

## Data Book

T\_iMID\_0120\_IT - HFC R410A

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# i-MID

4-15 kW

Packaged air conditioners for Telecom applications.  
Indoor installation.



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



- Version with BLDC inverter compressor
- Air delivery from the downside or floor level
- Cooling with outdoor temperature down to -20°C
- Direct free cooling on request
- Power supply from UPS 48VDC on request
- Additional free cooler on request

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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



Packaged direct expansion close control air conditioners with built-in air cooled condenser

The machines are made for indoor 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.

Machines supply fully assembled with control systems. The installation requires electrical, hydraulic connections and the realization of wall holes for the condenser air inlet and discharge. The same holes are used by the free-cooling system for the fresh air intake.

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 BLDC inverter refrigerant compressor and consists of 3 models with cooling capacities from 4 to 15 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 units may have downflow air supply at floor level or in the raised floor.  
Air suction from front or upper side of the unit.

### 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

## PRODUCT FEATURES AND BENEFITS

- Wide operating range in mechanical cooling with outdoor air temperatures from 48°C to -20°C.
- Adaptable to any type of plant thanks to the multiple alternatives of ambient air discharge and suction.
- Improvement of the control software with advanced control logic
- High energy savings thanks to the compressor BLDC inverter combined to direct free-cooling system
- 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.
- Lower operating and maintenance costs for a payback of only two years thanks to the FULL inverter technology
- 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**

**Packaged air conditioners** for Telecom applications  
**i-MID BASIC 0031**

**i-MID** Series with BLDC inverter compressor

**BASIC** **Version**  
 BASIC = Basic version

**0031** Model

**WORKING LIMITS**

**OUTDOOR AIR CONDITIONS**

-20°C minimum temperature with dry bulb  
 48°C maximum 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)  
 ± 2% Maximum unbalancing of the phases.

**PROTECTIONS**

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

41,5 Bar +0 / -1,4 High pressure switch intervention (open)  
 33,0 Bar ± 2,0 High pressure switch restore (close)

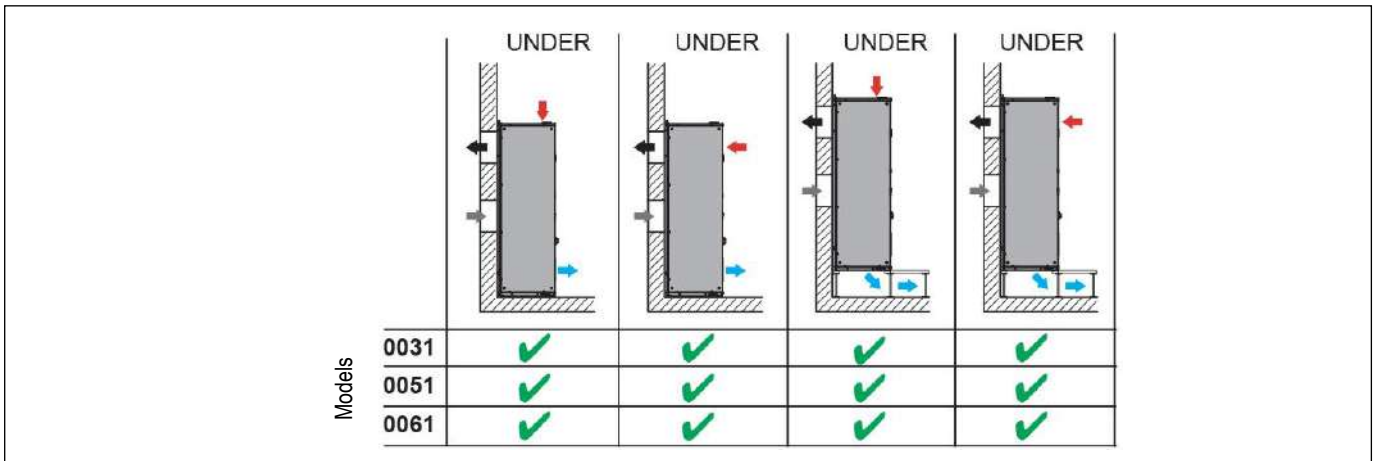
**TRANSPORT AND STORAGE TEMPERATURE**

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.

**TYPES OF INSTALLATION**

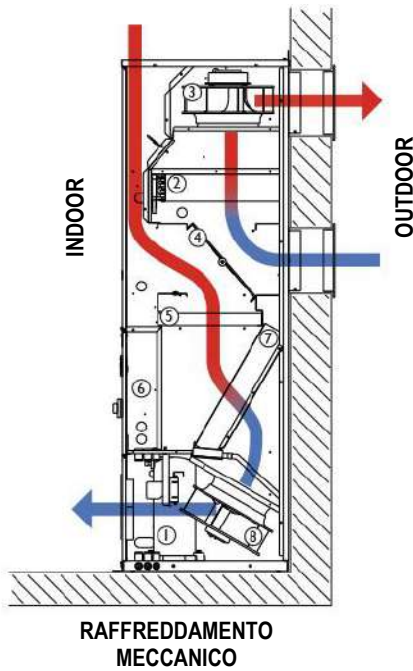
The units have been designed to perfectly fit the different installation requirements. Typical installation is on the perimeter of the room, with the unit adjacent to the wall of the room to be conditioned. Two openings in the wall allows the intake and exhaust air of the condenser; the air intake is also used for the free-cooling system. In case it is not possible to lay the units adjacent to the wall, a kit is available with flexible pipes to duct the air intake and discharge of the condenser / free-cooling system. The air handling section is suitable for any type of plant with air return / delivery form the upper side, bottom side or frontal. **AVAILABLE AIR FLOW:**  
 UNDER air flow: return air form the upper side of the unit and air delivery the bottom side.

**Types of installation:**

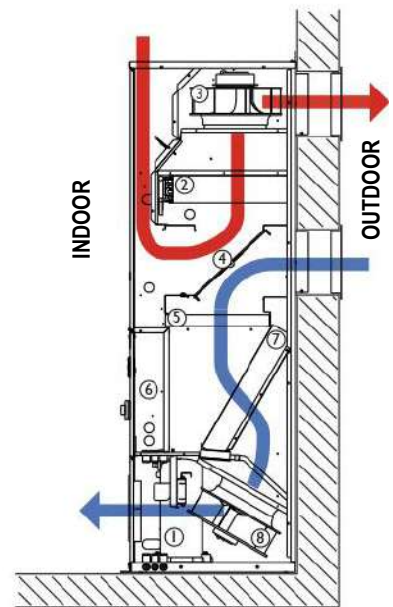
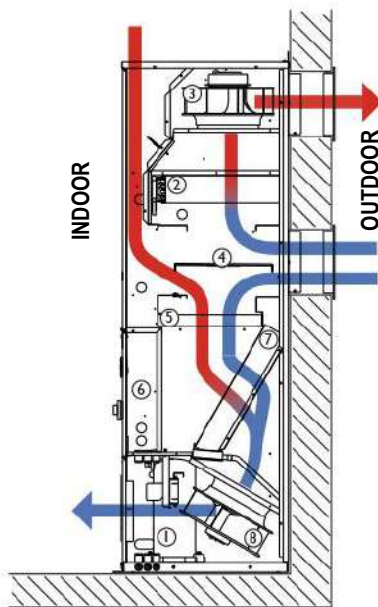
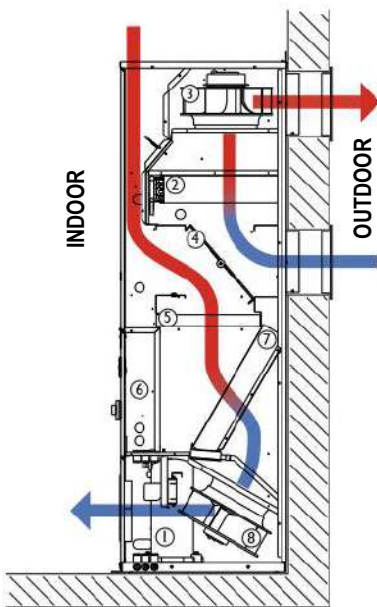


WORKING PRINCIPLE

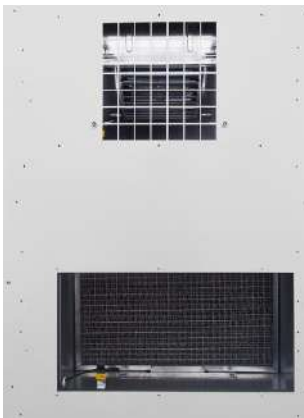
UNDER – STANDARD UNIT



UNDER – UNIT WITH FREE-COOLING SYSTEM



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

**MAIN COMPONENTS****FRAMEWORK**

- Base, 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 and delivery protect with grilles formed on the panelling.
- Hinged front panels.
- Total front access for routine maintenance.
- Compartment for electrical panel on unit front for direct access to control and regulation devices;
- Power supply input from top and bottom the unit.

**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**

- 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.

**SUPPLY FAN SECTION**

- 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.
- Electric motor:
  - AC type for model 0031.
  - EC type for model 0051, 0061.
- Rubber support
- Differential pressure switch on the air side for air flow loss alarm signal.

**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**

Model: 0031:

- Double suction centrifugal fan directly coupled to external rotor electric motor;
- AC electric motor;
- Condensing control system with variation of fan speed through phase-cut electronic regulator directly driven by the condensing pressure proportional signal.
- Rubber support

Model 0051, 0061:

- 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.
- AC electric motor.
- Condensing control system with variation of fan speed through 0-10Vdc signal.
- Rubber support



**COMPRESSOR SECTION**

Model: 0031, 0051:

- Rotary BLDC inverter compressors optimized for R410A refrigerant:
- Synchronous brushless inverter driven motor.
- Inverter for modulating capacity control.
- Reactance for the reduction of electromagnetic noise and interference.
- Crankcase heater.
- Oil separator on refrigerant discharge
- Rubber supports.

Model 0061:

- Scroll BLDC inverter compressors with spiral profile optimized for R410A refrigerant:
- Synchronous brushless inverter driven motor.
- Inverter for modulating capacity control.
- Reactance for the reduction of electromagnetic noise and interference.
- Crankcase heater.
- Oil separator on refrigerant discharge
- Rubber supports.

