MULTIPLO PF: Multifunction chillers for indoor installation, equipped with scroll compressors and plug fan
Cooling Capacity: **21,8 ÷ 222,0 kW**
Heating Capacity: **25,2 ÷ 236,0 kW**

IDEA® RC Hi-Tech

multiplo pf

rcgroupairconditioning

R410A PLATE EC

MAIN FEATURES
- Multifunction chiller
- 17 models available, for a wide selection opportunity..
- Average step of 12kW.
- EER up to 3,12.
- COP up to 3,84.
- ESEER up to 4,01.
- Scroll compressors.
- Single gas circuit.
- R410A Refrigerant charge.
- Plate type heat exchangers.
- EC-type plug fan.
- Single air circuit.
- Electronic expansion valve.
- Suitable for indoor installation.

MAIN BENEFITS
- Defrosting dynamics control system IDEA®.
- Availability of pumping groups.
- Availability of kit for the reduction of the noise.
- Easily of maintenance.

INDOOR INSTALLATION
The machines are designed for indoor installation.

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: -12÷20°C
Ambient temperature: -10÷45°C

WORKING LIMITS IN HEATING MODE
Condenser hot water outlet temperature: 30÷60°C
Ambient temperature: -10÷35°C

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1 9 6 3 2 0 1 3
fifty cool years

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.
- Terminal box with IP54 enclosure class.
- 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
- Centrifugal fans with backward curved blades, single suction and without scroll housings (Plug-fan).
- Brushless type synchronous EC motor with integrated electronic commutated system and continuous variation of the rotation speed. The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the 0÷10V proportional signal coming from the microprocessor control.
- Maintenance-free bearings
- IP54 enclosure class.

REFRIGERANT CIRCUIT

Components for the single refrigerant circuit:
- Reversing valve for refrigeration cycle inversion.
- Electronic expansion valves:
  - o For P1 units:
    - One electronic expansion valve.
  - o For P2 units:
    - One valve on plant side heat exchanger.
    - One valve on source side heat exchanger (finned coil).

  The 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.
- Thermostatic expansion valve for defrosting check on air/gas heat exchanger.
- Sight glass.
- Liquid receiver with service valve and safety valve.
- Filter dryer on liquid line.
- Solenoid valves on liquid lines.
- Service valves on liquid line and gas discharge.
- 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.
- Check valves.
- 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.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- 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.
  - Clock card for alarms date and time displaying and storing.
  - Nonvolatile “Flash” memory for data storage.
  - Menu with protection password.
  - LAN connection.

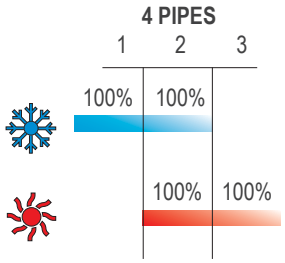
HYDRAULIC CONNECTIONS OF HEAT EXCHANGERS
- The heat exchangers’ threaded hydraulic connections are available up to a diameter of 2” included, and correspond to ISO 228/1 – G M.
- The pipes’ threaded hydraulic connections are available up to a diameter of 2” included, and correspond to ISO 7/1 – R.
- The hydraulic connections with flange (FL) are supplied as standard with counter flange.
- The hydraulic connections with grooved end are supplied as standard with flexible joint and adapter pipe.

MULTIPLO PF

Multifunction liquid chiller with independent or simultaneous production of chilled and hot water for 4 pipes plants.

WORKING LOGIC

According to the request, the unit can produce chilled water and hot water for heating, as indicated in the below scheme, that summarizes the various working conditions.
The unit cooling and heating functions are enabled by selectors placed on the electric board.
The pumps indicated in the scheme are optional accessories and they are factory installed inside the chiller.
The pumps are active only when the relative working mode is enabled.



MULTIPLO PF can produce chilled water or hot water with variable loads up to 50% of the nominal.
Unit equipped with two compressors can partialize their operation so as to obtain different working conditions as per following table:

UNITS EQUIPPED WITH 2 COMPRESSORS			
Cool %	**Heat %**	**Compressor 1**	**Compressor 2**
50	-	●	-
100	-	●	●
-	50	●	-
-	100	●	●
50	50	●	-
100	100	●	●
Defrosting		●	-
Defrosting		●	●

UNITS EQUIPPED WITH 1 COMPRESSOR		
Cool %	**Heat %**	**Compressor 1**
100	-	●
-	100	●
100	100	●
Defrosting		●

● component on; **-** component off.

