



## RESIDENTIAL HEAT PUMPS

*Smart comfort for a sustainable home*

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## HOW DOES THE HEAT PUMP WORK?

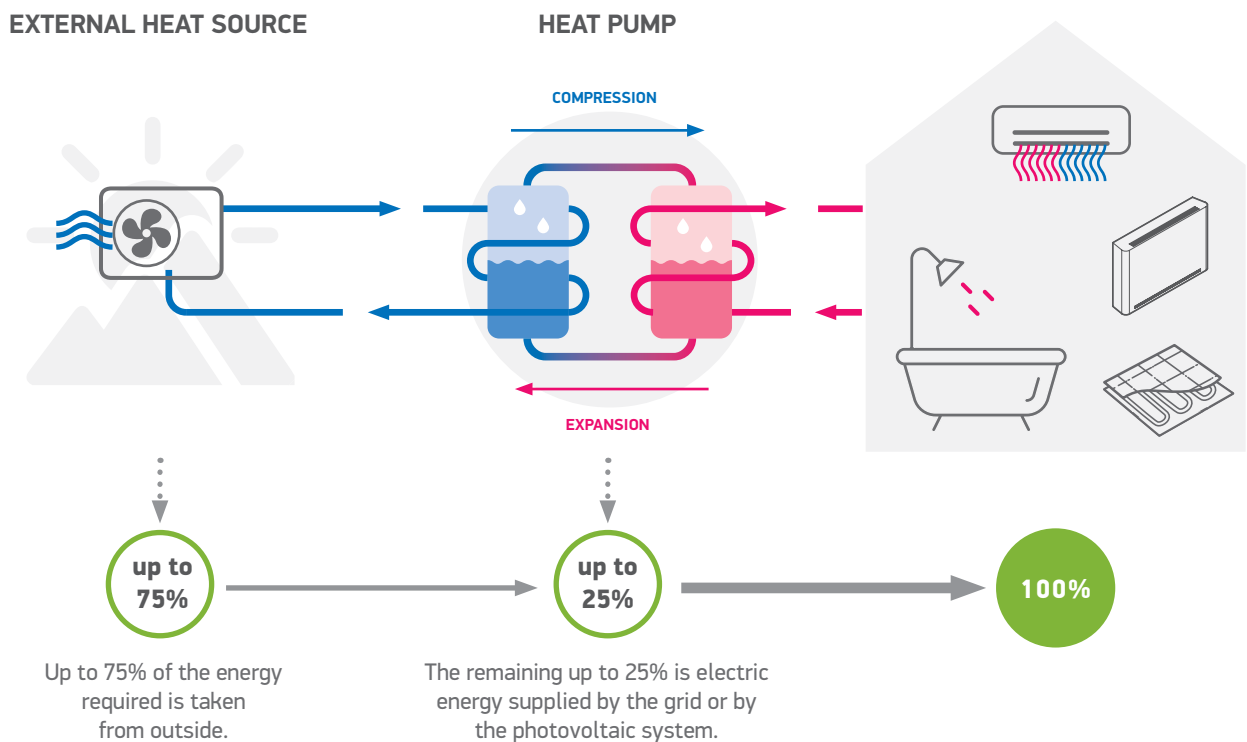
Heat pumps use environmental energy to generate heating and hot water for any home or office building. It works by extracting thermal energy (heat) from the air, ground or a local water source, which is then converted by a heat pump to generate heating and domestic hot water.

By inverting the operating cycle, a heat pump cools rooms in summer with the same principle: the heat extracted indoors is taken outdoors.

The process uses the thermal energy already available in nature, which makes the heat pumps highly efficient heat generators which use renewable, clean and free energy.

The heat pumps are powered by electric energy which allows a cooling cycle to be completed, but the production of heat occurs through absorption from the external source: the air, water or ground (geothermal heat pump).

Electrical energy can also be supplied by a photovoltaic or wind plant. In this case, the thermal energy produced is completely free and renewable.



## THE ADVANTAGES OF A HEAT PUMP

### ENERGY EFFICIENT - CLASS A+++

### COST EFFICIENT

Multithermica has the capacity to generate up to four times as much thermal energy as it uses electrical energy which results in cost savings. It effectively provides heating, cooling and hot water to the house all over the year.

### ENVIRONMENTALLY-FRIENDLY

Heat pumps operate with electricity (including from alternative sources such as solar power) and produce no emissions, making them much more environmentally-friendly than traditional heating systems.

### SUSTAINABLE

Thanks to the use of natural energy sources such as air, water and/or ground.

### EFFICIENT AT LOW TEMPERATURE

Heat pumps can operate at high efficiency levels even in cold temperatures up to -25 °C. Just 25% of the energy used by a heat pump is provided by electricity, with the remaining 75% being generated by the environment through the air or water.

### FLEXIBLE

Heat pumps work effectively with both radiant floor heating and radiators with low surface temperatures

### LONG PRODUCT LIFE

### QUIET

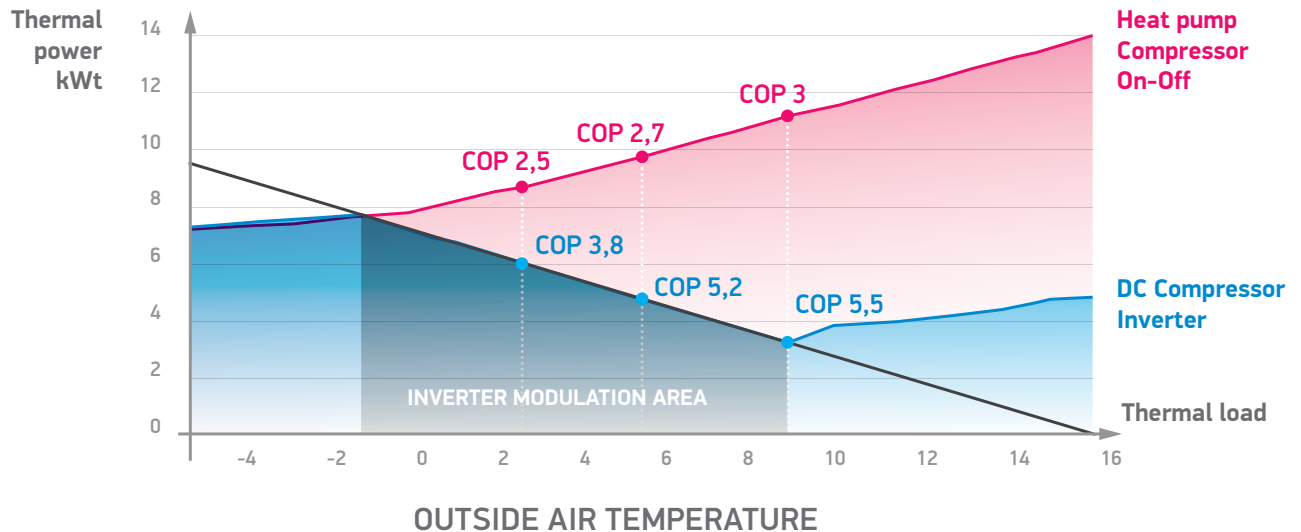
Heat pumps are quiet and can be positioned anywhere without causing any noise disruption.

### EASY TO MAINTAIN

Heat pumps require very little maintenance (yearly checks are recommendable but not required), especially in comparison to the annual maintenance required of a traditional boiler.



## THE EFFICIENCY OF INVERTER TECHNOLOGY



The heat pump with inverter compressor modulates the power supplied based on the building requirement. As the external temperature increases, the power supplied decreases and so, increases efficiency.

The heat pump with on/off compressor always works at 100% and, as the external temperature increases, the power generated increases, in contrast to the building requirement. In these conditions, in order to meet the requested load, the compressor works by repeatedly turning off and on which significantly reduces efficiency.

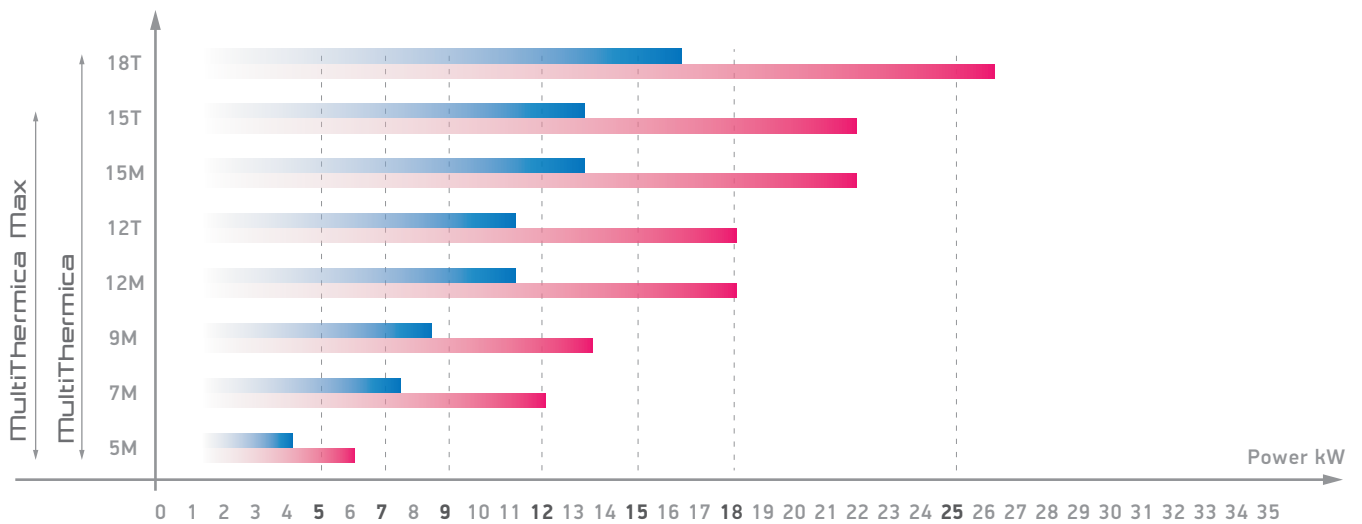
# MULTITHERMICA PORTFOLIO: AIR-TO-WATER SPLIT HEAT PUMP SYSTEMS

Air-to-water heat pump split systems are an innovative and energy-efficient way to provide heating, cooling and domestic hot water to a building. These systems extract heat from the outside air and transfer it to a water-based heating system inside the building, providing warmth during the winter months with high efficiency at low temperatures up to  $-25^{\circ}\text{C}$ . In the summer, the process is reversed, and the heat pump removes heat from the indoor space, providing cool air for the building’s occupants.

Air-to-water heat pump split systems consist of two main components: an outdoor unit and an indoor unit. The outdoor unit contains a compressor, a heat exchanger, and a fan, while the indoor unit contains a heat exchanger and a circulation pump. The two units are connected by pipes with refrigerant.

Air-to-water heat pump split systems offer several advantages over traditional heating and cooling systems. One of the main advantages is their energy efficiency. Another advantage of air to water heat pump split systems is their flexibility in installation. As the outdoor and indoor units are separate, they can be installed in a variety of locations, depending on the building’s layout and local climate conditions. The split system design also allows for quieter operation, as the outdoor unit can be placed further away from the indoor unit, reducing noise levels inside the building.

## Power range



■ Maximum heating power A7/W35  
■ Maximum cooling power A35/W7



## MultiThermica

Flexible solution, suitable to use in tailor made systems. Internal module is connected to outdoor unit via refrigerant pipes. The split system is designed for the benefit and comfort of installers, especially in locations with colder climate conditions. It has a maximized energy efficiency of A+++ in mild temperature conditions, leading to reduced operating costs.

