Technical description

iTec Eco

Thermia AB is not liable or bound by warranty if these instructions are not adhered to during installation or service.

The English language is used for the original instructions.
Other languages are a translation of the original instructions.
(Directive 2006/42/EC)

Table of Contents

1 Technical data, iTec indoor unit

1.1 Indoor unit

Indoor unit	Unit	iTec Total	iTec Total SP
		086L4554	086L4555
Mains power supply	V	400V 3~N 50Hz	230V 1~N 50Hz
Marking power, circulation pumps	kW	0,1	0,1
Immersion heater, steps	kW	3/6/9/12/15	3/6/9
Fuse separate supply, indoor unit	A	6/10/16/20/25	16/30/40
Hot water tank, size	l	180	180
Weight	kg	106	106
Dimensions	mm	596x690x1845	596x690x1845

Indoor unit	Unit	iTec Total Compact SP	iTec Total Compact 230-3	iTec Total Compact
		086L4807	203263	086L4805
Mains power supply	V	230V 1~N 50Hz	230V 3~, 50Hz	400V 3~N 50Hz
Marking power, circulation pumps	kW	0,1	0,1	0,1
Immersion heater, steps	kW	3/6/9	1,8/3,6/5,4/7,2/9	3/6/9/12/15
Fuse separate supply, indoor unit	A	16/30/40	6/10/16/20/25	6/10/16/20/25
Hot water tank, size	l	180	180	180
Weight	kg	100	100	100
Dimensions	mm	596x690x1538	596x690x1538	596x690x1538

Indoor unit	Unit	iTec Total EQ	iTec Total EQ SP
		203264	203265
Mains power supply	V	400V 3~N 50Hz	230V 1~N 50Hz
Marking power, circulation pumps	kW	0,1	0,1
Immersion heater, steps	kW	3/6/9/12/15	3/6/9
Fuse separate supply, indoor unit	A	6/10/16/20/25	16/30/40
Hot water tank, size	l	180	180
Weight	kg	142	142
Dimensions	mm	596x690x1845	596x690x1845

Indoor unit	Unit	iTec Standard
		086L4553
Mains power supply	V	230V 1~N 50Hz
Marking power, circulation pumps	kW	
Immersion heater, steps	kW	
Fuse separate supply, indoor unit	A	10
Hot water tank, size	l	
Weight	kg	180
Dimensions	mm	380x204x600

Indoor unit	Unit	iTec Plus	iTec Plus SP 1~230 V
		086L4912	086L4913
Mains power supply	V	400V 3~N 50Hz	230V 1~N 50Hz
Marking power, circulation pumps	kW	0,1	0,1
Immersion heater, steps	kW	3/6/9/12/15	3/6/9
Fuse separate supply, indoor unit	A	6/10/16/20/25	16/30/40
Hot water tank, size	l		
Weight	kg	21	21
Dimensions	mm	417x258x727	417x258x727

2 Technical data iTec Eco 5 230V

2.1 Technical data iTec Eco 5 230V

iTec Eco 5 230V outdoor unit		Units	230V
Heating capacity		kW	5
Refrigerant	Type		R32
	Amount [1]	kg	1,00
	CO [2] equivalent	tons	0,680
	Design pressure	bar(g)	47
Compressor	Type		BLDC Twin Rotary
	Oil		POE
Electrical data, 230V 1~N 50Hz	Mains power supply	V	230V 1~N 50Hz
	Max working power, compressor	kW	2,79
	Fuse separate supply, outdoor unit	A	13
Performance	SCOP, floor heating (35°C) - cold climate		3,6
	SCOP, radiator heating (55°C) - cold climate		2,47
	SCOP, floor heating (35°C) - average climate		4,46
	SCOP, radiator heating (55°C) - average climate		3,2
	SCOP, floor heating (35°C) - warm climate		6,06
	SCOP, radiator heating (55°C) - warm climate		3,71
	COP (A7W35)		4,85
	SEER		3,98
Energy class - system [2]	Floor heating (35°C)		A+++
	Radiator heating (55°C)		A++
Energy class-product [3]	Floor heating (35°C)		A+++
	Radiator heating (55°C)		A++
	Hot water -EN16147		A+
	Declared load profile		L
Min/Max temperature	Heating	°C	+15~+65
Operating temperature range	Heating		-25~+35
	Cooling		+10~+46
	Hot water		-25~+43
Pressure limits refrigerant circuit		bar(g)	47,0
Sound power level -EN12102		dB(A)	61
Sound Pressure	1m [4]	dB(A)	49,6
	4m [5]		44
Hot water performance -EN16147	Volume 40°C hot water	l	261
	COP, hot water		3,34
Hot water tank, size		l	
Water mains		bar(g)	3
Weight		kg	58,5
Dimensions (WxDxH)		mm	880 x 310 x 798

1) The refrigerant circuit is hermetically sealed and contains refrigerants covered by the F-gas regulation. GWP for R32according to EC 517/2014 is675

2) When the heat pump is installed in a heating system that is controlled via the heat pump's control computer. According to EU regulation 811/2013.

3) When the heat pump is not connected to a heating system, and the function of the built-in control computer is not taken into account. According to EU regulation 811/2013.