OPTIONAL ACCESSORIES

MULTIPLO PF	22 P1 S	24 P1 S	28 P1 S	32 P1 S	36 P1 S	42 P1 S	53 P1 S	67 P1 S	55 P2 S
SIZE	C1	C1	C1	C1	C1	C1	C2	C2	C2
744 - CW Pumping group (1 pump)	●	●	●	●	●	●	●	●	●
748 - CW Pumping group (2 pumps)	-	-	-	-	-	-	-	-	-
746 - HW Pumping group (1 pump)	-	-	-	-	-	-	-	-	-
750 - HW Pumping group (2 pumps)	-	-	-	-	-	-	-	-	-
768 - Chilled water storage tank	●	●	●	●	●	●	●	●	●
763 - Chilled and hot water tanks	●	●	●	●	●	●	●	●	●
170 - Spring antivibration holders (kit)	●	●	●	●	●	●	●	●	●
172 - Rubber support (kit)	●	●	●	●	●	●	●	●	●
118 - Kit brine A	●	●	●	●	●	●	●	●	●
119 - Kit brine B	●	●	●	●	●	●	●	●	●
Plant side heat exchanger flexible joint with adapter pipe (solder type)	-	-	-	-	-	-	-	-	-
Plant side heat exchanger flexible joint with adapter for flange connection	-	-	-	-	-	-	-	-	-
251 - Coils protection nets	●	●	●	●	●	●	●	●	●
351 - Coils with pre-painted fins	●	●	●	●	●	●	●	●	●
Coil in special execution	●	●	●	●	●	●	●	●	●
160 - Discharge air plenum with sound attenuators	●	●	●	●	●	●	●	●	●
731 - Safety water flow switch	●	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	●	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●	●
460 - Kit for outdoor installation	●	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●	●

MULTIPLO PF	62 P2 S	71 P2 S	85 P2 S	107 P2 S	135 P2 S	170 P2 S	195 P2 S	220 P2 S
SIZE	C2	C2	C3	C3	C4	C4	C4	C5
744 - CW Pumping group (1 pump)	●	●	●	●	●	●	●	●
748 - CW Pumping group (2 pumps)	-	-	-	-	●	●	●	●
746 - HW Pumping group (1 pump)	-	-	-	-	●	●	●	●
750 - HW Pumping group (2 pumps)	-	-	-	-	●	●	●	●
768 - Chilled water storage tank	●	●	●	●	●	●	●	●
763 - Chilled and hot water tanks	●	●	●	●	●	●	●	●
170 - Spring antivibration holders (kit)	●	●	●	●	●	●	●	●
172 - Rubber support (kit)	●	●	●	●	●	●	●	●
118 - Kit brine A	●	●	●	●	●	●	●	●
119 - Kit brine B	●	●	●	●	●	●	●	●
Plant side heat exchanger flexible joint with adapter pipe (solder type)	-	-	●	●	●	●	●	●
Plant side heat exchanger flexible joint with adapter for flange connection	-	-	●	●	●	●	●	●
251 - Coils protection nets	●	●	●	●	●	●	●	●
351 - Coils with pre-painted fins	●	●	●	●	●	●	●	●
Coil in special execution	●	●	●	●	●	●	●	●
160 - Discharge air plenum with sound attenuators	●	●	●	●	●	●	●	●
731 - Safety water flow switch	●	●	●	●	●	●	●	●
605 - Compr. power factor capacitor - 0,9	●	●	●	●	●	●	●	●
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	●	●	●	●	●	●	●	●
460 - Kit for outdoor installation	●	●	●	●	●	●	●	●
889 - Master plant SEQUENCER	●	●	●	●	●	●	●	●
962 - Kit modem GSM	●	●	●	●	●	●	●	●
957 - Plantwatch without modem	●	●	●	●	●	●	●	●
930 - Remote graphic terminal kit	●	●	●	●	●	●	●	●

