HPI-S

REVERSIBLE AIR-TO-WATER "SPLIT INVERTER" HEAT PUMPS

HPI-S 4.5 MR-2

HPI-S 8 MR-2

HPI-S 11 and 16 MR-2
HPI-S 11 and 16 TR-2

HPI-S 22 and 27 TR-2

New Diematic Evolution interface

- **HPI-S /E**
  from 4.6 to 24.4 kW with additional heating by integrated electrical resistance

- **HPI-S/H**
  from 4.6 to 24.4 kW with additional hydraulic heating by boiler (or without additional heating)

HPI-S /E (with electrical backup):
heating and refreshing with underfloor heating/cooling or heating and air conditioning using fan coil units.

HPI-S/H (with hydraulic backup):
heating and refreshing with underfloor heating/cooling or heating and air conditioning using fan coil units.

Air-to-water heat pump

ENR — Free, natural and renewable energy

ELEC. — Electricity
(power supplied to the compressor)

SMART TC° — Compatible room thermostat
SMART TC°

Compatible regulation
DIEMATIC

OPERATING CONDITIONS

operating temperature limits

In heating mode
Outside air: - 20/+ 35°C (- 15°C with AWHP 4.5 and 6 MR)
Water: + 18/+ 60°C (+ 55°C for 4.5 kW)

In cooling mode
Outside air: +7/+ 46°C
Water: + 18/+ 25°C

In air conditioning mode
Outside air: + 7/+ 46°C
Water: + 7/+ 25°C

Heating circuit

Max. operating pressure: 3 bar
Max. operating temp.: 95°C with .../H and
75°C with .../E

HPI-S heat pumps stand out for their compactness and high performances: operation down to -20°C and COP up to 5.11 at +7/+35°C. They are reversible and can be used for heating and for cooling in summer. They can also be equipped with an optional «insulation kit» for air conditioning using fan coil units.
They are composed of an outdoor «Inverter» unit, which is connected to the inside module by cooling connections.

The indoor module comes fully equipped and includes, in particular:
- DIEMATIC Evolution control panel with control system that can be programmed according to the outside temperature that communicates with the outdoor unit and, depending on the options connected, can be used to manage up to 3 heating circuits, direct or with mixing valves and a domestic hot water production circuit. Option of connecting HPI heat pumps and boilers with DIEMATIC Evolution control system in cascade;
- High energy efficiency pumps (EEI < 0.23);
- Hydraulic filter with isolating valve.

This module is available in 2 versions:
- MIT-S /E for auxiliary heating by integrated electrical heater, which can be wired as either 2 or 6 kW single-phase, 4 or 12 kW three-phase (cannot be installed without the heat pump)
- MIT-S /H for auxiliary heating by boiler.

CE

De Dietrich
SUSTAINABLE COMFORT®

PRESENTATION OF THE RANGE

The **HPI S** range of air/water Inverter heat pumps comes in models of 4.6 to 24.4kW (heating output at +7/+35°C in accordance with the EN 14511-2 standard). They comprise an outdoor unit and a **MIT-S** indoor unit.

AWHP OUTDOOR MODULE TECHNICAL DATA

The AWHP 4.5 MR to 27 TR outdoor modules are used in our current split air-to-water ranges.
The outdoor module comprises:
- a modulating compressor, an aluminium fin heat exchanger
- 1 to 2 axial fan(s) (depending on the model)
- a liquid separator and power reserve
- a 4-way reversal valve
- a HP pressure switch and a pressure reducer
- an anti-surge and output reserve cylinder
- electronic pressure release valves, a filter, a HP pressure switch
- a start-up current limitation system.

MIT-S HYDRAULIC INDOOR MODULE TECHNICAL DATA

MIT-S/H... hydraulic indoor module with hydraulic backup via boiler or **MIT-S /E...** with electrical backup via immersion heater.

MAIN FEATURES

- Diematic Evolution control panel, with regulation according to outside temperature, and factory-set to control one DHW production circuit and one direct circuit for heating or cooling/refreshing (outdoor sensor included)
- An electronic pressure switch, a safety valve, automatic air vents, a flow rate controller, gate valves, a valve with integrated filter
- 10-litre expansion vessel
- A high energy efficiency heating pump (EEI < 0.23)
- Integrated patented 40 litres decoupling tank to simplify connection and increase lifetime
- A condenser formed by a stainless steel plate exchanger
- Suitable for renovation projects or new builds
- High performance with COP of up to 5.11 and EER of up to 4.75.
- Easy access to the various components
- The module can be remote-controlled thanks to the WiFi SMART TC° thermostat

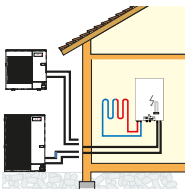
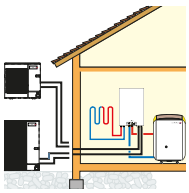
MODELS AVAILABLE

HPI-S... E MODELS AND HPI-S... H MODELS

ADVANCE

up to A+++

HPIS_Q0002

HEAT PUMPS			BACKUP	OUTPUT	
	 VIA INTEGRATED IMMERSION HEATER		 HYDRAULIC VIA BOILER (OR WITHOUT BACKUP)		
	2 OR 6 KW SINGLE-PHASE	4 OR 12 KW THREE-PHASE		HEATING KW (1)	COOLING KW (2)
Heat pump with electrical backup for heating using radiators and cooling with underfloor heating/ cooling.	HPI-S 4.5 MR/E	-	-	4.60	3.80
	HPI-S 6 MR/E	-	-	5.87	4.69
	HPI-S 8 MR/E	-	-	8.26	7.9
	HPI-S 11 MR/E	HPI-S 11 TR/E	-	10.56	11 .16
	HPI-S 16 MR/E	HPI-S 16 TR/E	-	14.19	14.46
	-	HPI-S 22 TR/E	-	21 .7	17.65
	-	HPI-S 27 TR/E	-	24.4	22.2
Heat pump with hydraulic backup via boiler for radiator heating and cooling with underfloor heating/ cooling.	-	-	HPI-S 4.5 MR/H	4.60	3.80
	-	-	HPI-S 6 MR/H	5.87	4.69
	-	-	HPI-S 8 MR/H	8.26	7.9
	-	-	HPI-S 11 MR/H HPI-S 11 TR/H	10.56	11 .16
	-	-	HPI-S 16 MR/H HPI-S 16 TR/H	14.19	14.46
	-	-	HPI-S 22 TR/H	21 .7	17.65
	-	-	HPI-S 27 TR/H	24.4	22.2

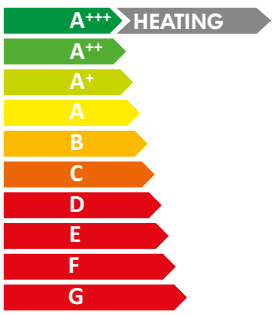
(1) Water flow temp.: + 35°C, outside temp.: + 7°C. (2) Water flow temp.: + 18°C, outside temp.: + 35°C

ENERGY LABELLING

The HPI-S heat pump is supplied with an energy label, which contains a large amount of information: energy efficiency, annual energy consumption, name of manufacturer, noise level, etc.
By combining your heat pump with, for example, a solar system, a DHW storage tank, a control system or even another generator, you can improve the performance of your installation and generate a "System" label corresponding to your installation:
visit our website "**www.ecosolutions.dedietrich-heating.com**" for more information.

REFERENCE SCALE FOR THE SYSTEM ENERGY LABEL

The reference scale is given below for heating and DHW indicating the product's energy performance to be included on the corresponding energy label.



TECHNICAL SPECIFICATIONS

OPERATING TEMPERATURE LIMIT

In heating mode:
- Water: + 18°C/+ 60°C (+55°C for 4.5-kW model),
- Outside air: - 20°C/+ 35°C (- 15°C for 4.5- and 6-kW models)

In cooling mode:
- Water: + 18°C/+ 25°C,
- Outside air: +7°C/+ 46°C

In air conditioning mode (with options EH811 and HK25):
- Water: + 7°C/+ 25°C,
- Outside air: +7°C/+ 46°C

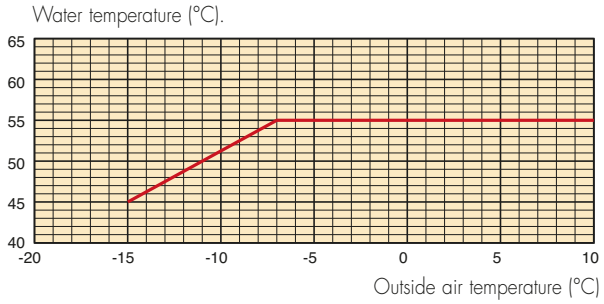
MODEL	HPI-S	4,5 MR -	6 MR -	8 MR -	11 MR 11 TR	16 MR 16 TR	22 MR -	27 TR -
SEASONAL PERFORMANCES								
Energy class in heating ERP (35°C)		A+++	A+++	A+++	A+++	A+++	A++	A++
Energy class in heating ERP (55°C)		A++	A++	A++	A++	A+	A+	A+
SCOP (35°C/55°C)		4.8/3.42	4.48/3.2	4.52/3.29	4.54/3.20	4.45/3.10	3.89/ 2.92	3.86/ 2.87
Seasonal space heating energy efficiency under average temperature (35°C/55°C) *	%	189/134	176/125	178/129	178/125	175/121	153/114	151/112
Seasonal space heating energy efficiency under average temperature (35°C/55°C) (with outdoor sensor supplied as standard)	%	191/136	178/127	180/131	180/127	177/123	155/116	153/114
CERTIFIED THERMAL PERFORMANCE								
Heating output at +7°C/+35°C (1)	kW	4.60	5.87	8.26	10.56	14.19	21 .70	24.40
Heating COP at +7°C/+35°C (1)		5.11	4.18	4.27	4.18	4.22	3.96	3.80
Heating output at -7°C/+35°C (1)	kW	2.79	4.02	5.60	8.09	9.83	13.81	13.80
Heating COP at -7°C/+35°C (1)		3.07	2.56	2.70	2.88	2.75	2.59	2.26
Outdoor module sound power (3)	dB[A]	58	65	65	69	69	77	77
Indoor module sound power (3)	dB[A]	43	43	51	51	51	43	43
TECHNICAL SPECIFICATIONS								
Outdoor module perceived sound level(4)	dB[A]	39	43	43	47	47	55	55
Indoor module perceived sound level(4)	dB[A]	35	35	43	43	43	35	35
Cooling output at +35°C/+18°C (5)	kW	3.80	4.69	7.90	11 .16	14.46	17.65	22.20
Cooling EER at +35°C/+18°C (5)		4.28	4.09	3.99	4.68	4.43	3.80	3.80
Cooling output at +35°C/+7°C (5)	kW	4	3.13	4.98	7.43	7.19	-	-
Cooling EER at +35°C/+7°C (5)		2.73	3.14	2.7	3.34	3.58	-	-
Nominal water flow rate at $\Delta T = 5$ K	m^3/h	0.8	1 .04	1 .47	1 .88	2.67	3.8	4.2
Total pressure head at nominal flow rate at $\Delta T = 5$ K	mbar	650	618	493	393	213	-	-
Power supply voltage of the outdoor unit • MR	V	230 V mono	230 V mono	230 V mono	230 V mono	230 V mono	-	-
• TR		-	-	-	400 V Three-phase	400 V Three-phase	400 V Three-phase	400 V Three-phase
Curved circuit breaker protection C outdoor unit	A	16	16	25	32	40	25	25
Refrigerant fluid R410A	kg	1 .4	1 .3	3.2	4.6	4.6	7.1	7.7
CO_2 equivalent	Tonne	2.92	2.71	6.68	9.6	9.6	14.82	14.82
Max. pre-loaded length	m	7	10	10	10	10	20	20
Length min - max **	m	2-30	2-40	2-40	2-75	2-75	2-80	2-80
Weight of outdoor unit • MR		54	42	75	118	118	-	-
• TR		-	-	-	130	130	135	141
Weight of indoor module • MR	kg	59	59	59	66	66	66	66
• TR		53	53	53	60	60	60	60

* Values certified according directives n°813/2013
** Max height difference 30 m for all models
(1) Heating mode: outside air temperature/water temperature at outlet, performance in accordance with EN 14511-2
(3) Test performed in accordance with standard EN 12102-1
(4) At 1 m in a free field (5 m for the outdoor unit)
(5) Air conditioning mode: outdoor air temperature/water temperature at the outlet, performance according to EN 14511-2.

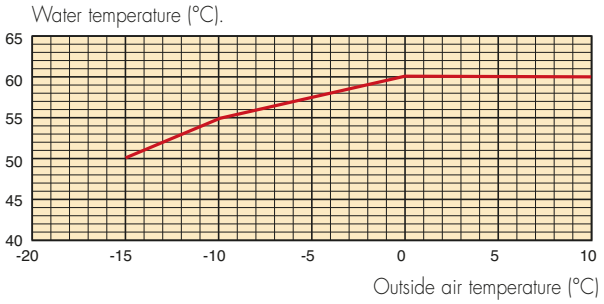
WATER TEMPERATURE

HPI-S heat pump models can produce hot water up to a temperature of 60°C (55°C for 4.5 kW). The graph shows the water temperature produced for each model based on the outside temperature.

