Basic performance data - WAMAK TBW 98 EVI

Heating - EN 14511		
Heating capacity [kW]	B0 / W35 (max)	**96.1** (48.1 / 96.1)
	B0 / W35 (min)	**48.1** (48.1 / 96.1)
	B0 / W34	**96.0** (48.0 / 96.0)
Electrical power input [kW]	B0 / W35 (max)	**21.7** (10.7 / 21.7)
	B0 / W35 (min)	**10.7** (10.7 / 21.7)
	B0 / W34	**21.2** (10.5 / 21.2)
Heating efficiency faktor [COP]	B0 / W35 (max)	4.43
	B0 / W35 (min)	4.49
	B0 / W34	4.52
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35°C]	SCOP	5.01
	η [%]	200.3
	Label	A+++
	Qhe [kWh]	39612.5
	Pdesignh [kW]	96.1
	Tbivalent [°C]	-10
Cooling		
Cooling capacity - [kW]	A35 / W23-18	96.9
	A25 / W23-18	101.8
	A35 / W12-7	96.9
	A25 / W12-7	96.9
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18°C]	SEER	5.14
	Qce [kWh]	10682.5
	ηc [%]	205.7
Sound EN 12102		
Acoustic power - Lw	dB(A)	65.9
Acoustic pressure - Lp	**1 m** dB(A)	57.9
	5 m dB(A)	43.9
	10 m dB(A)	37.9
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 2 /	On/Off
Refrigerant	R410A (GWP - 2088)	11.5 kg
Operating limit temperatures heating - (min / max) [°C]		25 / **65**
Operating limit temperatures source - (min / max) [°C]		**-10 (7)** / 30
Weight		460 kg

Main technical data - WAMAK TBW 98 EVI

Enclosure type		VN1100
Basic dimensions	Height [mm]	1270
	Width [mm]	1100
	Length [mm]	750
Weight [kg]		460
Colour		Gray
Enclousure IP Class		IP20
Refrigeration cycle		
Compressor	Type	Scroll
	Number of stages	2
	On/Off	
	Power factor Cosϕ	0.64
	Winding resistance	0.76 Ohm
Refrigerant		R410A
	Volme	11.5 kg
	GWP	2088
	Safety class	A1
Refrigeration oil type	POE RL32-3MAF	
	Oil volume	2 x 3.38 L
Maximal pressure - refrigerant [bar]		50
	PED class	2
EVI - vapour injection with economizer		
Electrical connection data		
Line voltage [#~ V/Hz]		3~ 400/50
Current	nominal [A]	46.70
	maximal [A]	74.80
	starting [A]	63.04
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

Heat energy rejection side data		
Operating limit temperatures heating	MAX [°C]	65
	MIN [°C]	25
for more see operating limits diagram		
Condenser	Port size	VIC 2.1/2 "
	Type	BPHE
	Count	1
	Material	AISI 316
Maximal operating pressure - refrigerant [bar]		50
Maximal operating pressure - Water [bar]		6
Testing pressure [bar]		70
Heat transfer medium		Water
Volume flow @ dT 5K (nom) - Water [m3/h]		8.32 ~ 16.63
Internal pressure drop - Water [kPa]		20
Temperature difference	@ 35°C (nom)	5 K
	@ 55°C	8 K
	@ 65°C	10 K
Renewable energy extraction side data		
Operating limit temperatures source	MIN [°C]	-10 (7)
	MAX [°C]	30
for more see operating limits diagram		
Evaporator	Port size	VIC 2.1/2 "
	Type	BPHE
	Count	1
	Material	AISI 316
Maximal operating pressure - refrigerant [bar]		29
Heat transfer medium		Ethylenglykol
Brine proportion [%]		29
Antifreeze to [°C]		-15
Maximal operating pressure - Ethylenglykol [bar]		6
Volume flow - Ethylenglykol [m3/h]		8.48 ~ 16.96
Internal pressure drop - Ethylenglykol [kPa]		20
Temperature difference - Ethylenglykol		4 K

WAMAK TBW 98 EVI

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

Model	**TBW 98 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
Rated heat output at Tdesignh	Prated	96.1	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	Pdh	96.0	kW
Tj = +2 °C	Pdh	95.5	kW
Tj = +7 °C	Pdh	95.0	kW
Tj = +12 °C	Pdh	94.5	kW
Tj = bivalent temperature	Pdh	96.1	kW
Tj = operation limit temperature	Pdh	---	kW
Bivalent temperature	Tbiv	-10	°C
Power consumption in modes other than active mode			
Off mode	Poff	0.010	kW
Thermostat-off mode	Pto	0.010	kW
Standby mode	Psb	0.010	kW
Crankcase heater mode	Pck	0.000	kW
Other items			
Capacity control		multi-stage	
Sound power level			
indoors	Lwa	66	dB
outdoors	Lwa	---	dB
Annual energy consumption	Q_{HE}	39612.5	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηs	200.3	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	COPd	4.52	-
Tj = +2 °C	COPd	4.9	-
Tj = +7 °C	COPd	5.3	-
Tj = +12 °C	COPd	5.7	-
Tj = bivalent temperature	COPd	4.4	-
Tj = operation limit temperature	COPd	---	-
Tj = operation limit temperature	TOL	---	°C
Heating water operating limit temperature	WTOL	65	°C
Supplementary heater			
Rated heat output	Psup	18.5	kW
Type of energy input		electricity	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	8.48 ~ 16.96	m3/h

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

WAMAK TBW 98 EVI

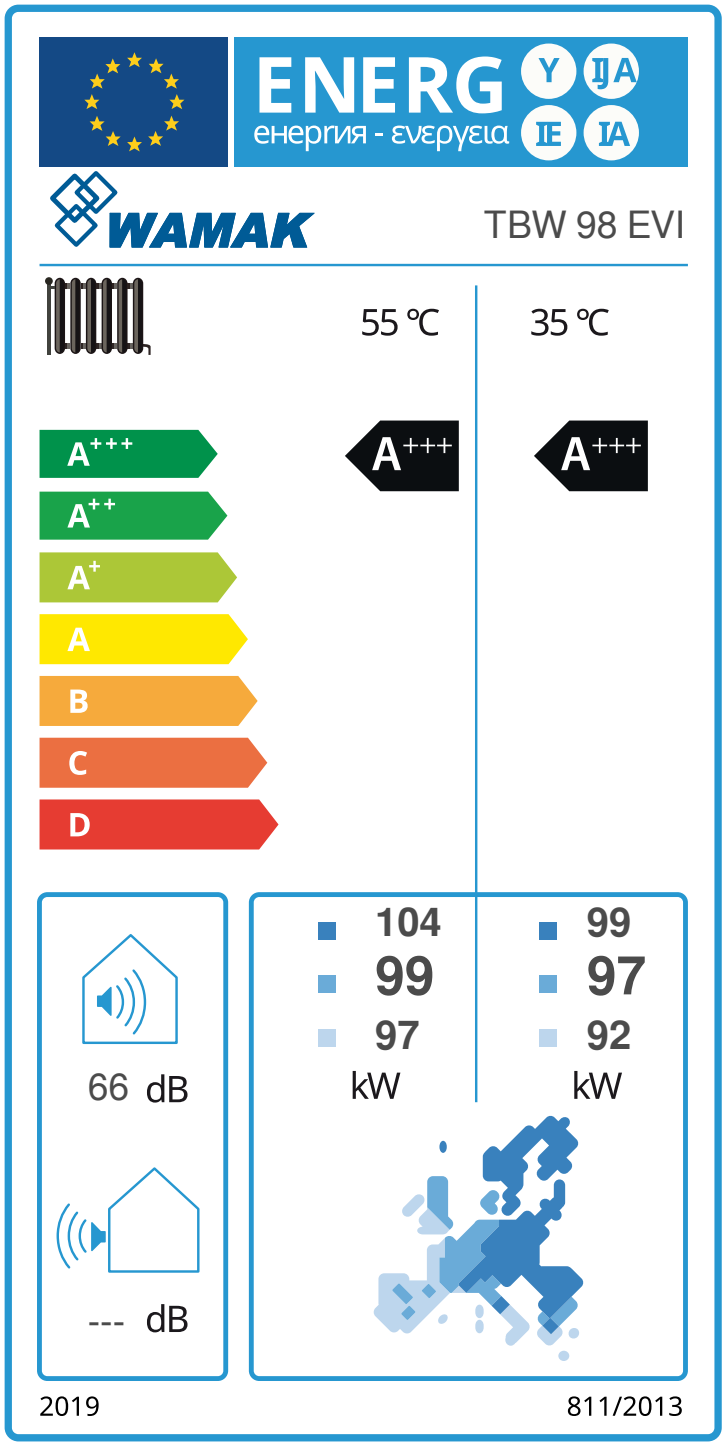
ErP (EU) No 811/2013: Technical parameters for heat pump space heaters

Model	**TBW 98 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
Rated heat output at Tdesignh	Prated	98.3	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	Pdh	98.9	kW
Tj = +2 °C	Pdh	98.9	kW
Tj = +7 °C	Pdh	97.2	kW
Tj = +12 °C	Pdh	96.7	kW
Tj = bivalent temperature	Pdh	98.3	kW
Tj = operation limit temperature	Pdh	---	kW
Bivalent temperature	Tbiv	-10	°C
Power consumption in modes other than active mode			
Off mode	Poff	0.010	kW
Thermostat-off mode	Pto	0.010	kW
Standby mode	Psb	0.010	kW
Crankcase heater mode	Pck	0.000	kW
Other items			
Capacity control		multi-stage	
Sound power level			
indoors	Lwa	66	dB
outdoors	Lwa	---	dB
Annual energy consumption	Q_{HE}	50568.0	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηs	160.5	%
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	COPd	3.29	-
Tj = +2 °C	COPd	4.1	-
Tj = +7 °C	COPd	4.6	-
Tj = +12 °C	COPd	5.0	-
Tj = bivalent temperature	COPd	2.9	-
Tj = operation limit temperature	COPd	---	-
Tj = operation limit temperature	TOL	---	°C
Heating water operating limit temperature	WTOL	65	°C
Supplementary heater			
Rated heat output	Psup	18.5	kW
Type of energy input		electricity	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	---	m3/h
For water- or brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	8.48 ~ 16.96	m3/h

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



TBW 98 EVI — ErP Data

		55 °C	35 °C
Energy class		A+++	A+++
η	[%]	160.5	200.3
P_{rated}	[kW]	99	97
Q_{HE}	[kWh/y]	50568	39613
SCOP	[-]	4.01	5.01
$T_{bivalent}$	[°C]	-10	-10

CONTROLER

+ 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] ZHI46K1P-TWD_R410A_2_BWW

	Operating conditions	Qh	P	COP
1	B0 / W30-35	96.1	21.7	4.43
2	B0 / W30-35 (MIN)	48.1	10.7	4.49
A	B0 / Wxx-34	96.0	21.2	4.52
B	B0 / Wxx-30	95.5	19.4	4.92
C	B0 / Wxx-27	47.5	8.9	5.32
D	B0 / Wxx-24	47.3	8.3	5.68
E	B0 / Wxx-35	96.1	21.7	4.43
F	B0 / Wxx-35	96.1	21.7	4.43

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Low Temperature [35°C]	
SCOPon	5.01
SCOPnet	5.01
SCOP	5.01
η [%]	200.25
Label	A+++
Qh [kWh]	39613
Pdesignh [kW]	96.1
Tbivalent [°C]	-10

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

	Operating conditions	Qh	P	COP
1	B0 / W47-55	98.3	34.0	2.89
2	B0 / W47-55 (MIN)	49.1	16.5	2.93
A	B0 / Wxx-52	98.9	31.0	3.29
B	B0 / Wxx-42	98.9	24.2	4.13
C	B0 / Wxx-36	48.6	10.6	4.59
D	B0 / Wxx-30	48.3	9.6	5.05
E	B0 / Wxx-55	98.3	34.0	2.89
F	B0 / Wxx-54	99.0	31.8	3.12

SCOP DATA EN 14825:2018	
Source - Brine [0°C] / Medium Temperature [55°C]	
SCOPon	4.02
SCOPnet	4.02
SCOP	4.01
η [%]	160.49
Label	A+++
Qh [kWh]	50568
Pdesignh [kW]	98.3
Tbivalent [°C]	-10

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

	Operating conditions	Qh	P	COP
1	W10 / W30-35	121.2	21.7	5.58
2	W10 / W30-35 (MIN)	60.6	10.7	5.66
A	W10 / Wxx-34	121.2	21.2	5.70
B	W10 / Wxx-30	121.3	19.5	6.21
C	W10 / Wxx-27	121.3	18.3	6.72
D	W10 / Wxx-24	121.3	17.2	7.16
E	W10 / Wxx-35	121.2	21.7	5.58
F	W10 / Wxx-35	121.2	21.7	5.58

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	6.33
SCOPnet	6.33
SCOP	6.32
η [%]	252.96
Label	A+++
Qh [kWh]	39550
Pdesignh [kW]	121.2
Tbivalent [°C]	-10.00

