Data Book

T_sMEXTG00_0721_EN - HFC R32 / R410A

Elca Engine ver.

INVERTER

EEV ELEC. EXP. VALVE

EC FAN

s-MEXT-G00

6-42 kW

Indoor evaporating unit for IT Cooling application.
For connection to Mr. Slim outdoor condensing unit.

R HCFC R-22

R HFC R-410A

(The photo of the unit is indicative and may vary depending on the model)

- FOR SMALL DATA ROOM
- AIR DELIVERY FROM THE BOTTOM OR FROM THE TOP
- SINGLE OR DOUBLE REFRIGERANT CIRCUIT
- AIR SUCTION TEMPERATURE UP TO 35°C
- PLUG-FAN WITH EC ELECTRIC MOTORS
- TOTAL FRONT ACCESSIBILITY
- LAN CONNECTION UP TO 10 UNITS

MITSUBISHI ELECTRIC

Changes for the Better

INSERT HERE YOUR CONTACT DETAILS

s-MEXT-G00

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CERTIFICATIONS

CE MARKING

RoHS Compliant 2011/65/EU

EAC CERTIFICATION
(Russian Federation, Belarus, Kazakhstan)

s-MEXT-G00

Indoor evaporating unit for the close control air conditioning in:

- Small Data Centres
- UPS rooms
- Batteries rooms
- Distribution rooms
- All areas of the Data Centre that need a service of air conditioning.

The “state of the art” in components granting high reliability and close control in temperature following the trend of the thermal load thanks to the BLDC inverter compressor.

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

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

The series is available for operation with **R32** or **R410A refrigerant.**

s-MEXT-G00
Indoor evaporating unit

Outdoor
condensing unit

The s-MEXT-G00 units are designed for operation with Mr. Slim outdoor condensing units in the PUZ versions for refrigerant R32 and PUHZ version for refrigerant R4010A.

For all the technical information of external condensing units, please refer to the Data Book and Manuals of Mr. Slim series.

The extreme flexibility allows top installation that adapts perfectly to every requirement of the plant with 2 types of air supply for the indoor unit:

DOWNFLOW AIR DELIVERY (U - UNDER)

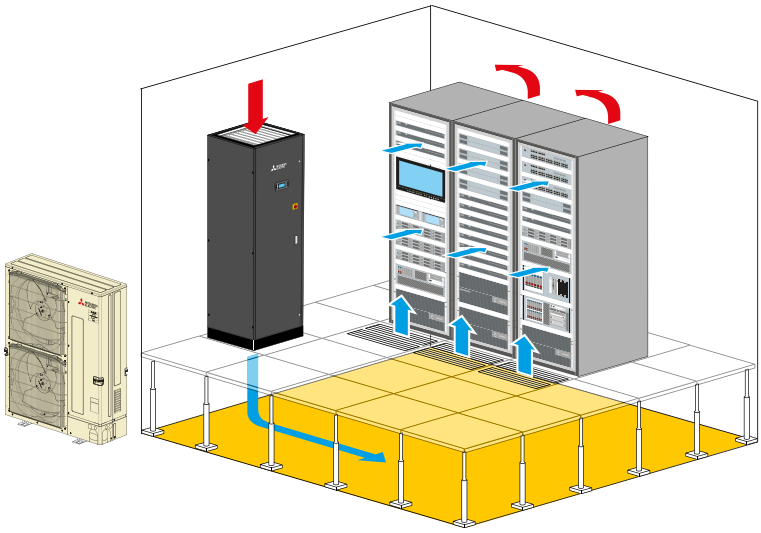
Application suitable for server racks with vented front and rear doors.

The air distribution is from the bottom by means of the plenum between the building floor and the raised floor. This solution is usually applied in hi-tech. air conditioning and it is most favourable when load is uniformly distributed in all areas of the room.

The air distribution is achieved by special tiles placed in front of the racks row, forming cold aisle for air diffusion.

On the rear of the racks is expelled the hot air then aspirated by the unit.

For an optimal installation is advisable to provide the cold aisle containment.



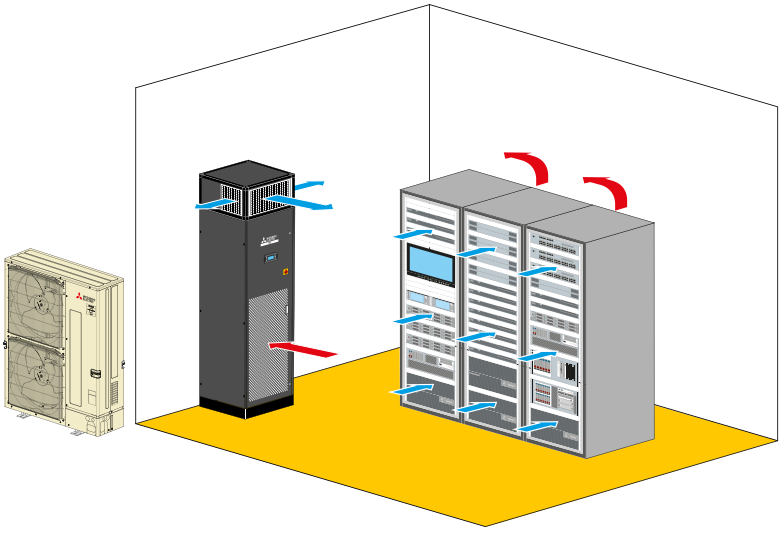
UPFLOW AIR DELIVERY (O - OVER)

Application suitable for server racks with vented front and rear doors.

The air distribution is from the top of the unit directly into the room by a plenum (or duct).

The supply air flow can be directed through the adjustable fins of the plenum grilles.

The system is normally applied where it is not possible to provide a raised floor.



THE R32 REFRIGERANT

The R32 is a pure refrigerant, highly efficient and anticipates with a wide margin the European Directive 517/2014 which prohibits from 2025 the use of refrigerant gas with GWP higher than 750 (for mono-split air conditioners with refrigerant charge lower than 3kg).
The R32 is also characterized by an ODP (Ozone Depletion Potential) index of 0 (zero) and a GWP (Global Warning Potential) value of 675.
Refrigerant gases are classified according to their degree of toxicity and flammability (ISO 817-2014).
The R32 belongs to the "A" class for toxicity and "2L" for the flammability.

The letter "A" or "B", indicates the level of toxicity of the refrigerant.
A: Non toxic refrigerant
B: Toxic refrigerant

The number "1" or "2" or "3" indicates the degree of flammability:
- 1: not flammable
- 2L: low flammability
- 2: flamable
- 3: high flammability

With regard to flammability it is important to underline that the R32 is flammable only in high concentrations.
The triggering occurs only in the presence of a very high energy source, such as a flame with a minimum temperature of 648°C.
Moreover the flame propagation speed is very low, equal to 0.10 m/s.
It should be noted that if the power source is turned off, the flame is extinguished.
The Lower Flammability Limit (LFL Index) is 0.307 kg / m^3.

FOR SAFE USE OF R32
The R32 refrigerant ensures:
- Low toxicity
- A very limited flammable field

By carefully following all the indications of the manufacturer for the choice, installation, operation and maintenance of the machines with R32, you will avoid dangerous or risky situations.

ADVANTAGES OF THE R32
Comparing the characteristics of the R32 refrigerant with the R410A we obtain a series of advantages such as:
- It is more efficient
- At the same cooling capacity, the amount of refrigerant charge is reduced
- Reduces the electrical consumption of the machine
- As pure gas it is easy to load and recover
- Has a significantly reduced environmental impact

WARNING!
R32 is heavier than air – as well as other refrigerants – so tends to accumulate at the base (in vicinity of the floor).
If R32 accumulates around the base, it may reach a flammable concentration in case the room is small.
To avoid ignition, maintain a safe work environment by ensuring appropriate ventilation.
If the refrigerant leaks in a room or area that has insufficient ventilation, refrain from using flames until the work environment is improved by ensuring appropriate ventilation.

INSTALLATION AND MAINTENANCE
All personnel who must interact with the product during the installation and / or maintenance phases MUST BE PROVIDED WITH F-GAS CERTIFICATION (license).

PLANT DESIGN AND CHOICE OF MACHINES WITH R32

In order to reduce the risks associated with the installation and use of machines with R32, a series of information for design and selection of the machines.

CAREFUL EVALUATION AND ADEQUATE INFORMATION MAY REDUCE THE RISK TO 10 TIMES.

CALCULATION OF THE AREA ACCORDING TO THE MAXIMUM REFRIGERANT CHARGE.

The minimum installation surface refers to the most severe condition that equates to the maximum refrigerant charge of the conditioning system.

The maximum charge refers to the refrigerant content of the system depending on the maximum permissible length of the refrigerant pipes connecting the outdoor unit and the indoor unit.

In case of installation with several indoor machines on the same installation, it must be considered for the calculation of a single indoor unit with the highest refrigerant charge.

ELCAWORD SELECTION SOFTWARE

The ELCAWORD selection software automatically proposes the models and quantities of indoor units that can be installed in the room to be conditioned according to the area in m2 of the room.

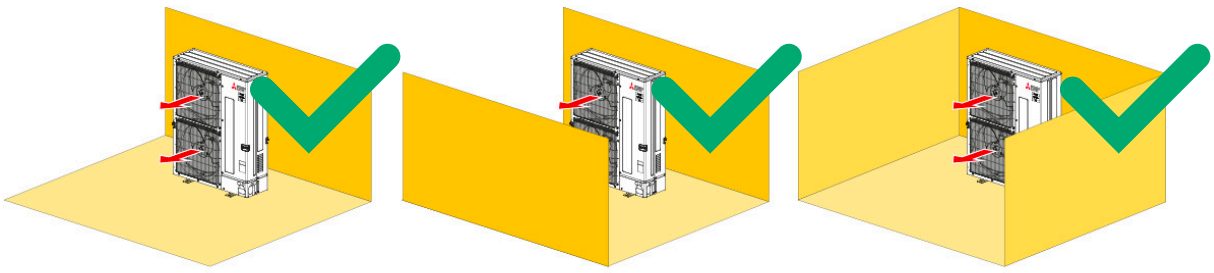
The contribution provided by the software helps to define the system especially in particular conditions, for example with more indoor units installed in the room, where it is necessary to divide the cooling capacity, and therefore the refrigerant charge, on several machines.

ALL THE ABOVE-MENTIONED RESTRICTIONS APPLY NOT ONLY TO NEW INSTALLATIONS BUT ALSO, TO RELOCATIONS AND LAYOUT CHANGES.
IF YOU FACE ANY UNCLEAR SITUATION, PLEASE CONTACT TO FACTORY.

OUTDOOR UNIT

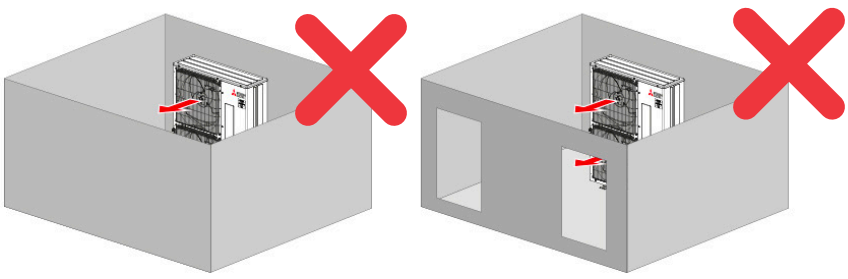
The unit must be installed outdoors, in a ventilated place and completely open at least on one side.

EXAMPLES OF CORRECT INSTALLATIONS



DO NOT INSTALL THE OUTDOOR UNIT IN A SEMIBASEMENT, BASEMENT OR MACHINERY ROOM WHERE THE REFRIGERANT REMAINS IN THE ROOM WHEN IT LEAKS OUT.

EXAMPLES OF INCORRECT INSTALLATIONS



Do not install in semibasement, basement or machinery room

Even if an opening or a louver is present, installation is not allowed

INDOOR UNIT

The units are designed for IT Cooling applications. Essential conditions for compliance with the safe operation are:

The stop valves installed on the refrigerant line inside the unit must only be opened when commissioned.

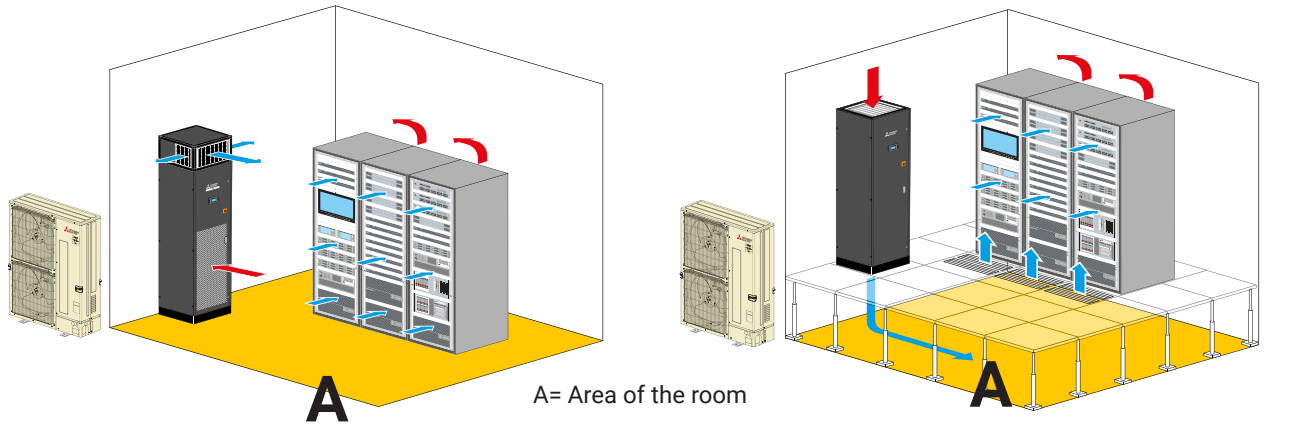
Once started, the machines must always be kept powered.

The machines, even if not in use, keep the fans running at minimum speed once powered

Operations other than those indicated above must be carried out by “informed” personnel in compliance with the instructions contained in the use and maintenance manual of the series.

The installation site has to be compliant with the EN378-1:2016 Location Classification II and Access Category “C” with less than 1 person per 10 m^2.

MINIMUM INSTALLATION AREA



A= Area of the room

		Model s-MEXT-G00						
		006 F1	009 F1	013 F1	022 F2	028 F3	038 F3	044 F3
Area of the room A	≤8 m²	✗	✗	✗	✗	✗	✗	✗
	≥8 m²	✓	✗	✗	✗	✗	✗	✗
	≥15 m²	✓	✓	✓	✗	✗	✗	✗
	≥21 m²	✓	✓	✓	✓	✓	✓	✓

✓ Installable ✗ Not installable

The selection of the machines must be carried out on the machine with the biggest minimum area requested among all those installed in the room.

EXAMPLE OF CHOICE FOR UNITS WITH R32

As can be seen from the tables, beyond a certain surface area of the room there are no limits for installation.

Cooling capacity [kW]	Installation area "A" [m²]	Units quantity [no.]	Unit model	Feasibility	
12	8	1	O 013 F1	Not installable on an area of 8m².	✗
12	**8**	**2**	**O 006 F1**	**Suitable for installation.**	✓
30	14	3	U 009 F1	Not installable on an area of 16m².	✗
30	**16**	**5**	**U 006 F1**	**Suitable for installation.**	✓
45	**26**	**4**	**U 013 F1**	**Suitable for installation.**	✓
45	**26**	**5**	**U 009 F1**	**Suitable for installation.**	✓

OPERATION LOGIC OF THE FAN SYSTEM

For safety purposes with the use of machines with R32 refrigerant charge, it is necessary to circulate room air by always operating the fan of indoor unit.

This allows, in case of refrigerant leak, to minimize the risks of flammability arising from the possible concentration of the refrigerant gas.

ESSENTIAL CONDITION FOR A CORRECT OPERATION, WHEN ONCE WORKING, THE MACHINES MUST ALWAYS BE KEPT SUPPLIED TO THE ELECTRICAL POWER SUPPLY.

The indoor unit fan will therefore always be active at minimum speed even in particular operating conditions such as:

- When the room temperature set point is reached.
- By unit stop from keyboard.
- By unit stop from command on the LAN network.
- In case of failure of the microprocessor control system of the indoor unit.
- In case of external unit stop also via line disconnector.
- In case of failure of the outdoor unit.
- In case of intervention of a gas leak detection system - the system is stopped except for the indoor unit fan.

Operating condition with smoke / fire alarm intervention.

- In case of smoke / fire alarm intervention, the control completely stops the system, including continuous fan operation.
- In the case of combined smoke / fire alarm and gas leak alarm, the system completely stops the system, including continuous fan operation.

INDOOR UNIT WITH FREE-COOLING PLENUM

The logic is the same as previously described. Furthermore, if a gas leak detection system intervenes, the system opens the external air damper by ventilating the room with new air and sets the fan to the maximum speed.

THE s-MEXT-G00 SERIES

The units has been designed for a quick and easy setting up. The installation requires only electrical and refrigerant connections.

The series is suitable for operation both with R32 refrigerant and with R410A refrigerant.

A set of accessories allows to control the room temperature even in heating by electric heaters and, if necessary, also the humidity control by a modulating steam humidifier.

	UNDER	OVER
Model 006 **Size F1** Air flow 2000 m³/h Single refrigerant circuit **R32:** Nominal cooling capacity 6,82 kW **R410A:** Nominal cooling capacity 6,79 kW		
Model 009 **Size F1** Air flow 2500 m³/h Single refrigerant circuit **R32:** Nominal cooling capacity 10,1 kW **R410A:** Nominal cooling capacity 10,1 kW		
Model 013 **Size F1** Air flow 2800 m³/h Single refrigerant circuit **R32:** Nominal cooling capacity 11,9 kW **R410A:** Nominal cooling capacity 11,9 kW		
Model 022 **Size F2** Air flow 5000 m³/h Single refrigerant circuit **R32:** Nominal cooling capacity 22,6 kW **R410A:** Nominal cooling capacity 22,5 kW		

Model 028
Size F3
Air flow 7600m³/h
Single refrigerant circuit

R32: Nominal cooling capacity 28,0 kW
R410A: Nominal cooling capacity 27,0 kW

Model 038
Size F3
Air flow 8800 m³/h
Double refrigerant circuit

R32: Nominal cooling capacity 39,0 kW
R410A: Nominal cooling capacity 38,8 kW

Model 044
Size F3
Air flow 10.000 m³/h
Double refrigerant circuit

R32: Nominal cooling capacity 42,5 kW
R410A: Nominal cooling capacity 42,4 kW

Matching table between evaporating s-MEXT unit and Mr. Slim condensing unit.

s-MEXT-G00	Mr. SLIM	
	R32	R410A
Model 006 - Size F1	1x PUZ-ZM 60 VHA	1x PUHZ-ZRP 60 VHA2
Model 009 - Size F1	1x PUZ-ZM 100 VKA	1x PUHZ-ZRP 100 VHA3
Model 013 - Size F1	1x PUZ-ZM 125 VKA	1x PUHZ-ZRP 125 VKA3
Model 013 - Size F1	1x PUZ-ZM 125 YKA	1x PUHZ-ZRP 125 YKA3
Model 022 - Size F2	1x PUZ-ZM 250 YKA	1x PUHZ-ZRP 250 YKA3
Model 028 - Size F3	1x PUZ-ZM 250 YKA	1x PUHZ-ZRP 250 YKA3
Model 038 - Size F3	2x PUZ-ZM 200 YKA	2x PUHZ-ZRP 200 YKA3
Model 044 - Size F3	2x PUZ-ZM 250 YKA	2x PUHZ-ZRP 250 YKA3

PRODUCT FEATURES AND BENEFITS

- Operation with R32 or R410A
- EER up to 5.2 at partial load
- Improvement of the control software with advanced logic
- Fast and easy installation
- Plug fans with EC electric motors and impeller in aluminium or composite material, which guarantees a reduction of power consumption
- New maintenance-free electric motor of the fan
- Variable air flow according to the load
- Models 038 and 044 are with double refrigerant circuit
- Continuous fan operation to ensure safety in the event of refrigerant gas leakage

F-GAS DIRECTIVE

The units highlighted in this publication contain fluorinated greenhouse gases.

- HFC R32 [GWP_{100}675]
- HFC R410A [GWP_{100}2088]

MODEL IDENTIFICATION

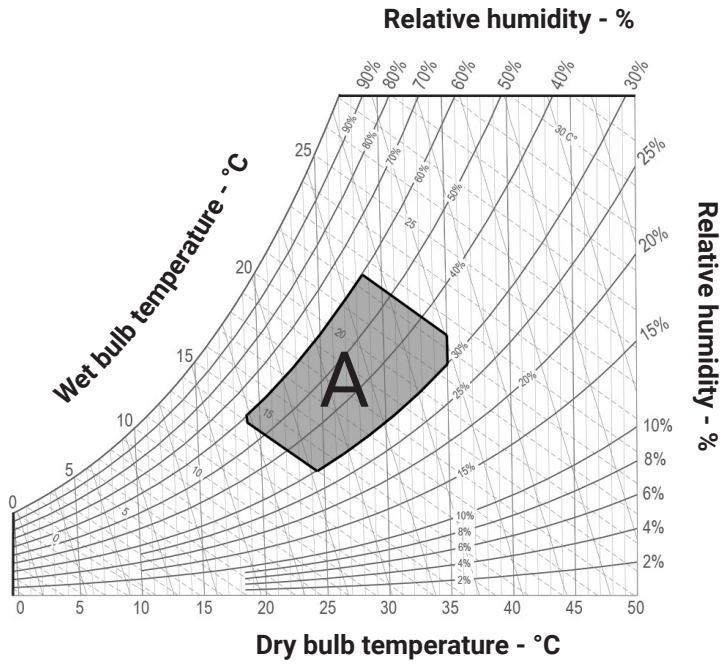
s-MEXT-G00 DX O 022 S F2 <H>

INDOOR UNIT:

s-MEXT-G00	**Series**
DX	**Unit type** DX – direct expansion, air cooled
O	**Air delivery** O = over – upflow air delivery U = under – downflow air delivery
022	**Model / Cooling capacity (kW) at nominal conditions**
S	**Refrigerant circuit** S = single D = double
F2	**Cabinet size**
<H>	**RoHS II compliant (Directive 2011/65/UE)**

STORING TEMPERATURE

If the machine is not installed on receipt and is stored for a long time, store it in a protected place, at temperatures ranging between -30°C and 46°C in absence of superficial condensation and direct sun light.



