

Basic performance data - WAMAK TWW 440 WHR HeavyDuty 2L4

Heating - EN 14511		
Heating capacity [kW]	W10 / W35 (max)	242.8 (30.4 / 242.8)
	W10 / W35 (min)	30.4 (30.4 / 242.8)
	W10 / W34	244.3 (30.5 / 244.3)
Electrical power input [kW]	W10 / W35 (max)	41.2 (5.0 / 41.2)
	W10 / W35 (min)	5.0 (5.0 / 41.2)
	W10 / W34	40.5 (4.9 / 40.5)
Heating efficiency faktor [COP]	W10 / W35 (max)	5.89
	W10 / W35 (min)	6.07
	W10 / W34	6.04
Seasonal space heating energy efficiency - SCOP EN 14825		
Average Climate / Low Temperature [35°C]	SCOP	6.79
	η [%]	271.4
	Label	A+++
	Qhe [kWh]	73568.4
	Pdesignh [kW]	242.8
	Tbivalent [°C]	-7
Cooling		
Cooling capacity - [kW]	A35 / W23-18	183.8
	A25 / W23-18	206.8
	A35 / W12-7	119.8
	A25 / W12-7	119.8
Seasonal space cooling energy efficiency - SEER EN 14825		
[W 23 / 18°C]	SEER	5.43
	Qce [kWh]	71880.0
	η_c [%]	217.3
Sound EN 12102		
Acoustic power - Lw	dB(A)	73.9
Acoustic pressure - Lp	1 m dB(A)	65.9
	5 m dB(A)	51.9
	10 m dB(A)	45.9
Mechanical and operational information		
Compressor type (3~ 400/50)	SCROLL / 8 /	On/Off
Refrigerant	R513A (GWP - 631)	4 x 11.2 kg
Operating limit temperatures heating - (min / max) [°C]		45 / 85
Operating limit temperatures source - (min / max) [°C]		-10 / 50
Weight		2480 kg

Main technical data - WAMAK TWW 440 WHR HeavyDuty 2L4

Enclosure type			HD2L4			Heat energy rejection side data		
Basic dimensions	Height [mm]	2000	Operating limit temperatures heating	MAX [°C]	85			
	Width [mm]	2800		MIN [°C]	45			
	Length [mm]	1200		for more see operating limits diagram				
Weight [kg]	2480		Condenser	Port size	4 x VIC 2.1/2 "			
Colour	Gray			Type	BPHE			
Enclosure IP Class	IP20			Count	4			
				Material	AISI 316			
Refrigeration cycle								
Compressor	Type	Scroll	Maximal operating pressure - refrigerant [bar]			32		
	Number of stages	8	Maximal operating pressure - Water [bar]			6		
	On/Off		Testing pressure [bar]			70		
	Power factor Cosφ	0.63	Heat transfer medium			Water		
	Winding resistance	1.23 Ohm	Volume flow @ dT 5K (nom) - Water [m3/h]			7.27 ~ 58.13		
Refrigerant		R513A	Internal pressure drop - Water [kPa]			4 x 20		
	Volme	4 x 11.2 kg	Temperature difference	@ 35°C (nom)	5 K			
	GWP	631		@ 55°C	8 K			
	Safety class	A1		@ 65°C	10 K			
Refrigeration oil type	POE RL32-3MAF		Renewable energy extraction side data					
	Oil volume	8 x 3.38 L	Operating limit temperatures source	MIN [°C]	-10			
Maximal pressure - refrigerant [bar]	32			MAX [°C]	50			
		PED class		for more see operating limits diagram				
EVI - vapour injection with economizer								
Electrical connection data								
Line voltage [#~ V/Hz]		3~ 400/50						
Current	nominal [A]	137.76						
	maximal [A]	178.40						
	starting [A]	12.9						
Softstart	-							
Main safety	C180							
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 TWW 440 WHR HeavyDuty 2L4

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

Model	TWW 440 WHR HeavyDuty 2L4
Air-to-water heat pump	no
Brine-to-water heat pump	no
Water-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no
Temperature application	low (35°C - 30°C)
Climate conditions	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output at Tdesignh	Prated	242.8	kW	Seasonal space heating energy efficiency	η_s	271.4	%
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	244.3	kW	Tj = -7 °C	COPd	6.04	-
Tj = +2 °C	Pdh	250.2	kW	Tj = +2 °C	COPd	6.6	-
Tj = +7 °C	Pdh	254.5	kW	Tj = +7 °C	COPd	7.4	-
Tj = +12 °C	Pdh	258.5	kW	Tj = +12 °C	COPd	7.9	-
Tj = bivalent temperature	Pdh	242.8	kW	Tj = bivalent temperature	COPd	5.9	-
Tj = operation limit temperature	Pdh	---	kW	Tj = operation limit temperature	COPd	---	-
Bivalent temperature	Tbiv	-7	°C	Tj = operation limit temperature	TOL	---	°C
Power consumption in modes other than active mode				Heating water operating limit temperature	WTOL	85	°C
Off mode	Poff	0.040	kW	Supplementary heater			
Thermostat-off mode	Pto	0.010	kW	Rated heat output	Psup	46.0	kW
Standby mode	Psb	0.010	kW	Type of energy input	electricity		
Crankcase heater mode	Pck	0.050	kW	For air-to-water heat pumps:			
Other items				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			
Sound power level							
indoors	Lwa	74	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	73568.4	kWh				

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

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Model	TWW 440 WHR HeavyDuty 2L4
Air-to-water heat pump	no
Brine-to-water heat pump	no
Water-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no
Temperature application	middle (55°C - 47°C)
Climate conditions	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output at Tdesignh	Prated	211.8	kW	Seasonal space heating energy efficiency	η_s	204.3	%
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Tj				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7 °C	Pdh	221.6	kW	Tj = -7 °C	COPd	3.97	-
Tj = +2 °C	Pdh	239.2	kW	Tj = +2 °C	COPd	5.3	-
Tj = +7 °C	Pdh	247.7	kW	Tj = +7 °C	COPd	6.2	-
Tj = +12 °C	Pdh	254.5	kW	Tj = +12 °C	COPd	7.0	-
Tj = bivalent temperature	Pdh	211.8	kW	Tj = bivalent temperature	COPd	3.5	-
Tj = operation limit temperature	Pdh	---	kW	Tj = operation limit temperature	COPd	---	-
Bivalent temperature	Tbiv	-7	°C	Tj = operation limit temperature	TOL	---	°C
Power consumption in modes other than active mode				Heating water operating limit temperature	WTOL	85	°C
Off mode	Poff	0.040	kW	Supplementary heater			
Thermostat-off mode	Pto	0.010	kW	Rated heat output	Psup	46.0	kW
Standby mode	Psb	0.010	kW	Type of energy input	electricity		
Crankcase heater mode	Pck	0.050	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	-	6.84 ~ 54.73	m ³ /h
indoors	Lwa	74	dB				
outdoors	Lwa	---	dB				
Annual energy consumption	Q _{HE}	85317.7	kWh				

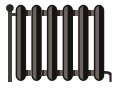
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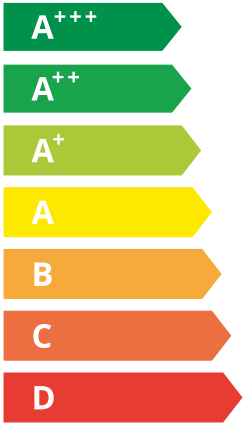


TWW 440 WHR
 HeavyDuty 2L4



55 °C

35 °C



A+++

A+++

74 dB

--- dB

■ 223	■ 248
■ 212	■ 243
■ 208	■ 231
kW	kW

2019

811/2013

TWW 440 WHR
 HeavyDuty 2L4

ErP Data

	55 °C	35 °C
Energy class	A+++	A+++
η [%]	204.3	271.4
P_{rated} [kW]	212	243
Q_{HE} [kWh/y]	85318	73569
SCOP [-]	5.11	6.79
$T_{bivalent}$ [°C]	-7	-7

CONTROLLER



+ QAA55/75 class VII 3.5% ↓
 - QAA55/75 class III 1.5% ↓

Heating performance data		Heat recovery		
Operating conditions		Qh	P	COP
W45 / W80		452.8	101.2	4.47
W30 / W70		336.5	83.3	4.04
W25 / W60		374.3	68.7	5.45

Normative data: water - water application

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

Operating conditions		Qh	P	COP
1	W10 / W30-35	242.8	41.2	5.89
2	W10 / W30-35 (MIN)	30.4	5.0	6.07
A	W10 / Wxx-34	244.3	40.5	6.04
B	W10 / Wxx-30	250.2	37.6	6.65
C	W10 / Wxx-27	254.5	35.7	7.35
D	W10 / Wxx-24	258.5	33.8	7.89
E	W10 / Wxx-35	242.8	41.2	5.89
F	W10 / Wxx-35	242.8	41.2	5.89

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Low Temperature [35°C]	
SCOPon	6.82
SCOPnet	6.82
SCOP	6.79
η [%]	271.43
Label	A+++
Qh [kWh]	73568
Pdesignh [kW]	242.8
Tbivalent [°C]	-7.00

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

Operating conditions		Qh	P	COP
1	W10 / W47-55	211.8	60.5	3.50
2	W10 / W47-55 (MIN)	26.5	7.3	3.61
A	W10 / Wxx-52	221.6	55.9	3.97
B	W10 / Wxx-42	239.2	45.2	5.29
C	W10 / Wxx-36	247.7	40.9	6.25
D	W10 / Wxx-30	254.5	37.7	6.96
E	W10 / Wxx-55	211.8	60.5	3.50
F	W10 / Wxx-55	211.8	60.5	3.50

SCOP DATA EN 14825:2018	
Source - Water [10°C] / Medium Temperature [55°C]	
SCOPon	5.13
SCOPnet	5.13
SCOP	5.11
η [%]	204.30
Label	A+++
Qh [kWh]	85318
Pdesignh [kW]	211.8
Tbivalent [°C]	-7.00