	System Names	INDOOR UNIT		OUTDOOR UNIT	
		Indoor Unit code	Indoor Unit name	Outdoor Unit code	Outdoor Unit name
MultiThermica	RHP 5 1P HE6 NV	423782	RHP 5 SI 1P HE6 NV	423830	RHP ATW 5 SO 1P NV
	RHP 7 1P HE6 NV	423821	RHP 7 SI 1P HE6 NV	423861	RHP ATW 7 SO 1P NV
	RHP 9 1P HE6 NV	423822	RHP 9 SI 1P HE6 NV	423832	RHP ATW 9 SO 1P NV
	RHP 12 1P HE6 NV	423823	RHP 12 SI 1/3P HE6 NV	423833	RHP ATW 12 SO 1P NV
	RHP 12 3P HE6 NV	423823	RHP 12 SI 1/3P HE6 NV	423835	RHP ATW 12 SO 3P NV
	RHP 15 1P HE6 NV	423826	RHP 15 SI 1/3P HE6 NV	423836	RHP ATW 15 SO 1P NV
	RHP 15 3P HE6 NV	423826	RHP 15 SI 1/3P HE6 NV	423837	RHP ATW 15 SO 3P NV
	RHP 18 3P HE6 NV	423828	RHP 18 SI 3P HE6 NV	423838	RHP ATW 18 SO 3P NV

## MultiThermica Max

Tower solution with integrated 200-liter DHW tank, connected to the outdoor unit via refrigerant pipes. Complete solution for maximum reliability and space saving design. Quick and easy installation made possible by the build-in components in the indoor unit.



	System Names	INDOOR UNIT		OUTDOOR UNIT	
		Indoor Unit code	Indoor Unit name	Outdoor Unit code	Outdoor Unit name
MultiThermica Max	RHP 5 MAX 1P HE6 NV	423907	RHP 5 SIT 1P HE6 NV	423830	RHP ATW 5 SO 1P NV
	RHP 7 MAX 1P HE6 NV	423908	RHP 7 SIT 1P HE6 NV	423861	RHP ATW 7 SO 1P NV
	RHP 9 MAX 1P HE6 NV	423909	RHP 9 SIT 1P HE6 NV	423832	RHP ATW 9 SO 1P NV
	RHP 12 MAX 1P HE6 NV	423840	RHP 12 SIT 1/3P HE6 NV	423833	RHP ATW 12 SO 1P NV
	RHP 12 MAX 3P HE6 NV	423840	RHP 12 SIT 1/3P HE6 NV	423835	RHP ATW 12 SO 3P NV
	RHP 15 MAX 1P HE6 NV	423842	RHP 15 SIT 1/3P HE6 NV	423836	RHP ATW 15 SO 1P NV
	RHP 15 MAX 3P HE6 NV	423842	RHP 15 SIT 1/3P HE6 NV	423837	RHP ATW 15 SO 3P NV



## Indoor unit of split air-to-water heat pump system

### PRODUCT DEFINITION:

Internal hydraulic module connected to the external unit via refrigerant pipes.

Flexible solution suitable for implementing tailor-made systems.

### ADVANTAGES:

- Energy Efficient - Class A+++
- Wide range: 5-7-9-12-15-18 kW /nominal heating capacity/
- High range of power available up to a maximum heating capacity of 26.9 kW
- R32 Refrigerant
- High quality of internal assembly with all components efficiently isolated
- Big surface of primary heat exchanger
- Powerful circulation pump to supply big systems (electronic valve)
- Integrated auxiliary heating element of 6 kW (3x2 kW)
- Elegant design for a perfect integration

### ADVANTAGES:

- 18 kW** Power range up to 18 kW
- Compact size

### SUITABLE FOR:

-  Households
-  Centralised systems
-  Offices
-  Industrial & commercial buildings

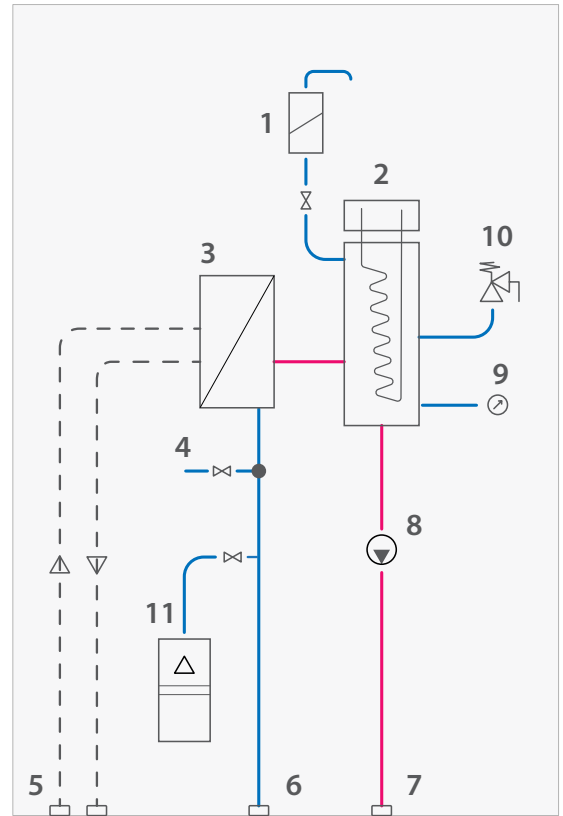
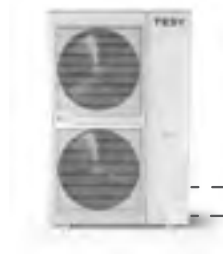
MODEL	CODE
RHP 5 SI 1P HE6 NV	423782
RHP 7 SI 1P HE6 NV	423821
RHP 9 SI 1P HE6 NV	423822
RHP 12 SI 1/3P HE6 NV	423823
RHP 15 SI 1/3P HE6 NV	423826
RHP 18 SI 3P HE6 NV	423828

PRODUCT DIMENSIONS		
width	mm	505
height	mm	900
depth	mm	300

# ADVANTAGES

## Indoor unit diagram

1. Automatic vent valve
2. Electrical heater
3. Plate exchanger
4. Differential pressure switch
5. Refrigerant connections
6. Return system hydraulic connection
7. Supply system hydraulic connection
8. Pump
9. Pressure gauge
10. Safety valve 3 bar
11. Expansion vessel 6 litres



## Indoor unit components

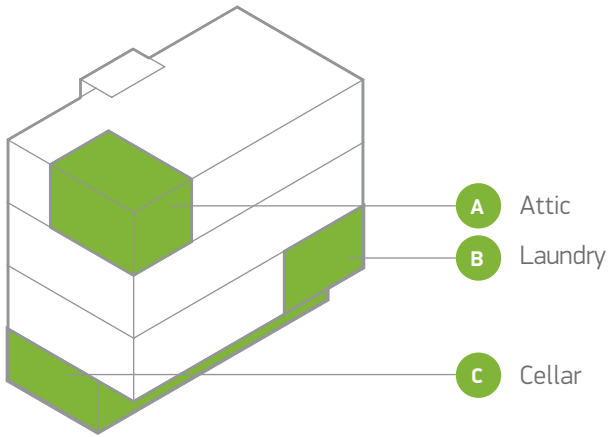
### Standard components

1. Structure and cover panels with RAL9003 finish
2. Automatic vent valve
3. Differential pressure switch
4. Expansion vessel 6 litres
5. Pressure gauge
6. Primary circuit circulation pump
7. Safety valve 3 bar

### Accessories kit (supplied separately)

8. ACS 3-way valve
9. ACS preparation tank from 200 to 1,500 litres
10. Inertial DHW tank from 100 to 1,000 litres

## MultiThermica installation



MultiThermica is a flexible solution. According to the application, the appropriate accessories are provided. For large homes or apartment buildings, for instance, the DHW need can be satisfied by selecting a DHW tank capacity ranging from 160 to 2000 liters.

MultiThermica is a modular heat pump that can be used in sequence to fulfill high power demands. The indoor unit must be installed in an adequate space to accommodate all system components.



