

## Data Book

T\_HEDHCAT\_1220\_EN - HFC R410A

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# HED - HCAT

5-17 kW

Air conditioners for Telecom applications.  
Split-System Installation.



The picture of the unit is indicative and may vary depending on the model

- Version with on/off compressor
- Air delivery from the top side or horizontal
- LT version for outdoor temperature down to -35°C
- Direct free cooling on request
- Power supply from UPS 48VDC on request
- Additional free cooler on request

## INDEX

CERTIFICATIONS .....	3
GENERAL CHARACTERISTICS .....	4
PRODUCT FEATURES AND BENEFITS .....	4
F-GAS DIRECTIVE .....	4
MODEL IDENTIFICATION .....	5
WORKING LIMITS .....	5
TRANSPORT AND STORAGE TEMPERATURE .....	5
TYPES OF INSTALLATION .....	6
WORKING PRINCIPLE .....	7
AIR DELIVERY OF EVAPORATING UNIT .....	8
MAIN COMPONENTS .....	9
OPTIONAL ACCESSORIES - INDOOR EVAPORATING UNIT .....	11
OPTIONAL ACCESSORIES - OUTDOOR CONDENSING UNIT .....	12
"LT" VERSION FOR OPERATION WITH OUTDOOR TEMPERATURES DOWN TO -35°C .....	12
TECHNICAL DATA – POWER SUPPLY FROM NETWORK .....	13
REFRIGERANT CHARGE .....	13
RECOMMENDED REFRIGERANT LINES .....	14
"SI" INTERNATIONAL SYSTEM PIPES DIAMETERS .....	14
"IMPERIAL" SYSTEM PIPES DIAMETERS .....	14
INSTALLATION DIAGRAM .....	15
REFRIGERANT CIRCUIT .....	16
ACOUSTIC DATA – INDOOR UNIT .....	16
ACOUSTIC DATA – OUTDOOR MOTO-CONDENSING UNIT .....	16
ELECTRICAL DATA .....	17
MICROPROCESSOR CONTROL SYSTEM .....	19
UNITS DRAWINGS .....	21
OPTIONAL ACCESSORIES: B082 – WITH UPS 48 VDC .....	25
OPTIONAL ACCESSORIES: A727 – EC FAN WITH UPS VDC .....	25
OPTIONAL ACCESSORIES: A431 - ELECTRIC HEATER .....	25
OPTIONAL ACCESSORIES: A352 – NO DISPLAY .....	26
OPTIONAL ACCESSORIES: A481 – CLOCK CARD .....	26
OPTIONAL ACCESSORIES: A471 – SERIAL CARD RS485 .....	26
OPTIONAL ACCESSORIES: A473 - CARD ETHERNET .....	26
OPTIONAL ACCESSORIES: A474 – SERIAL CARD LON .....	26
OPTIONAL ACCESSORIES: A501 – CLOGGED FILTER SENSOR .....	26
OPTIONAL ACCESSORIES: B174 - 0-10V FREE-COOLING DAMPER .....	26
OPTIONAL ACCESSORIES: A801 - TEMPERATURE / HUMIDITY SENSOR ONLY .....	27
OPTIONAL ACCESSORIES: A803 – DEHUMIDIFICATION ONLY .....	27
OPTIONAL ACCESSORIES: B103 – ADJUSTABLE HORIZONTAL AIR GRILLE .....	27
OPTIONAL ACCESSORIES: B104 – ADJUSTABLE HORIZONTAL/VERTICAL AIR GRILLE .....	27
OPTIONAL ACCESSORIES: A212 – COARSE 60% AIR FILTER .....	27
OPTIONAL ACCESSORIES: B121 – METAL MESH AIR FILTER .....	27
OPTIONAL ACCESSORIES: B181 – EXTERNAL FREE COOLER MANAGEMENT .....	28
OPTIONAL ACCESSORIES: 7387012600 – REMOTE TERMINAL DISPLAY PGD1 .....	28
OPTIONAL ACCESSORIES: 7396023600 / 7396023700 / 7396023800 / 7396023900: FREE COOLER .....	28
OPTIONAL ACCESSORIES: 7369009800 - KIT FREE-COOLING CONNECTION .....	32
OPTIONAL ACCESSORIES: 7369009900 - OVERPRESSURE DAMPER .....	33
OPTIONAL ACCESSORIES: A551 – 400/3+N/50 POWER SUPPLY FOR MODEL 0021 .....	34
OPTIONAL ACCESSORIES: A552 – 230/1/50 POWER SUPPLY FOR MODEL 0031 .....	34
OPTIONAL ACCESSORIES: A932 – AXIAL FANS WITH "EC" ELECTRIC MOTORS FOR OUTDOOR MOTO-CONDENSING UNIT .....	34
OPTIONAL ACCESSORIES: 881 – CU/CU CONDENSING COIL .....	35
OPTIONAL ACCESSORIES: 893 – EPOXY PAINTED CONDENSING COIL .....	35
OPTIONAL ACCESSORIES: 896 - CATAPHORESIS CONDENSING COIL .....	35
OPTIONAL ACCESSORIES: A181 - COMPRESSOR SOUNDPROOF JACKET .....	35
OPTIONAL ACCESSORIES: 7378005800 – RUBBER INSULATORS KIT .....	35

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## CERTIFICATIONS



**ISO 9001 CERTIFICATION**  
Quality Management System



**ISO 14001 CERTIFICATION**  
Environmental Management System



**BS OHSAS 18001 CERTIFICATION**  
Occupational Health and Safety Management System



**CE MARKING**

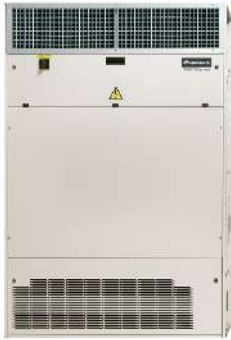


**CCC – CQC CERTIFICATION**  
(People's Republic of China)



**EAC CERTIFICATION**  
(Russian Federation, Belarus, Kazakhstan)

## GENERAL CHARACTERISTICS



Evaporating unit

Direct expansion close control air conditioners in split-system version.

The evaporating unit is made for indoor installation.  
The moto-condensing unit is made for outdoor installation.

The constructive solutions and the internal lay-out allow high application flexibility and the frontal access to the main components for the inspection and routine maintenance.

The installation requires refrigerant charge, electrical and refrigerant connections.

Final assembly on all machines before shipment including running test, reading and monitoring of operating parameters, alarms simulation and visual check.

The series is equipped with on/off type refrigerant compressor and consists of 7 models with cooling capacities from 5 to 17 kW

The series are particularly suitable for the conditioning of shelters for mobile telecommunication, telephone exchanges, or in all other critical applications with high technological content.

The evaporating indoor units can be installed on the wall or on ceiling.

### OPTIONAL

An extensive list of accessories allows the unit to adapt effectively to the real needs of the system, reducing the time and cost of installation.

- Double power supply (network + UPS 48VDC)
- Direct Free-Cooling with proportional action
- Additional Free-Cooling system
- Electric heaters



Motocondensing unit

## PRODUCT FEATURES AND BENEFITS

- Wide operating range in mechanical cooling with outdoor air temperatures from 48°C to -20°C (up to -35°C with LT version)
- Adaptable to any type of plant thanks to different types of installation.
- Improvement of the control software with advanced control logic
- Up to 10 units connected in LAN with the possibility of remote control from a single shared terminal
- Quiet operation particularly suitable for applications in urban areas.
- Operating life of the project exceeding 10 years

## F-GAS DIRECTIVE

The units highlighted in this publication contain <HFC R410A [GWP<sub>100</sub> 2088]> fluorinated greenhouse gases.

## MODEL IDENTIFICATION

**Air conditioners for Telecom application.** Split-system installation.  
Model: **HED 0031**

**HED** Indoor evaporating unit  
**0031** Model

Model: **HCAT BASIC 0031**

**HCAT** Outdoor moto-condensing unit with on-off compressor  
**BASIC** **Versione**  
BASIC = Versione base  
LT = Versione per bassa temperatura aria esterna  
**0031** Model

## WORKING LIMITS

### OUTDOOR AIR CONDITIONS

-20°C minimum temperature with dry bulb  
48°C maximum temperature with dry bulb

LT version for low outdoor temperature

-35°C minimum temperature with dry bulb

### ROOM TEMPERATURE

15,5°C minimum temperature with wet bulb.  
22°C minimum temperature with dry bulb  
23,5°C maximum temperature with wet bulb.  
32°C maximum temperature with dry bulb.

### POWER SUPPLY

± 10% Maximum tolerance of the supply voltage (V)

### PROTECTIONS

3,0 Bar ± 0,2 Low pressure switch intervention (open) for all models  
3,9 bar ± 0,3 Low pressure switch restore (close) for all models

41,5 Bar +0 / -1,4 High pressure switch intervention (open) models 0011

42,0 Bar +0 / -1,4 High pressure switch intervention (open) from model 0021 to model 0061

33,0 Bar ± 2,0 High pressure switch restore (close) for all models

## TRANSPORT AND STORAGE TEMPERATURE

During transport and if the machine is not installed at the reception, do not remove the packaging and place the machine in an enclosed, dry and protected from sunlight site at temperatures ranging between -30°C and 50°C in absence of superficial condensation.

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## TYPES OF INSTALLATION

The units have been designed to perfectly fit the different installation requirements. Typical installation of the indoor unit is on the ceiling of the room, but is also possible a wall mounting

Types of installation:

	FREE-COOLING	FREE-COOLING	NO FREE-COOLING	NO FREE-COOLING
Models				
0011	✓	✓	✓	✓
0021	✓	✓	✓	✓
0031	✓	✓	✓	✓
0041	✓	✓	✓	✓
0051	✓	✓	✓	✓
0056	✓	✓	✓	✓
0061	✓	✓	✓	✓

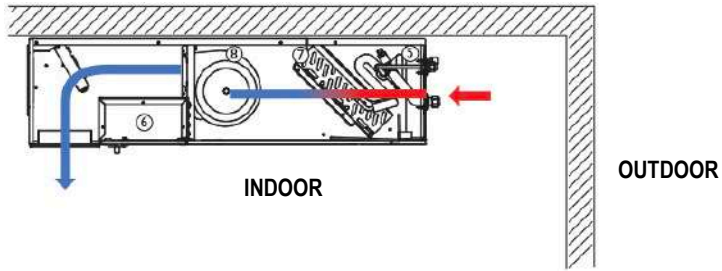
(\*) Air delivery modifiable in construction site

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## WORKING PRINCIPLE

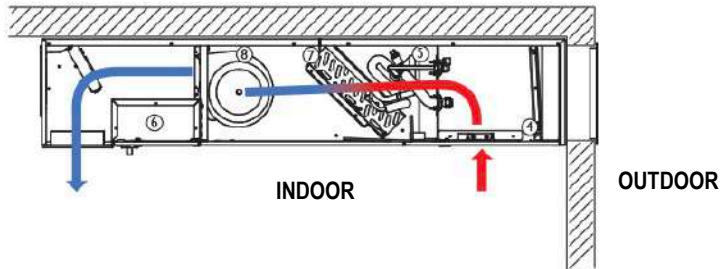
### STANDARD INDOOR UNIT

MECHANICAL COOLING

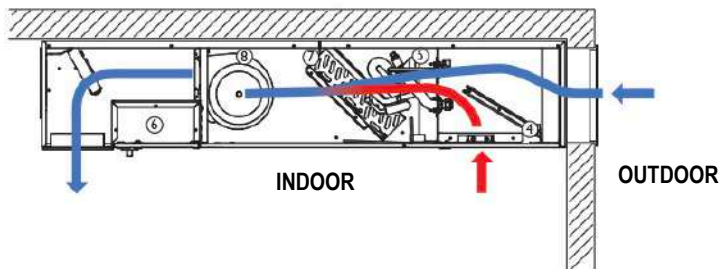


### INDOOR UNIT WITH FREE-COOLING

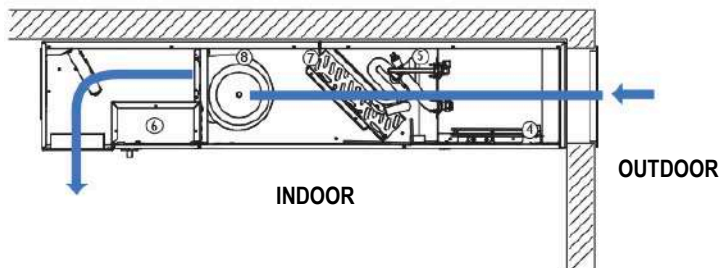
MECHANICAL COOLING



PARTIAL FREE-COOLING

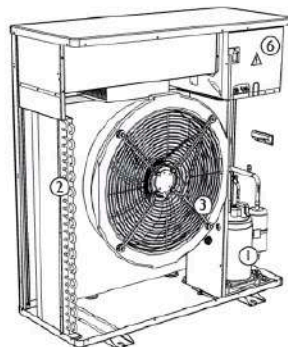


TOTAL FREE-COOLING



### OUTDOOR CONDENSING UNITS

1. Compressor
2. Condenser
3. Condenser fan
4. Free-cooling damper
5. Air filter
6. Electrical box
7. Evaporator
8. Supply fan

