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#### This information was generated by the HP KEYMARK database on 17 Dec 2020

Summary of	HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5 OS	Reg. No.	40049244
Certificate Holder			
Name	Saunier Duval Brand Group		
Address		Zip	
City		Country	Germany
Certification Body	VDE Prüf- und Zertifizierungsinstitut GmbH		
Name of testing laboratory	VDE Prüf- und Zertifizierungsinstitut GmbH		
Subtype title	HA 10-5 OS 230V / HA 12-5 OS 230V / HA 10-5 OS / HA 12-5	OS	
Heat Pump Type	Outdoor Air/Water		
Refrigerant	R410a		
Mass Of Refrigerant	3.6 kg		



# Model: HA 10-5 OS 230V + HA 12-5 WSB

General Data	
Power supply	1x230V 50Hz

## Heating

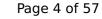
EN 14511-2				
	Low temperature	Medium temperature		
Heat output	9.62 kW	10.27 kW		
El input	2.07 kW	3.69 kW		
СОР	4.65	2.78		
Indoor water flow rate	1.70 m³/h	1.13 m³/h		

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



EN 12102-1			
	Low temperature	Medium temperature	
Sound power level indoor	42 dB(A)	45 dB(A)	
Sound power level outdoor	58 dB(A)	60 dB(A)	

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	185 %	130 %
Prated	11.57 kW	9.63 kW
SCOP	4.70	3.33
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.23 kW	8.51 kW
COP Tj = -7°C	2.84	2.13
Cdh	0.99	0.99
Pdh Tj = +2°C	6.59 kW	5.10 kW
COP Tj = +2°C	4.69	3.19
Cdh	0.99	0.99
Pdh Tj = +7°C	5.71 kW	5.23 kW
COP Tj = +7°C	6.01	4.38
Cdh	0.99	0.99





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Pdh Tj = 12°C	6.57 kW	6.16 kW
COP Tj = 12°C	7.70	5.99
Cdh	0.99	0.99
Pdh Tj = Tbiv	10.23 kW	8.51 kW
COP Tj = Tbiv	2.84	2.13
Pdh Tj = TOL	10.11 kW	8.03 kW
COP Tj = TOL	2.73	1.71
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	o w
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.46 kW	1.60 kW
Annual energy consumption Qhe	5087 kWh	5969 kWh

### Warmer Climate

EN 14825			
	Low temperature	Medium temperature	
$\eta_s$	220 %	162 %	
Prated	8.28 kW	9.34 kW	





This info	ormation was generated by the HP KI	EYMARK database on 17 Dec 202
SCOP	5.56	4.12
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.99	0.99
Pdh Tj = +7°C	5.45 kW	5.78 kW
COP Tj = +7°C	5.08	3.43
Cdh	0.99	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.99	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
РСК	o w	o w





Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	1989 kWh	3030 kWh

#### Colder Climate

#### EN 14825

	Low temperature	Medium temperature
$\eta_{s}$	156 %	113 %
Prated	9.56 kW	9.48 kW
SCOP	3.97	2.90
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.38 kW	6.19 kW
COP Tj = -7°C	3.47	2.58
Cdh	0.99	0.99
Pdh Tj = +2°C	5.00 kW	4.53 kW
COP Tj = +2°C	4.67	3.52
Cdh	0.99	0.99
Pdh Tj = +7°C	5.59 kW	5.37 kW
COP Tj = +7°C	6.11	4.72
Cdh	0.99	0.99



	<b>,</b>	
Pdh Tj = 12°C	6.50 kW	6.26 kW
COP Tj = 12°C	7.62	6.21
Cdh	0.99	0.99
Pdh Tj = Tbiv	7.80 kW	7.74 kW
COP Tj = Tbiv	2.35	1.89
Pdh Tj = TOL	7.46 kW	7.74 kW
COP Tj = TOL	2.23	1.89
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.59 kW	8.98 kW
Annual energy consumption Qhe	5933 kWh	8070 kWh
Pdh Tj = -15°C (if TOL<-20°C)	7.46	7.74
COP Tj = -15°C (if TOL<-20°C)	2.23	1.89
Cdh	0.99	0.99



