

Subtype LWDV 91-1/3

Certificate Holder	ait-deutschland GmbH
Address	Industriestr. 3
ZIP	95359
City	Kasendorf
Country	DE
Certification Body	BRE Global Limited
Subtype title	LWDV 91-1/3
Registration number	041-K001-24
Heat Pump Type	Outdoor Air/Water
Refrigerant	R290
Mass of Refrigerant	1.05 kg
Certification Date	27.03.2019
Testing basis	Heat Pump Keymark Scheme Rules Rev 08
Testing laboratory	Wärmepumpen-Testzentrum (WPZ), CH

Model alpha innotec LWDV 91-1/3-HDV 12-3

Model name	alpha innotec LWDV 91-1/3-HDV 12-3
Application	Heating (medium temp)
Units	Outdoor
Climate zone (for heating)	n/a
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	2.77 kW	4.23 kW
El input	0.52 kW	1.26 kW
COP	5.41	3.35

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	187 %	147 %
Prated	9.50 kW	8.90 kW
SCOP	4.75	3.75
Tbiv	-5 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.28 kW	7.07 kW
COP Tj = -7°C	2.96	2.19
Pdh Tj = +2°C	5.43 kW	4.86 kW
COP Tj = +2°C	5.17	4.86
Pdh Tj = +7°C	3.37 kW	3.18 kW
COP Tj = +7°C	6.90	5.36
Pdh Tj = 12°C	3.28 kW	3.18 kW
COP Tj = 12°C	8.22	6.77
Pdh Tj = Tbiv	7.68 kW	7.50 kW

COP Tj = Tbiv	3.11	2.35
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.63 kW	6.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.05	2.07
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.87 kW	2.11 kW
Annual energy consumption Qhe	4135 kWh	4904 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	160 %	119 %
Prated	7.50 kW	6.50 kW
SCOP	4.07	3.04
Tbiv	-17 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.50 kW	3.87 kW
COP Tj = -7°C	3.49	2.57
Pdh Tj = +2°C	2.87 kW	2.35 kW
COP Tj = +2°C	4.82	3.57
Pdh Tj = +7°C	2.97 kW	2.88 kW
COP Tj = +7°C	7.17	5.76
Pdh Tj = 12°C	3.05 kW	3.17 kW
COP Tj = 12°C	7.39	6.91
Pdh Tj = Tbiv	6.43 kW	5.70 kW
COP Tj = Tbiv	2.50	1.72
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.59 kW	5.06 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.14	1.53
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W

PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.91 kW	1.44 kW
Annual energy consumption Qhe	4541 kWh	5277 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	218 %	171 %
P _{rated}	9.50 kW	9.50 kW
SCOP	5.53	4.36
T _{biv}	4 °C	4 °C
TOL	2 °C	2 °C
P _{dh Tj = +2°C}	7.98 kW	8.10 kW
COP T _j = +2°C	3.49	2.32
P _{dh Tj = +7°C}	5.89 kW	6.24 kW
COP T _j = +7°C	5.99	4.07
P _{dh Tj = 12°C}	3.12 kW	3.24 kW
COP T _j = 12°C	7.47	6.53
P _{dh Tj = T_{biv}}	8.15 kW	8.06 kW
COP T _j = T _{biv}	3.81	2.70
P _{dh Tj = TOL or P_{dh Tj = T_{designh}} if TOL < T_{designh}}	7.98 kW	8.10 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	3.49	2.32
C _{dh Tj = TOL or P_{dh Tj = T_{designh}} if TOL < T_{designh}}	1.00	1.00
WTOL	60 °C	60 °C
P _{off}	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.52 kW	1.40 kW
Annual energy consumption Qhe	2295 kWh	2910 kWh

Model alpha innotec LWDV 91-1/3-HDV 9-1/3

Model name	alpha innotec LWDV 91-1/3-HDV 9-1/3
Application	Heating (medium temp)
Units	Outdoor
Climate zone (for heating)	n/a
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/Water**EN 14511-4 | Heating**

