# 8BVP0220HC00.000-1

## 1 General information

- Wide input voltage range
- Capable of power regeneration
- Integrated connection for temperature sensor
- 2 slots for ACOPOSmulti plug-in modules

## 2 Order data

| Model number | Short description | Figure |
|---|---|---|
| | **Cold plate or feed-through mounting** |  |
| 8BVP0220HC00.000-1 | ACOPOSmulti power supply module, 22 A, HV, cold plate or feed-through mounting | |
| | **Required accessories** | |
| | **Terminal block sets** | |
| 8BZVP044000.000-1A | Screw clamp set for ACOPOSmulti modules 8BVP0220Hx00 and 8BVP0440Hx00: 1x 8TB2106.2010-00, 1x 8TB2108.2010-00, 1x 8TB2104.204A-00, 1x 8TB4104.202L-10 | |
| | **Optional accessories** | |
| | **Accessory sets** | |
| 8BXB000.0000-00 | ACOPOSmulti accessory set for encoder buffering consists of the following: 1 lithium battery AA 3.6 V, 1 cover for battery compartment | |
| | **Fan modules** | |
| 8BXF001.0000-00 | ACOPOSmulti fan module, replacement fan for ACOPOSmulti modules (8BxP/8B0C/8BVI/8BVE/8B0K) | |
| | **Plug-in modules** | |
| 8BAC0120.000-1 | ACOPOSmulti plug-in module, EnDat 2.1 interface | |
| 8BAC0120.001-2 | ACOPOSmulti plug-in module, EnDat 2.2 interface | |
| 8BAC0121.000-1 | ACOPOSmulti plug-in module, HIPERFACE interface | |
| 8BAC0122.000-1 | ACOPOSmulti plug-in module, resolver interface 10 kHz | |
| 8BAC0123.000-1 | ACOPOSmulti plug-in module, incremental encoder and SSI absolute encoder interface for RS422 signals | |
| 8BAC0123.001-1 | ACOPOSmulti plug-in module, incremental encoder interface for 5 V single-ended and 5 V differential signals | |
| 8BAC0123.002-1 | ACOPOSmulti plug-in module, incremental encoder interface for 24 V single-ended and 24 V differential signals | |
| 8BAC0124.000-1 | ACOPOSmulti plug-in module, SinCos interface | |
| 8BAC0125.000-1 | ACOPOSmulti plug-in module, SinCos EnDat 2.1/SSI/BiSS interface | |
| 8BAC0130.000-1 | ACOPOSmulti plug-in module, 2 digital outputs, 50 mA, max. 62.5 kHz, 2 digital outputs, 500 mA, max. 1.25 kHz, 2 digital inputs 24 VDC | |
| 8BAC0130.001-1 | ACOPOSmulti plug-in module, 2 digital outputs, 50 mA, max. 62.5 kHz, 4 digital outputs, 500 mA, max. 1.25 kHz | |
| 8BAC0132.000-1 | ACOPOSmulti plug-in module, 4 analog inputs ±10 V | |
| 8BAC0133.000-1 | ACOPOSmulti plug-in module, 3 RS422 outputs for ABR encoder emulation, 1 MHz | |
| | **POWERLINK/Ethernet cables** | |
| X20CA0E61.00020 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 0.2 m | |
| X20CA0E61.00025 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 0.25 m | |
| X20CA0E61.00030 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 0.3 m | |
| X20CA0E61.00035 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 0.35 m | |
| X20CA0E61.00050 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 0.5 m | |
| X20CA0E61.00100 | POWERLINK/Ethernet connection cable, RJ45 to RJ45, 1 m | |
| | **Shield component sets** | |
| 8SCS002.0000-00 | ACOPOSmulti shield component set: 1x clamping plate; 2x clamps D 4-13.5 mm; 4x screws | |
| 8SCS005.0000-00 | ACOPOSmulti shield component set: 1x slot cover/shield plate | |
| 8SCS010.0000-00 | ACOPOSmulti shield component set: 1x ACOPOSmulti holding plate SK14-20, 1x shield connection clamp SK20 | |
| | **Terminal blocks** | |
| 8TB2104.204A-00 | 4-pin screw clamp, single row, spacing: 5.08 mm, label 4: T- T + F- F+, A keying: 0000 | |

Table 1: 8BVP0220HC00.000-1 - Order data

| Model number | Short description | Figure |
|---|---|---|
| 8TB2106.2010-00 | 6-pin screw clamp, single row, spacing: 5.08 mm, label 1: numbered serially | |
| 8TB2106.2210-00 | Push-in terminal block 6-pin, 1-row, spacing: 5.08 mm, label 1: numbered consecutively | |
| 8TB2108.2010-00 | 8-pin screw clamp, single row, spacing: 5.08 mm, label 1: numbered serially | |
| 8TB4104.202L-10 | 4-pin screw clamp terminal block, 1-row, spacing: 10.16 mm, label 2: PE L3 L2 L1, coding L: 1010 | |

Table 1: 8BVP0220HC00.000-1 - Order data

# 3 Technical data

| Model number | 8BVP0220HC00.000-1 |
|---|---|
| **General information** | |
| B&R ID code | 0xA7CE |
| Cooling and mounting method | Cold plate or feed-through mounting |
| Slots for plug-in modules | 2 |
| Certifications | |
| CE | Yes |
| KC | Yes |
| UL | cULus E225616<br>Power conversion equipment |
| **Mains connection** | |
| Network configurations | TT, TN-S, TN-C-S [1] |
| Mains input voltage | 3x 220 to 3x 480 VAC ±10% |
| Frequency | 50 / 60 Hz ±4% |
| Installed load [2] | Max. 15.6 kW |
| Inrush current at 400 VAC | Max. 67 A |
| Switch-on interval [3] | >300 s |
| Max. DC bus capacitance depending on mains voltage | |
| 230 VAC | 17.4 mF |
| 400 VAC | 5.8 mF |
| 480 VAC | 4 mF |
| Nominal switching frequency | 5 kHz |
| Possible switching frequencies [4] | 5 / 10 kHz |
| Integrated line filter per EN 61800-3, category C3 [5] | No |
| Integrated regeneration choke | No |
| Capable of power regeneration | Yes |
| Power factor correction (PFC) | Yes |
| Variant | |
| L1, L2, L3, PE | Male connector |
| PE | M5 threaded bolt |
| Shield connection [6] | Yes |
| Terminal connection cross section | |
| Flexible and fine-stranded wires | |
| With wire end sleeves | 0.5 to 16 mm² |
| Approbation data | |
| UL/C-UL-US | 20 to 6 AWG |
| CSA | 20 to 6 AWG |
| Terminal cable cross section dimension of shield connection | 23 to 35 mm |
| **DC bus connection** | |
| Voltage | |
| Nominal | 750 VDC |
| Continuous power (supply and regeneration) [7] | 15 kW |
| Reduction of continuous power depending on mains input voltage | |
| Mains input voltage <3x 400 VAC | 37.5 W/V * (400 V - Mains input voltage) |
| Reduction of continuous power depending on DC bus voltage ($U_{DC}$) | |
| $U_{DC}$ <750 VDC | P * (1 - $U_{DC}$/750) [8] |
| Reduction of continuous power depending on switching frequency and mounting method [9] | |
| Switching frequency 5 kHz | |
| Cold plate mounting [10] | No reduction |
| Feed-through mounting | No reduction |
| Switching frequency 10 kHz | |
| Cold plate mounting [10] | 0.33 kW/K (starting at 49°C) |
| Feed-through mounting | 0.37 kW/K (starting at 40°C) |

