



Heat pump



TWW 28 EVI

WAMAK TWW 28 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
- 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
- Cascade control - (with accessory)
- Solid frame structure
- Sylomer pads under compressor unit
- Electronic expansion valve
- Two-stage capacity control
- Compressor soft starter
- High pressure switch
- Low pressure sensor - analogue
- Flow sensor consumer - analogue - (with accessory)
- Mixed heating/cooling circuit control
- DHW switching control
- Outdoor temperature sensor
- Buffer temperature sensor
- Modbus connection - (with accessory)

Basic performance data - WAMAK TWW 28 EVI

Heating - EN 14511		
Heating capacity [kW]	W10 / W35 (max)	29.4 (14.7 / 29.4)
	W10 / W35 (min)	14.7 (14.7 / 29.4)
	W10 / W34	29.4 (14.7 / 29.4)
Electrical power input [kW]	W10 / W35 (max)	4.7 (2.3 / 4.7)
	W10 / W35 (min)	2.3 (2.3 / 4.7)
	W10 / W34	4.5 (3.6 / 7.3)
Heating efficiency faktor [COP]	W10 / W35 (max)	6.29
	W10 / W35 (min)	6.38
	W10 / W34	6.49
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35 °C]	SCOP	7.53
	η [%]	301.3
	Label	A+++
	Qhe [kWh]	60740.4
	Pdesignh [kW]	29.4
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	23.0
	A25 / W23-18	24.7
	A35 / W12-7	17.1
	A25 / W12-7	17.1
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18 °C]	SEER	5.59
	Qce [kWh]	10260.0
	η_c [%]	223.6
Sound EN 12102		
Acoustic power - Lw	dB(A)	53
Acoustic pressure - Lp	1 m dB(A)	45
	5 m dB(A)	31
	10 m dB(A)	25
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 2 /	On/Off
Refrigerant	R410A (GWP - 2088)	5.7 kg
Operating limit temperatures heating - (min / max) [°C]		25 / 65
Operating limit temperatures source - (min / max) [°C]		-10 (7) / 30
Weight		225 kg

Main technical data - WAMAK TWW 28 EVI

Enclosure type		VN800T		Heat energy rejection side data		
Basic dimensions	Height [mm]	1270		Operating limit temperatures heating	MAX [°C]	65
	Width [mm]	850			MIN [°C]	25
	Length [mm]	630		for more see operating limits diagram		
Weight [kg]	225		Condenser	Port size	1.1/4 "	
Colour	Gray			Type	BPHE	
Enclosure IP Class	IP20			Count	1	
Refrigeration cycle				Material	AISI 316	
Compressor	Type	Scroll		Maximal operating pressure - refrigerant [bar]		
	Number of stages	2		Maximal operating pressure - Water [bar]		
	On/Off			Testing pressure [bar]		
	Power factor Cosφ	0.79		Heat transfer medium		
	Winding resistance	3.20 Ohm		Volume flow - Water [m3/h]		
Refrigerant		R410A		Internal pressure drop - Water [kPa]		
	Volme	5.7 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 1.25 L		Operating limit temperatures source	MIN [°C]	-10 (7)
Maximal pressure - refrigerant [bar]	45		for more see operating limits diagram			
	PED class	1		Evaporator	MAX [°C]	30
EVI - vapour injection with economizer			Port size		1.1/2 "	
Electrical connection data			Type		BPHE	
Line voltage [#~ V/Hz]	3~ 400/50		Count	1		
Current	nominal [A]	8.56		Material	AISI 316	
	maximal [A]	18.40		Maximal operating pressure - refrigerant [bar]		
	starting [A]	11.56		Heat transfer medium		
Softstart	2 x MCI 12		Maximal operating pressure - Water [bar]			
Main safety	C20		Volume flow - Water [m3/h]			
Control System			Internal pressure drop - Water [kPa]			
Main controller	SIEMENS	RVS 61	Temperature difference - Water			
Extension module	AVS75.3xx	AVS75.3xx	4 K			
Bus Clip-In			Modbus OCI352			
Online connection	Web server	ToSyMo				
Superheat controller	OZW672					
	SEC61					

*** with accessory

WAMAK TWW 28 EVI

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

Model	TWW 28 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	29.4	kW	Seasonal space heating energy efficiency	η_s	301.3	%
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	29.4	kW	Tj = -7 °C	COPd	6.49	-
Tj = +2 °C	Pdh	29.5	kW	Tj = +2 °C	COPd	7.4	-
Tj = +7 °C	Pdh	14.8	kW	Tj = +7 °C	COPd	8.3	-
Tj = +12 °C	Pdh	14.8	kW	Tj = +12 °C	COPd	9.2	-
Tj = bivalent temperature	Pdh	29.4	kW	Tj = bivalent temperature	COPd	6.3	-
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	4.4	kW
Standby mode	Psb	0.010	kW	Type of energy input	electricity		
Crankcase heater mode	Pck	0.000	kW				
Other items				For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m ³ /h
Capacity control	multi-stage			For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	2.67 ~ 5.35	m ³ /h
Sound power level							
indoors	Lwa	53	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	60740.4	kWh				

Contact details: WAMAK, s.r.o., Orovnica 252, 96652, Orovnica, Slovensko, info@wamak.sk

WAMAK TWW 28 EVI

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

Model	TWW 28 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	28.8	kW	Seasonal space heating energy efficiency	η_s	214.6	%
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	29.2	kW	Tj = -7 °C	COPd	4.00	-
Tj = +2 °C	Pdh	29.6	kW	Tj = +2 °C	COPd	5.5	-
Tj = +7 °C	Pdh	14.9	kW	Tj = +7 °C	COPd	6.6	-
Tj = +12 °C	Pdh	14.9	kW	Tj = +12 °C	COPd	7.6	-
Tj = bivalent temperature	Pdh	28.8	kW	Tj = bivalent temperature	COPd	3.5	-
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	4.4	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	-	---	m ³ /h
Sound power level				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	2.67 ~ 5.35	m ³ /h
indoors	Lwa	53	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	59500.8	kWh				

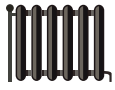
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WAMAK