Low temperature cooling W 12 / 7°C

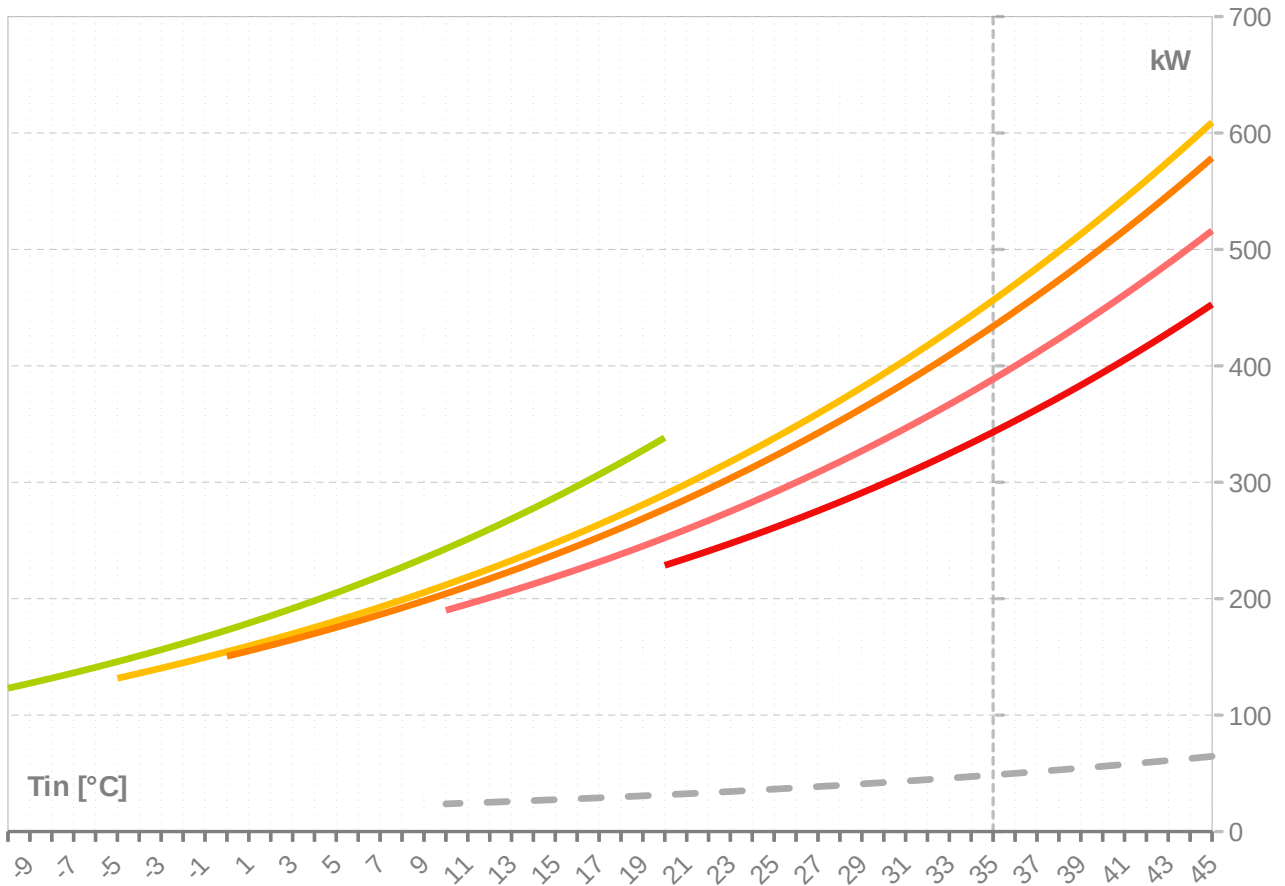
Operating conditions				Qc	P	EER	SEER DATA EN 14825:2018 [W 12 / 7°C]	
A	W30-35 / W12-7	128.7	43.6	2.95	SEERon	3.64		
B	W26-xx / W12-7	135.4	40.5	3.35	SEER	3.62		
C	W22-xx / W12-7	141.9	37.6	3.77	Qc [kWh]	71880		
D	W18-xx / W12-7	145.0	36.3	4.00	η [%]	144.75		

Radiant cooling W 23 / 18°C

Operating conditions				Qc	P	EER	SEER DATA EN 14825:2018 [W 23 / 18°C]	
A	W50-xx / W23-18	144.7	65.6	2.21	SEERon	5.48		
B	W40-xx / W23-18	171.4	53.1	3.23	SEER	5.43		
C	W30-35 / W23-18	195.6	43.6	4.49	Qc [kWh]	71880		
D	W26-xx / W23-18	204.6	40.5	5.06	η [%]	217.29		

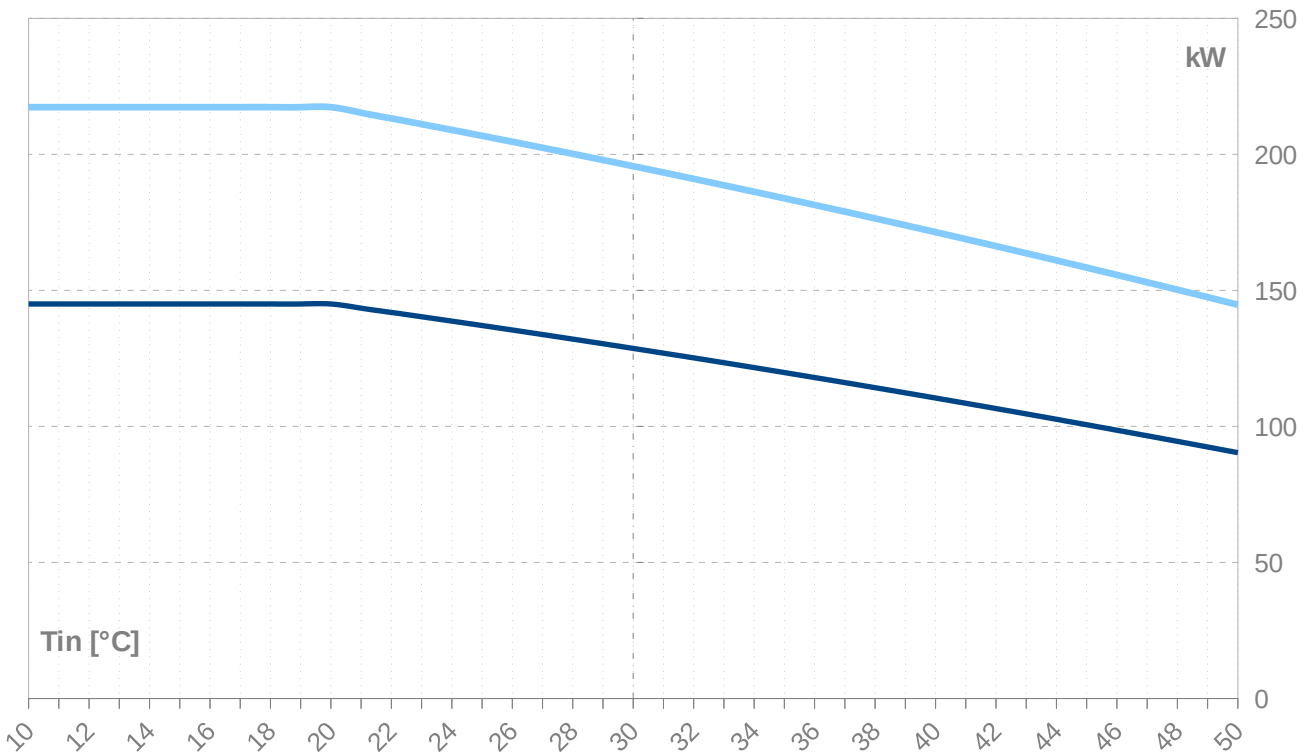
Performance lines - heating

- Qh-nom-35
- Qh-nom-55
- Qh-nom-60
- Qh-nom-70
- Qh-nom-80
- - - Qh-min-70



Performance lines - cooling

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



WAMAK TWW 440 WHR HeavyDuty 2L4

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]	
45	609.2	76.1	609.2	65.4	7.9	65.4	9.32	548.5	68.6	548.5	117.3	
44	592.2	74.0	592.2	65.2	7.9	65.2	9.09	531.7	66.5	531.7	117.1	
43	575.6	71.9	575.6	65.0	7.9	65.0	8.86	515.3	64.4	515.3	116.8	
42	559.4	69.9	559.4	64.7	7.9	64.7	8.64	499.3	62.4	499.3	116.5	
41	543.6	67.9	543.6	64.5	7.8	64.5	8.42	483.7	60.5	483.7	116.3	
40	528.1	66.0	528.1	64.3	7.8	64.3	8.21	468.4	58.6	468.4	116.1	
39	513.1	64.1	513.1	64.1	7.8	64.1	8.00	453.6	56.7	453.6	115.8	
38	498.3	62.3	498.3	64.0	7.8	64.0	7.79	439.0	54.9	439.0	115.6	
37	484.0	60.5	484.0	63.8	7.7	63.8	7.59	424.8	53.1	424.8	115.4	
36	470.0	58.7	470.0	63.6	7.7	63.6	7.39	411.0	51.4	411.0	115.1	
35	456.4	57.0	456.4	63.4	7.7	63.4	7.20	397.5	49.7	397.5	114.9	
34	443.0	55.4	443.0	63.2	7.7	63.2	7.00	384.4	48.0	384.4	114.7	
33	430.1	53.8	430.1	63.1	7.7	63.1	6.82	371.6	46.4	371.6	114.5	
32	417.4	52.2	417.4	62.9	7.6	62.9	6.63	359.1	44.9	359.1	114.3	
31	405.1	50.6	405.1	62.8	7.6	62.8	6.45	346.9	43.4	346.9	114.2	
30	393.1	49.1	393.1	62.6	7.6	62.6	6.28	335.1	41.9	335.1	114.0	
29	381.4	47.7	381.4	62.5	7.6	62.5	6.11	323.5	40.4	323.5	113.8	
28	370.1	46.3	370.1	62.3	7.6	62.3	5.94	312.3	39.0	312.3	113.6	
27	359.0	44.9	359.0	62.2	7.5	62.2	5.77	301.3	37.7	301.3	113.5	
26	348.2	43.5	348.2	62.0	7.5	62.0	5.61	290.7	36.3	290.7	113.3	
25	337.8	42.2	337.8	61.9	7.5	61.9	5.45	280.3	35.0	280.3	113.2	
24	327.6	40.9	327.6	61.8	7.5	61.8	5.30	270.3	33.8	270.3	113.0	
23	317.7	39.7	317.7	61.7	7.5	61.7	5.15	260.5	32.6	260.5	112.9	
22	308.0	38.5	308.0	61.6	7.5	61.6	5.00	250.9	31.4	250.9	112.7	
21	298.7	37.3	298.7	61.4	7.5	61.4	4.86	241.7	30.2	241.7	112.6	
20	289.6	36.2	289.6	61.3	7.4	61.3	4.72	232.7	29.1	232.7	112.5	
19	280.7	35.1	280.7	61.2	7.4	61.2	4.58	223.9	28.0	223.9	112.4	
18	272.1	34.0	272.1	61.1	7.4	61.1	4.45	215.4	26.9	215.4	112.3	
17	263.8	33.0	263.8	61.1	7.4	61.1	4.32	207.2	25.9	207.2	112.2	
16	255.7	32.0	255.7	61.0	7.4	61.0	4.19	199.1	24.9	199.1	112.1	
15	247.8	31.0	247.8	60.9	7.4	60.9	4.07	191.3	23.9	191.3	112.0	
14	240.2	30.0	240.2	60.8	7.4	60.8	3.95	183.8	23.0	183.8	111.9	
13	232.8	29.1	232.8	60.7	7.4	60.7	3.83	176.4	22.1	176.4	111.8	
12	225.6	28.2	225.6	60.7	7.4	60.7	3.72	169.3	21.2	169.3	111.7	
11	218.6	27.3	218.6	60.6	7.4	60.6	3.61	162.4	20.3	162.4	111.6	
10	211.8	26.5	211.8	60.5	7.3	60.5	3.50	155.7	19.5	155.7	111.6	
9	205.3	25.7	205.3	60.5	7.3	60.5	3.39	149.2	18.6	149.2	111.5	
8	198.9	24.9	198.9	60.4	7.3	60.4	3.29	142.9	17.9	142.9	111.5	
7	192.7	24.1	192.7	60.4	7.3	60.4	3.19	136.7	17.1	136.7	111.4	
6	186.8	23.3	186.8	60.4	7.3	60.4	3.09	130.8	16.3	130.8	111.4	
5	180.9	22.6	180.9	60.3	7.3	60.3	3.00	125.0	15.6	125.0	111.3	
4	175.3	21.9	175.3	60.3	7.3	60.3	2.91	119.4	14.9	119.4	111.3	
3	169.9	21.2	169.9	60.3	7.3	60.3	2.82	114.0	14.2	114.0	111.3	
2	164.6	20.6	164.6	60.2	7.3	60.2	2.73	108.7	13.6	108.7	111.2	
1	159.4	19.9	159.4	60.2	7.3	60.2	2.65	103.6	12.9	103.6	111.2	
0	154.4	19.3	154.4	60.2	7.3	60.2	2.57	98.6	12.3	98.6	111.2	
-1	149.6	18.7	149.6	60.2	7.3	60.2	2.48	93.8	11.7	93.8	111.2	
-2	144.9	18.1	144.9	60.2	7.3	60.2	2.41	89.1	11.1	89.1	111.2	
-3	140.3	17.5	140.3	60.2	7.3	60.2	2.33	84.5	10.6	84.5	111.2	
-4	135.9	17.0	135.9	60.2	7.3	60.2	2.26	80.1	10.0	80.1	111.2	
-5	131.6	16.4	131.6	60.2	7.3	60.2	2.19	75.7	9.5	75.7	111.2	