Table 2: 8BVP0220HC00.000-1 - Technical data

| Model number | 8BVP0220HC00.000-1 |
|---|---|
| Reduction of continuous power depending on installation elevation | |
| Starting at 500 m above sea level | 1.5 kW per 1000 m |
| Peak power (supply and regeneration) | 37.5 kW |
| Power dissipation depending on switching frequency [11] | |
| Switching frequency 5 kHz | [0.28*P²+7.9*P+40] W |
| Switching frequency 10 kHz | [0.9*P²+5.3*P+110] W |
| DC bus capacitance | 495 µF |
| Protective measures | |
| Overload protection | Yes |
| Short circuit and ground fault protection | No |
| Variant | ACOPOSmulti backplane |
| **24 VDC power supply** | |
| Input voltage | 25 VDC ±1.6% |
| Input capacitance | 4.7 µF |
| Max. power consumption | 27 W + $P_{SLOT1}$ + $P_{SLOT2}$ + $P_{24\ V\ Out}$ + $P_{Fan8BVF...}$ [12] |
| Variant | ACOPOSmulti backplane |
| **24 VDC Out** | |
| Quantity | 2 |
| Output voltage | |
| DC bus voltage ($U_{DC}$): 260 to 315 VDC | 25 VDC * ($U_{DC}$ / 315) |
| DC bus voltage ($U_{DC}$): 315 to 800 VDC | 24 VDC ±6% |
| Fuse protection | 250 mA (slow-blow) electronic, automatic reset |
| **Filter fan connection** | |
| Output voltage | 24 V +5.8% / -0.1% |
| Continuous current | 4.2 A |
| Max. overcurrent limitation | 10 A |
| Protective measures | |
| Overload protection | No |
| Short-circuit proof | Yes |
| Open circuit monitoring | No |
| Undervoltage monitoring | No |
| **Trigger inputs** | |
| Quantity | 2 |
| Wiring | Sink |
| Electrical isolation | |
| Input - Power supply module | Yes |
| Input - Input | Yes |
| Input voltage | |
| Nominal | 24 VDC |
| Maximum | 30 VDC |
| Switching threshold | |
| Low | <5 V |
| High | >15 V |
| Input current at nominal voltage | Approx. 10 mA |
| Switching delay | |
| Rising edge | 52 µs ± 0.5 µs (digitally filtered) |
| Falling edge | 53 µs ± 0.5 µs (digitally filtered) |
| Modulation compared to ground potential | Max. ±38 V |
| **Electrical characteristics** | |
| Discharge capacitance | 0.9 µF |
| **Operating conditions** | |
| Permissible mounting orientations | |
| Hanging vertically | Yes |
| Lying horizontally | Yes |
| Standing horizontally | No |
| Installation elevation above sea level | |
| Nominal | 0 to 500 m |
| Maximum [13] | 4000 m |
| Pollution degree per EN 61800-5-1 | 2 (non-conductive pollution) |
| Overvoltage category per EN 61800-5-1 | III |
| Degree of protection per EN 60529 | IP20 |
| **Environmental conditions** | |
| Temperature | |
| Operation | |
| Nominal | 5 to 40°C |
| Maximum [14] | 55°C |
| Storage | -25 to 55°C |
| Transport | -25 to 70°C |

Table 2: 8BVP0220HC00.000-1 - Technical data

| Model number | 8BVP0220HC00.000-1 |
|---|---|
| Relative humidity | |
| Operation | 5 to 85% |
| Storage | 5 to 95% |
| Transport | Max. 95% at 40°C |
| **Mechanical properties** | |
| Dimensions [15] | |
| Width | 106.5 mm |
| Height | 317 mm |
| Depth | |
| Cold plate | 212 mm |
| Feed-through mounting | 209 mm |
| Weight | Approx. 4.2 kg |
| Module width | 2 |

Table 2: 8BVP0220HC00.000-1 - Technical data

1) TT and TN power systems are commonly referred to as "Delta/Wye with grounded wye neutral" in the USA.
2) The specified value already contains the power dissipation of the associated 8BVF line filter and associated 8BVR regeneration choke.
3) At max. loadable DC bus capacitance.
4) B&R recommends operating the module at its nominal switching frequency. Operating the module at a higher switching frequency for application-specific reasons results in a reduction in continuous power and higher CPU utilization.
5) Limit values from EN 61800-3 C3 (second environment).
6) Cables do not have to be shielded up to a total length of 3 m between the line filter, regeneration choke and power supply module. Please contact B&R when using cable lengths >3 m.
7) Valid under the following conditions: 3x 400 VAC mains input voltage, DC bus nominal voltage 750 VDC, 5 kHz switching frequency, 40°C ambient temperature, installation elevation <500 m above sea level, no derating due to cooling type.
8) P ... Actual continuous power available (value adjusted to the actual environmental conditions)
9) Valid for the following conditions: 750 VDC DC bus voltage, minimum permissible coolant flow volume (3 l/min).
10) The temperature specifications refer to the return temperature of the cold plate mounting plate.
11) Valid for a mains input voltage of 400 VAC and a DC bus voltage of 750 VDC. P ... Continuous power [kW].
12) $P_{SLOT1}$ ... Max. power consumption $P_{8BAC}$ [W] of the plug-in module in SLOT1 (see the technical data for the respective plug-in module)
$P_{SLOT2}$ ... Max. power consumption $P_{8BAC}$ [W] of the plug-in module in SLOT2 (see the technical data for the respective plug-in module).
$P_{24\ V\ Out}$ ... Power [W] that is output to connections X2/+24 V Out 1 and X2/+24 V Out 2 on the module (max. 10 W).
$P_{Fan8BVF...}$ ... Power [W] that is output to connections X4A/F- and X4A/F+ on the module (see the technical data for the respective 8BVF... line filter).
13) Continuous operation at an installation elevation of 500 m to 4,000 m above sea level is possible taking the specified reduction of continuous current into account. Requirements that go beyond this must be arranged with B&R.
14) Continuous operation at an ambient temperature of 40°C to max. 55°C is possible taking the specified reduction of continuous torque into account, but this results in premature aging of components.
15) These dimensions refer to the actual device dimensions including the respective mounting plate. Make sure to leave additional space above and below the devices for mounting, connections and air circulation.

# 4 Overload characteristics

The continuous current for the module is permitted to be exceeded for a short time during operation (dynamic overload).

### Overload response: WARNING

When the module exceeds the maximum overload duration, it outputs a warning.

