Technical Bulletin
BT14E003GB-04

ELFOEnergy Duct Inverter

Air heat pump - ductable water for indoor or outdoor installation

SERIES WSN-XIN 21-141

Nominal heating capacity **(A7/W45)** from 5 to 32 kW
Nominal cooling capacity **(A35/W7)** from 4 to 29 kW

- **HIGH SEASONAL EFFICIENCY**
- **DC INVERTER COMPRESSOR**
- **PLUG-FAN DC INVERTER FAN**

Clivet is taking in the EUROVENT certification programme up to 1.500 kW. The products concerned appear in the certified products list of the EUROVENT www.eurovent-certification.com site.

Clivet hydronic system

Designed to provide high energy efficiency and sustainability of the investment, the wide range of Clivet liquid chillers and heat pumps for high efficiency air conditioning of Residential and Commercial spaces and for Industrial applications it is available with air or water source.

The ventilation with thermodynamic recovery

Air renewal determines comfort levels in rooms: it often represents the building's main energy load

ELFOFresh²
Mechanical ventilation system with energythermodynamic recovery

- It multiplies the recovered energy
- It reduces the main generator power
- Summer dehumidification for the matching to the radiant system
- It cools free (FREE-COOLING) in specific conditions
- PM10, pollens, bacteria and nanoparticles are eliminated thanks to the electronic filter

Complete management of the system

In integrated systems, control over the various elements is essential for correct management and increased seasonal efficiency

ELFOControl²
System domotics based on advanced algorithms to optimise energy and comfort

- Complete installation control
- Time schedule
- Customised comfort levels
- Optimization of the seasonal efficiency
- Communication with the room thermostat for temperature and humidity control.

ELFOEnergy Duct Inverter, two solutions to satisfy different installation needs

HEAT PUMP WSN-XIN:

- Reversible-cycle heat pump
- Capacity from 5 to 32 kW

COOLING ONLY WSA-XIN:

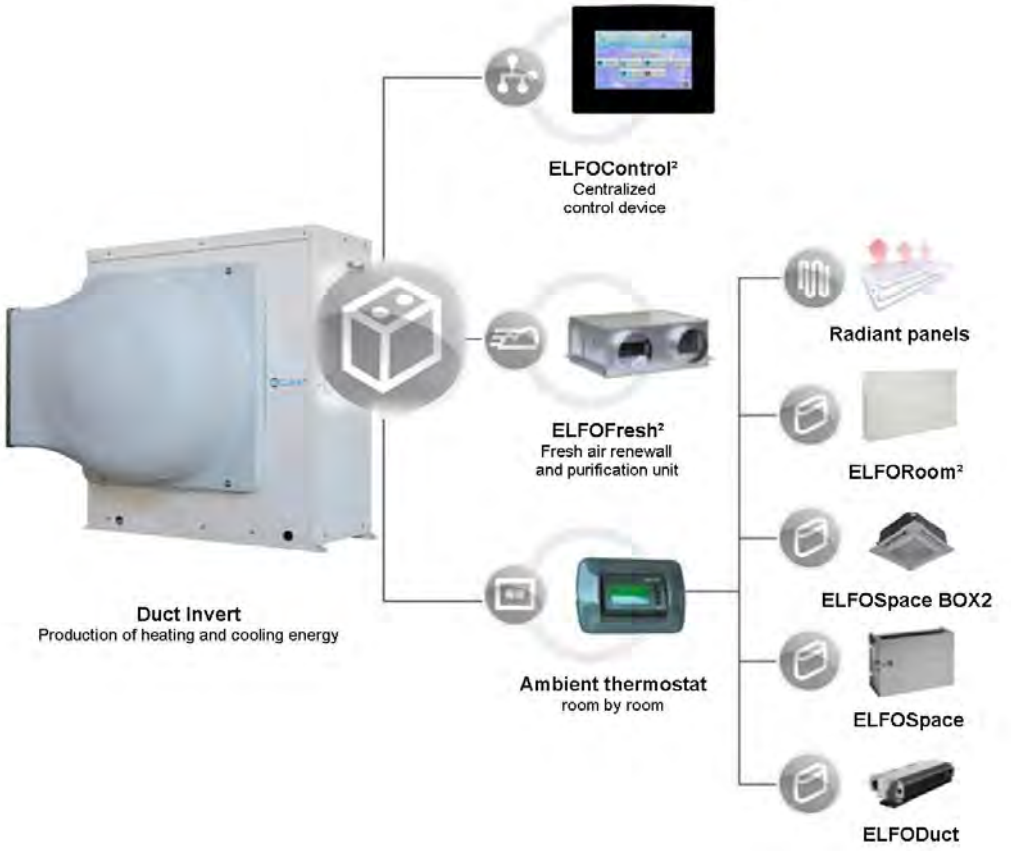
- Water cooler
- Capacity from 4 to 31 kW

Technical bulletin BT14E002GB-02

ELFOEnergy Duct Inverter is the heart of ELFOSystem

A single, intelligent system with all the elements for year-round comfort

- Heating
- Cooling
- Fresh air renewal and purification
- Dehumidification
- Domestic hot water production



System components

ELFOEnergy Duct Inverter

- Heat pump at high seasonal efficiency
- Inverter technology
- 100% silent operation
- Compact dimensions

ELFOControl²

- Advanced control system to manage the operation of the whole flat
- Optimisation of performance and operation
- Simply to use and complete system management

ELFOFresh²

- Energy-recovery based room ventialtion and purification
- Active thermodynamic recovery
- Electronic filtering
- Summer dehumidification
- FREE-COOLING

Fan coil units

- Wide range of room terminals to adapt to any
- installation requirement. with temperature
- control for room
- Compact design and small size
- Continuous speed variation
- Homogenous temperature
- Reduced consumptions

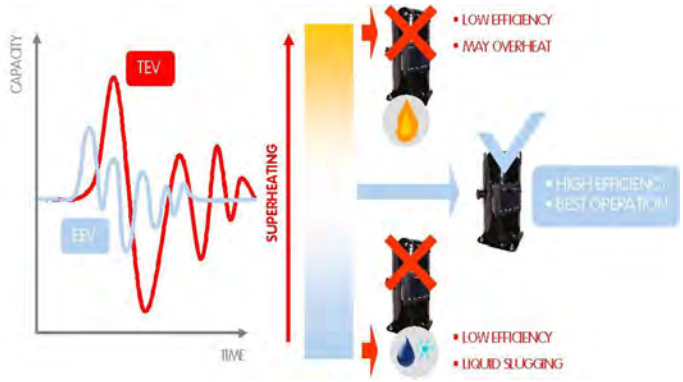
Advanced technology and benefits

Inverter compressor

The inverter compressor can continuously modulate the cooling capacity from 40% to 100%.

This allows the delivered capacity to be set according to the demand on the system. Very high efficiency values can be achieved, especially under load staging conditions that coincide with most of the operating time.

Thermostatic electronics



The thermostatic electronic expansion valve (TEE) adapts quickly and precisely to the effective load required for use, permitting a stable and accurate adjustment and optimal operation of the compressor.

There is also an additional increase in efficiency in comparison to traditional thermostatic mechanical valves (TEM) and a longer compressor life.

Domestic hot water production

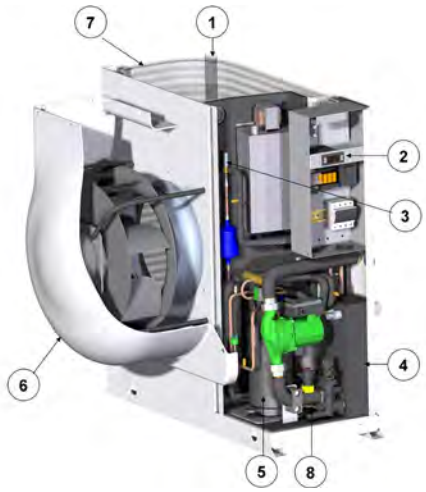
ELFOEnergy Duct Inverter heat pumps can produce domestic hot water up to outdoor temperatures of -20°C.

The temperature of the water produced can reach 60°C even during the summer when outdoor temperatures reach 40°C.

This allows using heat pumps throughout the year and to perfectly be adapted either to configurations of systems with radiant panels and terminal units or to new or renovated buildings.

To ensure a better production efficiency and so reduced operation costs, thanks to the experience on the monitored systems, Clivet recommends defining the set point of the domestic hot water between 48-50°C.

Special design features



1. The outdoor air probe allows setting the ideal climate in relation to environmental conditions

2. The built-in display shows all the operating parameter settings

3. The Electronic Thermostat Optimises the operation conditions of the refrigeration circuit

4. The plate heat exchanger maximises the thermal efficiency thanks to large exchange surfaces

5. The Inverter DC Compressor allows high seasonal efficiency thanks to the modulation

6. Plug-fan DC Inverter fan thanks to the flow rate modulation reduces the sound emissions and the fan consumptions.

7. The Hydrophilic Coil ensures a better cleaning maintaining thermal exchange efficiency and reduced defrost time

8. Water kit: kit that simplifies the hydronic circuit, reduces the overall dimensions and allows an easier maintenance

Intelligent energy management

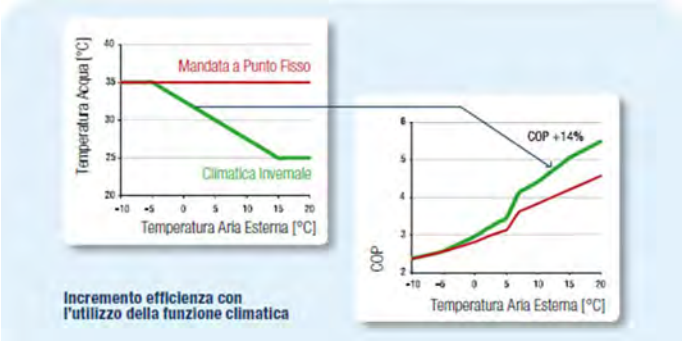
The Duct Inverter electronic control allows the energy to be produced in the necessary quantity and in the most efficient and effective way in function of the external conditions and the building's requirements.

Everything IS UNDER CONTROL

The electronic control with built-in display the unit allows defining the operation parameters with maximum simplicity. Once set, the control manages automatically the operation of the unit.

- setting the supply water set point
- climate compensation
- time schedule
- summer/winter operating mode management
- auxiliary heater management
- domestic hot water control (with CMACSX option)

Outdoor climatic compensation



The water temperature for the system is adjusted automatically in relation to the real requirements of the building and outdoor air temperature, increasing the seasonal energy efficiency.

Remote control

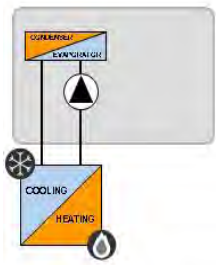
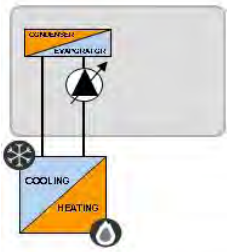
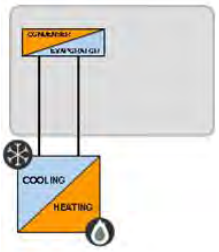
The RCTX remote control, is provided with a large and easy to read display. Programming, using only 4 keys, is intuitive and simple.

- The device can also:
  - control the unit's operation
  - activate the circulation of the system's water
  - set the unit set point water temperature according to time bands
- The RCTX also works in "remote control", making it even easier to configure and control the unit's operation. It can:
  - set the ON/OFF control and mode change (heating/cooling)
  - read the information detected by the device installed on board the unit, as the operation status, parameters and alarms.

Unit configuration

Model	Size										
WSN-XIN	21	31	41	51	71	81	91	101	121	131	141

Supply voltage											
230/1/50	std	std	std	optional	optional	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
400/3/50 + N	n.a.	n.a.	n.a.	std	std	std	std	std	std	std	std

Functionalities	Hydronic units		
	1.1 Standard unit	**1.2** Unit with high efficiency hydronic assembly	**1.3** Unit without hydronic assembly
2 **PIPE SYSTEM** Hot or chilled water production for installation			

Accessories separately supplied			
• **RCTX** - Remote control • **CMSC2X** - Serial comunication module with RS485 serial converter kit • **PGFCX** - Finned coil protection grill • **KG4UP** - Management kit up to 4 units in parallel	• **CMACSX -** Domestic hot water module • **3DHWX** - 3-way valve for domestic hot water • **KSAX** - 100-litre circuit breaker	• **ACS300X** - 300-litre domestic hot water storage tank • **ACS3SX** - 300-litre domestic hot water storage tank with solar coil • **ACS500X** - 500-litre domestic hot water storage tank • • **ACS5SX** - 500-litre domestic hot water storage tank with solar coil	• **AMRX** - Rubber antivibration mounts • **KTFL1X** - 1"water side hose kit • **KTFL2X** - 1"1/4 water side hose kit • **GMX -** Outlet grille

General technical data

Size			21	31	41	51	71	81	91	101	121	131	141
Radiant panels													
Heating													
Heating capacity	1	kW	5,41	6,81	8,70	11,9	14,3	16,5	18,4	19,6	23,8	26,4	30,3
Total power input	2	kW	1,39	1,78	2,29	3,83	4,50	4,38	4,99	5,32	6,58	7,62	9,11
COP (EN 14511:2013)	3		3,90	3,82	3,81	3,10	3,17	3,78	3,69	3,69	3,61	3,47	3,33
Financial COP	4		4,28	4,30	4,17	4,10	4,07	4,42	4,27	4,25	4,28	4,11	3,93
ErP Space Heating Energy Class - AVERAGE Climate - W35	15		A	A	A+	A	A	A+	A+	A	A	A	A+
Cooling													
Cooling capacity	7	kW	4,25	6,34	8,07	10,3	13,0	15,9	17,6	19,4	25,4	28,3	32,1
Total power input	2	kW	1,18	1,82	2,24	3,19	3,91	4,46	4,88	5,61	7,34	8,70	10,4
EER (EN 14511:_2013)	8		3,59	3,49	3,60	3,24	3,33	3,57	3,62	3,46	3,46	3,26	3,08
Financial ESEER	9		4,04	3,94	3,96	3,80	3,84	4,16	4,20	3,95	4,02	3,78	3,61
ESEER	10		4,46	4,64	4,98	5,14	4,45	5,67	5,72	5,62	5,21	4,61	4,58
Water flow-rate	7	l/s	0,20	0,30	0,39	0,49	0,62	0,76	0,84	0,93	1,21	1,35	1,53
Useful pump discharge head	7	kPa	53	43	48	42	45	70	65	60	55	46	32
Terminal units													
Heating													
Heating capacity	5	kW	5,19	6,54	8,25	11,5	13,8	16,2	18,5	20,4	25,8	28,2	31,5
Total power input	2	kW	1,59	2,16	2,72	4,49	5,32	5,37	6,23	7,27	8,85	10,2	12,1
COP (EN 14511:2013)	3		3,06	3,03	3,03	2,55	2,60	3,02	2,97	2,81	2,92	2,75	2,59
Cooling													
Cooling capacity	11	kW	3,88	5,24	6,11	8,84	11,7	15,5	16,8	19,5	24,0	26,6	29,1
Total power input	2	kW	1,57	2,12	2,40	3,72	4,86	5,85	6,38	8,47	10,2	11,9	14,1
EER (EN 14511:_2013)	8		2,48	2,47	2,54	2,37	2,41	2,65	2,64	2,30	2,35	2,24	2,06
ESEER	12		3,41	3,25	3,36	3,04	3,30	4,27	4,33	4,12	3,92	3,58	3,43
Water flow-rate	11	l/s	0,19	0,25	0,29	0,42	0,56	0,74	0,80	0,93	1,15	1,27	1,39
Useful pump discharge head	11	kPa	54	48	59	51	57	70	67	60	59	51	43
Radiators													
Heating													
Heating capacity	6	kW	5,05	6,39	8,03	11,0	13,3	15,2	17,7	19,9	24,0	26,6	29,9
Total power input	2	kW	2,04	2,58	3,32	5,27	6,28	6,49	7,57	8,93	11,0	12,2	14,5
COP (EN 14511:2013)	3		2,48	2,48	2,42	2,10	2,12	2,33	2,33	2,23	2,18	2,17	2,06
Water flow-rate	6	l/s	0,12	0,15	0,19	0,26	0,32	0,36	0,42	0,48	0,57	0,64	0,71
Useful pump discharge head	6	kPa	58	56	64	65	95	86	84	81	83	81	79
Compressor													
Type of compressors			ROTARY INVERTER DC			SCROLL INVERTER DC							
Refrigerant			R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
No. of compressors		No	1	1	1	1	1	1	1	1	1	1	1
Oil charge		l	0,35	0,35	0,87	1,70	1,70	1,90	1,90	1,90	1,90	1,90	1,90
Refrigeration circuits		No	1	1	1	1	1	1	1	1	1	1	1
Refrigerant charge		kg	2,0	2,1	2,0	3,4	4,6	6,0	6,0	6,0	8,7	8,7	8,7
User side exchanger													
Type of exchanger	13		PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
No. of exchangers			1	1	1	1	1	1	1	1	1	1	1
Water content		l	0,56	0,64	0,64	1,14	1,8	2,37	2,37	2,37	3,13	3,13	3,13
External Section Fans													
Type of fans	14		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
No. of fans		No	1	1	1	1	1	1	1	1	1	1	1
Standard airflow		l/s	653	1028	1028	2056	1996	2222	2306	2444	2778	3056	3172
Installed unit power		kW	0,25	0,36	0,36	0,88	0,88	0,67	0,74	0,76	1,28	1,75	2,04
Max external static pressure		Pa	100	100	100	100	100	120	120	120	120	120	120
Water circuit													

Size			21	31	41	51	71	81	91	101	121	131	141
Maximum water side pressure		kPa	550	550	550	550	550	550	550	550	550	550	550
Safety valve calibration		kPa	600	600	600	600	600	600	600	600	600	600	600
Min. installation water contents		l	17	20	25	33	40	50	53	57	63	68	74
Power supply													
Standard power supply			230/1/50	230/1/50	230/1/50	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N	400/3/50+N

The Product is compliant with the ErP (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 811/2013 (rated heat output ≤ 70 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 813/2013 (rated heat output ≤ 400 kW at specified reference conditions)

1. Entering/leaving water temperature user side 30/35°C, Entering external exchanger air temperature 7 °C (R.H. = 85%)
2. The overall power absorbed is calculated by adding the power absorbed by the compressor + the power absorbed by the fan - the percentage value of the fan to overcome external pressure drop + the power absorbed by the pump - the percentage value of the pump to overcome pressure drop outside + the power absorbed by the auxiliary electrical circuit
3. COP (EN 14511:2013) heating performance coefficient. Ratio between delivered heating capacity and power input in compliance with EN 14511:2013
4. COP Tax credit calculated according to EN14511:2008
5. Entering/leaving water temperature user side 40/45°C, Entering external exchanger air temperature 7 °C (R.H. = 85%)
6. Entering/leaving water temperature user side 45/55°C, Entering external exchanger air temperature 7°C (R.H. = 85%)
7. Entering/leaving water temperature user side 23/18°C, external exchanger entering air 35°C
8. EER (EN 14511:2013) cooling performance coefficient. Ratio between delivered cooling capacity and power input in compliance with EN 14511:2013
9. EER Tax credit calculated according to EN14511:2008
10. ESEER calculated by Clivet for radiant systems with water produced at 18°C by taking into account the load conditions and source water temperature as defined by EUROVENT for water at 7°C
11. User side entering/leaving water temperature 12/7 °C, external exchanger entering air 35°C
12. ESEER calculated by EUROVENT, for systems featuring terminal units with water produced at 7°C
13. PHE = plate exchanger
14. RAD = radial fan
15. Seasonal Space Heating Energy Efficiency Class according to Commission delegated Regulation (EU) No 811/2013. W = Water outlet temperature (°C)

The heads are intended as available at the unit connections
The pressure drops of the steel mesh strainer, supplied with the unit, have been already taken into consideration

Electrical data

Supply voltage 230/1/50

Size			21	31	41	51	71
F.L.A. - Full load current at max admissible conditions							
F.L.A. - Pump		A	0.58	0.58	0.95	0.95	1.24
F.L.A. - Fan		A	1,85	1,85	1,85	6,90	6,90
F.L.A. - Total		A	13,30	16,34	20,19	30,31	34,88
F.L.I. - Full load power input at max admissible conditions							
F.L.I. - Pump		kW	0,132	0,132	0,200	0,200	0,260
F.L.I. - Fan		kW	1,00	1,00	1,00	1,59	1,59
F.L.I. - Total		kW	3,63	4,33	5,20	7,04	8,05
M.I.C. Maximum inrush current							
M.I.C. - Value		A	13,30	16,34	20,19	30,31	34,88

Power supply: 230/1/50 Hz. Voltage variation: max. +/-10%
The pump is included in the total values calculation
For non standard voltage please contact Clivet technical office
The units are compliant with the provisions of European standards CEI EN 60204 and CEI EN 60335.

Supply voltage 400/3/50+N

Size			51	71	81	91	101	121	131	141
F.L.A. - Full load current at max admissible conditions										
F.L.A. - Pump		A	0.95	1.24	1.90	1.90	1.90	1.90	1.90	1.90
F.L.A. - Fan		A	6,90	6,90	4.10	4.10	4.10	4.10	4.10	4.10
F.L.A. - Total		A	15,65	17,18	27,83	28,13	28,93	31,53	33,53	34,53
F.L.I. - Full load power input at max admissible conditions										
F.L.I. - Pump		kW	0.20	0.26	0.39	0.39	0.39	0.39	0.39	0.39
F.L.I. - Fan		kW	1,59	1,59	2,70	2,70	2,70	2,70	2,70	2,70
F.L.I. - Total		kW	8,14	9,15	9,68	10,68	12,28	14,38	16,68	17,68
M.I.C. Maximum inrush current										
M.I.C. - Value		A	15,65	17,18	27,83	28,13	28,93	31,53	33,53	34,53

Power supply: 400/3/50 Hz. Voltage variation: max. +/-10%
Voltage unbalance between phases: max 2 %
The pump is included in the total values calculation
For non standard voltage please contact Clivet technical office
The units are compliant with the provisions of European standards CEI EN 60204 and CEI EN 60335.

