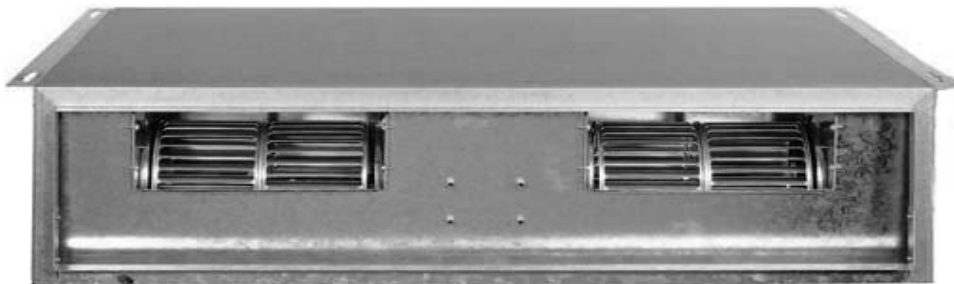




Service Manual

CD Series

Indoor Units	Outdoor Units
CD 60	OU12-60T



REFRIGERANT

R410A

COOLING ONLY

HEAT PUMP

OCTOBER 2007

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original 0 October 2007

Total number of pages in this publication is 93 consisting of the following:

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- Zero in this column indicates an original page.

*Due to constant improvements please note that the data on this service manual can be modified with out notice.

**Photos are not contractual.

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1.4 Filtration

- Mesh filter with easy access.

1.5 Control

The microprocessor indoor controller, and an infrared remote control, supplied as standard, provides complete operating function and programming. For further details, please refer to the Operation Manual, Appendix A.

1.6 Outdoor Unit

The **CD** outdoor units can be installed as floor or wall mounted units by using a wall-supporting bracket. The galvanized metal sheets allowing long life resistance. All outdoor units are pre-charged. For further information, please refer to the Product Data Sheet, Chapter 2.

It includes:

- Compressor mounted in a soundproofed compartment :

Scroll – for CD 60

- Improved 3- blades axial fans for noise reduction.
- Outdoor coil with hydrophilic fins for RC units optimised for operation with R 410A refrigerant.
- Fan grill air outlet.
- Service valves” flare” type connection.
- Service ports for high/ low pressure measurement.
- Interconnecting wiring terminal block with fast and easy TYPHOON PCB connections.

1.7 Tubing Connections

Flare type-interconnecting tubing to be produced on site.
For further details, please refer to the Installation Manual, Appendix A

1.8 Accessories

ASK (All Season Kit):

For low ambient working conditions in cooling, an ASK can be installed inside the outdoor unit. This kit allows cooling operation down to outdoor temperature of -5 °C by gradually controlling the outdoor fan speed motor.

RCW Wall Mounted Remote Control

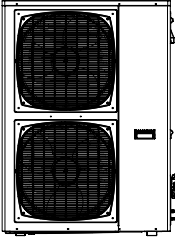
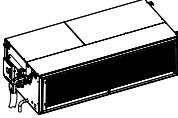

The RCW remote control is mounted on the wall, and controls the unit either as an infrared remote control or as a wired controller. The wired controller can control up to 10 Indoor units with the same program settings and adjustments.

For further details, please refer to Optional Accessories, Chapter 18.

1.9 Inbox Documentation

Each unit includes its own installation and operation manuals.

1.10 Matching Table

	OUTDOOR UNITS		INDOOR UNITS
			
	MODEL	REFR^{''}	CD 60
OU12-60T	R410A		

2. PRODUCT DATA SHEET

2.1 CD60 / OU12-60T R410A

Model Indoor Unit			CD 60			
Model Outdoor Unit			OU12-60T R410A			
Installation method			DUCTED			
Characteristics		Units	Cooling	Heating		
Capacity ⁽¹⁾		Btu/hr	56,000	61,750		
		kW	16.40	18.10		
Power input ⁽¹⁾		kW	5.52	5.17		
COP ⁽¹⁾		W/W	2.97	3.50		
Energy efficiency class			C	B		
Power supply		V/ Ph /Hz	400/3/50			
Rated current		A	3x12.0	3x11.0		
Starting current		A	74			
Circuit breaker rating		A	3x20			
INDOOR	Fan type & quantity		Centrifugal & 2			
	Fan speeds	H/ M/ L	RPM	1140	1060 900	
	Air flow ⁽²⁾	H/ M/ L	m ³ /hr	3380	3150 2510	
	External static pressure		Nom/ Min-Max	Pa 120 / 120 -200		
	Sound power level ⁽³⁾	H/ M/ L	dB(A)	73	71 67	
	Sound pressure level ⁽⁴⁾	H/ M/ L	dB(A)	58	55 50	
	Moisture removal		L/hr	4.6		
	Condensate drain tube I.D		mm	19		
	Dimensions	W/ H / D	mm	1350	400 640	
	Weight		kg	75		
	Package dimensions	W/ H / D	mm	1510	440 785	
	Packaged weight		kg	82		
	Units per pallet		Units	5		
Stacking height		Units	5			
OUTDOOR	Refrigerant control		Capillary			
	Compressor type, model		Scroll			
	Fan type & quantity		Axial & 2			
	Fan speeds	H / L	RPM	860	730	
	Air flow	H / L	m ³ /hr	5500	4650	
	Sound power level	H / L	dB(A)	70	64	
	Sound pressure level ⁽⁴⁾	H / L	dB(A)	62	56	
	Dimensions	W/ H / D	mm	900	1255 340	
	Weight		kg	110		
	Package dimensions	W/ H / D	mm	985	1395 435	
	Packaged weight		kg	120		
	Units per pallet		Units	1		
	Stacking height		Units	1		
	Refrigerant type		R410A			
	Refrigerant chargeless distance		kg/m	3.85 / 15		
Additional charge per 1 meter		g/m	45			
Connections between units	Liquid line	In.	1/2			
	Suction line	In.	7/8			
	Max. tubing length	m.	50			
	Max. height difference	m.	25			
Operation control type		LCD Remote Control				
Heating elements		kW				
Others		Crankcase heater (70W), 3 Phase Protector				

- (1) Rating conditions in accordance to ISO 5151 and ISO 13253 (for ducted units).
- (2) Airflow in ducted units; at nominal external static pressure.
- (3) Sound power in ducted units is measured at air discharge.
- (4) Sound pressure level measured at 1-meter distance from unit.

3. RATING CONDITIONS

Standard conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN 14511.

Cooling:

Indoor: 27°C DB 19°C WB

Outdoor: 35°C DB

Heating:

Indoor: 20°C DB

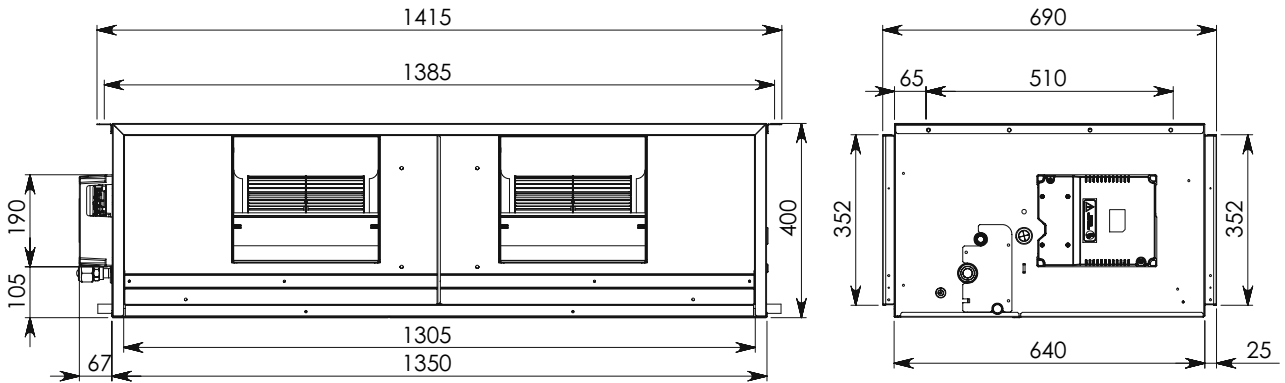
Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

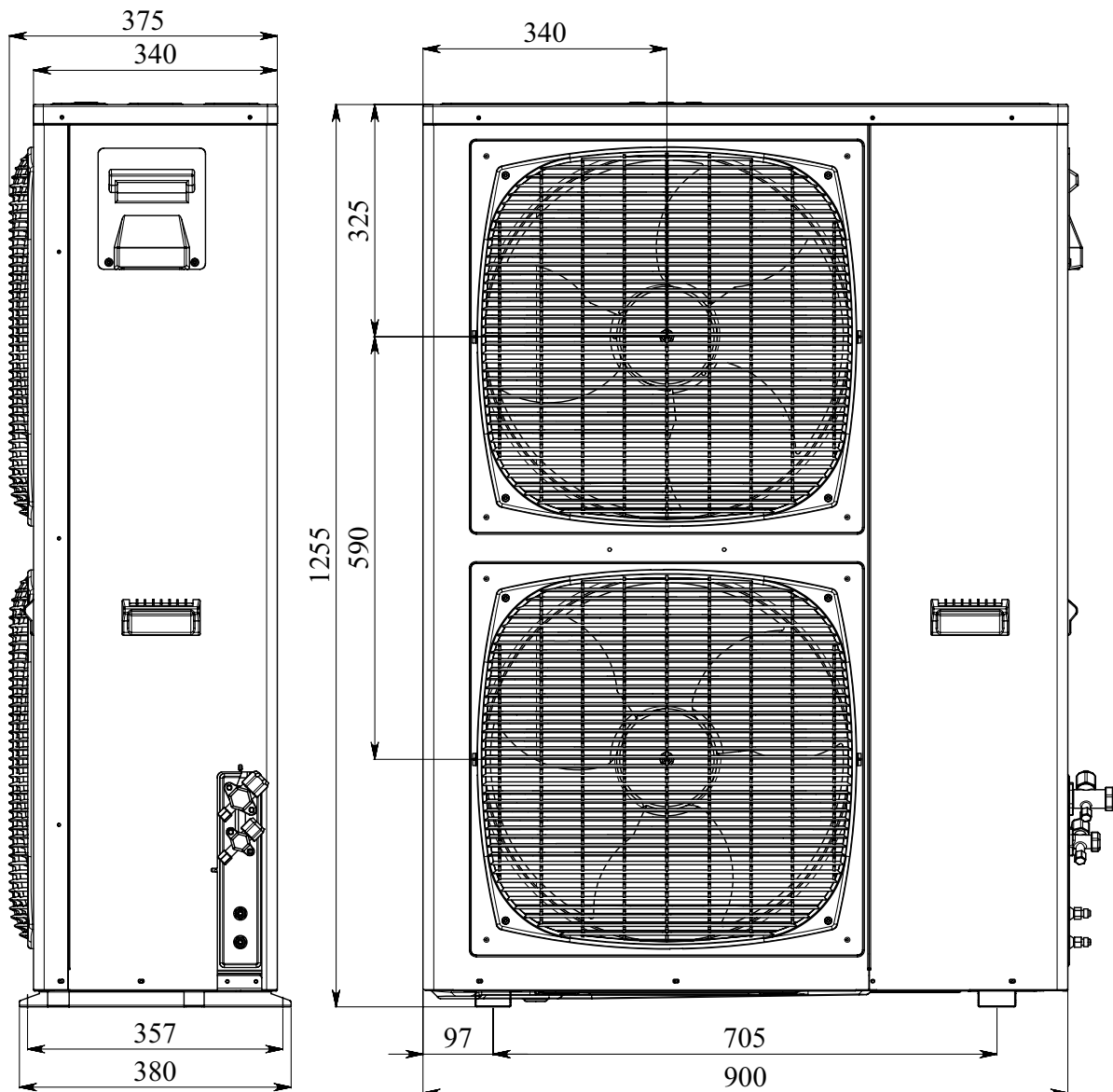
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	21°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	20°C DB	-9°C DB -10°C WB
Voltage	1PH	198 – 264V	
	3PH	360 – 440 V	

4. OUTLINE DIMENSIONS

4.1 Indoor Unit: CD60 R410A



4.2 Outdoor Unit: OU12-60T R410A



5. PERFORMANCE DATA & PRESSURE CURVES

5.1 CD 60 / OU12-60T R410A

5.1.1 Cooling Capacity (kW)

Entering Air DB OD Coil(°C)	Data	Entering Air WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15	TC	17.29	17.90	18.33	18.76	19.05
	SC	12.87	13.42	13.94	14.29	14.55
	PI	3.91	3.92	3.93	3.94	3.96
20	TC	16.72	17.63	18.18	18.61	19.01
	SC	12.61	13.30	13.86	14.25	14.51
	PI	4.25	4.26	4.28	4.30	4.31
25	TC	15.82	17.08	17.96	18.51	18.96
	SC	12.29	13.04	13.75	14.15	14.41
	PI	4.59	4.62	4.66	4.69	4.72
30	TC	14.80	16.11	17.41	18.03	18.56
	SC	11.90	12.65	13.45	13.84	14.11
	PI	4.95	5.03	5.07	5.11	5.16
35	TC	13.70	14.87	16.40	17.22	18.04
	SC	11.32	12.13	13.14	13.52	13.78
	PI	5.34	5.43	5.52	5.56	5.59
40	TC	12.46	13.56	14.80	16.18	17.01
	SC	10.67	11.48	12.43	12.82	13.09
	PI	5.76	5.85	5.95	6.03	6.08
46	TC	10.81	11.82	13.00	14.36	15.47
	SC	9.83	10.53	11.33	11.73	11.99
	PI	6.30	6.39	6.54	6.63	6.70

LEGEND

- TC – Total Cooling Capacity, kW
- SC – Sensible Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, refer to Optional Accessories (Chapter 16).

5.1.2 Heating

ENTERING WB OD COIL(°C)	ENTERING AIR DB ID COIL(°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	9.50	4.14	9.14	4.40	8.78	4.63
-7	10.23	4.24	9.86	4.47	9.50	4.72
-2	10.86	4.29	10.50	4.55	10.14	4.81
2	13.21	4.50	12.67	4.78	12.13	5.07
6	18.64	4.83	18.10	5.17	17.47	5.49
10	20.27	5.10	19.73	5.45	19.19	5.83
15	21.90	5.33	21.36	5.74	20.82	6.10
20	23.08	5.48	22.53	5.95	21.90	6.41

LEGEND

- TH – Total Heating Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

5.2 Capacity Correction Factor Due to Tubing Length

5.2.1 Cooling

TOTAL TUBING LENGTH (One Way)								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.01	1	0.97	0.96	0.95	0.94	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

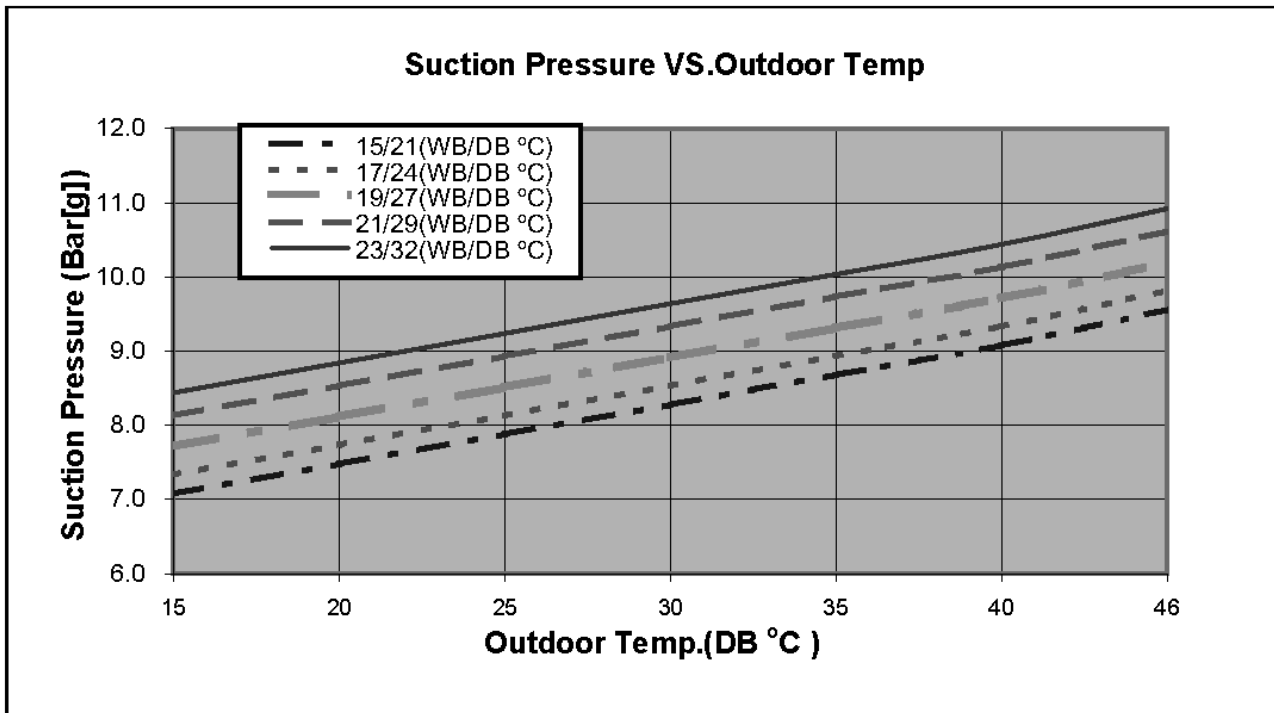
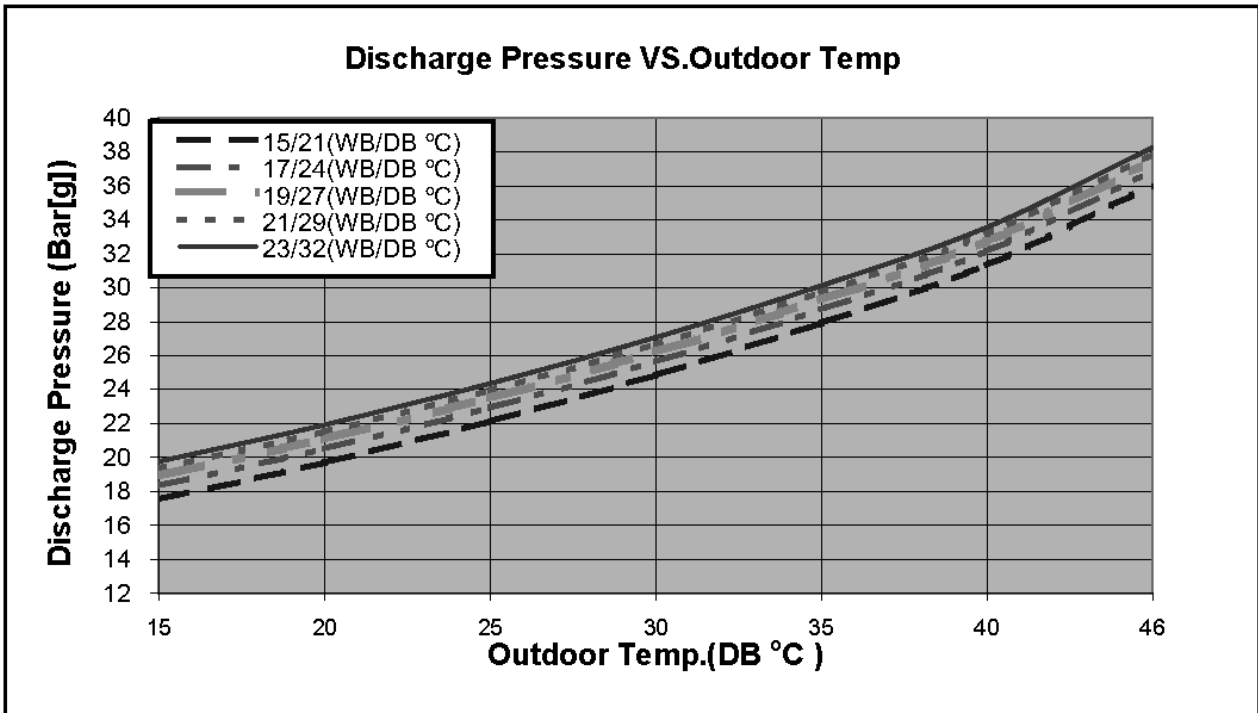
5.2.2 Heating

TOTAL TUBING LENGTH (One Way)								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.02	1	0.98	0.97	0.95	0.93	---	---	---

