



Heat pump



TBW 73 EVI

WAMAK TBW 73 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, the thermal energy of the sun accumulated in the ground through a horizontal collector or geothermal energy through a deep borehole is used. In the collector or borehole, an antifreeze flows which takes the energy of the earth at a low temperature and the heat pump raises this temperature to a temperature usable 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 TBW 73 EVI

Heating - EN 14511		
Heating capacity [kW]	B0 / W35 (max)	73.6 (36.8 / 73.6)
	B0 / W35 (min)	36.8 (36.8 / 73.6)
	B0 / W34	73.4 (36.7 / 73.4)
Electrical power input [kW]	B0 / W35 (max)	16.8 (8.3 / 16.8)
	B0 / W35 (min)	8.3 (8.3 / 16.8)
	B0 / W34	16.4 (8.1 / 16.4)
Heating efficiency faktor [COP]	B0 / W35 (max)	4.38
	B0 / W35 (min)	4.44
	B0 / W34	4.47
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35°C]	SCOP	4.94
	η [%]	197.5
	Label	A+++
	Qhe [kWh]	30751.5
	Pdesignh [kW]	73.6
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	74.8
	A25 / W23-18	78.1
	A35 / W12-7	74.8
	A25 / W12-7	74.8
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18°C]	SEER	5.09
	Qce [kWh]	8260.9
	η_c [%]	203.5
Sound EN 12102		
Acoustic power - Lw	dB(A)	62.1
Acoustic pressure - Lp	1 m dB(A)	54.1
	5 m dB(A)	40.1
	10 m dB(A)	34.1
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 2 /	On/Off
Refrigerant	R410A (GWP - 2088)	9.9 kg
Operating limit temperatures heating - (min / max) [°C]		25 / 65
Operating limit temperatures source - (min / max) [°C]		-10 (7) / 30
Weight		435 kg

Main technical data - WAMAK TBW 73 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]	435		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	0.55	Heat transfer medium			Water		
	Winding resistance	0.83 Ohm	Volume flow @ dT 5K (nom) - Water [m3/h]			6.36 ~ 12.72		
Refrigerant		R410A	Internal pressure drop - Water [kPa]			20		
	Volme	9.9 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								
Electrical connection data								
Line voltage [#~ V/Hz]		3~ 400/50						
Current	nominal [A]	42.12						
	maximal [A]	64.10						
	starting [A]	56.91						
Softstart	-							
Main safety	C80							
Control System								
Main controller	SIEMENS	RVS 61						
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 TBW 73 EVI

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

Model	TBW 73 EVI
Air-to-water heat pump	no
Brine-to-water heat pump	yes
Water-to-water heat pump	no
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	73.6	kW	Seasonal space heating energy efficiency	η_s	197.5	%
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	73.4	kW	Tj = -7 °C	COPd	4.47	-
Tj = +2 °C	Pdh	72.8	kW	Tj = +2 °C	COPd	4.9	-
Tj = +7 °C	Pdh	72.3	kW	Tj = +7 °C	COPd	5.2	-
Tj = +12 °C	Pdh	71.6	kW	Tj = +12 °C	COPd	5.6	-
Tj = bivalent temperature	Pdh	73.6	kW	Tj = bivalent temperature	COPd	4.4	-
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	14.3	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	-	6.47 ~ 12.93	m ³ /h
indoors	Lwa	62	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	30751.5	kWh				

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

WAMAK TBW 73 EVI

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

Model	TBW 73 EVI
Air-to-water heat pump	no
Brine-to-water heat pump	yes
Water-to-water heat pump	no
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	76.2	kW	Seasonal space heating energy efficiency	η_s	158.0	%
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	76.4	kW	Tj = -7 °C	COPd	3.23	-
Tj = +2 °C	Pdh	76.0	kW	Tj = +2 °C	COPd	4.1	-
Tj = +7 °C	Pdh	74.4	kW	Tj = +7 °C	COPd	4.5	-
Tj = +12 °C	Pdh	73.7	kW	Tj = +12 °C	COPd	4.9	-
Tj = bivalent temperature	Pdh	76.2	kW	Tj = bivalent temperature	COPd	2.8	-
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	14.3	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	-	6.47 ~ 12.93	m ³ /h
Sound power level							
indoors	Lwa	62	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	39810.5	kWh				

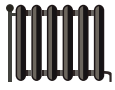
Contact details: WAMAK, s.r.o., Orovnicna 252, 96652, Orovnicna, Slovakia, info@wamak.sk



ENERG Y IIA
 енергия - ενεργεια IE IA

WAMAK

TBW 73 EVI



55 °C

35 °C



A+++

A+++



62 dB



--- dB

■ 81
 ■ 77
 ■ 75
 kW

■ 76
 ■ 74
 ■ 70
 kW



2019

811/2013

TBW 73 EVI

ErP Data

	55 °C	35 °C
Energy class	A+++	A+++
η [%]	158.0	197.5
P_{rated} [kW]	77	74
Q_{HE} [kWh/y]	39811	30752
SCOP [-]	3.95	4.94
$T_{bivalent}$ [°C]	-10	-10

CONTROLLER



+ QAA55/75
 - QAA55/75

class VII
 class III

3.5% ↓
 1.5% ↓

Heating performance data

Version: v2024.010-BW-WW

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

ZHI35K1P-TFD_R410A_2_BWW

Operating conditions		Qh	P	COP
1	B0 / W30-35	73.6	16.8	4.38
2	B0 / W30-35 (MIN)	36.8	8.3	4.44
A	B0 / Wxx-34	73.4	16.4	4.47
B	B0 / Wxx-30	72.8	15.0	4.85
C	B0 / Wxx-27	36.1	6.9	5.24
D	B0 / Wxx-24	35.8	6.4	5.59
E	B0 / Wxx-35	73.6	16.8	4.38
F	B0 / Wxx-35	73.6	16.8	4.38

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	4.94
SCOPnet	4.94
SCOP	4.94
η [%]	197.51
Label	A+++
Qh [kWh]	30751
Pdesignh [kW]	73.6
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	B0 / W47-55	76.2	27.0	2.83
2	B0 / W47-55 (MIN)	38.1	13.1	2.86
A	B0 / Wxx-52	76.4	24.4	3.23
B	B0 / Wxx-42	76.0	18.9	4.08
C	B0 / Wxx-36	37.2	8.2	4.54
D	B0 / Wxx-30	36.9	7.4	4.99
E	B0 / Wxx-55	76.2	27.0	2.83
F	B0 / Wxx-54	76.6	25.1	3.06

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	3.95
SCOPnet	3.95
SCOP	3.95
η [%]	158.00
Label	A+++
Qh [kWh]	39811
Pdesignh [kW]	76.2
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	W10 / W30-35	93.0	16.5	5.62
2	W10 / W30-35 (MIN)	46.5	8.2	5.70
A	W10 / Wxx-34	92.8	16.1	5.76
B	W10 / Wxx-30	92.2	14.5	6.38
C	W10 / Wxx-27	91.7	13.3	7.00
D	W10 / Wxx-24	91.0	12.1	7.61
E	W10 / Wxx-35	93.0	16.5	5.62
F	W10 / Wxx-35	93.0	16.5	5.62

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	6.52
SCOPnet	6.52
SCOP	6.51
η [%]	260.52
Label	A+++
Qh [kWh]	29457
Pdesignh [kW]	93.0
Tbivalent [°C]	-10.00

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

	Operating conditions	Qh	P	COP
1	W10 / W47-55	94.8	27.5	3.44
2	W10 / W47-55 (MIN)	47.4	13.6	3.49
A	W10 / Wxx-52	95.4	24.9	3.84
B	W10 / Wxx-42	94.5	18.8	5.03
C	W10 / Wxx-36	93.9	16.3	5.85
D	W10 / Wxx-30	93.3	14.4	6.56
E	W10 / Wxx-55	94.8	27.5	3.44
F	W10 / Wxx-55	94.8	27.5	3.44

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Medium Temperature [55°C]	
SCOPon	4.91
SCOPnet	4.91
SCOP	4.90
η [%]	196.17
Label	A+++
Qh [kWh]	39889
Pdesignh [kW]	94.8
Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

	Operating conditions	Qc	P	EER
A	W30-35 / W12-7	57.1	18.0	3.18
B	W26-xx / W12-7	58.1	16.4	3.53
C	W22-xx / W12-7	58.8	15.0	3.92
D	W18-xx / W12-7	59.1	14.3	4.13

SEER DATA EN 14825:2018 [W 12 / 7°C]	
SEERon	3.80
SEER	3.80
Qc [kWh]	33420
η [%]	151.96

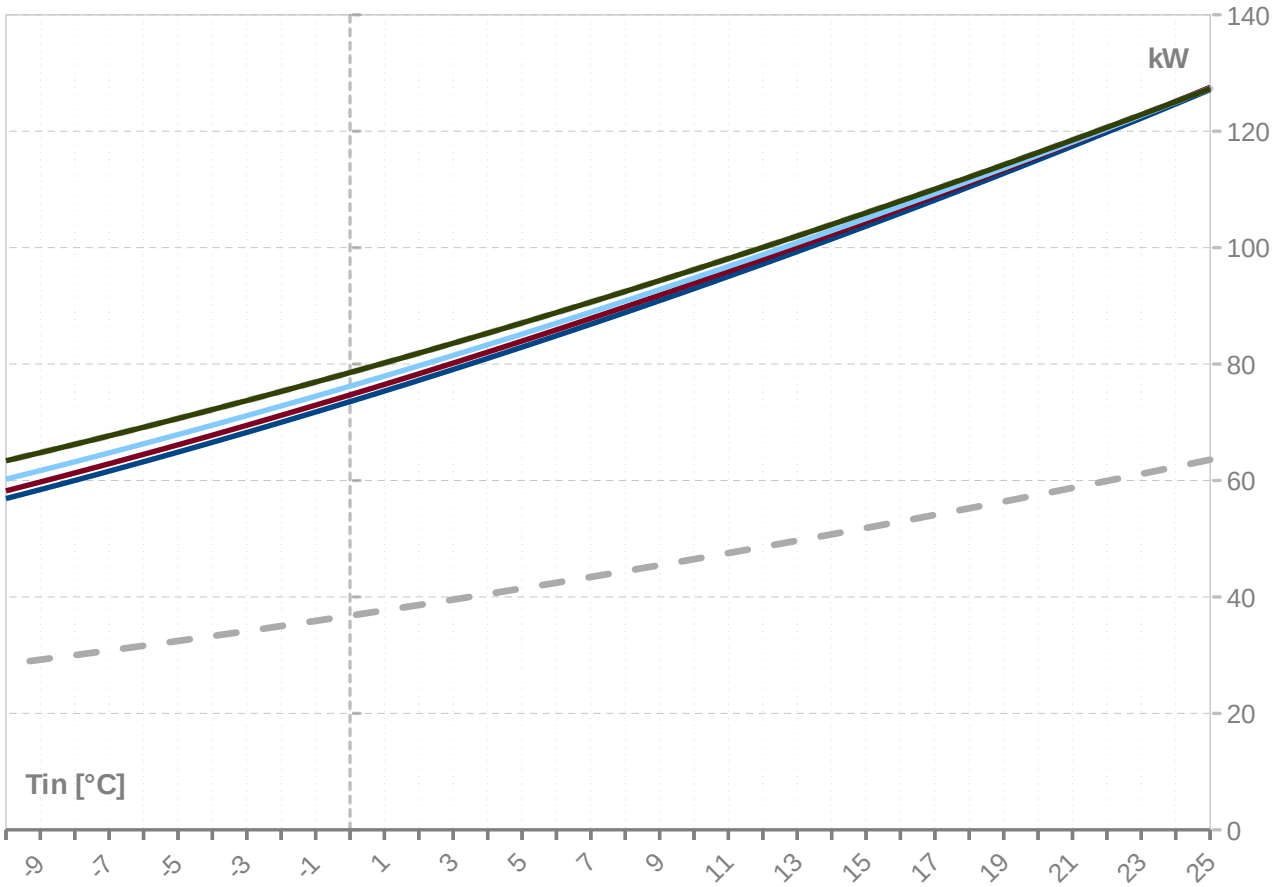
Radiant cooling W 23 / 18°C

	Operating conditions	Qc	P	EER
A	W50-xx / W23-18	67.3	29.1	2.31
B	W40-xx / W23-18	72.7	22.7	3.20
C	W30-35 / W23-18	76.6	18.0	4.26
D	W26-xx / W23-18	77.8	16.4	4.73

SEER DATA EN 14825:2018 [W 23 / 18°C]	
SEERon	5.09
SEER	5.09
Qc [kWh]	33420
η [%]	203.47