# Model: HA 10-5 OS + HA 12-5 WSB

General Data	
Power supply	3x400V 50Hz

## Heating

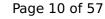
EN 14511-2		
	Low temperature	Medium temperature
Heat output	9.62 kW	10.27 kW
El input	2.07 kW	3.69 kW
СОР	4.65	2.78
Indoor water flow rate	1.70 m³/h	1.13 m³/h

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	58 dB(A)	59 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	185 %	130 %
Prated	11.57 kW	9.63 kW
SCOP	4.69	3.33
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.23 kW	8.51 kW
COP Tj = -7°C	2.84	2.13
Cdh	0.98	0.99
Pdh Tj = +2°C	6.59 kW	5.10 kW
COP Tj = +2°C	4.69	3.19
Cdh	0.98	0.99
Pdh Tj = +7°C	5.71 kW	5.23 kW
COP Tj = +7°C	6.01	4.38
Cdh	0.98	0.99





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Pdh Tj = 12°C	6.57 kW	6.16 kW
COP Tj = 12°C	7.70	5.99
Cdh	0.98	0.99
Pdh Tj = Tbiv	10.23 kW	8.51 kW
COP Tj = Tbiv	2.84	2.13
Pdh Tj = TOL	10.11 kW	8.03 kW
COP Tj = TOL	2.73	1.71
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	o w	o w
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.46 kW	1.60 kW
Annual energy consumption Qhe	5097 kWh	5980 kWh

### Warmer Climate

cure Medium temperature
161 %
9.34 kW



This information was ger	nerated by the HP KEYM	ARK database on 17 Dec 2020
SCOP	5.53	4.10
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.98	0.99
Pdh Tj = +7°C	5.45 kW	5.78 kW
$COP Tj = +7^{\circ}C$	5.08	3.43
Cdh	0.98	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.98	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	o w	o w



3043 kWh



Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW

2002 kWh

#### Colder Climate

Annual energy consumption Qhe

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	156 %	113 %
Prated	9.56 kW	9.48 kW
SCOP	3.96	2.89
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.38 kW	6.19 kW
COP Tj = -7°C	3.47	2.58
Cdh	0.98	0.98
Pdh Tj = +2°C	5.00 kW	4.53 kW
COP Tj = +2°C	4.67	3.52
Cdh	0.98	0.98
Pdh Tj = +7°C	5.59 kW	5.37 kW
COP Tj = +7°C	6.11	4.72
Cdh	0.98	0.98



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	enerated by the III REII	ATTR database on 17 Dec 2020
Pdh Tj = 12°C	6.50 kW	6.26 kW
COP Tj = 12°C	7.62	6.21
Cdh	0.98	0.98
Pdh Tj = Tbiv	7.80 kW	7.74 kW
COP Tj = Tbiv	2.35	1.89
Pdh Tj = TOL	7.46 kW	7.74 kW
COP Tj = TOL	2.23	1.89
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	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	1.59 kW	8.98 kW
Annual energy consumption Qhe	5948 kWh	8084 kWh
Pdh Tj = -15°C (if TOL<-20°C)	7.46	7.74
COP Tj = -15°C (if TOL<-20°C)	2.23	1.89
Cdh	0.98	0.98



# Model: HA 12-5 OS 230V + HA 12-5 WSB

General Data	
Power supply	1x230V 50Hz

## Heating

EN 14511-2		
	Low temperature	Medium temperature
Heat output	10.17 kW	10.82 kW
El input	2.21 kW	3.89 kW
СОР	4.61	2.78
Indoor water flow rate	1.80 m³/h	1.18 m³/h

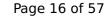
EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



