

# EFL-3R410

## 3-WAY FLOW LOGIC



<b>OUTDOOR UNITS</b>	<b>APPLICABLE INDOOR UNITS</b>	<b>V/Ø/Hz</b>
EFL 80-3R410	NKFL, NWFL, NK2FL, NDLP, NFFL, DNHP, NKSFL, NPFL	OUTDOOR 380-415/3Ø/50 INDOOR 220-240/1Ø/50
EFL 100-3R410		
EFL 120-3R410		
EFL 140-3R410		
EFL 160-3R410		

*Airwell*

DRV RANGE

Technical Manual  
TM-EFL-A-1-AN  
Cancels and Replaces:

## IMPORTANT! Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

### For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- This product is intended for professional use. Permission from the power supplier is required when installing an outdoor unit that is connected to a 16 A distribution network.
- Pay close attention to all warning and caution notices given in this manual.



**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

### If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

### In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

## SPECIAL PRECAUTIONS

### **WARNING** When Wiring



**ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

### When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

### When Installing...

#### ...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

#### ...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

#### ...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

#### ...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

### When Connecting Refrigerant Tubing

- Ventilate the room well, in the event that is refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

### **NOTE**

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "narrow" or "wide" than as "liquid" or "gas."

### When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.



**CAUTION**

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

### Check of Density Limit

**The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.**

The refrigerant (R410A), which is used in the air conditioner, is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws imposed to protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power, etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared to conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device. The density is as given below.

#### Total amount of refrigerant (kg)

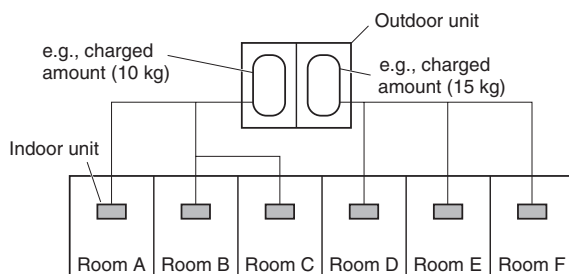
Min. volume of the indoor unit installed room (m <sup>3</sup> )	Density limit (kg/m <sup>3</sup> )
---	------------------------------------

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m<sup>3</sup> (ISO 5149).

#### NOTE

1. If there are 2 or more refrigerating systems in a single refrigerating device, the amount of refrigerant should be as charged in each independent device.

For the amount of charge in this example:

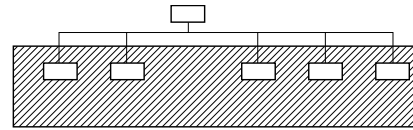


The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.

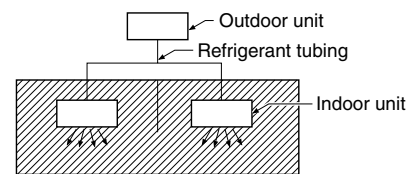
The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

2. The standards for minimum room volume are as follows.

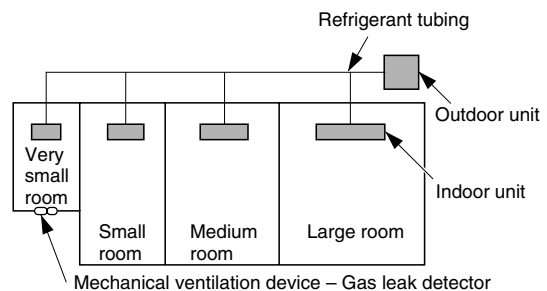
- (1) No partition (shaded portion)



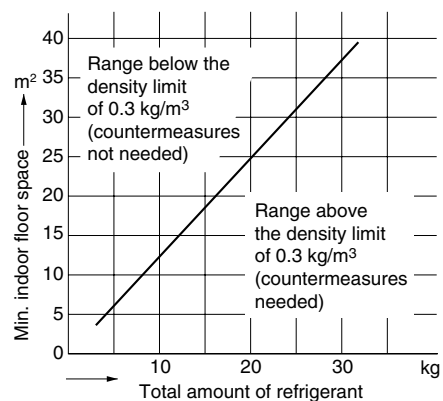
- (2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



- (3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



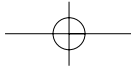
3. The minimum indoor floor space compared with the amount of refrigerant is roughly as follows: (When the ceiling is 2.7 m high)



## CONTENTS

<b>Section 1.</b>	<b>OUTLINE OF 3-WAY FLOW LOGIC</b> .....	<b>1-1</b>
	1. Line-up .....	1-2
	2. Features of 3-WAY FLOW LOGIC .....	1-4
<b>Section 2.</b>	<b>DESIGN OF 3-WAY FLOW LOGIC</b> .....	<b>2-1</b>
	1. Model Selecting and Capacity Calculator .....	2-2
	2. System Design .....	2-18
	3. Electrical Wiring .....	2-24
<b>Section 3.</b>	<b>CONTROL OF 3-WAY FLOW LOGIC</b> .....	<b>3-1</b>
	1. Main Operating Functions .....	3-2
	2. Wireless Remote Controller .....	3-4
	3. Wired Remote Controller / NRCG-FL .....	3-25
	4. System Controller / NRSC-FL .....	3-39
	5. Schedule Timer / NWTM-FL .....	3-61
	6. Simplified Remote Controller / NRCB-FL .....	3-86
	7. Remote Sensor / NSD .....	3-94
<b>Section 4.</b>	<b>3-WAY FLOW LOGIC UNIT SPECIFICATIONS</b> .....	<b>4-1</b>
	1. Outdoor Unit .....	4-2
	2. 4-Way Air-Discharge Semi-concealed Type .....	4-26
	3. 2-Way Air Discharge Semi-concealed Type .....	4-46
	4. Wall-Mounted Type .....	4-60
	5. Ceiling-Mounted Type .....	4-73
	6. Concealed Duct Type .....	4-86
	7. Concealed Duct High Static Pressure Type .....	4-107
	8. Floor Standing Type (NFFL Type) .....	4-124
	9. 1-Way Air Discharge Semi-concealed Slim Type (NKSFL Type) .....	4-137
<b>Section 5.</b>	<b>TEST RUN</b> .....	<b>5-1</b>
	1. Test Run .....	5-2
	2. Meaning of Alarm messages .....	5-3
<b>Section 6.</b>	<b>ELECTRICAL DATA</b> .....	<b>6-1</b>
	1. Outdoor Unit .....	6-2
	2. Indoor Unit .....	6-6
<b>Section 7.</b>	<b>PCB AND FUNCTIONS</b> .....	<b>7-1</b>
	1. Outdoor Unit Control PCB .....	7-2
	2. Indoor Unit Control PCB Switches and Functions .....	7-7

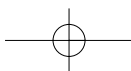




**Contents**

**1. OUTLINE OF 3-WAY FLOW LOGIC**







































**1. Line-up ..... 1-2**  
**2. Features of 3-WAY FLOW LOGIC .....1-4**








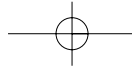
# 1. Line-up

1

## Indoor units

Type	7	9	12	18	25	36	48
Capacity: kW (BTU/h) Cooling Heating	2.2 (7,500) / 2.5 (8,500)	2.8 (9,600) / 3.2 (11,000)	3.6 (12,000) / 4.2 (14,000)	5.6 (19,000) / 6.3 (21,000)	7.3 (25,000) / 8.0 (27,000)	10.6 (36,000) / 11.4 (39,000)	14.0 (47,800) / 16.0 (54,600)
4-Way Air Discharge Semi-Concealed Type	 ST-NKFL 7	 ST-NKFL 9	 ST-NKFL 12	 ST-NKFL 18	 ST-NKFL 25	 ST-NKFL 36	 ST-NKFL 48
2-Way Air Discharge Semi-Concealed Type	 ST-NK2FL 7	 ST-NK2FL 9	 ST-NK2FL 12	 ST-NK2FL 18	 ST-NK2FL 24		
Wall-Mounted Type	 ST-NWFL 7	 ST-NWFL 9	 ST-NWFL 12	 ST-NWFL 18	 ST-NWFL 24		
Ceiling-Mounted Type			 ST-NPFL 12	 ST-NPFL 18	 ST-NPFL 24	 ST-NPFL 36	 ST-NPFL 48
1-Way Air Discharge Semi-Concealed-Slim Type		 ST-NKSFL 9	 ST-NKSFL 12	 ST-NKSFL 18	 ST-NKSFL 24		
Concealed-Duct Type	 ST-NDLP 7	 ST-NDLP 9	 ST-NDLP 12	 ST-NDLP 18	 ST-NDLP 24	 ST-NDLP 36	 ST-NDLP 48
Floor Standing Type	 ST-NFFL 7	 ST-NFFL 96	 ST-NFFL 12	 ST-NFFL 18	 ST-NFFL 24		

Type	24	36	48	76	96
Concealed-Duct High Static Pressure Type	 ST-NDHP 24	 ST-NDHP 36	 ST-NDHP 48	 ST-NDHP 76	 ST-NDHP 96



Outline of 3-WAY FLOW LOGIC

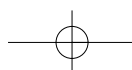
1. Line-up

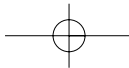
Outdoor units

Type	DC inverter unit		
	70	90	115
Capacity: kW (BTU/h) Cooling / Heating	22.4 (76,400) / 25.0 (85,300)	28.0 (95,500) / 31.5 (107,500)	33.5 (114,300) / 37.5 (128,000)
Outdoor Unit			
	EFL 80-3R410	EFL100-3R410	EFL 120-3R410

1

Type	DC inverter unit	
	130	140
Capacity: kW (BTU/h) Cooling / Heating	40.0 (136,400) / 45.0 (153,500)	45.0 (153,00) / 50.0 (170,500)
Outdoor Unit		
	EFL 140-3R410	EFL 160-3R410

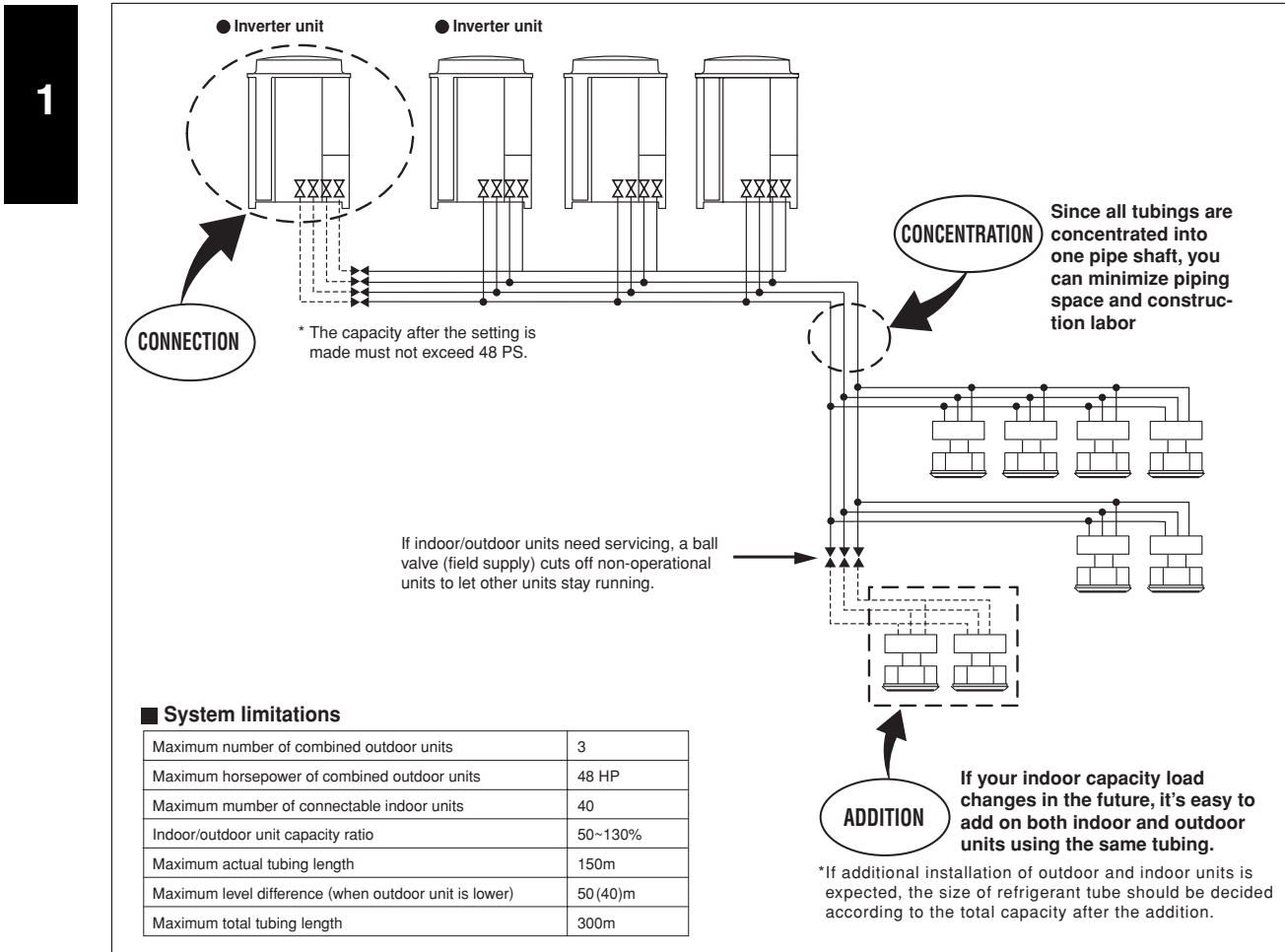




## 2. Features of 3-WAY FLOW LOGIC

### 2-1. Outline of 3-WAY FLOW LOGIC

#### ■ System example



#### ■ Combination of outdoor units

The DC inverter unit can be used independently or in combination.

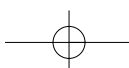


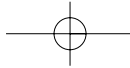
**CAUTION**

- R407C models and R22 models must not be used in combination with each other.

#### Combination of outdoor units

Total horse power Inverter unit	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	
8	1					1								1								
10		1				1	2	1		1				1	2	1		1				
12			1					1	2		1					1	2			1		
14				1								1									1	
16					1					1	1	1	2	1	1	1	1	2	2	2	2	3

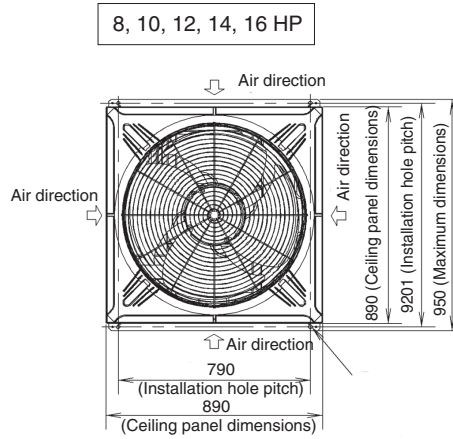




## 2. Features of 3-WAY FLOW LOGIC

### ■ Dimensions

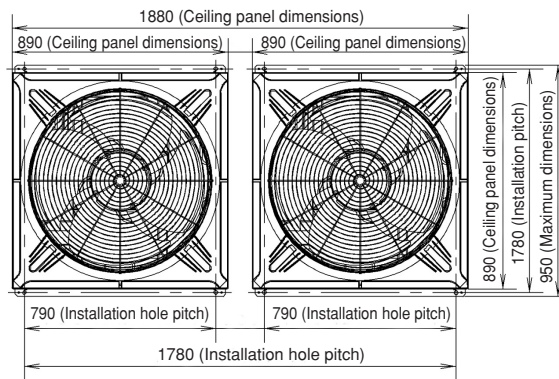
8HP	EFL 80R-3R410
10HP	EFL 100R-3R410
12HP	EFL 120R-3R410
14HP	EFL 140R-3R410
16HP	EFL 160R-3R410



Unit: mm

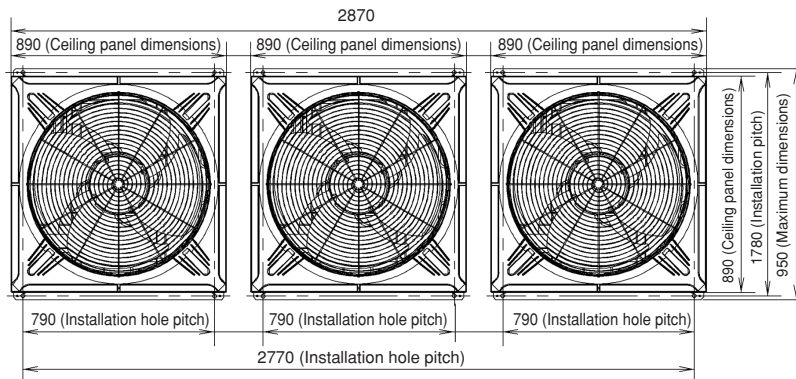
### ■ Dimensions of unit combinations

18 – 32 HP

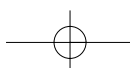


Unit: mm

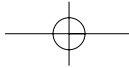
34 – 48 HP



Unit: mm



1



## 2. Features of 3-WAY FLOW LOGIC

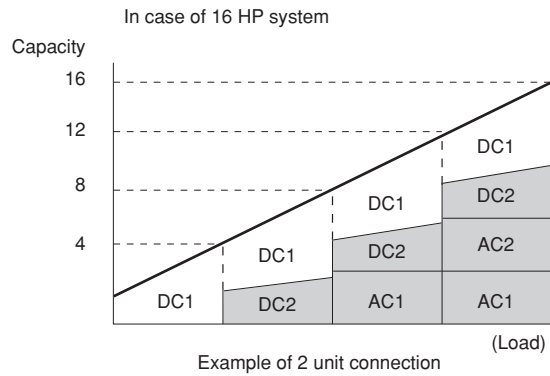
### ■ Capacity control

The compressor combination (DC inverter compressor + constant-speed compressor) allows smooth capacity control from 0.8 HP to 48 HP.

# 1

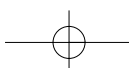
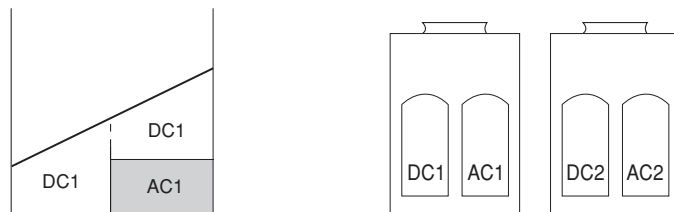
### Realization of smooth capacity control from 0.8 HP to 48 HP

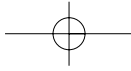
For the outdoor units of 8, 10, 12, 14 and 16 HP, a DC inverter and a constant-speed compressor both are installed. Correspondence to capacity control, which is difficult with a constant-speed compressor, is possible smoothly with a DC inverter. The performance difference at the time of start of a constant-speed compressor also is eliminated.



Priority selection is included for pairs of DC units (DC1 and DC2).  
Priority selection is included for pairs of AC units (AC1 and AC2).

In case of 8, 10, 12, 14, 16 HP system

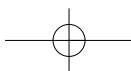


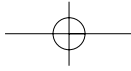


## Contents

### 2. DESIGN OF 3-WAY FLOW LOGIC

1. Model Selecting and Capacity Calculator .....	2-2
2. System Design .....	2-18
3. Electrical Wiring .....	2-24

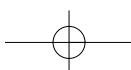
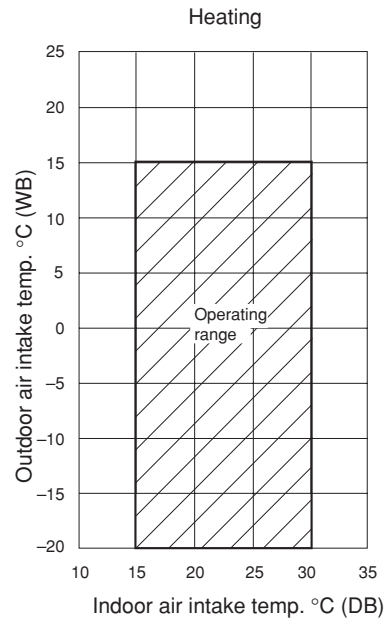
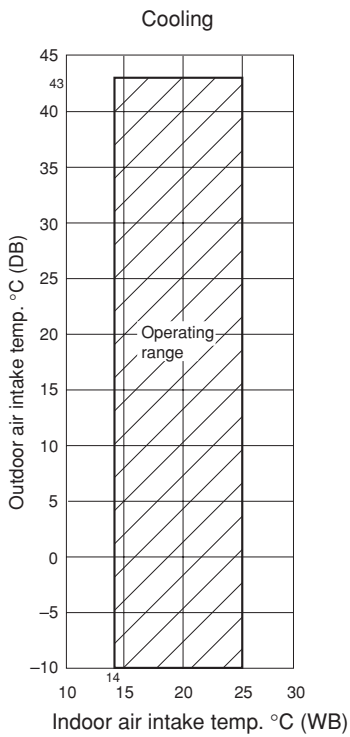
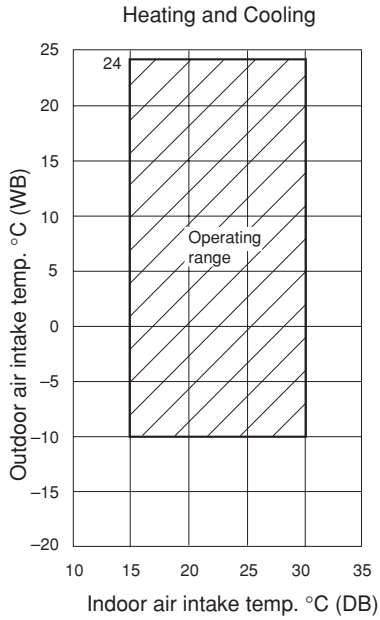




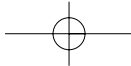
# 1. Model Selecting and Capacity Calculator

## 1-1. Operating Range

2





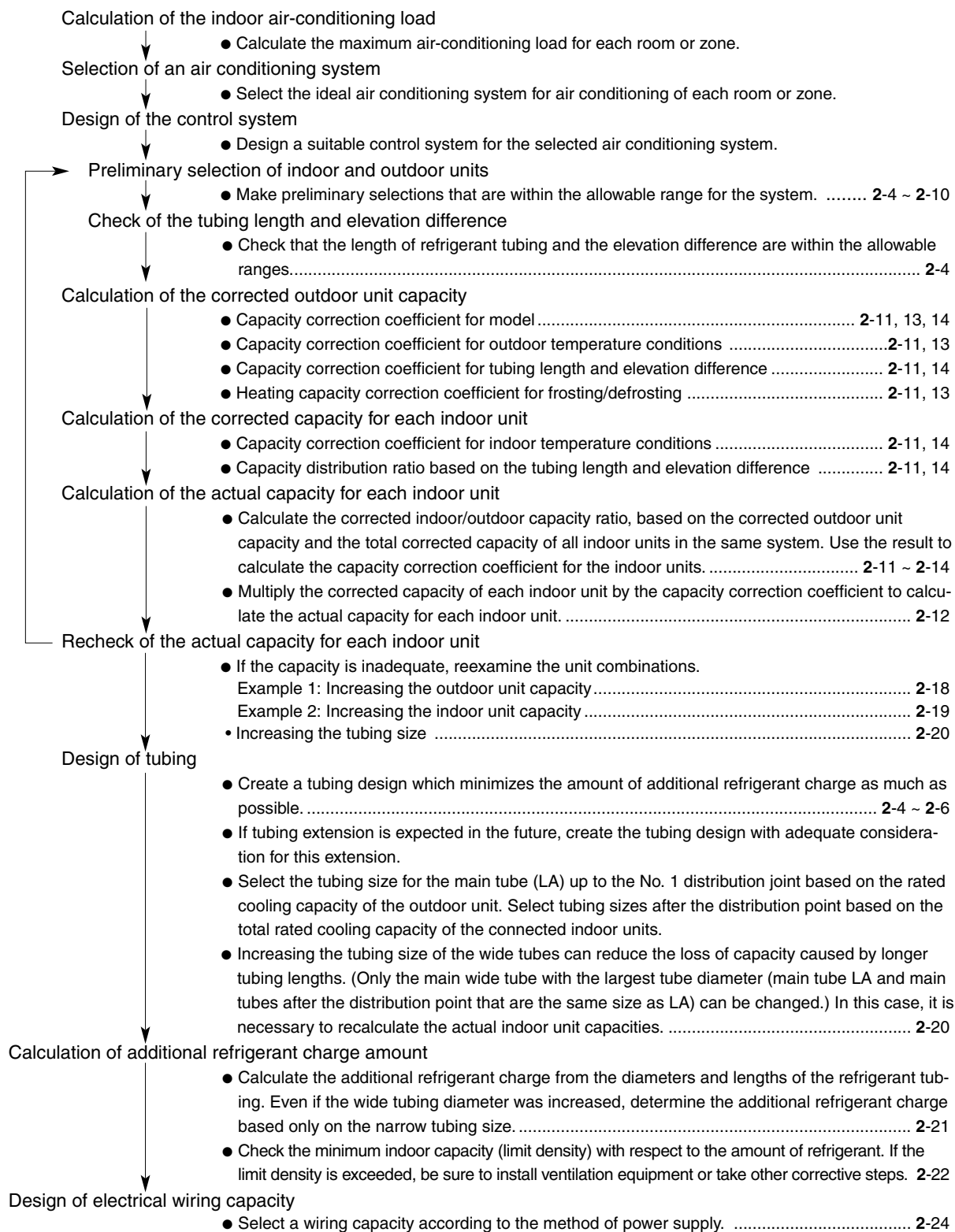


# 1. Model Selecting and Capacity Calculator

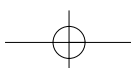
## 1-2. Procedure for Selecting Models and Calculating Capacity

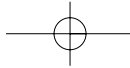
### ■ Model Selection Procedure

Select the model and calculate the capacity for each refrigerant system according to the procedure shown below.



2





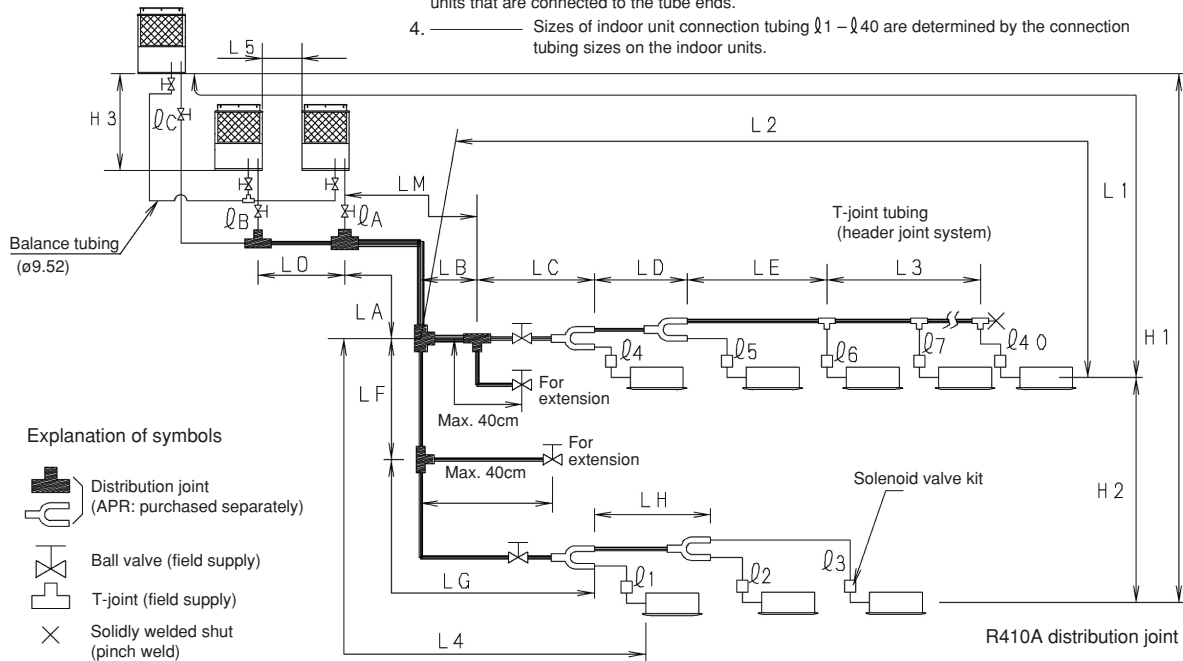
# 1. Model Selecting and Capacity Calculator

## 1-3. Design of Tubing Length

Select the installation location so that the length and size of refrigerant tubing are within the allowable range shown in the figure below.

1. Main tubing length  $LM = LA + LB \dots \leq 80$  m
2. Main distribution tubes LC – LH are selected according to the capacity after the distribution joint.
3. The outdoor connection main tubing (LD portion) is determined by the total capacity of the outdoor units that are connected to the tube ends.
4. Sizes of indoor unit connection tubing  $l_1 - l_{40}$  are determined by the connection tubing sizes on the indoor units.

2



Explanation of symbols

- Distribution joint (APR: purchased separately)
- Ball valve (field supply)
- T-joint (field supply)
- Solidly welded shut (pinch weld)

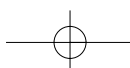
Note: Do not use commercially available T-joints for the liquid tubing and parts.

\* Be sure to use special R410A distribution joints (APR: purchased separately) for outdoor unit connections and tubing branches.

### Ranges that Apply to Refrigerant Tubing Lengths and to Differences in Installation Heights

Items	Marks	Contents	Length (m)	
Allowable tubing length	L1	Max. tubing length	Actual length	≤ 150
			Equivalent length	≤ 175
	$\Delta L (L_2 - L_4)$	Difference between max. length and min. length from the No.1 distribution joint	≤ 40	
	LM	Max. length of main tubing (at max. diameter)	≤ 80 *3	
	$l_1, l_2 \sim l_{40}$	Max. length of each distribution tube	≤ 30	
Allowable elevation difference	$L_1 + l_1 + l_2 + \sim l_{40} + l_A + l_B + LF + LG + LH$		Total max. tubing length including length of each distribution tube (only narrow tubing)	≤ 300
	L5	Distance between outdoor units	≤ 10	
	H1	When outdoor unit is installed higher than indoor unit	≤ 50	
Allowable length of joint tubing	L3	T-joint tubing (field-supply); Max. tubing length between the first T-joint and solidly welded-shut end point	When outdoor unit is installed lower than indoor unit	≤ 40
			Max. difference between indoor units	≤ 15
Allowable elevation difference	H2	Max. difference between indoor units	≤ 15	
	H3	Max. difference between outdoor units	≤ 4	

L = Length, H = Height



## 1. Model Selecting and Capacity Calculator

### NOTE

- 1: The outdoor connection main tubing (LD portion) is determined by the total capacity of the outdoor units that are connected to the tube ends.
- 2: If the longest tubing length (L1) exceeds 90 m (equivalent length), increase the sizes of the main tubes (LM) by 1 rank for the discharge tubes, suction tubes, and narrow tubes.
- 3: If the longest main tube length (LM) exceeds 50 m, increase the main tube size at the portion before 50 m by 1 rank for the suction tubes and discharge tubes.  
(For the portion that exceeds 50 m, set based on the main tube sizes (LA) listed in the table on the following page.)

### Refrigerant Charge Amount at Shipment (for outdoor unit)

DC (kg)	EFL 80-3R410	EFL 100-3R410	EFL 120-3R410
	12.0	12.0	12.0
DC (kg)	EFL 120-3R410	EFL 160-3R410	
	15.0	15.0	

### Additional Refrigerant Charge

Additional refrigerant charge amount is calculated from the narrow tubing total length as follows.

### Amount of Refrigerant Charge Per Meter, According to Narrow Tubing Size

Narrow tubing size	Amount of refrigerant charge/m (g/m)
φ 6.35	26
φ 9.52	56
φ 12.7	128
φ 15.88	185
φ 19.05	259
φ 22.22	366

Required amount of charge = (Amount of refrigerant charge per meter of each size of narrow tube × its tube length) + (...) + (...)

\*Always charge accurately using a scale for weighing.

### System Limitations

Max. No. allowable connected outdoor units	3 *2
Max. capacity allowable connected outdoor units	135 kW (48 hp)
Max. connectable indoor units	40 *1
Max. allowable indoor/outdoor capacity ratio	50 – 130 %

\*1: In the case of 22 hp (type 2054) or smaller units, the number is limited by the total capacity of the connected indoor units.

\*2: Up to 4 units can be connected if the system has been extended. However, the following combinations are not possible.

44 horse power (14+14+8+8)

46 horse power (16+14+8+8, 16+12+10+8, 16+10+10+10, 14+14+10+8)

48 horse power (16+16+8+8, 16+14+10+8, 16+12+12+8, 16+12+10+10, 14+14+12+8, 14+14+10+10)

## 1. Model Selecting and Capacity Calculator

### ■ Tubing size

#### Main Tubing Size (LA)

Unit: mm

kW	22.4	28.0	33.5	40.0	45.0	50.4	56.0	61.5	68.0	73.0	78.5	85.0	90.0	96.0
Total system horsepower	8	10	12	14	16	18	20	22	24	26	28	30	32	34
Combined outdoor units	8	10	12	14	16	10 8	10 10	12 10	14 10	16 10	16 12	16 14	16 16	14 10 10
Suction tubing (mm)	ø19.05	ø22.22	ø25.4		ø28.58	ø28.58				ø31.75				
Discharge tubing (mm)	ø15.88	ø19.05		ø22.22				ø25.40		ø28.58				
Liquid tubing (mm)	ø9.52		ø12.70			ø15.88				ø19.05				

kW	101.0	106.5	113.0	118.0	123.5	130.0	135.0
Total system horsepower	36	38	40	42	44	46	48
Combined outdoor units	16 10	16 12 10	16 14 10	16 16 10	16 16 12	16 16 14	16 16 16
Suction tubing (mm)	ø38.10						
Discharge tubing (mm)	ø28.58	ø31.75					
Liquid tubing (mm)	ø19.05						

\*1: If future extension is planned, select the tubing diameter based on the total horsepower after extension.

However extension is not possible if the resulting tubing size is two ranks higher.

\*2: The balance tube (outdoor unit tube) diameter is ø9.52.

\*3: Type 1 tubing should be used for the refrigerant tubes.

\*4: If the longest main tube length (LM) exceeds 50 m, increase the main tube size at the portion before 50 m by 1 rank for the suction tubes and discharge tubes.

(For the portion that exceeds 50 m, set based on the main tube sizes (LA) listed in the table above.)

### ■ Size of tubing (LO) between outdoor units

Select the size of tubing between outdoor units based on the main tubing size (LA) as given in the table above.

#### Main Tubing Size After Distribution (LB, LC...)

Unit: mm  
hp = horsepower

Total capacity after distribution	Below kW	7.1 (2.5 hp)	16.0 (6 hp)	25.0 (9 hp)	30.0 (11 hp)	36.4 (13 hp)	42.0 (15 hp)	47.6 (17 hp)	58.8 (21 hp)	70.0 (25 hp)
	Over kW	—	7.1 (2.5 hp)	16.0 (6 hp)	25.0 (6 hp)	30.0 (11 hp)	36.4 (13 hp)	42.0 (15 hp)	47.6 (17 hp)	58.8 (21 hp)
Tubing size	Suction tubing (mm)	ø15.88	ø19.05	ø19.05	ø22.22	ø25.4	ø25.4	ø28.58	ø28.58	ø28.58
	Discharge tubing (mm)	ø12.70	ø15.88	ø15.88	ø19.05	ø19.05	ø22.22	ø22.22	ø22.22	ø25.40
	Liquid tubing (mm)	ø9.52	ø9.52	ø9.52	ø9.52	ø12.70	ø12.70	ø12.70	ø15.88	ø15.88

Total capacity after distribution	Below kW	75.6 (27 hp)	98.0 (35 hp)	103.6 (37 hp)	—
	Over kW	70.0 (25 hp)	75.6 (27 hp)	98.0 (35 hp)	103.6 (37 hp)
Tubing size	Suction tubing (mm)	ø31.75	ø31.75	ø38.10	ø38.10
	Discharge tubing (mm)	ø25.4	ø28.58	ø28.58	ø31.75
	Liquid tubing (mm)	ø19.05	ø19.05	ø19.05	ø19.05

\*1: The outdoor unit connection tubing (LO) is determined by the total capacity of the outdoor units connected to the tube ends. The tubing size is selected based on the table of main tube sizes after the branch.

\*2: If the total capacity of the indoor units connected to the tube ends is different from the total capacity of the outdoor units, then the main tube size is selected based on the total capacity of the outdoor units.

(For LA, LB, and LF in particular)

## 1. Model Selecting and Capacity Calculator

### ■ Amount of Refrigerant Charge

Narrow tubing size	Amount of refrigerant charge/m (g/m)
φ 6.35	26
φ 9.52	56
φ 12.7	128
φ 15.88	185
φ 19.05	259
φ 22.22	366

### ■ Indoor Unit Tubing Connection (ℓ<sub>1</sub> ~ ℓ<sub>40</sub>)

Unit: mm

Indoor unit type		7	9	12	18	25	36	48	54	76 *1	96 *1
Total system horsepower		0.8	1	1.3	2	3	4	5	6	8	10
Distribution joint – solenoid valve kit tubing	Suction tubing (mm)	ø15.88								ø19.05	ø22.22
	Discharge tubing (mm)	ø12.7								ø15.88	ø19.05
	Liquid tubing (mm)	ø9.52								ø9.52	ø9.52
Solenoid valve kit – Indoor unit tubing connection	Wide tubing (mm)	ø12.7			ø15.88			ø19.05	ø22.22		
	Narrow tubing (mm)	ø6.35			ø9.52			ø9.52	ø9.52		

\*1: For the solenoid valve kits, use type 160 with parallel specifications. Branch the tubing before and after the solenoid valve kits.

### ■ Required Copper Tubing Dimensions

Unit: mm

Material		O					
Copper tubing	Outer diameter	6.35	9.52	12.70	15.88	19.05	22.22
	Wall thickness	0.8	0.8	0.8	1.0	1.0	1.15

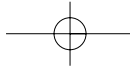
Material		1/2 H, H				
Copper tubing	Outer diameter	25.4	28.58	31.75	38.1	41.28
	Wall thickness	1.0	1.0	1.1	1.15	1.20

### ● Refrigerant tubing (Design pressure capability: 3.3 MPa)

Tubing size (mm)			
Material O		Material 1/2H • H	
φ 6.35	t0.8	φ 25.40	t1.0
φ 9.52	t0.8	φ 28.58	t1.0
φ 12.7	t0.8	φ 31.75	t1.1
φ 15.88	t1.0	φ 38.10	t1.15
φ 19.05	t1.0	φ 41.28	t1.20
φ 22.22	t1.15		

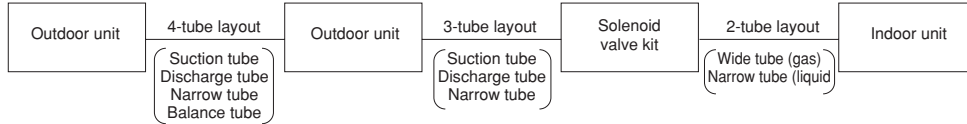
\* When bending the tubes, use a bending radius that is at least 4 times the outer diameter of the tubes. In addition, take sufficient care to avoid crushing or damaging the tubes when bending them.

\* When bending the tubes, use a bending radius that is at least 4 times the outer diameter of the tubes. In addition, take sufficient care to avoid crushing or damaging the tubes when bending them.



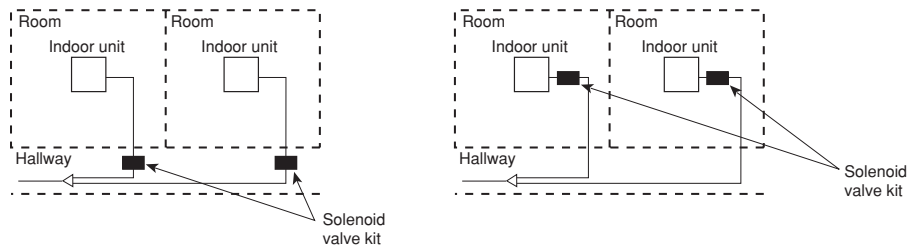
■ Installation standards

Relationship between A/C units and the refrigerant tubing



- Install the solenoid valve kit 30 m or less from the indoor unit.
- In quiet locations such as hospitals, libraries, and hotel rooms, the refrigerant noise may be somewhat noticeable. It is recommended that the solenoid valve kit be installed inside the corridor ceiling, at a location outside the room.

2



Common solenoid valve kit

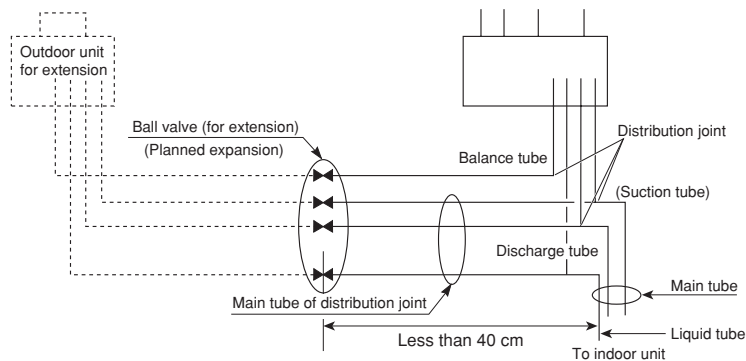
- Multiple indoor units under group control can utilize a solenoid valve kit in common.
- Categories of connected indoor unit capacities are determined by the solenoid valve kit.

Type of solenoid valve kit	Total capacity of indoor units (kW)
160	16.0 Total capacity < 5.6
56	5.6 Total capacity 2.2

- If the capacity range is exceeded, use 2 solenoid valves connected in parallel.

(2) When adding ball valve for outdoor unit

1. Location: Install the ball valve at the main tube of the distribution joint.

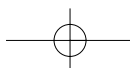


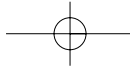
2. Installation requirements

- Be sure to install the ball valve up-grade to prevent the inadvertent flow of oil.
- Install the ball valve at the shortest distance (within 40 cm) from the main tube. If the diameter of the ball valve is smaller than that of the main tube, use a reducer or the like to reduce the size of the tubing at that location.

**NOTE**

- If the ball valve is installed at the outdoor unit (including extension for outdoor unit), face the service port of the valve toward the outdoor unit side (see above illustration; dotted line) and allow a distance of over 50 cm from the outdoor unit. If the ball valve is installed between the indoor unit (including extension for indoor unit) and the main tube, face the ball valve toward the indoor unit side (see above illustration; dotted line).
- Use a field supply ball valve.





# 1. Model Selecting and Capacity Calculator

## ■ Straight equivalent length of joints

### 1-6. Straight Equivalent Length of Joints

Design the tubing system by referring to the following table for the straight equivalent length of joints.

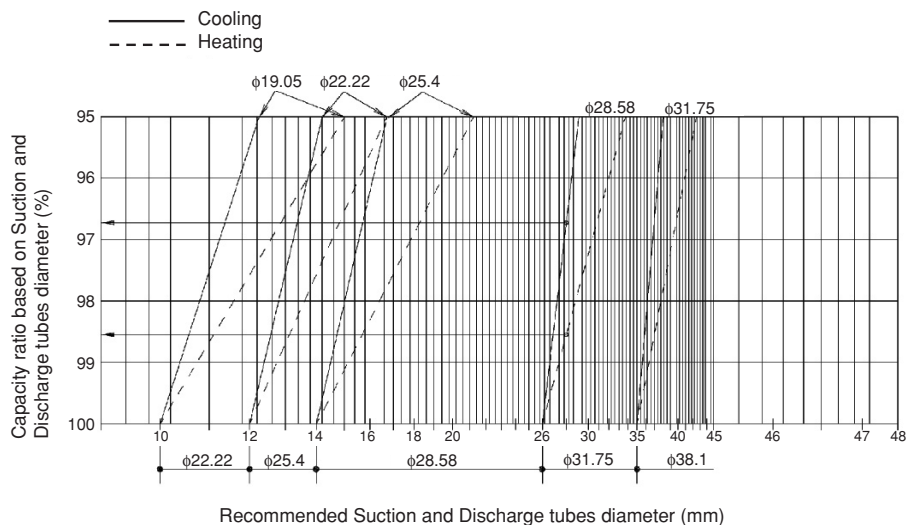
#### Straight Equivalent Length of Joints

Wide tubing size (mm)		12.7	15.88	19.05	22.22	25.4	28.58	31.8	38.1
90° elbow		0.3	0.35	0.42	0.48	0.52	0.57	0.7	0.79
45° elbow		0.23	0.26	0.32	0.36	0.39	0.43	0.53	0.59
U-shape tube bent (R60-100 mm)		0.9	1.05	1.26	1.44	1.56	1.71	2.1	2.37
Trap bend		2.3	2.8	3.2	3.8	4.3	4.7	5.0	5.8
Y-branch distribution joint		Equivalent length conversion not needed.							
Ball valve for service		Equivalent length conversion not needed.							

2

## ● Capacity loss caused by differences in tubing diameters

\* Capacity loss will occur if a tubing system that matches the horsepower is not selected (for example, if a tubing system was determined and installed with no plan for extension and extension occurs later). The loss rate can be found from the graph below.

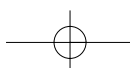


(Reading the graph)

<Example 1>

Currently a 20 HP system and φ28.58 Suction & Discharge tubings are used. Subsequently the system is expanded, with 8 HP added to the same tubing system.

- Horsepower after extension:  $20 + 8 = 28$  HP
- From the graph above: Cooling: Capacity ratio is 96.7%. Actual capacity =  $28 \times 0.967 = 27.1$  HP  
 Heating: Capacity ratio is 98.6%. Actual capacity =  $28 \times 0.986 = 27.6$  HP



## 1. Model Selecting and Capacity Calculator

### ■ Additional refrigerant charge amount

Additional refrigerant charge amount is calculated from the liquid tubing total length as follows.

#### Amount of Refrigerant Charge Per Meter, According to Liquid Tubing Size

Liquid tubing size	Amount of refrigerant charge/m (g/m)
φ 6.35	26
φ 9.52	56
φ 12.7	128
φ 15.88	185
φ 19.05	259
φ 22.22	366

Required amount of charge = (Amount of refrigerant charge per meter of each size of liquid tube × its tube length) + (...) + (...)

\*Always charge accurately using a scale for weighing.

2

### ■ Check of limit density



**WARNING**

Always check the gas density limit for the room in which the unit is installed.

#### 1-4. Check of Limit Density

When installing an air conditioner in a room, it is necessary to ensure that if the refrigerant gas accidentally leaks out, its density does not exceed the limit level for that room.

If the density could exceed the limit level, it is necessary to provide an opening between the unit and the adjacent room, or to install mechanical ventilation which is interlocked with the leak detector.

(Total refrigerant charged amount: kg)

(Min. indoor volume where the indoor unit is installed: m<sup>3</sup>)

**Limit density 0.3 (kg/m<sup>3</sup>)**

The limit density of refrigerant which is used in this unit is 0.3 kg/m<sup>3</sup> (ISO 5149).

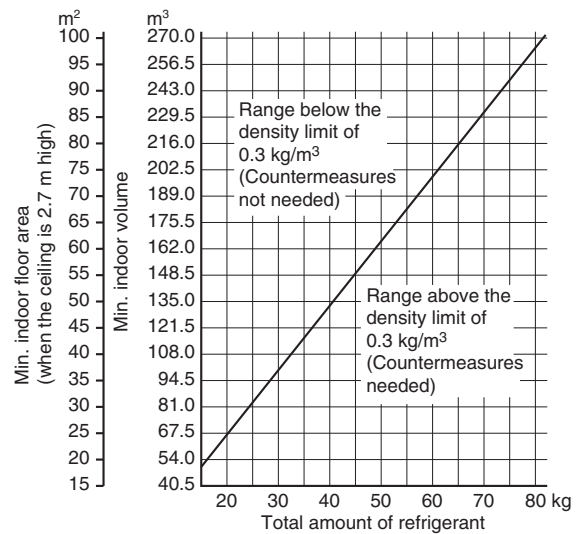
The shipped outdoor unit comes charged with the amount of refrigerant fixed for each type, so add it to the amount that is charged in the field. (For the refrigerant charge amount at shipment, refer to the unit's nameplate.)



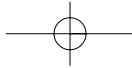
**CAUTION**

Pay special attention to any location, such as a basement, etc., where leaking refrigerant can accumulate, since refrigerant gas is heavier than air.

Minimum indoor volume and floor area as against the amount of refrigerant is roughly as given in the following table.







## 1. Model Selecting and Capacity Calculator

### 1-5. Calculation of Actual Capacity of Indoor Unit

#### ■ Calculating the actual capacity of each indoor unit

Because the capacity of a multi air-conditioner changes according to the temperature conditions, tubing length, elevation difference and other factors, select the correct model after taking into account the various correction values. When selecting the model, calculate the corrected capacities of the outdoor unit and each indoor unit. Use the corrected outdoor unit capacity and the total corrected capacity of all the indoor units to calculate the actual final capacity of each indoor unit.

#### 1. Outdoor unit capacity correction coefficient

Find the outdoor unit capacity correction coefficient for the following items.

- (1) Capacity correction for the outdoor unit model  
From the table of correction coefficients by horsepower on page 2-13, use the equivalent horsepower to find the capacity correction coefficient.  
However, if the outdoor air intake temperature is 35°C or higher, the capacity correction coefficient is 1.00.
- (2) Capacity correction for the outdoor unit temperature conditions  
From the graph of capacity characteristics on page 2-13, use the outdoor temperature to find the capacity correction coefficient.
- (3) Capacity correction for the outdoor unit tubing length and elevation difference  
From the graph of capacity change characteristics on page 2-14, use the tubing length and elevation difference to find the capacity correction coefficient.  
The outdoor unit correction coefficient is the value which corresponds to the most demanding indoor unit.
- (4) Capacity correction for outdoor unit frosting/defrosting during heating  
From the table on page 2-13, find the capacity correction coefficient.

#### 2. Indoor unit capacity correction coefficients

Find the indoor unit capacity correction coefficient for the following items.

- (2) Capacity correction for the indoor unit temperature conditions  
From the graph of capacity characteristics on page 2-14, use the indoor temperature to find the capacity correction coefficient.
- (3) Capacity distribution ratio based on the indoor unit tubing length and elevation difference  
First, in the same way as for the outdoor unit, use the tubing length and elevation difference for each indoor unit to find the correction coefficient from the graph of capacity change characteristics on page 2-14. Then divide the result by the outdoor unit correction coefficient to find the capacity distribution ratio for each indoor unit.

Capacity distribution ratio for each indoor unit (3) = Correction coefficient for that indoor unit / Correction coefficient for the outdoor unit

#### 3. Calculating the corrected capacities for the outdoor unit and each indoor unit

The corrected capacities for the outdoor unit and each indoor unit are calculated from the formula below.

##### <Cooling>

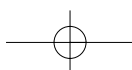
- Outdoor unit corrected cooling capacity (5) = Outdoor unit rated cooling capacity × Correction coefficient for model ((1) Page 2-13) × Correction coefficient for outdoor temperature conditions ((2) Page 2-13) × Correction coefficient for tubing length and elevation difference ((3) Page 2-14)

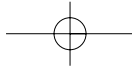
\* However, if the outdoor unit corrected cooling capacity [5] is greater than 100%, then the outdoor unit corrected cooling capacity [5] is considered to be 100%.

- Corrected cooling capacity of each indoor unit (5) = Rated cooling capacity for that indoor unit × Correction coefficient for indoor temperature conditions at that indoor unit ((2) Page 2-14) × Distribution ratio based on tubing length and elevation difference at that indoor unit ((3) Page 2-14)

However, the corrected cooling capacity of each indoor unit is found as shown below.

If (2) < 100% and (2) × (3) > 100%: Corrected cooling capacity for that indoor unit [5] = Rated cooling capacity for that indoor unit  
If (2) 100%: Corrected cooling capacity for that indoor unit (5) = Rated cooling capacity for that indoor unit × (2)





## 1. Model Selecting and Capacity Calculator

### <Heating>

- Outdoor unit corrected heating capacity (5) = Outdoor unit rated heating capacity × Correction coefficient for model ((1) Page 2-13) × Correction coefficient for outdoor temperature conditions ((2) Page 2-13) × Correction coefficient for tubing length and elevation difference ((3) Page 2-14) × Correction coefficient for frosting/defrosting ((4) Page 2-13)
  - \* However, if the outdoor unit corrected heating capacity [5] is greater than 100%, then the outdoor unit corrected heating capacity is considered to be 100%.
- Corrected heating capacity of each indoor unit (5) = Rated heating capacity for that indoor unit × Correction coefficient for indoor temperature conditions at that indoor unit ((2) Page 2-14) × Distribution ratio based on tubing length and elevation difference at that indoor unit.

However, the corrected heating capacity of each indoor unit is found as shown below.

If (2) < 100% and (2) × (3) > 100%: Corrected heating capacity for that indoor unit (5) = Rated heating capacity for that indoor unit  
 If (2) 100%: Corrected heating capacity for that indoor unit (5) = Rated heating capacity for that indoor unit × (2)

- \* Characteristic graphs are shown on the pages listed above next to each correction item.  
 Find each correction coefficient from the appropriate conditions.

### 4. Calculating the actual indoor unit capacity based on the indoor/outdoor corrected capacity ratio

Calculate the actual capacity of each indoor unit from the values (found in (3)) for the corrected outdoor unit capacity and the corrected capacity of each indoor unit.

#### <Cooling capacity>

Corrected indoor/outdoor capacity ratio during cooling (Ruc) = Total corrected cooling capacity of all indoor units in that system / Corrected outdoor unit cooling capacity

If the corrected outdoor unit cooling capacity is greater than or equal to the total corrected unit cooling capacity of all indoor units in that system (Ruc ≤ 1), then:

Actual cooling capacity of each indoor unit (7) = Corrected cooling capacity of each indoor unit (5)  
 (In other words, the correction coefficient (6), based on the corrected indoor/outdoor capacity ratios for each indoor unit, is 1.)

If the corrected outdoor unit cooling capacity is less than the total corrected unit cooling capacity of all indoor units in that system (Ruc > 1), then:

(Actual cooling capacity of each indoor unit (7)) = (Corrected cooling capacity of each indoor unit (5)) × (0.25 × Ruc + 0.75) / Ruc

(In other words, the correction coefficient (6), based on the corrected indoor/outdoor capacity ratios for each indoor unit, is the underlined part in the formula above.)

#### <Heating capacity>

Corrected indoor/outdoor capacity ratio during heating (Ruh) = Total corrected heating capacity of all indoor units in that system / Corrected outdoor unit heating capacity

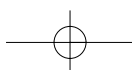
If the corrected outdoor unit heating capacity is greater than or equal to the total corrected unit heating capacity of all indoor units in that system (Ruh ≤ 1), then:

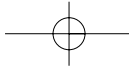
Actual heating capacity of each indoor unit (7) = Corrected heating capacity of each indoor unit (5)  
 (In other words, the correction coefficient (6), based on the corrected indoor/outdoor capacity ratios for each indoor unit, is 1.)

If the corrected outdoor unit heating capacity is less than the total corrected unit heating capacity of all indoor units in that system (Ruh > 1), then:

(Actual heating capacity of each indoor unit (7)) = (Corrected heating capacity of each indoor unit (5)) × (0.1 × Ruh + 0.9) / Ruh

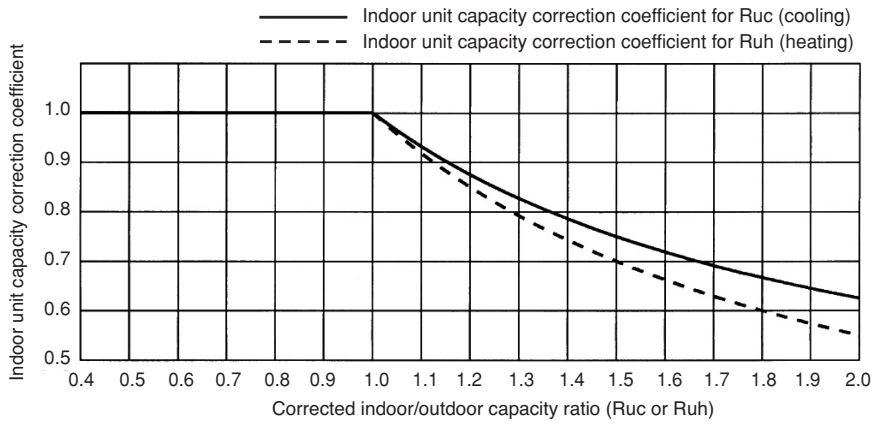
(In other words, the correction coefficient (6), based on the corrected indoor/outdoor capacity ratios for each indoor unit, is the underlined part in the formula above.)





# 1. Model Selecting and Capacity Calculator

Refer to the graph below for the correction coefficients for Ruc and Ruh.



**Note:** When Ruc or Ruh is less than or equal to 1.0, the indoor unit capacity correction coefficient for both Ruc and Ruh is 1.0.

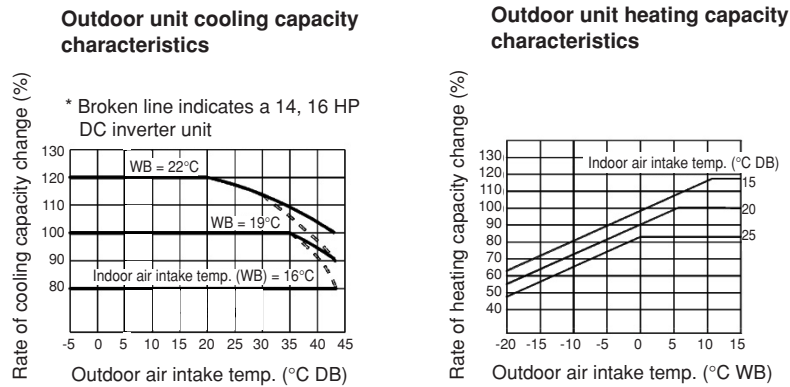
2

## 5. Graph of capacity correction coefficients

### ■ Table of correction coefficients by horsepower (1 – (1))

Equivalent horsepower	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
50 Hz	1.25	1.15	1.00	1.05	1.05	1.19	1.15	1.07	1.09	1.09	1.03	1.05	1.05	1.11	1.11	1.06	1.07	1.07	1.04	1.05	1.05

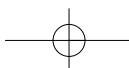
### ■ Graph of outdoor unit capacity characteristics (1 – (2))

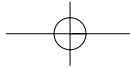


### ■ Outdoor unit heating capacity correction coefficient during frosting/defrosting (1 – (4))

Outdoor intake air temp. (°CWB RH85%)	-20	-15	-10	-8	-6	-5	-4	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.97	0.97	0.97	0.96	0.94	0.91	0.89	0.87	0.87	0.87	0.88	0.89	0.91	0.92	0.95	1.0

\* To calculate the heating capacity with consideration for frosting/defrosting operation, multiply the heating capacity found from the capacity graph by the correction coefficient from the table above.



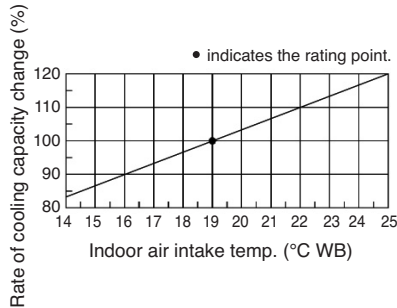


# 1. Model Selecting and Capacity Calculator

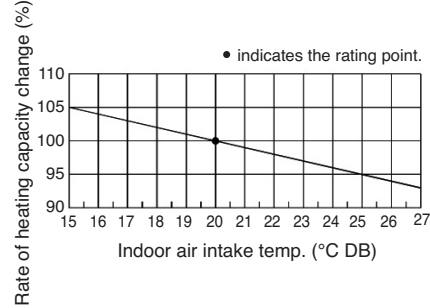
2

## ■ Graph of indoor unit capacity characteristics (2 – (2))

Indoor unit cooling capacity characteristics

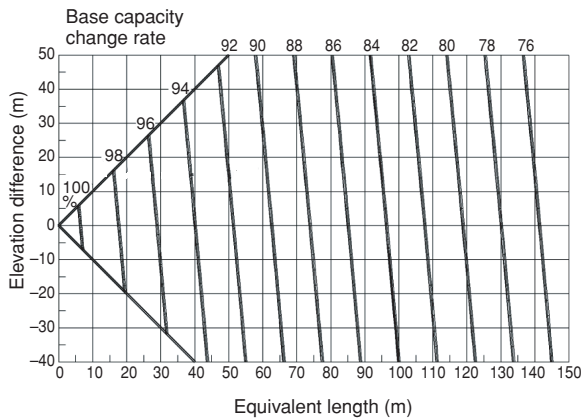


Indoor unit heating capacity characteristics

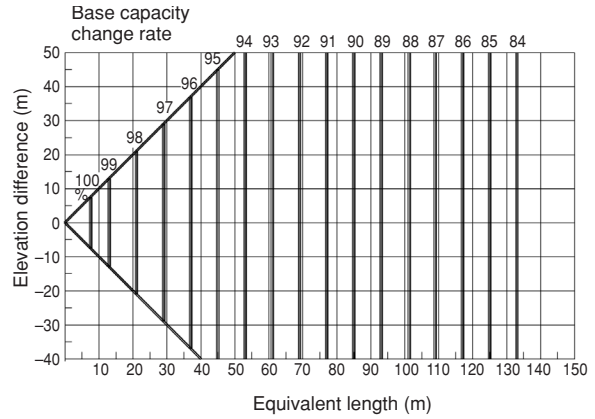


## ■ Graph of capacity change characteristics resulting from tubing length and elevation difference (1 / 2 – (3))

<Cooling>



<Heating>



The positive side for the elevation difference indicates that the outdoor unit is installed at a higher position than the indoor units. The negative side indicates the opposite.

- The capacity loss that is caused by the tubing length can be reduced by increasing the sizes of the discharge tubes and suction tubes. Refer to Table 1 and make the appropriate changes. However be sure that the total length does not exceed the maximum.

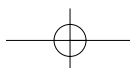
\* The only sizes which can be increased are the LM (main tube with the largest diameter) discharge tubes and suction tubes, and the changes are limited to those shown in Table 1.  
In addition, note that the additional refrigerant charge is determined only by the narrow-tube size.

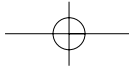
**Table 1. Equivalent Length Correction Coefficient when the Size of the Discharge Tubes and Suction Tubes (LM) is Increased**

Standard tubing diameter (discharge tube, mm)	φ12.7	φ15.88	φ19.05	φ22.22	φ25.4	φ28.58	φ31.75	φ38.1
Tubing diameter after change (suction tube, mm)	φ15.88	φ19.05	φ22.22	φ25.4	φ28.58	φ31.75	φ38.1	φ41.28
Equivalent length correction coefficient	0.4		0.5			0.6		0.7

\* If the size of the discharge tubes and suction tubes (LM) have been increased, apply the correction coefficient from Table 1 and calculate the equivalent length of the LM section.

$$\text{Equivalent length of tubing after size increase} = \text{Standard tubing equivalent length} \times \text{Equivalent length correction coefficient}$$





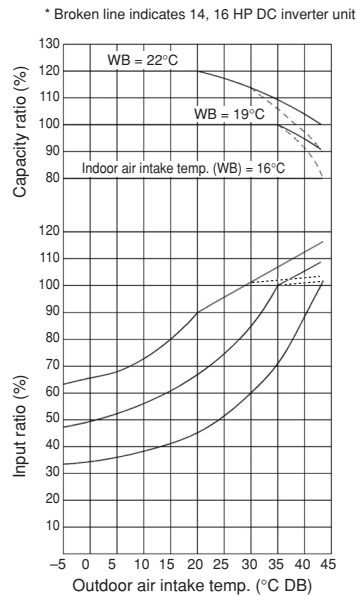
# 1. Model Selecting and Capacity Calculator

## 1-6. Capacity Correction Graph According to Temperature Condition

### ■ Capacity characteristics

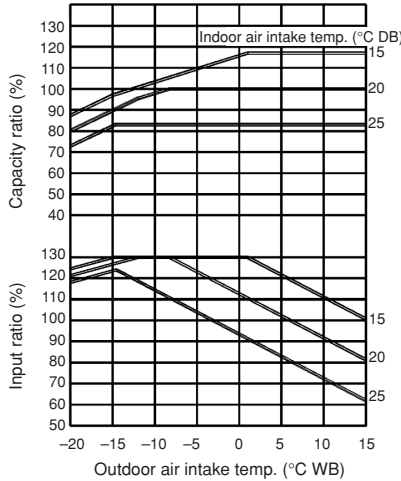
(The corrected capacity for specific temperature conditions can be found from the graphs below.)

<Cooling>

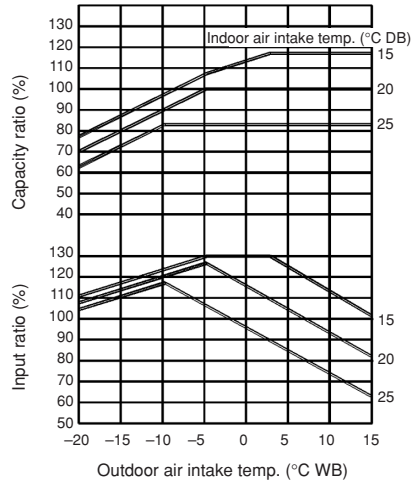


<Heating>

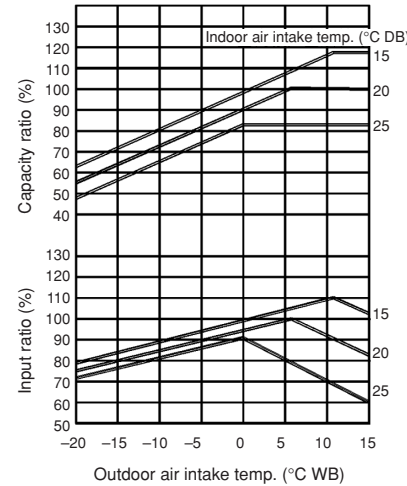
■ 50Hz: 8HP



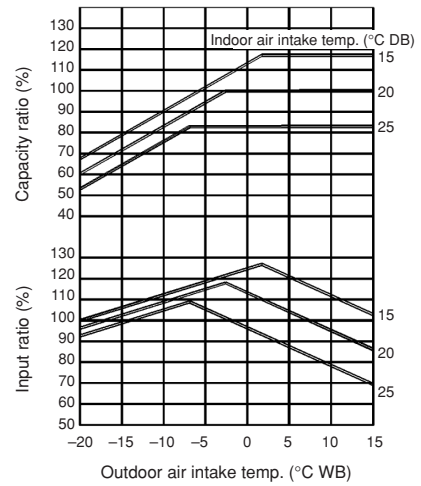
■ 50Hz: 10HP



■ 50Hz: 12HP



■ 50Hz: 14, 16HP



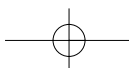
**Note:** For model combinations (12PS Inverter + 10PS Inverter) of 22 HP or higher, the lower limit for the outdoor air intake temperature is 5°C.

### ● Heating capacity correction coefficients for frost/defrost operation

Outdoor intake air temp. (°CWB, RH85%)	-20	-15	-10	-8	-6	-5	-4	-2	-1	0	1	2	3	4	5	6
Correction coefficient	0.97	0.97	0.97	0.96	0.94	0.91	0.89	0.87	0.87	0.87	0.88	0.89	0.91	0.92	0.95	1.0

\* The heating capacity when frost/defrost operation is considered is calculated by multiplying the heating capacity found from the capacity graph by the correction coefficient from the table above.

2



# 1. Model Selecting and Capacity Calculator

## ● Inverter model rated performance values

<50Hz models>

Model \ Item	Cooling		Heating	
	Cooling capacity (kW)	Power consumption (kW)	Heating capacity (kW)	Power consumption (kW)
	22.4	5.93	25.0	6.11
	28.0	8.12	31.5	7.97
	33.5	9.82	37.5	9.84
	40.0	11.6	45.0	11.5
	45.0	13.3	50.0	13.2

2

### 1-7. Capacity Correction Graph According to Tubing Length and Elevation Difference

#### ■ Capacity change characteristics

<Cooling>

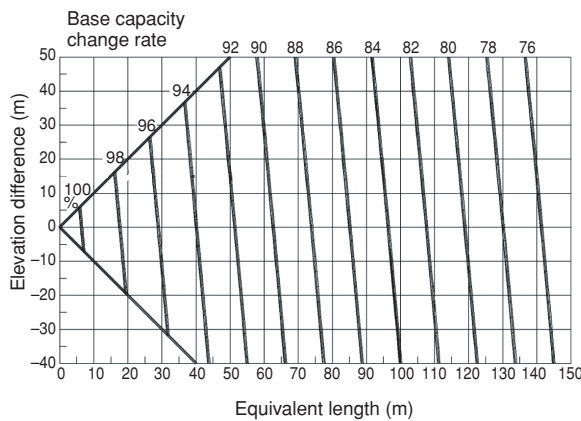
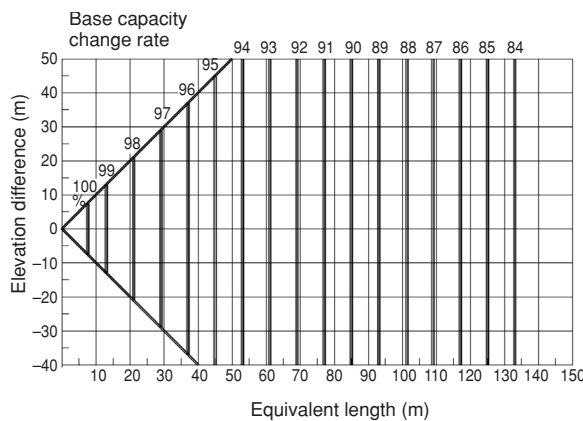


Table of correction coefficients by horsepower (HP)

Equivalent horsepower	50Hz
8	1.25
10	1.15
12	1.00
14	1.05
16	1.05
18	1.19
20	1.15
22	1.07
24	1.09
26	1.09
28	1.03
30	1.05
32	1.05
34	1.11
36	1.11
38	1.06
40	1.07
42	1.07
44	1.04
46	1.05
48	1.05

\* The capacity change rate due to the refrigerant tubing length and elevation difference for each horsepower level is found from the correction coefficient for that horsepower from this table multiplied by the base capacity change rate from the graphs at left. However, even if the calculated result exceeds 100%, the maximum capacity change rate is 100%.

<Heating>



**NOTE**

The positive side for the elevation difference indicates that the outdoor unit is installed at a higher position than the indoor units. The negative side indicates the opposite.

\*1 Sample calculations  
 (System: 20 HP, 50 Hz, 50 m equivalent length, 15 m elevation difference)  
 The cooling capacity and heating capacity for this system are found as shown below.)

- Cooling operation  
 From the table, the correction coefficient for that horsepower level is found to be 1.15.  
 From the graph, the base capacity change rate is found to be 92.0%.  
 $92.0\% \times 1.15 = 97.52\%$  Capacity change rate is 97.52%.  
 $56.0\text{kW} \times 97.52\% = 54.6\text{kW}$  Cooling capacity is 54.6 kW.
- Heating operation  
 From the table, the correction coefficient for that horsepower level is found to be 1.06.  
 From the graph, the base capacity change rate is found to be 97.2%.  
 $97.2\% \times 1.06 = 103.0\%$   
 Because the calculation result exceeds 100%, the capacity change rate is 100%.  
 $63.0\text{kW} \times 100\% = 63.0\text{kW}$  Heating capacity is 63.0 kW

## 1. Model Selecting and Capacity Calculator

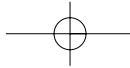
- If the maximum tubing length (L1) exceeds 90 m (equivalent length), increase the tubing size of the main liquid, suction and discharge tubes (LM) by one rank.  
However, the upper limit for the suction and discharge tube size is  $\phi 41.28$ .
- Increasing the tubing size of the suction and discharge tubes can reduce the loss of capacity caused by longer tubing lengths.  
Refer to Table 1 to increase the tubing size. However, the maximum allowable tubing length must not be exceeded.
- \* The size increase is applied to the LM suction and discharge tubes (main tube with the largest diameter) only, and is limited to the cases shown in Table 1. In addition, the amount of additional refrigerant charge is determined from the liquid tube size only.

**Table 1** Correction coefficient for equivalent length when the size of the suction and discharge tube (LM) is increased

Standard tube diameter (suction and discharge tubes, mm)	$\phi 9.52$	$\phi 12.7$	$\phi 15.88$	$\phi 19.05$	$\phi 22.22$	$\phi 25.4$	$\phi 28.58$	$\phi 31.75$	$\phi 38.1$
Tube diameter after change (suction and discharge tubes, mm)	$\phi 12.7$	$\phi 15.88$	$\phi 19.05$	$\phi 22.22$	$\phi 25.4$	$\phi 28.58$	$\phi 31.75$	$\phi 38.1$	$\phi 41.28$
Equivalent length correction coefficient	0.4		0.5			0.6		0.7	

\* When increasing the size of the suction and discharge tubing (LM), multiply by the correction coefficient from Table 1 and calculate the equivalent length for section LM.

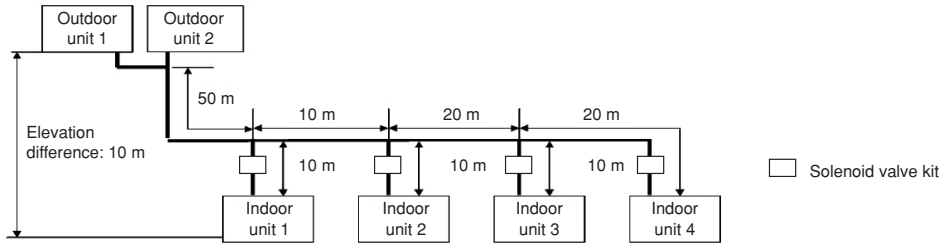
Tubing equivalent length after size increase  
= Standard tubing equivalent length  $\times$  Equivalent length correction coefficient



## 2. System Design

### 2-1. System Example

- (1) Below are the tables created using the "Airwell PAC/GHP System Diagram Software."  
Details of the calculations are shown in (2).



2

#### Selection conditions

Assumes that installation is in a 50 Hz region.

		Outdoor unit	Room 1 (indoor unit 1)	Room 2 (indoor unit 2)	Room 3 (indoor unit 3)	Room 4 (indoor unit 4)
Cooling	Air condition (DB/WB)	33.0 / 22.5	26.0 / 18.0	26.0 / 18.0	26.0 / 18.0	26.0 / 18.0
	Max. load (kW)	—	15.0	13.0	13.0	5.5
Heating	Air condition (DB/WB)	3.0 / 2.0	21.0 / 13.0	21.0 / 13.0	21.0 / 13.0	21.0 / 13.0
	Max. load (kW)	—	16.0	14.5	14.5	6.2
Actual tubing length		100 m	60 m	70 m	90 m	100 m
Equivalent length (with consideration for curves, etc.)		120 m	72 m	84 m	108 m	120 m

#### Preliminary selection

		Outdoor unit	Room 1 (indoor unit 1)	Room 2 (indoor unit 2)	Room 3 (indoor unit 3)	Room 4 (indoor unit 4)
Selected model		Type 2204	Type 604	Type 484	Type 484	Type 184
Load (cooling/heating) (kW)		—	15.0	13.0	13.0	5.5
Rated capacity (cooling/heating) (kW)		68.0 / 76.5	16.0 / 18.0	14.0 / 16.0	14.0 / 16.0	5.6 / 6.3
[5] Corrected capacity (cooling/heating) (kW)		55.3 / 54.86	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	5.23 / 6.07
[7] Actual capacity (cooling/heating) (kW)		—	16.00 / 17.74	14.00 / 15.77	13.42 / 15.46	5.23 / 5.98

Total corrected capacity of indoor units (cooling/heating) = 48.65/55.76

$Ruc = 48.65/55.3 = 0.880 < 1$      $Ruh = 55.76/54.86 = 1.164 > 1$

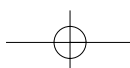
#### Outdoor unit changes

During heating, the corrected outdoor unit capacity is less than the total corrected capacity of all indoor units in the system. As a result, the actual capacity of each indoor unit is less than the maximum load. Therefore the outdoor unit is increased by one rank.

		Outdoor unit	Room 1 (indoor unit 1)	Room 2 (indoor unit 2)	Room 3 (indoor unit 3)	Room 4 (indoor unit 4)
Selected model		Type 2304	Type 604	Type 484	Type 484	Type 184
Maximum load (cooling/heating) (kW)		—	15.0	13.0	13.0	5.5
Rated capacity (cooling/heating) (kW)		73.0 / 81.5	16.0 / 18.0	14.0 / 16.0	14.0 / 16.0	5.6 / 6.3
(5) Corrected capacity (cooling/heating) (kW)		59.36 / 58.45	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	5.23 / 6.07
(7) Actual capacity (cooling/heating) (kW)		—	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	5.23 / 6.07

Total corrected capacity of all indoor units (cooling/heating) = 48.65/55.76

$Ruc = 48.65/59.36 = 0.820 < 1$      $Ruh = 55.76/58.45 = 0.954 < 1$





## 2. System Design

### Indoor unit changes

The indoor unit in room 4, where the corrected indoor unit capacity is less than the maximum load, is increased by one rank.

	Outdoor unit	Room 1 (indoor unit 1)	Room 2 (indoor unit 2)	Room 3 (indoor unit 3)	Room 4 (indoor unit 4)
Selected model	Type 2304	Type 604	Type 484	Type 484	Type 254
Maximum load (cooling/heating) (kW)	—	15.0 / 16.5	13.0 / 14.5	13.0 / 14.5	5.5 / 6.2
Rated capacity (cooling/heating) (kW)	73.0 / 81.5	16.0 / 18.0	14.0 / 16.0	14.0 / 16.0	7.30 / 8.00
(5) Corrected capacity (cooling/heating) (kW)	59.36 / 58.45	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	6.82 / 7.71
(7) Actual capacity (cooling/heating) (kW)	—	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	6.82 / 7.71

Total corrected capacity of all indoor units (cooling/heating) = 50.24/57.4

Ruc = 50.24/59.36 = 0.846 < 1    Ruh = 57.4/58.45 = 0.982 < 1

- For both cooling and heating in all rooms, actual capacity is now greater than or equal to the maximum load. Selection is completed.

(2) Calculate the final selection results according to the capacity calculation procedure.

**[From calculation of the correction coefficient to calculation of actual capacity]** (Cooling/heating)

	Outdoor unit	Room 1 (indoor unit 1)	Room 2 (indoor unit 2)	Room 3 (indoor unit 3)	Room 4 (indoor unit 4)
Rated capacity (kW)	73.0 / 81.5	16.0 / 18.0	14.0 / 16.0	14.0 / 16.0	7.30 / 8.00
Correction coefficient	(1) Model	—	—	—	—
	(2) Temp. condition	1.019 / 0.941	0.934 / 0.964	0.934 / 0.964	0.934 / 0.964
	(3) Tubing length, elevation difference	0.798 / 0.856	1.105 / 1.070	1.079 / 1.052	1.026 / 1.018
	(4) Frosting/defrosting	0.89	—	—	—
Result of (2) × (3)	—	1.032 / 1.031	1.008 / 1.014	0.958 / 0.981	0.934 / 0.964
Correction coefficient applied to indoor unit *1	—	1.03 / 1.03	1.01 / 1.01	0.96 / 0.98	0.93 / 0.96
(5) Corrected capacity (kW) *2	59.36 / 58.45	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	6.82 / 7.71
(6) Correction coefficient for corrected capacity ratio	—	1.00 / 1.00			
(7) Actual capacity (kW)	—	16.00 / 18.00	14.00 / 16.00	13.42 / 15.69	6.82 / 7.71

\*1: This varies depending on the values of (2) and (2) × (Distribution ratio in (3)).

\*2: Corrected outdoor unit capacity = Rated outdoor unit capacity × (1) × (2) × (3) × (4)

The actual capacity is calculated as shown below.

Cooling: Ruc = (16.0 + 14.0 + 13.42 + 6.82) / 59.36 = 0.846 < 1

Therefore,

Actual cooling capacity of each indoor unit = Corrected cooling capacity of each indoor unit

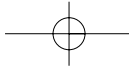
(In other words, the correction coefficient [6] for the corrected capacity ratio is 1.)

Heating: Ruh = (18.0 + 16.0 + 15.69 + 7.71) / 58.45 = 0.982 < 1

Therefore,

Actual heating capacity of each indoor unit = Corrected heating capacity of each indoor unit × (0.1 × Ruh + 0.9) / Ruh

(In other words, the correction coefficient (6) for the corrected capacity ratio is (0.1 × Ruh + 0.9) / Ruh.)



## 2. System Design

### (3) Increasing the size of the refrigerant tubing

Increasing the tubing size of the suction and discharge tubes can reduce the loss of capacity caused by longer tubing lengths. (Only the main suction and discharge tubes with the largest tube diameter (main tube LA and main tubes after the distribution point that are the same size as LA) can be changed.) In this case, it is necessary to recalculate the actual indoor unit capacities. Refer to the table below to increase the tubing size. However, total tubing length must not exceed the maximum allowable tubing length.

- Correction coefficient for equivalent length when the size of the largest main wide tube is increased

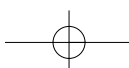
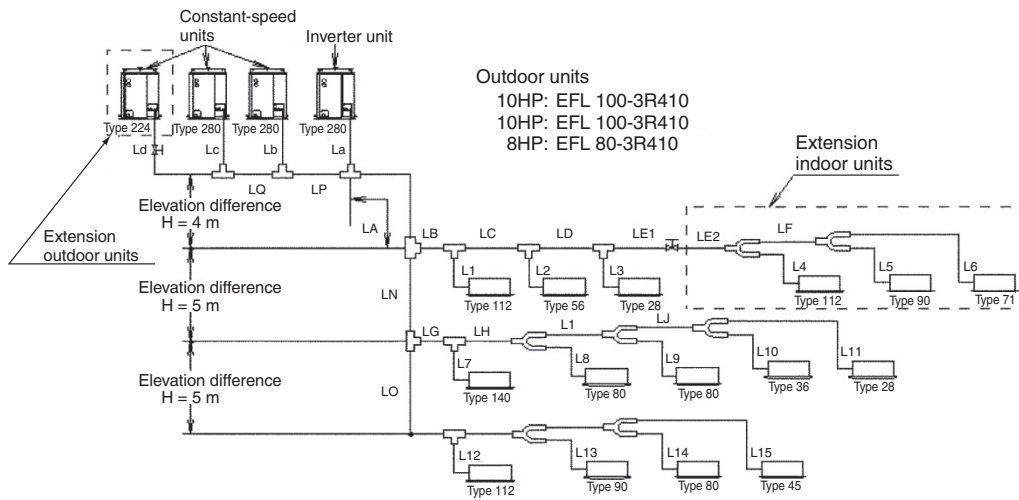
Standard tube diameter (suction and discharge tubes, mm)	φ31.75	φ38.1
Tube diameter after change (suction and discharge tubes, mm)	φ38.1	φ41.28
Equivalent length correction coefficient	0.6	0.7

Tubing equivalent length after size increase  
 = Standard tubing equivalent length × Equivalent length correction coefficient

2

### 2-2. Example of Tubing Size Selection for Extension and Additional Charge Amount

- Sample calculation for the system below



## 2. System Design

### Additional refrigerant charge before extension

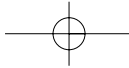
	Liquid tube diameter	Tubing length (m) (A)	Additional refrigerant charge per 1 m (kg/m) (B)	(A) × (B) kg
La	φ9.52	2	0.056	0.112
Lb	φ9.52	1	0.056	0.056
Lc	φ9.52	1	0.056	0.056
Ld	φ9.52	1	0.056	0.056
LP	φ19.05	1.5	0.259	0.389
LQ	φ15.88	20	0.185	3.700
LA	φ19.05	5	0.259	1.295
LB	φ15.88	6	0.185	1.110
LC	φ12.7	6	0.128	0.768
LD	φ12.7	0.4	0.128	0.051
LE1	φ9.52	5	0.056	0.280
LN	φ15.88	3	0.185	0.555
LG	φ12.7	3	0.128	0.384
LH	φ9.52	4	0.056	0.224
LI	φ9.52	5	0.056	0.280
LJ	φ9.52	5	0.056	0.280
LK	φ12.7	2	0.128	0.256
LL	φ9.52	3	0.056	0.168
LM	φ9.52	4	0.056	0.224
L1	φ9.52	3	0.056	0.168
L2	φ6.35	3	0.026	0.078
L3	φ6.35	3	0.026	0.078
L7	φ9.52	3	0.056	0.168
L8	φ9.52	3	0.056	0.168
L9	φ9.52	4	0.056	0.224
L10	φ6.35	4	0.026	0.104
L11	φ6.35	6	0.026	0.156
L12	φ9.52	4	0.056	0.224
L13	φ9.52	4	0.056	0.224
L14	φ9.52	4	0.056	0.224
L15	φ6.35	6	0.026	0.156
Total (kg)				12.2157 → 12.22 kg

### Additional refrigerant charge after extension

	Liquid tube diameter	Tubing length (m) (A)	Additional refrigerant charge per 1 m (kg/m) (B)	(A) × (B) kg
LE2	φ9.52	4	0.056	0.224
LF	φ9.52	5	0.056	0.280
L4	φ9.52	4	0.056	0.224
L5	φ9.52	6	0.056	0.336
L6	φ9.52	7	0.056	0.392
Total (kg)				1.4560 → 1.47 kg

Calculation of additional refrigerant charge for the entire 3-WAY FLOW LOGIC

$$\begin{aligned}
 & \text{(Additional refrigerant charge for entire 3-WAY FLOW LOGIC)} \\
 & = \text{(Refrigerant charge at outdoor unit)} + \text{(Additional refrigerant charge)} \\
 & = 40 + 13.69 = 53.69 \text{ kg (after extension)} \\
 & [\text{Before extension: } 30 + 12.22 = 42.22 \text{ kg}]
 \end{aligned}$$



## 2. System Design

### ■ Checking of limit density

The limit density judgment is made based on the room with the indoor unit having the smallest capacity in the system after extension.

The volume of the room where a type 28 indoor unit is used (connected to tubing L11) is calculated as follows: floor area 15 m<sup>2</sup> × Ceiling height 2.7 m = 40.5 m<sup>3</sup>. From the graph below, the minimum room volume for 53.69 kg of refrigerant is 175 m<sup>3</sup> (floor area 65 m<sup>2</sup>). Therefore an opening for ventilation is required.

2

<Judgment by calculation>

#### Total refrigerant charge for the refrigeration equipment (kg)

**Smallest room volume of all rooms where indoor units are installed (m<sup>3</sup>)**

$$= \frac{53.69 \text{ (kg)}}{40.5 \text{ (m}^3\text{)}} = 1.33 \text{ (kg/m}^3\text{)} - 0.30 \text{ (kg/m}^3\text{)}$$

In this case, an opening is required for ventilation.



**WARNING**

**Always check the gas density limit for the room in which the unit is installed.**

### ■ Check of Limit Density

When installing an air conditioner in a room, it is necessary to ensure that even if the refrigerant gas accidentally leaks out, its density does not exceed the limit level for that room.

If the density could exceed the limit level, it is necessary to provide an opening between the unit and the adjacent room, or to install mechanical ventilation which is interlocked with the leak detector.

**(Total refrigerant charged amount: kg)**

**(Min. indoor volume where the indoor unit is installed: m<sup>3</sup>)**

**Limit density 0.3 (kg/m<sup>3</sup>)**

The limit density of refrigerant which is used in this unit is 0.3 kg/m<sup>3</sup> (ISO 5149).

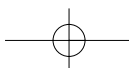
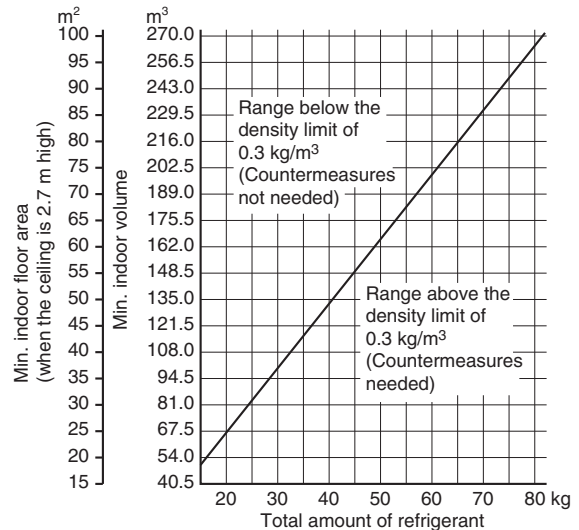
The shipped outdoor unit comes charged with the amount of refrigerant fixed for each type, so add it to the amount that is charged in the field. (For the refrigerant charge amount at shipment, refer to the unit's name-plate.)

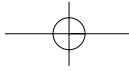


**CAUTION**

**Pay special attention to any location, such as a basement, etc., where leaking refrigerant can accumulate, since refrigerant gas is heavier than air.**

Minimum indoor volume & floor area as against the amount of refrigerant is roughly as given in the following table.



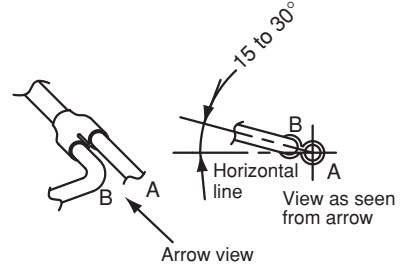


Design of 3-WAY FLOW LOGIC

■ Installing distribution joint

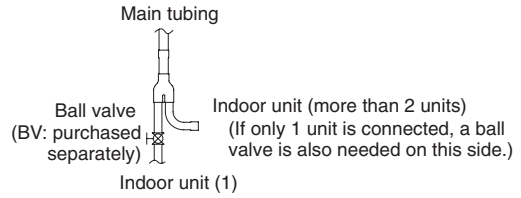
- (1) Refer to "HOW TO ATTACH DISTRIBUTION JOINT" enclosed with the optional distribution joint kit (NRFO-3DL68, NRFO-3D68135, NRF-DL 22, NRF-D 2268, NRF-D 68135).
- (2) In order to prevent accumulation of refrigerant oil in stopped units, if the main tubing is horizontal then each branch tubing length should be at an angle that is greater than horizontal. If the main tubing is vertical, provide a raised starting portion for each branch.
- (3) If there are height differences between indoor units or if branch tubing that follows a distribution joint is connected to only 1 unit, a trap or ball valve must be added to that distribution joint. (When adding the ball valve, locate it within 40 cm of the distribution joint.)  
(Consult with AIRWELL separately concerning the ball valve.)  
**If a trap or ball valve is not added, do not operate the system before repairs to a malfunctioning unit are completed. (The refrigerant oil sent through the tubing to the malfunctioning unit will accumulate and may damage the compressor.)**

Tube branching methods (horizontal use)

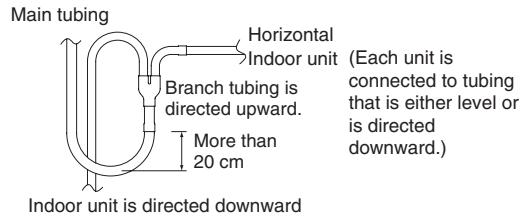


Types of vertical trap specifications

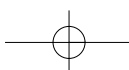
(When using ball valve)

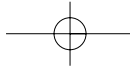


(When not using ball valve)



2





## 3. Electrical Wiring

### 3-1. General Precautions on Wiring

- (1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
- (2) Provide a power outlet to be used exclusively for each unit, and a power supply disconnect and circuit breaker for overcurrent protection should be provided in the exclusive line.
- (3) To prevent possible hazards from insulation failure, the unit must be grounded.
- (4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
- (5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- (6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.
- (7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with all relevant rules and regulations.
- (8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:
  - The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
  - Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.
- (9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop appointed by the manufacture, because special purpose tools are required.

### 3-2. Recommended Wire Length and Wire Diameter for Power Supply System

#### Outdoor unit

	(A) Power supply		Time delay fuse or circuit capacity
	Wire size	Max. length	
EFL 80-3R410	6 mm <sup>2</sup>	92 m	30 A
EFL 100-3R410	6 mm <sup>2</sup>	70 m	35 A
EFL 120-3R410	6 mm <sup>2</sup>	57 m	40 A
EFL 140-3R410	10 mm <sup>2</sup>	79 m	40 A
EFL 160-3R410	10 mm <sup>2</sup>	68 m	50 A

or

(A) Power supply		Time delay fuse or circuit capacity
Wire size	Max. length	
6 mm <sup>2</sup>	92 m	35A
6 mm <sup>2</sup>	70 m	35A
10 mm <sup>2</sup>	95 m	50A
10 mm <sup>2</sup>	79 m	50A
10 mm <sup>2</sup>	68 m	50A

#### Indoor unit

Type	(B) Power supply	Time delay fuse or circuit capacity
	2.5 mm <sup>2</sup>	
NWFL	Max. 150 m	10 – 16A
NKSFL, NK2FL, NKFL, NPFL, NDLP	Max. 130 m	10 – 16A
NDHPL (254, 364, 484)	Max. 60 m	10 – 16A
NDHPL (764/964)	Max. 50/30 m	10 – 16A

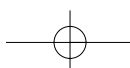
#### Control wiring

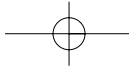
(C) Inter-unit (between outdoor and indoor units) control wiring	(D) Remote control wiring	(E) Control wiring for group control
0.75 mm <sup>2</sup> (AWG #18) Use shielded wiring*	0.75 mm <sup>2</sup> (AWG #18) Use shielded wiring	0.75 mm <sup>2</sup> (AWG #18) Use shielded wiring
Max. 1,000 m	Max. 500 m	Max. 500 m (Total)

#### NOTE

\* With ring-type wire terminal.

