

Data Book

378 HEATING

HEATING

HOT WATER

EW-HT 0152 - 0612_201612_EN HFC R134a

EW-HT 0152 - 0612

70,2-279 kW

Water to water heat pumps, heating only, very high temperature water production



R HFC R-134a

SCROLL

P PLATES

(The photo of the unit is indicative and may vary depending on the model)

- ✓ WIDE OPERATING RANGE
- ✓ MAXIMUM RELIABILITY
- ✓ ELECTRONIC EXPANSION VALVE SUPPLIED STANDARD

- ✓ RENEWABLE ENERGY FOR COMMERCIAL INSTALLATIONS
- ✓ COMPACTNESS

CERTIFICATIONS

Product certifications



System certifications



Climaveneta S.p.A.:

Quality System complying with the requirements of UNI EN ISO 9001:2008 regulation
Environmental Management System complying with the requirements of UNI EN ISO 14001:2004 regulation
Occupational Health and Safety Management System complying with the requirements of BS OHSAS 18001:2007

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The units highlighted in this publication contain HFC R134a [GWP₁₀₀ 1300] fluorinated greenhouse gases.

LEGEND

Functions



Heating 78°C



Heating



Hot water

Refrigerant



R-134a

Compressors



Scroll compressor

Exchangers



Plates

1.1 PRODUCT PRESENTATION

2.1 GREEN CERTIFICATION RELEVANT

Climaveneta as a major player in the world HVAC market and a leading manufacturer of energy efficient, sustainable HVAC solutions, recognizes and supports the diffusion of green certification systems, as an effective way to deliver high performance buildings and improve the quality and the sustainability of the built environment.

Since the first certification system was introduced at the beginning of the 1990s, the demand for certified buildings has grown considerably, as well as the number of standards, rating and certification programs. Operating worldwide Climaveneta has extensive experience with many of them and is active member of Green Building Council Italy.

Climaveneta commitment to develop responsible and sustainable HVAC solutions, is reflected by a full range of premium efficiency products and systems, designed with special care to improve building energy performance ratings, according to major certification protocols, including LEED, BREAM, GREENSTAR, BCA, NABERS, DNGB, HQE and BEAM.

To find out more about how our products contribute to enhanced green certification rating and energy performance of a building, please refer to:

<http://www.climaveneta.com/GLOBAL/Company/Green-Certifications/>
QR code



PRODUCT PRESENTATION

EW-HT represents the best solution for systems where very high temperature water is needed, for domestic hot water production, space heating or industrial process purpose.

The special compressor adopted grants hot water production up to 78°C and allows high evaporation temperature (evaporator leaving water temperature up to 40°C). The extraordinary operating limits ensure the perfect integration of the unit in any application, such as 4-pipe systems for residential and commercial buildings, industrial process heat recovery, district heating systems, IT-cooling plants.

1.3 WIDE OPERATING RANGE

Hot water production up to 78°C (evaporator water outlet up to 40°C).

1.4 MAXIMUM RELIABILITY

Unit with two independent refrigerant circuit, designed to ensure maximum efficiency at full load, ensuring uninterrupted operation even in the event of temporary stop of one of the two circuits.

1.5 ELECTRONIC EXPANSION VALVE SUPPLIED STANDARD

The use of the electronic expansion valve generates considerable benefits, especially in cases of variable demand and different external conditions. It was introduced into these units as a result of accurate design choices concerning the cooling circuit and the optimisation of operation in various different working conditions

1.6 RENEWABLE ENERGY FOR COMMERCIAL INSTALLATIONS

Best solution in centralised residential systems such as apartment buildings, where the cost of renovation needs to be limited by keeping the same distribution system with radiators, while offering a source of renewable energy.

1.7 COMPACTNESS

Reduced dimensions, for easy installation even in sites with space constraints

2.1 UNIT STANDARD COMPOSITION

2.2 Water to water heat pumps, heating only, very high temperature water production

EW-HT represents the best solution for systems where very high temperature water is needed, for domestic hot water production, space heating or industrial process purpose.

The special compressor adopted grants hot water production up to 78°C and allows high evaporation temperature (evaporator leaving water temperature up to 40°C). The extraordinary operating limits ensure the perfect integration of the unit in any application, such as 4-pipe systems for residential and commercial buildings, industrial process heat recovery, district heating systems, IT-cooling plants.

2.3 Installation note

The unit is supplied fully refrigerant charged and factory tested. On site installation only requires power and hydraulic connection.

2.4 Structure

Load-bearing base and structure made from suitably thick hot galvanized steel plate. All parts painted with polyester power coat.

2.5 Panelling

The external panelling, made from aluminium-like epoxy painted sheet metal, offers maximum ease of access to the internal components. Standard version without acoustic insulation on compressors case. Available, on request, acoustic insulation on compressors section by 30mm thick Fiberform. See acoustic performances section to be informed on the noise reduction level.

2.6 Compressors

Latest generation hermetic rotary scroll compressors operating on R134a, complete with sump heater, electronic thermal protector with centralized manual reset, and two-pole electric motor.

2.7 Plant side heat exchanger

Braze-welded AISI 316 plate heat exchanger, dual circuit type. The heat exchanger is externally insulated with a layer of closed-cell neoprene. When the unit is operating, the heat exchangers are protected against no flow conditions by a water differential pressure switch.

2.8 Source side heat exchanger

Braze-welded AISI 316 plate heat exchanger, dual circuit type. The heat exchanger is externally insulated with a layer of closed-cell neoprene. When the unit is operating, the heat exchangers are protected against no flow conditions by a water differential pressure switch.

