MAXA HEATING & COOLING

Inverter Air/Water chillers with axial fan

Technical Bulletin

Models

i-32V5C MIDI 0121
i-32V5C MIDI 0126
i-32V5C MIDI 0128
i-32V5C MIDI 0132

An Italian Company

02	01-2022	EM	AR	Modified compressor oil type, modified maximum absorbed power and current values, delete Gateway BACnet/Konnex accessory, correct sound power reference to the standard (UNI EN ISO 9641-1).
01	10-2021	EM	AR	0121, 0126 data update for fan change, added data BT version, change of Lw values, added data version SL, UNI/TS 11300-4 and 11300-4 data modification, circulator curves update, added minimum Hz function description
00	01-2021	EM	AR	First emission
Rev	**Date**	**Compiled**	**Approved**	**Note**
Code				**Serie**
BTE010401020002.02				**Inverter Air/Water chillers with axial fan**

CONTENTS

1. DESCRIPTION OF UNIT AND TECHNICAL SPECIFICATIONS

The refrigerant chillers in this series are designed for residential and commercial applications. The use of brushless inverter compressor technology, combined with an electronic expansion valve, circulator and variable speed fan, optimise the consumption and operating efficiency of the cooling components.

1.1 FRAMEWORK

Structure suitable for outdoor installation consisting of thick profiles in hot galvanised sheet metal painted with polyester powder, colour RAL 7035 textured, resistant to atmospheric agents.
The removable panels allow maintenance inside the refrigeration and hydraulic circuits.

1.2 COMPRESSORS

Twin rotary hermetic inverter controlled DC compressors, specifically designed to operate with R32, equipped with thermal protection and mounted on rubber vibration dampers.
This component is installed in a compartment separate from the air flow to reduce noise and is equipped with a crankcase heater that prevents the dilution of the oil by the refrigerant, ensuring correct lubrication and reducing wear on moving parts.
The compressors can be inspected by removing the side and front panels of the unit, allowing maintenance even when the unit is running.

1.3 AIR SIDE HEAT EXCHANGER

The air exchangers are made entirely of aluminium using micro-channel technology, which makes it possible to significantly reduce both the pressure drops on the air side and the refrigerant charge, at the same time guaranteeing a greater exchange capacity with the same frontal surface area compared to traditional exchangers and a lower refrigerant charge. On request, the coils can have surface treatments to allow greater resistance to corrosion.

1.4 UTILITY SIDE HEAT EXCHANGER

Gli scambiatori possono essere equipaggiati di resistenza elettrica antigelo (accessorio opzionale KA1). Brazed plate heat exchanger made of AISI 304 stainless steel, coated with black flexible closed-cell elastomeric foam; thickness 9 mm, thermal conductivity (λ)≤0.036 W/mK (at air +20°C). A flow switch installed on the water side ensures the presence of water flow and, together with the protection probe, prevents the formation of ice inside. The exchangers can be equipped with an electric antifreeze heater (optional accessory KA1).

1.5 FAN

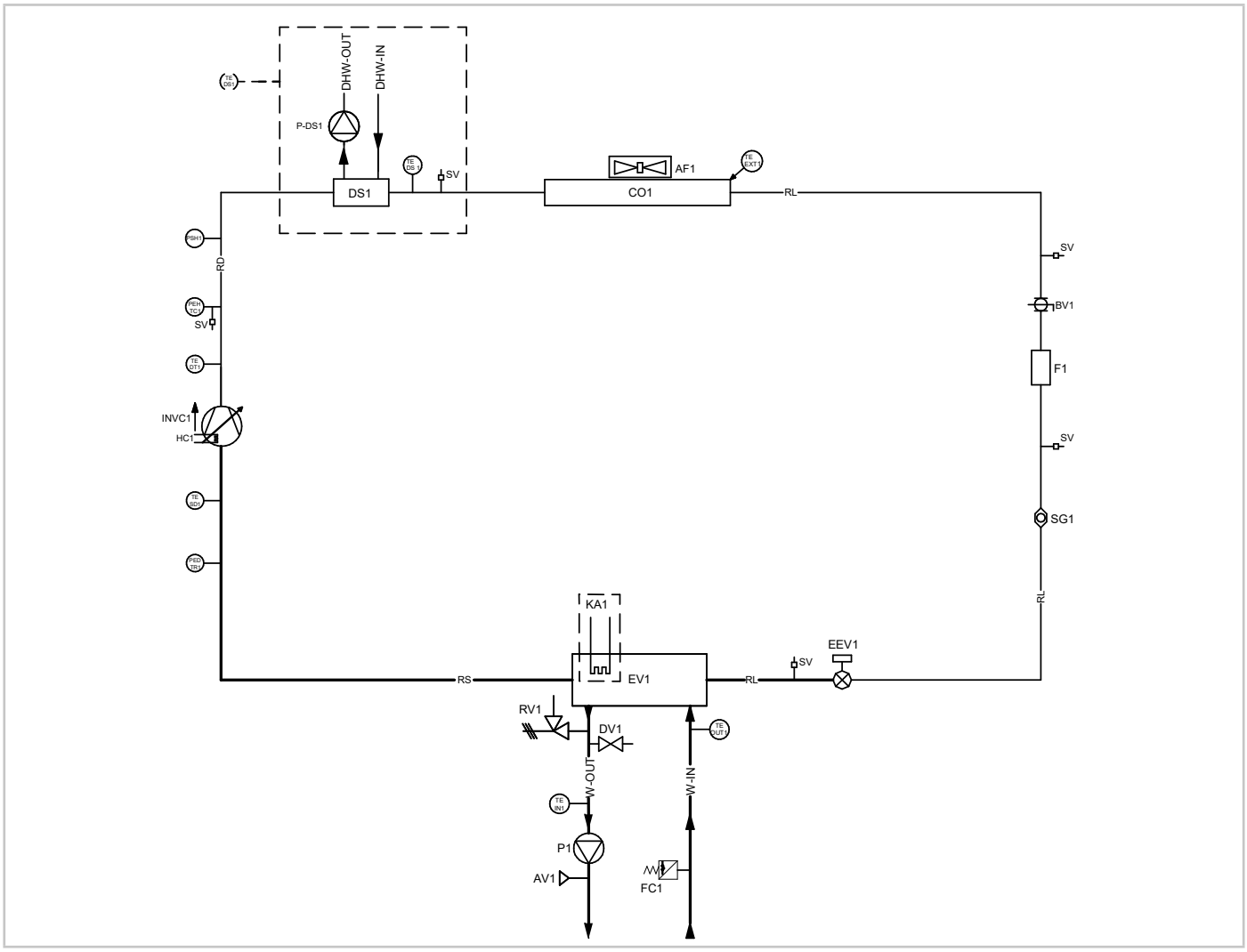
The fans are axial type with airfoil blades. They are statically and dynamically balanced and supplied complete with protection grille and air inlet and outlet with double flared profile, specially shaped to increase efficiency and reduce noise. The electric motor used is driven in modulation with brushless EC motor, directly coupled, and equipped with integrated thermal protection. The motor has an IP 54 protection rating according to CEI EN 60529.

1.6 COOLING CIRCUIT

The cooling circuit is made of copper piping, brazed and assembled in the factory in accordance with EN 13134. The components present are:

- Filter drier with 100% molecular sieve cartridge;
- Shut-off valve on the liquid line;
- Liquid flow and moisture indicator;
- Electronic expansion valve;
- Charge connections;
- High-pressure safety pressure switches;
- High and low pressure transducers.

The suction line is thermally insulated with flexible, closed-cell elastomeric foam.
Each unit is pressure tested to check for leaks and is supplied complete with a refrigerant charge optimised for operation.



LEGEND					
INVC	1	VARIABLE SPPED COMPRESSOR	SG	1	LIQUID AND MOISTURE INDICATOR
CO	1	CONDENSER-FINNED BATTERY	PEH TC	1	HIGH PRESSURE TRANSDUCER
EV	1	PLATE EVAPORATOR-EXCHANGER	PED TR	1	LOW PRESSURE TRANSDUCER
EEV	1	ELECTRONIC EXPANSION VALVE	PSH	1	HIGH-PRESSURE SWITCH
SV		CHARGE CONNECTION	HKA	1	HEAT EXCHANGER ANTIFREEZE RESISTOR
F	1	FILTER DRYER	TE SD	1	SUCTION TEMPERATURE PROBE
HC	1	CRANKCASE RESISTANCE	TE DT	1	EXHAUST TEMPERATURE PROBE
AF	1	AXIAL FAN	TE DS	1	TEMPERATURE PROBE (DS)
RD		DELIVERY LINE	TE EXT	1	OUTDOOR AIR PROBE
RL		LIQUID LINE	TE PD	1	WATER OUTLET TEMPERATURE PROBE DS
RS		SUCTION LINE	DHW-IN		DESUPERHEATER WATER INLET
BV	1	SPHERE VALVE	DHW-OUT		DESUPERHEATER WATER OUTLETS
DS	1	DESUPERHEATER	W-IN		WATER INLET
P-DS	1	DESUPERHEATER CIRCUIT CIRCULATOR	W-OUT		WATER OUTLET
---		ON-BOARD ACCESSORY			

1.7 ELECTRICAL AND CONTROL PANEL

Completely manufactured and wired in accordance with IEC 60335-2-40.
The power section includes:

- Isolation transformer for control power supply;
- Thermal protection fuses for compressor driver and EC fan;
- Automatic switch for compressor protection (optional);
- Driver for modulating compressor control;
- Phase sequence control relay;
- Phase sequence control relay with minimum/maximum voltage setting (optional);
- Thermostatically controlled ventilation inside the electrical panel;

- GI module - system management. (optional or for versions that require it).

The control section includes:

- Interface terminal with alphanumeric display;
- Display function for set values, analogue inputs, fault codes, alarm history and parameter index;
- Key on/off and alarm reset;
- Key combinations to force defrost and force pump to maximum speed;
- Management of unit start-up from local or remote;
- ModBus connectivity (optional);
- BMS connectivity via converter
- BMS connectivity provision (ModBus/Bacnet/Knx/Lonworks) - optional.

1.8 CONTROL AND PROTECTIVE DEVICES

All the units are standard supplied with the following control and protective devices: return water temperature probe, installed on water return pipe from the plant, working and antifreeze probe installed on the water delivery pipe to the plant, high pressure transducer, low pressure transducer, inlet and outlet temperature probes from the compressor, compressor thermal protection, fan thermal protection, water side flow switch protecting the evaporator, HP pressure switch.

1.9 WATER CIRCUIT

The series units are supplied with a built-in water circuit which includes: modulating circulator with high-efficiency brushless motor (EEI≤0.23), suitable for the use of chilled water and managed directly by the machine's controller, plate heat exchanger, protective flow switch, safety valve (6 bar) to be connected to a collection system and manual air venting valve.

2. DESCRIPTION OF VERSIONS AND ACCESSORIES

2.1 VERSIONS

The available versions are:

i-32V5C Midi - standard version chiller
i-32V5C-DS Midi - chiller with desuperheater

The unit with desuperheater includes the addition of a brazed plate type heat exchanger made of AISI 316 stainless steel, factory insulated using closed cell material. This version allows to recover about 20% of the condensing heat otherwise lost and to use it to feed the after-heating water coils of an AHU or for a hot water flywheel or for any other process use.

i-32V5C-BT Midi - BT version chiller (for low water temperatures)

The BT version unit allows the operating range of the unit to be extended by cooling water to -8°C. In this case, a mixture of water and glycol is used.