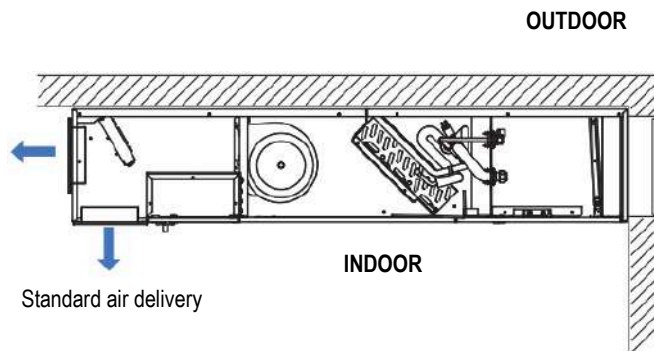




## AIR DELIVERY OF EVAPORATING UNIT

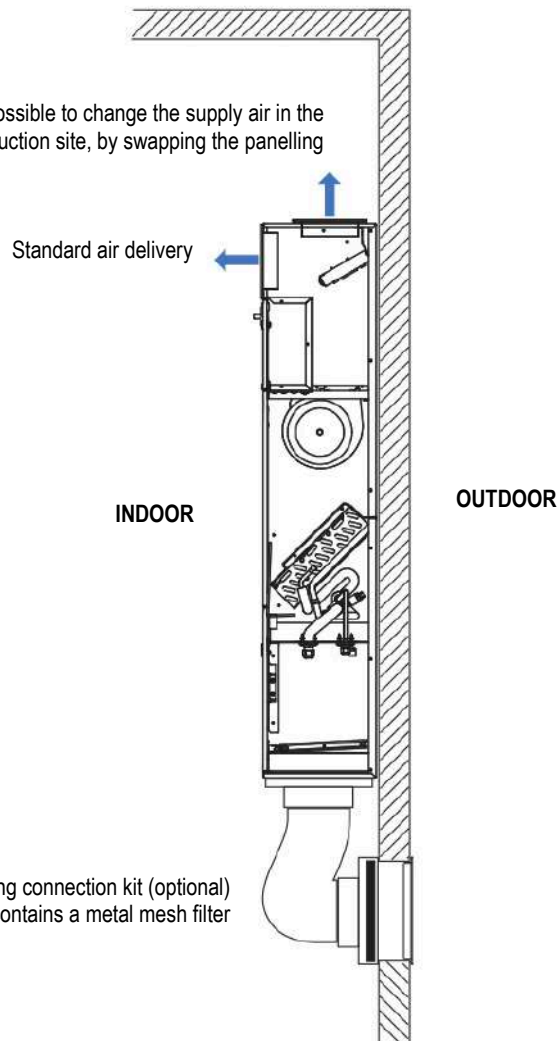
### CEILING MOUNTING

It is possible to change the supply air in the construction site, by swapping the panelling



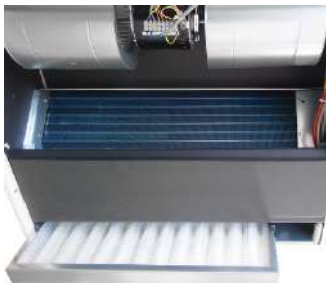
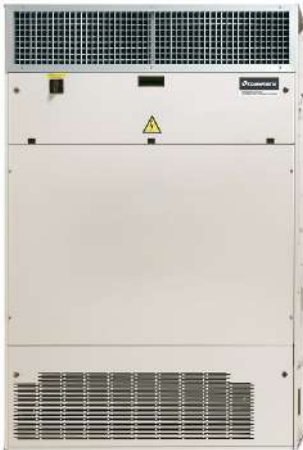
### WALL MOUNTING

It is possible to change the supply air in the construction site, by swapping the panelling





## MAIN COMPONENTS



### INDOOR EVAPORATING UNIT

#### FRAMEWORK

- Frame and panels in galvanized steel sheet and painted with epoxy powders. Colour RAL 9010;
- Non-flammable closed cell polyethylene foam thermal insulation and soundproofing on the inside
- Room air intake protect with grilles formed on the panelling.
- Room air delivery protect with grilles formed on the panelling.
- Screwed panels.
- Total front access for routine maintenance.
- Compartment for electrical panel on unit front for direct access to control and regulation devices;

#### FILTER SECTION

- Fire-resistant washable air filters with COARSE 50% efficiency (according to ISO EN 16890), with cells in synthetic fibre and metallic frame (EN 779-2012).

#### EVAPORATING SECTION

The evaporating unit is supplied with seal charge.

- Heat exchanger coil with copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Finned pack with hydrophilic treatment that assure the condensate water drop, high thermal conductivity and does not favour the growth of micro-organisms.
- Frame in galvanized steel or peralluman.
- Condensate tray in stainless steel or peralluman with PVC flexible discharge pipe. The condensate drain by gravity.
- Temperature sensors on air intake with control and regulation functions.
- Calibrated capillary (model 0011)
- Mechanical expansion valve (from model 0021 up to model 0061 included)
- Low pressure safety switch with automatic reset.
- High pressure transducer for condensing control.
- Flare connection.

#### SUPPLY FAN SECTION

- Model 0011, 0021, 0031:
  - Double suction twin-fan directly coupled to external rotor electric motor
- Model 0041, 0051, 0056 e 0061:
  - Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans),
  - Impeller in composite material exempt from rust formation.
- AC type electric motor:
- Rubber support
- Differential pressure switch on the air side for air flow loss alarm signal.

#### ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety on frontal panel.
- Magnetothermic switch for fan.
- Contactors for fan. The EC electric motor and don't requires contactor.
- Terminals for inlets / outlets.
- Power supply 230/1/50

Indoor unit power supply from network is derived from the outdoor unit electrical board.

#### CONTROL SYSTEM

Microprocessor control system with graphic display for control and monitor of operating and alarms status. The system includes:

- Built-in memory for the storing of the intervened events (up to 100 events recorded);
- Predisposition for connectivity board housing (RS485, LON, Ethernet. The electronic cards are optional accessories;
- Non-volatile "Flash" memory for data storage in case of power supply faulty;
- Menu with protection password;
- LAN connection (max 10 units).

Display is supplied in mounting kit.



## OUTDOOR CONDENSING UNIT

### FRAMEWORK

- Frame and panels in galvanized steel sheet and painted with epoxy powders. Colour RAL 9010;
- Non-flammable closed cell polyethylene foam thermal insulation and soundproofing on the inside
- Screwed panels.
- Total front access for routine maintenance.
- Compartment for electrical panel on unit front for direct access to control and regulation devices;
- Packing unit on pallet with carton.

### CONDENSING SECTION

- Heat exchanger coil with copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Frame in galvanized steel or peralluman.

### CONDENSER FAN SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- AC electric motor
- Condensing control system with variation of fan speed through phase-cut electronic regulator directly driven by the condensing pressure proportional signal.
- IP54 enclosure class.
- Rubber support

### COMPRESSOR SECTION

#### Model 0011

- Rotary compressors optimized for R410A refrigerant.
- 2-pole electric motor with direct on line starting.
- Crankcase heater.
- Rubber supports.

#### Model 0021, 0031, 0041, 0051, 0056, 0061

- Scroll rotary compressors with spiral profile optimized for R410A refrigerant.
- 2-pole electric motor with direct on line starting.
- Crankcase heater.
- Rubber supports.

### REFRIGERANT CIRCUIT

The moto-condensing unit is supplied with a minimum R410A refrigerant charge.

- Sight glass.
- Filter dryer on liquid line.
- High pressure safety switch with automatic reset.
- Low pressure safety switch with automatic reset.
- High pressure transducer for condensing control.
- Liquid receiver
- Solenoid valve for bypass on compressor discharge / suction
- Lubricant oil charge.
- 3-way valves with flare connection

### ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety on frontal panel.
- Magnetothermic switches for fan and compressor.
- Contactors for each load. The EC electric motor and don't requires contactor.
- Transformer for auxiliary circuit and microprocessor supply.
- Terminals for inlets / outlets.
- Power supply: 230/1/50 or 400/3+N/50 according to the model (see TECHNICAL DATA)

The electrical box of the condensing unit is the main box where to connect the power supply.

## OPTIONAL ACCESSORIES - INDOOR EVAPORATING UNIT

- B082**..... **With UPS 48 Vdc**: The accessory includes two main switches with door lock single command on the switchboard panel. The power supply of UPS is also available with other voltages - please contact the sales department for more information.
- A727**..... **EC fan with UPS VDC**: Supply fan with power supply from UPS:
- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric motor;
  - Impeller in composite material exempt from rust formation.
  - EC type electric motor:
  - Rubber support
- A431**..... **Electric heater**: Electric heating system
- A352**..... **No display**: Unit supplied without controller display.
- A481**..... **Clock card**: Clock card for controller.
- A471 – A473 - A474**..... **Serial card**:
- A471 RS485 serial card
  - A473 Ethernet card
  - A474 LON card
- A501**..... **Clogged filter sensor**: Differential pressure switch for clogged filters signalling.
- B174**..... **0-10V Free-Cooling damper**: Direct free-cooling system. The system is available for power supply from network or double power supply from network + 48Vdc from UPS.
- A801**..... **Temperature/Humidity sensor only**: Combined room temperature / humidity probe. Only visualization of room humidity.
- A803**..... **Dehumidification only**: Dehumidification system with humidity probe. For the control of the room humidity.
- B103**..... **Adjustable horizontal air grille**: Grille on room air delivery with a single row manually adjustable fin - only horizontal.
- B104**..... **Adjustable horizontal/vertical air grille**: Grille on room air delivery with a double row manually adjustable fins – horizontal and vertical.
- A212**..... **COARSE 60% air filter**: Washable air filter with COARSE 60% efficiency (according to ISO EN 16890).
- B121**..... **Metal mesh air filter**: Metal mesh filter on outdoor air suction grille. The optional accessory is available only with free cooling damper on unit.
- B181**..... **External Free Cooler management**: Power supply and control of the external Free Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system.
- 7387012600** ..... **Remote Terminal display EVOLUTION (for wall installation)**: Remote terminal for connecting and managing multiple units connected in LAN.
- 7396023600** ..... **Free cooler indoor installation 0021 48vdc RAL 9010**: External Free-Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system
- 7396023700** ..... **Free cooler indoor installation 0041 48vdc RAL 9010**: External Free-Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system
- 7396023800** ..... **Free cooler outdoor installation 0021 48vdc RAL 9010**: External Free-Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system
- 7396023900** ..... **Free cooler outdoor installation 0041 48vdc RAL 9010**: External Free-Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system
- 7369009800** ..... **Free cooling connection kit**: Circular air connections and flexible ducts for fresh air suction.
- 7369009900** ..... **Overpressure damper**: Overpressure damper. The optional accessory is useful for balancing the excess of pressurization in the indoor environment and is suggested when free-cooling damper (optional accessory) or external free-cooler (optional accessory) are foreseen.
- 9973** ..... **Wooden cage packing**: Unit packing in wooden cage

### WARNING

The Manufacturer reserves the right to accept the matching of the optional installed on the machine.

## OPTIONAL ACCESSORIES - OUTDOOR CONDENSING UNIT

A551.....	400/3+N/50 power supply for model 0021
A552.....	230/1/50 power supply for model 0031
A932.....	EC fan with UPS VDC: Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels. <ul style="list-style-type: none"><li>- EC type electric motor with external rotor</li><li>- Integrated motor thermal protection</li><li>- Protection grid on the fan air supply.</li></ul>
881 .....	Copper/Copper external coil: Condensing coil Cu/Cu execution
893 .....	Epoxy coated external coil: Condensing coil with epoxy paint protection
896 .....	Cataphoresis coated external coil: Condensing coil with cataphoresis paint protection.
A181.....	Soundproof jacket: Compressor soundproof cap for a sound level reduction of 2 dB(A). Only for Basic unit.
7378005800 .....	Rubber insulators kit: Rubber holders for installation on floor.
9973 .....	Wooden cage packing: Unit packing in wooden cage

### WARNING

The Manufacturer reserves the right to accept the matching of the optional installed on the machine.

## “LT” VERSION FOR OPERATION WITH OUTDOOR TEMPERATURES DOWN TO -35°C

The version allows the mechanical cooling operation of the air conditioner with outdoor temperatures down to -35°C.

