


CERTIFICATE

Certificate holder	Bosch Thermotechnik GmbH Sophienstr. 30-32 35576 Wetzlar GERMANY
Production facility	Tranas, Rishon LeZion, Aveiro
Product	Air/Water Heat pumps
Type, Model	Buderus Logatherm WLW-10,12,14 SP AR P3
Testing basis	DIN EN 14511-1; DIN EN 14511-2; DIN EN 14511-3; DIN EN 14511-4:2019-07 DIN EN 14825:2019-07 DIN EN 12102-1:2018-02 DIN EN 16147:2017-08 European KEYMARK Scheme for Heat Pumps Rev. 9 (2021-03)
Mark of conformity	
Registration No.	011-1W0540
Valid until	2032-06-30
Right of use	This certificate entitles the holder to use the mark of conformity shown above in conjunction with the specified registration number.

See annex for further information.

K. Vehring

2022-06-10

Dipl.-Biol. Katharina Vehring, M. Eng.
Certification Body



ANNEX

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Certificate	011-1W0540 dated 2022-06-10
Technical Data	See Heat Pump KEYMARK database for detailed information
Testing laboratory/ Inspection body	TÜV Rheinland Energy GmbH 51101 Köln GERMANY
Test report(s)	HP1602022S1 dated 2022-05-09 HP1602022S2 dated 2022-04-14 HP1602022S3 dated 2022-05-09



Subtype Buderus Logatherm WLW-10,12,14 SP AR P3

Certificate Holder	Bosch Thermotechnik GmbH (Buderus)
Address	Sophienstraße 30-32
ZIP	35576
City	Wetzlar
Country	DE
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	Buderus Logatherm WLW-10,12,14 SP AR P3
Registration number	011-1W0540
Heat Pump Type	Outdoor Air/Water
Refrigerant	R410A
Mass of Refrigerant	3.2 kg
Certification Date	10.06.2022
Testing basis	European KEYMARK Scheme for Heat Pumps Rev. 9 (as of 2021-03)

Model WLW166i-10 SP AR P3 T190

Model name	WLW166i-10 SP AR P3 T190
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 16147 | Average Climate

Declared load profile	XL
Efficiency η_{DHW}	120 %
COP	2.87
Heating up time	01:53 h:min
Standby power input	50 W
Reference hot water temperature	52.7 °C
Mixed water at 40°C	264 l

EN 16147 | Colder Climate

Declared load profile	XL
Efficiency η_{DHW}	104 %
COP	2.5
Heating up time	02:08 h:min
Standby power input	50 W
Reference hot water temperature	51.6 °C
Mixed water at 40°C	260 l

EN 16147 | Warmer Climate

Declared load profile	XL
Efficiency η_{DHW}	138 %
COP	3.33
Heating up time	01:26 h:min
Standby power input	40 W
Reference hot water temperature	50.6 °C
Mixed water at 40°C	255 l

EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	9.98 kW	8.88 kW
El input	2.09 kW	2.99 kW
COP	4.77	2.97

