

Basic performance data - WAMAK TBW 85 EVI

Heating - EN 14511		
Heating capacity [kW]	B0 / W35 (max)	83.4 (41.7 / 83.4)
	B0 / W35 (min)	41.7 (41.7 / 83.4)
	B0 / W34	83.4 (41.7 / 83.4)
Electrical power input [kW]	B0 / W35 (max)	18.7 (9.2 / 18.7)
	B0 / W35 (min)	9.2 (9.2 / 18.7)
	B0 / W34	18.3 (9.0 / 18.3)
Heating efficiency faktor [COP]	B0 / W35 (max)	4.46
	B0 / W35 (min)	4.53
	B0 / W34	4.56
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35 °C]	SCOP	5.02
	η [%]	200.9
	Label	A+++
	Qhe [kWh]	34267.1
	Pdesignh [kW]	83.4
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	85.3
	A25 / W23-18	89.7
	A35 / W12-7	85.3
	A25 / W12-7	85.3
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18 °C]	SEER	5.23
	Qce [kWh]	9075.5
	η_c [%]	209.2
Sound EN 12102		
Acoustic power - Lw	dB(A)	64.5
Acoustic pressure - Lp	1 m dB(A)	56.5
	5 m dB(A)	42.5
	10 m dB(A)	36.5
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 TBW 85 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		
					Material	AISI 316		
Refrigeration cycle								
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]			7.21 ~ 14.41	
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					
Electrical connection data			3~ 400/50			Port size	VIC 2.1/2 "	
						Type	BPHE	
						Count	1	
						Material	AISI 316	
Current	nominal [A]	43.28		Maximal operating pressure - refrigerant [bar]			29	
	maximal [A]	66.00		Heat transfer medium			Ethylenglykol	
	starting [A]	58.42		Brine proportion [%]			29	
Softstart		-		Antifreeze to [°C]			-15	
Main safety		C80		Maximal operating pressure - Ethylenglykol [bar]			6	
Control System								
Main controller	SIEMENS	RVS 61		Volume flow - Ethylenglykol [m3/h]			7.37 ~ 14.75	
Extension module	AVS75.3xx	AVS75.3xx	AVS75.372	Internal pressure drop - Ethylenglykol [kPa]			20	
Bus Clip-In		Modbus OCI352		Temperature difference - Ethylenglykol			4 K	
Online connection		Web server OZW672	ToSyMo					
Superheat controller		SEC61						
*** with accessory								

WAMAK TBW 85 EVI

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

Model	TBW 85 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	83.4	kW	Seasonal space heating energy efficiency	ηs	200.9	%
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	83.4	kW	Tj = -7 °C	COPd	4.56	-
Tj = +2 °C	Pdh	83.3	kW	Tj = +2 °C	COPd	4.9	-
Tj = +7 °C	Pdh	83.3	kW	Tj = +7 °C	COPd	5.3	-
Tj = +12 °C	Pdh	83.2	kW	Tj = +12 °C	COPd	5.6	-
Tj = bivalent temperature	Pdh	83.4	kW	Tj = bivalent temperature	COPd	4.5	-
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	16.1	kW
Standby mode	Psb	0.010	kW	Type of energy input		electricity	
Crankcase heater mode	Pck	0.000	kW				
Other items							
Capacity control		multi-stage		For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Sound power level				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	7.37 ~ 14.75	m3/h
indoors	Lwa	65	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	QHE	34267.1	kWh				

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

WAMAK TBW 85 EVI

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

Model	TBW 85 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	85.0	kW	Seasonal space heating energy efficiency	ηs	161.1	%
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	85.4	kW	Tj = -7 °C	COPd	3.30	-
Tj = +2 °C	Pdh	85.6	kW	Tj = +2 °C	COPd	4.2	-
Tj = +7 °C	Pdh	84.4	kW	Tj = +7 °C	COPd	4.6	-
Tj = +12 °C	Pdh	84.4	kW	Tj = +12 °C	COPd	5.0	-
Tj = bivalent temperature	Pdh	85.0	kW	Tj = bivalent temperature	COPd	2.9	-
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	16.1	kW
Standby mode	Psb	0.010	kW	Type of energy input		electricity	
Crankcase heater mode	Pck	0.000	kW				
Other items							
Capacity control		multi-stage		For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
Sound power level				For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	7.37 ~ 14.75	m3/h
indoors	Lwa	65	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	QHE	43560.0	kWh				

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WAMAK

TBW 85 EVI



55 °C

35 °C

A+++

A+++

A+++

A++

A+

A

B

C

D



65 dB



--- dB

■ 90
■ 85
■ 84
kW

■ 86
■ 84
■ 80
kW



2019

811/2013

TBW 85 EVI

ErP Data

	55 °C	35 °C
Energy class	A+++	A+++
η [%]	161.1	200.9
P_{rated} [kW]	85	84
Q_{HE} [kWh/y]	43560	34268
SCOP [-]	4.03	5.02
$T_{bivalent}$ [°C]	-10	-10

CONTROLLER



+ QAA55/75

class VII

3.5% ↓

- QAA55/75

class III

1.5% ↓

Heating performance data

Version: v2024.010-BW-WW

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

ZHI40K1P-TFD_R410A_2_BWW

Operating conditions		Qh	P	COP
1	B0 / W30-35	83.4	18.7	4.46
2	B0 / W30-35 (MIN)	41.7	9.2	4.53
A	B0 / Wxx-34	83.4	18.3	4.56
B	B0 / Wxx-30	83.3	16.9	4.94
C	B0 / Wxx-27	41.6	7.8	5.32
D	B0 / Wxx-24	41.6	7.4	5.64
E	B0 / Wxx-35	83.4	18.7	4.46
F	B0 / Wxx-35	83.4	18.7	4.46

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	5.03
SCOPnet	5.03
SCOP	5.02
η [%]	200.87
Label	A+++
Qh [kWh]	34267
Pdesignh [kW]	83.4
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	B0 / W47-55	85.0	29.5	2.88
2	B0 / W47-55 (MIN)	42.5	14.4	2.92
A	B0 / Wxx-52	85.4	26.8	3.30
B	B0 / Wxx-42	85.6	20.8	4.16
C	B0 / Wxx-36	42.2	9.1	4.63
D	B0 / Wxx-30	42.2	8.3	5.07
E	B0 / Wxx-55	85.0	29.5	2.88
F	B0 / Wxx-54	85.5	27.4	3.12

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	4.03
SCOPnet	4.03
SCOP	4.03
η [%]	161.09
Label	A+++
Qh [kWh]	43560
Pdesignh [kW]	85.0
Tbivalent [°C]	-10

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

Operating conditions		Qh	P	COP
1	W10 / W30-35	106.5	18.9	5.65
2	W10 / W30-35 (MIN)	53.3	9.3	5.73
A	W10 / Wxx-34	106.6	18.5	5.77
B	W10 / Wxx-30	106.8	17.0	6.27
C	W10 / Wxx-27	106.9	16.0	6.76
D	W10 / Wxx-24	107.0	15.1	7.18
E	W10 / Wxx-35	106.5	18.9	5.65
F	W10 / Wxx-35	106.5	18.9	5.65

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	6.38
SCOPnet	6.38
SCOP	6.38
η [%]	255.04
Label	A+++
Qh [kWh]	34463
Pdesignh [kW]	106.5
Tbivalent [°C]	-10.00

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

Operating conditions		Qh	P	COP
1	W10 / W47-55	106.6	29.8	3.58
2	W10 / W47-55 (MIN)	53.3	14.7	3.63
A	W10 / Wxx-52	107.5	27.0	3.98
B	W10 / Wxx-42	107.6	21.0	5.12
C	W10 / Wxx-36	107.8	18.7	5.85
D	W10 / Wxx-30	108.1	17.0	6.43
E	W10 / Wxx-55	106.6	29.8	3.58
F	W10 / Wxx-55	106.6	29.8	3.58

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Medium Temperature [55°C]	
SCOPon	4.96
SCOPnet	4.96
SCOP	4.95
η [%]	198.16
Label	A+++
Qh [kWh]	44410
Pdesignh [kW]	106.6
Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

Operating conditions		Qc	P	EER
A	W30-35 / W12-7	64.9	19.9	3.26
B	W26-xx / W12-7	66.3	18.3	3.62
C	W22-xx / W12-7	67.6	16.9	4.01
D	W18-xx / W12-7	68.2	16.2	4.21

SEER DATA EN 14825:2018 [W 12 / 7°C]	
SEERon	3.89
SEER	3.89
Qc [kWh]	37740
η [%]	155.45

Radiant cooling W 23 / 18°C

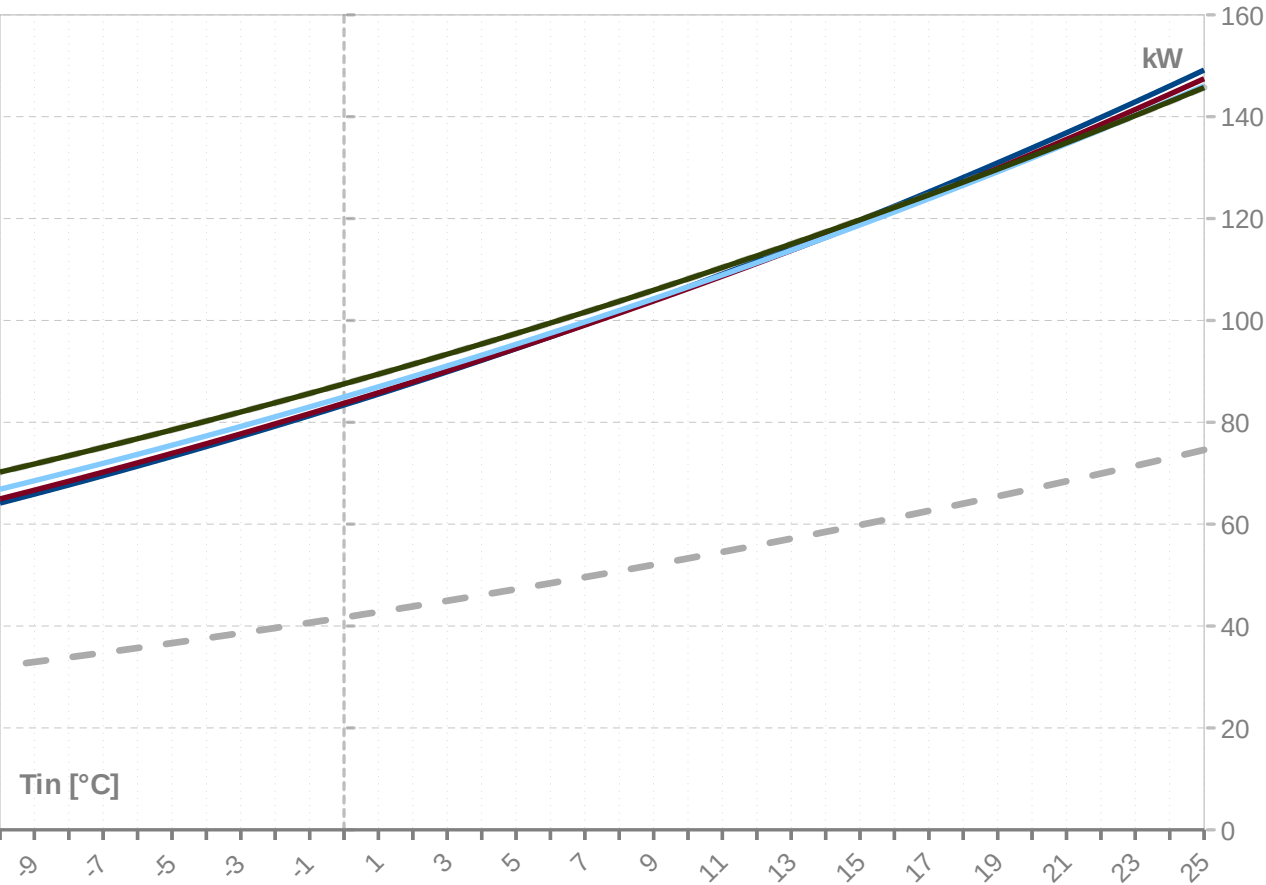
Operating conditions		Qc	P	EER
A	W50-xx / W23-18	76.9	31.8	2.42
B	W40-xx / W23-18	82.7	24.9	3.32
C	W30-35 / W23-18	87.6	19.9	4.40
D	W26-xx / W23-18	89.3	18.3	4.88