Additional components to the standard refrigerant circuit:

- Oversized liquid receiver
- Self-regulation heating cable for liquid receiver
- Soundproof compressor jacket

## TECHNICAL DATA – POWER SUPPLY FROM NETWORK

MODEL		0011	0021	0031	0041	0051	0056	0061
<b>COOLING CAPACITY (1)</b>								
<b>Total</b>	<b>kW</b>	<b>4,94</b>	<b>6,36</b>	<b>8,41</b>	<b>9,71</b>	<b>10,60</b>	<b>14,30</b>	<b>16,80</b>
<b>Sensible</b>	<b>kW</b>	<b>4,94</b>	<b>5,65</b>	<b>6,74</b>	<b>9,17</b>	<b>9,53</b>	<b>12,50</b>	<b>13,80</b>
SHR (2)		1,00	0,89	0,80	0,94	0,90	0,87	0,82
Total power input (Comp. + Fans)	kW	1,51	1,95	2,61	2,99	3,34	4,41	4,87
<b>SUPPLY FAN</b>								
	n.	1	1	1	2	2	2	2
Fan type		Centrifugal AC	Centrifugal AC	Centrifugal AC	Radial AC	Radial AC	Radial AC	Radial AC
Air flow	m³/h	1450	1450	1600	2450	2450	3200	3200
Nominal external static pressure	Pa	20	20	20	20	20	20	20
Maximum external static pressure	Pa	20	20	20	58	58	46	51
Power input (3)	kW	0,20	0,20	0,21	0,49	0,49	0,52	0,52
<b>ON/OFF COMPRESSOR</b>								
		Rotary	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Quantity	n.	1	1	1	1	1	1	1
Capacity steps	n.	1	1	1	1	1	1	1
Power input	kW	1,18	1,62	2,26	2,37	2,72	3,64	4,10
<b>CONDENSER FAN</b>								
	n.	1	1	1	2	2	2	2
Fan type		Axial AC	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC	Axial AC
Air flow	m³/h	2500	2500	2500	3600	3600	4900	4900
Nominal external static pressure	Pa	0	0	0	0	0	0	0
Power input (3)	kW	0,13	0,13	0,13	0,13	0,13	0,25	0,25
<b>AIR FILTERS</b>								
	n.	1	1	1	1	1	1	1
Efficiency (ISO EN 16890)	COARSE	50%	50%	50%	50%	50%	50%	50%
<b>REFRIGERANT</b>								
		R410A	R410A	R410A	R410A	R410A	R410A	R410A
Gas circuit	n.	1	1	1	1	1	1	1
<b>POWER SUPPLY</b>								
	V/Ph/Hz	230/1/50	230/1/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
<b>ENERGY INDEX (1)</b>								
EER = Energy Efficiency Ratio	kW/kW	3,27	3,26	3,23	3,25	3,17	3,24	3,45
<b>DIMENSIONS INDOOR UNIT</b>								
Length	mm	1060	1060	1060	1236	1236	1236	1236
Length with free-cooling	mm	1500	1500	1500	1523	1523	1523	1523
Width	mm	990	990	990	1110	1110	1110	1110
Height	mm	310	310	310	405	405	405	405
<b>NET WEIGHT INDOOR UNIT</b>								
Without free-cooling	kg	74	74	74	107	107	107	107
With free-cooling	kg	85	85	85	123	121	128	130
<b>DIMENSION OUTDOOR UNIT</b>								
Length	mm	900	900	900	900	900	900	900
Width	mm	370	370	370	370	370	420	420
Height	mm	740	740	740	990	990	1240	1240
<b>NET WEIGHT OUTDOOR UNIT</b>								
	kg	67	93	87	109	102	148	125
<b>CONDENSATE DISCHARGE</b>								
	F Ø	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
<b>REFRIGERANT CONNECTIONS</b>								
Liquid return	Ø	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"
Gas suction	Ø	5/8"	5/8"	5/8"	3/4"	3/4"	3/4"	3/4"

### THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD

1. Gross Value. Characteristics referred to entering air at 27°C with 50%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible Cooling Capacity / Total Cooling Capacity.
3. Corresponding to the nominal external static pressure.

The units highlighted in this publication contain <HFC R410A [GWP<sub>100</sub> 2088]> fluorinated greenhouse gases

### REFRIGERANT CHARGE

The evaporating unit is supplied with seal charge. The condensing unit is supplied with a minimum R410A refrigerant charge. **Refrigerant must be charged.** The indicated refrigerant charge values are enough for 5m of connecting pipe.

MODEL		0011	0021	0031	0041	0051	0056	0061
<b>REFRIGERANT</b>		R410A	R410A	R410A	R410A	R410A	R410A	R410A
<b>VERSION</b>		<b>BASIC</b>	<b>BASIC</b>	<b>BASIC</b>	<b>BASIC</b>	<b>BASIC</b>	<b>BASIC</b>	<b>BASIC</b>
Refrigerant circuits x Refrigerant charge	n x kg	1 x 1,3	1 x 2,1	1 x 2,8	1 x 4,0	1 x 3,7	1 x 4,8	1 x 4,5
HFC R410A - F Gas - CO <sub>2</sub> equivalent	t	2,71	4,38	5,85	8,35	7,72	10,02	9,40
<b>VERSION – LOW TEMPERATURE</b>								
Refrigerant circuits x Refrigerant charge	n x kg	1 x 2,9	1 x 3,9	1 x 3,8	1 x 6,5	1 x 6,5	1 x 9,1	1 x 9,4
HFC R410A - F Gas - CO <sub>2</sub> equivalent	t	6,05	8,14	7,93	13,57	13,57	19,00	19,63

## RECOMMENDED REFRIGERANT LINES

Diameter of the recommended refrigerant lines referred to "EQUIVALENT LENGHT".

Please always refer to the "INSTALLATION DIAGRAM" to properly select all necessary components

Verify the need to use pressure limiting devices (safety valves) where not already provided for by Directive 2014/68 / EU.

**Nominal diameter:** Refrigerant connection of the indoor unit. In some cases, the diameter of the refrigerant lines may not correspond with the nominal diameter. This is completely normal. It is enough to provide a reduction fitting to adjust the diameter.

## "SI" INTERNATIONAL SYSTEM PIPES DIAMETERS

SI system	Diameter	mm	6	8	10	12	16	18	22	28	35
	Thickness	mm	1	1	1	1	1	1	1	1	1,5

## ON/OFF COMPRESSORS

Model	Line	Nominal diameter ∅ [pollici]	EQUIVALENT LENGHT [m] FOR ON / OFF COMPRESSOR R410A									
			5	10	15	20	25	30	35	40	45	50
0011	Gas	5/8"	16mm	16mm	16mm	16mm	16mm	16mm	16mm	16mm	16mm	16mm
	Liquid	3/8"	10mm	10mm	10mm	10mm	10mm	10mm	10mm	10mm	10mm	10mm
0021	Gas	5/8"	16mm	16mm	16mm	16mm	16mm	16mm	18mm	18mm	18mm	18mm
	Liquid	3/8"	10mm	10mm	10mm	10mm	10mm	10mm	12mm	12mm	12mm	12mm
0031	Gas	5/8"	16mm	16mm	16mm	16mm	18mm	18mm	18mm	18mm	18mm	18mm
	Liquid	3/8"	10mm	10mm	10mm	10mm	12mm	12mm	12mm	12mm	12mm	12mm
0041	Gas	3/4"	18mm	18mm	18mm	18mm	18mm	18mm	18mm	18mm	22mm	22mm
	Liquid	1/2"	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm
0051	Gas	3/4"	18mm	18mm	18mm	18mm	18mm	18mm	22mm	22mm	22mm	22mm
	Liquid	1/2"	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm	12mm
0056	Gas	3/4"	18mm	18mm	18mm	22mm	22mm	22mm	22mm	22mm	22mm	22mm
	Liquid	1/2"	12mm	12mm	12mm	12mm	12mm	12mm	16mm	16mm	16mm	16mm
0061	Gas	3/4"	18mm	18mm	18mm	18mm	22mm	22mm	22mm	22mm	22mm	22mm
	Liquid	1/2"	12mm	12mm	12mm	12mm	16mm	16mm	16mm	16mm	16mm	16mm

For equivalent lengths over 50m, please contact the Manufacturer's Sales Office.

## "IMPERIAL" SYSTEM PIPES DIAMETERS

IMPERIAL system	Diameter	inch	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 3/8"
	Thickness	mm	6,35	9,52	12,7	15,87	19,05	22,22	25,4	28,57	34,92

## ON/OFF COMPRESSORS

Model	Line	Nominal diameter ∅ [pollici]	EQUIVALENT LENGHT [ft] FOR ON / OFF COMPRESSOR R410A									
			15	35	50	65	80	100	115	130	150	165
0011	Gas	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
	Liquid	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
0021	Gas	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	3/4"	3/4"	3/4"	3/4"
	Liquid	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"
0031	Gas	5/8"	5/8"	5/8"	5/8"	5/8"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
	Liquid	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
0041	Gas	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	7/8"	7/8"
	Liquid	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
0051	Gas	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	7/8"	7/8"	7/8"	7/8"
	Liquid	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
0056	Gas	3/4"	3/4"	3/4"	3/4"	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"
	Liquid	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"
0061	Gas	3/4"	3/4"	3/4"	3/4"	3/4"	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"
	Liquid	1/2"	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"

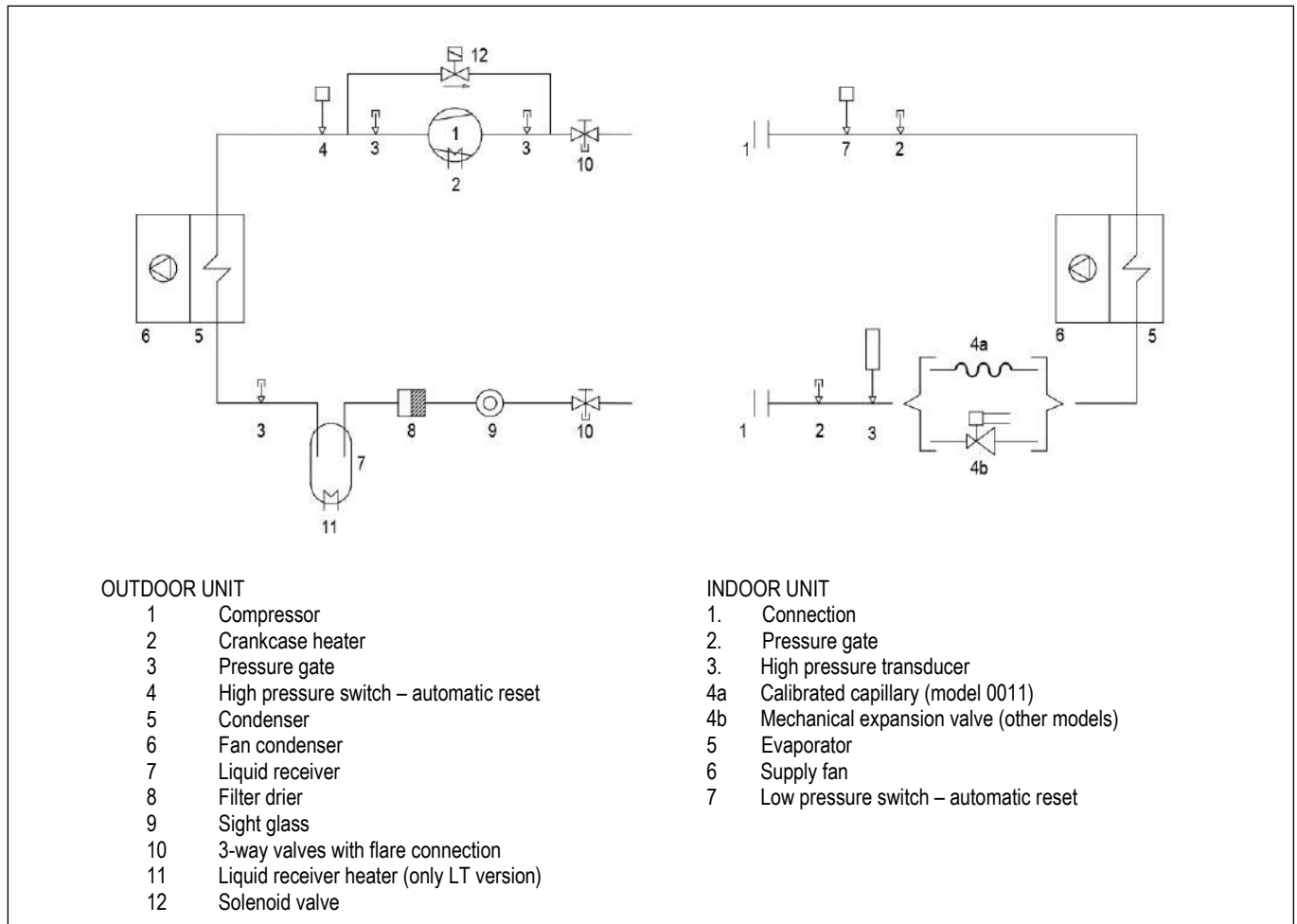
For equivalent lengths over 165ft, please contact the Manufacturer's Sales Office.







## REFRIGERANT CIRCUIT



## ACOUSTIC DATA – INDOOR UNIT

Acoustic data of the standard machine at full load working conditions.

### **WARNING:**

In a closed room the noise produced by a sound source reaches the listener in two different ways:

- Directly
- Reflected from the surrounding walls, floor, ceiling, from furniture.

With the same sound source, the noise produced in a closed room is greater than that produced outdoors. In fact, the sound pressure level generated by the source, must be added to the one reflected from the room. Also, the shape of the room affects the sound.

MODEL		0011	0021	0031	0041	0051	0056	0061
<b>SOUND LEVEL ISO 3744 (1)</b>								
Indoor pressure level (indoor unit)	dB(A)	61	61	61	50	50	48	48

Noise pressure level at 1 meter in free field – ISO 3744

## ACOUSTIC DATA – OUTDOOR MOTO-CONDENSING UNIT

Acoustic data of the standard machine at full load working conditions

MODELLO		0011	0021	0031	0041	0051	0056	0061
<b>SOUND LEVEL ISO 3744 (1)</b>								
Outdoor pressure level (outdoor unit)	dB (A)	52	53	56	56	56	58	58

1. Livello di pressione sonora a 1 metro in campo libero – ISO 3744

## ELECTRICAL DATA

### SINGLE POWER SUPPLY

#### POWER SUPPLY FROM NETWORK - INDOOR UNIT

MODEL		0011	0021	0031	0041	0051	0056	0061
POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
STANDARD UNIT								
Max power input (FLI)	kW	0,53	0,53	0,53	0,67	0,67	0,79	0,79
Max current input (FLA)	A	2,40	2,40	2,40	3,02	3,02	3,46	3,46
Start up current (SA)	A	2,40	2,40	2,40	3,02	3,02	3,46	3,46
Power input (OI)	kW	0,33	0,33	0,34	0,62	0,62	0,77	0,77

#### WARNING:

Indoor unit power supply from network is derived from the outdoor unit electrical board.

The electrical data indicated are referred to indoor units only, standard version, without optional accessories.

Outdoor unit and optional accessory electric data are included within the dedicated chapters and must be added.

