

Technical Data Sheet



Air



Ground



Water



Brine



Cooling



PV-ready



Modulation

DX/Water-Heat Pumps 8 – 20 kW



Heliotherm Basic Comfort

The fully modulating Direct Evaporating heat pump in Compact Design for indoor installation with continuous refrigerant cycle monitoring and optimized working point operating mode. Heliotherm has proven with this technology the highest measured JAZ values in the SUPEMO EU Project.

Basic Comfort Advantages

- Highest efficiency in Sepemo project: JAZ 5.5 and 7.29
- Quiet operation through acoustic decoupling and special insulation case design
- Ex-works integrated hydraulic block with innovative high efficiency pumps
- Energetic optimum heat pump operation in connection to a photovoltaic system
- Integrated weather compensated heating control



Technical Data

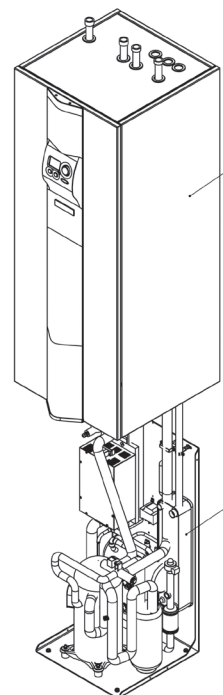
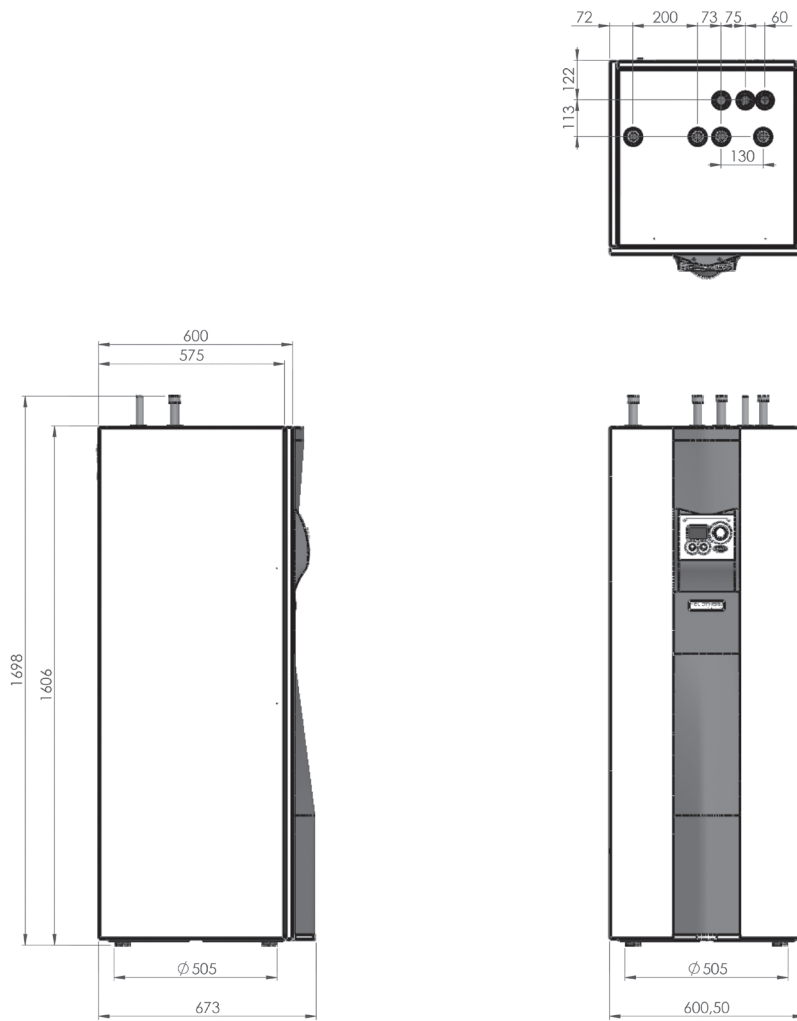
Type Basic Comfort Modulating		HP08E-M-BC	HP12E-M-BC	HP20E-M-BC
Energy source				
Model			Tube evaporator	
Material			Cu with PE sheath	
Quantity of circuit loops at 70 m	Pc.	8	11	18
Total length	m	560	770	1260
Heating water at 5 K temperature difference				
Content	Liter	2,51	2,51	2,51
Volume flow	m ³ /h	1,0 - 2,9	1,2 - 3,1	1,8 - 4,1
Pressure loss	mH ₂ O	2	2,1	2,1
Max. outlet temperature at E4	°C	65	65	65
Hydraulic bock		BC-HYD13	BC-HYD13	BC-HYD17
Max. outlet temperature at E4	mH ₂ O	3,2	2,9	3,9
Electric values				
Nominal voltage	V		3/N/PE 400 V/50 Hz	
Max. nominal amperage	A	13	15	20
Starting current	A	14	19	20
Stall current	A			
Fuse protection	A	16	16	20
Nominal control cuircuit	V		1/N/PE 230 V/50 Hz	
Protection control cuircuit	A	16	16	16
Electric input power				
Max. input power-compressor	kW	4,5	6,5	8,5
Refrigerant cycle				
Working fluid		R-410A	R-410A	R-410A
Fill amount at 10 m split line	kg	7,9	8,1	9,3
Compressor	Type	Scroll	Scroll	Scroll
Compressor speed	1/min	1.200 - 5.400	1.200 - 5.400	1.200 - 5.400
Oil amount	Liter	1,3	1,7	2,3
Unit dimensions				
Total length	mm	670	670	670
Total width	mm	600	600	600
Total height	mm	1.700	1.700	1.700
Total unit weight				
	kg	175	180	185
Permitted operating pressure				
Heating water	bar	10	10	10
Refrigerant	bar	42	42	42
Connections				
Heating water outlet and inlet	Inch	5/4	5/4	5/4
Pressure line	mm	12	12	12
Suction line	mm	22	22	22