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	183 %	135 %
Prated	10 kW	10 kW
SCOP	4.66	3.45
Tbiv	-9 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	8.84 kW	8.62 kW
COP Tj = -7°C	3.14	2.14
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	5.36 kW	5.61 kW
COP Tj = +2°C	4.68	3.49
Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.21 kW	4.83 kW
COP Tj = +7°C	5.46	4.22
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.20 kW	5.89 kW
COP Tj = 12°C	7.44	5.83
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	9.03 kW	8.62 kW
COP Tj = Tbiv	2.88	2.13
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.76 kW	7.71 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.80	1.86
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.24 kW	2.29 kW
Annual energy consumption Q _{he}	4435 kWh	5985 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	155 %	126 %
Prated	10 kW	10 kW
SCOP	3.95	3.23
T _{biv}	-15 °C	-13 °C
TOL	-20 °C	-20 °C
P _{dh} T _j = -7°C	6.11 kW	6.12 kW
COP T _j = -7°C	3.63	2.9
C _{dh} T _j = -7 °C	0.99	0.99
P _{dh} T _j = +2°C	4.48 kW	4.23 kW
COP T _j = +2°C	4.56	3.76
C _{dh} T _j = +2 °C	0.98	0.98
P _{dh} T _j = +7°C	5.26 kW	5.01 kW
COP T _j = +7°C	5.43	4.5
C _{dh} T _j = +7 °C	0.98	0.98
P _{dh} T _j = 12°C	6.14 kW	5.97 kW
COP T _j = 12°C	7.1	5.86
C _{dh} T _j = +12 °C	0.97	0.98
P _{dh} T _j = T _{biv}	7.7 kW	7.71 kW
COP T _j = T _{biv}	2.67	2.15
P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	6.2 kW	6.91 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	2.26	1.99
C _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	0.99	0.99
WTOL	60 °C	60 °C
P _{off}	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	10 kW	10 kW
Annual energy consumption Q _{he}	6248 kWh	7631 kWh

Pdh Tj = -15°C (if TOL	7.7	7.39
COP Tj = -15°C (if TOL	2.67	2.07
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	228 %	170 %
Prated	12 kW	12 kW
SCOP	5.77	4.32
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	9.6 kW	9.87 kW
COP Tj = +2°C	3.42	2.61
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	7.51 kW	7.68 kW
COP Tj = +7°C	5.37	3.74
Cdh Tj = +7 °C	0.98	0.99
Pdh Tj = 12°C	6.17 kW	5.94 kW
COP Tj = 12°C	7.09	5.48
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.24 kW	10.28 kW
COP Tj = Tbiv	3.78	2.87
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	9.6 kW	9.87 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.42	2.61
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.4 kW	2.13 kW
Annual energy consumption Qhe	2778 kWh	3712 kWh

Model WLW166i-10 SP AR P3 E

Model name	WLW166i-10 SP AR P3 E
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water

EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	9.98 kW	8.88 kW
El input	2.09 kW	2.99 kW
COP	4.77	2.97

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	183 %	135 %
Prated	10 kW	10 kW
SCOP	4.66	3.45
Tbiv	-9 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	8.84 kW	8.62 kW
COP Tj = -7°C	3.14	2.14
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	5.36 kW	5.61 kW
COP Tj = +2°C	4.68	3.49

Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.21 kW	4.83 kW
COP Tj = +7°C	5.46	4.22
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.20 kW	5.89 kW
COP Tj = 12°C	7.44	5.83
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	9.03 kW	8.62 kW
COP Tj = Tbiv	2.88	2.13
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.76 kW	7.71 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.80	1.86
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.24 kW	2.29 kW
Annual energy consumption Qhe	4435 kWh	5985 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	155 %	126 %
Prated	10 kW	10 kW
SCOP	3.95	3.23
Tbiv	-15 °C	-13 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	6.11 kW	6.12 kW
COP Tj = -7°C	3.63	2.9
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.48 kW	4.23 kW
COP Tj = +2°C	4.56	3.76
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.26 kW	5.01 kW
COP Tj = +7°C	5.43	4.5
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.14 kW	5.97 kW

COP Tj = 12°C	7.1	5.86
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	7.7 kW	7.71 kW
COP Tj = Tbiv	2.67	2.15
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	6.2 kW	6.91 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.26	1.99
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	10 kW	10 kW
Annual energy consumption Qhe	6248 kWh	7631 kWh
Pdh Tj = -15°C (if TOL	7.7	7.39
COP Tj = -15°C (if TOL	2.67	2.07
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	228 %	170 %
Prated	12 kW	12 kW
SCOP	5.77	4.32
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	9.6 kW	9.87 kW
COP Tj = +2°C	3.42	2.61
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	7.51 kW	7.68 kW
COP Tj = +7°C	5.37	3.74
Cdh Tj = +7 °C	0.98	0.99
Pdh Tj = 12°C	6.17 kW	5.94 kW
COP Tj = 12°C	7.09	5.48
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.24 kW	10.28 kW
COP Tj = Tbiv	3.78	2.87