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	2.77 kW	4.23 kW
El input	0.52 kW	1.26 kW
COP	5.41	3.35

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	187 %	147 %
Prated	9.50 kW	8.90 kW
SCOP	4.90	3.85
Tbiv	-5 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.28 kW	7.07 kW
COP Tj = -7°C	2.96	2.19
Cdh Tj = -7 °C		
Pdh Tj = +2°C	5.43 kW	4.86 kW
COP Tj = +2°C	5.17	4.86
Cdh Tj = +2 °C		
Pdh Tj = +7°C	3.37 kW	3.18 kW
COP Tj = +7°C	6.90	5.36
Cdh Tj = +7 °C		

Pdh Tj = 12°C	3.28 kW	3.18 kW
COP Tj = 12°C	8.22	6.77
Cdh Tj = +12 °C		
Pdh Tj = Tbiv	7.68 kW	7.50 kW
COP Tj = Tbiv	3.11	2.35
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.63 kW	6.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.05	2.07
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.87 kW	2.11 kW
Annual energy consumption Qhe	4135 kWh	4904 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	160 %	118 %
Prated	7.50 kW	6.50 kW
SCOP	4.07	3.04
Tbiv	-17 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.50 kW	3.87 kW
COP Tj = -7°C	3.49	2.57
Pdh Tj = +2°C	2.87 kW	2.35 kW
COP Tj = +2°C	4.82	3.57
Pdh Tj = +7°C	2.97 kW	2.88 kW
COP Tj = +7°C	7.17	5.76
Pdh Tj = 12°C	3.05 kW	3.17 kW
COP Tj = 12°C	7.39	6.91
Pdh Tj = Tbiv	6.43 kW	5.70 kW
COP Tj = Tbiv	2.50	1.72
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.59 kW	5.06 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.14	1.53

Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.91 kW	1.44 kW
Annual energy consumption Qhe	4541 kWh	5277 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	218 %	172 %
Prated	9.50 kW	9.50 kW
SCOP	5.53	4.36
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	7.98 kW	8.10 kW
COP Tj = +2°C	3.49	2.32
Pdh Tj = +7°C	5.89 kW	6.24 kW
COP Tj = +7°C	5.99	4.07
Pdh Tj = 12°C	3.12 kW	3.24 kW
COP Tj = 12°C	7.47	6.53
Pdh Tj = Tbiv	8.15 kW	8.06 kW
COP Tj = Tbiv	3.81	2.70
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.98 kW	8.10 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.49	2.32
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.52 kW	1.40 kW
Annual energy consumption Qhe	2295 kWh	2910 kWh

Model alpha innotec LWDV 91-1/3-HSDV 12M

Model name	alpha innotec LWDV 91-1/3-HSDV 12M
Application	Heating (medium temp)
Units	Outdoor
Climate zone (for heating)	n/a
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	2.77 kW	4.23 kW
El input	0.52 kW	1.26 kW
COP	5.41	3.35

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	187 %	147 %
Prated	9.50 kW	8.90 kW
SCOP	4.90	3.85
Tbiv	-5 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.28 kW	7.07 kW
COP Tj = -7°C	2.96	2.19
Pdh Tj = +2°C	5.43 kW	4.86 kW
COP Tj = +2°C	5.17	4.86
Pdh Tj = +7°C	3.37 kW	3.18 kW
COP Tj = +7°C	6.90	5.36
Pdh Tj = 12°C	3.28 kW	3.18 kW
COP Tj = 12°C	8.22	6.77
Pdh Tj = Tbiv	7.68 kW	7.50 kW

