

COOLSIDE DX

4 – 68 kW

FULL INVERTER direct Expansion air conditioners for IT Cooling.
To be matched with remote moto-condensing unit.



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

- IN-ROW IN-RACK INSTALLATION
- FOR HIGH DENSITY RACK AND BLADE SERVER
- FULLY HERMETIC BLDC INVERTER COMPRESSORS (on outdoor moto-condensing unit)
- SINGLE REFRIGERANT CIRCUIT
- PLUG FANS WITH EC ELECTRIC MOTOR
- ELECTRONIC EXPANSION VALVE

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MEHITS CERTIFICATIONS



SYSTEM CERTIFICATIONS

ISO 9001 CERTIFICATION – MEHITS S.p.A.
Quality Management System

ISO 14001 CERTIFICATION – MEHITS S.p.A.
Environmental Management System

BS OHSAS 18001 CERTIFICATION – MEHITS S.p.A.
Occupational Health and Safety Management System

PRODUCT CERTIFICATIONS BY COUNTRY



CE MARKING

MEHITS units are in compliance with the European Directives in force.

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

EAC CERTIFICATION
(Russian Federation, Belarus, Kazakhstan)



GENERAL CHARACTERISTICS



Modelli 0021 ÷ 0121



Modelli 0151 ÷ 0251

COOLSIDE DX: FULL INVERTER Air Conditioners for IT Cooling.

- Direct expansion, air cooled;
- For matching with remote air-cooled moto-condensing unit;
- Electronic expansion valve;
- Plug fans with EC electric motor;
- Single refrigerant circuit.

This series, for in-row, in-rack installation, is offered in 6 models available in the following version:

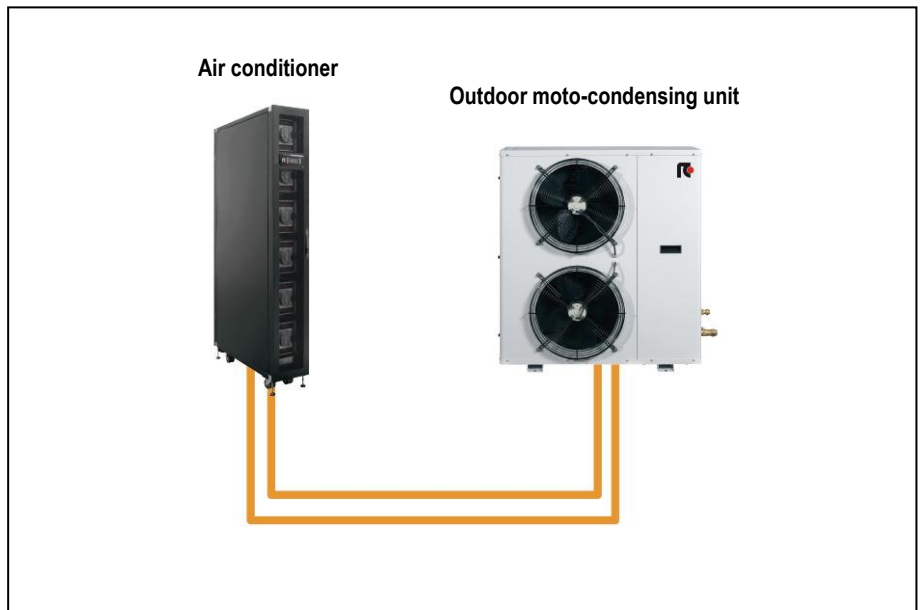
- IN ROW "I" air flow: Frontal or side air delivery, back side air suction
Cooling capacity: 4 ÷ 57 kW
- ENCLOSURE "E" air flow: Side air delivery, side air suction
Cooling capacity: 6 ÷ 68 kW

The machines are made for indoor installation.

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

The installation requires refrigerant charge, electrical, refrigerant and hydraulic connections.

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



Air conditioner

Outdoor moto-condensing unit

SPLIT EVO INV OUT: Outdoor moto-condensing units

- Hermetic BLDC inverter compressor

The machines are made for outdoor installation.

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

The installation requires refrigerant charge, electrical and refrigerant connections.

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



Modello 0071



Modello 0121



Modelli 0151 ÷ 0251

INSTALLATION

The series is particularly suitable for installation in Data Center with hot spot for high density racks and blade server cooling. It is able to cope the high density of the thermal load in a small space, **up to and over 40kW/m² per rack**.

For installation are not required underfloor plenum, ducts or false-ceilings; the installation foresees the direct insertion within the rows of racks to cool.

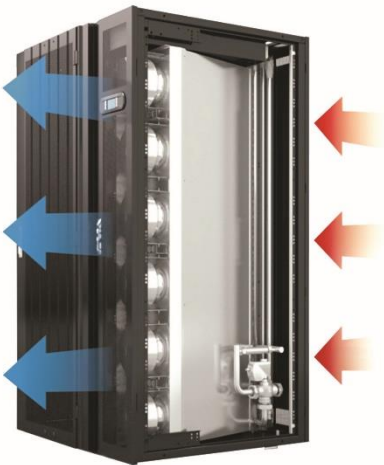
This allows to contrast the localized heat sources (hot spot) tailoring the installation to the actual situation of the plant. Another big advantage is the modularity and scalability of the system, characteristics that allow for quick adjustment and economic development of plant layout, according to the changing needs of the infrastructure.

IN ROW COOLING SYSTEM FOR ROWS OF RACKS (hot/cold aisles)

Units are placed in the rows of racks that are arranged so as to obtain alternate cold and hot aisles. Electronic equipment contained in racks independently provide to aspire the necessary air for cooling.

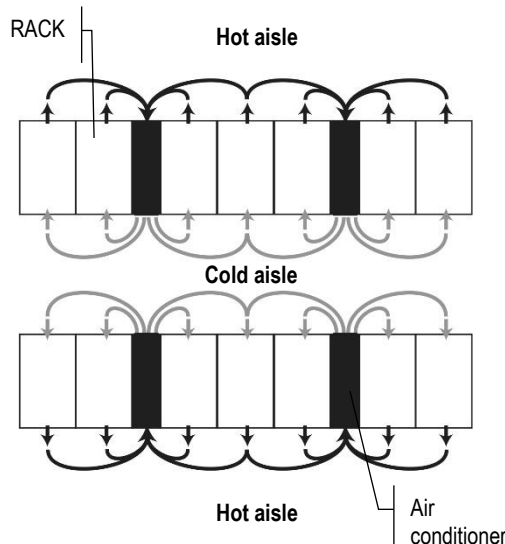
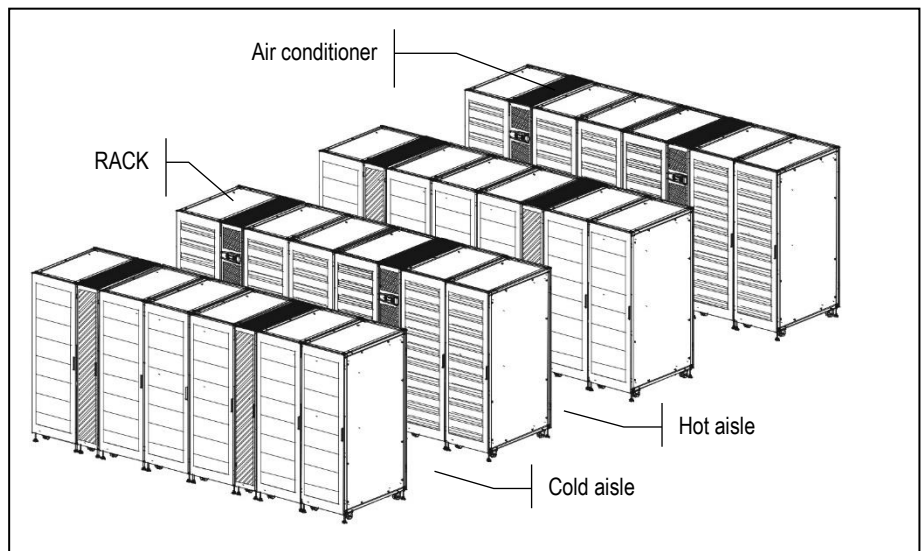
- In the hot aisle rack expels the hot air used to cool the electronic components while the air conditioner draws the hot air to be cooled.
- In the cold aisle the air conditioner blows the filtered and cooled air while the rack draws cold air to cool the electronic components.

PLANT TYPE



"1" VERSION - IN ROW VERSION – FRONTAL AIR DELIVERY

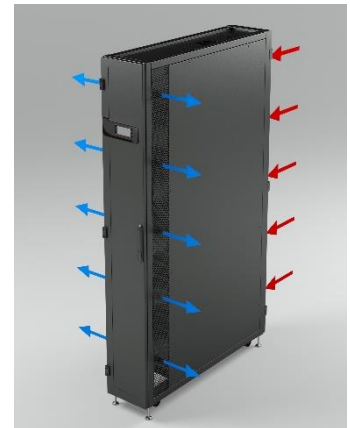
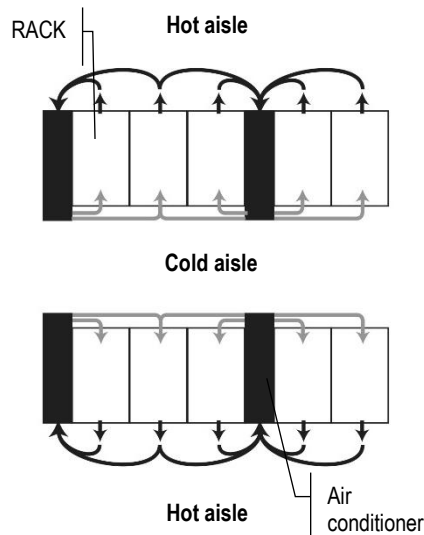
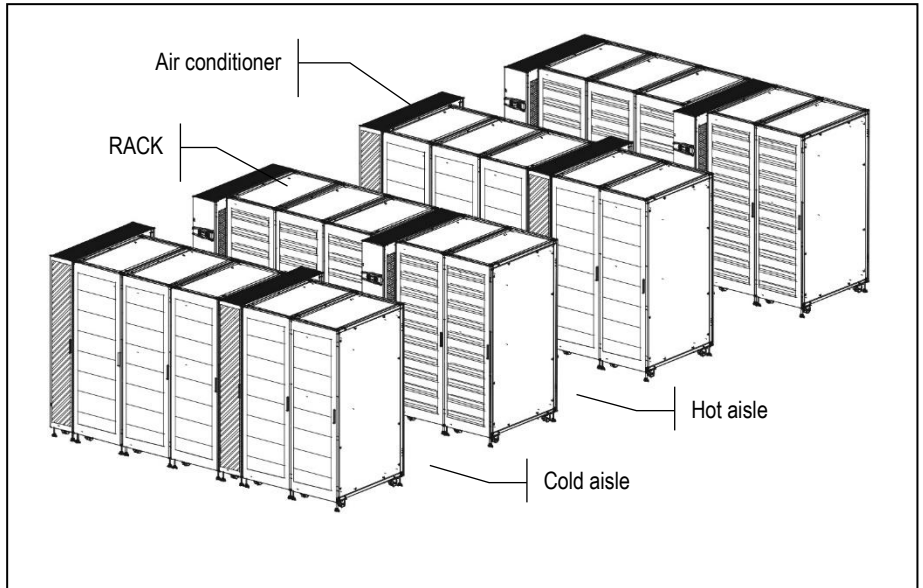
Frontal air delivery. Rear air suction.



Frontal air delivery
Rear air suction

"I" VERSION - INROW VERSION WITH SIDE AIR DELIVERY

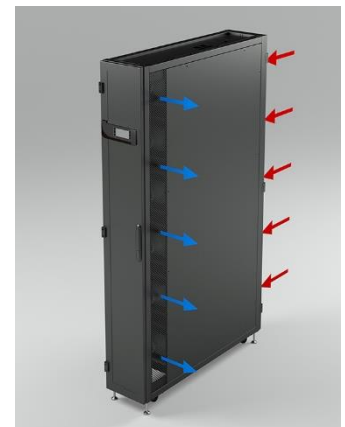
In the version with side outlet, the air is delivered directly to the front of the racks, reducing the risk of mixing between cold and hot air, and ensuring correct air distribution even when the rack cooler is installed at the start of the row.



Right + Left air delivery.
Rear air suction.



Left air delivery.
Rear air suction.



Right air delivery.
Rear air suction.

"E" VERSION - IN RACK COOLING SYSTEM FOR DIRECT COOLING OF THE RACKS

The rows of racks are arranged so as to insert an air conditioner between two racks.

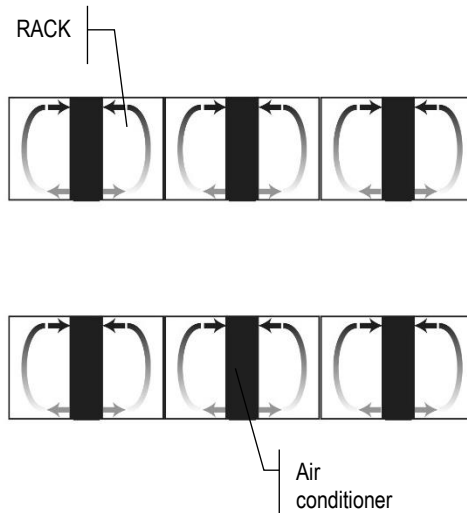
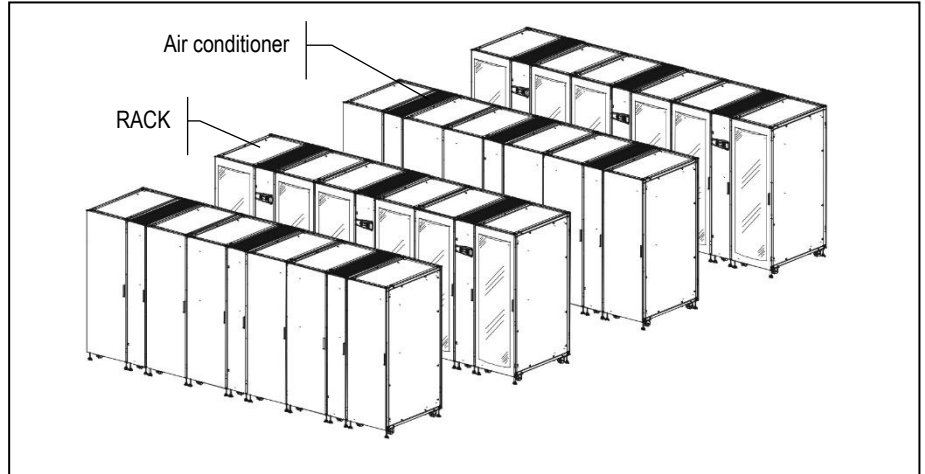
The racks are equipped with tight door for the containment of cooling air.

The air conditioner blows filtered and cooled air in the frontal side of the rack where the electronic equipment draws the cooled air.

Thanks to the "closed" cooling system the electronic equipment contained in racks do not require fans for air circulation.

In the back side of the rack, the hot air is drawn by the air conditioner that will repeat the cooling cycle.

ENCLOSURE VERSION



Right + left air outlet
Right + left air intake.



Left air outlet.
Left air intake.



Right air outlet.
Right air intake.

COOLSIDE DX

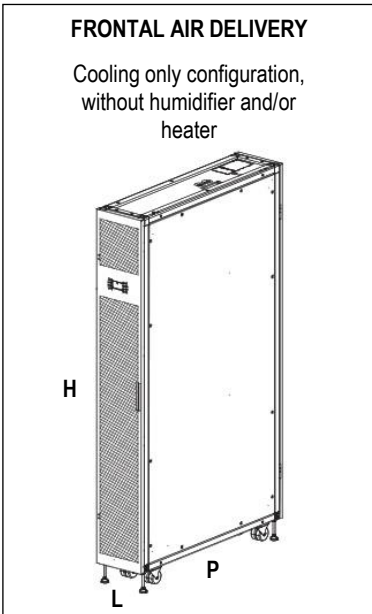
CONFIGURATIONS

The desired configuration must be selected during the order phase.

“I” VERSION

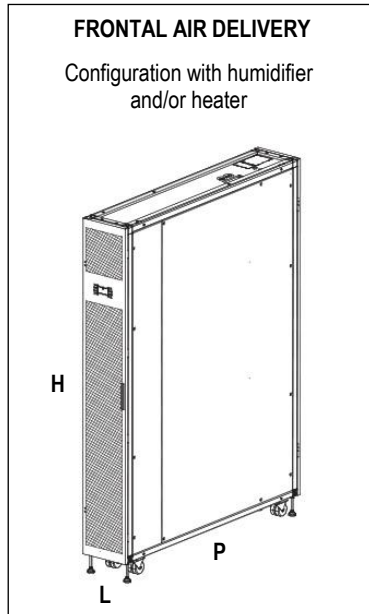
IN ROW COOLING SYSTEM (hot/cold aisle)

FRONTAL air delivery; BACK SIDE air suction



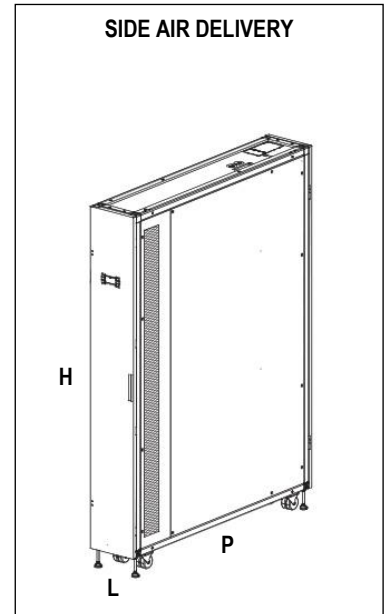
FRONTAL AIR DELIVERY

Cooling only configuration, without humidifier and/or heater



FRONTAL AIR DELIVERY

Configuration with humidifier and/or heater



SIDE AIR DELIVERY

SIDE air delivery; BACK SIDE air suction

DIMENSIONS		
L (mm)	300	600
P (mm)	1000/1200(*)	
H (mm)	2085	

DIMENSIONS		
L (mm)	300	600
P (mm)	1200 (*)	1000/1200(*)
H (mm)	2085	

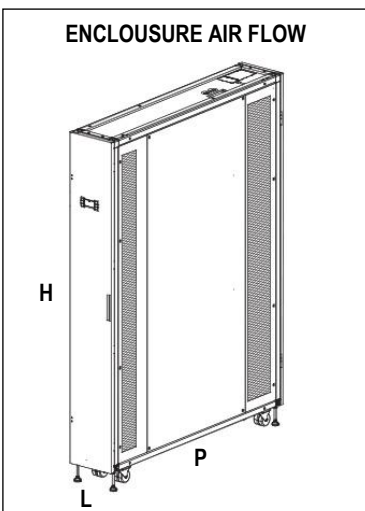
DIMENSIONS		
L (mm)	300	600
P (mm)	1200	
H (mm)	2085	

(*) Increased frame dimensions for in-row version with frontal air delivery. Optional mandatory for in-row version with frontal air delivery with Humidifier (optional) and/or electric heater (optional) for models 0021, 0051, 0071, 0121.