2.9 Refrigerant circuit

Unit fitted with 2 independent refrigerant circuits.

Standard equipment of each circuit:

- electronic expansion valve
- liquid line shut-off valve
- drier filter with replaceable cartridge
- high pressure safety valve
- high and low pressure transducers

2.10 Electrical and control panel

Electrical and control panel built to EN60204-1 and EC204-1 standards, complete with:

- control circuit transformer
- numbered cables
- general door lock isolator
- automatic circuit breakers and contactors for compressors
- terminals for cumulative alarm block
- relay for remote pump(s) activation
- remote ON/OFF terminals
- spring-type control circuit terminal board
- electronic controller
- multi-language user keypad with LCD display
- protection level IP21
- Power supply: 400V~ ±10% 3ph 50Hz PE

2.11 Certification and applicable directives

The unit complies with the following directives and relative amendments:

- Machine directive 2006/42/EC
- PED directive 97/23/EC
- Low Voltage directive 2006/95/EC
- ElectroMagnetic compatibility directive 2004/108/EC
- ISO 9001 Company's Quality Management System certification
- ISO 14001 Company's Environmental Management System certification

2.12 Tests

Tests performed throughout the production process, as indicated in

ISO9001.

Performance or noise tests can be performed by highly qualified staff in the presence of customers.

Performance tests comprise the measurement of:

- electrical data
- water flow rates
- working temperatures
- power input
- power output
- pressure drops on the water-side exchanger both at full load (at the conditions of selection and at the most critical conditions for the condenser) and at part load conditions.

During performance testing it is also possible to simulate the main alarm states.

Noise tests are performed to check noise emissions according to ISO9614.

2.13 Electronic control W3000TE

The W3000TE controller offers advanced functions and algorithms.

The Compact keypad features an easy-to-use interface and a complete LCD display that allows consulting and intervening on the unit by means of a multi-language menu (19 languages are available).

The regulation is based on the patented "Quickmind" water temperature regulation logic uses self-adapting control to maintain flow temperatures and optimise performance even in low water content scenarios. As an alternative, the proportional or proportional-integral regulations are also available.

The diagnostics comprises a complete alarm management system, with the "black-box" (via PC) and the alarm history display (via display or also PC) for enhanced analysis of the unit operation

Optional proprietary devices can perform the adjustment of the resources in systems made of several units. Consumption metering and performance measurement are possible as well.

Supervision can be easily developed via proprietary devices or the integration in third party systems by means of the most common protocols as ModBus, Bacnet, Bacnet-over-IP, LonWorks.

Compatibility with the remote keyboard (up to 8 units).

The programmable timer manages a weekly schedule organised into time bands to optimise unit performance by minimising power consumption during periods of inactivity. Up to 10 daily time bands can be associated with different operating set points.

The defrosting (air source reversible unit only) follows a proprietary self-adaptive logic, which features the monitoring of several operational parameters. This allows to reduce the number and duration of the defrost cycles, with a benefit for the overall energy efficiency.



3.1 ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
1960 PRESSURE RELIEF VALVES			
1961 DUAL RELIEF VALVES WITH SWITCH	Dual relief valve with switch	Allows to unselect a relief valve in order to service the unit avoiding medium or long inoperative periods	ALL
380 NUMBERED WIRING			
381 NUMBERED WIRING ON EL. BOARD	Electrical board wires are identified by numbered labels. The reference numbers are indicated in the unit's wiring scheme.	Facilitate maintenance interventions to the electrical board connections.	ALL
2410 PHASE SEQUENCE RELAY			
2411 WITH EXTERNAL PHASE SEQUENCE RELAY	Relay for checking mains phase-sequence	Protects loads against faults due to incorrect connection of mains	ALL
3410 AUTOMATIC CIRCUIT BREAKERS			
3412 AUTOM. CIRCUIT BREAK. ON LOADS	Over-current switch on the major electrical loads.	In case of overcurrent allows resetting of the switch without the replacement of relative fuses.	ALL
3600 ON/OFF COMPRESSOR SIGNAL			
3601 COMPRESSOR OPERATION SIGNAL	Auxiliary contacts providing a voltage-free signal.	Allows remote signalling of compressor's activation or remote control of any auxiliary loads.	ALL
4180 REMOTE CONNECTION ARRANGEMENT			
4181 SERIAL CARD MODBUS	Interface module for ModBUS protocols.	Allows integration with BMS operating with ModBUS protocol.	ALL
4182 SERIAL CARD FOR LONWORKS	Interface module for Echelon systems.	Allows integration with BMS operating with LonWorks protocols	ALL
4184 SERIAL CARD BACNET MS/TP RS485	Interface module for BACnet protocols.	Allows integration with BMS operating with BACnet protocol.	ALL
4185 SERIAL CARD FOR BACNET OVER IP	Interface module for BACnet OVER-IP protocols.	Allows to interconnect BACnet devices over Internet Protocol within wide-area networks.	ALL
6160 AUXILIARY INPUT			
6161 AUXILIARY SIGNAL 4-20mA	4-20 mA analog input	Allows to change the operating set-point according to the value of current applied to the analogue input.	ALL
6162 REMOTE SIGNAL DOUBLE SP	Allows to activate the Energy Saving set-point.	Allows to change the operating set-point according to a remote switch	ALL
6170 DEMAND LIMIT			
6171 INPUT REMOTE DEMAND LIMIT	Digital input (voltage free)	It permits to limit the unit's power absorption for safety reasons or in temporary situation.	ALL
6190 TYPE OF VISUAL DISPLAY			
6195 7 INCH TOUCH SCREEN	The unit is equipped with the Touch interface, with a 7" WVGA colour display and a front USB port (WARNING: with outdoor temperature below 0°C the display response time may visibly increase).	The touch-screen's technology is characterized by an easy-to-access data, and it allows an effective graphical representation of the main figures protecting the access through 3 privilege levels.	ALL