AREA "A". Machine operating envelope.

ROOM AIR CONDITIONS

Room air temperature:	
14°C	Minimum temperature with wet bulb
22.5°C	Maximum temperature with wet bulb
19°C	Minimum temperature with dry bulb
35°C	Maximum temperature with dry bulb

Room air humidity:	
30%RH	Minimum relative humidity
60%RH	Maximum relative humidity

OUTSIDE AIR TEMPERATURE (dry bulb):

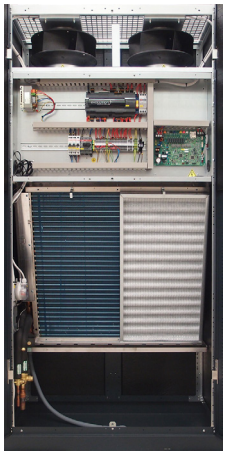
46°C	Maximum outside air temperature;
-5°C	Minimum outside air temperature;
-15°C	Minimum outside air temperature with optional "wind-baffle" installed.

All the values are indicative. The working temperatures are influenced by a series of variables as:

- Working conditions;
- Thermal load;
- Set of the microprocessor control;
- Installation pipe length - distance between indoor and outdoor unit.

POWER SUPPLY

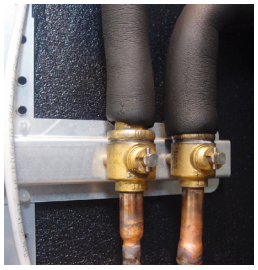
± 10%	Maximum tolerance of the nominal supply voltage (V);
± 2%	Maximum unbalancing of the phases.



MAIN COMPONENTS - INDOOR UNIT

FRAMEWORK

- Base and frame in galvanized steel, painted with epoxy powders. Colour RAL 7016.The inner frame is provided with seals for the panels;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 7016 hammered;
- Panels insulated with polyurethane foam based on polyester polyol with melted protective film and seals to ensure air tight. Fire resistance HF1 – UL94;
- Hinged front panels with key fasteners and removable lateral and back side panels;
- Total front routine maintenance;
- Compartment for electrical panel on unit front for direct access to control and regulation devices;
- Air flow UNDER version: Air intake from the top and air delivery from the bottom;
- Air flow OVER version: Air intake from the front through honeycomb type grille and air delivery from the top with protection guard grille.



AIR FILTERS SECTION

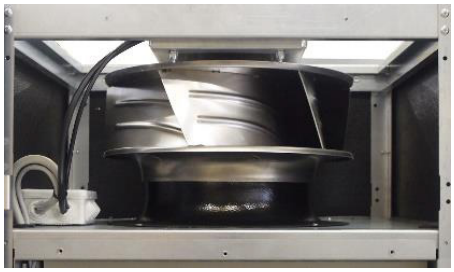
- Washable air filters with COARSE 60% efficiency (according to ISO EN 16890) with cells in synthetic fibre and metallic frame;
- Air filters access on unit front;
- Clogged filters sensor with differential pressure switch on air side.

COOLING SECTION

- Heat exchanger coil with internally corrugated 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 peraluman;
- Condensate tray in stainless steel with PVC flexible discharge pipe;
- Temperature sensor on air return/delivery.
- Additional condensing tray in peraluman for Under version;
- Water leakage detector for water presence alarm. For Over version the sensor is installed on the base inside the unit. For Under version the sensor is supplied to be installed at customer care in the additional condensing tray.

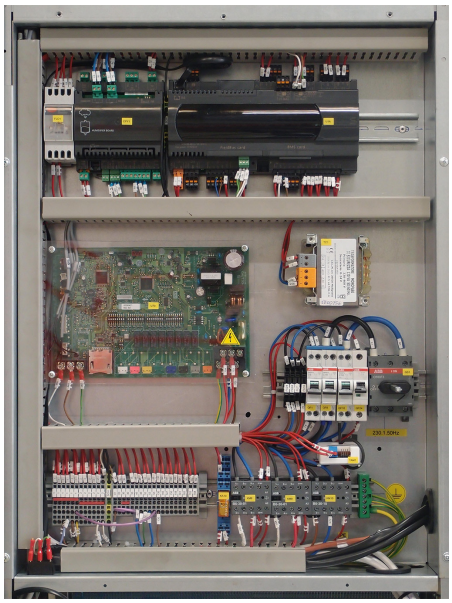
REFRIGERANT CIRCUIT

- Sealing charge with nitrogen;
- Valves on liquid / suction lines for coupling to remote outdoor unit;
- Low pressure transducer;
- Access valve 5/16” SAE with core and cap for charge plug on inlet and outlet coil side.



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 aluminium or in composite material exempt from rust formation;
- Brushless type synchronous EC motor with integrated electronic commutated system;
- Fans speed control with proportional signal 0-10V;
- Fan protection guard grille on discharge side for Over versions;
- Available external static pressure from 20 Pa up to max, adjustable with air flow rate;
- Continuous fan operation, even in standby mode, to guarantee a refrigerant mix in case of leak. The only way to stop the fan is to turn off the power supply, or in case of fire alarm;
- Air flow loss alarm with pressure-switch connected to pressure probe on the nozzle to set alarm in caso of insufficienct air flow rate, to garateen an increased security in case of refrigerant leak.



ELECTRICAL PANEL

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

- Main switch with door lock safety on front panel;
- Thermal-magnetic circuit breaker for supply fan;
- Transformer for auxiliary circuit and microprocessor supply;
- Numbered electric cables;
- Interface board (PAC IF) for connection to outdoor unit (one board for each outdoor unit);
- Terminals for remote enabling, General Alarm signal and machine status;
- Power supply (power supply is independent from the outdoor unit):
  - 230/1/50 for machine size F1 and F2
  - 400/3+N/50 form machine size F3

SAFETY DEVICES

- Automatic system to disconnect the power supply to fan in case of fire or smoke alarm (detectors suppled as optional);
- Leak sensor input (not supplied with the unit);
- Pressure switch for air flow loss alarm;
- Water leakage detector for water presence alarm;
- Additional condensing tray in peraluman for Under version;
- Metallic brackets to bind the unit.

MICROPROCESSOR CONTROL SYSTEM

The microprocessor control of the indoor unit manages the whole system, including the request to the outdoor unit.
INDOOR UNIT: s-MEXT-G00
The indoor unit is equipped with the controller connected to a 6 keys keyboard with graphic display on which all information in English language or easily identifiable symbols are displayed.
The controller 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 200 events.

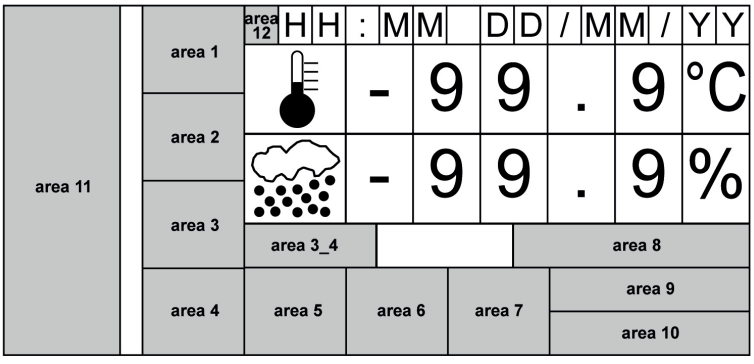
INDOOR UNIT Controller

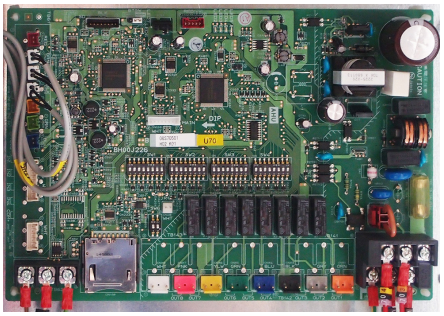
INDOOR UNIT Keyboard and Display

DISPLAY - KEYBOARD FUNCTIONS

	ALARAM	Alarm presence with red light. Push for alarm description. In case of more alarms scroll by UP / DOWN.
Prg	PRG	Menu list scrolled by UP/DOWN: Unit; Set-point; In/Out; Clock; History; User; Service; Factory. ENTER to execute.
Esc	ESC	Home. Used to come back to the previous menu level or to the main screen.
	UP DOWN	Changes pages and values of sets. By pressing in HOME mask, the synoptic of the main controls is displayed.
	ENTER	Moving the cursor on adjustable Program(s) fields to confirm the changes. Press ENTER to get out the fields.

DISPLAY - MAIN MASK





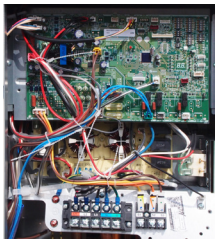
INDOOR UNIT
Interface card (PAC IF)

The main mask shows time, date, room temperature and humidity values (if the relative probe is present) and areas for displaying operating and alarm status with dedicated icons:

Area 1: Status of the unit: on / off
Area 2: Status detail
Area 3: Type of event (only in case of an event)
Area 3_A: Code and type of event
Area 4: Active cooling devices
Area 5: Active free-cooling devices
Area 6: Active humidity devices
Area 7: Active heating devices
Area 8: on / off parameters
Area 9: BMS address
Area 10: LAN address
Area 11: Schematic representation of units

Indoor unit is connected with the outdoor unit via an interface card that allows data transfer and communication between the control systems.

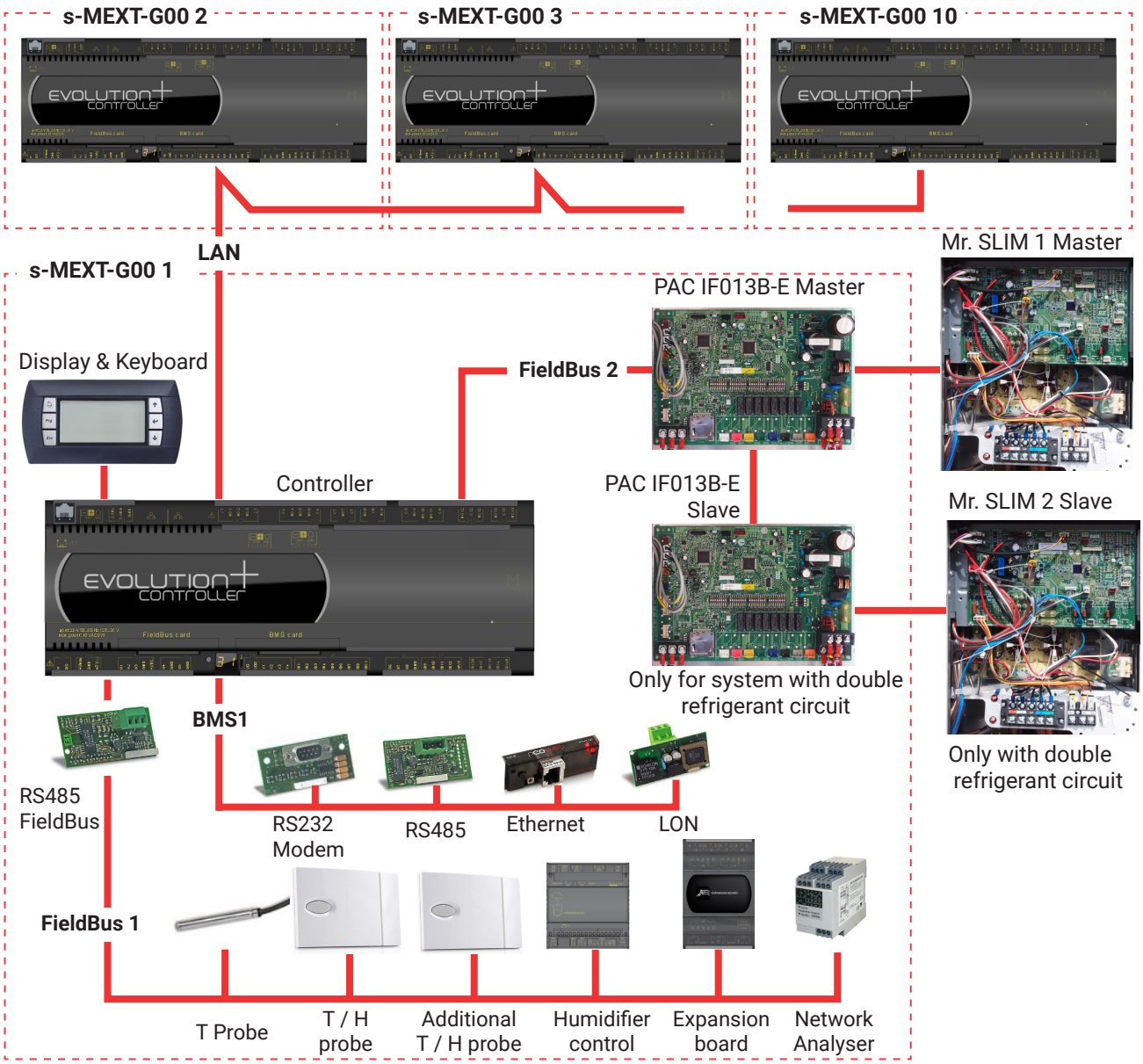
UNIT COMPONENTS



OUTDOOR UNIT
Electronic card

OUTDOOR UNIT: Mr. SLIM
The unit is controlled by a dedicated electronic card connected with the inverter system for the compressor speed management.

THE SYSTEM DIAGRAM



CONNECTIVITY
BMS 1: connection to BMS via serial port:
- ModBUS/ RS 485;
- RS232
- LON;
- BACnet per Ethernet - SNMP - TCP/IP;

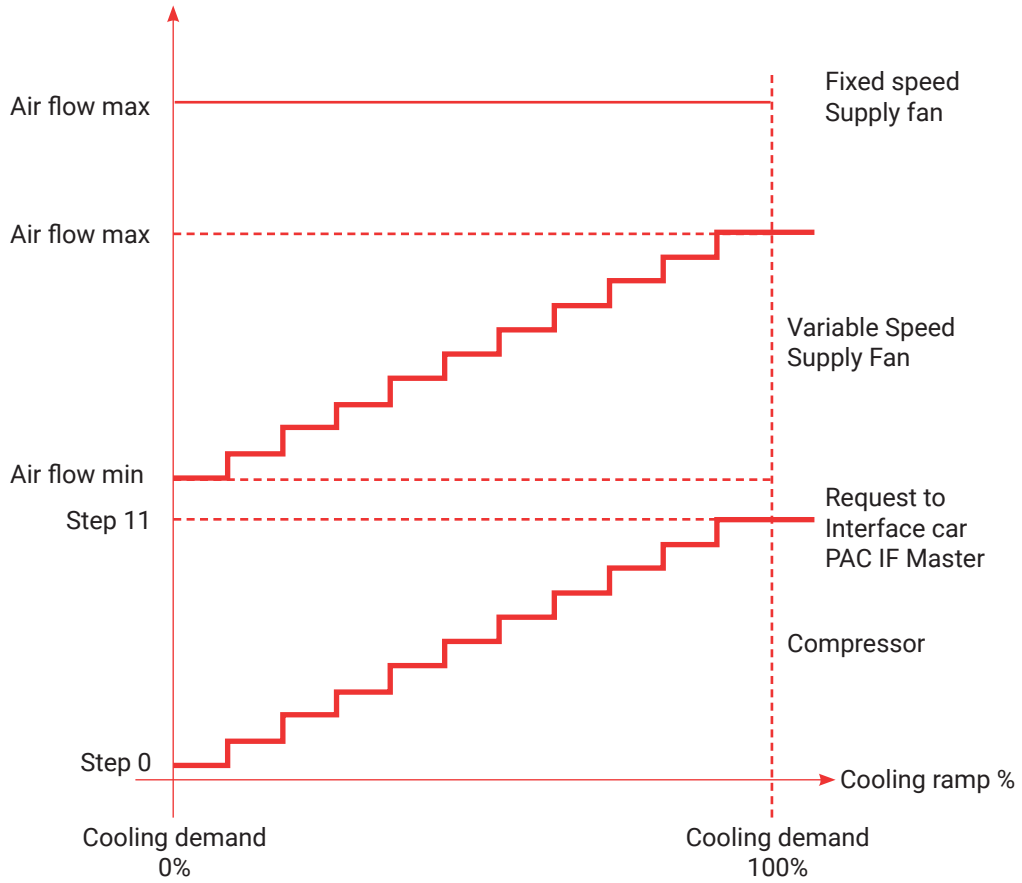
Fieldbus 1: MODBUS serial port for probes, transducers connection or other devices;
Fieldbus 2: MODBUS serial port for connection to interface card PAC IF013B-E;
LAN: LAN network up to 10 units.

LAN NETWORK (max 10 units)
The LAN connection allows to perform the following functions:
- Balance operating hours among the different units by rotating the reserve unit (Stand-by);
- Turn-on the reserve unit in case other units off due to alarm, maintenance or power feed interruption;
- Turn-on reserve unit to offset the excessive thermal load;
- Checking up to 10 units with a single user terminal (shared user terminal);

Electrical connections are in electrical panel connecting terminals.

TEMPERATURE CONTROL IN COOLING MODE
The request for cooling is calculated by the indoor unit based on the value of the supply air temperature (regulation on supply air temperature) with PID regulator (0-100%).
The request is converted into 11 steps for the compressor management.
The controller of the indoor unit sends the signal corresponding to the cooling capacity required to the PAC IF card which transmits the request to the outdoor unit

AIR FLOW CONTROL IN COOLING MODE
A constant air flow is maintained, independently of the control signal (fixed speed supply fan).
Alternatively, the air flow modulates according to the cooling request (variable speed supply fan).



TEMPERATURE PROBE ON AIR INTAKE/SUPPLY

Temperature probe installed on the air return and delivery for temperature control.

CLOGGED FILTERS

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

Control range:	0.3 … 4.0 mbar (30 … 400 Pa)
Differential for intervention:	0.15 mbar (15 Pa)

AIR FLOW LOSS ALARM

The system includes a differential pressure switch installed in the electrical panel or in the front compartment of the indoor unit and the plastic hoses for the relief of the pressure in fan mouth.

Control range:	0.2 … 2.0 mbar (20 … 200 Pa)
Differential for intervention:	0.1 mbar (10 Pa)

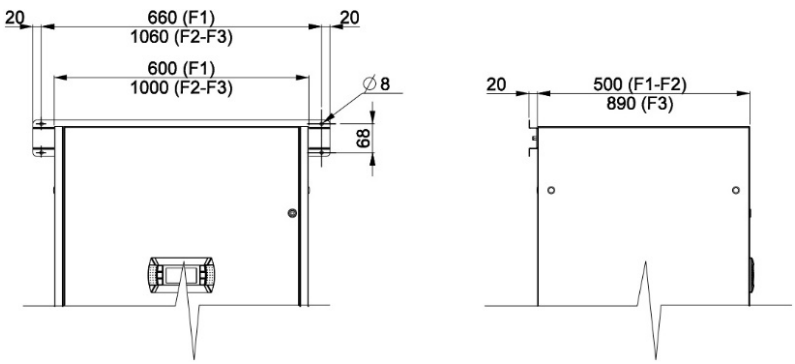
Supplied with the sensor set at fixed point of 0.2mbar, no availability to change it.

WATER LEAKAGE DETECTOR

The system includes an electronic relay installed in the electrical panel of the indoor machine.
The electrical connections for the probe and the alarm contact are present in the indoor machine's terminal board.
Sensor is installed inside unit for Over flow version and supplied to be connected and installed at customer care for Under flow units.

UNIT BIND BRACKET

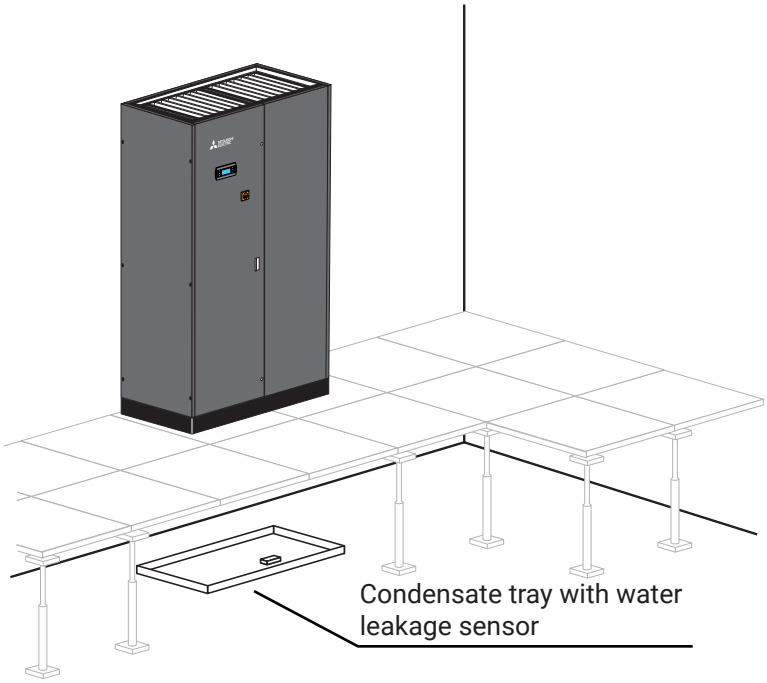
The bracket is supplied in mounting kit.
This bracket is supplied complete with fixing bolts to the machine.
This is a safety device that must be installed together with the unit and connected to a structural part in the installation site (wall, structure, etc.) to prevent the risk of unit overturning due to external causes (accidental impact, earthquake, etc.).
Wall fixing screws not supplied.