**REFRIGERANT CIRCUIT**

- Electronic expansion valve with control driver
- Sight glass.
- Filter dryer on liquid line.
- High pressure safety switch with automatic reset.
- Low pressure safety switch with automatic reset.
- Low pressure transducer
- High pressure transducer for condensing control:
  - Condenser fan with AC motor:
    - Condensing control system with variation of fan speed through phase-cut electronic regulator.
  - Condenser fan with EC motor:
    - Condensing control system with variation of fan speed through 0-10Vdc signal.
- Liquid separator on compressor suction line (only model 0061)
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- R410A refrigerant charge and lubricant oil.



**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 fans and compressor.
- Contactors for each load. The EC electric motor and don't require 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)

**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).





OPTIONAL ACCESSORIES

- 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.
- 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.
- A724**..... **EC fan:** (model 0031) Supply fan with power supply from network:
  - 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
- 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
- A181**..... **Soundproof jacket:** Compressor soundproof cap for a sound level reduction of 2 dB(A).
- 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.
- B175**..... **0-10V Free-Cooling damper+spring return:** Direct free-cooling system. The system is available for power supply from network or double power supply from network + 48Vdc from UPS. Servomotor with spring return. In the event of a power failure, the spring system completely closes the damper (Free-Cooling OFF).
- 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
- 7396023400 ..... **Air connection kit (models 0031):** Circular air connections and flexible ducts for condenser air suction and discharge.
- 7396024900 ..... **Air connection kit (models 0051-0061):** Circular air connections and flexible ducts for condenser air suction and discharge.
- 7396020700 ..... **Fresh air suction and delivery grilles – OVER models 0031:** Air grilles kit for condenser air suction and discharge. The air suction grille can be supplied with metal mesh air filter
- 7396020800 ..... **Fresh air suction and delivery grilles – OVER models 0051-0061:** Air grilles kit for condenser air suction and discharge. The air suction grille can be supplied with metal mesh air filter
- 7396020900 ..... **Fresh air suction and delivery grilles – UNDER models 0031:** Air grilles kit for condenser air suction and discharge. The air suction grille can be supplied with metal mesh air filter
- 7396021000 ..... **Fresh air suction and delivery grilles – UNDER models 0051-0061:** Air grilles kit for condenser air suction and discharge. The air suction grille can be supplied with metal mesh air filter
- 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.
- 5596034800 ..... **Base frame kit – models 0031:** Base frame with adjustable height between 200 and 600 mm.
- 5596034900 ..... **Base frame kit – models 0051-0061:** Base frame with adjustable height between 200 and 600 mm.
- 7396019400 ..... **Coupling frame for 0031:** Dima kit to adapt the existing holes of the wall with the condenser air suction and discharge
- 7396019500 ..... **Coupling frame for 0051-0061:** Dima kit to adapt the existing holes of the wall with the condenser air suction and discharge
- 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.

**TECHNICAL DATA – POWER SUPPLY FROM NETWORK**

MODEL		0031				0051					0061			
AIR FLOW (1)		U				U					U			
COOLING CAPACITY (2)		100%	80%	60%	45%	100%	80%	60%	40%	35%	100%	80%	60%	40%
<b>Total</b>	<b>kW</b>	<b>9,53</b>	<b>7,62</b>	<b>5,72</b>	<b>4,00</b>	<b>12,30</b>	<b>9,84</b>	<b>7,38</b>	<b>4,92</b>	<b>4,36</b>	<b>15,10</b>	<b>12,10</b>	<b>9,06</b>	<b>6,58</b>
<b>Sensible</b>	<b>kW</b>	<b>7,09</b>	<b>5,74</b>	<b>4,30</b>	<b>3,04</b>	<b>10,70</b>	<b>8,80</b>	<b>6,71</b>	<b>4,70</b>	<b>3,36</b>	<b>12,80</b>	<b>10,40</b>	<b>7,81</b>	<b>6,16</b>
SHR (3)		0,74	0,75	0,75	0,76	0,87	0,89	0,91	0,96	0,77	0,85	0,86	0,86	0,94
Total power input (Comp. + Fans)	kW	3,36	2,46	2,01	1,58	4,41	3,31	2,41	1,77	1,62	6,47	4,23	2,97	2,10
<b>SUPPLY FANS</b>	n.	1				1					2			
Fan type		Radial AC				Radial EC					Radial EC			
Air flow	m <sup>3</sup> /h	1600	1324	1049	800	3200	2704	2209	1713	1600	3200	2633	2066	1600
Nominal external static pressure	Pa	20	20	20	20	20	20	20	20	20	20	20	20	20
Maximum external static pressure	Pa	68	--	--	--	194	--	--	--	--	72	--	--	--
Power input (4)	kW	0,26	0,20	0,15	0,10	0,48	0,32	0,19	0,10	0,08	0,98	0,60	0,33	0,17
<b>BLDC INVERTER COMPRESSOR</b>		Rotary				Rotary					Scroll			
Quantity	n.	1				1					1			
Power input	kW	2,37	1,54	1,13	0,75	3,18	2,24	1,47	0,92	0,79	4,66	2,80	1,81	1,10
<b>CONDENSER FAN</b>	n.	1				1					1			
Fan type		Centrifugal AC				Radial AC					Radial AC			
Air flow	m <sup>3</sup> /h	2600				4500					4500			
Power input (4)	kW	0,73				0,75					0,83			
<b>AIR FILTERS</b>	n.	1				1					1			
Efficiency (ISO EN 16890)	COARSE	50%				50%					50%			
<b>REFRIGERANT</b>		R410A				R410A					R410A			
Gas circuit	n.	1				1					1			
<b>POWER SUPPLY</b>	V/Ph/Hz	230/1/50				230/1/50					400/3+N/50			
<b>ENERGY INDEX (2)</b>														
EER = Energy Efficiency Ratio	kW/kW	2,84	3,10	2,85	2,53	2,79	2,97	3,06	2,78	2,69	2,33	2,86	3,05	3,13
<b>DIMENSIONS</b>														
UNDER Length	mm	650				895					895			
UNDER Width	mm	650				750					750			
UNDER Height	mm	2000				2050					2050			
<b>NET WEIGHT UNDER</b>	kg	180				270					280			
<b>CONDENSATE DISCHARGE</b>	F Ø	1/2"				1/2"					1/2"			

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

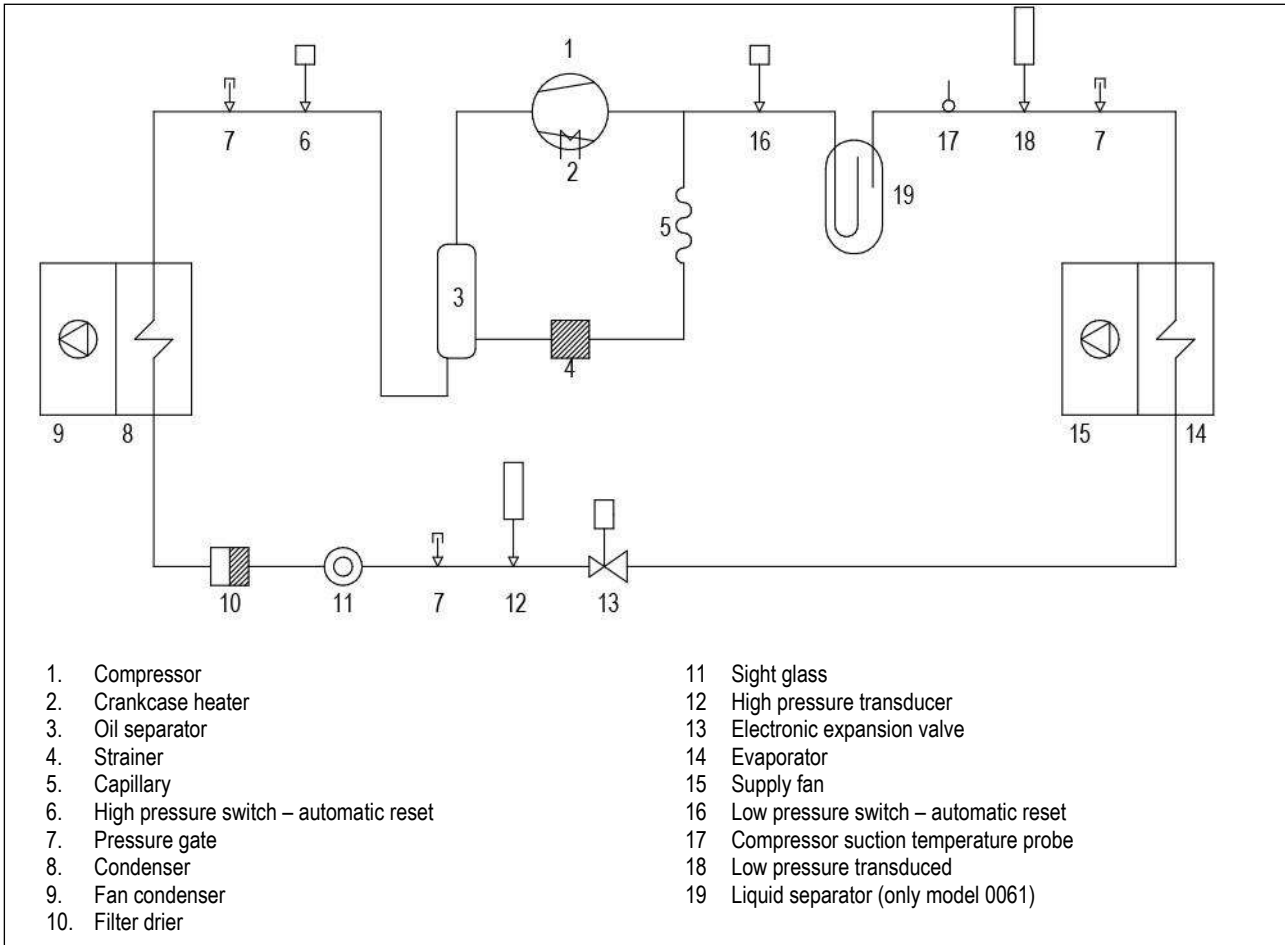
1. U = Under
2. Gross value. Characteristics referred to entering air at 27°C with 50%RH and ambient air temperature 35°C. ESP=20Pa.
3. SHR = Sensible cooling capacity / Total cooling capacity.
4. Corresponding to the nominal external static pressure.

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

**NOTE:**

Below the indicated minimum cooling capacity, the inverter compressor enters the "cycling" area in which the compressor operates with ON / OFF cycles below the minimum modulation frequency (operation only for short periods).  
**SELECT THE UNIT IN THE MODULATION FIELD.**

REFRIGERANT CIRCUIT



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.

