HPI EVOLUTION

REVERSIBLE AIR/WATER HEAT PUMPS "SPLIT INVERTER"

ECO SOLUTIONS — De Dietrich

- **HPI/E: from 5.8 to 24.4 kW with additional heating by integrated electrical resistance**
- **HPI/H: from 5.8 to 24.4 kW with additional hydraulic heating by boiler (or without additional heating)**

| HPI 6 MR-2 | HPI 8 MR-2 | HPI 11 and 16 MR-2/TR-2 | HPI 22 and 27 TR-2 |

Heating only by radiator or underfloor heating/cooling or air conditioning by fan coils (option)

Heat pump air/water

Electricity (energy supplied to the compressor)

Natural renewable energy free of charge

CE

HPI EVOLUTION heat pumps stand out for their compactness and high performances: operation down to -20°C and COP up to 4.27 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:

- A DIEMATIC iSystem 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 a direct heating circuit, a circuit with mixing valve and one or two domestic hot water production circuits. Option of connecting HPI heat pumps and boilers with DIEMATIC iSystem control system in cascade;
- High energy efficiency pumps (EEI < 0.23);
- A hydraulic filter with isolating valve.

This module is available in 2 versions:

- **MIT-IN-2/E…iSystem** for auxiliary heating by integrated electrical resistor, 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-IN-2/H…iSystem** for auxiliary heating by boiler.

CONDITIONS OF USE

Limit operating temperatures

- in heating mode:
  Outside air: - 20/+ 35°C (- 15/+ 35°C for HPI 6 MR-2)
  Water: + 18/+ 60°C
- in cooling mode:
  Outside air: - 5/+ 46°C
  Water: + 7/+ 25°C (insulation kit is required for water temperature below 18°C)

Maximum operating pressure: 3bar

ADVANCE

De Dietrich

RANGE OVERVIEW

The HPI EVOLUTION range of air/water Inverter heat pumps comes in models of 5.8 to 24.4 kW (heating output at +7/+35°C in accordance with the EN 14511-2 standard). They comprise an outdoor unit and an MIT-IN-2 indoor unit.

This range's strong points are:
- Operation possible with an outside air temperature as low as -20°C (except for the 6 MR-2 version which operate down to -15°C);
- All models can produce water at up to 60°C;
- The models are reversible to operate in underfloor heating / cooling mode or in air conditioning mode using fan coil units with the optional "air conditioning mode insulation" kit (except in the case of HPs mounted in cascade);
- Increased savings thanks to the "Hybrid" function which enables the management of solutions combining an HP with a condensing boiler, according to weather conditions, heating needs or energy cost

The outdoor unit, which can be powered in single- or three-phase, comprises:
- A modulating Twin Rotary or Scroll compressor (DC Inverter technology);
- An evaporator made of a battery in copper pipes and aluminium vanes;

- One or two helicoidal variable speed fans for silent running;
- An anti-surge and output reserve cylinder;
- Electronic pressure release valves, a filter, an HP pressure switch;
- A start-up current limitation system.

The indoor module is available in 2 versions:
- **MIT-IN-2/E… iSystem:** for a back-up via the integrated electrical resistor that can be wired in either 2/6 kW single-phase or 4/12 kW three-phase;
- **MIT-IN-2/H…iSystem:** for hydraulic boiler back-up.

Both modules are fitted with:
- 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);
- A 40-litre low-loss header;
- A condenser formed by a stainless steel plate exchanger;
- A DIEMATIC iSystem control panel with a programmable electronic control system that operates according to outside temperature and interfaces with the outdoor unit. It can be fitted with various remote control systems available as options.

▌THE VARIOUS MODELS AVAILABLE

Heat pump		Back-up type		Output	
		Electrical by resistance	Hydraulic heating by boiler (or without additional heating)		
		2 or 6 kW single phase / **4 or 12 kW three phase**		**Heating kW (1)**	**Cooling kW (2)**
Reversible air/water heat pump for outside temperatures up to - 20°C (- 15°C for HPI 6 MR-2/…)		HPI 6 MR-2/E · -	HPI 6 MR-2/H	5.87	4.69
		HPI 8 MR-2/E · -	HPI 8 MR-2/H	8.26	7.9
		HPI 11 MR-2/E · HPI 11 TR-2/E	HPI 11 MR-2/H, HPI 11 TR-2/H	10.56	11.16
		HPI 16 MR-2/E · HPI 16 TR-2/E	HPI 16 MR-2/H, HPI 16 TR-2/H	14.19	14.46
		- · HPI 22 TR-2/E	HPI 22 TR-2/H	19.4	17.75
		- · HPI 27 TR-2/E	HPI 27 TR-2/H	24.4	22.2

(1) Water flow temperature: + 35°C, outside air temperature: + 7°C in accordance with EN 14511-2.
(2) Water flow temperature: + 18°C, outside air temperature: + 35°C in accordance with EN 14511-2.

TECHNICAL SPECIFICATIONS

▊ Technical specifications of the HPI EVOLUTION heat pumps

Model HPI EVOLUTION		6 MR-2	8 MR-2	11 MR-2	11 TR-2	16 MR-2	16 TR-2	22 TR-2	27 TR-2
Heating output +7°C/+35°C (1)	kW	5.87	8.26	10.56	10.56	14.19	14.19	19.4	24.4
Heating COP +7°C/+35°C (1)		4.18	4.27	4.18	4.18	4.22	4.15	3.94	3.90
Heating output +2°C/+35°C (1)	kW	3.87	5.93	10.19	10.19	11.38	11.38	12,10	14.7
Heating COP +2°C/+35°C (1)		3.26	3.12	3.2	3.2	3.22	3.22	3.10	3.10
Heating output -7°C/+35°C (1)	kW	4.02	5.6	8.09	8.09	10.32	10.32	11.07	13.8
Heating COP -7°C/+35 °C (1)		2.56	2.7	2.88	2.88	2.89	2.89	2.25	2.25
Absorbed electrical power +7°C/+35°C (1)	kWe	1.41	1.93	2.53	2.53	3.36	3.42	4.92	6.25
Seasonal space heating energy efficiency (6)	%	137	136	132	132	130	130	125	125
Seasonal space heating energy efficiency (with outdoor sensor) (7)	%	139	138	134	134	132	132	127	127
Nominal amperage	A	6.57	8.99	11.81	3.8	16.17	5.40	7.75	9.86
Cooling output +35°C/+18°C (2)	kW	4.69	7.9	11.16	11.16	14.46	14.46	17.65	22.2
Cooling COP (EER) +35°C/+18°C (2)		4.09	3.99	4.68	4.68	4.43	4.43	3.8	3.8
Cooling output +35°C/+7°C (5)	kW	3.13	4.98	7.43	7.43	7.19	7.19	9.3	11.7
Cooling COP (EER) +35°C/+7°C (5)		3.14	2.7	3.34	3.34	3.58	3.58	2.9	2.9
Absorbed electrical power +35°C/+18°C (2)	kWe	1.15	2.0	2.35	2.35	3.65	3.65	4.65	5.84
Nominal water flow rate Δt = 5 K	m³/h	1.04	1.47	1.88	1.88	2.67	2.67	3.8	4.6
Manometric height available at nominal flow rate Δt = 5 K	mbar	618	493	393	393	213	213	-	-
Nominal air flow rate	m³/h	2100	3000	6000	6000	6000	6000	8400	8400
Power supply voltage outdoor rate	V	230 V mono	230 V mono	230 V mono	400 V tri	230 V mono	400 V tri	400 V tri	400 V tri
Sound output, indoor unit/outdoor unit (4)	dB(A)	43.2/64.8	51/65.2	51/68.8	51/68.8	51/68.5	51/68.5	43.4/73.8	43.4/75
R 410A refrigerant	kg	2.1	3.2	4.6	4.6	4.6	4.6	7.1	7.7
Max. preloaded piping length	m	10	10	10	10	10	10	30	30
Weight empty outdoor/indoor MIT-IN-2	kg	42/72	75/72	118/72	118/72	130/72	130/72	135/72	141/72

(1) Heating mode: outside air temp./water flow temp., performance in accordance with EN 14511-2.
(2) Cooling mode: outside air temp. /water flow temp., performance in accordance with EN 14511-2.
(4) Test conducted in accordance with NF EN 12102, at + 7°C/+ 55°C.
(5) Cooling mode: outside air temp./water flow temp.
(6) Under average temperature, according to commission regulation (EU) n° 813/2013
(7) Under average temperature, according to commission regulation (EU) n° 811/2013

▊ Water flow temperature

HPI EVOLUTION heat pump models can produce hot water at up to 60°C. The graph illustrates the water temperatures produced for each model according to outside temperature.

HPI 6 MR-2
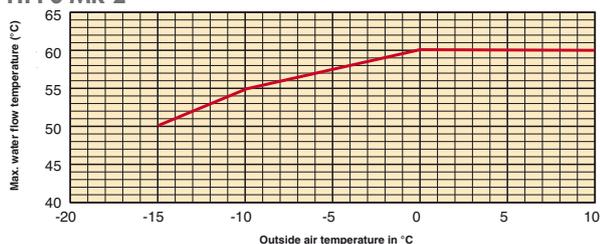
HPI 8 MR-2
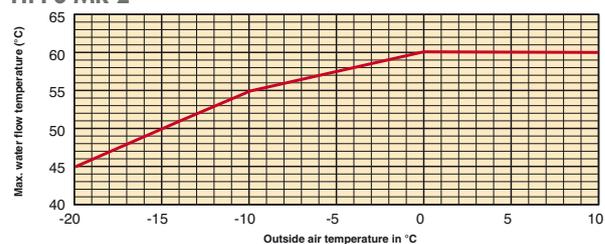
HPI 11 and 16 MR/TR-2
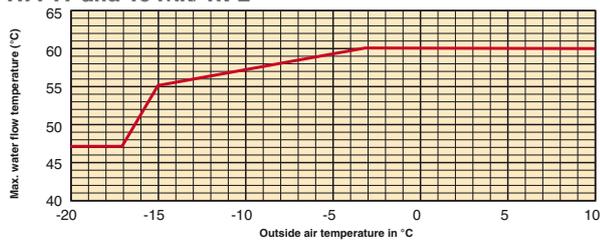
HPI 22 and 27 TR-2
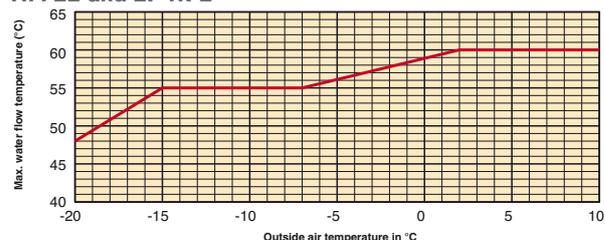
▊ Energy label

Each HP comes with its energy label, which incorporates various items of information: energy efficiency, annual energy consumption, manufacturer's name, noise level…
If you combine your HP, for instance, with a solar system, a DHW storage tank, a control device or another generator, you can improve your system's performance and generate the corresponding «system» label: **go to our website « www.dedietrich-heating.com »**

TECHNICAL SPECIFICATIONS

▮ DATA TABLES FOR SIZING

HPI 6 MR-2

		Water flow temperature (°C)														
		25		35		40		45		50		55		60	
		Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
Outside air temperature (°C)	-20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-15	-	-	3.46	1.97	3.32	1.71	3.18	1.46	3.02	1.22	-	-	-	-
	-10	4.40	2.70	4.22	2.40	4.11	2.08	4.00	1.77	3.81	1.53	3.61	1.28	-	-
	-7	4.40	3.29	4.40	2.72	4.40	2.35	4.40	1.98	4.40	1.76	4.40	1.54	-	-
	2	5.00	3.47	5.00	2.97	5.00	2.72	5.00	2.47	5.00	2.13	5.00	1.76	5.00	1.38
	7	6.00	5.51	6.00	4.42	6.00	3.87	6.00	3.32	6.00	2.84	6.00	2.32	6.00	1.77
	12	7.07	6.47	7.07	5.05	7.07	4.34	7.07	3.63	7.07	3.19	7.07	2.73	7.07	2.23
	15	7.54	7.04	7.54	5.46	7.54	4.68	7.54	3.89	7.54	3.43	7.54	2.92	7.54	2.38
	20	8.04	7.55	8.04	5.87	8.04	5.03	8.04	4.19	8.04	3.68	8.04	3.14	8.04	2.56

HPI 8 MR-2

		Water flow temperature (°C)														
		25		35		40		45		50		55		60	
		Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
Outside air temperature (°C)	-20	-	-	6.09	1.62	6.07	1.49	6.04	1.37	-	-	-	-	-	-
	-15	-	-	7.00	1.97	7.00	1.76	7.00	1.56	6.62	1.51	-	-	-	-
	-10	7.00	2.91	7.00	2.47	7.00	2.20	7.00	1.92	7.00	1.76	6.69	1.56	-	-
	-7	7.00	3.51	7.00	2.90	7.00	2.55	7.00	2.20	7.00	1.96	7.00	1.71	-	-
	2	7.50	3.97	7.50	3.40	7.50	3.11	7.50	2.83	7.50	2.37	7.14	1.91	6.57	1.65
	7	8.00	5.24	8.00	4.40	8.00	3.90	8.00	3.40	8.00	3.10	8.00	2.77	8.00	2.33
	12	9.00	6.16	9.00	5.26	9.00	4.54	9.00	3.83	9.00	3.42	9.00	2.97	9.00	2.50
	15	9.65	6.63	9.65	5.70	9.65	4.87	9.65	4.04	9.65	3.59	9.65	3.11	9.65	2.58
	20	10.15	7.03	10.15	6.03	10.15	5.14	10.15	4.25	10.15	3.76	10.15	3.25	10.15	2.68

These performance are not certified. They are only to be used for dimensioning of the HPI EVOLUTION heat pump.

