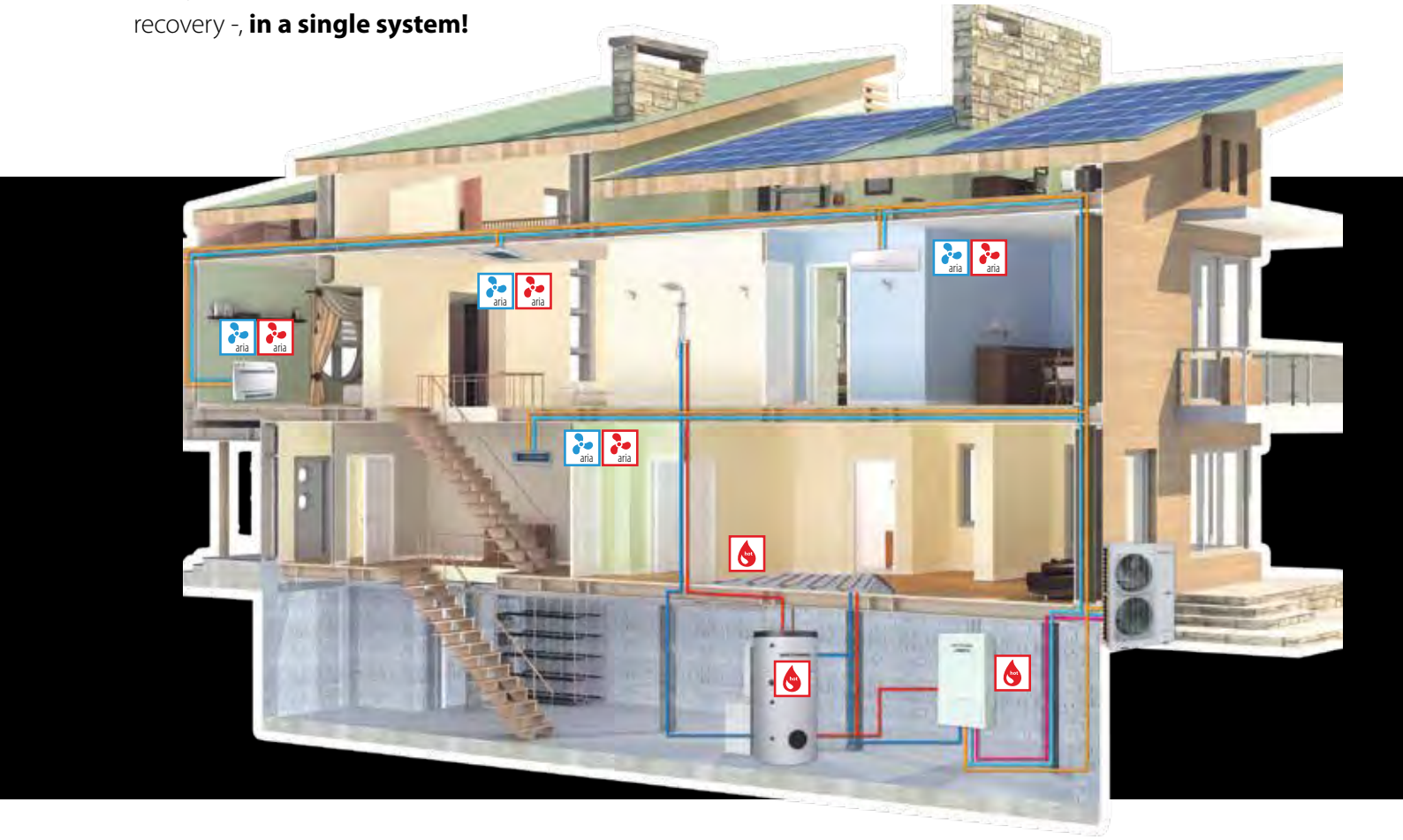
MW HYBRID VRF SYSTEM

MW HYBRID VRF HEAT PUMP SYSTEM

Heating, cooling and domestic hot water
e acqua calda sanitaria - even with heat
recovery -, **in a single system!**



no more traditional systems

MW HYBRID (VRF system + hydronic module) is a combination that replaces a traditional system consisting of two separate systems (air conditioning + traditional boiler).

free hot water

In cooling mode, heat is recovered to produce viene **free** domestic hot water.

hybrid system

MW HYBRID is born from the innovative union of two technologies:

1. Direct expansion technology, cools or heats rooms thanks to the MW HYBRID indoor units.

2. Hydronic technology, heating occurs through the hydronic module that powers low temperature systems such as radiant panels and high efficiency radiators. The MW HYBRID system is able to produce domestic hot water.