MODEL	0031	0051	0061
SOUND LEVEL ISO 3744 (1)	230/1/50	230/1/50	400/3+N/50
Indoor sound pressure	dB(A) 54	56	61

1. Sound pressure level at 1meter in free field - ISO 3744

## ELECTRICAL DATA

### SINGLE POWER SUPPLY

#### POWER SUPPLY FROM NETWORK

MODEL		0031	0051	0061
POWER SUPPLY		230/1/50	230/1/50	400/3+N/50
STANDARD UNIT				
Max power input (FLI)	kW	6,60	6,85	11,90
Max current input (FLA)	A	22,60	23,70	23,10
Start up current (SA)	A	8,38	9,45	12,70
Power input (OI)	kW	3,36	4,41	6,47

#### **WARNING:**

The electrical data indicated are referred to standard units, without optional accessories.  
Optional accessory electric data are included within the dedicated chapters and must be added.

### 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

MODEL		0031	0051	0061
POWER SUPPLY FROM NETWORK		230/1/50	230/1/50	400/3+N/50
STANDARD UNIT				
Max power input (FLI)	kW	6,33	6,35	10,90
Max current input (FLA)	A	21,40	20,50	16,80
Start up current (SA)	A	7,20	6,30	6,40
Power input (OI)	kW	3,10	3,93	5,49
POWER SUPPLY FROM UPS		48Vdc	48Vdc	48Vdc
Max power input (FLI)	kW	0,38	0,70	0,76
Max current input (FLA)	A	6,72	12,70	13,40
Start up current (SA)	A	6,72	12,70	13,40
Power input (OI)	kW	0,25	0,48	0,49

#### **WARNING:**




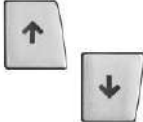

The electrical data indicated are referred to standard units, without optional accessories.  
Optional accessory electric data are included within the dedicated chapters and must be added.

**MICROPROCESSOR CONTROL SYSTEM**



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, MAINTENANCE

**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.

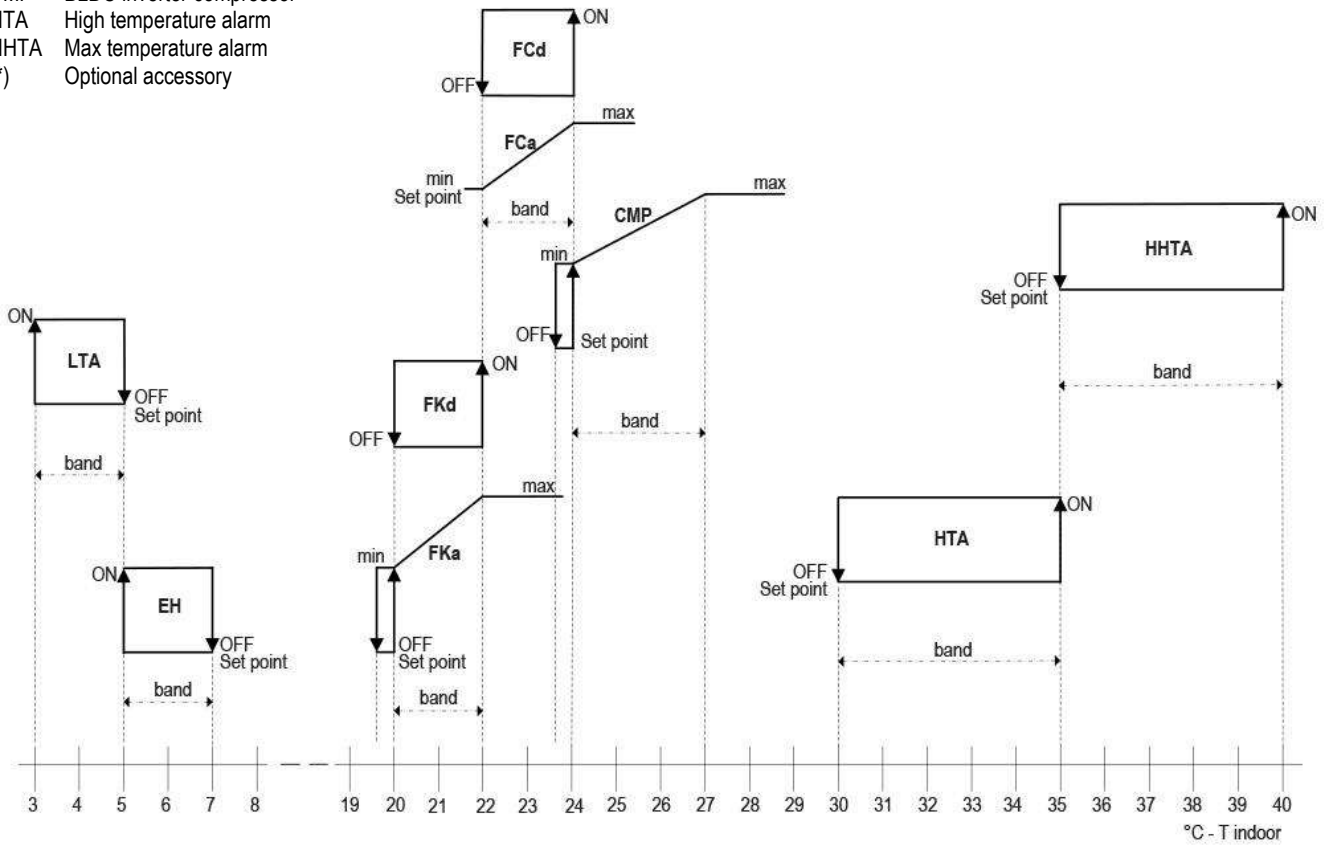
**LAN ADDRESS LIST**

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**

- 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 BLDC inverter compressor
- HTA High temperature alarm
- HHTA Max temperature alarm
- (\*) Optional accessory