Unit sound levels

ΔPut [Pa]	Size	Sound pressure level dB(A)	Sound power level dB(A)
50	**21**	51	66
50	**31**	52	67
50	**41**	53	68
50	**51**	64	80
50	**71**	66	81
80	**81**	57	74
80	**91**	57	74
80	**101**	58	74
80	**121**	62	79
80	**131**	65	82
80	**141**	66	83

The noise levels refer to units at full load under nominal test conditions, with ducted supply and return and available pressure of 50Pa and 80Pa as indicated in the table.
The sound pressure level refers to a distance of 1m from the outer surface of the unit operating in an open field.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2)
Data referred to the following conditions:
entering / leaving user side exchanger water T 12/7°C, source side air T 35°C

Supply sound levels

ΔPut [Pa]	Size	Sound power level								Sound pressure level	Sound power level
		Octave band (Hz)									
		63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
100	**21**	88	77	69	65	64	66	60	41	44	59
100	**31**	95	87	76	71	69	66	62	48	45	69
100	**41**	97	89	77	72	70	68	64	49	45	69
100	**51**	104	95	84	88	83	72	65	58	48	64
100	**71**	106	97	86	90	85	74	67	60	50	65
120	**81**	104	94	78	73	71	70	69	56	48	65
120	**91**	105	94	78	73	71	69	69	58	48	65
120	**101**	107	96	81	74	72	70	69	60	51	67
120	**121**	106	100	86	81	78	77	70	65	52	69
120	**131**	107	103	89	85	82	81	75	69	53	70
120	**141**	108	104	88	86	83	82	77	69	53	70

The noise levels refer to units at full load, under nominal test conditions with ducted supply.
The sound pressure level is measured on the outlet with 1 meter duct and available pressure of 100Pa and 120Pa as indicated in the table.
Noise levels are determined using the tensiometric method (UNI EN ISO 9614-2)
Data referred to the following conditions:
entering / leaving user side exchanger water T 12/7°C, source side air T 35°C

Admissible water flow rates

Min. (Qmin) and max. (Qmax) water flow-rates admissibles for the correct unit operation.

Size		21	31	41	51	71	81	91	101	121	131	141
Minimum flow	[l/s]	0,15	0,18	0,18	0,23	0,34	0,32	0,32	0,32	0,45	0,45	0,45
Maximum flow-rate	[l/s]	0,90	0,90	0,90	1,10	1,50	1,70	1,70	1,70	1,90	1,90	1,90

Correction factors for glycol use

% ethylene glycol by weight			5%	10%	15%	20%	25%	30%	35%	40%
Freezing temperature		°C	-2,0	-3,9	-6,5	-8,9	-11,8	-16,6	-19,0	-23,4
Safety temperature		°C	3	1	-1	-4	-6	-10	-14	-19
Cooling Capacity Factor		No	0,995	0,990	0,985	0,981	0,977	0,974	0,971	0,968
Compressor power input Factor		No	0,997	0,993	0,990	0,988	0,986	0,984	0,982	0,981
Internal exchanger glycol solution flow factor		No	1,003	1,010	1,020	1,033	1,050	1,072	1,095	1,124
Pressure drop Factor		No	1,029	1,060	1,090	1,118	1,149	1,182	1,211	1,243

The correction factors shown refer to water and glycol ethylene mixes used to prevent the formation of frost on the exchangers in the water circuit during inactivity in winter.

Fouling Correction Factors

	Internal exchanger	
m^2C/W	**F1**	**FK1**
0,44x10(-4)	1,00	1
0,44x10(-4)	0,97	0,99
0,44x10(-4)	0,94	0,98

The cooling performance values provided in the tables are based on the external exchanger having clean plates (fouling factor 1). For different fouling factor values, multiply the performance by the coefficients shown in the table.
F1 = Cooling capacity correction factors
FK1 = Compressor power input correction factor

Operating range

Cooling

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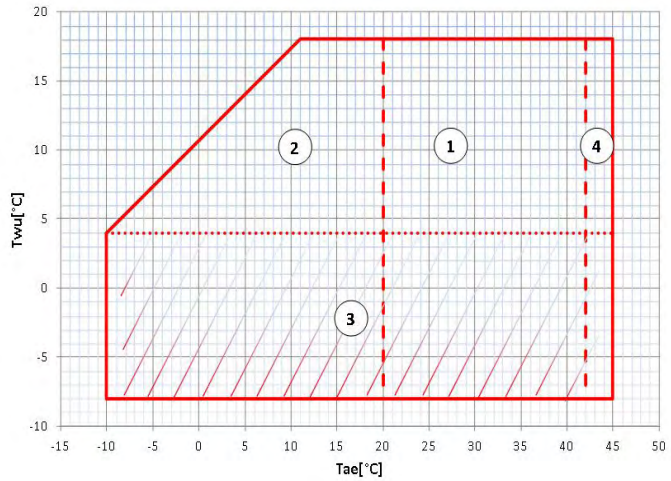
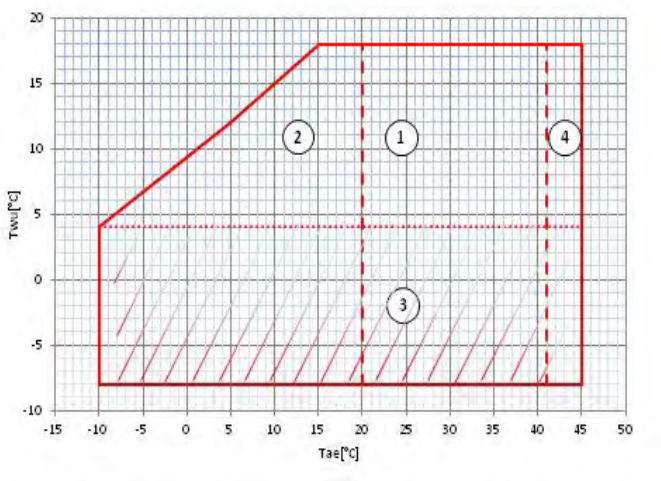


ELFOEnergy Duct Inverter 51-141

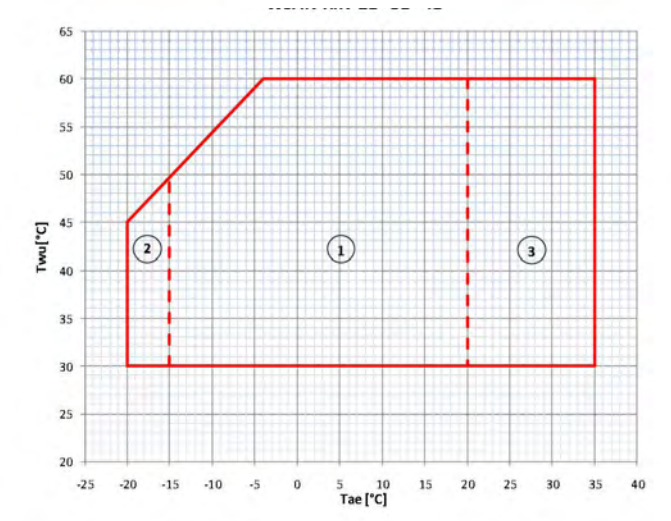


Twu [°C] = leaving exchanger water temperature
Eat [°C]: external exchanger inlet air temperature

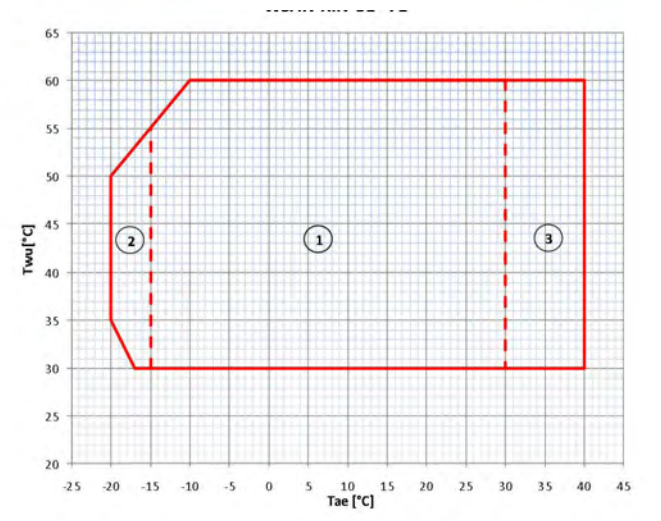
1. Normal operating range
2. Normal operating range, with modulating fans
3. Operating range where the use of ethylene glycol is mandatory in relation to the temperature of the water at the outlet of the user side exchanger
4. Operating range with modulating compressor

Heating

ELFOEnergy Duct Inverter 21 - 31 - 41



ELFOEnergy Duct Inverter 51-141



Twu [°C] = leaving exchanger water temperature
Eat [°C]: external exchanger inlet air temperature

1. Normal operating range
2. Operating range with modulating compressor
3. Operation with fans and compressors in modulation

Standard unit technical specifications

Compressor

Size 21-31-41

Inverter controlled rotary-type hermetic compressor equipped with a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on anti-vibration mounts and it is equipped with oil charge.

An oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops.

Size 51-141

Inverter controlled scroll-type hermetic compressor equipped with a motor protection device for overheating, overcurrents and excessive temperatures of the supply gas. It is installed on anti-vibration mounts and is equipped with oil charge.

An oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops.

Structure

Supporting structure made with zinc-magnesium sheet metal that ensures excellent mechanical features and high long-term resistance against corrosion.

base made from galvanized steel plate painted with polyester powder paint, RAL 9001.

Panelling

External panels made with prepainted zinc-magnesium, especially indicated in outdoor installation due to its superior resistance to corrosion avoiding periodic painting. Side panels are easily removable and allow complete access to unit components.

Internal exchanger

Direct expansion heat exchanger with braze welded stainless steel INOX AISI 316 plates and complete with external thermal/anti-condensation insulation.

The exchanger is complete with:

- antifreeze heater to protect the water side exchanger, preventing the formation of frost if the water temperature falls below a set value.

External exchanger

Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a hydrophilic treatment and a corrugated surface. They are appropriately distanced to ensure the maximum heat exchange efficiency.

Fan

Direct current radial fan, reversed blades, optimised to reduce at minimum the sound emissions and at the same time increase the energy efficiency, though keeping the pressure necessary to the unit duct system.

Refrigeration circuit

Refrigeration circuit with:

- electronic expansion valve
- 4-way reverse cycle valve
- filter dryer
- liquid receiver
- inlet liquid separator
- pressure probes
- low pressure safety
- high pressure safety

Drain pan

Thermoformed ABS condensate collection tray provided with drain circuit prevents the ice from forming inside; it activates automatically in relation to the outdoor air temperature.

Front return plenum

Magnesium zinc metal olate structure that allows the return duct to be easily connected.

Electrical panel

The capacity section includes:

- fans and auxiliary circuit fuse
- compressor fuses
- isolating transformer for auxiliary circuit power supply

The control section includes:

- compressor overload protection and timer
- relay for remote cumulative fault signal
- defrosting cycle optimization
- condenser control
- Set point compensation with outdoor temperature
- ON/OFF clear input
- clear input for heat and cool operating switching, as an alternative to the keypad one

The control keypad includes:

- Multifunction keys for ON/OFF control, cold and hot operation mode, display and alarm reset, daily or weekly schedule.
- Display

Water circuit

- water side safety valve
- drain valve
- Steel mesh strainer
- Flow Switch
- pump

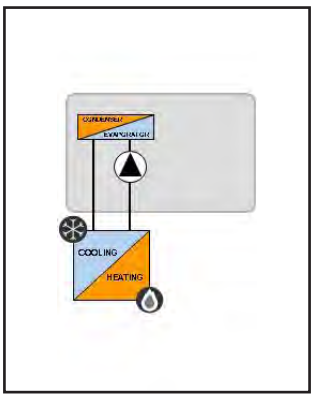
Accessories

- AMRX - Rubber antivibration mounts
- RCTX - Remote control
- CMACSX - Domestic hot water module
- CMSC2X - Serial communication module with RS485 serial converter kit
- KTFL1X - 1" water side hose kit
- KTFL2X - 1" 1/4 water side hose kit
- ACS300X - 300-litre domestic hot water storage tank
- ACS500X - 500-litre domestic hot water storage tank
- ACS5SX - 500-litre domestic hot water storage tank with solar coil
- ACS3SX - 300-litre domestic hot water storage tank with solar coil
- 3DHWX - 3-way valve for domestic hot water
- KSAX - 100-litre circuit breaker
- GMX - Outlet grille
- PGFCX - Finned coil protection grill
- KG4UP - Management kit up to 4 units in parallel

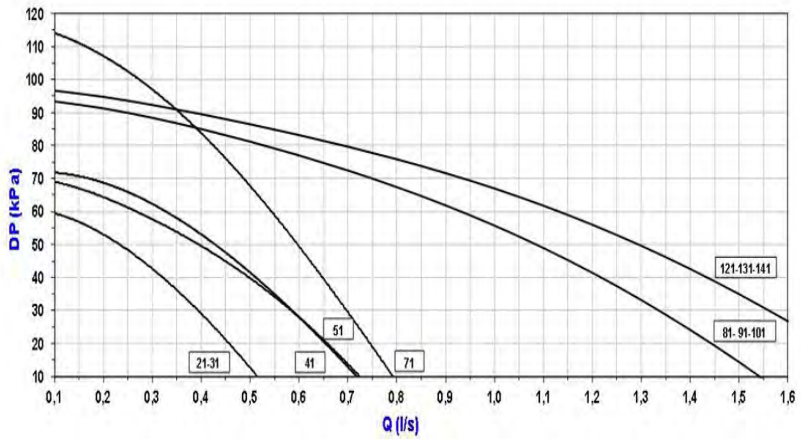
Hydronic assembly configuration 1.1

Standard unit

Standard unit is equipped with wet rotor, pipe union connection and max operating pressure at 6 bar.

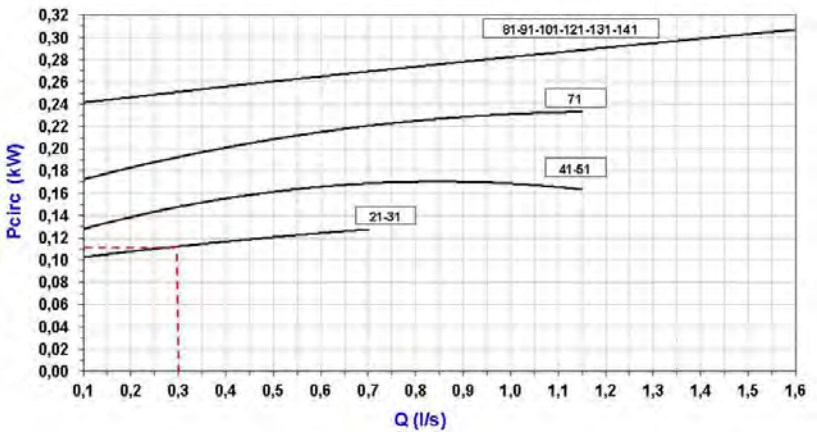


Curve of discharge head with standard circulator



Available pressure curves with hydronic assembly
DP [kPa] = Available pressure
Q [l/s] = Water flow-rate
the heads are intended as available at the unit connections
The pressure drops of the steel mesh strainer, supplied with the unit, have been already taken into consideration

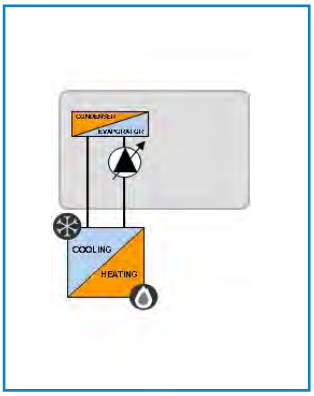
Standard circulator absorption curves



Available pressure curves with hydronic assembly
DP [kPa] = Available pressure
Q [l/s] = Water flow-rate

Hydronic assembly configuration 1.2

Unit with high efficiency hydronic assembly - HYHE



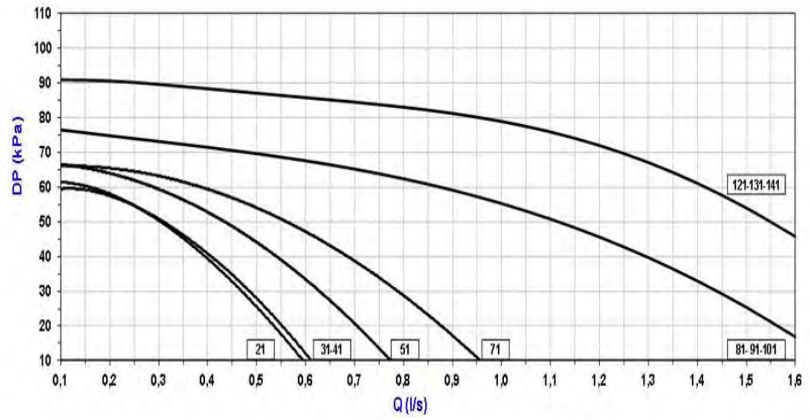
The EC technology decisively reduces the annual consumption of electric energy, thereby allowing for considerable cost savings compared to conventional motors.

The EC circulator use allows to chose the optimal operating curve according to the charge and the installation pressure drop and allows to exceed the traditional operating ranges.

A series of devices, autonomously activated, guarantee the operating of this unit also in critical conditions, where the old generation units would stop:

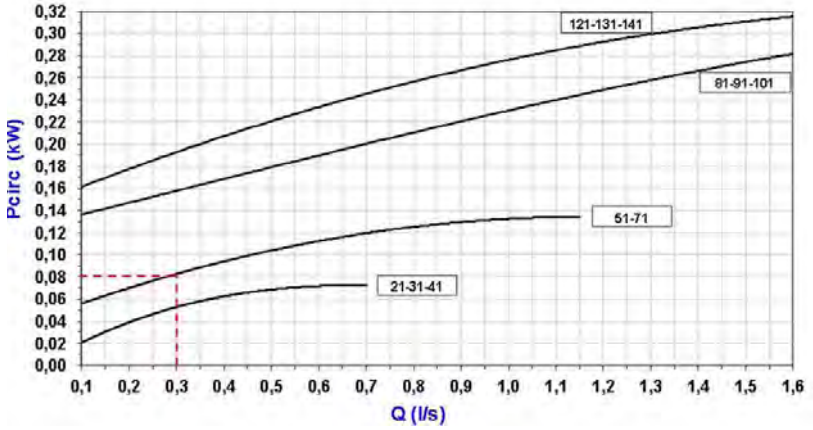
- if the water temperature exceeds the maximum operating temperature, the electronic control decreases the circulator's water flow-rate.

Available pressure curves with high-efficiency circulator



The heads are intended as available at the unit connections
Q [l/s] = Water flow-rate
DP [kPa] = Available pressure

High-efficiency circulator absorption curves

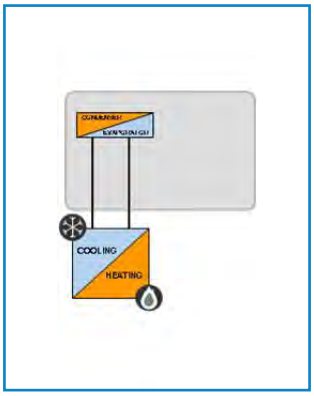


Q [l/s] = Water flow-rate
Pac (kW)= Capacity absorbed by the pump

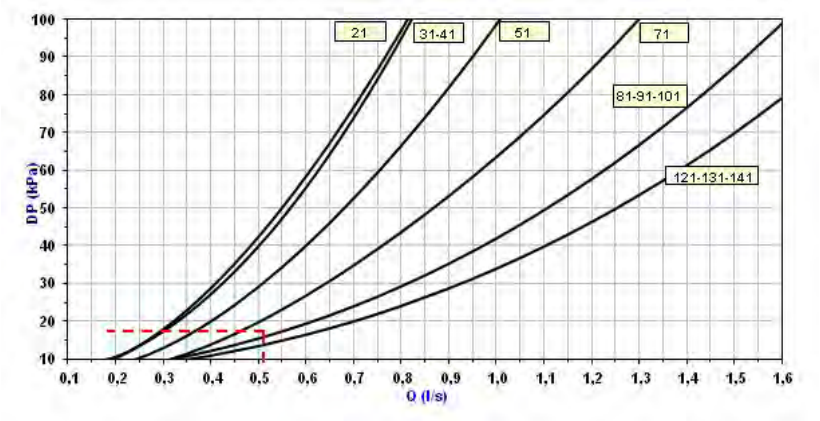
Hydronic assembly configuration 1.3

Unit without hydronic system

The unit can be requested without hydronic assembly, made up only of the circulating pump.



Exchanger pressure drop curves + steel mesh filter



Limit of exchanger + filter pressure drops. Caution: do not use beyond this limit

Dp = Pressure drop
Q = Water flow

Exchanger + filter pressure drop limit. Warning: don't use below this limit.

Control

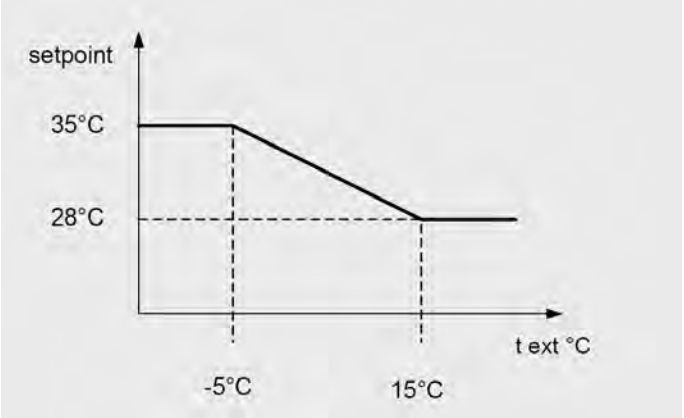
Climatic compensation with ambient temperature

The needs of building heat capacity decreases at the fresh air temperature increasing.

