

## Basic performance data - WAMAK TBW 500 EVI HeavyDuty 2L5

| Heating - EN 14511                                        |                     |                        |
|-----------------------------------------------------------|---------------------|------------------------|
| Heating capacity [kW]                                     | B0 / W35 (max)      | 480.5 ( 48.1 / 480.5 ) |
|                                                           | B0 / W35 (min)      | 48.1 ( 48.1 / 480.5 )  |
|                                                           | B0 / W34            | 480.0 ( 48.0 / 480.0 ) |
| Electrical power input [kW]                               | B0 / W35 (max)      | 108.6 ( 10.6 / 108.6 ) |
|                                                           | B0 / W35 (min)      | 10.6 ( 10.6 / 108.6 )  |
|                                                           | B0 / W34            | 106.2 ( 10.4 / 106.2 ) |
| Heating efficiency faktor [COP]                           | B0 / W35 (max)      | 4.43                   |
|                                                           | B0 / W35 (min)      | 4.54                   |
|                                                           | B0 / W34            | 4.52                   |
| Seasonal space heating energy efficiency - SCOP EN 14825  |                     |                        |
| Average Climate / Low Temperature [35 °C]                 | SCOP                | 5.03                   |
|                                                           | $\eta$ [ % ]        | 201.2                  |
|                                                           | Label               | A+++                   |
|                                                           | Qhe [ kWh ]         | 197297.2               |
|                                                           | Pdesignh [ kW ]     | 480.5                  |
|                                                           | Tbivalent [ °C ]    | -10                    |
| Cooling                                                   |                     |                        |
| Cooling capacity - [kW]                                   | A35 / W23-18        | 484.3                  |
|                                                           | A25 / W23-18        | 509.0                  |
|                                                           | A35 / W12-7         | 484.3                  |
|                                                           | A25 / W12-7         | 484.3                  |
| Seasonal space cooling energy efficiency - SEER EN 14825  |                     |                        |
| [ W 23 / 18 °C ]                                          | SEER                | 5.15                   |
|                                                           | Qce [ kWh ]         | 53383.3                |
|                                                           | $\eta_c$ [ % ]      | 205.8                  |
| Sound EN 12102                                            |                     |                        |
| Acoustic power - Lw                                       | dB(A)               | 77.3                   |
| Acoustic pressure - Lp                                    | 1 m dB(A)           | 69.3                   |
|                                                           | 5 m dB(A)           | 55.3                   |
|                                                           | 10 m dB(A)          | 49.3                   |
| Mechanical and operational information                    |                     |                        |
| Compressor type (3~ 400/50)                               | SCROLL / 10 /       | On/Off                 |
| Refrigerant                                               | R410A (GWP - 2088)  | 5 x 11.5 kg            |
| Operating limit temperatures heating - (min / max ) [ °C] | 25 / <b>65</b>      |                        |
| Operating limit temperatures source - (min / max ) [ °C]  | <b>-10 (7)</b> / 30 |                        |
| Weight                                                    | 3100 kg             |                        |

## Main technical data - WAMAK TBW 500 EVI HeavyDuty 2L5

| Enclosure type                         |                    |                   | HD2L5                                 |                                                |                                                  | Heat energy rejection side data        |                 |  |  |
|----------------------------------------|--------------------|-------------------|---------------------------------------|------------------------------------------------|--------------------------------------------------|----------------------------------------|-----------------|--|--|
| Basic dimensions                       |                    | Height [mm]       | 2000                                  |                                                | Operating limit temperatures heating             | MAX [°C]                               | 65              |  |  |
|                                        |                    | Width [mm]        | 3450                                  |                                                |                                                  | MIN [°C]                               | 25              |  |  |
|                                        |                    | Length [mm]       | 1200                                  |                                                | for more see operating limits diagram            |                                        |                 |  |  |
| Weight [kg]                            |                    | 3100              |                                       | Condenser                                      | Port size                                        | 5 x VIC 2.1/2 "                        |                 |  |  |
| Colour                                 |                    | Gray              |                                       |                                                | Type                                             | BPHE                                   |                 |  |  |
| Enclosure IP Class                     |                    | IP20              |                                       |                                                | Count                                            | 5                                      |                 |  |  |
| Refrigeration cycle                    |                    |                   |                                       |                                                | Material                                         | AISI 316                               |                 |  |  |
| Compressor                             | Type               | Scroll            |                                       | Maximal operating pressure - refrigerant [bar] |                                                  | 50                                     |                 |  |  |
|                                        | Number of stages   | 10                |                                       | Maximal operating pressure - Water [bar]       |                                                  | 6                                      |                 |  |  |
|                                        | On/Off             |                   |                                       | Testing pressure [bar]                         |                                                  | 70                                     |                 |  |  |
|                                        | Power factor Cosφ  | 0.64              |                                       | Heat transfer medium                           |                                                  | Water                                  |                 |  |  |
|                                        | Winding resistance | 0.76 Ohm          |                                       | Volume flow @ dT 5K (nom) - Water [m3/h]       |                                                  | 8.30 ~ 83.04                           |                 |  |  |
| Refrigerant                            |                    | R410A             |                                       | Internal pressure drop - Water [kPa]           |                                                  | 5 x 20                                 |                 |  |  |
|                                        | Volme              | 5 x 11.5 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         | 10 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                                       | Port size                              | 5 x VIC 2.1/2 " |  |  |
| Electrical connection data             |                    |                   |                                       |                                                |                                                  | Type                                   | BPHE            |  |  |
| Line voltage [#~ V/Hz]                 |                    |                   |                                       |                                                |                                                  | Count                                  | 5               |  |  |
| Current                                | nominal [A]        | 235.30            |                                       | Material                                       |                                                  | AISI 316                               |                 |  |  |
|                                        | maximal [A]        | 374.00            |                                       | Maximal operating pressure - refrigerant [bar] |                                                  | 29                                     |                 |  |  |
|                                        | starting [A]       | 57.2              |                                       | Heat transfer medium                           |                                                  | Ethylenglykol                          |                 |  |  |
| Softstart                              |                    |                   | -                                     |                                                | Brine proportion [%]                             |                                        | 29              |  |  |
| Main safety                            |                    |                   | C400                                  |                                                | Antifreeze to [°C]                               |                                        | -15             |  |  |
| Control System                         |                    |                   |                                       |                                                | Maximal operating pressure - Ethylenglykol [bar] |                                        | 6               |  |  |
| Main controller                        | SIEMENS            | RVS 61            |                                       | Volume flow - Ethylenglykol [m3/h]             |                                                  | 8.48 ~ 84.78                           |                 |  |  |
| Extension module                       | AVS75.3xx          | AVS75.3xx         | AVS75.372                             | Internal pressure drop - Ethylenglykol [kPa]   |                                                  | 5 x 20                                 |                 |  |  |
| Bus Clip-In                            |                    | LPB OCI346        |                                       | Modbus OCI352                                  |                                                  | Temperature difference - Ethylenglykol |                 |  |  |
| Online connection                      |                    | Web server OZW672 |                                       | ToSyMo                                         |                                                  | 4 K                                    |                 |  |  |
| Superheat controller                   |                    |                   | SEC61                                 |                                                |                                                  |                                        |                 |  |  |
| *** with accessory                     |                    |                   |                                       |                                                |                                                  |                                        |                 |  |  |

## WAMAK TBW 500 EVI HeavyDuty 2L5

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

| Model                                | TBW 500 EVI HeavyDuty 2L5 |
|--------------------------------------|---------------------------|
| 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 | 480.5       | kW   | Seasonal space heating energy efficiency                                                                                         | ηs     | 201.2        | %    |
| 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    | 480.0       | kW   | Tj = -7 °C                                                                                                                       | COPd   | 4.52         | -    |
| Tj = +2 °C                                                                                         | Pdh    | 477.4       | kW   | Tj = +2 °C                                                                                                                       | COPd   | 4.9          | -    |
| Tj = +7 °C                                                                                         | Pdh    | 475.2       | kW   | Tj = +7 °C                                                                                                                       | COPd   | 5.4          | -    |
| Tj = +12 °C                                                                                        | Pdh    | 472.7       | kW   | Tj = +12 °C                                                                                                                      | COPd   | 5.7          | -    |
| Tj = bivalent temperature                                                                          | Pdh    | 480.5       | kW   | Tj = bivalent temperature                                                                                                        | COPd   | 4.4          | -    |
| Tj = operation limit temperature                                                                   | Pdh    | ---         | kW   | Tj = operation limit temperature                                                                                                 | COPd   | ---          | -    |
| Bivalent temperature                                                                               | Tbiv   | -10         | °C   | Tj = operation limit temperature                                                                                                 | TOL    | ---          | °C   |
| Power consumption in modes other than active mode                                                  |        |             |      | Heating water operating limit temperature                                                                                        | WTOL   | 65           | °C   |
| Off mode                                                                                           | Poff   | 0.010       | kW   | Supplementary heater                                                                                                             |        |              |      |
| Thermostat-off mode                                                                                | Pto    | 0.010       | kW   | Rated heat output                                                                                                                | Psup   | 92.6         | 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:<br>Rated air flow rate, outdoors                                                                    | -      | ---          | m3/h |
| Sound power level                                                                                  |        |             |      | For water- or brine-to-water heat pumps:<br>Rated brine or water flow rate, outdoor heat exchanger                               | -      | 8.48 ~ 84.78 | m3/h |
| indoors                                                                                            | Lwa    | 77          | dB   |                                                                                                                                  |        |              |      |
| outdoors                                                                                           | Lwa    | ---         | dB   |                                                                                                                                  |        |              |      |
| Annual energy consumption                                                                          | QHE    | 197297.2    | kWh  |                                                                                                                                  |        |              |      |

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

| Model                                | TBW 500 EVI HeavyDuty 2L5 |
|--------------------------------------|---------------------------|
| 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 | 491.4       | kW   | Seasonal space heating energy efficiency                                                                                         | ηs     | 160.9        | %    |
| 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    | 494.4       | kW   | Tj = -7 °C                                                                                                                       | COPd   | 3.29         | -    |
| Tj = +2 °C                                                                                         | Pdh    | 494.6       | kW   | Tj = +2 °C                                                                                                                       | COPd   | 4.1          | -    |
| Tj = +7 °C                                                                                         | Pdh    | 486.0       | kW   | Tj = +7 °C                                                                                                                       | COPd   | 4.6          | -    |
| Tj = +12 °C                                                                                        | Pdh    | 483.3       | kW   | Tj = +12 °C                                                                                                                      | COPd   | 5.0          | -    |
| Tj = bivalent temperature                                                                          | Pdh    | 491.4       | 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   | 92.6         | 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:<br>Rated air flow rate, outdoors                                                                    | -      | ---          | m3/h |
| Sound power level                                                                                  |        |             |      | For water- or brine-to-water heat pumps:<br>Rated brine or water flow rate, outdoor heat exchanger                               | -      | 8.48 ~ 84.78 | m3/h |
| indoors                                                                                            | Lwa    | 77          | dB   |                                                                                                                                  |        |              |      |
| outdoors                                                                                           | Lwa    | ---         | dB   |                                                                                                                                  |        |              |      |
| Annual energy consumption                                                                          | QHE    | 252349.4    | kWh  |                                                                                                                                  |        |              |      |

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## WAMAK

TBW 500 EVI  
HeavyDuty 2L5



55 °C

35 °C

A+++

A+++

A+++

A++

A+

A

B

C

D



77 dB



--- dB

■ 516  
■ 492  
■ 482  
kW

■ 491  
■ 481  
■ 457  
kW



2019

811/2013

TBW 500 EVI

HeavyDuty 2L5

### ErP Data

55 °C

35 °C

Energy class

A+++

A+++

$\eta$  [%]

160.9

201.2

$P_{rated}$  [kW]

492

481

$Q_{HE}$  [kWh/y]

252350

197298

SCOP [-]

4.02

5.03

$T_{bivalent}$  [°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]

ZHI46K1P-TWD\_R410A\_10\_BWW

| Operating conditions |                     | Qh    | P     | COP  |
|----------------------|---------------------|-------|-------|------|
| 1                    | B0 / W30-35         | 480.5 | 108.6 | 4.43 |
| 2                    | B0 / W30-35 ( MIN ) | 48.1  | 10.6  | 4.54 |
| A                    | B0 / Wxx-34         | 480.0 | 106.2 | 4.52 |
| B                    | B0 / Wxx-30         | 477.4 | 97.1  | 4.92 |
| C                    | B0 / Wxx-27         | 47.5  | 8.8   | 5.37 |
| D                    | B0 / Wxx-24         | 47.3  | 8.2   | 5.74 |
| E                    | B0 / Wxx-35         | 480.5 | 108.6 | 4.43 |
| F                    | B0 / Wxx-35         | 480.5 | 108.6 | 4.43 |

| SCOP DATA EN 14825:2018                       |        |
|-----------------------------------------------|--------|
| Source - Brine [0°C] / Low Temperature [35°C] |        |
| SCOPon                                        | 5.03   |
| SCOPnet                                       | 5.03   |
| SCOP                                          | 5.03   |
| η [ % ]                                       | 201.19 |
| Label                                         | A+++   |
| Qh [ kWh ]                                    | 197297 |
| Pdesignh [ kW ]                               | 480.5  |
| Tbivalent [ °C ]                              | -10    |

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

| Operating conditions |                     | Qh    | P     | COP  |
|----------------------|---------------------|-------|-------|------|
| 1                    | B0 / W47-55         | 491.4 | 170.1 | 2.89 |
| 2                    | B0 / W47-55 ( MIN ) | 49.1  | 16.5  | 2.96 |
| A                    | B0 / Wxx-52         | 494.4 | 155.2 | 3.29 |
| B                    | B0 / Wxx-42         | 494.6 | 121.2 | 4.13 |
| C                    | B0 / Wxx-36         | 48.6  | 10.5  | 4.64 |
| D                    | B0 / Wxx-30         | 48.3  | 9.5   | 5.10 |
| E                    | B0 / Wxx-55         | 491.4 | 170.1 | 2.89 |
| F                    | B0 / Wxx-54         | 495.0 | 158.8 | 3.12 |

| SCOP DATA EN 14825:2018                          |        |
|--------------------------------------------------|--------|
| Source - Brine [0°C] / Medium Temperature [55°C] |        |
| SCOPon                                           | 4.02   |
| SCOPnet                                          | 4.02   |
| SCOP                                             | 4.02   |
| η [ % ]                                          | 160.87 |
| Label                                            | A+++   |
| Qh [ kWh ]                                       | 252349 |
| Pdesignh [ kW ]                                  | 491.4  |
| Tbivalent [ °C ]                                 | -10    |

