

TRILOGY BI: Reversible heat pumps (2 pipes plant)TRILOGY TETRA: Multifunction chillers (4 pipes plant)TRILOGY ESA: Multifunction chillers with total heat reclaim (4 +2 pipes plant
Cooling Capacity: 45,0 ÷ 212,0 kW
Heating Capacity: 57,6 ÷ 255,0 kW





rcgroupairconditioning

MAIN FEATURES

- · Reversible heat pump and multifunction chiller.
- 3 versions available 15 models available, for a wide selection opportunity..
- Average step of 25kW.
- EER up to 3,24.
- COP up to 3,73.
- ESEER up to 4,53.
- · Scroll compressors.
- Single refrigerant circuit.
- R410A refrigerant charge.
- Plate type heat exchanger.
- · EC axial fans.
- Single air circuit.
- Electronic expansion valves.
- Suitable for outdoor installation.

MAIN BENEFITS

- · Defrosting dynamics control system IDEA®.
- · Availability of pumping groups.
- · Availability of kit for the reduction of the noise.
- · EC fans for a higher efficiency.
- · Easily of maintenance.

ELECTRONIC EXPANSION VALVE

The electronic expansion valves are synonymous of an higher energy efficiency and stability of the system.



IDEA® DEFROSTING SYSTEM

"Patented" defrosting system with dynamic reading of working parameters. Thanks to proprietary software it senses the real presence of brine on the coil starting defrosting cycles only in that situation. This brings a remarkable energy saving (more than 20-30% on the average) and a higher working continuity compared with traditional systems.

WORKING LIMITS IN COOLING MODE

Evaporator chilled water outlet temperature: -10÷15°C Ambient temperature: -12÷18°C

WORKING LIMITS IN HEATING MODE

Condenser hot water outlet temperature: 30÷60°C Ambient temperature: -10÷35°C



trilogy bi

WORKING LOGIC

TRILOGY BI

The production of sanitary hot water is made through partial or total heat reclaim systems and it matches the normal production of chilled or hot water according to the following schemes. In working condition 2 the system produces simultaneously chilled water and domestic hot water. In working condition no. 4 (simultaneous request of hot water for heating and domestic hot water) the system gives priority to the domestic hot water production. Only when the domestic hot water request is satisfied, the system will start producing hot water for heating.





TRILOGI BI COMPONENTS

FRAMEWORK

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Technical compartment housing compressors and heat exchangers. Technical compartment and panels insulated with polyurethane for sound proofing.
- Colour: RAL 9002

COMPRESSORS

- Orbiting spiral (SCROLL) hermetic compressors with spiral profile optimized for R410A refrigerant.
- ON / OFF capacity control (0 / 100% each compressor).
- 2-pole 3-phase electric motor with direct on line starting.
- Phase sequence electronic relay.
- Crankcase heater.
- · Electric motor thermal protection via internal winding temperature sensors.
- Rubber supports.

PLANT SIDE HEAT EXCHANGER

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- · Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.
- Antifreeze heater.

AIR/GAS HEAT EXCHANGER

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
 - Maximum capacity relative to the size of the exchanger.
 - Minimum charge of refrigerant.
- Reduction of the air flow required for the heat exchange.
- Particular circulation on refrigerant side, in order to optimize performance in heat pump mode.
- Ambient temperature sensor
- Frame in galvanized steel.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- Brushless type synchronous EC motors with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control system.
- IP54 enclosure class.

REFRIGERANT CIRCUIT

- · Reversing valve for refrigeration cycle inversion.
- Electronic expansion valves.
- One valve on plant side heat exchanger
- One valve on source side heat exchanger (finned coil) The electronic expansion valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure. The electronic expansion valve exclude the installation of the electromagnetic valve on liquid line.
- · Sight glass.
- Liquid receiver with service valve and safety valve.
- Filter dryer on liquid line.
- · Service valves on suction line and gas discharge.
- Non-return valve
- Solenoid valve on liquid line
- Safety valve on low pressure side.
- · Safety valve on high pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- · High pressure safety switch with manual reset.
- · Oil drainage and oil recovery systems.
- · Liquid separator on suction line.
- IDEA® defrosting system.
 RC Group patented defrosting system based on a dynamic reading of the evaporating parameters.

Through sensors the microprocessor realize the real ice presence on the gas/air heat exchanger and activates the defrosting cycle only when necessary, with consequent energy saving.

- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- · Plastic capillary hoses for pressure sensors connection.
- R410A refrigerant charge.

ELECTRICAL PANEL

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

- Main switch with door lock safety.
- Magnetothermic switch or fuses for each compressor.
- Magnetothermic switches for fans or water pumps (if scheduled).
- Contactors for each load (fans excluded).
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls:
- Working mode selector Summer Winter Remote
- Enabling selector On Off Remote
- Power supply: 400/3/50+N.



CONTROL SYSTEM

- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
- Voltage free contact for remote general alarm.
- Main components hour-meter.
- Nonvolatile "Flash" memory for data storage.
- Menu with protection password.
- LAN connection.

