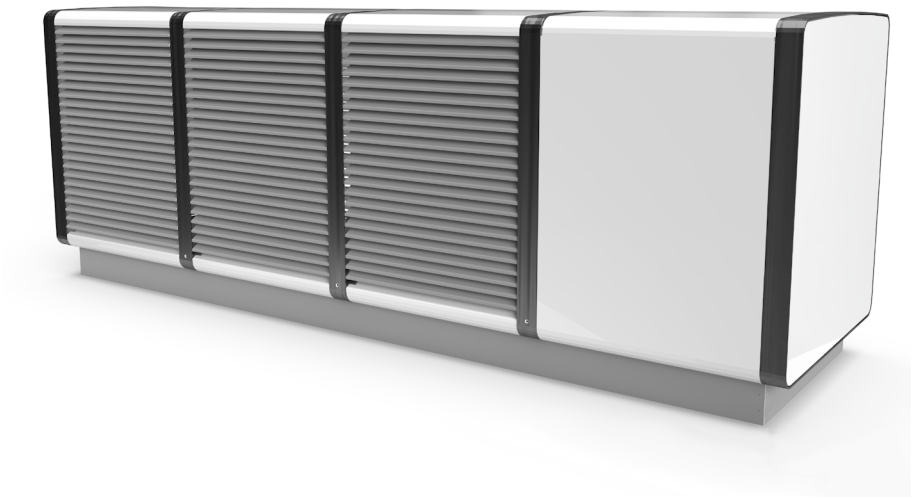
Technical Data Sheet

Air | Ground | Water

Air Compact Heat Pump 30 | 40 | 55 kW



Heliotherm Sensor Solid Compact

The Air Compact Design heat pump based on a stepless performance control, electronic expansion valve with DSI technology, twin-X technology, REMOTE CONTROL heat pump control, sound-optimized case design, PV connection, Smart Grid Ready, and possible active cooling mode.

Sensor Solid Compact Advantages

- Minimum operating costs due to a SCOP of up to 5,2
- Exceptionally silent in operation due to its acoustic optimized custom designed case
- Efficient solution for refurbishing projects with a max. heating outlet temperature of up to 62 °C
- Very quiet operation through the sound-optimized customized case
- Heat pump system optimization and easy to operate by means of REMOTE CONTROL
- Integral building control through integrated KNX connection
- Energetically optimized heat pump operation in connection to a photovoltaic system
- Pleasant room climate in warm summer days through active cooling (optional)

Air Compact Heat Pump
Modulating
30 / 40 / 55 kW

Technical Data

Typ Sensor Solid Compact		S30L-M-CC	S40L-M-CC	S55L-M-CC
Energy source				
Air volume	m^3/h	4.000 - 10.000	4.000 - 10.000	6.000 - 15.000
Evaporator area	m^2	240	240	360
Min. air inlet flow temperature	°C	-25	-25	-25
Max. air inlet flow temperature	°C	45	45	45
Cooling Mode				
Min. air inlet flow temperature	°C	10	10	10
Max. air inlet flow temperature	°C	45	45	45
Heating water at 5 K Temperature difference				
Content	liter	6,5	9,5	13
Volume flow	m^3/h	2,2 - 4,7	3,1 - 6,9	4,4 - 9,3
Pressure loss	m H_2O	2,8	2,9	3,1
Residual head	m H_2O	5,8	2	6,5
Max. outlet temperature at A0°C	°C	62	62	58
Max. outlet temperature at A-20°C	°C	52	52	52
Electric values				
Nominal voltage		3/N/PE 400 V / 50 Hz	3/N/PE 400 V / 50 Hz	3/N/PE 400 V / 50 Hz
Max. nominal voltage	A	26	31	52
Starting current	A	10	12	18
Fuse protection charactersitics G	A	32	32	50
Max. nominal current- fan	A	1	2	2
Fan protection	A	thermal relay	thermal relay	thermal relay
Nominal control cuircuit	V	1/N/PE 230 V/50 Hz	1/N/PE 230 V/50 Hz	1/N/PE 230 V/50 Hz
Protection control cuircuit	A	13	13	13
Power consumption				
Fan	W	120 - 380	120 - 380	180 - 570
Max. power consumption- compressor	kW	7,6	13	15,2
Refrigerant cycle				
Working fluid		R-410A	R-410A	R-410A
Fill amount	kg	15	15,5	28
Fill amount reversible		21	18	30
Compressor	Typ	Scroll	Scroll	Scroll
Compressor speed	1/min	900 - 7.200	1.200 - 6.000	900 - 7.200
Oil amount	liter	2,3	2,3	2,3
Oil type		FVC68D	FVC68D	MA32R