TWW 28 EVI



55 °C

35 °C



A+++

A+++



53 dB



--- dB

■ 31
 ■ 29
 ■ 29
 kW

■ 30
 ■ 30
 ■ 28
 kW



2019

811/2013

TWW 28 EVI

ErP Data

	55 °C	35 °C
Energy class	A+++	A+++
η [%]	214.6	301.3
P_{rated} [kW]	29	30
Q_{HE} [kWh/y]	59501	60741
SCOP [-]	5.36	7.53
$T_{bivalent}$ [°C]	-10	-10

CONTROLLER



+ QAA55/75
 - QAA55/75

class VII
 class III

3.5% ↓
 1.5% ↓

Heating performance data

Version: v202223.006-BW-WW

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

ZHI11K1P-TFM_R410A_2_BWW

Operating conditions	Qh	P	COP
1 B0 / W30-35	23.2	4.9	4.75
2 B0 / W30-35 (MIN)	11.6	2.4	4.81
A B0 / Wxx-34	23.2	4.8	4.87
B B0 / Wxx-30	23.2	4.3	5.41
C B0 / Wxx-27	11.6	1.9	5.95
D B0 / Wxx-24	11.6	1.8	6.47
E B0 / Wxx-35	23.2	4.9	4.75
F B0 / Wxx-35	23.2	4.9	4.75

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	5.54
SCOPnet	5.54
SCOP	5.51
η [%]	220.45
Label	A+++
Qh [kWh]	47931
Pdesignh [kW]	23.2
Tbivalent [°C]	-10

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

Operating conditions	Qh	P	COP
1 B0 / W47-55	23.4	8.2	2.86
2 B0 / W47-55 (MIN)	11.7	4.0	2.90
A B0 / Wxx-52	23.6	7.4	3.30
B B0 / Wxx-42	23.8	5.6	4.33
C B0 / Wxx-36	11.8	2.4	4.94
D B0 / Wxx-30	11.7	2.1	5.57
E B0 / Wxx-55	23.4	8.2	2.86
F B0 / Wxx-54	23.6	7.6	3.12

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	4.22
SCOPnet	4.22
SCOP	4.20
η [%]	168.04
Label	A+++
Qh [kWh]	48344
Pdesignh [kW]	23.4
Tbivalent [°C]	-10

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

Operating conditions	Qh	P	COP
1 W10 / W30-35	29.4	4.7	6.29
2 W10 / W30-35 (MIN)	14.7	2.3	6.38
A W10 / Wxx-34	29.4	4.5	6.49
B W10 / Wxx-30	29.5	4.0	7.37
C W10 / Wxx-27	14.8	1.8	8.26
D W10 / Wxx-24	14.8	1.6	9.19
E W10 / Wxx-35	29.4	4.7	6.29
F W10 / Wxx-35	29.4	4.7	6.29

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	7.57
SCOPnet	7.57
SCOP	7.53
η [%]	301.32
Label	A+++
Qh [kWh]	60740
Pdesignh [kW]	29.4
Tbivalent [°C]	-10.00

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

	Operating conditions	Qh	P	COP
1	W10 / W47-55	28.8	8.1	3.54
2	W10 / W47-55 (MIN)	14.4	4.0	3.59
A	W10 / Wxx-52	29.2	7.3	4.00
B	W10 / Wxx-42	29.6	5.4	5.49
C	W10 / Wxx-36	14.9	2.3	6.58
D	W10 / Wxx-30	14.9	2.0	7.59
E	W10 / Wxx-55	28.8	8.1	3.54
F	W10 / Wxx-55	28.8	8.1	3.54

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Medium Temperature [55°C]	
SCOPon	5.38
SCOPnet	5.38
SCOP	5.36
η [%]	214.56
Label	A+++
Qh [kWh]	59501
Pdesignh [kW]	28.8
Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

	Operating conditions	Qc	P	EER
A	W30-35 / W12-7	17.7	5.3	3.35
B	W26-xx / W12-7	18.2	4.8	3.81
C	W22-xx / W12-7	18.6	4.3	4.33
D	W18-xx / W12-7	18.8	4.1	4.61

SEER DATA EN 14825:2018 [W 12 / 7°C]	
SEERon	4.17
SEER	4.16
Qc [kWh]	10260
η [%]	166.26