Offices

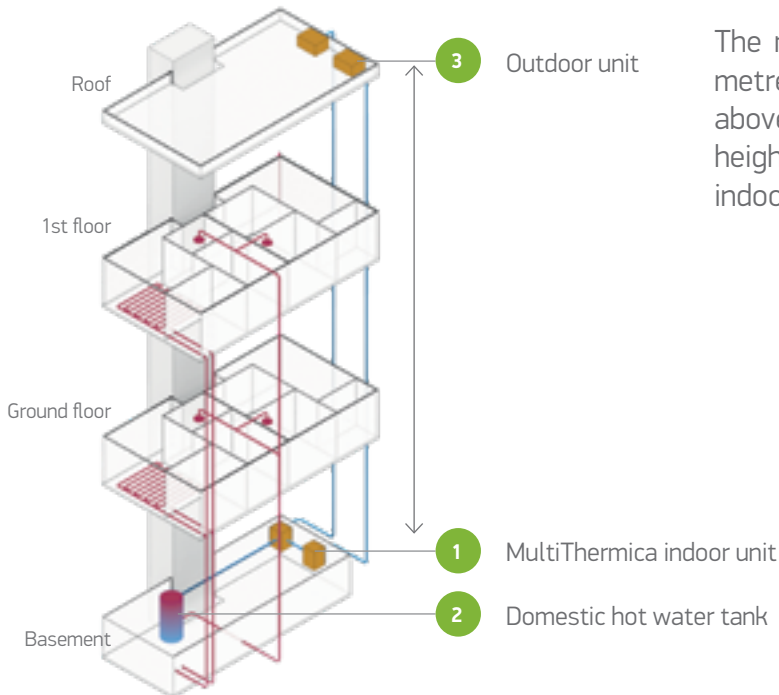


Large homes



Centralised systems

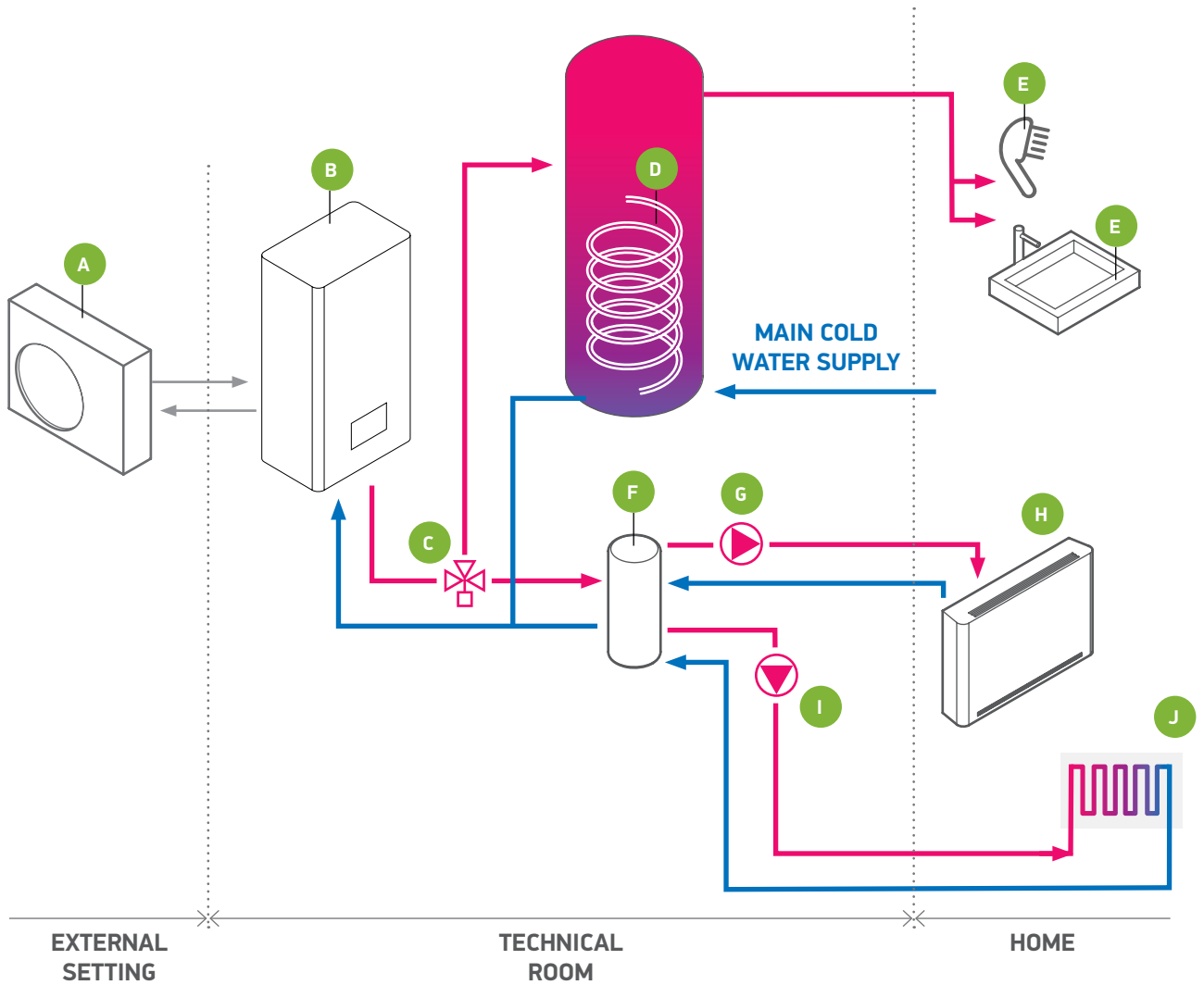
## Example of centralised system



The maximum length is 50 metres of which 15 metres height difference below (outdoor unit above and indoor unit below) and 30 metres height difference above (outdoor unit below and indoor unit above)

— Refrigerant pipes  
— Domestic hot water / heating

**MultiThermica system diagram**



- A. Outdoor unit
- B. MultiThermica indoor unit
- C. 3-way valve
- D. Thermal storage tank for instant preparation of DHW
- E. Hot water supply
- F. Hydraulic separator
- G. Secondary circuit pump
- H. Heating and cooling system
- I. Thermostatic Mixing group
- J. Floor heating

— Domestic hot water  
 — Cold water

# MultiThermica Max



## Indoor unit of split air-to-water heat pump system

### PRODUCT DEFINITION:


Tower with integrated 200-litre DHW tank and connected to the external unit via refrigerant pipes.

Complete solution which guarantees reliability and space saving design.

### ADVANTAGES:

- Energy Efficient - Class A+++
- Wide range: 5-7-9-12-15 kW /nominal heating capacity/
- High range of power available up to a maximum heating capacity of 22.8 kW
- R32 Refrigerant
- High quality of internal assembly- isolated components
- Big surface of primary heat exchanger
- Powerful circulation pump be able to supply big systems (electronic valve)
- Integrated auxiliary heating element of 6 kW (3x2 kW)
- Elegant design

### ADVANTAGES:

-  Built-in water tank
-  Built-in components

### SUITABLE FOR:

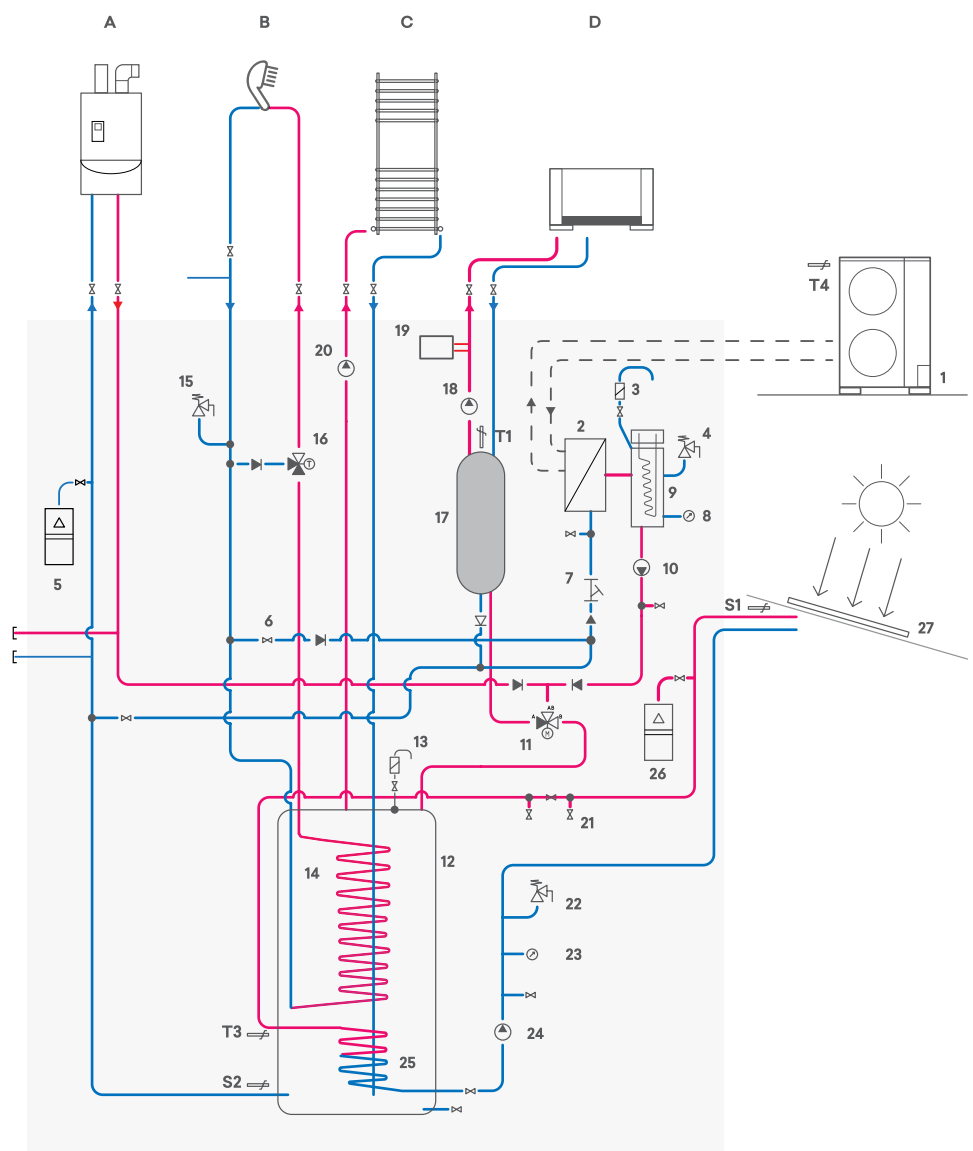
-  Medium-size households

MODEL	CODE
RHP 5 SIT 1P HE6 NV	423907
RHP 7 SIT 1P HE6 NV	423908
RHP 9 SIT 1P HE6 NV	423909
RHP 12 SIT 1/3P HE6 NV	423840
RHP 15 SIT 1/3P HE6 NV	423842

PRODUCT DIMENSIONS		
width	mm	600
height	mm	2000
depth	mm	600

## Indoor unit diagram

- A Boiler
  - B Domestic hot water utilities
  - C High temperature utilities (decorative radiators)
  - D System utilities
- 
1. Outdoor unit
  2. Plate exchanger
  3. Automatic vent valve
  4. System safety valve 3 bar
  5. System expansion vessel 24 litres
  6. Filling unit
  7. Y filter
  8. System pressure gauge
  9. Electrical heaters 2-4-6 kW
  10. Primary pump circuit
  11. ACS/system 3-way valve
  12. Domestic hot water tank 200 litres
  13. Boiler vent valve
  14. Stainless steel coil for instant DHW heating
  15. DHW safety valve 7 bar
  16. DHW thermostatic mixer
  17. Hydraulic separator (optional)\*
  18. Secondary circuit pump (optional)\*
  19. Inertial tank 20 litres (optional)\*
  20. Heated towel rail pump (optional)\*
  21. Solar load valve (optional)\*
  22. Solar safety valve 3 bar (optional)\*
  23. Solar circuit pressure gauge (optional)\*
  24. Solar circuit pump (optional)\*
  25. Solar heating coil (optional)\*
  26. Solar expansion vessel 24 litres (optional)\*
  27. Solar panel



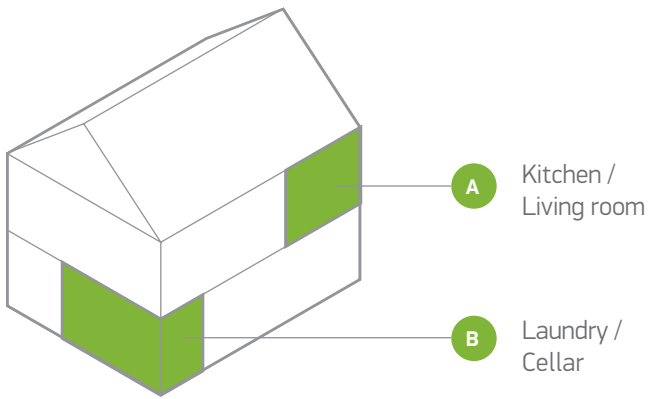
\*all components marked as optional should be purchased from third part suppliers

## Indoor unit components

### Standard components

1. 3in1 structure and cover panels with RAL9003 finish
2. Automatic vent valve
3. System safety valve 3 bar
4. System expansion vessel 24 litres
5. System filling unit and Y filter
6. Pressure gauge
7. Primary circuit circulation pump
8. ACS system 3-way valve
9. Domestic hot water tank 200 litres
10. DHW safety valve 7 bar
11. DHW thermostatic mixer

## MultiThermica Max installation

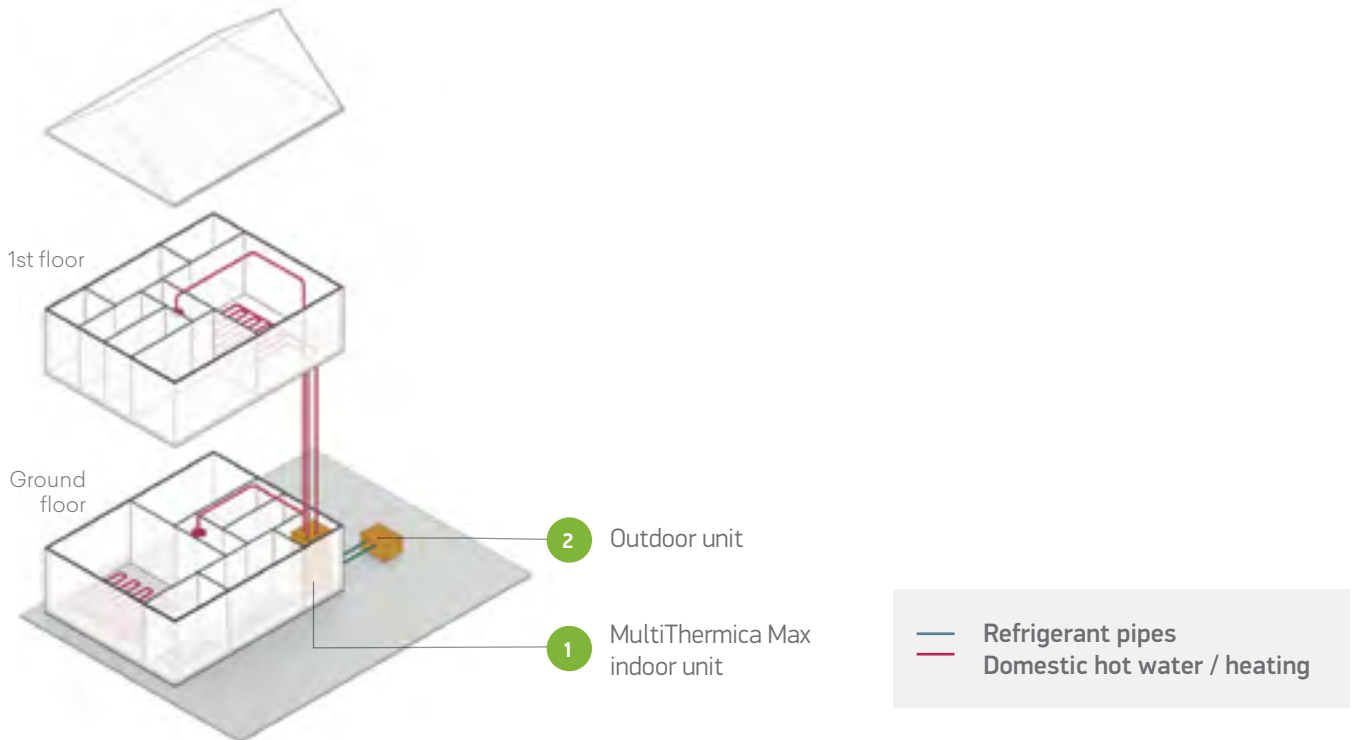


MultiThermica Max is a complete solution. All of the components of the system are placed in the indoor unit, which efficiently saves space. More reliability is provided by the product being installed, adjusted, and tested in the factory.