Order code	Unit version	Thermal capacity	Water pipe configuration	Injection (LT)	Silencing	Antifreeze kit accessory	System management module	Electrical variants	Accessory - Battery treatment	Accessory 1	Code
0110720#	RV	CT1	TA	IV	SIL	KA	GI	EL3	TR	AC1	MC
	00 Cooling only										
	54 Cooling only - BT version										
		24 0121									
		25 0126									
		26 0128									
		27 0132									
			0 2 pipes								
			3 Desuperheater circuit								
				0 Without injection							
					0 No silencing						
					1 Silencing						
						0 Without antifreeze kit					
						4 Exchanger resistance (KA1)					
							0 Without GI/GI2*				
							1 With GI/GI2 plant operator				
							2 Modbus (CM)*				
							3 Modbus (CM) +GI				
								0 Standard			
								2 Thermomagnetic circuit breakers (IM)			
									0 No one		
									7 Battery with AERO treatment (TR1)		
										0 No one	
											01 Standard

* Not valid if TA=3

2.2 LIST OF ACCESSORIES

Available accessories are indicated below:

Description	Accessory	Standard	Factory installed	Supplied loose/ activatable after delivery
Microchannel battery with Aero surface treatment	x		x	
Electronic expansion valve		x	x	
Electronic circulator		x	x	
Water-side safety valve		x	x	
Flow switch (indication of flow presence)		x	x	
Y-filter	x			x
Remote accumulation probe	x			x
Finned battery protection grids	x		x	
Rubber vibration dampers	x			x
KA1 exchanger adhesive resistor	x		x	
Dry contact on/off remote		x	x	
Dynamic set point		x	x	
Digital input for double set-point		x		x
Minimum Hz function		x		x
GI module including: - Compressor ON/OFF signalling - General alarm/machine block signalling	x		x	
Three-phase relays for sequence/shortage monitoring		x	x	
Three-phase relay for sequence/shortfall monitoring + min/max voltage detection	x		x	
General circuit breaker	x		x	
BMS connectivity provision - ModBus protocol included (CM)	x			x
Fan silent mode		x	x	
Serial converter USB RS485 (ISK)	x			x
Gateway Modbus RTU (RS485) to BACnet / Lonworks	x			x
7-touch/HUB (Cloud/App)	x			x
Remote display Touch screen (Hi-TV415)	x			x
Remote controll (I-Cr)	x			x

2.3 DESCRIPTION OF ACCESSORIES

2.3.1 Factory-fitted standard components

Electronic expansion valve

expansion valve, designed for the control and continuous regulation of the amount of refrigerant fed into the evaporator. Changes in thermal load may be followed quickly, so as to achieve optimised consumption.

Electronic circulator

standard on the unit, electronically controlled and high efficiency.

Water-side safety valve

Valve installed on the hydraulic circuit to control overpressure - setting 6 bar

Flow switch (flow presence signalling)

Device whose task is to control and signal the circulation of water in the plate heat exchanger. This component is of fundamental importance because it shuts down the unit and makes it safe by preventing the formation of ice.

Dry contact on/off remote

contact on the terminal board that allows the unit to be switched on and off.

Dynamic set-point

the regulator allows the set-point to be modified by adding a value according to the temperature of the external air probe.

Three-phase relay for sequence/absence monitoring

signals the presence of all three phases in the correct sequence.

Fan silent mode

Digital input that can be activated by an external contact that allows the reduction of the sound power level by acting on the ventilation. The mode is particularly suitable during night operation. The decreases in capacity and sound power level when the "fan silent mode" function is active are shown below.

The reduction refers to the test condition (1) of the technical data tables; the value is determined on the basis of measurements carried out in accordance with UNI EN ISO 9614-2, in compliance with the requirements of Eurovent certification.

Model i-32V5C Midi	Yeld reduction factor [-] A35W7	Sound power level reduction [dB(A)]
0121	0,982	-1
0126	0,977	-1,5
0128	0,973	-1,5
0132	0,973	-1,5

2.3.2 Factory-fitted optional accessories

Microchannel battery with Aero surface treatment

The treatment consists in the application by spraying of a special water-based paint made of new resins with very high chemical resistance. The product is flexible to resist thermal contraction and expansion, UV resistant, dirt repellent, mechanically resistant, with very low heat transmission losses and practically no effect on air-side pressure drops.
The treatment withstands 6000 h according to ASTM B117.

Finned coil protection grids

metal grid to prevent the intrusion of foreign bodies inside the coil and to protect the coil from accidental contact with things or people.

KA1

Heat exchanger adhesive resistor - electrical resistor located on the front face of the plate heat exchanger, which is activated when the temperature of the water inside the exchanger drops below +4°C. For BT units, this value must be set according to the percentage of glycol in the system and the freezing point of the mixture.

GI - Plant management module

allows the management of the following functions:

- Compressor ON/OFF signalling
- General alarm signalling/Machine block signalling

Three-phase relay for sequence/shortage monitoring + min/max voltage detection

signals if all three phases are present in the correct sequence and if all three phase-to-phase voltages are within the set limits. The maximum and minimum voltage thresholds can be set separately.

General circuit breaker

Overcurrent circuit breaker applied upstream of electrical components, protects components from failures caused by current peaks.

2.3.3 Standard components supplied separately/activatable after delivery

Digital input for doubleset-point

input allowing set-point changes.

Minimum Hz function

Activating this function by the procedure described in the controller manual, the unit will reduce the absorbed power by about 10% compared to the nominal reference value; there will therefore also be a reduction in capacity of the unit.

2.3.4 Optional accessories supplied separately/activatable after delivery

Y-filter

contains a stainless steel mesh sieve (500 µm filtration) that collects solids in the water. Filtration prevents clogging and/or damage to devices installed downstream of the filter.

System storage remote probe

system temperature probe to be positioned inside an external tank. The system remote probe thermoregulates the heat pump only during the compressor start-up phase; shutdown is managed by the probe on the unit's delivery side.

Rubber vibrations dampers

are designed to prevent the transmission of vibrations to the structure; they are mounted underneath the unit in special holes.
The optimum recommended load capacities are given below, depending on the size of the machine.

Model i-32V5C Midi	Capacity of rubber vubration dampers [daN/mm]
0121, 0126, 0128, 0132	63

BMS connectivity predisposition - ModBus protocol included (CM)

accessory allowing connection of the unit to external controllers via serial cable with RS-485 electrical standard and ModBus RTU protocol.

USB RS485 serial converter (ISK)

Interface device capable of reading and writing control registers via the RS485 standard and converting it to a USB port that can be connected to any supervisory system.

Gateway Modbus RTU (RS485) to BACnet / Lonworks

device that allows conversion between Modbus RTU and BACnet/Lonworks, allowing the unit control to be configured as a normal device in the BACnet/Lonworks network.

7-touch/HUB (Cloud/App)

7-touch/HUB (Cloud/App) is a compact system consisting of an ultra-thin touch panel, including a temperature control unit and gateway for remote control from a PC (via the "my.maxa.it" portal) or smartphone (via the app downloadable from the "My Maxa" online store). It allows winter and summer climate control.

Remote touch screen display (Hi-TV415)

remote touch screen control for the centralised management of a chiller/heat pump network, it integrates humidity and temperature sensors for the thermo-hygrometric analysis of the environment and the management of the double set point for radiant floor systems that use a dehumidification system.

Remote control (I-Cr)

Modbus remote control with negative LCD and capacitive keys. The device is to be used as a remote machine keyboard with local temperature detection, replicating the functions of the on-board control.

3. INSTALLATION

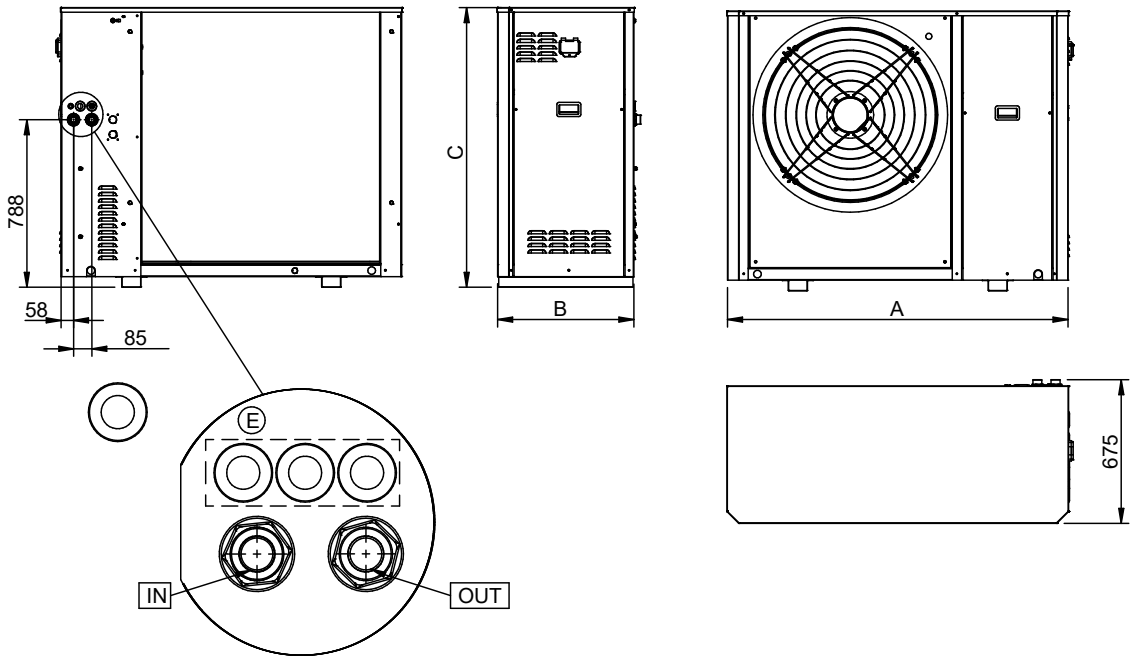
All handling, installation and maintenance operations must be carried out by QUALIFIED PERSONNEL only. Before any operation on the unit, make sure that the power supply is disconnected.
The minimum permissible temperature for storing the units is 5°C.

3.1 UNIT DIMENSIONS,HYDRAULIC CONNECTIONS,WEIGHTS AND CENTRE OF GRAVITY POSITION

3.1.1 Net dimensions and with packaging

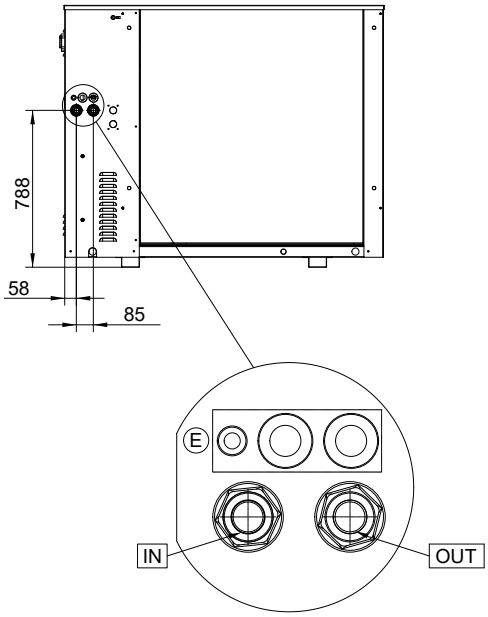
Model i-32V5C Midi	Length A [mm]	Width B [mm]	Height C [mm]
0121	1600	680	1315
0126	1600	680	1315
0128	1600	680	1315
0132	1600	680	1315

Model with packaging	Length [mm]	Width [mm]	Height [mm]
0121	1660	700	1412
0126	1660	700	1412
0128	1660	700	1412
0132	1660	700	1412



3.1.2 Detail of connections and location

Model i-32V5C Midi	Hydraulic connections IN/OUT
0121	1"M
0126	1"M
0128	1"1/4 M
0132	1"1/4 M

