

MANTA: Packaged water cooled liquid chillers for indoor installation,
equipped with scroll compressors and plate heat exchangers
Cooling Capacity: 29,1 ÷ 670,0 kW



rcgroupairconditioning

MAIN FEATURES

- Water cooled liquid chiller.
- 33 models available, for a wide selection opportunity.
- Average step of 25kW.
- EER up to 4,18.
- ESEER up to 5,51.
- Scroll compressors.
- R410A Refrigerant charge.
- Plate type heat exchangers.
- Suitable for indoor installation.

MAIN BENEFITS

- Up to three scroll compressors for each refrigerant circuit to reach a high efficiency.
- Units with single or double refrigerant circuits.
- High ESEER.
- Availability of partial heat recovery system.
- Easily of maintenance.
- Eurovent Certification.

INDOOR INSTALLATION

The machines are designed for indoor installation.

REDUCED NOISE EMISSION

The machines are characterized by a low sound level guaranteed by the containing structure.

DOMESTIC HOT WATER

On request is possible to install the system for the domestic hot water production.

WORKING LIMITS IN COOLING MODE

Evaporator chilled water outlet temperature: -12÷20°C
Condenser outlet water temperature: 20÷60°C



MAIN 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.
- 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.

EVAPORATOR

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
 - With single refrigerant circuit for S version machines.
 - With double refrigerant circuit for D version machines.
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Differential water pressure switch for water flow control.

CONDENSER

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel.
- 0÷10V proportional signal to manage the condensing control system of the 2-way motorized valve.

REFRIGERANT CIRCUIT

Components for each refrigerant circuit:

- Thermostatic expansion valve up to model T 150 P2 included.
- Electronic expansion valve from model T 170 P4 included. The valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure.
The expansion valve is equipped with energy reserve to allow the closure of the valve in the event of lack of power supply.
- Sight glass.
- Electromagnetic valve on liquid line up to model T 150 P2 included. The electromagnetic valve is not installed when the electronic expansion valve is present.

- Filter dryer on liquid line.
- Service valves on liquid line and gas discharge.
- Safety valves on high and low pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- 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 indoor installation complete with:

- Main switch with door lock safety.
- Magnetothermic switch or fuses for each compressor.
- Contactors for each load.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply 400/3/50.

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 heat exchangers' threaded hydraulic connections are available up to a diameter of 3 " included, and correspond to ISO 228/1 – G M.
- The pipes' 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 not supplied with counter flange.
- The hydraulic connections with grooved end are not supplied with flexible joint (optional accessory).

OPTIONAL ACCESSORIES

MANTA	T 27 P1	T 30 P1	T 33 P1	T 40 P1	T 40 P2	T 40 P2	T 48 P2	T 48 P2	T 54 P2	T 54 P2	T 60 P2
SIZE	S	S	S	S	D	S	D	S	D	D	S
	J4	J4	J4	J4	J7						
172 - Rubber support (kit)	●	●	●	●	●	●	●	●	●	●	●
118 - Kit brine A	●	●	●	●	●	●	●	●	●	●	●
119 - Kit brine B	●	●	●	●	●	●	●	●	●	●	●
Evaporator flexible joint with adapter pipe (solder type)	-	-	-	-	-	-	-	-	-	-	-
Evaporator flexible joint with adapter for flange connection	-	-	-	-	-	-	-	-	-	-	-
Condenser flexible joint with adapter pipe (solder type)	-	-	-	-	-	-	-	-	-	-	-
Condenser flexible joint with adapter for flange connection	-	-	-	-	-	-	-	-	-	-	-
450 - Desuperheater	●	●	●	●	●	●	●	●	●	●	●
220 - Electronic expansion valve	●	●	●	●	●	●	●	●	●	●	●
1002 - Condensing control with 2 way valve	●	●	●	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	-	-	-	-	-	●	●	●	●	●	●
Ambient temperature sensor	●	●	●	●	●	●	●	●	●	●	●
919 - Clock card	●	●	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●	●	●