Air - to - Air

Direct expansion cooling and heating.

The air-to-air mode with the use of direct expansion indoor units ensures rapid achievement of the desired comfort.

Air - to - Water

Heating and domestic hot water production with hydromodule, cooling with direct expansion units (mandatory installation).

FLOOR HEATING

HIGH-EFFICIENCY RADIATORS

DOMESTIC HOT WATER

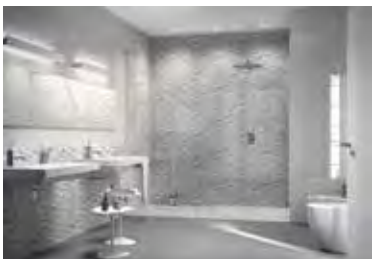
In this configuration, the MW HYBRID system can be used in the winter to produce domestic hot water and to heat internal environments using radiant panels (or high-efficiency radiators). In the summer, when the indoor direct expansion units work in cooling mode, it is possible to produce domestic hot water by recovering the heat that would otherwise be dispersed by the outdoor unit.

Air - to - Air & Air - to - Water

Combined use of the two technologies.

FLOOR HEATING

HEATING OR COOLING



DOMESTIC HOT WATER

MW HYBRID heats using both indoor direct expansion units and by powering a radiant panel system (or high efficiency radiators) and produces domestic hot water. The operating priority can be selected by the user.

OUTDOOR UNITS

These units allow to recover, in the summer period, the condensation heat that would normally be dissipated in the environment. This heat is directed to the hydromodule, which produces domestic hot water for free.

HYDRONIC MODULE

Heat exchanger for the production of domestic hot water and water for low temperature heating systems.

360° comfort **all year round**

MW HYBRID guarantees a complete solution for climate control of all environments all year round.

It is an economical system, which reduces CO2 emissions, is able to guarantee internal comfort and produce domestic hot water.

MW HYBRID uses 1-Phase and 3-Phase outdoor units, of different capacities, to which up to 13 indoor units and 2 hydronic modules can be connected.

HYDRONIC MODULE CONTROL

Multifunction control panel for managing the hydronic part (remote control).

RADIANT PANELS

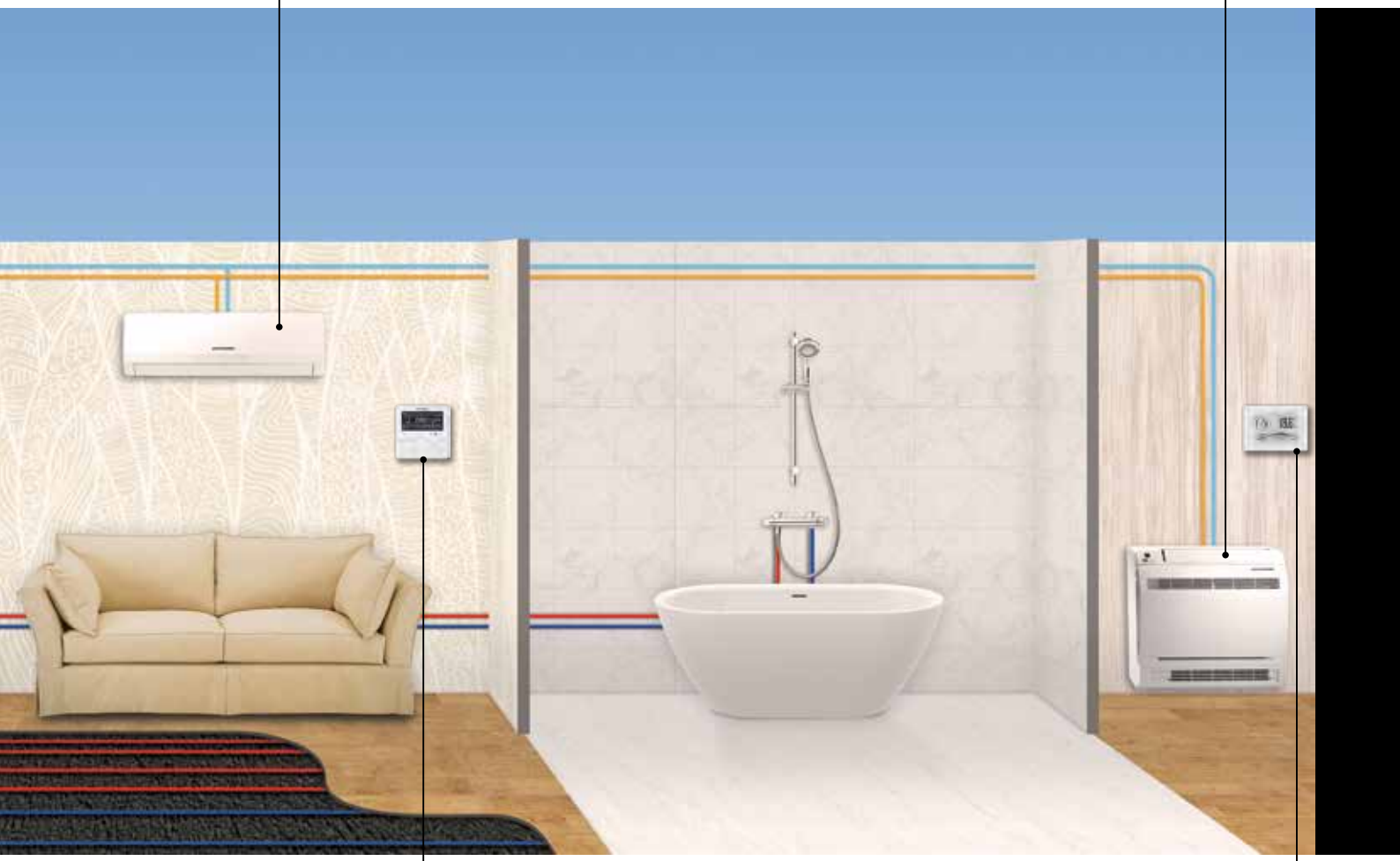
They heat the home with a pleasant thermal gradient *(not provided by MULTIWARM).*

