



Heat pump



TWW 360 EVI

HeavyDuty

2L3

WAMAK TWW 360 EVI HeavyDuty 2L3

Product description

High-efficiency heat pump consisting of multiple modules of separate heat pumps. Each module contains one short closed refrigerant circuit with a pair of quiet Scroll compressors and robust stainless steel plate heat exchangers. Applications range from heating, cooling and domestic hot water heating of office or multi-functional buildings to cascading applications in industrial applications.

Use for demanding industrial applications. By combining the most suitable performance and application variants of heat pump modules, it is possible to tailor-make the complete system required. Each module is refrigeration, hydraulically and electrically isolated with a separate controller. The connection of the modules is cascaded, whereby each single controller can take over the function of the cascade master.

As a primary source, thermal energy from underground water at a depth of between 12 and 30 metres is used. A submersible pump delivers the groundwater to the heat pump and, depending on the quality and chemical composition, the heat from the groundwater is extracted either directly in the heat pump or through a separating heat exchanger with an intermediate circuit and antifreeze. The heat pump then raises this temperature to a usable temperature for heating or hot water.

The EVI (Enhanced Vapour Injection) technology allows the heat pump to achieve higher header flow temperatures even at lower source temperatures. EVI also has a positive impact on the compressor lifespan and overall system stability because the discharge gas temperature from the compressor is lower.

The twin compressors give the system robustness and the ability to distribute the heat output according to the actual load.

Product features

- Scroll compressor
- EVI technology
- Asymetric plate heat exchanger
- Multi-stage capacity control
- High pressure switch
- Low pressure sensor - analogue
- Flow sensor consumer - analogue - (with accessory)
- Outdoor temperature sensor - (with accessory)
- Buffer temperature sensor - (with accessory)
- Modbus connection
- Two level frame
- Sylomer pads under compressor unit
- Electronic expansion valve
- Two-stage capacity control
- Phase and rotation control
- High pressure sensor - analogue
- Flow switch consumer - on/off - (with accessory)
- Flow switch source - on/off - (with accessory)
- DHW temperature sensor - (with accessory)
- Cascade control
- Solid frame structure

Basic performance data - WAMAK TWW 360 EVI HeavyDuty 2L3

Heating - EN 14511		
Heating capacity [kW]	W10 / W35 (max)	371.8 (62.0 / 371.8)
	W10 / W35 (min)	62.0 (62.0 / 371.8)
	W10 / W34	372.0 (62.0 / 372.0)
Electrical power input [kW]	W10 / W35 (max)	65.1 (10.6 / 65.1)
	W10 / W35 (min)	10.6 (10.6 / 65.1)
	W10 / W34	63.8 (15.1 / 92.9)
Heating efficiency faktor [COP]	W10 / W35 (max)	5.71
	W10 / W35 (min)	5.84
	W10 / W34	5.83
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35°C]	SCOP	4.34
	η [%]	173.6
	Label	A+++
	Qhe [kWh]	768138.8
	Pdesignh [kW]	371.8
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	290.6
	A25 / W23-18	305.4
	A35 / W12-7	218.3
	A25 / W12-7	218.3
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18°C]	SEER	5.15
	Qce [kWh]	130980.0
	η_c [%]	205.8
Sound EN 12102		
Acoustic power - Lw	dB(A)	72.3
Acoustic pressure - Lp	1 m dB(A)	64.3
	5 m dB(A)	50.3
	10 m dB(A)	44.3
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 6 /	On/Off
Refrigerant	R410A (GWP - 2088)	3 x 15.8 kg
Operating limit temperatures heating - (min / max) [°C]	25 / 65	
Operating limit temperatures source - (min / max) [°C]	-10 (7) / 30	
Weight	1590 kg	

Main technical data - WAMAK TWW 360 EVI HeavyDuty 2L3

Enclosure type			HD2L3			Heat energy rejection side data		
Basic dimensions		Height [mm]	2000		Operating limit temperatures heating	MAX [°C]	65	
		Width [mm]	2150			MIN [°C]	25	
		Length [mm]	1200		for more see operating limits diagram			
Weight [kg]		1590		Condenser	Port size	3 x VIC 2.1/2 "		
Colour		Gray			Type	BPHE		
Enclosure IP Class		IP20			Count	3		
Refrigeration cycle					Material	AISI 316		
Compressor	Type	Scroll		Maximal operating pressure - refrigerant [bar]		50		
	Number of stages	6		Maximal operating pressure - Water [bar]		6		
	On/Off			Testing pressure [bar]		70		
	Power factor Cosφ	0.64		Heat transfer medium		Water		
	Winding resistance	0.76 Ohm		Volume flow @ dT 5K (nom) - Water [m3/h]		10.70 ~ 64.18		
Refrigerant		R410A		Internal pressure drop - Water [kPa]		3 x 20		
	Volme	3 x 15.8 kg		Temperature difference	@ 35°C (nom)	5 K		
	GWP	2088			@ 55°C	8 K		
	Safety class	A1			@ 65°C	10 K		
Refrigeration oil type	POE RL32-3MAF			Renewable energy extraction side data				
	Oil volume	6 x 3.38 L		Operating limit temperatures source	MIN [°C]	-10 (7)		
Maximal pressure - refrigerant [bar]		50			MAX [°C]	30		
	PED class	2		for more see operating limits diagram				
EVI - vapour injection with economizer				Evaporator	Port size	3 x VIC 2.1/2 "		
Electrical connection data					Type	BPHE		
Line voltage [#~ V/Hz]					Count	3		
Current	nominal [A]	141.18			Material	AISI 316		
	maximal [A]	224.40		Maximal operating pressure - refrigerant [bar]		29		
	starting [A]	57.2		Heat transfer medium		Water		
Softstart		-		Maximal operating pressure - Water [bar]		6		
Main safety		C240		Volume flow - Water [m3/h]		11.05 ~ 66.32		
Control System				Internal pressure drop - Water [kPa]		3 x 20		
Main controller	SIEMENS	RVS 61		Temperature difference - Water		4 K		
Extension module	AVS75.3xx	AVS75.3xx	AVS75.372					
Bus Clip-In		LPB OCI346	Modbus OCI352					
Online connection		Web server OZW672	ToSyMo					
Superheat controller		SEC61						
*** with accessory								