SEER DATA EN 14825:2018 [W 23 / 18°C]	
SEERon	5.23
SEER	5.23
Qc [kWh]	37740
η [%]	209.16

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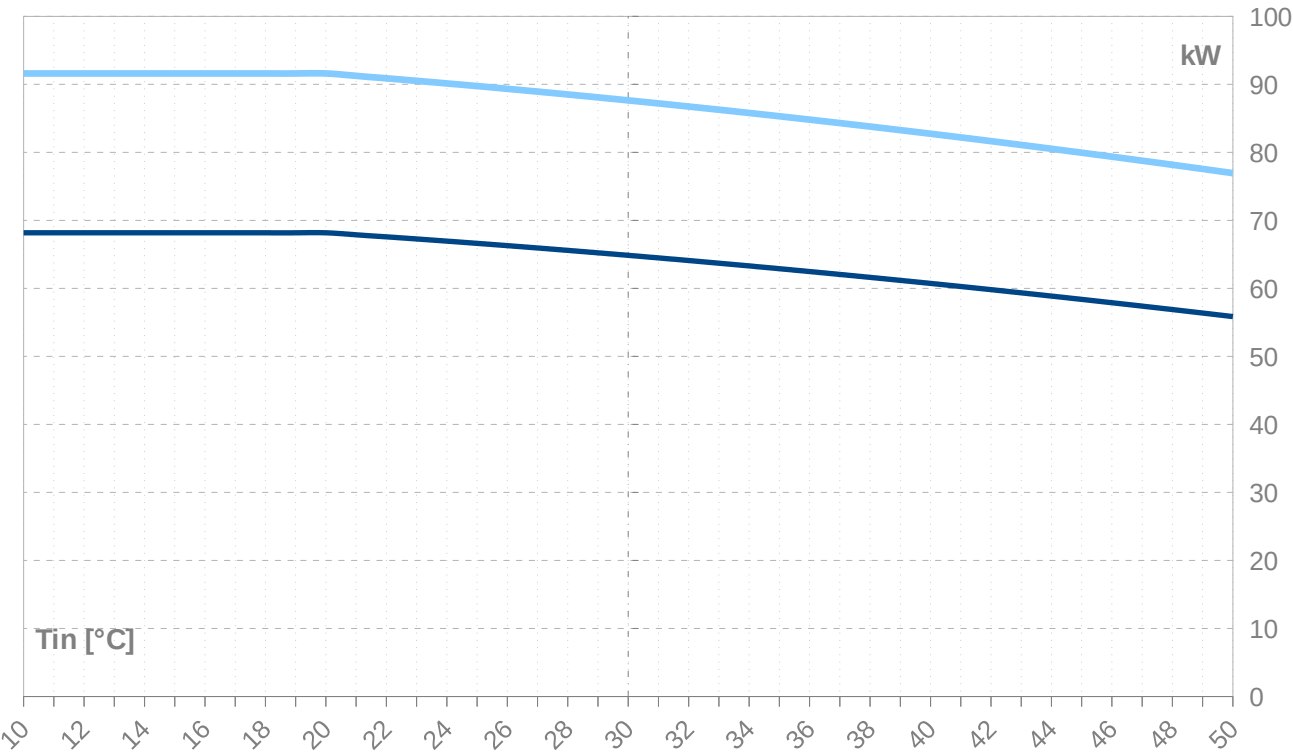
Performance lines - heating

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										
	°C]										
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	149.2	74.6	149.2	19.2	9.5	19.2	7.78	131.3	65.6	131.3	43.2
24	146.0	73.0	146.0	19.2	9.4	19.2	7.62	128.1	64.1	128.1	43.2
23	142.9	71.5	142.9	19.1	9.4	19.1	7.47	125.0	62.5	125.0	43.2
22	139.8	69.9	139.8	19.1	9.4	19.1	7.32	122.0	61.0	122.0	43.2
21	136.8	68.4	136.8	19.1	9.4	19.1	7.17	119.0	59.5	119.0	43.3
20	133.9	66.9	133.9	19.1	9.4	19.1	7.02	116.1	58.0	116.1	43.3
19	130.9	65.5	130.9	19.0	9.4	19.0	6.87	113.1	56.6	113.1	43.3
18	128.1	64.0	128.1	19.0	9.4	19.0	6.73	110.3	55.1	110.3	43.3
17	125.2	62.6	125.2	19.0	9.4	19.0	6.59	107.5	53.7	107.5	43.4
16	122.4	61.2	122.4	19.0	9.4	19.0	6.45	104.7	52.3	104.7	43.4
15	119.7	59.8	119.7	19.0	9.4	19.0	6.31	102.0	51.0	102.0	43.4
14	117.0	58.5	117.0	18.9	9.3	18.9	6.17	99.3	49.6	99.3	43.4
13	114.3	57.1	114.3	18.9	9.3	18.9	6.04	96.6	48.3	96.6	43.5
12	111.7	55.8	111.7	18.9	9.3	18.9	5.91	94.0	47.0	94.0	43.5
11	109.1	54.5	109.1	18.9	9.3	18.9	5.78	91.5	45.7	91.5	43.5
10	106.5	53.3	106.5	18.9	9.3	18.9	5.65	88.9	44.5	88.9	43.5
9	104.1	52.0	104.1	18.8	9.3	18.8	5.52	86.5	43.2	86.5	43.5
8	101.6	50.8	101.6	18.8	9.3	18.8	5.40	84.0	42.0	84.0	43.5
7	99.2	49.6	99.2	18.8	9.3	18.8	5.27	81.6	40.8	81.6	43.5
6	96.8	48.4	96.8	18.8	9.3	18.8	5.15	79.3	39.6	79.3	43.6
5	94.5	47.2	94.5	18.8	9.3	18.8	5.03	76.9	38.5	76.9	43.6
4	92.2	46.1	92.2	18.8	9.2	18.8	4.92	74.7	37.3	74.7	43.6
3	89.9	45.0	89.9	18.7	9.2	18.7	4.80	72.4	36.2	72.4	43.6
2	87.7	43.9	87.7	18.7	9.2	18.7	4.69	70.2	35.1	70.2	43.6
1	85.5	42.8	85.5	18.7	9.2	18.7	4.57	68.1	34.0	68.1	43.6
0	83.4	41.7	83.4	18.7	9.2	18.7	4.46	65.9	33.0	65.9	43.6
-1	81.3	40.6	81.3	18.7	9.2	18.7	4.35	63.9	31.9	63.9	43.6
-2	79.2	39.6	79.2	18.7	9.2	18.7	4.25	61.8	30.9	61.8	43.6
-3	77.2	38.6	77.2	18.6	9.2	18.6	4.14	59.8	29.9	59.8	43.6
-4	75.2	37.6	75.2	18.6	9.2	18.6	4.04	57.8	28.9	57.8	43.6
-5	73.3	36.6	73.3	18.6	9.2	18.6	3.94	55.9	28.0	55.9	43.6
-6	71.4	35.7	71.4	18.6	9.2	18.6	3.84	54.0	27.0	54.0	43.6
-7	69.5	34.8	69.5	18.6	9.2	18.6	3.74	52.2	26.1	52.2	43.6
-8	67.7	33.8	67.7	18.6	9.2	18.6	3.65	50.3	25.2	50.3	43.6
-9	65.9	32.9	65.9	18.6	9.2	18.6	3.55	48.6	24.3	48.6	43.5
-10	64.1	32.1	64.1	18.5	9.1	18.5	3.46	46.8	23.4	46.8	43.5
-11	62.4	31.2	62.4	18.5	9.1	18.5	3.37	45.1	22.6	45.1	43.5
-12	60.7	30.4	60.7	18.5	9.1	18.5	3.28	43.4	21.7	43.4	43.5
-13	59.1	29.5	59.1	18.5	9.1	18.5	3.19	41.8	20.9	41.8	43.4
-14	57.5	28.7	57.5	18.5	9.1	18.5	3.10	40.2	20.1	40.2	43.4
-15	55.9	27.9	55.9	18.5	9.1	18.5	3.02	38.6	19.3	38.6	43.4