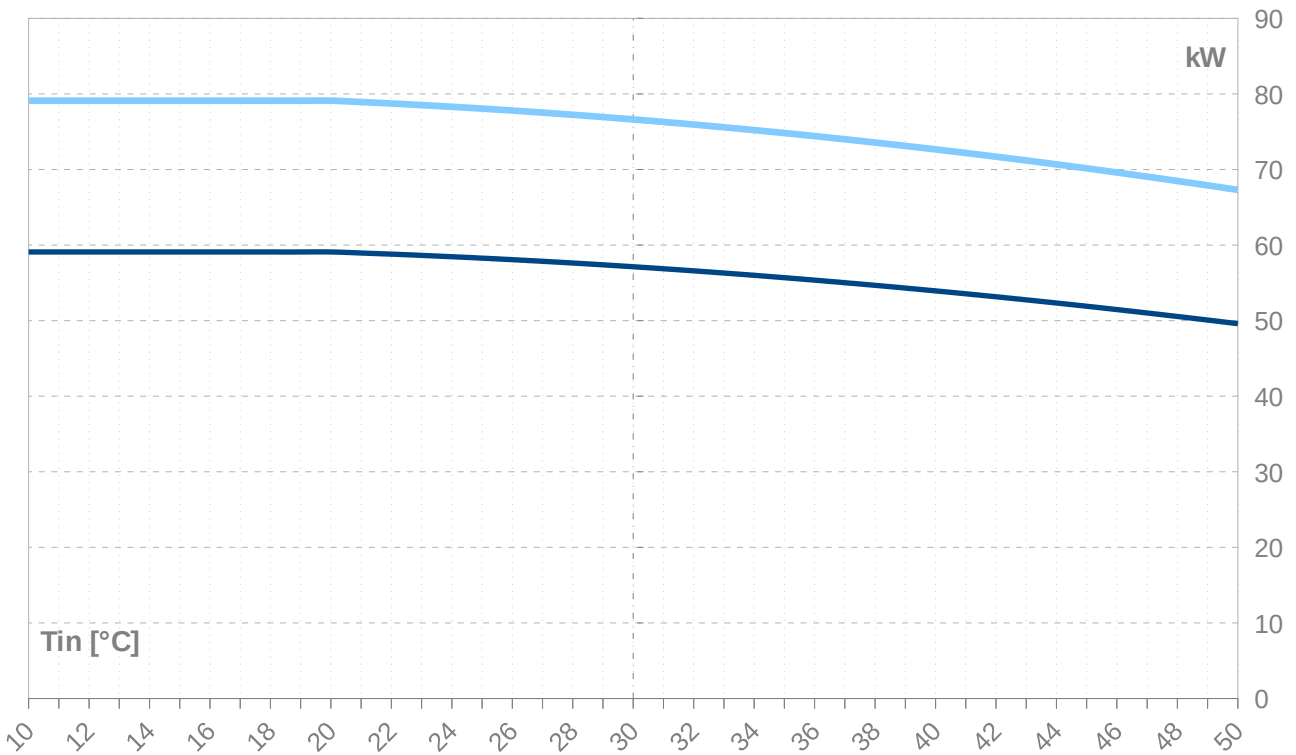
Performance lines - heating

- 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 [°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	127.1	63.6	127.1	14.6	7.2	14.6	8.70	113.5	56.7	113.5	40.1
24	124.7	62.3	124.7	14.8	7.3	14.8	8.42	110.8	55.4	110.8	40.3
23	122.2	61.1	122.2	15.0	7.4	15.0	8.14	108.2	54.1	108.2	40.4
22	119.8	59.9	119.8	15.2	7.5	15.2	7.89	105.6	52.8	105.6	40.6
21	117.4	58.7	117.4	15.4	7.6	15.4	7.65	103.1	51.6	103.1	40.8
20	115.1	57.5	115.1	15.5	7.7	15.5	7.42	100.6	50.3	100.6	40.9
19	112.8	56.4	112.8	15.7	7.7	15.7	7.20	98.1	49.1	98.1	41.1
18	110.4	55.2	110.4	15.8	7.8	15.8	6.99	95.7	47.8	95.7	41.2
17	108.2	54.1	108.2	15.9	7.9	15.9	6.79	93.3	46.6	93.3	41.3
16	105.9	53.0	105.9	16.0	7.9	16.0	6.60	90.9	45.5	90.9	41.5
15	103.7	51.8	103.7	16.1	8.0	16.1	6.42	88.6	44.3	88.6	41.6
14	101.5	50.7	101.5	16.2	8.0	16.2	6.25	86.3	43.2	86.3	41.7
13	99.3	49.7	99.3	16.3	8.1	16.3	6.08	84.1	42.0	84.1	41.8
12	97.2	48.6	97.2	16.4	8.1	16.4	5.92	81.9	40.9	81.9	41.9
11	95.1	47.5	95.1	16.5	8.1	16.5	5.77	79.7	39.8	79.7	41.9
10	93.0	46.5	93.0	16.5	8.2	16.5	5.62	77.5	38.8	77.5	42.0
9	90.9	45.5	90.9	16.6	8.2	16.6	5.48	75.4	37.7	75.4	42.1
8	88.9	44.4	88.9	16.6	8.2	16.6	5.34	73.3	36.7	73.3	42.1
7	86.9	43.4	86.9	16.7	8.2	16.7	5.21	71.3	35.6	71.3	42.2
6	84.9	42.4	84.9	16.7	8.2	16.7	5.08	69.3	34.6	69.3	42.2
5	82.9	41.5	82.9	16.7	8.3	16.7	4.95	67.3	33.6	67.3	42.3
4	81.0	40.5	81.0	16.8	8.3	16.8	4.83	65.3	32.7	65.3	42.3
3	79.1	39.5	79.1	16.8	8.3	16.8	4.71	63.4	31.7	63.4	42.4
2	77.2	38.6	77.2	16.8	8.3	16.8	4.60	61.5	30.8	61.5	42.4
1	75.4	37.7	75.4	16.8	8.3	16.8	4.48	59.7	29.8	59.7	42.4
0	73.6	36.8	73.6	16.8	8.3	16.8	4.38	57.9	28.9	57.9	42.4
-1	71.8	35.9	71.8	16.8	8.3	16.8	4.27	56.1	28.0	56.1	42.4
-2	70.0	35.0	70.0	16.8	8.3	16.8	4.16	54.3	27.1	54.3	42.4
-3	68.3	34.1	68.3	16.8	8.3	16.8	4.06	52.6	26.3	52.6	42.4
-4	66.6	33.3	66.6	16.8	8.3	16.8	3.96	50.9	25.4	50.9	42.5
-5	64.9	32.4	64.9	16.8	8.3	16.8	3.86	49.2	24.6	49.2	42.4
-6	63.2	31.6	63.2	16.8	8.3	16.8	3.77	47.5	23.8	47.5	42.4
-7	61.6	30.8	61.6	16.8	8.3	16.8	3.67	45.9	23.0	45.9	42.4
-8	60.0	30.0	60.0	16.8	8.3	16.8	3.58	44.3	22.2	44.3	42.4
-9	58.4	29.2	58.4	16.8	8.3	16.8	3.49	42.8	21.4	42.8	42.4
-10	56.9	28.4	56.9	16.7	8.3	16.7	3.40	41.3	20.6	41.3	42.4
-11	55.4	27.7	55.4	16.7	8.3	16.7	3.31	39.8	19.9	39.8	42.4
-12	53.9	26.9	53.9	16.7	8.2	16.7	3.22	38.3	19.1	38.3	42.4
-13	52.4	26.2	52.4	16.7	8.2	16.7	3.14	36.8	18.4	36.8	42.3
-14	51.0	25.5	51.0	16.7	8.2	16.7	3.05	35.4	17.7	35.4	42.3
-15	49.6	24.8	49.6	16.7	8.2	16.7	2.97	34.0	17.0	34.0	42.3

-- attention: operating limits not reflected in performance table

ZHI35K1P-TFD_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	127.5	63.8	127.5	20.2	10.0	20.2	6.31	108.7	54.3	108.7	44.9
24	125.1	62.6	125.1	20.3	10.0	20.3	6.16	106.1	53.1	106.1	45.0
23	122.7	61.4	122.7	20.4	10.1	20.4	6.00	103.6	51.8	103.6	45.1
22	120.3	60.2	120.3	20.5	10.1	20.5	5.86	101.2	50.6	101.2	45.2
21	118.0	59.0	118.0	20.6	10.2	20.6	5.72	98.7	49.4	98.7	45.3
20	115.7	57.8	115.7	20.7	10.2	20.7	5.59	96.3	48.2	96.3	45.3
19	113.4	56.7	113.4	20.8	10.2	20.8	5.46	94.0	47.0	94.0	45.4
18	111.1	55.6	111.1	20.8	10.3	20.8	5.33	91.6	45.8	91.6	45.4
17	108.9	54.4	108.9	20.9	10.3	20.9	5.21	89.4	44.7	89.4	45.5
16	106.6	53.3	106.6	20.9	10.3	20.9	5.09	87.1	43.5	87.1	45.5
15	104.5	52.2	104.5	21.0	10.3	21.0	4.98	84.9	42.4	84.9	45.5
14	102.3	51.1	102.3	21.0	10.4	21.0	4.87	82.7	41.3	82.7	45.6
13	100.1	50.1	100.1	21.0	10.4	21.0	4.76	80.5	40.3	80.5	45.6
12	98.0	49.0	98.0	21.0	10.4	21.0	4.66	78.4	39.2	78.4	45.6
11	95.9	48.0	95.9	21.1	10.4	21.1	4.56	76.3	38.1	76.3	45.6
10	93.9	46.9	93.9	21.1	10.4	21.1	4.46	74.2	37.1	74.2	45.6
9	91.8	45.9	91.8	21.1	10.4	21.1	4.36	72.2	36.1	72.2	45.6
8	89.8	44.9	89.8	21.1	10.4	21.1	4.27	70.2	35.1	70.2	45.6
7	87.8	43.9	87.8	21.1	10.4	21.1	4.17	68.2	34.1	68.2	45.6
6	85.9	42.9	85.9	21.0	10.4	21.0	4.08	66.2	33.1	66.2	45.6
5	84.0	42.0	84.0	21.0	10.4	21.0	3.99	64.3	32.2	64.3	45.6
4	82.1	41.0	82.1	21.0	10.4	21.0	3.91	62.4	31.2	62.4	45.6
3	80.2	40.1	80.2	21.0	10.3	21.0	3.82	60.6	30.3	60.6	45.5
2	78.3	39.2	78.3	21.0	10.3	21.0	3.74	58.8	29.4	58.8	45.5
1	76.5	38.3	76.5	20.9	10.3	20.9	3.66	57.0	28.5	57.0	45.5
0	74.7	37.4	74.7	20.9	10.3	20.9	3.57	55.2	27.6	55.2	45.4
-1	72.9	36.5	72.9	20.9	10.3	20.9	3.49	53.4	26.7	53.4	45.4
-2	71.2	35.6	71.2	20.8	10.3	20.8	3.42	51.7	25.9	51.7	45.4
-3	69.5	34.7	69.5	20.8	10.3	20.8	3.34	50.0	25.0	50.0	45.3
-4	67.8	33.9	67.8	20.8	10.2	20.8	3.26	48.4	24.2	48.4	45.3
-5	66.1	33.1	66.1	20.7	10.2	20.7	3.19	46.8	23.4	46.8	45.2
-6	64.5	32.2	64.5	20.7	10.2	20.7	3.11	45.1	22.6	45.1	45.2
-7	62.9	31.4	62.9	20.7	10.2	20.7	3.04	43.6	21.8	43.6	45.1
-8	61.3	30.6	61.3	20.7	10.2	20.7	2.97	42.0	21.0	42.0	45.1
-9	59.7	29.9	59.7	20.6	10.2	20.6	2.90	40.5	20.2	40.5	45.1
-10	58.2	29.1	58.2	20.6	10.2	20.6	2.83	39.0	19.5	39.0	45.0
-11	56.7	28.4	56.7	20.6	10.1	20.6	2.76	37.5	18.7	37.5	45.0
-12	55.2	27.6	55.2	20.6	10.1	20.6	2.69	36.0	18.0	36.0	44.9
-13	53.8	26.9	53.8	20.5	10.1	20.5	2.62	34.6	17.3	34.6	44.9
-14	52.4	26.2	52.4	20.5	10.1	20.5	2.55	33.2	16.6	33.2	44.8
-15	51.0	25.5	51.0	20.5	10.1	20.5	2.48	31.8	15.9	31.8	44.8