HYDRAULIC CONNECTIONS OF HEAT EXCHANGERS

- The threaded hydraulic connections are available up to a diameter of 3 " included, and correspond to ISO 7/1 - R.
- The hydraulic connections with flange (FL) are supplied as standard with counter flange.
- The hydraulic connections with grooved end (Victaulic) are supplied as standard with Victaulic joint and adapter pipe.

OPTIONAL ACCESSORIES- TRILOGY BI

TRILOGY BI	44 P2	58 P2	76 P2	100 P2	124 P2	150 P2	210 P2
SIZE	F1	F1	F2	F2	F3	F3	F4
735 - Plant water pump	•	•	•	•	•	•	•
738 - Sanitary water pump	•	٠	•	•	•	٠	•
118 - Kit brine A	•	•	•	•	•	•	•
119 - Kit brine B	•	•	•	•	•	•	•
784 - Heat exchanger antifreezing heater	•	•	•	•	•	•	•
785 - Sanitary antifreezing heater	•	•	•	•	•	•	•
150 - LNO kit (noise reduction)	•	•	•	•	•	•	•
170 - Spring antivibration holders (kit)	•	•	•	•	•	•	•
172 - Rubber support (kit)	•	•	•	•	•	•	•
Plant heat exchanger flexible joint with adapter pipe (solder type)	•	٠	•	•	•	•	•
Plant heat exchanger flexible joint with adapter for flange connection	•	•	•	•	•	•	•
453 - 100% hot sanitary water	•	•	•	•	•	•	•
Total heat recovery flexible joint with adapter pipe (solder type)	•	•	•	•	•	•	•
Total heat recovery flexible joint with adapter for flange connection	•	•	•	•	•	•	•
452 - 20% hot sanitary water	•	•	•	•	•	•	•
Partial heat recovery flexible joint with adapter pipe (solder type)	•	•	•	•	•	•	•
Partial heat recovery flexible joint with adapter for flange connection	•	•	•	•	•	•	•
351 - Coils with pre-painted fins	•	•	•	•	•	•	•
Exhaustion Coil in special execution	•	•	•	•	•	•	•
731 - Safety water flow switch	•	•	•	•	•	•	•
1003 - Analogic flowmeter	•	•	•	•	•	•	•
606 - Compr. power factor capacitor - 0,9	•	•	٠	•	•	٠	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•	•	•
926 - LON Serial board	•	•	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•	•	•
942 - Serial card for GSM Modem	•	•	•	•	•	•	•
943 - Data Logger	•	•	٠	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•	•	•
962 - Kit modem GSM	•	•	٠	٠	•	•	•
957 - Plantwatch without modem	•	•	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•	•	•