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EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	59 dB(A)	60 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	179 %	135 %
Prated	13.64 kW	11.04 kW
SCOP	4.55	3.44
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.07 kW	9.76 kW
COP Tj = -7°C	2.52	2.16
Cdh	0.99	0.99
Pdh Tj = +2°C	7.27 kW	5.87 kW
COP Tj = +2°C	4.56	3.30
Cdh	0.99	0.99
Pdh Tj = +7°C	5.74 kW	5.28 kW
COP Tj = +7°C	6.06	4.60
Cdh	0.99	0.99

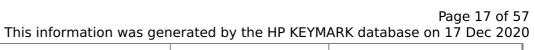




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Pdh Tj = 12°C	6.50 kW	6.12 kW
COP Tj = 12°C	7.73	6.06
Cdh	0.99	0.99
Pdh Tj = Tbiv	12.07 kW	9.76 kW
COP Tj = Tbiv	2.52	2.16
Pdh Tj = TOL	12.50 kW	9.02 kW
COP Tj = TOL	2.47	1.85
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.14 kW	2.01 kW
Annual energy consumption Qhe	6188 kWh	6619 kWh

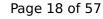
### Warmer Climate

EN 14825		
m temperature	Low temperature Medium	
	214 % 162 %	$\eta_{s}$
V	8.28 kW 9.34 kW	Prated
V 	8.28 kW 9.34 kW	Prated



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	CEN heat pump
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This information was generated by the HP KEYMARK database on 17 Dec 2020		
SCOP	5.43	4.12
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.99	0.99
Pdh Tj = +7°C	5.45 kW	5.78 kW
$COPTj = +7^{\circ}C$	5.08	3.43
Cdh	0.99	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.99	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W





Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2038 kWh	3030 kWh

#### Colder Climate

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	157 %	113 %
Prated	12.38 kW	10.35 kW
SCOP	4.00	2.90
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.11 kW	6.55 kW
COP Tj = -7°C	3.44	2.59
Cdh	0.99	0.99
Pdh Tj = +2°C	5.01 kW	4.53 kW
COP Tj = +2°C	4.84	3.52
Cdh	0.99	0.99
Pdh Tj = +7°C	5.80 kW	5.39 kW
COP Tj = +7°C	6.18	4.74
Cdh	0.99	0.99



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Pdh Tj = 12°C	6.54 kW	6.16 kW
COP Tj = 12°C	7.33	6.31
Cdh	0.99	0.99
Pdh Tj = Tbiv	10.10 kW	8.44 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL	8.69 kW	8.44 kW
COP Tj = TOL	2.18	1.84
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	3.04 kW	9.80 kW
Annual energy consumption Qhe	7634 kWh	8799 kWh
Pdh Tj = -15°C (if TOL<-20°C)	8.69	8.44
COP Tj = -15°C (if TOL<-20°C)	2.18	1.84
Cdh	0.99	0.99



# Model: HA 12-5 OS + HA 12-5 WSB

General Data	
Power supply	3x400V 50Hz

## Heating

EN 14511-2		
	Low temperature	Medium temperature
Heat output	10.17 kW	10.82 kW
El input	2.21 kW	3.89 kW
СОР	4.61	2.78
Indoor water flow rate	1.80 m³/h	1.18 m³/h

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



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EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	45 dB(A)	45 dB(A)
Sound power level outdoor	58 dB(A)	60 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	179 %	135 %
Prated	13.64 kW	11.04 kW
SCOP	4.55	3.44
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.07 kW	9.76 kW
COP Tj = -7°C	2.52	2.16
Cdh	0.98	0.98
Pdh Tj = +2°C	7.27 kW	5.87 kW
COP Tj = +2°C	4.56	3.30
Cdh	0.98	0.98
Pdh Tj = +7°C	5.74 kW	5.28 kW
COP Tj = +7°C	6.06	4.60
Cdh	0.98	0.98





in a marination was get		
Pdh Tj = 12°C	6.50 kW	6.12 kW
COP Tj = 12°C	7.73	6.06
Cdh	0.98	0.98
Pdh Tj = Tbiv	12.07 kW	9.76 kW
COP Tj = Tbiv	2.52	2.16
Pdh Tj = TOL	12.50 kW	9.02 kW
COP Tj = TOL	2.47	1.85
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.14 kW	2.01 kW
Annual energy consumption Qhe	6196 kWh	6628 kWh