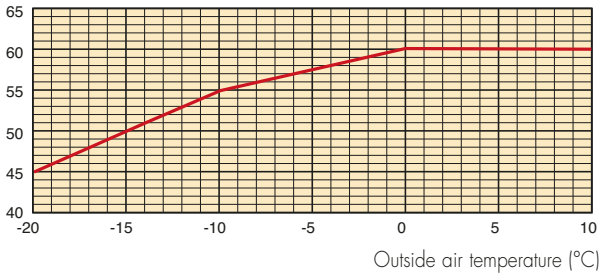
HPI-S 4.5 MR



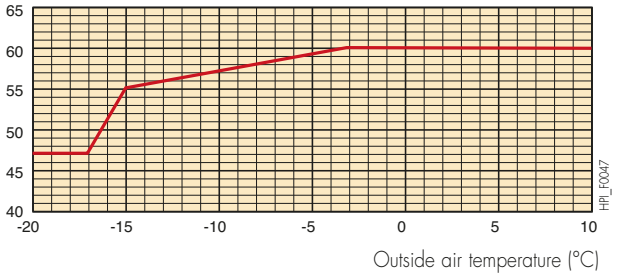
HPI-S 6 MR



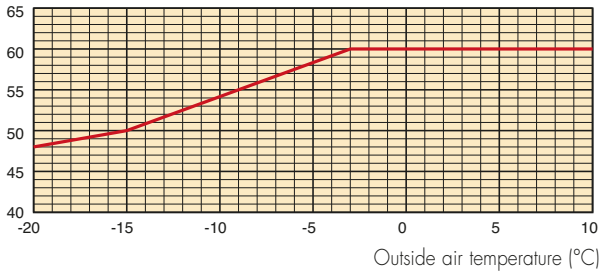
HPI-S 8 MR



HPI-S 11 AND 16 MR/TR



HPI-S 22 AND 27 TR



TABLES FOR SIZING

HPI-S 4.5 MR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-15	-	-	-	-	3.7	2.76	3.4	2.35	3.3	1.83	3.1	1.74	-	-	-	-	-	-
-10	-	-	-	-	4.4	3.24	4.0	2.43	3.9	2.13	3.7	1.88	3.5	1.66	-	-	-	-
-7	-	-	-	-	4.7	3.40	4.4	2.64	4.2	2.30	4.0	2.02	3.7	1.70	3.5	1.41	-	-
2	-	-	-	-	4.7	3.45	4.5	2.84	4.4	2.53	4.3	2.22	4.2	1.91	4.0	1.60	-	-
7	-	-	-	-	7.7	4.70	7.0	3.99	6.6	3.45	6.3	2.91	6.3	2.59	6.3	2.27	-	-
12	-	-	-	-	9.0	5.80	7.8	4.44	7.2	3.76	6.7	3.08	6.6	2.76	6.5	2.45	-	-
15	-	-	-	-	9.4	6.13	8.3	4.72	7.7	4.01	7.2	3.31	7.1	2.98	6.9	2.65	-	-
20	5.3	3.13	7.1	3.54	9.6	6.40	9.1	5.18	8.9	4.57	8.6	3.95	8.4	3.58	8.2	3.20	-	-
25	5.3	3.16	7.1	3.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	5.1	2.82	6.8	3.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	4.9	2.48	6.5	2.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 6 MR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-15	-	-	-	-	-	-	3.8	2.04	3.4	1.76	3.0	1.48	2.7	1.20	-	-	-	-
-10	-	-	-	-	5.6	2.97	4.9	2.42	4.5	2.14	4.1	1.87	4.0	1.69	3.9	1.51	-	-
-7	-	-	-	-	6.2	3.20	5.5	2.65	5.1	2.38	4.8	2.10	4.6	1.90	4.5	1.70	-	-
2	-	-	-	-	5.7	3.25	5.7	2.83	5.7	2.62	5.6	2.41	5.6	2.19	5.6	1.98	5.6	1.77
7	-	-	-	-	8.0	4.72	7.6	3.87	7.4	3.45	7.3	3.02	7.1	2.60	6.9	2.17	6.7	1.75
12	-	-	-	-	8.8	5.53	8.6	4.48	8.5	3.95	8.4	3.42	8.2	2.94	8.0	2.46	7.8	1.98
15	-	-	-	-	9.3	6.02	9.2	4.84	9.1	4.25	9.1	3.66	8.8	3.14	8.6	2.63	8.4	2.11
20	4.9	3.48	5.4	5.44	10.1	6.83	10.2	5.45	10.2	4.75	10.2	4.06	9.9	3.49	9.7	2.92	9.4	2.35
25	4.9	3.52	5.4	5.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	4.7	3.14	5.2	5.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	4.5	2.76	5	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 8 MR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	5.6	1.78	5.6	1.64	5.6	1.51	-	-	-	-	-	-
-15	-	-	-	-	-	-	6.6	2.12	6.5	1.91	6.4	1.72	6.1	1.66	-	-	-	-
-10	-	-	-	-	8.6	2.72	8.2	2.35	8.0	2.11	7.8	1.88	7.3	1.72	6.7	1.56	-	-
-7	-	-	-	-	9.6	3.07	9.0	2.61	8.6	2.33	8.3	2.05	7.7	1.89	7.0	1.71	-	-
2	-	-	-	-	10.4	3.30	9.6	2.84	8.9	2.60	8.3	2.37	7.7	2.15	7.1	1.91	6.6	1.65
7	-	-	-	-	10.7	4.53	10.2	3.93	10.0	3.54	9.7	3.14	9.5	2.88	9.3	2.59	9.0	2.26
12	-	-	-	-	12.7	5.20	12.0	4.62	11.7	4.11	11.3	3.59	11.0	3.26	10.7	2.90	10.4	2.38
15	-	-	-	-	13.9	5.51	13.0	4.96	12.5	4.38	12.0	3.80	11.7	3.43	11.3	3.02	11.0	2.50
20	8.5	3.6	11.3	4.38	14.4	5.76	13.5	5.17	13.0	4.56	12.6	3.95	12.2	3.56	11.9	3.15	11.5	2.56
25	8.2	3.26	11	4.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	7.8	2.89	10.6	3.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	7.3	2.55	10	3.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 11 MR/TR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	6.9	1.79	6.7	1.64	6.6	1.49	-	-	-	-	-	-
-15	-	-	-	-	-	-	8.2	2.16	8.1	1.93	8.0	1.69	7.9	1.52	7.8	1.34	-	-
-10	-	-	-	-	9.7	2.97	9.5	2.50	9.4	2.25	9.4	1.98	9.1	1.76	8.9	1.52	-	-
-7	-	-	-	-	10.9	3.27	10.6	2.73	10.4	2.45	10.3	2.14	10.0	1.91	9.7	1.62	-	-
2	-	-	-	-	12.0	3.56	11.5	3.16	11.2	2.83	11.0	2.49	10.6	2.19	10.1	1.88	9.4	1.49
7	-	-	-	-	15.6	4.48	14.8	4.15	14.4	3.70	14.0	3.24	13.4	2.90	12.80	2.54	12.2	2.07
12	-	-	-	-	17.7	5.14	16.8	4.72	16.4	4.20	16.0	3.68	15.4	3.30	14.7	2.91	14.0	2.39
15	-	-	-	-	18.7	5.53	17.8	4.98	17.3	4.44	16.9	3.89	16.2	3.51	15.6	3.08	14.9	2.58
20	10.10	3.78	15.10	4.42	19.8	5.87	19.0	5.31	18.6	4.75	18.1	4.19	17.5	3.78	16.8	3.34	16.2	2.97
25	9.80	3.50	14.90	4.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9.70	3.22	14.80	4.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9.10	2.75	14.00	3.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 16 MR/TR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	8.0	1.74	7.9	1.60	7.8	1.46	-	-	-	-	-	-
-15	-	-	-	-	-	-	9.6	2.10	9.5	1.88	9.4	1.66	9.3	1.50	9.2	1.32	-	-
-10	-	-	-	-	11.2	2.92	11.1	2.43	11.1	2.19	11.1	1.94	10.8	1.73	10.6	1.51	-	-
-7	-	-	-	-	12.6	3.21	12.4	2.65	12.3	2.38	12.2	2.10	11.9	1.89	11.5	1.66	-	-
2	-	-	-	-	13.8	3.50	13.4	3.07	13.2	2.75	13.0	2.44	12.5	2.16	12.0	1.86	11.2	1.54
7	-	-	-	-	18.0	4.40	17.3	4.03	16.9	3.60	16.6	3.18	15.9	2.86	15.2	2.52	14.5	2.13
12	-	-	-	-	20.8	5.07	19.8	4.58	19.4	4.09	18.9	3.61	18.2	3.25	17.4	2.87	16.7	2.44
15	-	-	-	-	22.0	5.34	21.0	4.83	20.5	4.32	20.0	3.80	19.2	3.43	18.4	3.02	17.7	2.58
20	13.9	2.93	16.9	4.05	23.2	5.64	22.2	5.11	21.7	4.58	21.2	4.04	20.5	3.66	19.7	3.25	19.0	2.80
25	13.5	2.77	16.9	4.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	13.4	2.63	17	4.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	12.5	2.32	16	3.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 22 TR

OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	-	11.2	2.25	10.2	1.99	9.4	1.75	-	-	-	-	-	-
-15	-	-	-	-	-	-	11.6	2.37	10.9	2.14	10.3	1.90	9.9	1.67	-	-	-	-
-10	-	-	-	-	14.2	3.00	12.6	2.61	12.0	2.36	11.6	2.11	11.2	1.87	-	-	-	-
-7	-	-	-	-	14.7	3.22	13.4	2.80	13.0	2.54	12.5	2.27	12.2	2.01	11.8	1.76	-	-
2	-	-	-	-	20.8	3.50	19.9	2.94	19.4	2.63	18.9	2.34	18.3	2.06	17.7	1.81	17.1	1.57
7	-	-	-	-	28.7	4.58	27.7	3.78	27.1	3.37	26.5	2.99	25.8	2.64	25.3	2.35	24.4	2.06
12	-	-	-	-	33.5	5.42	32.4	4.37	31.7	3.89	31.0	3.44	30.1	3.03	29.2	2.67	28.2	2.34
15	-	-	-	-	36.6	5.92	35.3	4.74	34.6	4.20	33.7	3.71	32.8	3.27	31.8	2.88	30.7	2.53
20	19.3	2.3	26.6	3.18	42.4	6.80	40.8	5.37	39.9	4.76	38.9	4.20	37.8	3.71	36.6	3.27	35.4	2.88
25	18.8	2.61	20.9	4.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	19.4	2.94	21.6	4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	20.1	3.07	22.3	5.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HPI-S 27 TR

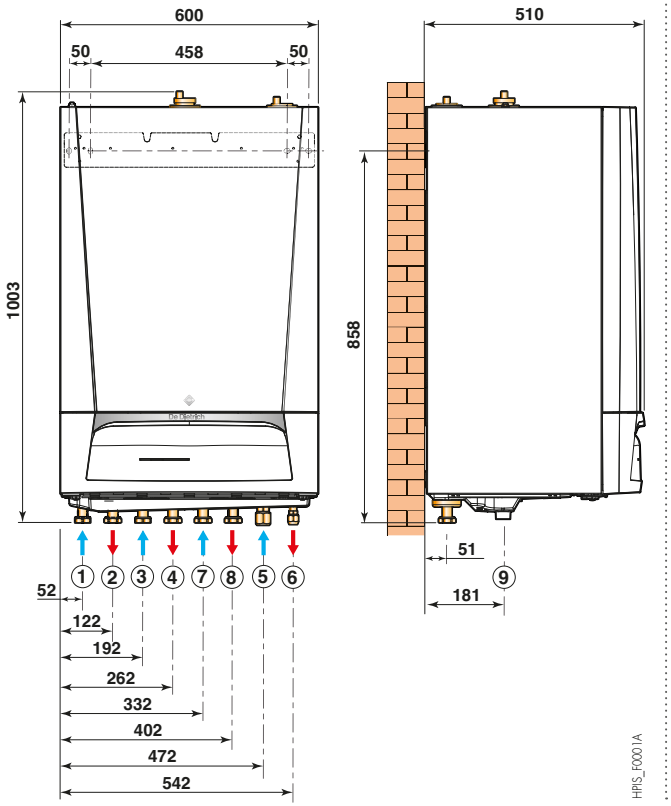
OUTSIDE TEMPERATURE [°C]	COOLING/ AIR CONDITIONING				HEATING													
	FLOW TEMPERATURE [°C]																	
	7		18		25		35		40		45		50		55		60	
	Output (kW)	EER	Output (kW)	EER	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP	Output (kW)	COP
-20	-	-	-	-	-	13.1	2.19	11.8	1.94	10.9	1.70	-	-	-	-	-	-	
-15	-	-	-	-	-	-	13.5	2.30	12.6	2.07	11.9	1.84	11.5	1.62	-	-	-	-
-10	-	-	-	-	16.4	2.88	14.5	2.50	13.8	2.27	13.3	2.03	12.9	1.80	-	-	-	-
-7	-	-	-	-	16.8	3.06	15.3	2.67	14.8	2.42	14.3	2.17	14.0	1.92	13.6	1.69	-	-
2	-	-	-	-	22.3	3.16	21.5	2.70	21.1	2.44	20.8	2.19	20.4	1.95	20.1	1.73	19.6	1.53
7	-	-	-	-	30.9	4.40	30.1	3.66	29.6	3.29	29.1	2.93	28.6	2.61	28.0	2.31	27.6	2.07
12	-	-	-	-	35.8	5.16	34.9	4.20	34.4	3.76	33.8	3.34	33.1	2.97	32.3	2.63	31.5	2.33
15	-	-	-	-	39.0	5.62	38.0	4.53	37.4	4.04	36.7	3.59	35.9	3.19	35.1	2.83	34.1	2.51
20	20.3	2.19	27.8	2.95	44.9	6.43	43.6	5.12	42.9	4.56	42.0	4.04	41.1	3.59	40.1	3.19	39.0	2.83
25	21.2	2.40	25.6	3.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	21.9	2.71	26.4	4.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	22.7	2.83	27.4	4.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-

These performance levels are not certified, so they should only be used to size the heat pump.

MIT-S INDOOR MODULE SPECIFICATIONS

MAIN DIMENSIONS (mm AND INCHES)

MIT-S



KEY

① Return 3-way valve circuit Ø G 1 (option)
- with HK21 package: internal 3-way valve set or
- with HK22 package: adaptation kit for external 3-way valve

② Flow 3-way valve circuit Ø G 1 (option)
- with HK21 package: internal 3-way valve set or
- with HK22 package: adaptation kit for external 3-way valve

③ Direct circuit return G 1"
④ Direct circuit flow G 1"
⑤ Gas refrigeration connection: see below
⑥ Refrigerant fluid connection: see below
⑦ Connection to boiler flow Ø G 1" (MIT-S/H only)
⑧ Connection to boiler return Ø G 1" (MIT-S/H only)
⑨ Condensates drain Ø 34 mm ext. (for PVC pipe Ø40 mm)

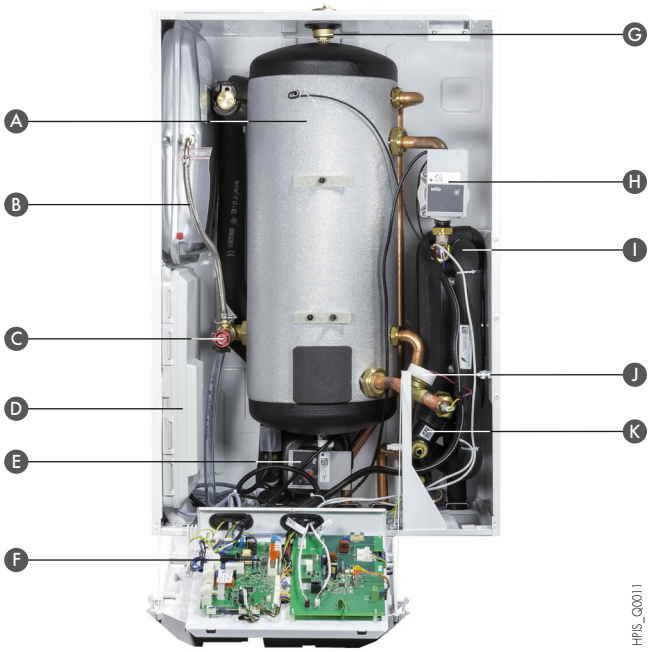
	Modell	⑤ Gas refrigeration connection*	⑥ Refrigerant fluid connection
Indoor module MIT-S Evolution	4.5 to 16 kW	5/8" flare	3/8" flare
	22 and 27 kW	3/4" flare + For connection 3/4" – 1" to solder delivered	1/2" flare

* For 22 kW and 27 kW models, if the gas connection is 3/4" instead of 1", then the distance is limited to 20 m and the cooling capacity reduced up to 80% (at 20 m) of rated power.

MIT-S INDOOR MODULE SPECIFICATIONS

COMPONENTS

· MIT-S /H TR

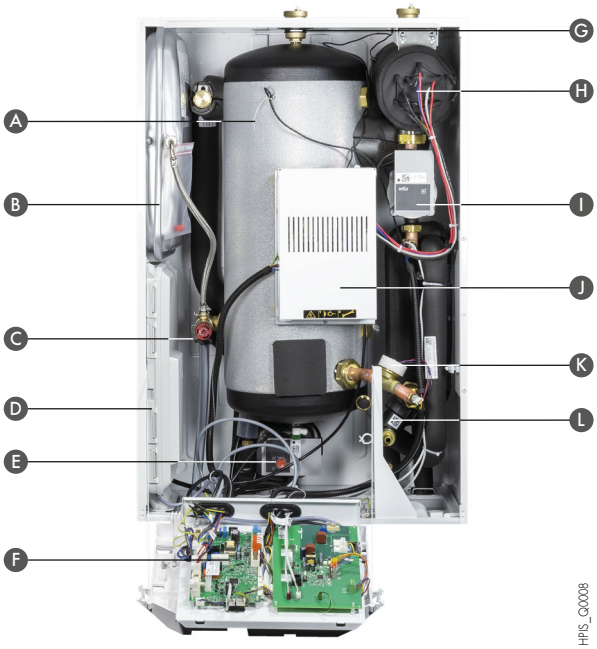


A 40L decoupling tank
B 10L expansion vessel
C Heating safety valve (3 bar)
D Interface PCB: electronic boards accessible under the cover
E High efficiency heating pump for direct circuit with EEI < 0.23
F Angled DIEMATIC Evolution control panel
G Automatic air vent
H High energy efficiency primary circulating pump
I Condenser in the form of a stainless steel plate exchanger
J Flowmeter
K Magnetic filter

MODEL SHOWN:

MIT-S /H with front panel removed and control panel folded down.