• available accessory; - not available accessory

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TRILOGY BI TECHNICAL DATA

	TRILOGY BI SIZE		44 P2 F1	58 P2 F1	76 P2 F2	100 P2 F2	124 P2 F3	150 P2 F3	210 P2 F4
	Only cooling - Cooling capacity (1)	kW	45.0	57 1	74.6	101.0	124.0	152.0	208.0
	Unit power input	kW	15.8	21.0	26.0	35.3	47.3	54.9	64.6
	Diant side water flow rate	m ³ /b	7.0	21,0	20,0	17 /	21.2	04,0	25.0
	Plant side water now rate	1117/11 IvDe	7,0	9,0	12,0	17,4	21,3	20,2	33,0
	Only besting Useting senseity (2)	KPa	21 57 G	20	20 05.2	20	30	27	22
	Only neating - Heating capacity (2)	KVV	57,0	13,1	95,3	132,0	162,0	190,0	250,0
	Unit power input	KVV	16,5	21,5	26,8	38,8	49,5	57,2	78,1
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	2	2	2	2
	Capacity steps	n.	2	2	2	2	2	2	2
	Axial fans	n.	2	2	2	2	2	2	3
	Total air flow	m³/h	17000	18000	25000	39400	45000	45000	69000
~	Air circuits	n.	1	1	1	1	1	1	1
RI	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A
ğ	Total refrigerant charge (optional excluded)	ka	14	16	31	32	45	46	60
A	Gas circuits	n	1	1	1	1	1	1	1
S	Power supply	V/Ph/Hz	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
	Max unit operating current (FLA)	Δ	453	53.3	70.4	85.0	103.8	136.8	174.2
	Lipit starting current (LDA)	٨	125.3	1/6 3	200.4	270.0	375.8	391.9	176.2
			100,0	0.70	203,4	270,0	0.60	0.77	470,2
			2,04	2,12	2,07	2,00	2,02	2,11	3,22
		KVV/KVV	3,49	3,43	3,50	3,40	3,27	3,32	3,20
	ESEER		4,30	4,09	4,47	3,99	3,69	3,91	4,36
	Sound power level [Lw] (3)	dB(A)	84,7	84,9	85,1	91,8	92,6	92,8	95,8
	Average sound pressure level [Lpm] (4)	dB(A)	67,9	68	67,3	73,9	74,1	74,3	76,3
	Net weight	kg	575	610	905	1010	1180	1240	1665
	Hydraulic connections								
	Plant side exchanger IN/OUT - (ISO7/1 - R)	Ø	2"	2"					
	Plant side exchanger IN/OUT - OD (5)	Ømm			76,1	76,1	76,1	76,1	76,1
	Hot sanitary water								
	Partial heat recovery system								
	Heating capacity (6)	kW	16.5	21.0	27 4	37.2	45.4	55.8	76.3
	Total heat recovery system		10,0	21,0	2.,.	01,12	10,1	00,0	10,0
A	Production of hot sanitary water only								
ō	Hosting consolty (7)	L-\M	57.7	72.0	05.5	122.0	162.4	100.1	250.2
РТ	Mith contemporary and which of chilled water	K V V	51,1	13,0	90,0	132,0	102,4	109,1	230,3
0	with contemporary production of chilled water	1.14/	50.7	70.4	00.5	400.0	400.0	407.0	005.0
	Heating capacity (8)	KVV	59,7	76,4	99,5	133,0	168,0	197,0	265,0
	Chilled/hot water pumping group	kW	1,1	1,1	1,1	1,5	2,2	2,2	3,2
	Chilled/hot water pumping group (total reclaim)	kW	1,1	1,5	1,1	1,1	1,5	1,5	3,2
	Only cooling - Cooling capacity (1)	kW	45,0	57,1	74,6	101,0	124,0	152,0	208,0
	Unit power input	kW	16,1	21,2	26,1	35,8	47,7	55,3	64,6
%0	Only heating - Thermal capacity (2)	kW	57,6	73,7	95,3	132,0	162,0	190,0	250,0
10	Unit power input	kW	16,7	21,7	26,8	39,4	49,8	57,6	78,1
E	Total air flow	m³/h	17000	18000	25000	39400	45000	45000	69000
Ň	EER (1)	kW/kW	2.80	2.69	2.86	2.82	2.60	2.75	3.22
ž	COP (2)	kW/kW	3.44	3.39	3.55	3.35	3.25	3,30	3.20
	Sound power level [Lw] (3)	dB(A)	84 7	84 7	81.2	91 7	92.4	92.5	95.2
	Average sound pressure level [1 pm] (4)	dB(A)	67.8	67.9	63.4	73.9	73.9	74.1	76.0
	Only cooling - Cooling capacity (1)	kW	44.0	55.5	72 5	98.7	121.0	147.0	203.0
	Unit news input		16.2	21.7	27.0	36.3	/8.6	56.8	66.3
_	Only besting Thermal canasity (2)	L/M	F6 9	72.5	02.0	120.0	40,0	107.0	247.0
5%	Unit nearing - mermai capacity (2)	KVV LVA/	30,0	12,3	93,0	130,0	109,0	107,0	247,0
18	Unit power input	KVV	10,4	21,3	20,0	38,5	49,1	20050	77,4
Y	Iotal air tiow	m³/n	14450	15300	21250	33490	38250	38250	58650
2	EER (1)	kW/kW	2,71	2,56	2,69	2,72	2,49	2,59	3,06
	COP (2)	kW/kW	3,46	3,4	3,53	3,38	3,24	3,29	3,19
	Sound power level [Lw] (3)	dB(A)	80,9	81,0	78,6	87,9	88,8	89,0	90,0
	Average sound pressure level [Lpm] (4)	dB(A)	64,0	64,2	60,8	70,1	70,3	70,5	71,0
	Only cooling - Cooling capacity (1)	kW	42,5	53,3	69,7	95,2	116,0	140,0	195,0
	Unit power input	kW	17,1	22,9	28,3	37,9	50,7	59,8	69,4
%	Only heating - Thermal capacity (2)	kW	55,6	70,8	91,6	127,0	156,0	182,0	242,0
70,	Unit power input	kW	16.3	21,2	26.5	38,1	48.8	56.3	76.8
E	Total air flow	m³/h	11900	12600	17500	27580	31500	31500	48300
XC	FER (1)	kW/kW	2 49	2.33	2 46	2 51	2 29	2.34	2 81
ž	COP (2)	k M/k M	3.42	3 34	3.46	3 33	3 20	3 23	3 15
_	Sound power level [1 w] (3)	$dB(\Delta)$	76.5	76.0	76.5	83.7	84.0	85 /	85 A
	Average sound pressure level [1 pm] (4)	dB(A)	59.6	60.0	58.7	65.9	66.4	66.9	66.9

1. 2. 3. 4. 5. 6. 7. 8.

Referred to chilled water temperature 12/7°C; 35°C ambient temperature. Referred to hot water outlet temperature 45°C; ambient air at 7°C with 90%rH. Sound power level [Lw] according to ISO EN 9614 - 2. Average sound pressure level [LPm] 1m far according to ISO EN 3744. Hydraulic connection with grooved end. The flexible joint is an optional accessory. Referred to domestic hot water temperature 40/45°C. Referred to domestic hot water temperature 40/45°C; ambient temperature at 7°C. Referred to domestic hot water temperature 40/45°C; chilled water outlet temperature at 7°C.

WORKING LOGIC

TRILOGY TETRA

The production of domestic hot water is made by the installation of a heat exchanger (optional accessory) for the partial heat reclaim. The domestic hot water is always produced regardless of the working request.