-- attention: operating limits not reflected in performance table

ZR144KRE-TFD_R513A_8_WHR

WAMAK TWW 440 WHR HeavyDuty 2L4

Th -OU	60										
[°C]	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]
45	578.6	72.3	578.6	70.9	8.6	70.9	8.16	512.8	64.1	512.8	124.0
44	562.5	70.3	562.5	70.7	8.6	70.7	7.95	496.9	62.1	496.9	123.8
43	546.7	68.3	546.7	70.5	8.6	70.5	7.75	481.3	60.2	481.3	123.6
42	531.4	66.4	531.4	70.4	8.5	70.4	7.55	466.1	58.3	466.1	123.4
41	516.4	64.6	516.4	70.2	8.5	70.2	7.36	451.3	56.4	451.3	123.2
40	501.8	62.7	501.8	70.0	8.5	70.0	7.16	436.8	54.6	436.8	123.0
39	487.5	60.9	487.5	69.9	8.5	69.9	6.98	422.7	52.8	422.7	122.8
38	473.6	59.2	473.6	69.7	8.5	69.7	6.79	409.0	51.1	409.0	122.6
37	460.1	57.5	460.1	69.6	8.4	69.6	6.61	395.5	49.4	395.5	122.4
36	446.8	55.9	446.8	69.4	8.4	69.4	6.44	382.4	47.8	382.4	122.2
35	434.0	54.2	434.0	69.3	8.4	69.3	6.26	369.7	46.2	369.7	122.1
34	421.4	52.7	421.4	69.2	8.4	69.2	6.09	357.3	44.7	357.3	121.9
33	409.2	51.1	409.2	69.0	8.4	69.0	5.93	345.1	43.1	345.1	121.7
32	397.3	49.7	397.3	68.9	8.4	68.9	5.77	333.3	41.7	333.3	121.6
31	385.6	48.2	385.6	68.8	8.3	68.8	5.61	321.9	40.2	321.9	121.4
30	374.3	46.8	374.3	68.7	8.3	68.7	5.45	310.7	38.8	310.7	121.3
29	363.4	45.4	363.4	68.5	8.3	68.5	5.30	299.8	37.5	299.8	121.2
28	352.7	44.1	352.7	68.4	8.3	68.4	5.15	289.2	36.1	289.2	121.0
27	342.2	42.8	342.2	68.3	8.3	68.3	5.01	278.9	34.9	278.9	120.9
26	332.1	41.5	332.1	68.2	8.3	68.2	4.87	268.8	33.6	268.8	120.8
25	322.3	40.3	322.3	68.1	8.3	68.1	4.73	259.1	32.4	259.1	120.7
24	312.7	39.1	312.7	68.0	8.3	68.0	4.60	249.6	31.2	249.6	120.6
23	303.4	37.9	303.4	67.9	8.2	67.9	4.47	240.4	30.0	240.4	120.5
22	294.3	36.8	294.3	67.9	8.2	67.9	4.34	231.4	28.9	231.4	120.4
21	285.6	35.7	285.6	67.8	8.2	67.8	4.21	222.7	27.8	222.7	120.3
20	277.0	34.6	277.0	67.7	8.2	67.7	4.09	214.2	26.8	214.2	120.2
19	268.7	33.6	268.7	67.6	8.2	67.6	3.97	206.0	25.7	206.0	120.1
18	260.7	32.6	260.7	67.6	8.2	67.6	3.86	198.0	24.8	198.0	120.0
17	252.9	31.6	252.9	67.5	8.2	67.5	3.75	190.3	23.8	190.3	120.0
16	245.3	30.7	245.3	67.4	8.2	67.4	3.64	182.7	22.8	182.7	119.9
15	237.9	29.7	237.9	67.4	8.2	67.4	3.53	175.4	21.9	175.4	119.8
14	230.8	28.8	230.8	67.3	8.2	67.3	3.43	168.3	21.0	168.3	119.8
13	223.8	28.0	223.8	67.3	8.2	67.3	3.33	161.4	20.2	161.4	119.7
12	217.1	27.1	217.1	67.2	8.2	67.2	3.23	154.7	19.3	154.7	119.7
11	210.6	26.3	210.6	67.2	8.2	67.2	3.13	148.2	18.5	148.2	119.6
10	204.2	25.5	204.2	67.2	8.1	67.2	3.04	141.9	17.7	141.9	119.6
9	198.1	24.8	198.1	67.2	8.1	67.2	2.95	135.8	17.0	135.8	119.6
8	192.1	24.0	192.1	67.1	8.1	67.1	2.86	129.9	16.2	129.9	119.5
7	186.4	23.3	186.4	67.1	8.1	67.1	2.78	124.1	15.5	124.1	119.5
6	180.8	22.6	180.8	67.1	8.1	67.1	2.69	118.5	14.8	118.5	119.5
5	175.3	21.9	175.3	67.1	8.1	67.1	2.61	113.1	14.1	113.1	119.5
4	170.0	21.3	170.0	67.1	8.1	67.1	2.54	107.8	13.5	107.8	119.5
3	164.9	20.6	164.9	67.1	8.1	67.1	2.46	102.7	12.8	102.7	119.5
2	160.0	20.0	160.0	67.1	8.1	67.1	2.39	97.8	12.2	97.8	119.5
1	155.1	19.4	155.1	67.1	8.1	67.1	2.31	92.9	11.6	92.9	119.5
0	150.5	18.8	150.5	67.1	8.1	67.1	2.24	88.2	11.0	88.2	119.5
-1											
-2											
-3											
-4											
-5											

-- attention: operating limits not reflected in performance table

WAMAK TWW 440 WHR HeavyDuty 2L4

Th -OU	70										
Th -OU	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]
45	516.1	64.5	516.1	84.2	10.2	84.2	6.13	438.1	54.8	438.1	141.1
44	501.9	62.7	501.9	84.1	10.2	84.1	5.97	423.9	53.0	423.9	141.0
43	487.9	61.0	487.9	84.0	10.2	84.0	5.81	410.0	51.3	410.0	140.9
42	474.4	59.3	474.4	83.9	10.2	83.9	5.65	396.5	49.6	396.5	140.8
41	461.1	57.6	461.1	83.9	10.2	83.9	5.50	383.3	47.9	383.3	140.7
40	448.2	56.0	448.2	83.8	10.2	83.8	5.35	370.5	46.3	370.5	140.6
39	435.6	54.5	435.6	83.7	10.2	83.7	5.20	358.0	44.7	358.0	140.5
38	423.4	52.9	423.4	83.7	10.1	83.7	5.06	345.8	43.2	345.8	140.4
37	411.5	51.4	411.5	83.6	10.1	83.6	4.92	333.9	41.7	333.9	140.3
36	399.9	50.0	399.9	83.5	10.1	83.5	4.79	322.4	40.3	322.4	140.2
35	388.6	48.6	388.6	83.5	10.1	83.5	4.65	311.1	38.9	311.1	140.2
34	377.6	47.2	377.6	83.4	10.1	83.4	4.52	300.2	37.5	300.2	140.1
33	366.9	45.9	366.9	83.4	10.1	83.4	4.40	289.5	36.2	289.5	140.0
32	356.4	44.6	356.4	83.4	10.1	83.4	4.28	279.1	34.9	279.1	140.0
31	346.3	43.3	346.3	83.3	10.1	83.3	4.16	269.0	33.6	269.0	139.9
30	336.5	42.1	336.5	83.3	10.1	83.3	4.04	259.2	32.4	259.2	139.9
29	326.9	40.9	326.9	83.3	10.1	83.3	3.93	249.7	31.2	249.7	139.9
28	317.6	39.7	317.6	83.2	10.1	83.2	3.82	240.4	30.1	240.4	139.8
27	308.6	38.6	308.6	83.2	10.1	83.2	3.71	231.4	28.9	231.4	139.8
26	299.8	37.5	299.8	83.2	10.1	83.2	3.60	222.6	27.8	222.6	139.8
25	291.3	36.4	291.3	83.2	10.1	83.2	3.50	214.1	26.8	214.1	139.8
24	283.0	35.4	283.0	83.1	10.1	83.1	3.40	205.9	25.7	205.9	139.7
23	275.0	34.4	275.0	83.1	10.1	83.1	3.31	197.8	24.7	197.8	139.7
22	267.2	33.4	267.2	83.1	10.1	83.1	3.21	190.1	23.8	190.1	139.7
21	259.6	32.4	259.6	83.1	10.1	83.1	3.12	182.5	22.8	182.5	139.7
20	252.2	31.5	252.2	83.1	10.1	83.1	3.03	175.1	21.9	175.1	139.7
19	245.1	30.6	245.1	83.1	10.1	83.1	2.95	168.0	21.0	168.0	139.7
18	238.2	29.8	238.2	83.1	10.1	83.1	2.87	161.1	20.1	161.1	139.8
17	231.5	28.9	231.5	83.2	10.1	83.2	2.78	154.4	19.3	154.4	139.8
16	225.0	28.1	225.0	83.2	10.1	83.2	2.71	147.9	18.5	147.9	139.8
15	218.7	27.3	218.7	83.2	10.1	83.2	2.63	141.6	17.7	141.6	139.8
14	212.6	26.6	212.6	83.2	10.1	83.2	2.55	135.4	16.9	135.4	139.9
13	206.7	25.8	206.7	83.2	10.1	83.2	2.48	129.5	16.2	129.5	139.9
12	200.9	25.1	200.9	83.3	10.1	83.3	2.41	123.7	15.5	123.7	139.9
11	195.4	24.4	195.4	83.3	10.1	83.3	2.35	118.1	14.8	118.1	140.0
10	190.0	23.7	190.0	83.3	10.1	83.3	2.28	112.7	14.1	112.7	140.0
9											
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-- attention: operating limits not reflected in performance table