TECHNICAL SPECIFICATIONS

HPI 11 MR/TR-2

Outside air temperature (°C)	Water flow temperature (°C)													
	25		35		40		45		50		55		60	
	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
-20	-	-	6.87	1.79	6.71	1.64	6.55	1.49	-	-	-	-	-	-
-15	-	-	8.17	2.16	8.07	1.93	7.96	1.69	7.87	1.52	7.77	1.34	-	-
-10	8.50	3.02	8.50	2.52	8.50	2.27	8.50	2.02	8.50	1.78	8.50	1.54	-	-
-7	8.50	3.45	8.50	2.89	8.50	2.55	8.50	2.22	8.50	1.94	8.50	1.65	-	-
2	10.00	3.86	10.00	3.32	10.00	2.99	10.00	2.66	10.00	2.28	10.00	1.89	9.36	1.49
7	11.20	4.89	11.20	4.45	11.20	3.94	11.20	3.42	11.20	3.02	11.20	2.60	11.20	2.13
12	12.85	5.60	12.85	5.16	12.85	4.54	12.85	3.92	12.85	3.48	12.85	2.99	12.85	2.48
15	13.62	6.00	13.62	5.49	13.62	4.83	13.62	4.18	13.62	3.71	13.62	3.21	13.62	2.65
20	14.67	6.62	14.67	5.96	14.67	5.27	14.67	4.57	14.67	4.06	14.67	3.52	14.67	3.10

HPI 16 MR/TR-2

Outside air temperature (°C)	Water flow temperature (°C)													
	25		35		40		45		50		55		60	
	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
-20	-	-	8.03	1.74	7.89	1.60	7.75	1.46	-	-	-	-	-	-
-15	-	-	9.55	2.10	9.49	1.88	9.42	1.66	9.33	1.50	9.23	1.32	-	-
-10	11.20	2.92	11.13	2.43	11.10	2.19	11.07	1.94	10.82	1.73	10.57	1.51	-	-
-7	11.20	3.38	11.20	2.85	11.20	2.49	11.20	2.14	11.20	1.92	11.20	1.68	-	-
2	12.00	3.76	12.00	3.24	12.00	2.88	12.00	2.52	12.00	2.20	12.00	1.86	11.15	1.54
7	16.00	4.58	16.00	4.10	16.00	3.67	16.00	3.23	15.89	2.86	15.21	2.52	14.53	2.13
12	18.39	5.38	18.39	4.74	18.39	4.19	18.39	3.64	18.18	3.25	17.43	2.87	16.68	2.44
15	19.44	5.66	19.44	5.01	19.44	4.43	19.44	3.84	19.19	3.43	18.42	3.02	17.65	2.58
20	20.62	5.95	20.62	5.31	20.62	4.71	20.62	4.10	20.47	3.66	19.73	3.25	18.99	2.80

HPI 22 TR-2

Outside air temperature (°C)	Water flow temperature (°C)													
	25		35		40		45		50		55		60	
	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
-20	-	-	11.24	2.25	10.15	1.99	9.42	1.75	-	-	-	-	-	-
-15	-	-	11.64	2.37	10.89	2.14	10.33	1.90	9.92	1.67	9.63	1.47	-	-
-10	14.18	3.00	12.61	2.61	12.04	2.36	11.60	2.11	11.22	1.87	10.88	1.64	-	-
-7	14.66	3.22	13.42	2.80	12.95	2.54	12.53	2.27	12.15	2.01	11.79	1.76	-	-
2	16.00	3.98	16.00	3.11	16.00	2.85	16.00	2.36	16.00	2.17	16.00	1.87	16.00	1.61
7	22.00	5.32	22.00	4.20	22.00	3.78	22.00	3.20	22.00	2.86	22.00	2.47	22.00	2.13
12	25.97	6.36	25.97	4.94	25.97	4.31	25.97	3.75	25.97	3.25	25.99	2.81	25.97	2.42
15	28.42	7.00	28.40	5.36	28.41	4.67	28.41	4.05	28.41	3.51	28.43	3.03	28.42	2.62
20	32.97	8.12	32.97	6.13	32.99	5.31	32.99	4.60	33.00	3.97	32.99	3.44	32.98	2.97

HPI 27 TR-2

Outside air temperature (°C)	Water flow temperature (°C)													
	25		35		40		45		50		55		60	
	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP	Output kW	COP
-20	-	-	13.09	2.19	11.78	1.94	10.93	1.70	-	-	-	-	-	-
-15	-	-	13.45	2.30	12.55	2.07	11.93	1.84	11.50	1.62	11.22	1.43	-	-
-10	15.40	2.92	14.46	2.50	13.82	2.27	13.32	2.03	12.93	1.80	12.60	1.58	-	-
-7	16.28	3.10	15.32	2.67	14.78	2.42	14.34	2.17	13.96	1.92	13.60	1.69	-	-
2	20.00	3.39	20.00	2.80	20.00	2.51	20.00	2.20	20.00	1.96	20.00	1.73	19.60	1.53
7	25.00	5.02	25.00	4.00	25.00	3.57	25.00	3.10	25.00	2.80	25.00	2.46	24.90	2.14
12	29.20	5.95	29.20	4.67	29.21	4.11	29.20	3.60	29.20	3.15	29.22	2.75	29.22	2.40
15	31.84	6.52	31.84	5.06	31.85	4.44	31.84	3.88	31.85	3.39	31.84	2.96	31.86	2.58
20	36.76	7.53	36.75	5.75	36.76	5.02	36.77	4.37	36.79	3.81	36.78	3.33	36.78	2.91

These performance are not certified. They are only to be used for dimensioning of the HPI EVOLUTION heat pump.

TECHNICAL SPECIFICATIONS

## MAIN DIMENSIONS (MM AND INCHES)

Outdoor unit
HPI 6 MR-2
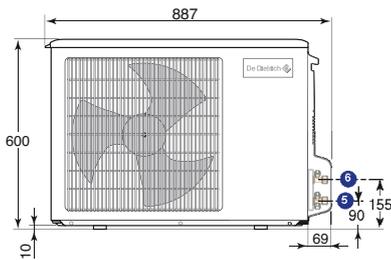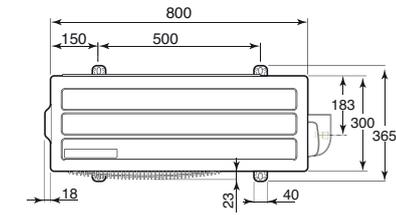
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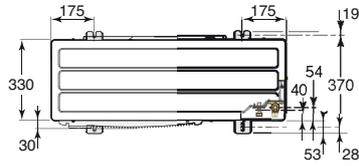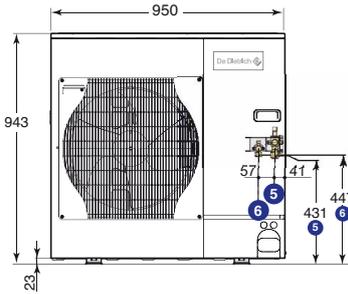
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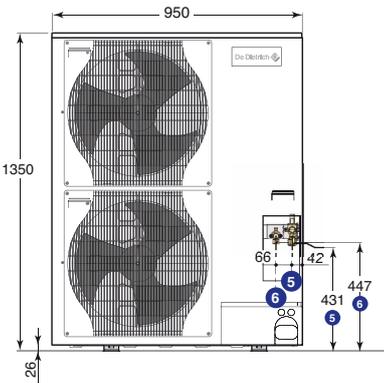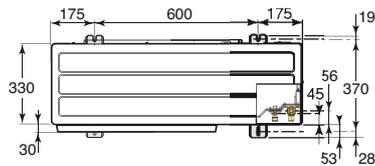
HPI 22 and 27 TR-2
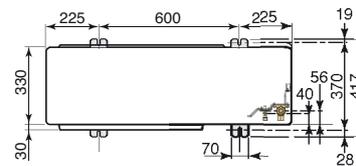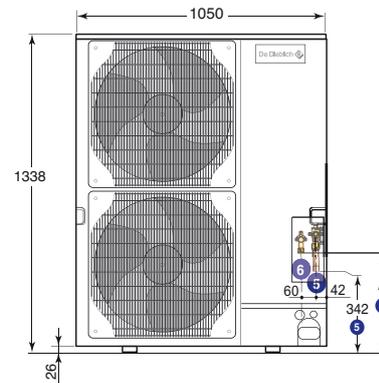
| HPI	22 TR-2	27 TR-2
A (mm)	450	424

The indoor unit MIT-IN-2 iSystem
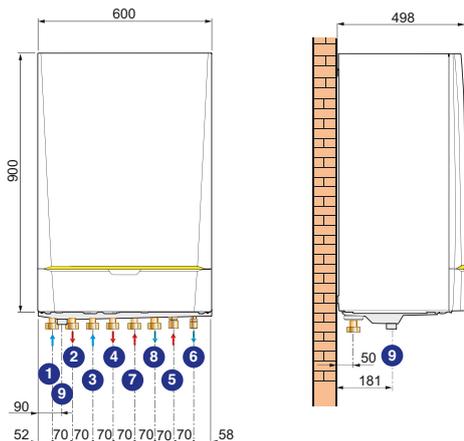
① ② Return/Flow 3-way valve circuit Ø G 1" (with HK21 package: Internal 3-way valve set or with HK 22 package: adaptation kit for external 3-way valve)
③ Direct circuit return Ø G 1"
④ Direct circuit flow Ø G 1"
⑤ Gas refrigeration connection:
  - HPI 6 MR-2: 1/2" flare (adapter connection 1/2" to 5/8" for connection to MIT-IN-2 delivered)
  - HPI 8 to 16 MR/TR-2: 5/8" flare
  - HPI 22 and 27 TR-2: 3/4" flare + adapter connection 3/4" to 1" braze-on
  - MIT-IN-2 6 and 8 kW and 11/16 kW : 5/8 " flare
  - MIT-IN-2 22/27 kW: 3/4" flare + adapter connection 3/4" to 1" braze-on,
⑥ Liquid refrigeration connection:
  - HPI 6 MR-2: 1/4"flare (adapter connection 1/4" to 3/8" for connection to MIT-IN-2 delivered)
  - HPI 8 to 16 MR/TR-2: 3/8" flare
  - HPI 22 TR-2: 3/8" flare + adapter connection 3/8" to 1/2"
  - HPI 27 TR-2: 1/2" flare
  - MIT-IN-2 6 and 8 kW and 11/16 kW: 3/8" flare
  - MIT-IN-2 22/27 kW: 1/2" flare
⑦ Connection to boiler flow Ø G 1" (MIT-IN-2/H only)
⑧ Connection to boiler return Ø G 1" (MIT-IN-2/H only)
⑨ Drain Ø 34 mm ext. (for PVC pipe Ø 40 mm)