Air Compact Heat Pump
Modulating
30 / 40 / 55 kW

Technical Data

Type Sensor Solid Brine		S30L-M-CC	S40L-M-CC	S55L-M-CC
Outdoor unit dimensions				
Total length	mm	2.948	2.948	3.900
Total width	mm	1.136	1.136	1.136
Total height	mm	1.516	1.516	1.516
Outdoor unit - total weight	kg	660	675	1025
Connections				
Heating water Heating out-and inlet	Inch	6/4“	2“	2 1/2“
Permitted operating pressure	bar	3	3	3

Acoustic Technical Data

Type Sensor Solid Compact 30 kW		
A-Rated acoustic capacity & level in heating mode at A7(±3 K)/W35 (±1 K)		Outdoor unit standing unit
Nominal power	dB(A)	51
Maximal power	dB(A)	69
Type Sensor Solid Compact 40 kW		
A-Rated acoustic capacity & level in heating mode at A7(±3 K)/W35 (±1 K)		Outdoor unit standing unit
Nominal power	dB(A)	53
Maximal power	dB(A)	70
Type Sensor Solid Compact 55 kW		
A-Rated acoustic capacity & level in heating mode at A7(±3 K)/W35 (±1 K)		Outdoor unit standing unit
Nominal power	dB(A)	55
Maximal power	dB(A)	72

Air Compact Heat Pump
Modulating
30 / 40 / 55 kW

Performance Data Sensor Solid Compact 30

acc. EN14825 (calculated values; errors reserved)
Operating limit temperature TOL = -25 °C

Bivalent temperature for climate zone "medium"

H. Outlet temperature level	$T_{bivalent}$ [°C]
high (55°C)	-10

Bivalent temperature for climate zone "colder"

H. Outlet temperature level	$T_{bivalent}$ [°C]
lower (35°C)	-17
medium (45°C)	-15
high (55°C)	-15

Full load and Seasonal Perfomance Factor in heating mode

Climate zone	H. Outlet temperature level	P_{desinh} [kW]	QHE [kWh]	SCOP	ηS [%]
medium (Strasbourg)	low (35°C)	27,3	7612	5,07	200
	medium (45°C)	24,0	8175	4,11	161
	high (55°C)	25,1	9739	3,83	150
warmer (Athens)	low (35°C)	30,0	6646	6,32	250
	medium (45°C)	30,0	7880	5,33	210
	high (55°C)	30,0	9396	4,47	176
colder (Helsinki)	low (35°C)	28,0	13213	4,45	175
	medium (45°C)	28,0	16333	3,60	141
	high (55°C)	28,0	19153	3,07	120

Full load in cooling mode for ceiling cooling applications — P_{desinh} = 28 kW
SPF in cooling mode for ceiling cooling applications — SEER = 6,50

Full load in cooling mode for convector fans — P_{desinh} = 28 kW
SPF in cooling mode for convector fans — SEER = 6,14

Performance Sensor Solid Compact 30 (Continued)

Partial loads and COPs for the reference heating season, “medium“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	15	12,44	7,98
	A7/W27	35	13,58	6,45
	A2/W30	54	14,63	5,19
	A-7/W34	88	24,62	2,96
	A-10/W35	100	27,30	2,45
medium (45°C)	A12/W28	15	10,54	6,55
	A7/W33	35	9,08	4,87
	A2/W37	54	12,99	4,30
	A-7/W43	88	21,14	2,43
	A-10/W45	100	24,00	1,65
high (55°C)	A12/W30	15	12,49	6,28
	A7/W36	35	10,92	5,11
	A2/W42	54	13,79	3,90
	A-7/W52	88	22,64	2,11
	A-9/W54	96	25,06	1,70
	A-10/W55	100	20,15	1,11

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

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W26	29	11,46	6,94
	A7/W31	64	19,17	6,07
	A2/W35	100	30,24	4,23
medium (45°C)	A12/W31	29	10,67	6,21
	A7/W39	64	19,57	4,95
	A2/W45	100	29,98	2,98
high (55°C)	A12/W34	29	10,27	5,71
	A7/W46	64	19,02	3,90
	A2/W55	100	29,98	2,04

Performance Data Sensor Solid Compact 30 (Continued)

Partial loads and COPs for the reference heating season, "colder" (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	11	11,20	7,26
	A7/W25	24	9,43	6,04
	A2/W27	37	10,31	5,43
	A-7/W30	61	16,79	3,90
	A-15/W32	82	23,55	2,51
	A-19/W34	92	21,53	2,19
	A-22/W35	100	18,53	1,62
medium (45°C)	A12/W26	11	10,94	6,97
	A7/W30	24	8,97	5,59
	A2/W33	37	10,38	4,79
	A-7/W38	61	16,73	3,06
	A-15/W41	79	22,41	1,68
	A-22/W45	100	15,49	1,17
high (55°C)	A12/W28	11	10,54	6,55
	A7/W32	24	8,74	5,33
	A2/W37	37	10,21	4,30
	A-7/W44	61	16,96	2,55
	A-15/W49	82	19,80	1,25
	A-22/W55	100	12,76	1,09

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W18	21	11,20	7,91
A25/W18	47	13,05	7,00
A30/W18	74	20,79	6,04
A35/W18	100	27,97	4,21

Partial loads and COPs in cooling mode for cooling mode convector

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W11,5	21	9,10	6,37
A25/W10	47	13,50	7,07
A30/W8,5	74	20,80	5,91
A35/W7	100	28,20	4,02

* Cooling temperatures below 15°C only after consultation with Heliotherm.