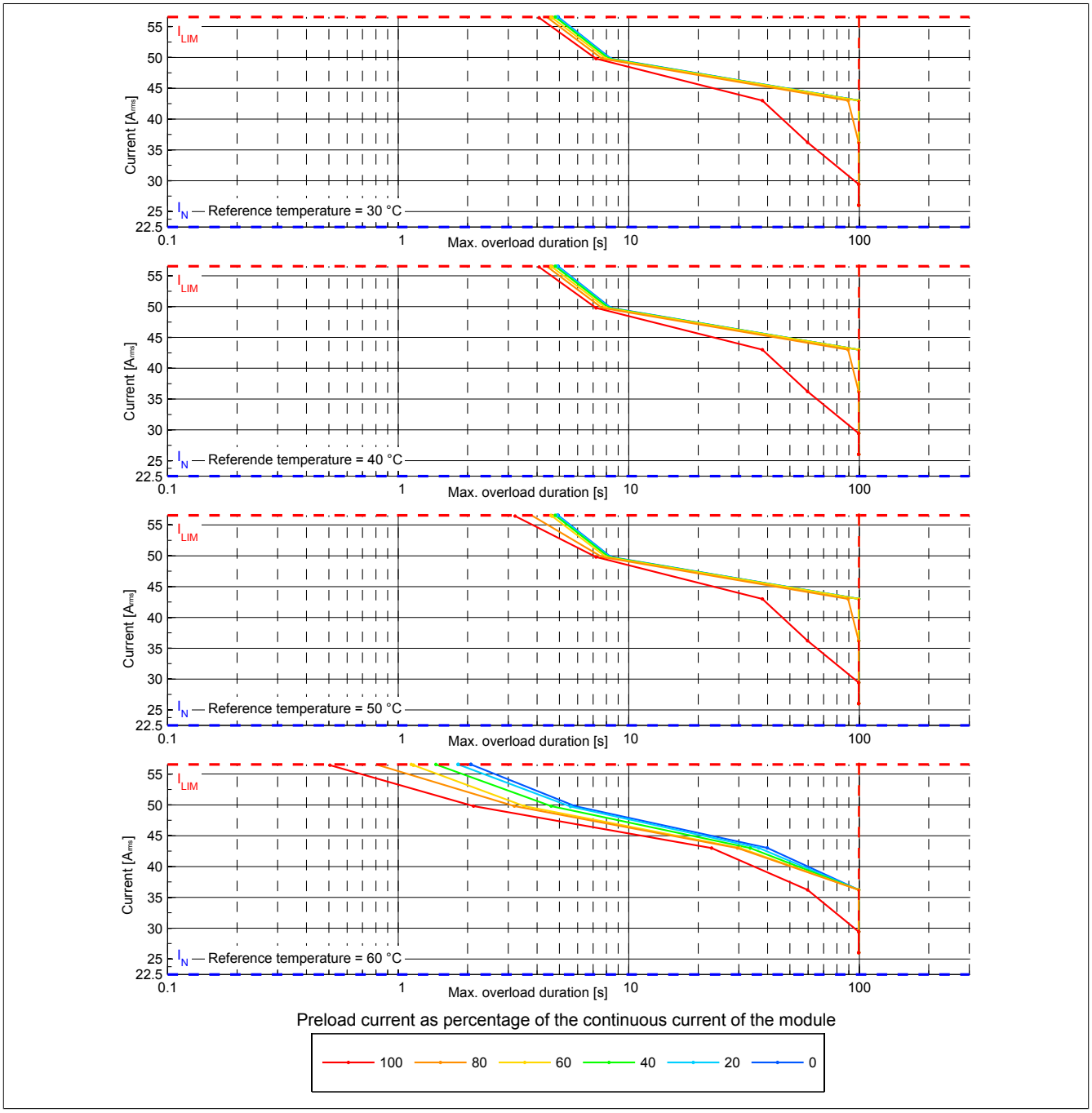



Figure 1: Overload characteristics of 8BVP0220HCS0.000-1, overload response - WARNING

| | |
|---|---|
| $I_N$ | Continuous current of the module [$A_{rms}$] |
| $I_{LIM}$ | Peak current of the module [$A_{rms}$] |
| Mounting type: | Cold plate mounting |
| DC bus voltage: | 700 V |
| Switching frequency: | 5 kHz |
| Rotary frequency of current indicator: | 50 Hz |
| Reference temperature: | Temperature of the coolant at the return of the cold plate mounting plate |

### Overload response ERROR + STOP

When the module exceeds the maximum overload duration, it outputs an error and executes a movement stop with current limiting (ERROR + STOP).

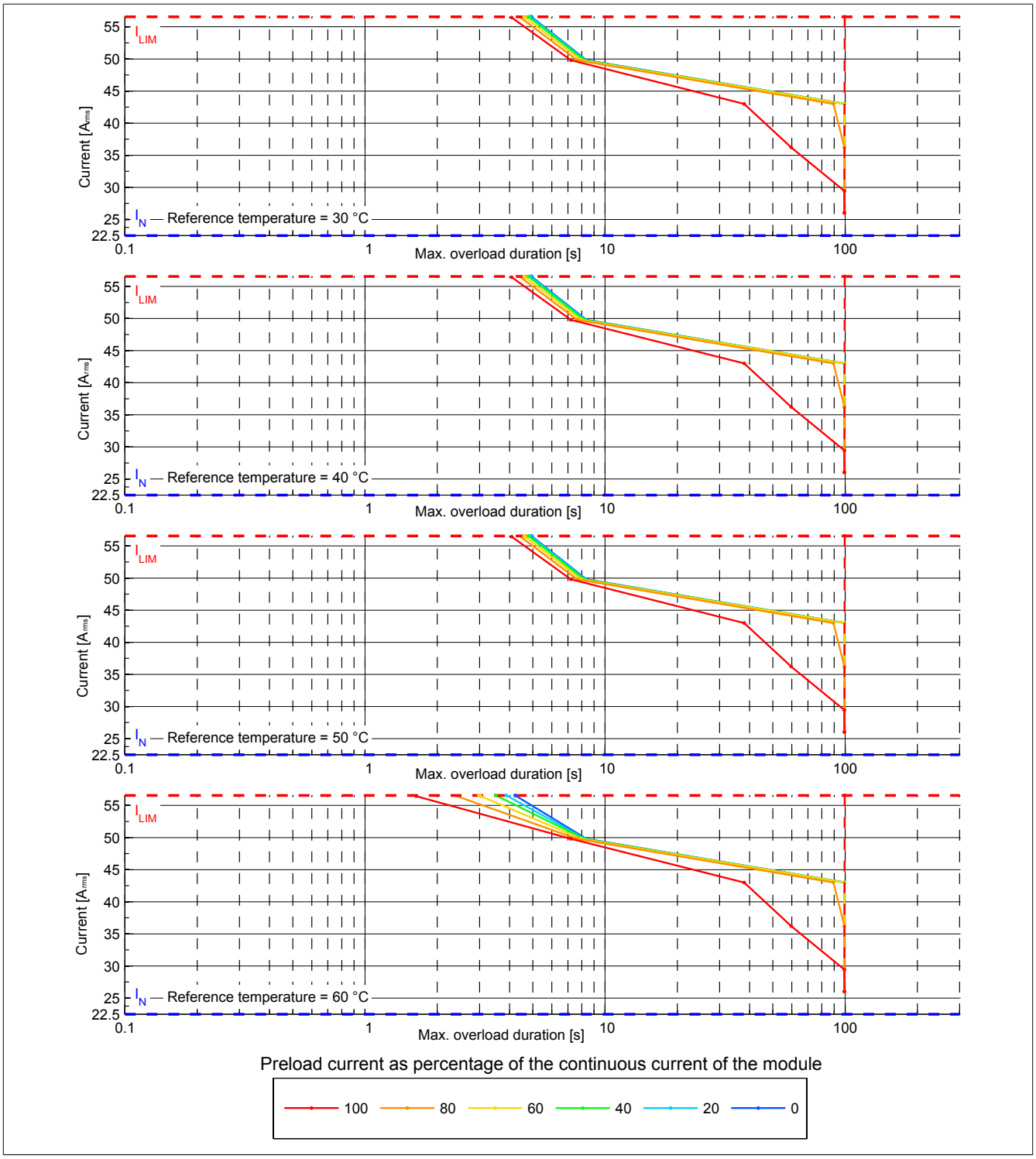



Figure 2: Overload characteristics of 8BVP0220HCS0.000-1, overload response - ERROR+STOP

| | |
|---|---|
| $I_N$ | Continuous current of the module [$A_{rms}$] |
| $I_{LIM}$ | Peak current of the module [$A_{rms}$] |
| Mounting type: | Cold plate mounting |
| DC bus voltage: | 700 V |
| Switching frequency: | 5 kHz |
| Rotary frequency of current indicator: | 50 Hz |
| Reference temperature: | Temperature of the coolant at the return of the cold plate mounting plate |

# 5 Status indicators

Status indicators are located on the black cover of each module.