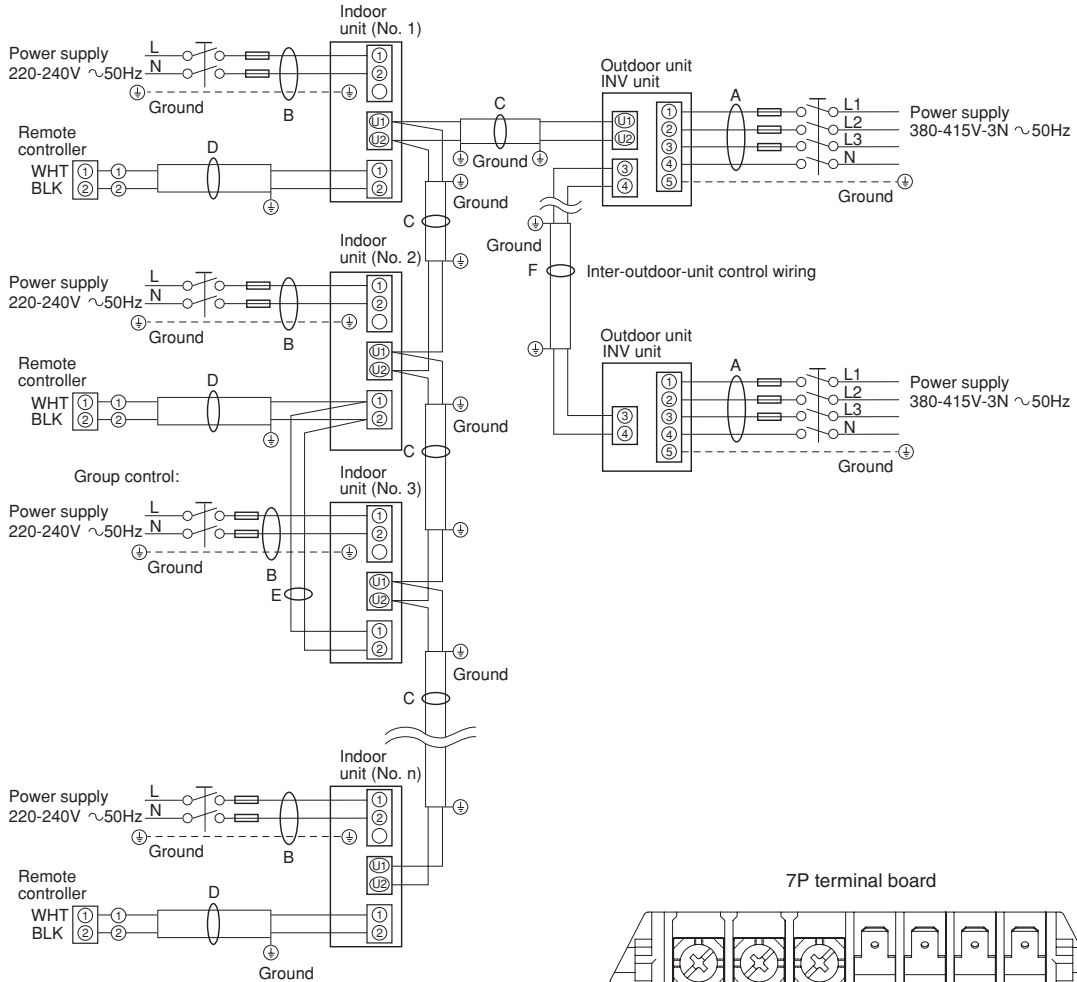
(F) Inter-outdoor unit control wiring
0.75 mm <sup>2</sup> (AWG #18) Use shielded wiring
Max. 500 m





### 3. Electrical Wiring

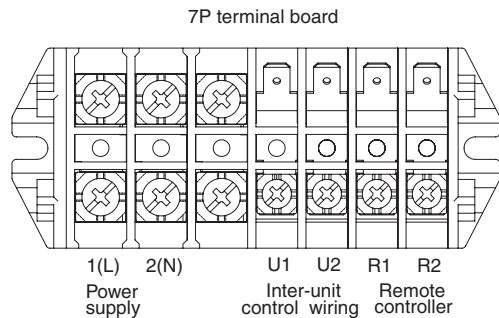
#### 3-3. Wiring System Diagrams



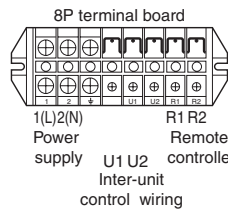
2

**NOTE**

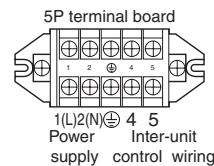
- (1) Refer to Section 3-2. "Recommended Wire Length and Wire Diameter for Power Supply System" for the explanation of "A," "B," "C," "D," and "E," in the above diagrams.
- (2) The basic connection diagram of the indoor unit shows the 7P terminal board, so the terminal boards in your equipment may differ from the diagram.
- (3) Refrigerant Circuit (R.C.) address should be set before turning the power on.
- (4) Regarding the R.C. address setting, refer to pages 107 and 112 in the Installation Instructions. Auto address setting can be executed by remote controller automatically.



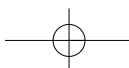
**NK2FL, NKFL, NPFL Type**

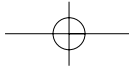


**NKSFL, NDLP Type**



**NWFL Type**





### 3. Electrical Wiring

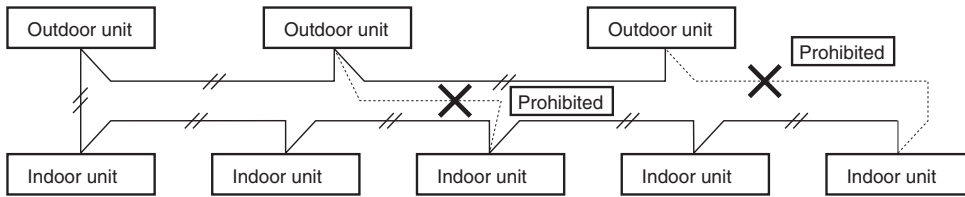


- (1) When linking outdoor units in a network (S-net link system), disconnect the terminal extended from the short plug (CN003, 2P Black, location: right bottom on the outdoor main control PCB) from all outdoor units except any one of the outdoor units.  
(When shipping: In shorted condition.)

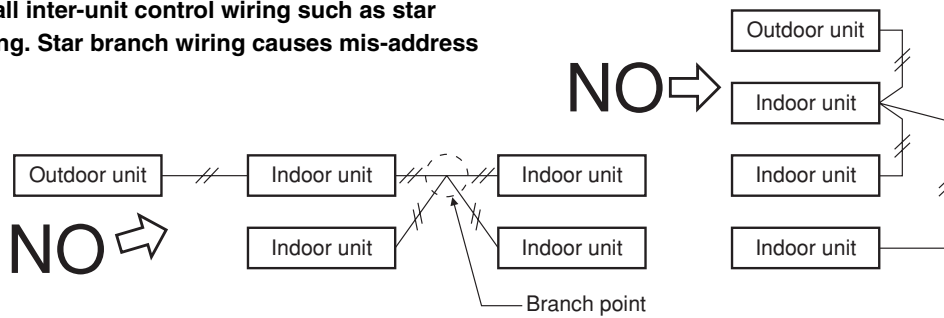
Otherwise the communication of S-net link system is not performed. For a system without link (no connection wiring between outdoor units), do not remove the short plug.

- (2) Do not install the inter-unit control wiring in a way that forms a loop.

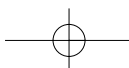
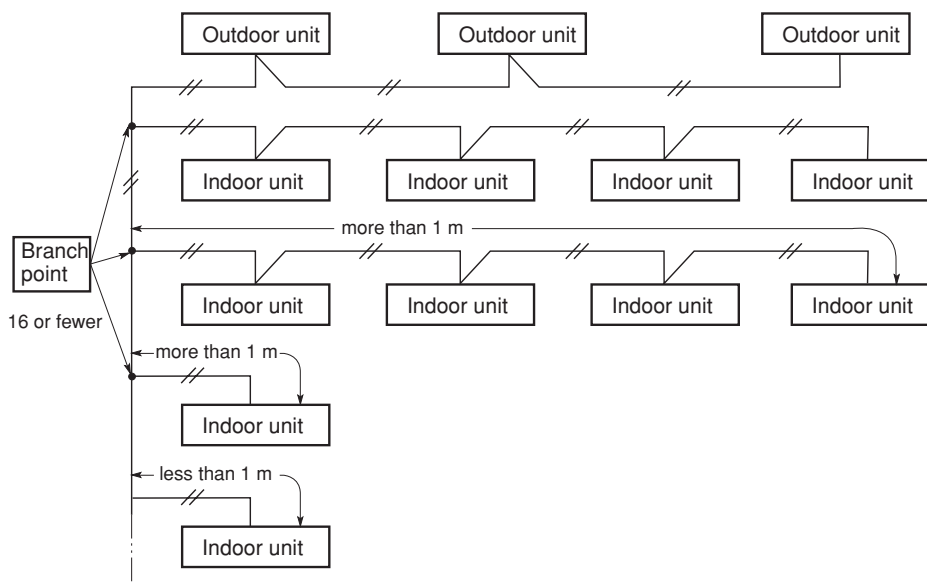
2



- (3) Do not install inter-unit control wiring such as star branch wiring. Star branch wiring causes mis-address setting.



- (4) If branching the inter-unit control wiring, the number of branch points should be 16 or fewer.  
(Branches less than 1 m are not included in the total branch number.)





### 3. Electrical Wiring

- (5) Use shielded wires for inter-unit control wiring (c) and ground the shield on both sides, otherwise misoperation from noise may occur. Connect wiring as shown in Section 3-3. "Wiring System Diagrams."



**WARNING**

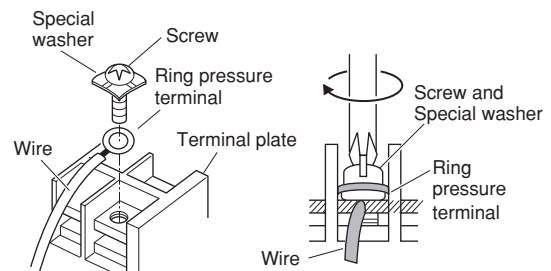
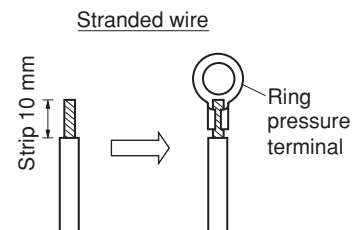
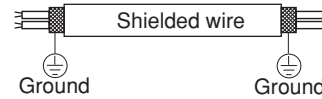
Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, ensure that all wiring is tightly connected.

When connecting each power wire to the terminal, follow the instructions on "How to connect wiring to the terminal" and fasten the wire securely with the fixing screw of the terminal plate.

#### How to connect wiring to the terminal

##### ■ For stranded wiring

- (1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wiring about 10 mm and tightly twist the wire ends.
- (2) Using a Phillips head screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring pressure terminal.
- (4) Place the ring pressure terminal, and replace and tighten the removed terminal screw using a screwdriver.





## Contents

### 3. CONTROL OF 3 WAY FLOW LOGIC

<b>1. Main Operating Functions</b> .....	<b>3-2</b>
<b>2. Wireless Remote Controller</b> .....	<b>3-4</b>
Optional Controller (Remote Controller) .....	3-4
<b>3. Wired Remote Controller</b> .....	<b>3-25</b>
Wired Remote Control / NRCG-FL .....	3-25
<b>4. System Controller</b> .....	<b>3-39</b>
System Controller / NRSC-FL .....	3-39
<b>5. Schedule Timer</b> .....	<b>3-61</b>
Schedule Timer / NWTM-FL .....	3-61
<b>6. Simplified Remote Controller</b> .....	<b>3-86</b>
Simplified Remote Controller / NRCB-FL .....	3-86
<b>7. Remote Sensor</b> .....	<b>3-94</b>
Remote Sensor / NSD .....	3-94



## 1. Main Operating Functions

### 1-1. Room Temperature Control

The thermostat is turned ON/OFF according to  $\Delta T$  as shown below.

$\Delta T = \text{Room temperature} - \text{Set temperature}$	
When remote controller sensor is used	Room temperature = Temperature detected by the remote controller sensor
When body sensor is used	Room temperature = Temperature detected by the body sensor - *Intake shift temperature

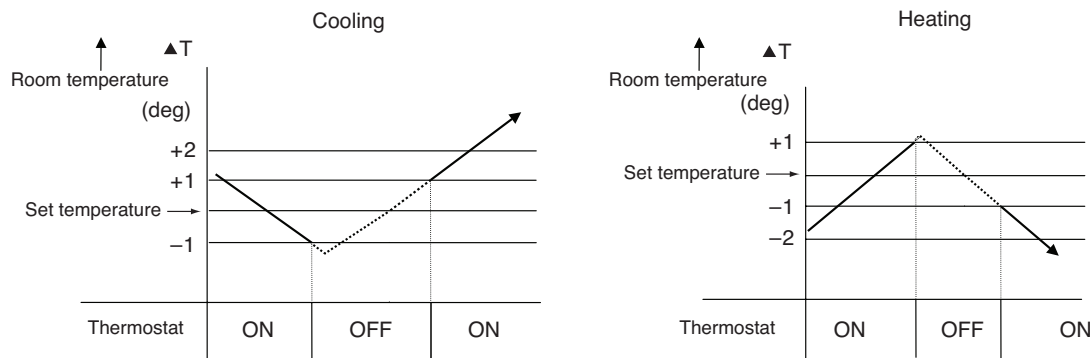
\* Intake shift temperature (enabled only during heating)

During heating, a difference in temperature occurs between the top and bottom of a room. This value is set in consideration for the difference between the temperature detected by the body sensor and the temperature at the bottom of the room.

<Value set for intake shift temperature at time of shipment>: 4°C

**Note:** The shift temperature can be selected in the range of 0 – 10°C, by using the remote controller simplified setting mode.

3



- (1) After the thermostat turns ON, it will not turn OFF again as a result of  $\Delta T$  for 5 minutes.
- (2) After the thermostat turns OFF, it will not turn ON again for 3 minutes. (It also will not turn ON for 3 minutes after the power is switched ON.)
- (3) The compressor turns OFF if the mode is changed cooling → heating (or heating → cooling) while the compressor is ON.
- (4) If “test run” mode is selected, the thermostat will not turn OFF as a result of  $\Delta T$  for 60 minutes. (The thermostat is forced ON.)

# 1. Main Operating Functions

## 1-2. Automatic Control for Heating and Cooling

### Automatic Heating/Cooling Control

(1) When operation starts, heating or cooling is selected according to the set temperature and the room temperature.

- Room temperature  $\geq$  Set temperature + 1  $\rightarrow$  Cooling
- Set temperature - 1 < Room temperature  $\leq$  Set temperature + 1  $\rightarrow$  Monitoring mode (\*1)
- Room temperature < Set temperature - 1  $\rightarrow$  Heating

\*1: If the difference between the room temperature and set temperature is small when operation starts, the cooling thermostat remains in standby status (OFF) until the temperature difference increases. When the temperature difference increases, either cooling operation or heating operation is selected. This standby status is known as "monitoring mode."

(2) After operation starts in the selected operating mode, the set temperature is automatically shifted by +2°C (cooling operation) or -2°C (heating operation).

Example: Temperature set on the remote controller is 20°C.

	Selected operating mode	Shifted set temp.	Remote controller display
1	Cooling	22°C	20°C
2	Heating	18°C	20°C

(3) Operating mode changes (heating  $\rightarrow$  cooling, cooling  $\rightarrow$  heating) which occur during operation as a result of temperature changes are handled as shown below.

- Heating  $\rightarrow$  cooling: Room temperature  $\geq$  Shifted set temperature (set temperature + 2°C) + 0.5°C
- Cooling  $\rightarrow$  heating: Room temperature  $\leq$  Shifted set temperature (set temperature - 2°C) - 1.0°C

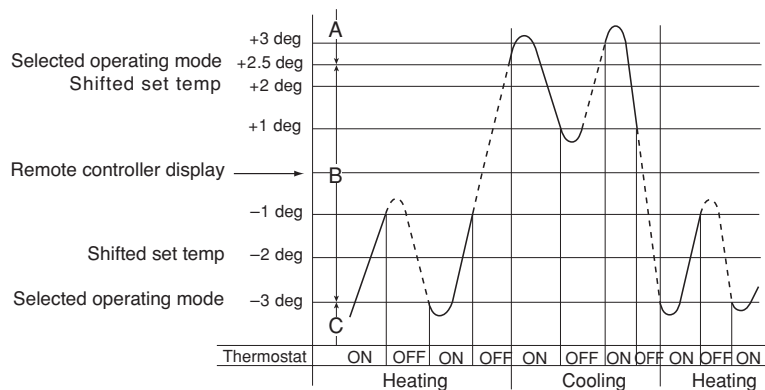
Example: Temperature set on the remote controller is 20°C.

	Operating mode change	Shifted set temp.
1	Heating $\rightarrow$ Cooling	$20 + 2 + 0.5 = 22.5^\circ\text{C}$ or higher (*2)
2	Cooling $\rightarrow$ Heating	$20 - 2 - 1.0 = 17^\circ\text{C}$ or lower

\*2: During heating operation when the body sensor is used, a temperature shift is applied to the intake temperature detected by the sensor, in consideration for the difference in temperature at the top and bottom of the room. (Refer to the "Room Temperature Control" item.) If this intake shift temperature is 4°C, then the heating  $\rightarrow$  cooling change occurs when the temperature detected by the body sensor is 26.5°C or higher.

(4) Cooling (heating) operation does not change if the room temperature changes from area C  $\rightarrow$  A (or A  $\rightarrow$  C) within 10 minutes after the compressor turns OFF. (Monitoring mode is excepted.)

(5) When the heating/cooling change occurs, the 4-way valve switches approximately 30 to 50 seconds after the compressor turns ON.

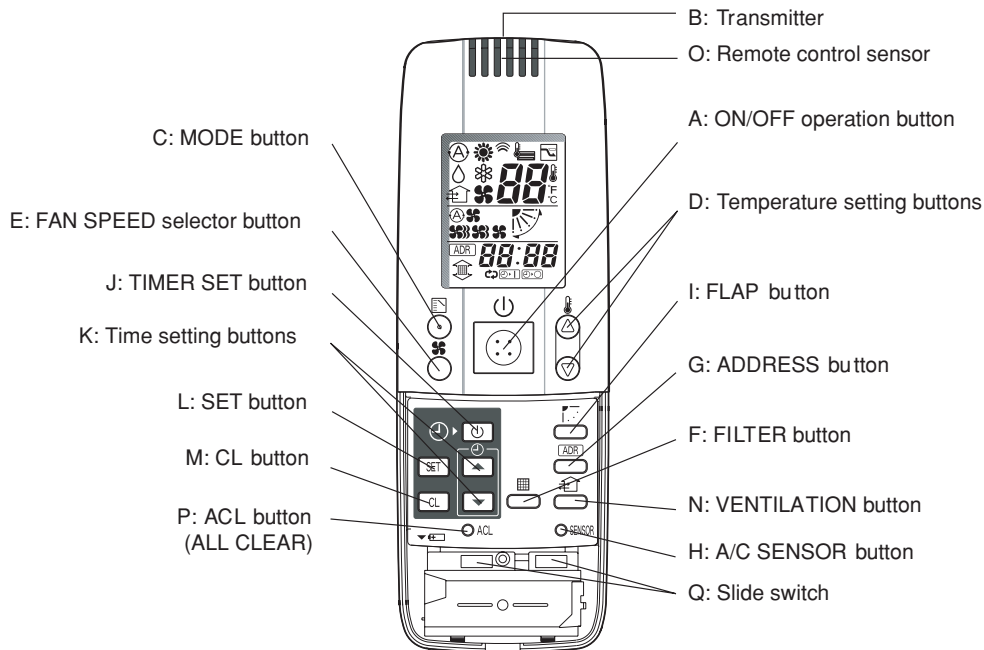


## 2. Wireless Remote Controller

### Optional Controller (Remote Controller)

Wireless Remote Controller / RCIRK-FL (for NKFL type) / RCIRKS-FL (for NK2FL, NKSFL types) / RCIRP-FL (for NPFL type) / RCIRC-FL (for NDLP, NDHP types).

#### ■ How to Use the Wireless Remote Controller




















**NOTE** The illustration above pictures the wireless remote control unit after the cover has been lowered and removed.

<b>A: ON/OFF operation button</b>	This button is for turning the air conditioner on and off.
<b>B: Transmitter</b>	When you press the buttons on the wireless remote control unit, the  mark appears in the display to transmit the setting changes to the receiver in the air conditioner.
<b>C: MODE button</b>	Use this button to select one of the following five operating modes. <ul style="list-style-type: none"> <li><b>(AUTO)</b>  : Used to automatically set cooling or heating operation. Only for single heat pump type (Temperature range: 17 to 27°C)</li> <li><b>(HEAT)</b>  : Used for normal heating operation. Only for heat pump type (Temperature range: 16 to 26°C)</li> <li><b>(DRY)</b>  : Used for dehumidifying without changing the room temperature. (Temperature range: 18 to 30°C)</li> <li><b>(COOL)</b>  : Used for normal cooling operation. (Temperature range: 18 to 30°C)</li> <li><b>(FAN)</b>  : Used to run the fan only, without heating or cooling operation.</li> </ul>
<b>D: Temperature setting buttons</b>	: Press this button to increase the temperature setting. : Press this button to decrease the temperature setting.
<b>E: FAN SPEED selector button</b>	<ul style="list-style-type: none"> <li> : The air conditioner automatically decides the fan speeds.</li> <li> : High fan speed</li> <li> : Medium fan speed</li> <li> : Low fan speed</li> </ul>

Continued

## 2. Wireless Remote Controller

<p><b>F: FILTER button</b></p>	<p>If a separately installed signal receiver is being employed, this button is used to turn off its filter lamp. When the filter lamp has lighted, first clean the filter, and then press the FILTER button to turn off the filter lamp.</p> <p>When a wired remote control unit and wireless remote control unit are both used, the filter sign on the wired remote control unit will appear. When this happens, first clean the filter, and then press the FILTER button on one of the remote control units to turn off the filter sign.</p>												
<p><b>G: ADDRESS button</b></p>	<p>When a multiple number of indoor units that can be operated by the wireless remote control unit have been installed in the same room with a multi-unit or single-unit installation, this button enables addresses to be set in order to prevent the sending of signals to the wrong indoor unit. Each of up to six indoor units can be controlled separately using its own wireless remote control unit by matching the number of the address switch on the operation area of the indoor unit and the number used for the address of its remote control unit. (The indoor units cannot be controlled separately when they are used in a flexible combination format, simultaneous operation of multi units format or any other such format since they will all operate at the same time.)</p>												
<p><b>H: A/C SENSOR button</b></p>	<p>When you press this button (use a narrow-tipped object such as a ballpoint pen), the  indication will disappear on the display. The room temperature is detected by the sensor which is built into the indoor unit and the air conditioner is controlled accordingly.</p>												
<p><b>I: FLAP button</b></p>	<p>1. Use this button to set the airflow direction to a specific angle. The airflow direction is displayed on the remote control unit.</p> <table border="1"> <thead> <tr> <th>Operation mode</th> <th>Number of airflow direction settings</th> </tr> </thead> <tbody> <tr> <td> (COOL) or  (DRY)</td> <td>3</td> </tr> <tr> <td> (HEAT) or  (FAN)</td> <td>5</td> </tr> <tr> <td> (AUTO)</td> <td></td> </tr> <tr> <td>    Cooling mode:</td> <td>3</td> </tr> <tr> <td>    Heating mode:</td> <td>5</td> </tr> </tbody> </table> <p><b>In the Cool mode and Dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent. Do not move the flap with your hands.</b></p> <p><b>CAUTION</b></p> <p><b>NOTE</b></p> <p>This function is available only for models NKFL, NKSFL, NK2FL and NWFL.</p> <p><b>(SWEEP)</b></p> <p>2. Use this button to make the airflow direction sweep up and down automatically. Press this button several times until the  symbol appears on the display.</p> <p><b>To stop the swing operation</b> Press the FLAP button again during the flap swing operation to stop the flap at the desired position. Then, the airflow can be set from the top position by pressing the FLAP button again.</p>	Operation mode	Number of airflow direction settings	 (COOL) or  (DRY)	3	 (HEAT) or  (FAN)	5	 (AUTO)		Cooling mode:	3	Heating mode:	5
Operation mode	Number of airflow direction settings												
 (COOL) or  (DRY)	3												
 (HEAT) or  (FAN)	5												
 (AUTO)													
Cooling mode:	3												
Heating mode:	5												

## 2. Wireless Remote Controller

	<p><b>Indicator when swing operation is stopped</b></p> <table border="1"> <thead> <tr> <th>Fan and heating</th> <th>Cooling and drying</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p>During cooling and drying, the flap does not stop at the downward position. Even if the flap is stopped at the downward position during the swing operation, it does not stop until it moves to the third position from the top.</p> <p><b>NOTE</b> This function is available only for models NKFL, NKSFL, NK2FL and NWFL.</p>	Fan and heating	Cooling and drying		
Fan and heating	Cooling and drying				
<b>J: TIMER SET button</b> (OFF Timer) (OFF Cycle Timer) (ON Timer)	Use this button while the unit is operating to switch between timer settings. : The air conditioner stops after a preset time elapses. : The air conditioner always stops after a preset time elapses. : The air conditioner starts after a preset time elapses.				
<b>K: Time setting buttons</b>	: Press this button to increase the time. : Press this button to decrease the time.				
<b>L: SET button</b>	Use this button to set the timer.				
<b>M: CL button</b>	Use this button to clear the timer setting.				
<b>N: VENTILATION button</b>	<p>This is used when a ventilation fan (available commercially) is connected. Pressing the VENTILATION button turns the fan on and off. The ventilation fan also turns on and off when the air conditioner unit is turned on and off. (The display of the remote control unit shows “” while the ventilation fan is running.)</p> <p>* If the VENTILATION button is held down for 4 or more seconds when the batteries have been replaced, “” appears on the display, and the ventilation fan can be used.</p>				
<b>O: Remote control sensor</b>	This detects the temperature around the remote control unit when the remote control unit position has been selected using the sensor button.				
<b>P: ACL button (ALL CLEAR)</b>	Puts the wireless remote control unit into pre-operation status. This is used after the batteries have been replaced or when the slide switch setting has been changed.				
<b>Q: Slide switch</b>	This switch is for setting the operation mode of the indoor unit and setting the flaps.				

**NOTE**

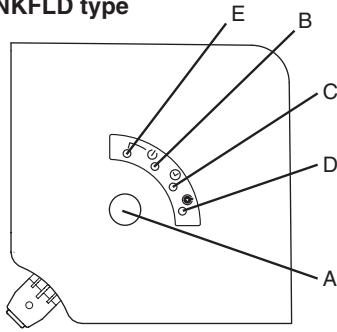
- The wireless remote control unit sends the temperature signal to the air conditioner regularly at five-minute intervals. If the signal from the wireless remote control unit stops for more than ten minutes due to the loss of the wireless remote control unit or other trouble, the air conditioner will switch to the temperature sensor which is built into the indoor unit and control the room temperature. In these cases, the temperature around the wireless remote control unit may differ from the temperature detected at the air conditioner's position.
- When low fan speed is selected and the air conditioner is in cooling operation at a low outdoor temperature of less than 10 C, the air conditioner may automatically switch to medium fan speed to prevent freezing.

## 2. Wireless Remote Controller

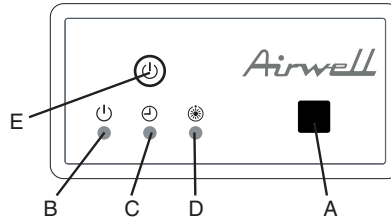
### ■ Receiver

The signal receivers with the exception of the separately installed signal receiver are mounted on the indoor units.

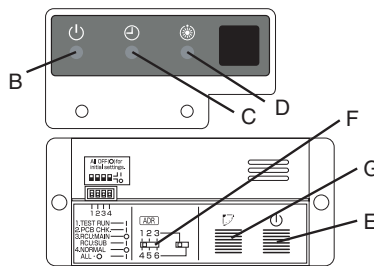
NKFLD type



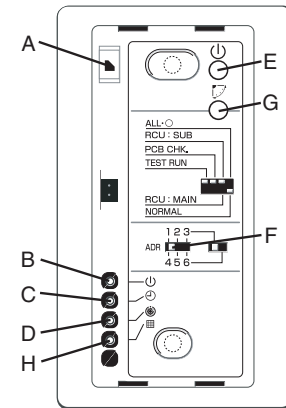
NPFL type



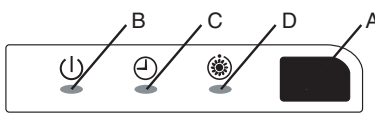
NK2FL, NKSFL type



Separately installed signal receiver (NDLP, NDHP type)



NWFL type



<b>A: Receiver</b>	This section picks up infrared signals from the wireless remote control unit (transmitter).
<b>Indication lamps</b>	One of these lamps will blink when trouble has occurred. When an indicator lamp starts to blink, refer to "Troubleshooting" on page III-91.
<b>B: Operation lamp</b>	This lamp lights when the appliance is turned on.
<b>C: Timer lamp</b>	This lamp lights when the NKS system is being controlled by the timer.
<b>D: Standby lamp</b>	<ul style="list-style-type: none"> <li>This lamp lights at the following times during heating operations: When operation has started, when the thermostat has been activated, during defrosting operation.</li> <li>The lamp blinks when trouble has occurred.</li> </ul>
<b>E: Emergency operation button</b>	This is used when operation cannot be performed due to trouble with or loss of the wireless remote control unit.
<b>F: ADDRESS switch</b>	This switch is used in order to prevent the sending of signals to the wrong indoor unit when a multiple number of indoor units that can be operated by the wireless remote control units have been installed in the same room.
<b>G: SWING button</b>	When this button is pressed, the airflow sweeps up and down automatically.
<b>H: FILTER lamp</b>	This lamp lights to indicate that it is time to clean the filter.

- If 2 beeps are heard, the operation lamp among the indication lamps has lighted and the timer lamp and standby lamp blink alternately. In cases where heat pump models are used, this indicates a Cooling/Heating mode mismatch and, as such, operation in the desired mode cannot be performed. (The same beeps will be heard and the same operation lamps will light when auto cooling/heating has been selected on a model which does not have the auto cooling/heating function.)
- When local operation has been set to disabled because the centralized control mode is established, for instance, pressing the ON/OFF operation button, MODE button or temperature setting buttons results in the sounding of 5 beeps, and the attempted change in the operation will not be accepted.



## 2. Wireless Remote Controller

### How to Install the Wireless Remote Controller Receiver

#### ■ RCIRK-FL for 4-Way Cassette (NKFL Type)

##### 2-1. Installing the Receiver Unit

The only corner where the receiver unit can be installed is the one shown in Fig. 3-1. Therefore, consider the direction of the panel when it is installed on the indoor unit.

- (1) Remove the intake grille.
- (2) Remove the screws that fasten the adjustable corner cap, then slide the adjustable corner cap to the side to remove it. (Fig. 3-2)
- (3) The square hole used for the panel wiring is filled with packing (sponge material) used for insulation.\* Remove the packing, then pass the wiring from the wireless receiver unit through the grill. Twist the wires together and use a cable fastener to fasten them and fix with screw, then replace the packing in the hole as it was before. (Fig. 3-3)
- \* If this packing is not used, there is danger of condensation on the wiring. Be sure to replace the packing.
- (4) After completing wiring as described in "Wiring the Receiver Unit" on the next page, twist the wires together and use a cable fastener to fasten them, leaving a length of wiring that is long enough to permit removal of the adjustable corner cap. (Fig. 3-3)
- (5) Install the receiver unit in the panel. At this time, slide the receiver unit so that each of the 3 tabs fits into its respective hole. Take care that the wires are not pinched. (Fig. 3-4)

\* Refer to the instruction manual provided with the panel.

#### NOTE

- Do not twist the control wiring together with the power wiring because this may cause a malfunction.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

\* For wiring and test run procedures, refer to "Wiring the Receiver Unit" and "Test Run."

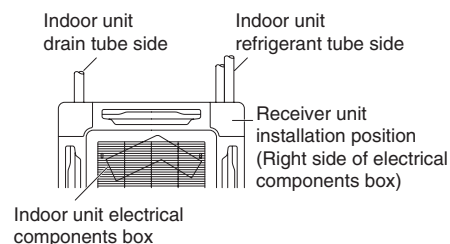


Fig. 3-1

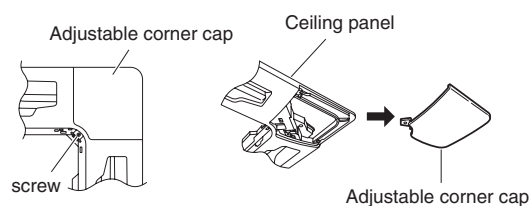


Fig. 3-2

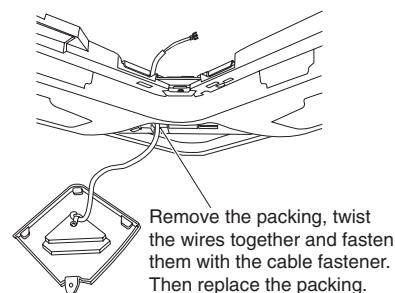


Fig. 3-3

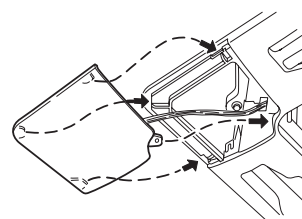
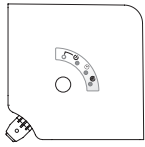








Fig. 3-4

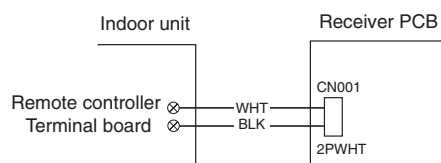
## 2. Wireless Remote Controller

### 2-2. Accessories

No.	Parts	Q'ty
1	Receiver unit 	1
2	Remote control unit 	1
3	Remote control holder 	1
4	AAA alkaline battery 	2
5	Tapping screw 4 × 16 	2
6	Clamp 	1
7	Fastening screw 4 × 12 	1

### 2-3. Wiring the Receiver Unit

- Connection diagram



- Connect the wire from the receiver unit to the indoor unit remote controller terminal board. (The wire has no polarity.)

### 2-4. Precautions on Simultaneous Installation of Wired Remote Controller and Wireless Remote Controller

By installing a wired remote controller, the wireless remote controller kit can permit dual remote control operation at the same time.

(Up to 2 units of remote controllers – a wireless kit and a wired unit – can be installed.)

Dual remote control operation can control 1 or multiple air conditioners using several remote controllers.



CAUTION

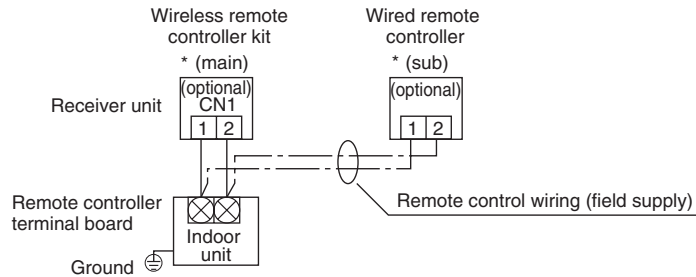
- Be sure to determine the correct terminal numbers on the indoor unit when wiring the remote controller. The remote controller will be damaged if high voltage (such as 200 VAC) is applied.
- The wireless remote controller kit components cannot be used for more than 1 indoor unit at a time. (However, separate receiver units may be used simultaneously.)
- When a wireless remote controller kit and a wired remote controller are used simultaneously, assign either the wireless remote controller or the wired remote controller as the sub remote controller unit.

## 2. Wireless Remote Controller

- (1) To assign the wired remote controller as the sub unit, locate the address connector at the rear of the wired remote controller PCB and disconnect it. Reconnect it to the sub unit position.
- (2) To assign the wireless remote controller as the sub unit, locate the dip switch [S003] on the wireless receiver unit PCB. Set the No. 3 switch to the ON position.

### When 1 indoor unit is operated with 2 remote controllers:

(The indoor unit runs according to which of the remote controllers is assigned as the main or sub unit.)



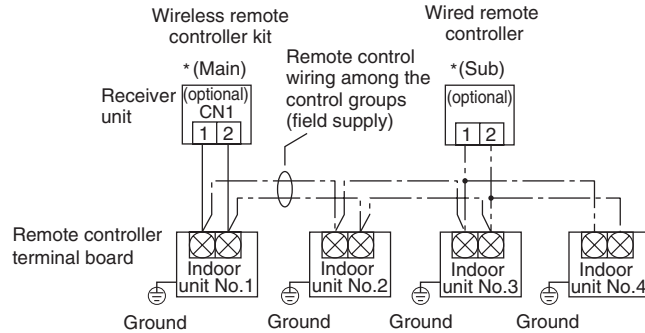
\* Use field wiring cables with a cross-sectional area of at least 0.5mm<sup>2</sup> to 2mm<sup>2</sup>.

\* The maximum total length of crossover cables must be no longer than 400m.

3

### When several groups of indoor units are operated with 2 remote controllers:

(The remote controller (main or sub unit) can operate with any indoor unit.)



\* Use field wiring cables with a cross-sectional area of at least 0.5mm<sup>2</sup> to 2mm<sup>2</sup>.

\* The maximum total length of crossover cables must be no longer than 200m.

Fig. 3-5

### 2-5. How to use the Test Run Setting

1. Set DIP switch [S003] No. 1 on the wireless receiver unit PCB from OFF to ON.
2. All indicator lamps in the display section blink during test run operation.
3. No temperature control is available during the test run.
4. After the test run, be sure to reset DIP switch No. 1 back to the OFF position and check that no indicator lamps are blinking. Then remount and attach the PCB cover as before.

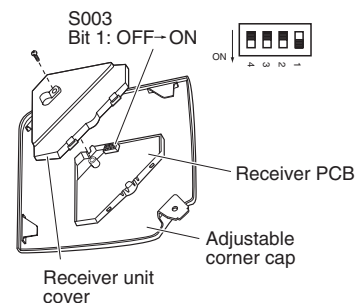


Fig. 3-6

**NOTE**

To avoid placing excessive operating load on the equipment, use this function only when conducting the test run.

## 2. Wireless Remote Controller

### ■ RCIRP-FL for Ceiling Mounted (NPFL Type)

#### 2-6. Installing the Receiver Unit

- (1) To take off the side panel, open the intake grille and remove the screw. Then remove the side panel by moving it toward the front (direction of arrow). (Fig. 3-7)
- (2) Wrap the end of a standard (flat) screwdriver blade with vinyl tape. Then insert the screwdriver blade into the groove on the side of the cover below the "O" mark, and pry open the cover. (Fig. 3-8) (Take care not to scratch the panel.)
- (3) Pass the lead wire through the panel, then install the receiver unit in the panel hole. (The projections on the receiver unit engage the panel holes to attach the unit.)
- (4) Fasten the receiver lead wire to the fastener that holds the louver motor wiring. (Fig. 3-9)
- (5) Reattach the side panel.
- (6) Route the lead wire from the receiver unit along the louver motor wiring and other wiring and fasten them with a fastener. (Fig. 3-10)

\* Access the hole at the top of the electrical component box to draw in the wiring.

#### NOTE

- Do not twist the control wiring with the power wiring because this may cause malfunction.
- Install a noise filter or take other appropriate action if electrical noise disturbs the unit's power supply circuit.

\* For the wiring and test run procedures, refer to "Wiring the Receiver Unit" and "Test Run."

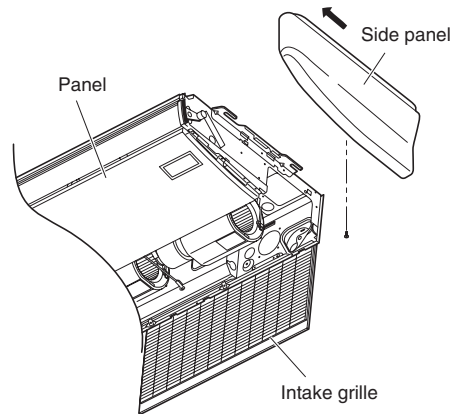


Fig. 3-7

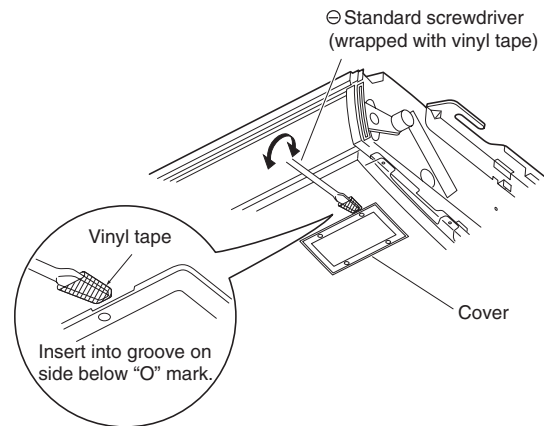


Fig. 3-8

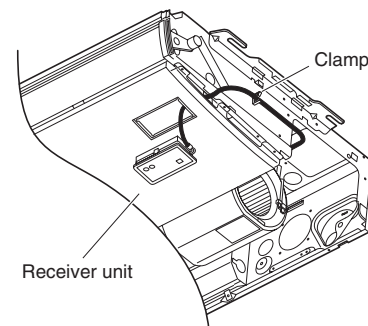


Fig. 3-9

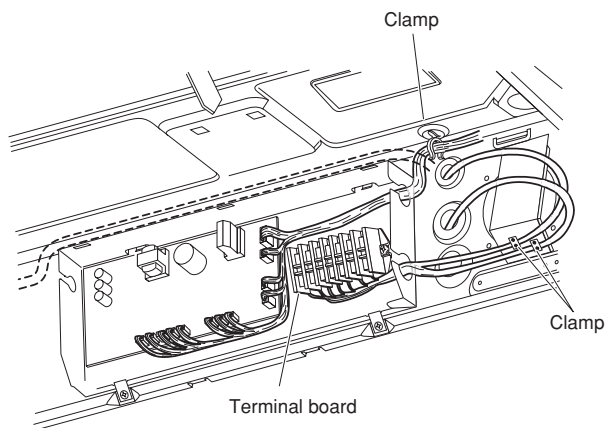







Fig. 3-10

## 2. Wireless Remote Controller

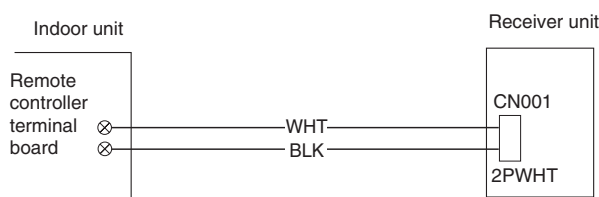
### 2-7. Accessories Supplied with Unit

No.	t	Q'ty
1	Receiver unit 	1
2	Remote control unit 	1
3	Remote control holder 	1

No.	Parts	Q'ty
4	AAA alkaline battery 	2
5	Tapping screw 4 × 16 	2

### 2-8. Wiring the Receiver Unit

#### ● Connection diagram



3

- Connect the provided wire (already connected to the receiver unit) to the indoor unit remote controller terminal board. (The wire has no polarity.)

### 2-9. Precautions on Simultaneous Installation of Wired Remote Controller and Wireless Remote Controller

By installing a wired remote controller, the wireless receiver unit can permit dual remote control operation at the same time.

(Up to 2 units of remote controllers – a wireless remote controller and a wired remote controller – can be installed.)

Dual remote control operation can control 1 or multiple air conditioners using several remote controllers.



- **Be sure to determine the correct terminal numbers on the indoor unit when wiring the remote controller. The remote controller will be damaged if high voltage (such as 200 VAC) is applied.**
- **The wireless receiver unit components cannot be used for more than 1 indoor unit at a time. (However, separate receiver units may be used simultaneously.)**
- **When a wireless receiver unit and a wired remote controller are used simultaneously, assign either the wireless remote controller or the wired remote controller as the sub remote controller unit.**

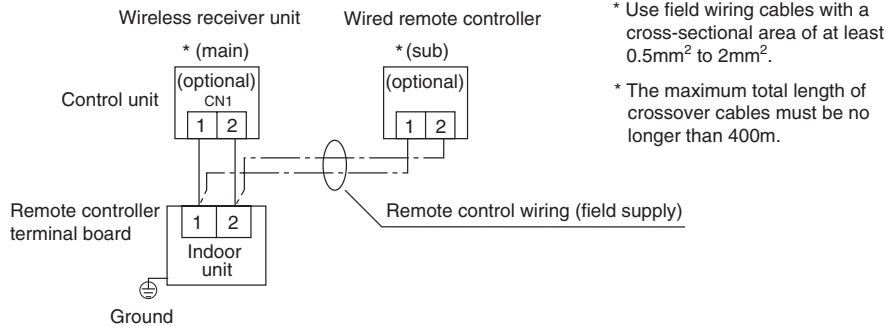
(1) To assign the wired remote controller as the sub unit, locate the address connector at the rear of the wired remote controller PCB and disconnect it. Reconnect it to the sub unit position.

(2) To assign the wireless remote controller as the sub unit, locate the DIP switch [S003] on the wireless control unit. Set the No. 3 switch to the ON position.

## 2. Wireless Remote Controller

### When 1 indoor unit is operated with 2 remote controllers:

(The indoor unit runs according to which of the remote controllers is assigned as the main or sub unit.)



### When several groups of indoor units are operated with 2 remote controllers:

(The remote controller (main or sub unit) can operate with any indoor unit.)

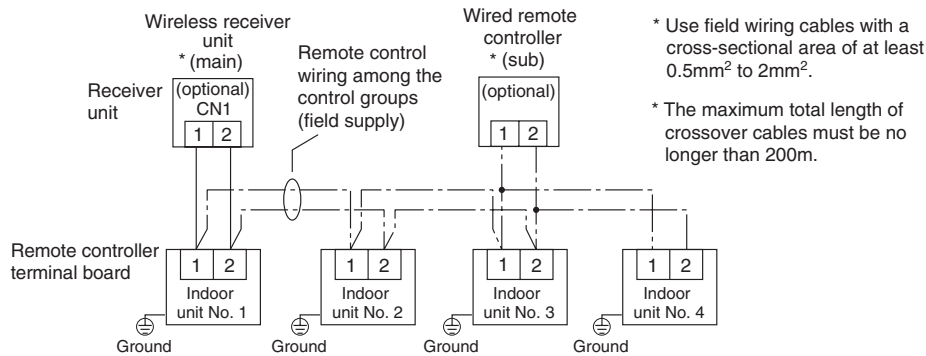


Fig. 3-11

### 2-10. How to Use the Test Run Setting

1. Set DIP switch [S003] No. 1 on the wireless receiver unit PCB from OFF to ON.
2. All indicator lamps in the display section blink during test run operation.
3. No temperature control is available during the test run.
4. After the test run, be sure to reset DIP switch No. 1 back to the OFF position and check that no indicator lamps are blinking. Then remount and attach the PCB cover as before.

#### NOTE

- To avoid placing excessive operating load on the equipment, use this function only when conducting the test run.
- The unit does not receive remote controller signals for approximately 1 minute after the power is turned ON. This is not a malfunction. (The signals are received, but have no immediate effect.)

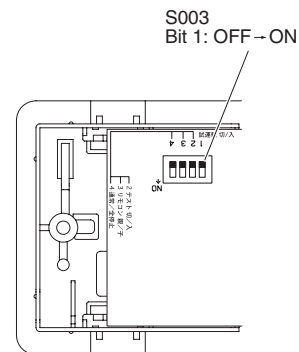


Fig. 3-12

## 2. Wireless Remote Controller

### ■ RCIRKS-FL for 2-Way and High Ceiling 1-Way Type (NK2FL, NKSL Type)

#### For 2-way Cassette Type (NK2FL Type)

#### 2-11. Installing the Display

- Remove panel cover A and install the display.
  - (1) Remove cover A from the rear side of the panel.
  - (2) Cover B is fit inside cover A. Therefore, spread cover A and remove cover B, as shown in Fig. 3-13.

Remove the tape that holds cover B in place. It was used for protection during shipping.

  - (3) Fit the display into the panel.
  - (4) Pass the display lead wire through the notch in the panel. Use the hole in the plate and a clamp to fasten the wire in place.
  - (5) Reattach cover A.

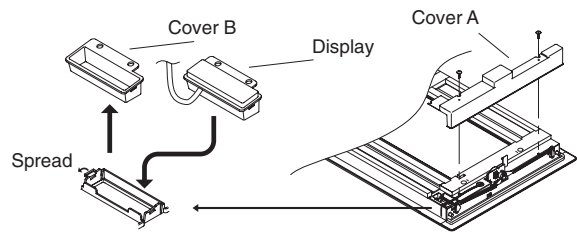


Fig. 3-13

Fasten the wire in the hole of the plate.

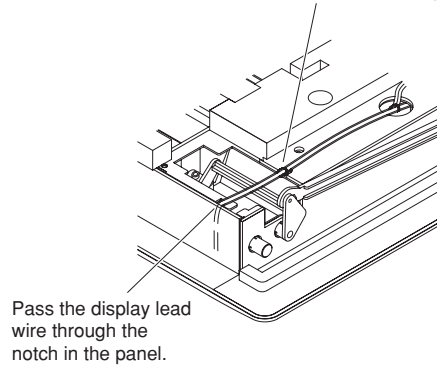


Fig. 3-14

Bend the excess lead wire, then use the figure 8 clamp to fasten it in place.

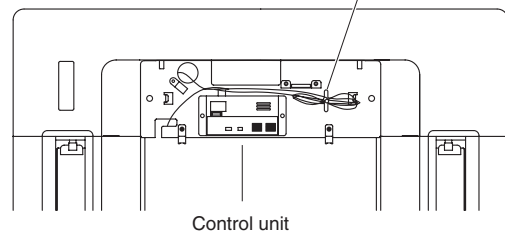


Fig. 3-15

#### 2-12. Installing the Control Unit

##### NOTE

- Do not twist the control wiring with the power wiring because this may cause malfunction.
  - Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.
- (1) Use the 2 supplied screws (4 x 10) to attach the control unit at the location shown in the diagram below.
  - (2) Connect the display and control unit 6P connectors.
  - (3) Connect the control unit lead wire to the indoor unit remote controller wiring terminal.
  - (4) Bend the lead wire into the correct shape, and use a figure 8 clamp to fasten it in place.
  - (5) Attach the ceiling panel.

\* For the wiring and test run procedures, refer to "Wiring the Receiver Unit" and "Test Run."

## 2. Wireless Remote Controller

### For 1-Way Air Discharge High-Ceiling Cassette Type (NKSFL Type)

#### 2-13. Installing the Display

- Remove the side panel and ceiling panel. Install the display.

- (1) Remove the side panel.
  - a) Press the tabs on both sides of the side panel to disengage the lock. Then slide the panel sideways to remove it.
- (2) Remove the ceiling panel.
  - a) Remove the 4 screws that fasten the ceiling panel to the indoor unit.
  - b) Disconnect the wiring connector (15P) between the indoor unit and the ceiling panel.
  - c) While pressing the ceiling panel upwards, press on the bottom of the moveable hook inside the ceiling panel (electrical component box side). This disconnects one side of the panel.
  - d) Lift up the opposite side (refrigerant tubing side) of the ceiling panel to disengage the fastening hook. The panel can then be removed.
- (3) Remove cover A and cover B.
  - a) To remove cover A, remove the rivets from the inside of the ceiling panel. (Fig. 3-17)
  - b) Remove cover B.
- (4) Install the display onto cover A.
- (5) Pass the lead wire from the display into the ceiling panel hole. Then reattach cover A.
- (6) Form the lead wire as shown in the figure. (Fig. 3-16) At the position of the cover fastening bracket (part fastened by rivets), extend the lead wire parallel to the ceiling panel side surface, then use tape to fasten it in place.

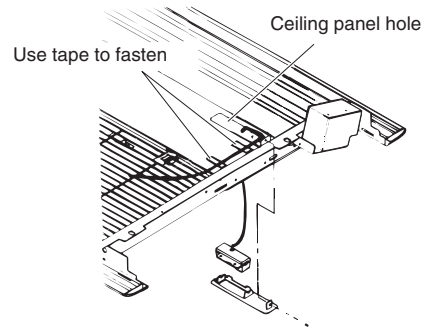


Fig. 3-16

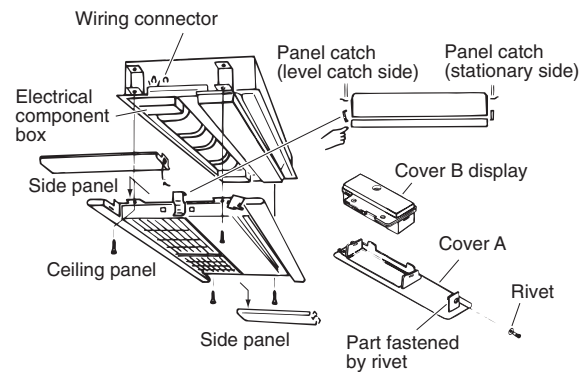


Fig. 3-17

#### 2-14. Installing the Control Unit

##### NOTE

Do not twist the control wiring with the power wiring because this may cause malfunction.

Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

- Attach the control unit to the indoor unit intake port.
  - (1) Use the 2 supplied screws (4 × 10) to fasten the control unit to the service cover (cover with attached handle). (Fig. 3-18)
  - (2) Connect the control unit lead wire to the indoor unit remote controller wiring terminal.
  - (3) Pass the lead wire over the shaft (ceiling side) and clamp it to form it in the correct shape (power-side lead wire). (Fig. 3-19)

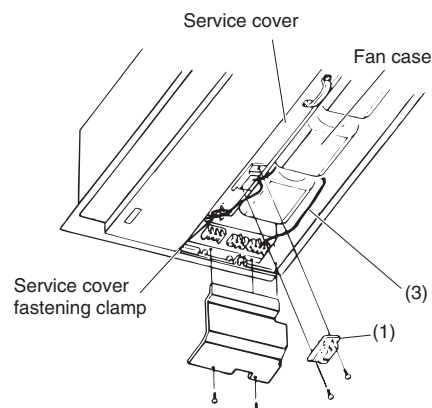


Fig. 3-18



## 2. Wireless Remote Controller

- (4) Attach the ceiling panel.
- (5) Open the air-intake grille. Connect the display and the control unit 6P relay connector (white).  
At this time, pass the lead wire from the display through the notch in the main unit, and use the supplied vinyl clamp to bind the lead wire. Then use the fastening clamp to fasten it to the service cover. Also connect the ceiling panel wiring connector.

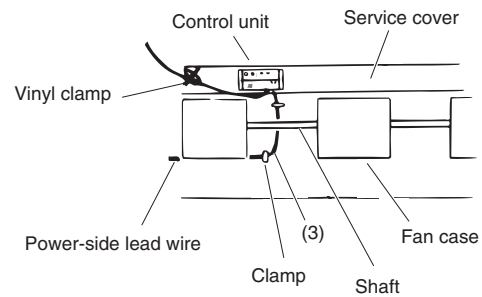











Fig. 3-19

\* For the wiring and test run procedures, refer to "Wiring the Receiver Unit" and "Test Run."

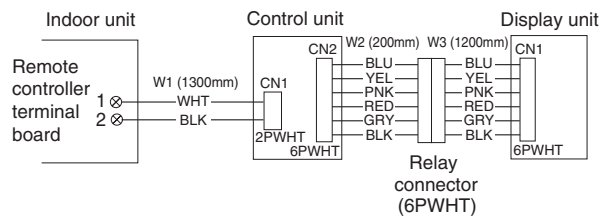
### 2-15. Accessories

No.	Parts	Q'ty	No.	Parts	Q'ty
1	Control unit 	1	6	Spacer 	2
2	Display unit 	1	7	Tapping screw 4 x 10 	4
3	Remote control unit 	1	8	Tapping screw Truss-head Phillips 4 x 16 	2
4	Remote control holder 	1	9	Vinyl clamp L 150 	3
5	AAA alkaline battery 	2			

### 2-16. Wiring the Receiver Unit

#### ● Connection diagram

1. Connect W1 to the indoor unit remote controller wiring terminal. (It has no polarity.)
2. Connect W3 from the display and W2 from the control unit to the relay connector.



### 2-17. Precautions on Simultaneous Installation of Wired Remote Controller and Wireless Remote Controller

By installing a wired remote controller, the wireless receiver unit can permit dual remote control operation at the same time.

(Up to 2 units of remote controllers – a wireless remote controller and a wired remote controller – can be installed.)

Dual remote control operation can control 1 or multiple air conditioners using several remote controllers.



- Be sure to determine the correct terminal numbers on the indoor unit when wiring the remote controller. The remote controller will be damaged if high voltage (such as 200 VAC) is applied.

## 2. Wireless Remote Controller

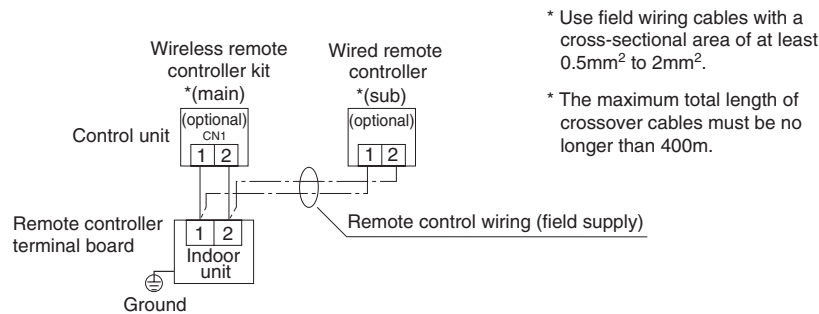


### CAUTION

- The wireless receiver unit components cannot be used for more than 1 indoor unit at a time. (However, separate receiver units may be used simultaneously.)
  - When a wireless receiver unit and a wired remote controller are used simultaneously, assign either the wireless remote controller or the wired remote controller as the sub remote controller unit.
- To assign the wired remote controller as the sub unit, locate the address connector at the rear of the wired remote controller PCB and disconnect it. Reconnect it to the sub unit position.
  - To assign the wireless remote controller as the sub unit, locate the DIP switch [S003] on the wireless control unit PCB. Set the No. 3 switch to the ON position.

### When 1 indoor unit is operated with 2 remote controllers:

(The indoor unit runs according to which of the remote controllers is assigned as the main or sub unit.)



### When several groups of indoor units are operated with 2 remote controllers:

(The remote controller (main or sub unit) can operate with any indoor unit.)

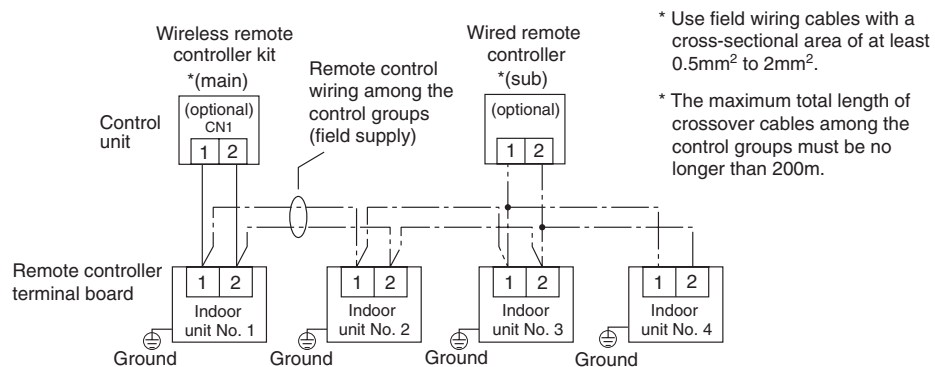


Fig. 3-20

## 2. Wireless Remote Controller

### 2-18. How to Use the Test Run Setting

1. Set DIP switch [DS] No. 1 on the wireless receiver unit PCB from OFF to the ON position.
2. All indicator lamps in the display section blink during test run operation.
3. No temperature control is available during the test run.
4. After the test run, be sure to reset DIP switch No. 1 back to the OFF position and check that no indicator lamps are blinking.

#### NOTE

- Be aware that test run is not possible if the ceiling panel is not attached.
- To avoid placing an excessive load on the equipment, use this function only when conducting the test run.

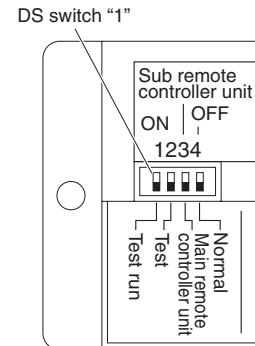


Fig. 3-21

## 2. Wireless Remote Controller

### ■ RCIRC-FL for NDLP, NDHP Type

#### 2-19. Accessories Supplied with Separate Receiver Unit

No.	Parts	Q'ty	No.	Parts	Q'ty
1	Separate receiver unit (provided 200mm power cable)	1	6	Spacer	4
2	Plate mounting	1	7	Wire joints	2
3	Screws M4 × 25	2	8	Clamp	1
4	Screws M4 × 40	2	9	Pattern template 95 × 51	1
5	Wood screws	2			

unit: mm

#### 2-20. Important Information for Installation of 1 Separate Receiver Unit

##### <Installation location>

- Do not install in a location where the air contains oil mist, such as in a kitchen or factory.
- Do not install next to a window, or in any other location directly exposed to sunlight and outside air.
- Do not install nearby devices which can be expected to produce electrical noise, such as elevators, automatic doors, and industrial sewing machines.
- If the receiver unit is installed near a rapid-start type or inverter-type fluorescent lamp (a lamp which does not include a glow lamp), it may not be possible to receive the wireless remote controller signal in some cases. In order to prevent interference from fluorescent lamps, leave a minimum of 2 meters between the receiver unit and the fluorescent lamps, and install the receiver unit in a location where it can receive the wireless remote controller signal when the fluorescent lamps are lit.

#### 2-21. How to Install the Separate Receiver Unit

##### NOTE

- To avoid malfunction of the remote controller, do not assemble or run remote control wiring together with the power cables, and do not enclose them in the same metal conduit.
- When the power unit induces electrical noise, it is recommended that a noise filter or the like be installed.

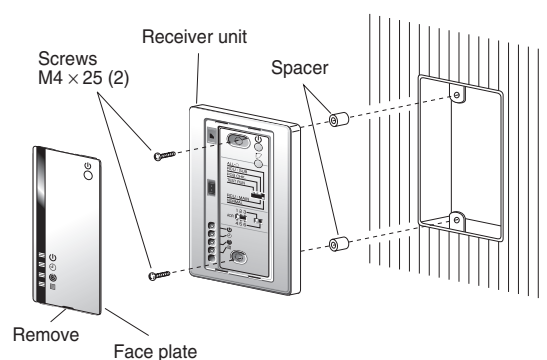


Fig. 3-22

## 2. Wireless Remote Controller

- For flush mounting into a wall, install the separate receiver unit in a metal switch box (field supply) that has been recessed into the wall in advance.

1. Insert a flathead screwdriver or similar tool into the notch, and remove the face plate.
2. Fix the receiver unit with 2 M4 screws provided. Do not overly tighten, and use the provided spacers. If the receiver unit does not fit in the wall, cut spacers to adjust the clearance.
3. Connect the receiver unit wiring (2-core cable) with the cables extended from the indoor unit. (Refer to the section on receiver unit wiring.) Be sure to determine the correct terminal numbers on the indoor unit when wiring the receiver unit. The remote controller will be damaged if high voltage (such as 200 VAC) is applied.
4. Reinstall the face plate.

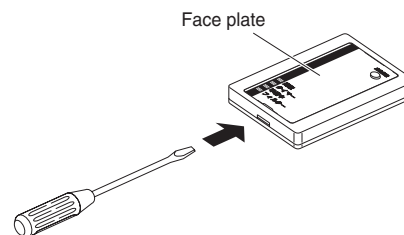


Fig. 3-23

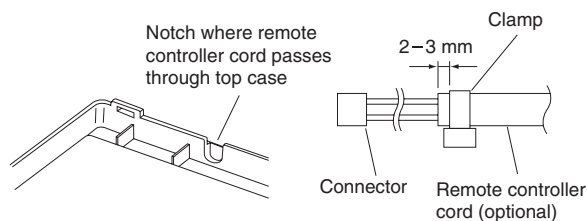


Fig. 3-24

- When using exposed mounting for the receiver unit, install onto a wall where the receiver unit can be attached.

1. Insert a flathead screwdriver or similar tool into the groove on the bottom of the receiver unit. Pry open with the screwdriver and remove the lower case. (Fig. 3-23).
2. In order to later pass the receiver wiring out through the upper case (thin part at the top center), use nippers or a similar tool to cut a notch in the same size as the remote controller cord (optional). (Fig. 3-24)
3. Disconnect the wires that were connected to the connector at the time of shipment.
4. Fasten the remote controller cord (optional) at the position shown in Fig. 3-25, using the provided clamp. Then connect the cord to the receiver connector.
5. Shape the remote controller cord as shown in Fig. 3-25 so that it fits at the top inside the receiver unit, above the PCB. Then attach the lower case. At this time, bend the head of the clamp so that it faces sideways.
6. Remove the nameplate and use 2 wood screws to attach the receiver unit.
7. Use the provided cord clips to fasten the remote controller cord to the wall.
8. Reattach the nameplate.

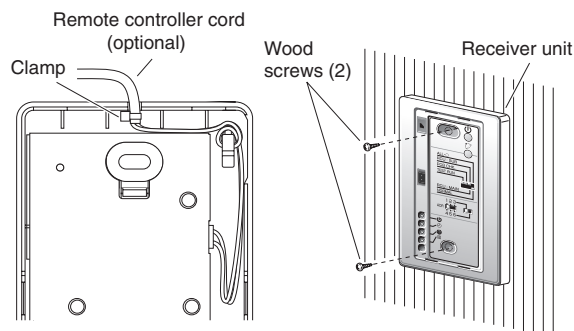


Fig. 3-25

- If the separate receiver unit is installed on the ceiling, use the provided ceiling mounting bracket for installation.

## 2. Wireless Remote Controller

1. Insert a screwdriver or similar tool into the notch at the bottom to remove the receiver nameplate.
2. Cut a section out of the ceiling along the provided paper pattern (95 × 51 mm).
3. Pass the wire through the provided mounting bracket and insert the bracket into the installation hole. (Fig. 3-26)
4. Use bracket parts (A) and (B) to securely grip the ceiling material. (Fig. 3-27)
5. Connect the receiver wire (2-core) to the wire from the indoor unit.  
(Refer to "Wiring the Receiver Unit.")  
Check the terminal number on the indoor unit before wiring the receiver unit and be sure not to wire incorrectly. (The unit will be damaged if high voltage, such as 200 VAC, is applied.)
6. Adjust the provided spacers so that they are several millimeters larger than the thickness of the ceiling material. Pass the 2 supplied screws (M4 × 40) through the spacers and tighten them enough to hold the receiver unit in place.
7. Return parts (A) and (B) through the gap between the ceiling and receiver unit so that they are contained in the openings. Then tighten the screws. Do not tighten the screws excessively. This may result in damage or deformation of the case. Tighten to the point where the receiver unit can be moved slightly by hand. (Fig. 3-28)
8. Reattach the nameplate.

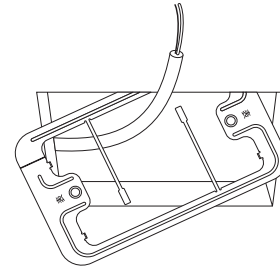


Fig. 3-26

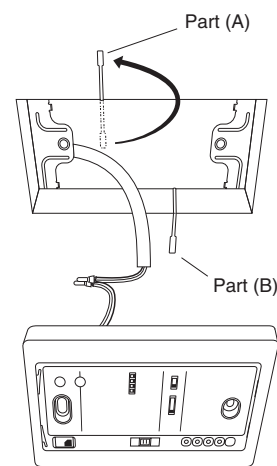


Fig. 3-27

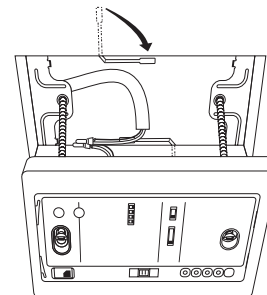


Fig. 3-28

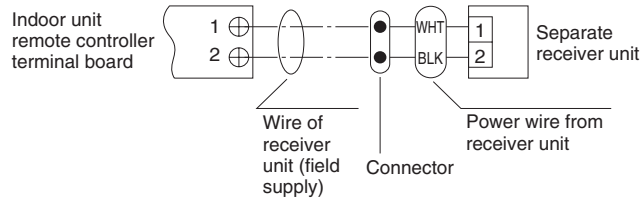
## 2. Wireless Remote Controller

### 2-22. Wiring the Separate Receiver Unit

- \* Use wires that are 0.5 mm<sup>2</sup> – 2 mm<sup>2</sup> in diameter.
- \* The wiring length must not exceed 400 m.

#### <Flush Mounting>

- Connection diagram

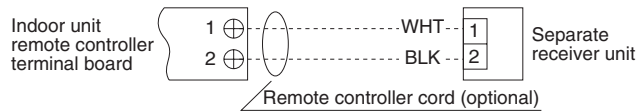


<p>Provided wire joint (WHT 2)</p>	<p>Wire of receiver unit (field supply)</p>	<ol style="list-style-type: none"> <li>1. Strip the insulation to approximately 14mm from the ends of the wires to be connected.</li> <li>2. Twist together the 2 wires and create a crimp connection at the wire joint.</li> <li>3. If a special crimping tool is not used, or if the connection is soldered, insulate the wires using insulation tape.</li> </ol>
	<p>Power wire from receiver unit</p> <p>Wire joint CE-1 (provided)</p>	

3

#### <Exposed Mounting>

- Connection diagram



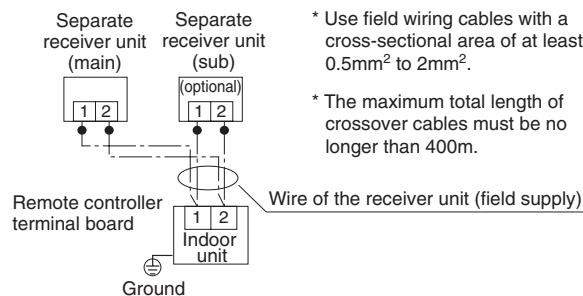
- Use the remote controller cord (optional) for wiring the separate receiver unit.
1. For the methods used to install the remote controller cord, refer to “For flush mounting into a wall, install the separate receiver unit in a metal switch box (field supply) that has been recessed into the wall in advance” on P. III-21.
  2. When using the remote controller cord (optional), refer to the instruction manual that came with the cord.  
Check the terminal number on the indoor unit before wiring the remote controller and be sure not to wire incorrectly. (The unit will be damaged if high voltage, such as 200 VAC, is applied to it.)

## 2. Wireless Remote Controller

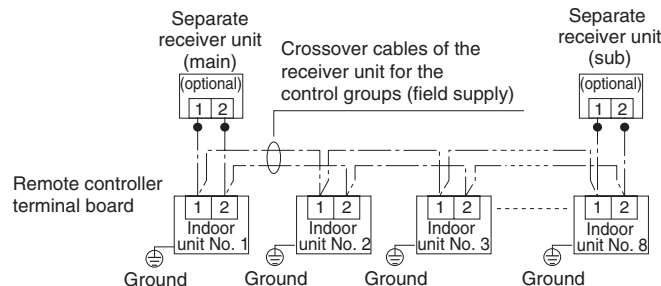
### 2-23. Important Information for Installation of 2 Separate Receiver Units

When using 2 receiver units to operate 1 or more indoor units at the same time, follow the procedure below to install them.

- Installation method
  1. If 2 remote controllers are installed, set one of them as the "main remote controller" (setting at time of factory shipment).
  2. At the other remote controller, remove the receiver nameplate and switch the DIP switch to "sub remote controller." Under these conditions, the receiver unit functions as the sub receiver unit.
    - \* The TIMER lamp lights only at the remote controller that receives the signal.
- Basic wiring diagram
  - \* When connecting the wires, be careful not to wire incorrectly. (Incorrect wiring will damage the unit.)
- Using 2 separate receiver units to control 1 indoor unit:



- Using 2 separate receiver units to control a group of multiple indoor units:
  - \* The main and sub receiver units will operate regardless of the indoor unit in which they are installed.



- \* Use wires that are 0.5 mm<sup>2</sup> – 2 mm<sup>2</sup> in diameter.
- \* The wiring length must not exceed 400 m.



## 2. Wireless Remote Controller

### 2-24. Test Run Setting

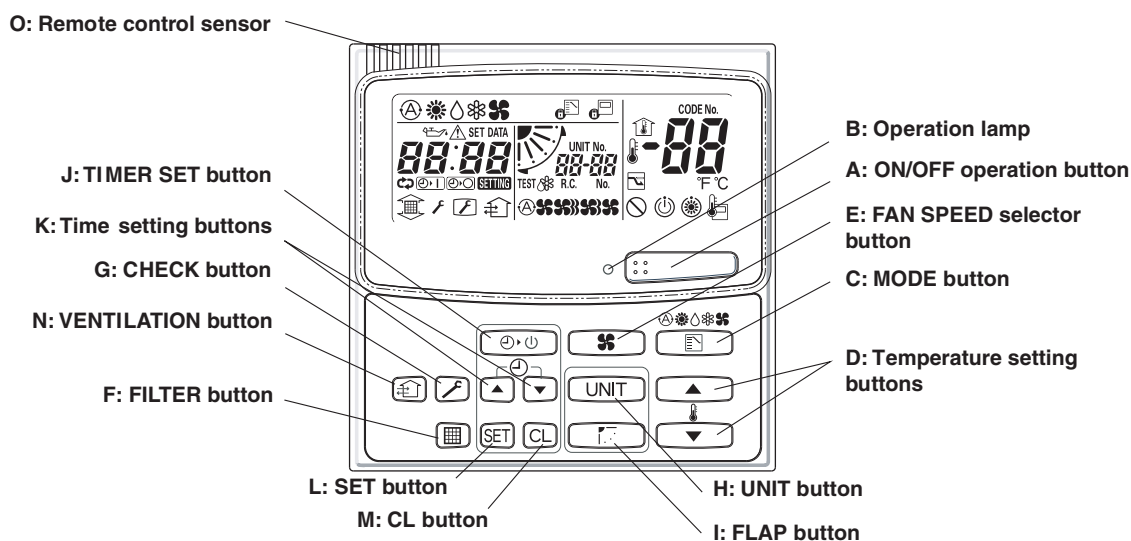
1. Remove the receiver unit face plate, and set the DIP switch to "Test Run - ON" position.
2. Run the air conditioner using the wireless remote controller by pressing the "ON/OFF" button.
  - All LEDs ("RUN," "TIMER" and "STANDBY") blink during test run operation.
  - No temperature control is effective with the wireless remote controller in the "Test Run – ON" position.  
To avoid mechanical strain on the air conditioner, do not use this mode except for conducting a test run.
3. Select any one of the operation modes HEAT, COOL or FAN for the test run.
  - \* The outdoor unit will not start running for about 3 minutes after the power ON button is pressed.
4. After the test run operation, stop the air conditioner using the wireless remote controller, and then reset the DIP switch in the receiver unit as it was before. (To prevent constant test running of the air conditioner, the receiver unit has a 60-minute off-timer function.)

### 3. Wired Remote Controller / NRCG-FL

#### Wired Remote Controller / NRCG-FL

##### ■ How to Use the Wired Remote Controller

- This remote control unit can be used to operate up to 8 indoor units. Once the operation settings are made, the units can be operated by simply pressing the ON/OFF operation button.
- In the NDLP, NDHP series, the flap position is not shown on the display.
- The ST-NDHP 76 / ST-NDHP 96 does not have a dry function.




























3






<b>A: ON/OFF operation button</b>	This button is for turning the air conditioner on and off.
<b>B: Operation lamp</b>	This lamp lights when the air conditioner is turned on. This lamp blinks when an error occurs or a protective device is activated.
<b>C: MODE button</b>	Use this button to select one of the following 5 operating modes. <ul style="list-style-type: none"> <li><b>(AUTO)</b>     : Used to automatically set cooling or heating operation. Only for single heat pump type (Temperature range: 17 to 27C)</li> <li><b>(HEAT)</b>     : Used for normal heating operation. Only for heat pump type (Temperature range: 16 to 30C)</li> <li><b>(DRY)</b>      : Used for dehumidifying without changing the room temperature. (Temperature range: 18 to 30C)</li> <li><b>(COOL)</b>     : Used for normal cooling operation. (Temperature range: 18 to 30C)</li> <li><b>(FAN)</b>      : Used to run the fan only, without heating or cooling operation.</li> </ul>
<b>D: Temperature setting buttons</b>	: Press this button to increase the temperature setting. : Press this button to decrease the temperature setting.
<b>E: FAN SPEED selector button</b>	<ul style="list-style-type: none"> <li><b>(AUTO)</b>     : The air conditioner automatically decides the fan speeds.</li> <li><b>(HI)</b>         : High fan speed</li> <li><b>(MED)</b>      : Medium fan speed</li> <li><b>(LO)</b>         : Low fan speed</li> </ul>

### 3. Wired Remote Controller / NRCG-FL

3

<b>F: FILTER button</b>	This button is used to turn off the filter sign (  ). When the filter sign appears on the display, clean the filter, and then press this button to turn off the sign.																
<b>G: CHECK button</b>   <b>CAUTION</b>	This button is used only when servicing the air conditioner.  <b>Do not use the CHECK button for normal operation.</b>																
<b>H: UNIT button</b>	When more than one indoor unit is connected, this button is used to select a unit when adjusting the airflow direction. If no unit is selected, the airflow direction of all units can be adjusted concurrently using the FLAP button.																
<b>I: FLAP button</b>   <b>CAUTION</b>  <b>NOTE</b> (SWEEP)	<ol style="list-style-type: none"> <li>Use this button to set the airflow direction to a specific angle. The airflow direction is displayed on the remote control unit.                     <table border="1"> <thead> <tr> <th>Operation mode</th> <th>Number of airflow direction settings</th> </tr> </thead> <tbody> <tr> <td> (COOL) or  (DRY)</td> <td>3</td> </tr> <tr> <td> (HEAT) or  (FAN)</td> <td>5</td> </tr> <tr> <td> (AUTO)</td> <td></td> </tr> <tr> <td>    Cooling mode:</td> <td>3</td> </tr> <tr> <td>    Heating mode:</td> <td>5</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>In the Cool mode and Dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent.</li> <li>Do not move the flap with your hands.</li> </ul> </li> </ol> <p>This function is available only for models NKFL, NKSFL, NK2FL and NWFL.</p> <ol style="list-style-type: none"> <li>Use this button to make the airflow direction sweep up and down automatically. Press this button several times until the  symbol appears on the display.                     <p><b>To stop the swing operation</b> Press the FLAP button again during the flap swing operation to stop the flap at the desired position. Then, the airflow can be set from the top position by pressing the FLAP button again.</p> <p><b>Indicator when swing operation is stopped</b></p> <table border="1"> <thead> <tr> <th>Fan and heating</th> <th>Cooling and drying</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table> <p>During cooling and drying, the flap does not stop at the downward position. Even if the flap is stopped at the downward position during the swing operation, it does not stop until it moves to the third position from the top.</p> </li> </ol> <p>This function is available only for models NKFL, NKSFL, NK2FL and NWFL.</p>	Operation mode	Number of airflow direction settings	 (COOL) or  (DRY)	3	 (HEAT) or  (FAN)	5	 (AUTO)		Cooling mode:	3	Heating mode:	5	Fan and heating	Cooling and drying		
Operation mode	Number of airflow direction settings																
 (COOL) or  (DRY)	3																
 (HEAT) or  (FAN)	5																
 (AUTO)																	
Cooling mode:	3																
Heating mode:	5																
Fan and heating	Cooling and drying																
																	

### 3. Wired Remote Controller / NRCG-FL

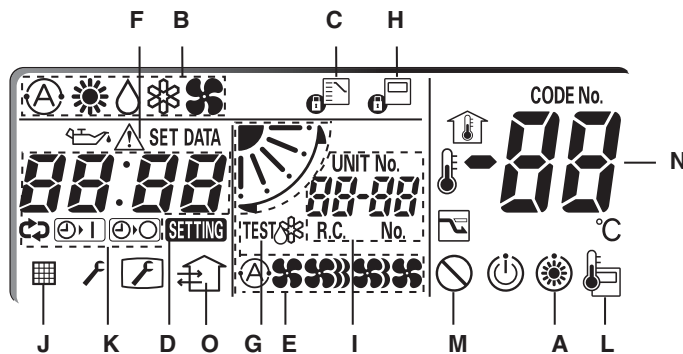
<b>J: TIMER SET button</b> (OFF Timer) (OFF Cycle Timer) (ON Timer)	Use this button while the unit is operating to switch between timer settings.  : The air conditioner stops after a preset time elapses.  : The air conditioner always stops after a preset time elapses.  : The air conditioner starts after a preset time elapses.
<b>K: Time setting buttons</b>	 : Press this button to increase the time.  : Press this button to decrease the time.
<b>L: SET button</b>	Use this button to set the timer.
<b>M: CL button</b>	Use this button to clear the timer setting.
<b>N: VENTILATION button</b>	This is used when a ventilation fan (available commercially) is connected. Pressing the VENTILATION button turns the fan on and off. The ventilation fan also turns on and off when the air conditioner unit is turned on and off. (The display of the remote control unit shows "⌘" while the ventilation fan is running.) * If "⊙" is shown on the display of the remote control unit when the VENTILATION button is pressed, this indicates that the ventilation fan is not connected.
<b>O: Remote control sensor</b>	Normally, the temperature sensor of the indoor unit is used to detect the temperature. However, it is also possible to detect the temperature around the remote control unit. For details, contact the dealer where you made the purchase. (Do not set when using group control.)

**NOTE**

- 1) When 2 remote control units are being used in one group control\* system,
  - a) the most recent button that is pressed on any remote control unit is effective.
  - b) either a main-remote control unit or a sub-remote control can set the timer.
    - \* Group control means that maximum up to 8 indoor units can be concurrently controlled with a remote control unit.
- 2) If a power failure occurs in timer mode, the time counted up to that point will be stored in memory.  
After power is restored, the timer starts again counting up to the set time.

### 3. Wired Remote Controller / NRCG-FL

#### ■ Display



#### Description

- A:** When the unit is in heating standby status, the indicator appears. While this indicator is displayed, the indoor fan turns off or on at low fan speed.
- B:** The currently selected operation mode is displayed.  
\* The ST-NDHP 76/ST-NDHP 96 shows the dry indicator, but it does not have a dry function.
- C:** This is displayed if a different operation mode was selected already by another remote control unit and indicates that the mode cannot be changed.
- D:** After turning on the mains power switch for the first time, **SETTING** indicator blinks on the display of the remote control unit. While this is displayed, the system is automatically checking units, and so wait until the **SETTING** indicator turns off to operate the remote control unit. When the **SETTING** SET button is pressed to set the timer, the **SETTING** indicator flashes.
- E:** The currently selected FAN SPEED, fan angle and SWEEP status are displayed.
- F:** This is displayed only if an abnormality occurs within a unit.
- G:** When the CHECK button is pressed for more than 4 seconds, the TEST indicator appears. Then, press the ON/OFF operation button to start test run.
- H:** This is displayed to indicate that the system controller is being used for control. When is flashing on the display, the operation is not accepted by the system controller.
- I:** This displays the unit number of the indoor unit selected with the unit selection button or the indoor/outdoor unit where an error is indicated.
- Unit No.  
1 - 2  
└──┬── Indoor unit No.  
    └── Refrigerant circuit No.
- J:** This is displayed if it is time to clean the filter.
- K:** When setting the timer, the selected timer mode is displayed. This displays the time of the timer. (An alarm message is displayed when an error occurs.) Pressing the TIMER SET button cycles through the options in this order: → → → → No Display
- L:** This is displayed when using the remote control unit sensor.
- M:** This is displayed if a function is unavailable when a button is pressed.
- N:** This displays the temperature setting.
- O:** This is displayed when a connected ventilation fan (available commercially) is operating.

### 3. Wired Remote Controller / NRCG-FL

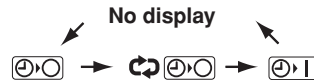
#### ■ Setting the Timer

**Using the timer** Set the timer during air conditioner operation.

Recommended usage		Display
To stop the air conditioner after a preset time elapses	OFF timer	
To always stop the air conditioner after a preset time elapses	OFF cycle timer	
To start the air conditioner after a preset time elapses	ON timer	

**Time indicator of timer** Each time is pressed, the time setting increases at 0.5-hour (30 minute) intervals. The upper limit is 72.0 hours. Each time is pressed, the time setting decreases at 0.5-hour (30 minute) intervals. The lower limit is 0.5 hours.

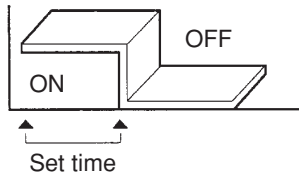
**Timer indicator** The timer cycles through the following options each time (TIMER SET button) is pressed.



3

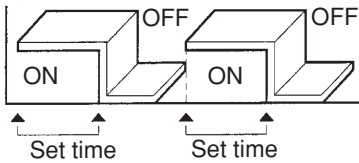
**OFF timer**

Use this mode to turn off the unit automatically after a preset time elapses.



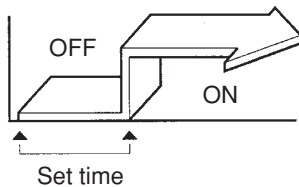
**OFF cycle timer**

Use this mode to always turn off the unit automatically after a preset time elapses.



**ON timer**

Use this mode to start the unit automatically after a preset time elapses.



**NOTE**

When 2 remote control units are being used, either a main remote control unit or a sub remote control unit can be used for timer operations.

### 3. Wired Remote Controller / NRCG-FL

#### How to set the OFF timer (⏸)

Example: Stopping the air conditioner after 3.5 hours of operation



#### Operation

1. Press the **ON/OFF** button once to start the air conditioner.
2. Press the **TIMER SET** button to select the ⏸ mode.
3. Press the ▲ button until 3.5 is displayed.  
Press the ▼ button if the set time is exceeded.
4. Press the **SET** button to set the OFF timer.

#### Indication

➔ The **SETTING** and time indications (hour) flash.

3

#### How to set the OFF cycle timer (⏸⏸)

Example: Always stopping the air conditioner after 3.5 hours of operation



#### Operation

1. Press the **ON/OFF** button to start the air conditioner.
2. Press the **TIMER SET** button twice to select the ⏸⏸ mode.
3. Set the time using the ▲ or ▼ button.
4. Press the **SET** button to set the OFF cycle timer (⏸⏸).

#### NOTE

When the OFF cycle timer is set, the unit will always stop after 3.5 hours of operation.

#### How to set the ON timer (⏸|)

Example: Starting the air conditioner 10.5 hours after the ON time setting



#### Operation

1. Press the **ON/OFF** button to start the air conditioner.
2. Press the **TIMER SET** button to select ⏸| mode.
3. Press the ▲ button until 10.5 is displayed.  
Press the ▼ button if the set time is exceeded.
4. Press the **SET** button to set the ON timer.

#### Indication

➔ The **SETTING** and time indications (hour) flash.

#### NOTE

When the ON timer is set, the unit enters the paused state.

#### Canceling timer operation

Press the CL button to cancel operation. The time setting is canceled, and the timer indicator no longer appears on the display.

### 3. Wired Remote Controller / NRCG-FL

#### ■ How to Install the Remote Controller

Remote controller wiring can be extended to a maximum of 1,000 m.



**CAUTION**

- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the remote controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

The mounting position for the remote controller should be located in an accessible place for control. Never cover the remote controller or recess it into the wall.

- (1) When you open the decorative cover, you will see 2 gaps under the remote controller. Insert a coin into these gaps and pry off the back case.

#### When Using a Wall Box for Flush Mounting

- If local codes allow, this remote controller can be mounted using a conventional wall box for flush mounting.
- (2) Attach the back case with the 2 small screws provided. Using a screwdriver, push open the cut-outs on the back case. These holes are for screws. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
  - (3) Connect the remote controller wiring (3 wires) correctly to the corresponding terminals in the electrical component box of the indoor unit.



**CAUTION**

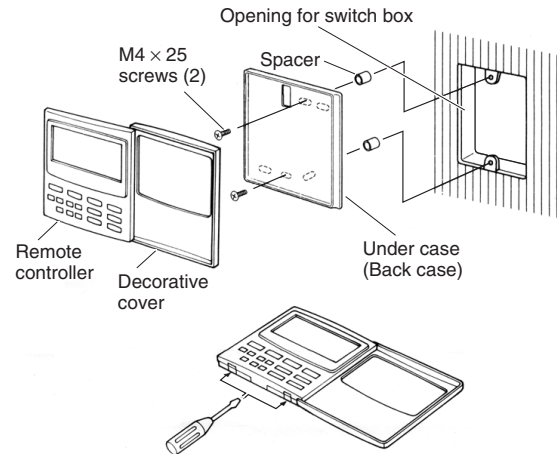
**When wiring, do not connect the remote controller wires to the adjacent terminal block for the power wiring. Otherwise, the unit will break down.**

- (4) To finish, fit the back tabs of the case into the remote controller and mount it.



**CAUTION**

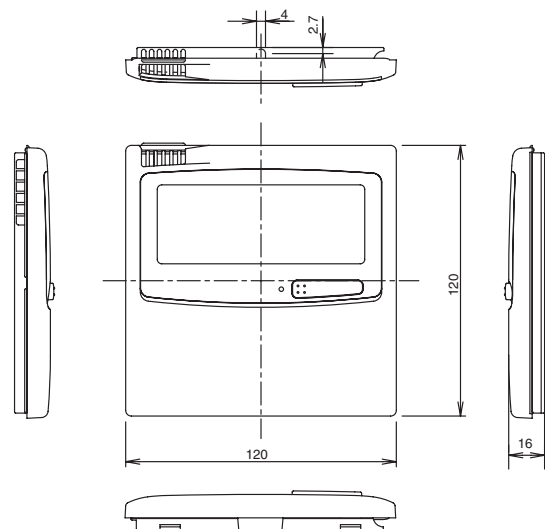
**Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.**



#### Accessories for remote controller switch

No.	Supplied parts	Q'ty	No.	Supplied parts	Q'ty
1	Remote controller switch (with 200 mm wire)	1	4	Spacers	2
2	Small screws M4 x 25	2	5	Wire joints	2
3	Wood screws	2			

#### Diagram of outer dimensions





### 3. Wired Remote Controller / NRCG-FL

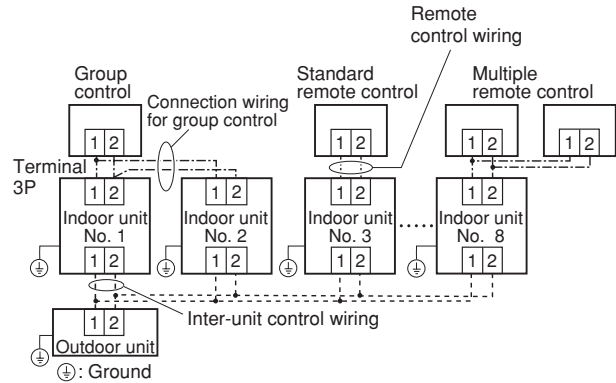
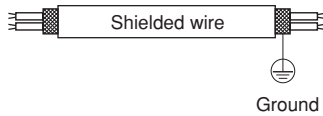
#### Basic Wiring Diagram



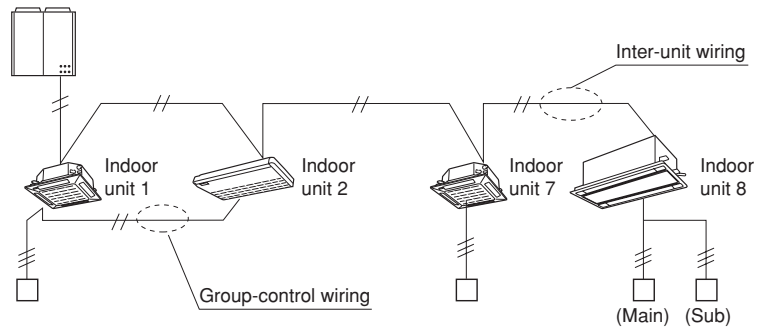
**CAUTION**

**Install wiring correctly (incorrect wiring will damage the equipment).**

- Use shielded wires for remote control wiring and ground the shield on both sides. Otherwise misoperation due to noise may occur.



3



#### Wiring System Diagram for Group Control

This diagram shows when several units (maximum of 8) are controlled by a remote controller (master unit). In this case, a remote controller can be connected at any indoor unit.

#### Wiring procedure

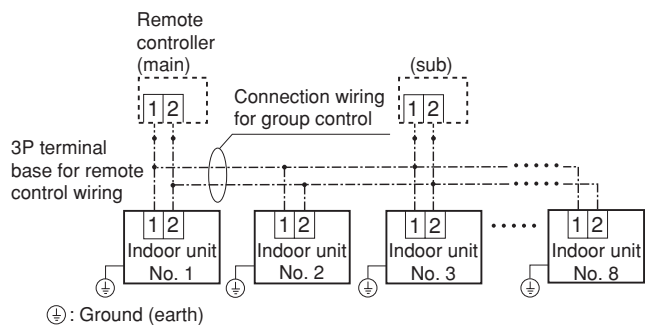
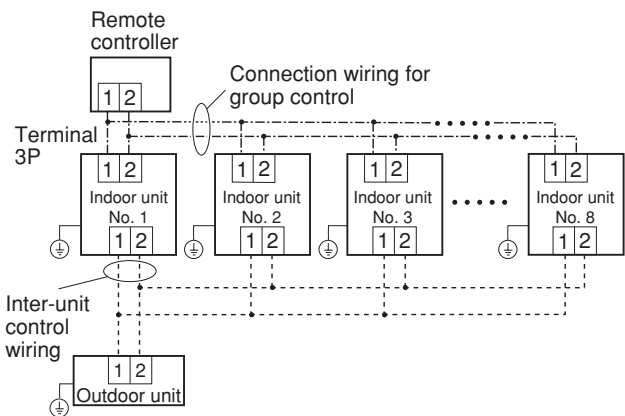
Wire according to the diagram at right:

- Each successive unit will respond at 1-second intervals following the order of the group address when the remote controller is operated.

#### Group control using 2 remote controllers

It does not matter which of the 2 remote controllers you set as the main controller.

When using multiple remote controllers (up to 2 can be used), one serves as the main remote controller and the other as the sub-remote controller.

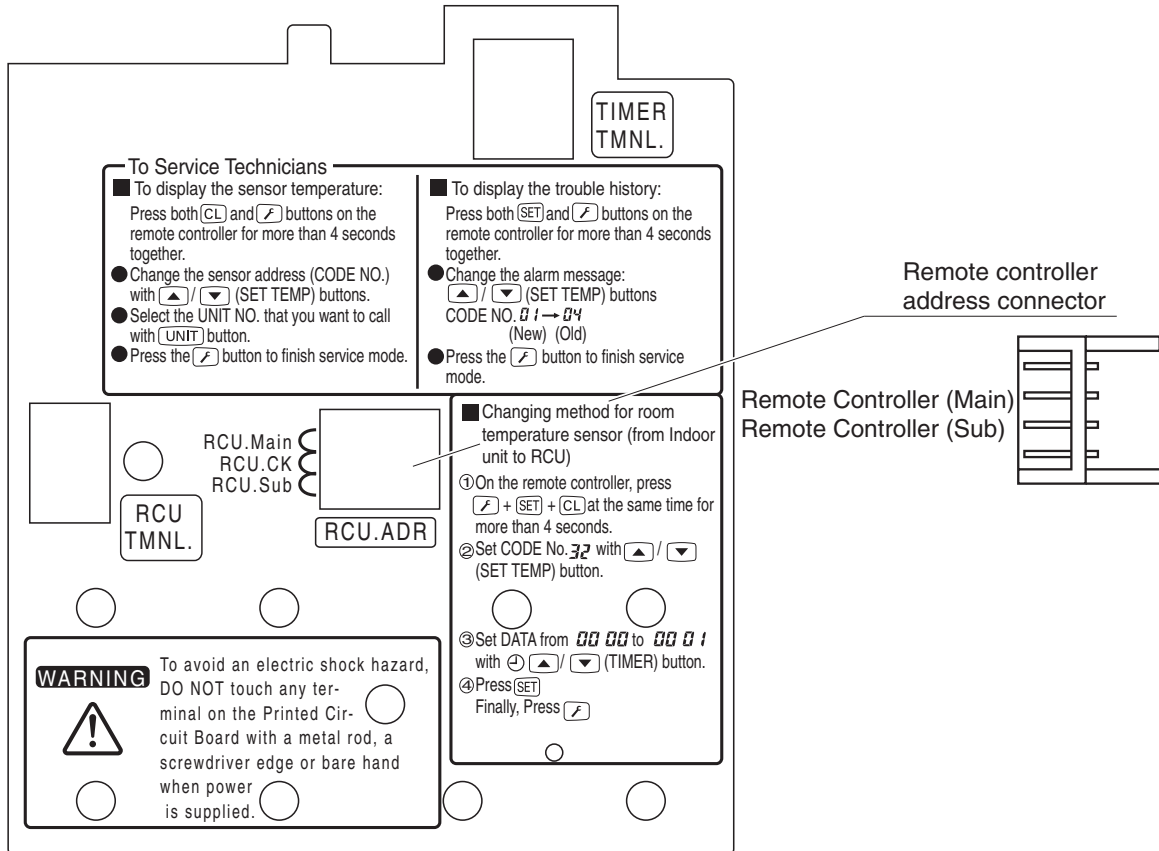


### 3. Wired Remote Controller / NRCG-FL

#### Setting the main and sub remote controllers

1. Set one of the 2 connected remote controllers as the main remote controller.
2. On the other remote controller (sub-remote controller), switch the remote controller address connector on the rear of the remote controller PCB from Main to Sub. When the connector has been switched, the remote controller will function as the sub-remote controller.