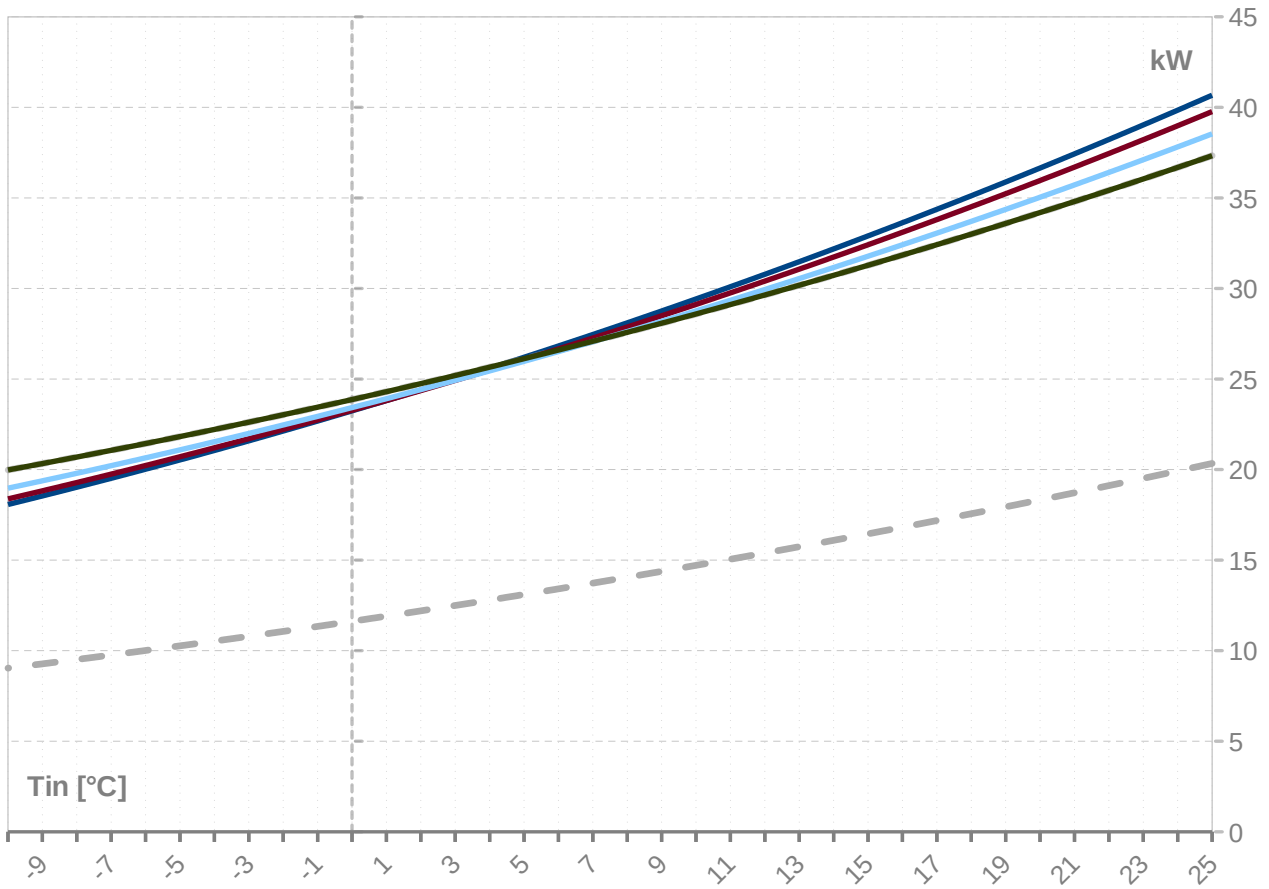
Radiant cooling W 23 / 18°C

	Operating conditions	Qc	P	EER
A	W50-xx / W23-18	19.9	8.8	2.25
B	W40-xx / W23-18	22.1	6.8	3.23
C	W30-35 / W23-18	23.9	5.3	4.51
D	W26-xx / W23-18	24.5	4.8	5.13

SEER DATA EN 14825:2018 [W 23 / 18°C]	
SEERon	5.61
SEER	5.59
Qc [kWh]	10260
η [%]	223.58