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

	Operating conditions	Qh	P	COP
1	W10 / W47-55	120.9	34.0	3.55
2	W10 / W47-55 (MIN)	60.5	16.8	3.60
A	W10 / Wxx-52	122.1	31.0	3.94
B	W10 / Wxx-42	122.4	24.2	5.06
C	W10 / Wxx-36	122.6	21.5	5.79
D	W10 / Wxx-30	122.7	19.5	6.37
E	W10 / Wxx-55	120.9	34.0	3.55
F	W10 / Wxx-55	120.9	34.0	3.55

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Medium Temperature [55°C]	
SCOPon	4.91
SCOPnet	4.91
SCOP	4.91
η [%]	196.37
Label	A+++
Qh [kWh]	50831
Pdesignh [kW]	120.9
Tbivalent [°C]	-10.00

Low temperature cooling W 12 / 7°C

	Operating conditions	Qc	P	EER
A	W30-35 / W12-7	74.8	23.2	3.22
B	W26-xx / W12-7	76.2	21.2	3.59
C	W22-xx / W12-7	77.3	19.4	3.98
D	W18-xx / W12-7	77.9	18.6	4.20

SEER DATA EN 14825:2018 [W 12 / 7°C]	
SEERon	3.86
SEER	3.86
Qc [kWh]	43680
η [%]	154.44

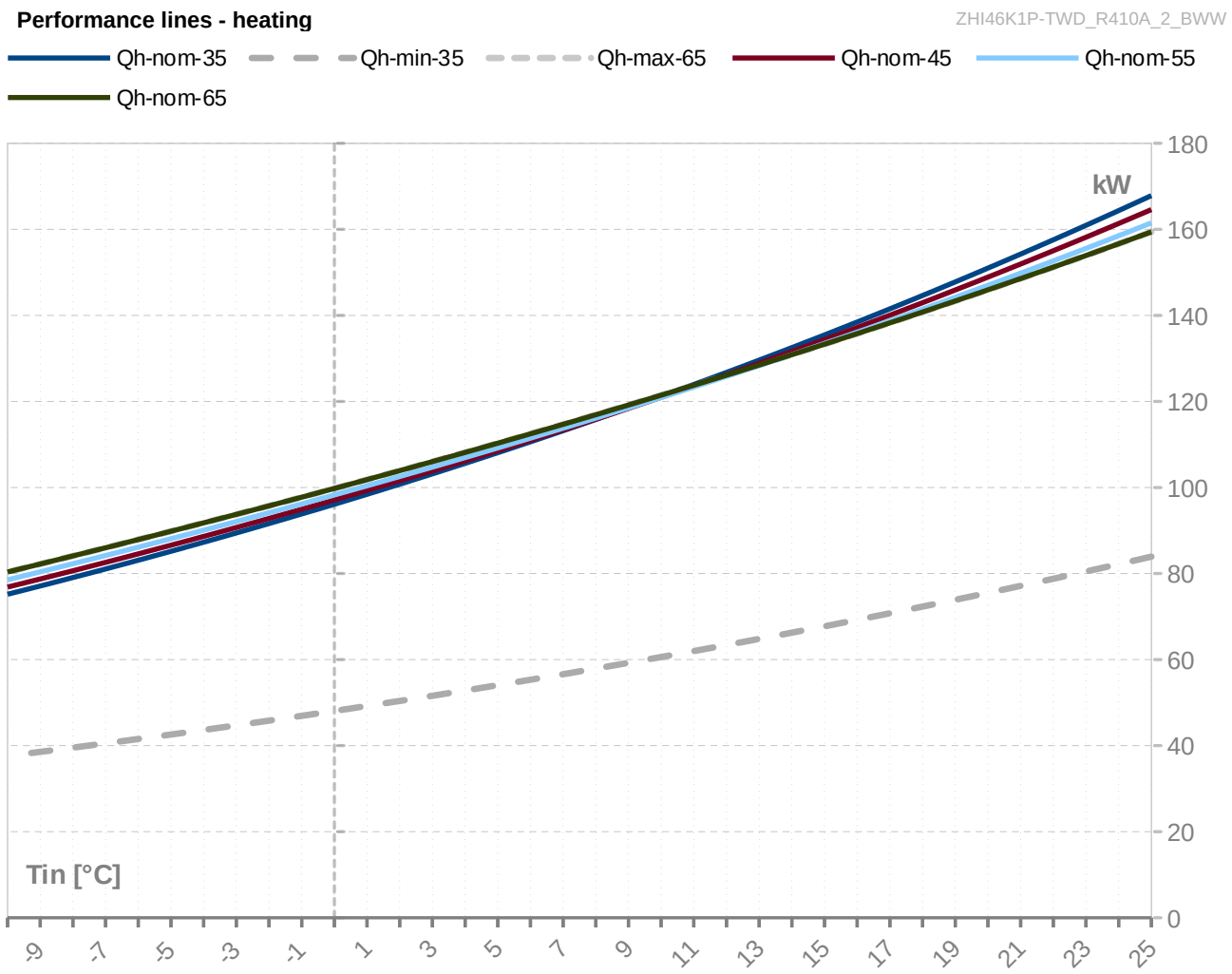
Radiant cooling W 23 / 18°C

	Operating conditions	Qc	P	EER
A	W50-xx / W23-18	86.9	36.5	2.38
B	W40-xx / W23-18	93.9	29.0	3.24
C	W30-35 / W23-18	99.5	23.2	4.29
D	W26-xx / W23-18	101.4	21.2	4.77

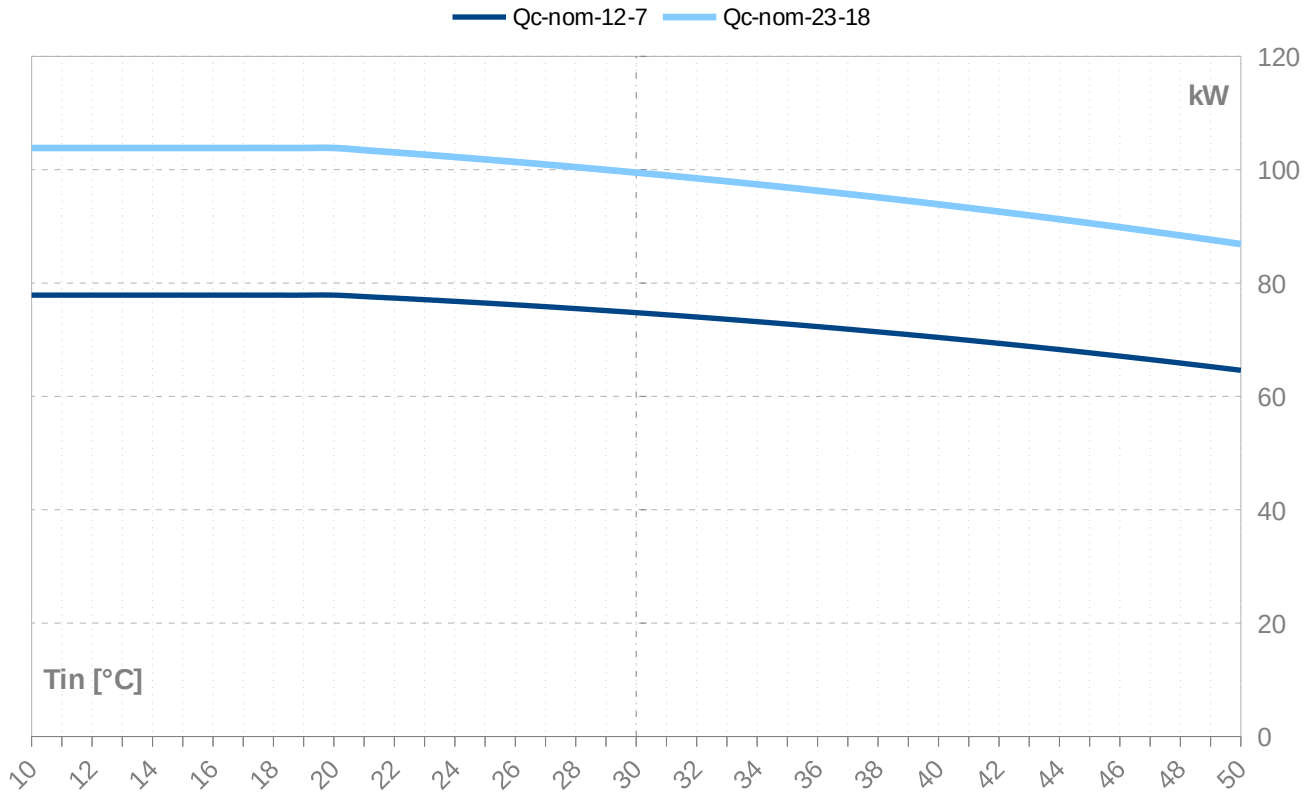
SEER DATA EN 14825:2018 [W 23 / 18°C]	
SEERon	5.15
SEER	5.14
Qc [kWh]	43680
η [%]	205.69

Performance lines - heating

ZHI46K1P-TWD_R410A_2_BWW



Performance lines - cooling



Th -OU	**[°C]**			**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	**167.8**	83.9	167.8	**22.1**	10.9	22.1	**7.59**	147.2	73.6	147.2	46.8
24	**164.4**	82.2	164.4	**22.1**	10.9	22.1	**7.45**	143.8	71.9	143.8	46.7
23	**160.9**	80.5	160.9	**22.0**	10.9	22.0	**7.31**	140.4	70.2	140.4	46.6
22	**157.6**	78.8	157.6	**22.0**	10.8	22.0	**7.18**	137.1	68.5	137.1	46.6
21	**154.3**	77.1	154.3	**21.9**	10.8	21.9	**7.04**	133.8	66.9	133.8	46.5
20	**151.0**	75.5	151.0	**21.9**	10.8	21.9	**6.90**	130.6	65.3	130.6	46.5
19	**147.8**	73.9	147.8	**21.8**	10.8	21.8	**6.76**	127.4	63.7	127.4	46.5
18	**144.6**	72.3	144.6	**21.8**	10.8	21.8	**6.63**	124.3	62.1	124.3	46.5
17	**141.5**	70.8	141.5	**21.8**	10.7	21.8	**6.49**	121.2	60.6	121.2	46.5
16	**138.5**	69.2	138.5	**21.8**	10.7	21.8	**6.36**	118.1	59.1	118.1	46.5
15	**135.5**	67.7	135.5	**21.8**	10.7	21.8	**6.23**	115.1	57.6	115.1	46.5
14	**132.5**	66.3	132.5	**21.7**	10.7	21.7	**6.10**	112.2	56.1	112.2	46.5
13	**129.6**	64.8	129.6	**21.7**	10.7	21.7	**5.96**	109.3	54.7	109.3	46.5
12	**126.8**	63.4	126.8	**21.7**	10.7	21.7	**5.84**	106.5	53.2	106.5	46.6
11	**123.9**	62.0	123.9	**21.7**	10.7	21.7	**5.71**	103.7	51.8	103.7	46.6
10	**121.2**	60.6	121.2	**21.7**	10.7	21.7	**5.58**	100.9	50.5	100.9	46.6
9	**118.5**	59.2	118.5	**21.7**	10.7	21.7	**5.46**	98.2	49.1	98.2	46.7
8	**115.8**	57.9	115.8	**21.7**	10.7	21.7	**5.34**	95.5	47.8	95.5	46.7
7	**113.2**	56.6	113.2	**21.7**	10.7	21.7	**5.22**	92.9	46.5	92.9	46.8
6	**110.6**	55.3	110.6	**21.7**	10.7	21.7	**5.10**	90.4	45.2	90.4	46.9
5	**108.1**	54.0	108.1	**21.7**	10.7	21.7	**4.98**	87.8	43.9	87.8	46.9
4	**105.6**	52.8	105.6	**21.7**	10.7	21.7	**4.87**	85.3	42.7	85.3	47.0
3	**103.2**	51.6	103.2	**21.7**	10.7	21.7	**4.75**	82.9	41.4	82.9	47.0
2	**100.8**	50.4	100.8	**21.7**	10.7	21.7	**4.64**	80.5	40.3	80.5	47.1
1	**98.4**	49.2	98.4	**21.7**	10.7	21.7	**4.53**	78.1	39.1	78.1	47.1
0	**96.1**	48.1	96.1	**21.7**	10.7	21.7	**4.43**	75.8	37.9	75.8	47.2
-1	**93.8**	46.9	93.8	**21.7**	10.7	21.7	**4.32**	73.6	36.8	73.6	47.3
-2	**91.6**	45.8	91.6	**21.7**	10.7	21.7	**4.22**	71.3	35.7	71.3	47.3
-3	**89.4**	44.7	89.4	**21.7**	10.7	21.7	**4.12**	69.2	34.6	69.2	47.3
-4	**87.3**	43.6	87.3	**21.7**	10.7	21.7	**4.02**	67.0	33.5	67.0	47.4
-5	**85.2**	42.6	85.2	**21.7**	10.7	21.7	**3.93**	64.9	32.5	64.9	47.4
-6	**83.1**	41.5	83.1	**21.7**	10.7	21.7	**3.83**	62.8	31.4	62.8	47.5
-7	**81.1**	40.5	81.1	**21.7**	10.7	21.7	**3.74**	60.8	30.4	60.8	47.5
-8	**79.1**	39.5	79.1	**21.7**	10.7	21.7	**3.65**	58.8	29.4	58.8	47.5
-9	**77.1**	38.6	77.1	**21.6**	10.7	21.6	**3.56**	56.9	28.4	56.9	47.5
-10	**75.2**	37.6	75.2	**21.6**	10.7	21.6	**3.48**	55.0	27.5	55.0	47.5
-11	**73.3**	36.6	73.3	**21.6**	10.6	21.6	**3.39**	53.1	26.6	53.1	47.5
-12	**71.4**	35.7	71.4	**21.6**	10.6	21.6	**3.31**	51.3	25.7	51.3	47.5
-13	**69.6**	34.8	69.6	**21.5**	10.6	21.5	**3.23**	49.5	24.8	49.5	47.4
-14	**67.8**	33.9	67.8	**21.5**	10.6	21.5	**3.16**	47.8	23.9	47.8	47.4
-15	**66.1**	33.0	66.1	**21.4**	10.6	21.4	**3.08**	46.1	23.0	46.1	47.3

