



# FLOW LOGIC RANGE

R410A VRF AIR CONDITIONING SOLUTIONS



*Airwell*

## The FLOW LOGIC Solution

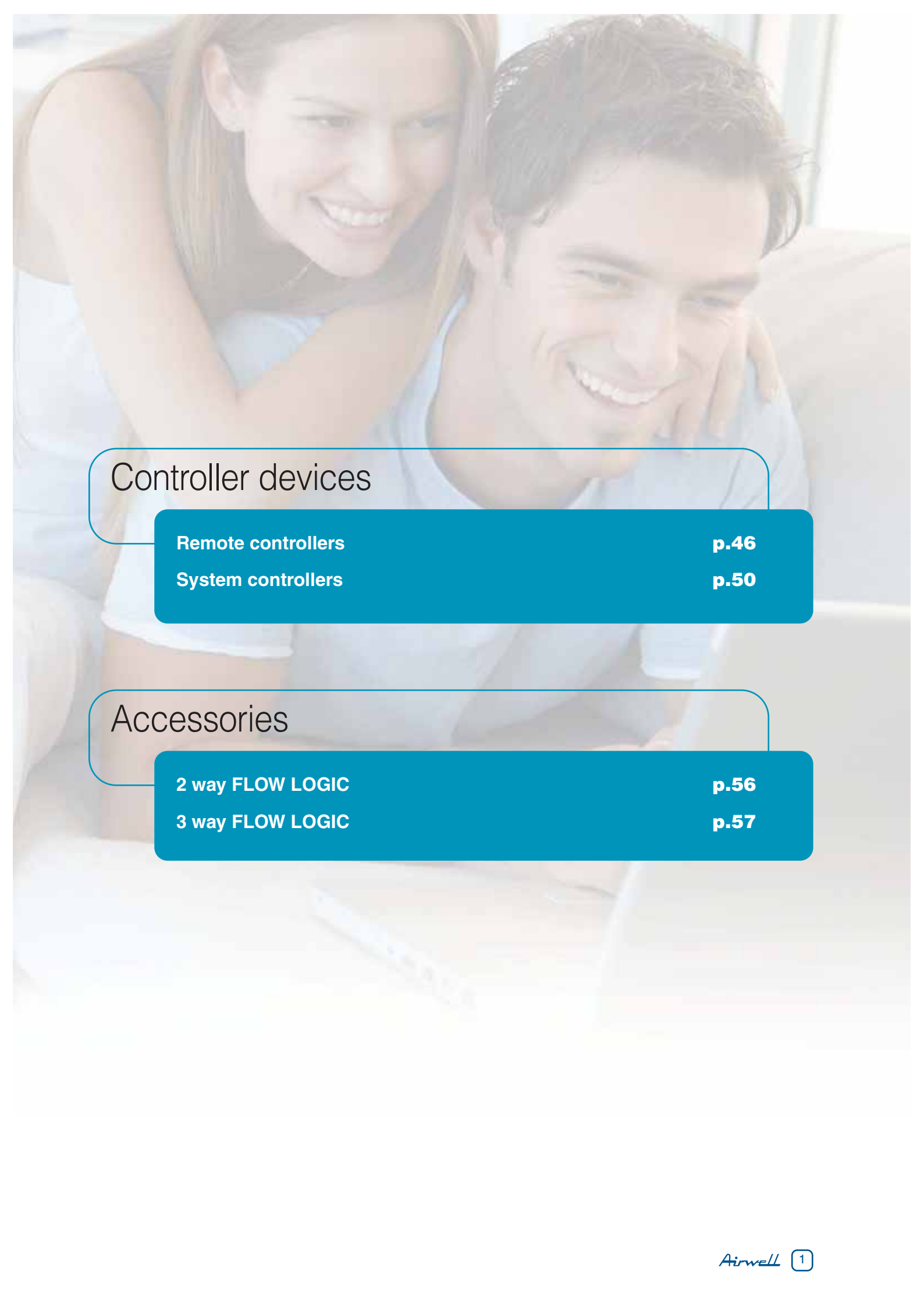
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## The range of Outdoor Units

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<b>2 way FLOW LOGIC</b>	<b>p.12</b>
<b>3 way FLOW LOGIC</b>	<b>p.18</b>

## The range of Indoor Units

<b>NK6FL : 4 way cassette 600x600</b>	<b>p.26</b>
<b>NKFL : 4 way cassette</b>	<b>p.28</b>
<b>NK2FL : 2 way cassette</b>	<b>p.30</b>
<b>NK1FL : 1 way cassette</b>	<b>p.32</b>
<b>NDSL P : Extra Slim Ducted</b>	<b>p.34</b>
<b>NDLP : Low pressure ducted</b>	<b>p.36</b>
<b>NDHP : High pressure ducted</b>	<b>p.38</b>
<b>NPFL : Under ceiling unit</b>	<b>p.40</b>
<b>NWFL : Wall mounted</b>	<b>p.42</b>
<b>NFFL : Console with casing</b>	<b>p.44</b>

A young man and woman are sitting on a couch, smiling and looking at a laptop screen. The woman is leaning over the man's shoulder. The background is bright and slightly blurred.

## Controller devices

**Remote controllers**

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**System controllers**

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## Accessories

**2 way FLOW LOGIC**

**p.56**

**3 way FLOW LOGIC**

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**FLOW LOGIC** is a range of variable refrigerant flow solutions for heating and air conditioning applications comprising of three innovative systems each utilising high performance R410a refrigerant. This range is unmatched by anything on the market and can independently pilot **up to 40 indoor units**, giving a capacity of between 4 and 48HP (11 to 135 kW). The DC Inverter technology means that these systems achieve remarkable energy efficiency (**COP greater than 4**) whilst offering ultra silent operation, and a compact footprint.

This range of products is adapted to numerous applications : residential, small businesses, major office complexes, shopping centres or hotels etc : and this is thanks to its numerous technical assets such as :

- A range of single phase units,
- Significant refrigerant pipe lengths and height differences,
- Minimum outdoor temperature for heating mode operation -20°C,
  - Simultaneous heating and cooling



### ■ GUARANTEES

These reliable and high performance ranges, containing proven components, are equipped with the latest generation DC Inverter technology. We are so confident of the performance of our products that we guarantee all the compressors in the FLOW LOGIC range for **5 years**, and parts and service contribution for **3 years**, providing the equipment is installed and maintained by an approval Airwell installer.

### ■ OPTIMAL ENERGY SAVINGS – GOOD FOR THE ENVIRONMENT

The energy efficiency of the FLOW LOGIC range is exceptional thanks to the use of DC Inverter compressors and the use of variable speed fan motors. Therefore for 1kw of electricity used by the system, up to 4kWh of heat output is generated. As the units operate using R410A, the entire range of products contributes to the preservation of the environment (high performance “green” fluid, recyclable and harmless to the ozone layer, reduction in energy consumption) within the framework of the Renewable Energy plan.



### ■ SILENT OPERATION

The Twin Rotary DC Inverter compressors are fitted across the entire FLOW LOGIC range producing a significant reduction in noise levels and vibrations that guarantees silent running.

## ■ FLOW LOGIC A HIGH PERFORMANCE SYSTEM FOR ALL THOSE INVOLVED IN THE PROJECT

- Owners or users benefit from a system which offers **significant energy savings** and has a direct impact on their fuel bills.
- The user benefits from a high performance system which guarantees **optimal comfort** all year round
- The installer benefits from the **simplicity of the installation procedure**
- The designer benefits from a number of tools (software and documents) which make it **easier to calculate the dimensions of the system**.

### ■ A COMPLETE RANGE OF INDOOR UNITS AND CONTROL DEVICES



All **indoor units** and **control devices** are the same across the three systems of the Airwell FLOW LOGIC range.

The 3 systems which make up the **FLOW LOGIC** range from AIRWELL make it possible to meet all requirements and all system configurations.

## 2 WAY MINI FLOW LOGIC



Composed of three single phase units of 4, 5, 6 HP, this range is designed for **residential** use or for **light commercial use**.

### > Product Advantages

- COP can reach 4.1
- Up to 9 units can be connected
- Single phase electrics
- Compact (0.32m<sup>2</sup> footprint)
- Minimum outdoor temperature for heating mode operation -20°C
- Minimum outdoor temperature for cooling mode operation -10°C
- DC Inverter compressor and ventilator
- Refrigerant tubing lengths of up to 150m

## 2 WAY FLOW LOGIC



Composed of DC Inverter models of 5 x 8, 10, 12, 14, 16 HP, this new generation of units enables a capacity range from 8 - 48 HP to be covered by combining up to 3 units. This range offers noise pressure levels that vary between 55 and 66 dB(A) without a silent mode, making these units the quietest on the market.

### > Product Advantages

- The whole range is DC Inverter.
- Capacity range from 8 to 48 HP.
- COP average of 3.9
- COP can reach 4.1, which is a 15% COP increase in relation to the previous range
- 12% increase in EER in relation to the previous range
- 40 indoor units connectable from 24HP to only 2 outdoor units
- Minimum outdoor temperature of heating mode operation -20°C
- DC Inverter fan
- Noise levels: 51.5 dB(A)\*
- Power Ratio 130%
- Indoor Units Identical to the FLOW LOGIC 3 way and Mini FLOW LOGIC R410A ranges
- Control device identical to the 3 way FLOW LOGIC and Mini FLOW LOGIC R410A ranges.
- Unit dimensions optimised
- De-icing between outdoor units
- Lead lag operation to maintain equal operating time
- Total connection length 300 metres
- Wide range of control systems (Wireless control devices, centralised, simplified, intelligent controller, GTC gateway.)

## 3 WAY FLOW LOGIC



Composed of 5 DC Inverter units of 8, 10, 12, 14, 16 HP, this range produces between 8 - 48 HP (22 - 135kW) and is designed for all top-of-the-range commercial applications. It operates simultaneously in both heating and cooling mode and has an heat reclaim system



### > Product Advantages

- COP average of 3.9
- EER average 3.4
- Simultaneous heating and cooling
- Heat reclaim system.
- 40 indoor units can be connected from 24HP
- DC Inverter compressor and ventilator
- Compact with 0.79m<sup>2</sup> footprint
- Minimum outdoor temperature for heating mode operation -20°C
- Minimum outdoor temperature for cooling mode operation -10°C
- Extremely silent operation (and even more so when in silent mode)
- DC Inverter compressor and ventilator
- Lead lag operation to maintain equal compressor operating time
- Total refrigeration tubing length of 300m




## OUTDOOR UNITS

Capacity in HP	4	5	6	8	10	12	14	16	18
Cooling capacity in kW	11,2	14	15,5	22,4	28	33,5	40	45	50,4
Heating capacity in kW	12,5	16	17,6	25	31,5	37,5	45	50	56,5




  

2 WAY MINI FLOW LOGIC				
	<b>Outdoor units</b>			
	Combination (HP)	4	5	6
	Reference	MFL 40H R410	MFL 50H R410	MFL 60H R410
	Oracle Code	7SP14R023	7SP14R024	7SP14R025











  

2 WAY FLOW LOGIC								
	<b>Outdoor units</b>							
	Combination (HP)	8	10	12	14	16	8+10	
	Reference	MFL 80R-3R410	MFL 100R-3R410	MFL 120R-3R410	MFL 140R-3R410	MFL 160R-3R410	MFL 80R-3R410	MFL 100R-3R410
	Oracle Code	7SP14R012	7SP14R013	7SP14R014	7SP14R029	7SP14R030	7SP14R012	7SP14R013



  



3 WAY FLOW LOGIC								
	<b>Outdoor units</b>							
	Combination (HP)	8	10	12	14	16	8+10	
	Reference	EFL 80-3R410	EFL 100-3R410	EFL 120-3R410	EFL 140-3R410	EFL 160-3R410	EFL 80-3R410	EFL 100-3R410
	Oracle Code	7SP14R018	7SP14R019	7SP14R020	7SP14R021	7SP14R022	7SP14R018	7SP14R019

## INDOOR UNITS

Size	7	9	12	
Capacity (cooling/heating in kW)	2,2/2,5	2,8/3,2	3,6/4,2	
<b>Wall mounted</b>		<b>ST-NWFL 7R</b>	<b>ST-NWFL 9R</b>	<b>ST-NWFL 12R</b>
Oracle Code	7SP02R296	7SP02R293	7SP02R294	
<b>Extra Slim Ducted</b>		<b>ST-NDSLPL 7R</b>	<b>ST-NDSLPL 9R</b>	<b>ST-NDSLPL 12R</b>
Oracle Code	7SP03R002	7SP03R003	7SP03R004	
<b>Ducted low static</b>		<b>ST-NDLP 7R</b>	<b>ST-NDLP 9R</b>	<b>ST-NDLP 12R</b>
Oracle Code	7SP03R068	7SP03R069	7SP03R070	
<b>High pressure ducted</b>				
Oracle Code				
Accessory: RAP Valve kit NRAP-FL				
<b>4 way cassette 600x600</b>		<b>ST-NK6FL 7R</b>	<b>ST-NK6FL 9R</b>	<b>ST-NK6FL 12R</b>
Oracle Code	7SP04R006	7SP04R007	7SP04R008	
Required option : Front GR ST-NK6FL	7ACVFR003	7ACVFR003	7ACVFR003	
<b>4 way cassette</b>		<b>ST-NKFL 7R</b>	<b>ST-NKFL 9R</b>	<b>ST-NKFL 12R</b>
Oracle Code	7SP04R137	7SP04R138	7SP04R139	
Required option : Front GR ST-NK7-60	7ACVFR292	7ACVFR292	7ACVFR292	
Option : Plenum FAIP-NKFL 7-60	7ACVFR293	7ACVFR293	7ACVFR293	
Option : Fresh air intake connector FAIB-NKFL 7-60	7ACVFR294	7ACVFR294	7ACVFR294	
<b>2 way cassette</b>		<b>ST-NK2FL 7R</b>	<b>ST-NK2FL 9R</b>	<b>ST-NK2FL 12R</b>
Oracle Code	7SP04R149	7SP04R150	7SP04R151	
Required option : Front GR ST-K2(7-18)	7ACVFR002	7ACVFR002	7ACVFR002	
Required option : Front GR ST-K2(24)				
<b>1 way cassette</b>			<b>ST-NK1FL 9R</b>	<b>ST-NK1FL 12R</b>
Oracle Code		7SP04R001	7SP04R002	
Required option : Front NK1FL9-24R		7ACVFR001	7ACVFR001	
<b>Ceiling units</b>			<b>ST-NPFL 12</b>	
Oracle Code			7SP02R298	
<b>Floor Consoles</b>		<b>ST-NFFL 7R</b>	<b>ST-NFFL 9R</b>	<b>ST-NFFL 12R</b>
Oracle Code	7SP01R123	7SP01R124	7SP01R125	

20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
56	61,5	68	73	78,5	85	90	96	101	107	113	118	124	130	135
63	69	76,5	81,5	87,5	95	100	108	113	119	127	132	138	145	150

															
	<b>10+10</b>	<b>10+12</b>	<b>10+14</b>	<b>10+16</b>	<b>12+16</b>	<b>14+16</b>	<b>16+16</b>	<b>10+10+14</b>	<b>10+10+16</b>	<b>10+12+16</b>	<b>10+14+16</b>	<b>10+16+16</b>	<b>12+16+16</b>	<b>14+16+16</b>	<b>16+16+16</b>
	MFL 100R-3R410 MFL 100R-3R410	MFL 100R-3R410 MFL 120R-3R410	MFL 100R-3R410 MFL 140R-3R410	MFL 100R-3R410 MFL 160R-3R410	MFL 120R-3R410 MFL 160R-3R410	MFL 140R-3R410 MFL 160R-3R410	MFL 160R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 100R-3R410 MFL 140R-3R410	MFL 100R-3R410 MFL 100R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 120R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 140R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 120R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 140R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 160R-3R410 MFL 160R-3R410 MFL 160R-3R410
	7SP14R013 7SP14R013	7SP14R013 7SP14R014	7SP14R013 7SP14R029	7SP14R013 7SP14R030	7SP14R014 7SP14R030	7SP14R029 7SP14R030	7SP14R030 7SP14R030	7SP14R013 7SP14R013 7SP14R029	7SP14R013 7SP14R013 7SP14R030	7SP14R013 7SP14R013 7SP14R030	7SP14R013 7SP14R014 7SP14R030	7SP14R013 7SP14R029 7SP14R030	7SP14R013 7SP14R030 7SP14R030	7SP14R014 7SP14R030 7SP14R030	7SP14R029 7SP14R030 7SP14R030

															
	<b>10+10</b>	<b>10+12</b>	<b>10+14</b>	<b>10+16</b>	<b>12+16</b>	<b>14+16</b>	<b>16+16</b>	<b>10+10+14</b>	<b>10+10+16</b>	<b>10+12+16</b>	<b>10+14+16</b>	<b>10+16+16</b>	<b>12+16+16</b>	<b>14+16+16</b>	<b>16+16+16</b>
	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 120-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 160-3R410	EFL 120-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410	EFL 100-3R410 EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 120-3R410 EFL 160-3R410	EFL 100-3R410 EFL 140-3R410 EFL 160-3R410	EFL 100-3R410 EFL 160-3R410 EFL 160-3R410	EFL 120-3R410 EFL 160-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410 EFL 160-3R410
	7SP14R019 7SP14R019	7SP14R019 7SP14R020	7SP14R019 7SP14R021	7SP14R019 7SP14R022	7SP14R020 7SP14R022	7SP14R021 7SP14R022	7SP14R022 7SP14R022	7SP14R019 7SP14R019 7SP14R021	7SP14R019 7SP14R019 7SP14R022	7SP14R019 7SP14R019 7SP14R020	7SP14R019 7SP14R020 7SP14R021	7SP14R019 7SP14R020 7SP14R022	7SP14R019 7SP14R022 7SP14R022	7SP14R020 7SP14R022 7SP14R022	7SP14R021 7SP14R022 7SP14R022

	<b>16</b>	<b>18</b>	<b>24</b>	<b>36</b>	<b>48</b>	<b>60</b>	<b>76</b>	<b>96</b>
	4,5/5	5,6/6,3	7,3/8	10,6/11,4	14/16	16/18	22,4/25	28/31,5
	<b>ST-NWFL 16R</b>	<b>ST-NWFL 18R</b>	<b>ST-NWFL 24R</b>					
	7SP02R368	7SP02R295	7SP02R297					
	<b>ST-NDSL 16R</b>	<b>ST-NDSL 18R</b>	<b>ST-NDSL 22R</b>					
	7SP03R005	7SP03R006	7SP03R007					
	<b>ST-NDLP 16R</b>	<b>ST-NDLP 18R</b>	<b>ST-NDLP 24R</b>	<b>ST-NDLP 36R</b>	<b>ST-NDLP 48R</b>			
	7SP03R085	7SP03R071	7SP03R072	7SP03R073	7SP03R074			
			<b>ST-NDHP 24R</b>	<b>ST-NDHP 36R</b>	<b>ST-NDHP 48R</b>		<b>ST-NDHP 76R</b>	<b>ST-NDHP 96R</b>
			7SP05R124	7SP05R125	7SP05R126		7SP15R127	7SP15R128
							7ACFHR418	7ACFHR418
	<b>ST-NK6FL 16R</b>	<b>ST-NK6FL 18R</b>						
	7SP04R009	7SP04R010						
	7ACVFR003	7ACVFR003						
	<b>ST-NKFL 16R</b>	<b>ST-NKFL 18R</b>	<b>ST-NKFL 24R</b>	<b>ST-NKFL 36R</b>	<b>ST-NKFL 48R</b>	<b>ST-NKFL 60R</b>		
	7SP04R171	7SP04R140	7SP04R141	7SP04R142	7SP04R143	7SP04R144		
	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292		
	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293		
	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294		
	<b>ST-NK2FL 16R</b>	<b>ST-NK2FL 18R</b>	<b>ST-NK2FL 24R</b>					
	7SP04R170	7SP04R152	7SP04R153					
	7ACVFR002	7ACVFR002						
			7ACVFR170					
		<b>ST-NK1FL 18R</b>	<b>ST-NK1FL 24R</b>					
		7SP04R003	7SP04R004					
		7ACVFR001	7ACVFR001					
	<b>ST-NPFL 16R</b>	<b>ST-NPFL 18R</b>	<b>ST-NPFL 24R</b>	<b>ST-NPFL 36R</b>	<b>ST-NPFL 48R</b>			
	7SP02R369	7SP02R299	7SP02R300	7SP02R301	7SP02R302			
	<b>ST-NFFL 16R</b>	<b>ST-NFFL 18R</b>	<b>ST-NFFL 24R</b>					
	7SP01R128	7SP01R126	7SP01R127					

# The technological innovations

## THE FLOW LOGIC SYSTEM OF COMBINED COMPRESSORS

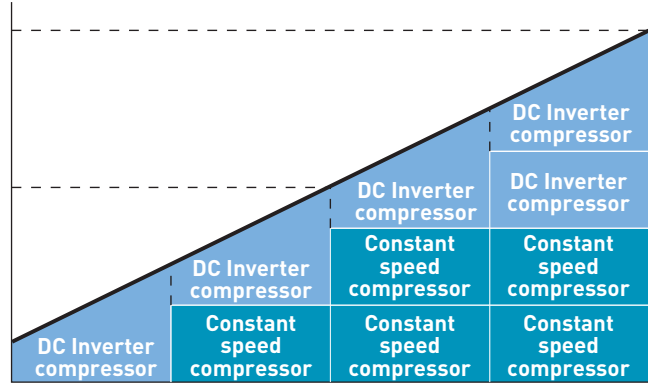
### The Harmonic frequencies are reduced to a minimum

The combination of a DC Inverter compressor and a constant-speed compressor makes it possible to reduce the generation of harmonic frequencies.

### Variable capacity regulation

The units are equipped with a DC Inverter compressor and a constant-speed compressor. The regulation of capacity, difficult to achieve with a constant-speed compressor, is easily manageable with a DC Inverter compressor : producing continuous or linear regulation. The difference in performance registered with the start up of a constant-speed compressor has also been removed.

### Capacity

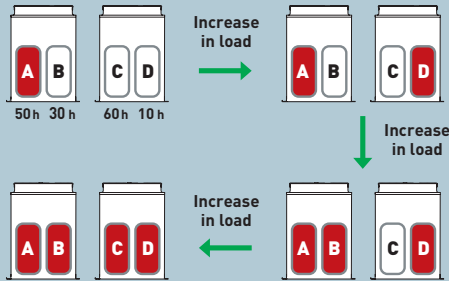


Load

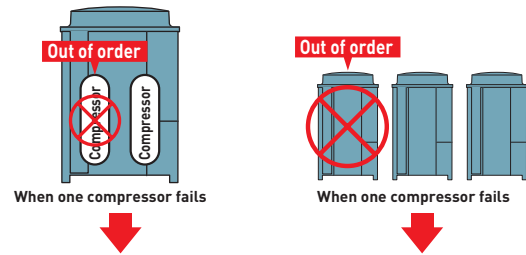
## LEAD LAG OPERATION

The total operation time of the processors is monitored by a microcomputer, which makes it possible to standardise this time for each compressor in the system

**Example** A,C : DC Inverter compressor  
B, D : Constant speed compressor



## BACKUP FUNCTION



The backup function maintains customer comfort in the event of failure

If one of the two compressors in a system malfunctions, a switch on the control panel of the outdoor unit makes it possible to provide backup by using just the other compressor.

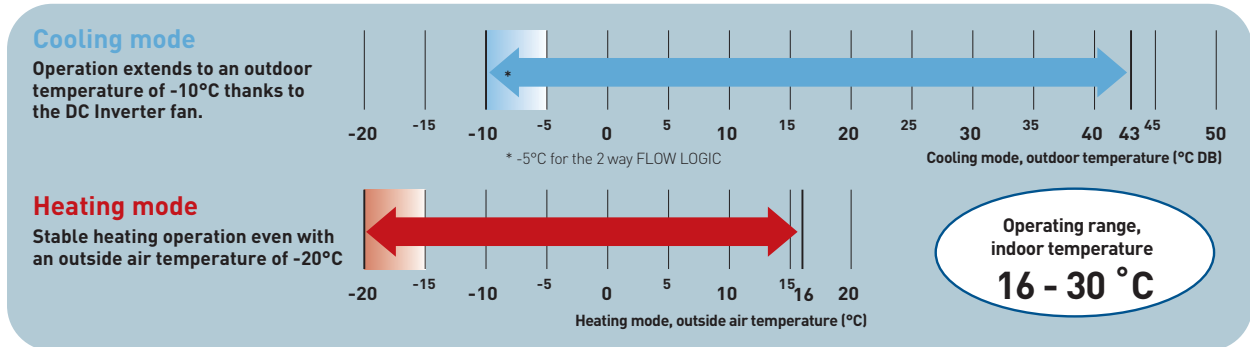
In addition, if one of the outdoor units of a system malfunctions, the other outdoor units provide emergency backup operation.

## CONTROLLER DEVICES

<p>Wireless control device for all units</p> <p><b>RCIRC-FLR</b> Code : 7ACEL1310</p>	<p>Wireless control device for NKFL</p> <p><b>RCIRK-FLR</b> Code : 7ACEL1308</p>	<p>Wireless control device for NK1FL, NK2FL</p> <p><b>RCIRKS-FLR</b> Code : 7ACEL309</p>	<p>Wireless control device for NPFL</p> <p><b>RCIRP-FLR</b> Code : 7ACELR311</p>	<p>Wireless control device for NWFL</p> <p><b>RCIRWR</b> Code : 7ACELR312</p>	<p>Simplified control device</p> <p><b>NRCB-FLR</b> Code : 7ACELR315</p>	<p>Standard Wired control device</p> <p><b>NRCT-FLR</b> Code : 7ACELR001</p>
<p>Schedule timer</p> <p><b>NWTM-FLR</b> Code : 7ACELR314</p>	<p>System controller</p> <p><b>NRSC-FLR</b> Code : 7ACELR313</p>	<p>Intelligent control device</p> <p><b>IC-FLR</b> Code : 7ACELR319</p>	<p>Communication Adapter</p> <p><b>CM-FLR</b> Code : 7ACELR317</p>	<p>I/O Seri-Para unit</p> <p><b>SPIO-FLR</b> Code : 7ACELR320</p>	<p>LonWorks interface</p> <p><b>LON-FLR</b> Code : 7ACELR321</p>	<p>Remote sensor</p> <p><b>NSDR</b> Code : 7ACELR316</p>



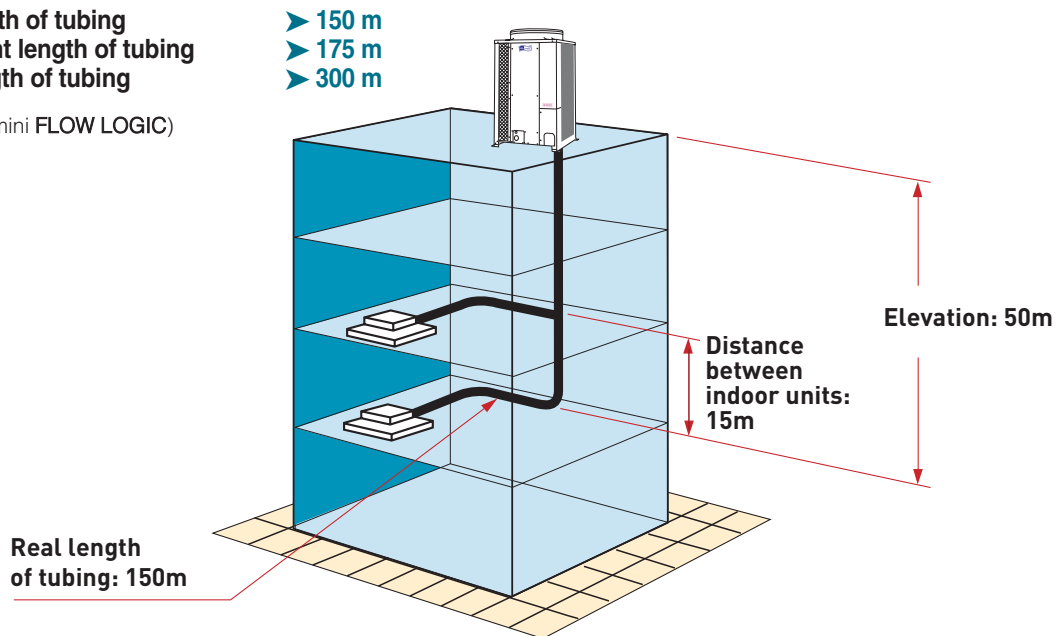
## EXTENDED OPERATING RANGE



## TUBING LENGTHS

- Real length of tubing
- Equivalent length of tubing
- Total length of tubing

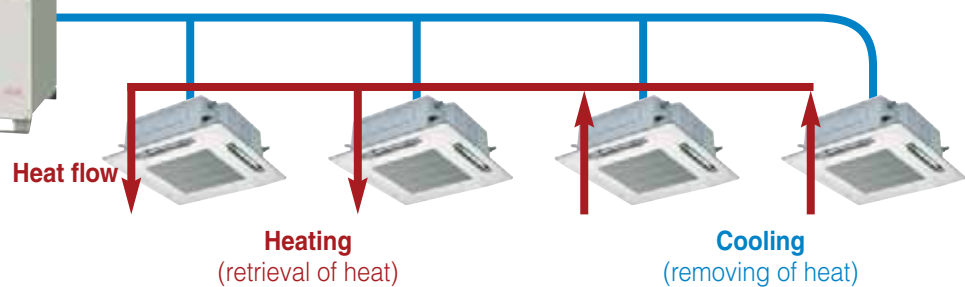
(200m for mini FLOW LOGIC)

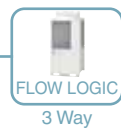


## HEAT RECLAIM (3 way)



The heat removed from rooms being cooled are “freely” restored to rooms requiring heating, producing significant energy savings.