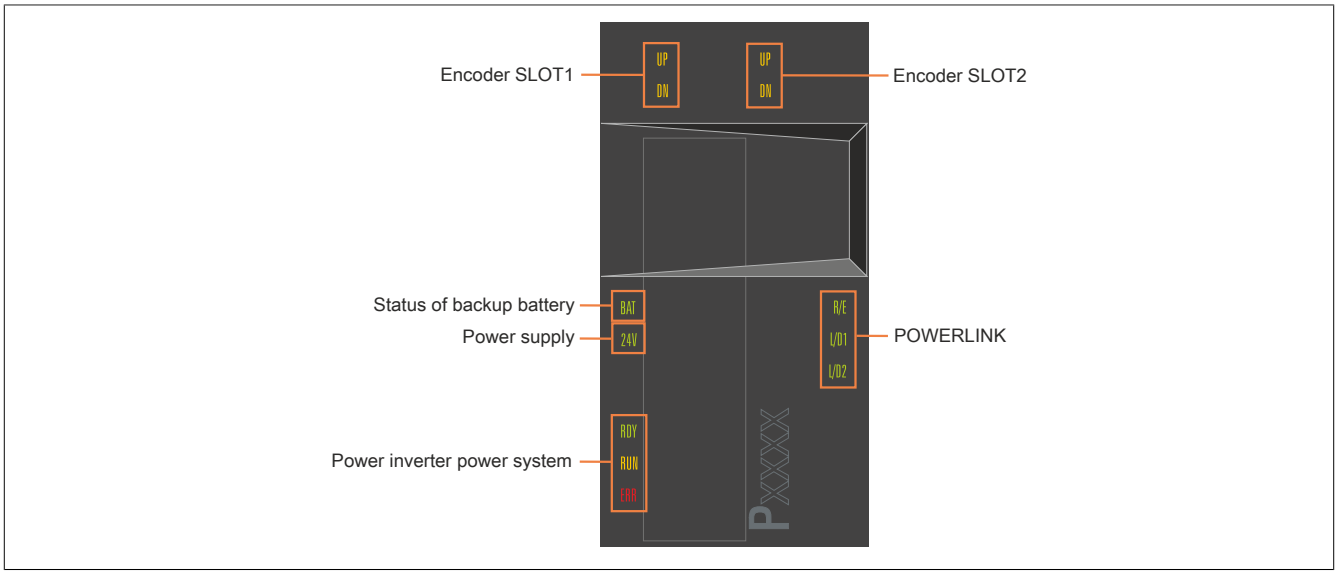



Figure 3: 8BVP power supply modules - Status indicator groups

## 5.1 LED status indicators

| Status indicator group | Label | Color | Function | Description |
|---|---|---|---|---|
| POWERLINK | R/E | Green/Red | Ready/Error | see "POWERLINK - LED status indicators" on page 8 |
| | L/D1 | Green | Link/Data activity on port 1 | |
| | L/D2 | Green | Link/Data activity on port 2 | |
| Power inverter power system | RDY | Green | Ready | see "RDY, RUN, ERR (8BVI, 8BVP, 8B0P) - LED status indicators" on page 8 |
| | RUN | Orange | Run | |
| | ERR | Red | Error | |
| Status of backup battery | BAT | Green/Red | Ready/Error | see "Backup battery - LED status indicators" on page 8 |
| Power supply | 24 V | Green | 24 V OK | 24 V internal system voltage supply is within the tolerance range |
| Encoder SLOT1 | UP | Orange | Encoder direction of rotation + | The encoder position of the connected encoder is changing in the positive direction. The faster the encoder position changes, the brighter the LED is lit. |
| | DN | Orange | Encoder direction of rotation - | The encoder position of the connected encoder is changing in the negative direction. The faster the encoder position changes, the brighter the LED is lit. |
| Encoder SLOT2 | UP | Orange | Encoder direction of rotation + | See encoder SLOT1. |
| | DN | Orange | Encoder direction of rotation - | |

Table 3: 8BVP power supply modules - LED status indicators

## 5.2 RDY, RUN, ERR (8BVI, 8BVP, 8B0P) - LED status indicators

| Label | Color | Function | Description | |
|---|---|---|---|---|
| RDY | Green | Ready | Solid green | The module is operational and the power stage can be enabled (operating system present and booted, no permanent or temporary errors). |
| | | | Blinking green [1] | The module is not ready for operation.<br>**Examples:**<br>• No signal on one or both enable inputs<br>• DC bus voltage outside the tolerance range<br>• Overtemperature on the motor (temperature sensor)<br>• Motor feedback not connected or defective<br>• Motor temperature sensor not connected or defective<br>• Overtemperature on the module (IGBT junction, heat sink, etc.)<br>• Disturbance on network |
| RUN | Orange | Run | Solid orange | The module's power stage is enabled. |
| ERR | Red | Error | Solid red [1] | There is a permanent error on the module.<br>**Examples:**<br>• Permanent overcurrent<br>• Invalid data in EPROM |
| | | | Blinking red | • LED status "Status changes when starting up the operating system loader" on page 9 |

Table 4: RDY, RUN, ERR (8BVI, 8BVP, 8B0P) - LED status indicators

1) Firmware V2.130 and later.

# Information:

**The ACOPOSmulti drive system has no way of detecting whether the fans in the fan modules of the mounting plate or the module-internal fans are actually rotating.**

## 5.3 POWERLINK - LED status indicators

| Label | Color | Function | Description | |
|---|---|---|---|---|
| R/E | Green/Red | Ready/Error | LED off | The module is not supplied with power or network interface initialization has failed. |
| | | | Solid red | The POWERLINK node number of the module is 0. |
| | | | Blinking red/green | The client is in an error state (drops out of cyclic operation). |
| | | | Blinking green (1x) | The client detects a valid POWERLINK frame on the network. |
| | | | Blinking green (2x) | Cyclic operation on the network is taking place, but the client itself is not yet a participant. |
| | | | Blinking green (3x) | Cyclic operation of the client is in preparation. |
| | | | Solid green | The client is participating in cyclic operation. |
| | | | Flickering green | The client is not participating in cyclic operation and also does not detect any other stations on the network participating in cyclic operation. |
| L/D1 | Green | Link/Data activity Port 1 | Solid green | A physical connection has been established to another station on the network. |
| | | | Blinking green | Activity on port 1 |
| L/D2 | Green | Link/Data activity Port 2 | Solid green | A physical connection has been established to another station on the network. |
| | | | Blinking green | Activity on port 2 |

Table 5: POWERLINK - LED status indicators

## 5.4 Backup battery - LED status indicators

| Label | Color | Function | Description | |
|---|---|---|---|---|
| BAT | Green/Red | Ready/Error | LED off | **Possible causes:**<br>• The voltage of the installed backup battery is within the tolerance range, but an EnDat encoder with backup battery is not connected.<br>• An EnDat encoder with backup battery is connected and registering "Battery OK", but the module's firmware version does not support EnDat encoders with battery backup. |
| | | | Solid green | An EnDat encoder with battery backup is connected and registering "Battery OK" (voltage of the installed backup battery is within the tolerance range). |
| | | | Solid red | An EnDat encoder with battery backup is connected and registering "Battery not OK".<br>**Possible causes:**<br>• Voltage of the installed backup battery outside of tolerance range<br>• No backup battery installed in module |

Table 6: Backup battery - LED status indicators

### 5.5 Status changes when starting up the operating system loader

The following intervals are used for the LED status indicators:

Block size: 50 ms
Repeats after: 3,000 ms

| Status | LED | Display |
|---|---|---|
| 1. Boot procedure for base hardware active | RDY | |
| | RUN | |
| | ERR | |
| 2. Network configuration active | RDY | |
| | RUN | |
| | ERR | |
| 3. Waiting for network telegram | RDY | |
| | RUN | |
| | ERR | |
| 4. Network communication active | RDY | |
| | RUN | |
| | ERR | |
| 5. ACOPOS operating system being transferred/burned [1] | RDY | |
| | RUN | |
| | ERR | |

Table 7: Status changes when starting up the operating system loader

1) Firmware V2.140 and later.