WAMAK TWW 440 WHR HeavyDuty 2L4

Th -OU	80										
[°C]	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]
45	452.8	56.6	452.8	101.2	12.3	101.2	4.47	358.9	44.9	358.9	164.0
44	440.4	55.1	440.4	101.3	12.3	101.3	4.35	346.5	43.3	346.5	164.0
43	428.4	53.5	428.4	101.3	12.3	101.3	4.23	334.4	41.8	334.4	164.1
42	416.6	52.1	416.6	101.3	12.3	101.3	4.11	322.6	40.3	322.6	164.1
41	405.2	50.7	405.2	101.4	12.3	101.4	4.00	311.2	38.9	311.2	164.1
40	394.1	49.3	394.1	101.4	12.3	101.4	3.89	300.0	37.5	300.0	164.2
39	383.3	47.9	383.3	101.5	12.3	101.5	3.78	289.2	36.2	289.2	164.2
38	372.8	46.6	372.8	101.5	12.3	101.5	3.67	278.7	34.8	278.7	164.3
37	362.6	45.3	362.6	101.6	12.3	101.6	3.57	268.4	33.6	268.4	164.3
36	352.7	44.1	352.7	101.6	12.3	101.6	3.47	258.4	32.3	258.4	164.4
35	343.0	42.9	343.0	101.7	12.3	101.7	3.37	248.7	31.1	248.7	164.5
34	333.7	41.7	333.7	101.7	12.3	101.7	3.28	239.3	29.9	239.3	164.5
33	324.6	40.6	324.6	101.8	12.3	101.8	3.19	230.2	28.8	230.2	164.6
32	315.8	39.5	315.8	101.9	12.4	101.9	3.10	221.3	27.7	221.3	164.7
31	307.2	38.4	307.2	101.9	12.4	101.9	3.01	212.7	26.6	212.7	164.8
30	298.9	37.4	298.9	102.0	12.4	102.0	2.93	204.3	25.5	204.3	164.9
29	290.8	36.4	290.8	102.1	12.4	102.1	2.85	196.2	24.5	196.2	165.0
28	283.0	35.4	283.0	102.1	12.4	102.1	2.77	188.3	23.5	188.3	165.1
27	275.5	34.4	275.5	102.2	12.4	102.2	2.69	180.6	22.6	180.6	165.2
26	268.1	33.5	268.1	102.3	12.4	102.3	2.62	173.2	21.7	173.2	165.3
25	261.0	32.6	261.0	102.4	12.4	102.4	2.55	166.0	20.8	166.0	165.4
24	254.1	31.8	254.1	102.5	12.4	102.5	2.48	159.0	19.9	159.0	165.5
23	247.4	30.9	247.4	102.6	12.4	102.6	2.41	152.3	19.0	152.3	165.6
22	240.9	30.1	240.9	102.7	12.5	102.7	2.35	145.7	18.2	145.7	165.7
21	234.7	29.3	234.7	102.8	12.5	102.8	2.28	139.4	17.4	139.4	165.9
20	228.6	28.6	228.6	102.9	12.5	102.9	2.22	133.2	16.6	133.2	166.0
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-- attention: operating limits not reflected in performance table

WAMAK TWW 440 WHR HeavyDuty 2L4

Tc -OU		W 12 / 7 °C										
°C	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	110.4	13.8	110.4	53.1	6.4	53.1	2.08	159.7	20.0	159.7	103.0	
39	112.3	14.0	112.3	52.0	6.3	52.0	2.16	160.6	20.1	160.6	101.8	
38	114.2	14.3	114.2	51.0	6.2	51.0	2.24	161.5	20.2	161.5	100.6	
37	116.1	14.5	116.1	50.0	6.1	50.0	2.32	162.4	20.3	162.4	99.5	
36	118.0	14.7	118.0	49.0	5.9	49.0	2.41	163.4	20.4	163.4	98.4	
35	119.8	15.0	119.8	48.0	5.8	48.0	2.49	164.3	20.5	164.3	97.4	
34	121.6	15.2	121.6	47.1	5.7	47.1	2.58	165.3	20.7	165.3	96.4	
33	123.4	15.4	123.4	46.2	5.6	46.2	2.67	166.2	20.8	166.2	95.4	
32	125.2	15.6	125.2	45.3	5.5	45.3	2.76	167.2	20.9	167.2	94.5	
31	126.9	15.9	126.9	44.4	5.4	44.4	2.86	168.2	21.0	168.2	93.6	
30	128.7	16.1	128.7	43.6	5.3	43.6	2.95	169.1	21.1	169.1	92.7	
29	130.4	16.3	130.4	42.8	5.2	42.8	3.05	170.1	21.3	170.1	91.9	
28	132.1	16.5	132.1	42.0	5.1	42.0	3.15	171.0	21.4	171.0	91.1	
27	133.8	16.7	133.8	41.2	5.0	41.2	3.25	172.0	21.5	172.0	90.3	
26	135.4	16.9	135.4	40.5	4.9	40.5	3.35	173.0	21.6	173.0	89.6	
25	137.1	17.1	137.1	39.7	4.8	39.7	3.45	173.9	21.7	173.9	88.8	
24	138.7	17.3	138.7	39.0	4.7	39.0	3.56	174.9	21.9	174.9	88.2	
23	140.3	17.5	140.3	38.3	4.6	38.3	3.66	175.8	22.0	175.8	87.5	
22	141.9	17.7	141.9	37.6	4.6	37.6	3.77	176.8	22.1	176.8	86.8	
21	143.5	17.9	143.5	37.0	4.5	37.0	3.88	177.7	22.2	177.7	86.2	
20	145.0	18.1	145.0	36.3	4.4	36.3	4.00	178.7	22.3	178.7	85.6	

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	171.4	21.4	171.4	53.1	6.4	53.1	3.23	221.2	27.6	205.7	103.6	
39	173.9	21.7	173.9	52.0	6.3	52.0	3.34	222.7	27.8	207.3	102.4	
38	176.5	22.1	176.5	51.0	6.2	51.0	3.46	224.3	28.0	208.8	101.3	
37	178.9	22.4	178.9	50.0	6.1	50.0	3.58	225.9	28.2	210.3	100.2	
36	181.4	22.7	181.4	49.0	5.9	49.0	3.70	227.4	28.4	211.8	99.1	
35	183.8	23.0	183.8	48.0	5.8	48.0	3.83	229.0	28.6	213.4	98.1	
34	186.2	23.3	186.2	47.1	5.7	47.1	3.95	230.6	28.8	214.9	97.1	
33	188.6	23.6	188.6	46.2	5.6	46.2	4.08	232.1	29.0	216.5	96.2	
32	191.0	23.9	191.0	45.3	5.5	45.3	4.22	233.7	29.2	218.1	95.2	
31	193.3	24.2	193.3	44.4	5.4	44.4	4.35	235.2	29.4	219.6	94.4	
30	195.6	24.5	195.6	43.6	5.3	43.6	4.49	236.8	29.6	221.2	93.5	
29	197.9	24.7	197.9	42.8	5.2	42.8	4.63	238.3	29.8	222.7	92.7	
28	200.2	25.0	200.2	42.0	5.1	42.0	4.77	239.8	30.0	224.3	91.9	
27	202.4	25.3	202.4	41.2	5.0	41.2	4.91	241.3	30.2	225.9	91.1	
26	204.6	25.6	204.6	40.5	4.9	40.5	5.06	242.8	30.4	227.4	90.3	
25	206.8	25.9	206.8	39.7	4.8	39.7	5.21	244.3	30.5	229.0	89.6	
24	209.0	26.1	209.0	39.0	4.7	39.0	5.36	245.8	30.7	230.6	88.9	
23	211.1	26.4	211.1	38.3	4.6	38.3	5.51	247.3	30.9	232.1	88.2	
22	213.2	26.7	213.2	37.6	4.6	37.6	5.67	248.8	31.1	233.7	87.5	
21	215.3	26.9	215.3	37.0	4.5	37.0	5.83	250.2	31.3	235.2	86.9	
20	217.3	27.2	217.3	36.3	4.4	36.3	5.99	251.6	31.5	236.8	86.2	