“E” VERSION

ENCLOSURE COOLING SYSTEM - IN RACK (close loop).

SIDE air delivery; SIDE air suction



ENCLOSURE AIR FLOW

DIMENSIONS		
L (mm)	300	600
P (mm)	1200	
H (mm)	2085	



PRODUCT FEATURES AND BENEFITS



EFFICIENCY

The unit combines the efficiency of the use of the last EC fans generation and a direct expansion system with inverter compressor (within outdoor moto-condensing unit) allowing a great EER value. Thanks to the adoption of BLDC inverter compressors, these units can reduce by 50% the consumption at partial load if compared to traditional ON/OFF compressor unit. This is made possible also thanks to the advantage of variable air flow enabled by EC fans.

FLEXIBILITY

The In-Row and Enclosure versions are both equipped with predisposition for passing refrigerant connections and power both from above and below, so as to allow a quick and easy installation in any condition, whether or not foreseen the presence of a raised floor.

IDM - INTEGRATED DYNAMIC MANAGEMENT OF TEMPERATURE

The units are supplied with a new management algorithm called IDM INTEGRAL DYNAMIC MANAGEMENT able to prevent stratification of temperature within the rack using 4 sensors (2 on the air suction and 2 on the air outlet) integrated and independent that, on the basis of the real load in the single stratified BLADE, work to optimize the ventilation only when required so as to maximize energy benefits. The IDM also provides the optimal management of the outlet treated air temperatures integrating the various resources in a DYNAMIC and INTELLIGENT way to avoid unpleasant condensation and ensuring (SHR = 1).

MODULARITY

The units, with their characteristics of dimensional standardization based on the rack, are ideal for all those Data Centers where SCALABILITY of the system is a strategic factor.

COMPARTIZATION

Perfect integration with systems that minimize the mixing of air between the hot and cold aisles and that emphasize the efficiency of such systems.

The series represents the state of the art of the air conditioning of Data Center with hot spots for high density racks and blade server cooling. The modularity of the system together with the adaptive logic of microprocessor control, make it the best solution for racks and the latest generation equipment cooling.

- EER up to 7,10 at nominal conditions.
- High cooling density, **up to and over 40kW/m² per rack.**
- Single BLDC scroll inverter compressor (within outdoor moto-condensing unit) in order to provide always the best efficiency;
- New plug fans with EC electric motors and impeller in composite material, which guarantees a reduction of power consumption;
- New fans electric motor that do not require maintenance;
- Total modulating, FULL INVERTER;
- Improvement of the control software with advanced control logic;
- Single refrigerant circuit;
- Total frontal access and lateral panels fully removable to facilitate the operations of extraordinary maintenance;

F-GAS DIRECTIVE

The units highlighted in this publication contain <HFC R410A [GWP₁₀₀ 2088]> fluorinated greenhouse gases.

MODEL IDENTIFICATION

FULL INVERTER direct expansion air conditioners for IT Cooling
model: COOLSIDE DX I 0021 BASIC

COOLSIDE DX	Series
I	IN-ROW air flow
E	ENCLOSURE air flow
0021	Model
BASIC	Single refrigerant circuit

Outdoor moto-condensing units
model: SPLIT EVO INV OUT 0021

SPLIT EVO INV OUT	Series
	With BLDC inverter compressor
0021	Modello

WORKING LIMITS

ROOM AIR CONDITIONS

Room air temperature:

IN-ROW air flow: 23°C / 53% U.R. ÷ 40°C / 20% U.R.

ENCLOSURE air flow: 30°C / 35% U.R. ÷ 50°C / 12% U.R.

AMBIENT AIR TEMPERATURE

With outdoor moto-condensing unit, BASIC version

+45°C Maximum ambient air temperature

-20°C Minimum ambient air temperature

With outdoor moto-condensing unit, LT version

+45°C Maximum ambient air temperature

-35°C Minimum ambient air temperature

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.

POWER SUPPLY

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

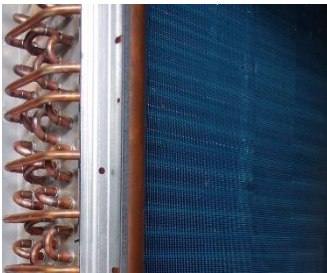
± 2% Maximum unbalancing of the phases.

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 50°C in absence of superficial condensation and direct sun light.



MAIN COMPONENTS – INDOOR UNIT



FRAMEWORK

- Framework in galvanized steel sheet externally painted with epoxy powders.
- Panel coated with a double layer of plastic and internally insulated with noise absorption material.
- Access doors. The doors are equipped with handle with security lock.
- Holders for unit height adjusting.
- Colour RAL 9005.
- Air flow:
 - IN ROW cooling system (for rows of racks) "I" VERSION:
 - Air intake from the back side and frontal or side air delivery through honeycomb type grilles.
 - IN RACK cooling system (direct cooling of racks) "E" VERSION:
 - Air intake from side and air delivery from side through honeycomb type grilles.

FILTER SECTION

Models 0021, 0051, 0071, 0121:

- Washable air filters with COARSE 40% efficiency (according to ISO EN 16890), with cells in synthetic fibre, supported by a frame with protective metal mesh. The filtering media is flame retardant.

Models 0151, 0251:

- Washable air filters with COARSE 60% efficiency (according to ISO EN 16890), with cells in synthetic fibre, supported by a frame with protective metal mesh. The filtering media is flame retardant.

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.
- Condensate tray with connection (internal diameter Ø16) for a discharge tube or for a pump for condensate drain (option).

FANS SECTION

- Centrifugal fans with backward curved blades, single suction and without scroll housings (Plug-fans), directly coupled to brushless type synchronous EC motor with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.
- Fans quick installation system for a fast replacement.
- N+1 dynamic management of EC fans. Allows operation at reduced flow-rate to optimise power consumption. Moreover, in the event of a fault on one fan, the other fans are operated at maximum speed to ensure the same cooling performance.
- Nr.2 temperature sensors on air delivery.
- Nr.2 temperature sensors on air intake.
- Current detector for loss of air flow alarm.

REFRIGERANT CIRCUIT

The indoor unit is supplied with seal charge.

- Electronic expansion valve. The valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure
- Refrigerant pressure transducer for expansion valve.
- Refrigerant temperature sensor for expansion valve.
- Low pressure safety switch with automatic reset.
- Valves on liquid and suction line for coupling to remote moto-condensing unit.
- Predisposition for refrigerant connections from the bottom or from the top of the unit.

ELECTRICAL PANEL

Extractable electrical panel in accordance with EN60204-1 norms, complete with:

- Magnetothermic switches for supply fans.
- Terminals for smoke/fire alarm and LAN connection.
- Power supply: 230/1/50 or 400/3+N/50 according to the model (see TECHNICAL DATA)



CONTROL SYSTEM

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

MAIN COMPONENTS – OUTDOOR MOTO-CONDENSING UNIT



OUTDOOR MOTO-CONDENSING UNIT – MODELS 0021, 0051, 0071, 0121 FRAMEWORK

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

CONDENSING SECTION

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

CONDENSER FAN SECTION

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

COMPRESSOR SECTION

Model 0021, 0051:

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

Model 0071:

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

REFRIGERANT CIRCUIT

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

- Sight glass.
- Filter dryer on liquid line.
- High pressure safety switch with manual reset.
- High pressure transducer for condensing control:
Condenser fan with AC motor:
- Condensing control with variation of fan speed through phase-cut electronic regulator.
- Liquid receiver
- Liquid separator on compressor suction line (only model 0071)
- Check valve on condenser inlet
- Lubricant oil charge.
- External refrigerant connections with valves.

ELECTRICAL PANEL

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

- Main switch with door lock safety on frontal panel.
- Magnetohermic switches for fan and compressor.
- Contactors for each load.
- Phase sequence relay for compressor with three-phase power supply
- Transformer for auxiliary circuit and microprocessor supply.
- Terminals for inlets / outlets.
- Power supply: 230/1/50 or 400/3+N/50 according to the model (see TECHNICAL DATA).
The power supply is independent from the outdoor condensing unit.

MAIN COMPONENTS – OUTDOOR MOTO-CONDENSING UNIT



OUTDOOR MOTO-CONDENSING UNIT – MODEL 0151, 0251 FRAMEWORK

- Frame and panels in galvanized steel sheet and painted with epoxy powders. Colour RAL 9010;
- Containing box for compressors.
- Compartment for electrical panel on unit front for direct access to control and regulation devices.

CONDENSING SECTION

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

CONDENSER FAN SECTION

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

COMPRESSOR SECTION

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

REFRIGERANT CIRCUIT

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

- Sight glass.
- Filter dryer on liquid line.
- High pressure safety switch with manual reset.
- High pressure transducer for condensing control:
Condenser fan with AC motor:
 - Condensing control with variation of fan speed through phase-cut electronic regulator.
- Liquid receiver
- Liquid separator on compressor suction line
- Check valve on condenser inlet
- Solenoid valve
- Lubricant oil charge.
- External refrigerant connections, with valves.

ELECTRICAL PANEL

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

- Main switch with door lock safety on frontal panel.
- Magnetothermic switches for fan and compressor.
- Contactors for each load.
- Phase sequence relay for compressor with three-phase power supply
- Transformer for auxiliary circuit and microprocessor supply.
- Terminals for inlets / outlets.
- Power supply: 400/3+N/50
The power supply is independent from the outdoor condensing unit.

OPTIONAL ACCESSORIES – INDOOR UNIT

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

- Electric heating system with steel tubular and fins, three-stage control and safety thermostat.
The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.
- Oversized electric heating system with steel tubular and fins, three stage control and safety thermostat.
The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.
- Modulating steam humidifier with immersed electrodes with electronic control.
The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.
- Standard condensate drain pump. Installed on the unit. For low temperature water.
- Humidifier and condensate drain pump kit. For high water temperature. Supplied in mounting kit.
- Smoke sensor.
- Fire sensor.
- Smoke / fire sensor.
- Network analyzer: multifunction utility for calculating and displaying the machine electrical measurements.
- Double power supply with automatic change-over. Supplied in mounting kit.
- Anti-mixing frontal/back panel. Not compatible with optional "floor brackets fixing kit" for models 0021, 0051, 0071, 0121.
- Anti-mixing side panel.

OTHER ACCESSORIES

- Increased frame dimensions for in-row version with frontal air delivery:
 - 42U 300x1200 for models 0021, 0051, 0071, 0121;
 - 42U 600x1200 for models 0151, 0251.The optional accessory is mandatory for in-row version with frontal air delivery with Humidifier (optional) and/or Electric heating (optional).
- 60Hz Power Supply:
 - 230/1/60 (for models 0021, 0051);
 - 460/3/60 (for models 0071, 0121, 0151, 0251);
 - 380/3/60 (for models 0071, 0121, 0151, 0251).
- Combined Temperature / Humidity sensor on in-room air.
- Dehumidification system. The optional foresee the combined Temperature / Humidity sensor on in-room air.
- Modulating steam humidifier with immersed electrodes with electronic control and Dehumidification system. The optional foresee the combined Temperature / Humidity sensor on return air.
The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.
- Differential pressure switch on the air side for clogged filters alarm signal.
- Under floor water alarm through sensor to be placed on the floor.
- Floor brackets fixing kit
- Unit packing in wooden crate.
- Microprocessor control accessories:
 - Remote terminal for connecting and managing multiple units connected in LAN.
 - Serial card MBUS RS485.
 - Serial card LON.
 - Serial card Ethernet

WARNING

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

OPTIONAL ACCESSORIES – OUTDOOR MOTO-CONDENSING UNIT

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

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
 - EC electric motor
 - IP54 enclosure class.
- LT version for operation in mechanical cooling with outdoor temperatures down to -35°C.
- Network analyser.
- Double power supply with ATS system.

OTHER ACCESSORIES

- Condensing coil in special execution:
 - Cu/Cu version
 - Epoxy painted protection
 - Electro-phoresic paint protection (cataphoresis)
- 60Hz Power Supply:
 - 230/1/60 (only for models 0021, 0051);
 - 460/3/60 (only for models 0071, 0121, 0151, 0251);
 - 380/3/60 (only for models 0071, 0121, 0151, 0251).
- Compressor soundproof cap for a sound level reduction of 2 dB(A).
- Rubber support.
- Unit packing in wooden crate.

WARNING

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

TECHNICAL DATA – In Row “I” Version

INDOOR UNIT										
MODEL	0021					0051				
COOLING CAPACITY (1)	100%	80%	60%	50%	100%	80%	60%	45%		
Total	kW	8,81	7,05	5,29	4,34	10,60	8,48	6,36	4,64	
Sensible	kW	8,81	6,98	5,29	4,34	9,61	8,03	5,98	4,64	
SHR (2)		1,00	1,00	1,00	1,00	0,91	0,94	0,94	1,00	
SUPPLY FAN	n.	2				2				
Fan type		Plug Fan EC				Plug Fan EC				
Air flow	m³/h	1500	1224	948	800	1500	1287	1073	900	
Fans power input (3)	kW	0,16	0,09	0,06	0,03	0,16	0,11	0,08	0,04	
Nominal external static pressure	Pa	20				20				
AIR FILTERS	n.	1				1				
Efficiency		COARSE 40%				COARSE 40%				
REFRIGERANT		R410A				R410A				
Gas circuit	n	1				1				
POWER SUPPLY	V/Ph/Hz	230/1/50				230/1/50				
ENERGY EFFICIENCY INDEX (1) (4)										
EER Energy Efficiency Ratio	kW/kW	3,07	3,83	4,85	5,56	3,48	3,93	4,00	4,30	
DIMENSIONS INDOOR UNIT										
Width	mm	300				300				
Length with frontal air delivery (5)	mm	1000				1000				
Length with side air delivery	mm	1200				1200				
Height	mm	2085				2085				
NET WEIGHT	kg	185				175				
REFRIGERANT CONNECTIONS										
Liquid line	Ø mm	3/8" SAE-9,52				12				
Suction line	Ø mm	5/8" SAE-16				18				
HYDRAULIC CONNECTIONS										
CONDENSATE DISCHARGE										
Rubber pipe – internal diameter	Ø mm	16				16				
OUTDOOR MOTO-CONDENSING UNIT										
MODEL	0021					0051				
COOLING CAPACITY	100%	80%	60%	40%	100%	80%	60%	45%		
BLDC INVERTER COMPRESSOR		Rotary					Rotary			
Quantity	n.	1					1			
Power input	kW	2,58	1,61	0,90	0,62	2,63	1,80	1,26	0,77	
CONDENSER FAN	n.	1					2			
Fan type		Axial AC					Axial AC			
Air flow	m³/h	3200					6400			
Power input (3)	kW	0,13					0,26			
REFRIGERANT		R410A					R410A			
Refrigerant circuit	n	1					1			
POWER SUPPLY	V/Ph/Hz	230/1/50					230/1/50			
OUTDOOR UNIT DIMENSIONS										
Length	mm	900					900			
Width	mm	370					420			
Height	mm	990					1240			
NET WEIGHT	kg	100					108			
REFRIGERANT CONNECTIONS										
Liquid line	Ø mm	12					1/2" SAE - 12			
Suction line	Ø mm	16					3/4" SAE - 18			

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

1. Gross Value. Characteristics referred to entering air at 35°C with 27%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.
5. Unit in standard configuration, without optional accessories.

The units highlighted in this publication contain <HFC R410A [GWP100 2088]> fluorinated greenhouse gases

NOTE:

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

SELECT THE UNIT IN THE MODULATION FIELD.