#### POWER SUPPLY FROM NETWORK - OUTDOOR UNIT

MODEL		0011	0021	0021	0031	0031
POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	400/3+N/50(*)	230/1/50(*)	400/3+N/50
STANDARD UNIT						
Max power input (FLI)	kW	2,51	3,23	3,33	3,73	3,72
Max current input (FLA)	A	11,50	18,40	7,90	18,40	8,40
Start up current (SA)	A	38,40	60,40	28,40	69,40	40,40
Power input (OI)	kW	1,51	1,95	1,95	2,61	2,60

MODEL		0041	0051	0056	0061
POWER SUPPLY	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
STANDARD UNIT					
Max power input (FLI)	kW	4,37	4,97	6,69	6,69
Max current input (FLA)	A	10,00	11,00	13,50	15,30
Start up current (SA)	A	49,00	51,00	67,50	67,50
Power input (OI)	kW	2,99	3,34	4,41	4,87

(1) Power supply available as option

#### WARNING:

The electrical data indicated are referred to outdoor units only, standard version, without optional accessories.

Indoor unit and optional accessory electric data are included within the dedicated chapters and must be added.

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## DOUBLE POWER SUPPLY

### POWER SUPPLY FROM NETWORK:

Powered from the network: the compressor, the condenser fan and the eventual electric heater.

### POWER SUPPLY FROM UPS:

Powered from UPS: supply fan, the auxiliary of electrical box, the microprocessor control, the eventual free-cooling damper servomotor and the eventual external free-cooler.

## POWER SUPPLY FROM NETWORK + UPS 48Vdc – INDOOR UNITS

MODEL		0011	0021	0031	0041	0051	0056	0061
<b>POWER SUPPLY FROM NETWORK</b>		230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
<b>STANDARD UNIT</b>								
Max power input (FLI)	kW	0,13	0,13	0,13	0,13	0,13	0,25	0,25
Max current input (FLA)	A	0,55	0,55	0,55	0,66	0,66	1,10	1,10
Start up current (SA)	A	0,55	0,55	0,55	0,66	0,66	1,10	1,10
Power input (OI)	kW	0,13	0,13	0,13	0,13	0,13	0,25	0,25
<b>POWER SUPPLY FROM UPS</b>		48Vdc	48Vdc	48Vdc	48Vdc	48Vdc	48Vdc	48Vdc
Max power input (FLI)	kW	0,3	0,3	0,3	0,76	0,76	0,76	0,76
Max current input (FLA)	A	7,5	7,5	7,5	13,4	13,4	13,4	13,4
Start up current (SA)	A	7,5	7,5	7,5	13,4	13,4	13,4	13,4
Power input (OI)	kW	0,28	0,28	0,31	0,45	0,45	0,49	0,49

### WARNING:

Indoor unit power supply from network is derived from the outdoor unit electrical board.

The electrical data indicated are referred to indoor units only, standard version, without optional accessories.

Outdoor unit and optional accessory electric data are included within the dedicated chapters and must be added.

## POWER SUPPLY FROM NETWORK + UPS 48Vdc – OUTDOOR UNITS

MODEL		0011	0021	0021	0031	0031
<b>POWER SUPPLY</b>	V/Ph/Hz	230/1/50	230/1/50	400/3+N/50 (*)	230/1/50 (*)	400/3+N/50
<b>STANDARD UNIT</b>						
Max power input (FLI)	kW	2,11	2,83	2,93	3,33	3,32
Max current input (FLA)	A	9,65	16,5	6,05	16,5	6,55
Start up current (SA)	A	36,5	58,5	26,5	67,6	38,5
Power input (OI)	kW	1,31	1,75	1,75	2,4	2,39
MODEL		0041	0051	0056	0061	0061
<b>POWER SUPPLY</b>	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
<b>STANDARD UNIT</b>						
Max power input (FLI)	kW	3,83	4,43	6,15	6,15	6,15
Max current input (FLA)	A	7,66	8,66	11,1	12,9	12,9
Start up current (SA)	A	46,7	48,7	65,1	65,1	65,1
Power input (OI)	kW	2,50	2,85	3,89	4,35	4,35

(1) Power supply available as option

### WARNING:

The electrical data indicated are referred to outdoor units only, standard version, without optional accessories.

Indoor unit and optional accessory electric data are included within the dedicated chapters and must be added.

## MICROPROCESSOR CONTROL SYSTEM



The microprocessor is installed within the electrical board of indoor evaporating unit. The microprocessor control system is equipped with 6 keys terminal and back lighted graphic display on which all information in different languages or easily identifiable symbols are displayed. The system disposes of a "flash" memory that preserves the information even in absence of power supply. Part of memory is dedicated to the registration of intervened events - up to 100 events.

### KEYBOARD FUNCTIONS

	ALARM	Alarm, Back-red light active – alarm presence, push to have alarm description. If more than one alarm(s), the others can be scrolled by Key UP / DOWN
	PRG	Menu list, scrolled by key UP/DOWN: <b>Status; Alarm log; Graphs, Clock, User, Maintenance.</b> Use the ENTER key to execute the mode.
	ESC	Home. Used to come back to the previous menu level or to the main screen.
	UP DOWN	Used to change the pages and values of sets. When display is in main screen (HOME), pressing one of them (UP/DOWN) will display the synoptic of the main controls.
	ENTER	Moving the cursor on adjustable Program(s) fields, to confirm the changes, press the key (ENTER) to get out of the fields.

### CONNECTIVITY

Through the optional serial port, the microprocessor control enables communication with the modern buildings BMS systems with the following protocols:

- RS485 serial card;
- LON Works serial card;
- Ethernet serial card;

### PASSWORD

No password is required to access: STATUS, ALARM HISTORY, GRAPHICS

Level 1: Access to STATUS, ALARM HISTORY, GRAPHICS, CLOCK, USER

Level 2: Contact Service: Access to STATUS, ALARM HISTORY, GRAPHICS, CLOCK, USER, MANITENANCE

### LAN NETWORK

The LAN is part of the control software and it is possible to connect 10 units.

This type of connection allows to control the units in coherent way, moreover the units can be controlled and managed from a shared remote terminal.

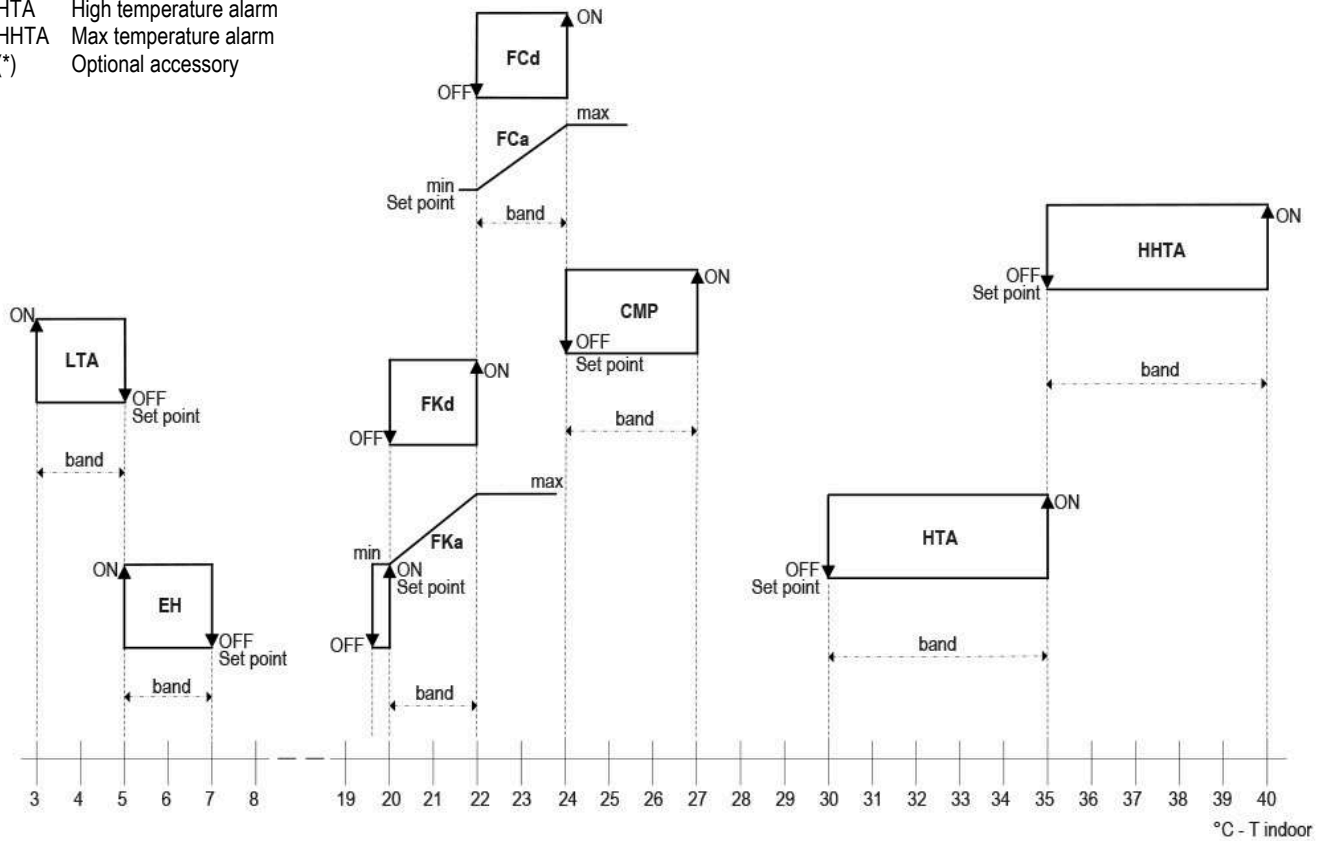
### LAN ADDRESS LIST

Unit #	1	2	3	4	5	6	7	8	9	10	Remote Terminal
Terminal address	11	12	13	14	15	16	17	18	19	20	32
Mother board address	1	2	3	4	5	6	7	8	9	10	-

## AIR TEMPERATURE CONTROL LOGIC

**EXAMPLE - CONTROL LOGIC**  
Temperatures are indicative

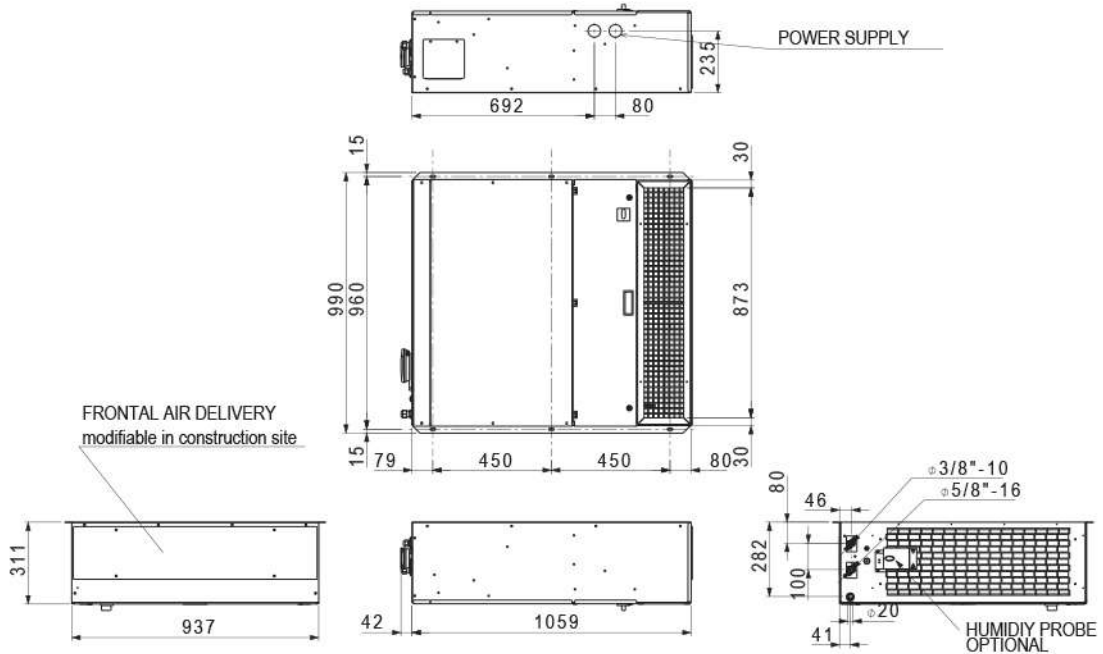
- LTA Low temperature alarm
- EH electric heater (\*)
- FKd External Free Cooler digital control (\*)
- FKa External Free Cooler analogue control (\*)
- FCd Free-cooling damper digital control (\*)
- FCa Free-cooling damper analogue control (\*)
- CMP On/off compressor
- HTA High temperature alarm
- HHTA Max temperature alarm
- (\*) Optional accessory