Power supply is not necessary for the terminal units always at the same temperature; for each kind of terminal unit it is better to have a water temperature that changes according with ambient temperature, with linear trend (what is commonly defined climatic control) for a high seasonal energy efficiency.

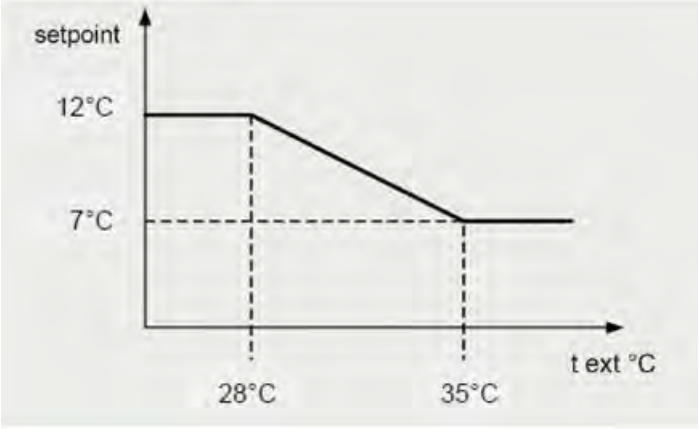
The following graph shows an example of climatic control on the water supply temperature.

Climatic curve in Heating



With a increase ambient temperature, the climatic function decreasing the supply water set point:
Set point = 35°C
Compensated setpoint = 28°C

Climatic curve in Cooling



With a decreasing ambient temperature, the climatic function increases the supply water set point
Set point = 7°C
Compensated set point = 12°C

Boiler management

The Duct Inverter units are able to manage (on/off) an auxiliary generator (boiler).

The configuration of the system involves an auxiliary generator connected in parallel in relation to the heat pump and controlled via a dedicated digital output.

The auxiliary generator is always managed as a replacement for the heat pump.

Boiler management only for installation production

The configuration of the system involves 1 3-way diverting valve (E) between the heat pump and the auxiliary generator.

The heat pump acts as the main generator and is activated whenever there is a request from the system.

If the System set point has not been reached yet and the outdoor air temperature drops below the selected set point, the heat pump stops, switches the 3-way valve (E) and, after a 120-second delay, it activates the auxiliary generator with its own set point.

If the outdoor air temperature remains below the selected set point, the auxiliary generator operates until it reaches the System's set point.

If the air temperature rises above the selected set point, the control stops the auxiliary generator, switches the 3-way valve (E) and activates the heat pump until it reaches the System's set point.

Boiler management for installation and DHW production

The system configuration consists of:

- 1 module to manage domestic hot water (CMACSX)
- 1 3-way diverting valve (E) between the heat pump and the auxiliary generator
- 1 3-way valve (D) to divert the flow towards the DHW storage tank

The heat pump acts as the main generator and is activated whenever there is a request from the system or a DHW request.

If the domestic hot water temperature drops below a set value, the CMACSX module sends the request to produce DHW to the heat pump and controls the switching of the 3-way valve (D), so that it diverts the flow from the system to the DHW storage tank.

The heat pump switches the set point from the system's value to the DHW value and produces DHW.

If the DHW set point has not been reached yet and the outdoor air temperature drops below the selected set point, the heat pump stops, switches the 3-way valve (E) and, after a 120-second delay, it activates the auxiliary generator to produce DHW.

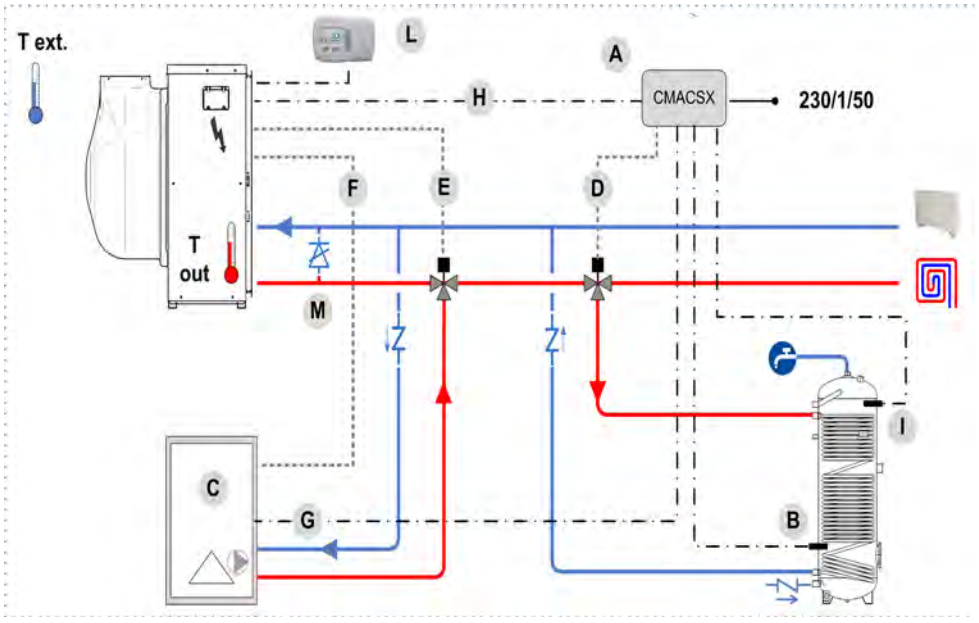
Via the CMACSX module, the heat pump switches the set point of the auxiliary generator from System production to DHW production through a potential-free contact.

If the auxiliary generator is not designed to manage a double set point, set the DHW production value as a set point and provide for a downstream mixing system to reach the correct system supply temperature.

If the outdoor air temperature remains below the selected set point, the auxiliary generator operates until it reaches the DHW set point.

If the air temperature rises above the selected set point, the control stops the auxiliary generator, switches the 3-way valve (E) and activates the heat pump until it reaches the DHW set point.

In this system configuration, the anti-Legionella function is carried out by the auxiliary generator and not via the electric heater inside the storage tank.



A - Domestic hot water module
B - Temperature probe domestic hot water
C - Boiler
D - 3-way DHW valve
E - 3-way Boiler valve
F - Setpoint control system
G - Setpoint control ACS
H - max 100 mt
I - Safety probe (By Customer)
L - Room keypad (RCTX)
M - Bypass

WSN-XIN 21 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	1,82	1,65	1,22	0,74	0,50	1,51	1,51	1,51	1,49	1,45
	-10/-10,5	2,96	2,70	2,03	1,28	0,91	2,42	2,42	2,42	2,34	2,23
	-7/-8	3,30	3,01	2,30	1,53	1,14	2,68	2,69	2,70	2,65	2,57
	0/-0,6	4,02	3,63	2,89	2,17	1,82	3,23	3,26	3,31	3,34	3,33
	2/1,1	4,30	3,92	3,06	2,15	1,69	3,44	3,48	3,53	3,55	3,52
	7/6	5,47	4,93	3,84	2,75	2,21	4,35	4,40	4,50	4,54	4,52
	12/10,2	6,12	5,55	4,33	3,06	2,42	4,83	4,89	5,02	5,09	5,07
	15/13	6,61	6,00	4,67	3,27	2,58	5,19	5,27	5,42	5,51	5,48
	20/16	7,43	6,75	5,23	3,63	2,83	5,79	5,89	6,09	6,22	6,20
35	-20/-20,1	1,80	1,62	1,18	0,71	0,47	1,39	1,39	1,39	1,38	1,34
	-10/-10,5	2,93	2,66	1,98	1,23	0,86	2,21	2,21	2,21	2,15	2,06
	-7/-8	3,27	2,96	2,24	1,47	1,08	2,44	2,46	2,47	2,43	2,36
	0/-0,6	3,99	3,58	2,82	2,10	1,74	2,93	2,95	3,01	3,05	3,05
	2/1,1	4,27	3,86	2,98	2,07	1,61	3,11	3,14	3,20	3,23	3,21
	7/6	5,41	4,86	3,76	2,67	2,12	3,90	3,95	4,04	4,10	4,10
	12/10,2	6,07	5,46	4,21	2,94	2,31	4,34	4,41	4,53	4,62	4,62
	15/13	6,56	5,91	4,55	3,15	2,46	4,68	4,75	4,90	5,00	5,00
	20/16	7,37	6,65	5,10	3,50	2,70	5,22	5,32	5,51	5,65	5,66
45	-20/-20,1	1,81	1,60	1,14	0,67	0,43	1,28	1,28	1,28	1,25	1,20
	-10/-10,5	2,85	2,55	1,85	1,12	0,76	1,87	1,87	1,88	1,83	1,75
	-7/-8	3,17	2,82	2,09	1,33	0,95	2,03	2,04	2,05	2,03	1,98
	0/-0,6	3,83	3,38	2,59	1,88	1,52	2,33	2,36	2,41	2,45	2,46
	2/1,1	4,10	3,64	2,74	1,85	1,41	2,47	2,50	2,55	2,59	2,59
	7/6	5,19	4,64	3,54	2,45	1,90	3,06	3,10	3,18	3,25	3,26
	12/10,2	5,81	5,15	3,88	2,64	2,02	3,69	3,74	3,84	3,90	3,89
	15/13	6,26	5,54	4,16	2,81	2,13	3,92	3,98	4,10	4,18	4,17
	20/16	6,99	6,20	4,65	3,10	2,33	4,30	4,38	4,53	4,64	4,64
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	3,10	2,77	2,04	1,28	0,90	1,73	1,74	1,75	1,73	1,68
	0/-0,6	3,74	3,31	2,53	1,80	1,44	1,93	1,94	1,99	2,02	2,03
	2/1,1	3,99	3,56	2,68	1,77	1,32	2,03	2,05	2,09	2,13	2,13
	7/6	5,05	4,50	3,40	2,31	1,76	2,48	2,51	2,58	2,64	2,66
	12/10,2	5,64	5,02	3,76	2,51	1,89	2,69	2,73	2,82	2,91	2,94
	15/13	6,08	5,41	4,05	2,68	2,00	2,85	2,89	3,00	3,10	3,13
	20/16	6,80	6,06	4,53	2,96	2,18	3,09	3,15	3,29	3,42	3,47
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	-	-	-	-	-	-	-	-	-	-
	0/-0,6	3,59	3,19	2,43	1,71	1,35	1,50	1,52	1,56	1,60	1,62
	2/1,1	3,83	3,43	2,57	1,69	1,24	1,57	1,59	1,64	1,68	1,70
	7/6	4,85	4,31	3,24	2,17	1,64	1,90	1,92	1,99	2,06	2,09
	12/10,2	5,38	4,80	3,59	2,37	1,76	1,87	1,90	1,98	2,07	2,13
	15/13	5,81	5,18	3,87	2,53	1,87	1,97	2,01	2,10	2,20	2,27
	20/16	6,52	5,82	4,34	2,81	2,05	2,13	2,18	2,28	2,42	2,50

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	90%	75%	60%	50%	40%	100%	90%	75%	60%	50%	40%
5	20	4,35	3,89	3,35	2,59	2,13	1,67	3,54	3,54	3,57	3,55	3,53	3,48
	25	4,11	3,68	3,18	2,47	2,04	1,61	3,03	3,05	3,08	3,08	3,07	3,05
	30	3,87	3,47	3,01	2,34	1,94	1,54	2,62	2,64	2,67	2,68	2,68	2,67
	35	3,62	3,26	2,83	2,21	1,84	1,47	2,36	2,38	2,42	2,42	2,42	2,41
	40	3,38	3,05	2,65	2,09	1,75	1,41	1,90	1,92	1,97	1,98	2,00	2,00
	45	3,15	2,84	2,48	1,96	1,65	1,34	1,55	1,58	1,63	1,64	1,66	1,67
7	20	4,66	4,17	3,60	2,78	2,29	1,80	3,81	3,84	3,89	3,88	3,87	3,82
	25	4,40	3,95	3,41	2,65	2,19	1,73	3,26	3,29	3,34	3,35	3,36	3,34
	30	4,14	3,72	3,23	2,52	2,10	1,67	2,80	2,83	2,89	2,91	2,92	2,92
	35	3,88	3,50	3,04	2,39	2,00	1,61	2,48	2,51	2,57	2,58	2,59	2,59
	40	3,63	3,27	2,86	2,26	1,90	1,55	2,04	2,07	2,13	2,15	2,17	2,18
	45	3,37	3,05	2,67	2,13	1,81	1,48	1,69	1,72	1,78	1,81	1,83	1,84
12	20	5,45	4,88	4,21	3,26	2,68	2,11	4,50	4,57	4,70	4,72	4,73	4,70
	25	5,14	4,61	4,00	3,11	2,59	2,05	3,82	3,88	4,01	4,05	4,08	4,08
	30	4,83	4,35	3,78	2,97	2,49	2,00	3,26	3,33	3,44	3,48	3,52	3,54
	35	4,54	4,09	3,58	2,84	2,39	1,95	2,77	2,83	2,93	2,97	3,01	3,04
	40	4,23	3,83	3,37	2,70	2,30	1,89	2,37	2,42	2,52	2,56	2,60	2,62
	45	3,93	3,57	3,15	2,56	2,20	1,84	2,03	2,08	2,18	2,21	2,25	2,27
15	20	5,92	5,30	4,58	3,54	2,92	2,30	4,96	5,06	5,23	5,27	5,29	5,25
	25	5,58	5,01	4,35	3,39	2,82	2,25	4,10	4,19	4,36	4,42	4,47	4,49
	30	5,25	4,72	4,11	3,24	2,72	2,19	3,44	3,52	3,67	3,73	3,79	3,83
	35	4,93	4,45	3,90	3,11	2,63	2,15	2,92	2,99	3,13	3,19	3,24	3,29
	40	4,59	4,17	3,67	2,96	2,53	2,10	2,48	2,55	2,67	2,73	2,78	2,82
	45	4,26	3,88	3,44	2,82	2,44	2,06	2,12	2,18	2,29	2,34	2,39	2,42
18	20	6,41	5,74	4,96	3,84	3,17	2,49	5,27	5,39	5,62	5,69	5,74	5,72
	25	6,06	5,44	4,72	3,69	3,07	2,45	4,40	4,52	4,72	4,81	4,88	4,92
	30	5,71	5,14	4,49	3,54	2,98	2,41	3,73	3,83	4,01	4,10	4,17	4,23
	35	5,35	4,84	4,25	3,40	2,88	2,37	3,33	3,42	3,59	3,66	3,72	3,76
	40	5,00	4,54	4,01	3,25	2,79	2,34	2,70	2,78	2,93	2,99	3,06	3,11
	45	4,64	4,24	3,77	3,11	2,70	2,30	2,30	2,38	2,52	2,58	2,63	2,68

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 31 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	2,23	2,02	1,59	1,03	0,73	1,68	1,67	1,64	1,54	1,44
	-10/-10,5	3,69	3,36	2,71	1,80	1,32	2,52	2,52	2,50	2,39	2,25
	-7/-8	4,13	3,76	3,02	2,07	1,57	2,74	2,74	2,74	2,65	2,54
	0/-0,6	5,07	4,57	3,58	2,65	2,20	3,15	3,17	3,19	3,18	3,14
	2/1,1	5,42	4,92	3,93	2,79	2,21	3,33	3,37	3,41	3,39	3,33
	7/6	6,87	6,18	4,81	3,45	2,77	4,15	4,20	4,26	4,26	4,20
	12/10,2	7,70	6,97	5,52	3,93	3,12	4,66	4,73	4,83	4,85	4,78
	15/13	8,31	7,53	5,98	4,23	3,34	5,03	5,11	5,24	5,28	5,19
	20/16	9,33	8,47	6,74	4,74	3,71	5,64	5,75	5,94	6,00	5,91
35	-20/-20,1	2,31	2,08	1,62	1,03	0,73	1,58	1,58	1,55	1,47	1,38
	-10/-10,5	3,72	3,37	2,66	1,75	1,27	2,33	2,33	2,31	2,22	2,10
	-7/-8	4,14	3,75	2,96	2,00	1,51	2,53	2,53	2,53	2,46	2,35
	0/-0,6	5,03	4,51	3,47	2,54	2,09	2,90	2,92	2,94	2,93	2,90
	2/1,1	5,38	4,85	3,81	2,67	2,10	3,07	3,10	3,14	3,13	3,07
	7/6	6,81	6,12	4,74	3,36	2,68	3,82	3,87	3,94	3,94	3,89
	12/10,2	7,64	6,88	5,35	3,76	2,97	4,26	4,33	4,42	4,45	4,39
	15/13	8,25	7,43	5,79	4,05	3,18	4,58	4,66	4,78	4,82	4,75
	20/16	9,26	8,34	6,53	4,54	3,53	5,11	5,22	5,39	5,46	5,38
45	-20/-20,1	2,31	2,05	1,54	0,96	0,66	1,33	1,33	1,30	1,25	1,17
	-10/-10,5	3,62	3,24	2,47	1,58	1,12	1,90	1,90	1,89	1,82	1,73
	-7/-8	4,02	3,59	2,73	1,80	1,33	2,05	2,06	2,06	2,01	1,93
	0/-0,6	4,85	4,29	3,18	2,27	1,83	2,33	2,35	2,37	2,37	2,34
	2/1,1	5,18	4,61	3,49	2,38	1,83	2,46	2,49	2,52	2,52	2,47
	7/6	6,54	5,86	4,48	3,12	2,44	3,03	3,07	3,14	3,16	3,12
	12/10,2	7,34	6,52	4,89	3,35	2,59	3,33	3,39	3,47	3,50	3,47
	15/13	7,90	7,02	5,27	3,59	2,76	3,53	3,59	3,69	3,74	3,71
	20/16	8,82	7,85	5,91	4,00	3,05	3,83	3,91	4,05	4,14	4,11
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	3,92	3,51	2,70	1,76	1,28	1,74	1,75	1,75	1,72	1,66
	0/-0,6	4,72	4,19	3,13	2,21	1,76	1,94	1,96	1,98	1,99	1,97
	2/1,1	5,04	4,51	3,44	2,33	1,77	2,04	2,06	2,09	2,10	2,07
	7/6	6,39	5,71	4,34	2,97	2,29	2,48	2,52	2,57	2,60	2,58
	12/10,2	7,13	6,36	4,81	3,26	2,49	2,69	2,73	2,81	2,86	2,84
	15/13	7,68	6,85	5,19	3,50	2,66	2,84	2,89	2,99	3,05	3,03
	20/16	8,58	7,66	5,83	3,91	2,94	3,08	3,15	3,27	3,36	3,35
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	-	-	-	-	-	-	-	-	-	-
	0/-0,6	4,66	4,14	3,11	2,18	1,73	1,78	1,80	1,82	1,82	1,81
	2/1,1	4,98	4,46	3,43	2,30	1,73	1,87	1,89	1,92	1,93	1,90
	7/6	6,32	5,63	4,26	2,90	2,22	2,27	2,30	2,35	2,37	2,35
	12/10,2	7,03	6,28	4,78	3,22	2,43	2,44	2,48	2,55	2,60	2,58
	15/13	7,57	6,76	5,16	3,46	2,60	2,58	2,63	2,71	2,77	2,75
	20/16	8,46	7,57	5,79	3,86	2,88	2,79	2,85	2,96	3,04	3,04

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	90%	75%	60%	50%	40%	100%	90%	75%	60%	50%	40%
5	20	5,85	5,00	4,24	3,39	2,79	2,20	3,56	3,56	3,55	3,53	3,49	3,41
	25	5,52	4,73	4,01	3,22	2,66	2,11	3,02	3,03	3,03	3,03	3,01	2,97
	30	5,19	4,45	3,79	3,05	2,53	2,01	2,57	2,59	2,60	2,62	2,61	2,58
	35	4,88	4,20	3,58	2,89	2,41	1,93	2,34	2,37	2,38	2,40	2,39	2,37
	40	4,57	3,93	3,36	2,73	2,28	1,83	1,87	1,90	1,92	1,95	1,96	1,96
	45	4,25	3,67	3,14	2,56	2,15	1,74	1,59	1,63	1,66	1,69	1,71	1,71
7	20	6,25	5,35	4,54	3,63	2,99	2,35	3,84	3,87	3,88	3,88	3,84	3,76
	25	5,91	5,06	4,30	3,46	2,86	2,27	3,25	3,29	3,31	3,33	3,32	3,27
	30	5,56	4,78	4,07	3,29	2,73	2,18	2,77	2,81	2,84	2,87	2,88	2,85
	35	5,24	4,51	3,85	3,12	2,61	2,10	2,47	2,52	2,55	2,58	2,59	2,57
	40	4,90	4,23	3,63	2,96	2,49	2,01	2,02	2,06	2,10	2,14	2,16	2,16
	45	4,56	3,95	3,40	2,79	2,36	1,93	1,72	1,77	1,81	1,86	1,88	1,89
12	20	7,26	6,22	5,27	4,22	3,49	2,75	4,54	4,64	4,71	4,75	4,73	4,64
	25	6,88	5,91	5,03	4,05	3,36	2,67	3,84	3,94	4,01	4,07	4,08	4,05
	30	6,50	5,59	4,78	3,87	3,24	2,60	3,27	3,37	3,45	3,51	3,54	3,53
	35	6,12	5,29	4,54	3,71	3,12	2,53	2,80	2,89	2,96	3,03	3,07	3,07
	40	5,73	4,98	4,29	3,53	3,00	2,46	2,38	2,47	2,54	2,61	2,65	2,66
	45	5,35	4,66	4,04	3,36	2,88	2,40	2,03	2,12	2,19	2,27	2,30	2,32
15	20	7,86	6,73	5,71	4,58	3,78	2,98	4,89	5,04	5,15	5,22	5,22	5,13
	25	7,46	6,41	5,46	4,40	3,66	2,92	4,08	4,22	4,33	4,43	4,46	4,43
	30	7,06	6,08	5,20	4,23	3,54	2,86	3,45	3,58	3,68	3,78	3,83	3,84
	35	6,65	5,76	4,95	4,05	3,43	2,80	2,93	3,05	3,15	3,25	3,30	3,32
	40	6,23	5,42	4,69	3,88	3,31	2,73	2,49	2,60	2,70	2,79	2,84	2,88
	45	5,81	5,09	4,43	3,70	3,19	2,68	2,12	2,23	2,33	2,42	2,47	2,50
18	20	8,65	7,41	6,29	5,04	4,17	3,29	5,31	5,52	5,67	5,78	5,80	5,72
	25	8,21	7,05	6,01	4,85	4,04	3,23	4,48	4,67	4,82	4,95	4,99	4,98
	30	7,76	6,69	5,73	4,67	3,92	3,17	3,82	3,99	4,13	4,26	4,32	4,34
	35	7,31	6,34	5,46	4,48	3,80	3,11	3,33	3,49	3,61	3,74	3,80	3,83
	40	6,86	5,98	5,18	4,30	3,68	3,06	2,77	2,91	3,03	3,15	3,22	3,26
	45	6,40	5,62	4,91	4,13	3,58	3,02	2,36	2,50	2,62	2,74	2,80	2,85