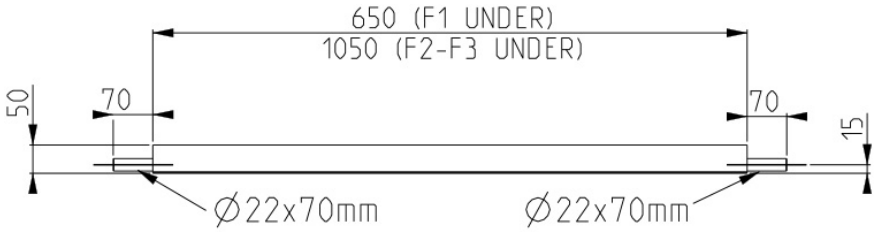


Dimensions in millimetres

CONDENSATE TRAY (only UNDER version)

Additional condensing tray for Under flow version in peraluman.
This component must be considered as a safety device to install in the floor under the unit in the event of water leaks.
The water leakage sensor is supplied to be installed at customer care in the additional condensing tray.
The tray is equipped with a water drainage system Ø 22mm.





Dimensions in millimetres

TECHNICAL DATA – R32

MODEL		006	009	013		022	028
SIZE		F1	F1	F1		F2	F3
VERSION (1)		U / O	U / O	U / O		U / O	U / O
OUTDOOR UNIT							
Quantity	No.	1	1	1	1	1	1
Model	PUZ-ZM	60 VHA	100 VKA	125 VKA	125 YKA	250 YKA	250 YKA
Power input (2)	kW	1.25	2.00	2.94	2.94	6.41	9.67
Power Supply	V/Ph/Hz	230/1/50	230/1/50	230/1/50	400/3+N50	400/3+N/50	400/3+N50
Power supply wiring cable (7)	No. x mm2	3G4	3G4	3G4	5G1.5	5G6	5G6
INDOOR UNIT							
COOLING CAPACITY (2)							
Total	kW	6.82	10.1	11.9		22.6	28.0
Sensible	kW	6.18	8.91	10.2		19.3	26.2
SHR (3)		0.91	0.88	0.86		0.85	0.94
System EER (nominal)		4.67	4.30	3.49		3.18	2.68
"EC" SUPPLY FAN	No.	1	1	1		2	1
Air flow	m^3/h	2000	2500	2800		5000	7600
Nominal external static pressure	Pa	20	20	20		20	20
Maximum external static pressure	Pa	208	22	110		21	305
Power input (4)	kW	0.21	0.35	0.47		0.70	0.64
INDOOR UNIT ELECTRICAL DATA							
Nominal absorbed current	A	1.5	2.1	2.7		3.0	2.1
Starting current (SA)	A	2.0	2.0	2.8		3.3	3.8
Max absorbed current (FLA)	A	2.3	2.3	2.8		3.9	3.8
Power input Electrical Panel	kW	0.14	0.14	0.14		0.14	0.14
SOUND LEVEL ISO 3744 (5)							
Pressure level	dB(A)	53	57	61		60	60
Power level	dB(A)	69	73	77		76	76
AIR FILTERS	No.	1	1	1		2	4
Extended filtering surface	m^2	0.68	0.68	0.68		1.05	1.76
Efficiency (ISO EN 16890)	COARSE	60%	60%	60%		60%	60%
REFRIGERANT CIRCUITS	No.	1	1	1		1	1
POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	230/1/50		230/1/50	400/3+N/50
DIMENSIONS							
Length	mm	600	600	600		1000	1000
Depth	mm	500	500	500		500	890
Height	mm	1980	1980	1980		1980	1980
NET WEIGHT Over	kg	103	106	110		165	237
NET WEIGHT Under	kg	110	115	120		175	247
CONNECTIONS							
Refrigerant pipes: Gas - Liquid	Ø Inch	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"		1" - 1/2"	1" - 1/2
Condensate (6)	Ø mm	19	19	19		19	19
Power supply wiring cable (7)	No. x mm2	3G1.5	3G1.5	3G1.5		3G1.5	5G1.5

TECHNICAL DATA – R32

MODEL		038	044
SIZE		F3	F3
VERSION (1)		U / O	U / O
OUTDOOR UNIT			
Quantity	No.	2	2
Model	PUZ-ZM	200 YKA	250 YKA
Power input (2)	kW	2x 4.73	2x 6.41
Power Supply	V/Ph/Hz	400/3+N50	400/3+N/50
Power supply wiring cable (7)	No. x mm2	5G6	5G6
INDOOR UNIT			
COOLING CAPACITY (2)			
Total	kW	39.0	42.5
Sensible	kW	33.6	35.3
SHR (3)		0.86	0.83
System EER (nominal)		3.58	2.88
"EC" SUPPLY FAN	No.	1	1
Air flow	m^3/h	8800	10000
Nominal external static pressure	Pa	20	20
Maximum external static pressure	Pa	129	20
Power input (4)	kW	1.43	1.96
INDOOR UNIT ELECTRICAL DATA			
Nominal absorbed current	A	2.1	2.8
Starting current (SA)	A	3.8	3.8
Max absorbed current (FLA)	A	3.8	3.8
Power input Electrical Panel	kW	0.14	0.14
SOUND LEVEL ISO 3744 (5)			
Pressure level	dB(A)	63	67
Power level	dB(A)	79	83
AIR FILTERS	No.	4	4
Extended filtering surface	m^2	1.76	1.76
Efficiency (ISO EN 16890)	COARSE	60%	60%
REFRIGERANT CIRCUITS	No.	2	2
POWER SUPPLY	V/Ph/Hz	400/3+N/50	400/3+N/50
DIMENSIONS			
Length	mm	1000	1000
Depth	mm	890	890
Height	mm	1980	1980
NET WEIGHT Over	kg	237	237
NET WEIGHT Under	kg	247	247
CONNECTIONS			
Refrigerant pipes: Gas - Liquid	Ø Inch	1" - 3/8"	1" - 1/2"
Condensate (6)	Ø mm	19	19
Power supply wiring cable (7)	No. x mm2	5G1.5	5G1.5

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

1. U = Under, downflow / O = Over, upflow
2. Gross value. Characteristics referred to entering air at 27°C-47% RH; Ambient temperature 35°C; ESP=20Pa; Connection pipes length 5m;
3. SHR = Sensible cooling capacity / Total cooling capacity.
4. Corresponding to the nominal ESP=20Pa.
5. Sound pressure level on air return at 1m.
6. Rubber pipe – referred to internal diameter.
7. Minimum section of the power cable for units without accessories.

These units contain <HFC R32 [GWP_{100} 675]> fluorinated greenhouse gas.

TECHNICAL DATA – R410A

MODEL		006	009	013		022	028
SIZE		F1	F1	F1		F2	F3
VERSION (1)		U / O	U / O	U / O		U / O	U / O
OUTDOOR UNIT							
Quantity	No.	1	1	1	1	1	1
Model	PUHZ-ZRP	60 VHA2	100 VKA3	125 VKA3	125 YKA3	250 YKA3	250 YKA3
Power input (2)	kW	1.53	2.17	3.49	3.49	7.11	10.93
Power Supply	V/Ph/Hz	230/1/50	230/1/50	230/1/50	400/3+N50	400/3+N/50	400/3+N50
Power supply wiring cable (7)	No. x mm2	3G4	3G4	3G4	5G1.5	5G6	5G6
INDOOR UNIT							
COOLING CAPACITY (2)							
Total	kW	6.79	10.1	11.9		22.5	27.0
Sensible	kW	6.28	9.00	10.3		19.5	25.9
SHR (3)		0.92	0.89	0.87		0.87	0.96
System EER (nominal)		3.90	4.01	3.01		2.88	2.31
“EC” SUPPLY FAN	No.	1	1	1		2	1
Air flow	m^3/h	2000	2500	2800		5000	7600
Nominal external static pressure	Pa	20	20	20		20	20
Maximum external static pressure	Pa	208	22	110		21	305
Power input (4)	kW	0.21	0.35	0.47		0.70	0.64
INDOOR UNIT ELECTRICAL DATA							
Nominal absorbed current	A	1.5	2.1	2.7		3.0	2.1
Starting current (SA)	A	2.0	2.0	2.8		3.3	3.8
Max absorbed current (FLA)	A	2.3	2.3	2.8		3.9	3.8
Power input Electrical Panel	kW	0.14	0.14	0.14		0.14	0.14
SOUND LEVEL ISO 3744 (5)							
Pressure level	dB(A)	53	57	61		60	60
Power level	dB(A)	69	73	77		76	76
AIR FILTERS	No.	1	1	1		2	4
Extended filtering surface	m^2	0.68	0.68	0.68		1.05	1.76
Efficiency (ISO EN 16890)	COARSE	60%	60%	60%		60%	60%
REFRIGERANT CIRCUITS	No.	1	1	1		1	1
POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	230/1/50		230/1/50	400/3+N/50
DIMENSIONS							
Length	mm	600	600	600		1000	1000
Depth	mm	500	500	500		500	890
Height	mm	1980	1980	1980		1980	1980
NET WEIGHT Over	kg	103	106	110		165	237
NET WEIGHT Under	kg	110	115	120		175	247
CONNECTIONS							
Refrigerant pipes: Gas - Liquid	Ø Inch	5/8” - 3/8”	5/8” - 3/8”	5/8” - 3/8”		1” - 1/2”	1” - 1/2”
Condensate (6)	Ø mm	19	19	19		19	19
Power supply wiring cable (7)	No. x mm2	3G1.5	3G1.5	3G1.5		3G1.5	5G1.5

MODEL		038	044
SIZE		F3	F3
VERSION (1)		U / O	U / O
OUTDOOR UNIT			
Quantity	No.	2	2
Model	PUHZ-ZRP	200 YKA3	250 YKA3
Power input (2)	kW	2x 5.44	2x 7.11
Power Supply	V/Ph/Hz	400/3+N50	400/3+N/50
Power supply wiring cable (7)	No. x mm2	5G6	5G6
INDOOR UNIT			
COOLING CAPACITY (2)			
Total	kW	38.8	42.4
Sensible	kW	34.0	37.5
SHR (3)		0.88	0.88
System EER (nominal)		3.15	2.62
"EC" SUPPLY FAN	No.	1	1
Air flow	m^3/h	8800	10000
Nominal external static pressure	Pa	20	20
Maximum external static pressure	Pa	129	20
Power input (4)	kW	1.43	1.96
INDOOR UNIT ELECTRICAL DATA			
Nominal absorbed current	A	2.1	2.8
Starting current (SA)	A	3.8	3.8
Max absorbed current (FLA)	A	3.8	3.8
Power input Electrical Panel	kW	0.14	0.14
SOUND LEVEL ISO 3744 (5)			
Pressure level	dB(A)	63	67
Power level	dB(A)	79	83
AIR FILTERS	**No.**	**4**	**4**
Extended filtering surface	m^2	1.76	1.76
Efficiency (ISO EN 16890)	COARSE	60%	60%
REFRIGERANT CIRCUITS	No.	2	2
POWER SUPPLY	V/Ph/Hz	400/3+N/50	400/3+N/50
DIMENSIONS			
Length	mm	1000	1000
Depth	mm	890	890
Height	mm	1980	1980
NET WEIGHT Over	kg	237	237
NET WEIGHT Under	kg	247	247
CONNECTIONS			
Refrigerant pipes: Gas - Liquid	Ø Inch	1" - 3/8"	1" - 1/2"
Condensate (6)	Ø mm	19	19
Power supply wiring cable (7)	No. x mm2	5G1.5	5G1.5

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

1 U = Under, downflow / O = Over, upflow

2 1. Gross value. Characteristics referred to entering air at 27°C-47% RH; Ambient temperature 35°C; ESP=20Pa; Connection pipes length 5m;

3 2. SHR = Sensible cooling capacity / Total cooling capacity.

4 3. Corresponding to the nominal ESP=20Pa.

5 4. Sound pressure level on air return at 1m.

6 5. Rubber pipe – referred to internal diameter.

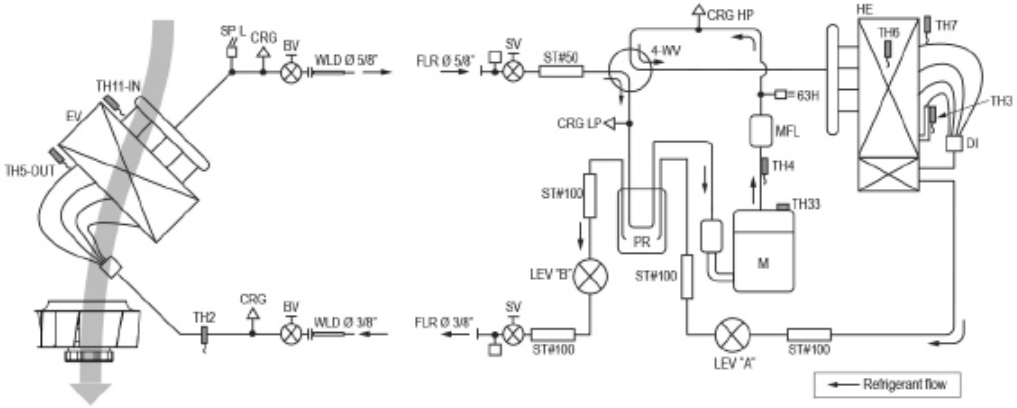
7 6. Minimum section of the power cable for units without accessories.

These units contain <HFC R410A [GWP_{100} 2088]> fluorinated greenhouse gas.

Below refrigerant diagrams for version with single or double refrigerant circuit. The diagrams refer to the standard configuration, without optional.

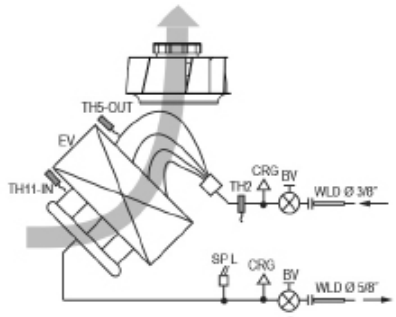
s-MEXT-G00 006 F1

INDOOR UNIT - UNDER



OUTDOOR UNIT

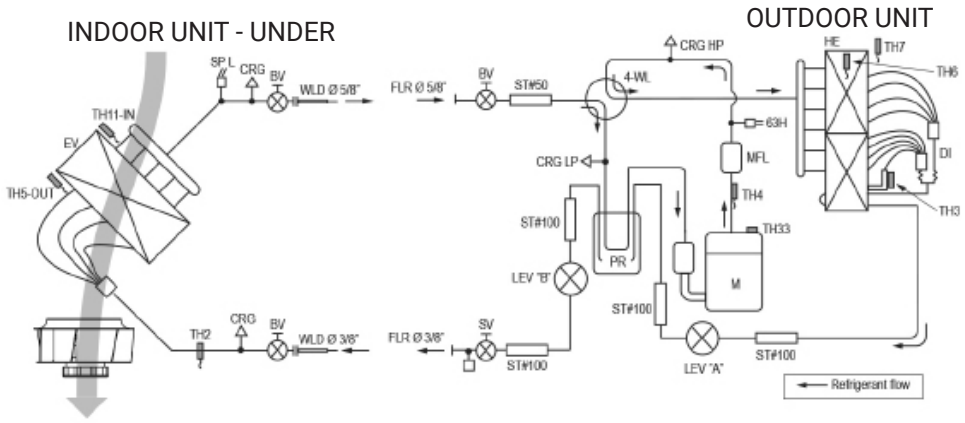
INDOOR UNIT - OVER

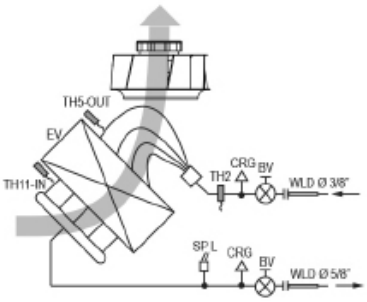


LEGENDA

M	BLDC inverter compressor
TH ...	Thermistor
MFL	Muffler
63H	High pressure switch
CRG HP	Charge plug on high pressure side
4-WV	4-way valve only in cooling position
HE	Heat exchanger
DI	Distributor
ST#...	Strainer
LEV ...	Linear expansion valve
PR	Power receiver
ACC	Accumulator
SV	Stop valve with service port
FLR	FLARER connection
CRG LP	Charge plug on low pressure side
WLD	WELDING connection
CRG	Charge plug
TH-IN	Air inlet temperature probe
TH-OUT	Air outlet temperature probe
EV	Evaporating coil
BV	Ball valve
SP L	Low pressure transducer

s-MEXT-G00 009 F1
s-MEXT-G00 013 F1



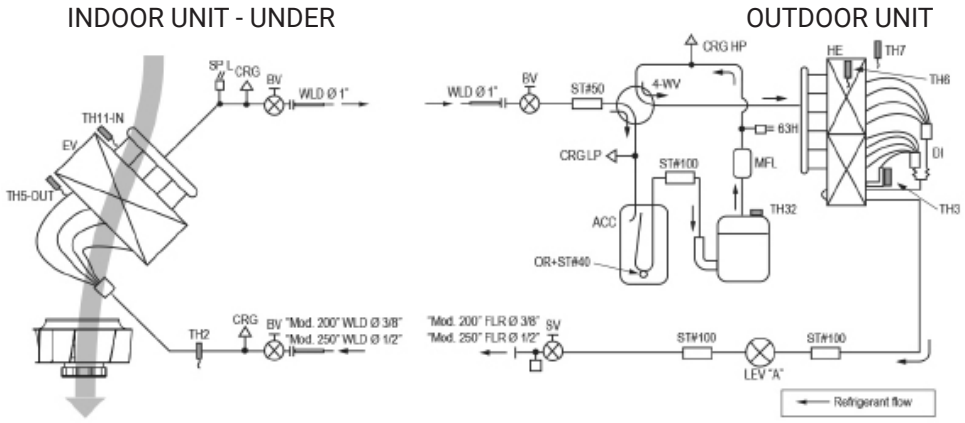


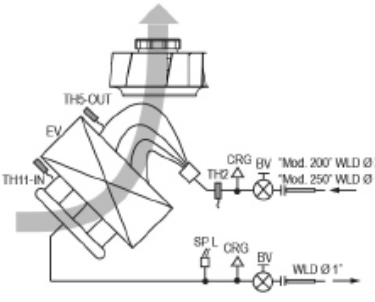
LEGENDA

M	BLDC inverter compressor
TH …	Thermistor
MFL	Muffler
63H	High pressure switch
CRG HP	Charge plug on high pressure side
4-WV	4-way valve only in cooling position
HE	Heat exchanger
DI	Distributor
ST#...	Strainer
LEV …	Linear expansion valve
PR	Power receiver

ACC	Accumulator
SV	Stop valve with service port
FLR	FLARER connection
CRG LP	Charge plug on low pressure side
WLD	WELDING connection
CRG	Charge plug
TH-IN	Air inlet temperature probe
TH-OUT	Air outlet temperature probe
EV	Evaporating coil
BV	Ball valve
SP L	Low pressure transducer

s-MEXT-G00 022 F2
s-MEXT-G00 028 F3





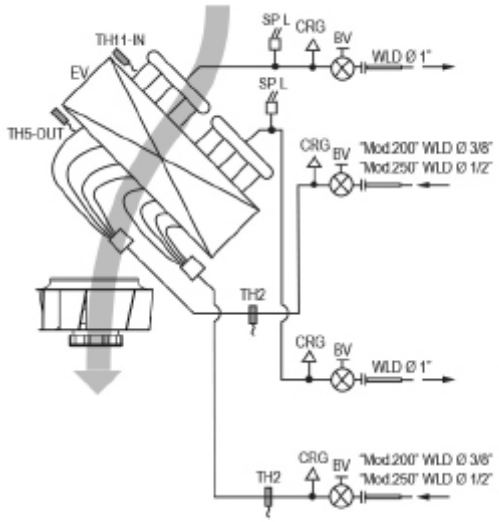
LEGENDA

M	BLDC inverter compressor
TH …	Thermistor
MFL	Muffler
63H	High pressure switch
CRG HP	Charge plug on high pressure side
4-WV	4-way valve only in cooling position
HE	Heat exchanger
DI	Distributor
ST#...	Strainer
LEV …	Linear expansion valve
PR	Power receiver