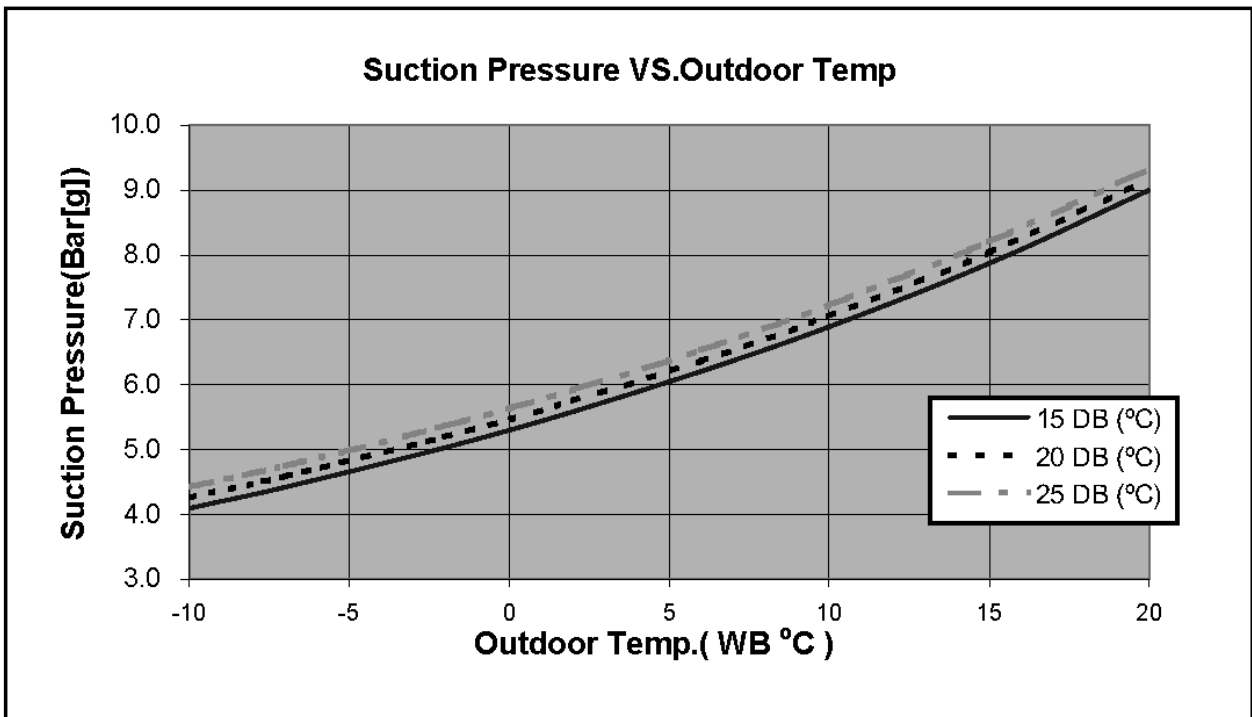
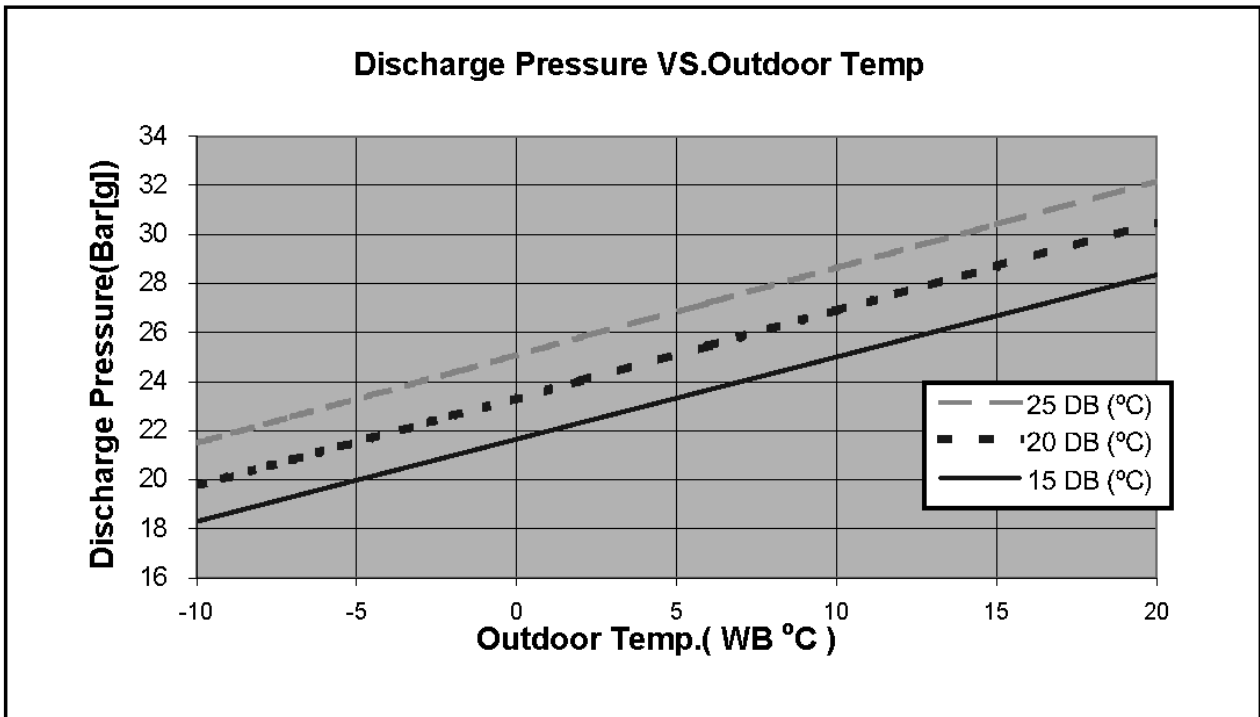
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.3 Pressure Curves

5.3.1 Cooling

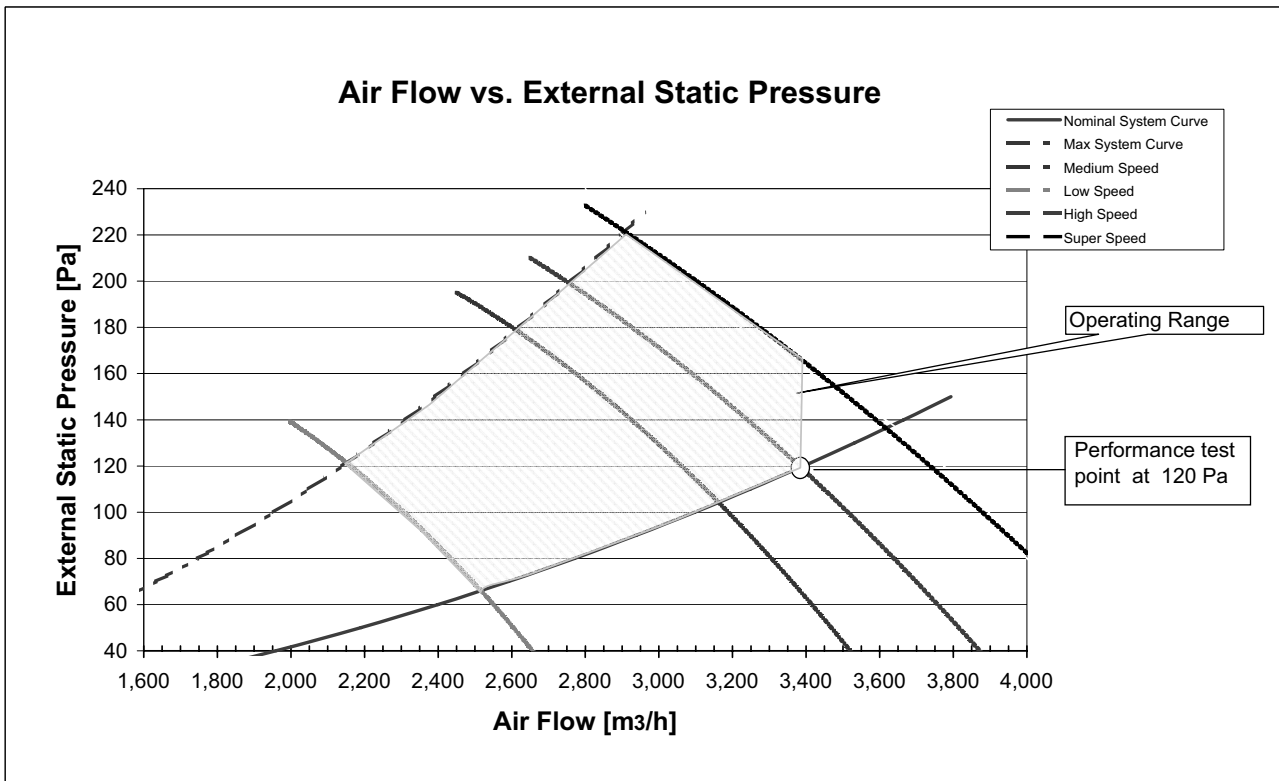


5.3.2 Heating



6. AIRFLOW CURVES

6.1 Model: CD 60



7. SOUND LEVEL CHARACTERISTICS

7.1 Sound Pressure Level

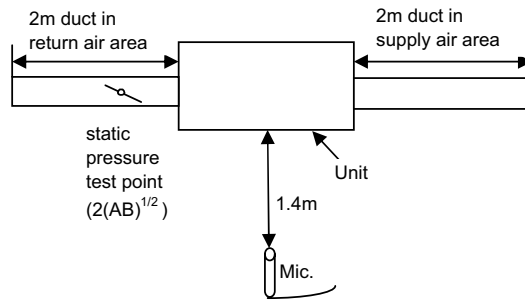
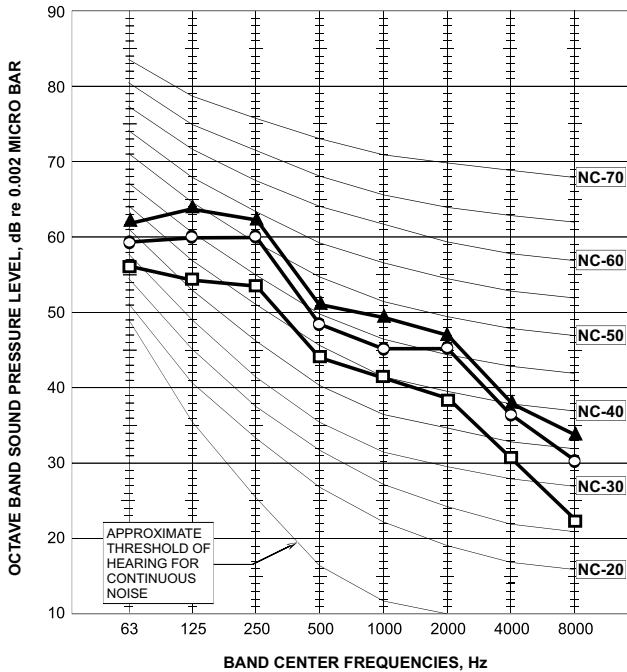


Figure 1

7.2 Sound Pressure Level Spectrum (Measured as Figure 1)

CD 60



FAN SPEED	LINE
HI	—▲—
ME	—○—
LO	—□—

7.3 Outdoor Units

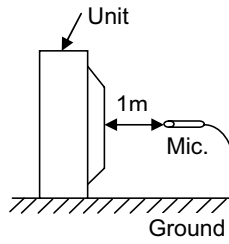
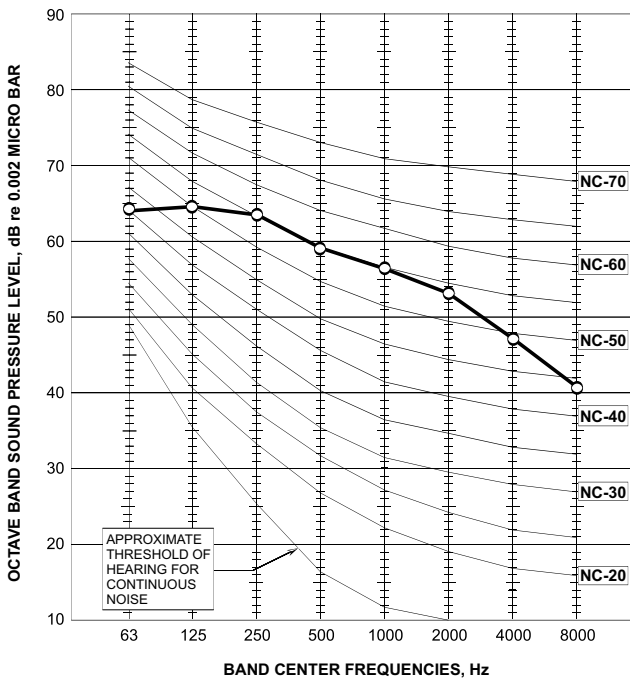


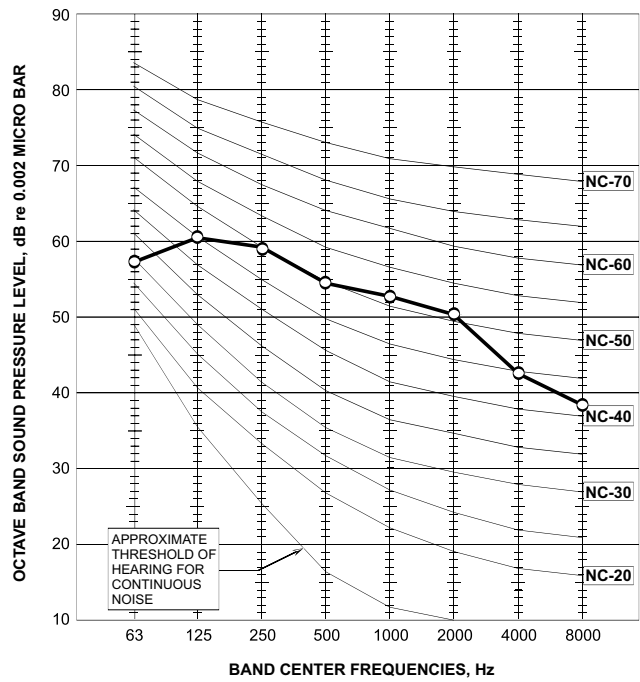
Figure 2

7.4 Sound Pressure Level Spectrum (Measured as Figure 2)

OU12-60T Cooling



OU12-60T Heating



FAN SPEED	LINE
HI	—▲—
ME	—○—
LO	—□—

8. ELECTRICAL DATA

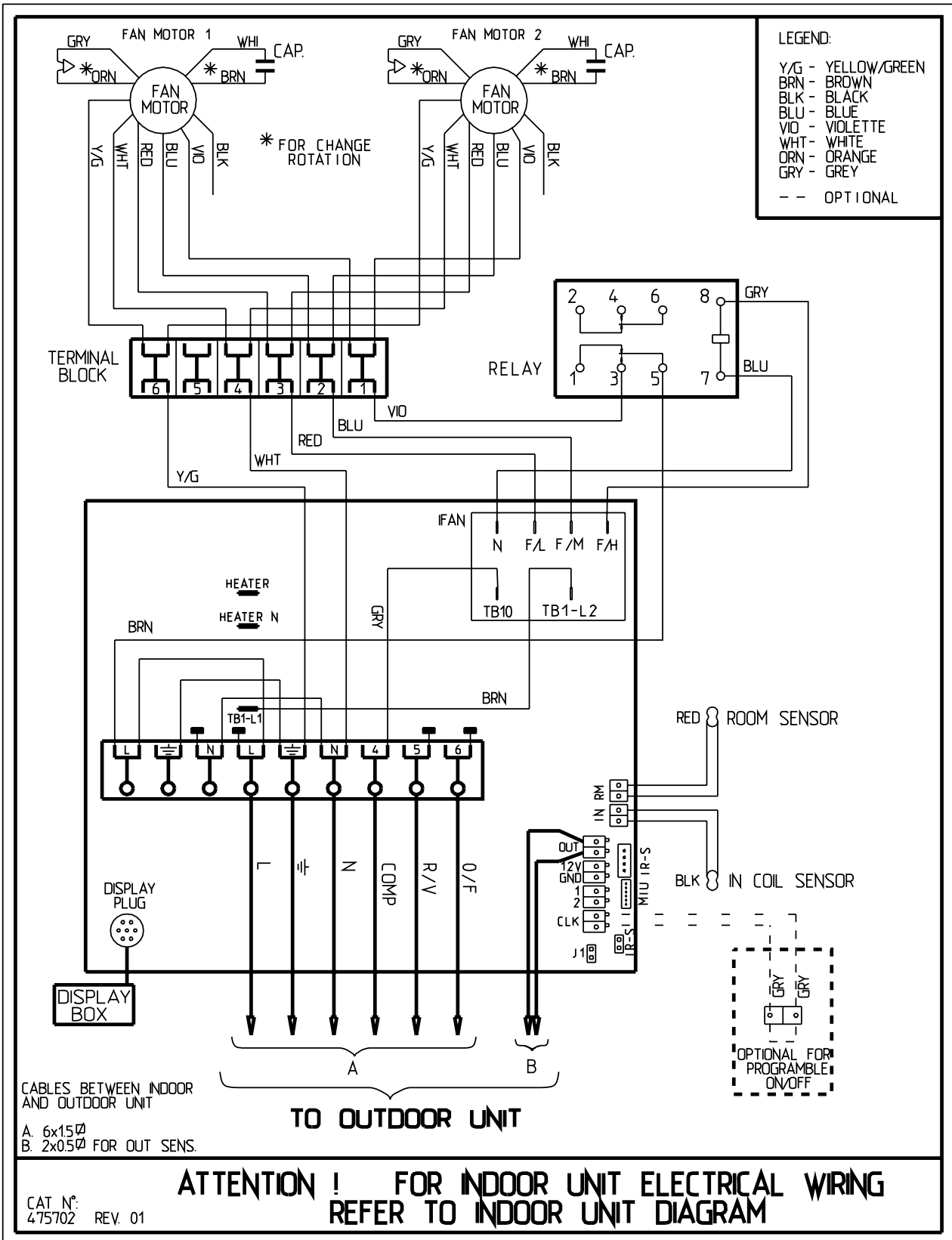
8.1 Three Phase Units

MODEL	CD 60
Power Supply	To Outdoor
	3PH – 400V – 50 Hz
Max Current, A	16.0
Circuit Breaker	3 X 20
Power Supply Wiring No. X Cross Section mm ²	5 X 2.5 mm ²
Interconnecting Cable RC Model No. X Cross Section mm ²	6 X 1.5 mm ² + 2 X 0.5 mm ² (OCT Sensor)
Interconnecting Cable ST Model No. X Cross Section mm ²	5 X 1.5 mm ² + 2 X 0.5 mm ² (OCT Sensor)

NOTE: Power wiring cord should comply with local laws and electrical regulations requirements.

9. WIRING DIAGRAMS

9.1 Indoor Unit: CD 60



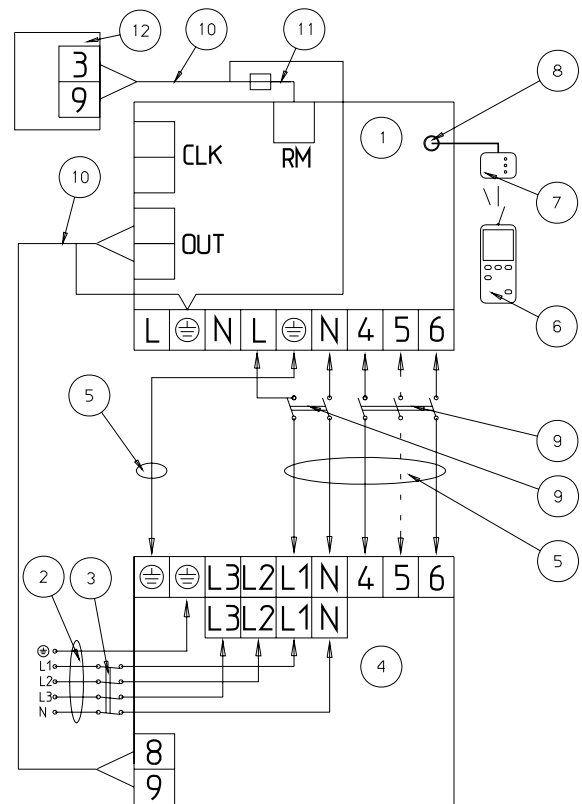
10. ELECTRICAL CONNECTIONS

10.1 CD 60 3PH

- 1. Indoor Unit
- 2. Power Supply Cable
- 3. Main Power Breaker
- 4. Outdoor Unit
- 5. Interconnecting Cable (6x1.5mm²)
- 6. Wireless Remote Control
- 7. Display Unit
- 8. Display Connector
- 9. Power Breaker* (by installer)
- 10. Control Cable**
- 11. Sensor Wire with Connector
- 12. Room Temperature Sensor

* The power breaker must be of type that disconnects all poles with 3 mm contact opening.

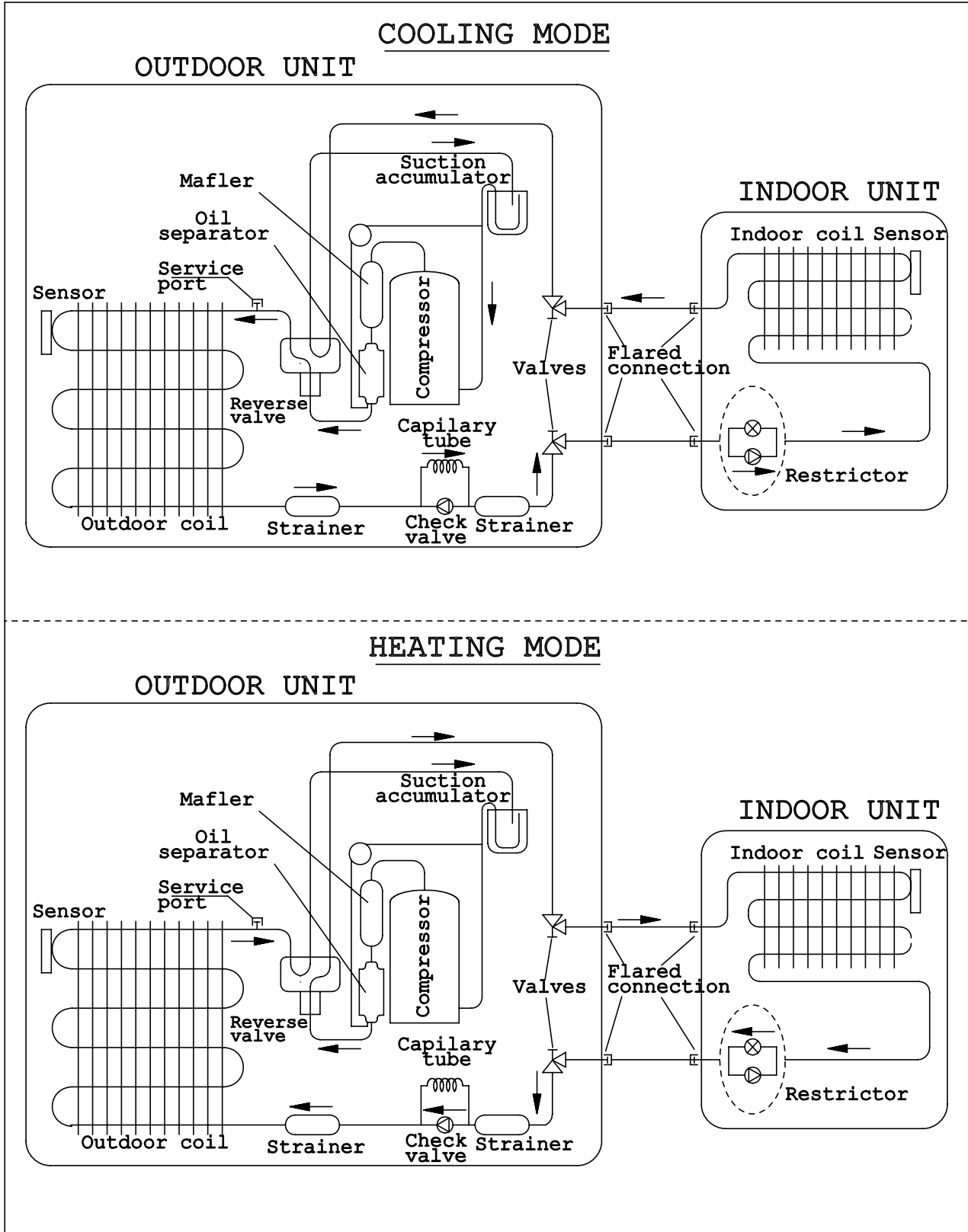
** Use shielded cable and connect the shield to earth point on Indoor Unit only.