TECHNICAL SPECIFICATIONS

▍COMPONENTS

MIT-IN-2 iSystem

- Automatic air vent
- 40-litre decoupling storage tank
- High energy efficiency primary circulating pump
- 10 litre expansion vessel
- Condenser in the form of a stainless steel plate exchanger
- Pressure gauge
- Heating safety valve 3 bar
- Flowmeter
- Interface PCB: electronic boards accessible under the cover
- Filter with isolating valve
- High energy efficiency heating circulating pump for direct circuit
- Angled DIEMATIC iSystem control panel: electronic boards accessible under the hinge-mounted cover

HPI_QO012

Connection terminal block interface

Location for the «PCB for mixing valve» package AD249 (optional)

- Connection of the pump sensors
- Connection of the first circuit with mixing valve
- Connection of a direct circuit

HPI_QO015

Control panel connection terminal block

- Electricity supply connection for the MIT-IN-2 module
- Heating/DHW reversal valve connection

HPI_QO013

Model shown: MIT-IN-2 iSystem/H

NB: The electrical connection for auxiliary heating on MIT-IN-2 iSystem/E models is made using a specific terminal block

▍OUTDOOR UNIT

HPI 8 MR-2/…

HPI_QO020

HPI 6 MR-2/…

- Electronic PCB
- Evaporator
- 4-way valve for cycle inversion
- Stop valve on the refrigeration connections with indoor unit
- Ventilator
- «Inverter» compressor with power receiver

PAC_QO12I

HPI 11 and 16 MR/TR-2…

HPI_QO02I
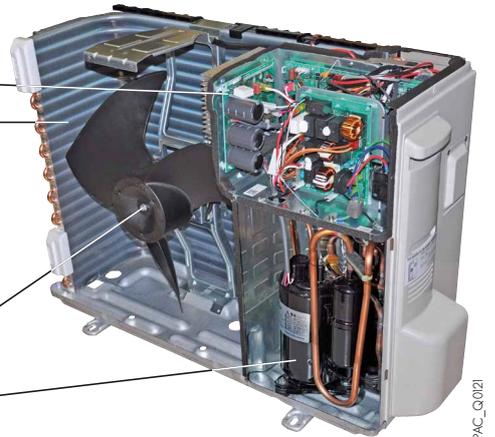
HPI 22 and 27 TR-2/…

- Electronic PCB
- Evaporator
- Ventilator
- 4-way valve for cycle inversion
- Suction accumulator
- Stop valve on the refrigeration connections with indoor unit
- «Inverter» compressor with power receiver

HPI_QO014

THE CONTROL PANEL FITTED TO THE MIT-IN-2 iSystem

▍The DIEMATIC iSystem control panel

The DIEMATIC iSystem control panel is a very advanced control panel, with new control ergonomics which includes electronic programmable regulation as standard to modulate the temperature in decoupling cylinder from MIT-IN-2 by acting on the thermodynamic module and the HP circulating pump (and the auxiliary heating if in use) according to the outside temperature or according to the room temperature if a remote control CDI D. iSystem, CDR D. iSystem is connected (option).

As standard, DIEMATIC iSystem is capable of automatically operating a central heating installation with a direct circuit without mixing valve and 1 circuit with mixing valve (the flow sensor - package AD199 - must be ordered separately, however).
By connecting another «PCB + sensor for 1 valve circuit» option AD249), it is therefore possible to control up to 3 circuits in total and each of these circuits can be fitted with a CDI or CDR D.iSystem remote control (optional).

Connection of a domestic hot water sensor makes it possible to programme and regulate a DHW circuit (package AD212 - optional).
This control system has been specifically developed to enable **optimum management of systems combining various heating generators**. It allows the installer to set the parameters for the entire heating installation regardless of its degree of complexity.
In the context of larger installations, it is also possible to connect 2 and as many as 10 heat pumps HPI in cascade (or HPI heat pumps + boilers with DIEMATIC iSystem control panel).
Room temperature optimization in cooling mode is possible thanks to the installation of a remote control with room temperature sensor on an underfloor heating/cooling system (see options opposite).

Temperature setting key (heating, DHW, swimming pool)

Selection key for the heating, Summer and Winter DHW and Auto operating modes depending on the programme, Day, Night, Holidays, Manual

Forced load key for DHW production

Key:
- to access the various menus or parameters,
- for programming, reset, which vary as selections are made

Rotary setting button and push button:
- by turning it, you can scroll down the menu or modify a value
- by pressing it, you can confirm a selection or value modification

Large LCD display

On/Off switch

AGC_Q0008

▍DIEMATIC iSystem CONTROL PANEL OPTIONS

Domestic hot water sensor (length 5m) - Package AD212

This is used for regulating the DHW temperature as a priority and programming of domestic hot water

production with an independent calorifier.

8518Q022

Outlet sensor downstream of the valve (length 2.5m) - Package AD199

This sensor is required to connect the first circuit with mixing valve to an HP fitted with a DIEMATIC-iSystem control panel. If using the «internal 3-way valve kit» package HK21, it is not necessary to

order this sensor, which is included as standard in package HK21.

GT220_Q0002

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 iSystem panel connected by pin connections. DIEMATIC iSystem

can receive 1 "PCB + sensor" option, enabling it to control 1 additional mixing valve.

MCA_Q0013

Underfloor heating connection kit - Package HA249

This cable harness is inserted into the heating pump and includes the wires for connecting a safety

thermostat for underfloor heating.

HA249_Q0001

▌DIEMATIC iSystem CONTROL PANEL OPTIONS

AD285/284

AD252

CALENTA_Q0005

8666GQ172A

CDI D. iSystem interactive remote control - Package AD285
CDR D. iSystem interactive "radio" remote control (**without transmitter/receiver radio**) **-** Package AD284
Radio boiler module DIEMATIC iSystem (**transmitter/receiver**) **-** Package AD252

These are used to override all instructions from the DIEMATIC iSystem control panel from the room in which they are installed. In addition, they enable the self-adaptability of the heating regime for the circuit concerned (one CDI D.iSystem or CDR D.iSystem per circuit).

In the case of the CDR D.iSystem, the data are transmitted by radio waves from the place where the CDR D.iSystem is installed to the transmitter/receiver box (package AD252) placed close to the boiler.

8575GQ037

Simplified remote control with room sensor - Package FM52

This is used from the room in which it is installed to override certain instructions from the DIEMATIC iSystem panel:
- room temperature program and instruction override. It is also used to enable the self-

adaptability of the heating curve for the circuit concerned (1 remote control per circuit).

8227GQ020

BUS connection cable (**length 12 m**) **-** Package AD134

The BUS cable is used to make the connection between 2 heat pumps HPI fitted with the DIEMATIC iSystem control panel in a cascade

installation, as well as the connection of a DIEMATIC VM iSystem control unit or a telemonitoring network transmitter.

MCA_Q0012

Sensor for storage tank (**length 5m**) **-** Package AD250

Includes a sensor for managing a storage tank with an HP fitted with a DIEMATIC iSystem control panel.

AD251

AD252

8575GQ034

8666GQ172A

Radio outside temperature sensor - Package AD251
Boiler radio module (**radio transmitter**) **-** Package AD252

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 iSystem control panel would be too complex.
If this sensor is used:

- With a wire connection remote control (AD285 or FM52), it is necessary to order the "Boiler radio module"
- With a radio remote control (AD284), already combined with a "boiler radio module" (AD252), control of a second module is not necessary.

HPI_Q0016

Energy metering kit - Package HK29

This kit comprises an electronic PCB and 2 temperature sensors which, once installed, can meter the energy used. The electronic PCB can also

accommodate additional meters (a pulse meter, for example). A pulse meter must be ordered separately.

HPI_Q0017

Condensation detector kit - Package HK27

Sensor measuring humidity, it has to be installed on the collector of the underfloor cooling. It cuts the

heat pump when humidity is to high to prevent the appearance of condensation on the underfloor.

HPI_F0046
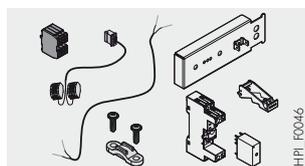
Silencer for outside unit - Package EH559

After installation allows reducing the sound level from outdoor unit.

ADDITIONAL CONTROL SYSTEM FUNCTIONS

▍THE "ENERGY METERING" FUNCTION

The control system fitted to the indoor modules comes with an "energy metering" function. Using parameters like the performances of the system(s) connected, (weather conditions function), the nature of the energies used, the control system meters each of the energies used for each operating mode (DHW, heating, cooling). This metering can be displayed in plain text on the control system display. This means placing a separate order for the optional "energy metering" kit, package **HK29**.

▍"HYBRID" SOLUTION

The hybrid function integrated in the control system for the indoor module is used to manage solutions that combine an HP (using a proportion of renewable energy) and a condensing boiler (oil or gas), operating on their own or simultaneously depending on weather conditions and heating needs.

The objective of the hybrid function is to meet the needs of the installation while always consuming the most efficient form of energy, whether that is natural gas, oil or electricity, i.e.
- Either the cheapest energy (oil, gas or electricity) for optimized heating costs;
- Or the one that uses the least primary energy as part of an eco-friendly approach.

The values that correspond to "energy prices" or "primary energy coefficient" can be modified within the control system parameters.

The mode of management may also generate other advantages:
- Reduction of the HP's thermal output to lower electricity charges (no extra cost for an electrical back-up system)
- 100% cover of heating and DHW needs by the HP + boiler system
- In existing housing, energy savings when compared with running a boiler only, reduction of CO_2 emissions from the current boiler, connection possible without having to replace any existing heat emitters or resort. to very high temperature.

Primary energy

To heat and light our homes and produce domestic hot water, we consume energy (oil, wood, gas, electricity). This final energy used by the consumer is not always available naturally (e.g. electricity) and sometimes requires conversion. Primary energy consumption includes the energy necessary to achieve that conversion. Primary energy is quantified by "the primary energy coefficient" which expresses the quantity of primary energy necessary to obtain one unit of energy. For electricity, the coefficient in Europe is 2.5 which means that we have to consume 2.5 kWh of primary energy to obtain 1 kWh of electrical energy. For natural gas and oil, this coefficient is 1 (gas and oil are primary energies).

Performance of a hybrid solution

The graph below shows a comparison of performances (COP) for heating and DHW production in primary energy for various solutions:
- The hybrid solution: combination of an HP and a condensing boiler (renewable energy, electric energy and gas or oil energy);

- The solution with an HP only (renewable energy with electrical back-up);
- The solution with a condensing boiler only (oil or gas energy).

For an outside air temperature lower than the switch-over point, the hybrid solution helps to improve system performances (COP on primary energy) compared with an HP used on its own. Likewise for an air temperature higher than the switch-over point, the hybrid solution performs more efficiently than a condensing boiler used on its own.

Primary energy performance comparisons of an electric HP, a condensing boiler and a hybrid solution


Source CETIAT
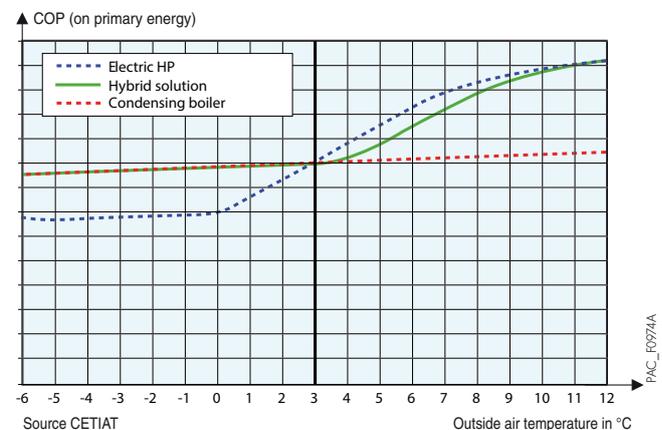
ADDITIONAL CONTROL SYSTEM FUNCTIONS

EXAMPLE OF HYBRID SOLUTION

Performance of a hybrid solution according to the primary energy coefficient

The graph illustrates the operating principle of the hybrid solution according to the outside air temperature and the consumption of primary energy.
When the HP's COP > 2.5 and Tair > Teq the HP only will be called upon. For Toff < Tair < Teq, the control system manages the HP used in combination with the boiler. When the HP's COP < 2.5 the control system only manages the boiler.
For each configuration, it is therefore the control system that decides which generator or combination of generators will be used to meet heating and DHW needs.