-- attention: operating limits not reflected in performance table

ZHI40K1P-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	147.5	73.7	147.5	23.6	11.6	23.6	6.25	125.4	62.7	125.4	48.0
24	144.4	72.2	144.4	23.6	11.6	23.6	6.12	122.4	61.2	122.4	48.0
23	141.4	70.7	141.4	23.6	11.6	23.6	6.00	119.4	59.7	119.4	47.9
22	138.5	69.2	138.5	23.5	11.6	23.5	5.89	116.5	58.2	116.5	47.9
21	135.5	67.8	135.5	23.5	11.6	23.5	5.77	113.6	56.8	113.6	47.9
20	132.7	66.3	132.7	23.5	11.6	23.5	5.65	110.8	55.4	110.8	47.8
19	129.8	64.9	129.8	23.4	11.6	23.4	5.54	108.0	54.0	108.0	47.8
18	127.1	63.5	127.1	23.4	11.5	23.4	5.43	105.2	52.6	105.2	47.8
17	124.3	62.2	124.3	23.4	11.5	23.4	5.32	102.5	51.2	102.5	47.8
16	121.6	60.8	121.6	23.4	11.5	23.4	5.21	99.8	49.9	99.8	47.7
15	118.9	59.5	118.9	23.3	11.5	23.3	5.10	97.2	48.6	97.2	47.7
14	116.3	58.2	116.3	23.3	11.5	23.3	4.99	94.6	47.3	94.6	47.7
13	113.7	56.9	113.7	23.3	11.5	23.3	4.89	92.0	46.0	92.0	47.7
12	111.2	55.6	111.2	23.3	11.5	23.3	4.78	89.5	44.7	89.5	47.6
11	108.7	54.3	108.7	23.2	11.5	23.2	4.68	87.0	43.5	87.0	47.6
10	106.2	53.1	106.2	23.2	11.4	23.2	4.58	84.6	42.3	84.6	47.6
9	103.8	51.9	103.8	23.2	11.4	23.2	4.48	82.2	41.1	82.2	47.6
8	101.4	50.7	101.4	23.2	11.4	23.2	4.38	79.8	39.9	79.8	47.5
7	99.1	49.5	99.1	23.1	11.4	23.1	4.28	77.5	38.7	77.5	47.5
6	96.8	48.4	96.8	23.1	11.4	23.1	4.19	75.2	37.6	75.2	47.5
5	94.5	47.3	94.5	23.1	11.4	23.1	4.09	72.9	36.5	72.9	47.4
4	92.3	46.1	92.3	23.1	11.4	23.1	4.00	70.7	35.4	70.7	47.4
3	90.1	45.0	90.1	23.1	11.4	23.1	3.91	68.6	34.3	68.6	47.4
2	87.9	44.0	87.9	23.0	11.4	23.0	3.82	66.4	33.2	66.4	47.4
1	85.8	42.9	85.8	23.0	11.3	23.0	3.73	64.3	32.2	64.3	47.3
0	83.7	41.9	83.7	23.0	11.3	23.0	3.64	62.3	31.1	62.3	47.3
-1	81.7	40.8	81.7	23.0	11.3	23.0	3.56	60.2	30.1	60.2	47.3
-2	79.7	39.8	79.7	23.0	11.3	23.0	3.47	58.3	29.1	58.3	47.2
-3	77.7	38.9	77.7	22.9	11.3	22.9	3.39	56.3	28.2	56.3	47.2
-4	75.8	37.9	75.8	22.9	11.3	22.9	3.31	54.4	27.2	54.4	47.2
-5	73.9	36.9	73.9	22.9	11.3	22.9	3.23	52.5	26.3	52.5	47.1
-6	72.0	36.0	72.0	22.9	11.3	22.9	3.15	50.7	25.3	50.7	47.1
-7	70.2	35.1	70.2	22.9	11.3	22.9	3.07	48.8	24.4	48.8	47.1
-8	68.4	34.2	68.4	22.9	11.3	22.9	2.99	47.1	23.5	47.1	47.0
-9	66.7	33.3	66.7	22.9	11.3	22.9	2.92	45.3	22.7	45.3	47.0
-10	65.0	32.5	65.0	22.9	11.3	22.9	2.84	43.6	21.8	43.6	46.9
-11	63.3	31.6	63.3	22.8	11.3	22.8	2.77	41.9	21.0	41.9	46.9
-12	61.6	30.8	61.6	22.8	11.3	22.8	2.70	40.3	20.1	40.3	46.9
-13	60.0	30.0	60.0	22.8	11.3	22.8	2.63	38.7	19.3	38.7	46.8
-14	58.4	29.2	58.4	22.8	11.3	22.8	2.56	37.1	18.6	37.1	46.8
-15	56.9	28.4	56.9	22.8	11.3	22.8	2.49	35.6	17.8	35.6	46.7

-- attention: operating limits not reflected in performance table

Th -OU	55										
	°C										
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	146.0	73.0	146.0	30.3	14.9	30.3	4.83	117.8	58.9	117.8	54.9
24	143.1	71.6	143.1	30.2	14.9	30.2	4.74	114.9	57.5	114.9	54.8
23	140.3	70.1	140.3	30.2	14.9	30.2	4.65	112.1	56.0	112.1	54.8
22	137.4	68.7	137.4	30.2	14.9	30.2	4.56	109.3	54.6	109.3	54.7
21	134.6	67.3	134.6	30.1	14.9	30.1	4.47	106.5	53.3	106.5	54.7
20	131.9	65.9	131.9	30.1	14.8	30.1	4.38	103.8	51.9	103.8	54.6
19	129.2	64.6	129.2	30.0	14.8	30.0	4.30	101.1	50.6	101.1	54.6
18	126.5	63.3	126.5	30.0	14.8	30.0	4.22	98.5	49.2	98.5	54.5
17	123.9	61.9	123.9	30.0	14.8	30.0	4.13	95.9	47.9	95.9	54.5
16	121.3	60.7	121.3	29.9	14.8	29.9	4.05	93.3	46.7	93.3	54.4
15	118.8	59.4	118.8	29.9	14.8	29.9	3.97	90.8	45.4	90.8	54.4
14	116.2	58.1	116.2	29.9	14.7	29.9	3.89	88.3	44.2	88.3	54.3
13	113.8	56.9	113.8	29.9	14.7	29.9	3.81	85.9	42.9	85.9	54.3
12	111.3	55.7	111.3	29.8	14.7	29.8	3.73	83.5	41.7	83.5	54.2
11	108.9	54.5	108.9	29.8	14.7	29.8	3.66	81.1	40.6	81.1	54.2
10	106.6	53.3	106.6	29.8	14.7	29.8	3.58	78.8	39.4	78.8	54.2
9	104.2	52.1	104.2	29.7	14.7	29.7	3.51	76.5	38.2	76.5	54.1
8	102.0	51.0	102.0	29.7	14.7	29.7	3.43	74.2	37.1	74.2	54.1
7	99.7	49.9	99.7	29.7	14.6	29.7	3.36	72.0	36.0	72.0	54.0
6	97.5	48.7	97.5	29.7	14.6	29.7	3.29	69.8	34.9	69.8	54.0
5	95.3	47.7	95.3	29.6	14.6	29.6	3.22	67.6	33.8	67.6	54.0
4	93.2	46.6	93.2	29.6	14.6	29.6	3.15	65.5	32.8	65.5	53.9
3	91.1	45.5	91.1	29.6	14.6	29.6	3.08	63.4	31.7	63.4	53.9
2	89.0	44.5	89.0	29.6	14.6	29.6	3.01	61.4	30.7	61.4	53.9
1	87.0	43.5	87.0	29.5	14.6	29.5	2.94	59.4	29.7	59.4	53.8
0	85.0	42.5	85.0	29.5	14.6	29.5	2.88	57.4	28.7	57.4	53.8
-1	83.0	41.5	83.0	29.5	14.6	29.5	2.81	55.4	27.7	55.4	53.8
-2	81.1	40.5	81.1	29.5	14.5	29.5	2.75	53.5	26.8	53.5	53.7
-3	79.2	39.6	79.2	29.5	14.5	29.5	2.69	51.7	25.8	51.7	53.7
-4	77.3	38.7	77.3	29.5	14.5	29.5	2.62	49.8	24.9	49.8	53.7
-5	75.5	37.7	75.5	29.4	14.5	29.4	2.56	48.0	24.0	48.0	53.6
-6	73.7	36.8	73.7	29.4	14.5	29.4	2.50	46.2	23.1	46.2	53.6
-7	71.9	36.0	71.9	29.4	14.5	29.4	2.45	44.5	22.2	44.5	53.6
-8	70.2	35.1	70.2	29.4	14.5	29.4	2.39	42.7	21.4	42.7	53.6
-9	68.5	34.3	68.5	29.4	14.5	29.4	2.33	41.1	20.5	41.1	53.5
-10	66.9	33.4	66.9	29.4	14.5	29.4	2.27	39.4	19.7	39.4	53.5
-11	65.2	32.6	65.2	29.4	14.5	29.4	2.22	37.8	18.9	37.8	53.5
-12	63.6	31.8	63.6	29.4	14.5	29.4	2.17	36.2	18.1	36.2	53.4
-13	62.1	31.0	62.1	29.4	14.5	29.4	2.11	34.6	17.3	34.6	53.4
-14	60.5	30.3	60.5	29.4	14.5	29.4	2.06	33.1	16.5	33.1	53.4
-15	59.0	29.5	59.0	29.4	14.5	29.4	2.01	31.6	15.8	31.6	53.3

-- attention: operating limits not reflected in performance table

Th -OU	65 (T-max)										
Ts -IN	Qh nom	Qh min	Qh max	Pin nom	Pin min	Pin max	COP nom	Qc nom	Qc min	Qc max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
25	145.7	72.9	145.7	38.8	19.2	38.8	3.75	109.4	54.7	109.4	65.7
24	143.0	71.5	143.0	38.8	19.1	38.8	3.68	106.7	53.4	106.7	65.7
23	140.2	70.1	140.2	38.8	19.1	38.8	3.62	104.0	52.0	104.0	65.6
22	137.5	68.8	137.5	38.7	19.1	38.7	3.55	101.4	50.7	101.4	65.6
21	134.9	67.4	134.9	38.7	19.1	38.7	3.49	98.8	49.4	98.8	65.5
20	132.3	66.1	132.3	38.6	19.1	38.6	3.42	96.2	48.1	96.2	65.5
19	129.7	64.8	129.7	38.6	19.0	38.6	3.36	93.6	46.8	93.6	65.4
18	127.1	63.6	127.1	38.6	19.0	38.6	3.30	91.1	45.6	91.1	65.4
17	124.6	62.3	124.6	38.5	19.0	38.5	3.24	88.7	44.3	88.7	65.4
16	122.2	61.1	122.2	38.5	19.0	38.5	3.17	86.2	43.1	86.2	65.3
15	119.7	59.9	119.7	38.4	19.0	38.4	3.11	83.8	41.9	83.8	65.3
14	117.4	58.7	117.4	38.4	18.9	38.4	3.06	81.5	40.7	81.5	65.3
13	115.0	57.5	115.0	38.4	18.9	38.4	3.00	79.2	39.6	79.2	65.2
12	112.7	56.3	112.7	38.3	18.9	38.3	2.94	76.9	38.4	76.9	65.2
11	110.4	55.2	110.4	38.3	18.9	38.3	2.88	74.6	37.3	74.6	65.2
10	108.1	54.1	108.1	38.3	18.9	38.3	2.83	72.4	36.2	72.4	65.2
9	105.9	53.0	105.9	38.3	18.9	38.3	2.77	70.2	35.1	70.2	65.1
8	103.8	51.9	103.8	38.2	18.9	38.2	2.71	68.1	34.0	68.1	65.1
7	101.6	50.8	101.6	38.2	18.8	38.2	2.66	65.9	33.0	65.9	65.1
6	99.5	49.7	99.5	38.2	18.8	38.2	2.61	63.9	31.9	63.9	65.1
5	97.4	48.7	97.4	38.1	18.8	38.1	2.55	61.8	30.9	61.8	65.1
4	95.4	47.7	95.4	38.1	18.8	38.1	2.50	59.8	29.9	59.8	65.1
3	93.4	46.7	93.4	38.1	18.8	38.1	2.45	57.8	28.9	57.8	65.1
2	91.4	45.7	91.4	38.1	18.8	38.1	2.40	55.8	27.9	55.8	65.1
1	89.5	44.7	89.5	38.0	18.8	38.0	2.35	53.9	27.0	53.9	65.1
0	87.5	43.8	87.5	38.0	18.8	38.0	2.30	52.0	26.0	52.0	65.1
-1	85.7	42.8	85.7	38.0	18.7	38.0	2.25	50.2	25.1	50.2	65.1
-2	83.8	41.9	83.8	38.0	18.7	38.0	2.21	48.3	24.2	48.3	65.1
-3	82.0	41.0	82.0	38.0	18.7	38.0	2.16	46.6	23.3	46.6	65.1
-4	80.2	40.1	80.2	38.0	18.7	38.0	2.11	44.8	22.4	44.8	65.1
-5	78.5	39.2	78.5	37.9	18.7	37.9	2.07	43.0	21.5	43.0	65.1
-6	76.8	38.4	76.8	37.9	18.7	37.9	2.02	41.3	20.7	41.3	65.1
-7	75.1	37.5	75.1	37.9	18.7	37.9	1.98	39.7	19.8	39.7	65.1
-8	73.4	36.7	73.4	37.9	18.7	37.9	1.94	38.0	19.0	38.0	65.1
-9	71.8	35.9	71.8	37.9	18.7	37.9	1.89	36.4	18.2	36.4	65.1
-10	70.2	35.1	70.2	37.9	18.7	37.9	1.85	34.8	17.4	34.8	65.1
-11	68.6	34.3	68.6	37.9	18.7	37.9	1.81	33.3	16.6	33.3	65.1
-12	67.1	33.6	67.1	37.9	18.7	37.9	1.77	31.7	15.9	31.7	65.1
-13	65.6	32.8	65.6	37.9	18.7	37.9	1.73	30.2	15.1	30.2	65.1
-14	64.1	32.1	64.1	37.9	18.7	37.9	1.69	28.7	14.4	28.7	65.2
-15	62.7	31.3	62.7	37.9	18.7	37.9	1.65	27.3	13.6	27.3	65.2