4) According to EN11203, nominal operation A7W35, heat pump placed against housing facade

5) Quarter spherical sound propagation in free field, rated operation A7W35, heat pump placed against the house facade

2.2 Performance iTec Eco 5 kW

Water outlet temperature (℃)	35			45			55		
Outdoor temperature (℃)	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP
-15	4,30	1,85	2,32	4,03	2,02	4,03	-	-	-
-7	5,31	1,96	2,71	5,08	2,46	5,08	4,67	2,79	1,67
2	5,58	1,69	3,31	4,97	1,88	4,97	4,47	2,35	1,90
7	5,00	1,03	4,85	4,80	1,30	4,80	4,30	1,52	2,83
15	6,23	1,05	5,91	6,12	1,33	6,12	5,51	1,66	3,31
20	7,00	1,07	6,54	6,94	1,35	6,94	6,25	1,69	3,70

3 iTec Eco 8 kW 400V and 230V

3.1 Technical data iTec Eco 8 kW, 400V and 230V

iTec Eco 8 400V outdoor unit			400V	230V
Heating capacity		kW	8	
Refrigerant	Type		R32	
	Amount [1]	kg	1,15	
	CO [2] equivalent	tons	0,780	
	Design pressure	bar(g)	47	
Compressor	Type		BLDC Twin Rotary	
	Oil		POE	
Electrical data, 230V 1~N 50Hz	Mains power supply	V	400V 1~N 50Hz	230V 1~N 50Hz
	Max working power, compressor	kW	4,13	
	Fuse separate supply, outdoor unit	A	10	20
Performance	SCOP, floor heating (35°C) - cold climate		3,62	
	SCOP, radiator heating (55°C) - cold climate		2,53	
	SCOP, floor heating (35°C) - average climate		4,45	
	SCOP, radiator heating (55°C) - average climate		3,23	
	SCOP, floor heating (35°C) - warm climate		6,02	
	SCOP, radiator heating (55°C) - warm climate		3,77	
	COP (A7W35)		4,52	
	SEER		4,52	
Energy class - system [2]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
Energy class-product [3]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
	Hot water -EN16147		A	A+
	Declared load profile		L	
Min/Max temperature	Heating	°C	+15~+65	
Operating temperature range	Heating		-25~+35	
	Cooling		+10~+46	
	Hot water		-25~+43	
Pressure limits refrigerant circuit		bar(g)	47,0	
Sound power level -EN12102		dB(A)	63	
Sound Pressure	1m [4]	dB(A)	51,2	
	4m [5]		46	
Hot water performance -EN16147	Volume 40°C hot water	l	248	
	COP, hot water		3,17	
Hot water tank, size		l		
Water mains		bar(g)	3	
Weight		kg	76	
Dimensions (WxDxH)		mm	940 x 330 x 998	

1) The refrigerant circuit is hermetically sealed and contains refrigerants covered by the F-gas regulation. GWP for R32according to EC 517/2014 is675

2) When the heat pump is installed in a heating system that is controlled via the heat pump's control computer. According to EU regulation 811/2013.

3) When the heat pump is not connected to a heating system, and the function of the built-in control computer is not taken into account. According to EU regulation 811/2013.

4) According to EN11203, nominal operation A7W35, heat pump placed against housing facade

5) Quarter spherical sound propagation in free field, rated operation A7W35, heat pump placed against the house facade

3.2 Performance iTec Eco 8 kW

Water outlet temperature (℃)	35			45			55		
Outdoor temperature (℃)	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP
-15	6,31	2,75	2,29	6,12	3,19	1,92	-	-	-
-7	7,66	3,15	2,43	7,20	3,46	2,08	5,95	4,01	1,48
2	8,14	2,73	2,98	7,56	3,05	2,48	6,80	3,81	1,79
7	8,00	1,77	4,52	7,40	2,12	3,49	7,10	2,53	2,81
15	10,10	1,76	5,75	9,74	2,24	4,34	8,76	2,80	3,13
20	11,41	1,75	6,52	11,20	2,32	4,83	10,08	2,90	3,48

4 Technical Data iTec Eco 12 kW 400V and 230V~1

4.1 Technical data iTec Eco 12kW 400V and 230V~1

iTec Eco 12 400V and 230V-1 outdoor unit		Units	400V	230V~1
Heating capacity		kW	12	
Refrigerant	Type		R32	
	Amount [1]	kg	2,20	
	CO [2] equivalent	tons	1,490	
	Design pressure	bar(g)	47	
Compressor	Type		BLDC Twin Rotary	
	Oil		POE	
Electrical data, 400V 3~N 50Hz	Mains power supply	V	400V 3~N 50Hz	230V 1~N 50Hz
	Max working power, compressor	kW	6,87	
	Fuse separate supply, outdoor unit	A	10	30
Performance	SCOP, floor heating (35°C) - cold climate		3,66	
	SCOP, radiator heating (55°C) - cold climate		2,63	
	SCOP, floor heating (35°C) - average climate		4,69	
	SCOP, radiator heating (55°C) - average climate		3,52	
	SCOP, floor heating (35°C) - warm climate		6,13	
	SCOP, radiator heating (55°C) - warm climate		3,8	
	COP (A7W35)		4,53	
	SEER		5,22	
Energy class - system [2]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
Energy class-product [3]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
	Hot water -EN16147		A	A+
	Declared load profile		L	
Min/Max temperature	Heating	°C	+15~+65	
Operating temperature range	Heating		-25~+35	
	Cooling		+10~+46	
	Hot water		-25~+43	
Pressure limits refrigerant circuit		bar(g)	47,0	
Sound power level -EN12102		dB(A)	64	
Sound Pressure	1m [4]	dB(A)	51,6	
	4m [5]		47	
Hot water performance -EN16147	Volume 40°C hot water	l	251	
	COP, hot water		2,83	
Hot water tank, size		l		
Water mains		bar(g)	3	
Weight		kg	111	
Dimensions (WxDxH)		mm	940 x 330 x 1420	

1) The refrigerant circuit is hermetically sealed and contains refrigerants covered by the F-gas regulation. GWP for R32according to EC 517/2014 is675

2) When the heat pump is installed in a heating system that is controlled via the heat pump's control computer. According to EU regulation 811/2013.