# 2 WAY MINI FLOW LOGIC



The **Mini FLOW LOGIC 410** range is a 2 way heating/cooling solution with variable refrigerant flow using the high performance R410A fluid. This range is unmatched by anything on the market and can operate up to **9 indoor units** independently. Using inverter technology, this system can achieve a **COP of 4** while at the same time offering ultra-silent operation and a very compact footprint.

Its great flexibility means that the Mini FLOW LOGIC is equally well adapted to **residential** applications and to light **commercial** applications (small businesses, doctor's surgeries etc)



MFL-HR 40/50/60

## > Product features

- COP of up to 4.1
- DC Inverter compressor and fan
- 9 indoor units connected to one outdoor unit
- Minimum outdoor temperature for heating mode operation -20°C
- Minimum outdoor temperature for cooling mode operation -10°C
- Refrigerant tubing length of 200m
- Compact footprint (0.32m<sup>2</sup>)
- Ultra-silent operation
- Single phase electrics
- Easy installation
- Indoor units and control devices identical to the 2 way and 3 way FLOW LOGIC ranges



## > TIP

Depending on installation and usage constraints, it is possible to combine one or many Mini FLOW LOGIC units with a 2 way FLOW LOGIC system on the same site.

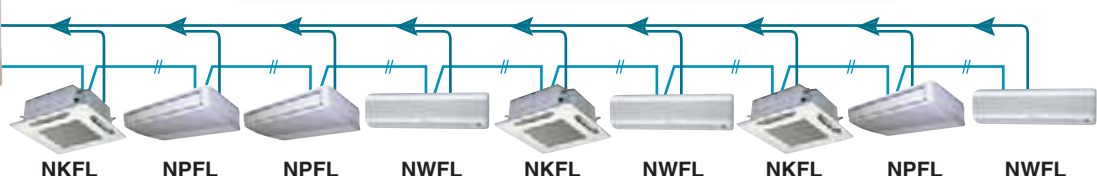
Advantages:

- All the systems can be controlled by the same control device
- There is no difference at the design level (the indoor units are identical for all systems).

**Example:** in the case of a hotel with conference rooms on the ground floor and bedrooms on the upper floors, it is possible to fit the mini FLOW LOGIC in conference rooms and the 2 WAY FLOW LOGIC system in bedrooms. In this way, in winter, bedrooms can be heated while conference rooms receiving lots of people can be cooled.

**Benefit:** optimal comfort guaranteed without the cost of a three way system.

## Up to 9 indoor units can be connected.



# 2 WAY MINI FLOW LOGIC

## 2 way series MFL-H R410

		MFL 40H R410	MFL 50H R410	MFL 60H R410
<b>Cooling capacity</b>	<b>kW</b>	<b>11.2</b>	<b>14.0</b>	<b>15.5</b>
Power input	kW	2.76	3.83	4.57
EER/Energy label		4.10 / A	3.70 / A	3.40 / A
Operating Limits T.EXT	°C	-10°/ 43° Dry Bulb		
<b>Heating capacity</b>	<b>kW</b>	<b>12.5</b>	<b>16</b>	<b>17.6</b>
Power input	kW	2.88	3.9	4.58
COP / Energy label		4.30 / A	4.10 / A	3.80 / A
Operating Limits T.EXT	°C	-20°/ 15° Wet Bulb		

Number of connectable indoor units	6	8	9
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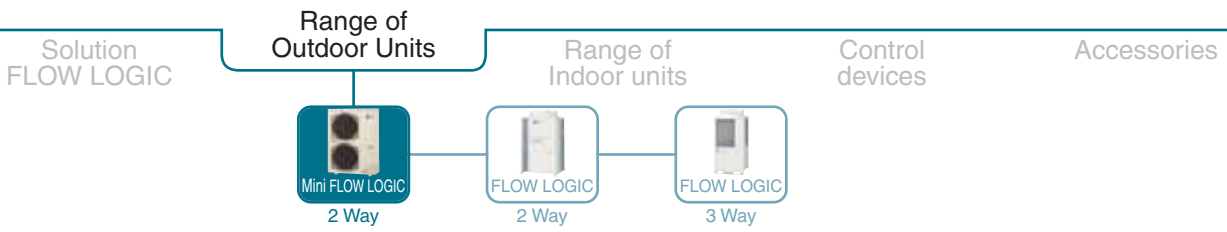
Outdoor units				
Air circulation	m³/h	6000		
Acoustic pressure at 1m (max)	dB(A)	51	51	52
Acoustic pressure in silent mode	dB(A)	48	48	49
Refrigerant charge	kg	4		
Weight	kg	104		
Height	mm	1230		
Width	mm	940		
Depth	mm	340		

Characteristics of unit connections				
<b>Cooling links</b>				
Gas tubing diameter	Inches	5/8"	5/8"	3/4"
Liquid tubing diameter	Inches	3/8"	3/8"	3/8"
Maximum length between outdoor units and indoor units	m	150		
Total tubing length	m	200		
Height difference (outdoor unit higher than indoor units)	m	50		
Height difference (outdoor unit lower than indoor units)	m	40		
Height difference between indoor units	m	15		
<b>Reference</b>	<b>Model 1~230 V</b>	<b>7SP14R023</b>	<b>7SP14R024</b>	<b>7SP14R025</b>

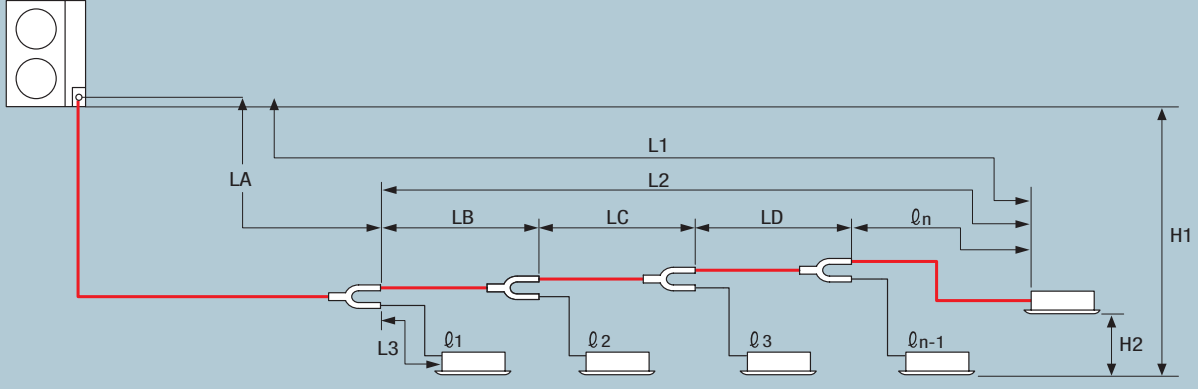
## Accessories

Name	Reference	Oracle code	Cooling capacity after connection
Cooling connection	NRF-DL 16	7ACFHR405	Less than 22.4 kW

Name	Reference	Oracle code	Diameter of connection with valve		Indoor unit cap. after the valve
			Gas pipe	Liquid pipe	
Shut-off valve	NVL5.6R	7ACFHR411	1/2"	1/4"	Less than 5.6 kW
	NVL16R	7ACFHR412	5/8"	3/8"	Less than 16 kW



## ● SIZING OF THE COOLING LINKS



## ● TUBING LENGTHS AND AUTHORISED HEIGHT DIFFERENCES

Lengths	Code	Explanation	Lengths (m)
Tubing length	L1	Piping length	<ul style="list-style-type: none"> <li>Piping length: <math>\leq 150</math></li> <li>Equiv. piping length: <math>\leq 175</math></li> </ul>
	$\Delta L$ (L2-L3)	Difference in the maximum and minimum lengths from the first distribution joint	$\leq 40$
	$\varrho_1, \varrho_2 \sim \varrho_n$	Maximum piping length between the distribution joint and indoor unit	$\leq 30$
	$\varrho_1 + \varrho_2 + \varrho_{n-1} + L1$	Total maximum piping length	$\leq 200$
Authorised height difference	H1	When the outdoor unit is higher than the indoor units	$\leq 50$
		When the outdoor unit is lower than the indoor units	$\leq 40$
	H2	Difference between the indoor units	$\leq 15$

## ● MAIN PIPING SIZES FROM DISTRIBUTION JOINT

Capacity after distribution joint	Below (kW)	7.1 (2.5 W)	11.2 (4 HP)	14.0 (5 HP)	15.5 (6 HP)
	Above (kW)	-	7.1 (2.5 HP)		
Pipe diameter	Gas	1/2"	5/8"	3/4"	
	Liquid	3/8"	3/8"		

## ● MAIN PIPE SIZES(LA)

Power (kW)	11.2	14.0	15.5
Power (HP)	4	5	6
Gas pipe	5/8"		3/4"
Liquid pipe	3/8"		

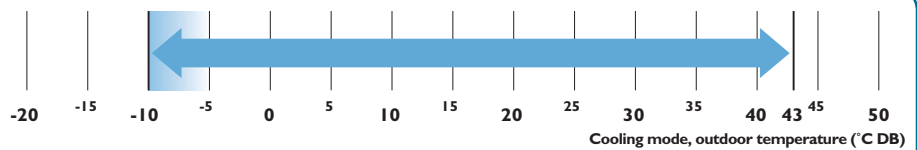
## ● INDOOR UNIT CONNECTION PIPING

Indoor unit type	7	9	12	16	18	25	36	48	60
Gas pipe	1/2"			5/8"			3/4"		
Liquid pipe	1/4"			3/8"					

## ● OPERATING RANGE

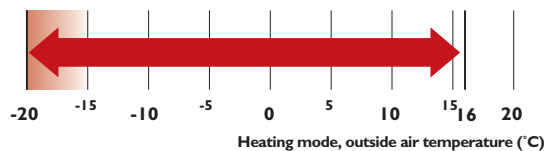
### Cooling mode

The DC Inverter fan means operation extends to an outdoor temperature of -10°C.



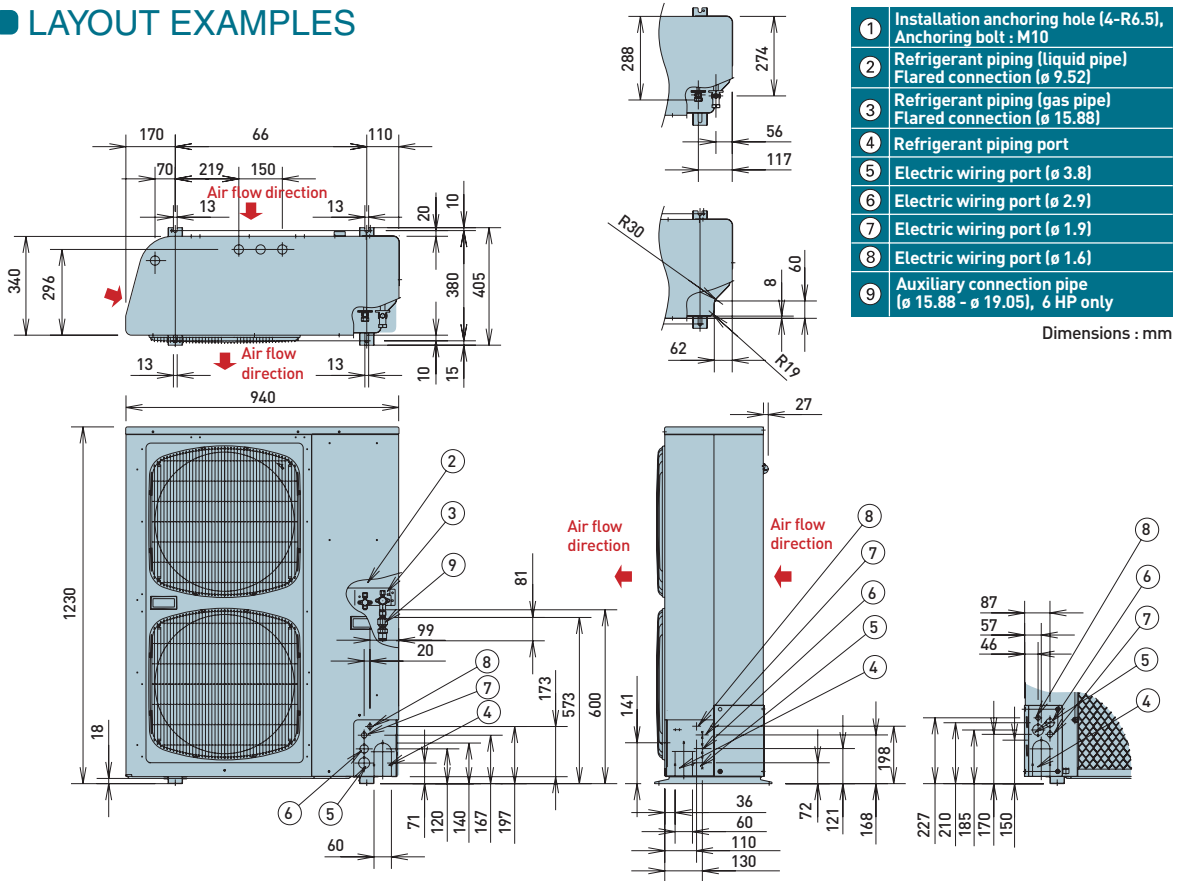
### Heating mode

Stable heating operation even with an outside air temperature of -20°C.

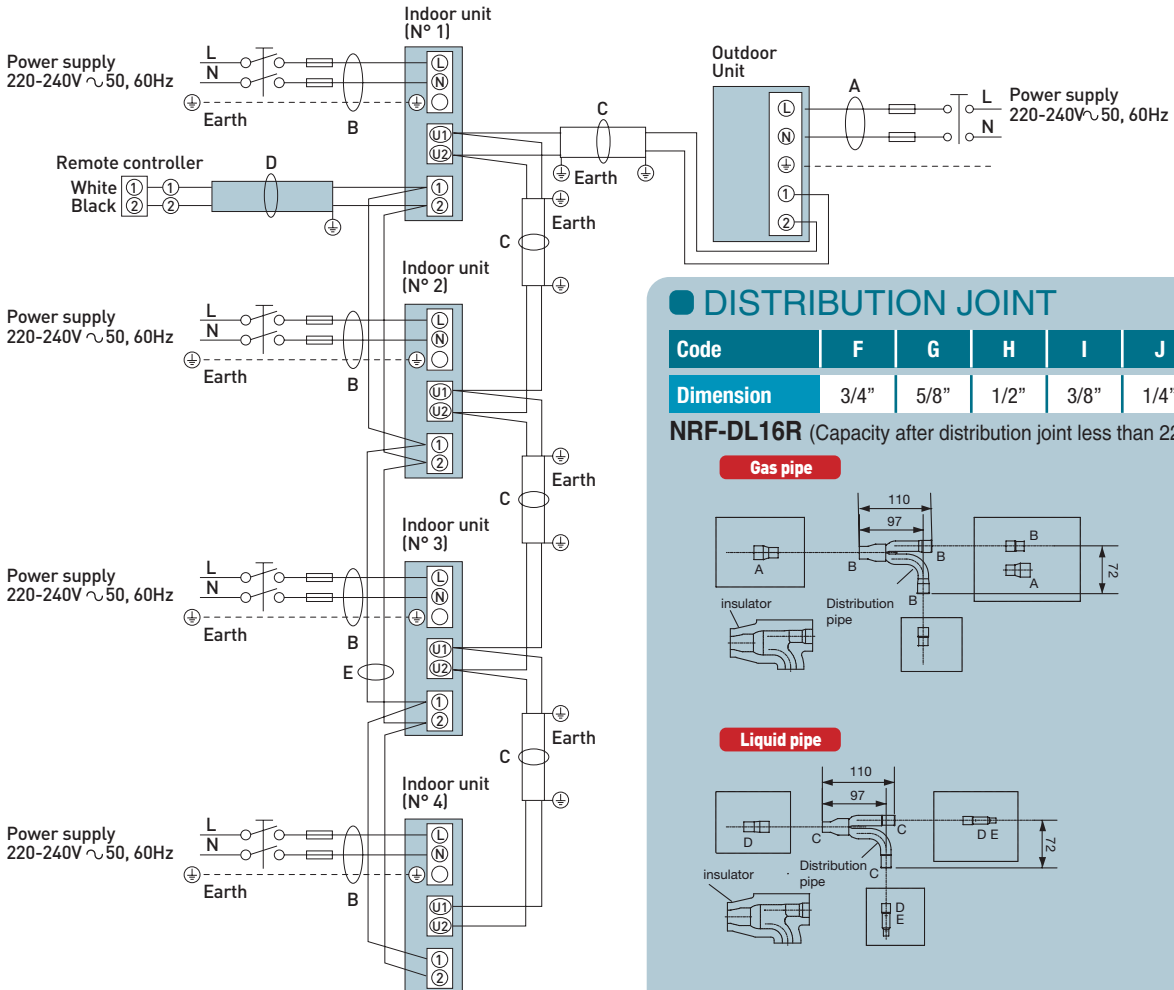


Operating range, indoor temperature:  
**16 - 30 °C**

## LAYOUT EXAMPLES



## WIRING

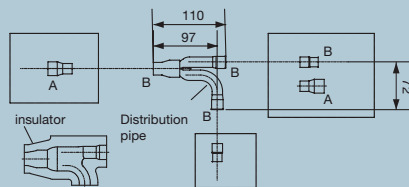


## DISTRIBUTION JOINT

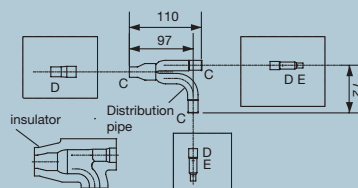
Code	F	G	H	I	J
Dimension	3/4"	5/8"	1/2"	3/8"	1/4"

NRF-DL16R (Capacity after distribution joint less than 22.4kW)

### Gas pipe



### Liquid pipe





# MFL-R410



2 Way FLOW LOGIC i-410

**NEW**



Airwell proposes a new generation of outdoor units with increased performance. Composed of 5 x 8, 10, 12, 14 or 16 HP DC Inverter models, this range enables a capacity range of 48 HP to be covered, by intermixing up to 3 units. The heat performance has been significantly improved:

- Average COP 3.9 as opposed to 3.4 for the previous range.
- Average EER 3.5 as opposed to 3.1 for the previous range.

The new range proposes sound levels that vary between 55 and 61 dB(A) without a silence mode, making it the quietest on the market.

Finally, the new 2 way Flow Logic can be perfectly inserted into the Airwell DRV range, offering 3 mono-phased 2 way DCI units from 4-6 DV and 5 x 3 way DCI units from 8 - 16CV.

## > Product Advantages

- The whole range is DC Inverter.
- Capacity range from 8 to 48 HP.
- COP can reach 4.1
- COP average 3.9.
- 15% increase in COP in relation to the previous range
- 12% increase in EER in relation to the previous range
- 40 indoor units connectable from 24 HP to only 2 outdoor units
- Minimum outdoor temperature for heating mode operating -20°C
- DC Inverter fan .
- Noise levels: 51.5 dB(A)\*
- Power ratio 130%
- Indoor Units Identical to the FLOW LOGIC 3 way and Mini FLOW LOGIC R410A ranges
- Control device identical to the 3 way FLOW LOGIC and Mini FLOW LOGIC R410A ranges.
- High yield R410A fluid .
- Unit dimensions optimised
- De-icing between outdoor units
- Lead lag operating to maintain equal operating time
- Total connection length 300 meters
- Wide range of control systems (Wireless control devices, centralised, simplified, intelligent controller, GTC gateway.)

\* 8 HP Unit.

## ● MAXIMUM NUMBER OF INDOOR UNITS THAT CAN BE CONNECTED TOGETHER

System (HP)	8	10	12	14	16	18	20	22	24-48
Indoor units connected	13	16	19	23	26	29	33	36	40

# 2 WAY FLOW LOGIC

## 2 way MFL-R410 Series

		MFL 80R -3R410	MFL 100R -3R410	MFL 120R -3R410	MFL 140R-3R410	MFL 160R-3R410
<b>Cooling Capacity</b>	kW	22,4	28	33,5	40	45
Power input	kW	6,0	7,9	9,6	11,6	13,3
EER		3,74	3,54	3,5	3,4	3,4
Operating Limits T.EXT	°C	-10°C/+43°C				
<b>Heating Capacity</b>	kW	25	31,5	37,5	45	50
Power input	kW	6,2	7,8	9,6	11,5	13,2
COP		4	4	3,9	3,9	3,8
Operating Limits T.EXT	°C	-20°C/+15°C				

Outdoor Units						
Air Flow	m³/h	9000	9600	10800	12000	13200
Weight	kg	290	295	295	345	345
Normal Acoustic Pressure	dB(A)	54,5	55	56	60	62
Acoustic Pressure in Silent Mode	dB(A)	51,5	52	53	58	59
Dimensions (H x W x D)	mm	1887x890x890	1887x890x890	1887x890x890	1887x890x890	1887x890x890




Characteristics of Connections between Units						
Gas Tube	inches	3/4"	7/8"	1"	1"	1"
Liquid Tube	inches	3/8"	3/8"	1/2"	1/2"	1/2"
Reference	Modèle 3N~400 V	7SP14R012	7SP14R013	7SP14R014	7SP14R029	7SP14R030

## Accessories

Name		Reference	Oracle code
Cooling connection	Outdoor Unit	NRFO-DL 68R	7ACFHR408
		NRFO-D 68135R	7ACFHR409
	Indoor Unit	NRF-DL 16R	7ACFHR405
		NRF-D 1668R	7ACFHR406
		NRF-T68135R	7ACFHR407




	Name	Reference	Oracle code
Shut off valve	For balancing tube	NVBR	7ACFHR410
	5,6 kW or less	NVL 5R	7ACFHR411
	16 kw or less	NVL16R	7ACFHR412
	22,4 kW or less	NVL22R	7ACFHR413
	Less than 30 kW	NVL30R	7ACFHR414
	Between 30 and 42 kW	NVL3042R	7ACFHR415

## CFLOW LOGIC i-410 Outdoor Unit Combinations

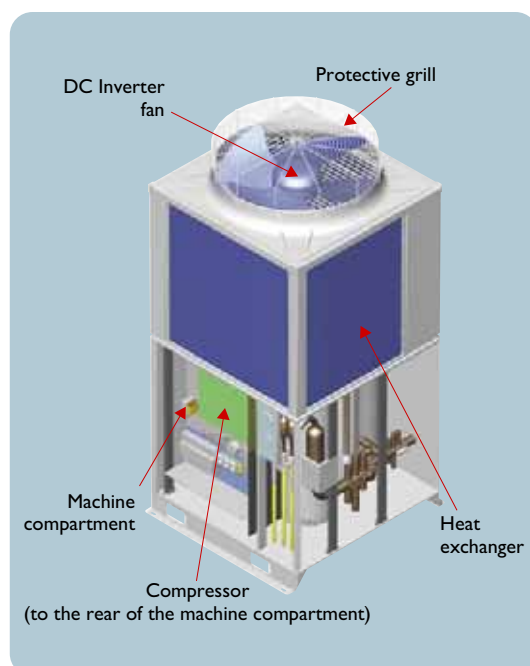
Presentation	HP	Models			References		
	8	MFL 80R -3R410			7SP14R012		
	10	MFL 100R -3R410			7SP14R013		
	12	MFL 120R -3R410			7SP14R014		
	14	MFL 140R -3R410			7SP14R029		
	16	MFL 160R -3R410			7SP14R030		
	18 (8+10)	MFL 80R -3R410	MFL 100R -3R410		7SP14R012	7SP14R013	
	20 (10+10)	MFL 100R -3R410	MFL 100R -3R410		7SP14R013	7SP14R013	
	22 (10+12)	MFL 100R -3R410	MFL 120R -3R410		7SP14R013	7SP14R014	
	24 (10+14)	MFL 100R -3R410	MFL 140R -3R410		7SP14R013	7SP14R029	
	26 (10+16)	MFL 100R -3R410	MFL 160R -3R410		7SP14R013	7SP14R030	
	28 (12+16)	MFL 120R -3R410	MFL 160R -3R410		7SP14R014	7SP14R030	
	30 (14+16)	MFL 140R -3R410	MFL 160R -3R410		7SP14R029	7SP14R030	
	32 (16+16)	MFL 160R -3R410	MFL 160R -3R410		7SP14R030	7SP14R030	
	34 (10+10+14)	MFL 100R -3R410	MFL 100R -3R410	MFL 140R -3R410	7SP14R013	7SP14R013	7SP14R029
	36 (10+10+16)	MFL 100R -3R410	MFL 100R -3R410	MFL 160R -3R410	7SP14R013	7SP14R013	7SP14R030
	38 (10+12+16)	MFL 100R -3R410	MFL 120R -3R410	MFL 160R -3R410	7SP14R013	7SP14R014	7SP14R030
	40 (10+14+16)	MFL 100R -3R410	MFL 140R -3R410	MFL 160R -3R410	7SP14R013	7SP14R029	7SP14R030
	42 (10+16+16)	MFL 100R -3R410	MFL 160R -3R410	MFL 160R -3R410	7SP14R013	7SP14R030	7SP14R030
	44 (12+16+16)	MFL 120R -3R410	MFL 160R -3R410	MFL 160R -3R410	7SP14R014	7SP14R030	7SP14R030
	46 (14+16+16)	MFL 140R -3R410	MFL 160R -3R410	MFL 160R -3R410	7SP14R029	7SP14R030	7SP14R030
	48 (16+16+16)	MFL 160R -3R410	MFL 160R -3R410	MFL 160R -3R410	7SP14R030	7SP14R030	7SP14R030



## OUTDOOR UNIT RANGE

HP						 					
	8	10	12	14	16	18	20	22	24		
Reference	MFL 80R-3R410	MFL 100R-3R410	MFL 120R-3R410	MFL 140R-3R410	MFL 160R-3R410	MFL 80R-3R410 MFL 100R-3R410	MFL 100R-3R410 MFL 100R-3R410	MFL 100R-3R410 MFL 120R-3R410	MFL 100R-3R410 MFL 140R-3R410		
Oracle Code	7SP14R012	7SP14R013	7SP14R014	7SP14R029	7SP14R030	7SP14R012 7SP14R013	7SP14R013 7SP14R013	7SP14R013 7SP14R014	7SP14R013 7SP14R029		
Cooling Capacity	kW	22,4	28	33,5	40	45	50,4	56	61,5	68	
	BTU/h	76400	95500	114300	136500	153600	172000	191100	219900	232000	
EER		3,7	3,5	3,5	3,4	3,4	3,6	3,5	3,5	3,5	
Heating Capacity	kW	25	31,5	37,5	45	50	56,5	63	69	76,5	
	BTU/h	85300	107500	128000	153600	170600	192800	215000	235500	261100	
COP		4	4	3,9	3,9	3,8	4	4	3,9	3,9	
Dimensions (H x W x D)	mm	1887x890x890					1887x1880x890				
Weight	kg	290	295	295	345	345	585	585	585	640	
Electricity Supply	Cool	Nom. Intensity A	9,2	12,3	14,9	18,6	21,3	21,6	24,7	27,2	30,8
		abs. Power kW	5,99	7,9	9,58	11,6	13,3	13,9	15,8	17,5	19,5
	Heat	Nom. Intensity A	9,5	12	14,9	18,5	21,2	21,6	24,2	27	30,4
		abs. Power kW	6,17	7,75	9,6	11,5	13,2	13,9	15,5	17,4	19,3
Air Flow	m <sup>3</sup> /min	150	160	180	200	220	150+160	160+160	160+180	160+200	
Factory Load	kg	12	12	12	13	13	24	24	24	25	
Connections	Gas tube	inches	3/4"	7/8"	1"	1"	1"1/8	3/4"-7/8"	7/8"	7/8"-1"	7/8"-1"7/8
	Liquid Tube	inches	3/8"	3/8"	1/2"	1/2"	1/2"	3/8"	3/8"	1/2"	3/8"-1/2"
	Balance Tube	inches	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
Operating Range			Cooling: -10°C/+43°C, Heating: -20°C/+15°C								
Acoustic Pressure	Normal mode	dB(A)	54,5	55	56	60	62	58	58	58,5	61,5
	Silent mode	dB(A)	51,5	52	53	58	59	55	55	55,5	58,5

## TECHNOLOGICAL PROGRESS IN THE RANGE



### Identical Sized Outdoor Units

The 5 outdoor units that form the range are identical in size, enabling the ground surface used to be rationalised.

### Efficient Operation

In addition to adapting a DC INVERTER fan that improves energy efficiency, load losses have been able to be reduced thanks to a new generation of protection grid. These elements contribute to the significant improvement of the COP.

### A High Performance Compressor Scroll (High Pressure) for the Set Compressor Speed

The oil behaviour is stable, the COP is improved and reliability reinforced, in comparison with traditional compressors.

### New Generation Exchanger

The increase in exchange surface, the use of hairpin tubes 7 mm in diameter and air suction in 4 directions has enabled the COP to be substantially improved.



### Optimal Organisation of Component Locations

The sound levels have been greatly reduced by placing the compressor in a specific compartment in the lower part of the unit.