· MIT-S /E TR

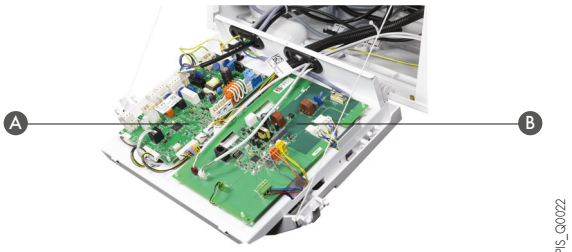


A 10L expansion vessel
B 40L decoupling tank
C Heating safety valve (3 bar)
D Interface PCB: electronic boards accessible under the cover
E High efficiency heating pump for direct circuit with EEI < 0.23
F Angled DIEMATIC Evolution control panel
G Automatic air vent
H Integrated electrical heater
I High energy efficiency primary circulating pump
J Electrical box for backup
K Flowmeter
L Magnetic filter

MODEL SHOWN:

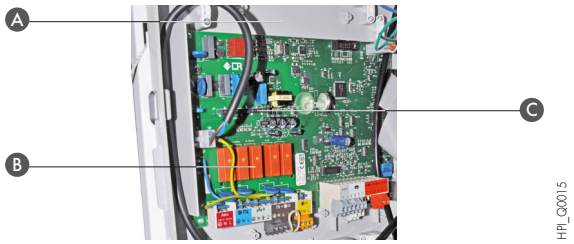
MIT-S/E with front panel removed and control panel folded down

CONNECTION BLOCK CONTROL BOARDS



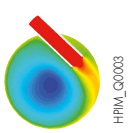
A Heat pump main control board
B Outdoor unit interface PCB

CONNECTION BLOCK INTERFACE



A CB04 PCB location (option): autofilling
B SCB-10 control board
C AD249 PCB location (option): additional 3way valve circuit management

INTEGRATED DECOUPLING CYLINDER (40 L) PATENTED WITH VORTEX EFFECT

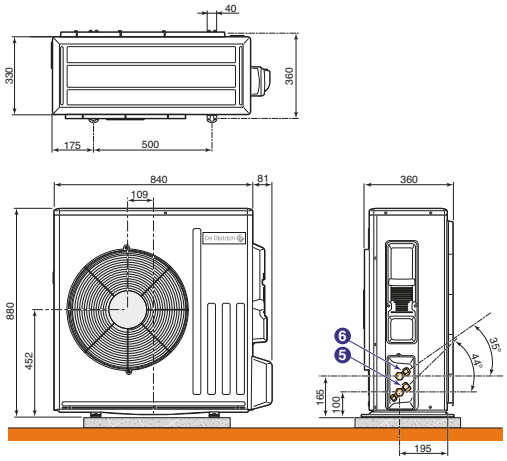


- Keep the stratification in the cylinder
- Increase the performances

OUTDOOR UNIT TECHNICAL SPECIFICATIONS

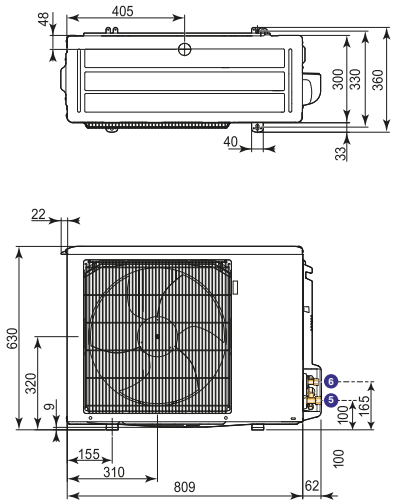
MAIN DIMENSIONS (mm AND INCHES)

AWHP 4.5 MR



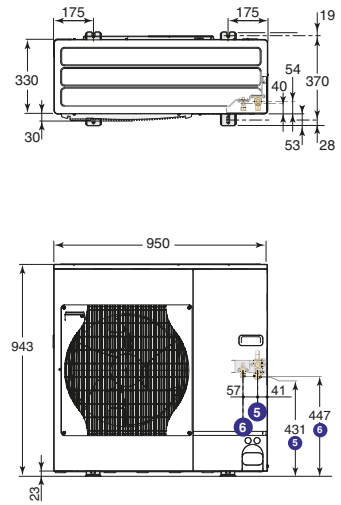
PAC_F0304

AWHP 6 MR-3



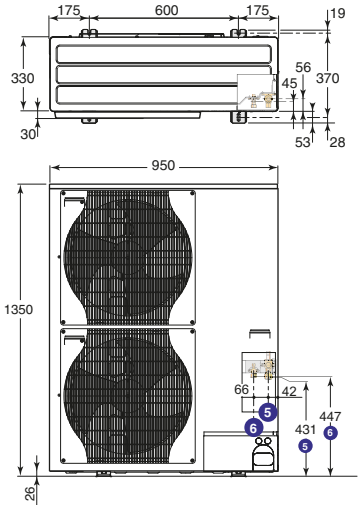
PAC_F0226

AWHP 8 MR-2



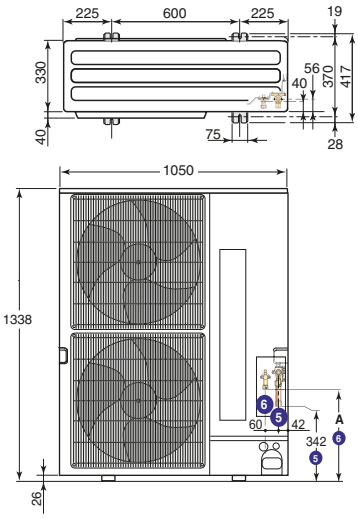
PAC_F0087D

AWHP 11 AND 16 MR/TR-2



PAC_F0088E

AWHP 22 AND 27 TR-2



HPI S	A (mm)
22 TR-2	450
27 TR-2	424

PAC_F0225

KEY

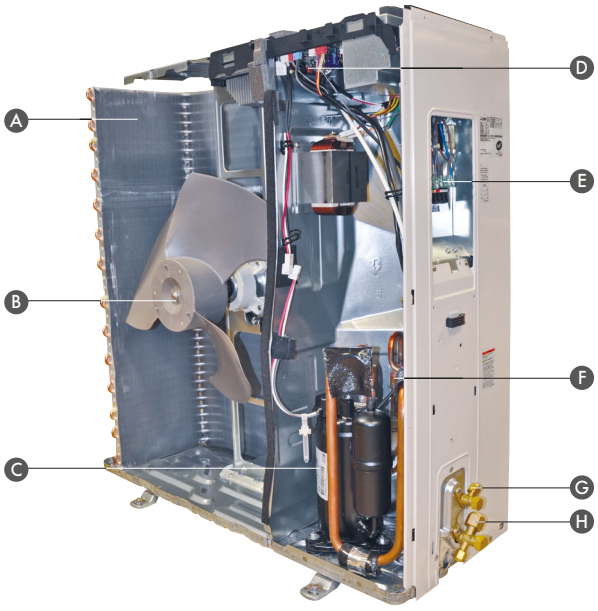
	Modell	⑤ Gas refrigeration connection*	⑥ Refrigerant fluid connection
Outdoor module AWHP ... MR/TR	4.5 and 6	1/2" flare + For connection 1/2" – 5/8" delivered	1/4" flare + For connection 1/4" – 3/8" delivered
	8 to 16	5/8" flare	3/8" flare
	22	3/4" flare + For connection 3/4" – 1" to solder delivered	3/8" flare + For connection 3/8" -1/2" delivered
	27	3/4" flare + For connection 3/4" – 1" to solder delivered	1/2" flare

* For 22 kW and 27 kW models, if the gas connection is 3/4" instead of 1", then the distance is limited to 20 m and the cooling capacity reduced up to 80% (at 20 m) of rated power.

OUTDOOR UNIT TECHNICAL SPECIFICATIONS

COMPONENTS

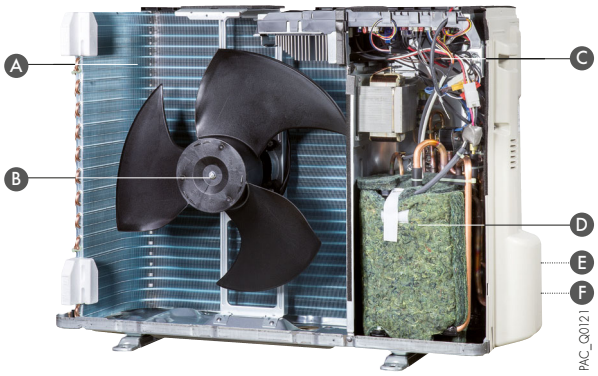
AWHP 4.5 MR



PAC_Q0525

A Evaporator
B Fan
C Compressor
D Electronic board
E Electrical connection
F 4-way cycle reversal valve
G Refrigerant fluid connection
H Refrigerant gas connection

AWHP 6 MR-3



PAC_Q0121

A Evaporator
B Fan
C Electronic board
D "Inverter" compressor with power accumulator
E Refrigerant fluid connection (not shown)
F Refrigerant gas connection (not shown)

AWHP 8 MR-2

HPI_Q0020

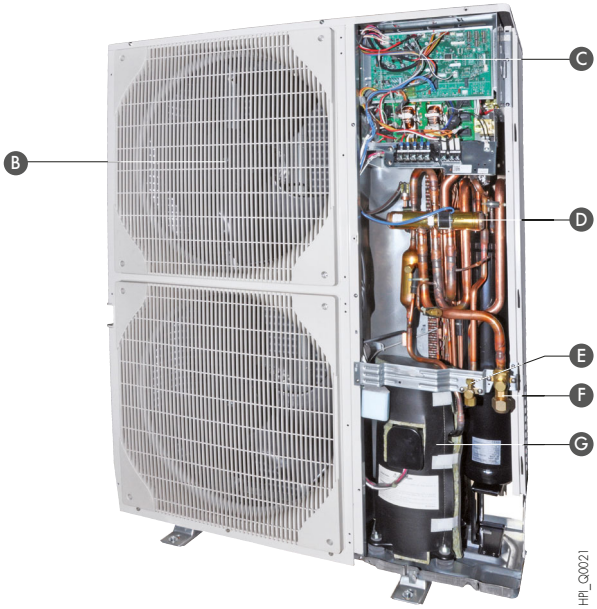
A Evaporator
B Fan
C Electronic board
D 4-way cycle reversal valve
E Refrigerant gas connection
F Refrigerant fluid connection
G "Inverter" compressor with power accumulator

AWHP 11 AND 16 MR/TR-2

HPI_Q0021

A Evaporator
B Fan
C Electronic board
D 4-way cycle reversal valve
E Refrigerant fluid connection
F Refrigerant gas connection
G "Inverter" compressor with power accumulator

AWHP 22 AND 27 TR-2



HPI_Q0021

A Fan
B Electronic board
C 4-way cycle reversal valve
D Refrigerant fluid connection
E Refrigerant gas connection
F "Inverter" compressor with power accumulator

CONTROL PANEL
DIEMATIC EVOLUTION

PRESENTATION OF THE DIEMATIC EVOLUTION CONTROL PANEL

The DIEMATIC EVOLUTION control panel is a highly advanced panel with new ergonomic controls, with a built-in programmable electronic control system as standard which modulates the heat pump temperature, based on the outdoor temperature and possibly the room temperature if a thermostat or a room sensor (supplied as an option) is connected.
As standard, the DIEMATIC EVOLUTION is able to automatically run a central heating system with 2 circuits direct without mixing valve or with mixing valve (however the flow sensors - package AD199 - must be ordered separately).
By simply adding 1 "PCB + sensor for 1 valve circuit" option (package AD249), it will be possible to control up to 3 circuits in total, with the option to equip each of these circuits with a room sensor (option).
Connecting a domestic hot water sensor can be used to program and regulate a DHW circuit (package AD212 - option).

This control system has been specifically developed to enable **optimal management of systems combining different heating generators** (boiler + heat pump or + solar system…). This control enables the installer to set up the entire heating system, regardless of its degree of complexity.

For larger installations, it is also possible to connect up to 8 appliances in cascade configuration.

An optimisation of the room temperature in cooling mode is possible thanks to the installation of SMART TC°, which makes it possible to manage both the heating setpoint and the cooling setpoint on an underfloor heating circuit, a fan coil circuit.

CHOICE OF OPTIONS ACCORDING TO THE CONNECTED CIRCUITS

Circuit type (1)		DHW	direct	direct + 1 valve		direct + 2 x valve	direct + 3 x valve
				Integrated	External		
DIEMATIC Evolution control panel (1) (2)	electrical options	1 x AD212	as standard	-	1 x AD199	2 x AD199	2 x AD199 + 1 x AD249
	hydraulic options	EH812	as standard	HK21	HK22	HK22 EA141 - EA140 2 x EA144 + 2 x EA142	HK22 EA141 - EA140 3 x EA144 + 3 x EA142

(1) Each of the circuits «**heating**» can be completed in choice by a remote control AD324, AD140, AD341, AD342, AD337, AD338 or AD345 (2) Cascade of 8 HP possible

CONTROL OPTIONS OF THE DIEMATIC EVOLUTION CONTROL PANEL

GT220_Q0002

FLOW SENSOR DOWNSTREAM OF VALVE (LENGTH 2.5 M) - PACKAGE AD199

This sensor is required to connect the first with mixing valve to a boiler fitted with a DIEMATIC Evolution control panel. When using the package «Internal 3-way valve kit» HK21, it is not necessary to order this sensor which is originally included in the HK21 package.


HPIS_Q0027

ELECTRICAL CONNECTION KIT FOR DHW BACK UP - PACKAGE EH904

For e.g. hot water heater BEPC 300 with integrated electric auxiliary heater for hot water.


HA249_Q0001

UNDERFLOOR HEATING THERMOSTAT CONNECTION KIT - PACKAGE HA255

Wired for connecting a safety thermostat to the circulating pump in an underfloor heating circuit.


8518Q022

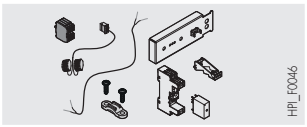
SENSOR FOR BUFFER TANK - PACKAGE AD250

Comprises 1 sensor for managing a buffer tank with a boiler equipped with a DIEMATIC EVOLUTION control panel


8518Q022

SENSOR FOR DOMESTIC HOT WATER (LENGTH 5 M) - PACKAGE AD212

This is used for regulating the DHW temperature as a priority and programming of domestic hot water production with an independent calorifier.


HPI_F0046

SILENCER KIT FOR OUTSIDE MODULE - PACKAGE EH829

After installation allows reducing the sound level from outdoor unit.

Availability Q2/2021 depending on country


8575Q034

RADIO OUTSIDE TEMPERATURE SENSOR - PACKAGE AD346

The radio outside temperature sensor can be delivered as optional equipment for systems in which the installation of the external wire connection sensor delivered with DIEMATIC EVOLUTION control panel would be too complex.
This sensor must be used with a radio remote control (AD341), already combined with an "appliance radio module".


HPI_Q0017

HUMIDITY SENSOR KIT (ON/OFF) - PACKAGE HK27

Sensor for measuring humidity in the flow part of an installation with underfloor heating/cooling. In "refreshing" mode, the heat pump is stopped if the humidity detected is high, avoiding the appearance of condensation.


HYBRID_Q0050

HUMIDITY SENSOR (0 - 10 V) - PACKAGE HZ64

Collector for measuring the humidity in your installation in the flow part of the underfloor heating/cooling. In cooling mode, it is used to adapt the water flow temperature to avoid the appearance of condensation.

MCA_Q0013

PCB + SENSOR FOR 1 MIXING VALVE - PACKAGE AD249

This is used to control a mixing valve with an electromechanical or electrothermal motor. The PCB is inserted into the DIEMATIC Evolution panel connected by pin connections. DIEMATIC Evolution can receive 1 "PCB + sensor" option, enabling it to control 1 additional mixing valve.

8801Q003/TH_Q0001 / TH_Q0002

WIRED PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD337
WIRELESS PROGRAMMABLE ROOM THERMOSTAT 230 V - PACKAGE AD345
WIRELESS PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD338
NON-PROGRAMMABLE ROOM THERMOSTAT - PACKAGE AD140

Programmable thermostats provide weekly programming and regulation of the heating according to the various operating modes: "Automatic" depending on the programming, "Permanent" at a set temperature or "Holiday". The wireless version includes an emitter module which is fixed to the wall near the HPI-S.
The non-programmable thermostat is only used to regulate the room temperature based on the specific setpoint.