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	9.6 kW	9.87 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.42	2.61
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.4 kW	2.13 kW
Annual energy consumption Qhe	2778 kWh	3712 kWh

Model WLW166i-10 SP AR P3 B

Model name	WLW166i-10 SP AR P3 B
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	9.98 kW	8.88 kW
El input	2.09 kW	2.99 kW
COP	4.77	2.97

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	183 %	135 %
Prated	10 kW	10 kW
SCOP	4.66	3.45
Tbiv	-9 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	8.84 kW	8.62 kW
COP Tj = -7°C	3.14	2.14
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	5.36 kW	5.61 kW
COP Tj = +2°C	4.68	3.49

Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.21 kW	4.83 kW
COP Tj = +7°C	5.46	4.22
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.20 kW	5.89 kW
COP Tj = 12°C	7.44	5.83
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	9.03 kW	8.62 kW
COP Tj = Tbiv	2.88	2.13
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.76 kW	7.71 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.80	1.86
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	1.24 kW	2.29 kW
Annual energy consumption Qhe	4435 kWh	5985 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	155 %	126 %
Prated	10 kW	10 kW
SCOP	3.95	3.23
Tbiv	-15 °C	-13 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	6.11 kW	6.12 kW
COP Tj = -7°C	3.63	2.9
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.48 kW	4.23 kW
COP Tj = +2°C	4.56	3.76
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.26 kW	5.01 kW
COP Tj = +7°C	5.43	4.5
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.14 kW	5.97 kW

COP Tj = 12°C	7.1	5.86
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	7.7 kW	7.71 kW
COP Tj = Tbiv	2.67	2.15
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	6.2 kW	6.91 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.26	1.99
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	10 kW	10 kW
Annual energy consumption Qhe	6248 kWh	7631 kWh
Pdh Tj = -15°C (if TOL	7.7	7.39
COP Tj = -15°C (if TOL	2.67	2.07
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	228 %	170 %
Prated	12 kW	12 kW
SCOP	5.77	4.32
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	9.6 kW	9.87 kW
COP Tj = +2°C	3.42	2.61
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	7.51 kW	7.68 kW
COP Tj = +7°C	5.37	3.74
Cdh Tj = +7 °C	0.98	0.99
Pdh Tj = 12°C	6.17 kW	5.94 kW
COP Tj = 12°C	7.09	5.48
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.24 kW	10.28 kW
COP Tj = Tbiv	3.78	2.87

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	9.6 kW	9.87 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.42	2.61
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	2.4 kW	2.13 kW
Annual energy consumption Qhe	2778 kWh	3712 kWh

Model WLW166i-12 SP AR P3 T190

Model name	WLW166i-12 SP AR P3 T190
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 16147 | Average Climate

Declared load profile	XL
Efficiency η_{DHW}	120 %
COP	2.87
Heating up time	01:53 h:min
Standby power input	50 W
Reference hot water temperature	52.7 °C
Mixed water at 40°C	264 l

EN 16147 | Colder Climate

Declared load profile	XL
Efficiency η_{DHW}	104 %
COP	2.5
Heating up time	02:08 h:min
Standby power input	50 W
Reference hot water temperature	51.6 °C
Mixed water at 40°C	260 l

EN 16147 | Warmer Climate

Declared load profile	XL
Efficiency η_{DHW}	138 %
COP	3.33
Heating up time	01:26 h:min
Standby power input	40 W
Reference hot water temperature	50.6 °C
Mixed water at 40°C	255 l

EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	11.6 kW	10.80 kW
El input	2.58 kW	3.75 kW
COP	4.5	2.88