DOMESTIC HOT WATER TANK

Accumulates and supplies domestic hot water produced by the system.

DIRECT EXPANSION INDOOR UNITS

Wall-mounted, cassette, ducted, console, floor/ceiling, recessed floor models.



CONTROL PANEL

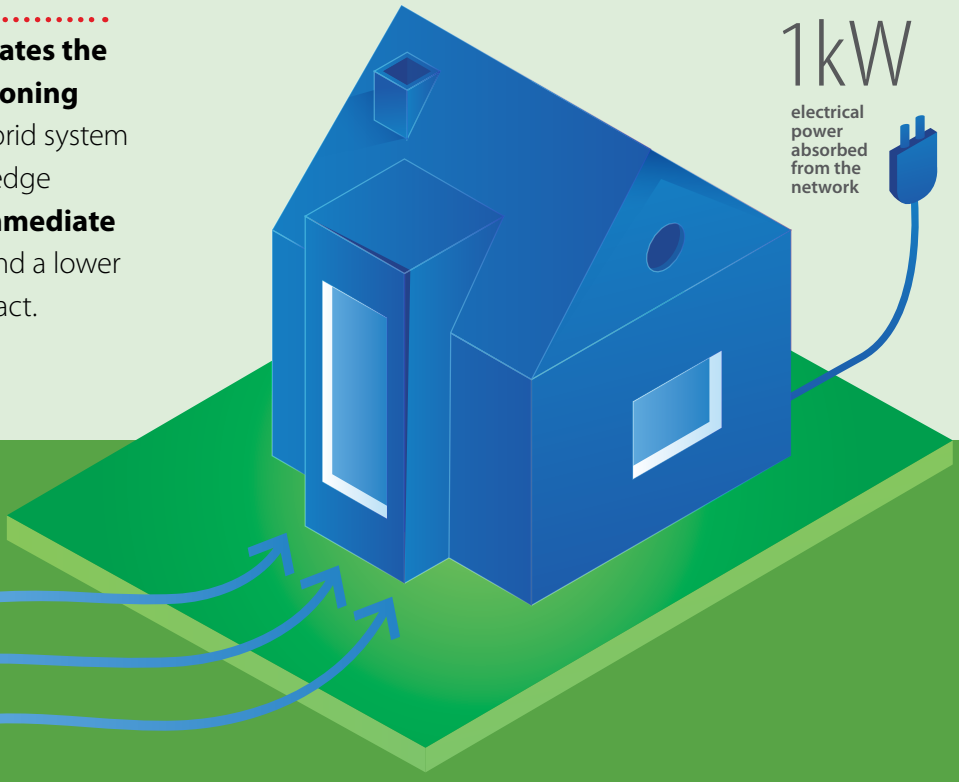
Control panel for managing direct and hydronic expansion with integrated temperature sensor.

