



Heat pump



TWW 105 EVI

WAMAK TWW 105 EVI

Product description

Heat pump with two power stages for heating and domestic hot water with the possibility of passive cooling control. One short closed refrigerant circuit with a pair of quiet Scroll compressors and robust stainless steel plate heat exchangers. Through the connection kit, the circulation pumps can be easily and quickly connected while externally controlling their variable speed.

Use for multi-family dwellings, suburban mixed-use buildings or commercial operations. The Urban range is based on a robust construction quality steel for all parts. High quality, long proven heat pump circuit components extend the life of the heat pump.

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
- Asymmetric plate heat exchanger
- Multi-stage capacity control
- High pressure switch
- Low pressure sensor - analogue
- Flow sensor consumer - analogue - (with accessory)
- Mixed heating/cooling circuit control
- DHW switching control
- Outdoor temperature sensor - (with accessory)
- Buffer temperature sensor - (with accessory)
- Modbus connection - (with accessory)
- 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)
- Direct heating/cooling circuit control
- DHW circulation control
- DHW temperature sensor - (with accessory)
- Cascade control - (with accessory)
- Solid frame structure

Basic performance data - WAMAK TWW 105 EVI

Heating - EN 14511		
Heating capacity [kW]	W10 / W35 (max)	109.1 (54.5 / 109.1)
	W10 / W35 (min)	54.5 (54.5 / 109.1)
	W10 / W34	109.1 (54.6 / 109.1)
Electrical power input [kW]	W10 / W35 (max)	18.9 (9.3 / 18.9)
	W10 / W35 (min)	9.3 (9.3 / 18.9)
	W10 / W34	18.5 (13.3 / 27.1)
Heating efficiency faktor [COP]	W10 / W35 (max)	5.78
	W10 / W35 (min)	5.86
	W10 / W34	5.90
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35°C]	SCOP	6.52
	η [%]	260.9
	Label	A+++
	Qhe [kWh]	225400.6
	Pdesignh [kW]	109.1
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	85.3
	A25 / W23-18	89.7
	A35 / W12-7	62.9
	A25 / W12-7	62.9
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18°C]	SEER	5.23
	Qce [kWh]	37740.0
	ηc [%]	209.2
Sound EN 12102		
Acoustic power - Lw	dB(A)	64.4
Acoustic pressure - Lp	1 m dB(A)	56.4
	5 m dB(A)	42.4
	10 m dB(A)	36.4
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 2 /	On/Off
Refrigerant	R410A (GWP - 2088)	10.6 kg
Operating limit temperatures heating - (min / max) [°C]	25 / 65	
Operating limit temperatures source - (min / max) [°C]	-10 (7) / 30	
Weight	445 kg	

Main technical data - WAMAK TW 105 EVI

Enclosure type		VN1100	Heat energy rejection side data		
Basic dimensions	Height [mm]	1270	Operating limit temperatures heating	MAX [°C]	65
	Width [mm]	1100		MIN [°C]	25
	Length [mm]	750	for more see operating limits diagram		
Weight [kg]		445	Condenser	Port size	VIC 2.1/2 "
Colour		Gray	Type	BPHE	
Enclosure IP Class		IP20	Count	1	
Refrigeration cycle			Material	AISI 316	
Compressor	Type	Scroll	Maximal operating pressure - refrigerant [bar]	50	
	Number of stages	2	Maximal operating pressure - Water [bar]	6	
	On/Off		Testing pressure [bar]	70	
	Power factor Cosφ	0.59	Heat transfer medium	Water	
	Winding resistance	0.83 Ohm	Volume flow @ dT 5K (nom) - Water [m³/h]	9.43 ~ 18.86	
Refrigerant	R410A		Internal pressure drop - Water [kPa]	20	
	Volme	10.6 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		2 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	VIC 2.1/2 "
Electrical connection data			Type	BPHE	
Line voltage [#~ V/Hz]		3~ 400/50	Count	1	
Current	nominal [A]	43.28	Material	AISI 316	
	maximal [A]	66.00	Maximal operating pressure - refrigerant [bar]	29	
	starting [A]	58.42	Heat transfer medium	Water	
Softstart		-	Maximal operating pressure - Water [bar]	6	
Main safety		C80	Volume flow - Water [m³/h]	9.75 ~ 19.50	
Control System			Internal pressure drop - Water [kPa]	20	
Main controller	SIEMENS	RVS 61	Temperature difference - Water	4 K	
Extension module	AVS75.3xx	AVS75.3xx	AVS75.372		
Bus Clip-In		Modbus OCI352			
Online connection		Web server OZW672	ToSyMo		
Superheat controller		SEC61			
*** with accessory					

WAMAK TWW 105 EVI

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

Model	TWW 105 EVI
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	109.1	kW	Seasonal space heating energy efficiency	ηs	260.9	%
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	109.1	kW	Tj = -7 °C	COPd	5.90	-
Tj = +2 °C	Pdh	109.4	kW	Tj = +2 °C	COPd	6.4	-
Tj = +7 °C	Pdh	54.8	kW	Tj = +7 °C	COPd	6.9	-
Tj = +12 °C	Pdh	54.8	kW	Tj = +12 °C	COPd	7.4	-
Tj = bivalent temperature	Pdh	109.1	kW	Tj = bivalent temperature	COPd	5.8	-
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	16.4	kW
Standby mode	Psb	0.010	kW	Type of energy input		electricity	
Crankcase heater mode	Pck	0.000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Other items				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	9.75 ~ 19.50	m3/h
Capacity control		multi-stage		Annual energy consumption	QHE	225400.6	kWh
Sound power level							
indoors	Lwa	64	dB				
outdoors	Lwa	---	dB				

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

WAMAK TWW 105 EVI

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

Model	TWW 105 EVI
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	108.9	kW	Seasonal space heating energy efficiency	ηs	202.6	%
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	109.9	kW	Tj = -7 °C	COPd	4.06	-
Tj = +2 °C	Pdh	110.1	kW	Tj = +2 °C	COPd	5.2	-
Tj = +7 °C	Pdh	55.2	kW	Tj = +7 °C	COPd	6.0	-
Tj = +12 °C	Pdh	55.3	kW	Tj = +12 °C	COPd	6.6	-
Tj = bivalent temperature	Pdh	108.9	kW	Tj = bivalent temperature	COPd	3.7	-
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	16.4	kW
Standby mode	Psb	0.010	kW	Type of energy input			
Crankcase heater mode	Pck	0.000	kW	For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Other items				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	9.75 ~ 19.50	m3/h
Capacity control		multi-stage		Annual energy consumption	QHE	224987.4	kWh
Sound power level							
indoors	Lwa	64	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	QHE	224987.4	kWh				