-- attention: operating limits not reflected in performance table

ZHI46K1P-TWD_R410A_2_BWW

Th -OU	**[°C]**			**45**							
Ts -IN	**Qh nom**	**Qh min**	**Qh max**	**Pin nom**	**Pin min**	**Pin max**	**COP nom**	**Qc nom**	**Qc min**	**Qc max**	**I nom**
[°C]	**[kW]**	[kW]	[kW]	**[kW]**	[kW]	[kW]	**kW / kW**	[kW]	[kW]	[kW]	[A]
25	**164.6**	82.3	164.6	**26.6**	13.1	26.6	**6.18**	139.7	69.9	139.7	52.9
24	**161.4**	80.7	161.4	**26.6**	13.1	26.6	**6.06**	136.5	68.2	136.5	52.8
23	**158.2**	79.1	158.2	**26.6**	13.1	26.6	**5.94**	133.3	66.7	133.3	52.8
22	**155.0**	77.5	155.0	**26.6**	13.1	26.6	**5.82**	130.2	65.1	130.2	52.7
21	**151.9**	76.0	151.9	**26.6**	13.1	26.6	**5.71**	127.1	63.5	127.1	52.7
20	**148.9**	74.4	148.9	**26.6**	13.1	26.6	**5.59**	124.0	62.0	124.0	52.7
19	**145.9**	73.0	145.9	**26.6**	13.1	26.6	**5.48**	121.0	60.5	121.0	52.7
18	**143.0**	71.5	143.0	**26.6**	13.1	26.6	**5.37**	118.1	59.0	118.1	52.7
17	**140.0**	70.0	140.0	**26.6**	13.1	26.6	**5.26**	115.2	57.6	115.2	52.7
16	**137.2**	68.6	137.2	**26.6**	13.1	26.6	**5.15**	112.3	56.2	112.3	52.7
15	**134.4**	67.2	134.4	**26.7**	13.1	26.7	**5.04**	109.5	54.7	109.5	52.7
14	**131.6**	65.8	131.6	**26.7**	13.2	26.7	**4.94**	106.7	53.4	106.7	52.7
13	**128.9**	64.4	128.9	**26.7**	13.2	26.7	**4.83**	104.0	52.0	104.0	52.7
12	**126.2**	63.1	126.2	**26.7**	13.2	26.7	**4.73**	101.3	50.6	101.3	52.8
11	**123.6**	61.8	123.6	**26.7**	13.2	26.7	**4.63**	98.6	49.3	98.6	52.8
10	**121.0**	60.5	121.0	**26.7**	13.2	26.7	**4.53**	96.0	48.0	96.0	52.8
9	**118.4**	59.2	118.4	**26.7**	13.2	26.7	**4.43**	93.4	46.7	93.4	52.8
8	**115.9**	57.9	115.9	**26.7**	13.2	26.7	**4.33**	90.9	45.4	90.9	52.8
7	**113.4**	56.7	113.4	**26.8**	13.2	26.8	**4.24**	88.4	44.2	88.4	52.9
6	**111.0**	55.5	111.0	**26.8**	13.2	26.8	**4.14**	86.0	43.0	86.0	52.9
5	**108.6**	54.3	108.6	**26.8**	13.2	26.8	**4.05**	83.5	41.8	83.5	52.9
4	**106.2**	53.1	106.2	**26.8**	13.2	26.8	**3.96**	81.2	40.6	81.2	52.9
3	**103.9**	51.9	103.9	**26.8**	13.2	26.8	**3.88**	78.8	39.4	78.8	52.9
2	**101.6**	50.8	101.6	**26.8**	13.2	26.8	**3.79**	76.6	38.3	76.6	53.0
1	**99.3**	49.7	99.3	**26.8**	13.2	26.8	**3.71**	74.3	37.2	74.3	53.0
0	**97.1**	48.6	97.1	**26.8**	13.2	26.8	**3.62**	72.1	36.0	72.1	53.0
-1	**94.9**	47.5	94.9	**26.8**	13.2	26.8	**3.54**	69.9	35.0	69.9	53.0
-2	**92.8**	46.4	92.8	**26.8**	13.2	26.8	**3.46**	67.8	33.9	67.8	52.9
-3	**90.7**	45.3	90.7	**26.8**	13.2	26.8	**3.39**	65.7	32.8	65.7	52.9
-4	**88.6**	44.3	88.6	**26.8**	13.2	26.8	**3.31**	63.6	31.8	63.6	52.9
-5	**86.6**	43.3	86.6	**26.8**	13.2	26.8	**3.24**	61.6	30.8	61.6	52.9
-6	**84.6**	42.3	84.6	**26.7**	13.2	26.7	**3.16**	59.6	29.8	59.6	52.8
-7	**82.6**	41.3	82.6	**26.7**	13.2	26.7	**3.09**	57.6	28.8	57.6	52.8
-8	**80.6**	40.3	80.6	**26.7**	13.2	26.7	**3.02**	55.7	27.9	55.7	52.7
-9	**78.7**	39.4	78.7	**26.6**	13.1	26.6	**2.96**	53.8	26.9	53.8	52.6
-10	**76.8**	38.4	76.8	**26.6**	13.1	26.6	**2.89**	52.0	26.0	52.0	52.5
-11	**75.0**	37.5	75.0	**26.5**	13.1	26.5	**2.82**	50.2	25.1	50.2	52.4
-12	**73.2**	36.6	73.2	**26.5**	13.1	26.5	**2.76**	48.4	24.2	48.4	52.3
-13	**71.4**	35.7	71.4	**26.4**	13.0	26.4	**2.70**	46.7	23.3	46.7	52.2
-14	**69.6**	34.8	69.6	**26.4**	13.0	26.4	**2.64**	45.0	22.5	45.0	52.0
-15	**67.9**	33.9	67.9	**26.3**	13.0	26.3	**2.58**	43.3	21.6	43.3	51.9

-- attention: operating limits not reflected in performance table

Th -OU	**[°C]**			**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	**161.5**	80.8	161.5	**33.7**	16.6	33.7	**4.79**	130.0	65.0	130.0	61.3
24	**158.5**	79.3	158.5	**33.7**	16.6	33.7	**4.70**	127.0	63.5	127.0	61.3
23	**155.6**	77.8	155.6	**33.7**	16.6	33.7	**4.61**	124.1	62.0	124.1	61.3
22	**152.7**	76.3	152.7	**33.8**	16.6	33.8	**4.52**	121.2	60.6	121.2	61.3
21	**149.8**	74.9	149.8	**33.8**	16.7	33.8	**4.44**	118.3	59.1	118.3	61.3
20	**147.0**	73.5	147.0	**33.8**	16.7	33.8	**4.35**	115.4	57.7	115.4	61.3
19	**144.2**	72.1	144.2	**33.8**	16.7	33.8	**4.26**	112.6	56.3	112.6	61.3
18	**141.5**	70.7	141.5	**33.9**	16.7	33.9	**4.18**	109.9	54.9	109.9	61.3
17	**138.8**	69.4	138.8	**33.9**	16.7	33.9	**4.10**	107.1	53.6	107.1	61.4
16	**136.1**	68.1	136.1	**33.9**	16.7	33.9	**4.01**	104.4	52.2	104.4	61.4
15	**133.5**	66.7	133.5	**33.9**	16.7	33.9	**3.93**	101.8	50.9	101.8	61.4
14	**130.9**	65.4	130.9	**34.0**	16.7	34.0	**3.86**	99.2	49.6	99.2	61.4
13	**128.3**	64.2	128.3	**34.0**	16.8	34.0	**3.78**	96.6	48.3	96.6	61.5
12	**125.8**	62.9	125.8	**34.0**	16.8	34.0	**3.70**	94.1	47.0	94.1	61.5
11	**123.4**	61.7	123.4	**34.0**	16.8	34.0	**3.63**	91.6	45.8	91.6	61.5
10	**120.9**	60.5	120.9	**34.0**	16.8	34.0	**3.55**	89.1	44.6	89.1	61.5
9	**118.5**	59.3	118.5	**34.0**	16.8	34.0	**3.48**	86.7	43.4	86.7	61.5
8	**116.1**	58.1	116.1	**34.1**	16.8	34.1	**3.41**	84.3	42.2	84.3	61.5
7	**113.8**	56.9	113.8	**34.1**	16.8	34.1	**3.34**	82.0	41.0	82.0	61.5
6	**111.5**	55.7	111.5	**34.1**	16.8	34.1	**3.27**	79.7	39.8	79.7	61.5
5	**109.2**	54.6	109.2	**34.1**	16.8	34.1	**3.20**	77.4	38.7	77.4	61.5
4	**107.0**	53.5	107.0	**34.1**	16.8	34.1	**3.14**	75.1	37.6	75.1	61.5
3	**104.7**	52.4	104.7	**34.1**	16.8	34.1	**3.07**	72.9	36.5	72.9	61.5
2	**102.6**	51.3	102.6	**34.1**	16.8	34.1	**3.01**	70.8	35.4	70.8	61.5
1	**100.4**	50.2	100.4	**34.0**	16.8	34.0	**2.95**	68.6	34.3	68.6	61.4
0	**98.3**	49.1	98.3	**34.0**	16.8	34.0	**2.89**	66.5	33.3	66.5	61.4
-1	**96.2**	48.1	96.2	**34.0**	16.8	34.0	**2.83**	64.4	32.2	64.4	61.3
-2	**94.1**	47.1	94.1	**34.0**	16.8	34.0	**2.77**	62.4	31.2	62.4	61.3
-3	**92.1**	46.0	92.1	**33.9**	16.7	33.9	**2.71**	60.4	30.2	60.4	61.2
-4	**90.1**	45.0	90.1	**33.9**	16.7	33.9	**2.66**	58.4	29.2	58.4	61.1
-5	**88.1**	44.0	88.1	**33.9**	16.7	33.9	**2.60**	56.5	28.2	56.5	61.0
-6	**86.1**	43.1	86.1	**33.8**	16.7	33.8	**2.55**	54.6	27.3	54.6	60.9
-7	**84.2**	42.1	84.2	**33.7**	16.6	33.7	**2.50**	52.7	26.3	52.7	60.8
-8	**82.3**	41.1	82.3	**33.7**	16.6	33.7	**2.44**	50.8	25.4	50.8	60.6
-9	**80.4**	40.2	80.4	**33.6**	16.6	33.6	**2.39**	49.0	24.5	49.0	60.5
-10	**78.5**	39.3	78.5	**33.5**	16.5	33.5	**2.34**	47.2	23.6	47.2	60.3
-11	**76.7**	38.3	76.7	**33.4**	16.5	33.4	**2.29**	45.5	22.7	45.5	60.1
-12	**74.9**	37.4	74.9	**33.3**	16.4	33.3	**2.25**	43.7	21.9	43.7	59.9
-13	**73.1**	36.5	73.1	**33.2**	16.4	33.2	**2.20**	42.1	21.0	42.1	59.7
-14	**71.3**	35.7	71.3	**33.1**	16.3	33.1	**2.15**	40.4	20.2	40.4	59.4
-15	**69.6**	34.8	69.6	**33.0**	16.3	33.0	**2.11**	38.7	19.4	38.7	59.2