-- 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	127.4	63.7	127.4	27.7	13.7	27.7	4.59	101.5	50.7	101.5	52.0	
24	125.0	62.5	125.0	27.8	13.7	27.8	4.50	99.1	49.5	99.1	52.0	
23	122.7	61.3	122.7	27.8	13.7	27.8	4.41	96.7	48.4	96.7	52.0	
22	120.4	60.2	120.4	27.8	13.7	27.8	4.33	94.4	47.2	94.4	52.0	
21	118.1	59.1	118.1	27.8	13.7	27.8	4.24	92.1	46.1	92.1	52.0	
20	115.9	57.9	115.9	27.8	13.7	27.8	4.16	89.9	44.9	89.9	52.0	
19	113.7	56.8	113.7	27.8	13.7	27.8	4.08	87.7	43.8	87.7	52.0	
18	111.5	55.7	111.5	27.8	13.7	27.8	4.01	85.5	42.7	85.5	52.0	
17	109.3	54.6	109.3	27.8	13.7	27.8	3.93	83.3	41.7	83.3	51.9	
16	107.1	53.6	107.1	27.8	13.7	27.8	3.86	81.2	40.6	81.2	51.9	
15	105.0	52.5	105.0	27.8	13.7	27.8	3.78	79.1	39.5	79.1	51.9	
14	102.9	51.5	102.9	27.7	13.7	27.7	3.71	77.0	38.5	77.0	51.8	
13	100.8	50.4	100.8	27.7	13.7	27.7	3.64	75.0	37.5	75.0	51.8	
12	98.8	49.4	98.8	27.6	13.6	27.6	3.57	73.0	36.5	73.0	51.8	
11	96.8	48.4	96.8	27.6	13.6	27.6	3.51	71.0	35.5	71.0	51.7	
10	94.8	47.4	94.8	27.5	13.6	27.5	3.44	69.0	34.5	69.0	51.7	
9	92.8	46.4	92.8	27.5	13.6	27.5	3.37	67.1	33.6	67.1	51.6	
8	90.9	45.4	90.9	27.4	13.5	27.4	3.31	65.2	32.6	65.2	51.5	
7	88.9	44.5	88.9	27.4	13.5	27.4	3.25	63.4	31.7	63.4	51.5	
6	87.0	43.5	87.0	27.3	13.5	27.3	3.18	61.5	30.8	61.5	51.4	
5	85.2	42.6	85.2	27.3	13.5	27.3	3.12	59.7	29.8	59.7	51.3	
4	83.3	41.7	83.3	27.2	13.4	27.2	3.06	57.9	29.0	57.9	51.3	
3	81.5	40.8	81.5	27.2	13.4	27.2	3.00	56.1	28.1	56.1	51.2	
2	79.7	39.9	79.7	27.1	13.4	27.1	2.94	54.4	27.2	54.4	51.1	
1	77.9	39.0	77.9	27.0	13.3	27.0	2.88	52.7	26.3	52.7	51.1	
0	76.2	38.1	76.2	27.0	13.3	27.0	2.83	51.0	25.5	51.0	51.0	
-1	74.5	37.2	74.5	26.9	13.3	26.9	2.77	49.4	24.7	49.4	50.9	
-2	72.8	36.4	72.8	26.9	13.2	26.9	2.71	47.7	23.9	47.7	50.9	
-3	71.1	35.6	71.1	26.8	13.2	26.8	2.65	46.1	23.1	46.1	50.8	
-4	69.5	34.7	69.5	26.8	13.2	26.8	2.60	44.5	22.3	44.5	50.7	
-5	67.9	33.9	67.9	26.7	13.2	26.7	2.54	43.0	21.5	43.0	50.6	
-6	66.3	33.2	66.3	26.7	13.1	26.7	2.49	41.4	20.7	41.4	50.6	
-7	64.7	32.4	64.7	26.6	13.1	26.6	2.43	39.9	19.9	39.9	50.5	
-8	63.2	31.6	63.2	26.6	13.1	26.6	2.38	38.4	19.2	38.4	50.4	
-9	61.7	30.9	61.7	26.5	13.1	26.5	2.33	36.9	18.5	36.9	50.4	
-10	60.2	30.1	60.2	26.5	13.1	26.5	2.27	35.5	17.7	35.5	50.3	
-11	58.8	29.4	58.8	26.5	13.1	26.5	2.22	34.0	17.0	34.0	50.2	
-12	57.3	28.7	57.3	26.5	13.0	26.5	2.17	32.6	16.3	32.6	50.2	
-13	55.9	28.0	55.9	26.4	13.0	26.4	2.12	31.3	15.6	31.3	50.1	
-14	54.6	27.3	54.6	26.4	13.0	26.4	2.06	29.9	14.9	29.9	50.1	
-15	53.2	26.6	53.2	26.4	13.0	26.4	2.01	28.5	14.3	28.5	50.0	

-- 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	127.3	63.7	127.3	36.9	18.2	36.9	3.45	92.9	46.4	92.9	63.2
24	125.1	62.5	125.1	36.9	18.2	36.9	3.39	90.7	45.3	90.7	63.2
23	122.9	61.4	122.9	36.8	18.2	36.8	3.34	88.5	44.2	88.5	63.1
22	120.7	60.3	120.7	36.8	18.1	36.8	3.28	86.3	43.2	86.3	63.0
21	118.5	59.2	118.5	36.7	18.1	36.7	3.23	84.2	42.1	84.2	63.0
20	116.3	58.2	116.3	36.6	18.1	36.6	3.18	82.1	41.1	82.1	62.9
19	114.2	57.1	114.2	36.6	18.0	36.6	3.12	80.1	40.0	80.1	62.8
18	112.1	56.1	112.1	36.5	18.0	36.5	3.07	78.0	39.0	78.0	62.8
17	110.1	55.0	110.1	36.4	18.0	36.4	3.02	76.0	38.0	76.0	62.7
16	108.0	54.0	108.0	36.3	17.9	36.3	2.97	74.1	37.0	74.1	62.6
15	106.0	53.0	106.0	36.3	17.9	36.3	2.92	72.1	36.1	72.1	62.5
14	104.0	52.0	104.0	36.2	17.8	36.2	2.87	70.2	35.1	70.2	62.4
13	102.0	51.0	102.0	36.1	17.8	36.1	2.83	68.3	34.2	68.3	62.4
12	100.0	50.0	100.0	36.0	17.8	36.0	2.78	66.4	33.2	66.4	62.3
11	98.1	49.1	98.1	35.9	17.7	35.9	2.73	64.6	32.3	64.6	62.2
10	96.2	48.1	96.2	35.8	17.7	35.8	2.69	62.8	31.4	62.8	62.1
9	94.3	47.2	94.3	35.7	17.6	35.7	2.64	61.0	30.5	61.0	62.0
8	92.5	46.2	92.5	35.6	17.6	35.6	2.60	59.2	29.6	59.2	61.9
7	90.7	45.3	90.7	35.5	17.5	35.5	2.55	57.5	28.7	57.5	61.8
6	88.9	44.4	88.9	35.4	17.5	35.4	2.51	55.8	27.9	55.8	61.7
5	87.1	43.5	87.1	35.4	17.4	35.4	2.46	54.1	27.0	54.1	61.6
4	85.3	42.7	85.3	35.3	17.4	35.3	2.42	52.4	26.2	52.4	61.6
3	83.6	41.8	83.6	35.2	17.3	35.2	2.38	50.7	25.4	50.7	61.5
2	81.9	40.9	81.9	35.1	17.3	35.1	2.33	49.1	24.6	49.1	61.4
1	80.2	40.1	80.2	35.0	17.3	35.0	2.29	47.5	23.8	47.5	61.3
0	78.5	39.3	78.5	34.9	17.2	34.9	2.25	45.9	23.0	45.9	61.2
-1	76.9	38.5	76.9	34.9	17.2	34.9	2.21	44.4	22.2	44.4	61.1
-2	75.3	37.7	75.3	34.8	17.2	34.8	2.17	42.8	21.4	42.8	61.0
-3	73.7	36.9	73.7	34.7	17.1	34.7	2.12	41.3	20.7	41.3	60.9
-4	72.2	36.1	72.2	34.6	17.1	34.6	2.08	39.8	19.9	39.8	60.9
-5	70.6	35.3	70.6	34.6	17.1	34.6	2.04	38.3	19.2	38.3	60.8
-6	69.1	34.6	69.1	34.5	17.0	34.5	2.00	36.9	18.4	36.9	60.7
-7	67.7	33.8	67.7	34.5	17.0	34.5	1.96	35.5	17.7	35.5	60.6
-8	66.2	33.1	66.2	34.4	17.0	34.4	1.92	34.1	17.0	34.1	60.6
-9	64.8	32.4	64.8	34.4	17.0	34.4	1.88	32.7	16.3	32.7	60.5
-10	63.4	31.7	63.4	34.4	17.0	34.4	1.84	31.3	15.6	31.3	60.4
-11	62.0	31.0	62.0	34.4	16.9	34.4	1.81	29.9	15.0	29.9	60.4
-12	60.7	30.3	60.7	34.3	16.9	34.3	1.77	28.6	14.3	28.6	60.3
-13	59.3	29.7	59.3	34.3	16.9	34.3	1.73	27.3	13.6	27.3	60.3
-14	58.0	29.0	58.0	34.3	16.9	34.3	1.69	26.0	13.0	26.0	60.2
-15	56.8	28.4	56.8	34.3	16.9	34.3	1.65	24.7	12.3	24.7	60.2

-- 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	53.9	27.0	53.9	22.7	11.2	22.7	2.38	75.1	37.6	75.1	46.9
39	54.3	27.2	54.3	22.2	10.9	22.2	2.45	75.0	37.5	75.0	46.4
38	54.7	27.3	54.7	21.7	10.7	21.7	2.52	74.9	37.4	74.9	46.0
37	55.0	27.5	55.0	21.1	10.4	21.1	2.60	74.8	37.4	74.8	45.6
36	55.4	27.7	55.4	20.7	10.2	20.7	2.68	74.6	37.3	74.6	45.3
35	55.7	27.8	55.7	20.2	10.0	20.2	2.76	74.5	37.3	74.5	44.9
34	56.0	28.0	56.0	19.7	9.7	19.7	2.84	74.4	37.2	74.4	44.6
33	56.3	28.1	56.3	19.3	9.5	19.3	2.92	74.3	37.1	74.3	44.2
32	56.6	28.3	56.6	18.8	9.3	18.8	3.00	74.2	37.1	74.2	43.9
31	56.9	28.4	56.9	18.4	9.1	18.4	3.09	74.1	37.0	74.1	43.6
30	57.1	28.6	57.1	18.0	8.9	18.0	3.18	73.9	37.0	73.9	43.3
29	57.4	28.7	57.4	17.6	8.7	17.6	3.26	73.8	36.9	73.8	43.0
28	57.6	28.8	57.6	17.2	8.5	17.2	3.35	73.7	36.8	73.7	42.7
27	57.9	28.9	57.9	16.8	8.3	16.8	3.44	73.6	36.8	73.6	42.4
26	58.1	29.0	58.1	16.4	8.1	16.4	3.53	73.4	36.7	73.4	42.1
25	58.3	29.1	58.3	16.1	7.9	16.1	3.63	73.3	36.6	73.3	41.8
24	58.5	29.2	58.5	15.7	7.7	15.7	3.72	73.1	36.6	73.1	41.5
23	58.6	29.3	58.6	15.4	7.6	15.4	3.82	73.0	36.5	73.0	41.2
22	58.8	29.4	58.8	15.0	7.4	15.0	3.92	72.8	36.4	72.8	40.8
21	58.9	29.5	58.9	14.7	7.2	14.7	4.02	72.6	36.3	72.6	40.4
20	59.1	29.5	59.1	14.3	7.1	14.3	4.13	72.5	36.2	72.5	40.0