WAMAK TWW 360 EVI HeavyDuty 2L3

ErP (EU) No 811/2013: Technical parameters for heat pump space heaters

Model	TWW 360 EVI HeavyDuty 2L3
Air-to-water heat pump	no
Brine-to-water heat pump	no
Water-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no
Temperature application	low (35 °C - 30 °C)
Climate conditions	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output at Tdesignh	Prated	371.8	kW	Seasonal space heating energy efficiency	ηs	173.6	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	Pdh	372.0	kW	Tj = -7 °C	COPd	5.83	-
Tj = +2 °C	Pdh	372.4	kW	Tj = +2 °C	COPd	6.4	-
Tj = +7 °C	Pdh	62.1	kW	Tj = +7 °C	COPd	6.9	-
Tj = +12 °C	Pdh	62.1	kW	Tj = +12 °C	COPd	7.4	-
Tj = bivalent temperature	Pdh	371.8	kW	Tj = bivalent temperature	COPd	5.7	-
Tj = operation limit temperature	Pdh	---	kW	Tj = operation limit temperature	COPd	---	-
Bivalent temperature	Tbiv	-10	°C	Tj = operation limit temperature	TOL	---	°C
Power consumption in modes other than active mode				Heating water operating limit temperature	WTOL	65	°C
Off mode	Poff	0.010	kW	Supplementary heater			
Thermostat-off mode	Pto	0.010	kW	Rated heat output	Psup	57.0	kW
Standby mode	Psb	0.010	kW	Type of energy input		electricity	
Crankcase heater mode	Pck	0.000	kW				
Other items							
Capacity control		multi-stage		For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Sound power level				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	11.05 ~ 66.32	m3/h
indoors	Lwa	72	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	QHE	768138.8	kWh				

Contact details: WAMAK, s.r.o., Orovnic 252, 96652, Orovnic, Slovakia, info@wamak.sk

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ErP (EU) No 811/2013: Technical parameters for heat pump space heaters

Model	TWW 360 EVI HeavyDuty 2L3
Air-to-water heat pump	no
Brine-to-water heat pump	no
Water-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no
Temperature application	middle (55 °C - 47 °C)
Climate conditions	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output at Tdesignh	Prated	370.1	kW	Seasonal space heating energy efficiency	ηs	147.7	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	Pdh	373.9	kW	Tj = -7 °C	COPd	4.03	-
Tj = +2 °C	Pdh	375.3	kW	Tj = +2 °C	COPd	5.2	-
Tj = +7 °C	Pdh	62.7	kW	Tj = +7 °C	COPd	6.0	-
Tj = +12 °C	Pdh	62.8	kW	Tj = +12 °C	COPd	6.6	-
Tj = bivalent temperature	Pdh	370.1	kW	Tj = bivalent temperature	COPd	3.6	-
Tj = operation limit temperature	Pdh	---	kW	Tj = operation limit temperature	COPd	---	-
Bivalent temperature	Tbiv	-10	°C	Tj = operation limit temperature	TOL	---	°C
Power consumption in modes other than active mode				Heating water operating limit temperature	WTOL	65	°C
Off mode	Poff	0.010	kW	Supplementary heater			
Thermostat-off mode	Pto	0.010	kW	Rated heat output	Psup	57.0	kW
Standby mode	Psb	0.010	kW	Type of energy input		electricity	
Crankcase heater mode	Pck	0.000	kW				
Other items							
Capacity control		multi-stage		For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Sound power level				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	11.05 ~ 66.32	m3/h
indoors	Lwa	72	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	QHE	764626.6	kWh				

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WAMAK

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55 °C

35 °C

A+++

A++

A+

A

B

C

D

A++

A+++



72 dB



--- dB

■ 389
■ 371
■ 363
kW

■ 380
■ 372
■ 354
kW



2019

811/2013

TWW 360 EVI

HeavyDuty 2L3

ErP Data

55 °C

35 °C

Energy class

A++

A+++

η [%]

147.7

173.6

P_{rated} [kW]

371

372

Q_{HE} [kWh/y]

764627

768139

SCOP [-]

3.69

4.34

$T_{bivalent}$ [°C]

-10

-10

CONTROLLER



+ QAA55/75

class VII

3.5% ↓

- QAA55/75

class III

1.5% ↓

Heating performance data

Version: v2024.004-BW-WW

Source - Brine [0°C] / Low Temperature [35°C]

ZHI46K1P-TWD_R410A_6_BWW

Operating conditions		Qh	P	COP
1	B0 / W30-35	295.3	65.1	4.53
2	B0 / W30-35 (MIN)	49.2	10.6	4.64
A	B0 / Wxx-34	294.9	63.7	4.63
B	B0 / Wxx-30	293.5	58.3	5.04
C	B0 / Wxx-27	48.7	8.9	5.50
D	B0 / Wxx-24	48.5	8.3	5.87
E	B0 / Wxx-35	295.3	65.1	4.53
F	B0 / Wxx-35	295.3	65.1	4.53

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	3.72
SCOPnet	5.63
SCOP	3.72
η [%]	148.67
Label	A++
Qh [kWh]	610090
Pdesignh [kW]	295.3
Tbivalent [°C]	-10

Source - Brine [0°C] / Medium Temperature [55°C]

Operating conditions		Qh	P	COP
1	B0 / W47-55	301.2	102.1	2.95
2	B0 / W47-55 (MIN)	50.2	16.6	3.02
A	B0 / Wxx-52	303.2	93.2	3.36
B	B0 / Wxx-42	303.6	72.7	4.22
C	B0 / Wxx-36	49.8	10.5	4.74
D	B0 / Wxx-30	49.5	9.5	5.22
E	B0 / Wxx-55	301.2	102.1	2.95
F	B0 / Wxx-54	303.5	95.3	3.18