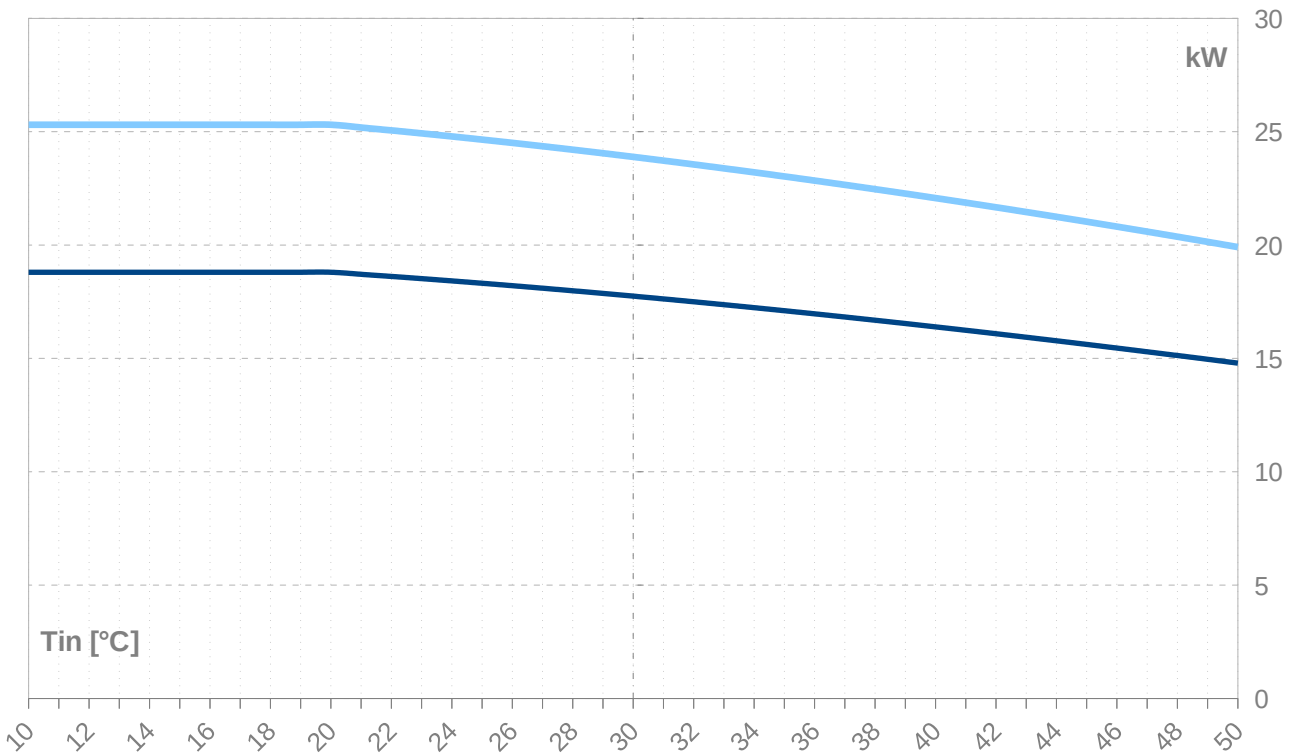
Performance lines - heating

- 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	40.7	20.3	40.7	3.8	1.9	3.8	10.71	37.1	18.6	37.1	7.4	
24	39.8	19.9	39.8	3.9	1.9	3.9	10.27	36.2	18.1	36.2	7.5	
23	39.0	19.5	39.0	4.0	2.0	4.0	9.85	35.3	17.7	35.3	7.6	
22	38.2	19.1	38.2	4.0	2.0	4.0	9.47	34.5	17.2	34.5	7.7	
21	37.4	18.7	37.4	4.1	2.0	4.1	9.11	33.6	16.8	33.6	7.8	
20	36.7	18.3	36.7	4.2	2.1	4.2	8.77	32.7	16.4	32.7	7.8	
19	35.9	17.9	35.9	4.2	2.1	4.2	8.45	31.9	16.0	31.9	7.9	
18	35.1	17.6	35.1	4.3	2.1	4.3	8.16	31.1	15.5	31.1	8.0	
17	34.4	17.2	34.4	4.4	2.2	4.4	7.88	30.3	15.1	30.3	8.1	
16	33.6	16.8	33.6	4.4	2.2	4.4	7.61	29.5	14.8	29.5	8.1	
15	32.9	16.5	32.9	4.5	2.2	4.5	7.36	28.7	14.4	28.7	8.2	
14	32.2	16.1	32.2	4.5	2.2	4.5	7.13	28.0	14.0	28.0	8.2	
13	31.5	15.7	31.5	4.6	2.2	4.6	6.90	27.2	13.6	27.2	8.3	
12	30.8	15.4	30.8	4.6	2.3	4.6	6.69	26.5	13.2	26.5	8.3	
11	30.1	15.0	30.1	4.6	2.3	4.6	6.48	25.8	12.9	25.8	8.4	
10	29.4	14.7	29.4	4.7	2.3	4.7	6.29	25.1	12.5	25.1	8.4	
9	28.8	14.4	28.8	4.7	2.3	4.7	6.11	24.4	12.2	24.4	8.5	
8	28.1	14.1	28.1	4.7	2.3	4.7	5.93	23.7	11.8	23.7	8.5	
7	27.5	13.7	27.5	4.8	2.4	4.8	5.76	23.0	11.5	23.0	8.5	
6	26.8	13.4	26.8	4.8	2.4	4.8	5.60	22.3	11.2	22.3	8.6	
5	26.2	13.1	26.2	4.8	2.4	4.8	5.44	21.7	10.9	21.7	8.6	
4	25.6	12.8	25.6	4.8	2.4	4.8	5.29	21.1	10.5	21.1	8.6	
3	25.0	12.5	25.0	4.9	2.4	4.9	5.15	20.5	10.2	20.5	8.6	
2	24.4	12.2	24.4	4.9	2.4	4.9	5.01	19.8	9.9	19.8	8.7	
1	23.8	11.9	23.8	4.9	2.4	4.9	4.88	19.3	9.6	19.3	8.7	
0	23.2	11.6	23.2	4.9	2.4	4.9	4.75	18.7	9.3	18.7	8.7	
-1	22.7	11.3	22.7	4.9	2.4	4.9	4.62	18.1	9.0	18.1	8.7	
-2	22.1	11.1	22.1	4.9	2.4	4.9	4.50	17.5	8.8	17.5	8.7	
-3	21.6	10.8	21.6	4.9	2.4	4.9	4.39	17.0	8.5	17.0	8.7	
-4	21.1	10.5	21.1	4.9	2.4	4.9	4.27	16.5	8.2	16.5	8.7	
-5	20.5	10.3	20.5	4.9	2.4	4.9	4.17	15.9	8.0	15.9	8.7	
-6	20.0	10.0	20.0	4.9	2.4	4.9	4.06	15.4	7.7	15.4	8.7	
-7	19.5	9.8	19.5	4.9	2.4	4.9	3.96	14.9	7.5	14.9	8.7	
-8	19.0	9.5	19.0	4.9	2.4	4.9	3.86	14.4	7.2	14.4	8.7	
-9	18.5	9.3	18.5	4.9	2.4	4.9	3.76	13.9	7.0	13.9	8.7	
-10	18.1	9.0	18.1	4.9	2.4	4.9	3.67	13.5	6.7	13.5	8.7	
-11	17.6	8.8	17.6	4.9	2.4	4.9	3.57	13.0	6.5	13.0	8.7	
-12	17.2	8.6	17.2	4.9	2.4	4.9	3.49	12.6	6.3	12.6	8.7	
-13	16.7	8.4	16.7	4.9	2.4	4.9	3.40	12.1	6.1	12.1	8.7	
-14	16.3	8.1	16.3	4.9	2.4	4.9	3.31	11.7	5.8	11.7	8.7	
-15	15.9	7.9	15.9	4.9	2.4	4.9	3.23	11.3	5.6	11.3	8.7	