Because of its compact size and attractive design, the indoor unit may be fitted in any room.

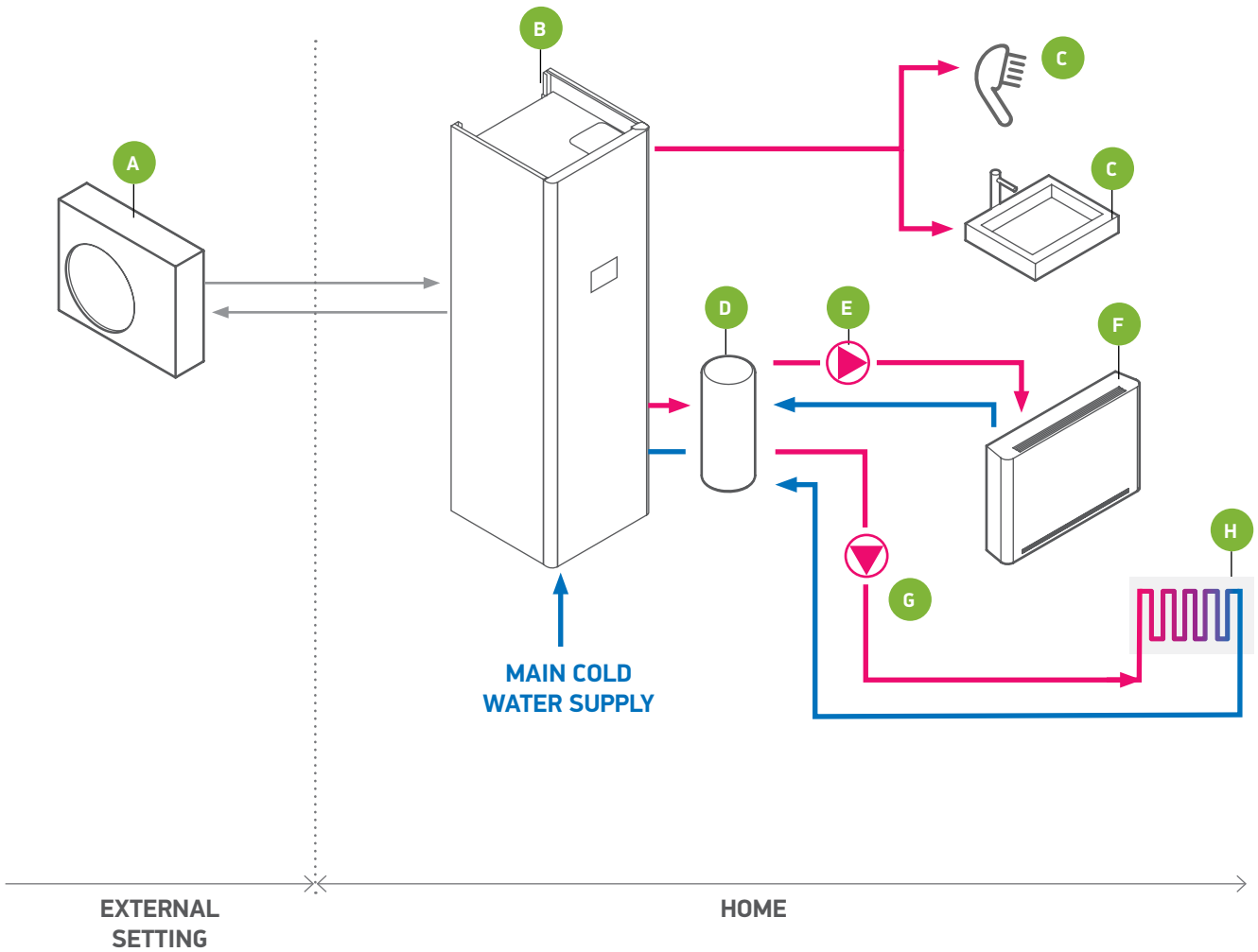


## Example of centralised system





# MultiThermica Max system diagram



- A. Outdoor unit
- B. 3in1 indoor unit
- C. Domestic hot water supply
- D. Heating system
- E. Hot water
- F. Cold water
- G. Thermostatic Mixing group
- H. Floor heating

— Domestic hot water  
— Cold water

# OUTDOOR UNITS

- Energy Efficient - Class A+++
- Twin rotary compressor with oil separator
- R32
- Particularly silent DC modulating fans
- Electronic expansion valve
- Latest generation defrost system
- High efficiency even at low temperatures

## SINGLE FAN UNIT



5M - 7M - 9M

## TWIN FAN UNIT



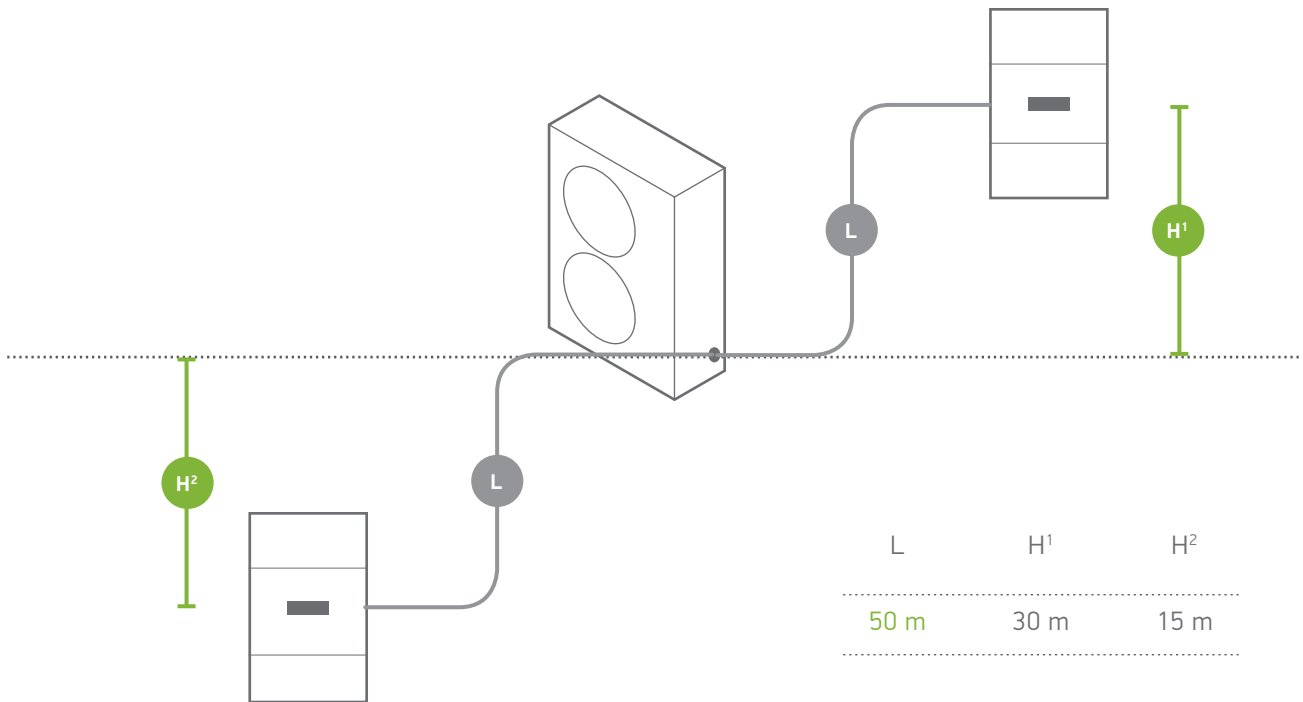
12M - 12T - 15M - 15T - 18T

	MULTITHERMICA ® MULTITHERMICA MAX							MULTI THERMICA
<b>MODEL</b>	RHP ATW 5 SO 1P NV	RHP ATW 7 SO 1P NV	RHP ATW 9 SO 1P NV	RHP ATW 12 SO 1P NV	RHP ATW 12 SO 3P NV	RHP ATW 15 SO 1P NV	RHP ATW 15 SO 3P NV	RHP ATW 18 SO 3P NV
<b>CODE</b>	423830	423861	423832	423833	423835	423836	423837	423838

PRODUCT DIMENSIONS		SINGLE FAN UNIT	TWIN FAN UNIT
width	mm	940	940
height	mm	996	1416
depth	mm	340	340
weight	kg	69	98



# Distance between components



### ADVANTAGES:



DC inverter compressor with wide modulation range.



Silent unit thanks to the continuous modulation of the fan with DC inverter motor.

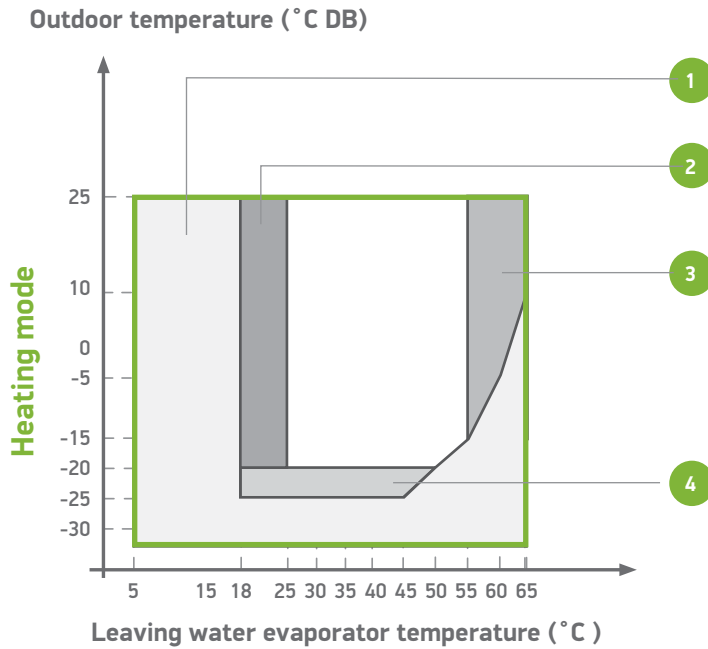


Advanced algorithms for preventing frosting of finned coil.