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 41 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	3,36	3,04	2,16	1,28	0,85	1,72	1,73	1,78	1,86	1,93
	-10/-10,5	5,09	4,63	3,36	2,09	1,46	2,48	2,50	2,55	2,58	2,57
	-7/-8	5,60	5,11	3,80	2,50	1,85	2,70	2,72	2,79	2,85	2,87
	0/-0,6	6,69	6,04	4,85	3,66	3,07	3,11	3,16	3,28	3,41	3,49
	2/1,1	7,10	6,46	4,97	3,48	2,74	3,30	3,35	3,48	3,63	3,73
	7/6	8,87	7,98	6,22	4,46	3,59	4,10	4,18	4,37	4,59	4,71
	12/10,2	9,81	8,89	6,86	4,85	3,84	4,51	4,61	4,83	5,09	5,24
	15/13	10,5	9,51	7,31	5,11	4,02	4,81	4,92	5,17	5,46	5,63
	20/16	11,6	10,5	8,05	5,56	4,33	5,31	5,44	5,75	6,11	6,31
35	-20/-20,1	3,31	2,97	2,10	1,23	0,80	1,63	1,64	1,68	1,75	1,82
	-10/-10,5	4,98	4,51	3,25	1,99	1,37	2,33	2,34	2,39	2,41	2,40
	-7/-8	5,49	4,96	3,67	2,38	1,74	2,52	2,55	2,61	2,66	2,67
	0/-0,6	6,54	5,86	4,67	3,49	2,90	2,90	2,95	3,05	3,17	3,24
	2/1,1	6,95	6,27	4,80	3,32	2,59	3,07	3,12	3,24	3,38	3,46
	7/6	8,70	7,81	6,05	4,29	3,41	3,81	3,88	4,04	4,24	4,35
	12/10,2	9,65	8,68	6,65	4,64	3,63	4,19	4,27	4,48	4,72	4,87
	15/13	10,3	9,30	7,10	4,91	3,81	4,46	4,56	4,80	5,07	5,23
	20/16	11,5	10,3	7,83	5,35	4,11	4,91	5,04	5,33	5,66	5,86
45	-20/-20,1	3,09	2,73	1,90	1,08	0,66	1,40	1,41	1,43	1,48	1,52
	-10/-10,5	4,69	4,17	2,96	1,76	1,16	1,94	1,96	1,99	2,01	2,00
	-7/-8	5,17	4,60	3,35	2,11	1,49	2,09	2,11	2,16	2,20	2,21
	0/-0,6	6,18	5,44	4,27	3,10	2,51	2,36	2,40	2,48	2,59	2,65
	2/1,1	6,57	5,84	4,39	2,95	2,23	2,48	2,52	2,62	2,74	2,82
	7/6	8,25	7,37	5,61	3,86	2,99	3,03	3,08	3,21	3,37	3,47
	12/10,2	9,17	8,11	6,12	4,14	3,16	3,29	3,36	3,53	3,74	3,88
	15/13	9,84	8,71	6,55	4,39	3,32	3,47	3,55	3,74	3,98	4,14
	20/16	11,0	9,72	7,25	4,81	3,59	3,76	3,85	4,08	4,38	4,59
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	4,99	4,46	3,22	1,98	1,36	1,74	1,76	1,79	1,82	1,82
	0/-0,6	5,99	5,30	4,11	2,92	2,33	1,92	1,95	2,02	2,09	2,14
	2/1,1	6,37	5,68	4,23	2,78	2,06	2,01	2,04	2,12	2,21	2,27
	7/6	8,03	7,14	5,38	3,63	2,75	2,42	2,46	2,56	2,69	2,77
	12/10,2	8,92	7,92	5,92	3,92	2,92	2,59	2,64	2,77	2,93	3,05
	15/13	9,54	8,48	6,31	4,14	3,06	2,70	2,76	2,90	3,09	3,22
	20/16	10,6	9,42	6,96	4,51	3,29	2,88	2,95	3,12	3,34	3,51
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	-	-	-	-	-	-	-	-	-	-
	-7/-8	-	-	-	-	-	-	-	-	-	-
	0/-0,6	5,92	5,25	4,04	2,84	2,24	1,77	1,80	1,85	1,92	1,95
	2/1,1	6,31	5,64	4,17	2,71	1,98	1,85	1,88	1,94	2,01	2,06
	7/6	7,96	7,07	5,29	3,52	2,64	2,22	2,25	2,34	2,45	2,51
	12/10,2	8,84	7,87	5,84	3,82	2,81	2,36	2,41	2,51	2,65	2,74
	15/13	9,44	8,41	6,21	4,03	2,94	2,45	2,50	2,62	2,77	2,88
	20/16	10,5	9,32	6,84	4,38	3,15	2,59	2,65	2,80	2,98	3,11

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	90%	75%	60%	50%	40%	100%	90%	75%	60%	50%	40%
5	20	6,57	5,99	4,96	3,93	3,20	2,46	3,44	3,48	3,56	3,67	3,78	3,93
	25	6,24	5,69	4,73	3,77	3,08	2,39	2,97	3,01	3,08	3,18	3,27	3,41
	30	5,91	5,40	4,50	3,61	2,96	2,32	2,58	2,62	2,68	2,77	2,84	2,95
	35	5,58	5,10	4,27	3,44	2,84	2,25	2,38	2,42	2,47	2,54	2,60	2,67
	40	5,25	4,81	4,04	3,27	2,72	2,17	1,92	1,95	2,00	2,06	2,11	2,18
	45	4,92	4,52	3,81	3,10	2,60	2,09	1,66	1,68	1,73	1,79	1,83	1,87
7	20	7,16	6,53	5,41	4,29	3,50	2,69	3,76	3,82	3,93	4,08	4,22	4,41
	25	6,81	6,22	5,18	4,13	3,39	2,64	3,24	3,29	3,39	3,52	3,64	3,81
	30	6,46	5,91	4,94	3,97	3,28	2,58	2,81	2,86	2,95	3,05	3,15	3,28
	35	6,11	5,60	4,70	3,81	3,16	2,52	2,54	2,58	2,65	2,74	2,81	2,90
	40	5,75	5,28	4,46	3,64	3,05	2,46	2,09	2,13	2,19	2,27	2,33	2,40
	45	5,39	4,97	4,22	3,47	2,93	2,40	1,81	1,84	1,90	1,96	2,01	2,06
12	20	8,65	7,88	6,54	5,20	4,24	3,28	4,56	4,66	4,85	5,09	5,31	5,61
	25	8,24	7,53	6,29	5,04	4,15	3,25	3,92	4,00	4,17	4,37	4,55	4,80
	30	7,84	7,18	6,03	4,88	4,06	3,23	3,39	3,46	3,60	3,77	3,91	4,10
	35	7,43	6,82	5,77	4,72	3,96	3,21	2,93	2,99	3,11	3,24	3,35	3,49
	40	7,01	6,46	5,51	4,55	3,87	3,18	2,52	2,58	2,67	2,78	2,86	2,96
	45	6,58	6,10	5,24	4,39	3,77	3,16	2,18	2,23	2,31	2,40	2,46	2,53
15	20	9,32	8,49	7,05	5,61	4,58	3,54	5,07	5,19	5,43	5,71	5,96	6,29
	25	8,89	8,13	6,79	5,46	4,50	3,54	4,27	4,38	4,58	4,82	5,03	5,32
	30	8,47	7,76	6,54	5,30	4,42	3,54	3,65	3,74	3,90	4,10	4,27	4,49
	35	8,03	7,39	6,27	5,15	4,35	3,54	3,13	3,20	3,34	3,49	3,62	3,78
	40	7,58	7,01	6,00	4,99	4,26	3,54	2,68	2,74	2,86	2,98	3,08	3,19
	45	7,13	6,62	5,73	4,83	4,19	3,55	2,31	2,37	2,46	2,56	2,64	2,71
18	20	10,2	9,30	7,73	6,15	5,02	3,89	5,51	5,66	5,95	6,29	6,60	7,01
	25	9,72	8,89	7,44	5,98	4,94	3,90	4,69	4,81	5,05	5,34	5,60	5,93
	30	9,24	8,48	7,15	5,82	4,86	3,91	4,02	4,13	4,33	4,56	4,76	5,01
	35	8,76	8,07	6,87	5,66	4,79	3,93	3,51	3,60	3,76	3,94	4,09	4,27
	40	8,28	7,66	6,58	5,50	4,73	3,96	2,98	3,05	3,19	3,33	3,44	3,57
	45	7,79	7,25	6,30	5,35	4,67	3,99	2,57	2,64	2,75	2,87	2,95	3,04

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 51 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	5,48	4,93	3,73	2,53	1,93	1,73	1,70	1,60	1,41	1,27
	-10/-10,5	7,02	6,36	4,91	3,47	2,75	2,08	2,05	1,93	1,73	1,58
	-7/-8	7,48	6,84	5,43	4,03	3,33	2,18	2,15	2,05	1,89	1,77
	0/-0,6	9,18	8,44	6,82	5,21	4,40	2,56	2,50	2,33	2,08	1,92
	2/1,1	9,72	8,94	7,22	5,51	4,66	2,71	2,68	2,59	2,44	2,33
	7/6	12,1	11,2	9,36	7,50	6,57	3,34	3,32	3,25	3,13	3,04
	12/10,2	13,5	12,5	10,3	8,16	7,08	3,71	3,69	3,61	3,47	3,36
	15/13	14,6	13,5	11,1	8,70	7,50	3,99	3,97	3,89	3,72	3,60
	20/16	16,5	15,2	12,4	9,59	8,20	4,45	4,43	4,34	4,15	4,01
35	-20/-20,1	3,88	3,49	2,64	1,79	1,37	1,13	1,12	1,05	0,94	0,84
	-10/-10,5	6,55	5,93	4,58	3,24	2,56	1,81	1,79	1,70	1,53	1,41
	-7/-8	7,35	6,72	5,34	3,96	3,27	2,01	1,99	1,91	1,77	1,67
	0/-0,6	9,06	8,33	6,73	5,14	4,34	2,38	2,34	2,19	1,97	1,82
	2/1,1	9,58	8,81	7,12	5,43	4,59	2,52	2,50	2,43	2,30	2,20
	7/6	11,9	11,1	9,22	7,38	6,47	3,10	3,10	3,05	2,95	2,87
	12/10,2	13,3	12,3	10,1	8,00	6,94	3,44	3,43	3,38	3,25	3,16
	15/13	14,3	13,2	10,8	8,50	7,33	3,69	3,68	3,62	3,48	3,37
	20/16	16,0	14,8	12,0	9,32	7,98	4,10	4,09	4,03	3,86	3,74
45	-20/-20,1	4,10	3,69	2,79	1,89	1,45	1,01	1,01	0,97	0,89	0,82
	-10/-10,5	6,46	5,85	4,52	3,19	2,53	1,52	1,51	1,47	1,36	1,27
	-7/-8	7,17	6,56	5,21	3,86	3,19	1,66	1,66	1,63	1,54	1,47
	0/-0,6	8,67	7,97	6,44	4,92	4,16	1,94	1,92	1,82	1,66	1,55
	2/1,1	9,19	8,45	6,83	5,21	4,41	2,06	2,06	2,04	1,96	1,91
	7/6	11,5	10,7	8,89	7,12	6,24	2,55	2,56	2,56	2,52	2,48
	12/10,2	12,8	11,9	9,80	7,73	6,71	2,83	2,84	2,84	2,78	2,74
	15/13	13,8	12,7	10,5	8,20	7,07	3,02	3,03	3,03	2,96	2,91
	20/16	15,4	14,2	11,6	8,98	7,68	3,33	3,35	3,35	3,27	3,21
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	6,43	5,83	4,50	3,18	2,52	1,28	1,27	1,24	1,16	1,10
	-7/-8	7,08	6,47	5,14	3,82	3,15	1,40	1,39	1,37	1,30	1,25
	0/-0,6	8,44	7,76	6,27	4,79	4,05	1,63	1,60	1,52	1,38	1,29
	2/1,1	8,92	8,20	6,63	5,06	4,28	1,71	1,71	1,69	1,63	1,59
	7/6	11,0	10,3	8,57	6,86	6,01	2,10	2,10	2,10	2,06	2,04
	12/10,2	12,3	11,4	9,38	7,41	6,42	2,30	2,31	2,30	2,26	2,23
	15/13	13,2	12,2	10,0	7,84	6,76	2,44	2,45	2,44	2,40	2,36
	20/16	14,7	13,5	11,0	8,55	7,32	2,68	2,69	2,68	2,63	2,59
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	6,42	5,81	4,49	3,17	2,51	1,19	1,18	1,15	1,07	1,01
	-7/-8	7,04	6,43	5,11	3,79	3,13	1,29	1,29	1,26	1,20	1,15
	0/-0,6	8,33	7,66	6,19	4,73	3,99	1,50	1,47	1,39	1,26	1,18
	2/1,1	8,79	8,08	6,53	4,98	4,21	1,57	1,57	1,55	1,49	1,45
	7/6	10,8	10,1	8,40	6,73	5,90	1,92	1,92	1,90	1,87	1,84
	12/10,2	12,0	11,1	9,12	7,14	6,16	2,09	2,09	2,06	2,01	1,96
	15/13	12,9	11,9	9,77	7,66	6,60	2,22	2,22	2,20	2,15	2,12
	20/16	14,3	13,2	10,9	8,51	7,34	2,42	2,43	2,43	2,40	2,38

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	85%	75%	60%	50%	40%	100%	85%	75%	60%	50%	40%
5	20	9,73	8,50	7,62	6,38	5,56	4,73	3,14	3,32	3,45	3,62	3,79	4,04
	25	9,30	8,09	7,22	6,01	5,20	4,39	2,77	2,89	2,98	3,10	3,22	3,39
	30	8,83	7,67	6,84	5,68	4,90	4,12	2,45	2,53	2,59	2,67	2,75	2,85
	35	8,32	7,23	6,46	5,37	4,64	3,91	2,28	2,33	2,37	2,42	2,46	2,51
	40	7,74	6,76	6,06	5,07	4,41	3,75	1,85	1,90	1,93	1,96	2,00	2,04
	45	7,14	6,29	5,67	4,82	4,24	3,67	1,60	1,64	1,66	1,70	1,73	1,77
7	20	10,3	8,99	8,02	6,66	5,75	4,84	3,35	3,55	3,69	3,88	4,07	4,37
	25	9,87	8,55	7,60	6,27	5,38	4,49	2,95	3,09	3,19	3,32	3,45	3,65
	30	9,38	8,11	7,20	5,92	5,06	4,21	2,60	2,70	2,77	2,86	2,94	3,07
	35	8,84	7,65	6,79	5,59	4,79	3,99	2,37	2,44	2,48	2,54	2,59	2,66
	40	8,23	7,15	6,38	5,29	4,57	3,84	1,97	2,02	2,06	2,10	2,14	2,19
	45	7,60	6,66	5,98	5,04	4,40	3,77	1,70	1,75	1,78	1,81	1,85	1,90
12	20	11,9	10,2	9,01	7,34	6,23	5,11	3,87	4,11	4,29	4,53	4,79	5,20
	25	11,3	9,70	8,54	6,90	5,81	4,72	3,40	3,57	3,70	3,87	4,04	4,32
	30	10,7	9,19	8,08	6,51	5,47	4,42	2,99	3,12	3,20	3,32	3,43	3,61
	35	10,1	8,67	7,63	6,16	5,18	4,20	2,62	2,71	2,77	2,84	2,92	3,03
	40	9,46	8,13	7,18	5,85	4,95	4,06	2,27	2,34	2,38	2,43	2,49	2,57
	45	8,76	7,59	6,76	5,58	4,80	4,01	1,96	2,02	2,06	2,11	2,16	2,23
15	20	12,7	11,0	9,84	8,16	7,03	5,90	4,22	4,49	4,68	4,96	5,23	5,64
	25	12,1	10,5	9,32	7,67	6,57	5,47	3,67	3,87	4,01	4,20	4,39	4,68
	30	11,5	9,94	8,81	7,23	6,18	5,12	3,21	3,35	3,45	3,58	3,71	3,90
	35	10,8	9,38	8,32	6,84	5,85	4,86	2,79	2,89	2,96	3,05	3,14	3,26
	40	10,1	8,80	7,84	6,50	5,60	4,70	2,41	2,48	2,54	2,60	2,67	2,76
	45	9,41	8,23	7,39	6,21	5,42	4,63	2,07	2,14	2,19	2,25	2,31	2,39
18	20	16,4	14,4	12,9	10,8	9,40	8,00	7,46	7,88	8,13	8,38	8,58	8,83
	25	14,6	12,7	11,3	9,42	8,15	6,87	5,08	5,36	5,55	5,79	6,01	6,32
	30	12,6	11,0	9,77	8,11	7,00	5,88	3,58	3,77	3,90	4,07	4,24	4,48
	35	11,9	10,3	9,24	7,67	6,63	5,59	3,11	3,24	3,34	3,46	3,58	3,75
	40	11,2	9,74	8,72	7,30	6,35	5,40	2,72	2,82	2,89	2,99	3,08	3,20
	45	10,4	9,12	8,23	6,99	6,15	5,32	2,35	2,44	2,51	2,59	2,67	2,78

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 71 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	6,63	6,07	4,68	3,20	2,41	1,79	1,78	1,70	1,52	1,36
	-10/-10,5	8,44	7,78	6,10	4,32	3,36	2,13	2,13	2,05	1,85	1,68
	-7/-8	8,98	8,25	6,57	4,85	3,92	2,22	2,22	2,15	1,98	1,84
	0/-0,6	11,1	10,3	8,39	6,35	5,26	2,62	2,68	2,58	2,31	2,11
	2/1,1	11,7	10,9	8,87	6,72	5,56	2,77	2,77	2,71	2,56	2,42
	7/6	14,5	13,0	10,5	8,34	7,17	3,43	3,43	3,35	3,19	3,06
	12/10,2	16,2	14,7	11,9	9,28	7,89	3,83	3,87	3,80	3,61	3,45
	15/13	17,5	15,9	12,8	9,95	8,41	4,15	4,20	4,13	3,91	3,72
	20/16	19,7	17,9	14,4	11,1	9,28	4,69	4,76	4,69	4,42	4,19
35	-20/-20,1	4,69	4,29	3,30	2,26	1,70	1,15	1,14	1,10	1,00	0,90
	-10/-10,5	7,87	7,25	5,68	4,02	3,12	1,84	1,84	1,78	1,63	1,49
	-7/-8	8,83	8,10	6,44	4,75	3,85	2,03	2,04	1,98	1,84	1,73
	0/-0,6	10,9	10,1	8,22	6,22	5,15	2,42	2,47	2,39	2,15	1,98
	2/1,1	11,5	10,7	8,69	6,58	5,45	2,56	2,56	2,51	2,39	2,27
	7/6	14,3	12,9	10,5	8,29	7,12	3,17	3,18	3,13	3,01	2,90
	12/10,2	15,9	14,4	11,7	9,12	7,75	3,53	3,56	3,51	3,36	3,23
	15/13	17,2	15,6	12,6	9,76	8,24	3,80	3,84	3,79	3,62	3,46
	20/16	19,3	17,5	14,1	10,8	9,06	4,24	4,30	4,26	4,05	3,87
45	-20/-20,1	4,88	4,45	3,41	2,34	1,76	1,00	1,00	0,98	0,91	0,84
	-10/-10,5	7,76	7,12	5,57	3,94	3,06	1,53	1,53	1,50	1,41	1,31
	-7/-8	8,63	7,89	6,26	4,62	3,74	1,68	1,68	1,65	1,58	1,50
	0/-0,6	10,5	9,70	7,87	5,96	4,93	1,97	2,01	1,97	1,80	1,67
	2/1,1	11,1	10,3	8,34	6,31	5,22	2,09	2,08	2,07	2,01	1,94
	7/6	13,8	12,6	10,3	8,16	7,01	2,60	2,63	2,64	2,59	2,53
	12/10,2	15,4	13,9	11,2	8,76	7,44	2,88	2,89	2,89	2,83	2,75
	15/13	16,6	15,0	12,1	9,36	7,90	3,08	3,11	3,11	3,03	2,94
	20/16	18,5	16,8	13,5	10,3	8,67	3,42	3,45	3,46	3,37	3,27
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	7,81	7,12	5,53	3,91	3,04	1,30	1,30	1,27	1,20	1,13
	-7/-8	8,57	7,78	6,14	4,53	3,67	1,41	1,41	1,39	1,33	1,27
	0/-0,6	10,1	9,34	7,53	5,70	4,72	1,63	1,66	1,62	1,49	1,38
	2/1,1	10,7	9,88	7,97	6,04	4,99	1,72	1,71	1,70	1,65	1,60
	7/6	13,3	12,0	9,66	7,65	6,57	2,12	2,13	2,13	2,09	2,04
	12/10,2	14,8	13,3	10,6	8,31	7,06	2,33	2,34	2,34	2,29	2,23
	15/13	15,8	14,2	11,4	8,83	7,46	2,49	2,50	2,50	2,44	2,38
	20/16	17,6	15,9	12,6	9,71	8,14	2,73	2,76	2,76	2,70	2,62
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	7,84	7,11	5,51	3,90	3,03	1,21	1,20	1,18	1,12	1,05
	-7/-8	8,54	7,72	6,07	4,48	3,63	1,30	1,30	1,28	1,22	1,17
	0/-0,6	9,99	9,16	7,37	5,58	4,61	1,50	1,52	1,48	1,35	1,25
	2/1,1	10,6	9,68	7,79	5,90	4,88	1,58	1,57	1,54	1,50	1,45
	7/6	13,1	11,7	9,35	7,40	6,36	1,93	1,93	1,91	1,87	1,83
	12/10,2	14,5	12,9	10,3	8,08	6,86	2,12	2,13	2,11	2,06	2,01
	15/13	15,5	13,9	11,1	8,57	7,24	2,25	2,26	2,25	2,19	2,14
	20/16	17,2	15,4	12,2	9,40	7,87	2,47	2,49	2,48	2,42	2,35