The sub-remote controller will also operate when connected to the indoor unit (indoor unit 2 or 3).



3

### 3. Wired Remote Controller / NRCG-FL


#### ■ Switching the Room Temperature Sensors

Room temperature sensors are contained in the indoor unit and in the remote controller.



One or the other of the temperature sensors is used for operation. Normally, the indoor unit sensor is set; however, the procedure below can be used to switch to the remote controller sensor.


(1) Press and hold the  +  +  buttons for 4 seconds or longer.


#### NOTE

- The unit No. that is initially displayed is the indoor unit address of the group control master unit.
- Do not press the  button.

(2) Use the temperature setting  /  buttons to select item code 32.

(3) Use the timer time  /  buttons to change the setting data from 0000 to 0001.

(4) Press the  button. (The change is completed when the display stops blinking.)


(5) Press the  button.




The unit returns to normal stop status. At this time, "Remote controller sensor" is displayed on the LCD.

#### NOTE


- If 2 remote controllers are used for control, this setting can be made from either the main or sub remote controller. However, the temperature sensor that is used is the sensor in the main remote controller.
- When group control is used, the remote controller sensor will not function unless the group address is set to the address of the master indoor unit.
- If both the remote sensor and remote controller are used, do not use the temperature sensor in the remote controller.

#### ■ Connecting to a Ventilation Fan



If a commercially available ventilation fan or similar device is run from the ventilation fan output terminal (FAN DRIVE: 2P (white), DC 12 V) (Note) on the indoor unit PCB, use the  button to enable fan operation and change the settings.


(1) Press and hold the  +  +  buttons for 4 seconds or longer.


#### NOTE


- The unit No. that is initially displayed is the indoor unit address of the group control master unit.
- Do not press the  button.

(2) Use the temperature setting  /  buttons to select item code 31.

(3) Use the timer time  /  buttons to change the setting data from 0000 to 0001.

(4) Press the  button. (The change is completed when the display stops blinking.)

(5) Press the  button.

The unit returns to normal stop status. Press the  button and check that "Fan" is displayed on the LCD display.

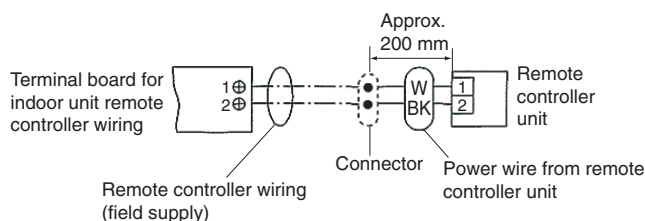
(Note) A special adapter (optional) is required to convert the signal for use at the no-voltage A contact.

### 3. Wired Remote Controller / NRCG-FL

#### ■ Wiring the Remote Controller

<Flush Mounting>

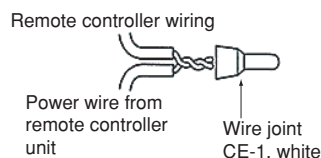
#### ● Connection diagram



#### ● Use 0.5 mm<sup>2</sup> – 2 mm<sup>2</sup> wires.

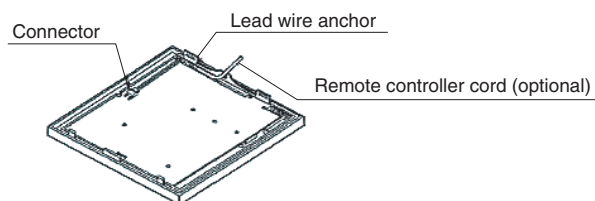
- (1) Strip the insulation to approximately 14 mm from the ends of the wires that will be connected.
- (2) Twist together the 2 wires and create a crimp connection at the wire joint.
- (3) If a special crimping tool is not used, or if the connection is soldered, insulate the wires using insulation tape.

#### Provided wire joint (white)



#### ● Use the remote controller cord (optional) for remote controller wiring.

- (1) Disconnect the lead wire that is wound around the lead wire anchor on the remote controller unit. Disconnect the connector and connect the remote controller cord (optional) to the connector on the remote controller unit. Insert the remote controller cord (optional) into the groove and bend it into the correct shape, then wind it around the lead wire anchor.
- (2) If the remote controller cord (optional) is used, refer to the installation manual that is provided with the cord.



### 3. Wired Remote Controller / NRCG-FL

#### ■ Meaning of Alarm Messages

#### Table of Self-Diagnostics Functions and Description of Alarm Displays

Alarm messages are indicated by the blinking of LED 1 and 2 (D72, D75) on the outdoor unit PCB. They are also displayed on the wired remote controller.

#### ● LED 1 and 2 (D72 and D75) alarm displays

LED 1	LED 2	Alarm contents
⊛	⊛	Alarm display
Alternating		LED 1 blinks M times, then LED 2 blinks N times. The cycle then repeats. M = 2: P alarm 3: H alarm 4: E alarm 5: F alarm 6: L alarm N = Alarm No. Example: LED 1 blinks 2 times, then LED 2 blinks 17 times. The cycle then repeats. Alarm is "P17."

(⊛: Blinking)

Possible cause of malfunction		Alarm message	
Serial communication errors Mis-setting	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) Ex: Auto address is not completed. <E01>	
		Error in transmitting serial communication signal. <E02>	
	Indoor unit is detecting error signal from remote controller (and system controller).	<<E03>>	
Indoor unit is detecting error signal from main outdoor unit.	Error in receiving serial communication signal. When turning on the power supply, the number of connected indoor units does not correspond to the number set. (Except R.C. address is "0.")	E04	
	Error of the main outdoor unit in receiving serial communication signal from the indoor unit.	<E06>	
Improper setting of indoor unit or remote controller.	Indoor unit address setting is duplicated.	E08	
	Remote controller address connector (RCU. ADR) is duplicated. (Duplication of main remote controller)	<<E09>>	
During auto. address setting, number of connected units does not correspond to number set.	Starting auto. address setting is prohibited. This alarm message shows that the auto address connector CN100 is shorted while other RC line is executing auto address operation.	E12	
	Error in auto. address setting. (Number of connected indoor units is less than the number set)	E15	
When turning on the power supply, number of connected units does not correspond to number set. (Except R.C. address is "0.")	Error in auto. address setting. (Number of connected indoor units is more than the number set)	E16	
	No indoor unit is connected during auto. address setting.	E20	
	Main outdoor unit is detecting error signal from sub outdoor unit.	E24	
	Error of outdoor unit address setting.	E25	
	The number of connected main and sub outdoor units do not correspond to the number set at main outdoor unit P.C.B.	E26	
	Error of sub outdoor unit in receiving serial communication signal from main outdoor unit.	E29	
	Indoor unit communication error of group control wiring.	Error of main indoor unit in receiving serial communication signal from sub indoor units. E18	
	Improper setting.	This alarm message shows when the indoor unit for multiple-use is not connected to the outdoor unit.	L02
		Duplication of main indoor unit address setting in group control.	<L03>
		Duplication of outdoor R.C. address setting.	L04
Group control wiring is connected to individual control indoor unit.		L07	
Indoor unit address is not set.		L08	
Capacity code of indoor unit is not set.		<<L09>>	
Capacity code of outdoor unit is not set.		L10	
Mis-match connection of outdoor units which have different kind of refrigerant.		L17	
4-way valve operation failure	L18		
Activation of protective device	Protective device in indoor unit is activated.	Thermal protector in indoor unit fan motor is activated. <<P01>> Improper wiring connections of ceiling panel. <<P09>> Float switch is activated. <<P10>>	

Continued

### 3. Wired Remote Controller / NRCG-FL

Possible cause of malfunction		Alarm message	
Activation of protective device	Protective device in outdoor unit is activated.	Compressor thermal protector is activated. Power supply voltage is unusual. (The voltage is more than 260 V or less than 160 V between L and N phase.)	P02
		Incorrect discharge temperature. (Comp. No. 1)	P03
		High pressure switch is activated.	P04
		Negative (Defective) phase.	P05
		Incorrect discharge temperature. (Comp. No. 2)	P17
		Outdoor unit fan motor is unusual.	P22
		Compressor running failure resulting from missing phase in the compressor wiring, etc. (Start failure not caused by IPM or no gas.) Negative (defective) N phase.	P16
		Overcurrent at time of compressor runs more than 80Hz (DCCT secondary current or ACCT primary current is detected at a time other than when IPM has tripped.)	P26
		IPM trip (IPM current or temperature)	H31
		Inverter for compressor is unusual. (DC compressor does not operate.)	P29
Thermistor fault	Indoor thermistor is either open or damaged.	Indoor coil temp. sensor (E1) (See Note)	<<F01>>
		Indoor coil temp. sensor (E2)	<<F02>>
		Indoor coil temp. sensor (E3)	<<F03>>
		Indoor suction air (room) temp. sensor (TA)	<<F10>>
		Indoor discharge air temp. sensor (BL)	<<F11>>
	Outdoor thermistor is either open or damaged.	Comp. No. 1 discharge gas temp. sensor (DISCH1)	F04
		Comp. No. 2 discharge gas temp. sensor (DISCH2)	F05
		Outdoor No. 1 coil gas temp. sensor (EXG1)	F06
		Outdoor No. 1 coil liquid temp. sensor (EXL1)	F07
		Outdoor air temp. sensor (AIR TEMP)	F08
		Compressor intake port temperature sensor (RDT)	F12
		High pressure sensor	F16
		Outdoor No. 2 coil gas temp. sensor (EXG2)	F23
		Outdoor No. 2 coil liquid temp. sensor (EXL2)	F24
		EEP ROM on indoor unit P.C.B. failure	F29
		Protective device for compressor is activated	Protective device for compressor No. 1 is activated.
Overload current is detected.	H01		
Lock current is detected.	H02		
Current is not detected when comp. No. 1 is ON.	H03		
Discharge gas temperature of the comp. No. 1 is not detected. Temp. sensor is not seated at the sensor holder.	H05		
Protective device for compressor No. 2 is activated.	Overload current is detected.		H11
	Lock current is detected.		H12
	Current is not detected when comp. No. 2 is ON.		H13
	Discharge gas temperature of the comp. No. 2 is not detected.		H15
	Low pressure switch is activated.		H06
Low oil level.	H07		
Oil sensor fault. (Disconnection, etc.)	Comp. No. 1 oil sensor		H08
	Comp. No. 2 oil sensor		H27

Continued

**3. Wired Remote Controller / NRCG-FL**

Alarm messages displayed on system controller			
Serial communication errors	Error in transmitting serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller.	C05
Mis-setting	Error in receiving serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller. CN1 is not connected properly.	C06
Activation of protective device	Protective device of sub indoor unit in group control is activated.	When using wireless remote controller or system controller, in order to check the alarm message in detail, connect wired remote controller to indoor unit temporarily.	P30

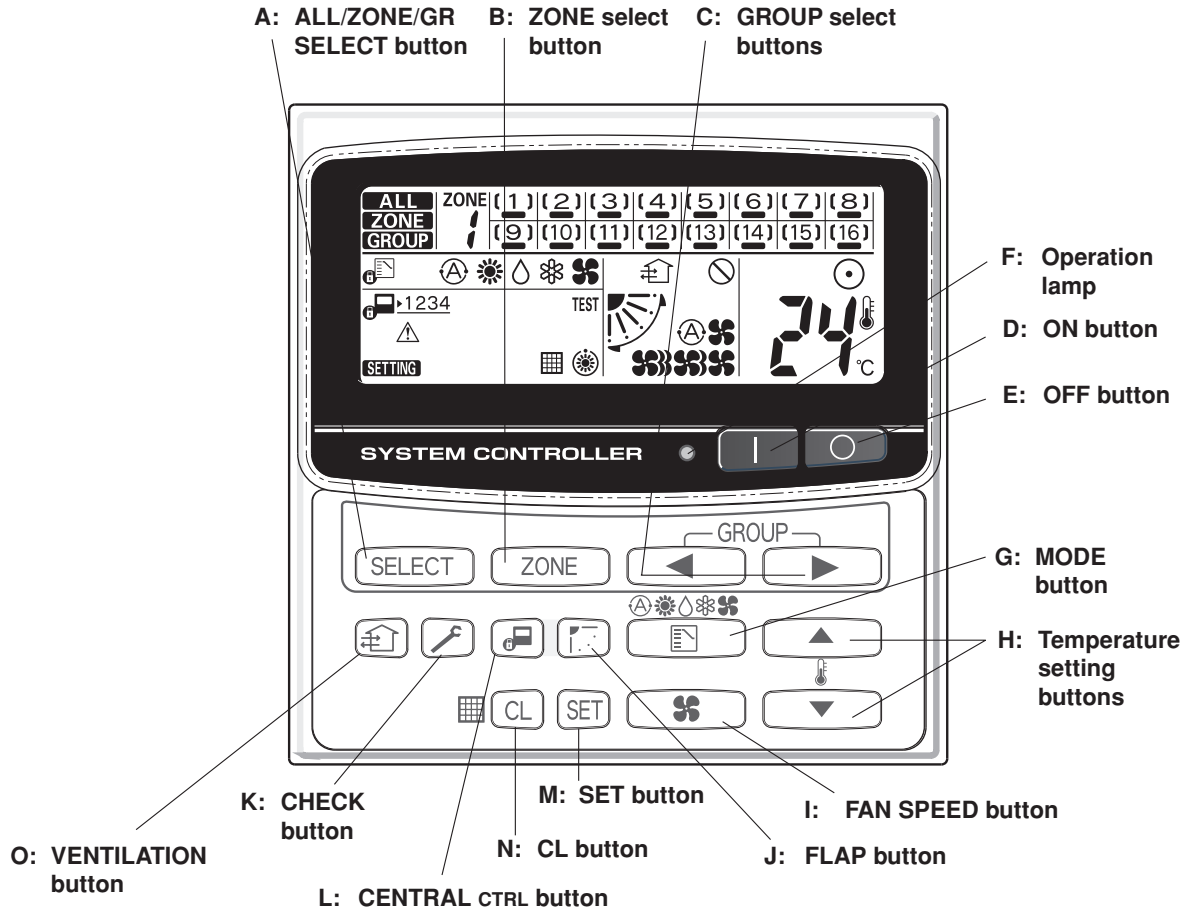
**NOTE**

1. Alarm messages in << >> do not affect other indoor unit operations.
2. Alarm messages in < > sometimes affect other indoor unit operations depending on the fault.

## 4. System Controller / NRSC-FL

### System Controller / NRSC-FL

#### ■ Operation Buttons
























































3

<p><b>A: ALL/ZONE/GR SELECT button</b></p> <p><b>NOTE</b></p>	<p>Use this button to select one of the following:</p> <p><b>ALL:</b> Used for turning all the air conditioners on and off.</p> <p><b>ZONE:</b> Used for turning all the air conditioners of each zone on and off.</p> <p><b>GR:</b> Used for turning all the air conditioners of each group on and off.</p> <p><b>A maximum of 4 zones and 16 groups (units) in a zone can be set.</b></p>
<p><b>B: ZONE select button</b></p>	<p>Use this button to select a zone (1 to 4) to operate individually.</p>
<p><b>C: GROUP select buttons</b></p>	<p>Use these buttons to select a group (1 to 16) to operate individually.</p>











Continued



## 4. System Controller / NRSC-FL

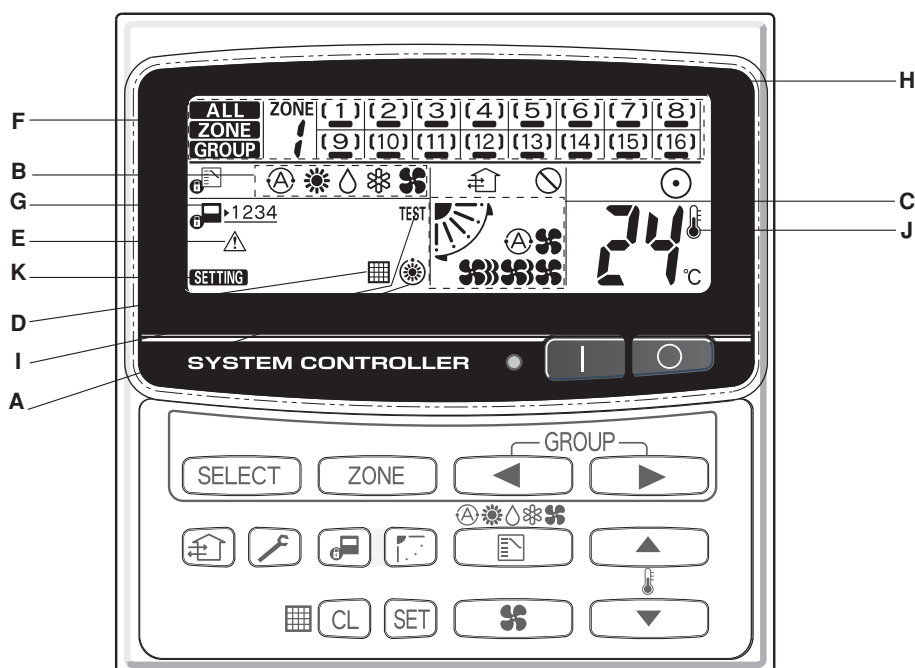
<b>D: ON button</b> 	This button is for turning the selected air conditioner on.												
<b>E: OFF button</b> 	This button is for turning the selected air conditioner off.												
<b>F: Operation lamp</b>	This lamp lights when the unit is turned on.												
<b>G: MODE button</b>  <b>(AUTO)</b>  <b>(HEAT)</b>  <b>(DRY)</b>  <b>(COOL)</b>  <b>(FAN)</b>  <b>NOTE</b>	<p>Use this button to select one of the following 5 operations:</p> <p> : Used to automatically set cooling or heating operation.  <b>Only for heat pump type</b>  (Temperature range: 17 to 27C)</p> <p> : Used for normal heating operation.  <b>Only for heat pump type</b>  (Temperature range: 16 to 26C)</p> <p> : Used for dehumidifying without changing the room temperature.  (Temperature range: 18 to 30C)</p> <p> : Used for normal cooling operation.  (Temperature range: 18 to 30C)</p> <p> : Used to run the fan only, without heating or cooling operation.</p> <p>When the  indication is displayed, you cannot change the mode from  and  or  to  or  and . To change the mode, turn off all units once then select the mode again.</p>												
<b>H: Temperature setting buttons</b>  	 : Press this button to increase the temperature setting.  : Press this button to decrease the temperature setting.												
<b>I: FAN SPEED button</b>  <b>(AUTO)</b>  <b>(HI)</b>  <b>(MED)</b>  <b>(LO)</b> 	<p> : The air conditioner automatically decides the fan speed.</p> <p> : High fan speed</p> <p> : Medium fan speed</p> <p> : Low fan speed</p>												
<b>J: FLAP button</b>  (  )  <b>CAUTION</b> <b>NOTE</b>	<p>1. Use this button to set the airflow direction to a specific angle. The airflow direction is displayed on the remote control unit.</p> <table border="1"> <thead> <tr> <th>Operation mode</th> <th>Number of airflow direction settings</th> </tr> </thead> <tbody> <tr> <td> (COOL) or  (DRY)</td> <td>3</td> </tr> <tr> <td> (HEAT) or  (FAN)</td> <td>5</td> </tr> <tr> <td> (AUTO)</td> <td></td> </tr> <tr> <td>Cooling mode:</td> <td>3</td> </tr> <tr> <td>Heating mode:</td> <td>5</td> </tr> </tbody> </table> <p><b>In the Cool mode and Dry mode, when the flaps are set in a downward position, condensation may form and drip around the vent. Do not move the flap with your hands.</b></p> <p>This function is available only for models NKFL and NPFL.</p>	Operation mode	Number of airflow direction settings	 (COOL) or  (DRY)	3	 (HEAT) or  (FAN)	5	 (AUTO)		Cooling mode:	3	Heating mode:	5
Operation mode	Number of airflow direction settings												
 (COOL) or  (DRY)	3												
 (HEAT) or  (FAN)	5												
 (AUTO)													
Cooling mode:	3												
Heating mode:	5												
 <b>NOTE</b>	<p>2. Use this button to make the airflow direction sweep up and down automatically. Press this button several times until the (  ) symbol appears on the display.</p> <p>This function is available only for models NKFL, NWFL and NPFL.</p>												
<b>NOTE</b>	<p>1) The flap setting can be performed only for units that have no remote controllers.</p> <p>2) In the ALL or ZONE mode, no flap setting can be performed. If necessary, you should select the GR mode and use the FLAP button.</p>												

## 4. System Controller / NRSC-FL










<p><b>K: CHECK button</b> </p> <p> <b>CAUTION</b></p>	<p>This button is used only when servicing the air conditioner.</p> <p><b>Do not use the CHECK button for normal operation.</b></p>
<p><b>L: CENTRAL CTRL button</b> </p>	<p>Use this button to inhibit individual operation by remote controller as follows:</p> <p> 1234</p> <ol style="list-style-type: none"> <li>1: Individual ON/OFF operation is inhibited.</li> <li>2: Individual ON/OFF, MODE and Temperature setting operation is inhibited.</li> <li>3: Individual MODE and Temperature setting operation is inhibited.</li> <li>4: Individual MODE operation is inhibited.</li> </ol> <p>No indication: Central control is cleared. (Individual operation)</p>
<p><b>M: SET button</b> </p> <p><b>NOTE</b></p>	<p>This button is used for setting indoor unit's address when installing the air conditioner.</p> <p><b>Do not use the SET button for normal operation.</b></p>
<p><b>N: CL button</b> </p>	<p>Use this button to reset the filter sign .</p> <p>The air conditioner has the timer for the filter and informs you when the filter needs cleaning.</p>
<p><b>O: VENTILATION button</b> </p>	<p>Use this button when you installed a fan available in the market. Pressing this button turns on and off the fan.</p> <p>When turning off the air conditioner, the fan will also turned off. While the fan is operating,  will appear in the display.</p> <p>If  is displayed when pressing the ventilation button, no fans are installed.</p>

## 4. System Controller / NRSC-FL

### ■ Display



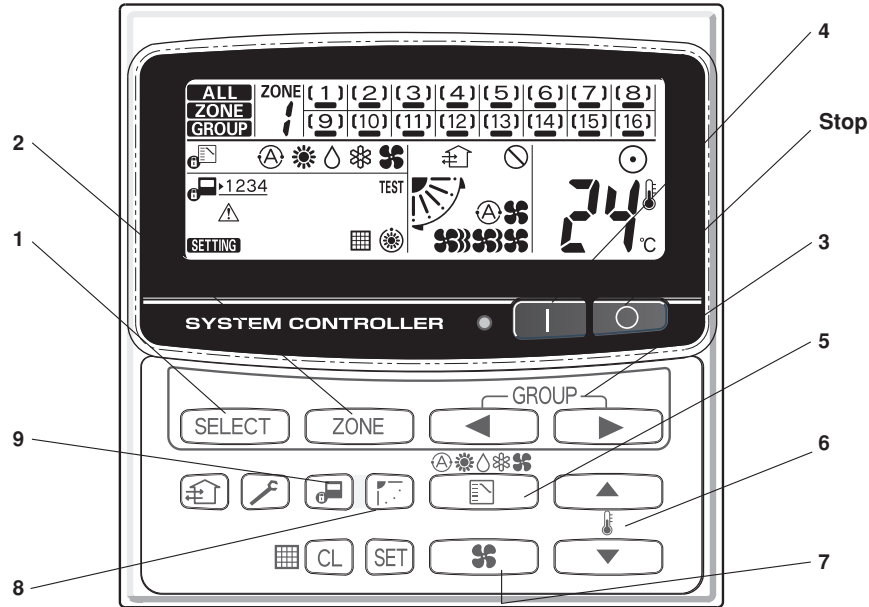
### Description

- A:** When the unit is in heating standby status, the  indicator appears.
- B:** The currently selected operation mode is displayed.
- C:** The currently selected FAN SPEED, Airflow Direction and SWEEP settings are displayed.
- D:** This indication appears when the filter needs cleaning.
- E:** This indication appears only when an abnormality occurs within a unit.
- F:** The currently selected mode (ALL, ZONE or GROUP), ZONE number and GROUP number are displayed.
  -  GROUP number display (no figure: no number registered)
  -  **[5]** GROUP state display (  : registered group,  : currently selected group)
  -  Operation state display (  : on, no sign: off,  : alarm)
- G:** The currently selected central control mode (1, 2, 3 or 4) is displayed.
- H:** Lights when any of the air conditioners under the system control is operating; turns off when none of the air conditioners under the system control is operating. Blinks when any conditioner is operating under abnormal conditions and its protection function is working.
- I:** When the  button is pressed for more than 4 seconds, the TEST indicator appears.
- J:** This indication appears when the temperature is set.
- K:** When turning on the power switch of the system controller, **SETTING** sign blinks for a few minutes. While blinking, any controls using the system controller are inhibited. This is because the system controller is verifying connected groups.

## 4. System Controller / NRSC-FL

### ■ How to Start Group Operation

To start group operation



3

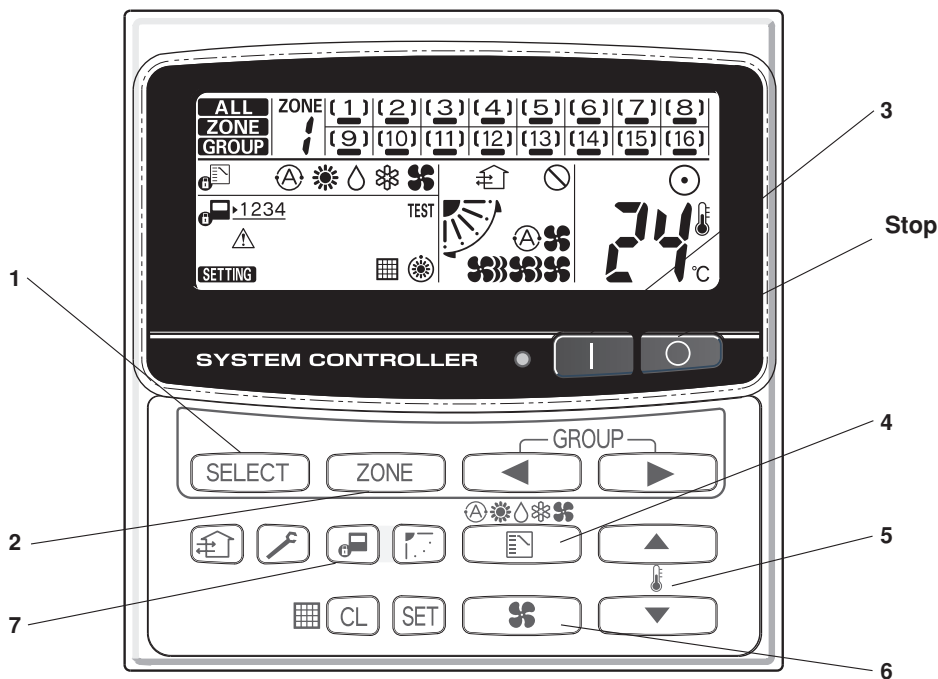
<b>Power</b>	Turn the power supply switch on more than 5 hours before starting operation.
<b>1</b>	Press the SELECT button and select GROUP.
<b>2</b>	Select the ZONE No. including the group to be operated by pressing ZONE button.
<b>3</b>	Select the GROUP No. to be operated by pressing GROUP select buttons ◀ ▶.
<b>4</b>	Press the ON button.
<b>5</b>	Set the operation mode by pressing the MODE button.
<b>6</b>	Set the desired temperature by pressing one of the temperature setting buttons ▲ ▼.
<b>7</b>	Set the desired fan speed by pressing the FAN SPEED button.
<b>8</b>	Set the airflow direction to a specific angle or sweep mode.
<b>9</b>	By pressing , select your desired setting. Individual: Controls with the remote controller are possible. Central 1: Individual ON/OFF operation with the remote controller is inhibited. Central 2: Individual ON/OFF, MODE, and Temp. setting operations with the remote controller are inhibited. Central 3: Individual MODE and Temp. setting operations with the remote controller are inhibited. Central 4: Individual MODE operation with the remote controller is inhibited. • Under Central/Individual settings other than listed above, "CENTRAL" is displayed.
<b>AUTO Operation</b>	Depending on the difference between the temperature setting and the room temperature, heating and cooling alternate automatically so that a uniform room temperature is maintained.
<b>Stop</b>	Confirming the GROUP No. to be selected, press the OFF button.

**NOTE** The flap setting can be performed only for units that have no remote controllers.

## 4. System Controller / NRSC-FL

### ■ How to Start Collective Operation

To start collective operation (ALL or ZONE)



3

<b>Power</b>		Turn the power supply switch on 5 hours or more before starting operation.
<b>1</b>		Press the SELECT button and select ALL or ZONE. In case of ZONE collective operation.
<b>2</b>		Select the ZONE No. to be operated by pressing ZONE button.
<b>3</b>		Press the ON button.
<b>4</b>		Set the operation mode by pressing the MODE button.
<b>5</b>		Set the desired temperature by pressing one of the temperature setting buttons ▲ ▼.
<b>6</b>		Set the desired fan speed by pressing the FAN SPEED button.
<b>7</b>		Select the control mode.
<b>Stop</b>		Confirming the ZONE No. to be selected or ALL indication, press the OFF button.

**NOTE** In the ALL or ZONE mode, no flap setting can be performed. If necessary, you should select the GR mode and use the FLAP button.

## 4. System Controller / NRSC-FL

### ■ How to Install the System Controller

#### Installation site selection

- Install the system controller at a height of between 1 and 1.5 meters above the floor.
- Do not install the system controller in a place where it will be exposed to direct sunlight or near a window or other place where it will be exposed to the outside air.
- Be sure to install the system controller vertically, such as on a wall.



**CAUTION**





- Do not twist the control wiring together with the power wiring or run it through the same metal conduit, because this may cause a malfunction.
- Install the system controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.



**WARNING**

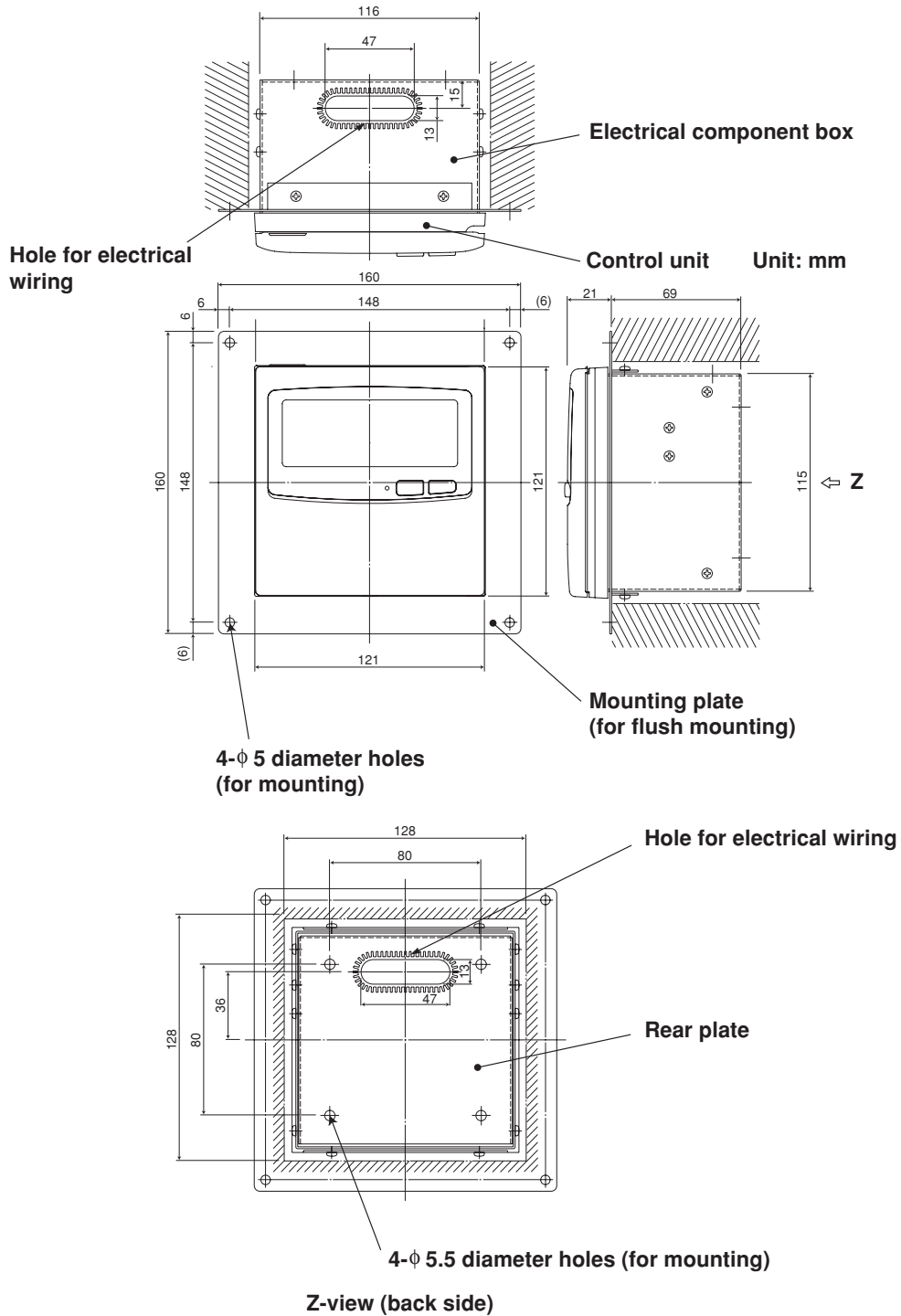
Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.

**3**

Part Name	Figure	Q'ty	Remarks
System controller		1	
Tapping screw	Truss-head Phillips 4 x 16 mm 	4	For securing the system controller
Rawl plug		4	For securing the system controller
Manual		1	For installation
		1	For operation

## 4. System Controller / NRSC-FL

### ■ Overview of the System Controller

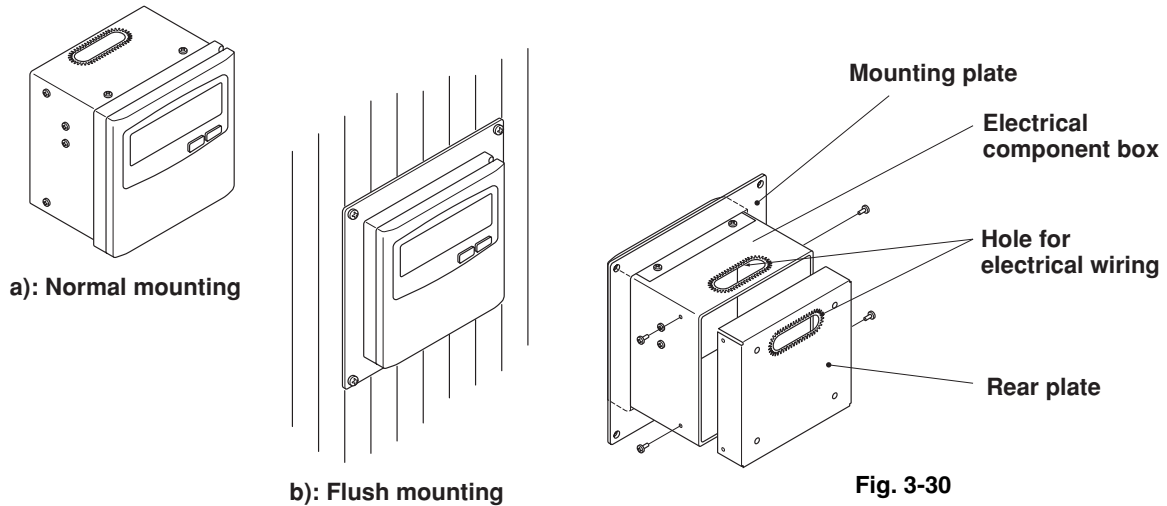


\* In order to mount the system controller flush with the wall, an opening measuring 128 mm x 128 mm is necessary.

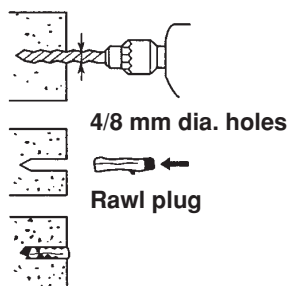
Fig. 3-29

## 4. System Controller / NRSC-FL

### ■ Installation Procedure



1. Decide how the system controller will be mounted: in the normal manner or flush with the wall.
  - a) To mount the system controller in the normal manner, remove the mounting plate. Then reattach the 4 screws to the electrical component box.
  - b) To mount the system controller flush with the wall, make an opening in the wall measuring 128 mm x 128 mm. The opening must be at least 85 mm deep as measured from the outside surface of the wall.
2. Remove the rear plate and connect the electrical wiring.
  - 1) Remove the 4 screws located on both sides of the rear plate.
  - 2) Either the hole in the top of the electrical component box or the hole in the rear plate may be used to feed the electrical wiring.
  - 3) If the hole on top is used, the rear plate should be turned upside down.
3. Secure the system controller in place.
  - a) If the system controller is being mounted in the normal manner, first attach the rear plate to the wall using the screws and Rawl plugs provided. Next, place the body of the system controller over the rear plate and secure it in place using four screws.
  - b) If the system controller is being mounted flush with the wall, fit it through the mounting plate on the wall and secure it in place using the screws and Rawl plugs provided.



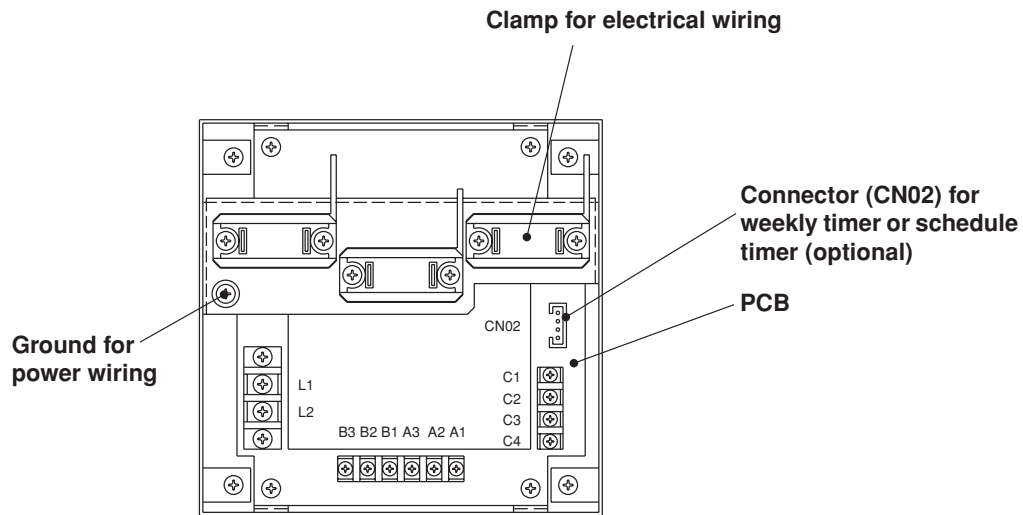
#### NOTE

To mount the system controller on a wall made of cinder block, brick, concrete, or a similar material, drill 4.8 mm diameter holes in the wall and insert Rawl plugs to anchor the mounting screws.



## 4. System Controller / NRSC-FL

### ■ Layout of Electrical Terminals



3

#### How to connect electrical wiring

##### 1) Basic wiring

L1:   Power supply ( $\sim$  50 Hz/60 Hz, 220 – 240 VAC)

L2:  

C1:   Inter-unit control wiring (Low voltage)

C2:  

C3: Auxiliary

C4: Ground for inter-unit control wiring

##### 2) Terminals for remote monitoring

A1: Input for turning ON air conditioners concurrently

A2: Input for turning OFF air conditioners concurrently

A3: Common input for turning air conditioners ON or OFF

B1: On operation state indicator output

B2: Alarm indicator output

B3: Common indicator output

Fig. 3-31

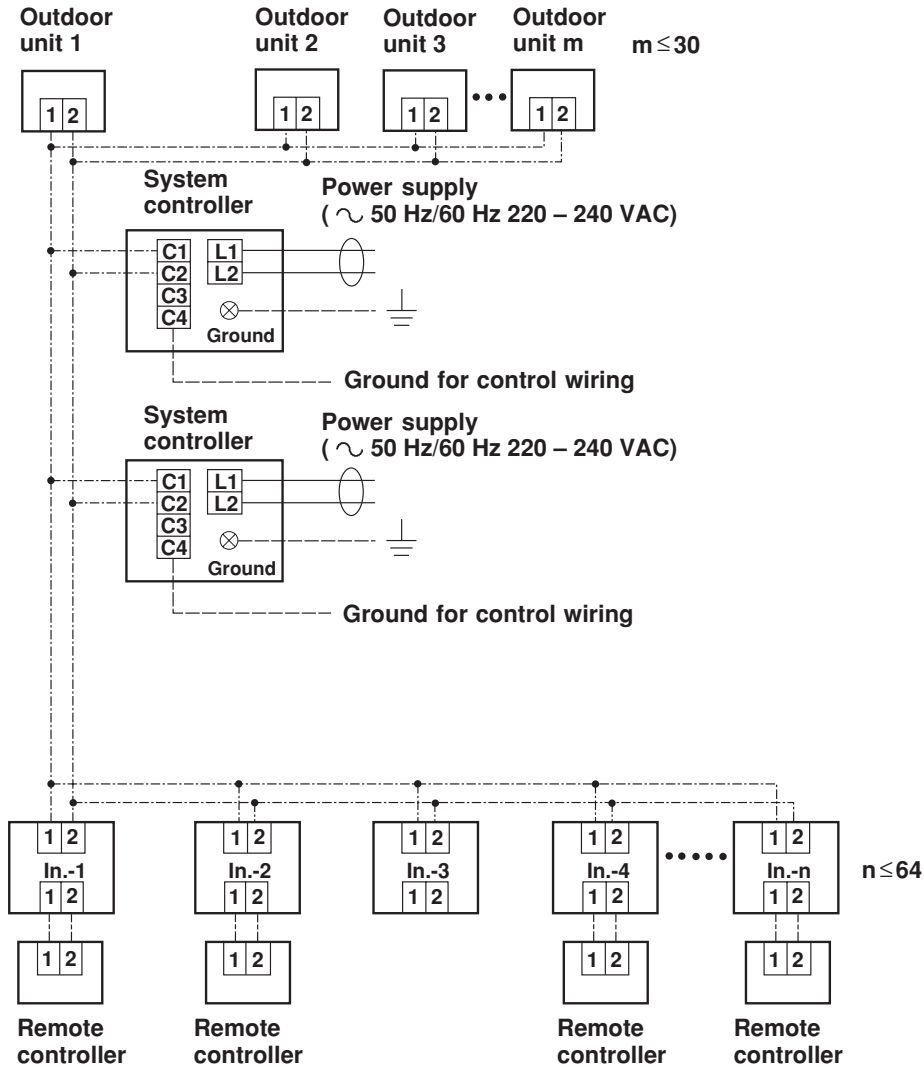
## 4. System Controller / NRSC-FL

### ■ Basic Wiring Diagram



**CAUTION**

Ensure that wiring connections are correct. (Incorrect wiring will damage the equipment.)



3

**NOTE**

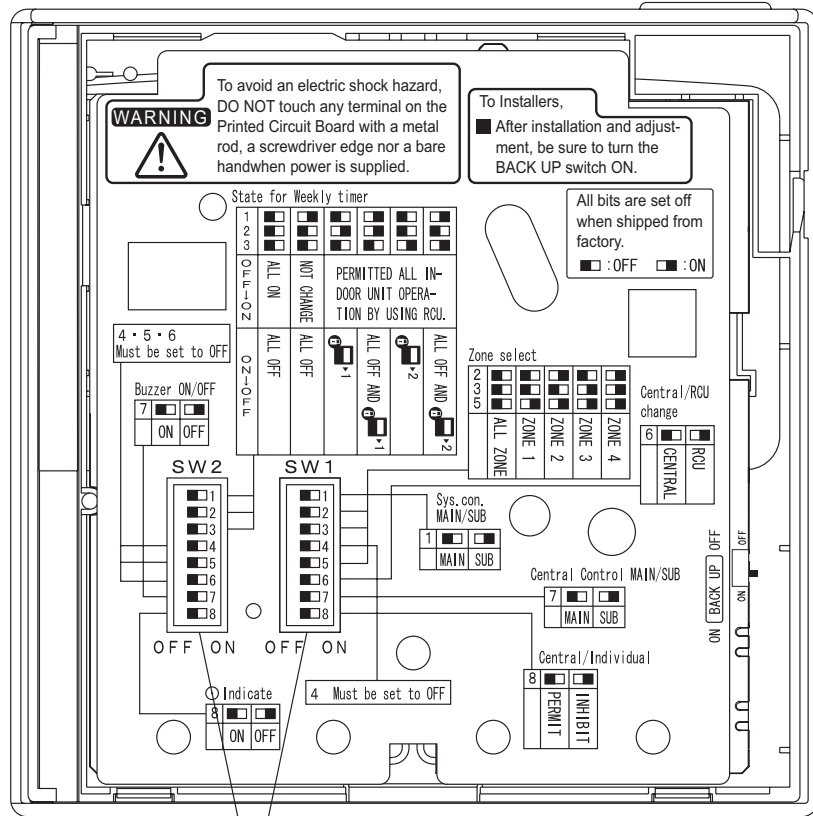
1. Lines consisting of dots and dashes (-----) indicate inter-unit control wirings.
2. In. means indoor unit.
3. Up to 2 system controllers may be connected to 1 control line system.

Fig. 3-32

## 4. System Controller / NRSC-FL

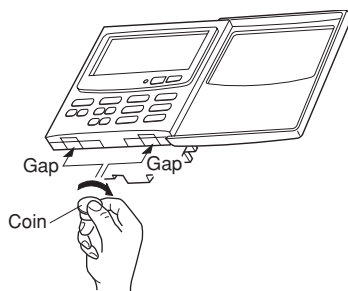
### ■ Address Switch Setting

3



PCB of the control unit

Dip switches

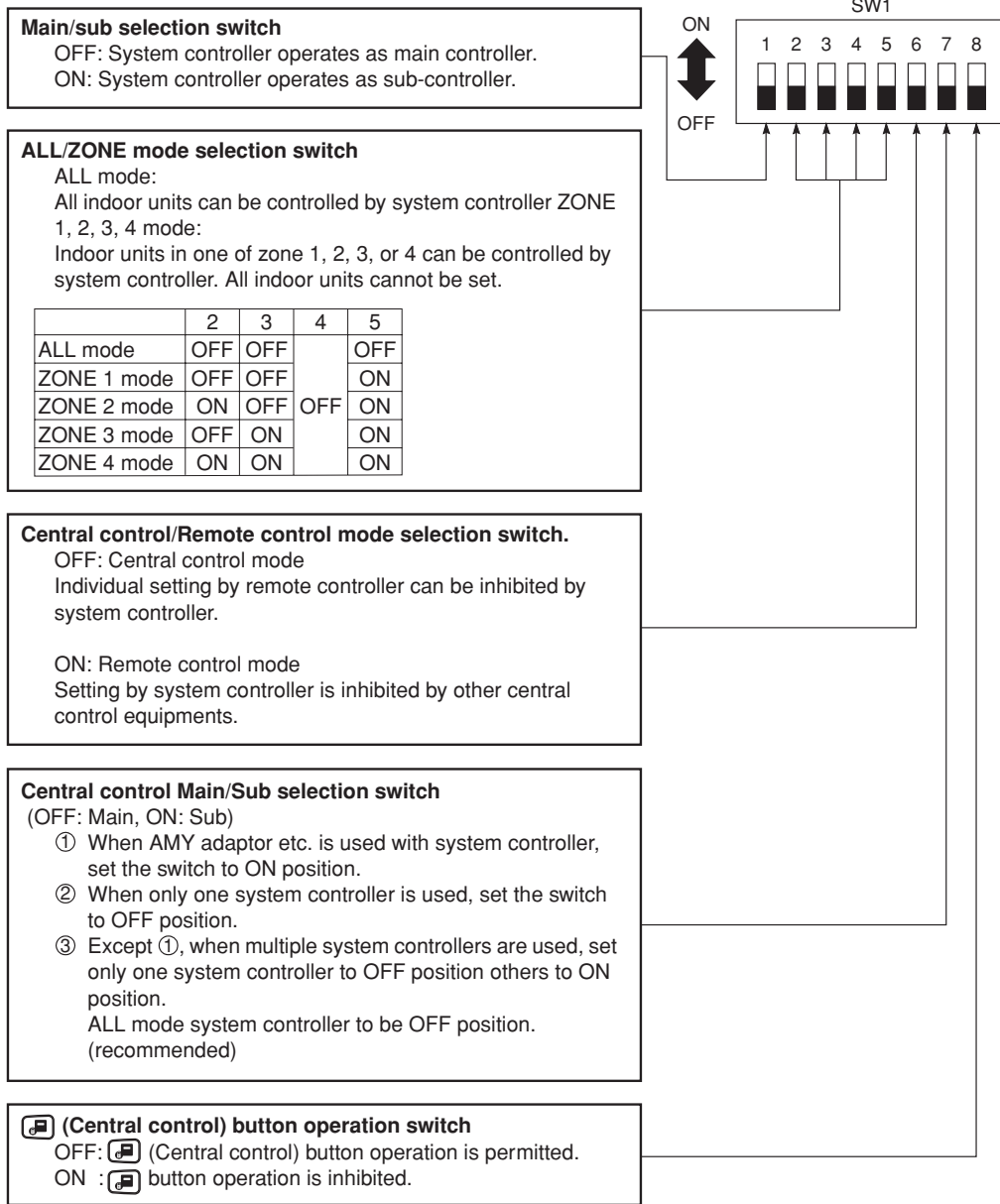


#### How to reach the PCB

Remove the flat-top screw on the bottom of the back case. When you open up the decorative cover, you will see 2 notches under the control unit. Inset a coin or other flat object into these notches and pry off the back case. The PCB on the back of the control unit is now visible.

## 4. System Controller / NRSC-FL

SW1



\*All switches are in OFF position at shipment.

3

Fig. 3-33

### 4. System Controller / NRSC-FL

SW2

3

**Weekly timer input switches.**  
System controller operation can be set when weekly timer activates (ON/OFF).

System controller operation	Switch No.	Switch No.				
		1	2	3		
① All ON	Timer OFF→ON	All OFF	Timer ON→OFF	OFF	OFF	OFF
② No change	Timer OFF→ON	All OFF	Timer ON→OFF	ON	OFF	OFF
③ Individual control of all indoor units to be permitted	Timer OFF→ON	All indoor units to be  1*1	Timer ON→OFF	OFF	ON	OFF
④ Ditto	Timer OFF→ON	All OFF and all indoor units to be  1*1	Timer ON→OFF	ON	ON	OFF
⑤ Ditto	Timer OFF→ON	All indoor units to be  2*2	Timer ON→OFF	OFF	OFF	ON
⑥ Ditto	Timer OFF→ON	All OFF and all indoor units to be  2*2	Timer ON→OFF	ON	OFF	ON

In case of Remote control mode, use ① or ②.  
In case of ZONE 1, 2, 3, 4 mode, ALL, all indoor units means one of ZONE 1, 2, 3, 4.  
\*1: 1 (Central control 1) means ON/OFF operation cannot execute by remote controller.  
\*2: 2 (Central control 2) means ON/OFF, MODE change. Temp. setting cannot be executed by remote controller.

- Auxilliary switch**  
Must be set to OFF position.
- Beep tone switch**  
OFF: Beep tone when each button is pushed.  
ON: No tone when each button is pushed.
- Indication switch**  
Normally set to OFF position.  
When set to ON position, indication is not displayed on LCD of system controller.

\*All switches are in OFF position at shipment.

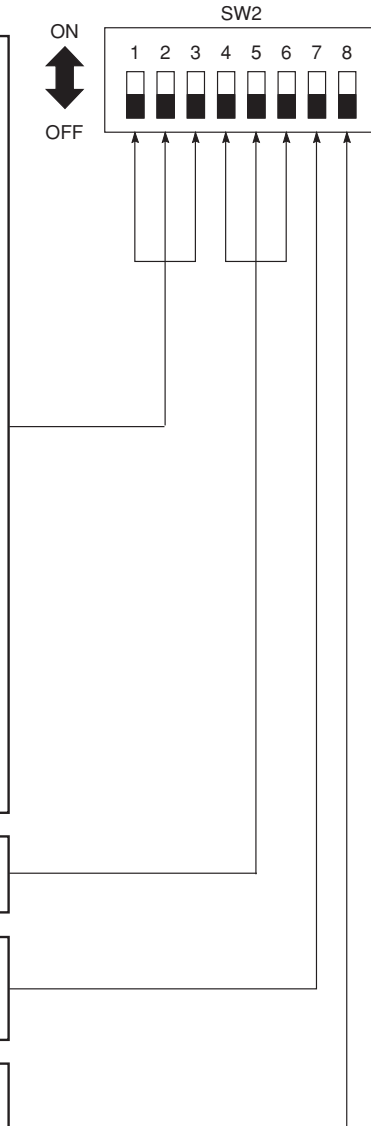


Fig. 3-34

## 4. System Controller / NRSC-FL

### ■ Mode Setting

According to function of each system controller, set SW1 as Fig. 3-35.

(1) Central control/Remote control mode

**Central control mode**

System controller is used as central control equipment.

Individual setting by remote controller can be inhibited by system controller

**Remote control mode**

System controller is used as remote controller. Setting by system controller is inhibited by other central control equipments.

(2) ALL/ZONE mode

**ALL mode**

All indoor units can be controlled by system controller.

**ZONE mode**

Indoor units in one of ZONE 1, 2, 3 or 4 can be controlled by system controller

(3) Function of system controller is 10 types according to combination of central control/remote control mode and ALL/ZONE mode setting as given in table 1.

(4) Affix the system controller unit label in a conspicuous position.

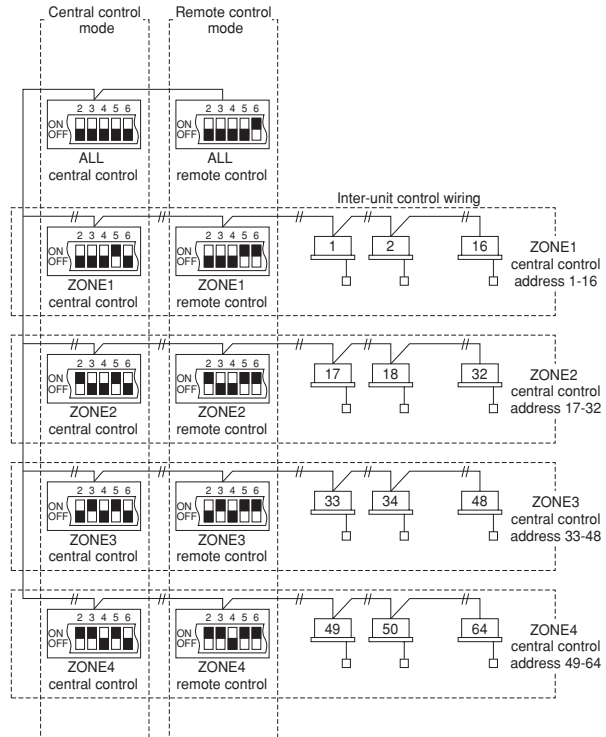


Fig. 3-35

Table 1

	Central control	Remote control
ALL	1. ALL/Central	6. ALL/Remote
ZONE1	2. ZONE1/Central	7. ZONE1/Remote
ZONE2	3. ZONE2/Central	8. ZONE2/Remote
ZONE3	4. ZONE3/Central	9. ZONE3/Remote
ZONE4	5. ZONE4/Central	10. ZONE4/Remote

## 4. System Controller / NRSC-FL

### ■ How to Perform Zone Registration

To operate the system controller properly, zone registration is required after finishing the test run (and after setting all indoor unit addresses) using one of the following methods.

- (a) Zone registration using the remote controller (RCIRK-FL)  
Refer to page III-55
- (b) Zone registration using the system controller (NRSC-FL)  
Refer to page III-56
- (c) Automatic zone registration using the system controller (NRSC-FL)  
Refer to page III-56

For methods (a) and (b), you should make a zone registration table manually before performing the registration. Use the form on page III-56 for this.

For method (c), zone registration is executed automatically, proceeding from small indoor unit addresses and small central addresses to larger numbers in numerical order. For example:

Central address	1	2	3	4	5	6	
ZONE-group	1-1	1-2	1-3	1-4	1-5	1-6	
Indoor unit address	1-1	1-2	2-1	2-2	2-3	3-1	

#### NOTE

1. An indoor unit address is assigned to each indoor unit during automatic address operation. Each indoor unit address combines an R.C. address and indoor unit number as follows:

1-1 : Indoor unit address (UNIT No.)  
   ↑   ↑  
   R.C. address Indoor unit No.

This address is displayed on remote controller for UNIT No. when the UNIT button is pressed.

2. The central address represents the zone and group number. These addressed are assigned in ascending numerical order.

## 4. System Controller / NRSC-FL

■ Zone Registration Table

ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location	ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location
1	1	1			3	1	33		
	2	2				2	34		
	3	3				3	35		
	4	4				4	36		
	5	5				5	37		
	6	6				6	38		
	7	7				7	39		
	8	8				8	40		
	9	9				9	41		
	10	10				10	42		
	11	11				11	43		
	12	12				12	44		
	13	13				13	45		
	14	14				14	46		
	15	15				15	47		
	16	16				16	48		
2	1	17			4	1	49		
	2	18				2	50		
	3	19				3	51		
	4	20				4	52		
	5	21				5	53		
	6	22				6	54		
	7	23				7	55		
	8	24				8	56		
	9	25				9	57		
	10	26				10	58		
	11	27				11	59		
	12	28				12	60		
	13	29				13	61		
	14	30				14	62		
	15	31				15	63		
	16	32				16	64		

**NOTE**

- Assign indoor unit addresses to the desired positions (central addresses) manually.
- For group control, only the main indoor unit should be assigned. Sub indoor units cannot be assigned.



## 4. System Controller / NRSC-FL

### (a) Zone registration using the remote controller (NRCG-FL)





(Determination of central address)

In this case, after confirming which indoor unit is connected to the remote controller and that the air conditioner in the OFF state, you set the central addresses one at a time.


If the system has no remote controller, connect a remote controller to the system temporarily. Then follow this procedure.

#### NOTE

The indoor unit address must already have been set before performing zone registration. If necessary, refer to the Installation Manual supplied with the outdoor unit.

- (1) Press the  and  buttons at the same time of the remote controller for more than 4 seconds.
- (2) Do not press  button.
- (3) Once in this mode, the UNIT No., CODE No., No. of SET DATA and  indications will flash on the display as shown Fig. 3-36.







#### NOTE

In case of group control "ALL" instead of "UNIT No." will flash on the display. Select the main indoor unit address by pressing the  button once.

- (4) Set CODE No. to 03 using the  and  (  ) buttons.

#### NOTE

The CODE No. 03 must be selected to perform zone registration using the remote controller.

- (5) Set the Central address which you want to assign to the indoor unit address using the  and  (  ) buttons according to the zone registration table.
- (6) Press the  button. The CODE No. and Central address changes from flashing to ON state. If you make mistake, then press the  button and reset the central address.
- (7) Press the  button to finish zone registration.

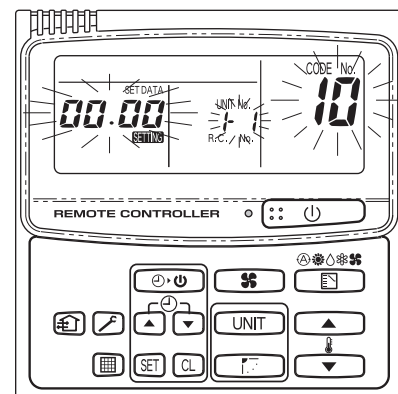
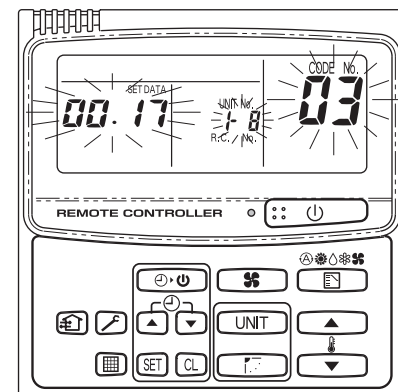


Fig. 3-36



For example, in this case  
 Indoor unit address: 1-8  
 Central address : 17 (ZONE 2, GROUP 1)

Fig. 3-37

## 4. System Controller / NRSC-FL

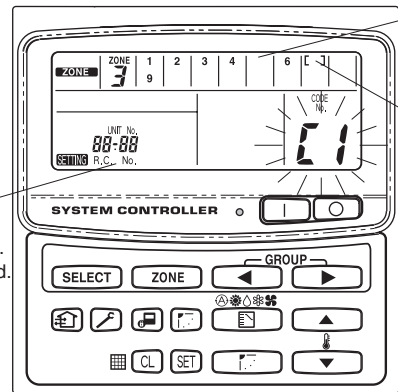
### (b) Zone registration using the system controller (NRSC-FL)

† In this case, you set all Central addresses by system controller at once manually.

- (1) Press the and buttons at the same time for more than 4 seconds.  
 and CODE No. C1 will flash.
- (2) After confirming that CODE No. C1 is displayed, press the button. Once in this mode, a change takes place as Fig. 3-38.
- (3) Select the zone and group No. which you want to set with and (GROUP) buttons. If already set, press the button.
- (4) Set the unit No. (Indoor unit address) with and buttons, according to the zone registration table.

R.C. No. .... button  
Indoor unit No..... button

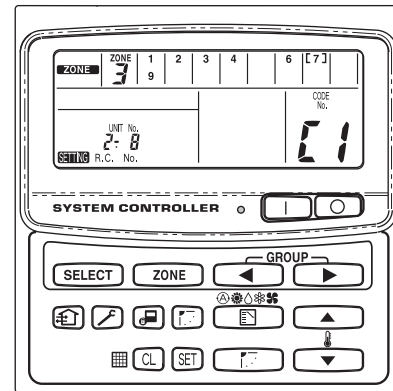
- (5) Press the button.  
GROUP No. turns ON and UNIT No. (Indoor unit address) changes from flashing to ON state. UNIT No. is registered to selected ZONE No. and GROUP No.  
If you make a mistake, then press the button and reselect the ZONE, GROUP and UNIT No.
- (6) Register the other UNIT Nos. in the same way by following the steps (3) to (5).
- (7) Finally, complete the registration by pressing the button.  
 flashes for a few minutes, then goes OFF.



If data is registered the unit No. is displayed.

If no data is registered no number is displayed. Selected group No. if no data is registered.

Fig. 3-38



For example, in the case at left  
Zone 3, group No. 7  
Unit No. (indoor unit address) 2-8  
Unit No. 2-8 is registered to zone 3-group 7.

Fig. 3-39

### (c) Automatic zone registration using the system controller (NRSC-FL)

- (1) Press the and buttons at the same time for more than 4 seconds.  
 and CODE No. C1 will flash.
- (2) Select CODE. No. C2 by pressing and ( ) button and press the button.  
C2 changes from flashing to ON state and automatic zone registration will start.
- (3) All registered GROUP Nos. will disappear.
- (4) Central addresses will be assigned from small indoor unit addresses to large addresses in numerical order automatically.  
After automatic zone registration is completed, changes from flashing to OFF.
- (5) If an error occurs "CHECK" starts flashing and zone registration finishes at this time. Press the button.
- (6) Finally, complete automatic zone registration mode by pressing the button.  
 flashes for a few minutes, then goes OFF.

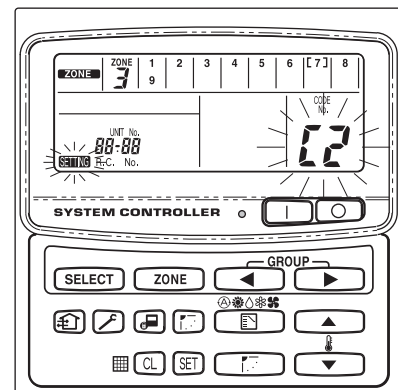


















Fig. 3-40

## 4. System Controller / NRSC-FL

### ■ How to Check Overlapping of Central Address Nos.

- (1) Press the  and  buttons at the same time for more than 4 seconds.  
 and CODE No. C1 will flash.
- (2) Select CODE. No. C3 by pressing ,  (  ) button and press the  button.  
 C3 changes from flashing to ON state and  will flash. Then auto. overlap checking will start.
- (3) If C3 changes from ON to flashing and  stops flashing and disappears, there is no overlapping.  
 Then complete the auto overlap checking mode by pressing the  button.
- (4) If some of GROUP No., ZONE No. and UNIT No. flash, you should try again the zone registration.
  - ① Select CODE No. C1 by pressing ,  (  ) button and press the  button.
  - ② Select the flashing GROUP No. with ZONE and GROUP button. Then press the  button and reselect the ZONE, GROUP and UNIT No.
  - ③ Then complete the auto. overlap checking mode by pressing the  button.

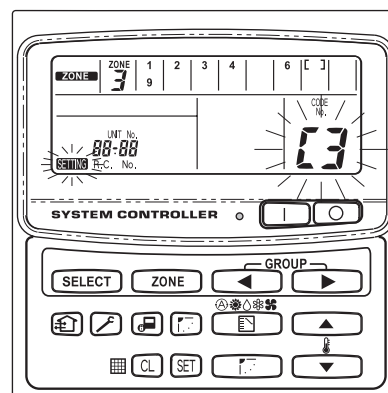



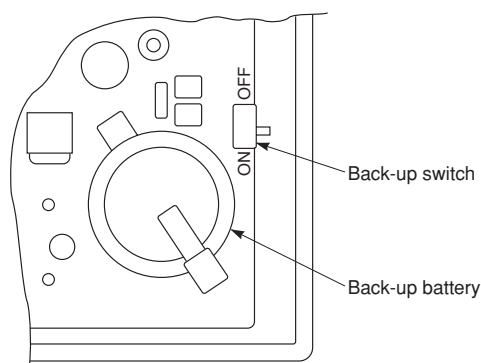
Fig. 3-41

3

### ■ Test Run

- (1) Supply power to all indoor units. Next, power on the system controller.  
 will flash, checking the indoor unit address automatically.
- (2) If group No. displayed on system controller is not same as indoor unit No.\* which is connected, see Fig. 7 and do the setting again.

\*In case of group control, main unit No. only.

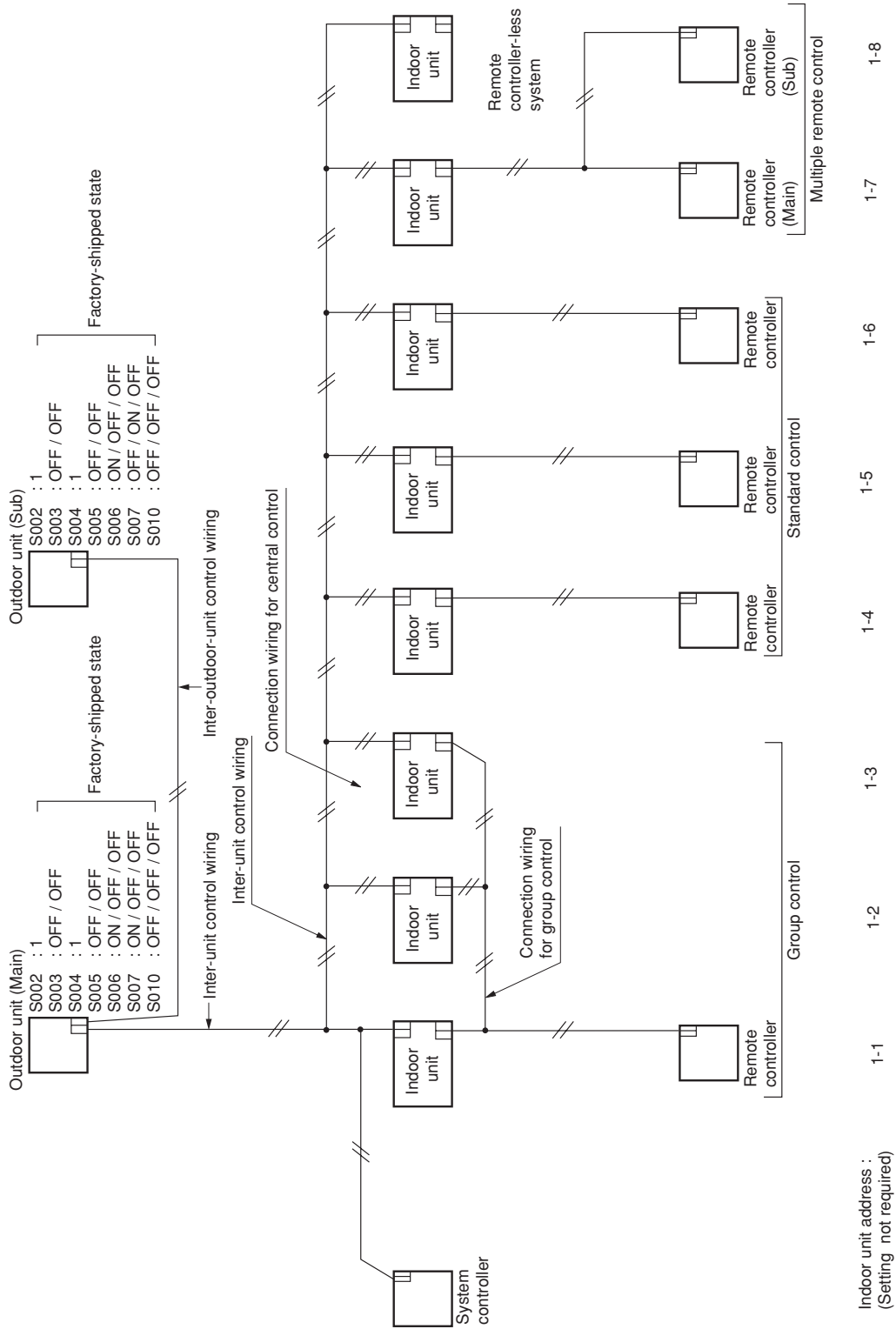


## 4. System Controller / NRSC-FL

### ■ System Examples

The following diagrams show system examples and the correct setting of the switches on the PCB.

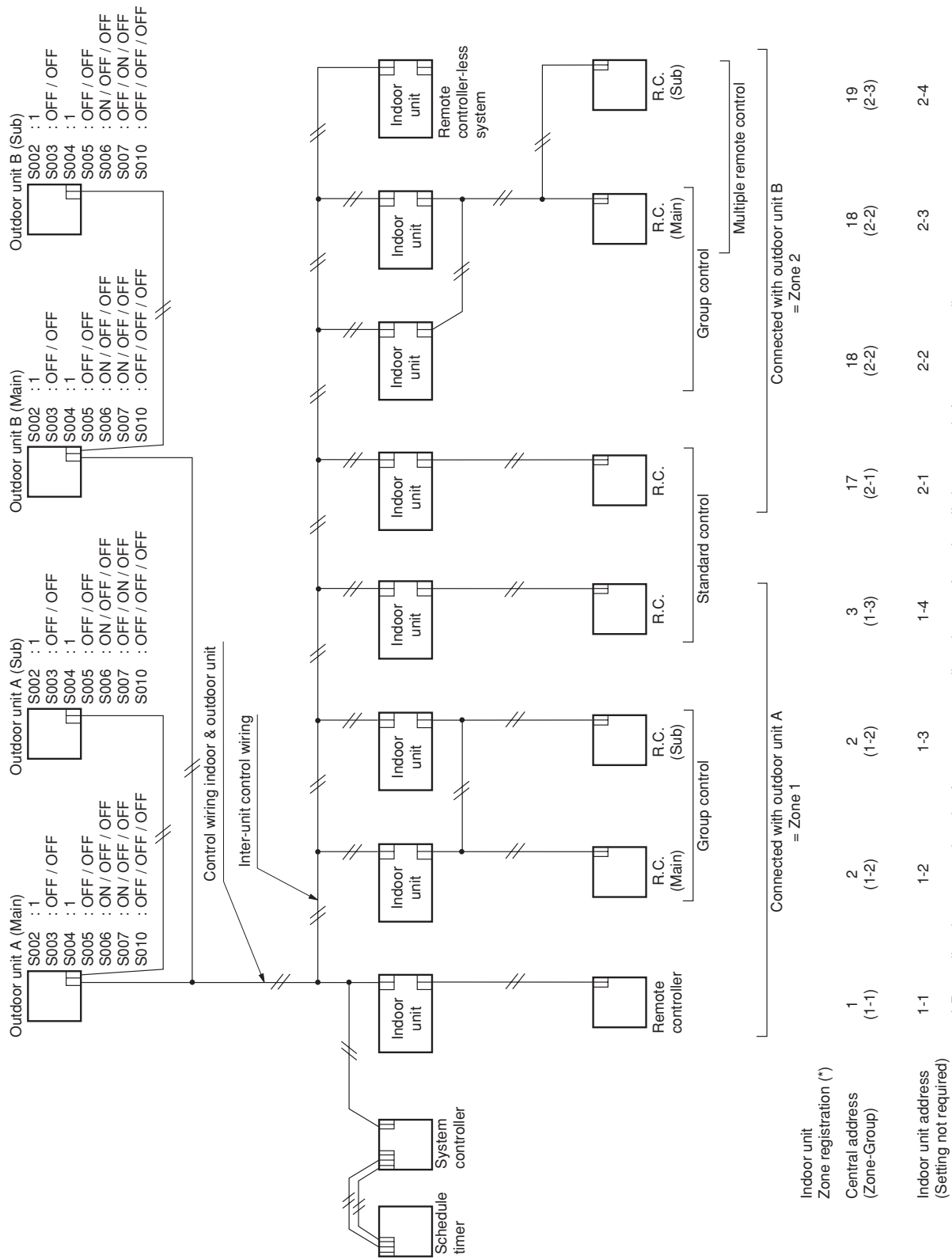
(1) For a system without link



### 4. System Controller / NRSC-FL

(2) For a system with link

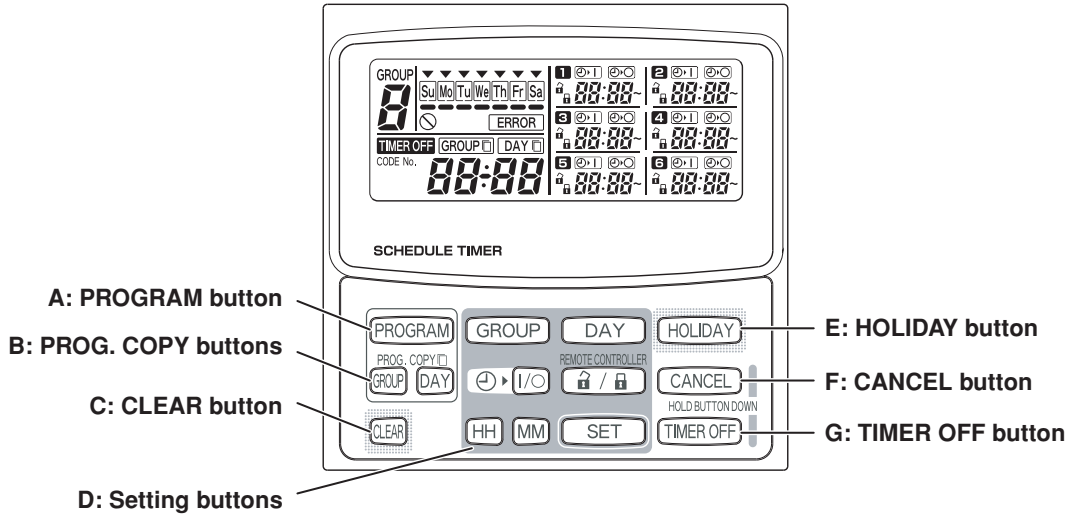
**3**



## 5. Schedule Timer / NWTM-FL


### Schedule Timer / NWTM-FL

#### ■ Operation Buttons



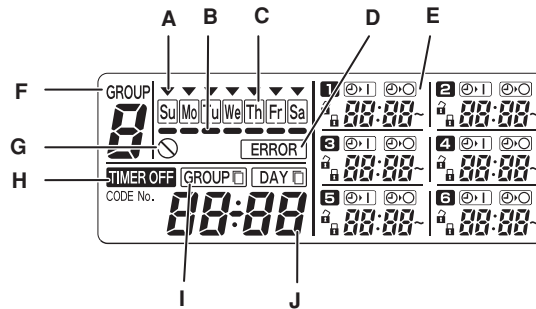
3

<b>A: PROGRAM button</b>	Use to start setting programs and to enter program settings.
<b>B: PROG. COPY buttons</b>	Use to copy programs to groups or specific days in a schedule.
<b>C: CLEAR button</b>	Press to clear the settings of the currently displayed program. <ul style="list-style-type: none"> <li>The current program is not cleared unless the <b>PROGRAM</b> button is pressed after pressing the CLEAR button.</li> </ul>
<b>D: Setting buttons</b>	Use to make program settings and to set the present time. <ul style="list-style-type: none"> <li><b>GROUP</b>: Press to set groups for programmed operation.</li> <li><b>DAY</b>: Press to set today's day and days of programmed operation.</li> <li><b>HH</b> <b>MM</b>: Press to set the present time and times used in programmed operation.</li> <li><b>I/O</b>: Use to start/stop indoor units via the timer.</li> <li><b>REMOTE CONTROLLER</b>: Use to enable/disable remote controller operation via the timer.</li> <li><b>SET</b>: Use to set programmed operation trigger time.                     <ul style="list-style-type: none"> <li>Program settings are not entered unless the <b>PROGRAM</b> button is pressed at the end of setting operations.</li> </ul> </li> </ul>
<b>E: HOLIDAY button</b>	Press to set and cancel holidays during a scheduled week of operation.
<b>F: CANCEL button</b>	Press to cancel the current program setting operation, copying operation or holiday setting operation. When the CANCEL button is held down for 2 seconds, the current setting operation or copying operation is canceled and the normal display returns.
<b>G: TIMER OFF button</b>	Press to turn the timer OFF when timer operation will not be used for a long period of time. When this button is held down for 2 seconds, <b>TIMER OFF</b> appears on the display. Programs cannot be run until the button is again held down for 2 seconds.

- Some of the above features are disabled when the unit is installed. If the button of a disabled feature is pressed,  appears on the display. For more information, contact your dealer.

## 5. Schedule Timer / NWTM-FL

### ■ Display



3

<b>A: Today's day of the week (▼)</b>	Indicates today's day of the week.
<b>B: Program schedule indication (▬)</b>	Appears under days that are scheduled for program operation.
<b>C: Holiday schedule indication (□)</b>	Appears around scheduled holidays.
<b>D: ERROR indication</b>	Displayed when a mistake is made during timer setting.
<b>E: Timer program</b>	Displays set timer programs. Also, indicates the copy source/destination during group program copying.
<b>F: Group No.</b>	Up to 8 groups can be selected and displayed.
<b>G: ⊘ (Disabled Feature) indication</b>	Displayed if the selected feature was disabled during installation.
<b>H: TIMER OFF indication</b>	Displayed when the timer has been turned OFF.
<b>I: Copy mode indication</b>	Displayed when copying a program into a group or day of the schedule.
<b>J: Present time</b>	Displays the present time on a 24-hour clock. Also, displays settings in the various setting modes.

### ■ Using the Schedule Timer

To use the schedule timer, follow the steps below.

**STEP 1 Turn ON power to the air conditioner.**

- Turn ON power to the air conditioner connected to the schedule timer. The schedule timer performs initial communications with the indoor units, during which **5E An** blinks on the display.

**NOTE**

Do not turn off the power mains in heating and cooling seasons. (This keeps the crankcase heater electricity turned on, which protects the compressor at startup.) If the air conditioner has been OFF for a long period of time, turn on power 5 hours before starting operation.

**STEP 2 Make the initial settings of the schedule timer.**

- Set the present time and today's day of the week. (Refer to page III-64.)

**STEP 3 Set up programs of the schedule timer.**

- Make settings for programmed operation. (Refer to page III-77.)

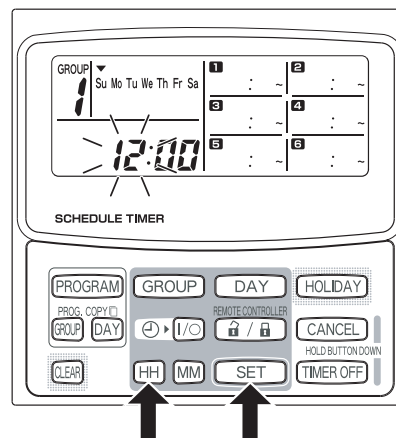
## 5. Schedule Timer / NWTM-FL

### ■ Setting the Present Time

Set the present time. (Example: When the present time is 12:45)

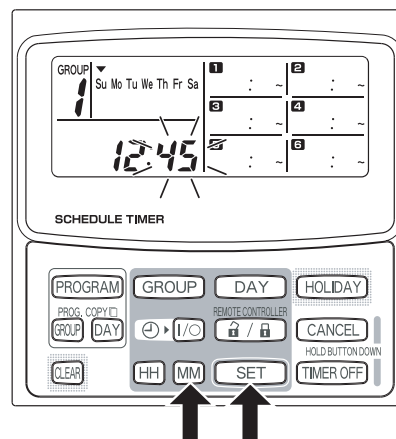
#### STEP 1 Hold down the SET button and press the HH button to set the hour.

- The hour increases one hour at a time with each single press of the HH button while the SET button is held down.
- The hour scrolls rapidly when both the SET button and HH button are held down. (Example: To set 12:00, release the HH button when "12" is displayed.)
- When the SET button is released, the hour is set and the indication changes from blinking to lighting.



#### STEP 2 Hold down the SET button and press the MM button to set the minutes.

- The minutes increase one minute at a time with each single press of the MM button while the SET button is held down.
- The minutes scroll rapidly when both the SET button and MM button are held down. (Example: To set 00:45, release the MM button when "45" is displayed.)
- When the SET button is released, the minutes are set and the indication changes from blinking to lighting.



#### NOTE

- Pressing just the HH or MM button does not change the time.



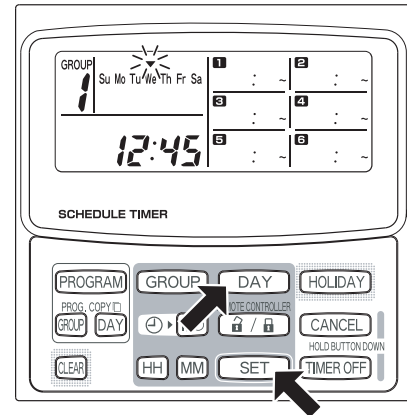
## 5. Schedule Timer / NWTM-FL

### ■ Setting Today's Day of the Week

Set today's day of the week. (Example: When today is Wednesday)

**STEP 1** Hold down the SET button and press the DAY button to set today's day of the week.

- ▼ blinks and moves one day at a time across the days of the week with each single press of the DAY button while the SET button is held down.
- When the SET button is released, the day of the week is set and the ▼ changes from blinking to lighting.



3

#### NOTE

- Pressing just the DAY button does not change the day of the week.

## 5. Schedule Timer / NWTM-FL

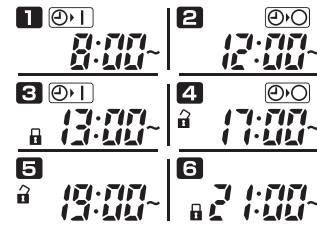
### ■ Setting Up Programmed Operations

Correctly set the present time and today's day of the week.

Unless both are correctly set, the programs will not run as expected.

- Up to 6 programmed operations can be set per day for each group and day of the week.
- A combination of the below operations can be set for each timer program.
  - Air conditioner starting/stopping
  - Remote controller operation enable/disable \*1
- To change the settings of an existing program, use the same procedure used to set up a new program as below.

Example settings



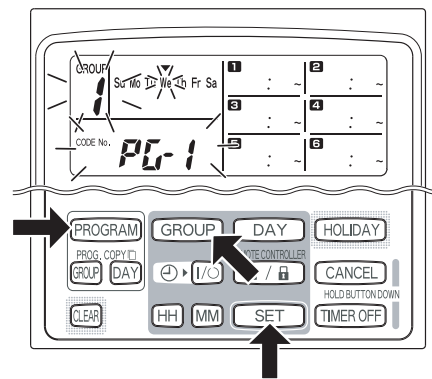
- \*1 The remote controller operation enable/disable setting is disabled depending on installation conditions. If so, appears on the display when the button is pressed.  
For more information, contact your dealer.

#### STEP 1 Press the PROGRAM button to select a group.

- When the PROGRAM button is pressed, the group No. and today's day of the week start blinking and the present time indication changes to a blinking "PG-1".
- Press the GROUP button to select a group for programmed operation and then press the SET button.

#### NOTE

- Group selection is disabled depending on installation conditions. If so, proceed to the next step.
- The number of selectable groups is set during installation.

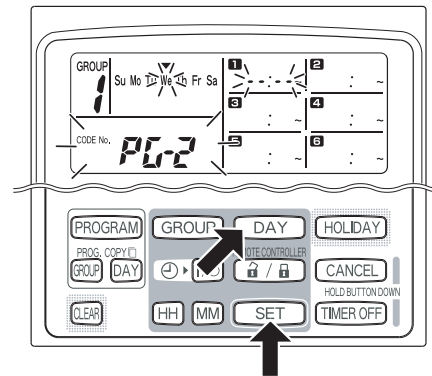


#### STEP 2 Press the DAY button and select a day of the week for programmed operation.

- When the SET button is pressed, the program schedule marker () changes from blinking to lighting and, at the same time, the time set in program **1** starts blinking. Also, the present time indication changes to a blinking "PG-2".

#### NOTE

- The currently selected day of the week blinks slowly at this time.



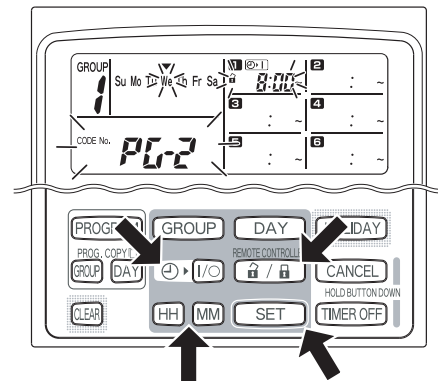
## 5. Schedule Timer / NWTM-FL

### STEP 3 Set up the program and press the SET button.

- Select timer operation with the  $\odot \triangleright$  I/O (timer ON/OFF) button and  $\hat{\square} / \square$  (remote controller operation enable/disable) button. Then, set the trigger time with the HH and MM buttons, and press the SET button.
- When the SET button is pressed, the time set in program **1** changes from blinking to lighting and, at the same time, the time set in program **2** starts blinking.

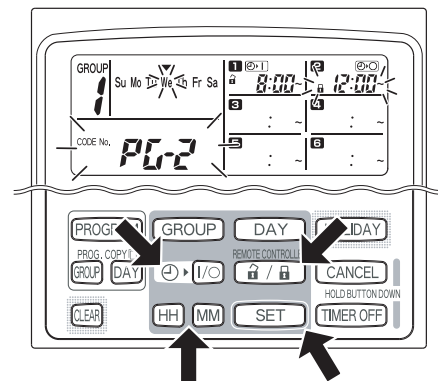
#### NOTE

- Every time the  $\odot \triangleright$  I/O button is pressed, the timer indication changes in the order of  $\odot \triangleright$  I (ON)  $\odot \circ$  (OFF) no indication.
- Every time the  $\hat{\square} / \square$  button is pressed, the remote controller indication changes in the order of  $\hat{\square}$  (enabled)  $\square$  (disabled) no indication.
- The remote control operation enable/disable setting is disabled depending on installation conditions. In this case, only timer ON/OFF can be set.



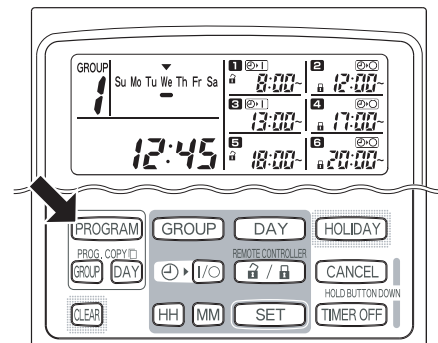
### STEP 4 Set up programs **2** ~ **6** in the same way.

- When the SET button is pressed, settings are automatically arranged in the order of earliest time first.
- If the SET button is pressed without any new settings being made in the program, program **1** starts blinking again and settings can be changed.
- Similarly, if the SET button is pressed after setting up program **6**, program **1** starts blinking again.



### STEP 5 Press the PROGRAM button.

- Program settings are entered and the normal display returns.



### STEP 6 Set up programmed operation for other groups and days of the week in the same way.

Programs that have already been set up can be copied into other groups and days of the week. (Refer to page III-68.)

#### NOTE

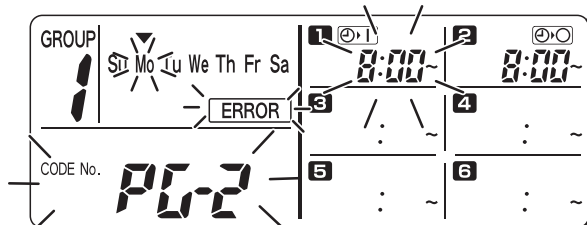
- A "0:00" time setting is interpreted to mean 12:00 midnight.
- To cancel program settings during program setup (while "PG-1" or "PG-2" is blinking on the display), hold down the CANCEL button for more than 2 seconds. The normal display returns.
- If settings are canceled without pressing the PROGRAM button, settings are not entered.

## 5. Schedule Timer / NWTM-FL

### ■ Setting Errors

If time is set as shown below while setting up a program, "ERROR" is displayed (the **ERROR** indication blinks). Therefore, correct the time setting.

#### If Program Times are the Same



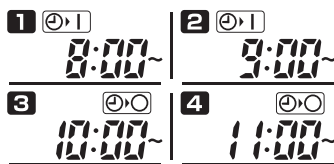
- STEP 1** Every time the SET button is pressed, the setting mode switches between programmed operations of the same time setting (1 and 2 in the above example), therefore select the time setting to correct.
- STEP 2** Change the time setting with the HH and MM buttons so that the times are no longer the same.
- STEP 3** Press the SET button and check "ERROR" is not displayed.
- STEP 4** Press the PROGRAM button to end the setting mode.

3

#### Example of Time Settings That Do Not Cause Errors

The below time settings do not generate an error.

##### 1) When ON and OFF times are staggered



##### 2) When OFF time is earlier than ON time



## 5. Schedule Timer / NWTM-FL

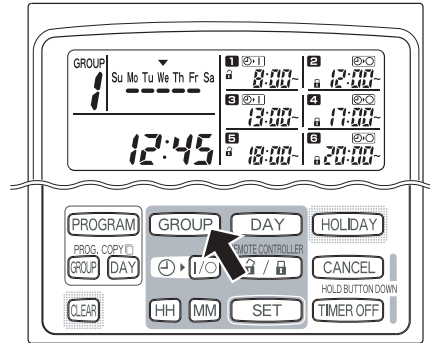
### ■ How to Check Program Times

You can check the programmed times for each group and day of the week.

**STEP 1** Press the **GROUP** button and select a group whose time you want to check.

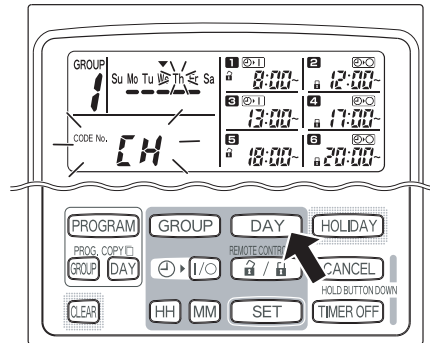
**NOTE**

- Group selection is disabled depending on installation conditions. If so, proceed to the next step.



**STEP 2** Press the **DAY** button.

- When the DAY button is pressed the first time, tomorrow's day of the week starts blinking and the program settings for tomorrow are displayed.
- Every time the DAY button is pressed, the program settings change in order of the days of the week.
- Pressing the GROUP button displays the program settings of another group on that same day.

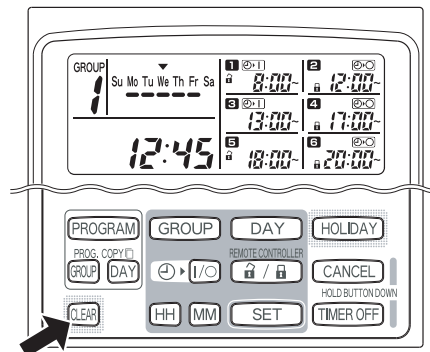


**STEP 3** End checking.

- Press the CLEAR button. The normal display returns.

**NOTE**

- Holding down the CANCEL button for more than 2 seconds also returns the normal display.



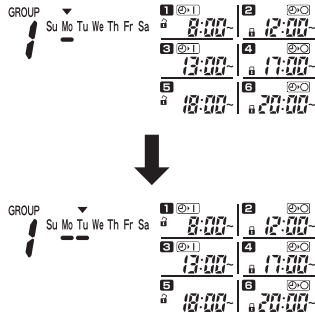
3

## 5. Schedule Timer / NWTM-FL

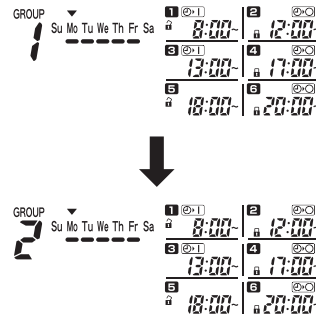
### ■ How to Copy Program Times

You can copy the already set program of one day into another day (Day Program Copying), as well as copy the entire week programmed for one group into another group (Group Program Copying).