TRILOGY TETRA COMPONENTS

FRAMEWORK

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Technical compartment housing compressors and heat exchangers. Technical compartment and panels insulated with polyurethane for sound proofing.
- Colour: RAL 9002

COMPRESSORS

- Orbiting spiral (SCROLL) hermetic compressors with spiral profile optimized for R410A refrigerant.
- ON / OFF capacity control (0 / 100% each compressor).
- 2-pole 3-phase electric motor with direct on line starting.
- Phase sequence electronic relay.
- Crankcase heater.
- · Electric motor thermal protection via internal winding temperature sensors.
- Rubber supports.

PLANT SIDE HEAT EXCHANGER FOR COOLING

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.
- · Antifreeze heater.

PLANT SIDE HEAT EXCHANGER FOR HEATING

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- · Anticondensate insulation made of polyurethane.
- · Temperature sensors on water inlet and outlet.
- · Differential water pressure switch for water flow control.
- · Antifreeze heater.

AIR/GAS HEAT EXCHANGER

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
 - Maximum capacity relative to the size of the exchanger.
 - Minimum charge of refrigerant.
 - Reduction of the air flow required for the heat exchange.

- Particular circulation on refrigerant side, in order to optimize performance in heat pump mode.
- Ambient temperature sensor
- · Frame in galvanized steel.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- Brushless type synchronous EC motors with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control system.
- · IP54 enclosure class.

REFRIGERANT CIRCUIT

- · Reversing valve for refrigeration cycle inversion.
- · Electronic expansion valves.
 - One valve on plant side cooling heat exchanger
- One valve on source side heat exchanger (finned coil) The electronic expansion valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure. The electronic expansion valve exclude the installation of the electromagnetic valve on liguid line.
- Mechanical expansion valve for defrosting control on gas / air heat exchanger
- · Sight glass.
- Liquid receiver with service valve and safety valve.
- · Filter dryer on liquid line.
- · Service valves on suction line and gas discharge.
- Non-return valve
- Solenoid valve on liquid line
- Safety valve on low pressure side.
- Safety valve on high pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- · High pressure safety switch with manual reset.
- · Oil drainage and oil recovery systems.
- · Liquid separator on suction line.
- IDEA® defrosting system.
- RC Group patented defrosting system based on a dynamic reading of the evaporating parameters.

Through sensors the microprocessor realize the real ice presence on the gas/air heat exchanger and activates the defrosting cycle only when necessary, with consequent energy saving.

- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- · Plastic capillary hoses for pressure sensors connection.
- R410A refrigerant charge.

ELECTRICAL PANEL

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

- · Main switch with door lock safety.
- Magnetothermic switch or fuses for each compressor.
- · Magnetothermic switches for fans or water pumps (if scheduled).
- · Contactors for each load (except fans).
- · Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls:
 Enabling selector On Off Remote for cooling working mode
 - Enabling selector On Off Remote for heating working mode
- Power supply: 400/3/50+N.

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CONTROL SYSTEM

- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
- Voltage free contact for remote general alarm.
- Main components hour-meter.
- Nonvolatile "Flash" memory for data storage.
- Menu with protection password.
- LAN connection.

HYDRAULIC CONNECTIONS OF HEAT EXCHANGERS

- The threaded hydraulic connections are available up to a diameter of 3 " included, and correspond to ISO 7/1 - R.
- The hydraulic connections with flange (FL) are supplied as standard with counter flange.
- The hydraulic connections with grooved end (Victaulic) are supplied as standard with Victaulic joint and adapter pipe.

OPTIONAL ACCESSORIES- TRILOGY TETRA

	44 02	50 D2	76 00	100 02	124 02	150 D2	210 02
	44 FZ	J0 F2	70 FZ	100 FZ	124 FZ	130 FZ	210 F2
SIZE 727 Het water pump	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>гэ</u>	<u> </u>	<u> </u>
737 - FIOL Water pump	•	•	•	•	•		•
730 - Onlined Water pump	•	•	•	•	•	•	•
	•	•	•	•	•	•	•
119 - Kitorine B	•	•	•	•	•	•	•
783 - Heat exchangers antifreezing heater	•	•	•	•	•	•	•
785 - Sanitary antifreezing heater	•	•	•	•	•	•	•
150 - LNO kit (noise reduction)	•	•	•	•	•	•	•
170 - Spring antivibration holders (kit)	•	•	•	•	•	•	•
172 - Rubber support (kit)	•	•	•	•	•	•	•
Plant heat exchangers flexible joint with adapter pipe (solder type)	-	-	•	•	•	•	•
Plant heat exchangers flexible joint with adapter for flange connection	-	-	•	•	•	•	•
452 - 20% hot sanitary water	•	•	•	•	•	•	•
Partial heat recovery flexible joint with adapter pipe (solder type)	-	-	•	•	•	•	•
Partial heat recovery flexible joint with adapter for flange connection	-	-	•	•	•	•	•
351 - Coils with pre-painted fins	•	•	•	•	•	•	•
Exhaustion Coil in special execution	•	•	•	•	•	•	•
606 - Compr. power factor capacitor - 0,9	٠	•	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	٠	•	•	•	•	•	•
926 - LON Serial board	•	•	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•	•	•
942 - Serial card for GSM Modem	•	•	•	•	•	•	•
943 - Data Logger	•	•	•	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•	•	•
962 - Kit modem GSM	•	•	•	•	•	•	•
957 - Plantwatch without modem	•	•	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•	•	•