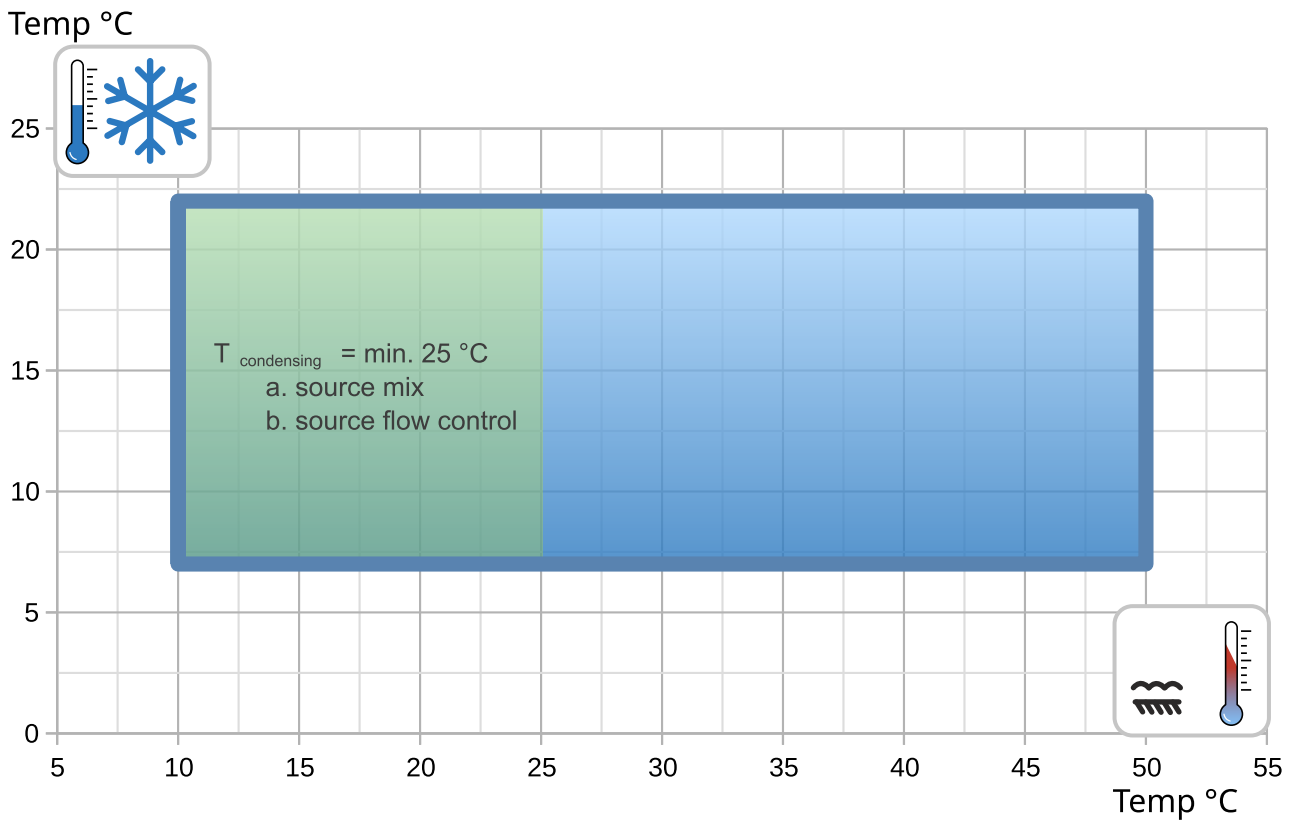
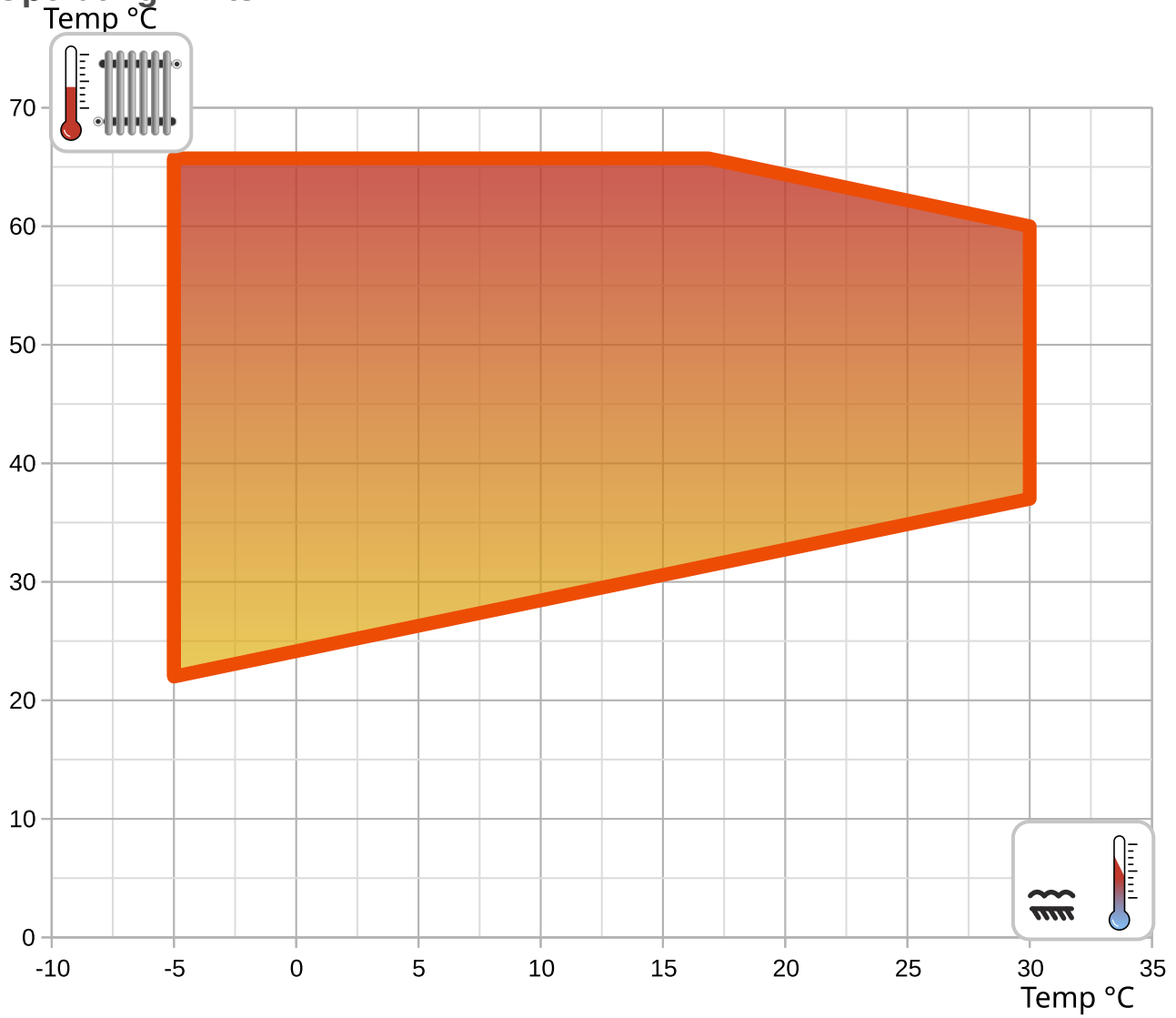
Tc [°C]		W 23 / 18 °C									
0 [°C]	Qc nom [kW]	Qc min [kW]	Qc max [kW]	Pin nom [kW]	Pin min [kW]	Pin max [kW]	EER kW / kW	Qh nom [kW]	Qh min [kW]	Qh max [kW]	I nom [A]
40	72.7	36.3	72.7	22.7	11.2	22.7	3.20	94.2	47.1	95.1	47.3
39	73.1	36.6	73.1	22.2	10.9	22.2	3.30	94.1	47.0	95.0	46.8
38	73.6	36.8	73.6	21.7	10.7	21.7	3.40	94.0	47.0	94.9	46.3
37	74.0	37.0	74.0	21.1	10.4	21.1	3.50	93.9	47.0	94.8	45.8
36	74.4	37.2	74.4	20.7	10.2	20.7	3.60	93.8	46.9	94.7	45.4
35	74.8	37.4	74.8	20.2	10.0	20.2	3.71	93.8	46.9	94.6	45.0
34	75.2	37.6	75.2	19.7	9.7	19.7	3.81	93.7	46.8	94.5	44.6
33	75.6	37.8	75.6	19.3	9.5	19.3	3.92	93.6	46.8	94.4	44.2
32	75.9	38.0	75.9	18.8	9.3	18.8	4.03	93.5	46.7	94.3	43.8
31	76.3	38.1	76.3	18.4	9.1	18.4	4.14	93.4	46.7	94.2	43.5
30	76.6	38.3	76.6	18.0	8.9	18.0	4.26	93.3	46.7	94.2	43.1
29	76.9	38.5	76.9	17.6	8.7	17.6	4.37	93.2	46.6	94.1	42.7
28	77.2	38.6	77.2	17.2	8.5	17.2	4.49	93.1	46.5	94.0	42.4
27	77.5	38.8	77.5	16.8	8.3	16.8	4.61	93.0	46.5	93.9	42.0
26	77.8	38.9	77.8	16.4	8.1	16.4	4.73	92.8	46.4	93.8	41.6
25	78.1	39.0	78.1	16.1	7.9	16.1	4.86	92.7	46.4	93.8	41.2
24	78.3	39.1	78.3	15.7	7.7	15.7	4.99	92.6	46.3	93.7	40.9
23	78.5	39.3	78.5	15.4	7.6	15.4	5.11	92.4	46.2	93.6	40.4
22	78.7	39.4	78.7	15.0	7.4	15.0	5.25	92.2	46.1	93.5	40.0
21	78.9	39.5	78.9	14.7	7.2	14.7	5.38	92.1	46.0	93.4	39.6
20	79.1	39.6	79.1	14.3	7.1	14.3	5.52	91.9	45.9	93.3	39.1

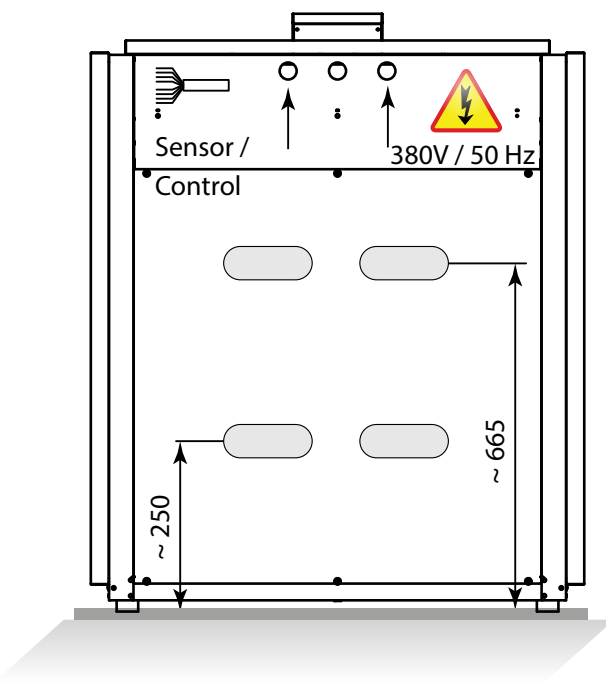
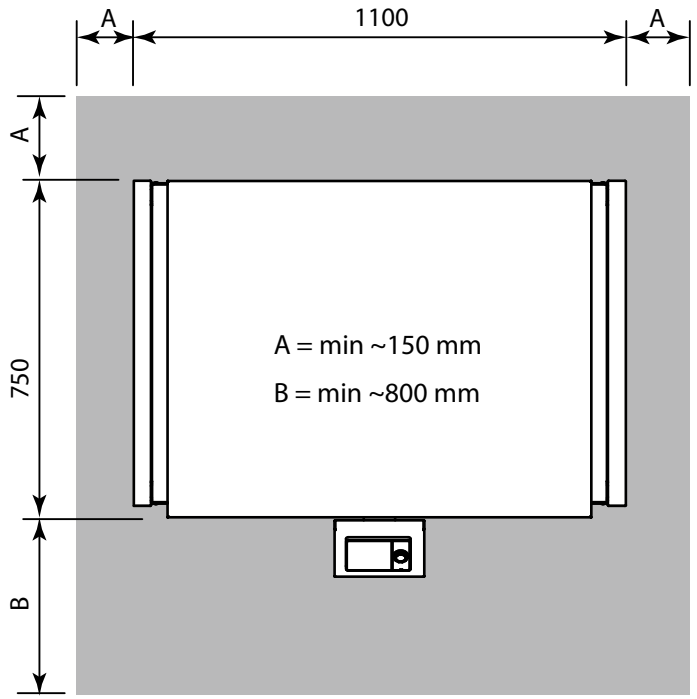
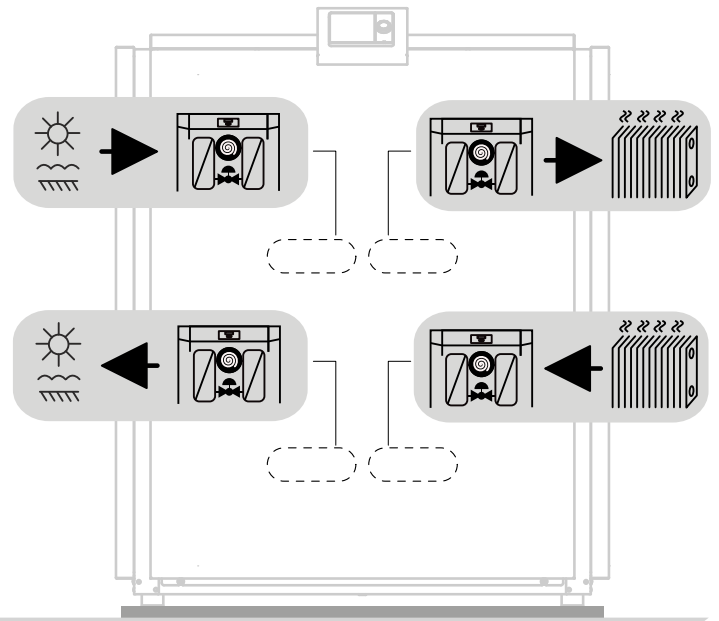
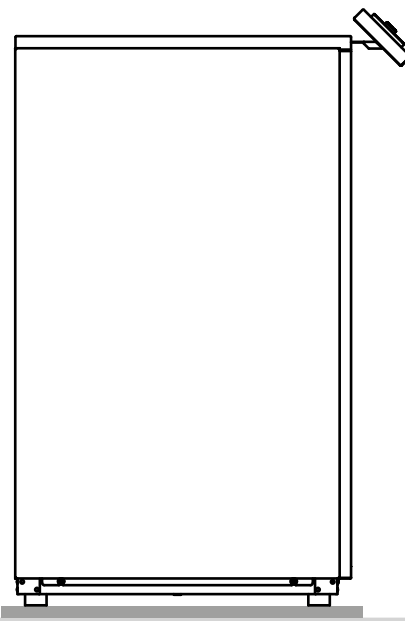
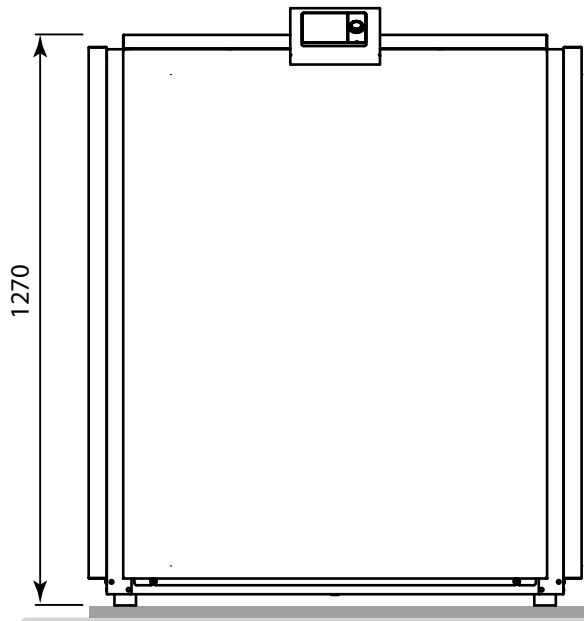
-- attention: operating limits not reflected in performance table