This principle of management based on the primary energy is especially true in the new housing.
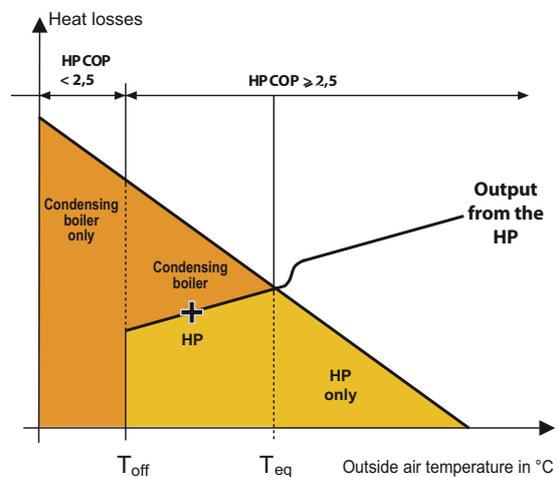
PAC_F0300

Example of a hybrid solution according to energy costs

The graph illustrates the operating principle of the hybrid solution according to outside air temperature and energy costs.

Calculation of the energy price ratio R (France):

$$R = \frac{\text{price of electricity (€/kWh)}}{\text{price of gas (€/kWh)}} = 0.15/0.07 = 2.1$$

(in this example, the energy prices factor in the annual subscription)
It is the R coefficient (calculated energy price ratio) and the outside air temperature which are used as parameters by the control system to define the various operating modes. In the example opposite:
- The HP is HPI 11 MR-2 in combination with a condensing natural gas boiler
- The generators are installed in an existing house of 130 m^2,

When the HP's COP > 2.1 and T air > +2°C, the control system only manages the HP to meet heating and DHW production needs.
When the HP's COP > 2.1 and -5°C < T air < +2°C, the control system manages the HP in combination with the boiler. When the HP's COP < 2.1 the control system only manages the boiler.
For each configuration, it is therefore the control system which decides which generator or combination of generators will be used to meet needs.
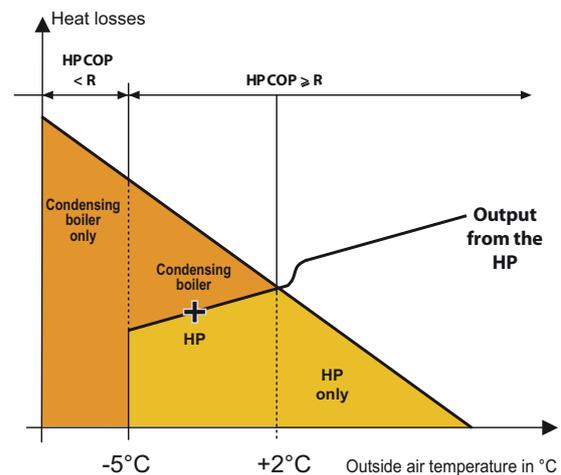
PAC_F0301

OPTIONAL EQUIPMENT

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.

List of packages required by the type of installation to achieve

	1 direct circuit (radiator)	1 direct underfloor heating circuit	1 direct circuit + 1 circuit with 3-way mixing valve	2 circuits with 3-way mixing valve	3 circuits, 2 of them with 3-way mixing valve
Type of installation to be constructed					
Hydraulic options needed	–	–	HK21	EA140 + 2 x EA144 (1)	HK22 + EA140 + 2 x EA144 (1)
Control system options needed	–	HA249	-	AD199 + AD249	AD199 + AD249

(1) Connecting pipes not be delivered, to be constructed by the fitter.

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-IN-2, includes the sensor.

Specifications of the pump in the 3-way valve kit

Pressure available (kPa) / Manometric height (mH$_2$O)

Flow rate (m³/h)

······· Constant pressure

– – – Proportional pressure

▨ Pump on "AutoAdapt" position
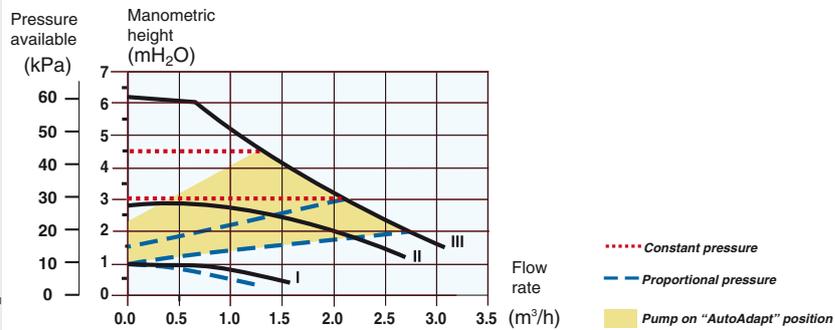
Adapter kit for external 3-way valve - Package HK22

Allows the connection of a circuit with mixing valve outside the MIT-IN-2.

OPTIONAL EQUIPMENT

▌Hydraulic modules
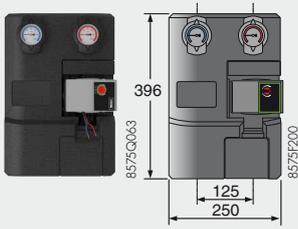
EA143

Hydraulic module for 1 direct circuit - Package EA143 (with a high energy efficiency pump)

This module is fully assembled, insulated and tested, fitted with an high performance energy pump, a differential safety valve, thermometers built into the gate valves and a non return valve built into the outlet valve.
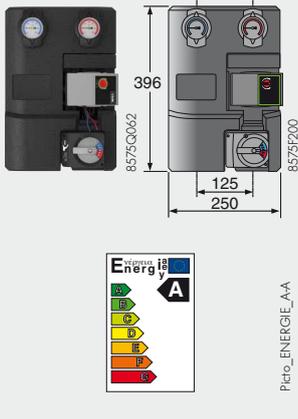
**Hydraulic module for 1 circuit with valve -** Package EA144 (with a high energy efficiency pump)

EA144

This module is fully assembled, insulated and tested, fitted with an high performance energy pump, a motorized 3-way mixing valve, a differential safety valve, thermometers built into the gate valves and a non return valve built into the outlet valve.

Technical specifications of the pump WILO-YONOS PARA RS 25/6 fitted to the hydraulic modules EA143 and EA144

Manometric height (mH2O) — ΔP variable — (kPa) — Flow rate (m³/h)

Manometric height (mH2O) — ΔP constant — (kPa) — Flow rate (m³/h)
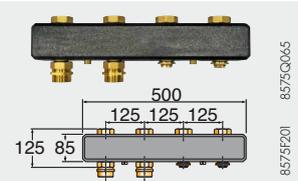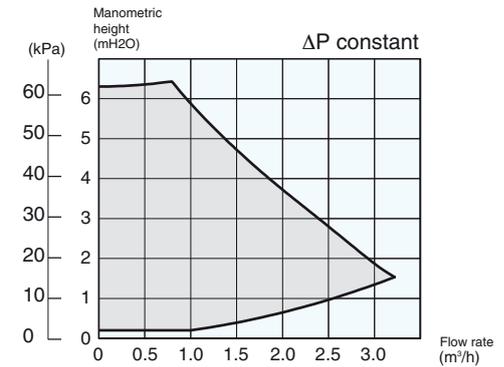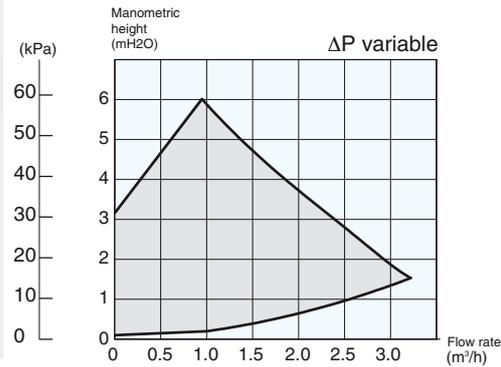
Collector for 2 or 3 circuits - Package EA140

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

Wall-hung console for a hydraulic module - Package EA142

This console is used to fix a hydraulic module for direct circuit or circuit with valve to the wall.

Is used when one of the two hydraulic modules is mounted on its own. It incorporates two brass male/female connectors.

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).

Wall bracket for collector - Package EA141

This console is used to fix the collector EA140 on the wall.

OPTIONAL EQUIPMENT

▌ INSULATION KITS FOR AIR CONDITIONING USING FAN COIL UNITS

Insulation set in air-conditioning mode for MIT-IN-2 iSystem - Package HK24

Insulation set in air-conditioning mode for internal 3-way valve kit (HK21) - Package HK25

▌ OTHER ACCESSORIES

Heating/DHW reversal valve - Package HK23

This kit includes the motorised reversal valve with connector for connection to the DIEMATIC iSystem control panel and a connector. It enables connection of the MIT-IN-2 to an independent DHW tank (BPB/BLC… for example).

DHW calorifier BPB 150 to 500 - Package EC609 to 613 (in combination with package HK23)
BEPC 300 calorifier - Package ER615

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

An example of an installation combining a heat pump and a BPB DHW tank is shown on page 20.

	Capacity (l)	HPI 6 MR-2	HPI 8 MR-2	HPI 11 MR-2/TR-2	HPI 16 MR-2/TR-2	HPI 22 TR-2	HPI 27 TR-2
BPB 150	150	●	●	●	○	○	○
BPB 200	200	●	●	●	●	○	○
BPB 300	300	○	○	●	●	●	●
BPB 400	400	○	○	○	○	●	●
BPB 500	500	○	○	○	○	●	●
BEPC 300	300	●	●	●	●	●	●

● recommended association   ○ not recommended association

HP/DHW tank hydraulic connection pack - Package EH149

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

Wall mounting bracket + anti-vibration studs for HPI 6 and 8 MR-2 - Package EH95
Wall mounting bracket + anti-vibration studs for HPI 11/16 MR/TR-2 and 22/27 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.

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.

Floor support - 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.

OPTIONAL EQUIPMENT

Refrigeration connection pipes 5/8" - 3/8"
length 5 m - Package EH114
length 10 m - Package EH115
length 20 m - Package EH116
Insulated high quality copper pipe to limit heat loss and condensation.

Refrigeration connection pipes 1/2" - 1/4"
length 10 m - Package EH142

Electrical heater for condensate drain and condensate tray - Package EH113
This kit is used to prevent condensates freezing.

Buffer tank B 80 T - Package EH85

The B 80 T tank is use 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.

E.g.: 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

▌ SIZING AIR/WATER HEAT PUMPS

The HP is sized in relation to the heat losses calculation. The heat losses are calculated according to the NF EN 12831 Standard and the national addendum NF P 52-612/CN.
The losses are calculated for the rooms heated by the HP and are broken down into:
- Surface losses through walls and partitions;
- Losses per unit length in the connecting spaces between the various surfaces;
- Losses through air renewal and infiltration.

Air/Water heat pumps alone cannot compensate for the heat loss from a home as their output diminishes when the outside temperature falls and they shut down altogether at the so-called shutdown temperature. This temperature is -20°C (-15°C for HPI 6 kW) for our HPI EVOLUTION range. Electric or hydraulic boiler back-up is then necessary. The balance point temperature corresponds to the outside temperature at which the output of the heat pump is equal to the heat losses.