-- attention: operating limits not reflected in performance table

Th -OU	**[°C]**			**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	**159.4**	79.7	159.4	**42.9**	21.2	42.9	**3.71**	119.3	59.7	119.3	72.0
24	**156.6**	78.3	156.6	**43.0**	21.2	43.0	**3.65**	116.5	58.3	116.5	72.0
23	**153.9**	77.0	153.9	**43.0**	21.2	43.0	**3.58**	113.8	56.9	113.8	72.1
22	**151.2**	75.6	151.2	**43.0**	21.2	43.0	**3.51**	111.0	55.5	111.0	72.2
21	**148.6**	74.3	148.6	**43.1**	21.2	43.1	**3.45**	108.3	54.2	108.3	72.2
20	**145.9**	73.0	145.9	**43.1**	21.3	43.1	**3.39**	105.7	52.8	105.7	72.3
19	**143.3**	71.7	143.3	**43.1**	21.3	43.1	**3.32**	103.1	51.5	103.1	72.3
18	**140.8**	70.4	140.8	**43.2**	21.3	43.2	**3.26**	100.5	50.2	100.5	72.4
17	**138.3**	69.1	138.3	**43.2**	21.3	43.2	**3.20**	97.9	49.0	97.9	72.4
16	**135.8**	67.9	135.8	**43.2**	21.3	43.2	**3.14**	95.4	47.7	95.4	72.5
15	**133.3**	66.7	133.3	**43.2**	21.3	43.2	**3.08**	92.9	46.5	92.9	72.6
14	**130.9**	65.4	130.9	**43.2**	21.3	43.2	**3.03**	90.5	45.3	90.5	72.6
13	**128.5**	64.2	128.5	**43.3**	21.3	43.3	**2.97**	88.1	44.0	88.1	72.6
12	**126.1**	63.1	126.1	**43.3**	21.3	43.3	**2.92**	85.7	42.9	85.7	72.7
11	**123.8**	61.9	123.8	**43.3**	21.3	43.3	**2.86**	83.4	41.7	83.4	72.7
10	**121.5**	60.7	121.5	**43.3**	21.3	43.3	**2.81**	81.0	40.5	81.0	72.7
9	**119.2**	59.6	119.2	**43.3**	21.3	43.3	**2.75**	78.8	39.4	78.8	72.8
8	**116.9**	58.5	116.9	**43.3**	21.3	43.3	**2.70**	76.5	38.3	76.5	72.8
7	**114.7**	57.3	114.7	**43.2**	21.3	43.2	**2.65**	74.3	37.1	74.3	72.8
6	**112.5**	56.2	112.5	**43.2**	21.3	43.2	**2.60**	72.1	36.1	72.1	72.8
5	**110.3**	55.2	110.3	**43.2**	21.3	43.2	**2.55**	70.0	35.0	70.0	72.8
4	**108.1**	54.1	108.1	**43.2**	21.3	43.2	**2.50**	67.8	33.9	67.8	72.7
3	**106.0**	53.0	106.0	**43.1**	21.3	43.1	**2.46**	65.7	32.9	65.7	72.7
2	**103.9**	52.0	103.9	**43.1**	21.3	43.1	**2.41**	63.7	31.8	63.7	72.6
1	**101.8**	50.9	101.8	**43.1**	21.2	43.1	**2.37**	61.6	30.8	61.6	72.6
0	**99.8**	49.9	99.8	**43.0**	21.2	43.0	**2.32**	59.6	29.8	59.6	72.5
-1	**97.7**	48.9	97.7	**42.9**	21.2	42.9	**2.28**	57.6	28.8	57.6	72.4
-2	**95.7**	47.9	95.7	**42.9**	21.1	42.9	**2.23**	55.7	27.8	55.7	72.3
-3	**93.7**	46.9	93.7	**42.8**	21.1	42.8	**2.19**	53.8	26.9	53.8	72.2
-4	**91.8**	45.9	91.8	**42.7**	21.1	42.7	**2.15**	51.9	25.9	51.9	72.1
-5	**89.8**	44.9	89.8	**42.6**	21.0	42.6	**2.11**	50.0	25.0	50.0	71.9
-6	**87.9**	43.9	87.9	**42.5**	21.0	42.5	**2.07**	48.2	24.1	48.2	71.8
-7	**86.0**	43.0	86.0	**42.4**	20.9	42.4	**2.03**	46.4	23.2	46.4	71.6
-8	**84.1**	42.0	84.1	**42.3**	20.9	42.3	**1.99**	44.6	22.3	44.6	71.4
-9	**82.2**	41.1	82.2	**42.2**	20.8	42.2	**1.95**	42.8	21.4	42.8	71.2
-10	**80.4**	40.2	80.4	**42.0**	20.7	42.0	**1.91**	41.1	20.5	41.1	70.9
-11	**78.5**	39.3	78.5	**41.9**	20.7	41.9	**1.87**	39.4	19.7	39.4	70.6
-12	**76.7**	38.3	76.7	**41.7**	20.6	41.7	**1.84**	37.7	18.9	37.7	70.4
-13	**74.9**	37.4	74.9	**41.6**	20.5	41.6	**1.80**	36.1	18.0	36.1	70.1
-14	**73.1**	36.5	73.1	**41.4**	20.4	41.4	**1.77**	34.4	17.2	34.4	69.7
-15	**71.3**	35.6	71.3	**41.2**	20.3	41.2	**1.73**	32.8	16.4	32.8	69.4

-- attention: operating limits not reflected in performance table

Tc -OU	**[°C]**			**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	**70.4**	35.2	70.4	**29.0**	14.3	29.0	**2.43**	97.5	48.7	97.5	55.5
39	**70.9**	35.5	70.9	**28.4**	14.0	28.4	**2.50**	97.4	48.7	97.4	54.7
38	**71.4**	35.7	71.4	**27.7**	13.7	27.7	**2.58**	97.3	48.6	97.3	54.0
37	**71.9**	35.9	71.9	**27.1**	13.4	27.1	**2.65**	97.2	48.6	97.2	53.3
36	**72.3**	36.2	72.3	**26.5**	13.1	26.5	**2.73**	97.1	48.5	97.1	52.6
35	**72.8**	36.4	72.8	**25.9**	12.8	25.9	**2.81**	97.0	48.5	97.0	52.0
34	**73.2**	36.6	73.2	**25.4**	12.5	25.4	**2.89**	96.9	48.4	96.9	51.3
33	**73.6**	36.8	73.6	**24.8**	12.2	24.8	**2.97**	96.8	48.4	96.8	50.7
32	**74.0**	37.0	74.0	**24.3**	12.0	24.3	**3.05**	96.7	48.3	96.7	50.1
31	**74.4**	37.2	74.4	**23.7**	11.7	23.7	**3.14**	96.6	48.3	96.6	49.5
30	**74.8**	37.4	74.8	**23.2**	11.4	23.2	**3.22**	96.4	48.2	96.4	48.9
29	**75.1**	37.6	75.1	**22.7**	11.2	22.7	**3.31**	96.3	48.2	96.3	48.3
28	**75.5**	37.7	75.5	**22.2**	10.9	22.2	**3.40**	96.2	48.1	96.2	47.7
27	**75.8**	37.9	75.8	**21.7**	10.7	21.7	**3.49**	96.1	48.1	96.1	47.2
26	**76.2**	38.1	76.2	**21.2**	10.5	21.2	**3.59**	96.0	48.0	96.0	46.7
25	**76.5**	38.2	76.5	**20.8**	10.2	20.8	**3.68**	95.9	47.9	95.9	46.1
24	**76.8**	38.4	76.8	**20.3**	10.0	20.3	**3.78**	95.7	47.9	95.7	45.6
23	**77.1**	38.5	77.1	**19.9**	9.8	19.9	**3.88**	95.6	47.8	95.6	45.1
22	**77.3**	38.7	77.3	**19.4**	9.6	19.4	**3.98**	95.5	47.7	95.5	44.6
21	**77.6**	38.8	77.6	**19.0**	9.4	19.0	**4.09**	95.3	47.7	95.3	44.1
20	**77.9**	38.9	77.9	**18.6**	9.1	18.6	**4.20**	95.2	47.6	95.2	43.6

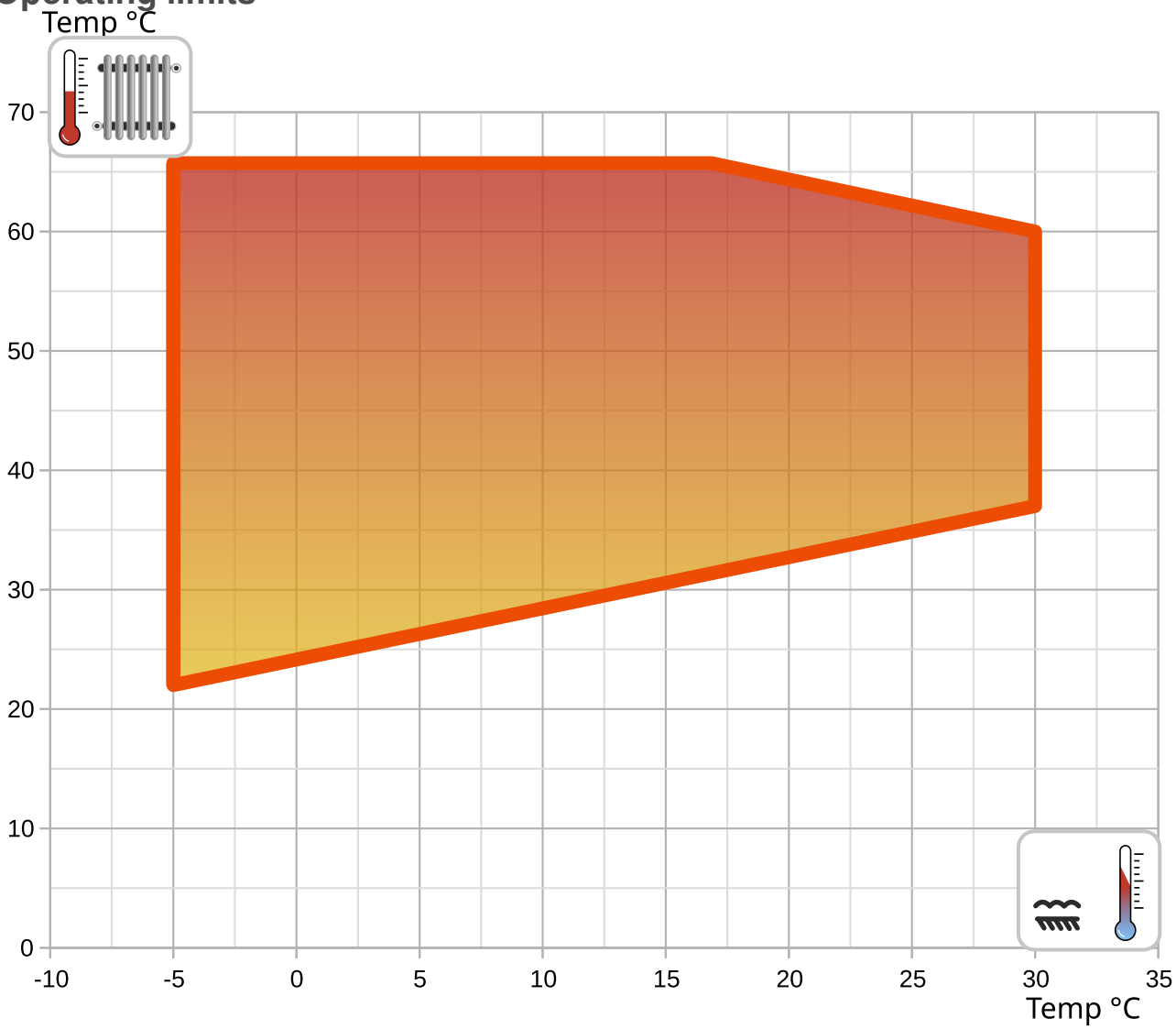
Tc [°C]				**W 23 / 18 °C**							
0	**Qc nom**	**Qc min**	**Qc max**	**Pin nom**	**Pin min**	**Pin max**	**EER**	**Qh nom**	**Qh min**	**Qh max**	**I nom**
[°C]	**[kW]**	[kW]	[kW]	**[kW]**	[kW]	[kW]	**kW / kW**	[kW]	[kW]	[kW]	[A]
40	**93.9**	46.9	93.9	**29.0**	14.3	29.0	**3.24**	120.9	60.4	121.0	55.4
39	**94.5**	47.3	94.5	**28.4**	14.0	28.4	**3.33**	120.9	60.5	121.0	54.7
38	**95.1**	47.6	95.1	**27.7**	13.7	27.7	**3.43**	120.9	60.5	120.9	53.9
37	**95.7**	47.9	95.7	**27.1**	13.4	27.1	**3.53**	120.9	60.5	120.9	53.2
36	**96.3**	48.1	96.3	**26.5**	13.1	26.5	**3.63**	121.0	60.5	120.9	52.4
35	**96.9**	48.4	96.9	**25.9**	12.8	25.9	**3.74**	121.0	60.5	120.9	51.7
34	**97.4**	48.7	97.4	**25.4**	12.5	25.4	**3.84**	121.0	60.5	120.9	51.1
33	**97.9**	49.0	97.9	**24.8**	12.2	24.8	**3.95**	121.0	60.5	120.9	50.4
32	**98.5**	49.2	98.5	**24.3**	12.0	24.3	**4.06**	121.1	60.5	120.9	49.7
31	**99.0**	49.5	99.0	**23.7**	11.7	23.7	**4.17**	121.1	60.5	120.9	49.1
30	**99.5**	49.7	99.5	**23.2**	11.4	23.2	**4.29**	121.1	60.6	120.9	48.5
29	**100.0**	50.0	100.0	**22.7**	11.2	22.7	**4.41**	121.1	60.6	120.9	47.9
28	**100.5**	50.2	100.5	**22.2**	10.9	22.2	**4.53**	121.2	60.6	120.9	47.2
27	**100.9**	50.5	100.9	**21.7**	10.7	21.7	**4.65**	121.2	60.6	120.9	46.6
26	**101.4**	50.7	101.4	**21.2**	10.5	21.2	**4.77**	121.2	60.6	121.0	46.1
25	**101.8**	50.9	101.8	**20.8**	10.2	20.8	**4.90**	121.2	60.6	121.0	45.5
24	**102.2**	51.1	102.2	**20.3**	10.0	20.3	**5.03**	121.3	60.6	121.0	44.9
23	**102.7**	51.3	102.7	**19.9**	9.8	19.9	**5.17**	121.3	60.6	121.0	44.3
22	**103.1**	51.5	103.1	**19.4**	9.6	19.4	**5.31**	121.3	60.6	121.1	43.8
21	**103.4**	51.7	103.4	**19.0**	9.4	19.0	**5.45**	121.3	60.6	121.1	43.2
20	**103.8**	51.9	103.8	**18.6**	9.1	18.6	**5.60**	121.3	60.6	121.1	42.6