• available accessory; - not available accessory



TRILOGY TETRA TECHNICAL DATA

	TRILOGY TETRA		44 P2	58 P2	76 P2	100 P2	124 P2	150 P2	210 P2
		1.14/	F 1	FI	72	FZ	ГЭ 404.0	F3	F4
	Only cooling - Cooling capacity (1)	KW	45,4	60,0	78,2	107,0	131,0	152,0	212,0
		KVV	14,9	21,0	20,0	30,4	40,3	22,3	00,4
	Evaporator water now rate	m°/n	/,8	10,3	13,5	18,4	22,5	20,2	30,4
	Evaporator pressure drop	кра	21	31	28	31	3/	21	00
	Only neating - Heating capacity (2)	KVV	5/,/	74,2	95,8	132,0	163,0	190,0	255,0
	Unit power input	KVV	16,2	20,8	25,8	37,9	48,5	55,1	69,9
	Condenser water flow rate	m²/n	10,0	12,9	16,7	23,0	28,4	33,1	44,3
	Condenser pressure drop	кРа	33	35	29	32	37	30	70
	Cooling + Heating (3)	1.147	40 5	50.7	77.0	404.0	404.0	450.0	004.0
	Cooling Capacity	KVV	46,5	59,7	//,9	104,0	131,0	153,0	204,0
	Heating Capacity	KVV	62,2	79,9	104,0	139,0	176,0	205,0	270,0
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	2	2	2	2
0	Capacity steps	n.	2	2	2	2	2	2	2
A RI	Axial rans	Π.	17000	2 10000	2	2	Z	Z	3
ģ	Iotal air flow	m°/n	17000	18000	25000	39400	45000	45000	69000
Z	Air circuits	n.							
S	Reingerant aborra (antional avaluded)	ka	16 K4 IUA	10 K4 IUA	R4 IUA	R4 IUA	R410A	K410A	R4 IUA
		кд	10	10	30	30	50	1	/ 0
	Bayer supply	11. \//Db/Ц=	1 400/2/50 - N	1 100/2/50 - N	100/2/50 N	1 400/2/50 - N	100/2/50 - N	100/2/50 - N	100/2/50 N
	Max upit operating current (ELA)		400/3/30+N	400/3/30+N	400/3/30+N	400/3/30+N	400/3/30+N	400/3/30+N	400/3/30+N
	Lipit starting current (LPA)	Λ	47,3	1/8 3	237.6	273.6	328.6	376.6	114,2
			3.05	2 78	201,0	275,0	2 71	2.75	3.24
	COP(2)		3,05	2,70	2,34	2,34	2,71	2,75	3,24
		KVV/KVV	3,57	3,50	3,71	3,40	3,30	3,45	3,05
	Sound nowor loval [] w] (1)	$dP(\Lambda)$	4,40	4,00	4,50	01.8	02.6	02.8	4,57
	Average sound pressure level [Lw] (4)		67.0	68	67.3	73.0	92,0 74 1	92,0 74.3	76.3
	Not weight	ub(A)	575	610	07,5	1010	1180	12/0	1665
	Hydraulic connections	ĸġ	515	010	303	1010	1100	1240	1005
	Evaporator/Condenser IN/OLIT - (ISO7/1 - R)	Ø	2"	2"					
	Evaporator/Condenser IN/OUT - OD (6)	Ømm			76 1	76 1	76 1	76 1	76 1
	Partial heat recovery				,.	, .	,.	, .	, .
PT.	Heating Capacity (7)	kW	16.7	22.0	28.7	39.2	48.1	55.9	77.7
0	Chilled/hot water pumping group	kW	1,1	1,1	1,1	1,5	2,2	2,2	3,2
	Only cooling - Cooling capacity (1)	kW	45.4	60.0	78.2	107.0	131.0	152.0	212.0
	Unit power input	kW	14,9	21,6	26,6	36,4	48,3	55,3	65,4
%	Only heating - Thermal capacity (2)	kW	57,7	74,2	95,8	132,0	163,0	190,0	255,0
9	Unit power input	kW	16,2	20,8	25,8	37,9	48,5	55,1	69,9
Ð	Total air flow	m³/h	17000	18000	25000	39400	45000	45000	69000
ŏ	EER (1)	kW/kW	3,05	2,78	2,94	2,94	2,71	2,75	3,24
Ě	COP (2)	kW/kW	3,57	3,56	3,71	3,48	3,36	3,45	3,65
	Sound power level [Lw] (4)	dB(A)	84,7	84,7	81,2	91,7	92,4	92,5	95,2
	Average sound pressure level [Lpm] (5)	dB(A)	67,8	67,9	63,4	73,9	73,9	74,1	76,0
	Only cooling - Cooling capacity (1)	kW	44,2	58,3	76,0	104,0	128,0	147,0	206,0
	Unit power input	kW	15,3	22,3	27,5	37,4	49,6	57,2	67,3
2%	Only heating - Thermal capacity (2)	kW	57,7	74,2	95,8	132,0	163,0	190,0	255,0
č	Unit power input	kW	16,0	20,7	25,7	37,5	47,9	54,6	69,1
Y	Total air flow	m³/h	14450	15300	21250	33490	38250	38250	58650
2	EER (1)	kW/kW	2,88	2,61	2,76	2,78	2,58	2,57	3,06
	COP (2)	kW/kW	3,60	3,59	3,73	3,52	3,40	3,48	3,69
	Sound power level [Lw] (4)	dB(A)	80,9	81,0	78,6	87,9	88,8	89,0	90,0
	Average sound pressure level [Lpm] (5)	dB(A)	64,0	64,2	60,8	/0,1	70,3	70,5	/1,0
	Only cooling - Cooling capacity (1)	kW	42,4	55,8	72,8	99,9	123,0	141,0	198,0
	Unit power input	KVV	16,0	23,5	29,0	39,0	51,9	60,0	/0,5
%0.	Only heating - Thermal capacity (2)	KW	57,7	74,2	95,8	132,0	163,0	190,0	255,0
IT 7	Unit power input	KVV	15,9	20,5	25,5	37,1	47,5	54,1	68,5
N N		m*/n	11900	12600	17500	27580	31500	31500	48300
ž		KVV/KVV	2,05	2,37	2,51	2,50	2,37	2,35	2,01
_		KVV/KVV	.) 0.1	3.02	.) /)		.1 4.1		.) //
	Sound nower level [] w] (1)	dB(A)	76.5	76.0	76.5	83.7	8/ 0	85 /	85 /
	Sound power level [Lw] (4) Average sound pressure level [I pm] (5)	dB(A) dB(A)	76,5 59.6	76,9	76,5 58.7	83,7 65.9	84,9 66.4	85,4 66.9	85,4 66.9