ROOM THERMOSTAT

Possibility of integration with third-party room thermostat (*not supplied by MULTIWARM).*

ENERGY SAVING

Multiwarm innovates the way of air conditioning the home. The hybrid system combines cutting-edge technologies for **immediate savings on bills** and a lower environmental impact.



MW HYBRID runs on free renewable energy!

Being a highly energy efficient heat pump system, MW HYBRID takes 75-80% of the energy it uses from the outside air.

For every kW of electricity consumed, 3 kW are taken for free from the outside air.

The thermal power released into the environment is 4 times the electrical power absorbed.

MW HYBRID does not waste energy but uses it to heat water, how?

During the summer season, while the indoor unit are working in cooling mode, **the condensation heat** is not dispersed into the external environment; **it is recovered inside the hydromodule to produce FREE domestic hot water**.

3kW FREE + 1kW ELECTRICAL CURRENT = 4kW HEATING POWER IN YOUR HOME!

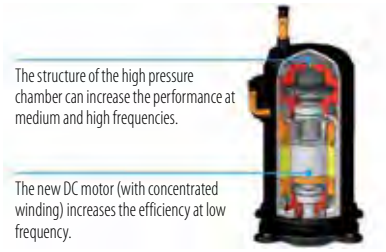
FREE DHW
IN SUMMER WITH CONDENSING HEAT RECOVERY

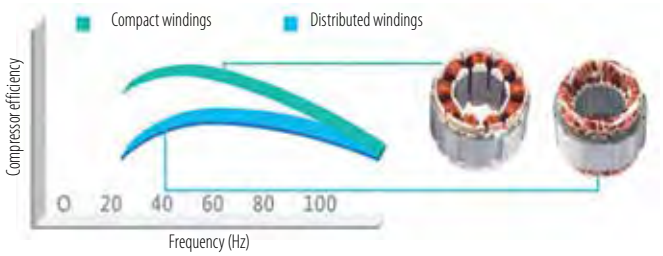
TOTAL INVERTER TECHNOLOGY

DC Inverter Compressors and Fans

ADVANTAGES

- Maximizing efficiency performance.
- Reduction of energy consumption and operating costs.





EASY INSTALLATION AND MAINTENANCE

Automatic addressing of units

The indoor and outdoor units are addressed automatically and not manually. The outdoor unit, through a particular setting, recognizes the various indoor units present in the system reducing possible risks of error.

Can-bus communication system

MW HYBRID adopts a faster, more reliable and anti-interference communication system (between outdoor unit, indoor units and hydromodule).

Maintenance

Maintenance of MW HYBRID is simple thanks to the 3 self-diagnosis functions:

1. automatic detection of unit error type;

2. automatic start of diagnostic operation;

3. real-time anomaly detection.

360° COMFORT

Ultra-fast comfort

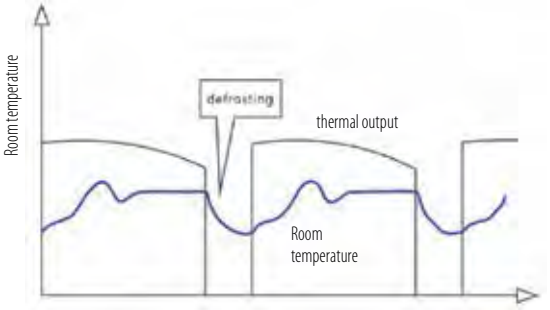
By using direct expansion technology and radiant floor heating at the same time, you can achieve maximum winter comfort by heating rooms quickly and economically.

"Continuous heating" effect

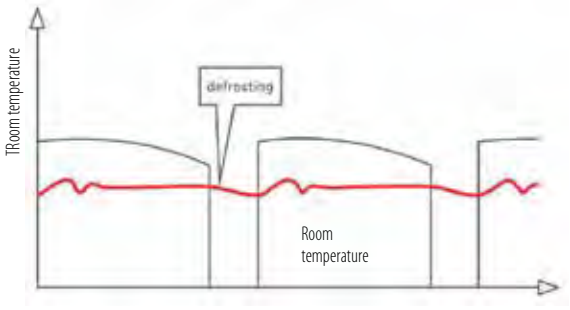
MW HYBRID is equipped with intelligent defrosting as it uses, when possible, the thermal energy of the domestic hot water tank.