● available accessory; - not available accessory

TECHNICAL DATA MULTIPLO PF

	MULTIPLO PF		22 P1 S	24 P1 S	28 P1 S	32 P1 S	36 P1 S	42 P1 S	53 P1 S	67 P1 S
	SIZE		C1	C1	C1	C1	C1	C1	C2	C2
STANDARD	**Only cooling - Cooling capacity (1)**	**kW**	**21,8**	**24,8**	**29,0**	**32,9**	**36,7**	**42,4**	**53,9**	**67,8**
	Unit power input	kW	7,0	8,2	9,9	11,1	12,8	15,5	18,6	23,4
	Evaporator water flow rate	m³/h	3,8	4,3	5,0	5,7	6,3	7,3	9,3	11,7
	Evaporator pressure drop	kPa	27	35	37	29	36	37	33	29
	Only heating - Heating capacity (2)	**kW**	**25,2**	**28,8**	**30,0**	**37,9**	**42,4**	**43,7**	**56,6**	**70,9**
	Unit power input	kW	6,6	7,6	9,1	10,2	11,7	13,8	17,4	21,8
	Condenser water flow rate	m³/h	4,4	5,0	5,2	6,6	7,4	7,6	9,8	11,8
	Condenser pressure drop	kPa	34	44	41	34	42	42	41	32
	Cooling + Heating (3)									
	Cooling capacity	**kW**	**22,7**	**26,1**	**30,6**	**34,9**	**39,0**	**45,4**	**55,5**	**69,7**
	Heating capacity	**kW**	**28,7**	**32,9**	**38,5**	**43,8**	**49,0**	**57,2**	**71,2**	**89,4**
	Unit power input	kW	6,5	7,4	9,0	10,1	11,6	13,9	17,7	22,1
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	1	1	1	1	1	1	1	1
	Capacity steps	n.	1	1	1	1	1	1	1	1
	Plug fans EC	n.	1	1	1	1	1	1	2	2
	Total air flow	m³/h	6500	7000	8500	10000	11000	12000	16000	21000
	External static pressure	Pa	50	50	50	50	50	50	50	50
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	12,2	12,3	12,3	13,0	13,0	13,0	16,4	17,9
	Gas circuits	n.	1	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	400/3/50+N
	Max unit operating current (FLA)	A	20,3	25,3	26,3	29,9	35,9	38,9	48,6	52,4
	Unit starting current (LRA)	A	99,3	115,3	122,3	122,9	144,9	178,9	233,6	148,4
	EER (1)	kW/kW	3,12	3,03	2,93	2,96	2,86	2,73	2,90	2,90
	COP (2)	kW/kW	3,84	3,80	3,30	3,70	3,63	3,16	3,25	3,25
	ESEER		4,01	3,93	3,62	3,66	3,46	3,19	3,51	3,70
	Sound power level [Lw] (4)	dB(A)	87,1	88,7	92,9	92,1	94,2	96,0	94,8	93,1
	Average sound pressure level [Lpm] (5)	dB(A)	70,6	72,1	76,3	75,6	77,6	79,4	77,6	75,9
	Net weight	kg	400	410	410	430	430	440	690	740
	Hydraulic connections									
	Evaporator/Condenser IN/OUT - ISO 7/1 – R	Ø	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"
	Evaporator/Condenser IN/OUT - OD (6)	Ø mm	-	-	-	-	-	-	-	-
OPTIONAL	Chilled water pumping group	kW	0,75	0,75	0,75	0,75	0,75	0,75	1,5	1,5
	Hot water pumping group	kW	0,75	0,75	0,75	0,75	0,75	0,75	1,5	1,5
	Chilled water tank - volume	l	130	130	130	130	130	130	210	210
	Hot water tank - volume	l	130	130	130	130	130	130	210	210

1. Referred to chilled water temperature 12/7°C; ambient temperature 35°C.
2. Referred to hot water outlet temperature 45°C; 7°C ambient temperature.
3. Referred to chilled water temperature 12/7°C; ambient temperature 35°C and hot water temperature 40/45°C.
4. Sound power level [Lw] according to ISO EN 9614 - 2
5. Average sound pressure level [L_{Pm}] 1m far according to ISO EN 3744.
6. Hydraulic connection with grooved end. The flexible joint is an optional accessory.

