Subtype HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5 OS

Certificate Holder	Saunier Duval Brand Group
Address	SDECCI SAS - 17 rue de la Petite Baratte
ZIP	44300
City	Nantes
Country	FR
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Subtype title	HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5 OS
Registration number	011-1W0764
Heat Pump Type	Outdoor Air/Water
Refrigerant	R410A
Mass of Refrigerant	3.6 kg
Certification Date	28.04.2021
Testing basis	HP KEYMARK certification scheme rules rev. 14

Model HA 10-5 OS 230V + HA 12-5 WSB	
Model name	HA 10-5 OS 230V + HA 12-5 WSB
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
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
Starting and operating test	passed

EN 14511-2 | Heating		
	Low temperature	Medium temperature
Heat output	9.70 kW	10.35 kW
El input	2.12 kW	3.74 kW
COP	4.57	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	180 %	128 %
Prated	11.50 kW	9.56 kW
SCOP	4.58	3.28
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.18 kW	8.46 kW
COP Tj = -7°C	2.83	2.12
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	6.53 kW	5.05 kW
COP Tj = +2°C	4.57	3.14
Cdh Tj = +2 °C	0.990	0.990

Pdh Tj = +7°C	5.66 kW	5.18 kW
COP Tj = +7°C	5.78	4.27
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.52 kW	6.11 kW
COP Tj = 12°C	7.35	5.79
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	10.18 kW	8.46 kW
COP Tj = Tbiv	2.83	2.12
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.05 kW	7.98 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.72	1.71
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.45 kW	1.59 kW
Annual energy consumption Qhe	5189 kWh	6029 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	152 %	111 %
Prated	9.49 kW	9.42 kW
SCOP	3.88	2.86
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.32 kW	6.14 kW
COP Tj = -7°C	3.41	2.56
Cdh Tj = -7 °C	0.990	1.000
Pdh Tj = +2°C	4.94 kW	4.48 kW
COP Tj = +2°C	4.53	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.53 kW	5.31 kW
COP Tj = +7°C	5.86	4.59
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.44 kW	6.21 kW
COP Tj = 12°C	7.27	5.99

Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	7.74 kW	7.68 kW
COP Tj = Tbiv	2.34	1.89
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.41 kW	7.68 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.22	1.89
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	9.49 kW	9.42 kW
Annual energy consumption Qhe	6025 kWh	8124 kWh
Pdh Tj = -15°C (if TOL	7.74	7.68
COP Tj = -15°C (if TOL	2.34	1.89
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	212 %	158 %
Prated	8.23 kW	9.30 kW
SCOP	5.37	4.03
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.99	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2046 kWh	3076 kWh

Model HA 10-5 OS 230V + HA 12-5 STB	
Model name	HA 10-5 OS 230V + HA 12-5 STB
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
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 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	94 %
COP	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	86 %
COP	2.14
Heating up time	01:13 h:min
Standby power input	51.6 W
Reference hot water temperature	53.4 °C
Mixed water at 40°C	246 l
EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	105 %
COP	2.62
Heating up time	01:01 h:min
Standby power input	41.3 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	243 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	9.70 kW	10.35 kW
El input	2.12 kW	3.74 kW
COP	4.57	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	180 %	128 %
Prated	11.50 kW	9.56 kW
SCOP	4.58	3.28
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.18 kW	8.46 kW
COP Tj = -7°C	2.83	2.12
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	6.53 kW	5.05 kW
COP Tj = +2°C	4.57	3.14
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.66 kW	5.18 kW
COP Tj = +7°C	5.78	4.27
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.52 kW	6.11 kW
COP Tj = 12°C	7.35	5.79
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	10.18 kW	8.46 kW
COP Tj = Tbiv	2.83	2.12
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.05 kW	7.98 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.72	1.71
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W

Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.45 kW	1.59 kW
Annual energy consumption Qhe	5189 kWh	6029 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	152 %	111 %
Prated	9.49 kW	9.42 kW
SCOP	3.88	2.86
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.32 kW	6.14 kW
COP Tj = -7°C	3.41	2.56
Cdh Tj = -7 °C	0.990	1.000
Pdh Tj = +2°C	4.94 kW	4.48 kW
COP Tj = +2°C	4.53	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.53 kW	5.31 kW
COP Tj = +7°C	5.86	4.59
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.44 kW	6.21 kW
COP Tj = 12°C	7.27	5.99
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	7.74 kW	7.68 kW
COP Tj = Tbiv	2.34	1.89
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.41 kW	7.68 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.22	1.89
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	9.49 kW	9.42 kW
Annual energy consumption Qhe	6025 kWh	8124 kWh
Pdh Tj = -15°C (if TOL	7.74	7.68

COP Tj = -15°C (if TOL	2.34	1.89
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate		
	Low temperature	Medium temperature
ηs	212 %	158 %
Prated	8.23 kW	9.30 kW
SCOP	5.37	4.03
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.99	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2046 kWh	3076 kWh

Model HA 10-5 OS + HA 12-5 WSB	
Model name	HA 10-5 OS + HA 12-5 WSB
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data	
Power supply	3x400V 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
Starting and operating test	passed

EN 14511-2 | Heating		
	Low temperature	Medium temperature
Heat output	9.70 kW	10.35 kW
El input	2.12 kW	3.74 kW
COP	4.57	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	180 %	128 %
Prated	11.50 kW	9.56 kW
SCOP	4.57	3.27
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.18 kW	8.46 kW
COP Tj = -7°C	2.83	2.12
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	6.53 kW	5.05 kW
COP Tj = +2°C	4.57	3.14
Cdh Tj = +2 °C	0.990	0.990

Pdh Tj = +7°C	5.66 kW	5.18 kW
COP Tj = +7°C	5.78	4.27
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.52 kW	6.11 kW
COP Tj = 12°C	7.35	5.79
Cdh Tj = +12 °C	0.980	0.990
Pdh Tj = Tbiv	10.18 kW	8.46 kW
COP Tj = Tbiv	2.83	2.12
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.05 kW	7.98 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.72	1.71
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.45 kW	1.59 kW
Annual energy consumption Qhe	5199 kWh	6040 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	152 %	111 %
Prated	9.49 kW	9.42 kW
SCOP	3.87	2.85
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.32 kW	6.14 kW
COP Tj = -7°C	3.41	2.56
Cdh Tj = -7 °C	0.990	0.990
Pdh Tj = +2°C	4.94 kW	4.48 kW
COP Tj = +2°C	4.53	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.53 kW	5.31 kW
COP Tj = +7°C	5.86	4.59
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.44 kW	6.21 kW
COP Tj = 12°C	7.27	5.99

Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	7.74 kW	7.68 kW
COP Tj = Tbiv	2.34	1.89
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.41 kW	7.68 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.22	1.89
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	9.49 kW	9.42 kW
Annual energy consumption Qhe	6040 kWh	8138 kWh
Pdh Tj = -15°C (if TOL	7.74	7.68
COP Tj = -15°C (if TOL	2.34	1.89
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	211 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.34	4.02
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	0.99	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.98	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1.00
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2059 kWh	3090 kWh

Model HA 10-5 OS + HA 12-5 STB	
Model name	HA 10-5 OS + HA 12-5 STB
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data	
Power supply	3x400V 50Hz
Off-peak product	n/a

Outdoor Air/Water	
EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	97 %
COP	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	89 %
COP	2.14
Heating up time	01:13 h:min
Standby power input	51.6 W
Reference hot water temperature	53.4 °C
Mixed water at 40°C	246 l
EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	108 %
COP	2.62
Heating up time	01:01 h:min
Standby power input	41.3 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	243 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	9.70 kW	10.35 kW
El input	2.12 kW	3.74 kW
COP	4.57	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	180 %	128 %
Prated	11.50 kW	9.56 kW
SCOP	4.57	3.27
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.18 kW	8.46 kW
COP Tj = -7°C	2.83	2.12
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	6.53 kW	5.05 kW
COP Tj = +2°C	4.57	3.14
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.66 kW	5.18 kW
COP Tj = +7°C	5.78	4.27
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.52 kW	6.11 kW
COP Tj = 12°C	7.35	5.79
Cdh Tj = +12 °C	0.980	0.990
Pdh Tj = Tbiv	10.18 kW	8.46 kW
COP Tj = Tbiv	2.83	2.12
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	10.05 kW	7.98 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.72	1.71
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W

Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.45 kW	1.59 kW
Annual energy consumption Qhe	5199 kWh	6040 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	152 %	111 %
Prated	9.49 kW	9.42 kW
SCOP	3.87	2.85
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.32 kW	6.14 kW
COP Tj = -7°C	3.41	2.56
Cdh Tj = -7 °C	0.990	0.990
Pdh Tj = +2°C	4.94 kW	4.48 kW
COP Tj = +2°C	4.53	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.53 kW	5.31 kW
COP Tj = +7°C	5.86	4.59
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.44 kW	6.21 kW
COP Tj = 12°C	7.27	5.99
Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	7.74 kW	7.68 kW
COP Tj = Tbiv	2.34	1.89
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	7.41 kW	7.68 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.22	1.89
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	9.49 kW	9.42 kW
Annual energy consumption Qhe	6040 kWh	8138 kWh
Pdh Tj = -15°C (if TOL	7.74	7.68

COP Tj = -15°C (if TOL	2.34	1.89
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate		
	Low temperature	Medium temperature
ηs	211 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.34	4.02
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	0.99	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.98	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1.00
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2059 kWh	3090 kWh

Model HA 12-5 OS 230V + HA 12-5 WSB	
Model name	HA 12-5 OS 230V + HA 12-5 WSB
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
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
Starting and operating test	passed

EN 14511-2 | Heating		
	Low temperature	Medium temperature
Heat output	10.25 kW	10.90 kW
El input	2.26 kW	3.94 kW
COP	4.54	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	175 %	133 %
Prated	13.57 kW	10.97 kW
SCOP	4.45	3.39
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.01 kW	9.71 kW
COP Tj = -7°C	2.51	2.16
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	7.21 kW	5.81 kW
COP Tj = +2°C	4.47	3.25
Cdh Tj = +2 °C	0.990	0.990

Pdh Tj = +7°C	5.68 kW	5.22 kW
COP Tj = +7°C	5.83	4.47
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.44 kW	6.06 kW
COP Tj = 12°C	7.38	5.85
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	12.01 kW	9.71 kW
COP Tj = Tbiv	2.51	2.16
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.44 kW	8.97 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.47	1.85
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.13 kW	2.01 kW
Annual energy consumption Qhe	6303 kWh	6691 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	153 %	111 %
Prated	12.31 kW	10.28 kW
SCOP	3.91	2.86
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.06 kW	6.50 kW
COP Tj = -7°C	3.40	2.57
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	4.95 kW	4.47 kW
COP Tj = +2°C	4.68	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.74 kW	5.33 kW
COP Tj = +7°C	5.94	4.61
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.48 kW	6.10 kW
COP Tj = 12°C	7.01	6.08

Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	10.04 kW	8.38 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.63 kW	8.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.17	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12.31 kW	10.28 kW
Annual energy consumption Qhe	7757 kWh	8863 kWh
Pdh Tj = -15°C (if TOL	10.04	8.38
COP Tj = -15°C (if TOL	2.27	1.84
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	212 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.37	4.03
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.99	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2046 kWh	3076 kWh

Model HA 12-5 OS 230V + HA 12-5 STB	
Model name	HA 12-5 OS 230V + HA 12-5 STB
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
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 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	97 %
COP	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	89 %
COP	2.14
Heating up time	01:13 h:min
Standby power input	51.6 W
Reference hot water temperature	53.4 °C
Mixed water at 40°C	246 l
EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	108 %
COP	2.62
Heating up time	01:01 h:min
Standby power input	41.3 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	243 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	10.25 kW	10.90 kW
El input	2.26 kW	3.94 kW
COP	4.54	2.77

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	175 %	133 %
Prated	13.57 kW	10.97 kW
SCOP	4.45	3.39
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.01 kW	9.71 kW
COP Tj = -7°C	2.51	2.16
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	7.21 kW	5.81 kW
COP Tj = +2°C	4.47	3.25
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.68 kW	5.22 kW
COP Tj = +7°C	5.83	4.47
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.44 kW	6.06 kW
COP Tj = 12°C	7.38	5.85
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	12.01 kW	9.71 kW
COP Tj = Tbiv	2.51	2.16
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.44 kW	8.97 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.47	1.85
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W

Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.13 kW	2.01 kW
Annual energy consumption Qhe	6303 kWh	6691 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	153 %	111 %
Prated	12.31 kW	10.28 kW
SCOP	3.91	2.86
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.06 kW	6.50 kW
COP Tj = -7°C	3.40	2.57
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	4.95 kW	4.47 kW
COP Tj = +2°C	4.68	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.74 kW	5.33 kW
COP Tj = +7°C	5.94	4.61
Cdh Tj = +7 °C	0.990	0.990
Pdh Tj = 12°C	6.48 kW	6.10 kW
COP Tj = 12°C	7.01	6.08
Cdh Tj = +12 °C	0.990	0.990
Pdh Tj = Tbiv	10.04 kW	8.38 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.63 kW	8.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.17	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12.31 kW	10.28 kW
Annual energy consumption Qhe	7757 kWh	8863 kWh
Pdh Tj = -15°C (if TOL	10.04	8.38

COP Tj = -15°C (if TOL	2.27	1.84
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	212 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.37	4.03
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	1.00	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.99	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.00	1.00
WTOL	55 °C	55 °C
Poff	11 W	11 W
PTO	11 W	11 W
PSB	11 W	11 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2046 kWh	3076 kWh

Model HA 12-5 OS + HA 12-5 WSB	
Model name	HA 12-5 OS + HA 12-5 WSB
Application	Heating (medium temp)
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data	
Power supply	3x400V 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
Starting and operating test	passed

EN 14511-2 | Heating		
	Low temperature	Medium temperature
Heat output	10.25 kW	10.90 kW
El input	2.26 kW	3.94 kW
COP	4.54	2.77

EN 12102-1 | Average Climate		
	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate		
	Low temperature	Medium temperature
ηs	175 %	132 %
Prated	13.57 kW	10.97 kW
SCOP	4.44	3.38
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.01 kW	9.71 kW
COP Tj = -7°C	2.51	2.16
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	7.21 kW	5.81 kW
COP Tj = +2°C	4.47	3.25
Cdh Tj = +2 °C	0.990	0.990

Pdh Tj = +7°C	5.68 kW	5.22 kW
COP Tj = +7°C	5.83	4.47
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.44 kW	6.06 kW
COP Tj = 12°C	7.38	5.85
Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	12.01 kW	9.71 kW
COP Tj = Tbiv	2.51	2.16
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.44 kW	8.97 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.47	1.85
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.13 kW	2.01 kW
Annual energy consumption Qhe	6311 kWh	6700 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	153 %	111 %
Prated	12.31 kW	10.28 kW
SCOP	3.91	2.85
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.06 kW	6.50 kW
COP Tj = -7°C	3.40	2.57
Cdh Tj = -7 °C	0.990	0.990
Pdh Tj = +2°C	4.95 kW	4.47 kW
COP Tj = +2°C	4.68	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.74 kW	5.33 kW
COP Tj = +7°C	5.94	4.61
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.48 kW	6.10 kW
COP Tj = 12°C	7.01	6.08

Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	10.04 kW	8.38 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.63 kW	8.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.17	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12.31 kW	10.28 kW
Annual energy consumption Qhe	7766 kWh	8875 kWh
Pdh Tj = -15°C (if TOL	10.04	8.38
COP Tj = -15°C (if TOL	2.27	1.84
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate

	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate

	Low temperature	Medium temperature
ηs	211 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.34	4.02
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	0.99	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.98	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW

COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1.00
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2059 kWh	3090 kWh

Model HA 12-5 OS + HA 12-5 STB	
Model name	HA 12-5 OS + HA 12-5 STB
Application	Heating + DHW + low temp
Units	Indoor, Outdoor
Climate zone (for heating)	Warmer Climate, Colder Climate
Reversibility	Yes
Cooling mode application (optional)	n/a
Any additional heat sources	n/a