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	13,2	10,9	10,3	8,63	7,33	6,02	3,23	3,45	3,52	3,71	3,82	3,97
	25	12,5	10,3	9,77	8,14	6,87	5,60	2,84	3,02	3,07	3,19	3,26	3,36
	30	11,8	9,76	9,24	7,68	6,47	5,25	2,50	2,65	2,68	2,76	2,80	2,86
	35	11,0	9,18	8,69	7,24	6,10	4,96	2,33	2,43	2,45	2,50	2,52	2,54
	40	10,3	8,58	8,14	6,81	5,78	4,74	1,88	1,97	1,99	2,03	2,04	2,07
	45	9,51	7,97	7,59	6,42	5,51	4,60	1,61	1,70	1,71	1,75	1,77	1,80
7	20	13,9	11,5	10,9	9,08	7,65	6,21	3,41	3,68	3,76	3,96	4,08	4,26
	25	13,2	10,9	10,3	8,56	7,17	5,78	2,99	3,22	3,27	3,41	3,49	3,60
	30	12,5	10,3	9,78	8,08	6,75	5,42	2,64	2,82	2,85	2,95	2,99	3,06
	35	11,7	9,74	9,21	7,62	6,37	5,13	2,41	2,54	2,56	2,62	2,64	2,67
	40	10,9	9,11	8,63	7,18	6,04	4,90	1,98	2,10	2,12	2,16	2,18	2,21
	45	10,1	8,48	8,06	6,77	5,77	4,77	1,70	1,81	1,83	1,87	1,90	1,93
12	20	15,9	13,2	12,4	10,2	8,46	6,71	3,86	4,26	4,36	4,61	4,75	4,96
	25	15,0	12,5	11,8	9,62	7,93	6,23	3,38	3,71	3,78	3,95	4,05	4,18
	30	14,2	11,8	11,1	9,07	7,46	5,84	2,98	3,24	3,29	3,41	3,47	3,55
	35	13,3	11,1	10,5	8,56	7,05	5,53	2,59	2,81	2,84	2,92	2,96	3,01
	40	12,5	10,5	9,86	8,09	6,70	5,31	2,24	2,42	2,45	2,51	2,53	2,57
	45	11,6	9,76	9,23	7,65	6,42	5,18	1,93	2,09	2,11	2,17	2,20	2,25
15	20	17,0	14,2	13,5	11,2	9,42	7,64	4,12	4,60	4,71	5,01	5,19	5,45
	25	16,1	13,5	12,8	10,6	8,83	7,10	3,57	3,96	4,04	4,25	4,38	4,56
	30	15,2	12,8	12,1	9,96	8,31	6,65	3,11	3,43	3,48	3,63	3,72	3,84
	35	14,3	12,0	11,4	9,41	7,86	6,31	2,70	2,96	3,00	3,10	3,16	3,24
	40	13,4	11,3	10,7	8,89	7,48	6,05	2,33	2,55	2,57	2,65	2,70	2,76
	45	12,4	10,6	10,0	8,43	7,17	5,91	2,00	2,19	2,22	2,29	2,34	2,41
18	20	18,4	15,4	14,6	12,2	10,4	8,53	4,36	4,91	5,04	5,43	5,68	6,03
	25	17,4	14,6	13,8	11,5	9,73	7,93	3,81	4,26	4,36	4,64	4,82	5,07
	30	16,5	13,8	13,1	10,9	9,16	7,43	3,35	3,71	3,78	3,98	4,11	4,28
	35	15,5	13,0	12,3	10,3	8,66	7,04	3,01	3,33	3,38	3,53	3,61	3,72
	40	14,5	12,3	11,6	9,74	8,26	6,77	2,53	2,78	2,82	2,93	3,01	3,11
	45	13,6	11,5	10,9	9,25	7,94	6,63	2,19	2,40	2,44	2,55	2,62	2,72

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

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Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	8,12	7,22	5,42	3,63	2,73	2,01	2,06	2,21	2,49	2,86
	-10/-10,5	10,0	8,97	6,90	4,84	3,81	2,49	2,53	2,62	2,77	2,91
	-7/-8	10,6	9,59	7,61	5,64	4,66	2,63	2,67	2,77	2,91	3,02
	0/-0,6	12,3	11,2	9,09	6,95	5,88	3,07	3,12	3,23	3,39	3,52
	2/1,1	13,1	12,0	9,69	7,41	6,27	3,28	3,33	3,46	3,63	3,77
	7/6	16,6	15,3	12,8	10,3	9,08	4,16	4,23	4,39	4,61	4,77
	12/10,2	18,7	17,2	14,2	11,3	9,82	4,71	4,79	4,99	5,25	5,46
	15/13	20,4	18,7	15,4	12,1	10,5	5,14	5,23	5,46	5,75	5,98
	20/16	23,2	21,3	17,4	13,5	11,6	5,86	5,98	6,25	6,62	6,90
35	-20/-20,1	6,60	5,87	4,41	2,95	2,22	1,54	1,58	1,67	1,83	2,02
	-10/-10,5	9,67	8,67	6,67	4,68	3,68	2,24	2,28	2,37	2,48	2,58
	-7/-8	10,6	9,60	7,62	5,65	4,67	2,45	2,49	2,59	2,70	2,80
	0/-0,6	12,5	11,4	9,24	7,07	5,98	2,87	2,92	3,04	3,18	3,30
	2/1,1	13,3	12,1	9,80	7,49	6,34	3,04	3,10	3,22	3,37	3,50
	7/6	16,5	15,3	12,8	10,3	9,06	3,78	3,85	4,02	4,21	4,36
	12/10,2	18,6	17,1	14,2	11,2	9,77	4,24	4,33	4,52	4,76	4,94
	15/13	20,1	18,5	15,2	12,0	10,4	4,59	4,69	4,90	5,16	5,36
	20/16	22,7	20,8	17,0	13,2	11,4	5,17	5,29	5,54	5,86	6,10
45	-20/-20,1	5,78	5,13	3,86	2,58	1,94	1,15	1,19	1,26	1,39	1,54
	-10/-10,5	9,32	8,36	6,43	4,51	3,55	1,81	1,85	1,94	2,05	2,16
	-7/-8	10,4	9,42	7,48	5,54	4,58	2,00	2,05	2,14	2,26	2,37
	0/-0,6	12,6	11,5	9,34	7,14	6,04	2,39	2,45	2,57	2,71	2,83
	2/1,1	13,3	12,1	9,80	7,49	6,34	2,50	2,56	2,68	2,84	2,97
	7/6	16,2	15,0	12,5	10,1	8,87	3,02	3,09	3,25	3,43	3,58
	12/10,2	18,0	16,5	13,7	10,9	9,45	3,33	3,41	3,60	3,82	3,99
	15/13	19,5	17,9	14,7	11,6	10,0	3,59	3,68	3,88	4,12	4,32
	20/16	22,0	20,1	16,5	12,8	11,0	4,02	4,13	4,36	4,65	4,88
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	9,06	8,12	6,25	4,38	3,45	1,46	1,48	1,53	1,60	1,66
	-7/-8	9,86	8,94	7,10	5,26	4,34	1,57	1,60	1,65	1,72	1,78
	0/-0,6	11,5	10,5	8,51	6,51	5,51	1,80	1,83	1,90	1,98	2,05
	2/1,1	12,2	11,1	9,01	6,89	5,83	1,89	1,93	2,00	2,08	2,16
	7/6	15,2	14,0	11,7	9,45	8,31	2,33	2,38	2,47	2,58	2,66
	12/10,2	16,9	15,6	12,9	10,2	8,90	2,58	2,63	2,74	2,87	2,97
	15/13	18,2	16,7	13,8	10,9	9,39	2,77	2,82	2,93	3,07	3,18
	20/16	20,4	18,7	15,3	11,9	10,2	3,07	3,13	3,26	3,42	3,55
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	8,93	8,01	6,16	4,32	3,40	1,29	1,30	1,34	1,39	1,43
	-7/-8	9,60	8,70	6,91	5,12	4,23	1,38	1,39	1,43	1,48	1,52
	0/-0,6	11,0	10,0	8,10	6,19	5,24	1,55	1,57	1,62	1,67	1,71
	2/1,1	11,7	10,6	8,61	6,59	5,57	1,65	1,67	1,72	1,77	1,82
	7/6	14,6	13,5	11,3	9,13	8,03	2,05	2,08	2,15	2,22	2,27
	12/10,2	16,4	15,1	12,5	9,91	8,62	2,28	2,31	2,39	2,47	2,54
	15/13	17,6	16,2	13,3	10,5	9,07	2,43	2,47	2,55	2,64	2,71
	20/16	19,6	18,0	14,7	11,4	9,81	2,68	2,73	2,82	2,93	3,01

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	17,3	15,9	13,5	11,4	9,95	8,53	3,91	4,12	4,51	4,90	5,20	5,66
	25	16,4	15,0	12,7	10,6	9,27	7,90	3,37	3,52	3,79	4,07	4,28	4,59
	30	15,5	14,2	12,0	10,0	8,71	7,39	2,92	3,02	3,22	3,40	3,55	3,76
	35	14,5	13,3	11,2	9,41	8,19	6,96	2,51	2,58	2,71	2,84	2,94	3,08
	40	13,3	12,2	10,4	8,74	7,65	6,56	2,12	2,17	2,27	2,36	2,43	2,52
	45	12,1	11,2	9,57	8,18	7,24	6,29	1,78	1,82	1,90	1,98	2,04	2,11
7	20	18,4	16,9	14,2	11,9	10,4	8,80	4,11	4,34	4,77	5,21	5,56	6,11
	25	17,5	16,0	13,4	11,2	9,65	8,14	3,55	3,71	4,01	4,32	4,57	4,95
	30	16,5	15,1	12,6	10,5	9,06	7,61	3,08	3,19	3,40	3,62	3,79	4,04
	35	15,5	14,1	11,8	9,85	8,51	7,17	2,65	2,73	2,87	3,02	3,14	3,30
	40	14,2	13,0	10,9	9,17	7,96	6,76	2,23	2,29	2,40	2,50	2,58	2,70
	45	13,0	11,9	10,2	8,61	7,57	6,52	1,88	1,93	2,02	2,11	2,17	2,26
12	20	21,3	19,4	16,1	13,3	11,4	9,47	4,61	4,89	5,43	5,99	6,46	7,25
	25	20,2	18,4	15,2	12,5	10,6	8,74	3,98	4,18	4,57	4,96	5,30	5,84
	30	19,1	17,3	14,3	11,7	9,95	8,17	3,46	3,60	3,87	4,15	4,38	4,74
	35	17,8	16,2	13,4	11,0	9,32	7,68	2,99	3,09	3,28	3,47	3,63	3,87
	40	16,4	14,9	12,4	10,2	8,75	7,27	2,52	2,59	2,73	2,86	2,97	3,14
	45	15,1	13,8	11,6	9,70	8,40	7,09	2,13	2,20	2,31	2,43	2,51	2,64
15	20	23,1	21,1	17,8	14,9	12,9	11,0	4,78	5,09	5,67	6,28	6,78	7,60
	25	21,9	20,0	16,8	13,9	12,0	10,1	4,14	4,35	4,77	5,20	5,56	6,12
	30	20,7	18,9	15,8	13,1	11,3	9,47	3,59	3,75	4,04	4,35	4,59	4,97
	35	19,2	17,5	14,7	12,2	10,5	8,84	3,05	3,16	3,37	3,58	3,75	4,00
	40	17,8	16,3	13,7	11,5	9,94	8,42	2,62	2,70	2,85	3,00	3,12	3,30
	45	16,6	15,2	12,9	10,9	9,61	8,26	2,25	2,32	2,45	2,57	2,67	2,81
18	20	24,9	22,8	19,3	16,3	14,3	12,3	4,97	5,32	6,00	6,70	7,28	8,20
	25	23,5	21,6	18,2	15,3	13,3	11,3	4,29	4,55	5,04	5,54	5,95	6,59
	30	22,2	20,3	17,1	14,3	12,4	10,5	3,72	3,90	4,26	4,62	4,90	5,35
	35	20,6	18,9	15,9	13,4	11,6	9,88	3,18	3,31	3,57	3,82	4,02	4,32
	40	19,2	17,6	14,9	12,6	11,0	9,42	2,72	2,83	3,02	3,21	3,35	3,56
	45	18,0	16,6	14,2	12,1	10,7	9,32	2,36	2,45	2,62	2,77	2,89	3,06

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 91 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	9,16	8,29	6,14	4,16	3,18	2,00	2,05	2,17	2,37	2,60
	-10/-10,5	11,3	10,3	7,76	5,48	4,34	2,47	2,51	2,59	2,70	2,80
	-7/-8	11,9	10,9	8,50	6,30	5,21	2,61	2,65	2,74	2,85	2,94
	0/-0,6	14,2	13,2	10,4	7,97	6,74	3,13	3,18	3,29	3,43	3,55
	2/1,1	15,0	13,9	11,0	8,42	7,12	3,31	3,36	3,48	3,63	3,75
	7/6	18,6	17,2	14,1	11,3	9,92	4,09	4,17	4,33	4,53	4,67
	12/10,2	20,8	19,2	15,6	12,3	10,68	4,59	4,68	4,88	5,11	5,29
	15/13	22,5	20,8	16,8	13,2	11,3	4,97	5,07	5,29	5,55	5,74
	20/16	25,4	23,4	18,8	14,6	12,4	5,60	5,73	5,99	6,31	6,54
35	-20/-20,1	8,01	7,25	5,36	3,64	2,78	1,65	1,69	1,78	1,91	2,04
	-10/-10,5	11,0	9,98	7,55	5,33	4,22	2,23	2,27	2,36	2,44	2,52
	-7/-8	11,8	10,85	8,46	6,28	5,19	2,41	2,45	2,54	2,64	2,72
	0/-0,6	13,7	12,6	10,0	7,64	6,46	2,75	2,79	2,91	3,03	3,13
	2/1,1	14,6	13,5	10,7	8,15	6,89	2,93	2,98	3,11	3,24	3,35
	7/6	18,4	17,1	14,0	11,2	9,84	3,69	3,77	3,94	4,12	4,26
	12/10,2	20,7	19,1	15,5	12,3	10,6	4,14	4,22	4,43	4,65	4,81
	15/13	22,2	20,5	16,6	13,0	11,2	4,43	4,53	4,75	4,99	5,17
	20/16	24,8	22,9	18,4	14,2	12,2	4,92	5,03	5,29	5,57	5,79
45	-20/-20,1	7,34	6,64	4,91	3,33	2,54	1,28	1,31	1,39	1,51	1,63
	-10/-10,5	10,8	9,85	7,45	5,26	4,17	1,83	1,86	1,95	2,05	2,15
	-7/-8	11,9	10,9	8,48	6,29	5,20	1,98	2,02	2,13	2,23	2,33
	0/-0,6	14,1	13,0	10,3	7,86	6,65	2,29	2,34	2,46	2,60	2,71
	2/1,1	14,9	13,7	10,9	8,32	7,04	2,42	2,46	2,60	2,74	2,87
	7/6	18,5	17,2	14,1	11,3	9,90	2,97	3,04	3,22	3,40	3,55
	12/10,2	20,6	19,0	15,5	12,2	10,6	3,28	3,36	3,55	3,77	3,94
	15/13	22,1	20,4	16,5	12,9	11,1	3,50	3,58	3,80	4,03	4,22
	20/16	24,7	22,7	18,2	14,1	12,1	3,86	3,96	4,21	4,48	4,70
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	10,5	9,57	7,26	5,14	4,08	1,46	1,48	1,54	1,61	1,67
	-7/-8	11,5	10,6	8,25	6,14	5,08	1,58	1,61	1,68	1,75	1,81
	0/-0,6	13,7	12,6	10,0	7,67	6,49	1,84	1,86	1,94	2,03	2,10
	2/1,1	14,4	13,3	10,6	8,07	6,83	1,91	1,94	2,03	2,12	2,20
	7/6	17,7	16,4	13,5	10,80	9,47	2,33	2,38	2,49	2,60	2,69
	12/10,2	19,5	18,0	14,6	11,6	10,0	2,55	2,60	2,72	2,85	2,96
	15/13	20,8	19,1	15,5	12,2	10,51	2,70	2,76	2,89	3,03	3,14
	20/16	23,0	21,1	17,0	13,2	11,3	2,95	3,01	3,16	3,32	3,45
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	10,6	9,66	7,32	5,19	4,12	1,32	1,34	1,38	1,43	1,47
	-7/-8	11,6	10,6	8,30	6,17	5,11	1,44	1,45	1,50	1,55	1,59
	0/-0,6	13,7	12,6	10,0	7,66	6,48	1,66	1,68	1,74	1,80	1,85
	2/1,1	14,4	13,3	10,6	8,07	6,83	1,74	1,76	1,82	1,89	1,94
	7/6	17,7	16,3	13,4	10,8	9,47	2,13	2,16	2,24	2,32	2,38
	12/10,2	19,5	18,0	14,6	11,6	10,0	2,33	2,36	2,45	2,55	2,62
	15/13	20,8	19,2	15,5	12,2	10,5	2,47	2,51	2,60	2,70	2,78
	20/16	23,0	21,1	17,0	13,2	11,3	2,70	2,74	2,85	2,97	3,06

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	18,8	17,2	14,8	12,3	10,6	8,90	3,92	4,12	4,47	4,87	5,19	5,68
	25	17,9	16,3	14,0	11,6	9,95	8,27	3,38	3,53	3,78	4,06	4,28	4,62
	30	17,0	15,5	13,2	11,0	9,38	7,78	2,93	3,04	3,22	3,41	3,57	3,80
	35	15,8	14,5	12,4	10,3	8,79	7,30	2,51	2,59	2,71	2,85	2,95	3,10
	40	14,5	13,3	11,4	9,54	8,21	6,87	2,12	2,18	2,27	2,36	2,44	2,54
	45	13,2	12,2	10,5	8,91	7,76	6,60	1,79	1,84	1,92	2,00	2,06	2,15
7	20	20,0	18,3	15,6	13,0	11,1	9,19	4,08	4,30	4,69	5,14	5,50	6,08
	25	19,0	17,4	14,8	12,2	10,4	8,54	3,53	3,70	3,98	4,29	4,55	4,95
	30	18,0	16,5	14,0	11,5	9,77	8,01	3,07	3,20	3,40	3,61	3,79	4,06
	35	16,8	15,4	13,1	10,8	9,15	7,52	2,64	2,73	2,87	3,02	3,14	3,32
	40	15,4	14,1	12,1	10,0	8,56	7,09	2,22	2,30	2,40	2,51	2,59	2,72
	45	14,1	13,0	11,2	9,40	8,12	6,85	1,88	1,95	2,03	2,12	2,19	2,30
12	20	23,1	21,1	17,8	14,6	12,3	9,93	4,47	4,75	5,24	5,80	6,27	7,09
	25	21,9	20,0	16,8	13,7	11,4	9,20	3,90	4,13	4,47	4,87	5,20	5,77
	30	20,7	18,9	15,9	12,9	10,8	8,61	3,42	3,60	3,84	4,12	4,35	4,73
	35	19,3	17,7	14,9	12,1	10,1	8,08	2,94	3,08	3,25	3,44	3,60	3,85
	40	17,7	16,3	13,8	11,2	9,44	7,65	2,49	2,60	2,73	2,87	2,98	3,15
	45	16,4	15,1	12,9	10,6	9,04	7,46	2,11	2,21	2,32	2,43	2,53	2,67
15	20	25,2	23,1	19,8	16,4	14,0	11,6	4,78	5,12	5,66	6,28	6,81	7,69
	25	23,8	21,8	18,6	15,3	13,0	10,7	4,09	4,35	4,73	5,17	5,54	6,14
	30	22,3	20,5	17,4	14,3	12,1	9,91	3,51	3,71	3,98	4,29	4,54	4,95
	35	20,8	19,1	16,3	13,4	11,3	9,30	3,01	3,17	3,36	3,57	3,75	4,02
	40	19,3	17,7	15,1	12,5	10,7	8,84	2,58	2,70	2,85	3,00	3,13	3,32
	45	18,0	16,6	14,3	12,0	10,3	8,69	2,23	2,33	2,46	2,59	2,70	2,85
18	20	27,0	24,8	21,3	17,8	15,3	12,8	4,95	5,33	5,96	6,69	7,30	8,31
	25	25,5	23,4	20,0	16,7	14,3	11,9	4,27	4,56	5,02	5,55	5,98	6,69
	30	24,1	22,1	18,9	15,6	13,4	11,1	3,70	3,92	4,26	4,63	4,93	5,43
	35	22,5	20,6	17,6	14,7	12,5	10,4	3,19	3,37	3,62	3,88	4,10	4,44
	40	20,8	19,1	16,4	13,7	11,8	9,86	2,72	2,86	3,04	3,24	3,40	3,63
	45	19,6	18,1	15,6	13,2	11,5	9,78	2,36	2,49	2,64	2,82	2,95	3,14