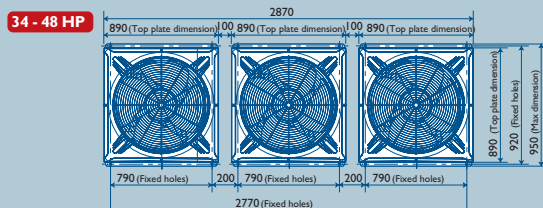
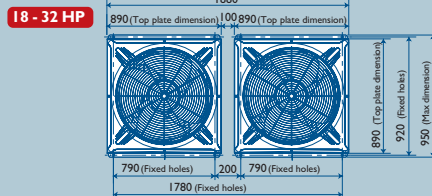
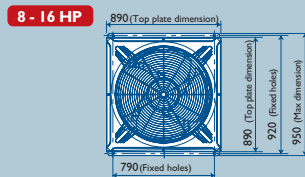
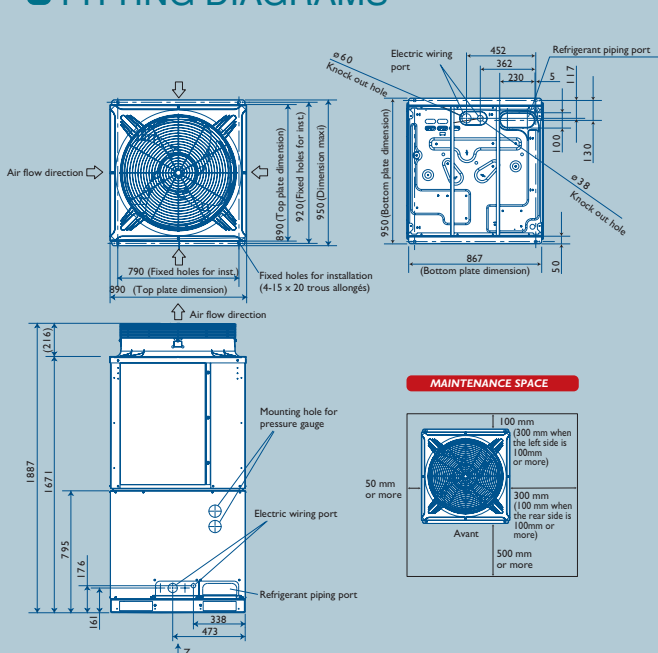
### Possibility of Side-by-Side Installation

The position of the fixing systems enables outdoor units to be installed side by side with a gap of 100 mm in order to significantly reduce the space used on the ground.



												
26	28	30	32	34	36	38	40	42	44	46	48	
(10+16)	(12+16)	(14+16)	(16+16)	(10+10+14)	(10+10+16)	(10+12+16)	(10+14+16)	(10+16+16)	(12+16+16)	(14+16+16)	(16+16+16)	
MFL 100R-3R410 MFL 160R-3R410	MFL 120R-3R410 MFL 160R-3R410	MFL 140R-3R410 MFL 160R-3R410	MFL 160R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 100R-3R410 MFL 140R-3R410	MFL 100R-3R410 MFL 100R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 120R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 140R-3R410 MFL 160R-3R410	MFL 100R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 120R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 140R-3R410 MFL 160R-3R410 MFL 160R-3R410	MFL 160R-3R410 MFL 160R-3R410 MFL 160R-3R410	
7SP14R013 7SP14R030	7SP14R014 7SP14R030	7SP14R029 7SP14R030	7SP14R030 7SP14R030	7SP14R013 7SP14R013 7SP14R029	7SP14R013 7SP14R013 7SP14R030	7SP14R013 7SP14R014 7SP14R030	7SP14R013 7SP14R029 7SP14R030	7SP14R013 7SP14R030 7SP14R030	7SP14R014 7SP14R030 7SP14R030	7SP14R029 7SP14R030 7SP14R030	7SP14R030 7SP14R030 7SP14R030	
73	78,5	85	90	96	101	107	113	118	124	130	135	
249100	267900	290000	307100	327600	347600	365100	385600	402700	421400	443600	460700	
3,4	3,4	3,4	3,4	3,5	3,4	3,4	3,4	3,4	3,4	3,4	3,4	
81,5	87,5	95	100	108	113	119	127	132	138	145	150	
278100	298600	324200	341200	368500	385600	406100	431700	450400	470900	494800	511900	
3,8	3,8	3,8	3,8	4	3,9	3,8	3,9	3,8	3,8	3,8	3,8	
<b>1887x1880x890</b>						<b>1887x2870x890</b>						
640	640	700	700	935	935	935	985	985	985	1035	1035	
33,6	36,3	39,9	42,7	43,1	45,8	48	52	55	57	61	64	
21,2	22,9	24,9	26,6	27,4	29,1	30,8	32,8	34,5	36,2	38,2	39,9	
33,3	36,2	39,6	42,3	42,5	45,2	48	52	54	57	61	64	
21	22,8	24,7	26,4	27	28,7	30,6	32,5	34,2	36	37,9	39,6	
160+220	180+220	200+220	220+220	160+160+200	160+160+220	160+180+220	160+200+220	160+220+220	180+220+220	200+220+220	220+220+220	
25	25	26	26	37	37	37	42	42	42	45	45	
7/8"-1"1/8	1"-1/8"	1"-1"1/8	1"1/8	7/8"-1"	7/8"-1"1/8	7/8"-1"-1"1/8	7/8"-1"-1"1/8	7/8"-1"1/8	1"-1"1/8	1"-1"1/8	1"1/8	
3/8"-1/2"	1/2"	1/2"	1/2"	3/8"-1/2"	3/8"-1/2"	3/8"-1/2"	3/8"-1/2"	3/8"-1/2"	1/2"	1/2"	1/2"	
1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	
<b>Cooling -10°C/+43°C, Heating: -20°C/+15°C</b>												
63	63	64,5	65	63	63,5	63,5	65	65,5	66,5	66,5	66,5	
60	60	61,5	62	60	60,5	60,5	60	62,5	62,5	63,5	63,5	

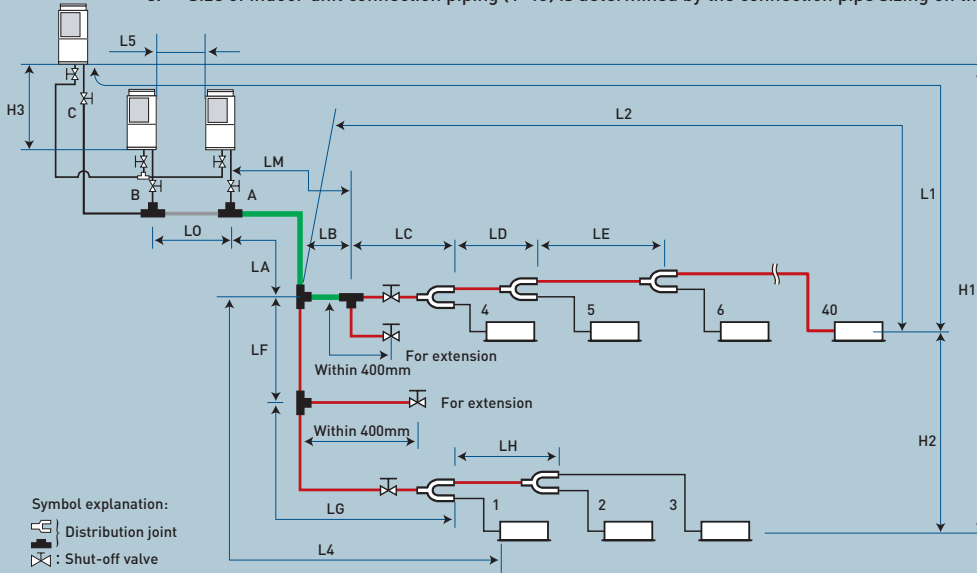
## FITTING DIAGRAMS





## ● SIZING OF THE COOLING LINKS

1. — Main piping length  $LM = LA + LB + \dots \leq 80 \text{ m}$
2. — Main distribution pipes LC-LH are selected according to the capacity after the distribution joint.
3. — Size of indoor unit connection piping (1-40) is determined by the connection pipe sizing on the indoor units



## ● TUBING LENGTHS AND AUTHORISED HEIGHT DIFFERENCES

Lengths	Code	Contents	Lengths (m)
Allowable piping length	L1	Max piping length	Real $\leq 150$ Equivalent $\leq 175$
	$\Delta L (L2-L4)$	Diff. between the max. length and the min. length from the N°1 distribution joint	$\leq 40$
	LM	Max. Length of main piping (at Max. diameter)	$\leq 80$
	1 to 40	Max length of each distribution	$\leq 30$
	$L1+1+2+\dots+40 + A+B+LF+LG+LH$	Total max piping length including length of each distribution (only narrow tubing)	$\leq 300$
	L5	Distribution between PC and AD unit	$\leq 10$
Allowable height difference	H1	Outdoor unit installed higher than indoor unit	$\leq 50$
	H2	Outdoor unit installed lower than indoor unit	$\leq 40$
	H3	Maximum difference between the indoor units	$\leq 15$
	H3	Maximum difference between the outdoor units	$\leq 4$

The size of the outdoor connection main piping (L0 part) depends on the total capacity of the outdoor units connected at its end. When the main piping length (L1) equivalent length exceeds 90m, increase the size of the gas and liquid main piping (LM).

## ● SYSTEM LIMITATIONS

Max. number of combined outdoor units	3
Max HP of combined outdoor units	135 kW (48 HP)
Max. number of connectable indoor units	40
Indoor/Outdoor unit capacity ratio	50 to 130 %

## ● ADD. REFRIGERANT CHARGE

Liquid piping size	Refrigerant charge (g/m)
1/4"	26
3/8"	56
1/2"	128
5/8"	185
3/4"	259
7/8"	366

## MAIN PIPE SIZES (LA)

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	101,0	106,5	113,0	118,0	123,5	130,0	135,0
Total system capacity	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Outdoor units combined	8	10	12	14	16	10	10	12	14	16	16	16	16	14	16	16	16	16	16	16	16
Gaz pipe	3/4"	7/8"	1"			1"1/8					1"1/4						1"1/2				
Liquid pipe	3/8"		1/2"			5/8"									3/4"						

NOTE 1: For an extension, chose a diameter that takes the full power into consideration.

NOTE 2: The balancing tube is 3/8" in diameter.

NOTE 3: The maximum length of the main tube LM: when the length is greater than 50 m, the size of the gas tubes and HP gas tubes must be increased by one size.

## MAIN TUBE BETWEEN OUTDOOR UNITS (LO)

Choose the size depending on the size of the main tube (LA) above.

## MAIN TUBE AFTER DISTRIBUTION (LB, LC, ...)

Total power after distribution	Under kW	7,1 (2,5 HP)	16,0 (6 HP)	22,5 (8,1 HP)	30,0 (11 HP)	42 (15 HP)	52,4 (19 HP)	70 (25 HP)	98 (35 HP)	-
	Over kW	-	7,1 (2,5 HP)	16,0 (6 HP)	22,5 (8,1 HP)	30,0 (11 HP)	42 (15 HP)	52,4 (19 HP)	70 (25 HP)	98,00 (35 HP)
Size	Gas tube		1/2"	5/8"	3/4"	7/8"	1"	1"1/8	1"1/8	1"1/4
	Liquid Tube		3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	5/8"	3/4"

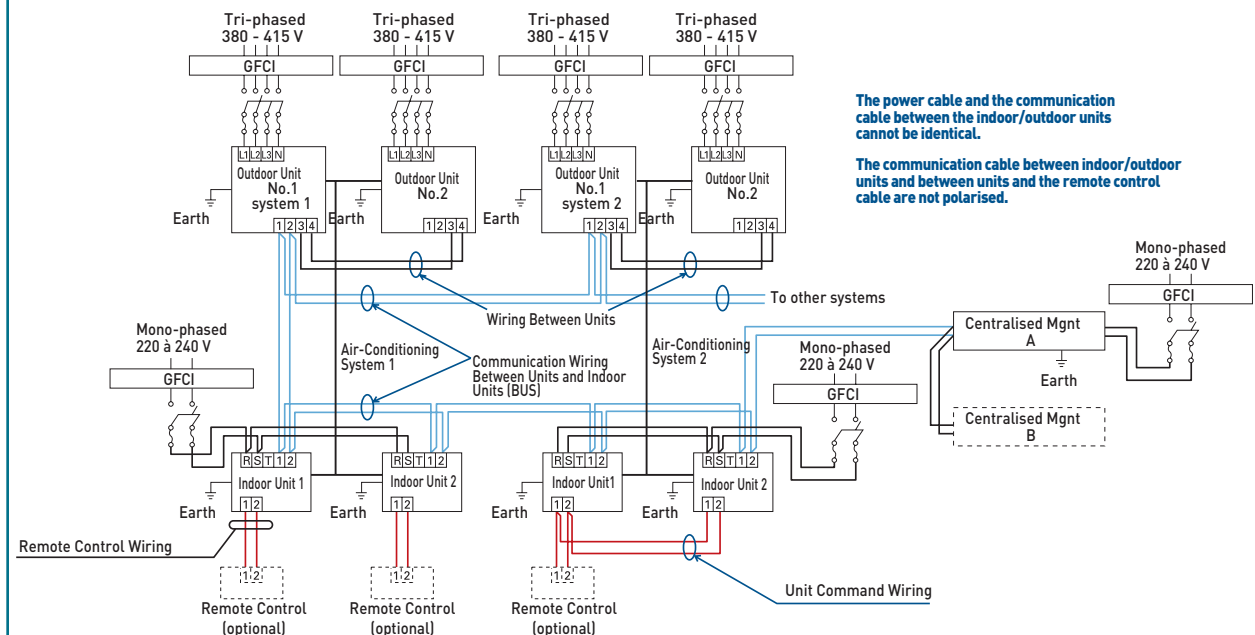
NOTE 1: The size of the connection tube between the units (LO) depends on the total power of the system.

NOTE 2: If the total power of the indoor units is different to the power of the units, the size of the main tube must be chosen depending on the power of the units.

## INDOOR UNITS CONNECTIONS (1 - 40)

Type of indoor units	7	9	12	16	18	25	36	48	76	96
Gas tube			1/2"				5/8"		3/4"	7/8"
Liquid tubes			1/4"					3/8"		

## ELECTRICAL WIRING DIAGRAM





# 3 WAY FLOW LOGIC



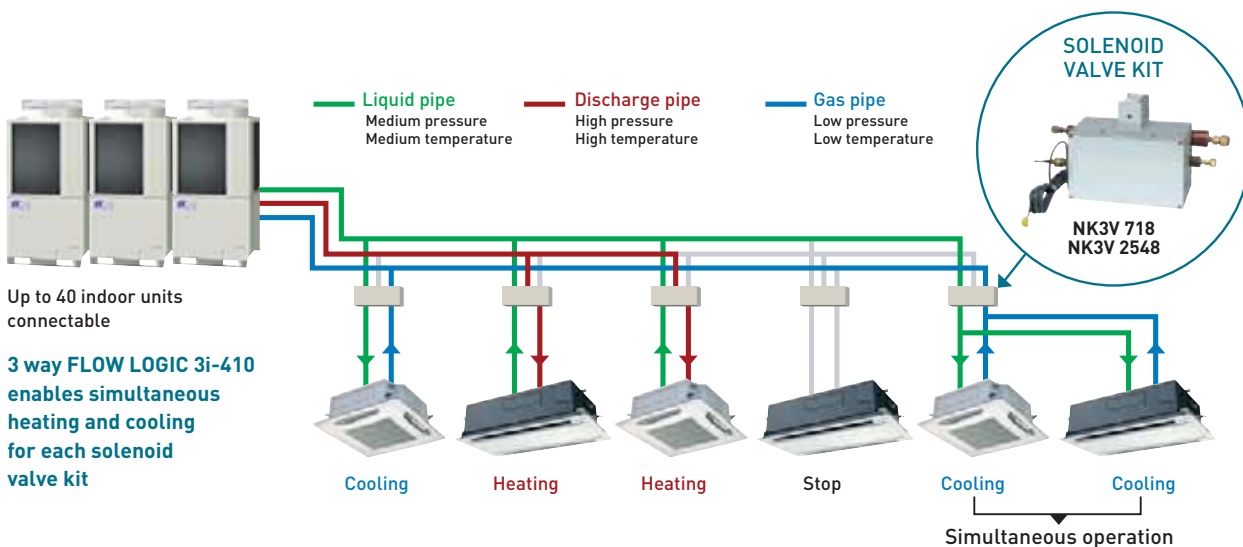
**FLOW LOGIC 3i-410** is a range of variable refrigerant flow solutions for 3 way heating and air-conditioning using the high performance **R410A** fluid. This range is unmatched by anything on the market and can independently pilot up to **40 indoor units** in cooling and heating mode. The DC Inverter technology means that these systems achieve a **COP of 4** whilst offering ultra silent operation, and a compact footprint.

## > Features

- Simultaneous heating and cooling
- High performance R410A fluid
- Average COP : 3.88
- Average EER : 3.44
- Heat reclaim system
- DCI Inverter technology on all units (compressor and fan)
- 40 indoor units connectable from 24HP
- Compact footprint (0.79m<sup>2</sup>)
- Low sound levels up to 5dB (A) in silent mode
- Innovative defrosting (between outdoor units)
- All units are identical in size
- Total piping length 300m
- Power ratio 130%
- Lead lag operation to maintain equal compressor operating time
- A single unit for up to 16HP (45kW)



EFL-3R410



## MAXIMUM NUMBER OF CONNECTABLE INDOOR UNITS

System (HP)	8	10	12	14	16	18	20	22	24-48
Connectable indoor units	13	16	19	23	26	29	33	36	40

# 3 WAY FLOW LOGIC

## 3 way series EFL-3R410 (DC Inverter units)

		EFL 80-3R410	EFL 100-3R410	EFL 120-3R410	EFL 140-3R410	EFL 160-3R410
Cooling capacity	kW	22.4	28.0	33.5	40	45
Power input	kW	5.93	8.12	9.82	11.6	13.3
EER		3.80	3.50	3.40	3.50	3.4
Operating Limits T.EXT	°C	-10°/ 43° Dry Bulb				
Heating capacity	kW	25	31.5	37.5	45	50
Power input	kW	6.11	7.97	9.84	11.5	13.2
COP		4.10	3.95	3.80	3.90	3.8
Operating Limits T.EXT	°C	-20°/ 15° Wet Bulb				

Outdoor units						
Air circulation	m³/h	9000	9600	10800	12000	13200
Acoustic pressure at 1m (max)	dB(A)	54.5	55	56	60	61
Acoustic pressure in silent mode	dB(A)	51.5	52	53	57	58
Weight	kg	290			350	
Height	mm	1887				
Width	mm	890				
Depth	mm	890				

Characteristics of unit connections						
<b>Cooling links</b>						
Gas tubing diameter	Inches	3/4"	7/8"	1"	1"	1"1/8
Discharge pipe diameter	Inches	5/8"	3/4"	3/4"	7/8"	7/8"
Liquid tubing diameter	Inches	3/8"	3/8"	1/2"	1/2"	1/2"
Balance pipe	Inches	3/8"	3/8"	3/8"	3/8"	3/8"
Reference	Model 3N~400 V	7SP14R018	7SP14R019	7SP14R020	7SP14R021	7SP14R022

## Accessories

### Distribution joint kits

Indoor units			Outdoor units	
NRF-DL 22R	NRF-D 2268R	NRF-D 68135R	NRFO-3DL68R	NRFO-3D68135R
code oracle : 7ACFHR434	code oracle : 7ACFHR435	code oracle : 7ACFHR436	code oracle : 7ACFHR437	code oracle : 7ACFHR438
Cooling capacity after connection less than <b>22.4 kW</b>	Cooling capacity after connection between <b>22.4 and 68 kW</b>	Cooling capacity after connection between <b>68 and 135 kW</b>	Cooling capacity after connection less than <b>68 kW</b>	Capacity after connection between <b>68 and 135 kW</b>

### Solenoid valve kit

NK3V 718R	NK3V 2548R
code oracle : 7ACFHR439	code oracle : 7ACFHR441
For type indoor units <b>7 to 18</b>	For type indoor units <b>25 to 48</b>



### Solenoid valve controller

NK3V-FLR
code oracle : 7ACFHR417
This controls the RAP valve and Solenoid valve kit



**A valve must be installed for each independent indoor unit.**

Note : if a 76 or 96 ducted high pressure unit is used, two **NK3V 2548R** solenoid valves must be installed in series.

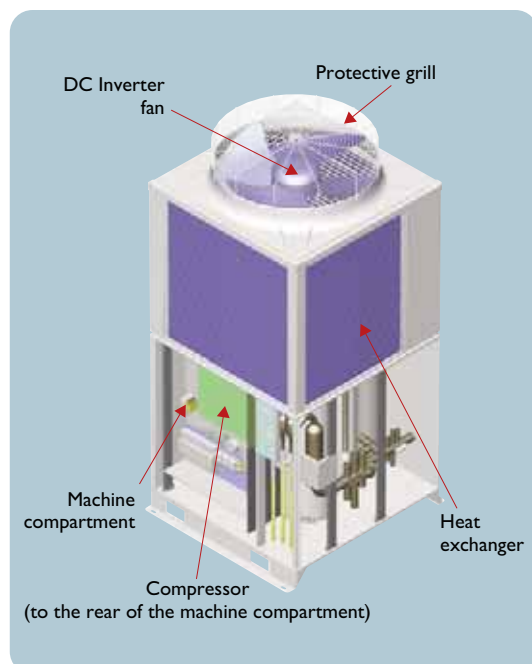
**ATTENTION : A control kit must be installed for each valve kit.**



## RANGE OF OUTDOOR UNITS

HP											
	8	10	12	14	16	18	20	22	24		
Reference	EFL 80-3R410	EFL 100-3R410	EFL 120-3R410	EFL 140-3R410	EFL 160-3R410	EFL 80-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 120-3R410	EFL 100-3R410 EFL 140-3R410		
Oracle code	7SP14R018	7SP14R019	7SP14R020	7SP14R021	7SP14R022	7SP14R018 7SP14R019	7SP14R019 7SP14R019	7SP14R019 7SP14R020	7SP14R019 7SP14R021		
Cooling capacity	kW	22.4	28	33.5	40	45	50.4	56	61.5	68	
	BTU/h	76400	95500	114300	136500	153600	172000	191100	219900	232000	
EER		3.8	3.5	3.4	3.5	3.4	3.6	3.5	3.4	3.5	
Heating capacity	kW	25	31.5	37.5	45	50	56.5	63	69	76.5	
	BTU/h	85300	107500	128000	153600	170600	192800	215000	235500	261100	
COP		4.1	4	3.8	3.9	3.8	4	4	3.9	3.9	
Dimensions (HxLxW)	mm	1887x890x890					1887x1880x890				
Weight	kg	290	290	290	350	350	580	580	580	640	
Electrical rating	Cooling	Running amp. (A)	10/9.5/9.2	13.7/13/12.6	16.6/15.7/15.2	20/19/18.3	23/21.8/21	23.8/22.6/21.8	27.3/26/25	30.2/28.7/27.7	33.6/31.9/30.8
		Power input kW	5.93	8.12	9.82	11.6	13.3	14.1	16.2	17.9	19.7
	Heating	Running amp. (A)	10.3/9.8/9.4	13.5/12.8/12.3	16.6/15.8/15.2	19.9/18.9/18.2	22.8/21.6/20.9	23.8/22.6/21.8	26.8/25.5/24.6	30/28.5/27.5	33.3/31.6/60.5
		Power input kW	6.11	7.97	9.84	11.5	13.2	14.1	15.9	17.8	19.5
Air circulation	m <sup>3</sup> /min	150	160	180	200	220	150+160	160+160	160+180	160+200	
Refrigerant amount at shipment	kg	12	12	12	15	15	24	24	24	27	
Connections	Gas pipe	inches	3/4"	7/8"	1"	1"	1"1/8	1"1/8	1"1/8	1"1/8	
	Discharge pipe	inches	5/8"	3/4"	3/4"	7/8"	7/8"	7/8"	1"	1"	
	Liquid pipe	inches	3/8"	3/8"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	
	Balance pipe	inches	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	
OPERATING RANGE		Cooling: -10°C/+43°C, Heating: -20°C/+15°C, Simultaneous operation: -10°C/+43°C									
Acoustic pressure	Normal mode	dB(A)	54.5	55	56	60	61	58	58	58.5	61.5
	Silent mode	dB(A)	51.5	52	53	57	58	55	55	55.5	58.5

## THE TECHNOLOGICAL INNOVATIONS OF THE 3i-410 RANGE



### Identically sized outdoor units

The 5 outdoor units which make up the 3i-410 range are of identical size, enabling the footprint to be rationalized.

### Efficient performance

In addition to the inclusion of a DC Inverter fan which improves energy efficiency, a new generation of protective grills have also reduced power losses. These elements contribute to a significant improvement in the COP.

### High performance (High pressure) compressor scroll for the constant speed compressor

In comparison with traditional compressors, oil is stable, COP is improved and reliability reinforced.

### New generation exchanger



The increase in the exchange surface, the use of 7mm coiled diameter pipes and the drawing of air from 4 directions has enabled a significant improvement of the COP.

### Optimal organisation of component location

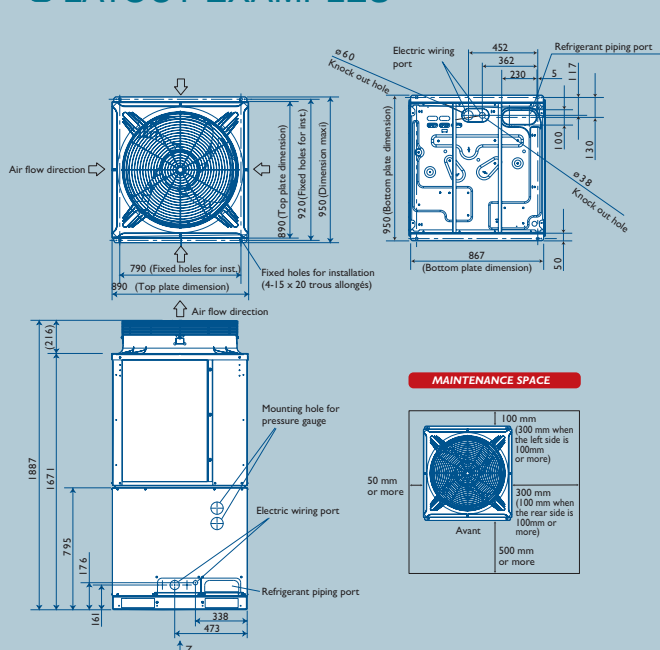
Sound levels have been greatly reduced by locating the compressor in a specific box towards the bottom of the unit.

### Possibility of side-by-side installation

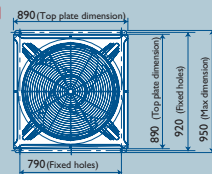
The location of the fixing systems means that it is possible for outdoor units to be assembled side by side, 100mm apart for a significant reduction in footprint.