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	179 %	136 %
Prated	11 kW	11 kW
SCOP	4.56	3.48
Tbiv	-10 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.22 kW	9.51 kW
COP Tj = -7°C	3.02	2.10
Cdh Tj = -7 °C	0.99	1
Pdh Tj = +2°C	6.14 kW	6.06 kW
COP Tj = +2°C	4.56	3.52
Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.22 kW	5.01 kW
COP Tj = +7°C	5.46	4.35
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.17 kW	5.97 kW
COP Tj = 12°C	7.21	5.69
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.76 kW	9.51 kW
COP Tj = Tbiv	2.62	2.10
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.76 kW	8.89 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.62	1.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	2.11 kW
Annual energy consumption Q _{he}	4983 kWh	6527 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	156 %	126 %
Prated	11 kW	11 kW
SCOP	3.97	3.23
T _{biv}	-15 °C	-13 °C
TOL	-20 °C	-20 °C
P _{dh} T _j = -7°C	6.96 kW	6.95 kW
COP T _j = -7°C	3.61	2.76
C _{dh} T _j = -7 °C	0.99	0.99
P _{dh} T _j = +2°C	4.5 kW	4.44 kW
COP T _j = +2°C	4.6	4.02
C _{dh} T _j = +2 °C	0.98	0.98
P _{dh} T _j = +7°C	5.28 kW	5.01 kW
COP T _j = +7°C	5.56	4.54
C _{dh} T _j = +7 °C	0.98	0.98
P _{dh} T _j = 12°C	6.15 kW	5.97 kW
COP T _j = 12°C	7.09	5.89
C _{dh} T _j = +12 °C	0.97	0.98
P _{dh} T _j = T _{biv}	9.57 kW	8.16 kW
COP T _j = T _{biv}	2.45	2.05
P _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	7.9 kW	7.15 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	2.05	1.84
C _{dh} T _j = TOL or P _{dh} T _j = T _{designh} if TOL < T _{designh}	0.99	0.99
WTOL	60 °C	60 °C
P _{off}	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	11 kW	11 kW
Annual energy consumption Q _{he}	6834 kWh	8388 kWh

Pdh Tj = -15°C (if TOL	9.57	7.78
COP Tj = -15°C (if TOL	2.45	1.96
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	229 %	168 %
Prated	13 kW	13 kW
SCOP	5.79	4.27
Tbiv	3 °C	3 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	10.9 kW	11.3 kW
COP Tj = +2°C	3.28	2.48
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.66 kW	8.67 kW
COP Tj = +7°C	5.22	3.61
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.15 kW	5.97 kW
COP Tj = 12°C	7.13	5.51
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	11.3 kW	11.57 kW
COP Tj = Tbiv	3.46	2.61
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.9 kW	11.3 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.28	2.48
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.1 kW	1.7 kW
Annual energy consumption Qhe	2999 kWh	4068 kWh

Model WLW166i-12 SP AR P3 E

Model name	WLW166i-12 SP AR P3 E
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water

EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	11.6 kW	10.80 kW
El input	2.58 kW	3.75 kW
COP	4.5	2.88

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	179 %	136 %
Prated	11 kW	11 kW
SCOP	4.56	3.48
Tbiv	-10 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.22 kW	9.51 kW
COP Tj = -7°C	3.02	2.10
Cdh Tj = -7 °C	0.99	1
Pdh Tj = +2°C	6.14 kW	6.06 kW
COP Tj = +2°C	4.56	3.52

Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.22 kW	5.01 kW
COP Tj = +7°C	5.46	4.35
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.17 kW	5.97 kW
COP Tj = 12°C	7.21	5.69
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.76 kW	9.51 kW
COP Tj = Tbiv	2.62	2.10
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.76 kW	8.89 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.62	1.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	2.11 kW
Annual energy consumption Qhe	4983 kWh	6527 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	156 %	126 %
Prated	11 kW	11 kW
SCOP	3.97	3.23
Tbiv	-15 °C	-13 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	6.96 kW	6.95 kW
COP Tj = -7°C	3.61	2.76
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.5 kW	4.44 kW
COP Tj = +2°C	4.6	4.02
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.28 kW	5.01 kW
COP Tj = +7°C	5.56	4.54
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.15 kW	5.97 kW