General data	
Power supply	3x400V 50Hz
Off-peak product	n/a

Outdoor Air/Water	
EN 16147 | Average Climate	
Declared load profile	XL
Efficiency ηDHW	97 %
COP	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244 l
EN 16147 | Colder Climate	
Declared load profile	XL
Efficiency ηDHW	89 %
COP	2.14
Heating up time	01:13 h:min
Standby power input	51.6 W
Reference hot water temperature	53.4 °C
Mixed water at 40°C	246 l
EN 16147 | Warmer Climate	
Declared load profile	XL
Efficiency ηDHW	108 %
COP	2.62
Heating up time	01:01 h:min
Standby power input	41.3 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	243 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	10.25 kW	10.90 kW
El input	2.26 kW	3.94 kW
COP	4.54	2.77

EN 12102-1 | Average Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Average Climate

	Low temperature	Medium temperature
ηs	175 %	132 %
Prated	13.57 kW	10.97 kW
SCOP	4.44	3.38
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.01 kW	9.71 kW
COP Tj = -7°C	2.51	2.16
Cdh Tj = -7 °C	1.000	1.000
Pdh Tj = +2°C	7.21 kW	5.81 kW
COP Tj = +2°C	4.47	3.25
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.68 kW	5.22 kW
COP Tj = +7°C	5.83	4.47
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.44 kW	6.06 kW
COP Tj = 12°C	7.38	5.85
Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	12.01 kW	9.71 kW
COP Tj = Tbiv	2.51	2.16
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	12.44 kW	8.97 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.47	1.85
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W

Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	1.13 kW	2.01 kW
Annual energy consumption Qhe	6311 kWh	6700 kWh

EN 12102-1 | Colder Climate

	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Colder Climate

	Low temperature	Medium temperature
ηs	153 %	111 %
Prated	12.31 kW	10.28 kW
SCOP	3.91	2.85
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.06 kW	6.50 kW
COP Tj = -7°C	3.40	2.57
Cdh Tj = -7 °C	0.990	0.990
Pdh Tj = +2°C	4.95 kW	4.47 kW
COP Tj = +2°C	4.68	3.45
Cdh Tj = +2 °C	0.990	0.990
Pdh Tj = +7°C	5.74 kW	5.33 kW
COP Tj = +7°C	5.94	4.61
Cdh Tj = +7 °C	0.980	0.990
Pdh Tj = 12°C	6.48 kW	6.10 kW
COP Tj = 12°C	7.01	6.08
Cdh Tj = +12 °C	0.980	0.980
Pdh Tj = Tbiv	10.04 kW	8.38 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.63 kW	8.38 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	2.17	1.84
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	1.000	1.000
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	12.31 kW	10.28 kW
Annual energy consumption Qhe	7766 kWh	8875 kWh
Pdh Tj = -15°C (if TOL	10.04	8.38

COP Tj = -15°C (if TOL	2.27	1.84
Cdh Tj = -15 °C	1.000	1.000

EN 12102-1 | Warmer Climate		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	52 dB(A)	52 dB(A)

EN 14825 | Warmer Climate		
	Low temperature	Medium temperature
ηs	211 %	158 %
Prated	8.23 kW	9.29 kW
SCOP	5.34	4.02
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.23 kW	9.30 kW
COP Tj = +2°C	3.64	2.42
Cdh Tj = +2 °C	0.99	1.00
Pdh Tj = +7°C	5.40 kW	5.73 kW
COP Tj = +7°C	4.92	3.37
Cdh Tj = +7 °C	0.99	0.99
Pdh Tj = 12°C	5.99 kW	6.15 kW
COP Tj = 12°C	6.28	5.20
Cdh Tj = +12 °C	0.98	0.99
Pdh Tj = Tbiv	8.23 kW	9.29 kW
COP Tj = Tbiv	3.64	2.42
Pdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	8.23 kW	9.30 kW
COP Tj = TOL or COP Tj = Tdesignh if TOL < Tdesignh	3.64	2.42
Cdh Tj = TOL or Pdh Tj = Tdesignh if TOL < Tdesignh	0.99	1.00
WTOL	55 °C	55 °C
Poff	17 W	17 W
PTO	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W
Supplementary Heater: Type of energy input	Electricity	Electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2059 kWh	3090 kWh