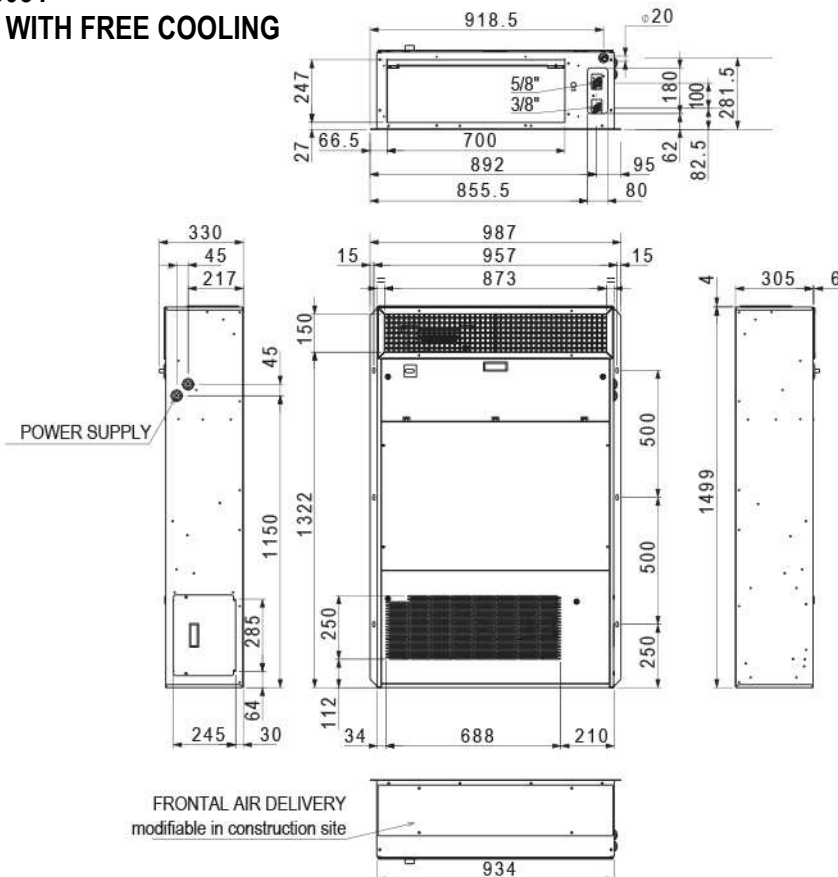
## UNITS DRAWINGS

Dimensions in mm

### Model 0011 - 0031 INDOOR UNIT



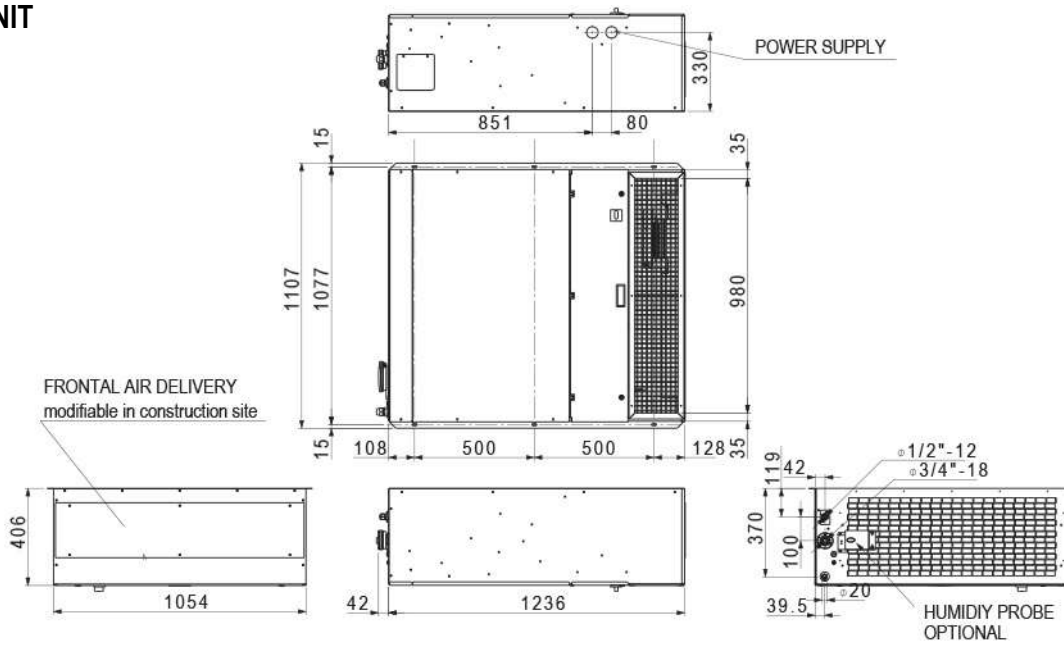
### Model 0011 - 0031 INDOOR UNIT WITH FREE COOLING



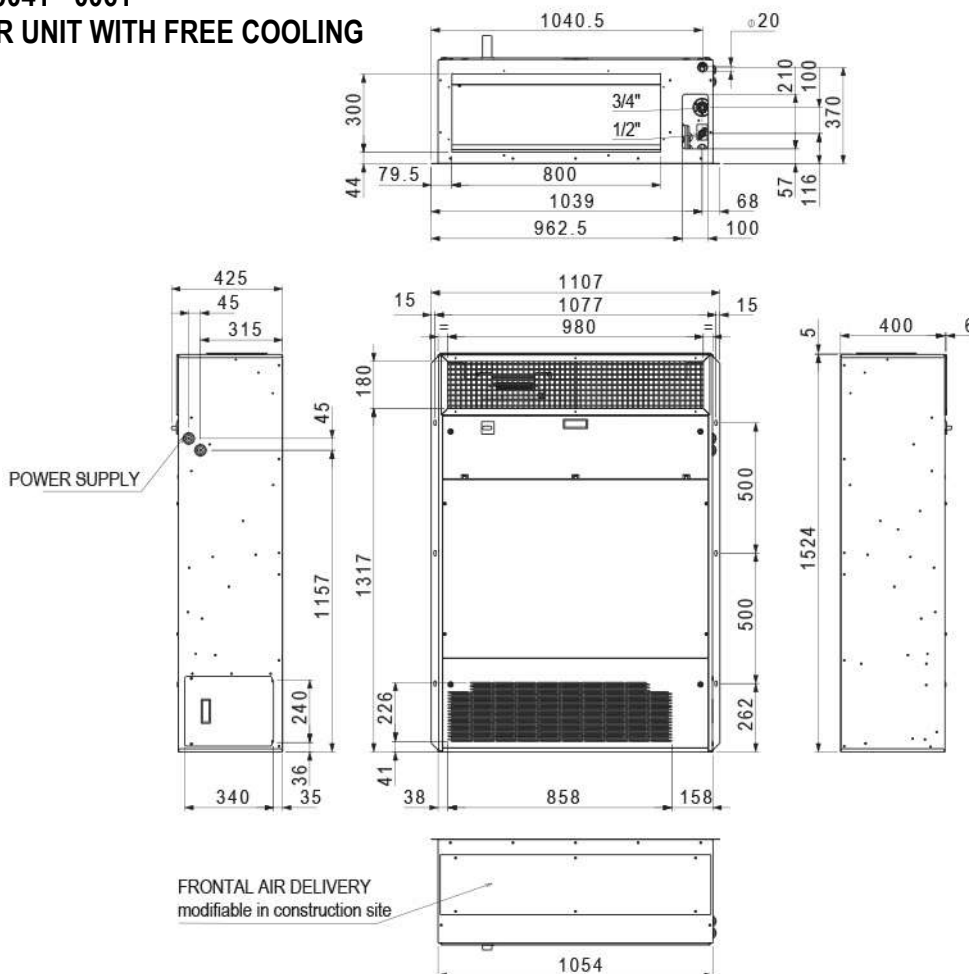
# HED - HCAT

UNITS DRAWING  
Dimensions in mm

## Model 0041 - 0061 INDOOR UNIT



## Model 0041 - 0061 INDOOR UNIT WITH FREE COOLING

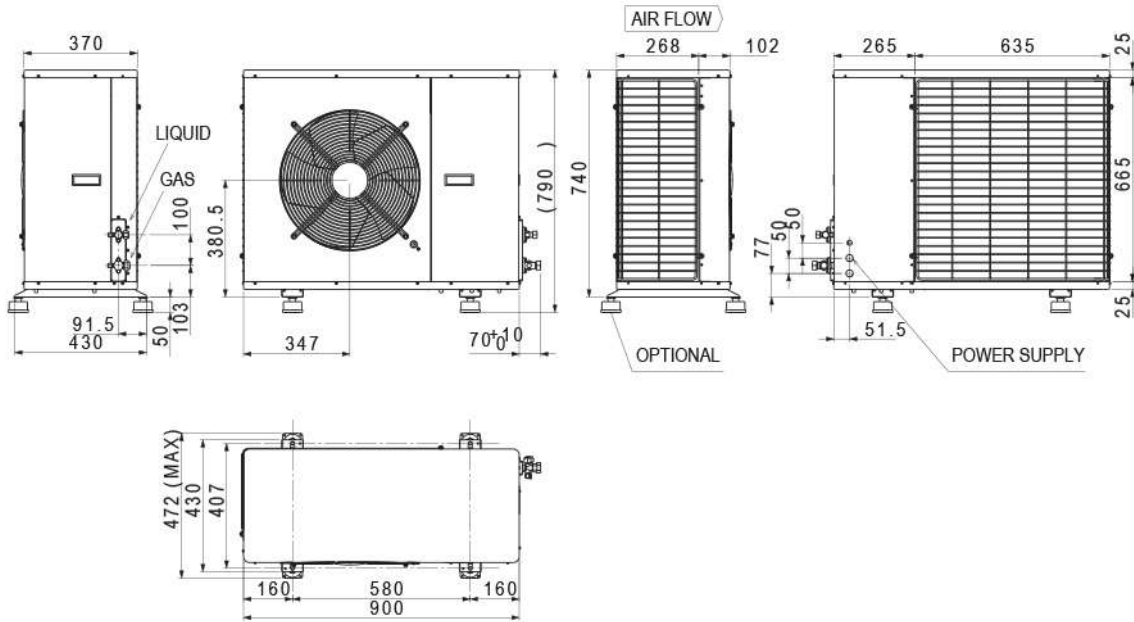




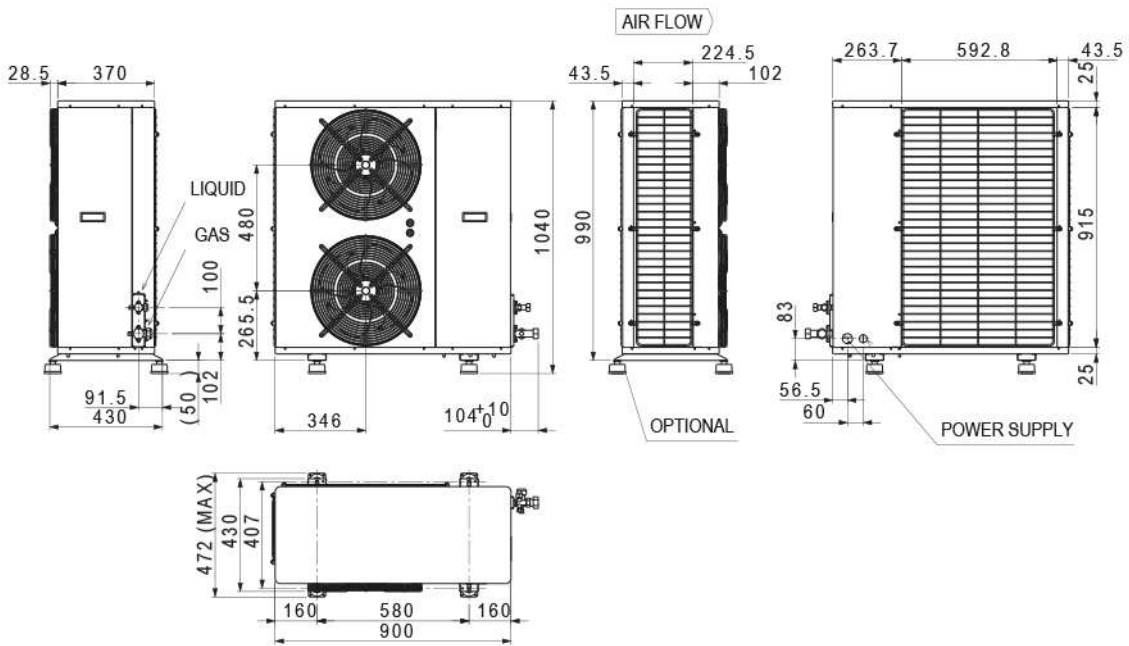
# HED - HCAT

UNITS DRAWING  
Dimensions in mm

## Model 0011 - 0031 OUTDOOR UNIT



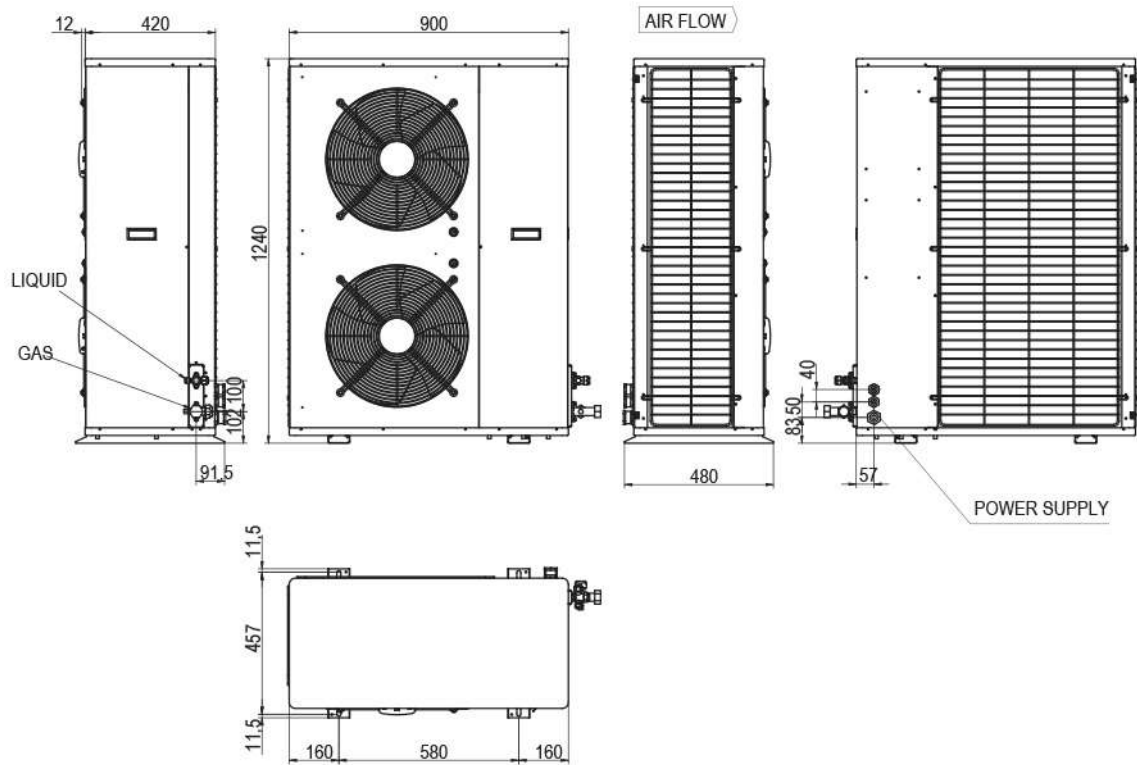
## Model 0041 - 0051 OUTDOOR UNIT



# HED - HCAT

UNITS DRAWING  
Dimensions in mm

## Model 0056 - 0061 OUTDOOR UNIT



## OPTIONAL ACCESSORIES: B082 – WITH UPS 48 VDC

The machine is designed for dual power supply from the mains and 48 Vdc from the UPS. The accessory has a double general disconnecter with a single door lock command on the panel of the electrical board. The 48Vdc line supplies the microprocessor control, the supply fan and the free-cooling damper (accessory).