Air Compact Heat Pump
Modulating
30 / 40 / 55 kW

Performance Data Sensor Solid Compact 40

acc. EN14825 (calculated values; errors reserved)
Operating limit temperature TOL = -25 °C

Bivalent temperature for climate zone "medium"

H. Outlet temperature level	$T_{bivalent}$ [°C]
high (55°C)	-8

Bivalent temperature for climate zone "colder"

H. Outlet temperature level	$T_{bivalent}$ [°C]
low (35°C)	-17
medium (45°C)	-15
high (55°C)	-13

Full Load and Seasonal Performance Factor in Heating Mode

Climate zone	H. Outlet temperature level	P_{desinh} [kW]	QHE [kWh]	SCOP	ηS [%]
medium (Strasbourg)	low (35°C)	40	11178	5,18	204
	medium (45°C)	35	12129	4,04	159
	high (55°C)	35	14203	4,05	158
warmer (Athen)	low (35°C)	45	10413	6,05	239
	medium (45°C)	45	12257	5,14	203
	high (55°C)	45	14651	4,30	169
colder (Helsinki)	low (35°C)	40	19444	4,32	170
	medium (45°C)	40	23140	3,63	142
	high (55°C)	40	28475	2,95	115

Full load in cooling mode for ceiling cooling applications — P_{desinh} = 45 kW
SPF in cooling mode for ceiling cooling applications — SEER = 6,15

Full load in cooling mode for convector fans — P_{desinh} = 45 kW
SPF in cooling mode for convector fans — SEER = 5,38

Performance Data Sensor Solid Compact 40 (Continued)

Partial loads and COPs for the reference heating season “medium“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	15	14,13	8,08
	A7/W27	35	14,45	6,65
	A2/W30	54	20,86	5,29
	A-7/W34	88	34,64	3,06
	A-10/W35	100	39,70	2,55
medium (45°C)	A12/W28	15	17,72	6,33
	A7/W33	35	14,09	4,69
	A2/W37	54	18,48	4,16
	A-7/W43	88	29,51	2,51
	A-10/W45	100	32,48	1,92
high (55°C)	A12/W30	15	14,20	6,38
	A7/W36	35	13,31	5,21
	A2/W42	54	20,50	4,00
	A-7/W52	88	33,37	2,21
	A-8/W53	92	34,85	2,07
	A-10/W55	100	37,82	1,80

Partial loads and COPs for the reference heating season “warmer“ (Athens)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W26	29	18,82	6,81
	A7/W31	64	28,87	5,57
	A2/W35	100	43,61	4,39
medium (45°C)	A12/W31	29	17,94	6,18
	A7/W39	64	28,65	4,55
	A2/W45	100	44,70	3,12
high (55°C)	A12/W34	29	17,28	5,71
	A7/W46	64	26,27	3,61
	A2/W55	100	45,27	2,01

Performance Data Sensor Solid Compact 40 (Continued)

Partial loads and COPs for the reference heating season, "colder" (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	11	18,38	6,50
	A7/W25	24	15,80	5,62
	A2/W27	37	13,63	4,95
	A-7/W30	61	24,31	3,53
	A-15/W32	82	31,83	2,50
	A-16/W32	84	31,50	2,29
	A-22/W35	100	24,58	1,70
medium (45°C)	A12/W26	11	17,94	6,18
	A7/W30	24	15,04	5,11
	A2/W33	37	14,69	4,33
	A-7/W38	61	26,04	2,91
	A-15/W41	79	30,00	1,84
	A-22/W45	100	19,96	1,17
high (55°C)	A12/W28	11	17,72	6,45
	A7/W32	24	14,66	5,19
	A2/W37	37	14,57	4,17
	A-7/W44	61	24,90	2,29
	A-13/W48	76	29,15	1,54
	A-15/W49	82	25,57	1,33
	A-22/W55	100	15,81	1,05

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W18	21	20,60	7,49
A25/W18	47	22,33	6,69
A30/W18	74	32,64	5,35
A35/W18	100	45,96	4,18

Partial loads and COPs in cooling mode for cooling mode for convector fans

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W11,5	21	16,72	6,35
A25/W10	47	21,32	5,63
A30/W8,5	74	33,06	4,86
A35/W7	100	43,65	3,99

* Cooling temperatures below 15°C only after consultation with Heliotherm.