#### Example of Day Program Copying (Copying Monday's program into Tuesday)



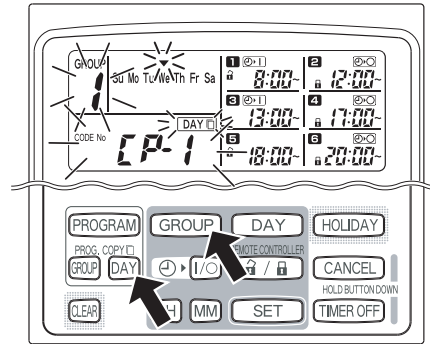
#### Example of Group Program Copying (Copying group No. 1's program into group No. 2)



### How to Copy Day Programs

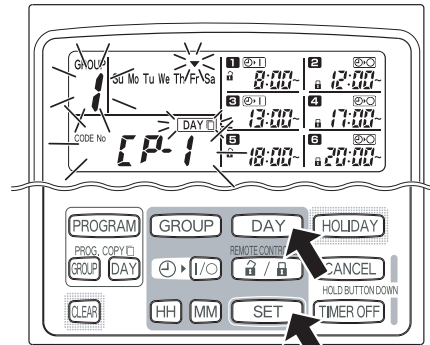
#### STEP 1 Press the PROG. COPY DAY button.

- The group No. and the ▼ over today's day start blinking and "CP-1" starts blinking in the present time display area. In this state, select a group in which to copy day programs, using the GROUP button.



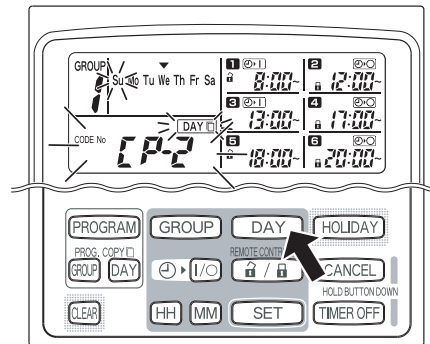
#### STEP 2 Select a source day program to copy.

- Every time the DAY button is pressed, the ▼ moves across the days of the week display, therefore select a day of the week that will serve as the copy source.
- Once having selected the copy source day, press the SET button to set it. The display changes to key you to select a copy destination day.



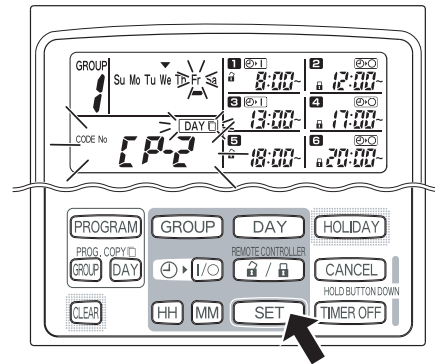
#### STEP 3 Select a copy destination day.

- When the schedule timer is ready for you to select a copy destination day, "CP-2" starts blinking in the present time display area, while the selected copy source day blinks in the days of the week. Therefore, select a day of the week as the copy destination, using the DAY button.



## 5. Schedule Timer / NWTM-FL

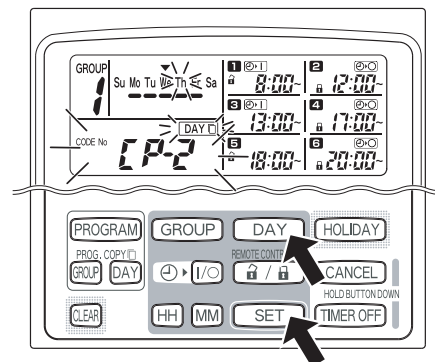
- STEP 4 Press the SET button to copy.**
- Press the SET button and the program schedule marker (■) will be displayed.



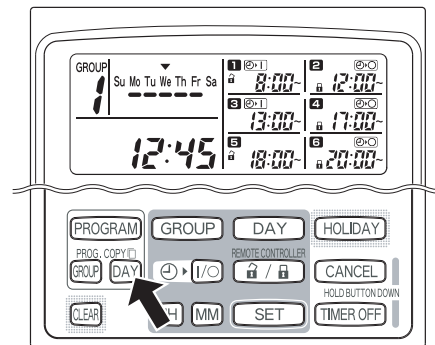
- STEP 5 Select other copy destination days if desired.**
- You can copy the selected source day program into other days by repeatedly pressing the DAY button to select a day of the week followed by the SET button to set it.

**NOTE**

- Pressing the CLEAR button extinguishes the program schedule marker (■) and cancels the copy operation.



- STEP 6 Press the PROG. COPY DAY button to enter the copied program in the selected days.**
- The normal display returns.



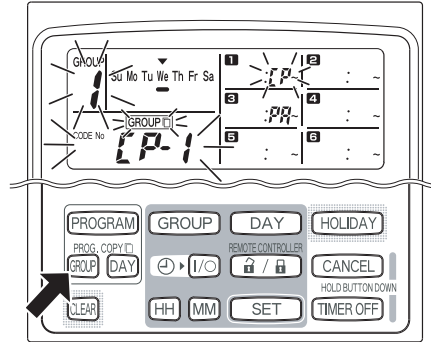
**NOTE**

- If a program already exists in the copy destination day, the newly copied program overwrites the existing program.
- If you accidentally copy over a program in the day program copy mode, holding down the CANCEL button for more than 2 seconds returns the program to the point prior to pressing the PROG. COPY DAY button in STEP 1. (All changes and copy operations made up until that point are cleared.)

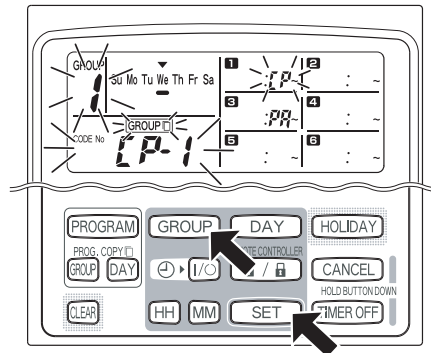
## 5. Schedule Timer / NWTM-FL

### ■ How to Copy Group Programs

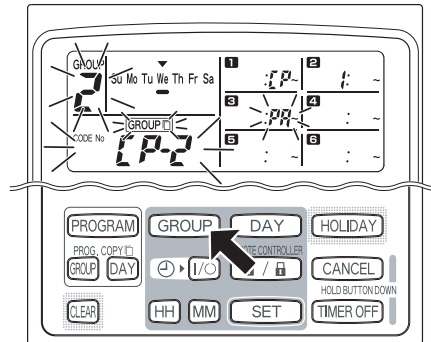
- STEP 1 Press the PROG. COPY GROUP button.**
- “CP-1” starts blinking in the present time display area and “CP” (copy) starts blinking in the program **1** area to indicate the copy source.



- STEP 2 Select a source group program to copy.**
- Select a copy source group using the GROUP button.
  - Once having selected the copy source group, press the SET button to set it.



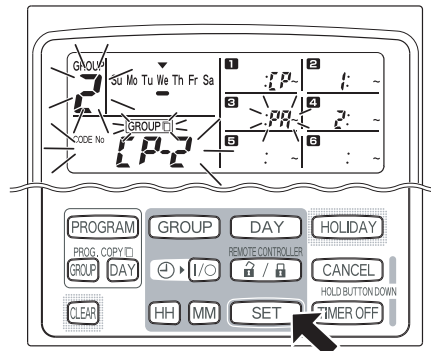
- STEP 3 Select a copy destination group.**
- After pressing the SET button, “CP-2” starts blinking in the present time display area, the copy source group No. set appears in the program **2** area, and “PA” (paste) starts blinking in the program **3** area to indicate the copy destination.
  - Select a copy destination group using the GROUP button.



- STEP 4 Enter the selected copy destination group.**
- When the SET button is pressed, the number of the copy destination group appears in the program No. area.

**NOTE**

- If a group from numbers 1 to 4 was selected as the copy destination group, that number appears in the program **4** area. If a group from numbers 5 to 8 was selected, that number appears in the program **6** area.





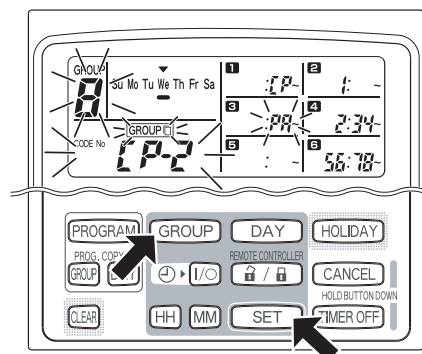
## 5. Schedule Timer / NWTM-FL

### STEP 5 Select other copy destination groups if desired.

- You can copy the selected source group programs into other groups by repeatedly pressing the GROUP button to select a group followed by the SET button to set it.

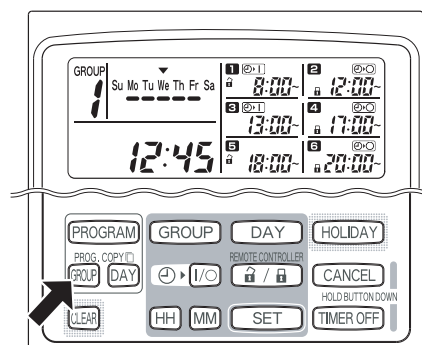
#### NOTE

- If a group from numbers 1 to 4 was selected as the copy destination group, that number appears in the program **4** area. If a group from numbers 5 to 8 was selected, that number appears in the program **6** area.



### STEP 6 Press the PROG. COPY GROUP button to enter the copied programs in the selected groups.

- The normal display returns.



#### NOTE

- If a program already exists in the copy destination group, the newly copied program overwrites the existing program.
- If you accidentally copy over a program in the group program copy mode, holding down the CANCEL button for more than 2 seconds returns the program to the point prior to pressing the PROG. COPY GROUP button in STEP 1. (All changes and copy operations made up until that point are cleared.)

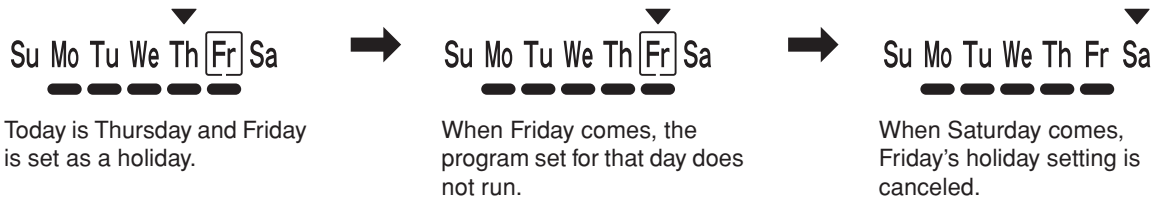
## 5. Schedule Timer / NWTM-FL

### ■ How to Set Holidays in a Scheduled Week of Operation

Operations programmed for a specific day during the week can be temporarily disabled by setting that day as a holiday.

- When the set holiday passes, the holiday setting is canceled and operation is resumed as programmed the following week.
- Holidays can be selected for the week starting from today's day. If today is selected as a holiday, the holiday setting is canceled from the next programmed operation. (Depending on the program, if the program is currently running, the program may not stop.)

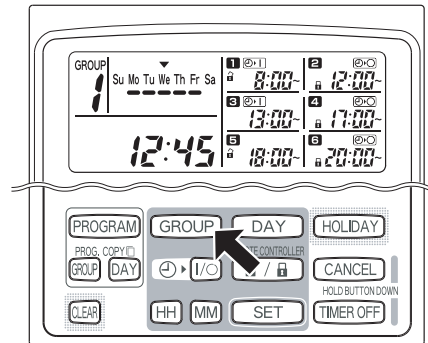
#### Example Setting



**STEP 1** Press the **GROUP** button to select a group to go on holiday.

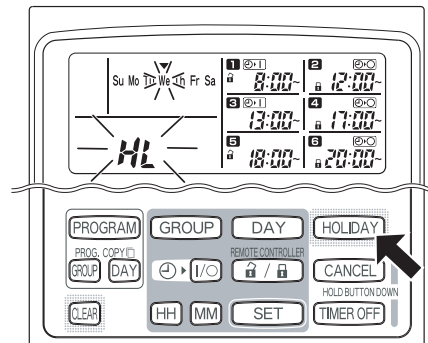
**NOTE**

- Depending on installation conditions, group selection is disabled or set so that all groups are automatically selected for the holiday feature. If so, proceed to the next step.



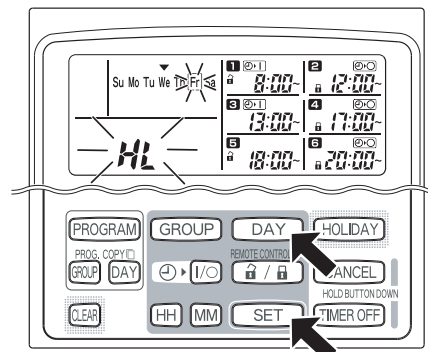
**STEP 2** Press the **HOLIDAY** button.

- "HL" starts blinking in the present time display area and today's day of the week starts blinking.



**STEP 3** Select a day as the holiday using the **DAY** button, and press the **SET** button.

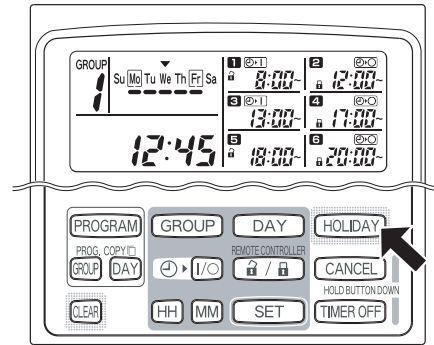
- A "□" appears over the selected holiday.
- To select other holidays, select a day using the DAY button and set it with the SET button.
- If you made a mistake or want to cancel a holiday, press the CLEAR button.



## 5. Schedule Timer / NWTM-FL

### STEP 4 Press the HOLIDAY button to enter the holiday.

- The normal display returns.



3

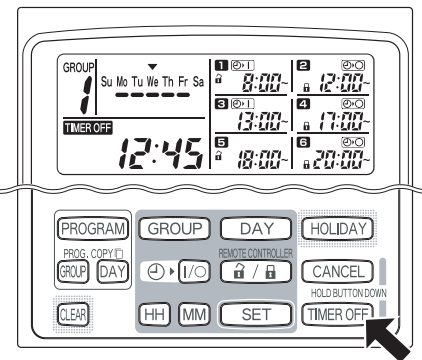
To halt programmed operation for one week or more, you can disable all timer programs.

- Once the timer has been disabled, programmed operations are not run until the below procedure is performed.

#### NOTE

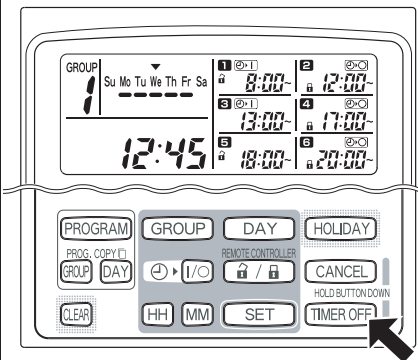
- During installation, the remote controller may be set to disable the timer for individual groups. In this state, the timer is disabled only for the selected group, therefore press the GROUP button to confirm which group is selected.

Hold down the **TIMER OFF** button for more than 2 seconds



- TIMER OFF** appears on the display. The timer is disabled from the next scheduled program.

To turn the timer back ON, hold down the **TIMER OFF** button for more than 2 seconds

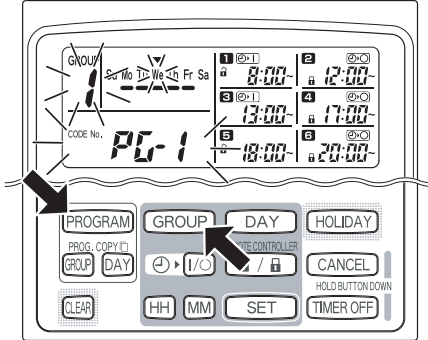


- TIMER OFF** goes out and the timer is enabled from the next scheduled program.

## 5. Schedule Timer / NWTM-FL

### ■ How to Clear Programs

Press the PROGRAM button.



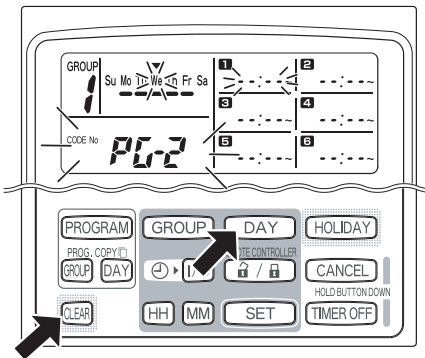
- When the PROGRAM button is pressed, the group No. and the present day of the week start blinking and the present time indication changes to a blinking "PG-1".
- Press the GROUP button to select a group to clear.

#### NOTE

- Group selection may be disabled during installation. If so, proceed to the next step.
- Holding down the CANCEL button for more than 2 seconds returns the program to the point prior to pressing the PROGRAM button. (All operations made up until that point are cleared.)

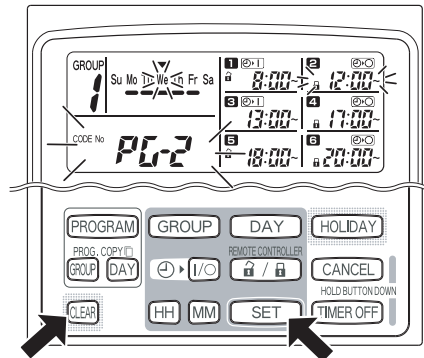


To cancel specific days



- Select a day to cancel using the DAY button and press the CLEAR button. All settings in programmed operations 1 through 6 are cleared. The display appears as shown above.
- Press the PROGRAM button to enter the clear operation. The normal display returns without the program schedule marker (PG) underneath the days of the week.

To cancel individual programs on specific days



- Select a day and press the SET button. Programmed operations 1 through 6 start blinking in rotation, therefore press the CLEAR button when the programmed operation to clear starts blinking. (The remaining programmed operations are automatically arranged in the order of earliest time first.)
- Press the PROGRAM button to enter the clear operation. The normal display returns.

Example:  
Display after clearing  
programmed operation 2  
above

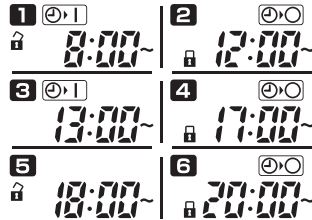
1	8:00	2	13:00
3	17:00	4	18:00
5	20:00	6	---

## 5. Schedule Timer / NWTM-FL

### ■ Schedule Timer and Air Conditioner Operation

Air conditioners operate either according to operations programmed from the schedule timer (starting/stopping and remote control operation enable/disable) or according to a connected remote controller or system controller.

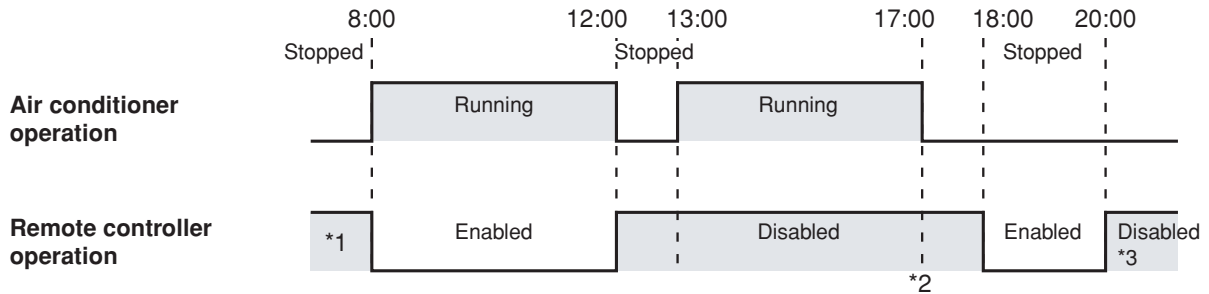
#### Schedule timer settings (Example)



#### Operation without system controller operation

- If remote controller operation is enabled, the air conditioner can be started/stopped from the remote controller. (The air conditioner responds to the most recently pressed button.)

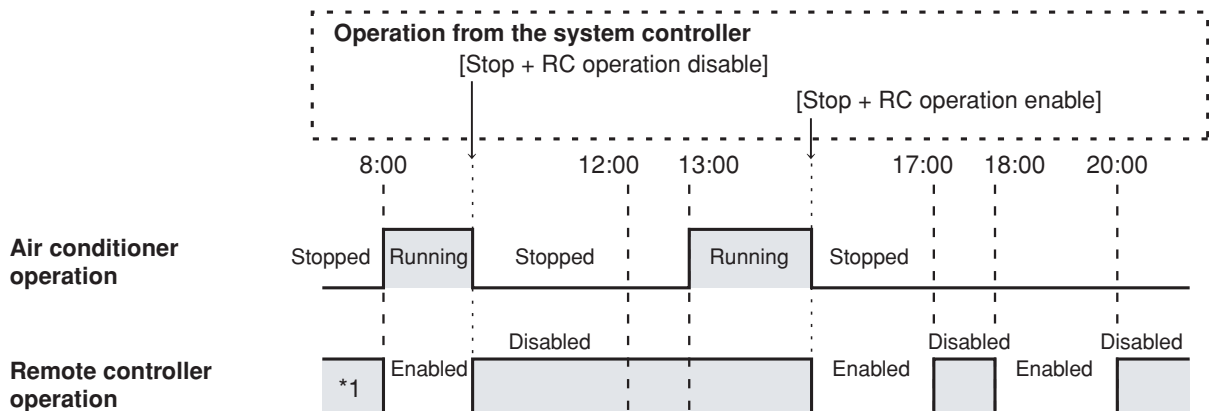
3



- \*1 Whether remote controller operation is enabled or disabled depends on the setting of the previous day.
- \*2 Since remote controller operation is disabled, operation remains disabled.
- \*3 The remote controller remains disabled the next day and thereafter until it is enabled in the remote controller operation enable/disable setting.

#### Operation with system controller operation

- If remote controller operation is enabled, the air conditioner can be started/stopped from the remote controller. (The air conditioner responds to the most recently pressed button.)
- The remote controller operation enable/disable set from the system controller (Centralized control 1 to 4) is canceled according to programmed operations.



- \*1 Whether remote controller operation is enabled or disabled depends on the setting of the previous day.

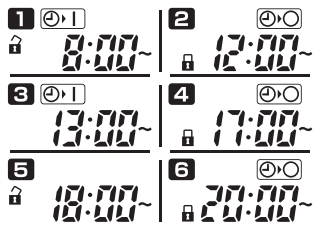
## 5. Schedule Timer / NWTM-FL

### ■ Power Outages

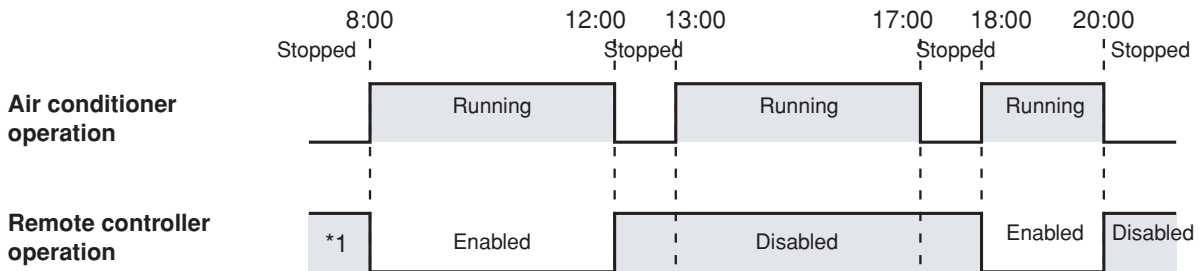
If the air conditioner is running when power is lost, the air conditioner remains OFF when power is restored. Also, if remote controller operation was disabled when power was lost, it is enabled for a few minutes when power is restored.

- Programmed operations scheduled for times that come after power is restored run as usual.
- Program settings are retained in the non-volatile memory of the schedule timer, therefore they are not cleared in the event of a power outage. Also, the present time and today's day of the week are retained for a maximum of 100 hours by the internal battery.

### Schedule timer settings (Example)

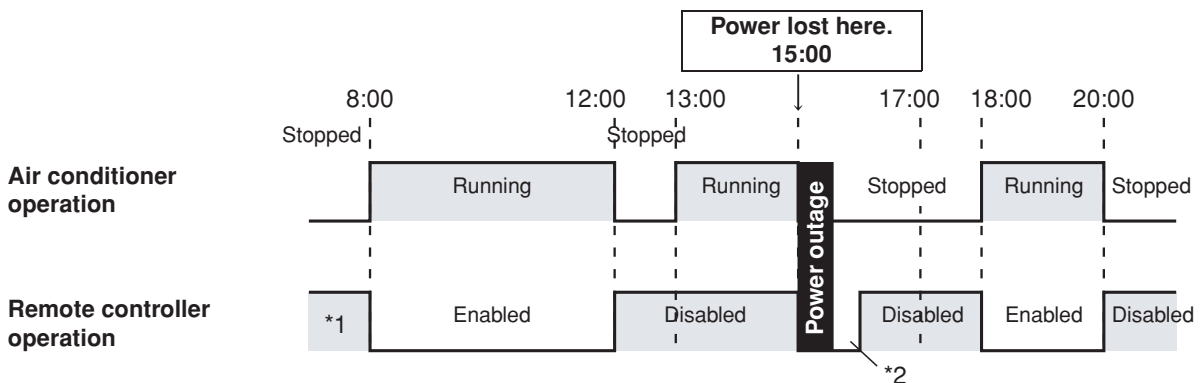


### Operation when power is not lost



\*1 Whether remote controller operation is enabled or disabled depends on the setting of the previous day.

### Operation when power is lost at 15:00 and subsequently restored



\*1 Whether remote controller operation is enabled or disabled depends on the setting of the previous day.

\*2 Remote controller operation is enabled for a few minutes after power is restored.

3

## 5. Schedule Timer / NWTM-FL

### ■ Troubleshooting

Before requesting servicing, check the following.

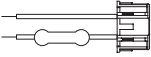

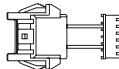

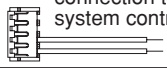



Trouble		Cause/Remedy
Check before requesting servicing	ⓈⓈ A <sub>n</sub> blinks on the display.	The schedule timer is performing initial communications with connected indoor units. Wait for communications to finish.
	Air conditioners do not operate as scheduled when the set time comes.	The timer has been disabled. (Refer to pages III-67 and III-77.) A holiday has been scheduled. (Refer to page III-74.)
	Air conditioners can be started and stopped from the remote controller even though the program disables remote controller operation.	Power to the air conditioner was lost and subsequently restored. (Refer to page III-78.)
	ⓈⓈ:ⓈⓈ blinks in the present time display area.	Power to the air conditioner was lost for a long period of time. Set the present time and today's day of the week again. (Refer to pages III-64 and III-65.)

3

If trouble persists despite taking the above action, stop the schedule timer, turn off the unit and report the serial number and problem to your dealer. Never service the unit yourself as this is dangerous.

## 5. Schedule Timer / NWTM-FL

### ■ Accessories for Schedule Timer

No.	Supplied parts	Q'ty	No.	Supplied parts	Q'ty
1	T10 power wire  (with current fuse) *1	1	5	Spacers 	2
2	T10 relay wire *2 	1	6	Wire joints 	6
3	Power wire for connection to system controller 	1	7	Operation manual 	1
4	Screws M4 × 30 	1	8	Installation manual 	1

\*1 If the fuse blows as a result of a wiring short-circuit, miswiring, or overcurrent, replace it with a 125 V, 0.1 A fuse.

\*2 Use with 3-series type (Fig. 3-42).

### ■ Installing the Schedule Timer

<Note 1> Avoid twisting the inter-unit control wiring or the input/output wiring together with power or other wiring, and avoid running them in the same metal conduit. Doing so can cause malfunction.

<Note 2> Install the schedule timer at a location away from any sources of electrical noise.

<Note 3> Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

- (1) Open the panel on the schedule timer unit. Insert a standard (flat-head) screwdriver or similar tool into the notches on the bottom of the schedule timer unit to open and remove the back case.
- (2) Use the 2 supplied M4 small screws and install the schedule timer back case onto the switch box. Before installing, use a screwdriver or similar tool to press on and open the screw holes that correspond to the JIS box that is used. When fastening the case, use spacers and do not tighten the screws too much. If the schedule timer does not fit tightly against the wall, cut the spacers as required to make adjustments.
- (3) Connect the supplied power wire (2-core) and inter-unit control wire (3-core) to the schedule timer unit. (Refer to "Wiring the Schedule Timer.")
- (4) Align the schedule timer unit with the tabs on the back case and press to install it.

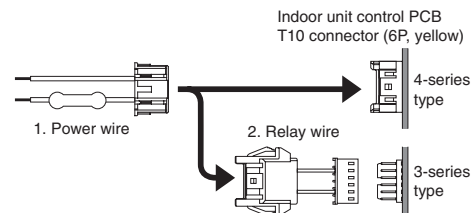


Fig. 3-42

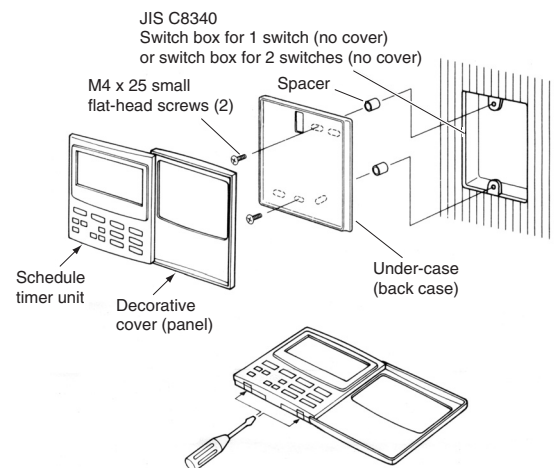


Fig. 3-43



## 5. Schedule Timer / NWTM-FL

### ■ Installation of Connected Schedule Timers

When installing schedule timers (remote controller switches, system controllers, etc.) onto the wall, use the method shown in Figs. 3-44 and 3-45.

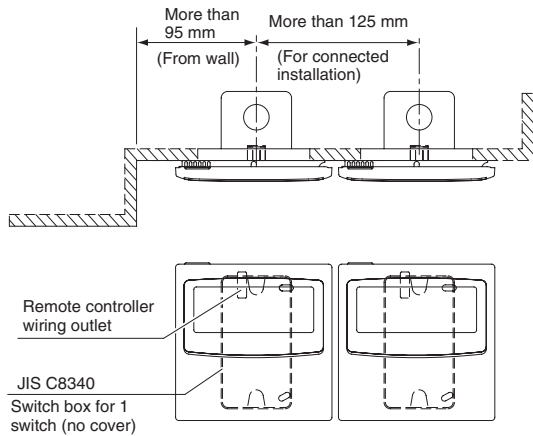
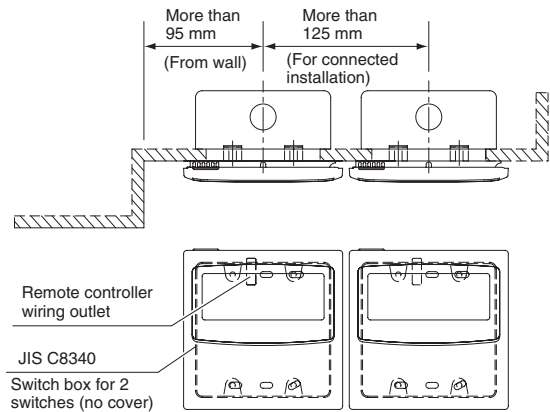


Fig. 3-44



\* For maintenance reasons, leave a gap of 25 mm or more between the remote controller switch and schedule timer if they are arranged in parallel above/below each other.

Fig. 3-45

### ■ Wiring the Schedule Timer

- Before beginning wiring
  - Use 0.5 – 2 mm<sup>2</sup> wires for field supply wiring.
  - For inter-unit control wiring, use signal wires that allow the remote controller wiring to be differentiated from the power wiring, and take care to prevent miswiring. **(Miswiring will damage the schedule timer.)**
  - Check that the schedule timer communications wiring and power wiring are connected correctly. (Fig. 3-46)

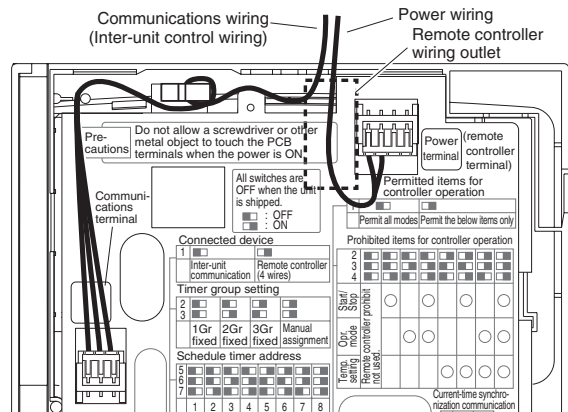


Fig. 3-46

### <Basic Wiring Diagram>

- Route the A/C inter-unit control wiring for central control as shown in the figure at right.
- The maximum number of indoor units that can be connected to a single system is 64. The maximum number of outdoor units is 30.
- The maximum number of schedule timer units that can be connected is 8. (A maximum of 10 schedule timer units and other central control devices can be connected.)

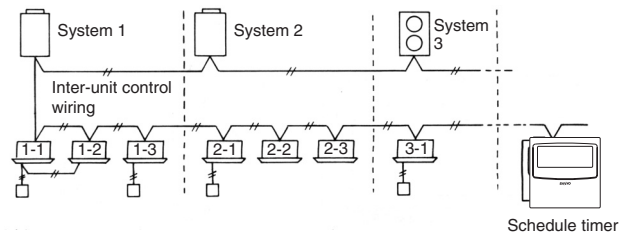


Fig. 3-47

<Note> Depending on the model of A/C, a local adapter may be required.

## 5. Schedule Timer / NWTM-FL

### ● Wiring

The schedule timer wiring can be connected by the following two methods. Select one of these connection methods according to the actual installation location.

When wiring, extend the lengths of the wires using wire joints (provided) and extension wires (field supply).

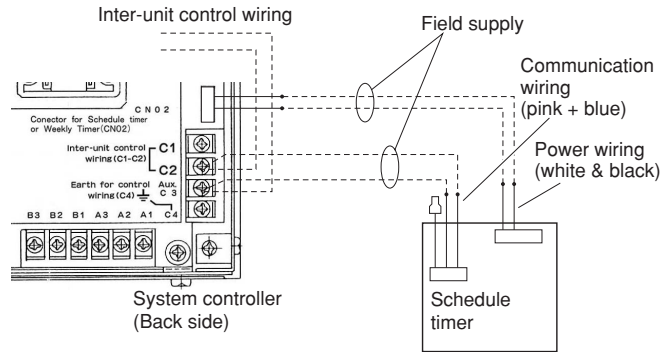


**CAUTION**

**When installing multiple schedule timers, avoid the use of cross-over wiring.**

- Connection diagram (Be sure to use the provided wires as the power wiring.)

**If a system controller is also installed:**



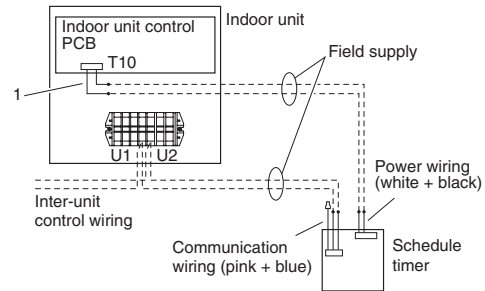
**Fig. 3-48**

Connect the wires for the schedule timer inter-unit control wiring (see Note below) to the C1 and C2 terminals on the system controller terminal board. Connect the system controller power wiring to CN02 and to the schedule timer power wires (white + black).

- The inter-unit control wiring has no polarity. The wiring may be connected in either direction to C1 and C2.
- The power wiring has no polarity. The wiring may be connected in reverse.
- **The length of the power wiring must be no more than 100 m.**

**Note:** The inter-unit control wires are pink + blue + blue (using wire joint crimping). Use pink + blue wires.

**If a system controller is not installed (power is supplied from the indoor unit):**



**Fig. 3-49**

If power is supplied from the indoor unit control PCB of a nearby indoor unit, connect the provided T10 terminal connection wires to the T10 terminal on the indoor unit control PCB, and to the schedule timer power wires.

- The inter-unit control wiring has no polarity. The wiring may be connected in either direction to U1 and U2.
- If necessary, use a relay wire when connecting the wiring to the indoor unit control PCB.
- The power wiring has no polarity. The wiring may be connected in reverse.
- **The length of the power wiring must be no more than 200 m.**

<Note> The only functions of the schedule timer are indoor unit ON/OFF and remote controller enable/disable operations. It is therefore recommended that during installation, a system controller, remote controller, or similar device be installed next to the schedule timer so that the operation mode and other information can be checked.

(If the system controller or other central control device is not present, the schedule timer cannot be used in combination with a system that does not utilize remote controllers.)

## 5. Schedule Timer / NWTM-FL

### ■ About the Setting Switches

Complete the switch settings before turning ON the schedule timer power.

**S41**

OFF ↔ ON

\* These switches are all OFF at the time of delivery.

**Connection (1)**  
This switch should be OFF for normal use. Turn S41 switch ON only for systems that are compatible with the former weekly timer service.

**Timer Group Settings (2, 3)**

Function	2	3
1 timer group – fixed	OFF	OFF
4 timer group – fixed	OFF	ON
8 timer group – fixed	ON	OFF
Manual group setting	ON	ON

What is a timer group?  
This is a group of indoor units, created by dividing the central control addresses of the 64 indoor units that are connected to the inter-unit control wiring, and assigning a timer program to each group.

**Central Control Main/Sub Switching (4)** Sub: OFF Main: ON

(1) Set to "sub" (OFF) when using together with the AMY adapter, communications adapter, intelligent controller, multi-controller, LON I/F, and system controller.  
 (2) In cases other than (1) above, when using together with an ON/OFF central controller, set to "main" (ON) when only 1 schedule timer unit is used.  
 (3) In cases other than (1) above, and when using with multiple schedule timer units, set only 1 unit to "main" (ON) and set the remainder to "sub" (OFF).

**Schedule Timer Address Settings (5, 6, 7)**  
A maximum of 8 schedule timer units can be connected to the inter-unit control wiring. If multiple units are connected, use the setting switches and allocate the addresses, taking care to avoid duplication.

Function	5	6	7
Address 1	OFF	OFF	OFF
Address 2	OFF	OFF	ON
Address 3	OFF	ON	OFF
Address 4	OFF	ON	ON
Address 5	ON	OFF	OFF
Address 6	ON	OFF	ON
Address 7	ON	ON	OFF
Address 8	ON	ON	ON

**Holiday and Operation Disable Settings for Each Group (8)**  
When this setting switch is OFF, units are all controlled together. When this switch is ON, the units are controlled by the settings for each timer group.

**S42**

OFF ↔ ON

\* These switches are all OFF at the time of delivery.

**Remote Controller Enable Items (1)**  
If remote controller enable/disable is used, this switch sets the range for remote controller enable (cancel).  
**Enable all items\* that can be controlled with the remote controller.**  
 → OFF  
**Enable only the items determined by setting switches 2, 3, and 4.**  
 → ON  
 This switch should be OFF for normal use, or when remote controller enable/disable is not used.

\* This refers to the following items: start/stop, operation mode, temperature setting, flap, and fan speed.

**Remote Controller Disable Item Switches (2, 3, 4)**  
When timer remote controller disable is used, set the remote controller disable item switches according to the items for which remote controller operation will be disabled.

Remote controller disabled items	2	3	4
Remote controller disable not used	OFF	OFF	OFF
Start/stop	Central 1	OFF	ON
Operation mode	Central 4	OFF	ON
Operation mode + Start/stop		OFF	ON
Temperature setting		ON	OFF
Temperature setting + Start/stop		ON	OFF
Temperature setting + Operation mode	Central 3	ON	ON
Temperature setting + Operation mode + Start/stop	Central 2	ON	ON

Central 1 – 4 are the designations for the remote-controller disable modes for the system controller.

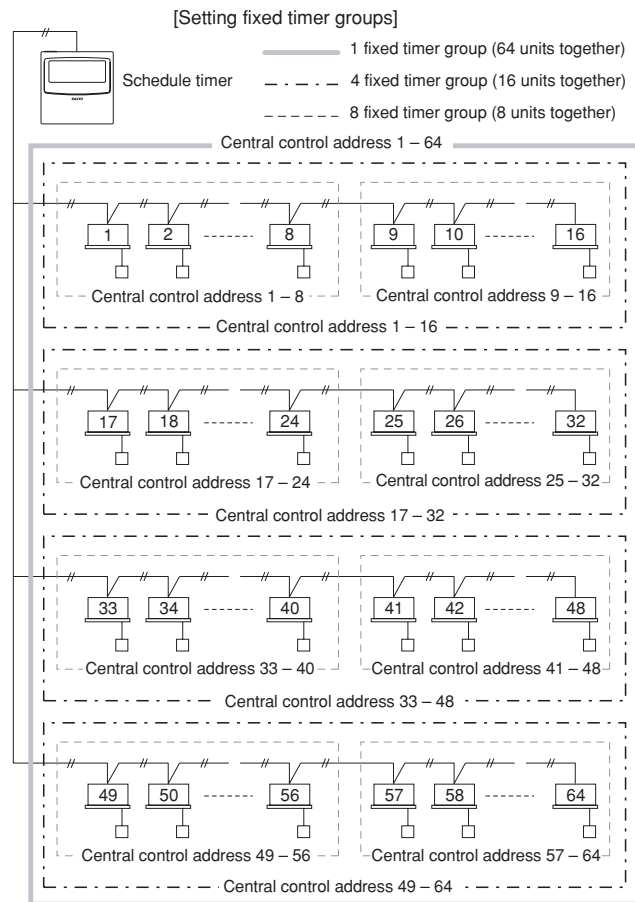
**Simultaneous time communications (5)** Disabled: OFF Enabled: ON  
 When multiple schedule timers are installed, set this switch to ON to perform time settings for multiple units simultaneously. One minute after the time is set, the time at the other schedule timers will change to match the set time. (Ordinarily this switch is OFF.)

**Spare (6, 7, 8)**  
Be sure that these switches are OFF when the system is used.

## 5. Schedule Timer / NWTM-FL

### ■ Creating Timer Groups

The schedule timer can be set for 6 time status changes. These can be used to create up to 8 groups (timer groups). For systems in which schedule timers are used, set the timer groups to match the central control addresses of the indoor units that will be subject to group timer control. The timer-group settings for the schedule timer involve assignment of central control addresses. Therefore, use the system controller (or other central control device) or wired remote controllers to set the central control addresses of the indoor units, then make the schedule timer settings.



3

### ● Procedure for making fixed timer group settings (fixed groups)

- (1) First, use a different central control device (system controller or other device) or the wired remote controllers to set the central control addresses, as assigned in the figure above, to the indoor units that will be subject to group timer control.
- (2) Next, use S41 switches 2 and 3 to set the number of timer groups you wish to create.
- (3) Finally, turn ON the schedule timer power. Initial communications are performed. (SCAN blinks in the display.) The normal display appears after several minutes, and the timer group settings are confirmed.

### ● Procedure for making manual timer group settings (manual group assignments)

Manual timer group settings allow central control addresses to be assigned freely within the timer groups.

- (1) Turn ON S41 setting switches 2 and 3, then turn ON the power. Restart and initial communications are performed. (SCAN blinks in the display.) The normal display appears after several minutes.
- (2) When the normal display appears, press and hold the schedule timer button, the timer button, and the button for 4 seconds or longer. "Ad-01" appears, blinking, in the current time display. (Ad indicates "address" and 01 is the central address number.)
- (3) Use the button in the area to select the timer group. Then use the button in the area to select the central control address to assign and register for that timer group. Press the button to register the selected central control address.

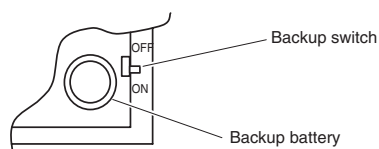
## 5. Schedule Timer / NWTM-FL

- (4) To continue registering addresses, repeat step (3). (Central control address numbers will be added to the right side of the LCD display.) To cancel a registered central control address, use the **GROUP** button in the ■ area to select the timer group, then use the **DAY** button in the ■ area to select the central control address and press the **CLEAR** button.
- (5) Repeat steps (3) – (4) for each timer group. When registration is completed, press the timer **⊕/I/O** button. The schedule timer restarts automatically and performs initial communications. (SCAN blinks in the display.) The normal display appears after several minutes, and the manually assigned timer group settings are confirmed.

### ■ Memory Backup Switch

After installation is completed, check that the backup switch on the reverse side of the schedule timer PCB is turned to ON.

(The backup battery will retain the current time for up to 100 hours.)



3

### ■ Checking the Central Control Addresses and Operating the Units that are Controlled by the Schedule Timer

The schedule timer communicates with the indoor units to check which central control addresses can be controlled with the current timer control. The schedule timer can then be used to start and stop these units.

- (1) Press and hold the schedule timer **⊕/I/O** button, **TIMER OFF** button, and **CLEAR** button for 4 seconds or longer. “Ad-(central control address)” appears in sequence, blinking.
- (2) Use the **GROUP** button in the ■ area to display the blinking central control addresses in sequential order. In this way, it is possible to check which central control addresses in the displayed timer group can be operated by the timer.
- (3) With the selected timer group displayed, press the timer **⊕/I/O** button. Each time the button is pressed the indoor units in the displayed timer group start or stop. Pressing the **⊕/I/O** button in this mode permits all items (operation start/stop, operation mode, temperature setting items) at the indoor units in the displayed timer group where remote controller prohibit is in effect.
- (4) After checking the addresses and operating the units, press and hold the **CANCEL** button for 2 seconds or longer. The schedule timer display returns to the normal display and all controllable indoor units stop.

### ■ Explanation to Customers

- After work is completed, present the Operation Manual and Information for the Person in Charge of Installation (Electrical) Work to the customer.
- Explain to the customer the methods for use of the system, as described in the Operation Manual.

## 5. Schedule Timer / NWTM-FL

### ■ Installation Work Plan

- Use the wired remote controller to check the unit No. of the indoor units.  
(Start the A/C unit with the wired remote controller, then press the remote controller UNIT SELECT button once to display the unit No. of the master unit.)

Schedule timer			Central control addresses	Indoor unit Unit No. System - Indoor	Room name	
Fixed timer group						
1	4	8				
1	1	1	1	- , -		
			2	- , -		
			3	- , -		
			4	- , -		
			5	- , -		
			6	- , -		
			7	- , -		
			8	- , -		
	2	2	2	9	- , -	
				10	- , -	
				11	- , -	
				12	- , -	
				13	- , -	
				14	- , -	
				15	- , -	
				16	- , -	
	3	3	3	17	- , -	
				18	- , -	
				19	- , -	
				20	- , -	
				21	- , -	
				22	- , -	
				23	- , -	
				24	- , -	
	4	4	4	25	- , -	
				26	- , -	
				27	- , -	
				28	- , -	
				29	- , -	
				30	- , -	
				31	- , -	
				32	- , -	
	5	5	5	33	- , -	
				34	- , -	
				35	- , -	
				36	- , -	
				37	- , -	
				38	- , -	
				39	- , -	
				40	- , -	
	6	6	6	41	- , -	
				42	- , -	
				43	- , -	
				44	- , -	
				45	- , -	
				46	- , -	
				47	- , -	
				48	- , -	
	7	7	7	49	- , -	
				50	- , -	
				51	- , -	
				52	- , -	
				53	- , -	
				54	- , -	
				55	- , -	
				56	- , -	
	8	8	8	57	- , -	
				58	- , -	
				59	- , -	
				60	- , -	
				61	- , -	
				62	- , -	
				63	- , -	
				64	- , -	

1  
At the  
time of  
shipment

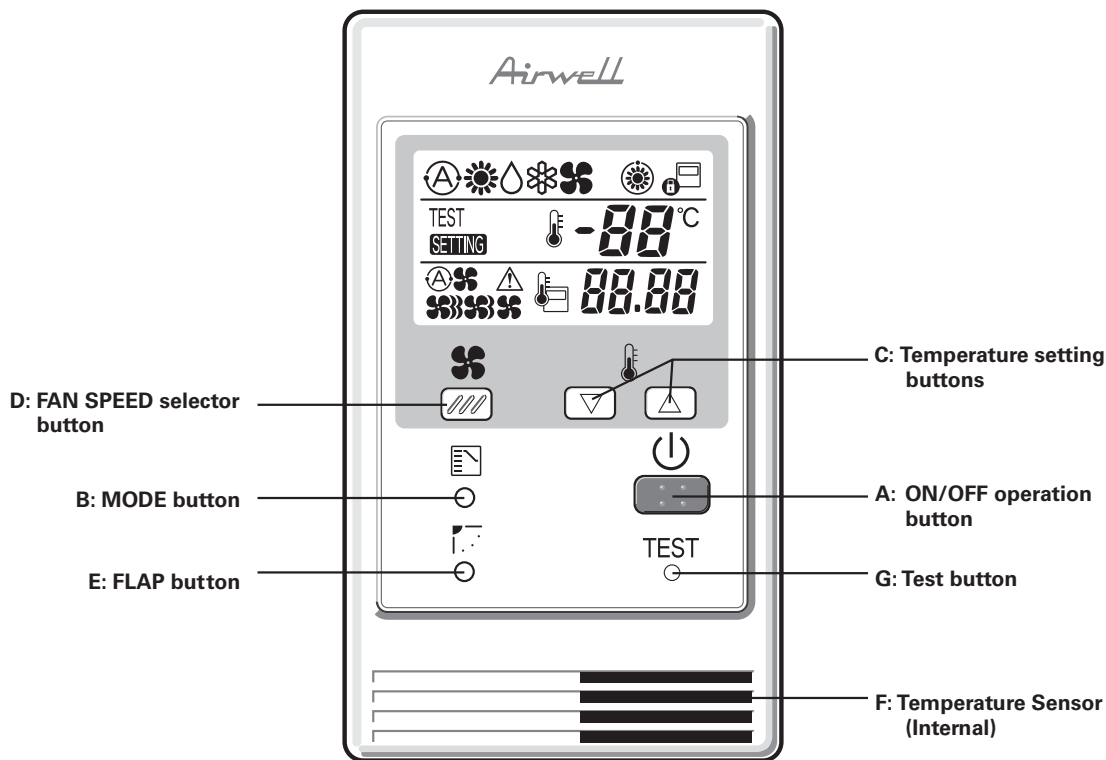
3








## 6. Simplified Remote Controller / NRCB-FL

### Simplified Remote Controller / NRCB-FL






#### ■ Operation Buttons

3



<b>A: ON/OFF operation button</b>	This button is for turning the air conditioner on and off.
<b>B: MODE button</b>	Use this button to select one of the following five operating modes. <ul style="list-style-type: none"> <li><b>(AUTO)</b>     : Used to automatically set cooling or heating operation. Only for single heat pump type (Temperature range: 17 ~ 27 C)</li> <li><b>(HEAT)</b>     : Used for normal heating operation. Only for heat pump type (Temperature range: 16 ~ 26 C)</li> <li><b>(DRY)</b>      : Used for dehumidifying without changing the room temperature. (Temperature range: 18 ~ 30 C)</li> <li><b>(COOL)</b>     : Used for normal cooling operation. (Temperature range: 18 ~ 30 C)</li> <li><b>(FAN)</b>      : Used to run the fan only, without heating or cooling operation.</li> </ul>
<b>C: Temperature setting buttons</b>	<ul style="list-style-type: none"> <li> : Press this button to increase the temperature setting.</li> <li> : Press this button to decrease the temperature setting.</li> </ul>

## 6. Simplified Remote Controller / NRCB-FL

<p><b>D: FAN SPEED selectr button</b></p> <p>(AUTO)  : The air conditioner automatically decides the fan speed.</p> <p>(HI)  : High fan speed</p> <p>(MED)  : Medium fan speed</p> <p>(LO)  : Low fan speed</p>	
<p><b>E: FLAP button</b></p> <p><b>NOTE</b></p>	<p>1. Use this but ton to set the airflow direction to a specific angle.</p> <ul style="list-style-type: none"> <li>• In the Cool mode and Dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent.</li> <li>• Do not mo ve the flap with your hands.</li> </ul> <p>This function is available only for models NKFL, NKSFL, NK2FL and NWFL.</p>
<p><b>F: Temperature sensor (Internal)</b></p>	<p>Although the temperature sensor in the indoor unit normally detects the temperature, this internal sensor can detect the temperature around the remote control unit. F or more information, contact the dealer where you made the purc hase. (Do not mak e any settings if group control is being used.)</p>
<p><b>G: TEST button</b></p> <p> <b>CAUTION</b></p>	<p>This but ton is used only when servicing the air conditioner.</p> <p><b>Do not use the TEST button for normal operation.</b></p>

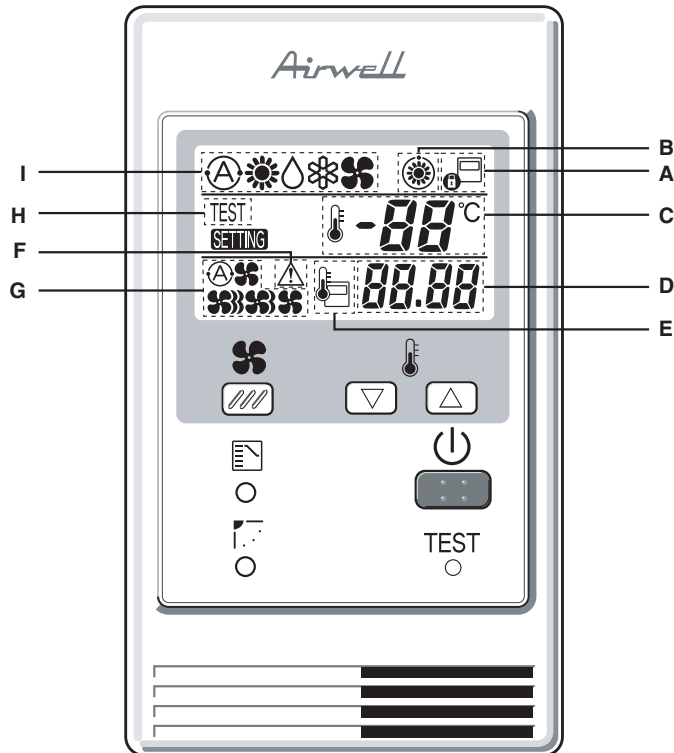
**NOTE** When 2 remote control units are being used in 1 group control\* system, the most recent button that is pressed on any remote control unit is effecti ve.

\* Group control means that maximum up to 8 indoor units can be concurrently controlled with a remote control unit.





## 6. Simplified Remote Controller / NRCB-FL

### ■ Display



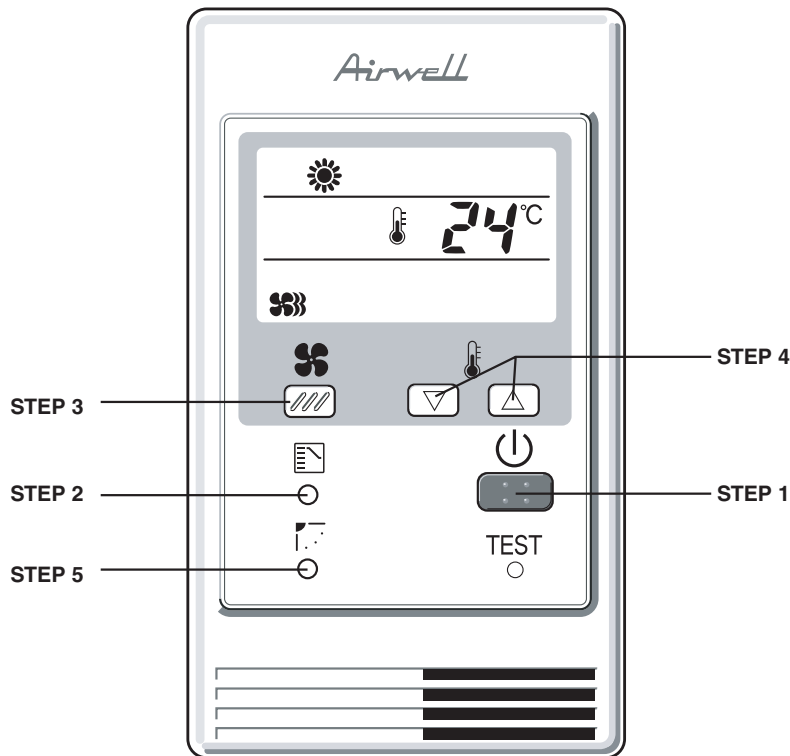
3

### Description

- A:** This is displayed to indicate that the system controller is being used for control.  
When  indicator is flashing on the display, the operation is not accepted by the system controller.
- B:** When the unit is in heating standby status, the  indicator appears.
- C:** This displays the temperature setting.
- D:** This displays alarm messages when an error occurs.
- E:** This is displayed when using the temperature sensor in the remote control unit.
- F:** This is displayed only if an abnormality occurs within a unit.
- G:** The currently selected FAN SPEED is displayed.
- H:** When the TEST button is pressed, the TEST indicator appears.
- I:** The currently selected operation mode is displayed.

## 6. Simplified Remote Controller / NRCB-FL

### ■ Operation



3

**NOTE** To warm up the system, the power mains must be turned on at least five (5) hours before operation.

**STEP 1 To start the air conditioner**

Press the ON/OFF operation button ( ).

**STEP 2 Setting the mode**

Press the MODE button ( ) to select the mode of your choice.

[ (AUTO), (HEAT), (DRY), (COOL) or (FAN)]

**STEP 3 Setting the fan speed**

Press the FAN SPEED button ( ) to select the fan speed of your choice.

[ (AUTO), (HI.), (MED.) or (LO.)]

If AUTO is selected, the fan speed switch changes automatically.

**STEP 4 Setting the temperature**

Use the or button as appropriate to change the temperature setting as desired.

( reduces the temperature, and increases the temperature.)


**STEP 5 To stop the air conditioner**

Press the ON/OFF operation button ( ) again.

## 6. Simplified Remote Controller / NRCB-FL

### ■ Troubleshooting

If your air conditioner does not work properly, first check the following points before requesting service. If it still does not work properly, contact your dealer or a service center.

Trouble	Possible Cause	Remedy
Air conditioner does not run at all.	<ol style="list-style-type: none"> <li>1. Power failure</li> <li>2. Leakage circuit breaker has tripped.</li> <li>3. Line voltage is too low.</li> <li>4. Operation button is turned off.</li> <li>5. The remote control unit or heat pump is malfunctioning. (ERROR and characters such as EI, PI, FI, etc., appear on the display.)</li> </ol>	<ol style="list-style-type: none"> <li>1. Restore power.</li> <li>2. Contact service center.</li> <li>3. Consult your electrician or dealer.</li> <li>4. Press the button again.</li> <li>5. Consult your dealer.</li> </ol>
Compressor runs but soon stops.	<ol style="list-style-type: none"> <li>1. Obstruction in front of condenser coil</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove obstruction.</li> </ol>
Poor cooling (or heating) performance	<ol style="list-style-type: none"> <li>1. Dirty or clogged air filter</li> <li>2. Heat source or many people in room</li> <li>3. Doors and/or windows are open.</li> <li>4. Obstacle near air intake or air discharge port</li> <li>5. Thermostat is set too high for cooling (or too low for heating).</li> <li>6. (Outdoor temperature is too low.)</li> <li>7. (Defrosting system does not work.)</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the air filter to improve the airflow.</li> <li>2. Eliminate heat source if possible.</li> <li>3. Shut them to keep the heat (or cold) out.</li> <li>4. Remove it to ensure good airflow.</li> <li>5. Set the temperature lower (or higher).</li> <li>6. (Try to use a back-up heater.)</li> <li>7. (Consult your dealer.)</li> </ol>
 is displayed.	<ol style="list-style-type: none"> <li>1. Trouble in the system</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact service center.</li> </ol>

3

### ■ Tips for Energy Saving

- Avoid**
- Do not block the air intake and outlet of the unit. If either is obstructed, the unit will not work well, and may become damaged.
  - Do not let direct sunlight into the room. Use sunshades, blinds or curtains. If the walls and ceiling of the room are warmed by the sun, it will take longer to cool the room.
- Do**
- Always try to keep the air filter clean. A clogged filter will impair the performance of the unit.
  - To prevent conditioned air from escaping, keep windows, doors and any other openings closed.







#### NOTE

#### Should the power fail while the unit is running

If the power supply for this unit is temporarily interrupted the unit will automatically resume operation (once the power is restored) with the same settings that were in effect before the power was interrupted.

## 6. Simplified Remote Controller / NRCB-FL

### ■ Parts Supplied with Simplified Remote Controller

No.	Supplied parts	Qty	No.	Supplied parts	Qty
1	Simplified remote controller (comes with 200 mm wire) 		4	Spacers 	2
2	Machine screws M4 × 25 	2	5	Wire joints 	3
3	Wood screws 	2	6	Installation manual 	1

### 3

### ■ Simplified Remote Controller Installation Guidelines

#### Place of installation

- Mount the simplified remote controller at a height of 1 to 1.5 meters above the floor where it can sense the average temperature of the room.
- Do not mount the simplified remote controller in a place exposed to direct sunlight or a place exposed to outside air such as near a window.
- Do not mount the simplified remote controller behind an object so that it is separated from the air circulation of the room.
- Mount the simplified remote controller within the room being air conditioned.
- The simplified remote controller must be mounted on the wall or other surface vertically.

#### SWITCHING THE ROOM TEMPERATURE SENSOR

The room temperature sensor is placed both in the indoor unit and the simplified remote controller respectively. Either sensor can be used to sense the room temperature.

The indoor unit sensor is usually used.

If you use the simplified remote controller to sense the room temperature, switch the remote controller sensor switch (RCU.SNS) on the P.C.B. of the simplified remote controller from OFF to ON. See the diagram below.

- < NOTE 1 > Even though the simplified sub-remote controller switch is switched from OFF to ON, the sub-remote controller cannot detect the room temperature.

- < NOTE 2 > The standard remote controller cannot detect the room temperature.

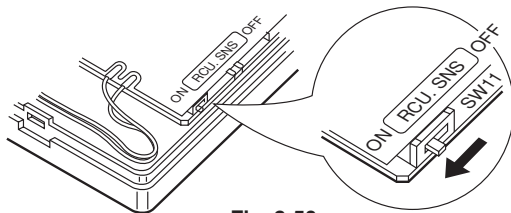


Fig. 3-50

### ■ How to Install the Simplified Remote Controller

- < NOTE 1 > Do not twist the simplified remote controller wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- < NOTE 2 > Install the simplified remote controller away from sources of electrical noise.
- < NOTE 3 > Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.
- Use an electric junction box (supplied locally) (Fig. 3-51) for flush mounting of the simplified remote controller.

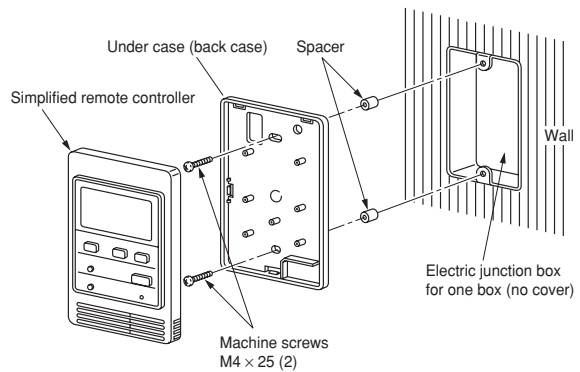


Fig. 3-51

## 6. Simplified Remote Controller / NRCB-FL

1. Insert a screwdriver or the like in the groove on the lower side of the simplified remote controller body to pry off the back case. (Fig. 3-52)
2. Use the 2 supplied M4 machine screws to secure the simplified remote controller back case. Prior to mounting, clear the cutouts in the back case corresponding to the holes in the wall box using a screwdriver or the like. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
3. Connect locally supplied 3 core lead wires to the lead wires from the simplified remote controller. (See "How to wire the simplified remote controller.")

**When connecting the locally supplied 3 core lead wires to the terminal block, check the terminal numbers in the indoor unit to make sure that the wires are correctly connected. (Fig. 3-53)  
(The simplified remote controller is damaged if 220 / 240 V AC is applied.)**

4. Fit the simplified remote controller to the tabs of the back case and mount it.

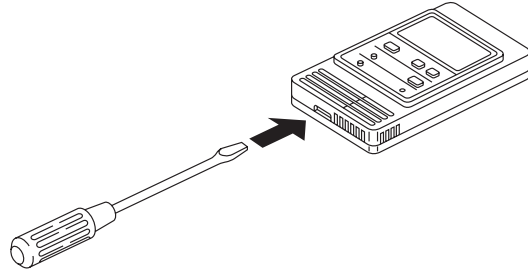
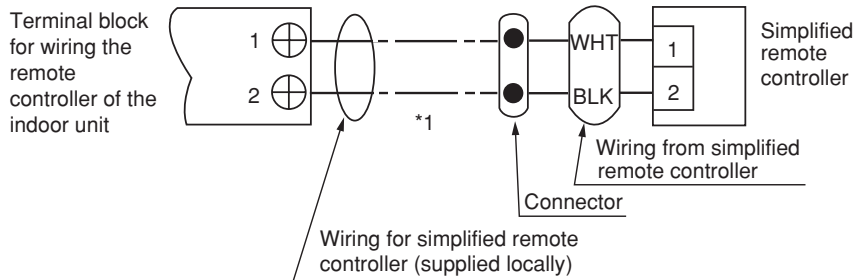


Fig. 3-52

3

### How to Wire the Simplified Remote Controller

#### Connection diagram



\*1: 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup> wires are used for lead wires.

Fig. 3-53

#### How to connect lead wires

<p>2 supplied white wire joints</p>	<p>Lead wire from indoor unit</p> <p>Lead wire from simplified remote controller</p> <p>Wire joint</p>	<ol style="list-style-type: none"> <li>1. Peel off 14 mm of the cable sheathing.</li> <li>2. Twist the 2 wires together and crimp them together with the wire joint.</li> <li>3. When a crimping tool is not used, solder the wires together and cover the joint with insulating tape.</li> </ol>
-------------------------------------	--	---

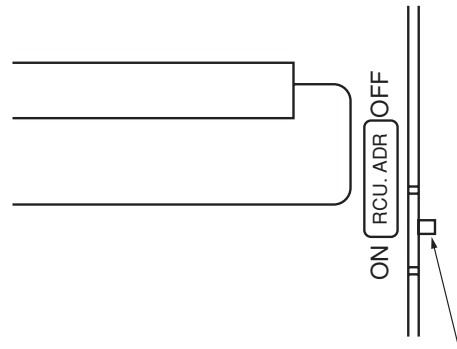
## 6. Simplified Remote Controller / NRCB-FL

### ■ Guidelines for Using 2 Simplified Remote Controllers

This multiple remote controller system controls 1 to 8 indoor units with 2 simplified remote controllers.

#### ● Set-up procedure

1. One of the 2 simplified remote controllers should be set as main controller.
2. Set the address switch on the other simplified remote controller P.C.B. from OFF to ON. (Fig. 3-54)  
The simplified remote controller can now be used as a sub-remote controller.



Remote controller address switch

Fig. 3-54

#### ● Basic wiring diagram

**Note: Make sure to connect the wires correctly or the unit may be damaged. (Fig. 3-55)**

- At right is a diagram for controlling 1 indoor unit by 2 simplified remote controllers.
- Performing group control of the multiple indoor units with 2 simplified remote controllers.
- \* The main and the sub simplified remote controllers can be installed at any indoor unit for operations.

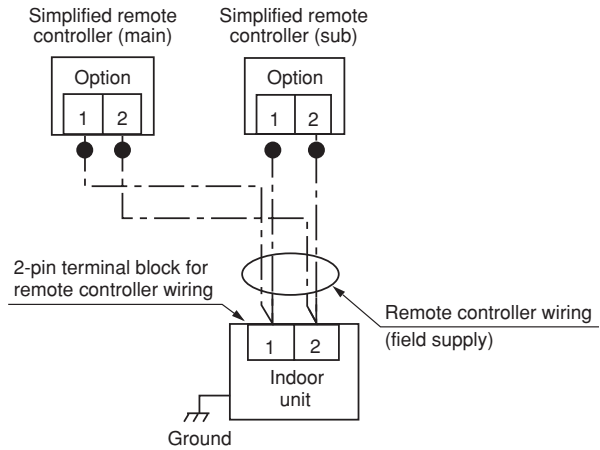


Fig. 3-55

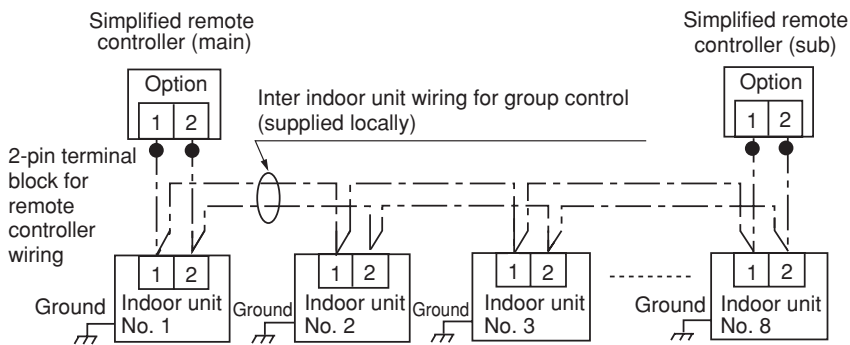



Fig. 3-56

### ■ Remote Controller Test Run Setting

1. Push the tip of a ball-pointed pen, etc. into the hole marked "TEST" for more than 4 seconds and press the  (ON/OFF) button.
  - "TEST" will appear on the crystal display during test run.
  - During test run, temperature cannot be adjusted. This button should be used only for test run.
2. Perform test run in any operation mode of "Heat," "Cool" or "Fan."

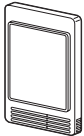
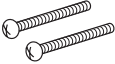





**Note:** The outdoor unit does not operate for 3 minutes after stopping operation or turning on the unit.

3. After finishing the test run, push the tip of a ball-point pen, etc. into the hole marked "TEST" again until "TEST" disappears from the crystal display.  
(The 60-minute off timer function is provided for this remote controller in order to avoid continuous test run.)

## 7. Remote Sensor / NSD

### Remote Sensor / NSD

#### ■ Parts Supplied with Remote Sensor

No.	Supplied parts	Qty
1	Remote sensor (comes with 200 mm wire) 	1
2	Machine screws M4 × 25 	2
3	Wood screws 	2
4	Spacers 	2
5	Wire joints 	2
6	Clamp 	1
7	Installation manual 	1

3

#### ■ Remote Sensor Installation Guidelines

##### Place of installation

- Mount the remote sensor at a height of 1 to 1.5 meters above the floor where it can sense the average temperature of the room.
- Do not mount the remote sensor in a place exposed to direct sunlight or a place exposed to outside air such as near a window.
- Do not mount the remote sensor behind an object so that it is separated from the air circulation of the room.
- Mount the remote sensor within the room being air conditioned.
- The remote sensor must be mounted on the wall or other surface vertically.

## 7. Remote Sensor / NSD

### ■ How to Install the Remote Sensor

- < NOTE 1 > Do not twist the remote sensor wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
  - < NOTE 2 > Install the remote sensor away from sources of electrical noise.
  - < NOTE 3 > Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.
- Use an electric junction box (supplied locally) (Fig. 3-57) for flush mounting of the remote sensor.

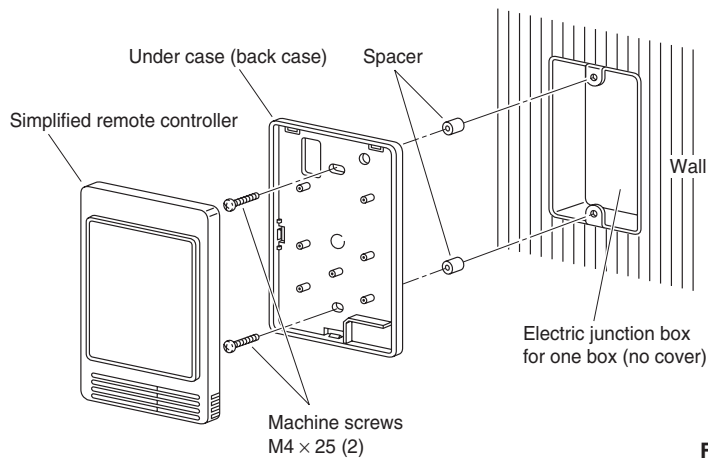


Fig. 3-57

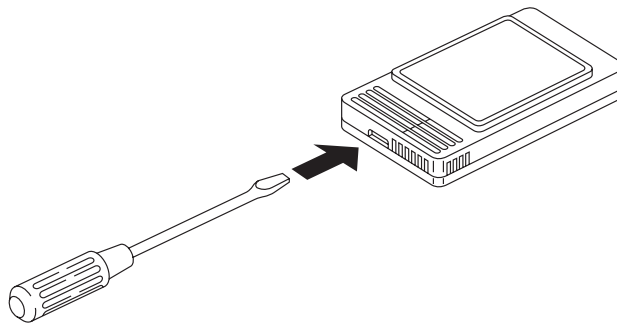


Fig. 3-58

1. Insert a screwdriver or the like in the groove on the lower side of the remote sensor body to pry off the back case. (Fig. 3-58)
2. Use the 2 supplied M4 machine screws to secure the remote sensor back case. Prior to mounting, clear the cutouts in the back case corresponding to the holes in the wall box using a screwdriver or the like. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
3. Connect locally supplied 2 core lead wires to the lead wires from the remote sensor. (See "How to wire the remote sensor.")

**When connecting the locally supplied 2 core lead wires to the terminal block, check the terminal numbers in the indoor unit to make sure that the wires are correctly connected. (Fig. 3-59)**

**(The remote sensor is damaged if 220 / 240V AC is applied.)**

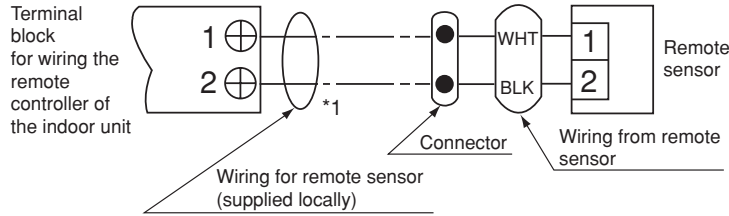
4. Fit the remote sensor to the tabs of the back case and mount it.



## 7. Remote Sensor / NSD

### How to Wire the Remote Sensor

#### Connection diagram



\*1: 0.5 mm<sup>2</sup> to 1.6 mm<sup>2</sup> wires are used for lead wires.

Fig. 3-59

#### How to connect lead wires

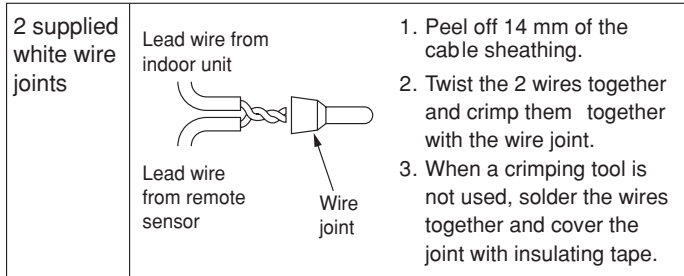


Fig. 3-60

3

### Important Information When Using Together with Remote Controller Switch

#### Installation method

1. Set the remote controller switch as the main remote controller.

< NOTE > Do not set the room temperature sensor on the remote controller switch as the remote controller sensor.

#### Basic wiring diagram

< NOTE > When connecting the wires, be careful not to wire incorrectly. (Incorrect wiring will damage the unit.)

- Wiring when controlling a single indoor unit with the remote sensor and remote controller switch:

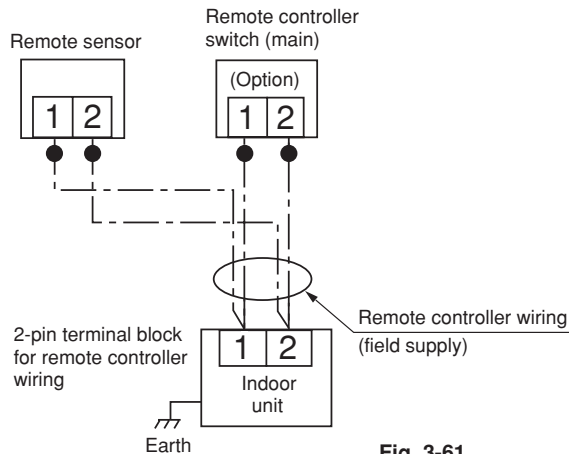


Fig. 3-61



## Contents

### 4. 3-WAY FLOW LOGIC UNIT SPECIFICATIONS

1. Outdoor Unit .....	4-2
2. 4-Way Air Discharge Semi-concealed Type .....	4-26
3. 2-Way Air Discharge Semi-concealed Type .....	4-46
4. Wall-Mounted Type .....	4-60
5. Ceiling-Mounted Type .....	4-73
6. Concealed Duct Type .....	4-86
7. Concealed Duct High Static Pressure Type .....	4-107
8. Floor-Standing Type (NFFL Type) .....	4-124
9. 1-Way Air Discharge Semi-concealed Slim Type (NKSFL Type) .....	4-137



## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## 1-1. Specifications

## Unit Specifications (1)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <8, 10 horsepower>							
MODEL No.		EFL 80-3R410			EFL 100-3R410				
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz			380 - 400 - 415V / 3N / 50Hz				
PERFORMANCE									
Cooling capacity		kW (BTU/h)	22.4 (76,400)			28.0 (95,500)			
Heating capacity		kW (BTU/h)	25.0 (85,300)			31.5 (107,500)			
COP	Cooling standard	-	3.78			3.45			
	Heating standard	-	4.09			3.95			
	Heating/Cooling ave.	-	3.94			3.70			
UNIT DIMENSIONS		Height	1887 (74 · 9/32)						
		Width	890 (35 · 1/32)						
		Depth	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)						
Net weight		kg (lbs.)	290 (639)						
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)						
ELECTRICAL RATINGS									
Voltage rating		V	380	400	415	380	400	415	
Cooling	Running amperes	A	10.0	9.50	9.2	13.7	13.0	12.6	
	Power input	kW	5.93	5.93	5.93	8.12	8.12	8.12	
	Power factor	%	90	90	90	90	90	90	
Heating	Standard	Running amperes	A	10.3	9.80	9.4	13.5	12.8	12.3
		Power input	kW	6.11	6.11	6.11	7.97	7.97	7.97
		Power factor	%	90	90	90	90	90	90
	Low temp.	Power input	kW	6.78	6.78	6.78	8.85	8.85	8.85
Starting amperes		A	139	139	139	148	148	148	
COMPRESSOR									
Type × Q'ty			Hermetic type × 2						
Motor output		kW	2.3 + 3.75			3 + 4.5			
Refrigeration oil	Type		FV68S (Ether oil)						
	Charge amount	L	1.9 + 1.5 + 2.4			1.9 + 1.5 + 2.4			
Crankcase heater		W	32 × 2			32 × 2			
Capacity control		%	-						
Refrigerant amount at shipment		kg	R410A · 12.0			R410A · 12.0			
Refrigerant control			Electronic expansion valve						
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost						
Heat exchanger			Tube with plate fins						
FAN DEVICE									
Type × Q'ty			Propeller fan × 1			Propeller fan × 1			
Air circulation		m <sup>3</sup> /min	150			160			
External static pressure		Pa	0						
Motor output (No. of poles)		kW	0.7 (8P)			0.7 (8P)			
Protective devices			High pressure switch, overcurrent (CT method)						
TUBING		Suction tube	mm (in)			φ19.05 (Brazing)			
Refrigerant	Discharge tube	mm (in)	φ15.88 (Brazing)			φ19.05 (Brazing)			
	Liquid tube	mm (in)	φ9.52 (Brazing)			φ9.52 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			φ9.52 (Flare nut)			
	Drain port		Compatibility w/optional drain pan (attached at time of installation)						
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB)			Heating: -20 ~ 24°C (WB)			
			Cooling & Heating: -20 ~ 24°C (DB)						
Operation sound (Hi)		dB-A	54.5 (Quiet mode: 51.5)			55 (Quiet mode: 52.0)			
Primary accessories			None			Connection tubing (φ22.22, φ19.05)			

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (2)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <12, 14, 16 horsepower>										
MODEL No.		EFL 120-3R410			EFL 140-3R410			EFL 160-3R410				
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz			380 - 400 - 415V / 3N / 50Hz			380 - 400 - 415V / 3N / 50Hz				
PERFORMANCE												
Cooling capacity		kW (BTU/h)	33.5 (114,300)			40.0 (136,500)			45.0 (153,600)			
Heating capacity		kW (BTU/h)	37.5 (128,000)			45.0 (153,600)			50.0 (170,600)			
COP	Cooling standard	-	3.41			3.45			3.38			
	Heating standard	-	3.81			3.91			3.79			
	Heating/Cooling ave.	-	3.61			3.68			3.59			
UNIT DIMENSIONS		Height	1887 (74 · 9/32)									
		Width	890 (35 · 1/32)									
		Depth	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)									
Net weight		kg (lbs.)	290 (639)			340 (750)			340 (750)			
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)										
ELECTRICAL RATINGS		3-phase	50Hz									
Voltage rating		V	380	400	415	380	400	415	380	400	415	
Cooling	Running amperes	A	16.6	15.7	15.2	20.0	19.0	18.3	23.0	21.8	21.0	
	Power input	kW	9.82	9.82	9.82	11.6	11.6	11.6	13.3	13.3	13.3	
	Power factor	%	90	90	90	88	88	88	88	88	88	
Heating	Standard	Running amperes	A	16.6	15.8	15.2	19.9	18.9	18.2	22.8	21.6	20.9
		Power input	kW	9.84	9.84	9.84	11.5	11.5	11.5	13.2	13.2	13.2
		Power factor	%	90	90	90	88	88	88	88	88	88
	Low temp.	Power input	kW	9.32	9.32	9.32	12.1	12.1	12.1	14.0	14.0	14.0
Starting amperes		A	156	156	156	147	147	147	158	158	158	
COMPRESSOR												
Type × Q'ty		Hermetic type × 2			Hermetic type × 2			Hermetic type × 2				
Motor output		kW	4.2 + 4.88			3 + 3.75 × 2			3 + 4.5 × 2			
Refrigeration oil	Type	FV68S (Ether oil)										
	Charge amount	L	1.9 + 1.5 + 2.4			1.9 + 1.5 × 2 + 2.4			1.9 + 1.5 × 2 + 2.4			
Crankcase heater		W	32 × 2			32 × 3			32 × 3			
Capacity control		%	-									
Refrigerant amount at shipment		kg	R410A · 12.0			R410A · 15.0			R410A · 15.0			
Refrigerant control		Electronic expansion valve										
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost										
Heat exchanger		Tube with plate fins										
FAN DEVICE												
Type × Q'ty		Propeller fan × 1			Propeller fan × 1			Propeller fan × 1				
Air circulation		m <sup>3</sup> /min	150			200			220			
External static pressure		Pa	0									
Motor output (No. of poles)		kW	0.7 (8P)			0.7 (8P)			0.7 (8P)			
Protective devices		High pressure switch, overcurrent (CT method)										
TUBING	Suction tube	mm (in)	φ25.4 (Brazing)			φ25.4 (Brazing)			φ28.58 (Brazing)			
	Discharge tube	mm (in)	φ19.05 (Brazing)			φ19.05 (Brazing)			φ22.22 (Brazing)			
	Liquid tube	mm (in)	φ12.7 (Brazing)			φ12.7 (Brazing)			φ12.7 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			φ9.52 (Flare nut)			φ9.52 (Flare nut)			
Drain port		Compatibility w/optional drain pan (attached at time of installation)										
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB)			Heating: -20 ~ 15°C (WB)			Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	56.0 (Quiet mode: 53.0)			60.0 (Quiet mode: 57.0)			61.0 (Quiet mode: 58.0)			
Primary accessories		Connection tubing (φ25.4, φ19.05, φ12.7)			Connection tubing (φ22.22)			Connection tubing (φ28.58, φ22.22)				

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (3)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <18 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 100-3R410		EFL 80-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)		50.4 (172,000)		
Heating capacity		kW (BTU/h)		56.5 (192,800)		
COP	Cooling standard	-		3.57		
	Heating standard	-		4.01		
	Heating/Cooling ave.	-		3.79		
UNIT DIMENSIONS		mm (in.)		1887 (74 · 9/32)		
		mm (in.)		890 (35 · 1/32)		
		mm (in.)		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		
Net weight		kg (lbs.)		290 (639)		
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)				
ELECTRICAL RATINGS						
Voltage rating		V		380      400      415		
Cooling	Running amperes	A		23.8      22.6      21.8		
	Power input	kW		14.1      14.1      14.1		
	Power factor	%		90      90      90		
Heating	Standard	Running amperes	A		23.8      22.6      21.8	
		Power input	kW		14.1      14.1      14.1	
		Power factor	%		90      90      90	
	Low temp.	Power input	kW		15.6      15.6      15.6	
Starting amperes		A		158      158      157		
COMPRESSOR						
Type × Q'ty		Hermetic type × 2		Hermetic type × 2		
Motor output		kW		3 + 4.5      2.3 + 3.75		
Refrigeration oil	Type	FV68S (Ether oil)				
	Charge amount	L		1.9 + 1.5 + 2.4      1.9 + 1.5 + 2.4		
Crankcase heater		W		32 × 2      32 × 2		
Capacity control		%				
Refrigerant amount at shipment		kg		R410A · 12.0      R410A · 12.0		
Refrigerant control		Electronic expansion valve				
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost				
Heat exchanger		Tube with plate fins				
FAN DEVICE						
Type × Q'ty		Propeller fan × 1		Propeller fan × 1		
Air circulation		m <sup>3</sup> /min		160      150		
External static pressure		Pa		0      0		
Motor output (No. of poles)		kW		0.7 (8P)      0.7 (8P)		
Protective devices		High pressure switch, overcurrent (CT method)				
TUBING		mm (in)		φ28.58 (Brazing)		
Refrigerant	Suction tube	mm (in)		φ22.22 (Brazing)		
	Discharge tube	mm (in)		φ15.88 (Brazing)		
	Liquid tube	mm (in)		φ9.52 (Flare nut)		
	Balance tube	mm (in)				
Drain port		Compatibility w/optional drain pan (attached at time of installation)				
External air temperature operation range		°C		Cooling: -10 ~ 43°C (DB)      Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A		57.8 (Quiet mode: 54.8)		
Primary accessories		Connection tubing (φ22.22, φ19.05)		None		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (4)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <20 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 100-3R410		EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	56.0 (191,100)			
Heating capacity		kW (BTU/h)	63.0 (215,000)			
COP	Cooling standard	-	3.46			
	Heating standard	-	3.96			
	Heating/Cooling ave.	-	3.71			
UNIT DIMENSIONS						
		Height	mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	
		Width	mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	
		Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	290 (639)		290 (639)	
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)				
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	27.3	26.0	25.0	
	Power input	kW	16.2	16.2	16.2	
	Power factor	%	90	90	90	
Heating	Standard	Running amperes	A	26.8	25.5	24.6
		Power input	kW	15.9	15.9	15.9
		Power factor	%	90	90	90
	Low temp.	Power input	kW	17.7	17.7	17.7
Starting amperes		A	162	161	161	
COMPRESSOR						
Type × Qty		Hermetic type × 2		Hermetic type × 2		
Motor output		kW	3 + 4.5	3 + 4.5		
Refrigeration oil	Type	FV68S (Ether oil)				
	Charge amount	L	1.9 + 1.5 + 2.4	1.9 + 1.5 + 2.4		
Crankcase heater		W	32 × 2	32 × 2		
Capacity control		%	-			
Refrigerant amount at shipment		kg	R410A · 12.0	R410A · 12.0		
Refrigerant control		Electronic expansion valve				
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost				
Heat exchanger		Tube with plate fins				
FAN DEVICE						
Type × Qty		Propeller fan × 1		Propeller fan × 1		
Air circulation		m <sup>3</sup> /min	160	160		
External static pressure		Pa	0	0		
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)		
Protective devices		High pressure switch, overcurrent (CT method)				
TUBING						
Refrigerant	Suction tube	mm (in)	φ28.58 (Brazing)			
	Discharge tube	mm (in)	φ22.22 (Brazing)			
	Liquid tube	mm (in)	φ15.88 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port		Compatibility w/optional drain pan (attached at time of installation)				
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	58.0 (Quiet mode: 55.0)			
Primary accessories			Connection tubing (φ22.22, φ19.05)	Connection tubing (φ22.22, φ19.05)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (5)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <22 horsepower>			
COMPONENT OUTDOOR UNIT		EFL 120-3R410		EFL 100-3R410	
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz	
PERFORMANCE					
Cooling capacity		kW (BTU/h)	61.5 (219,900)		
Heating capacity		kW (BTU/h)	69.0 (235,500)		
COP	Cooling standard	–	3.44		
	Heating standard	–	3.88		
	Heating/Cooling ave.	–	3.66		
UNIT DIMENSIONS					
		Height	mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)
		Width	mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)
		Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)
Net weight		kg (lbs.)	290 (639)		290 (639)
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Cooling	Running amperes	A	30.2	28.7	27.7
	Power input	kW	17.9	17.9	17.9
	Power factor	%	90	90	90
Heating	Standard	Running amperes	A	30.0	28.5
		Power input	kW	17.8	17.8
		Power factor	%	90	90
	Low temp.	Power input	kW	18.2	18.2
Starting amperes		A	170	169	169
COMPRESSOR					
Type × Q'ty			Hermetic type × 2		Hermetic type × 2
Motor output		kW	4.2 + 4.88		3 + 4.5
Refrigeration oil	Type		FV68S (Ether oil)		
	Charge amount	L	1.9 + 1.5 + 2.4		1.9 + 1.5 + 2.4
Crankcase heater		W	32 × 2		32 × 2
Capacity control		%	–		
Refrigerant amount at shipment		kg	R410A · 12.0		R410A · 12.0
Refrigerant control			Electronic expansion valve		
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost		
Heat exchanger			Tube with plate fins		
FAN DEVICE					
Type × Q'ty			Propeller fan × 1		Propeller fan × 1
Air circulation		m <sup>3</sup> /min	180		160
External static pressure		Pa	0		
Motor output (No. of poles)		kW	0.7 (8P)		0.7 (8P)
Protective devices			High pressure switch, overcurrent (CT method)		
TUBING	Suction tube	mm (in)	φ28.58 (Brazing)		
	Discharge tube	mm (in)	φ25.4 (Brazing)		
	Liquid tube	mm (in)	φ15.88 (Brazing)		
	Balance tube	mm (in)	φ9.52 (Flare nut)		
Drain port			Compatibility w/optional drain pan (attached at time of installation)		
External air temperature operation range		°C	Cooling: –10 ~ 43°C (DB) Heating: –20 ~ 15°C (WB) Cooling & Heating: –20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A	58.5 (Quiet mode: 55.5)		
Primary accessories			Connection tubing (φ25.4, φ19.05, φ12.7)		Connection tubing (φ22.22, φ19.05)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (6)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <24 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 140-3R410		EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)		68.0 (232,000)		
Heating capacity		kW (BTU/h)		76.5 (261,100)		
COP	Cooling standard	-		3.45		
	Heating standard	-		3.92		
	Heating/Cooling ave.	-		3.69		
UNIT DIMENSIONS		Height		mm (in.)		
		Width		mm (in.)		
		Depth		mm (in.)		
Net weight		kg (lbs.)		340 (750)		
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)				
ELECTRICAL RATINGS						
Voltage rating		V		380      400      415		
Cooling	Running amperes	A		33.6      31.9      30.8		
	Power input	kW		19.7      19.7      19.7		
	Power factor	%		89      89      89		
Heating	Standard	Running amperes	A		33.3      31.6      30.5	
		Power input	kW		19.5      19.5      19.5	
		Power factor	%		89      89      89	
	Low temp.	Power input	kW		21.0      21.0      21.0	
Starting amperes		A		168      167      166		
COMPRESSOR						
Type × Q'ty		Hermetic type × 3		Hermetic type × 2		
Motor output		kW		3 + 3.75 × 2      3 + 4.5		
Refrigeration oil	Type	FV68S (Ether oil)				
	Charge amount	L		1.9 + 1.5 × 2 + 2.4      1.9 + 1.5 + 2.4		
Crankcase heater		W		32 × 3      32 × 2		
Capacity control		%		-		
Refrigerant amount at shipment		kg		R410A · 15.0      R410A · 12.0		
Refrigerant control		Electronic expansion valve				
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost				
Heat exchanger		Tube with plate fins				
FAN DEVICE						
Type × Q'ty		Propeller fan × 1		Propeller fan × 1		
Air circulation		m <sup>3</sup> /min		200      160		
External static pressure		Pa		0      0		
Motor output (No. of poles)		kW		0.7 (8P)      0.7 (8P)		
Protective devices		High pressure switch, overcurrent (CT method)				
TUBING		Suction tube		mm (in.)		
		Discharge tube		mm (in.)		
Refrigerant	Liquid tube	mm (in.)		φ28.58 (Brazing)      φ25.4 (Brazing)		
	Balance tube	mm (in.)		φ15.88 (Brazing)      φ9.52 (Flare nut)		
Drain port		Compatibility w/optional drain pan (attached at time of installation)				
External air temperature operation range		°C		Cooling: -10 ~ 43°C (DB)      Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A		57.8 (Quiet mode: 54.8)		
Primary accessories		Connection tubing (φ22.22)		Connection tubing (φ22.22, φ19.05)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)



## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (7)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <26 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 180-3R410		EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)		73.0 (249,100)		
Heating capacity		kW (BTU/h)		81.5 (278,100)		
COP	Cooling standard	-		3.41		
	Heating standard	-		3.84		
	Heating/Cooling ave.	-		3.63		
UNIT DIMENSIONS		Height		mm (in.)		
		1887 (74 · 9/32)		1887 (74 · 9/32)		
		Width		mm (in.)		
		890 (35 · 1/32)		890 (35 · 1/32)		
		Depth		mm (in.)		
		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		
Net weight		kg (lbs.)		340 (750)		
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)				
ELECTRICAL RATINGS						
Voltage rating		V		380      400      415		
Cooling	Running amperes	A		36.5      34.7      33.5		
	Power input	kW		21.4      21.4      21.4		
	Power factor	%		89      89      89		
Heating	Standard	Running amperes	A		36.2      34.4      33.1	
		Power input	kW		21.2      21.2      21.2	
		Power factor	%		89      89      89	
	Low temp.	Power input	kW		22.9      22.9      22.9	
Starting amperes		A		172      171      170		
COMPRESSOR						
Type × Q'ty		Hermetic type × 3		Hermetic type × 2		
Motor output		kW		3 + 4.5 × 2      3 + 4.5		
Refrigeration oil	Type	FV68S (Ether oil)				
	Charge amount	L		1.9 + 1.5 × 2 + 2.4      1.9 + 1.5 + 2.4		
Crankcase heater		W		32 × 3      32 × 2		
Capacity control		%		-		
Refrigerant amount at shipment		kg		R410A · 15.0      R410A · 12.0		
Refrigerant control		Electronic expansion valve				
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost				
Heat exchanger		Tube with plate fins				
FAN DEVICE						
Type × Q'ty		Propeller fan × 1		Propeller fan × 1		
Air circulation		m <sup>3</sup> /min		220      160		
External static pressure		Pa		0      0		
Motor output (No. of poles)		kW		0.7 (8P)      0.7 (8P)		
Protective devices		High pressure switch, overcurrent (CT method)				
TUBING		Suction tube		mm (in.)		
		φ31.75 (Brazing)				
		Discharge tube		mm (in.)		
		φ25.4 (Brazing)				
		Liquid tube		mm (in.)		
		φ19.05 (Brazing)				
		Balance tube		mm (in.)		
		φ9.52 (Flare nut)				
Drain port		Compatibility w/optional drain pan (attached at time of installation)				
External air temperature operation range		°C		Cooling: -10 ~ 43°C (DB)      Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A		60.1 (Quiet mode: 57.1)		
Primary accessories		Connection tubing (φ28.58, φ22.22)		Connection tubing (φ22.22, φ19.05)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (8)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <28 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410		EFL 120-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)		78.5 (267,900)		
Heating capacity		kW (BTU/h)		87.5 (300,300)		
COP	Cooling standard	-		3.40		
	Heating standard	-		3.80		
	Heating/Cooling ave.	-		3.60		
UNIT DIMENSIONS		Height		mm (in.)		
		1887 (74 · 9/32)		1887 (74 · 9/32)		
		Width		mm (in.)		
		890 (35 · 1/32)		890 (35 · 1/32)		
		Depth		mm (in.)		
		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		
Net weight		kg (lbs.)		340 (750)		
Color (Munsell code)		Silky shade (1Y 8.5 / 0.5)				
ELECTRICAL RATINGS						
Voltage rating		V		380      400      415		
Cooling	Running amperes	A		39.4      37.5      36.1		
	Power input	kW		23.1      23.1      23.1		
	Power factor	%		89      89      89		
Heating	Standard	Running amperes	A		39.3      37.3      36.0	
		Power input	kW		23.0      23.0      23.0	
		Power factor	%		89      89      89	
	Low temp.	Power input	kW		23.3      23.3      23.3	
Starting amperes		A		179      178      177		
COMPRESSOR						
Type × Q'ty		Hermetic type × 3		Hermetic type × 2		
Motor output		kW		3 + 4.5 × 2      4.2 + 4.88		
Refrigeration oil	Type	FV68S (Ether oil)				
	Charge amount	L		1.9 + 1.5 × 2 + 2.4      1.9 + 1.5 + 2.4		
Crankcase heater		W		32 × 3      32 × 2		
Capacity control		%		-		
Refrigerant amount at shipment		kg		R410A · 15.0      R410A · 12.0		
Refrigerant control		Electronic expansion valve				
Defrost method		Reverse-cycle defrost, outdoor unit cycle defrost				
Heat exchanger		Tube with plate fins				
FAN DEVICE						
Type × Q'ty		Propeller fan × 1		Propeller fan × 1		
Air circulation		m <sup>3</sup> /min		220      180		
External static pressure		Pa		0      0		
Motor output (No. of poles)		kW		0.7 (8P)      0.7 (8P)		
Protective devices		High pressure switch, overcurrent (CT method)				
TUBING		Suction tube		mm (in.)		
		φ31.75 (Brazing)				
		Discharge tube		mm (in.)		
		φ28.58 (Brazing)				
Refrigerant		Liquid tube		mm (in.)		
		φ19.05 (Brazing)				
		Balance tube		mm (in.)		
		φ9.52 (Flare nut)				
Drain port		Compatibility w/optional drain pan (attached at time of installation)				
External air temperature operation range		°C		Cooling: -10 ~ 43°C (DB)      Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A		60.4 (Quiet mode: 57.4)		
Primary accessories		Connection tubing (φ28.58, φ22.22)		Connection tubing (φ25.4, φ19.05, φ12.7)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (9)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <30 horsepower>			
COMPONENT OUTDOOR UNIT			EFL 180-3R410		EFL 140-3R410
POWER SOURCE			380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz
PERFORMANCE					
Cooling capacity		kW (BTU/h)	85.0 (290,100)		
Heating capacity		kW (BTU/h)	95.0 (324,200)		
COP	Cooling standard	-	3.41		
	Heating standard	-	3.85		
	Heating/Cooling ave.	-	3.63		
UNIT DIMENSIONS					
Height		mm (in.)	1887 (74 · 9/32)		1887 (74 · 9/32)
Width		mm (in.)	890 (35 · 1/32)		890 (35 · 1/32)
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)
Net weight		kg (lbs.)	340 (750)		340 (750)
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)		
ELECTRICAL RATINGS					
Voltage rating		V	380		400 415
Cooling	Running amperes	A	43.0		40.8 39.4
	Power input	kW	24.9		24.9 24.9
	Power factor	%	88		88 88
Heating	Standard	Running amperes	42.6		40.5 39.0
		Power input	24.7		24.7 24.7
		Power factor	88		88 88
	Low temp.	Power input	26.1		26.1 26.1
Starting amperes		A	179		177 176
COMPRESSOR					
Type × Q'ty			Hermetic type × 3		Hermetic type × 3
Motor output		kW	3 + 4.5 × 2		3 + 3.75 × 2
Refrigeration oil	Type		FV68S (Ether oil)		
	Charge amount	L	1.9 + 1.5 × 2 + 2.4		1.9 + 1.5 × 2 + 2.4
Crankcase heater		W	32 × 3		32 × 3
Capacity control		%	-		
Refrigerant amount at shipment		kg	R410A · 15.0		R410A · 15.0
Refrigerant control			Electronic expansion valve		
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost		
Heat exchanger			Tube with plate fins		
FAN DEVICE					
Type × Q'ty			Propeller fan × 1		Propeller fan × 1
Air circulation		m <sup>3</sup> /min	220		200
External static pressure		Pa	0		0
Motor output (No. of poles)		kW	0.7 (8P)		0.7 (8P)
Protective devices			High pressure switch, overcurrent (CT method)		
TUBING					
Refrigerant	Suction tube	mm (in)	φ31.75 (Brazing)		
	Discharge tube	mm (in)	φ28.58 (Brazing)		
	Liquid tube	mm (in)	φ19.05 (Brazing)		
	Balance tube	mm (in)	φ9.52 (Flare nut)		
Drain port			Compatibility w/optional drain pan (attached at time of installation)		
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A	61.0 (Quiet mode: 58.0)		
Primary accessories			Connection tubing (φ28.58, φ22.22)		Connection tubing (φ22.22)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (10)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <32 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410		EFL 160-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz		380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	90.0 (307,100)			
Heating capacity		kW (BTU/h)	100 (343,000)			
COP	Cooling standard	–	3.38			
	Heating standard	–	3.79			
	Heating/Cooling ave.	–	3.59			
UNIT DIMENSIONS			1887 (74 · 9/32)		1887 (74 · 9/32)	
		Height	mm (in.)			
		Width	mm (in.)	890 (35 · 1/32)		
		Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)		
Net weight		kg (lbs.)	340 (750)		340 (750)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Standard	Running amperes	A	45.9	43.6	42.1
		Power input	kW	26.6	26.6	26.6
		Power factor	%	88	88	88
Heating	Standard	Running amperes	A	45.6	43.3	41.7
		Power input	kW	26.4	26.4	26.4
		Power factor	%	88	88	88
	Low temp.	Power input	kW	28.0	28.0	28.0
Starting amperes		A	182	180	179	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3		Hermetic type × 3	
Motor output		kW	3 + 4.5 × 2		3 + 4.5 × 2	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4		1.9 + 1.5 × 2 + 2.4	
Crankcase heater		W	32 × 3		32 × 3	
Capacity control		%	–			
Refrigerant amount at shipment		kg	R410A · 15.0		R410A · 15.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1		Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	220		220	
External static pressure		Pa	0			
Motor output (No. of poles)		kW	0.7 (8P)		0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING						
Refrigerant	Suction tube	mm (in)	φ31.75 (Brazing)			
	Discharge tube	mm (in)	φ28.58 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: –10 ~ 43°C (DB) Heating: –20 ~ 15°C (WB) Cooling & Heating: –20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	61.5 (Quiet mode: 58.5)			
Primary accessories			Connection tubing (φ28.58, φ22.22)		Connection tubing (φ28.58, φ22.22)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (11)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <34 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 140-3R410	EFL 100-3R410	EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	96.0 (327,600)			
Heating capacity		kW (BTU/h)	108 (368,500)			
COP	Cooling standard	-	3.45			
	Heating standard	-	3.93			
	Heating/Cooling ave.	-	3.69			
UNIT DIMENSIONS						
	Height	mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)	
	Width	mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)	
	Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	340 (750)	290 (639)	290 (639)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	47.5	45.1	43.5	
	Power input	kW	27.8	27.8	27.8	
	Power factor	%	89	89	89	
Heating	Standard	Running amperes	46.9	44.6	43.0	
		Power input	27.5	27.5	27.5	
		Power factor	89	89	89	
	Low temp.	Power input	kW	29.8	29.8	29.8
Starting amperes		A	182	180	179	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3	Hermetic type × 2	Hermetic type × 2	
Motor output		kW	3 + 3.75 × 2	3 + 4.5	3 + 4.5	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4	1.9 + 1.5 + 2.4	
Crankcase heater		W	32 × 3	32 × 2	32 × 2	
Capacity control		%	-			
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 12.0	R410A · 12.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	200	160	160	
External static pressure		Pa	0	0	0	
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING	Suction tube	mm (in)	φ31.75 (Brazing)			
	Discharge tube	mm (in)	φ28.58 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	60.8 (Quiet mode: 57.8)			
Primary accessories			Connection tubing (φ22.22)	Connection tubing (φ22.22, φ19.05)	Connection tubing (φ22.22, φ19.05)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (12)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <36 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 100-3R410	EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	101 (344,700)			
Heating capacity		kW (BTU/h)	113 (385,600)			
COP	Cooling standard	-	3.41			
	Heating standard	-	3.88			
	Heating/Cooling ave.	-	3.65			
UNIT DIMENSIONS						
Height		mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)	
Width		mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)	
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	340 (750)	290 (639)	290 (639)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	50.5	48.0	46.3	
	Power input	kW	29.6	29.6	29.6	
	Power factor	%	89	89	89	
Heating	Standard	Running amperes	A	49.7	47.2	45.5
		Power input	kW	29.1	29.1	29.1
		Power factor	%	89	89	89
	Low temp.	Power input	kW	31.7	31.7	31.7
Starting amperes		A	186	184	183	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3	Hermetic type × 2	Hermetic type × 2	
Motor output		kW	3 + 4.5 × 2	3 + 4.5	3 + 4.5	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4	1.9 + 1.5 + 2.4	
Crankcase heater		W	32 × 3	32 × 2	32 × 2	
Capacity control		%	-			
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 12.0	R410A · 12.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	220	160	160	
External static pressure		Pa	0	0	0	
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING	Suction tube	mm (in)	φ38.1 (Brazing)			
	Discharge tube	mm (in)	φ28.58 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	61.3 (Quiet mode: 58.3)			
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ22.22, φ19.05)	Connection tubing (φ22.22, φ19.05)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (13)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <38 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 120-3R410	EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	107 (363,400)			
Heating capacity		kW (BTU/h)	119 (407,800)			
COP	Cooling standard	-	3.42			
	Heating standard	-	3.84			
	Heating/Cooling ave.	-	3.63			
UNIT DIMENSIONS						
Height		mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)	
Width		mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)	
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	340 (750)	290 (639)	290 (639)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	53.0	51.0	49.0	
	Power input	kW	31.3	31.3	31.3	
	Power factor	%	89	89	89	
Heating	Standard	Running amperes	A	53.0	50.0	48.0
		Power input	kW	31.0	31.0	31.0
		Power factor	%	89	89	89
	Low temp.	Power input	kW	32.2	32.2	32.2
Starting amperes		A	193	191	190	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3	Hermetic type × 2	Hermetic type × 2	
Motor output		kW	3 + 4.5 × 2	4.2 + 4.88	3 + 4.5	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4	1.9 + 1.5 + 2.4	
Crankcase heater		W	32 × 3	32 × 2	32 × 2	
Capacity control		%	-			
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 12.0	R410A · 12.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	220	180	160	
External static pressure		Pa	0	0	0	
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING	Suction tube	mm (in)	φ38.1 (Brazing)			
	Discharge tube	mm (in)	φ31.75 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	61.5 (Quiet mode: 58.5)			
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ25.4, φ19.05, φ12.7)	Connection tubing (φ22.22, φ19.05)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (14)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <40 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 140-3R410	EFL 100-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	113 (385,600)			
Heating capacity		kW (BTU/h)	127 (431,700)			
COP	Cooling standard	–	3.42			
	Heating standard	–	3.88			
	Heating/Cooling ave.	–	3.65			
UNIT DIMENSIONS						
Height		mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)	
Width		mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)	
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	340 (750)	340 (750)	290 (639)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	57.0	54.0	52.0	
	Power input	kW	33.0	33.0	33.0	
	Power factor	%	88	88	88	
Heating	Standard	Running amperes	A	56.0	54.0	52.0
		Power input	kW	32.7	32.7	32.7
		Power factor	%	88	88	88
	Low temp.	Power input	kW	35.0	35.0	35.0
Starting amperes		A	192	190	188	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3	Hermetic type × 3	Hermetic type × 2	
Motor output		kW	3 + 4.5 × 2	3 + 3.75 × 2	3 + 4.5	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4	
Crankcase heater		W	32 × 3	32 × 3	32 × 2	
Capacity control		%	–			
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 15.0	R410A · 12.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	220	200	160	
External static pressure		Pa	0	0	0	
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING						
Refrigerant	Suction tube	mm (in)	φ38.1 (Brazing)			
	Discharge tube	mm (in)	φ31.75 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: –10 ~ 43°C (DB) Heating: –20 ~ 15°C (WB) Cooling & Heating: –20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	62.0 (Quiet mode: 59.0)			
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ22.22)	Connection tubing (φ22.22, φ19.05)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)



## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (15)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <42 horsepower>			
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 160-3R410	EFL 100-3R410	
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	
PERFORMANCE					
Cooling capacity		kW (BTU/h)	118 (402,700)		
Heating capacity		kW (BTU/h)	132 (450,400)		
COP	Cooling standard	-	3.40		
	Heating standard	-	3.84		
	Heating/Cooling ave.	-	3.62		
UNIT DIMENSIONS					
Height		mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)
Width		mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)
Net weight		kg (lbs.)	340 (750)	340 (750)	290 (639)
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Cooling	Running amperes	A	60.0	57.0	55.0
	Power input	kW	34.7	34.7	34.7
	Power factor	%	88	88	88
Heating	Standard	Running amperes	A	59.0	54.0
		Power input	kW	34.4	34.4
		Power factor	%	89	89
	Low temp.	Power input	kW	36.9	36.9
Starting amperes		A	195	193	191
COMPRESSOR					
Type × Q'ty			Hermetic type × 3	Hermetic type × 3	Hermetic type × 2
Motor output		kW	3 + 4.5 × 2	3 + 4.5 × 2	3 + 4.5
Refrigeration oil	Type		FV68S (Ether oil)		
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4
Crankcase heater		W	32 × 3	32 × 3	32 × 2
Capacity control		%	-		
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 15.0	R410A · 12.0
Refrigerant control			Electronic expansion valve		
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost		
Heat exchanger			Tube with plate fins		
FAN DEVICE					
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1
Air circulation		m <sup>3</sup> /min	220	220	160
External static pressure		Pa	0	0	0
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)
Protective devices			High pressure switch, overcurrent (CT method)		
TUBING					
Refrigerant	Suction tube	mm (in)	φ38.1 (Brazing)		
	Discharge tube	mm (in)	φ31.75 (Brazing)		
	Liquid tube	mm (in)	φ19.05 (Brazing)		
	Balance tube	mm (in)	φ9.52 (Flare nut)		
Drain port			Compatibility w/optional drain pan (attached at time of installation)		
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A	62.4 (Quiet mode: 59.4)		
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ28.58, φ22.22)	Connection tubing (φ22.22, φ19.05)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (16)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <44 horsepower>			
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 160-3R410	EFL 120-3R410	
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	
PERFORMANCE					
Cooling capacity		kW (BTU/h)	124 (421,400)		
Heating capacity		kW (BTU/h)	138 (470,900)		
COP	Cooling standard	-	3.41		
	Heating standard	-	3.81		
	Heating/Cooling ave.	-	3.61		
UNIT DIMENSIONS					
Height		mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)
Width		mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)
Depth		mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)
Net weight		kg (lbs.)	340 (750)	340 (750)	290 (639)
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Cooling	Running amperes	A	63.0	80.0	58.0
	Power input	kW	36.4	36.4	36.4
	Power factor	%	88	88	88
Heating	Standard	Running amperes	63.0	59.0	57.0
		Power input	36.2	36.2	36.2
		Power factor	88	88	88
	Low temp.	Power input	37.3	37.3	37.3
Starting amperes		A	202	200	198
COMPRESSOR					
Type × Q'ty			Hermetic type × 3	Hermetic type × 3	Hermetic type × 2
Motor output		kW	3 + 4.5 × 2	3 + 4.5 × 2	4.2 + 4.88
Refrigeration oil	Type		FV68S (Ether oil)		
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 + 2.4
Crankcase heater		W	32 × 3	32 × 3	32 × 2
Capacity control		%	-		
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 15.0	R410A · 12.0
Refrigerant control			Electronic expansion valve		
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost		
Heat exchanger			Tube with plate fins		
FAN DEVICE					
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1
Air circulation		m <sup>3</sup> /min	220	220	180
External static pressure		Pa	0	0	0
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)
Protective devices			High pressure switch, overcurrent (CT method)		
TUBING					
Refrigerant	Suction tube	mm (in)	φ38.1 (Brazing)		
	Discharge tube	mm (in)	φ31.75 (Brazing)		
	Liquid tube	mm (in)	φ19.05 (Brazing)		
	Balance tube	mm (in)	φ9.52 (Flare nut)		
Drain port			Compatibility w/optional drain pan (attached at time of installation)		
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A	62.6 (Quiet mode: 59.6)		
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ28.58, φ22.22)	Connection tubing (φ25.4, φ19.05, φ12.7)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (17)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <46 horsepower>				
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 160-3R410	EFL 140-3R410		
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz		
PERFORMANCE						
Cooling capacity		kW (BTU/h)	130 (443,600)			
Heating capacity		kW (BTU/h)	145 (494,800)			
COP	Cooling standard	-	3.40			
	Heating standard	-	3.83			
	Heating/Cooling ave.	-	3.62			
UNIT DIMENSIONS						
	Height	mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)	
	Width	mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)	
	Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	
Net weight		kg (lbs.)	340 (750)	340 (750)	340 (750)	
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)			
ELECTRICAL RATINGS						
Voltage rating		V	380	400	415	
Cooling	Running amperes	A	66.0	63.0	60.0	
	Power input	kW	38.2	38.2	38.2	
	Power factor	%	88	88	88	
Heating	Standard	Running amperes	A	65.0	62.0	60.0
		Power input	kW	37.9	37.9	37.9
		Power factor	%	88	88	88
	Low temp.	Power input	kW	40.1	40.1	40.1
Starting amperes		A	202	199	197	
COMPRESSOR						
Type × Q'ty			Hermetic type × 3	Hermetic type × 3	Hermetic type × 3	
Motor output		kW	3 + 4.5 × 2	3 + 4.5 × 2	3 + 3.75 × 2	
Refrigeration oil	Type		FV68S (Ether oil)			
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	
Crankcase heater		W	32 × 3	32 × 3	32 × 3	
Capacity control		%	-			
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 15.0	R410A · 15.0	
Refrigerant control			Electronic expansion valve			
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost			
Heat exchanger			Tube with plate fins			
FAN DEVICE						
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1	
Air circulation		m <sup>3</sup> /min	220	220	200	
External static pressure		Pa	0	0	0	
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)	
Protective devices			High pressure switch, overcurrent (CT method)			
TUBING						
Refrigerant	Suction tube	mm (in)	φ38.1 (Brazing)			
	Discharge tube	mm (in)	φ31.75 (Brazing)			
	Liquid tube	mm (in)	φ19.05 (Brazing)			
	Balance tube	mm (in)	φ9.52 (Flare nut)			
Drain port			Compatibility w/optional drain pan (attached at time of installation)			
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)			
Operation sound (Hi)		dB-A	63.0 (Quiet mode: 60.0)			
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ28.58, φ22.22)	Connection tubing (φ22.22)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

## 3-WAY FLOW LOGIC Unit Specifications

## 1. Outdoor Unit

## Unit Specifications (18)

MODEL NAME		3-WAY FLOW LOGIC Capacity Control Outdoor Unit <48 horsepower>			
COMPONENT OUTDOOR UNIT		EFL 160-3R410	EFL 160-3R410	EFL 160-3R410	
POWER SOURCE		380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	380 - 400 - 415V / 3N / 50Hz	
PERFORMANCE					
Cooling capacity		kW (BTU/h)	135 (460,700)		
Heating capacity		kW (BTU/h)	150 (511,900)		
COP	Cooling standard	-	3.38		
	Heating standard	-	3.79		
	Heating/Cooling ave.	-	3.59		
UNIT DIMENSIONS					
	Height	mm (in.)	1887 (74 · 9/32)	1887 (74 · 9/32)	1887 (74 · 9/32)
	Width	mm (in.)	890 (35 · 1/32)	890 (35 · 1/32)	890 (35 · 1/32)
	Depth	mm (in.)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)	890 (Ceiling dimension) (+60) (35 · 1/32) (+2 · 3/8)
Net weight		kg (lbs.)	340 (750)	340 (750)	340 (750)
Color (Munsell code)			Silky shade (1Y 8.5 / 0.5)		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Cooling	Running amperes	A	69.0	65.0	63.0
	Power input	kW	39.9	39.9	39.9
	Power factor	%	88	88	88
Heating	Standard	Running amperes	A	68.0	65.0
		Power input	kW	39.6	39.6
		Power factor	%	88	88
	Low temp.	Power input	kW	42.0	42.0
Starting amperes		A	205	202	200
COMPRESSOR					
Type × Q'ty			Hermetic type × 3	Hermetic type × 3	Hermetic type × 3
Motor output		kW	3 + 4.5 × 2	3 + 4.5 × 2	3 + 4.5 × 2
Refrigeration oil	Type		FV68S (Ether oil)		
	Charge amount	L	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4	1.9 + 1.5 × 2 + 2.4
Crankcase heater		W	32 × 3	32 × 3	32 × 3
Capacity control		%	-		
Refrigerant amount at shipment		kg	R410A · 15.0	R410A · 15.0	R410A · 15.0
Refrigerant control			Electronic expansion valve		
Defrost method			Reverse-cycle defrost, outdoor unit cycle defrost		
Heat exchanger			Tube with plate fins		
FAN DEVICE					
Type × Q'ty			Propeller fan × 1	Propeller fan × 1	Propeller fan × 1
Air circulation		m <sup>3</sup> /min	220	220	220
External static pressure		Pa	0	0	0
Motor output (No. of poles)		kW	0.7 (8P)	0.7 (8P)	0.7 (8P)
Protective devices			High pressure switch, overcurrent (CT method)		
TUBING	Suction tube	mm (in)	φ38.1 (Brazing)		
	Discharge tube	mm (in)	φ31.75 (Brazing)		
	Liquid tube	mm (in)	φ19.05 (Brazing)		
	Balance tube	mm (in)	φ9.52 (Flare nut)		
Drain port			Compatibility w/optional drain pan (attached at time of installation)		
External air temperature operation range		°C	Cooling: -10 ~ 43°C (DB) Heating: -20 ~ 15°C (WB) Cooling & Heating: -20 ~ 24°C (DB)		
Operation sound (Hi)		dB-A	63.3 (Quiet mode: 60.3)		
Primary accessories			Connection tubing (φ28.58, φ22.22)	Connection tubing (φ28.58, φ22.22)	Connection tubing (φ28.58, φ22.22)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

\* Performance and electrical characteristics values are based on JIS B8616 package A/C.  
(Cooling: Indoor intake air temp. 27°C DB or 19°C WB. Outdoor intake air temp. 35°C DB.)  
(Heating [standard]: Indoor intake air temp. 20°C DB. Outdoor intake air temp. 7°C DB or 6°C WB.)  
(Heating [cold]: Indoor intake air temp. 20°C DB or 15°C WB or less. Outdoor intake air temp. 2°C DB or 1°C WB.)

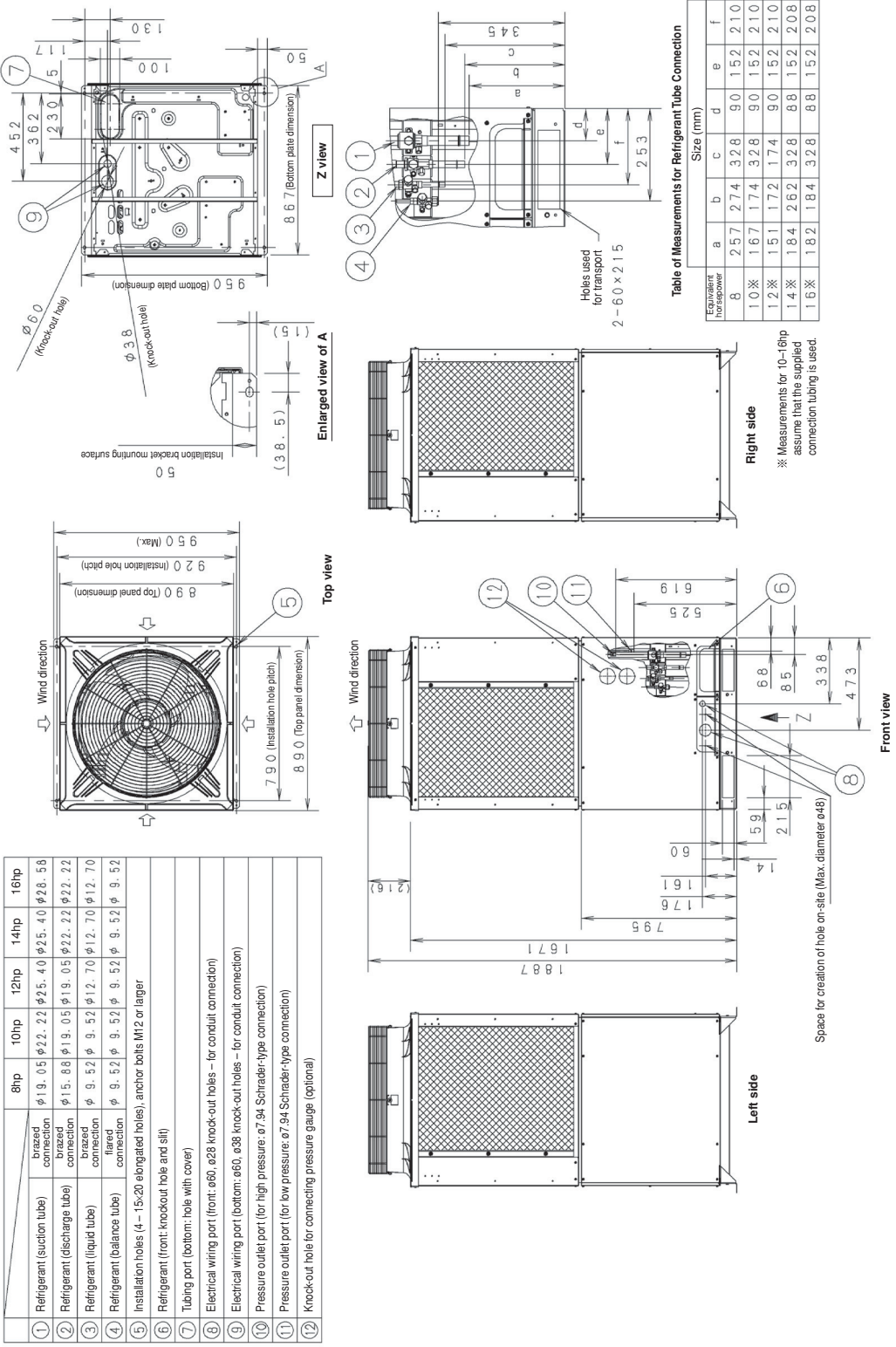
3-WAY FLOW LOGIC Unit Specifications

1. Outdoor Unit

1-2. Dimensional Data

EFL 80-3R410, EFL 100-3R410, EFL 120-3R410

4

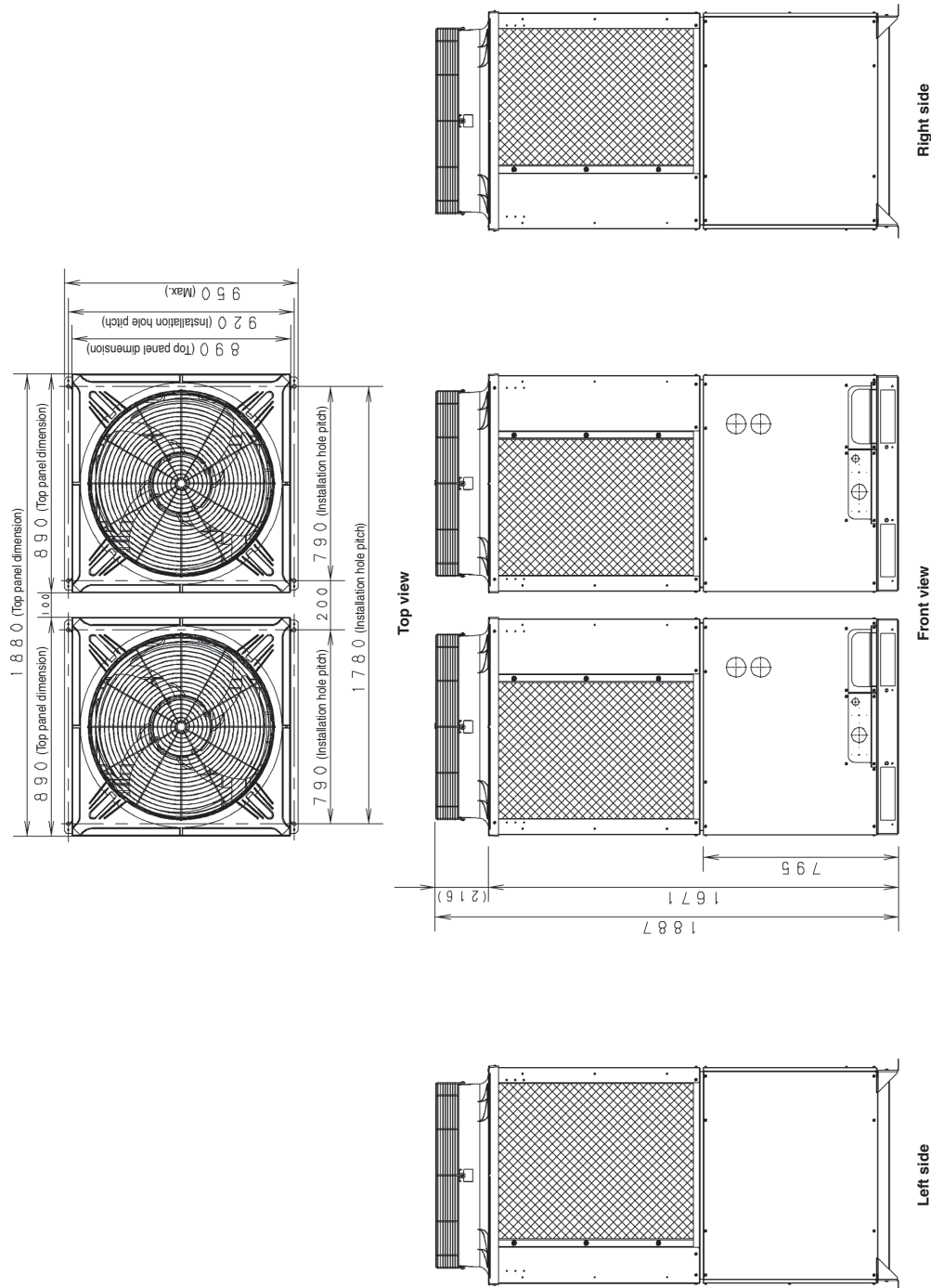


	8hp	10hp	12hp	14hp	16hp
1 Refrigerant (suction tube) brazed connection	φ19.05	φ22.22	φ25.40	φ25.40	φ28.58
2 Refrigerant (discharge tube) brazed connection	φ15.88	φ19.05	φ19.05	φ22.22	φ22.22
3 Refrigerant (liquid tube) brazed connection	φ9.52	φ9.52	φ12.70	φ12.70	φ12.70
4 Refrigerant (balance tube) flared connection	φ9.52	φ9.52	φ9.52	φ9.52	φ9.52
5 Installation holes (4-15x20 elongated holes), anchor bolts M12 or larger					
6 Refrigerant (front: knockout hole and slit)					
7 Tubing port (bottom: hole with cover)					
8 Electrical wiring port (front: φ60, φ28 knockout holes - for conduit connection)					
9 Electrical wiring port (bottom: φ60, φ38 knockout holes - for conduit connection)					
10 Pressure outlet port (for high pressure: φ7.94 Schrader-type connection)					
11 Pressure outlet port (for low pressure: φ7.94 Schrader-type connection)					
12 Knockout hole for connecting pressure gauge (optional)					

3-WAY FLOW LOGIC Unit Specifications

1. Outdoor Unit

1-3. Multiple Unit Installation Example

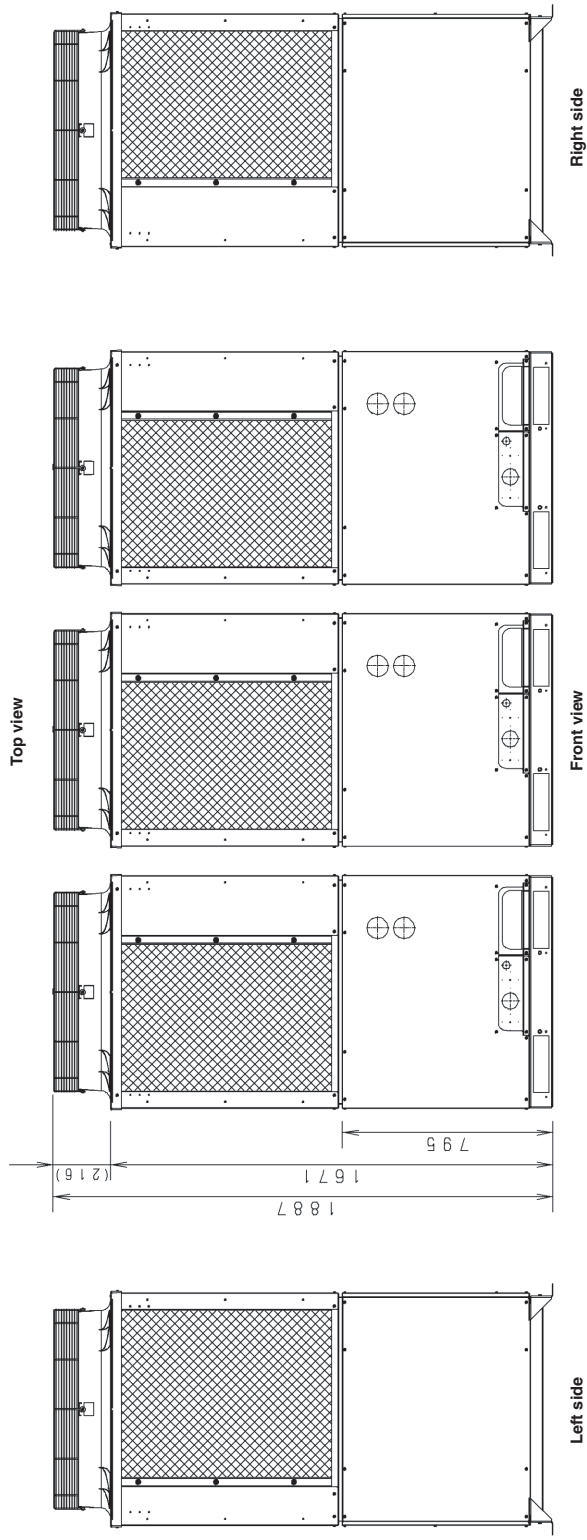
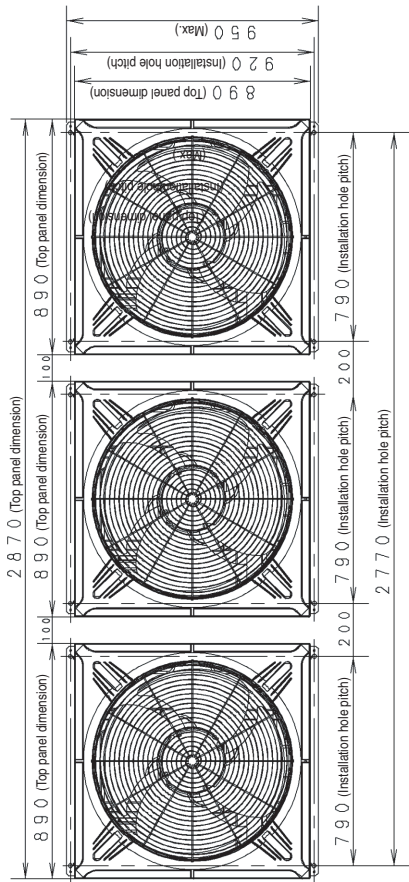




3-WAY FLOW LOGIC Unit Specifications

1. Outdoor Unit

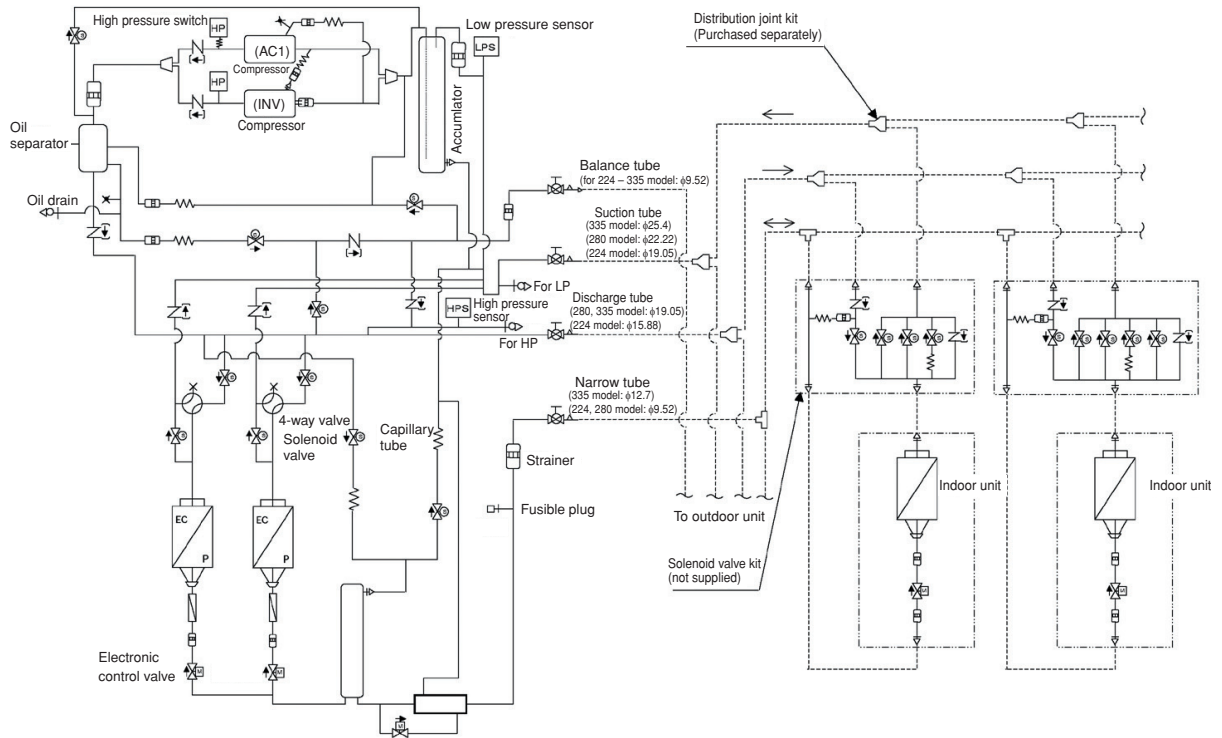
4



# 1. Outdoor Unit

## 1-4. Refrigerant Flow Diagram

EFL 80-3R410  
 EFL 100-3R410  
 EFL 120-3R410

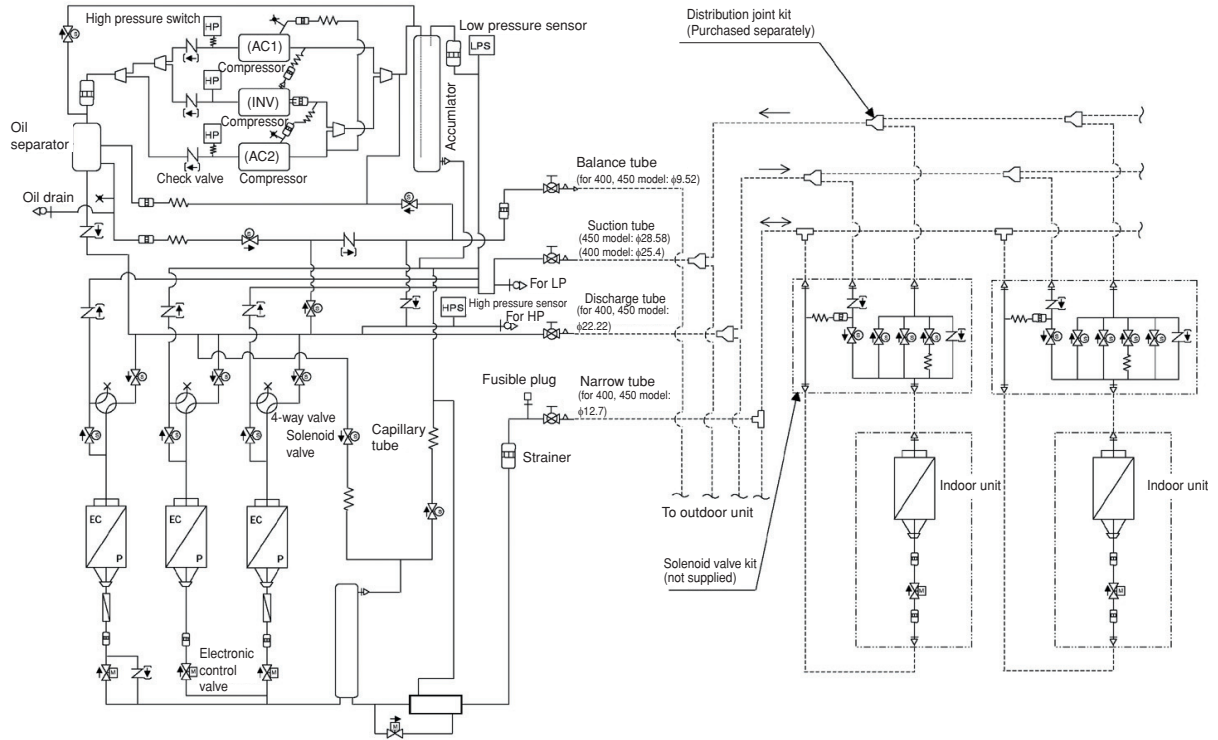


4



# 1. Outdoor Unit

## EFL 140-3R410

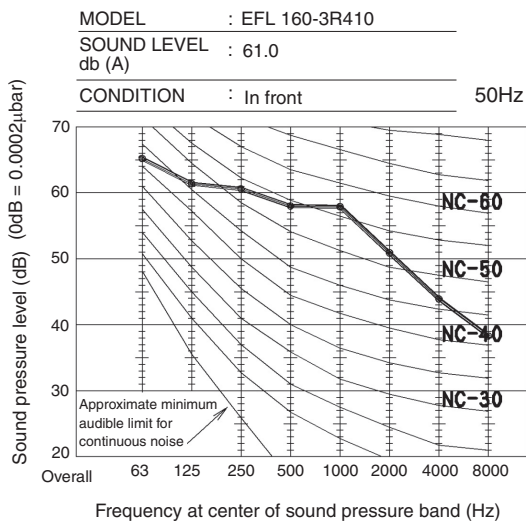
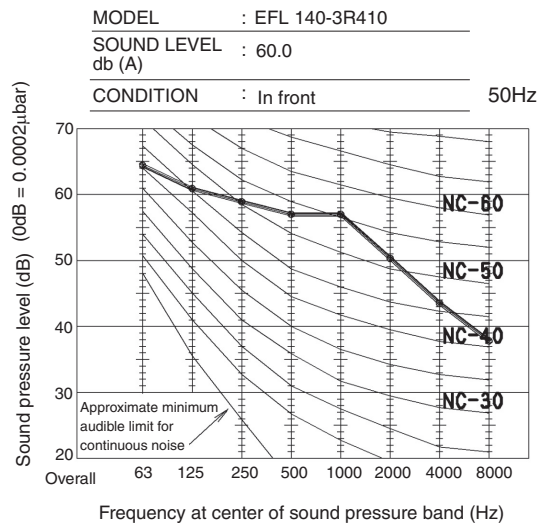
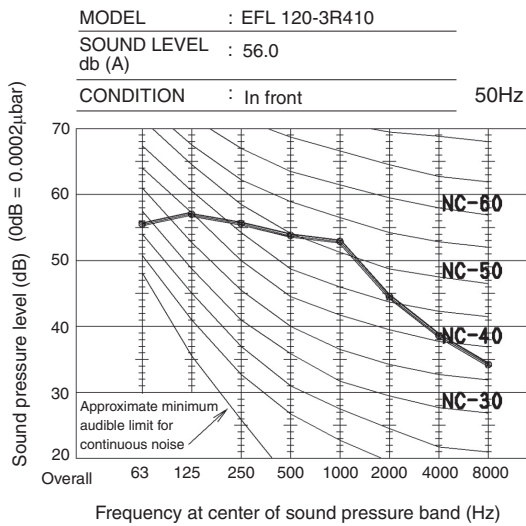
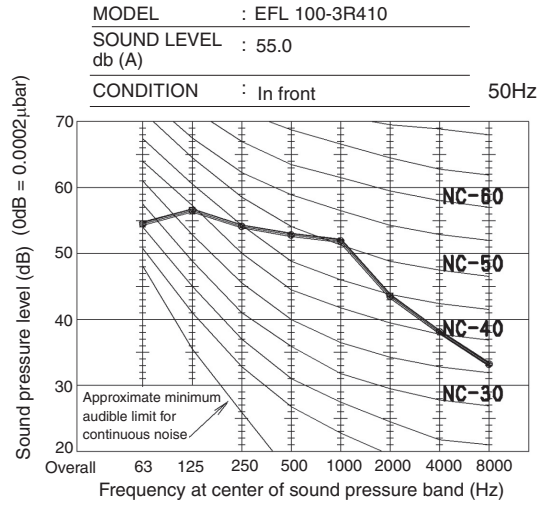
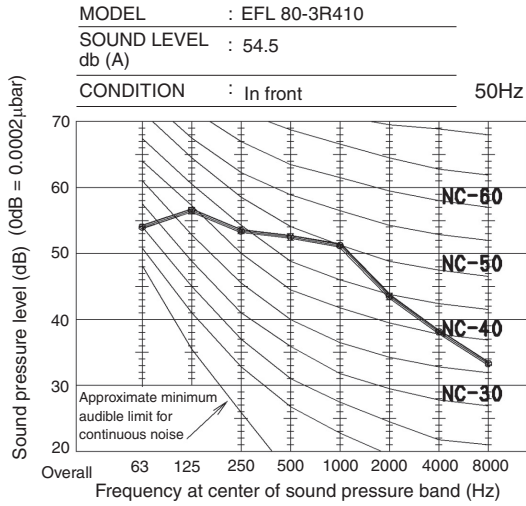


4

# 1. Outdoor Unit

## 1-5. Noise Criterion Curves

### EFL 80-3R410, EFL 100-3R410, EFL 120-3R410, EFL 140-3R410, EFL 160-3R410



## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## 2-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NKFL-7					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		2.2			2.5		
	BTU / h		7,500			8,500		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		930 / 840 / 780					
Moisture removal (High)	Liters/h		2.2			—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 – 264			198 – 264		
Running amperes	A		0.22	0.21	0.20	0.19	0.18	0.17
Power input	W		33	32	32	23	22	22
Power factor	%		68	66	67	55	53	54
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		31 / 29 / 27					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 64 cm above drain connection					
Panel			Optional (GR-ST NK7-60)					
Remote Controller			Optional (RCIRK-FL)					
Refrigerant tubing kit / Accessories			Optional / –					
Color (Approximate value)			Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	291 (11-15/32)			283 (11-5/32)		104 (4-3/32)
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)		1008 (39-22/32)
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)		990 (38-31/32)
Net weight		kg (lbs.)	25.5 (56)			–		–
Shipping weight		kg (lbs.)	–			24 (53)		7 (16)
Shipping volume		m <sup>3</sup> (cu. ft)	–			0.228 (8.1)		0.104 (3.8)

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NKFL 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	2.8			3.2			
		9,600			11,000			
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h		930 / 840 / 780				
Moisture removal (High)		Liters/h		2.2		-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.22	0.21	0.20	0.19	0.18	0.17	
Power input	W	33	32	32	23	22	22	
Power factor	%	68	66	67	55	53	54	
Max. starting amperes	A	1	1	1	1	1	1	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		31 / 29 / 27				
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection		25A, OD32 mm						
Drain pump		Max. head 64 cm above drain connection						
Panel		Optional (GR-ST NK7-60)						
Remote Controller		Optional (RCIRK-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)						
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)		Package			
Unit dimensions	Height	mm (in.)	291 (11-15/32)		283 (11-5/32)	104 (4-3/32)		
	Width	mm (in.)	950 (37-13/32)		892 (35-4/32)	1008 (39-22/32)		
	Depth	mm (in.)	950 (37-13/32)		905 (35-20/32)	990 (38-31/32)		
Net weight		kg (lbs.)	25.5 (56)		-	-		
Shipping weight		kg (lbs.)	-		24 (53)	7 (16)		
Shipping volume		m <sup>3</sup> (cu. ft)	-		0.228 (8.1)	0.104 (3.8)		

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NKFL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		3.6			4.2		
	BTU / h		12,000			14,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	930 / 840 / 780					
Moisture removal (High)		Liters/h	2.2			—		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 – 264			198 – 264		
Running amperes	A		0.22	0.21	0.20	0.19	0.18	0.17
Power input	W		33	32	32	23	22	22
Power factor	%		68	66	67	55	53	54
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	31 / 29 / 27					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 64 cm above drain connection					
Panel			Optional (GR-ST NK7-60)					
Remote Controller			Optional (RCIRK-FL)					
Refrigerant tubing kit / Accessories			Optional / –					
Color (Approximate value)			Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	291 (11-15/32)			283 (11-5/32)		104 (4-3/32)
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)		1008 (39-22/32)
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)		990 (38-31/32)
Net weight		kg (lbs.)	25.5 (56)			–		–
Shipping weight		kg (lbs.)	–			24 (53)		7 (16)
Shipping volume		m <sup>3</sup> (cu. ft)	–			0.228 (8.1)		0.104 (3.8)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NKFL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		5.6			6.3		
	BTU / h		19,000			21,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	930 / 840 / 780					
Moisture removal (High)		Liters/h	2.2			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.23	0.22	0.21	0.20	0.19	0.18
Power input	W		35	34	34	23	23	23
Power factor	%		69	67	67	52	53	53
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A	31 / 29 / 27					
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection		25A, OD32 mm						
Drain pump		Max. head 64 cm above drain connection						
Panel		Optional (GR-ST NK7-60)						
Remote Controller		Optional (RCIRK-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)						
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	291 (11-15/32)			283 (11-5/32)		104 (4-3/32)
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)		1008 (39-22/32)
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)		990 (38-31/32)
Net weight		kg (lbs.)	25.5 (56)			-		-
Shipping weight		kg (lbs.)	-			24 (53)		7 (16)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.228 (8.1)		0.104 (3.8)

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NKFL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1200 / 960 / 840					
Moisture removal (High)		Liters/h	2.8			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.29	0.27	0.26	0.26	0.25	0.24
Power input		W	42	41	41	31	31	31
Power factor		%	66	66	66	54	54	54
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	34 / 31 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 64 cm above drain connection					
Panel			Optional (GR-ST NK7-60)					
Remote Controller			Optional (RCIRK-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	291 (11-15/32)			283 (11-5/32)		104 (4-3/32)
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)		1008 (39-22/32)
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)		990 (38-31/32)
Net weight		kg (lbs.)	26.5 (58)			-		-
Shipping weight		kg (lbs.)	-			24 (55)		7 (16)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.228 (8.1)		0.104 (3.8)

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (F)

MODEL No.	Indoor Unit		ST-NKFL 36					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		10.6			11.4		
	BTU / h		36,000			39,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1680 / 1380 / 1260					
Moisture removal (High)		Liters/h	3.9			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.49	0.46	0.44	0.48	0.45	0.43
Power input		W	70	69	69	62	60	60
Power factor		%	65	65	65	59	58	58
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	39 / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 64 cm above drain connection					
Panel			Optional (GR-ST NK7-60)					
Remote Controller			Optional (RCIRK-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)		Package			
Unit dimensions	Height	mm (in.)	354 (13-30/32)		Body		Panel	
	Width	mm (in.)	950 (37-13/32)		892 (35-4/32)		1008 (39-22/32)	
	Depth	mm (in.)	950 (37-13/32)		905 (35-20/32)		990 (38-31/32)	
Net weight		kg (lbs.)	30.5 (67)		-		-	
Shipping weight		kg (lbs.)	-		30 (66)		7 (16)	
Shipping volume		m <sup>3</sup> (cu. ft)	-		0.279 (9.9)		0.104 (3.8)	

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.



## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (G)

MODEL No.	Indoor Unit		ST-NKFL 48					
<b>POWER SOURCE</b>			220 - 230 - 240 V / 1 phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		14.0			16.0		
	BTU / h		47,800			54,600		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	1980 / 1500 / 1320					
Moisture removal (High)		Liters/h	4.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.67	0.63	0.60	0.67	0.63	0.60
Power input		W	99	97	97	95	93	93
Power factor		%	67	67	67	64	64	65
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A	42 / 38 / 34					
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection		25A, OD32 mm						
Drain pump		Max. head 64 cm above drain connection						
Panel		Optional (GR-ST NK7-60)						
Remote Controller		Optional (RCIRK-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)						
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	354 (13-30/32)			346 (13-20/32)		104 (4-3/32)
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)		1008 (39-22/32)
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)		990 (38-31/32)
Net weight		kg (lbs.)	30.5 (67)			-		-
Shipping weight		kg (lbs.)	-			30 (66)		7 (16)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.279 (9.9)		0.104 (3.8)

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Unit specifications (H)

MODEL No.	Indoor Unit		ST-NKFL 60					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		16.0			18.0		
	BTU / h		54,600			61,400		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	2040 / 1620 / 1380					
Moisture removal (High)		Liters/h	4.7			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.72	0.68	0.65	0.76	0.71	0.68
Power input		W	107	105	105	100	98	98
Power factor		%	68	67	67	60	60	60
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A	44 / 40 / 36					
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection		25A, OD32 mm						
Drain pump		Max. head 64 cm above drain connection						
Panel		Optional (GR-ST NK7-60)						
Remote Controller		Optional (RCIRK-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 2.5GY 9.0 / 0.5, RAL 9001-GL (resemblant color)						
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	354 (13-30/32)			346 (13-20/32)	104 (4-3/32)	
	Width	mm (in.)	950 (37-13/32)			892 (35-4/32)	1008 (39-22/32)	
	Depth	mm (in.)	950 (37-13/32)			905 (35-20/32)	990 (38-31/32)	
Net weight		kg (lbs.)	30.5 (67)			-		
Shipping weight		kg (lbs.)	-			30 (66)	7 (16)	
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.279 (9.9)	0.104 (3.8)	

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## 2-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NKFL	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... $\phi$ 460)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-53A280H ... 50 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 380	
Coil resistance (Ambient temperature 20°C)	$\Omega$	RED - WHT : 87.0 WHT - BLK : 87.0 BLK - RED : 87.0	
Run capacitor	VAC, $\mu$ F	-	
<b>Safety device</b>		overcurrent, rotating signal detection, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	$\Omega$	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.360	
<b>Panel</b>			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	$\Omega$	380 $\Omega$ $\pm$ 7% / phase	
<b>Drain pump</b>			
Rated		ADP-1414	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 2. 4-Way Air Discharge Semi-concealed Type

### Indoor unit (B)

MODEL No.		ST-NKFL 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 460)	
Fan motor			
Model...Nominal output	W	DK8-53A280H ... 50 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 380	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 87.0 WHT - BLK : 87.0 BLK - RED : 87.0	
Run capacitor	VAC, μF	-	
Safety device		overcurrent, rotating signal detection, fuse	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.360	
Panel			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
Drain pump		ADP-1414	
Rated	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (C)

MODEL No.		ST-NKFL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 460)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-53A280H ... 50 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 380	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 87.0 WHT - BLK : 87.0 BLK - RED : 87.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		overcurrent, rotating signal detection, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.360	
<b>Panel</b>			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
<b>Drain pump</b>			
Rated		V, W	
Total head & capacity		AC230 V, 50 Hz, 12 W 500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (D)

<b>MODEL No.</b>		<b>ST-NKFL 18</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Turbo (1 ... ø 460)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-53A280H ... 50 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 390	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 87.0 WHT - BLK : 87.0 BLK - RED : 87.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		overcurrent, rotating signal detection, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.360	
<b>Panel</b>			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
<b>Drain pump</b>			
Rated		V, W	
Total head & capacity		AC230 V, 50 Hz, 12 W 500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (E)

MODEL No.		ST-NKFL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 460)	
Fan motor			
Model...Nominal output	W	DK8-53A280H ... 50 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 440	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 87.0 WHT - BLK : 87.0 BLK - RED : 87.0	
Run capacitor	VAC, μF	-	
Safety device		overcurrent, rotating signal detection, fuse	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.405	
Panel			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
Drain pump		ADP-1414	
Rated	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (F)

<b>MODEL No.</b>		<b>ST-NKFL 36</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Turbo (1 ... ø 460)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-93B280H ... 90 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 540	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 43.0 WHT - BLK : 43.0 BLK - RED : 43.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		overcurrent, rotating signal detection, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.584	
<b>Panel</b>			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
<b>Drain pump</b>		ADP-1414	
Rated	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	



## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

## Indoor unit (G)

<b>MODEL No.</b>		<b>ST-NKFL 48</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Turbo (1 ... ø 460)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-93B280H ... 90 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 620	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 43.0 WHT - BLK : 43.0 BLK - RED : 43.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		overcurrent, rotating signal detection, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.584	
<b>Panel</b>			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
<b>Drain pump</b>			
Rated		ADP-1414	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 2. 4-Way Air Discharge Semi-concealed Type

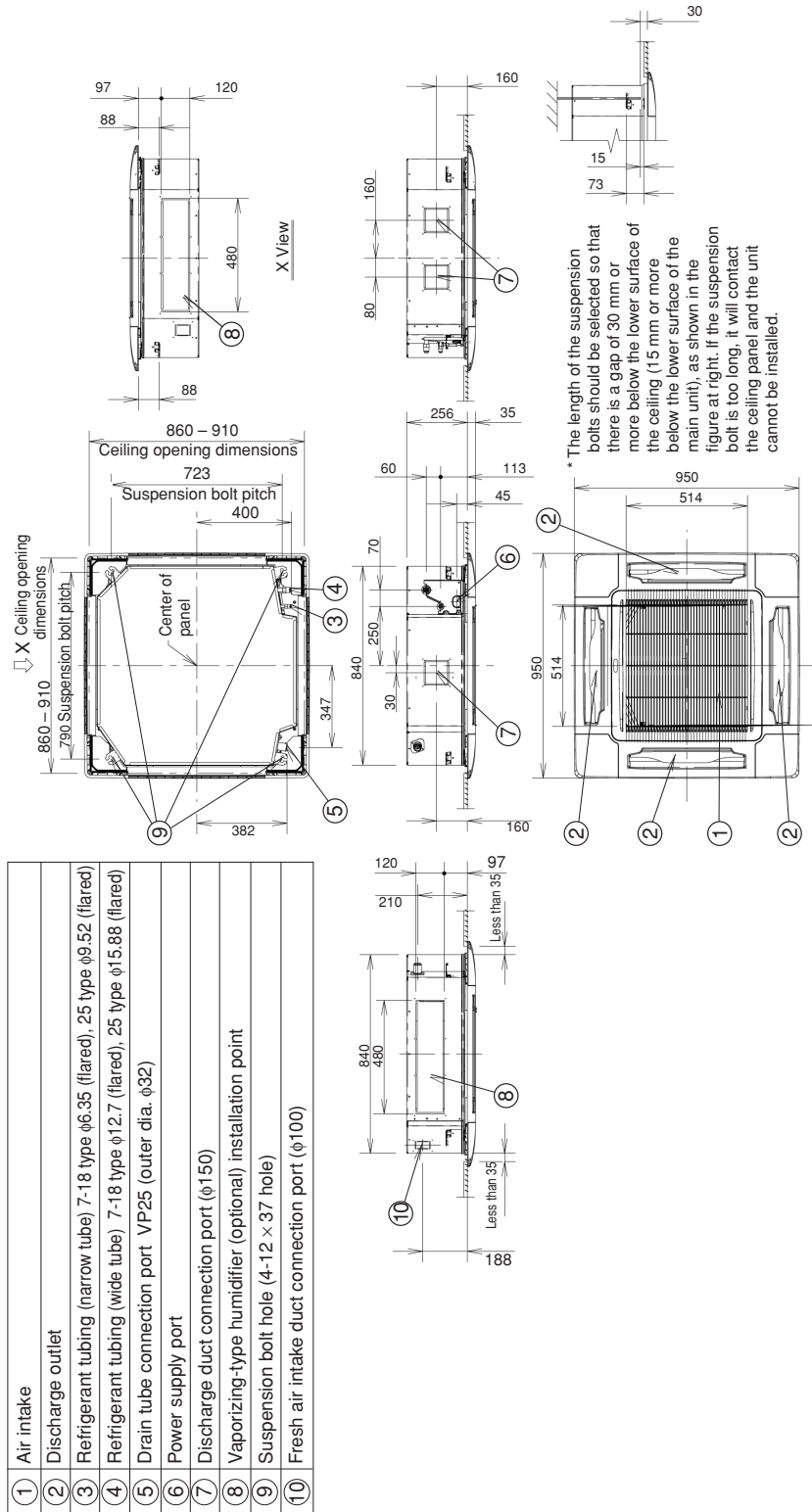
## Indoor unit (H)

MODEL No.		ST-NKFL 60	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Turbo (1 ... ø 460)	
Fan motor			
Model...Nominal output	W	DK8-93B280H ... 90 W	
Source		280 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 640	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 43.0 WHT - BLK : 43.0 BLK - RED : 43.0	
Run capacitor	VAC, μF	-	
Safety device		overcurrent, rotating signal detection, fuse	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.25	
Face area	m <sup>2</sup>	0.584	
Panel			
Model No.		GR-ST NK7-60	
Auto louver motor		MP24GA	
Coil resistance (at 25 °C)	Ω	380 Ω ± 7% / phase	
Drain pump		ADP-1414	
Rated	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

3-WAY FLOW LOGIC Unit Specifications

2. 4-Way Air Discharge Semi-concealed Type

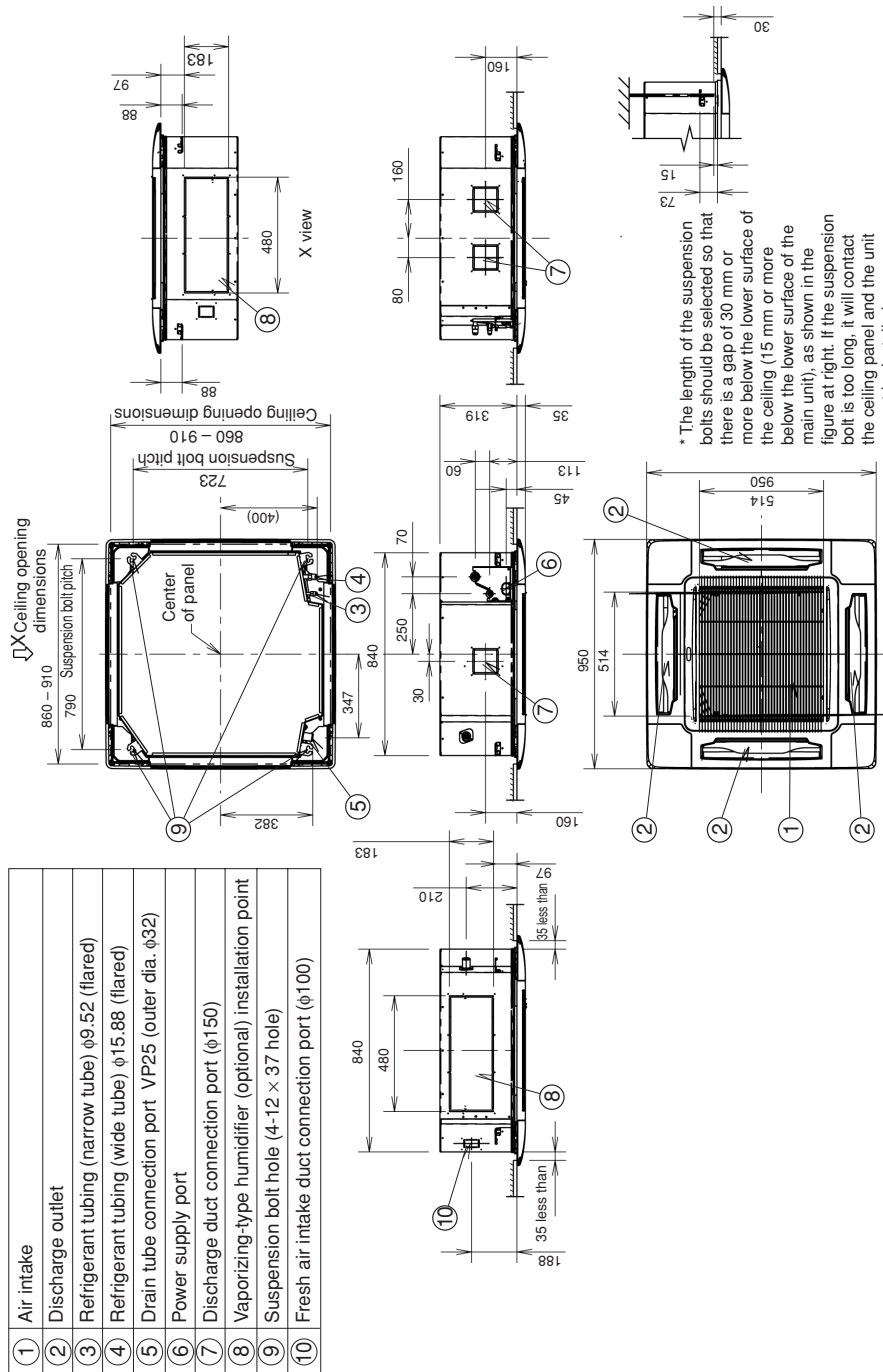
2-3. Dimensional Data



3-WAY FLOW LOGIC Unit Specifications

2. 4-Way Air Discharge Semi-concealed Type

4



## 2. 4-Way Air Discharge Semi-concealed Type

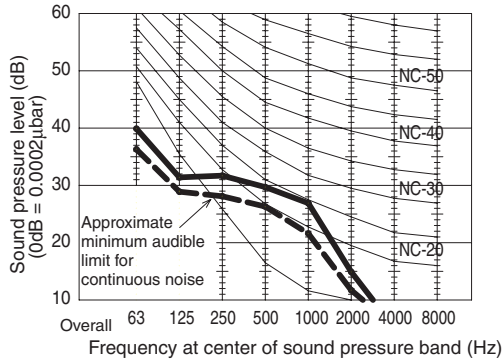
### 2-4. Noise Criterion Curves

#### ST-NFKL

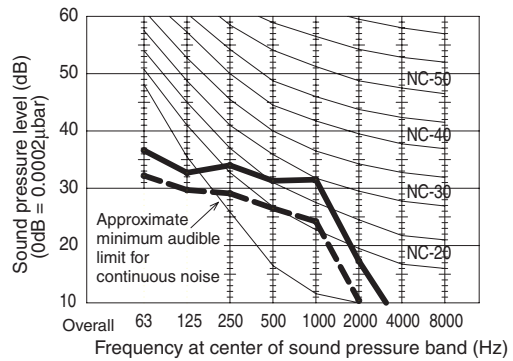
Both 50Hz and 60Hz

- Strong
- Weak

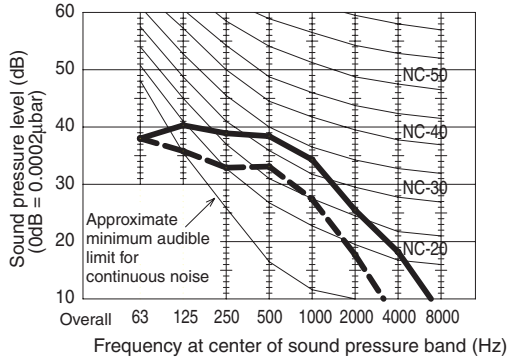
MODEL	: ST-NKFL 7, ST-NKFL 9, ST-NKFL 12, ST-NKFL 18
SOUND LEVEL : STRONG	31 dB(A)
HIGH	29 dB(A)
LOW	27 dB(A)
CONDITION	: 1.5 m directly below unit



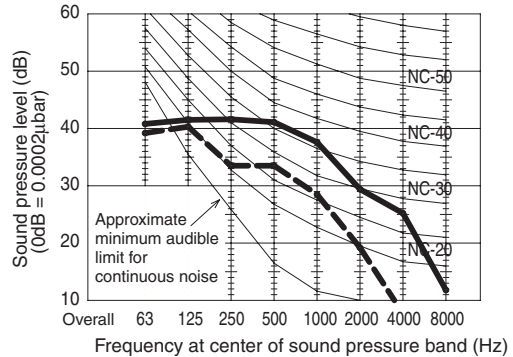
MODEL	: ST-NKFL 24
SOUND LEVEL : STRONG	34 dB(A)
HIGH	31 dB(A)
LOW	28 dB(A)
CONDITION	: 1.5 m directly below unit



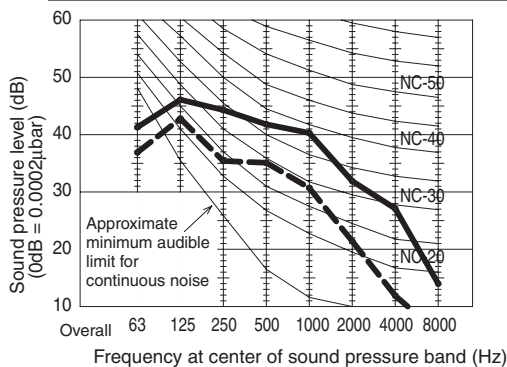
MODEL	: ST-NKFL 36
SOUND LEVEL : STRONG	39 dB(A)
HIGH	36 dB(A)
LOW	33 dB(A)
CONDITION	: 1.5 m directly below unit



MODEL	: ST-NKFL 48
SOUND LEVEL : STRONG	42 dB(A)
HIGH	38 dB(A)
LOW	34 dB(A)
CONDITION	: 1.5 m directly below unit



MODEL	: ST-NKFL 60
SOUND LEVEL : STRONG	44 dB(A)
HIGH	40 dB(A)
LOW	36 dB(A)
CONDITION	: 1.5 m directly below unit



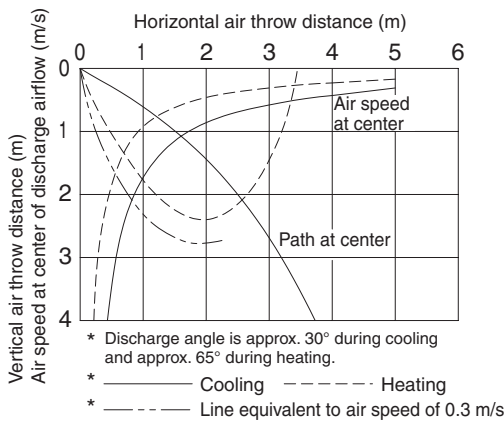
## 2. 4-Way Air Discharge Semi-concealed Type

### 2-5. Air Throw Distance Chart (Indoor temp.: Cooling 27°C, heating 20°C)

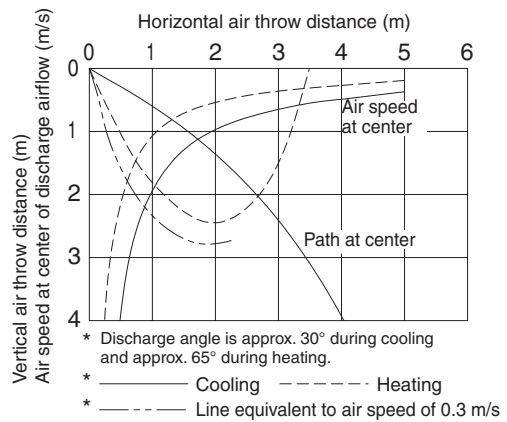
#### ST-NKFL

- If an ultra long-life filter or high performance filter (65% by colorimetric method) is installed, the vertical air throw distance for heating and cooling will be approximately 0.2 m less than the values shown in the graph below.
- If a high performance filter (90% by colorimetric method) or electronic filter is installed, the vertical air throw distance for heating and cooling will be approximately 0.5 m less than the values shown in the graph below.

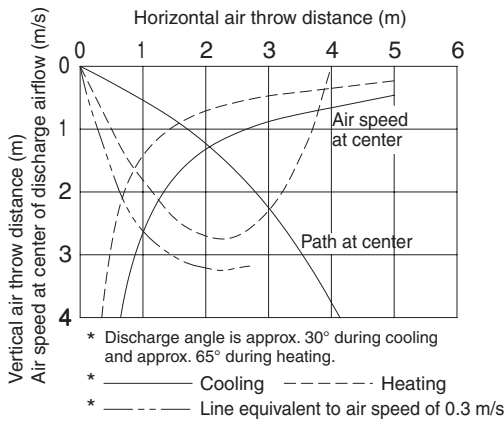
**ST-NKFL 7, ST-NKFL 9,  
ST-NKFL 12, , ST-NKFL 18**



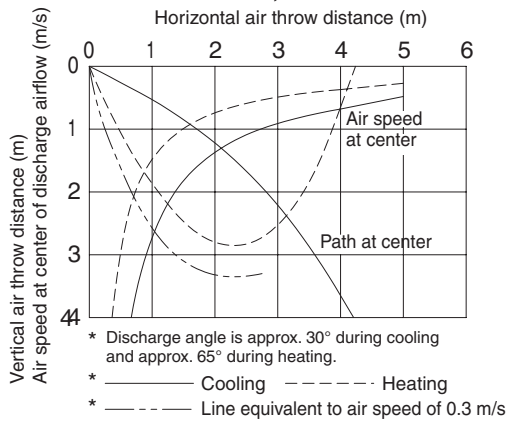
**ST-NKFL 24**



**ST-NKFL 36**



**ST-NKFL 48, ST-NKFL 60**



## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## 3-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NK2FL 7					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		2.2 7,500			2.5 8,500		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		480 / 420 / 360					
Moisture removal (High)	Liters/h		0.5			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.45	0.45	0.45	0.29	0.29	0.30
Power input	W		86	90	95	55	58	62
Power factor	%		87	87	88	86	87	86
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	30 / 27 / 24					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter		Narrow tube mm (in.)	6.35 (1/4)					
		Wide tube mm (in.)	12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Panel			Optional (GR-ST K2(7-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions			Height	mm (in.)	358 (14-3/32)	Body	Panel	
			Width	mm (in.)	1060 (41-23/32)	1082 (42-19/32)	1147 (45-5/32)	
			Depth	mm (in.)	680 (26-25/32)	658 (25-29/32)	789 (31-20/32)	
Net weight		kg (lbs.)	30 (66)			-	-	
Shipping weight		kg (lbs.)	-			26 (57)	11 (24)	
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.221 (7.8)	0.149 (5.3)	

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NK2FL 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		2.8			3.2		
			9,600			11,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		540 / 480 / 420					
Moisture removal (High)	Liters/h		1.0			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.44	0.45	0.45	0.28	0.29	0.30
Power input	W		86	92	97	55	60	64
Power factor	%		89	89	90	89	90	89
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	33 / 29 / 26					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Panel			Optional (GR-ST K2(7-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	358 (14-3/32)			310 (12-7/32)		165 (6-16/32)
	Width	mm (in.)	1060 (41-23/32)			1082 (42-19/32)		1147 (45-5/32)
	Depth	mm (in.)	680 (26-25/32)			658 (25-29/32)		789 (31-20/32)
Net weight		kg (lbs.)	30 (66)			-		-
Shipping weight		kg (lbs.)	-			26 (57)		11 (24)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.221 (7.8)		0.149 (5.3)

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.



## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NK2FL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity		kW BTU / h	3.6 12,000			4.2 14,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	580 / 520 / 460					
Moisture removal (High)		Liters/h	1.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.44	0.45	0.45	0.28	0.29	0.30
Power input		W	88	93	99	57	61	66
Power factor		%	91	90	92	93	91	92
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	34 / 31 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)					
	Wide tube	mm (in.)	12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Panel			Optional (GR-ST K2(7-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	358 (14-3/32)			310 (12-7/32)		165 (6-16/32)
	Width	mm (in.)	1060 (41-23/32)			1082 (42-19/32)		1147 (45-5/32)
	Depth	mm (in.)	680 (26-25/32)			658 (25-29/32)		789 (31-20/32)
Net weight		kg (lbs.)	30 (66)			-		-
Shipping weight		kg (lbs.)	-			26 (57)		11 (24)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.221 (7.8)		0.149 (5.3)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NK2FL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		5.6			6.3		
			19,000			21,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		660 / 540 / 480					
Moisture removal (High)	Liters/h		2.4			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.45	0.45	0.45	0.29	0.29	0.30
Power input	W		91	97	103	60	65	70
Power factor	%		92	94	95	94	97	97
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	35 / 33 / 29					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Panel			Optional (GR-ST K2(7-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	358 (14-3/32)			310 (12-7/32)	165 (6-16/32)	
	Width	mm (in.)	1060 (41-23/32)			1082 (42-19/32)	1147 (45-5/32)	
	Depth	mm (in.)	680 (26-25/32)			658 (25-29/32)	789 (31-20/32)	
Net weight		kg (lbs.)	30 (66)			-		
Shipping weight		kg (lbs.)	-			26 (57)	11 (24)	
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.221 (7.8)	0.149 (5.3)	

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NK2FL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		7.3			8.0		
			25,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,140 / 960 / 840					
Moisture removal (High)	Liters/h		3.5			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.64	0.65	0.66	0.46	0.48	0.49
Power input	W		135	145	154	100	109	117
Power factor	%		96	94	97	99	99	99
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	38 / 35 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Panel			Optional (GR-ST K2(7-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	358 (14-3/32)			310 (12-7/32)		165 (6-16/32)
	Width	mm (in.)	1060 (41-23/32)			1382 (54-13/32)		1447 (56-31/32)
	Depth	mm (in.)	680 (26-25/32)			658 (25-29/32)		789 (31-20/32)
Net weight		kg (lbs.)	30 (66)			-		
Shipping weight		kg (lbs.)	-			30 (66)		13 (29)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.282 (10.0)		0.188 (6.7)

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## 3-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NK2FL 7	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31C3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 640	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 138.0    ORG - YEL : 25.58 WHT - VLT : 18.55    YEL - BLK : 43.31 VLT - ORG : 35.03    BLK - PNK : 84.18	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± ±5)	
Run capacitor	VAC, μF	440 VAC, 0.8 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.255	
<b>Panel</b>			
Model No.		GR-ST K2(7-18)	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		V, W	AC230 V, 50 Hz, 12 W
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Indoor unit (B)

MODEL No.		ST-NK2FL 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31C3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 708	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 139.3    ORG - YEL : 25.59 WHT - VLT : 19.77    YEL - BLK : 43.02 VLT - ORG : 38.20    BLK - PNK : 84.32	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.255	
<b>Panel</b>			
Model No.		GR-ST K2(7-18)	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>		ADP-1408	
Rated	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Indoor unit (C)

MODEL No.		ST-NK2FL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31C3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 760	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 139.3    ORG - YEL : 25.59 WHT - VLT : 19.77    YEL - BLK : 43.02 VLT - ORG : 38.20    BLK - PNK : 84.32	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.2 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.255	
<b>Panel</b>			
Model No.		GR-ST K2(7-18)	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		ADP-1408	
Total head & capacity		AC230 V, 50 Hz, 12 W 500 mm, 400 cc/min	

### 3. 2-Way Air Discharge Semi-concealed Type

#### Indoor unit (D)

MODEL No.		ST-NK2FL 18	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4X-31C3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 68.2      ORG - YEL : 10.37 WHT - VLT : 12.46      YEL - BLK : 20.04 VLT - ORG : 16.31      BLK - PNK : 16.26	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46      YEL - GRY : 46 RED - GRY : 46      BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.255	
<b>Panel</b>			
Model No.		GR-ST K2(7-18)	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		V, W	AC230 V, 50 Hz, 12 W
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 3. 2-Way Air Discharge Semi-concealed Type

## Indoor unit (E)

MODEL No.		ST-NK2FL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-51F3P ... 50 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 71.63    ORG - YEL : 10.94 WHT - VLT : 10.84    YEL - BLK : 28.73 VLT - ORG : 14.31    BLK - PNK : 14.94	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 3.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.381	
<b>Panel</b>			
Model No.		GR-ST K2(24)	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	200 ~ 240 VAC, 3 W, 2.5 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		ADP-1408	
		AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

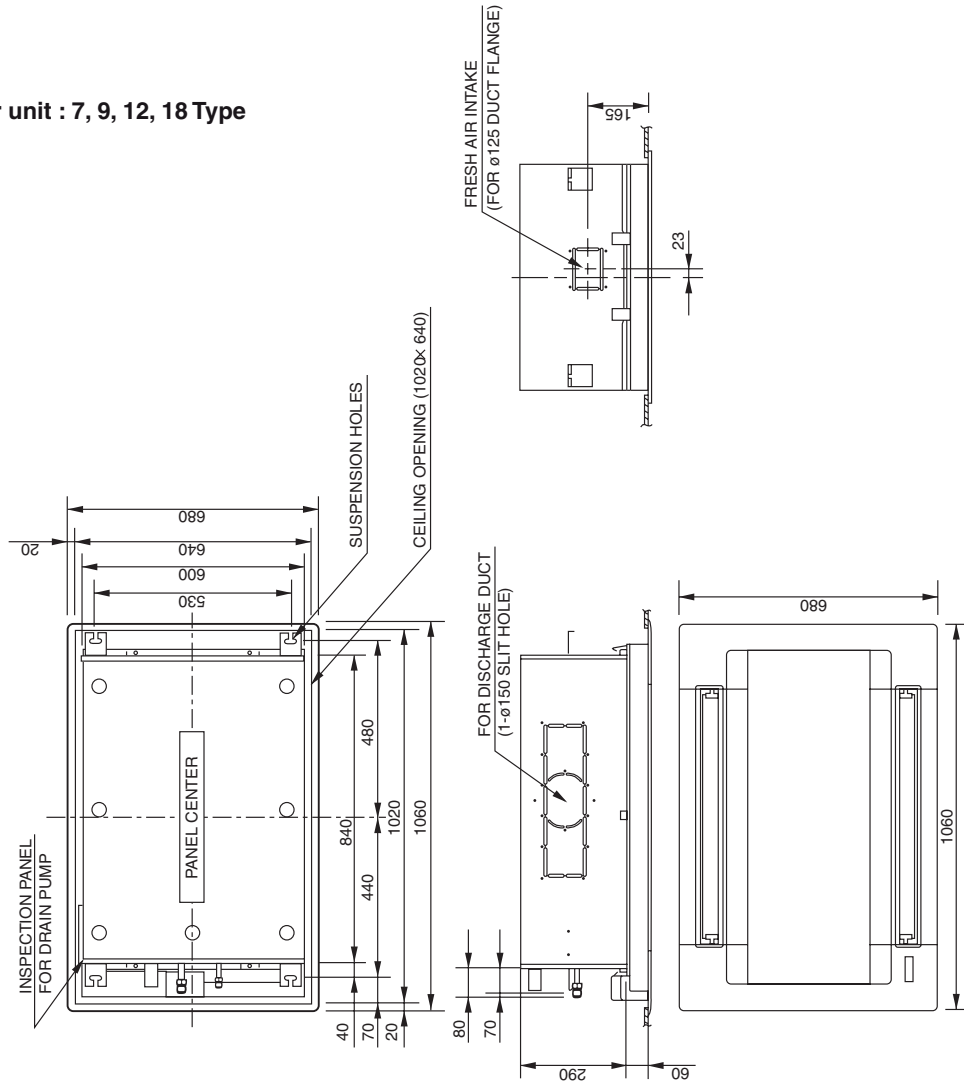


3-WAY FLOW LOGIC Unit Specifications

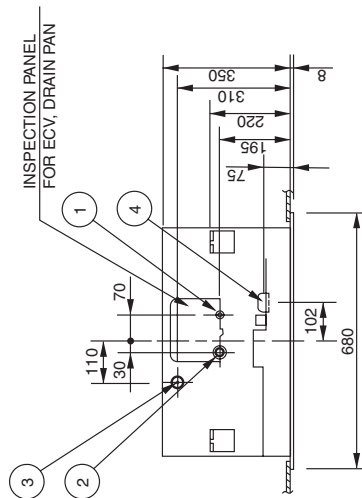
3. 2-Way Air Discharge Semi-concealed Type

3-3. Dimensional Data

Indoor unit : 7, 9, 12, 18 Type



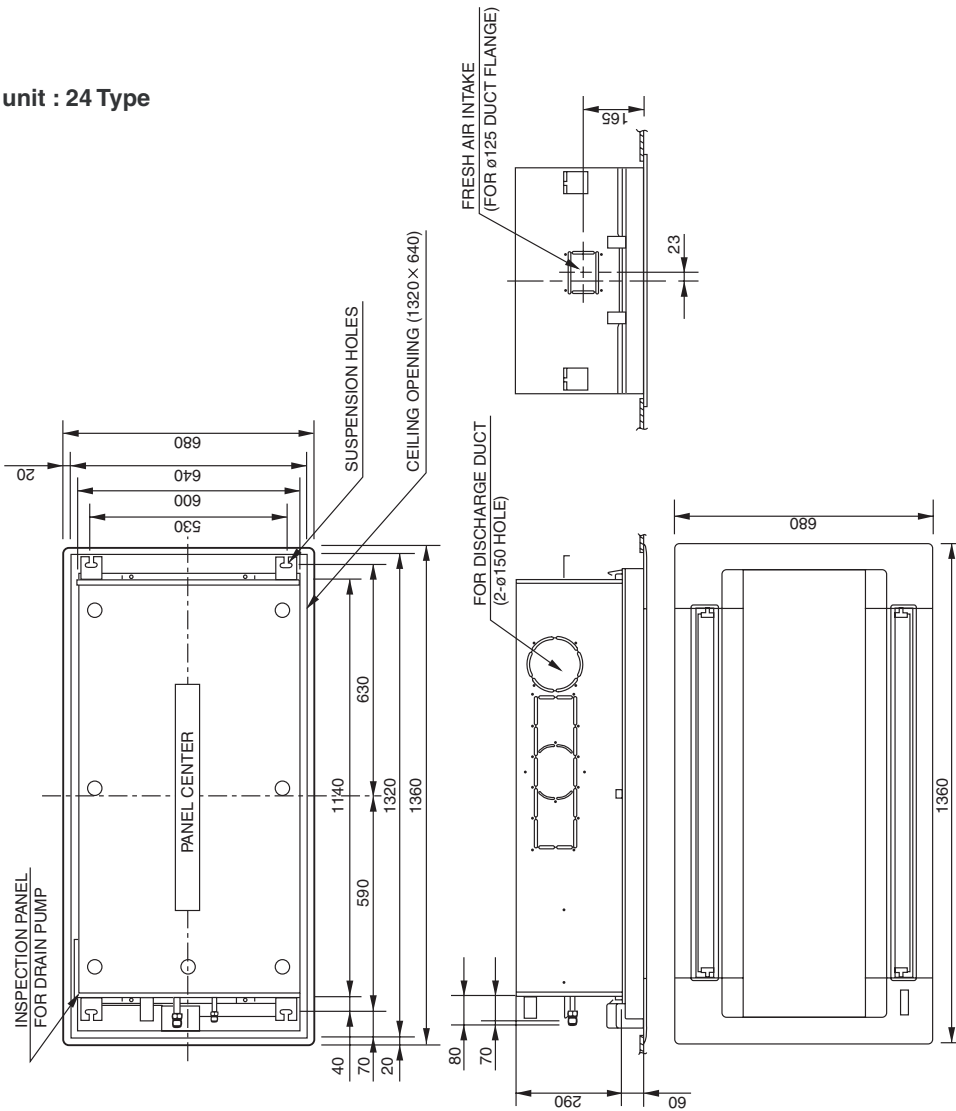
- ① Refrigerant liquid line (ø6.35)
- ② Refrigerant gas line (ø12.7 : 7,9,12, 18 type)
- ③ Drain connection (25 A. O.D. 32 mm)
- ④ Power supply entry



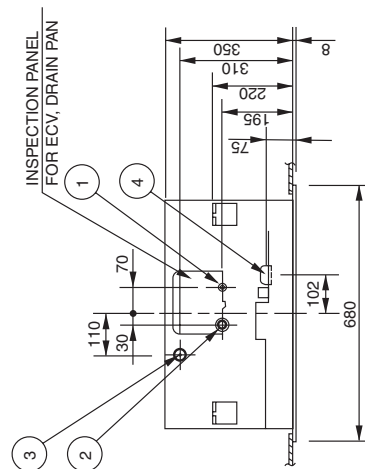
3-WAY FLOW LOGIC Unit Specifications

3. 2-Way Air Discharge Semi-concealed Type

Indoor unit : 24 Type



- ① Refrigerant liquid line (ø9.52)
- ② Refrigerant gas line (ø15.88)
- ③ Drain connection (25 A. O.D. 32 mm)
- ④ Power supply entry



3-WAY FLOW LOGIC Unit Specifications

3. 2-Way Air Discharge Semi-concealed Type

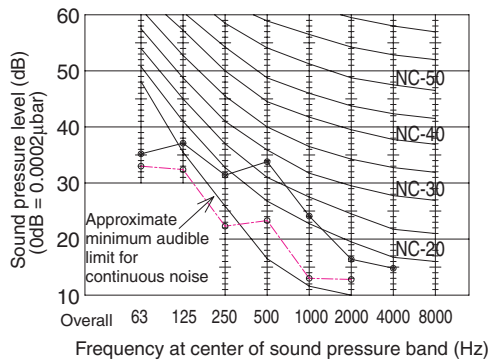
3-4. Noise Criterion Curves

ST-NK2FL

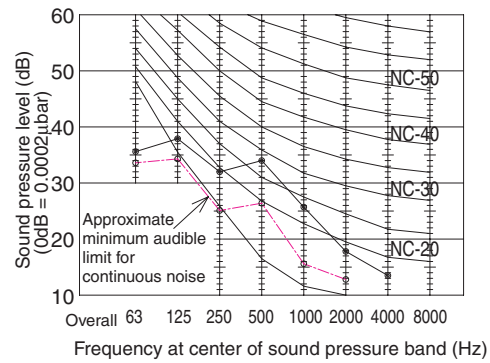
Both 50Hz and 60Hz

- Strong
- Weak

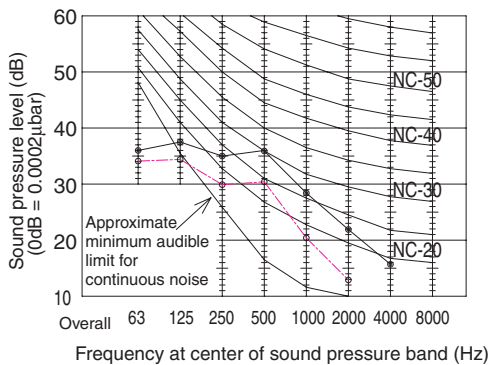
MODEL	: ST-NK2FL 7
SOUND LEVEL: STRONG	30 dB(A)
HIGH	27 dB(A)
LOW	24 dB(A)
CONDITION	: 1.5 m directly below unit



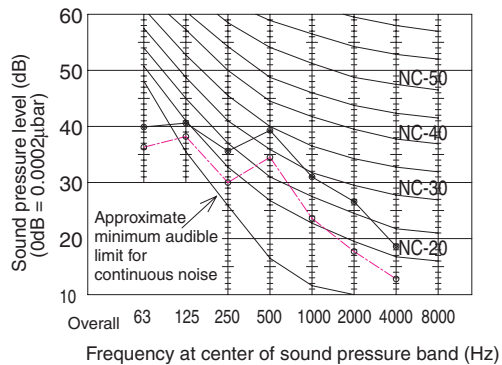
MODEL	: ST-NK2FL 9, ST-NK2FL 12
SOUND LEVEL: STRONG	33 dB(A)
HIGH	29 dB(A)
LOW	26 dB(A)
CONDITION	: 1.5 m directly below unit



MODEL	: ST-NK2FL 18
SOUND LEVEL: STRONG	35 dB(A)
HIGH	33 dB(A)
LOW	29 dB(A)
CONDITION	: 1.5 m directly below unit



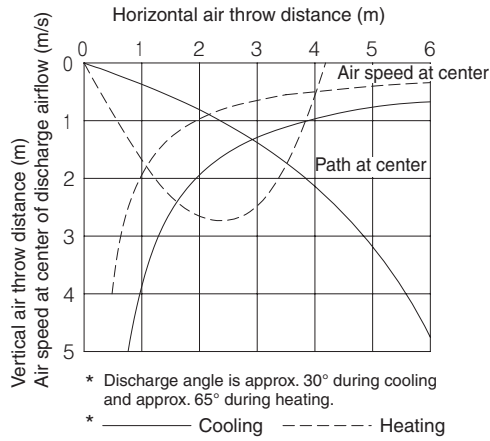
MODEL	: ST-NK2FL 24
SOUND LEVEL: STRONG	38 dB(A)
HIGH	35 dB(A)
LOW	33 dB(A)
CONDITION	: 1.5 m directly below unit



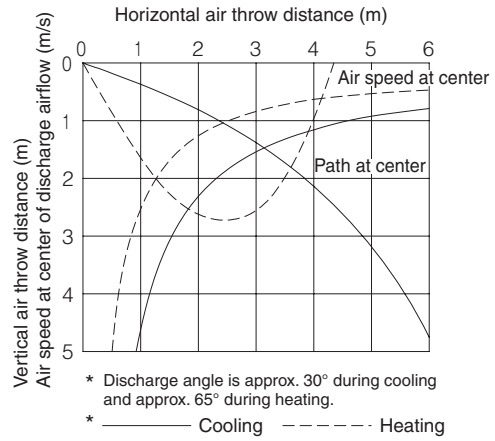
### 3. 2-Way Air Discharge Semi-concealed Type

#### 3-5. Air Throw Distance Chart (Indoor temp.: Cooling 27°C, heating 20°C)

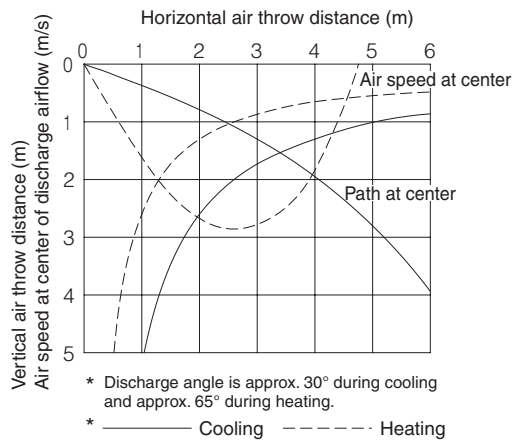
**ST-NK2FL 7**



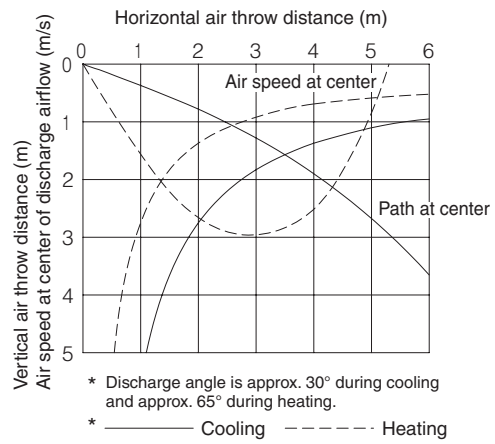
**ST-NK2FL 9, ST-NK2FL 12**



**ST-NK2FL 18**



**ST-NK2FL 24**



4

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## 4-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NWFL 7					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	2.2			2.5			
		7,500			8,500			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	600 / 480 / 360						
Moisture removal (High)	Liters/h	1.6			-			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.15	0.15	0.15	0.15	0.15	0.15	
Power input	W	31	33	35	31	33	35	
Power factor	%	94	96	97	94	96	97	
Max. starting amperes	A	1	1	1	1	1	1	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		36 / 32 / 28				
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)	6.35 (1/4)						
	Wide tube mm (in.)	12.7 (1/2)						
Drain connection		13A, OD18 mm						
Remote controller		Optional (NRCG-FL)						
Refrigerant tubing kit / Accessories		Optional / Hanging wall bracket						
Color (Approximate value)		Munsell 3.0Y 8.6 / 0.8, RAL 9002-GL (resemblant color)						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	285 (11-7/32)			347 (13-21/32)		
	Width	mm (in.)	995 (39-6/32)			1065 (41-30/32)		
	Depth	mm (in.)	203 (8)			260 (10-8/32)		
Net weight		kg (lbs.)	14 (31)					
Shipping weight		kg (lbs.)	16 (35)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.096 (3.4)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB  
 Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NWFL 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		2.8 9,600			3.2 11,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		600 / 480 / 360					
Moisture removal (High)	Liters/h		1.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.15	0.15	0.15	0.15	0.15	0.15
Power input	W		31	33	35	31	33	35
Power factor	%		94	96	97	94	96	97
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	36 / 32 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			13A, OD18 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket					
Color (Approximate value)			Munsell 3.0Y 8.6 / 0.8, RAL 9002-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	285 (11-7/32)			347 (13-21/32)		
	Width	mm (in.)	995 (39-6/32)			1065 (41-30/32)		
	Depth	mm (in.)	203 (8)			260 (10-8/32)		
Net weight		kg (lbs.)	14 (31)					
Shipping weight		kg (lbs.)	16 (35)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.096 (3.4)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NWFL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		3.6			4.2		
			12,000			14,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		600 / 480 / 360					
Moisture removal (High)	Liters/h		1.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 – 264			198 – 264		
Running amperes	A		0.15	0.15	0.15	0.15	0.15	0.15
Power input	W		31	33	35	31	33	35
Power factor	%		94	96	97	94	96	97
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		36 / 32 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			13A, OD18 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket					
Color (Approximate value)			Munsell 3.0Y 8.6 / 0.8, RAL 9002-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	285 (11-7/32)			347 (13-21/32)		
	Width	mm (in.)	995 (39-6/32)			1065 (41-30/32)		
	Depth	mm (in.)	203 (8)			260 (10-8/32)		
Net weight		kg (lbs.)	14 (31)					
Shipping weight		kg (lbs.)	16 (35)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.096 (3.4)					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NWFL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		5.6			6.3		
	BTU / h		19,000			21,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		720 / 600 / 480					
Moisture removal (High)	Liters/h		1.9			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.15	0.15	0.15	0.15	0.15	0.15
Power input	W		31	33	35	31	33	35
Power factor	%		94	96	97	94	96	97
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		36 / 32 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			13A, OD18 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket					
Color (Approximate value)			Munsell 3.0Y 8.6 / 0.8, RAL 9002-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	285 (11-7/32)			347 (13-21/32)		
	Width	mm (in.)	995 (39-6/32)			1065 (41-30/32)		
	Depth	mm (in.)	203 (8)			260 (10-8/32)		
Net weight	kg (lbs.)	14 (31)						
Shipping weight	kg (lbs.)	16 (35)						
Shipping volume	m <sup>3</sup> (cu. ft)	0.096 (3.4)						

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.



## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NWFL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity		kW	7.3			8.0		
		BTU / h	25,000			27,000		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	960 / 840 / 600					
Moisture removal (High)		Liters/h	3.4			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	0.23	0.23	0.24	0.23	0.23	0.24
Power input		W	49	52	55	49	52	55
Power factor		%	97	98	95	97	98	95
Max. starting amperes		A	1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	42 / 38 / 35					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	9.52 (3/8)					
	Wide tube	mm (in.)	15.88 (5/8)					
Drain connection			13A, OD18 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Hanging wall bracket					
Color (Approximate value)			Munsell 3.0Y 8.6 / 0.8, RAL 9002-GL (resemblant color)					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	330 (13)			390 (15-11/32)		
	Width	mm (in.)	1140 (44-28/32)			1215 (47-27/32)		
	Depth	mm (in.)	228 (8-31/32)			293 (11-17/32)		
Net weight		kg (lbs.)	21 (46)					
Shipping weight		kg (lbs.)	24 (53)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.139 (4.9)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## 4-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NWFL 7	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-KR74GXH56 (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 88 / L740)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4Q-31G5P ... 12 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,164	
Coil resistance (Ambient temperature 20°C)	Ω	WHT - BRN : 490.5	ORG - YEL : 39.18
		WHT - VLT : 78.43	YEL - PNK : 213.5
		VLT - ORG : 62.63	
<b>Safety device</b>			
Operating temperature (17AM033E5-4)	Open °C	130 ± 5	
	Close °C	83 ± 15	
Operating temperature (9700k211-215)	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U023E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.3	
Face area	m <sup>2</sup>	0.231	

4

4

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Indoor unit (B)

MODEL No.		ST-NFFL 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT6Q-11A3P ... 15 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	6P ... 831	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 370.2      ORG - YEL : 168.0 WHT - VLT : 105.4      YEL - PNK : 92.16 VLT - ORG : 67.05	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46      YEL - GRY : 46 RED - GRY : 46      BLK - GRY : 46	
Valve body		UKV-18D31	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.102	

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Indoor unit (C)

MODEL No.		ST-NWFL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-KR74GXH56 (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 88 / L740)	
<b>Fan motor</b>			
Model...Nominal output	W	UF4Q-31G5P ... 12 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,164	
Coil resistance (Ambient temperature 20°C)	Ω	WHT - BRN : 490.5	ORG - YEL : 39.18
		WHT - VLT : 78.43	YEL - PNK : 213.5
		VLT - ORG : 62.63	
<b>Safety device</b>			
Operating temperature (17AM033E5-4)	Open °C	130 ± 5	
	Close °C	83 ± 15	
Operating temperature (9700k211-215)	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U023E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.3	
Face area	m <sup>2</sup>	0.231	

4

4

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Indoor unit (D)

MODEL No.		ST-NWFL 18	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-KR74GXH56 (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... $\phi$ 88 / L740)	
Fan motor			
Model...Nominal output	W	UF4Q-31G5P ... 12 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,205	
Coil resistance (Ambient temperature 20°C)	$\Omega$	WHT - BRN : 490.5    ORG - YEL : 39.18 WHT - VLT : 78.43    YEL - PNK : 213.5 VLT - ORG : 62.63	
Safety device			
Operating temperature (17AM033E5-4)	Open °C	130 $\pm$ 5	
	Close °C	83 $\pm$ 15	
Operating temperature (9700k211-215)	Open °C	130 $\pm$ 8	
	Close °C	79 $\pm$ 15	
Run capacitor	VAC, $\mu$ F	440 VAC, 1.2 $\mu$ F	
Electronic expansion valve			
Coil		UKV-U023E	
Coil resistance (at 20°C)	$\Omega$	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.3	
Face area	m <sup>2</sup>	0.231	

## 3-WAY FLOW LOGIC Unit Specifications

## 4. Wall-Mounted Type

## Indoor unit (E)

MODEL No.		ST-NWFL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-KR254GXH56 (Microprocessor)	
Fan (Number...diameter)	mm	Cross-flow (1 ... ø 100 / L848)	
<b>Fan motor</b>			
Model...Nominal output	W	KFT4Q-31A5P-S ... 27 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,147	
Coil resistance (Ambient temperature 20°C)	Ω	WHT - BRN : 306.9    ORG - YEL : 23.12 WHT - VLT : 54.58    YEL - PNK : 96.62 VLT - ORG : 33.91	
<b>Safety device</b>			
Operating temperature (17AM033E5-4)	Open °C	130 ± 5	
	Close °C	83 ± 15	
Operating temperature (9700k211-215)	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.2 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.3	
Face area	m <sup>2</sup>	0.329	

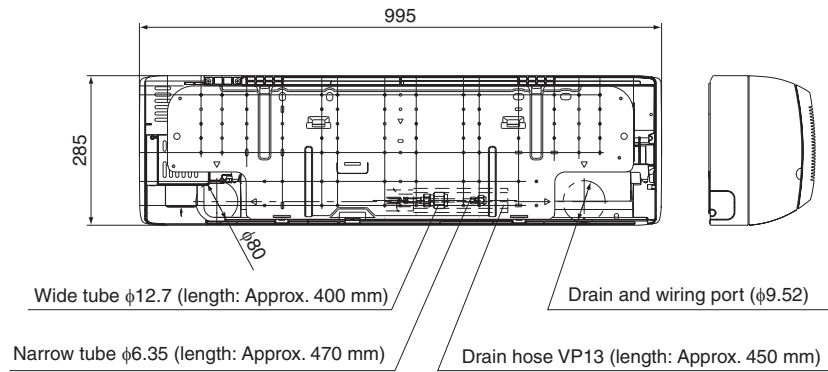
4

4

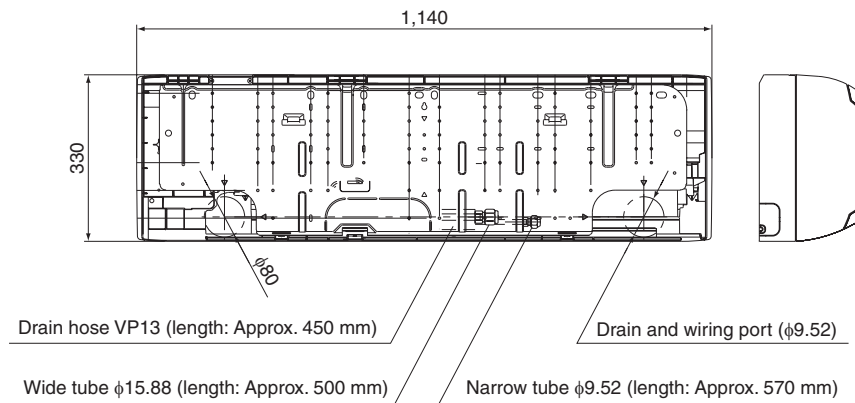
## 4. Wall-Mounted Type

### 4-3. Dimensional Data

#### 7, 9, 12, 18 type



#### 24 type



## 4. Wall-Mounted Type

### 4-4. Noise Criterion Curves

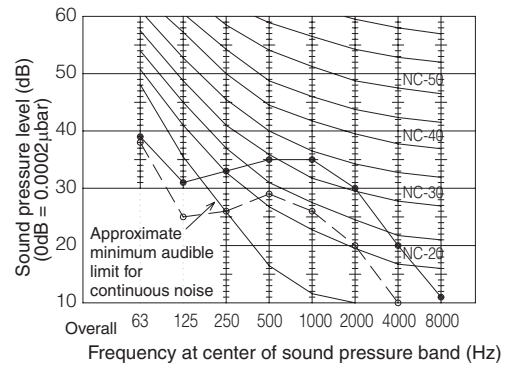
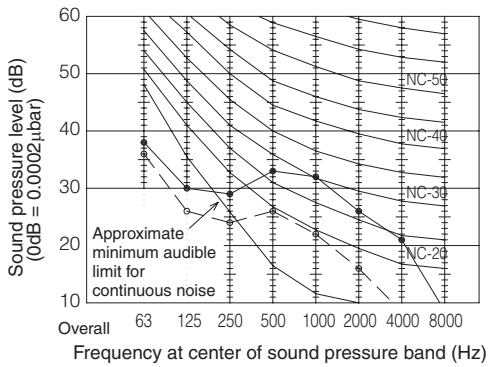
#### ST-NWFL

Both 50Hz and 60Hz

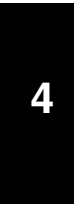
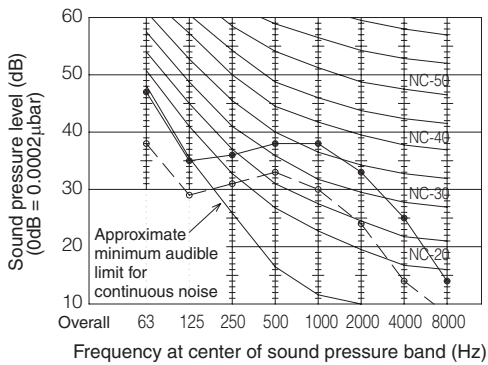
- Strong
- Weak

MODEL	: ST-NWFL 7, ST-NWFL 9 ST-NWFL 12
SOUND LEVEL : STRONG	36 dB(A)
HIGH	32 dB(A)
LOW	28 dB(A)
CONDITION	: 1 m in front at height of 1 m

MODEL	: ST-NWFL 18
SOUND LEVEL : STRONG	39 dB(A)
HIGH	35 dB(A)
LOW	31 dB(A)
CONDITION	: 1 m in front at height of 1 m



MODEL	: ST-NWFL 24
SOUND LEVEL : STRONG	42 dB(A)
HIGH	38 dB(A)
LOW	35 dB(A)
CONDITION	: 1 m in front at height of 1 m



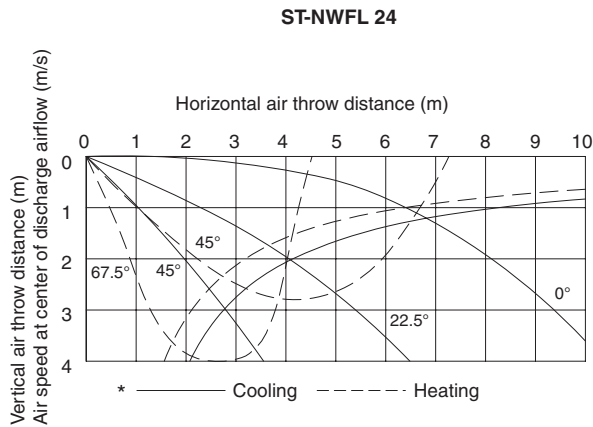
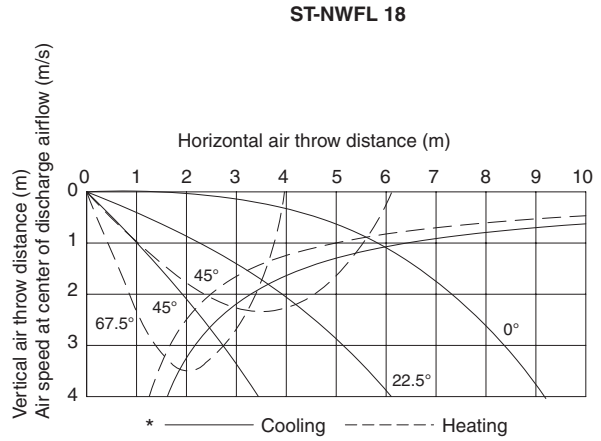
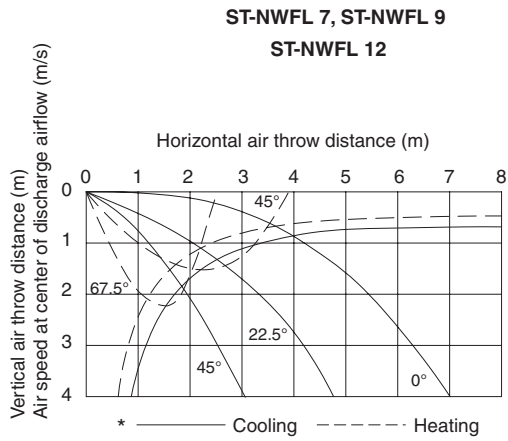


3-WAY FLOW LOGIC Unit Specifications

4. Wall-Mounted Type

4-5. Air Throw Distance Chart (Indoor temp.: Cooling 27°C, heating 20°C)

ST-NWFL



## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## 5-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NPFL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		3.6			4.2		
			12,000			14,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		720 / 600 / 540					
Moisture removal (High)	Liters/h		1.4			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.26	0.24	0.23	0.26	0.24	0.23
Power input	W		28	29	39	28	28	29
Power factor	%		49	53	53	49	51	53
Max. starting amperes	A		2	2	2	2	2	2
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		35 / 32 / 30					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (RCIRP-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.0 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	210 (8-9/32)			280 (11-1/32)		
	Width	mm (in.)	910 (35-26/32)			958 (38-25/32)		
	Depth	mm (in.)	680 (26-25/32)			780 (30-23/32)		
Net weight		kg (lbs.)	21 (46)					
Shipping weight		kg (lbs.)	24 (53)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.215 (7.6)					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NPFL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	5.6			6.3			
		19,000			21,000			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	780 / 660 / 540						
Moisture removal (High)	Liters/h	2.0			-			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.28	0.26	0.24	0.28	0.26	0.25	
Power input	W	31	32	32	31	31	32	
Power factor	%	50	54	56	50	52	53	
Max. starting amperes	A	2	2	2	2	2	2	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)	dB-A	36 / 33 / 30						
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)	6.35 (1/4)						
	Wide tube mm (in.)	12.7 (1/2)						
Drain connection		20A, OD26 mm						
Remote controller		Optional (RCIRP-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 10Y 9.0 / 0.4, RAL 9010-GL						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	210 (8-9/32)			280 (11-1/32)		
	Width	mm (in.)	910 (35-26/32)			958 (38-25/32)		
	Depth	mm (in.)	680 (26-25/32)			780 (30-23/32)		
Net weight		kg (lbs.)	21 (46)					
Shipping weight		kg (lbs.)	24 (53)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.215 (7.6)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NPFL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1110 / 900 / 840					
Moisture removal (High)	Liters/h		3.0			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.38	0.35	0.33	0.38	0.35	0.34
Power input	W		43	43	44	42	42	43
Power factor	%		51	53	56	50	52	53
Max. starting amperes	A		2	2	2	2	2	2
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		38 / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (RCIRP-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.0 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	210 (8-9/32)			280 (11-1/32)		
	Width	mm (in.)	1180 (46-15/32)			1255 (49-13/32)		
	Depth	mm (in.)	680 (26-25/32)			780 (30-23/32)		
Net weight	kg (lbs.)	25 (55)						
Shipping weight	kg (lbs.)	28 (62)						
Shipping volume	m <sup>3</sup> (cu. ft)	0.274 (9.7)						

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NPFL 36					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	10.6			11.4			
		36,000			39,000			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	1650 / 1380 / 1200						
Moisture removal (High)	Liters/h	3.9			-			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.62	0.57	0.53	0.62	0.57	0.55	
Power input	W	73	74	75	72	73	74	
Power factor	%	54	56	59	53	56	56	
Max. starting amperes	A	3	3	3	3	3	3	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access, long life (2,500 hr)						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)	dB-A	41 / 38 / 35						
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)	9.52 (3/8)						
	Wide tube mm (in.)	15.88 (5/8)						
Drain connection		20A, OD26 mm						
Remote controller		Optional (RCIRP-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 10Y 9.0 / 0.4, RAL 9010-GL						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	210 (8-9/32)			280 (11-1/32)		
	Width	mm (in.)	1595 (62-25/32)			1670 (65-24/32)		
	Depth	mm (in.)	680 (26-25/32)			780 (30-23/32)		
Net weight	kg (lbs.)	33 (73)						
Shipping weight	kg (lbs.)	37 (82)						
Shipping volume	m <sup>3</sup> (cu. ft)	0.365 (12.9)						

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NPFL 48					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		14			16.0		
			47,800			54,600		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1800 / 1560 / 1320					
Moisture removal (High)	Liters/h		5.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.69	0.63	0.60	0.69	0.63	0.62
Power input	W		85	86	88	84	85	86
Power factor	%		56	59	61	55	59	58
Max. starting amperes	A		3	3	3	3	3	3
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		43 / 40 / 37					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (RCIRP-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.0 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	210 (8-9/32)			280 (11-1/32)		
	Width	mm (in.)	1595 (62-25/32)			1670 (65-24/32)		
	Depth	mm (in.)	680 (26-25/32)			780 (30-23/32)		
Net weight		kg (lbs.)	33 (73)					
Shipping weight		kg (lbs.)	37 (82)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.365 (12.9)					

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## 5-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NPFL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 140)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-63A280H ... 30 W	
Source		340 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 920	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 53.0 WHT - BLK : 53.0 BLK - RED : 53.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		Thermal protector, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.4	
Face area	m <sup>2</sup>	0.154	

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Indoor unit (B)

<b>MODEL No.</b>		<b>ST-NPFL 18</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (2 ... ø 140)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-63A280H ... 30 W	
Source		340 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 960	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 53.0 WHT - BLK : 53.0 BLK - RED : 53.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		Thermal protector, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.4	
Face area	m <sup>2</sup>	0.154	

4

4



## 5. Ceiling-Mounted Type

### Indoor unit (C)

MODEL No.		ST-NPFL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-SRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 140)	
Fan motor			
Model...Nominal output	W	DK8-63B280H ... 40 W	
Source		340 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 980	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 53.0 WHT - BLK : 53.0 BLK - RED : 53.0	
Run capacitor	VAC, μF	-	
Safety device		Thermal protector, fuse	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.4	
Face area	m <sup>2</sup>	0.222	

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Indoor unit (D)

<b>MODEL No.</b>		<b>ST-NPFL 36</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4 ... ø 140)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-123B280H ... 80 W	
Source		340 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 1,040	
Coil resistance (Ambient temperature 20°C)	Ω	RED – WHT : 37.0 WHT – BLK : 37.0 BLK – RED : 37.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		Thermal protector, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46    YEL – GRY : 46 RED – GRY : 46    BLK – GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.4	
Face area	m <sup>2</sup>	0.326	

4

4

## 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

## Indoor unit (E)

<b>MODEL No.</b>		<b>ST-NPFL 48</b>	
<b>Source</b>		<b>220 - 230 - 240 V / single-phase / 50 Hz</b>	
<b>Controller P.C.B. Ass'y</b>		CR-SRP50A-B (Microprocessor)	
<b>Fan (Number...diameter)</b>	mm	Centrifugal (4 ... ø 140)	
<b>Fan motor</b>			
Model...Nominal output	W	DK8-123B280H ... 80 W	
Source		340 VDC	
No. of pole...r.p.m. (230 V, High)	rpm	8P ... 1,100	
Coil resistance (Ambient temperature 20°C)	Ω	RED - WHT : 37.0 WHT - BLK : 37.0 BLK - RED : 37.0	
Run capacitor	VAC, μF	-	
<b>Safety device</b>		Thermal protector, fuse	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.4	
Face area	m <sup>2</sup>	0.326	

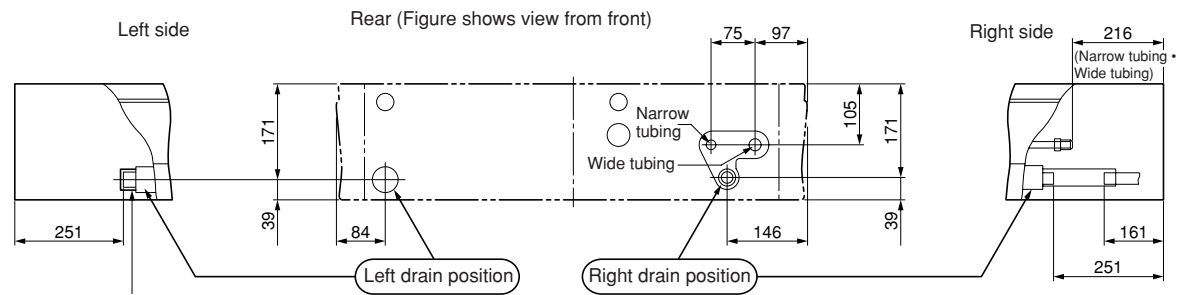
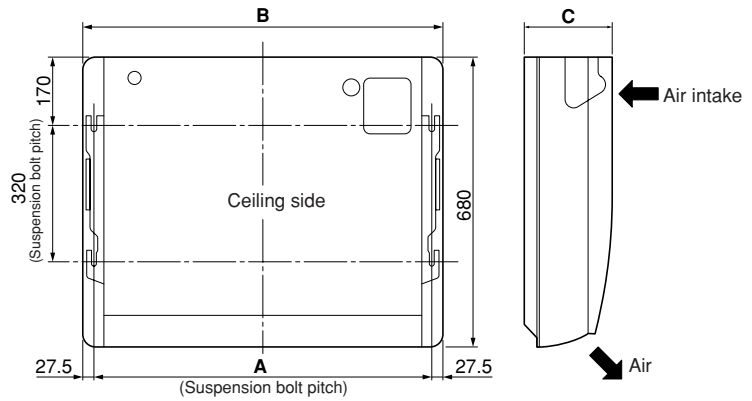
### 3-WAY FLOW LOGIC Unit Specifications

## 5. Ceiling-Mounted Type

### 5-3. Dimensional Data

Type \ Length	A	B	C
12, 18	855	910	210
24	1125	1180	210
36, 48	1540	1595	210

Unit: mm



Closed with rubber stopper at time of shipment.

3-WAY FLOW LOGIC Unit Specifications

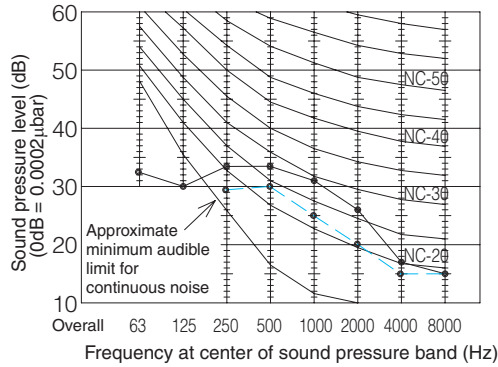
5. Ceiling-Mounted Type

5-4. Noise Criterion Curves

ST-NPFL

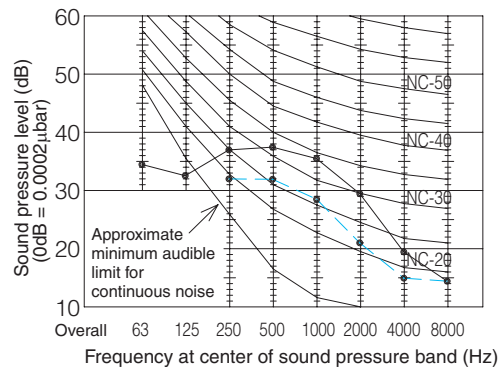
MODEL	: ST-NPFL 12
SOUND LEVEL : STRONG	35 dB(A)
HIGH	32 dB(A)
LOW	30 dB(A)

CONDITION : 1 m from front of outlet at height of 1.5 m



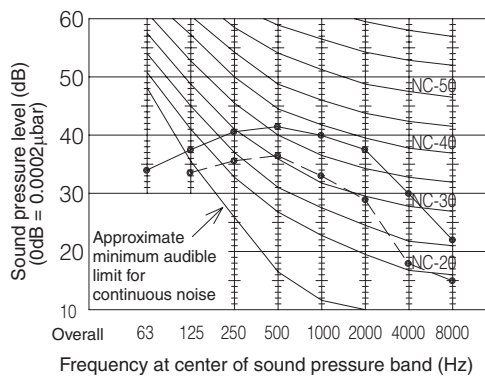
MODEL	: ST-NPFL 24
SOUND LEVEL : STRONG	39 dB(A)
HIGH	37 dB(A)
LOW	33 dB(A)

CONDITION : 1 m from front of outlet at height of 1.5 m



MODEL	: ST-NPFL 48
SOUND LEVEL :	44 dB(A)
HIGH	41 dB(A)
LOW	37 dB(A)

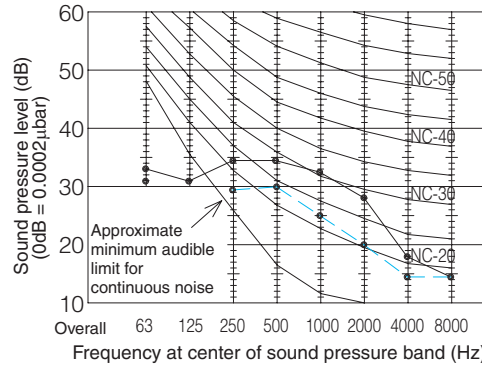
CONDITION : 1 m from front of outlet at height of 1.5 m



Both 50Hz and 60Hz  
 —●— Strong  
 -○- Weak

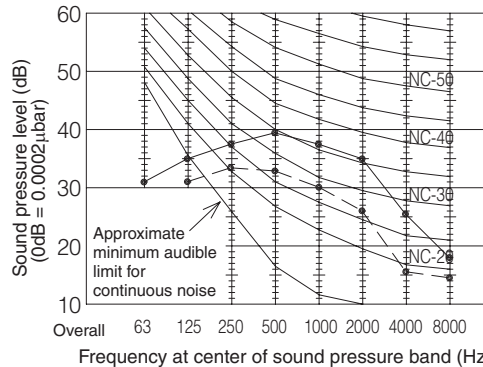
MODEL	: ST-NPFL 18
SOUND LEVEL : STRONG	36 dB(A)
HIGH	33 dB(A)
LOW	30 dB(A)

CONDITION : 1 m from front of outlet at height of 1.5 m



MODEL	: ST-NPFL 36
SOUND LEVEL : STRONG	42 dB(A)
HIGH	40 dB(A)
LOW	35 dB(A)

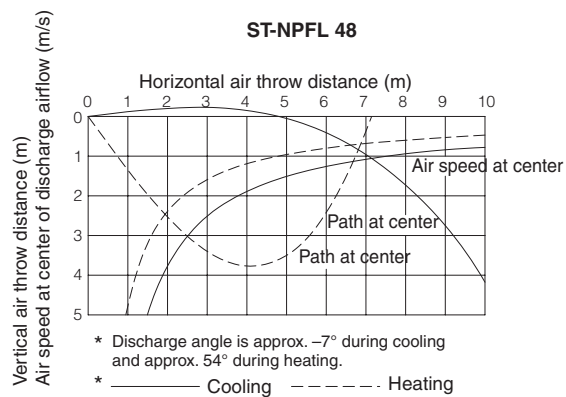
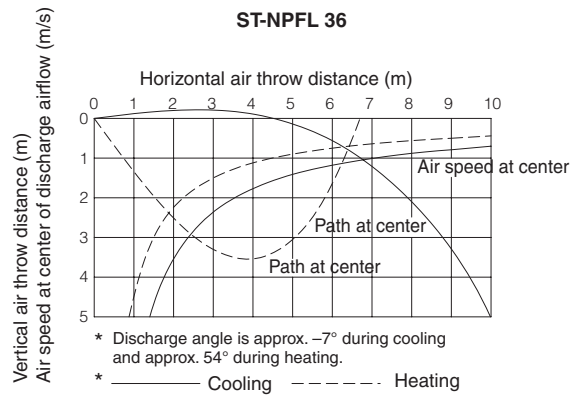
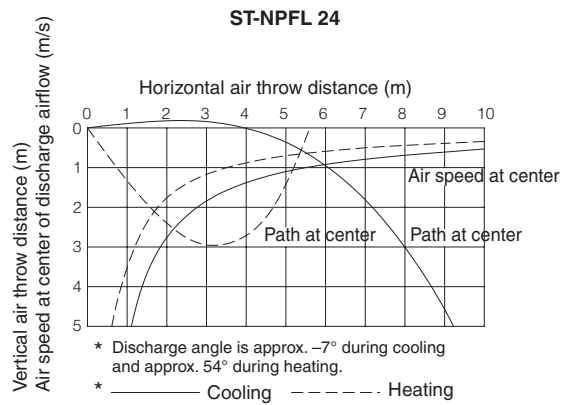
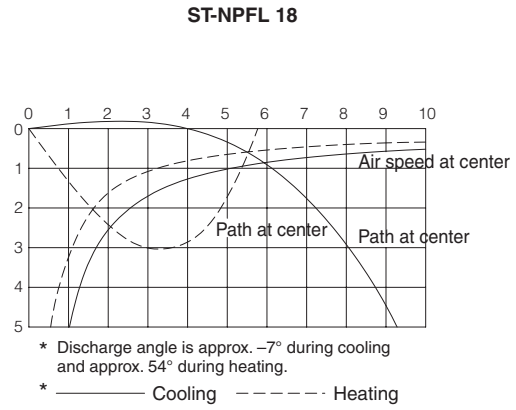
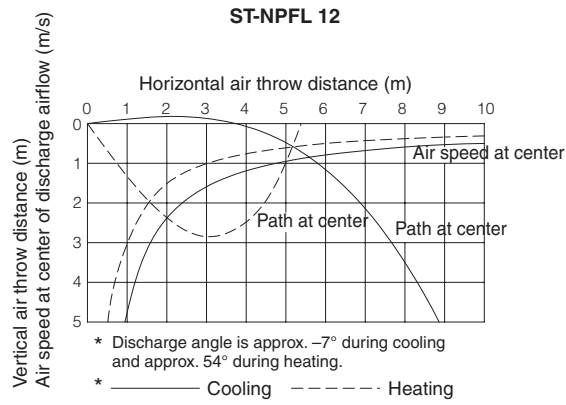
CONDITION : 1 m from front of outlet at height of 1.5 m



## 5. Ceiling-Mounted Type

### 5-5. Air Throw Distance Chart (Indoor temp.: Cooling 27°C, heating 20°C)

#### ST-NPFL



4

4

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## 6-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NDLP 7					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		2.2			2.5		
	BTU / h		7,500			8,500		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		600 / 510 / 420					
Moisture removal (High)	Liters/h		0.8			-		
External static pressure (High)	Pa (mmAq)		49(5): At shipment 69(7): Using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.45	0.46	0.47	0.40	0.41	0.42
Power input	W		94	100	106	82	88	94
Power factor	%		95	95	94	93	93	93
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		29 / 26 / 22					
Using the booster cable (Hi / Me / Lo)	dB-A		32 / 29 / 26					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	700 (27-18/32)			891 (35-3/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight	kg (lbs.)		24 (53)					
Shipping weight	kg (lbs.)		28 (62)					
Shipping volume	m <sup>3</sup> (cu. ft)		0.250 (8.8)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NDLP 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		2.8			3.2		
			9,600			11,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		600 / 510 / 420					
Moisture removal (High)	Liters/h		1.1			-		
External static pressure (High)	Pa (mmAq)		49(5): At shipment			69(7): Using the booster cable		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.45	0.46	0.47	0.40	0.41	0.42
Power input	W		94	100	106	82	88	94
Power factor	%		95	95	94	93	93	93
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	29 / 26 / 22					
Using the booster cable (Hi / Me / Lo)		dB-A	32 / 29 / 26					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	700 (27-18/32)			891 (35-3/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	24 (53)					
Shipping weight		kg (lbs.)	28 (62)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.250 (8.8)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB



## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NDLP 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	3.6			4.2			
		12,000			14,000			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	600 / 510 / 420						
Moisture removal (High)	Liters/h	1.8			-			
External static pressure (High)	Pa (mmAq)	49(5): At shipment 69(7): Using the booster cable						
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.45	0.46	0.47	0.40	0.41	0.42	
Power input	W	94	100	106	82	88	94	
Power factor	%	95	95	94	93	93	93	
Max. starting amperes	A	1	1	1	1	1	1	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Field supply						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		29 / 26 / 22				
Using the booster cable (Hi / Me / Lo)		dB-A		32 / 29 / 26				
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)	6.35 (1/4)						
	Wide tube mm (in.)	12.7 (1/2)						
Drain connection		25A, OD32 mm						
Drain pump		Max. head 50 cm above drain connection						
Remote controller		Optional (NRCG-FL)						
Refrigerant tubing kit / Accessories		Optional / Booster cable						
Color (Approximate value)		-						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	700 (27-18/32)			891 (35-3/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	24 (53)					
Shipping weight		kg (lbs.)	28 (62)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.250 (8.8)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NDLP 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		5.6			6.3		
	BTU / h		19,000			21,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		720 / 630 / 540					
Moisture removal (High)	Liters/h		3.0			-		
External static pressure (High)	Pa (mmAq)		40(4.1): At shipment			62(6.3): Using the booster cable		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.44	0.45	0.46	0.39	0.40	0.41
Power input	W		96	102	109	84	90	97
Power factor	%		99	99	99	98	98	99
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	30 / 28 / 25					
Using the booster cable (Hi / Me / Lo)		dB-A	33 / 30 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)					
	Wide tube	mm (in.)	12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	700 (27-18/32)			891 (35-3/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	25 (55)					
Shipping weight		kg (lbs.)	29 (64)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.250 (8.8)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NDLP 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,080 / 900 / 780					
Moisture removal (High)	Liters/h		3.5			-		
External static pressure (High)	Pa (mmAq)		50(5.1): At shipment 92(9.4): Using the booster cable					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.83	0.86	0.89	0.78	0.81	0.84
Power input	W		180	195	210	168	183	198
Power factor	%		99	99	98	98	98	98
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	34 / 30 / 27					
Using the booster cable (Hi / Me / Lo)		dB-A	38 / 34 / 30					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	1000 (39-12/32)			1191 (46-28/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	32 (71)					
Shipping weight		kg (lbs.)	37 (82)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.334 (11.8)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (F)

MODEL No.	Indoor Unit		ST-NDLP 36					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		10.6			11.4		
	BTU / h		36,000			39,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,800 / 1,560 / 1,260					
Moisture removal (High)	Liters/h		4.2			-		
External static pressure (High)	Pa (mmAq)		79(8.1): At shipment		122(12.4): Using the booster cable			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		1.44	1.45	1.46	1.39	1.40	1.41
Power input	W		312	327	342	300	315	330
Power factor	%		98	98	98	98	98	98
Max. starting amperes	A		2	2	2	2	2	2
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	38 / 33 / 31					
Using the booster cable (Hi / Me / Lo)		dB-A	42 / 38 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	9.52 (3/8)					
	Wide tube	mm (in.)	15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	1480 (58-9/32)			1671 (65-25/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	47 (104)					
Shipping weight		kg (lbs.)	52 (115)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.468 (16.5)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Unit specifications (G)

MODEL No.	Indoor Unit		ST-NDLP 48					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		14.0			16.0		
			47,800			54,600		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,980 / 1,800 / 1,500					
Moisture removal (High)	Liters/h		6.6			-		
External static pressure (High)	Pa (mmAq)		78(8.0): At shipment			113(11.5): Using the booster cable		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		1.42	1.43	1.44	1.36	1.37	1.38
Power input	W		308	325	341	296	313	329
Power factor	%		99	99	99	99	99	99
Max. starting amperes	A		2	2	2	2	2	2
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	40 / 37 / 33					
Using the booster cable (Hi / Me / Lo)		dB-A	44 / 40 / 37					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 50 cm above drain connection					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / Booster cable					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	310 (12-7/32)			358 (14-3/32)		
	Width	mm (in.)	1480 (58-9/32)			1671 (65-25/32)		
	Depth	mm (in.)	630 (24-26/32)			783 (30-26/32)		
Net weight		kg (lbs.)	47 (104)					
Shipping weight		kg (lbs.)	52 (115)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.468 (16.5)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## 6-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NDLP 7	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 76.88	ORG – YEL : 14.42
		WHT – VLT : 12.66	YEL – BLK : 26.76
		VLT – ORG : 21.01	BLK – PNK : 25.17
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46	YEL – GRY : 46
		RED – GRY : 46	BLK – GRY : 46
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Indoor unit (B)

MODEL No.		ST-NDLP 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 76.88      ORG – YEL : 14.42 WHT – VLT : 12.66      YEL – BLK : 26.76 VLT – ORG : 21.01      BLK – PNK : 25.17	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46      YEL – GRY : 46 RED – GRY : 46      BLK – GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Indoor unit (C)

MODEL No.		ST-NDLP 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 834	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 76.88    ORG - YEL : 14.42 WHT - VLT : 12.66    YEL - BLK : 26.76 VLT - ORG : 21.01    BLK - PNK : 25.17	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	



## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Indoor unit (D)

MODEL No.		ST-NDLP 18	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X-51C3P ... 50 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,191	
Coil resistance (Ambient temperature 20°C)	W	BRN - WHT : 76.88    ORG - YEL : 14.42 WHT - VLT : 12.66    YEL - BLK : 26.76 VLT - ORG : 21.01    BLK - PNK : 25.17	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, nF	450 VAC, 2.0 nF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	W	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.113	
<b>Drain pump</b>			
Rated		V, W	AC230 V, 50 Hz, 12 W
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

## Indoor unit (E)

MODEL No.		ST-NDLP 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... $\phi$ 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4X-71B5P ... 70 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,063	
Coil resistance (Ambient temperature 20°C)	$\Omega$	BRN - WHT : 74.72    ORG - YEL : 9.588 WHT - VLT : 19.14    YEL - BLK : 10.52 VLT - ORG : 10.52    BLK - PNK : 21.72	
<b>Safety device</b>			
Operating temperature	Open °C	130 $\pm$ 5	
	Close °C	(115 $\pm$ 5)	
Run capacitor	VAC, $\mu$ F	450 VAC, 5.0 $\mu$ F	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	$\Omega$	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.189	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 6. Concealed Duct Type

### Indoor unit (F)

MODEL No.		ST-NDLP 36	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-141A5P ... 160 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,207	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 25.79	ORG - YEL : 5.792
		WHT - VLT : 5.086	YEL - BLK : 6.746
		VLT - ORG : 8.626	BLK - PNK : 6.361
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 6.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.308	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 6. Concealed Duct Type

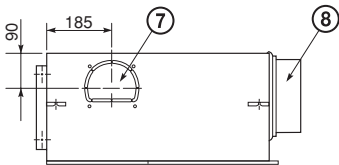
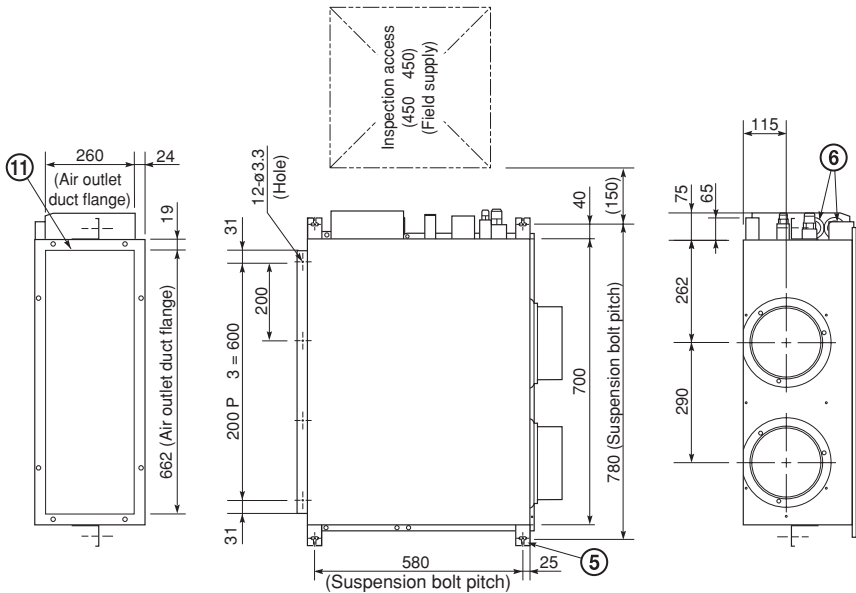
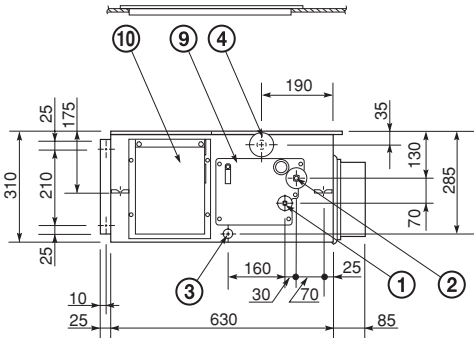
## Indoor unit (G)

MODEL No.		ST-NDLP 48	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 190)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-141A5P ... 160 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,207	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 25.79    ORG - YEL : 5.792 WHT - VLT : 5.086    YEL - BLK : 6.746 VLT - ORG : 8.626    BLK - PNK : 6.361	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 8.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U031E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.308	
<b>Drain pump</b>			
Rated		ADP-1413	
	V, W	AC230 V, 50 Hz, 12 W	
Total head & capacity		500 mm, 400 cc/min	

## 6. Concealed Duct Type

### 6-3. Dimensional Data

Indoor unit : 7, 9, 12, 18 Type

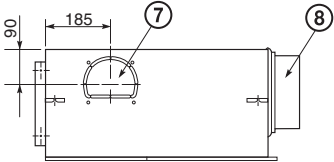
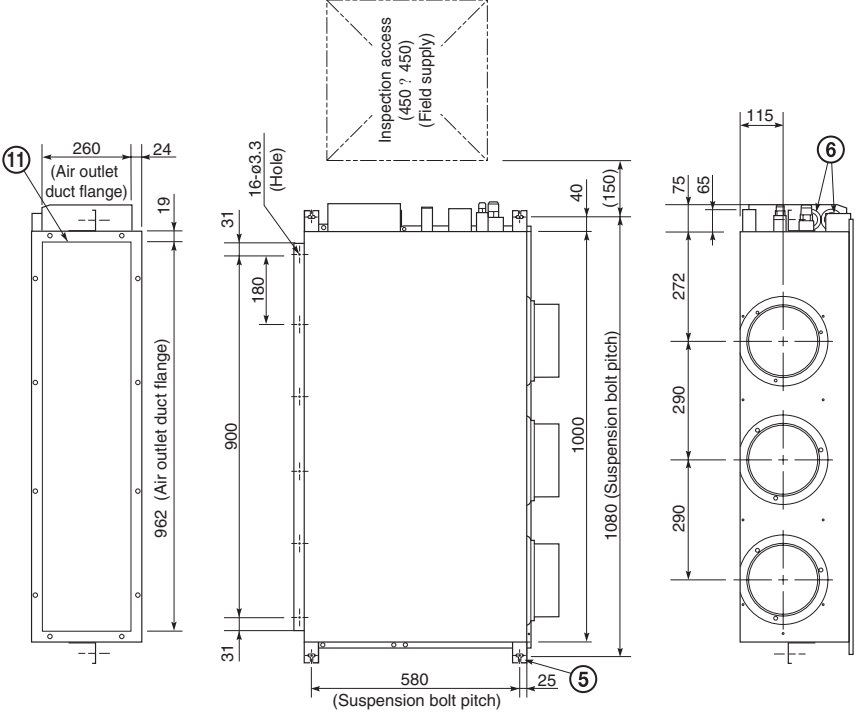
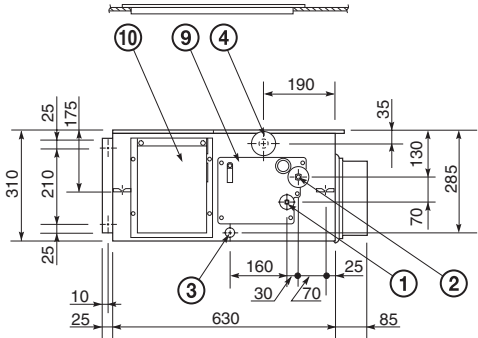


- ① Refrigerant liquid line ø6.35 (narrow tube)
- ② Refrigerant gas line ø12.7
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2-ø30)
- ⑦ Fresh air intake port (ø150)
- ⑧ Flange for the flexible air outlet duct (ø200)
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct (Option or field supply)

3-WAY FLOW LOGIC Unit Specifications

6. Concealed Duct Type

Indoor unit: 24 Type

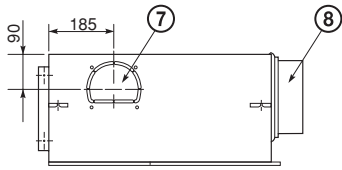
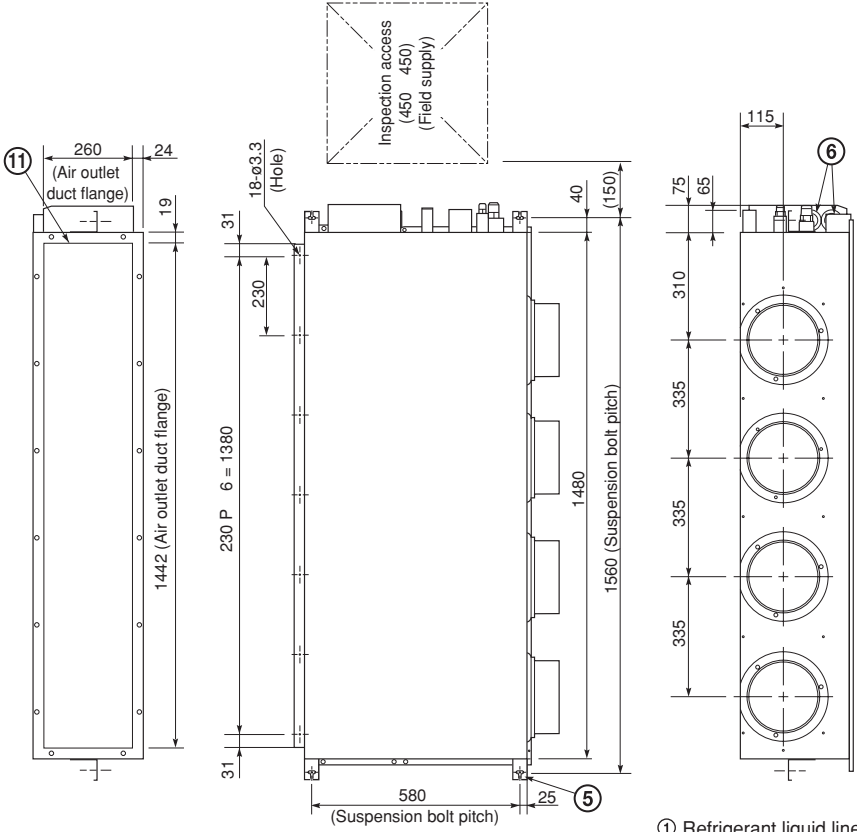
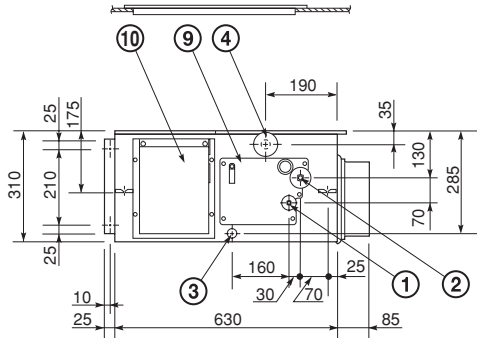


- ① Refrigerant liquid line ø9.52 (narrow tube)  
(Use the tube connector)
- ② Refrigerant gas line ø15.88 (wide tube)
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2-ø30)
- ⑦ Fresh air intake port (ø150)
- ⑧ Flange for the flexible air outlet duct (ø200)
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct  
(Option or field supply)

4

### 6. Concealed Duct Type

Indoor unit: 36, 48 Type

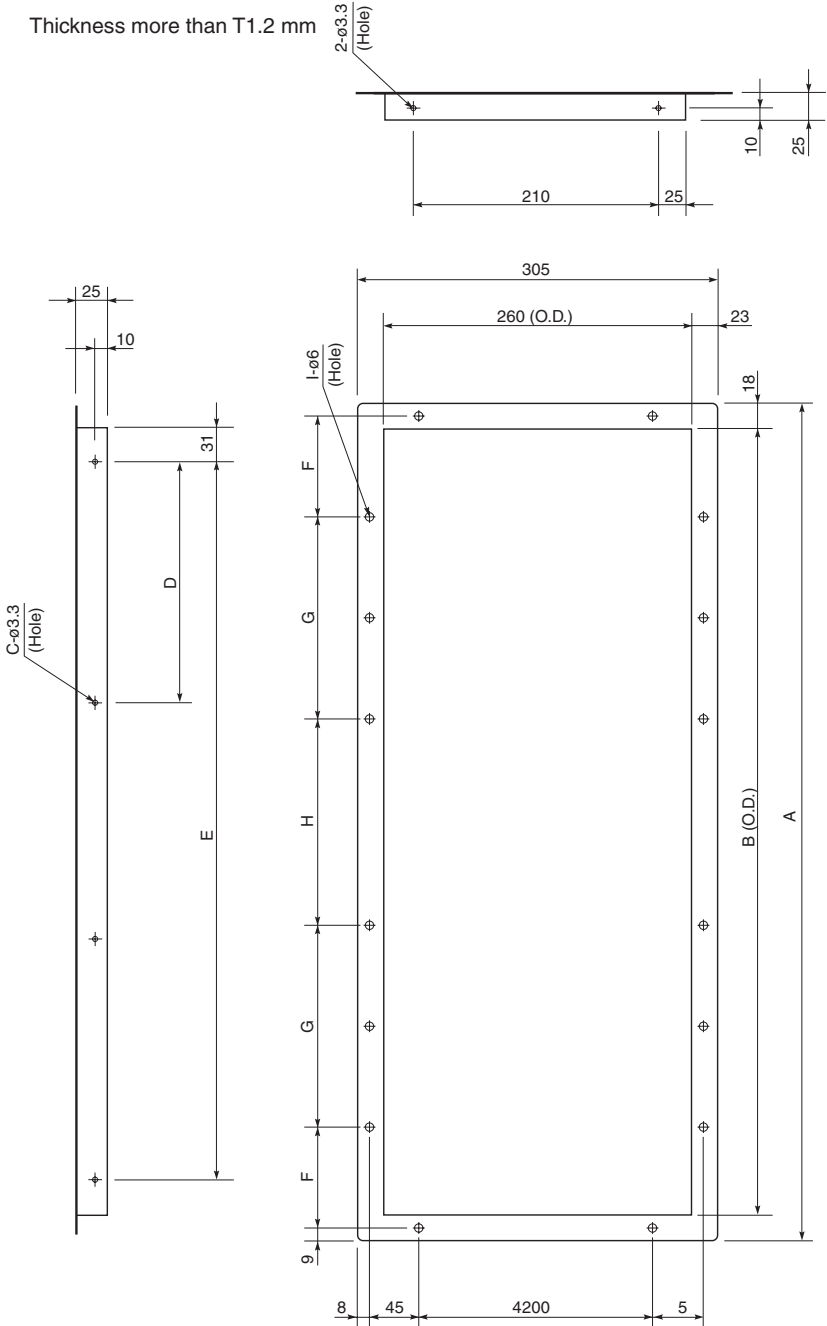


- ① Refrigerant liquid line  $\varnothing 9.52$  (narrow tube)
- ② Refrigerant gas line  $\varnothing 15.88$  (wide tube)
- ③ Upper drain port (O.D. 32 mm)
- ④ Bottom drain port (O.D. 26 mm)
- ⑤ Suspension lug
- ⑥ Power supply outlet (2- $\varnothing 30$ )
- ⑦ Fresh air intake port ( $\varnothing 150$ )
- ⑧ Flange for the flexible air outlet duct ( $\varnothing 200$ )
- ⑨ Tube cover
- ⑩ Electrical component box
- ⑪ Flange for the air intake duct (Option or field supply)

4

### 6. Concealed Duct Type

■ Flange for Air Intake Duct (Field Supply)  
For Concealed Duct Type



4

(mm)

	A	B	C	D	E	F	G	H	I
7, 9, 12, 18 type	698	662	4	200	3 200P = 600	170	-	340	12
24 type	998	962	6	180	5 180P = 900	120	245 (245 1)	250	16
36, 48 type	1,478	1,442	7	230	6 230P = 1,380	120	490 (245 2)	240	20



## 6. Concealed Duct Type

### 6-4. Noise Criterion Curves

MODEL : ST-NDLP 7  
 ST-NDLP 9  
 ST-NDLP 12

---

SOUND LEVEL : HIGH 29 dB(A), NC 20 / LOW 22 dB(A), NC 13

---

CONDITION : Under the unit 1.5 m

---

SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL : ST-NDLP 18

---

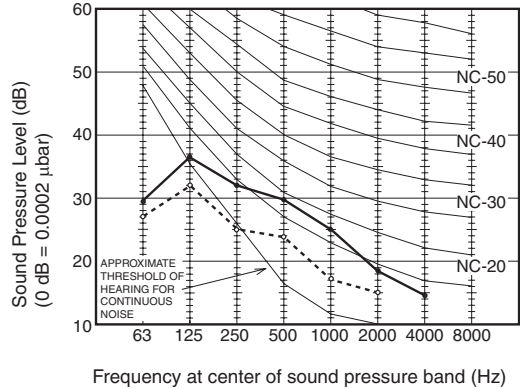
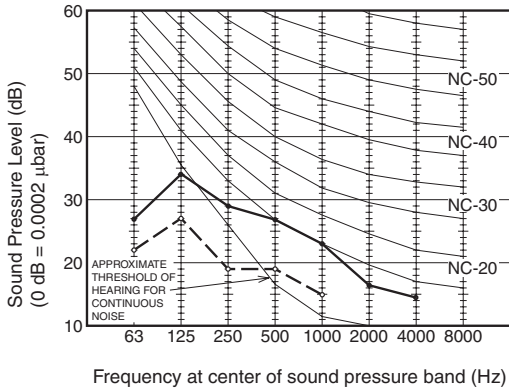
SOUND LEVEL : HIGH 30 dB(A), NC 23 / LOW 25 dB(A), NC 17

---

CONDITION : Under the unit 1.5 m

---

SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



4

MODEL : ST-NDLP 24

---

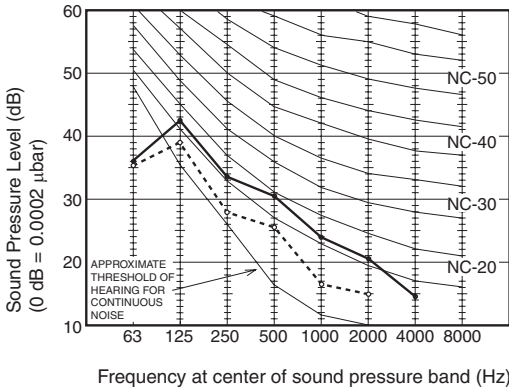
SOUND LEVEL : HIGH 34 dB(A), NC 22 / LOW 27 dB(A), NC 18

---

CONDITION : Under the unit 1.5 m

---

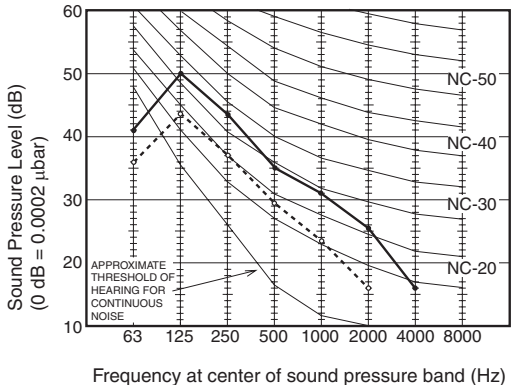
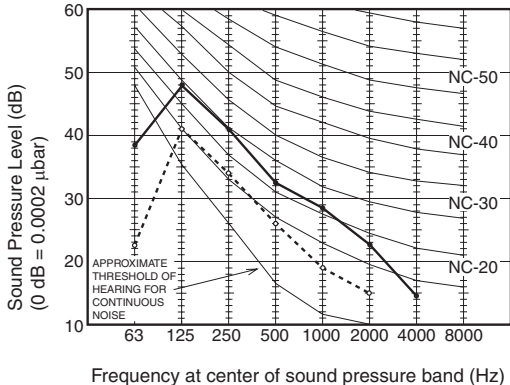
SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



### 6. Concealed Duct Type

MODEL : ST-NDLP 36  
 SOUND LEVEL : HIGH 38 dB(A), NC 30 / LOW 31 dB(A), NC 21  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL : ST-NDLP 48  
 SOUND LEVEL : HIGH 40 dB(A), NC 33 / LOW 33 dB(A), NC 25  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



4

- REMARKS:**
- Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  - The test results were obtained from an anechoic room.

**NOTE**

To evaluate the noise level, the maximum value of the measured sound pressure level is used. Read the value at each frequency level (on horizontal axis, center of the sound pressure band) from 63 Hz to 8000 Hz, and select the corresponding maximum value indicated on the vertical axis.

## 6. Concealed Duct Type

### 6-5. Increasing the Fan Speed

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

- (1) Remove 2 screws on the electrical component box and remove the cover plate.
- (2) Disconnect the fan motor sockets in the box.
- (3) Take out the booster cable (sockets at both ends) clamped in the box.
- (4) Securely connect the booster cable sockets between the disconnected fan motor sockets in step 2 as shown in the Fig. 7-1.
- (5) Place the cable neatly in the box and reinstall the cover plate.

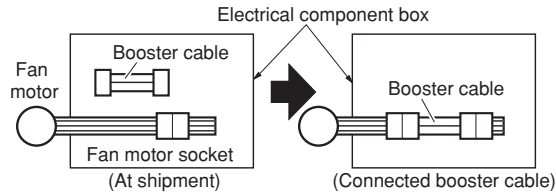
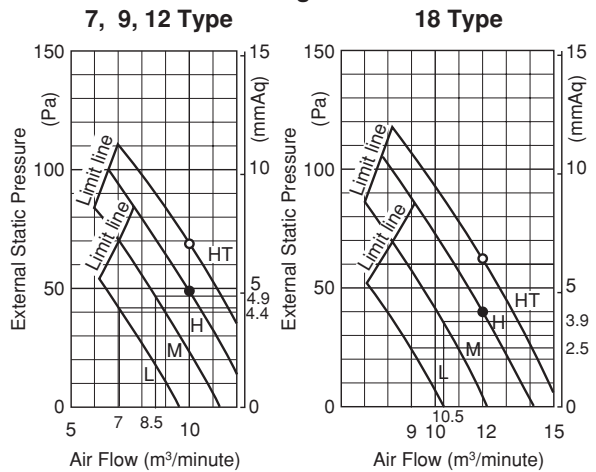


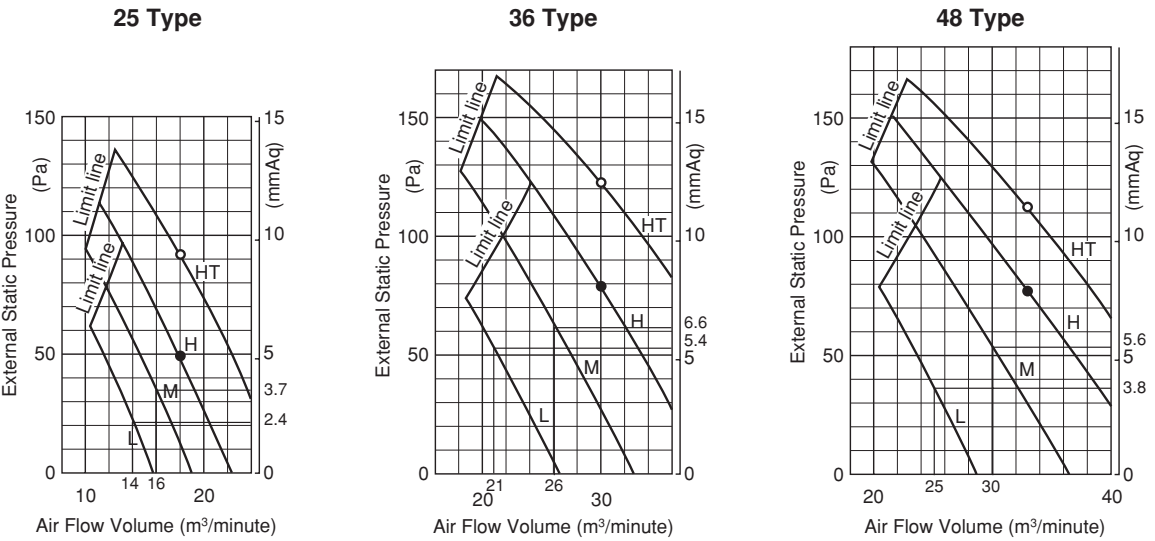
Fig. 7-1

1743\_M\_1



## 4

### Indoor Fan Performance



**NOTE** HT : Using the booster cable  
 H : At shipment

#### How to read the diagram

The vertical axis is the external static pressure (Pa) while the horizontal axis represents the AIR FLOW (m³/minute). The characteristic curves for "HT", "H", "M" and "L" fan speed control are shown. The nameplate values are shown based on the "H" air flow. For the 25 type, the air flow is 18 m³/minute, while the external static pressure is 49 Pa at "H" position. If external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed as explained above.

Fig. 7-2

3-WAY FLOW LOGIC Unit Specifications

7. Concealed Duct High Static Pressure Type

7-1. Specifications

Unit specifications (A)

MODEL No.	Indoor Unit		ST-NDHP 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,380/ 1,320 / 1,260					
Moisture removal (High)	Liters/h		3.1			-		
External static pressure (High)	Pa (mmAq)		186 (19)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		2.29	2.30	2.31	2.29	2.30	2.31
Power input	W		480	505	530	480	505	530
Power factor	%		95	95	96	95	95	96
Max. starting amperes	A		3	3	3	3	3	3
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		44 / 43 / 42					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, Male screw					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	420 (16-16/32)			513 (20-8/32)		
	Width	mm (in.)	1065 (41-28/32)			1148 (45-8/32)		
	Depth	mm (in.)	620 (24-12/32)			713 (28-4/32)		
Net weight	kg (lbs.)	47 (104)						
Shipping weight	kg (lbs.)	61 (134)						
Shipping volume	m <sup>3</sup> (cu. ft)	0.420 (14.8)						

4

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NDHP 36					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		10.6			11.4		
	BTU / h		36,000			39,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,800 / 1,680 / 1,500					
Moisture removal (High)	Liters/h		4.4			-		
External static pressure (High)	Pa (mmAq)		176 (18)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 – 264			198 – 264		
Running amperes	A		2.46	2.46	2.47	2.46	2.46	2.47
Power input	W		520	545	570	480	545	570
Power factor	%		96	96	96	96	96	96
Max. starting amperes	A		4	4	4	4	4	4
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		45 / 44 / 42					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			25A, Male screw					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	420 (16-16/32)			513 (20-8/32)		
	Width	mm (in.)	1065 (41-28/32)			1148 (45-8/32)		
	Depth	mm (in.)	620 (24-12/32)			713 (28-4/32)		
Net weight	kg (lbs.)	50 (110)						
Shipping weight	kg (lbs.)	64 (141)						
Shipping volume	m <sup>3</sup> (cu. ft)	0.420 (14.8)						

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NDHP 48					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity		kW	14.0			16.0		
		BTU / h	47,800			54,600		
Air circulation (Hi / Me / Lo)		m <sup>3</sup> /h	2,160 / 2,100 / 1,980					
Moisture removal (High)		Liters/h	6.6			-		
External static pressure (High)		Pa (mmAq)	167					
<b>ELECTRICAL RATINGS</b>			(17)					
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 - 264			198 - 264		
Running amperes		A	2.80	2.90	3.00	2.80	2.90	3.00
Power input		W	600	660	710	600	660	710
Power factor		%	97	99	99	97	99	99
Max. starting amperes		A	4	4	4	4	4	4
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	47 / 46 / 44					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	9.52 (3/8)					
	Wide tube	mm (in.)	15.88 (5/8)					
Drain connection			25A, Male screw					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	450 (17-24/32)			513 (20-8/32)		
	Width	mm (in.)	1065 (41-28/32)			1148 (45-8/32)		
	Depth	mm (in.)	620 (24-12/32)			713 (28-4/32)		
Net weight		kg (lbs.)	54 (119)					
Shipping weight		kg (lbs.)	69 (152)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.420 (14.8)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NDHP 76					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		22.4			25.0		
	BTU / h		76,400			85,300		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		3,360 / 3,190 / 2,980					
Moisture removal (High)	Liters/h		11.1			-		
External static pressure (High)	Pa (mmAq)		176 (18)					
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		4.50	4.06	4.07	4.05	4.06	4.07
Power input	W		870	900	930	870	900	930
Power factor	%		98	96	95	98	96	95
Max. starting amperes	A		7	7	7	7	7	7
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Field supply					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		48 / 47 / 46					
Refrigerant tubing connections			3/8" : Flare type			3/4" : Brazing connection		
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		19.05 (3/4)					
Drain connection			25A, Male screw					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			-					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	467 (18-12/32)			615 (24-7/32)		
	Width	mm (in.)	1428 (56-7/32)			1536 (60-15/32)		
	Depth	mm (in.)	1230 (48-14/32)			1342 (52-27/32)		
Net weight	kg (lbs.)	110 (243)						
Shipping weight	kg (lbs.)	134 (295)						
Shipping volume	m <sup>3</sup> (cu. ft)	1.268 (44.8)						

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NDHP 96					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	28.0			31.5			
		95,500			107,500			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	4,320 / 4,200 / 3,960						
Moisture removal (High)	Liters/h	13.9			-			
External static pressure (High)	Pa (mmAq)	216(22) at shipment			235(24) using the booster cable			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	6.04	6.06	6.07	6.04	6.06	6.07	
Power input	W	1270	1330	1390	1270	1330	1390	
Power factor	%	96	95	95	96	95	95	
Max. starting amperes	A	7	7	7	7	7	7	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Field supply						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		51 / 50 / 49				
Using the booster cable (Mi / Me / Lo)		dB-A		52 / 51 / 50				
Refrigerant tubing connections		3/8" : Flare type		7/8" : Brazing connection				
Refrigerant tube diameter	Narrow tube mm (in.)	9.52 (3/8)						
	Wide tube mm (in.)	22.22 (7/8)						
Drain connection		25A, Male screw						
Remote controller		Optional (NRCG-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		-						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	467 (18-12/32)			615 (24-7/32)		
	Width	mm (in.)	1428 (56-7/32)			1536 (60-15/32)		
	Depth	mm (in.)	1230 (48-14/32)			1342 (52-27/32)		
Net weight		kg (lbs.)	120 (265)					
Shipping weight		kg (lbs.)	144 (317)					
Shipping volume		m <sup>3</sup> (cu. ft)	1.268 (44.8)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.



## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## 7-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NDHP 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 220)	
Fan motor			
Model...Nominal output	W	KFC4X-201B5P ... 200 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,004	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 13.75	ORG - YEL : 2.21
		WHT - VLT : 4.47	YEL - BLK : 10.33
		VLT - ORG : 1.20	BLK - PNK : 12.90
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 5.0 μF	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-25D32	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.233	

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Indoor unit (B)

MODEL No.		ST-NDHP 36	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 220)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-201B5P ... 200 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,134	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 13.75    ORG - YEL : 2.21 WHT - VLT : 4.47    YEL - BLK : 10.33 VLT - ORG : 1.20    BLK - PNK : 12.90	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 5.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4...2.0	
Face area	m <sup>2</sup>	0.273	

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Indoor unit (C)

MODEL No.		ST-NDHP 48	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 250)	
Fan motor			
Model...Nominal output	W	KFC4Q-401A5P ... 400 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,077	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 11.05      ORG – YEL : 4.57 WHT – VLT : 1.80      YEL – PNK : 7.70 VLT – ORG : 1.00	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 7.0 μF	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46      YEL – GRY : 46 RED – GRY : 46      BLK – GRY : 46	
Valve body		UKV-30D33	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	4...2.0	
Face area	m <sup>2</sup>	0.273	

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Indoor unit (D)

MODEL No.		ST-NDHP 76	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 220)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-201B5P ... 180 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,012	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 13.75    ORG – YEL : 2.21 WHT – VLT : 4.47    YEL – BLK : 10.33 VLT – ORG : 1.20    BLK – PNK : 12.90	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 7.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U023E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46    YEL – GRY : 46 RED – GRY : 46    BLK – GRY : 46	
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.540	

## 3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

## Indoor unit (E)

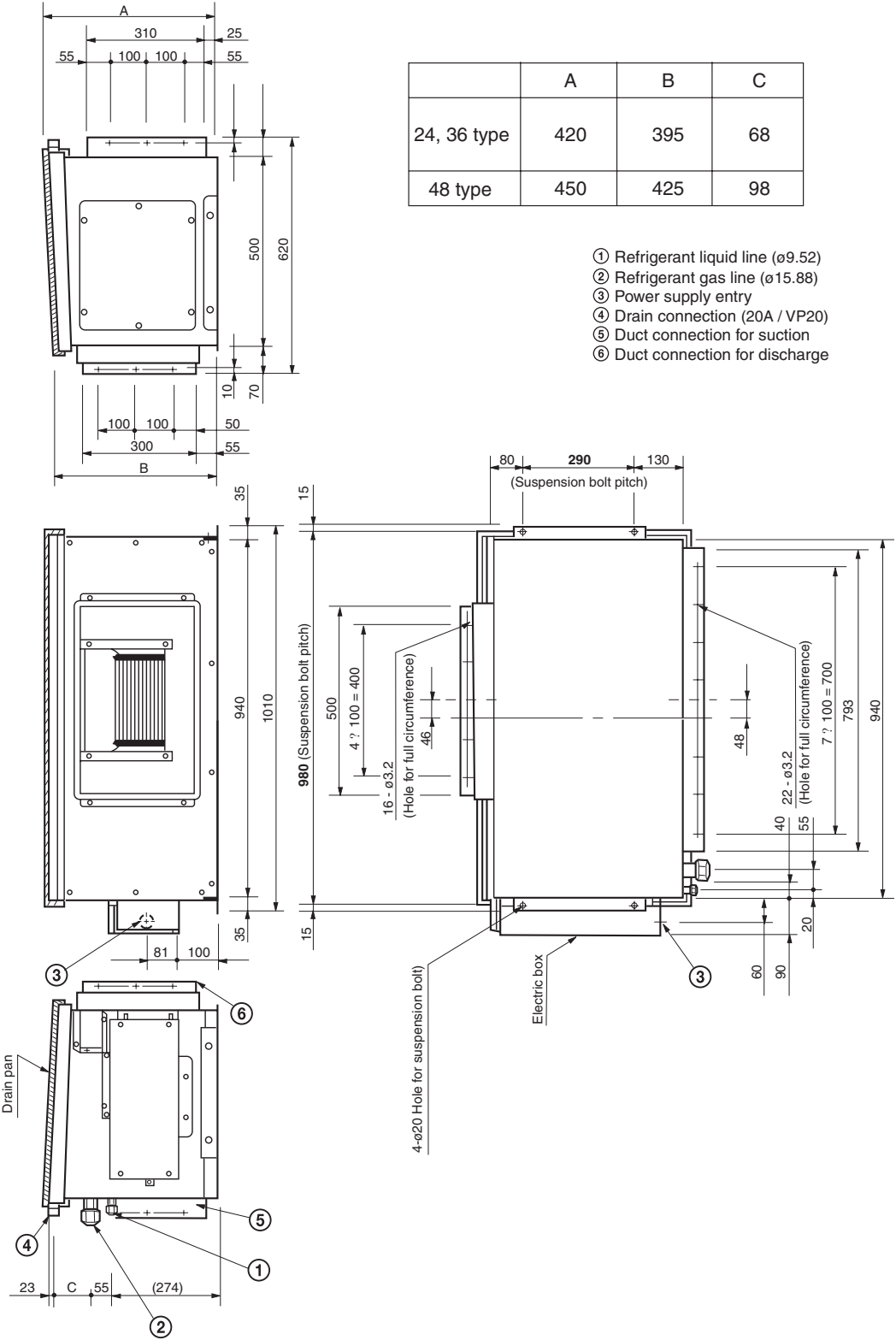
MODEL No.		ST-NDHP 96	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 250)	
<b>Fan motor</b>			
Model...Nominal output	W	KFC4X-401B3P ... 400 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,211	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 6.159	ORG - YEL : 0.87
		WHT - VLT : 1.08	YEL - BLK : 2.87
		VLT - ORG : 0.77	BLK - PNK : 5.98
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	450 VAC, 5.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U023E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-30D33	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.655	

3-WAY FLOW LOGIC Unit Specifications

7. Concealed Duct High Static Pressure Type

7-3. Dimensional Data

Indoor unit : 24, 36, 48 Type



	A	B	C
24, 36 type	420	395	68
48 type	450	425	98

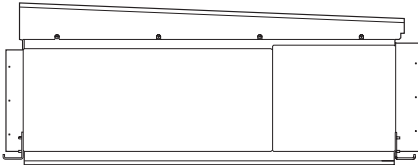
- ① Refrigerant liquid line (ø9.52)
- ② Refrigerant gas line (ø15.88)
- ③ Power supply entry
- ④ Drain connection (20A / VP20)
- ⑤ Duct connection for suction
- ⑥ Duct connection for discharge

4

3-WAY FLOW LOGIC Unit Specifications

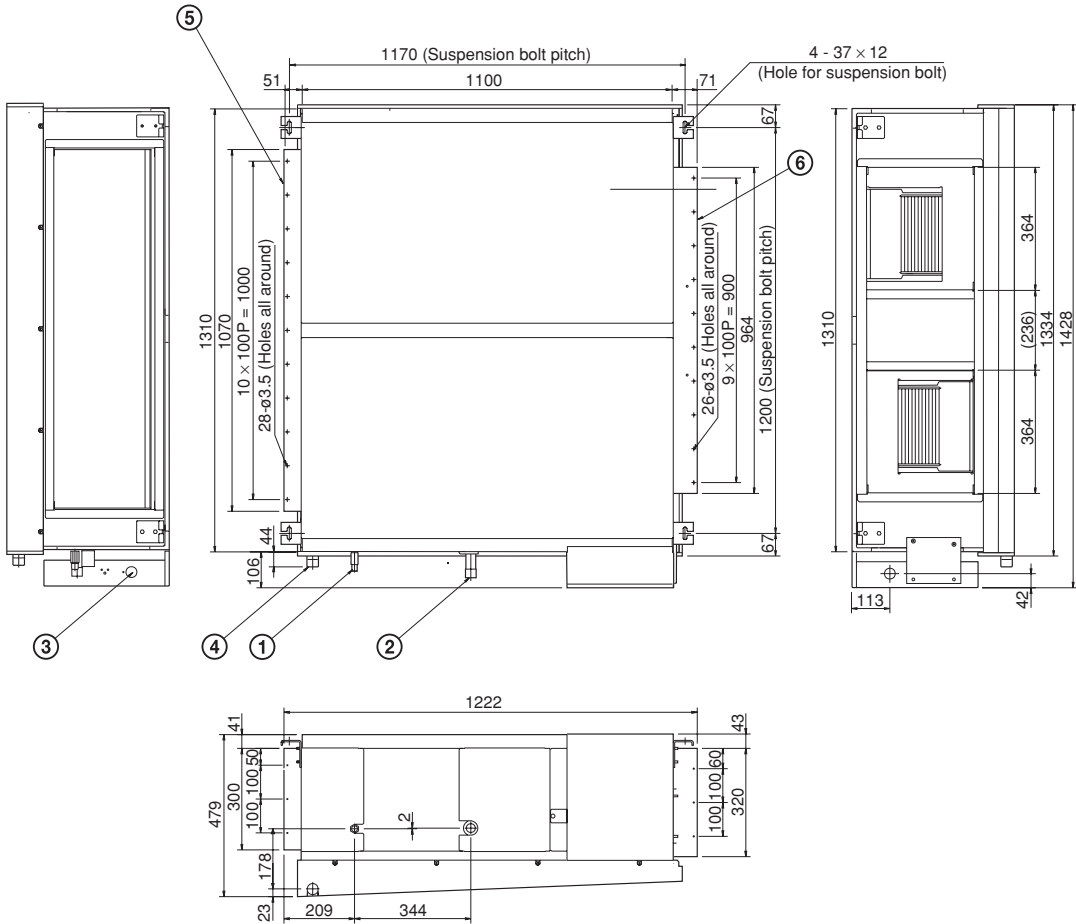
7. Concealed Duct High Static Pressure Type

Indoor unit : 76, 96 Type



- ① Refrigerant liquid line  $\phi 9.52$  (narrow tube)
- ② Refrigerant gas line 76:  $\phi 19.05$ , 96:  $\phi 22.22$
- ③ Power supply outlet
- ④ Drain port (OD 32 mm)
- ⑤ Duct connection for suction
- ⑥ Duct connection for discharge

4

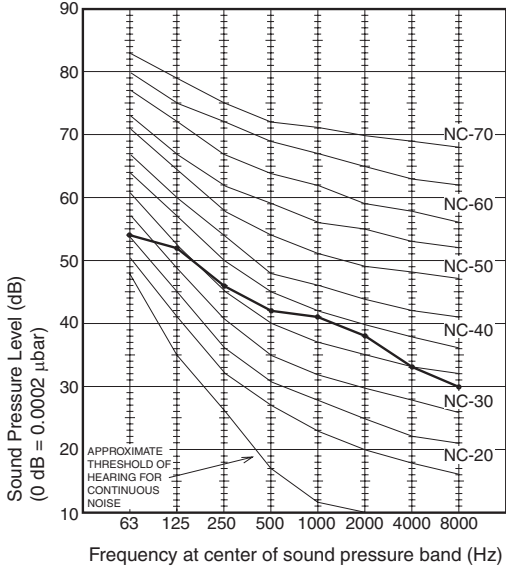
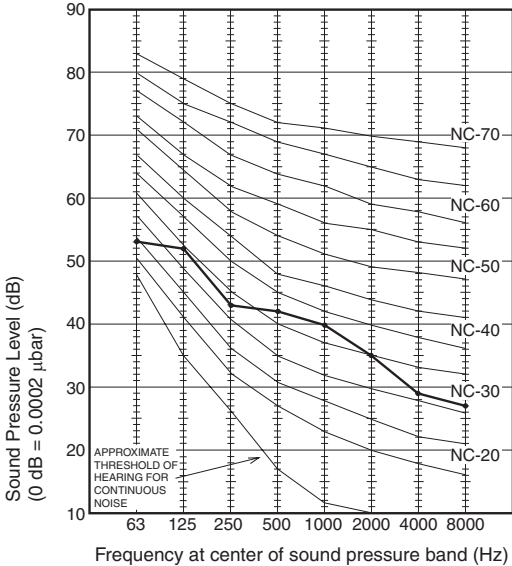


## 7. Concealed Duct High Static Pressure Type

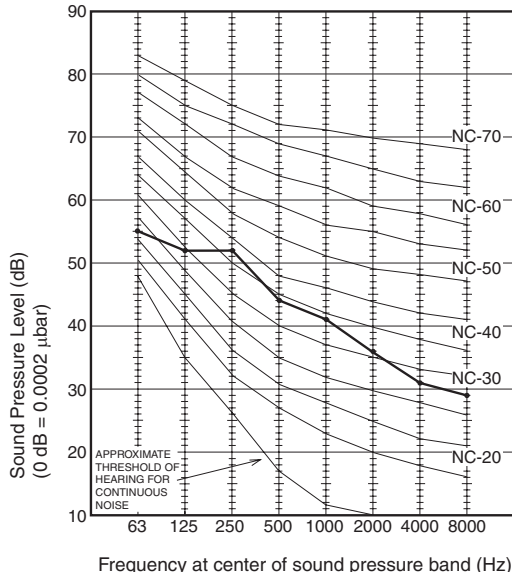
### 7-4. Noise Criterion Curves

MODEL : ST-NDHP 24  
 SOUND LEVEL : HIGH 44 dB(A), NC 38  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL : ST-NDHP 36  
 SOUND LEVEL : HIGH 45 dB(A), NC 39  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL : ST-NDHP 48  
 SOUND LEVEL : HIGH 47 dB(A), NC 42  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



**REMARKS:** 1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.  
 2. The test results were obtained from an anechoic room.

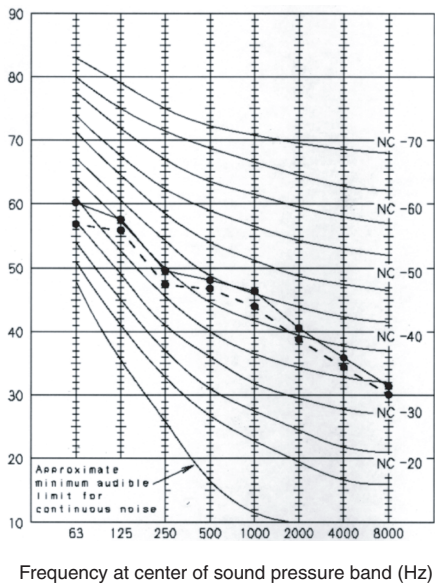
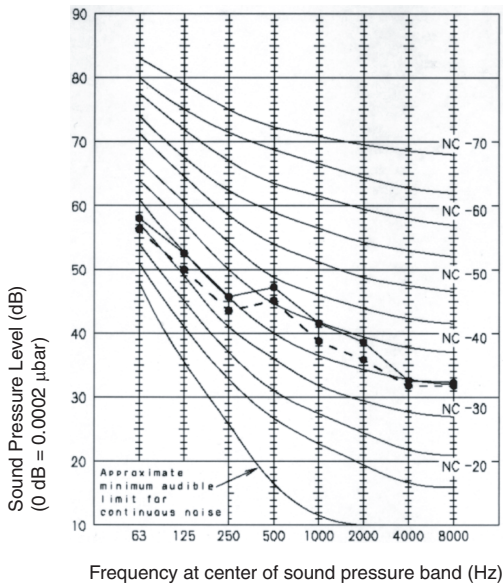
**NOTE**  
 To evaluate the noise level, the maximum value of the measured sound pressure level is used. Read the value at each frequency level (on horizontal axis, center of the sound pressure band) from 63 Hz to 8000 Hz, and select the corresponding maximum value indicated on the vertical axis.



## 7. Concealed Duct High Static Pressure Type

MODEL : ST-NDHP 76  
 SOUND LEVEL : HIGH 48 dB(A), NC 42  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

MODEL : ST-NDHP 96  
 SOUND LEVEL : HIGH 51 dB(A), NC 43  
 CONDITION : Under the unit 1.5 m  
 SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



4

- REMARKS:**
- Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
  - The test results were obtained from an anechoic room.

**NOTE**

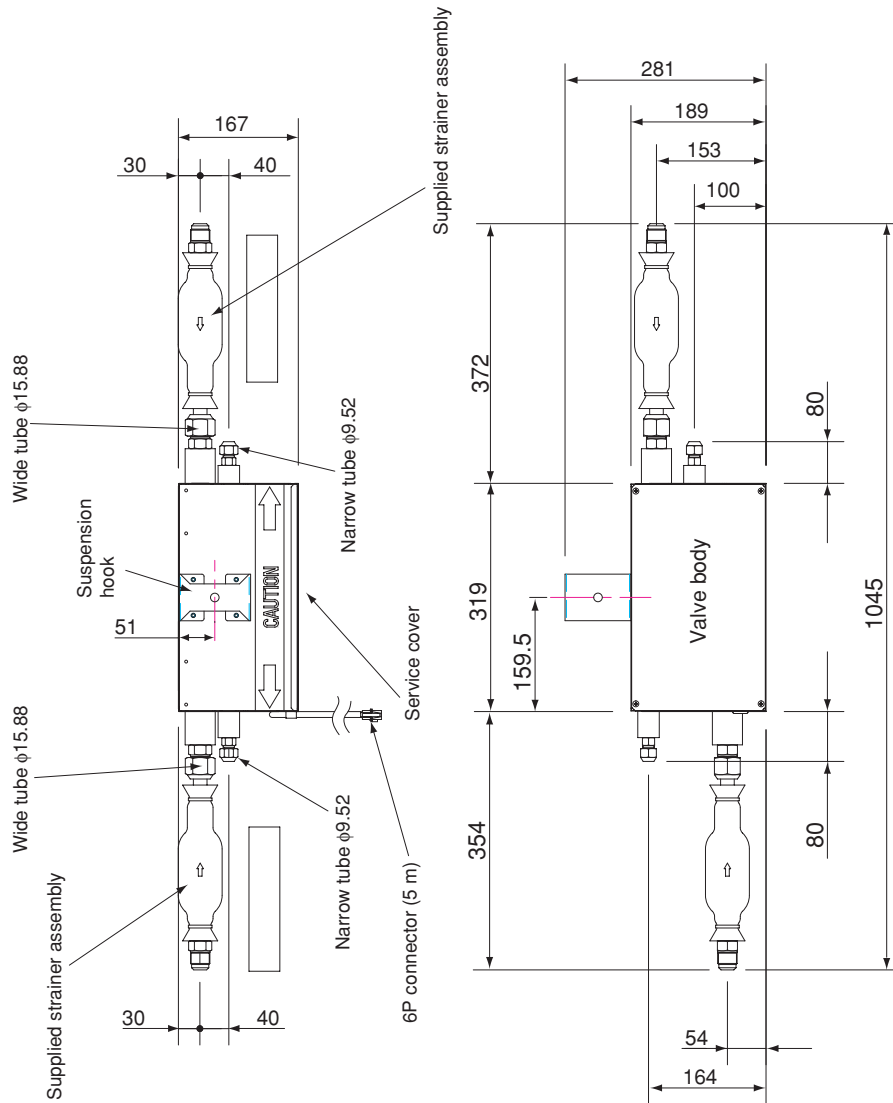
To evaluate the noise level, the maximum value of the measured sound pressure level is used. Read the value at each frequency level (on horizontal axis, center of the sound pressure band) from 63 Hz to 8000 Hz, and select the corresponding maximum value indicated on the vertical axis.

3-WAY FLOW LOGIC Unit Specifications

## 7. Concealed Duct High Static Pressure Type

### 7-5. R.A.P. Valve Kit

- Connect 2 units in parallel for each indoor unit.
- Attach the R.A.P. valve kit within 30 meters from the indoor unit.
- Secure the R.A.P. valve kit using hanging bolts, etc.
- Be absolutely sure to install the R.A.P. valve kit top side up.
- Do not place the R.A.P. valve kit directly on the ceiling.
- The R.A.P. valve kit is required when a multiple number of type 76 or 96 units are to be connected to the same system.
- The R.A.P. valve kit is required when a type 76 or 96 indoor unit is to be connected among other indoor units.



## 7. Concealed Duct High Static Pressure Type

### 7-6. Indoor Fan Performance

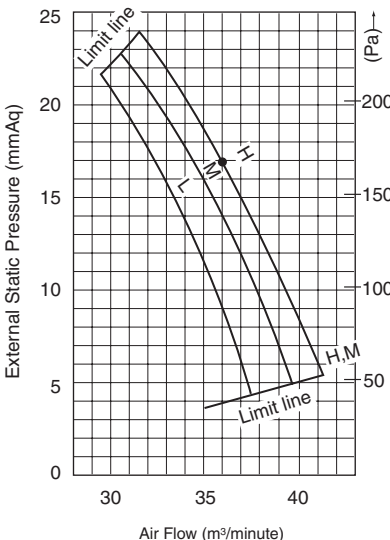
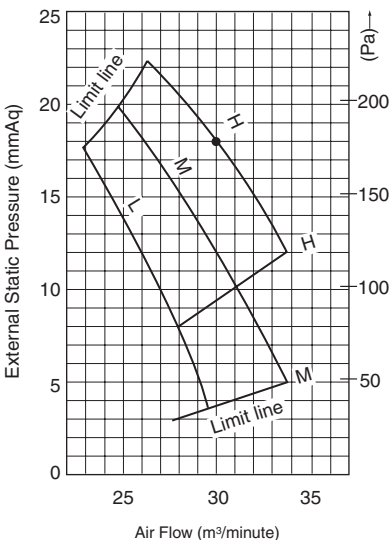
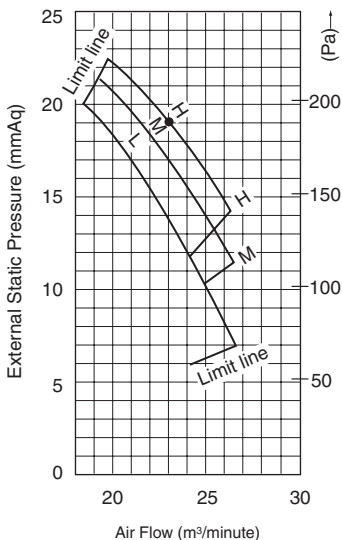
#### How to Read the Diagram

The vertical axis is the EXTERNAL STATIC PRESSURE (mmAq) while the horizontal axis represents the AIR FLOW (m<sup>3</sup>/minute). The characteristic curve for the "H", "Med", and "Lo" fan speed control. The name plate values are shown based on the "H" air flow. Therefore in the case of the 25 type the flow is 23 m<sup>3</sup>/minute, while the EXTERNAL STATIC PRESSURE is 19 mmAq at "H" position. If the external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet.

24 Type

36 Type

48 Type



4

## 7. Concealed Duct High Static Pressure Type

### Increasing the Fan Speed (96 type only)

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

- (1) Remove 4 screws on the electrical component box and remove the cover plate.
- (2) Disconnect the fan motor sockets in the box.
- (3) Take out 2 booster cables from option curtain box (sockets at both ends).
- (4) Securely connect 2 booster cable's sockets between the disconnected fan motor sockets in step 2 as shown in the Fig. 8-1.
- (5) Place the cable neatly in the box and reinstall the cover plate.