## OPTIONAL ACCESSORIES: A727 – EC FAN WITH UPS VDC

Supply fan with power supply from UPS:

- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric motor;
- Impeller in composite material exempt from rust formation.
- EC type electric motor:
- Rubber support

### TECHNICAL DATA

MODEL		0011	0021	0031	0041	0051	0056	0061
SUPPLT FAN	n.	3	3	3	2	2	2	2
Fan type		Radial EC	Radial EC	Radial EC	Radial EC	Radial EC	Radial EC	Radial EC
Air flow	m <sup>3</sup> /h	1450	1450	1600	2450	2450	3200	3200
Nominal external static pressure	Pa	20	20	20	20	20	20	20
Max external static pressure	Pa	40	40	40	54	54	41	46
Power input (1)	kW	0,17	0,17	0,20	0,45	0,45	0,49	0,49
UPS POWER SUPPLY	V/Ph/Hz	48Vdc	48Vdc	48Vdc	48Vdc	48Vdc	48Vdc	48Vdc

1. Corresponding to the nominal external static pressure.

### ACOUSTIC DATA

Acoustic data of the standard machine at full load working conditions.

#### **WARNING:**

In a closed room the noise produced by a sound source reaches the listener in two different ways:

- Directly
- Reflected from the surrounding walls, floor, ceiling, from furniture.

With the same sound source, the noise produced in a closed room is greater than that produced outdoors. In fact, the sound pressure level generated by the source, must be added to the one reflected from the room. Also, the shape of the room affects the sound.

MODELL		0011	0021	0031	0041	0051	0056	0061
SOUND LEVELI SO 3744 (1)								
Indoor sound pressure (indoor unit)	dB(A)	63	63	64	56	56	58	58

1. Noise pressure level at 1 meter in free field – ISO 3744

## OPTIONAL ACCESSORIES: A431 - ELECTRIC HEATER



Electric heater ensuring low surface temperature and deleting the air ionization problems. The optional is installed downstream the main cooling coil.

In electric heaters with three working steps the activation is binary type.

Components:

- Electric heater
- Electrical control
- Safety thermostat.

MODEL		0011	0021	0031	0041	0051	0056	0061
THERMAL POWER (1)	kW	1,7	1,7	1,7	3,4	3,4	3,4	3,4
Operating current [OA] (1)	A	7,4	7,4	7,4	14,8	14,8	14,8	14,8
Capacity step	n.	1	1	1	2	2	2	2

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1. Value to be added to the engaged power (kW) and absorbed current (A) of standard unit according to the operating conditions.

### OPTIONAL ACCESSORIES: A352 – NO DISPLAY

The machine is supplied without microprocessor display

### OPTIONAL ACCESSORIES: A481 – CLOCK CARD



The card is factory installed.  
Consult the User Manual for all technical information.

### OPTIONAL ACCESSORIES: A471 – SERIAL CARD RS485



The card is factory installed.  
Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: A473 - CARD ETHERNET



The card is factory installed.  
Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: A474 – SERIAL CARD LON



The card is factory installed. The manufacturer will supply the serial card and .NXE file and a .XIF files necessary for LonWorks technicians to configure the network.  
The board is programmed by the technician in charge of the integration.  
Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: A501 – CLOGGED FILTER SENSOR



The system includes a differential pressure switch installed in the electrical panel or in the front of the indoor unit and the plastic hoses for the relief of the pressure upstream and downstream the air filters.

Control range: 0,5 ... 6,0 mbar (50 ... 600 Pa)  
Differential for intervention: 0,30 mbar (30 Pa)

### OPTIONAL ACCESSORIES: B174 - 0-10V FREE-COOLING DAMPER

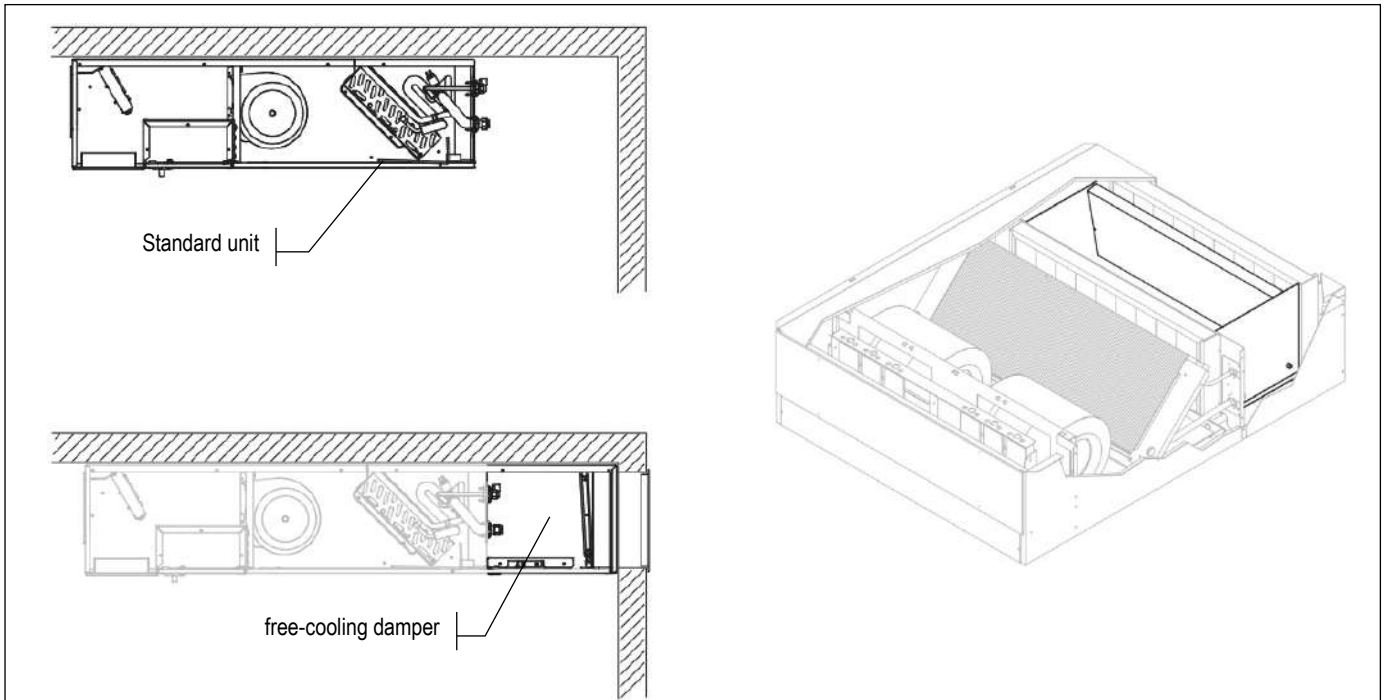


The optional allow to obtain free-cooling by direct ambient air intake into the room.  
The damper is applied to the air conditioner and change the overall dimensions.  
The damper is proportionally managed by the microprocessor control, that regulates the quantity of the ambient air to put in the room according to the set-point.

The Free-Cooling damper always have priority on the compressor. In case the free-cooling is not sufficient to satisfy the thermal load, the compressor is activated.

Components:

- Damper made of sheet steel;
- Actuator with power supply from network or 48Vdc



MODEL		0011	0021	0031	0041	0051	0056	0061
Air flow	m <sup>3</sup> /h	1450	1450	1600	2450	2450	3200	3200

## OPTIONAL ACCESSORIES: A801 - TEMPERATURE / HUMIDITY SENSOR ONLY



The accessory replaces the temperature sensor installed on the air intake in the unit and allows the displaying of the relative humidity room value

## OPTIONAL ACCESSORIES: A803 – DEHUMIDIFICATION ONLY

The optional requires mandatory accessory "A801 Temperature / humidity sensor only". For the control of the room humidity in dehumidification.

## OPTIONAL ACCESSORIES: B103 – ADJUSTABLE HORIZONTAL AIR GRILLE



Grille on room air delivery with single row manually adjustable fin – only horizontal.

## OPTIONAL ACCESSORIES: B104 – ADJUSTABLE HORIZONTAL/VERTICAL AIR GRILLE



Grille on room air delivery with double row manually adjustable fins –horizontal and vertical.

## OPTIONAL ACCESSORIES: A212 – COARSE 60% AIR FILTER

Air filters with efficiency COARSE 60% (according to ISO EN 16890); the filter replaces the standard one.

## OPTIONAL ACCESSORIES: B121 – METAL MESH AIR FILTER

Metal mesh filter on outdoor air suction grille. The optional accessory is available only with free cooling damper on unit.

## OPTIONAL ACCESSORIES: B181 – EXTERNAL FREE COOLER MANAGEMENT

Power supply and control of the external Free Cooler. The accessory is available only with double power supply Network + 48Vdc from UPS system.

## OPTIONAL ACCESSORIES: 7387012600 – REMOTE TERMINAL DISPLAY PGD1

Wall mounting remote display.

## OPTIONAL ACCESSORIES: 7396023600 / 7396023700 / 7396023800 / 7396023900: FREE COOLER



The accessory is an additional unit that allows input in the local of a greater amount of external air during the operation in the free-cooling.  
The Free Cooler is available for indoor (FKI) or outdoor (FKO) installation and is directly managed by the microprocessor control of the air conditioner.  
The Free Cooler is available only for 48Vdc power supply from UPS.

### Components:

- Frame and panels in galvanized steel sheet and painted with epoxy powders. Colour RAL 9010;
- Metal mesh pre-filter on outdoor air suction.
- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric motor. Impeller in composite material exempt from rust formation. EC electric motor 48Vdc. Rubber support.
- Bag filter with COARSE 50% efficiency (according to ISO EN 16890).
- Terminal for electrical connection to main air conditioner
- The accessory is supplied as standard with rain shelter on air intake