COP Tj = Tbiv	3.11	2.35
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.63 kW	6.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.05	2.07
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.87 kW	2.11 kW
Annual energy consumption Qhe	4135 kWh	4904 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	160 %	119 %
Prated	7.50 kW	6.50 kW
SCOP	4.07	3.04
Tbiv	-17 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.50 kW	3.87 kW
COP Tj = -7°C	3.49	2.57
Pdh Tj = +2°C	2.87 kW	2.35 kW
COP Tj = +2°C	4.82	3.57
Pdh Tj = +7°C	2.97 kW	2.88 kW
COP Tj = +7°C	7.17	5.76
Pdh Tj = 12°C	3.05 kW	3.17 kW
COP Tj = 12°C	7.39	6.91
Pdh Tj = Tbiv	6.43 kW	5.70 kW
COP Tj = Tbiv	2.50	1.72
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.59 kW	5.06 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.14	1.53
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W

PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.91 kW	1.44 kW
Annual energy consumption Qhe	4541 kWh	5277 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	218 %	171 %
P _{rated}	9.50 kW	9.50 kW
SCOP	5.53	4.36
T _{biv}	4 °C	4 °C
TOL	2 °C	2 °C
P _{dh Tj = +2°C}	7.98 kW	8.10 kW
COP T _j = +2°C	3.49	2.32
P _{dh Tj = +7°C}	5.89 kW	6.24 kW
COP T _j = +7°C	5.99	4.07
P _{dh Tj = 12°C}	3.12 kW	3.24 kW
COP T _j = 12°C	7.47	6.53
P _{dh Tj = T_{biv}}	8.15 kW	8.06 kW
COP T _j = T _{biv}	3.81	2.70
P _{dh Tj = TOL or P_{dh Tj = T_{designh}} if TOL < T_{designh}}	7.98 kW	8.10 kW
COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	3.49	2.32
C _{dh Tj = TOL or P_{dh Tj = T_{designh}} if TOL < T_{designh}}	1.00	1.00
WTOL	60 °C	60 °C
P _{off}	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.52 kW	1.40 kW
Annual energy consumption Qhe	2295 kWh	2910 kWh

Model alpha innotec LWDV-91-1/3-HSDV9 M1/3

Model name	alpha innotec LWDV-91-1/3-HSDV9 M1/3
Application	Heating (medium temp)
Units	Outdoor
Climate zone (for heating)	n/a
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/Water
EN 14511-4 | Heating

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	2.77 kW	4.23 kW
El input	0.52 kW	1.26 kW
COP	5.41	3.35

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	187 %	147 %
Prated	9.50 kW	8.90 kW
SCOP	4.75	3.75
Tbiv	-5 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.28 kW	7.07 kW
COP Tj = -7°C	2.96	2.19
Pdh Tj = +2°C	5.43 kW	4.86 kW
COP Tj = +2°C	5.17	4.86
Pdh Tj = +7°C	3.37 kW	3.18 kW
COP Tj = +7°C	6.90	5.36
Pdh Tj = 12°C	3.28 kW	3.18 kW
COP Tj = 12°C	8.22	6.77
Pdh Tj = Tbiv	7.68 kW	7.50 kW

COP Tj = Tbiv	3.11	2.35
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.63 kW	6.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.05	2.07
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.87 kW	2.11 kW
Annual energy consumption Qhe	4135 kWh	4904 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	160 %	119 %
Prated	7.50 kW	6.50 kW
SCOP	4.07	3.04
Tbiv	-17 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.50 kW	3.87 kW
COP Tj = -7°C	3.49	2.57
Pdh Tj = +2°C	2.87 kW	2.35 kW
COP Tj = +2°C	4.82	3.57
Pdh Tj = +7°C	2.97 kW	2.88 kW
COP Tj = +7°C	7.17	5.76
Pdh Tj = 12°C	3.05 kW	3.17 kW
COP Tj = 12°C	7.39	6.91
Pdh Tj = Tbiv	6.43 kW	5.70 kW
COP Tj = Tbiv	2.50	1.72
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.59 kW	5.06 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.14	1.53
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W

PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.91 kW	1.44 kW
Annual energy consumption Qhe	4541 kWh	5277 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
η_s	218 %	171 %
P _{rated}	9.50 kW	9.50 kW
SCOP	5.53	4.36
T _{biv}	4 °C	4 °C
TOL	2 °C	2 °C
P _{dh Tj = +2°C}	7.98 kW	8.10 kW
COP T _j = +2°C	3.49	2.32
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COP T _j = TOL or COP T _j = T _{designh} if TOL < T _{designh}	3.49	2.32
C _{dh Tj = TOL or P_{dh Tj = T_{designh}} if TOL < T_{designh}}	1.00	1.00
WTOL	60 °C	60 °C
P _{off}	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.52 kW	1.40 kW
Annual energy consumption Qhe	2295 kWh	2910 kWh

Model NOVELAN LADV 9.1-1/3

Model name	NOVELAN LADV 9.1-1/3
Application	Heating (medium temp)
Units	Outdoor
Climate zone (for heating)	n/a
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data

Power supply	1x230V 50Hz
Off-peak product	n/a

Outdoor Air/Water**EN 14511-4 | Heating**

Shutting off the heat transfer medium flow passed

Complete power supply failure	passed
Defrost test	passed

EN 14511-2 | Heating

	Low temperature	Medium temperature
Heat output	2.77 kW	4.23 kW
El input	0.52 kW	1.26 kW
COP	5.41	3.35

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
η_s	187 %	147 %
Prated	9.50 kW	8.90 kW
SCOP	4.90	3.85
Tbiv	-5 °C	-6 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	7.28 kW	7.07 kW
COP Tj = -7°C	2.96	2.19
Cdh Tj = -7 °C		
Pdh Tj = +2°C	5.43 kW	4.86 kW
COP Tj = +2°C	5.17	4.86
Cdh Tj = +2 °C		
Pdh Tj = +7°C	3.37 kW	3.18 kW
COP Tj = +7°C	6.90	5.36
Cdh Tj = +7 °C		

Pdh Tj = 12°C	3.28 kW	3.18 kW
COP Tj = 12°C	8.22	6.77
Cdh Tj = +12 °C		
Pdh Tj = Tbiv	7.68 kW	7.50 kW
COP Tj = Tbiv	3.11	2.35
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.63 kW	6.79 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.05	2.07
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.87 kW	2.11 kW
Annual energy consumption Qhe	4135 kWh	4904 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	160 %	118 %
Prated	7.50 kW	6.50 kW
SCOP	4.07	3.04
Tbiv	-17 °C	-17 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	4.50 kW	3.87 kW
COP Tj = -7°C	3.49	2.57
Pdh Tj = +2°C	2.87 kW	2.35 kW
COP Tj = +2°C	4.82	3.57
Pdh Tj = +7°C	2.97 kW	2.88 kW
COP Tj = +7°C	7.17	5.76
Pdh Tj = 12°C	3.05 kW	3.17 kW
COP Tj = 12°C	7.39	6.91
Pdh Tj = Tbiv	6.43 kW	5.70 kW
COP Tj = Tbiv	2.50	1.72
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	5.59 kW	5.06 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.14	1.53

Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.91 kW	1.44 kW
Annual energy consumption Qhe	4541 kWh	5277 kWh

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level outdoor	54 dB(A)	54 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	218 %	172 %
Prated	9.50 kW	9.50 kW
SCOP	5.53	4.36
Tbiv	4 °C	4 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	7.98 kW	8.10 kW
COP Tj = +2°C	3.49	2.32
Pdh Tj = +7°C	5.89 kW	6.24 kW
COP Tj = +7°C	5.99	4.07
Pdh Tj = 12°C	3.12 kW	3.24 kW
COP Tj = 12°C	7.47	6.53
Pdh Tj = Tbiv	8.15 kW	8.06 kW
COP Tj = Tbiv	3.81	2.70
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.98 kW	8.10 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.49	2.32
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	22 W	22 W
PSB	22 W	22 W
PCK	30 W	30 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.52 kW	1.40 kW
Annual energy consumption Qhe	2295 kWh	2910 kWh