# 6 Dimension diagram and installation dimensions

## 6.1 Cold plate

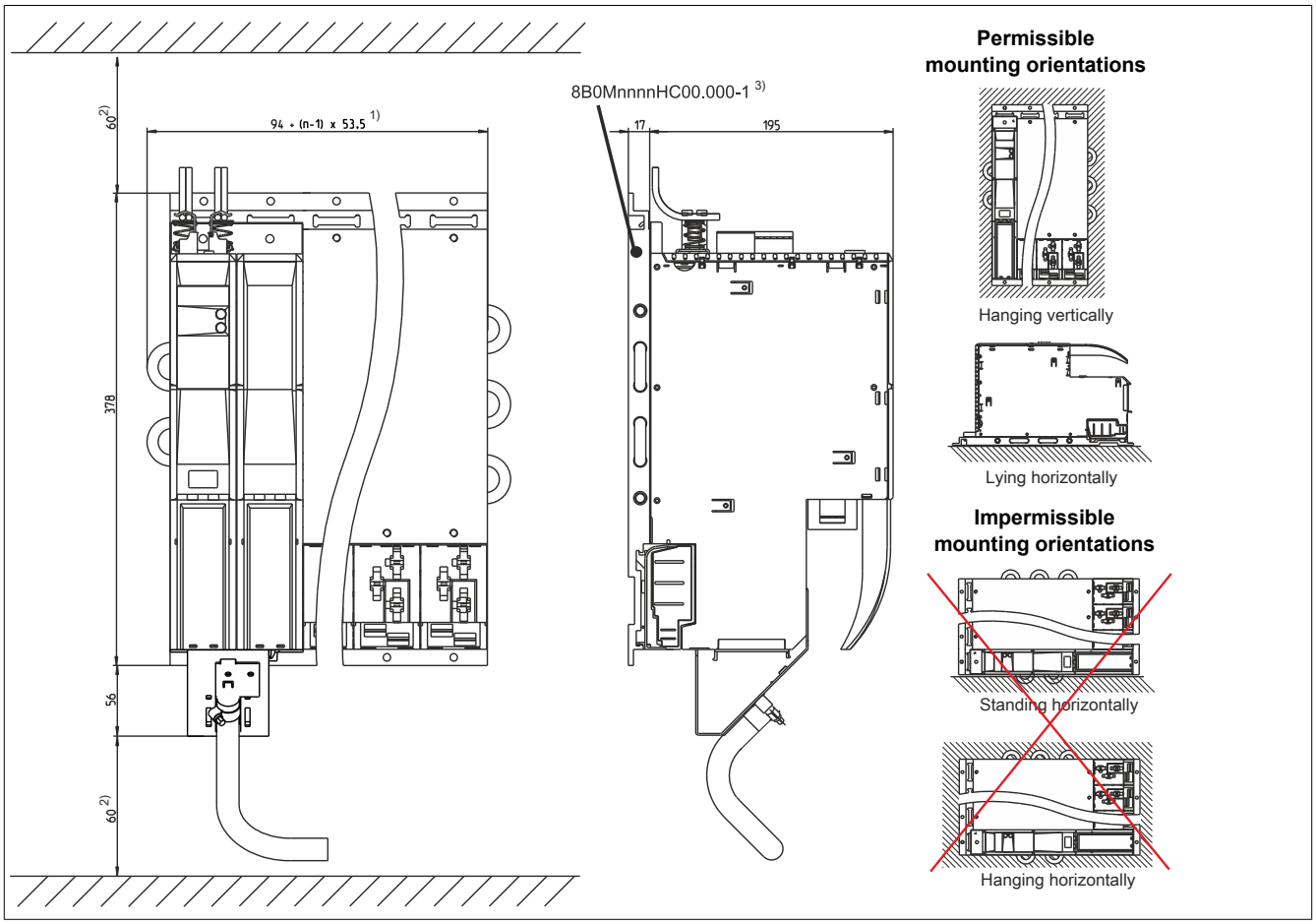



Figure 4: Cold plate - Dimension diagram and installation dimensions

1) n... Number of width units on the mounting plate
2) For sufficient air circulation, a clearance of at least 60 mm must be provided above the mounting plate and below the module.
3) nnnn indicates the number of slots (e.g. 0160 refers to 16 slots).

## Information:

**When mounting ACOPOSmulti modules for cold-plate or feed-through mounting, be sure not to scratch the backplane. This can impair thermal dissipation to the mounting plate.**

**Do not set down ACOPOSmulti modules for cold-plate or feed-through mounting on their bottom side. Doing so could break the clips that hold the unit is fan. Broken clips make it more difficult to replace the fans later on.**

### 6.2 Feed-through mounting

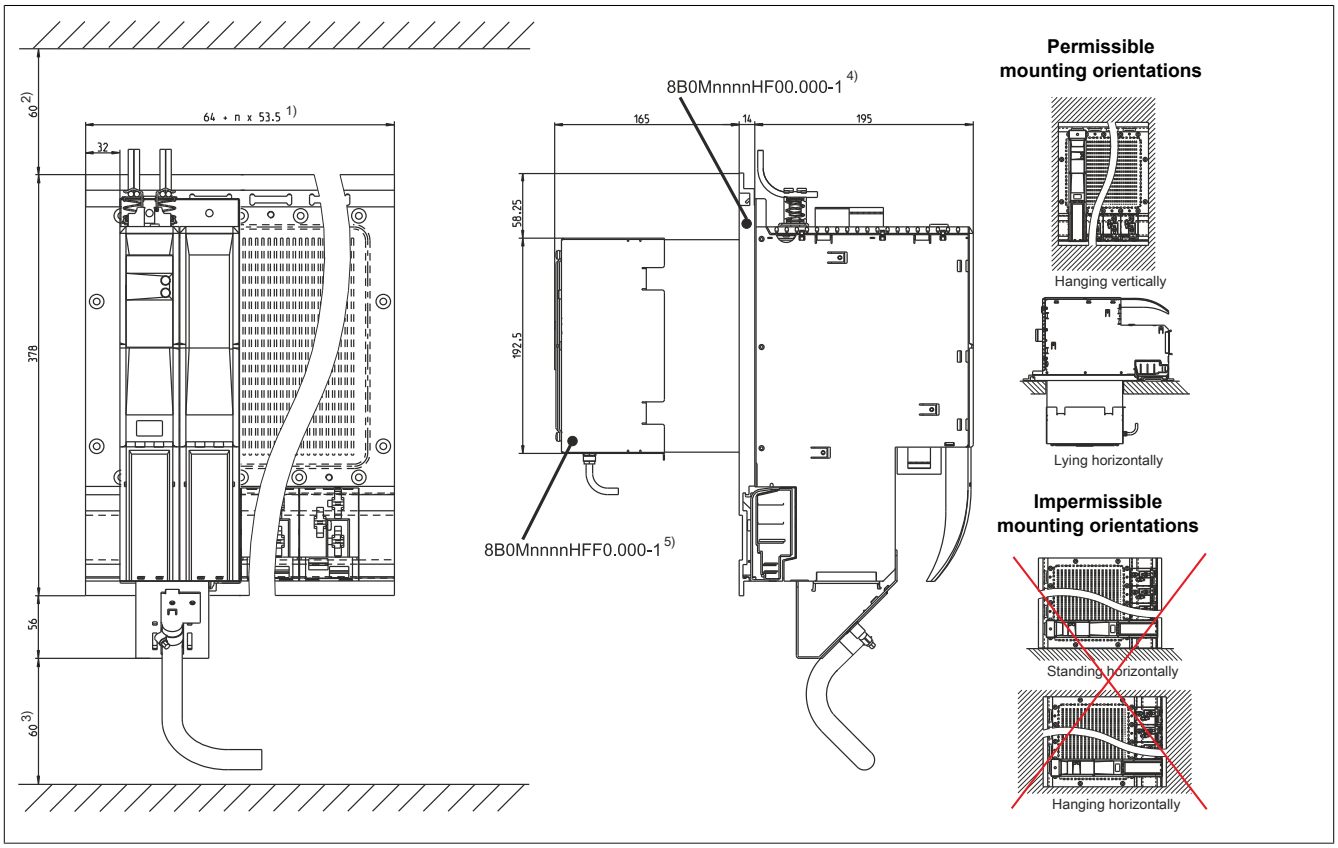



Figure 5: Feed-through mounting - Dimension diagram and installation dimensions

1) n... Number of width units on the mounting plate
2) For sufficient air circulation, a clearance of at least 60 mm must be provided above the mounting plate and below the module.
3) The required spacing to the wiring on the bottom of the module depends on the power cable being used.
4) nnnn indicates the number of slots (e.g. 0160 refers to 16 slots).
5) For sufficient air circulation, a clearance of at least 100 mm must be provided around the fan module.