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 101 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	10,4	9,51	7,32	5,01	3,85	1,89	1,95	2,07	2,23	2,40
	-10/-10,5	13,1	12,1	9,45	6,68	5,30	2,38	2,46	2,57	2,67	2,77
	-7/-8	13,9	12,8	10,2	7,49	6,16	2,53	2,61	2,73	2,84	2,94
	0/-0,6	16,5	15,4	12,5	9,48	7,96	3,01	3,08	3,21	3,36	3,48
	2/1,1	17,4	16,2	13,2	9,98	8,38	3,17	3,25	3,39	3,55	3,68
	7/6	21,4	19,2	15,5	12,3	10,7	3,89	4,02	4,22	4,41	4,55
	12/10,2	23,8	21,6	17,4	13,6	11,7	4,32	4,51	4,77	4,99	5,17
	15/13	25,7	23,3	18,8	14,6	12,5	4,65	4,87	5,16	5,41	5,60
	20/16	28,9	26,3	21,1	16,2	13,8	5,19	5,46	5,82	6,12	6,35
35	-20/-20,1	8,53	7,78	5,98	4,09	3,15	1,46	1,49	1,57	1,67	1,79
	-10/-10,5	12,7	11,7	9,16	6,47	5,14	2,15	2,20	2,30	2,40	2,49
	-7/-8	14,0	12,8	10,2	7,51	6,18	2,36	2,42	2,52	2,63	2,73
	0/-0,6	16,7	15,5	12,6	9,50	7,98	2,78	2,82	2,95	3,09	3,22
	2/1,1	17,6	16,3	13,2	10,0	8,40	2,92	2,97	3,10	3,26	3,39
	7/6	21,6	19,6	16,0	12,6	10,98	3,57	3,69	3,90	4,10	4,25
	12/10,2	24,0	21,7	17,5	13,7	11,8	3,95	4,09	4,32	4,55	4,73
	15/13	26,0	23,5	18,9	14,7	12,5	4,24	4,40	4,67	4,92	5,11
	20/16	29,1	26,4	21,2	16,3	13,8	4,72	4,92	5,24	5,54	5,77
45	-20/-20,1	8,83	8,05	6,17	4,22	3,25	1,33	1,35	1,43	1,53	1,65
	-10/-10,5	12,2	11,2	8,74	6,18	4,90	1,77	1,81	1,89	2,00	2,09
	-7/-8	13,2	12,1	9,58	7,07	5,81	1,90	1,94	2,03	2,14	2,24
	0/-0,6	15,3	14,2	11,5	8,70	7,30	2,14	2,17	2,27	2,41	2,53
	2/1,1	16,3	15,1	12,2	9,25	7,76	2,27	2,30	2,41	2,55	2,68
	7/6	20,4	18,6	15,2	12,0	10,5	2,81	2,91	3,10	3,29	3,44
	12/10,2	22,8	20,6	16,6	12,9	11,1	3,10	3,19	3,39	3,61	3,78
	15/13	24,4	22,1	17,8	13,8	11,8	3,30	3,41	3,63	3,86	4,05
	20/16	27,2	24,6	19,7	15,1	12,8	3,63	3,76	4,02	4,28	4,51
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	12,1	11,0	8,57	6,06	4,81	1,43	1,45	1,51	1,57	1,63
	-7/-8	13,1	11,9	9,37	6,91	5,69	1,53	1,56	1,62	1,69	1,75
	0/-0,6	15,1	13,9	11,2	8,49	7,12	1,73	1,74	1,81	1,89	1,96
	2/1,1	16,0	14,7	11,9	8,98	7,54	1,81	1,83	1,89	1,98	2,06
	7/6	19,9	17,8	14,4	11,4	9,89	2,23	2,28	2,39	2,51	2,59
	12/10,2	22,0	19,7	15,8	12,3	10,6	2,44	2,50	2,63	2,75	2,86
	15/13	23,5	21,1	16,8	13,0	11,2	2,58	2,66	2,79	2,93	3,04
	20/16	25,9	23,3	18,6	14,2	12,1	2,82	2,91	3,07	3,23	3,35
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	11,9	10,8	8,35	5,90	4,68	1,25	1,27	1,31	1,35	1,39
	-7/-8	13,1	11,8	9,31	6,87	5,65	1,38	1,40	1,44	1,49	1,53
	0/-0,6	15,7	14,4	11,5	8,73	7,33	1,65	1,66	1,71	1,77	1,82
	2/1,1	16,4	15,0	12,1	9,13	7,66	1,68	1,70	1,74	1,81	1,86
	7/6	19,8	17,7	14,2	11,2	9,73	2,03	2,06	2,14	2,22	2,28
	12/10,2	21,7	19,4	15,5	12,1	10,4	2,20	2,25	2,34	2,43	2,50
	15/13	23,2	20,7	16,5	12,8	10,9	2,33	2,39	2,49	2,58	2,66
	20/16	25,6	22,9	18,2	14,0	11,9	2,54	2,62	2,74	2,84	2,93

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	22,1	20,2	15,8	14,3	12,4	10,4	3,45	3,60	4,08	4,30	4,61	4,95
	25	20,8	19,2	15,0	13,5	11,6	9,7	2,97	3,09	3,47	3,62	3,84	4,08
	30	19,6	18,0	14,1	12,8	11,0	9,14	2,56	2,67	2,96	3,07	3,22	3,38
	35	18,2	16,8	13,2	11,9	10,3	8,58	2,20	2,27	2,48	2,55	2,65	2,76
	40	16,7	15,4	12,2	11,0	9,53	8,02	1,86	1,93	2,11	2,16	2,24	2,32
	45	15,3	14,2	11,3	10,3	8,97	7,65	1,59	1,65	1,80	1,85	1,91	1,98
7	20	23,6	21,8	17,0	15,4	13,2	11,0	3,59	3,78	4,36	4,60	4,95	5,35
	25	22,3	20,6	16,1	14,5	12,4	10,3	3,10	3,26	3,71	3,88	4,13	4,41
	30	21,0	19,4	15,2	13,7	11,7	9,67	2,68	2,82	3,17	3,29	3,46	3,65
	35	19,5	18,1	14,2	12,8	10,9	9,06	2,30	2,41	2,66	2,75	2,86	3,00
	40	17,9	16,6	13,1	11,9	10,2	8,49	1,95	2,05	2,27	2,33	2,41	2,51
	45	16,6	15,4	12,3	11,1	9,64	8,15	1,67	1,75	1,93	1,99	2,06	2,14
12	20	27,5	25,5	20,0	18,0	15,2	12,5	3,96	4,25	5,05	5,36	5,82	6,36
	25	26,0	24,2	19,0	17,0	14,3	11,7	3,43	3,67	4,30	4,53	4,85	5,23
	30	24,4	22,8	18,0	16,0	13,5	11,0	2,98	3,19	3,68	3,84	4,07	4,33
	35	22,7	21,2	16,8	15,0	12,6	10,3	2,56	2,74	3,13	3,24	3,40	3,58
	40	20,9	19,6	15,6	13,9	11,8	9,67	2,18	2,33	2,65	2,73	2,85	2,98
	45	19,6	18,3	14,7	13,2	11,3	9,40	1,86	1,99	2,26	2,33	2,43	2,54
15	20	29,8	27,7	21,9	19,8	17,0	14,1	4,02	4,35	5,26	5,61	6,11	6,71
	25	28,1	26,2	20,8	18,7	16,0	13,2	3,50	3,79	4,51	4,75	5,11	5,54
	30	26,4	24,7	19,7	17,7	15,1	12,4	3,05	3,30	3,87	4,05	4,30	4,60
	35	24,5	22,9	18,3	16,5	14,0	11,6	2,61	2,82	3,27	3,39	3,57	3,77
	40	22,7	21,3	17,1	15,4	13,2	11,0	2,24	2,42	2,79	2,88	3,01	3,15
	45	21,7	20,3	16,4	14,9	12,9	10,9	1,99	2,14	2,46	2,54	2,66	2,78
18	20	32,0	29,6	23,4	21,3	18,4	15,4	4,20	4,55	5,54	5,95	6,54	7,22
	25	30,2	28,0	22,2	20,1	17,3	14,4	3,66	3,95	4,74	5,03	5,45	5,95
	30	28,3	26,4	21,0	18,9	16,2	13,5	3,18	3,44	4,06	4,27	4,58	4,92
	35	26,2	24,4	19,4	17,6	15,1	12,6	2,72	2,95	3,46	3,62	3,83	4,08
	40	24,5	22,8	18,3	16,6	14,3	12,0	2,36	2,54	2,95	3,06	3,23	3,41
	45	24,0	22,4	18,1	16,5	14,3	12,2	2,13	2,29	2,65	2,76	2,91	3,07

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 121 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	11,2	10,2	7,73	5,26	4,04	1,81	1,85	1,90	1,93	1,96
	-10/-10,5	15,0	13,8	10,6	7,49	5,93	2,34	2,40	2,43	2,42	2,41
	-7/-8	16,1	14,8	11,6	8,57	7,05	2,49	2,55	2,60	2,61	2,61
	0/-0,6	19,7	18,4	14,7	11,2	9,38	2,99	3,04	3,11	3,15	3,18
	2/1,1	21,0	19,5	15,7	11,9	9,98	3,17	3,23	3,30	3,34	3,38
	7/6	26,4	23,7	19,2	15,3	13,3	3,94	4,04	4,14	4,21	4,26
	12/10,2	29,7	26,9	21,7	17,0	14,6	4,39	4,54	4,67	4,76	4,83
	15/13	32,0	29,0	23,4	18,2	15,5	4,71	4,89	5,04	5,13	5,20
	20/16	35,9	32,6	26,1	20,1	17,1	5,24	5,46	5,64	5,76	5,84
35	-20/-20,1	7,30	6,64	5,01	3,41	2,62	1,05	1,07	1,10	1,11	1,13
	-10/-10,5	14,0	12,8	9,85	6,95	5,50	1,96	1,99	2,03	2,04	2,04
	-7/-8	16,0	14,6	11,5	8,45	6,95	2,22	2,26	2,31	2,34	2,36
	0/-0,6	20,3	18,8	15,1	11,4	9,58	2,76	2,79	2,87	2,93	2,98
	2/1,1	21,3	19,8	15,9	12,0	10,1	2,90	2,93	3,01	3,08	3,13
	7/6	26,3	23,8	19,4	15,4	13,4	3,52	3,61	3,74	3,83	3,90
	12/10,2	29,2	26,4	21,2	16,4	13,9	3,88	4,00	4,14	4,24	4,31
	15/13	31,5	28,4	22,9	17,8	15,2	4,17	4,29	4,45	4,56	4,65
	20/16	35,4	31,9	25,8	20,2	17,4	4,65	4,78	4,95	5,08	5,18
45	-20/-20,1	8,13	7,38	5,57	3,79	2,91	0,98	0,99	1,03	1,07	1,11
	-10/-10,5	14,2	13,0	10,0	7,05	5,58	1,67	1,70	1,75	1,79	1,82
	-7/-8	16,0	14,6	11,5	8,47	6,97	1,88	1,90	1,97	2,02	2,07
	0/-0,6	19,9	18,4	14,8	11,2	9,40	2,29	2,31	2,39	2,48	2,55
	2/1,1	21,0	19,4	15,6	11,8	9,90	2,40	2,42	2,51	2,60	2,67
	7/6	25,8	23,5	19,2	15,2	13,2	2,92	3,00	3,14	3,27	3,36
	12/10,2	28,6	25,7	20,8	16,2	14,0	3,20	3,27	3,42	3,55	3,66
	15/13	30,7	27,7	22,3	17,3	14,8	3,42	3,50	3,67	3,81	3,92
	20/16	34,3	31,0	24,8	19,0	16,2	3,77	3,88	4,07	4,24	4,37
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	13,9	12,6	9,66	6,81	5,39	1,30	1,32	1,36	1,38	1,40
	-7/-8	15,4	13,9	10,9	8,04	6,61	1,45	1,47	1,51	1,54	1,57
	0/-0,6	18,6	17,1	13,6	10,3	8,68	1,75	1,76	1,81	1,86	1,90
	2/1,1	19,6	18,0	14,4	10,9	9,13	1,79	1,80	1,86	1,91	1,95
	7/6	24,0	21,5	17,4	13,8	12,0	2,18	2,23	2,31	2,38	2,43
	12/10,2	26,4	23,6	19,0	14,9	12,8	2,38	2,43	2,52	2,59	2,66
	15/13	28,2	25,3	20,3	15,7	13,5	2,53	2,58	2,68	2,76	2,83
	20/16	31,3	28,0	22,4	17,2	14,6	2,76	2,84	2,95	3,04	3,12
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	14,3	12,9	9,91	6,99	5,54	1,23	1,25	1,27	1,29	1,30
	-7/-8	15,6	14,0	11,0	8,09	6,66	1,33	1,35	1,38	1,40	1,41
	0/-0,6	18,2	16,6	13,3	10,0	8,44	1,53	1,54	1,57	1,60	1,63
	2/1,1	19,2	17,5	14,0	10,6	8,90	1,60	1,61	1,64	1,67	1,70
	7/6	23,6	20,9	16,9	13,4	11,7	1,96	1,98	2,03	2,08	2,11
	12/10,2	26,1	23,2	18,7	14,6	12,6	2,16	2,20	2,26	2,31	2,35
	15/13	27,9	24,9	19,9	15,5	13,2	2,32	2,37	2,43	2,49	2,53
	20/16	31,0	27,6	22,0	16,9	14,4	2,59	2,65	2,73	2,79	2,84

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	27,8	25,5	21,4	18,2	15,6	13,1	3,50	3,63	3,93	4,22	4,44	4,66
	25	26,2	24,1	20,2	17,1	14,7	12,2	3,03	3,15	3,38	3,59	3,75	3,90
	30	24,6	22,7	19,1	16,1	13,8	11,5	2,64	2,74	2,92	3,06	3,17	3,27
	35	22,6	20,8	17,6	14,9	12,7	10,6	2,23	2,30	2,43	2,52	2,59	2,66
	40	20,6	19,0	16,1	13,7	11,8	9,86	1,89	1,96	2,08	2,14	2,19	2,24
	45	18,5	17,1	14,5	12,4	10,8	9,19	1,56	1,62	1,71	1,77	1,82	1,86
7	20	29,7	27,3	22,9	19,4	16,6	13,8	3,67	3,84	4,19	4,51	4,76	5,00
	25	27,9	25,7	21,7	18,2	15,5	12,8	3,19	3,34	3,61	3,83	4,01	4,17
	30	26,2	24,2	20,4	17,1	14,5	12,0	2,77	2,90	3,12	3,27	3,39	3,50
	35	24,0	22,2	18,8	15,8	13,5	11,1	2,35	2,45	2,61	2,71	2,79	2,86
	40	21,9	20,3	17,2	14,5	12,4	10,3	1,98	2,07	2,21	2,29	2,34	2,40
	45	19,8	18,4	15,6	13,3	11,5	9,69	1,66	1,73	1,85	1,92	1,97	2,02
12	20	34,3	31,8	26,8	22,4	18,9	15,4	4,11	4,37	4,84	5,23	5,53	5,83
	25	32,1	29,8	25,2	21,0	17,6	14,2	3,57	3,79	4,17	4,45	4,66	4,86
	30	30,0	27,9	23,6	19,6	16,4	13,2	3,10	3,29	3,60	3,79	3,93	4,07
	35	27,6	25,7	21,9	18,2	15,2	12,3	2,64	2,81	3,05	3,18	3,28	3,37
	40	25,1	23,4	20,0	16,7	14,1	11,4	2,21	2,35	2,55	2,65	2,72	2,78
	45	23,1	21,6	18,5	15,5	13,2	10,9	1,90	2,02	2,19	2,28	2,34	2,40
15	20	37,0	34,3	29,1	24,5	21,0	17,4	4,33	4,64	5,20	5,64	5,99	6,34
	25	34,6	32,1	27,3	23,0	19,5	16,1	3,69	3,96	4,41	4,72	4,96	5,21
	30	32,2	30,0	25,5	21,4	18,2	14,9	3,15	3,38	3,74	3,96	4,13	4,30
	35	29,6	27,6	23,6	19,8	16,8	13,8	2,69	2,88	3,18	3,33	3,44	3,56
	40	27,1	25,3	21,7	18,3	15,6	12,9	2,29	2,45	2,69	2,80	2,88	2,97
	45	25,1	23,5	20,2	17,2	14,8	12,5	1,96	2,10	2,31	2,41	2,48	2,56
18	20	40,1	37,0	31,4	26,6	22,9	19,2	4,63	4,96	5,58	6,12	6,55	6,97
	25	37,5	34,7	29,4	24,9	21,3	17,7	3,96	4,24	4,74	5,13	5,43	5,73
	30	34,8	32,3	27,5	23,2	19,8	16,4	3,39	3,63	4,03	4,30	4,52	4,73
	35	32,1	29,8	25,4	21,5	18,4	15,3	2,90	3,12	3,46	3,66	3,81	3,96
	40	29,4	27,4	23,4	19,9	17,1	14,3	2,47	2,64	2,90	3,05	3,17	3,28
	45	27,8	25,9	22,2	19,1	16,6	14,0	2,17	2,32	2,55	2,69	2,80	2,90

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 131 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	12,7	11,5	9,00	6,12	4,68	1,80	1,83	1,86	1,81	1,76
	-10/-10,5	16,8	15,3	12,2	8,56	6,74	2,30	2,35	2,37	2,29	2,22
	-7/-8	18,0	16,4	13,1	9,61	7,85	2,45	2,50	2,53	2,47	2,41
	0/-0,6	23,1	21,4	17,6	13,2	11,0	3,07	3,12	3,16	3,13	3,10
	2/1,1	24,3	22,5	18,5	13,9	11,5	3,21	3,27	3,32	3,28	3,26
	7/6	29,9	26,6	21,2	16,6	14,3	3,89	3,97	4,04	4,02	3,99
	12/10,2	33,1	29,8	23,9	18,5	15,8	4,29	4,42	4,55	4,52	4,49
	15/13	35,7	32,1	25,8	19,8	16,8	4,59	4,75	4,91	4,87	4,84
	20/16	40,0	36,1	28,9	22,0	18,5	5,09	5,30	5,50	5,47	5,43
35	-20/-20,1	8,64	7,81	6,08	4,13	3,16	1,07	1,08	1,09	1,08	1,06
	-10/-10,5	15,9	14,5	11,4	8,03	6,33	1,91	1,94	1,96	1,92	1,89
	-7/-8	18,1	16,4	13,1	9,55	7,80	2,16	2,19	2,22	2,20	2,18
	0/-0,6	22,7	20,9	17,1	12,8	10,7	2,66	2,68	2,72	2,73	2,74
	2/1,1	23,9	22,0	18,0	13,5	11,3	2,79	2,81	2,86	2,87	2,87
	7/6	29,4	26,4	21,3	16,7	14,4	3,38	3,47	3,57	3,59	3,61
	12/10,2	32,6	29,2	23,3	18,0	15,4	3,72	3,81	3,92	3,95	3,96
	15/13	35,2	31,6	25,2	19,4	16,4	3,99	4,11	4,24	4,26	4,27
	20/16	39,5	35,5	28,3	21,5	18,2	4,44	4,59	4,76	4,79	4,80
45	-20/-20,1	12,5	11,3	8,77	5,96	4,56	1,31	1,32	1,35	1,36	1,37
	-10/-10,5	16,5	15,0	11,9	8,32	6,56	1,68	1,70	1,74	1,74	1,74
	-7/-8	17,7	16,0	12,8	9,34	7,63	1,79	1,81	1,85	1,87	1,88
	0/-0,6	21,8	20,0	16,4	12,3	10,2	2,17	2,18	2,22	2,27	2,30
	2/1,1	23,0	21,1	17,2	12,9	10,8	2,27	2,28	2,33	2,38	2,42
	7/6	28,2	25,5	20,7	16,2	14,0	2,75	2,84	2,95	3,02	3,08
	12/10,2	31,2	27,9	22,2	17,2	14,7	3,02	3,08	3,19	3,26	3,31
	15/13	33,5	30,0	23,9	18,4	15,6	3,22	3,30	3,42	3,50	3,55
	20/16	37,4	33,6	26,8	20,3	17,2	3,55	3,66	3,81	3,90	3,96
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	16,2	14,6	11,4	8,02	6,32	1,38	1,40	1,43	1,43	1,43
	-7/-8	17,2	15,5	12,2	8,92	7,28	1,46	1,47	1,50	1,56	1,62
	0/-0,6	20,6	18,8	15,2	11,4	9,50	1,71	1,76	1,84	1,89	1,94
	2/1,1	21,7	19,8	16,0	12,0	10,0	1,79	1,79	1,82	1,84	1,86
	7/6	26,6	23,6	18,7	14,7	12,7	2,17	2,12	2,11	2,25	2,35
	12/10,2	29,2	25,9	20,5	15,8	13,5	2,36	2,40	2,45	2,46	2,46
	15/13	31,2	27,7	21,9	16,8	14,3	2,51	2,56	2,63	2,64	2,65
	20/16	34,5	30,8	24,3	18,5	15,6	2,74	2,82	2,91	2,95	2,98
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	15,5	13,9	10,8	7,60	5,99	1,21	1,22	1,23	1,22	1,21
	-7/-8	18,1	16,2	12,7	9,27	7,57	1,40	1,41	1,42	1,42	1,42
	0/-0,6	20,0	18,2	14,6	11,0	9,14	1,52	1,52	1,53	1,54	1,55
	2/1,1	21,0	19,1	15,4	11,5	9,61	1,59	1,59	1,60	1,61	1,62
	7/6	25,7	22,7	17,8	14,0	12,0	1,92	1,95	1,98	2,00	2,01
	12/10,2	28,2	24,9	19,6	15,2	12,9	2,09	2,13	2,17	2,19	2,21
	15/13	30,1	26,6	20,9	16,1	13,6	2,21	2,26	2,31	2,33	2,34
	20/16	33,1	29,4	23,1	17,5	14,8	2,41	2,47	2,54	2,56	2,58