**For optimum sizing, we recommend observing the following rules:**
- **80% of heat losses ≤ HP output at To ≤ 100% of heat losses**
  where To = Tbasis when Tstop < Tbasis
    To = shutdown if the opposite is the case
- **HP output at Tbasis + back-up output = 120% of heat losses**

By following these sizing rules, we obtain, depending on the case, rates of cover ranging from approx. 80% to more than 90%. For more detailed calculations, you can use our DiemaPAC calculation tool available on the pro page DiemaTOOLS: www.dedietrich-heating.com
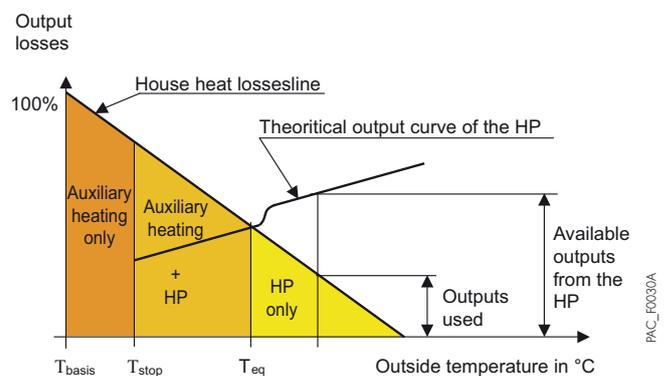
Tbasis = basis outside temperature,
Teq = balance point temperature,
Tstop = shutdown temperature

TABLE FOR SELECTING MODELS

⇨ Single phase HPI… MR-2

Heat losses in kW	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
with Tbasis in °C																		
0														16 MR + 7			16 MR + 11	16 MR + 13
-1															16 MR + 9	16 MR + 10		
-2			-	6 MR + 4				11 MR + 4	11 MR + 6	16 MR + 6								
-3							11 MR + 4											
-4		-				8 MR + 4			11 MR + 6	16 MR + 6		16 MR + 8					
-5		6 MR + 2	8 MR + 2													16 MR + 12	
-6	-				8 MR + 4								16 MR + 7	16 MR + 9	16 MR + 10	16 MR + 11	16 MR + 14
-7		6 MR + 4					11 MR + 6		16 MR + 4	16 MR + 6		16 MR + 8					
-8		8 MR									16 MR + 7					16 MR + 13	
-9																	
-10	6MR+2	8 MR + 2			11 MR + 6	16 MR + 4			16 MR + 9	16 MR + 10	16 MR + 11	16 MR + 12	16 MR + 15	
-11	6MR+4			11 MR + 4		16 MR + 6	16 MR + 7		16 MR + 8				16 MR + 14	16 MR + 16
-12	6MR+6	8 MR+2	8 MR + 4							16 MR + 10		16 MR + 11	16 MR + 12	16 MR + 13	16 MR + 15	16 MR + 16
-13					11 MR + 4	16 MR + 6	16 MR + 7	16 MR + 8	16 MR + 9		16 MR + 12	16 MR + 13	16 MR + 14	16 MR + 16	16 MR + 17
-14					16 MR + 4		16 MR + 8	16 MR + 9	16 MR + 10	16 MR + 11	16 MR + 13	16 MR + 14	16 MR + 15	16 MR + 17	16 MR + 18

+..: minimum electrical or hydraulic back-up required in kW   ▨ with hydraulic back-up only

⇨ Three phase HPI… TR-2

Heat losses in kW	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
with Tbasis in °C																							
0											11 TR + 6				22 TR + 6		22 TR + 6	22 TR + 6	22 TR + 9	22 TR + 12	22 TR + 12		
-1										11 TR + 6			16 TR + 6	16 TR + 9				22 TR + 9			27 TR + 9		27 TR + 12
-2							-									22 TR + 9			27 TR + 9	27 TR + 9	27 TR + 12	27 TR + 12	
-3						-		11 TR + 3	11 TR + 6		11 TR + 6	16 TR + 6			22 TR + 6		27 TR + 6	27 TR + 9		27 TR + 12			
-4																							
-5																	27 TR + 6						
-6					-											22 TR + 9							
-7				-			11 TR + 3			16 TR + 6		16 TR + 9	22 TR + 6	22 TR + 9		27 TR + 9							
-8																							
-9												16 TR + 9		22 TR + 6	27 TR + 6								
-10	-	-	-	-		11 TR + 3					16 TR + 6		22 TR + 6	22 TR + 9									
-11															27 TR + 9								
-12					11 TR + 3				16 TR + 6			22 TR + 6	22 TR + 9	27 TR + 9									
-13						11 TR + 6												-				.	.
-14								16 TR + 6		16 TR + 9	22 TR + 9		27 TR + 6	27 TR + 9		-		-					
-15					11 TR + 3					16 TR + 9	22 TR + 9	27 TR + 9											
-16						11 TR + 6	16 TR + 6						-	-									
-17							22 TR + 6	27 TR + 9														
-18								27 TR + 9															

+..: minimum electrical or hydraulic back-up required in kW   ▨ with hydraulic back-up only

Comments:
- the losses must be precisely calculated without oversizing coefficient +2, +4… corresponds to the minimum electrical or hydraulic back-up required in kW,
- the electrical back-up is 9 kW max. and requires a three phase power supply (6 kW max. in single phase),

- in installations with boiler back-up, it is possible to select a slightly undersized single phase heat pump instead of a three phase heat pump, on the understanding that it is tricky with renovation projects to change a single phase into a three phase junction box,
- **beneath the outside temperature from which the heat pump stops (- 15°C or - 20°C) only the additional back-ups provide heat.**

INFORMATION REQUIRED FOR INSTALLATION

HPI EVOLUTION HEAT PUMPS INSTALLATION

- The outdoor units for HPI EVOLUTION heat pumps should be installed close to the house, on a terrace, on the façade 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 emplacement 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).
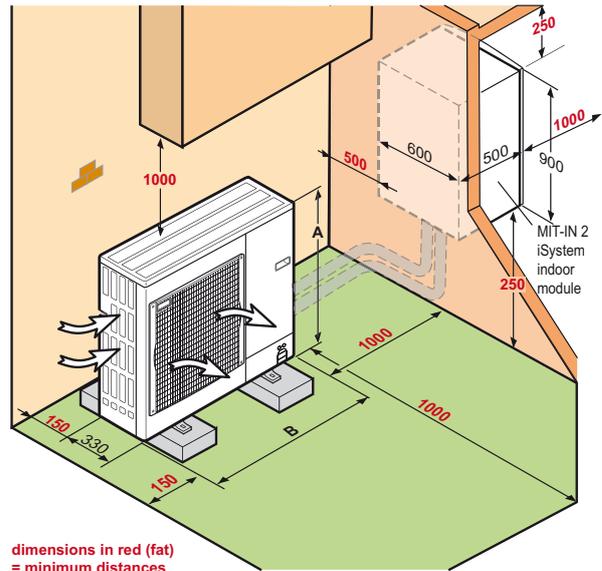
dimensions in red (fat) = minimum distances

HPI	6 MR-2	8 MR-2	11/16 MR-2/TR-2	22/27 TR-2
A (mm)	600	943	1350	1338
B (mm)	800	950	950	1050

MINIMUM INSTALLATION DISTANCES TO BE OBSERVED (MM)
⇨ dimensions without brackets: HPI 6/8 MR-2…
⇨ dimensions with brackets: HPI 11/16 MR/TR-2 and 22/27 TR-2…

17
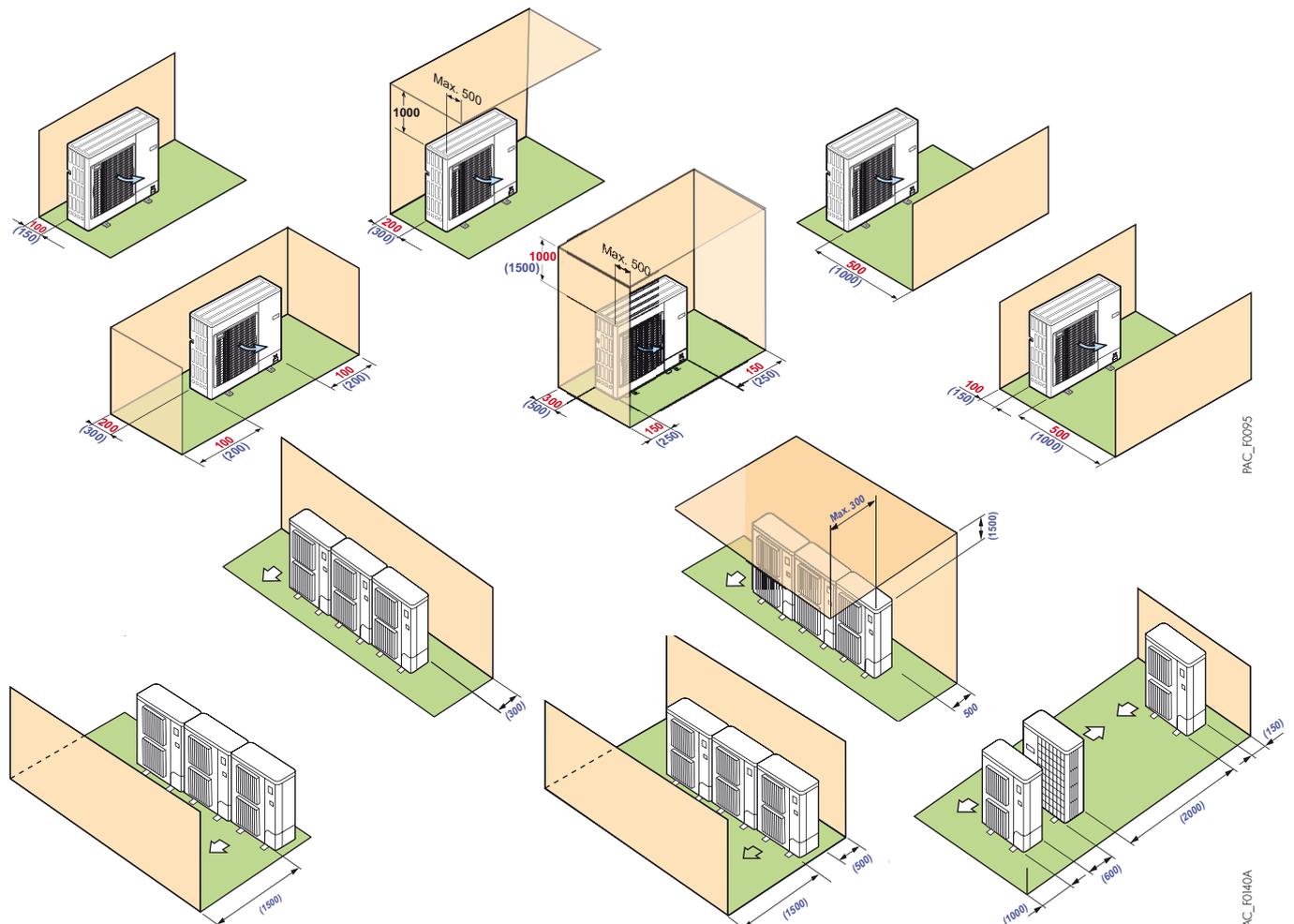
INFORMATION REQUIRED FOR INSTALLATION

▌MAXIMUM DISTANCES AND QUANTITY OF REFRIGERANT FLUID TO BE LOADED

Maximum connection distance (see below)

HPI	6 MR-2	8 MR-2	11 MR/TR-2, 16 MR/TR-2	22 TR-2 or		27 TR-2 or	
Ø cooling gas pipe	1/2"	5/8"	5/8"	3/4"	1"	3/4"	1"
Ø cooling fluid pipe	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"
L (m)	40	40	75	20	70	20	70
B (m)	10	30	30	30	30	30	30

L: maximum connection distance between outdoor and indoor unit.
B: maximum height difference permitted between the indoor module and the outdoor unit

Pre-loaded quantity of refrigerant

No additional load of refrigerant fluid is necessary if the length of the refrigerant pipe is less than 10 m. For lengths in excess of 10 m, the following additional loading is necessary:

Model	Additional load of refrigerant fluid (in 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
HPI 6	0.2	0.4	0.6	(1)	(1)	(1)
HPI 8	0.15	0.3	0.6	(1)	(1)	(1)
HPI 11 y 16	0.2	0.4	1.0	1.6	2.2	2.8
HPI 22* (with 3/4" gas tube)	(2)	(1)	(1)	(1)	(1)	(1)
HPI 22 (with 1" gas tube)	(2)	(2)	0.9	1.8	2.7	3.6
HPI 27* (with 3/4" gas tube)	(2)	(1)	(1)	(1)	(1)	(1)
HPI 27 (with 1" gas tube)	(2)	(2)	1.2	2.4	3.6	4.8

B: max height difference
L: maximum connection distance
C: 15 elbows max.