-- attention: operating limits not reflected in performance table

ZHI11K1P-TFM_R410A_2_BWW

Th -OU	45										
[°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	39.8	19.9	39.8	5.5	2.7	5.5	7.27	34.7	17.3	34.7	9.4
24	39.0	19.5	39.0	5.5	2.7	5.5	7.04	33.8	16.9	33.8	9.5
23	38.2	19.1	38.2	5.6	2.8	5.6	6.82	33.0	16.5	33.0	9.5
22	37.5	18.7	37.5	5.7	2.8	5.7	6.62	32.2	16.1	32.2	9.6
21	36.7	18.4	36.7	5.7	2.8	5.7	6.42	31.4	15.7	31.4	9.7
20	36.0	18.0	36.0	5.8	2.8	5.8	6.24	30.6	15.3	30.6	9.7
19	35.2	17.6	35.2	5.8	2.9	5.8	6.06	29.8	14.9	29.8	9.8
18	34.5	17.3	34.5	5.9	2.9	5.9	5.89	29.0	14.5	29.0	9.9
17	33.8	16.9	33.8	5.9	2.9	5.9	5.72	28.3	14.1	28.3	9.9
16	33.1	16.6	33.1	5.9	2.9	5.9	5.57	27.6	13.8	27.6	10.0
15	32.4	16.2	32.4	6.0	3.0	6.0	5.42	26.8	13.4	26.8	10.0
14	31.7	15.9	31.7	6.0	3.0	6.0	5.28	26.1	13.1	26.1	10.1
13	31.1	15.5	31.1	6.0	3.0	6.0	5.14	25.4	12.7	25.4	10.1
12	30.4	15.2	30.4	6.1	3.0	6.1	5.00	24.7	12.4	24.7	10.1
11	29.8	14.9	29.8	6.1	3.0	6.1	4.88	24.1	12.0	24.1	10.2
10	29.1	14.6	29.1	6.1	3.0	6.1	4.75	23.4	11.7	23.4	10.2
9	28.5	14.2	28.5	6.1	3.0	6.1	4.63	22.7	11.4	22.7	10.2
8	27.9	13.9	27.9	6.2	3.0	6.2	4.52	22.1	11.1	22.1	10.2
7	27.3	13.6	27.3	6.2	3.0	6.2	4.41	21.5	10.7	21.5	10.3
6	26.7	13.3	26.7	6.2	3.1	6.2	4.30	20.9	10.4	20.9	10.3
5	26.1	13.0	26.1	6.2	3.1	6.2	4.20	20.3	10.1	20.3	10.3
4	25.5	12.7	25.5	6.2	3.1	6.2	4.10	19.7	9.8	19.7	10.3
3	24.9	12.5	24.9	6.2	3.1	6.2	4.00	19.1	9.6	19.1	10.3
2	24.4	12.2	24.4	6.2	3.1	6.2	3.90	18.5	9.3	18.5	10.3
1	23.8	11.9	23.8	6.2	3.1	6.2	3.81	18.0	9.0	18.0	10.3
0	23.3	11.6	23.3	6.3	3.1	6.3	3.72	17.4	8.7	17.4	10.4
-1	22.7	11.4	22.7	6.3	3.1	6.3	3.64	16.9	8.4	16.9	10.4
-2	22.2	11.1	22.2	6.3	3.1	6.3	3.55	16.4	8.2	16.4	10.4
-3	21.7	10.9	21.7	6.3	3.1	6.3	3.47	15.9	7.9	15.9	10.4
-4	21.2	10.6	21.2	6.3	3.1	6.3	3.39	15.4	7.7	15.4	10.4
-5	20.7	10.4	20.7	6.3	3.1	6.3	3.31	14.9	7.4	14.9	10.4
-6	20.2	10.1	20.2	6.3	3.1	6.3	3.23	14.4	7.2	14.4	10.4
-7	19.7	9.9	19.7	6.3	3.1	6.3	3.16	13.9	7.0	13.9	10.4
-8	19.3	9.6	19.3	6.2	3.1	6.2	3.09	13.4	6.7	13.4	10.4
-9	18.8	9.4	18.8	6.2	3.1	6.2	3.01	13.0	6.5	13.0	10.4
-10	18.4	9.2	18.4	6.2	3.1	6.2	2.95	12.6	6.3	12.6	10.3
-11	17.9	9.0	17.9	6.2	3.1	6.2	2.88	12.1	6.1	12.1	10.3
-12	17.5	8.8	17.5	6.2	3.1	6.2	2.81	11.7	5.8	11.7	10.3
-13	17.1	8.5	17.1	6.2	3.1	6.2	2.75	11.3	5.6	11.3	10.3
-14	16.7	8.3	16.7	6.2	3.1	6.2	2.68	10.9	5.4	10.9	10.3
-15	16.3	8.1	16.3	6.2	3.1	6.2	2.62	10.5	5.2	10.5	10.3

-- attention: operating limits not reflected in performance table

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	38.5	19.3	38.5	7.7	3.8	7.7	5.03	31.4	15.7	31.4	12.2	
24	37.8	18.9	37.8	7.7	3.8	7.7	4.91	30.6	15.3	30.6	12.3	
23	37.1	18.6	37.1	7.8	3.8	7.8	4.79	29.9	14.9	29.9	12.3	
22	36.4	18.2	36.4	7.8	3.8	7.8	4.67	29.1	14.6	29.1	12.4	
21	35.7	17.9	35.7	7.8	3.9	7.8	4.56	28.4	14.2	28.4	12.4	
20	35.0	17.5	35.0	7.9	3.9	7.9	4.45	27.7	13.8	27.7	12.5	
19	34.4	17.2	34.4	7.9	3.9	7.9	4.34	27.0	13.5	27.0	12.5	
18	33.7	16.9	33.7	7.9	3.9	7.9	4.24	26.3	13.1	26.3	12.6	
17	33.1	16.5	33.1	8.0	3.9	8.0	4.15	25.6	12.8	25.6	12.6	
16	32.4	16.2	32.4	8.0	3.9	8.0	4.05	24.9	12.5	24.9	12.6	
15	31.8	15.9	31.8	8.0	4.0	8.0	3.96	24.3	12.1	24.3	12.7	
14	31.2	15.6	31.2	8.1	4.0	8.1	3.87	23.6	11.8	23.6	12.7	
13	30.5	15.3	30.5	8.1	4.0	8.1	3.78	23.0	11.5	23.0	12.7	
12	29.9	15.0	29.9	8.1	4.0	8.1	3.70	22.4	11.2	22.4	12.8	
11	29.3	14.7	29.3	8.1	4.0	8.1	3.62	21.8	10.9	21.8	12.8	
10	28.8	14.4	28.8	8.1	4.0	8.1	3.54	21.2	10.6	21.2	12.8	
9	28.2	14.1	28.2	8.1	4.0	8.1	3.47	20.6	10.3	20.6	12.8	
8	27.6	13.8	27.6	8.1	4.0	8.1	3.39	20.0	10.0	20.0	12.8	
7	27.1	13.5	27.1	8.2	4.0	8.2	3.32	19.4	9.7	19.4	12.9	
6	26.5	13.3	26.5	8.2	4.0	8.2	3.25	18.9	9.4	18.9	12.9	
5	26.0	13.0	26.0	8.2	4.0	8.2	3.18	18.3	9.2	18.3	12.9	
4	25.4	12.7	25.4	8.2	4.0	8.2	3.11	17.8	8.9	17.8	12.9	
3	24.9	12.5	24.9	8.2	4.0	8.2	3.05	17.3	8.6	17.3	12.9	
2	24.4	12.2	24.4	8.2	4.0	8.2	2.98	16.8	8.4	16.8	12.9	
1	23.9	12.0	23.9	8.2	4.0	8.2	2.92	16.3	8.1	16.3	12.9	
0	23.4	11.7	23.4	8.2	4.0	8.2	2.86	15.8	7.9	15.8	12.9	
-1	22.9	11.5	22.9	8.2	4.0	8.2	2.80	15.3	7.6	15.3	12.9	
-2	22.5	11.2	22.5	8.2	4.0	8.2	2.74	14.8	7.4	14.8	12.9	
-3	22.0	11.0	22.0	8.2	4.0	8.2	2.69	14.4	7.2	14.4	12.9	
-4	21.5	10.8	21.5	8.2	4.0	8.2	2.63	13.9	6.9	13.9	12.9	
-5	21.1	10.5	21.1	8.2	4.0	8.2	2.58	13.5	6.7	13.5	12.9	
-6	20.6	10.3	20.6	8.2	4.0	8.2	2.53	13.0	6.5	13.0	12.9	
-7	20.2	10.1	20.2	8.2	4.0	8.2	2.47	12.6	6.3	12.6	12.9	
-8	19.8	9.9	19.8	8.2	4.0	8.2	2.42	12.2	6.1	12.2	12.9	
-9	19.4	9.7	19.4	8.2	4.0	8.2	2.37	11.8	5.9	11.8	12.9	
-10	19.0	9.5	19.0	8.2	4.0	8.2	2.32	11.4	5.7	11.4	12.9	
-11	18.6	9.3	18.6	8.2	4.0	8.2	2.28	11.0	5.5	11.0	12.9	
-12	18.2	9.1	18.2	8.2	4.0	8.2	2.23	10.6	5.3	10.6	12.9	
-13	17.8	8.9	17.8	8.1	4.0	8.1	2.18	10.2	5.1	10.2	12.9	
-14	17.4	8.7	17.4	8.1	4.0	8.1	2.14	9.8	4.9	9.8	12.9	
-15	17.1	8.5	17.1	8.1	4.0	8.1	2.10	9.5	4.7	9.5	12.8	