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	30,9	28,9	23,7	20,4	17,5	14,5	3,35	3,50	3,71	3,91	4,06	4,16
	25	29,0	27,1	22,4	19,3	16,4	13,5	2,88	3,02	3,21	3,34	3,44	3,51
	30	27,1	25,4	21,1	18,1	15,4	12,7	2,49	2,60	2,77	2,86	2,93	2,97
	35	25,1	23,6	19,6	16,9	14,4	11,8	2,14	2,24	2,36	2,42	2,46	2,49
	40	22,7	21,3	17,8	15,4	13,2	10,9	1,79	1,87	1,99	2,04	2,07	2,09
	45	20,4	19,1	16,0	13,9	12,0	10,1	1,48	1,54	1,65	1,69	1,72	1,75
7	20	32,9	30,8	25,4	21,9	18,6	15,3	3,50	3,67	3,96	4,18	4,35	4,47
	25	30,9	29,0	24,1	20,7	17,5	14,3	3,01	3,17	3,43	3,58	3,70	3,78
	30	28,8	27,1	22,7	19,4	16,4	13,4	2,60	2,74	2,97	3,08	3,15	3,20
	35	26,6	25,1	21,0	18,0	15,3	12,5	2,24	2,35	2,52	2,60	2,65	2,67
	40	24,2	22,7	19,1	16,5	14,0	11,5	1,87	1,97	2,14	2,19	2,23	2,25
	45	21,8	20,6	17,3	15,0	12,9	10,7	1,57	1,64	1,78	1,83	1,87	1,90
12	20	37,8	35,7	29,9	25,5	21,4	17,3	3,85	4,10	4,58	4,87	5,09	5,24
	25	35,5	33,5	28,3	24,1	20,1	16,2	3,34	3,56	3,98	4,19	4,34	4,43
	30	33,2	31,3	26,6	22,6	18,9	15,1	2,90	3,09	3,46	3,60	3,70	3,76
	35	30,5	28,8	24,6	20,9	17,5	14,0	2,46	2,62	2,94	3,04	3,11	3,14
	40	27,8	26,3	22,5	19,2	16,1	13,0	2,09	2,22	2,50	2,57	2,62	2,65
	45	25,5	24,1	20,6	17,7	15,0	12,3	1,79	1,89	2,12	2,19	2,24	2,28
15	20	40,7	38,5	32,5	27,9	23,7	19,5	3,99	4,28	4,87	5,21	5,48	5,68
	25	38,2	36,2	30,7	26,3	22,2	18,2	3,43	3,69	4,20	4,45	4,64	4,78
	30	35,6	33,8	28,8	24,7	20,8	17,0	2,96	3,18	3,63	3,80	3,93	4,02
	35	32,7	31,1	26,6	22,8	19,3	15,7	2,53	2,71	3,10	3,22	3,31	3,37
	40	29,8	28,3	24,3	20,9	17,8	14,6	2,13	2,28	2,61	2,70	2,77	2,81
	45	24,7	23,5	20,2	17,5	15,0	12,5	1,64	1,75	2,00	2,07	2,13	2,17
18	20	49,7	47,2	39,5	34,1	29,2	24,2	4,66	5,00	5,72	6,21	6,62	6,96
	25	40,9	38,9	32,7	28,2	24,0	19,8	3,58	3,84	4,37	4,67	4,92	5,12
	30	32,0	30,5	25,7	22,2	18,8	15,5	2,60	2,79	3,17	3,35	3,49	3,60
	35	35,0	33,4	28,3	24,4	20,8	17,1	2,64	2,83	3,26	3,42	3,54	3,64
	40	32,1	30,6	26,0	22,5	19,2	16,0	2,24	2,40	2,73	2,86	2,95	3,03
	45	30,6	29,1	24,8	21,6	18,7	15,7	1,98	2,12	2,41	2,53	2,62	2,70

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

WSN-XIN 141 Performances

Heating

To	Tae (°C) DB/WB	Heating capacity					COP				
°C	°C	100%	90%	70%	50%	40%	100%	90%	70%	50%	40%
30	-20/-20,1	13,7	12,4	9,88	6,73	5,16	1,62	1,65	1,68	1,60	1,53
	-10/-10,5	18,7	17,5	14,2	9,93	7,81	2,15	2,20	2,26	2,16	2,07
	-7/-8	20,2	18,9	15,2	11,0	8,96	2,30	2,35	2,42	2,34	2,27
	0/-0,6	24,9	23,4	19,5	14,5	12,0	2,76	2,85	2,92	2,86	2,81
	2/1,1	26,4	24,8	20,7	15,4	12,7	2,91	3,00	3,08	3,02	2,97
	7/6	33,0	30,7	23,4	18,1	15,5	3,59	3,74	3,83	3,76	3,71
	12/10,2	36,8	33,7	26,2	20,1	17,0	3,97	4,15	4,35	4,26	4,18
	15/13	39,6	36,3	28,4	21,6	18,2	4,24	4,45	4,69	4,59	4,51
	20/16	44,3	40,8	32,1	24,2	20,2	4,68	4,93	5,26	5,15	5,05
35	-20/-20,1	10,9	9,82	7,77	5,29	4,05	1,15	1,16	1,17	1,14	1,10
	-10/-10,5	18,0	16,7	13,5	9,43	7,42	1,86	1,89	1,92	1,86	1,82
	-7/-8	20,1	18,7	14,9	10,8	8,81	2,06	2,09	2,13	2,09	2,05
	0/-0,6	24,6	23,1	19,1	14,2	11,8	2,47	2,52	2,55	2,54	2,52
	2/1,1	26,1	24,5	20,3	15,1	12,5	2,60	2,66	2,69	2,68	2,66
	7/6	32,6	30,3	23,6	18,3	15,7	3,21	3,33	3,45	3,44	3,43
	12/10,2	36,4	33,4	26,0	19,7	16,5	3,53	3,68	3,85	3,81	3,77
	15/13	39,2	35,9	27,9	21,2	17,8	3,79	3,95	4,11	4,08	4,05
	20/16	43,9	40,0	30,9	23,7	20,1	4,21	4,38	4,54	4,53	4,51
45	-20/-20,1	14,7	13,3	10,5	7,12	5,46	1,30	1,31	1,32	1,31	1,31
	-10/-10,5	18,7	17,4	13,9	9,76	7,68	1,61	1,62	1,65	1,65	1,64
	-7/-8	19,9	18,5	14,7	10,7	8,67	1,69	1,72	1,74	1,75	1,76
	0/-0,6	23,8	22,3	18,3	13,6	11,3	1,99	2,02	2,04	2,07	2,10
	2/1,1	25,2	23,6	19,5	14,5	12,0	2,10	2,14	2,15	2,19	2,22
	7/6	31,5	29,3	23,2	18,0	15,4	2,59	2,69	2,83	2,88	2,92
	12/10,2	35,2	32,0	24,7	18,9	16,0	2,86	2,96	3,05	3,10	3,13
	15/13	37,8	34,5	26,7	20,3	17,1	3,04	3,16	3,28	3,33	3,37
	20/16	42,1	38,6	30,1	22,6	18,9	3,34	3,48	3,66	3,72	3,76
55	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	18,4	17,1	13,4	9,40	7,39	1,32	1,36	1,39	1,39	1,38
	-7/-8	19,5	18,1	14,1	10,2	8,33	1,39	1,40	1,41	1,46	1,50
	0/-0,6	22,7	21,2	17,1	12,7	10,6	1,59	1,62	1,71	1,75	1,79
	2/1,1	24,0	22,4	18,1	13,5	11,2	1,61	1,64	1,64	1,67	1,69
	7/6	29,9	27,7	21,0	16,3	13,9	2,06	2,08	1,95	2,06	2,16
	12/10,2	33,1	30,1	22,7	17,4	14,7	2,28	2,36	2,42	2,41	2,39
	15/13	35,3	32,2	24,4	18,6	15,7	2,38	2,47	2,55	2,55	2,55
	20/16	39,0	35,7	27,3	20,5	17,2	2,54	2,64	2,76	2,79	2,81
60	-20/-20,1	-	-	-	-	-	-	-	-	-	-
	-10/-10,5	18,5	17,1	13,4	9,35	7,35	1,21	1,22	1,23	1,22	1,21
	-7/-8	20,1	18,6	14,3	10,4	8,47	1,30	1,32	1,33	1,32	1,32
	0/-0,6	22,3	20,7	16,6	12,3	10,2	1,42	1,44	1,44	1,44	1,45
	2/1,1	23,6	22,0	17,6	13,1	10,8	1,49	1,51	1,51	1,52	1,52
	7/6	29,4	27,2	20,2	15,6	13,4	1,84	1,90	1,92	1,93	1,94
	12/10,2	32,7	29,6	22,2	17,0	14,4	2,03	2,09	2,14	2,15	2,15
	15/13	34,9	31,7	23,9	18,1	15,3	2,15	2,22	2,29	2,30	2,30
	20/16	38,7	35,3	26,7	20,1	16,8	2,35	2,44	2,54	2,55	2,55

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Heating capacity and COP calculated according to EN 14511:2013
ATTENTION: The data of the heat capacity and COP include defrostings.

Cooling

To	Tae	Cooling capacity						EER					
°C	°C	100%	80%	75%	60%	50%	40%	100%	80%	75%	60%	50%	40%
5	20	33,6	31,9	26,2	23,1	19,7	16,3	3,10	3,33	3,63	3,73	3,86	3,92
	25	31,6	29,9	24,7	21,8	18,5	15,3	2,66	2,86	3,12	3,21	3,29	3,33
	30	29,5	28,0	23,2	20,5	17,4	14,3	2,28	2,45	2,69	2,76	2,81	2,83
	35	27,4	26,0	21,6	19,2	16,3	13,4	1,97	2,13	2,31	2,36	2,39	2,40
	40	24,7	23,5	19,5	17,4	14,8	12,3	1,64	1,76	1,92	1,98	2,00	2,00
	45	22,2	21,1	17,5	15,6	13,5	11,3	1,37	1,45	1,58	1,63	1,66	1,67
7	20	35,9	34,2	28,3	25,0	21,2	17,4	3,21	3,46	3,83	3,96	4,12	4,20
	25	33,7	32,0	26,6	23,6	19,9	16,3	2,76	2,98	3,31	3,43	3,53	3,58
	30	31,4	29,9	24,9	22,2	18,7	15,2	2,39	2,57	2,87	2,97	3,03	3,05
	35	29,1	27,7	23,2	20,6	17,4	14,2	2,06	2,22	2,46	2,53	2,57	2,58
	40	26,4	25,1	21,1	18,8	15,9	13,1	1,73	1,85	2,06	2,13	2,16	2,17
	45	23,9	22,7	19,0	17,0	14,6	12,1	1,45	1,54	1,70	1,77	1,80	1,82
12	20	41,7	39,8	33,5	29,8	25,0	20,2	3,46	3,76	4,33	4,56	4,77	4,88
	25	39,0	37,3	31,5	28,1	23,5	18,8	3,03	3,29	3,79	3,99	4,13	4,20
	30	36,3	34,7	29,4	26,3	21,9	17,6	2,65	2,87	3,32	3,48	3,57	3,60
	35	33,4	31,9	27,2	24,4	20,3	16,3	2,26	2,45	2,83	2,97	3,03	3,04
	40	30,5	29,2	24,9	22,3	18,7	15,1	1,93	2,08	2,40	2,52	2,56	2,57
	45	28,0	26,7	22,8	20,5	17,4	14,2	1,64	1,75	2,01	2,11	2,16	2,18
15	20	45,6	43,9	37,2	33,2	28,2	23,1	3,82	4,17	4,89	5,19	5,45	5,61
	25	42,3	40,7	34,7	31,1	26,2	21,4	3,22	3,51	4,13	4,39	4,57	4,67
	30	39,0	37,5	32,1	28,8	24,3	19,7	2,71	2,96	3,49	3,70	3,82	3,88
	35	35,8	34,4	29,5	26,6	22,4	18,2	2,31	2,51	2,96	3,14	3,22	3,26
	40	32,7	31,5	27,1	24,4	20,7	16,9	1,96	2,13	2,51	2,65	2,71	2,75
	45	30,5	29,3	25,2	22,8	19,5	16,1	1,70	1,82	2,14	2,27	2,33	2,37
18	20	48,0	46,8	39,8	35,4	30,2	25,0	3,72	4,10	4,85	5,17	5,52	5,77
	25	44,9	43,7	37,3	33,3	28,3	23,3	3,22	3,54	4,19	4,46	4,71	4,89
	30	41,7	40,6	34,8	31,1	26,4	21,7	2,77	3,05	3,61	3,83	4,01	4,13
	35	38,3	37,3	32,1	28,8	24,4	20,1	2,37	2,59	3,08	3,28	3,41	3,49
	40	35,3	34,4	29,6	26,6	22,7	18,7	2,03	2,22	2,62	2,78	2,88	2,95
	45	33,3	32,5	27,9	25,2	21,6	18,1	1,78	1,93	2,27	2,41	2,50	2,58

To = Leaving internal exchanger water temperature (°C)
Tae [°C]: external exchanger inlet air temperature
Performances in function of the inlet/outlet water temperature differential = 5°C
Cooling capacity and EER calculated according to EN 14511:2013

Seasonal efficiency in accordance with EN 14825

To assess the benefits of heat pumps in terms of lower consumption of primary energy, CO2 emissions and running costs, the EN 14825 standard defines the method to calculate a seasonal performance coefficient in heating mode called SCOP for heat pumps based on three climate ranges:

Colder, Average and Warmer and it identifies a representative area for each one of them:

Helsinki, Strasbourg and Athens are characterized by design temperatures respectively of -22°C, -10°C, 2°C.

The standard defines the method to also calculate the coefficient representative of the seasonal efficiency in cooling mode, called SEER and, in this case, only climate is considered.

Unlike the COP and EER values, which are normally provided by the manufacturers, and relate only to precise and specific operate conditions, the seasonal coefficients of performance summarize the unit performance in a single value considering the temperature variations of the fresh air, the produced water and the degree of partialisation of the compressor.

SCOP

Climatic zone	Average										
Place	Strasbourg										
project T	-10										
Size	21	31	41	51	71	81	91	101	121	131	141
Radiant panels	2,97	2,93	3,18	2,57	2,69	3,07	3,08	3,17	2,87	3,24	3,09
Terminal units	2,44	2,41	2,65	2,16	2,25	2,27	2,58	2,55	2,46	2,30	2,17
Radiators	2,02	2,00	2,11	1,75	1,96	1,91	1,98	1,97	1,83	1,81	1,68

Climatic zone	Warmer										
Place	Athens										
project T	2										
Size	21	31	41	51	71	81	91	101	121	131	141
Radiant panels	3,83	3,73	3,94	3,24	3,39	3,80	3,78	3,88	3,60	3,37	3,19
Terminal units	3,16	3,01	3,16	2,69	2,80	3,08	3,11	3,07	3,03	2,81	2,65
Radiators	2,47	2,45	2,50	2,14	2,23	2,30	2,36	2,34	2,21	2,14	1,99

SEER

	Size										
SEER	21	31	41	51	71	81	91	101	121	131	141
Radiant panels	4,02	4,29	4,61	4,74	4,28	5,15	5,4	5,3	5,06	4,46	4,29
Terminal units	2,89	2,93	3,08	2,94	3,15	3,99	4,06	4,08	3,72	3,36	3,23

Accessories separately supplied

Every accessory is marked with a configuration code, for instance CMMBX.

When the letter X is placed at the end, this means that the accessory is supplied separately. If there is no X in the code, the accessory is mounted in the factory.

AMRX - Rubber antivibration mounts

The rubber antivibration mounts reduce the vibrations of compressor during its operation and they are installed at the base toe.

RCTX - Remote control

The RCTX remote control, is provided with a large and easy to read display. Programming, using only 4 keys, is intuitive and simple.

The display can:

- control the unit's operation
- activate the circulation of the system's water
- set the unit set point water temperature according to time bands

The RCTX also works in "remote control", making it even easier to configure and control the unit's operation.

It can:

- - set the ON/OFF control and mode change (heating/cooling)
- read the information detected by the built-in device, such as parameters and alarms

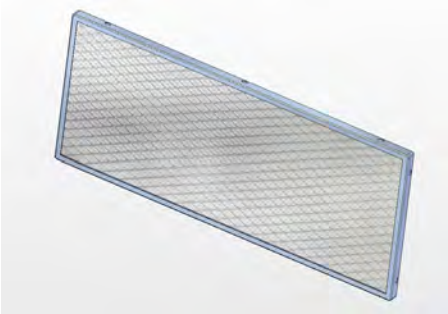
The unit is not activated if the room temperature set point has not been reached, but it is activated if the supply water temperature does not reach the set point programmed when setting the daily or weekly operating schedule.

The thermostat can be controlled at a maximum distance of 100 metres.

1. Clock
2. summer/winter/defrosting operating display
3. Ambient temperature
4. Alarm
5. UP + DOWN: operating time band setting
6. ON/OFF button
7. ESC +SET parameter programming
8. fan operating status (active)
9. compressor operating status (not active)
10. circulator operating status (active)

GMX - Outlet grille

Protection grille to apply to the screw supply outlet as protection of the moving parts if the unit has been installed in an accessible position and not ducted

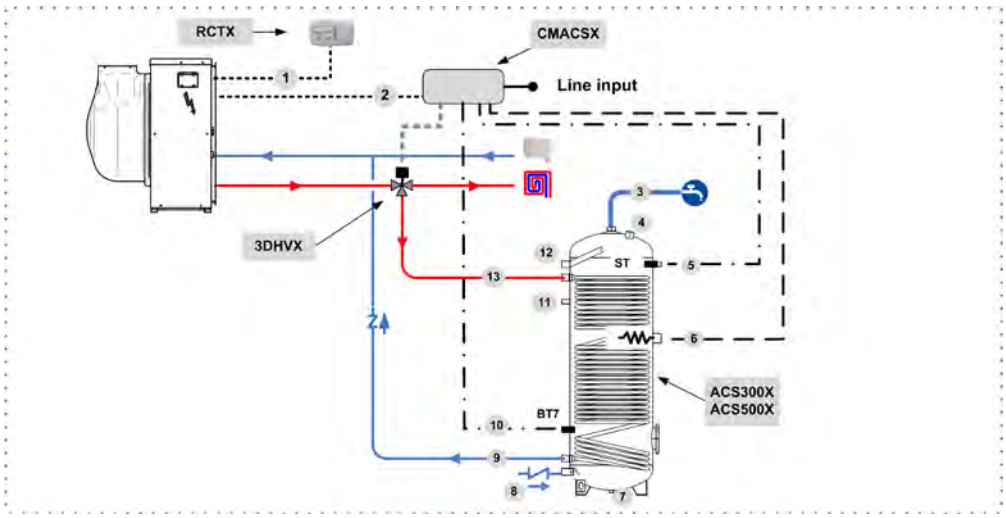


CMACSX - Domestic hot water module

The CMACSX module allows controlling the temperature of the Domestic Hot Water, by means of the temperature probe placed inside the storage tank. The control allows the production of Domestic Hot Water to a specific set-point that can be defined in 4 daily intervals and 3 user profiles. If the temperature of the Domestic Hot Water drops below a preset value (generally 40°C), the unit performs the "mode change" between system and Domestic Hot Water production, driving a diverter valve that switches the flow from the system to the storage tank. The request of DHW production has always the priority over the system and ends if the configured set-point has been reached or the set time for the production of DHW has elapsed. The Anti-legionella function allows removing the Legionella bacteria, which reside in the water storage tank. These bacteria are removed if the water temperature exceeds 60°C for at least 30 consecutive minutes. The anti-legionella function is managed by a different set-point, which is independent from that set for the Domestic Hot Water. This function can be scheduled daily, weekly, at different time intervals.

The adjustment module is provided with:

- a water temperature probe
- a power circuit and resistor control (the resistor is not supplied by Clivet)
- a 15 m length Twisted and Shielded connection cable for RS485 AGW22/24 networks
- an installation box.



1. DHW
2. Anode
3. ST-safety probe
4. ELECTRIC HEATER
5. Blind connection for fasting
6. Waterworks water inlet
7. Return
8. BT7 probe
9. domestic hot water recirculation
10. Supply
11. DHW

A. Room keypad (accessory RCTX)
B. Max. = 100 mt.
Cable section: Min. 0,35 Max.1 mm2
C. Electric heater provided by the customer
D. 3-way valve (accessory 3DHWX)
A+B max 100 mt

CMSC2X - Serial communication module with RS485 serial converter kit

It is a serial communication module (MODBUS) designed to be connected to a supervisor with the standard MODBUS protocol.

Up to 127 units can be connected to a single supervision system.

The serial communication module fitted with the supervisor (MODBUS) is required if the unit is connected to ELFOControl.

Use an RS 485 BUS to connect it to a PC.

KTFL1X - 1" water side hose kit

The kit is composed of: Two hoses, length 300 and diameter 1 ", required for connection of the unit to the system.

This kit can be used for 4 to 15kW heat pumps

KTFL2X - 1" 1/4 water side hose kit

The kit is composed of: Two hoses, length 300 and diameter 1 ¼", required for connection of the unit to the system.

This kit can be used for 16 to 31kW heat pumps

KSAX - 100-litre circuit breaker

Storage in Fe360b and anti-corrosion treatment with organic enamel, 50 mm-thick polyethylene and polyurethane external insulation and a maximum operating pressure of 6 bar.

Diameter 500 Height 900 8 connections.

Suitable for all WSN-XIN sizes.