-- 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

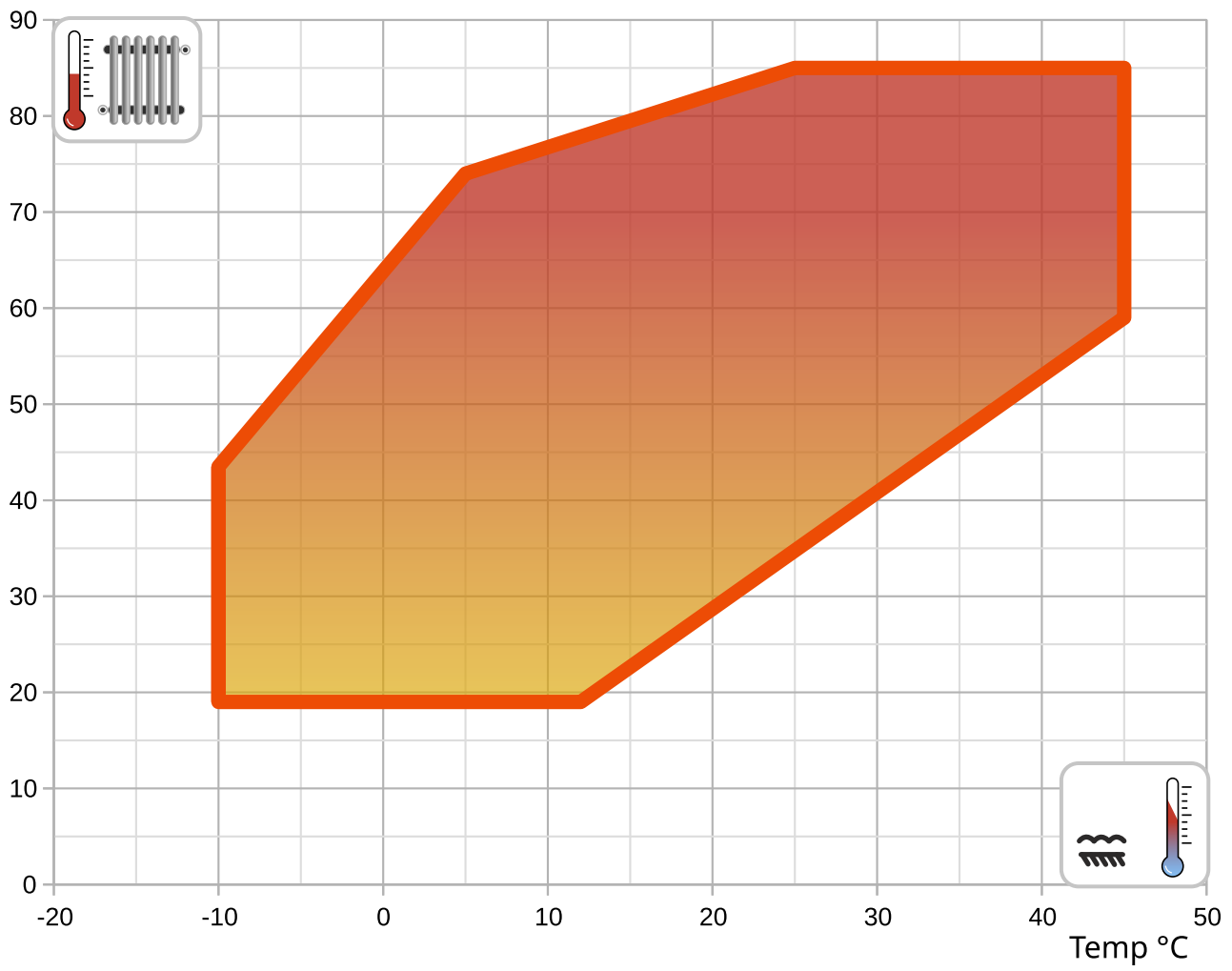
Qc max: cooling / heat extraction at maximal heating capacity

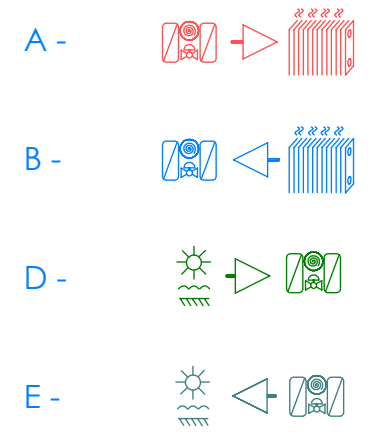
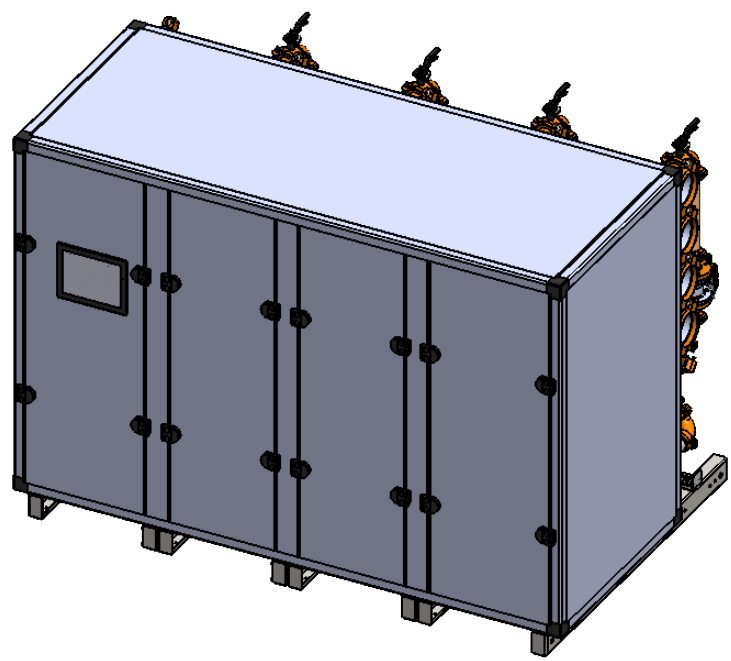
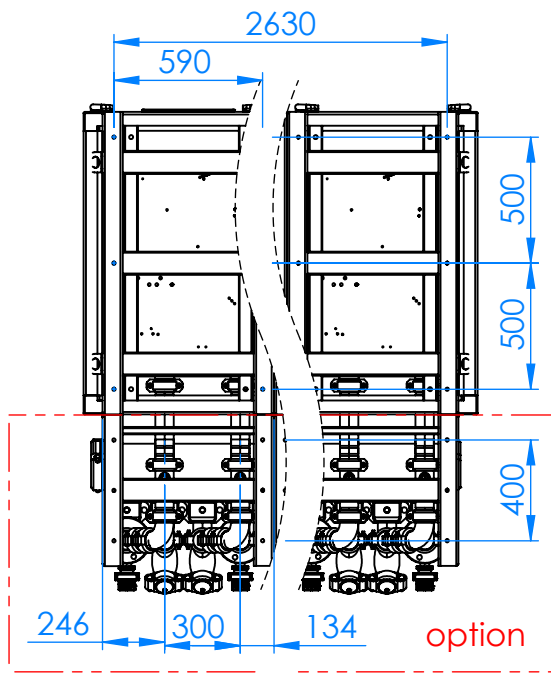
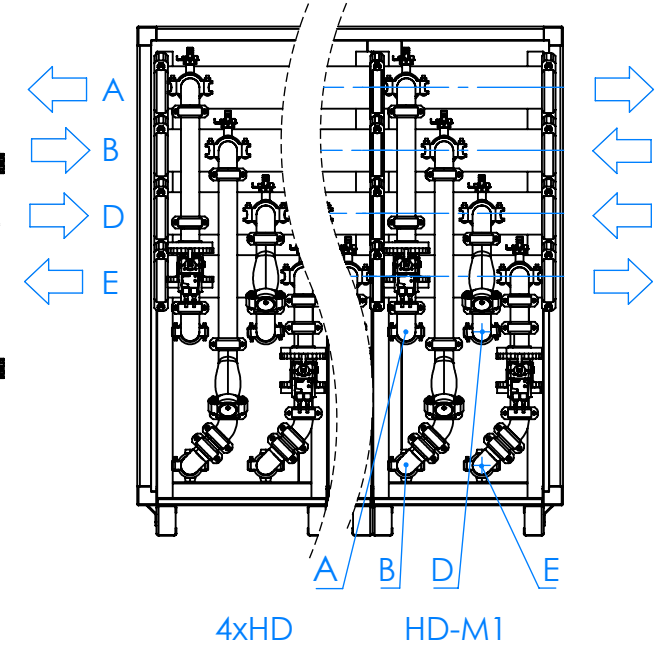
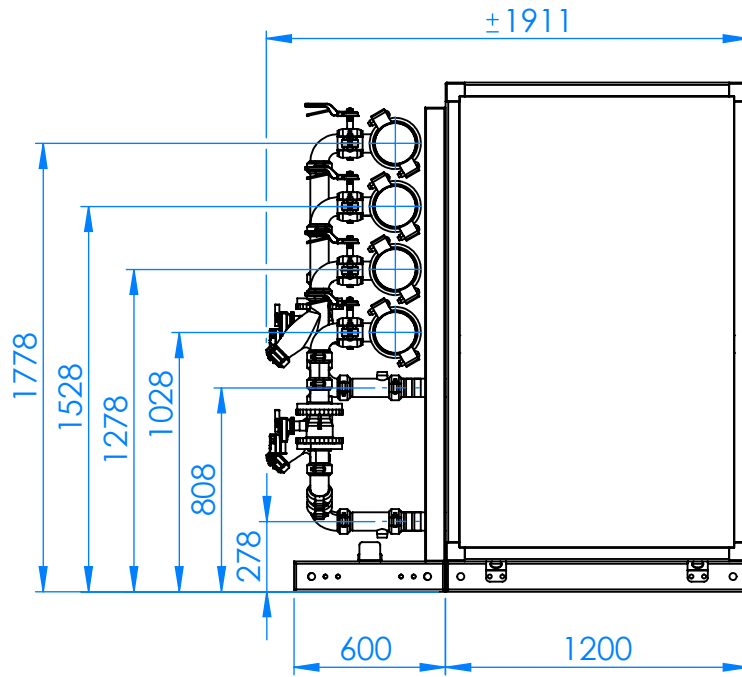
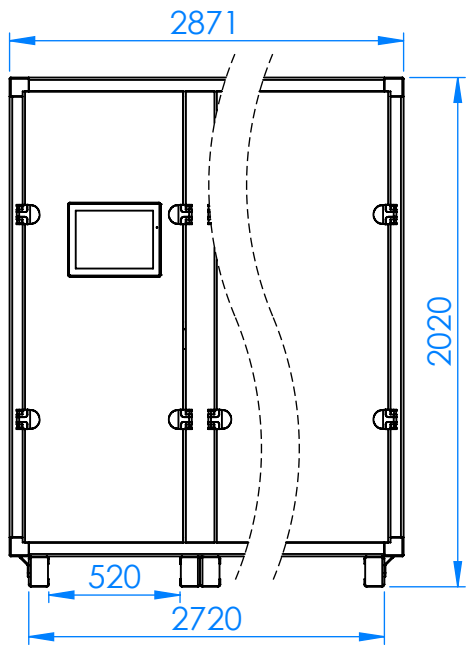
I nom: Current at nominal heating capacity