-- attention: operating limits not reflected in performance table

Tc -OU		W 12 / 7 °C									
Ts -IN	Qc nom	Qc min	Qc max	Pin nom	Pin min	Pin max	EER	Qh nom	Qh min	Qh max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
40	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

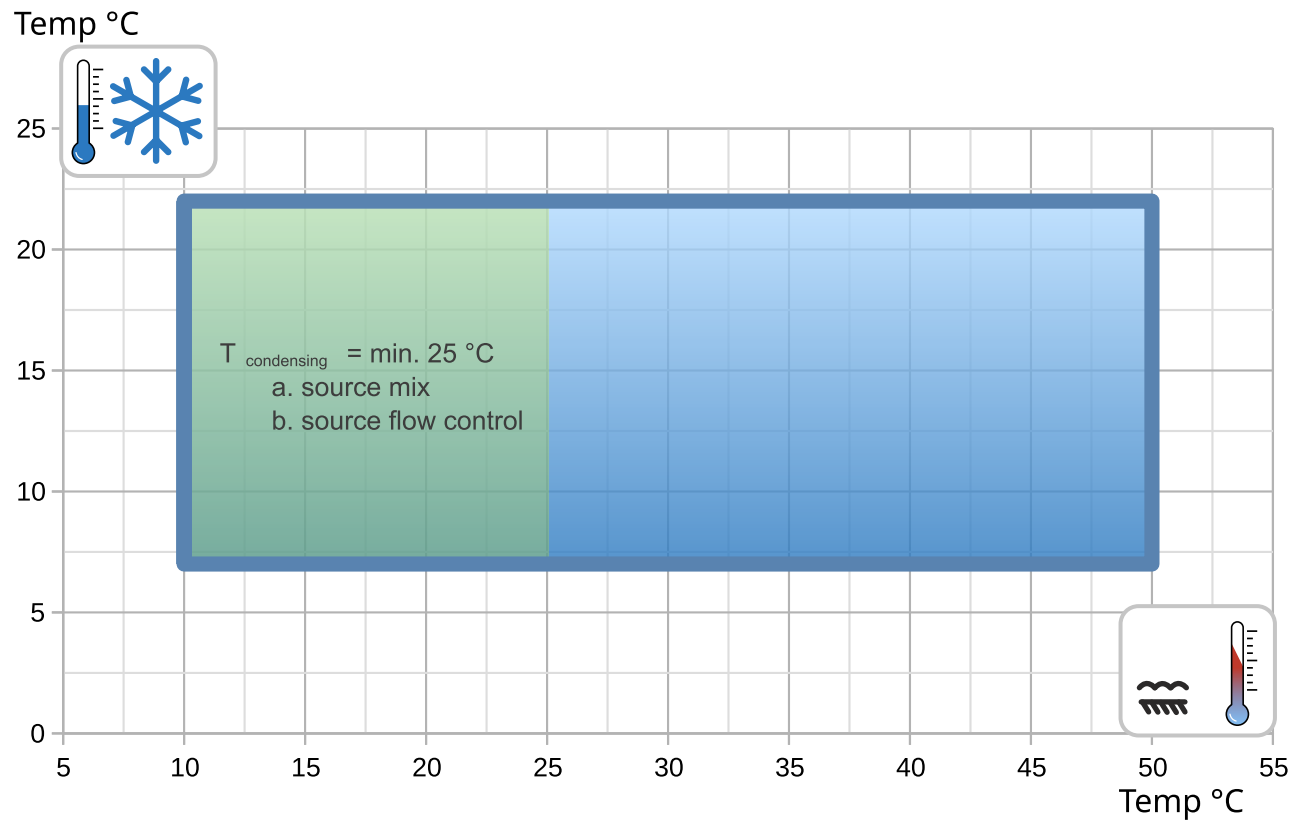
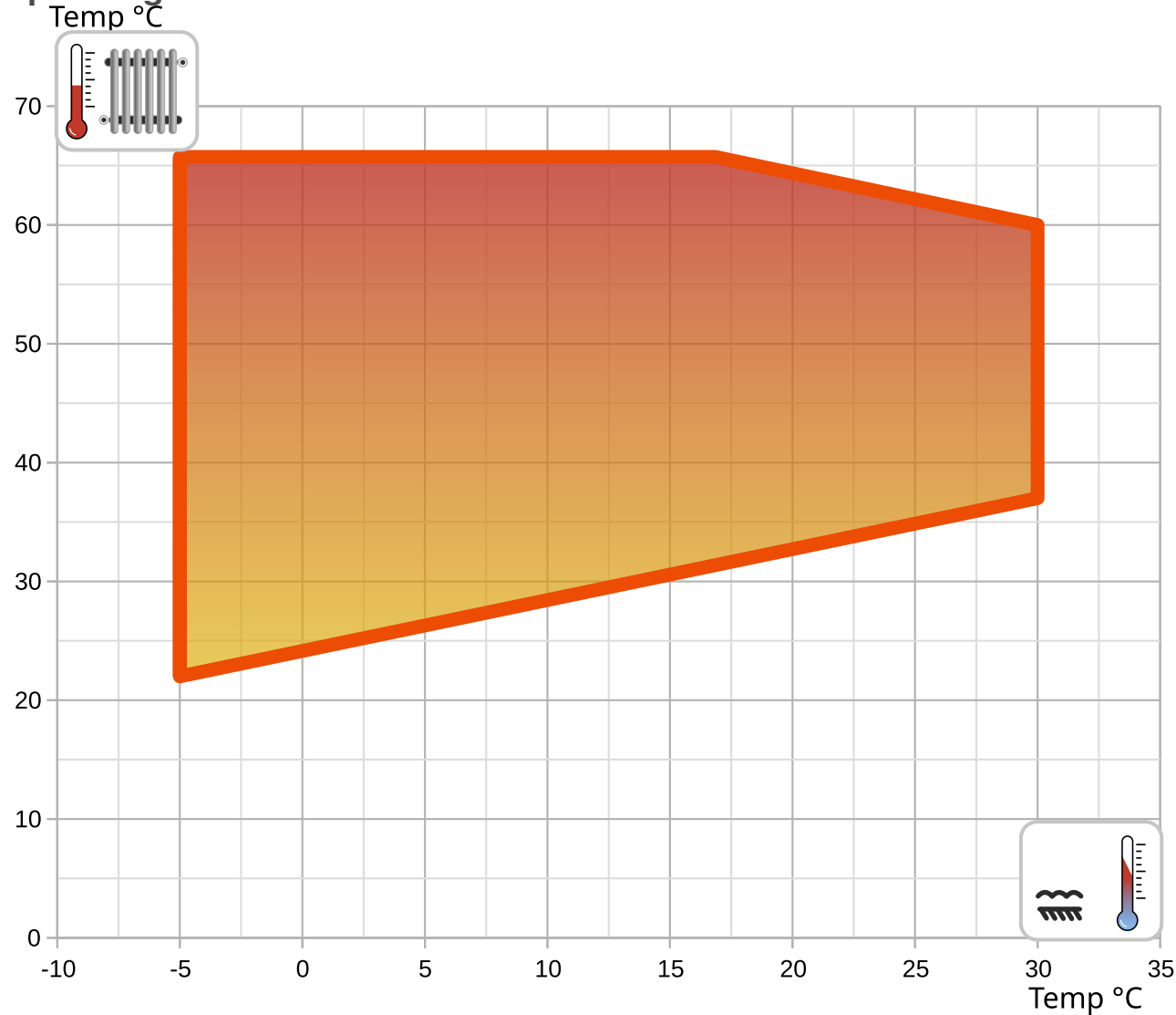
Tc [°C]		W 23 / 18 °C									
0	Qc nom	Qc min	Qc max	Pin nom	Pin min	Pin max	EER	Qh nom	Qh min	Qh max	I nom
[°C]	[kW]	[kW]	[kW]	[kW]	[kW]	[kW]	kW / kW	[kW]	[kW]	[kW]	[A]
40	82.7	41.4	82.7	24.9	12.3	24.9	3.32	106.2	53.1	106.9	49.4
39	83.3	41.6	83.3	24.4	12.0	24.4	3.42	106.2	53.1	106.8	48.8
38	83.8	41.9	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