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

| Operating conditions |                      | Qh    | P     | COP  |
|----------------------|----------------------|-------|-------|------|
| 1                    | W10 / W30-35         | 605.9 | 108.5 | 5.58 |
| 2                    | W10 / W30-35 ( MIN ) | 60.6  | 10.6  | 5.72 |
| A                    | W10 / Wxx-34         | 606.1 | 106.2 | 5.70 |
| B                    | W10 / Wxx-30         | 606.4 | 97.6  | 6.21 |
| C                    | W10 / Wxx-27         | 606.5 | 91.6  | 6.79 |
| D                    | W10 / Wxx-24         | 606.4 | 85.9  | 7.24 |
| E                    | W10 / Wxx-35         | 605.9 | 108.5 | 5.58 |
| F                    | W10 / Wxx-35         | 605.9 | 108.5 | 5.58 |

| SCOP DATA EN 14825:2018                        |        |
|------------------------------------------------|--------|
| Source - Water [10°C] / Low Temperature [35°C] |        |
| SCOPon                                         | 6.35   |
| SCOPnet                                        | 6.35   |
| SCOP                                           | 6.35   |
| η [ % ]                                        | 254.13 |
| Label                                          | A+++   |
| Qh [ kWh ]                                     | 196953 |
| Pdesignh [ kW ]                                | 605.9  |
| Tbivalent [ °C ]                               | -10.00 |

## WAMAK TBW 500 EVI HeavyDuty 2L5

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

|   | Operating conditions | Qh    | P     | COP  |
|---|----------------------|-------|-------|------|
| 1 | W10 / W47-55         | 604.6 | 170.1 | 3.55 |
| 2 | W10 / W47-55 ( MIN ) | 60.5  | 16.6  | 3.64 |
| A | W10 / Wxx-52         | 610.6 | 154.9 | 3.94 |
| B | W10 / Wxx-42         | 612.0 | 120.9 | 5.06 |
| C | W10 / Wxx-36         | 612.9 | 107.4 | 5.85 |
| D | W10 / Wxx-30         | 613.5 | 97.6  | 6.44 |
| E | W10 / Wxx-55         | 604.6 | 170.1 | 3.55 |
| F | W10 / Wxx-55         | 604.6 | 170.1 | 3.55 |

| SCOP DATA EN 14825:2018                           |        |
|---------------------------------------------------|--------|
| Source - Water [10°C] / Medium Temperature [55°C] |        |
| SCOPon                                            | 4.93   |
| SCOPnet                                           | 4.93   |
| SCOP                                              | 4.93   |
| η [ % ]                                           | 197.25 |
| Label                                             | A+++   |
| Qh [ kWh ]                                        | 253220 |
| Pdesignh [ kW ]                                   | 604.6  |
| Tbivalent [ °C ]                                  | -10.00 |

### Low temperature cooling W 12 / 7°C

|   | Operating conditions | Qc    | P     | EER  |
|---|----------------------|-------|-------|------|
| A | W30-35 / W12-7       | 373.9 | 116.0 | 3.22 |
| B | W26-xx / W12-7       | 380.8 | 106.2 | 3.59 |
| C | W22-xx / W12-7       | 386.7 | 97.1  | 3.98 |
| D | W18-xx / W12-7       | 389.3 | 92.8  | 4.20 |

| SEER DATA EN 14825:2018 [ W 12 / 7°C ] |        |
|----------------------------------------|--------|
| SEERon                                 | 3.86   |
| SEER                                   | 3.86   |
| Qc [ kWh ]                             | 218280 |
| η [ % ]                                | 154.51 |

### Radiant cooling W 23 / 18°C

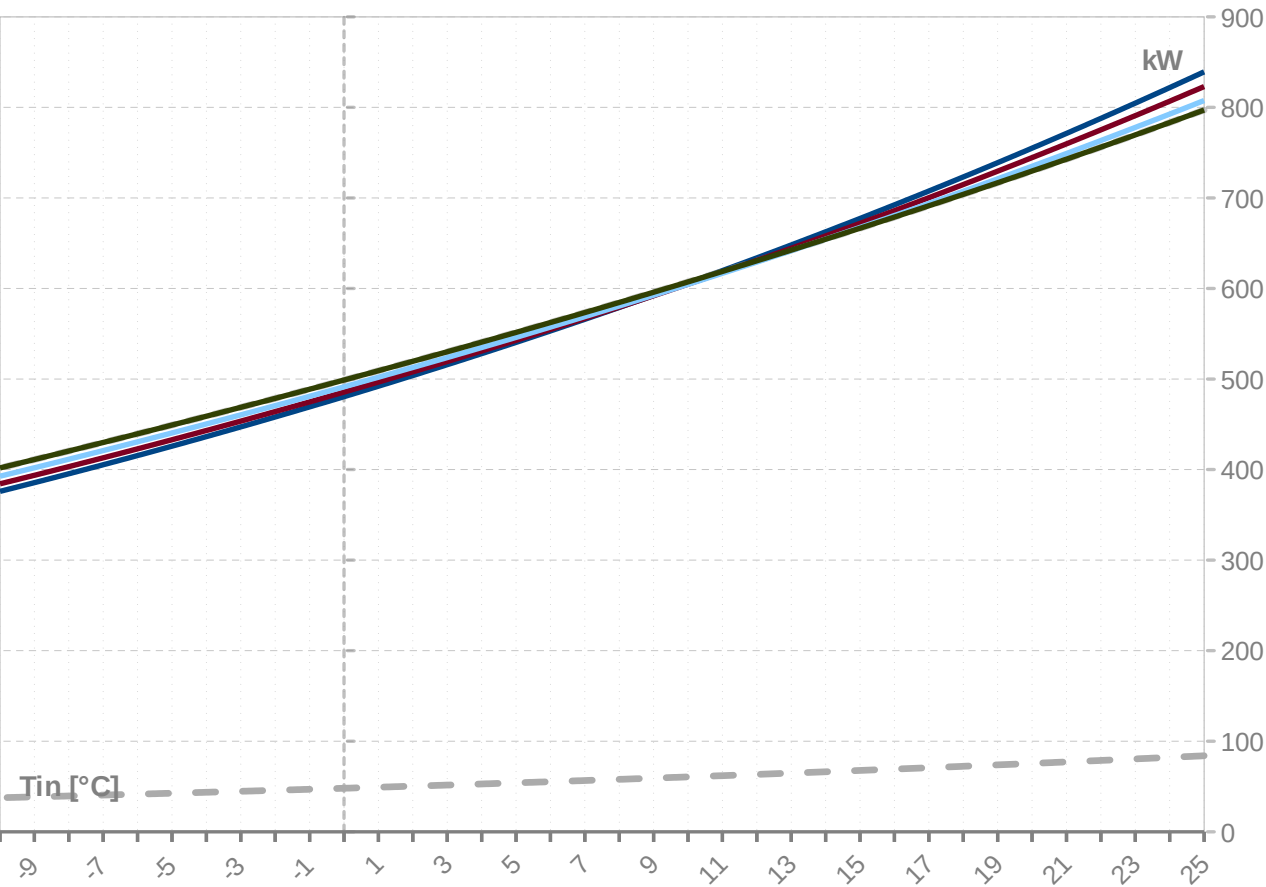
|   | Operating conditions | Qc    | P     | EER  |
|---|----------------------|-------|-------|------|
| A | W50-xx / W23-18      | 434.4 | 182.4 | 2.38 |
| B | W40-xx / W23-18      | 469.4 | 145.0 | 3.24 |
| C | W30-35 / W23-18      | 497.4 | 116.0 | 4.29 |
| D | W26-xx / W23-18      | 506.8 | 106.2 | 4.77 |

| SEER DATA EN 14825:2018 [ W 23 / 18°C ] |        |
|-----------------------------------------|--------|
| SEERon                                  | 5.15   |
| SEER                                    | 5.15   |
| Qc [ kWh ]                              | 218280 |
| η [ % ]                                 | 205.82 |

ZHI46K1P-TWD\_R410A\_10\_BWW

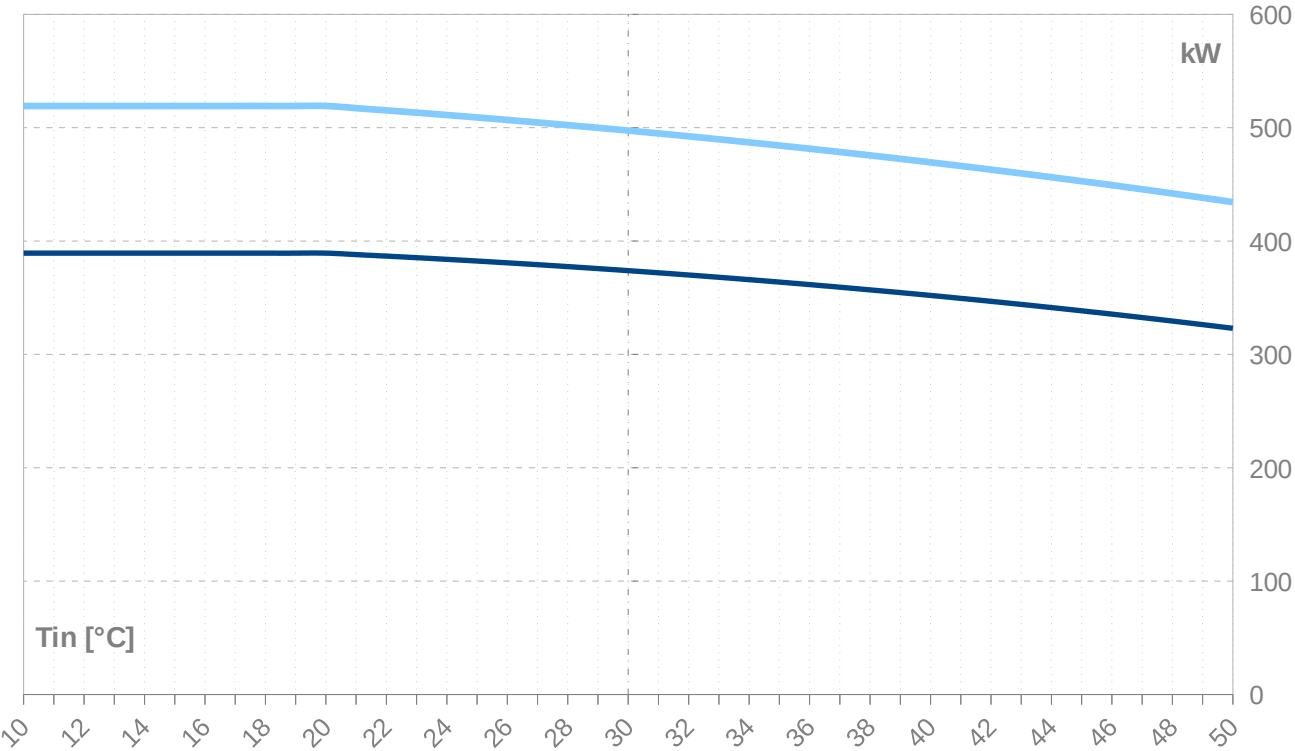
Performance lines - heating

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<br>-OU | 35        |           |           |            |            |            |            |           |           |           |          |
|-----------|-----------|-----------|-----------|------------|------------|------------|------------|-----------|-----------|-----------|----------|
| Ts<br>-IN | Qh<br>nom | Qh<br>min | Qh<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | COP<br>nom | Qc<br>nom | Qc<br>min | Qc<br>max | I<br>nom |
| [°C]      | [kW]      | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW    | [kW]      | [kW]      | [kW]      | [A]      |
| 25        | 839.2     | 83.9      | 839.2     | 110.6      | 10.8       | 110.6      | 7.59       | 735.9     | 73.6      | 735.9     | 234.0    |
| 24        | 821.8     | 82.2      | 821.8     | 110.3      | 10.8       | 110.3      | 7.45       | 718.8     | 71.9      | 718.8     | 233.6    |
| 23        | 804.7     | 80.5      | 804.7     | 110.0      | 10.7       | 110.0      | 7.31       | 701.9     | 70.2      | 701.9     | 233.2    |
| 22        | 787.8     | 78.8      | 787.8     | 109.8      | 10.7       | 109.8      | 7.18       | 685.3     | 68.5      | 685.3     | 232.9    |
| 21        | 771.3     | 77.1      | 771.3     | 109.6      | 10.7       | 109.6      | 7.04       | 668.9     | 66.9      | 668.9     | 232.7    |
| 20        | 755.0     | 75.5      | 755.0     | 109.4      | 10.7       | 109.4      | 6.90       | 652.8     | 65.3      | 652.8     | 232.5    |
| 19        | 738.9     | 73.9      | 738.9     | 109.2      | 10.7       | 109.2      | 6.76       | 636.9     | 63.7      | 636.9     | 232.4    |
| 18        | 723.1     | 72.3      | 723.1     | 109.1      | 10.6       | 109.1      | 6.63       | 621.3     | 62.1      | 621.3     | 232.3    |
| 17        | 707.6     | 70.8      | 707.6     | 109.0      | 10.6       | 109.0      | 6.49       | 605.8     | 60.6      | 605.8     | 232.3    |
| 16        | 692.3     | 69.2      | 692.3     | 108.9      | 10.6       | 108.9      | 6.36       | 590.7     | 59.1      | 590.7     | 232.4    |
| 15        | 677.3     | 67.7      | 677.3     | 108.8      | 10.6       | 108.8      | 6.23       | 575.7     | 57.6      | 575.7     | 232.4    |
| 14        | 662.6     | 66.3      | 662.6     | 108.7      | 10.6       | 108.7      | 6.10       | 561.0     | 56.1      | 561.0     | 232.5    |
| 13        | 648.0     | 64.8      | 648.0     | 108.6      | 10.6       | 108.6      | 5.96       | 546.6     | 54.7      | 546.6     | 232.7    |
| 12        | 633.8     | 63.4      | 633.8     | 108.6      | 10.6       | 108.6      | 5.84       | 532.4     | 53.2      | 532.4     | 232.8    |
| 11        | 619.7     | 62.0      | 619.7     | 108.6      | 10.6       | 108.6      | 5.71       | 518.4     | 51.8      | 518.4     | 233.0    |
| 10        | 605.9     | 60.6      | 605.9     | 108.5      | 10.6       | 108.5      | 5.58       | 504.6     | 50.5      | 504.6     | 233.2    |
| 9         | 592.4     | 59.2      | 592.4     | 108.5      | 10.6       | 108.5      | 5.46       | 491.0     | 49.1      | 491.0     | 233.5    |
| 8         | 579.1     | 57.9      | 579.1     | 108.5      | 10.6       | 108.5      | 5.34       | 477.7     | 47.8      | 477.7     | 233.7    |
| 7         | 566.0     | 56.6      | 566.0     | 108.5      | 10.6       | 108.5      | 5.22       | 464.6     | 46.5      | 464.6     | 234.0    |
| 6         | 553.1     | 55.3      | 553.1     | 108.5      | 10.6       | 108.5      | 5.10       | 451.8     | 45.2      | 451.8     | 234.3    |
| 5         | 540.5     | 54.0      | 540.5     | 108.5      | 10.6       | 108.5      | 4.98       | 439.1     | 43.9      | 439.1     | 234.6    |
| 4         | 528.1     | 52.8      | 528.1     | 108.5      | 10.6       | 108.5      | 4.87       | 426.7     | 42.7      | 426.7     | 234.9    |
| 3         | 515.9     | 51.6      | 515.9     | 108.5      | 10.6       | 108.5      | 4.75       | 414.5     | 41.4      | 414.5     | 235.1    |
| 2         | 503.9     | 50.4      | 503.9     | 108.6      | 10.6       | 108.6      | 4.64       | 402.5     | 40.3      | 402.5     | 235.4    |
| 1         | 492.1     | 49.2      | 492.1     | 108.6      | 10.6       | 108.6      | 4.53       | 390.7     | 39.1      | 390.7     | 235.7    |
| 0         | 480.5     | 48.1      | 480.5     | 108.6      | 10.6       | 108.6      | 4.43       | 379.2     | 37.9      | 379.2     | 236.0    |
| -1        | 469.2     | 46.9      | 469.2     | 108.6      | 10.6       | 108.6      | 4.32       | 367.8     | 36.8      | 367.8     | 236.3    |
| -2        | 458.0     | 45.8      | 458.0     | 108.5      | 10.6       | 108.5      | 4.22       | 356.7     | 35.7      | 356.7     | 236.5    |
| -3        | 447.1     | 44.7      | 447.1     | 108.5      | 10.6       | 108.5      | 4.12       | 345.8     | 34.6      | 345.8     | 236.7    |
| -4        | 436.4     | 43.6      | 436.4     | 108.5      | 10.6       | 108.5      | 4.02       | 335.0     | 33.5      | 335.0     | 236.9    |
| -5        | 425.8     | 42.6      | 425.8     | 108.5      | 10.6       | 108.5      | 3.93       | 324.5     | 32.5      | 324.5     | 237.1    |
| -6        | 415.4     | 41.5      | 415.4     | 108.4      | 10.6       | 108.4      | 3.83       | 314.2     | 31.4      | 314.2     | 237.3    |
| -7        | 405.3     | 40.5      | 405.3     | 108.4      | 10.6       | 108.4      | 3.74       | 304.1     | 30.4      | 304.1     | 237.4    |
| -8        | 395.3     | 39.5      | 395.3     | 108.3      | 10.6       | 108.3      | 3.65       | 294.2     | 29.4      | 294.2     | 237.4    |
| -9        | 385.5     | 38.6      | 385.5     | 108.2      | 10.6       | 108.2      | 3.56       | 284.5     | 28.4      | 284.5     | 237.5    |
| -10       | 375.9     | 37.6      | 375.9     | 108.1      | 10.5       | 108.1      | 3.48       | 275.0     | 27.5      | 275.0     | 237.5    |
| -11       | 366.5     | 36.6      | 366.5     | 108.0      | 10.5       | 108.0      | 3.39       | 265.7     | 26.6      | 265.7     | 237.4    |
| -12       | 357.2     | 35.7      | 357.2     | 107.8      | 10.5       | 107.8      | 3.31       | 256.5     | 25.7      | 256.5     | 237.3    |
| -13       | 348.1     | 34.8      | 348.1     | 107.6      | 10.5       | 107.6      | 3.23       | 247.6     | 24.8      | 247.6     | 237.2    |
| -14       | 339.2     | 33.9      | 339.2     | 107.4      | 10.5       | 107.4      | 3.16       | 238.9     | 23.9      | 238.9     | 237.0    |
| -15       | 330.5     | 33.0      | 330.5     | 107.2      | 10.5       | 107.2      | 3.08       | 230.3     | 23.0      | 230.3     | 236.7    |