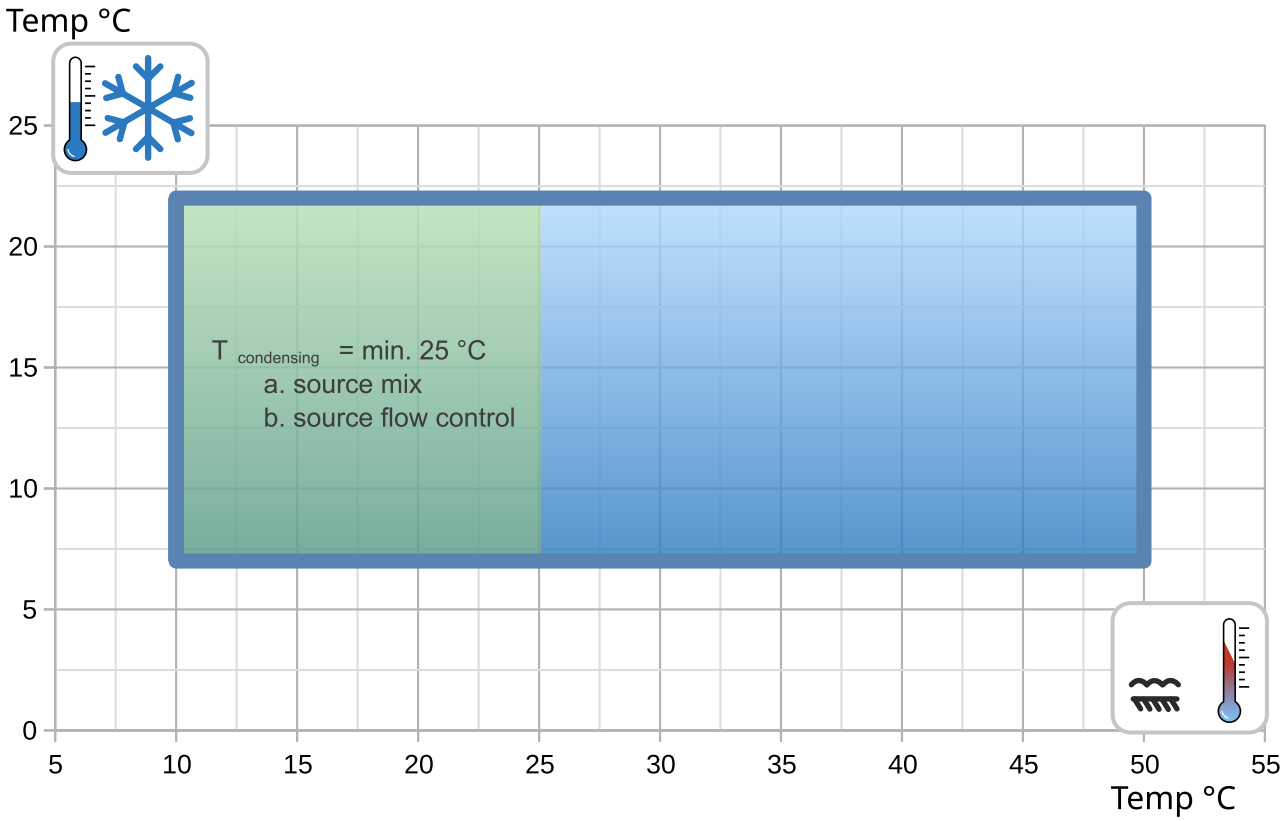
-- attention: operating limits not reflected in performance table

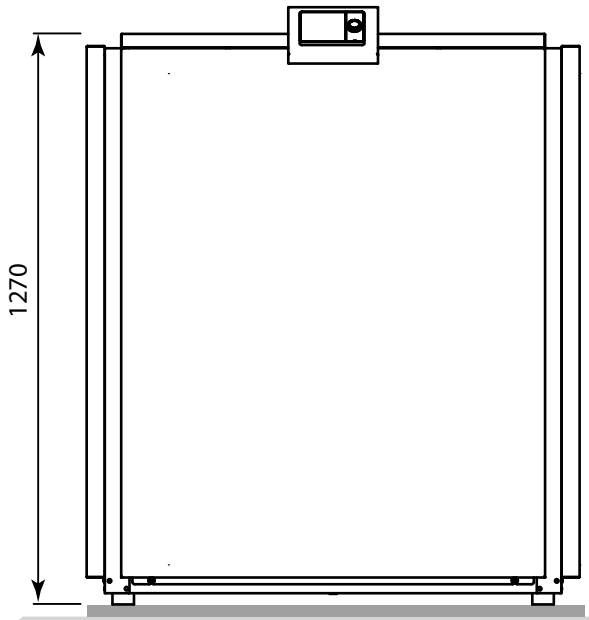
LEGEND:

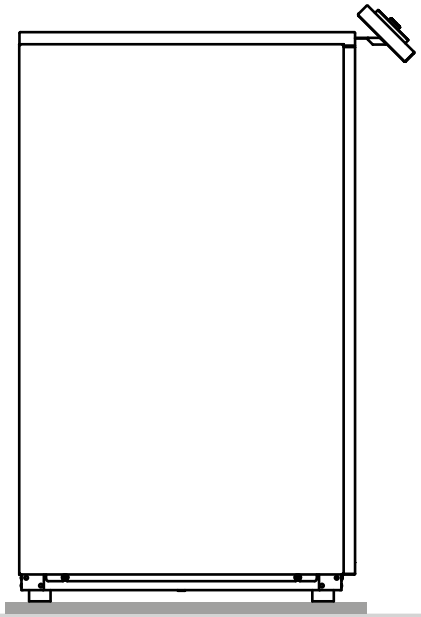
Ts-IN: Temperature renewable source - inlet [°C]
Th-OU: Temperature heating - outlet (flow) [°C]
Tc-OU: Temperature cooling - outlet (flow) [°C]
Qh nom: Heating capacity nominal
Qh min: Heating capacity minimal
Qh max: Heating capacity maximal
Pin nom: Power input at nominal heating capacity
Pin min: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