OPTIONAL ACCESSORIES

MANTA	T 60 P2	T 70 P2	T 70 P2	T 90 P2	T 90 P2	T 120 P2	T 120 P2	T 150 P2	T 150 P2	T 170 P4	T 175 P3
SIZE	D J7	S J7	D J7	S J7	D J7	S J7	D J7	S J8	D J8	D J8	S J8
172 - Rubber support (kit)	●	●	●	●	●	●	●	●	●	●	●
118 - Kit brine A	●	●	●	●	●	●	●	●	●	●	●
119 - Kit brine B	●	●	●	●	●	●	●	●	●	●	●
Evaporator flexible joint with adapter pipe (solder type)	-	-	-	-	-	-	-	-	-	-	-
Evaporator flexible joint with adapter for flange connection	-	-	-	-	-	-	-	-	-	-	-
Condenser flexible joint with adapter pipe (solder type)	-	-	-	-	-	-	-	-	-	-	-
Condenser flexible joint with adapter for flange connection	-	-	-	-	-	-	-	-	-	-	-
450 - Desuperheater	-	●	-	●	-	●	-	●	●	●	●
220 - Electronic expansion valve	●	●	●	●	●	●	●	●	●	●	-
1002 - Condensing control with 2 way valve	●	●	●	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	●	●	●	●	●	●	●	●	●	●	●
Ambient temperature sensor	●	●	●	●	●	●	●	●	●	●	●
919 - Clock card	●	●	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●	●	●

MANTA	T 190 P4	T 200 P2	T 200 P2	T 220 P3	T 240 P4	T 290 P3	T 300 P4	T 340 P4	T 380 P4	T 460 P6	T 570 P6
SIZE	D J9	S J9	D J9	S J9	D J9	S J9	D J9	D J10	D J10	D J10	D J10
172 - Rubber support (kit)	●	●	●	●	●	●	●	●	●	●	●
118 - Kit brine A	●	●	●	●	●	●	●	●	●	●	●
119 - Kit brine B	●	●	●	●	●	●	●	●	●	●	●
Evaporator flexible joint with adapter pipe (solder type)	●	●	●	●	●	●	●	●	●	●	●
Evaporator flexible joint with adapter for flange connection	●	●	●	●	●	●	●	●	●	●	●
Condenser flexible joint with adapter pipe (solder type)	●	●	●	●	●	●	●	●	●	●	●
Condenser flexible joint with adapter for flange connection	●	●	●	●	●	●	●	●	●	●	●
450 - Desuperheater	●	●	●	●	●	●	●	●	●	●	●
220 - Electronic expansion valve	-	-	-	-	-	-	-	-	-	-	-
1002 - Condensing control with 2 way valve	●	●	●	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	●	●	●	●	●	●	●	●	●	●	●
Ambient temperature sensor	●	●	●	●	●	●	●	●	●	●	●
919 - Clock card	●	●	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●	●	●

● available accessory; - not available accessory

TECHNICAL DATA MANTA

MANTA		T 27 P1 S J4	T 30 P1 S J4	T 33 P1 S J4	T 40 P1 S J4	T 40 P2 S J7	T 40 P2 D J7	T 48 P2 S J7	T 48 P2 D J7	
SIZE										
Cooling capacity (1)	kW	29,1	32,9	36,6	41,3	47,6	48,5	56,9	56,7	
Unit power input	kW	7,1	7,9	9,0	10,1	12,3	12,2	14,2	13,6	
Evaporator water flow rate	m³/h	5,0	5,7	6,3	7,1	8,2	8,3	9,8	9,7	
Evaporator pressure drop	kPa	55	56	50	37	46	28	47	29	
Condenser water flow rate	m³/h	6,1	7,0	7,8	8,9	10,2	10,4	12,1	12,1	
Condenser pressure drop	kPa	69	63	64	47	57	38	57	38	
Compressors		scroll								
Quantity	n.	1	1	1	1	2	2	2	2	
Capacity steps	n.	1	1	1	1	2	2	2	2	
Refrigerant		R410A								
Total refrigerant charge (optional excluded)	kg	2,9	2,9	3,0	3,9	4,2	5,0	4,3	5,7	
Gas circuits	n.	1	1	1	1	1	2	1	2	
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	
Max unit operating current (FLA)	A	22	25	31	34	42	42	44	44	
Unit starting current (LRA)	A	118	118	140	173	132	132	140	140	
EER (1)	kW/kW	4,10	4,14	4,06	4,08	3,88	3,99	4,01	4,16	
ESEER		4,33	4,37	4,26	6,14	4,81	4,52	5,07	4,78	
Sound power level [Lw] (2)	dB(A)	65,4	66,4	67,4	68,8	68,9	68,9	68,9	68,9	
Average sound pressure level [Lpm] (3)	dB(A)	50,0	51,0	52,0	53,0	53,0	53,0	53,0	53,0	
Net weight	kg	258	260	270	281	440	450	444	455	
Hydraulic connections										
Evaporator / Condenser IN/OUT - ISO228/1-G M Ø		1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"	2"	
Evaporator IN/OUT - OD (4)	Ø mm	--	--	--	--	--	--	--	--	
OPT	Partial heat recovery (5)									
	Heating capacity	kW	4,5	5,1	5,7	6,4	7,4	--	8,9	--