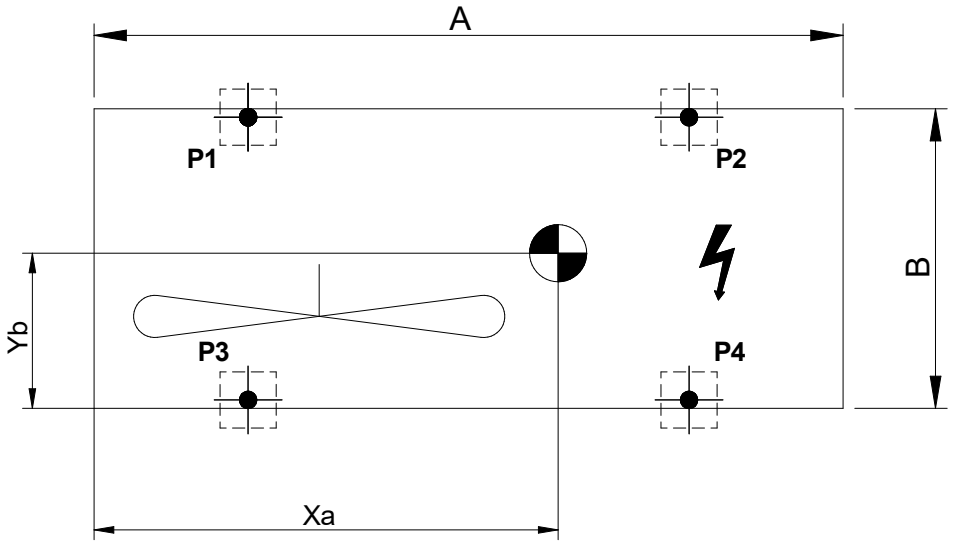


3.1.3 Weights

Model i-32V5C Midi	Shipping weight [kg]	Operating weight [kg]
0121	215	205
0126	215	205
0128	225	215
0132	225	215

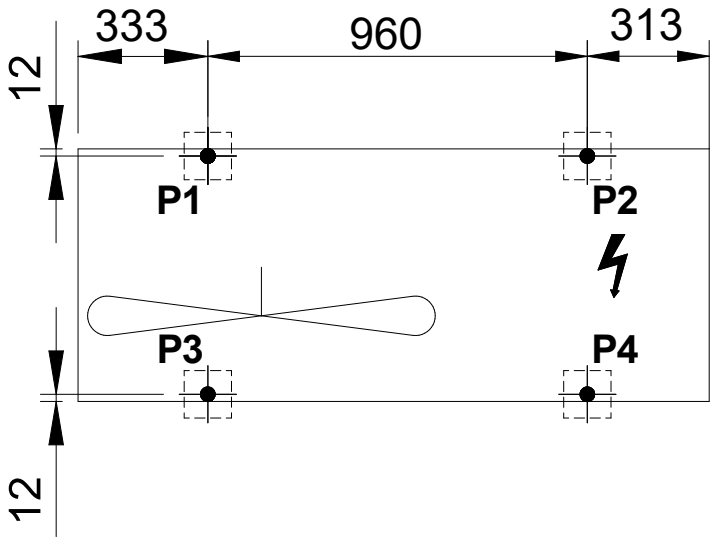
3.1.4 Location of the centre of gravity and vibrations dampers

The position of the centre of gravity of each machine is shown in the tables, with reference to the dimensions shown in the image.



Model i-32V5C Midi	Shipping weight [kg]	Operating weight [kg]	A [mm]	B [mm]	X_a [mm]	Y_b [mm]
0121, 0126	215	205	1600	680	1060	310
0128, 0132	225	215	1600	680	1060	320

The positions provided for the installation of vibration dampers for each type of machine are shown in the pictures below.



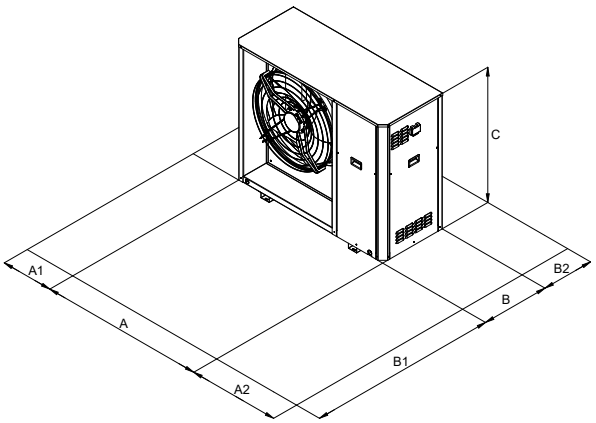
3.2 TECHNICAL SERVICE AREAS

All models in the series are designed and constructed for outdoor installation.
It is good practice to create a support slab of adequate size for the unit. The units transmit a low level of vibration to the ground: it is nevertheless advisable to place anti-vibration mounts between the base frame and the support surface.

	**SUSPENDED INSTALLATION IS PROHIBITED.**
	**The support surface must have a sufficient capacity to support the weight of the unit, which can be seen on the technical label affixed to the machine and in the dedicated chapter of this manual.** **The support surface must not be inclined to ensure correct operation of the unit and to prevent it from tipping over.** **The installation surface of the unit must not be smooth, to avoid the deposit of water/ice, potential sources of danger.**

	The installation site of the unit must be free from foliage, dust, etc., which could block or cover the heat exchange coils. Installation should be avoided in areas subject to stagnant or falling water, for example from gutters. Also avoid locations subject to snow accumulation (such as corners of buildings with sloping roofs). When installing in areas subject to snowfall, mount the unit on a base 20 to 30 cm above the ground to prevent snow from accumulating around the unit.
	It is recommended to ensure sufficient air exchange to dilute the R32 gas in case of accidental leakage, in order to avoid the formation of explosive atmospheres. For this reason, a minimum distance of 1 metre must be maintained from openings or wells, where the gas could accumulate.
	Avoid installing the unit under any type of cover such as a roof, canopy, carport, or similar.

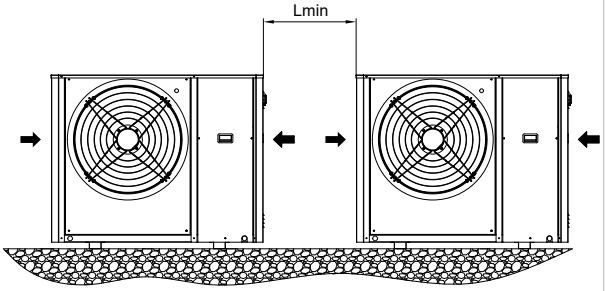
It is very important to avoid recirculation phenomena between suction and delivery, otherwise the performance of the unit will deteriorate or even interrupt normal operation.
In this respect it is absolutely necessary to guarantee the minimum service spaces indicated below.

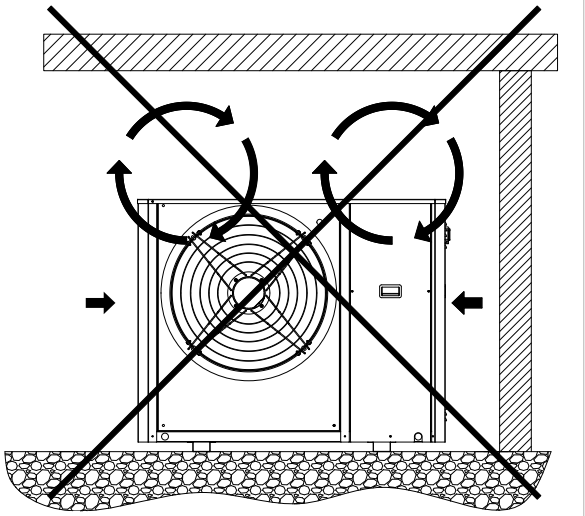
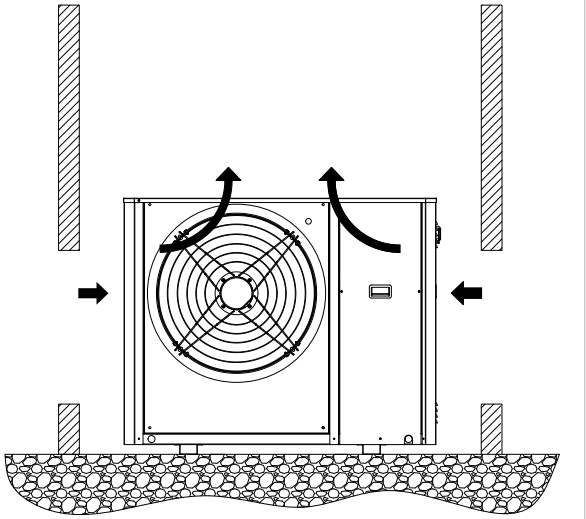


MODEL		A1	A2	B1	B2
i-32V5C Midi 0121, 0126, 0128, 0132	mm	400	700	1500	400

	Obstruction or covering of ventilation openings must be avoided.
	For installations in locations with strong winds refer to the area classification according to the Beaufort scale. If the value is ≥ 7 (strong wind, average wind speed = 13.9-17.1 m/s) it is strictly necessary to keep the fan powered at all times, thus preventing its unintentional rotation.

In the case of side-by-side units, the minimum distance Lmin between them is 700 mm.



Covering with canopies or positioning near plants or walls should be avoided in order to prevent air circulation.	
In the case of winds with speeds in excess of 13.9-17.1 m/s (strong winds according to the Beaufort scale), the use of windbreaks is recommended.	

It is always advisable to make an environmental impact assessment based on the power and sound pressure data given in the technical data chapter and the sound emission limits based on the installation area of the unit, with reference to the DPCM of 14/11/1997. An assessment must also be made if the unit is installed in the vicinity of workers, according to D. LGS. 81/2008 Art. 189 and following.

4. HYDRAULIC CIRCUIT

The hydraulic connections must be made in accordance with national or local regulations; the piping can be made of steel, galvanised steel or PVC. The pipes must be carefully sized according to the nominal water flow rate of the unit and the pressure drops of the hydraulic circuit. All hydraulic connections must be insulated using closed-cell material of adequate thickness. The chiller must be connected to the piping using new, non-reused flexible couplings. It is recommended to install the following components in the hydraulic circuit:

- Thermometers to measure the temperature in the circuit.
- Manual gate valves to isolate the chiller from the hydraulic circuit.
- Y-shaped metal filter or a defangator (installed on the return pipe from the system) with a metal mesh of no more than 1 mm.
- Loading unit and discharge valve where necessary.

	**CAUTION: When dimensioning the pipes, make sure that the maximum system-side leakage is not exceeded as shown in the technical data table (see useful head).**
	**CAUTION: connect the pipes to the connections, always using the key-to-wrench system.**
	**CAUTION: create a suitable outlet for the safety valve.**
	**CAUTION: The expansion vessel, to be provided externally, must be suitably sized according to the type and volume of fluid, the variation of temperatures and pressures in the system.**

	**CAUTION: The return line from the system must be at the "WATER INPUT" label, otherwise the evaporator could freeze.**
	**CAUTION: It is compulsory to install a metal filter (with a mesh size of no more than 1 mm) and a defangator on the return pipe from the installation marked "WATER INPUT". Alternatively, it is possible to install a defangator that guarantees a filtration degree of no more than 1 mm; in this case, it is no longer necessary to install the Y-filter. If the metal filter or the defangator are not present on the installation, the warranty will be immediately void. The filter or (the defangator) must be kept clean, so make sure they are still clean after the unit is installed and check them periodically.**
	**All units leave the factory with a flow switch (factory installed). If the flow switch is tampered with or removed, or if the water filter and deflector are not present in the unit, the warranty will be void. Refer to the wiring diagram enclosed with the unit for the connection of the flow switch. Never jumper the flow switch connections in the terminal block.**
	**The heating system and safety valves must conform to the requirements of EN 12828.**