### Warmer Climate

emperature Mediu	um temperature
161 %	
W 9.34 k	W
<' -	sW 9.34 k



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#### This information was generated by the HP KEYMARK database on 17 Dec 2020

This information was generated by the HP KEYMARK database on 17 Dec 202			
SCOP	5.53	4.10	
Tbiv	2 °C	2 °C	
TOL	2 °C	2 °C	
Pdh Tj = +2°C	8.28 kW	9.35 kW	
COP Tj = +2°C	3.69	2.43	
Cdh	0.98	0.99	
Pdh Tj = +7°C	5.45 kW	5.78 kW	
$COPTj = +7^{\circ}C$	5.08	3.43	
Cdh	0.98	0.99	
Pdh Tj = 12°C	6.05 kW	6.21 kW	
COP Tj = 12°C	6.54	5.36	
Cdh	0.98	0.99	
Pdh Tj = Tbiv	8.28 kW	9.34 kW	
COP Tj = Tbiv	3.69	2.43	
Pdh Tj = TOL	8.28 kW	9.35 kW	
COP Tj = TOL	3.69	2.43	
WTOL	55 °C	55 °C	
Poff	17 W	17 W	
РТО	17 W	17 W	
PSB	17 W	17 W	
PCK	o w	o w	





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Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	2002 kWh	3043 kWh

#### Colder Climate

	Low temperature	Medium temperature
$\eta_{s}$	157 %	113 %
Prated	12.38 kW	10.35 kW
SCOP	3.99	2.89
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.11 kW	6.55 kW
COP Tj = -7°C	3.44	2.59
Cdh	0.98	0.98
Pdh Tj = +2°C	5.01 kW	4.53 kW
COP Tj = +2°C	4.84	3.52
Cdh	0.98	0.98
Pdh Tj = +7°C	5.80 kW	5.39 kW
COP Tj = +7°C	6.18	4.74
Cdh	0.98	0.98



		ATTR database on 17 Dec 2020
Pdh Tj = 12°C	6.54 kW	6.16 kW
COP Tj = 12°C	7.33	6.31
Cdh	0.98	0.98
Pdh Tj = Tbiv	10.10 kW	8.44 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL	8.69 kW	8.44 kW
COP Tj = TOL	2.18	1.84
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	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	3.04 kW	9.80 kW
Annual energy consumption Qhe	7634 kWh	8811 kWh
Pdh Tj = -15°C (if TOL<-20°C)	8.69	8.44
COP Tj = -15°C (if TOL<-20°C)	2.18	1.84
Cdh	0.98	0.98



# Model: HA 10-5 OS 230V + HA 12-5 STB

General Data		
Power supply	1x230V 50Hz	

## Heating

EN 14511-2				
	Low temperature	Medium temperature		
Heat output	9.62 kW	10.27 kW		
El input	2.07 kW	3.69 kW		
СОР	4.65	2.78		
Indoor water flow rate	1.70 m³/h	1.13 m³/h		

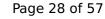
EN 14511-4		
Shutting off the heat transfer medium flow	passed	
Complete power supply failure	passed	
Starting and operating test	passed	



 $$\operatorname{\textit{Page}}\xspace$  27 of 57 This information was generated by the HP KEYMARK database on 17 Dec 2020

EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	58 dB(A)	60 dB(A)
Sound power level outdoor	42 dB(A)	45 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	185 %	130 %
Prated	11.57 kW	9.63 kW
SCOP	4.70	3.33
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.23 kW	8.51 kW
COP Tj = -7°C	2.84	2.13
Cdh	0.99	0.99
Pdh Tj = +2°C	6.59 kW	5.10 kW
COP Tj = +2°C	4.69	3.19
Cdh	0.99	0.99
Pdh Tj = +7°C	5.71 kW	5.23 kW
COP Tj = +7°C	6.01	4.38
Cdh	0.99	0.99