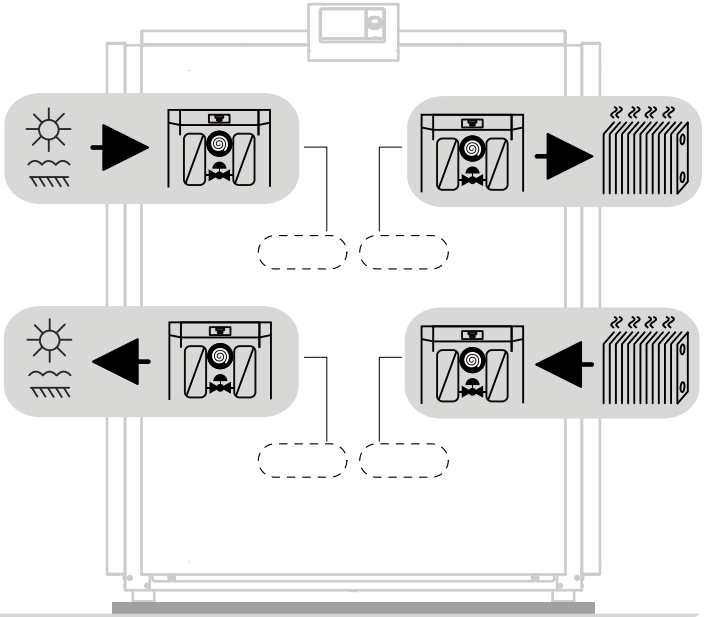
Operating limits

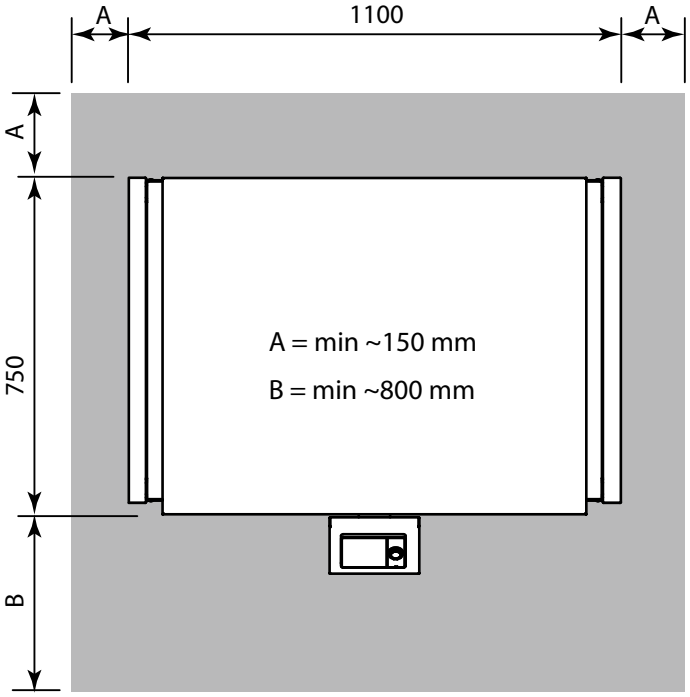


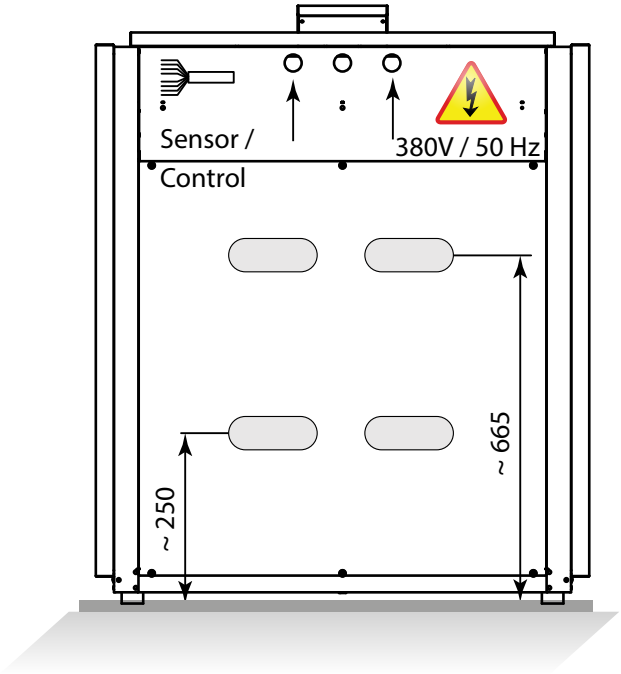




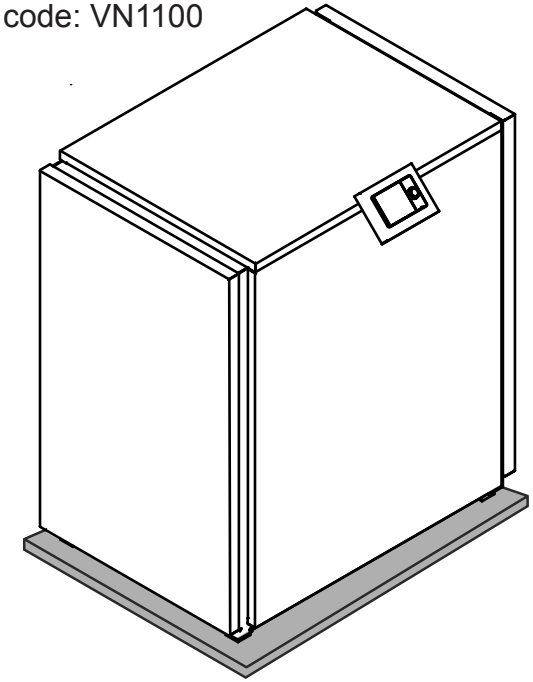


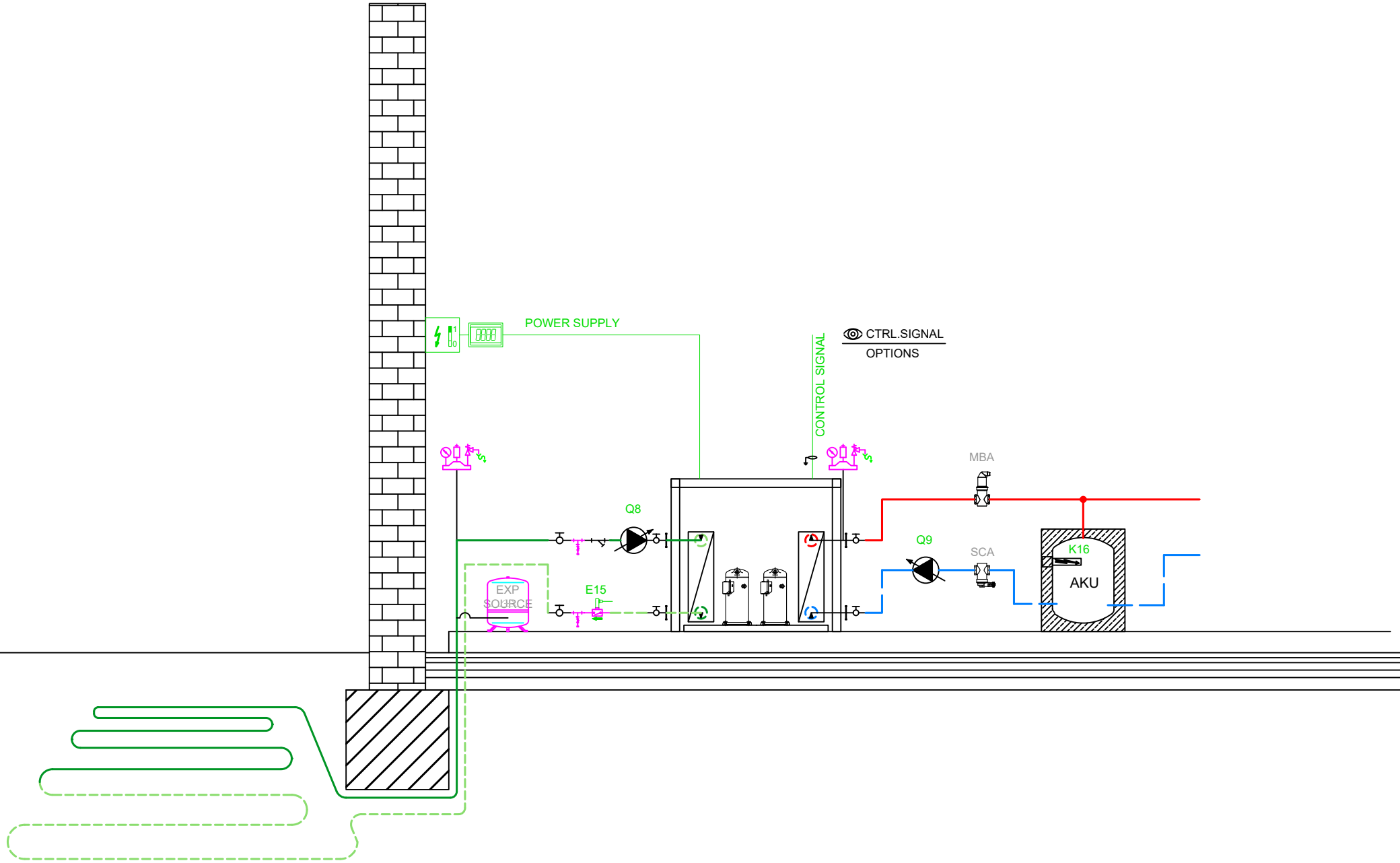




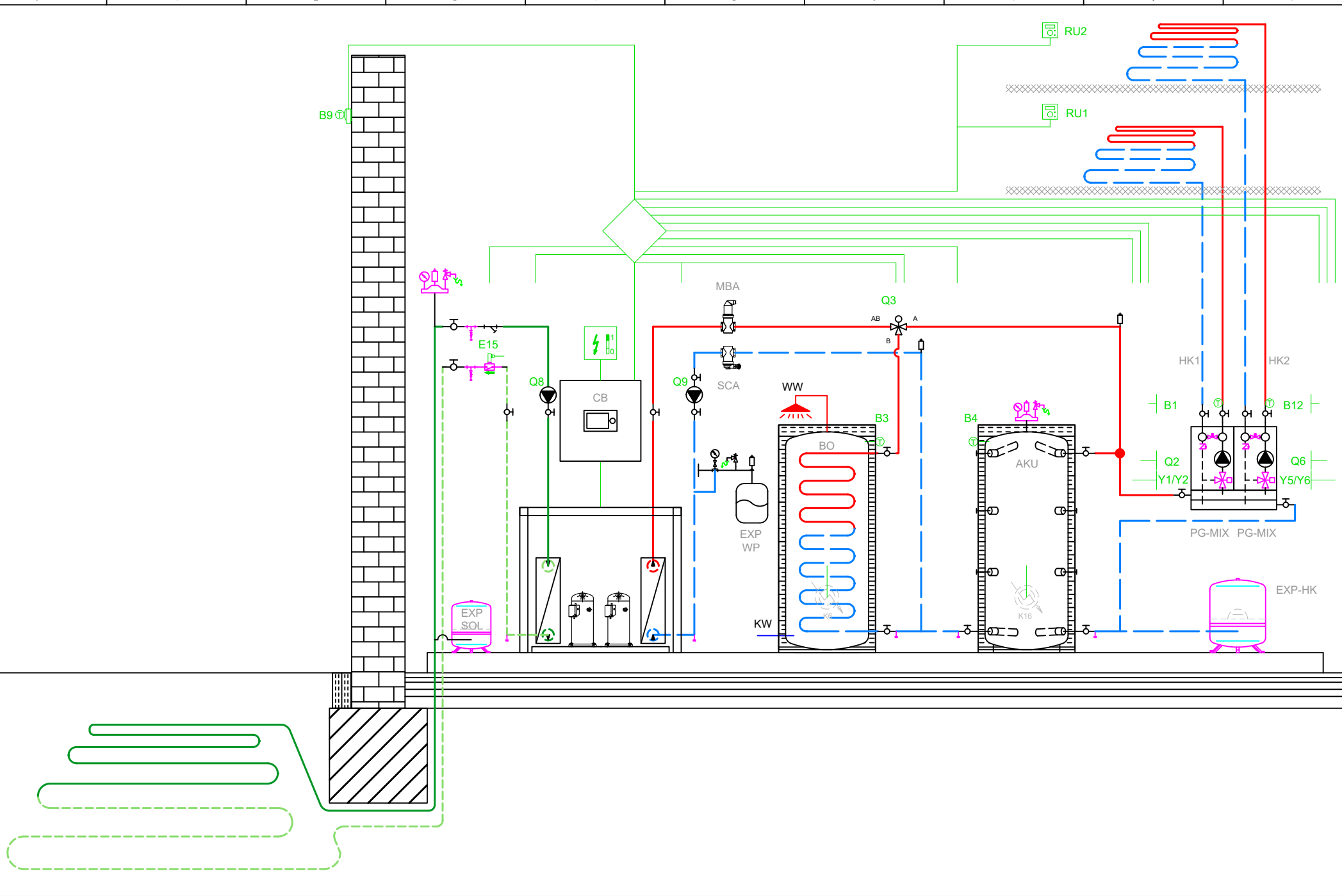


int. code: VN1100

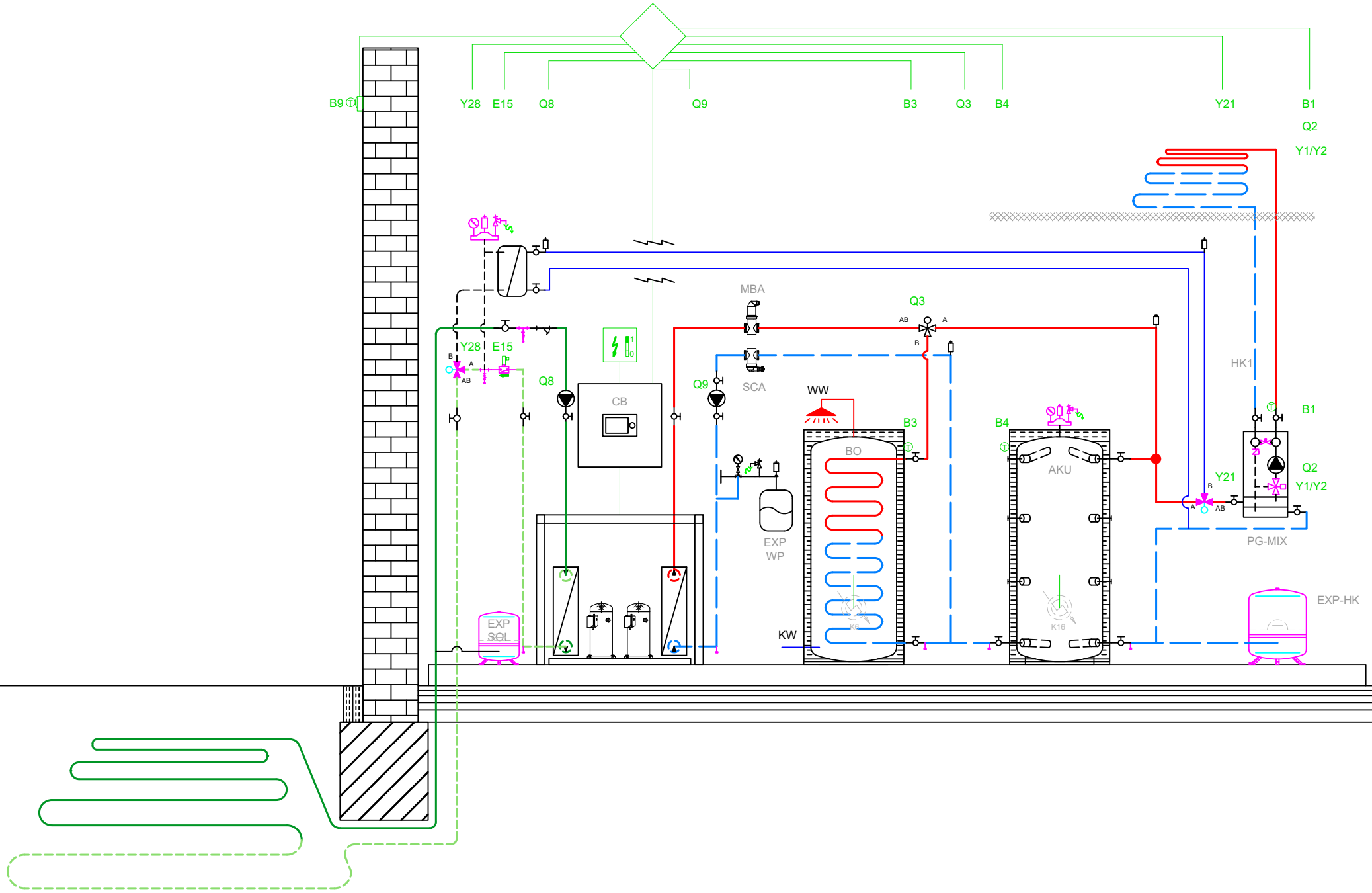




FACTORY SETTINGS



BASIC APPLICATION

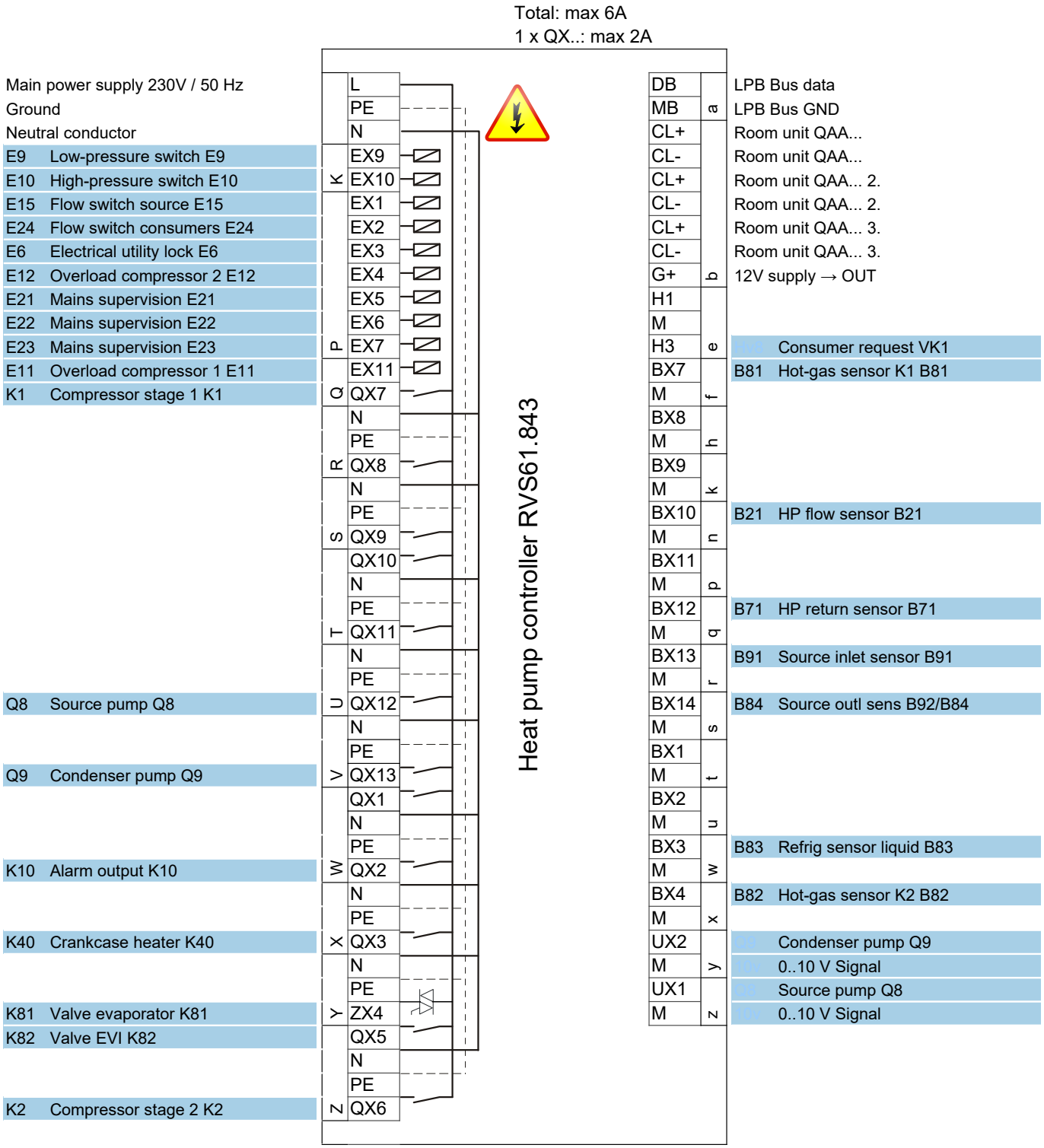


OPTIONAL APPLICATION

TBW / TBW EVI v052024

Heat pump controller preconfiguration and standard wiring of inputs and outputs

EN



TBW / TBW EVI v052024

Heat pump controller preconfiguration and standard wiring of inputs and outputs

EN

AVS75.390
AVS75.391
AVS75.370

ControlBox

Main power supply 230V / 50 Hz
Ground
Neutral conductor

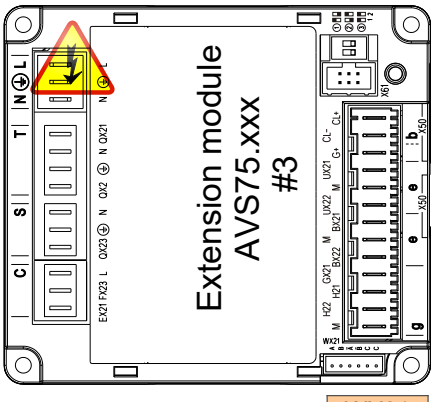
	L	X50	Operating unit (HMI) AVS37.xxx
	PE	X50	Extension module AVS75.xxx
	N	CL+	Room unit QAA...
	QX21	CL-	Room unit QAA...