-- attention: operating limits not reflected in performance table

ZHI46K1P-TWD\_R410A\_10\_BWW

| Th<br>-OU | 45        |           |           |            |            |            |            |           |           |           |          |
|-----------|-----------|-----------|-----------|------------|------------|------------|------------|-----------|-----------|-----------|----------|
| Ts<br>-IN | Qh<br>nom | Qh<br>min | Qh<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | COP<br>nom | Qc<br>nom | Qc<br>min | Qc<br>max | I<br>nom |
| [°C]      | [kW]      | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW    | [kW]      | [kW]      | [kW]      | [A]      |
| 25        | 823.0     | 82.3      | 823.0     | 133.2      | 13.0       | 133.2      | 6.18       | 698.5     | 69.9      | 698.5     | 264.4    |
| 24        | 806.8     | 80.7      | 806.8     | 133.2      | 13.0       | 133.2      | 6.06       | 682.4     | 68.2      | 682.4     | 264.1    |
| 23        | 790.8     | 79.1      | 790.8     | 133.1      | 13.0       | 133.1      | 5.94       | 666.5     | 66.7      | 666.5     | 263.9    |
| 22        | 775.2     | 77.5      | 775.2     | 133.1      | 13.0       | 133.1      | 5.82       | 650.9     | 65.1      | 650.9     | 263.7    |
| 21        | 759.7     | 76.0      | 759.7     | 133.1      | 13.0       | 133.1      | 5.71       | 635.4     | 63.5      | 635.4     | 263.6    |
| 20        | 744.5     | 74.4      | 744.5     | 133.1      | 13.0       | 133.1      | 5.59       | 620.2     | 62.0      | 620.2     | 263.5    |
| 19        | 729.5     | 73.0      | 729.5     | 133.1      | 13.0       | 133.1      | 5.48       | 605.2     | 60.5      | 605.2     | 263.4    |
| 18        | 714.8     | 71.5      | 714.8     | 133.1      | 13.0       | 133.1      | 5.37       | 590.4     | 59.0      | 590.4     | 263.4    |
| 17        | 700.2     | 70.0      | 700.2     | 133.2      | 13.0       | 133.2      | 5.26       | 575.9     | 57.6      | 575.9     | 263.4    |
| 16        | 686.0     | 68.6      | 686.0     | 133.2      | 13.0       | 133.2      | 5.15       | 561.5     | 56.2      | 561.5     | 263.4    |
| 15        | 671.9     | 67.2      | 671.9     | 133.3      | 13.0       | 133.3      | 5.04       | 547.4     | 54.7      | 547.4     | 263.5    |
| 14        | 658.0     | 65.8      | 658.0     | 133.3      | 13.0       | 133.3      | 4.94       | 533.5     | 53.4      | 533.5     | 263.6    |
| 13        | 644.4     | 64.4      | 644.4     | 133.4      | 13.0       | 133.4      | 4.83       | 519.8     | 52.0      | 519.8     | 263.7    |
| 12        | 631.0     | 63.1      | 631.0     | 133.5      | 13.0       | 133.5      | 4.73       | 506.3     | 50.6      | 506.3     | 263.8    |
| 11        | 617.8     | 61.8      | 617.8     | 133.5      | 13.0       | 133.5      | 4.63       | 493.1     | 49.3      | 493.1     | 263.9    |
| 10        | 604.8     | 60.5      | 604.8     | 133.6      | 13.0       | 133.6      | 4.53       | 480.0     | 48.0      | 480.0     | 264.0    |
| 9         | 592.0     | 59.2      | 592.0     | 133.7      | 13.0       | 133.7      | 4.43       | 467.1     | 46.7      | 467.1     | 264.1    |
| 8         | 579.4     | 57.9      | 579.4     | 133.7      | 13.0       | 133.7      | 4.33       | 454.5     | 45.4      | 454.5     | 264.2    |
| 7         | 567.0     | 56.7      | 567.0     | 133.8      | 13.1       | 133.8      | 4.24       | 442.0     | 44.2      | 442.0     | 264.4    |
| 6         | 554.8     | 55.5      | 554.8     | 133.9      | 13.1       | 133.9      | 4.14       | 429.8     | 43.0      | 429.8     | 264.5    |
| 5         | 542.8     | 54.3      | 542.8     | 133.9      | 13.1       | 133.9      | 4.05       | 417.7     | 41.8      | 417.7     | 264.6    |
| 4         | 531.0     | 53.1      | 531.0     | 134.0      | 13.1       | 134.0      | 3.96       | 405.9     | 40.6      | 405.9     | 264.7    |
| 3         | 519.4     | 51.9      | 519.4     | 134.0      | 13.1       | 134.0      | 3.88       | 394.2     | 39.4      | 394.2     | 264.7    |
| 2         | 507.9     | 50.8      | 507.9     | 134.0      | 13.1       | 134.0      | 3.79       | 382.8     | 38.3      | 382.8     | 264.8    |
| 1         | 496.7     | 49.7      | 496.7     | 134.0      | 13.1       | 134.0      | 3.71       | 371.5     | 37.2      | 371.5     | 264.8    |
| 0         | 485.6     | 48.6      | 485.6     | 134.0      | 13.1       | 134.0      | 3.62       | 360.5     | 36.0      | 360.5     | 264.8    |
| -1        | 474.7     | 47.5      | 474.7     | 134.0      | 13.1       | 134.0      | 3.54       | 349.6     | 35.0      | 349.6     | 264.8    |
| -2        | 464.0     | 46.4      | 464.0     | 134.0      | 13.1       | 134.0      | 3.46       | 338.9     | 33.9      | 338.9     | 264.7    |
| -3        | 453.5     | 45.3      | 453.5     | 133.9      | 13.1       | 133.9      | 3.39       | 328.4     | 32.8      | 328.4     | 264.6    |
| -4        | 443.1     | 44.3      | 443.1     | 133.9      | 13.1       | 133.9      | 3.31       | 318.1     | 31.8      | 318.1     | 264.5    |
| -5        | 432.9     | 43.3      | 432.9     | 133.8      | 13.0       | 133.8      | 3.24       | 308.0     | 30.8      | 308.0     | 264.3    |
| -6        | 422.8     | 42.3      | 422.8     | 133.7      | 13.0       | 133.7      | 3.16       | 298.0     | 29.8      | 298.0     | 264.1    |
| -7        | 412.9     | 41.3      | 412.9     | 133.5      | 13.0       | 133.5      | 3.09       | 288.2     | 28.8      | 288.2     | 263.8    |
| -8        | 403.2     | 40.3      | 403.2     | 133.4      | 13.0       | 133.4      | 3.02       | 278.7     | 27.9      | 278.7     | 263.4    |
| -9        | 393.6     | 39.4      | 393.6     | 133.2      | 13.0       | 133.2      | 2.96       | 269.2     | 26.9      | 269.2     | 263.0    |
| -10       | 384.2     | 38.4      | 384.2     | 133.0      | 13.0       | 133.0      | 2.89       | 260.0     | 26.0      | 260.0     | 262.6    |
| -11       | 374.9     | 37.5      | 374.9     | 132.7      | 12.9       | 132.7      | 2.82       | 251.0     | 25.1      | 251.0     | 262.1    |
| -12       | 365.8     | 36.6      | 365.8     | 132.5      | 12.9       | 132.5      | 2.76       | 242.1     | 24.2      | 242.1     | 261.5    |
| -13       | 356.8     | 35.7      | 356.8     | 132.2      | 12.9       | 132.2      | 2.70       | 233.4     | 23.3      | 233.4     | 260.8    |
| -14       | 348.0     | 34.8      | 348.0     | 131.9      | 12.9       | 131.9      | 2.64       | 224.8     | 22.5      | 224.8     | 260.1    |
| -15       | 339.3     | 33.9      | 339.3     | 131.5      | 12.8       | 131.5      | 2.58       | 216.5     | 21.6      | 216.5     | 259.3    |

-- attention: operating limits not reflected in performance table

| Th<br>-OU | 55        |           |           |            |            |            |            |           |           |           |          |
|-----------|-----------|-----------|-----------|------------|------------|------------|------------|-----------|-----------|-----------|----------|
|           | °C        |           |           |            |            |            |            |           |           |           |          |
| Ts<br>-IN | Qh<br>nom | Qh<br>min | Qh<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | COP<br>nom | Qc<br>nom | Qc<br>min | Qc<br>max | I<br>nom |
| [°C]      | [kW]      | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW    | [kW]      | [kW]      | [kW]      | [A]      |
| 25        | 807.5     | 80.8      | 807.5     | 168.4      | 16.4       | 168.4      | 4.79       | 650.2     | 65.0      | 650.2     | 306.4    |
| 24        | 792.6     | 79.3      | 792.6     | 168.5      | 16.4       | 168.5      | 4.70       | 635.2     | 63.5      | 635.2     | 306.4    |
| 23        | 777.9     | 77.8      | 777.9     | 168.6      | 16.5       | 168.6      | 4.61       | 620.4     | 62.0      | 620.4     | 306.4    |
| 22        | 763.4     | 76.3      | 763.4     | 168.8      | 16.5       | 168.8      | 4.52       | 605.8     | 60.6      | 605.8     | 306.4    |
| 21        | 749.0     | 74.9      | 749.0     | 168.9      | 16.5       | 168.9      | 4.44       | 591.3     | 59.1      | 591.3     | 306.5    |
| 20        | 735.0     | 73.5      | 735.0     | 169.0      | 16.5       | 169.0      | 4.35       | 577.1     | 57.7      | 577.1     | 306.5    |
| 19        | 721.1     | 72.1      | 721.1     | 169.1      | 16.5       | 169.1      | 4.26       | 563.1     | 56.3      | 563.1     | 306.6    |
| 18        | 707.4     | 70.7      | 707.4     | 169.3      | 16.5       | 169.3      | 4.18       | 549.3     | 54.9      | 549.3     | 306.7    |
| 17        | 693.9     | 69.4      | 693.9     | 169.4      | 16.5       | 169.4      | 4.10       | 535.7     | 53.6      | 535.7     | 306.8    |
| 16        | 680.5     | 68.1      | 680.5     | 169.5      | 16.5       | 169.5      | 4.01       | 522.2     | 52.2      | 522.2     | 306.9    |
| 15        | 667.4     | 66.7      | 667.4     | 169.6      | 16.5       | 169.6      | 3.93       | 509.0     | 50.9      | 509.0     | 307.0    |
| 14        | 654.5     | 65.4      | 654.5     | 169.8      | 16.6       | 169.8      | 3.86       | 496.0     | 49.6      | 496.0     | 307.2    |
| 13        | 641.7     | 64.2      | 641.7     | 169.9      | 16.6       | 169.9      | 3.78       | 483.1     | 48.3      | 483.1     | 307.3    |
| 12        | 629.2     | 62.9      | 629.2     | 170.0      | 16.6       | 170.0      | 3.70       | 470.4     | 47.0      | 470.4     | 307.4    |
| 11        | 616.8     | 61.7      | 616.8     | 170.1      | 16.6       | 170.1      | 3.63       | 458.0     | 45.8      | 458.0     | 307.5    |
| 10        | 604.6     | 60.5      | 604.6     | 170.1      | 16.6       | 170.1      | 3.55       | 445.7     | 44.6      | 445.7     | 307.6    |
| 9         | 592.5     | 59.3      | 592.5     | 170.2      | 16.6       | 170.2      | 3.48       | 433.6     | 43.4      | 433.6     | 307.6    |
| 8         | 580.6     | 58.1      | 580.6     | 170.3      | 16.6       | 170.3      | 3.41       | 421.6     | 42.2      | 421.6     | 307.7    |
| 7         | 568.9     | 56.9      | 568.9     | 170.3      | 16.6       | 170.3      | 3.34       | 409.9     | 41.0      | 409.9     | 307.7    |
| 6         | 557.4     | 55.7      | 557.4     | 170.4      | 16.6       | 170.4      | 3.27       | 398.3     | 39.8      | 398.3     | 307.7    |
| 5         | 546.0     | 54.6      | 546.0     | 170.4      | 16.6       | 170.4      | 3.20       | 386.9     | 38.7      | 386.9     | 307.7    |
| 4         | 534.8     | 53.5      | 534.8     | 170.4      | 16.6       | 170.4      | 3.14       | 375.7     | 37.6      | 375.7     | 307.6    |
| 3         | 523.7     | 52.4      | 523.7     | 170.3      | 16.6       | 170.3      | 3.07       | 364.6     | 36.5      | 364.6     | 307.5    |
| 2         | 512.8     | 51.3      | 512.8     | 170.3      | 16.6       | 170.3      | 3.01       | 353.8     | 35.4      | 353.8     | 307.4    |
| 1         | 502.0     | 50.2      | 502.0     | 170.2      | 16.6       | 170.2      | 2.95       | 343.1     | 34.3      | 343.1     | 307.2    |
| 0         | 491.4     | 49.1      | 491.4     | 170.1      | 16.6       | 170.1      | 2.89       | 332.5     | 33.3      | 332.5     | 307.0    |
| -1        | 480.9     | 48.1      | 480.9     | 170.0      | 16.6       | 170.0      | 2.83       | 322.2     | 32.2      | 322.2     | 306.7    |
| -2        | 470.6     | 47.1      | 470.6     | 169.9      | 16.6       | 169.9      | 2.77       | 312.0     | 31.2      | 312.0     | 306.4    |
| -3        | 460.4     | 46.0      | 460.4     | 169.7      | 16.6       | 169.7      | 2.71       | 301.9     | 30.2      | 301.9     | 306.0    |
| -4        | 450.3     | 45.0      | 450.3     | 169.5      | 16.5       | 169.5      | 2.66       | 292.1     | 29.2      | 292.1     | 305.6    |
| -5        | 440.4     | 44.0      | 440.4     | 169.3      | 16.5       | 169.3      | 2.60       | 282.3     | 28.2      | 282.3     | 305.1    |
| -6        | 430.6     | 43.1      | 430.6     | 169.0      | 16.5       | 169.0      | 2.55       | 272.8     | 27.3      | 272.8     | 304.5    |
| -7        | 420.9     | 42.1      | 420.9     | 168.7      | 16.5       | 168.7      | 2.50       | 263.4     | 26.3      | 263.4     | 303.8    |
| -8        | 411.4     | 41.1      | 411.4     | 168.4      | 16.4       | 168.4      | 2.44       | 254.2     | 25.4      | 254.2     | 303.1    |
| -9        | 401.9     | 40.2      | 401.9     | 168.0      | 16.4       | 168.0      | 2.39       | 245.1     | 24.5      | 245.1     | 302.3    |
| -10       | 392.6     | 39.3      | 392.6     | 167.6      | 16.3       | 167.6      | 2.34       | 236.1     | 23.6      | 236.1     | 301.4    |
| -11       | 383.4     | 38.3      | 383.4     | 167.1      | 16.3       | 167.1      | 2.29       | 227.4     | 22.7      | 227.4     | 300.5    |
| -12       | 374.4     | 37.4      | 374.4     | 166.6      | 16.3       | 166.6      | 2.25       | 218.7     | 21.9      | 218.7     | 299.4    |
| -13       | 365.4     | 36.5      | 365.4     | 166.1      | 16.2       | 166.1      | 2.20       | 210.3     | 21.0      | 210.3     | 298.3    |
| -14       | 356.5     | 35.7      | 356.5     | 165.5      | 16.1       | 165.5      | 2.15       | 201.9     | 20.2      | 201.9     | 297.1    |
| -15       | 347.8     | 34.8      | 347.8     | 164.9      | 16.1       | 164.9      | 2.11       | 193.7     | 19.4      | 193.7     | 295.8    |