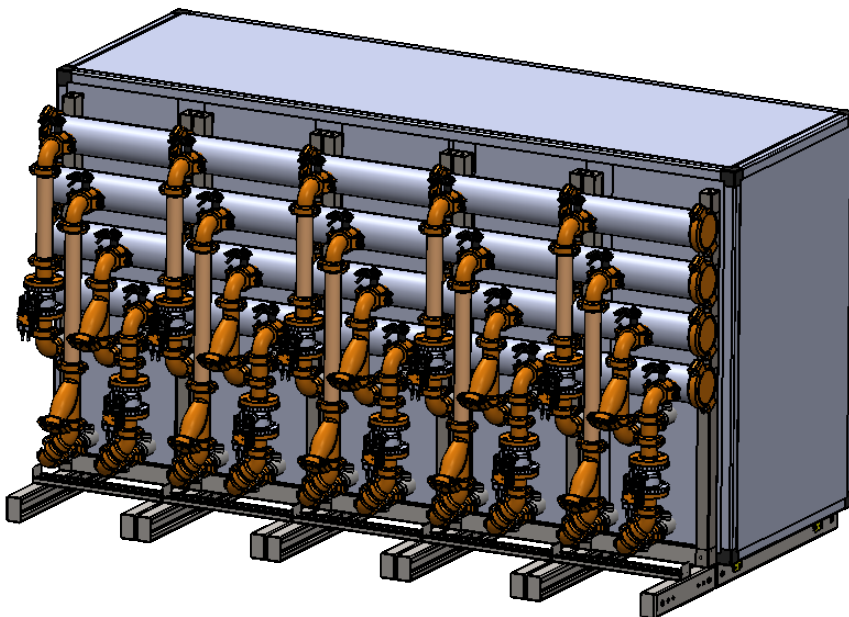
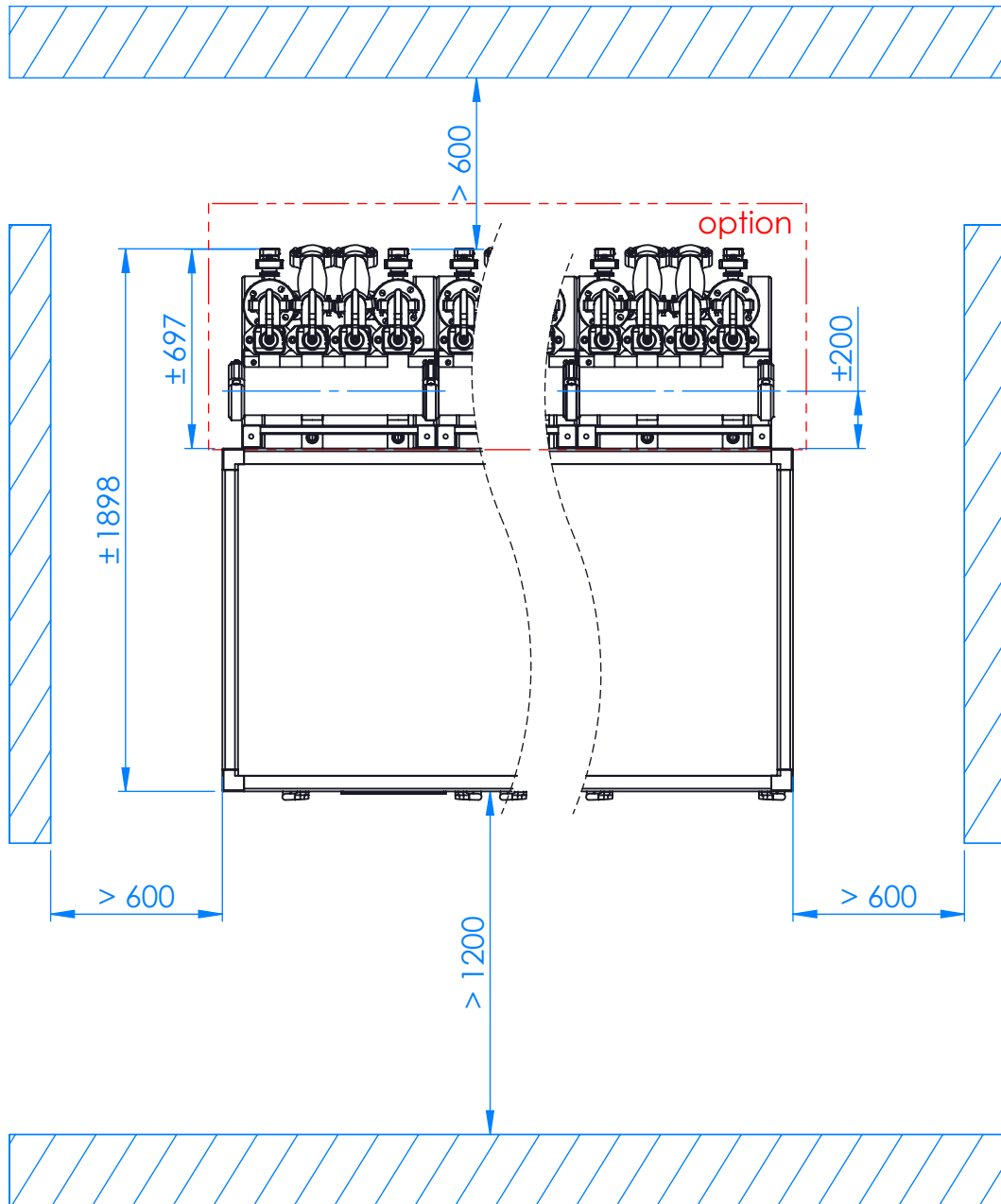
EER: energy efficiency ratio at nominal cooling capacity