3) When the heat pump is not connected to a heating system, and the function of the built-in control computer is not taken into account. According to EU regulation 811/2013.

4) According to EN11203, nominal operation A7W35, heat pump placed against housing facade

5) Quarter spherical sound propagation in free field, rated operation A7W35, heat pump placed against the house facade

4.2 Performance iTec Eco 12 kW

Water outlet temperature (℃)	35			45			55		
Outdoor temperature (℃)	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP
-15	10,60	4,78	2,22	10,26	4,98	2,06	-	-	-
-7	12,50	4,91	2,55	11,40	5,88	1,94	10,28	6,84	1,50
2	12,56	3,84	3,27	12,81	4,94	2,59	11,53	6,18	1,87
7	12,00	2,65	4,53	11,70	3,18	3,68	11,30	3,73	3,03
15	15,32	2,59	5,92	14,81	3,07	4,82	13,33	3,84	3,47
20	17,40	2,55	6,82	16,75	3,00	5,58	15,08	3,75	4,02

5 Technical data itec Eco 16kW 400V and 230V~1

5.1 Technical data iTec Eco 16kW 400V and 230V 1~N

iTec Eco 16 400V and 230V 1~N outdoor unit		Units	400V	230V
Heating capacity		kW	16	
Refrigerant	Type		R32	
	Amount [1]	kg	2,20	
	CO [2] equivalent	tons	1,490	
	Design pressure	bar(g)	47	
Compressor	Type		BLDC Twin Rotary	
	Oil		POE	
Electrical data, 400V 3~N 50Hz	Mains power supply	V	400V 3~N 50Hz	230V 1~N 50Hz
	Max working power, compressor	kW	8,47	
	Fuse separate supply, outdoor unit	A	16	40
Performance	SCOP, floor heating (35°C) - cold climate		3,44	
	SCOP, radiator heating (55°C) - cold climate		2,55	
	SCOP, floor heating (35°C) - average climate		4,48	
	SCOP, radiator heating (55°C) - average climate		3,53	
	SCOP, floor heating (35°C) - warm climate		6,36	
	SCOP, radiator heating (55°C) - warm climate		3,85	
	COP (A7W35)		4,42	
	SEER		5,31	
Energy class - system [2]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
Energy class-product [3]	Floor heating (35°C)		A+++	
	Radiator heating (55°C)		A++	
	Hot water -EN16147		A	A+
	Declared load profile		L	
Min/Max temperature	Heating	°C	+15~+65	
Operating temperature range	Heating		-25~+35	
	Cooling		+10~+46	
	Hot water		-25~+43	
Pressure limits refrigerant circuit		bar(g)	47,0	
Sound power level -EN12102		dB(A)	65	
Sound Pressure	1m [4]	dB(A)	53,6	
	4m [5]		49	
Hot water performance -EN16147	Volume 40°C hot water	l	252	
	COP, hot water		2,83	
Hot water tank, size		l		
Water mains		bar(g)	3	
Weight		kg	111	
Dimensions (WxDxH)		mm	940 x 330 x 1420	

1) The refrigerant circuit is hermetically sealed and contains refrigerants covered by the F-gas regulation. GWP for R32according to EC 517/2014 is675

2) When the heat pump is installed in a heating system that is controlled via the heat pump's control computer. According to EU regulation 811/2013.

3) When the heat pump is not connected to a heating system, and the function of the built-in control computer is not taken into account. According to EU regulation 811/2013.

4) According to EN11203, nominal operation A7W35, heat pump placed against housing facade

5) Quarter spherical sound propagation in free field, rated operation A7W35, heat pump placed against the house facade