-- attention: operating limits not reflected in performance table

| Th<br>-OU | 65 (T-max) |           |           |            |            |            |            |           |           |           |          |
|-----------|------------|-----------|-----------|------------|------------|------------|------------|-----------|-----------|-----------|----------|
| Ts<br>-IN | Qh<br>nom  | Qh<br>min | Qh<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | COP<br>nom | Qc<br>nom | Qc<br>min | Qc<br>max | I<br>nom |
| [°C]      | [kW]       | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW    | [kW]      | [kW]      | [kW]      | [A]      |
| 25        | 797.1      | 79.7      | 797.1     | 214.7      | 20.9       | 214.7      | 3.71       | 596.6     | 59.7      | 596.6     | 360.0    |
| 24        | 783.2      | 78.3      | 783.2     | 214.8      | 21.0       | 214.8      | 3.65       | 582.6     | 58.3      | 582.6     | 360.2    |
| 23        | 769.6      | 77.0      | 769.6     | 215.0      | 21.0       | 215.0      | 3.58       | 568.8     | 56.9      | 568.8     | 360.5    |
| 22        | 756.1      | 75.6      | 756.1     | 215.2      | 21.0       | 215.2      | 3.51       | 555.2     | 55.5      | 555.2     | 360.8    |
| 21        | 742.8      | 74.3      | 742.8     | 215.3      | 21.0       | 215.3      | 3.45       | 541.7     | 54.2      | 541.7     | 361.1    |
| 20        | 729.7      | 73.0      | 729.7     | 215.5      | 21.0       | 215.5      | 3.39       | 528.5     | 52.8      | 528.5     | 361.4    |
| 19        | 716.7      | 71.7      | 716.7     | 215.6      | 21.0       | 215.6      | 3.32       | 515.4     | 51.5      | 515.4     | 361.7    |
| 18        | 703.9      | 70.4      | 703.9     | 215.8      | 21.0       | 215.8      | 3.26       | 502.5     | 50.2      | 502.5     | 362.0    |
| 17        | 691.3      | 69.1      | 691.3     | 215.9      | 21.1       | 215.9      | 3.20       | 489.7     | 49.0      | 489.7     | 362.2    |
| 16        | 678.8      | 67.9      | 678.8     | 216.0      | 21.1       | 216.0      | 3.14       | 477.1     | 47.7      | 477.1     | 362.5    |
| 15        | 666.5      | 66.7      | 666.5     | 216.1      | 21.1       | 216.1      | 3.08       | 464.7     | 46.5      | 464.7     | 362.8    |
| 14        | 654.4      | 65.4      | 654.4     | 216.2      | 21.1       | 216.2      | 3.03       | 452.5     | 45.3      | 452.5     | 363.0    |
| 13        | 642.4      | 64.2      | 642.4     | 216.3      | 21.1       | 216.3      | 2.97       | 440.4     | 44.0      | 440.4     | 363.2    |
| 12        | 630.5      | 63.1      | 630.5     | 216.3      | 21.1       | 216.3      | 2.92       | 428.5     | 42.9      | 428.5     | 363.4    |
| 11        | 618.8      | 61.9      | 618.8     | 216.3      | 21.1       | 216.3      | 2.86       | 416.8     | 41.7      | 416.8     | 363.6    |
| 10        | 607.3      | 60.7      | 607.3     | 216.3      | 21.1       | 216.3      | 2.81       | 405.2     | 40.5      | 405.2     | 363.7    |
| 9         | 595.8      | 59.6      | 595.8     | 216.3      | 21.1       | 216.3      | 2.75       | 393.8     | 39.4      | 393.8     | 363.8    |
| 8         | 584.6      | 58.5      | 584.6     | 216.3      | 21.1       | 216.3      | 2.70       | 382.6     | 38.3      | 382.6     | 363.8    |
| 7         | 573.4      | 57.3      | 573.4     | 216.2      | 21.1       | 216.2      | 2.65       | 371.5     | 37.1      | 371.5     | 363.9    |
| 6         | 562.4      | 56.2      | 562.4     | 216.2      | 21.1       | 216.2      | 2.60       | 360.5     | 36.1      | 360.5     | 363.8    |
| 5         | 551.5      | 55.2      | 551.5     | 216.0      | 21.1       | 216.0      | 2.55       | 349.8     | 35.0      | 349.8     | 363.8    |
| 4         | 540.7      | 54.1      | 540.7     | 215.9      | 21.1       | 215.9      | 2.50       | 339.1     | 33.9      | 339.1     | 363.6    |
| 3         | 530.1      | 53.0      | 530.1     | 215.7      | 21.0       | 215.7      | 2.46       | 328.6     | 32.9      | 328.6     | 363.4    |
| 2         | 519.6      | 52.0      | 519.6     | 215.5      | 21.0       | 215.5      | 2.41       | 318.3     | 31.8      | 318.3     | 363.2    |
| 1         | 509.2      | 50.9      | 509.2     | 215.3      | 21.0       | 215.3      | 2.37       | 308.1     | 30.8      | 308.1     | 362.9    |
| 0         | 498.9      | 49.9      | 498.9     | 215.0      | 21.0       | 215.0      | 2.32       | 298.1     | 29.8      | 298.1     | 362.5    |
| -1        | 488.7      | 48.9      | 488.7     | 214.7      | 20.9       | 214.7      | 2.28       | 288.2     | 28.8      | 288.2     | 362.1    |
| -2        | 478.7      | 47.9      | 478.7     | 214.4      | 20.9       | 214.4      | 2.23       | 278.5     | 27.8      | 278.5     | 361.6    |
| -3        | 468.7      | 46.9      | 468.7     | 214.0      | 20.9       | 214.0      | 2.19       | 268.9     | 26.9      | 268.9     | 361.0    |
| -4        | 458.9      | 45.9      | 458.9     | 213.6      | 20.8       | 213.6      | 2.15       | 259.4     | 25.9      | 259.4     | 360.3    |
| -5        | 449.1      | 44.9      | 449.1     | 213.1      | 20.8       | 213.1      | 2.11       | 250.1     | 25.0      | 250.1     | 359.6    |
| -6        | 439.5      | 43.9      | 439.5     | 212.6      | 20.7       | 212.6      | 2.07       | 240.9     | 24.1      | 240.9     | 358.8    |
| -7        | 429.9      | 43.0      | 429.9     | 212.1      | 20.7       | 212.1      | 2.03       | 231.8     | 23.2      | 231.8     | 357.9    |
| -8        | 420.4      | 42.0      | 420.4     | 211.5      | 20.6       | 211.5      | 1.99       | 222.9     | 22.3      | 222.9     | 356.9    |
| -9        | 411.1      | 41.1      | 411.1     | 210.9      | 20.6       | 210.9      | 1.95       | 214.1     | 21.4      | 214.1     | 355.8    |
| -10       | 401.8      | 40.2      | 401.8     | 210.2      | 20.5       | 210.2      | 1.91       | 205.5     | 20.5      | 205.5     | 354.6    |
| -11       | 392.6      | 39.3      | 392.6     | 209.4      | 20.4       | 209.4      | 1.87       | 197.0     | 19.7      | 197.0     | 353.2    |
| -12       | 383.4      | 38.3      | 383.4     | 208.7      | 20.4       | 208.7      | 1.84       | 188.6     | 18.9      | 188.6     | 351.8    |
| -13       | 374.4      | 37.4      | 374.4     | 207.8      | 20.3       | 207.8      | 1.80       | 180.3     | 18.0      | 180.3     | 350.3    |
| -14       | 365.4      | 36.5      | 365.4     | 206.9      | 20.2       | 206.9      | 1.77       | 172.2     | 17.2      | 172.2     | 348.7    |
| -15       | 356.5      | 35.6      | 356.5     | 206.0      | 20.1       | 206.0      | 1.73       | 164.1     | 16.4      | 164.1     | 347.0    |

-- attention: operating limits not reflected in performance table

| Tc<br>-OU | W 12 / 7 °C |           |           |            |            |            |         |           |           |           |          |
|-----------|-------------|-----------|-----------|------------|------------|------------|---------|-----------|-----------|-----------|----------|
| Ts<br>-IN | Qc<br>nom   | Qc<br>min | Qc<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | EER     | Qh<br>nom | Qh<br>min | Qh<br>max | I<br>nom |
| [°C]      | [kW]        | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW | [kW]      | [kW]      | [kW]      | [A]      |
| 40        | 352.0       | 35.2      | 352.0     | 145.0      | 14.1       | 145.0      | 2.43    | 487.4     | 48.7      | 487.4     | 277.4    |
| 39        | 354.5       | 35.5      | 354.5     | 141.8      | 13.8       | 141.8      | 2.50    | 486.9     | 48.7      | 486.9     | 273.7    |
| 38        | 357.0       | 35.7      | 357.0     | 138.6      | 13.5       | 138.6      | 2.58    | 486.4     | 48.6      | 486.4     | 270.0    |
| 37        | 359.3       | 35.9      | 359.3     | 135.5      | 13.2       | 135.5      | 2.65    | 485.9     | 48.6      | 485.9     | 266.5    |
| 36        | 361.6       | 36.2      | 361.6     | 132.5      | 12.9       | 132.5      | 2.73    | 485.4     | 48.5      | 485.4     | 263.1    |
| 35        | 363.8       | 36.4      | 363.8     | 129.6      | 12.6       | 129.6      | 2.81    | 484.9     | 48.5      | 484.9     | 259.8    |
| 34        | 366.0       | 36.6      | 366.0     | 126.8      | 12.4       | 126.8      | 2.89    | 484.3     | 48.4      | 484.3     | 256.6    |
| 33        | 368.0       | 36.8      | 368.0     | 124.0      | 12.1       | 124.0      | 2.97    | 483.8     | 48.4      | 483.8     | 253.4    |
| 32        | 370.1       | 37.0      | 370.1     | 121.3      | 11.8       | 121.3      | 3.05    | 483.3     | 48.3      | 483.3     | 250.3    |
| 31        | 372.0       | 37.2      | 372.0     | 118.6      | 11.6       | 118.6      | 3.14    | 482.8     | 48.3      | 482.8     | 247.3    |
| 30        | 373.9       | 37.4      | 373.9     | 116.0      | 11.3       | 116.0      | 3.22    | 482.2     | 48.2      | 482.2     | 244.4    |
| 29        | 375.7       | 37.6      | 375.7     | 113.5      | 11.1       | 113.5      | 3.31    | 481.7     | 48.2      | 481.7     | 241.6    |
| 28        | 377.5       | 37.7      | 377.5     | 111.0      | 10.8       | 111.0      | 3.40    | 481.1     | 48.1      | 481.1     | 238.7    |
| 27        | 379.2       | 37.9      | 379.2     | 108.6      | 10.6       | 108.6      | 3.49    | 480.5     | 48.1      | 480.5     | 236.0    |
| 26        | 380.8       | 38.1      | 380.8     | 106.2      | 10.4       | 106.2      | 3.59    | 480.0     | 48.0      | 480.0     | 233.3    |
| 25        | 382.4       | 38.2      | 382.4     | 103.8      | 10.1       | 103.8      | 3.68    | 479.3     | 47.9      | 479.3     | 230.6    |
| 24        | 383.9       | 38.4      | 383.9     | 101.5      | 9.9        | 101.5      | 3.78    | 478.7     | 47.9      | 478.7     | 228.0    |
| 23        | 385.3       | 38.5      | 385.3     | 99.3       | 9.7        | 99.3       | 3.88    | 478.1     | 47.8      | 478.1     | 225.4    |
| 22        | 386.7       | 38.7      | 386.7     | 97.1       | 9.5        | 97.1       | 3.98    | 477.4     | 47.7      | 477.4     | 222.8    |
| 21        | 388.1       | 38.8      | 388.1     | 94.9       | 9.3        | 94.9       | 4.09    | 476.7     | 47.7      | 476.7     | 220.3    |
| 20        | 389.3       | 38.9      | 389.3     | 92.8       | 9.0        | 92.8       | 4.20    | 476.0     | 47.6      | 476.0     | 217.8    |