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TWW 105 EVI



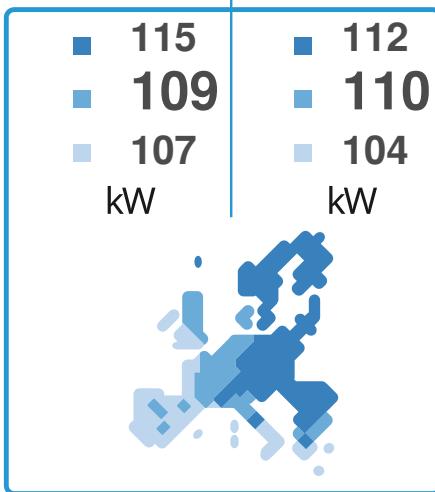
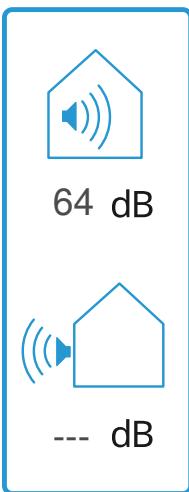
55 °C

35 °C



A+++

A+++



2019

811/2013

TWW 105 EVI

ErP Data

	55 °C	35 °C
Energy class		
η [%]	202.6	260.9
P _{rated} [kW]	109	110
Q _{HE} [kWh/y]	224988	225401
SCOP [-]	5.06	6.52
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]

ZHI40K1P-TFD_R410A_2_BWW

Operating conditions		Qh	P	COP
1	B0 / W30-35	85.5	18.7	4.57
2	B0 / W30-35 (MIN)	42.8	9.2	4.64
A	B0 / Wxx-34	85.5	18.3	4.67
B	B0 / Wxx-30	85.5	16.9	5.06
C	B0 / Wxx-27	42.7	7.8	5.45
D	B0 / Wxx-24	42.7	7.4	5.78
E	B0 / Wxx-35	85.5	18.7	4.57
F	B0 / Wxx-35	85.5	18.7	4.57

SCOP DATA EN 14825:2018

Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	5.15
SCOPnet	5.15
SCOP	5.15
η [%]	205.90
Label	A+++
Qh [kWh]	176643
Pdesignh [kW]	85.5
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	B0 / W47-55	87.0	29.5	2.94
2	B0 / W47-55 (MIN)	43.5	14.4	2.98
A	B0 / Wxx-52	87.4	26.8	3.37
B	B0 / Wxx-42	87.8	20.8	4.26
C	B0 / Wxx-36	43.3	9.1	4.74
D	B0 / Wxx-30	43.3	8.3	5.20
E	B0 / Wxx-55	87.0	29.5	2.94
F	B0 / Wxx-54	87.5	27.5	3.19

SCOP DATA EN 14825:2018

Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	4.13
SCOPnet	4.13
SCOP	4.12
η [%]	164.93
Label	A+++
Qh [kWh]	179742
Pdesignh [kW]	87.0
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	W10 / W30-35	109.1	18.9	5.78
2	W10 / W30-35 (MIN)	54.5	9.3	5.86
A	W10 / Wxx-34	109.1	18.5	5.90
B	W10 / Wxx-30	109.4	17.0	6.42
C	W10 / Wxx-27	54.8	7.9	6.92
D	W10 / Wxx-24	54.8	7.5	7.35
E	W10 / Wxx-35	109.1	18.9	5.78
F	W10 / Wxx-35	109.1	18.9	5.78

SCOP DATA EN 14825:2018

Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	6.53
SCOPnet	6.53
SCOP	6.52
η [%]	260.94
Label	A+++
Qh [kWh]	225401
Pdesignh [kW]	109.1
Tbivalent [°C]	-10.00

WAMAK TWW 105 EVI

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

Operating conditions		Qh	P	COP	SCOP DATA EN 14825:2018	
1	W10 / W47-55	108.9	29.8	3.66	Source - Water [10°C] / Medium Temperature [55°C]	
2	W10 / W47-55 (MIN)	54.5	14.7	3.71	SCOPon	5.07
A	W10 / Wxx-52	109.9	27.1	4.06	SCOPnet	5.07
B	W10 / Wxx-42	110.1	21.0	5.24	SCOP	5.06
C	W10 / Wxx-36	55.2	9.2	5.99	η [%]	202.56
D	W10 / Wxx-30	55.3	8.4	6.58	Label	A+++
E	W10 / Wxx-55	108.9	29.8	3.66	Qh [kWh]	224987
F	W10 / Wxx-55	108.9	29.8	3.66	Pdesignh [kW]	108.9
					Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

Operating conditions		Qc	P	EER	SEER DATA EN 14825:2018 [W 12 / 7°C]	
A	W30-35 / W12-7	64.9	19.9	3.26	SEERon	3.89
B	W26-xx / W12-7	66.3	18.3	3.62	SEER	3.89
C	W22-xx / W12-7	67.6	16.9	4.01	Qc [kWh]	37740
D	W18-xx / W12-7	68.2	16.2	4.21	η [%]	155.45