-- attention: operating limits not reflected in performance table

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]
25	37.3	18.7	37.3	10.2	5.0	10.2	3.66	27.8	13.9	27.8	15.7
24	36.7	18.3	36.7	10.2	5.1	10.2	3.58	27.1	13.6	27.1	15.8
23	36.0	18.0	36.0	10.3	5.1	10.3	3.51	26.4	13.2	26.4	15.8
22	35.4	17.7	35.4	10.3	5.1	10.3	3.43	25.8	12.9	25.8	15.9
21	34.8	17.4	34.8	10.3	5.1	10.3	3.36	25.1	12.6	25.1	15.9
20	34.2	17.1	34.2	10.4	5.1	10.4	3.30	24.5	12.3	24.5	16.0
19	33.6	16.8	33.6	10.4	5.1	10.4	3.23	23.9	11.9	23.9	16.0
18	33.0	16.5	33.0	10.4	5.1	10.4	3.17	23.3	11.6	23.3	16.0
17	32.4	16.2	32.4	10.4	5.2	10.4	3.10	22.7	11.3	22.7	16.1
16	31.8	15.9	31.8	10.5	5.2	10.5	3.04	22.1	11.0	22.1	16.1
15	31.3	15.6	31.3	10.5	5.2	10.5	2.98	21.5	10.7	21.5	16.1
14	30.7	15.4	30.7	10.5	5.2	10.5	2.93	20.9	10.5	20.9	16.1
13	30.2	15.1	30.2	10.5	5.2	10.5	2.87	20.4	10.2	20.4	16.2
12	29.6	14.8	29.6	10.5	5.2	10.5	2.82	19.8	9.9	19.8	16.2
11	29.1	14.6	29.1	10.5	5.2	10.5	2.76	19.3	9.6	19.3	16.2
10	28.6	14.3	28.6	10.5	5.2	10.5	2.71	18.7	9.4	18.7	16.2
9	28.1	14.0	28.1	10.6	5.2	10.6	2.66	18.2	9.1	18.2	16.2
8	27.6	13.8	27.6	10.6	5.2	10.6	2.61	17.7	8.9	17.7	16.2
7	27.1	13.5	27.1	10.6	5.2	10.6	2.56	17.2	8.6	17.2	16.2
6	26.6	13.3	26.6	10.6	5.2	10.6	2.52	16.7	8.4	16.7	16.3
5	26.1	13.1	26.1	10.6	5.2	10.6	2.47	16.2	8.1	16.2	16.3
4	25.7	12.8	25.7	10.6	5.2	10.6	2.42	15.8	7.9	15.8	16.3
3	25.2	12.6	25.2	10.6	5.2	10.6	2.38	15.3	7.7	15.3	16.3
2	24.7	12.4	24.7	10.6	5.2	10.6	2.34	14.9	7.4	14.9	16.3
1	24.3	12.2	24.3	10.6	5.2	10.6	2.29	14.4	7.2	14.4	16.3
0	23.9	11.9	23.9	10.6	5.2	10.6	2.25	14.0	7.0	14.0	16.3
-1	23.4	11.7	23.4	10.6	5.2	10.6	2.21	13.6	6.8	13.6	16.3
-2	23.0	11.5	23.0	10.6	5.2	10.6	2.17	13.1	6.6	13.1	16.3
-3	22.6	11.3	22.6	10.6	5.2	10.6	2.14	12.7	6.4	12.7	16.3
-4	22.2	11.1	22.2	10.6	5.2	10.6	2.10	12.3	6.2	12.3	16.3
-5	21.8	10.9	21.8	10.6	5.2	10.6	2.06	11.9	6.0	11.9	16.3
-6	21.4	10.7	21.4	10.6	5.2	10.6	2.02	11.5	5.8	11.5	16.3
-7	21.1	10.5	21.1	10.6	5.2	10.6	1.99	11.2	5.6	11.2	16.3
-8	20.7	10.3	20.7	10.6	5.2	10.6	1.95	10.8	5.4	10.8	16.3
-9	20.3	10.2	20.3	10.6	5.2	10.6	1.92	10.4	5.2	10.4	16.3
-10	20.0	10.0	20.0	10.6	5.2	10.6	1.89	10.1	5.0	10.1	16.3
-11	19.6	9.8	19.6	10.6	5.2	10.6	1.85	9.7	4.9	9.7	16.3
-12	19.3	9.6	19.3	10.6	5.2	10.6	1.82	9.4	4.7	9.4	16.3
-13	19.0	9.5	19.0	10.6	5.2	10.6	1.79	9.1	4.5	9.1	16.3
-14	18.6	9.3	18.6	10.6	5.2	10.6	1.76	8.7	4.4	8.7	16.3
-15	18.3	9.2	18.3	10.6	5.2	10.6	1.73	8.4	4.2	8.4	16.3