COOLSIDE DX

TECHNICAL DATA – In Row “I” Version

INDOOR UNIT									
MODEL		0071				0121			
COOLING CAPACITY (1)		100%	80%	60%	40%	100%	80%	60%	40%
Total	kW	16,60	13,30	9,90	6,78	28,60	22,90	17,20	11,80
Sensible	kW	15,70	12,50	9,80	6,78	27,40	21,90	16,70	11,70
SHR (2)		0,94	0,94	0,99	1,00	0,96	0,96	0,97	0,99
SUPPLY FAN		n.				5			
Fan type		4				Plug Fan EC			
Air flow	m³/h	2700	2193	1686	1200	4200	3383	2566	1800
Fans power input (3)	kW	0,31	0,18	0,13	0,07	0,86	0,47	0,33	0,09
Nominal external static pressure	Pa	20				20			
AIR FILTERS		n.				1			
Efficiency		COARSE 40%				COARSE 40%			
REFRIGERANT		R410A				R410A			
Gas circuit	n	1				1			
POWER SUPPLY		V/Ph/Hz				230/1/50			
ENERGY EFFICIENCY INDEX (1) (4)		kW/kW				kW/kW			
EER Energy Efficiency Ratio		3,03	3,49	3,80	3,73	3,09	3,57	3,81	3,79
DIMENSIONS INDOOR UNIT									
Width	mm	300				300			
Length with frontal air delivery (5)	mm	1000				1000			
Length with side air delivery	mm	1200				1200			
Height	mm	2085				2085			
NET WEIGHT	kg	190				193			
REFRIGERANT CONNECTIONS									
Liquid line	Ø mm	16				18			
Suction line	Ø mm	22				28			
HYDRAULIC CONNECTIONS									
CONDENSATE DISCHARGE									
Rubber pipe – internal diameter	Ø mm	16				16			
OUTDOOR MOTO-CONDENSING UNIT									
MODEL		0071				0121			
COOLING CAPACITY		100%	80%	60%	40%	100%	80%	60%	40%
BLDC INVERTER COMPRESSOR		Scroll				Scroll			
Quantity	n.	1				1			
Power input	kW	4,56	3,03	1,89	1,17	7,19	4,75	2,98	1,81
CONDENSER FAN		n.				2			
Fan type		Axial AC				Axial AC			
Air flow	m³/h	8640				15768			
Power input (3)	kW	0,6				1,2			
REFRIGERANT		R410A				R410A			
Refrigerant circuit	n	1				1			
POWER SUPPLY		V/Ph/Hz				400/3+N/50			
OUTDOOR UNIT DIMENSIONS									
Length	mm	1450				1450			
Width	mm	550				550			
Height	mm	1200				1700			
NET WEIGHT	kg	182				247			
REFRIGERANT CONNECTIONS									
Liquid line	Ø mm	5/8" SAE - 16				18			
Suction line	Ø mm	7/8" SAE - 22				28			

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

1. Gross Value. Characteristics referred to entering air at 35°C with 27%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.
5. Unit in standard configuration, without optional accessories.

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NOTE:

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SELECT THE UNIT IN THE MODULATION FIELD.



COOLSIDE DX

TECHNICAL DATA – In Row “I” Version

INDOOR UNIT									
MODEL		0151				0251			
COOLING CAPACITY (1)		100%	80%	60%	50%	100%	80%	60%	50%
Total	kW	37,20	29,80	22,30	18,50	57,50	46,00	34,50	27,30
Sensible	kW	37,20	29,70	21,60	18,50	57,50	45,90	34,00	27,30
SHR (2)		1,00	0,99	0,97	1,00	1,00	0,99	0,98	1,00
SUPPLY FAN		2				3			
Fan type		Plug Fan EC				Plug Fan EC			
Air flow	m³/h	7000	5607	4215	3500	12000	9715	7430	6000
Fans power input (3)	kW	1,21	0,75	0,42	0,32	2,66	1,61	0,69	0,51
Nominal external static pressure		20				20			
AIR FILTERS		1				1			
Efficiency		COARSE 60%				COARSE 60%			
REFRIGERANT		R410A				R410A			
Gas circuit		1				1			
POWER SUPPLY		V/Ph/Hz				400/3+N/50			
ENERGY EFFICIENCY INDEX (1) (4)									
EER Energy Efficiency Ratio	kW/kW	3,13	3,61	3,89	4,13	3,04	3,57	3,88	4,31
DIMENSIONS INDOOR UNIT									
Width	mm	600				600			
Length with frontal air delivery (5)	mm	1000				1000			
Length with side air delivery	mm	1200				1200			
Height	mm	2085				2085			
NET WEIGHT	kg	220				232			
REFRIGERANT CONNECTIONS									
Liquid line	Ø mm	18				22			
Suction line	Ø mm	28				35			
HYDRAULIC CONNECTIONS									
CONDENSATE DISCHARGE									
Rubber pipe – internal diameter	Ø mm	16				16			
OUTDOOR MOTO-CONDENSING UNIT									
MODEL		0151				0251			
COOLING CAPACITY		100%	80%	60%	50%	100%	80%	60%	50%
BLDC INVERTER COMPRESSOR		Scroll				Scroll			
Quantity	n.	1				1			
Power input	kW	9,50	6,31	4,12	3,01	14,40	9,54	6,42	4,05
CONDENSER FAN		4				6			
Fan type		Axial AC				Axial AC			
Air flow	m³/h	13932				20920			
Power input (3)	kW	1,2				1,8			
REFRIGERANT		R410A				R410A			
Refrigerant circuit		1				1			
POWER SUPPLY		V/Ph/Hz				400/3+N/50			
OUTDOOR UNIT DIMENSIONS									
Length	mm	1825				2395			
Width	mm	1195				1195			
Height	mm	1865				1865			
NET WEIGHT	kg	440				500			
REFRIGERANT CONNECTIONS									
Liquid line	Ø mm	18				22			
Suction line	Ø mm	28				35			

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

1. Gross Value. Characteristics referred to entering air at 35°C with 27%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.
5. Unit in standard configuration, without optional accessories.

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NOTE:

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

SELECT THE UNIT IN THE MODULATION FIELD.



TECHNICAL DATA – Enclosure “E” Version

INDOOR UNIT									
MODEL	0021					0051			
COOLING CAPACITY (1)	100%	80%	60%	55%	100%	80%	60%	40%	
Total	kW	10,70	8,56	6,42	5,82	11,80	9,40	7,10	4,64
Sensible	kW	10,70	8,56	6,42	5,82	11,80	9,40	7,10	4,64
SHR (2)		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
SUPPLY FAN	n.	2			2				
Fan type		Plug Fan EC			Plug Fan EC				
Air flow	m ³ /h	1500	1193	886	800	1500	1302	1104	900
Fans power input (3)	kW	0,16	0,09	0,05	0,03	0,17	0,11	0,08	0,04
Nominal external static pressure	Pa	20			20				
AIR FILTERS	n.	1			1				
Efficiency		COARSE 40%			COARSE 40%				
REFRIGERANT		R410A			R410A				
Gas circuit	n	1			1				
POWER SUPPLY	V/Ph/Hz	230/1/50			230/1/50				
ENERGY EFFICIENCY INDEX (1) (4)									
EER Energy Efficiency Ratio	kW/kW	3,52	4,76	6,62	7,10	3,79	4,35	4,27	4,30
DIMENSIONS INDOOR UNIT									
Width	mm	300			300				
Length	mm	1200			1200				
Height	mm	2085			2085				
NET WEIGHT	kg	185			185				
REFRIGERANT CONNECTIONS									
Liquid line	Ø	3/8" SAE-9,52			12				
Suction line	Ø	5/8" SAE-16			18				
HYDRAULIC CONNECTIONS									
CONDENSATE DISCHARGE									
Rubber pipe – internal diameter	Ø mm	16			16				
OUTDOOR MOTO-CONDENSING UNIT									
MODEL	0021					0051			
COOLING CAPACITY	100%	80%	60%	55%	100%	80%	60%	40%	
BLDC INVERTER COMPRESSOR		Rotary			Rotary				
Quantity	n.	1			1				
Power input	kW	2,75	1,58	0,79	0,66	2,68	1,79	1,31	0,73
CONDENSER FAN	n.	1			2				
Fan type		Axial AC			Axial AC				
Air flow	m ³ /h	3200			6400				
Power input (3)	kW	0,13			0,26				
REFRIGERANT		R410A			R410A				
Refrigerant circuit	n	1			1				
POWER SUPPLY	V/Ph/Hz	230/1/50			230/1/50				
DIMENSIONS OUTDOOR UNIT									
Length	mm	900			900				
Width	mm	370			420				
Height	mm	990			1240				
NET WEIGHT	kg	100			108				
REFRIGERANT CONNECTIONS									
Liquid line	Ø mm	12			1/2" SAE - 12				
Suction line	Ø mm	16			3/4" SAE - 18				

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

1. Gross Value. Characteristics referred to entering air at 46°C with 16%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.

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NOTE:

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



COOLSIDE DX

TECHNICAL DATA – Enclosure “E” Version

INDOOR UNIT									
MODEL	0071					0121			
COOLING CAPACITY (1)	100%	80%	60%	45%	100%	80%	60%	45%	
Total	kW	18,70	15,00	11,20	8,19	33,00	26,40	19,80	14,10
Sensible	kW	18,70	15,00	11,20	8,19	33,00	26,40	19,80	14,10
SHR (2)		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
SUPPLY FAN	n.	4				5			
Fan type		Plug Fan EC				Plug Fan EC			
Air flow	m³/h	2700	2166	1632	1200	4200	3362	2524	1800
Fans power input (3)	kW	0,31	0,18	0,10	0,07	0,87	0,46	0,24	0,09
Nominal external static pressure	Pa	20				20			
AIR FILTERS	n.	1				1			
Efficiency		COARSE 40%				COARSE 40%			
REFRIGERANT		R410A				R410A			
Gas circuit	n	1				1			
POWER SUPPLY	V/Ph/Hz	230/1/50				230/1/50			
ENERGY EFFICIENCY INDEX (1) (4)									
EER Energy Efficiency Ratio	kW/kW	3,36	4,09	4,36	4,55	3,48	4,11	4,38	4,53
DIMENSIONS INDOOR UNIT									
Width	mm	300				300			
Length	mm	1200				1200			
Height	mm	2085				2085			
NET WEIGHT	kg	200				203			
REFRIGERANT CONNECTIONS									
Liquid line	∅	16				18			
Suction line	∅	22				28			
HYDRAULIC CONNECTIONS									
CONDENSATE DISCHARGE									
Rubber pipe – internal diameter	∅ mm	16				16			

OUTDOOR MOTO-CONDENSING UNIT										
MODEL	0071					0121				
COOLING CAPACITY	100%	80%	60%	45%	100%	80%	60%	45%		
BLDC INVERTER COMPRESSOR		Scroll					Scroll			
Quantity	n.	1					1			
Power input	kW	4,65	2,89	1,87	1,15	7,40	4,75	3,07	1,81	
CONDENSER FAN	n.	1				2				
Fan type		Axial AC				Axial AC				
Air flow	m³/h	8640				15768				
Power input (3)	kW	0,6				1,2				
REFRIGERANT		R410A				R410A				
Refrigerant circuit	n	1				1				
POWER SUPPLY	V/Ph/Hz	400/3+N/50				400/3+N/50				
DIMENSIONS OUTDOOR UNIT										
Length	mm	1450				1450				
Width	mm	550				550				
Height	mm	1200				1700				
NET WEIGHT	kg	182				247				
REFRIGERANT CONNECTIONS										
Liquid line	∅ mm	5/8" SAE - 16				18				
Suction line	∅ mm	7/8" SAE - 22				28				

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

1. Gross Value. Characteristics referred to entering air at 46°C with 16%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.

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NOTE:

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SELECT THE UNIT IN THE MODULATION FIELD.



COOLSIDE DX

TECHNICAL DATA – Enclosure “E” Version

INDOOR UNIT		0151				0251			
MODEL		0151				0251			
COOLING CAPACITY (1)		100%	80%	60%	50%	100%	80%	60%	50%
Total	kW	44,10	35,30	26,50	22,20	68,40	54,70	41,00	33,10
Sensible	kW	44,10	35,30	26,30	22,20	68,40	54,70	41,00	33,10
SHR (2)		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
SUPPLY FAN	n.	2				3			
Fan type		Plug Fan EC				Plug Fan EC			
Air flow	m³/h	7000	5590	4181	3500	12000	9675	7350	6000
Fans power input (3)	kW	1,22	0,75	0,41	0,32	2,68	1,60	0,85	0,51
Nominal external static pressure	Pa	20				20			
AIR FILTERS	n.	1				1			
Efficiency		COARSE 60%				COARSE 60%			
REFRIGERANT		R410A				R410A			
Gas circuit	n	1				1			
POWER SUPPLY	V/Ph/Hz	400/3+N/50				400/3+N/50			
ENERGY EFFICIENCY INDEX (1) (4)									
EER Energy Efficiency Ratio	kW/kW	3,61	4,24	4,57	5,00	3,53	4,21	4,57	5,26
DIMENSIONS INDOOR UNIT									
Width	mm	600				600			
Length	mm	1200				1200			
Height	mm	2085				2085			
NET WEIGHT	kg	245				257			
REFRIGERANT CONNECTIONS									
Liquid line	∅	18				22			
Suction line	∅	28				35			
HYDRAULIC CONNECTIONS									
CONDENSATE DISCHARGE									
Rubber pipe – internal diameter	∅ mm	16				16			

OUTDOOR MOTO-CONDENSING UNIT		0151				0251			
MODEL		0151				0251			
COOLING CAPACITY		100%	80%	60%	50%	100%	80%	60%	50%
BLDC INVERTER COMPRESSOR		Scroll				Scroll			
Quantity	n.	1				1			
Power input	kW	9,80	6,36	4,19	2,97	14,90	9,57	6,31	3,99
CONDENSER FAN	n.	4				6			
Fan type		Axial AC				Axial AC			
Air flow	m³/h	13932				20920			
Power input (3)	kW	1,2				1,8			
REFRIGERANT		R410A				R410A			
Refrigerant circuit	n	1				1			
POWER SUPPLY	V/Ph/Hz	400/3+N/50				400/3+N/50			
DIMENSIONS OUTDOOR UNIT									
Length	mm	1825				2395			
Width	mm	1195				1195			
Height	mm	1865				1865			
NET WEIGHT	kg	440				500			
REFRIGERANT CONNECTIONS									
Liquid line	∅ mm	18				22			
Suction line	∅ mm	28				35			

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

1. Gross Value. Characteristics referred to entering air at 46°C with 16%RH and ambient air temperature 35°C. ESP=20Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The Energy Efficiency Index consider the matched moto-condensing unit.

The units highlighted in this publication contain <HFC R410A [GWP100 2088]> fluorinated greenhouse gases.

NOTE:

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



REFRIGERANT CHARGE

The indoor unit is supplied with seal charge. The moto-condensing unit is supplied with a minimum R410A refrigerant charge. **Refrigerant must be charged.** The following table shows the refrigerant charge that must be introduced, it's enough for connection of the moto-condensing unit to the corresponding indoor unit and for a maximum pipe length of 5m.

OUTDOOR MOTOCONDENSING UNIT – BASIC VERSION

MODEL		0021	0051	0071	0121	0151	0251
SIZE		BASIC	BASIC	BASIC	BASIC	BASIC	BASIC
REFRIGERANT		R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant circuits x Refrigerant charge	n x kg	1 x 5,8	1 x 5,8	1 x 5,7	1 x 10,3	1 x 16,5	1 x 20,5
HFC R410A - F Gas - CO ₂ equivalent	t	12,11	12,11	11,90	21,51	34,45	42,80

OUTDOOR MOTOCONDENSING UNIT – LT VERSION, FOR LOW AMBIENT AIR TEMPERATURE

MODEL		0021	0051	0071	0121	0151	0251
SIZE		LT	LT	LT	LT	LT	LT
REFRIGERANT		R410A	R410A	R410A	R410A	R410A	R410A
Refrigerant circuits x Refrigerant charge	n x kg	1 x 7,7	1 x 7,7	1 x 11,6	1 x 11,3	1 x 17,0	1 x 23,0
HFC R410A - F Gas - CO ₂ equivalent	t	16,08	16,08	24,22	23,59	35,50	48,02

RECOMMENDED REFRIGERANT LINES

Hereafter the recommended refrigerant lines diameters for each cooling circuit.