Air Compact Heat Pump
Modulating
30 / 40 / 55 kW

Performance Data Sensor Solid Compact 55

acc. EN14825 (calculated values; errors reserved)
Operating limit temperature TOL = -25°C

Bivalent temperature for climate zone "medium"

H. Outlet temperature level	$T_{bivalent}$ [°C]
high (55°C)	-9

Bivalent temperature for climate zone "colder"

H. Outlet temperature level	$T_{bivalent}$ [°C]
low (35°C)	-17
medium (45°C)	-15
high (55°C)	-15

Full Load and Seasonal Performance Factor in Heating Mode

Climate zone	H. Outlet temperature level	P_{desinh} [kW]	QHE [kWh]	SCOP	ηS [%]
medium (Strasbourg)	low (35°C)	45,0	12233	5,07	200
	medium (45°C)	45,0	15328	4,11	161
	high (55°C)	45,0	18261	3,83	150
wärmer (Athen)	low (35°C)	55,0	12184	6,32	250
	medium (45°C)	55,0	14447	5,33	210
	high (55°C)	50,0	15660	4,47	176
kälter (Helsinki)	low (35°C)	45,0	21236	4,45	175
	medium (45°C)	45,0	26250	3,60	141
	high (55°C)	45,0	30782	3,07	120

Full load in cooling mode for ceiling cooling applications — P_{desinh} = 56 kW
SPF in cooling mode for ceiling cooling applications — SEER = 6,50

Full load in cooling mode for convector fans — P_{desinh} = 56 kW
SPF in cooling mode for convector fans — SEER = 6,14

Performance Data Sensor Solid Compact 55 (Continued)

Partial loads and COPs for the reference heating season “medium“ (Strasbourg)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	15	17,34	7,98
	A7/W27	35	17,57	6,45
	A2/W30	54	27,38	5,19
	A-7/W34	88	43,21	2,96
	A-10/W35	100	48,90	2,45
medium (45°C)	A12/W28	15	16,08	6,55
	A7/W33	35	15,16	4,87
	A2/W37	54	24,98	4,30
	A-7/W43	88	39,28	2,43
	A-10/W45	100	45,00	1,65
high (55°C)	A12/W30	15	17,13	6,28
	A7/W36	35	16,14	5,11
	A2/W42	54	24,78	3,90
	A-7/W52	88	40,51	2,11
	A-9/W54	96	43,04	1,84
	A-10/W55	100	44,30	1,70

Partial loads and COPs for the reference heating season “warmer“ (Athens)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W26	29	18,92	6,94
	A7/W31	64	35,34	6,07
	A2/W35	100	55,48	4,23
medium (45°C)	A12/W31	29	18,34	6,21
	A7/W39	64	35,14	4,95
	A2/W45	100	54,96	2,98
high (55°C)	A12/W34	29	16,54	5,71
	A7/W46	64	32,04	3,90
	A2/W55	100	50,96	2,04

Performance Data Sensor Solid Compact 55 (Continued)

Partial loads and COPs for the reference heating season “colder“ (Helsinki)

Temperature level	Operating point	Partial load ratio [%]	Heating capacity $_{Pdh}$ [kW]	COP_d
low (35°C)	A12/W24	11	17,40	7,26
	A7/W25	24	15,86	6,04
	A2/W27	37	18,62	5,43
	A-7/W30	61	27,58	3,90
	A-15/W32	82	36,10	2,51
	A-19/W34	92	39,10	2,19
	A-22/W35	100	35,06	1,62
medium (45°C)	A12/W26	11	17,88	6,97
	A7/W30	24	15,94	5,59
	A2/W33	37	18,76	4,79
	A-7/W38	61	27,46	3,06
	A-15/W41	79	36,82	1,68
	A-22/W45	100	30,98	1,17
high (55°C)	A12/W28	11	18,08	6,55
	A7/W32	24	15,48	5,33
	A2/W37	37	18,42	4,30
	A-7/W44	61	27,92	2,55
	A-15/W49	82	36,60	1,25
	A-22/W55	100	25,52	1,09

Partial loads and COPs in cooling mode for ceiling cooling applications

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W18	21	22,40	7,91
A25/W18	47	26,10	7,00
A30/W18	74	41,58	6,04
A35/W18	100	55,94	4,21

Partial loads and COPs in cooling mode for cooling mode for convector fans

Operating point	Partial load ratio [%]	Cooling capacity Pdc [kW]	EERd
A20/W11,5	21	18,20	6,37
A25/W10	47	27,00	6,19
A30/W8,5	74	41,60	5,91
A35/W7	100	56,40	4,02

* Cooling temperatures below 15°C only after consultation with Heliotherm.