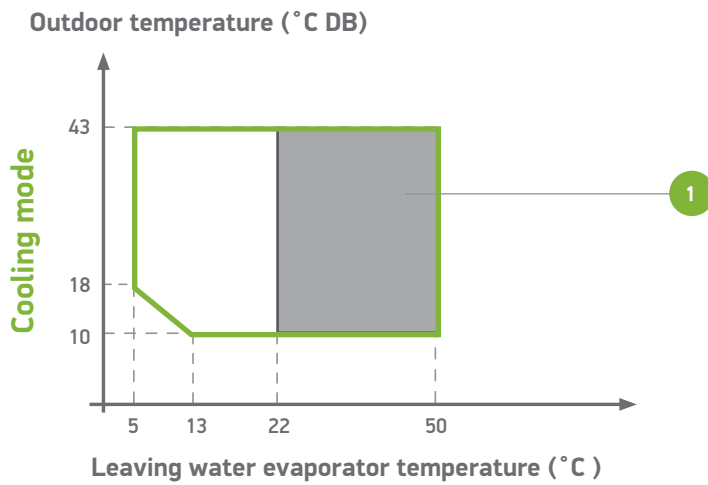
Finned coil with hydrophilic coating and subcooling circuit.

## Heating and domestic hot water



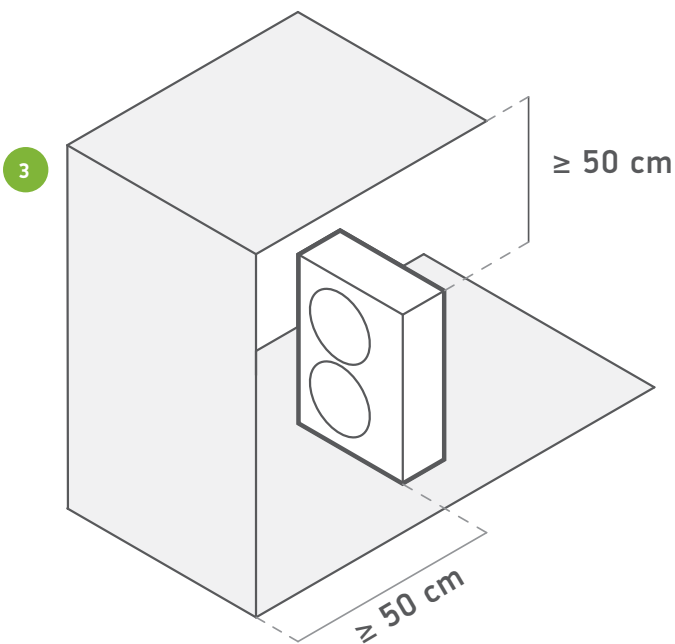
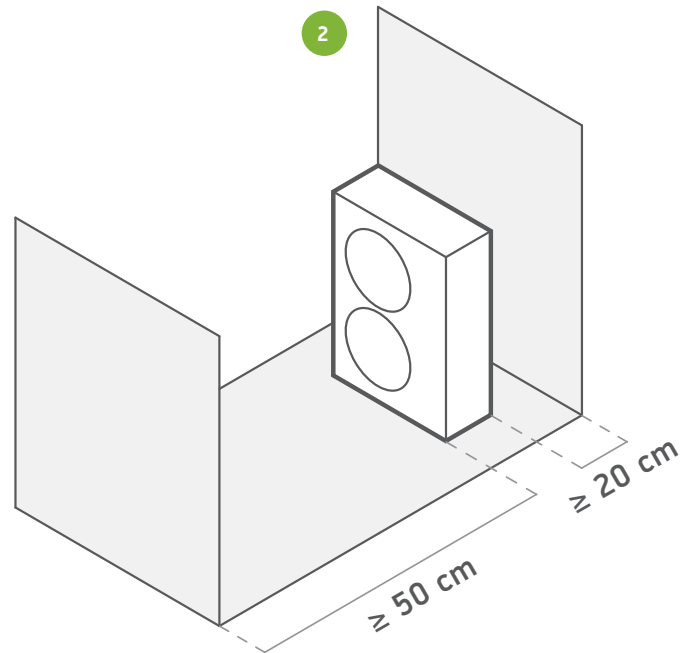
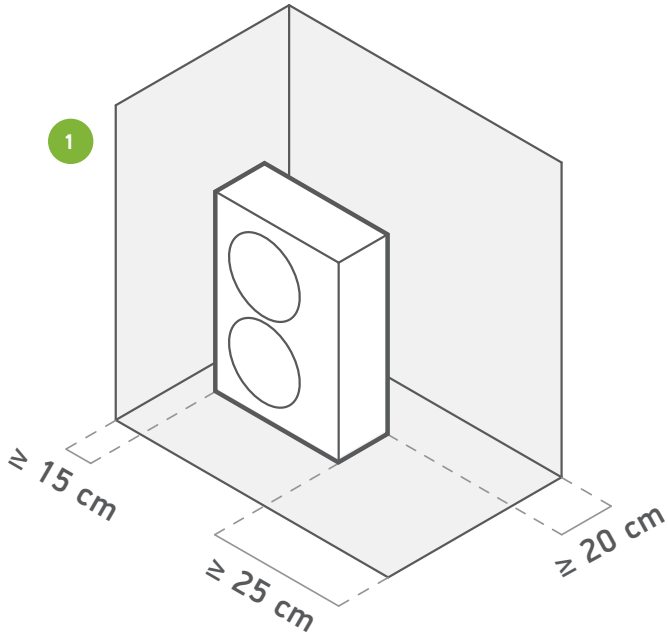
- 1 Auxiliary heating element only. No outdoor unit operation
- 2 Outdoor unit operation if setpoint > -25 °C
- 3 Outdoor unit operation if setpoint > 55 °C and  $\Delta T = 10^\circ C$   
( $\Delta T = \text{outlet temperature} - \text{inlet temperature}$ )
- 4 Operation of outdoor unit possible, but with possible capacity reduction. If the outdoor temperature < -25 °C, the outdoor unit will stop. Indoor unit and backup heater operation will continue.

## Cooling



- 1 Pull-down area

## Installation distances



MultiThermica Systems									Multi Thermica
	5M	7M	9M	12M	12T	15M	15T	18T	
Indoor Unit MultiThermica	423782	423821	423822	423823	423823	423826	423826	423828	
Indoor Unit MultiThermica Max	423907	423908	423909	423840	423840	423842	423842		
Outdoor unit model	423830	423861	423832	423833	423835	423836	423837	423838	

**PERFORMANCE DATA IN HEATING MODE**
**HEATING PERFORMANCE (A7°C; W35°C)**

Nominal thermal power	kW	5,58	7,10	8,10	11,59	11,59	14,61	14,61	15,95
Total absorbed power	kW	1,31	1,64	1,79	2,35	2,35	2,95	2,95	3,69
COP		4,26	4,33	4,53	4,93	4,93	4,95	4,95	4,32
Maximum thermal power	kW	6,8	8,5	13,7	18,3	18,3	22,8	22,8	26,9
SCOP		4,90	4,80	4,82	4,89	4,89	4,92	4,92	4,45
Energy Efficiency class		<b>A+++</b>	<b>A+++</b>	<b>A+++</b>	<b>A+++</b>	<b>A+++</b>	<b>A+++</b>	<b>A+++</b>	<b>A+++</b>

**HEATING PERFORMANCE (A2°C; W35°C)**

Nominal thermal power	kW	4,84	5,94	6,78	9,76	9,76	12,29	12,29	13,46
Total absorbed power	kW	1,29	1,55	1,71	2,30	2,30	2,94	2,94	3,56
COP		3,75	3,83	3,96	4,24	4,24	4,18	4,18	3,78

**HEATING PERFORMANCE (A-7°C; W35°C)**

Nominal thermal power	kW	3,76	4,32	4,86	6,93	6,93	9,03	9,03	10,03
Total absorbed power	kW	1,25	1,52	1,67	2,11	2,11	2,87	2,87	3,54
COP		3,01	2,84	2,91	3,28	3,28	3,15	3,15	2,83

**HEATING PERFORMANCE (A7°C; W45°C)**

Nominal thermal power	kW	5,23	6,65	7,59	10,87	10,87	13,70	13,70	14,96
Total absorbed power	kW	1,71	2,13	2,33	3,06	3,06	3,84	3,84	5,03
COP		3,06	3,12	3,26	3,55	3,55	3,57	3,57	2,97

**HEATING PERFORMANCE (A7°C; W55°C)**

Nominal thermal power	kW	4,87	6,19	7,06	10,11	10,11	12,74	12,74	13,91
Total absorbed power	kW	2,24	2,79	3,05	4,01	4,01	5,03	5,03	6,60
COP		2,17	2,22	2,31	2,52	2,52	2,53	2,53	2,11
SCOP		3,68	3,42	3,44	3,54	3,54	3,58	3,58	3,36
Energy Efficiency class		<b>A++</b>	<b>A++</b>	<b>A++</b>	<b>A++</b>	<b>A++</b>	<b>A++</b>	<b>A++</b>	<b>A++</b>

**PERFORMANCE DATA IN COOLING MODE**
**COOLING PERFORMANCE (A35°C; W18°C)**

Nominal cooling thermal power	kW	4,7	7,4	8,7	12,3	12,3	15,6	15,6	19,4
Total absorbed power	kW	1,3	1,8	2,1	3,0	3,0	3,9	3,9	4,7
EER		3,66	4,02	4,21	4,09	4,09	4,00	4,00	4,13
SEER		6,80	7,30	6,90	7,05	7,05	6,62	6,62	7,23

**COOLING PERFORMANCE (A35°C; W7°C)**

Nominal cooling thermal power	kW	3,5	5,3	6,3	8,9	8,9	11,2	11,2	13,9
Total absorbed power	kW	1,4	1,8	1,8	2,8	2,8	3,5	3,5	4,4
Maximum cooling thermal power	kW	4,1	7,6	8,1	11,8	11,8	13,3	13,3	16,5
EER		2,48	3,03	3,18	3,22	3,22	3,20	3,20	3,19
SEER		5,78	5,80	5,45	5,50	5,50	5,12	5,12	5,95



# Technical specifications

MultiThermica ® MultiThermica Max									MultiThermica
HYDRAULIC CONNECTIONS	u.m.	5M	7M	9M	12M	12T	15M	15T	18T
Nominal flow rate in heating (A7/W35 °C)	l/min	16,0	20,4	23,2	33,2	33,2	41,9	41,9	45,7
Nominal flow rate in cooling (A35/W18 °C)	l/min	13,5	21,2	25,0	35,3	35,3	44,7	44,7	55,5
Diameter hydraulic fittings	"	1"G	1"G	1"G	1"G	1"G	1"G	1"G	1"G
Expansion vessel capacity of the system	L	24	24	24	24	24	24	24	26
Minimum system water content	L	20	30	40	50	65	50	65	75

CIRCULATION PUMP PERFORMANCE									
Model of the pump		PARA 25-130/8	PARA 25-130/8	PARA 25-130/8	HF 25/10	HF 25/10	HF 25/10	HF 25/10	HF 25/10
Available pump head (A7; W35)	kPa	65	64	58	31	31	31	31	51

REFRIGERANT CONNECTIONS									
Refrigerant type		R32 (GWP 675)							
Refrigerant Load	kg	1,13	1,15	1,95	3,05	3,05	3,05	3,05	3,05
Extraction	"SAE	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
Liquid	"SAE	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"

ELECTRICAL DATA									
Supply voltage	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	230/1/50	400/3+N/50	400/3+N/50
Indoor unit protection degree		IPX2	IPX2	IPX2	IPX2	IPX2	IPX2	IPX2	IPX2
Outdoor unit protection degree		IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4	IPX4