												
26	28	30	32	34	36	38	40	42	44	46	48	
(10+16)	(12+16)	(14+16)	(16+16)	(10+10+14)	(10+10+16)	(10+12+16)	(10+14+16)	(10+16+16)	(12+16+16)	(14+16+16)	(16+16+16)	
EFL 100-3R410 EFL 160-3R410	EFL 120-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410	EFL 100-3R410 EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 120-3R410 EFL 160-3R410	EFL 100-3R410 EFL 140-3R410 EFL 160-3R410	EFL 100-3R410 EFL 160-3R410 EFL 160-3R410	EFL 120-3R410 EFL 160-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410 EFL 160-3R410	
7SP14R019 7SP14R022	7SP14R020 7SP14R022	7SP14R021 7SP14R022	7SP14R022 7SP14R022	7SP14R019 7SP14R019 7SP14R021	7SP14R019 7SP14R019 7SP14R022	7SP14R019 7SP14R020 7SP14R022	7SP14R019 7SP14R021 7SP14R022	7SP14R019 7SP14R022 7SP14R022	7SP14R020 7SP14R022 7SP14R022	7SP14R021 7SP14R022 7SP14R022	7SP14R022 7SP14R022 7SP14R022	
73	78.5	85	90	96	101	107	113	118	124	130	135	
249100	267900	290100	307100	327600	344700	363400	385600	402700	421400	443600	460700	
3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	
81.5	87.5	95	100	108	113	119	127	132	138	145	150	
278100	300300	324200	343000	368500	385600	407800	431700	450400	470900	494800	511900	
3.8	3.8	3.9	3.8	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.8	
<b>1887x1880x890</b>				<b>1887x2870x890</b>								
640	640	700	700	930	930	930	990	990	990	1050	1050	
36.5/34.7/33.5	39.4/37.5/36.1	43/40.8/39.4	45.9/43.6/42.1	47.5/45.1/43.5	50.5/48/46.3	53/51/49	57/54/52	60/57/55	63/60/58	66/63/60	69/65/63	
21.4	23.1	24.9	26.6	27.8	29.6	31.3	33	34.7	36.4	38.2	39.9	
36.2/34.4/33.1	39.3/37.3/36	42.6/40.5/39	45.6/43.3/41.7	46.9/44.6/43	49.7/47.2/45.5	53/50/48	56/54/52	59/56/54	63/59/57	65/62/60	68/65/63	
21.2	23	24.7	26.4	27.5	29.1	31	32.7	34.4	36.2	37.9	39.6	
160+220	180+220	200+220	220+220	160+160+200	160+160+220	160+180+220	160+200+220	160+220+220	180+220+220	200+220+220	220+220+220	
27	27	30	30	39	39	39	42	42	42	45	45	
1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	
1"	1"1/8	1"1/8	1"1/8	1"1/8	1"1/8	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	
3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	
3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	
<b>Cooling: -10°C/+43°C, Heating: -20°C/+15°C, Simultaneous operation: -10°C/+43°C</b>												
62	62.5	63.5	64	62.5	63	63	64.5	64.5	65	65.5	66	
59	59.5	60.5	61	59.5	60	60	61.5	61.5	62	62.5	63	

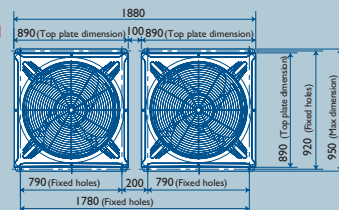
## LAYOUT EXAMPLES



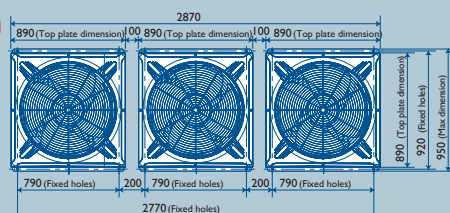
### 8 - 16 HP

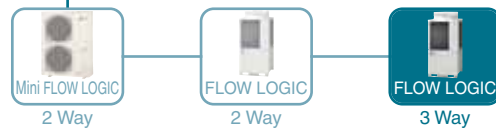


### 18 - 32 HP



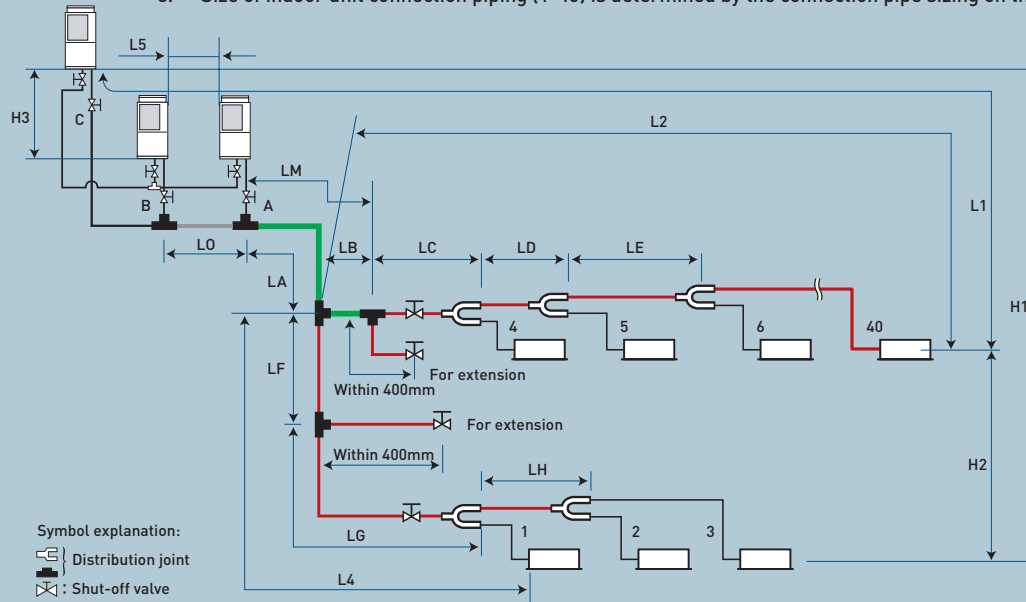
### 34 - 48 HP





## ● SIZING OF THE COOLING LINKS

1. — Main piping length  $LM = LA + LB \dots \leq 80 \text{ m}$
2. — Main distribution pipes LC-LH are selected according to the capacity after the distribution joint.
3. — Size of indoor unit connection piping (1-40) is determined by the connection pipe sizing on the indoor units



## ● TUBING LENGTHS AND AUTHORISED HEIGHT DIFFERENCES

Lengths	Code	Contents	Lengths (m)
Allowable piping length	L1	Max piping length	Per circuit $\leq 150$ Equivalent $\leq 175$
	$\Delta L (L2-L4)$	Difference between the max. length and the min. length from the N°1 distribution joint	$\leq 40$
	LM	Max. Length of main piping	$\leq 80$
	1.2~40	Max length of each distribution	$\leq 30$
	$L1+1+2+\dots+40$ $+A+B+LF+LG+LH$	Total max piping length	$\leq 300$
	L5	Max length between two outdoor units	$\leq 10$
Allowable height difference	H1	Outdoor unit installed higher than indoor unit	$\leq 50$
		Outdoor unit installed lower than indoor unit	$\leq 40$
	H2	Maximum difference between the indoor units	$\leq 15$
	H3	Maximum difference between the outdoor units	$\leq 4$

Note 1: The size of the outdoor connection main piping (L0 part) depends on the total capacity of the system

Note 2: When the main piping length (L1) equivalent length exceeds 90m in equivalent length, increase the size of the gas and liquid main piping (LM)

## ● SYSTEM LIMITATIONS

Max. number of combined outdoor units	3
Max HP of combined outdoor units	135 kW (48 HP)
Max. number of connectable indoor units	40
Indoor/Outdoor unit capacity ratio	50 to 130 %

## ● ADDITIONAL REFRIGERANT CHARGE

Liquid tubing diameter	Refrigerant charge (g/m)
1/4"	26
3/8"	56
1/2"	128
5/8"	185
3/4"	259
7/8"	366



## MAIN PIPE SIZES (LA)

HP	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	
Combination	8	10	12	14	16	10 8	10 10	12 10	14 10	16 10	16 12	16 14	16 16	14 10	16 10	16 12	16 14	16 10	16 12	16 10	16 14	16 16
Gas pipe	3/4"	7/8"	1"				1"1/8					1"1/4						1"1/2				
Discharge pipe	5/8"	3/4"			7/8"			1"				1"1/8						1"1/4				
Liquid pipe	3/8"		1/2"				5/8"								3/4"							

Note 1: When future expansion is planned, select a diameter which taken into account the total HP after expansion

Note 2: The balance piping diameter is 9.52mm

Note 3: Max length for the main pipe (LM) : when the length exceeds 50m, the size of the gas pipe and HP gas pipe [suction pipe and discharge pipe] should be increased by one size.

## MAIN PIPING SIZE BETWEEN OUTDOOR UNITS (L0)

Select the piping size between outdoor units according to the main pipe size (LA) of the above table.

## MAIN PIPING SIZE AFTER DISTRIBUTION (LB, LC...)

Total cap. after connection	Before (kW)	7.1	16.0	26.2	30.0	36.4	42.0	47.6	58.8	70.0	75.6	98.0	103.6	–
	After (kW)	–	7.1	16.0	26.2	30.0	36.4	42.0	47.6	58.8	70.0	75.6	98.0	103.6
Size	Gas pipe	5/8"	3/4"	3/4"	7/8"	1"	1"	1"1/8	1"1/8	1"1/8	1"1/4	1"1/4	1"1/2	1"1/2
	Discharge pipe	1/2"	5/8"	5/8"	3/4"	3/4"	7/8"	7/8"	7/8"	1"	1"	1"1/8	1"1/8	1"1/4
	Liquid pipe	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	3/4"

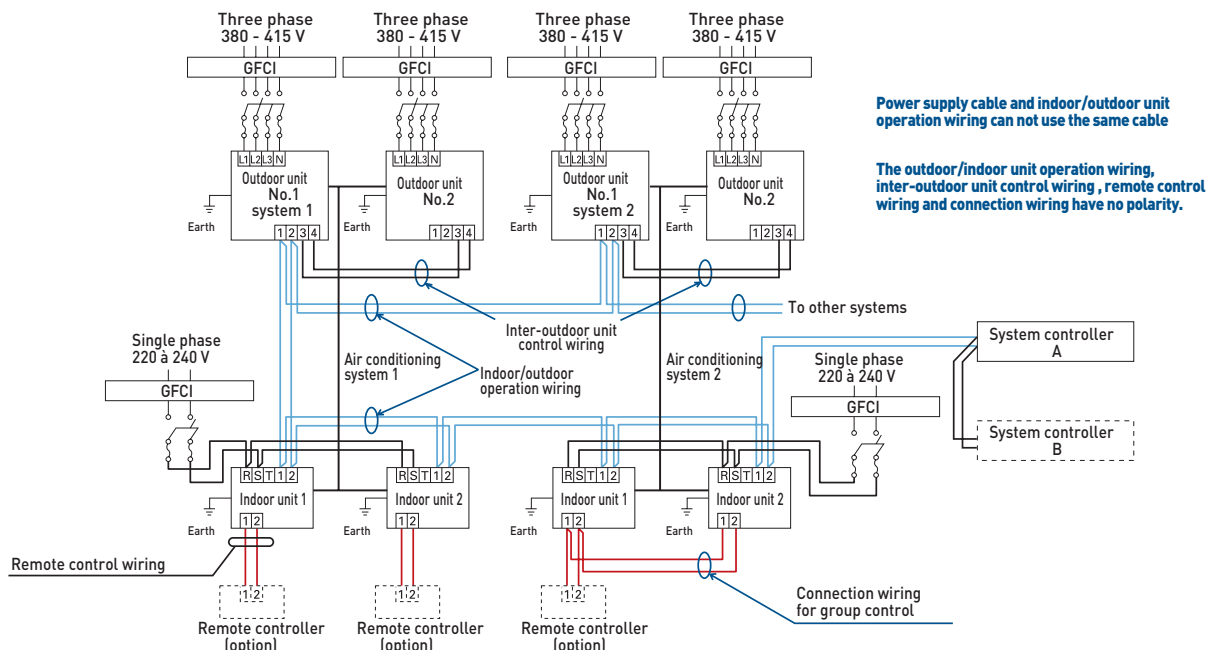
Note 1: The outdoor unit connection main pipe (L0 part) depends on the total capacity of the system.

Note 2: If the total capacity of the indoor units differs from the total capacity of the outdoor units, select the main pipe size according to the total capacity of the outdoor units.

## INDOOR UNIT CONNECTION PIPING (1 – 40)

Size		7	9	12	16	18	25	36	48	60	76	96		
HP		0.8	1	1.3	1.6	2	2.5	4	5	6	8	10		
Piping between distribution and solenoid valve kit	Gas pipe	5/8"										3/4"	7/8"	
	Discharge pipe	1/2"										5/8"	3/4"	
	Liquid pipe	3/8"												
Piping between solenoid valve kit and indoor unit	Gas pipe	1/2"				5/8"				3/4"				7/8"
	Liquid pipe	1/4"				3/8"				3/8"				






## WIRING



# 10 types of unit available in 11 sizes

## 61 different models

### Answers to all indoor constraints.

Size	7	9	12	16	18	24	
Capacity (cooling/heating in kW)	2,2/2,5	2,8/3,2	3,6/4,2	4,5/5	5,6/6,3	7,3/8	
<b>Wall Mounted</b>							
Oracle Code	ST-NWFL 7R 7SP02R296	ST-NWFL 9R 7SP02R293	ST-NWFL 12R 7SP02R294	ST-NWFL 16R 7SP02R368	ST-NWFL 18R 7SP02R295	ST-NWFL 24R 7SP02R297	
<b>Extra Slim Ducted</b>							
Oracle Code	ST-NDSL 7R 7SP03R001	ST-NDSL 9R 7SP03R002	ST-NDSL 12R 7SP03R003	ST-NDSL 16R 7SP03R004	ST-NDSL 18R 7SP03R005	ST-NDSL 22R 7SP03R006	
<b>Low Pressure Ducted</b>							
Oracle Code	ST-NDLP 7R 7SP03R068	ST-NDLP 9R 7SP03R069	ST-NDLP 12R 7SP03R070	ST-NDLP 16R 7SP03R085	ST-NDLP 18R 7SP03R071	ST-NDLP 24R 7SP03R072	
<b>High pressure ducted</b>							
Oracle Code						ST-NDHP 24R 7SP05R124	
Accessory: RAP Valve kit NRAP-FL					7ACFHR418		
<b>4 way cassette 600x600</b>							
Oracle Code	ST-NK6FL 7R 7SP04R006	ST-NK6FL 9R 7SP04R007	ST-NK6FL 12R 7SP04R008	ST-NK6FL 16R 7SP04R009	ST-NK6FL 18R 7SP04R010		
Accessory: Front GR ST-NK6FL	7ACVFR003	7ACVFR003	7ACVFR003	7ACVFR003	7ACVFR003		
<b>4 way cassette</b>							
Oracle Code	ST-NKFL 7R 7SP04R137	ST-NKFL 9R 7SP04R138	ST-NKFL 12R 7SP04R139	ST-NKFL 16R 7SP04R171	ST-NKFL 18R 7SP04R140	ST-NKFL 24R 7SP04R141	
Required option: Front GR ST-NK7-60	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292	7ACVFR292	
Option: Plenum FAIP-NKFL 7-60	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293	7ACVFR293	
Option: Fresh air intake connector FAIB-NKFL 7-60	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294	7ACVFR294	
<b>2 way cassette</b>							
Oracle Code	ST-NK2FL 7R 7SP04R149	ST-NK2FL 9R 7SP04R150	ST-NK2FL 12R 7SP04R151	ST-NK2FL 16R 7SP04R170	ST-NK2FL 18R 7SP04R152	ST-NK2FL 24R 7SP04R153	
Required option: Front GR ST-K2(7-18)	7ACVFR002	7ACVFR002	7ACVFR002	7ACVFR002	7ACVFR002		
Required option: Front GR ST-K2(24)						7ACVFR170	
<b>1 way cassette</b>							
Oracle Code		ST-NK1FL 9R 7SP04R001	ST-NK1FL 12R 7SP04R002		ST-NK1FL 18R 7SP04R004	ST-NK1FL 24R 7SP04R005	
Option obligatoire: Front GR ST-NK1FL9-24R		7ACVFR001	7ACVFR001		7ACVFR001	7ACVFR001	
<b>Ceiling units</b>							
Oracle Code			ST-NPFL 12R 7SP02R298	ST-NPFL 16R 7SP02R369	ST-NPFL 18R 7SP02R299	ST-NPFL 24R 7SP02R300	
<b>Floor Consoles</b>							
Oracle Code	ST-NFFL 7R 7SP01R123	ST-NFFL 9R 7SP01R124	ST-NFFL 12R 7SP01R125	ST-NFFL 16R 7SP01R128	ST-NFFL 18R 7SP01R126	ST-NFFL 24R 7SP01R127	

	36	48	60	76	96
	10,6/11,4	14/16	16/18	22,4/25	28/31,5
	ST-NDLP 36R 7SP03R073	ST-NDLP 48R 7SP03R074			
	ST-NDHP 36R 7SP05R125	ST-NDHP 48R 7SP05R126		ST-NDHP 76R 7SP15R127	ST-NDHP 96R 7SP15R128
	ST-NKFL 36R 7SP04R142	ST-NKFL 48R 7SP04R143	ST-NKFL 60R 7SP04R144		
	7ACVFR292	7ACVFR292	7ACVFR292		
	7ACVFR293	7ACVFR293	7ACVFR293		
	7ACVFR294	7ACVFR294	7ACVFR294		
	ST-NPFL 36R 7SP02R301	ST-NPFL 48R 7SP02R302			

IR Remote Control		Long Life Filter	Lift Pump	Automatic Flaps	Automatic Sweeping
Integrated Receiver	Separate Receiver				
✓	✓	✓			✓
	✓	✓			
	✓		✓		
✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓
	✓	✓			

Solution  
FLOW LOGIC



Range of  
Indoor units



Control devices

Accessories

# NK6FL



4 way cassette 600 x 600

5 Heat pump Models from 2 500 - 6 300 W

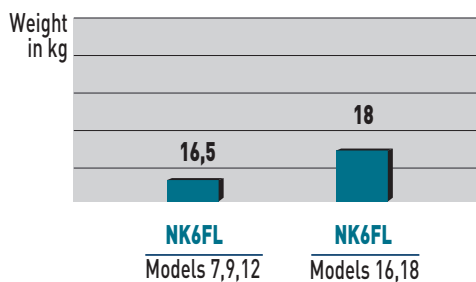


Compatible with all the Airwell DRV Flow Logic range (Mini / 2 way / 3 way), the **NK6FL** integrates flawlessly into suspended ceilings thanks to its slimness and its standard 600x600 dimensions.

Its 4 automatic sweeping blowing tracks, filters and drain pump included, its new air inlet and low noise levels make this unit the most complete in its class.

### SIZE AND WEIGHT

The NK6FL units have been designed for perfect integration into standard 600x600 suspended ceilings. The weight of the NK6FL units has been minimised and facilitates their installation.

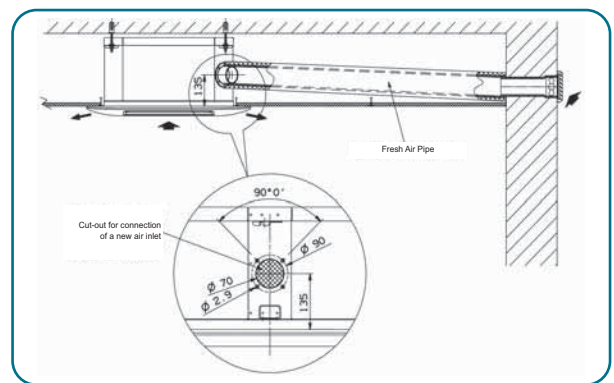


### > Product Advantages

- Tailored to 600 x 600 mm ceiling
- Slim - 296 mm
- Simplified installation and maintenance
- Low noise levels
- 4 blowing tracks
- Anti-condensation-treated sweep flaps
- Wired or Wireless control device (accessory)
- Automatic sweeping of the processed air
- 3 ventilation speeds plus auto ventilation
- Washable anti-bacterial, anti-mould filter
- Integrated drain pump
- New air inlet.

### NEW AIR INLET

The units NK6FL have an aperture for the possible connection of a tube intended to suck fresh air inside. The fresh air flow must be 10% of the total air flow so as to avoid any problem in operation and generation of noise.

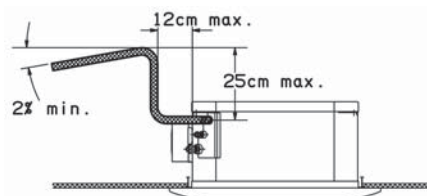


### MOTORISED SWEEPING LOUVER

The motorised louvers control the air flow direction, using the remote control. This sweeping action enables uniform and regular air flow into all areas of the room.

### CONDENSATE REMOVAL

All NK6FL cassettes are fitted with a condensate pump which can move the condensates 25cm from the connection point.



## NK6FL series

		ST NK6FL 7R	ST NK6FL9R	ST NK6FL 12R	ST NK6FL 16R	ST NK6FL 18R
<b>Cooling Capacity</b>	kW	2,2	2,8	3,6	4,5	5,6
Power input	kW	0,06	0,06	0,06	0,06	0,06
<b>Heating Capacity</b>	kW	2,5	3,2	4	5	6,3
Power input	kW	0,06	0,06	0,06	0,06	0,06

Indoor Units						
Air Flow Rate (PV/MV/GV)	m <sup>3</sup> /h	500/600/700	500/600/700	500/600/700	530/630/750	530/630/750
Noise Levels (PV/MV/GV) <sup>(1)</sup>	dB(A)	28/31/35	28/31/35	28/31/35	28/31/35	28/31/35
Weight (Front panel included)	kg	16,5	16,5	16,5	18	18
Height	mm	273+<64>*	273+<64>*	273+<64>*	273+<64>*	273+<64>*
Width	mm	575<730>*	575<730>*	575<730>*	575<730>*	575<730>*
Depth	mm	575<730>*	575<730>*	575<730>*	575<730>*	575<730>*

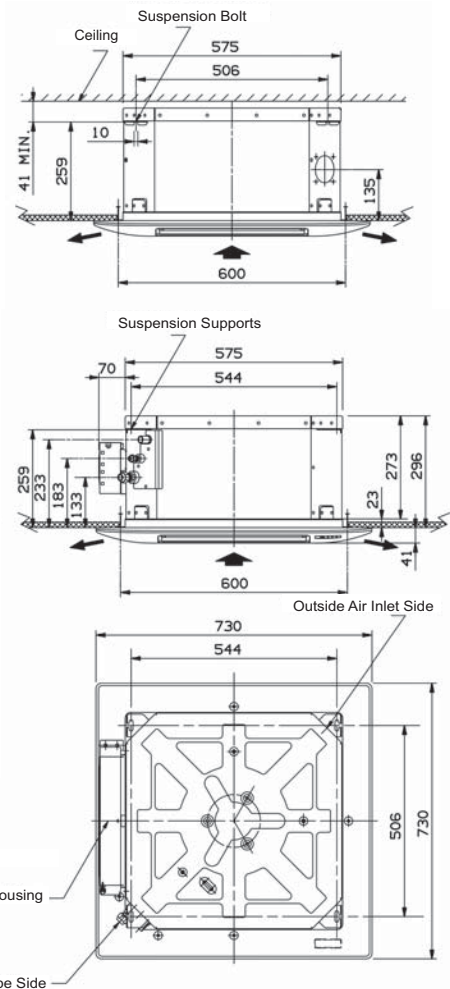
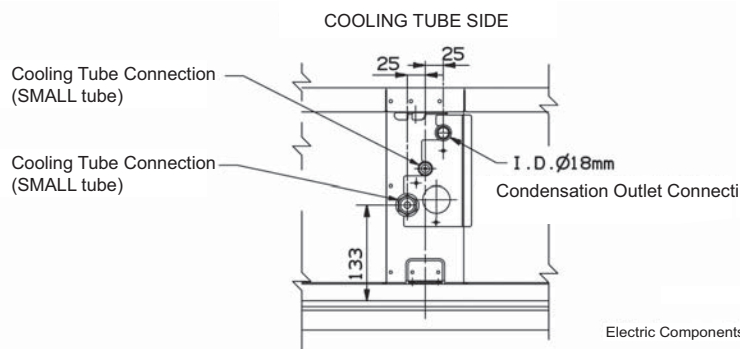
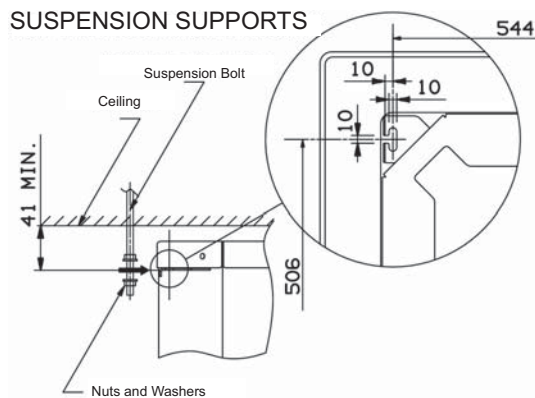
Cooling links						
Gas Tube Diameter	Inches	1/2	1/2	1/2	1/2	1/2
Liquid Tube Diameter	Inches	1/4	1/4	1/4	1/4	1/4
<b>Reference</b>		<b>7SP04R006</b>	<b>7SP04R007</b>	<b>7SP04R008</b>	<b>7SP04R009</b>	<b>7SP04R010</b>

\* The values of the outer walls and the weight between <> are the values for the front panel (accessory) at 2m.

## Accessories

Remote Controls			Front panel
<b>Wired</b> NRCT-FLR	<b>Wireless</b> RCIRKS-FLR RCIRC-FLR	<b>Simplified Wired</b> NRCB-FLR	<b>GR-NK6 FL</b> Ref. 7ACVFR003
	 Transmitter (common part)		

## FITTING DIAGRAMS



Solution  
FLOW LOGIC



Range of  
Outdoor Units

Range of  
Indoor units

Control  
devices

Accessories

# NKFL



## 4 Way cassettes



9 Heat pump models from 2 500 to 18

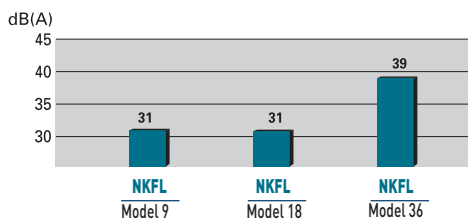
The NKFL cassette was designed to integrate seamlessly with contemporary trends. The new design and standardization of the front panel (dim. 950 x 950mm) for the 9 – 60 types allows better integration, particularly when a number of units of different capacities are installed in the same environment. In addition to its improved performances and silent operation, NKFL has been designed to provide a very high level of comfort for its users and easy installation for fitters.

### > Features

- Very low noise levels
- Very low height : 256mm (NKFL 7 – 24)
- 4 air outlets
- DC Inverter turbine motors
- Drain pump
- Simplified installation and maintenance
- Fresh air intake plenum (option)
- Fresh air intake connector (option)

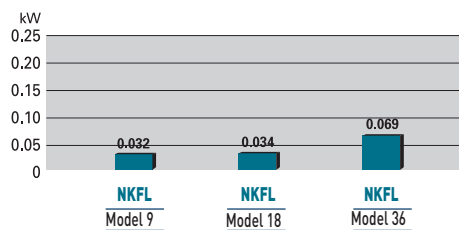
### NOISE LEVELS

The use of a new type of centrifuge turbine associated with a new form of exchanger fins has meant a reduction in noise levels of up to 6dB(A)



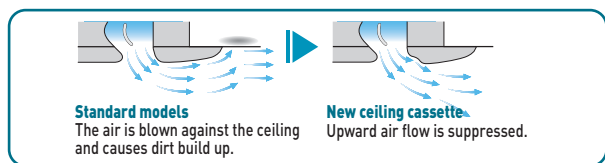
### CONSUMPTION

The use of DC Inverter variable motors on new generation turbines and new exchangers has resulted in a significant reduction in consumption.



### PANEL FEATURES

A reduction in the condensate residues and dirt which collected near the louvers and on the ceiling.

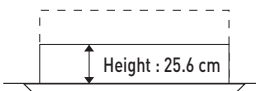


The louvers are removable to make them easier to wash with water.

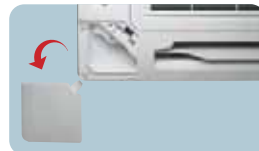


### SIMPLIFIED INSTALLATION AND MAINTENANCE

In addition to being particularly compact, NKFL is also the lightest cassette of its category weighing 26kg (types 36 and 48). Its low height of only 25.6cm (types 9 – 25) means that it can be installed in even the narrowest ceilings



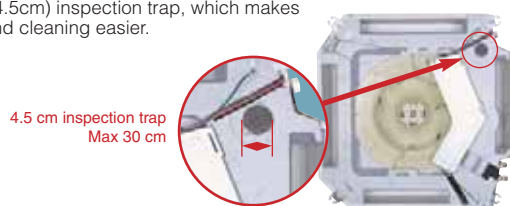
The four angles of the front panel are equipped with removable covers making it possible to reach the mounting feet. It is therefore possible to precisely adjust the height of suspension of the cassette even after installation.



- It is possible to change the direction of the air intake grille
- An wireless receiver for remote control can be assembled to replace the angle piece. The modification only takes a few moments.

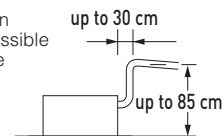
### CONDENSATE TRAY

Maintenance of the condensate tray has been improved with a large diameter (4.5cm) inspection trap, which makes draining and cleaning easier.



### CONDENSATE REMOVAL

The head of the condensate pump has been increased to 85cm. This has been made possible by the use of a drain pump which allows the connection of a very long horizontal pipe.