SMARTTC_Q5002/SMARTTC_Q007

WIRED WIFI SMART TC° ROOM THERMOSTAT (R-BUS) - PACKAGE AD324
WIRELESS WIFI SMART TC° ROOM CONTROLLER (R-BUS) - PACKAGE AD341
WIRELESS WIFI SMART TC° ROOM CONTROLLER WITHOUT TRANSMITTER/ RECEIVER RADIO - PACKAGE AD342

This enables **remote control of the heating and domestic hot water** via an app which is free to download and **simple to use, with the option of providing a professional with access to your installation (with authorisation)**.
It is used to remote control the installation, including programmed times of operation and access to settings such as checking the energy consumption using data logs.
Smart TC° can also be used as a standard thermostat without using WiFi or any other app, although you are recommended to keep it connected to the Internet to benefit from the latest updates.
AD342 wireless SMART TC° room controller can be used to add a second or third circuit if there is already a AD341 on the first circuit with emitter/transmitter.

ADDITIONAL FEATURES
OF THE **CONTROL SYSTEM**

« ESTIMATE ENERGY CONSUMPTION » FEATURE

The control system on our indoor modules includes an "Estimate energy consumption" feature. Using parameters such as the performance of the system(s) (according to the weather conditions) and the type of energy sources being used, the control system calculates the energy consumption for each operating mode (DHW, heating, cooling). This estimate is shown on the screen of the control system.
This thermal energy metering is performed automatically by the regulation using the standard integrated equipment.
For the metering of electrical energy, an impulse meter must be added and connected to the main board so that the information on electrical consumption are also shown on the display

«HYBRID» FEATURE

The hybrid feature incorporated into the control system of the indoor module is used to manage solutions which combine a heat pump (partially using renewable energy) and a low-temperature boiler or condensing boiler (oil-fired or gas) which operate alone or simultaneously depending on the weather conditions and the heating requirements.

The hybrid feature serves to meet the needs of the installation by always optimising energy consumption between gas, oil and electricity, and it does so by:
- Either using the cheapest energy source (to minimise heating costs).
- Or using the one with the lowest primary energy consumption based on sustainable management.

The «energy tariff» or «primary energy coefficient» values can be changed by adjusting the control system parameters.
This regulation mode also offers the following advantages:
- Reduction in the heat pump output to minimise electricity bills.
- Heating and DHW requirements are fully covered by the heat pump + boiler system.
- In the existing home, energy savings are higher compared to using a boiler alone, the installed boiler's CO_2 emissions are reduced, and connection is possible without changing the existing heat emitters, and no need to use a very high temperature.

PRIMARY ENERGY

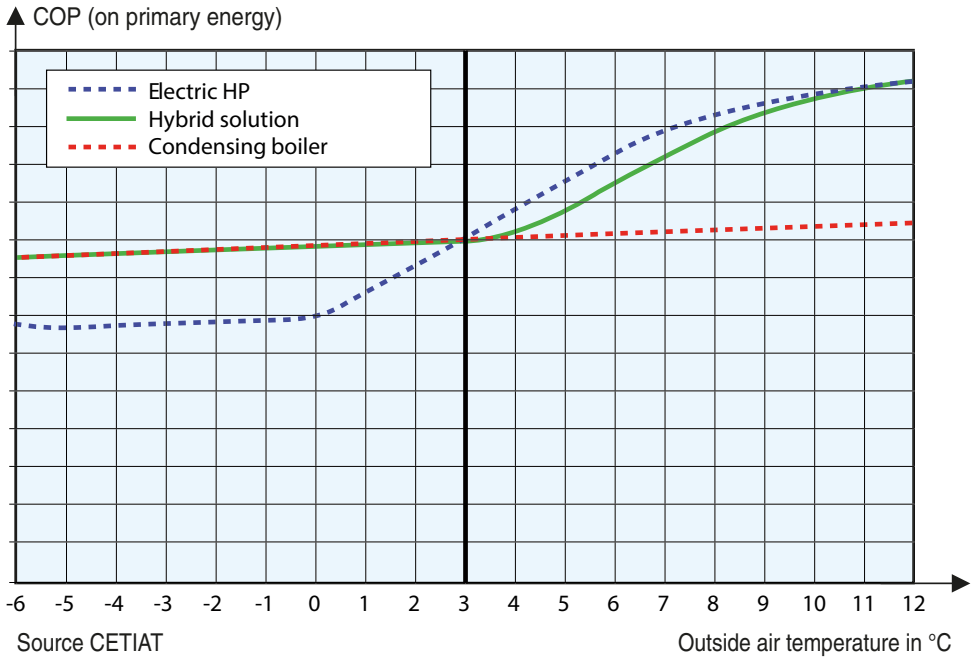
Using the lighting, domestic hot water and control system involves consuming energy (oil, wood, gas, electricity). This energy that is finally consumed is not always available in the same state as in nature (e.g. electricity) and sometimes needs to be transformed. Primary energy includes the energy used to transform and transport it. Primary energy is measured using the **"primary energy coefficient"**, which represents the amount of primary energy needed to obtain a unit of energy. In the case of electricity, the coefficient is approximately 2.4 (*), which means that to obtain 1 kWh of electrical energy, primary energy consumption is 2.4 kWh. For natural gas and oil, the coefficient is approximately 1.2.
(*) Electricity conventionally produced by the state

PERFORMANCE LEVELS OF A "HYBRID" SOLUTION

The graph below shows a comparison of the performance (COP) in terms of primary energy (for heating and DHW production) of various solutions:
- The hybrid solution: combination of a heat pump and a condensing boiler (renewable energy, electrical energy and energy from gas or oil).
- The solution with a heat pump alone (renewable energy with an electrical backup).
- The solution with a condensing boiler alone (energy from gas or oil).

For an outside air temperature below the tipping point, the hybrid solution improves the performance (primary energy COP) of the system compared to using a heat pump alone.
Moreover, for an outside air temperature above the tipping point, the hybrid solution offers superior performance compared to using a condensing boiler alone.

comparison of the primary energy performance levels of an electric heat pump, a condensing boiler and a hybrid solution

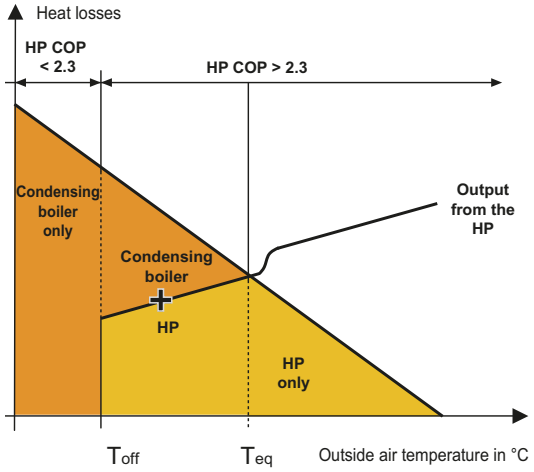


PAC_F0974A

EXAMPLES OF HYBRID SOLUTIONS

EXAMPLE OF A HYBRID SOLUTION ACCORDING TO THE PRIMARY ENERGY COEFFICIENT

The graph opposite shows the different hybrid solutions according to the outside air temperature and the primary energy consumption.
When the COP of the heat pump > 2.3 and the $T_{air} > T_{bal}$ only the heat pump will be used. For Tstop < $T_{air} < T_{bal}$, the control system will manage the heat pump in combination with the boiler. When the COP of the heat pump < 2.3, the control system will only manage the boiler.
Therefore, for each configuration, it is the control system which decides which generator or combination of generators will be used to meet the heating and DHW requirements.
This principle of management according to primary energy is especially valid for new builds.



PAC_F3007

EXAMPLE OF A HYBRID SOLUTION ACCORDING TO ENERGY COSTS

The graph opposite shows the operating principle of the hybrid feature according to the outside air temperature and energy costs.

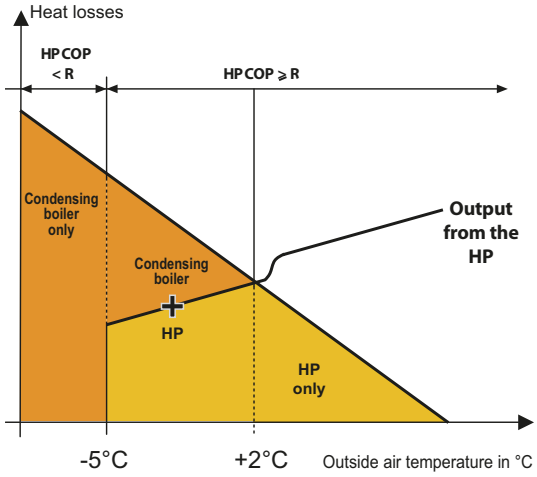
To calculate the energy cost ratio, R:

$$R = \frac{\text{Cost of electricity (€/kWh)}}{\text{Cost of gas (€/kWh)}} = 0.20/0.07 = 2.9$$

(the energy cost takes into account the annual tariff)
The coefficient R (the calculated energy cost ratio) and the outside air temperature are the parameters which the control system uses to define the various operating modes. In the example opposite:

- The heat pump is a HPI-S 11 MR model paired with a natural-gas-fired condensing boiler.
- The generators are installed in a 130-m2 house.

When the heat pump COP > 3 and Tair > +2°C, the control system only manages the heat pump to meet the heating and DHW production requirements.
When the heat pump COP > 3 and -5°C < T_{air} < +2°C, the control system manages the heat pump in combination with the boiler. When the COP of the heat pump < 3, the control system will only manage the boiler.
Therefore, for each configuration, it is the control system which decides which generator or combination of generators will be used to meet the requirements.



PAC_F0301

NB : Values given as an example

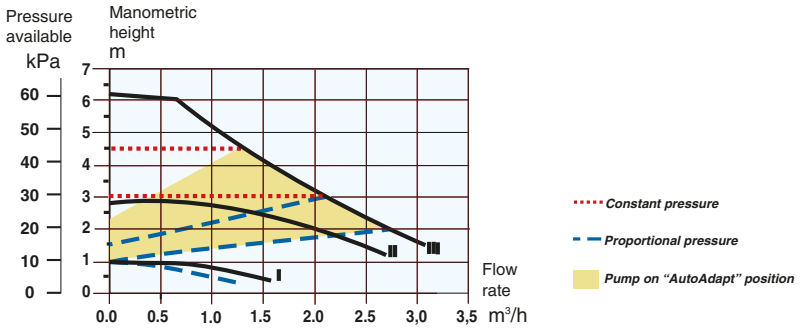
HYDRAULIC MODULES

Using the various options presented below, it is possible to put together complete hydraulic connection kits depending on the installation to be constructed.

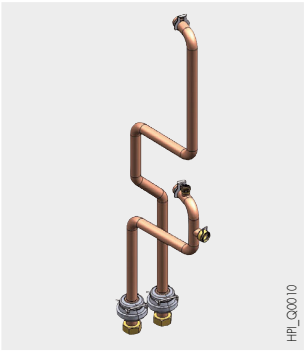
INTERNAL 3-WAY VALVE KIT WITH ENGINE AND FLOW SENSOR - PACKAGE HK21

Permits the connection of a circuit with mixing valve.
This kit will be integrated under the casing of the MIT-S, includes the sensor.

specifications of the pump in the 3-way valve kit

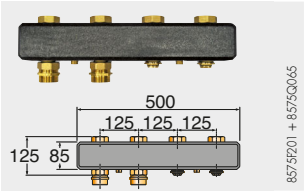


8575FI18A



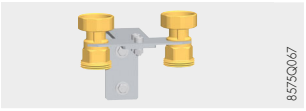
ADAPTER KIT FOR EXTERNAL 3-WAY VALVE - PACKAGE HK22

Allows the connection of a circuit with mixing valve outside the MIT-S.



INSULATED COLLECTOR FOR 2 OR 3 MODULES - PACKAGE EA140

With an installation with 2 or 3 circuits with modules EA143/144.



INSULATED COLLECTOR FOR 1 HYDRAULIC MODULE - PACKAGE EA142

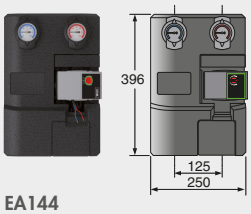
This console allows to secure one hydraulic module for one direct circuit or circuit with mixing valve on the wall.
Is used only when one of the two hydraulic modules is mounted. It includes two brass male / female connectors.

OPTIONAL EQUIPMENT

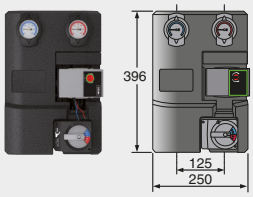
HPI-S

HYDRAULIC MODULES

EA143



EA144



8575F204/8575Q064/8575F204/8575Q068A/8575Q062/8575F200/8575Q063/8575F200

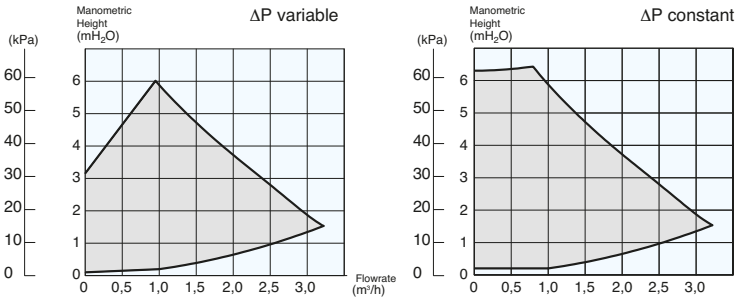
HYDRAULIC MODULE FOR 1 DIRECT CIRCUIT - PACKAGE EA143

Fully assembled, insulated and tested; fitted with an electronic pump, thermometers built into the gate valves, and a non return valve built into the return valve.

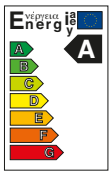
HYDRAULIC MODULE FOR 1 CIRCUIT WITH VALVE - PACKAGE EA144

Fully assembled, insulated and tested, fitted with an electronic pump, a motorized 3-way mixing valve, thermometers built into the gate valves and a non-return valve built into the return valve.

specifications heating circulating pump
(WILO-YONOS PARA RS 25/6 fitted to the module EA143 and EA144)



8575F202A

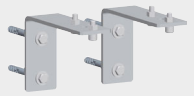


Picto_ENERGIE_A

DTG130_Q0021

SET CONNECTION G IN R (1" AND 3/4") - PACKAGE BH84

This kit includes 2 x G 1"-R 1" fittings and 1 x G 3/4"-R 3/4" fitting with gaskets and can be used to switch from flat gasket fittings to conical fittings (water tightness in the threading).



8575Q066

SET OF 2 WALLS CONSOLES FOR COLLECTOR - PACKAGE EA141

These consoles are used to fix the collector to the wall.

INSULATION KITS FOR AIR CONDITIONING USING FAN COIL UNITS

HPI_Q0009

INSULATION SET IN AIR-CONDITIONING MODE FOR INTERNAL 3-WAY VALVE KIT (HK21) - PACKAGE HK25

HPIS_Q00026

INSULATION SET FOR AIR CONDITIONING MODE MIT-S - PACKAGE EH811

DHW PREPARATION


BPB_Q0001A


8531Q019


PAC_Q0032

DHW CALORIFIER:
- **BPB 150 TO 501 - PACKAGE EC609 TO 613 (IN COMBINATION WITH PACKAGE HK23)**
- **BEPC 300 - PACKAGE ER615**

In order to optimize domestic hot water performance, we recommend the following HP/DHW tank combinations.