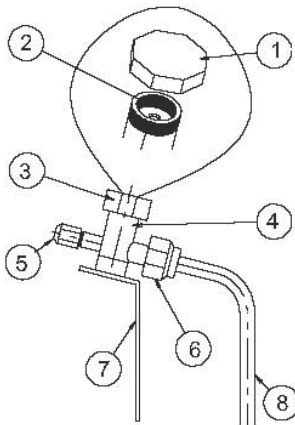
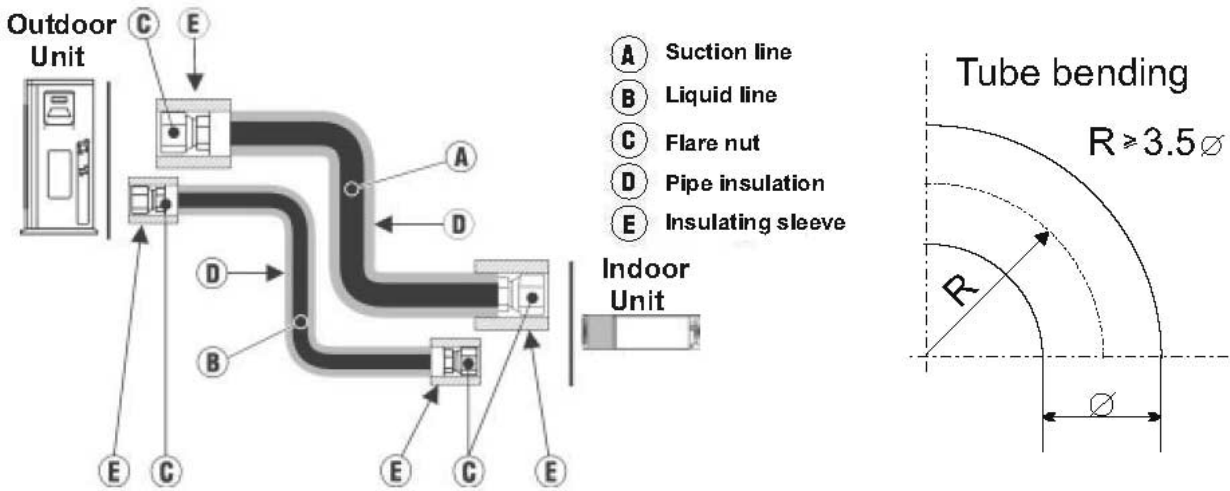
11. REFRIGERATION DIAGRAMS

11.1 Heat Pump Models

11.1.1 CD 60



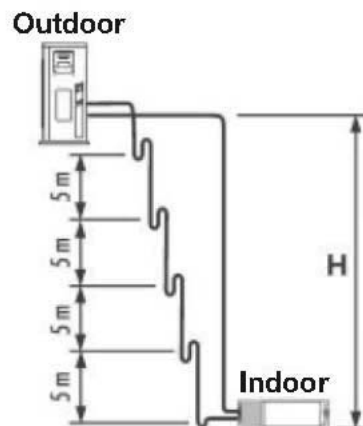
12. TUBING CONNECTIONS



TUBE (Inch)	1/4"	3/8"	1/2"	5/8"	3/4"
TORQUE (Nm)					
Flare Nuts	15-18	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

When the outdoor unit is installed above the indoor unit an oil trap is required every 5m along the suction line at the lowest point of the riser. In case the indoor unit is installed above the outdoor, no trap is required.



13. CONTROL SYSTEM

13.1 Abbreviations

AC	- Alternate Current
A/C	- Air-Conditioner
ANY	- ON or OFF status
CLOCK	- ON/OFF Operation Input, (dry contact)
COMP	- Compressor
CPU	- Central Processing Unit
CTV	- Compensation Temperature Value
ELUM	- Extended Louver Upward Movement (Software Jumper)
E ² PROM, EEP	- Erase Enable Programmable Read Only Memory
HE	- Heating Element
HPC	- High Pressure Control
H/W	- Hardware
ICP	- Indoor Condensation Pump
ICT	- Indoor Coil Temperature (RT2) sensor
IF, IFAN	- Indoor Fan
IR	- Infra Red
LEVEL1	- Normal Water Level
LEVEL2/3	- Medium/High Water Level
LEVEL4	- Overflow Level
LWT	- Leaving Water Temperature
Max	- Maximum
Min	- Minimum
min	- Minute (time)
NA	- Not Applicable
OCP	- Outdoor Condensation Pump
OCT	- Outdoor Coil Temperature (RT3) sensor
OF, OFAN	- Outdoor Fan
OPER	- Operate
Para.	- Paragraph
RAT	- Return Air Temperature (RT1) sensor
RC	- Reverse Cycle (Heat Pump)
R/C	- Remote Control
RCT	- Remote Control Temperature
RH	- Resistance Heater
RT	- Room Temperature (i.e. RCT in IFEEL mode, RAT otherwise)
RV	- Reversing Valve
SB, STBY	- Stand-By
sec	- Second (time)
Sect	- Section
SH	- Supplementary Heater
SPT	- Set Point Temperature
ST	- Standard (a Model with Cooling Only)
S/W	- Software
TEMP	- Temperature
W/O	- Without
ΔT	- The difference between SPT and RT. in Heat Mode: $\Delta T = SPT - RT$ in Cool/Dry/Fan Mode: $\Delta T = RT - SPT$

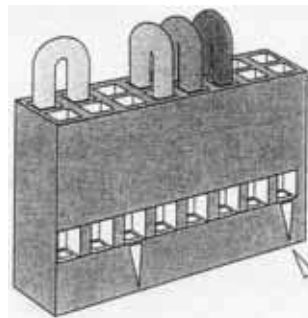
13.2 List of A/C Models

Model	Type
PXD	Floor Mounted w/ SPT and fan speed indicators
Ducted	All ducted models
ECC	All Cassette

13.2.1 Model Plug Settings

Group	J6 Setting	J2 Setting
ST/RC	Open	Open
SH	Closed	Open
RH	Closed	Closed

Model Plug



Group	Location of the jumpers
ST	
RC	
RH	
SH	

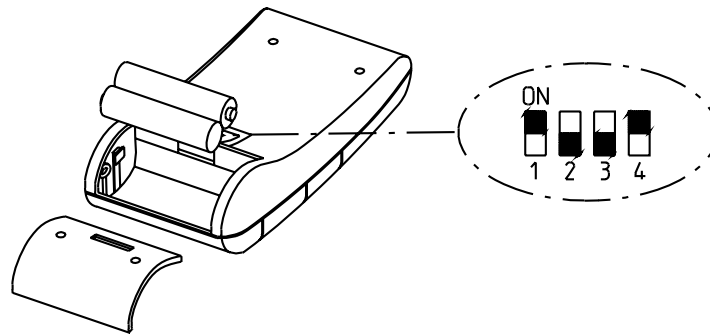
13.2.2 List of A/C Groups

The following table defines the different A/C groups, and the applicable operation modes for each group.

- _ ST/RC group -Cooling only / cooling and heating by heat pump.
- _ SH group -Cooling and heating by heat pump and supplementary heater.
- _ RH group -Cooling, heating by heaters only.

13.3 Remote Controller

13.3.1 Remote controller Dip Switch Setting



SETTING SWITCH STATUS				DEFINITION	
SW. NO. 1	SW. NO. 2	SW. NO. 3	SW. NO. 4	RC3	RC4
OFF	OFF	--	--	RC-ALL MODES OF OPERATION	
ON	OFF	--	--	STD-COOL, FAN, DRY, ACTIVE	
OFF	ON	--	--	HEAT-COOL, FAN, DRY, ACTIVE	
ON	ON	--	--	AUTO FAN (AF)	
--	--	OFF	--	TEMP. DISPLAY IN °C DEGREES	VERTICAL SWING ONLY
--	--	ON	--	TEMP. DISPLAY IN °F DEGREES	HORIZONTAL & VERTICAL SWING FUNCTIONS TOGETHER
--	--	--	OFF	TIMER & CLOCK 12H AM, PM	DISABLE LCD & KEY ILLUMINATION
--	--	--	ON	TIMER & CLOCK 24H	ENABLE LCD & KEY ILLUMINATION

LEGEND

SW1, SW2 - Selection of RC/ST

SW3 – Selection of Display °C or °F in RC3 or swing function in RC4

SW4 – Selection of Time Display 12H AM/PM or 24H in RC3 or illumination in RC4

OFF = 0

ON = 1

13.3.2 Remote controller Reset

After changing dipswitch configuration and/or after changing Batteries manual reset **must** be performed. To reset the RC four keys:

“CLEAR”, “SET”, “HR +”, “HR -” must be pressed and held together for at least 5 sec.



13.4 General functions for all models

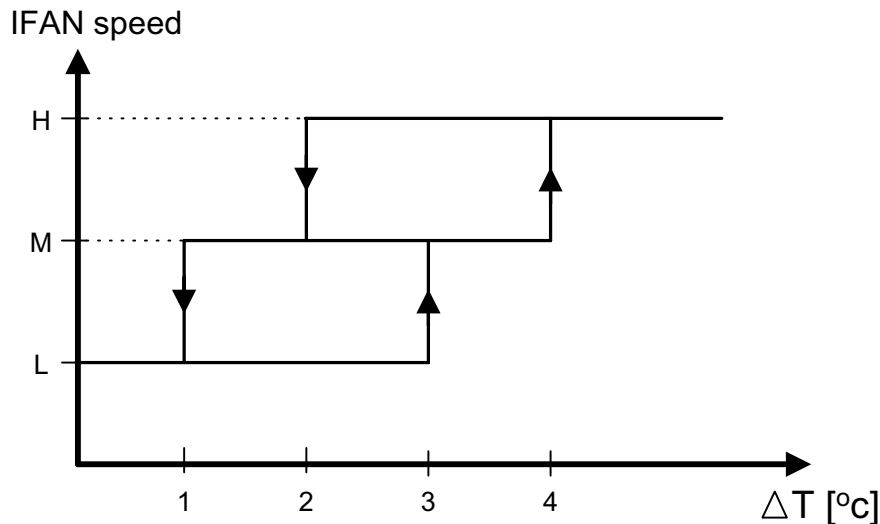
13.4.1 COMP operation.

- For each Mode including POWER OFF & SB, a Min time delay of 3 min before COMP restarting, excluding DEICING Mode (see 13.7.2.1).
- The Min operation time of COMP under different operating conditions is

Operation Mode	Min operation time of COMP
Heat, Cool, Auto Modes	3 min.
Fan, Dry, Overflow, Protection modes, or mode change	ignored

13.4.2 IFAN operation

- 13.4.2.1 Min time interval between IFAN speed change in AUTOFAN Mode, is 30 sec.
- 13.4.2.2 Min time interval between IFAN speed change in H/M/L Mode is 1 sec.
- 13.4.2.3 IFAN speed in Heat/Cool Autofan Mode is determined according to the following chart:



where in Heat Mode: $\Delta T = SPT - RT$
 in Cool Mode: $\Delta T = RT - SPT$

- 13.4.2.4 For Ducted models, whenever IFAN changes from OFF to ON, its first 30 seconds operation will be replaced by low speed, and then it will go to ANY.

13.4.3 OFAN operation

- 13.4.3.1 Min time interval between OFAN ON/OFF state change is 30 sec.

13.4.4 HE operation

- 13.4.4.1 Minimum Heaters ON or OFF time is 30 sec.
- 13.4.4.2 Heaters can never be in operation while IFAN is OFF.
- 13.4.4.3 In RH group, HE-1 and HE-2 will be activated only when COMP is not operating, except in Dry Mode.

13.4.5 Protections

- 13.4.5.1 High pressure protection is applicable to all operating modes.
- 13.4.5.2 Deicing control is valid in Heat and Auto Heat Mode only.
- 13.4.5.3 Defrosting control is valid in Dry, Cool, Heat and Auto Modes.
- 13.4.5.4 No reset after protection modes

13.4.6 Thermistors operation

13.4.6.1 Room air temperature sensing

Return air Temp. is detected by RAT in normal Mode, or by RCT (R/C sensor) in I-FEEL Mode.

13.4.6.2 Indoor Coil Temp. is detected by ICT

13.4.6.3 Outdoor Coil Temp. is detected by OCT

13.4.6.4 Definition of thermistor faults:

- a. Thermistor is disconnected - The thermistor reading is below -30°C.
- b. Thermistor is shorted - The thermistor reading is over 75°C.

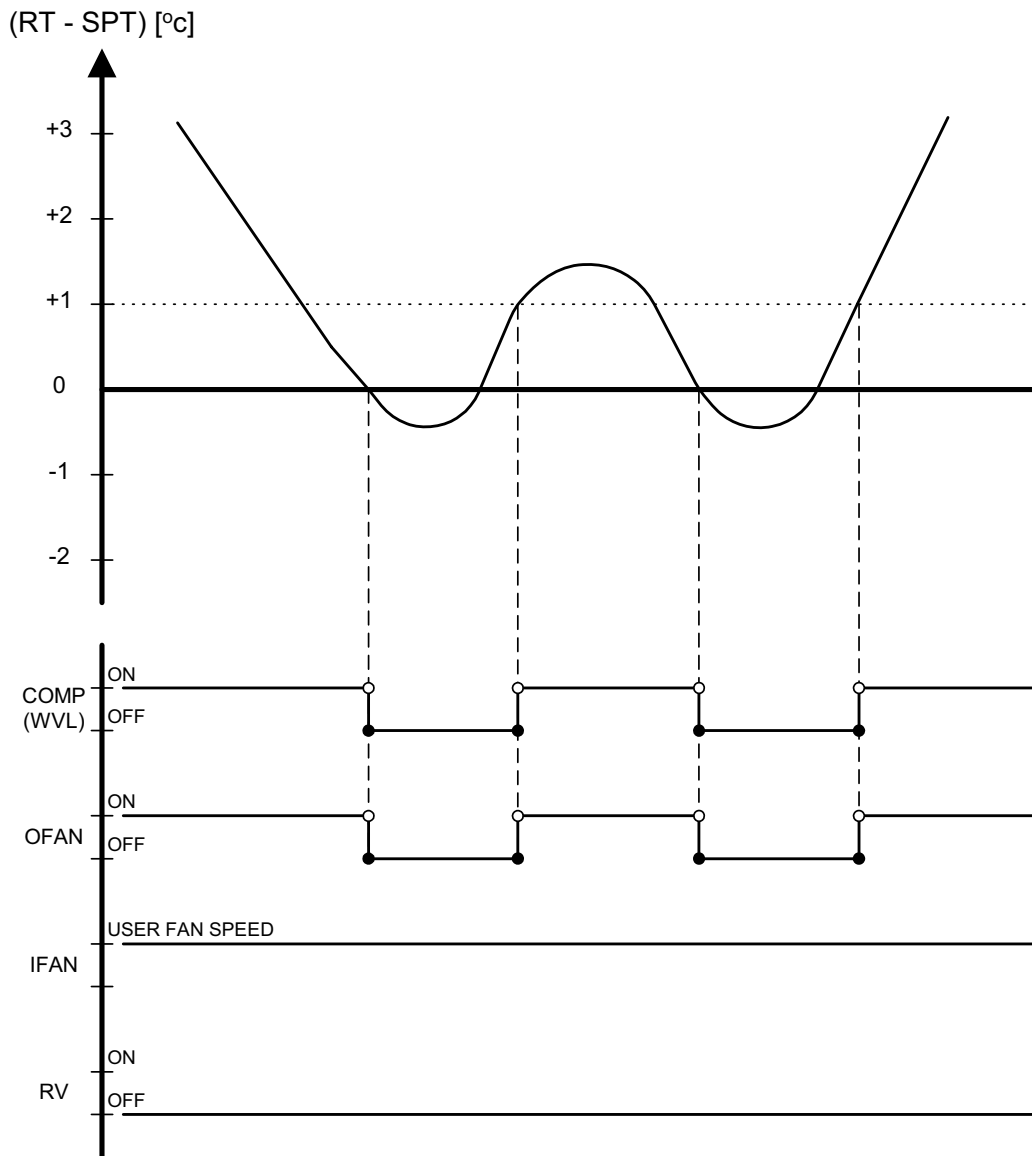
13.5 Cooling Mode

13.5.1 Cooling Mode – General

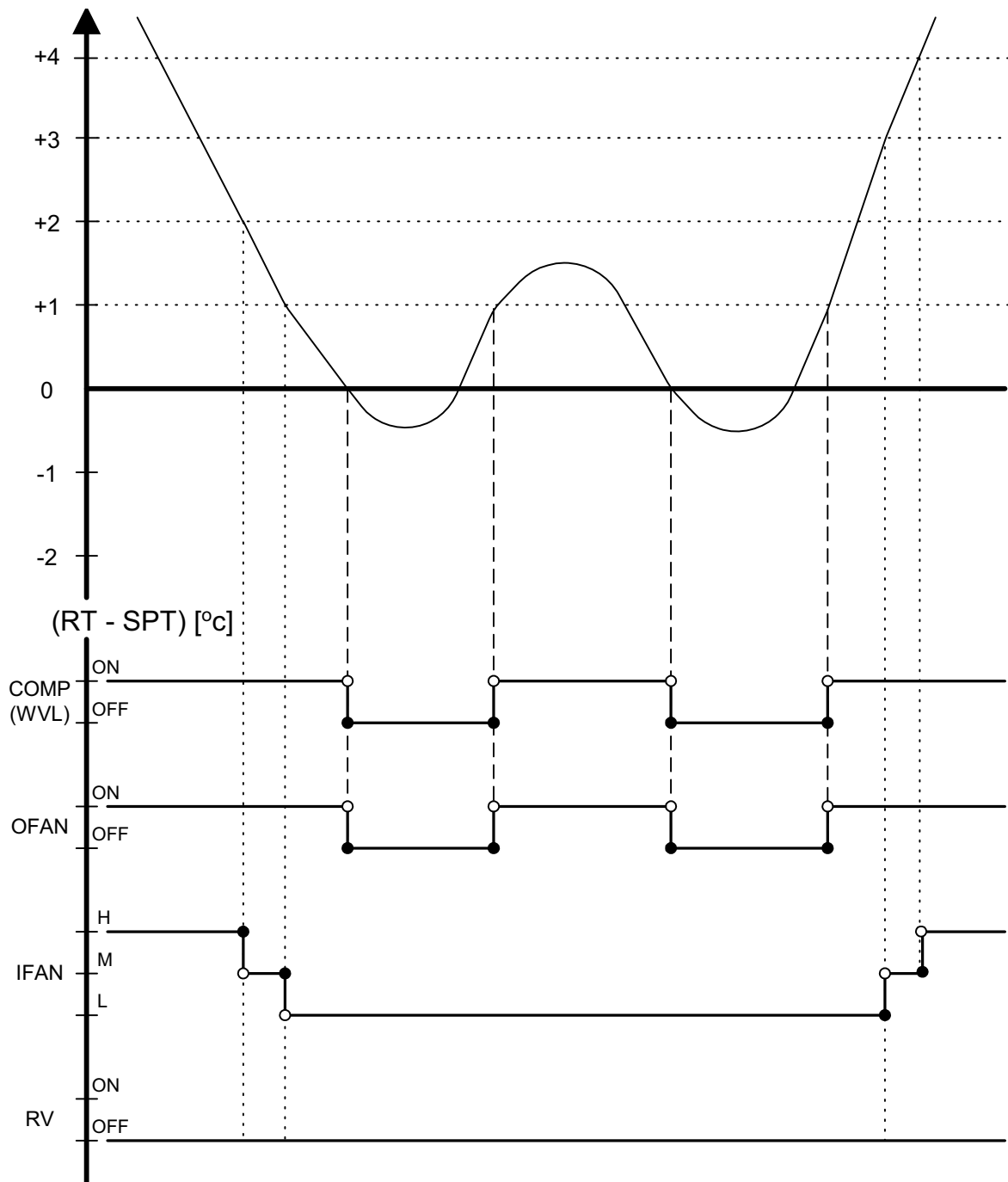
- Mode: Cool, Auto (at Cooling)
- Temp: Selected desired temperature.
- Fan: HIGH, MED, LOW, AUTO.
- Timer: Any
- I Feel: On or Off

13.5.2 Control Functions

Maintaining room temp at desired level by comparing RT and SPT with user defined IFAN speed.



Maintaining room temp at desired level by comparing RT and SPT with AUTO-IFAN.



Note: Refer to Sect 4.2 for IFAN operations in Auto-fan mode.

13.6 Heating Mode

13.6.1 Heating Mode - General

13.6.1.1 Compensation Procedure

The compensation procedure comes to solve the problem of the temperature distribution by height during heat mode :

When I feel is OFF during heat mode: $RT = RAT - CTV$.

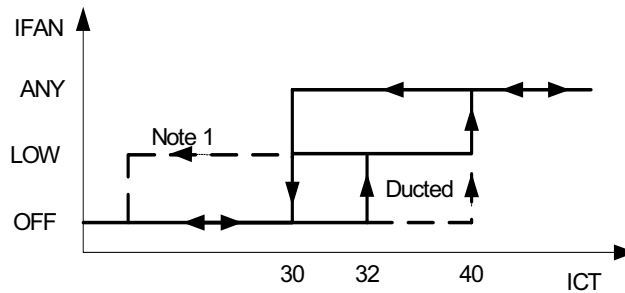
When I feel is ON during heat mode: $RT = RCT$.

When either of : COMP is ON or COMP is OFF & IFAN ON

Model	Compensation Value (CTV)
Floor Ceiling	0
Cassettes/Ducted	2

13.6.1.2 IFAN operation rules for **RC and SH groups**

- (a) In standard units, as a general rule for **RC and SH groups**, IFAN will be switched ON according to the following graph:



Note 1: When COMP is ON, IFAN will change from Low to OFF either when:

- (1) $ICT < 28$ and IFAN is on for 5 min or longer.
- Or,
- (2) $ICT < 20$

Note 2: When ICT is faulty:

When the compressor switches from off to on (excluding deicing), IFAN will be on in ANY speed.

When the compressor switches from on to off, the IFAN will change to low speed for 30 seconds and then it will be off.

- (b) In **SH or RC group**, IFAN will operate for min 30 sec according to 4.1.2-(a) after HE's turned off, where in a case it has to be OFF, it will be forced to low speed.