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
1510 SOFT-STARTER			
1511 UNIT WITH SOFT-START 2PH	Electronic device adopted to manage the inrush current.	Break down of the inrush current compared to the direct motor start, lower motor windings' mechanical wear, avoidance of mains voltage fluctuations during starting, favourable sizing for the electrical system.	ALL
5920 MANAGEMENT & CONTROL SYSTEMS			
5922 ClimaPRO ModBUS RS485 - MID	This option includes all following devices on-board the unit panel: - MID certified network analyzer operating on ModBUS over RS-485 - Current transformers - W3000TE controller - Software release LA09 or later version.	This accessory allows to acquire the electrical data and the power absorbed by the unit and communicate with ClimaPRO via high level communication interface based on ModBUS over EIA RS-485. More specifically, the data collected are: power supply, current, frequency, power factor ($\cos\phi$), electrical power consumption, energy consumption. This specific energy meter model is MID certified and can therefore be used for billing applications. This option also ensures the compatibility between the units and ClimaPRO, thus allowing ClimaPRO to acquire all the main unit's operating variables and status by means of a high level communication interface to the controller installed onboard the unit panel.	ALL
5923 ClimaPRO BacNET over IP	This option includes all following devices on-board the unit panel: - network analyzer operating on BACnet over IP - Current transformers - W3000TE controller - Software release LA09 or later version.	This accessory allows to acquire the electrical data and the power absorbed by the unit and communicate with ClimaPRO via high level communication interface based on BACnet over IP. More specifically, the data collected are: power supply, current, frequency, power factor ($\cos\phi$), electrical power consumption, energy consumption. This network analyzer is not MID certified and cannot therefore be used for billing applications. This option also ensures the compatibility between the units and ClimaPRO, thus allowing ClimaPRO to acquire all the main unit's operating variables and status by means of a high level communication interface to the controller installed onboard the unit panel.	ALL
1400 HP AND LP GAUGES			
1401 HP AND LP GAUGES	High and low pressure gauges	Allows immediate reading of the pressure values on both low and high pressure circuits	ALL
1900 COMPRESSOR SUCTION VALVE			
1901 COMPRESSOR SUCTION VALVE	Shut-off valve on compressor's suction circuit.	Simplifies maintenance activities	ALL

ACCESSORIES

ACCESSORIES	DESCRIPTIONS	BENEFITS	AVAILABLE FOR MODELS
1910 COMPRESSOR DISCHARGE VALVE			
1911 COMPR. DISCHARGE LINE VALVE	Shut-off solenoid valve on compressor discharge circuit	Simplifies maintenance activities	ALL
1940 EXPANSION VALVE			
1941 ELECTRONIC EXPANSION VALVE	Electronic expansion valve	Electronic lamination device with step motor. It is designed for the continuous and precise control of refrigerant flow entering in the evaporator. This solution permits extremely short times for reaction to variation in load, optimising power consumption.	ALL
2620 ACOUSTICAL ENCLOSURE			
2621 EXTRA INSULATION COMPR. SECTION	Increased soundproofing enclosure for compressor section	Noise emission reduction of 4 dB(A)	ALL

ACCESSORIES

NOTES ACCESSORIES

The following accessories are provided as standard:

- 381 Numbered wiring on el. board
- 3412 Autom. circuit break. on loads
- 1901 Compressor suction valve
- 1941 Electronic expansion valve

ACCESSORIES

Chiller Plant Control with Active Optimization System

ClimaPRO System Manager

ClimaPRO System Manager represents the state-of-the-art platform for chiller plant management and control.

ClimaPRO ensures to actively optimize the entire chiller plant by managing and adjusting each component directly involved in the production and the distribution of the heating and the cooling energies, therefore involving chillers and heat pumps, pumping groups as well as the source-side devices like, for example, the cooling towers.

In particular, ClimaPRO measures in real-time all the operating variables from the field, for each individual device and each of the main system branches, by using serial communication lines as well as dedicated analogue signals.

The acquired data are then compared with the design data of each single unit at any different working conditions, thus allowing to implement control strategies based on dynamic algorithms which take into account the real operating conditions.

On the basis of these values, an advanced diagnostic module also allows to assess the level of efficiency for each individual unit, translating data into easy-to-read information in order to simplify and optimize the maintenance activities.

The "Chart Builder" software module allows to display the trends of the main operating variables. The "Reporting" module allows to send reports to selected users, including data and system's status of the main devices as well as to perform calculation of the energy indexes for each single unit and for the entire chiller plant.

The accessibility to ClimaPRO System Manager is ensured by an integrated web server that makes it visible from any computer equipped with a web browser, either locally or remotely.