LEGEND:

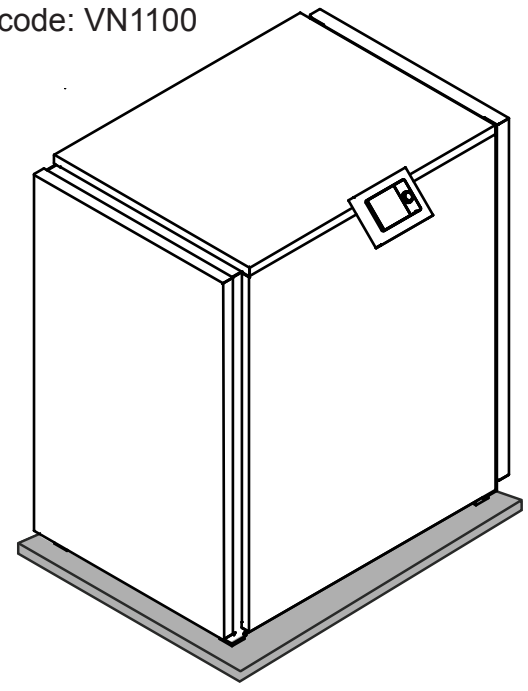
Ts-IN: Temperature renewable source - inlet [°C]
Th-OU: Temperature heating - outlet (flow) [°C]
Tc-OU: Temperature cooling - outlet (flow) [°C]
Qh nom: Heating capacity nominal
Qh min: Heating capacity minimal
Qh max: Heating capacity maximal
Pin nom: Power input at nominal heating capacity
Pin min: 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