-- attention: operating limits not reflected in performance table

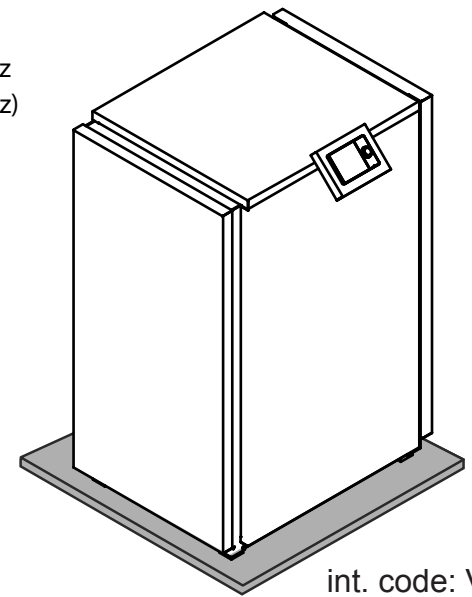
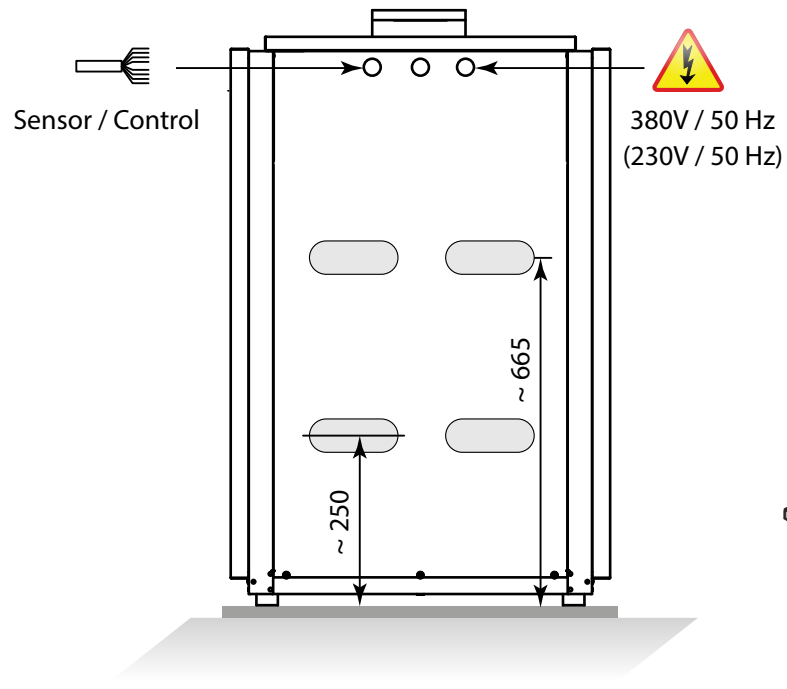
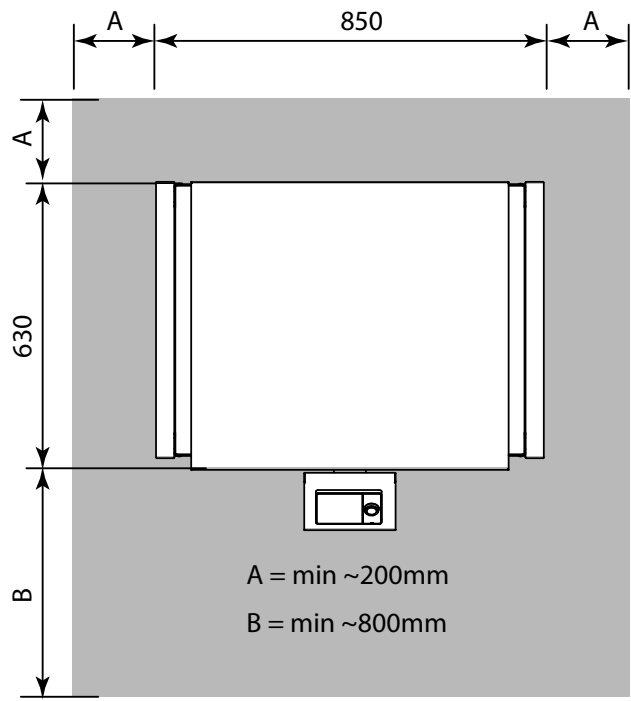
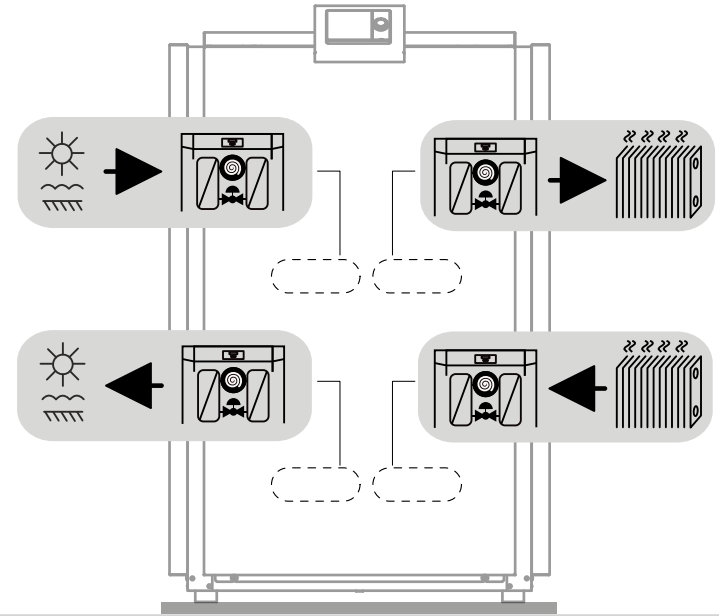
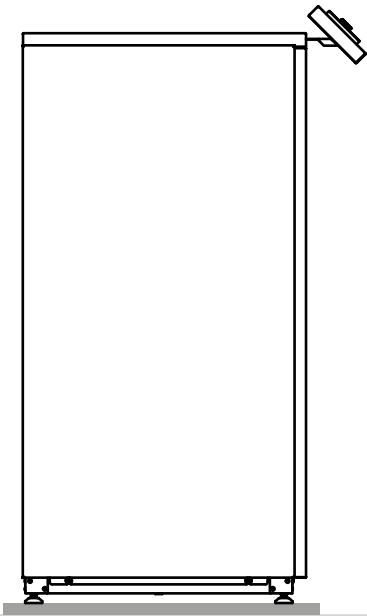
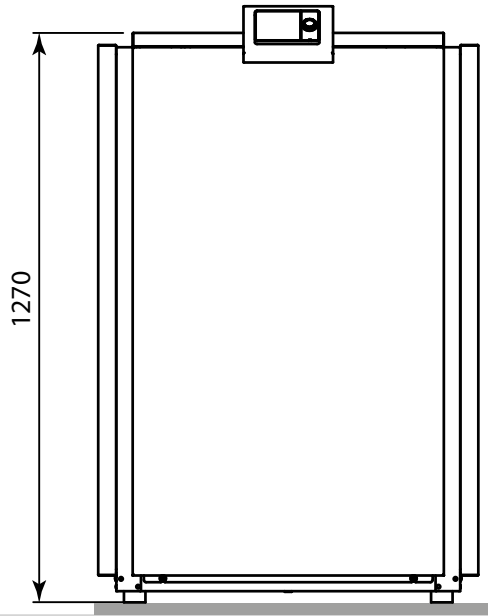
Tc -OU [°C]		W 12 / 7 °C									
Ts -IN [°C]	Qc nom [kW]	Qc min [kW]	Qc max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	EER kW / kW	Qh nom [kW]	Qh min [kW]	Qh max [kW]	I nom [A]
40	16.4	8.2	16.4	6.8	3.4	6.8	2.40	22.8	11.4	22.8	11.1
39	16.5	8.3	16.5	6.7	3.3	6.7	2.48	22.8	11.4	22.8	10.9
38	16.7	8.3	16.7	6.5	3.2	6.5	2.57	22.8	11.4	22.8	10.7
37	16.8	8.4	16.8	6.3	3.1	6.3	2.66	22.7	11.4	22.7	10.5
36	17.0	8.5	17.0	6.2	3.0	6.2	2.75	22.7	11.4	22.7	10.3
35	17.1	8.6	17.1	6.0	3.0	6.0	2.84	22.7	11.4	22.7	10.1
34	17.2	8.6	17.2	5.9	2.9	5.9	2.94	22.7	11.4	22.7	9.9
33	17.4	8.7	17.4	5.7	2.8	5.7	3.04	22.7	11.4	22.7	9.7
32	17.5	8.7	17.5	5.6	2.8	5.6	3.14	22.7	11.4	22.7	9.5
31	17.6	8.8	17.6	5.4	2.7	5.4	3.24	22.7	11.4	22.7	9.3
30	17.7	8.9	17.7	5.3	2.6	5.3	3.35	22.7	11.3	22.7	9.2
29	17.9	8.9	17.9	5.2	2.5	5.2	3.46	22.7	11.3	22.7	9.0
28	18.0	9.0	18.0	5.0	2.5	5.0	3.57	22.7	11.3	22.7	8.9
27	18.1	9.0	18.1	4.9	2.4	4.9	3.69	22.7	11.3	22.7	8.7
26	18.2	9.1	18.2	4.8	2.4	4.8	3.81	22.7	11.3	22.7	8.5
25	18.3	9.2	18.3	4.7	2.3	4.7	3.93	22.7	11.3	22.7	8.4
24	18.4	9.2	18.4	4.5	2.2	4.5	4.06	22.7	11.3	22.7	8.3
23	18.5	9.3	18.5	4.4	2.2	4.4	4.19	22.6	11.3	22.6	8.1
22	18.6	9.3	18.6	4.3	2.1	4.3	4.33	22.6	11.3	22.6	8.0
21	18.7	9.4	18.7	4.2	2.1	4.2	4.47	22.6	11.3	22.6	7.9
20	18.8	9.4	18.8	4.1	2.0	4.1	4.61	22.6	11.3	22.6	7.7