This generates the "**continuous heating**" effect with the following advantages:

- the ambient temperature is stable;
- there is no draft (skin effect).



COMPETITORS' HEAT PUMP



MW HYBRID HEAT PUMP

Quiet operation

The MW HYBRID system is able to establish when to activate the "night silent mode" (based on the outdoor temperature and the internal load): the outdoor unit operates with **noise emissions lower than 45 dB(A)**.

Silent mode can be activated in:

AUTOMATIC

Under low load conditions, at night, the system automatically activates silent mode.

MANUAL

In particular applications where low noise is required, the system can force the unit to operate at reduced speeds, thus containing noise emissions.

DHW PRODUCTION

Range of use

- **Eco Function (recommended)**: max water temperature 48° C.
- **Power Function**: max water temperature 55° C.
- **Fast Power Function**: required water temperature higher than 55° C (through integration with electric resistance).

Special applications

- **Sunflower**: domestic hot water is heated during the hottest hours of the day (based on the highest outside temperature recorded the previous day) to achieve maximum energy savings.
- **Auto**: sets the set point temperature automatically based on the outside temperature.
- **Sterilize**: anti-legionella cycle 65-70° C.
- **Rapid**: it starts the compressor and the electric resistance at the same time to heat, in a short time, water for sanitary use or for hydronic heating.

WATER TEMPERATURE

48°C
ECO function

55°C
POWER function

55°C+
FAST POWER function

Sterilize function

Through the hydronic module of MW HYBRID system, with a simple function settable from the wired control, it is possible to program sterilization cycles at regular intervals (from 1 to 60 days, it is recommended to carry out at least one cycle per month) **or carry out a single cycle**.

With a thermal shock, temperatures between 60~70° C are reached which guarantee the elimination of any bacteria.

THE RANGE OF MW HYBRID VRF SYSTEM

OUTDOOR UNITS

12.10 kW	14.00 kW	16.00 kW
1-Phase	1-Phase	1-Phase
M-VH-OV-120-NG	M-VH-OV-140-NG	M-VH-OV-160-NG

22.40 kW	28.00 kW
3-Phase	3-Phase
M-VH-OV-224-SG	M-VH-OV-280-SG

HYDRONIC MODULE

16.00 kW
1-Phase
M-VH-HM-160-NG

TANKS

200 Liters	300 Liters	500 Liters
WT-XL-DW1-200 C-1	WT-XL-DW1-300 C-1	WT-XL-DW1-500 C-1

NOTE: Third party tanks can also be used.

INDOOR UNITS

Applicable indoor units for air/air operation on page 101

MW HYBRID IS MADE UP OF **5 OUTDOOR UNITS** TO WHICH UP TO MAX **13 INDOOR UNITS** AND **2 HYDRONIC MODULES** CAN BE CONNECTED, DEPENDING ON THE CAPACITY OF THE OUTDOOR UNIT

3 SINGLE PHASE MODELS

The 1-Phase outdoor units with horizontal air discharge are available in 12.10 kW, 14.00 kW and 16.00 kW models.
All the compressors of the 1-Phase models are Rotary DC Inverter.

2 THREE-PHASE MODELS

The 3-Phase outdoor units with vertical air discharge are available in 22.40 kW and 28.00 kW models. All the compressors of the 3-Phase models are Scroll DC Inverter.

POWER AND NUMBER OF CONNECTABLE INDOOR UNITS

Model	Min~Max power of connectable I.U.	Min~Max number of connectable I.U.	Max nb. of connectable hydronic modules	Conto Termico 2.0*	Ecobonus*
M-VH-OV-120-NG	80~110%	1~6	1	✓	✓
M-VH-OV-140-NG	80~110%	1~7	1	✓	✓
M-VH-OV-160-NG	80~110%	1~8	1	✓	✓
M-VH-OV-224-SG	80~110%	1~10	2	✓	✓
M-VH-OV-280-SG	80~110%	1~13	2	✓	✓

* For Italian market only.