## NKFL series






		ST-NKFL 7R	ST-NKFL 9R	ST-NKFL 12R	ST-NKFL 16R	ST-NKFL 18R	ST-NKFL 24R	ST-NKFL 36R	ST-NKFL 48R	ST-NKFL 60R
<b>Cooling capacity</b>	<b>kW</b>	2.2	2.8	3.6	4.5	5.6	7.3	10.6	14	16
<b>Power input</b>	<b>kW</b>	0.032	0.032	0.032	0.033	0.034	0.041	0.069	0.097	0.105
<b>Heating capacity</b>	<b>kW</b>	2.5	3.2	4.2	5	6.3	8	11.4	16	18
<b>Power input</b>	<b>kW</b>	0.022	0.022	0.022	0.022	0.023	0.031	0.060	0.093	0.098

Indoor units										
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	930/840/780	930/840/780	930/840/780	930/840/780	960/840/780	1200/960/840	1680/1380/1260	1980/1500/1320	2040/1620/1380
Op. noise level (GV/MV/PV)	dB(A)	31/29/27	31/29/27	31/29/27	31/29/27	31/29/27	34/31/28	39/36/33	42/38/34	44/40/36
Weight	kg	21+<4.5>*	21+<4.5>*	21+<4.5>*	21+<4.5>*	21+<4.5>*	21+<4.5>*	26+<4.5>*	26+<4.5>*	26+<4.5>*
Height	mm	256+<35>*	256+<35>*	256+<35>*	256+<35>*	256+<35>*	256+<35>*	319+<35>*	319+<35>*	319+<35>*
Width	mm	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*
Depth	mm	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*	840<950>*

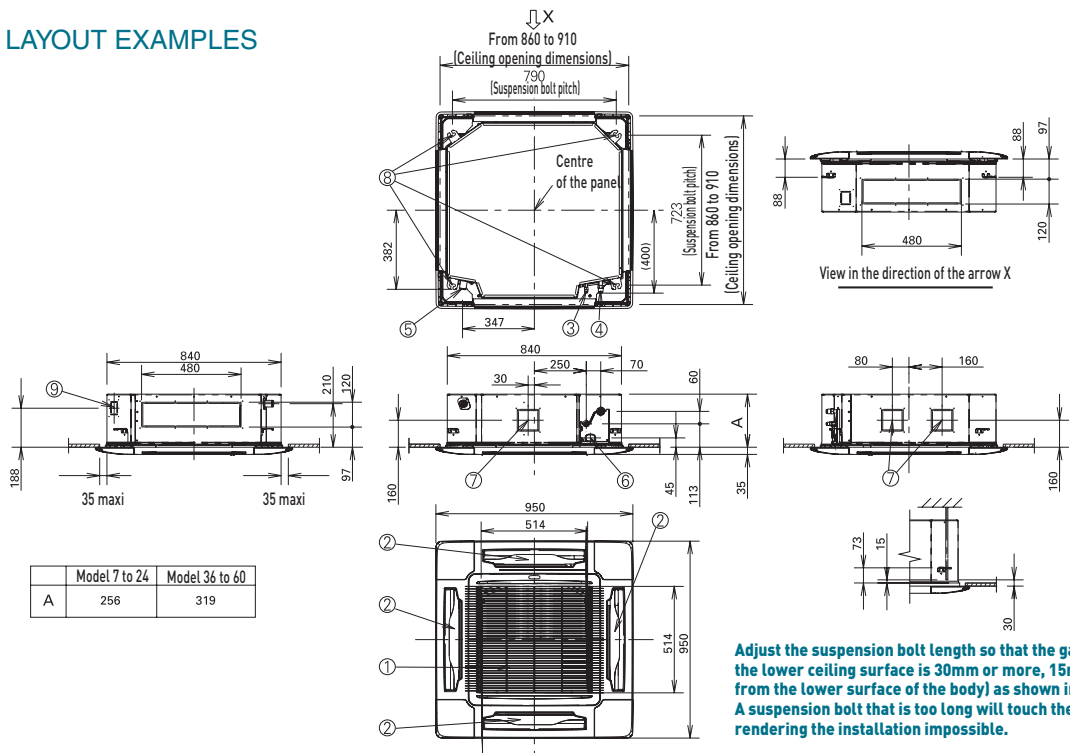
Cooling links										
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"
<b>Reference</b>		<b>7SP04R137</b>	<b>7SP04R138</b>	<b>7SP04R139</b>	<b>7SP04R171</b>	<b>7SP04R140</b>	<b>7SP04R141</b>	<b>7SP04R142</b>	<b>7SP04R143</b>	<b>7SP04R144</b>

\* The values of the external dimensions and the weight in < > are the values of the optional ceiling panel

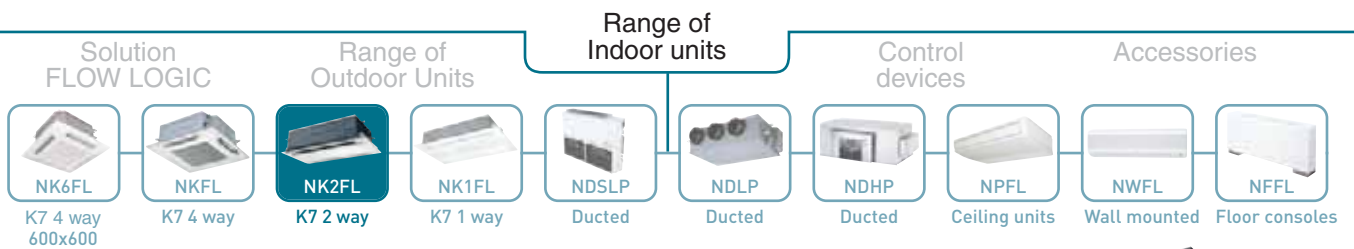
## Accessories

Remote controls			Front panel	Fresh air intake plenum
<b>Wired</b> NRCG-FL	<b>Wireless</b> RCIRKS-FLR RCIRC-FLR (transmitter, shared part)	<b>Simplified</b> NRCB-FLR	<b>GR ST-NK-7-60</b> Ref. 7ACVFR292	<b>FAIB-NKFL 7-60R</b> Ref. 7ACVFR294 <b>FAIP-NKFL 7-60R</b> Ref. 7ACVFR293
				

## LAYOUT EXAMPLES



① Air intake grill	⑥ Power supply entry
② Air outlets	⑦ Knock-out discharge duct (Ø150)
③ Refrigerant piping (liquid pipes) Type 7 -18 : Ø (flared) Type 24 - 60: Ø (flared)	⑧ Suspension bolt hole (4-12 x 37 slot)
④ Refrigerant piping (gas pipes) Type 7 -18: Ø (flared) Type 24 - 60 : Ø (flared)	⑨ Outside air inlet duct connection port (Ø 100)
⑤ Drain outlet (outer Ø 32)	



# NK2FL



2 way cassette



6 Heat pump models from 2 500 to 8 000 W

The characteristics of the new **NK2FL** range of cassettes are their attractive and discreet design, flexibility and ease of installation. In addition to a reduced footprint and weight, **NK2FL** has been developed to guarantee a very high level of comfort for its users and very easy installation.

- ### > Features
- Very low noise levels
  - Height : 350mm
  - Motorized louvers
  - 2 air outlets
  - Drain pump
  - Simplified installation and maintenance
  - Additional air outlet
  - Fresh air intake

### A PARTICULARLY COMPACT RANGE

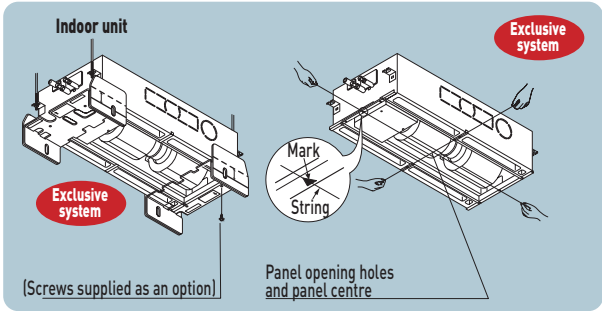
Remarkable progress in terms of footprint and weight has been made, notably thanks to the new arrangement of the different components around the motor-fan.



Model	7	24
Cassette volume	Reduction of around 14%	Reduction of around 12%
Weight (cassette + panel)	From 40kg to 30kg (reduction of around 25%)	From 50kg to 39 kg (reduction of around 22%)

### AN EXCLUSIVE INSTALLATION SYSTEM

The packaging of the cassette can be used as a template for cutting the hole in the ceiling and for adjusting the height of the indoor unit.

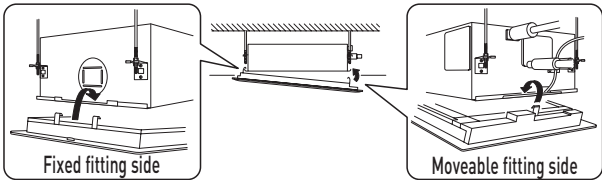


### NOISE LEVELS

The use of new highly efficient motorised fan unit has allowed noise levels to be achieved which are unmatched.

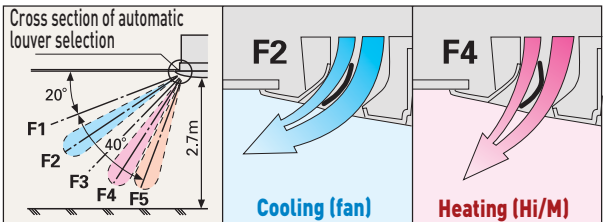
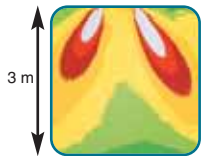
Model 7	Model 9	Model 12	Model 18	Model 24
From 30 to 24	From 33 to 26	From 34 to 28	From 35 to 29	From 38 to 33

Difference GV/MV dB(A)



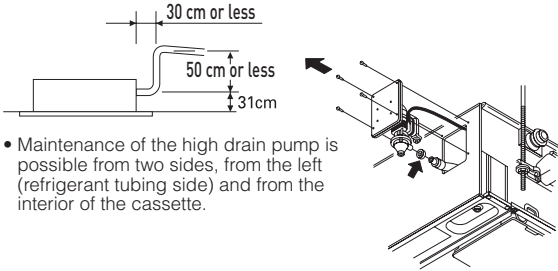
### DIFFUSION OF AIR

In addition to the automatic air sweeping, in both cooling mode and heating mode, and in order to optimize the diffusion of the treated air, the NK2FL electronics automatically control the airflow and the adjust the louvers.



### CONDENSATE REMOVAL

The head of the condensates pump is 500mm from the drain outlet. This increase of 250mm has been made possible by the use of a high drain pump with high flow.



### SIMPLIFIED MAINTENANCE

Accessibility to the motorised fan unit has been simplified by the use of a removable condensates tray. Once the protective pieces have been removed, maintenance is much easier.



## NK2FL series

		ST-NK2FL 7R	ST-NK2FL 9R	ST-NK2FL 12R	ST-NK2FL 16R	ST-NK2FL 18R	ST-NK2FL 24R
<b>Cooling capacity</b>	kW	2.2	2.8	3.6	4.5	5.6	7.3
Power input	kW	0.09	0.092	0.093	0.095	0.097	0.145
<b>Heating capacity</b>	kW	2.5	3.2	4.2	5	6.3	8
Power input	kW	0.058	0.060	0.061	0.063	0.065	0.109

Indoor units							
Air flow rate (GV/MV/PV)	m³/h	480/420/360	540/480/420	576/516/456	600/520/465	660/540/480	1140/960/840
Operating noise level (GV/MV/PV)	dB(A)	30/27/24	33/29/26	34/31/28	34/32/28	35/33/29	38/35/33
Weight	kg	23+<7>*	23+<7>*	23+<7>*	23+<7>*	23+<7>*	30+<9>*
Height	mm	350+<8>*	350+<8>*	350+<8>*	350+<8>*	350+<8>*	1140<1360>*
Width	mm	840<1060>*	840<1060>*	840<1060>*	840<1060>*	840<1060>*	840+<950>*
Depth	mm	600<680>*	600<680>*	600<680>*	600<680>*	600<680>*	600<680>*

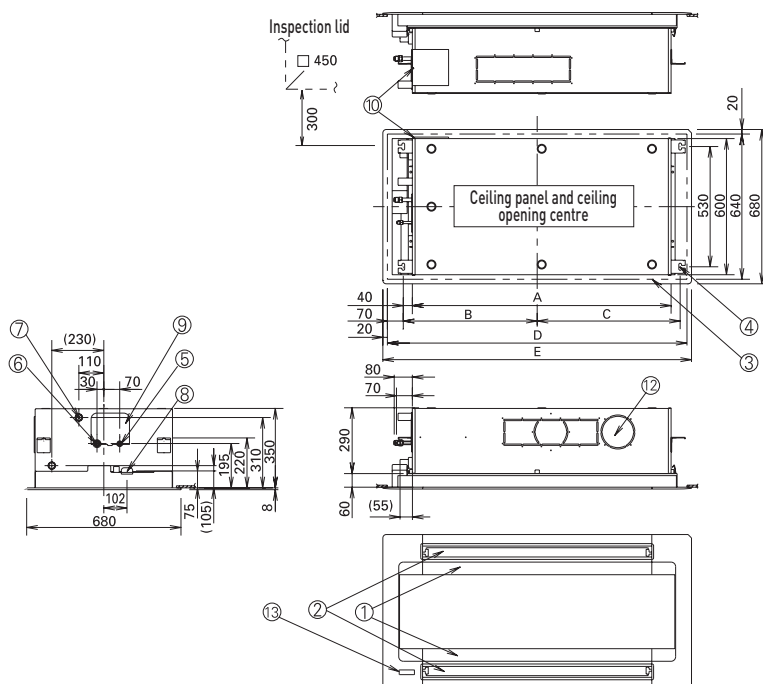
Cooling links							
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
<b>Reference</b>		<b>7SP04R149</b>	<b>7SP04R150</b>	<b>7SP04R151</b>	<b>7SP04R170</b>	<b>7SP04R152</b>	<b>7SP04R153</b>

\* The values of the external dimensions and the weight in <> are the values of the optional ceiling panel.

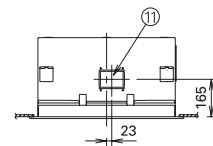
## Accessories

Remote controls			Front panel
<b>Wired</b> NRCG-FLR	<b>Wireless</b> RCIRKS-FLR RCIRC-FLR (transmitter, shared part)	<b>Simplified</b> NRCB-FLR	<b>GR ST-K2 7-18</b> (Ref. 7ACVFR002) - <b>GR ST-K2 24</b> (Ref. 7ACVFR370)

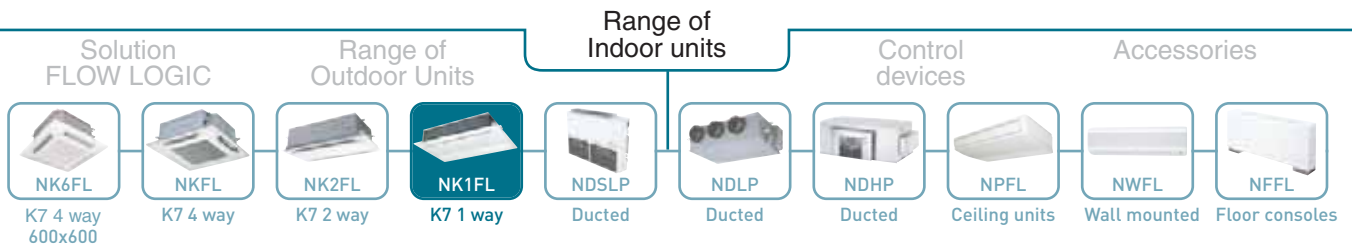
## LAYOUT EXAMPLES



Model	7~18	24
A	840	1 140
B	440	590
C	480	630
D	1 020	1 320
E	1 080	1 360
③ Ceiling opening dimensions	1020x640	1320x1850
⑤ Liquid pipe	1/4"	3/8"
⑥ Gas pipe	1/2"	5/8"
⑫ Duct connection port (right side only)	⌀ x 1 pc.	⌀ x 2 pc.



- |                                     |   |
|-------------------------------------|---|
| ① Air intake grille                 | ⑩ Inlet for optional cord between power supply and unit                   |
| ② Louver outlets                    | ⑪ Drain pan, drain pump inspection lid                                    |
| ③ Ceiling opening dimensions        | ⑫ Drain pump inspection lid   |
| ④ Suspension fitting (notch 12mm)   | ⑬ Round flange (site supply) mounting part (fresh air inlet Ø 125)        |
| ⑤ Refrigerant piping (liquid pipes) | ⑭ Discharge duct mounting part (installation only possible on right side) |
| ⑥ Refrigerant piping (gas pipes)    | ⑮ Wireless remote controller (option) signal receiver installation part   |
| ⑦ Drain connection (outer Ø 32)     |   |



# NK1FL



1 way cassette



4 Heat pump models from 3 200 to 8 000 W

The purity and fluidity of its lines makes the **NK1FL** cassette able to integrate seamlessly into all types of interiors. Particularly adapted to very high ceilings, **NK1FL** has been designed to facilitate integration into low ceilings.

## > Features

- Heights : 200 mm
- Automatic air diffusion
- 1 air outlet
- Low noise levels
- Built-in high drain pump
- Simplified installation and maintenance
- Fresh air intake

## ■ VERSATILITY AND ADAPABILITY

NK1FL cassettes, which were designed to be installed in very high ceilings, up to 3.5m, can also be installed in standard height ceilings. In this case, NK1FL offers the possibility, as an option, to adapt air flow and sound levels to this new configuration.

## ■ FOOTPRINT AND AESTHETICS

At only 20 cm high, NK1FL is one of the most compact cassette on the market, and can be fitted into even the narrowest ceiling spaces, thus corresponding to all variety of installation criteria.

In addition, the design and compact footprint of the NK1FL panel (2 cm high) have been conceived to preserve the aesthetic of its location.

## ■ DIFFUSION OF AIR

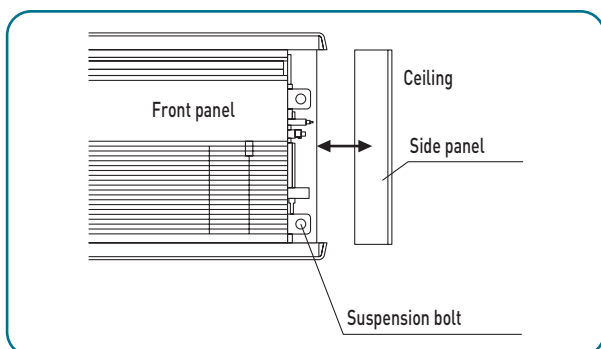
In addition to the automatic air sweeping, in both cooling mode and heating mode, and in order to optimize the diffusion of the treated air, the NK2FL electronics automatically control the airflow and adjust the discharge outlet.

In order to achieve perfect air quality, NK1FL is fitted with long life pleated filters as standard, which only need changing every 2500 hours.

## ■ INSTALLATION AND MAINTENANCE

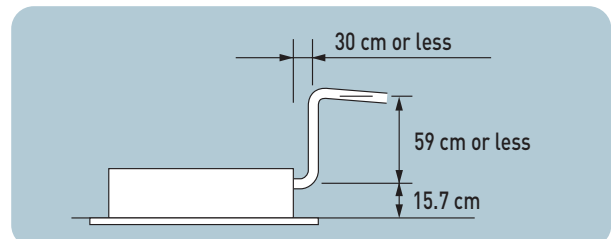
Careful attention has been paid to the accessibility and the installation of the cassette.

Even after installation it is possible to precisely adjust the height of the cassette by accessing the mounting feet of the cassette by simply removing the side panels.



## ■ CONDENSATE REMOVAL

All NK1FL cassettes are fitted with a condensate pump which can move the condensates 75cm from the connection point.



## NK1FL series

		ST-NK1FL 9R	ST-NK1FL 12R	ST-NK1FL 18R	ST-NK1FL 24R
<b>Cooling capacity</b>	kW	2.8	3.6	5.6	7.3
Power input	kW	0.11	0.11	0.115	0.12
<b>Heating capacity</b>	kW	3.2	4.2	6.3	8
Power input	kW	0.08	0.08	0.085	0.090

Indoor units					
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	540/600/720	540/600/720	600/690/790	780/900/1080
Operating noise level (GV/MV/PV)	dB(A)	33/34/36	33/34/36	34/36/38	36/40/45
Weight	kg	21+<5,5>	21+<5,5>	21+<5,5>	21+<5,5>
Height	mm	200+<20>	200+<20>	200+<20>	200+<20>
Width	mm	1000<1230>	1000<1230>	1000<1230>	1000<1230>
Depth	mm	710<800>	710<800>	710<800>	710<800>

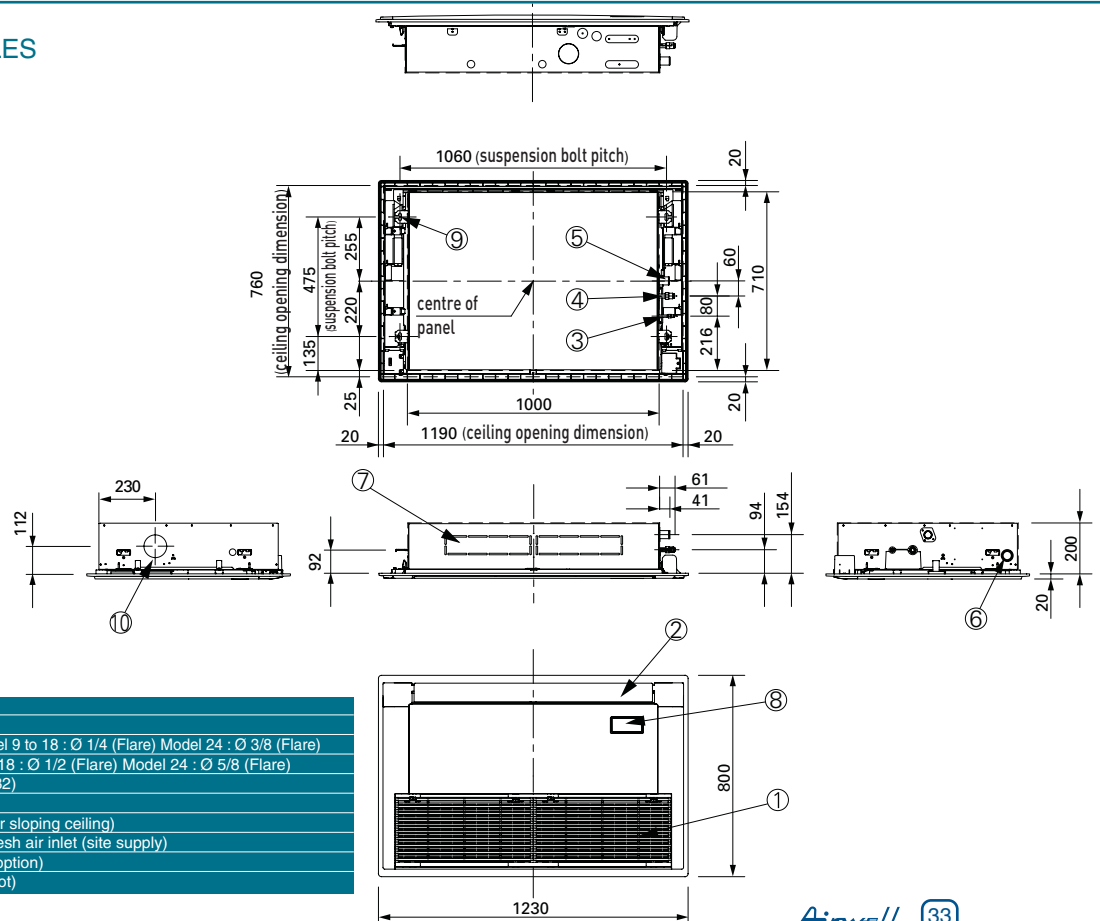
Cooling links					
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	3/8"
<b>Reference</b>		<b>7SP04R001</b>	<b>7SP04R002</b>	<b>7SP04R004</b>	<b>7SP04R005</b>

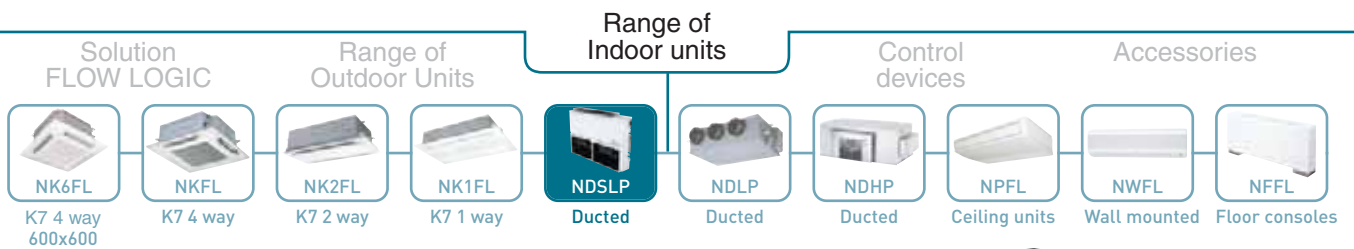
\* The values in ( ) correspond to air flow and noise levels obtained using the cable supplied when installed in a standard height ceiling. The values of the external dimensions and the weight in < > are the values of the optional ceiling panel.

## Accessories

Remote controls			Front panel
<b>Wired</b> NRCG-FLR	<b>Wireless</b> RCIRKS-FLR RCIRC-FLR (transmitter, shared part)	<b>Simplified</b> NRCB-FLR	<b>GR-ST-NK1FL 9-24R</b> Ref. 7ACVFR001

### LAYOUT EXAMPLES





# NDSLPL



**Extra Slim Ducted**



6 Heat pump models from 2 500 – 7 000 W

At 190 mm deep it's the slimmest ducted unit in the market. Compatible with the full Airwell DRV Flow Logic range (Mini / 2 way / 3 way), the **NDSLPL** can be integrated into even the shallowest suspended ceilings. It also has the unique quality of being able to be installed vertically, enabling it to meet any constraint.

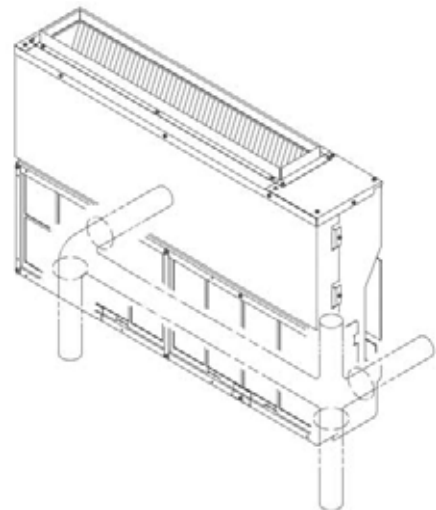
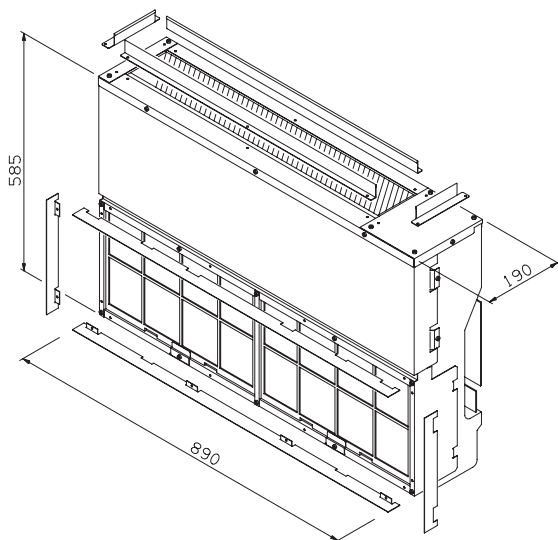
- ### > Product Advantages
- Extremely thin at 190 mm
  - The only modular ducted unit that can be installed horizontally or vertically as a floor console or a wall or ceiling mounted unit
  - Largest capacity range
  - Low noise levels
  - Washable anti-bacterial, anti-mould filter included.
  - 3-Speed Centrifugal Ventilation

### RECORD OVERALL DIMENSIONS

The fitting depth is only 190mm for all models. The NDSLPL ducted units have been specially designed for installations in hotels fitted with very tight suspended ceilings.

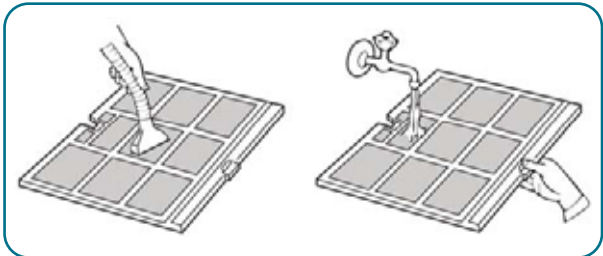
### MODULAR INSTALLATION

To facilitate installation, which may be vertical or horizontal as a floor console or a wall or ceiling mounted unit. The unit can be connected in different 4 positions, i.e. back right, back left, bottom left or bottom right.



### WASHABLE FILTER

The air filter traps the dust and the particles in the air and must be washed at least once every six months. Use a vacuum cleaner to remove the dust. If the dust sticks to the filter, wash the filter in warm soapy water, rinse with clean water and dry it.

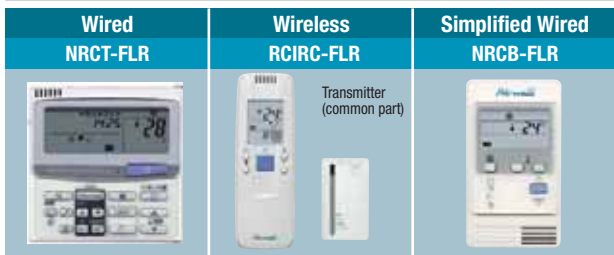


## NDSLPL series

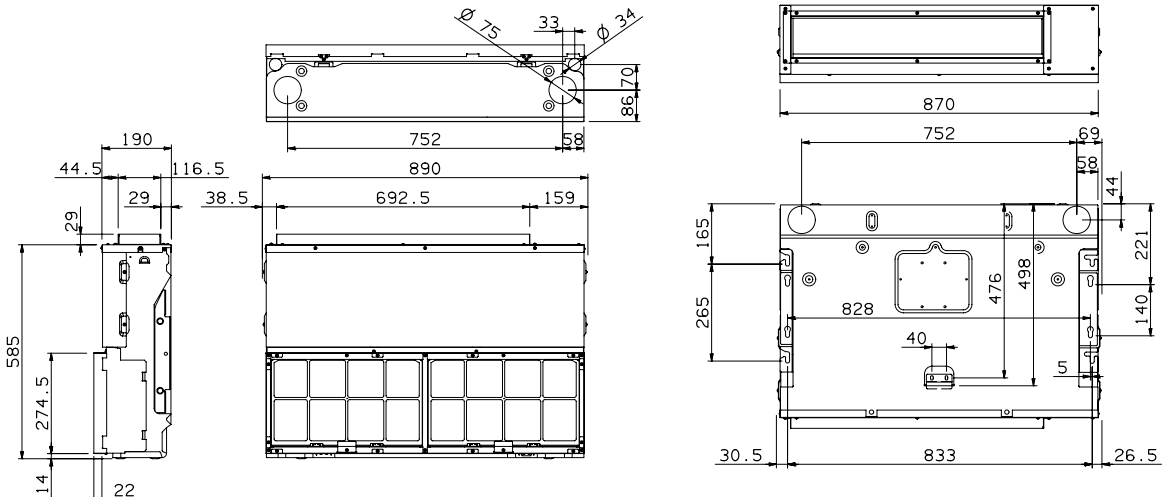
		ST NDSLPL 7R	ST NDSLPL 9R	ST NDSLPL 12R	ST NDSLPL 16R	ST NDSLPL18R	ST NDSLPL 22R
<b>Cooling Capacity</b>	kW	2,2	2,8	3,6	4,5	5,6	6,4
Power input	kW	0,037	0,037	0,037	0,065	0,065	0,088
<b>Heating Capacity</b>	kW	2,5	3,2	4	5	6,3	7
Power input	kW	0,037	0,037	0,037	0,065	0,065	0,088
<b>Indoor Units</b>							
Air Flows rate (PV/MV/GV)	m³/h	335/470/880	335/470/880	335/470/880	450/540/620	450/540/620	520/600/680
Available Static Pressure	Pa	5/6/7,5	5/6/7,5	5/6/7,5	4,7/7,2/10	4,7/7,2/10	4,7/5,2/10
Noise Levels (PV/MV/GV)*	dB(A)	20/24/31	20/24/31	27/35/39	27/35/39	34/39/43	34/39/43
Weight	kg	25	25	25	25	25	25
Height	mm	585	585	585	585	585	585
Width	mm	890	890	890	890	890	890
Depth	mm	190	190	190	190	190	190
<b>Cooling links</b>							
Gas Tube Diameter	Inches	1/2	1/2	1/2	1/2	1/2	1/2
Liquid Tube Diameter	Inches	1/4	1/4	1/4	1/4	1/4	1/4
<b>Reference</b>		<b>7SP03R001</b>	<b>7SP03R002</b>	<b>7SP03R003</b>	<b>7SP03R004</b>	<b>7SP03R005</b>	<b>7SP03R006</b>

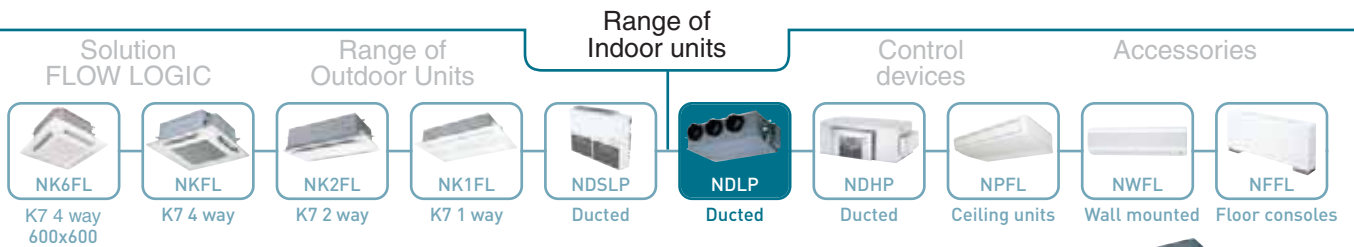
\* to 2m.