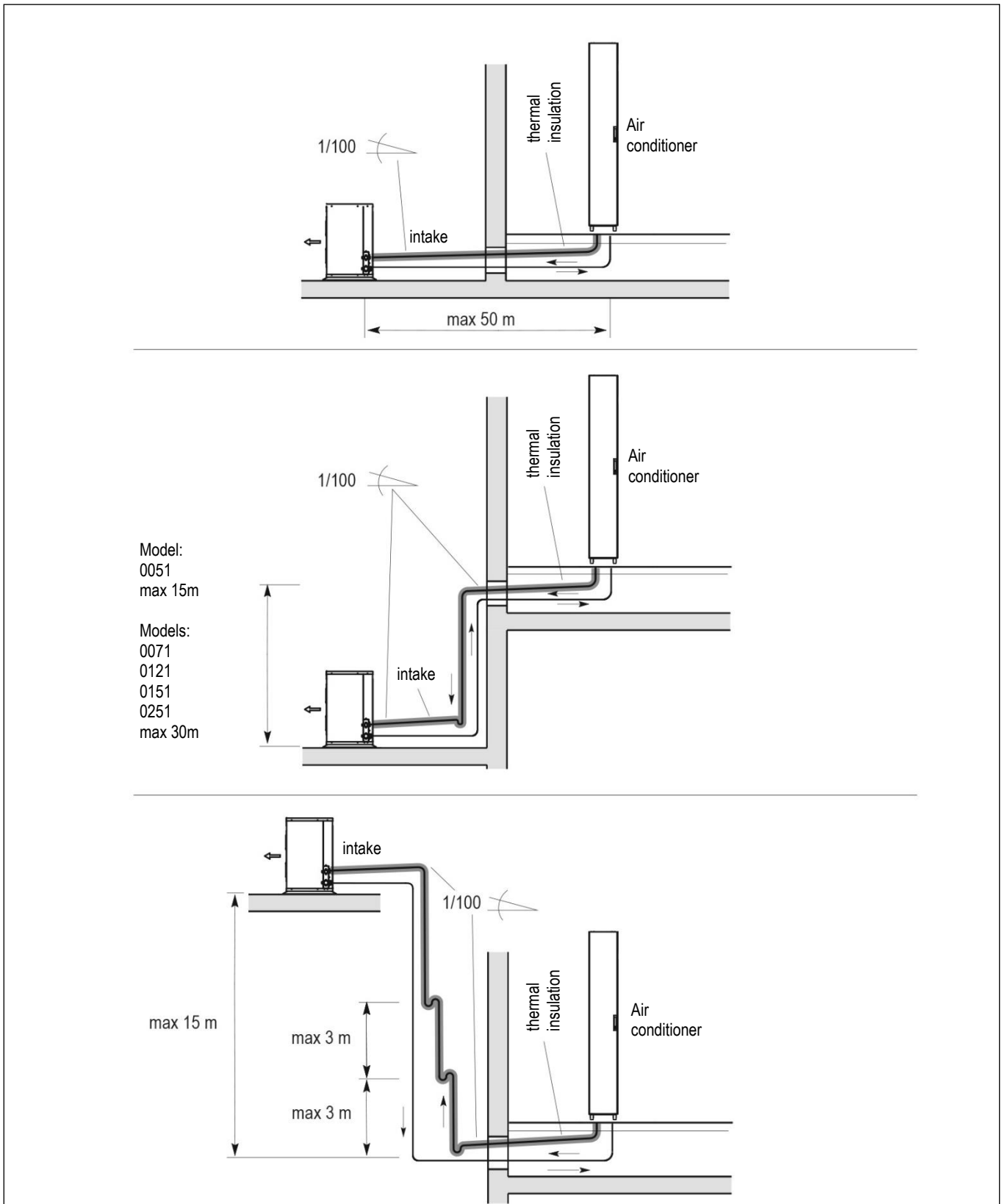
Values are referred to "EQUIVALENT LENGTH" of the piping.

You are kindly requested to always refer to the "TYPICAL INSTALLATION DIAGRAM" to properly select all necessary components

MODEL	Nominal capacity of circuit [kW]	Line	Ø nominal [mm]	EQUIVALENT LENGHT [m]									
				5	10	15	20	25	30	35	40	45	50
0021	8,81	Suction	16	16 mm									
		Liquid	9,52	9,52 mm									
0051	10,6	Suction	16	16 mm									
		Liquid	9,52	9,52 mm									
0071	16,6	Suction	18	18 mm									
		Liquid	9,52	9,52 mm			12 mm						
0121	28,6	Suction	22	22 mm									
		Liquid	9,52	9,52 mm	12 mm						14 mm		
0151	37,2	Suction	28	28 mm									
		Liquid	14	14 mm					16 mm				
0251	57,5	Suction	28	28 mm									
		Liquid	16	16 mm						18 mm			

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

TYPICAL INSTALLATION DIAGRAM

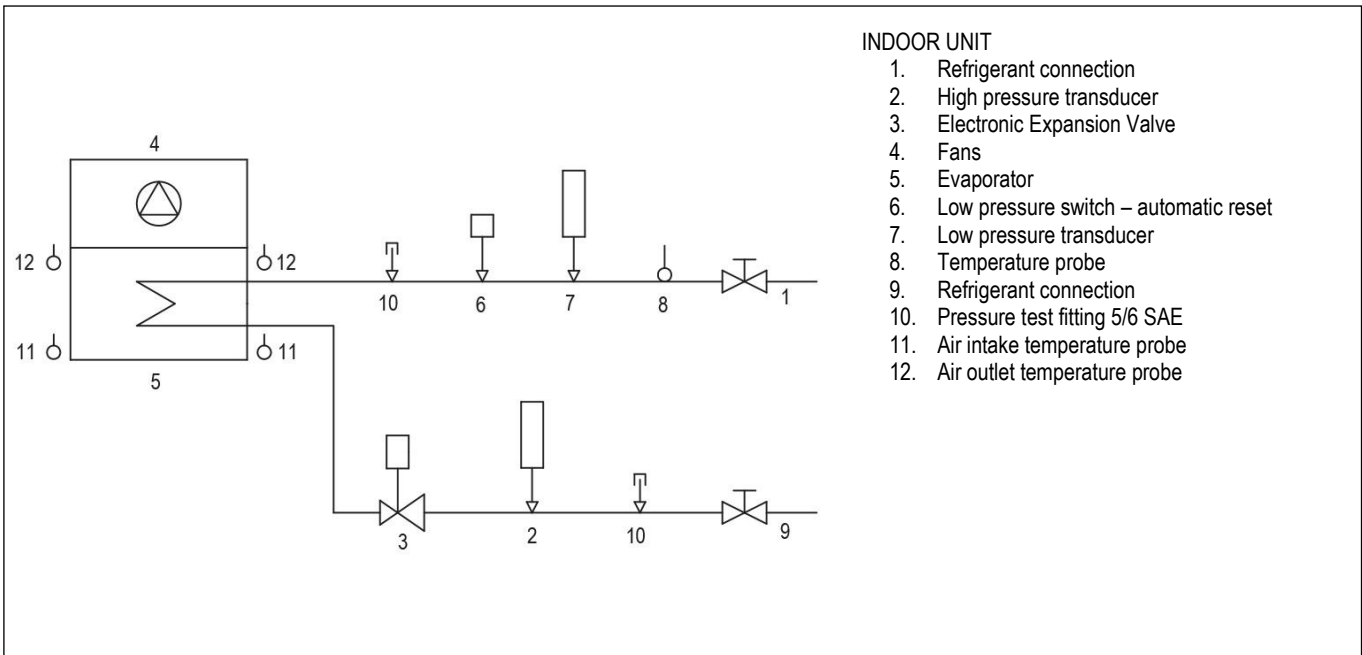


WARNING

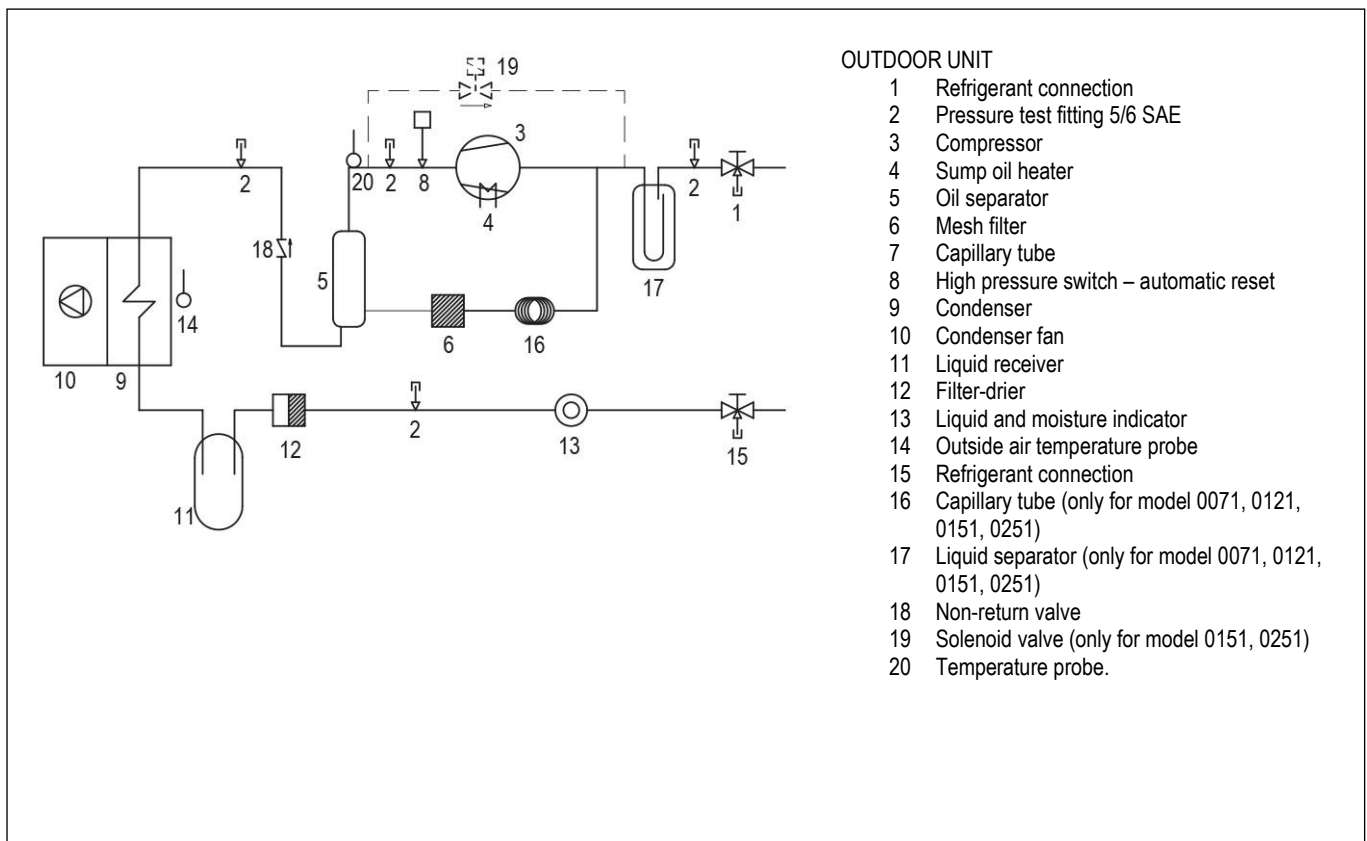
It is necessary to provide the refrigerant and lubricant oil charge for the connection pipes when exceeding an equivalent length of 5 metres. Create traps as shown in the figure, making sure to fill them with oil when commissioning the system.

The liquid pipes must be protected against sunlight.

REFRIGERANT DIAGRAM – INDOOR UNIT



REFRIGERANT DIAGRAM – OUTDOOR MOTO-CONDENSING UNIT



ACOUSTIC DATA – INDOOR UNIT

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

WARNING:

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

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

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

MODEL		0021	0051	0071	0121	0151	0251
SOUND LEVEL ISO 3744 (1)							
On air delivery	dB(A)	63	63	64	70	62	66

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

ACOUSTIC DATA – OUTDOOR MOTO-CONDENSING UNIT

Acoustic data of the standard machine at full load working conditions

MODELLO		0021	0051	0071	0121	0151	0251
SOUND LEVEL ISO 3744 (1)							
On air delivery	dB(A)	54	54	61	63	62	65

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

ELECTRICAL DATA

Indoor unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
STANDARD UNIT							
Max power input (FLI)	kW	0,34	0,34	0,68	0,85	2,64	3,96
Max current input (FLA)	A	2,90	2,90	5,80	7,25	4,20	6,30
Power input (OI)	kW	0,16	0,16	0,31	0,86	1,21	2,66

Outdoor moto-condensing unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/50	230/1/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
STANDARD UNIT							
Max power input (FLI)	kW	3,13	5,86	10,70	17,90	14,50	20,80
Max current input (FLA)	A	9,95	18,30	18,00	30,80	26,40	38,50
Power input (OI)	kW	2,71	2,89	5,16	8,39	10,70	16,20

WARNING:

The electric data indicated refer only to the standard units, without optional accessories.

Optional accessory electric data are included within the dedicated chapters and must be added.

Please refer to ELCA WORLD selection program to calculate the electrical data of the air conditioner according to the requested optional accessories.

ELECTRICAL DATA – POWER SUPPLY 230/1/60 – 230/3/60 (OPTIONAL)

Indoor unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/60	230/1/60	-	-	-	-
STANDARD UNIT							
Max power input (FLI)	kW	0,34	0,34	-	-	-	-
Max current input (FLA)	A	2,90	2,90	-	-	-	-

Outdoor moto-condensing unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/60	230/1/60	-	-	-	-
STANDARD UNIT							
Max power input (FLI)	kW	5,76	6,12	-	-	-	-
Max current input (FLA)	A	6,12	19,52	-	-	-	-

ELECTRICAL DATA – POWER SUPPLY 460/3/60 (OPTIONAL)

Indoor unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		-	-	460/3/60	460/3/60	460/3/60	460/3/60
STANDARD UNIT							
Max power input (FLI)	kW	-	-	0,68	0,85	2,64	3,96
Max current input (FLA)	A	-	-	5,80	7,25	4,20	6,30

Outdoor moto-condensing unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		-	-	460/3/60	460/3/60	460/3/60	460/3/60
STANDARD UNIT							
Max power input (FLI)	kW	-	-	10,85	18,55	14,84	21,28
Max current input (FLA)	A	-	-	16,42	28,75	27,54	40,22

ELECTRICAL DATA – POWER SUPPLY 380/3/60 (OPTIONAL)

Indoor unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		-	-	380/3/60	380/3/60	380/3/60	380/3/60
STANDARD UNIT							
Max power input (FLI)	kW	-	-	0,68	0,85	2,64	3,96
Max current input (FLA)	A	-	-	5,80	7,25	4,20	6,30

Outdoor moto-condensing unit

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		-	-	380/3/60	380/3/60	380/3/60	380/3/60
STANDARD UNIT							
Max power input (FLI)	kW	-	-	10,76	17,53	14,84	21,28
Max current input (FLA)	A	-	-	22,95	31,68	27,54	40,22

WARNING:

The electric data indicated refer only to the standard units, without optional accessories.




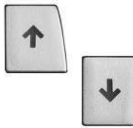

MICROPROCESSOR CONTROL SYSTEM



The microprocessor control system is equipped with 6 keys terminal and back lighted graphic display on which all information in different languages or easily identifiable symbols are displayed.

The system disposes of a "flash" memory that preserves the information even in absence of power supply. Part of memory is dedicated to the registration of intervened events - up to 100 events.

KEYBOARD FUNCTIONS

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

CONNECTIVITY

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

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

PASSWORD

Level 1: On request of the End User. Allowing to reach and modify USER parameters.

Level 2: Asks to Service: Allowing to reach and modify MAINTENANCE parameters.

Level 3: Asks to Service: Allowing to reach and modify MANUFACTURER parameters.

LAN NETWORK

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

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

LAN ADDRESS LIST

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

OPTIONAL ACCESSORIES – ELECTRIC HEATERS



Tubular electric heater with steel fins. The optional is installed downstream the main cooling coil. Electric heaters have a three-stage control. The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.

Components:

- Tubular electric heater with steel fins.
- Electrical control
- Safety thermostat.

TECHNICAL DATA

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
THERMAL CAPACITY	kW	2,4	2,4	2,4	3,6	5,4	7,2
Absorbed current (OA)	A	10,43	10,43	10,43	15,65	7,79	10,39
Capacity steps	n	3	3	3	3	3	3

Optional accessory modifies the weight of the standard unit.

OPTIONAL ACCESSORIES – OVERSIZED ELECTRIC HEATERS

The components are the same as for the standard accessory. The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121.

TECHNICAL DATA

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
THERMAL CAPACITY	kW	3,6	3,6	3,6	4,8	7,2	10,8
Absorbed current (OA)	A	15,65	15,65	15,65	20,87	10,39	15,59
Capacity steps	n	3	3	3	3	3	3

Optional accessory modifies the weight of the standard unit.

OPTIONAL ACCESSORIES – MODULATING STEAM HUMIDIFIER



Modulating steam humidifier with immersed electrodes fitted with safety and running accessories. The accessory is factory installed and requires water filling connection. The optional accessory requires increased frame dimensions (optional) for in-row version with frontal air delivery, models 0021, 0051, 0071, 0121. It is recommended to install a filter and a shut-off valve on the pipe to the water inlet. 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**.

LIMIT VALUES

LIMIT VALUES FOR IMMERSSED ELECTRODE HUMIDIFIER FEED WATER			Normal water		Water with low salt content	
			Min	Max	Min	Max
Mains pressure	bar		1	8	1	8
Hydrogen ions	pH		7	8,5	7	8,5
Specific conductivity at 20°C	$\sigma_{R, 20^\circ C}$	$\mu S/cm$	350	1250	75	350
Total dissolved solids	TDS	mg/l	(1)	(1)	(1)	(1)
Dry residue at 180°C	R ₁₈₀	mg/l	(1)	(1)	(1)	(1)
Total hardness	TH	mg/l CaCO ₃	100 (2)	400	50 (2)	160
Temporary hardness		mg/l CaCO ₃	60 (3)	300	30 (3)	100
Iron + Manganese		mg/l Fe + Mn	0	0,2	0	0,2
Chlorides		ppm Cl	0	30	0	20
Silica		mg/l SiO ₂	0	20	0	20
Residual chlorine		mg/l Cl ⁻	0	0,2	0	0,2
Calcium sulphate		mg/l CaSO ₄	0	100	0	60
Metallic impurities		mg/l	0	0	0	0
Solvents, diluents, soaps, lubricants		mg/l	0	0	0	0

- (1) Values depending on specific conductivity; in general: TDS \cong 0,93 * $\sigma_{R, 20^\circ C}$; R₁₈₀ \cong 0,65 * $\sigma_{R, 20^\circ C}$
 (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⁻

CYLINDER CONDUCTIVITY Function	LOW CONDUCTIVITY CILINDER		MEDIUM CONDUCTIVITY CILINDER		HIGH CONDUCTIVITY CILINDER	
	Min	Max	Min	Max	Min	Max
Specific conductivity at 20°C ($\sigma_{R, 20^\circ C}$)	75	350	350	750	750	1250

WARNING:

- No relation can be demonstrated between water hardness and 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 inhibitors 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
- **The water exiting the steam cylinder is very hot. Operating temperature up to 100°C.**



COOLSIDE DX

TECHNICAL DATA

MODEL		0021	0051	0071	0121	0151	0251
POWER SUPPLY		230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
STEAM PRODUCTION	kg/h	3	3	3	3	3	3
Power input	kW	2,25	2,25	2,25	2,25	2,25	2,25
Max absorbed current (FLA)	A	9,8	9,8	9,8	9,8	3,2	3,2
Water content	l	3,9	3,9	3,9	3,9	3,9	3,9
HYDRAULIC CONNECTION							
WATER INLET - ISO 228/1 – G M (1)	Ø	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
WATER OUTLET - internal diameter	Ø mm	32	32	32	32	32	32

(1) The humidifier water supply threaded male fitting is already fitted with a plastic hose, diameter 6mm, for connection to the building's water supply. Optional accessory modifies the weight of the standard unit. Consider the weight of the water content.