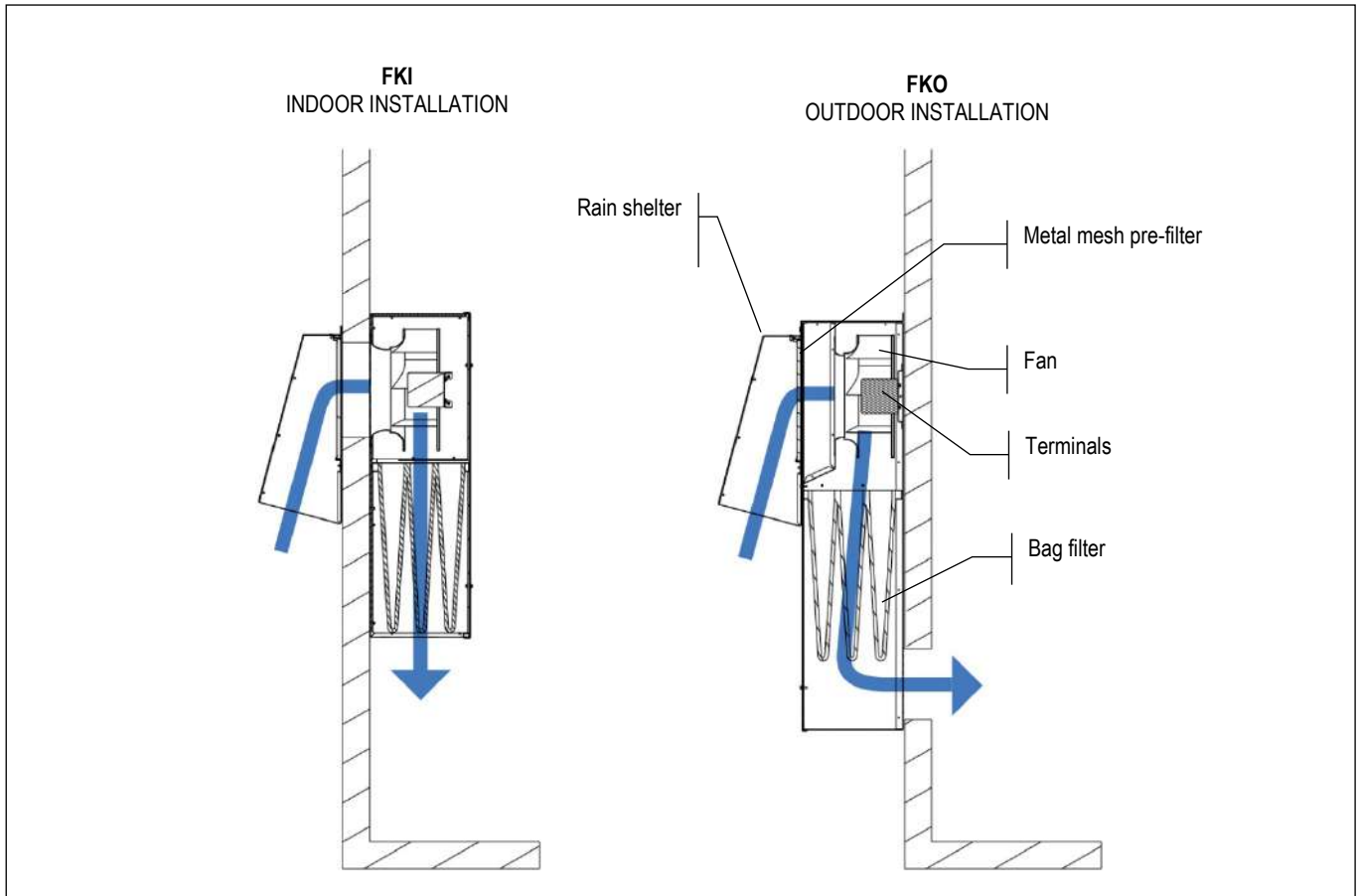
T

MODEL		0021	0041	0051
<b>COOLING CAPACITY (1)</b>	<b>kW</b>	<b>7,67</b>	<b>8,17</b>	<b>10,13</b>
<b>FAN 48 Vdc</b>	<b>n.</b>	<b>1</b>	<b>1</b>	<b>1</b>
Air flow	m <sup>3</sup> /h	2300	2450	3040
Engaged power 48Vdc (3)	W	248	234	497
Absorbed current 48Vdc (3)	A	5,24	4,93	10,6
<b>ENERGY INDEX (1)</b>				
EER = Energy Efficiency Ratio	kW/kW	34,85	35,51	22,03
<b>DIMENSIONS</b>				
FKI - Length	mm	646	646	646
FKI - Width	mm	296	296	296
FKI - Height	mm	955	955	955
FKO - Length	mm	648	648	648
FKO - Width	mm	296	296	296
FKO – Width with rain shelter	mm	542	542	542
FKO - Height	mm	1227	1227	1227
<b>NET WEIGHT FKI</b>	<b>kg</b>	<b>30</b>	<b>31</b>	<b>40</b>
<b>NET WEIGHT FKO</b>	<b>kg</b>	<b>45</b>	<b>46</b>	<b>46</b>
<b>SOUND PRESSURE (2)</b>	<b>dB(A)</b>	<b>62</b>	<b>65</b>	<b>66</b>

1. Referred to ambient temperature 17°C and room temperature 27°C
2. Sound pressure value at 1 meter from unit front in free filed
3. Value to be added to the engaged power (kW) and absorbed current (A) of standard unit according to the operating conditions.

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## INSTALLATION EXAMPLE

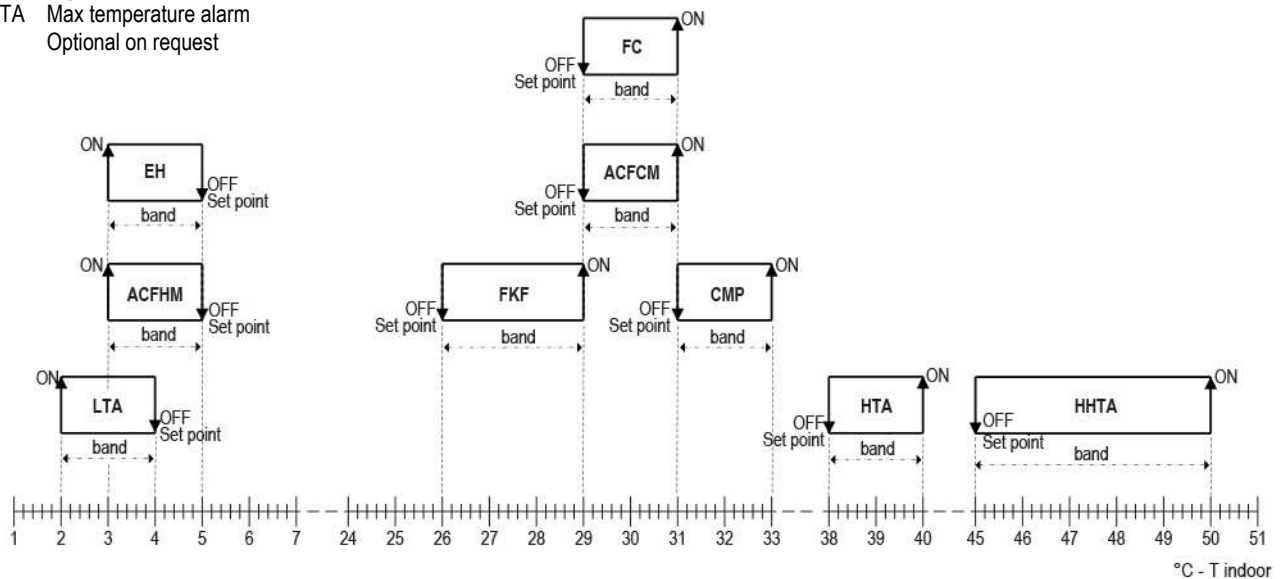


## WORKING LOGIC

- LTA Low temperature alarm
- EH Electric heater (\*)
- ACFHM Supply fan in heating mode
- FKF Free Cooler (\*)
- ACFCM Supply fan in cooling mode
- FC Free-cooling damper
- CMP Compressor
- HTA High temperature alarm
- HHTA Max temperature alarm
- (\*) Optional on request

### EXAMPLE - WORKING LOGIC

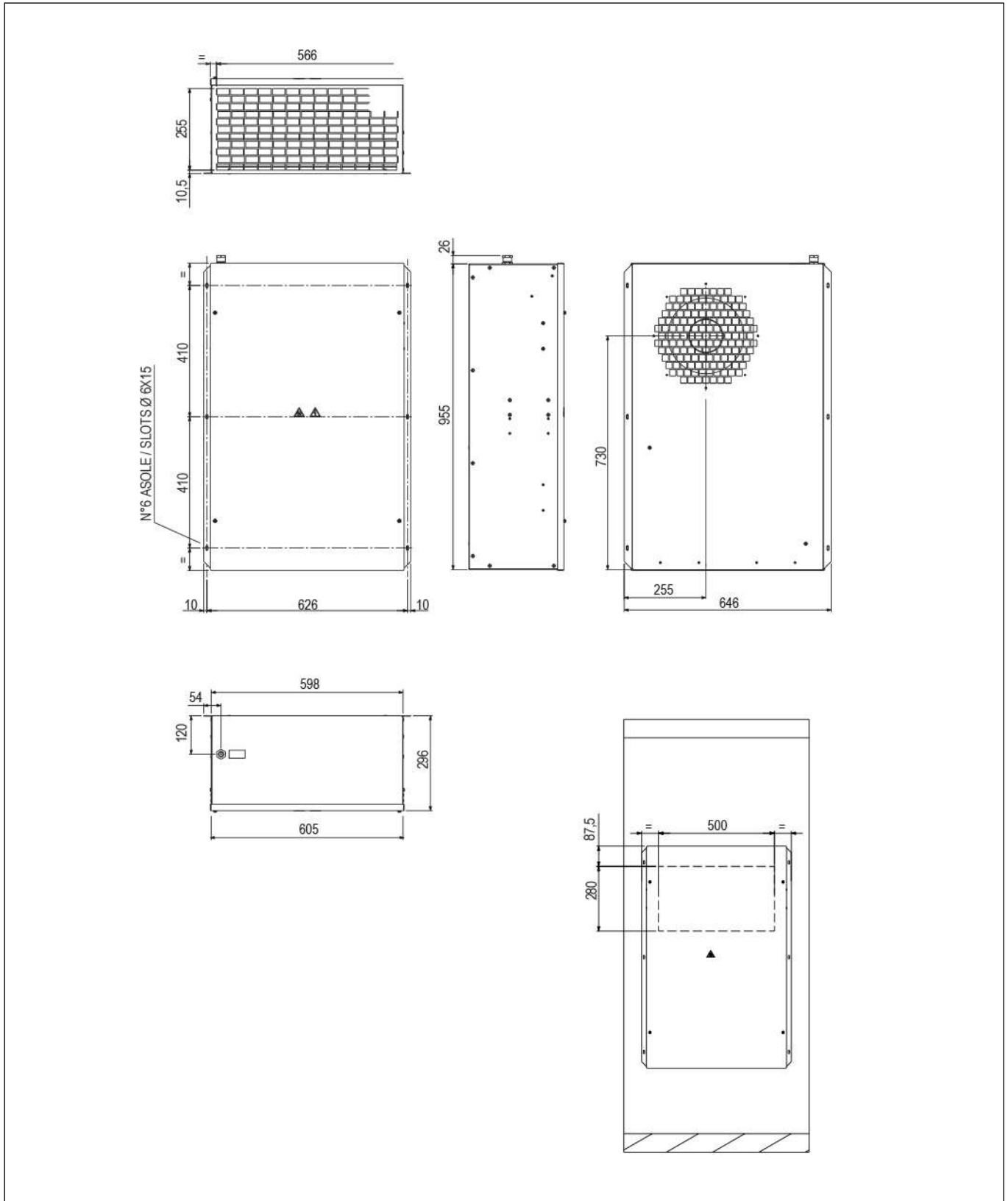
Temperatures are indicative





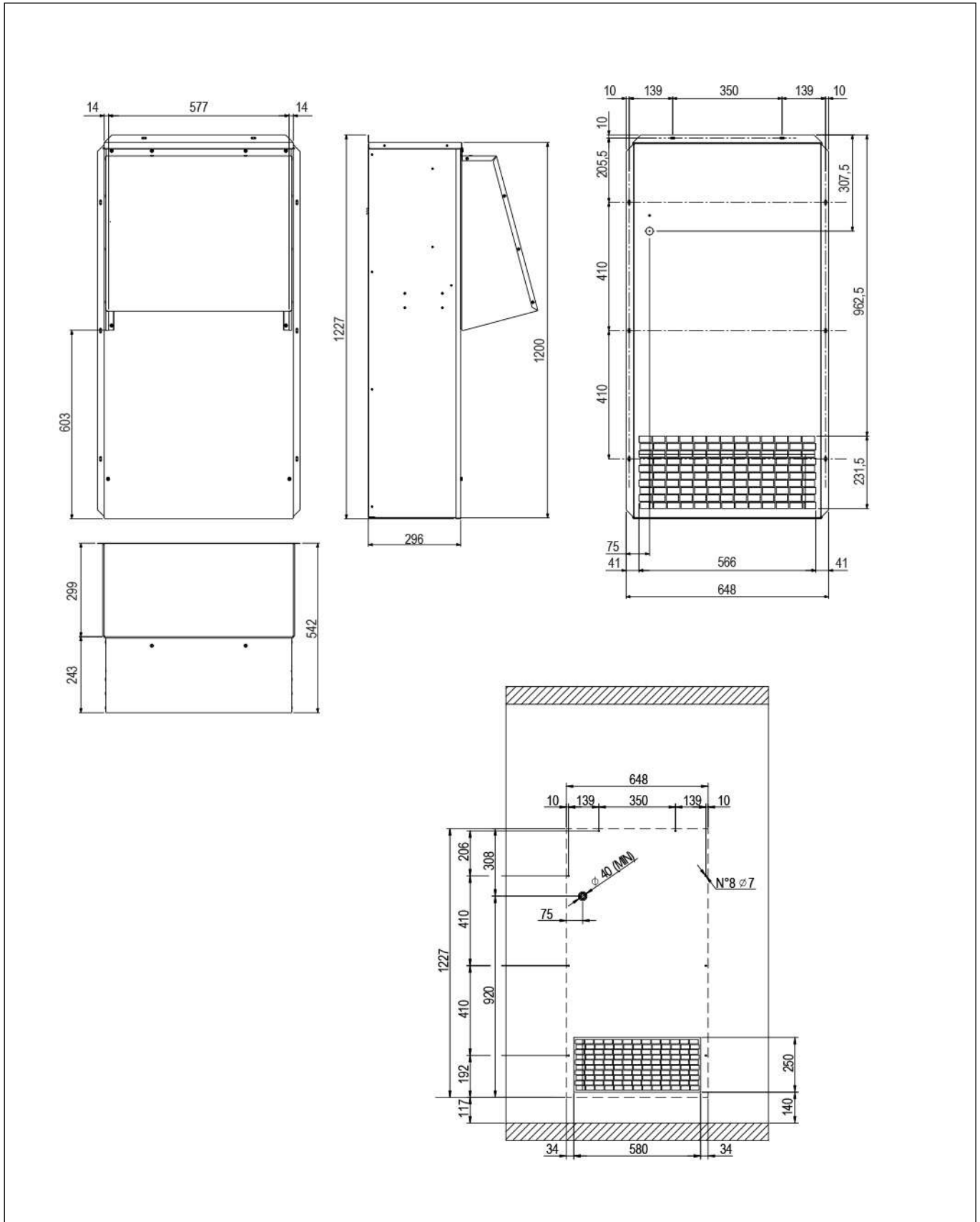
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## DRAWING FKI UNIT – Dimensions in mm