MODELS	CAPACITY (l)	HPI-S 4,5 MR	6 MR	8 MR	11 MR/TR	16 MR/TR	22 TR	27 MR/TR
BPB 150	150	●	●	●	●	○	○	○
BPB 200	200	●	●	●	●	●	○	○
BPB 300	300	○	○	○	●	●	●	●
BPB 401	400	○	○	○	○	○	●	●
BPB 501	500	○	○	○	○	○	●	●
BEPC 300	300	●	●	●	●	●	●	●

● recommended association ○ not recommended association

An example of an installation combining a heat pump and a BPB DHW tank is shown on page 26

HEATING/DHW REVERSAL VALVE - PACKAGE EH812

This kit includes the motorised reversal valve with connector for connection to the DIEMATIC Evolution control panel and a connector. It enables connection of the MIT-S to an independent DHW tank (BPB/BLC… for example).

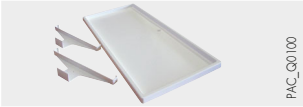
HP/DHW TANK HYDRAULIC CONNECTION PACK - PACKAGE EH149

This pack, comprising 2 ribbed, insulated stainless steel pipes, is used to connect the MIT-S to a DHW tank BPB (length: 1250 mm).

OPTIONAL EQUIPMENT

HPI-S

OTHER ACCESSORIES


PAC_Q0100

CONDENSATE TRAY TANK FOR WALL BRACKET - PACKAGE EH111

In solid plastic, this kit is used to recuperate condensates from the outdoor unit. It can be fitted to the wall mounting bracket packages EH95 and EH250.


PAC_Q9120

RUBBER SUPPORT FOR FLOOR-STANDING ASSEMBLY (600 mm) - PACKAGE EH879

A resistant rubber support, for installing the outdoor unit on the ground, compatible with all outdoor units


PAC_Q0098

SUPPORT FOR FLOOR-STANDING INSTALLATION OF THE HPI-S (OUTDOOR UNIT) - PACKAGE EH112

Support in hard wearing PVC, for mounting the outside unit on the ground. The screws, washers and nuts are provided for quick and easy mounting.


PAC_Q0097

- **5/8" - 3/8" REFRIGERANT CONNECTION KIT:**
  - **LENGTH 5 m - PACKAGE EH114**
  - **LENGTH 10 m - PACKAGE EH115**
  - **LENGTH 20 m - PACKAGE EH116**
- **1/2" - 1/4" REFRIGERANT CONNECTION KIT:**
  - **LENGTH 10 m - PACKAGE EH142**

High-quality insulated copper pipe which limits heat loss and condensation.


PAC_Q0021

BUFFER TANK B 80 T - PACKAGE EH85

The B 80 T tank is used to limit operation of the compressor in short cycles and to provide a reserve for the defrosting phase on reversible Air/Water heat pumps.
It is also recommended for all heat pumps connected to installations in which the water volume is less than 5 l/kW in heating output.
EXEMPLE: Heat pump output = 10 kW
Min. volume in the installation: 50 litres
Dimensions of buffer tank:: H 850 x L 440 x P 450 mm


HPIS_Q0028

AUTOFILL SET - PACKAGE EH726

Allows the heating water to be refilled automatically.


PAC_Q5005

DIFFERENTIAL BY-PASS VALVE - PACKAGE HK150

This differential by-pass valve has to be installed on circuits equipped with thermostatic valves, in order to ensure a minimum flow rate in the MIT-S.

TF1 + raccords

FERNOX TF1 FILTER - PACKAGE EH896


PAC_Q0032

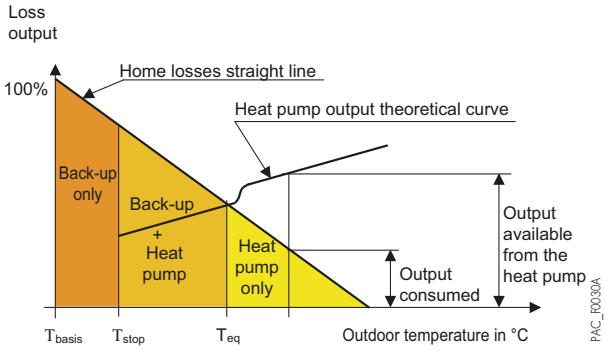
WALL MOUNTING SUPPORT + ANTI-VIBRATION MOUNTS:

- **FOR AWHP 4.5 MR, 6 AND 8 MR-2... - PACKAGE EH95**
- **FOR AWHP 11 AND 16 MR/TR-2... - PACKAGE EH250**

This kit is used to mount the outdoor unit of the HPI to the wall.
It comes with anti-vibration studs to limit the transmission of vibrations into the ground.

SIZING AIR-TO-WATER HEAT PUMPS

Air-to-water heat pumps alone cannot compensate for the heat losses of a home, as their output is reduced when the outside temperature drops, and they stop working at a certain temperature, known as the "stop temperature". For the HPI-S range, this temperature is - 20°C (- 15°C for 4.5 and 6 kW). Therefore, an electrical backup via an immersion heater or a hydraulic backup via a boiler is necessary. The balance temperature corresponds to the outside temperature at which the heat pump's output is equal to the losses.



TO OPTIMISE SIZING, IT IS RECOMMENDED TO APPLY THE FOLLOWING RULES:

- 80% of losses ≤ Heat pump output at T_o ≤ 100% of losses where $T_o = T_{base}$ if $T_{stop} < T_{base}$ and T_o = stop otherwise
- Heat pump output at T_{base} + Backup power = 120% of losses

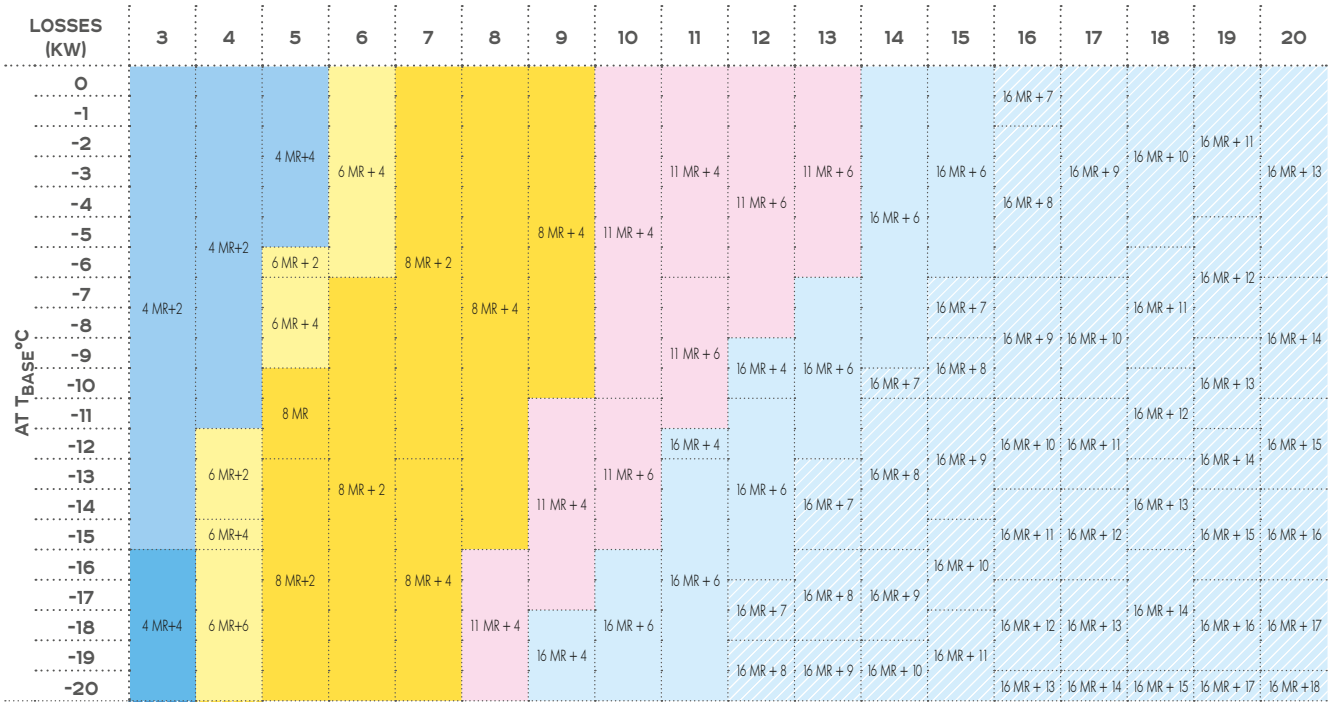
T_{base} = Base outside temperature,
T_{bal} = Balance temperature,
T_{stop} = Stop temperature (See tables on page 61).

If these sizing rules are followed, it is possible to achieve coverage rates of 80 to over 90%, depending on the case.

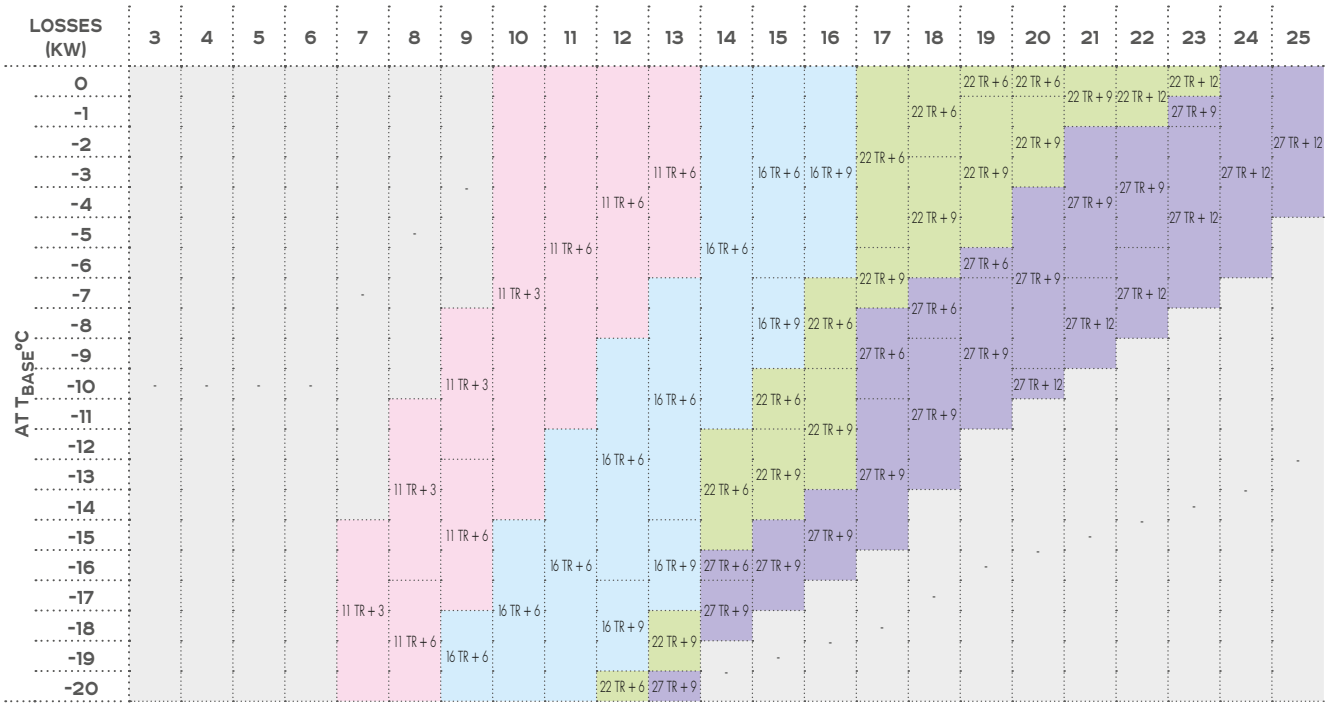
SIZING AN INSTALLATION
WITH A HEAT PUMP

SELECTION TABLE

• HPI-S MR SINGLE-PHASE MODULES



• HPI-S TR THREE-PHASE MODULES



+..: minimum electrical or hydraulic backup required in kW hatched boxes: with hydraulic backup only

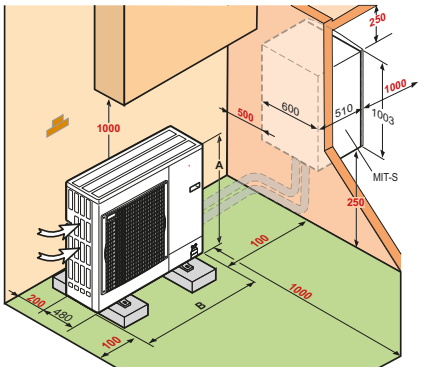
Notes

- The losses must be calculated accurately and without a surplus power coefficient.
- + 2, + 4… corresponds to the minimum electrical or hydraulic backup required in kW
- The electrical backup is 9 kW max. and requires a three-phase power supply (6 kW max. for single-phase supply)
- in the case of installations with boiler replacement, it is possible to select a slightly undersized single-phase heat pump instead of a three-phase heat pump, taking into account that during a renovation it is not always possible to switch from a single-phase to a three-phase electrical cabinet.
- At an outside temperature below the stop temperature of the heat pump (- 20°C or - 15°C) only the backups work.

SIZING AN INSTALLATION
FOR **HPI-S HEAT PUMPS**

INSTALLING HPI-S HEAT PUMPS

- The outdoor units for HPI-S heat pumps should be installed close to the house, on a terrace, on the facade or in a garden. They are designed to operate in the rain but can also be installed under cover as long as there is sufficient ventilation.
- The outdoor unit must be installed protected from prevailing winds that may influence the installation's performance.
- We recommend positioning the unit above the average depth of snowfall in the region in which it is installed.
- The location of the outdoor unit should be carefully chosen in order for it to be compatible with environmental requirements: integration in the site, compliance with planning rules or co-ownership agreements.
- No obstacles must hinder the free circulation of air around the exchanger on intake and output. It is therefore necessary to allow clearance all around the appliance that will also facilitate connection, commissioning and maintenance operations (see installation diagrams below).



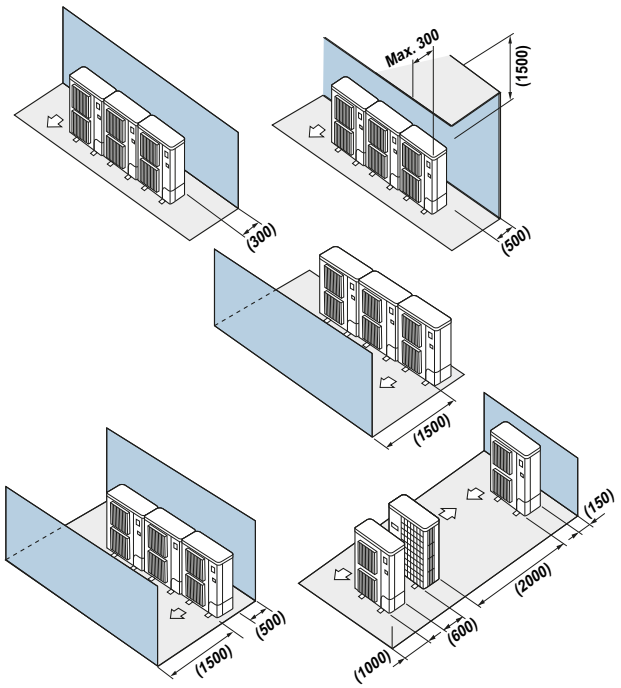
HPI_F5008A

HPI-S	4.5 MR	6 MR	8 MR	11/16 MR	22/27 MR/TR
A (mm)	880	630	943	1 350	1 338
B (mm)	840	809	950	950	1 050

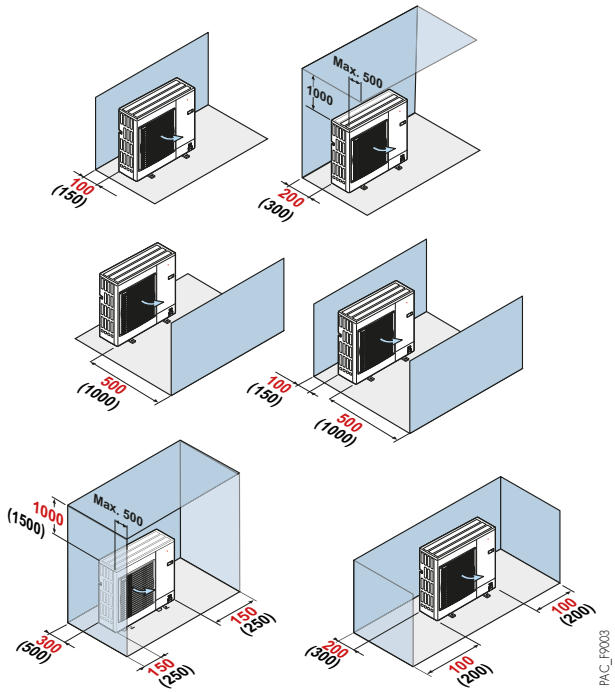
Dimensions in red (fat) = mimimum distances