ACS300X - 300-litre domestic hot water storage tank

Carbon steel storage tank, glass lining process in accordance with DIN 4753.3, external 50 mm rigid polyurethane insulation, 4 sq m exchange coil suitable for heat pumps (max. 10 kW), maximum operating pressure 6 bar, equipped with anodic protection and 2 kW electric heater (single phase) with safety thermostat. Controller not included.

Suitable for sizes 21-51 WSN-XIN

Size of the 300-litre boiler: 600x1615mm

Control not included,see CMACSX option

ACS3SX - 300-litre domestic hot water storage tank with solar coil

Carbon steel storage tank, glass lining process in accordance with DIN 4753.3, external 50 mm rigid polyurethane insulation, upper 3,7 sq m exchange coil suitable for heat pumps (max. 10 kW), lower 1,2 sq m exchange coil for thermal solar panels, maximum operating pressure 6 bar, equipped with anodic protection and 2 kW electric heater (single phase) with safety thermostat.

Suitable for sizes 21-51 WSN-XIN

Size of the 300-litre boiler: 600x1615mm

Control not included,see CMACSX option

ACS500X - 500-litre domestic hot water storage tank

Carbon steel storage tank, glass lining process in accordance with DIN 4753.3, external 50 mm rigid polyurethane insulation, 6 sq m exchange coil suitable for heat pumps (max. 25 kW), maximum working pressure 6 bar, equipped with anodic protection and 3 kW electric heater (single phase) with safety thermostat. Controller not included.

Suitable for sizes 21-101

Size of the 500-litre boiler: 750x1690mm

Control not included,see CMACSX option

ACS5SX - 500-litre domestic hot water storage tank with solar coil

Carbon steel storage tank, glass lining process in accordance with DIN 4753.3, external 50 mm rigid polyurethane insulation, upper 4,9 sq m exchange coil suitable for heat pumps (max. kW), lower 1,8 sq m exchange coil for thermal solar panels, maximum working pressure 6 bar, equipped with anodic protection and 3 kW electric heater (single phase) with safety thermostat. Controller not included.

Suitable for sizes 21-101

Size of the 500-litre boiler: 750x1690mm

Control not included,see CMACSX option

3DHWX - 3-way valve for domestic hot water

The 3-way switching valve for the deviation of the water flow to a DHW heating storage tank is separately supplied.

If the DHW temperature does not reach the set-point, the CMACSX module sends a signal to the unit to produce domestic hot water.

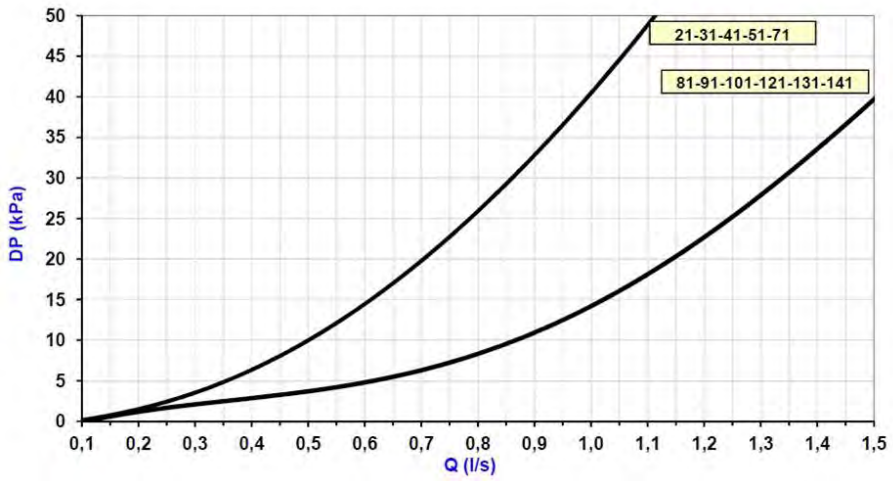
The unit controller closes a digital output to control the flow diverter valve from the installation to the tank till the achievement of the DHW Set-point set in the CMACSX module.

For sizes from 21 to 71 the 3-way valve is of 1"

For sizes from 81 to 141 the 3-way valve is of 1"1/4

It is therefore compulsory for the DHW call management to select the CMACSX option in combination with this option.

3-way valve pressure drop



DP [kPa] = Available pressure
Q [l/s] = water flow-rate

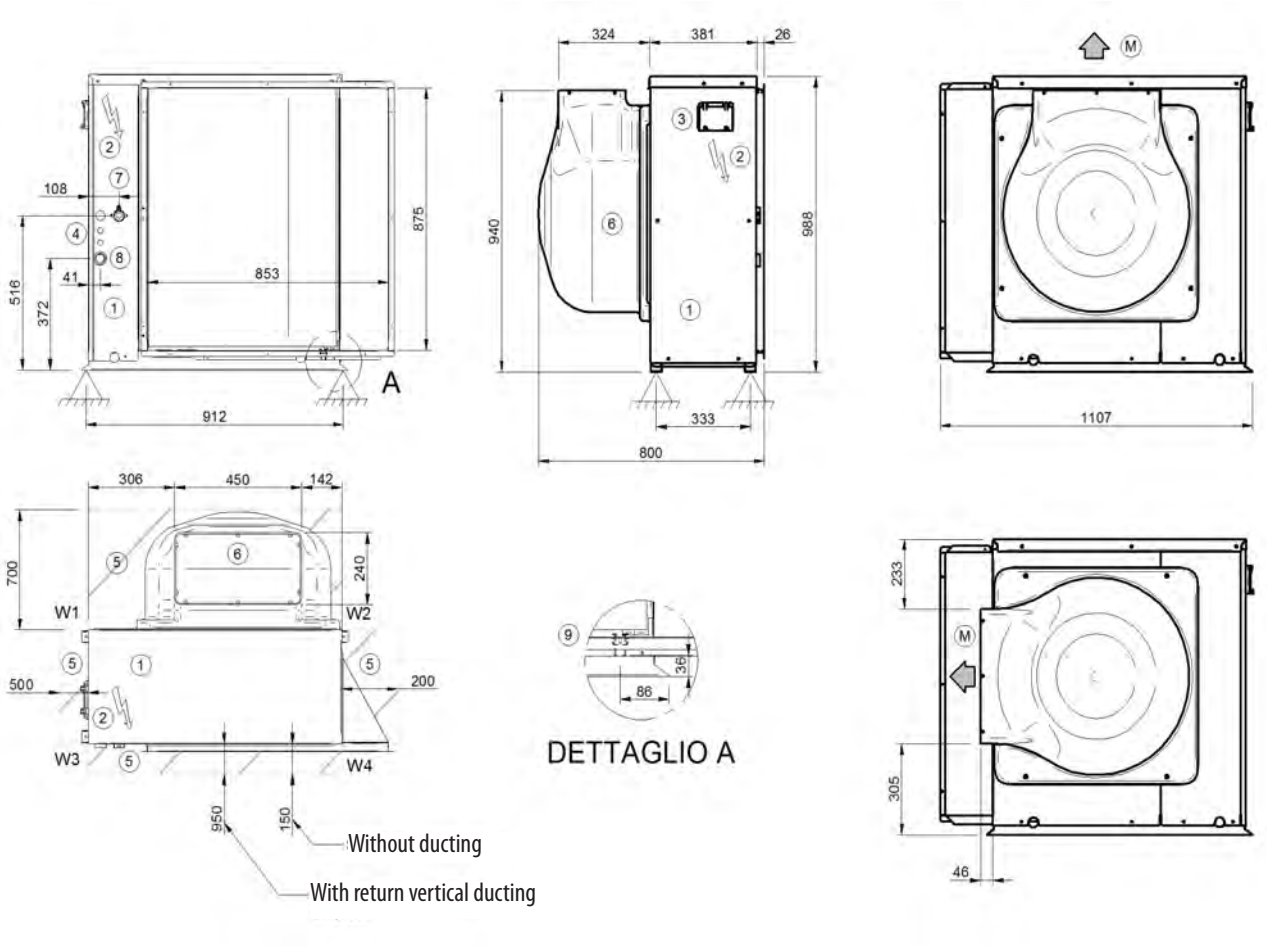
KG4UP - Management kit up to 4 units in parallel

Module that, by the remote activation of the first and second set-point, allows to manage the unit operating in cascade, up to 4 units, balancing the operating hours. Each unit must be connected to the module that enables its operating by a potential-free contact.

Dimensional drawings

Size 21-31-41

DAAV9-21-41_1 REV01
DATA 28/01/2016



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Functional spaces
6. Electric fan (Supply)
7. Internal exchanger water inlet (GAS F 1")
8. Internal exchanger water outlet (GAS F 1")
9. Condensate drain

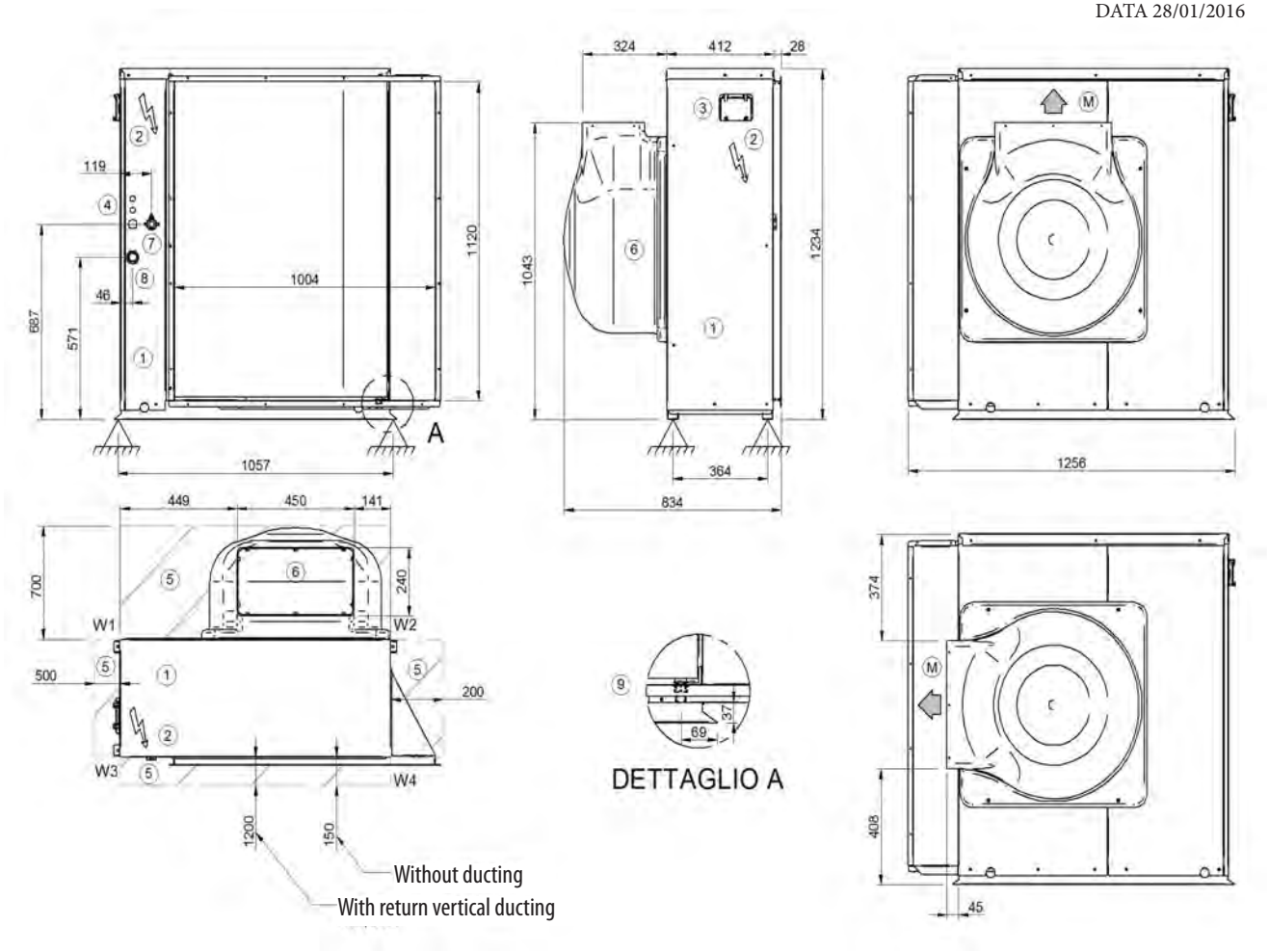
(M)Air supply

Size		21	31	41
Length	mm	1107	1107	1107
Depth	mm	800	800	800
Height	mm	988	988	988
W1	kg	35	35	35
W2	kg	39,2	39,2	39,2
W3	kg	40	40	40
W4	kg	24	24	24
Operating weight	kg	126	132	138
Shipping weight	kg	132	138	142

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 51-71

DAAV9-51-71_1 REV01
DATA 28/01/2016



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Functional spaces
6. Electric fan (Supply)
7. Internal exchanger water inlet (GAS F 1")
8. Internal exchanger water outlet (GAS F 1")
9. Condensate drain

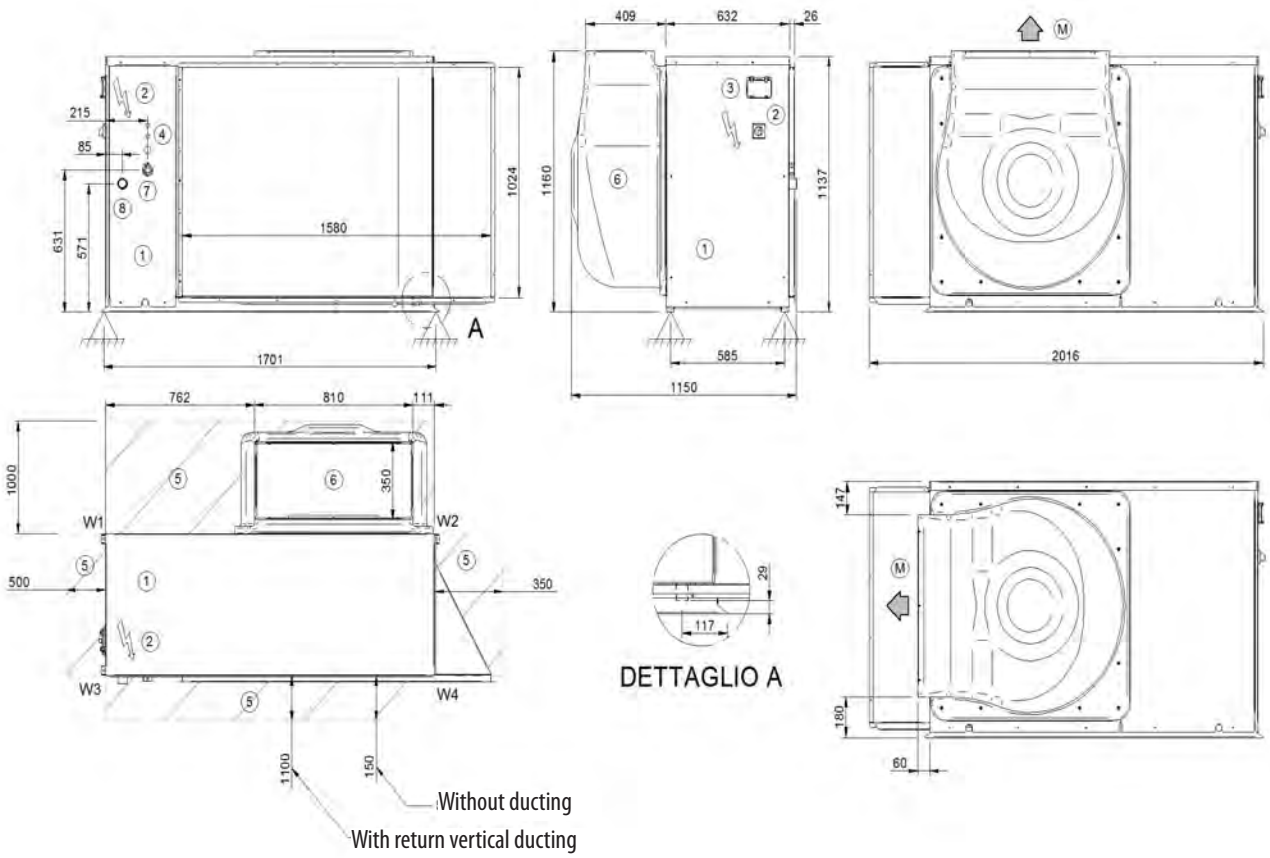
(M) Supply Air

Size			51	71
Length		mm	1256	1256
Depth		mm	834	834
Height		mm	1234	1234
W1		kg	51,5	53
W2		kg	45,9	47,4
W3		kg	54,5	55,5
W4		kg	29,5	30,5
Operating weight		kg	181	186
Shipping weight		kg	185	190

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Sizes 81-91-101

DAAV9-81-101_1 REV01
DATA 19/05/2014



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Functional spaces
6. Electric fan (Supply)
7. Internal exchanger water inlet (GAS F 1"1/4)
8. Internal exchanger water outlet (GAS F 1"1/4)
9. Condensate drain

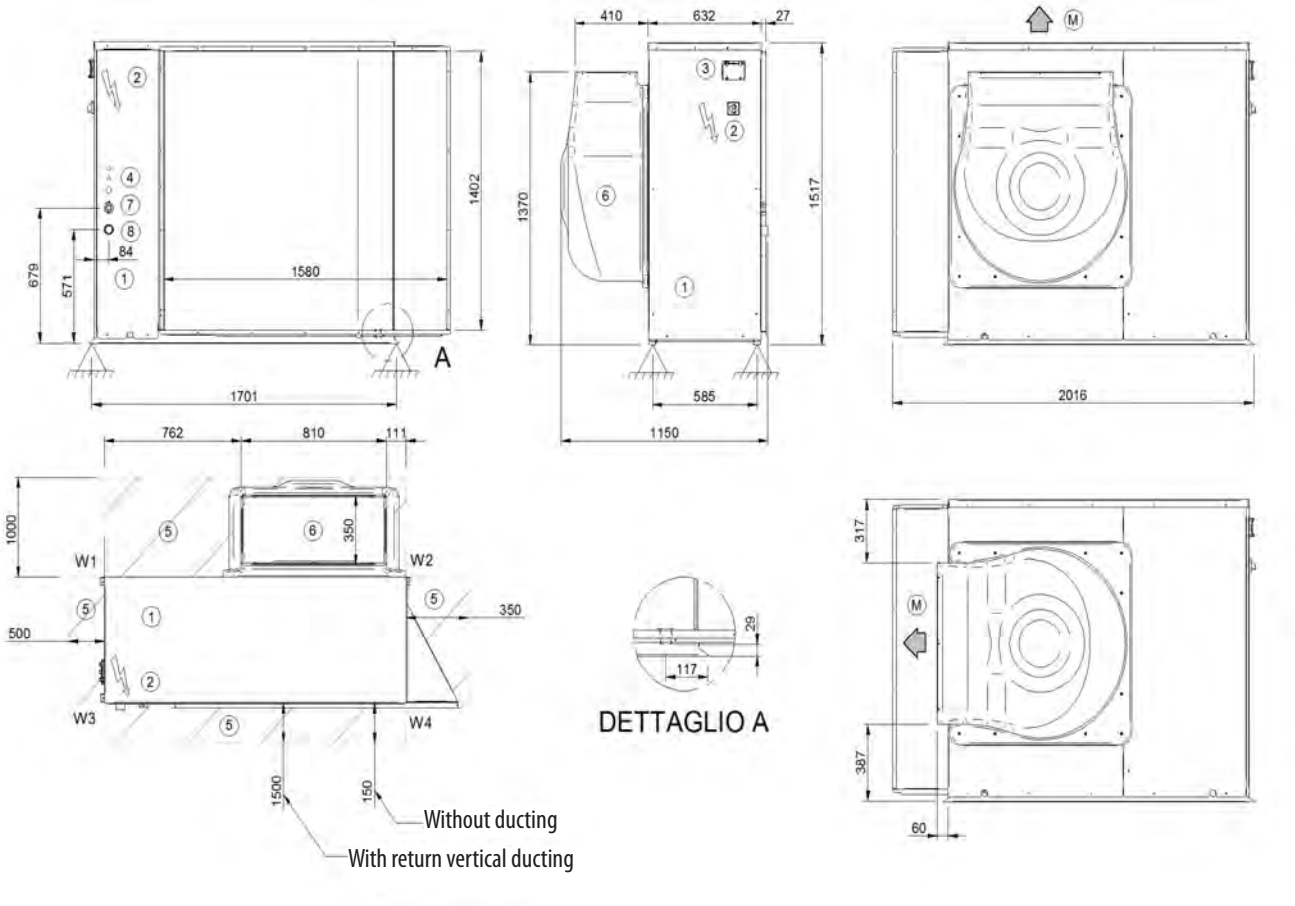
(M) Air supply

Size		81	91	101
Length	mm	2016	2016	2016
Depth	mm	1150	1150	1150
Height	mm	1137	1137	1137
W1	kg	80	80	80
W2	kg	71	71	71
W3	kg	70	70	70
W4	kg	40	40	40
Operating weight	kg	261	261	261
Shipping weight	kg	265	265	265

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Sizes 121-131-141

DAAV9-121-141_1 REV01
DATA 19/05/2014



1. Compressor compartment
2. Electrical panel
3. Unit control keypad
4. Power input
5. Functional spaces
6. Electric fan (Supply)
7. Internal exchanger water inlet (GAS F 1"1/4)
8. Internal exchanger water outlet (GAS F 1"1/4)
9. Condensate drain

(M) Supply Air

Size		121	131	141
Length	mm	2016	2016	2016
Depth	mm	1150	1150	1150
Height	mm	1517	1517	1517
W1	kg	85	85	85
W2	kg	89	89	89
W3	kg	85	85	85
W4	kg	60	60	60
Operating weight	kg	319	319	319
Shipping weight	kg	325	325	325

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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