OPTIONAL ACCESSORIES – STANDARD CONDENSATE DRAIN PUMP



Optional accessory installed within the indoor unit.

A plastic case contains the pump motor, the thermal protection with automatic reset, the float with the trigger threshold and alarm threshold overflow and hydraulic and electric connection.

The condensate discharge pump operation is fully automatic.

TECHNICAL SPECIFICATION

Maximum flow-rate	30 l/h
Maximum suction height	4 m
Maximum discharge height	13 m (flow rate 8 l/h)
Maximum pressure	18 m (flow rate 0 l/h)

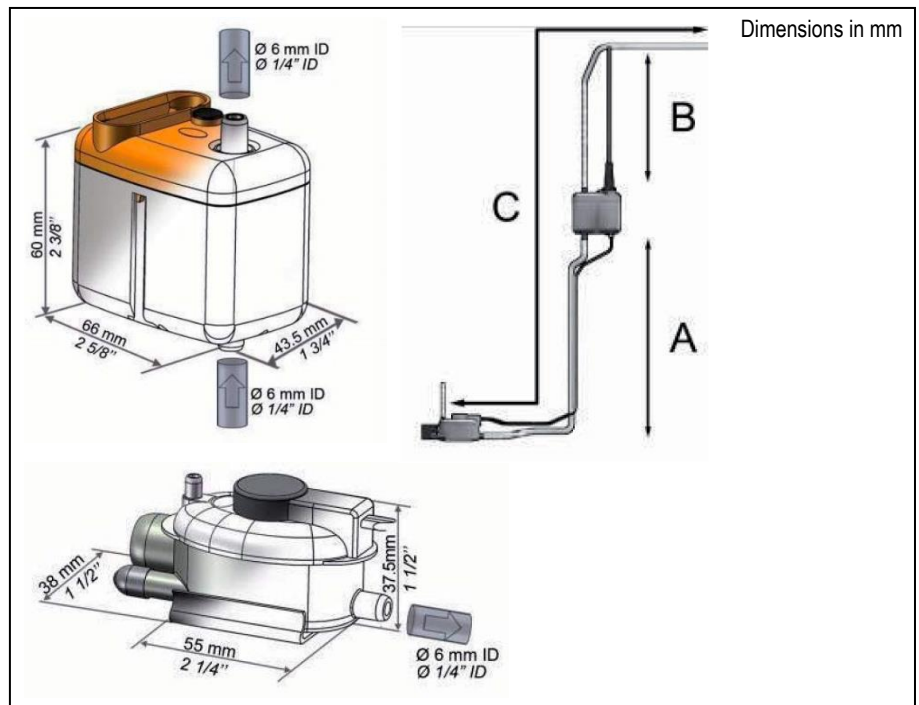
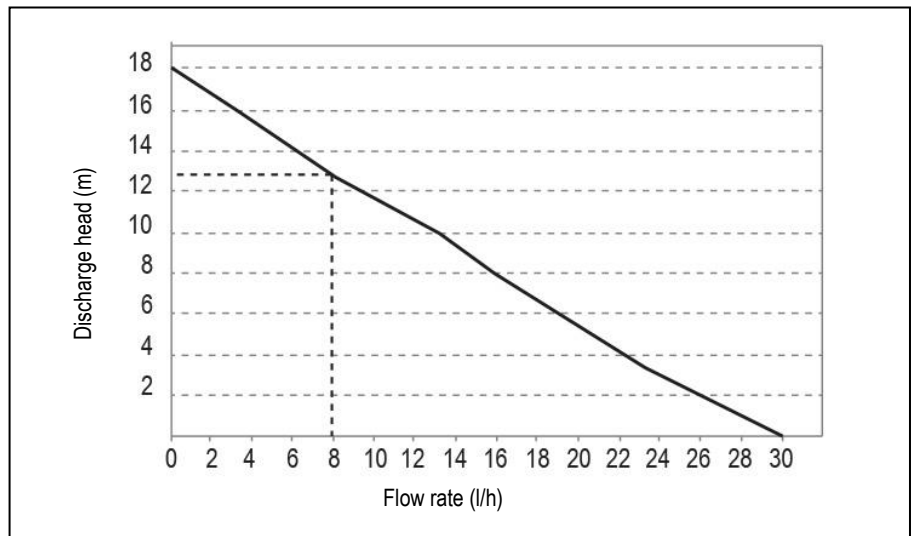


TABLE OF EFFECTIVE FLOW RATES (l/h)

Total pipe length with 6mm ID pipe (C)

Suction (A)	Discharge (B)	5 m	10 m	20 m	30m
0 m	0 m	30	27	26	25
	2 m	26	24	23	22
	4 m	22	21	20	19
	6 m	-	18	17	16
	8 m	-	15	14	13
	10 m	-	12	11	10
1 m	12 m	-	-	8	7
	0 m	24	23	22	21
	2 m	20	19	18	17
	4 m	17	16	15	14
	6 m	-	13	12	11
	8 m	-	10	9	8
2 m	10 m	-	-	6	5
	0 m	21	20	19	18
	2 m	17	16	15	14
	4 m	14	13	12	11
3 m	6 m	-	10	9	8
	8 m	-	7	6	5
	0 m	18	17	16	15
	2 m	15	14	13	12
	4 m	-	10	9	8
	6 m	-	6	5	4

PERFORMANCE OF STANDARD CONDENSATE DRAIN PUMP



OPTIONAL ACCESSORIES – HUMIDIFIER AND CONDENSATE DRAIN PUMP KIT FOR HIGH WATER TEMPERATURE.



Optional accessory supplied in mounting kit to be installed outside of the indoor unit. These pumps are designed to collect the hot water produced by the humidifier drain cycles, as well as the condensate produced. These pump has mechanical features capable to resist to the high temperatures of the water exiting the steam cylinder.

The pump body is made from Cycloy, a heat-resistant material, the pre-wired safety float is a low voltage switch used to stop the drain cycle in the unlikely event where the pump malfunctions.

TECHNICAL SPECIFICATIONS

Tank capacity	4 litres
Recommended maximum head	6 m
Maximum water flow-rate	900 l/h with zero head
Rated power	0.6 A, 230 VAC
Power cable	(2 m long)
Safety switch	max 4 A
Power supply voltage	220/240 VAC
Current draw	0.7 A
Power consumption	175 W

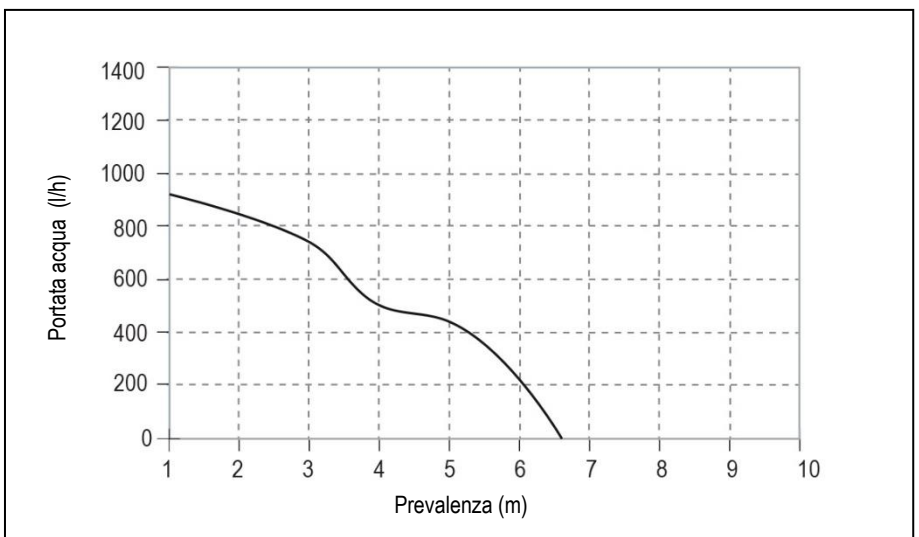
Dimensions

Height	205 mm
Width	300 mm
Depth	150 mm
Weight	3.6 kg

Electrical connections

Brown	Line
Blue	Neutral
Green/yellow	Earth
2 x black	Safety switch

PERFORMANCE OF HUMIDIFIER AND CONDENSATE DRAIN PUMP KIT



OPTIONAL ACCESSORIES – SMOKE SENSOR



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).

Technical features:

Light source	GaAlAs infrared emitting diode
Operating voltage	20 Vdc (-15%, +10%)
Average power consumption (normal condition)	65 η A @ 20Vdc
Average power consumption (alarm condition)	23 mA @ 20Vdc
Three colours LED	Red steady: alarm condition Green slow blinking (2s): normal condition Yellow blinking (2s) normal condition, it needs maintenance. Green flash and yellow sequence: fault condition
Minimum reset time	300mS
Operating temperature	-10° ÷ 55°C ± 2°C
Relative humidity	93% ± 2%, non-condensing
Storage/shipping temperature	-30 ÷ 70°C
Dimensions	Diameter Φ 90 x 31mm height
Weight	70g
Enclosure material	ABS V0

OPTIONAL ACCESSORIES – FIRE SENSOR



The heat detector has been designed to identify temperatures at which fires may start. When the temperature exceeds the set threshold the relay is activated to signal an alarm.

Technical features:

Operating voltage	20 Vdc (-15%, +10%)
Average power consumption (normal condition)	40 η A @ 20Vdc
Average power consumption (alarm condition)	23 mA @ 20Vdc
Static alarm treshold	58°C ± 5%
Three colours LED	Red steady: alarm condition Green slow blinking (2s): normal condition Green flash and yellow sequence: fault condition
Minimum reset time	300mS
Operating temperature	-10° ÷ 50°C ± 2°C
Relative humidity	93% ± 2%, non-condensing
Storage/shipping temperature	-30 ÷ 70°C
Dimensions	Diameter Φ 90 x 40mm height
Weight	70g
Enclosure material	ABS V0

OPTIONAL ACCESSORIES – FIRE / SMOKE SENSOR



The combined smoke/fire detector senses the presence of combustion by-products (visible smoke) and/or the temperatures at which fires may start and activates an alarm. The smoke detection principle is based on the light scattering technique (Tyndall effect). The heat detector has been designed to identify temperatures at which fires may start. When the temperature exceeds the set threshold in temperature, the relay is activated to signal an alarm.

Technical features:

Light source	GaAlAs infrared emitting diode
Operating voltage	20 Vdc (-15%, +10%)
Average power consumption (normal condition)	65 η A @ 20Vdc
Average power consumption (alarm condition)	23 mA @ 20Vdc
Static alarm treshold	58°C \pm 5%
Three colours LED	Red steady: alarm condition Green slow blinking (2s): normal condition Yellow blinking (2s) normal condition, it needs maintenance. Green flash and yellow sequence: fault condition
Minimum reset time	300mS
Operating temperature	-10° \div 55°C \pm 2°C
Relative humidity	93% \pm 2%, non-condensing
Storage/shipping temperature	-30 \div 70°C
Dimensions	Diameter Φ 90 x 40mm height
Weight	70g
Enclosure material	ABS V0

OPTIONAL ACCESSORIES – NETWORK ANALYZER



The optional is available both for indoor unit and outdoor moto-condensing unit.

Outdoor moto-condensing unit, models 0021, 0051, 0071, 0121:

The optional is installed outside the unit within an external box and includes:

- Network transducer;
- Current transformers, one for each power supply phase cable.

Indoor units and outdoor moto-condensing unit, models 0151, 0251:

The optional is installed within the electrical box downstream the main switch with door safety lock and includes:

- Network transducer;
- Current transformers, one for each power supply phase cable

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

OPTIONAL ACCESSORIES – DOUBLE POWER SUPPLY WITH AUTOMATIC TRANSFER SWITCH



The optional is available both for indoor unit and for outdoor moto-condensing unit.

The motorised changeover switches automatically manage changeover under load between two mono-phase or three-phase power supplies, or manually for emergency operations.

These transfer switching (TSE) 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.

ATS INSTALLATION – INDOOR UNIT

Frame	Power Supply	ATS Installation
0021	230/1/50	EXTERNAL, supplied in kit
0051	230/1/50	EXTERNAL, supplied in kit
0071	230/1/50	EXTERNAL, supplied in kit
0121	230/1/50	EXTERNAL, supplied in kit
0151	400/3+N/50	EXTERNAL, supplied in kit
0251	400/3+N/50	EXTERNAL, supplied in kit

ATS INSTALLATION – OUTDOOR MOTO-CONDENSING UNIT

Frame	Power Supply	ATS Installation
0021	230/1/50	EXTERNAL, supplied mounted
0051	230/1/50	EXTERNAL, supplied mounted
0071	230/1/50	EXTERNAL, supplied mounted
0121	230/1/50	EXTERNAL, supplied mounted
0151	400/3+N/50	INTERNAL, on unit electrical panel
0251	400/3+N/50	INTERNAL, on unit electrical panel

The optional is available on request for the following power supply:

- 380/3/60Hz (power supply available as optional accessory);
- 460/3/60Hz (power supply available as optional accessory).

OPTIONAL ACCESSORIES – ANTI-MIXING PANELS



Optional accessory supplied in mounting kit :

- Anti-mixing frontal/back panel. Not compatible with optional “floor brackets fixing kit” for models 0021, 0051, 0071, 0121.
- Anti-mixing side panel.

Anti-mixing panels in galvanized steel sheet externally painted with epoxy powders. Colour RAL 9005.

They close the lower part of the indoor unit hiding the holders for height adjusting.

The optional is useful to avoid the by-pass between cold-aisle and hot-aisle below the air conditioners and the server racks.

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



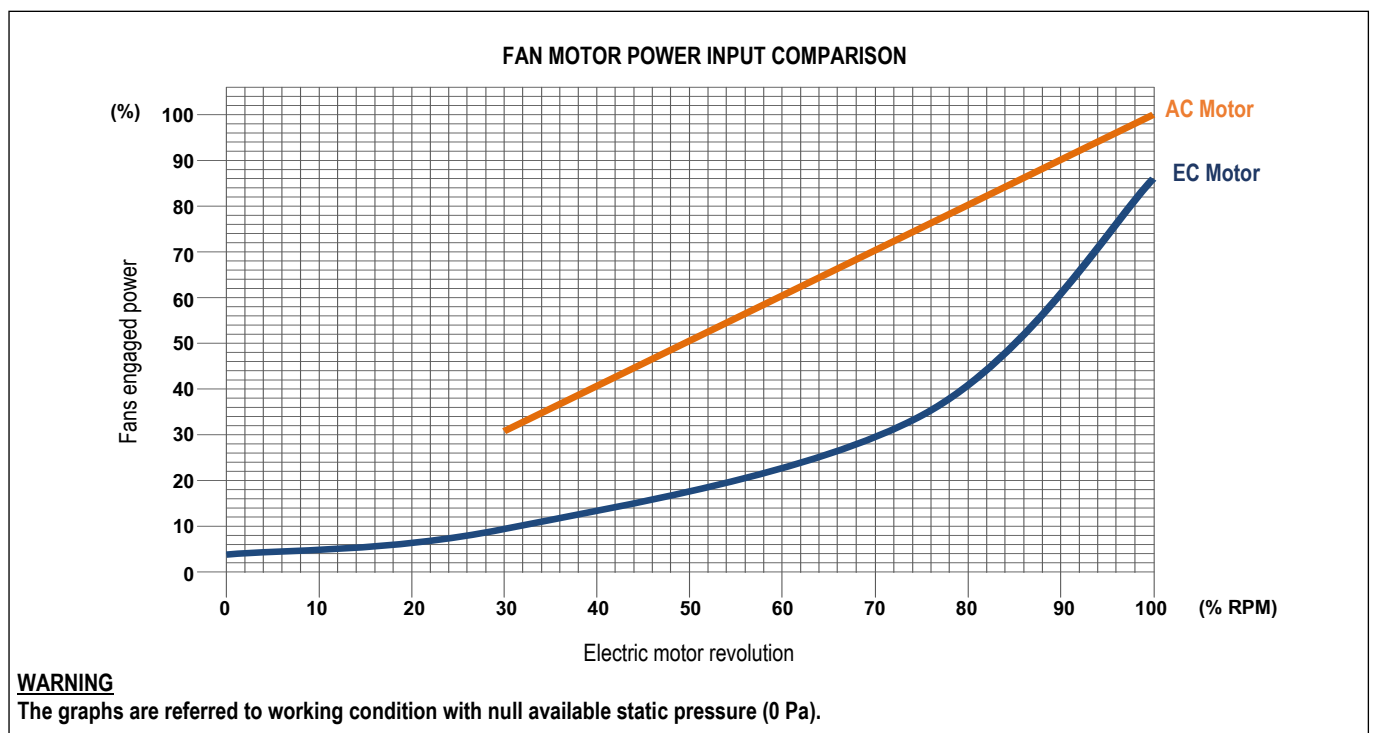
The “EC” axial fans are equipped with a brushless type synchronous motor with integrated electronic commutated system.