MAXIMUM COMPACTNESS FOR ALL OUTDOOR UNITS

12.10 - 14.00 - 16.00 kW

L 900 x H 1345 x D 340 (mm)

22.40 - 28.00 kW

L 1340 x H 1605 x D 765 (mm)

Operating ranges of outdoor units

The **VRF MW HYBRID** system features a very wide external temperature operating range, ensuring new design flexibility.

up to
50°C
in cooling

down to
-15°C
in heating

COOLING MODE

Outdoor temperature from -5° to 50° C

HYDRONIC HEATING MODE

Outdoor temperature from -15° to 21° C
Water temperature from 25° to 52° C

HEATING MODE

Outdoor temperature from -15° to 24° C

DOMESTIC HOT WATER PRODUCTION

Outdoor temperature from -15° to 43° C
Water temperature from 35° to 55° C

OUTDOOR UNITS

5 CAPACITIES
12.10~28.00 kW

R410A
Refrigerant gas

DC Inverter compressors guarantee total reliability thanks to high energy efficiency and silence. In addition, they allow a reduction in vibrations and accurate control of the operating frequency.

M-VH-OV-120-NG
M-VH-OV-140-NG
M-VH-OV-160-NG

M-VH-OV-224-SG
M-VH-OV-280-SG

Model			M-VH-OV-120-NG	M-VH-OV-140-NG	M-VH-OV-160-NG	M-VH-OV-224-SG	M-VH-OV-280-SG
Nominal Data							
Rated capacity	Cooling	kW	12.10	14.00	16.00	22.40	28.00
Rated absorbed power		kW	3.05	3.98	4.85	5.35	7.70
Energy efficiency coefficient (rated)		EER[1]	3.97	3.52	3.30	4.19	3.64
Rated capacity	Heating	kW	14.00	16.50	18.50	25.00	31.50
Rated absorbed power		kW	3.30	4.10	4.67	5.80	7.60
Energy performance coefficient (rated)		COP[1]	4.24	4.02	3.96	4.31	4.14
Seasonal Data							
Seasonal energy efficiency index	Cooling	SEER[2]	8.08	7.79	7.73	8.46	7.58
	Heating	SCOP[2]	4.17	4.11	4.04	5.50	5.58
Electrical data							
Power supply		Ph-V-Hz	1-220~240V-50Hz				
Maximum current		A	27.00	31.00	33.00	16.10	20.90
Refrigerant circuit data							
Refrigerant[3]		type (GWP)	R410A (2088)				
Q.ty of refrigerant pre-charge[4] (tons of CO2 equivalent)		Kg	5 (10.4)	5 (10.4)	5 (10.4)	10.5 (21.9)	11 (23)
Compressor		nb. / type	1 / Rotary DC Inverter			1 / Scroll DC Inverter	
Piping diameter	Liquid	mm (inch)	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")
	Gas	mm (inch)	15.9 (5/8")	15.9 (5/8")	19.05 (3/4")	19.05 (3/4")	22.2 (7/8")
	High pressure gas	mm (inch)	12.7 (1/2")	12.7 (1/2")	12.7 (1/2")	15.9 (5/8")	15.9 (5/8")
Product Specifications							
Dimensions	LxHxD	mm	900x1345x340	900x1345x340	900x1345x340	1340x1605x765	1340x1605x765
Net weight		Kg	113	113	113	295	295
Sound power level	max	dB(A)	72	72	72	81	81
Sound pressure level at 1 m	max	dB(A)	55	56	58	57	58
Volume of air treated	max	m3/h	6000	6300	6600	14000	14000
	Cooling	°C	-5~50				
	Air heating	°C	-15~24				
	Hydronic heating	°C	-15~21				
	Domestic hot water (DHW)	°C	-15~43				
	Cooling + DHW	°C	-5~43				
	Air heating + DHW	°C	-15~24				
Water circuit operating limits	Hydronic heating	°C	25~52				
	Domestic hot water (DHW)	°C	35~55				
Connectable air-to-air indoor units (min - max)[5]		**nb.**	**1~6**	**1~7**	**1~8**	**1~10**	**1~13**
Connectable hydronic modules (max)		**nb.**	**1**	**1**	**1**	**2**	**2**
Capacity of connectable air-to-air indoor units		**%**	**80~110**				

1. Value measured according to the harmonized standard EN14511.
2. EU Regulation No. 206/2012 - - Value measured according to the harmonized standard EN14825.
3. Refrigerant leakage contributes to climate change. If released into the atmosphere, refrigerants with a lower global warming potential (GWP) contribute less to global warming than those with a higher GWP. This appliance contains a refrigerant with a GWP of 2088. If 1 kg of this refrigerant were released into the atmosphere, therefore, the impact on global warming would be 2088 times higher than 1 kg of CO2, over a period of 100 years. Under no circumstances should the user attempt to intervene on the refrigerant circuit or disassemble the product. If necessary, always contact qualified personnel.
4. To calculate the additional refrigerant charge, refer to the labels located inside and outside the unit.
5. At least 1 direct expansion indoor unit is mandatory.