COP Tj = 12°C	7.09	5.89
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	9.57 kW	8.16 kW
COP Tj = Tbiv	2.45	2.05
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.9 kW	7.15 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.05	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	11 kW	11 kW
Annual energy consumption Qhe	6834 kWh	8388 kWh
Pdh Tj = -15°C (if TOL	9.57	7.78
COP Tj = -15°C (if TOL	2.45	1.96
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	229 %	168 %
Prated	13 kW	13 kW
SCOP	5.79	4.27
Tbiv	3 °C	3 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	10.9 kW	11.3 kW
COP Tj = +2°C	3.28	2.48
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.66 kW	8.67 kW
COP Tj = +7°C	5.22	3.61
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.15 kW	5.97 kW
COP Tj = 12°C	7.13	5.51
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	11.3 kW	11.57 kW
COP Tj = Tbiv	3.46	2.61

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.9 kW	11.3 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.28	2.48
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	2.1 kW	1.7 kW
Annual energy consumption Qhe	2999 kWh	4068 kWh

Model WLW166i-12 SP AR P3 B

Model name	WLW166i-12 SP AR P3 B
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	11.6 kW	10.80 kW
El input	2.58 kW	3.75 kW
COP	4.5	2.88

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	179 %	136 %
Prated	11 kW	11 kW
SCOP	4.56	3.48
Tbiv	-10 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.22 kW	9.51 kW
COP Tj = -7°C	3.02	2.10
Cdh Tj = -7 °C	0.99	1
Pdh Tj = +2°C	6.14 kW	6.06 kW
COP Tj = +2°C	4.56	3.52

Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.22 kW	5.01 kW
COP Tj = +7°C	5.46	4.35
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.17 kW	5.97 kW
COP Tj = 12°C	7.21	5.69
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.76 kW	9.51 kW
COP Tj = Tbiv	2.62	2.10
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.76 kW	8.89 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.62	1.93
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	0.00 kW	2.11 kW
Annual energy consumption Qhe	4983 kWh	6527 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	156 %	126 %
Prated	11 kW	11 kW
SCOP	3.97	3.23
Tbiv	-15 °C	-13 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	6.96 kW	6.95 kW
COP Tj = -7°C	3.61	2.76
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.5 kW	4.44 kW
COP Tj = +2°C	4.6	4.02
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.28 kW	5.01 kW
COP Tj = +7°C	5.56	4.54
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.15 kW	5.97 kW

COP Tj = 12°C	7.09	5.89
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	9.57 kW	8.16 kW
COP Tj = Tbiv	2.45	2.05
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.9 kW	7.15 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.05	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	11 kW	11 kW
Annual energy consumption Qhe	6834 kWh	8388 kWh
Pdh Tj = -15°C (if TOL	9.57	7.78
COP Tj = -15°C (if TOL	2.45	1.96
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	229 %	168 %
Prated	13 kW	13 kW
SCOP	5.79	4.27
Tbiv	3 °C	3 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	10.9 kW	11.3 kW
COP Tj = +2°C	3.28	2.48
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.66 kW	8.67 kW
COP Tj = +7°C	5.22	3.61
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.15 kW	5.97 kW
COP Tj = 12°C	7.13	5.51
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	11.3 kW	11.57 kW
COP Tj = Tbiv	3.46	2.61

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.9 kW	11.3 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.28	2.48
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	2.1 kW	1.7 kW
Annual energy consumption Qhe	2999 kWh	4068 kWh

Model WLW166i-14 SP AR P3 T190

Model name	WLW166i-14 SP AR P3 T190
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 16147 | Average Climate

Declared load profile	XL
Efficiency η_{DHW}	120 %
COP	2.87
Heating up time	01:53 h:min
Standby power input	50 W
Reference hot water temperature	52.7 °C
Mixed water at 40°C	264 l

EN 16147 | Colder Climate

Declared load profile	XL
Efficiency η_{DHW}	104 %
COP	2.5
Heating up time	02:08 h:min
Standby power input	50 W
Reference hot water temperature	51.6 °C
Mixed water at 40°C	260 l