	N	G+	12V supply → OUT
	PE	UX21	
T	QX22	M	
	N	UX22	
	PE	BX21	
S	QX23	M	
	L	BX22	
	FX23	GX21	5V/12V supply → OUT
C	EX21	WX21	

Main power supply 230V / 50 Hz
Ground
Neutral conductor

	L	X50	Operating unit (HMI) AVS37.xxx
	PE	X50	Extension module AVS75.xxx
	N	CL+	Room unit QAA...
	QX21	CL-	Room unit QAA...
	N	G+	12V supply → OUT
	PE	UX21	
T	QX22	M	
	N	UX22	
	PE	BX21	
S	QX23	M	
	L	BX22	
	FX23	GX21	5V/12V supply → OUT
C	EX21	H21	
		WX21	H22
			M

Multifunktional

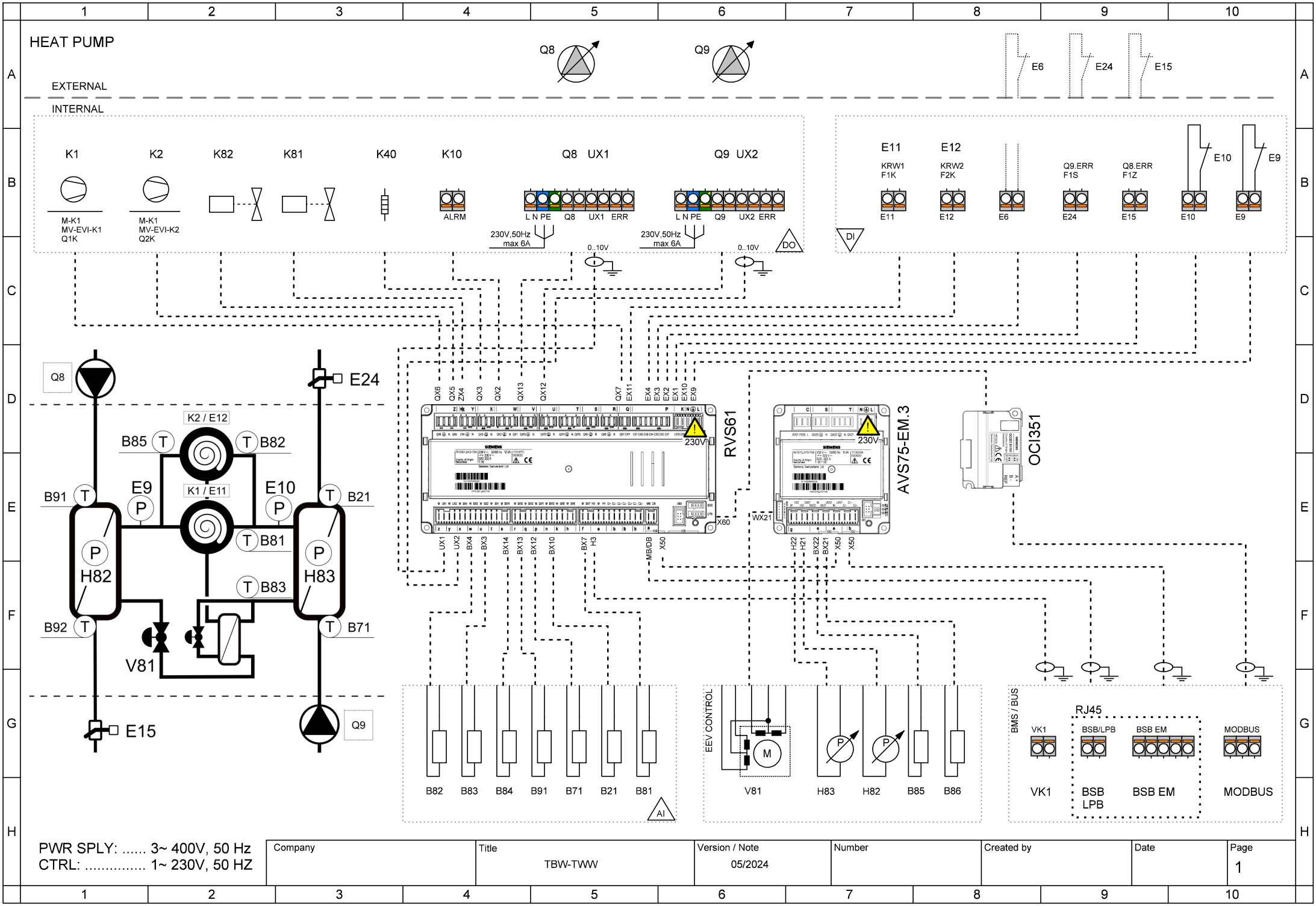
Main power supply 230V / 50 Hz
Ground
Neutral conductor



	L	X50	Operating unit (HMI) AVS37.xxx
	PE	X50	Extension module AVS75.xxx
	N	CL+	Room unit QAA...
	QX21	CL-	Room unit QAA...
	N	G+	12V supply → OUT
	PE	UX21	
T	QX22	M	
	N	UX22	B86 Suction gas sensor EVI B86
	PE	BX21	
S	QX23	M	
	L	BX22	B85 Suction gas sensor B85
	FX23	GX21	5V/12V supply → OUT
C	EX21	H21	Low pressure 0..10V
		WX21	H22 High pressure 0..10V
			M