HYDRONIC MODULE

HIGH EFFICIENCY
A+ in combination with any size of outdoor unit

DHW PRODUCTION
105 L/h nominal
75-140 (min.-max. L/h) outdoor

DHW THERMAL POWER
4.50 kW nominal for DHW production
3.60-16.00 (min.-max. kW)

HEATING THERMAL POWER
16.00 kW for hydronic heating

CONTROLS
wired control included

M-VH-HM-160-NG

Model			M-VH-HM-160-NG
Rated capacity	Domestic hot water[1]	kW	4.50 (3.60~16.00)
	Hydronic heating	kW	16.00
Maximum delivery water temperature		℃	55
Electrical data			
Power supply		Ph-V-Hz	1-220~240-50Hz
Electrical integration power (2 steps)		kW	1.50+1.50
Hydraulic data			
Water/freon heat exchanger		type	Braze-welded plates
Circulation pump	Brand	-	Wilo
	Water flow	m3/h	1.7
	Static pressure	m	6
Water connections	Diameter	mm	25
	Thread	Inch	G1
Expansion vessel	Volume	L	10
	Pre-load	bar	1
Refrigerant circuit data			
Piping diameter	Liquid	mm (inch)	9.52 (3/8")
	Gas		15.9 (5/8")
	High pressure gas		12.7 (1/2")
Product Specifications			
Dimensions	LxHxD	mm	500x919x328
Net weight		kg	56

1. Conditions: outdoor air 20°C DB (15°C WB), water inlet 15°C / outlet 52°C.

Hydronic module control

The hydronic module is equipped with a control that allows you to manage hydronic heating and provides various functions for managing domestic hot water.

SOME FUNCTIONS

- **Sunflower**: domestic hot water is heated during the hottest hours of the day (based on the highest outside temperature recorded the previous day) to achieve maximum energy savings.
- **Auto**: sets the set point temperature automatically based on the outside temperature.
- **Sterilize**: anti-legionella cycle 65-70° C.
- **Rapid**: it starts the compressor and the electric resistance of the tank at the same time to heat, in a short time, water for sanitary use or for hydronic heating.

DHW STORAGE TANKS

Tanks for storage of domestic hot water

MULTIWARM offers a complete range of fixed coil tanks for the production of domestic hot water.

The Polywarm coated steel structure and the included magnesium anode, proportionate to the volume to be protected, ensure high protection against corrosion.

In the 200, 300 and 500 litre models the insulation, which is not removable, is made of expanded polyurethane (50 mm thick).

All tanks are externally coated in flexible PVC, which ensures excellent insulation, reducing heat loss to a minimum.

WT-XL-DW1-200 C-1
WT-XL-DW1-300 C-1
WT-XL-DW1-500 C-1

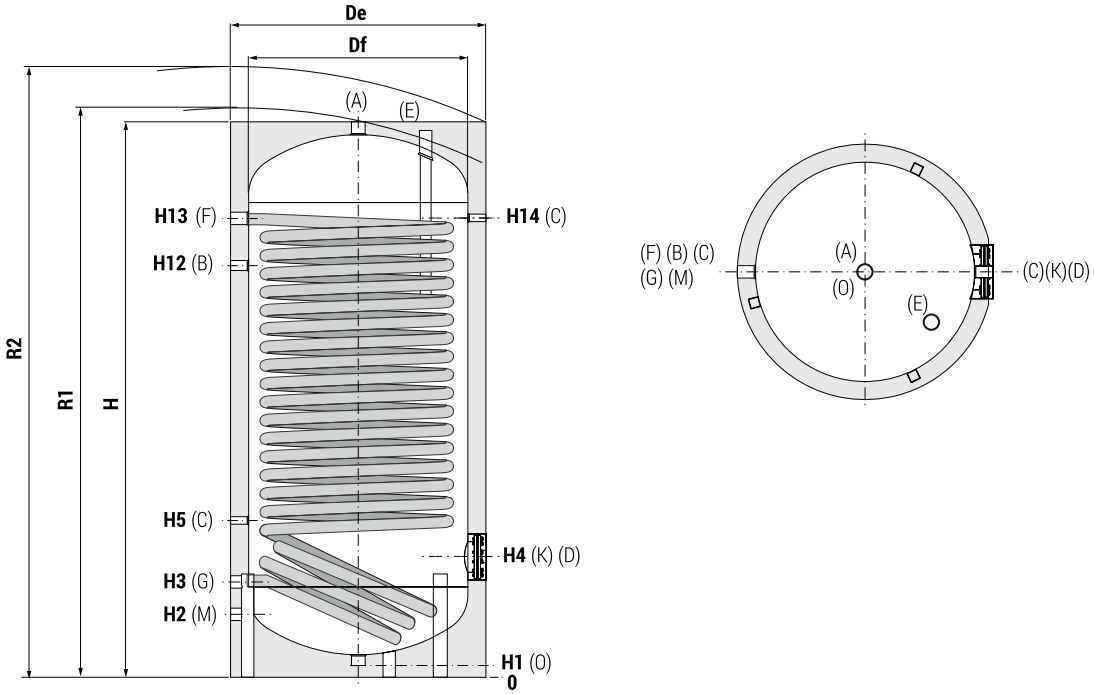
Model			WT-XL-DW1-200 C-1	WT-XL-DW1-300 C-1	WT-XL-DW1-500 C-1
Net storage volume		liters	189	291	498
Storage material		-	Polywarm-coated steel		
Heating element power (optional)		kW	1.50		
Exchanger surface		m2	2.00	3.40	5.40
Insulation thickness		mm	50		
Maximum water temperature		°C	90		
Dimensions	Diameter	mm	550	650	750
	Height	mm	1440	1500	1800
Net weight		kg	96	130	174
Connections	Domestic water inlet	inch	3/4"	1"	1"
	Domestic hot water outlet	inch	1"1/4	1"1/4	1"1/4
	Recirculation	inch	3/4"	1"	1"
	Drain	inch	1"1/4	1"1/4	1"1/4
Energy efficiency class *			B	B	C