MANTA		T 54 P2 S J7	T 54 P2 D J7	T 60 P2 S J7	T 60 P2 D J7	T 70 P2 S J7	T 70 P2 D J7	T 90 P2 S J7	T 90 P2 D J7	
SIZE										
Cooling capacity (1)	kW	65,4	64,2	69,8	70,4	83,4	83,1	108,0	107,0	
Unit power input	kW	16,2	15,4	17,9	17,3	21,9	20,9	27,7	26,8	
Evaporator water flow rate	m³/h	11,2	11,0	12,0	12,1	14,3	14,3	18,5	18,4	
Evaporator pressure drop	kPa	50	28	43	28	50	28	46	29	
Condenser water flow rate	m³/h	13,9	13,6	15,0	15,0	18,0	17,8	23,2	23,0	
Condenser pressure drop	kPa	60	37	51	36	60	37	52	36	
Compressors		scroll								
Quantity	n.	2	2	2	2	2	2	2	2	
Capacity steps	n.	2	2	2	2	2	2	2	2	
Refrigerant		R410A								
Total refrigerant charge (optional excluded)	kg	5,7	5,7	5,8	5,7	6,6	8,1	8,7	10,4	
Gas circuits	n.	1	2	1	2	1	2	1	2	
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	
Max unit operating current (FLA)	A	50	50	62	62	68	68	80	80	
Unit starting current (LRA)	A	143	143	171	171	207	207	265	265	
EER (1)	kW/kW	4,03	4,18	3,91	4,06	3,80	3,97	3,90	3,99	
ESEER		5,03	4,77	4,79	4,59	4,88	4,60	4,90	4,55	
Sound power level [Lw] (2)	dB(A)	69,9	69,9	70,9	70,9	71,9	71,9	76,9	76,9	
Average sound pressure level [Lpm] (3)	dB(A)	54,0	54,0	55,0	55,0	56,0	56,0	61,0	61,0	
Net weight	kg	455	468	460	485	465	495	715	760	
Hydraulic connections										
Evaporator / Condenser IN/OUT - ISO228/1-G M Ø		2"	2"	2"	2"	2"	2"	--	--	
Evaporator IN/OUT - OD (4)	Ø mm	--	--	--	--	--	--	76,1	76,1	
OPT	Partial heat recovery (5)									
	Heating capacity	kW	10,2	--	10,9	--	13,0	--	16,9	--

1. Referred to chilled water temperature 12/7°C and condenser water temperature 30/35°C according to Eurovent standard
2. Sound power level [Lw] according to ISO EN 9614 - 2
3. Average sound pressure level [Lpm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end. The flexible joint is an optional accessory.
5. Referred to chilled water temperature 12/7°C; condenser water temperature 30/35°C and recovery hot water temperature 40/45°C.