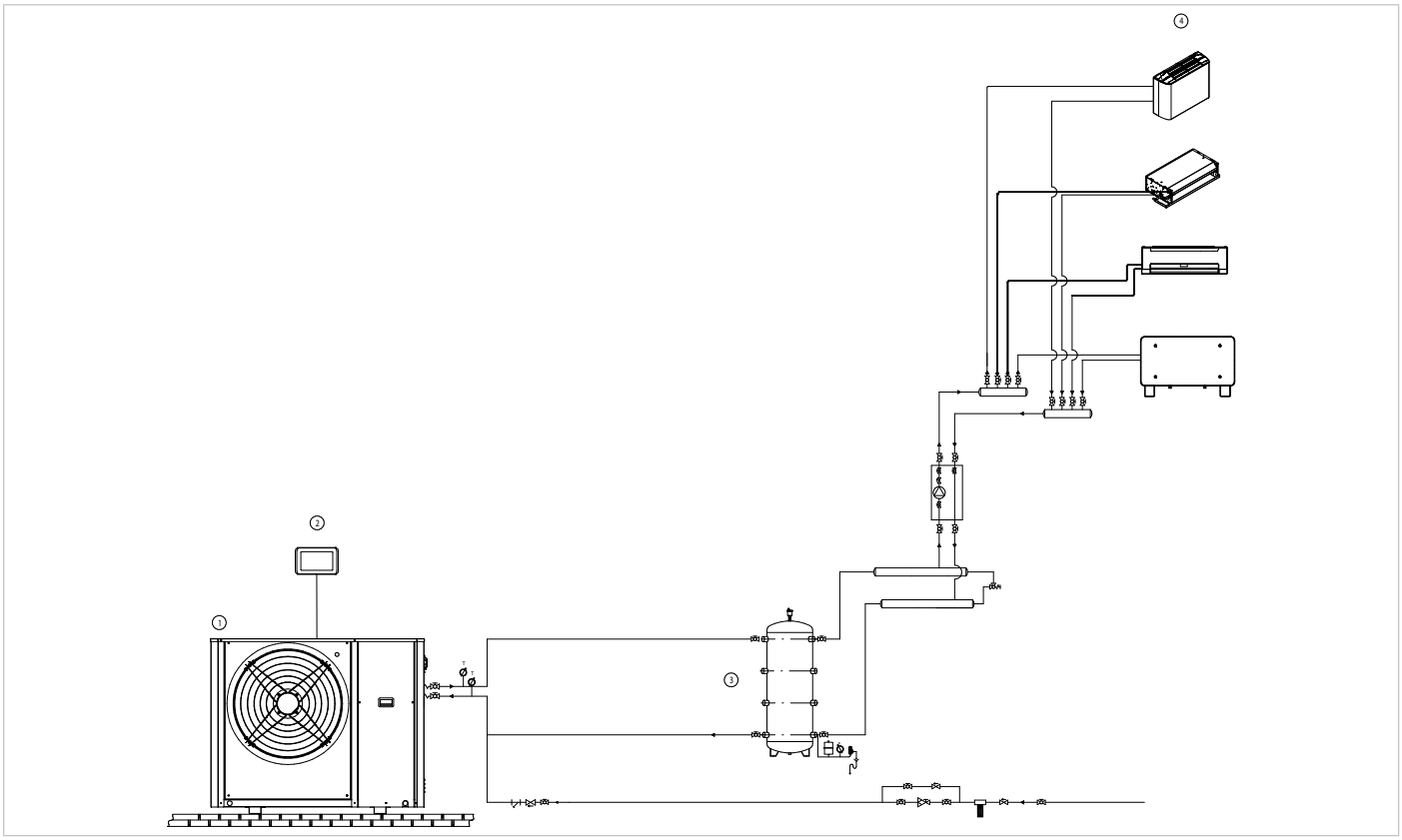
4.1 SYSTEM WATER SPECIFICATIONS

To ensure that the unit functions properly, the water must be adequately filtered (see the beginning of this section) and the quantity of dissolved substances must be minimal. The maximum permitted values are listed below.

MAXIMUM PERMITTED CHEMICAL AND PHYSICAL CHARACTERISTICS OF THE SYSTEM WATER	
PH	7,5 - 9
Electrical conductivity	100 - 500 µS/cm
Total hardness	4,5 – 8,5 dH
Temperature	< 65°C
Oxygen content	< 0,1 ppm
Max. glycol quantity	40 %
Phosphates (PO4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alcalinity (HCO3)	70 – 300 ppm
Chlorine ions(Cl-)	< 50 ppm
Sulphate ions (SO4)	< 50 ppm
sulphide ion (S)	No one
Ammonium ions(NH4)	No one
Silica (SiO2)	< 30 ppm

4.1.1 Typical hydraulic scheme

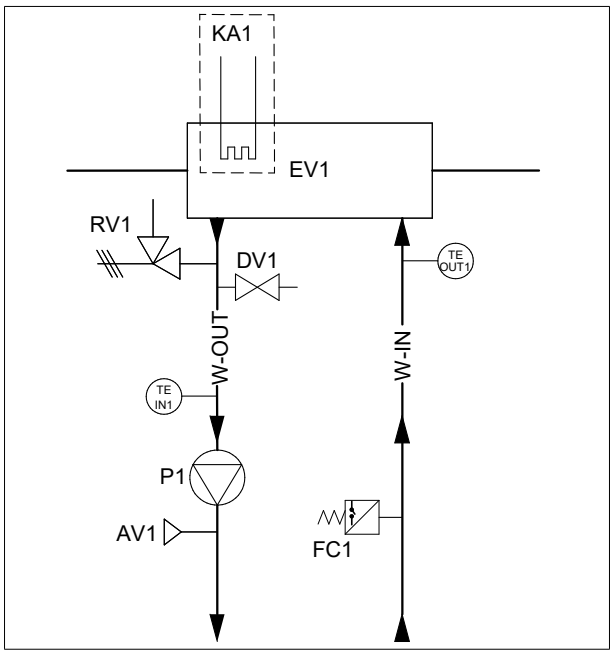
The following is a recommended connection diagram



LEGEND			
1	i-32V5C MIDI - CHILLER	3	PUFFROLLER - TECHNICAL WATER TANK
2	Hi-T2 REMOTE CONTROLLER	4	TERMINALS FANCOIL

4.1.2 Hydraulic diagram inside the unit

The hydraulic diagram for connection to the unit is shown below



LEGEND					
EV	1	PLATE HEAT EXCHANGER	W-IN		WATER INLET
DV	1	DRAIN TAP	W-OUT		WATER OUTLET
RV	1	SAFETY VALVE	P	1	ELECTRONIC CIRCULATOR
TE IN	1	USER WATER INLET TEMPERATURE PROBE	AV	1	AUTOMATIC AIR VENT VALVE

LEGEND					
TE OUT	1	WATER TEMPERATURE PROBE USER OUTLET	FC	1	FLOW SWITCH
---	Accessory installed on board				

In any case, each unit includes a safety valve with 6 bar opening pressure.

ATTENTION: It is recommended to connect the safety valve vent to a suitable conveyor/discharge.
Otherwise the discharged water could stagnate around the unit and become a source of danger by slipping/falling.

4.1.3 Minimum water content and hydraulic circuit volumes

Minimum water content and hydraulic circuit volumes.
The table shows the minimum system water content recommended per unit. The volume of the hydraulic circuit is also indicated. If this volume is less than the recommended minimum water content, it must be ensured that the pipes connecting to the unit have sufficient capacity to compensate for this difference. The additional volume required is shown in the table.

Model i-32V5C Midi	0121	0126	0128	0132
Minimum system water content [l]	110	110	110	110
Hydraulic circuit volume [l]	2,4	2,4	3,4	3,4

4.1.4 Condansate drainage system

As the pipes are well insulated, the production of condensation is minimal and does not lead to the accumulation of water inside the refrigeration compartment.

4.1.5 System charging / discharging

CAUTION: supervise all filling/top-up operations.

CAUTION: before filling/topping up the system, disconnect power to the units.

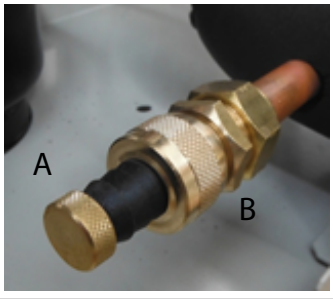
CAUTION: the system must always be filled/topped up in controlled pressure conditions (1÷3 bar).Make sure that a pressure reducer and safety valve have been installed on the filling/top-up line.

CAUTION: the water in the loading/reintegration line must be properly pre-filtered from any impurities and suspended particles. Ensure that a removable cartridge filter and a dirt separator are installed.

CAUTION: regularly check and vent the air built up in the system.

CAUTION: install an automatic air venting valve at the highest point of the system.

If it is necessary to top up the system or adjust the glycol content, the service tap can be used. Unscrew the cap of the service tap (A) and connect a 14 or 12 mm pipe (internal diameter measurements - check the tap model installed on your unit) to the hose connector connected to the water mains, then fill the system by unscrewing the ring nut (B). After this operation, tighten the ring nut (B) again and screw the cap (A) back on. In any case, it is advisable to use an external tap to fill the system.



If the unit must be completely drained, first close the manual inlet and outlet shutters (not supplied) and then disconnect the pipes externally

arranged on the water inlet and outlet in order to drain the liquid contained in the unit (to make the operation easier, it is advisable to install two external drain cocks on the water inlet and outlet interposed between the unit and the manual shutters).

4.1.6 Air vent valve

The unit is equipped with an air vent valve that automatically eliminates the air accumulated inside the circuit, avoiding: undesirable effects such as premature corrosion and wear, lower efficiency and reduced exchange yield.
The device also has a safety function in that, in the event of a break in the exchanger, it allows the refrigerant gas to escape into the external air, preventing it from being transported to the internal terminals.
It is possible to leave the valve in the closed position by closing the cap on the outlet; by loosening the cap the valve remains in the open position and the air is discharged automatically.

If a water leak is noticed, it is mandatory to replace the component by unscrewing it with a spanner, as shown in the image below.

5. TECHNICAL DATA

5.1 CHILLER DATA SHEET

TECHNICAL CHARACTERSTICS		Unità	i-32V5C MIDI			
			0121	0126	0128	0132
Cooling	Cooling capacity (1) min/nom/max	kW	7,80 / 20,7 / 24,7*	8,80 / 25,8 / 27,1*	10,1 / 28,1 / 30,8*	11,2 / 31,8 / 32,8*
	Power input (1)	kW	5,92	8,03	8,29	10,2
	E.E.R. (1)	W/W	3,50	3,21	3,39	3,13
	Cooling capacity (2) min/nom/max	kW	11,4 / 21,6 / 24,7*	12,9 / 25,5 / 27,4*	14,6 / 28,4 / 31,9*	16,3 / 32,8 / 34,3*
	Power input (2)	kW	4,30	5,28	5,77	7,09
	E.E.R. (2)	W/W	5,02	4,83	4,92	4,63
	SEER (3)	W/W	5,19	5,07	5,43	5,06
	IPLV (4)		5,56	5,55	5,73	5,54
	Cooling capacity (8)	kW	10,70	13,80	14,90	17,20
	Power input (8)	kW	6,05	7,66	7,92	9,47
	E.E.R. (8)	W/W	1,77	1,80	1,88	1,82
	Water flow rate (1)	L/s	1,0	1,2	1,3	1,5
	User side heat exchanger pressure drops (1)	kPa	37,5	53,1	39,2	47,8
Compressor	Type		Twin Rotary DC Inverter			
	Number of compressors		1	1	1	1
	Refriferant oil (type)		FW68S or equiv.	FW68S or equiv.	FW68S or equiv.	FW68S or equiv.
	Refrigerant oil (quantity)	L	1,5	1,5	1,5	1,5
	Refrigerant circuits		1	1	1	1
Refrigerant	Type		R32	R32	R32	R32
	Refrigerant charge (5)	kg	1,8	1,8	2,2	2,2
	Amount of refrigerant in equivalent CO2 tonnes (5)	ton	1,22	1,22	1,49	1,49
	Design pressure (high/low) chiller mode	bar	42,8/3,5	42,8/3,5	42,8/3,5	42,8/3,5
External zone fans	Type		Motore DC Brushless			
	Number		1	1	1	1
	Nominal power (1)	kW	0,27	0,31	0,70	0,73
	Maximum power input	kW	0,83	0,83	0,83	0,83
	Maximum current input	A	1,45	1,45	1,45	1,45
	Nominal air flow rate	m3/h	8091	8407	12873	12836
Internal heat exchanger	Type of internal heat exchanger		A piastre			
	N° internal heat exchangers		1	1	1	1
	Water content	L	1,7	1,7	2,1	2,1
Hydraulic circuit	Useful head (1)	kPa	79,1	55,8	66,3	50,2
	Water content of hydronic circuit	L	2,4	2,4	3,4	3,4
	Maximum pressure hydronic kit (safety valve calibration)	bar	6	6	6	6
	Hydraulic connections	inch	1"M	1"M	1"1/4 M	1"1/4 M
	Minimum water capacity (6)	L	110	110	110	110
	Maximum circulator power	kW	0,31	0,31	0,31	0,31
	Max. circulator current input	A	1,37	1,37	1,37	1,37
	Circulator Energy Efficiency Index (EEI)		≤ 0,23	≤ 0,23	≤ 0,23	≤ 0,23
Noise level	Sound power level Lw (7)	dB(A)	73	74	75	76
Electrical data	Power supply		400V/3P+N+PE/50Hz			
	Maximum power input	kW	9,88	10,3	11,1	11,7
	Maximum current input	A	19,0	19,7	20,9	21,9
	Maximum power input with antifreeze kit	kW	9,95	10,4	11,1	11,8
	Maximum current input with antifreeze kit	A	19,0	19,7	20,9	21,9