**EXAMPLE - CONTROL LOGIC**  
Temperatures are indicative

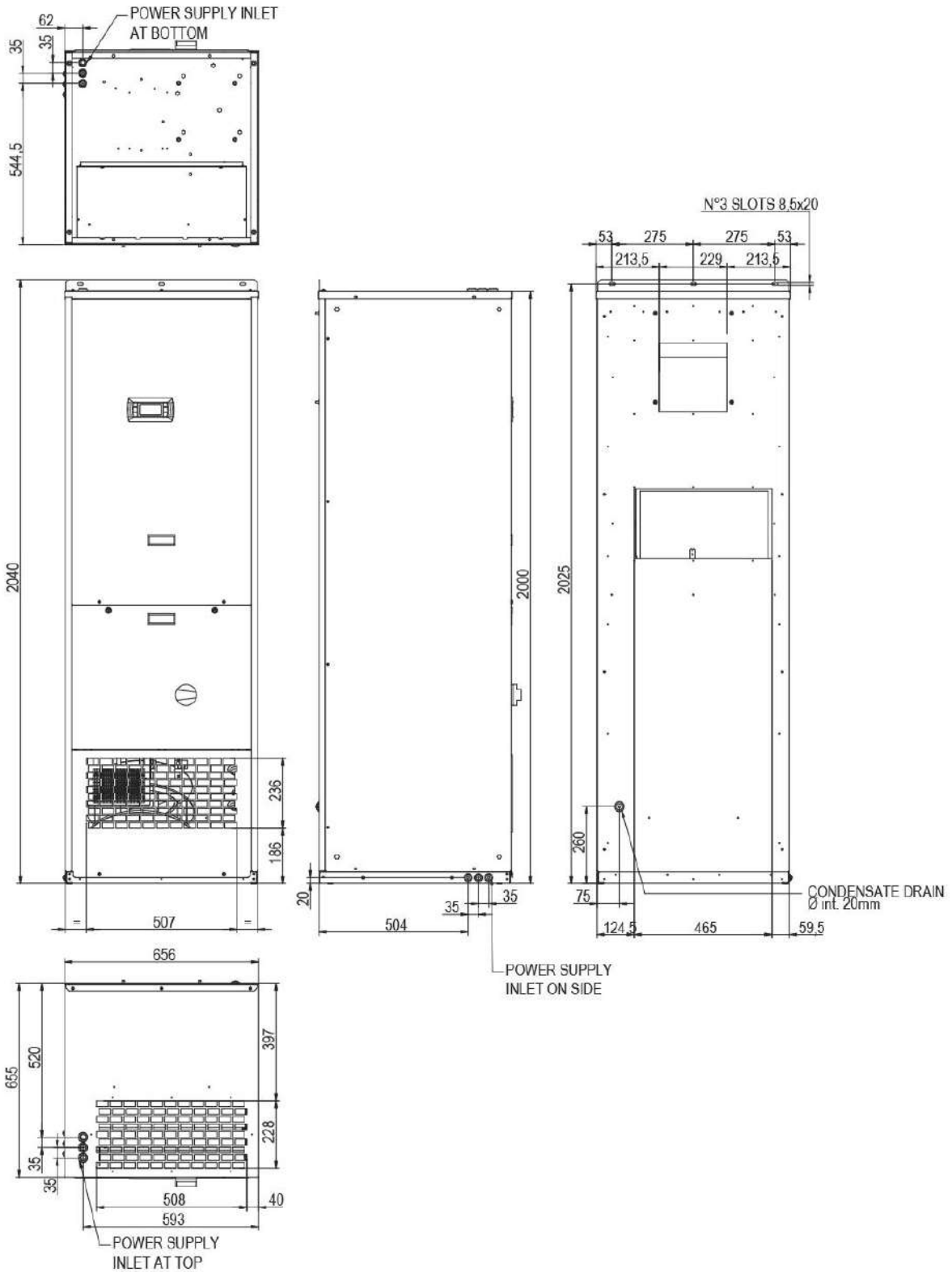


UNITS DRAWINGS

Dimensions in mm

Model 0031 UNDER

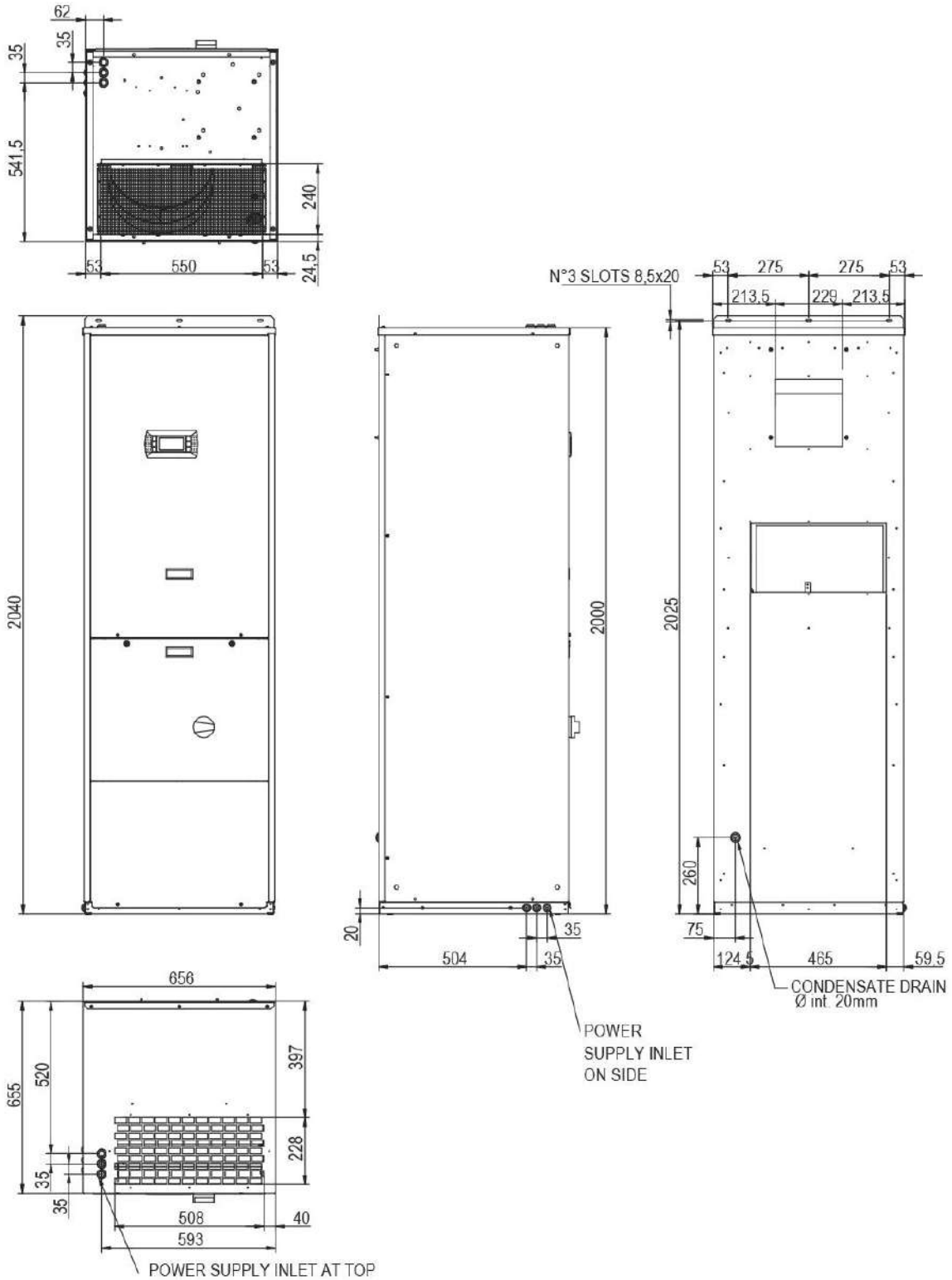
Air intake from the top and air delivery at floor level





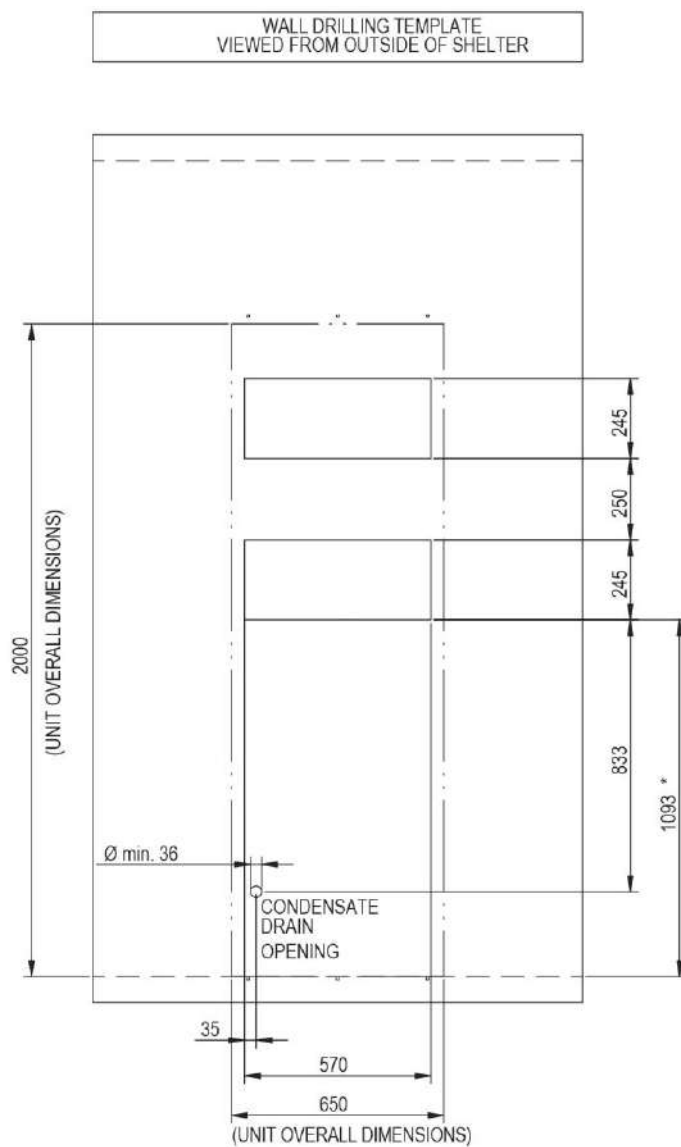
**UNITS DRAWING**  
Dimensions in mm

**Model 0031 UNDER**  
Air intake from the top and air delivery in raised floor



UNITS DRAWING  
Dimensions in mm

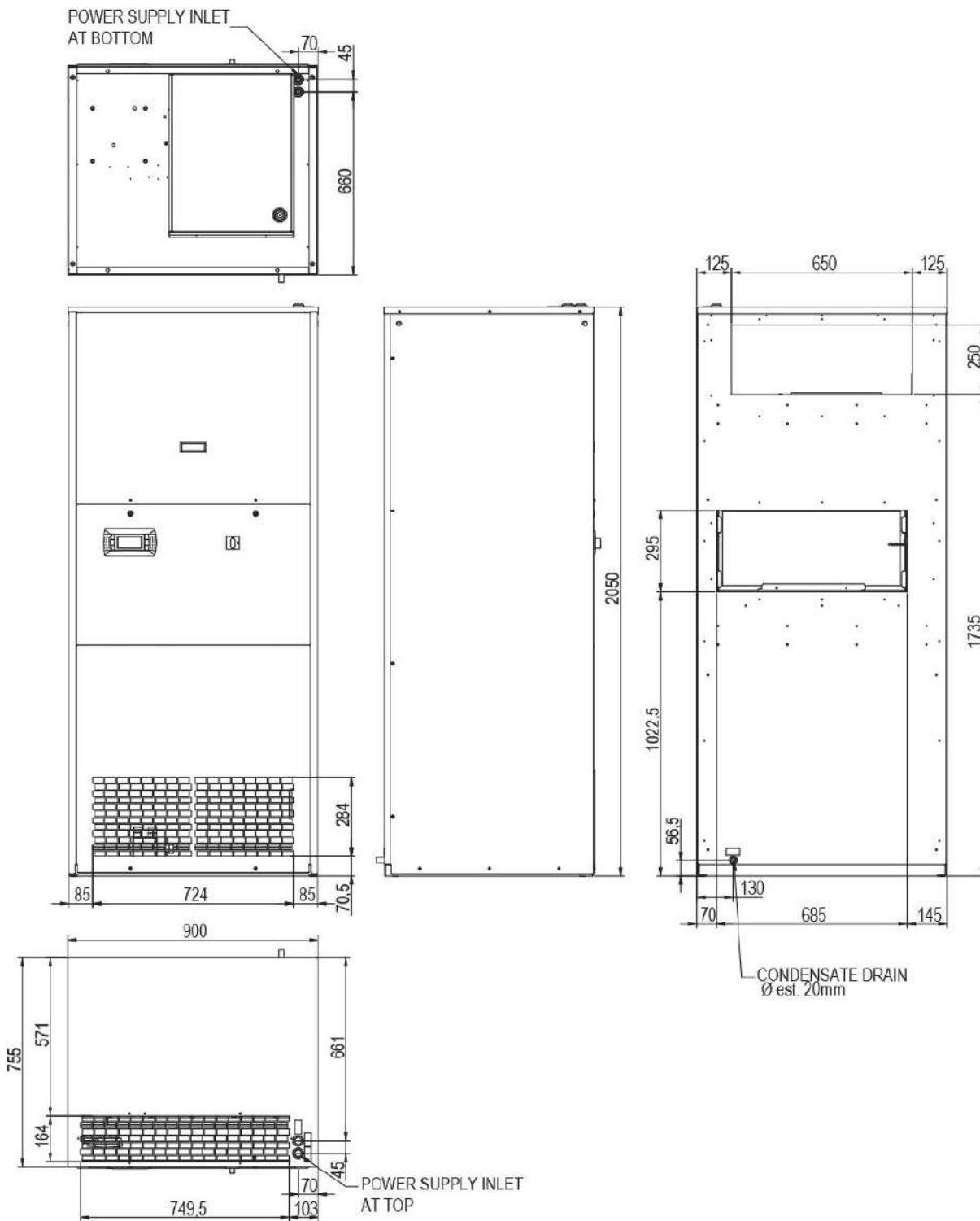
Modello 0031 UNDER  
Wall drilling template