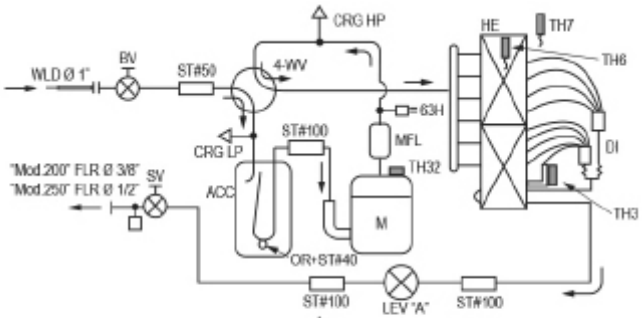
ACC	Accumulator
SV	Stop valve with service port
FLR	FLARER connection
CRG LP	Charge plug on low pressure side
WLD	WELDING connection
CRG	Charge plug
TH-IN	Air inlet temperature probe
TH-OUT	Air outlet temperature probe
EV	Evaporating coil
BV	Ball valve
SP L	Low pressure transducer

s-MEXT-G00 038 F3
s-MEXT-G00 044 F3

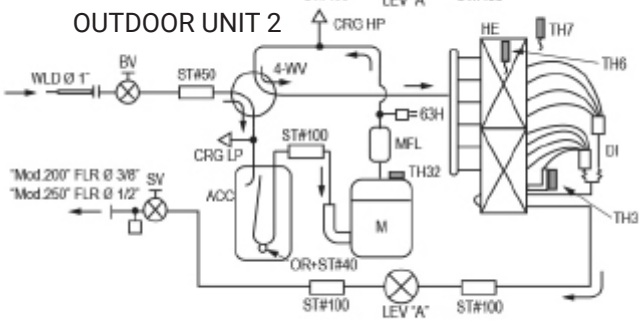
INDOOR UNIT - UNDER



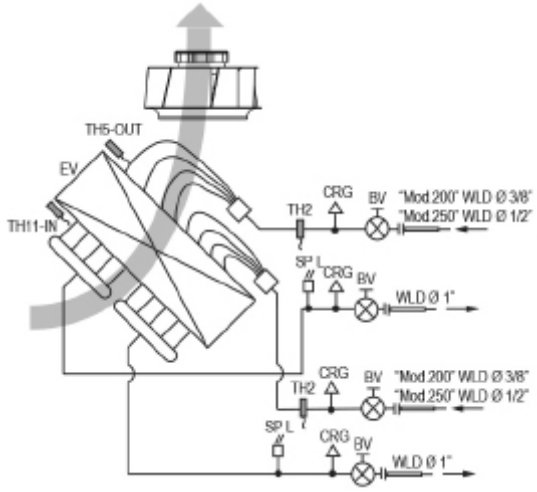
OUTDOOR UNIT 1



OUTDOOR UNIT 2



INDOOR UNIT - OVER



LEGENDA

M	BLDC inverter compressor
TH ...	Thermistor
MFL	Muffler
63H	High pressure switch
CRG HP	Charge plug on high pressure side
4-WV	4-way valve only in cooling position
HE	Heat exchanger
DI	Distributor
ST#...	Strainer
LEV ...	Linear expansion valve
PR	Power receiver
ACC	Accumulator
SV	Stop valve with service port
FLR	FLARER connection
CRG LP	Charge plug on low pressure side
WLD	WELDING connection
CRG	Charge plug
TH-IN	Air inlet temperature probe
TH-OUT	Air outlet temperature probe
EV	Evaporating coil
BV	Ball valve
SP L	Low pressure transducer

COOLING CAPACITY CORRECTION FACTORS

COOLING CAPACITY CORRECTION FACTORS ACCORDING TO REFRIGERANT PIPING LENGTH

REFRIGERANT R32

Indoor unit Outdoor unit	Refrigerant piping length (one way)												
	5m	10m	20m	30m	40m	50m	55m	60m	70m	75m	80m	90m	100m
006 F1 PUZ-ZM 60 VHA	1.000	0.989	0.967	0.948	0.929	0.913	0.905	X	X	X	X	X	X
009 F1 PUZ-ZM 100 VKA	1.000	0.985	0.957	0.932	0.909	0.888	0.879	0.870	0.854	0.847	0.840	0.829	0.820
013 F1 PUZ-ZM 125 VKA/ PUZ-ZM 125 YKA	1.000	0.981	0.948	0.917	0.887	0.861	0.848	0.836	0.814	0.804	0.794	0.776	0.761
022 F2 PUZ-ZM 250 YKA	1.000	0.979	0.946	0.915	0.886	0.858	0.847	0.836	0.814	0.805	0.796	0.779	0.764
028 F3 PUZ-ZM 250 YKA	1.000	0.979	0.946	0.915	0.886	0.858	0.847	0.836	0.814	0.805	0.796	0.779	0.764
038 F3 2x PUZ-ZM 200 YKA	1.000	0.986	0.959	0.934	0.911	0.888	0.880	0.870	0.852	0.844	0.836	0.821	0.808
044 F2 2x PUZ-ZM 250 YKA	1.000	0.979	0.946	0.915	0.886	0.858	0.847	0.836	0.814	0.805	0.796	0.779	0.764

X = NOT ALLOWED

REFRIGERANT R410A

Indoor unit Outdoor unit	Refrigerant piping length (one way)												
	5m	10m	20m	30m	40m	50m	55m	60m	70m	75m	80m	90m	100m
006 F1 PUHZ-ZRP P60 VHA2	1.000	0.988	0.965	0.945	0.928	0.913	X	X	X	X	X	X	X
009 F1 PUHZ-ZRP 100 VKA3	1.000	0.985	0.957	0.931	0.906	0.884	0.874	0.864	0.846	0.838	X	X	X
013 F1 PUHZ-ZRP 125 VKA3/ PUHZ-ZRP 125 YKA3	1.000	0.981	0.946	0.914	0.884	0.857	0.844	0.832	0.810	0.800	X	X	X
022 F2 PUHZ-ZRP 250 YKA3	1.000	0.979	0.945	0.913	0.883	0.856	0.843	0.831	0.809	0.799	0.789	0.772	0.757
028 F3 PUHZ-ZRP 250 YKA3	1.000	0.979	0.945	0.913	0.883	0.856	0.843	0.831	0.809	0.799	0.789	0.772	0.757
038 F3 2x PUHZ-ZRP 200 YKA3	1.000	0.986	0.958	0.932	0.908	0.886	0.875	0.865	0.847	0.838	0.830	0.815	0.801
044 F2 2x PUHZ-ZRP 250 YKA3	1.000	0.979	0.945	0.913	0.883	0.856	0.843	0.831	0.809	0.799	0.789	0.772	0.757

X = NOT ALLOWED

PIPE LENGTH AND REFRIGERANT CHARGE

ADDITIONAL REFRIGERANT CHARGING FOR PIPE OF STANDARD DIAMETER ACCORDING TO REFRIGERANT PIPING LENGTH

REFRIGERANT R32

Indoor unit Outdoor unit	Refrigerant piping length (one way)								
	5m	10m	20m	30m	31…40m	41…50m	51…60m	61…70m	71…100m
	No additional charge				Additional charge (kg/)				
006 F1 PUZ-ZM P60 VHA	---	---	---	---	0.4	0.8 (up to 55 m)	X	X	X
009 F1 PUZ-ZM 100 VKA	---	---	---	---	0.4	0.8	1.2	1.8 (up to 75m)	2.8 (from 75m)
013 F1 PUZ-ZM 125 VKA/ PUZ-ZM 125 YKA	---	---	---	---	0.4	0.8	1.2	1.8 (up to 75m)	2.8 (from 75m)
022 F2 PUZ-ZM 250 YKA	---	---	---	---	0.6	1.2	1.8	2.4	2.4
028 F3 PUZ-ZM 250 YKA	---	---	---	---	0.6	1.2	1.8	2.4	2.4
038 F3 2x PUZ-ZM 200 YKA	---	---	---	---	2x 0.4	2x 0.8	2x 1.2	2x 1.6	2x Max 2.9 (+)
044 F2 2x PUZ-ZM 250 YKA	---	---	---	---	2x 0.6	2x 1.2	2x 1.8	2x 2.4	2x 2.4

(+) from 71 up to 100 m please refer to Mr Slim O&M Manual.

Note; --- = NO ADDITIONAL CHARGE X = NOT ALLOWED

REFRIGERANT R410A

Indoor unit Outdoor unit	Refrigerant piping length (one way)								
	5m	10m	20m	30m	31…40m	41…50m	51…60m	61…75m	75…100m
	No additional charge				Additional charge (kg)				
006 F1 PUHZ-ZRP 60 VHA2	---	---	---	---	0.6	1.2	X	X	X
009 F1 PUHZ-ZRP 100 VKA3	---	---	---	---	0.6	1.2	1.8	2.4	X
013 F1 PUHZ-ZRP 125 VKA3/ PUHZ-ZRP 125 YKA3	---	---	---	---	0.6	1.2	1.8	2.4	X
022 F2 PUHZ-ZRP 250 YKA3	---	---	---	---	1.2	2.4	3.6	4.8	>4.8 (+)
028 F3 PUHZ-ZRP 250 YKA3	---	---	---	---	1.2	2.4	3.6	4.8	>4.8 (+)
038 F3 2x PUHZ-ZRP 200 YKA3	---	---	---	---	2x 0.9	2x 1.8	2x 2.7	2x 3.6	2x >3.6 (+)
044 F2 2x PUHZ-ZRP 250 YKA3	---	---	---	---	2x 1.2	2x 2.4	2x 3.6	2x 4.8	2x >4.8 (+)

(+) from 71 up to 100 m please refer to Mr Slim O&M Manual.

Note; --- = NO ADDITIONAL CHARGE X = NOT ALLOWED

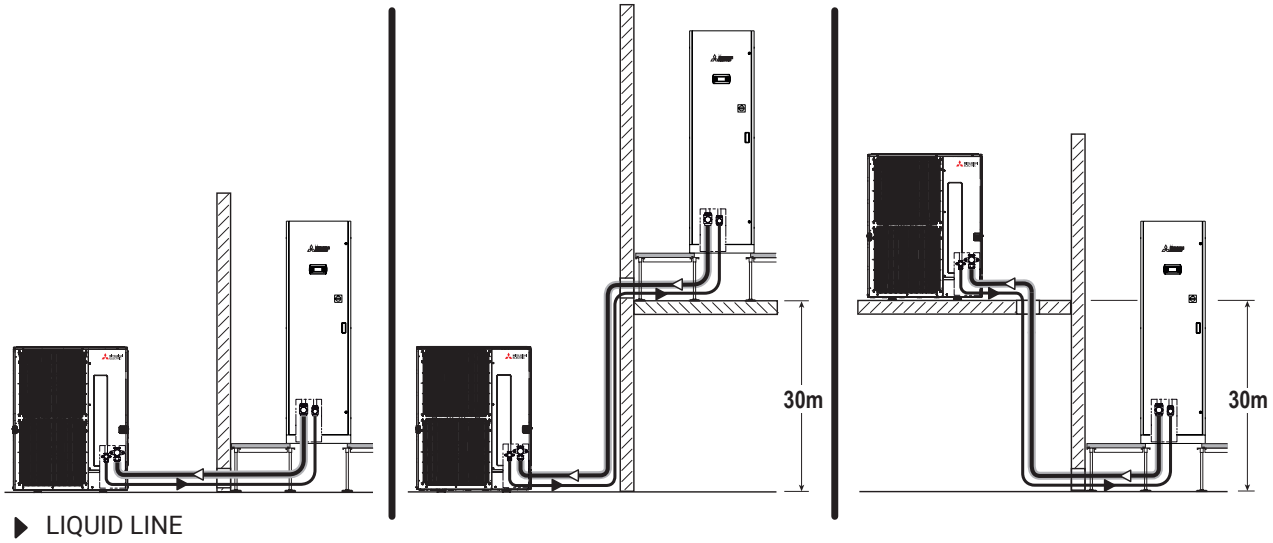
PIPING DIAMETER TABLE

Nominal dimension (inch)	1/4”	3/8”	1/2”	5/8”	3/4”	1”
External diameter (mm)	6,35	9,52	12,70	15,88	19,05	25,40

INSTALLATION DIAGRAMS

DIAGRAMS VALID FOR UNDER AND OVER UNITS APPLIES THIS DIAGRAM TO EACH REFRIGERANT CIRCUIT OF THE UNIT.

THE REFRIGERANT CIRCUIT DOESN'T NEED TRAPS OR PRECAUTION FOR LUBRICANT OIL RETURN TO THE COMPRESSOR



▶ LIQUID LINE
◁ GAS LINE - Insulated

ACOUSTIC DATA

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

WARNING:

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

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

With the same sound source, the noise produced in a 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.

INDOOR UNIT								
MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
SOUND LEVEL ISO EN 3744 (2)								
On air delivery	dB(A)	60.9	64.9	68.9	67.2	66.7	69.7	73.7
On air intake UNDER	dB(A)	56.6	60.6	64.6	62.9	50.1	53.1	57.1
On front side OVER	dB(A)	51.6	55.6	59.6	58.0	45.8	48.8	52.8
On front side UNDER	dB(A)	46.9	50.8	54.9	53.3	41.4	44.4	48.4

U = Under, downflow / O = Over, upflow

Sound Pressure level at 1 meter in free field – ISO EN 3744

Electrical data of the system at full load working conditions.

INDOOR UNIT									
MODEL		006	009	013	013	022	028	038	044
SIZE		F1	F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O	U / O
Power supply	V /Ph /Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50	400/3+N/50
Starting current (SA)	A	2.0	2.0	2.8	2.8	3.3	3.8	3.8	3.8
MAX ABSORBED CURRENT (FLA)									
Only cooling	A	2.3	2.3	2.8	2.8	3.9	3.8	3.8	3.8
Cooling + Heating	A	13.6	13.6	14.1	14.1	20.9	16.8	16.8	16.8
Cooling + Humidifier	A	16.4	16.4	16.9	16.9	18.0	16.2	16.2	16.2
Cooling + Heating + Humidifier	A	27.7	27.7	28.2	28.2	35.0	29.2	29.2	29.2
Cooling + Heating oversized	A	–	–	–	–	–	23.3	23.3	23.3
Cooling + Heating oversized + Humidifier	A	–	–	–	–	–	35.7	35.7	35.7

U = Under, downflow / O = Over, upflow

OPTIONAL ACCESSORIES – INDOOR UNIT

The descriptions of these additional components can be found in Chapter OPTIONAL ACCESSORIES.

P113	**Dual power supply** – External ATS: kit for double power supply with automatic change-over supplied in mounting kit.
A842	**Network analyser**: multifunction utility for calculating and displaying the machine electrical measurements, supplied in mounting kit;
A492	**Water leakage detector + additional sensor:** supplied in mounting kit;
A511	**Smoke detecto**r. Supplied in mounting kit.
A521	Fire detector. Supplied in mounting kit.
4301 / 4303 (2)	**Humidification:** Modulating steam humidifier with immersed electrodes with electronic control, all with a metal cover on the top. The optional foresee the combined Temperature / Humidity sensor on return air and control board;
P051 (3)	**Dehumidification function:** The optional foresee the combined Temperature / Humidity sensor on return air;
P161	**T/rH air intake sensor**
A431	**Electric heater:** Heating with electric heaters
A432	**Extra power electric heater**: available only for F3 frame units;
A548	**Constant prevalence:** automatic system for the air pressure control in the underfloor (Under version) or in the duct (Over version). The system controls the supply fans rotation speed to keep constant the air pressure in the underfloor/duct via a differential pressure transmitter connected to the microprocessor control. Not compatible with constant flow control system;
A547	**Constant flow**: automatic system for the air flow control in the underfloor (Under version) or in the duct (Over version). The system controls the supply fans rotation speed to keep constant the air flow in the underfloor/duct via a differential pressure transmitter connected to the microprocessor control. Not compatible with constant prevalence control system;
P041 / P042 / P043	**Support frame** with height adjusting rubber holders. It is not possible to match the unit floor stand with plenum installed under the machine. The optional is not suitable for installation in seismic areas;
A272	**CL. A1 (EN 13501-1) insulation**: Panelling with fire reaction in class "A1;
P084	**Air filter ePM10 50%**: High efficiency air filter (according to ISO EN 16890);
A532	**Damper with spring return**: non-return air damper driven by electric servomotor installed on the top of units for all versions. The damper is never fully closed to guarantee a minimum air flow. The optional is not suitable for installation in seismic areas;
P011	**Empty plenum**. The optional is not suitable for installation in seismic areas;
P012	**Empty plenum CL. A1 (EN 13501-1)**. Plenum with fire reaction in class "A1". The optional is not suitable for installation in seismic areas;
P013	**Plenum + 3 grilles** on three sides with double adjustable row. The optional is not suitable for installation in seismic areas;
P014	**Plenum + 3 grilles CL. A1 (EN 13501-1)**. Plenum with grilles on three sides with double adjustable row, with fire reaction in class "A1". The optional is not suitable for installation in seismic areas;
P015	**Silenced plenum.** The optional is not suitable for installation in seismic areas;
P016	**Silenced plenum + 1 grille**: Plenum with grille with double adjustable row on front side and sound absorbers. The optional is not suitable for installation in seismic areas;
P031	**Empty intake plenum.** The optional is not suitable for installation in seismic areas;
P032	**Empty intake plenum CL. A1 (EN 13501-1).** Plenum with fire reaction in class "A1". The optional is not suitable for installation in seismic areas;

P033	**Silenced intake plenum.** The optional is not suitable for installation in seismic areas;
P034 (4)	**Intake free-cooling plenum for Under version.** The optional foresee the combined Temperature / Humidity sensor on machine air suction, the Temperature sensor for ambient air and the expansion board for the microprocessor control. The optional is not suitable for installation in seismic areas;
A812 (1)	**Free-cooling direct control;**
4666	**External air probe;**
P101	**Anti-seismic fixing kit**, supplied in mounting kit;
383	**Numbered wirings + UK requests;**
P151	**Lowered display for Under**: for units equipped with plenum under the unit;
	Serial cards:
	A471 - RS485 serial card
	A472 - RS232 serial card
	A473 – Ethernet card
	A474 - LON card
A476	**GSM modem for SMS sending** with connecting cable;
P091	**Back-up module controller.** The system guarantees the microprocessor power supply for a few minutes, in case of supply voltage failure. Not compatible with “Free-cooling plenum” and “Steam humidifier” optional accessories;
9973	**Wooden cage packing.** The machines are delivered on pallet, covered with shrink wrap and packaged in wooden cage.

WARNING

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

MANDATORY COMBINATIONS OF ACCESSORIES

1. When optional accessory “A812 Free cooling direct control” is present, it requires mandatory accessories “P161 T/rH air intake sensor“ and “4666 External air probe”.
2. When optional accessories “4301 / 4303 Steam humidifier” are present, they require mandatory accessory “P161 T/rH air intake sensor“.
3. When optional accessory “P051 Dehumidification function” is present, it requires mandatory accessory “P161 T/rH air intake sensor“.
4. When optional accessory “P034 Intake free-cooling plenum” is present, it requires mandatory accessories “P161 T/rH air intake sensor“, “4666 External air probe”, “A812 Free-cooling direct control”

OPTIONAL ACCESSORIES – OUTDOOR UNIT

The descriptions of these additional components can be found in Chapter OPTIONAL ACCESSORIES.

P113	**Dual power supply – External ATS:** system with automatic change-over supplied in mounting kit;
P061	**Outdoor unit low temperature kit:** Wind baffle for operating with outdoor temperature down to -15°C; supplied in mounting kit.

WARNING

The Manufacturer reserves the right to accept the matching of the optional installed on the indoor and/or outdoor machines

Single-phase device

Three-phases device

OPTIONAL ACCESSORIES: P113 - DUAL POWER SUPPLY – EXTERNAL ATS

The optional is supplied in mounting kit and contained in polycarbonate box.

The optional is available both for indoor and outdoor unit.

The motorised changeover automatically manage changeover between two power supply lines, or manually for emergency operations.

These devices are suitable for low voltage systems with interruption of the supply to the load during transfer.

The model supplied in the automatic version checks the source and switches over automatically, based on configurable parameters.

OPEN TRANSITION TYPE TRANSFER SWITCH WITH A MINIMUM INTERRUPTION OF THE SUPPLY DURING TRANSFER.

To maintain the microprocessor powered and avoid its restarts is mandatory to foresee the installation of the "temporary microprocessor power supply" optional accessory. The system guarantees the microprocessor power supply for a few minutes, in case of supply voltage failure.

Considering that the power supply lines of the outdoor and indoor units are separate, two change-over devices are provided, one for each unit. Install the device close to the unit.

INDOOR UNIT

Model	Power Supply	Quantity	Installation
006 F1	230/1/50	1	EXTERNAL to the unit, supplied in kit
009 F1	230/1/50	1	EXTERNAL to the unit, supplied in kit
013 F1	230/1/50	1	EXTERNAL to the unit, supplied in kit
022 F2	230/1/50	1	EXTERNAL to the unit, supplied in kit
028 F3	400/3+N/50	1	EXTERNAL to the unit, supplied in kit
038 F3	400/3+N/50	1	EXTERNAL to the unit, supplied in kit
044 F3	400/3+N/50	1	EXTERNAL to the unit, supplied in kit

OUTDOOR UNIT

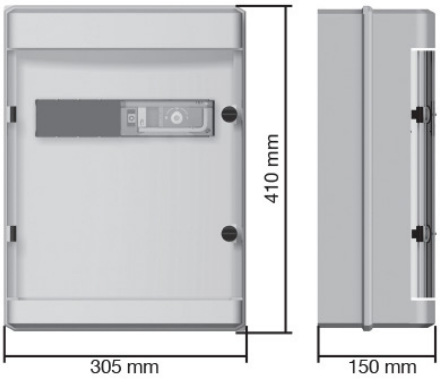
Model R32	Model R410A	Power supply	Quantity	Installation
60 VHA	60 VHA2	230/1/50	1	EXTERNAL to the unit, supplied in kit
100 VKA	100 VKA3	230/1/50	1	EXTERNAL to the unit, supplied in kit
125 VKA	125 VKA3	230/1/50	1	EXTERNAL to the unit, supplied in kit
125 YKA	125 YKA3	400/3+N/50	1	EXTERNAL to the unit, supplied in kit
200 YKA	200 YKA3	400/3+N/50	1 / 2 (*)	EXTERNAL to the unit, supplied in kit
250 YKA	250 YKA3	400/3+N/50	1 / 2 (*)	EXTERNAL to the unit, supplied in kit

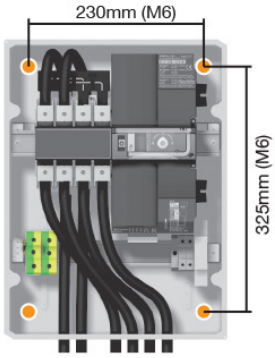
(*) For indoor unit 038 F3 and 044 F3 two automatic transfer switches are required, one for each Mr. SLIM.