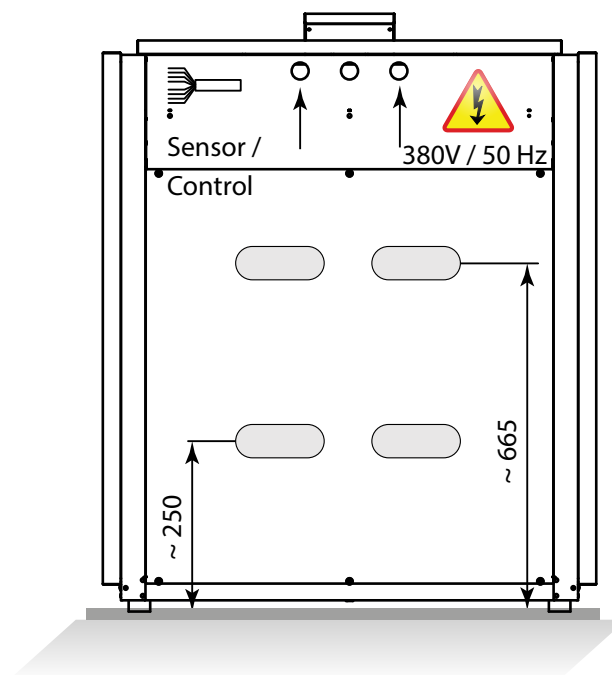
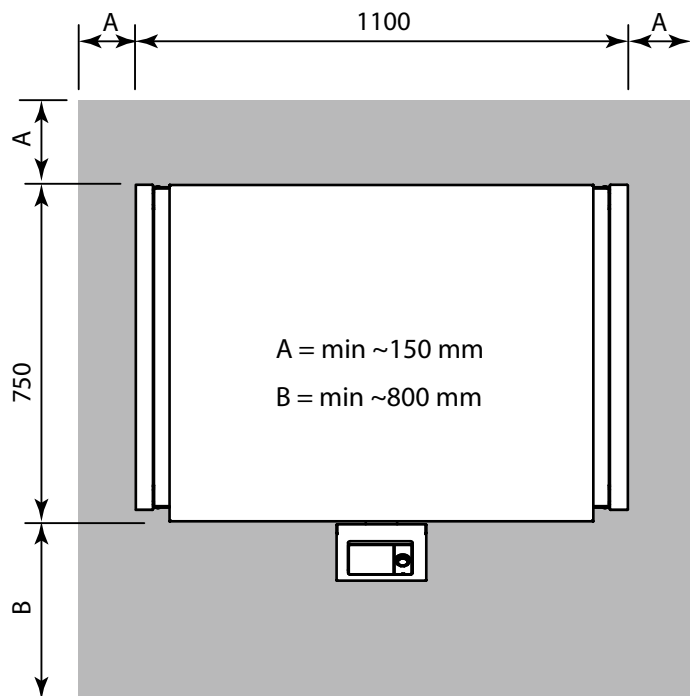
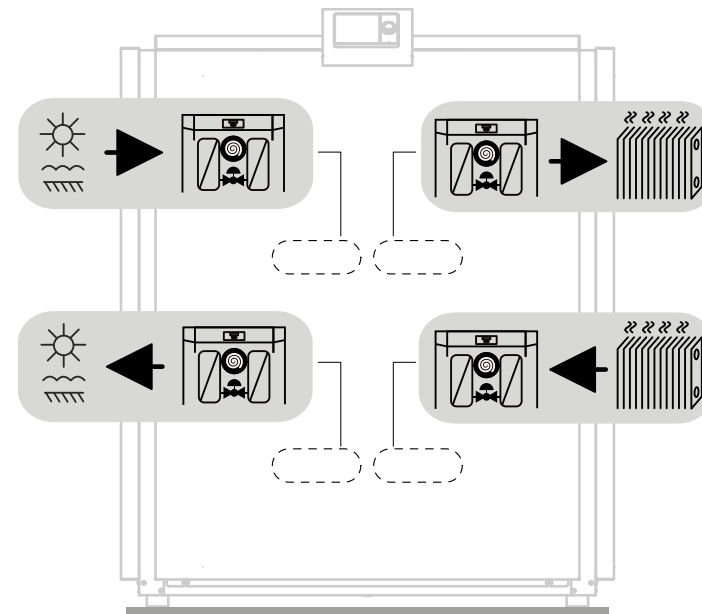
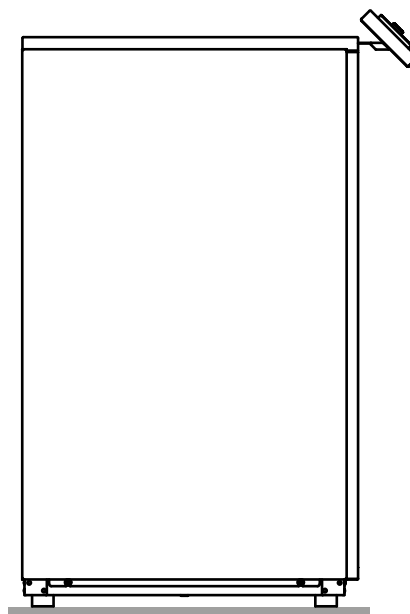
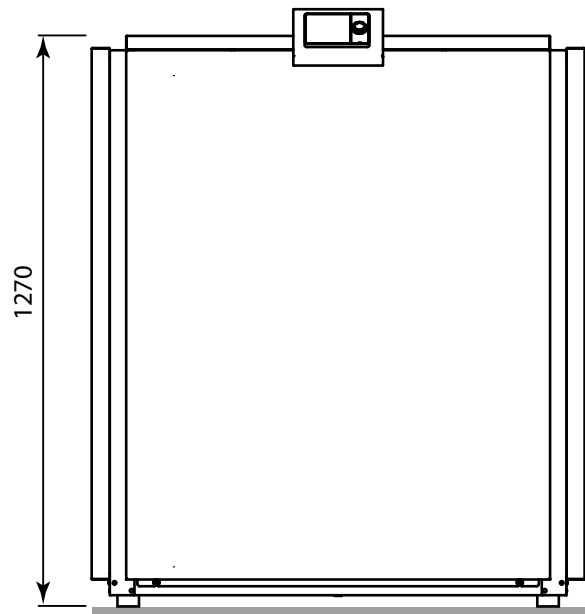
-- attention: operating limits not reflected in performance table

LEGEND:

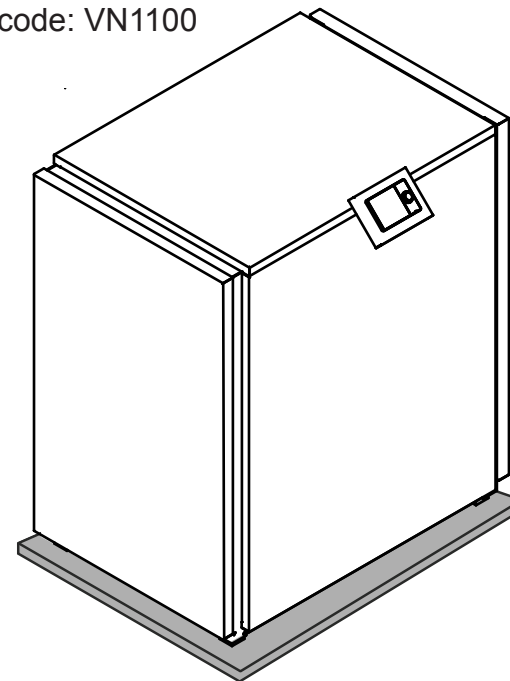
Ts-IN: Temperature renewable source - inlet [°C]
Th-OU: Temperature heating - outlet (flow) [°C]
Tc-OU: Temperature cooling - outlet (flow) [°C]
Qh nom: Heating capacity nominal
Qh min: Heating capacity minimal
Qh max: Heating capacity maximal
Pin nom: Power input at nominal heating capacity
Pin min: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