13.6.1.3 IFAN operation rules for **RH group**

- (a) In **RH group**, IFAN starts when HE starts. When HE switches to OFF, IFAN switches to LOW for 30 sec and then stops.

Note 1: When CIF property is activated by the jumper setting: Except protections, when IFAN should be off, it will operate in LOW speed.

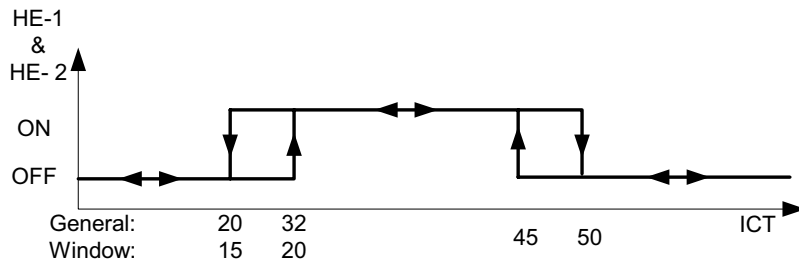
13.6.1.4 Heaters operation rules for RC and SH groups

General Rules:

1. EH are OFF when $SPT-RT \leq 1$
2. EH are always OFF for the first five minutes after each compressor start-up.

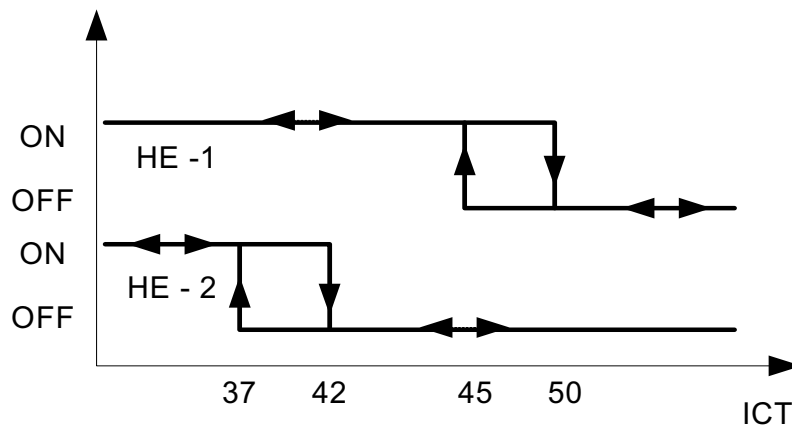
(b) Operation rules for Heaters in **RC group**:

- (i) Heaters can be enabled only if IFAN is ON, i.e IFAN is in higher precedence than the Heaters.
- (ii) Heaters will operate according to LOAD **and** the following graph:



(c) Rules for Heaters operation in **SH group**:

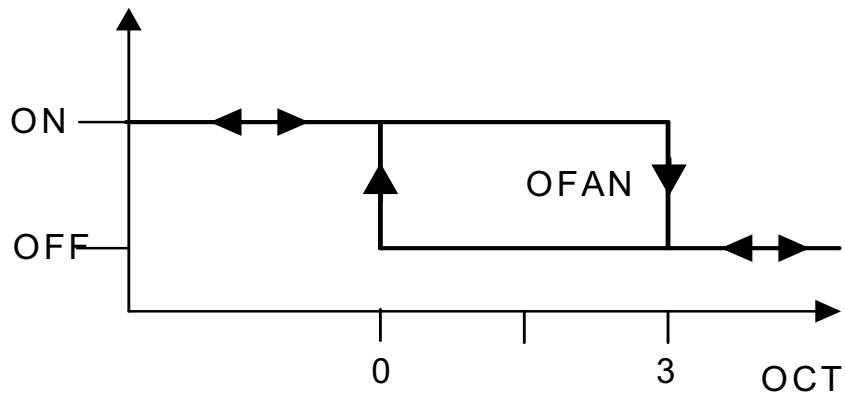
- (i) When heaters are to be ON and IFAN is to be OFF according to 4.1.2 (a), IFAN will be forced to low speed.
- (ii) Heaters will operate according to load **and** the following graph:



- (d) In standard units for both **RC** and **SH** groups, excluding deicing, HE1 and HE2 can be on only when the compressor is on.

13.6.1.5 OFAN Operation for RC and SH groups

- (i) As a general rule for **RC and SH groups**, excluding protection modes, OFAN starts with the compressor.
- (ii) When OFAN is then ON it will operate according to the following conditions:
 - a) OFAN operates together with the compressor.
 - b) When $(RT \geq SPT - 2)$ and $ICT \geq 50$ and the 4.7k Ohm resistor is not connected to the OCT and OCT thermistor is not disconnected/shorted, OFAN will operate according to the following curve:

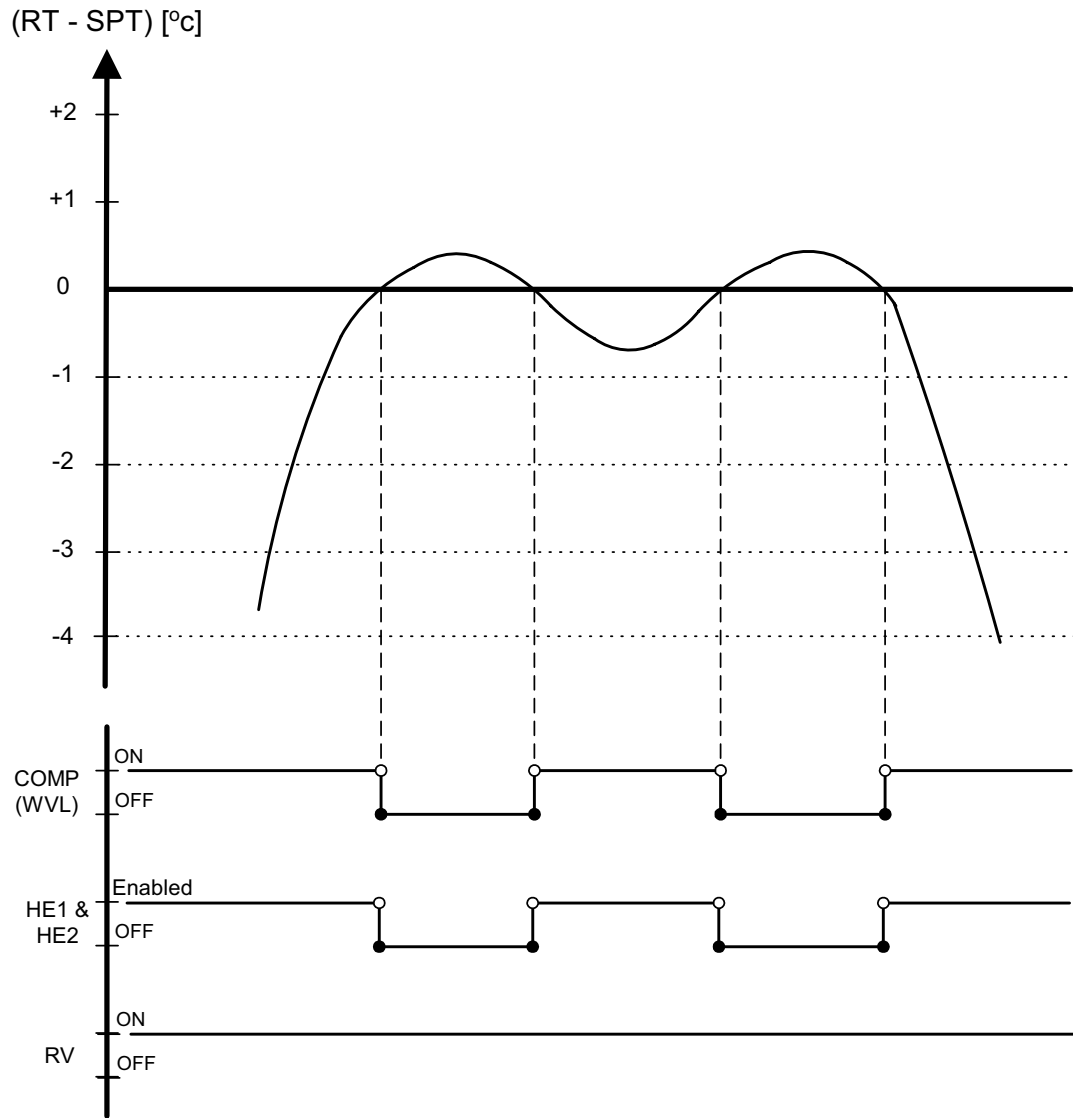


13.6.2 Heating, RC or SH Group

Mode: Heat, Auto (at heating)
 Temp: Selected desired temperature
 Fan: HIGH, MED, LOW
 Timer: Any
 I Feel: On or Off

Sequence Diagram

Maintains room temp. at desired level by comparing RAT or RCT to SPT.

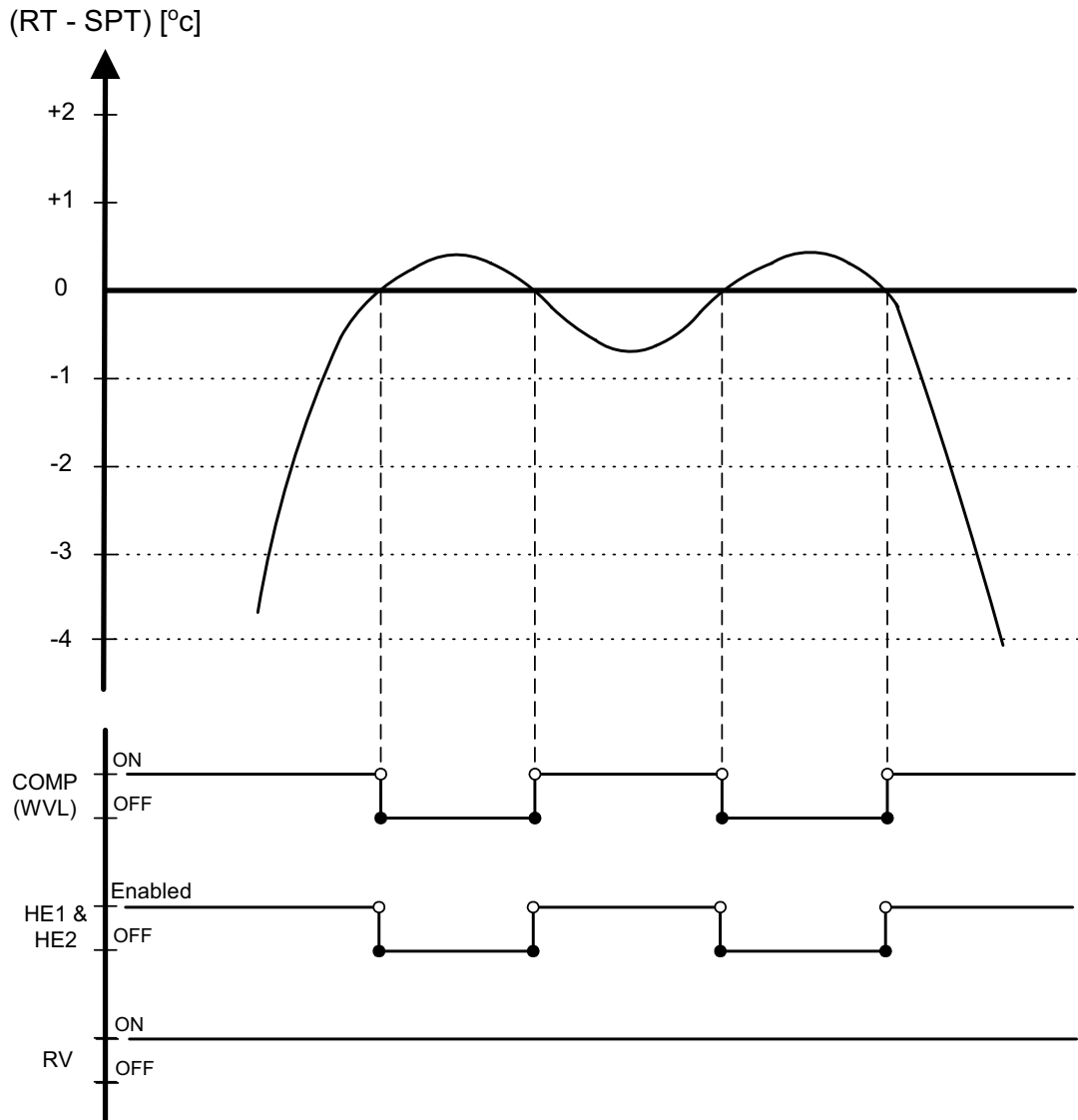


13.6.3 Heating, RC or SH Group with Autofan

Mode: Heat, Auto (at heating)
 Temp: Selected desired temperature
 Fan: Auto
 Timer: Any
 I Feel: On or Off

Sequence Diagram

Maintains room temp at desired level by controlling COMP, IFAN and OFAN.

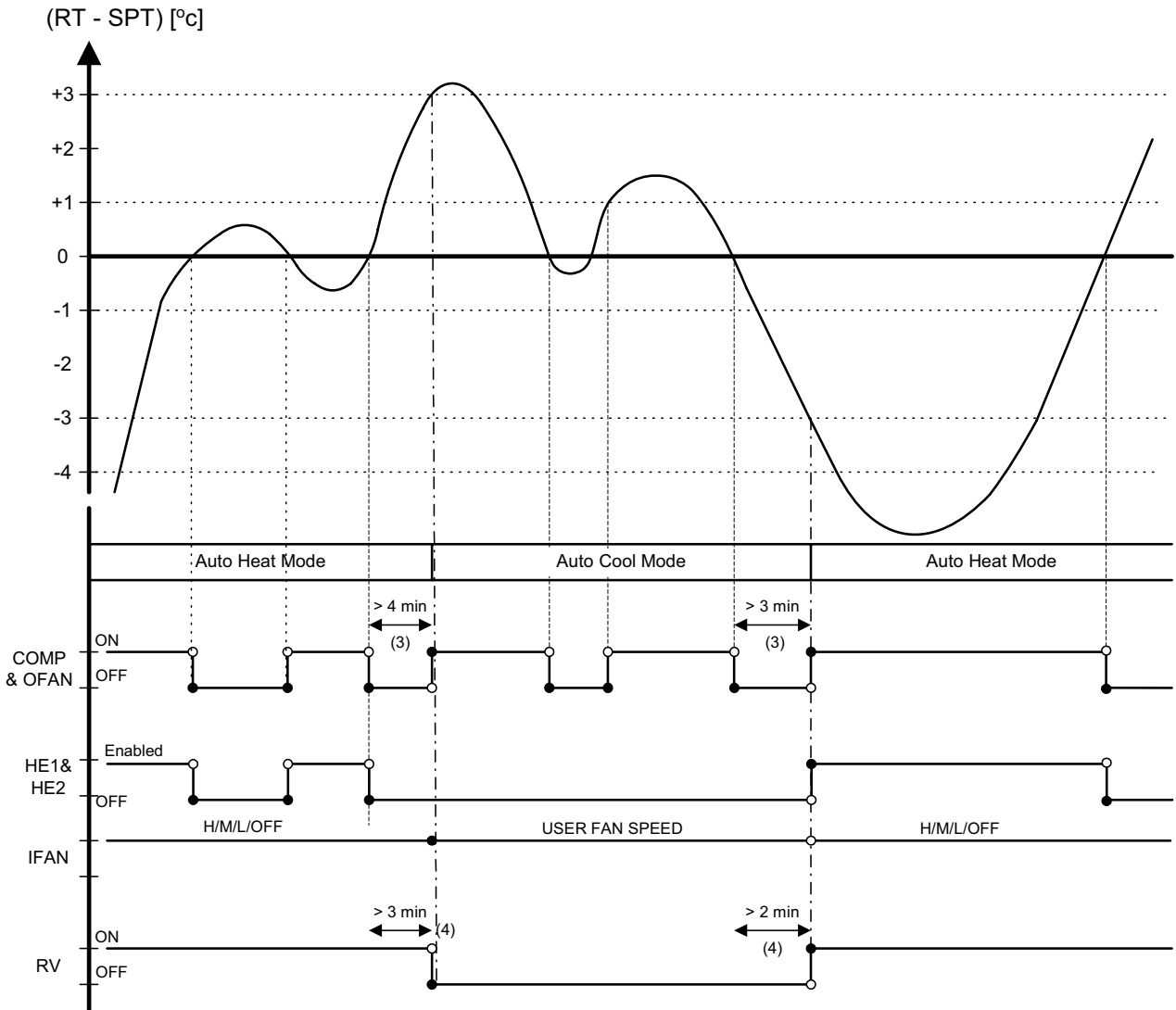


13.7 Automatic Cooling or Heating

Maintains room temp at desired level by selecting between cooling and heating modes.

- Mode: Auto
- Temp: Selected desired temperature
- Fan: Any
- Timer: Any
- I Feel: On or Off

13.7.1 Auto Cooling or Heating, RC or SH Groups



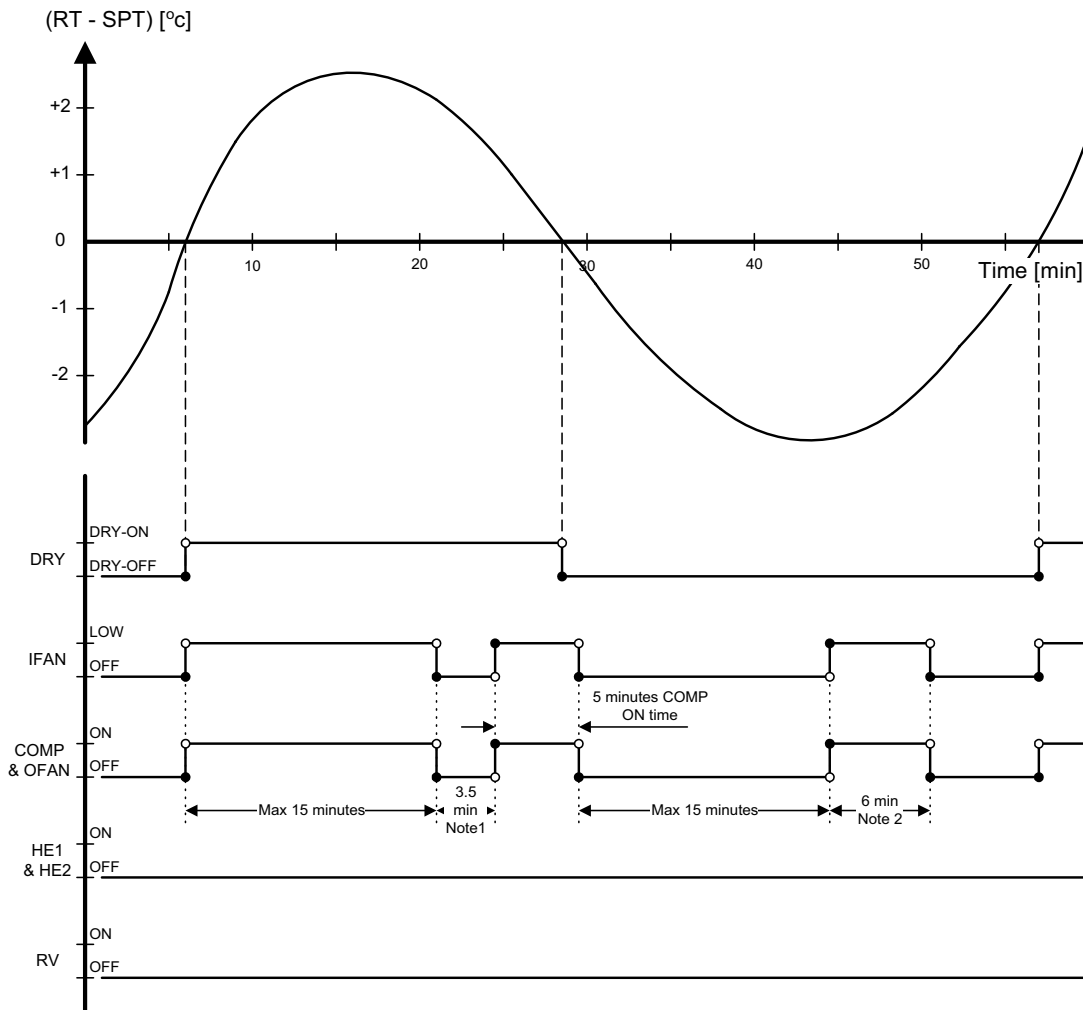
13.8. Dry Mode

13.8.1. Dry, ST or RC group

Mode: Dry
 Temp: Selected desired temp
 Fan: Low (automatically selected by software)
 Timer: Any
 I FEEL: Any

Control function

Reduce room humidity with minimum temp. fluctuations by operating in Cool Mode with low speed IFAN.