Unit without heating element									
Maximum absorbed power	kW	2,1	3,93	3,93	5,55	6,2	5,85	6,5	7,5
Assorted maximum current	A	9,1	18	18	25	9	28	10	11,3

Unit with 6kW heating element									
Maximum absorbed power	kW	8,1	9,93	9,93	11,55	12,2	11,85	12,5	13,5
Assorted maximum current	A	35,2	44,1	44,1	51,1	35,1	54,1	36,1	37,4

SOUND SPECIFICATIONS									
Sound power internal unit	dB(A)	41	41	41	42	42	42	42	43
Sound power external unit	dB(A)	61	61	61	63	63	64	64	66

DIMENSIONS AND WEIGHT (EXTERNAL UNIT)									
Length-depth-height (LxDxH)	mm	799 x 299 x 619	799 x 299 x 619	940 x 340 x 996	940 x 340 x 1416	940 x 340 x 1416	940 x 340 x 1526	940 x 340 x 1526	940 x 340 x 1526
Net weight	kg	39	40	69	98	98	98	98	98

DIMENSIONS AND WEIGHT (INTERNAL UNIT)									
MultiThermica (length-depth-height)	mm	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900	505 x 300 x 900
MultiThermica Net weight	kg	41	41	41	41	41	43	43	46
MultiThermica Max (length-depth-height)	mm	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000	600 x 600 x 2000
MultiThermica Max Net weight	kg	172	172	172	172	172	172	172	



# Heat pump performance for heating | Rating frequency

	T. a	30			35			40			45			50			55		
	T. a	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>
5	-20	2,68	1,07	2,50	2,60	1,20	2,17	2,52	1,37	1,84	2,44	1,56	1,56	2,35	1,79	1,31	2,27	2,05	1,11
	-15	3,08	1,08	2,85	2,99	1,22	2,45	2,91	1,39	2,09	2,81	1,59	1,77	2,71	1,82	1,49	2,61	2,08	1,25
	-7	3,87	1,11	3,49	3,76	1,25	3,01	3,65	1,43	2,55	3,52	1,63	2,16	3,40	1,87	1,82	3,27	2,14	1,53
	-2	4,46	1,13	3,95	4,33	1,27	3,41	4,20	1,45	2,90	4,06	1,66	2,45	3,91	1,90	2,06	3,77	2,17	1,74
	0	4,72	1,14	4,14	4,58	1,28	3,58	4,44	1,46	3,04	4,29	1,67	2,57	4,14	1,91	2,17	3,99	2,19	1,82
	2	4,99	1,15	4,34	4,84	1,29	3,75	4,70	1,47	3,20	4,54	1,68	2,70	4,38	1,92	2,28	4,22	2,20	1,92
	7	5,75	1,17	4,91	5,58	1,31	4,26	5,42	1,50	3,61	5,23	1,71	3,06	5,05	1,96	2,58	4,87	2,24	2,17
	12	6,62	1,19	5,56	6,43	1,33	4,83	6,24	1,52	4,11	6,03	1,74	3,47	5,81	1,99	2,92	5,61	2,28	2,46
	15	7,21	1,20	6,01	7,00	1,35	5,19	6,79	1,54	4,41	6,56	1,75	3,75	6,33	2,01	3,15	6,10	2,30	2,65
20	8,30	1,22	6,80	8,06	1,37	5,88	7,83	1,56	5,02	7,56	1,78	4,25	7,29	2,04	3,57	7,03	2,34	3,00	
7	-20	3,14	1,53	2,05	3,04	1,72	1,77	2,95	1,96	1,50	2,85	2,24	1,27	2,75	2,57	1,07	2,65	2,55	1,04
	-15	3,49	1,43	2,44	3,39	1,61	2,11	3,29	1,83	1,79	3,18	2,09	1,52	3,06	2,40	1,28	2,95	2,58	1,14
	-7	4,45	1,35	3,30	4,32	1,52	2,85	4,20	1,73	2,42	4,05	1,97	2,05	3,91	2,26	1,73	3,77	2,59	1,46
	-2	5,30	1,35	3,93	5,15	1,52	3,39	5,00	1,73	2,88	4,82	1,98	2,44	4,65	2,26	2,06	4,49	2,59	1,73
	0	5,69	1,36	4,18	5,53	1,53	3,61	5,37	1,75	3,07	5,18	1,99	2,60	5,00	2,28	2,19	4,82	2,62	1,84
	2	6,12	1,38	4,43	5,94	1,55	3,82	5,77	1,77	3,25	5,57	2,02	2,76	5,37	2,31	2,32	5,18	2,65	1,95
	7	7,31	1,45	5,03	7,10	1,64	4,34	6,89	1,87	3,69	6,65	2,13	3,13	6,42	2,44	2,63	6,19	2,79	2,22
	12	8,69	1,57	5,55	8,44	1,76	4,78	8,19	2,01	4,07	7,91	2,29	3,45	7,63	2,63	2,90	7,36	3,01	2,44
	15	9,61	1,65	5,81	9,33	1,86	5,01	9,06	2,12	4,26	8,75	2,42	3,61	8,44	2,78	3,04	8,14	3,18	2,56
20	11,30	1,83	6,17	10,97	2,06	5,32	10,65	2,35	4,53	10,29	2,68	3,83	9,92	3,07	3,23	9,57	3,52	2,72	
9	-20	3,21	1,64	1,96	3,11	1,85	1,68	3,02	2,11	1,43	2,92	2,40	1,21	2,81	2,75	1,02	2,71	2,65	1,02
	-15	3,75	1,55	2,41	3,64	1,75	2,08	3,53	1,99	1,77	3,41	2,27	1,50	3,29	2,60	1,26	3,17	2,98	1,06
	-7	5,00	1,49	3,37	4,86	1,67	2,90	4,71	1,91	2,47	4,55	2,18	2,09	4,39	2,49	1,76	4,23	2,85	1,48
	-2	6,03	1,49	4,04	5,85	1,68	3,48	5,68	1,91	2,97	5,48	2,18	2,51	5,29	2,50	2,12	5,10	2,86	1,78
	0	6,49	1,50	4,32	6,30	1,69	3,72	6,12	1,93	3,17	5,91	2,20	2,68	5,69	2,52	2,26	5,49	2,89	1,90
	2	6,98	1,52	4,59	6,78	1,71	3,96	6,58	1,95	3,37	6,35	2,23	2,85	6,13	2,55	2,40	5,91	2,92	2,02
	7	8,34	1,59	5,25	8,10	1,79	4,52	7,86	2,04	3,85	7,59	2,33	3,26	7,32	2,67	2,75	7,06	3,05	2,31
	12	9,88	1,69	5,84	9,59	1,91	5,03	9,31	2,17	4,28	8,99	2,48	3,63	8,67	2,84	3,05	8,37	3,25	2,57
	15	10,90	1,77	6,15	10,58	2,00	5,30	10,27	2,28	4,51	9,92	2,60	3,82	9,57	2,97	3,22	9,23	3,41	2,71
20	12,74	1,93	6,59	12,37	2,18	5,68	12,01	2,48	4,83	11,59	2,83	4,09	11,18	3,24	3,45	10,78	3,72	2,90	
12	-20	4,03	1,48	2,72	3,91	1,66	2,36	3,80	1,90	2,00	3,67	2,16	1,70	3,54	2,48	1,43	3,41	2,84	1,20
	-15	5,07	1,65	3,07	4,92	1,86	2,65	4,78	2,12	2,25	4,62	2,42	1,91	4,45	2,78	1,60	4,29	3,18	1,35
	-7	7,14	1,88	3,80	6,93	2,11	3,28	6,73	2,41	2,79	6,50	2,75	2,36	6,27	3,15	1,99	6,04	3,61	1,67
	-2	8,68	1,98	4,38	8,43	2,23	3,78	8,18	2,54	3,22	7,90	2,90	2,72	7,62	3,32	2,30	7,35	3,80	1,93
	0	9,35	2,01	4,65	9,08	2,26	4,02	8,81	2,58	3,41	8,51	2,94	2,89	8,21	3,37	2,44	7,92	3,86	2,05
	2	10,05	2,04	4,93	9,76	2,30	4,24	9,48	2,62	3,62	9,15	2,98	3,07	8,82	3,42	2,58	8,51	3,92	2,17
	7	11,94	2,09	5,71	11,59	2,35	4,93	11,25	2,68	4,20	10,87	3,06	3,55	10,48	3,50	2,99	10,11	4,01	2,52
	12	14,02	2,11	6,64	13,61	2,37	5,74	13,21	2,71	4,87	12,76	3,08	4,14	12,31	3,53	3,49	11,87	4,05	2,93
	15	15,36	2,10	7,31	14,91	2,37	6,29	14,48	2,70	5,36	13,98	3,08	4,54	13,48	3,53	3,82	13,00	4,04	3,22
20	17,75	2,08	8,53	17,23	2,34	7,36	16,73	2,67	6,27	16,15	3,04	5,31	15,58	3,48	4,48	15,02	3,99	3,76	
15	-20	6,61	2,34	2,83	6,42	2,63	2,44	6,23	3,00	2,08	6,01	3,42	1,76	5,80	3,92	1,48	5,59	4,49	1,25
	-15	7,34	2,44	3,01	7,13	2,74	2,60	6,92	3,13	2,21	6,69	3,57	1,87	6,45	4,09	1,58	6,22	4,68	1,33
	-7	9,31	2,55	3,65	9,03	2,87	3,15	8,77	3,27	2,68	8,47	3,73	2,27	8,17	4,28	1,91	7,88	4,90	1,61
	-2	11,02	2,59	4,25	10,70	2,92	3,66	10,39	3,33	3,12	10,03	3,80	2,64	9,67	4,35	2,22	9,33	4,98	1,87
	0	11,81	2,60	4,54	11,47	2,93	3,91	11,13	3,34	3,33	10,75	3,81	2,82	10,37	4,37	2,37	10,00	5,00	2,00
	2	12,66	2,61	4,85	12,29	2,94	4,18	11,93	3,36	3,55	11,52	3,83	3,01	11,11	4,38	2,54	10,72	5,02	2,14
	7	15,05	2,62	5,74	14,61	2,95	4,95	14,19	3,36	4,22	13,70	3,84	3,57	13,21	4,39	3,01	12,74	5,03	2,53
	12	17,82	2,61	6,83	17,30	2,94	5,88	16,80	3,35	5,01	16,22	3,82	4,25	15,64	4,37	3,58	15,08	5,01	3,01
	15	19,66	2,59	7,59	19,09	2,92	6,54	18,53	3,32	5,58	17,89	3,79	4,72	17,26	4,34	3,98	16,64	4,97	3,35
20	23,03	2,54	9,07	22,36	2,86	7,82	21,70	3,26	6,66	20,96	3,72	5,63	20,21	4,26	4,74	19,49	4,88	3,99	
18	-20	7,75	3,73	2,08	7,52	4,00	1,88	7,30	4,79	1,52	7,05	5,46	1,29	6,79	6,25	1,09	6,55	6,33	1,03
	-15	8,39	3,50	2,40	8,14	3,75	2,17	7,91	4,49	1,76	7,63	5,12	1,49	7,36	5,87	1,25	7,10	6,33	1,12
	-7	10,33	3,30	3,13	10,03	3,54	2,83	9,74	4,23	2,30	9,41	4,83	1,95	9,07	5,53	1,64	8,75	6,33	1,38
	-2	12,12	3,28	3,70	11,77	3,51	3,35	11,42	4,21	2,72	11,03	4,80	2,30	10,64	5,49	1,94	10,26	6,29	1,63
	0	12,95	3,29	3,94	12,58	3,53	3,56	12,21	4,22	2,89	11,79	4,82	2,45	11,37	5,52	2,06	10,97	6,32	1,74
	2	13,86	3,32	4,18	13,46	3,56	3,78	13,07	4,26	3,07	12,62	4,85	2,60	12,17	5,56	2,19	11,73	6,37	1,84
	7	16,43	3,44	4,78	15,95	3,69	4,32	15,49	4,41	3,51	14,96	5,03	2,97	14,42	5,77	2,50	13,91	6,60	2,11
	12	19,44	3,64	5,34	18,88	3,90	4,84	18,33	4,67	3,92	17,70	5,33	3,32	17,07	6,10	2,80	16,46	6,99	2,35
	15	21,46	3,80	5,65	20,83	4,07	5,12	20,22	4,88	4,14	19,53	5,56	3,51	18,83	6,37	2,96	18,16	7,30	2,49
20	25,17	4,13	6,10	24,43	4,43	5,51	23,72	5,30	4,47	22,91	6,05	3,79	22,09	6,93	3,19	21,30	7,93	2,69	