OUTDOOR MODULE: MINIMUM DISTANCES FOR INSTALLATION (mm)

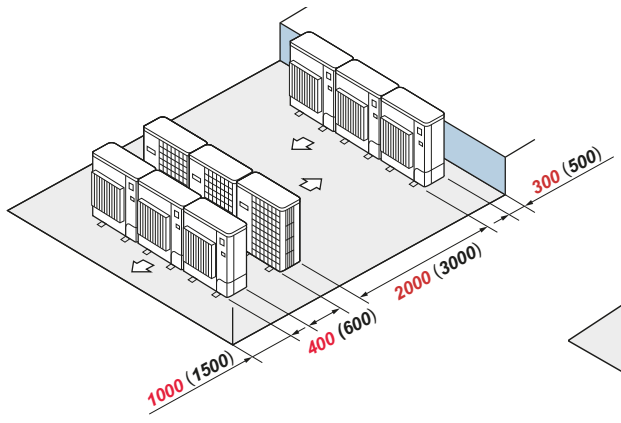
- Height without brackets: AWHP 4.5, 6 and 8 MR…
- Height in brackets: AWHP 11/16 MR/TR-2… and 22/27 TR-2…

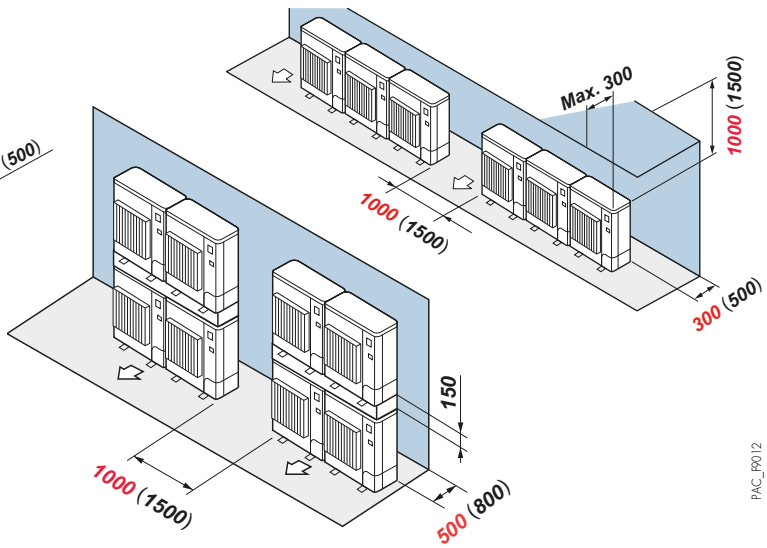


PAC_F9002



PAC_F9003





PAC_F9012

MAXIMUM DISTANCES FOR REFRIGERANT FLUID CHARGE

MAXIMUM CONNECTION DISTANCE (SEE DIAGRAM BELOW)

AWHP OUTDOOR UNIT	4.5 MR	6 MR-3	8 MR-2	11 MR-2	11 TR-2	16 MR-2	16 TR-2	22 TR-2		27 TR-2	
refrigerant gas pipe Ø	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	3/4"	1"	3/4"	1"
refrigerant fluid pipe Ø	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"
L (m)	2-30	2-40	2-40	2-40	2-40	2-75	2-75	2-20	2-75	2-20	2-75
B (m)	30	30	30	30	30	30	30	30	30	30	30

L: Minimum/maximum connection distance between the indoor module and the outdoor unit. If the distance is less than 2 m, malfunctions and noise may result.
B: Maximum permitted height difference between the indoor module and the outdoor unit.

PRECHARGE QUANTITY OF REFRIGERANT

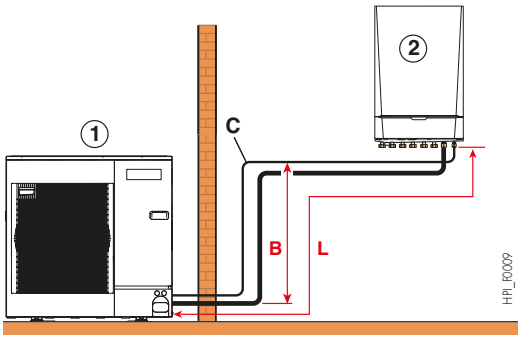
If the length of the refrigerant pipe is less than 10 m, no additional refrigerant fluid charge is required. For lengths over 10 m, the following additional charges are required:

AWHP OUTDOOR UNIT MODELS	ADDITIONAL REFRIGERANT FLUID (KG) FOR A DISTANCE › 7 m				
	7 m	10 m	15 m	20 m	30 m
AWHP 4.5 MR	0	0.045	0.120	0.195	0.345

Calculation of additional charge (X) according to length:
X (in kg) = 0.015 x (length of pipe (m) - 7)

AWHP OUTDOOR UNIT MODELS	ADDITIONAL REFRIGERANT FLUID (KG) FOR A DISTANCE › 10 m					
	11 TO 20 m	21 TO 30 m	31 TO 40 m	41 TO 50 m	51 TO 60 m	61 TO 75 m
AWHP 6 MR	0.2	0.4	0.6	-	-	-
AWHP 8 MR	0.2	0.4	1.0	-	-	-
AWHP 11 and 16 MR/TR	0.2	0.4	1.0	1.6	2.2	2.8
AWHP 22* (with 3/4" gas tube)	(2)	(1)	(1)	(1)	(1)	(1)
AWHP 22 (with 1" gas tube)	(2)	(2)	0.9	1.8	2.7	3.6
AWHP 27* (with 3/4" gas tube)	(2)	(1)	(1)	(1)	(1)	(1)
AWHP 27 (with 1" gas tube)	(2)	(2)	1.2	2.4	3.6	4.8

IMPORTANT: attention to the quality of the copper used! We recommend using copper 1/2H or H
(1) Greater than the maximum length allowed (2) Preloaded in factory



B: Max. height difference
L: Max. connection distance
C: 15 elbows max. (except 4.5 MR...: 10)
① Outdoor unit
② MIT-S indoor module

* Connection in 3/4 " does not cause power loss in "heating mode".
In "cold mode", the power losses are:
- Up to 7,5m of connection length: no significant power reduction
- From 7.5 to 10 m of connection length: -5 %
- From 10 to 15 m connection length: -10 %
- From 15 to 20 m connection length: -20 %

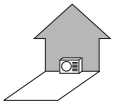
ACOUSTIC INTEGRATION OF HPI-S HEAT PUMPS

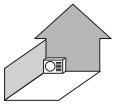
DEFINITIONS

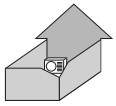
The acoustic performance levels of the outdoor units are defined by the following two values:
- **The sound power Lw expressed in dB[A]:** this characterises the sound emission capacity of the source, independently of its environment. It enables appliances to be compared.
- **The sound pressure Lp expressed in dB[A]:** this is the value perceived by the human ear, and depends on parameters such as the distance from the source, the size and the type of walls in the building.

RECOMMENDATIONS FOR ACOUSTIC INTEGRATION OF THE OUTDOOR MODULE

- Do not position the module close to bedrooms.
- Avoid placing it close to a terrace, and do not install the module opposite a wall. The increase in the noise level due to the installation configuration is shown in the diagrams below:

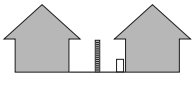

Module positioned against a wall: + 3 dB[A]

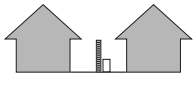

Module positioned in a corner: + 6 dB[A]


Module positioned in an inner courtyard: + 9 dB[A]

HPI_F0029

- The following configurations must not be used:


Ventilation directed towards the neighbouring property


Module positioned at the boundary of the property


Module positioned under a window

HPI_F0029

- The following recommendations should be followed to reduce environmental noise and the transmission of vibrations:
  - Installing the outdoor module on a metal frame or an inertia base. This base must be at least twice as heavy as the module and be independent of the building. Anti-vibration mounts will still need to be installed to reduce the transmission of vibrations.
  - The use of suitable sleeves at the points where the refrigerant connections are routed through the walls.
  - The use of flexible, anti-vibration materials for mountings.
  - The installation of vibration-damping devices such as loops or elbows on the refrigerant connections.
- It is also recommended to install an acoustic attenuation device, for example:
  - A wall dampener fitted on the wall behind the module.
  - A sound barrier: the surface of the barrier must be larger than the outdoor module and be positioned as close as possible to it, while allowing air to circulate freely. The barrier must be made from a suitable material such as acoustic bricks or concrete blocks covered with absorbent material. It is also possible to use natural barriers, such as banks of earth.

IMPORTANT INFORMATION FOR INSTALLATION

HPI-S HEAT PUMPS

REFRIGERANT CONNECTION

The installation of HPI-S heat pumps includes operations in the refrigerant circuit.
Installation, start-up, maintenance and repair of the appliances must be carried out by qualified, trained staff, in compliance with the provisions of the directives, laws and regulations in force.

ELECTRICAL CONNECTION

The heat pumps must be electrically installed in accordance with the current norms, decrees and legal texts associated with them.
The cable will be carefully chosen according to the following information: maximum amperage on the outdoor unit (thermodynamic unit). See the table below, distance of the appliance from the original power supply, upstream protection, neutral operating conditions.

RECOMMENDATIONS ON CABLE CROSS-SECTIONS AND CIRCUIT BREAKERS TO BE INSTALLED

		OUTDOOR UNIT					INDOOR MODULE		
HEAT PUMP HPI-S	TYPE	NOMINAL AMPERAGE + 7/35°C	START-UP AMPERAGE + 7/35°C	MAX. AMPERAGE	OUTDOOR UNIT POWER SUPPLY		MIT-S INDOOR MODULE POWER SUPPLY		COMMUNICATION BUS
	...PHASE	A	A	A	CS (mm²)	CURVE C* CB	CS (mm²)	CURVE C* CB	CS (mm²)
4.5 MR	Single	4.25	5	12	3 x 2.5	16 A	3 x 1.5	10 A	2 x 0.75
6 MR	Single	6.57	5	13	3 x 2.5	16 A	3 x 1.5	10 A	2 x 0.75
8 MR	Single	8.99	5	17	3 x 4	25 A	3 x 1.5	10 A	2 x 0.75
11 MR	Single	11.41	5	29.5	3 x 6	32 A	3 x 1.5	10 A	2 x 0.75
11 TR	Three	3.8	3	13	5 x 2.5	16 A	3 x 1.5	10 A	2 x 0.75
16 MR	Single	16.17	6	29.5	3 x 10	40 A	3 x 1.5	10 A	2 x 0.75
16 TR	Three	5.39	3	13	5 x 2.5	16 A	3 x 1.5	10 A	2 x 0.75
22 TR-2	Three	4.92	7.75	19	5 x 4	25 A	3 x 1.5	10 A	2 x 0.75
27 TR-2	Three	6.26	9.86	21	5 x 6	32 A	3 x 1.5	10 A	2 x 0.75

ELECTRICAL BACKUP		
1-PH: 2, 4 or 6 kW	CS	3 x 6 mm²
	CB	Curve C, 32 A
3-PH : 9 or 6 kW	CS	5 x 2.5 mm²
	CB	Curve C, 16 A

KEY

CS =Cable cross-section in mm²
CB =Circuit breaker
* Differential protection

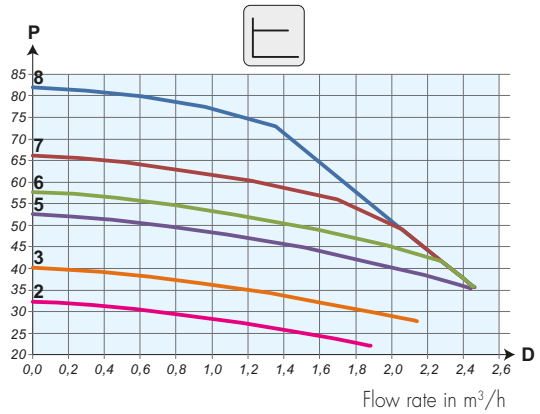
HYDRAULIC CONNECTION

The indoor MIT-S module on HPI-S heat pumps is fully equipped for the connection of a direct circuit (radiators or underfloor heating): a high energy efficiency circulating pump (EEI < 0.23), expansion vessel (10 litres), heating safety valve, pressure gauge, air vent…

NOTE
As HPI S heat pumps are of the "SPLIT INVERTER" type with refrigeration link between the outdoor unit and the MIT-S module, it is not necessary to add glycol to the installation.

MANOMETRIC HEIGHT AVAILABLE FOR THE HEATING CIRCUIT

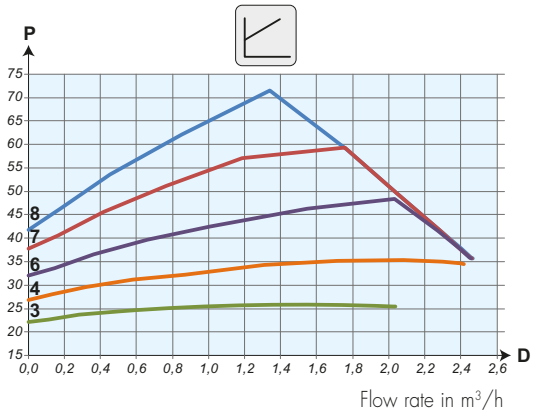
• CONSTANT



KEY

P Available Pressure (kPa)
D Flow rate in m³/h
2 Speed 2
3 Speed 3
4 Speed 4
5 Speed 5
6 Speed 6
7 Speed 7
8 Speed 8

• VARIABLE PRESSURE



SIZING THE STORAGE TANK

The volume of water contained in the heating installation must be capable of storing up all of the energy provided by the HP during its minimum running time. Therefore, the storage volume corresponds to the minimum water volume required from which we subtract the content of the network.

- The installation of a storage tank is recommended for installations in which the water volume is less than 5 l/kW in heating output on the HP (remember to factor in the 40 l in the MIT-S).
- Increasing the volume in an installation helps to limit short cycle running of the compressor (the greater the water volume the fewer the number of compressor start-ups and the longer its life span).
- As an initial approach, below is an estimate of the storage volume for a minimum running time of 6 minutes, a regulation differential of 5 K and factoring in a negligible network volume (factor in the 40 litres in the MIT-S).

HPI-S	4.5 MR	6 MR	8 MR	11 MR	11 TR	16 MR	16 TR	22 TR	27 TR
Minimal installation capacity (litres)	23	30	40	57	57	73	73	110	135

IMPORTANT RECOMMENDATIONS

Types of emitters

HPI-S heat pumps are limited to a maximum flow temperature of 60°C. It is therefore essential to work with low-temperature emitters, for example underfloor heating/cooling or radiators sized for low temperatures. For cooling mode, only underfloor cooling with slabs is acceptable. It is also necessary to comply with the minimum flow temperatures according to the geographical area to avoid condensation (between 18°C and 22°C).

refrigerant gases

R410A refrigerant gas has properties suited to heat pumps. It belongs to the HFC (Hydrofluorcarbon) family comprising carbon, fluorine and hydrogen. It does not contain chlorine, and are therefore not harmful to the ozone layer.

cooling or air-conditioning mode

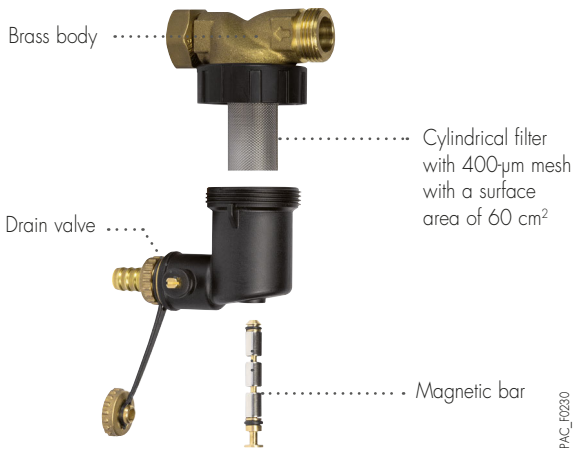
Reversible heat pumps can be used for cooling in summer. A 4-way valve, known as a cycle reversal valve, switches the cycle from heating to cooling mode.
The compressor suction is thus connected to the internal exchanger, which becomes an evaporator. The compressor return is thus connected to the external exchanger which becomes a condenser.