TECHNICAL DATA MULTIPLO PF

	MULTIPLO PF		55 P2 S	62 P2 S	71 P2 S	85 P2 S	107 P2 S	135 P2 S	170 P2 S	195 P2 S	220 P2 S
	SIZE		C2	C2	C2	C3	C3	C4	C4	C4	C5
STANDARD	**Only cooling - Cooling capacity (1)**	**kW**	**56,9**	**63,9**	**72,1**	**85,8**	**109,0**	**134,0**	**175,0**	**194,0**	**222,0**
	Unit power input	kW	19,2	21,7	25,0	28,0	37,5	45,4	60,3	70,0	74,7
	Evaporator water flow rate	m³/h	9,8	11,0	12,4	14,8	18,7	23,1	30,1	33,4	38,2
	Evaporator pressure drop	kPa	36	35	35	38	36	37	36	41	42
	Only heating - Heating capacity (2)	**kW**	**59,7**	**67,1**	**75,5**	**90,0**	**114,0**	**143,0**	**185,0**	**208,0**	**236,0**
	Unit power input	kW	18,5	20,8	23,4	26,6	35,7	42,7	57,3	64,2	70,7
	Condenser water flow rate	m³/h	10,4	11,7	13,1	15,6	19,8	24,8	32,1	36,1	41,0
	Condenser pressure drop	kPa	40	38	42	45	40	40	35	55	54
	Cooling + Heating (3)										
	Cooling capacity	**kW**	**58,2**	**65,7**	**75,0**	**88,5**	**111,0**	**139,0**	**180,0**	**204,0**	**229,0**
	Heating capacity	**kW**	**74,6**	**84,2**	**95,6**	**112,0**	**142,0**	**179,0**	**231,0**	**261,0**	**293,0**
	Unit power input	kW	18,4	20,7	23,5	26,7	36,3	43,1	57,9	65,2	71,4
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	2	2	2	2	2	2
	Capacity steps	n.	2	2	2	2	2	2	2	2	2
	Plug fans EC	n.	2	2	2	3	3	4	4	4	5
	Total air flow	m³/h	18000	20500	23000	25500	32000	40000	52000	54000	62500
	External static pressure	Pa	50	50	50	50	50	50	50	50	50
	Air circuits	n.	1	1	1	1	1	1	1	1	1
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	17,7	17,7	18,6	23,2	26,3	33,7	39,4	41,9	69,4
	Gas circuits	n.	1	1	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	400/3/50+N	400/3/50+N
	Max unit operating current (FLA)	A	59,8	56,9	70,4	82,7	94,7	113,8	147,6	164,2	185,0
	Unit starting current (LRA)	A	152,8	280,4	179,4	222,7	279,7	337,3	392,2	456,2	477,0
	EER (1)	kW/kW	2,97	2,94	2,88	3,06	2,91	2,95	2,90	2,77	2,97
	COP (2)	kW/kW	3,22	3,23	3,23	3,38	3,19	3,35	3,23	3,24	3,34
	ESEER		3,85	3,69	3,61	3,94	3,47	3,97	3,49	3,38	3,69
	Sound power level [Lw] (4)	dB(A)	86,8	96,7	89,2	93,9	98,7	92,6	95,9	96,6	96,6
	Average sound pressure level [Lpm] (5)	dB(A)	69,6	79,5	72,0	76,0	80,8	74,0	77,3	78,0	77,3
	Net weight	kg	680	750	770	960	1160	1560	1680	1770	2150
	Hydraulic connections										
	Evaporator / Condenser IN/OUT - ISO 7/1 – R	Ø	2"	2"	2"	-	-	-	-	-	-
	Evaporator / Condenser IN/OUT - OD (6)	Ø mm	-	-	-	76,1	76,1	88,9	88,9	88,9	88,9
OPTIONAL	Chilled water pumping group	kW	1,5	1,5	1,5	2,2	2,2	3,0	3,0	3,0	3,0
	Hot water pumping group	kW	1,5	1,5	1,5	2,2	2,2	3,0	3,0	3,0	4,0
	Chilled water tank - volume	l	210	210	210	360	360	520	520	520	720
	Hot water tank - volume	l	210	210	210	360	360	520	520	520	720

1. Referred to chilled water temperature 12/7°C; ambient temperature 35°C.
2. Referred to hot water outlet temperature 45°C; 7°C ambient temperature.
3. Referred to chilled water temperature 12/7°C; ambient temperature 35°C and hot water temperature 40/45°C.
4. Sound power level [Lw] according to ISO EN 9614 - 2
5. Average sound pressure level [L_{Pm}] 1m far according to ISO EN 3744.
6. Hydraulic connection with grooved end. The flexible joint is an optional accessory.

DIMENSIONS (mm)

SIZE C	a	b	c
C1	1250	890	1950
C2	1800	1040	2000
C3	2600	1200	2000
C4	3700	1260	2000
C5	4950	1260	2040