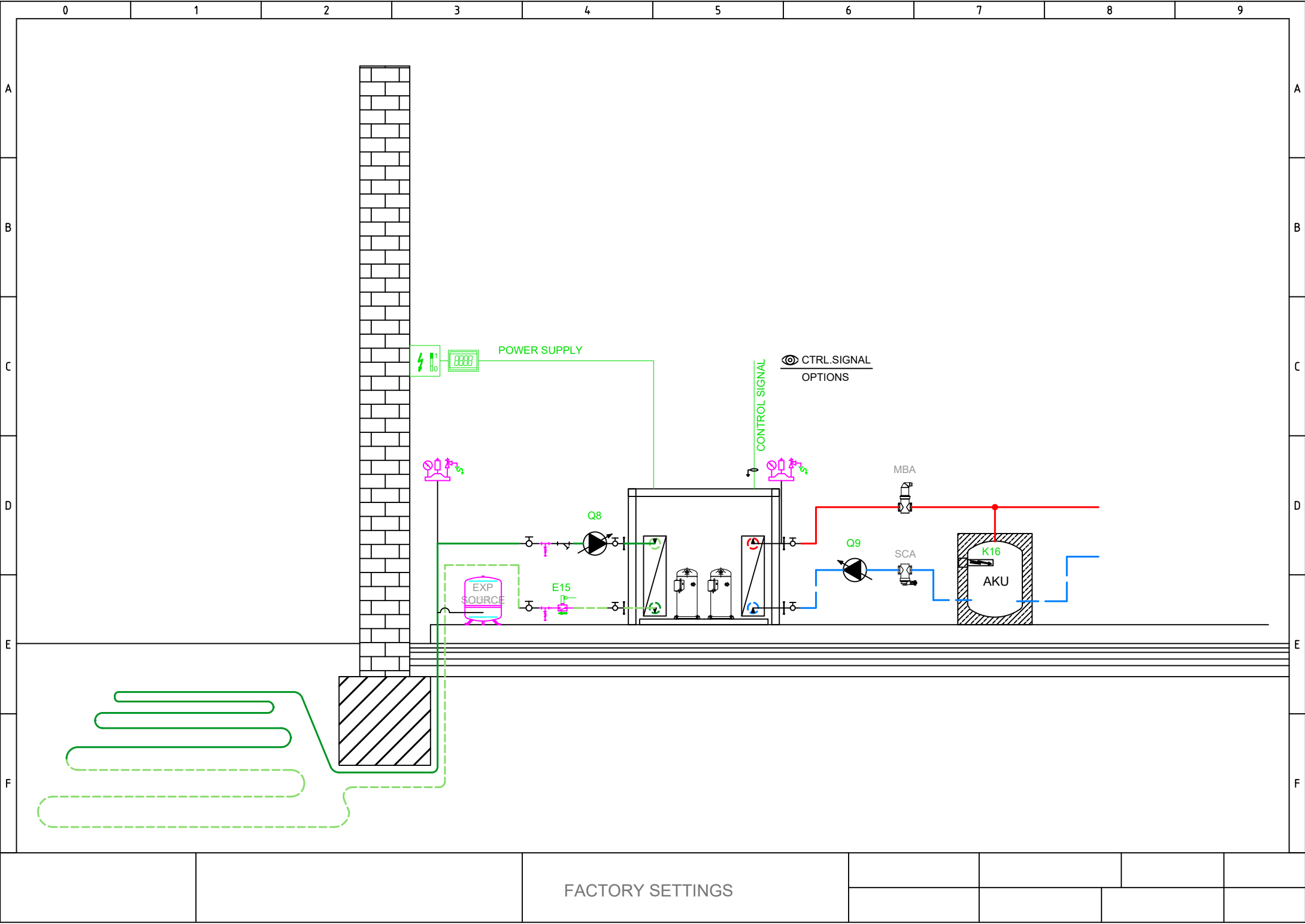
Operating limits

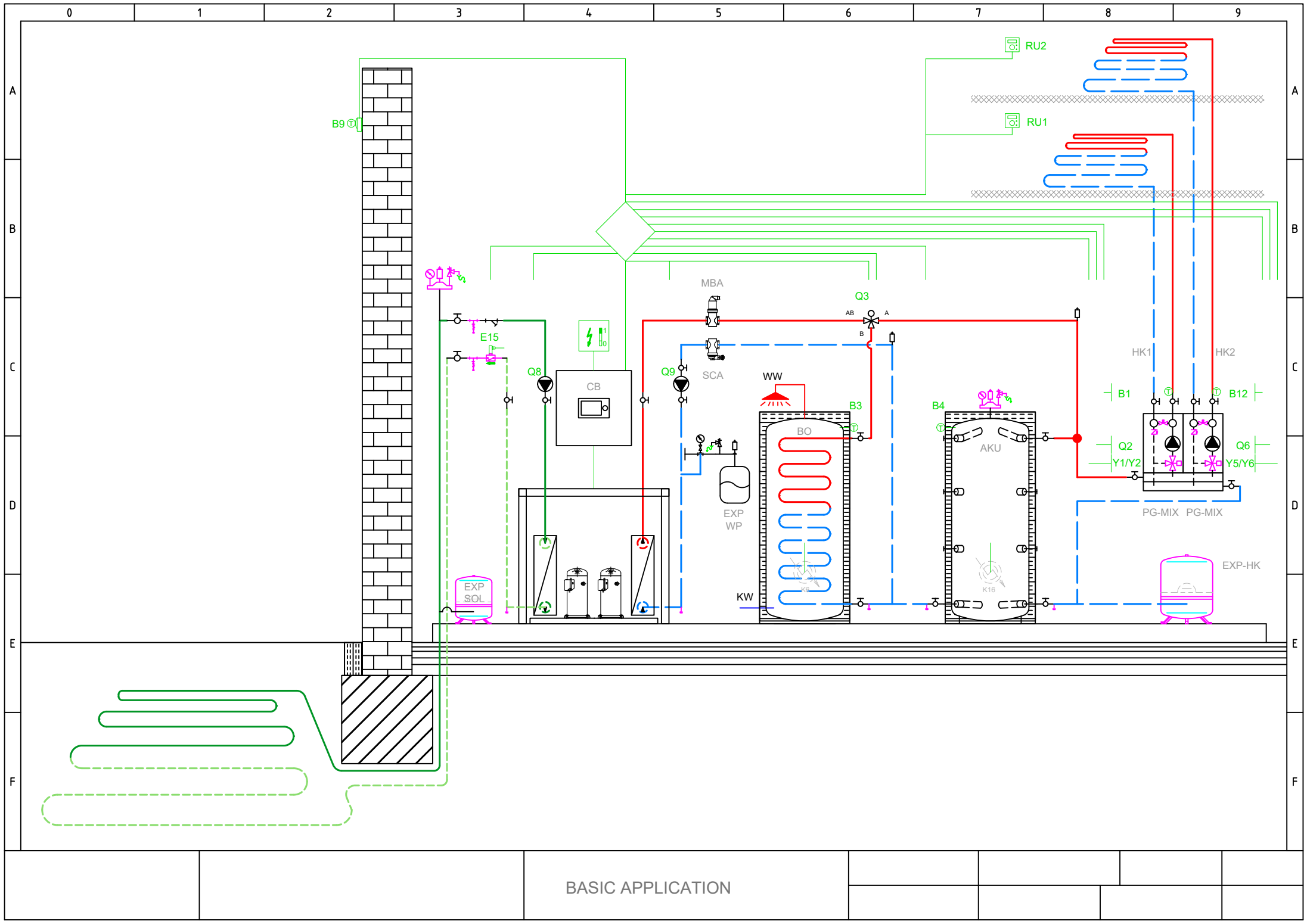




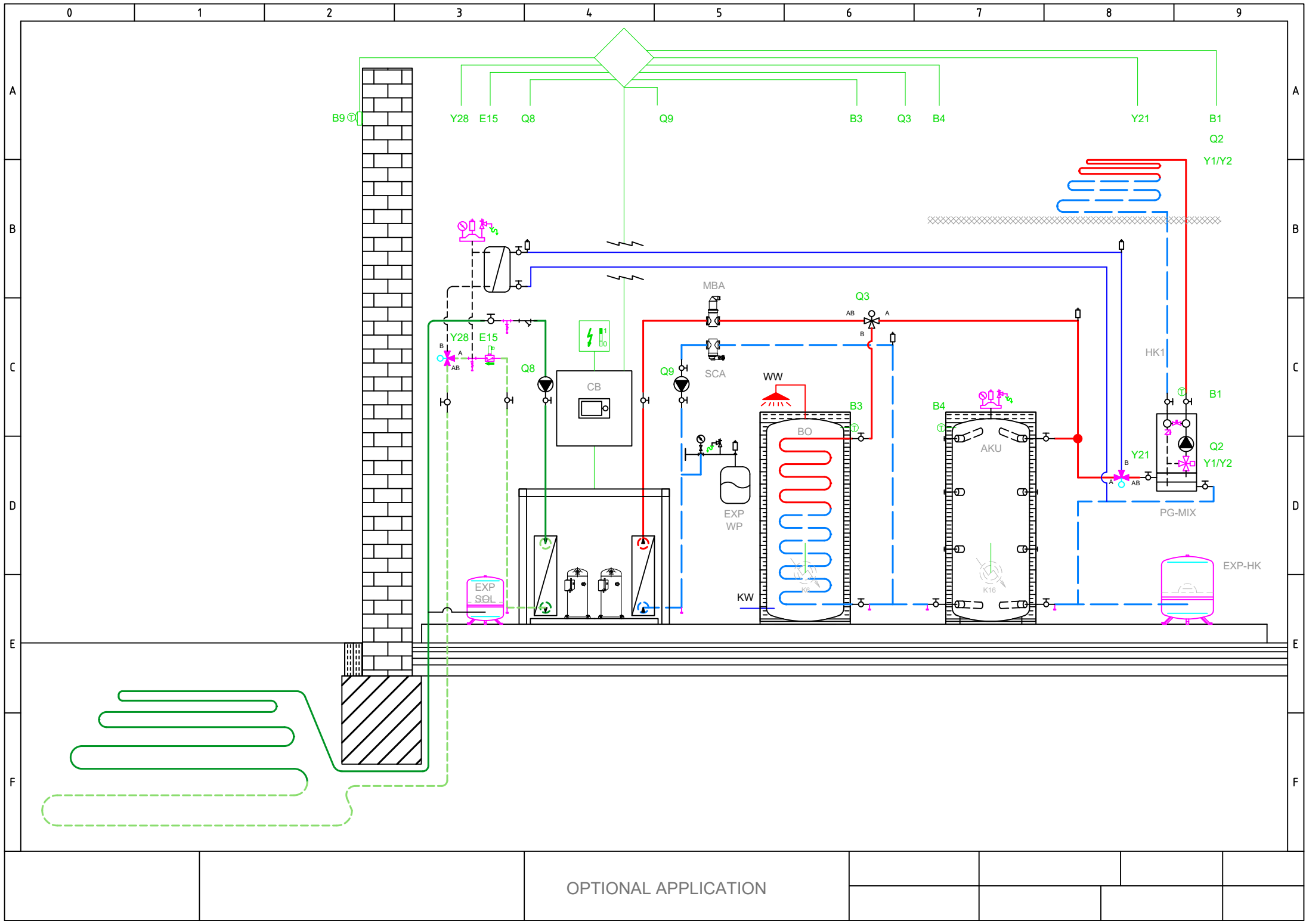
int. code: VN1100







BASIC 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

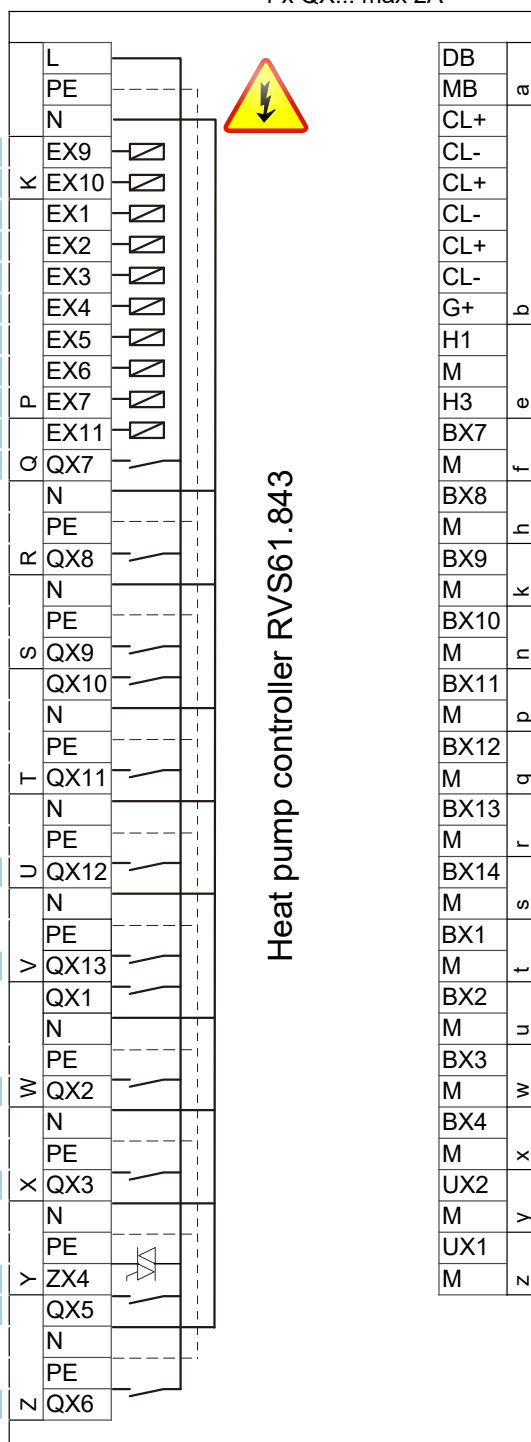
K10 Alarm output K10

K40 Crankcase heater K40

K81 Valve evaporator K81

K82 Valve EVI K82

K2 Compressor stage 2 K2



LPB Bus data

LPB Bus GND

Room unit QAA...

Room unit QAA...

Room unit QAA... 2.

Room unit QAA... 2.

Room unit QAA... 3.

Room unit QAA... 3.