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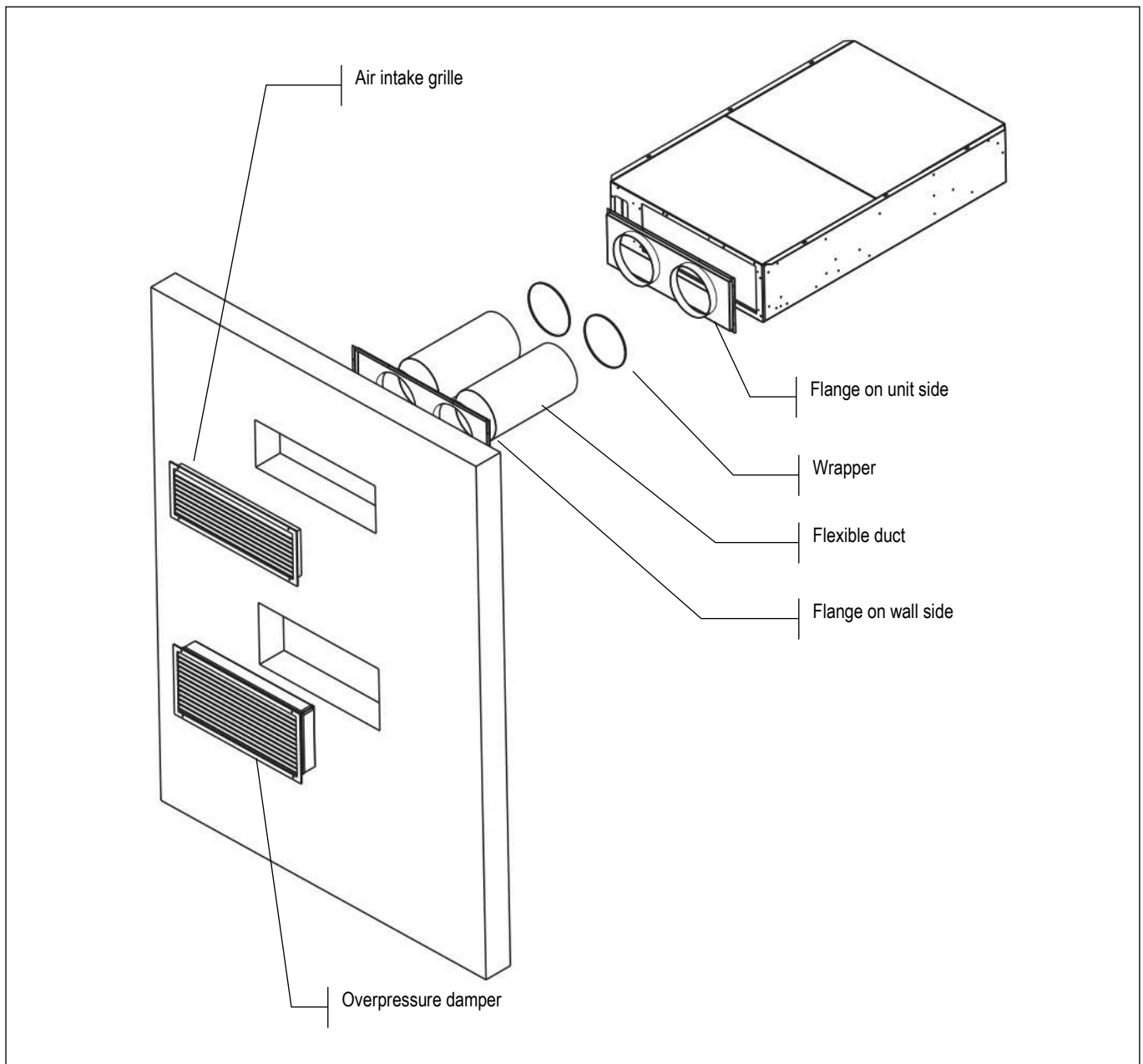
DRAWING FKO UNIT – Dimensions in mm



## OPTIONAL ACCESSORIES: 7369009800 - KIT FREE-COOLING CONNECTION

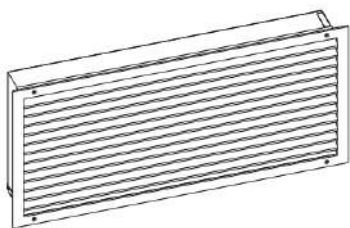
Kit for the connection of the free-cooling system  
For the dimensions of the holes. Please refer to the drawings

The air intake grille can be fitted with a metallic mesh pre-filter



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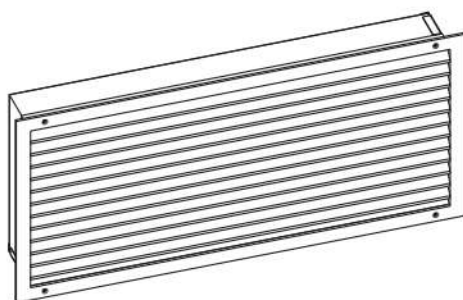
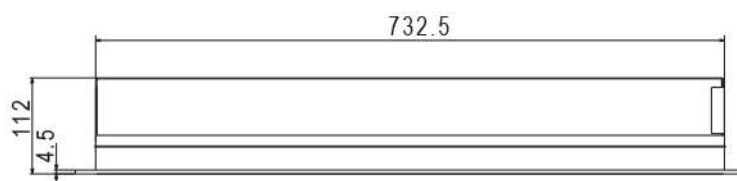
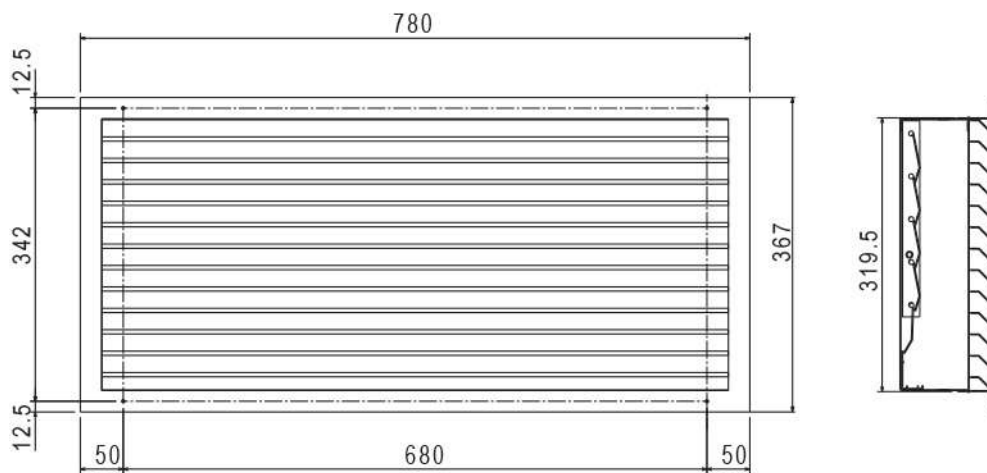
### OPTIONAL ACCESSORIES: 7369009900 - OVERPRESSURE DAMPER



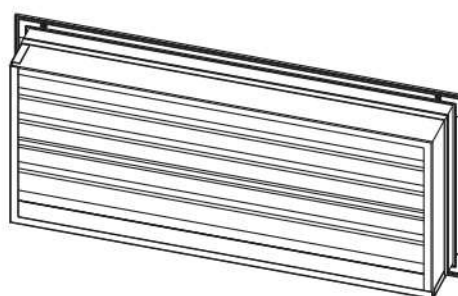
The overpressure relief allows to eject excess air blown into the room during operation in free-cooling or with the use of free-cooler external  
The damper is made totally in aluminum.

The damper must be mounted by the installer highest possible point of the room.

The accessory must be installed together with free cooling damper or external free cooler.



FRONT VIEW



BACK VIEW

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## OPTIONAL ACCESSORIES: A551 – 400/3+N/50 POWER SUPPLY FOR MODEL 0021

| 400/3+N/50 power supply for model 0021.

## OPTIONAL ACCESSORIES: A552 – 230/1/50 POWER SUPPLY FOR MODEL 0031

| 230/1/50 power supply for model 0031.

## OPTIONAL ACCESSORIES: A932 – AXIAL FANS WITH “EC” ELECTRIC MOTORS FOR OUTDOOR MOTO-CONDENSING UNIT

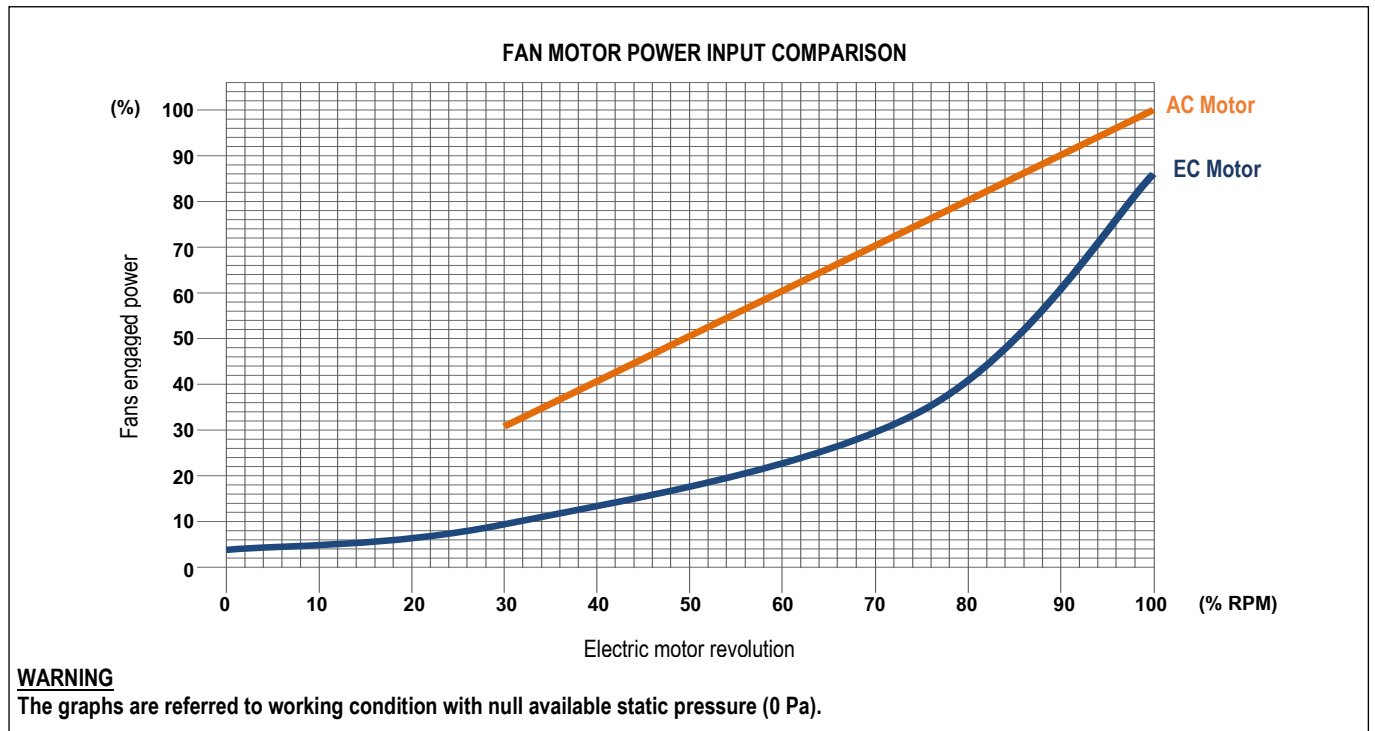


The “EC” axial fans are equipped with a brushless type synchronous motor with integrated electronic commutated system.  
The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.

Characteristics of “EC” motors:

- no electromagnetic noise
- efficiency 83÷86%
- minimum power input

Characteristics comparison between an “AC” asynchronous electric motor with phase-cut control (voltage controller) and “EC” brushless type synchronous motor.



### OPTIONAL ACCESSORIES: 881 – CU/CU CONDENSING COIL

Finned pack and tubes made of copper.

This type of heat exchanger is free from galvanic corrosion thanks to the use of a single material used for its construction.

Advantages of the Cu/Cu heat exchanger:

- High thermal conductivity;
- High corrosion resistance;

To ensure correct machine operation and the best operating conditions, it is important to keep the exchangers clean and efficient as indicated in the Installation, Use and Maintenance manuals.

The special Cu/Cu execution does not exclude maintenance and cleaning operations of the exchangers.

### OPTIONAL ACCESSORIES: 893 – EPOXY PAINTED CONDENSING COIL

Process with epoxy paint.

Advantages of the protective treatment:

- 100% coating of the exchanger;
- 1-2%; exchanger efficiency loss
- Thick protective film thickness at each point of the exchanger;
- Flexible and resistant protective film;

To ensure correct machine operation and the best operating conditions, it is important to keep the exchangers clean and efficient as indicated in the Installation, Use and Maintenance manuals.

The protective treatment does not exclude maintenance and cleaning operations of the exchangers.

### OPTIONAL ACCESSORIES: 896 - CATAPHORESIS CONDENSING COIL

The coating is applied through a complete immersion in the tank, in which the coil behaves like a magnet, attracting the coating on every point of its surface.

Advantages of the protective treatment:

- 100% coating of the exchanger;
- 1-2%; exchanger efficiency loss
- Thick protective film thickness at each point of the exchanger;
- Flexible and resistant protective film;

To ensure correct machine operation and the best operating conditions, it is important to keep the exchangers clean and efficient as indicated in the Installation, Use and Maintenance manuals.

The protective treatment does not exclude maintenance and cleaning operations of the exchangers.

### OPTIONAL ACCESSORIES: A181 - COMPRESSOR SOUNDPROOF JACKET



The system includes a soundproof jacket for each compressor to obtain a reduction of the sound level of the unit.

### OPTIONAL ACCESSORIES: 7378005800 – RUBBER INSULATORS KIT



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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