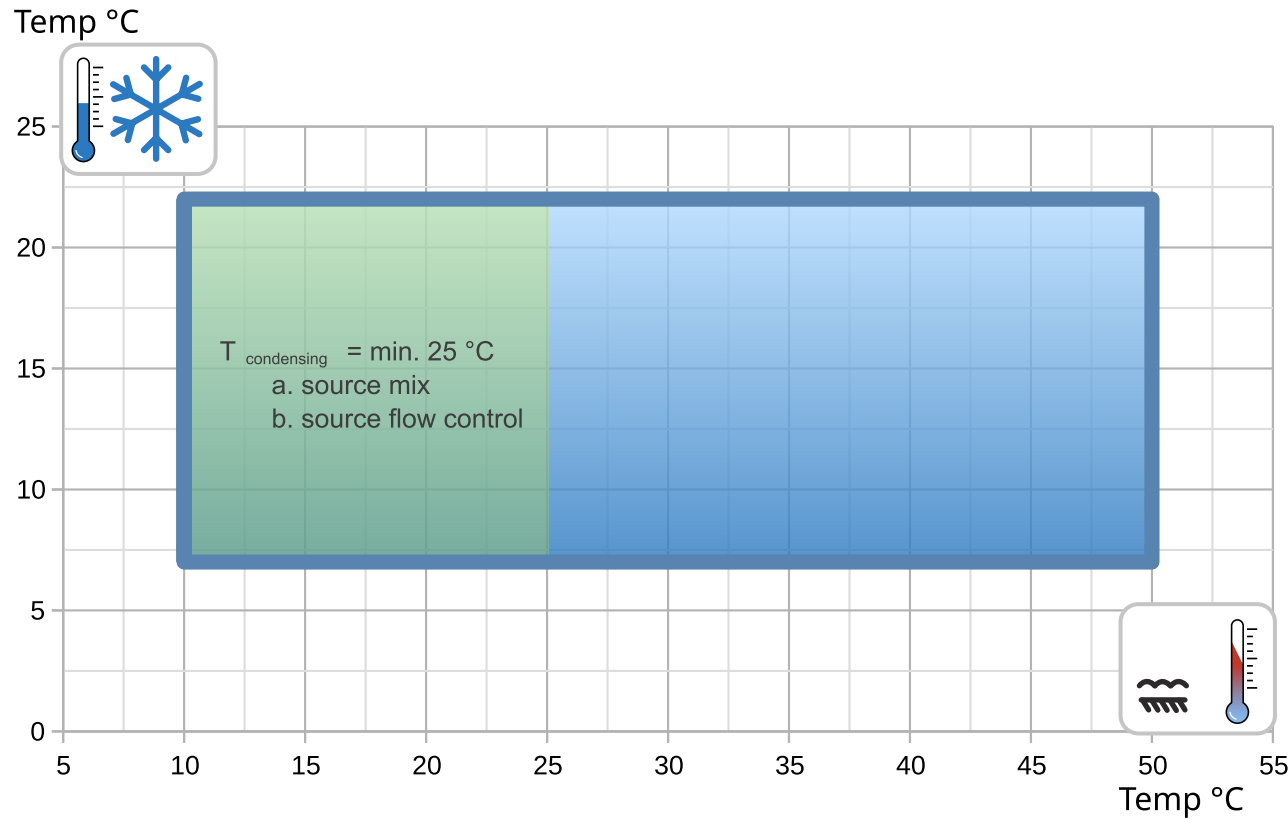
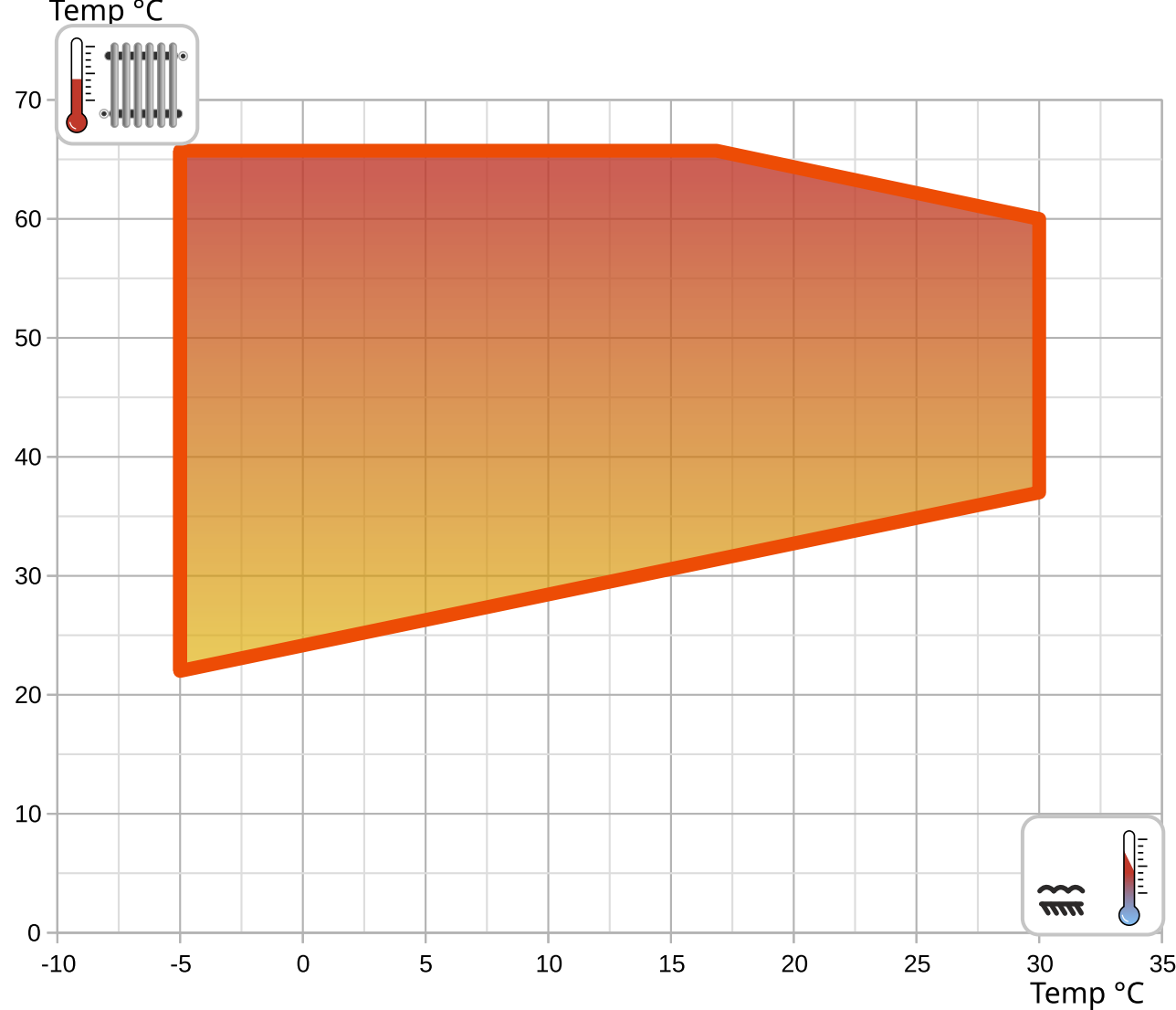
| Tc [°C] | W 23 / 18 °C |           |           |            |            |            |         |           |           |           |          |
|---------|--------------|-----------|-----------|------------|------------|------------|---------|-----------|-----------|-----------|----------|
| 0       | Qc<br>nom    | Qc<br>min | Qc<br>max | Pin<br>nom | Pin<br>min | Pin<br>max | EER     | Qh<br>nom | Qh<br>min | Qh<br>max | I<br>nom |
| [°C]    | [kW]         | [kW]      | [kW]      | [kW]       | [kW]       | [kW]       | kW / kW | [kW]      | [kW]      | [kW]      | [A]      |
| 40      | 469.4        | 46.9      | 469.4     | 145.0      | 14.1       | 145.0      | 3.24    | 604.5     | 60.4      | 605.0     | 277.1    |
| 39      | 472.5        | 47.3      | 472.5     | 141.8      | 13.8       | 141.8      | 3.33    | 604.5     | 60.5      | 604.8     | 273.3    |
| 38      | 475.6        | 47.6      | 475.6     | 138.6      | 13.5       | 138.6      | 3.43    | 604.6     | 60.5      | 604.7     | 269.5    |
| 37      | 478.5        | 47.9      | 478.5     | 135.5      | 13.2       | 135.5      | 3.53    | 604.7     | 60.5      | 604.6     | 265.8    |
| 36      | 481.4        | 48.1      | 481.4     | 132.5      | 12.9       | 132.5      | 3.63    | 604.8     | 60.5      | 604.5     | 262.2    |
| 35      | 484.3        | 48.4      | 484.3     | 129.6      | 12.6       | 129.6      | 3.74    | 604.9     | 60.5      | 604.4     | 258.7    |
| 34      | 487.0        | 48.7      | 487.0     | 126.8      | 12.4       | 126.8      | 3.84    | 605.1     | 60.5      | 604.4     | 255.3    |
| 33      | 489.7        | 49.0      | 489.7     | 124.0      | 12.1       | 124.0      | 3.95    | 605.2     | 60.5      | 604.4     | 252.0    |
| 32      | 492.4        | 49.2      | 492.4     | 121.3      | 11.8       | 121.3      | 4.06    | 605.3     | 60.5      | 604.4     | 248.7    |
| 31      | 494.9        | 49.5      | 494.9     | 118.6      | 11.6       | 118.6      | 4.17    | 605.4     | 60.5      | 604.4     | 245.5    |
| 30      | 497.4        | 49.7      | 497.4     | 116.0      | 11.3       | 116.0      | 4.29    | 605.6     | 60.6      | 604.5     | 242.3    |
| 29      | 499.9        | 50.0      | 499.9     | 113.5      | 11.1       | 113.5      | 4.41    | 605.7     | 60.6      | 604.5     | 239.3    |
| 28      | 502.3        | 50.2      | 502.3     | 111.0      | 10.8       | 111.0      | 4.53    | 605.8     | 60.6      | 604.6     | 236.2    |
| 27      | 504.6        | 50.5      | 504.6     | 108.6      | 10.6       | 108.6      | 4.65    | 605.9     | 60.6      | 604.7     | 233.2    |
| 26      | 506.8        | 50.7      | 506.8     | 106.2      | 10.4       | 106.2      | 4.77    | 606.1     | 60.6      | 604.8     | 230.3    |
| 25      | 509.0        | 50.9      | 509.0     | 103.8      | 10.1       | 103.8      | 4.90    | 606.2     | 60.6      | 604.9     | 227.4    |
| 24      | 511.2        | 51.1      | 511.2     | 101.5      | 9.9        | 101.5      | 5.03    | 606.3     | 60.6      | 605.1     | 224.5    |
| 23      | 513.3        | 51.3      | 513.3     | 99.3       | 9.7        | 99.3       | 5.17    | 606.3     | 60.6      | 605.2     | 221.6    |
| 22      | 515.3        | 51.5      | 515.3     | 97.1       | 9.5        | 97.1       | 5.31    | 606.4     | 60.6      | 605.3     | 218.8    |
| 21      | 517.2        | 51.7      | 517.2     | 94.9       | 9.3        | 94.9       | 5.45    | 606.4     | 60.6      | 605.4     | 216.0    |
| 20      | 519.1        | 51.9      | 519.1     | 92.8       | 9.0        | 92.8       | 5.60    | 606.5     | 60.6      | 605.6     | 213.2    |