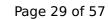




This information was go		
Pdh Tj = 12°C	6.57 kW	6.16 kW
COP Tj = 12°C	7.70	5.99
Cdh	0.99	0.99
Pdh Tj = Tbiv	10.23 kW	8.51 kW
COP Tj = Tbiv	2.84	2.13
Pdh Tj = TOL	10.11 kW	8.03 kW
COP Tj = TOL	2.73	1.71
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	o w
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.46 kW	1.60 kW
Annual energy consumption Qhe	5087 kWh	5969 kWh

### Warmer Climate

EN 14825		
	Low temperature	Medium temperature
$\eta_{S}$	220 %	162 %
Prated	8.28 kW	9.34 kW





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	,	milit database on 17 Dec 202
SCOP	5.56	4.12
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.99	0.99
Pdh Tj = $+7^{\circ}$ C	5.45 kW	5.78 kW
COP Tj = +7°C	5.08	3.43
Cdh	0.99	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.99	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	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	1989 kWh	3030 kWh

#### Colder Climate

#### EN 14825

	Low temperature	Medium temperature
$\eta_{s}$	156 %	113 %
Prated	9.56 kW	9.48 kW
SCOP	3.97	2.89
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.38 kW	6.19 kW
COP Tj = -7°C	3.47	2.58
Cdh	0.99	0.98
Pdh Tj = +2°C	5.00 kW	4.53 kW
COP Tj = +2°C	4.67	3.52
Cdh	0.99	0.98
Pdh Tj = +7°C	5.59 kW	5.37 kW
COP Tj = +7°C	6.11	4.72
Cdh	0.99	0.98



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This information was generated by the HP KEYMARK database on 17 Dec 2020

Pdh Tj = 12°C	6.50 kW	6.26 kW
COP Tj = 12°C	7.62	6.21
Cdh	0.99	0.98
Pdh Tj = Tbiv	7.80 kW	7.74 kW
COP Tj = Tbiv	2.35	1.89
Pdh Tj = TOL	7.46 kW	7.74 kW
COP Tj = TOL	2.23	1.89
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.59 kW	8.98 kW
Annual energy consumption Qhe	5933 kWh	8084 kWh
Pdh Tj = -15°C (if TOL<-20°C)	7.46	7.74
COP Tj = -15°C (if TOL<-20°C)	2.23	1.89
Cdh	0.99	0.98

Domestic Hot Water (DHW)

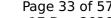


EN 16147	
Declared load profile	XL
Efficiency ηDHW	97 %
СОР	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244

### Warmer Climate

EN 16147		
Declared load profile	XL	
Efficiency ηDHW	108 %	
СОР	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	

### Colder Climate





 $$\operatorname{\textit{Page}}\xspace$  33 of 57 This information was generated by the HP KEYMARK database on 17 Dec 2020

EN 16147		
Declared load profile	XL	
Efficiency ηDHW	89 %	
СОР	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	



# Model: HA 10-5 OS + HA 12-5 STB

General Data	
Power supply	3x400V 50Hz

## Heating

EN 14511-2		
	Low temperature	Medium temperature
Heat output	9.62 kW	10.27 kW
El input	2.07 kW	3.69 kW
СОР	4.65	2.78
Indoor water flow rate	1.70 m³/h	1.13 m³/h

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



 $$\operatorname{\textit{Page}}\xspace$  35 of 57 This information was generated by the HP KEYMARK database on 17 Dec 2020

EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	42 dB(A)	45 dB(A)
Sound power level outdoor	58 dB(A)	59 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	185 %	130 %
Prated	11.57 kW	9.63 kW
SCOP	4.69	3.33
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	10.23 kW	8.51 kW
COP Tj = -7°C	2.84	2.13
Cdh	0.98	0.99
Pdh Tj = +2°C	6.59 kW	5.10 kW
COP Tj = +2°C	4.69	3.19
Cdh	0.98	0.99
Pdh Tj = +7°C	5.71 kW	5.23 kW
COP Tj = +7°C	6.01	4.38
Cdh	0.98	0.99