NOTE: For air-to-water type heat pumps, this 4-way valve is also used for the evaporator defrosting phase.

For an installation with underfloor heating/cooling (water flow/return temp.: + 18°C/+ 23°C), the cooling output is limited but sufficient to maintain comfortable conditions in the home. This enables the average room temperature to be reduced by 3-4°C.

AIR-TO-WATER HEAT PUMPS

The HPI-S model is supplied **with a magnetic filter** which guarantees the durability and correct operation **of our heat pump ranges**. Our kits designed to create a second circuit also include this magnetic filter.
The filter comprises a metal screen with a large surface area (larger than a standard filter), and a high-capacity magnetic bar which can retain all types of particles in the heating circuit. It can also **trap sludge and sediment** using its built-in **drain valve**.



IMPORTANT

Fitting this filter does not preclude compliance with the norms which apply to installation and start-up.
The filter should be cleaned simply and quickly during each annual maintenance or in the case of insufficient flow. The specifications required for heating water indicated in the manual must be taken into account. Avoid any air infiltration in the hydraulic circuit; it is important to guarantee the correct size and filling pressure of the expansion vessel.

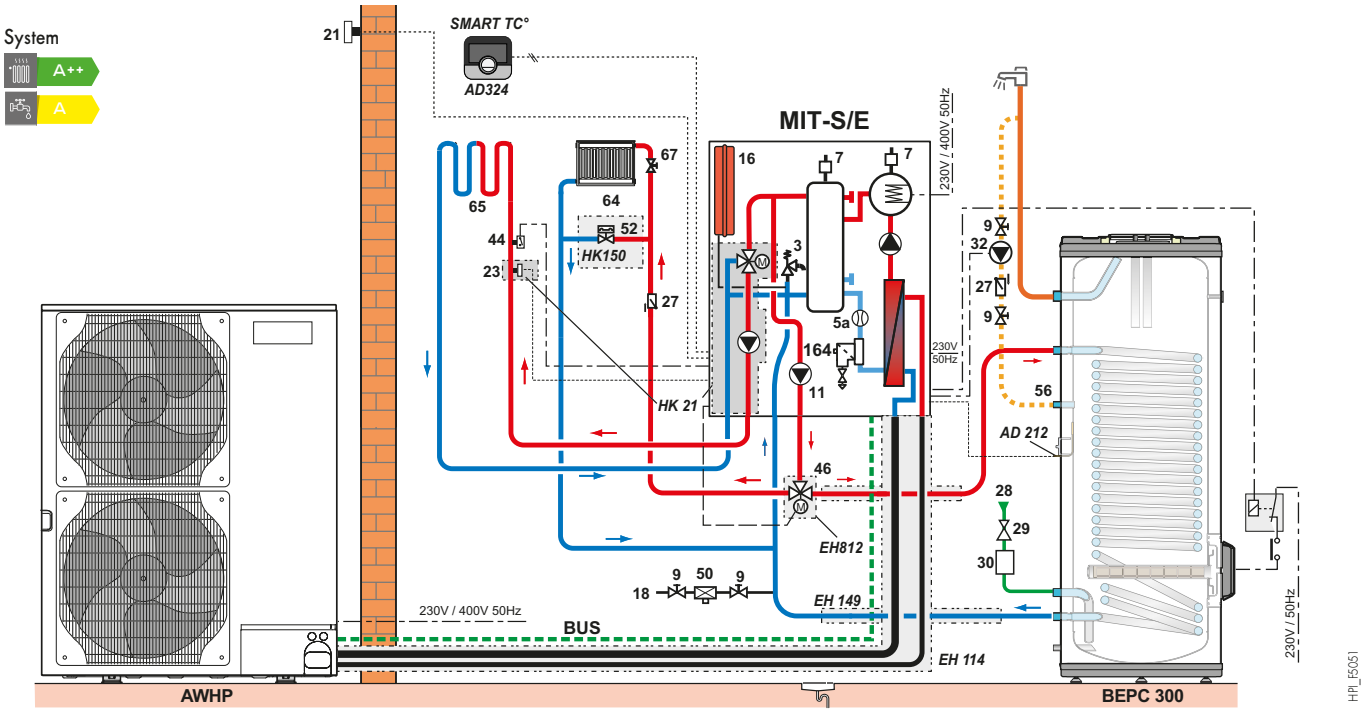
INSTALLATION EXAMPLES

HPI-S

The installation examples shown below cannot include all of the possible scenarios that may be encountered. These examples are provided as a guide for the basic concepts. A certain number of safety and control components are shown, but the planners and regulatory authorities are ultimately responsible for deciding which safety and control components should be provided, based on individual requirements, and always in compliance with current standards and legislation.

HPI-S HEAT PUMP WITH INDOOR MIT-S /E MODULE

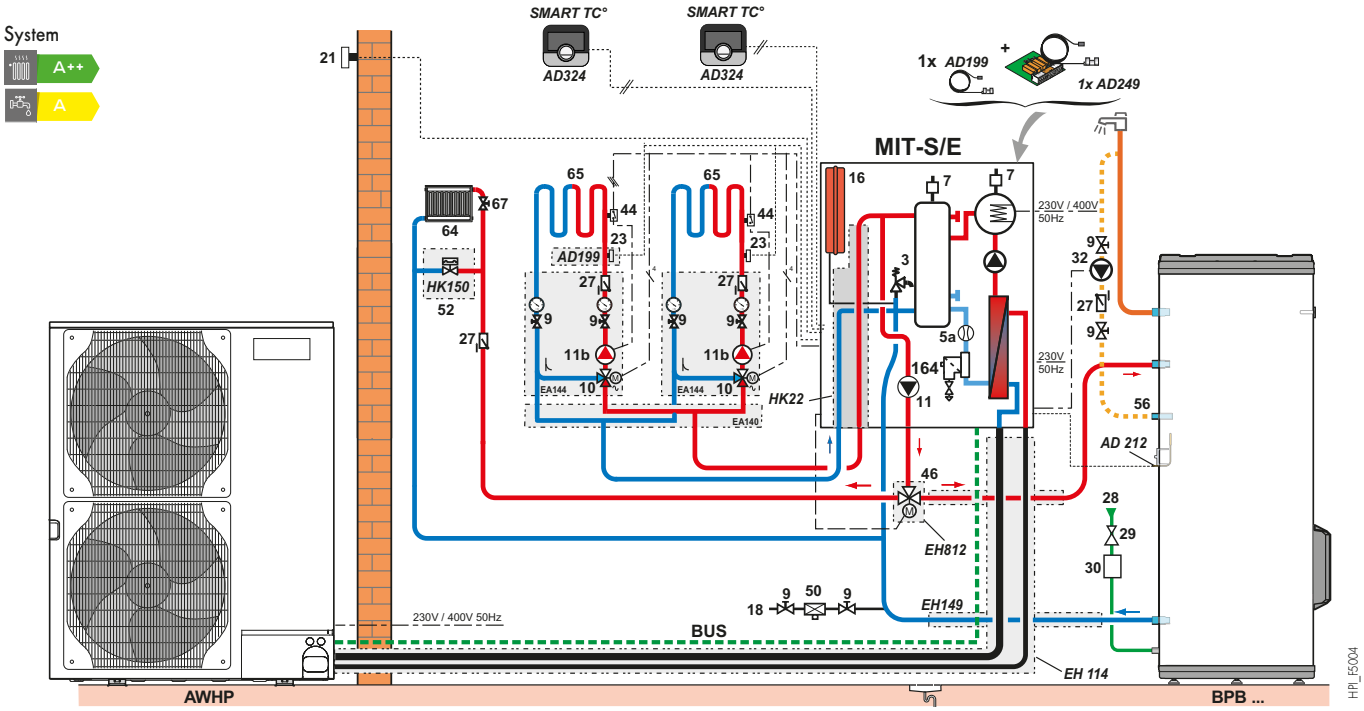
- 1 direct circuit "radiators"
- 1 circuit with mixing valve
- DHW production by independent tank BEPC 300



* Package supplied with HPI-S 4.5 and 6 MR models

HPI-S HEAT PUMP WITH INDOOR MIT-S /E MODULE

- 1 direct circuit "radiators"
- 2 circuits with mixing valve
- DHW production by independent tank



KEY: see page 31

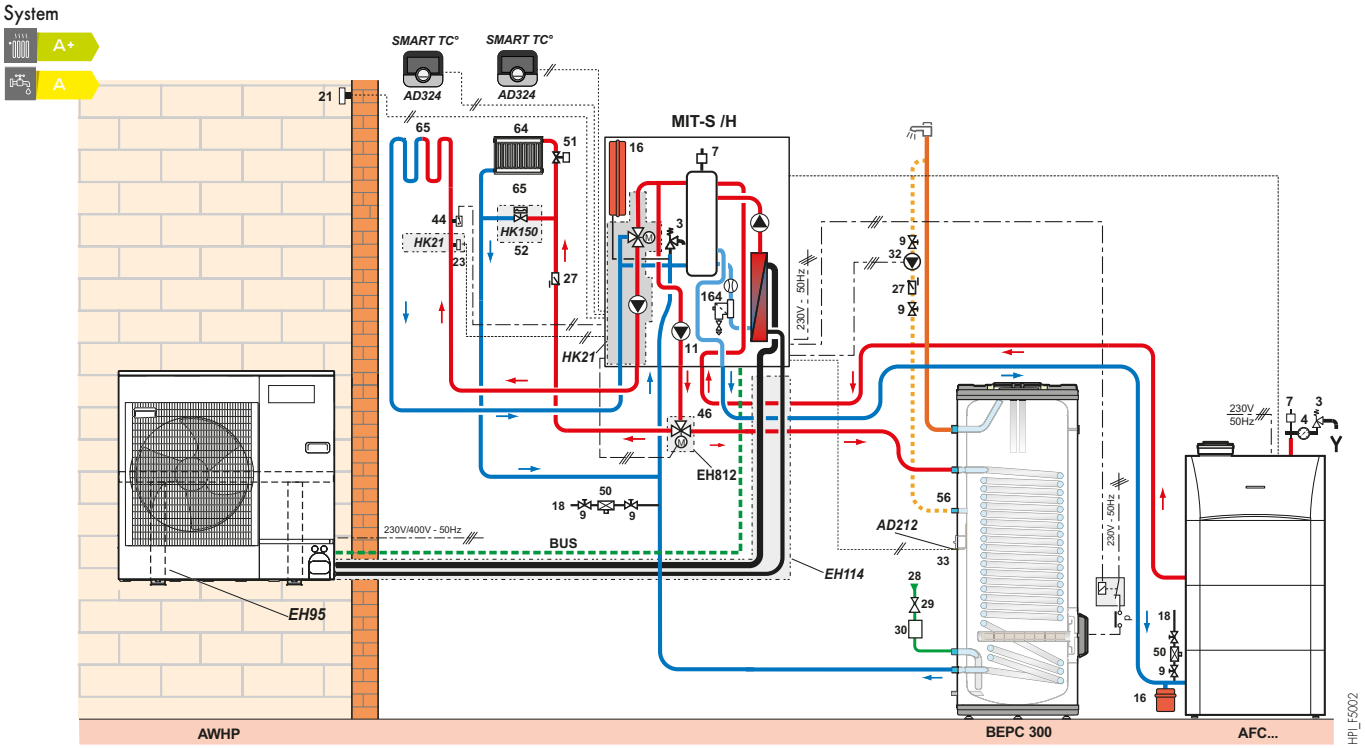
INSTALLATION EXAMPLES

HPI-S

HPI-S HEAT PUMP WITH INDOOR MIT-S /H MODULE, WITH BOILER BACK-UP

- 1 direct circuit "radiators"
- 1 circuit with mixing valve
- DHW production by independent tank

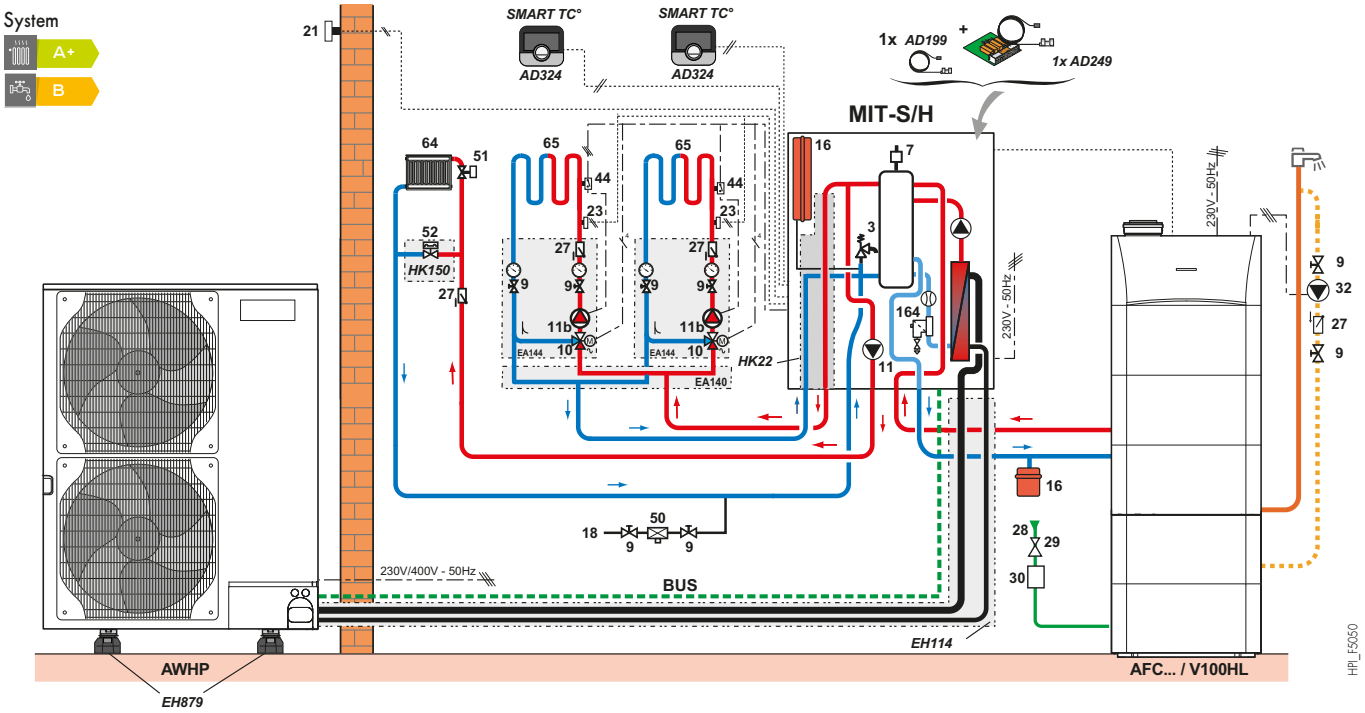
System



HPI-S HEAT PUMP WITH INDOOR MIT-S /H MODULE

- 1 direct circuit "radiators"
- 2 underfloor heating circuits
- 1 circuit with boiler back-up and integrated DHW production