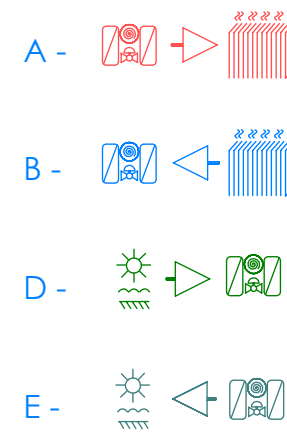
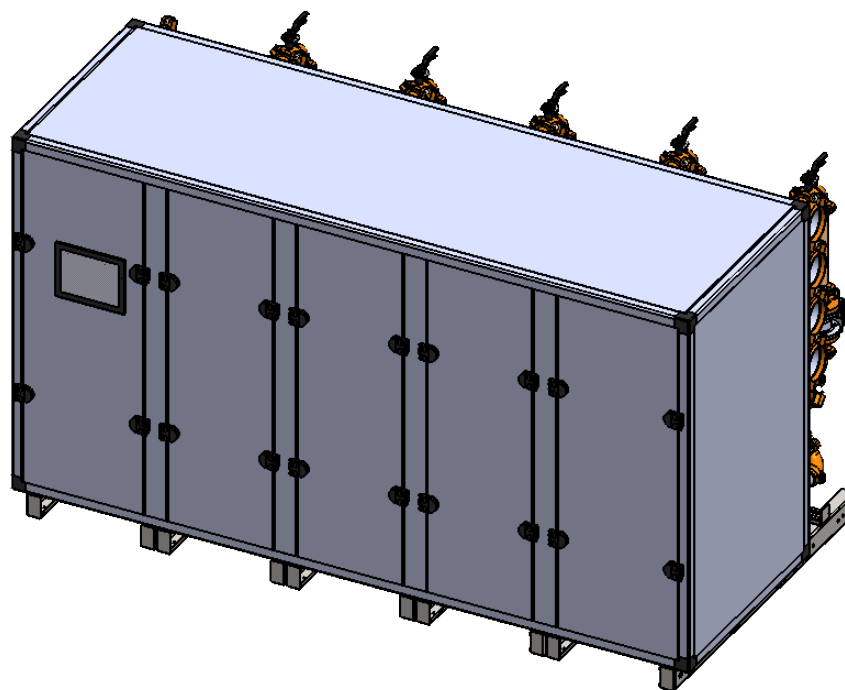
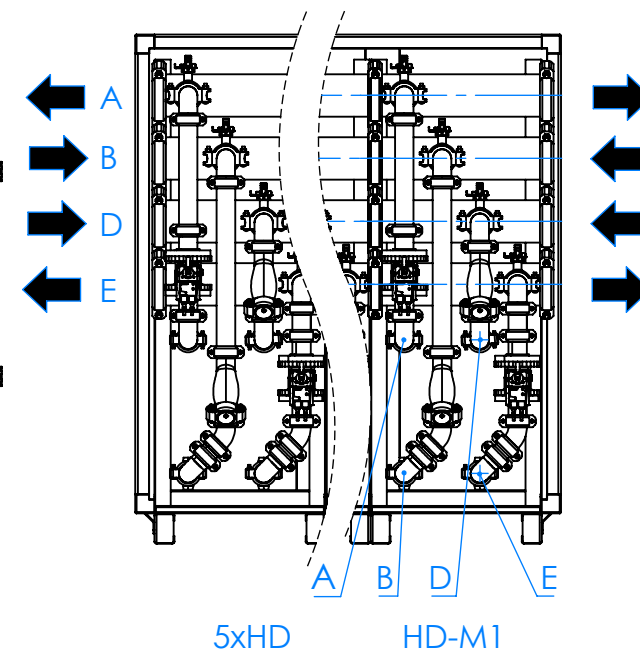
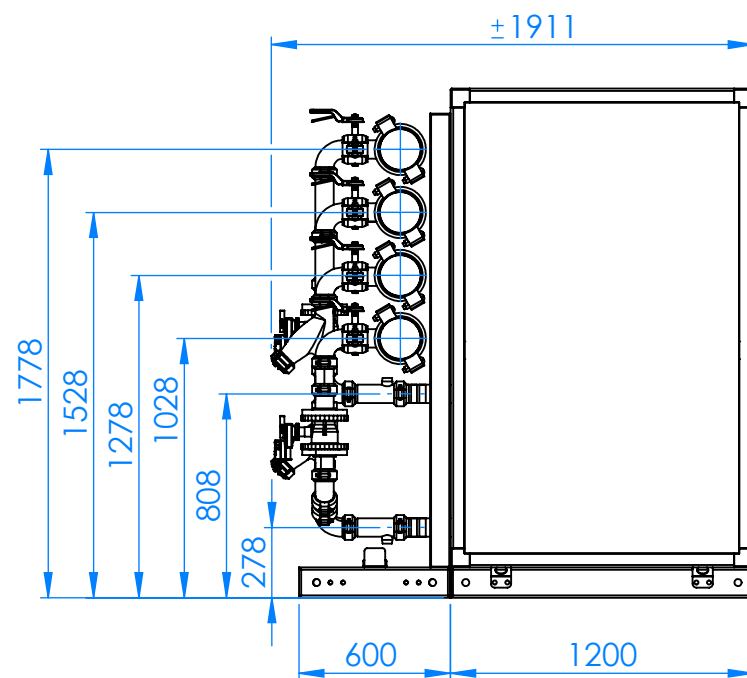
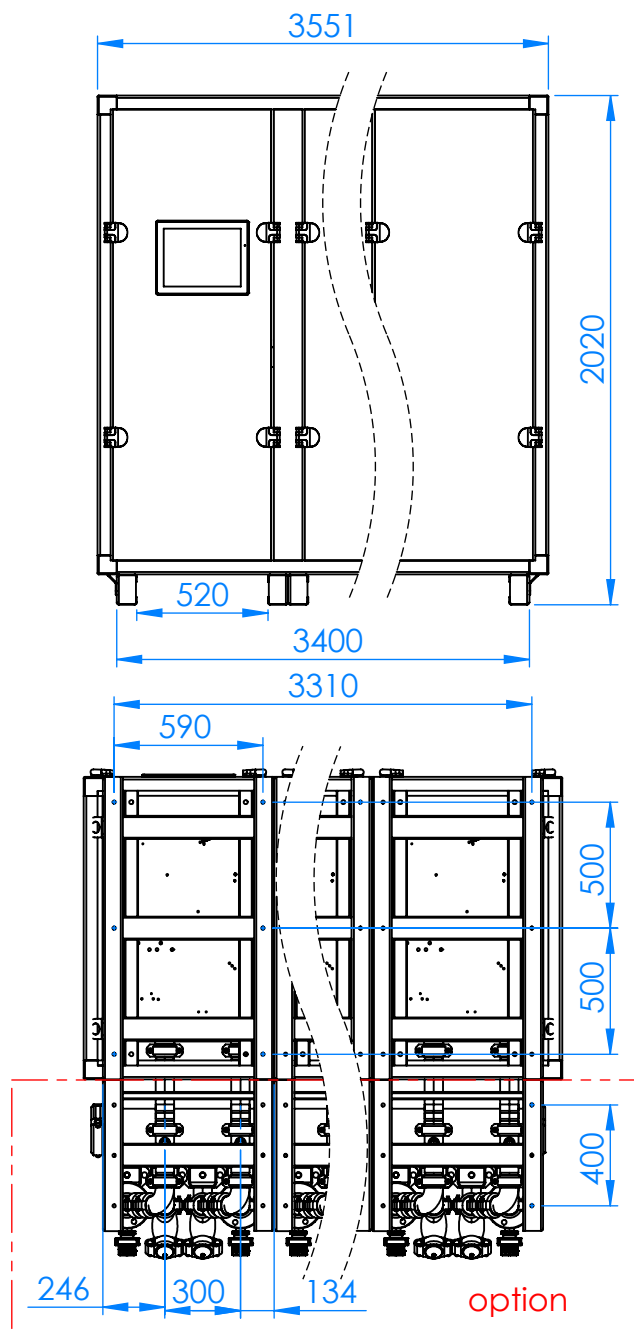
-- attention: operating limits not reflected in performance table

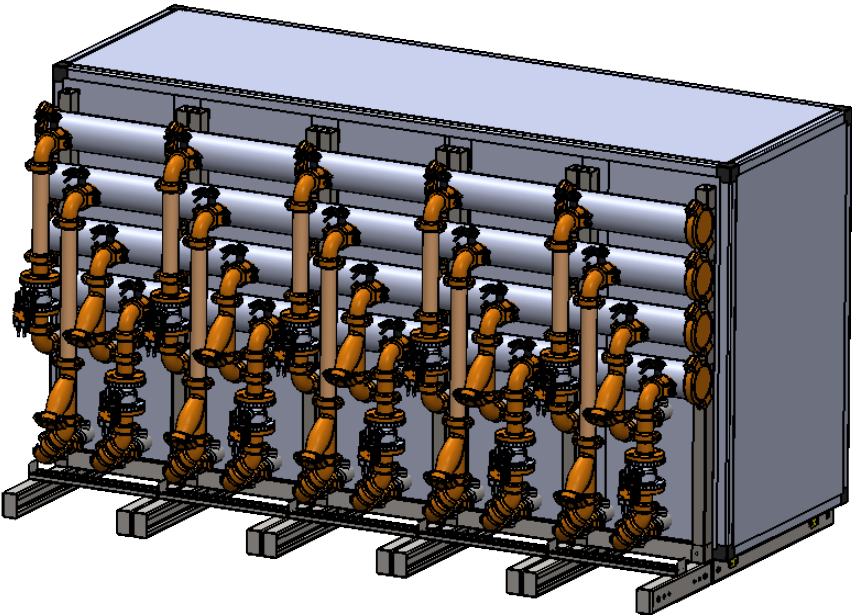
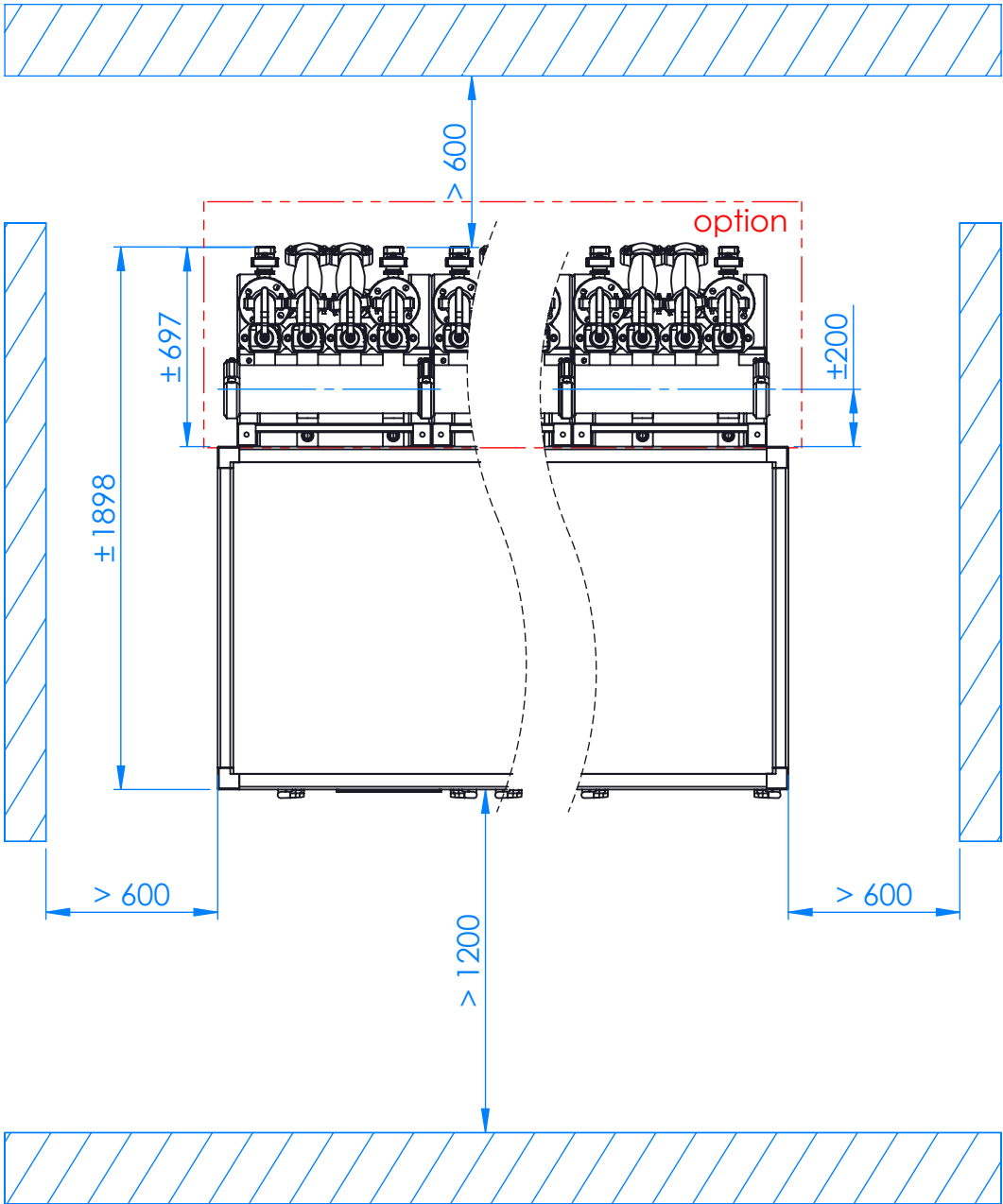
### LEGEND:

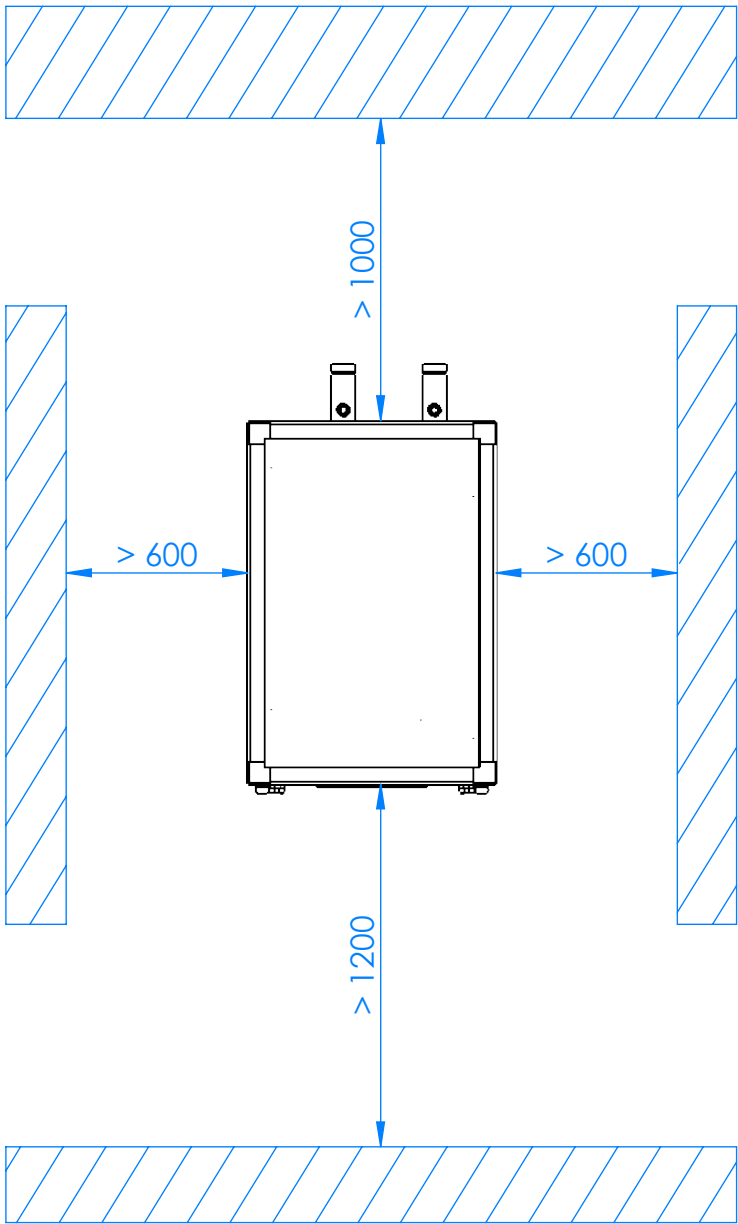
Ts-IN: Temperature renewable source - inlet [°C]  
Th-OU: Temperature heating - outlet (flow) [°C]  
Tc-OU: Temperature cooling - outlet (flow) [°C]  
Qh nom: Heating capacity nominal  
Qh min: Heating capacity minimal  
Qh max: Heating capacity maximal  
Pin nom: Power input at nominal heating capacity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