## Information:

**When mounting ACOPOSmulti modules for cold-plate or feed-through mounting, be sure not to scratch the backplane. This can impair thermal dissipation to the mounting plate.**

**Do not set down ACOPOSmulti modules for cold-plate or feed-through mounting on their bottom side. Doing so could break the clips that hold the unit is fan. Broken clips make it more difficult to replace the fans later on.**

# 7 Wiring

## 7.1 8BVP0220Hx00.000-1, 8BVP0440Hx00.000-1 - Pinout overview

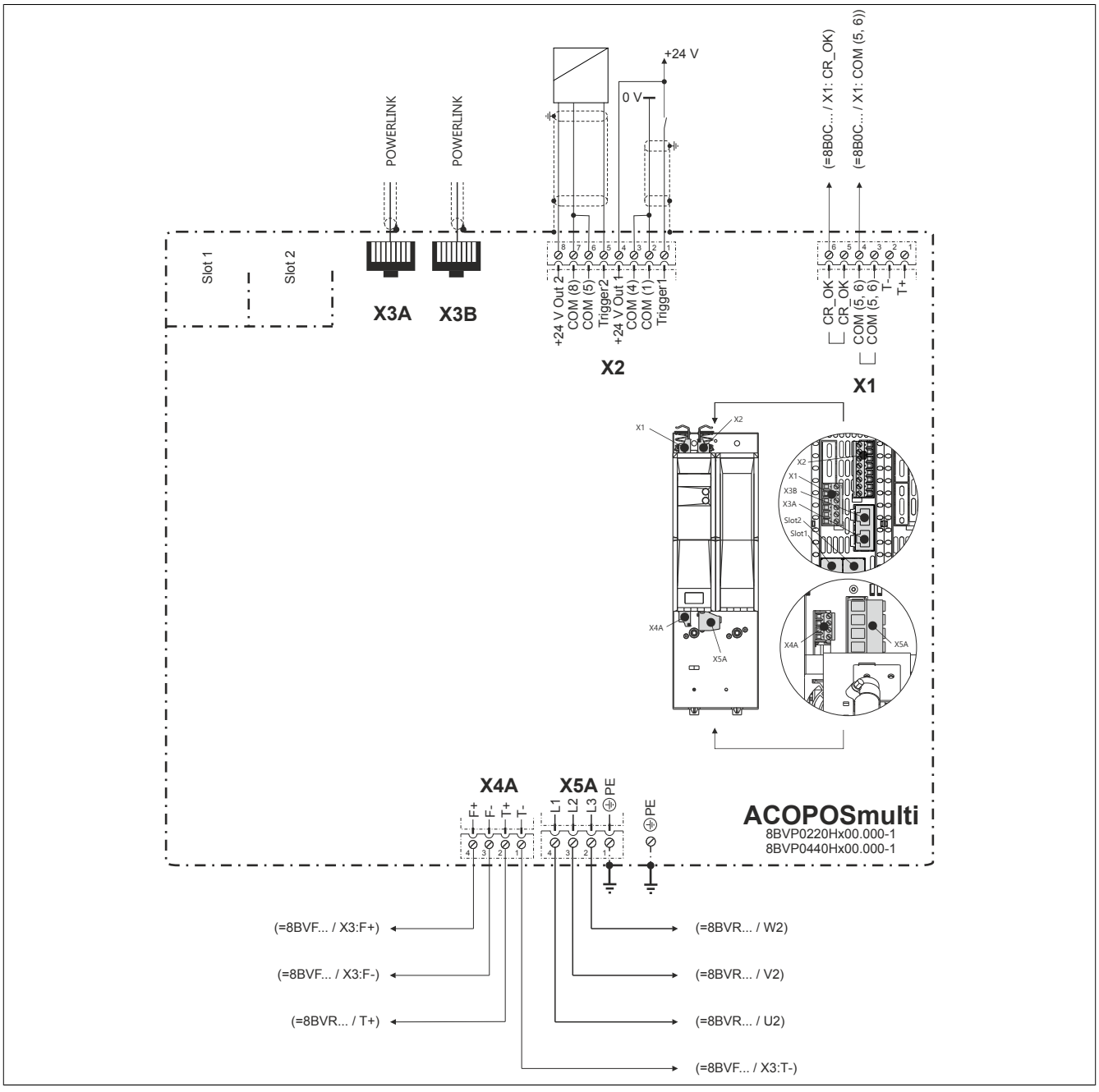



Figure 6: 8BVP0220Hx00.000-1, 8BVP0440Hx00.000-1 - Pinout overview

## 7.2 Connector X1 - Pinout

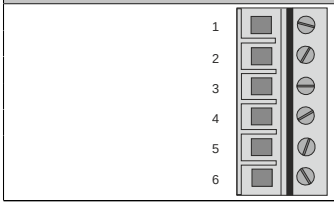
| X1 | Pin | Description | Function |
|---|---|---|---|
|  | 1 | T+ | Temperature sensor + |
| | 2 | T- | Temperature sensor - |
| | 3 | COM (5, 6) | DC bus ready 0 V |
| | 4 | COM (5, 6) | DC bus ready 0 V |
| | 5 | CR_OK | DC bus ready [1] |
| | 6 | CR_OK | DC bus ready [1] |

Table 8: Connector X1 - Pinout

1) Output CR_OK is only set if the following condition is met:
The charging relay is closed and the DC bus voltage $U_{DC}$ >270 VDC.

## Danger!

**The connections for the temperature sensors are safely isolated circuits. These connections are therefore only permitted to be connected to devices or components that have sufficient isolation per IEC 60364-4-41 or EN 61800-5-1.**

### 7.3 Connector X2 - Pinout

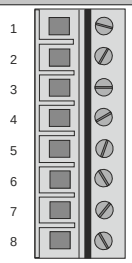
| X2 | Pin | Description | Function |
|---|---|---|---|
|  | 1 | Trigger1 | Trigger1 |
| | 2 | COM (1) | Trigger 1 0 V |
| | 3 | COM (4) | +24 V output 1 0 V |
| | 4 | +24 V Out 1 | +24 V output 1 |
| | 5 | Trigger2 | Trigger2 |
| | 6 | COM (5) | Trigger 2 0 V |
| | 7 | COM (8) | +24 V output 2 0 V |
| | 8 | +24 V Out 2 | +24 V output 2 |



Table 9: Connector X2 - Pinout

### 7.4 Connectors X3A, X3B - Pinout

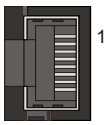
| X3A, X3B | Pin | Description | Function |
|---|---|---|---|
|  | 1 | RXD | Receive signal |
| | 2 | RXD\ | Receive signal inverted |
| | 3 | TXD | Transmit signal |
| | 4 | Shield | Shield |
| | 5 | Shield | Shield |
| | 6 | TXD\ | Transmit signal inverted |
| | 7 | Shield | Shield |
| | 8 | Shield | Shield |