12V supply → OUT

Consumer request VK1

B81 Hot-gas sensor K1 B81

B21 HP flow sensor B21

B71 HP return sensor B71

B91 Source inlet sensor B91

B84 Source outl sens B92/B84

B83 Refrig sensor liquid B83

B82 Hot-gas sensor K2 B82

Condenser pump Q9

0..10 V Signal

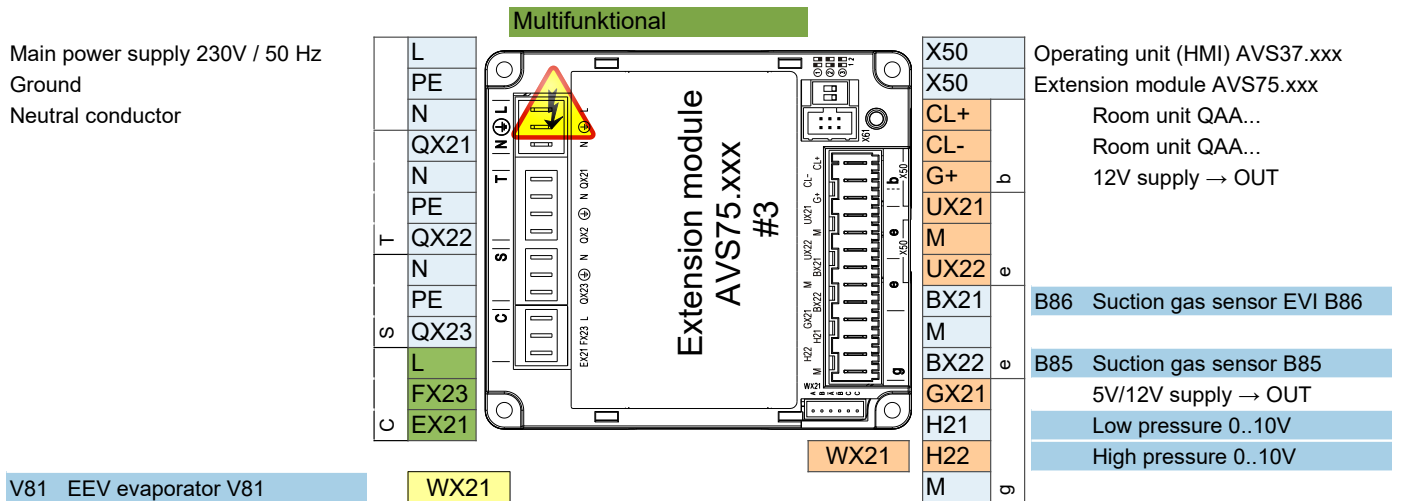
Source pump Q8