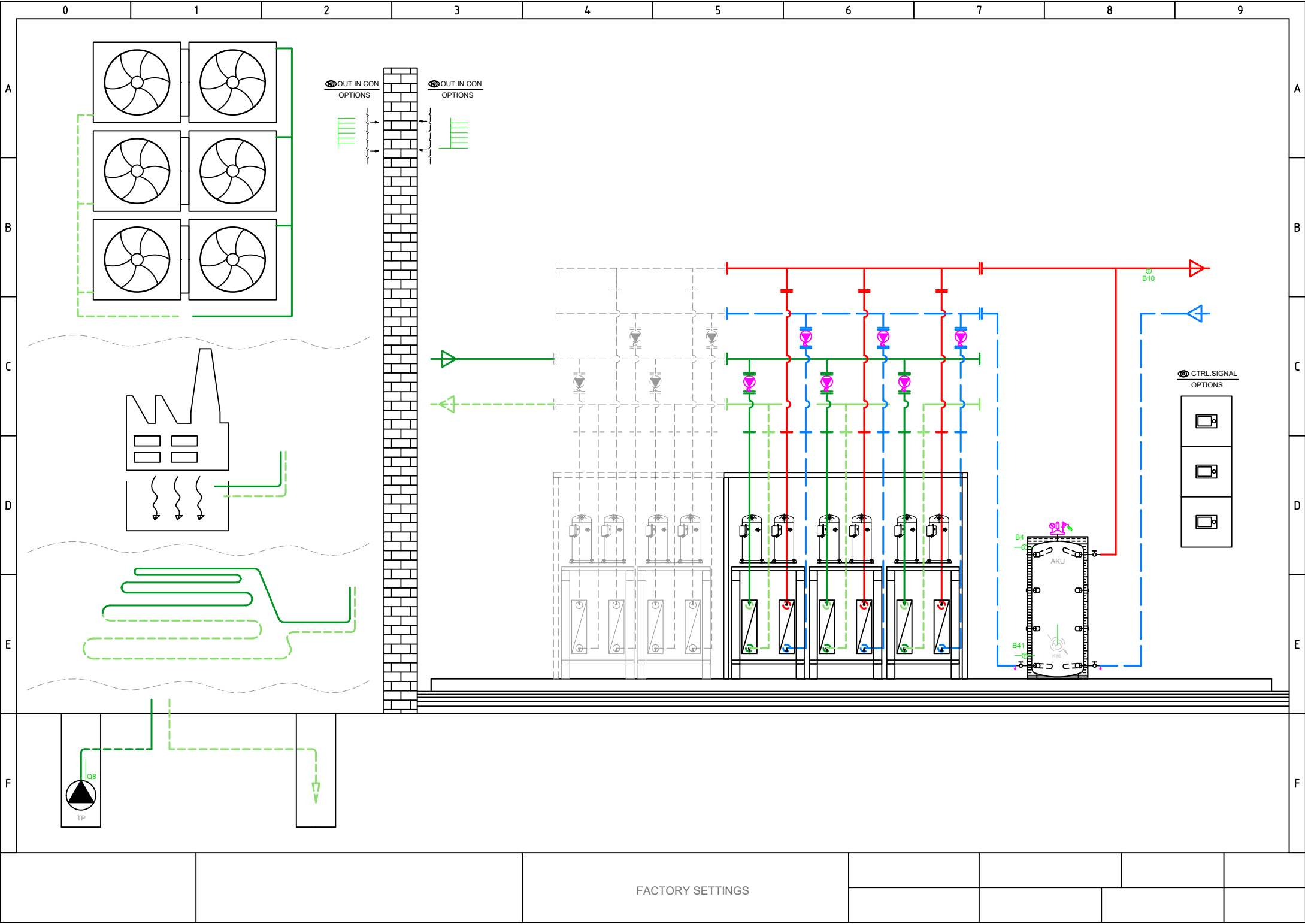
Operating limits











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

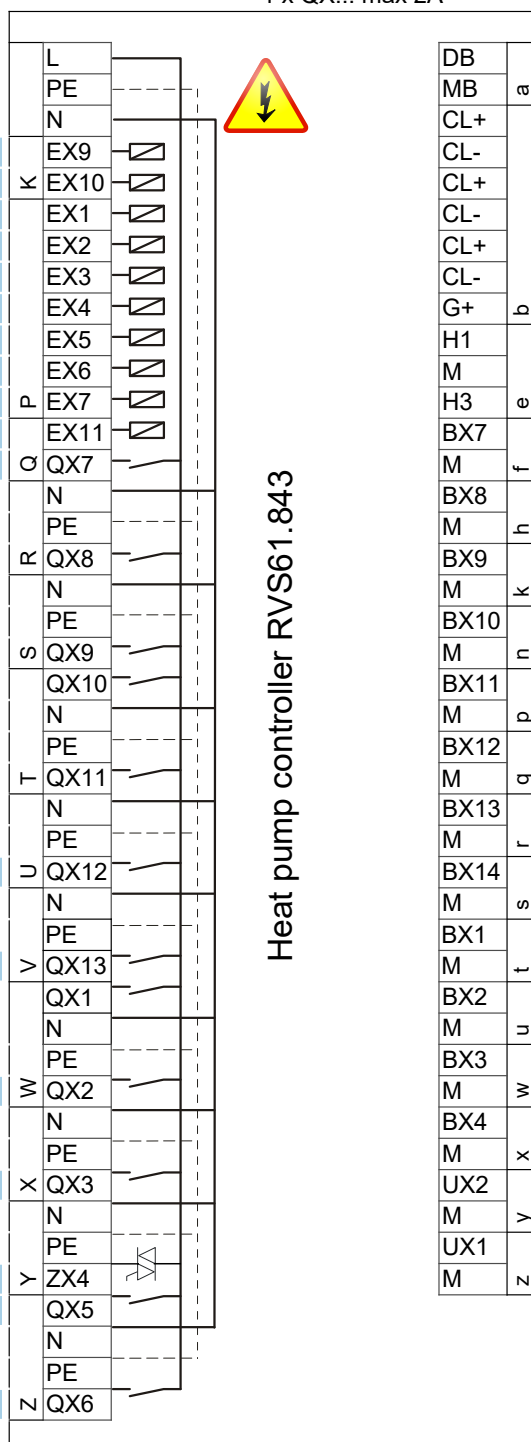
K10 Alarm output K10

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

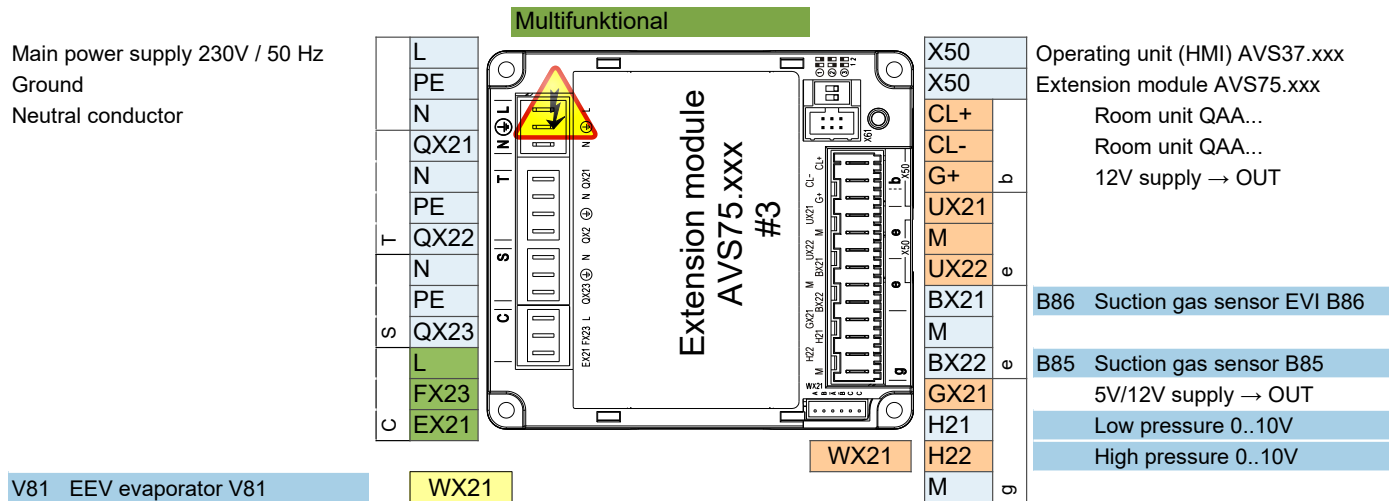
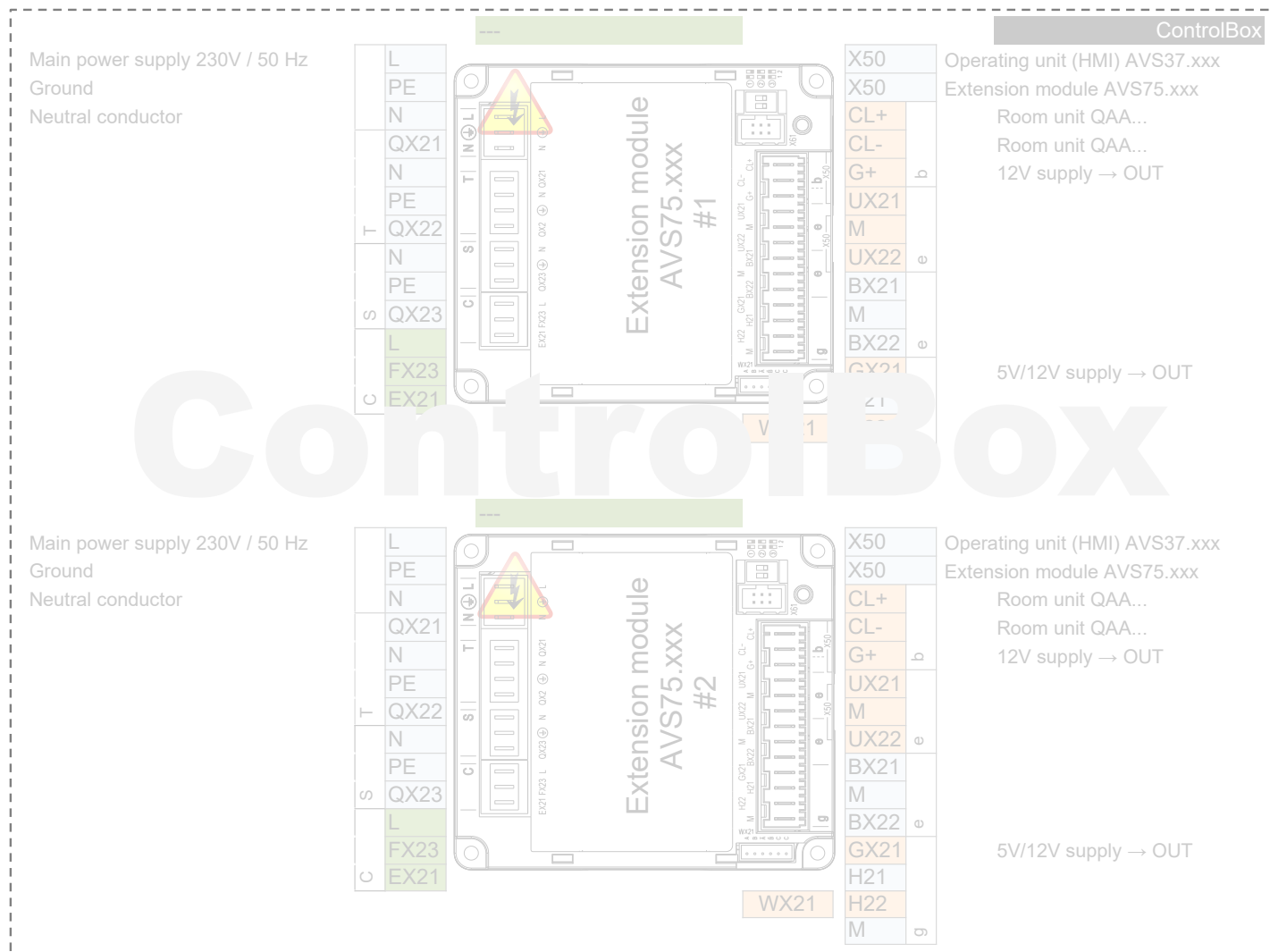
Condenser pump Q9