4.1 GENERAL TECHNICAL DATA

EW-HT

[SI System]

EW-HT		0152	0182	0202	0262	0302	0412	0512	0612	
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								
PERFORMANCE										
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(1)	kW	70,2	79,3	92,5	113	139	181	225	279
Total power input	(1)	kW	17,0	18,9	22,0	27,9	34,2	43,7	55,1	67,6
COP	(1)	kW/kW	4,13	4,20	4,20	4,05	4,08	4,14	4,08	4,13
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(1)(2)	kW	70,4	79,5	92,7	113	140	181	225	280
COP	(1)(2)	kW/kW	4,01	4,07	4,08	3,94	3,98	4,04	4,01	4,06
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(1)	l/s	2,15	2,42	2,83	3,45	4,26	5,52	6,87	8,54
Pressure drop	(1)	kPa	23,9	25,0	24,2	24,2	19,7	19,8	19,8	20,1
HEAT EXCHANGER SOURCE SIDE IN HEATING										
Water flow	(1)	l/s	2,62	2,97	3,47	4,19	5,18	6,74	8,35	10,41
Pressure drop	(1)	kPa	45,4	46,7	51,8	53,8	49,7	50,1	37,6	37,7
REFRIGERANT CIRCUIT										
Compressors nr.		N°	2	2	2	2	2	2	2	2
Number of capacity		N°	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2
Regulation			STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS	STEPS
Min. capacity step		%	50	50	50	50	50	50	50	50
Refrigerant			R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge		kg	6	7	8	9	10	11	12	13
Oil charge		kg	5	7	7	7	7	9	14	13
NOISE LEVEL										
Sound Pressure	(3)	dB(A)	58	58	58	60	60	62	62	64
Sound power level in heating	(4)(5)	dB(A)	74	74	74	76	76	78	78	80
SIZE AND WEIGHT										
A	(6)	mm	1223	1223	1223	1223	1223	1223	1223	1223
B	(6)	mm	877	877	877	877	877	877	877	877
H	(6)	mm	1496	1496	1496	1496	1496	1496	1496	1496
Operating weight	(6)	kg	365	380	390	415	430	610	675	740

Notes:

1 Plant (side) heating exchanger water (in/out) 70,0°C/78,0°C; Source (side) heat exchanger water (in/out) 45,0°C/40,0°C.

2 Values in compliance with EN14511-3:2013.

3 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

4 Sound power on the basis of measurements made in compliance with ISO 9614.

5 Sound power level in heating, indoors.

6 Unit in standard configuration/execution, without optional accessories.

- Not available

5.1 TECHNICAL DATA SEASONAL EFFICIENCY IN HEATING (EN14825 VALUE)

EW-HT

EW-HT - MEDIUM TEMPERATURE application			0152	0182	0202	0262	0302	0412
Power supply		(V/ph/Hz)	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER								
Potenza termica nominale a Tdesign	(1)(2)	kW	34	38	44	54	69	92
Temperatura bivalente	(1)(2)	°C	2	2	2	2	2	2
SCOP	(1)(2)		3,07	3,20	3,26	3,15	3,17	3,14
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	115	120	123	118	119	117
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		-	-	-	-	-	-
WEATHER CONDITIONS - AVERAGE								
Potenza termica nominale a Tdesign	(1)(2)	kW	39	44	50	62	78	104
Temperatura bivalente	(1)(2)	°C	-7	-7	-7	-7	-7	-7
SCOP	(1)(2)		3,27	3,39	3,45	3,30	3,30	3,25
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	123	128	130	124	124	122
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		A+	A++	A++	A+	-	-
WEATHER CONDITIONS - COLDER								
Potenza termica nominale a Tdesign	(1)(2)	kW	42	47	54	67	85	112
Temperatura bivalente	(1)(2)	°C	-15	-15	-15	-15	-15	-15
SCOP	(1)(2)		3,31	3,43	3,48	3,32	3,32	3,27
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	124	129	131	125	125	123
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		-	-	-	-	-	-

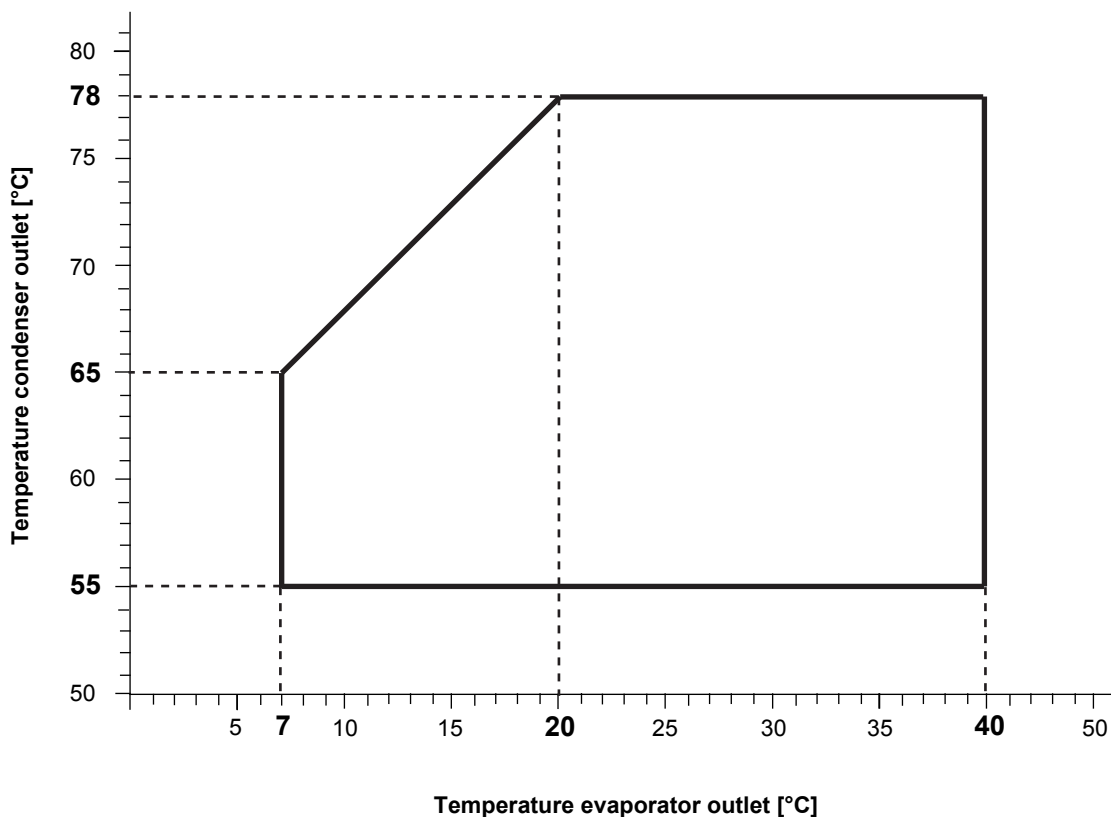
1 Classe di efficienza energetica stagionale del riscaldamento d'ambiente a MEDIA TEMPERATURA [REGOLAMENTO (UE) N. 811/2013]