Table 10: X3A, X3B connectors - Pinout

### 7.5 Connector X4A - Pinout

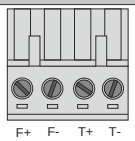
| X4A | Description | Function |
|---|---|---|
|  | T- | Power system: Temperature sensor - |
| | T+ | Power system: Temperature sensor + |
| | F- | Power system: Fan - |
| | F+ | Power system: Fan + |



Table 11: Connector X4A - Pinout

## Danger!

**The connections for temperature sensor and fan are safely isolated circuits. These connections are therefore only permitted to be connected to devices or components that have sufficient isolation per IEC 60364-4-41 or EN 61800-5-1.**

## Warning!

**Temperature sensors are only permitted to be connected to the X4A/T+ and X4A/T- connectors on an ACOPOSmulti module under the following conditions:**

- **SLOT1 of the ACOPOSmulti module does not contain an ACOPOSmulti plug-in module to which a temperature sensor is connected on the T+ and T- connections.**

**Otherwise, the temperature monitoring functions on the ACOPOSmulti module may become ineffective, which in extreme cases can cause the hardware (e.g. motors) connected to the ACOPOSmulti module to be destroyed!**

## 7.6 Connector X5A - Pinout

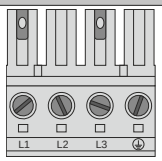
| X5A | Description | Function |
|---|---|---|
|  | PE | Power system: Protective ground conductor |
| | L3 | Power system: Mains connection L3 |
| | L2 | Power system: Mains connection L2 |
| | L1 | Power system: Mains connection L1 |

Table 12: Connector X5A - Pinout

# Danger!

**Before switching on the module, it is important to make sure that the housing is properly connected to ground (PE rail). Ground connections must also be established if the module is connected for test purposes or only being operated for a short period of time!**

## 7.7 Additional protective ground connection (PE)

The protective ground conductor is secured to the M5 threaded bolt provided for this purpose using a cable lug.

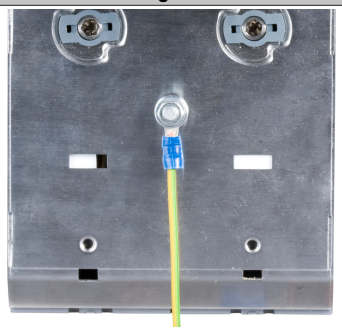
| Figure | Pin | Description | Function |
|---|---|---|---|
|  | --- | PE | Protective ground conductor |
| **Terminal cross section** | **[mm²]** | | **AWG** |
| Cable lug for M5 threaded bolt | 0.25 - 16 | | 23 - 5 |

Table 13: Additional protective ground connection (PE)

# Danger!

**Before switching on the power supply, it must be ensured that the housing of the 8BVP power supply module is properly connected to ground potential (PE rail). Ground connections must also be established if the 8BVP power supply module is connected for test purposes or only being operated for a short period of time!**