EN 16147 | Warmer Climate

Declared load profile	XL
Efficiency η_{DHW}	138 %
COP	3.33
Heating up time	01:26 h:min
Standby power input	40 W
Reference hot water temperature	50.6 °C
Mixed water at 40°C	255 l

EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	14.58 kW	12.70 kW
El input	3.41 kW	4.54 kW
COP	4.28	2.80

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	178 %	138 %
Prated	12 kW	12 kW
SCOP	4.53	3.53
Tbiv	-10 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.98 kW	10.26 kW
COP Tj = -7°C	2.73	2.10
Cdh Tj = -7 °C	0.99	1
Pdh Tj = +2°C	6.71 kW	6.60 kW
COP Tj = +2°C	4.71	3.59
Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.26 kW	5.09 kW
COP Tj = +7°C	5.40	4.48
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.11 kW	6.06 kW
COP Tj = 12°C	6.75	5.60
Cdh Tj = +12 °C	0.98	0.98
Pdh Tj = Tbiv	11.49 kW	10.26 kW
COP Tj = Tbiv	2.56	2.10
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.49 kW	9.04 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.54	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W

PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	2.96 kW
Annual energy consumption Qhe	5475 kWh	7031 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	155 %	122 %
Prated	12 kW	12 kW
SCOP	3.96	3.12
Tbiv	-15 °C	-12 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	7.62 kW	7.48 kW
COP Tj = -7°C	3.56	2.68
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.53 kW	4.64 kW
COP Tj = +2°C	4.64	3.86
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.26 kW	5.01 kW
COP Tj = +7°C	5.43	4.57
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.15 kW	5.98 kW
COP Tj = 12°C	7.13	5.91
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.18 kW	8.85 kW
COP Tj = Tbiv	2.42	2.03
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.69 kW	7.37 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.06	1.7
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12 kW	12 kW
Annual energy consumption Qhe	7474 kWh	9483 kWh

Pdh Tj = -15°C (if TOL	10.18	8.31
COP Tj = -15°C (if TOL	2.42	1.88
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	229 %	168 %
Prated	14 kW	14 kW
SCOP	5.79	4.27
Tbiv	3 °C	3 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	12.2 kW	11.85 kW
COP Tj = +2°C	3.16	2.38
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.88 kW	9.05 kW
COP Tj = +7°C	5.21	3.58
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.16 kW	5.97 kW
COP Tj = 12°C	7.19	5.56
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	12.6 kW	12.3 kW
COP Tj = Tbiv	3.33	2.56
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.2 kW	11.85 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.16	2.38
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.8 kW	2.15 kW
Annual energy consumption Qhe	3228 kWh	4384 kWh

Model WLW166i-14 SP AR P3 E

Model name	WLW166i-14 SP AR P3 E
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	3x400V 50Hz
Off-peak product	No

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	14.58 kW	12.70 kW
El input	3.41 kW	4.54 kW
COP	4.28	2.80

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	178 %	138 %
Prated	12 kW	12 kW
SCOP	4.53	3.53
Tbiv	-10 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.98 kW	10.26 kW
COP Tj = -7°C	2.73	2.10
Cdh Tj = -7 °C	0.99	1
Pdh Tj = +2°C	6.71 kW	6.60 kW
COP Tj = +2°C	4.71	3.59