Performance referring to the following conditions, according to standard 14511:2018:

(1) Cooling: outdoor air temperature 35°C;in/out water temperature 12/7°C.
(2) Cooling: outdoor air temperature 35°C; in/out water temperature 23/18°C.
(3) Cooling: in/out water temperature 7/12°C.
(4) Calculated according to AHRI standard 551/591 (SI).
(5) Indicative data subject to changes. For the correct value, always refer to the technical label on the unit.
(6) Calculated for a decrease in system water temperature of 10°C with a defrost cycle lasting 6 minutes.
(7) Condition (1); value determined on the basis of measurements carried out in accordance with UNI EN ISO 9614-1, in compliance with the requirements of Eurovent certification.

(8) Cooling BT version: outdoor air temperature 35°C; in/out water temperature -3/-8°C. Fluid treated with 35% ethylene glycol.
(*) activating the maximum Hz function

N.B. the performance data shown are indicative and may be subject to variation. Besides, the yields declared in points (1) and (2) refer to instantaneous power according to UNI EN 14511. The data declared in point (3) is determined according to UNI EN 14825.

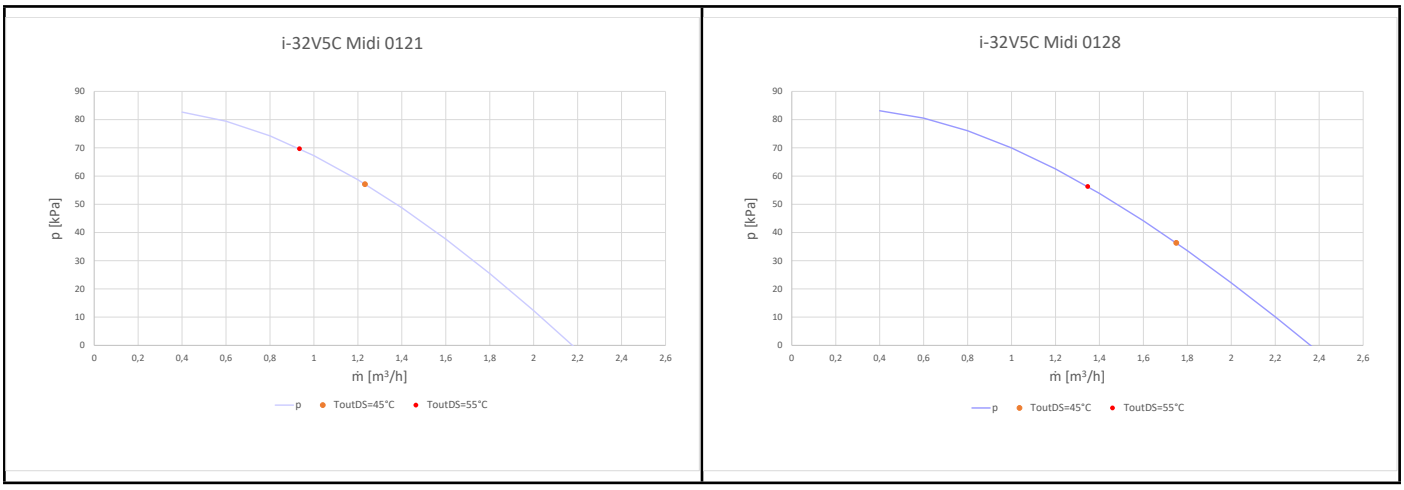
5.2 DATA SHEET FOR DESUPERHEATER UNIT

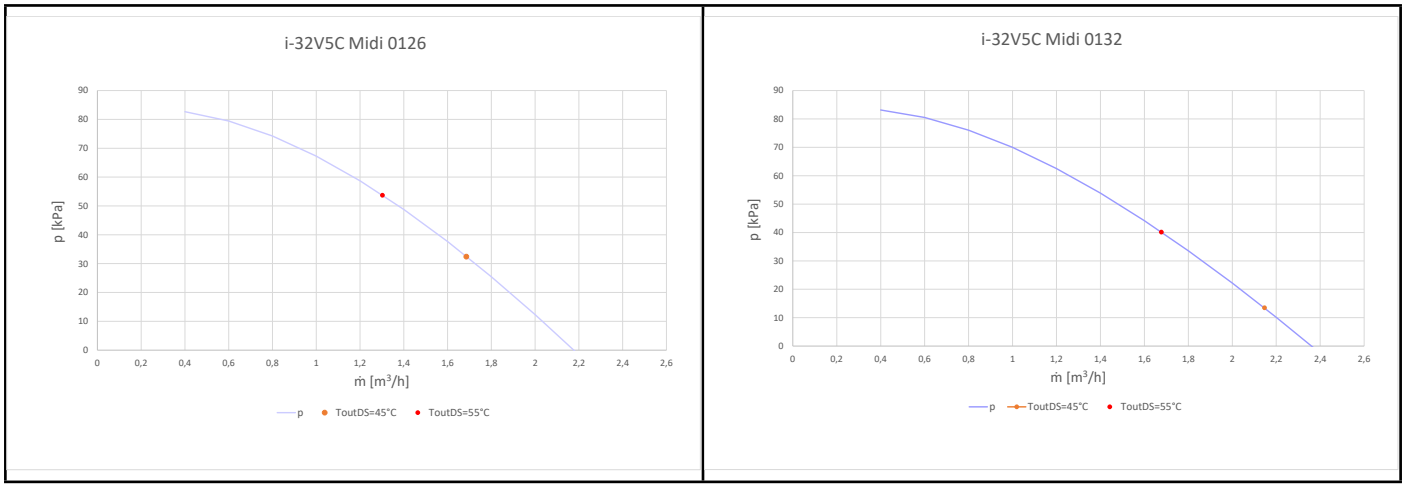
The performance with desuperheater is shown, under conditions (1) of the technical data table, for water outlet temperatures of 45°C and 55°C from the desuperheater.

Model i-32V5C Midi	ToutDS=45°C					ToutDS=55°C				
	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Thermal power DS [kW]	Pressure losses DS [kPa]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Thermal power DS [kW]	Pressure losses DS [kPa]
0121	20,9	6,0	3,50	7,2	19,1	20,8	6,0	3,46	5,4	11,5
0126	26,2	8,1	3,24	9,8	34,1	26,0	8,1	3,20	7,6	21,2
0128	28,4	8,2	3,48	10,2	28,7	28,3	8,3	3,43	7,8	17,7
0132	32,4	10,0	3,23	12,5	41,9	32,1	10,1	3,17	9,8	26,6

The useful heads of the circulator associated with the desuperheater are shown below. The operating points shown in the previous table are also represented.

Model i-32V5C Midi 0121, 0126		Model i-32V5C Midi 0128, 0132	
Water flow rate DS [m³/h]	Useful head of the circulator associated with the DS [kPa]	Water flow rate DS [m³/h]	Useful head of the circulator associated with the DS [kPa]
0,4	82,7	0,4	83,1
0,6	79,4	0,6	80,5
0,8	74,2	0,8	76,1
1,0	67,2	1,0	70,0
1,2	58,7	1,2	62,5
1,4	48,8	1,4	53,9
1,6	37,6	1,6	44,2
1,8	25,5	1,8	33,5
2,0	12,3	2,0	22,2





p [kPa]	Useful prevalence
ṁ [m³/h]	water flow rate

5.3 UNIT AND AUXILIARY ELECTRICAL DATA

Unit power supply	V/~/Hz	400/3PH+PE/50
On-board control circuit	V/~/Hz	12/1/50
Remote control circuit	V/~/Hz	12/1/50
Fan power supply	V/~/Hz	400/3PH+PE/50

NOTE: Electrical data is subject to change due to updating. It is therefore always necessary to refer to the technical characteristics label attached to the unit.

6. CORRECTIVE FACTORS

6.1 CORRECTION FACTORS FOR USE OF WATER-GLYCOL MIXTURE

The correction factors for water flow rate and pressure drop must be applied to the values obtained without the use of glycol. The correction factor for water flow rate shall be calculated to maintain the same temperature difference as would be obtained without the use of glycol. The pressure drop correction factor is applied to the water flow rate value corrected by the water flow rate correction factor.

Percentage of glycol	Freezing point [°C]	Yeld correction factor	Power input correction factors	Water flow correction factor	Pressure drop correction factor
10%	-3,2	0,985	1	1,02	1,08
20%	-7,8	0,98	0,99	1,05	1,12
30%	-14,1	0,97	0,98	1,10	1,22
40%	-22,3	0,965	0,97	1,14	1,25
50%	-33,8	0,955	0,965	1,2	1,33

6.2 SCALING CORRECTION FACTORS

The correction factors due to contamination of the internal gas/water exchanger are shown below.

m² °C/kW	Correction factor of the yeld power	Power input correction factor
0,44 x 10^{-1}	1,00	1,00
0,88 x 10^{-1}	0,99	1,00
1,76 x 10^{-1}	0,98	1,00

6.3 CALIBRATIONS AND PROTECTIONS CONTROLS

Description	Value
High pressure switch	42,8 bar
High pressure alarm	41,5 bar
Low pressure alarm	3,5 bar

Description	Value
Maximum number of restarts/hours after high/low pressure alarm (manual reset)	3
Antifreeze protection (standard version/ BT version)	3°C / -10°C*
Water circuit safety valve	6 bar

* Check that the antifreeze mixture concentration is suitable for the freezing temperature.

6.4 CORRECTION FACTORS DEPENDING ON ALTITUDE

The correction factors for performance as a function of altitude are calculated for cooling under the conditions (1) in the above technical data tables and are given for altitudes of 500, 1000, 1500 and 2000 m.