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	3.17
SCOPnet	4.47
SCOP	3.17
η [%]	126.79
Label	A++
Qh [kWh]	622279
Pdesignh [kW]	301.2
Tbivalent [°C]	-10

Source - Water [10°C] / Low Temperature [35°C]

Operating conditions		Qh	P	COP
1	W10 / W30-35	371.8	65.1	5.71
2	W10 / W30-35 (MIN)	62.0	10.6	5.84
A	W10 / Wxx-34	372.0	63.8	5.83
B	W10 / Wxx-30	372.4	58.6	6.35
C	W10 / Wxx-27	62.1	9.0	6.93
D	W10 / Wxx-24	62.1	8.4	7.38
E	W10 / Wxx-35	371.8	65.1	5.71
F	W10 / Wxx-35	371.8	65.1	5.71

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	4.34
SCOPnet	7.07
SCOP	4.34
η [%]	173.63
Label	A+++
Qh [kWh]	768139
Pdesignh [kW]	371.8
Tbivalent [°C]	-10.00

WAMAK TWW 360 EVI HeavyDuty 2L3

Source - Water [10°C] / Medium Temperature [55°C]

Operating conditions		Qh	P	COP
1	W10 / W47-55	370.1	102.0	3.63
2	W10 / W47-55 (MIN)	61.7	16.6	3.71
A	W10 / Wxx-52	373.9	92.9	4.03
B	W10 / Wxx-42	375.3	72.5	5.17
C	W10 / Wxx-36	62.7	10.5	5.97
D	W10 / Wxx-30	62.8	9.6	6.57
E	W10 / Wxx-55	370.1	102.0	3.63
F	W10 / Wxx-55	370.1	102.0	3.63

SCOP DATA EN 14825:2018

Source - Water [10°C] / Medium Temperature [55°C]

SCOPon	3.69
SCOPnet	5.43
SCOP	3.69
η [%]	147.67
Label	A++
Qh [kWh]	764627
Pdesignh [kW]	370.1
Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

Operating conditions		Qc	P	EER
A	W30-35 / W12-7	224.3	69.6	3.22
B	W26-xx / W12-7	228.5	63.7	3.59
C	W22-xx / W12-7	232.0	58.2	3.98
D	W18-xx / W12-7	233.6	55.7	4.20

SEER DATA EN 14825:2018 [W 12 / 7°C]

SEERon	3.86
SEER	3.86
Qc [kWh]	130980
η [%]	154.50

Radiant cooling W 23 / 18°C

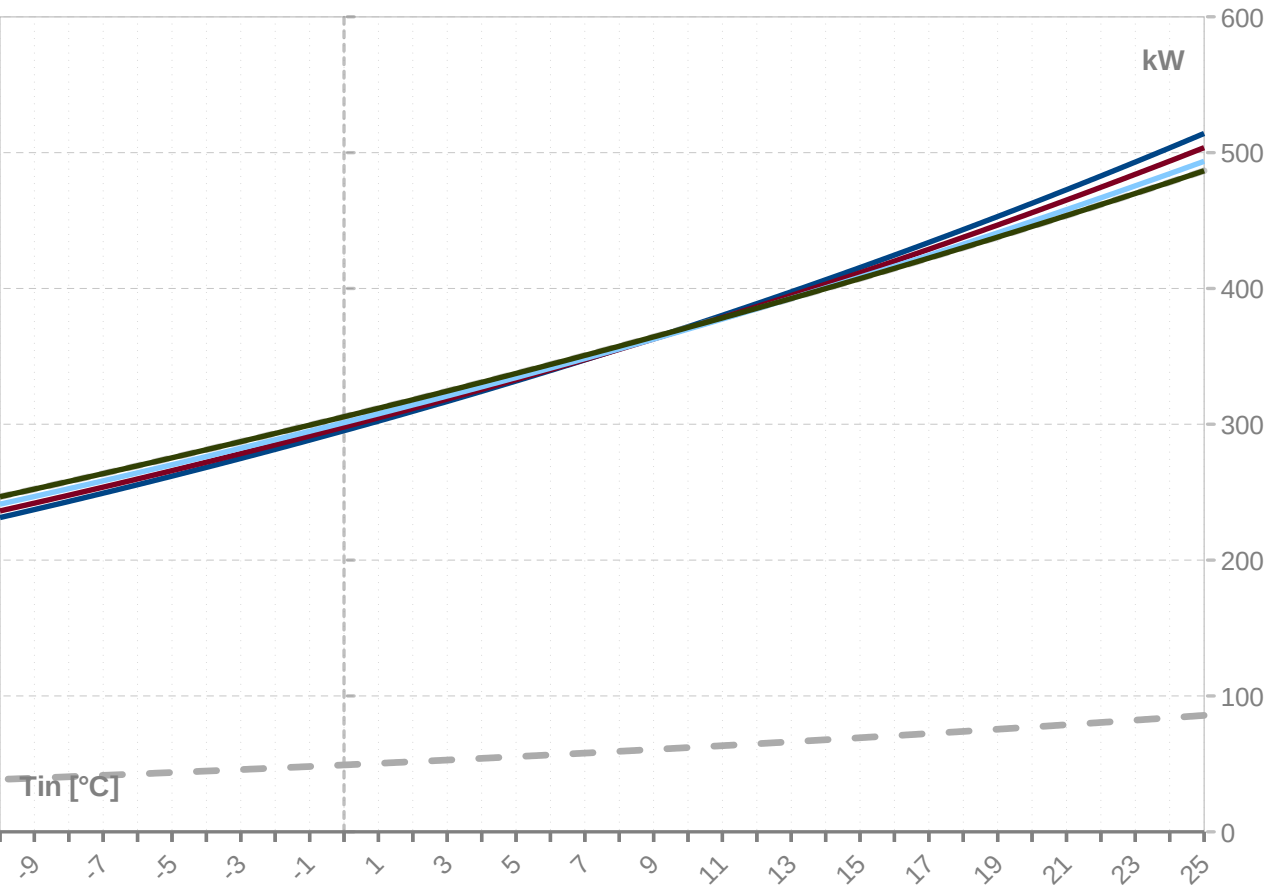
Operating conditions		Qc	P	EER
A	W50-xx / W23-18	260.6	109.4	2.38
B	W40-xx / W23-18	281.7	87.0	3.24
C	W30-35 / W23-18	298.5	69.6	4.29
D	W26-xx / W23-18	304.1	63.7	4.77