Notes :

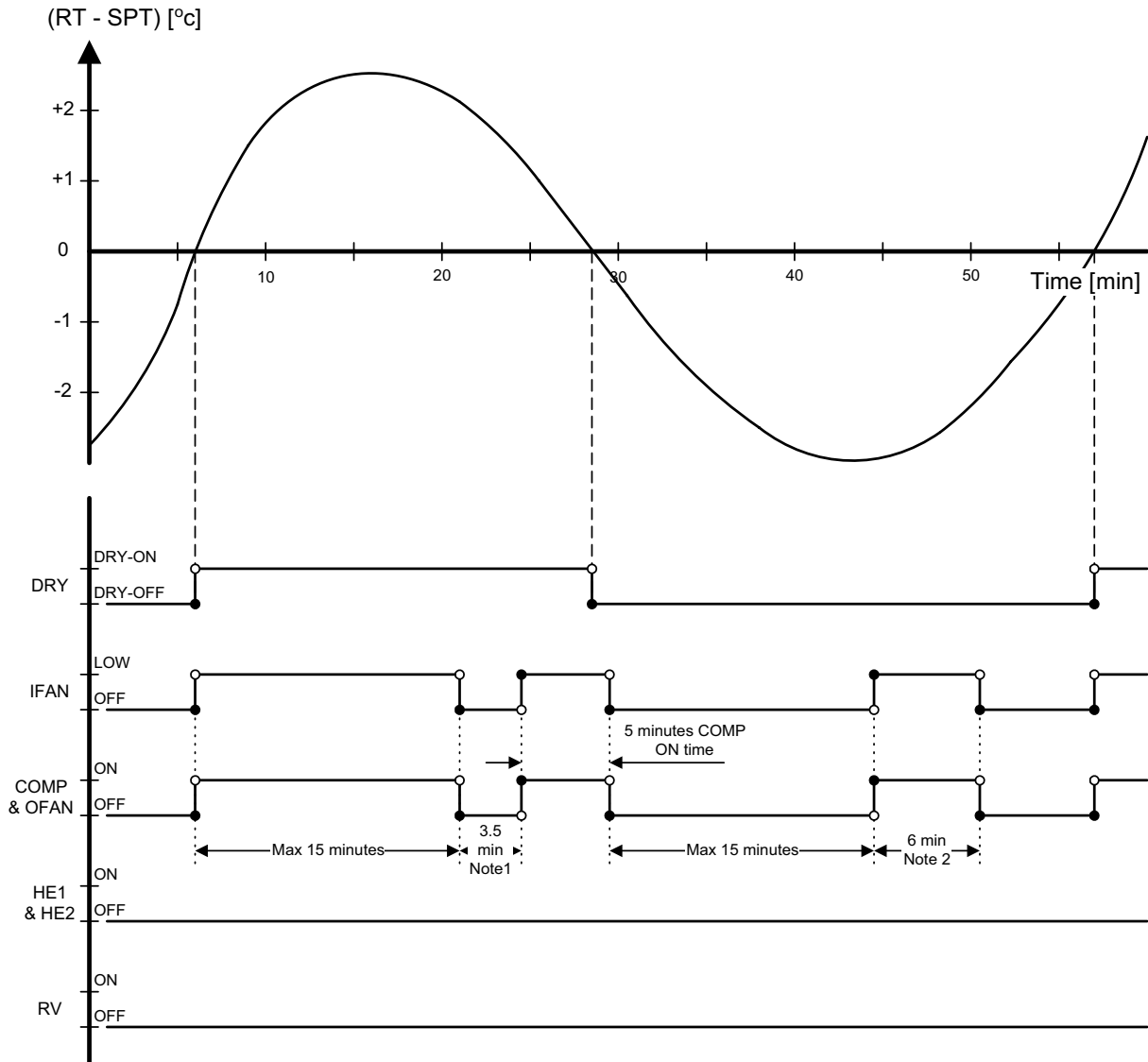
1. When Dry is ON, the COMP is forced OFF for 3.5 min (longer than the 3 min Min COMP-Off time) after every 15 min of continuous COMP operation.
2. When Dry is OFF, the COMP is forced ON for 6 min (longer than the 3 min Min COMP-On time) after every 15 min of continuous COMP OFF time.
3. When Dry is changed from ON to OFF or vice versa, the limits mentioned in (1) & (2) are ignored. The COMP operation is only controlled by the 3 min Min OFF time and 1 min Min ON time.
4. In Dry Mode, IFAN is LOW when COMP is ON, and is OFF when COMP is OFF.
5. Pumps are operating as indicated in Sect. 7.3, 7.4, and 7.5.
6. HEs are always OFF in Dry Mode.

13.8.2. Dry, SH or RH groups

Mode: Dry
 Temp: Selected desired temp.
 Fan: Low (automatically selected by software)
 Timer: Any
 I FEEL: Any

Control function

Reduce room humidity with minimum Temp. fluctuations by operating in Cool Mode with low speed IFAN and HE.



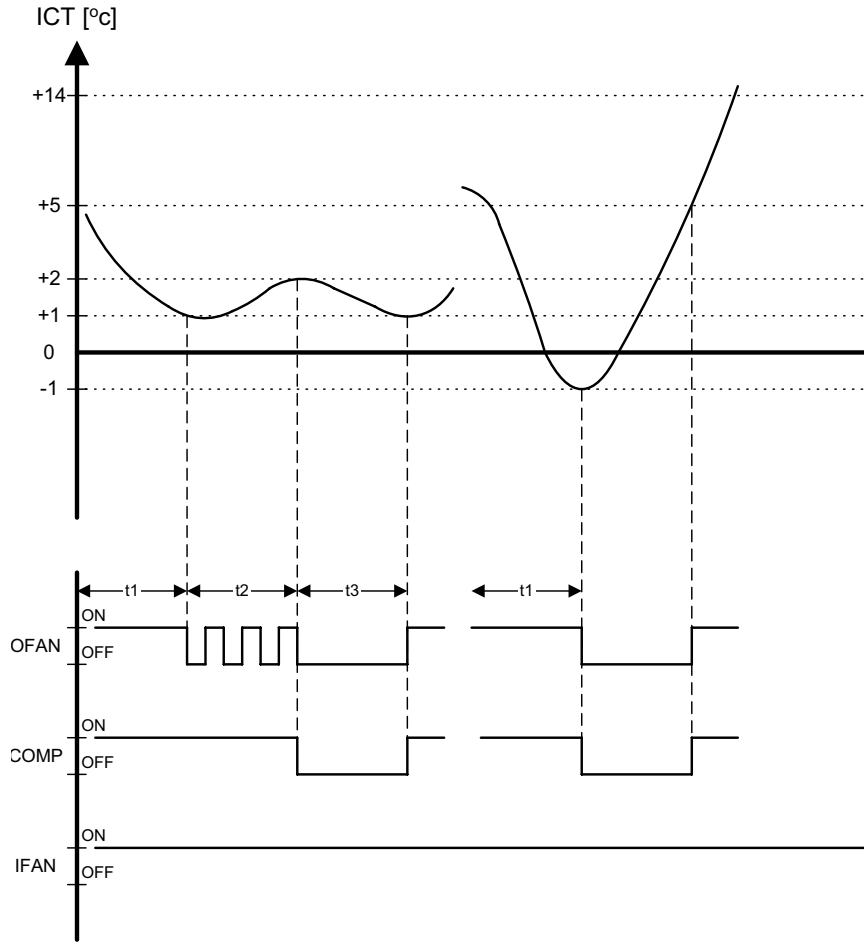
13.9. Cooling Mode Protections

13.9.1. Indoor Coil Defrost

Mode: Cooling, Dry, Auto
 Temp: Selected desired temp.
 Fan: Any
 Timer: Any
 I Feel: On or Off
 Models: All

Control Function

Protect the indoor coil from ice formation at low ambient temperature.



t1 = 5 min minimum for each COMP starting
 t2 = OFAN cycling (alternate between ON and OFF every 30 sec) for 20 min maximum
 t3 = COMP and OFAN stop for 10 min minimum

Note :

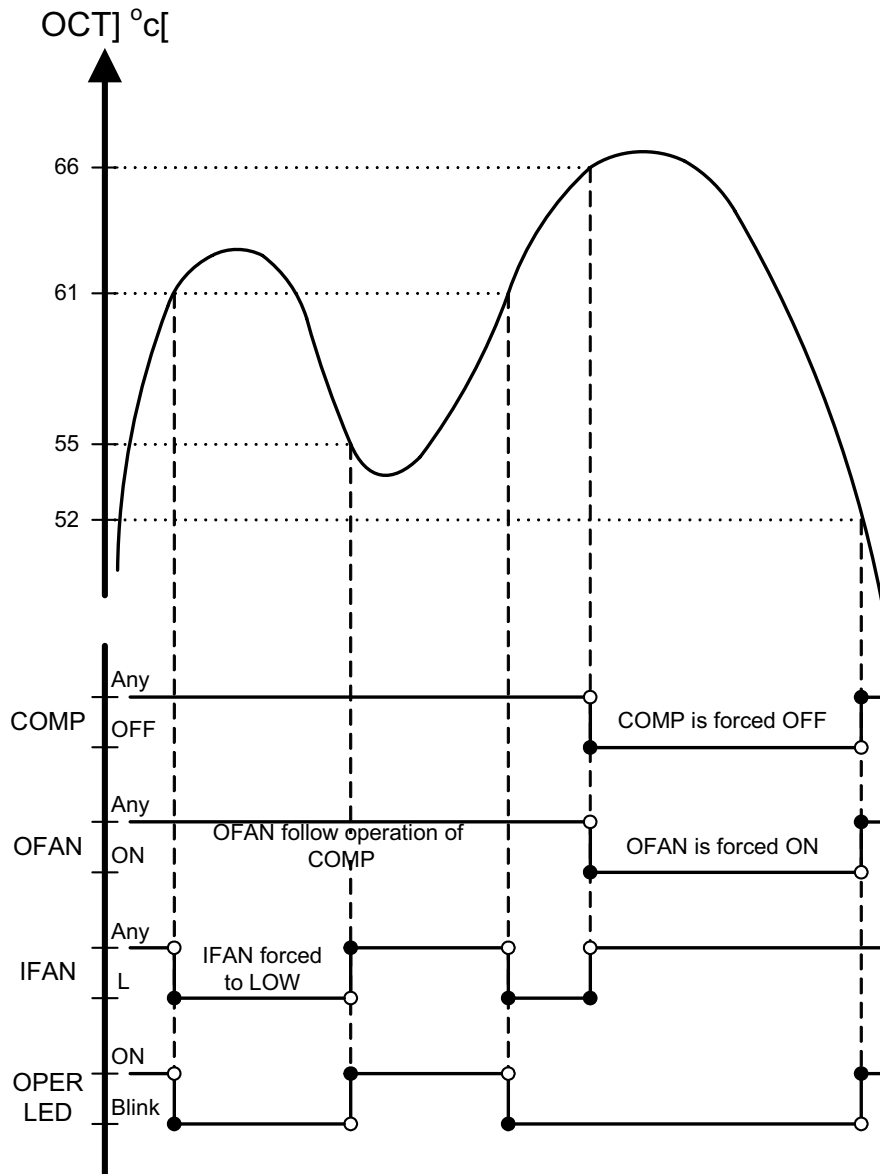
- 1) OFAN cycling is disabled when OCT > 50°C and restarted when OCT < 50°C

13.9.2. High Pressure Protection

Mode: (Auto) Cooling or Dry
 Temp: Selected desired temp.
 Fan: Any
 Timer: Any
 I Feel: On or Off
 Models: standard (not WSHP)

Control Function

To protect the COMP from the high pressure built-up in the outdoor coil during normal cooling operation, by switching OFF the IFAN and COMP.



Note:

1. The ICT is also monitored during Cool and Dry mode, in case the RV control circuit is faulty. Whenever ICT reaches 70°C, which indicates a high pressure in the indoor coil, the COMP will be forced off automatically. The COMP can be turned on again only after the ICT is under 70°C again and after the 3 min COMP ON delay time. The OPER LED will not blink in this case.

13.10. Heating Mode Protections

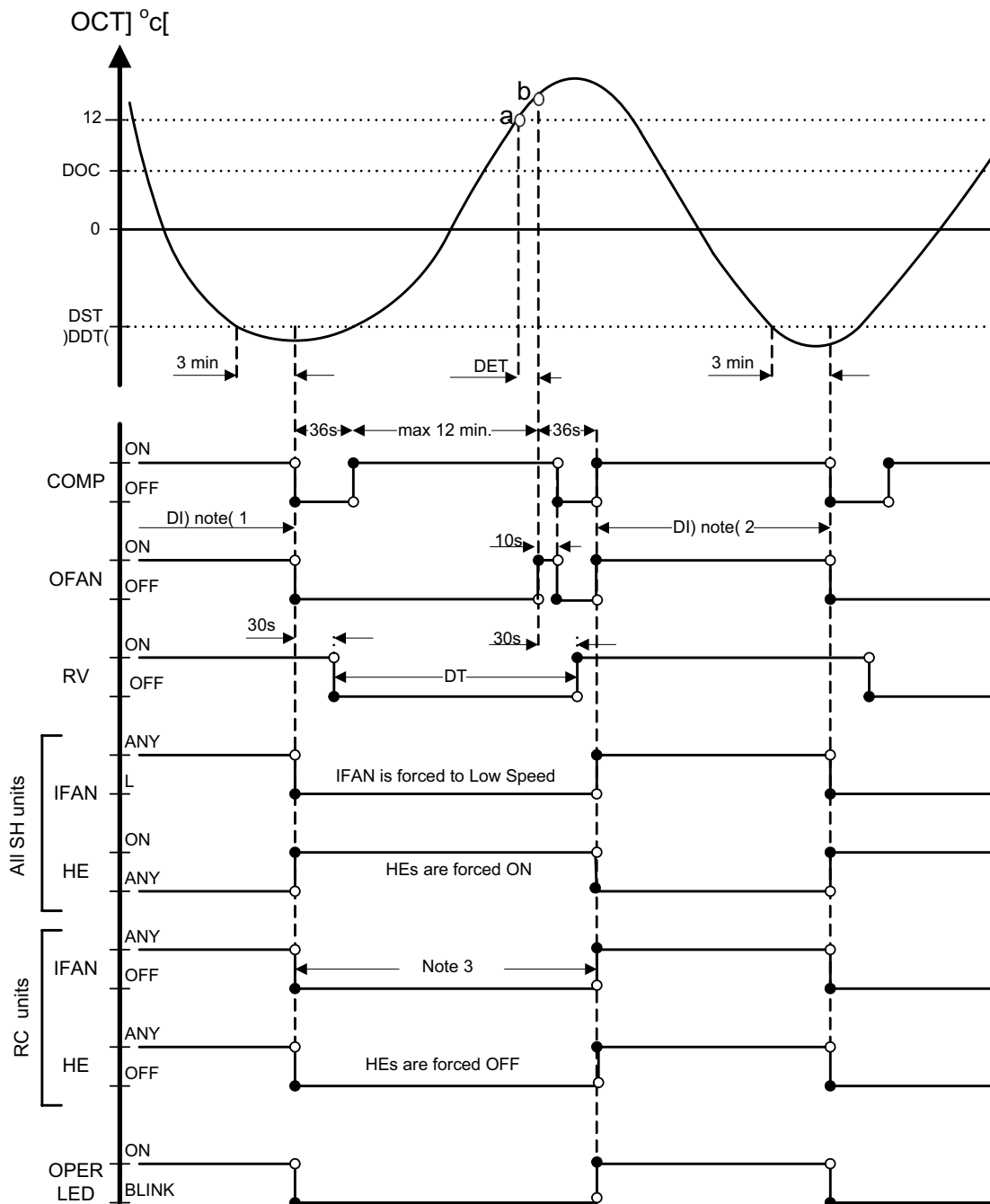
13.10.1. Outdoor coil Deicing (excluding RH Group)

Mode: Heating, Auto (at heating)
 Temp: Selected desired Temp
 Fan: Any
 Timer: Any
 I FEEL: Any
 Models: All except WSHP

Control function

Protects the Outdoor coil from ice formation by controlling COMP & RV operation.

Deicing procedure



Notes :

1. At the first COMP activation after SB or OFF, if (OCT < 0°C), then DI = 10 min, else DI = 40 min.
2. In the following Deicing cycles, the time interval between two Deicing cycles activation is between 30 to 80 min (refer to the flow chart).
3. For RC group, IFAN is forced off, where the rule item (b) of Sect 4.1.2 has a higher priority.
4. For SH group, HEs are forced ON and IFAN is forced to operate in Low speed, regardless of the ICT and difference between RAT & SPT.
5. When jumper J7 is set, the DST value is -2°C.
6. When OCT > 12°C (Point "a") Deicing stop procedure continues even if the OCT drops below 12°C again.

13.10.2 High pressure protection (excluding RH Group)

Mode: (Auto) Heating

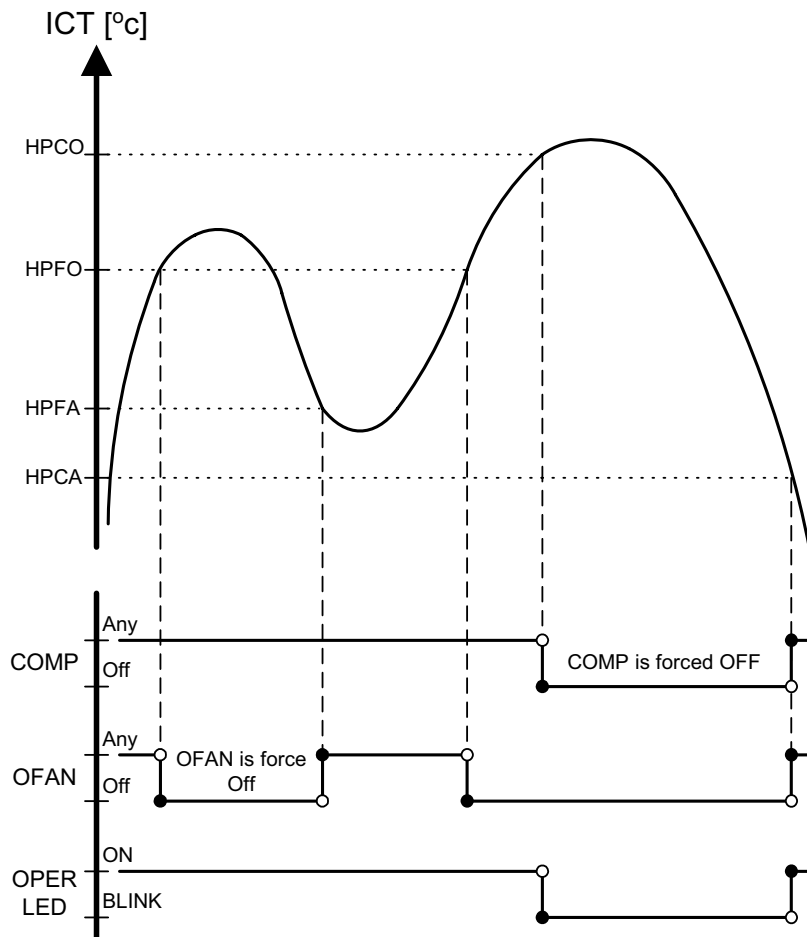
Fan: Any

Timer: Any

I Feel: On or Off

Control Function

Protect the Compressor from high pressure by switching OFF the OFAN and COMP.



Notes:

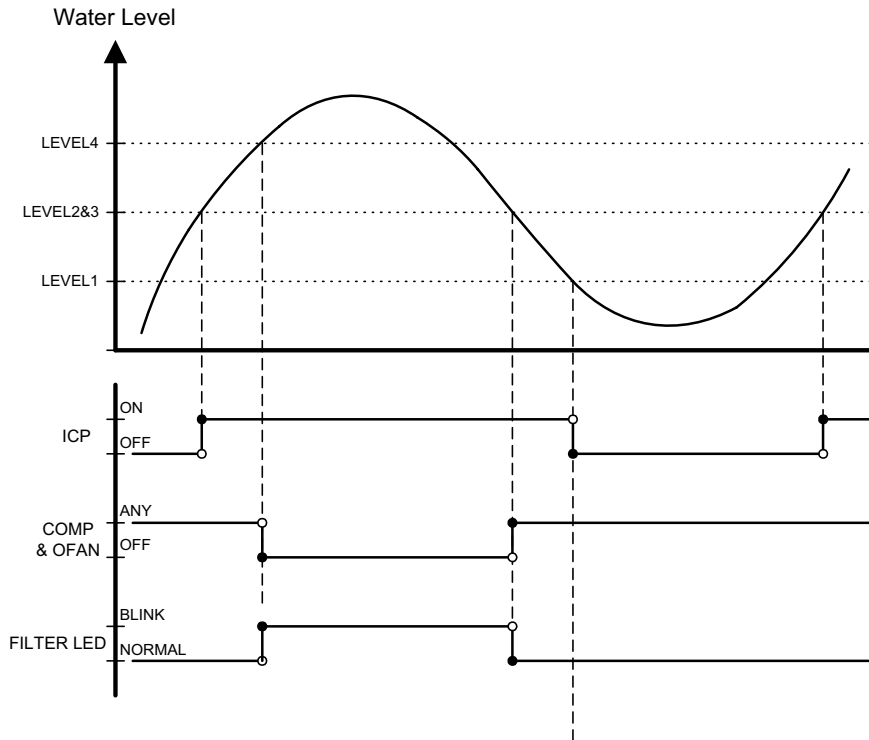
1. IFAN, HE1 and HE2 will be activated according to the relevant Heating Mode Sect.
2. In case of any malfunction in the relay control circuit, the OCT is also monitored during Heating mode. Whenever OCT reaches 70oc, which indicates a high pressure in the outdoor coil, the COMP will be forced off automatically. The COMP can be turned on again only after the 3 min COMP ON delay and the OCT is under 70oc. The OPER LED will not blink in this case.

13.11. Indoor Condensation Pump (ICP) Operation and Overflow Protection (PXD model only)

Mode: Cooling, Dry, Auto (at Cooling)
 Temp: Desired temp selected
 Fan: Any
 Timer: Any
 I Feel: On or Off

Control function:

To prevent the overflow of condensed water by turning ON the ICP.