### Remote Controls



## FITTING DIAGRAMS





# NDLP



Low pressure ducted



8 Heat pump models from 2 500 to 16 000 W

Perfect discretion and integration, design freedom and flexible installation characterise the NDLP ducted range. These very compact units fit into even the narrowest ceiling spaces.

- ### > Features
- Plenums are supplied
  - Adaptable available pressure
  - Height : 310mm
  - Fresh air input
  - Low noise levels
  - Simplified installation and maintenance
  - High drain pump
  - Easier access (even from the side)

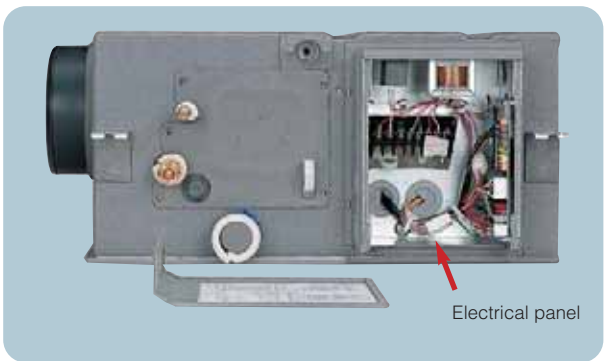
### ■ INSTALLATION

The NDLP ducted units allow a tailor made installation using a network of ducts, and in this way is adaptable for all the constraints and configurations of the building.



### ■ CONNECTION AND MAINTENANCE

Electrical connections and maintenance are made easier by the installation outside of the unit of a box containing the connector block and electronic components.



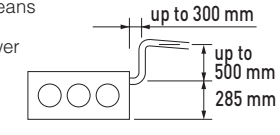
### ■ AVAILABLE PRESSURE

All NDLP ducted units are delivered with a "Booster" cable which makes it possible to increase the available pressure.

Model	7-9-12	18	24	36	48
Standard pressure	49 Pa	40 Pa	50 Pa	79 Pa	78 Pa
With "Booster" cable	69 Pa	62 Pa	92 Pa	122 Pa	113 Pa

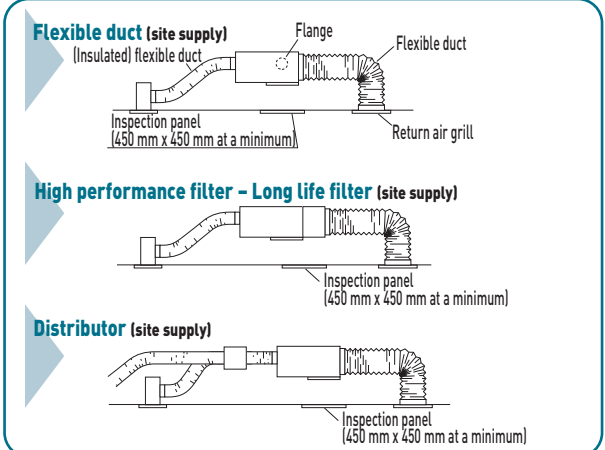
### ■ CONDENSATE REMOVAL

The use of a high flow drain pump means that the head of the pump can move the condensates 785mm from the lower surface of the unit.



### ■ ACCESSIBILITY

An inspection panel (at least 450mm x 450mm) is required on the under side of the indoor unit.



### ■ FOOTPRINT

At only 31 cm high, NDLP ducted units can be easily installed in even the narrowest ceiling spaces.

## NDLP series

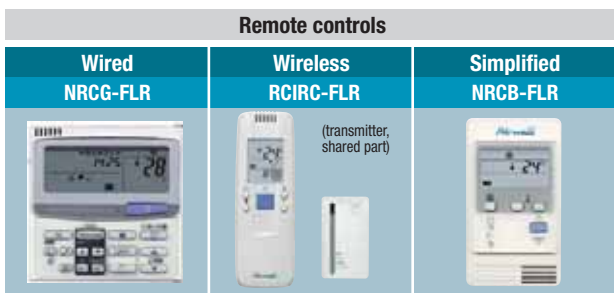
	ST-NDLP 7R	ST-NDLP 9R	ST-NDLP 12R	ST-NDLP 16R	ST-NDLP 18R	ST-NDLP 24R	ST-NDLP 36R	ST-NDLP 48R
<b>Cooling capacity</b>	<b>kW</b> 2.2	<b>2.8</b>	<b>3.6</b>	<b>4.5</b>	<b>5.6</b>	<b>7.3</b>	<b>10.6</b>	<b>14</b>
<b>Power input</b>	<b>kW</b> 0.1	<b>0.1</b>	<b>0.1</b>	<b>0.101</b>	<b>0.102</b>	<b>0.195</b>	<b>0.327</b>	<b>0.325</b>
<b>Heating capacity</b>	<b>kW</b> 2.5	<b>3.2</b>	<b>4.2</b>	<b>5</b>	<b>6.3</b>	<b>8</b>	<b>11.4</b>	<b>16</b>
<b>Power input</b>	<b>kW</b> 0.088	<b>0.088</b>	<b>0.088</b>	<b>0.089</b>	<b>0.090</b>	<b>0.183</b>	<b>0.315</b>	<b>0.313</b>

Indoor units									
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	600/510/420	600/510/420	600/510/420	600/510/420	720/630/540	1080/900/780	1800/1560/1260	1980/1800/1500
Available static pressure	Pa	49 (69)	49 (69)	49 (69)	49(69)	40 (62)	50 (92)	79 (122)	78 (113)
Operating noise level (GV/MV/PV)	dB(A)	(32)/29/26/22	(32)/29/26/22	(32)/29/26/22	(32)/29/26/22	(33)/30/28/25	(38)/34/30/27	(42)/38/33/31	(44)/40/37/33
Weight	kg	24	24	24	24	25	32	47	47
Height	mm	310	310	310	310	310	310	310	310
Width	mm	700	700	700	700	700	1000	1480	1480
Depth	mm	630	630	630	630	630	630	630	630

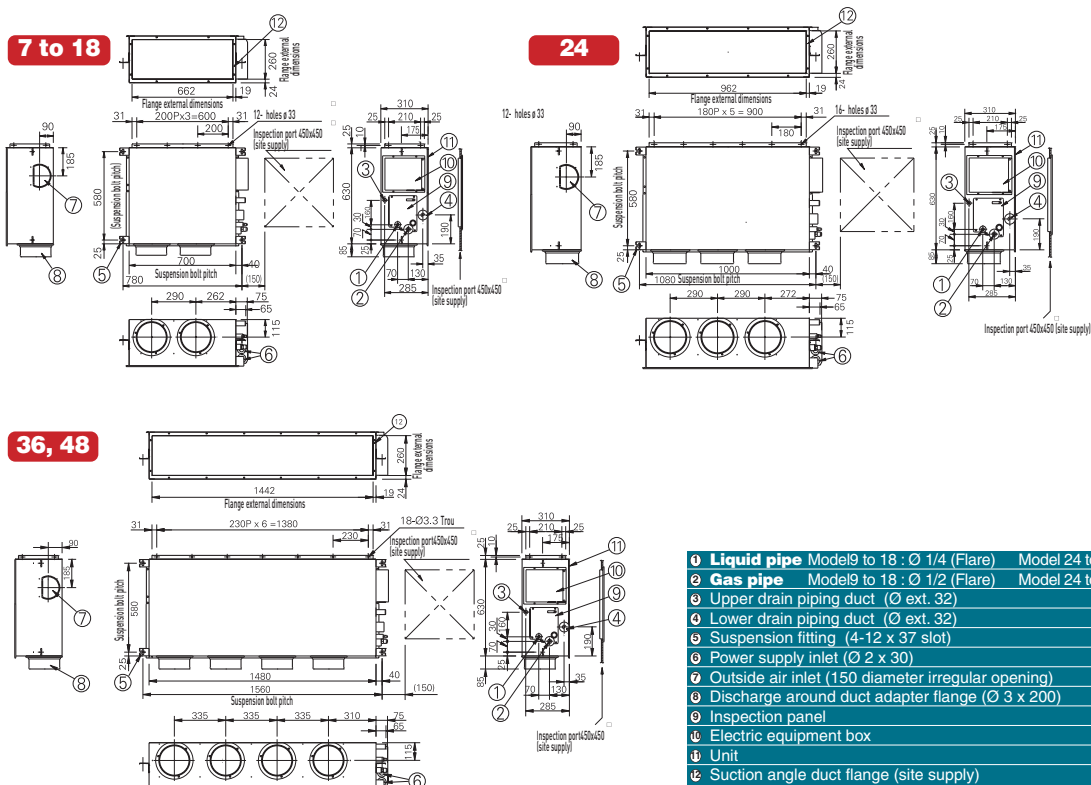
Cooling links									
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"
<b>Reference</b>		<b>7SP03R68</b>	<b>7SP03R069</b>	<b>7SP03R070</b>	<b>7SP03R085</b>	<b>7SP03R071</b>	<b>7SP03R072</b>	<b>7SP03R073</b>	<b>7SP03R074</b>

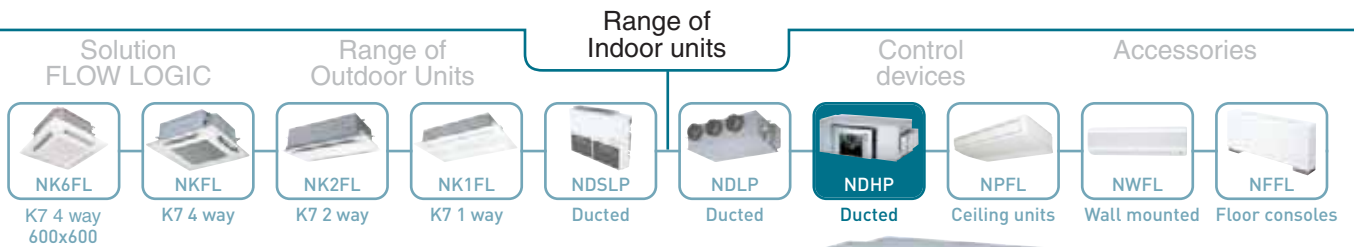
\* The values in ( ) correspond to static pressure and noise levels when a booster cable is used.

## Accessories



### LAYOUT EXAMPLES





# NDHP



High pressure ducted



5 Heat pump models from 8 000 to 31 500 W

Integration and discretion, liberty of design and flexible installation are the characteristics of the NDHP ducted high pressure range.

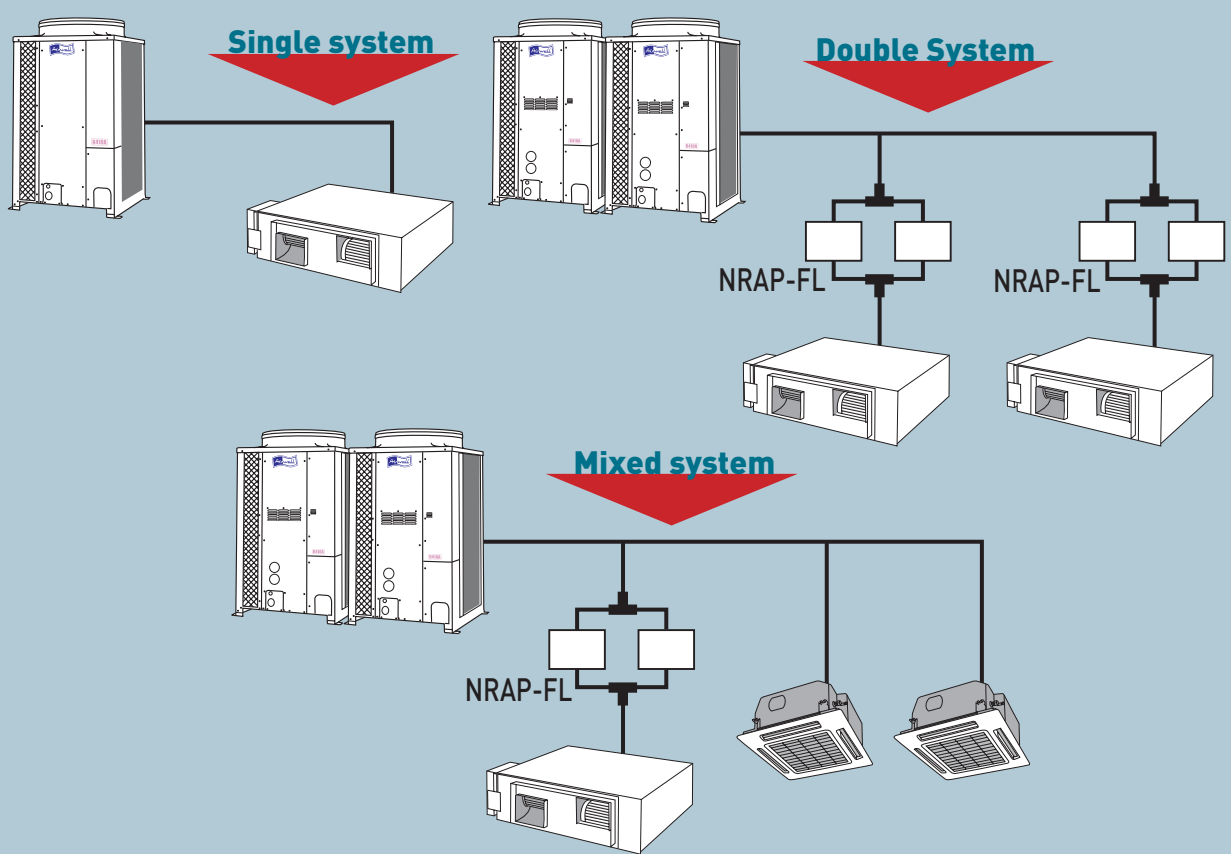
- > Features**
- Increased available static pressure
  - Fresh air input
  - Low noise levels
  - Simplified installation and maintenance
  - Control system (option)
  - RAP valve kit size 76-79 (option)

**■ HIGH PRESSURE DUCTED**

The ducted NDHP units have one of the lowest operating noise levels on the market. The available pressure and the numerous possibilities for the distribution of the air mean that the NDHP range can provide a tailor made service via a network of ducts which adapt to all the constraints and configurations of the building.

**■ RAP VALVE KIT**

Two RAP valves are required on the 76 and 79 models except for single system applications.



⌚ : Distribution joints kit (NRF-D 1668)






## NDHP series

		ST-NDHP 24R	ST-NDHP 36R	ST-NDHP 48R	ST-NDHP 76R	ST-NDHP 96R
Cooling capacity	kW	7.3	10.6	14	22.4	28
Power input	kW	0.505	0.545	0.66	0.9	1.33
Heating capacity	kW	8	11.4	16	25	31.5
Power input	kW	0.505	0.545	0.66	0.9	1.33

Indoor units						
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	1380/1320/1260	1800/1680/1500	2160/2100/1980	3360/3186/2976	4320/4200/3960
Available static pressure	Pa	186	176	167	176	216
Operating noise level (GV/MV/PV)	dB(A)	44/43/42	45/44/42	47/46/44	48/47/46	51/50/49
Weight	kg	47	50	54	110	120
Height	mm	420	420	450	467	467
Width	mm	1065	1065	1065	1428	1428
Depth	mm	620	620	620	1230	1230

Cooling links						
Gas tubing diameter	Inches	5/8"	5/8"	5/8"	3/4"	7/8"
Liquid tubing diameter	Inches	3/8"	3/8"	3/8"	3/8"	3/8"
Reference		7SP05R124	7SP05R125	7SP05R126	7SP05R127	7SP05R128

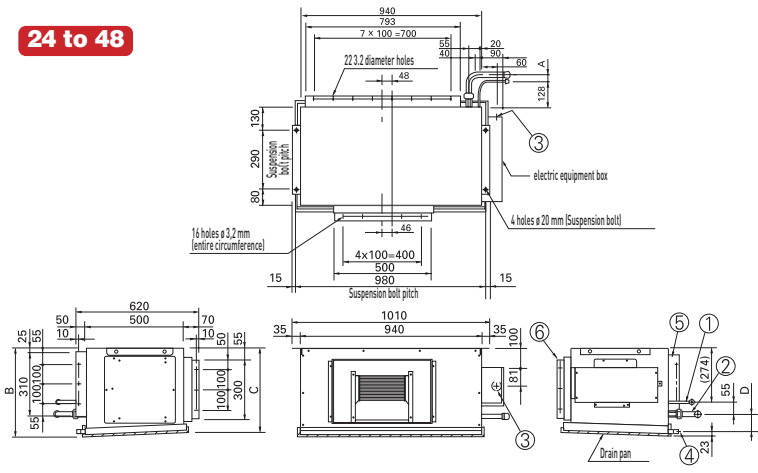
## Accessories

Remote controls			RAP valve kit
Wired NRCG-FLR	Wireless RCIRC-FLR (transmitter, shared part)	Simplified NRCB-FLR	NRAP-FLR
			
			The 76 and 96 types require a RAP kit on the gas line of each unit.

### LAYOUT EXAMPLES

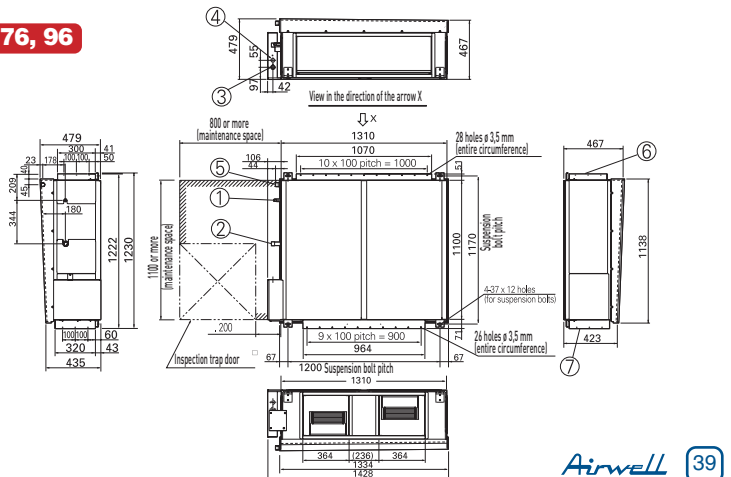
24 to 48

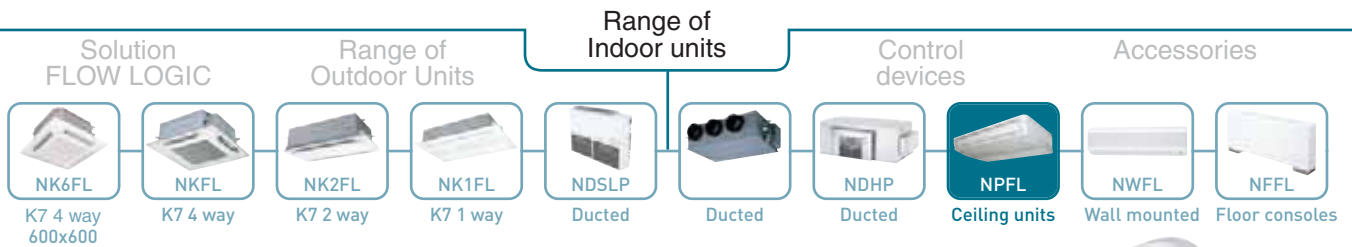
- ① Liquid pipe  $\varnothing$  3/8
- ② Gas pipe  $\varnothing$  5/8
- ③ Power supply inlet
- ④ Drain  $\varnothing$  32
- ⑤ Duct connection for suction
- ⑥ Duct connection for discharge



76, 96

- ① Liquid pipe  $\varnothing$  3/8
- ② Gas pipe Model 76 :  $\varnothing$  3/4, Model 96 :  $\varnothing$  7/8
- ③ Power supply outlet (gland  $\varnothing$  25, rubber)
- ④ Power supply outlet (reserve) (connection  $\varnothing$  30)
- ⑤ Drain  $\varnothing$  32, male thread
- ⑥ Duct connection for suction
- ⑦ Duct connection for discharge





# NPFL



## Ceiling units



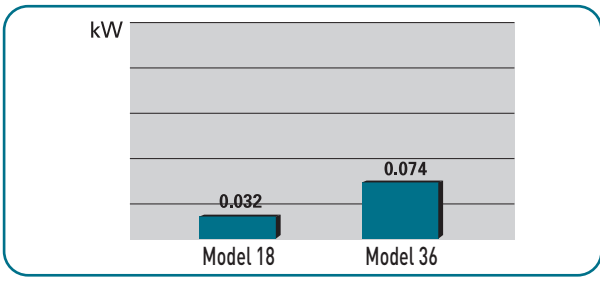
6 Heat pump models of 4 200 to 16 000 W

Rarely have technology and innovation combined to such an extent in order to offer optimal comfort to users. Combining aesthetics, pure lines and Hi-Tech technology, **NPFL** under-ceiling units have been designed to ensure a very high level of comfort for users.

- ### > Features
- DC Inverter motor turbine
  - Significant air diffusion
  - Low noise levels
  - Simplified installation and maintenance
  - Limited height (21cm)

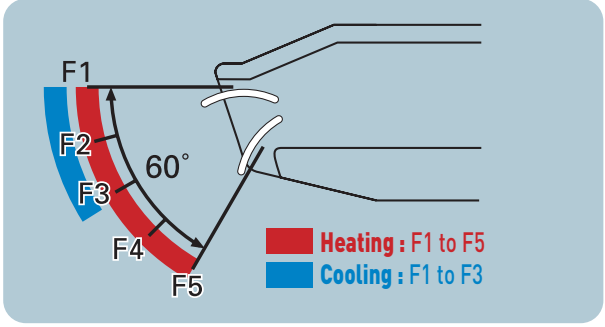
### CONSUMPTION

The use of new generation turbines equipped with DC inverters motors in association with optimized exchangers has resulted in a reduction in power consumption at start up and a reduction in global consumption.



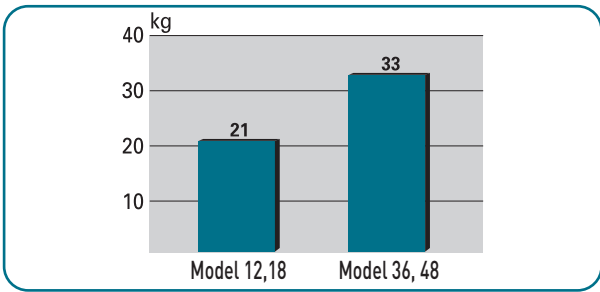
### DIFFUSION OF AIR

With an excellent air diffusion range, NPFL is equipped with motorized louvers. The electronic system automatically manages the air flow and the adjustment of the louver angle in order to optimize the diffusion of the treated air, both in cooling and heating mode. In automatic mode, the sweeping louver oscillates continuously between F1 and F5.



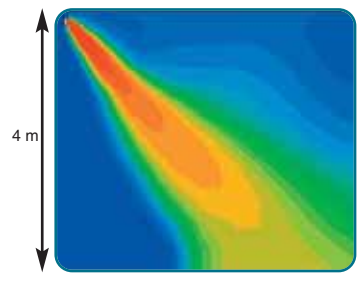
### FOOTPRINT AND WEIGHT

The NPFL under-ceiling units have been designed with the aim of perfect integration in all types of environments. This range is particularly adapted to tertiary applications and has been designed to offer easy installation for filters. Particular attention has been paid to the reduction in weight and footprint (the height and the depth of the units has been standardised), making NPFL the lightest range of under-ceiling units on the market.



The broad discharge louver enables homogenous diffusion of the air in the environment, improving comfort while avoiding the sensation of being in a draught which can be felt when the flow of air is directly projected on the occupants.

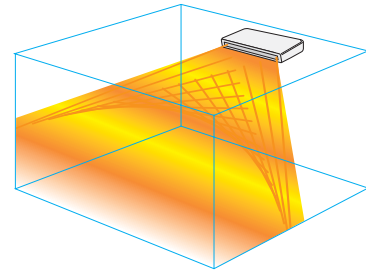
In terms of a 4m ceiling



### NOISE LEVELS

The use of a new type of centrifuge turbine and a new profile of heat exchangers has resulted in a reduction in noise levels of 2dB(A).

Model	24	48
Operating noise level (GV/PV)	38/33 dB(A)	43/37 dB(A)



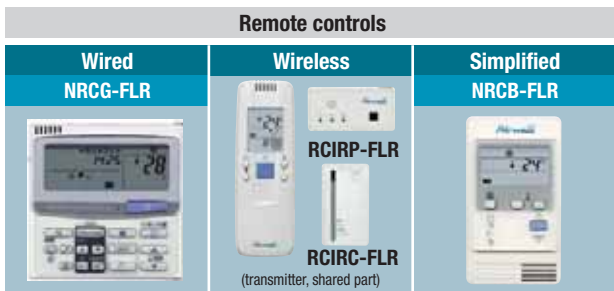
## NPFL series

		ST-NPFL 12R	ST-NPFL 16R	ST-NPFL 18R	ST-NPFL 24R	ST-NPFL 36R	ST-NPFL 48R
<b>Cooling capacity</b>	kW	3.6	4.5	5.6	7.3	10.6	14
Power input	kW	0.028	0.03	0.032	0.042	0.074	0.085
<b>Heating capacity</b>	kW	4.2	5	6.3	8	11.4	16
Power input	kW	0.028	0.03	0.032	0.042	0.073	0.086

Indoor units							
Air flow rate (GV/MV/PV)	m³/h	720/600/540	750/640/540	780/660/540	1110/900/840	1650/1380/1200	1800/1560/1320
Operating noise level (GV/MV/PV)	dB(A)	35/32/30	35/32/30	36/33/30	38/36/33	41/38/35	43/40/37
Weight	kg	21	21	21	25	33	33
Height	mm	210	210	210	210	210	210
Width	mm	910	910	910	1180	1595	1595
Depth	mm	680	680	680	680	680	680

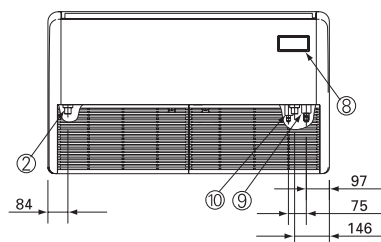
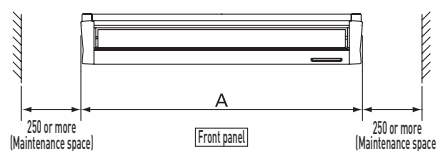
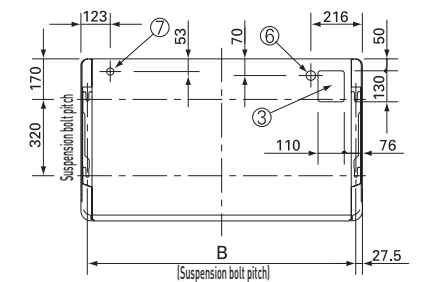
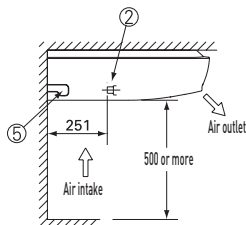
Cooling links							
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"
Reference		7SP02R298	7SP02R369	7SP02R299	7SP02R300	7SP02R301	7SP02R302

## Accessories

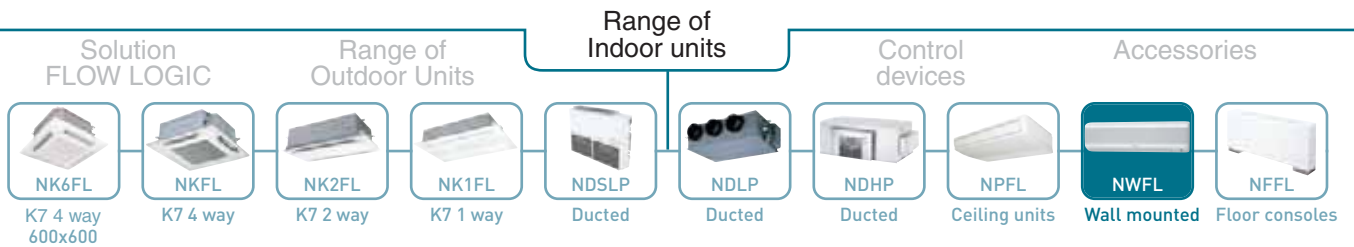


### LAYOUT EXAMPLES

Model	12 to 18	24 to 48
A (body)	910	1180
B (suspension bolt pitch)	855	1125
⑨ Gas pipe	1/2"	5/8"
⑩ Liquid pipe	1/4"	3/8"



- |  |   |
|--|---|
| ① Drain port (inner Ø, 32 hose accessory)                | ⑤ Left side drain piping                          |
| ② Left side drain hole                                   | ⑥ Power supply entry port (with connection Ø 40)  |
| ③ Rear refrigerant piping outlet (with connection)       | ⑦ Remote controller wiring inlet port             |
| ④ Right side refrigerant piping outlet (with connection) | ⑧ Wireless remote control receiver mounting port. |



# NWFL



Wall mounted



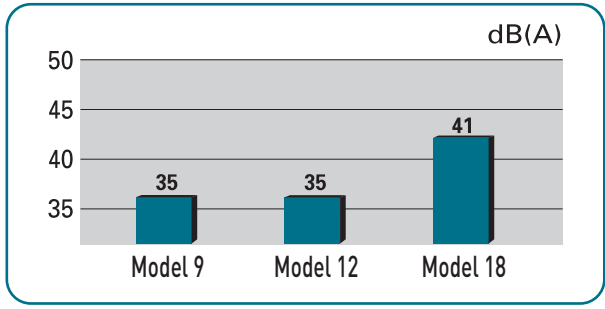
6 Heat pump models from 2 500 to 8 000 W

Easy installation and implementation. This extensive range of 5 models has been developed to offer professionals maximum flexibility of configuration and the easiest of installations. Compact, elegant and simple to maintain, these are some of the advantages which make the NWFL range the ideal equipment for small and medium tertiary applications.