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	22.1	11.0	22.1	6.8	3.4	6.8	3.23	28.4	14.2	28.1	11.0
39	22.3	11.1	22.3	6.7	3.3	6.7	3.34	28.4	14.2	28.1	10.8
38	22.5	11.2	22.5	6.5	3.2	6.5	3.46	28.4	14.2	28.2	10.5
37	22.7	11.3	22.7	6.3	3.1	6.3	3.58	28.5	14.2	28.2	10.3
36	22.8	11.4	22.8	6.2	3.0	6.2	3.70	28.5	14.3	28.2	10.1
35	23.0	11.5	23.0	6.0	3.0	6.0	3.82	28.5	14.3	28.2	9.9
34	23.2	11.6	23.2	5.9	2.9	5.9	3.95	28.6	14.3	28.3	9.7
33	23.4	11.7	23.4	5.7	2.8	5.7	4.09	28.6	14.3	28.3	9.5
32	23.6	11.8	23.6	5.6	2.8	5.6	4.22	28.6	14.3	28.3	9.3
31	23.7	11.9	23.7	5.4	2.7	5.4	4.36	28.7	14.3	28.4	9.1
30	23.9	11.9	23.9	5.3	2.6	5.3	4.51	28.7	14.3	28.4	9.0
29	24.0	12.0	24.0	5.2	2.5	5.2	4.66	28.7	14.4	28.4	8.8
28	24.2	12.1	24.2	5.0	2.5	5.0	4.81	28.7	14.4	28.4	8.6
27	24.4	12.2	24.4	4.9	2.4	4.9	4.97	28.8	14.4	28.5	8.5
26	24.5	12.3	24.5	4.8	2.4	4.8	5.13	28.8	14.4	28.5	8.3
25	24.7	12.3	24.7	4.7	2.3	4.7	5.29	28.8	14.4	28.5	8.2
24	24.8	12.4	24.8	4.5	2.2	4.5	5.47	28.8	14.4	28.6	8.0
23	24.9	12.5	24.9	4.4	2.2	4.4	5.64	28.8	14.4	28.6	7.8
22	25.1	12.5	25.1	4.3	2.1	4.3	5.82	28.8	14.4	28.6	7.7
21	25.2	12.6	25.2	4.2	2.1	4.2	6.01	28.8	14.4	28.7	7.6
20	25.3	12.7	25.3	4.1	2.0	4.1	6.21	28.8	14.4	28.7	7.4

-- 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: VN800T