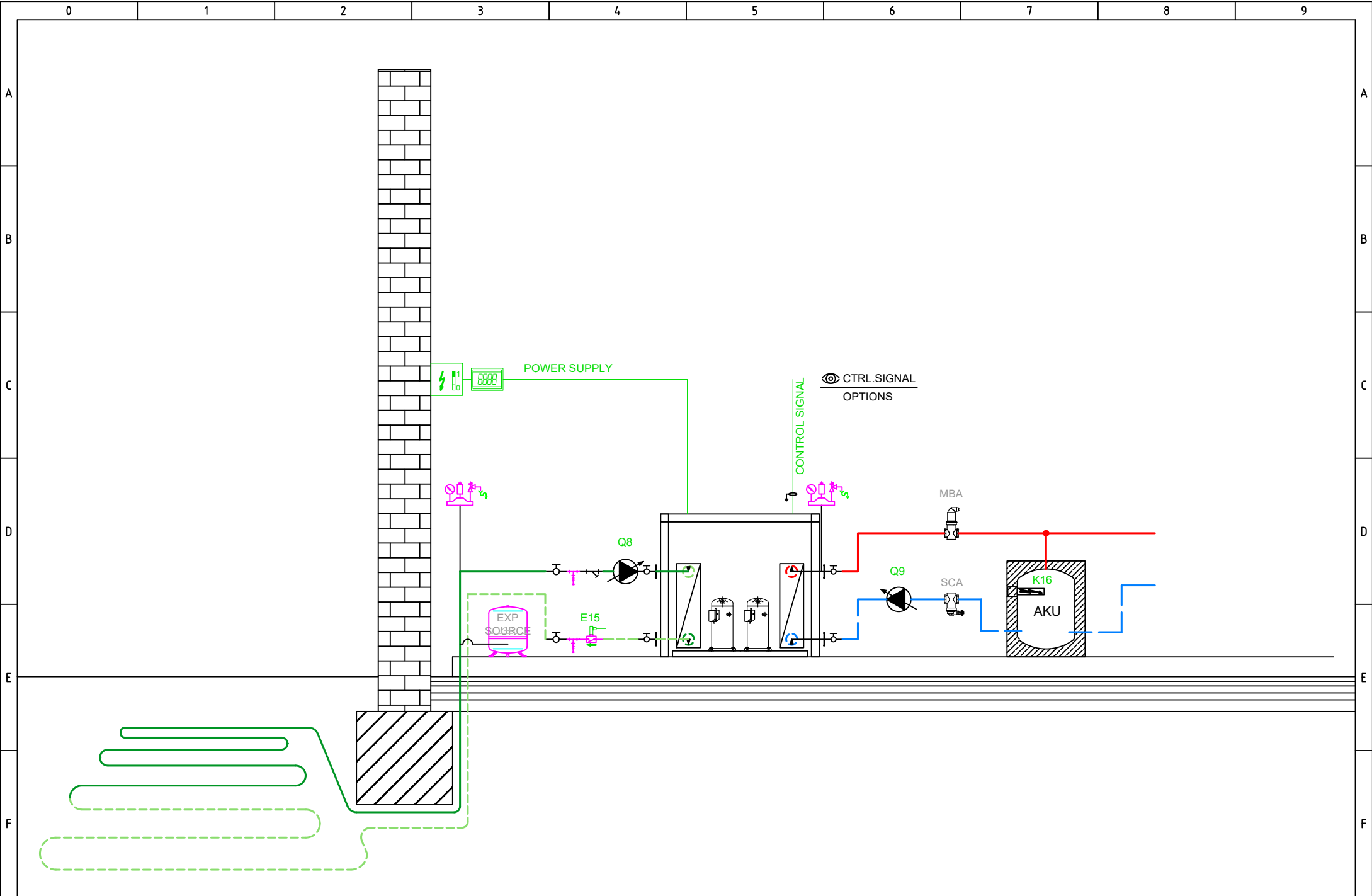
Operating limits



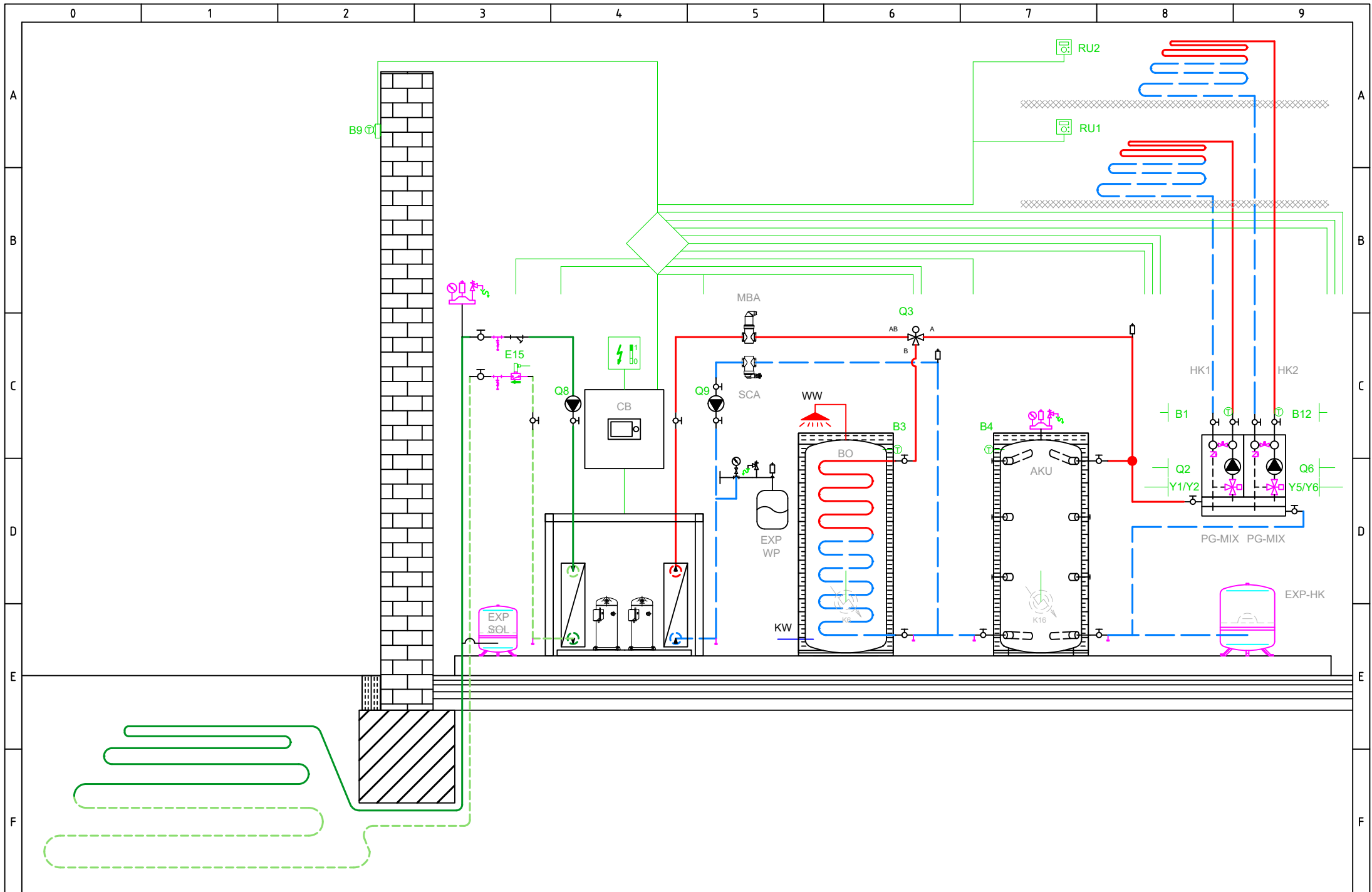


int. code: VN1100

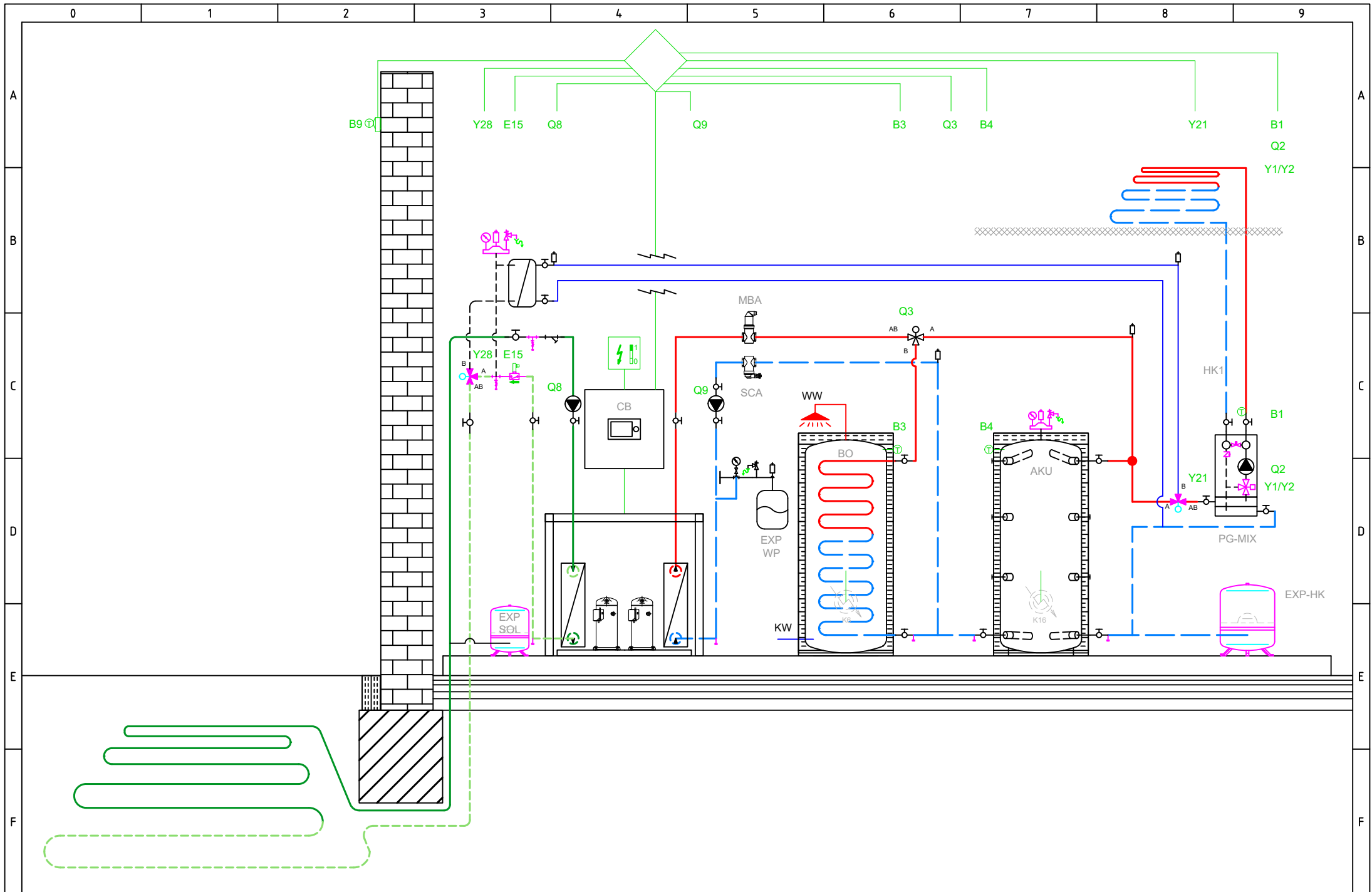




FACTORY SETTINGS



BASIC APPLICATION



OPTIONAL APPLICATION

Total: max 6A
1 x QX...: max 2A

Main power supply 230V / 50 Hz
Ground
Neutral conductor

- E9 Low-pressure switch E9
- E10 High-pressure switch E10
- E15 Flow switch source E15
- E24 Flow switch consumers E24
- E6 Electrical utility lock E6
- E12 Overload compressor 2 E12
- E21 Mains supervision E21
- E22 Mains supervision E22
- E23 Mains supervision E23
- E11 Overload compressor 1 E11
- K1 Compressor stage 1 K1

Q8 Source pump Q8

Q9 Condenser pump Q9

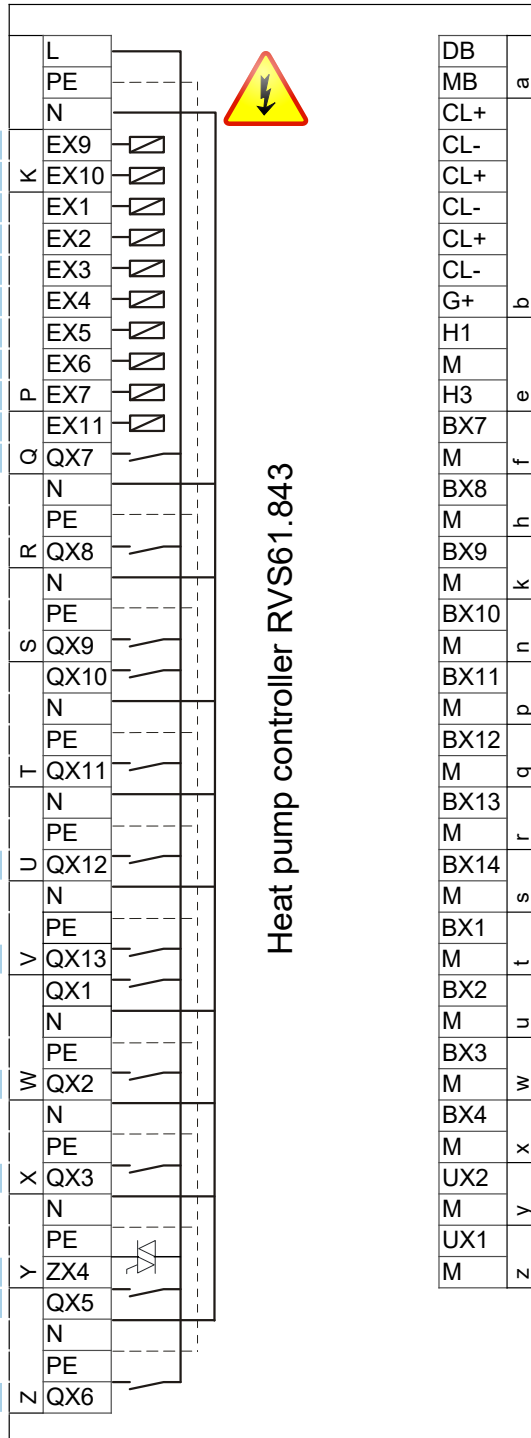
K10 Alarm output K10

K40 Crankcase heater K40

K81 Valve evaporator K81

K82 Valve EVI K82

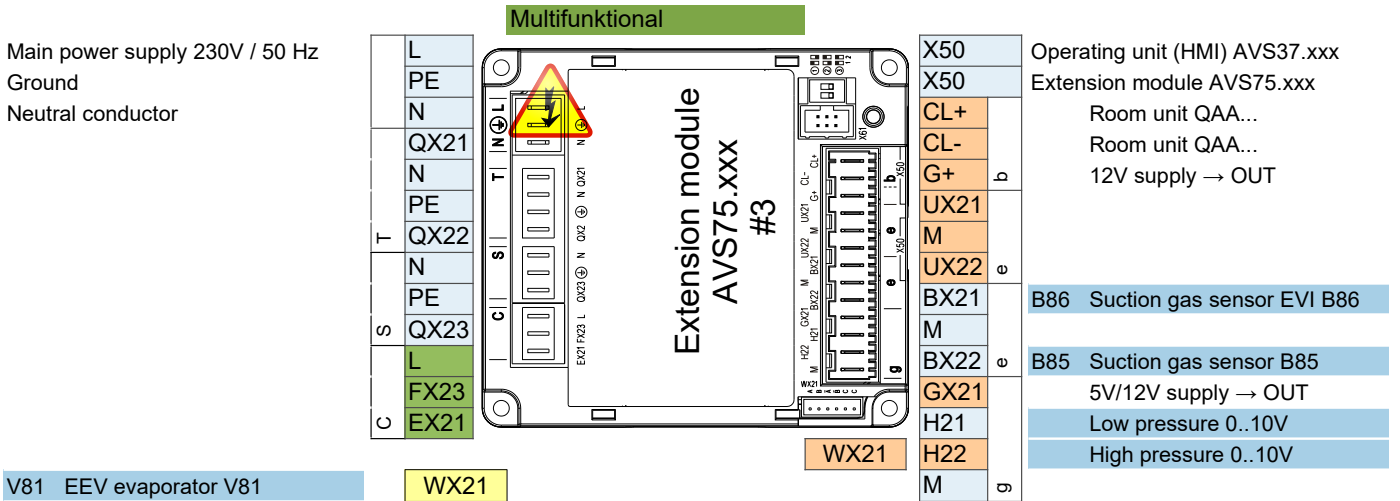
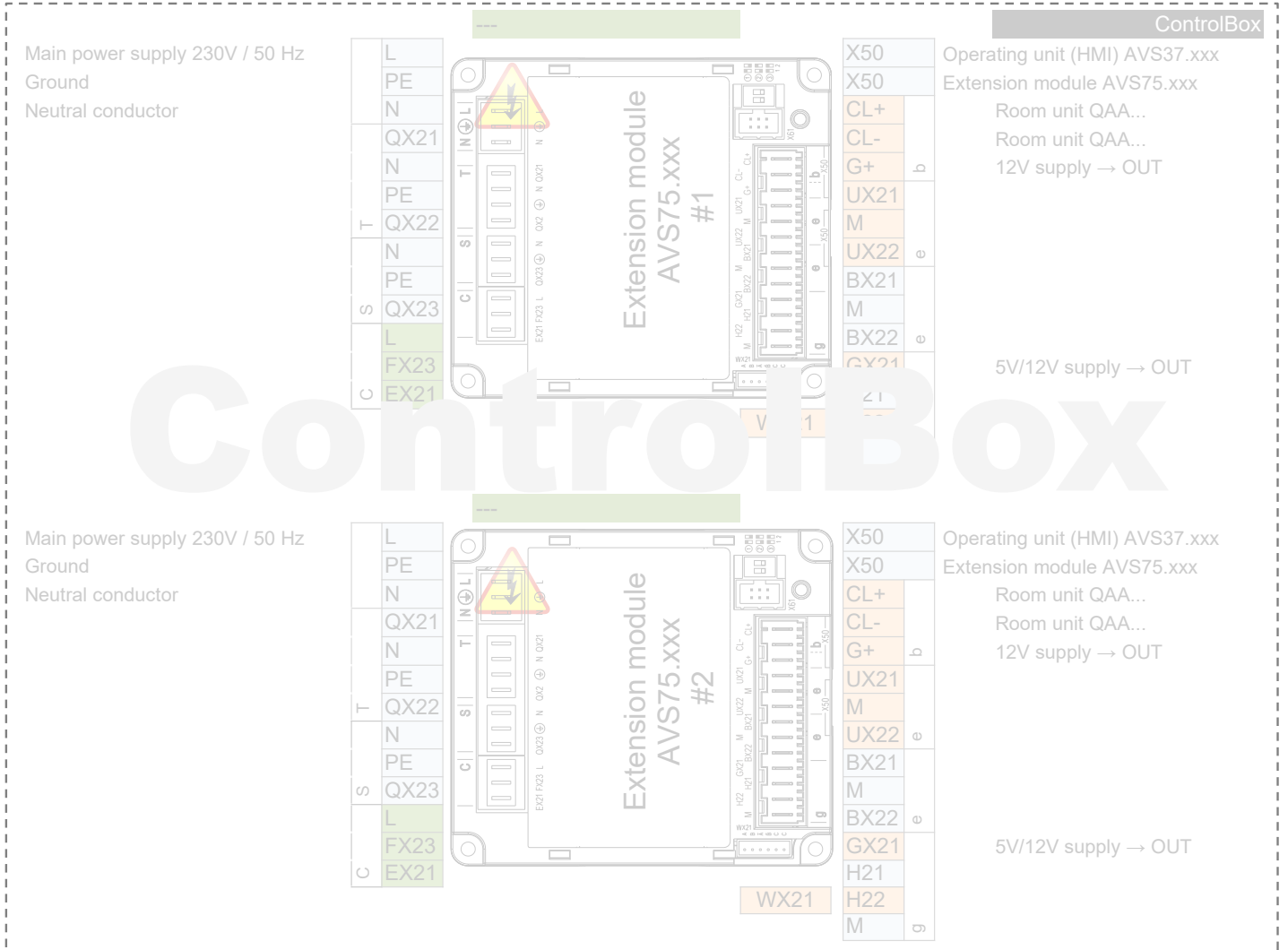
K2 Compressor stage 2 K2