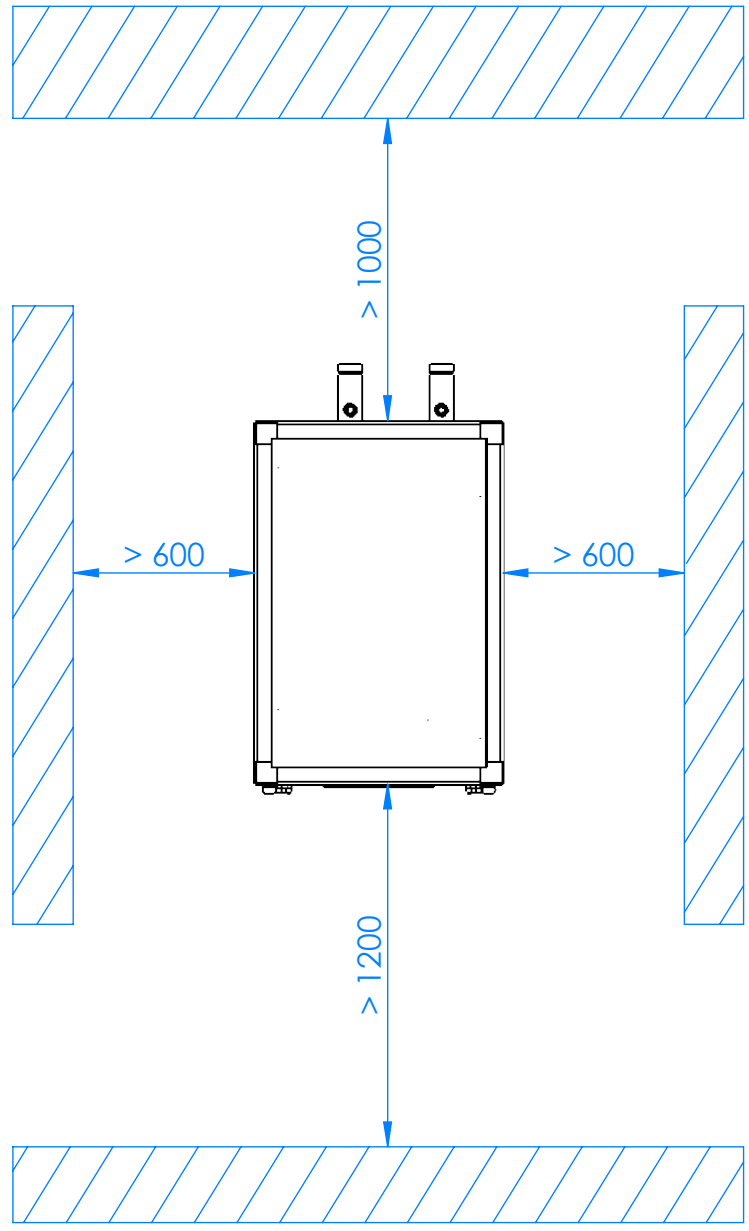
Operating limits

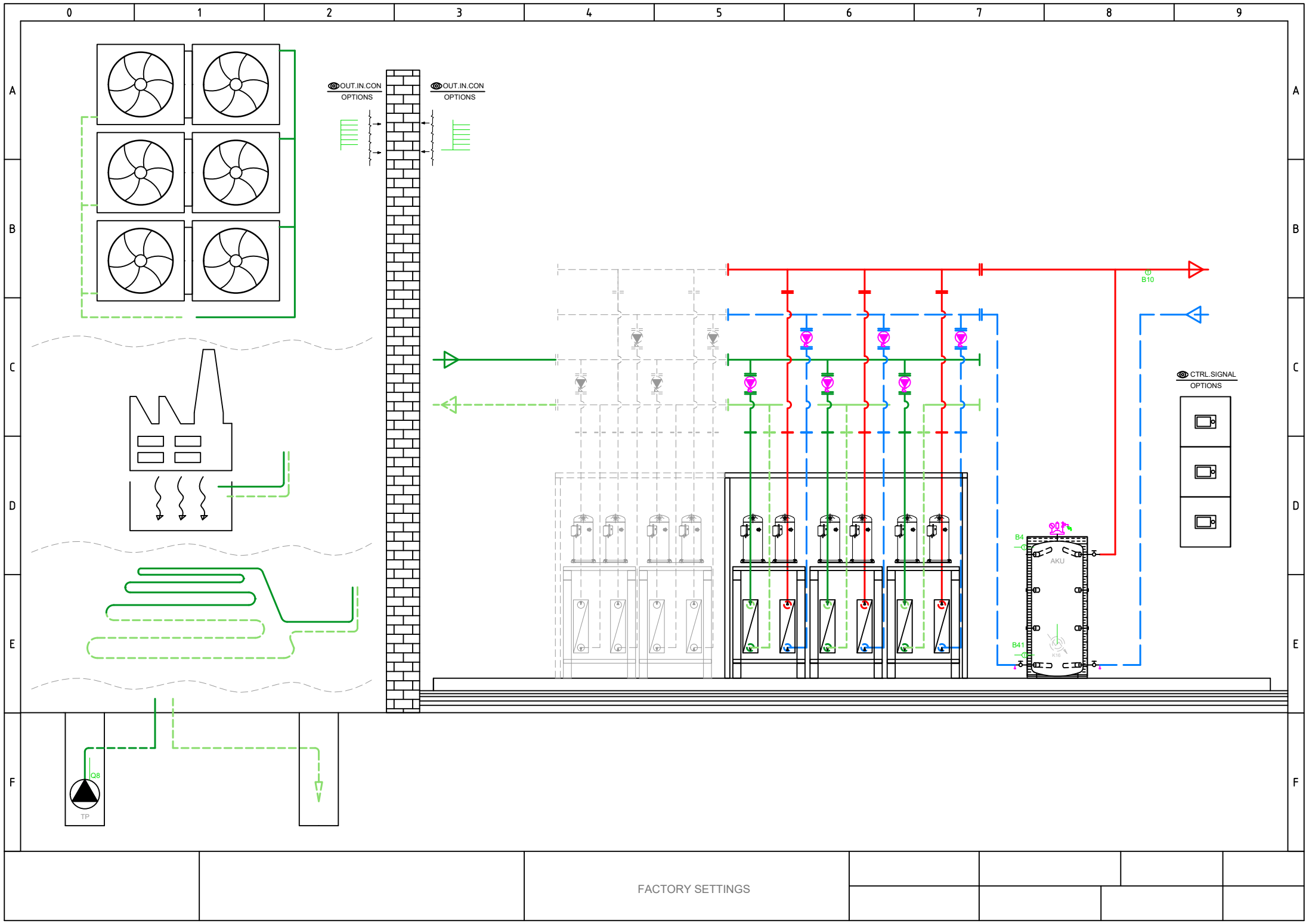
Temp °C











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

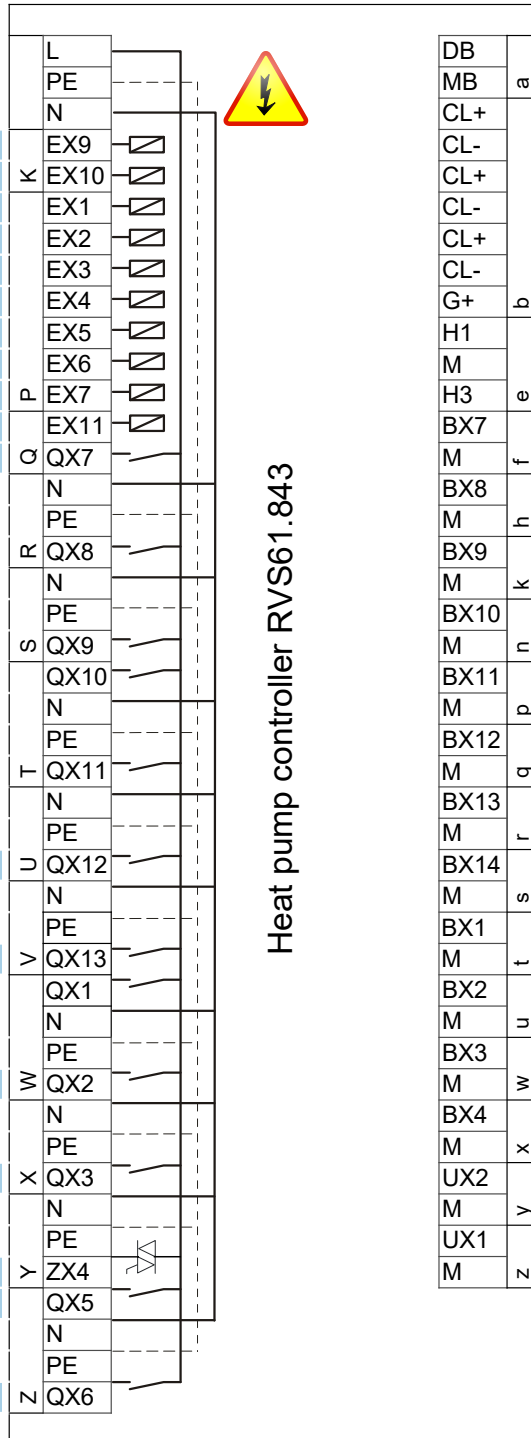
K10 Alarm output K10

K40 Crankcase heater K40

K81 Valve evaporator K81

K82 Valve EVI K82

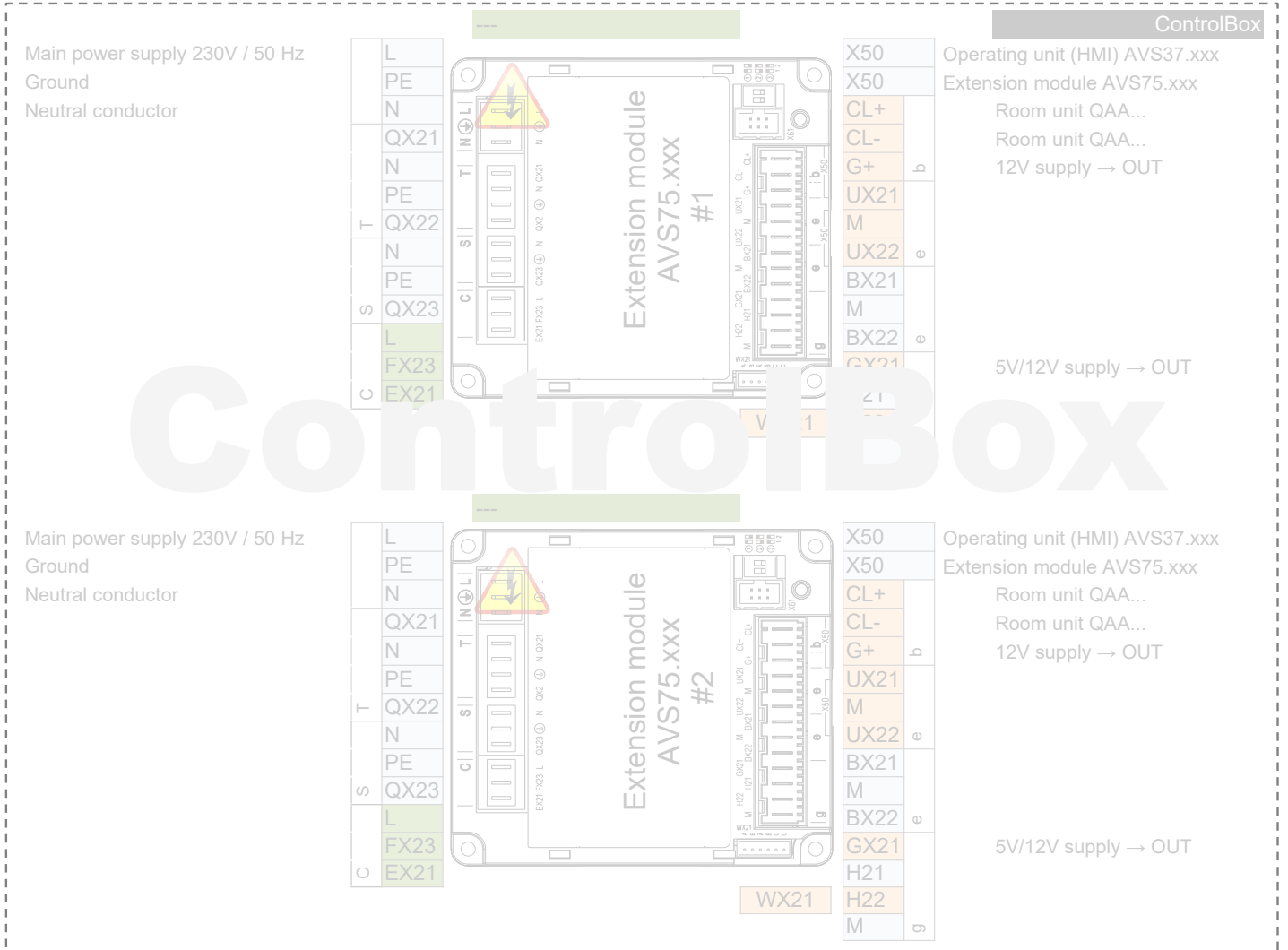
K2 Compressor stage 2 K2



- 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
- BX10 B21 HP flow sensor B21
- 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
- UX1 0..10 V Signal
- M
- Z 0..10 V Signal

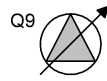
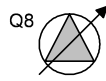