2 Tipo di calcolo con portata fissa e temperatura variabile.

EW-HT - MEDIUM TEMPERATURE application			0512	0612
Power supply		(V/ph/Hz)	400/3/50	400/3/50
WEATHER CONDITIONS - WARMER				
Potenza termica nominale a Tdesign	(1)(2)	kW	113	139
Temperatura bivalente	(1)(2)	°C	2	2
SCOP	(1)(2)		3,17	3,19
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	119	120
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		-	-
WEATHER CONDITIONS - AVERAGE				
Potenza termica nominale a Tdesign	(1)(2)	kW	128	157
Temperatura bivalente	(1)(2)	°C	-7	-7
SCOP	(1)(2)		3,27	3,30
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	123	124
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		-	-
WEATHER CONDITIONS - COLDER				
Potenza termica nominale a Tdesign	(1)(2)	kW	139	171
Temperatura bivalente	(1)(2)	°C	-15	-15
SCOP	(1)(2)		3,28	3,30
Efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)	%	123	124
Classe di efficienza energetica stagionale del riscaldamento d'ambiente	(1)(2)		-	-

1 Classe di efficienza energetica stagionale del riscaldamento d'ambiente a MEDIA TEMPERATURA [REGOLAMENTO (UE) N. 811/2013]

2 Tipo di calcolo con portata fissa e temperatura variabile.



6.2 ETHYLENE GLYCOL MIXTURE

Ethylene glycol and water mixture, used as a heat-conveying fluid, cause a variation in unit performance. For correct data, use the factors indicated in the following tabel.

	Freezing point (°C)							
	0	-5	-10	-15	-20	-25	-30	-35
	Ethylene glycol percentage by weight							
	0%	12%	20%	30%	35%	40%	45%	50%
cPf	1	0,985	0,98	0,974	0,97	0,965	0,964	0,96
cQ	1	1,02	1,04	1,075	1,11	1,14	1,17	1,2
cdp	1	1,07	1,11	1,18	1,22	1,24	1,27	1,3

cPf: cooling power correction factor
 cQ: flow correction factor
 cdp: pressure drop correction factor

For data concerning other kind of anti-freeze solutions (e.g. propylene glycol) please contact our Sale Department.

6.3 FOULING FACTORS

Performances are based on clean condition of tubes (fouling factor = 1). For different fouling values, performance should be adjusted using the correction factors shown in the following table.

SERIES	FOULING FACTORS	EVAPORATOR			CONDENSER/RECOVERY		
	ff (m ² °CW)	F1	FK1	KE [°C]	F2	FK2	KC [°C]
VARIOUS	0	1,000	1,000	0,0	1,000	1,000	0,0
VARIOUS	1,80 x 10 ⁻⁵	1,000	1,000	0,0	1,000	1,000	0,0
VARIOUS	4,40 x 10 ⁻⁵	1,000	1,000	0,0	0,990	1,030	1,0
VARIOUS	8,80 x 10 ⁻⁵	0,960	0,990	0,7	0,980	1,040	1,5
VARIOUS	13,20 x 10 ⁻⁵	0,944	0,985	1,0	0,964	1,050	2,3
VARIOUS	17,20 x 10 ⁻⁵	0,930	0,980	1,5	0,950	1,060	3,0