5.2 Performance iTec Eco 16 kW

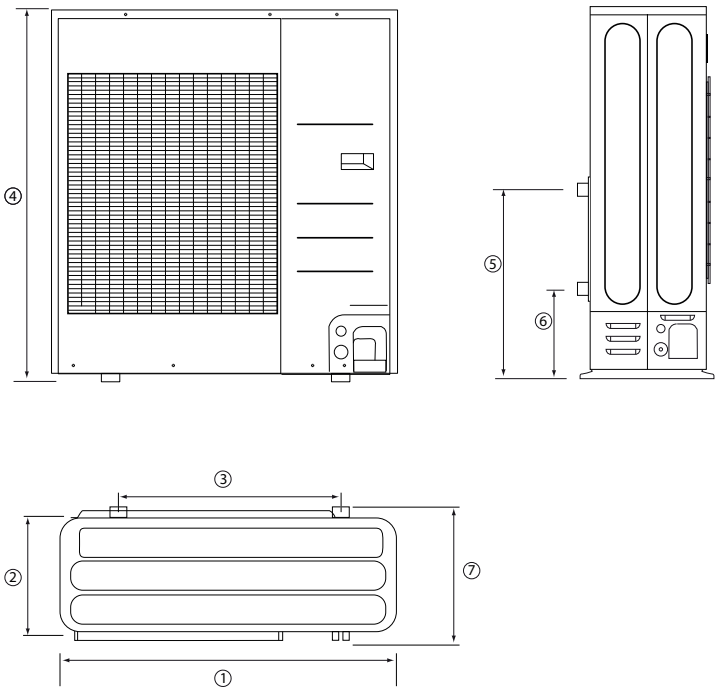
Water outlet temperature (℃)	35			45			55		
Outdoor temperature (℃)	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP	Output (kW)	Input (kW)	COP
-15	13,00	6,00	2,17	12,57	6,74	1,86	-	-	-
-7	15,21	6,25	2,43	15,32	7,84	1,95	13,40	8,07	1,66
2	15,35	5,12	3,00	12,95	5,42	2,39	11,66	6,77	1,72
7	16,00	3,62	4,42	15,40	4,49	3,43	15,00	5,18	2,90
15	19,69	3,74	5,27	19,14	4,61	4,15	17,23	5,77	2,99
20	22,00	3,81	5,77	21,48	4,69	4,58	19,33	5,86	3,30

6 Heat pump data

6.1 Heat pump data, dimensions and connections

6.1.1 Description outdoor unit

iTec Eco



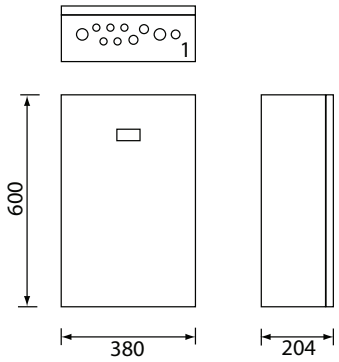
Position	Description outdoor unit	5kW	8 kW	12kW and 16kW
1	Width	880 mm	940 mm	940 mm
2	Depth	310 mm	330 mm	330 mm
3	Distance between feets	660 mm	620 mm	620 mm
4	Height	798 m	998 mm	1420 mm
5	Height to supply line pipe	497 mm	513,4 mm	151,5 mm
6	Height to return line pipe	227 mm	244,4 mm	83,5 mm
7	Depth with protruding feets	364 mm	384 mm	384 mm

6.1.2 Description indoor unit

Do not install the indoor unit if it has any drainage problem.

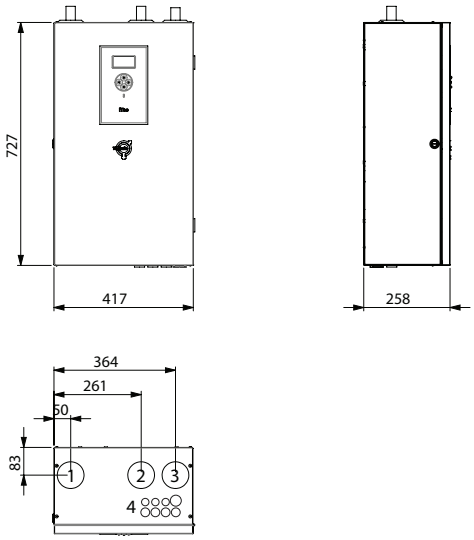
Caution The indoor unit must be placed indoors, in an area with a floor drain.

Indoor unit iTec Standard



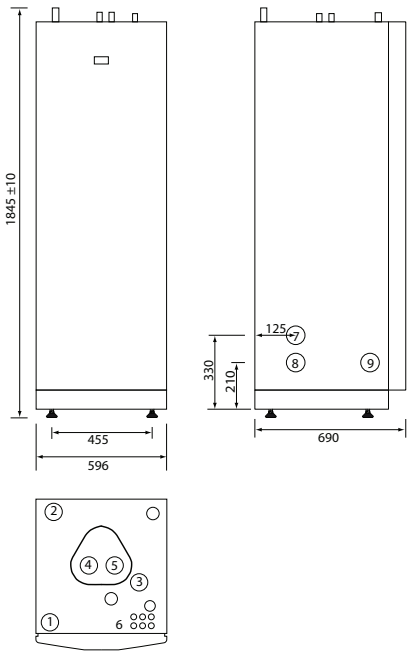
1. Lead-in for supply, sensor and communication cables

Indoor unit iTec Plus



1. Supply line for heating system,28 mm Cu
2. Supply line to water heater, 28 mm Cu
3. Supply line from heat pump, 28 mm Cu
4. Lead-in for supply, sensor and communication cables