SEER DATA EN 14825:2018 [W 23 / 18°C]

SEERon	5.15
SEER	5.15
Qc [kWh]	130980
η [%]	205.80

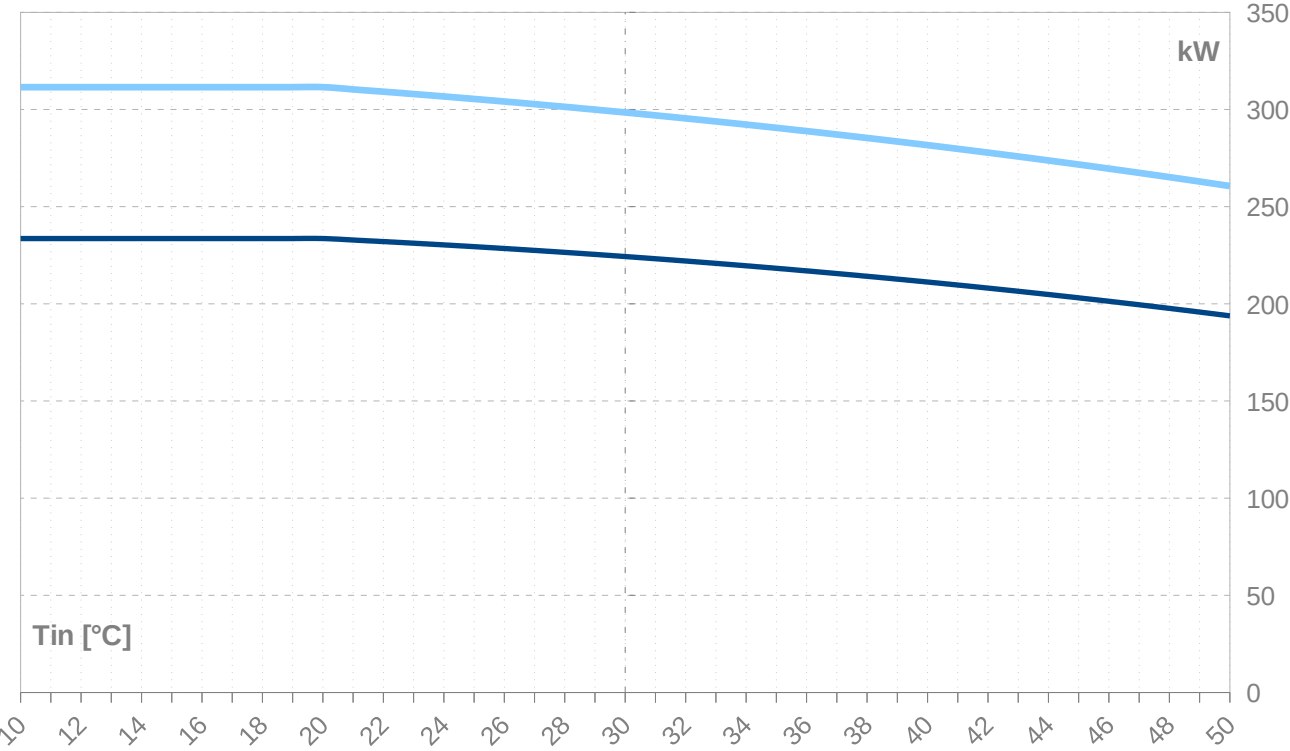
Performance lines - heating

Qh-nom-35 Qh-min-35 Qh-max-65 Qh-nom-45 Qh-nom-55
Qh-nom-65



Performance lines - cooling

Qc-nom-12-7 Qc-nom-23-18



Th -OU	35										
Ts -IN	Qh nom	Qh min	Qh max	Pin nom	Pin min	Pin max	COP nom	Qc nom	Qc min	Qc max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
25	514.1	85.7	514.1	66.5	10.8	66.5	7.73	452.0	75.3	452.0	140.7
24	503.5	83.9	503.5	66.3	10.8	66.3	7.59	441.6	73.6	441.6	140.4
23	493.1	82.2	493.1	66.2	10.8	66.2	7.45	431.3	71.9	431.3	140.2
22	482.8	80.5	482.8	66.0	10.8	66.0	7.31	421.2	70.2	421.2	139.9
21	472.7	78.8	472.7	65.9	10.7	65.9	7.18	411.2	68.5	411.2	139.8
20	462.8	77.1	462.8	65.8	10.7	65.8	7.04	401.4	66.9	401.4	139.6
19	453.0	75.5	453.0	65.6	10.7	65.6	6.90	391.7	65.3	391.7	139.5
18	443.3	73.9	443.3	65.5	10.7	65.5	6.76	382.1	63.7	382.1	139.4
17	433.9	72.3	433.9	65.5	10.7	65.5	6.63	372.8	62.1	372.8	139.4
16	424.6	70.8	424.6	65.4	10.6	65.4	6.49	363.5	60.6	363.5	139.4
15	415.4	69.2	415.4	65.3	10.6	65.3	6.36	354.4	59.1	354.4	139.4
14	406.4	67.7	406.4	65.3	10.6	65.3	6.23	345.4	57.6	345.4	139.4
13	397.5	66.3	397.5	65.2	10.6	65.2	6.10	336.6	56.1	336.6	139.5
12	388.8	64.8	388.8	65.2	10.6	65.2	5.96	327.9	54.7	327.9	139.6
11	380.3	63.4	380.3	65.2	10.6	65.2	5.84	319.4	53.2	319.4	139.7
10	371.8	62.0	371.8	65.1	10.6	65.1	5.71	311.0	51.8	311.0	139.8
9	363.6	60.6	363.6	65.1	10.6	65.1	5.58	302.8	50.5	302.8	139.9
8	355.4	59.2	355.4	65.1	10.6	65.1	5.46	294.6	49.1	294.6	140.1
7	347.4	57.9	347.4	65.1	10.6	65.1	5.34	286.6	47.8	286.6	140.2
6	339.6	56.6	339.6	65.1	10.6	65.1	5.22	278.8	46.5	278.8	140.4
5	331.9	55.3	331.9	65.1	10.6	65.1	5.10	271.1	45.2	271.1	140.6
4	324.3	54.0	324.3	65.1	10.6	65.1	4.98	263.5	43.9	263.5	140.7
3	316.8	52.8	316.8	65.1	10.6	65.1	4.87	256.0	42.7	256.0	140.9
2	309.5	51.6	309.5	65.1	10.6	65.1	4.75	248.7	41.4	248.7	141.1
1	302.3	50.4	302.3	65.1	10.6	65.1	4.64	241.5	40.3	241.5	141.3
0	295.3	49.2	295.3	65.1	10.6	65.1	4.53	234.4	39.1	234.4	141.4
-1	288.3	48.1	288.3	65.1	10.6	65.1	4.43	227.5	37.9	227.5	141.6
-2	281.5	46.9	281.5	65.1	10.6	65.1	4.32	220.7	36.8	220.7	141.8
-3	274.8	45.8	274.8	65.1	10.6	65.1	4.22	214.0	35.7	214.0	141.9
-4	268.3	44.7	268.3	65.1	10.6	65.1	4.12	207.5	34.6	207.5	142.0
-5	261.8	43.6	261.8	65.1	10.6	65.1	4.02	201.0	33.5	201.0	142.2
-6	255.5	42.6	255.5	65.1	10.6	65.1	3.93	194.7	32.5	194.7	142.3
-7	249.3	41.5	249.3	65.1	10.6	65.1	3.83	188.5	31.4	188.5	142.4
-8	243.2	40.5	243.2	65.0	10.6	65.0	3.74	182.5	30.4	182.5	142.4
-9	237.2	39.5	237.2	65.0	10.6	65.0	3.65	176.5	29.4	176.5	142.5
-10	231.3	38.6	231.3	64.9	10.6	64.9	3.56	170.7	28.4	170.7	142.5
-11	225.5	37.6	225.5	64.8	10.6	64.8	3.48	165.0	27.5	165.0	142.5
-12	219.9	36.6	219.9	64.8	10.5	64.8	3.39	159.4	26.6	159.4	142.5
-13	214.3	35.7	214.3	64.7	10.5	64.7	3.31	153.9	25.7	153.9	142.4
-14	208.9	34.8	208.9	64.6	10.5	64.6	3.23	148.6	24.8	148.6	142.3