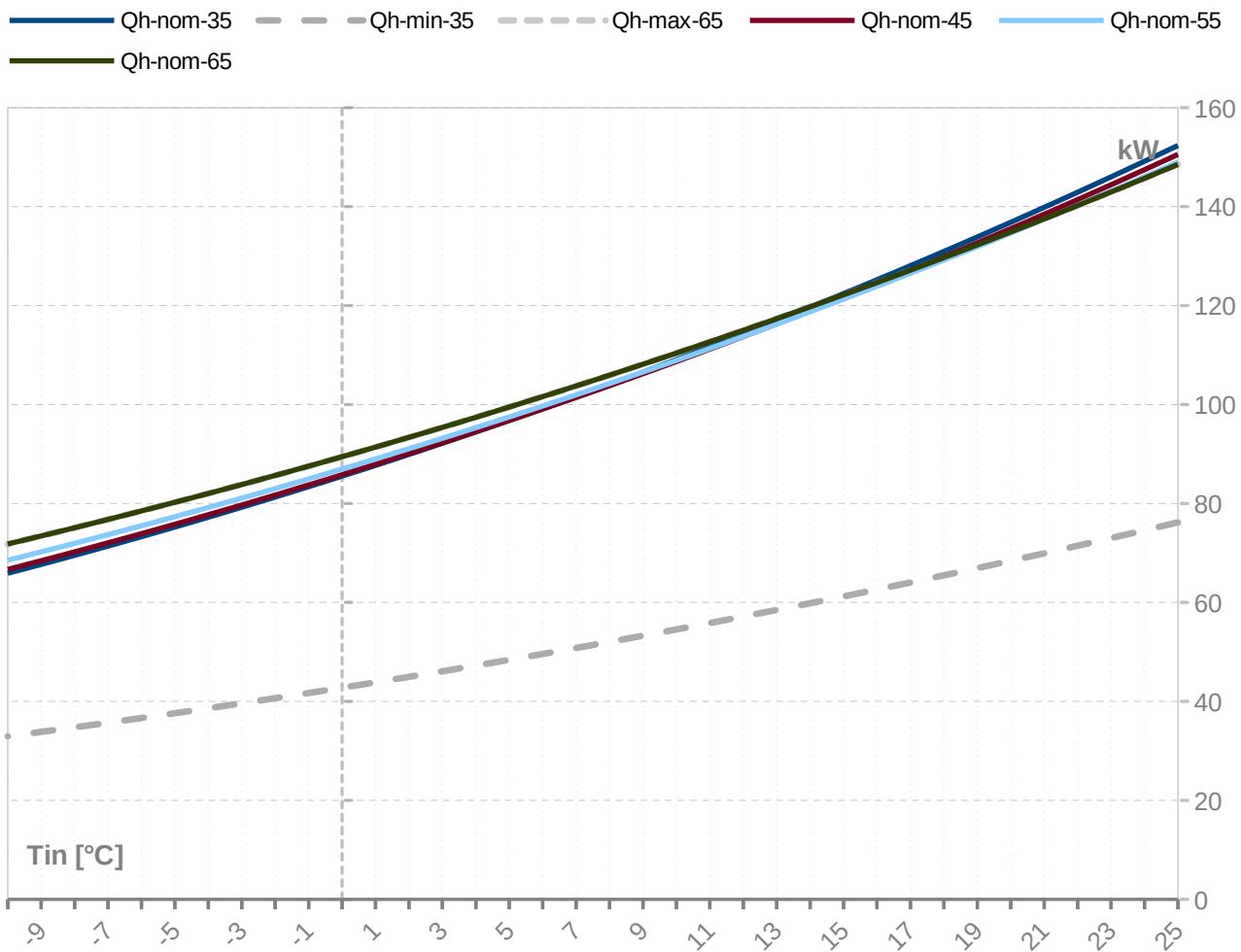
Radiant cooling W 23 / 18°C

Operating conditions		Qc	P	EER	SEER DATA EN 14825:2018 [W 23 / 18°C]	
A	W50-xx / W23-18	76.9	31.8	2.42	SEERon	5.23
B	W40-xx / W23-18	82.7	24.9	3.32	SEER	5.23
C	W30-35 / W23-18	87.6	19.9	4.40	Qc [kWh]	37740
D	W26-xx / W23-18	89.3	18.3	4.88	η [%]	209.16