The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.

Characteristics of “EC” motors:

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

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



TECHNICAL DATA

OUTDOOR MOTO-CONDENSING UNIT				
MODEL		0021	0051	0071
COOLING CAPACITY		MAX	MAX	MAX
CONDENSER FAN	n.	1	2	1
Fan type		Axial EC	Axial EC	Axial EC
Max power input (FLI)	kW	0,1	0,2	0,72
Max current input (FLA)	A	0,8	1,6	3,2
POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	400/3+N/50

OUTDOOR MOTO-CONDENSING UNIT				
MODEL		0121	0151	0251
COOLING CAPACITY		MAX	MAX	MAX
CONDENSER FAN	n.	2	4	6
Fan type		Axial EC	Axial EC	Axial EC
Max power input (FLI)	kW	1,44	1,4	2,1
Max current input (FLA)	A	6,4	8,8	13,2
POWER SUPPLY	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50



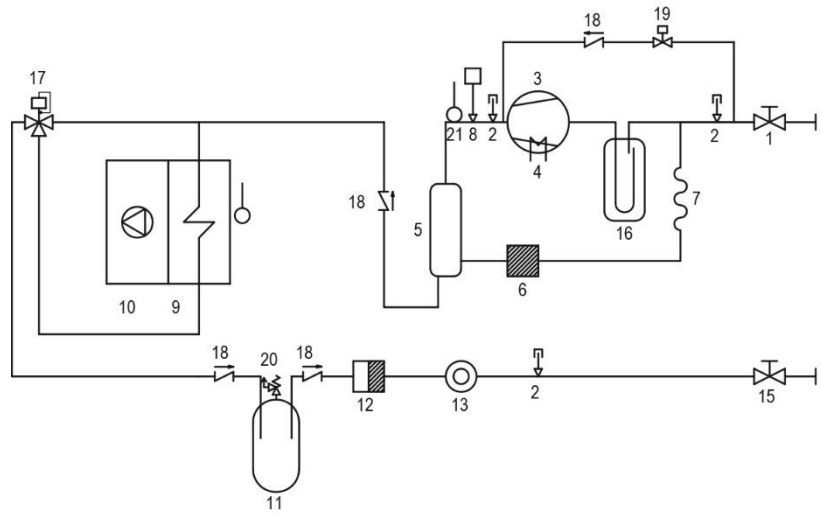
OPTIONAL ACCESSORIES – OUTDOOR MOTO-CONDENSING UNIT – LT VERSION FOR OPERATION WITH LOW AMBIENT AIR TEMPERATURE DOWN TO -35°C.

The system is necessary for the correct machine start up and operation with very low ambient air temperatures: between -20°C and -35°C.

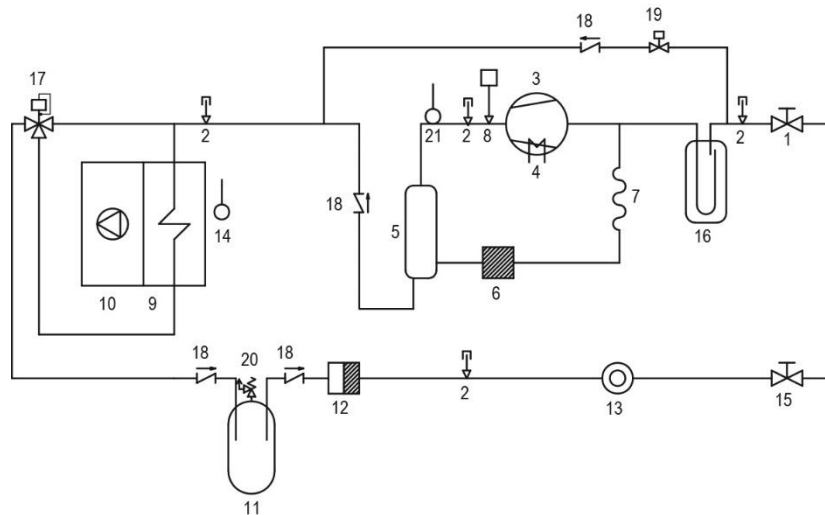
Components:

- Pressure regulating valve (17)
- Non-return valve (18)
- Solenoid valve (19)
- Safety valve (20)

REFRIGERANT DIAGRAM – OUTDOOR MOTO-CONDENSING UNIT – LT VERSION – 0021-0051



REFRIGERANT DIAGRAM – OUTDOOR MOTOCONDENSING UNIT – LT VERSION – 0071-0121-0151-0251



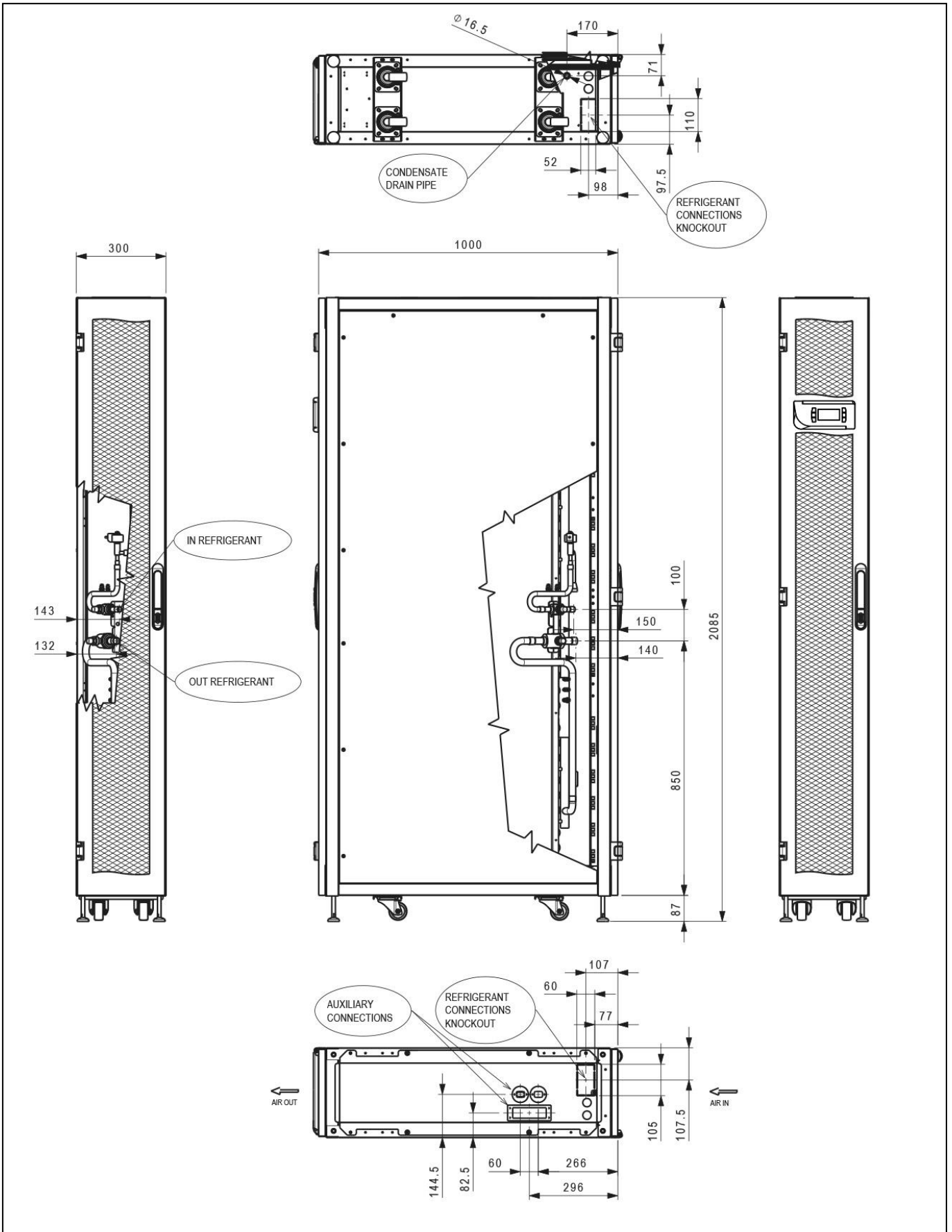
OUTDOOR UNIT

- | | | | |
|----|------------------------|----|-------------------------------|
| 1 | Refrigerant connection | 11 | Liquid receiver |
| 2 | Pressure test fitting | 12 | Filter-drier |
| 3 | Compressor | 13 | Liquid and moisture indicator |
| 4 | Sump oil heater | 14 | Outside air temperature probe |
| 5 | Oil separator | 15 | Refrigerant connection |
| 6 | Mesh filter | 16 | Liquid separator |
| 7 | Capillary tube | 17 | Pressure regulating valves |
| 8 | High pressure switch | 18 | Non-return valve |
| 9 | Condenser | 19 | Solenoid valve |
| 10 | Condenser fan | 20 | Safety valve |
| | | 21 | Temperature probe. |



MACHINE DRAWINGS – INDOOR UNITS

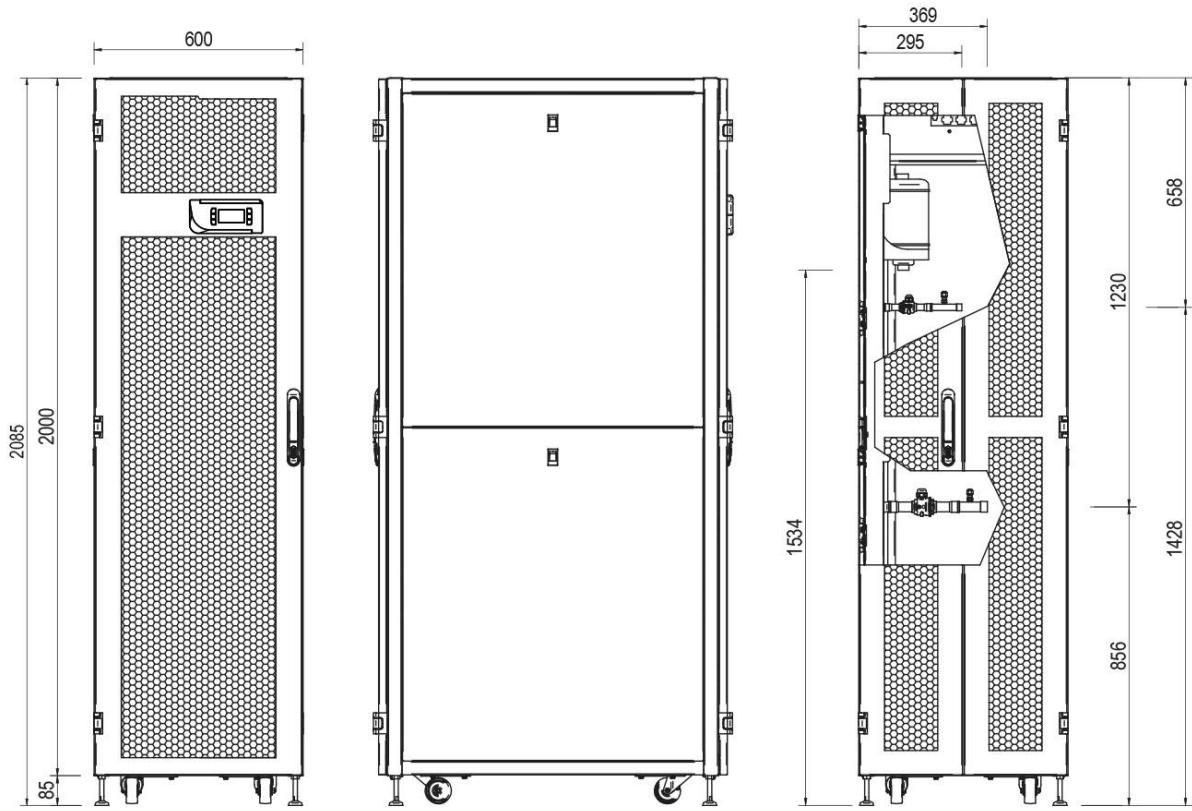
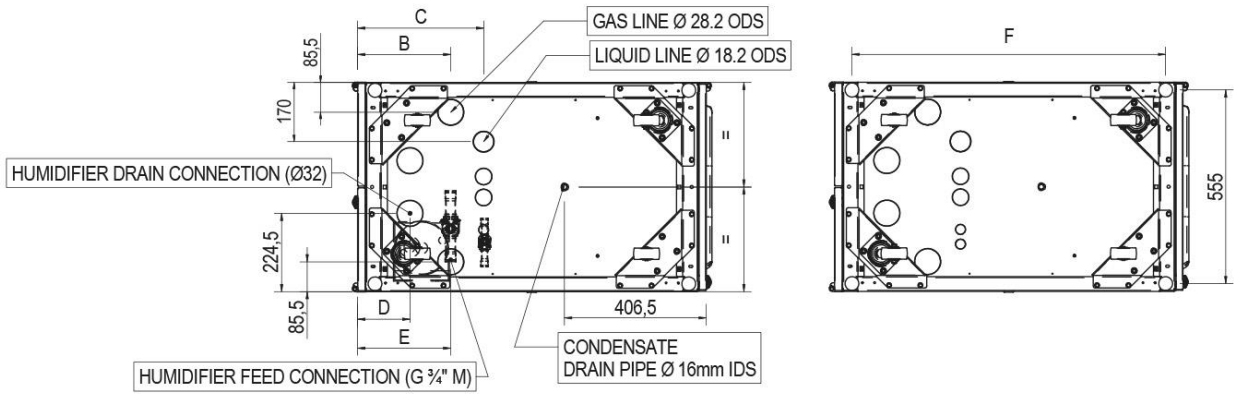
Dimensions in mm – In-Row “I” Version – 0021, 0051, 0071, 0121 (300 x 1000 x 42U FRAME)



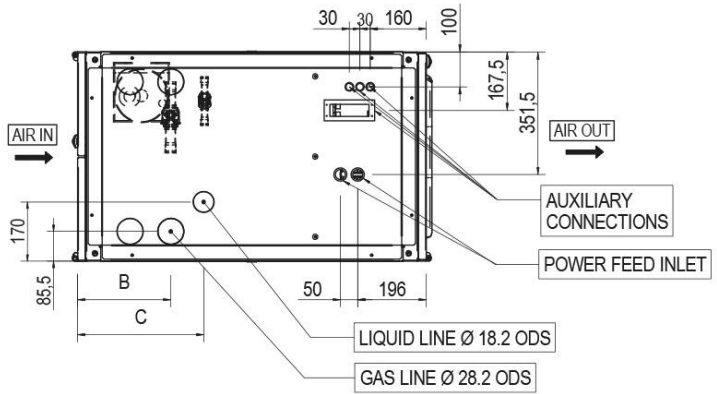
COOLSIDE DX

MACHINE DRAWINGS

Dimensions in mm – In-Row “I” Version – 0151-0251 (600 x 1000/1200 x 42U FRAME)



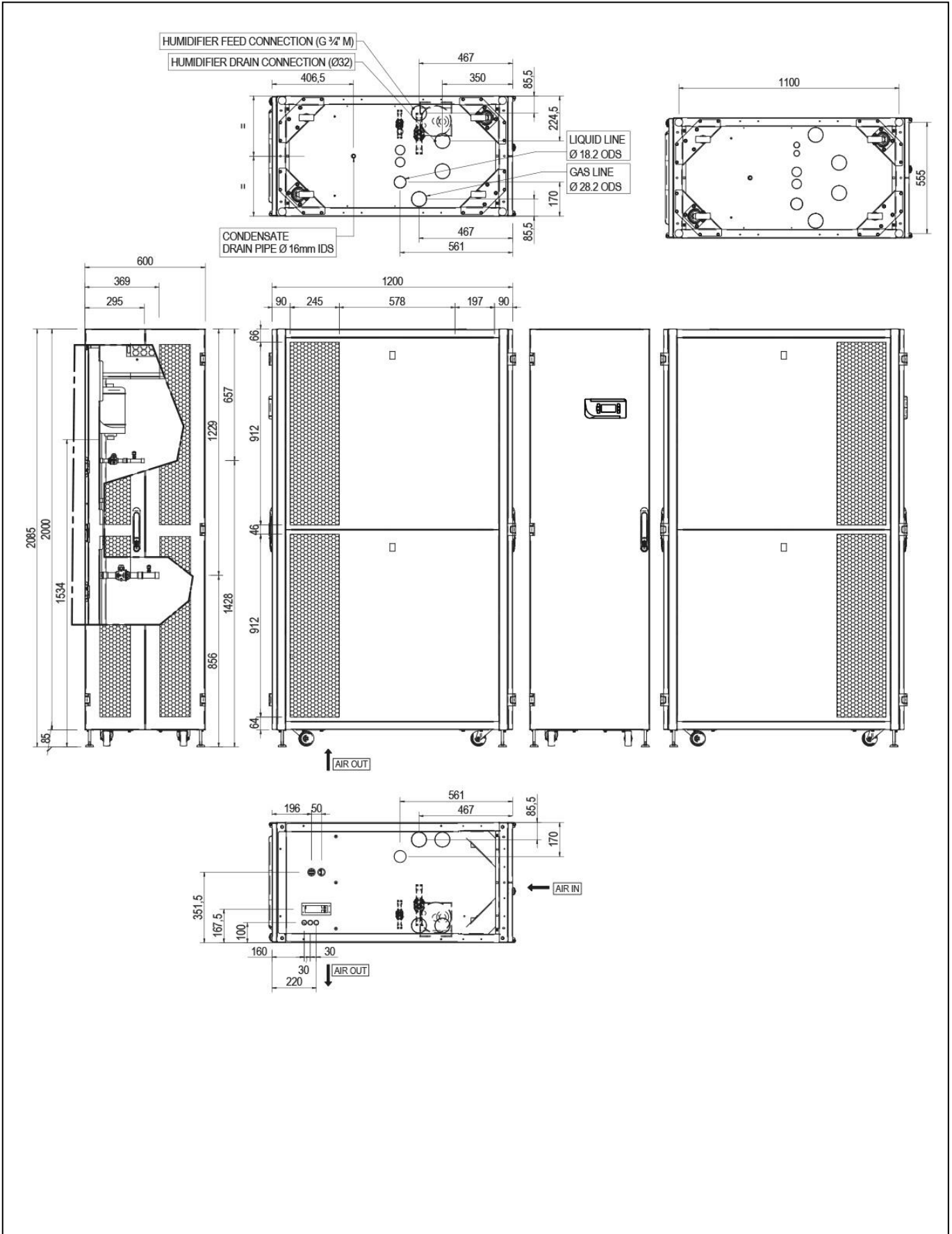
	IN ROW (-) 0151-0251 600x1000x42U	IN ROW (-) 0151-0251 600x1200x42U
A	1000mm	1200mm
B	267mm	467mm
C	362mm	562mm
D	150mm	350mm
E	267mm	467mm
F	900mm	1100mm