# Cooling performance | Rating frequency

	T. ae	20			25			30			35			40		
	T. a	PF	PA	EER	PF	PA	EER	PF	PA	EER	PF	PA	EER	PF	PA	EER
7	7	4,12	0,95	4,34	3,95	1,06	3,74	3,73	1,19	3,14	3,52	1,33	2,64	3,31	1,49	2,22
	10	4,61	0,96	4,79	4,42	1,07	4,13	4,17	1,20	3,47	3,92	1,35	2,90	3,70	1,51	2,45
	13	5,13	0,98	5,26	4,92	1,08	4,55	4,64	1,21	3,82	4,36	1,37	3,17	4,12	1,53	2,69
	15	5,50	0,99	5,58	5,27	1,09	4,84	4,98	1,22	4,07	4,66	1,39	3,36	4,42	1,55	2,85
	18	6,08	1,00	6,08	5,82	1,10	5,30	5,50	1,24	4,45	4,73	1,30	3,66	4,88	1,57	3,11
	22				6,62	1,11	5,95	6,25	1,25	5,00	5,83	1,43	4,06	5,55	1,60	3,46
9	7	6,21	1,25	4,96	5,94	1,39	4,28	5,61	1,56	3,60	5,36	1,69	3,17	4,98	1,96	2,54
	10	6,82	1,27	5,36	6,52	1,40	4,65	6,17	1,58	3,91	5,97	1,71	3,48	5,46	1,99	2,75
	13	7,46	1,30	5,76	7,13	1,42	5,03	6,76	1,60	4,23	6,63	1,74	3,81	5,99	2,02	2,96
	15	7,90	1,31	6,02	7,55	1,42	5,30	7,17	1,61	4,45	7,09	1,75	4,04	6,36	2,04	3,12
	18	8,58	1,34	6,41	8,21	1,44	5,72	7,81	1,63	4,79	7,82	1,78	4,39	6,95	2,07	3,36
	22				9,15	1,45	6,31	8,70	1,65	5,27	8,86	1,82	4,87	7,80	2,07	3,69
12	7	7,35	1,43	5,14	7,02	1,56	4,50	6,64	1,75	3,79	6,27	1,97	3,19	5,89	2,07	2,68
	10	8,08	1,44	5,61	7,70	1,58	4,88	7,30	1,77	4,12	6,90	1,99	3,47	6,46	2,07	2,89
	13	8,84	1,45	6,10	8,41	1,59	5,29	7,99	1,79	4,47	7,56	2,02	3,75	7,08	2,07	3,12
	15	9,36	1,45	6,44	8,91	1,60	5,57	8,47	1,80	4,71	8,01	2,04	3,93	7,52	2,07	3,28
	18	10,17	1,46	6,96	9,69	1,61	6,01	9,22	1,82	5,08	8,71	2,07	4,22	8,21	2,07	3,53
	22				10,79	1,63	6,62	10,27	1,84	5,59	9,69	2,11	4,60	9,21	2,07	3,87
15	7	10,35	2,03	5,09	9,90	2,27	4,36	9,36	2,55	3,67	8,89	2,76	3,21	8,30	2,07	2,59
	10	11,38	2,05	5,56	10,86	2,29	4,73	10,29	2,58	3,99	9,83	2,80	3,51	9,11	2,07	2,80
	13	12,45	2,06	6,04	11,87	2,31	5,13	11,27	2,61	4,32	10,83	2,84	3,81	9,98	2,07	3,02
	15	13,18	2,07	6,38	12,57	2,33	5,40	11,95	2,63	4,54	11,53	2,87	4,02	10,59	2,07	3,18
	18	14,31	2,07	6,90	13,67	2,35	5,83	13,01	2,66	4,89	12,62	2,91	4,33	11,57	2,07	3,42
	22				15,23	2,37	6,42	14,50	2,70	5,37	14,16	2,97	4,76	12,97	2,07	3,75
18	7	13,12	2,64	4,97	12,55	2,94	4,26	11,86	3,31	3,59	11,24	3,51	3,20	10,52	2,07	2,53
	10	14,42	2,66	5,43	13,76	2,97	4,63	13,04	3,35	3,90	12,36	3,62	3,41	11,54	2,07	2,74
	13	15,77	2,67	5,90	15,04	3,00	5,01	14,27	3,39	4,22	13,54	3,69	3,67	12,65	2,07	2,96
	15	16,70	2,68	6,22	15,93	3,02	5,28	15,13	3,41	4,44	14,36	3,71	3,87	13,44	2,07	3,11
	18	18,14	2,70	6,72	17,33	3,04	5,69	16,47	3,45	4,78	15,63	3,70	4,23	14,68	2,07	3,34
	22				19,29	3,08	6,27	18,36	3,50	5,24	17,41	3,62	4,81	16,47	2,07	3,67
25	7	16,28	3,17	5,13	15,57	3,55	4,39	14,72	3,98	3,70	13,94	4,37	3,19	13,05	2,07	2,61
	10	17,90	3,19	5,61	17,08	3,58	4,77	16,18	4,03	4,02	15,39	4,43	3,47	14,33	2,07	2,83
	13	19,01	3,20	5,94	18,12	3,60	5,03	17,19	4,06	4,24	16,91	4,49	3,77	15,23	2,07	2,97
	15	20,73	3,22	6,45	19,77	3,64	5,44	18,78	4,11	4,57	17,97	4,53	3,96	16,68	2,07	3,21
	18	22,52	3,22	6,98	21,50	3,67	5,86	20,44	4,15	4,92	19,61	4,60	4,27	18,22	2,07	3,45
					23,94	3,71	6,46	22,77	4,21	5,41	21,91	4,68	4,68	20,44	2,07	3,79