\* UNIT RESTING ON THE GROUND

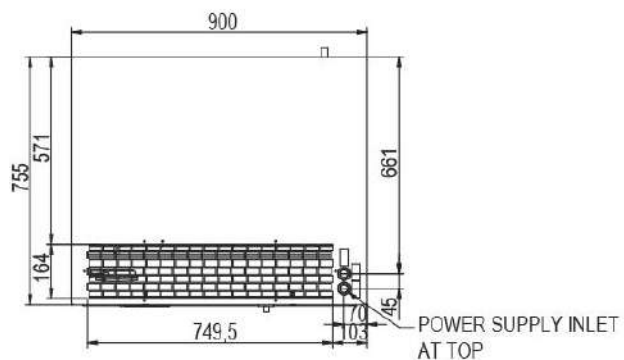
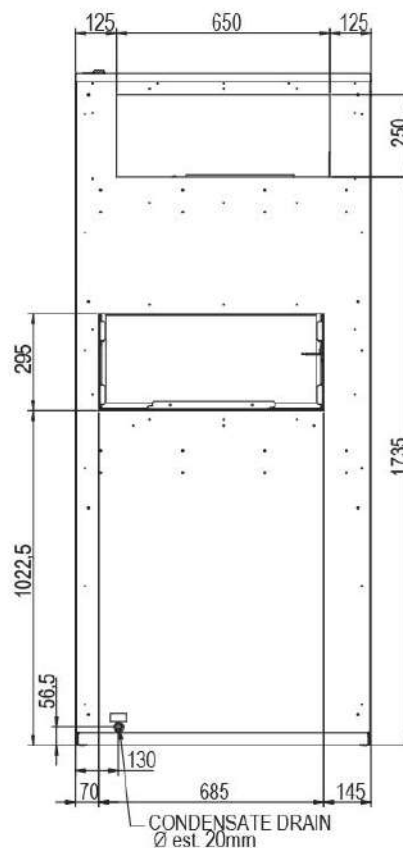
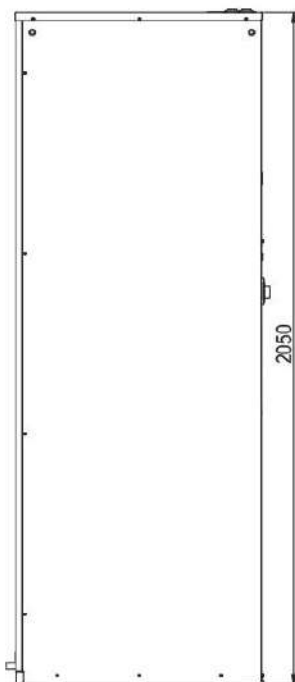
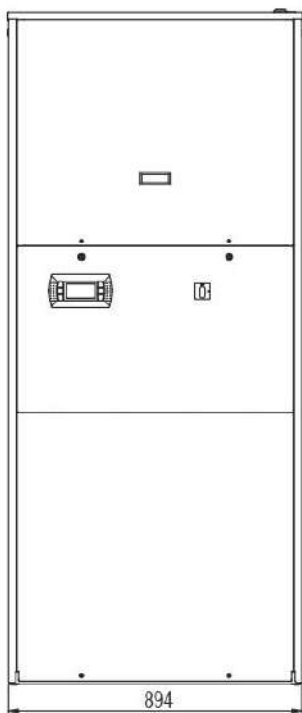
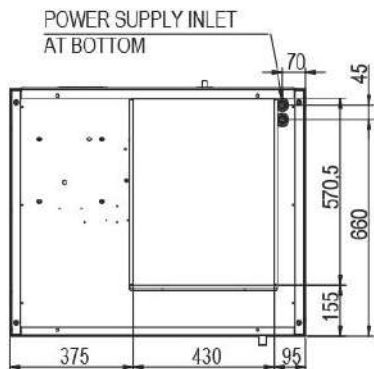
**UNITS DRAWING**  
Dimensions in mm

**Model 0051 - 0061 UNDER**  
Air intake from the top and air delivery at floor level



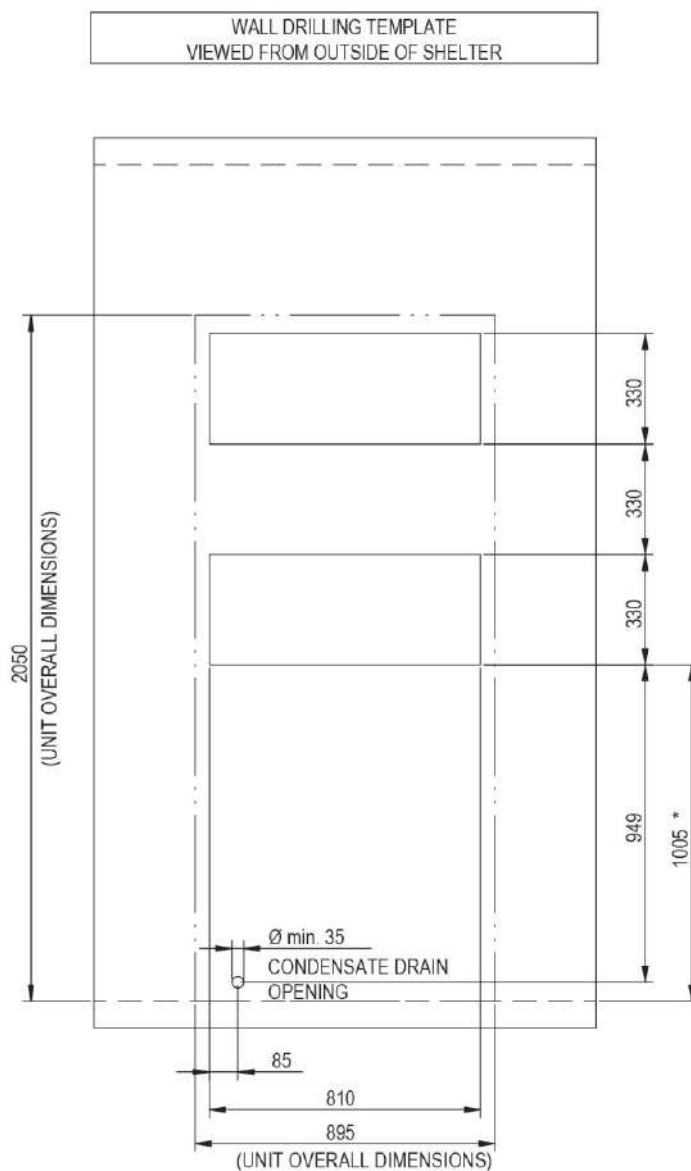
**UNITS DRAWING**  
 Dimensions in mm

**Model 0051 - 0061 UNDER**  
 Air intake from the top and air delivery in raised floor



UNITS DRAWING  
Dimensions in mm

Model 0051 - 0061 UNDER  
Wall drilling template



\* UNIT RESTING ON THE GROUND

## 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: 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: A724 – EC FAN

Supply fan with power supply from network (model 0031):

- 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

**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

**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: 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.

**TECHNICAL DATA**

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

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)

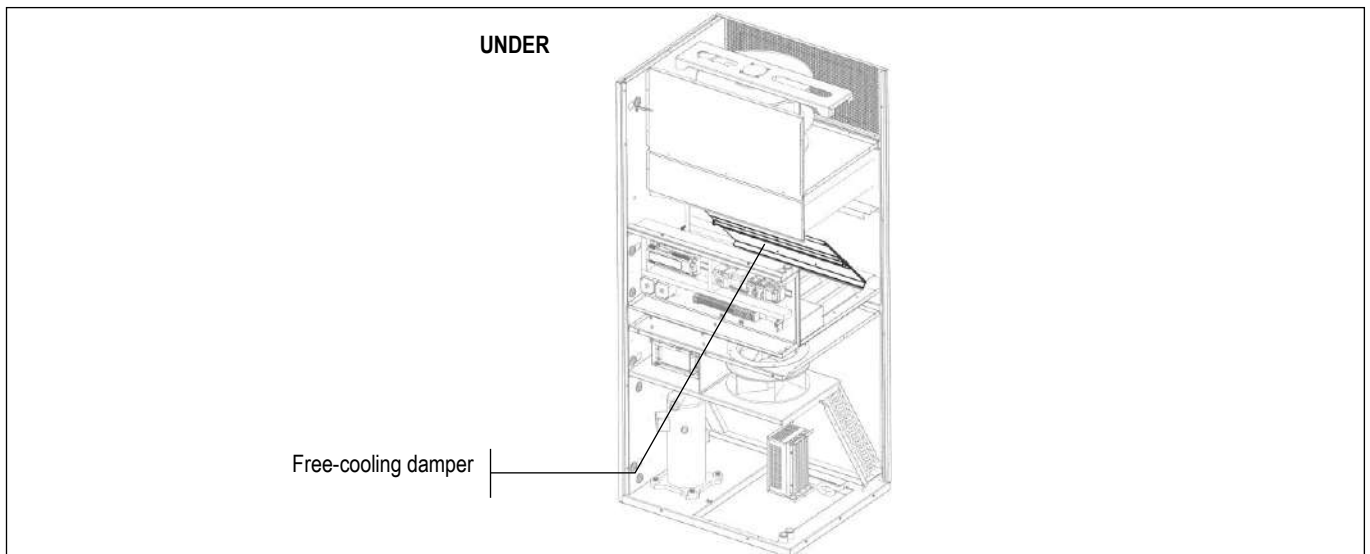
**OPTIONAL ACCESSORIES: B174 – B175 - 0-10V FREE-COOLING DAMPER**



The optional allow to obtain free-cooling by direct ambient air intake into the room.  
The damper is contained within the air conditioner and does not 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:

- B174 Damper made of sheet steel with actuator with power supply from network or 48Vdc  
Alternatively:
- B175 Damper made of sheet steel with spring-return actuator with power supply from network or 48Vdc. In the event of power failure, the damper is completely closed by the spring system (Free-Cooling OFF).