-15	203.5	33.9	203.5	64.5	10.5	64.5	3.16	143.3	23.9	143.3	142.2

-- attention: operating limits not reflected in performance table

ZHI46K1P-TWD_R410A_6_BWW

WAMAK TWW 360 EVI HeavyDuty 2L3

Th -OU	45										
Th -OU	Qh nom	Qh min	Qh max	Pin nom	Pin min	Pin max	COP nom	Qc nom	Qc min	Qc max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
25	503.6	83.9	503.6	80.0	13.0	80.0	6.30	428.9	71.5	428.9	158.8
24	493.8	82.3	493.8	79.9	13.0	79.9	6.18	419.1	69.9	419.1	158.6
23	484.1	80.7	484.1	79.9	13.0	79.9	6.06	409.5	68.2	409.5	158.5
22	474.5	79.1	474.5	79.9	13.0	79.9	5.94	399.9	66.7	399.9	158.3
21	465.1	77.5	465.1	79.9	13.0	79.9	5.82	390.5	65.1	390.5	158.2
20	455.8	76.0	455.8	79.9	13.0	79.9	5.71	381.3	63.5	381.3	158.2
19	446.7	74.4	446.7	79.9	13.0	79.9	5.59	372.1	62.0	372.1	158.1
18	437.7	73.0	437.7	79.9	13.0	79.9	5.48	363.1	60.5	363.1	158.1
17	428.9	71.5	428.9	79.9	13.0	79.9	5.37	354.3	59.0	354.3	158.0
16	420.1	70.0	420.1	79.9	13.0	79.9	5.26	345.5	57.6	345.5	158.0
15	411.6	68.6	411.6	79.9	13.0	79.9	5.15	336.9	56.2	336.9	158.1
14	403.1	67.2	403.1	80.0	13.0	80.0	5.04	328.5	54.7	328.5	158.1
13	394.8	65.8	394.8	80.0	13.0	80.0	4.94	320.1	53.4	320.1	158.1
12	386.6	64.4	386.6	80.0	13.0	80.0	4.83	311.9	52.0	311.9	158.2
11	378.6	63.1	378.6	80.1	13.0	80.1	4.73	303.8	50.6	303.8	158.3
10	370.7	61.8	370.7	80.1	13.1	80.1	4.63	295.8	49.3	295.8	158.3
9	362.9	60.5	362.9	80.2	13.1	80.2	4.53	288.0	48.0	288.0	158.4
8	355.2	59.2	355.2	80.2	13.1	80.2	4.43	280.3	46.7	280.3	158.5
7	347.6	57.9	347.6	80.2	13.1	80.2	4.33	272.7	45.4	272.7	158.5
6	340.2	56.7	340.2	80.3	13.1	80.3	4.24	265.2	44.2	265.2	158.6
5	332.9	55.5	332.9	80.3	13.1	80.3	4.14	257.9	43.0	257.9	158.7
4	325.7	54.3	325.7	80.4	13.1	80.4	4.05	250.6	41.8	250.6	158.7
3	318.6	53.1	318.6	80.4	13.1	80.4	3.96	243.5	40.6	243.5	158.8
2	311.6	51.9	311.6	80.4	13.1	80.4	3.88	236.5	39.4	236.5	158.8
1	304.8	50.8	304.8	80.4	13.1	80.4	3.79	229.7	38.3	229.7	158.9
0	298.0	49.7	298.0	80.4	13.1	80.4	3.71	222.9	37.2	222.9	158.9
-1	291.4	48.6	291.4	80.4	13.1	80.4	3.62	216.3	36.0	216.3	158.9
-2	284.8	47.5	284.8	80.4	13.1	80.4	3.54	209.7	35.0	209.7	158.9
-3	278.4	46.4	278.4	80.4	13.1	80.4	3.46	203.3	33.9	203.3	158.8
-4	272.1	45.3	272.1	80.4	13.1	80.4	3.39	197.0	32.8	197.0	158.8
-5	265.9	44.3	265.9	80.3	13.1	80.3	3.31	190.8	31.8	190.8	158.7
-6	259.7	43.3	259.7	80.3	13.1	80.3	3.24	184.8	30.8	184.8	158.6
-7	253.7	42.3	253.7	80.2	13.1	80.2	3.16	178.8	29.8	178.8	158.4
-8	247.8	41.3	247.8	80.1	13.1	80.1	3.09	172.9	28.8	172.9	158.3
-9	241.9	40.3	241.9	80.0	13.0	80.0	3.02	167.2	27.9	167.2	158.1
-10	236.2	39.4	236.2	79.9	13.0	79.9	2.96	161.5	26.9	161.5	157.8
-11	230.5	38.4	230.5	79.8	13.0	79.8	2.89	156.0	26.0	156.0	157.6
-12	225.0	37.5	225.0	79.6	13.0	79.6	2.82	150.6	25.1	150.6	157.2
-13	219.5	36.6	219.5	79.5	12.9	79.5	2.76	145.3	24.2	145.3	156.9
-14	214.1	35.7	214.1	79.3	12.9	79.3	2.70	140.0	23.3	140.0	156.5
-15	208.8	34.8	208.8	79.1	12.9	79.1	2.64	134.9	22.5	134.9	156.1