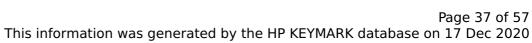


		9
This information v	as generated by the HP KEYMARK	database on 17 Dec 2020

Pdh Tj = 12°C	6.57 kW	6.16 kW
COP Tj = 12°C	7.70	5.99
Cdh	0.98	0.99
Pdh Tj = Tbiv	10.23 kW	8.51 kW
COP Tj = Tbiv	2.84	2.13
Pdh Tj = TOL	10.11 kW	8.03 kW
COP Tj = TOL	2.73	1.71
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.46 kW	1.60 kW
Annual energy consumption Qhe	5097 kWh	5980 kWh

### Warmer Climate

EN 14825		
	Low temperature	Medium temperature
$\eta_{S}$	218 %	161 %
Prated	8.28 kW	9.34 kW





	generated by the in Rein	
SCOP	5.53	4.10
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.98	0.99
Pdh Tj = +7°C	5.45 kW	5.78 kW
COP Tj = +7°C	5.08	3.43
Cdh	0.98	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.98	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	0 W	0 W





	<u> </u>	
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW

EN 14825

# Supplementary Heater: PSUP 0.00 kW 0.00 kW Annual energy consumption Qhe 2002 kWh 3043 kWh

#### Colder Climate

 $COP Tj = +7^{\circ}C$ 

Cdh

	Low temperature	Medium temperature
$\eta_{s}$	156 %	113 %
Prated	9.56 kW	9.48 kW
SCOP	3.96	2.89
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	6.38 kW	6.19 kW
COP Tj = -7°C	3.47	2.58
Cdh	0.98	0.98
Pdh Tj = +2°C	5.00 kW	4.53 kW
COP Tj = +2°C	4.67	3.52
Cdh	0.98	0.98
Pdh Tj = +7°C	5.59 kW	5.37 kW

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6.11

0.98

4.72

0.98



CEN heat p	oump
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Pdh Tj = 12°C	6.50 kW	6.26 kW
COP Tj = 12°C	7.62	6.21
Cdh	0.98	0.98
Pdh Tj = Tbiv	7.80 kW	7.74 kW
COP Tj = Tbiv	2.35	1.89
Pdh Tj = TOL	7.46 kW	7.74 kW
COP Tj = TOL	2.23	1.89
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	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	1.59 kW	8.98 kW
Annual energy consumption Qhe	5948 kWh	8084 kWh
Pdh Tj = -15°C (if TOL<-20°C)	7.46	7.74
COP Tj = $-15$ °C (if TOL< $-20$ °C)	2.23	1.89
Cdh	0.98	0.98

### Domestic Hot Water (DHW)

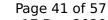


EN 16147	
Declared load profile	XL
Efficiency ηDHW	97 %
СОР	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244

#### Warmer Climate

EN 16147	
Declared load profile	XL
Efficiency ηDHW	108 %
СОР	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 I

# Colder Climate





EN 16147	
Declared load profile	XL
Efficiency ηDHW	89 %
СОР	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



# Model: HA 12-5 OS 230V + HA 12-5 STB

General Data		
Power supply 1x230V 50Hz		

# Heating

EN 14511-2		
	Low temperature	Medium temperature
Heat output	10.17 kW	10.82 kW
El input	2.21 kW	3.89 kW
СОР	4.61	2.78
Indoor water flow rate	1.80 m³/h	1.18 m³/h

EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



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EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	59 dB(A)	60 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	179 %	135 %
Prated	13.64 kW	11.04 kW
SCOP	4.55	3.44
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.07 kW	9.76 kW
COP Tj = -7°C	2.52	2.16
Cdh	0.99	0.99
Pdh Tj = +2°C	7.27 kW	5.87 kW
COP Tj = +2°C	4.56	3.30
Cdh	0.99	0.99
Pdh Tj = +7°C	5.74 kW	5.28 kW
COP Tj = +7°C	6.06	4.60
Cdh	0.99	0.99





in a marination was get		
Pdh Tj = 12°C	6.50 kW	6.12 kW
COP Tj = 12°C	7.73	6.06
Cdh	0.99	0.99
Pdh Tj = Tbiv	12.07 kW	9.76 kW
COP Tj = Tbiv	2.52	2.16
Pdh Tj = TOL	12.50 kW	9.02 kW
COP Tj = TOL	2.47	1.85
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	11 W	11 W
PSB	11 W	11 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.14 kW	2.01 kW
Annual energy consumption Qhe	6188 kWh	6619 kWh

# Warmer Climate

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	214 %	162 %
Prated	8.28 kW	9.34 kW
11464	J.ZJ KIT	3.3 i Kii





	cheracea by the fill RETT	
SCOP	5.43	4.12
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.99	0.99
Pdh Tj = $+7^{\circ}$ C	5.45 kW	5.78 kW
COP Tj = +7°C	5.08	3.43
Cdh	0.99	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.99	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	11 W	11 W
РТО	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	2038 kWh	3030 kWh

#### Colder Climate

EN 14825
----------

	Low temperature	Medium temperature
$\eta_{s}$	157 %	113 %
Prated	12.38 kW	10.35 kW
SCOP	4.00	2.90
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.11 kW	6.55 kW
COP Tj = -7°C	3.44	2.59
Cdh	0.99	0.99
Pdh Tj = +2°C	5.01 kW	4.53 kW
COP Tj = +2°C	4.84	3.52
Cdh	0.99	0.99
Pdh Tj = +7°C	5.80 kW	5.39 kW
COP Tj = +7°C	6.18	4.74
Cdh	0.99	0.99





This information was generated by the Till RETPIAKK database on 17 Dec 202		
Pdh Tj = 12°C	6.54 kW	6.16 kW
COP Tj = 12°C	7.33	6.31
Cdh	0.99	0.99
Pdh Tj = Tbiv	10.10 kW	8.44 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL	8.69 kW	8.44 kW
COP Tj = TOL	2.18	1.84
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	3.04 kW	9.80 kW
Annual energy consumption Qhe	7634 kWh	8799 kWh
Pdh Tj = -15°C (if TOL<-20°C)	8.69	8.44
COP Tj = $-15$ °C (if TOL< $-20$ °C)	2.18	1.84
Cdh	0.99	0.99

# Domestic Hot Water (DHW)

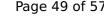


EN 16147	
Declared load profile	XL
Efficiency ηDHW	97 %
СОР	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244

#### Warmer Climate

EN 16147	
Declared load profile	XL
Efficiency ηDHW	108 %
СОР	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 I

#### Colder Climate





# $$\operatorname{\textit{Page}}\xspace$ 49 of 57 This information was generated by the HP KEYMARK database on 17 Dec 2020

EN 16147	
Declared load profile	XL
Efficiency ηDHW	89 %
СОР	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



# Model: HA 12-5 OS + HA 12-5 STB

General Data	
Power supply	3x400V 50Hz

# Heating

EN 14511-2			
	Low temperature	Medium temperature	
Heat output	10.17 kW	10.82 kW	
El input	2.21 kW	3.89 kW	
СОР	4.61	2.78	
Indoor water flow rate	1.80 m³/h	1.18 m³/h	

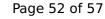
EN 14511-4	
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Starting and operating test	passed



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EN 12102-1		
	Low temperature	Medium temperature
Sound power level indoor	43 dB(A)	44 dB(A)
Sound power level outdoor	58 dB(A)	60 dB(A)