MODEL		0031	0051	0061
Air flow (MIN – MAX)	m <sup>3</sup> /h	800 - 1600	1600 - 3200	1600 - 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**

The optional is not available for models 0001, 0003 and 0004.  
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:**

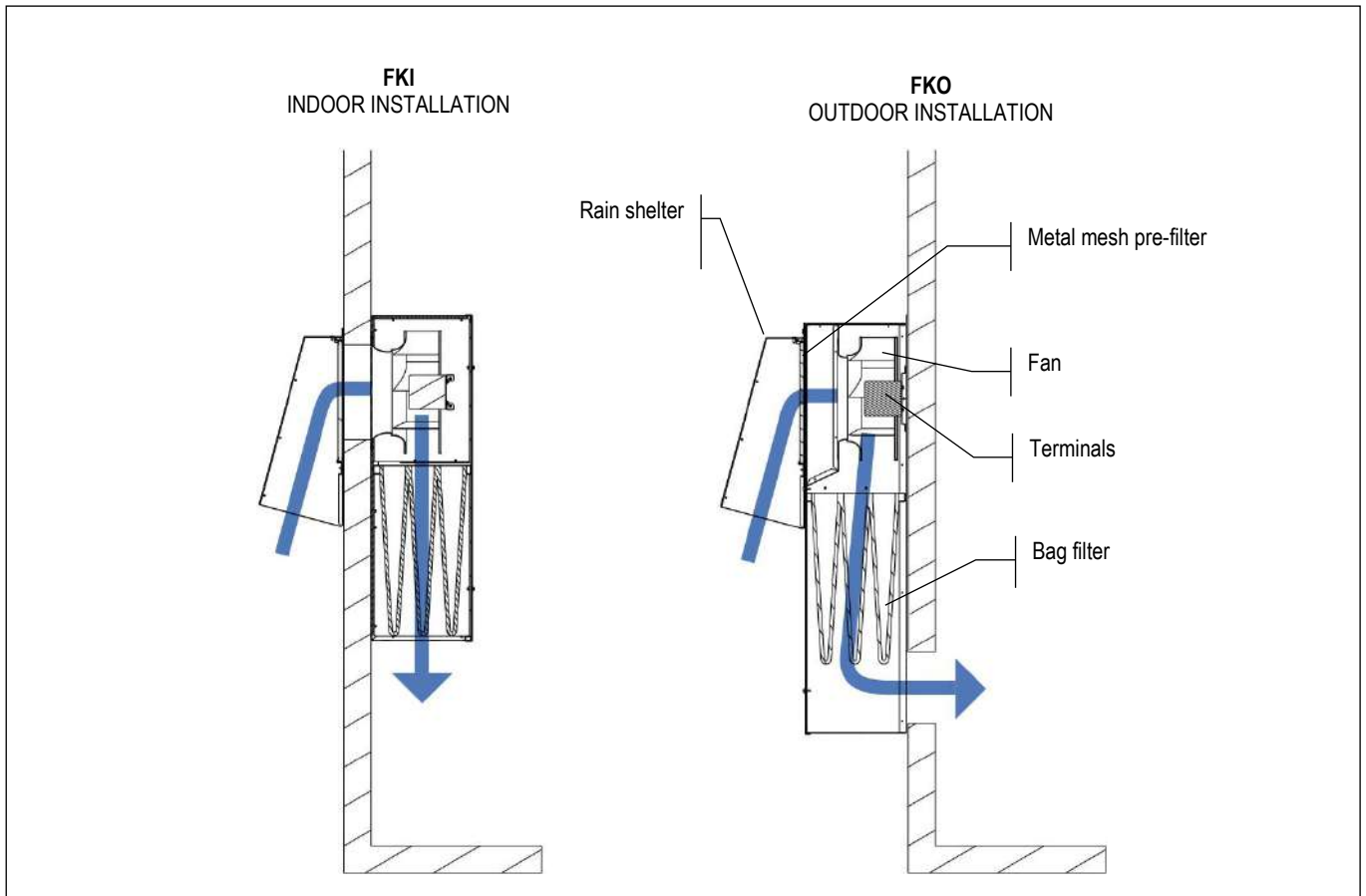
- Frame and panels in galvanized steel sheet and painted with epoxy powders. Colour RAL 9010;
- Metal mesh pre-filter on outdoor air suction.
- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric 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

## TECHNICAL DATA

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

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.
- 4.