-- attention: operating limits not reflected in performance table

WAMAK TWW 360 EVI HeavyDuty 2L3

Th -OU	55										
Ts -IN	Qh nom	Qh min	Qh max	Pin nom	Pin min	Pin max	COP nom	Qc nom	Qc min	Qc max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
25	493.6	82.3	493.6	101.0	16.5	101.0	4.89	399.3	66.5	399.3	183.9
24	484.5	80.8	484.5	101.1	16.5	101.1	4.79	390.1	65.0	390.1	183.9
23	475.5	79.3	475.5	101.1	16.5	101.1	4.70	381.1	63.5	381.1	183.8
22	466.7	77.8	466.7	101.2	16.5	101.2	4.61	372.2	62.0	372.2	183.8
21	458.0	76.3	458.0	101.3	16.5	101.3	4.52	363.5	60.6	363.5	183.9
20	449.4	74.9	449.4	101.3	16.5	101.3	4.44	354.8	59.1	354.8	183.9
19	441.0	73.5	441.0	101.4	16.5	101.4	4.35	346.3	57.7	346.3	183.9
18	432.6	72.1	432.6	101.5	16.5	101.5	4.26	337.9	56.3	337.9	184.0
17	424.4	70.7	424.4	101.6	16.5	101.6	4.18	329.6	54.9	329.6	184.0
16	416.3	69.4	416.3	101.6	16.6	101.6	4.10	321.4	53.6	321.4	184.1
15	408.3	68.1	408.3	101.7	16.6	101.7	4.01	313.3	52.2	313.3	184.2
14	400.5	66.7	400.5	101.8	16.6	101.8	3.93	305.4	50.9	305.4	184.2
13	392.7	65.4	392.7	101.9	16.6	101.9	3.86	297.6	49.6	297.6	184.3
12	385.0	64.2	385.0	101.9	16.6	101.9	3.78	289.9	48.3	289.9	184.4
11	377.5	62.9	377.5	102.0	16.6	102.0	3.70	282.3	47.0	282.3	184.4
10	370.1	61.7	370.1	102.0	16.6	102.0	3.63	274.8	45.8	274.8	184.5
9	362.7	60.5	362.7	102.1	16.6	102.1	3.55	267.4	44.6	267.4	184.5
8	355.5	59.3	355.5	102.1	16.6	102.1	3.48	260.1	43.4	260.1	184.6
7	348.4	58.1	348.4	102.2	16.6	102.2	3.41	253.0	42.2	253.0	184.6
6	341.4	56.9	341.4	102.2	16.6	102.2	3.34	245.9	41.0	245.9	184.6
5	334.4	55.7	334.4	102.2	16.6	102.2	3.27	239.0	39.8	239.0	184.6
4	327.6	54.6	327.6	102.2	16.6	102.2	3.20	232.1	38.7	232.1	184.6
3	320.9	53.5	320.9	102.2	16.6	102.2	3.14	225.4	37.6	225.4	184.6
2	314.2	52.4	314.2	102.2	16.6	102.2	3.07	218.8	36.5	218.8	184.5
1	307.7	51.3	307.7	102.2	16.6	102.2	3.01	212.3	35.4	212.3	184.4
0	301.2	50.2	301.2	102.1	16.6	102.1	2.95	205.8	34.3	205.8	184.3
-1	294.8	49.1	294.8	102.1	16.6	102.1	2.89	199.5	33.3	199.5	184.2
-2	288.6	48.1	288.6	102.0	16.6	102.0	2.83	193.3	32.2	193.3	184.0
-3	282.4	47.1	282.4	101.9	16.6	101.9	2.77	187.2	31.2	187.2	183.8
-4	276.2	46.0	276.2	101.8	16.6	101.8	2.71	181.2	30.2	181.2	183.6
-5	270.2	45.0	270.2	101.7	16.6	101.7	2.66	175.2	29.2	175.2	183.3
-6	264.2	44.0	264.2	101.6	16.5	101.6	2.60	169.4	28.2	169.4	183.0
-7	258.4	43.1	258.4	101.4	16.5	101.4	2.55	163.7	27.3	163.7	182.7
-8	252.6	42.1	252.6	101.2	16.5	101.2	2.50	158.0	26.3	158.0	182.3
-9	246.8	41.1	246.8	101.0	16.5	101.0	2.44	152.5	25.4	152.5	181.9
-10	241.2	40.2	241.2	100.8	16.4	100.8	2.39	147.0	24.5	147.0	181.4
-11	235.6	39.3	235.6	100.5	16.4	100.5	2.34	141.7	23.6	141.7	180.9
-12	230.1	38.3	230.1	100.3	16.3	100.3	2.29	136.4	22.7	136.4	180.3
-13	224.6	37.4	224.6	100.0	16.3	100.0	2.25	131.2	21.9	131.2	179.7
-14	219.2	36.5	219.2	99.7	16.2	99.7	2.20	126.2	21.0	126.2	179.0
-15	213.9	35.7	213.9	99.3	16.2	99.3	2.15	121.2	20.2	121.2	178.3