- ### > Features
- Simple product, easy to position
  - Reduced weight and footprint
  - Automatic air diffusion
  - Low noise levels
  - Simplified installation and maintenance

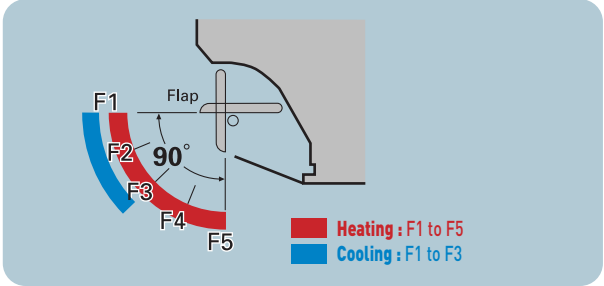
### OPERATING NOISE LEVEL

Particular attention has been paid to improving noise levels, positioning NWFL as one of the quietest wall mounted units in its category.



### DIFFUSION OF AIR

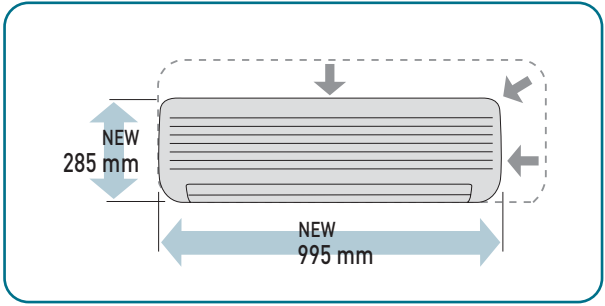
NWFL is equipped with a motorized sweeping louver. The electronic system automatically manages the air flow and the adjustment of the louver angle in order to optimize the diffusion of the treated air, both in cooling and heating mode. In automatic mode, the sweeping louver oscillates continuously between F1 and F5.



The broad discharge louver enables homogenous diffusion of the air in the environment, improving comfort while avoiding the sensation of being in a draught which can be felt when the flow of air is directly projected on the occupants. When the unit is not in operation, the louver closes completely to minimize the penetration of dust into the unit and to keep it as clean as possible.

### INSTALLATION

In order to make installation easier, a number of improvements have been made to reduce the footprint and the weight. The height has been reduced by 20% compared with the previous generation model. To respond to all types of installation constraints, the wall mounted NWFL unit can be connected by the rear, to the left and also to the right.



### FILTRATION

In order to offer optimal air filtration, the entire wall mounted NWFL range is fitted with anti-bacterial washable filters.

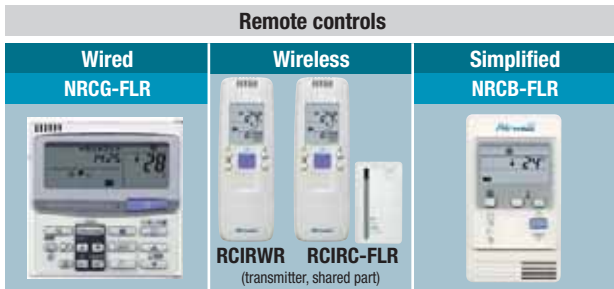
## NWFL Series

		ST-NWFL 7R	ST-NWFL 9R	ST-NWFL 12R	ST-NWFL 16R	ST-NWFL 18R	ST-NWFL 24R
<b>Cooling capacity</b>	kW	2.2	2.8	3.6	4.5	5.6	7.3
Power input	kW	0.033	0.033	0.033	0.033	0.033	0.052
<b>Heating capacity</b>	kW	2.5	3.2	4.2	5	6.3	8
Power input	kW	0.033	0.033	0.033	0.033	0.033	0.052

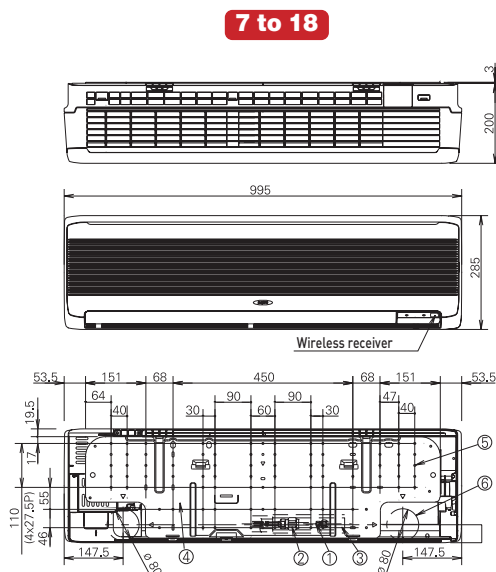
Indoor units							
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	600/480/360	600/480/360	600/480/360	650/540/420	720/600/480	960/840/600
Operating noise level (GV/MV/PV)	dB(A)	36/32/28	36/32/28	36/32/28	38/33/30	39/35/31	42/38/35
Weight	kg	14	14	14	14	14	21
Height	mm	285	285	285	285	285	330
Width	mm	995	995	995	995	995	1140
Depth	mm	203	203	203	203	203	228

Cooling links							
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
<b>Reference</b>		7SP02R296	7SP02R293	7SP02R294	7SP02R368	7SP02R295	7SP02R297

## Accessories

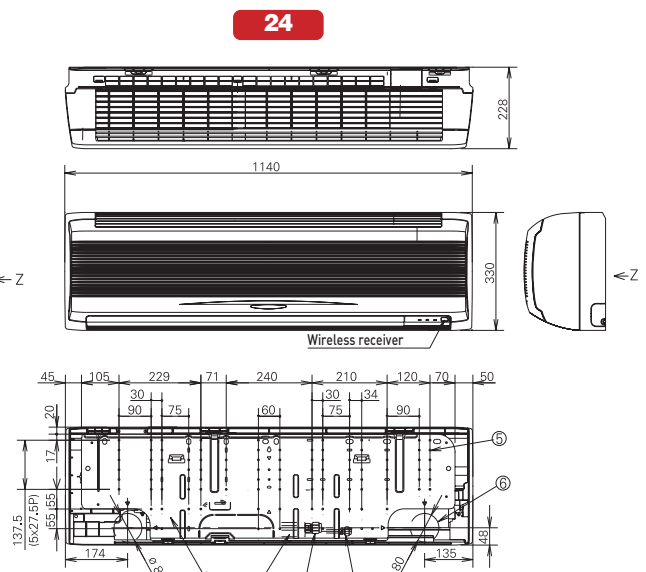


### LAYOUT EXAMPLES



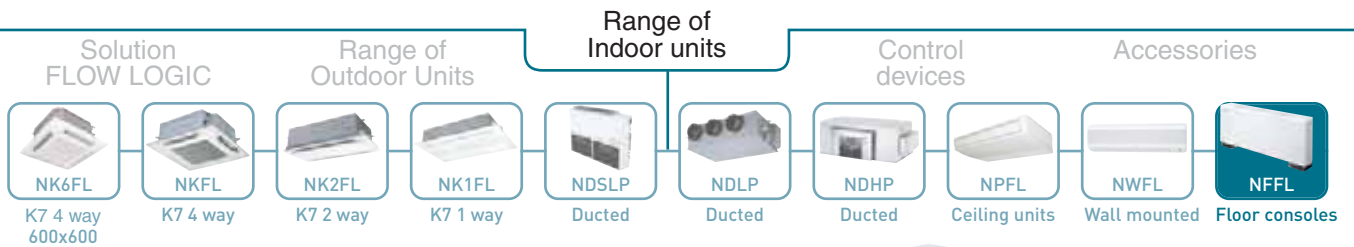
View in direction of arrow Z

- ① Liquid pipe Ø 3/8
- ② Gas pipe Ø 5/8
- ③ Power supply inlet
- ④ Drain Ø 32
- ⑤ Duct connection for suction
- ⑥ Duct connection for discharge



View in direction of arrow Z

- ① Liquid pipe Ø 3/8
- ② Gas pipe Ø 5/8
- ③ Power supply inlet
- ④ Drain Ø 32
- ⑤ Duct connection for suction
- ⑥ Duct connection for discharge



# NFFL



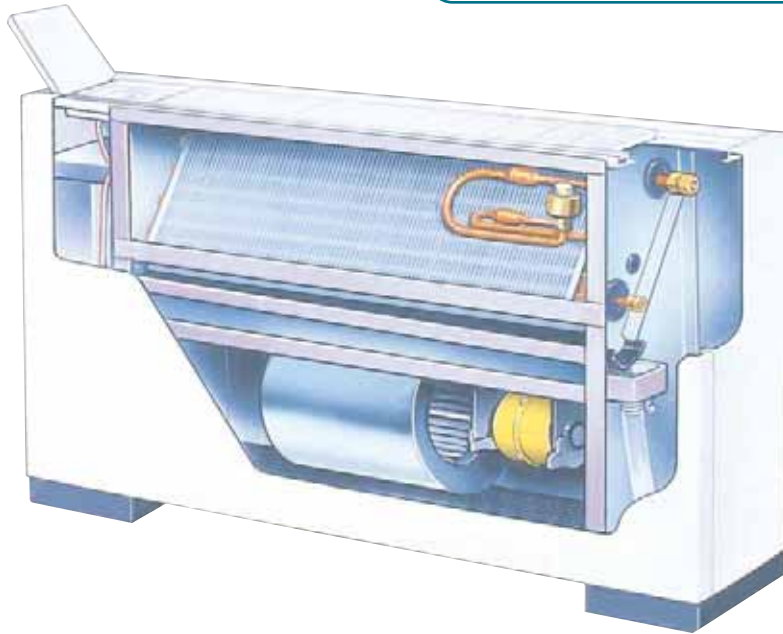
## Consoles with casing

5 Heat pump models from 2500 to 8000W



The sober and streamlined design of the NFFL consoles meets the air conditioning requirements of commercial buildings and small and medium sized offices.

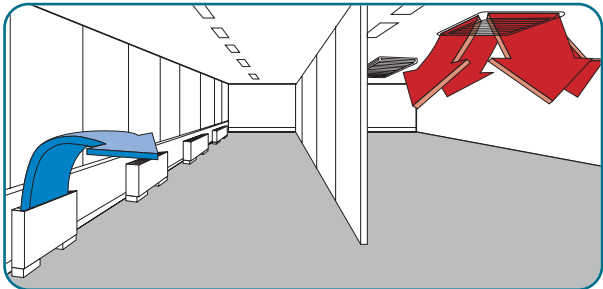
- > Features**
- Sober and streamlined design
  - Reduced footprint
  - Simplified installation and maintenance
  - Low noise levels
  - Remote control can be integrated



The NRCG-FL standard wired remote control can be integrated into the console

### ■ INSTALLATION AND MAINTENANCE

This equipment has been designed to ensure a very high level of comfort for users, easy maintenance and easy installation for fitters.



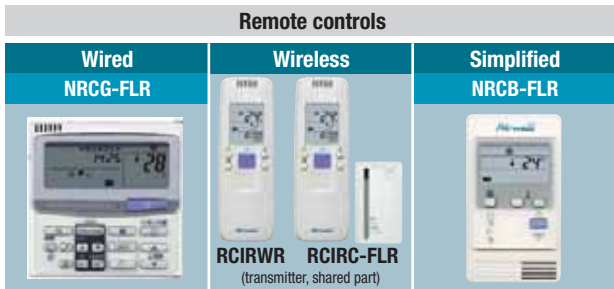
## NFFL series

		ST-NFFL 7R	ST-NFFL 9R	ST-NFFL 12R	ST-NFFL 18R	ST-NFFL 24R
<b>Cooling capacity</b>	kW	2.2	2.8	3.6	5.6	7.1
Power input	kW	0.056	0.056	0.085	0.126	0.16
<b>Heating capacity</b>	kW	2.5	3.2	4.2	6.3	8
Power input	kW	0.04	0.04	0.07	0.09	0.12

Indoor units						
Air flow rate (GV/MV/PV)	m <sup>3</sup> /h	420/360/300	420/360/300	540/420/360	900/780/660	1020/840/720
Operating noise level (GV/MV/PV)	dB(A)	33/30/28	33/30/28	39/35/29	39/36/31	41/38/35
Weight	kg	29	29	29	39	39
Height	mm	615	615	615	615	615
Width	mm	1065	1065	1065	1380	1380
Depth	mm	230	230	230	230	230

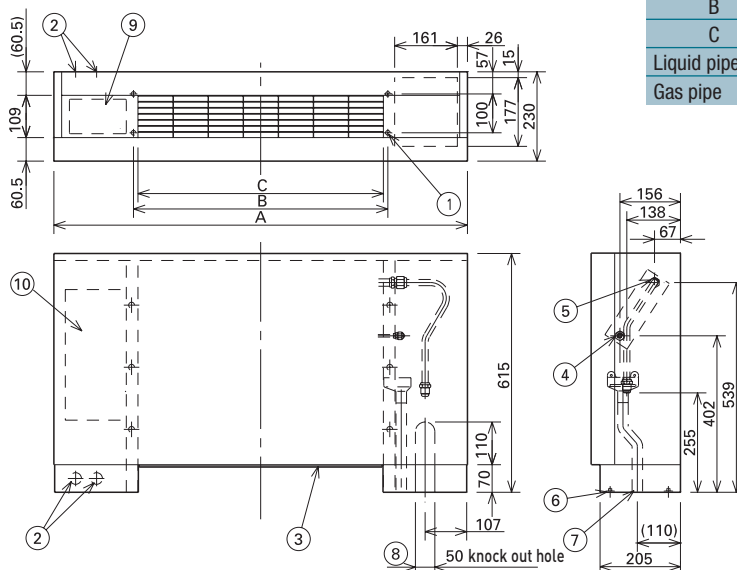
Cooling links						
Gas tubing diameter	Inches	1/2"	1/2"	1/2"	1/2"	5/8"
Liquid tubing diameter	Inches	1/4"	1/4"	1/4"	1/4"	3/8"
Reference		7SP01R123	7SP01R124	7SP01R125	7SP01R126	7SP01R127

## Accessories



### LAYOUT EXAMPLES










#### Console with casing



Model	7~12	18	24
A	1065	1380	1380
B	665	980	980
C	632	947	947
Liquid pipe	1/4"	1/4"	3/8"
Gas pipe	1/2"	1/2"	5/8"

① 4 x Ø 12 holes (for floor fixing)	⑥ Level adjustment bolt
② Power supply outlet	⑦ Drain outlet Ø 32 (with vinyl hose)
③ Air filter	⑧ Refrigerant piping connection port (bottom or rear)
④ Liquid pipe	⑨ Site of standard wired remote control device NRCG-FL
⑤ Gas pipe	⑩ Electric equipment box

# The range of **control devices** means that there is a solution for all installation management requirements

Control devices	Operation	Type, Model	Number of indoor units controlled	Limitations of use		
Individual control devices	Standard wired remote control NRCT-FLR	 Standard wired remote control NRCT-FLR	One indoor unit or 8 master/slave indoor units	Connection of 2 controllers per unit max		
	Wireless remote control	 Wireless remote control RCIRK-FLR RCIRKS-FLR RCIRC-FLR RCIRP-FLR RCIRWR	One indoor unit or 8 master/slave indoor units	Connection of 2 controllers per unit max		
	Simple	 Simple remote control NRCB-FLR	One indoor unit or 8 master/slave indoor units	Connection of 2 controllers per unit max		
Scheduled timer	Timer or programmer	 Programmer NWTM-FLR	64 indoor units maximum / possibility of grouping	Power supply from system controller In the absence of centralized control, poss. of connection to T10 terminal of 1 indoor unit		
Centralized control systems	Centralized without local remote control	 Gestion centralisée NRSC-FLR	64 indoor units maximum / possibility of grouping	<ul style="list-style-type: none"> <li>• 10 controllers can be connected to one system.</li> <li>• Possibility of master /slave connection</li> </ul>		
	Simplified calculation of consumption per occupant and proportional invoicing	Consumption calculator	 Intelligent controller IC-FLR	4 groups of 64 units : max 256 units	A communications adapter must be installed for 3 groups or more	
		Unit counter	 Communications adapter CM-FLR	2 groups , 128 units max		
I/O outdoor interface	Temperature controller	 I/O Seri/para unit SPIO-FLR	Up to 64 units	Can not operate without remote controller.		
Others	Centralized control of a number of indoor units from the LonWorks network	 LonWork Interface LON-FLR	Complete control of 16 indoor units or 64 units in On/off	A centralized control system ie remote controller, Centralized, control, intelligent control is required.		

(1) Select two of the following : fan speed; motorized louvers, central/individual and filter indicator

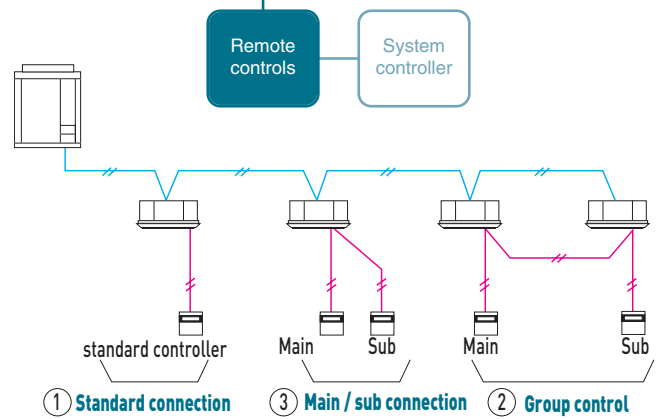
(2) Setting is not possible when a system controller is installed (use the local controller for settings)



FUNCTIONS

	Setting Off / On	Setting mode	Fan speed setting	Temperature adjustment	Motorised louvers	Permit or prohibit switching	Weekly programme
	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓		
	✓	✓	✓	✓	✓		
							✓
	✓	✓	✓	✓	✓ <sup>(2)</sup>	✓	
	✓	✓	✓	✓	✓ <sup>(2)</sup>	✓	✓
	✓	✓	✓	✓	✓ <sup>(2)</sup>	✓	✓
	✓			✓		✓	
	✓	✓	✓ <sup>(1)</sup>	✓	✓ <sup>(1)</sup>	✓ <sup>(1)</sup>	

System examples:



## REMOTE CONTROLS (Standard Wired or Wireless)

Control contents	Name	Model
① <b>Standard controller</b> <ul style="list-style-type: none"> <li>Control of the various operations of the indoor unit by wired or wireless control.</li> <li>Selection of cooling or heating mode on the outdoor unit by prior activation of the priority button on the controller.</li> <li>Possible to switch between the controller sensor and that of the indoor unit.</li> </ul>	<b>Wired controller</b>	NRCT-FLR
	<b>Wireless controller</b>	RCIRK-FLR, RCIRKS-FLR RCIRC-FLR, RCIRP-FLR RCIRWR
② <b>Group control</b> <ul style="list-style-type: none"> <li>Centralized control of all the indoor units.</li> <li>Operation of all the indoor units in the same mode.</li> <li>Can connect up to 8 units.</li> <li>Controlled by the sensor in the indoor unit and it is possible to use the on/off setting of the controller pre-set temperature.</li> </ul>	<b>Wired controller</b>	NRCT-FLR
③ <b>Main / Sub control</b> <ul style="list-style-type: none"> <li>2 controllers max per indoor unit (can connect a main and sub controller).</li> <li>The last button used has priority (the selection of main / sub is made on the controller).</li> <li>Possible to use the timer even if the sub controller is in use.</li> </ul>	<b>Wired controller</b>	NRCT-FLR
	<b>Wireless controller</b>	RCIRK-FLR, RCIRKS-FLR RCIRC-FLR RCIRP-FLR RCIRWR

## REMOTE CONTROL WITH TIMER NRCT-FLR

### Remote control ON/OFF basic

- Mode change (cooling, heating, dehumidifying, auto, fan).
- Temperature adjustment (cooling/dehumidifying: 18-30°C, heating: 16-30°C).
- Air speed adjustment (HH, H LL, auto).
- Air direction adjustment.

### Timer function

- Real 24 hour timer.
- Week day indicator.

### Weekly programming function

- A maximum of six actions maximums can be programmed each day.

### Outing Function

- This function can stop the temperature going down or up when the occupants have gone out for a certain amount of time.

### Night Function

- This function controls the ambient temperature for ensuring the comfort of the occupants of the room whilst they sleep.

**It is possible to control 8 indoor units with only one remote control.**

**It is possible to remotely control the units using the main or secondary remote control.**

**It is possible to install a maximum of two remote controls (primary and secondary) for a single indoor unit.**



(Dimensions :  
H120 x L70 x W16 mm)



## WIRELESS CONTROLLERS

### Mechanical ventilation fans

With this function outdoor mechanical ventilation fans or heat exchangers can be controlled. The control can be synchronized with the indoor units, or operate independently.

**Easy to install on the NKFL 4 way cassette by simply replacing the angle cover**

**The timer can be set for up to 72 hours (in 30 minute intervals)**

**Operation can be via a main or sub controller**

Maximum of two controllers ( main and sub) can be installed for one indoor unit.

**The RCIRC-FL controller can be used with all indoor units**

- When a remote sensor is installed in another room to the unit, it is possible to control the system from this room.
- The automatic function can be set from the Manual Auto mode button even when the remote control has been lost or the batteries are flat.

**Other functions such as maintenance, fan speed control, timer, and control of filter choking are also available**

## ● SIMPLE CONTROLLER NRCB-FLR

**This controller has all the essential functions for simplified usage**

- Ideal for hotel bedrooms, for example, where sophisticated functions are not always required.
- This controller offers the "office" functions : On/Off, operating mode selection, temperature setting, fan speed selection, motorized louver position, alarm and autotest.
- Up to 8 units can be controlled by one controller (master / slave)
- A main or secondary unit can be controlled by a simple or standard controller (max two units).

(Dim. : H120 x L70 x W16 mm)



## ● SCHEDULE TIMER NWTM-FLR



(Dim. : H 120 x L120 x W16 mm)

**Maximum of 64 indoor units can be controlled divided into 8 timer groups**

**Up to 6 programmes per day (Stop / start / Local permission / local prohibition) within a weekly programme**

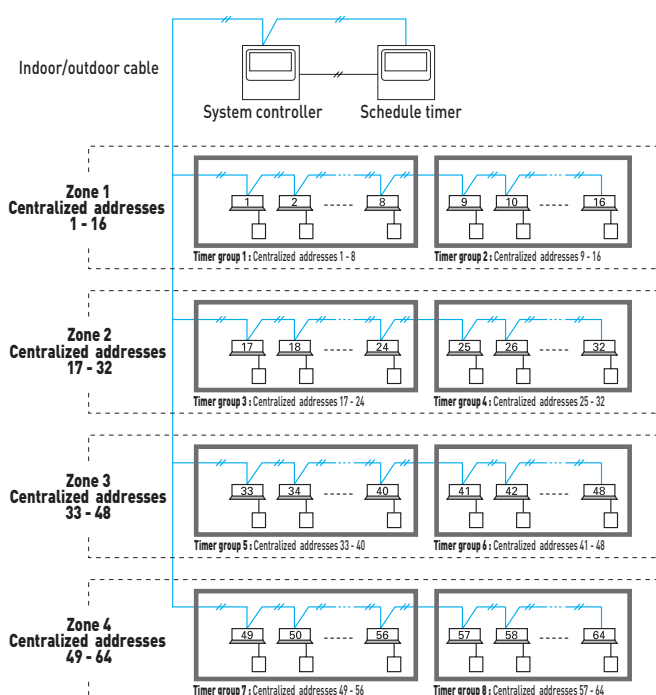
- Only the options : Stop / Start / Local Permission / Local prohibition and combinations of these are available (Start + Local permission, Stop + Local prohibition, Local permission only etc).
- The local prohibition and the combination of three function : temperature setting, mode selection and stop/start can be configured during installation.

**It is possible to pause the timer during public holidays and the programmer can also be put into hibernation for prolonged periods.**

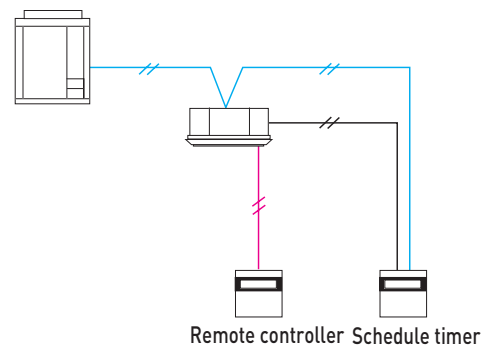
- LSettings for holiday periods or a period of non-use in the week is possible
- All the settings can be cancelled by the use of the OFF/ON button. (Press the button again to switch the programmer on again).

\*As the operating mode and temperature settings are not available on the timer, it must be used in conjunction with a remote controller, a system controller or an intelligent controller. For the address, a remote controller must be used (system controller or intelligent controller).

**Connection example (powered by the system controller) :**



**Connection example :**



**Schedule timer power supply is as follows:**

1. Indoor unit electronic control board PCB (T10) of a neighbouring indoor unit.  
(wiring length max 200m from indoor unit)
2. System controller  
(wiring length max 100m from indoor unit)

**When the power supply for the schedule timer is taken from the electronic control board of the indoor unit (T10), that indoor unit cannot be used with other control devices using the T10 terminal.**

Remote  
controlsSystem  
controller

## SYSTEM CONTROLLER NRSC-FLR

### Up to 64 indoor units can be individually controlled

- Control of 64 indoor units divided into 4 zones. Each zone can have up to 16 groups and each group can have up to 8 units.
- The following functions can be controlled : On/Off, operation mode, fan speed, air flow direction (only when the remote controller is not used), operation monitoring, ventilation, local operation prohibition of remote controller etc.
- Power supply** : from 220 to 240 V CA
- I/O part** : Controller input (24 V CC) : All on / all off  
Controller output (voltage free contacts) : All on/All off (external power supply limited to 30 V CC)
- Total wiring length**: 1 km



(Dimensions : H120 x L120 x W16+52)  
(Embedding dimension mm)

Individual	All operations are also possible from the remote controller. However their contents will correspond to those of the last used controller.
Zone 1	The remote controller can't be used for the On/Off function. (All other operations are available)
Zone 2	The remote controller can't be used for the On/Off function, mode selection or temperature setting. (All other operations are available.)
Zone 3	The remote controller can't be used for operation mode selection or temperature setting. (All other operations are available.)
Zone 4	The remote controller can't be used for the mode selection function. (All other operations are available.)

### A control mode can be chosen from 10 configurations according to usage conditions.

**(A) Operation mode** : selection of the Central control mode or the Remote control mode.

- Central control mode** : The system controller is used as a centralized control device. (Settings from a remote controller can be prohibited by using the system controller to prohibit local operation).
- Remote control mode** : The system controller is used a remote controller. (Settings from the system controller can be prohibited by prohibiting local operation by another system controller). (Settings from a remote controller can be prohibited by using the system controller to prohibit local operation).

**(B) Number of units under control**: Selection of All or Zone 1,2,3,4 mode

- Global Mode** : All units, Zone or Group of units can be selected.
- Mode Zone 1,2,3,4** : Only possible to control the indoor units belonging to zone 1,2,3 or 4.