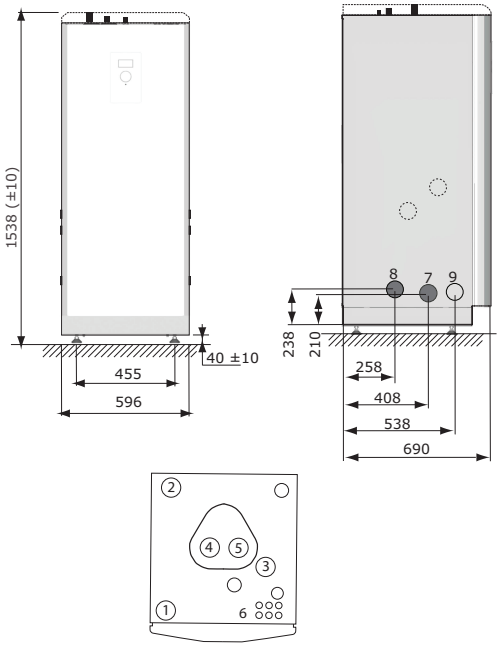
Indoor unit iTec Total



1. Supply line heating system,28 mm Cu
2. Return line heating system,28 mm Cu
3. Connection for bleed valve,22 mm Cu
4. Hot water line,22 mm Cu
5. Cold water line,22 mm Cu
6. Lead-in for supply, sensor and communication cables
7. Supply or return line heat pump
8. Supply or return line heat pump
9. Extra knock-out

Position 7 and 8 can be connected to either the left or right-hand side or at the bottom of the indoor unit.

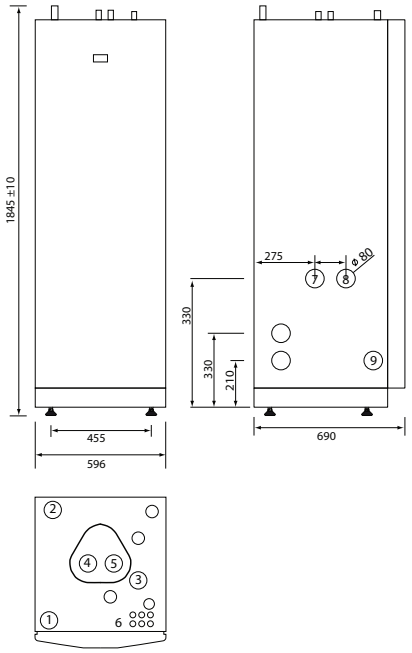
Indoor unit iTec Compact



1. Supply line heating system,28 mm Cu
2. Return line heating system,28 mm Cu
3. Connection for bleed valve,22 mm Cu
4. Hot water line,22 mm Cu
5. Cold water line,22 mm Cu
6. Lead-in for supply, sensor and communication cables
7. Supply or return line heat pump
8. Supply or return line heat pump
9. Extra knock-out

Position 7 and 8 can be connected to either the left or right-hand side or at the bottom of the indoor unit.

Indoor unit iTec Total EQ



1. Supply line heating system,28 mm Cu
2. Return line heating system,28 mm Cu
3. Connection for bleed valve,22 mm Cu
4. Hot water line,22 mm Cu
5. Cold water line,22 mm Cu
6. Lead-in for supply, sensor and communication cables
7. Supply or return line heat pump
8. Supply or return line heat pump
9. Extra knock-out

6.1.3 Removing front cover

Caution Do not damage the electrical wiring for the display when the front cover is removed!

1. Press against the front cover and turn the catch 90° degrees anti-clockwise to release the front cover.
2. Tilt the front cover outwards.
3. Lift the front cover upwards to remove it from the heat pump.

6.1.4 iTec System solution

Symbol key

The following symbol key applies to all system proposal:

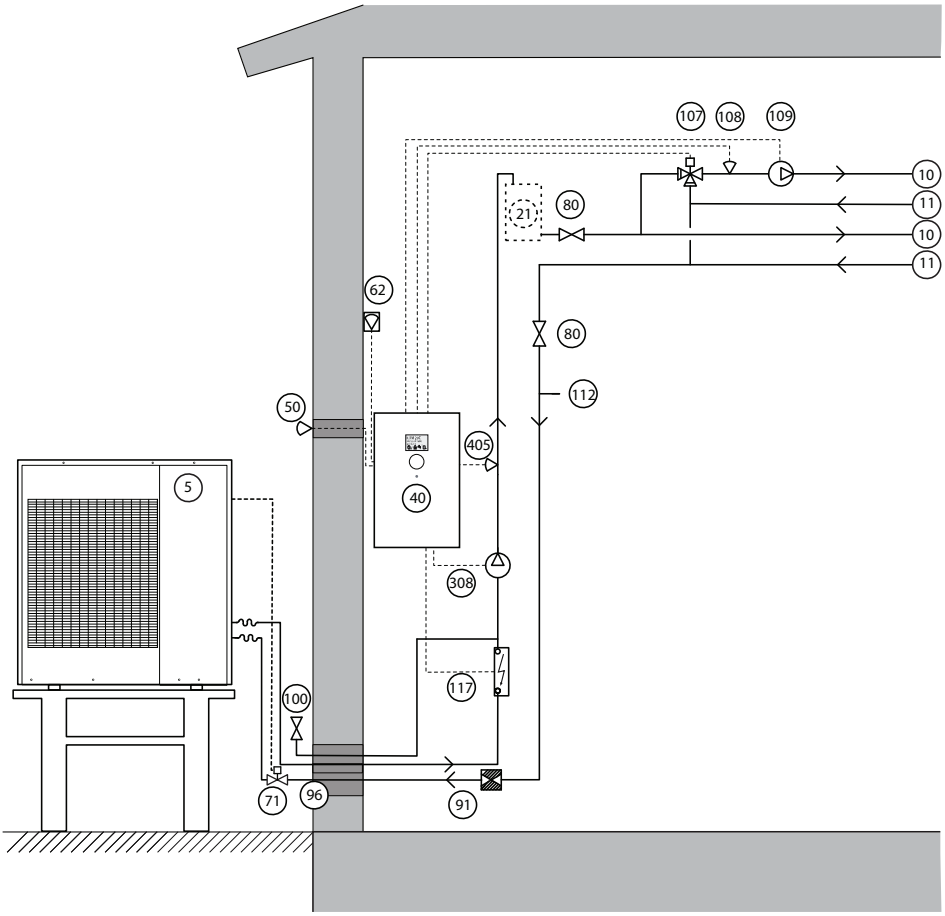
Pos	Description	Pos	Description
5	Heat pump unit	95	Flexible hose,1000 mm DN 25
10	Supply line	100	Security valve (1.5 bar)
11	Return line	101	Reversing valve pool
12	Cold water	103	Pool heater exchanger
13	Hot water	107	Shunt (distribution circuit 1)
18	Hot water storage tank	108	Supply line sensor (distribution circuit 1)
21	Volume tank	109	Circulation pump (distribution circuit 1)
23	Buffer tank	112	Expansion vessel (hot gas)
36	System circulation pump	117	External auxiliary heater
50	Outdoor sensor	120	Fan coil
51	System supply line sensor	136	Buffer tank sensor
53	Hot water sensor lower	207	Shunt (distribution circuit 2)
55	Hot water sensor top	208	Supply line sensor (distribution circuit 2)
60	Pool sensor	209	Circulation pump (distribution circuit 2)
62	Room sensor	308	Condenser Pump
71	Flow switch	312	Reversing valve bypass heating/cooling
72	External auxiliary heater shunt	317	Immersion heater
77	Reversing valve hot water	405	Radiator out sensor
79	Reversing valve cooling tank	453	Display and control (indoor unit)