EN 14825		
	Low temperature	Medium temperature
$\eta_{s}$	179 %	135 %
Prated	13.64 kW	11.04 kW
SCOP	4.55	3.44
Tbiv	-7 °C	-7 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	12.07 kW	9.76 kW
COP Tj = -7°C	2.52	2.16
Cdh	0.98	0.98
Pdh Tj = +2°C	7.27 kW	5.87 kW
COP Tj = +2°C	4.56	3.30
Cdh	0.98	0.98
Pdh Tj = +7°C	5.74 kW	5.28 kW
COP Tj = +7°C	6.06	4.60
Cdh	0.98	0.98





in a marination was get		
Pdh Tj = 12°C	6.50 kW	6.12 kW
COP Tj = 12°C	7.73	6.06
Cdh	0.98	0.98
Pdh Tj = Tbiv	12.07 kW	9.76 kW
COP Tj = Tbiv	2.52	2.16
Pdh Tj = TOL	12.50 kW	9.02 kW
COP Tj = TOL	2.47	1.85
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
PCK	o w	0 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	1.14 kW	2.01 kW
Annual energy consumption Qhe	6196 kWh	6628 kWh

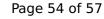
# Warmer Climate

emperature Mediu	um temperature
161 %	
W 9.34 k	W
<' -	sW 9.34 k



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This information was generated by the HP KEYMARK database on 17 Dec 2020		
SCOP	5.53	4.10
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = $+2$ °C	8.28 kW	9.35 kW
COP Tj = +2°C	3.69	2.43
Cdh	0.98	0.99
Pdh Tj = +7°C	5.45 kW	5.78 kW
$COP Tj = +7^{\circ}C$	5.08	3.43
Cdh	0.98	0.99
Pdh Tj = 12°C	6.05 kW	6.21 kW
COP Tj = 12°C	6.54	5.36
Cdh	0.98	0.99
Pdh Tj = Tbiv	8.28 kW	9.34 kW
COP Tj = Tbiv	3.69	2.43
Pdh Tj = TOL	8.28 kW	9.35 kW
COP Tj = TOL	3.69	2.43
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	17 W	17 W
PSB	17 W	17 W
РСК	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	2002 kWh	3043 kWh

#### Colder Climate

#### EN 14825

	Low temperature	Medium temperature
$\eta_{s}$	157 %	113 %
Prated	12.38 kW	10.35 kW
SCOP	3.99	2.89
Tbiv	-15 °C	-15 °C
TOL	-20 °C	-15 °C
Pdh Tj = -7°C	8.11 kW	6.55 kW
COP Tj = -7°C	3.44	2.59
Cdh	0.98	0.98
Pdh Tj = +2°C	5.01 kW	4.53 kW
COP Tj = +2°C	4.84	3.52
Cdh	0.98	0.98
Pdh Tj = +7°C	5.80 kW	5.39 kW
COP Tj = +7°C	6.18	4.74
Cdh	0.98	0.98



Pdh Tj = 12°C	6.54 kW	6.16 kW
COP Tj = 12°C	7.33	6.31
Cdh	0.98	0.98
Pdh Tj = Tbiv	10.10 kW	8.44 kW
COP Tj = Tbiv	2.27	1.84
Pdh Tj = TOL	8.69 kW	8.44 kW
COP Tj = TOL	2.18	1.84
WTOL	55 °C	55 °C
Poff	17 W	17 W
РТО	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	3.04 kW	9.80 kW
Annual energy consumption Qhe	7634 kWh	8811 kWh
Pdh Tj = -15°C (if TOL<-20°C)	8.69	8.44
COP Tj = $-15$ °C (if TOL< $-20$ °C)	2.18	1.84
Cdh	0.98	0.98

# Domestic Hot Water (DHW)

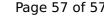


EN 16147	
Declared load profile	XL
Efficiency ηDHW	97 %
СОР	2.36
Heating up time	01:04 h:min
Standby power input	44.6 W
Reference hot water temperature	53.7 °C
Mixed water at 40°C	244

#### Warmer Climate

EN 16147		
Declared load profile	XL	
Efficiency ηDHW	108 %	
СОР	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 I	

#### Colder Climate





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EN 16147	
Declared load profile	XL
Efficiency ηDHW	89 %
СОР	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