Cdh Tj = +2 °C	0.98	0.99
Pdh Tj = +7°C	5.26 kW	5.09 kW
COP Tj = +7°C	5.40	4.48
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.11 kW	6.06 kW
COP Tj = 12°C	6.75	5.60
Cdh Tj = +12 °C	0.98	0.98
Pdh Tj = Tbiv	11.49 kW	10.26 kW
COP Tj = Tbiv	2.56	2.10
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	11.49 kW	9.04 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.54	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	2.96 kW
Annual energy consumption Qhe	5475 kWh	7031 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
η_s	155 %	122 %
Prated	12 kW	12 kW
SCOP	3.96	3.12
Tbiv	-15 °C	-12 °C
TOL	-20 °C	-20 °C
Pdh Tj = -7°C	7.62 kW	7.48 kW
COP Tj = -7°C	3.56	2.68
Cdh Tj = -7 °C	0.99	0.99
Pdh Tj = +2°C	4.53 kW	4.64 kW
COP Tj = +2°C	4.64	3.86
Cdh Tj = +2 °C	0.98	0.98
Pdh Tj = +7°C	5.26 kW	5.01 kW
COP Tj = +7°C	5.43	4.57
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.15 kW	5.98 kW

COP Tj = 12°C	7.13	5.91
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	10.18 kW	8.85 kW
COP Tj = Tbiv	2.42	2.03
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.69 kW	7.37 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.06	1.7
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12 kW	12 kW
Annual energy consumption Qhe	7474 kWh	9483 kWh
Pdh Tj = -15°C (if TOL	10.18	8.31
COP Tj = -15°C (if TOL	2.42	1.88
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
Sound power level outdoor	64 dB(A)	64 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	229 %	168 %
Prated	14 kW	14 kW
SCOP	5.79	4.27
Tbiv	3 °C	3 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	12.2 kW	11.85 kW
COP Tj = +2°C	3.16	2.38
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.88 kW	9.05 kW
COP Tj = +7°C	5.21	3.58
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.16 kW	5.97 kW
COP Tj = 12°C	7.19	5.56
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	12.6 kW	12.3 kW
COP Tj = Tbiv	3.33	2.56

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.2 kW	11.85 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.16	2.38
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.8 kW	2.15 kW
Annual energy consumption Qhe	3228 kWh	4384 kWh

Model WLW166i-14 SP AR P3 B

Model name	WLW166i-14 SP AR P3 B
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Heat Source	Outdoor Air
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	No

Outdoor Air/Water

EN 14511-4 | Heating

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed
Starting and operating test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	14.58 kW	12.70 kW
El input	3.41 kW	4.54 kW
COP	4.28	2.80

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
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EN 14825 | Average Climate

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COP Tj = +7°C	5.40	4.48
Cdh Tj = +7 °C	0.98	0.98
Pdh Tj = 12°C	6.11 kW	6.06 kW
COP Tj = 12°C	6.75	5.60
Cdh Tj = +12 °C	0.98	0.98
Pdh Tj = Tbiv	11.49 kW	10.26 kW
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COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.54	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1	1
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	0.00 kW	2.96 kW
Annual energy consumption Qhe	5475 kWh	7031 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
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EN 14825 | Colder Climate

	Low temperature	Medium temperature
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Pdh Tj = 12°C	6.15 kW	5.98 kW

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Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	0.99
WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	12 kW	12 kW
Annual energy consumption Qhe	7474 kWh	9483 kWh
Pdh Tj = -15°C (if TOL	10.18	8.31
COP Tj = -15°C (if TOL	2.42	1.88
Cdh Tj = -15 °C	0.99	0.99

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	42 dB(A)
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EN 14825 | Warmer Climate

	Low temperature	Medium temperature
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COP Tj = +2°C	3.16	2.38
Cdh Tj = +2 °C	0.99	0.99
Pdh Tj = +7°C	8.88 kW	9.05 kW
COP Tj = +7°C	5.21	3.58
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	6.16 kW	5.97 kW
COP Tj = 12°C	7.19	5.56
Cdh Tj = +12 °C	0.97	0.98
Pdh Tj = Tbiv	12.6 kW	12.3 kW
COP Tj = Tbiv	3.33	2.56

Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.2 kW	11.85 kW
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WTOL	60 °C	60 °C
Poff	22 W	22 W
PTO	0 W	0 W
PSB	22 W	22 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	n/a	n/a
Supplementary Heater: PSUP	1.8 kW	2.15 kW
Annual energy consumption Qhe	3228 kWh	4384 kWh