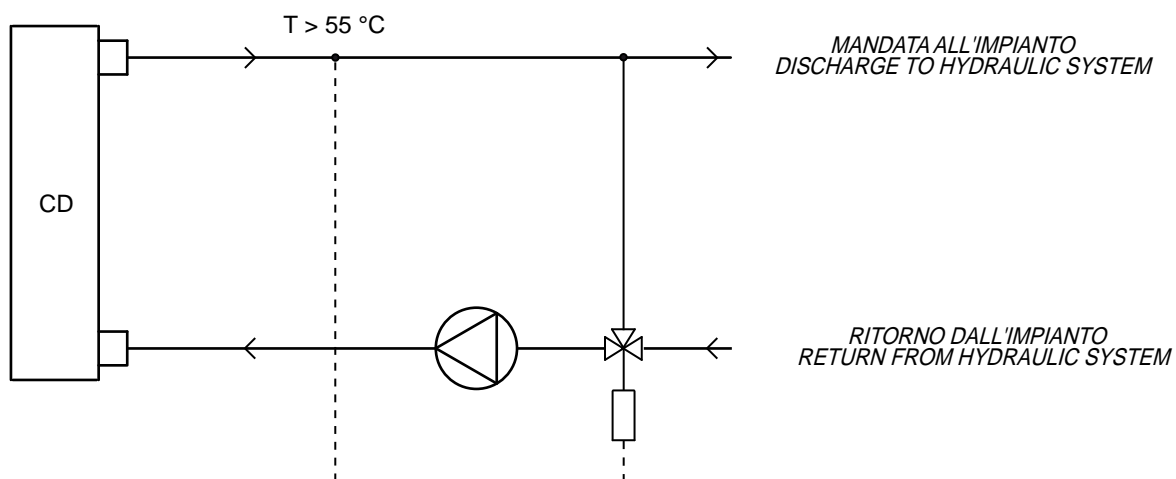
ff: fouling factors
 F1 - F2: potential correction factors
 FK1 - FK2: compressor power input correction factors
 R3: capacity correction factors
 KE: minimum evaporator outlet temperature increase
 KC: maximum condenser outlet temperature decrease

OPERATING LIMITS

Guarantee the minimum condenser leaving water temperature

If it isn't possible to guarantee the indicated minimum temperature, for example during plant start-up, it is recommended to install a dedicated kit to protect the unit (see figure). The device is subject to RFQ - request for feasibility and quotation.

Condenser minimum outlet temperature: 55°C



7.1 HYDRAULIC DATA

[SI System]

Water flow and pressure drop

Water flow in the plant (side) exchanger is given by:

$$Q = P / (4,186 \times \Delta t)$$

Q: water flow (l/s)

Δt : difference between inlet and outlet water temp. (°C)

P: heat exchanger capacity (kW)

Pressure drop is given by:

$$\Delta p = K \times (3,6 \times Q)^2 / 1000$$

Q: water flow (l/s)

Δp : pressure drop (kPa)

K: unit size ratio

SIZE	Power supply V/ph/Hz	HEAT EXCHANGER USER SIDE					HEAT EXCHANGER SOURCE SIDE			
		K	Q min l/s	Q max l/s	C.A.S. l	C.a. min l	K [1]	Q min [2] l/s	Q max l/s	C.A.S. l
EW-HT /0152	400/3/50	401	1,00	4,19	4,00	250	512	0,94	4,31	3,60
EW-HT /0182	400/3/50	328	1,14	4,72	4,50	290	409	1,06	4,89	4,00
EW-HT /0202	400/3/50	234	1,31	5,53	5,50	330	333	1,22	5,69	4,50
EW-HT /0262	400/3/50	157	1,61	6,75	6,90	410	237	1,50	6,89	5,50
EW-HT /0302	400/3/50	83,7	2,06	8,36	7,70	530	143	2,03	8,58	7,30
EW-HT /0412	400/3/50	50,0	2,75	10,86	10,1	680	85,1	2,69	11,19	10,2
EW-HT /0512	400/3/50	32,3	3,42	13,47	13,0	850	41,6	3,31	13,86	11,4
EW-HT /0612	400/3/50	21,3	4,17	16,75	16,8	1050	26,8	4,08	17,28	14,7

The coefficient "K" on the source side heat exchanger is referred to its standart selection. When it's required to move to an higher number of steps water side (with $\Delta T \geq 10^\circ\text{C}$), "K" coefficient as to be multiplied for 8,5 ($K_{\text{new}} = K \times 8,5$)

Q min: minimum water flow admitted to the heat exchanger

Q min [2]: minimum water flow admitted to the heat exchanger

Q max: maximum water flow admitted to the heat exchanger

C.a. min: minimum water content admitted in the plant

C.A.S.: Exchanger water content

8.1 ELECTRICAL DATA

EW-HT

[SI System]

SIZE	Power supply V/ph/Hz	Maximum values						
		n	Compressor			Total (1)		
			F.L.I. [kW]	F.L.A. [A]	L.R.A. [A]	F.L.I. [kW]	F.L.A. [A]	S.A. [A]
0152	400/3/50	2	2 x 9.3	2 x 17.3	2 x 95	18,6	35	112
0182	400/3/50	2	2 x 10.4	2 x 19.0	2 x 111	20,8	38	130
0202	400/3/50	2	2 x 12.1	2 x 21.3	2 x 118	24,2	43	139
0262	400/3/50	2	2 x 15.3	2 x 24.4	2 x 140	30,6	49	164
0302	400/3/50	2	2 x 18.5	2 x 31.9	2 x 174	37,0	64	206
0412	400/3/50	2	2 x 24.8	2 x 39.6	2 x 225	49,6	79	265
0512	400/3/50	2	2 x 31.2	2 x 49.5	2 x 272	62,4	99	322
0612	400/3/50	2	2 x 38.2	2 x 62.7	2 x 310	76,4	125	373

F.L.I.: Full load power

F.L.A.: Full load current

L.R.A.: Locked rotor amperes for single compressor

S.A.: Inrush current

(1) Safety values to be considered when cabling the unit for power supply and line-protections

Electrical data valid for standard units without any additional option

Plant (side) heating exchanger water (in/out) 70,0°C/78,0°C; Source (side) heat exchanger water (in/out) 45,0°C/40,0°C.