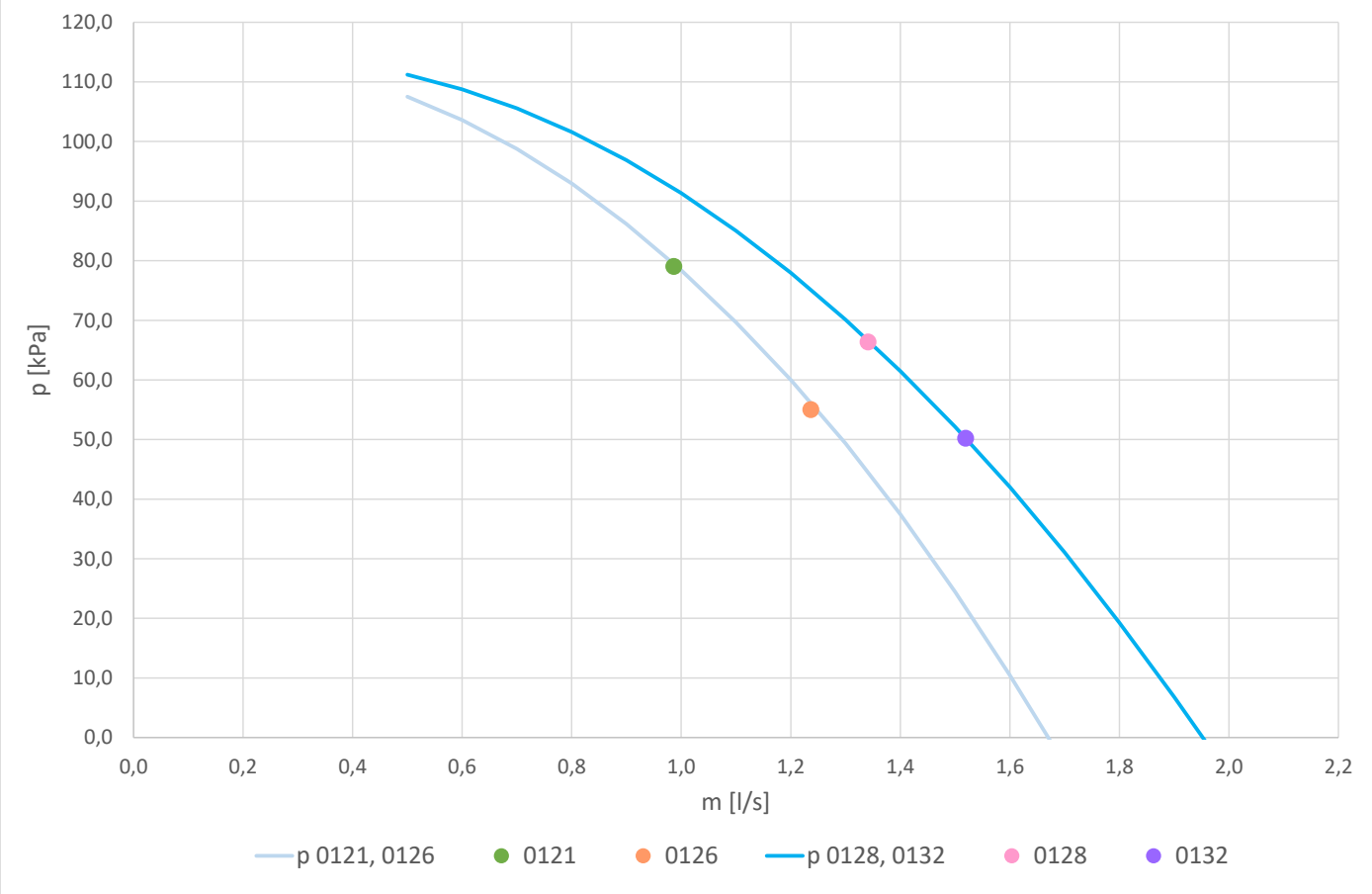
Altitude [m]	500	1000	1500	2000
Correction factors cooling capacity	0,9888	0,9762	0,9618	0,9466
Correction factor for power input in cooling mode	1,0106	1,0235	1,0386	1,0560

7. HYDRONIC GROUP DATA

7.1 USEFUL HEAD

The characteristic head-flow curves net of pressure drops of the hydronic kit are shown below. On each curve the optimal working point corresponding to condition (1) of the technical data table is highlighted.
The system must be designed in such a way as to guarantee the nominal flow rate relative to the working points shown below.

Flow rate m [l/s]	Useful head p models 0121, 0126 [kPa]	Useful head p models 0128, 0132 [kPa]
0,5	107,5	111,2
0,6	103,6	108,8
0,7	98,8	105,6
0,8	93,0	101,6
0,9	86,2	96,9
1,0	78,4	91,3
1,1	69,7	85,0
1,2	60,0	78,0
1,3	49,3	70,1
1,4	37,4	61,5
1,5	24,4	52,1
1,6	10,5	42,0



7.2 PRESSURE DROP Y-FILTER ACCESSORIES

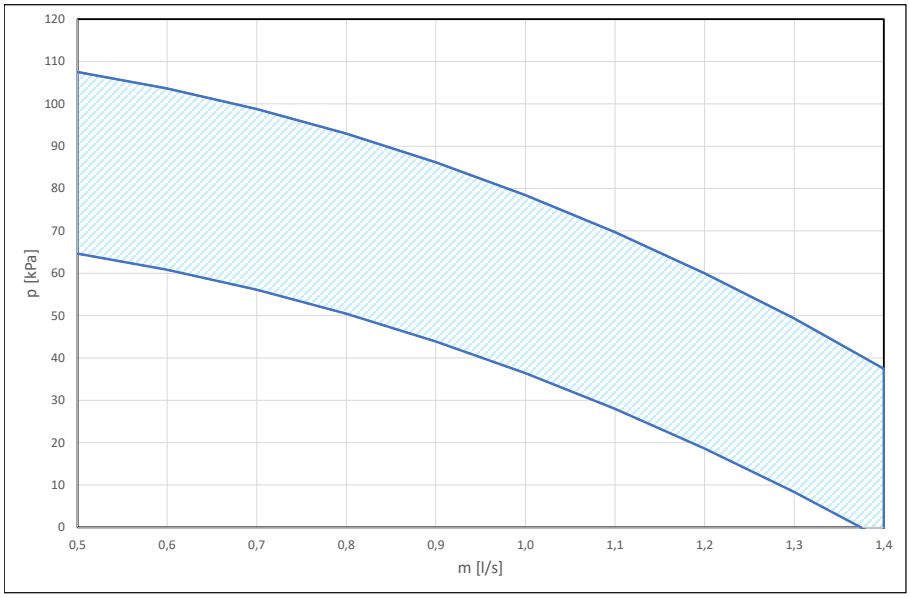
Flow rate [l/s]	Pressure drop Y-filter models 0121, 0126 [kPa]	Pressure drop Y-filter models 0128, 0132 [kPa]
0,5	1,92	1,44
0,6	2,76	2,07
0,7	3,76	2,82
0,8	4,91	3,69

Flow rate [l/s]	Pressure drop Y-filter models 0121, 0126 [kPa]	Pressure drop Y-filter models 0128, 0132 [kPa]
0,9	6,21	4,67
1,0	7,67	5,76
1,1	9,28	6,97
1,2	11,04	8,29
1,3	12,96	9,73
1,4	15,03	11,29
1,5	17,25	12,96
1,6	19,63	14,75
1,7	22,16	16,65
1,8	24,85	18,66

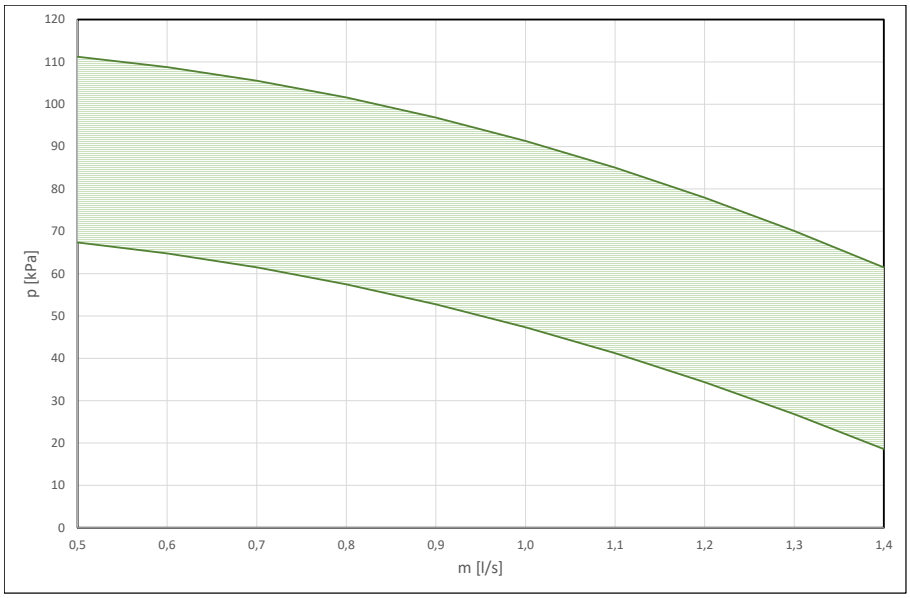
7.3 CIRCULATOR /PUMP CURVES

We report the range of useful heads that the machine guarantees during circulator modulation.

i-32V5C Midi 0121, 0126



i-32V5C Midi 0128, 0132

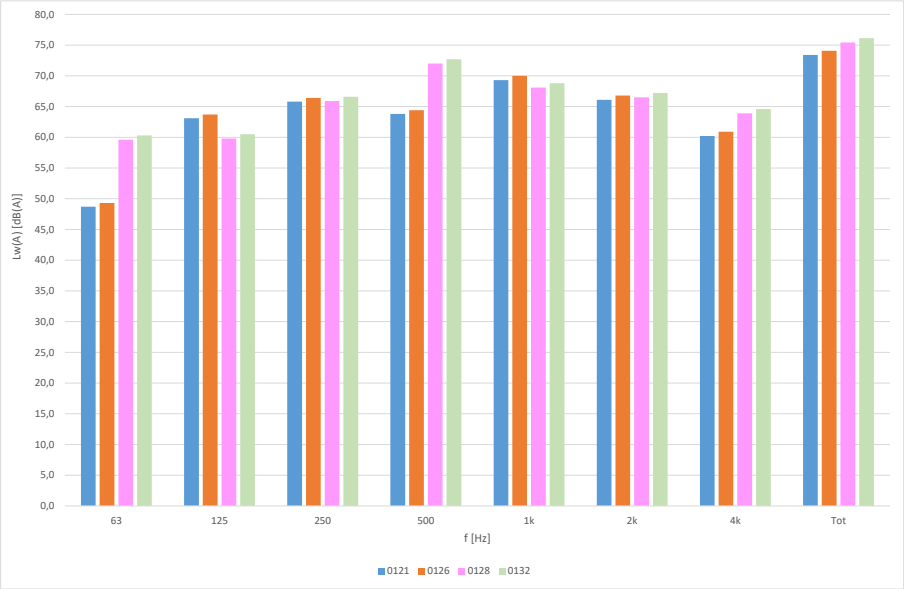


8. NOISE LEVEL

The sound levels refer to fully loaded units at standard nominal conditions, in accordance with EU Regulation 2016/2281. The tolerance on the value of the total sound power level is 2 dB(A). The value is determined in accordance with EN 12102-1, used in conjunction with UNI EN ISO 9614-1, which describes how to test with the intensimetric method. The sound pressure values are calculated from the sound power level using ISO 3744:2010, considering units operating in the open area.