1. 2. 3. 4. 5. 6. 7.

Referred to chilled water temperature 12/7°C; 35°C ambient temperature. Referred to hot water temperature 40/45°C;ambient air at 7°C with 90%rH. Referred to chilled water temperature 12/7°C; hot water outlet temperature at 45°C. Sound power level [Lw] according to ISO EN 9614 - 2. Average sound pressure level [LPm] 1m far according to ISO EN 3744. Hydraulic connection with grooved end. The flexible joint is an optional accessory. Referred to domestic hot water temperature 40/45°C;

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TRILOGY ESA

Multifunction liquid chiller with simultaneous production of chilled water, hot water and domestic hot water. In working condition no. 4 and 7 the system gives priority to the domestic hot water production. Only when the domestic hot water request is satisfied, the system will start producing hot water for heating.



TRILOGY ESA COMPONENTS

FRAMEWORK

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Technical compartment housing compressors and heat exchangers. Technical compartment and panels insulated with polyurethane for sound proofing.
- Colour: RAL 9002

COMPRESSORS

- Orbiting spiral (SCROLL) hermetic compressors with spiral profile optimized for R410A refrigerant.
- ON / OFF capacity control (0 / 100% each compressor).
- 2-pole 3-phase electric motor with direct on line starting.
- · Phase sequence electronic relay.
- · Crankcase heater.
- · Electric motor thermal protection via internal winding temperature sensors.
- · Rubber supports.

PLANT SIDE HEAT EXCHANGER FOR COOLING

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.
- Antifreeze heater.

PLANT SIDE HEAT EXCHANGER FOR HEATING

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.
- Antifreeze heater.

HEAT EXCHANGER FOR DOMESTIC HOT WATER

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.
- Antifreeze heater.

AIR/GAS HEAT EXCHANGER

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
 - Maximum capacity relative to the size of the exchanger.
 - Minimum charge of refrigerant.
 - Reduction of the air flow required for the heat exchange.
- Particular circulation on refrigerant side, in order to optimize performance in heat pump mode.
- Ambient temperature sensor
- · Frame in galvanized steel.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- Brushless type synchronous EC motors with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control system.
 IP54 enclosure class.

REFRIGERANT CIRCUIT

- · Double reversing valves for refrigeration cycle inversion.
- Electronic expansion valves.
 - One valve on plant side cooling heat exchanger

- One valve on source side heat exchanger (finned coil) The electronic expansion valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure. The electronic expansion valve exclude the installation of the electromagnetic valve on liquid line.

- Mechanical expansion valve for defrosting control on gas / air heat exchanger
- Sight glass.
- · Liquid receiver with service valve and safety valve.
- · Filter dryer on liquid line.
- · Service valves on suction line and gas discharge.
- Non-return valve
- Solenoid valve on liquid line
- Safety valve on low pressure side.
- Safety valve on high pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- · High pressure safety switch with manual reset.
- · Oil drainage and oil recovery systems.
- · Liquid separator on suction line.
- IDEA® defrosting system.
- RC Group patented defrosting system based on a dynamic reading of the evaporating parameters.

Through sensors the microprocessor realize the real ice presence on the gas/air heat exchanger and activates the defrosting cycle only when necessary, with consequent energy saving.

- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- · Plastic capillary hoses for pressure sensors connection.
- R410A refrigerant charge.