COOLSIDE DX

MACHINE DRAWINGS

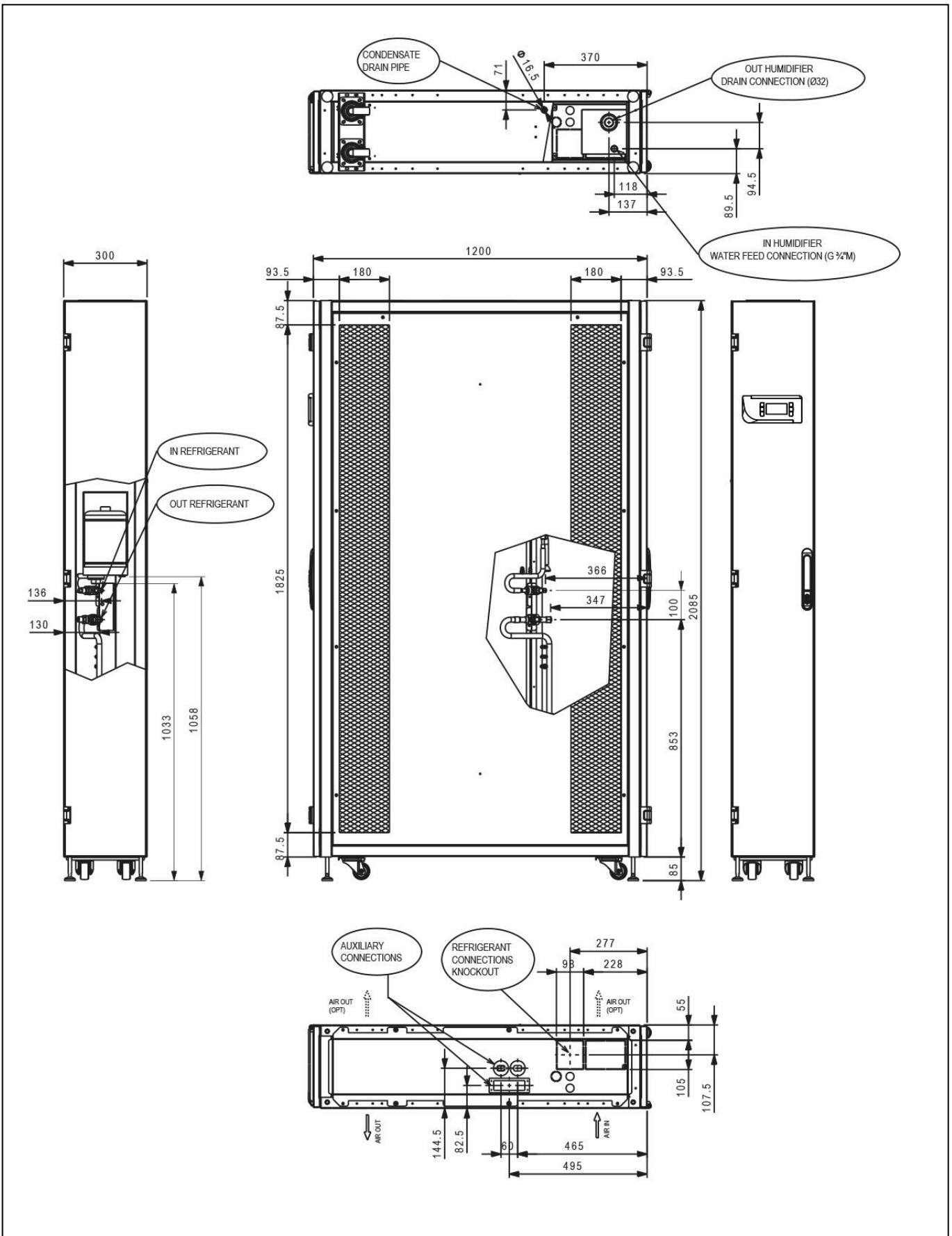
Dimensions in mm – In-Row “I” Version – 0151, 0251 (600 x 1000 x 42U FRAME)



COOLSIDE DX

MACHINE DRAWINGS

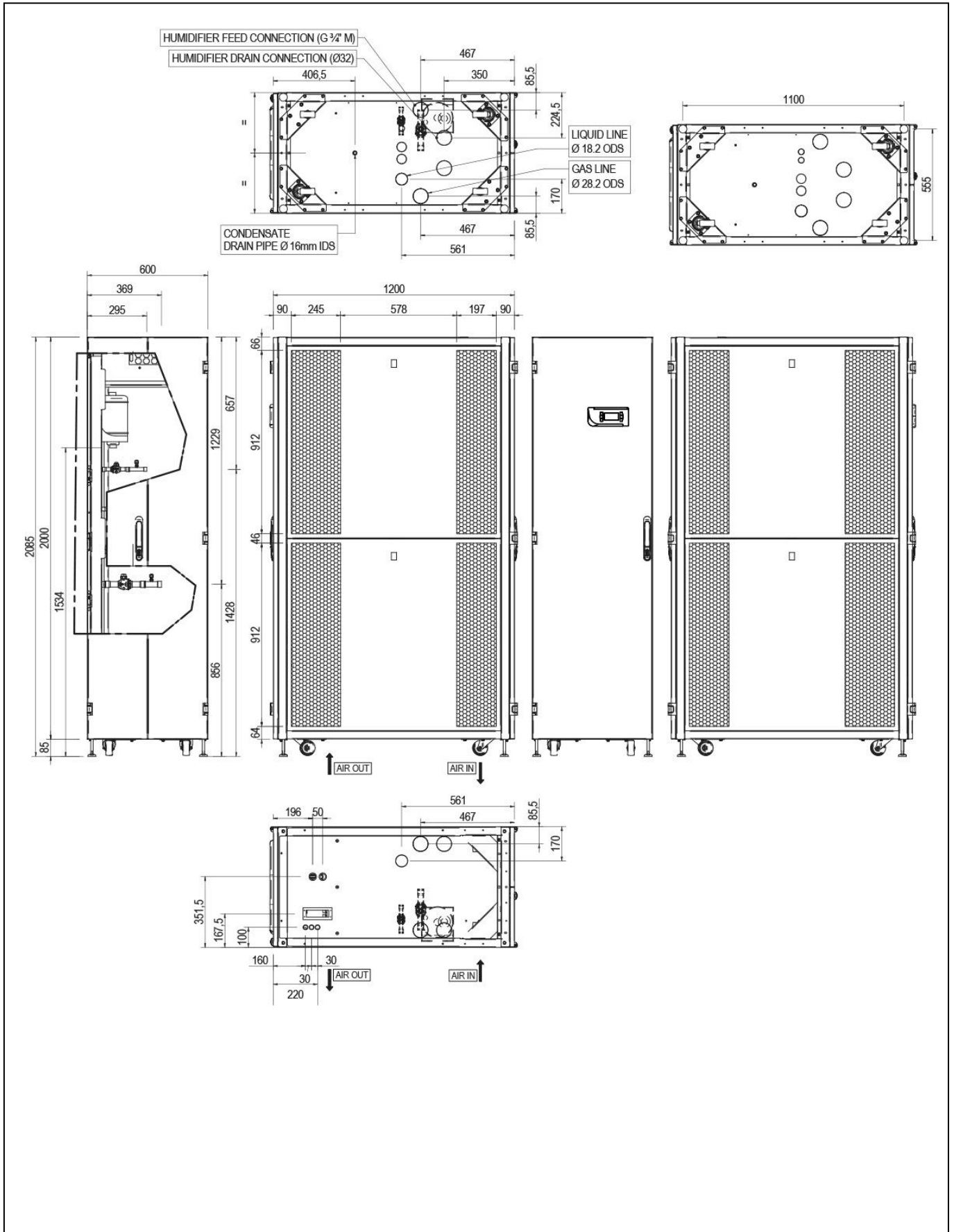
Dimensions in mm – In-Row “I” Version – 0021, 0051, 0071, 0121 (300 x 1200 x 42U FRAME)



COOLSIDE DX

MACHINE DRAWINGS

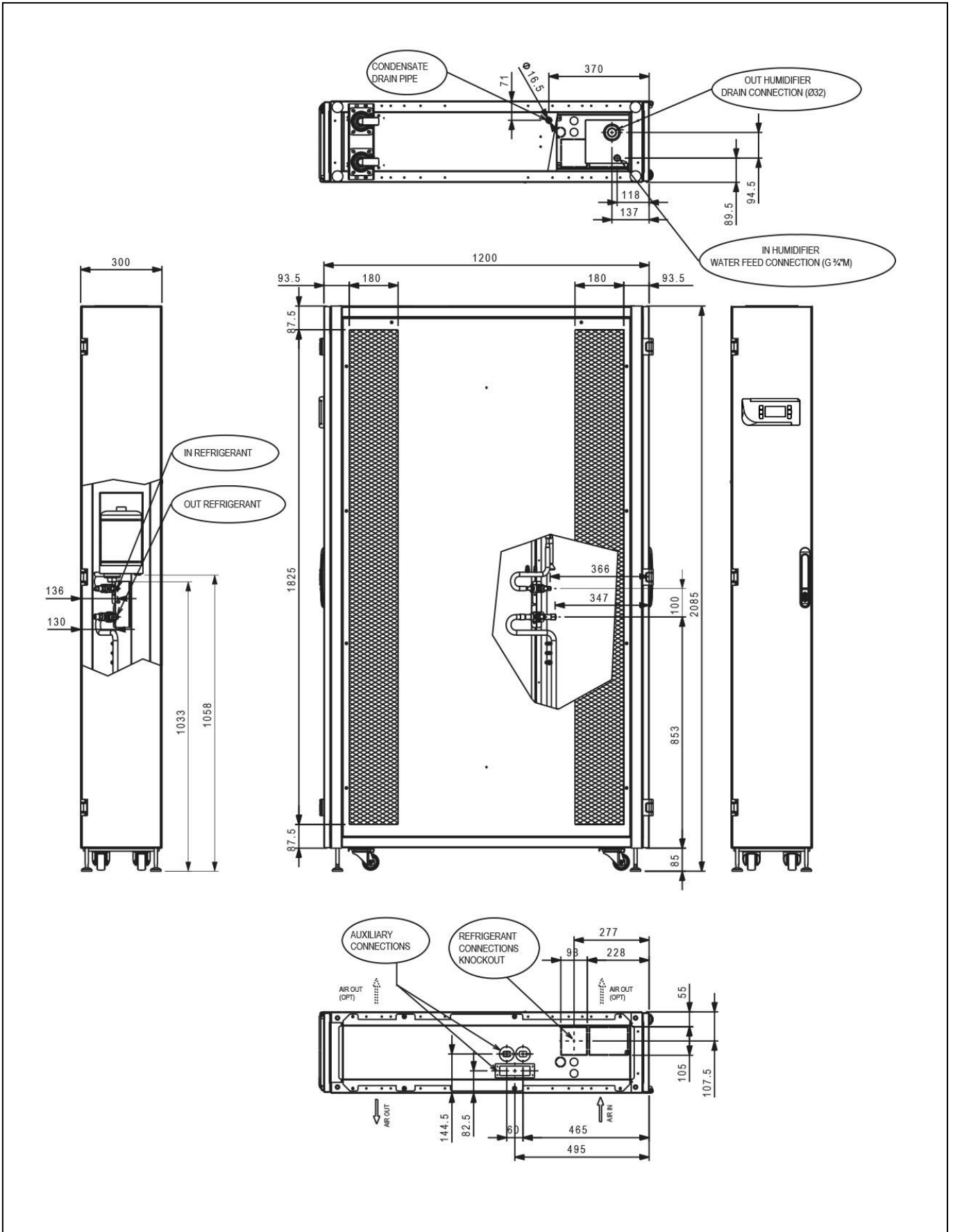
Dimensions in mm – Enclosure “E” Version – 0151, 0251 (600 x 1200 x 42U FRAME)



COOLSIDE DX

MACHINE DRAWINGS

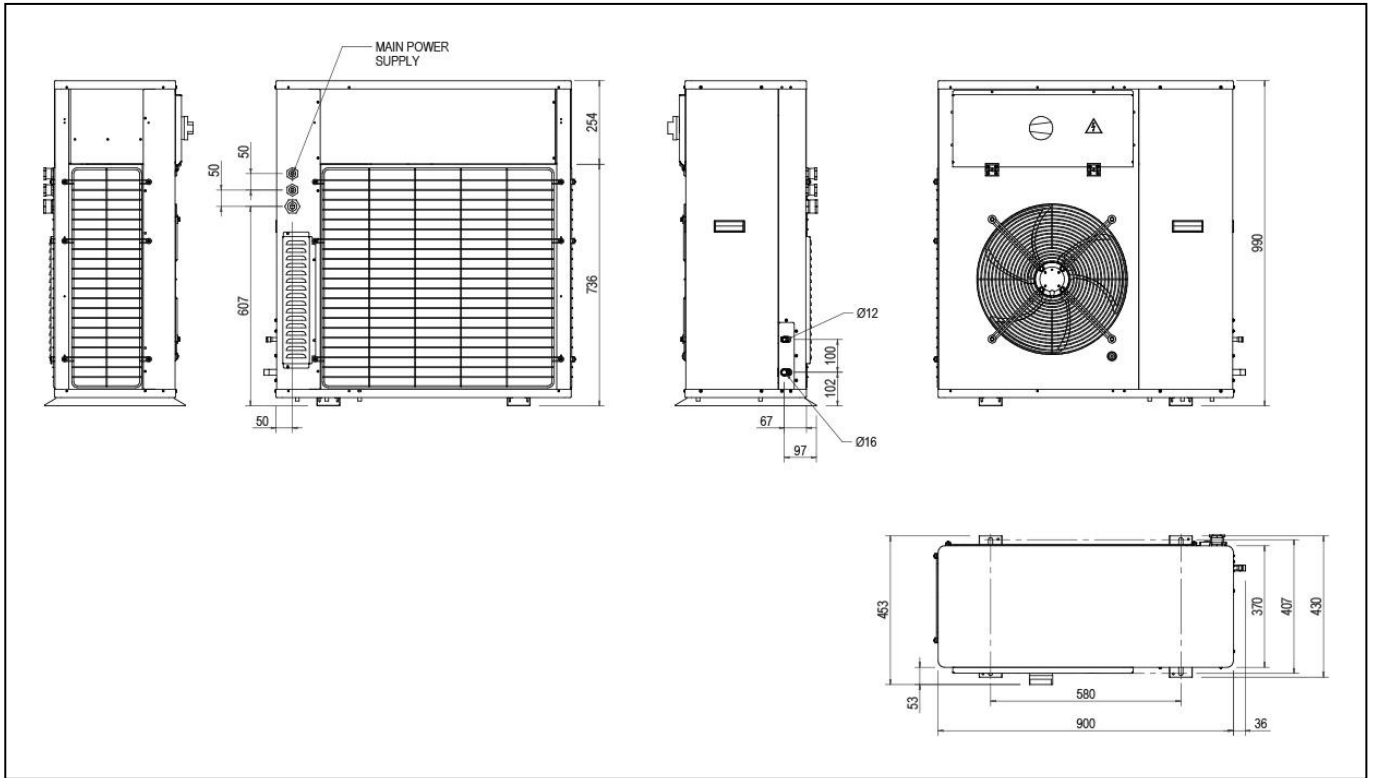
Dimensions in mm – Enclosure “E” Version – 0021, 0051, 0071, 0121 (300 x 1200 x 42U FRAME)