MOUNTING KIT

The wall mounting kit includes a plastic enclosure with following dimensions:

SINGLE-PHASE system – IP55

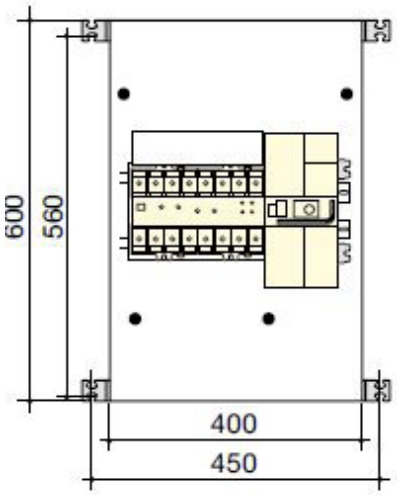


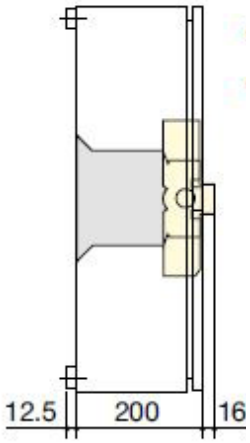


Dimensions in millimetres

Wall-mounting fixing screws not supplied
Weight of the system: 12 kg
Electrical connections at Customer care

THREE-PHASES system – IP54





Dimensions in millimetres

Wall-mounting fixing screws not supplied
Weight of the system: 12 kg
Electrical connections at Customer care

OPTIONAL ACCESSORIES: A842 - NETWORK ANALYZER

The optional is available only for indoor units.

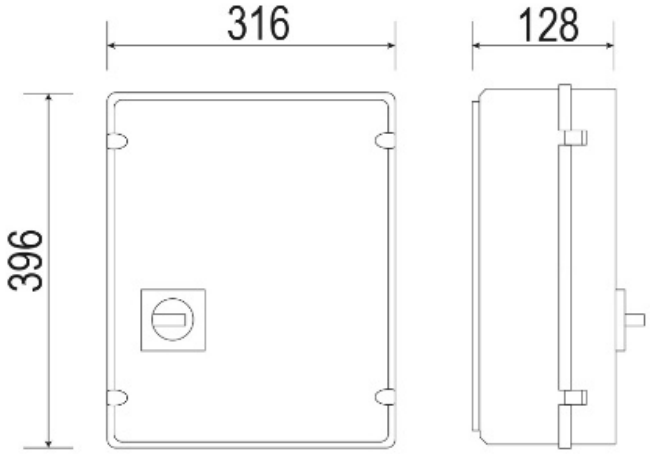
The optional is supplied in kit for external installation to the machine, and includes:

- Main switch with door lock safety;
- Fuse;
- Network transducer;
- Current transformers, one for each power supply phase cable;
- Terminals.

This device provides continuous measurement of power consumption, monitoring current, voltage and power. These values are sent to unit microprocessor via RS485 serial cable, as shown on the unit wiring diagram.

The displayed variables are:

- Phase to phase voltage, only for three-phase units;
- Phase voltage (phase-neutral);
- Phase current;
- Neutral current only for three-phase units;
- Active phase power, only for three-phase units;
- Total active power;
- Active energy;
- Hour counts.



Dimensions in millimetres

Wall-mounting fixing screws not supplied

Weight of the system: 5 kg

Electrical connections at Customer care

OPTIONAL ACCESSORIES: A492 – WATER LEAKAGE DETECTOR + ADDITIONAL SENSOR

The system includes an electronic relay installed in the electrical panel of the indoor machine and 2 water detectors to be connected in series.

The electrical connections for the probe and the alarm contact are present in the indoor machine's terminal board.

The first sensor is installed inside unit for Over flow version.

In Under flow version are supplied to be connected and installed at customer care.

OPTIONAL ACCESSORIES: A511 – SMOKE DETECTOR

The device in supplied in mounting kit.

The optical smoke detector senses the presence of combustion by-products (visible smoke) and activates an alarm.

The operating principle is based on the light scattering technique (Tyndall effect).

The device is in conformity to EN 54-7 standard.

Technical features:

Material	ABS		Relative humidity	<93% not-condensing
Power supply	12...28 Vdc		Index of protection	IP 20
Normal current	50µA 24 Vdc		Testing by magnet	Yes
Alarm current	25mA 24 Vdc		Relay	max. 1A 30Vdc
LED visibility	360° (double led)		Signal repeater	14mA 24 Vdc
Storage temperature	-10...+70°C		Covered area	40m2 max.
Operating temperature	-10...+70°C		Shielded connection cable	Min. 0.5 mm^2
Max. speed air	0.2 m/s		Colour	White

Supplied as optional with unit to be connected and installed at customer care close to the unit.

OPTIONAL ACCESSORIES: A521 – FIRE DETECTOR

The device in supplied in mounting kit.

The fire detector has been designed to identify temperatures at which fires may start. When the temperature exceeds the set threshold or when there is a rapid variation in temperature, the relay is activated to signal an alarm.

The device is in conformity to EN 54-5 standard.

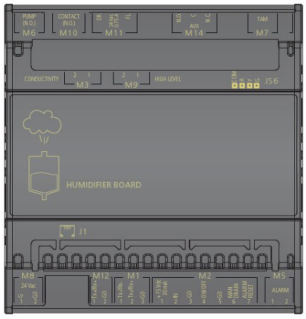
Technical features:

Material	ABS		Index of protection	IP 20
Power supply	12...28 Vdc		Testing by magnet	Yes
Normal current	50µA 24 Vdc		Relay	max. 1A 30Vdc
Alarm current	25mA 24 Vdc		Signal repeater	14mA - 24 Vdc
LED visibility	360° (double LED)		Alarm temperature threshold	62°C
Storage temperature	-10...+70°C		Covered area	40m2 max.
Operating temperature	-10...+70°C		Shielded connection cable	Min. 0.5 mm^2
Relative humidity	<93% non-condensing		Colour	White

Supplied as optional with unit to be connected and installed at customer care close to the unit.

OPTIONAL ACCESSORIES: 4301 / 4303 – STEAM HUMIDIFIER

Modulating steam humidifier with immersed electrodes fitted with safety and running accessories.
A metallic cover on the top and tank ensure the highest levels of safety during operation.
Standard for safety flammability UL94: V0
The optional includes the combined temperature / humidity sensor on unit air intake and control board.
The accessory is factory installed and requires only water filling connection.
Humidifier water charge and discharge pipes are not supplied.
It is recommended to install a filter and a shut-off valve on water inlet pipe.
This humidifier produces non-pressurized steam by electrodes immersed in the water inside the cylinder: they bring the electric phase in the water that works as an electrical resistance and overheats. The steam so produced is distributed with dedicated distributors and used for ambient humidification or for industrial processes.
CHARACTERISTICS OF THE SUPPLY WATER
The quality of the used water influences the evaporation process, so the humidifier can be fed with **not-treated water, only when potable and non-demineralised.**



Humidifier control board

LIMIT VALUES

			Min	Max
Hydrogen ions	pH		7	8.5
Specific conductivity at 20°C	$\sigma_{R,\ 20\ °C}$	µS/cm	350	750
Total dissolved solids	TDS	mg/l	(1)	(1)
Dry residue at 180°C	R_{180}	mg/l	(1)	(1)
Total hardness	TH	mg/l $CaCO_3$	100 (2)	400
Temporary hardness		mg/l $CaCO_3$	60 (3)	300
Iron + Manganese		mg/l Fe + Mn	0	0.2
Chlorides		ppm Cl	0	30
Silica		mg/l SiO_2	0	20
Residual chlorine		mg/l Cl-	0	0.2
Calcium sulphate		mg/l $CaSO_4$	0	100
Metallic impurities		mg/l	0	0
Solvents, diluents, soaps, lubricants		mg/l	0	0

(1) Values depending on specific conductivity; in general: TDS ≅ 0,93 * σ_R, 20 °C; R180 ≅ 0,65 * σR
(2) Not lower than 200% of the chloride content in mg/l di Cl-
(3) Not lower than 300% of the chloride content in mg/l di Cl-

WARNING:

- Use only with drinking water.
- There is no reliable relationship between hardness and water conductivity
- Do not treat water with softeners! This could cause corrosion of the electrodes or the formation of foam, leading to potential operating problems or failures.
- Do not add disinfectants or corrosion inhibiters to water, as these substances are potentially irritant.
- Is absolutely forbidden to use well water, industrial water or water drawn from cooling circuits; in general, avoid using potentially contaminated water, either from a chemical or bacteriological point of view.

MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
Code		4301	4301	4301	4301	4303	4303	4303
STEAM PRODUCTION	kg/h	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Power input	kW	2.3	2.3	2.3	2.3	6.0	6.0	6.0
Absorbed current (OA)	A	10.0	10.0	10.0	10.0	8.7	8.7	8.7
Max absorbed current (FLA)	A	14.1	14.1	14.1	14.1	12.4	12.4	12.4
Water content	l	3.9	3.9	3.9	3.9	6.4	6.4	6.4
Max water supply pressure	Bar	1÷8	1÷8	1÷8	1÷8	1÷8	1÷8	1÷8
NET WEIGHT (2)	kg	4	4	4	4	10	10	10
HYDRAULIC CONNECTION								
WATER INLET - ISO 228/1 – G M	Ø	3/4”	3/4”	3/4”	3/4”	3/4”	3/4”	3/4”

1. U = Under, downflow / O = Over, upflow
2. Value to be added to the weight of the standard unit. Does not include the weight of the water content.

OPTIONAL ACCESSORIES: P051 - DEHUMIDIFICATION

The system is automatic and checks for any increase in ambient humidity.

Components:

- Temperature / Humidity sensor on the air intake.
- Electronic control system of the dew point temperature for the combined intervention of cooling capacity and air flow.

OPTIONAL ACCESSORIES: P161 – T/rH AIR INTAKE SENSOR

The accessory replaces the temperature sensor installed on the air intake in the indoor unit.

The sensor is supplied with following option:

- Steam humidifier installation;
- Dehumidification system.
- Displaying of the relative humidity room value.

OPTIONAL ACCESSORIES: A431 / A432 - ELECTRIC HEATER

Electric heater consisting of finned aluminium elements, 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 in aluminium armoured elements with integral fins;
- Electrical control;
- Safety thermostat.

A431 - STANDARD ELECTRIC HEATER

INDOOR UNIT								
MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
THERMAL CAPACITY	kW	2.6	2.6	2.6	3.9	9.0	9.0	9.0
Max absorbed current (FLA)	A	11.3	11.3	11.3	17	13	13	13
First working step	kW	1.3	1.3	1.3	1.3	3.0	3.0	3.0
Second working step	kW	1.3	1.3	1.3	2.6	6.0	6.0	6.0
Third working step	kW	--	--	--	1.3 + 2.6	3.0 + 6.0	3.0 + 6.0	3.0 + 6.0
NET WEIGHT (2)	kg	5	5	5	10	15	15	15

A432 – EXTRA POWER ELECTRIC HEATER

INDOOR UNIT								
MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
THERMAL CAPACITY	kW	--	--	--	--	13.5	13.5	13.5
Max absorbed current (FLA)	A	--	--	--	--	19.5	19.5	19.5
First working step	kW	--	--	--	--	4.5	4.5	4.5
Second working step	kW	--	--	--	--	9.0	9.0	9.0
Third working step	kW	--	--	--	--	4.5 + 9.0	4.5 + 9.0	4.5 + 9.0
NET WEIGHT (2)	kg	--	--	--	--	16	16	16

U = Under, downflow / O = Over, upflow

Value to be added to the weight of the standard unit.

OPTIONAL ACCESSORIES: A547 / A548 - CONSTANT FLOW / CONSTANT PREVALENCE

The optional is a differential pressure sensor with a 0…20mA output signal. The device is installed in the machine.

The sensor is connected to the microprocessor control of the indoor unit and allows the control of:

A547 - CONSTANT FLOW

The system controls the air flow of the air conditioner by measuring the static pressure before the inlet nozzle of the fan with the static pressure in the inlet ring.

Pressure control range from 0 to 1000 Pa.

The air flow control system is not compatible with constant prevalence control system.

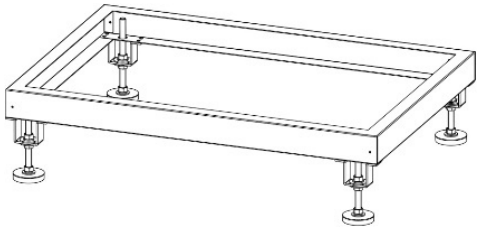
A458 - CONSTANT PREVALENCE

The system controls the air pressure in the raised floor (Under version) or in the duct (Over version). Through the relief piping of the room pressure (low pressure side) and the air supply of the fan (high pressure side) the fan rotation speed is controlled to keep the air pressure constant.

Pressure control range from 0 to 100 Pa.

The air pressure control system is not compatible with constant flow control system.

OPTIONAL ACCESSORIES: P041 / P042 / P043 - SUPPORT FRAME



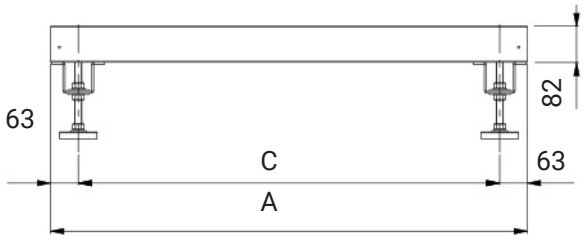
The optional is supplied in mounting kit.

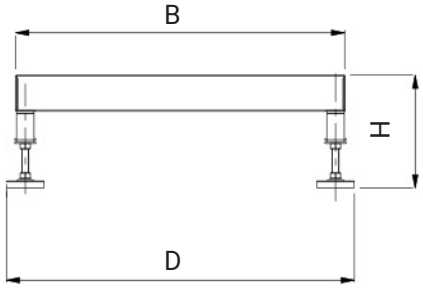
It is not possible to match the base frame with plenum installed under the machine.

For a correct installation of the air conditioner we suggest you utilize a gasket between the base frame and the unit base.

The base frame is available in 3 models with 3 different heights.

The optional is not suitable for installation in seismic areas.





SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
A	mm	600	1000	1000
B	mm	500	500	890
C	mm	474	874	874
D	mm	541	541	931

U = Under, downflow / O = Over, upflow

MODEL		Hmax350	Hmax450	Hmax510
Code		P041	P042	P043
H min height	mm	255	355	400
H max height	mm	350	450	510

OPTIONAL ACCESSORIES: A272 – CL.A1 (EN13501-1) INSULATION

The optional is designed TO SUPPLY THE PANELING ONLY WITH FIRE REACTION IN CLASS A1 (EN 13501-1)"; furthermore, allows a noise insulation of the panels of the air conditioners.

The pressure level reduction of the unit is about 2 dB(A). The reduction refers ONLY to the sound level radiated from the unit or in front of the unit. The noise level data on return and delivery air do not undergo reductions.

The accessory includes:
- External part as standard panel.
- Internal part in galvanized steel sheet.
- The inside noise insulation with special soundproof material.

REACTION TO FIRE CLASSIFICATION

On Italian territory, the classification is per the D.M. of June 26, 1984 and subsequent amendments, providing for a sort in “Classes” from 0 (non-combustible material) to 5 (extremely flammable material).

The EN 13501-1 regulation is ordered in classes from A1 (non-combustible material) to F (extremely flammable material).

A comparison of the classes is not possible because the methods and evaluation criteria are completely different. The comparison table below is being considered purely indicative.

Definition	Italian classes	EN 13501-1
Non-combustible material	Class 0	A1
Combustible material, very limited contribution to fire	Class 1	A2 – B
Combustible material, limited contribution to fire	Class 2	A2 – B - C
Combustible material, medium contribution to fire	Class 3	C – D
Combustible material, highly contribution to fire	Class 4	E
Combustible material, easily flammable	Class 5	F

It is possible to provide the sandwich panels for the OVER units with air flow from the top.

This implies that the air intake must necessarily be from the base of the unit with front blind panelling.

The accessory increases the unit weight:

SIZE		F1	F2	F3
OVER				
Weight increasing (1)	kg	26	35	46
UNDER				
Weight increasing (1)	kg	31	42	53

1. Add this value to the total unit weight

OPTIONAL ACCESSORIES: P084 –ePM$_{10}$ 50% AIR FILTERS

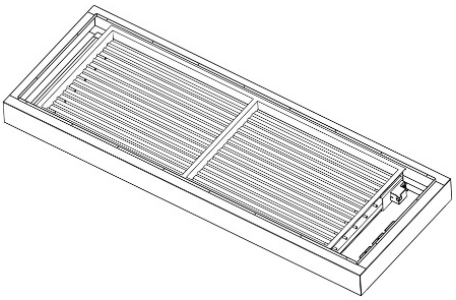
The ePM$_{10}$ 50% air filters (according to ISO EN 16890), replace the standard one.

The filters generate a pressure drops higher than the standard ones.

The filters are made of glass micro-fibre and are not regenerable.

INDOOR UNIT								
MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
Additional pressure drops (2)	Pa	16	16	16	46	35	47	47
Reference air flow	m3/h	2000	2000	2000	4000	7600	8800	8800

1. U = Under, downflow / O = Over, upflow
2. Additional pressure drops referred to nominal air flow with clean filter.



OPTIONAL ACCESSORIES: A532 – DAMPER WITH SPRING RETURN

Accessory installed on unit air delivery (Over flow version) or return (Under flow version) and it can be matched to plenum.

The optional is not suitable for installation in seismic areas.

FRAMEWORK

- Frame in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 9005;
- Opposed blade dampers in galvanized steel sheet;
- Actuator for damper control with spring return;
- Terminals for electric connection to the unit.

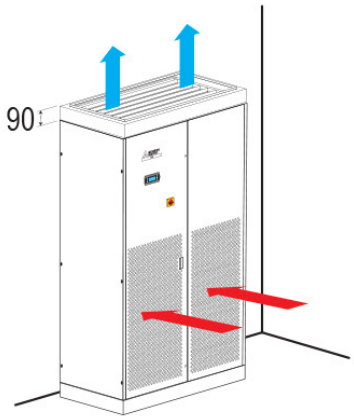
WORKING LOGIC

The damper opens at supply fans activation to allow air flow.

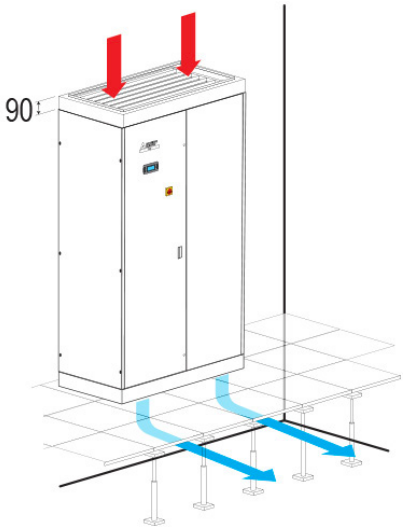
When the fans stop for failure or stop command, the damper closes, preventing air flow into the unit.

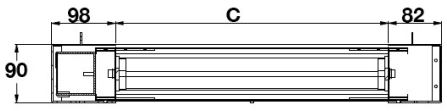
The damper closing is limited to guarantee minimum safety ventilation in the event of refrigerant leakage.

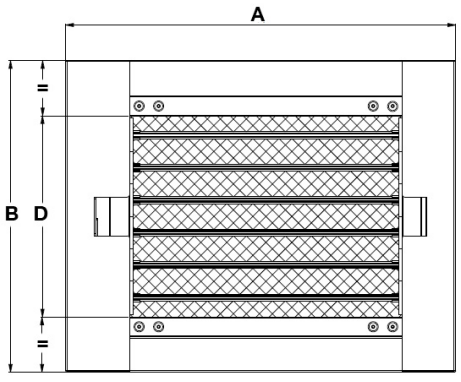
A532 OVER



A532 UNDER



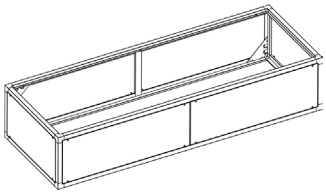


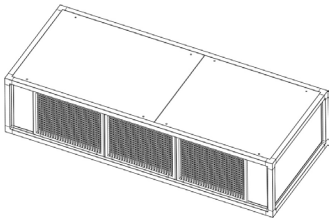


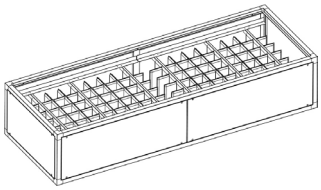
SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
A	mm	600	1000	1000
B	mm	480	480	870
C	mm	420	820	820
D	mm	310	310	420
Weight (2)	kg	9	12	21

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

Dimensions in millimetres







OPTIONAL ACCESSORIES: P011 ... P034 - SUPPLY / INTAKE AIR PLENUM

The optional is supplied separately and the installation on the unit is at Customer care.
The plenums can be used for all versions on supply and return air.

The plenums have same technical characteristics of the indoor unit cabinet.

It is possible to install only a single plenum to ensure stability to the unit.

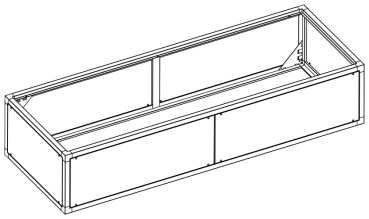
The optional are not suitable for installation in seismic areas.

FRAMEWORK

- Frame in aluminium extrusion, painted with epoxy powders. Colour RAL 7016;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 7016;
- Panels insulated with polyurethane foam and seals to ensure air tight.
- Panels fixed with screws.
- Removable panels.
- Set of fixing elements to fasten the plenum to the unit.