Pos	Description	Pos	Description
80	Shut-off valve		
82	Adjustment valve		
83	Non-return valve		
85	Air bleeding valve		
87	Safety valve (9 bar, WW)		
91	Dirt strainer with shut-off valve		

System proposal iTec Standard

iTec Standard includes the control module with a outdoor sensor and a radiator out sensor. The heat pump produces only heat or cooling. One extra heating circuits can be connected, using a shunt. The shunt is controlled by the heat pump control system. The supply line temperature is controlled with reference to the outside temperature following a set heat curve. The additional heater starts automatically on demand if auto mode is selected.

For position explanations, see the chapter Symbol Key.



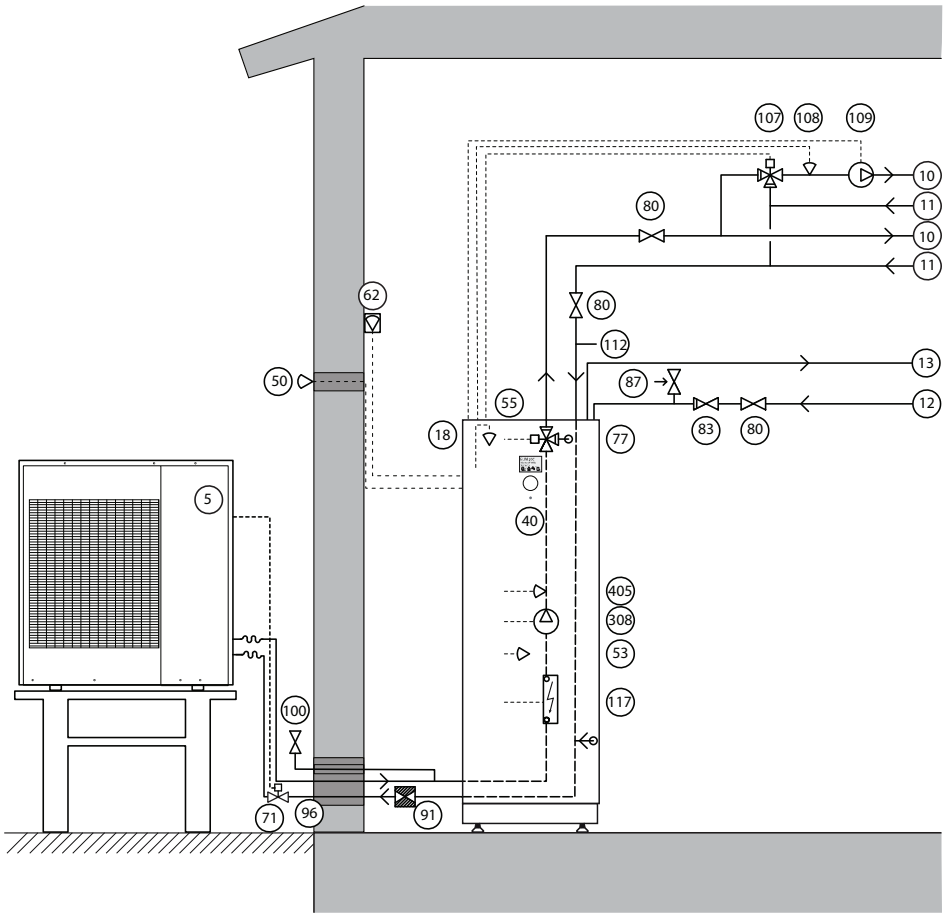
System solution iTec Total and iTec Compact

iTec Total The heat pump produces heat, cooling and hot water. The control module comes with a outdoor sensor, radiator out sensors, condenser pump, 3-way valve, electric auxiliary heater, and a 180 litre water tank .