## 7.8 Input/Output circuit diagram

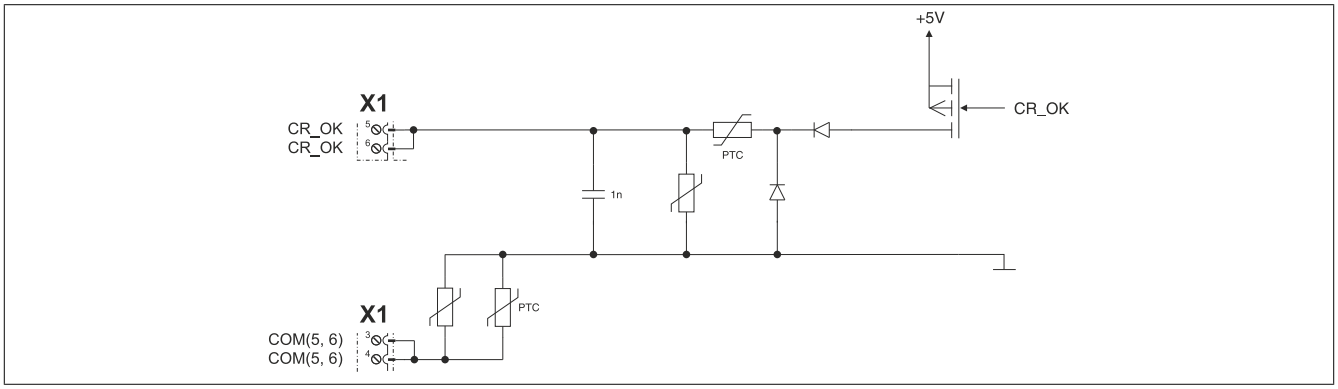



Figure 7: 8B0C - Enable

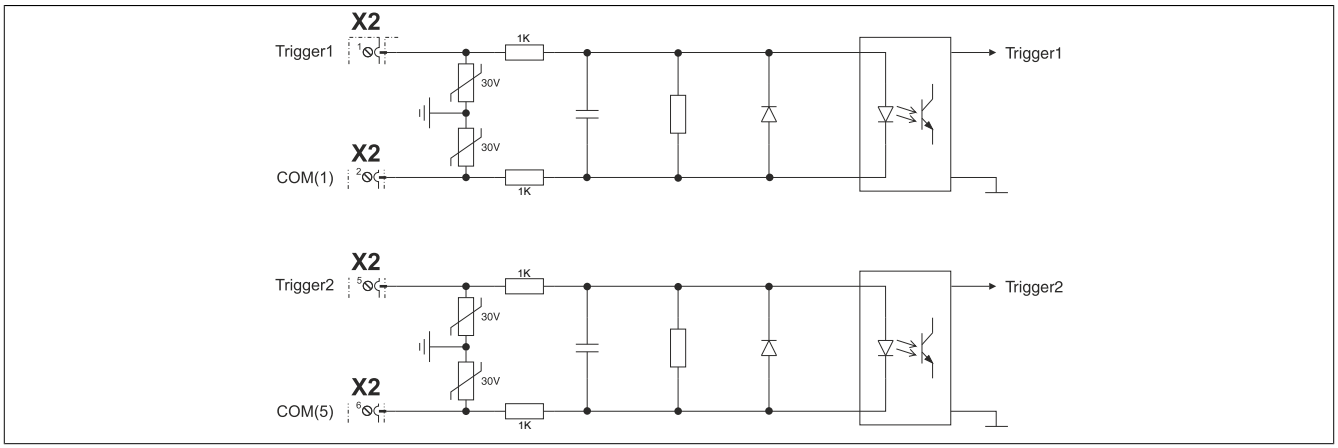



Figure 8: Trigger inputs

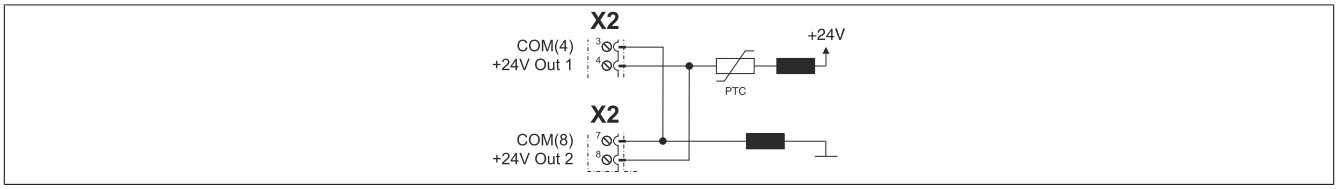



Figure 9: 24 VDC out

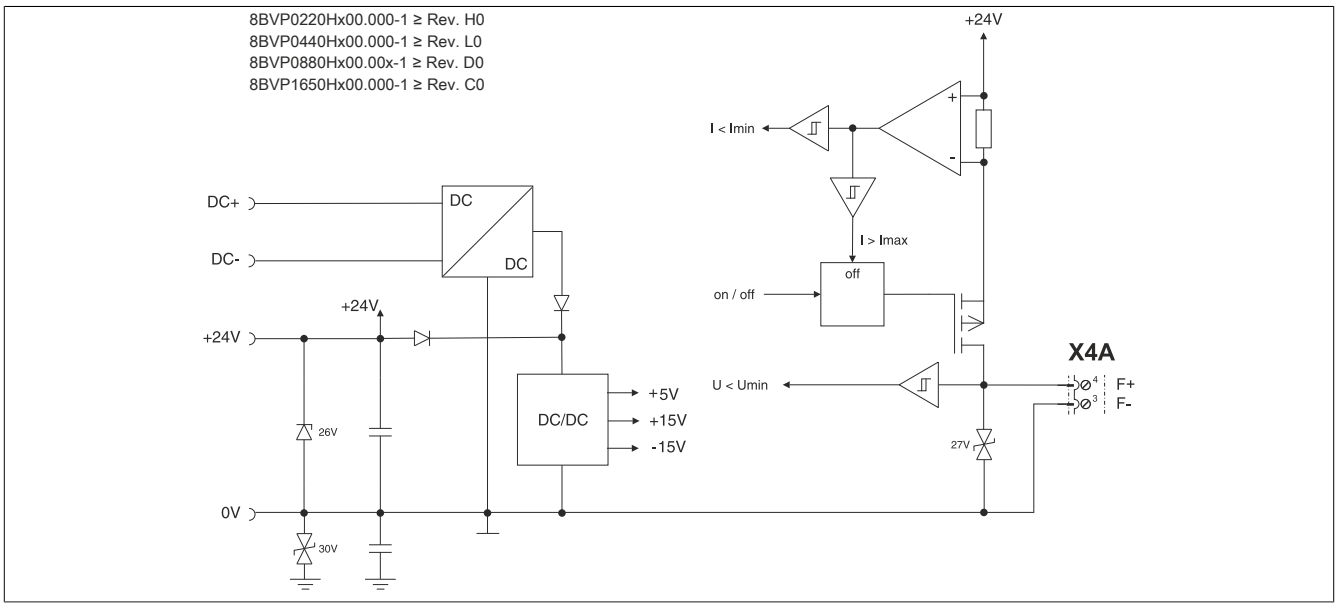



Figure 10: 8BVF fan - Control

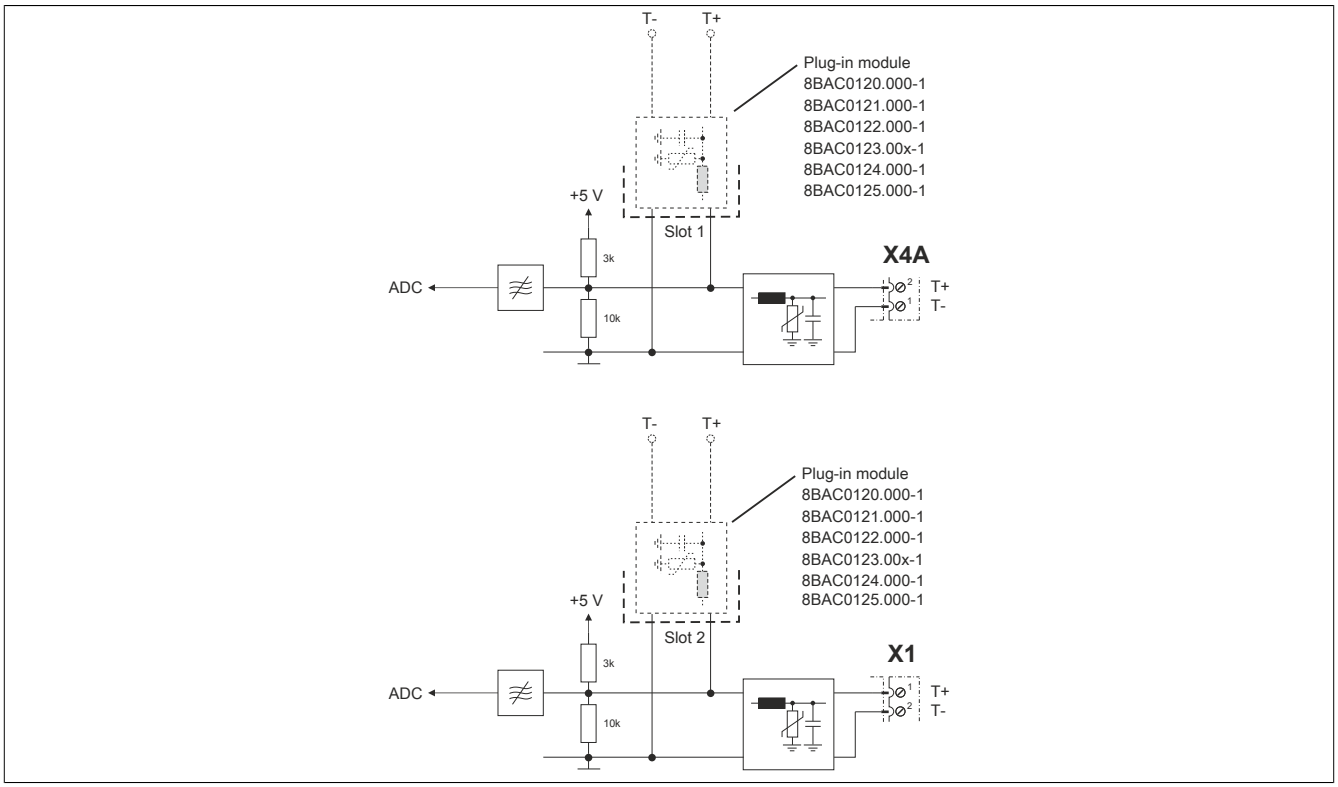



Figure 11: Temperature sensor

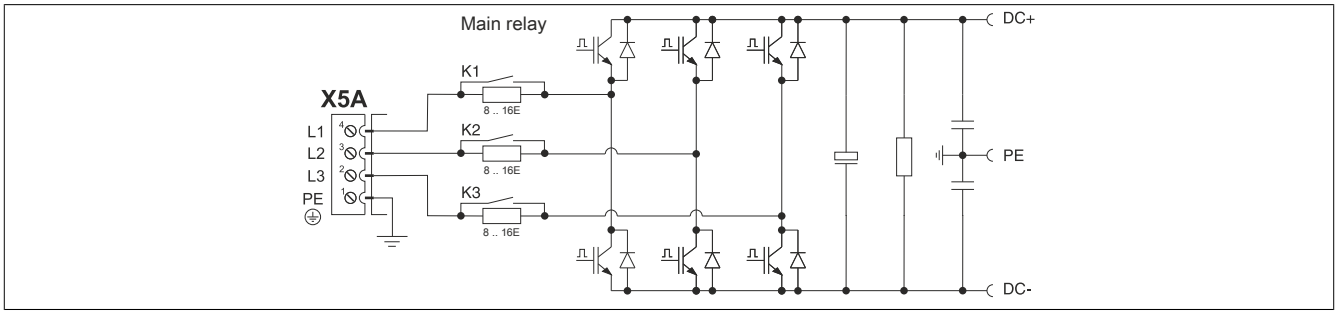



Figure 12: Power unit

## 7.9 POWERLINK node number setting

The POWERLINK node number can be set using the two hexadecimal coded rotary switches located behind the module's black cover.

| Figure | | Coded rotary switches | POWERLINK node number |
|---|---|---|---|
|  |  | 1 | 16s position (high) |
| | | 2 | 1s position (low) |
| Cover closed | Cover open | A change to the POWERLINK node number only takes effect the next time the ACOPOSmulti drive system is switched on. | |

**Information:**

**In principle, node numbers between $01 and $FD are permitted.**
**However, node numbers between $F0 and $FD are intended for future system expansions. To ensure compatibility, these node numbers should be avoided.**

**Node numbers $00, $FE and $FF are reserved and are therefore not permitted to be set.**

Table 14: Setting the POWERLINK node number