Notes:

1. When water level reaches LEVEL 4, ICP will be turned ON even if the unit is in SB mode.
2. The operation of the pump is not related to the ON/OFF state of the COMP. On the contrary, the COMP can be forced to OFF when the water level is high (level 4).
3. The water level inputs are low (0V) active and high (5V) inactive.
4. Water level definition according to pin number on the connector:

Level	Pin 2	Pin 3
No Level	0	0
Level 1	1	0
Level 2/3	1	1
Level 4	0	1

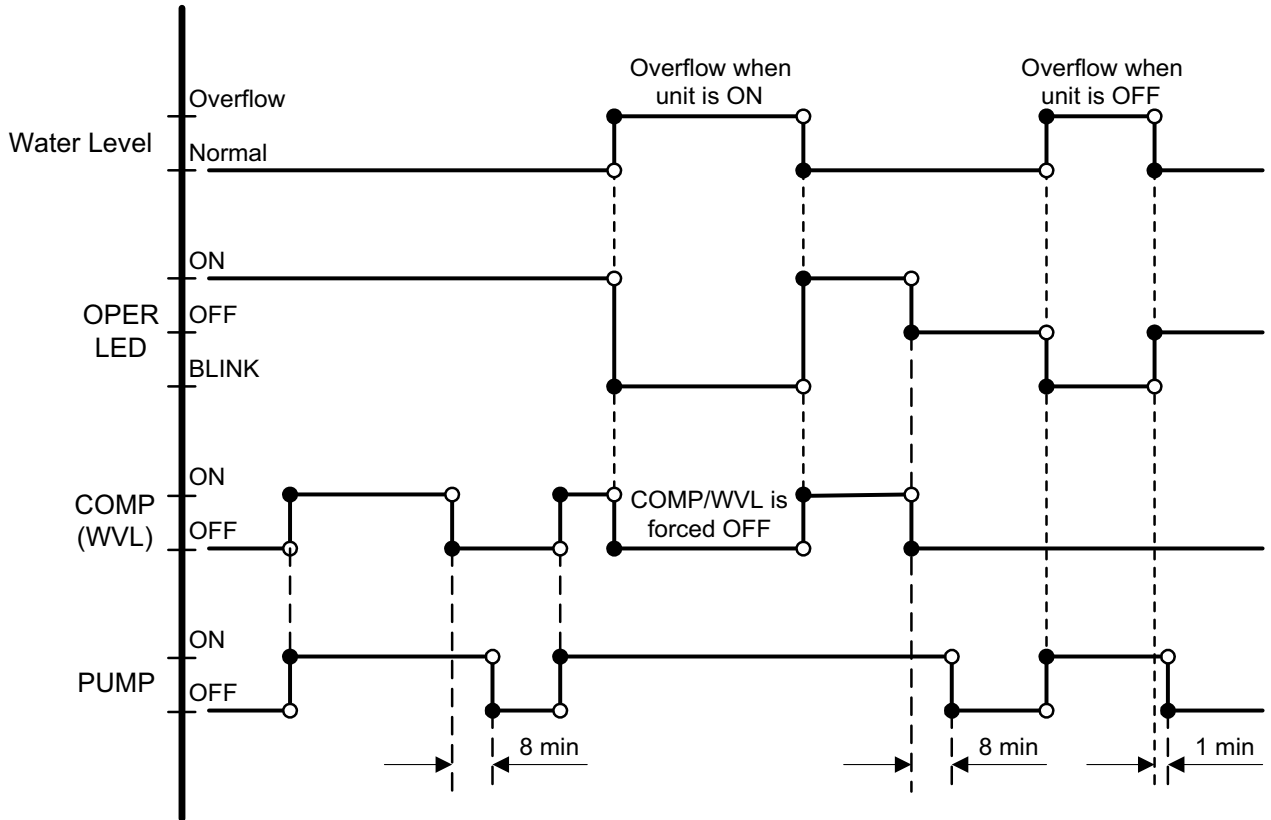
Notes: The table is in respect to pin 4 on the connector. Pin 1 is disconnected. Logic 1 (0V) means active while logic 0 (5V) means inactive.

13.12. Condensation Pump (Cassette & Ducted)

Mode: Cool, Dry, Auto
 Temp: Selected desired temperature
 Fan: Any
 Timer: Any
 I FEEL: Any

Control function:

Prevent Condensed water from Overflowing.



Notes:

1. The switch used for water level detection is closed under normal condition, and is open when water overflow.
2. For the NEC version of MCU, the "Over Flow" & "Normal" condition are indicated by logic "0" & "1" at the LEVEL4 input pin respectively.
3. For the Fujitsu version of MCU, the "Over Flow" & "Normal" condition are indicated by logic "1" & "0" at the LEVEL4 input pin respectively.
4. The "Overflow" condition can activate the water pump in SB and operating modes.

13.13 Forced operation (excluding PXD Models)

Forced operation allows units to start, stop and operate in Cooling or Heating in pre-set temperature according to the following table:

Forced operation mode	Pre-set Temp for : Ducted, Cassette
Cooling	22°C
Heating	28°C

Note:

1. While under the forced operation, the temperature compensation is disabled.
2. The forced operation is activated when the mode button on the Display Board is used to switch the unit to Cool or Heat mode.
3. The IFAN is always set to **Autofan** Speed in forced operation.

13.14 General Alarm Output

The swing output will function as Alarm Output for the Cassette and Ducted and WSHP models.

Alarm output relay ON either when:

1. Any fault (thermistors/RV fault)
2. High Pressure Protections in cooling/heating (Only at compressor stop)
3. Indoor coil defrost (Only at compressor stop)
4. Overflow Level
5. Any WSHP fault that makes the LED flash according to section 24

Alarm output relay OFF:

When the above faults are cleared.

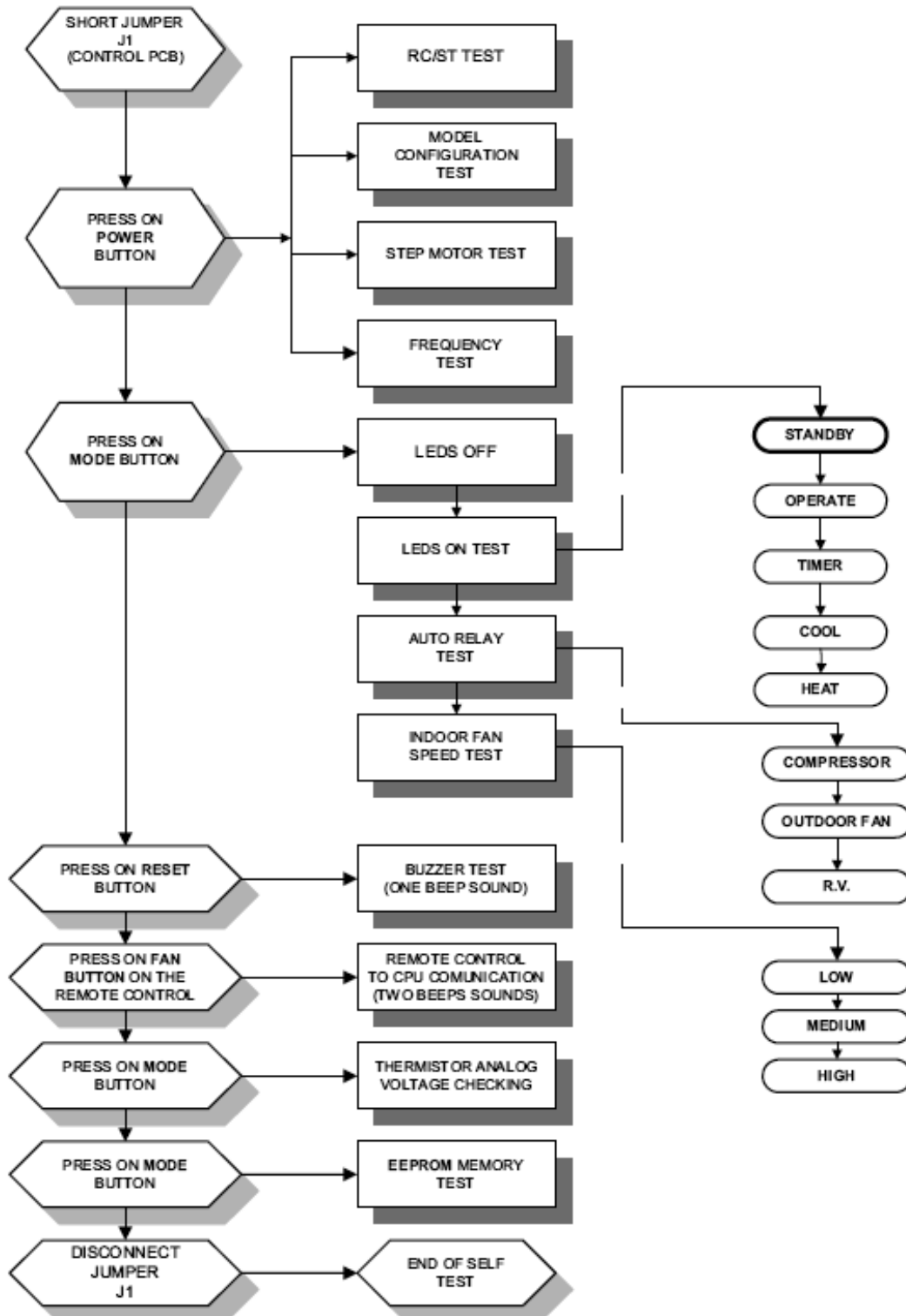
13.15 SELF TEST

13.15.1 Introduction

The purpose of the Self Test mode is to provide an easy solution to test all the input and output circuits and devices of the control board or the unit assembly.

13.15.2 Initiate the Self-Test Mode by using the jumper J1

SELF-TEST FLOW CHART
FOR CONTROLLER (VERSION 4V5 OR HIGHER)



13.15.2 Initiate the Self-Test Mode by using a R/C

- a. **STEP 1: TURNING ON THE POWER.**
Turn ON the power, make sure that the unit is in operation.
- b. **STEP 2 : ENABLE SELF-TEST MODE**
 - 1) Use the remote control to send the first settings to display / indoor unit HEAT mode, HIGH IFAN, set temperature to 16 °C, no I-FEEL Sleep or any other timer settings are needed.
 - 2) Cover the IR transmitter components in the remote control so that it will not transmit the signals to the indoor unit display.
 - 3) Use the remote control to send the second settings to display / indoor unit COOL mode, LOW IFAN, no I-FEEL Sleep or any other timer settings.
 - 4) Uncover the remote control IR transmitter and change the temperature settings. If the display/indoor unit receive the settings properly the following steps will start
- c. **STEP 3: MODEL SETTING CONFIRMATION**
 - 1) The STAND-BY and COOL LEDES will indicate the operation mode as follows:

OPERATION MODE	STAND-BY LED	COOL LED
ST	ON	OFF
RC	OFF	OFF
SH	OFF	ON
RH	ON	ON

- 2) Testing the Model configuration. Selected by the COMP, STAND-BY, TIMER LEDES and FILTER will indicate the model configuration as follows (the relevant line for this manual is highlighted):

MODEL	COMP	OPERATE LED	TIMER LED	FILTER LED
WNG	ON	OFF	OFF	OFF
MBX	ON	OFF	OFF	ON
WNX	ON	OFF	ON	OFF
PRX	ON	ON	OFF	OFF
WMN1	ON	ON	OFF	ON
EMD/LS	ON	ON	ON	OFF
K/DNC/DNG	ON	ON	ON	ON
WMN 4	OFF	OFF	ON	OFF
PXD	OFF	OFF	ON	ON
WMN 2/WHX	OFF	ON	OFF	ON
WMN 3	OFF	ON	ON	ON

In this term the step motor will turn to HOME POSITION.

d. STEP 3: AUTO LED WALK TEST.

- 1) All the LEDS will turn OFF.
- 2) All the LEDS will turn ON for 1 second one by one in the following sequence:
STAND-BY ⇨ OPERATE ⇨ TIMER ⇨ FILTER ⇨ COOL ⇨ HEAT.
- 3) In PRX all the LEDS will turn ON for 1 second one by one in the following sequence : 18 °c ⇨ 20 °c ⇨ 22 °c ⇨ 24 °c ⇨ 26 °c ⇨ 28 °c ⇨ 30 °c ⇨ High IFAN ⇨ Auto IFAN ⇨ Med IFAN ⇨ Low IFAN ⇨ STAND-BY⇨ TIMER ⇨ FILTER ⇨COOL⇨ HEAT.

e. STEP 4: AUTO REALY WALK TEST:

All relays will energize one by one in the following sequence:

COMPRESSOR ⇨ OUTDOOR FAN⇨R. V. ⇨ HEATER 1 ⇨ HEATER 2 ⇨ INDOOR WATER PUMP ⇨ SWING or OUTDOOR WATER PUMP ⇨ INDOOR FAN: LOW ⇨ MID ⇨ HIGH.

When the relay walk test is completed, the next test will start automatically.

f. STEP 5: FREQUENCY TESTING:

If the frequency measuring process fails the COOL LED will turn ON. In order to move to the next step, press ON/OFF button on the remote control.

g. STEP 6: INPUT TEST.

The test purpose is to check the analog real time indicators (thermistors, LEVEL and clock) according to the table below.

LED Indicator	Condition for LED to be ON
STBY LED	Room thermistor ≠ 25°c
OPER LED	Indoor coil thermistor ≠ 25°c
TIMER LED	Outdoor coil thermistor ≠ 25°c
FILTER LED	Clock
COOL LED	LEVEL 2&3
HEAT LED	LEVEL 4

h. STEP 7: TIMING RESET TEST (WATCH DOG).

The test purpose is to verify that the CPU rise time after power failure is between 1 to 3 sec, test results are indicated on the LEDS : STAND-BY, OPER, TIMER and FILTER turning ON one by one.

The results of the test are coded as follows:

Pass condition:

- 1 sec - STAND-BY and OPER are turned ON
- 2 sec - STAND-BY, OPER and TIMER are turned ON

Fail condition:

0 sec - STAND-BY is turned ON

3 sec - STAND-BY, OPER, TIMER and FILTER are turned ON

When the timing reset test is completed, the next test will start automatically.

i. STEP 8: MEMORY TEST (EEPROM)

The test purpose is to check if the memory is functioning correctly. The test result is reported by using the STAND-BY and FILTER LEDs:

LED Indicator	Condition for LED to be ON
STAND-BY LED	Test passed
FILTER LED	Test failed

AT THIS POINT THE SELF-TEST IS COMPLETED.

In order to terminate Self-Test mode the User can change the unit setting from COOL Mode, LOW FAN to COOL Mode, MED FAN or to wait without using the remote control for 60 sec.

Values of Sensors Temperature VS. Voltage (DC)

Temp. (°C)	Voltage (V)	Temp. (°C)	Voltage (V)	Temp. (°C)	Voltage (V)	Temp. (°C)	Voltage (V)
-20	4.554	2	3.744	24	2.555	46	1.487
-19	4.529	3	3.695	25	2.5	47	1.447
-18	4.502	4	3.646	26	2.445	48	1.409
-17	4.475	5	3.595	27	2.391	49	1.371
-16	4.446	6	3.544	28	2.338	50	1.334
-15	4.417	7	3.492	29	2.284	51	1.298
-14	4.386	8	3.439	30	2.232	52	1.263
-13	4.354	9	3.386	31	2.18	53	1.228
-12	4.322	10	3.332	32	2.128	54	1.195
-11	4.287	11	3.278	33	2.077	55	1.162
-10	4.252	12	3.223	34	2.027	56	1.13
-9	4.216	13	3.168	35	1.978	57	1.099
-8	4.178	14	3.113	36	1.929	58	1.069
-7	4.14	15	3.058	37	1.881	59	1.04
-6	4.1	16	3.002	38	1.834	60	1.011
-5	4.059	17	2.946	39	1.798	61	0.983
-4	4.017	18	2.89	40	1.742	62	0.956
-3	3.974	19	2.833	41	1.698	63	0.929
-2	3.93	20	2.777	42	1.654	64	0.904
-1	3.885	21	2.722	43	1.611	65	0.879
0	3.839	22	2.666	44	1.569	66	0.854
1	3.792	23	2.61	45	1.527	67	0.831

13.16 JUMPER SETTINGS

0 = Open Jumper (disconnect jumper).
 1 = Close Jumper (connect jumper).

Self test Jumper - J1

OPERATION	J1
SELF-TEST	1
NORMAL	0

Group Jumper - J2, J6

GROUP	J2	J6
ST	1	0
RC	0	0
SH	0	1
RH	1	1

WVL Mode Jumper - J10, J9 ⁽¹⁾

Setting	J10	J9
Normal unit with COMP	0	0
WVL unit	1	0
WVL & IFC	1	1

Property configuration jumpers

Property Jumper	Jumper	Setting
Continuous IFAN operation in heat mode (CIF)	J8	1- Property Deactivated 0- Property Activated
Clock operation (CLK)	J3	1- clock option A 0- clock option B

Model selection Jumper - J4 and J5

OCT 3.9k res	J7	MODEL	J4	J5
any	0	Ducted	1	0
any	0	Cassette	1	1
any	0	PXD	0	1
no	1	WSHP use RCT	any	1
no	1	WSHP use RAT	any	0

WSHP / IFC Selection Jumper - J7

J7	3.9K Resistor on OCT	WSHP / IFC selection
0	No	Standard unit
1	No	WSHP unit
0	Yes	WVL MODE
1	Yes	IFC MODE

Note:

1. J9 & J10 are software jumpers stored in the EEPROM.

13.17 System diagnostics

Pressing Mode button for 5-10 seconds in SB or any other operation mode will activate diagnostic mode by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LEDs.

In diagnostic mode, system problems will be indicated by blinking of Heat & Cool LEDs.

The coding method will be as follow:

Heat led will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds. Cool led will blink during the same 5 seconds according to the following table:

No	Problem	1	2	3	4	5
1	RT1 is disconnected	○	●	●	●	●
2	RT1 is shorted	○	●	●	●	○
3	RV Fault	○	●	●	○	●
4	RT2 is disconnected	●	○	●	●	●
5	RT2 is shorted	●	○	●	●	○
6	(Reserved)	●	○	●	○	●
7	(Reserved)	●	○	●	○	○
8	RT3 is disconnected	●	●	○	●	●
9	RT3 is shorted	●	●	○	●	○
10	(Reserved)	●	●	○	○	●
11	(Reserved)	●	●	○	○	○
12	(Reserved)	●	○	○	○	○

○ - ON, ● - OFF

Notes:

1. If faults occur in more than one thermistor (except case number 12 on the table above), only one fault will be indicated according to the following order: RT3, RT2, RT1.
2. A/C will jump out to normal mode if sending a command by the R/C in the system diagnostics mode. If this command from the R/C contain a Group ID, this ID will become the new Group ID of the ELCON unit.

14. TROUBLESHOOTING

ELECTRICAL & CONTROL TROUBLESHOOTING

ATTENTION: check for broken or loose cable lugs first.

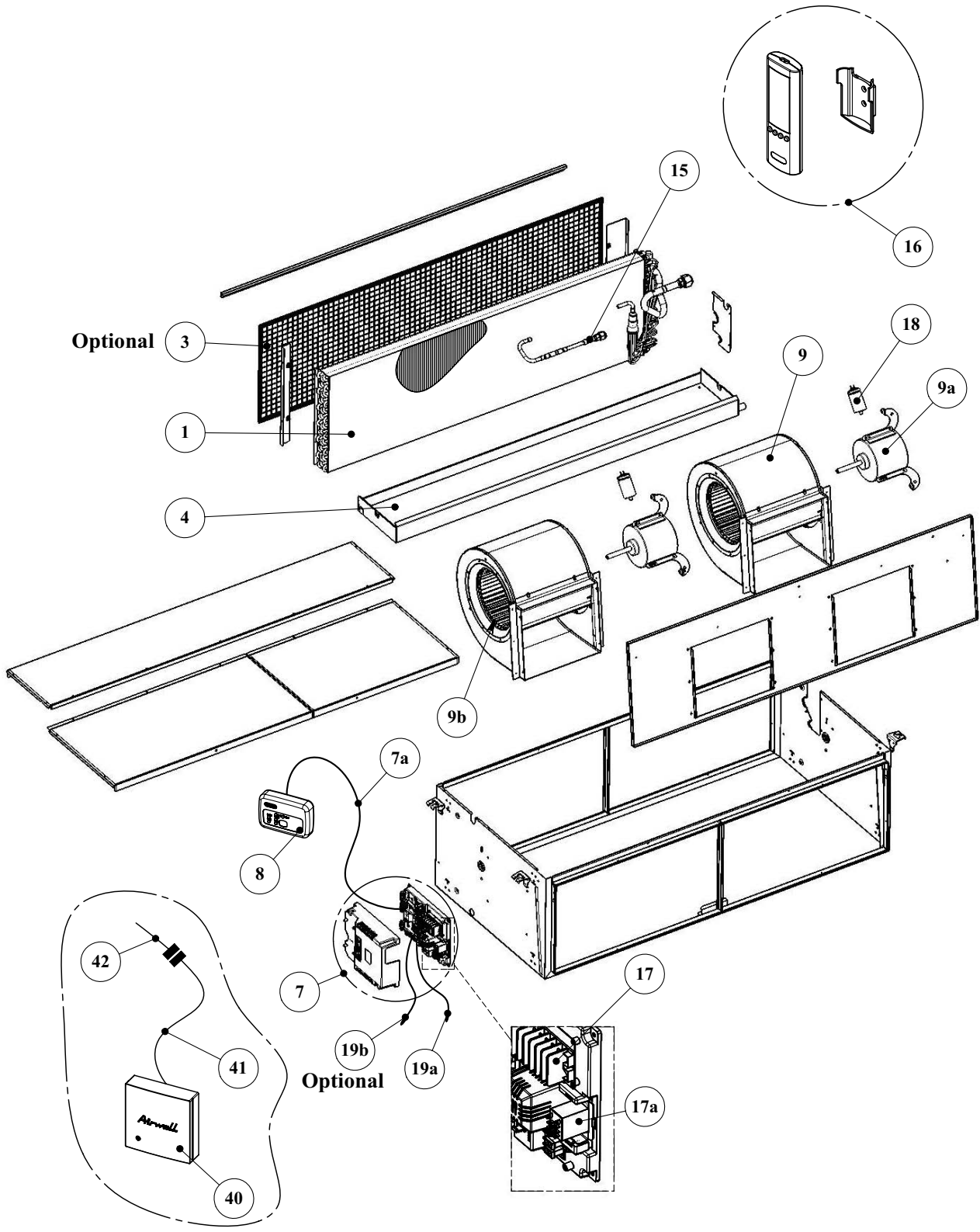
NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
1.	The stand-by indicator (red led) on the central control display panel doesn't light up.	There is no correct voltage between the line and neutral terminals on main P.C.B.	-If the voltage is low repair power supply. -If there is no voltage repair general wiring. -If there is correct voltage replace main or display P.C.B'S
2.	The operation indicator (green led) on the central control display panel does not light up.	The remote control batteries are discharged	-Replace batteries of the remote control
3.	The operation indicator (green led) does not light up when starting from unit.	Check main P.C.B and display P.C.B.	-Replace P.C.B if necessary.
4.	The indoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B.	- If there is voltage replace capacitor or motor.
5.	The outdoor fan does not function correctly.	Check the voltage between outdoor fan terminals on the main P.C.B. There is voltage between outdoor fan terminals on the outdoor unit. There is no voltage between outdoor fan terminals on the outdoor unit.	- If there is no voltage replace main P.C.B - Replace capacitor or motor. - Check and repair electrical wiring between indoor and outdoor units.
6.	The compressor does not start up.	Check voltage on compressor terminals on the outdoor unit. (with ammeter) Check if there is correct voltage between compressor terminals on the outdoor unit.	-If no voltage replace main P.C.B. - If low voltage repair power supply. -If the voltage correct replace capacitor or compressor. -If there is no voltage repair electrical wiring between indoor and outdoor units.
7.	The refrigeration system does not function correctly.	Check for leaks or restrictions, with ammeter, pressure gauge or surface thermometer.	- Repair refrigeration system and charge refrigerant if necessary.
8.	No cooling or heating only indoor fan works.	Outdoor fan motor faulty or other fault caused, compressor overload protection cut out.	-Replace P.C.B. - Outdoor fan blocked remove obstructions.