Type of plenum:

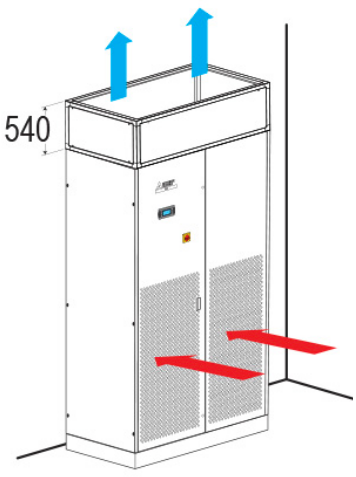
- Empty supply/intake plenum. Also available with fire reaction in class “A1” (EN 13501-1).
- Plenum with frontal and lateral grilles. Also available with fire reaction in class “A1” (EN 13501-1) or reaction to fire classification.
- Plenum with soundproof sections
- Plenum with frontal grille and soundproof sections



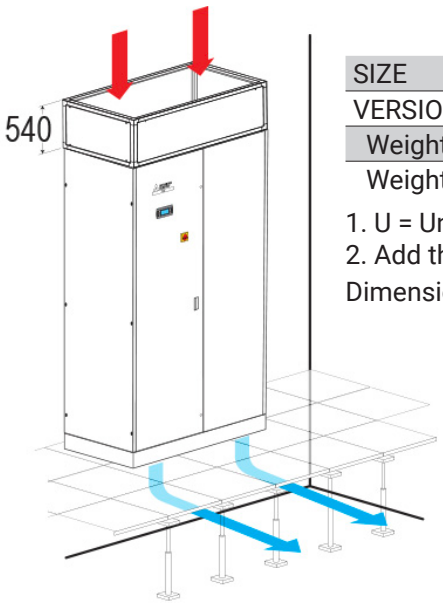
P011 / P012 – P031 / P032: EMPTY PLENUM

The plenum is void and can be used to rise the air inlet/outlet.
Remove the frontal panels for inspection.
Also available with fire reaction in class “A1” (EN 13501-1).
The optional is not suitable for installation in seismic areas.

P011 / P012 OVER



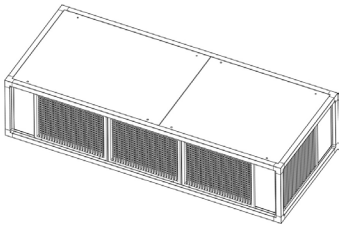
P031 / P032 UNDER



SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
Weight (2)	kg	12	16	20
Weight CL. A1 (2)	kg	22	29	36

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

Dimension in millimeters



P013 / P014: PLENUM + 3 GRILLES

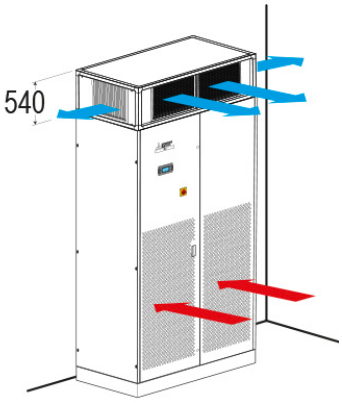
The plenum allows the air distribution directly into the room.

The plenum is supplied with air distribution grilles with double row adjustable fins on front and lateral side.

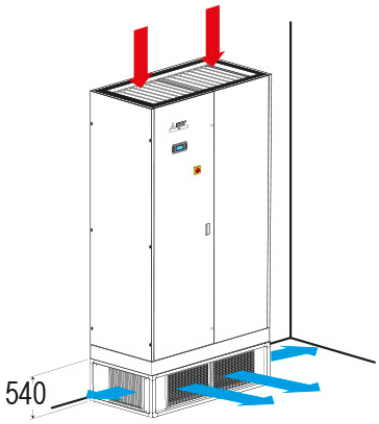
Also available with fire reaction in class “A1” (EN 13501-1).

The optional is not suitable for installation in seismic areas.

P013 / P014 OVER



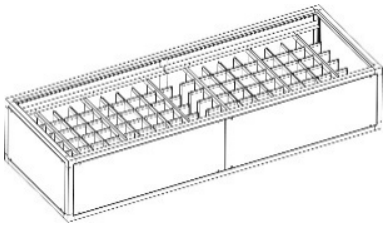
P013 / P014 UNDER



SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
Weight (2)	kg	12	16	20
Weight CL. A1 (2)	kg	17	22,5	28

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

Dimension in millimeters



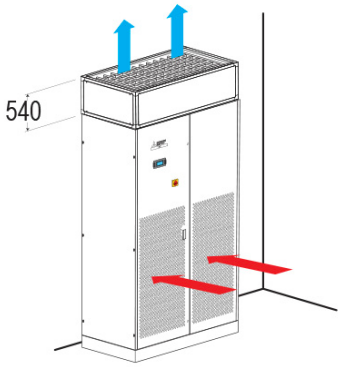
P015: SILENCED PLENUM

The plenum is fitted with sound absorbers to reduce the noise emission.

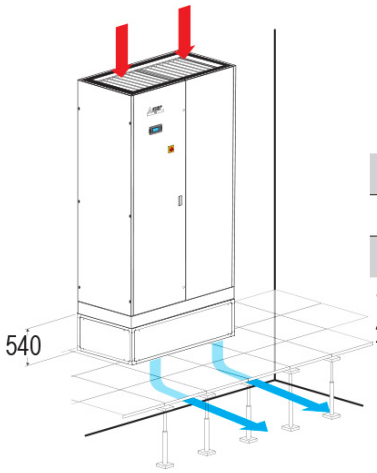
Remove the frontal panels for inspection.

The optional is not suitable for installation in seismic areas.

P015 OVER



P015 UNDER



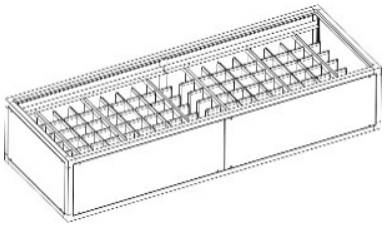
SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
Weight (2)	kg	18	24	30

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

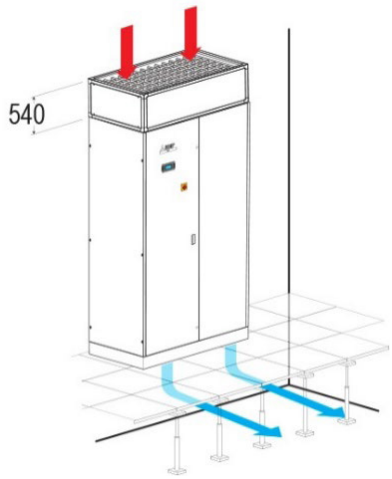
ACOUSTIC DATA

MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
SOUND LEVEL ISO EN 3744 (2)								
On air delivery, Under (2)	dB(A)	56.9	60.8	64.9	63.1	62.0	65.0	69.1
On air delivery, Over (3)	dB(A)	56.9	60.8	64.9	63.1	62.0	65.0	69.1
Air flow (4)	m3/h	2000	2500	2800	5000	7600	8800	10000

1. U = Under, downflow / O = Over, upflow
2. Noise pressure level at 1 meter in free field – ISO 3744
3. Air intake from the front
4. Nominal air flow with noise absorption partitions plenum installation and external static pressure 20 Pa.



P033 UNDER



P033: SILENCED INTAKE PLENUM

The plenum is fitted with sound absorbers to reduce the noise emission.

Remove the frontal panels for inspection.

The optional is not suitable for installation in seismic areas.

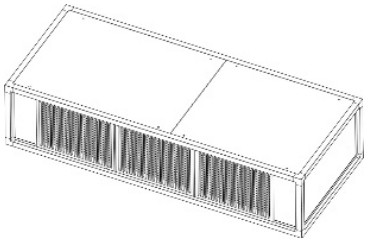
SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
Weight (2)	kg	18	24	30

1. U = Under, downflow
2. Add this value to the total unit weight

ACOUSTIC DATA

MODEL		006	009	013	022	038	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U	U	U	U	U	U	U
SOUND LEVEL ISO 3744 (2)								
On air intake, Under	dB(A)	52.7	56.7	60.7	59.0	46.1	49.1	53.2
Air flow (3)	m3/h	2000	2500	2800	5000	7600	8800	10000

1. U = Under, downflow
2. Noise pressure level at 1 meter in free field – ISO 3744
3. Nominal air flow with noise absorption partitions plenum installation and external static pressure 20 Pa.



P016 OVER

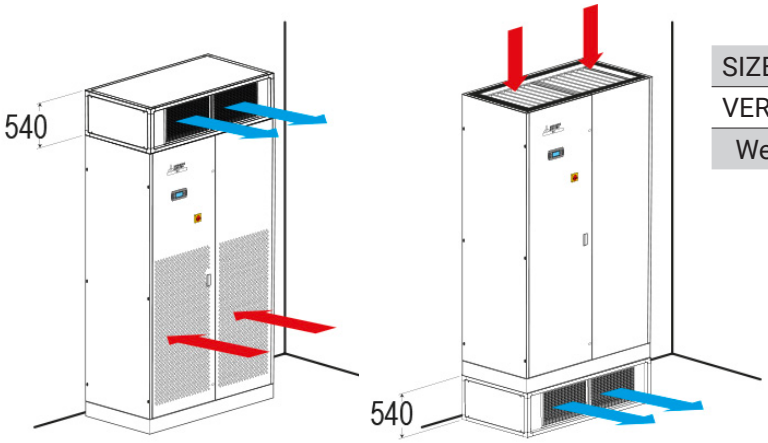
P016 UNDER

P016: SILENCED PLENUM + 1 GRILLE

The plenum allows the frontal air distribution directly into the room and a noise reduction of the air delivery.

The plenum is supplied with air distribution grille with double row adjustable grills on front side and sound absorbers.

The optional is not suitable for installation in seismic areas.

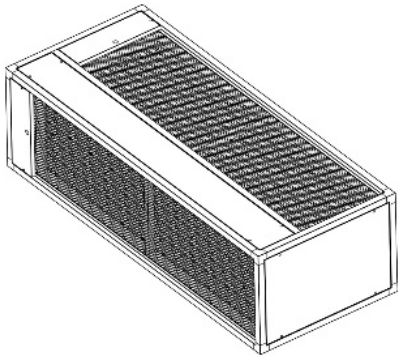


SIZE		F1	F2	F3
VERSION (1)		U / O	U / O	U / O
Weight (2)	kg	12	16	20

ACOUSTIC DATA

MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
SOUND LEVEL ISO 3744 (2)								
On air delivery, Under	dB(A)	55.5	59.5	63.5	61.9	61.7	64.7	68.7
On air delivery, Over	dB(A)	55.5	59.5	63.5	61.9	61.7	64.7	68.7
Air flow	m3/h	2000	2500	2800	5000	7600	8800	10000

1. U = Under, downflow / O = Over, upflow
2. Noise pressure level at 1 meter in free field – ISO 3744



OPTIONAL ACCESSORIES: P034 – INTAKE FREE-COOLING PLENUM

AVAILABLE ONLY FOR UNDER VERSION.

The optional is supplied separately and the installation on the unit is at Customer care.

The plenums have same technical characteristics and base dimensions of the machine cabinet.

The optional allow to obtain free-cooling by direct ambient air intake into the room.

The dampers are proportionally managed by the microprocessor control, that regulates the quantity of the ambient air to put in the room according to the set-point.

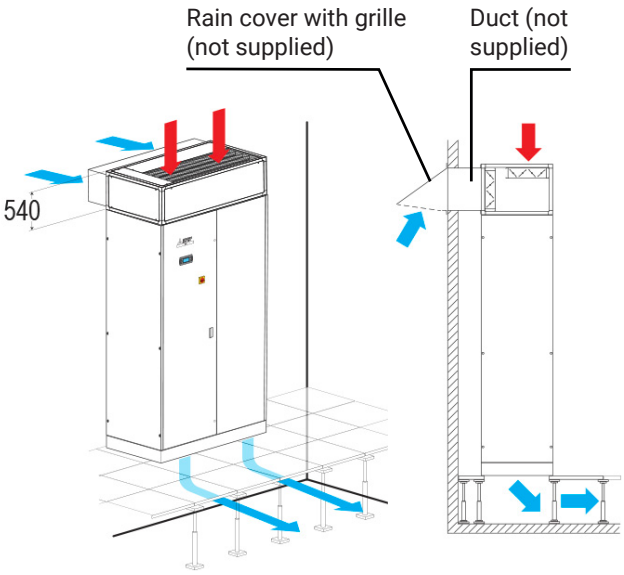
The optional is not suitable for installation in seismic areas.

COMPONENTS

- Frame in aluminium extrusion, painted with epoxy powders. Colour RAL 7016;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 7016;
- Panels insulated with polyurethane foam and seals to ensure air tight.
- Removable panels fixed with screws.
- Opposed blade dampers in galvanized steel sheet and safety grille for ambient air and room air suction.
- Actuator for each damper.
- Terminals for electric connection to the unit.
- Set of fixing elements to fasten the plenum to the unit.
- Combined Temperature / Humidity sensor on machine air suction. The sensor must be moved outside the air conditioners for a proper read of the room temperature value.
- Temperature sensor for outdoor air. The sensor must be installed in the outdoor air suction duct or anyway protected against atmospherics agent.
- Expansion board for microprocessor control.
- Free contact for free-cooling operating status monitoring.
- Terminals on indoor unit for:
  - 24 Vac power supply for the overpressure damper servomotor
  - 0-10Vdc control signal for the servomotor
  - Servomotor and overpressure damper are not supplied.

Ducting for ambient air suction are at Customer care.

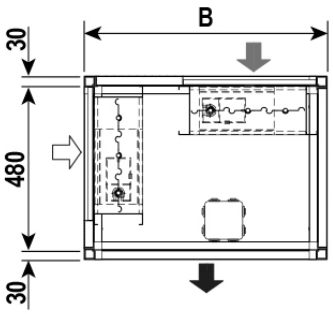
A rain cover with grille on ambient air intake is recommended.

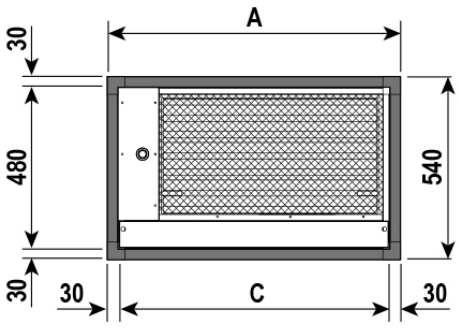


Size		F1	F2	F3
VERSION (1)		U	U	U
A	mm	600	1000	1000
B	mm	480	480	870
C	mm	540	940	940
Weight (2)	kg	18	25	29

1. U = Under, downflow
2. Add this value to the total unit weight

Dimensions in millimetres





WARNING

IT IS COMPULSORY TO INSTALL INTO THE ROOM AN APPROPRIATELY SIZED OVERPRESSURE DAMPER TO ALLOW THE ROOM AIR EXHAUSTION DURING FREE-COOLING WORKING MODE

OVERPRESSURE DAMPER – Not supplied

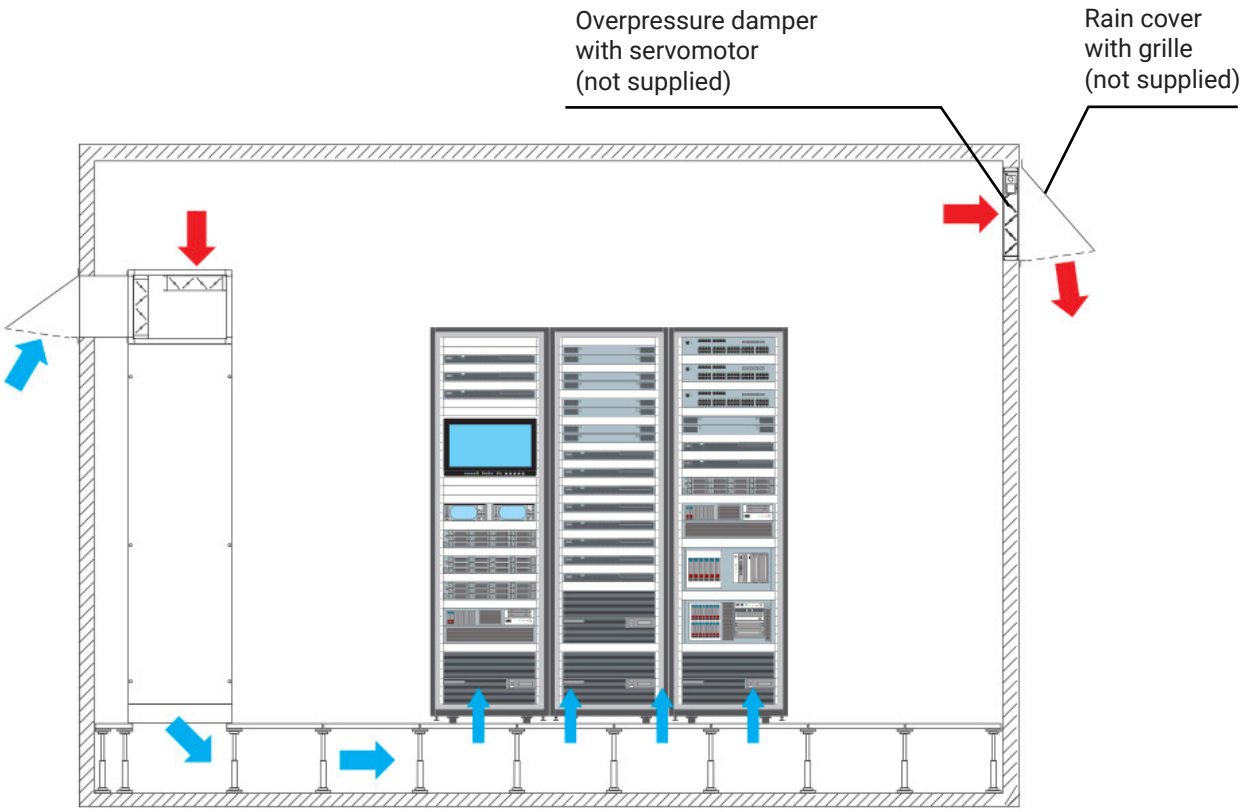
During free-cooling operation, the air conditioner supplies ambient air directly into the room, this causes an increase in air pressure inside the room.

The overpressure damper avoids the increase in pressure in the room.

The damper must be installed at the highest point of the room to expel excess hot air to the outside. Install the damper if possible in opposite position to air conditioner.

The damper is controlled by the modulating signal 0-10Vdc of the free cooling control of the air conditioner. The 24Vac power supply of the servomotor and the 0-10Vdc free-cooling signal is available on the unit's electrical terminal block (see wiring diagram for connections).

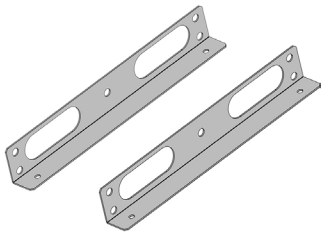
Air exhaustion must be protected with a rain cover and a grille (at Customer care).



DIMENSIONS OF THE OVERPRESSURE DAMPER

Unit model		006	009	013	022	028	038	044
Damper area	m2	0.2	0.2	0.2	0.4	0.4	0.4	0.4
Air flow	m3/h	2000	2500	2800	5000	7600	8800	10000

In case of several units installed in the same room that operate simultaneously, it is possible to install a single damper with adequate section.



OPTIONAL ACCESSORIES: 4666 – EXTERNAL AIR SENSOR

Ambient temperature probe.

OPTIONAL ACCESSORIES: P101 - ANTI-SEISMIC FIXING KIT

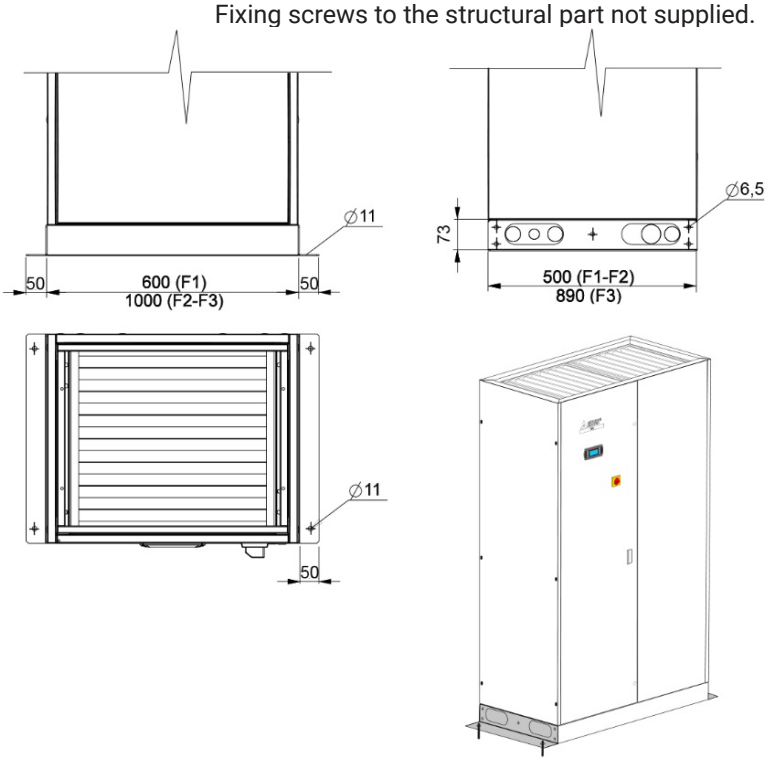
The optional is available for indoor unit.

The optional is supplied in mounting kit.

Two lateral supports that must be fixed at the machine basement sides, supplied with fixing bolts.

This is a safety device that must be mounted before the unit installation and connected to a structural part with adequate resistance in the installation site to prevent the risk of unit movement or overturning due to earthquake.

Fixing screws to the structural part not supplied.



The fixing of the unit to the structure is at Customer care.

To grant anti-seismic resistance the unit must be fixed to a structural part with adequate resistance with 4 steel screws M10 (not supplied). Each anchoring system must resist to a lifting traction force as shown in table.

INDOOR UNIT								
MODEL		006	009	013	022	028	038	044
SIZE		F1	F1	F1	F2	F3	F3	F3
VERSION (1)		U / O	U / O	U / O	U / O	U / O	U / O	U / O
Number of screws	No.	4	4	4	4	4	4	4
Type of screw		M10	M10	M10	M10	M10	M10	M10
Traction resistance needed, single anchor, Under	kg	1100	1100	1100	1800	1450	1450	1450
Traction resistance needed, single anchor, Over	kg	1150	1150	1150	1800	1500	1500	1500

1. U = Under, downflow / O = Over, upflow

ANTISEISMIC FIXING SYSTEM FOR Mr. SLIM OUTDOOR CONDENSING UNIT.