① Outdoor unit
② Indoor unit MIT-IN-2

* 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 %
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
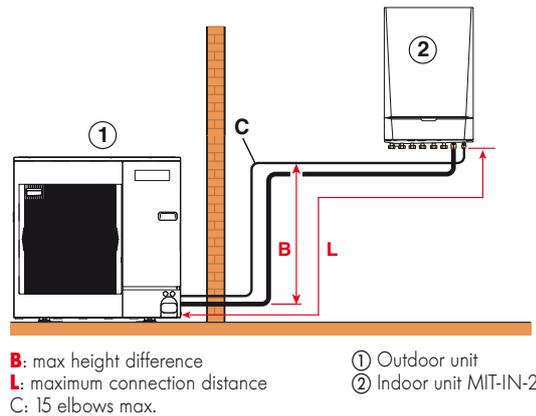
▌ACOUSTIC INTEGRATION OF **HPI EVOLUTION** HEAT PUMPS

Definitions

The acoustic performances of the outdoor units are defined by the following two figures:
- **The acoustic power Lw expressed in dB(A):** this describes the noise emission capacity of the source independently of its environment. It is used to compare appliances with each other.

- **The acoustic pressure Lp expressed in dB(A):** this is the extent of the noise perceived by the human ear. It depends on parameters like the distance from the source and the size and nature of the walls of the premises. The regulations are based on this value.

Recommendations on the acoustic integration of the outdoor unit
- Do not place it close to sleeping areas;
- Avoid placing it near a terrace, do not install the module opposite a wall. The increase in noise level due to installation configuration is shown in the diagrams below:
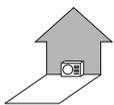
The module placed against a wall: +3 dB(A)
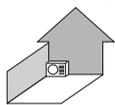
The module placed in a corner: +6 dB(A)
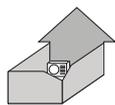
The module placed in an interior courtyard: +9 dB(A)

- The various layouts shown below should be avoided:

The ventilation directed towards the neighbouring property

The module positioned on the property boundary

The module placed under a window

- In order to limit noise pollution and the transmission of vibrations, we recommend:
  • Installing the outdoor module on a metal or inertia base frame. The mass of this base frame must be a minimum of twice the mass of the module and it must be independent of the building. In all cases, anti-vibration studs must be mounted to reduce the transmission of vibrations.
  • For the refrigerant connection wall feed through, the use of suitable sleeves;
  • For the fastenings, the use of flexible, anti-vibration materials;
  • The fitting of vibration reduction devices such as loops, lyres and elbows on refrigerant connections.
- We also recommend installing a noise reduction device in the form of:
  • A wall absorbent to be fitted to the wall behind the module;
  • An acoustic screen: the surface area of the screen must be greater than the dimensions of the outdoor module and must be positioned as close as possible to it while allowing air to circulate freely. The screen must be made of a suitable material like acoustic bricks, concrete blocks coated with absorbent materials. It is also possible to use natural screens like mounds of earth.

INFORMATION REQUIRED FOR INSTALLATION

REFRIGERATION CONNECTION

The commissioning of HPI EVOLUTION heat pumps includes operations on the refrigeration circuit.
Appliances must be installed, commissioned, maintained and repaired by qualified, authorised personnel, pursuant to the requirements of prevailing directives, laws and regulations and in accordance with the codes of practice of the profession.

ELECTRICAL CONNECTION

The electrical installation of heat pumps must be done in accordance with the local and national Codes of Practice and pursuant to prevailing standards, decrees and subsequent texts. 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.

Recommended cable cross-sections and circuit breakers to be installed

Heat pump		Type ...phase	Output electrical absorbed at + 7/35°C kW	Nominal intensity at + 7/35°C A	Maximal intensity at + 7/35°C A	Outdoor unit Power supply outdoor unit SC (mm²)	Curve D* DJ	Indoor unit Power supply MIT-IN-2 SC (mm²)	Curve C DJ	Cable BUS SC (mm²)
HPI	6 MR-2	Mono	1.41	6.57	13	3 x 2.5	16 A	3 x 1.5	10 A	3 x 1.5
	8 MR-2	Mono	1.93	8.99	19	3 x 4	25 A	3 x 1.5	10 A	3 x 1.5
	11 MR-2	Mono	2.53	11.81	29.5	3 x 6	32 A	3 x 1.5	10 A	3 x 1.5
	11 TR-2	Tri	2.53	3.80	13	5 x 2.5	16 A	3 x 1.5	10 A	3 x 1.5
	16 MR-2	Mono	3.42	16.17	29.5	3 x 10	40 A	3 x 1.5	10 A	3 x 1.5
	16 TR-2	Tri	3.42	5.40	13	5 x 2.5	16 A	3 x 1.5	10 A	3 x 1.5
	22 TR-2	Tri	4.92	7.75	21	5 x 4	25 A	3 x 1.5	10 A	3 x 1.5
	27 TR-2	Tri	6.26	9.86	23.3	5 x 6	32 A	3 x 1.5	10 A	3 x 1.5

Electrical back-up

|		
MONO: 2 x 3 kW (1)	SC	3 x 6 mm²
	DJ	Curve C, 32 A
TRI: 2 x 6 kW (2)	SC	5 x 4 mm²
	DJ	Curve C, 25 A

SC = cable cross-section in mm²
DJ = circuit breaker
* motor: curve D - differential protection
(1) Can be restricted to 3 kW by adjusting the DIEMATIC iSystem
(2) Can be restricted to 6 kW by adjusting the DIEMATIC iSystem

HYDRAULIC CONNECTION

The indoor MIT-IN-2 iSystem module on HPI EVOLUTION 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 EVOLUTION heat pumps are of the "SPLIT INVERTER" type with refrigeration link between the outdoor unit and the MIT-IN-2 module, it is not necessary to add glycol to the installation.

Manometric height available for the heating circuit
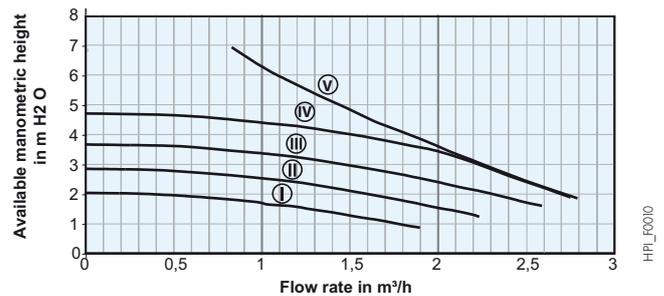
MIT-IN-2 6 and 8 : speed-controlled pump I
MIT-IN-2 11 : speed-controlled pump II
MIT-IN-2 16 : speed-controlled pump IV
MIT-IN-2 22 and 27 : speed-controlled pump V

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-IN-2).

- 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-IN-2).

| HP model	6 MR-2	8 MR-2	11MR/TR-2	16 MR/TR-2	22 TR-2	27 TR-2
Storage tank capacity (litres)	30	40	55	80	110	135

EXAMPLES OF INSTALLATIONS

HPI EVOLUTION heat pump with indoor MIT-IN-2 iSystem/E module
- 1 direct circuit "radiators"
- 1 circuit with mixing valve
- DHW production by independent tank
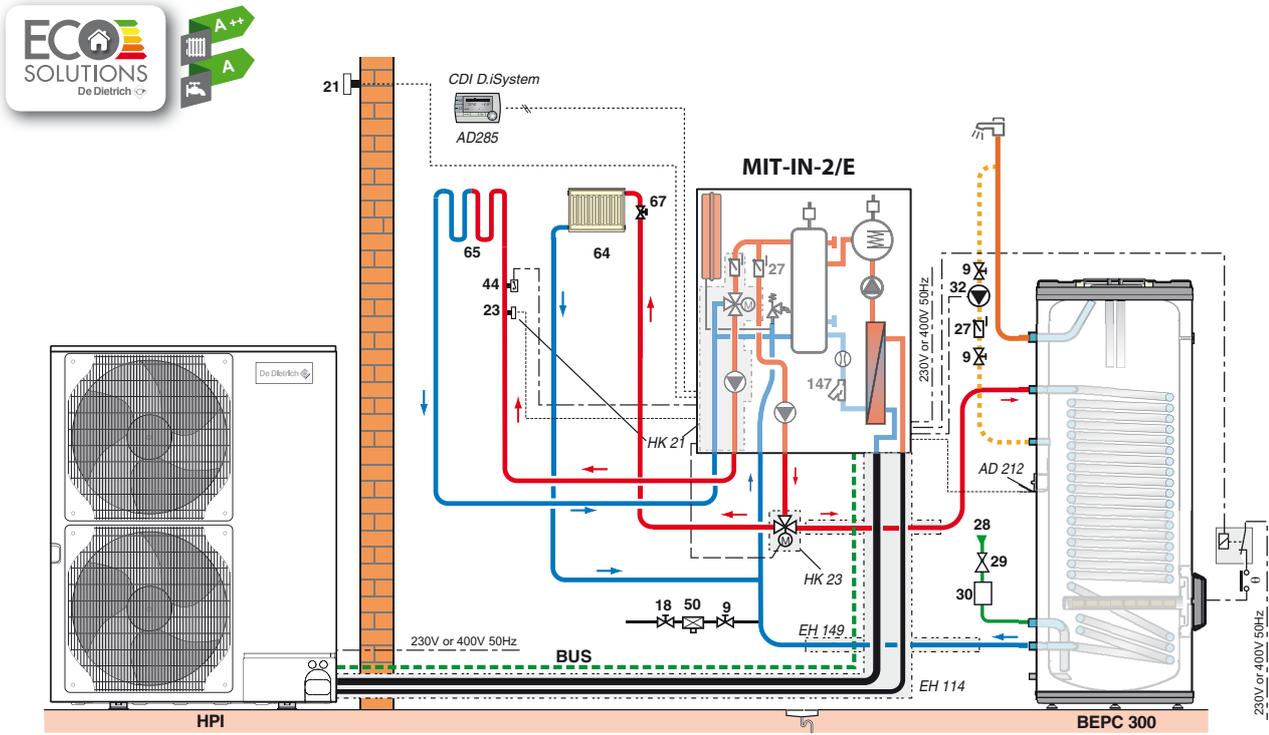
HPI EVOLUTION heat pump with indoor MIT-IN-2 iSystem/E module
- 1 direct circuit "radiators"
- 2 circuits with mixing valve
- DHW production by independent tank
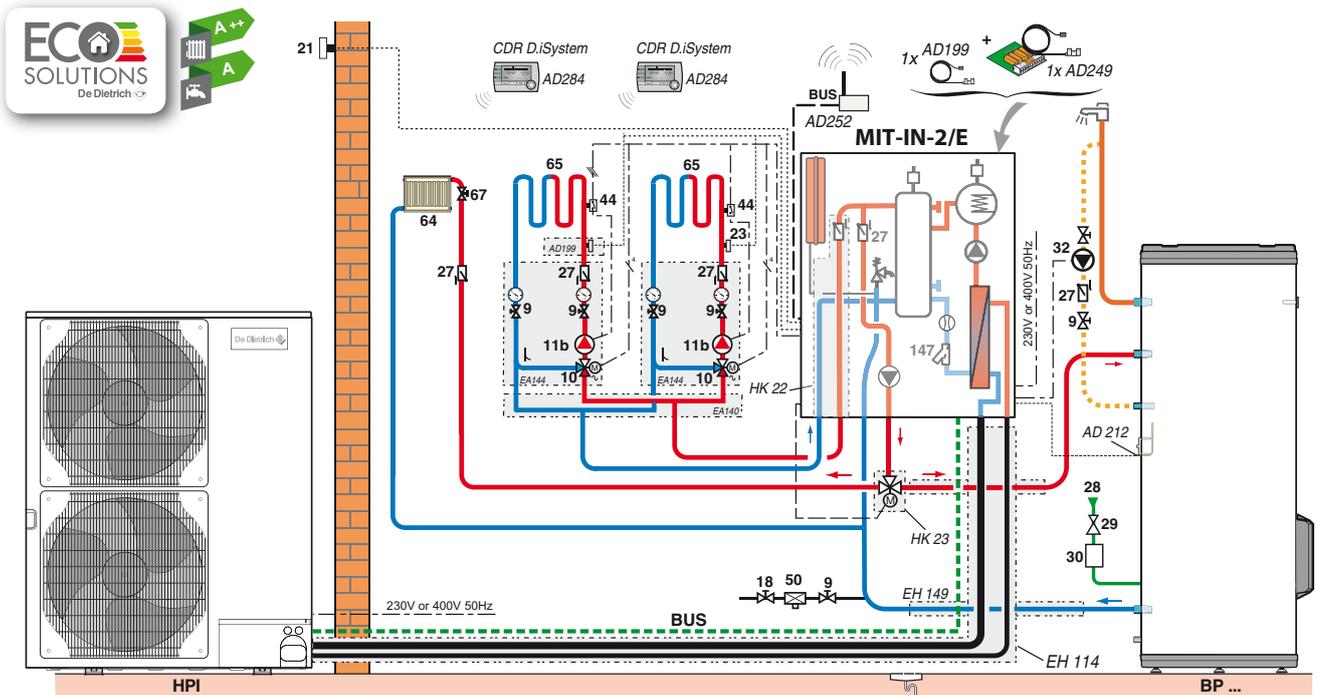
Key see page 24