- DB LPB Bus data
- MB LPB Bus GND
- CL+ Room unit QAA...
- CL- Room unit QAA...
- CL+ Room unit QAA... 2.
- CL- Room unit QAA... 2.
- CL+ Room unit QAA... 3.
- CL- Room unit QAA... 3.
- G+ 12V supply → OUT
- H1
- M
- H3 Consumer request VK1
- BX7 B81 Hot-gas sensor K1 B81
- M
- BX8
- M
- BX9
- M B21 HP flow sensor B21
- BX10
- M
- BX11
- M
- BX12 B71 HP return sensor B71
- M
- BX13 B91 Source inlet sensor B91
- M
- BX14 B84 Source outl sens B92/B84
- M
- BX1
- M
- BX2
- M
- BX3 B83 Refrig sensor liquid B83
- M
- BX4 B82 Hot-gas sensor K2 B82
- M
- UX2 Condenser pump Q9
- M 0..10 V Signal
- UX1 Source pump Q8
- M 0..10 V Signal

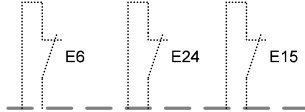
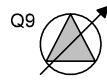
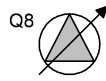


- AVS75.390
- AVS75.391
- AVS75.370



HEAT PUMP

EXTERNAL
INTERNAL



K1

K2

K82

K81

K40

K10

Q8 UX1

Q9 UX2

E11
KRW1
F1K
E11

E12
KRW2
F2K
E12

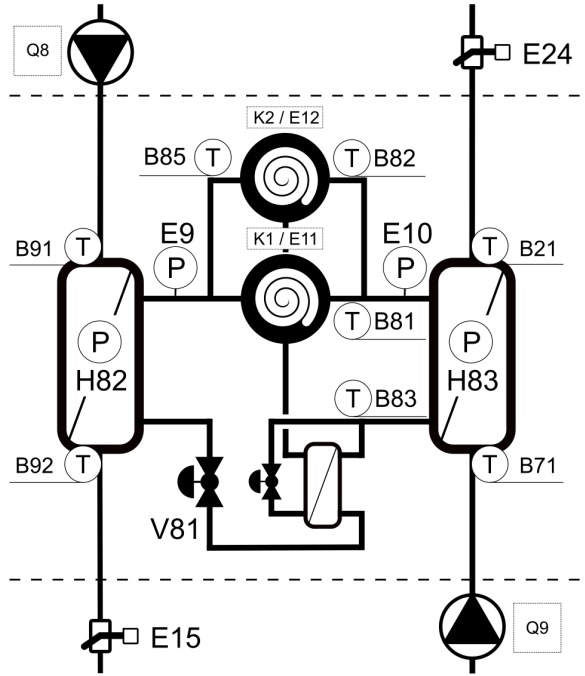
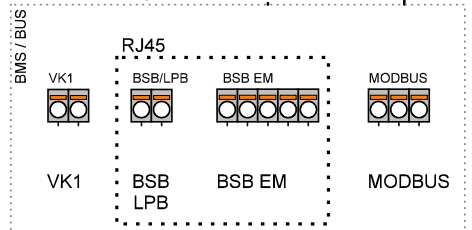
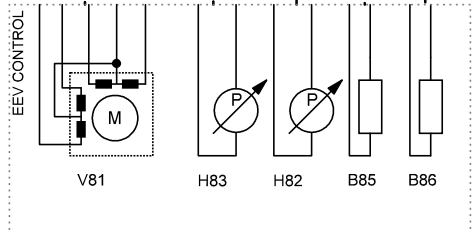
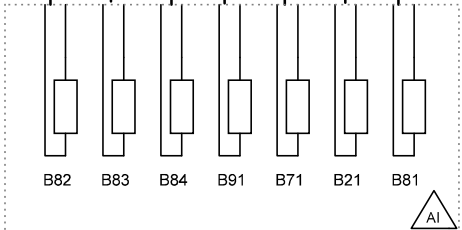
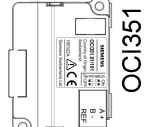
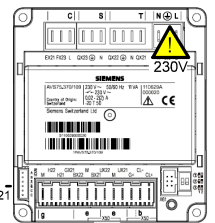
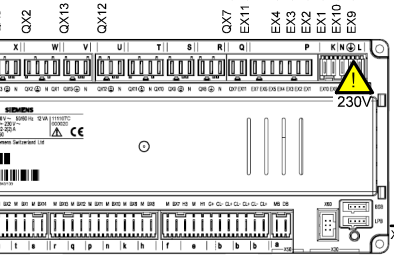
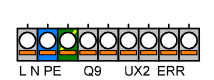
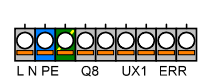
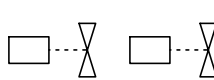
E6