		(A) Mode of operation	
		Central control mode	Remote control mode
(B) Number of units controlled	All mode	All central control * Example 1	All remote control
	Zone Mode 1	Centralized control of Zone 1 *Example 2	Remote controller Zone 1
	Zone Mode 2	Centralized control of Zone 2	Remote controller Zone 2 *Example 3
	Zone Mode 3	Centralized control of Zone 3 *Example 4	Remote controller Zone 3
Zone Mode 4	Centralized control of Zone 4	Remote controller Zone 4 *Example 5	

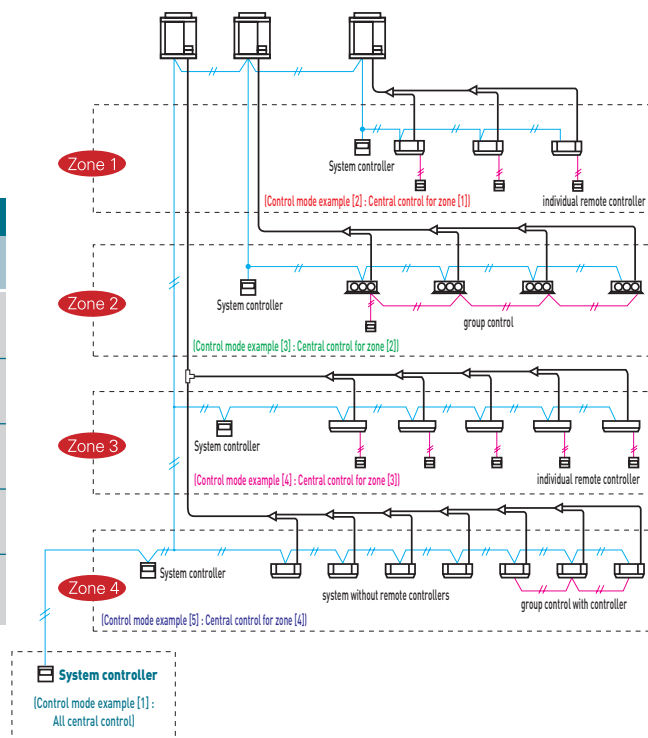
### Joint use with a remote controller, an intelligent controller or a schedule timer is possible.

Up to 10 system controllers can be connected (including other system controllers on the same circuit)

In the event of joint use with a wireless remote controller, restrictions will apply to the control mode)

**It is possible to control systems without remote control and main/sub systems (2 units maximum).**

### Connection example:



## INTELLIGENT CONTROLLER IC-FLR

- It is possible to control a maximum of 256 indoor units (4 zones of 64 units). For three zones or more, a CM-FL communications adapter is required.
- Operation can be in batch, by zone, by tenant or by group
- Available functions include : ON/ OFF, Operation Mode selection, Temperature setting, Fan speed setting, air flow direction setting (when used without a remote controller) and local operation prohibition (prohibition 1,2,3 and 4).
- It is possible to use a system without remote controller.  
It is also possible to combine the IC with a remote controller or a system controller.
- It is possible to use a schedule timer and to set holiday periods.
- Consumptions calculations are possible

\* In the case of joint use with a wireless remote control system, there will be limits to the control mode. To be used only with "Permission" and "Prohibition 1"



(Dimensions : H240 x L280 x W20 + 130 mm)

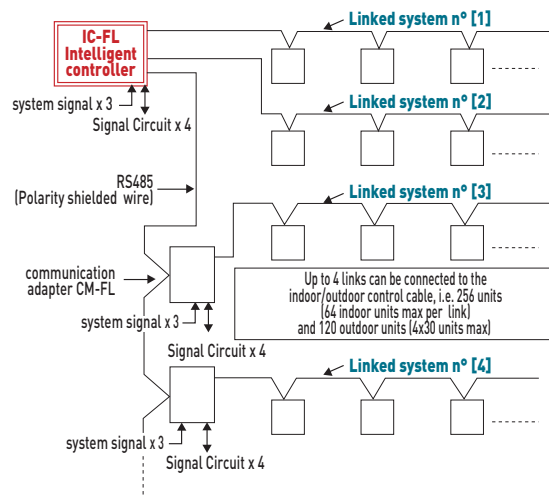
- **Power supply** : from 100 to 240 V CA (50Hz), 20W separate supply
- **I/O part** : Controller input (voltage free contact) : All ON/ All OFF  
Controller output (voltage free contact) : ALL ON / ALL OFF  
Alarm (external power supply limited to 30 VV CC)

- **Total wiring length** : 1km for each system

\* Only to be embedded in the panel

- **Usage limits**: prohibitions refer to operations controlled by the remote controller. It is also possible to alter the prohibited items.

<b>Individual</b>	All operations are also possible from the remote controller. However their contents will correspond to those of the last used controller (last button activated has priority)
<b>Prohibition 1</b>	The remote controller can't be used for the On/Off function. (All other operations are available)
<b>Prohibition 2</b>	The remote controller can't be used for the On/Off function, mode selection or temperature setting. (All other operations are available)
<b>Prohibition 3</b>	The remote controller can't be used for operation mode selection or temperature setting. (All other operations are available)
<b>Prohibition 4</b>	The remote controller can't be used for the mode selection function. (All other operations are available)



Note : The AMY system and the intelligent controller should not be used on the same indoor/outdoor control cable.



## COMMUNICATIONS ADAPTER CM-FLR

Required when connecting three or more zones (circuits) to the same intelligent controller (IC-FL)

Also required for connection to the AMY software

It is possible to connect to wiring systems to a CM-FL adapter, but no more than 4 systems can be connected to an intelligent controller.

\* This adapter is not water -proof. It must be installed indoor or within the control panel.

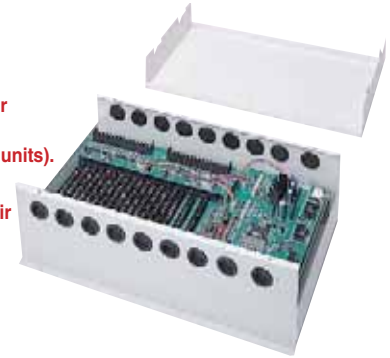
**Power supply**: from 100 to 240 HPA (50Hz), 3W (separate power supply).

(Dimensions : H260 x L200 x W68 mm)

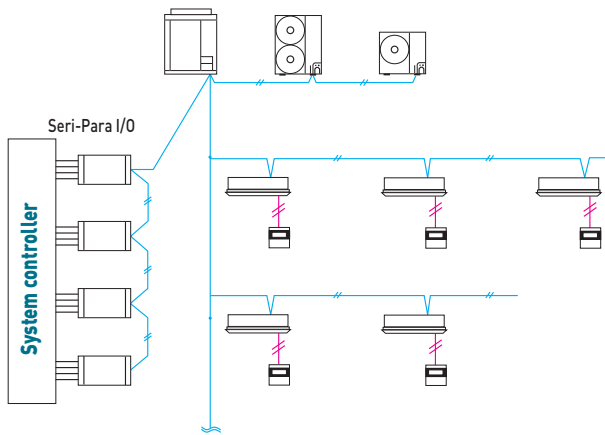


## ● SERI-PARA I/O UNIT SPIO-FLR

- This unit can control up to 4 outdoor units
- With this interface, the connection of signals coming from the system control via the AIRWELL air conditioning command network.
- The unit can control and monitor the status of up to 16 groups of indoor units (ie up to 64 indoor units).
- Up to 4 seri-para units can be connected to one system
- From the system controller, it is possible to set the temperature and monitor the room or intake air temperature.



System example :



### Input

- 1 On / Off (Pulse DC 24V)
- 2 Local prohibit (DC 24 V)
- 3 Temperature setting (1 – 5 V DC with analog display)
- 4 All ON/OFF (pulse DC 24V)
- 5 Local prohibit and All emergency stop (DC 24V)

### Output

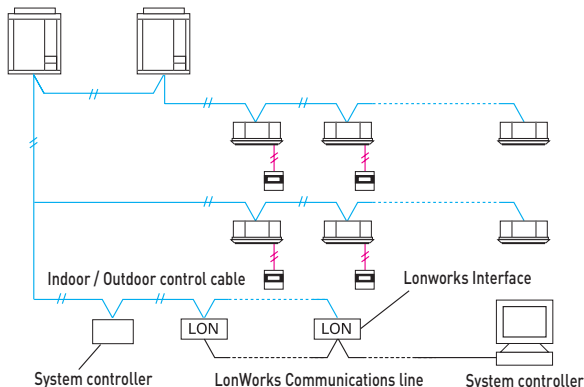
- 1 ON/Alarm/Answer/Filter indicator
- 2 Room temperature (DC 4 – 20mA CC with analog display)
- 3 All ON / OFF

## ● LONWORKS INTERFACE LON-FLR

- This interface is a communication converter which connects the Airwell control network to a Lonworks building management system.
- From the host system linked to the LonWorks interface, settings and status monitoring are possible for up to 16 zones of air conditioners.



System example :



### Functions

Elements which can be set from the LonWorks Interface	Settings for each group of indoor units	ON/OFF TEMP Setting Operation mode Option 1 settings (*) Option 2 settings (*)
	Settings for all units	Emergency stop
Elements which can be seen from the LonWorks Interface		ON/OFF TEMP Setting Operation mode Option 1 settings (*) Option 2 settings (*) Alarm status Indoor units with active alarms Room temperature A/C unit status
Configuration properties		Transmission interval settings Minimum time required for transmission

\* Select two from the following list : remote controller prohibit, fan speed setting, air direction setting, filter display reset



## ● REMOTE SENSOR NSDR

This is a remote sensor that can be used with the FLOW LOGIC i-410 indoor unit. It is used to detect room temperature in the absence of a remote controller sensor or unit sensor. Can be connected to a unit without a remote controller.

## ● ON/ OFF CONTROLLER ON/OFF-FLR

- Up to 16 groups of indoor units can be controlled.
- Collective control and individual control by group of units is also possible.
- Up to 8 ON/OFF controllers can be installed on the same circuit (4 main, 4 sub).

\* Operation mode and temperature setting are not functions of the ON/OFF controller, so it must be used in conjunction with a remote controller or a system controller.

**Power supply :** 220 - 240 V

**I/O Part :** Remote control input: (Effective voltage DC 24V) : General On/Off  
Remote control output (Allowable voltage DC 30V) : All ON / ALL Alarm



(Dimensions : H121 x I122 x P14 + 52mm)

## ● SERI-PARA I/O UNIT FOR OUTDOOR UNIT SPO-FLR

- This unit can control up to 4 outdoor units
- Functions include mode change, and batch operation or batch stop.

**Power supply:** 220 – 240 V

**Input:** Batch Start / Stop (DC 24V pulse signal)  
Heating / Cooling (static signal)  
Demand (static signal)

**Output:** Alarm output



## ● SERI-PARA I/O UNIT FOR EACH INDOOR UNIT SPI-FLR

- This unit is used for the control and monitoring of each indoor unit
- Digital input function for fan speed, air direction, operation mode and demand
- The reading and the definition of a set temperature based on the indoor suction temperature can be performed by a GTC (central control unit)
- Analog input for the temperature setting is 0-10V
- Power supply by T10 connector from the indoor unit

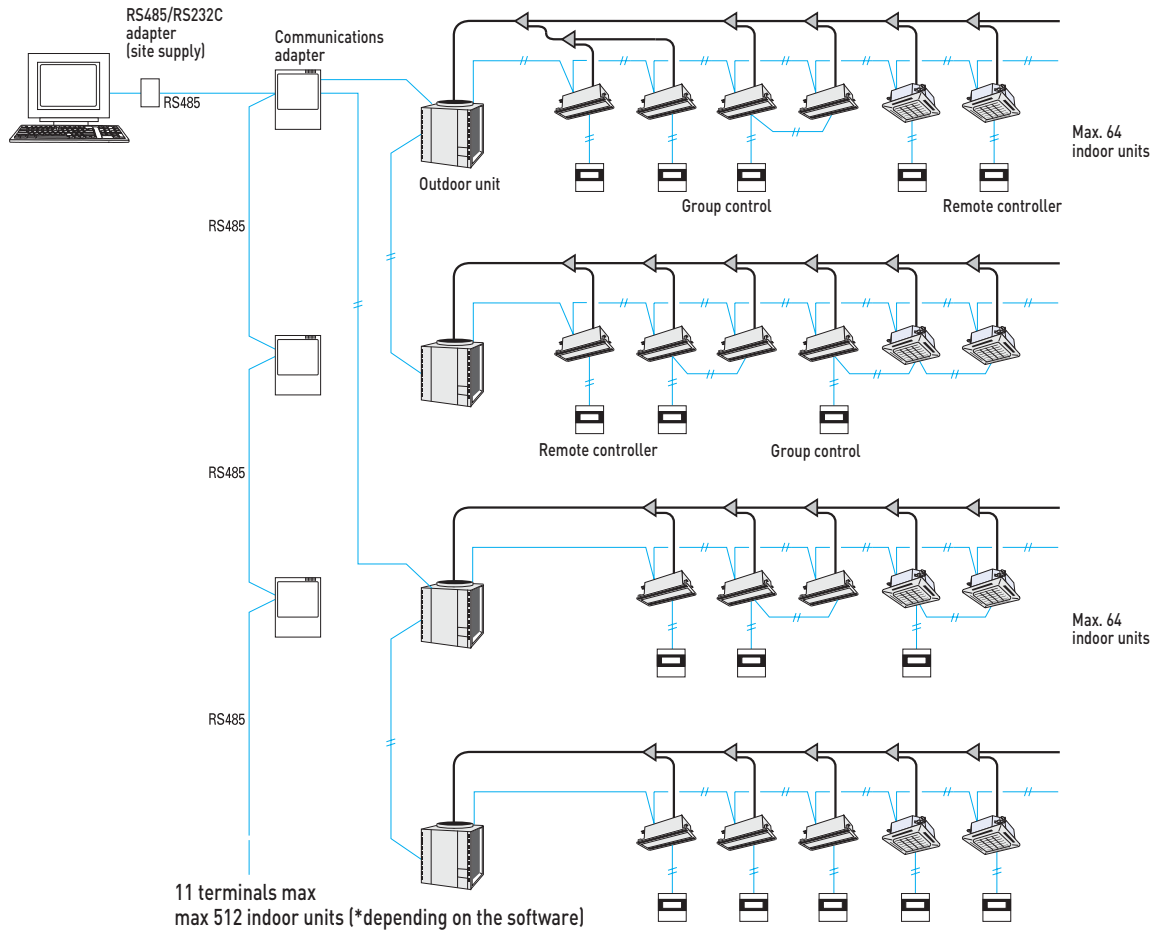
A separate power supply is possible.



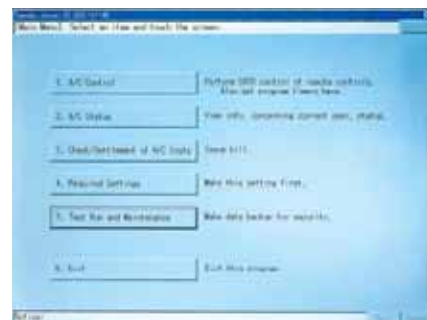


## AMY SOFTWARE

The AMY software is a system of centralized control.  
It is compatible with the following peripherals :



Functions	
A/C unit settings	Unit ON/OFF, Mode change
	Room temperature setting
	Fan speed setting
	Louver setting
	Central control setting
	Filter sign clear
A/C unit status	Alarm reset
	Unit ON/OFF
	Mode change
	Set temperature
	Fan speed status
	Louver status
	Central control mode
	Filter sign situation
	Correct/Incorrect status
	Alarm code
Consumption calculation data	

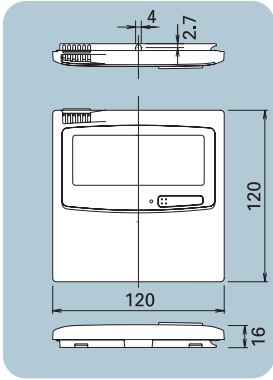


**Configuration requirements:**  
SE : Windows 2000, Windows NT 4.0 service Pack 6 or higher  
Navigator : IE 4.0 or higher

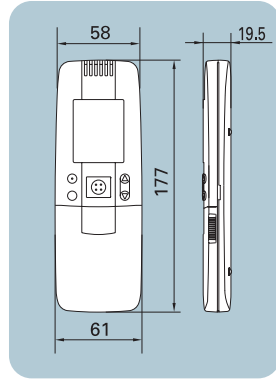


## CONTROLLER DIMENSIONS

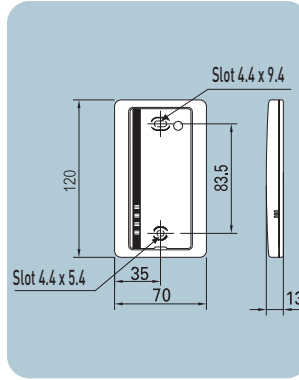
- Standard wired controller  
NRCR-FLR
- Schedule timer NWTM-FLR



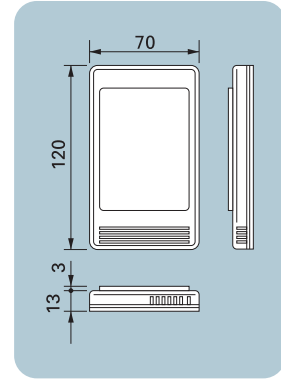
- Wireless controller



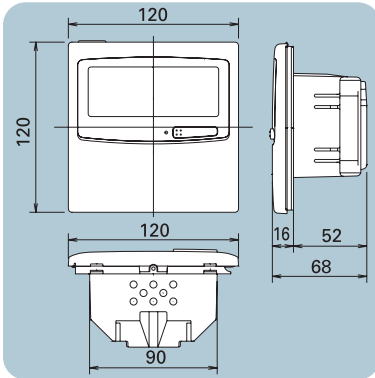
- Separate receiver for wireless remote controller



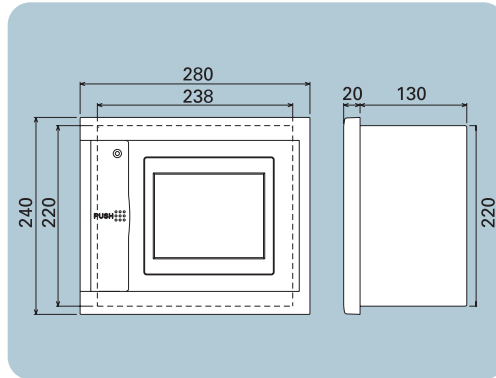
- Simple controller  
NRCB-FLR
- Remote sensor NSDR



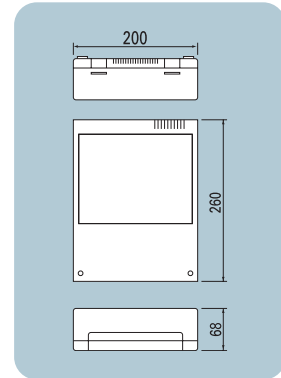
- System controller  
NRSC-FLR



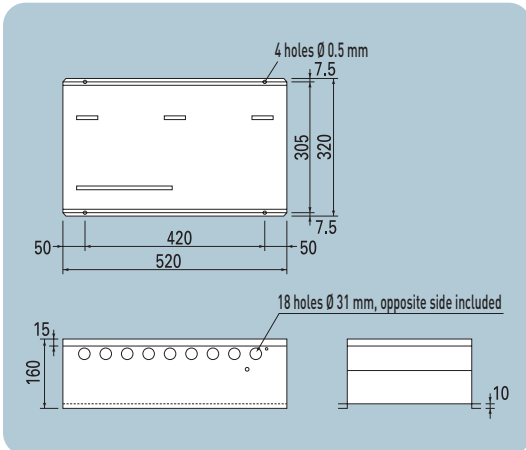
- Intelligent controller  
IC-FLR



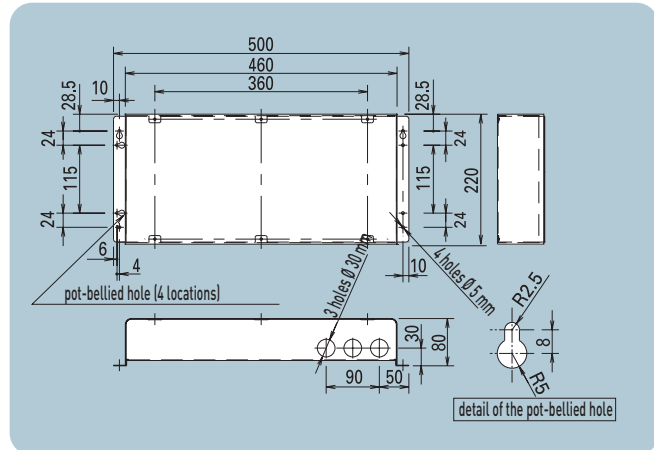
- Communications adapter  
CM-FLR



- Seri/para I/O unit  
SPIO-FLR



- LonWorks interface  
LON-FLR





# Accessories

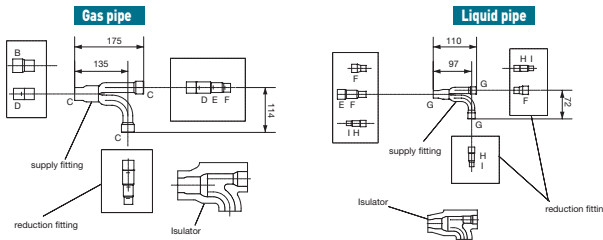
## 2 WAY FLOW LOGIC



### ■ DISTRIBUTION JOINT KITS

#### NRFO-DL68 R (for outdoor unit)

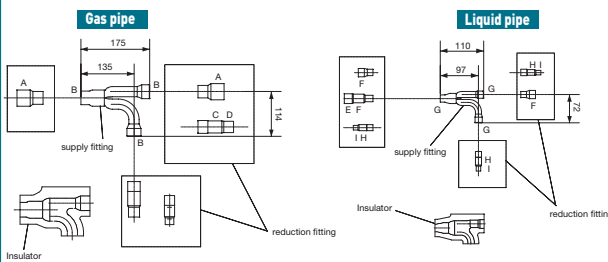
The power after the distribution connection 68 kW maximum.



Location	A	B	C	D	E	F	G	H	I
Diameters	1" 1/2	1" 1/4	1" 1/8	1"	7/8"	3/4"	5/8"	1/2"	3/8"

#### NRFO-DL68 135 R (for outdoor unit)

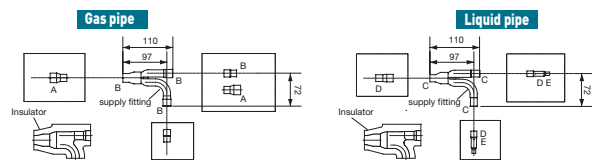
The capacity after the distribution connection is greater than 68 kW, but less than 135 kW.



Location	A	B	C	D	E	F	G	H	I
Diameters	1" 1/2	1" 1/4	1" 1/8	1"	7/8"	3/4"	5/8"	1/2"	3/8"

#### NRF-DL16R (for outdoor unit)

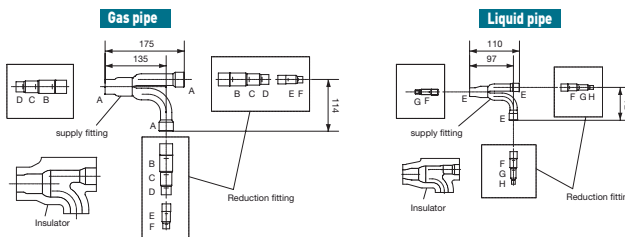
The maximum capacity after the distribution connection is 22.4 kW.



Location	A	B	C	D	E
Diameters	3/4"	5/8"	1/2"	3/8"	1/4"

#### NRF-DL1668 R (for indoor unit)

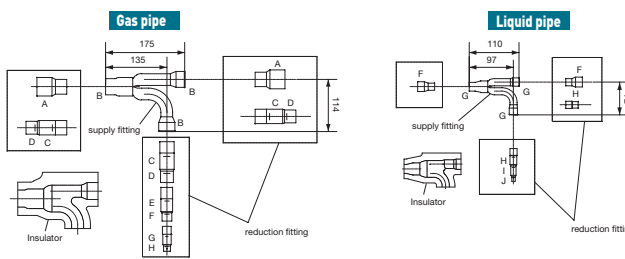
The capacity after the distribution connection is greater than 22.4 kW, but less than 68 kW.



Location	A	B	C	D	E	F	G	H
Diameters	1" 1/8	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"

#### NRF-T68135R (for indoor unit)

The capacity after the distribution connection is greater than 68 kW, but less than 135 kW.



Location	A	B	C	D	E	F	G	H	I	J
Diameters	1" 1/2	1" 1/4	1" 1/8	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"



# Accessories

## 3 WAY FLOW LOGIC



### DISTRIBUTION JOINT KITS

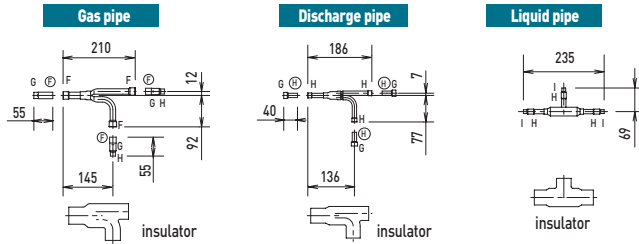
#### Connection dimensions of the parts

Example : In the drawing F indicates an inner diameter (F) designates an outer diameter (mm).

Position	A	B	C	D	E	F	G	H	I	J
Diameters	1"1/2	1"1/4	1"1/8	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"

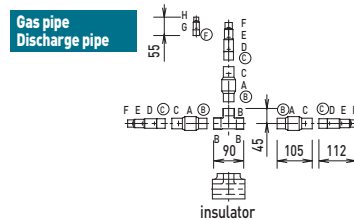
#### NRF-DL 22 (For indoor units)

Capacity after distribution joint is less than or equal to 22.4kw



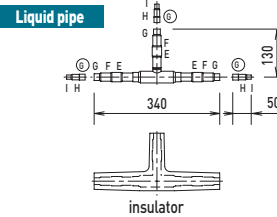
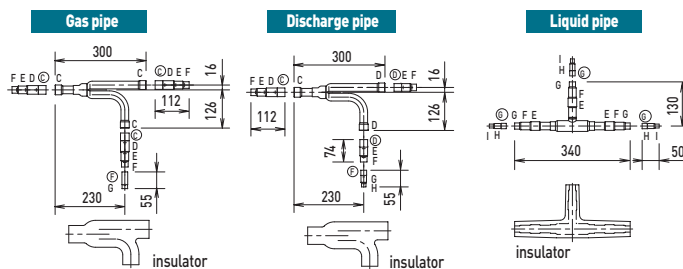
#### NRFO-3DL 68 (For Outdoor units)

Capacity after distribution joint is less than or equal to 68kW

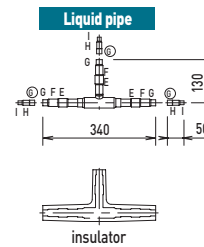
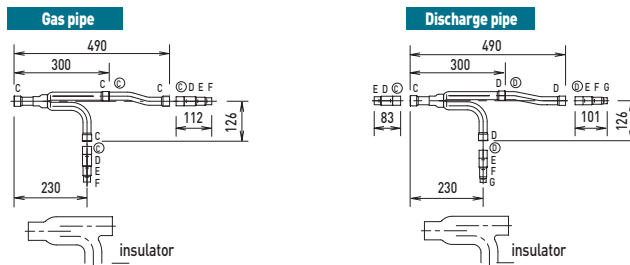


#### NRF-D 2268 (For indoor units)

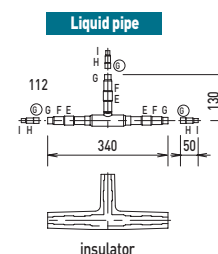
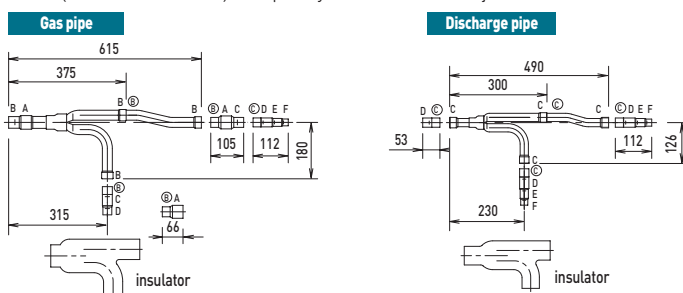
Capacity after distribution joint is between 22.4kW and 68kW



#### NRF-D 68135 (For indoor units) - Capacity after distribution joint is between 68kW and 135kW



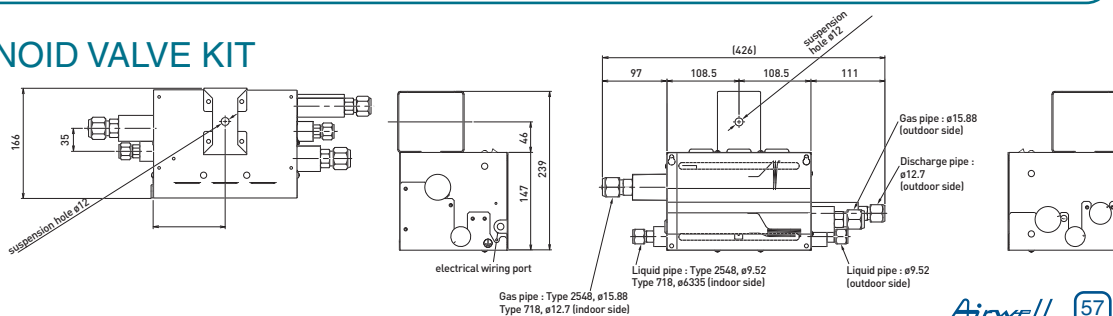
#### NRFO-3D 68135 (For Outdoor units) - Capacity after distribution joint is between 68kW and 135kW



### SOLENOID VALVE KIT

**NK3V 718**  
(For indoor units type 7 - 18)

**NK3V 2548**  
(For indoor units type 25 - 48)



Lined writing area with horizontal blue lines.



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