# EXAMPLES OF INSTALLATIONS

HPI EVOLUTION heat pump with indoor MIT-IN-2 iSystem/H module, with boiler back-up
- 1 direct circuit "radiators"
- 1 circuit with mixing valve
- DHW production by independent tank
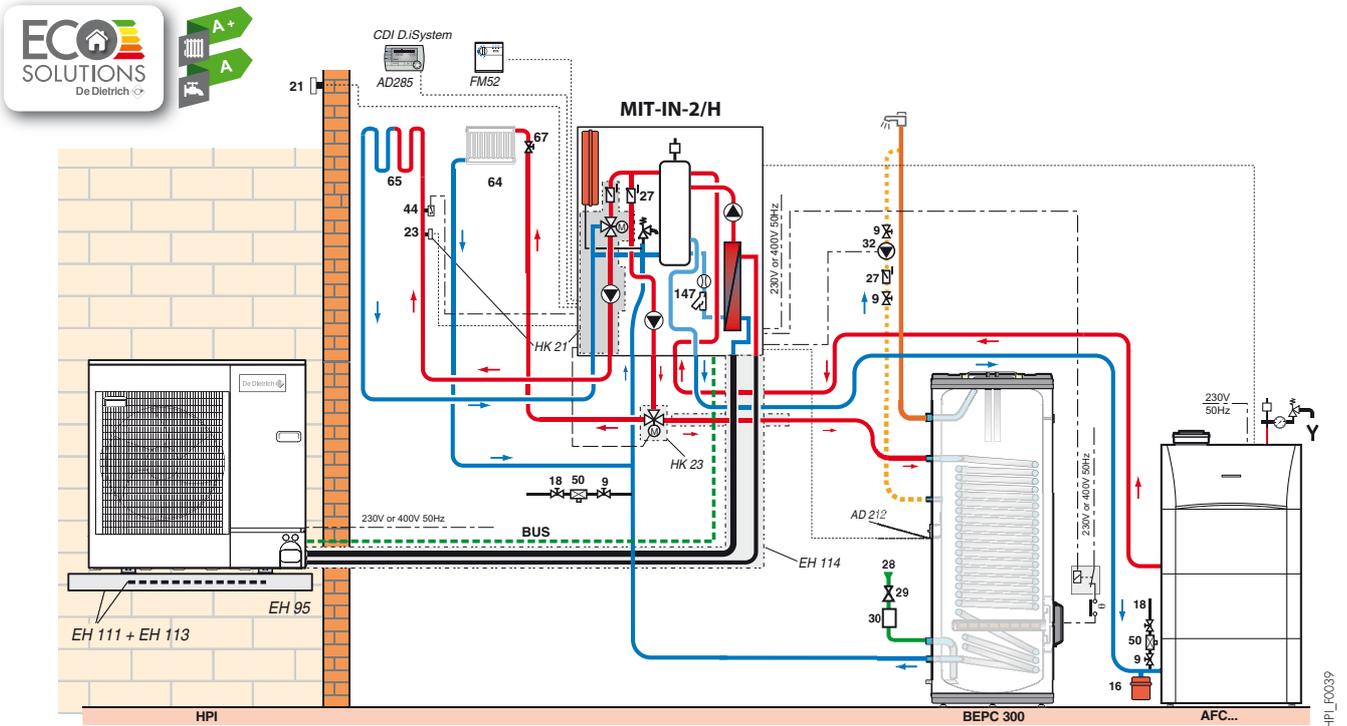
HPI EVOLUTION heat pump with indoor MIT-IN-2 iSystem/H module
- 1 direct circuit "radiators"
- 2 underfloor heating circuits
- 1 circuit with boiler back-up and integrated DHW production
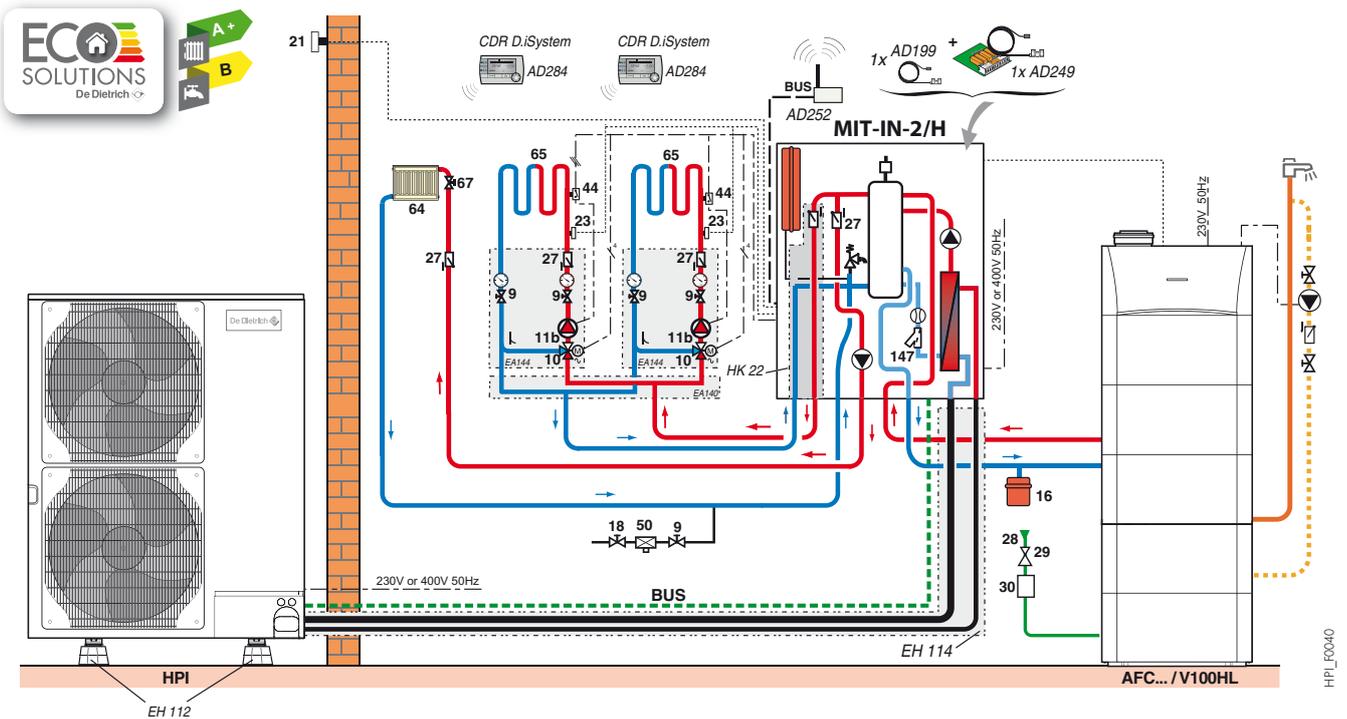

Key see page 24

EXAMPLES OF INSTALLATIONS

HPI EVOLUTION heat pump with indoor MIT-IN-2 iSystem/E module, with electrical back-up
- 1 direct circuit "radiators"
- DHW production by independent calorifier
- 1 circuit with solid fuel boiler and a storage tank
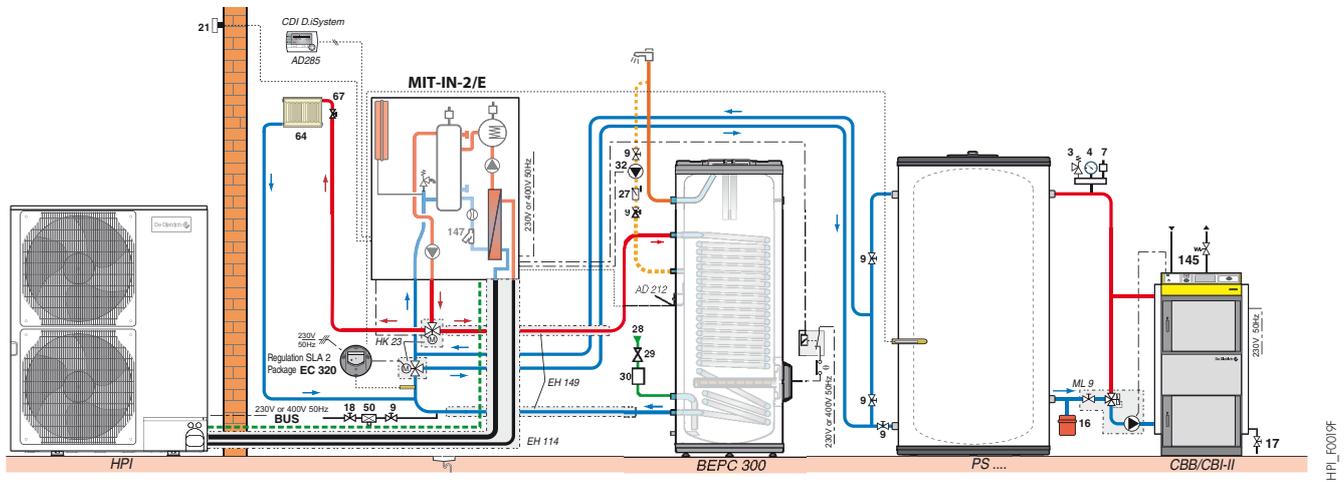
Cascade with an HPI heat pump (with MIT-IN-2 iSystem/E module) and an MCA wall-hung condensing boiler
- 1 direct circuit "radiators"
- DHW production by independent calorifier
- 2 circuits with mixing valve
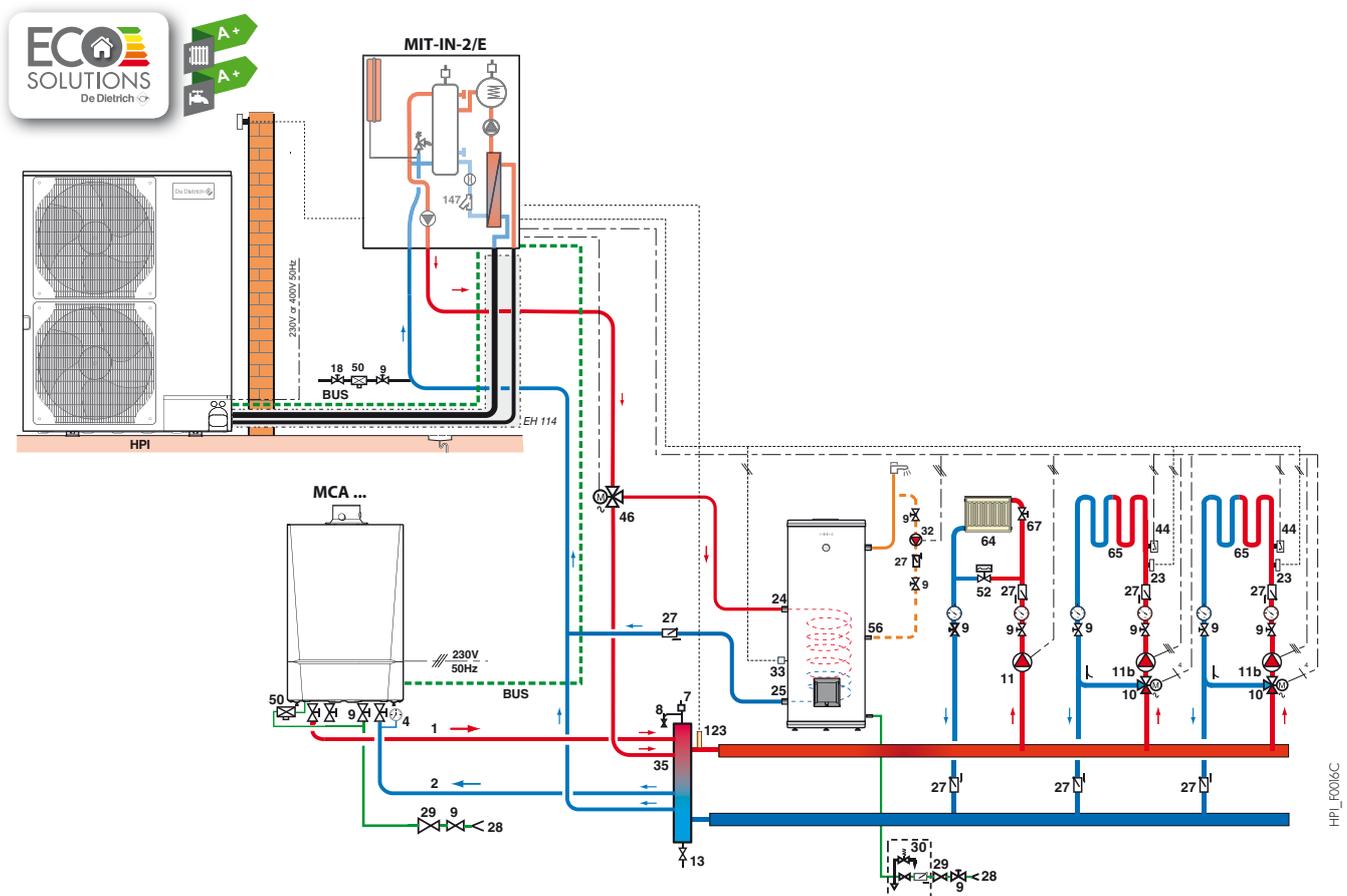
Key see page 24