Acoustic Technical Data

Type HP08E-M-BC		
A-Assessed acoustic capacity-hum level pin heating mode acc. to EN 12101 E4/W55		Indoor unit
Min. heating capacity	dB(A)	42
Nominal heat output	dB(A)	42
Max. heating output	dB(A)	51
Type HP12E-M-BC		
A-Assessed acoustic capacity-hum level pin heating mode acc. to EN 12101 E4/W55		Indoor unit
Min. heating capacity	dB(A)	42
Nominal heat output	dB(A)	43
Max. heating output	dB(A)	51
Type HP20E-M-BC		
A-Assessed acoustic capacity-hum level pin heating mode acc. to EN 12101 E4/W55		Indoor unit
Min. heating capacity	dB(A)	42
Nominal heat output	dB(A)	43
Max. heating output	dB(A)	53





Performance Data HP08E-M-BC

Energy source Ground - Direct evaporating (calculated values, errors and changes reserved!)
Seasonal room heating - Energy efficiency class A⁺⁺

Full Load and Seasonal Performance Factor in heating mode

Climate zone	Outlet temperature level	P _{designh} [kW]	Q _{HE} [kWh]	SCOP	η _s [%]
average (Strasbourg)	low (35°C)	8,0	1947	5,75	227
	average (45°C)	8,0	2350	4,77	188
	high (55°C)	8,0	2843	3,94	155
warmer (Athens)	low (35°C)	8,0	1939	5,78	228
	average (45°C)	8,0	2339	4,79	189
	high (55°C)	8,0	2843	3,94	155
colder (Helsinki)	low (35°C)	8,0	2864	5,86	231
	average (45°C)	8,0	3468	4,84	191
	high (55°C)	8,0	4140	4,06	159

Full load in cooling mode for ceiling cooling applications
SPF in cooling mode for ceiling cooling applications

P_{designc} = 8 kW
SEER = 6,91

Full load in cooling mode for fan coils
SPF in cooling mode for fan coils

P_{designc} = 8 kW
SEER = 6,31



Performance Data HP08E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „average“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	15	3,29	5,93
	E4/W27	35	3,33	5,86
	E4/W30	54	4,27	5,73
	E4/W34	88	7,10	5,66
	E4/W35	100	8,05	5,68
average (45°C)	E4/W28	15	3,27	5,48
	E4/W33	35	3,29	5,12
	E4/W37	54	4,35	4,75
	E4/W43	88	7,04	4,13
	E4/W45	100	8,08	4,02
high (55°C)	E4/W30	15	3,34	4,98
	E4/W36	35	3,25	4,50
	E4/W42	54	4,24	3,87
	E4/W52	88	7,23	3,08
	E4/W55	100	8,05	2,93