-- attention: operating limits not reflected in performance table

WAMAK TWW 360 EVI HeavyDuty 2L3

Th -OU	65 (T-max)										
Ts -IN	Qh nom	Qh min	Qh max	Pin nom	Pin min	Pin max	COP nom	Qc nom	Qc min	Qc max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
25	486.6	81.1	486.6	128.7	21.0	128.7	3.78	366.5	61.1	366.5	215.8
24	478.2	79.7	478.2	128.8	21.0	128.8	3.71	358.0	59.7	358.0	216.0
23	469.9	78.3	469.9	128.9	21.0	128.9	3.65	349.6	58.3	349.6	216.1
22	461.7	77.0	461.7	129.0	21.0	129.0	3.58	341.3	56.9	341.3	216.3
21	453.7	75.6	453.7	129.1	21.0	129.1	3.51	333.1	55.5	333.1	216.5
20	445.7	74.3	445.7	129.2	21.0	129.2	3.45	325.0	54.2	325.0	216.7
19	437.8	73.0	437.8	129.3	21.1	129.3	3.39	317.1	52.8	317.1	216.8
18	430.0	71.7	430.0	129.4	21.1	129.4	3.32	309.2	51.5	309.2	217.0
17	422.4	70.4	422.4	129.5	21.1	129.5	3.26	301.5	50.2	301.5	217.2
16	414.8	69.1	414.8	129.5	21.1	129.5	3.20	293.8	49.0	293.8	217.3
15	407.3	67.9	407.3	129.6	21.1	129.6	3.14	286.3	47.7	286.3	217.5
14	399.9	66.7	399.9	129.7	21.1	129.7	3.08	278.8	46.5	278.8	217.7
13	392.6	65.4	392.6	129.7	21.1	129.7	3.03	271.5	45.3	271.5	217.8
12	385.4	64.2	385.4	129.8	21.1	129.8	2.97	264.3	44.0	264.3	217.9
11	378.3	63.1	378.3	129.8	21.1	129.8	2.92	257.1	42.9	257.1	218.0
10	371.3	61.9	371.3	129.8	21.1	129.8	2.86	250.1	41.7	250.1	218.1
9	364.4	60.7	364.4	129.8	21.1	129.8	2.81	243.1	40.5	243.1	218.2
8	357.5	59.6	357.5	129.8	21.1	129.8	2.75	236.3	39.4	236.3	218.3
7	350.7	58.5	350.7	129.8	21.1	129.8	2.70	229.5	38.3	229.5	218.3
6	344.0	57.3	344.0	129.7	21.1	129.7	2.65	222.9	37.1	222.9	218.3
5	337.4	56.2	337.4	129.7	21.1	129.7	2.60	216.3	36.1	216.3	218.3
4	330.9	55.2	330.9	129.6	21.1	129.6	2.55	209.9	35.0	209.9	218.3
3	324.4	54.1	324.4	129.5	21.1	129.5	2.50	203.5	33.9	203.5	218.2
2	318.1	53.0	318.1	129.4	21.1	129.4	2.46	197.2	32.9	197.2	218.1
1	311.8	52.0	311.8	129.3	21.1	129.3	2.41	191.0	31.8	191.0	217.9
0	305.5	50.9	305.5	129.2	21.0	129.2	2.37	184.9	30.8	184.9	217.7
-1	299.3	49.9	299.3	129.0	21.0	129.0	2.32	178.9	29.8	178.9	217.5
-2	293.2	48.9	293.2	128.8	21.0	128.8	2.28	172.9	28.8	172.9	217.3
-3	287.2	47.9	287.2	128.6	21.0	128.6	2.23	167.1	27.8	167.1	217.0
-4	281.2	46.9	281.2	128.4	20.9	128.4	2.19	161.3	26.9	161.3	216.6
-5	275.3	45.9	275.3	128.2	20.9	128.2	2.15	155.6	25.9	155.6	216.2
-6	269.5	44.9	269.5	127.9	20.8	127.9	2.11	150.0	25.0	150.0	215.8
-7	263.7	43.9	263.7	127.6	20.8	127.6	2.07	144.5	24.1	144.5	215.3
-8	257.9	43.0	257.9	127.3	20.7	127.3	2.03	139.1	23.2	139.1	214.7
-9	252.3	42.0	252.3	126.9	20.7	126.9	1.99	133.8	22.3	133.8	214.1
-10	246.6	41.1	246.6	126.5	20.6	126.5	1.95	128.5	21.4	128.5	213.5
-11	241.1	40.2	241.1	126.1	20.5	126.1	1.91	123.3	20.5	123.3	212.7
-12	235.5	39.3	235.5	125.7	20.5	125.7	1.87	118.2	19.7	118.2	211.9
-13	230.1	38.3	230.1	125.2	20.4	125.2	1.84	113.1	18.9	113.1	211.1
-14	224.6	37.4	224.6	124.7	20.3	124.7	1.80	108.2	18.0	108.2	210.2
-15	219.2	36.5	219.2	124.2	20.2	124.2	1.77	103.3	17.2	103.3	209.2