TECHNICAL DATA MANTA

MANTA		T 120 P2 S J7	T 120 P2 D J7	T 150 P2 S J8	T 150 P2 D J8	T 170 P4 D J8	T 175 P3 S J8	T 190 P4 D J9	T 200 P2 S J9
SIZE		J7	J7	J8	J8	J8	J8	J9	J9
Cooling capacity (1)	kW	135,0	134,0	175,0	173,0	200,0	199,0	214,0	229,0
Unit power input	kW	35,0	34,2	44,3	43,5	48,3	52,2	56,3	56,8
Evaporator water flow rate	m³/h	23,1	23,0	30,0	29,7	34,3	34,2	36,8	39,2
Evaporator pressure drop	kPa	48	38	46	42	42	54	34	46
Condenser water flow rate	m³/h	29,1	28,8	37,5	37,2	42,6	43,1	46,6	48,8
Condenser pressure drop	kPa	53	47	45	47	70	51	42	62
Compressors	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
Quantity	n.	2	2	2	2	4	3	4	2
Capacity steps	n.	2	2	2	2	4	3	4	2
Refrigerant	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Total refrigerant charge (optional excluded)	kg	10,7	12,7	12,4	17,0	17,8	16,0	23,9	22,4
Gas circuits	n.	1	2	1	2	2	1	2	1
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Max unit operating current (FLA)	A	97	97	131	131	148	146	160	164
Unit starting current (LRA)	A	321	321	375	375	333	369	345	466
EER (1)	kW/kW	3,86	3,92	3,95	3,98	4,14	3,81	3,80	4,03
ESEER		4,87	4,47	5,03	4,54	5,44	5,11	5,11	4,52
Sound power level [Lw] (2)	dB(A)	80,1	80,1	81,0	81,0	81,0	82,8	81,0	81,0
Average sound pressure level [Lpm] (3)	dB(A)	64,0	64,0	64,0	64,0	64,0	65,8	64,0	64,0
Net weight	kg	775	788	1022	1030	1130	1152	1315	1085
Hydraulic connections									
Evaporator / Condenser IN/OUT - ISO228/1-G M Ø		--	--	--	--	--	--	--	--
Evaporator IN/OUT - OD (4)	Ø mm	76,1	76,1	76,1	76,1	76,1	76,1	88,9	88,9
OPT Partial heat recovery (5)									
Heating capacity	kW	21,0	--	27,2	27,0	31,2	31,1	33,5	35,6

MANTA		T 200 P2 D J9	T 220 P3 S J9	T 240 P4 D J9	T 290 P3 S J9	T 300 P4 D J9	T 340 P4 D J10	T 380 P4 D J10	T 460 P6 D J10	T 570 P6 D J10
SIZE		J9	J9	J9	J9	J9	J10	J10	J10	J10
Cooling capacity (1)	kW	227,0	270,0	276,0	331,0	347,0	403,0	446,0	534,0	670,0
Unit power input	kW	55,6	65,9	69,0	83,0	88,5	101,0	112,9	130,2	170,9
Evaporator water flow rate	m³/h	38,9	46,4	47,3	56,8	59,5	69,1	76,6	91,6	115,0
Evaporator pressure drop	kPa	53	52	61	49	70	70	64	63	85
Condenser water flow rate	m³/h	48,5	57,6	59,0	71,1	74,5	86,2	95,7	114,0	144,0
Condenser pressure drop	kPa	71	68	81	60	89	86	74	64	83
Compressors	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
Quantity	n.	2	3	4	3	4	4	4	6	6
Capacity steps	n.	2	3	4	3	4	4	4	6	6
Refrigerant	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Total refrigerant charge (optional excluded)	kg	22,8	23,1	24,7	30,3	31,6	31,1	48,1	49,5	62,4
Gas circuits	n.	2	1	2	1	2	2	2	2	2
Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Max unit operating current (FLA)	A	164	197	246	194	262	295	328	393	492
Unit starting current (LRA)	A	466	441	584	418	507	597	630	637	794
EER (1)	kW/kW	4,08	4,10	4,00	3,99	3,92	3,99	3,95	4,10	3,92
ESEER		5,11	5,37	5,19	5,27	5,09	5,20	5,19	5,51	5,25
Sound power level [Lw] (2)	dB(A)	81,0	82,8	84,1	82,8	84,1	84,5	84,5	86,3	86,3
Average sound pressure level [Lpm] (3)	dB(A)	64,0	65,8	67,0	65,8	67,0	67,0	67,0	68,8	68,8
Net weight	kg	1115	1302	1545	1403	1590	1665	1775	2270	2300
Hydraulic connections										
Evaporator / Condenser IN/OUT - ISO228/1-G M Ø		--	--	--	--	--	--	--	--	--
Evaporator IN/OUT - OD (4)	Ø mm	88,9	88,9	88,9	88,9	88,9	88,9	88,9	88,9	88,9
OPT Partial heat recovery (5)										
Heating capacity	kW	35,3	42,1	43,0	51,7	54,1	62,8	69,6	83,2	104,0

- Referred to chilled water temperature 12/7°C and condenser water temperature 30/35°C according to Eurovent standard
- 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 chilled water temperature 12/7°C; condenser water temperature 30/35°C and recovery hot water temperature 40/45°C.

DIMENSIONS (mm)

SIZE J	a	b	c
J4	1000	650	1400
J7	1200	750	1700
J8	1800	1200	1740
J9	1800	1200	1740
J10	1800	1800	1740