Partial loads and COPs for the reference heating period, „warmer“ (Athens)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W26	29	3,31	5,96
	E4/W31	64	5,36	5,67
	E4/W35	100	8,05	5,68
average (45°C)	E4/W31	29	3,27	5,27
	E4/W39	64	5,11	4,46
	E4/W45	100	8,08	4,02
high (55°C)	E4/W34	29	3,27	4,68
	E4/W46	64	5,13	3,43
	E4/W55	100	8,05	2,93



Performance Data HP08E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „colder“ (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	11	3,31	6,10
	E4/W25	24	3,31	6,03
	E4/W27	37	3,13	5,89
	E4/W30	61	4,83	5,82
	E4/W35	100	8,05	5,68
average (45°C)	E4/W26	11	3,37	5,65
	E4/W30	24	3,34	5,29
	E4/W33	37	3,31	4,90
	E4/W38	61	5,01	4,82
	E4/W45	100	8,08	4,02
high (55°C)	E4/W28	11	3,32	5,63
	E4/W32	24	3,24	5,27
	E4/W37	37	3,25	4,87
	E4/W44	61	4,77	4,80
	E4/W55	100	8,05	2,93

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W18	21	4,07	7,10
E15/W18	47	4,29	7,54
E15/W18	74	5,91	7,74
E15/W18	100	8,15	7,78

Partial loads and COPs in cooling mode for cooling mode for fan coils ^(a)

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W11,5	21	3,39	6,84
E15/W10	47	3,82	6,94
E15/W8,5	74	5,81	6,58
E15/W7	100	8,11	6,37

^(a) Cooling Temperatures below 15 °C only after consultation with Heliotherm.



Performance Data HP12E-M-BC

Energy source Ground - Direct evaporating (calculated values, errors and changes reserved!)
Seasonal room heating - Energy efficiency class A⁺⁺

Full Load and Seasonal Performance Factor in heating mode

Climate zone	Outlet temperature level	P _{designh} [kW]	Q _{HE} [kWh]	SCOP	η _s [%]
average (Strasbourg)	low (35°C)	12	2877	5,84	231
	average (45°C)	12	3408	4,93	194
	high (55°C)	12	4010	4,19	165
warmer (Athens)	low (35°C)	12	2828	5,94	235
	average (45°C)	12	3327	5,05	199
	high (55°C)	12	3844	4,37	172
colder (Helsinki)	low (35°C)	12	4221	5,97	236
	average (45°C)	12	4922	5,12	202
	high (55°C)	12	5833	4,32	170

Full load in cooling mode for ceiling cooling applications
SPF in cooling mode for ceiling cooling applications

P_{designc} = 12 kW
SEER = 6,72

Full load in cooling mode for fan coils
SPF in cooling mode for fan coils

P_{designc} = 12 kW
SEER = 6,11



Performance Data HP12E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „average“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	15	6,95	6,07
	E4/W27	35	7,19	6,00
	E4/W30	54	6,56	5,77
	E4/W34	88	10,65	5,76
	E4/W35	100	12,06	5,91
average (45°C)	E4/W28	15	7,04	5,44
	E4/W33	35	4,27	5,32
	E4/W37	54	6,52	4,94
	E4/W43	88	10,68	4,19
	E4/W45	100	12,04	4,07
high (55°C)	E4/W30	15	7,07	4,91
	E4/W36	35	4,23	4,96
	E4/W42	54	6,57	4,02
	E4/W52	88	10,60	3,42
	E4/W55	100	12,04	3,20

Partial loads and COPs for the reference heating period, „warmer“ (Athens)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W26	29	6,97	5,98
	E4/W31	64	7,70	5,99
	E4/W35	100	12,06	5,91
average (45°C)	E4/W31	29	7,07	5,33
	E4/W39	64	7,74	4,89
	E4/W45	100	12,04	4,07
high (55°C)	E4/W34	29	6,92	5,14
	E4/W46	64	7,72	3,85
	E4/W55	100	12,04	3,20



Performance Data HP12E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „colder“ (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	11	6,98	6,21
	E4/W25	24	6,96	6,14
	E4/W27	37	4,57	5,97
	E4/W30	61	7,24	5,94
	E4/W35	100	12,06	5,91
average (45°C)	E4/W26	11	7,03	5,59
	E4/W30	24	7,06	5,42
	E4/W33	37	4,48	5,25
	E4/W38	61	7,34	5,06
	E4/W45	100	12,04	4,07
high (55°C)	E4/W28	11	7,05	5,05
	E4/W32	24	2,90	4,46
	E4/W37	37	4,48	4,63
	E4/W44	61	7,35	4,11
	E4/W55	100	12,04	3,20

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W18	21	3,41	6,35
E15/W18	47	5,81	7,07
E15/W18	74	8,90	7,42
E15/W18	100	12,14	7,37

Partial loads and COPs in cooling mode for cooling mode for fan coils ^(a)

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W11,5	21	3,35	6,00
E15/W10	47	5,72	6,30
E15/W8,5	74	8,86	6,56
E15/W7	100	12,07	6,78

^(a) Cooling Temperatures below 15 °C only after consultation with Heliotherm.