COOLSIDE DX

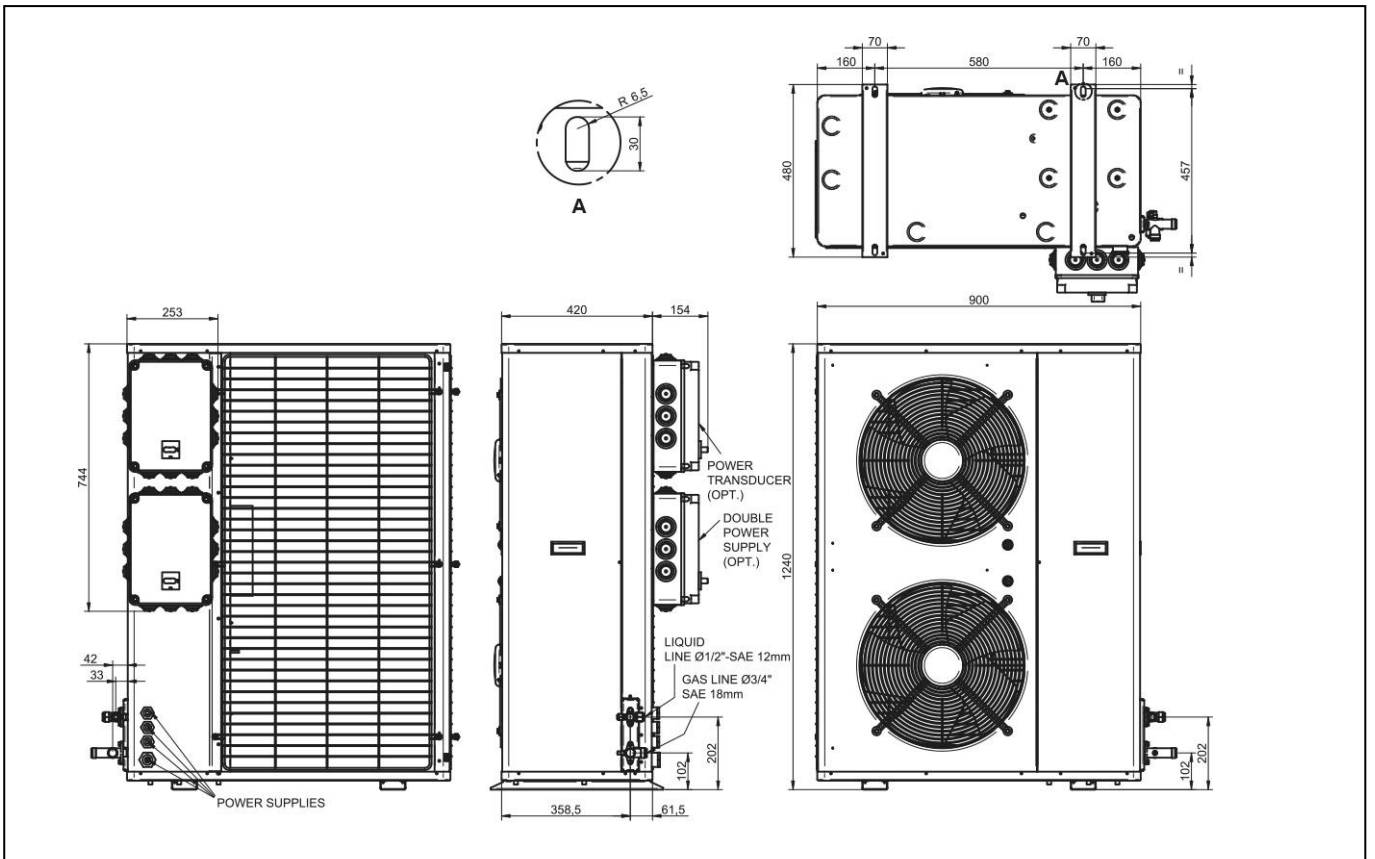
MACHINE DRAWINGS – OUTDOOR MOTO-CONDENSING UNITS

Dimensions in mm – Model 0021



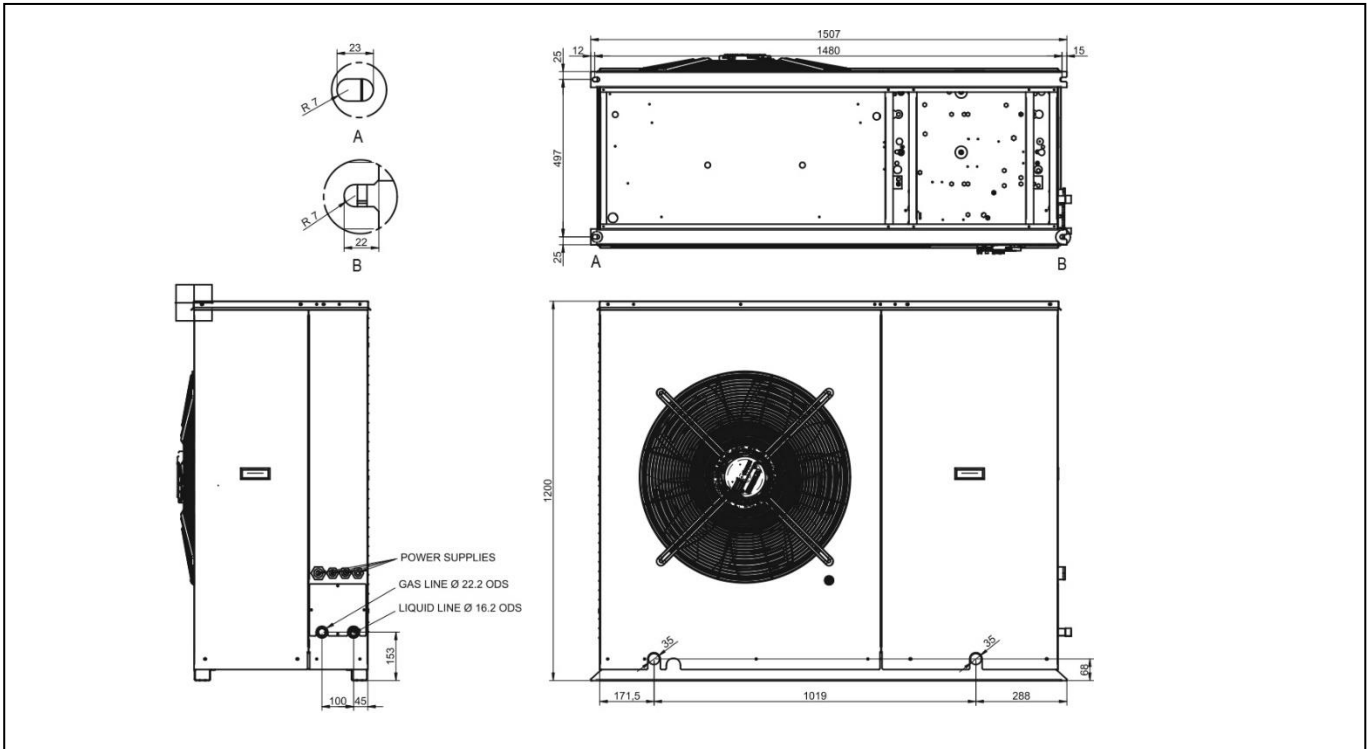
MACHINE DRAWINGS

Dimensions in mm – Model 0051

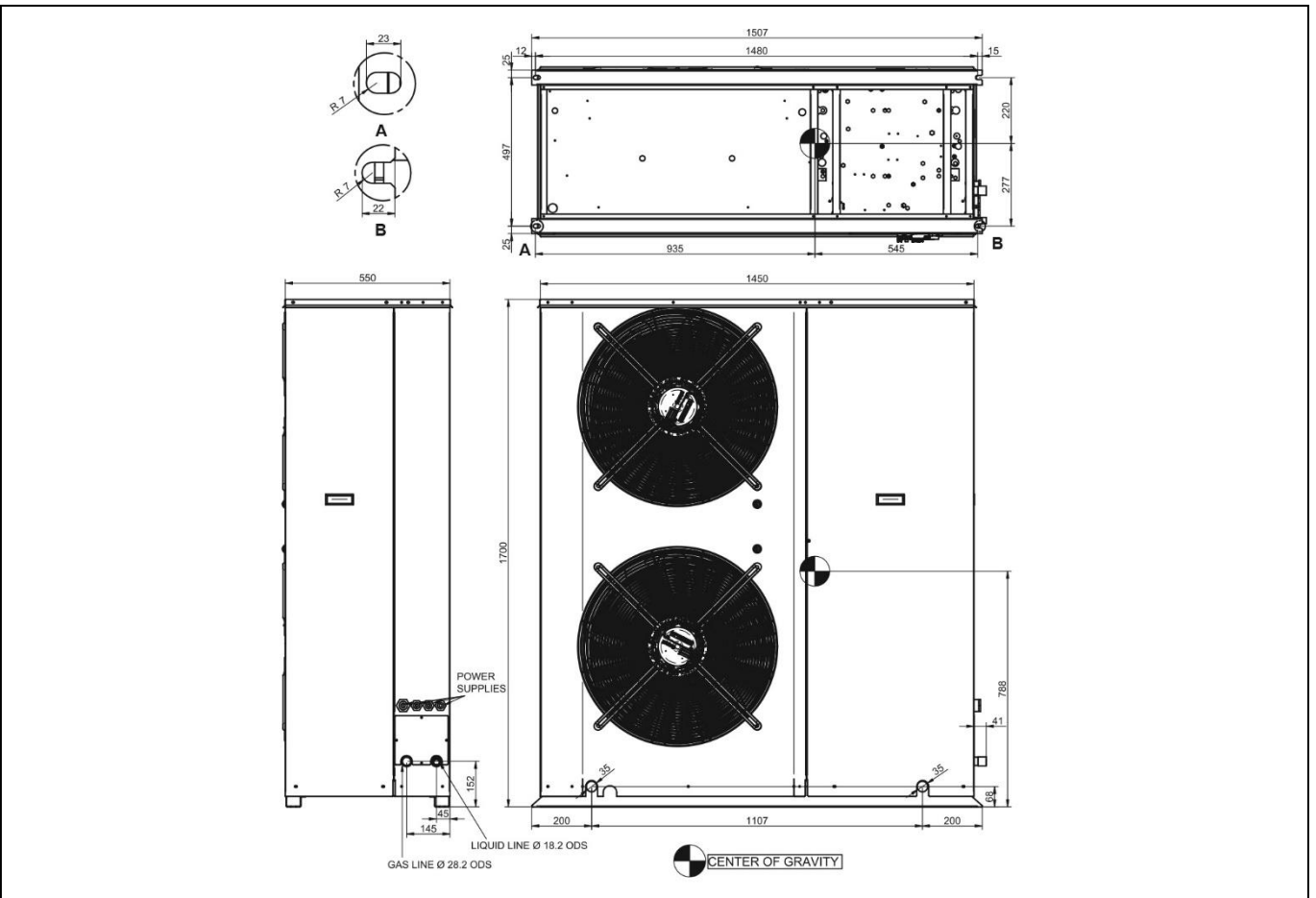


COOLSIDE DX

MACHINE DRAWINGS Dimensions in mm – Model 0071



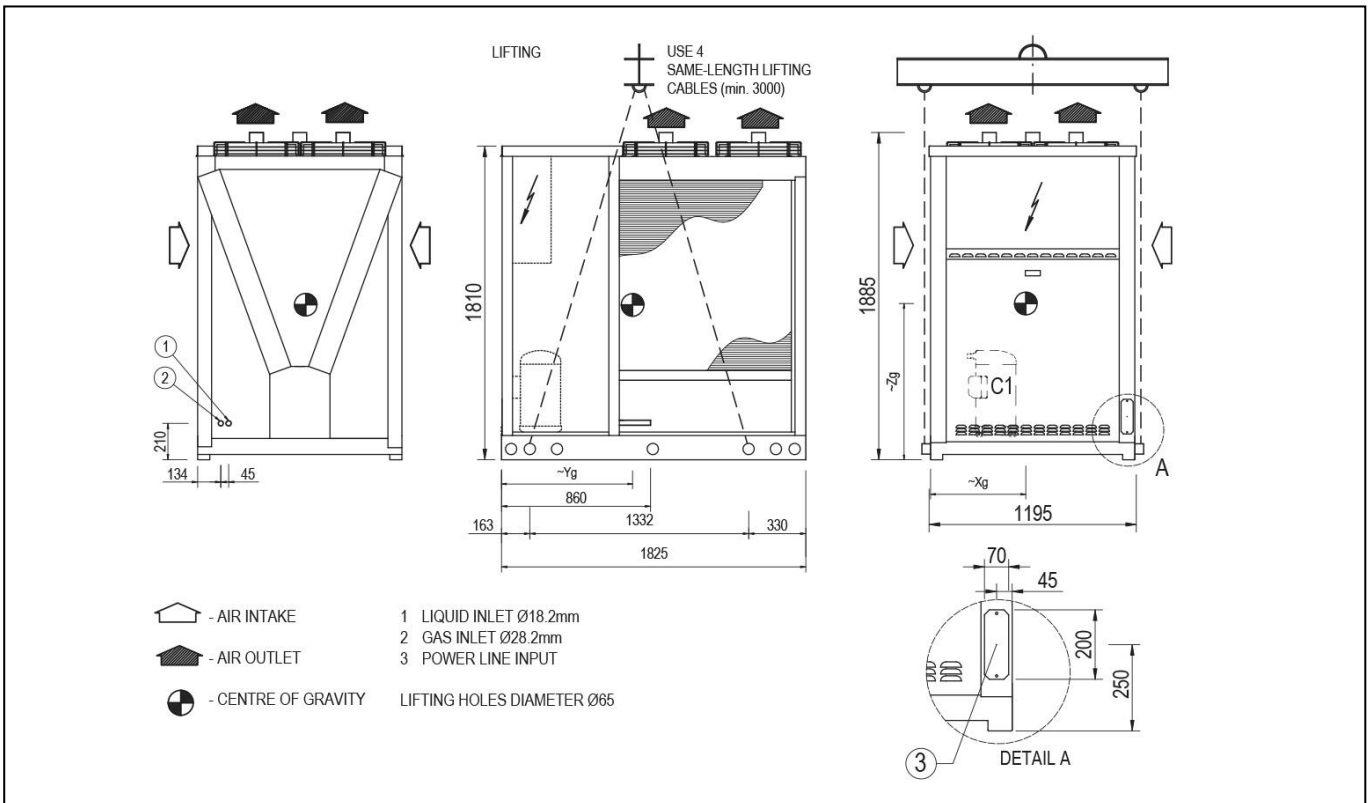
MACHINE DRAWINGS Dimensions in mm – Model 0121



COOLSIDE DX

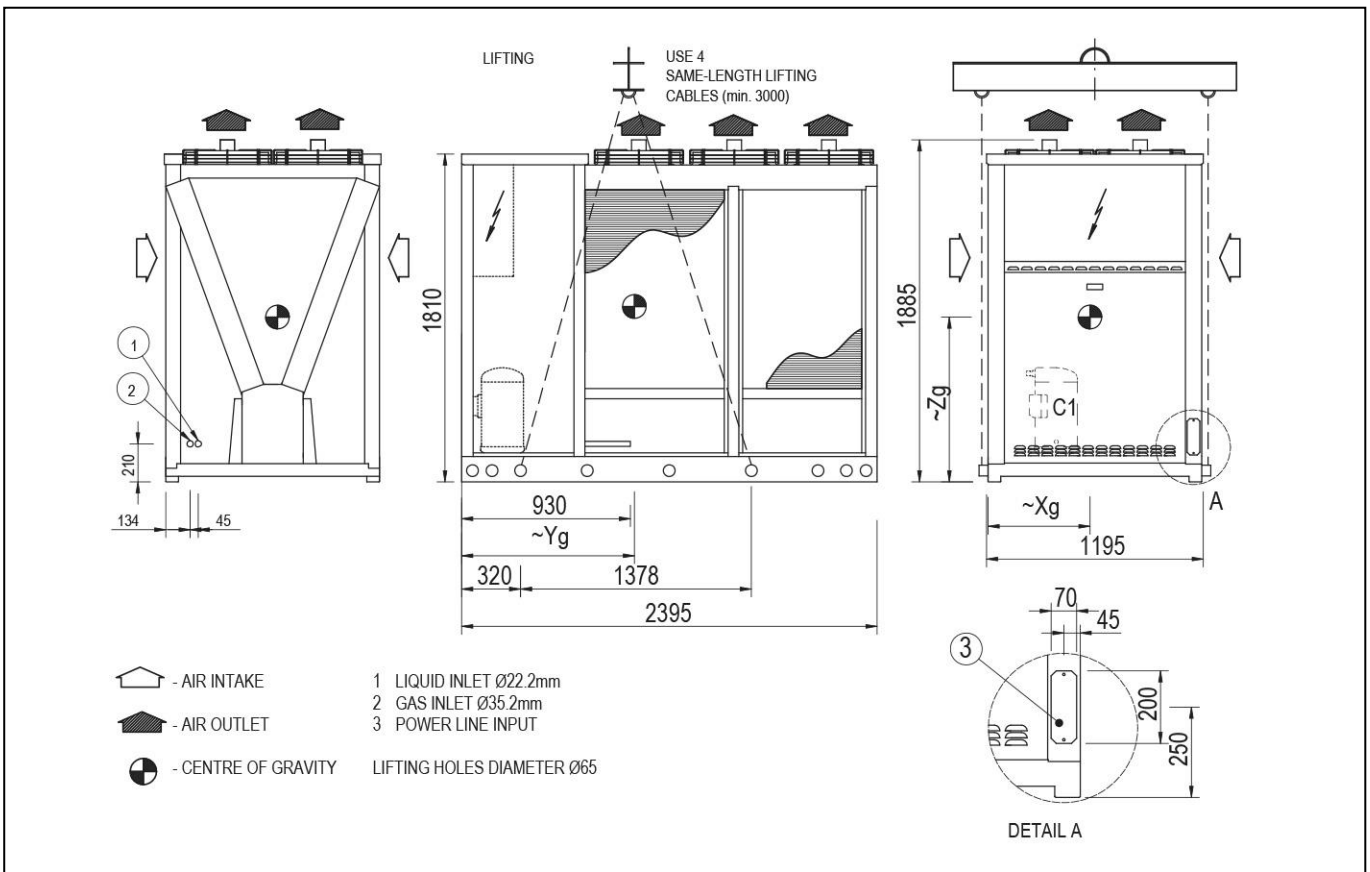
MACHINE DRAWINGS

Dimensions in mm – Modello 0151



MACHINE DRAWINGS

Dimensions in mm – Modello 0251





for a greener tomorrow

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



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