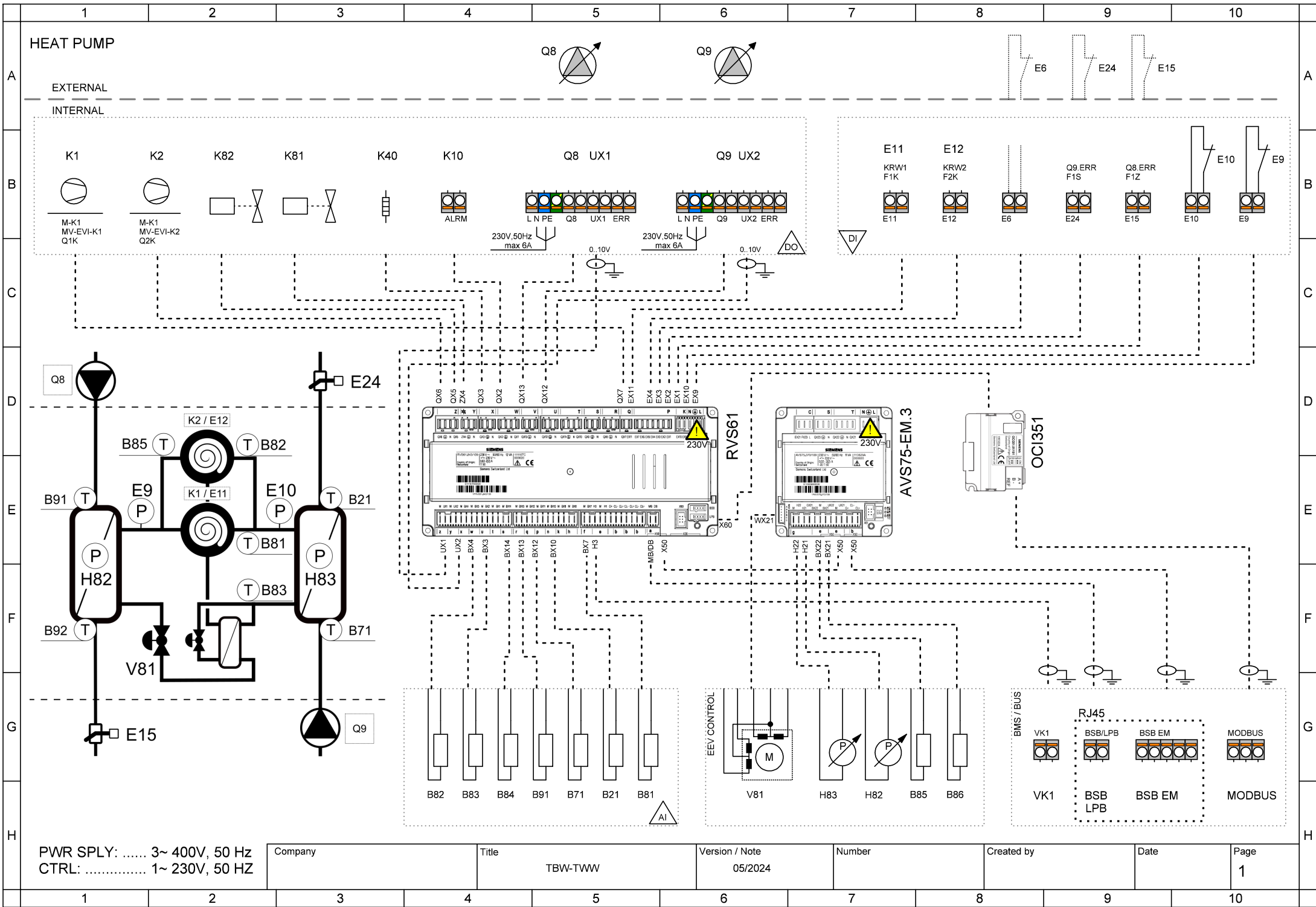
0..10 V Signal

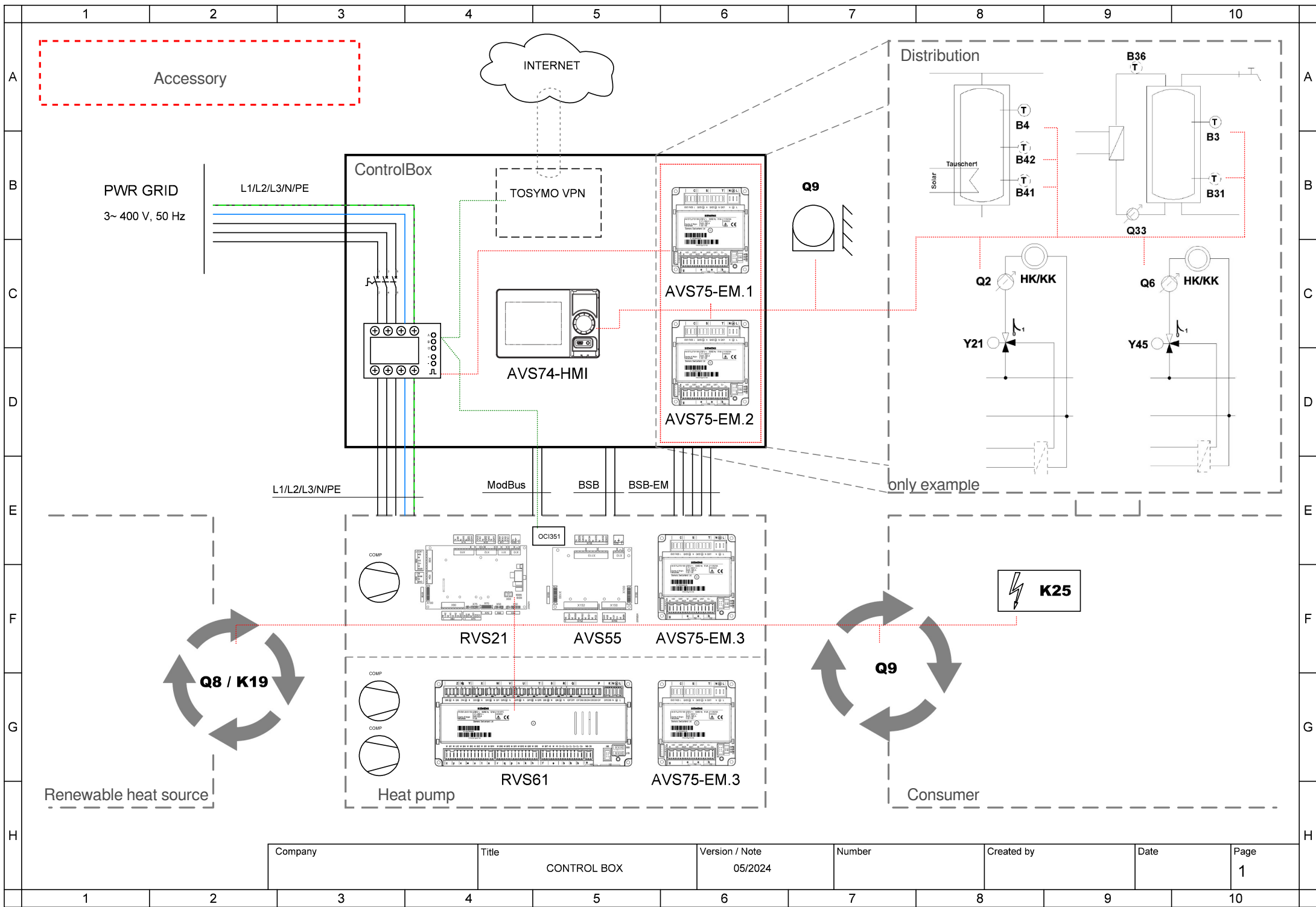
Source pump Q8

0..10 V Signal

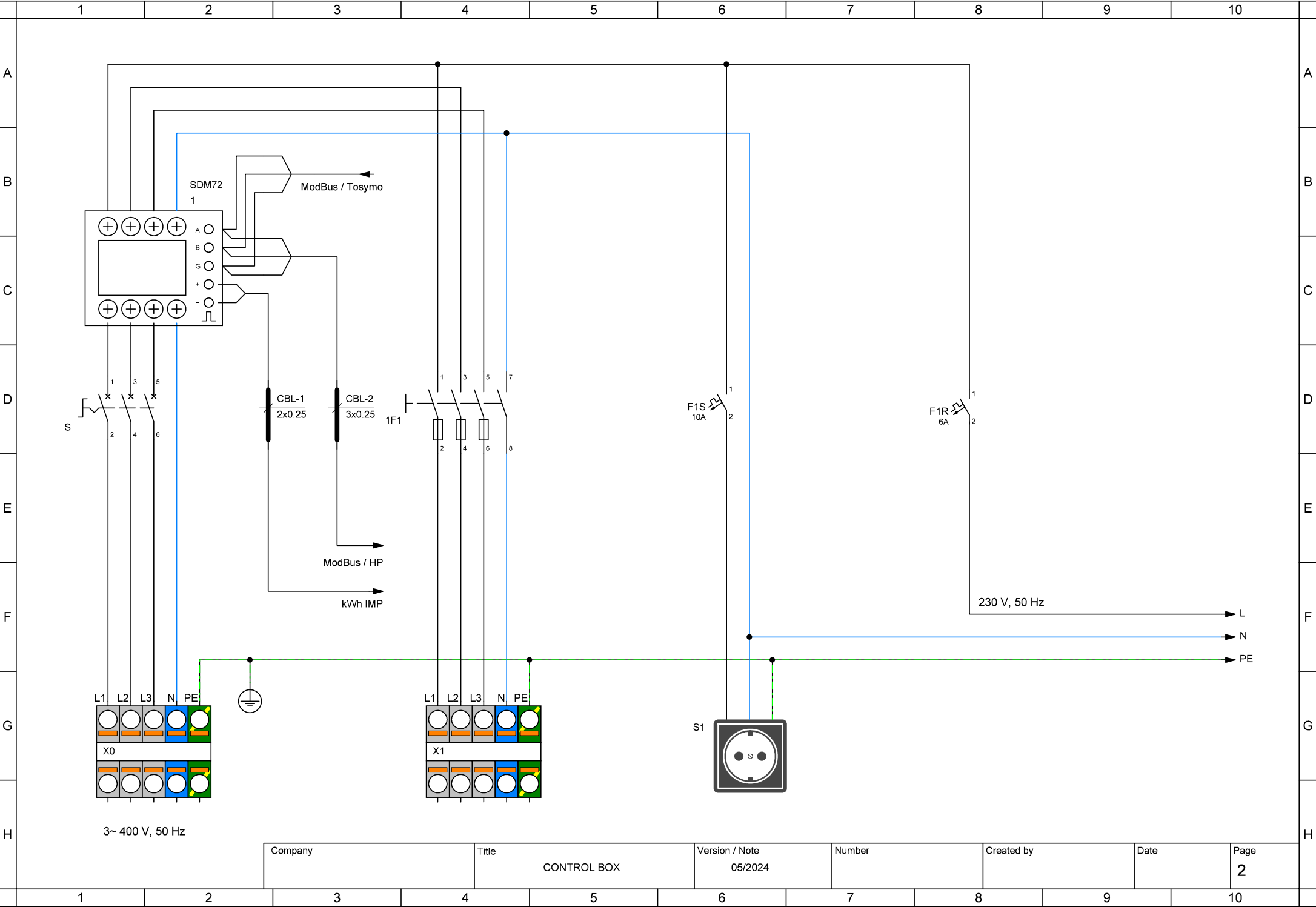
|  |           |
|--|-----------|
|  | AVS75.390 |
|  | AVS75.391 |
|  | AVS75.370 |





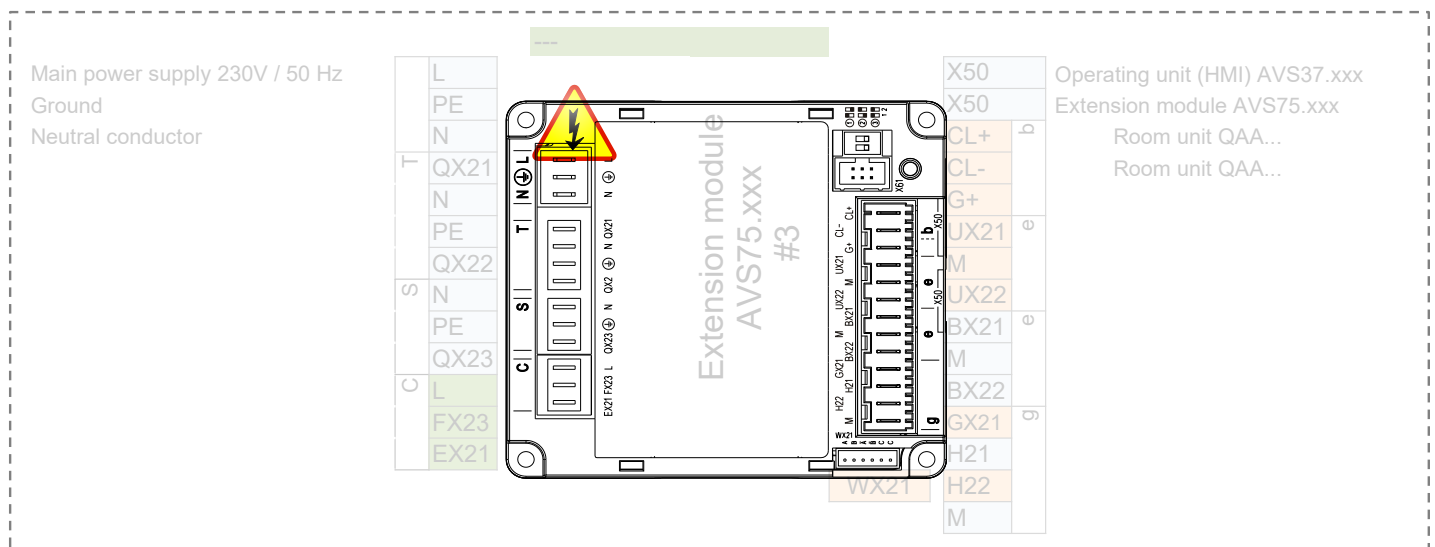
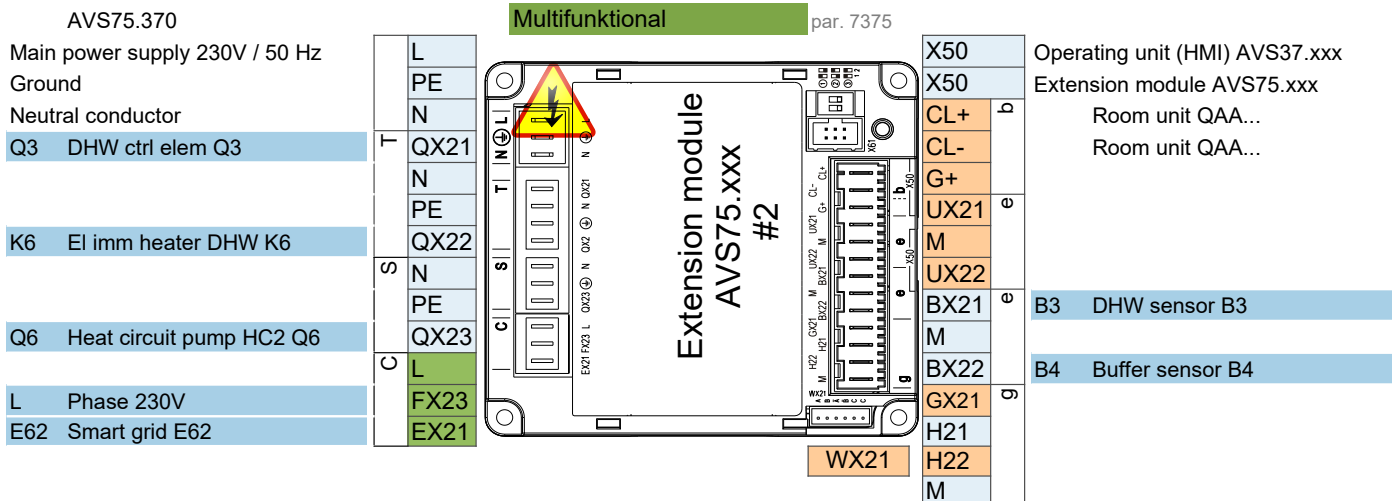
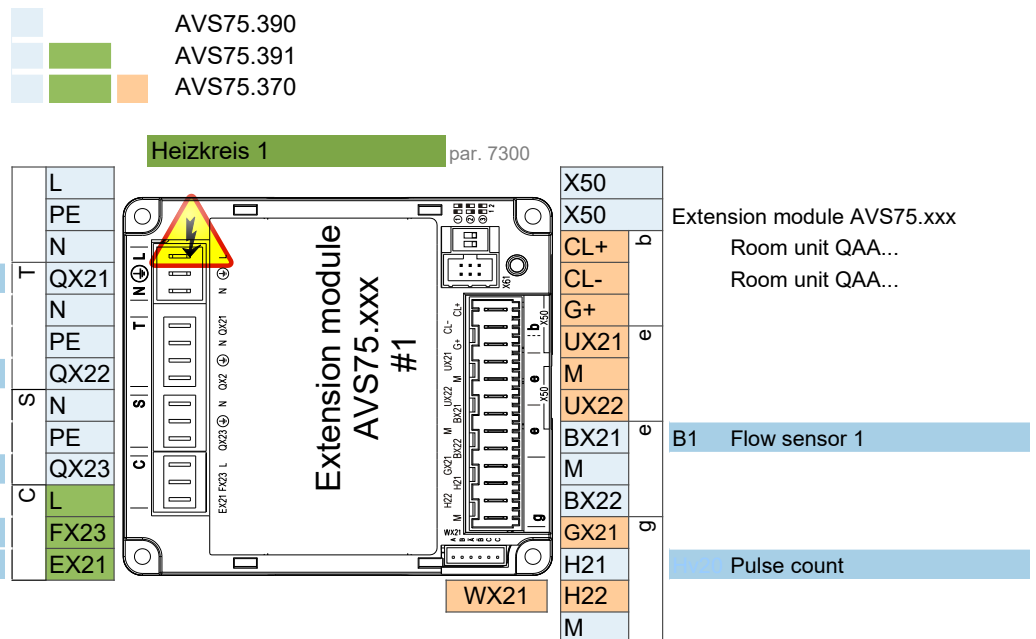


|         |             |                |        |            |      |      |
|---------|-------------|----------------|--------|------------|------|------|
| Company | Title       | Version / Note | Number | Created by | Date | Page |
|         | CONTROL BOX | 05/2024        |        |            |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









Attention: Extension module 3 is inside the heat pump

## Control connection options

### 1 ControlBox

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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

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2 wire shielded cable 2 x 0.5 mm<sup>2</sup> - Setpoint = 45°C (editable by param. 1859)

Connection terminal - see wiring diagram

### 3 Analog 0..10V flow temperature setpoint control

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

Connection terminal - see wiring diagram

### 4 ModBus RTU communication command

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3 wire shielded cable min. 3 x 0.25mm<sup>2</sup>

For ModBus mapping table contact technical support

### 5 MQTT IoT communication protocol

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For more information contact technical support