ATTENTION : check for broken or loose cable lugs first

NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
9.	Only indoor fan and compressor working.	Outdoor fan blocked.	- Remove obstructions.
10.	Only indoor fan working.	-Run capacitor of outdoor fan motor faulty. -Windings of outdoor fan are shorted.	- Replace capacitor. -Replace motor.
11.	No cooling or heating takes place, indoor and outdoor fans working.	- Overload safety device on compressor is cut out (low voltage or high temperature) - Compressor run capacitor faulty. - Compressor windings are shorted.	- Check for proper voltage, switch off power and try again after one hour. - Replace compressor capacitor. - Replace compressor.
12.	No air supply at indoor unit, compressor operates.	-Indoor fan motor is blocked or turns slowly. -indoor fan run capacitor faulty. - motor windings are shorted.	- Check voltage, repair wiring if necessary. -Check fan wheel if it is tight enough on motor shaft, tighten if necessary. -Replace indoor fan motor.
13.	Partial, limited air supply at indoor unit.	Lack of refrigerant (will accompanied by whistling noise) cause ice formation on indoor unit coil in cooling mode.	-Charge the unit after localizing leak.
14.	Water accumulates and overflow from indoor unit section.	Drain tube or spout of drain pan clogged.	-Disassemble plastic drain tube from spout of indoor unit drain pan.
15.	Water dripping from outdoor unit base. (in heating mode)	Water drain outlet is clogged.	-Open outdoor unit cover clean out water outlet clean the base inside throughly.
16.	Freeze-up of outdoor coil in heating mode, poor heating effect in room, indoor fan operates.	-Faulty outdoor thermistor. -Faulty control cable. - Outdoor temperature is too low (below -2°C) -Outdoor unit air outlet is blocked.	-Replace thermistor. - Repair control cable. - Shut unit off, outdoor temp. is below design conditions and cannot function properly. -Remove obstructions.

15. EXPLODED VIEWS AND SPARE PARTS LISTS

15.1 Indoor Unit: CD 60 R410A

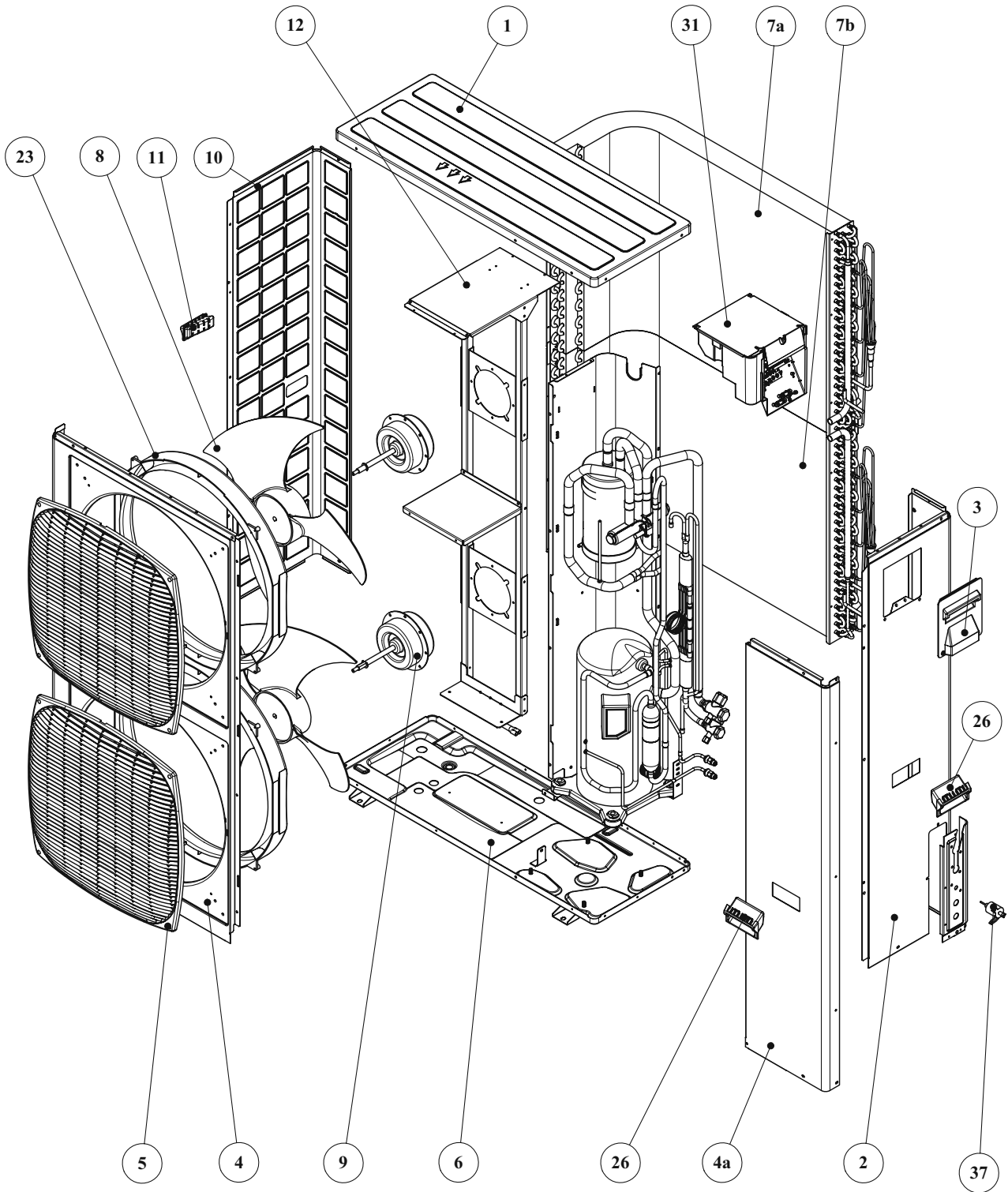


Option for External Room Temperature Sensor

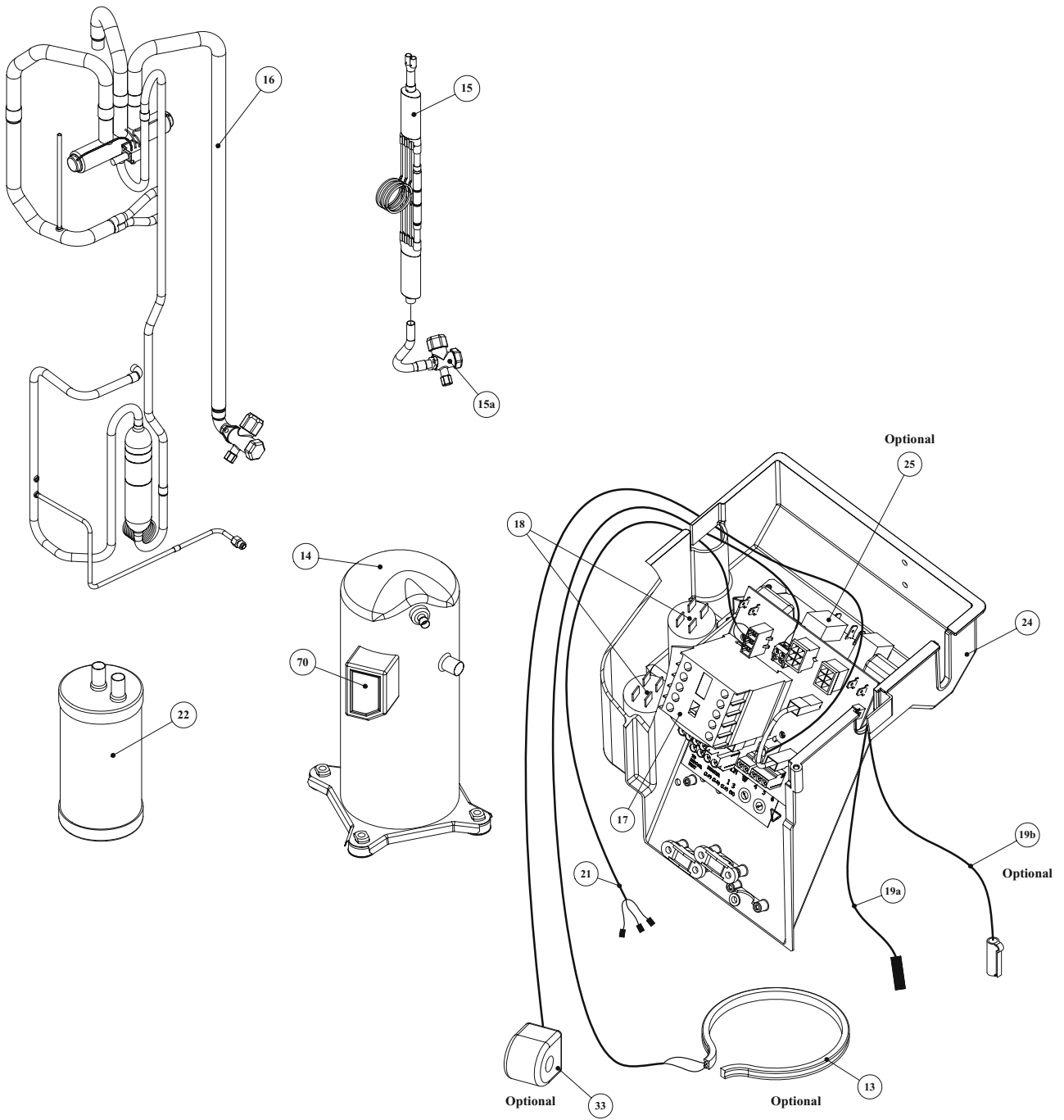
15.2 Indoor Unit: CD 60 R410A

No.	Item Code	Item Description	Quantity
1	475420	IU COIL GR/HDR CD 60	1
4	475009	INSULATED DRAIN PAN ASSY CD60	1
7	438769	CONTROLLER EMZ 10V8 (RoHS)	1
7a	404020	CABLE 8 WIRES 7M WTH CONNECTOR	1
8	438778	WIRED DISPLAY BOX EMD/ELD (RoSH)	1
9	182241	RT FAN MOTOR DD9*9 CAP. P2	2
9a	402003	MOTOR 343W, 4S, EMD 1100	1
9b	435413	FAN 240*240	2
15	475526	INLET MANIFOLD ASSY CD 60	1
16	4527178R	REMOTE CONTROL RC RC7 GRAY	1
17	430535	*TERMINAL BLOCK RW-52 P6/90	1
17a	192106	RELAY 230V 10A	1
18	442015	CAPACITOR 15mF 400V P1/P2	2
19a	400275	THERMISTOR+CAP WTH CONNECTOR	1
40	442297	THERMISTOR BOX AIRWELL	1
41	467030054	SHIELDED DEFROST CABLE	2
42	442296	ADAPTOR THERMISTOR WTH CONNECTOR	1

15.3 Outdoor Unit: OU12-60T R410A



15.3 Outdoor Unit: OU12-60T R410A



15.4 Outdoor Unit: OU12-60T R410A

No.	Item Code	Item Description	Quantity
1	416243	UPPER COVER EL13 OU LARGE	1
2	434798	SIDE PANEL OU12 Fix RPM	1
3	436357	SMALL ELECTRICAL COVER OU	1
4	416215	FRONT COVER OU12 DCI 4-5HP	1
4a	416216	FRONT Panel OU12 DCI 4-5HP	1
5	437091	OU SQUARE FAN GUARD	2
6	434792	NEW BASE ASSY OU12 Fix RPM EXPORT	1
7a	456720	LOWER COIL GR HDR OU12-60 R410A	1
7b	456721	UPPER COIL GR HDR OU12-60 R410A	1
8	4529604	AXIAL FAN D493*143	2
9	434211	MOTOR 70W,2S,OU7/8	2
10	416218	SIDE GUARD OU12 DCI 4-5HP	1
11	436358	OU LEADING HANDLE	1
12	434783	MOTOR SUPPORT ASSEMBLY OU12	1
13	190444	HEATER CRANKCASE OU12	1
14	433975	COMPRESSOR ZP67KCE-TFD	1
15	456732	CAPILLARY ASSY OU12-60 R410A	1
15a	456733	VALVE ASSY OU12-60 R410A	1
16	456727	TUBING ASSY OU12-60 R410A	1
17	438774	BOARD TPHN 3B (RoHS)	1
18	442007	CAPACITOR 6mF 400V P1/P2	2
19a	400275	THERMISTOR+CAP WTH CONNECTOR	1
19b	402741	THERMISTOR WTH CONNECTOR L1250	1
21	439448	COMPRESSOR WIRING WITHOUT PLUG	1
22	402284	SUCTION ACCUMULATOR 5" x 3/4"	1
23	439928	OUTLET PLASTIC RING OU8	2
24	437229	ELECTRICAL BOX TPHN	1
25	438803	3PH MOTOR PROTECTOR (RoHS)	1
26	436352	RAISING HANDLE OU10	2
31	402165	TYPHOON BOX COVER	1
33	442466	VALVE COIL L700 MOLEX-SANHUA	1
37	436397	HIGH PRESSURE SWITCH R410A	1

16. OPTIONAL ACCESSORIES

16.1 RCW Wall Mounted Remote Control

16.1.1 The RCW wall mounted remote control can be fitted to a large range and models, It can be used as IR (wireless mode) or wired controller.the RCW can control up to 15 indoor units using the same settings (on its wired application).

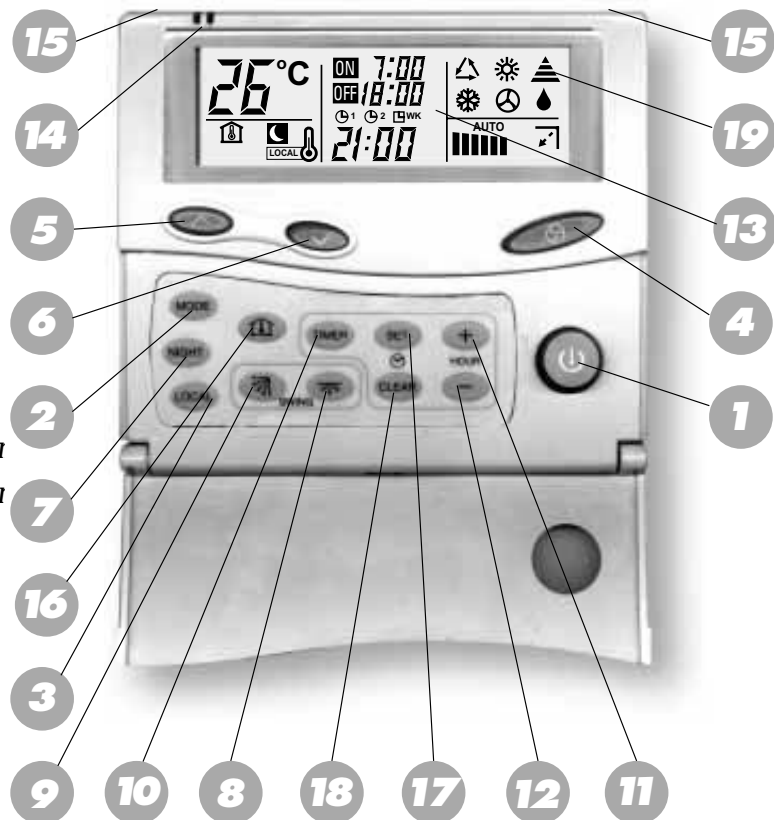
The max wiring length between the controller to the last indoor unit is 300m. for application on WNG LED indoor units an additional interface PCB is needed.

Ordering code no':

RCW – 436195
WNG add' PCB - SP000000290.

REMOTE CONTROL

1. START / STOP button
2. Operation mode selection button COOLING, HEATING, AUTO COOL / HEAT, DRY, FAN.
3. LOCAL temperature sensing button
4. FAN SPEED and AUTO FAN button
5. Room temperature UP button
6. Room temperature DOWN Button
7. NIGHT button
8. Airflow direction MANUAL positioning cor
9. Airflow direction AUTO-CONTROL button
10. TIMER button
11. TIMER UP button
12. TIMER DOWN button
13. LCD operation display
14. LOCAL sensor
15. Infrared signal transmitter
16. ROOM temperature button
17. TIMER SET button
18. TIMER CLEAR button
19. Transmission sign



16.2 RCW2 Wall Mounted Remote Control

16.2.1 The RCW2 wall mounted remote controller is a wired controller that can provide effective controlling management up to 15 different settings and temp' zones.

The RCW2 can be connected up to a max' of 32 units, allowing a max wiring length of 1000m for application on WNG LED indoor units an additional interface PCB is needed.

Ordering code no':

RCW2 – SP00000081

WNG add' PCB - SP000000290

1 Display screen.

2 Keys for raising and lowering the set temperature.

3 Ventilation mode selection :

- ▮ Low speed.
- ▮▮ Medium speed.
- ▮▮▮ High speed.
- AUTO : Automatic speed selection.

4 ON / Standby.

(SET) Accessing the time setting mode.

(+) Advancing the time setting.

(-) Retarding the time setting.

(CLEAR) Clearing memory of programmed time settings in programming mode.

(LOCAL DAY) Day of the week selection key or sending "I feel" local temperature setting.

(PROG) Programming mode key.

(COPY) "Copy" key, enabling zone parameters to be duplicated for other zones.

(MODE) Operating mode selection.

(NIGHT) Day /Night key.

(▲) Current zone setting: zone above.

(▼) Current zone setting: zone below.

(↕) Louver : step by step or horizontal.

(⌘) Louver : vertical.

1 Display screen.

2 Keys for raising and lowering the set temperature.

3 Ventilation mode selection :

- ▮ Low speed.
- ▮▮ Medium speed.
- ▮▮▮ High speed.
- AUTO : Automatic speed selection.

4 ON / Standby.

(SET) Accessing the time setting mode.

(+) Advancing the time setting.

(-) Retarding the time setting.

(CLEAR) Clearing memory of programmed time settings in programming mode.

(LOCAL DAY) Day of the week selection key or sending "I feel" local temperature setting.

(PROG) Programming mode key.

(COPY) "Copy" key, enabling zone parameters to be duplicated for other zones.

(MODE) Operating mode selection.

(NIGHT) Day /Night key.

(▲) Current zone setting: zone above.

(▼) Current zone setting: zone below.

(↕) Louver : step by step or horizontal.

(⌘) Louver : vertical.

16.3 Room Thermostat

Room Thermostat kit PN: 442298
 Thermistor with connector PN: 442296

Before starting the connection verify that the unit is disconnected from main power supply!!

ROOM THERMOSTAT INSTALLATION INSTRUCTIONS

Check the installation manual for further information

Supplied components list:

No.	Item	QTY	PN
1	Thermostat box	1	442298
2	Shielded cable	1	
3	Screws and plugs	2	
4	LABEL	1	
5	BAG	1	

1	Extension cable with connector	1	442296
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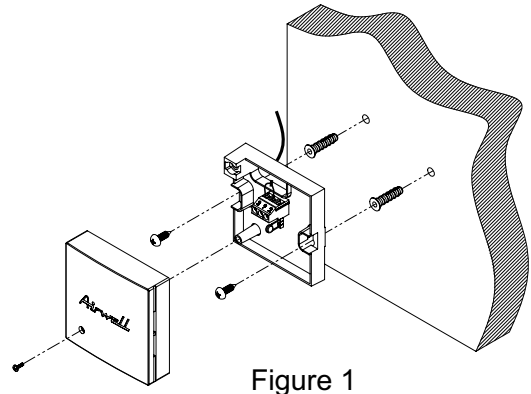


Figure 1

Choosing location of installation:

- Away from air drafts
- Away from direct sun light rays
- Average height – 1.5 meters above floor
- Away from any heat source

1. Install the thermostat box on the wall according the above location preferences. See figure 1.
2. Connect the shielded cable supplied to the thermostat box into points 3 and 9 (non polarity).
3. Disconnect the existing “RM” sensor from the indoor unit main controller.
4. Connect the other end of “RM” extension cable to the the sheilded cable. Also connect the grounding fork terminal into the grounding terminal point.
5. In the indoor unit main controller, move the dip switch #2 to OFF position.

APPENDIX A

INSTALLATION AND OPERATION MANUAL

- ▶ **INFRADED REMOTE CONTROL RECEIVER**
- ▶ **OPERATION RC7**
- ▶ **INSTALLATION INSTRUCTION**

AIR CONDITIONING

Airwell

GB

La Clim, c'est Airwell.

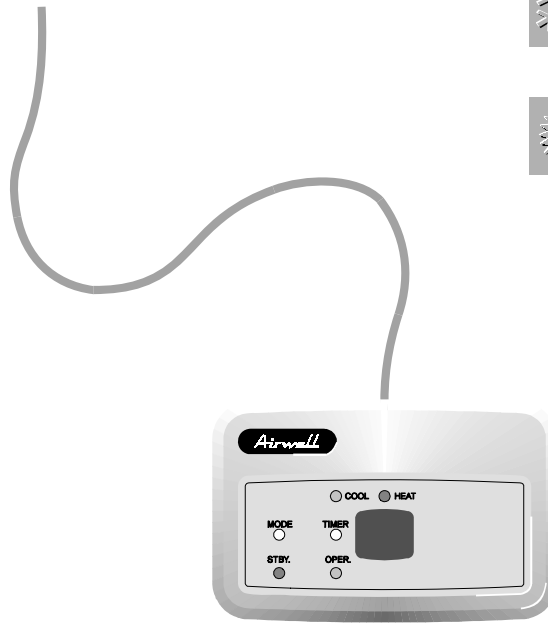
Comfort Range



Cooling only



Heatpump



TH 2729 B - 399244

INFRARED REMOTE CONTROL RECEIVER

COOL: Cooling LED

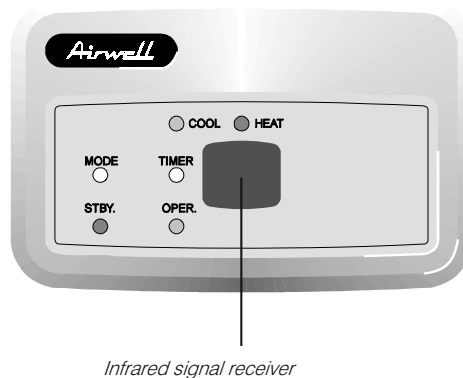
HEAT: Heating LED

TIMER: Timer active

OPER: Operation LED. Comes on when the system is operating.
Flashes to indicate reception of an infrared signal.

STBY: Standby LED. Lit when the system is connected and ready to receive commands from the remote control unit.