WAMAK TWW 105 EVI

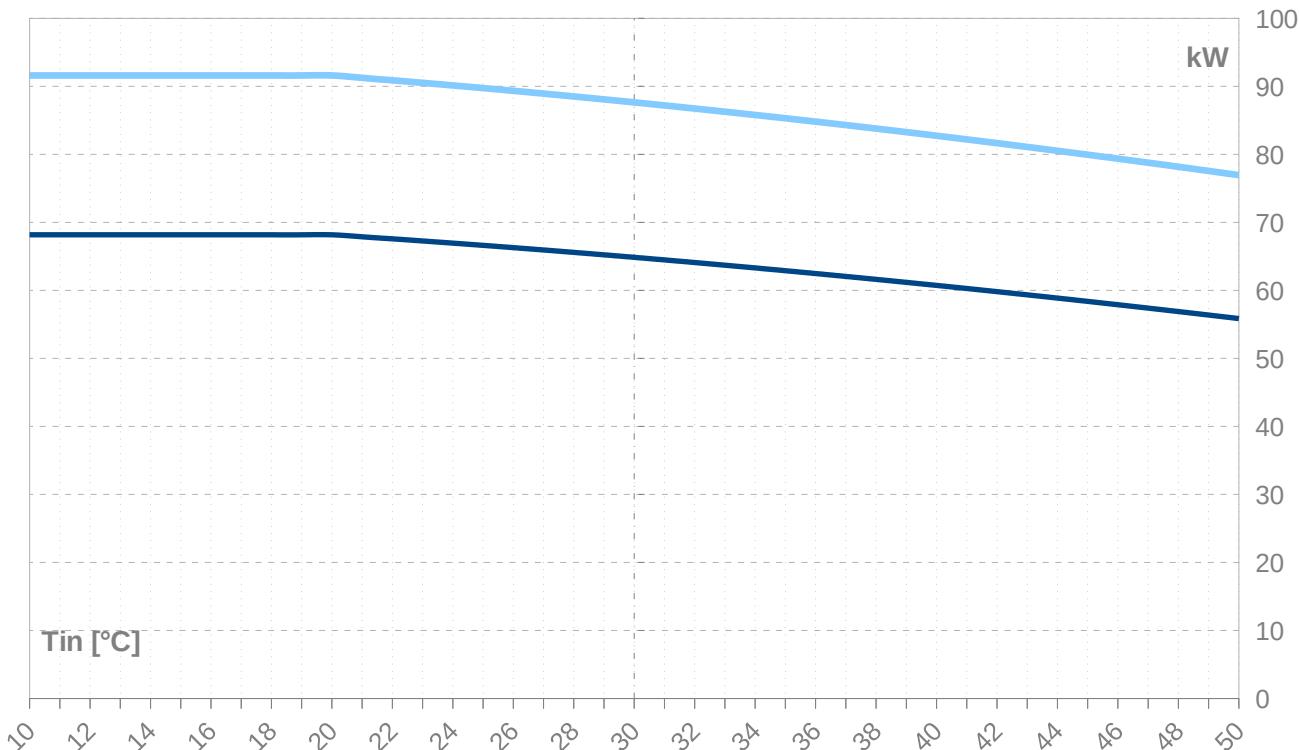
Performance lines - heating

ZHI40K1P-TFD_R410A_2_BWW



Performance lines - cooling

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



Th -OU	[°C]		35									
	Ts -IN [°C]	Qh nom [kW]	Qh min [kW]	Qh max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	COP nom kW / kW	Qc nom [kW]	Qc min [kW]	Qc max [kW]	I nom [A]
25	152.3	76.2	152.3	19.2	9.5	19.2	7.94	134.4	67.2	134.4	43.2	
24	149.2	74.6	149.2	19.2	9.5	19.2	7.78	131.3	65.6	131.3	43.2	
23	146.0	73.0	146.0	19.2	9.4	19.2	7.62	128.1	64.1	128.1	43.2	
22	142.9	71.5	142.9	19.1	9.4	19.1	7.47	125.0	62.5	125.0	43.2	
21	139.8	69.9	139.8	19.1	9.4	19.1	7.32	122.0	61.0	122.0	43.2	
20	136.8	68.4	136.8	19.1	9.4	19.1	7.17	119.0	59.5	119.0	43.3	
19	133.9	66.9	133.9	19.1	9.4	19.1	7.02	116.1	58.0	116.1	43.3	
18	130.9	65.5	130.9	19.0	9.4	19.0	6.87	113.1	56.6	113.1	43.3	
17	128.1	64.0	128.1	19.0	9.4	19.0	6.73	110.3	55.1	110.3	43.3	
16	125.2	62.6	125.2	19.0	9.4	19.0	6.59	107.5	53.7	107.5	43.4	
15	122.4	61.2	122.4	19.0	9.4	19.0	6.45	104.7	52.3	104.7	43.4	
14	119.7	59.8	119.7	19.0	9.4	19.0	6.31	102.0	51.0	102.0	43.4	
13	117.0	58.5	117.0	18.9	9.3	18.9	6.17	99.3	49.6	99.3	43.4	
12	114.3	57.1	114.3	18.9	9.3	18.9	6.04	96.6	48.3	96.6	43.5	
11	111.7	55.8	111.7	18.9	9.3	18.9	5.91	94.0	47.0	94.0	43.5	
10	109.1	54.5	109.1	18.9	9.3	18.9	5.78	91.5	45.7	91.5	43.5	
9	106.5	53.3	106.5	18.9	9.3	18.9	5.65	88.9	44.5	88.9	43.5	
8	104.1	52.0	104.1	18.8	9.3	18.8	5.52	86.5	43.2	86.5	43.5	
7	101.6	50.8	101.6	18.8	9.3	18.8	5.40	84.0	42.0	84.0	43.5	
6	99.2	49.6	99.2	18.8	9.3	18.8	5.27	81.6	40.8	81.6	43.5	
5	96.8	48.4	96.8	18.8	9.3	18.8	5.15	79.3	39.6	79.3	43.6	
4	94.5	47.2	94.5	18.8	9.3	18.8	5.03	76.9	38.5	76.9	43.6	
3	92.2	46.1	92.2	18.8	9.2	18.8	4.92	74.7	37.3	74.7	43.6	
2	89.9	45.0	89.9	18.7	9.2	18.7	4.80	72.4	36.2	72.4	43.6	
1	87.7	43.9	87.7	18.7	9.2	18.7	4.69	70.2	35.1	70.2	43.6	
0	85.5	42.8	85.5	18.7	9.2	18.7	4.57	68.1	34.0	68.1	43.6	
-1	83.4	41.7	83.4	18.7	9.2	18.7	4.46	65.9	33.0	65.9	43.6	
-2	81.3	40.6	81.3	18.7	9.2	18.7	4.35	63.9	31.9	63.9	43.6	
-3	79.2	39.6	79.2	18.7	9.2	18.7	4.25	61.8	30.9	61.8	43.6	
-4	77.2	38.6	77.2	18.6	9.2	18.6	4.14	59.8	29.9	59.8	43.6	
-5	75.2	37.6	75.2	18.6	9.2	18.6	4.04	57.8	28.9	57.8	43.6	
-6	73.3	36.6	73.3	18.6	9.2	18.6	3.94	55.9	28.0	55.9	43.6	
-7	71.4	35.7	71.4	18.6	9.2	18.6	3.84	54.0	27.0	54.0	43.6	
-8	69.5	34.8	69.5	18.6	9.2	18.6	3.74	52.2	26.1	52.2	43.6	
-9	67.7	33.8	67.7	18.6	9.2	18.6	3.65	50.3	25.2	50.3	43.6	
-10	65.9	32.9	65.9	18.6	9.2	18.6	3.55	48.6	24.3	48.6	43.5	
-11	64.1	32.1	64.1	18.5	9.1	18.5	3.46	46.8	23.4	46.8	43.5	
-12	62.4	31.2	62.4	18.5	9.1	18.5	3.37	45.1	22.6	45.1	43.5	
-13	60.7	30.4	60.7	18.5	9.1	18.5	3.28	43.4	21.7	43.4	43.5	
-14	59.1	29.5	59.1	18.5	9.1	18.5	3.19	41.8	20.9	41.8	43.4	
-15	57.5	28.7	57.5	18.5	9.1	18.5	3.10	40.2	20.1	40.2	43.4	