Performance Data HP20E-M-BC

Energy source Ground - Direct evaporating (calculated values, errors and changes reserved!)
Seasonal room heating - Energy efficiency class A++

Full Load and Seasonal Performance Factor in heating mode

Climate zone	Outlet temperature level	P _{designh} [kW]	Q _{HE} [kWh]	SCOP	η _s [%]
average (Strasbourg)	low (35°C)	20	4515	6,20	245
	average (45°C)	20	5446	5,14	203
	high (55°C)	20	6339	4,42	174
warmer (Athens)	low (35°C)	20	4466	6,27	248
	average (45°C)	20	5365	5,22	206
	high (55°C)	20	6262	4,47	176
colder (Helsinki)	low (35°C)	20	6639	6,33	250
	average (45°C)	20	7980	5,26	207
	high (55°C)	20	9235	4,55	179

Full load in cooling mode for ceiling cooling applications
SPF in cooling mode for ceiling cooling applications

P_{designc} = 20 kW
SEER = 6,85

Full load in cooling mode for fan coils
SPF in cooling mode for fan coils

P_{designc} = 20 kW
SEER = 6,23



Performance Data HP20E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „average“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	15	5,59	6,46
	E4/W27	35	7,56	6,26
	E4/W30	54	11,42	6,18
	E4/W34	88	17,72	6,06
	E4/W35	100	20,09	6,13
average (45°C)	E4/W28	15	5,43	5,78
	E4/W33	35	7,42	5,52
	E4/W37	54	11,29	5,11
	E4/W43	88	17,80	4,42
	E4/W45	100	20,17	4,27
high (55°C)	E4/W30	15	5,33	5,38
	E4/W36	35	7,40	5,17
	E4/W42	54	11,36	4,28
	E4/W52	88	17,58	3,49
	E4/W55	100	20,15	3,35

Partial loads and COPs for the reference heating period, „warmer“ (Athens)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _E
low (35°C)	E4/W26	29	5,51	6,32
	E4/W31	64	13,19	6,26
	E4/W35	100	20,09	6,13
average (45°C)	E4/W31	29	5,30	5,60
	E4/W39	64	13,23	4,97
	E4/W45	100	20,17	4,27
high (55°C)	E4/W34	29	5,39	5,24
	E4/W46	64	13,28	3,91
	E4/W55	100	20,15	3,35



Performance Data HP20E-M-BC (Continued)

Partial loads and COPs for the reference heating period, „colder“ (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity P _{dh} [kW]	COP _d
low (35°C)	E4/W24	11	5,57	6,56
	E4/W25	24	5,55	6,50
	E4/W27	37	7,57	6,35
	E4/W30	61	12,96	6,27
	E4/W35	100	20,09	6,13
average (45°C)	E4/W26	11	5,49	5,90
	E4/W30	24	5,30	5,63
	E4/W33	37	7,53	5,34
	E4/W38	61	12,86	5,18
	E4/W45	100	20,17	4,27
high (55°C)	E4/W28	11	5,43	5,40
	E4/W32	24	5,26	4,92
	E4/W37	37	7,42	4,84
	E4/W44	61	12,67	4,29
	E4/W55	100	20,15	3,35

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W18	21	16,19	6,60
E15/W18	47	17,34	7,20
E15/W18	74	17,89	7,22
E15/W18	100	20,32	7,42

Partial loads and COPs in cooling mode for cooling mode for fan coils ^(a)

Operating point	Partial load ratio [%]	Cooling capacity P _{dc} [kW]	EER _d
E15/W11,5	21	15,63	6,36
E15/W10	47	16,64	6,63
E15/W8,5	74	18,30	6,14
E15/W7	100	20,31	6,07

^(a) Cooling Temperatures below 15 °C only after consultation with Heliotherm.