EXAMPLES OF INSTALLATIONS

HPI EVOLUTION heat pumps with MIT-IN-2 iSystem/E and /H modules, in cascade
- 1 direct circuit "radiators"
- 3 circuits with mixing valve
- 1 circuit " with boiler back-up
- DHW production by independent calorifier
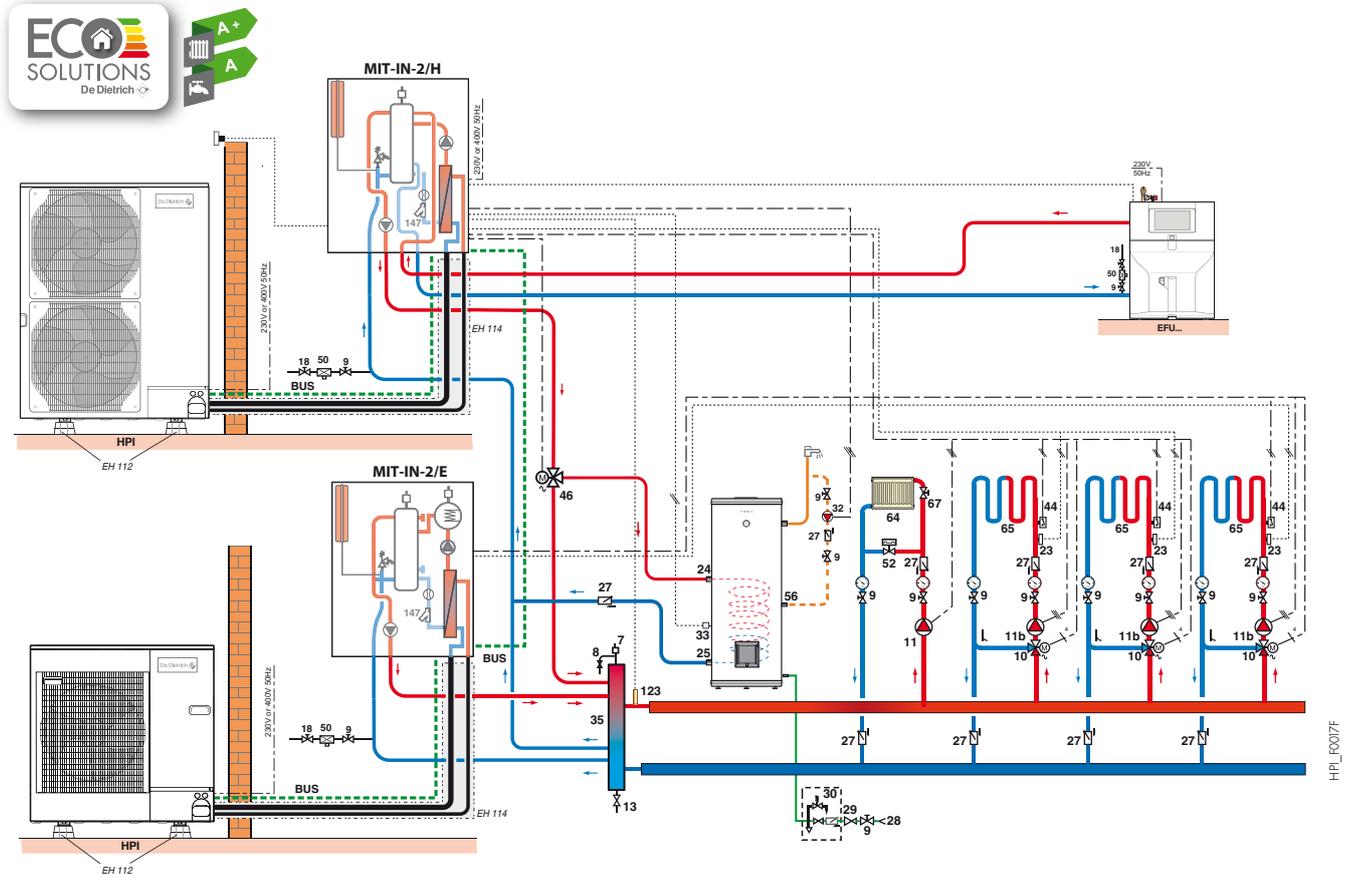
1 HPI EVOLUTION heat pump with MIT-IN-2 iSystem/E module
- 1 circuit with mixing valve
- 1 solar circuit made up of a TRIO system
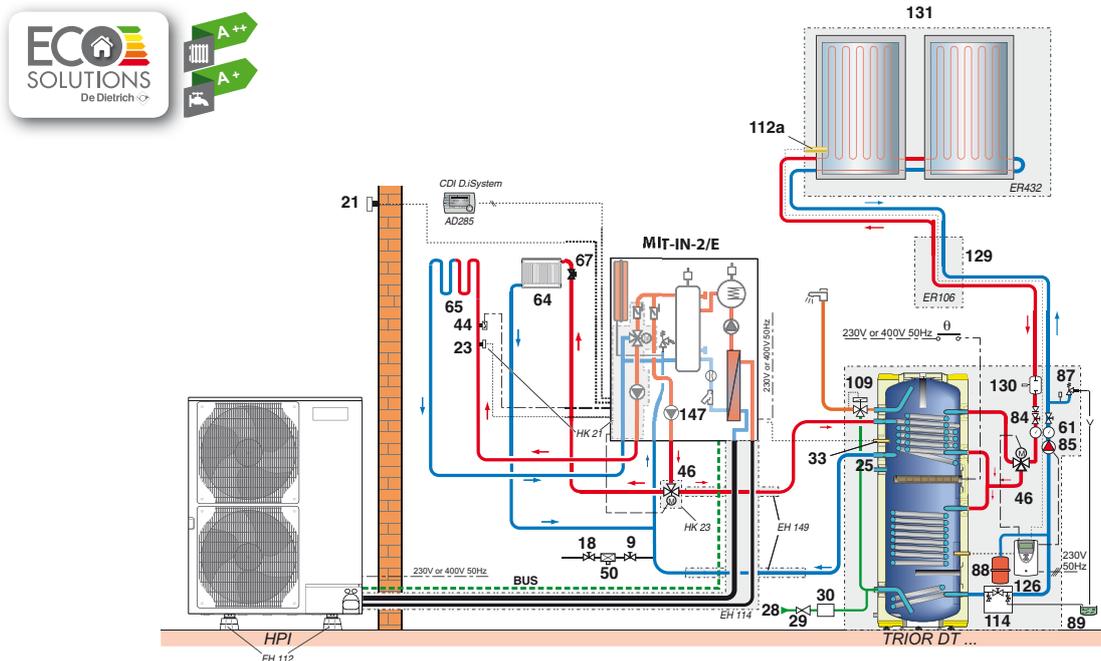
Key see page 24

EXAMPLES OF INSTALLATION

HPI EVOLUTION heat pump with MIT-IN-2 iSystem/E module, with insulation kit HK24, with electrical back-up
- 1 circuit with mixing valve
- 1 cooling circuit with fan coils
- DHW production by independent calorifier
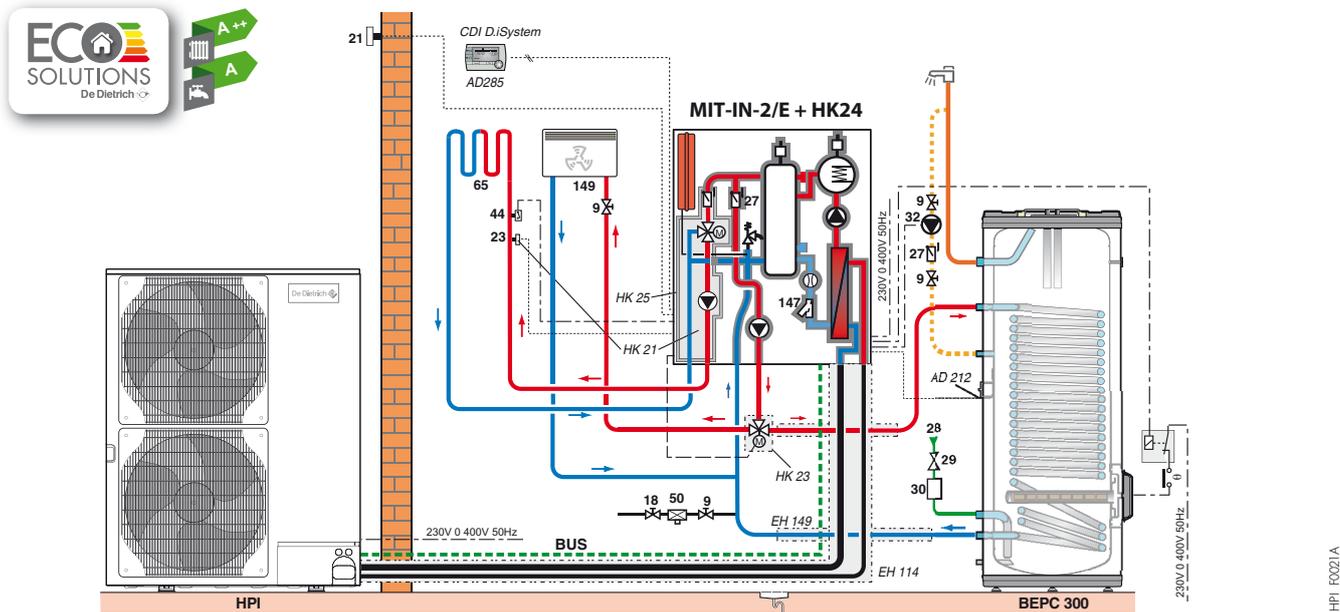
Key

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

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.

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