Voltage tolerance: 10%

Maximum voltage unbalance: 3%

Given the typical operating conditions of units designed for indoor installation, which can be associated (according to reference document IEC 60721) to the following classes:

- climatic conditions class AA4: air temperature range from 5 up to 42°C (*)
- special climatic conditions negligible
- presence of water class AD2: possibility of water dripping inside the technical room
- biological conditions class 4B1 and 4C2: negligible presence of corrosive and polluting substances
- mechanically active substances class 4S2: locations in areas with sand or dust sources

The required protection level for safe operation, according to reference document IEC 60529, is IP21 BW (protection against access of external devices with diameter larger than 12 mm and water falling vertically).

The unit can be considered IP21 CW protected, thus fulfilling the above operating conditions.

(*) for the unit's operating limits, see "selection limits" section

9.1 FULL LOAD SOUND LEVEL

EW-HT

SOUND POWER									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound power level dB								
0152	75	73	70	71	71	64	60	54	74
0182	75	73	70	71	71	64	60	54	74
0202	75	73	70	71	71	64	60	54	74
0262	76	74	75	74	70	68	64	53	76
0302	76	74	75	74	70	68	64	53	76
0412	78	76	77	76	72	70	66	55	78
0512	78	76	77	76	72	70	66	55	78
0612	80	78	79	78	74	72	68	57	80

Working conditions

Plant (side) heating exchanger water (in/out) 70,0°C/78,0°C; Source (side) heat exchanger water (in/out) 45,0°C/40,0°C.

Sound power in compliance with ISO 3744 for non-certified units.

Such certification refers specifically to the sound Power Level in dB(A). This is therefore the only acoustic data to be considered as binding.

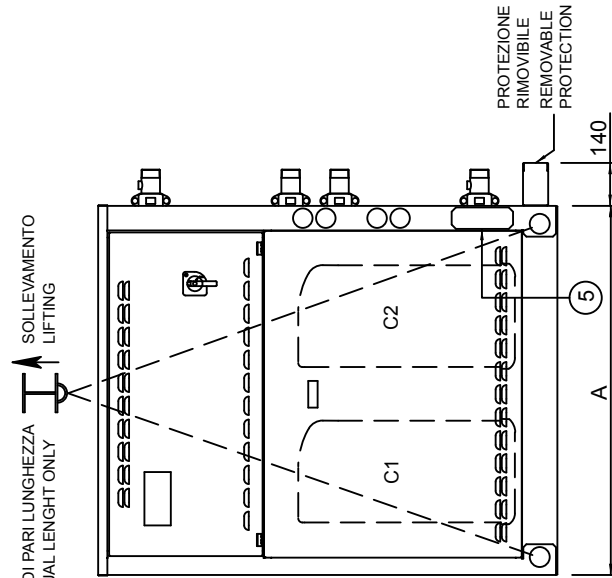
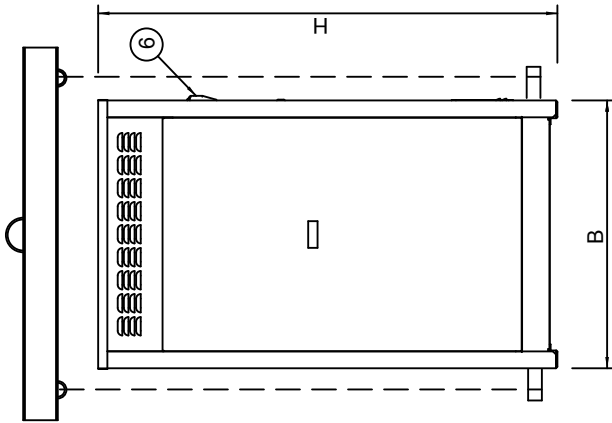
Sound power level in heating, indoors.

SOUND PRESSURE LEVEL									
SIZE	Octave band [Hz]								Total sound level dB(A)
	63	125	250	500	1000	2000	4000	8000	
	Sound pressure level dB								
0152	59	57	54	55	55	48	44	38	58
0182	59	57	54	55	55	48	44	38	58
0202	59	57	54	55	55	48	44	38	58
0262	60	58	59	58	54	52	48	37	60
0302	60	58	59	58	54	52	48	37	60
0412	62	60	61	60	56	54	50	39	62
0512	62	60	61	60	56	54	50	39	62
0612	64	62	63	62	58	56	52	41	64

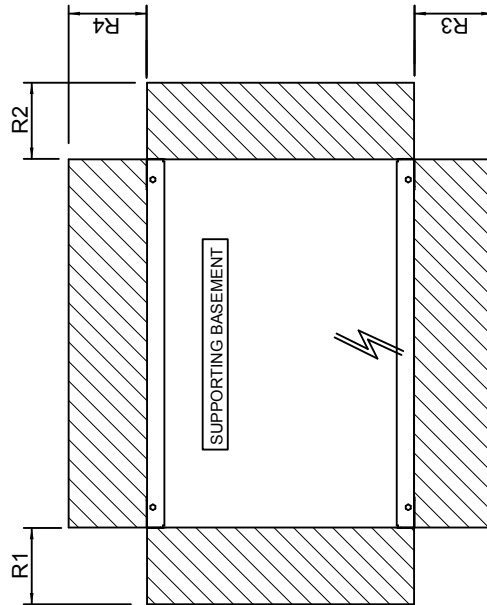
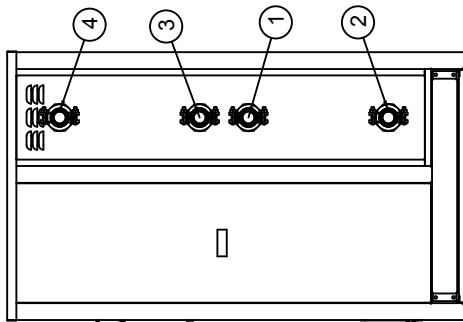
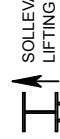
Working conditions

Plant (side) heating exchanger water (in/out) 70,0°C/78,0°C; Source (side) heat exchanger water (in/out) 45,0°C/40,0°C.

Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.



ATTN: UTILIZZARE N° 4 FUNI DI SOLLEVAMENTO DI PARI LUNGHEZZA
 ATTN: USE N° 4 LIFTING ROPES WITH EQUAL LENGTH ONLY



- ① ENTRATA ACQUA EVAPORATORE
EVAPORATOR WATER INLET
- ② USCITA ACQUA EVAPORATORE
EVAPORATOR WATER OUTLET
- ③ ENTRATA ACQUA CONDENSATORE
CONDENSER WATER INLET
- ④ USCITA ACQUA CONDENSATORE
CONDENSER WATER OUTLET
- ⑤ INGRESSO LINEA ELETTRICA
POWER INLET
- ⑥ MANIGLIA SEZIONATORE GENERALE
(RIMOVIBILE)
(REMOVABLE)

GRANDEZZA SIZE	Ø A
0152	EN10226 R2
0182	EN10226 R2
0202	EN10226 R2
0262	EN10226 R2
0302	EN10226 R2
0412	EN10226 R2½
0512	EN10226 R2½
0612	EN10226 R2½

"REMARKS:
 For installation purposes, please refer to the documentation sent after the purchase-contract. This technical data should be considered as indicative. CLIMAVENETA may modify them at any moment."

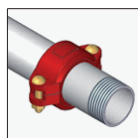
DIMENSIONAL DRAWINGS

EW-HT 0152 - 0612

[SI System]

SIZE	DIMENSIONS AND WEIGHTS				CLEARANCE				HEAT EXCHANGER USER SIDE		HEAT EXCHANGER SOURCE SIDE	
	A	B	H	WEIGH	R1	R2	R3	R4	IN/OUT		IN/OUT	
	[mm]	[mm]	[mm]	[kg]	[mm]	[mm]	[mm]	[mm]	TYPE	Ø	TYPE	Ø
EW-HT /0152	1223	877	1496	365	600	600	800	600	F	2"	F	2"
EW-HT /0182	1223	877	1496	380	600	600	800	600	F	2"	F	2"
EW-HT /0202	1223	877	1496	390	600	600	800	600	F	2"	F	2"
EW-HT /0262	1223	877	1496	415	600	600	800	600	F	2"	F	2"
EW-HT /0302	1223	877	1496	430	600	600	800	600	F	2"	F	2"
EW-HT /0412	1223	877	1496	610	600	600	800	600	F	2"1/2	F	2"1/2
EW-HT /0512	1223	877	1496	675	600	600	800	600	F	2"1/2	F	2"1/2
EW-HT /0612	1223	877	1496	740	600	600	800	600	F	2"1/2	F	2"1/2

LEGEND OF PIPE CONNECTIONS



TYPE = F

Grooved coupling
with male threaded
counter-pipe user side

LEGEND OF PIPE CONNECTIONS

UNI ISO 228/1

Pipe threads where pressure-tight joints are not made on the threads - Designation, dimensions and tolerances

Used terminology:

G: Pipe threads where pressure-tight joints are not made on the threads

A: Close tolerance class for external pipe threads where pressure-tight joints are not made on the threads

B: Wider tolerance class for external pipe threads where pressure-tight joints are not made on the threads

Internal threads: G letter followed by thread mark (only tolerance class)

External threads: G letter followed by thread mark and by A letter for A class external threads or by B letter for B class external threads.

UNI EN 10226-1

Pipe threads where pressure-tight joints are made on the threads - Designation, dimensions and tolerances

Used terminology:

Rp: Internal cylindrical threads where pressure-tight joints are made on the threads

Rc: Internal conical threads where pressure-tight joints are made on the threads

R: External conical threads where pressure-tight joints are made on the threads

Internal cylindrical threads: R letter followed by p letter

Internal conical threads: R letter followed by c letter

External conical threads: R letter

Designation	Description
UNI EN 10226-1 - Rp 1 1/2	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 1 1/2"
UNI EN 10226-1 - Rp 2 1/2	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 2 1/2"
UNI EN 10226-1 - Rp 3	Internal cylindrical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 3"
UNI EN 10226-1 - R 3	External conical threads where pressure-tight joints are made on the threads, defined by standard UNI ISO 7/1 Conventional ø 3"
UNI ISO 228/1 - G 4 B	Internal cylindrical threads where pressure-tight joints are not made on the threads, defined by standard UNI ISO 228/1 Tolerance class B for external thread Conventional ø 4"
DN 80 PN 16	Flange Nominal Diameter: 80 mm Nominal Pressure: 16 bar

Notes:

Conventional diameter value [in inches] identifies short thread designation, based upon the relative standard.

All relative values are defined by standards.

As example, here below some values:

	UNI EN 10226-1	UNI ISO 228/1
Conventional ø	1"	1"
Pitch	2.309 mm	2.309 mm
External ø	33.249 mm	33.249 mm
Core ø	30.291 mm	30.291 mm
Thread height	1.479 mm	1.479 mm



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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