-- attention: operating limits not reflected in performance table

ZHI40K1P-TFD_R410A_2_BWW

Th -OU	45											
	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]	[kW]	[A]
25	150.5	75.3	150.5	23.6	11.7	23.6	6.37	128.5	64.2	128.5	48.0	
24	147.5	73.7	147.5	23.6	11.6	23.6	6.25	125.4	62.7	125.4	48.0	
23	144.4	72.2	144.4	23.6	11.6	23.6	6.12	122.4	61.2	122.4	48.0	
22	141.4	70.7	141.4	23.6	11.6	23.6	6.00	119.4	59.7	119.4	47.9	
21	138.5	69.2	138.5	23.5	11.6	23.5	5.89	116.5	58.2	116.5	47.9	
20	135.5	67.8	135.5	23.5	11.6	23.5	5.77	113.6	56.8	113.6	47.9	
19	132.7	66.3	132.7	23.5	11.6	23.5	5.65	110.8	55.4	110.8	47.8	
18	129.8	64.9	129.8	23.4	11.6	23.4	5.54	108.0	54.0	108.0	47.8	
17	127.1	63.5	127.1	23.4	11.5	23.4	5.43	105.2	52.6	105.2	47.8	
16	124.3	62.2	124.3	23.4	11.5	23.4	5.32	102.5	51.2	102.5	47.8	
15	121.6	60.8	121.6	23.4	11.5	23.4	5.21	99.8	49.9	99.8	47.7	
14	118.9	59.5	118.9	23.3	11.5	23.3	5.10	97.2	48.6	97.2	47.7	
13	116.3	58.2	116.3	23.3	11.5	23.3	4.99	94.6	47.3	94.6	47.7	
12	113.7	56.9	113.7	23.3	11.5	23.3	4.89	92.0	46.0	92.0	47.7	
11	111.2	55.6	111.2	23.3	11.5	23.3	4.78	89.5	44.7	89.5	47.6	
10	108.7	54.3	108.7	23.2	11.5	23.2	4.68	87.0	43.5	87.0	47.6	
9	106.2	53.1	106.2	23.2	11.4	23.2	4.58	84.6	42.3	84.6	47.6	
8	103.8	51.9	103.8	23.2	11.4	23.2	4.48	82.2	41.1	82.2	47.6	
7	101.4	50.7	101.4	23.2	11.4	23.2	4.38	79.8	39.9	79.8	47.5	
6	99.1	49.5	99.1	23.1	11.4	23.1	4.28	77.5	38.7	77.5	47.5	
5	96.8	48.4	96.8	23.1	11.4	23.1	4.19	75.2	37.6	75.2	47.5	
4	94.5	47.3	94.5	23.1	11.4	23.1	4.09	72.9	36.5	72.9	47.4	
3	92.3	46.1	92.3	23.1	11.4	23.1	4.00	70.7	35.4	70.7	47.4	
2	90.1	45.0	90.1	23.1	11.4	23.1	3.91	68.6	34.3	68.6	47.4	
1	87.9	44.0	87.9	23.0	11.4	23.0	3.82	66.4	33.2	66.4	47.4	
0	85.8	42.9	85.8	23.0	11.3	23.0	3.73	64.3	32.2	64.3	47.3	
-1	83.7	41.9	83.7	23.0	11.3	23.0	3.64	62.3	31.1	62.3	47.3	
-2	81.7	40.8	81.7	23.0	11.3	23.0	3.56	60.2	30.1	60.2	47.3	
-3	79.7	39.8	79.7	23.0	11.3	23.0	3.47	58.3	29.1	58.3	47.2	
-4	77.7	38.9	77.7	22.9	11.3	22.9	3.39	56.3	28.2	56.3	47.2	
-5	75.8	37.9	75.8	22.9	11.3	22.9	3.31	54.4	27.2	54.4	47.2	
-6	73.9	36.9	73.9	22.9	11.3	22.9	3.23	52.5	26.3	52.5	47.1	
-7	72.0	36.0	72.0	22.9	11.3	22.9	3.15	50.7	25.3	50.7	47.1	
-8	70.2	35.1	70.2	22.9	11.3	22.9	3.07	48.8	24.4	48.8	47.1	
-9	68.4	34.2	68.4	22.9	11.3	22.9	2.99	47.1	23.5	47.1	47.0	
-10	66.7	33.3	66.7	22.9	11.3	22.9	2.92	45.3	22.7	45.3	47.0	
-11	65.0	32.5	65.0	22.9	11.3	22.9	2.84	43.6	21.8	43.6	46.9	
-12	63.3	31.6	63.3	22.8	11.3	22.8	2.77	41.9	21.0	41.9	46.9	
-13	61.6	30.8	61.6	22.8	11.3	22.8	2.70	40.3	20.1	40.3	46.9	
-14	60.0	30.0	60.0	22.8	11.3	22.8	2.63	38.7	19.3	38.7	46.8	
-15	58.4	29.2	58.4	22.8	11.3	22.8	2.56	37.1	18.6	37.1	46.8	