The feet of Mr Slim outdoor condensing unit are foreseen as standard with holes for ground fixing.

The fixing of the unit at the structure is at Customer care.

To grant anti-seismic resistance the unit must be fixed to a structural part with adequate resistance with 4 steel screws M10 (not supplied), as prescribed by Mr. Slim Data Book.

OPTIONAL ACCESSORIES: P091 – BACKUP MODULE CONTROLLER

The optional is available only for indoor units and it is installed within the electrical panel.

The optional accessory is not compatible with “Plenum for free-cooling” and with “Steam humidifier” optional accessories.

The system guarantees the microprocessor power supply for a few minutes in case of supply voltage failure.

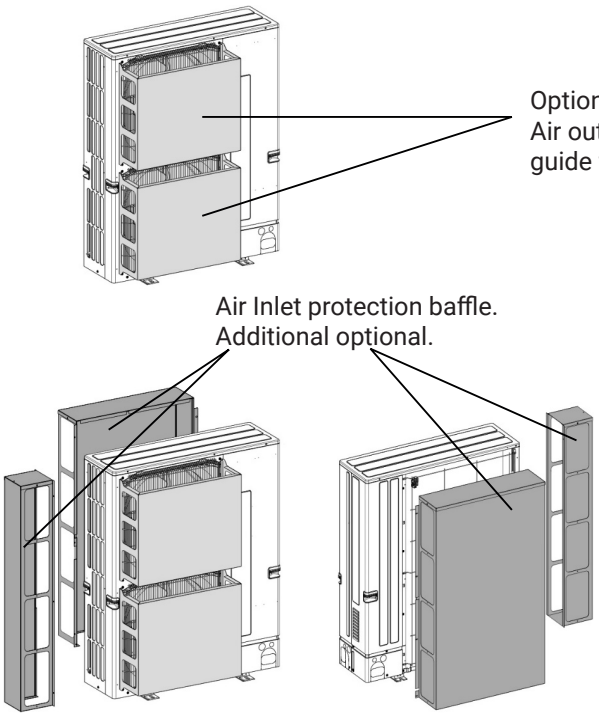
OPTIONAL ACCESSORIES: P061 - OUTDOOR UNIT LOW TEMPERATURE KIT

FOR OPERATION DOWN TO -15°C

AVAILABLE ONLY FOR Mr. SLIM CONDENSING UNIT.

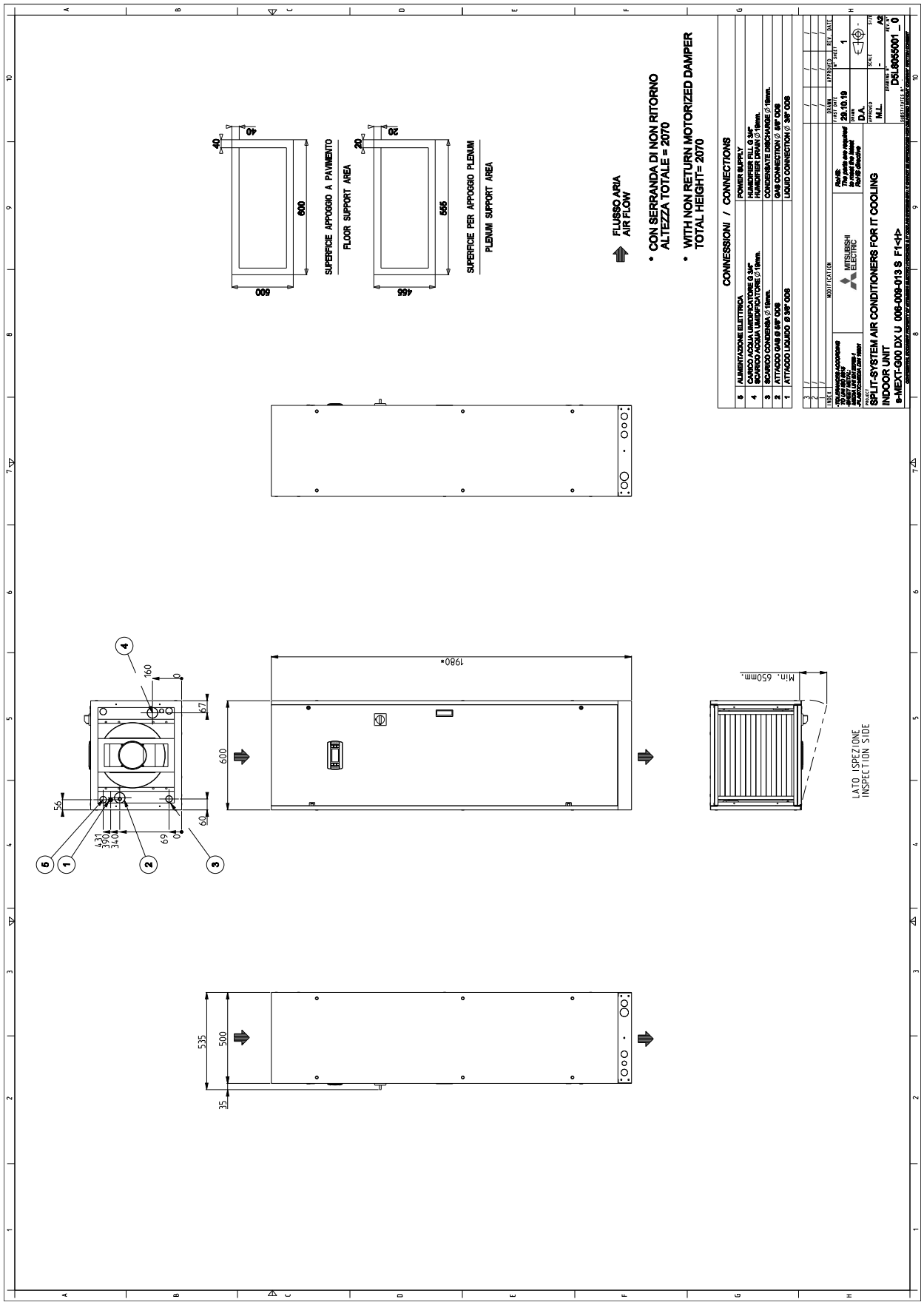
The optional is supplied with Mr. Slim separately and the installation on the unit is at Customer care. The option consists of air Inlet Protection Baffle, in addition to the air Outlet Guide as prescribed by Mr. Slim Data Book.

When installing the outdoor unit on a rooftop or other location unprotected from the wind, situate the air outlet of the unit so that it is not directly exposed to strong winds. Strong wind entering the air outlet may impede the normal airflow and a malfunction may result.