Production of heating and hot water cannot occur at the same time because the exchange valve for heating and hot water is positioned after the heat pump and the auxiliary heater. Hot water production is prioritised ahead of heat and cooling. One extra heating circuit is connected, using a shunt. The shunt is controlled by the heat pump control system.

The supply line temperature is controlled with reference to the outside
temperature following a set heat curve. The additional heater starts automatically on demand if auto mode is selected. The auxiliary heater carries out peak heating charging (anti-legionella function) in those operating modes that permit auxiliary heat.

For position numbers, see the chapter Symbol Key.



System proposal iTec Total two extra distribution circuits + cooling and swimming pool

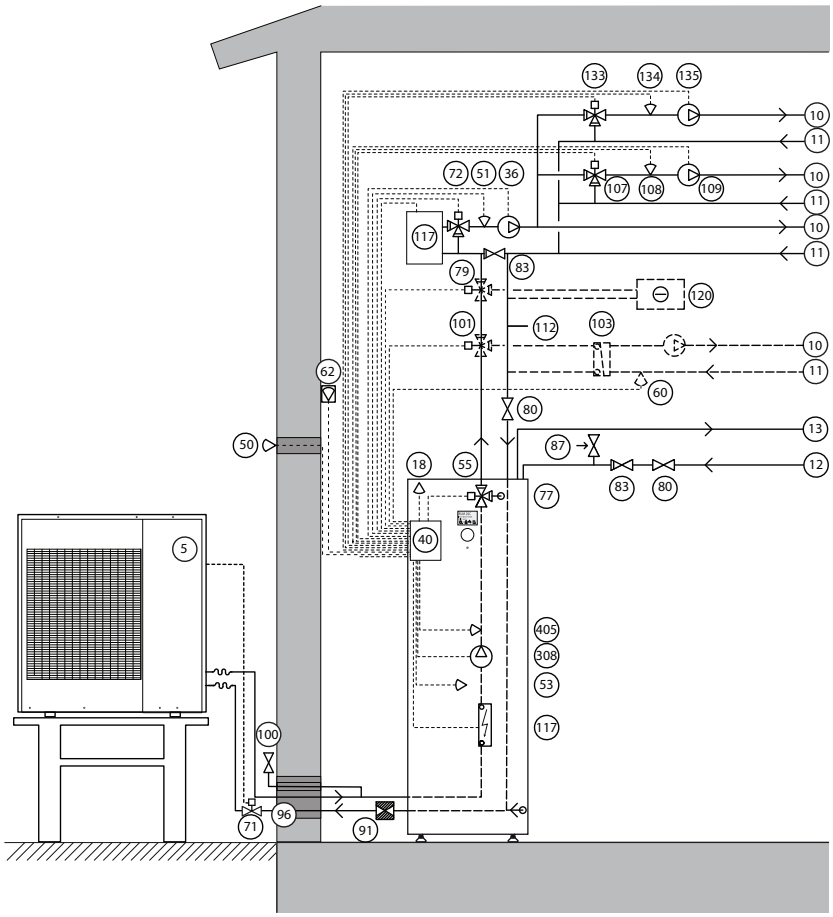
Accessories: Expansion card is needed for distribution circuit 2, cooling system and a swimming pool

iTec Total The heat pump produces heat, cooling and hot water. The control module comes with a outdoor sensor, radiator out sensors, condenser pump, 3-way valve, electric auxiliary heater, and a 180 litre water tank .

Production of heating and hot water cannot occur at the same time because the exchange valve for heating and hot water is positioned after the heat pump and the auxiliary heater. Hot water production is prioritised ahead of heat and cooling. Two heating circuits can be connected, using two shunt´s (requires expansion card). The shunt´s is controlled by the indoor unit control system.

The supply line temperature is controlled with reference to the outside
temperature following a set heat curve. The additional heater starts automatically on demand if auto mode is selected. The auxiliary heater carries out peak heating charging (anti-legionella function) in those operating modes that permit auxiliary heat.

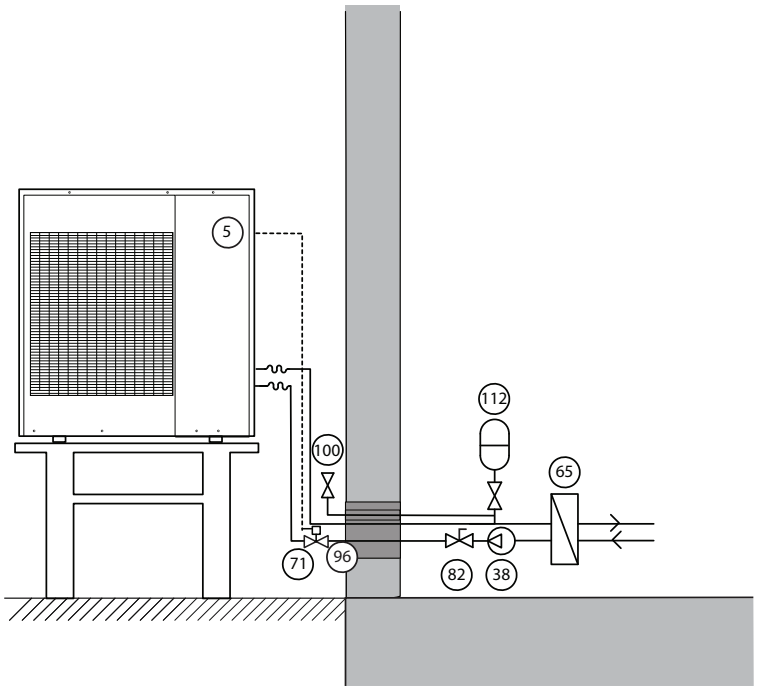
For position numbers, see the chapter Symbol Key.