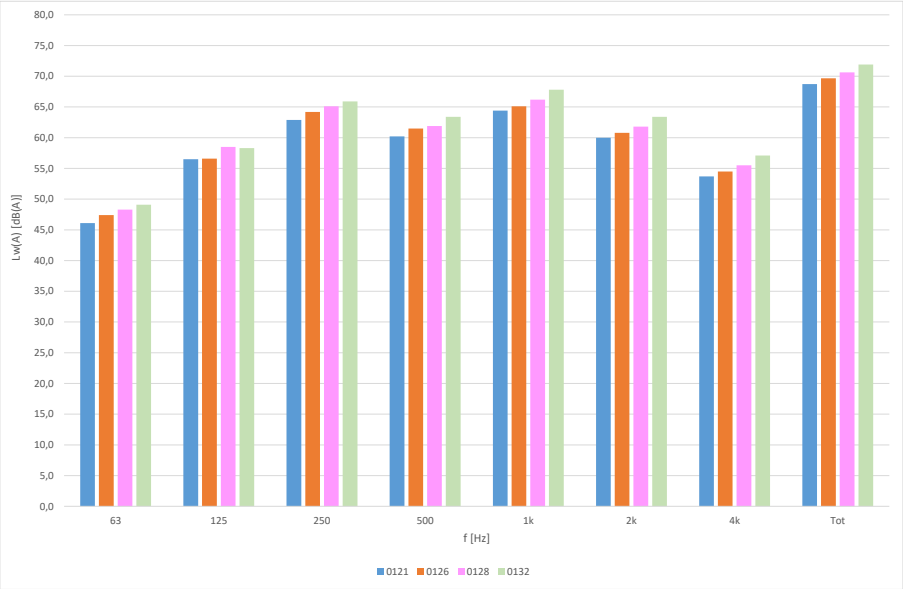
8.1 POWERS AND SOUND PRESSURES STANDARD VERSION

Model i-32V5C MIDI	Octave band sound power level [dB(A)]							Sound power level Lw(A) [dB(A)]	Suond pressure level at 1m [dB(A)]	Sound pressure level at 10m [dB(A)]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz			
0121	48,7	63,1	65,8	63,8	69,3	66,1	60,2	73	57,1	41,5
0126	49,3	63,7	66,4	64,4	70,0	66,8	60,9	74	58,1	42,5
0128	59,6	59,8	65,9	72,0	68,1	66,5	63,9	75	59,1	43,5
0132	60,3	60,5	66,6	72,7	68,8	67,2	64,6	76	60,1	44,5



8.2 POWERS AND SOUND PRESSURES SL VERSION

Model i-32V5C MIDI SL	Octave band sound power level [dB(A)]							Sound power level Lw(A) [dB(A)]	Suond pressure level at 1m [dB(A)]	Sound pressure level at 10m [dB(A)]
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz			
0121	46,1	56,5	62,9	60,2	64,4	60,0	53,7	69	53,1	37,5
0126	47,4	56,6	64,2	61,5	65,1	60,8	54,5	70	54,1	38,5
0128	48,3	58,5	65,1	61,9	66,2	61,8	55,5	71	55,1	39,5
0132	49,1	58,3	65,9	63,4	67,8	63,4	57,1	72	56,1	40,5



9. OPERATING LIMITS

9.1 WATER FLOW RATE AT THE EVAPORATOR

The nominal water flow rate refers to a temperature difference between the inlet and outlet of the evaporator of 5°C. The maximum permissible flow rate is the one with a temperature difference of 3°C and the minimum is the one with a temperature difference of 8°C at nominal conditions as indicated in the data sheet.

Insufficient water flow rates can cause too low evaporation temperatures with the intervention of the safety devices and the stopping of the unit and, in some borderline cases, with the formation of ice in the evaporator and consequent serious failures of the refrigeration circuit.

For greater precision we enclose a table showing the minimum flow rates to be ensured to the plate heat exchanger in order to guarantee its correct operation (please note: the water flow switch is used to prevent the anti-freeze probe from tripping due to a lack of flow but does not guarantee the minimum water flow rate required for correct operation of the unit).

Model i-32V5C Midi	0121	0126	0128	0132
Minimum water flow rate to be guaranteed in chiller mode (condition (1) data sheet) [l/s]	0,618	0,773	0,839	0,950
Maximum guaranteed water flow rate in chiller mode (condition (1) data sheet) [l/s]	1,65	2,06	2,24	2,53
Flow switch intervention flow rate - decreasing flow*. [l/s]	0,445	0,445	0,528	0,528
Flow switch intervention flow rate - increasing flow*. [l/s]	0,477	0,477	0,588	0,588

* When the flow rate falls below the indicated limit (flow switch intervention flow rate - decreasing flow) the flow switch signals an alarm, which can only be reset when the flow switch intervention flow rate - increasing flow - is reached.

9.2 CHILLED WATER PRODUCTION (SUMMER OPERATION)

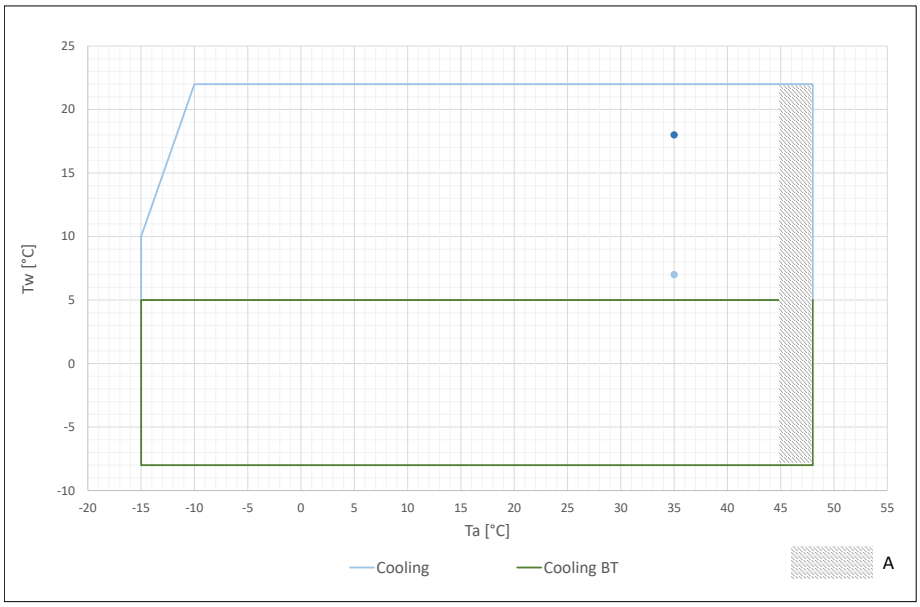
The minimum allowed evaporator outlet temperature is 5°C for units with standard configuration. In the case of units with BT (low temperature) configuration the limit drops to -8°C. Please note that in this case the use of glycol water is necessary. The maximum temperature that can be maintained at steady state at the evaporator outlet is 22°C.

9.3 AMBIENT AIR TEMPERATURE AND SUMMARY TABLE

The units are designed and built to operate in summer, with condensation control, with outdoor air temperatures between -15°C and 48°C.

Water chiller mode		
Air source temperature	Minimum -15°C	Maximum 48°C
Water outlet temperature standard version	Minimum 5°C	Maximum 22°C
Water outlet temperature LV version	Minimum -8°C	Maximum 22°C

Below are the graphical operating limits.



A = the maximum Hz function has no effect

Ta [°C]	Air temperature
Tw [°C]	Water temperature

10. PERFORMANCE TABLE

The tables show the capacity, power input and efficiency values for different outside air temperatures. The data shown are calculated according to EN 14511:2018. They are indicative and may be subject to change.

10.1 COOLING STANDARD VERSION

COOLING																			
Model i-32V5C MIDI	T air outdoor [°C]	Tout [°C]																	
		5			7			10			12			15			18		
		Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]
0121	20	19,4	3,75	5,17	20,7	3,80	5,45	22,8	3,87	5,89	17,8	2,65	6,72	19,5	2,65	7,36	21,3	2,66	8,01
	25	19,6	4,41	4,44	21,0	4,46	4,71	23,1	4,54	5,09	18,4	3,18	5,79	20,1	3,21	6,26	22,0	3,23	6,81
	30	18,8	4,84	3,88	20,1	4,90	4,10	22,2	5,00	4,44	17,7	3,57	4,96	19,4	3,60	5,39	21,2	3,63	5,84
	35	19,4	5,92	3,28	20,7	6,01	3,44	22,9	6,16	3,72	17,9	4,29	4,17	19,7	4,35	4,53	21,6	4,40	4,91
	40	18,3	6,57	2,79	19,6	6,66	2,94	21,7	6,78	3,20	16,9	4,87	3,47	18,7	4,92	3,80	20,5	4,95	4,14
	45	17,0	7,15	2,38	18,3	7,23	2,53	20,3	7,37	2,75	15,8	5,38	2,94	17,5	5,39	3,25	19,2	5,42	3,54
0126	20	24,2	5,13	4,72	25,8	5,20	4,96	28,4	5,31	5,35	20,8	3,16	6,58	22,8	3,18	7,17	24,8	3,21	7,73
	25	24,6	6,01	4,09	26,3	6,12	4,30	28,9	6,27	4,61	22,1	3,94	5,61	24,2	4,00	6,05	26,4	4,06	6,50
	30	23,6	6,55	3,60	25,2	6,68	3,77	27,8	6,87	4,05	21,2	4,40	4,82	23,3	4,46	5,22	25,5	4,53	5,63
	35	24,2	7,98	3,03	25,9	8,15	3,18	28,6	8,40	3,40	21,4	5,24	4,08	23,5	5,34	4,40	25,7	5,44	4,72
	40	22,9	8,74	2,62	24,5	8,89	2,76	27,0	9,14	2,95	20,3	5,90	3,44	22,3	5,97	3,74	24,4	6,04	4,04
	45	19,8	8,62	2,30	21,2	8,74	2,43	23,4	8,92	2,62	18,9	6,44	2,93	20,9	6,51	3,21	22,9	6,58	3,48
0128	20	26,7	5,17	5,16	28,5	5,24	5,44	31,4	5,33	5,89	23,6	3,37	7,00	25,9	3,39	7,64	28,3	3,41	8,30
	25	26,9	6,04	4,45	28,8	6,14	4,69	31,6	6,28	5,03	24,3	4,08	5,96	26,6	4,12	6,46	29,1	4,17	6,98
	30	25,8	6,68	3,86	27,6	6,79	4,06	30,4	6,95	4,37	23,3	4,61	5,05	25,6	4,67	5,48	28,0	4,73	5,92
	35	26,3	8,14	3,23	28,1	8,29	3,39	30,9	8,49	3,64	23,6	5,59	4,22	25,9	5,69	4,55	28,4	5,77	4,92
	40	24,7	8,86	2,79	26,3	9,01	2,92	29,0	9,24	3,14	22,2	6,20	3,58	24,4	6,27	3,89	26,7	6,33	4,22
	45	22,0	9,10	2,42	23,6	9,25	2,55	26,0	9,45	2,75	20,8	6,77	3,07	22,8	6,85	3,33	25,0	6,93	3,61
0132	20	31,2	6,70	4,66	33,4	6,82	4,90	36,6	6,99	5,24	26,4	3,99	6,62	28,9	4,02	7,19	31,6	4,07	7,76
	25	31,7	7,89	4,02	33,8	8,04	4,20	37,1	8,26	4,49	28,0	5,00	5,60	30,7	5,08	6,04	33,4	5,16	6,47
	30	30,3	8,64	3,51	32,4	8,81	3,68	35,6	9,08	3,92	26,9	5,62	4,79	29,4	5,70	5,16	32,2	5,81	5,54
	35	29,9	9,98	3,00	31,8	10,2	3,13	35,0	10,5	3,34	27,4	6,88	3,98	30,1	6,98	4,31	32,8	7,09	4,63
	40	28,0	10,8	2,59	29,9	11,0	2,71	32,8	11,4	2,89	25,8	7,52	3,43	28,3	7,64	3,70	30,9	7,76	3,98
	45	22,7	9,74	2,33	24,3	9,88	2,46	26,8	10,1	2,65	24,1	8,18	2,95	26,5	8,32	3,19	29,0	8,45	3,43

10.2 COOLING BT VERSION

BT version data are referred to water+35% ethylene glycol.