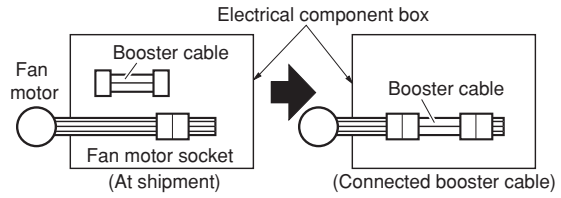
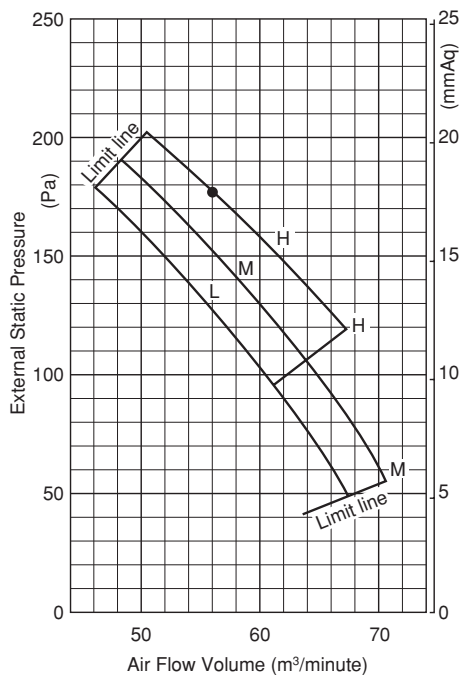


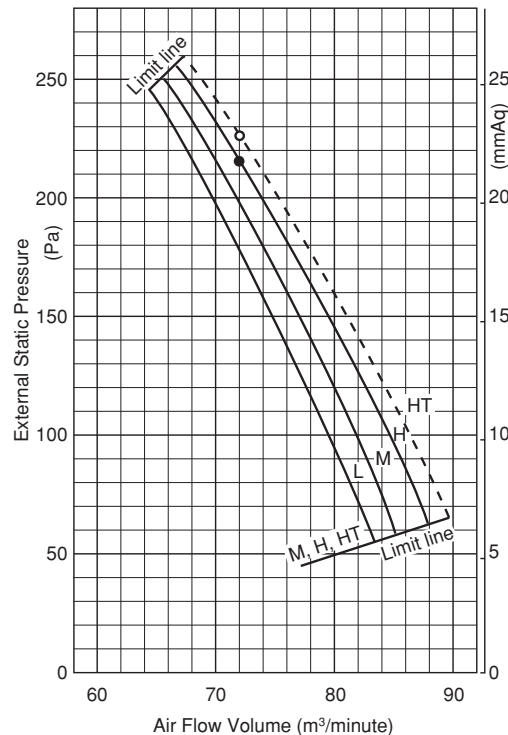
Fig. 8-1

### Indoor Fan Performance

76 Type



96 Type



**NOTE** HT : Using the booster cable (96 type only)  
 H : At shipment

Fig. 8-2

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## 8-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NFFL 7					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h	2.2			2.5			
		7,500			8,500			
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h	420 / 360 / 300						
Moisture removal (High)	Liters/h	1.0			-			
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V	220	230	240	220	230	240	
Available voltage range	V	198 - 264			198 - 264			
Running amperes	A	0.24	0.25	0.26	0.17	0.18	0.19	
Power input	W	51	56	61	36	40	45	
Power factor	%	97	97	98	96	97	99	
Max. starting amperes	A	1	1	1	1	1	1	
<b>FEATURES</b>								
Controls		Microprocessor						
Timer		ON / OFF Timer (Max. 72 hr)						
Fan speeds		3 and Automatic control						
Air filter		Washable, easy access						
Refrigerant control		Electronic expansion valve						
Operation sound (Hi / Me / Lo)		dB-A		33 / 30 / 28				
Refrigerant tubing connections		Flare type						
Refrigerant tube diameter	Narrow tube mm (in.)	6.35 (1/4)						
	Wide tube mm (in.)	12.7 (1/2)						
Drain connection		20A, OD26 mm						
Remote controller		Optional (NRCG-FL)						
Refrigerant tubing kit / Accessories		Optional / -						
Color (Approximate value)		Munsell 10Y 9.3 / 0.4, RAL 9010-GL						
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	615 (24-7/32)			694 (27-10/32)		
	Width	mm (in.)	1065 (41-30/32)			1157 (45-18/32)		
	Depth	mm (in.)	230 (9-2/32)			312 (12-9/32)		
Net weight		kg (lbs.)	29 (64)					
Shipping weight		kg (lbs.)	31 (68)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.251 (8.9)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB  
 Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NFFL 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		2.8			3.2		
	BTU / h		9,600			11,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		420 / 360 / 300					
Moisture removal (High)	Liters/h		1.3			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.24	0.25	0.26	0.17	0.18	0.19
Power input	W		51	56	61	36	40	45
Power factor	%		97	97	98	96	97	99
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	33 / 30 / 28					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)					
	Wide tube	mm (in.)	12.7 (1/2)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	615 (24-7/32)			694 (27-10/32)		
	Width	mm (in.)	1065 (41-30/32)			1157 (45-18/32)		
	Depth	mm (in.)	230 (9-2/32)			312 (12-9/32)		
Net weight		kg (lbs.)	29 (64)					
Shipping weight		kg (lbs.)	31 (68)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.251 (8.9)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB  
 Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NFFL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		3.6			4.2		
	BTU / h		12,000			14,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		540 / 420 / 360					
Moisture removal (High)	Liters/h		1.7			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.37	0.38	0.39	0.30	0.31	0.32
Power input	W		79	85	91	64	70	76
Power factor	%		97	97	98	96	98	99
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	39 / 35 / 29					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)					
	Wide tube	mm (in.)	12.7 (1/2)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	615 (24-7/32)			694 (27-10/32)		
	Width	mm (in.)	1065 (41-30/32)			1157 (45-18/32)		
	Depth	mm (in.)	230 (9-2/32)			312 (12-9/32)		
Net weight		kg (lbs.)	29 (64)					
Shipping weight		kg (lbs.)	31 (68)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.251 (8.9)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 8. Floor-Standing Type (ST-NFFL Type)

### Unit specifications (D)

MODEL No.	Indoor Unit		ST-NFFL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		5.6			6.3		
	BTU / h		19,000			21,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		900 / 780 / 660					
Moisture removal (High)	Liters/h		2.5			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.54	0.56	0.58	0.37	0.41	0.43
Power input	W		116	126	136	79	91	101
Power factor	%		98	98	98	97	97	98
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	39 / 36 / 31					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)					
	Wide tube	mm (in.)	12.7 (1/2)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	615 (24-7/32)			694 (27-10/32)		
	Width	mm (in.)	1380 (54-11/32)			1472 (57-30/32)		
	Depth	mm (in.)	230 (9-2/32)			312 (12-9/32)		
Net weight		kg (lbs.)	39 (86)					
Shipping weight		kg (lbs.)	41 (90)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.319 (11.3)					

Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

DATA SUBJECT TO CHANGE WITHOUT NOTICE.



## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Unit specifications (E)

MODEL No.	Indoor Unit		ST-NFFL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.1			8.0		
	BTU / h		24,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,020 / 840 / 720					
Moisture removal (High)	Liters/h		3.5			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.70	0.72	0.73	0.52	0.54	0.56
Power input	W		150	160	170	110	120	130
Power factor	%		97	97	97	96	97	97
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air filter			Washable, easy access					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	41 / 38 / 35					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		9.52 (3/8)					
	Wide tube mm (in.)		15.88 (5/8)					
Drain connection			20A, OD26 mm					
Remote controller			Optional (NRCG-FL)					
Refrigerant tubing kit / Accessories			Optional / -					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Unit dimensions			Package dimensions		
Unit dimensions	Height	mm (in.)	615 (24-7/32)			694 (27-10/32)		
	Width	mm (in.)	1380 (54-11/32)			1472 (57-30/32)		
	Depth	mm (in.)	230 (9-2/32)			312 (12-9/32)		
Net weight		kg (lbs.)	39 (86)					
Shipping weight		kg (lbs.)	41 (90)					
Shipping volume		m <sup>3</sup> (cu. ft)	0.319 (11.3)					

Rated conditions

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## 8-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NFFL 7	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFT6Q-11A3P ... 15 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	6P ... 831	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 370.2	ORG - YEL : 168.0
		WHT - VLT : 105.4	YEL - PNK : 92.16
		VLT - ORG : 67.05	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.102	

## 8. Floor-Standing Type (ST-NFFL Type)

### Indoor unit (B)

MODEL No.		ST-NFFL 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT6Q-11A3P ... 15 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	6P ... 831	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 370.2      ORG - YEL : 168.0 WHT - VLT : 105.4      YEL - PNK : 92.16 VLT - ORG : 67.05	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 1.0 μF	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46      YEL - GRY : 46 RED - GRY : 46      BLK - GRY : 46	
Valve body		UKV-18D31	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.102	

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Indoor unit (C)

MODEL No.		ST-NFFL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (1 ... ø 153)	
Fan motor			
Model...Nominal output	W	KFT4Q-21B3P ... 20 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,102	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 217.7      ORG – YEL : 37.88 WHT – VLT : 37.33      YEL – PNK : 21.82 VLT – ORG : 22.48	
Safety device			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46      YEL – GRY : 46 RED – GRY : 46      BLK – GRY : 46	
Valve body		UKV-18D31	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.102	

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Indoor unit (D)

MODEL No.		ST-NFFL 18	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... ø 153)	
<b>Fan motor</b>			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,066	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 67.62    ORG - YEL : 17.36 WHT - VLT : 18.47    YEL - PNK : 5.18 VLT - ORG : 10.10	
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 5	
	Close °C	(115 ± 5)	
Run capacitor	VAC, μF	440 VAC, 2.0 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46    YEL - GRY : 46 RED - GRY : 46    BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.165	

## 3-WAY FLOW LOGIC Unit Specifications

## 8. Floor-Standing Type (ST-NFFL Type)

## Indoor unit (E)

MODEL No.		ST-NFFL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (2 ... $\phi$ 153)	
Fan motor			
Model...Nominal output	W	KFG4Q-61C3P ... 60 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,066	
Coil resistance (Ambient temperature 20°C)	$\Omega$	BRN - WHT : 67.62      ORG - YEL : 17.36 WHT - VLT : 18.47      YEL - PNK : 5.18 VLT - ORG : 10.10	
Safety device			
Operating temperature	Open °C	130 $\pm$ 5	
	Close °C	(115 $\pm$ 5)	
Run capacitor	VAC, $\mu$ F	440 VAC, 3.5 $\mu$ F	
Electronic expansion valve			
Coil		UKV-U030E	
Coil resistance (at 20°C)	$\Omega$	ORG - GRY : 46      YEL - GRY : 46 RED - GRY : 46      BLK - GRY : 46	
Valve body		UKV-25D32	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...2.0	
Face area	m <sup>2</sup>	0.165	

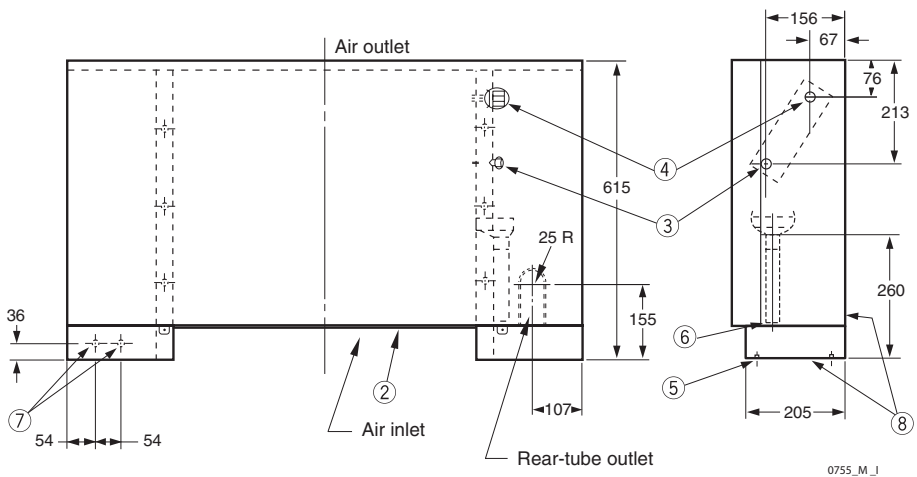
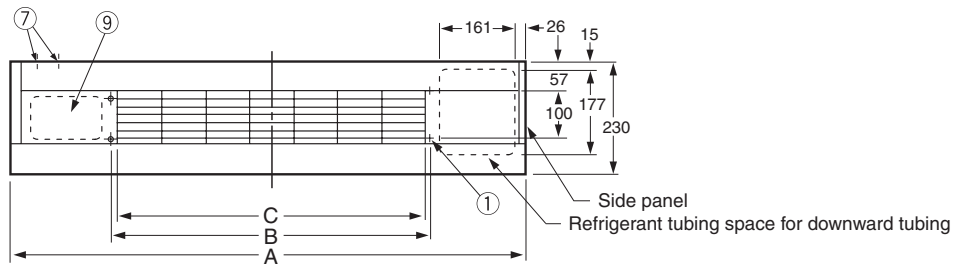
## 3-WAY FLOW LOGIC Unit Specifications

# 8. Floor-Standing Type (ST-NFFL Type)

### 8-3. Dimensional Data

Indoor unit : 9, 12, 18, 24 Type

Type \ Size	A	B	C	Narrow tube	Wide tube
7, 9, 12, 18	1065	665	632	6.35	12.7
18,24	1380	980	947	9.52	15.88



0755\_M\_I

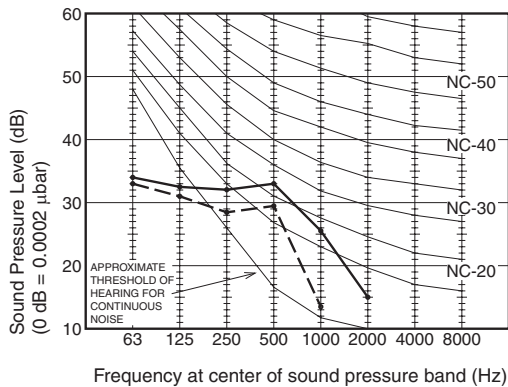
4

- 1 4-ø12 hole (For fastening the indoor unit to the floor by screws.)
- 2 Air filter
- 3 Refrigerant connection outlet (narrow tube)
- 4 Refrigerant connection outlet (wide tube)
- 5 Level adjusting bolt
- 6 Drain outlet (20 A)
- 7 Power cord outlet (downward, rear)
- 8 Refrigerant tubing outlet (downward, rear)
- 9 Location for mounting the remote controller (remote controller is attachable in the room)

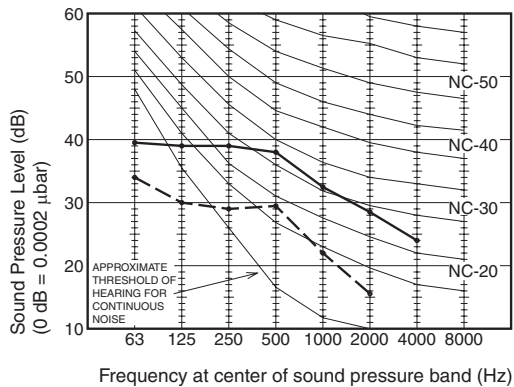
## 8. Floor-Standing Type (ST-NFFL Type)

### 8-4. Noise Criterion Curves

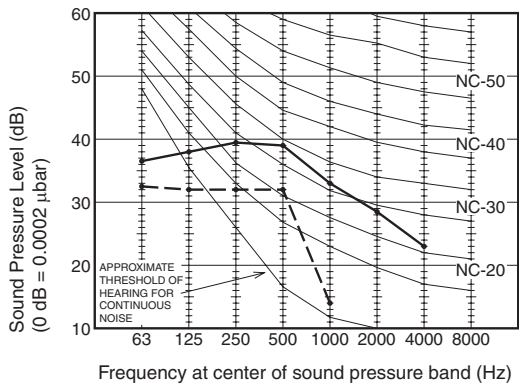
MODEL	: ST-NFFL 7, ST-NFFL 9
SOUND LEVEL	: HIGH 33 dB(A), NC 27 LOW 28 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



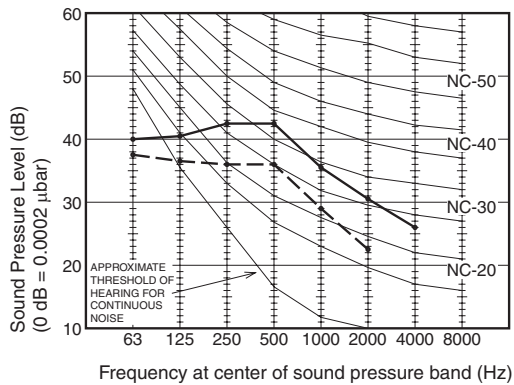
MODEL	: ST-NFFL 12
SOUND LEVEL	: HIGH 39 dB(A), NC 33 LOW 29 dB(A), NC 23
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: ST-NFFL 18
SOUND LEVEL	: HIGH 39 dB(A), NC 34 LOW 31 dB(A), NC 26
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



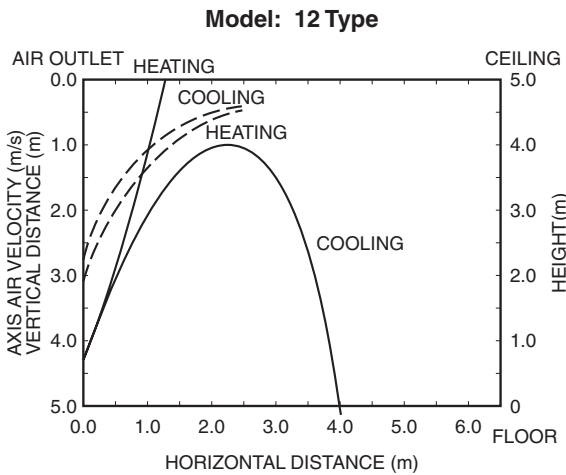
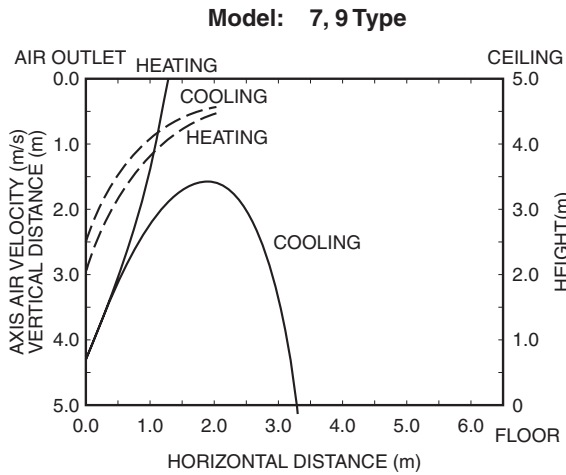
MODEL	: ST-NFFL 24
SOUND LEVEL	: HIGH 41 dB(A), NC 37 LOW 35 dB(A), NC 30
CONDITION	: In front of the unit 1 m, HEIGHT 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



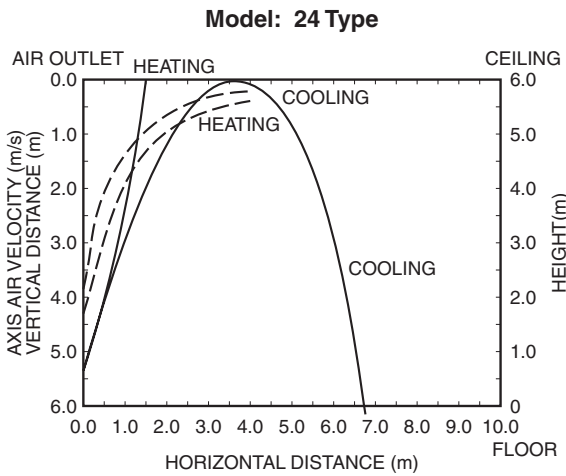
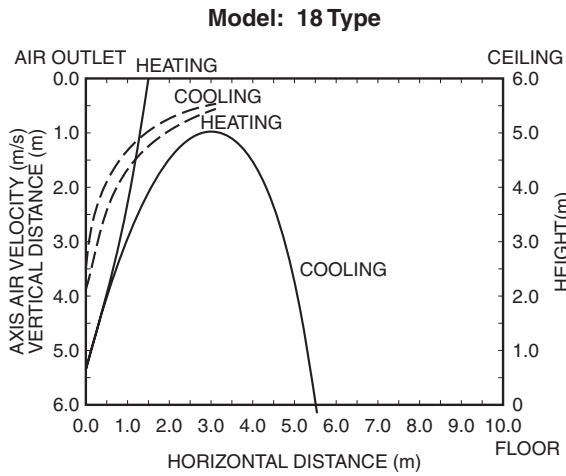


## 8. Floor-Standing Type (ST-NFFL Type)

### 8-5. Air Throw Distance Chart



4



Air Conditioner Fan Speed : Hi  
 Room air temp. : 27 °C DB in Cooling mode  
 20 °C DB in Heating mode

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## 9-1. Specifications

## Unit specifications (A)

MODEL No.	Indoor Unit		ST-NKSFL 9					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		2.8			3.2		
			9,600			11,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		840(750*) / 630 / 540					
Moisture removal (High)	Liters/h		0.6			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.50	0.50	0.51	0.36	0.37	0.38
Power input	W		105	110	115	75	80	85
Power factor	%		95	96	96	95	94	93
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	43(41*) / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 30 cm above drain connection					
Panel			Optional (GR-ST KSFL(9-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / Accessory cable					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	213 (8-12/32)			365 (14-12/32)	164 (6-15/32)	
	Width	mm (in.)	1233 (48-17/32)			1268 (49-29/32)	1393 (54-27/32)	
	Depth	mm (in.)	730 (28-24/32)			714 (28-4/32)	860 (33-27/32)	
Net weight		kg (lbs.)	34 (75)			-	-	
Shipping weight		kg (lbs.)	-			32 (71)	13 (29)	
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.330 (11.7)	0.196 (6.9)	

\* When using accessory cable.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Unit specifications (B)

MODEL No.	Indoor Unit		ST-NKSFL 12					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		3.6			4.2		
	BTU / h		12,000			14,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		870(780*) / 660 / 570					
Moisture removal (High)	Liters/h		1.3			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.50	0.50	0.51	0.36	0.37	0.38
Power input	W		105	110	115	75	80	85
Power factor	%		95	96	96	95	94	93
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)	dB-A		43(41*) / 36 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 30 cm above drain connection					
Panel			Optional (GR-ST KSFL(9-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / Accessory cable					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	213 (8-12/32)			365 (14-12/32)		164 (6-15/32)
	Width	mm (in.)	1233 (48-17/32)			1268 (49-29/32)		1393 (54-27/32)
	Depth	mm (in.)	730 (28-24/32)			714 (28-4/32)		860 (33-27/32)
Net weight		kg (lbs.)	34 (75)			-		-
Shipping weight		kg (lbs.)	-			32 (71)		13 (29)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.330 (11.7)		0.196 (6.9)

\* When using accessory cable.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Unit specifications (C)

MODEL No.	Indoor Unit		ST-NKSFL 18					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW BTU / h		5.6			6.3		
			19,000			21,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		900(810*) / 690 / 600					
Moisture removal (High)	Liters/h		2.5			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.53	0.53	0.54	0.38	0.39	0.40
Power input	W		110	115	120	80	85	90
Power factor	%		94	94	93	96	95	94
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	44(42*) / 38 / 33					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube mm (in.)		6.35 (1/4)					
	Wide tube mm (in.)		12.7 (1/2)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 30 cm above drain connection					
Panel			Optional (GR-ST KSFL(9-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / Accessory cable					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	213 (8-12/32)			365 (14-12/32)		164 (6-15/32)
	Width	mm (in.)	1233 (48-17/32)			1268 (49-29/32)		1393 (54-27/32)
	Depth	mm (in.)	730 (28-24/32)			714 (28-4/32)		860 (33-27/32)
Net weight		kg (lbs.)	34 (77)			-		-
Shipping weight		kg (lbs.)	-			33 (73)		13 (29)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.330 (11.7)		0.196 (6.9)

\* When using accessory cable.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Unit specifications (D)

MODEL No.	Indoor Unit		ST-NKSFL 24					
<b>POWER SOURCE</b>			220 - 230 - 240 V / single-phase / 50 Hz					
<b>PERFORMANCE</b>			Cooling			Heating		
Capacity	kW		7.3			8.0		
	BTU / h		25,000			27,000		
Air circulation (Hi / Me / Lo)	m <sup>3</sup> /h		1,200(1,110*) / 990 / 780					
Moisture removal (High)	Liters/h		3.3			-		
<b>ELECTRICAL RATINGS</b>								
Voltage rating	V		220	230	240	220	230	240
Available voltage range	V		198 - 264			198 - 264		
Running amperes	A		0.55	0.55	0.56	0.40	0.41	0.42
Power input	W		115	120	125	85	90	95
Power factor	%		95	95	93	97	95	94
Max. starting amperes	A		1	1	1	1	1	1
<b>FEATURES</b>								
Controls			Microprocessor					
Timer			ON / OFF Timer (Max. 72 hr)					
Fan speeds			3 and Automatic control					
Air flow direction			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Refrigerant control			Electronic expansion valve					
Operation sound (Hi / Me / Lo)		dB-A	48(46*) / 44 / 37					
Refrigerant tubing connections			Flare type					
Refrigerant tube diameter	Narrow tube	mm (in.)	9.52 (3/8)					
	Wide tube	mm (in.)	15.88 (5/8)					
Drain connection			25A, OD32 mm					
Drain pump			Max. head 30 cm above drain connection					
Panel			Optional (GR-ST KSFL(9-18))					
Remote controller			Optional (RCIRKS-FL)					
Refrigerant tubing kit / Accessories			Optional / Accessory cable					
Color (Approximate value)			Munsell 10Y 9.3 / 0.4, RAL 9010-GL					
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit (including panel)			Package		
Unit dimensions	Height	mm (in.)	213 (8-12/32)			365 (14-12/32)		164 (6-15/32)
	Width	mm (in.)	1430 (56-10/32)			1465 (57-22/32)		1590 (62-19/32)
	Depth	mm (in.)	730 (28-24/32)			714 (28-4/32)		860 (33-27/32)
Net weight		kg (lbs.)	39 (86)			-		-
Shipping weight		kg (lbs.)	-			35 (77)		15 (33)
Shipping volume		m <sup>3</sup> (cu. ft)	-			0.382 (13.5)		0.224 (7.9)

\* When using accessory cable.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## Rated conditions

Cooling: Indoor air temperature 27°C DB / 19°C WB; Outdoor air temperature 35°C DB

Heating: Indoor air temperature 20°C DB; Outdoor air temperature 7°C DB / 6°C WB

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## 9-2. Major Component Specifications

## Indoor unit (A)

MODEL No.		ST-NKSFL 9	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X-31A3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,010	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 191.0	ORG – YEL : 40.0
		WHT – VLT : 47.1	YEL – BLK : 96.5
		VLT – ORG : 40.0	BLK – PNK : 44.7
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.2 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46	YEL – GRY : 46
		RED – GRY : 46	BLK – GRY : 46
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		GR-ST KSFL9-18	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	220 ~ 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		V, W	
Total head & capacity		AC230 V, 50 Hz, 11 W	
		300 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Indoor unit (B)

MODEL No.		ST-NKSFL 12	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X-31A3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,080	
Coil resistance (Ambient temperature 20°C)	Ω	BRN - WHT : 191.0	ORG - YEL : 40.0
		WHT - VLT : 47.1	YEL - BLK : 96.5
		VLT - ORG : 40.0	BLK - PNK : 44.7
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG - GRY : 46	YEL - GRY : 46
		RED - GRY : 46	BLK - GRY : 46
Valve body		UKV-18D31	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	2...1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		GR-ST KSFL9-18	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	220 ~ 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		V, W	
		AC230 V, 50 Hz, 11 W	
Total head & capacity		300 mm, 400 cc/min	

## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Indoor unit (C)

MODEL No.		ST-NKSFL 18	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (3 ... ø 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SR4X-31A3P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,080	
Coil resistance (Ambient temperature 20°C)	Ω	BRN – WHT : 191.0	ORG – YEL : 40.0
		WHT – VLT : 47.1	YEL – BLK : 96.5
		VLT – ORG : 40.0	BLK – PNK : 44.7
<b>Safety device</b>			
Operating temperature	Open °C	130 ± 8	
	Close °C	79 ± 15	
Run capacitor	VAC, μF	440 VAC, 1.5 μF	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	Ω	ORG – GRY : 46	YEL – GRY : 46
		RED – GRY : 46	BLK – GRY : 46
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.145	
<b>Panel</b>			
Model No.		GR-ST KSFL9-18	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	220 ~ 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25°C)	Ω	16,430 Ω ± 8%	
<b>Drain pump</b>			
Rated		V, W	
Total head & capacity		AC230 V, 50 Hz, 11 W	
		300 mm, 400 cc/min	



## 3-WAY FLOW LOGIC Unit Specifications

## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

## Indoor unit (D)

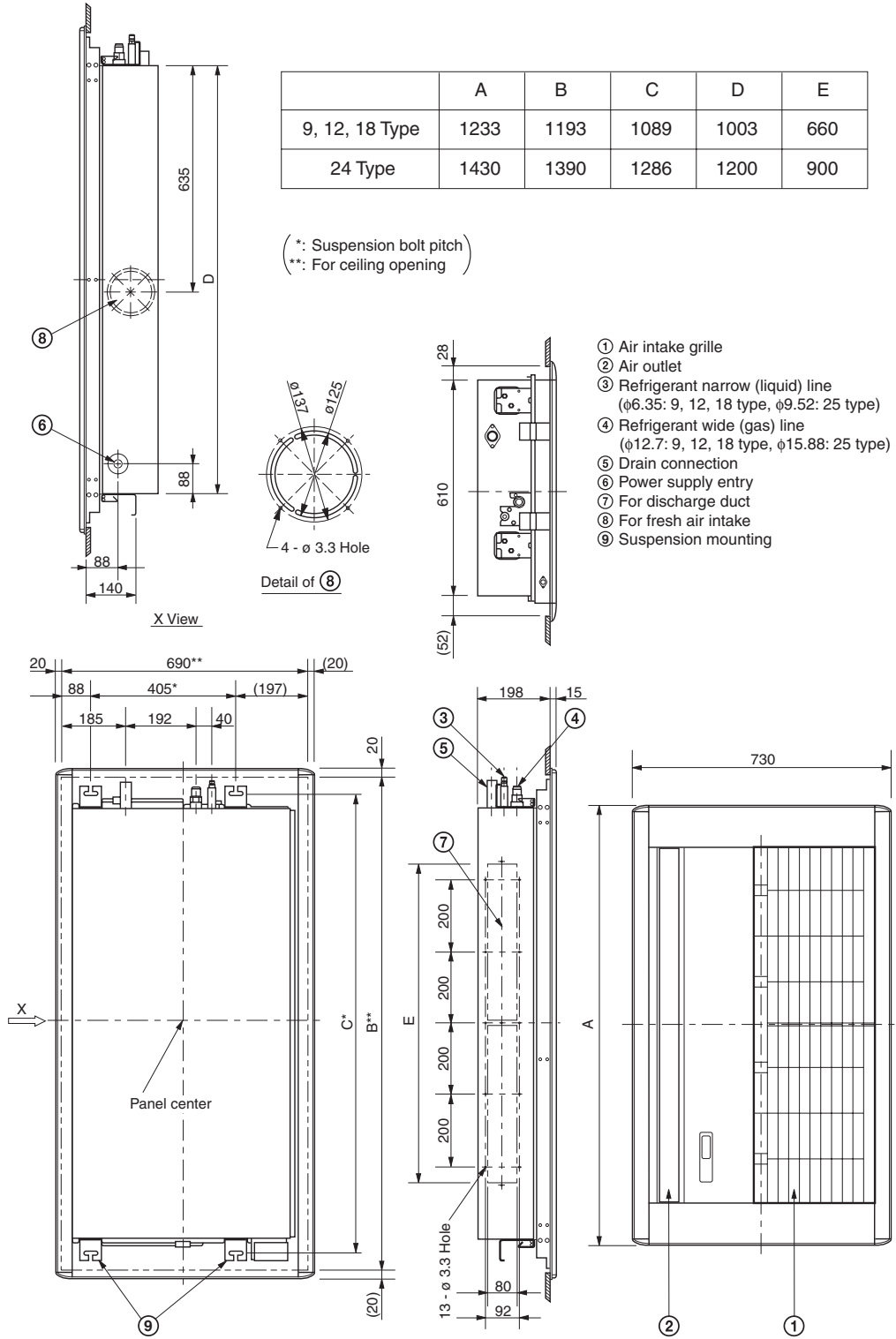
MODEL No.		ST-NKSFL 24	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
Controller P.C.B. Ass'y		CR-TRP50A-B (Microprocessor)	
Fan (Number...diameter)	mm	Centrifugal (4 ... $\phi$ 130)	
<b>Fan motor</b>			
Model...Nominal output	W	SFG4X-51B5P ... 30 W	
Source		220 - 230 - 240 V / single-phase / 50 Hz	
No. of pole...r.p.m. (230 V, High)	rpm	4P ... 1,210	
Coil resistance (Ambient temperature 20°C)	$\Omega$	BRN - WHT : 149.8      ORG - YEL : 35.66 WHT - VLT : 29.44      YEL - BLK : 40.72 VLT - ORG : 23.39      BLK - PNK : 3.780	
Safety device			
Operating temperature	Open °C	130 $\pm$ 8	
	Close °C	79 $\pm$ 15	
Run capacitor	VAC, $\mu$ F	440 VAC, 2.0 $\mu$ F	
<b>Electronic expansion valve</b>			
Coil		UKV-U030E	
Coil resistance (at 20°C)	$\Omega$	ORG - GRY : 46      YEL - GRY : 46 RED - GRY : 46      BLK - GRY : 46	
Valve body		UKV-25D32	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows...fin pitch	mm	3...1.5	
Face area	m <sup>2</sup>	0.170	
<b>Panel</b>			
Model No.		GR-ST KSFL24	
Auto louver motor		MT8-3C	
Auto louver motor...Rated	VAC, W, rpm	220 ~ 240 VAC, 3 W, 3 rpm	
Coil resistance (at 25°C)	$\Omega$	16,430 $\Omega$ $\pm$ 8%	
<b>Drain pump</b>			
Rated		V, W	
Total head & capacity		AC230 V, 50 Hz, 11 W 300 mm, 400 cc/min	

3-WAY FLOW LOGIC Unit Specifications

9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

9-3. Dimensional Data

Indoor unit : 9, 12, 18, 24 Type



## 9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

### 9-4. Noise Criterion Curves

MODEL : ST-NKSFL 9  
ST-NKSFL 12

---

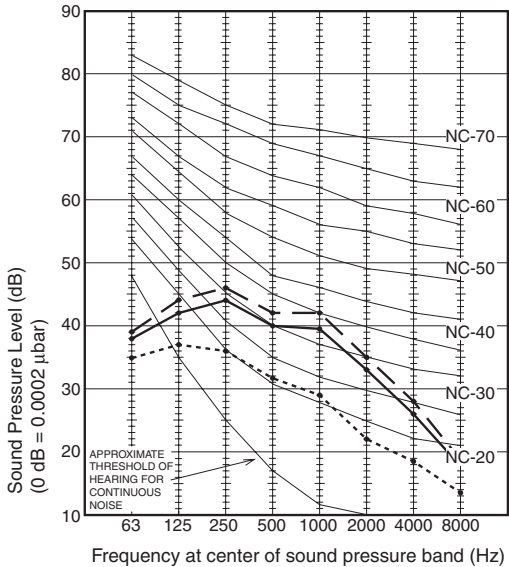
SOUND LEVEL : HIGH 43 dB(A), NC 41 / LOW 33 dB(A), NC 27  
(HIGH 41 dB(A), NC 37 / LOW 33 dB(A), NC 27)  
( ) : when Booster cable connected

---

CONDITION : Under the unit 1.5 m

---

SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL : ST-NKSFL 18

---

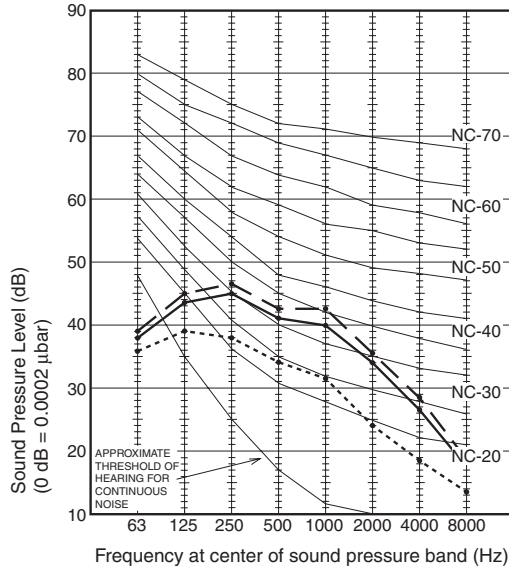
SOUND LEVEL : HIGH 44 dB(A), NC 41 / LOW 35 dB(A), NC 29  
(HIGH 42 dB(A), NC 38 / LOW 35 dB(A), NC 29)  
( ) : when Booster cable connected

---

CONDITION : Under the unit 1.5 m

---

SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL : ST-NKSFL 24

---

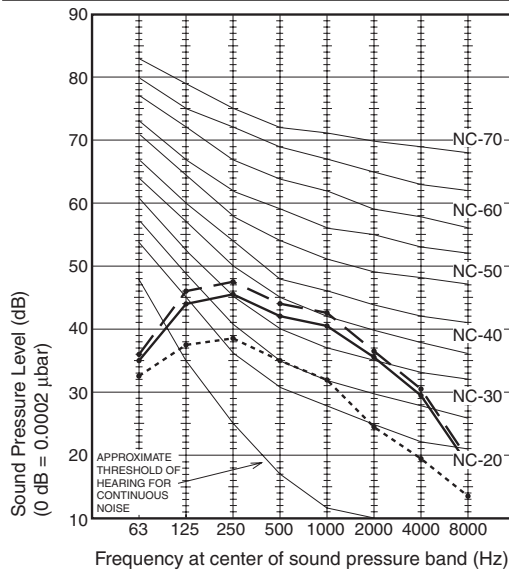
SOUND LEVEL : HIGH 48 dB(A), NC 41 / LOW 37 dB(A), NC 30  
(HIGH 46 dB(A), NC 38 / LOW 37 dB(A), NC 30)  
( ) : when Booster cable connected

---

CONDITION : Under the unit 1.5 m

---

SOURCE : 220 - 230 - 240 V, 1 Phase, 50 Hz

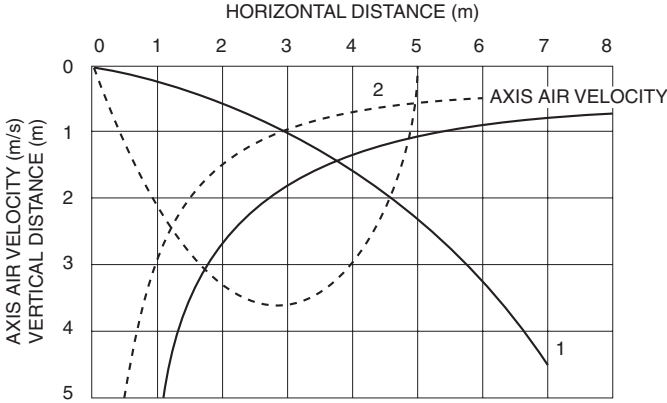


4

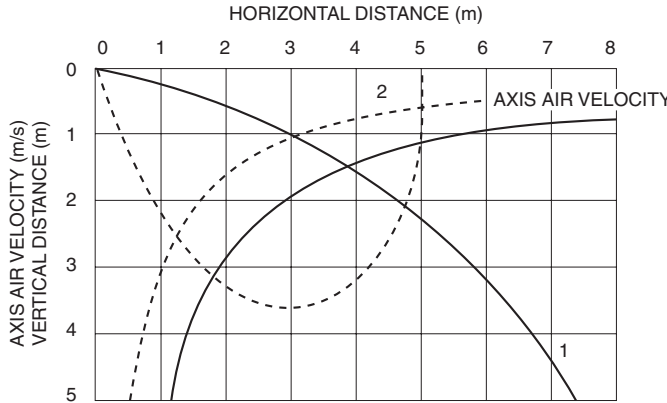
9. 1-Way Air Discharge Semi-concealed Slim Type (ST-NKSFL Type)

9-5. Air Throw Distance Chart

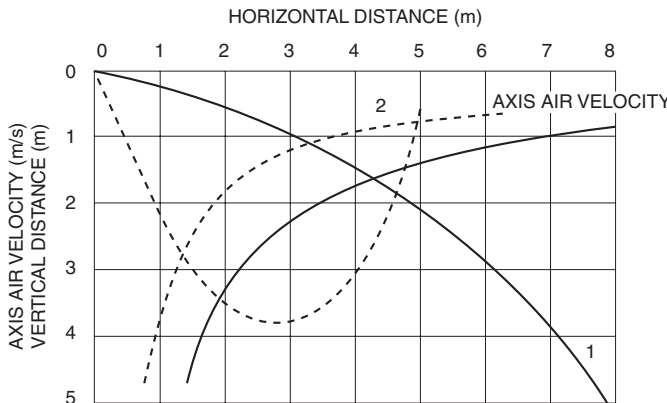
ST-NKSFL 9, ST-NKSFL 12



ST-NKSFL 18

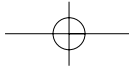


ST-NKSFL 24



Condition Fan Speed : Hi  
 Room air temp. : 27 °C DB in Cooling mode  
 20 °C DB in Heating mode

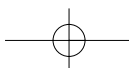
1 : LOUVER ANGLE 15° in Cooling mode  
 2 : LOUVER ANGLE 65° in Heating mode

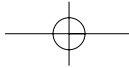


# Contents

## 5. TEST RUN

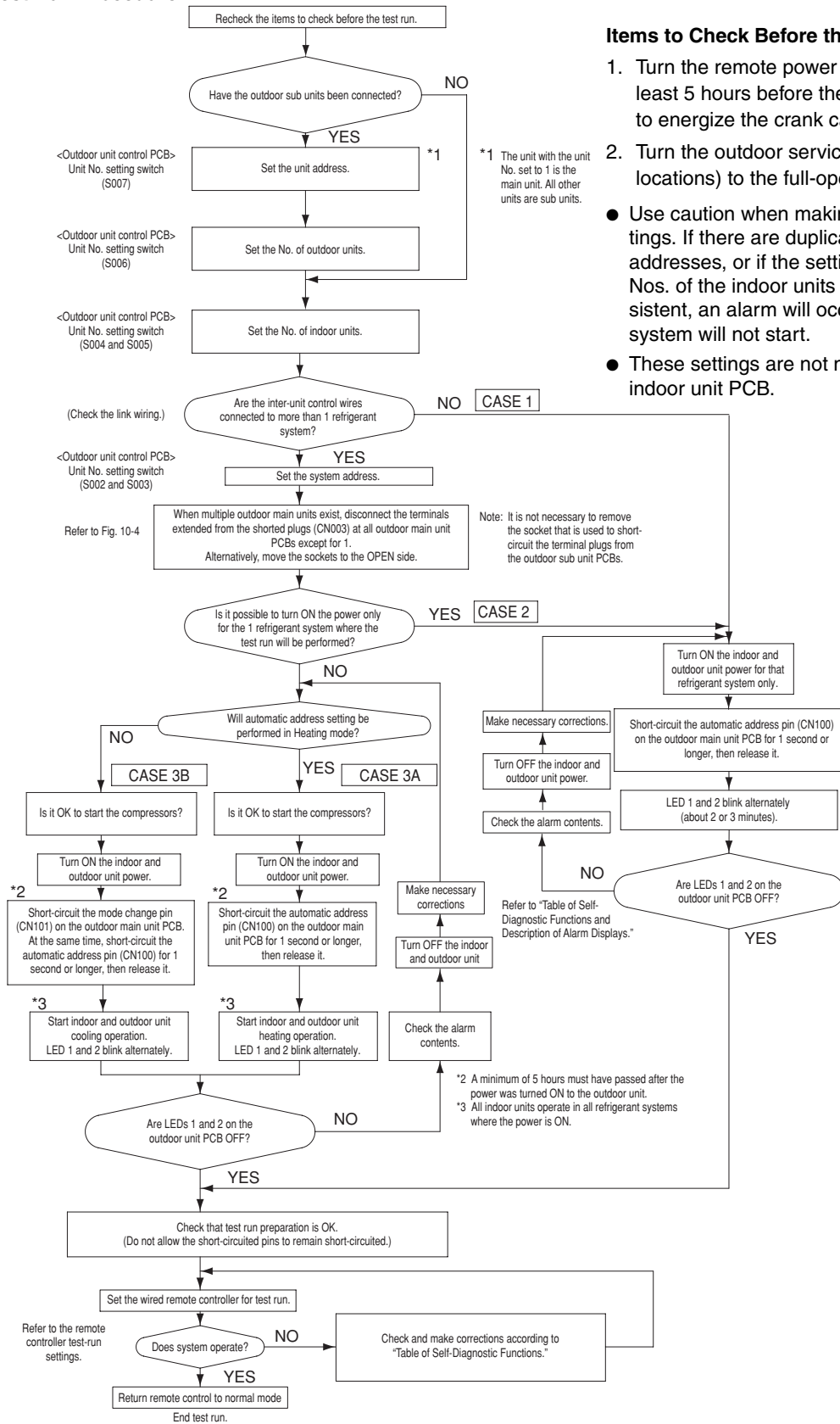
<b>1. Test Run</b> .....	<b>5-2</b>
1-1. Test Run Procedure .....	<b>5-2</b>
1-2. Meaning of Alarm Messages .....	<b>5-3</b>





# 1. Test Run

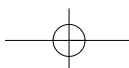
## 1-1. Test Run Procedure

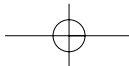


### Items to Check Before the Test Run

1. Turn the remote power switch on at least 5 hours before the test, in order to energize the crank case heater.
  2. Turn the outdoor service valves (4 locations) to the full-open positions.
- Use caution when making the settings. If there are duplicated system addresses, or if the settings for the Nos. of the indoor units are not consistent, an alarm will occur and the system will not start.
  - These settings are not made on the indoor unit PCB.

5





# 1. Test Run

## 1-2. Meaning of Alarm Messages

### Table of Self-Diagnostics Functions and Description of Alarm Displays.

Alarm messages are indicated by the blinking of LED 1 and 2 (D72, D75) on the outdoor unit PCB. They are also displayed on the wired remote controller.

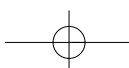
- Viewing the LED 1 and 2 (D72 and D75) alarm displays

LED 1	LED 2	Alarm contents
☼	☼	Alarm display
Alternating		LED 1 blinks M times, then LED 2 blinks N times. The cycle then repeats. M = 2: P alarm 3: H alarm 4: E alarm 5: F alarm 6: L alarm N = Alarm No. Example: LED 1 blinks 2 times, then LED 2 blinks 17 times. The cycle then repeats. Alarm is "P17."

(☼ : Blinking)

Possible cause of malfunction		Alarm message
Serial communication errors Mis-setting	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) Ex: Auto address is not completed.
		Error in transmitting serial communication signal.
	Indoor unit is detecting error signal from remote controller (and system controller).	<<E03>>
	Indoor unit is detecting error signal from main outdoor unit.	Error in receiving serial communication signal. When turning on the power supply, the number of connected indoor units does not correspond to the number set. (Except R.C. address is "0.")
		Error of the main outdoor unit in receiving serial communication signal from the indoor unit.
Improper setting of indoor unit or remote controller.		Indoor unit address setting is duplicated.
		Remote controller address connector (RCU. ADR) is duplicated. (Duplication of main remote controller)
		Error in driver communication signal for DC Inverter Fan.
During auto. address setting, number of connected units does not correspond to number set.  When turning on the power supply, number of connected units does not correspond to number set. (Except R.C. address is "0.")		Starting auto. address setting is prohibited. This alarm message shows that the auto address connector CN100 is shorted while other RC line is executing auto address operation.
		Error in auto. address setting. (Number of connected indoor units is less than the number set)
		Error in auto. address setting. (Number of connected indoor units is more than the number set)
		No indoor unit is connected during auto. address setting.
		Main outdoor unit is detecting error signal from sub outdoor unit.
		Error of outdoor unit address setting.
		The number of connected main and sub outdoor units do not correspond to the number set at main outdoor unit P.C.B.
		Error of sub outdoor unit in receiving serial communication signal from main outdoor unit.
	Indoor unit communication error of group control wiring.	Error of main indoor unit in receiving serial communication signal from sub indoor units.
	Improper setting.	
		Duplication of main indoor unit address setting in group control.
		Duplication of outdoor R.C. address setting.
There are 2 or more indoor units controllers which have operation mode priority in refrigerant circuit.		Priority set remote controller
		Non-priority set remote controller
		Group control wiring is connected to individual control indoor unit.
		Indoor unit address is not set.
		Capacity code of indoor unit is not set.
		Capacity code of outdoor unit is not set.
		Mis-match connection of outdoor units which have different kind of refrigerant.
	4-way valve operation failure	

Continued

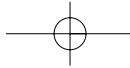


## 1. Test Run

Possible cause of malfunction		Alarm message	
Activation of protective device	Protective device in outdoor unit is activated.	Thermal protector in indoor unit fan motor is activated.	<<P01>>
		Improper wiring connections of ceiling panel.	<<P09>>
		Float switch is activated.	<<P10>>
		Error in indoor unit DC Inverter Fan.	P12
		Compressor thermal protector is activated. Power supply voltage is unusual. (The voltage is more than 260 V or less than 160 V between L and N phase.)	P02
		Incorrect discharge temperature. (Comp. No. 1)	P03
		High pressure switch is activated.	P04
		Negative (Defective) phase.	P05
		O <sup>2</sup> sensor (detects low oxygen level) activated	P14
		Compressor running failure resulting from missing phase in the compressor wiring, etc. (Start failure not caused by IPM or no gas.)	P16
		Incorrect discharge temperature. (Comp. No. 2)	P17
		Compressor 3 discharge temp. failure	P18
		Outdoor unit fan motor is unusual.	P22
		Overcurrent at time of compressor runs more than 80Hz (DCCT secondary current or ACCT primary current is detected at a time other than when IPM has tripped.)	P26
IPM trip (IPM current or temperature)	H31		
Inverter for compressor is unusual. (DC compressor does not operate.)	P29		
Thermistor fault	Indoor thermistor is either open or damaged.	Indoor coil temp. sensor (E1)	<<F01>>
		Indoor coil temp. sensor (E2)	<<F02>>
		Indoor coil temp. sensor (E3)	<<F03>>
		Indoor suction air (room) temp. sensor (TA)	<<F10>>
		Indoor discharge air temp. sensor (BL)	<<F11>>
	Outdoor thermistor is either open or damaged.	Comp. No. 1 discharge gas temp. sensor (DISCH1)	F04
		Comp. No. 2 discharge gas temp. sensor (DISCH2)	F05
		Outdoor No. 1 coil gas temp. sensor (EXG1)	F06
		Outdoor No. 1 coil liquid temp. sensor (EXL1)	F07
		Outdoor air temp. sensor (AIR TEMP)	F08
		Compressor intake port temperature sensor (RDT)	F12
		High pressure sensor. Negative (defective) N phase.	F16
		Low-pressure sensor failure	F17
		Compressor 3 discharge temp. sensor failure (DISCH3)	F22
		Outdoor No. 2 coil gas temp. sensor (EXG2)	F23
		Outdoor No. 2 coil liquid temp. sensor (EXL2)	F24
		Outdoor heat exchanger 3 gas (inlet) temp. sensor failure (EXG3)	F25
		Outdoor heat exchanger 3 liquid (outlet) temp. sensor failure (EXL3)	F26
EEP ROM on indoor unit P.C.B. failure		F29	
Protective device for compressor is activated	Protective device for compressor No. 1 is activated	EEP ROM on the main or sub outdoor unit P.C.B. is a failure.	F31
		Overload current is detected.	H01
		Lock current is detected.	H02
		Current is not detected when comp. No. 1 is ON.	H03
		Discharge gas temperature of the comp. No. 1 is not detected. Temp. sensor is not seated at the sensor holder.	H05
	Protective device for compressor No. 2 is activated	Overload current is detected.	H11
		Lock current is detected.	H12
		Current is not detected when comp. No. 2 is ON.	H13
		Discharge gas temperature of the comp. No. 2 is not detected.	H15
	Protective device for compressor No. 3 is activated	Compressor 3 current trouble (overcurrent)	H21
		Compressor 3 current trouble (locked)	H22
		Compressor 3 CT sensor disconnected or short circuit	H23
		Compressor 3 discharge temp. sensor disconnected	H25
	Low pressure switch is activated.	H06	

Continued



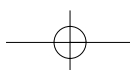


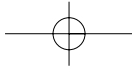
## 1. Test Run

Alarm messages displayed on system controller			Alarm message
Protective device for compressor is activated	Low oil level.		H07
	Oil sensor fault. (Disconnection, etc.)	Comp. No. 1 oil sensor	H08
		Comp. No. 2 oil sensor	H27
		Oil sensor (connection) failure	H28
Serial communication errors Mis-setting	Error in transmitting serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller.	C05
	Error in receiving serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller. CN1 is not connected properly.	C06
Activation of protective device	Protective device of sub indoor unit in group control is activated.	When using wireless remote controller or system controller, in order to check the alarm message in detail, connect wired remote controller to indoor unit temporarily.	P30

### NOTE

1. Alarm messages in << >> do not affect other indoor unit operations.
2. Alarm messages in < > sometimes affect other indoor unit operations depending on the fault.

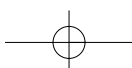




**Contents**

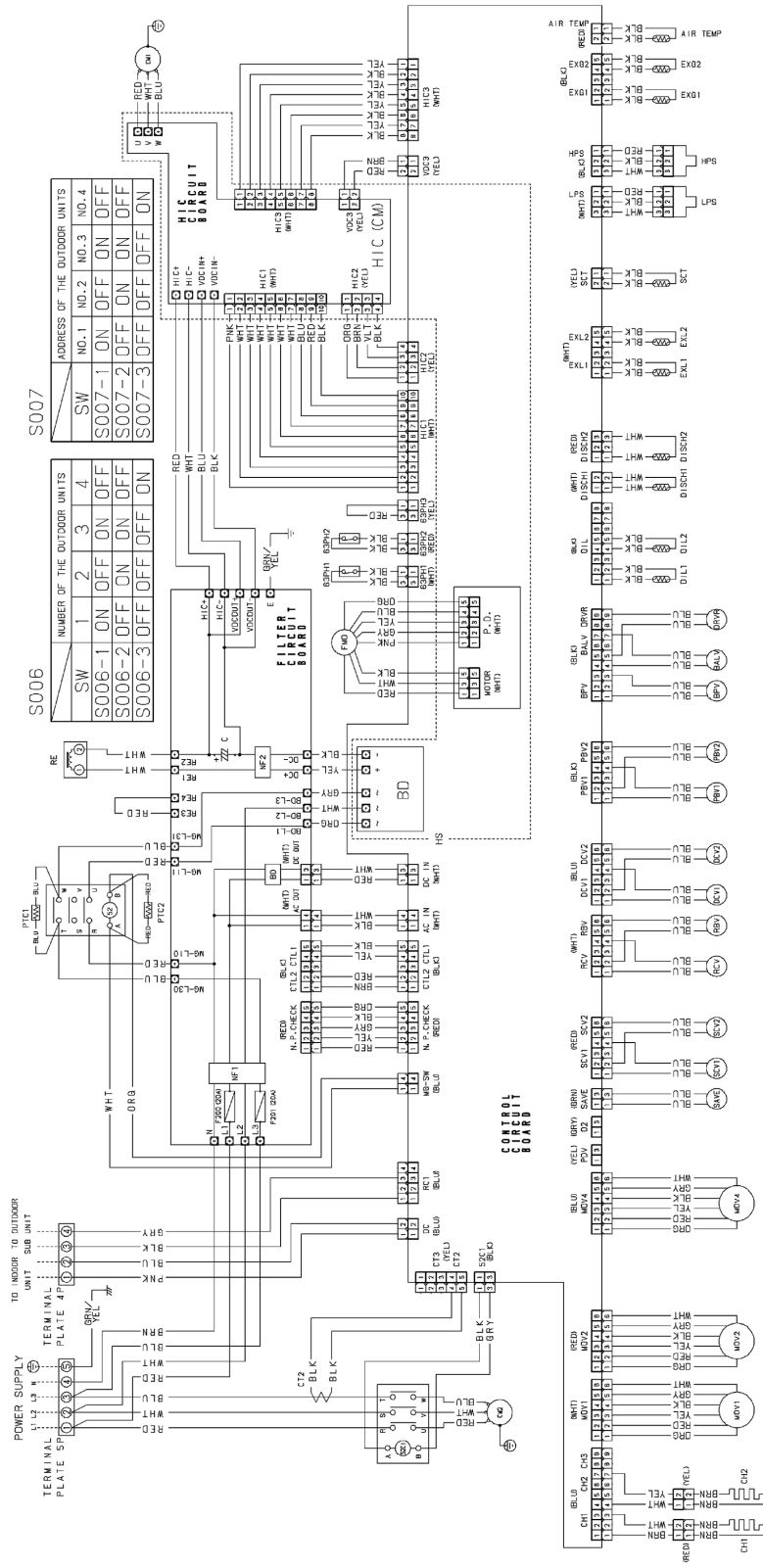
**6. ELECTRICAL DATA**

**1. Outdoor Unit ..... 6-2**  
**2. Indoor Unit ..... 6-6**



# 1. Outdoor Unit

## (1) Electric Wiring Diagram EFL 80-3R410, EFL 100-3R410, EFL 120-3R410

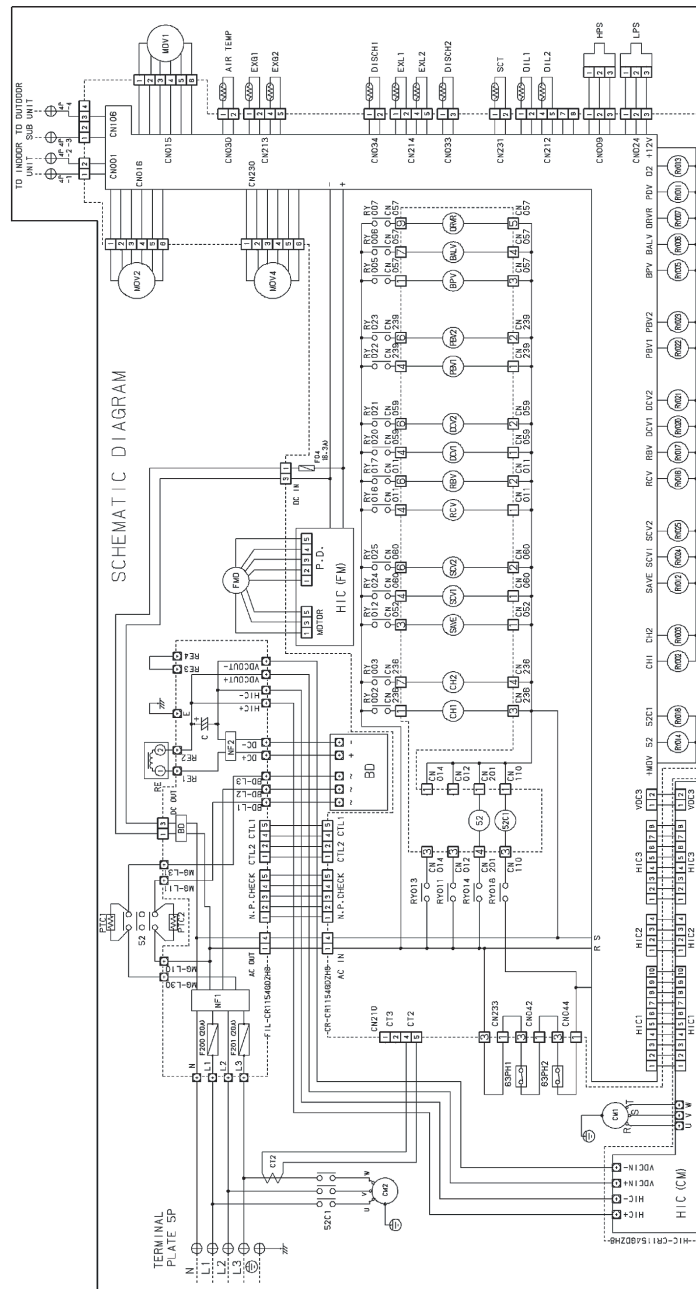


6

# 1. Outdoor Unit

## Schematic Diagram EFL 80-3R410, EFL 100-3R410, EFL 120-3R410

SYMBOLS	DESCRIPTION
CM1.2	COMPRESSOR MOTOR
FMD	OUTDOOR FAN MOTOR
SAVE	SAVE VALVE
SCV1.2	SUCTION VALVE
RCV, RBV	REFRIGERANT CONTROL VALVE
DCV1.2	DISSCHARGE VALVE
BPV1.2	PRESSURE BALANCE VALVE
BPV	BYPASS VALVE
BALV	BALANCE VALVE
DRVR	OIL RECOVERY VALVE
SZ	MAGNETIC CONTACTOR
5ZC1	COMPRESSOR MOTOR MAGNETIC CONTACTOR
MOV1.2, 4	MOTOR OPERATED VALVE
F.4, 200, 201	OPERATION CIRCUIT FUSE
NF 1.2	NOISE FILTER ON THE P.C.B
BD	BRIDGE DIODE
CH1.2	CRANK CASE HEATER
E3PH1.2	ELECTROLYTIC CAPACITOR
RE	REACTOR
HIC	HYBRID IC
HS	HEAT SINK (RADIATOR)
PTC1.2	PTC THERMISTOR
CT2	CURRENT TRANSFORMER
RY002, 003, RY005-007	RELAY
RY011-014, RY018-018	RELAY
RY020-025	RELAY
CR-CR115480ZHB	CONTROL CIRCUIT BOARD
FIL-CR115480ZHB	FILTER CIRCUIT BOARD
HIC-CR115480ZHB	H.I.C CIRCUIT BOARD
—0000—	THERMISTOR
□	CONNECTOR
○	TERMINAL
⊕	TERMINAL BOARD

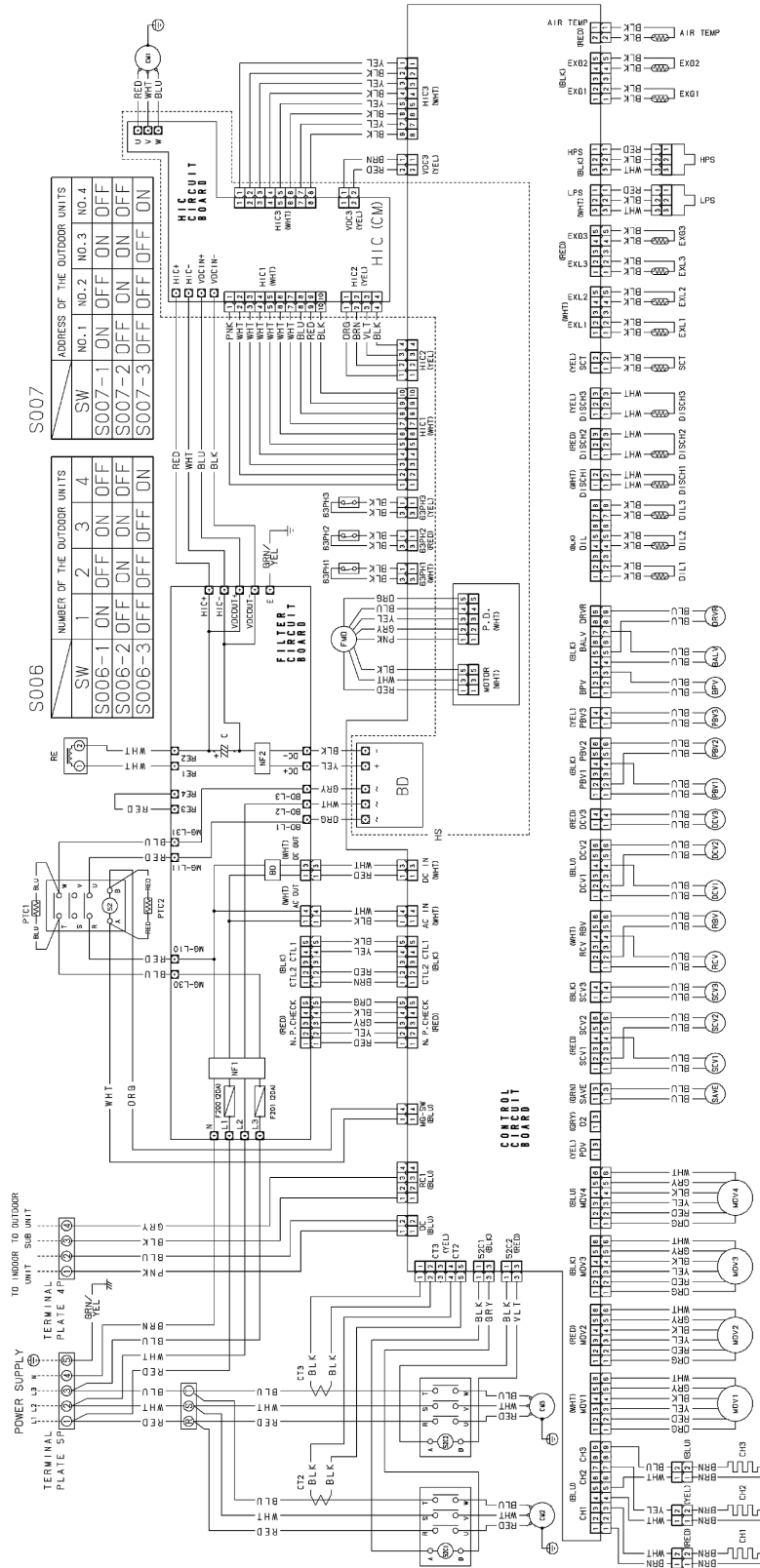


6

6

# 1. Outdoor Unit

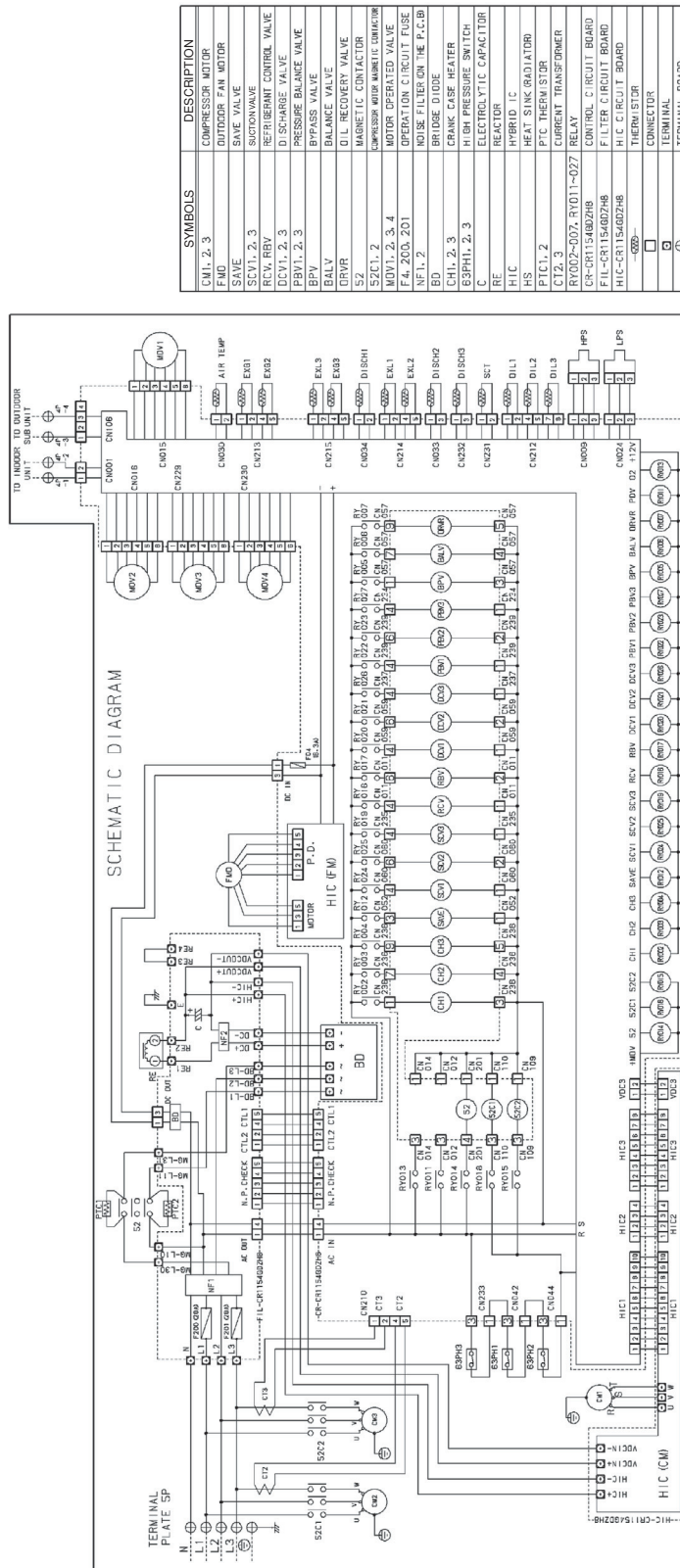
## (2) Electric Wiring Diagram EFL 140-3R410, EFL 160-3R410



6

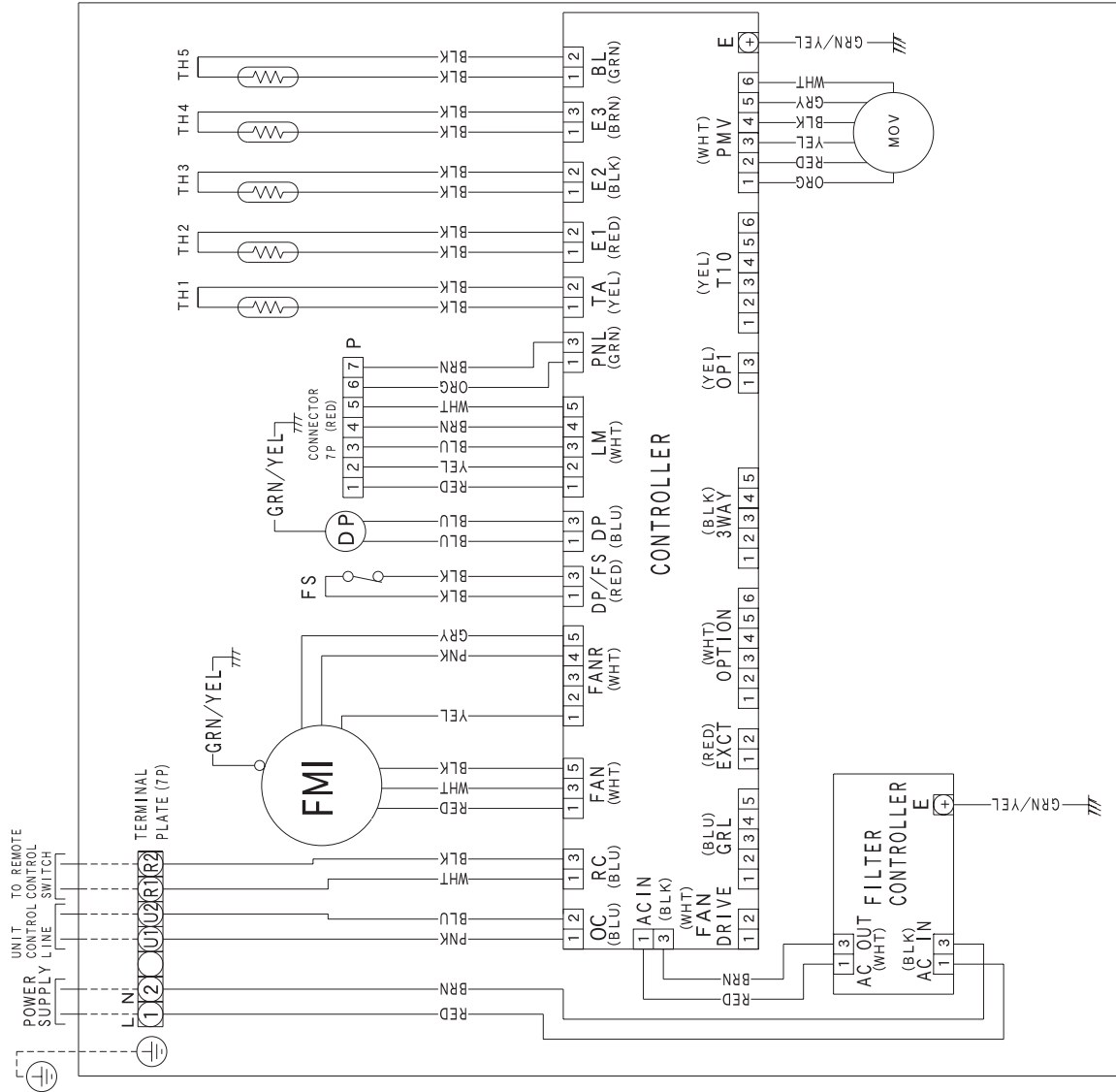
# 1. Outdoor Unit

## Schematic Wiring Diagram EFL 140-3R410, EFL 160-3R410



## 2. Indoor Unit

### (1) Electric Wiring Diagram ST-NKFL 7, ST-NKFL 9, ST-NKFL 12, ST-NKFL 18, ST-NKFL 24, ST-NKFL 36, ST-NKFL 48, ST-NKFL 60

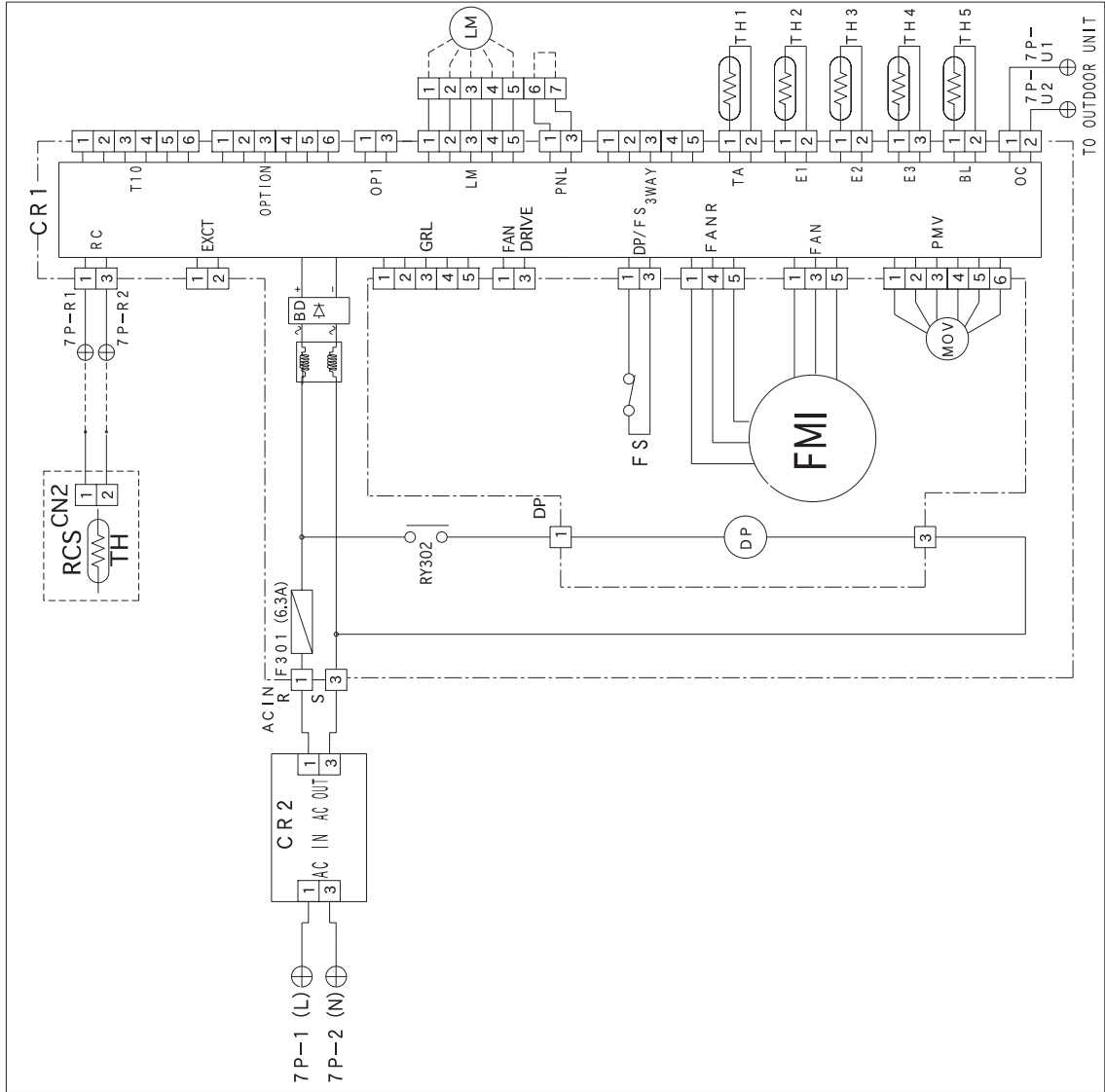


6

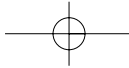
## 2. Indoor Unit

**Schematic Diagram ST-NKFL 7, ST-NKFL 9, ST-NKFL 12, ST-NKFL 18, ST-NKFL 24, ST-NKFL 36, ST-NKFL 48, ST-NKFL 60**

SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR
DP	DRAIN PUMP
FS	FLOAT SWITCH
TH1	ROOM THERMISTOR
TH2	THERMISTOR(INDOOR COILE1)
TH3	THERMISTOR(INDOOR COIL E2)
TH4	THERMISTOR(INDOOR COIL E3)
TH5	THERMISTOR(DISCHARGE AIR)
F301	FUSE
MOV	MOTOR OPERATED VALVE
CR1	INDOOR CONTROLLER
CR2	FILTER CONTROLLER
(LM)	AUTO LOUVER MOTOR(OPTION)
(RCS)	REMOTE CONTROL SWITCH(OPTION)
TH: ROOM THERMISTOR	
⊕	TERMINAL PLATE
□	CONNECTOR
⊕	TERMINAL

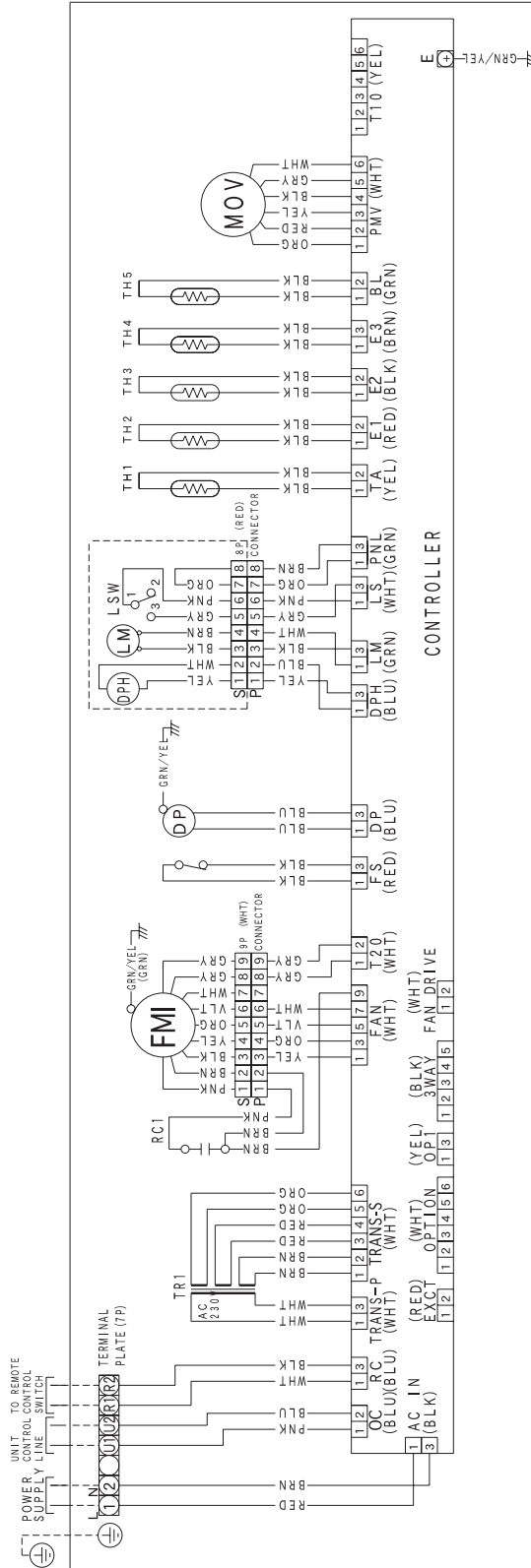






## 2. Indoor Unit

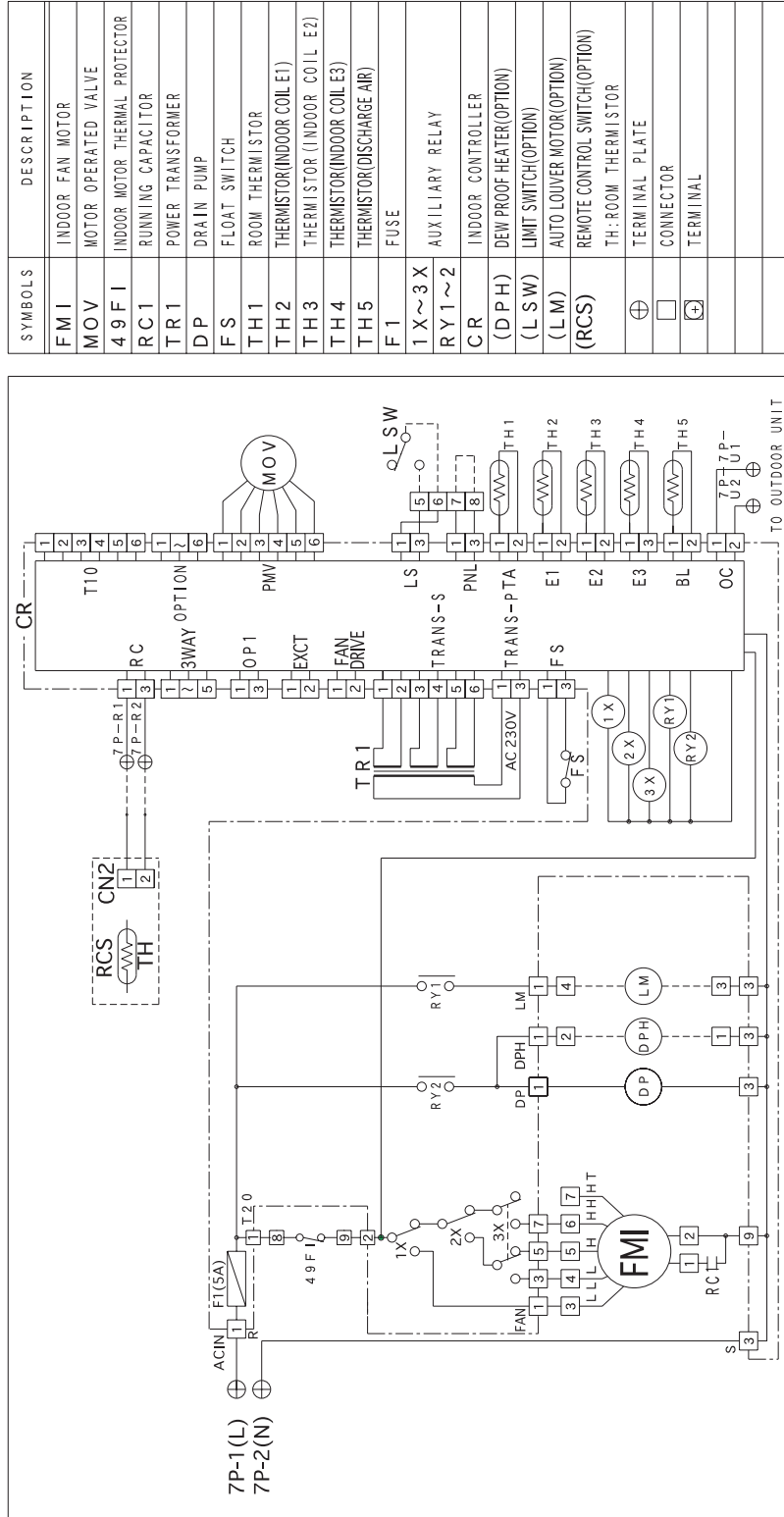
### (2) Electric Wiring Diagram ST-NK2FL 7, ST-NK2FL 9, ST-NK2FL 12, ST-NK2FL 18, ST-NK2FL 24



6

## 2. Indoor Unit

Schematic Wiring Diagram ST-NK2FL 7, ST-NK2FL 9, ST-NK2FL 12, ST-NK2FL 18, ST-NK2FL 24

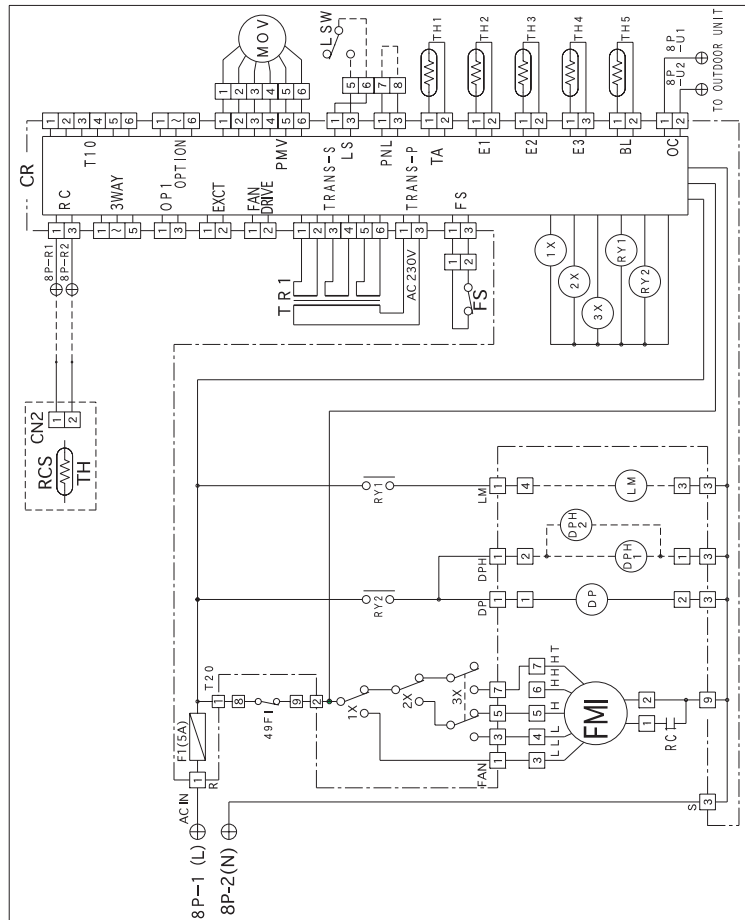


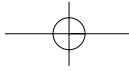


## 2. Indoor Unit

### Schematic Wiring Diagram ST-NWFL 7, ST-NWFL 9, ST-NWFL 12, ST-NWFL 18

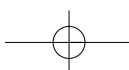
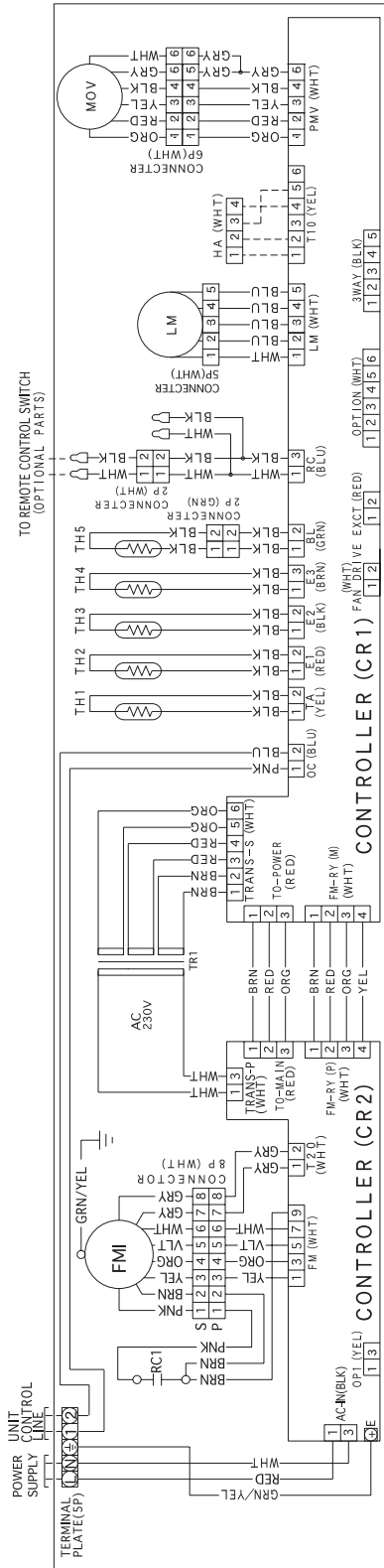
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR	CR	INDOOR CONTROLLER
MOV	MOTOR OPERATED VALVE	(DPH1, 2)	DEW PROOF HEATER(OPTION)
49FI	INDOOR MOTOR THERMAL PROTECTOR	(LSW)	LIMIT SWITCH(OPTION)
RC1	RUNNING CAPACITOR	(LM)	AUTO LOUVER MOTOR(OPTION)
TR1	POWER TRANSFORMER	(RCS)	REMOTE CONTROL SWITCH(OPTION)
DP	DRAIN PUMP	TH:ROOM	THERMISTOR
FS	FLOAT SWITCH	⊕	TERMINAL PLATE
TH1	ROOM THERMISTOR	□	CONNECTOR
TH2	THERMISTOR(INDOOR COIL1)	⊕	TERMINAL
TH3	THERMISTOR (INDOOR COIL E2)		
TH4	THERMISTOR(INDOOR COIL E3)		
TH5	THERMISTOR(DISCHARGE AIR)		
F1	FUSE		
1X~3X	AUXILIARY RELAY		
RY1, 2			





## 2. Indoor Unit

### (4)-1 Electric Wiring Diagram ST-NWFL 7, ST-NWFL 9, ST-NWFL 12, ST-NWFL 18

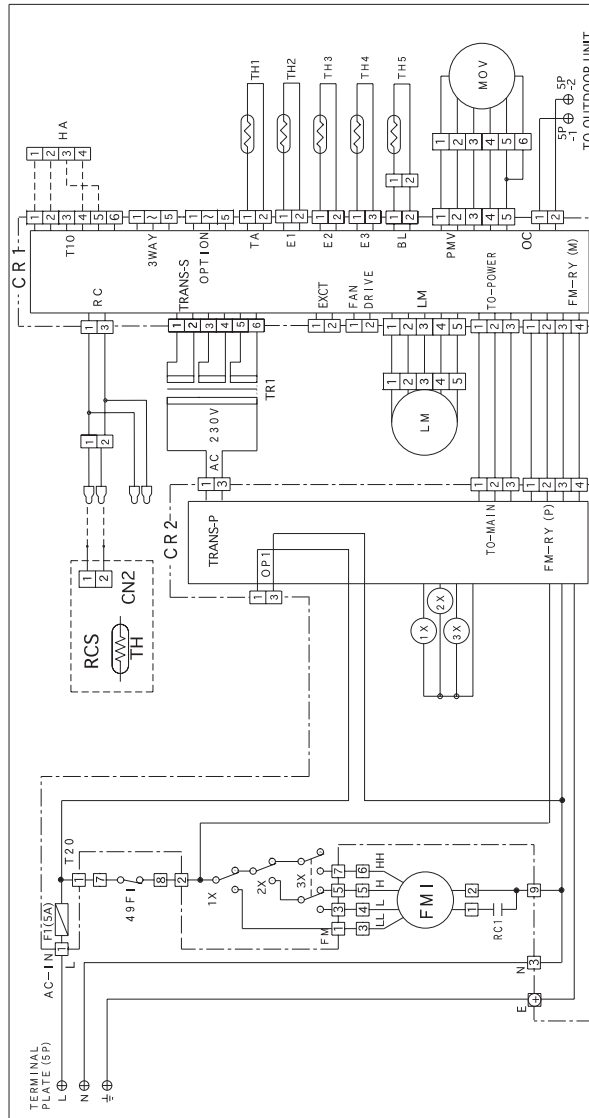


6

## 2. Indoor Unit

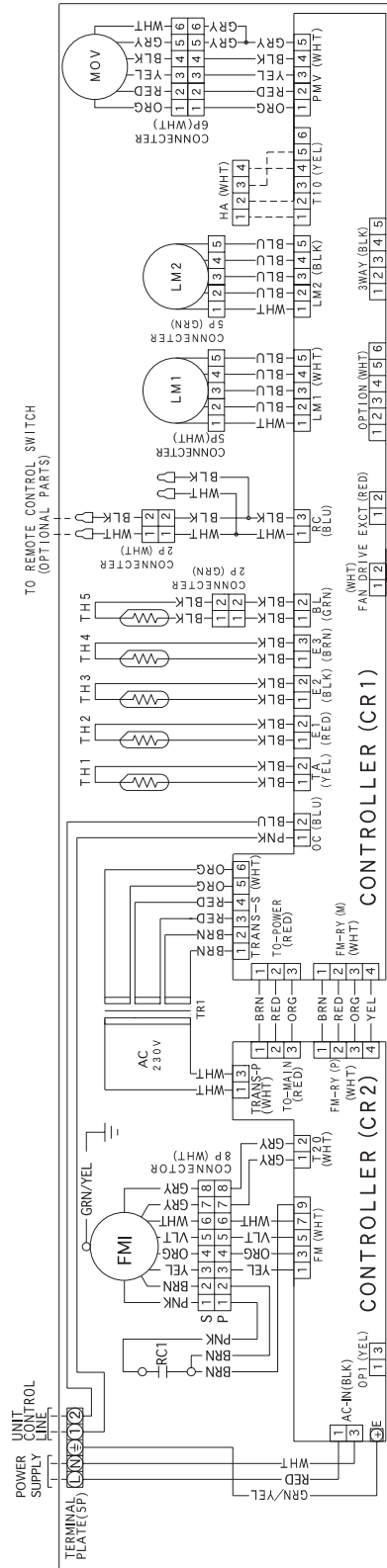
### Schematic Wiring Diagram ST-NWFL 7, ST-NWFL 9, ST-NWFL 12, ST-NWFL 18

SYMBOLS	DESCRIPTION
FM1	INDOOR FAN MOTOR
49F1	INDOOR MOTOR THERMAL PROTECTOR
RC1	RUNNING CAPACITOR
TR1	POWER TRANSFORMER
TH1	ROOM THERMISTOR
TH2	THERMISTOR (INDOOR COIL E1)
TH3	THERMISTOR (INDOOR COIL E2)
TH4	THERMISTOR (INDOOR COIL E3)
TH5	BLOW THERMISTOR
MOV	MOTOR OPERATED VALVE
F1	FUSE
LM	AUTO LOUVER MOTOR
1X-3X	AUXILIARY RELAY
CR1,CR2	INDOOR CONTROLLER
(RCS)	REMOTE CONTROL SWITCH (OPTIONAL PARTS)
TH:ROOM THERMISTOR	
⊕	TERMINAL PLATE
⊖	CONNECTOR
Ⓜ	TERMINAL