Q9 ERR
F1S
E24

Q8.ERR
F1Z
E15

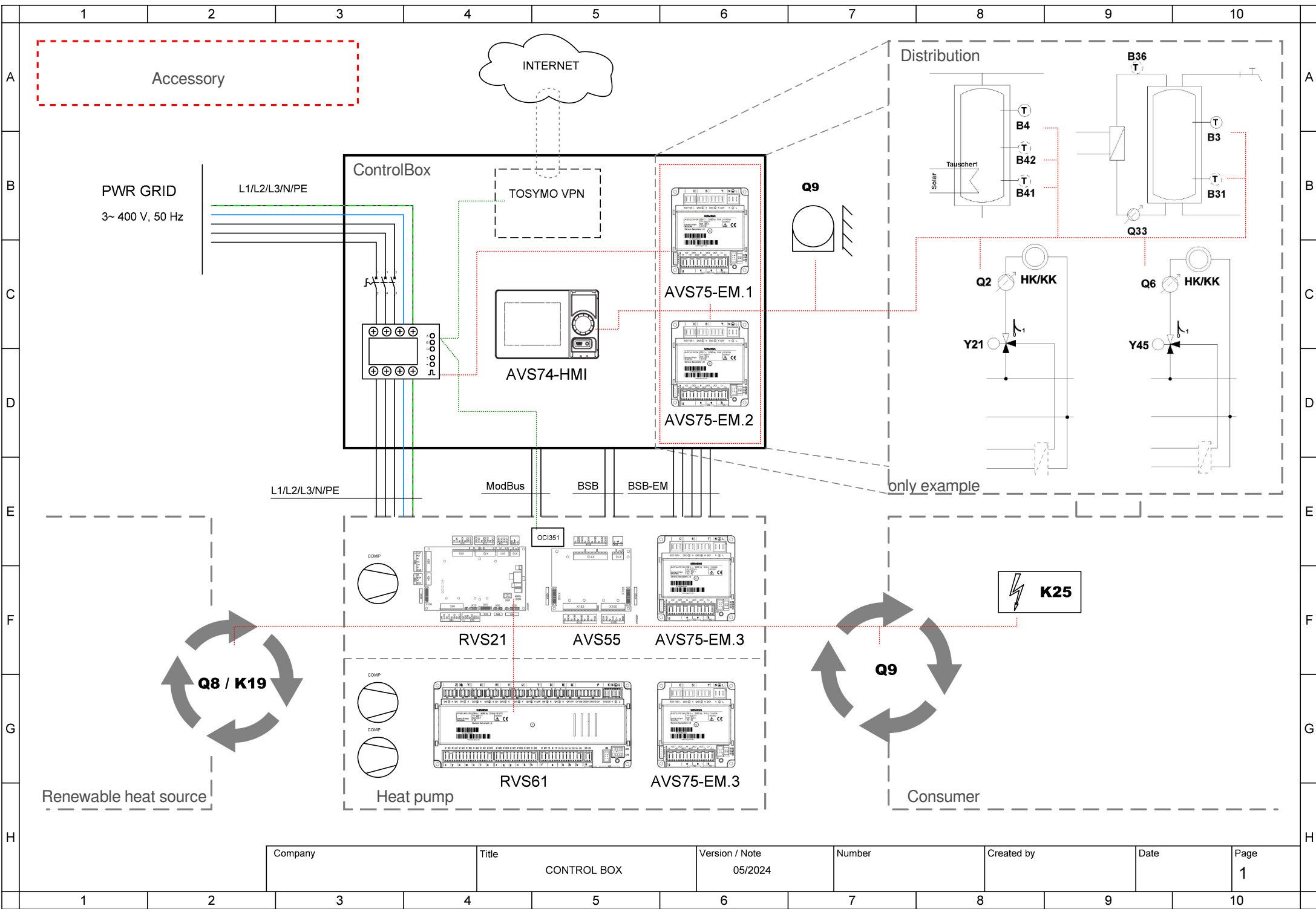
E10

E9

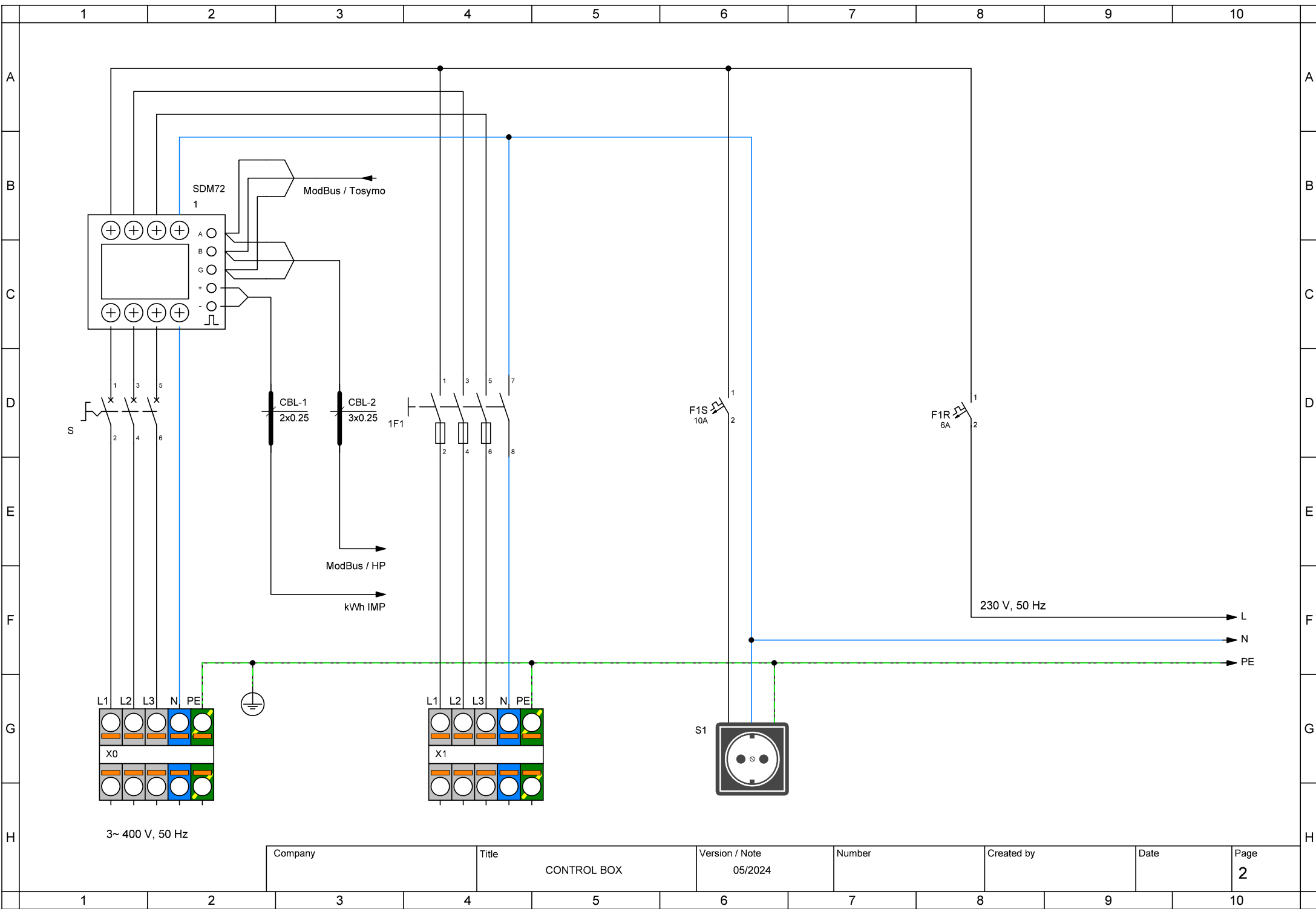


PWR SPLY: 3~ 400V, 50 Hz
CTRL: 1~ 230V, 50 HZ

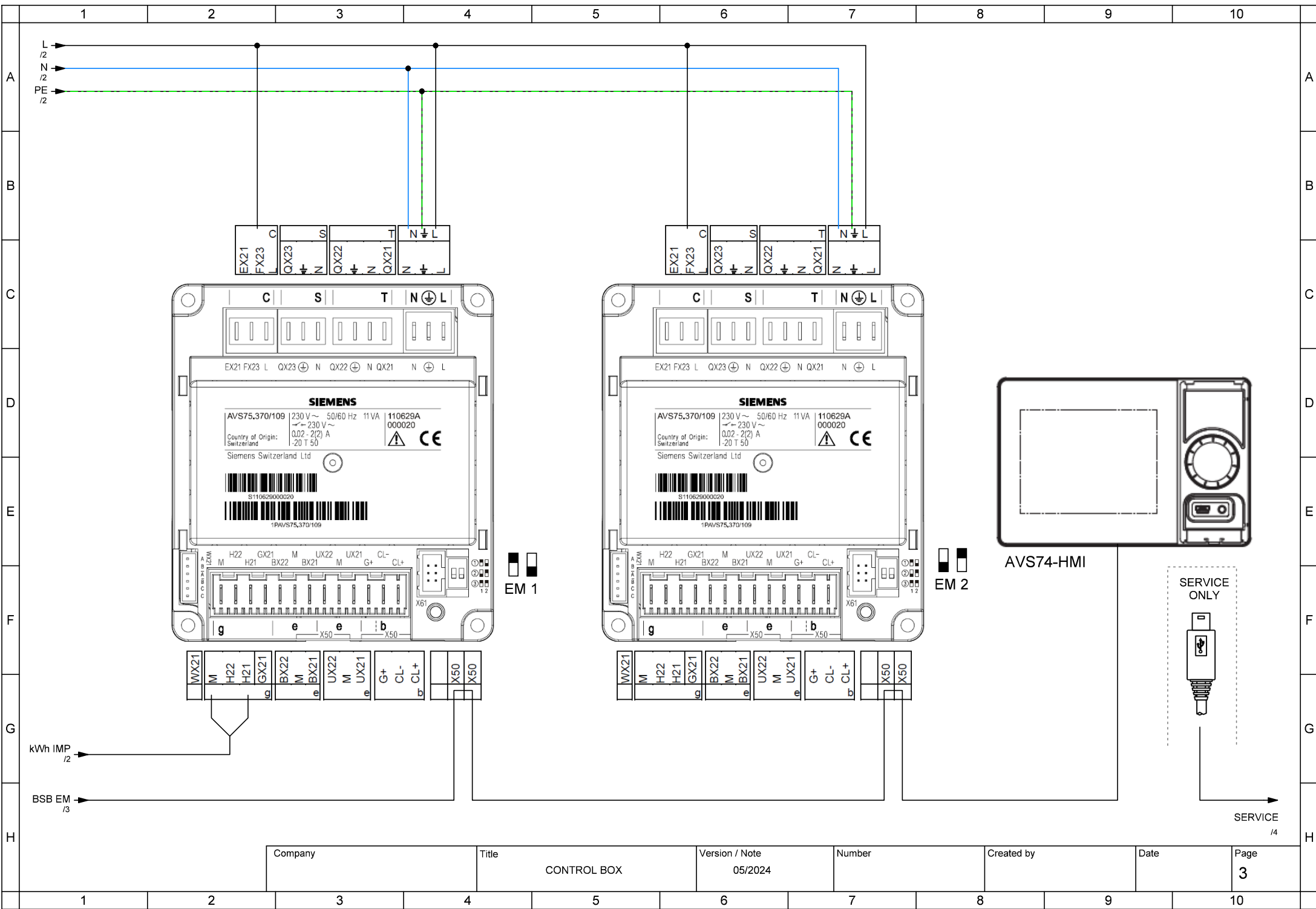
Company	Title	Version / Note	Number	Created by	Date	Page
	TBW-TWW	05/2024				1



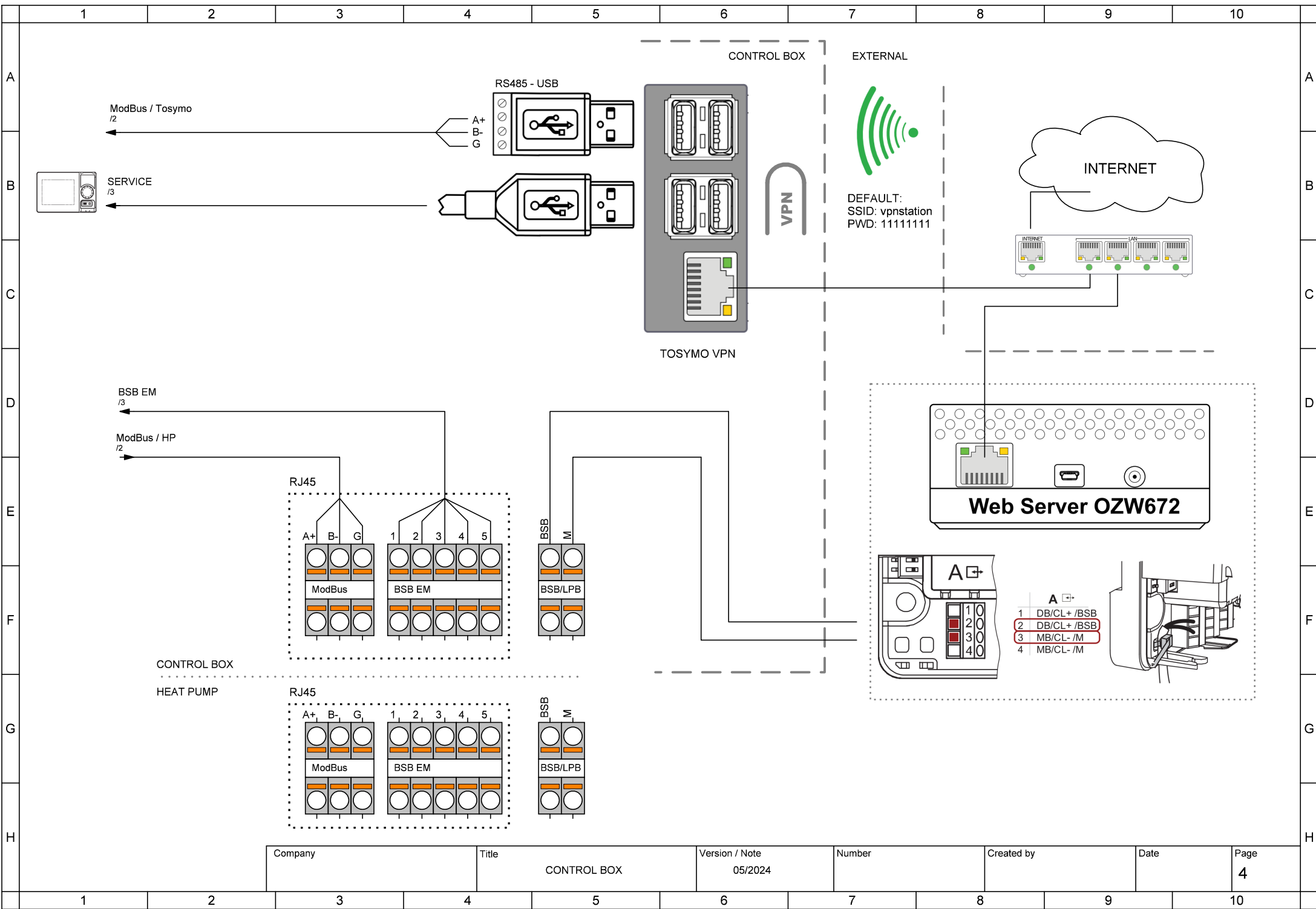
Company	Title	Version / Note	Number	Created by	Date	Page
	CONTROL BOX	05/2024				1



Company	Title	Version / Note	Number	Created by	Date	Page
	CONTROL BOX	05/2024				2



Company	Title	Version / Note	Number	Created by	Date	Page
	CONTROL BOX	05/2024				3



Company	Title	Version / Note	Number	Created by	Date	Page
	CONTROL BOX	05/2024				4

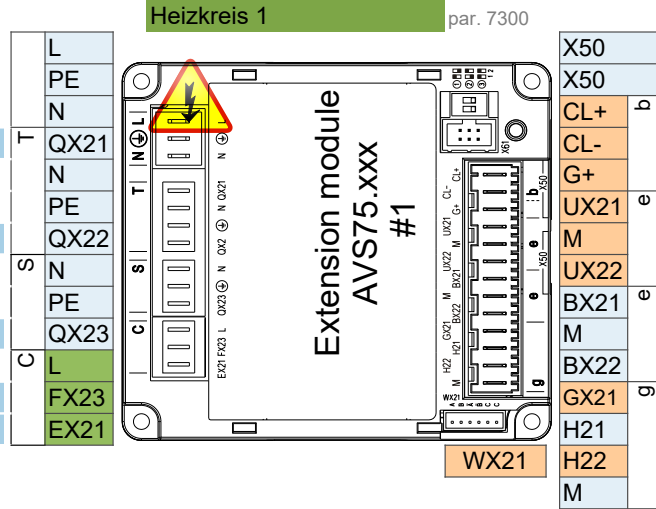
- AVS75.390
- AVS75.391
- AVS75.370

- AVS75.370**
 Main power supply 230V / 50 Hz
 Ground
 Neutral conductor
Y1 Mixing valve Open

Y2 Mixing valve Close

Q2 Heat circuit pump HC1 Q2

L Phase 230V
E61 Smart grid E61



- Extension module AVS75.xxx
 Room unit QAA...
 Room unit QAA...

B1 Flow sensor 1

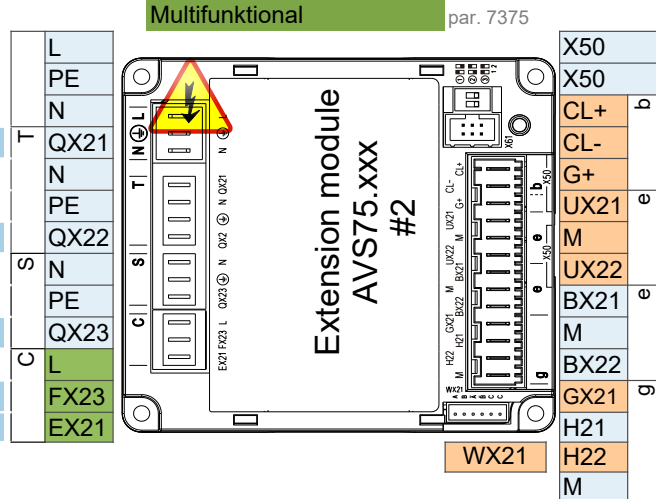
 Pulse count

- AVS75.370**
 Main power supply 230V / 50 Hz
 Ground
 Neutral conductor
Q3 DHW ctrl elem Q3

K6 El imm heater DHW K6

Q6 Heat circuit pump HC2 Q6

L Phase 230V
E62 Smart grid E62

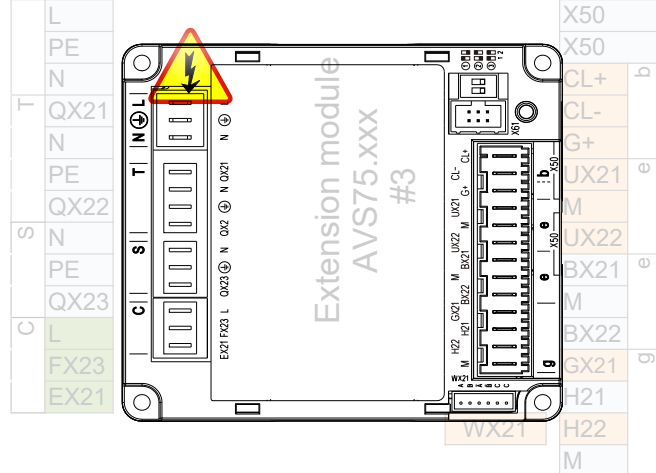


- Operating unit (HMI) AVS37.xxx
 Extension module AVS75.xxx
 Room unit QAA...
 Room unit QAA...

B3 DHW sensor B3

B4 Buffer sensor B4

- Main power supply 230V / 50 Hz
 Ground
 Neutral conductor



- Operating unit (HMI) AVS37.xxx
 Extension module AVS75.xxx
 Room unit QAA...
 Room unit QAA...

Attention: Extension module 3 is inside the heat pump

Control connection options

1 ControlBox

ControlBox, with two built-in extension modules, enables numerous options for application control on the consumer side behind the heat pump. For more, see the ControlBox schematic and the application diagrams sheet.

2 Fix flow temperature setpoint - On / Off dry (potential free) contact

2 wire shielded cable 2 x 0.5 mm² - Setpoint = 45°C (editable by param. 1859)

Connection terminal - see wiring diagram

3 Analog 0..10V flow temperature setpoint control

2 wire shielded cable 2 x 0.5 mm² - Setpoint: 0V = 16°C ~ 10V = 60°C (editable in parameter set)

Connection terminal - see wiring diagram

4 ModBus RTU communication command

3 wire shielded cable min. 3 x 0.25mm²

For ModBus mapping table contact technical support

5 MQTT IoT communication protocol

For more information contact technical support