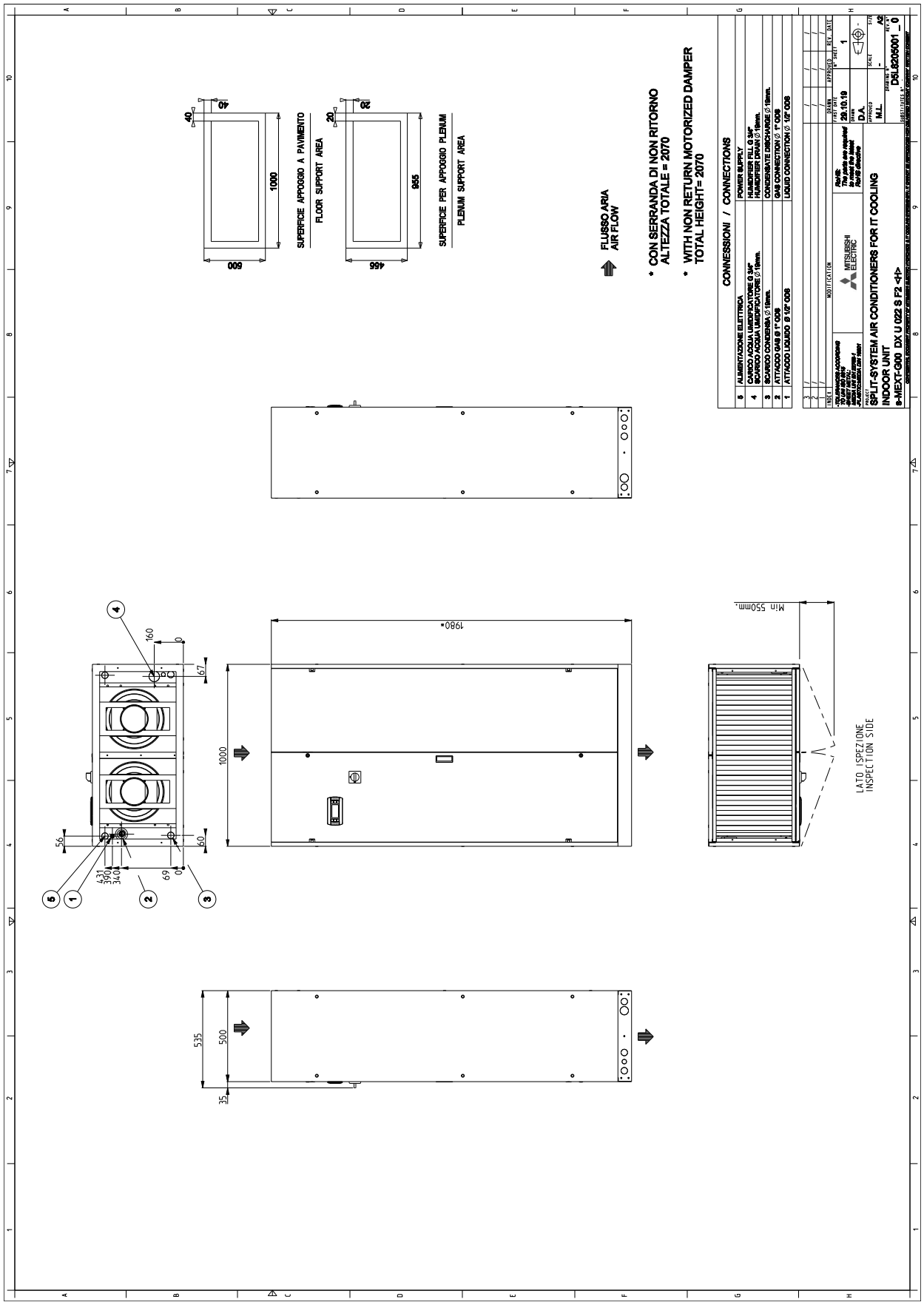
MACHINE DRAWINGS UNDER F1

Dimensions in mm



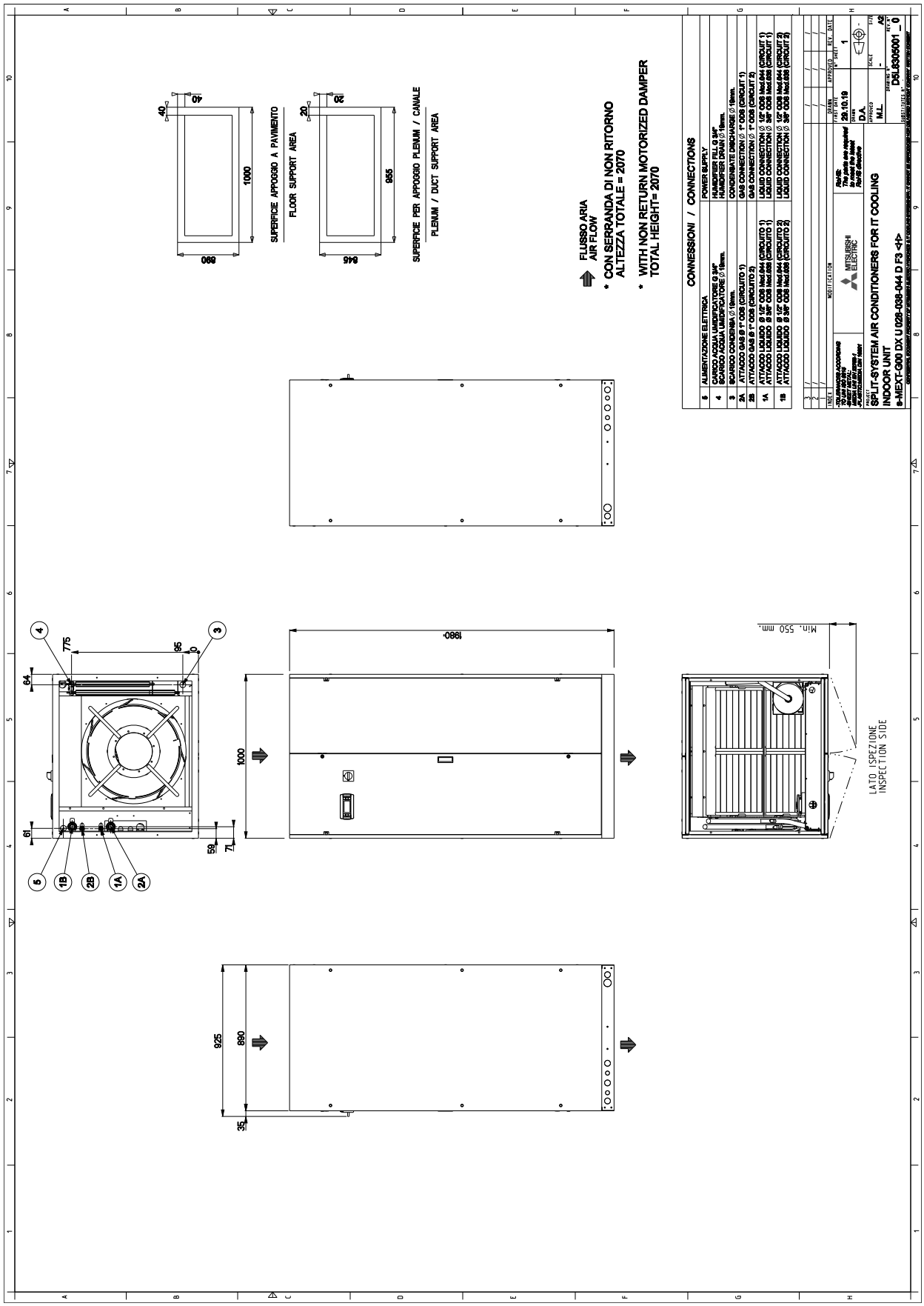
MACHINE DRAWINGS UNDER F2

Dimensions in mm



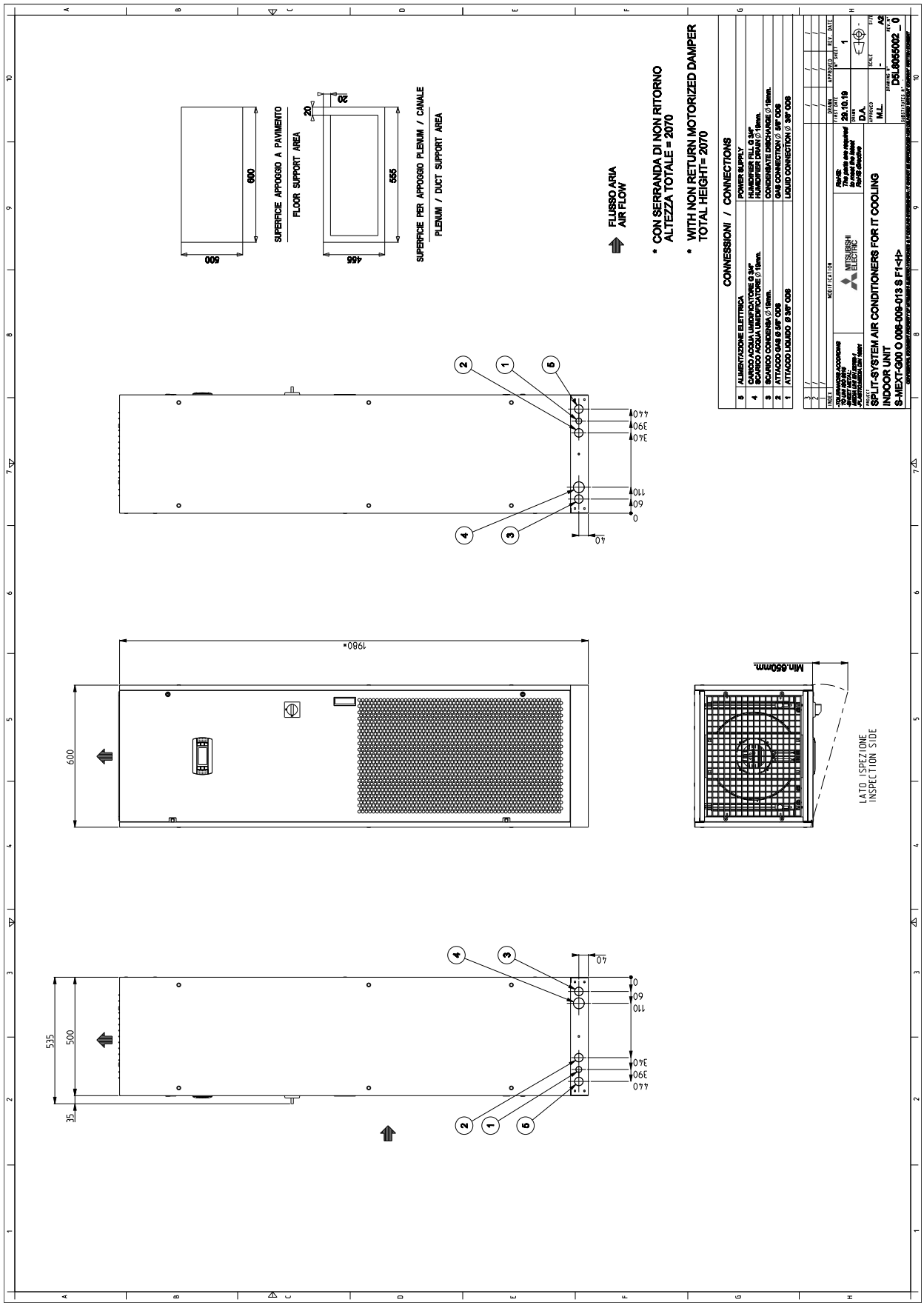
MACHINE DRAWINGS UNDER F3

Dimensions in mm



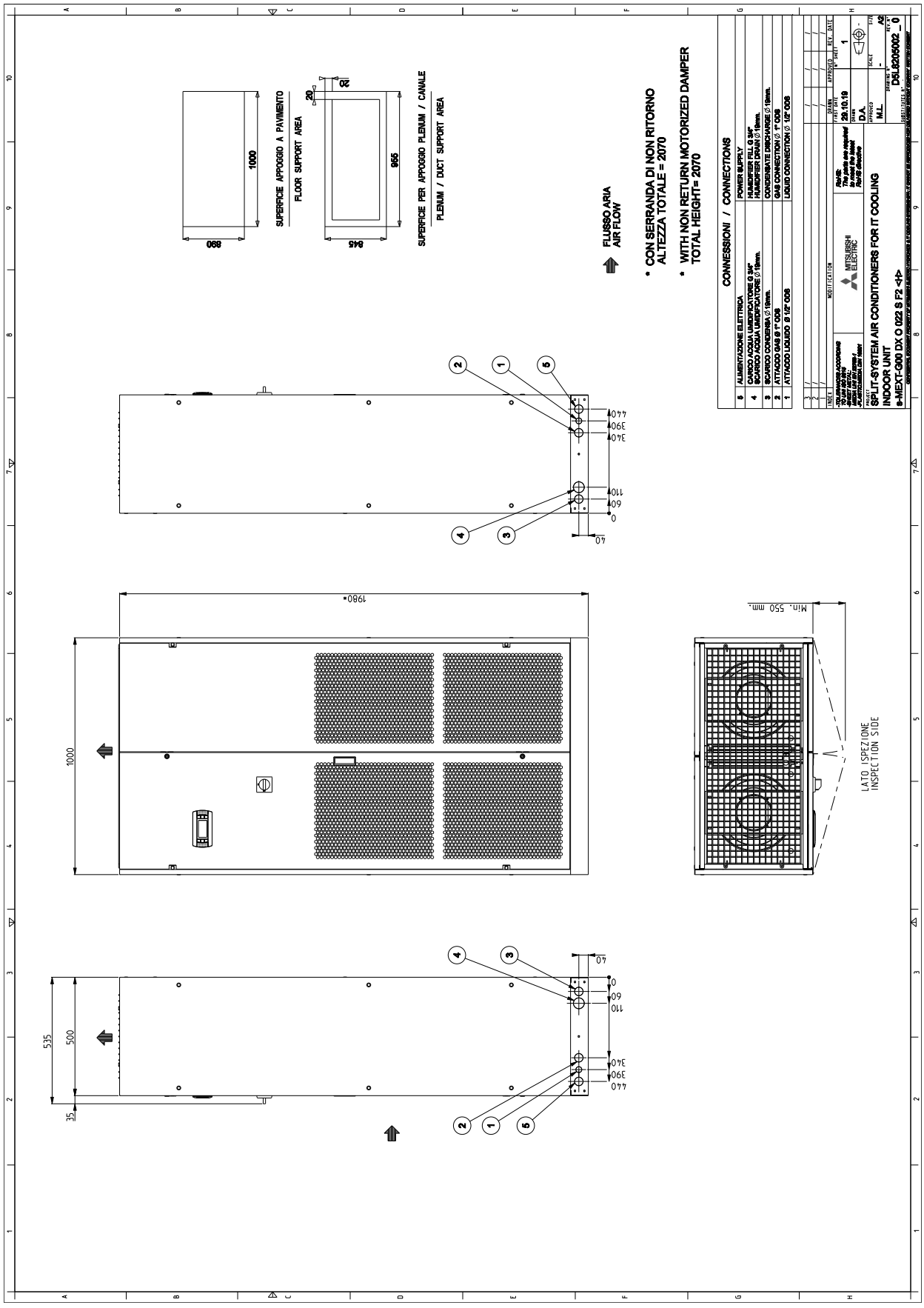
MACHINE DRAWINGS OVER F1

Dimensions in mm



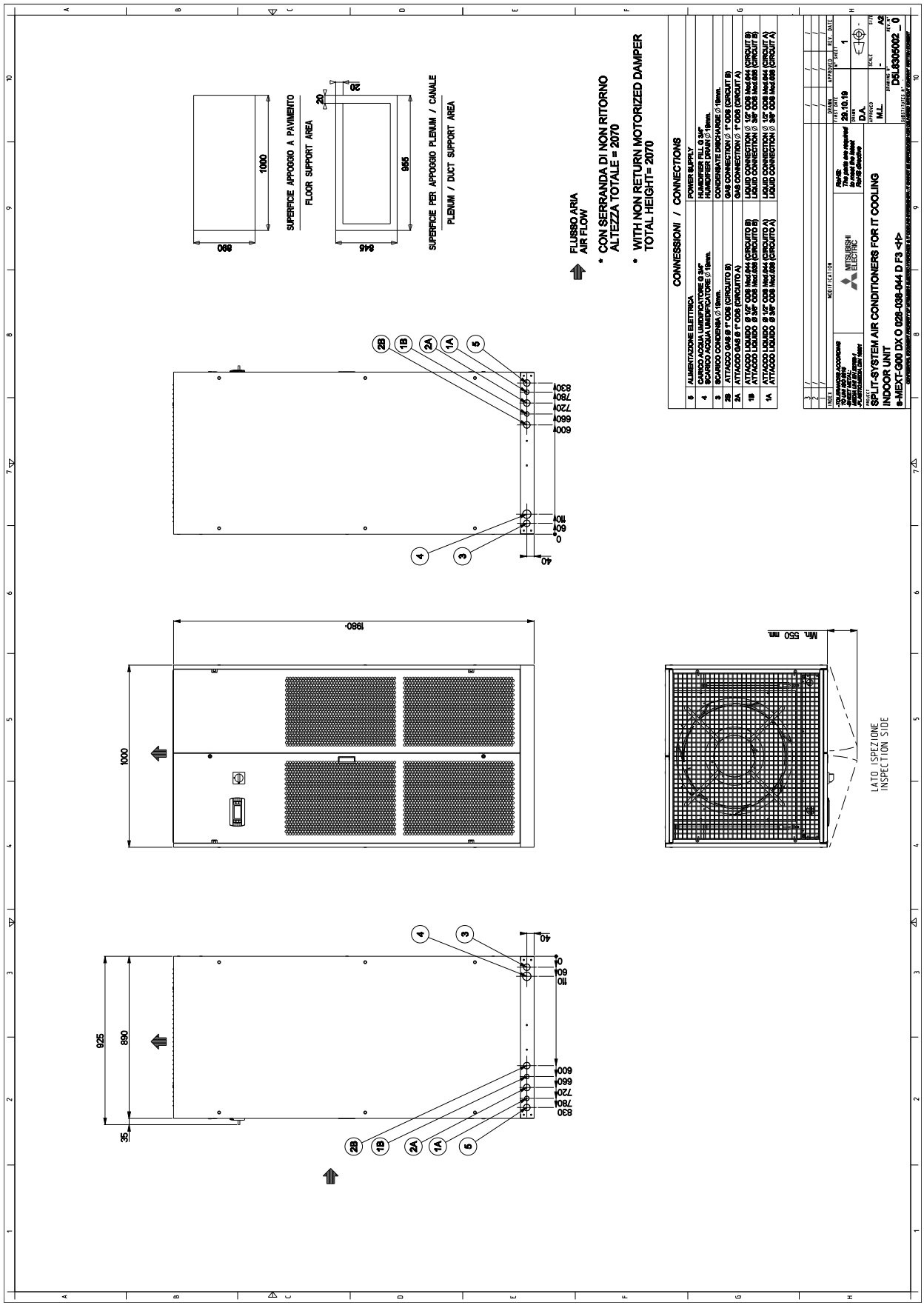
MACHINE DRAWINGS OVER F2

Dimensions in mm



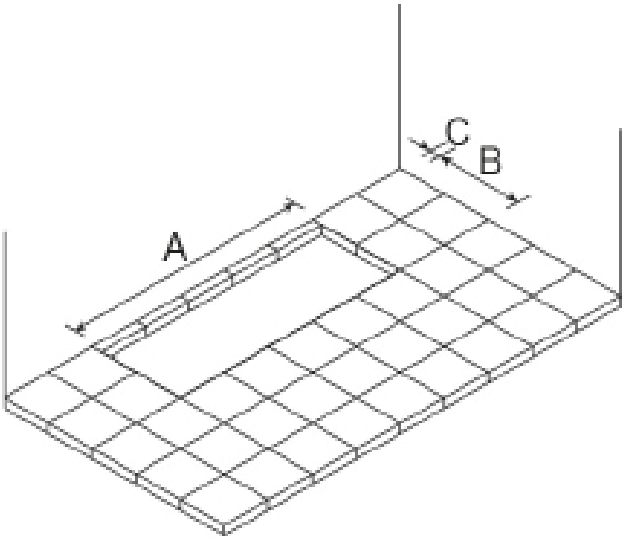
MACHINE DRAWINGS OVER F3

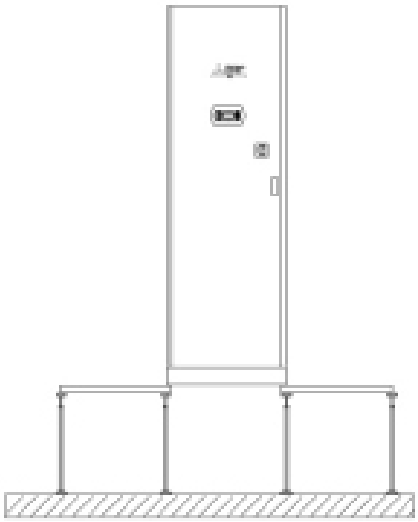
Dimensions in mm



HOLE IN THE RAISED FLOOR FOR DOWNFLOW VERSION

HOLE IN THE RAISED FLOOR WITHOUT SUPPORT FRAME

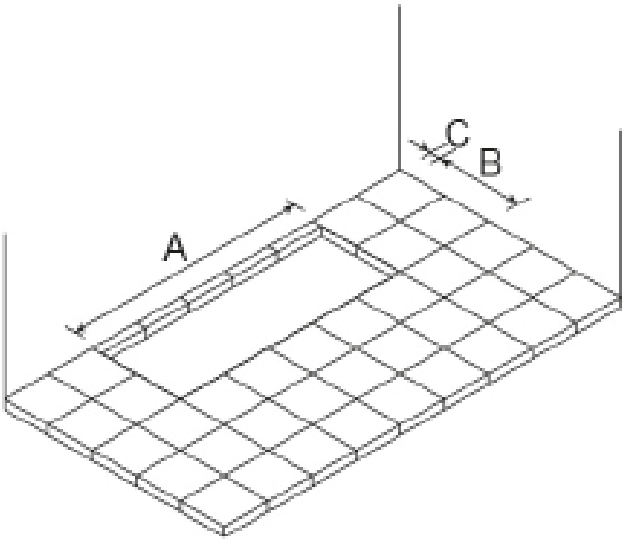


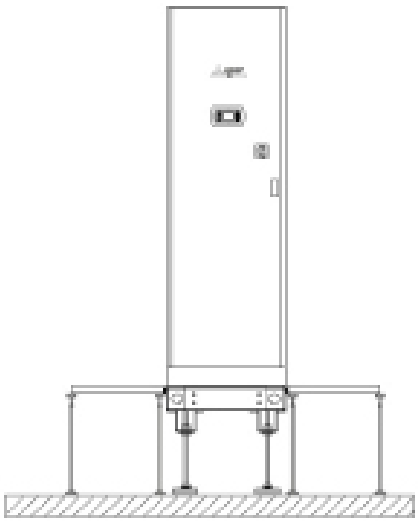


Foresee a hole in the floor with the following dimensions:

SIZE		F1	F2	F3
A	mm	540	940	940
B	mm	440	440	830
C	mm	90	90	90

HOLE IN THE RAISED FLOOR WITH SUPPORT FRAME (OPTION)



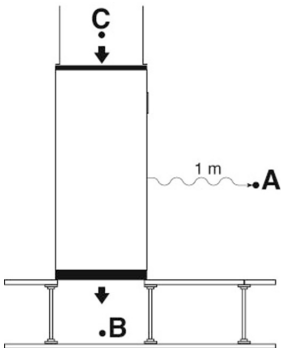


Foresee a hole in the floor with the following dimensions:

SIZE		F1	F2	F3
A	mm	610	1010	1010
B	mm	510	510	900
C	mm	60	60	60

EXAMPLE FOR MACHINES NOISE EMISSION CALCULATION

UNDER UNIT WITH DUCT ON AIR INTAKE



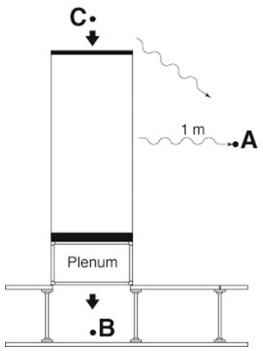
Lp **A** = Front side Under catalogue value

Lp **B** = Air delivery Under catalogue value

Lp **C** = Air intake Under catalogue value

The points **B** and **C** do not influence the point **A**

UNDER UNIT WITH PLENUM ON AIR DELIVERY



Lp **A** = Front side Under catalogue value

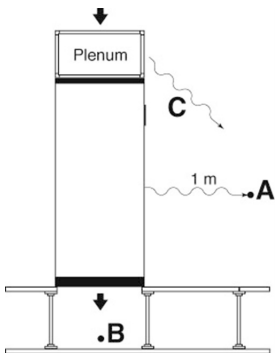
Lp **B** = Air delivery Under catalogue value – plenum noise reduction

Lp **C** = Air intake Under catalogue value

Lp **A+C** = $10 \log_{10} (10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}})$

The point **B** do not influence the point **A**

UNDER UNIT WITH PLENUM ON AIR INTAKE



Lp **A** = Front side Under catalogue value

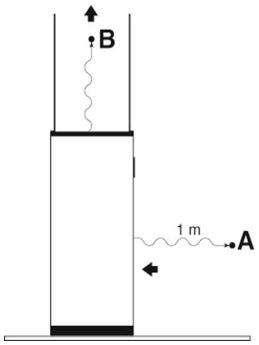
Lp **B** = Air delivery Under catalogue value

Lp **C** = Air intake Under catalogue value - plenum noise reduction

Lp **A+C** = $10 \log_{10} (10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}})$

The point **B** do not influence the point **A**

OVER UNIT WITH DUCT

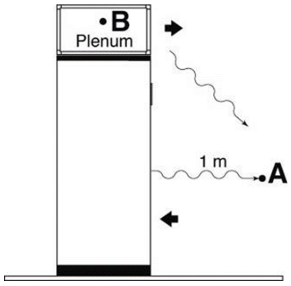


Lp **A** = Air intake Over catalogue value

Lp **B** = Air delivery Over catalogue value

The point **B** do not influence the point **A**

OVER UNIT WITH PLENUM ON AIR DELIVERY

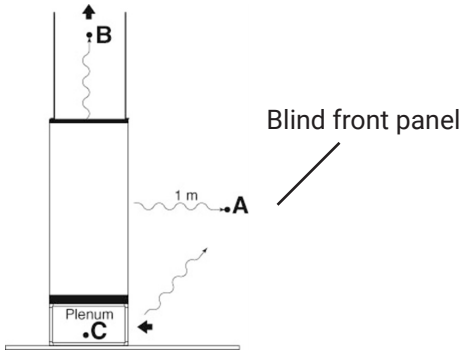


Lp **A** = Air intake Over catalogue value

Lp **B** = Air delivery Over catalogue value - plenum noise reduction

Lp **A+B** = $10 \log_{10} (10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}})$

OVER UNIT WITH DUCT AND PLENUM ON AIR DELIVERY



Lp **A** = Radiated Over catalogue value

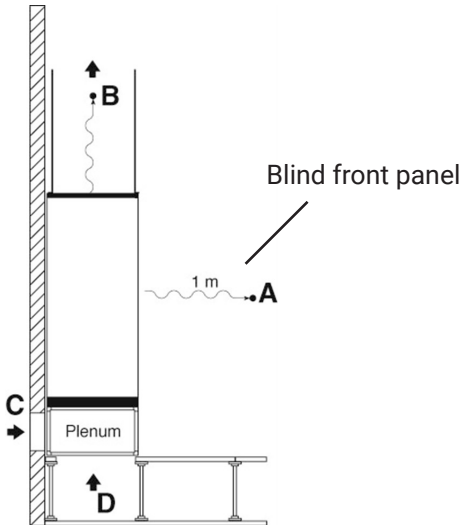
Lp **B** = Air delivery Over catalogue value

Lp **C** = Lp **A** + 6dB(A) - plenum noise reduction

Lp A+C = $10 \log_{10} (10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}})$

The point **B** do not influence the point **A+C**

OVER UNIT WITH DUCT AND PLENUM ON AIR DELIVERY



Lp **A** = Radiated Over catalogue value

Lp **B** = Air delivery Over catalogue value

Lp **C** = Lp **D** = Lp A + 6 dB(A) - plenum noise reduction

The points **B, C** and **D** do not influence the point **A**

IMPORTANT
The declared noise levels are intended in free field conditions.
The noise pressure level of an installed unit is affected by the room acoustic characteristics.
Please consider an average noise increase of +4/+6 dB(A).

SHIPMENT: s-MEXT-G00 PACKING DIMENSIONS

Values referred to basic machine. The presence of some accessories increases the weight of machine.

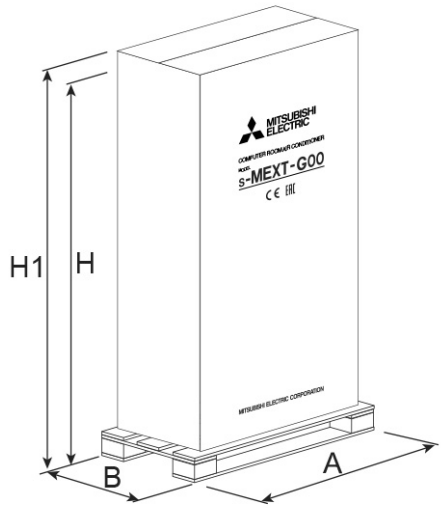
The machines are shipped on pallet and covered with carton box.

On request packing on pallet covered with shrink wrap and wooden cage.

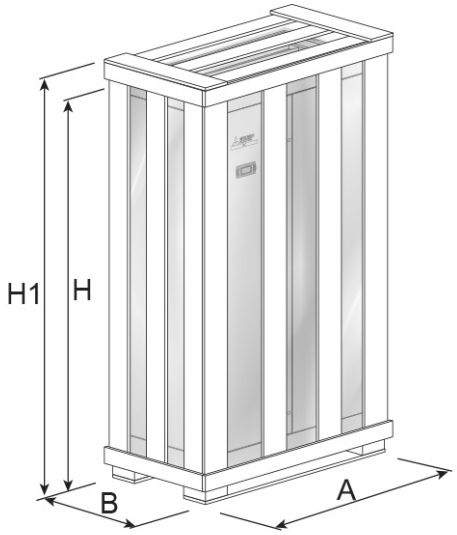
The optional "A532 Damper with spring return" is shipped mounted on the machine and increases its weight and height.

The shipping weight of the machine includes the unit bind bracket, the fire / smoke / water leakage detectors and the condensate tray (only Under version).

STANDARD PACKING DIMENSIONS



OPTIONAL 9973: WOODEN CAGE PACKING DIMENSIONS



Model	Size	A (mm)	B (mm)	H (mm)	H1 (mm)
006	F1	750	650	2100	2220
009	F1	750	650	2100	2220
013	F1	750	650	2100	2220
022	F2	1100	650	2100	2220
028	F3	1100	1100	2100	2220
038	F3	1100	1100	2100	2220
044	F3	1100	1100	2100	2220

Model	Size	A (mm)	B (mm)	H (mm)	H1 (mm)
006	F1	790	690	2250	2450
009	F1	790	690	2250	2450
013	F1	790	690	2250	2450
022	F2	1140	690	2250	2450
038	F3	1140	1140	2250	2450
038	F3	1140	1140	2250	2450
044	F3	1140	1140	2250	2450

H1 = Machine with optional A532 Damper with spring return

SHIPMENT: s-MEXT-G00 SHIPPING WEIGHT

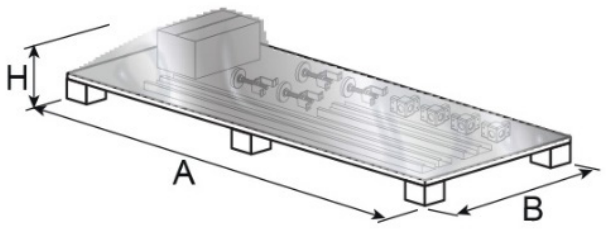
Version		U (UNDER)							O (OVER)						
Model		006	009	013	022	028	038	044	006	009	013	022	028	038	044
Size		F1	F1	F1	F2	F3	F3	F3	F1	F1	F1	F2	F3	F3	F3
PACKING TYPE															
Standard	kg	130	135	140	202	278	282	282	123	126	129	192	268	272	272
Standard (1)	kg	139	144	149	214	299	303	303	132	135	139	204	289	293	293
Wooden cage	kg	152	157	162	225	302	306	306	145	148	152	215	294	296	296
Wooden cage (1)	kg	154	159	164	228	306	310	310	147	150	154	218	296	300	300

1. Machine with optional A532 Damper with spring return

SHIPMENT: OPTIONALS PACKING DIMENSIONS AND SHIPPING WEIGHT

P041 / P042 / P043: SUPPORT FRAME

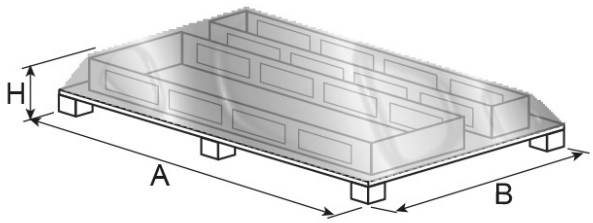
The frames are shipped on pallet and covered with shrink wrap.



Size		F1	F2	F3
DIMENSIONS				
A	mm	1200	1200	1200
B	mm	900	900	900
H	mm	500	500	500
SHIPPING WEIGHT	kg	29	31	33

P061: OUTDOOR LOW TEMPERATURE KIT

The kit is shipped on pallet and covered with shrink wrap.

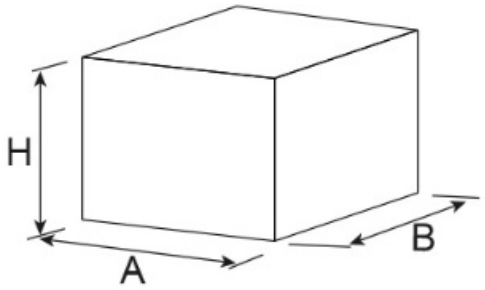


Size		F1	F2	F3
DIMENSIONS				
A	mm	950	1350	1350
B	mm	850	850	850
H	mm	350	350	350
SHIPPING WEIGHT	kg	20	40	40

A842: NETWORK ANALYZER

P113: DUAL POWER SUPPLY – External ATS

The optional are shipped in carton box



		A842 – NETWORK ANALYZER			P113 – DUAL SUPPLY External ATS		
Size		**F1**	**F2**	**F3**	**F1**	**F2**	**F3**
DIMENSIONS							
A	mm	410	410	410	400	400	400
B	mm	410	410	410	400	400	400
H	mm	210	210	210	210	210	210
SHIPPING WEIGHT	kg	5	5	5	12	12	12

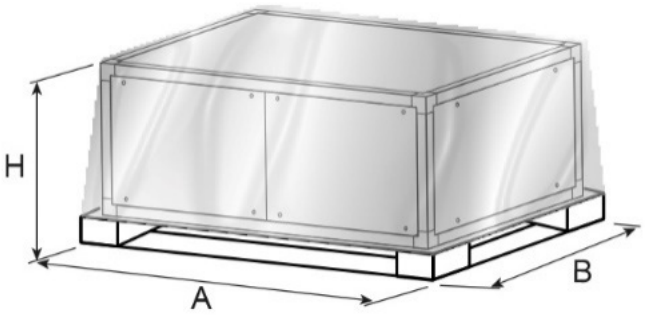
P101: ANTISEISMIC FIXING KIT

The kit is shipped togheter the machine.

Size		F1	F2	F3
Weight	kg	2,3	2,3	3,7

SHIPMENT INFORMATION

P011 / P012 – P031 / P032: EMPTY PLENUM
P013 / P014: PLENUM + 3 GRILLES
P015: SILENCED PLENUM
P033: SILENCED INTAKE PLENUM
P016: SILENCED PLENUM + 1 GRILLE
P034: INTAKE FREE COOLING PLENUM
The plenums are shipped on pallet and covered with shrink wrap.



Size		F1	F2	F3
DIMENSIONS				
A	mm	750	1100	1100
B	mm	650	650	1100
H	mm	670	670	670
SHIPPING WEIGHT				
P011 - Empty plenum “O”	kg	23	31	39
P012 - Empty plenum CL. A1 (EN 13501-1) “O”	kg	33	44	55
P031 - Empty plenum “U”	kg	23	31	39
P032 - Empty plenum CL. A1 (EN 13501-1) “U”	kg	33	44	55
P013 - Plenum + 3 grilles “O” / “U”	kg	23	31	39
P014 - Plenum + 3 grilles CL. A1 (EN 13501-1) “O” / “U”	kg	28	38	47
P015 - Silenced plenum “O” / “U”	kg	29	39	49
P033 - Silenced intake plenum “U”	kg	29	39	49
P016 - Silenced plenum + 1 grille + “O” / “U”	kg	23	31	39
P034 - Intake free cooing plenum “U”	kg	29	40	48

“O” Over / “U” Under

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