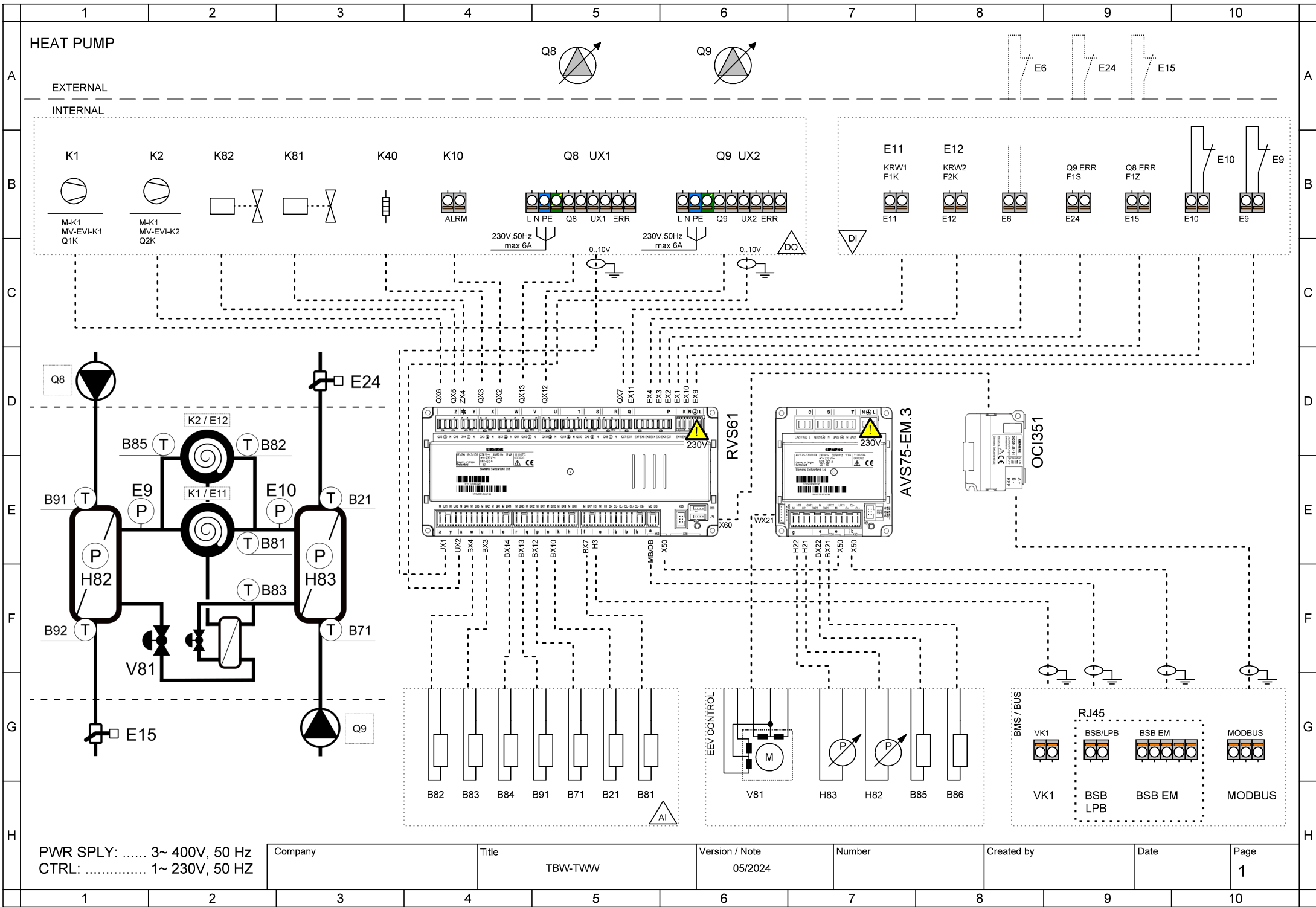
0..10 V Signal

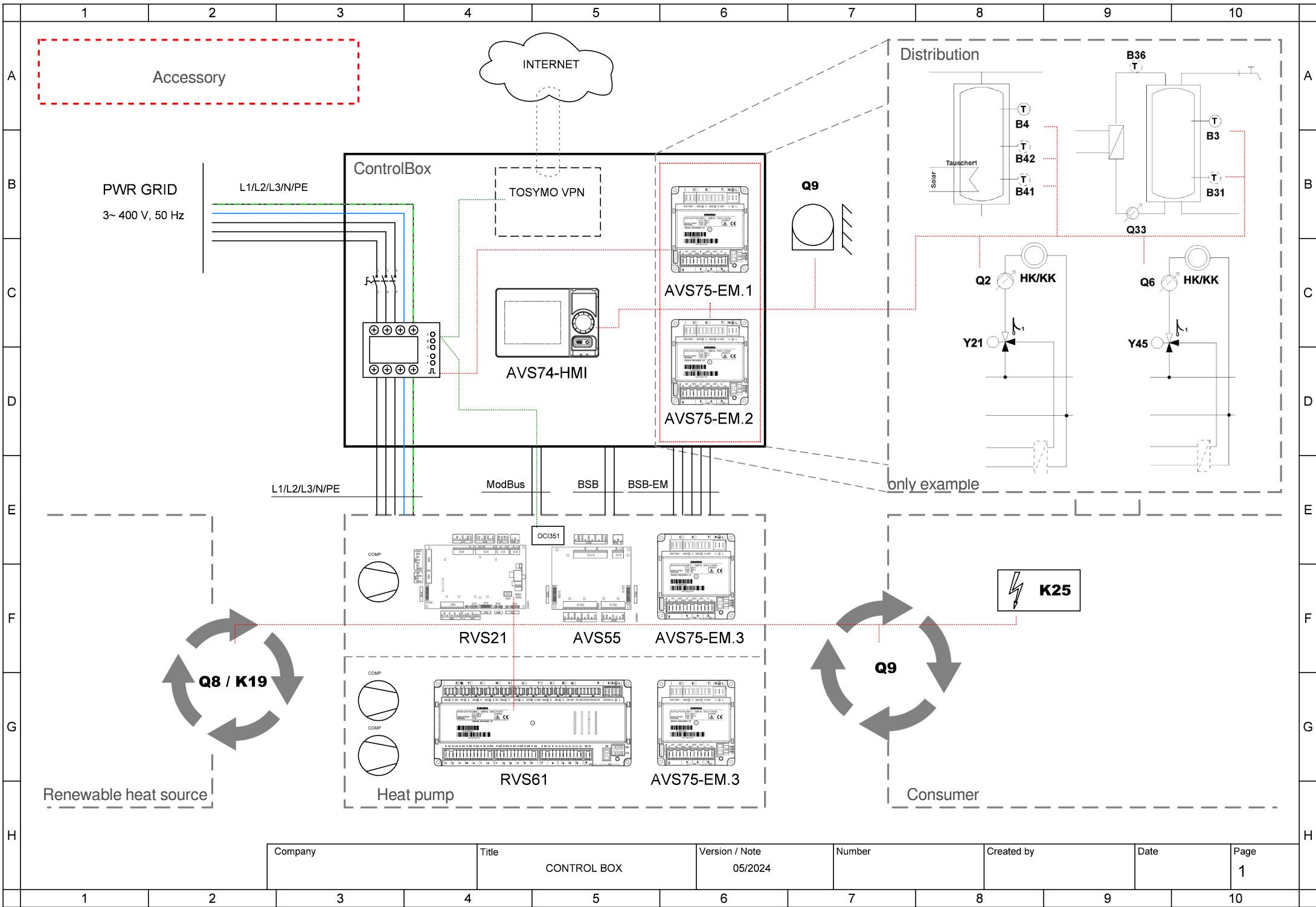
AVS75.390

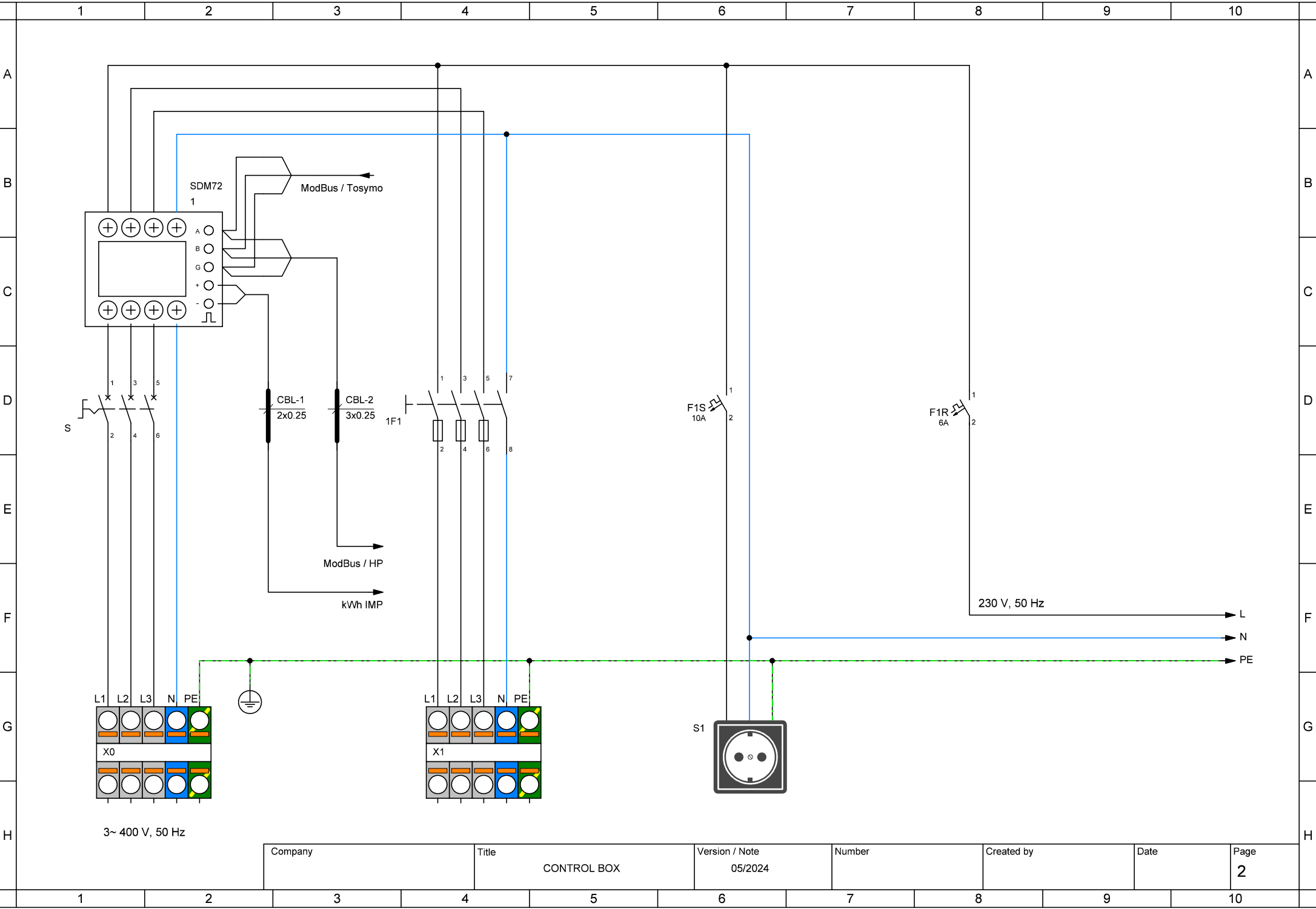
AVS75.391

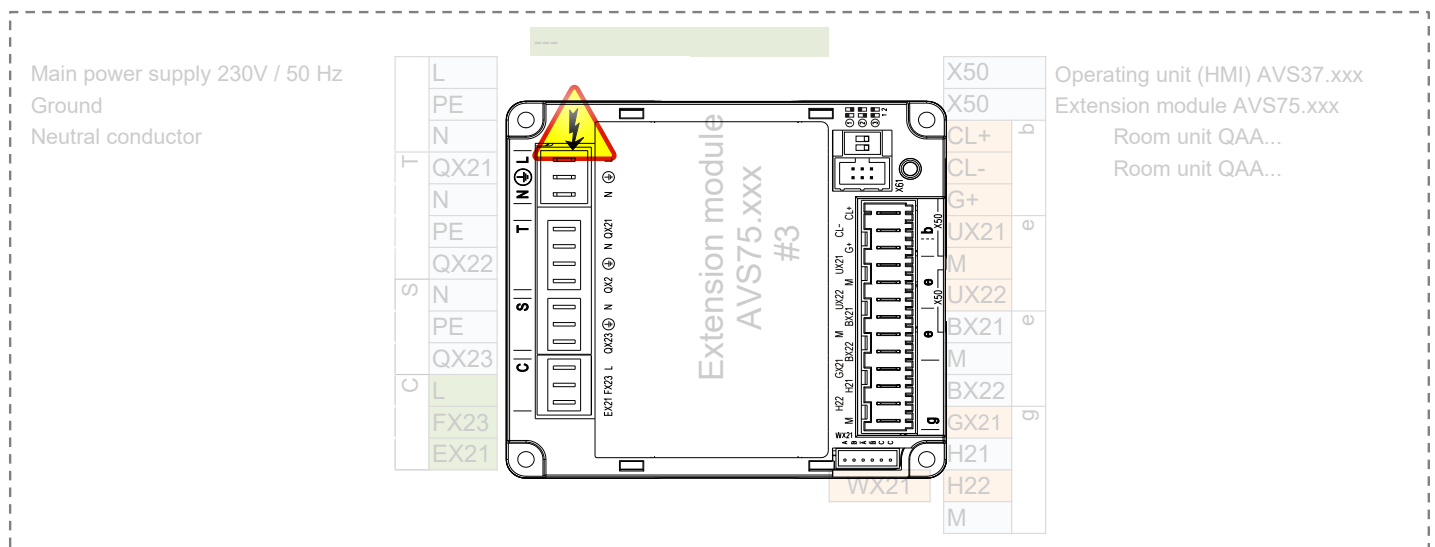
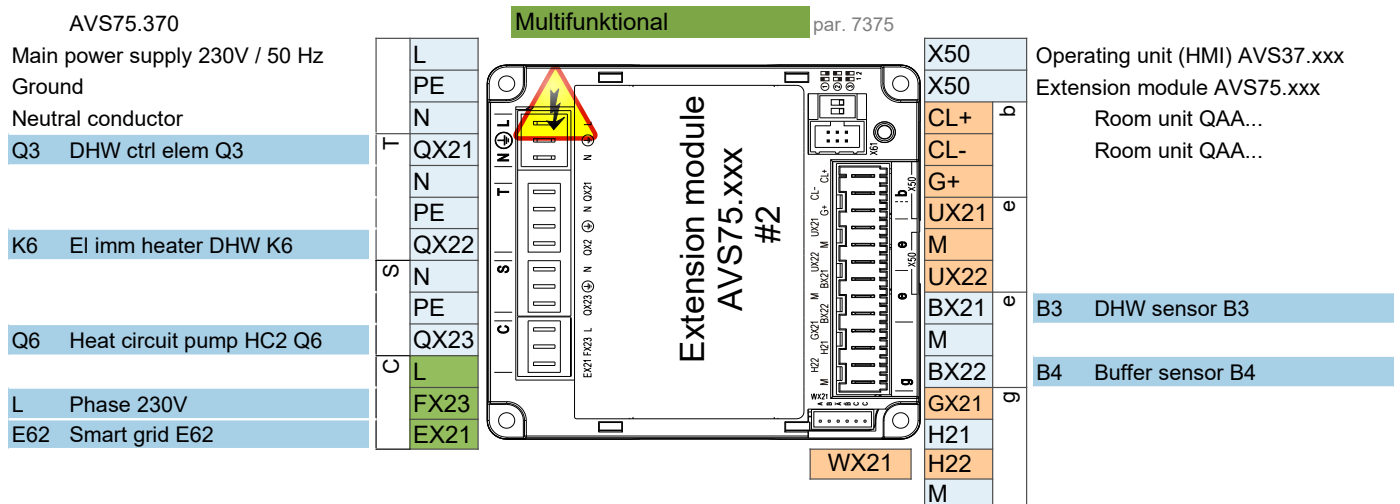
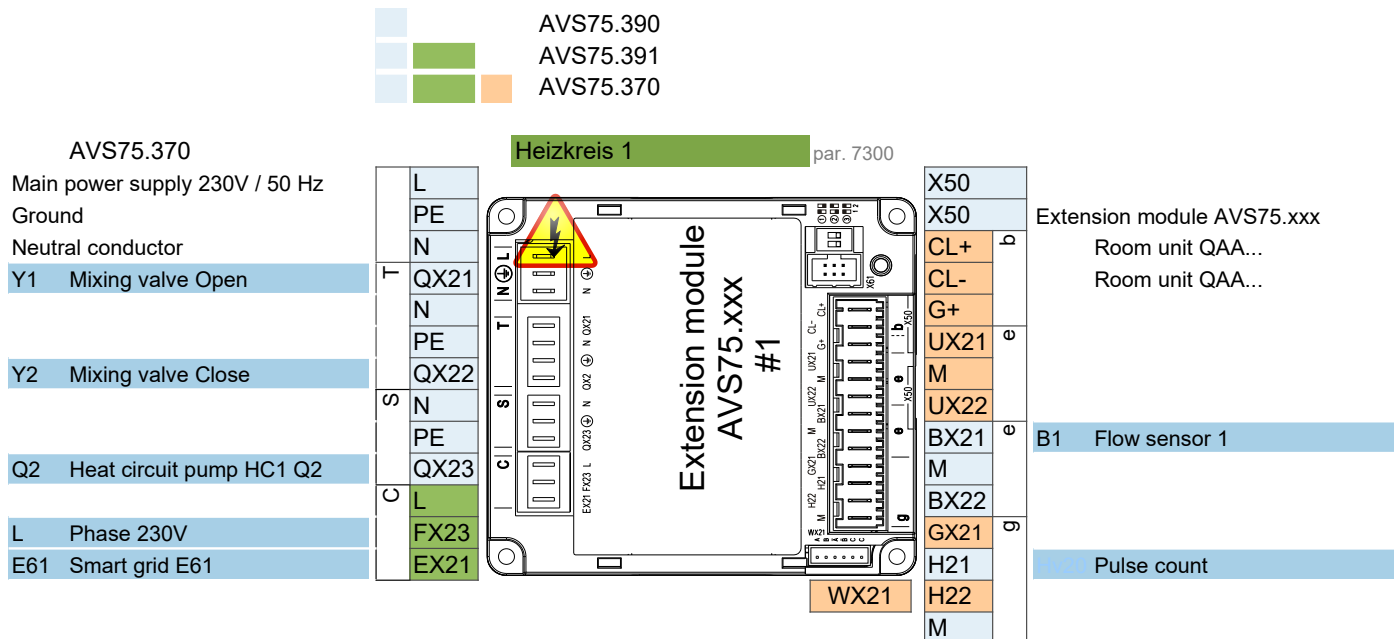
AVS75.370











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