System proposal intermediate exchanger

To safeguard against the pipes freezing an intermediate exchanger can be installed indoors. In such cases one must use glycol intended for refrigerant applications in the circuit to the outdoor unit and an extra circulation pump.
Follow the supplier's instructions for mixing, but if none is given 35% is the lowest concentration recommended. To order and for more information about the intermediate exchanger and the circulation pump, contact Thermia.

Caution No glycol mixtures may be used in systems with hot zinc dipped pipes or components.

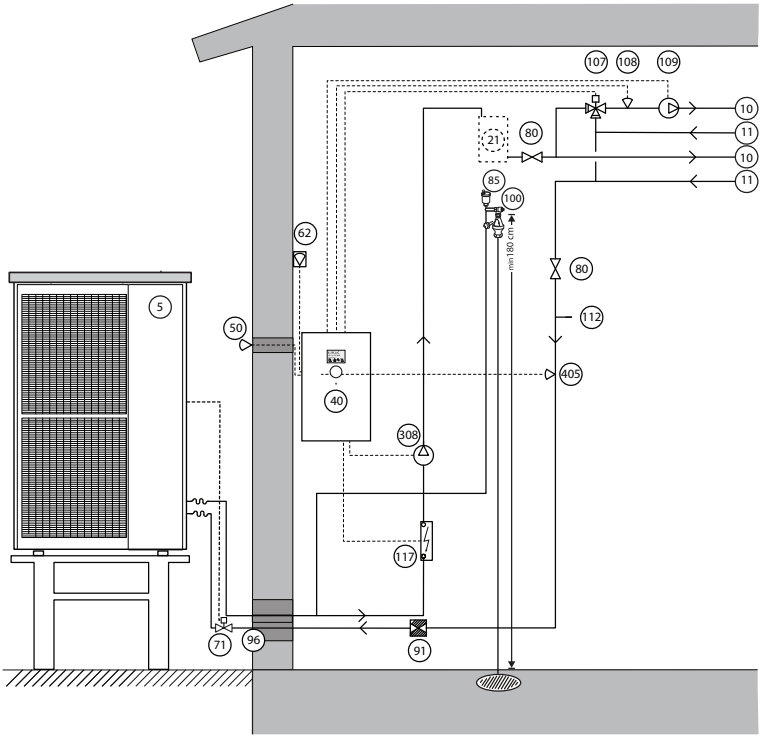


Safety valve and automatic air-bleeding valve for iTec Eco 12 & 16

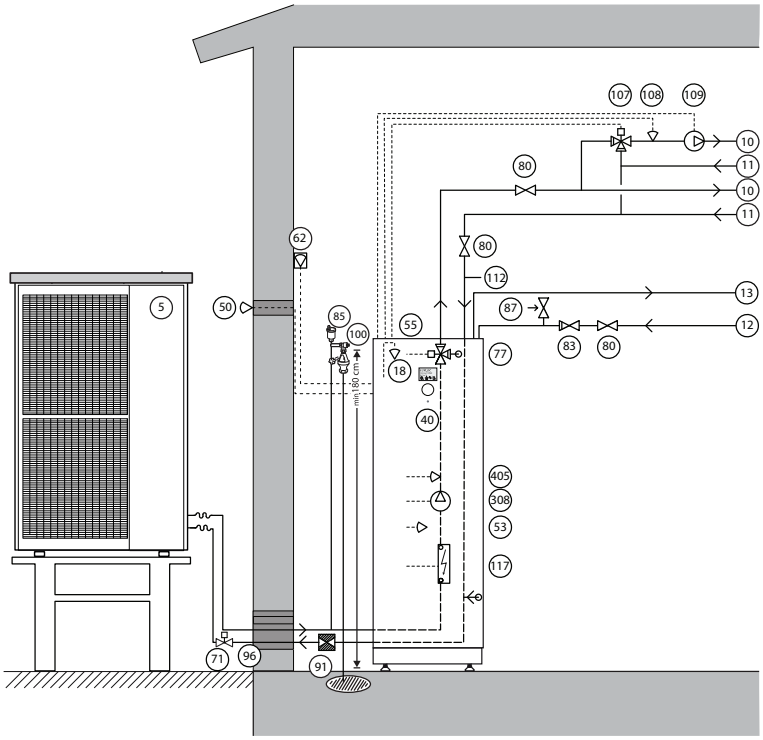
When using iTec Eco 12 & 16 outdoor units there must be a safety valve and a automatic air-bleeding valve installed at 180 cm height above ground inside. The area where the safety valve and the automatic air-bleeding valve is located must be 4,6 m^2 or larger and this area should´t be in direct vicinity to open flames such as gas boilers with open pilot flame.

There are no restrictions to have the indoor unit, the safety valve and the automatic air-bleeding valve installed in a boiler room with existing oil/wood/pellet burner or similar.

System proposal iTec Eco Standard 12-16kW



System proposal iTecEco Total and iTec Compact 12-16kW



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