ELECTRICAL PANEL

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

- Main switch with door lock safety.
- Magnetothermic switch or fuses for each compressor.
- Magnetothermic switches for fans or water pumps (if scheduled).
- Contactors for each load (except fans).
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls:
 - Enabling selector On Off Remote for cooling working mode
 - Enabling selector On Off Remote for heating working mode
 - Enabling selector On Off Remote for domestic hot water working mode
- Power supply: 400/3/50+N.



CONTROL SYSTEM

- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
 - Voltage free contact for remote general alarm.
 - Main components hour-meter.
 - Nonvolatile "Flash" memory for data storage.
 - Menu with protection password.
 - LAN connection.

HYDRAULIC CONNECTIONS OF HEAT EXCHANGERS

- The threaded hydraulic connections are available up to a diameter of 3 " included, and correspond to ISO 7/1 - R.
- The hydraulic connections with flange (FL) are supplied as standard with counter flange.
- The hydraulic connections with grooved end (Victaulic) are supplied as standard with Victaulic joint and adapter pipe.

OPTIONAL ACCESSORIES- TRILOGY ESA

TRILOGY ESA	44 P2	58 P2	76 P2	100 P2	124 P2	150 P2	210 P2
SIZE	F1	F1	F2	F2	F3	F3	F4
737 - Hot water pump	•	٠	•	•	•	•	•
736 - Chilled water pump	•	•	•	•	•	•	•
738 - Sanitary water pump	•	•	•	•	•	•	•
118 - Kit brine A	•	•	•	•	•	•	•
119 - Kit brine B	•	•	•	•	•	•	•
783 - Heat exchangers antifreezing heater	•	٠	٠	•	٠	•	•
150 - LNO kit (noise reduction)	•	•	•	•	•	•	•
170 - Spring antivibration holders (kit)	•	•	•	٠	•	•	•
172 - Rubber support (kit)	•	•	•	•	•	•	•
Plant heat exchangers flexible joint with adapter pipe (solder type)	-	-	٠	٠	٠	•	•
Plant heat exchangers flexible joint with adapter for flange connection	-	-	•	•	•	•	•
351 - Coils with pre-painted fins	•	•	٠	٠	٠	•	•
Exhaustion Coil in special execution	•	•	•	٠	•	•	•
606 - Compr. power factor capacitor - 0,9	•	•	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•	•	•
926 - LON Serial board	•	•	٠	٠	٠	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	٠	٠	•	•	•
942 - Serial card for GSM Modem	•	•	•	•	•	•	•
943 - Data Logger	•	•	•	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•	•	•
962 - Kit modem GSM	•	•	٠	٠	•	٠	•
957 - Plantwatch without modem	•	•	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•	•	•