* ERP ready 2017 (EU regulation n.814/2013).

STORAGE		EXCHANGER	
Maximum pressure	Maximum temperature	Maximum pressure	Maximum temperature
10 bar	90° C	12 bar	110° C

TANK FEATURES

- **USE**
  Production and storage of domestic hot water (DHW).
  All hydraulic connections on the back, front connections and flange are aligned for quick and easy installation.
- **MATERIALS AND FINISHES**
  Steel coated in Polywarm® (ACS - SSICA - EN 16421 certifications) suitable for drinking water pursuant to Ministerial Decree no. 174 of 06.04.04.
- **HEAT EXCHANGER**
  Fixed heat exchanger in steel coated in Polywarm®
- **RIGID INSULATION**
  Highly insulating expanded polyurethane.
- **CATHODIC PROTECTION**
  Magnesium anode.
- **DRAIN**
  Drain through sleeve at the bottom.
- **COUNTERFLANGE - GASKETS**
  Gaskets in food-grade silicone rubber (Ministerial Decree no. 174 of 2004); operating resistance up to 200° C.
  Carbon steel head with Polywarm® treatment and provision for electrical resistance.



TANK DIAGRAMS AND DIMENSIONS

Model	Volume	Weight	Df	H	De	R2	H1	H2	H3	H4	H5	H12	H13	H14	K	M	B	A	D
	[lt]	[Kg]	[mm]													Gas Connections F (inch)			
200	188.8	96	//	1440	550	1560	71	215	285	325	405	1055	1190	1190	Øi120/Øe180	3/4"	3/4"	1" 1/4"	1" 1/2"
300	290.5	130	//	1500	650	1650	71	241	321	381	431	1091	1211	1211	Øi120/Øe180	1"	1"	1" 1/4"	1" 1/2"
500	497.4	174	//	1800	750	1960	71	266	346	411	466	1326	1486	1486	Øi120/Øe180	1"	1"	1" 1/4"	1" 1/2"

CONNECTIONS

A	Domestic hot water outlet	**G**	Primary circuit outlet 1" 1/4" Gas F
B	Recirculation connection	**K**	Inspection flange
C	Connection for instrumentation 1/2" Gas F	**M**	Domestic water inlet
D	Connection for electrical integration	**N**	Connection for instrumentation 1/2" Gas F
E	Connection for magnesium anode 1" 1/4" Gas F	**O**	Drain 1" 1/4" Gas F
F	Primary circuit inlet 1" 1/4" Gas F		

OPTIONAL ACCESSORIES

- 1.5 Kw integrative electric resistance (**WT-EH-15-C**).
- Titanium anode for 200 and 300-liter tanks (**WT-AT-2-4-C**).
- Titanium anode for 500-liter tanks (**WT-AT-5-C**).

NOTE: Third-party accessories can also be used.