- AVS75.390
- AVS75.391
- AVS75.370



HEAT PUMP

EXTERNAL
INTERNAL



K1

K2

K82

K81

K40

K10

Q8 UX1

Q9 UX2

E11
KRW1
F1K
E11

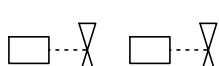
E12
KRW2
F2K
E12

E6

Q9 ERR
F1S
E24

Q8.ERR
F1Z
E15

E10
E9



230V,50Hz max 6A

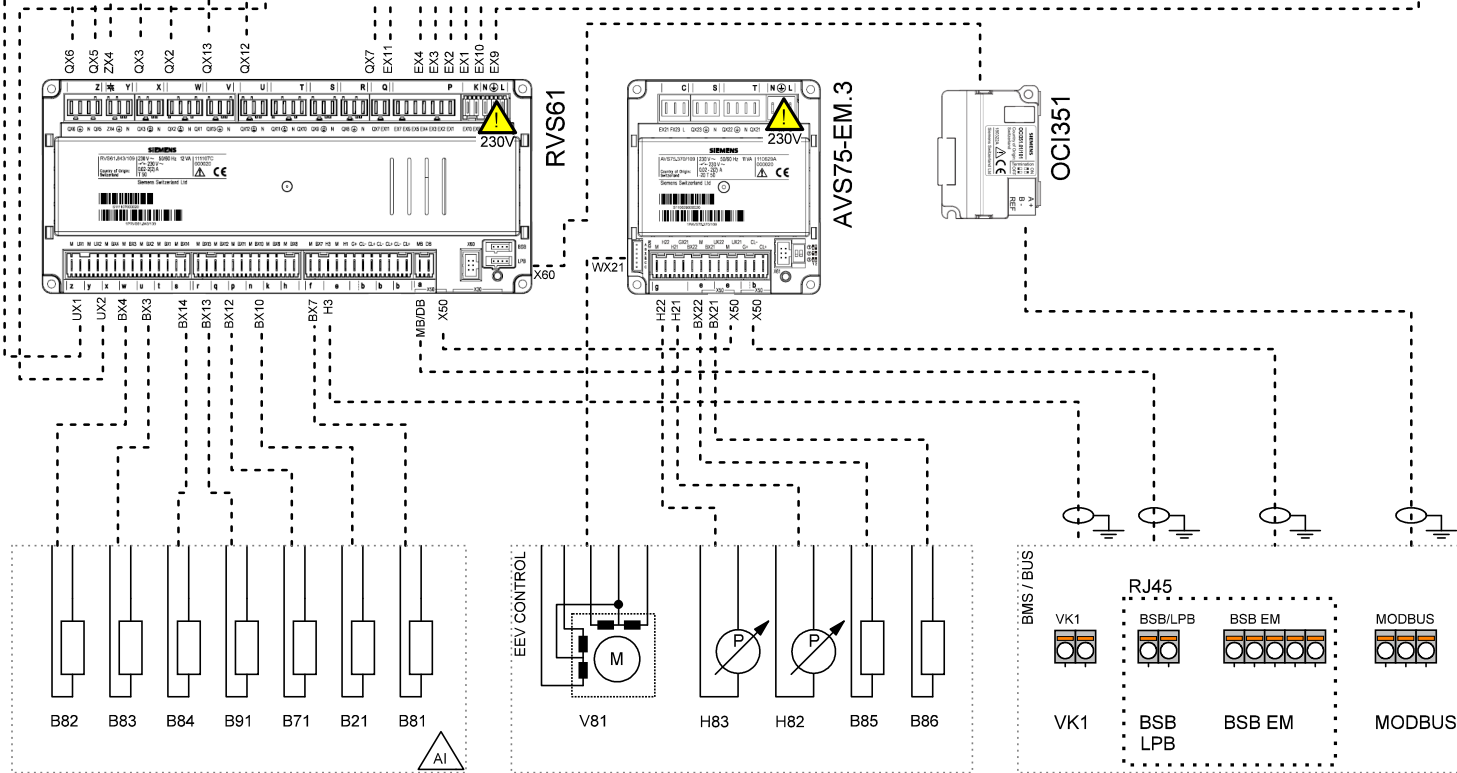
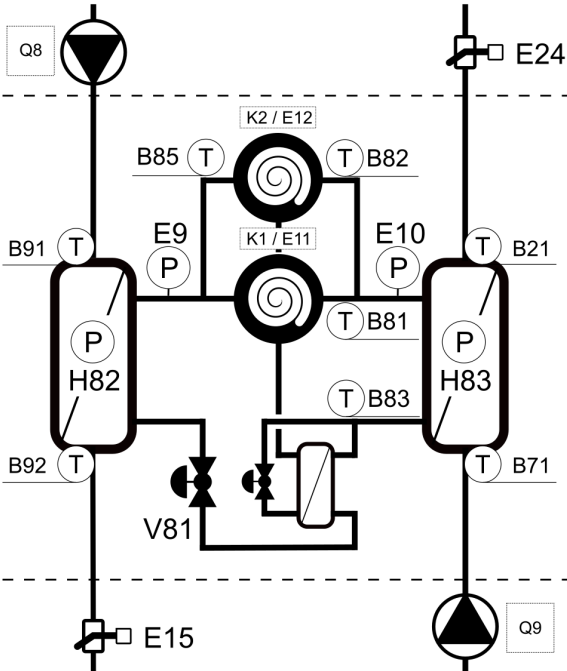
0...10V

230V,50Hz max 6A

0...10V

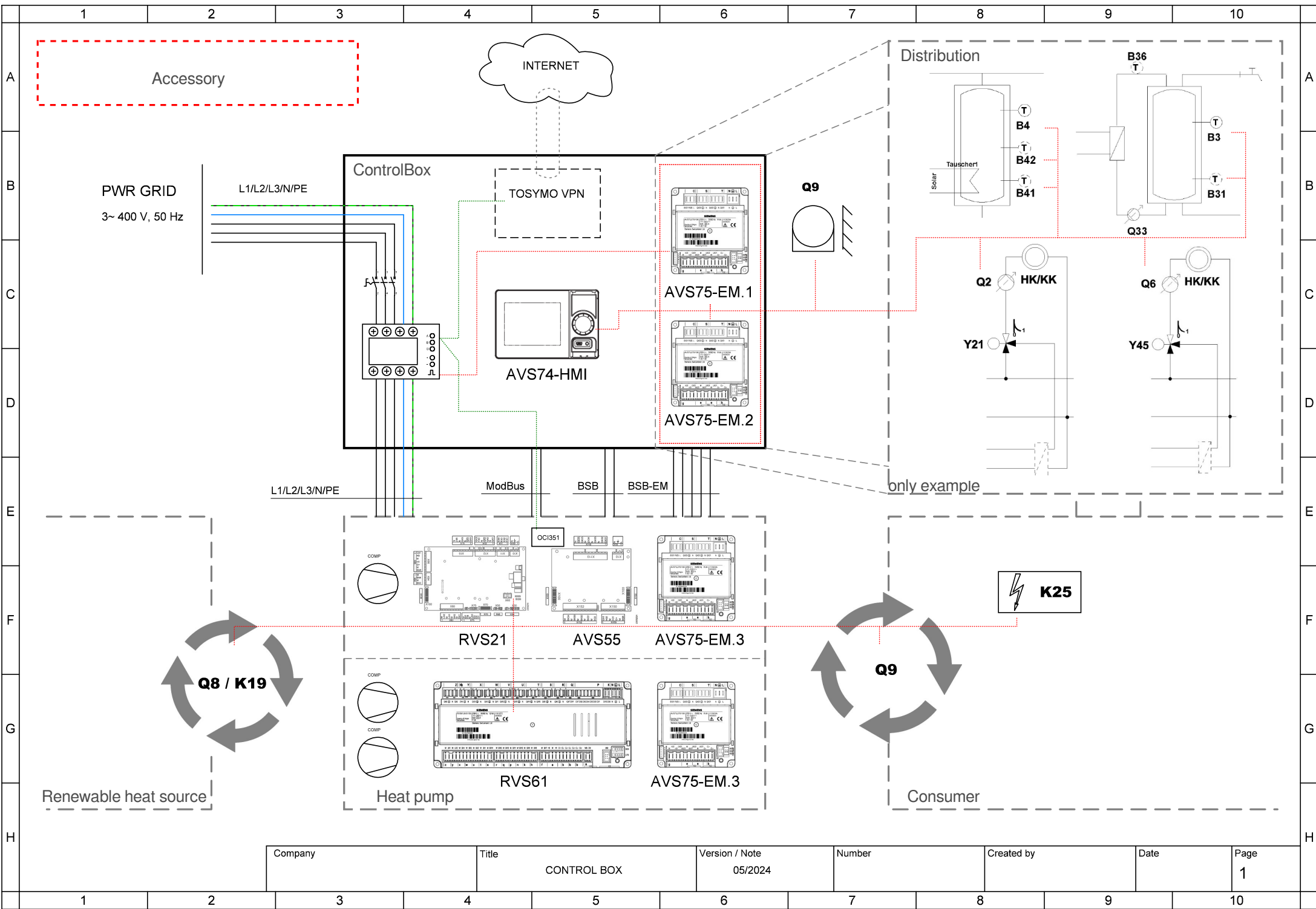
DO

DI



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

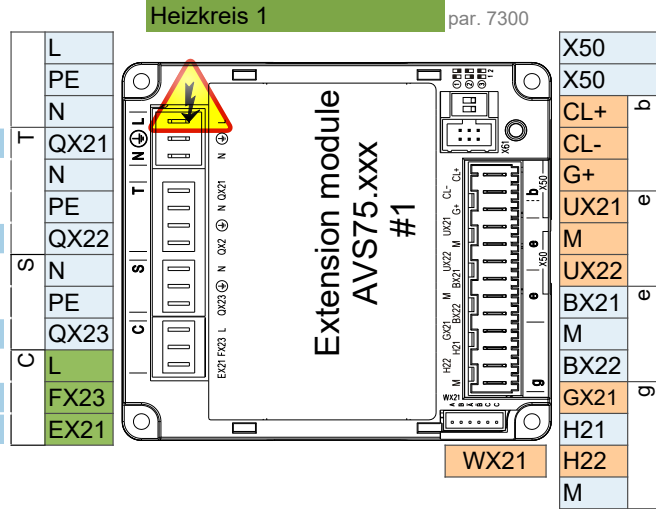
- AVS75.390
- AVS75.391
- AVS75.370

- 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

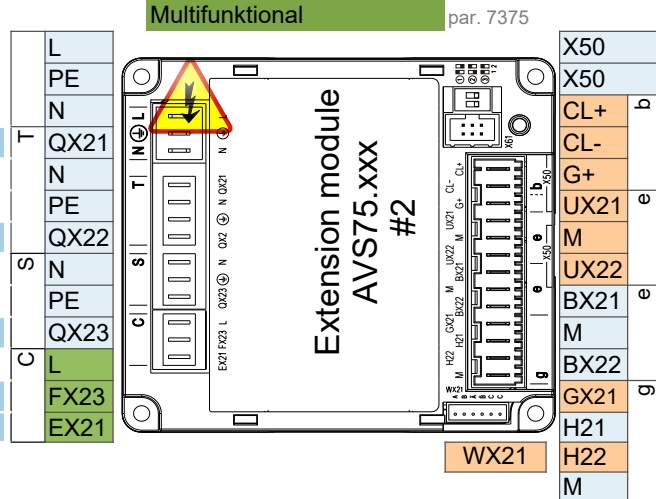


- AVS75.370**
 Main power supply 230V / 50 Hz
 Ground
 Neutral conductor
Q3 DHW ctrl elem Q3

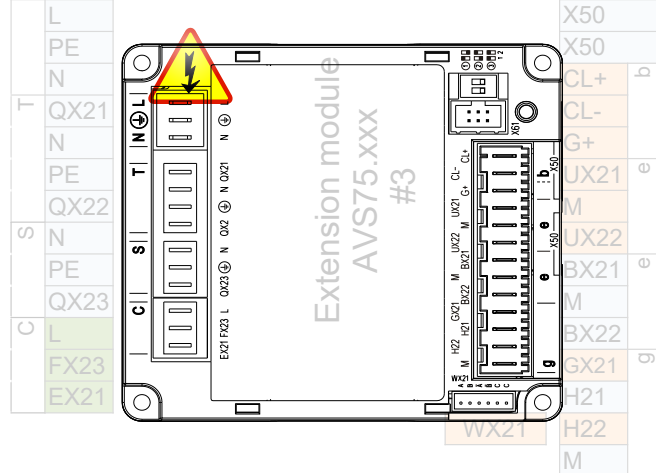
K6 El imm heater DHW K6

Q6 Heat circuit pump HC2 Q6

L Phase 230V
E62 Smart grid E62



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



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