-- attention: operating limits not reflected in performance table

Th -OU [°C]	55										
	Ts -IN [°C]	Qh nom [kW]	Qh min [kW]	Qh max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	COP nom kW / kW	Qc nom [kW]	Qc min [kW]	Qc max [kW]
25	149.0	74.5	149.0	30.3	14.9	30.3	4.92	120.7	60.3	120.7	55.0
24	146.0	73.0	146.0	30.3	14.9	30.3	4.83	117.8	58.9	117.8	54.9
23	143.1	71.6	143.1	30.2	14.9	30.2	4.74	114.9	57.5	114.9	54.8
22	140.3	70.1	140.3	30.2	14.9	30.2	4.65	112.1	56.0	112.1	54.8
21	137.4	68.7	137.4	30.2	14.9	30.2	4.56	109.3	54.6	109.3	54.7
20	134.6	67.3	134.6	30.1	14.9	30.1	4.47	106.5	53.3	106.5	54.7
19	131.9	65.9	131.9	30.1	14.8	30.1	4.38	103.8	51.9	103.8	54.6
18	129.2	64.6	129.2	30.0	14.8	30.0	4.30	101.1	50.6	101.1	54.6
17	126.5	63.3	126.5	30.0	14.8	30.0	4.22	98.5	49.2	98.5	54.5
16	123.9	61.9	123.9	30.0	14.8	30.0	4.13	95.9	47.9	95.9	54.5
15	121.3	60.7	121.3	29.9	14.8	29.9	4.05	93.3	46.7	93.3	54.4
14	118.8	59.4	118.8	29.9	14.8	29.9	3.97	90.8	45.4	90.8	54.4
13	116.2	58.1	116.2	29.9	14.7	29.9	3.89	88.3	44.2	88.3	54.3
12	113.8	56.9	113.8	29.9	14.7	29.9	3.81	85.9	42.9	85.9	54.3
11	111.3	55.7	111.3	29.8	14.7	29.8	3.73	83.5	41.7	83.5	54.2
10	108.9	54.5	108.9	29.8	14.7	29.8	3.66	81.1	40.6	81.1	54.2
9	106.6	53.3	106.6	29.8	14.7	29.8	3.58	78.8	39.4	78.8	54.2
8	104.2	52.1	104.2	29.7	14.7	29.7	3.51	76.5	38.2	76.5	54.1
7	102.0	51.0	102.0	29.7	14.7	29.7	3.43	74.2	37.1	74.2	54.1
6	99.7	49.9	99.7	29.7	14.6	29.7	3.36	72.0	36.0	72.0	54.0
5	97.5	48.7	97.5	29.7	14.6	29.7	3.29	69.8	34.9	69.8	54.0
4	95.3	47.7	95.3	29.6	14.6	29.6	3.22	67.6	33.8	67.6	54.0
3	93.2	46.6	93.2	29.6	14.6	29.6	3.15	65.5	32.8	65.5	53.9
2	91.1	45.5	91.1	29.6	14.6	29.6	3.08	63.4	31.7	63.4	53.9
1	89.0	44.5	89.0	29.6	14.6	29.6	3.01	61.4	30.7	61.4	53.9
0	87.0	43.5	87.0	29.5	14.6	29.5	2.94	59.4	29.7	59.4	53.8
-1	85.0	42.5	85.0	29.5	14.6	29.5	2.88	57.4	28.7	57.4	53.8
-2	83.0	41.5	83.0	29.5	14.6	29.5	2.81	55.4	27.7	55.4	53.8
-3	81.1	40.5	81.1	29.5	14.5	29.5	2.75	53.5	26.8	53.5	53.7
-4	79.2	39.6	79.2	29.5	14.5	29.5	2.69	51.7	25.8	51.7	53.7
-5	77.3	38.7	77.3	29.5	14.5	29.5	2.62	49.8	24.9	49.8	53.7
-6	75.5	37.7	75.5	29.4	14.5	29.4	2.56	48.0	24.0	48.0	53.6
-7	73.7	36.8	73.7	29.4	14.5	29.4	2.50	46.2	23.1	46.2	53.6
-8	71.9	36.0	71.9	29.4	14.5	29.4	2.45	44.5	22.2	44.5	53.6
-9	70.2	35.1	70.2	29.4	14.5	29.4	2.39	42.7	21.4	42.7	53.6
-10	68.5	34.3	68.5	29.4	14.5	29.4	2.33	41.1	20.5	41.1	53.5
-11	66.9	33.4	66.9	29.4	14.5	29.4	2.27	39.4	19.7	39.4	53.5
-12	65.2	32.6	65.2	29.4	14.5	29.4	2.22	37.8	18.9	37.8	53.5
-13	63.6	31.8	63.6	29.4	14.5	29.4	2.17	36.2	18.1	36.2	53.4
-14	62.1	31.0	62.1	29.4	14.5	29.4	2.11	34.6	17.3	34.6	53.4
-15	60.5	30.3	60.5	29.4	14.5	29.4	2.06	33.1	16.5	33.1	53.4

-- attention: operating limits not reflected in performance table

WAMAK TWW 105 EVI

Th -OU [°C]	65 (T-max)										
	Ts -IN [°C]	Qh nom [kW]	Qh min [kW]	Qh max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	COP nom kW / kW	Qc nom [kW]	Qc min [kW]	Qc max [kW]
25	148.5	74.3	148.5	38.9	19.2	38.9	3.82	112.2	56.1	112.2	65.8
24	145.7	72.9	145.7	38.8	19.2	38.8	3.75	109.4	54.7	109.4	65.7
23	143.0	71.5	143.0	38.8	19.1	38.8	3.68	106.7	53.4	106.7	65.7
22	140.2	70.1	140.2	38.8	19.1	38.8	3.62	104.0	52.0	104.0	65.6
21	137.5	68.8	137.5	38.7	19.1	38.7	3.55	101.4	50.7	101.4	65.6
20	134.9	67.4	134.9	38.7	19.1	38.7	3.49	98.8	49.4	98.8	65.5
19	132.3	66.1	132.3	38.6	19.1	38.6	3.42	96.2	48.1	96.2	65.5
18	129.7	64.8	129.7	38.6	19.0	38.6	3.36	93.6	46.8	93.6	65.4
17	127.1	63.6	127.1	38.6	19.0	38.6	3.30	91.1	45.6	91.1	65.4
16	124.6	62.3	124.6	38.5	19.0	38.5	3.24	88.7	44.3	88.7	65.4
15	122.2	61.1	122.2	38.5	19.0	38.5	3.17	86.2	43.1	86.2	65.3
14	119.7	59.9	119.7	38.4	19.0	38.4	3.11	83.8	41.9	83.8	65.3
13	117.4	58.7	117.4	38.4	18.9	38.4	3.06	81.5	40.7	81.5	65.3
12	115.0	57.5	115.0	38.4	18.9	38.4	3.00	79.2	39.6	79.2	65.2
11	112.7	56.3	112.7	38.3	18.9	38.3	2.94	76.9	38.4	76.9	65.2
10	110.4	55.2	110.4	38.3	18.9	38.3	2.88	74.6	37.3	74.6	65.2
9	108.1	54.1	108.1	38.3	18.9	38.3	2.83	72.4	36.2	72.4	65.2
8	105.9	53.0	105.9	38.3	18.9	38.3	2.77	70.2	35.1	70.2	65.1
7	103.8	51.9	103.8	38.2	18.9	38.2	2.71	68.1	34.0	68.1	65.1
6	101.6	50.8	101.6	38.2	18.8	38.2	2.66	65.9	33.0	65.9	65.1
5	99.5	49.7	99.5	38.2	18.8	38.2	2.61	63.9	31.9	63.9	65.1
4	97.4	48.7	97.4	38.1	18.8	38.1	2.55	61.8	30.9	61.8	65.1
3	95.4	47.7	95.4	38.1	18.8	38.1	2.50	59.8	29.9	59.8	65.1
2	93.4	46.7	93.4	38.1	18.8	38.1	2.45	57.8	28.9	57.8	65.1
1	91.4	45.7	91.4	38.1	18.8	38.1	2.40	55.8	27.9	55.8	65.1
0	89.5	44.7	89.5	38.0	18.8	38.0	2.35	53.9	27.0	53.9	65.1
-1	87.5	43.8	87.5	38.0	18.8	38.0	2.30	52.0	26.0	52.0	65.1
-2	85.7	42.8	85.7	38.0	18.7	38.0	2.25	50.2	25.1	50.2	65.1
-3	83.8	41.9	83.8	38.0	18.7	38.0	2.21	48.3	24.2	48.3	65.1
-4	82.0	41.0	82.0	38.0	18.7	38.0	2.16	46.6	23.3	46.6	65.1
-5	80.2	40.1	80.2	38.0	18.7	38.0	2.11	44.8	22.4	44.8	65.1
-6	78.5	39.2	78.5	37.9	18.7	37.9	2.07	43.0	21.5	43.0	65.1
-7	76.8	38.4	76.8	37.9	18.7	37.9	2.02	41.3	20.7	41.3	65.1
-8	75.1	37.5	75.1	37.9	18.7	37.9	1.98	39.7	19.8	39.7	65.1
-9	73.4	36.7	73.4	37.9	18.7	37.9	1.94	38.0	19.0	38.0	65.1
-10	71.8	35.9	71.8	37.9	18.7	37.9	1.89	36.4	18.2	36.4	65.1
-11	70.2	35.1	70.2	37.9	18.7	37.9	1.85	34.8	17.4	34.8	65.1
-12	68.6	34.3	68.6	37.9	18.7	37.9	1.81	33.3	16.6	33.3	65.1
-13	67.1	33.6	67.1	37.9	18.7	37.9	1.77	31.7	15.9	31.7	65.1
-14	65.6	32.8	65.6	37.9	18.7	37.9	1.73	30.2	15.1	30.2	65.1
-15	64.1	32.1	64.1	37.9	18.7	37.9	1.69	28.7	14.4	28.7	65.2