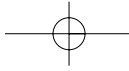


## 2. Indoor Unit

### (4-2) Electric Wiring Diagram ST-NWFL 24



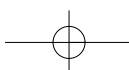
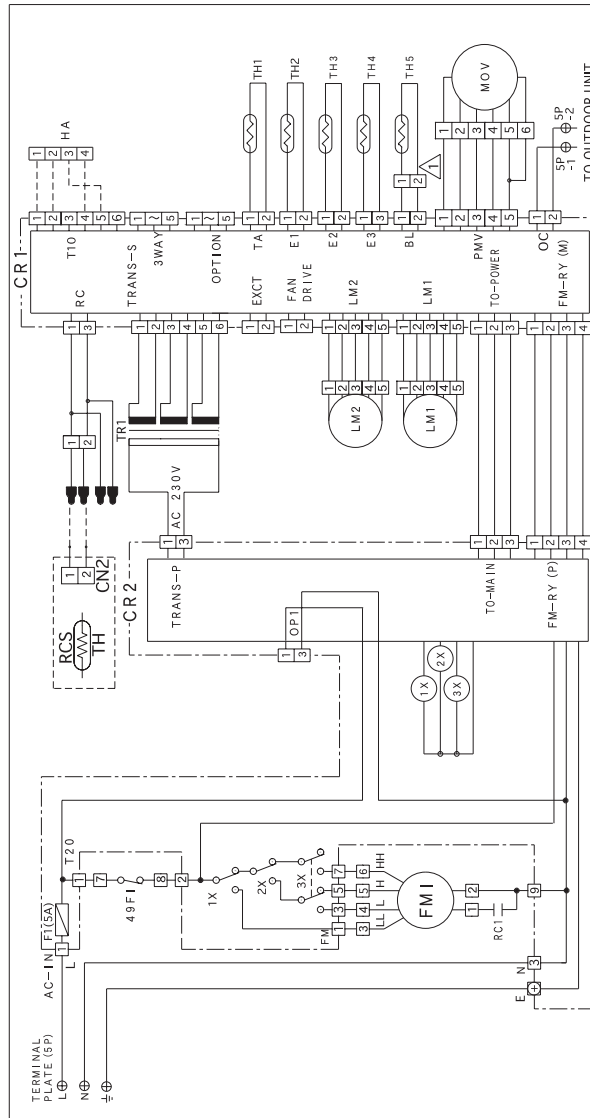
6



## 2. Indoor Unit

### Schematic Wiring Diagram ST-NWFL 24

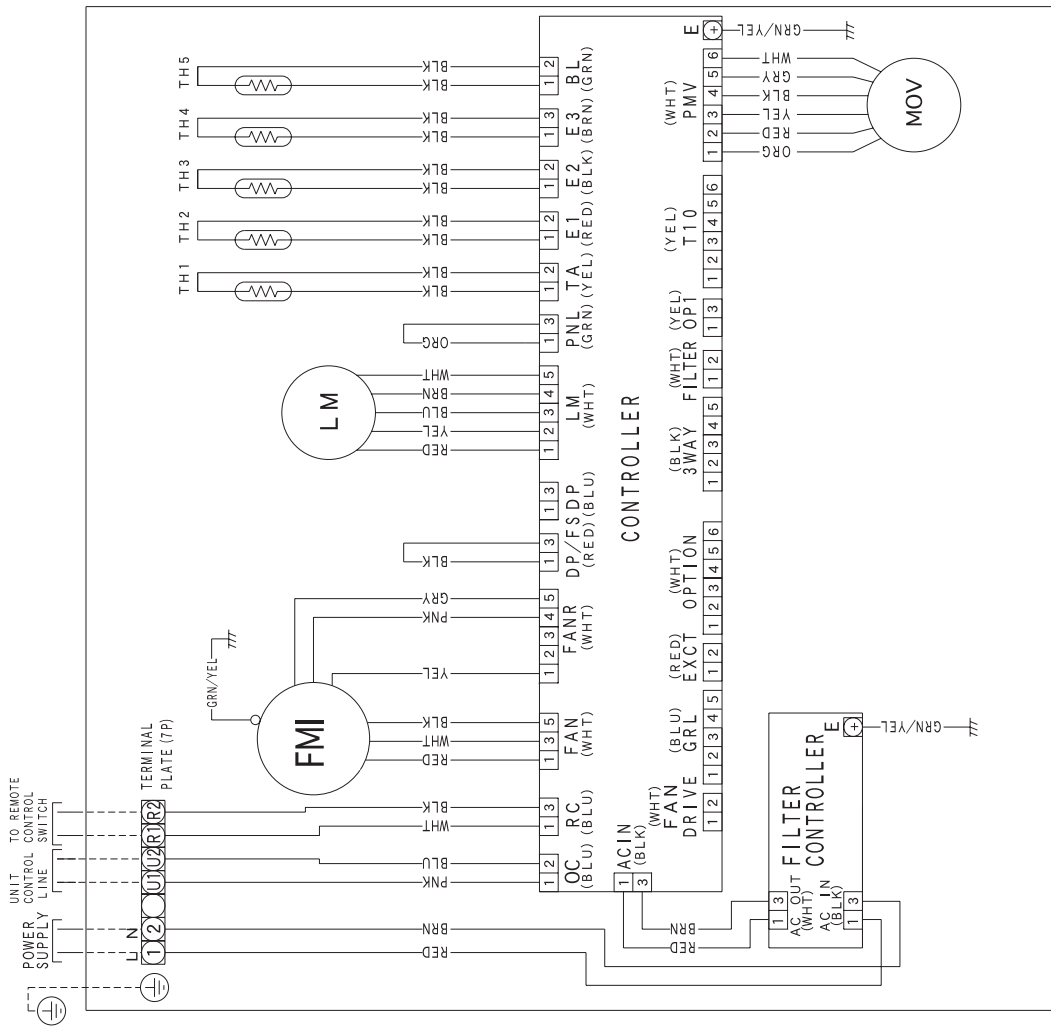
SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR
49F1	INDOOR MOTOR THERMAL PROTECTOR
RC1	RUNNING CAPACITOR
TR1	POWER TRANSFORMER
TH1	ROOM THERMISTOR
TH2	THERMISTOR (INDOOR COIL E1)
TH3	THERMISTOR (INDOOR COIL E2)
TH4	THERMISTOR (INDOOR COIL E3)
TH5	BLOW THERMISTOR
MOV	MOTOR OPERATED VALVE
F1	FUSE
LM	AUTO LOUVER MOTOR
1X-3X	AUXILIARY RELAY
CR1, CR2	INDOOR CONTROLLER
(RCS)	REMOTE CONTROL SWITCH (OPTIONAL PARTS)
⊕	TH-ROOM THERMISTOR
⊕	TERMINAL PLATE
⊕	CONNECTOR
⊕	TERMINAL





## 2. Indoor Unit

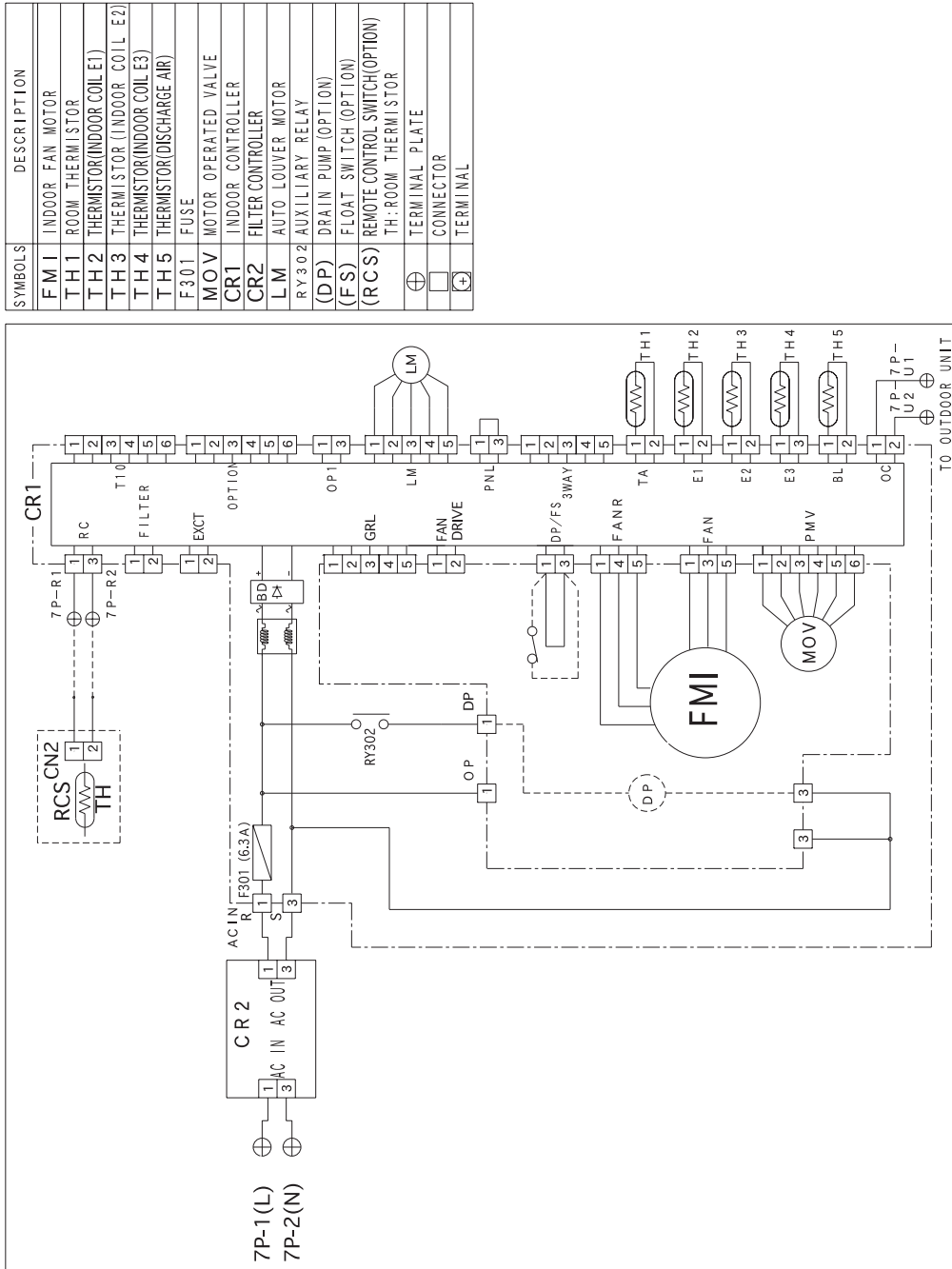
### (5) Electric Wiring Diagram ST-NPFL 12, ST-NPFL 18, ST-NPFL 24, ST-NPFL 36, ST-NPFL 48



6

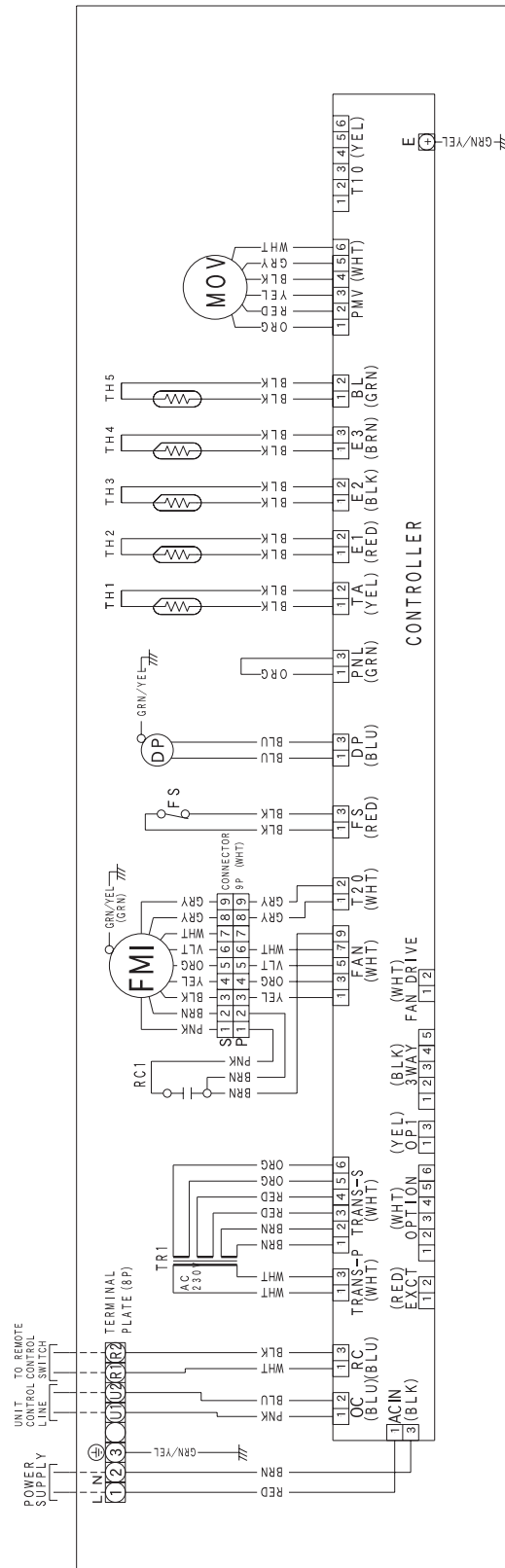
## 2. Indoor Unit

### Schematic Wiring Diagram ST-NPFL 12, ST-NPFL 18, ST-NPFL 24, ST-NPFL 36, ST-NPFL 48



## 2. Indoor Unit

### (6) Electric Wiring Diagram ST-NDLP 7, ST-NDLP 9, ST-NDLP 12, ST-NDLP 18, ST-NDLP 24, ST-NDLP 36, ST-NDLP 48

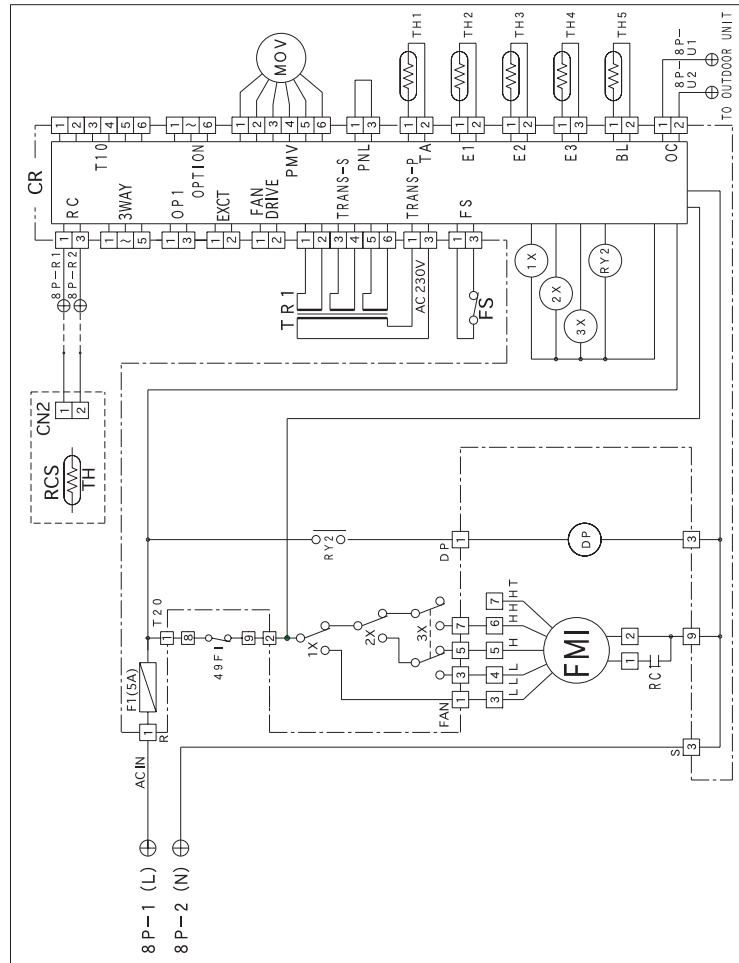


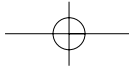
6

## 2. Indoor Unit

Schematic Wiring Diagram ST-NDLP 7, ST-NDLP 9, ST-NDLP 12, ST-NDLP 18, ST-NDLP 24, ST-NDLP 36, ST-NDLP 48

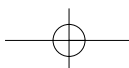
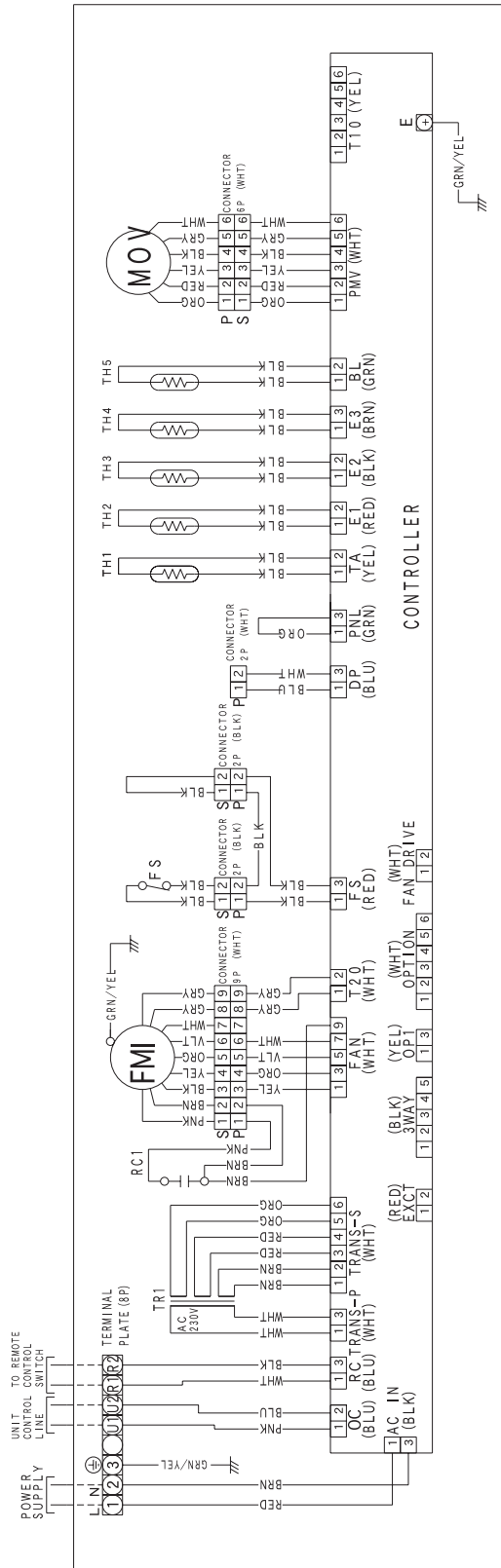
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR	1 X ~ 3 X	AUXILIARY RELAY
MOV	MOTOR OPERATED VALVE	RY 2	INDOOR CONTROLLER
4.9 F I	INDOOR MOTOR THERMAL PROTECTOR	CR	REMOTE CONTROL SWITCH(OPTION)
RC 1	RUNNING CAPACITOR	(RCS)	TH-ROOM THERMISTOR
TR 1	POWER TRANSFORMER	⊕	TERMINAL PLATE
DP	DRAIN PUMP	⊖	CONNECTOR
FS	FLOAT SWITCH	+	TERMINAL
TH 1	ROOM THERMISTOR		
TH 2	THERMISTOR(INDOOR COIL E1)		
TH 3	THERMISTOR (INDOOR COIL E2)		
TH 4	THERMISTOR(INDOOR COIL E3)		
TH 5	THERMISTOR(DISCHARGE AIR)		
F 1	FUSE		





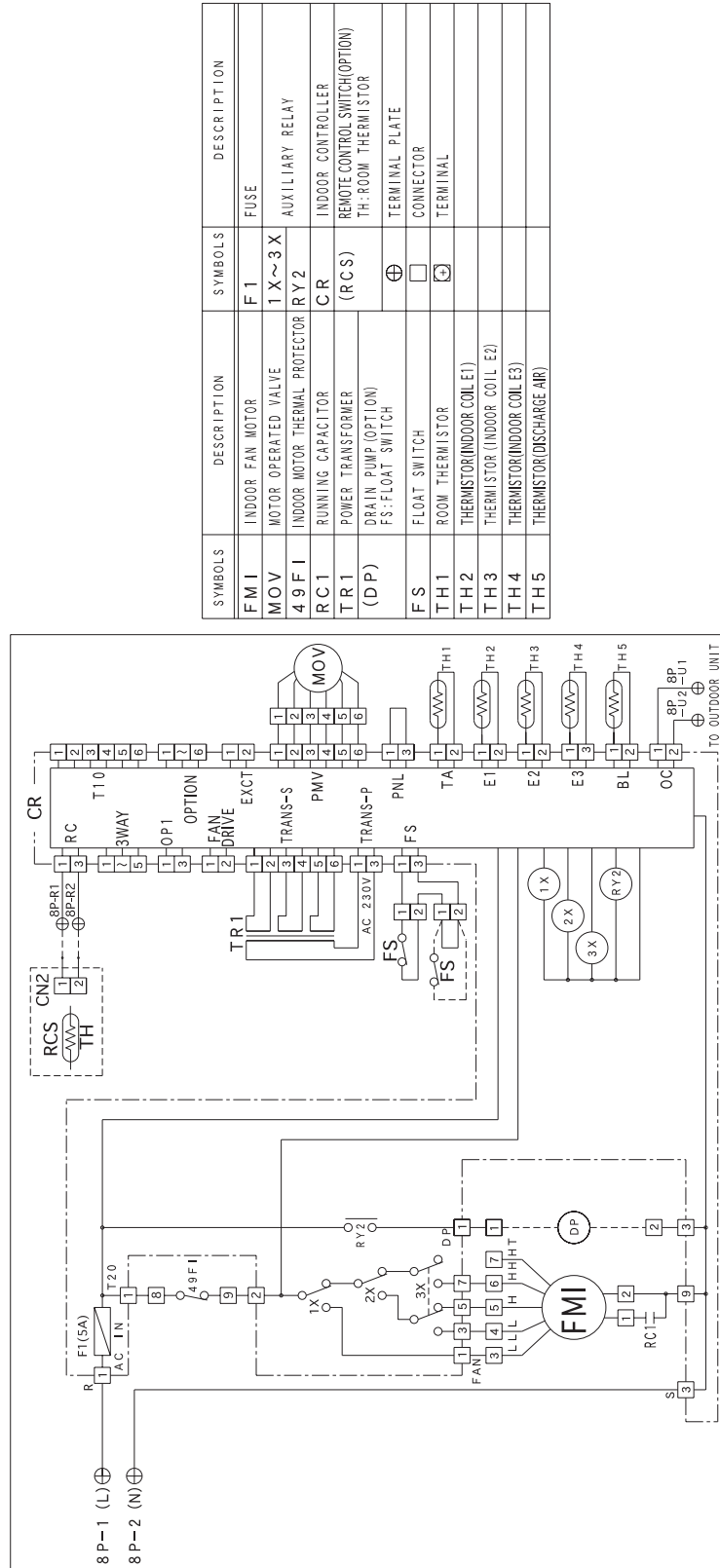
## 2. Indoor Unit

### (7)-1 Electric Wiring Diagram ST-NDHP 24

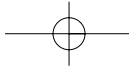


## 2. Indoor Unit

### Schematic Wiring Diagram ST-NDHP 24

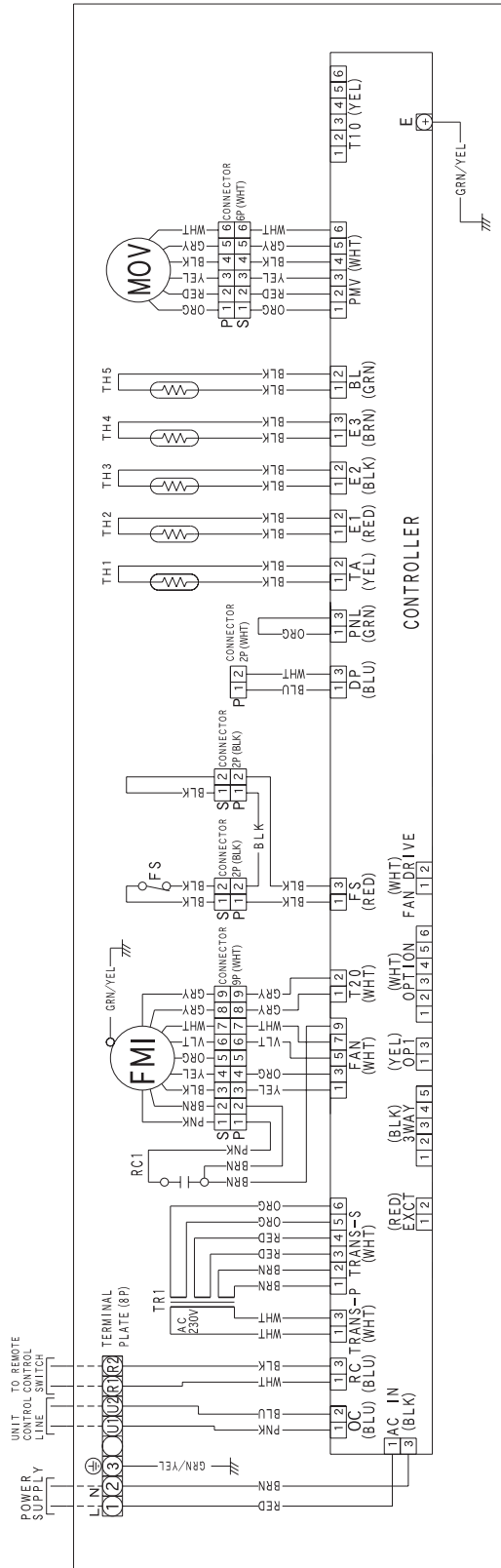


SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR	F1	FUSE
MOV	MOTOR OPERATED VALVE	1 X ~ 3 X	AUXILIARY RELAY
49FI	INDOOR MOTOR THERMAL PROTECTOR	RY2	INDOOR CONTROLLER
RC1	RUNNING CAPACITOR	CR	REMOTE CONTROL SWITCH(OPTION)
TR1	POWER TRANSFORMER	(RCS)	TH-ROOM THERMISTOR
(DP)	DRAIN PUMP (OPTION)		TERMINAL PLATE
FS	FS:FLOAT SWITCH	⊕	CONNECTOR
FS	FLOAT SWITCH	⊕	TERMINAL
TH1	ROOM THERMISTOR		
TH2	THERMISTOR(INDOOR COIL E1)		
TH3	THERMISTOR (INDOOR COIL E2)		
TH4	THERMISTOR(INDOOR COIL E3)		
TH5	THERMISTOR(DISCHARGE AIR)		

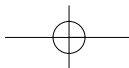


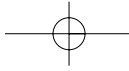
## 2. Indoor Unit

### (7)-2 Electric Wiring Diagram ST-NDHP 36



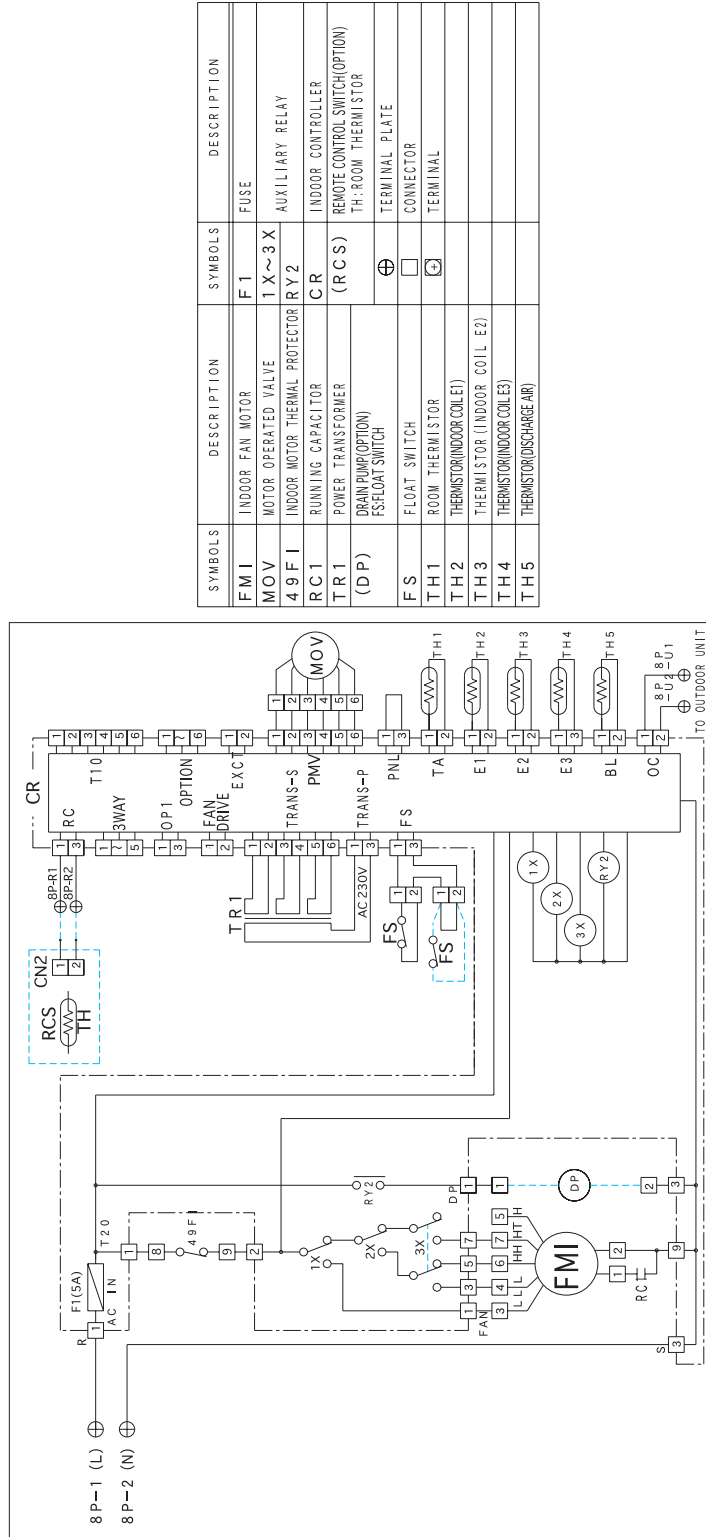
6



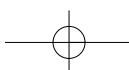


## 2. Indoor Unit

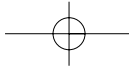
### Schematic Wiring Diagram ST-NDHP 36



SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR	F 1	FUSE
MOV	MOTOR OPERATED VALVE	1X~3X	AUXILIARY RELAY
49FI	INDOOR MOTOR THERMAL PROTECTOR	CR	INDOOR CONTROLLER
RC1	RUNNING CAPACITOR	(RCS)	REMOTE CONTROL SWITCH(OPTION)
TR1	POWER TRANSFORMER	TH	ROOM THERMISTOR
(DP)	DRAIN PUMP(OPTION)	⊕	TERMINAL PLATE
	FSELOAT SWITCH	□	CONNECTOR
FS	FLOAT SWITCH	⊕	TERMINAL
TH1	ROOM THERMISTOR		
TH2	THERMISTOR(INDOOR COILE1)		
TH3	THERMISTOR (INDOOR COIL E2)		
TH4	THERMISTOR(INDOOR COILES)		
TH5	THERMISTOR(DISCHARGE AIR)		



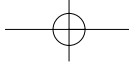
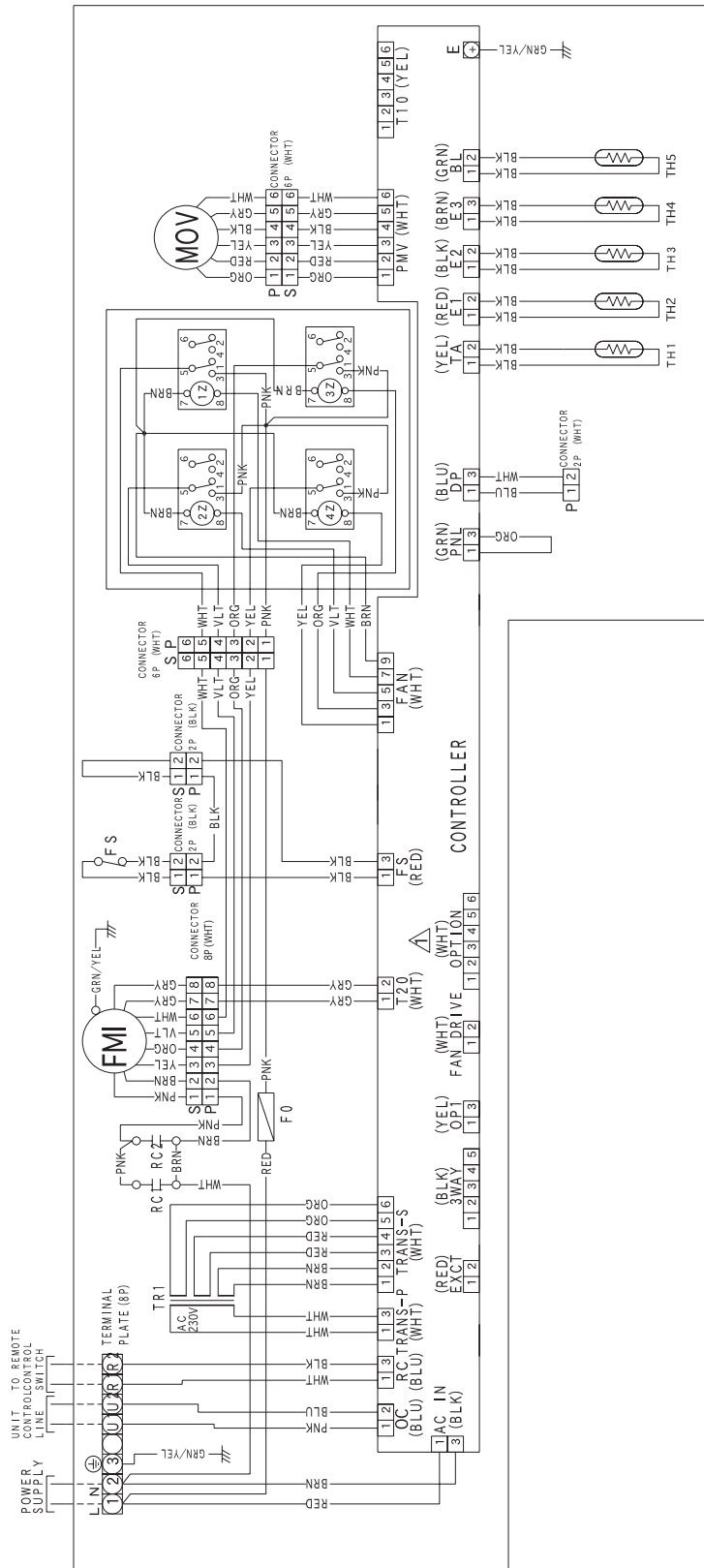




## 2. Indoor Unit

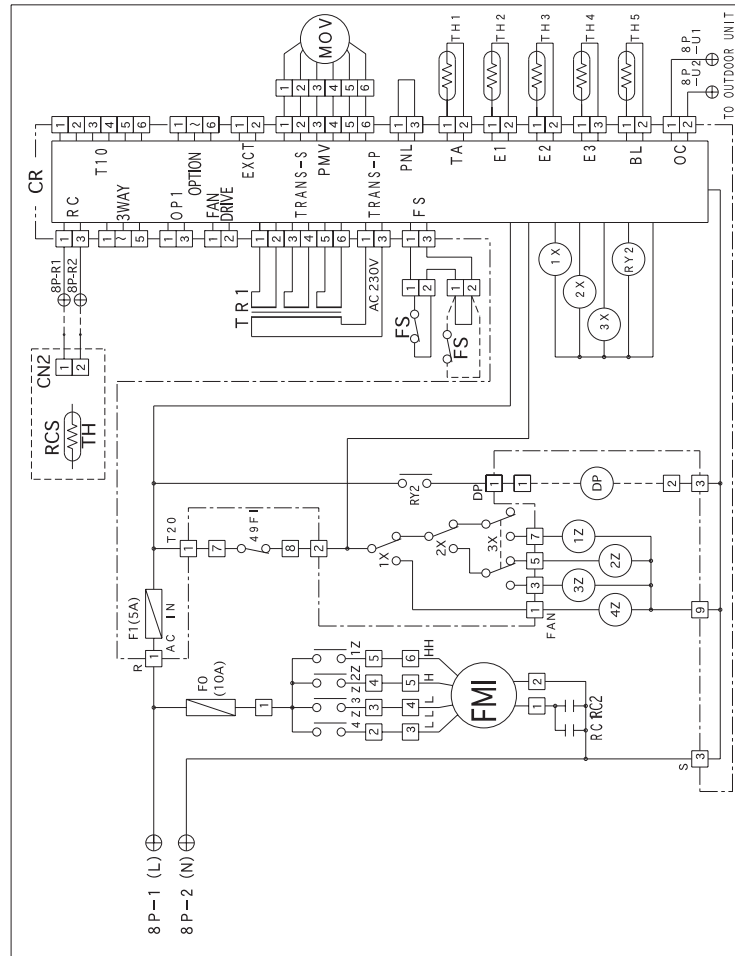
(7)-3 Electric Wiring Diagram ST-NDHP 48

6



## 2. Indoor Unit

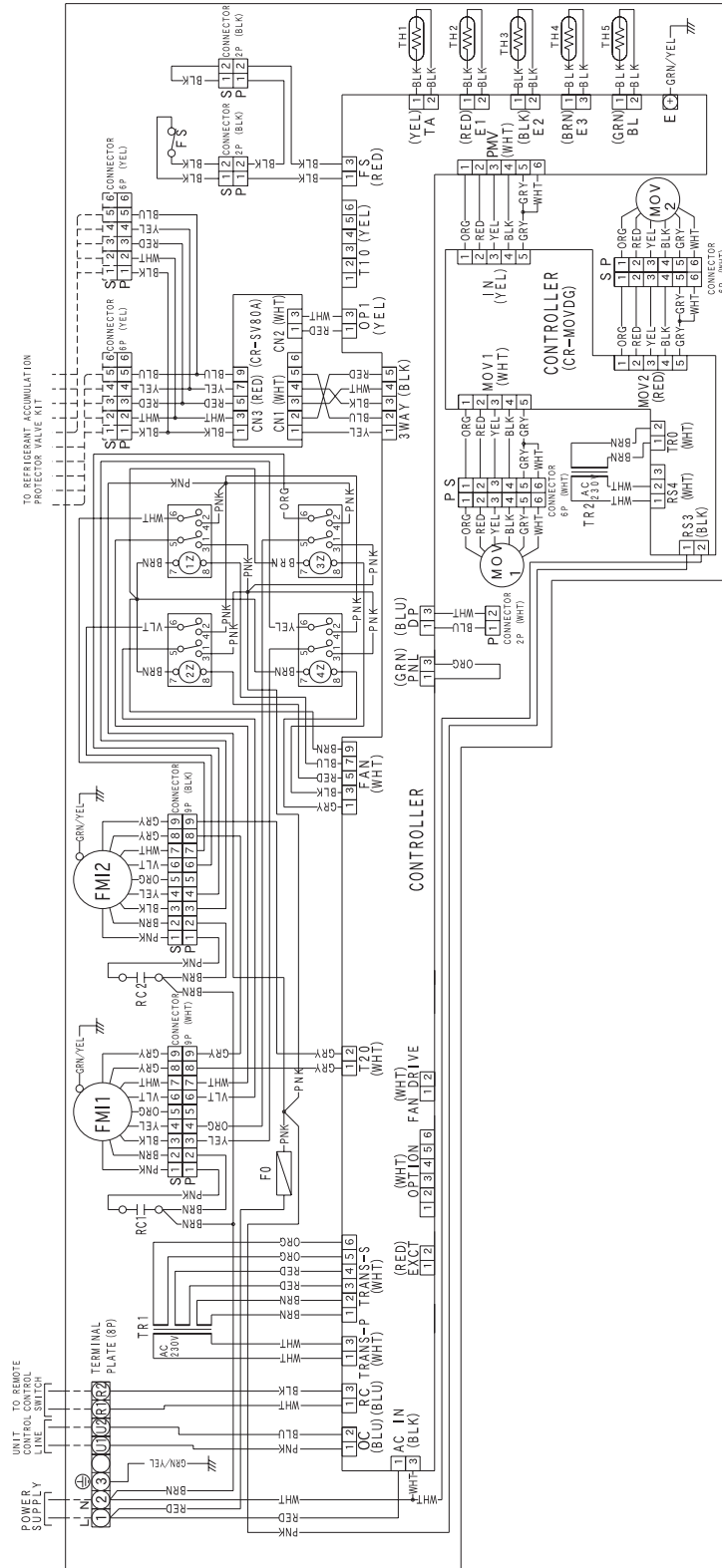
### Schematic Wiring Diagram ST-NDHP 48

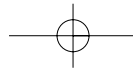


SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR	F0, 1	FUSE
MOV	MOTOR OPERATED VALVE	CR	INDOOR CONTROLLER
49FI	INDOOR MOTOR THERMAL PROTECTOR	1X~3X	
RC1, 2	RUNNING CAPACITOR	1Z~4Z	AUXILIARY RELAY
TR1	POWER TRANSFORMER	RY 2	
(DP)	DRAIN PUMP(OPTION) FSE/FLOAT SWITCH	(RCS)	REMOTE CONTROL SWITCH(OPTION) TH: ROOM THERMISTOR
FS	FLOAT SWITCH	⊕	TERMINAL PLATE
TH1	ROOM THERMISTOR	□	CONNECTOR
TH2	THERMISTOR(INDOOR COIL E1)	⊖	TERMINAL
TH3	THERMISTOR (INDOOR COIL E2)		
TH4	THERMISTOR(INDOOR COIL E3)		
TH5	THERMISTOR(DISCHARGE AIR)		

## 2. Indoor Unit

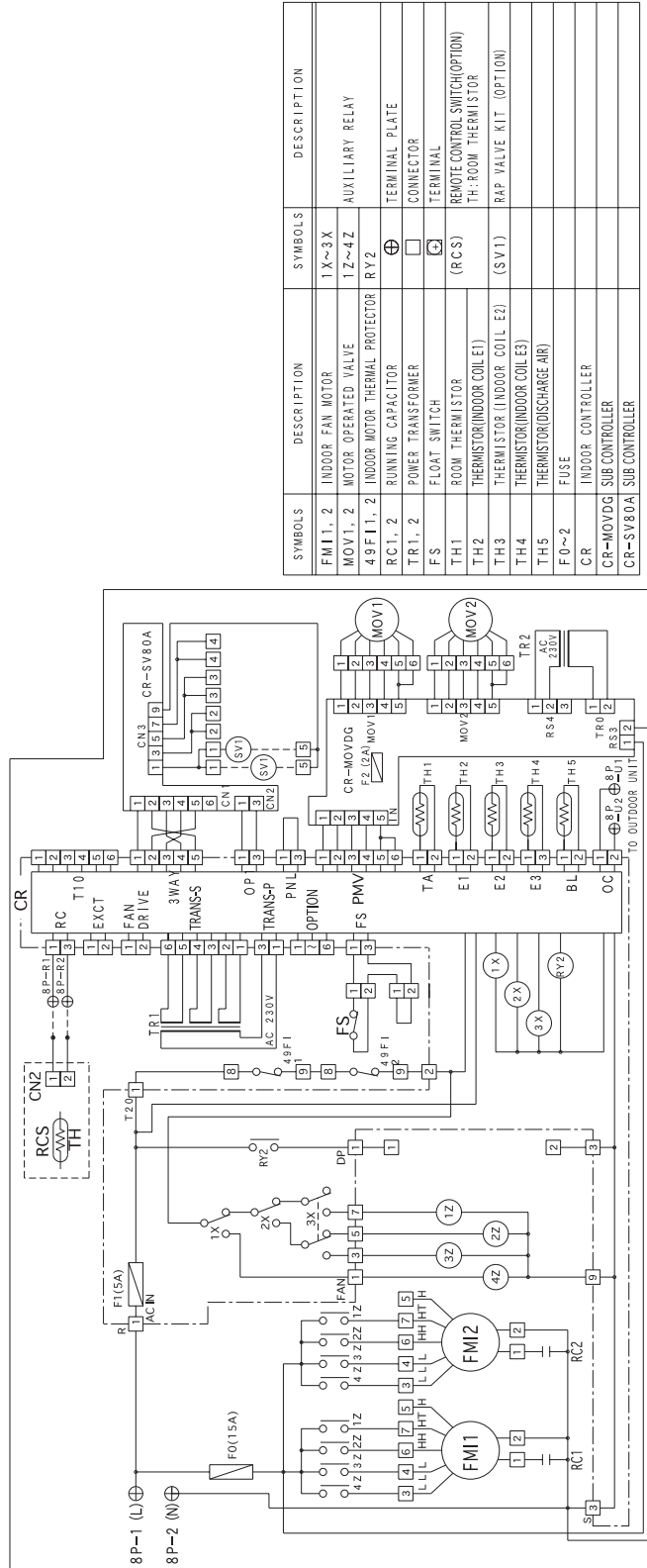
### (7)-4 Electric Wiring Diagram ST-NDHP 76





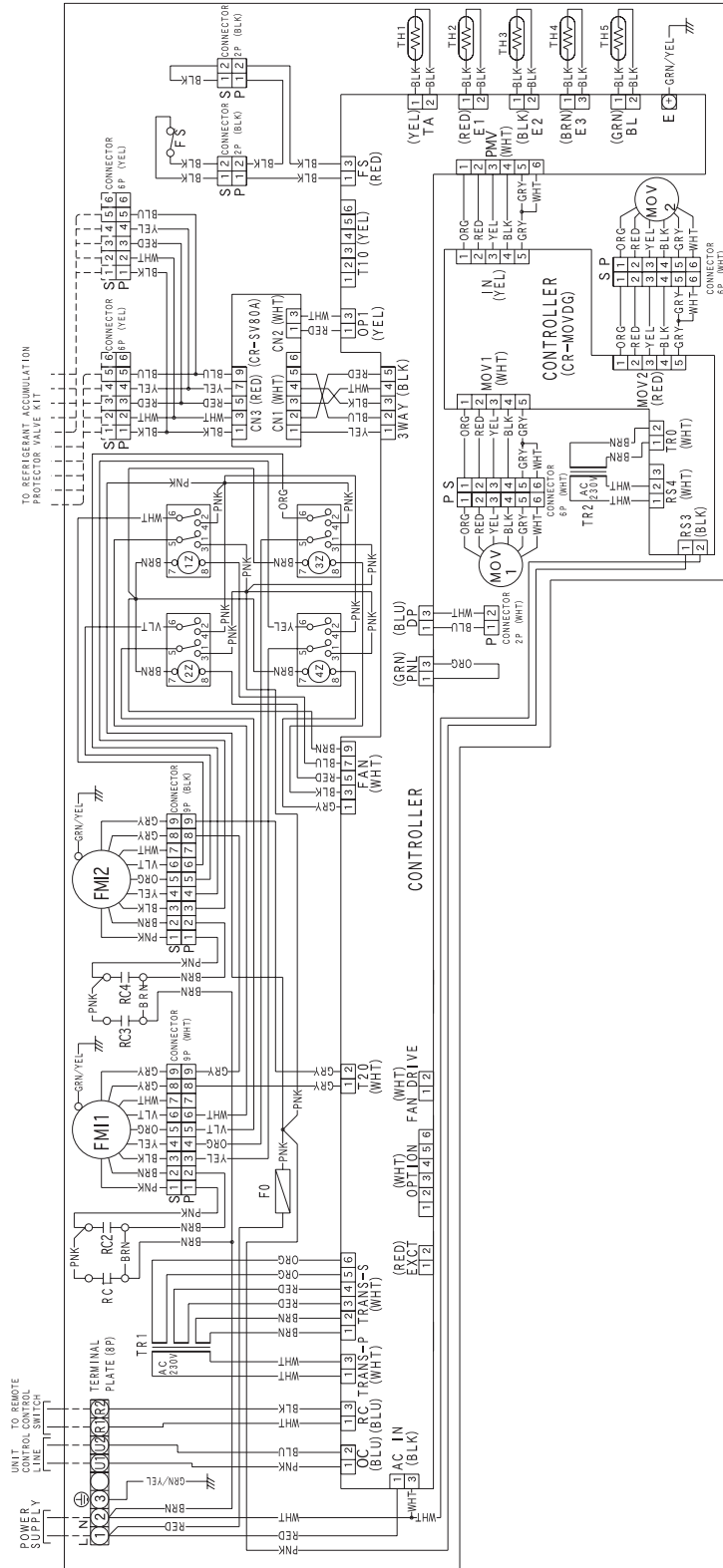
## 2. Indoor Unit

### Schematic Wiring Diagram ST-NDHP 76



## 2. Indoor Unit

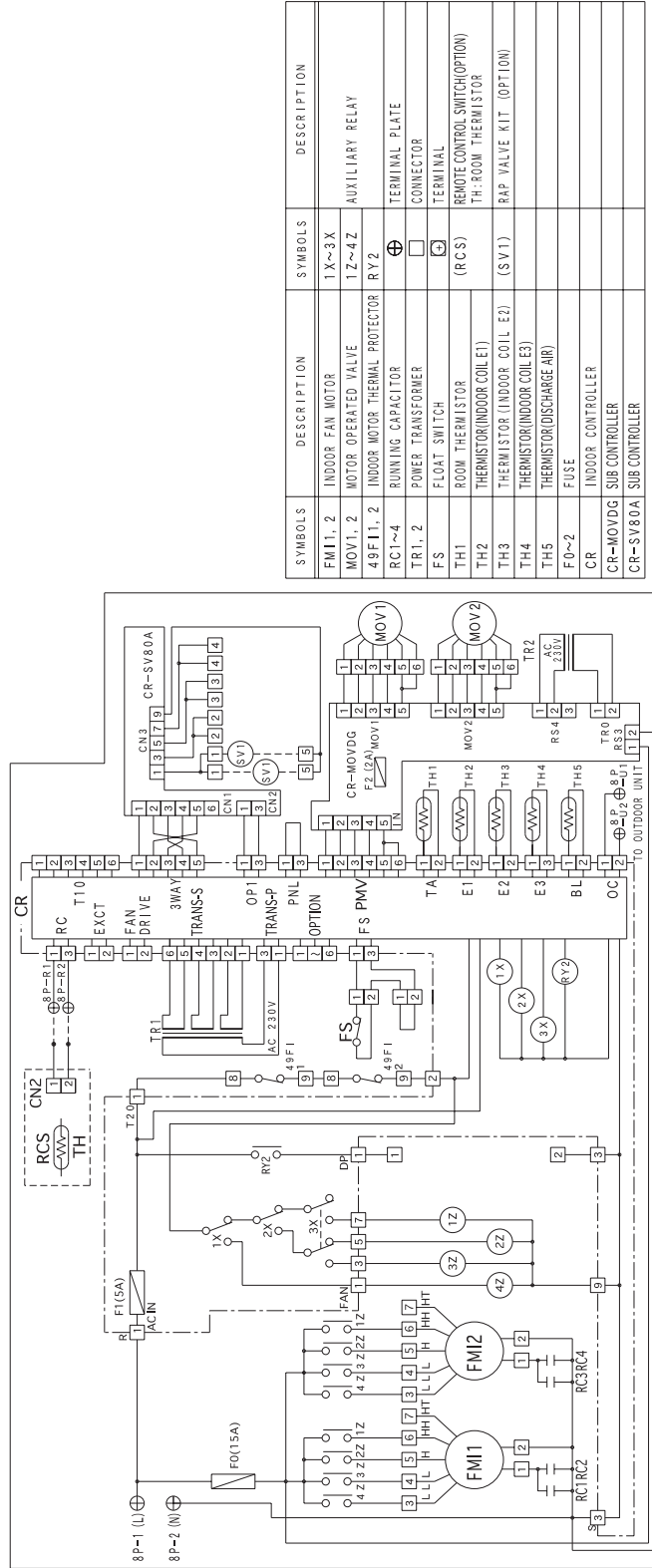
(7)-5 Electric Wiring Diagram ST-NDHP 96



6

## 2. Indoor Unit

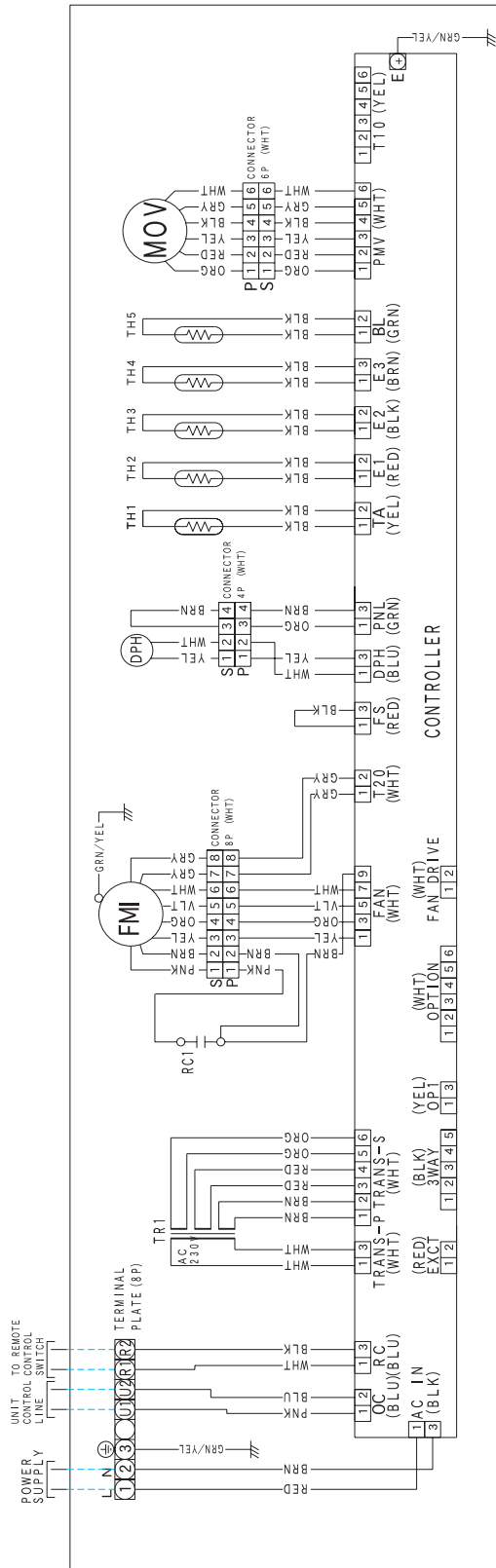
### Schematic Wiring Diagram ST-NDHP 96



SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
FMI1, 2	INDOOR FAN MOTOR	1X~3X	AUXILIARY RELAY
MOV1, 2	MOTOR OPERATED VALVE	1Z~4Z	TERMINAL PLATE
49F11, 2	INDOOR MOTOR THERMAL PROTECTOR	RY2	CONNECTOR
RC1~4	RUNNING CAPACITOR	⊕	TERMINAL
TR1, 2	POWER TRANSFORMER	⊖	REMOTE CONTROL SWITCH(OPTION)
FS	FLOAT SWITCH	⊖	TH:ROOM THERMISTOR
TH1	ROOM THERMISTOR	(RCS)	RAV VALVE KIT (OPTION)
TH2	THERMISTOR(INDOOR COILET)		
TH3	THERMISTOR (INDOOR COIL E2)	(SV1)	
TH4	THERMISTOR(INDOOR COIL E3)		
TH5	THERMISTOR(DISCHARGE AIR)		
F0~2	FUSE		
CR	INDOOR CONTROLLER		
CR~MOV1DG	SUB-CONTROLLER		
CR~SV80A	SUB-CONTROLLER		

## 2. Indoor Unit

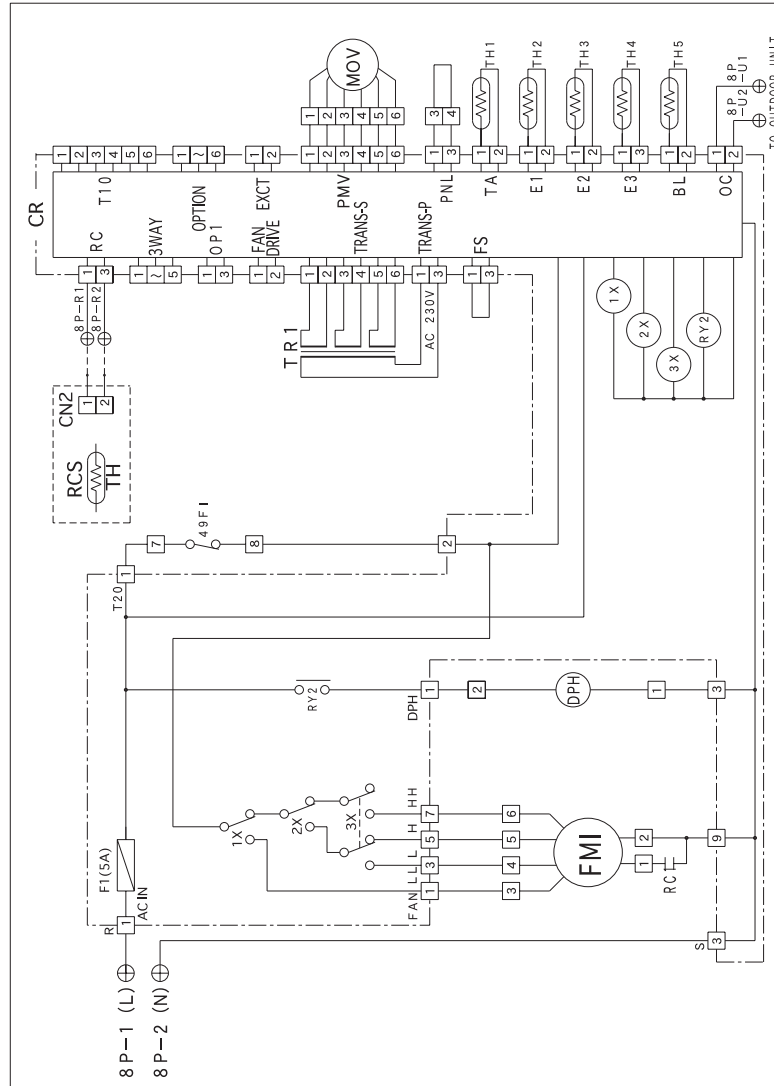
### (8) Electric Wiring Diagram ST-NDHP 96



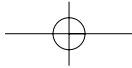
## 2. Indoor Unit

### Schematic Wiring Diagram ST-NFFL 7, ST-NFFL 9, ST-NFFL 12, ST-NFFL 18, ST-NFFL 24

SYMBOLS	DESCRIPTION
FMI	INDOOR FAN MOTOR
MOV	MOTOR OPERATED VALVE
49FI	INDOOR MOTOR THERMAL PROTECTOR
RC1	RUNNING CAPACITOR
TR1	POWER TRANSFORMER
DPH	DEW PROOF HEATER
TH1	ROOM THERMISTOR
TH2	THERMISTOR(INDOOR COIL E1)
TH3	THERMISTOR (INDOOR COIL E2)
TH4	THERMISTOR(INDOOR COIL E3)
TH5	THERMISTOR(DISCHARGE AIR)
F1	FUSE
1X~3X	AUXILIARY RELAY
RY2	REMOTE CONTROL SWITCH(OPTION) TH:ROOM THERMISTOR
CR	INDOOR CONTROLLER
⊕	TERMINAL PLATE
⊞	CONNECTOR
⊞	TERMINAL



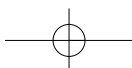
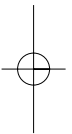
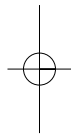


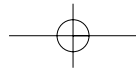


# Contents

## 7. PCB AND FUNCTIONS

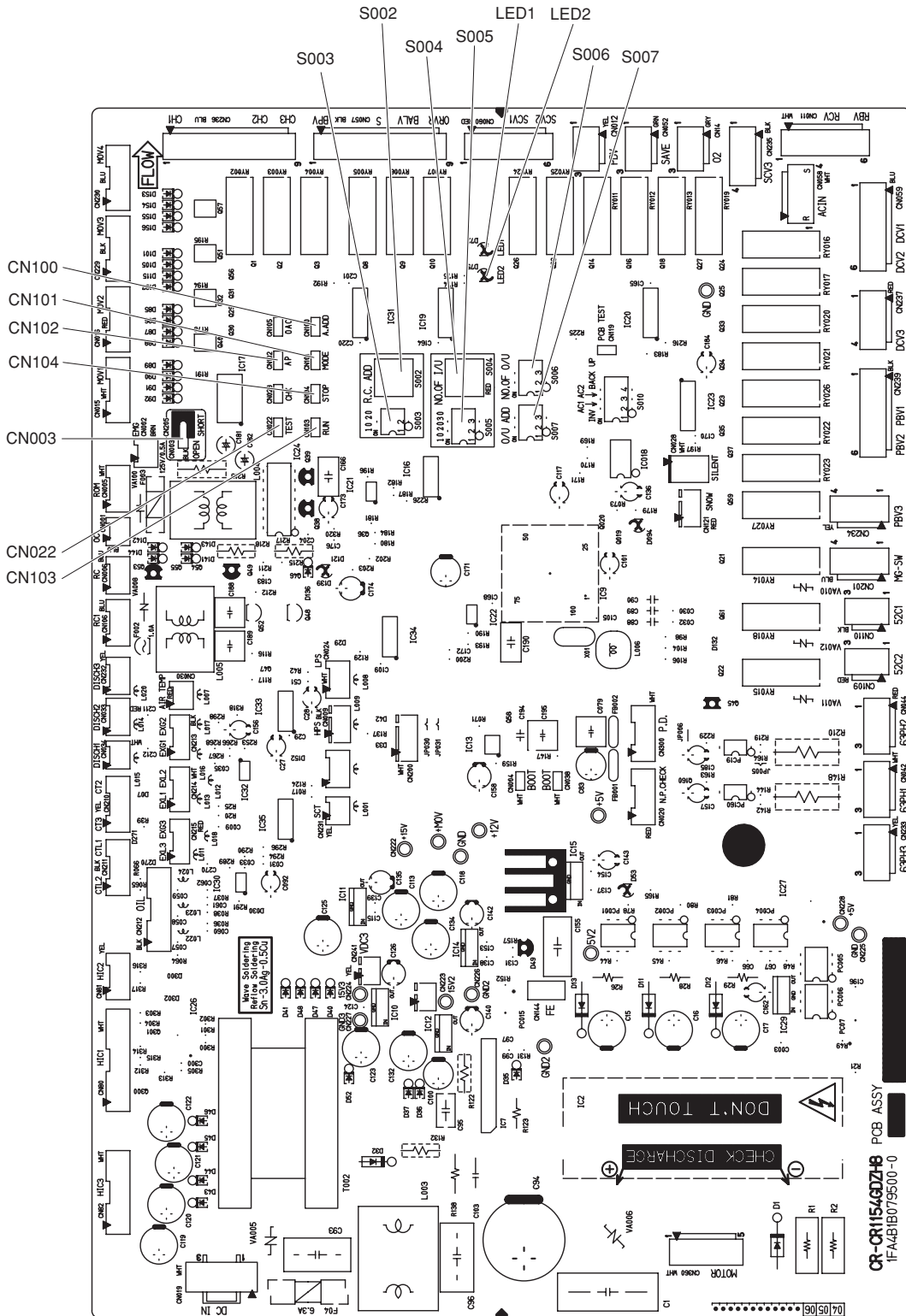
1. Outdoor Unit Control PCB .....	7-2
2. Indoor Unit Control PCB Switches and Functions .....	7-7



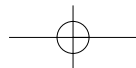


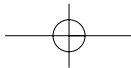
# 1. Outdoor Unit Control PCB

## 7-1. Outdoor Unit Control PCB EFL 120-3R410



7

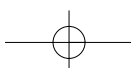




## 1. Outdoor Unit Control PCB

### 7-2. Functions (for EFL 120-3R410)

Automatic address setting (CN100)	<p>2P plug (white): Automatic address setting pin</p> <ul style="list-style-type: none"> <li>Short-circuit this pin for 1 second or longer to automatically set the addresses at the indoor units that are connected to that outdoor unit and are within the same system.</li> <li>The system address is "1" at the time of shipment. Automatic address setting is necessary even for communications lines in a single system where the inter-unit control wiring does not cross to any other systems.</li> <li>While automatic address setting is in progress, the 2 LEDs (LED1, 2: red) on the outdoor unit control PCB blink alternately. (Short-circuiting this pin while automatic address setting is in progress will stop the automatic address setting operation.)</li> </ul>
S002	<p>Rotary switch (10 positions, black): Outdoor system address setting switch</p> <ul style="list-style-type: none"> <li>The setting is "1" at the time of shipment. It is not necessary to change the setting if wiring is connected only to an outdoor unit and indoor units in a single system and the inter-unit control wiring does not cross multiple systems.</li> <li>If wiring links the inter-unit control wiring for multiple systems to the same communications lines, then a different address must be set for each refrigerant tubing system.</li> <li>If wiring links multiple systems, a maximum of 30 systems (up to 64 indoor units) can be connected. This setting can be set up to "39," however control will be for 30 systems even if the setting is set to higher than 30. An alarm will be displayed if system addresses are duplicated. (For details, refer to Table 1.)</li> </ul>
S003	<p>DIP switch (2P, blue): Switches for setting system address 10s digit and 20s digit</p> <ul style="list-style-type: none"> <li>If 10 systems or more are set, the setting is made by a combination of this DIP switch and S002.</li> <li>If 10 - 19 systems are set, set switch 1 (10s digit) to ON.</li> <li>If 20 - 29 systems are set, set switch 2 (20s digit) to ON, and set switch 1 (10s digit) to OFF.</li> <li>If 30 systems are set, set both switch 1 (10s digit) and switch 2 (20s digit) to ON. (For details concerning S002 and S003, refer to Table 1.)</li> </ul>
S004	<p>Rotary switch (10 positions, red): Switch for setting the number of connected indoor units In order to allow the outdoor unit to manage indoor units in the same refrigerant system, set the number of connected indoor units. (For details, refer to Table 2.)</p>
S005	<p>DIP switch (3P, blue): Switches for setting the 10s, 20s, and 30s digit for the number of connected indoor units</p> <ul style="list-style-type: none"> <li>If 10 systems or more are set, the setting is made by a combination of this DIP switch and S004.</li> <li>If 10 - 19 systems are set, set only switch 1 (10s digit) to ON.</li> <li>If 20 - 29 systems are set, set switch 2 (20s digit) to ON, and set switch 1 (10s digit) to OFF.</li> <li>If 30 - 39 systems are set, set only switch 3 (30s digit) to ON. (For details concerning S004 and S005, refer to Table 2.)</li> </ul>
S006	<p>DIP switch (3P, blue): Switch for setting the number of outdoor units</p> <ul style="list-style-type: none"> <li>Turn the switches ON according to the number of outdoor units (1 - 4). (For details, refer to Table 3.)</li> </ul>
S007	<p>DIP switch (3P, blue): Unit No. setting switch</p> <ul style="list-style-type: none"> <li>The setting is "1" at the time of shipment. (For details, refer to Table 4.)</li> </ul>
S010	<p>DIP switch (4P, blue): Backup operation switch</p> <p>If an INV compressor has malfunctioned, turn INV ON and Back Up SW ON to operate the outdoor unit using only the constant-speed compressor.</p> <p>If a constant-speed compressor has malfunctioned, turn AC1 (or AC2) ON and Back Up SW ON to operate the outdoor unit using compressors other than AC1 (or AC2). (Disconnect the wiring from the malfunctioning constant-speed compressor.)</p>



## 1. Outdoor Unit Control PCB

LED1, 2 DO72, DO75	<p>LED (red × 2)</p> <ul style="list-style-type: none"> <li>• LED 1 and 2 blink alternately while automatic address setting is in progress.</li> <li>• Display the alarm contents for alarms which were detected by the outdoor unit.</li> </ul>
D53	<p>LED (red): Power indicator</p> <p>Indicates the DC 5V power on the outdoor unit control PCB.</p>
Run (CN103)	<p>2P plug (white): Start pin</p> <p>Short-circuit this pin and apply a pulse signal to start all indoor units in that refrigerant system.</p>
Stop (CN104)	<p>2P plug (white): Stop pin</p> <p>Short-circuit this pin and apply a pulse signal to stop all indoor units in that refrigerant system.</p>
AP (CN102)	<p>2P plug (white): Vacuuming pin</p> <ul style="list-style-type: none"> <li>• To perform vacuuming of the outdoor unit, short-circuit this pin and then turn the power ON. All solenoid valves turn ON and vacuuming begins smoothly. (Do not perform automatic address setting at this time.)</li> <li>• Release the short-circuit to return the unit to normal status.</li> </ul>
Mode (CN101)	<p>2P plug (white): Indoor unit Heating/Cooling mode change pin</p> <ul style="list-style-type: none"> <li>• When operating the compressors to perform automatic address setting, operation in Heating mode can be normally used. However, short-circuiting this pin performs operation in Cooling mode. (Static signal)</li> <li>• Short-circuiting this pin during ordinary operation changes the mode from Cooling to Heating (if the current mode is Cooling) or from Heating to Cooling (if the current mode is Heating).</li> </ul>
Test (CN022)	<p>2P plug (white)</p> <ul style="list-style-type: none"> <li>• This pin is used to test the PCB at the factory.</li> <li>• When the power is turned ON after this pin has been short-circuited, all output signals will be output in sequence. (Sequential output does not occur if this pin is short-circuited when the power is already ON.) Releasing this pin returns the unit to normal control.</li> </ul>

# 1. Outdoor Unit Control PCB

**Table 1. Setting the System Address [S002: Rotary switch (black), S003: 2P DIP (blue)] (for CR-CR1154GDXH8)**

	Outdoor system address No.	S002 setting (system address switch)	S003 setting	
			1P (10s digit)	2P (20s digit)
<b>1 refrigerant system only</b>	1	0	OFF	OFF
<b>Link wiring</b>	1	1	OFF	OFF
	2	2	OFF	OFF
	3	3	OFF	OFF
	4	4	OFF	OFF
	5	5	OFF	OFF
	6	6	OFF	OFF
	7	7	OFF	OFF
	8	8	OFF	OFF
	9	9	OFF	OFF
	10	0	ON	OFF
	11	1	ON	OFF
	12	2	ON	OFF
	13	3	ON	OFF
	14	4	ON	OFF
	15	5	ON	OFF
	16	6	ON	OFF
	17	7	ON	OFF
	18	8	ON	OFF
	19	9	ON	OFF
	20	0	OFF	ON
	21	1	OFF	ON
	22	2	OFF	ON
	23	3	OFF	ON
	24	4	OFF	ON
	25	5	OFF	ON
	26	6	OFF	ON
	27	7	OFF	ON
	28	8	OFF	ON
	29	9	OFF	ON
	30	0	ON	ON

**Table 2. Setting the Number of Indoor Units [S004: Rotary switch (red), S005: 2P DIP (blue)]**

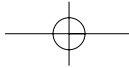
Number of Indoor Units	S004 Setting	S005 Setting		
		1	2	3
1	1	OFF	OFF	OFF
2	2	OFF	OFF	OFF
3	3	OFF	OFF	OFF
9	9	OFF	OFF	OFF
10	0	ON	OFF	OFF
11	1	ON	OFF	OFF
19	9	ON	OFF	OFF
20	0	ON	OFF	OFF
21	1	OFF	ON	OFF
29	9	OFF	ON	OFF
30	0	OFF	OFF	ON
31	1	OFF	OFF	ON
39	9	OFF	OFF	ON
40	0	ON	ON	ON

**Table 3. Setting the Number of Outdoor Units [S006: DIP switch (blue)]**

Number of Outdoor Units	S006 Setting		
	1	2	3
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON

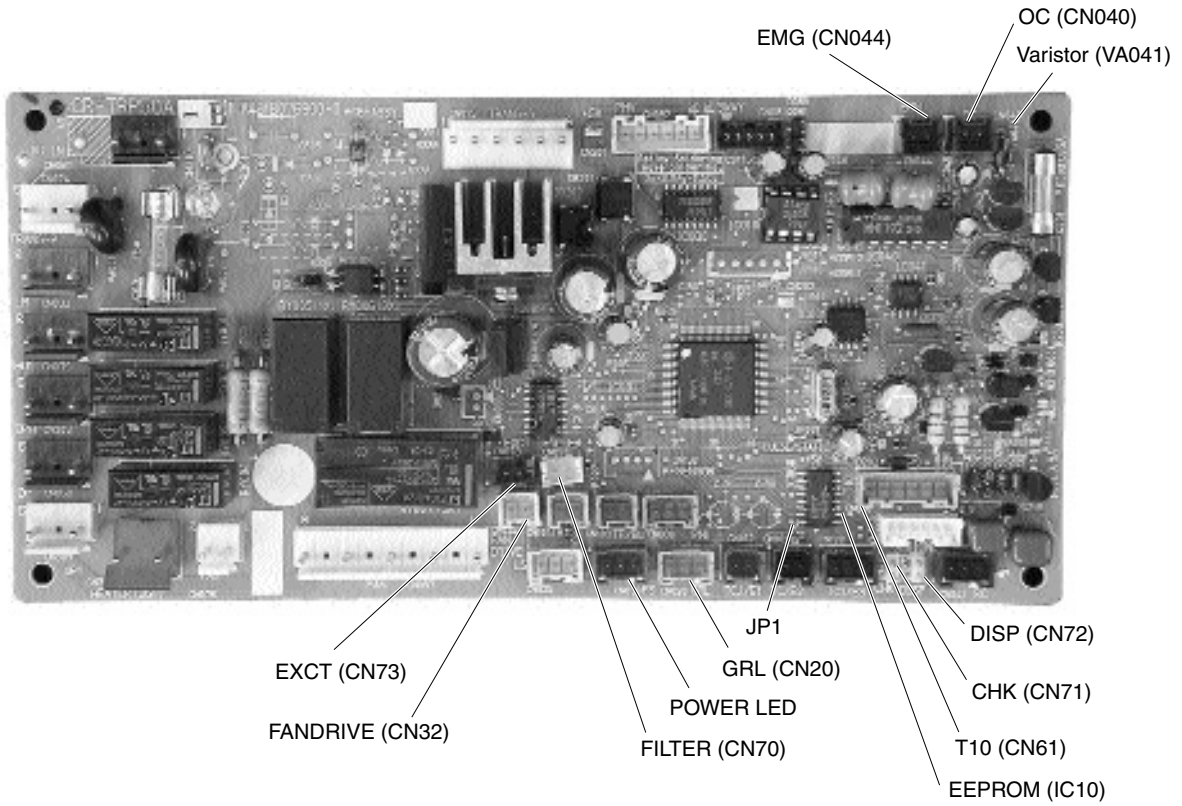
**Table 4. Setting the Unit No.**

Unit No.	S007 Setting		
	1	2	3
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON

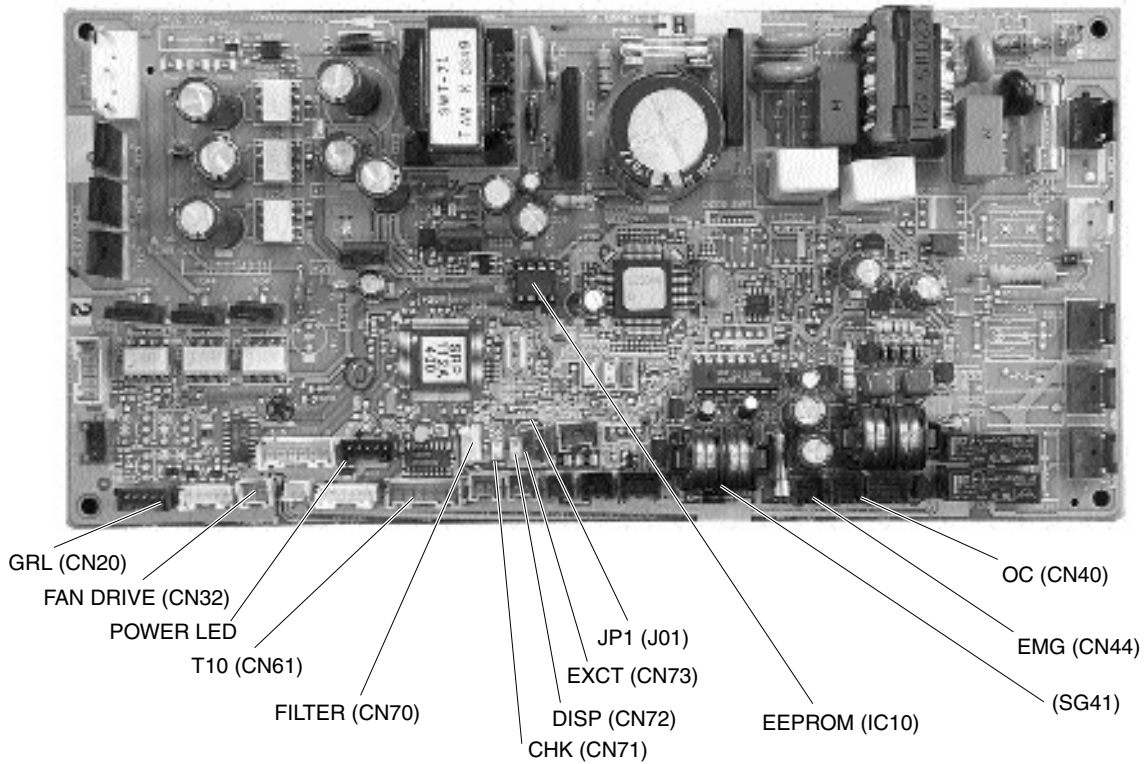


# 1. Outdoor Unit Control PCB

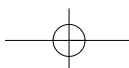
## ■ For AC Fan Motor (CR-TRP50A-B)



## ■ For DC Fan Motor (CR-SRP50A-B)



7

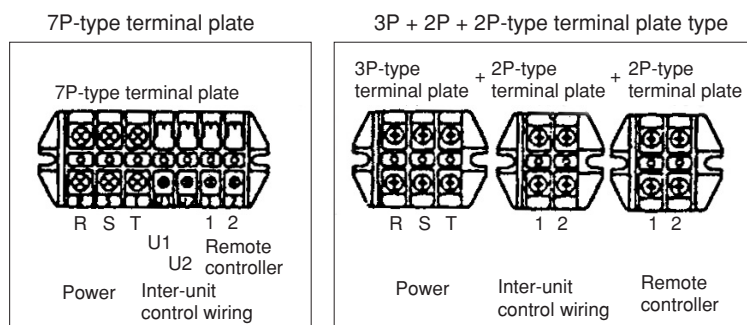


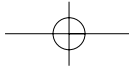
## 2. Indoor Unit Control PCB Switches and Functions

### Indoor Unit Control PCB Switches and Functions

#### Indoor unit control PCB

- T10:** **6P plug (yellow):** Used for remote control. (Refer to the remote control section.)  
(CN61) Control items: (1) Start/stop input (2) Remote controller prohibit input  
(3) Start signal output (4) Alarm signal output
- EXCT:** **2P plug (red):** Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.  
(CN73)
- DISP:** **2P plug (white):** Short-circuiting this plug allows the unit to be operated by the remote controller, even if it is not connected to an outdoor unit.  
(CN72) (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)
- CHK:** **2P plug (white):** Test pin. Short-circuiting this pin allows the indoor FM (H fan speed), drain pump, flap motor (F1 position), and electronic expansion valve full-open position to be checked. However this function turns OFF if the indoor unit protection mechanism is activated. The unit can be operated even if the remote controller and outdoor unit are not connected. However even if the remote controller cannot be connected, it cannot be used to operate the unit. This function can be used for short-term tests.
- JP1:** **Jumper wire:** Allows selection of the T10 terminal start/stop signal. (Refer to the remote control section.)  
(J01) Status at shipment: Pulse signal  
Jumper wire cut: Static signal (continuous signal)
- FAN DRIVE** **2P plug (white):** This terminal sends a signal to the ventilation fan when the FAN button on the wired remote controller is used to operate a commercially-available ventilation fan. (Refer to the remote control section.)  
Use a ventilation fan which can accept no-voltage A contact as the external input signal.
- FILTER:** **2P (white):** This terminal is used to connect contact input from the differential pressure switch which detects filter clogging. When the contacts turn ON, "FILTER" is displayed on the wired remote controller.  
(CN70)
- Power LED:** **LED (red):** Illuminates when power is supplied. Blinks when there is a failure in the EEPROM (IC10: nonvolatile memory).
- EEPROM:** **Nonvolatile memory:** Memory which stores the unit type data and other information. When the PCB is replaced, remove the EEPROM from the old PCB and install it onto the new PCB. If an IC failure occurs, replace with a new IC which was provided with the service PCB, and set the necessary information from the wired remote controller. (For the procedure, refer to the servicing technical materials.)  
(IC10)
- GRL:** ● For AC fan motor (CR-TRP50A-B: 3P (yellow))  
(CN20) ● For DC fan motor (CR-SRP50A-B: 5P (blue))
- The indoor unit power terminal plate may be a 7P type or may be a 3P + 2P + 2P type. (Refer to the figure at right.) The basic wiring diagram shows the 7P-type terminal plate. Therefore the terminal plate may differ from the illustrations.



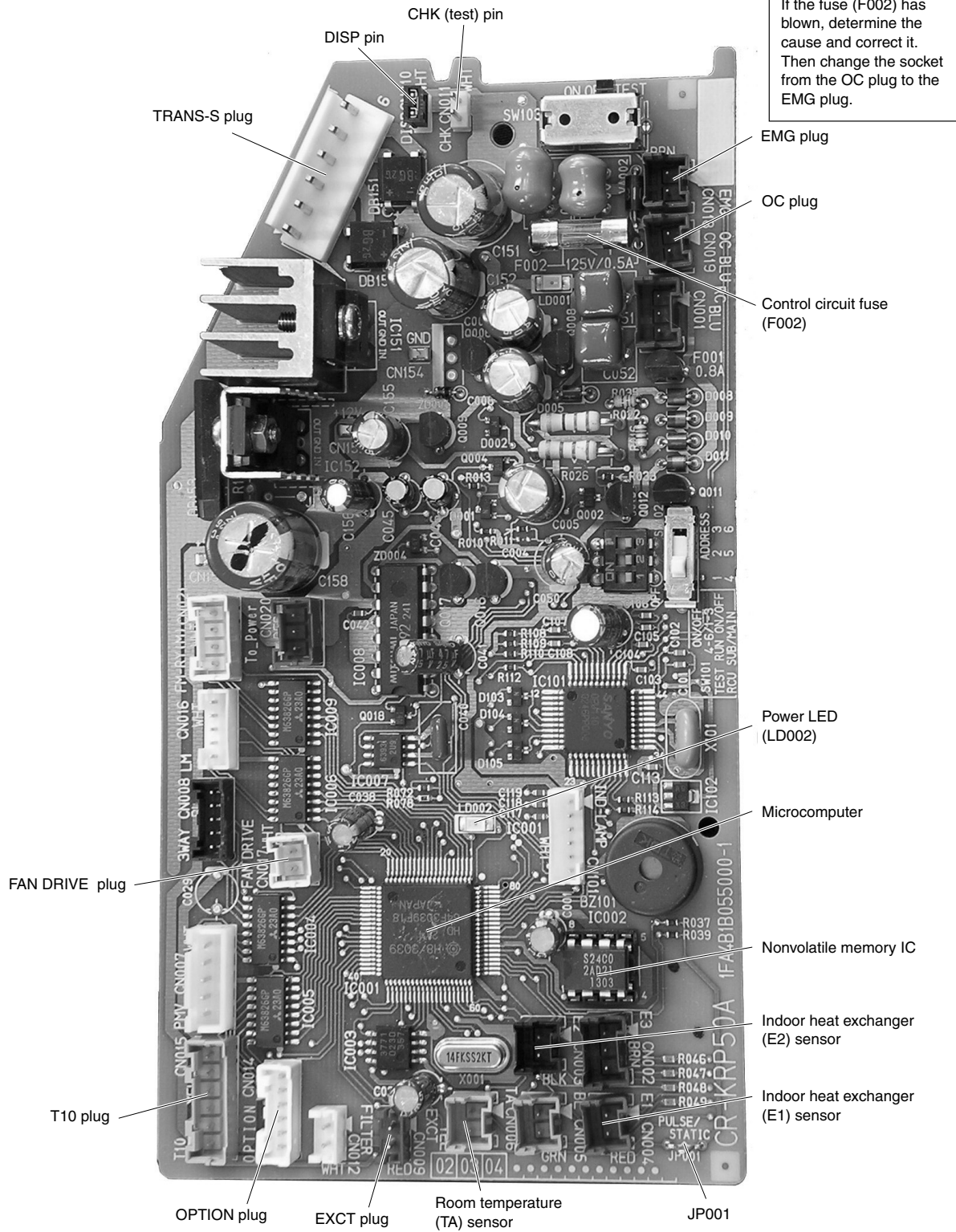


## 2. Indoor Unit Control PCB Switches and Functions

### Explanation of Functions

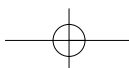
#### Indoor Unit Control PCB

#### 7-3. CR1 (for ST-NWFL 7, ST-NWFL 18) (Wall Mounted)



If the fuse (F002) has blown, determine the cause and correct it. Then change the socket from the OC plug to the EMG plug.

7

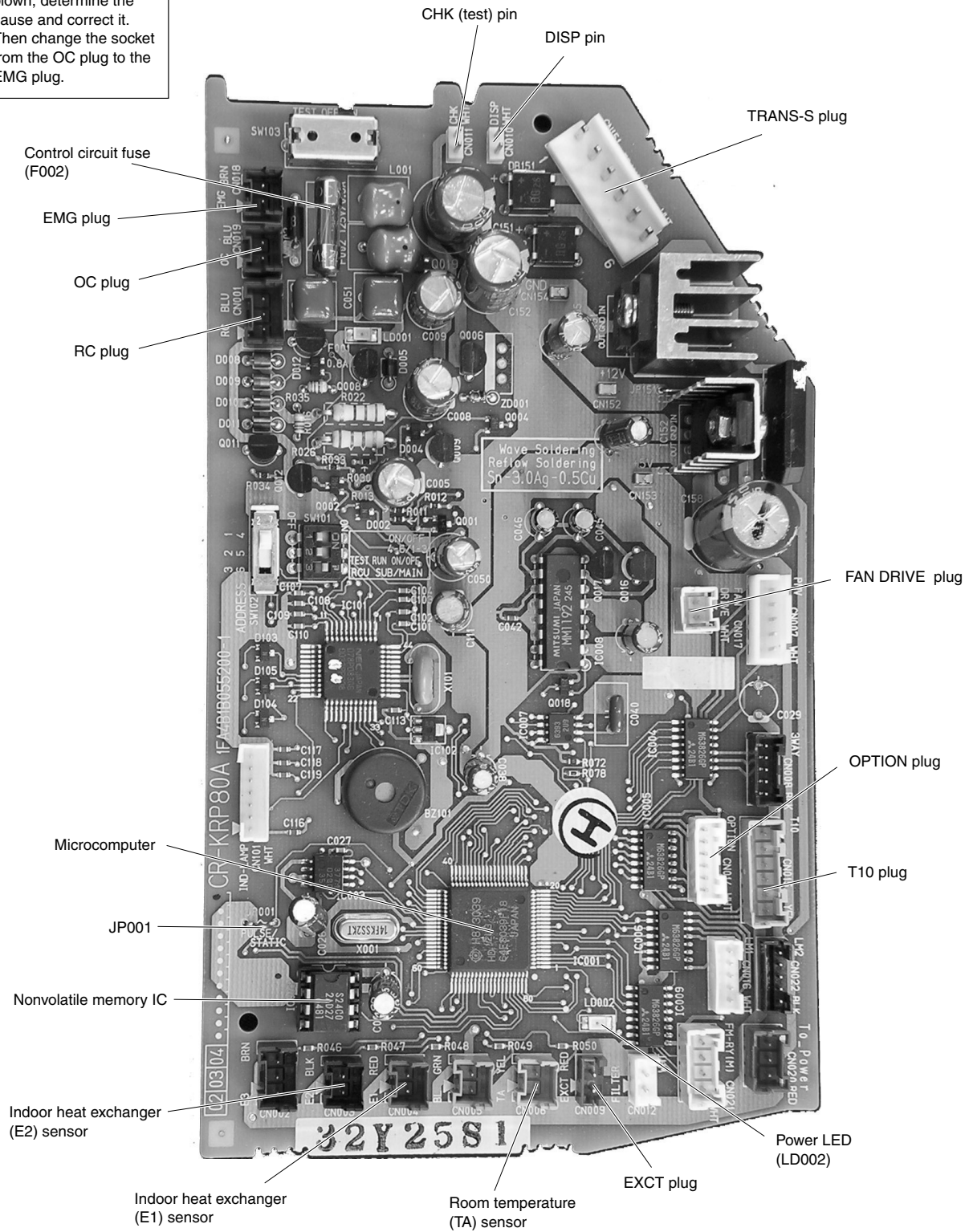


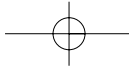


## 2. Indoor Unit Control PCB Switches and Functions

### 7-4. CR1 (for ST-NWFL 24) (Wall Mounted)

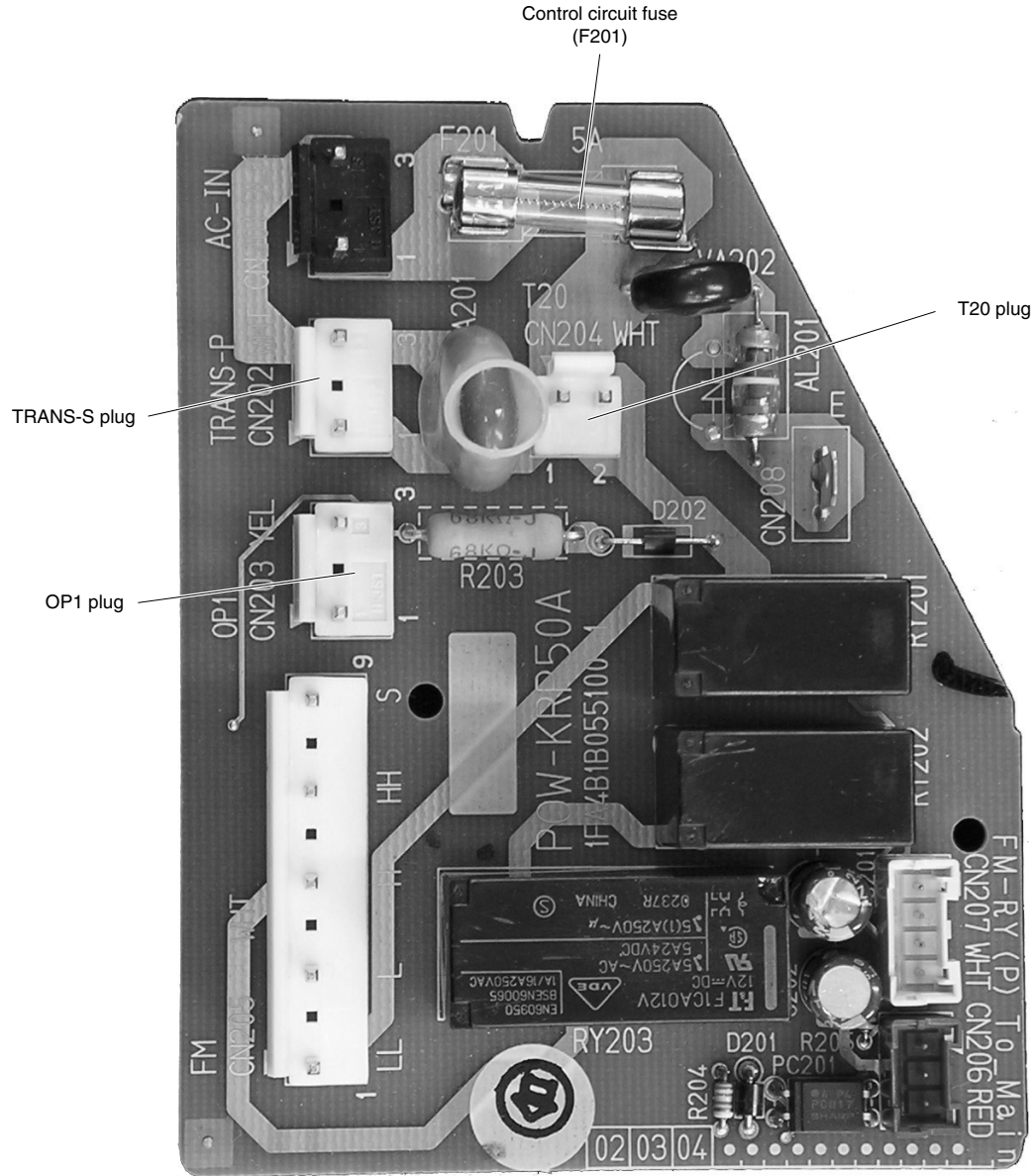
If the fuse (F002) has blown, determine the cause and correct it. Then change the socket from the OC plug to the EMG plug.



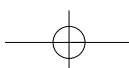


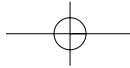
## 2. Indoor Unit Control PCB Switches and Functions

### 7-5. CR2 (for ST-NWFL 7, ST-NWFL 24) (Wall Mounted)



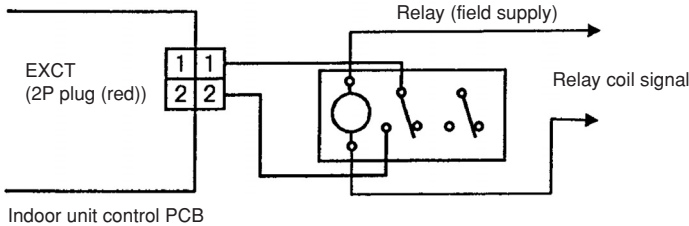
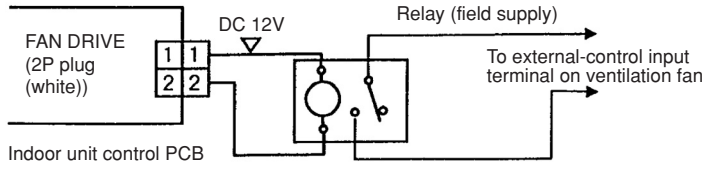
7

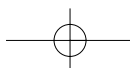


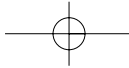


## 2. Indoor Unit Control PCB Switches and Functions

### 7-6. Explanation of Functions

<p>T10 (CN105) (For remote control)</p>	<p>6P flag (yellow): Used for remote control. Control items: ① Start/stop input ② Remote controller prohibit input ③ Start signal output ④ Alarm signal output</p>
<p>EXCT (CN009)</p>	<p>2P plug (red): Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.</p> <p>● Examples of wiring</p> <p>* Lead wire with 2P plug (special-order part: WIRE K/854 05280 75300)</p>  <p>Note: The length of the wiring from the indoor unit control PCB to the relay must be 2 m or less.</p>
<p>DISP (CN010)</p>	<p>2P plug (white): Short-circuiting this plug allows the unit to be operated by the remote controller, even if it is not connected to an outdoor unit. (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)</p>
<p>CHK (CN011)</p>	<p>2P plug (white): Test pin. Short circuiting this plug allows the operation of the indoor fan motor (high) and flap motor (F1 position) to be checked.</p> <p>However this test operation stops if the indoor unit protection mechanism is activated. The unit can be operated even if the remote controller and outdoor unit are not connected. However even if the remote controller cannot be connected, it cannot be used to operate the unit. This function can be used for short-term tests.</p>
<p>JP001</p>	<p>Jumper wire: Allows selection of the T10 terminal start/stop signal. Status at shipment: Pulse signal Jumper wire cut: Static signal (continuous signal)</p>
<p>FAN DRIVE (CN017)</p>	<p>2P plug (white): This terminal sends a signal to the ventilation fan when the FAN button on the wired remote controller is used to operate a commercially-available ventilation fan. Use a ventilation fan that can accept no-voltage A contact as the external input signal.</p> <p>● Examples of wiring</p> <p>* Lead wire with 2P plug (special-order part: WIRE K/854 05280 50600)</p>  <p>Note: The length of the wiring from the indoor unit control PCB to the relay must be 2 m or less.</p>





## 2. Indoor Unit Control PCB Switches and Functions