# Heat pump performance for heating | Maximum frequency

	T. a	30			35			40			45			50			55		
	T. a	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>	DC	PA	COP <sub>DC</sub>
5	-20	3,27	1,52	2,15	3,17	1,71	1,85	3,08	1,95	1,58	2,98	2,23	1,34	2,87	2,55	1,13	3,19	2,68	1,19
	-15	3,77	1,55	2,44	3,66	1,74	2,10	3,55	1,98	1,79	3,43	2,26	1,52	3,31	2,59	1,28	3,48	2,68	1,30
	-7	4,72	1,59	2,98	4,59	1,79	2,57	4,45	2,04	2,19	4,30	2,32	1,85	4,15	2,66	1,56	3,52	2,68	1,31
	-2	5,44	1,61	3,37	5,28	1,82	2,91	5,13	2,07	2,48	4,95	2,36	2,10	4,73	2,68	1,77	3,98	2,68	1,49
	0	5,76	1,62	3,55	5,59	1,83	3,06	5,43	2,08	2,60	5,24	2,38	2,21	4,98	2,68	1,86	4,19	2,68	1,56
	2	6,09	1,63	3,73	5,92	1,84	3,21	5,74	2,10	2,74	5,55	2,39	2,32	5,23	2,68	1,95	4,40	2,68	1,64
	7	7,02	1,66	4,23	6,82	1,87	3,64	6,62	2,13	3,10	6,39	2,43	2,63	5,93	2,68	2,21	4,99	2,68	1,86
	12	8,09	1,69	4,79	7,85	1,90	4,13	7,62	2,17	3,51	7,36	2,47	2,98	6,72	2,68	2,51	5,65	2,68	2,11
	15	8,80	1,71	5,16	8,55	1,92	4,45	8,30	2,19	3,79	8,01	2,50	3,21	7,24	2,68	2,70	6,09	2,68	2,27
20	10,14	1,73	5,85	9,85	1,95	5,04	9,56	2,23	4,29	9,23	2,54	3,64	8,20	2,68	3,06	6,91	2,68	2,58	
7	-20	4,49	2,41	1,87	4,36	2,71	1,61	4,23	3,09	1,37	4,08	3,10	1,32	4,27	3,55	1,20	3,91	3,57	1,10
	-15	5,26	2,36	2,23	5,11	2,66	1,92	4,96	3,04	1,63	4,79	3,19	1,50	4,62	3,57	1,27	4,03	3,57	1,13
	-7	6,34	2,30	2,76	6,16	2,59	2,38	5,98	2,95	2,02	5,77	3,37	1,71	5,57	3,57	1,44	4,52	3,57	1,27
	-2	7,62	2,26	3,37	7,39	2,54	2,91	7,18	2,90	2,48	6,93	3,31	2,10	6,69	3,57	1,77	5,31	3,57	1,49
	0	8,17	2,24	3,64	7,93	2,52	3,14	7,70	2,88	2,67	7,44	3,28	2,27	7,17	3,57	1,91	5,73	3,57	1,61
	2	8,75	2,23	3,93	8,49	2,51	3,39	8,24	2,86	2,88	7,96	3,26	2,44	7,68	3,57	2,06	6,18	3,57	1,73
	7	10,30	2,19	4,71	10,00	2,46	4,06	9,70	2,81	3,46	9,37	3,20	2,93	9,04	3,57	2,47	7,41	3,57	2,08
	12	12,00	2,15	5,59	11,65	2,42	4,82	11,31	2,75	4,11	10,92	3,14	3,48	10,53	3,57	2,93	8,80	3,57	2,46
	15	13,09	2,12	6,17	12,71	2,39	5,32	12,34	2,72	4,53	11,92	3,11	3,84	11,49	3,57	3,23	9,71	3,57	2,72
20	15,04	2,08	7,22	14,60	2,34	6,23	14,18	2,67	5,30	13,69	3,05	4,49	13,20	3,57	3,78	11,36	3,57	3,18	
9	-20	6,09	2,78	2,19	5,90	3,13	1,88	5,73	3,57	1,60	5,53	3,58	1,54	5,59	4,06	1,38	5,21	4,06	1,28
	-15	6,90	2,73	2,52	6,70	3,08	2,18	6,50	3,51	1,85	6,28	3,68	1,70	6,39	4,06	1,44	5,51	4,06	1,36
	-7	8,01	2,66	3,01	7,78	3,00	2,59	7,55	3,42	2,21	7,29	3,90	1,87	7,39	4,06	1,57	6,06	4,06	1,49
	-2	9,48	2,62	3,61	9,20	2,95	3,12	8,93	3,37	2,65	8,63	3,84	2,25	8,68	4,06	1,89	6,46	4,06	1,59
	0	10,12	2,61	3,88	9,82	2,94	3,34	9,54	3,35	2,85	9,21	3,82	2,41	9,24	4,06	2,03	6,94	4,06	1,71
	2	10,79	2,59	4,16	10,47	2,92	3,59	10,17	3,33	3,05	9,82	3,80	2,59	9,84	4,06	2,18	7,44	4,06	1,83
	7	12,59	2,56	4,92	12,22	2,88	4,24	11,87	3,28	3,61	11,46	3,74	3,06	10,46	4,06	2,58	8,81	4,06	2,17
	12	14,58	2,53	5,77	14,15	2,84	4,98	13,74	3,24	4,24	13,27	3,70	3,59	12,27	4,06	3,02	10,33	4,06	2,54
	15	15,86	2,51	6,33	15,40	2,82	5,45	14,95	3,22	4,64	14,44	3,67	3,93	13,44	4,06	3,31	11,32	4,06	2,79
20	18,15	2,48	7,32	17,62	2,79	6,31	17,10	3,18	5,37	16,52	3,63	4,55	15,55	4,06	3,83	13,10	4,06	3,23	
12	-20	9,87	4,29	2,30	9,58	4,84	1,98	9,30	5,51	1,69	8,98	5,53	1,62	8,32	5,75	1,45	7,13	5,75	1,24
	-15	10,73	4,14	2,59	10,51	4,67	2,25	10,11	5,32	1,90	9,93	5,58	1,78	8,54	5,75	1,49	8,00	5,75	1,39
	-7	12,05	3,96	3,04	11,70	4,46	2,62	11,36	5,09	2,23	11,08	5,69	1,95	9,16	5,75	1,59	8,83	5,75	1,54
	-2	14,17	3,89	3,64	13,76	4,38	3,14	13,36	4,99	2,67	12,90	5,69	2,27	10,97	5,75	1,91	9,23	5,75	1,61
	0	15,11	3,87	3,91	14,67	4,36	3,37	14,25	4,97	2,87	13,76	5,66	2,43	11,76	5,75	2,05	9,90	5,75	1,72
	2	16,12	3,85	4,18	15,65	4,34	3,61	15,19	4,95	3,07	14,67	5,64	2,60	12,59	5,75	2,19	10,60	5,75	1,84
	7	18,87	3,83	4,93	18,32	4,31	4,25	17,79	4,92	3,62	17,18	5,61	3,06	14,82	5,75	2,58	12,48	5,75	2,17
	12	21,99	3,84	5,72	21,35	4,33	4,93	20,72	4,93	4,20	20,01	5,63	3,56	17,22	5,75	2,99	14,50	5,75	2,52
	15	24,02	3,86	6,22	23,32	4,35	5,36	22,64	4,96	4,57	21,87	5,66	3,87	18,72	5,75	3,26	15,76	5,75	2,74
20	27,71	3,92	7,06	26,90	4,42	6,09	26,12	5,04	5,19	25,22	5,74	4,39	21,26	5,75	3,70	17,90	5,75	3,11	
15	-20	10,36	4,38	2,37	10,05	4,93	2,04	9,76	5,62	1,74	9,42	5,64	1,67	9,23	6,40	1,44	8,52	6,40	1,33
	-15	11,50	4,32	2,66	10,89	4,87	2,24	10,65	5,55	1,92	10,37	5,82	1,78	9,85	6,40	1,54	8,92	6,40	1,39
	-7	13,12	4,24	3,09	12,74	4,77	2,67	12,37	5,44	2,27	11,94	6,21	1,92	10,58	6,40	1,65	9,59	6,40	1,50
	-2	15,40	4,19	3,67	14,95	4,72	3,17	14,52	5,38	2,70	14,02	6,14	2,28	12,31	6,40	1,92	10,36	6,40	1,62
	0	16,40	4,17	3,93	15,92	4,70	3,39	15,46	5,36	2,88	14,92	6,11	2,44	13,16	6,40	2,06	11,08	6,40	1,73
	2	17,44	4,16	4,20	16,93	4,68	3,62	16,44	5,34	3,08	15,87	6,09	2,61	14,05	6,40	2,20	11,83	6,40	1,85
	7	20,25	4,12	4,92	19,66	4,63	4,24	19,09	5,28	3,61	18,43	6,03	3,06	16,48	6,40	2,58	13,88	6,40	2,17
	12	23,36	4,08	5,73	22,68	4,59	4,94	22,02	5,24	4,21	21,27	5,97	3,56	19,19	6,40	3,00	16,16	6,40	2,52
	15	25,37	4,06	6,25	24,63	4,57	5,39	23,91	5,21	4,59	23,09	5,94	3,89	20,95	6,40	3,27	17,64	6,40	2,76
20	28,95	4,02	7,20	28,11	4,53	6,20	27,29	5,17	5,28	26,35	5,89	4,47	24,10	6,40	3,77	20,29	6,40	3,17	
18	-20	9,06	4,79	1,89	8,79	5,40	1,63	8,53	6,15	1,39	8,24	7,01	1,17	7,37	7,45	0,99	6,20	7,45	0,83
	-15	10,67	4,69	2,27	10,36	5,28	1,96	10,05	6,02	1,67	9,71	6,87	1,41	8,87	7,45	1,19	7,47	7,45	1,00
	-7	13,92	4,54	3,07	13,52	5,11	2,64	13,12	5,83	2,25	12,67	6,65	1,91	11,95	7,45	1,60	10,06	7,45	1,35
	-2	16,37	4,46	3,67	15,90	5,02	3,17	15,43	5,72	2,70	14,90	6,52	2,28	14,33	7,45	1,92	12,06	7,45	1,62
	0	17,44	4,42	3,94	16,94	4,98	3,40	16,44	5,68	2,89	15,88	6,48	2,45	15,31	7,42	2,06	12,95	7,45	1,74
	2	18,57	4,39	4,23	18,02	4,95	3,64	17,50	5,64	3,10	16,90	6,43	2,63	16,30	7,37	2,21	13,88	7,45	1,86
	7	21,59	4,32	5,00	20,97	4,86	4,31	20,36	5,54	3,67	19,66	6,32	3,11	18,96	7,24	2,62	16,42	7,45	2,20
	12	24,95	4,25	5,87	24,22	4,78	5,06	23,51	5,46	4,31	22,71	6,22	3,65	21,90	7,13	3,07	19,27	7,45	2,59
	15	27,11	4,21	6,44	26,32	4,74	5,55	25,55	5,41	4,73	24,68	6,17	4,00	23,80	7,06	3,37	21,14	7,45	2,84
20	30,97	4,15	7,46	30,07	4,68	6,43	29,20	5,33	5,48	28,19	6,08	4,64	27,19	6,96	3,90	24,49	7,45	3,29	



# Cooling performance | Maximum frequency

	T. ae	20			25			30			35			40		
	T. a	PF	PA	EER	PF	PA	EER	PF	PA	EER	PF	PA	EER	PF	PA	EER
5	7	4,81	1,16	4,14	4,61	1,29	3,57	4,36	1,45	3,00	4,11	1,63	2,52	3,87	1,82	2,12
	10	5,38	1,18	4,57	5,16	1,31	3,94	4,87	1,47	3,31	4,58	1,66	2,77	4,32	1,85	2,34
	13	5,99	1,19	5,02	5,74	1,32	4,34	5,42	1,49	3,65	5,09	1,68	3,03	4,81	1,88	2,56
	15	6,42	1,21	5,32	6,15	1,33	4,62	5,81	1,50	3,88	5,44	1,70	3,21	5,16	1,90	2,72
	18	7,10	1,22	5,80	6,80	1,35	5,06	6,43	1,51	4,25	6,00	1,72	3,49	5,70	1,92	2,96
					7,73	1,36	5,68	7,30	1,53	4,77	6,80	1,76	3,88	6,48	1,96	3,30
7	7	8,74	1,88	4,65	8,37	2,09	4,01	7,91	2,35	3,37	7,56	2,55	2,97	7,01	2,95	2,38
	10	9,61	1,91	5,02	9,18	2,11	4,35	8,69	2,38	3,66	8,41	2,58	3,26	7,69	2,99	2,57
	13	10,51	1,95	5,40	10,04	2,13	4,72	9,52	2,41	3,96	9,33	2,61	3,57	8,43	3,04	2,78
	15	11,13	1,97	5,64	10,63	2,14	4,97	10,10	2,42	4,17	9,98	2,64	3,79	8,95	3,07	2,92
	18	12,09	2,01	6,01	11,57	2,16	5,36	10,99	2,45	4,49	11,01	2,68	4,11	9,79	3,11	3,14
					12,88	2,18	5,91	12,25	2,48	4,94	12,48	2,73	4,57	10,98	3,17	3,46
9	7	9,51	1,95	4,86	9,08	2,13	4,26	8,59	2,39	3,59	8,11	2,68	3,02	7,61	3,01	2,53
	10	10,45	1,97	5,31	9,96	2,15	4,62	9,44	2,42	3,90	8,93	2,72	3,28	8,36	3,05	2,74
	13	11,43	1,98	5,78	10,88	2,17	5,01	10,33	2,44	4,23	9,78	2,76	3,55	9,16	3,10	2,95
	15	12,10	1,98	6,10	11,53	2,19	5,27	10,96	2,46	4,46	10,37	2,78	3,72	9,72	3,13	3,11
	18	13,15	2,00	6,59	12,53	2,20	5,69	11,93	2,48	4,81	11,27	2,82	3,99	10,62	3,18	3,34
					13,95	2,23	6,27	13,29	2,51	5,29	12,53	2,88	4,36	11,91	3,25	3,67
12	7	13,73	2,74	5,01	13,13	3,06	4,29	12,42	3,44	3,61	11,79	3,73	3,16	11,00	4,31	2,55
	10	15,09	2,76	5,47	14,40	3,09	4,66	13,65	3,48	3,93	13,04	3,78	3,45	12,08	4,38	2,76
	13	16,51	2,77	5,95	15,74	3,12	5,05	14,95	3,52	4,25	14,37	3,83	3,75	13,23	4,45	2,98
	15	17,48	2,78	6,28	16,68	3,14	5,32	15,85	3,54	4,47	15,29	3,87	3,95	14,05	4,49	3,13
	18	18,98	2,80	6,79	18,14	3,16	5,73	17,25	3,58	4,81	16,74	3,93	4,26	15,35	4,56	3,36
					20,20	3,20	6,32	19,23	3,64	5,29	18,78	4,00	4,69	17,20	4,66	3,69
15	7	15,57	3,24	4,81	14,90	3,61	4,12	11,11	4,06	2,74	13,34	4,31	3,10	12,48	5,09	2,45
	10	17,12	3,26	5,25	16,34	3,65	4,48	12,22	4,11	2,98	14,68	4,45	3,30	13,71	5,17	2,65
	13	18,72	3,28	5,71	17,86	3,68	4,85	13,38	4,15	3,22	16,08	4,53	3,55	15,02	5,25	2,86
	15	19,83	3,29	6,02	18,92	3,71	5,11	14,19	4,19	3,39	17,05	4,55	3,75	15,95	5,30	3,01
	18	21,53	3,31	6,50	20,57	3,74	5,51	15,44	4,23	3,65	18,56	4,54	4,09	17,43	5,39	3,24
					22,91	3,77	6,07	17,21	4,30	4,01	20,68	4,44	4,66	19,55	5,50	3,55
18	7	19,22	3,92	4,91	18,38	4,38	4,20	17,37	4,91	3,54	16,45	5,39	3,05	15,40	6,16	2,50
	10	21,12	3,94	5,36	20,15	4,42	4,56	19,09	4,97	3,84	18,16	5,47	3,32	16,91	6,26	2,70
	13	22,44	3,95	5,68	21,39	4,45	4,81	20,29	5,01	4,05	19,96	5,54	3,60	17,98	6,32	2,84
	15	24,47	3,97	6,17	23,33	4,49	5,20	22,16	5,07	4,37	21,21	5,59	3,79	19,69	6,42	3,07
	18	26,58	3,98	6,68	25,37	4,53	5,61	24,12	5,12	4,71	23,15	5,67	4,08	21,51	6,52	3,30
					28,25	4,57	6,18	26,88	5,20	5,17	25,86	5,78	4,47	24,13	6,65	3,63









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