-- attention: operating limits not reflected in performance table

WAMAK TWW 105 EVI

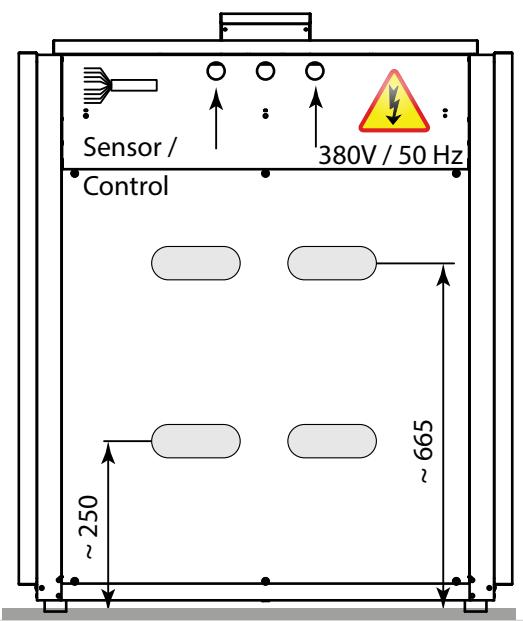
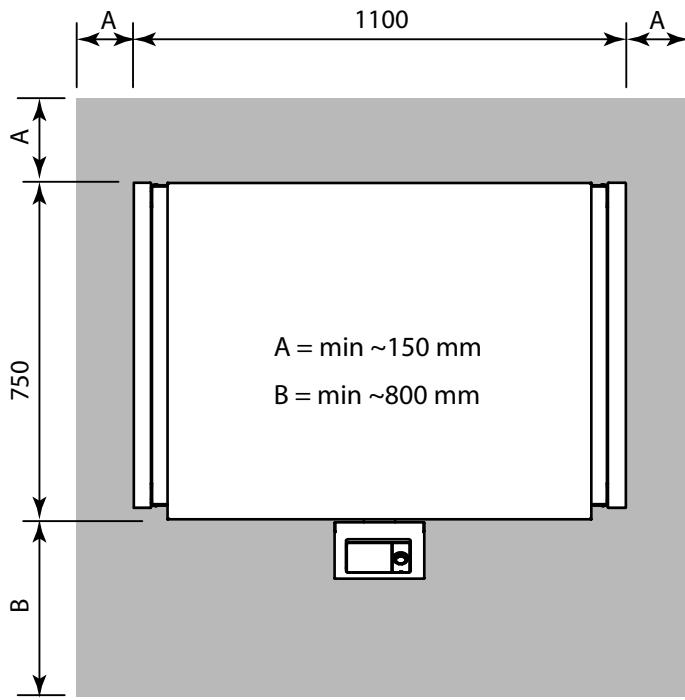
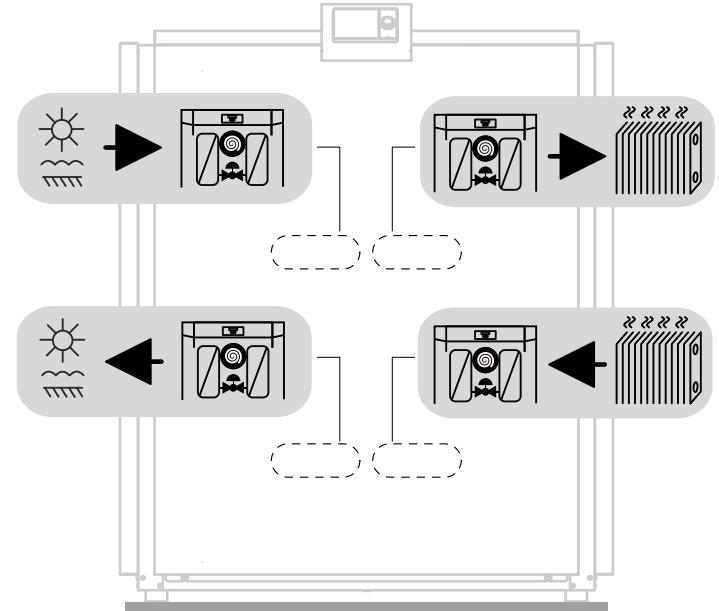
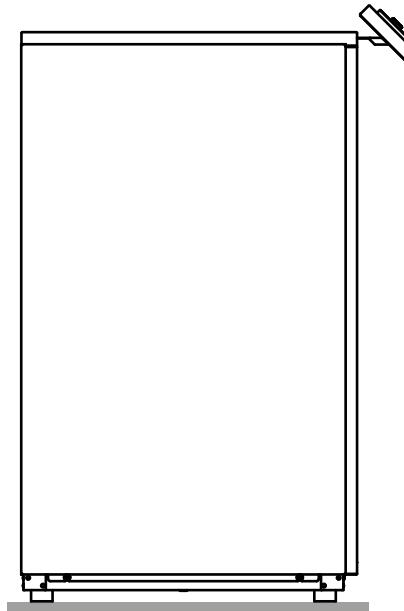
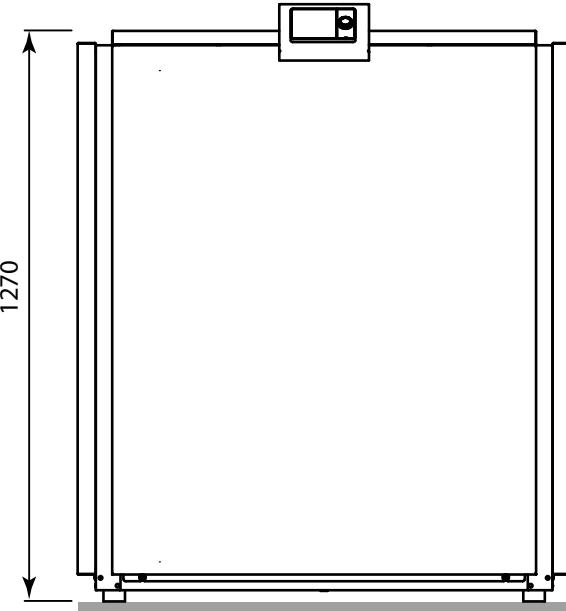
Tc -OU		W 12 / 7 °C										
Ts -IN [°C]	Qc nom [kW]	Qc min [kW]	Qc max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	EER kW / kW	Qh nom [kW]	Qh min [kW]	Qh max [kW]	I nom [A]	
40	60.7	30.4	60.7	24.9	12.3	24.9	2.44	84.0	42.0	84.0	49.0	
39	61.2	30.6	61.2	24.4	12.0	24.4	2.51	83.9	42.0	83.9	48.5	
38	61.6	30.8	61.6	23.8	11.7	23.8	2.59	83.8	41.9	83.8	48.0	
37	62.1	31.0	62.1	23.3	11.5	23.3	2.67	83.8	41.9	83.8	47.5	
36	62.5	31.2	62.5	22.7	11.2	22.7	2.75	83.7	41.9	83.7	47.1	
35	62.9	31.4	62.9	22.2	11.0	22.2	2.83	83.7	41.8	83.7	46.6	
34	63.3	31.7	63.3	21.7	10.7	21.7	2.91	83.6	41.8	83.6	46.2	
33	63.7	31.9	63.7	21.3	10.5	21.3	3.00	83.6	41.8	83.6	45.8	
32	64.1	32.0	64.1	20.8	10.3	20.8	3.08	83.5	41.8	83.5	45.4	
31	64.5	32.2	64.5	20.3	10.0	20.3	3.17	83.5	41.7	83.5	45.1	
30	64.9	32.4	64.9	19.9	9.8	19.9	3.26	83.5	41.7	83.5	44.7	
29	65.2	32.6	65.2	19.5	9.6	19.5	3.35	83.4	41.7	83.4	44.3	
28	65.6	32.8	65.6	19.1	9.4	19.1	3.44	83.4	41.7	83.4	44.0	
27	65.9	33.0	65.9	18.7	9.2	18.7	3.53	83.4	41.7	83.4	43.6	
26	66.3	33.1	66.3	18.3	9.0	18.3	3.62	83.4	41.7	83.4	43.2	
25	66.6	33.3	66.6	17.9	8.8	17.9	3.72	83.4	41.7	83.4	42.9	
24	66.9	33.5	66.9	17.6	8.7	17.6	3.81	83.3	41.7	83.3	42.5	
23	67.3	33.6	67.3	17.2	8.5	17.2	3.91	83.3	41.7	83.3	42.1	
22	67.6	33.8	67.6	16.9	8.3	16.9	4.01	83.3	41.7	83.3	41.7	
21	67.9	33.9	67.9	16.5	8.2	16.5	4.11	83.3	41.7	83.3	41.3	
20	68.2	34.1	68.2	16.2	8.0	16.2	4.21	83.3	41.7	83.3	40.8	