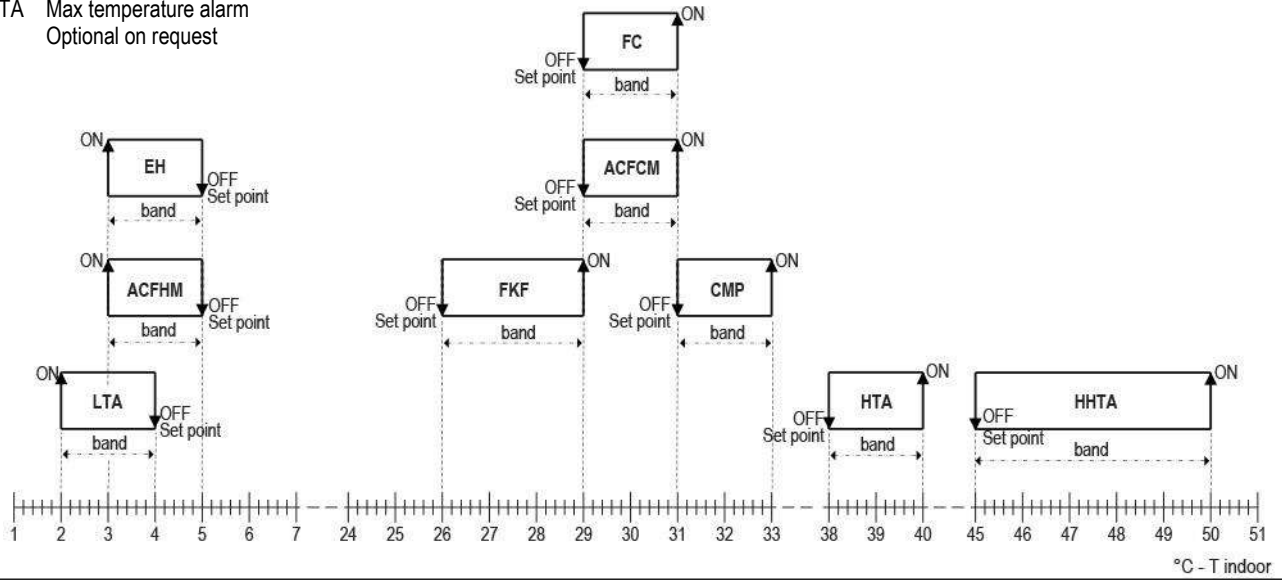
## INSTALLATION EXAMPLE



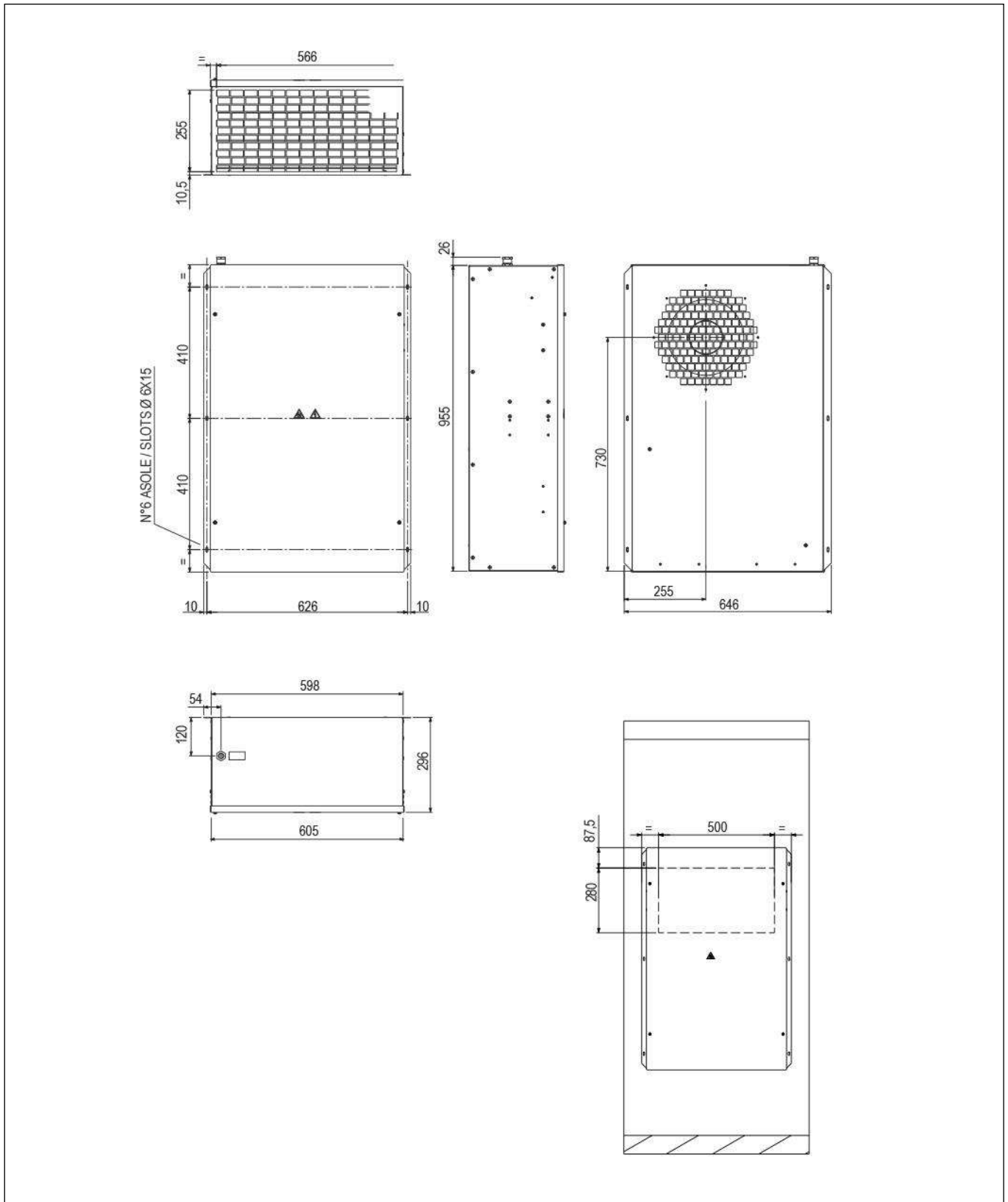
WORKING LOGIC

- 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

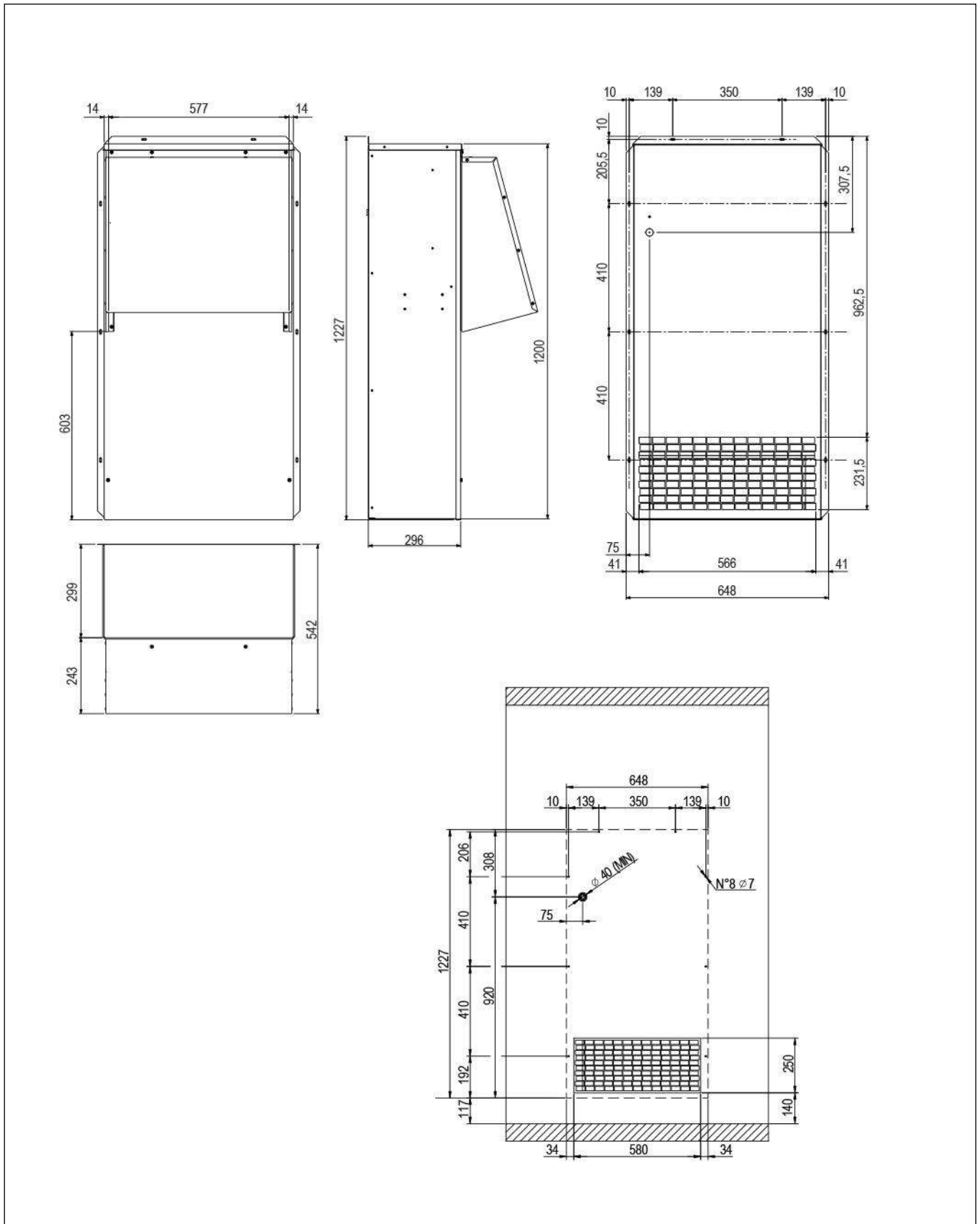
EXAMPLE - WORKING LOGIC  
Temperatures are indicative



**DRAWING FKI UNIT – Dimensions in mm**



DRAWING FKO UNIT – Dimensions in mm

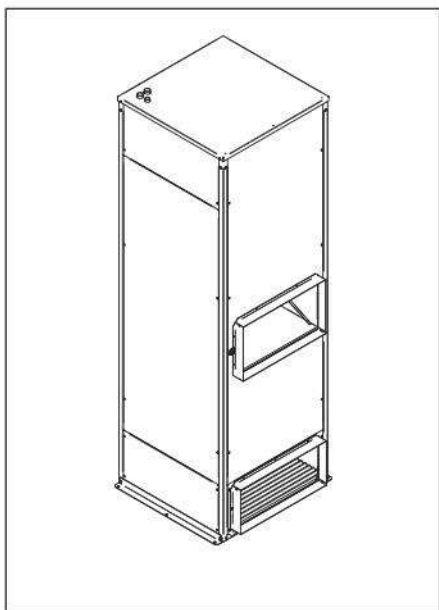


**OPTIONAL ACCESSORIES: 7396023400 / 7396024900 - AIR CONNECTION KIT**

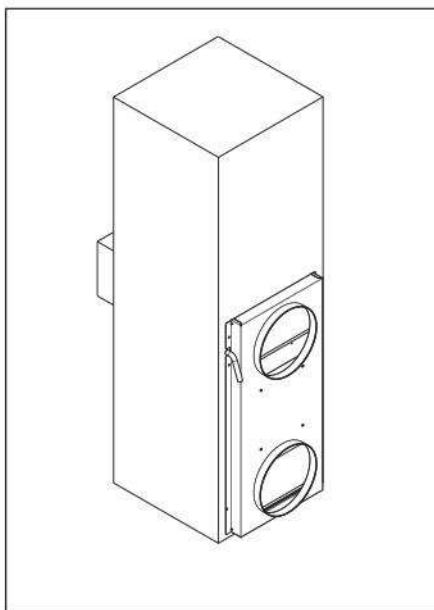
The kit comprises three flanges, one to be installed on the unit and two on the wall.  
The air suction flange is fitted with a metal mesh filter.  
The flexible connection pipes are 1.1 m long as standard. Other lengths are available on request.  
The flanges are sized so as to cover a hole measuring the sizes shown on the installation templates contained in the dimensional drawings for each individual unit.

The accessory is not compatible with kit dima.

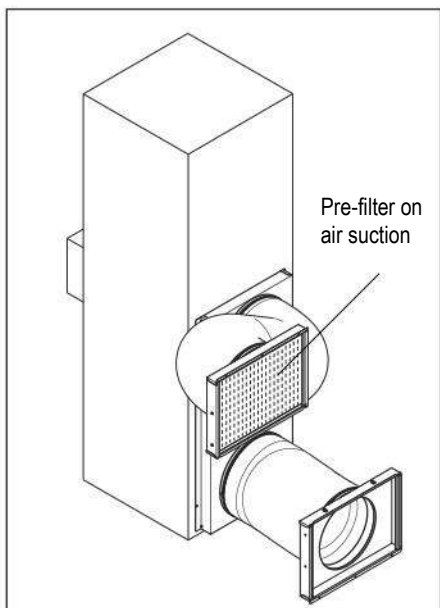
STANDARD UNIT



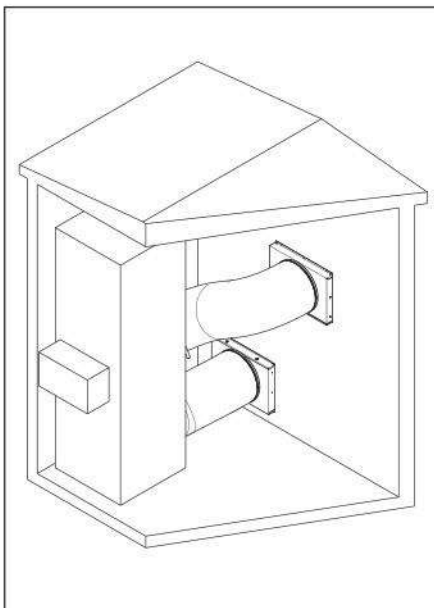
FLANGE OF UNIT



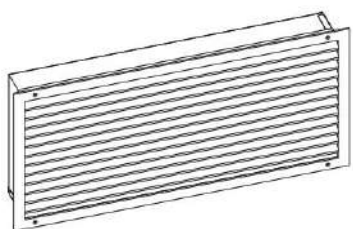
AIR SUCTION AND DISCHARGE FLANGES



INSTALLED UNIT



### OPTIONAL ACCESSORIES: 7396020700 / 7396020800 / 7396020900 / 7396021000 – FRESH AIR SUCTION AND DELIVERY GRILLES

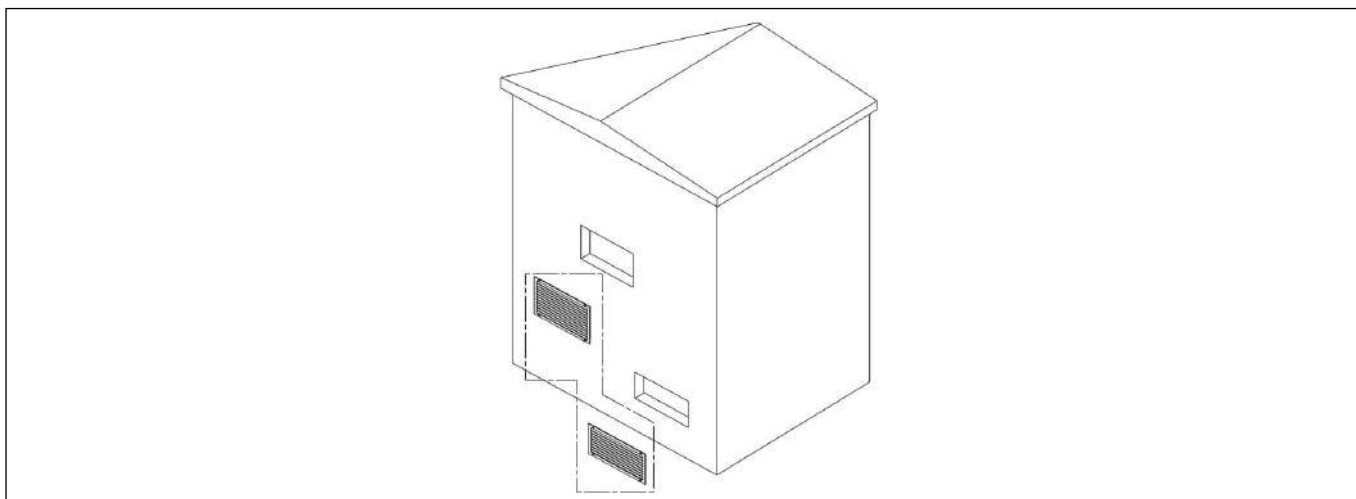


Air grilles kit for ambient air suction and discharge.

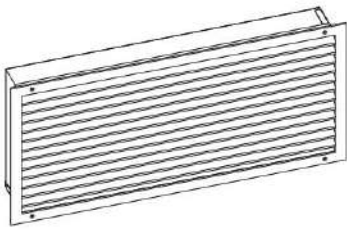
The airfoil profile of the louvers prevents rain from entering and recirculation of hot air between the two grilles, even if aligned vertically.

For the dimensions of the holes on the wall that are compatible with the grilles supplied, see the installation templates included in the dimensional drawings.

The air suction grille can be fitted with a metal mesh filter.