-- attention: operating limits not reflected in performance table

WAMAK TWW 360 EVI HeavyDuty 2L3

Tc -OU		W 12 / 7 °C									
Ts -IN	Qc nom	Qc min	Qc max	Pin nom	Pin min	Pin max	EER	Qh nom	Qh min	Qh max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
40	211.2	35.2	211.2	87.0	14.2	87.0	2.43	292.5	48.7	292.5	166.4
39	212.7	35.5	212.7	85.1	13.9	85.1	2.50	292.1	48.7	292.1	164.2
38	214.2	35.7	214.2	83.2	13.5	83.2	2.58	291.8	48.6	291.8	162.0
37	215.6	35.9	215.6	81.3	13.2	81.3	2.65	291.5	48.6	291.5	159.9
36	217.0	36.2	217.0	79.5	13.0	79.5	2.73	291.2	48.5	291.2	157.9
35	218.3	36.4	218.3	77.8	12.7	77.8	2.81	290.9	48.5	290.9	155.9
34	219.6	36.6	219.6	76.1	12.4	76.1	2.89	290.6	48.4	290.6	153.9
33	220.8	36.8	220.8	74.4	12.1	74.4	2.97	290.3	48.4	290.3	152.0
32	222.0	37.0	222.0	72.8	11.9	72.8	3.05	290.0	48.3	290.0	150.2
31	223.2	37.2	223.2	71.2	11.6	71.2	3.14	289.7	48.3	289.7	148.4
30	224.3	37.4	224.3	69.6	11.3	69.6	3.22	289.3	48.2	289.3	146.7
29	225.4	37.6	225.4	68.1	11.1	68.1	3.31	289.0	48.2	289.0	144.9
28	226.5	37.7	226.5	66.6	10.8	66.6	3.40	288.7	48.1	288.7	143.2
27	227.5	37.9	227.5	65.1	10.6	65.1	3.49	288.3	48.1	288.3	141.6
26	228.5	38.1	228.5	63.7	10.4	63.7	3.59	288.0	48.0	288.0	140.0
25	229.4	38.2	229.4	62.3	10.1	62.3	3.68	287.6	47.9	287.6	138.4
24	230.3	38.4	230.3	60.9	9.9	60.9	3.78	287.2	47.9	287.2	136.8
23	231.2	38.5	231.2	59.6	9.7	59.6	3.88	286.8	47.8	286.8	135.2
22	232.0	38.7	232.0	58.2	9.5	58.2	3.98	286.4	47.7	286.4	133.7
21	232.8	38.8	232.8	56.9	9.3	56.9	4.09	286.0	47.7	286.0	132.2
20	233.6	38.9	233.6	55.7	9.1	55.7	4.20	285.6	47.6	285.6	130.7

Tc [°C]		W 23 / 18 °C									
0	Qc nom	Qc min	Qc max	Pin nom	Pin min	Pin max	EER	Qh nom	Qh min	Qh max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
40	281.7	46.9	281.7	87.0	14.2	87.0	3.24	362.7	60.4	363.0	166.3
39	283.5	47.3	283.5	85.1	13.9	85.1	3.33	362.7	60.5	362.9	164.0
38	285.3	47.6	285.3	83.2	13.5	83.2	3.43	362.8	60.5	362.8	161.7
37	287.1	47.9	287.1	81.3	13.2	81.3	3.53	362.8	60.5	362.7	159.5
36	288.9	48.1	288.9	79.5	13.0	79.5	3.63	362.9	60.5	362.7	157.3
35	290.6	48.4	290.6	77.8	12.7	77.8	3.74	363.0	60.5	362.7	155.2
34	292.2	48.7	292.2	76.1	12.4	76.1	3.84	363.0	60.5	362.6	153.2
33	293.8	49.0	293.8	74.4	12.1	74.4	3.95	363.1	60.5	362.6	151.2
32	295.4	49.2	295.4	72.8	11.9	72.8	4.06	363.2	60.5	362.6	149.2
31	297.0	49.5	297.0	71.2	11.6	71.2	4.17	363.3	60.5	362.7	147.3
30	298.5	49.7	298.5	69.6	11.3	69.6	4.29	363.3	60.6	362.7	145.4
29	299.9	50.0	299.9	68.1	11.1	68.1	4.41	363.4	60.6	362.7	143.6
28	301.4	50.2	301.4	66.6	10.8	66.6	4.53	363.5	60.6	362.8	141.7
27	302.8	50.5	302.8	65.1	10.6	65.1	4.65	363.6	60.6	362.8	139.9
26	304.1	50.7	304.1	63.7	10.4	63.7	4.77	363.6	60.6	362.9	138.2
25	305.4	50.9	305.4	62.3	10.1	62.3	4.90	363.7	60.6	363.0	136.4
24	306.7	51.1	306.7	60.9	9.9	60.9	5.03	363.8	60.6	363.0	134.7
23	308.0	51.3	308.0	59.6	9.7	59.6	5.17	363.8	60.6	363.1	133.0
22	309.2	51.5	309.2	58.2	9.5	58.2	5.31	363.8	60.6	363.2	131.3
21	310.3	51.7	310.3	56.9	9.3	56.9	5.45	363.9	60.6	363.3	129.6
20	311.5	51.9	311.5	55.7	9.1	55.7	5.60	363.9	60.6	363.3	127.9

-- attention: operating limits not reflected in performance table

LEGEND:

Ts-IN: Temperature renewable source - inlet [°C]
Th-OU: Temperature heating - outlet (flow) [°C]
Tc-OU: Temperature cooling - outlet (flow) [°C]
Qh nom: Heating capacity nominal
Qh min: Heating capacity minimal
Qh max: Heating capacity maximal
Pin nom: Power input at nominal heating capacity
Pin min: Power input at minimal heating capacity
Pin max: Power input at maximal heating capacity
COP nom: coefficient of performance at nominal heating capacity
Qc nom: cooling / heat extraction capacity at nominal heating capacity
Qc min: cooling / heat extraction at minimal heating capacity
Qc max: cooling / heat extraction at maximal heating capacity
I nom: Current at nominal heating capacity
EER: energy efficiency ratio at nominal cooling capacity