Tc [°C]		W 23 / 18 °C										
0 [°C]	Qc nom [kW]	Qc min [kW]	Qc max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	EER kW / kW	Qh nom [kW]	Qh min [kW]	Qh max [kW]	I nom [A]	
40	82.7	41.4	82.7	24.9	12.3	24.9	3.32	106.2	53.1	106.9	49.4	
39	83.3	41.6	83.3	24.4	12.0	24.4	3.42	106.2	53.1	106.8	48.8	
38	83.8	41.9	83.8	23.8	11.7	23.8	3.52	106.2	53.1	106.7	48.3	
37	84.3	42.2	84.3	23.3	11.5	23.3	3.62	106.2	53.1	106.6	47.8	
36	84.8	42.4	84.8	22.7	11.2	22.7	3.73	106.2	53.1	106.5	47.3	
35	85.3	42.7	85.3	22.2	11.0	22.2	3.84	106.3	53.1	106.4	46.9	
34	85.8	42.9	85.8	21.7	10.7	21.7	3.95	106.3	53.1	106.4	46.4	
33	86.3	43.1	86.3	21.3	10.5	21.3	4.06	106.3	53.2	106.3	46.0	
32	86.7	43.4	86.7	20.8	10.3	20.8	4.17	106.3	53.2	106.3	45.6	
31	87.2	43.6	87.2	20.3	10.0	20.3	4.29	106.4	53.2	106.3	45.2	
30	87.6	43.8	87.6	19.9	9.8	19.9	4.40	106.4	53.2	106.2	44.7	
29	88.1	44.0	88.1	19.5	9.6	19.5	4.52	106.5	53.2	106.2	44.3	
28	88.5	44.3	88.5	19.1	9.4	19.1	4.64	106.5	53.3	106.2	43.9	
27	88.9	44.5	88.9	18.7	9.2	18.7	4.76	106.5	53.3	106.2	43.5	
26	89.3	44.7	89.3	18.3	9.0	18.3	4.88	106.6	53.3	106.2	43.1	
25	89.7	44.9	89.7	17.9	8.8	17.9	5.01	106.6	53.3	106.3	42.7	
24	90.1	45.1	90.1	17.6	8.7	17.6	5.13	106.7	53.3	106.3	42.2	
23	90.5	45.3	90.5	17.2	8.5	17.2	5.26	106.7	53.4	106.3	41.8	
22	90.9	45.4	90.9	16.9	8.3	16.9	5.39	106.8	53.4	106.3	41.3	
21	91.2	45.6	91.2	16.5	8.2	16.5	5.52	106.8	53.4	106.4	40.8	
20	91.6	45.8	91.6	16.2	8.0	16.2	5.65	106.9	53.4	106.4	40.3	

-- 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



int. code: VN1100