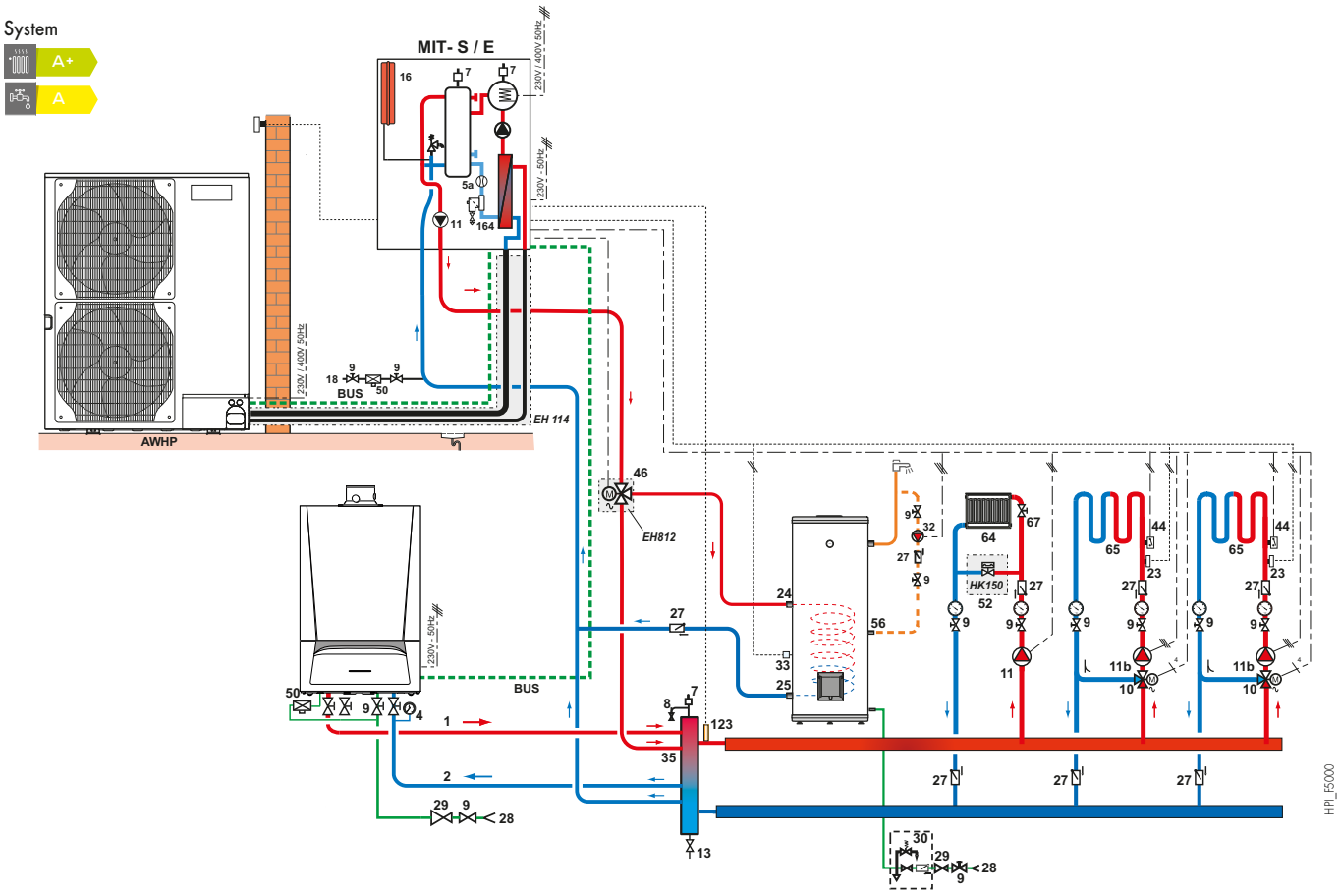
System



KEY: see page 31

CASCADE WITH A HPI-S HEAT PUMP (WITH MIT-S/E MODULE) AND AN EVODENS WALL-HUNG CONDENSING BOILER

- 1 direct circuit "radiators"
- DHW production by independent calorifier
- 2 circuits with mixing valve



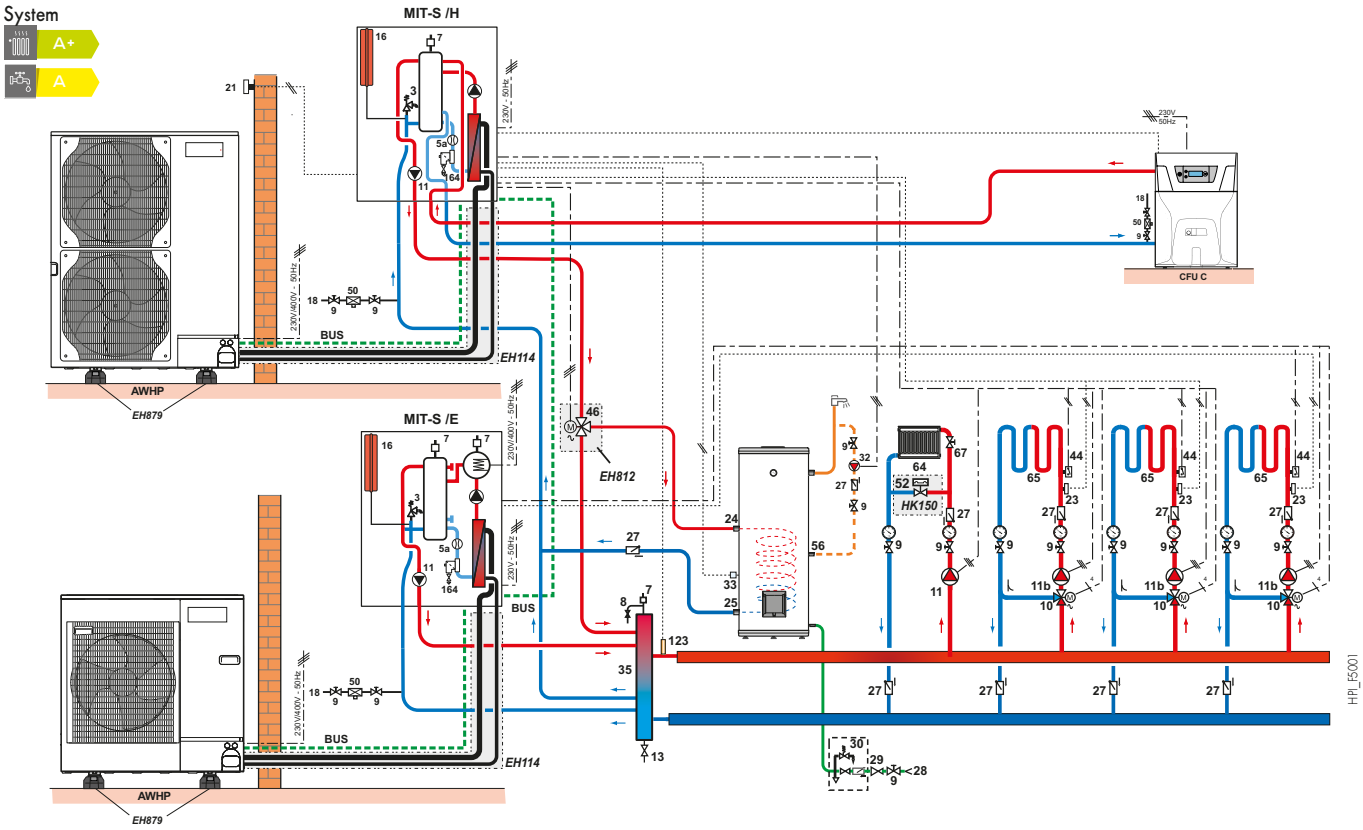
KEY: see page 31

INSTALLATION EXAMPLES

HPI-S

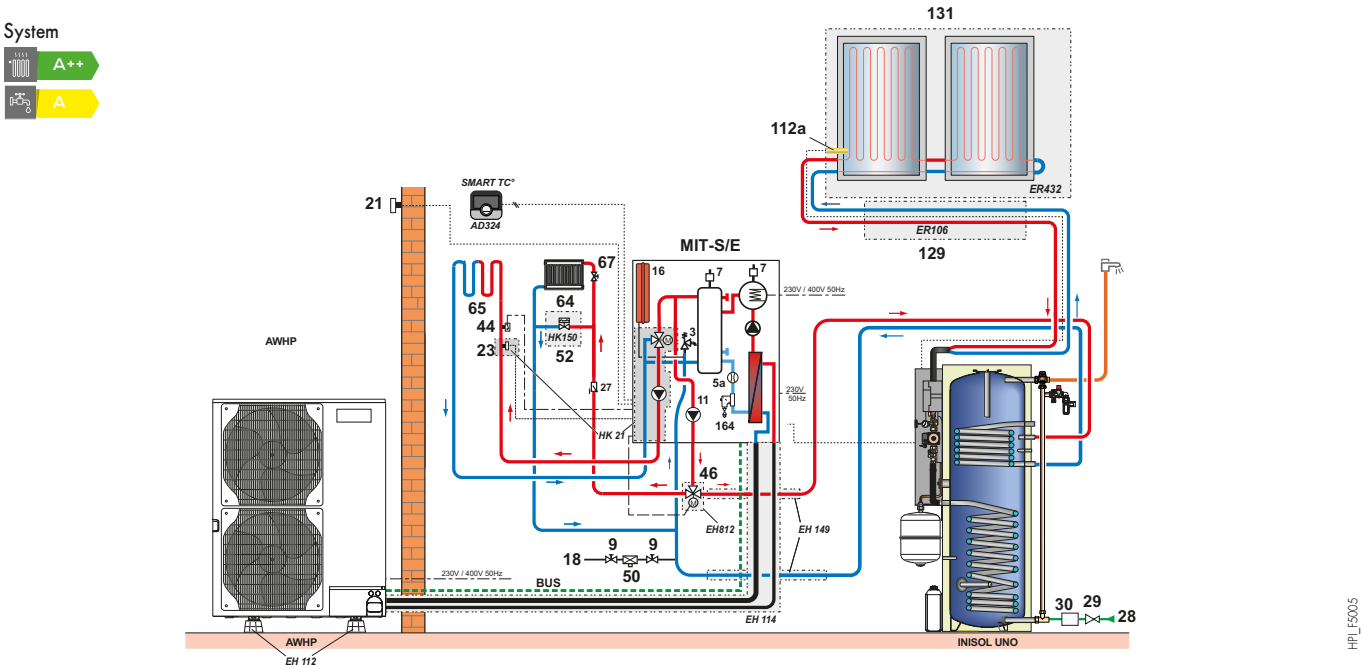
HPI-S HEAT PUMPS WITH MIT-S/E AND MIT-S/H MODULES, IN CASCADE

- 1 direct circuit "radiators"
- 3 circuits with mixing valve
- 1 circuit " with boiler back-up
- DHW production by independent calorifier



HPI-S HEAT PUMP WITH MIT-S/E MODULE

- 1 circuit with mixing valve
- 1 solar circuit made up of a TRIO system

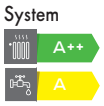


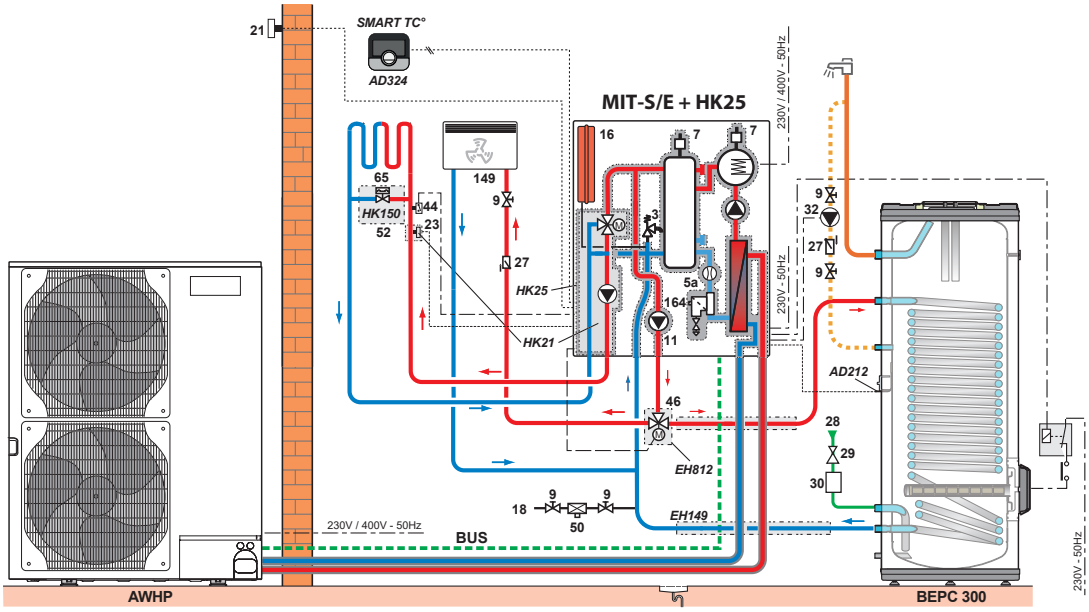
KEY: see page 31

HPI-S HEAT PUMP WITH MIT-S/E MODULE, WITH INSULATION KIT HK25, WITH ELECTRICAL BACK-UP

- 1 circuit with mixing valve
- 1 cooling circuit with fan coils
- DHW production by independent calorifier BEPC 300

System





KEY: see page 31

INSTALLATION EXAMPLES

HPI-S

KEY

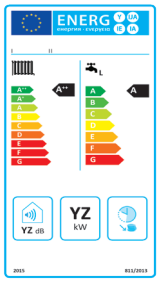
3 3-bar safety valve
4 Pressure gauge
5a Flowmeter
7 Automatic air vent
9 Isolation valve
10 3-way mixing valve
11 Heating pump
11b Pump for heating with mixing valve
13 Flushing valve
16 Expansion vessel
18 Filling device
21 Outside sensor
23 Mixing valve outlet temperature sensor
26 Load pump
27 Non-return valve
28 Domestic cold water inlet
29 Pressure reducer
30 Sealed safety device calibrated to 7 bar
32 DHW loop back pump
35 Decoupling cylinder
44 65°C manual reset safety thermostat for underfloor heating
50 Disconnector
51 Thermostatic valve
52 Differential valve
61 Thermometer
64 Direct heating circuit: radiators
65 Direct heating circuit: underfloor heating
67 Manual radiator valve
81 Electrical resistance
84 Stop valve with unlockable non-return valve
85 Primary solar circuit pump
87 Safety valve calibrated to 6 bar
89 Container for solar fluid
109 Thermostatic mixer tap
112a Solar collector sensor
112b Solar DHW tank sensor
114 Primary solar circuit filling and draining circuit
115 Thermostatic distribution valve per zone
117 3-way reversal valve
123 Cascade flow sensor
126 Solar control system
129 Duo-pipes
130 Degasser with manual vent
131 Collector field
133 Interactive remote control
147 Filter + gate valves
149 Fan coil
151 Motorised 4-way valve

Created by De Dietrich, the ECO-SOLUTIONS label guarantees a range of products which comply with the European Ecodesign Directives for energy-related products (ErP) and energy labelling. These directives have been in force since 26 September 2015 for heating equipment and domestic hot water production systems.

With De Dietrich ECO-SOLUTIONS, you can enjoy the latest generation of multi-energy products and systems which are more efficient and more economical, to guarantee your comfort and protect the environment. ECO-SOLUTIONS are the fruit of De Dietrich's extensive professional experience in the heating and domestic hot water segment.

The energy label associated with the ECO-SOLUTIONS labelling indicates the performance of the product you have chosen. Learn more at

www.dedietrich-heating.com



IMPORTANT RECOMMENDATIONS

In order to make the most of the performances of heat pumps for optimal comfort and to maximise their useful life, we recommend that you pay particular attention to their installation, commissioning and maintenance; to do this, abide by the various instructions that come with the appliances. In addition, the De Dietrich catalogue offers a commissioning service for heat pumps; we also strongly recommend that you take out a maintenance contract.

De Dietrich
BDR THERMEA France
S.A.S. with corporate capital of 229 288 696 €
57, rue de la Gare - F - 67580 Mertzwiller
Tel. +33 3 88 80 27 00 - Fax +33 3 88 80 27 99
www.dedietrich-heating.com

01/2021 – 300035461 – 347.555.559 R.C.S Strasbourg – Document non contractuel - OTT Imprimeurs 67310 Wasselonne - 202174