COOLING BT VERSION																
Model i-32V5C MIDI	T air outdoor [°C]	Tout [°C]														
		-8			-5			-2			1			4		
		Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]	Cooling capacity [kW]	Power input [kW]	EER [W/W]
0121	20	11,2	4,38	2,56	12,6	4,43	2,84	14,2	4,49	3,16	15,9	4,55	3,49	17,9	4,61	3,88
	25	11,2	4,85	2,31	12,7	4,95	2,57	14,3	5,03	2,84	16,1	5,12	3,14	18,1	5,23	3,46
	30	10,6	5,20	2,04	12,1	5,29	2,29	13,6	5,40	2,52	15,4	5,51	2,79	17,2	5,62	3,06
	35	10,7	6,05	1,77	12,2	6,17	1,98	13,9	6,29	2,21	15,7	6,44	2,44	17,6	6,58	2,67
	40	9,79	6,55	1,49	11,3	6,70	1,69	12,9	6,83	1,89	14,6	6,96	2,10	16,5	7,11	2,32
	45	8,94	6,99	1,28	10,3	7,18	1,43	11,8	7,35	1,61	13,5	7,50	1,80	15,2	7,66	1,98
0126	20	14,2	5,58	2,54	16,0	5,68	2,82	18,0	5,80	3,10	20,4	5,92	3,45	23,0	6,06	3,80
	25	14,1	6,14	2,30	16,2	6,37	2,54	18,3	6,53	2,80	20,6	6,68	3,08	23,2	6,86	3,38
	30	13,6	6,62	2,05	15,4	6,79	2,27	17,4	6,97	2,50	19,6	7,15	2,74	22,1	7,35	3,01
	35	13,8	7,66	1,80	15,6	7,89	1,98	17,7	8,11	2,18	20,0	8,35	2,40	22,5	8,57	2,63
	40	12,7	8,26	1,54	14,5	8,49	1,71	16,5	8,72	1,89	18,6	8,98	2,07	20,9	9,24	2,26
	45	10,8	8,28	1,30	12,4	8,51	1,46	13,9	8,62	1,61	16,0	8,89	1,80	17,9	9,15	1,96
0128	20	15,7	5,68	2,76	17,7	5,78	3,06	20,0	5,88	3,40	22,6	6,02	3,75	25,6	6,12	4,18
	25	15,7	6,31	2,49	17,7	6,46	2,74	20,0	6,61	3,03	22,6	6,77	3,34	25,5	6,90	3,70
	30	14,9	6,83	2,18	16,8	6,99	2,40	19,0	7,16	2,65	21,5	7,35	2,93	24,3	7,54	3,22
	35	14,9	7,92	1,88	16,9	8,17	2,07	19,2	8,41	2,28	21,7	8,64	2,51	24,5	8,88	2,76
	40	13,8	8,65	1,60	15,8	8,89	1,78	17,9	9,13	1,96	20,2	9,37	2,16	22,8	9,60	2,38
	45	12,2	8,90	1,37	13,9	9,13	1,52	15,8	9,39	1,68	17,9	9,62	1,86	20,2	9,89	2,04
0132	20	18,6	7,03	2,65	21,0	7,16	2,93	23,9	7,35	3,25	27,1	7,50	3,61	30,8	7,63	4,04
	25	18,6	7,85	2,37	21,1	8,08	2,61	24,0	8,32	2,88	27,1	8,52	3,18	30,8	8,64	3,56
	30	17,7	8,42	2,10	20,0	8,70	2,30	22,7	8,97	2,53	25,7	9,20	2,79	29,2	9,44	3,09
	35	17,2	9,47	1,82	19,5	9,78	1,99	22,2	10,1	2,20	25,1	10,4	2,41	28,5	10,7	2,66
	40	16,0	10,2	1,56	18,2	10,6	1,72	20,6	10,9	1,89	23,3	11,2	2,08	26,3	11,6	2,28
	45	12,8	9,63	1,33	14,6	9,86	1,48	16,5	10,1	1,63	18,7	10,4	1,80	21,2	10,7	1,98

10.3 EER VALUES FOR CALCULATING THE ENERGY PERFORMANCE OF BUILDINGS ACCORDING TO UNI/TS 11300-3

The cooling capacity values and EER coefficients under partial load conditions are shown.
The reference conditions at partial load specified by the UNI/TS 11300-3 standard are illustrated below.
EERs are also given for load factors lower than 25%.

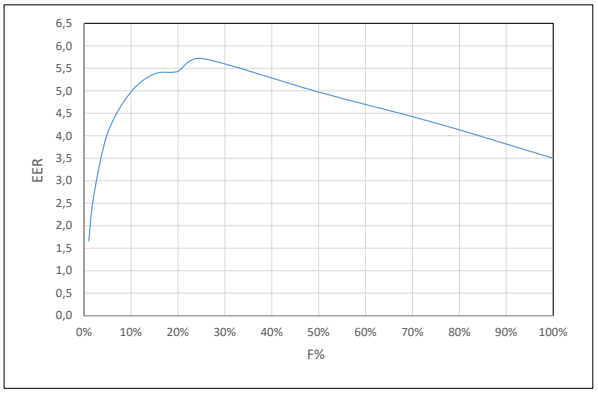
Test	Load factor F%	Outside air dry bulb temperature [°C]	Chlled waterinlet/outlet temperature of fan coil units [°C]
1	100%	35	12/7
2	75%	30	*)/7
3	50%	25	*)/7
4	25%	20	*)/7

*) temperature determined by water flow rate at full load.

10.3.1 Model i-32V5 MIDI 0121

Outside air dry bulb temperature [°C]	Load factor F%	EER	Cooling capacity [kW]
35	100%	3,50	20,7
30	75%	4,28	15,5
25	50%	4,97	10,3
20	25%	5,72	9,30

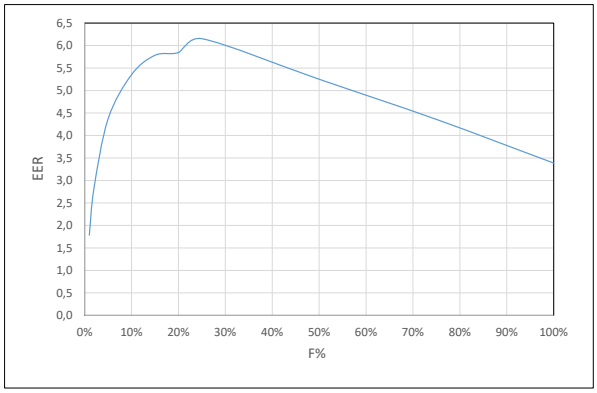
C	Load factor F%	EER @20°C xC
0,95	20%	5,43
0,94	15%	5,38
0,87	10%	4,98
0,71	5%	4,06
0,46	2%	2,63
0,29	1%	1,66



10.3.2 Model i-32V5 MIDI 0126

Outside air dry bulb temperature[°C]	Load factor F%	EER	Cooling capacity [kW]
35	100%	3,21	25,8
30	75%	4,17	19,3
25	50%	4,96	12,8
20	25%	5,57	9,36

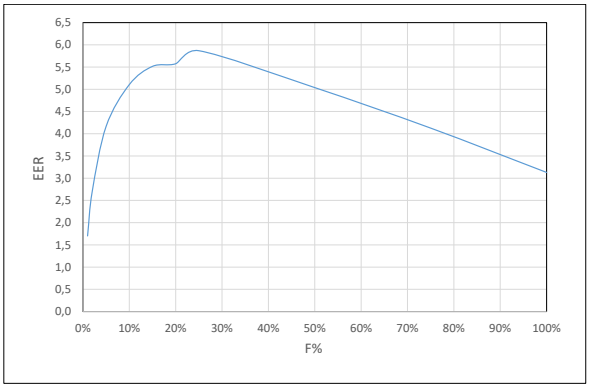
C	Load factor F%	EER @20°C xC
0,95	20%	5,30
0,94	15%	5,24
0,87	10%	4,85
0,71	5%	3,96
0,46	2%	2,56
0,29	1%	1,62



10.3.3 Model i-32V5 MIDI 0128

Outside air dry bulb temperature[°C]	Load factor F%	EER	Cooling capacity [kW]
35	100%	3,39	28,1
30	75%	4,36	21,0
25	50%	5,25	14,0
20	25%	6,15	11,9

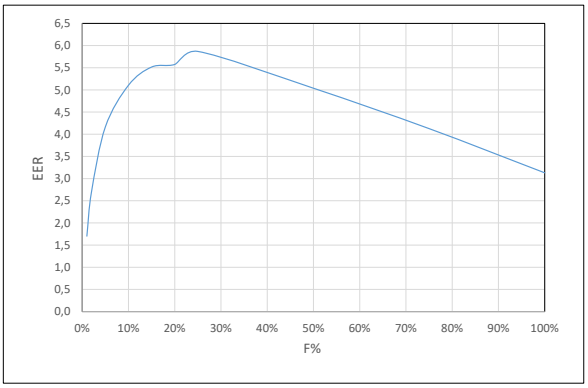
C	Load factor F%	EER @20°C xC
0,95	20%	5,85
0,94	15%	5,78
0,87	10%	5,35
0,71	5%	4,37
0,46	2%	2,83
0,29	1%	1,78



10.3.4 Model i-32V5 MIDI 0132

Outside air dry bulb temperature [°C]	Load factor F%	EER	Cooling capacity [kW]
35	100%	3,13	31,8
30	75%	4,13	23,8
25	50%	5,04	15,9
20	25%	5,87	11,9

C	Load factor F%	EER @20°C xC
0,95	20%	5,57
0,94	15%	5,52
0,87	10%	5,11
0,71	5%	4,17
0,46	2%	2,70
0,29	1%	1,70



12. REFRIGERANT SAFETY DATA SHEET

Name:	R32
HAZARDS IDENTIFICATION	
Main hazards:	Asphyxiation.
Specific hazards:	Quick evaporation could cause it to freeze.
FIRST AID MEASURES	
General information:	Do not administer to people who are unconscious.
Inhalation:	Immediately remove to fresh air. Use oxygen or artificial respiration as required. The use of adrenaline or similar drugs should be avoided.
Eye contact:	Carefully rinse with plenty of water for at least 15 minutes and get medical attention.
Skin contact:	Wash immediately with plenty of water for at least 15 minutes. Apply a sterile gauze. Immediately remove contaminated clothing.
FIRE FIGHTING MEASURES	
Extinguishing media:	Water spray, dry powder.
Specific hazards:	Breakage or explosion of vessel.
Specific methods:	Cool down the containers with a water spray from a safe position. Stop the product leakage if possible. Use water spray, if possible, to abate the fumes. Move the vessels away from the area of the fire if this can be done without posing any risks.
ACCIDENTAL RELEASE MEASURES	
Personal precautions:	Try to stop the leak. Evacuate personnel to safety areas. Ventilate appropriately. Eliminate the ignition sources. Use personal protective equipment.
Environmental precautions:	Try to stop the leak.
Cleaning methods:	Ventilate the area
HANDLING AND STORAGE	
Handling: technical measures/precautions:	Allow efficient air exchange and/or suction the work environments.
Advice for safe use:	Do not breath in fumes or aerosol.
Storage:	Close carefully and store in a cool, dry and well ventilated area. Keep in original containers. Incompatible products: explosive, flammable materials, organic peroxide
EXPOSURE CONTROLS/PERSONAL PROTECTION	
Control parameters:	OEL – data not available. DNEL: Derived no effect level (workers) long-term – systemic effects, inhalation = 7035 mg/m3. PNEC: Predicted no-effect concentration water (fresh water) = 0,142 mg/l aquatic, intermittent releases = 1,42 mg/l sediment, fresh water = 0,534 mg/kg dry weight
Respiratory protection:	Not required.
Eye protection:	Safety goggles.
Hand protection:	Latex gloves
Hygienic measures:	No smoking
PHYSICAL AND CHIMICAL PROPERTIES	
Colour:	Colourless.
Odour:	Ethereal. Hard to perceive at low concentrations.
Boiling point:	-51,7 °C at atm press
Flash point:	648 °C
Relative gas density (air=1) **Relative liquid density (water=1)**	1,8 1,1
Solubility in water:	280000 mg/l.
STABILITY AND REACTIVITY	
Stability:	Stable under normal conditions.
Materials to avoid: **Decomposition products hazardous:**	Air, oxidizing agents, humidity. Under normal storage and use conditions, hazardous decomposition products should not be generated..
TOXICOLOGICAL INFORMATION	
Acute toxicity: **Local effects:** **Long term toxicity:**	LD/LC50/inHALATION/4 hours/on rat = 1107000 mg/m3. No known effect. No kown effect.
ENVIRONMENTAL INFORMATION	
Global warming potential GWP (R744=1):	675
Ozone Depletion Potential ODP (R11=1):	0
Disposal consideration:	Refer to the supplier's gas retrieval program. Avoid direct release into the atmosphere.