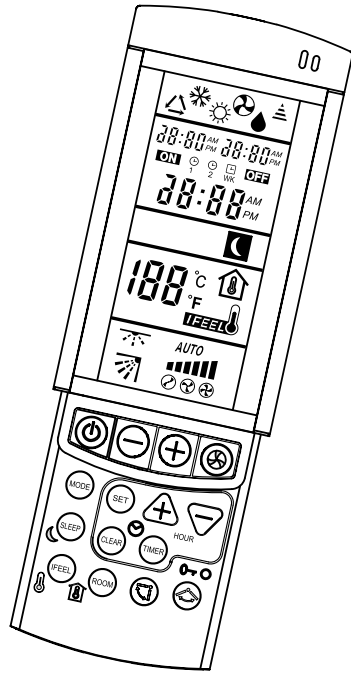
MODE: Emergency switch. In case of unavailability of the remote unit, this switch is used to select heating or cooling.



NOTE:

The COOL and HEAT LEDs only come on when the receiver MODE switch is used.

REMOTE CONTROL MANUAL



CONTENT

PRECAUTIONS1-2

USING THE REMOTE CONTROL UNIT3

OPERATION4-9



**Thank you for
purchasing our
Room Air Conditioner.**

Before using your air-conditioner, please read this operating instruction carefully and keep it for future reference.

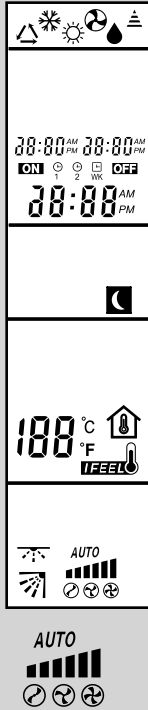
468040197/01

PRECAUTIONS

DISPLAY

Information are displayed when the remote control unit is switched on.

Operation Mode



- Automatic Heating Cooling
- Fan only Dehumidification (dry)
- Displayed when data transmitted Or remote control unit lock

- Shows the type of timer Clock (hours and minutes)
- Displayed when the timer on is set and activated
- Displayed when the timer off is set and activated

- Displayed in Sleep Mode Operation

- Set temperature or room temperature
- Displayed when the temperature is the room temperature
- Indicate that the air conditioner is operating in I FEEL mode

- Automatic horizontal air flow oscillation switched on (option)
- Automatic flap oscillation switched on

Fan speed indication

- Automatic fan speed
- Low speed Medium speed High speed

ON/OFF OPERATION BUTTON

This button turns the air conditioner ON and OFF.

MODE SELECTOR BUTTON

Press this button to modify the air conditioner mode.

(automatic) ★

When this setting is selected, the air conditioner calculates the difference between the thermostat setting and the room temperature and automatically switches to the "cool" or "heat" mode.

(heating)

The air conditioner makes the room warmer.

dehumidification (dry)

The air conditioner reduces the humidity in the room.

(cooling)

The air conditioner makes the room cooler.

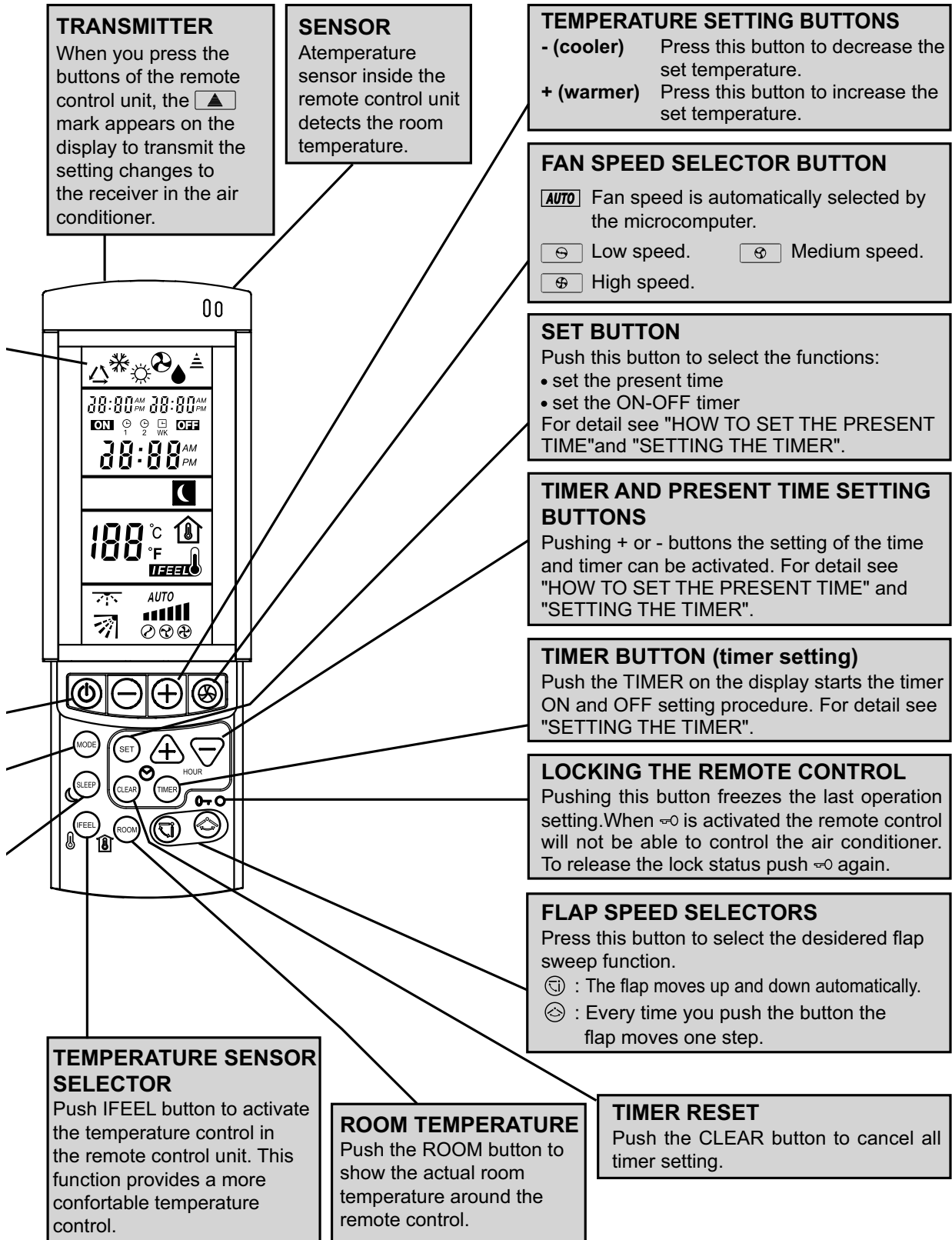
(fan)

The air conditioner circulate the air.

★ **COOL / DRY / HEAT / FAN Models**

SLEEP BUTTON

For details, see "Sleep mode". When you press this button in the COOL, HEAT or DRY mode, the mark appears on the display and the microcomputer in the remote control unit will adjust the set temperature to save energy.



USING THE REMOTE CONTROL UNIT

HOW TO INSTALL BATTERIES

- Remove the lid in the rear part of the remote control unit.
- Insert two AAA alkaline batteries of 1,5 V-DC. Make sure the batteries point in the direction marked in the battery compartment.
- The batteries last about six months. Depending on how much you use the remote control unit. Remove the batteries if you do not use the remote control unit for more than one month. Press the +, -, SET and CLEAR buttons together after batteries replacement. (This operation allows you to reset correctly all the programs. The remote control unit is to be set up again).
Replace the batteries when the remote control unit lamp fails to light, or when the air conditioner does not receive the remote control unit signals.
- The batteries of the remote control contain polluted substances exhausted batteries must be disposed according to the laws in force.

TEMPERATURE SENSOR SELECTOR

- Under normal conditions the room temperature is detected and checked by the temperature sensor placed in the air conditioner.
- Press the remote control I FEEL button to activate the temperature sensor placed in the remote control. This function is designed to provide a personalised environment by transmitting the temperature control command from the location next to you. Therefore, in using this function, the remote control should always be aimed, without obstruction, at the air conditioner.

NOTE

The remote control unit sends the temperature signal to the air conditioner regularly at two minute intervals. If the signal from the remote control unit stops for more than five minutes due to some troubles, the air conditioner will switch to the temperature sensor which is built into the indoor unit and controls the room temperature. In these cases, the temperature around the remote control unit may differ from the temperature detected in the air conditioner position.



REMOTE CONTROL
UNIT DISPLAY

OPERATION WITH THE REMOTE CONTROL UNIT



Check that the circuit breaker on the power panel is turned ON and the STANDBY lamp is light up. When using the remote control unit, always point the unit transmitter head directly at the air conditioner receiver.

HOW TO TURN ON THE AIR CONDITIONER

Press the ON/OFF button to turn the air conditioner on. The indicator OPERATION will light up, indicating the unit is in operation.


OPERATION

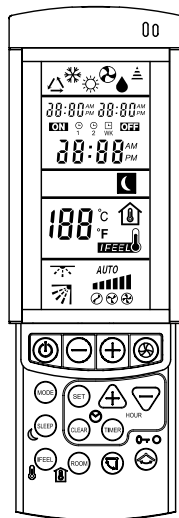
HOW TO SET THE PRESENT TIME

1. Press the SET button for five seconds. The time indication alone flashes.
2. Press the + or - buttons until the present time is displayed.
3. Press the SET button to stop the indication flashing.

COOLING

Verify that the unit is connected to the main power and the STANDBY lamp is light up.


1. Set the MODE selector to COOL .
2. Press the ON/OFF button and switch the air conditioner ON.
3. Press the TEMP. buttons to set the desired temperature (the temperature range is between 30°C max. and 16°C min.).

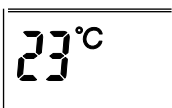


THE DISPLAY SHOWS THE SELECTED TEMPERATURE.

4. Press the FAN SPEED button to select the fan speed.
5. Press the FLAP buttons and adjust the air flow direction as desired (see adjustment of air flow). Make sure that the remote control is switched on.

HEATING

1. Set the MODE selector to HEAT .
2. Press the ON/OFF button and switch the air conditioner ON.
3. Press the TEMP. buttons to set the desired temperature (the temperature range is between 30 °C max. and 16 °C min.).



THE DISPLAY SHOWS THE SELECTED TEMPERATURE.

4. Press the FAN SPEED button to select the fan speed.
5. Press the FLAP buttons and adjust the air flow direction as desired (see adjustment of air flow). Make sure that the remote control is switched on.

NOTE

For several minutes after the start of heating operation, the indoor fan will not run until the indoor heat exchanger coil has warmed up sufficiently. This is because the COLD DRAFT PREVENTION SYSTEM is operating.

• DEFROSTING OF HEAT EXCHANGE OUT DOOR UNIT "STANDBY"


When the outdoor temperature is low, frost or ice may appear on the heat exchanger coil, reducing the heating performance. When this happens, a microcomputer defrosting system operates. At the same time, the fan in the indoor unit stops and the OPERATION lamp is flashing until defrosting is completed. Heating operation restarts after several minutes. (This interval will vary slightly depending on the room and outdoor temperature).

• HEATING PERFORMANCE

A heat pump conditioner heats a room by taking heat from outside air. The heating efficiency will fall off when the outdoor temperature is very low. If enough heat is not obtained with this air conditioner, use another heating appliance in conjunction with it.

OPERATION

AUTOMATIC OPERATION


1. Set the MODE selector to AUTO .
2. Press the ON/OFF button and switch the air conditioner ON.
3. Press the TEMP. buttons to set the desired temperature (the temperature range is between 30 °C max. and 16 °C min.).

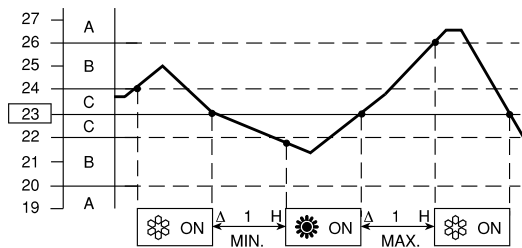


THE DISPLAY SHOWS THE SELECTED TEMPERATURE.

When this setting is selected, the air conditioner calculates the difference between the thermostat setting and the room temperature and automatically switches to the COOL or HEAT mode as appropriate.

4. Switch the FAN SPEED selector button to the setting you want.

Example of operation diagram in the  (Auto) mode with the set room temperature at 23°C.




NOTE

The air conditioner changes the operation mode (from cool to heat), if one of the following conditions occurs:

- **ZONE A:** changes if the difference between the room temperature and the temperature set on the remote control unit is at least 3°C..
- **ZONE B:** changes if the difference between the room temperature and the temperature set on the remote control unit is at least 1°C, one hour after the compressor stop.
- **ZONE C:** never changes if the difference between the room temperature and the temperature set on the remote control unit is no more than 1°C.

DEHUMIDIFYING (DRY)

1. Set the MODE selector switch to “DRY” .
2. Press the ON/OFF button and switch the air conditioner ON.
3. Press the TEMP. buttons to set the desired temperature (the temperature range is between 30 °C max. and 16 °C min.).




THE DISPLAY SHOWS THE SELECTED TEMPERATURE.

NOTE

- Use DRY operation when you want to reduce the humidity in the room.
- Once the room temperature reaches the set level, the unit repeats the cycle of turning on and off automatically.
- During DRY operation, the fan speed is automatically set to low or stops to prevent overcooling.
- Dry operation is not possible if the indoor temperature is 15 °C or less.

FAN ONLY

If you want to make air circulate without any temperature control, follow these steps:

1. Set the MODE selector switch to “FAN” .
2. Press the ON/OFF button and switch the air conditioner ON.

OPERATION

ADJUSTING THE FAN SPEED

• AUTOMATIC

Simply set the FAN SPEED selector to the **AUTO** position . A microcomputer automatically controls the fan speed when the AUTO mode is selected. When the air conditioner starts operating, the difference between the room temperature and the set temperature is detected by the microcomputer which then automatically switches the fan speed to the most suitable level.

NOTE

In FAN Only mode the fan speed is adjusted automatically as in cooling mode.

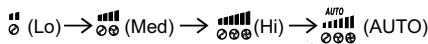
WHEN DIFFERENCE BETWEEN ROOM TEMPERATURE AND SET TEMPERATURE IS		FAN SPEED
Cooling and dehumidifying modes:	2 °C and over	High
	Between 2 and 1 °C	Medium
	Below 1 °C	Low
Heating mode:	2 °C and over	High
	Below 2 °C	Medium

The above mentioned data make reference to the conditioner operating when the sensor on the remote control unit is ON. If the sensor on the indoor unit is being used then actual operation will slightly differ from that described in the above tables.

• MANUAL

If you want to manually adjust speed just set the FAN SPEED selector as desired.

Each time the button is pressed, the fan speed is changed in sequence:



SLEEP MODE

The SLEEP mode enables you to save energy.

1. Set the MODE selector to cool, dry or heat.
2. Press the SLEEP button.
3. The mark appears on the display. Press the SLEEP button again to release the SLEEP function.

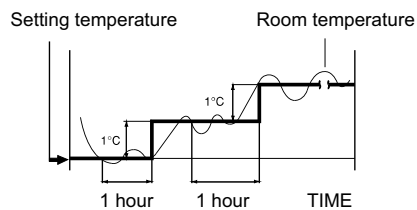
What does the SLEEP mode mean?

In this mode, the air conditioner will cool or heat the room to the set temperature, and then the thermostat will make the unit pause. After about 1 hour, the air conditioner will automatically reset the set temperature as follows (also refer to graphs).

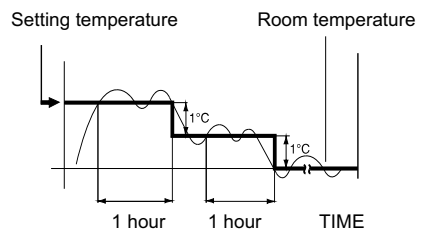
OPERATING MODE	SET TEMPERATURE CHANGE
Heating	Lowered by 1 °C
Cooling and Dehumidifying	Raised by 1 °C

When the room temperature reaches the new set value, the thermostat will cause the unit to pause. After about 1 hour the temperature will be raised by 1 °C in cooling, or lowered by 1 °C in heating. This enables you to save energy without sacrificing your comfort.

COOLING AND DEHUMIDIFYING




HEATING




OPERATION

I FEEL TEMP FUNCTION OPERATION

Press button IFEEL to activate the IFEEL function. Thermometer sign will appear on the LCD operation display . Select suitable temperature setting. Make sure that the remote control unit is aimed at the air conditioner, with the IFEEL sensor in front. Prevent the IFEEL sensor from being affected by heat sources such as lamps, heaters, direct sun, etc. or from being directly affected by the air conditioner air flow. These may cause the sensor to transmit the wrong temperature data, thereby disturbing the performance of the IFEEL function.

ROOM TEMP FUNCTION OPERATION


Press the ROOM button to show the actual room temperature around the remote control unit. The measured room temperature and the room temperature sign  will be displayed. To cancel the ROOM Temperature display press on one of the following:

- Press again on ROOM Temperature button.
- Change of MODE button.

NOTE

Room temperature range is between 6 and 36 in 1 increments. Display should show "HI" or "LO" to represent temperature that is above 36 or below 6.

LOCK FUNCTION

By pressing LOCK button, the remote control will lock the last operation program. All the function buttons will be inoperative, including START/STOP button. By pressing LOCK button again the remote control will be released from its locked position. When lock mode is functioning, the transmission sign  will be on.

SETTING THE TIMER

There are four timers that can be selected on the remote control. Two daily timers (designated as T1, T2), and two optional weekend timers (designated as WKT1, WKT2). Each timer can be selected by pressing TIMER button.

The daily timers T1 and T2 can be set for ON and OFF separately for two different time periods. Timer setting will not change until new setting is input.

The weekend timers WKT1 and WKT2 can be set for ON and OFF separately for two different time periods and they are effective two days only. These timers will be effective on the day of setting and on the day after only.

At 24:00 on the second day, the WK timer will not be effective anymore and the daily timer will be effective again.

WKT1 - effective on the setting day

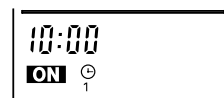
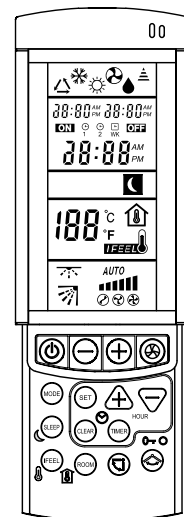
WKT2 - effective one day after the setting day.

NOTE:

1. During the weekend timer operation, the daily timers will be disabled.
2. The WK timers must be reactivated before every weekend.

A) HOW TO SET THE ON TIME

1. Press the TIMER button to select the desired timer.
2. Press the SET button till the ON sign blinks.
3. Press the + or - (HOUR) button until the desired value is displayed.
4. Press the SET button to activate the timer.

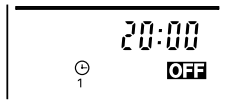


B) HOW TO SET THE OFF TIME

1. Press the TIMER button to select the desired timer.
2. Press the SET button till the OFF sign blinks.

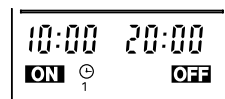
OPERATION

3. Press the + or - (HOUR) button until the desired value is displayed.
4. Press the SET button to activate the timer.



C) HOW TO SET A PROGRAM FOR DAILY ON/OFF OPERATION

1. Press the TIMER button to select the desired timer.
2. Press the SET button till the ON sign blinks.
3. Press the + or - (HOUR) button until the desired value is displayed.
4. Press the SET button again, the OFF sign blinks.
5. Press the + or - (HOUR) button until the desired value is displayed.
6. Press the SET button to activate the timer.



D) HOW TO CLEAR THE TIMER

1. Press the TIMER button to select the timer.
2. Press the CLEAR button if you want that every timer operation will be cleared.



NOTE

If the procedure to set the timer is not completed, by pushing the SET button, within 15 seconds the timer operation will be cancelled and the last set-up is restored.



ADJUSTING THE AIR FLOW DIRECTION

HORIZONTAL (manual)

The horizontal air flow can be adjusted by moving the vertical vanes to the left or right, as indicated in the following figures.

VERTICAL (with remote control unit)

The remote control gives you the possibility to control the flap in two way:

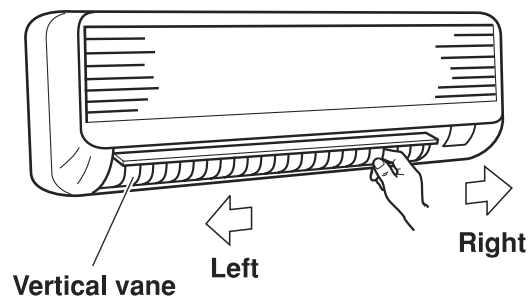
1. Push the  button to start the flap sweep. If you push again the flap stops immediately.
2. push the  button to move the flap step by step. Or activate the horizontal air flow option is selectable via switch.



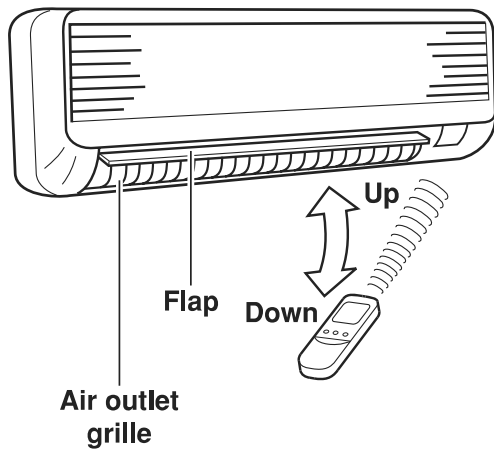
Set vertical vanes to the front position during COOLING/DRY operation if humidity is high. If the vertical vanes are set to the left-most or right-most position, condensation will form around the air outlet and drip off.



Do not move the flap with your hands when the air conditioner is running.



OPERATION



⚠ Caution

Use the FLAP button on the remote control to adjust the position of the flap. If you move the flap by hand, the factual flap position and the flap position on the remote control may no longer match. If this should happen, shut off the unit, wait for the flap to close, and then turn on the unit again; the flap position will now be normal again.

Do not have the flap pointed down during cooling operation. Condensation may begin to form around the air vent and drip down.

NOTES

The flap automatically closes when the unit is off.

During the heating operation, the fan speed will be very low and the flap will be in the horizontal position until the air being blown out of the unit begins to warm. Once the air warms up, the flap position and fan speed change to the settings specified with the remote control.