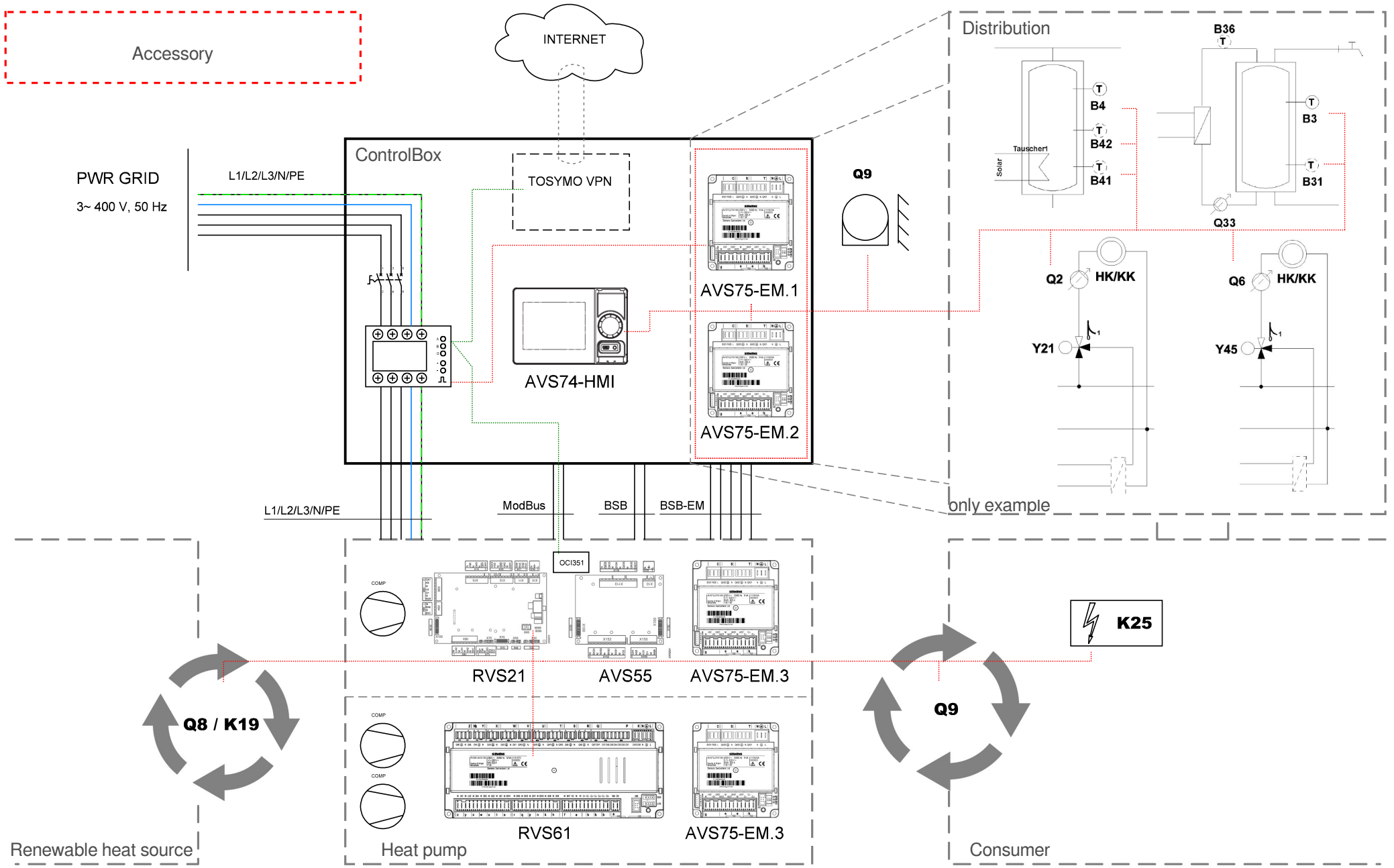
V81 EEV evaporator V81

WX21

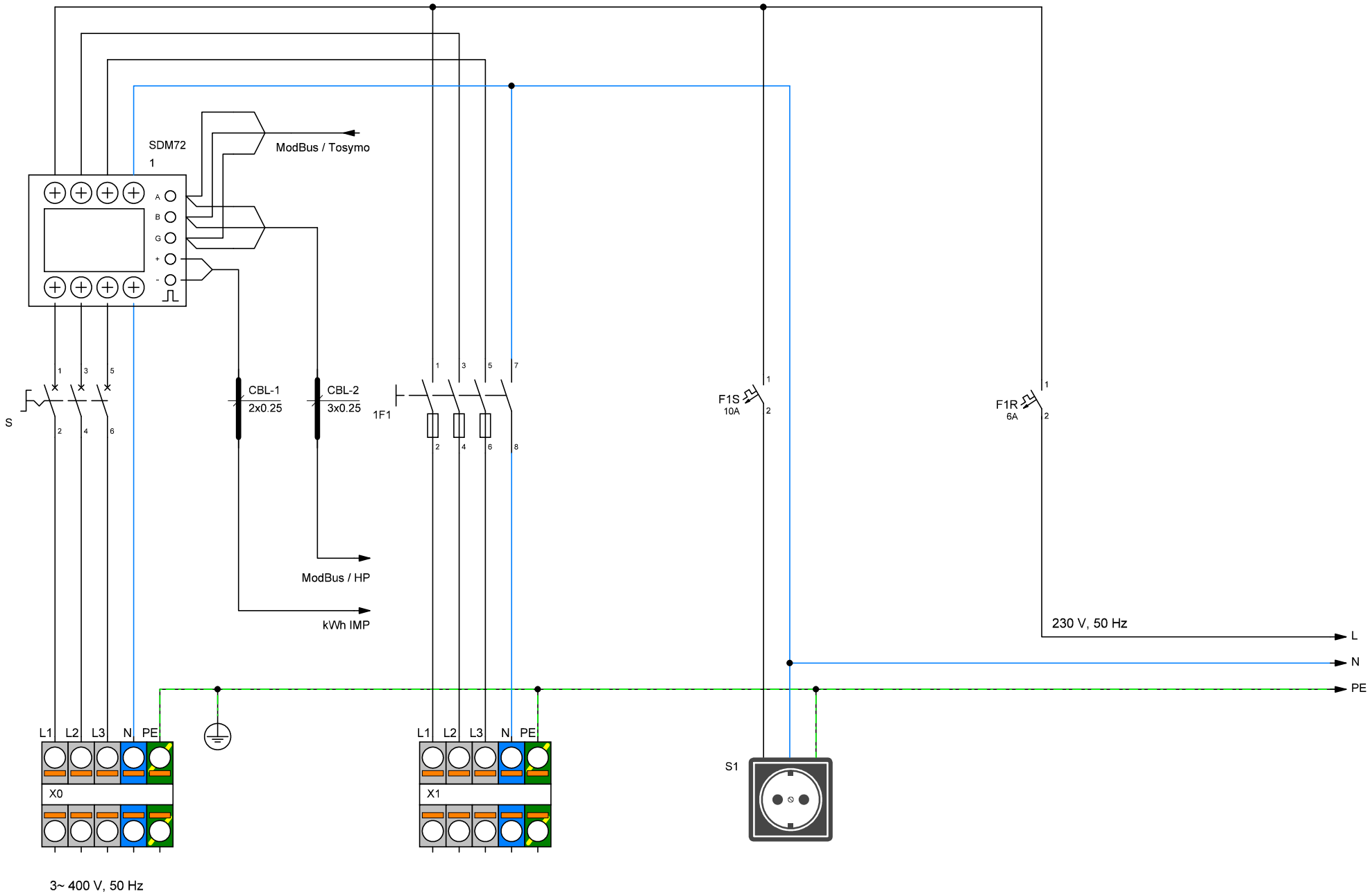


PWR SPLY: ..... 3~ 400V, 50 Hz
CTRL: ..... 1~ 230V, 50 HZ

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



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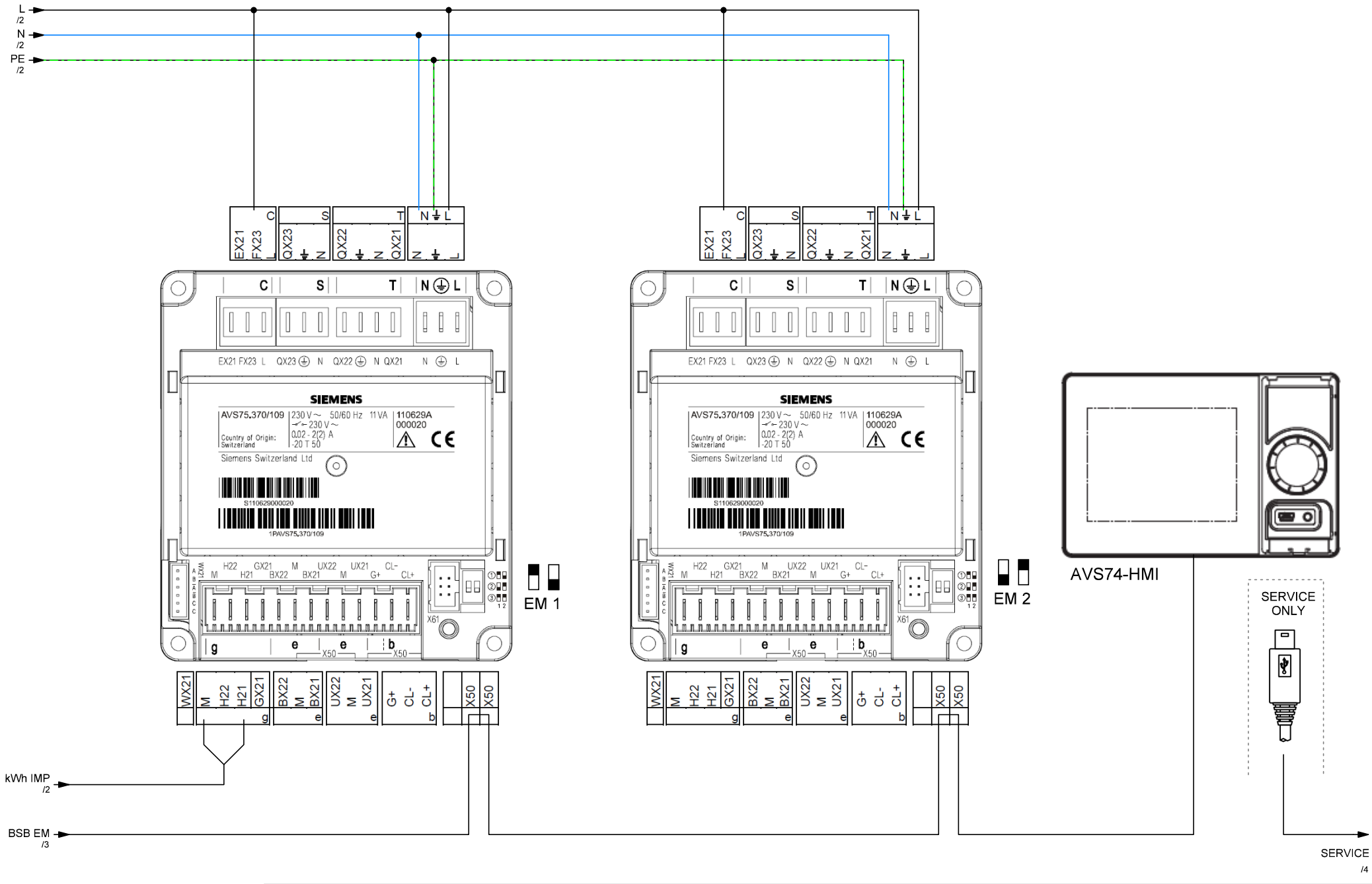

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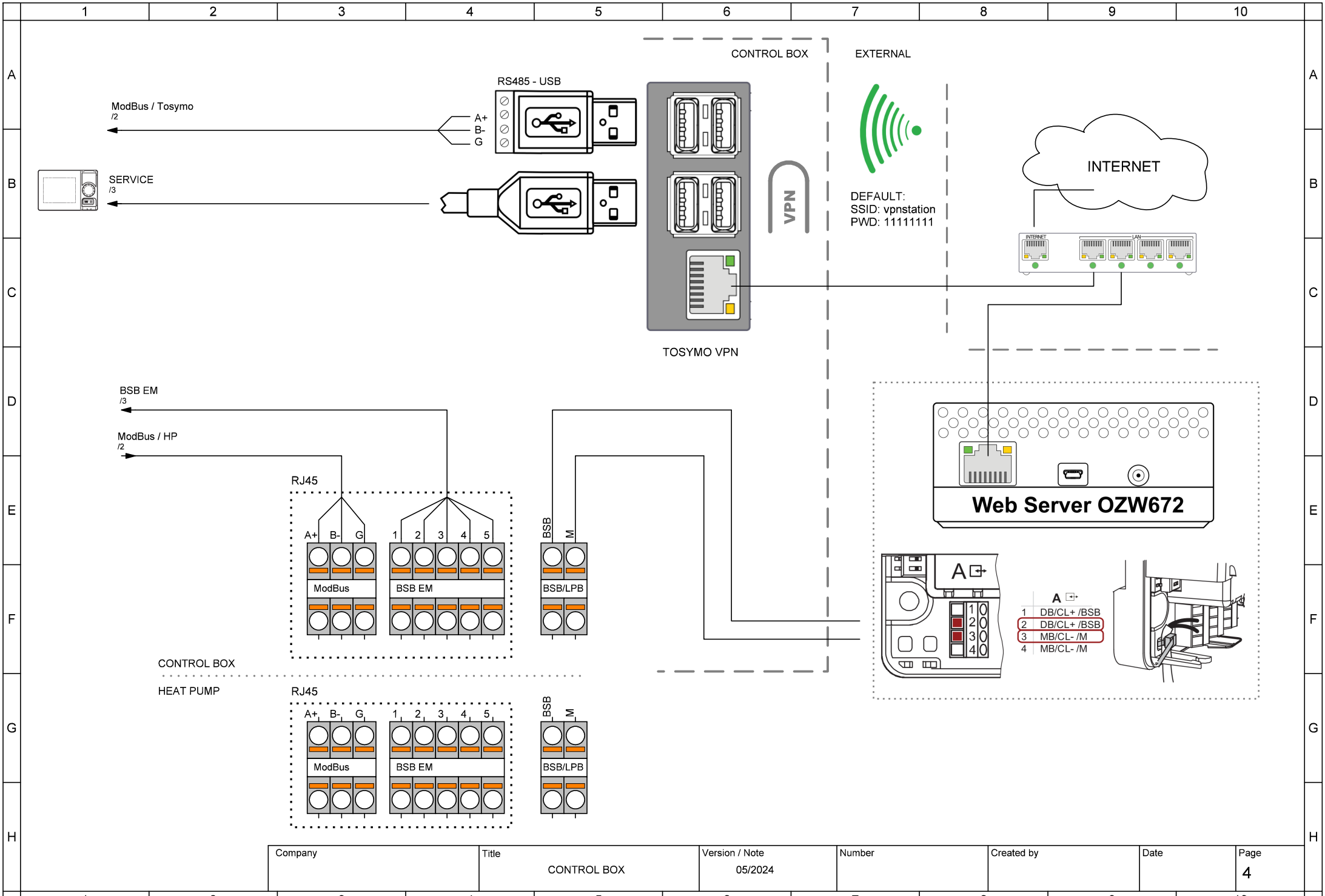


Company	Title	Version / Note	Number	Created by	Date	Page
	CONTROL BOX	05/2024				4

ControlBox v052024

Extension modules preconfiguration and standard wiring of inputs and outputs

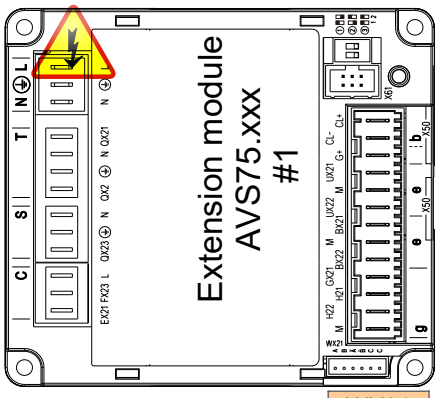
EN

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

Heizkreis 1 par. 7300

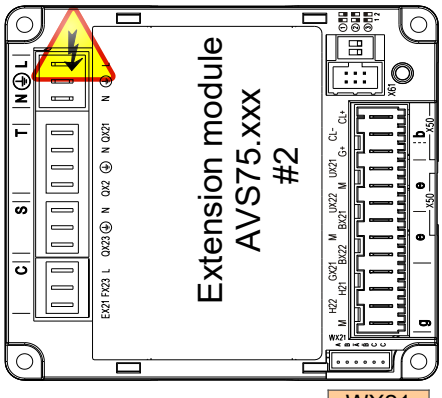


Extension module AVS75.xxx
Room unit QAA...
Room unit QAA...
B1 Flow sensor 1
Pulse count

AVS75.370

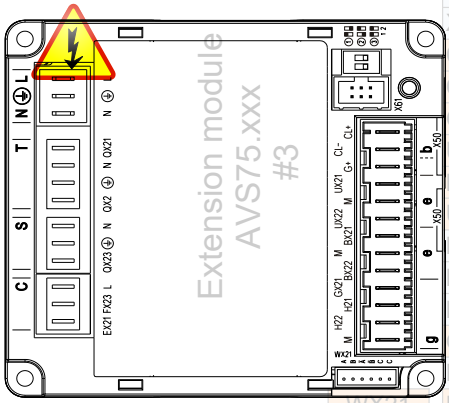
Main power supply 230V / 50 Hz
Ground
Neutral conductor
Q3 DHW ctrl elem Q3
K6 El imm heater DHW K6
Q6 Heat circuit pump HC2 Q6
L Phase 230V
E62 Smart grid E62

Multifunktional par. 7375



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 conntact technical support

5 MQTT IoT communication protocol

For more information contact technical support