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TRILOGY ESA TECHNICAL DATA

	TRILOGY ESA		44 P2	58 P2	76 P2	100 P2	124 P2	150 P2	210 P2
	SIZE		F1	F1	F2	F2	F3	F3	F4
	Only cooling - Cooling capacity (1)	kW	45,4	58,2	76,5	102,0	123,0	154,0	211,0
	Unit power input	kW	14,9	20,4	25,7	33,1	43,3	55,0	65,3
	Evaporator water flow rate	m³/h	7,8	10,0	13,2	17,5	21,0	26,5	36,3
	Evaporator pressure drop	kPa	2/	29	26	29	33	28	50
	Only neating - Heating capacity (2)	KW	5/,/	74,2	95,7	132,0	163,0	190,0	251,0
	Unit power input	KVV	16,2	20,7	25,7	37,8	48,1	54,6	74,0
	Condenser water flow rate	m³/h	10,0	12,9	16,6	23,0	28,3	33,0	43,7
	Condenser pressure drop	kPa	33	35	29	32	37	30	60
	Cooling+Heating (3)	1.14/	40 5	50.5	77.0	404.0	400.0	450.0	000.0
	Cooling Capacity	KW	46,5	59,5	11,8	104,0	129,0	153,0	203,0
	Heating Capacity	KVV	62,2	79,7	104,0	139,0	175,0	205,0	269,0
	Partial neat reclaim-Sanitary not water (4)								
	Sanitary not water production only	1/1/1	57 7	74.0	05.7	422.4	462.0	400 7	0E4 E
	Mith contemporary production of het wet	KVV	57,7	/4,∠	95,7	132,4	102,9	109,7	201,0
	With contemporary production of not wate	er LW	62.2	70.7	104.0	120.0	175.0	205.0	260.0
	Water flow	m ³ /h	10.0	19,1	104,0	139,0	175,0	205,0	209,0
	Prossure drop	kDo	38	12,5	34	23,0	20,3	33,0	43,7
8	Comprossors	кгa	soroll	40 Soroll	50roll	soroll	soroll	soroll	soroll
M	Quantity	n	2	2	2	2	2	2	2
AN	Consoity stops	n.	2	2	2	2	2	2	2
ST	Avial fanc	n.	2	2	2	2	2	2	2
	Total air flow	11. m ³ /h	17000	18000	25000	20400	45000	45000	60000
	Air circuite	n ///	1	10000	23000	1	43000	43000	1
	Pefrigerant	11.	R/10A	P/10A	P/10A	P/10A	P/10A	P/10A	P/10A
	Total refrigerant charge (ontional excluded)	ka	18	21	38	40	55	58	75
	Gas circuits	n	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	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
	Max unit operating current (FLA)	Α	47.3	55.3	70.6	88.6	105.6	125.6	174.2
	Unit starting current (I RA)	A	137.3	148.3	237.6	273.6	328.6	376.6	486.2
	FFR (1)	kW/kW	3 05	2 85	2.98	3.08	2 84	2 80	3 23
	COP (2)	kW/kW	3.57	3.58	3.73	3,49	3.39	3.48	3.39
	ESEER		4.40	4.19	4.53	4.01	3.88	3.88	4.37
	Sound power level [Lw] (5)	dB(A)	84,7	84,9	85,1	91,8	92,6	92,8	95,8
	Average sound pressure level [Lpm] (6)	dB(A)	67,9	68	67,3	73,9	74,1	74,3	76,3
	Net weight	kg	630	675	1025	1125	1305	1390	1820
	Hydraulic connections	-							
	Evaporator/Condenser IN/OUT - (ISO7/1 - F	R)Ø	2"	2"					
	Evaporator/Condenser IN/OUT - OD (7)	Ømm			76,1	76,1	76,1	76,1	76,1
Ľ.	Chilled/hot water pumping group	kW	1,1	1,1	1,1	1,5	2,2	2,2	3,2
ō	Sanitary water pumping group	kW	1,1	1,5	1,1	1,1	1,5	1,5	3,2
	Only cooling - Cooling capacity (1)	kW	45,4	58,2	76,5	102,0	123,0	154,0	211,0
_	Unit power input	kW	14,9	20,4	25,7	33,1	43,3	55,0	65,3
%0(Only heating - Thermal capacity (2)	kW	57,7	74,2	95,7	132,0	163,0	190,0	251,0
-	Unit power input	kW	16,2	20,7	25,7	37,8	48,1	54,6	74,0
Ā	Total air flow	m³/h	17000	18000	25000	39400	45000	45000	69000
9	EER (1)	kW/kW	3,05	2,85	2,98	3,08	2,84	2,80	3,23
	COP (2)	kW/kW	3,57	3,58	3,73	3,49	3,39	3,48	3,39
	Sound power level [Lw] (5)	dB(A)	84,7	84,7	81,2	91,7	92,4	92,5	95,2
	Average sound pressure level [Lpm] (6)	dB(A)	67,8	67,9	63,4	73,9	73,9	/4,1	76,0
	Only cooling - Cooling capacity (1)	KW	44,2	56,2	/4,2	99,2	120,0	149,0	206,0
_	Only power input	KVV	15,3	21,1	20,7	33,9	44,3	57,1	07,3
5%	Unit neuror input	KVV LAA/	JC 0	1 4, Z	95,7	132,0	103,0	190,0	Z01,0
<u>۲</u>	Tatal air flow	KVV m ³ /b	10,0	20,0	20,0	37,4	47,0	04, I 20250	73,4
X		L/V////	14400	15500	21230	20490	0.71	26200	2.06
ž	COP(2)		2,00	2,00	2,70	2,95	2,71	2,01	3,00
_	Sound nower level [] w1 (5)	dB(A)	80 Q	81.0	78.6	87.9	88.8	89.0	90.0
	Average sound pressure level [Lm] (6)	dB(A)	64.0	64.2	60.8	70.1	70.3	70.5	71.0
	Only cooling - Cooling capacity (1)	kW	A2 A	52 2	71.0	95.6	116.0	141.0	108.0
	Unit nower input	kW	16.0	22.4	28.2	35.1	45.8	60.3	70.5
%	Only heating - Thermal canacity (2)	kW	57.7	74.2	95.7	132 0	163.0	190.0	251.0
20,0	Unit power input	kW	15.9	20.4	25.5	36.9	47.0	53 7	72.8
Ê	Total air flow	m³/h	11900	12600	17500	27580	31500	31500	48300
0	EER (1)	kW/kW	2.65	2.38	2.52	2.72	2.53	2.34	2.81
S	COP (2)	kW/kW	3,63	3,64	3,76	3,58	3,47	3,54	3,45
	Sound power level [Lw] (5)	dB(A)	76,5	76,9	76,5	83,7	84,9	85,4	85,4
	Average sound pressure level [] pm] (6)	dB(A)	59.6	60.0	58.7	65.9	66.4	66.9	66.9

1. 2. 3. 4. 5. 6. 7.

Referred to chilled water temperature 12/7°C; 35°C ambient temperature. Referred to hot water temperature 40/45°C; ambient air at 7°C with 90%rH Referred to chilled water outlet temperature 7°C; hot water outlet temperature at 45°C. Referred to chilled water temperature 12/7°C; hot water temperature 40/45°C; Sound power level [Lw] according to ISO EN 9614 - 2. Average sound pressure level [LPm] 1m far according to ISO EN 3744. Hydraulic connection with grooved end. The flexible joint is an optional accessory.

DIMENSIONS (mm)

a b c F1 1750 950 1800 F2 2500 1100 2070 F3 2500 1100 2490 F4 3600 2000 2515