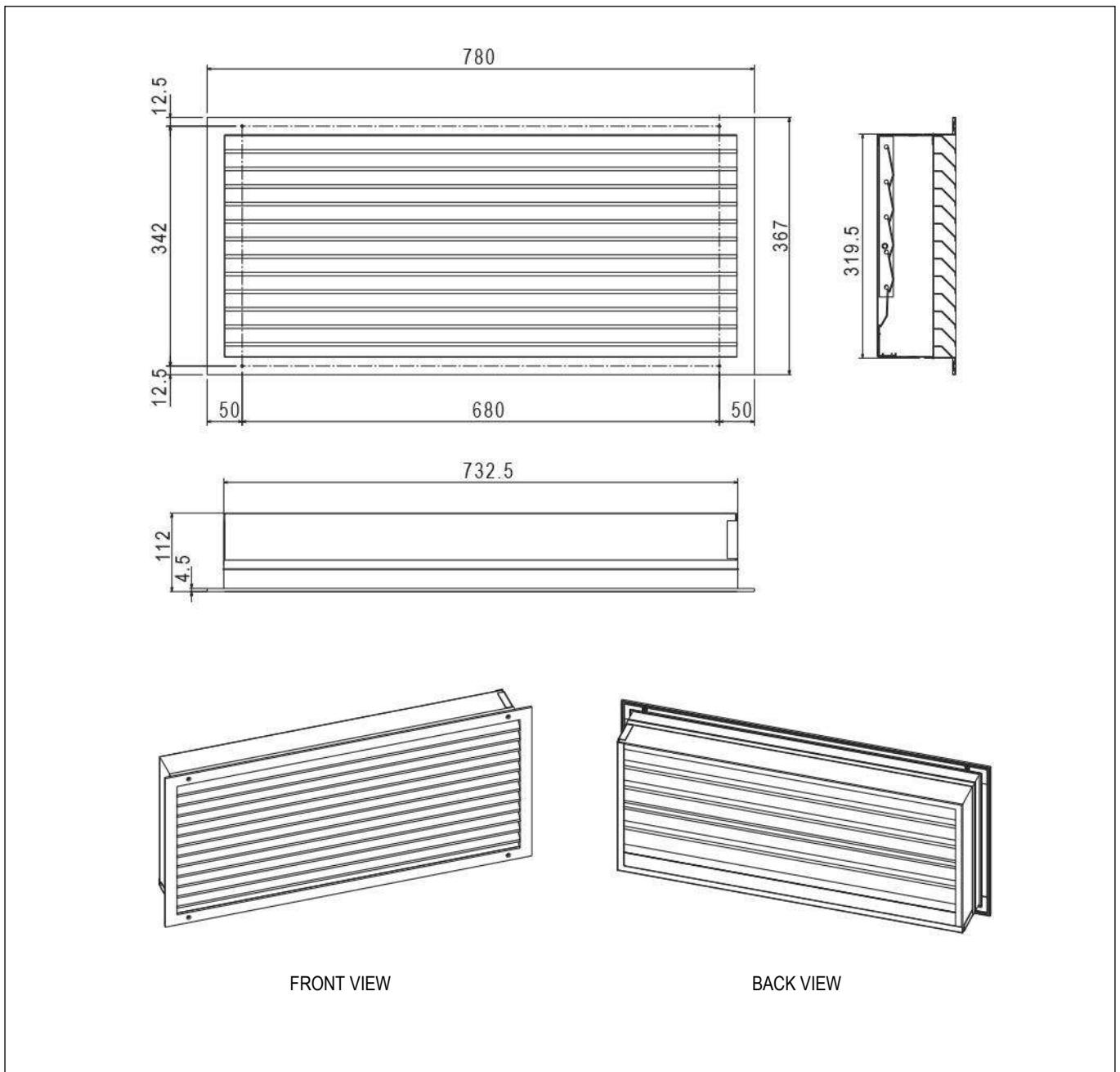
**OPTIONAL ACCESSORIES: 7369009900 - OVERPRESSURE DAMPER**



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.

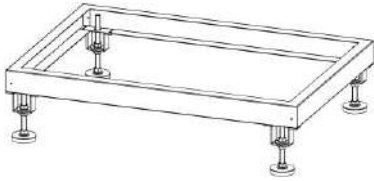
The overpressure relief allows to eject excess air blown into the room during operation in free-cooling or with the use of free-cooler external  
The damper is made totally in aluminum.

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





**OPTIONAL ACCESSORIES: 5596034800 / 5596034900 – BASE FRAME KIT**



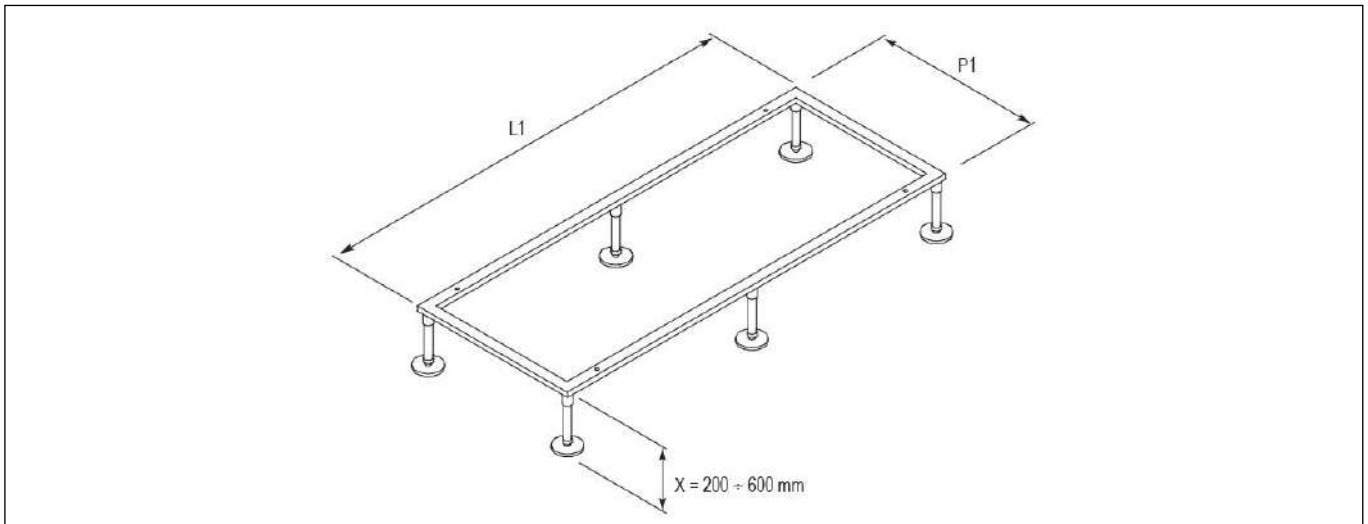
The base frame is recommended for:

- To allow the air-conditioner to be installed before assembling the raised floor
- Totally damp out mechanical vibrations
- Easing the passage of pipes and cables

The base frame is available as an accessory and is adjustable in height, indicated in the figure by the distance X, between 200 and 600 mm.

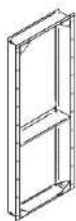
To prevent the transmission of noise and vibrations, an elastic gasket, at least 5 mm thick, should be inserted between the panels of the raised floor and the frame, which must also be insulated from the metallic structure of the floor.

The accessory is supplied in kit. The frame must be fitted by the installer following the instructions shown inside the packaging.



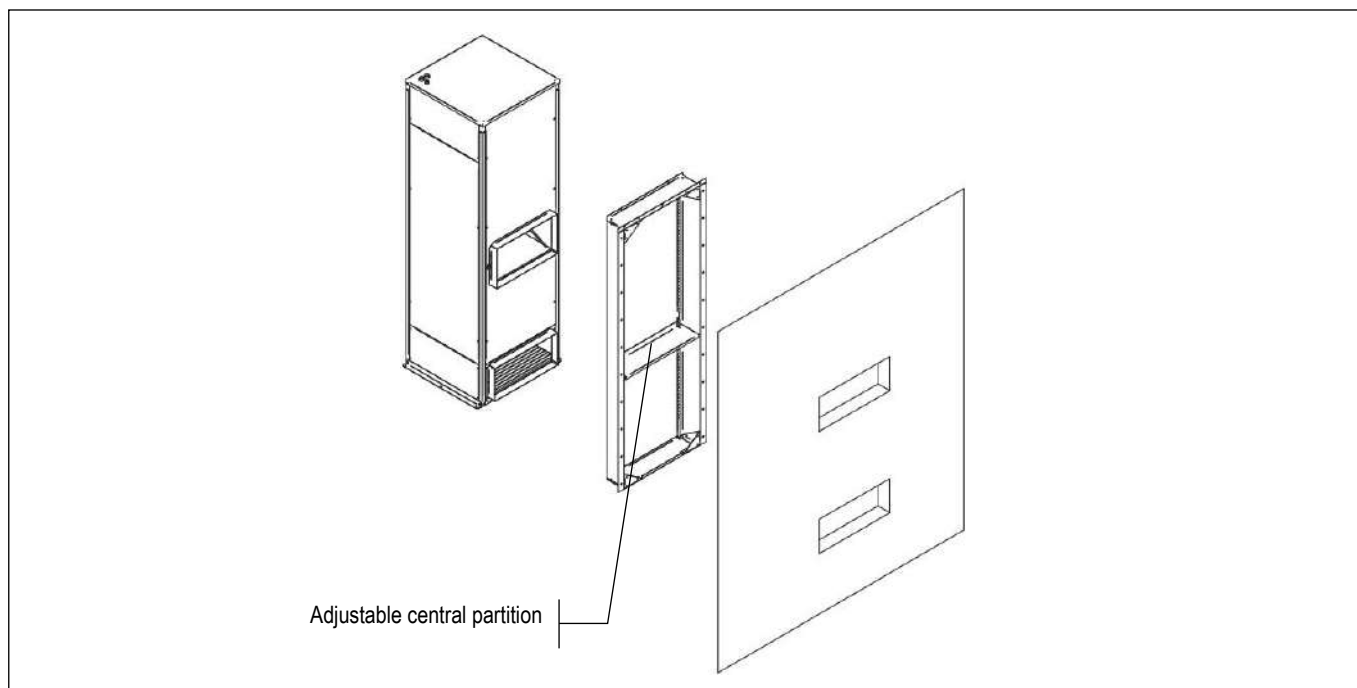
MODEL		0031	0051	0061
L1	mm	660	610	610
P1	mm	620	715	715

### OPTIONAL ACCESSORIES: 7396019400 / 7396019500 – COUPLING FRAME



To connect the units to existing holes on the walls that do not match those required for the unit.

The dima has a central partition adjustable in height.  
The accessory is not compatible with air connection 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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