

8BVE0500HC00.000-1

1 General information

8BVE expansion modules allow the DC bus and 24 VDC power supply of an ACOPOSmulti drive system to be distributed to multiple 8B0M mounting plates. This makes it possible to implement distributed units within an ACOPOS-multi drive system. The module is equipped with corresponding cable outlets for this. In addition, ACOPOSremote and ACOPOSmotor drive systems can be connected to an ACOPOSmulti drive system via 8BVE expansion modules.

Warning!

Do not use 8BVE expansion modules to supply power to devices from other manufacturers!
There is a risk of irreparable damage to these 3rd-party devices, 8BVE expansion modules or the ACOPOSmulti drive system!

Only the following B&R modules are permitted to be connected to connectors X4A and X4B on an 8BVE expansion module:

- ACOPOSmulti 8BVE expansion modules
- ACOPOSremote 8CVE connection boxes
- ACOPOSremote 8CVI inverter modules
- ACOPOSmotor 8DI modules
- ACOPOS P3 8EI servo drive

Fuse protection for cable outlets

Fuse protection must be provided for the cable outlets for the DC bus and 24 VDC connection from the 8BVE expansion modules. Fuse holders for fuses are thus installed in the 8BVE expansion modules accordingly. The fuses necessary for operation must be dimensioned based on the application and installed by the user in the 8BVE expansion modules before commissioning. Suitable fuses are available as 8BXS fuse sets.

Information:

Depending on the application, select exactly one 8BXS fuse set for the DC bus and exactly one 8BXS fuse set for the 24 VDC cable outlet for each 8BVE expansion module!

Monitoring

All fuse holders are thermally monitored. The monitoring status is indicated by LEDs. If the 8BVE expansion module is overloaded, this will be additionally indicated to the user over special relay contacts (ALARM) for additional evaluation.

Caution!

The monitoring status of 8BVE expansion modules must be evaluated in the application. An overload of expansion module 8BVE can result in irreparable damage to the fuse holders or damping resistors installed in the module!

2 Order data


Model number	Short description	Figure
	Cold plate or feed-through mounting	
8BVE0500HC00.000-1	ACOPOSMulti expansion module 50 A, HV, cold plate or feed-through mounting	
	Required accessories	
	Fuse sets	
8BXS000.0000-00	ACOPOSMulti fuse set: 2x fuse 14 x 51 mm, 50 A, high-speed	
8BXS001.0000-00	ACOPOSMulti fuse set: 2x fuse 14x51 mm, 20 A, fast-acting	
8BXS002.0000-00	ACOPOSMulti fuse set: 2x fuse 14 x 51 mm, 10 A, high-speed	
8BXS003.0000-00	ACOPOSMulti fuse set: 1x fuse 10x38 mm, 30 A, fast-acting	
8BXS004.0000-00	ACOPOSMulti fuse set: 1x fuse 10x38 mm, 12 A, fast-acting	
8BXS005.0000-00	ACOPOSMulti fuse set: 2x fuse 14 x 51 mm, 25 A, high-speed	
	Terminal block sets	
8BZVE050000.000-1A	Screw clamp terminal block set for ACOPOSMulti 8BVE0500Hx00.000-1 modules: 2x 8TB3102.201C-11, 2x 8TB4103.203C-10, 1x 8TB2104.2010-00	
	Optional accessories	
	8BVE / 8CVI connection cables	
8CCH0002.11120-1	Hybrid cable for connecting 8BVE to 8CVI or 8DI, length 2 m, 2x 2x 0.34 mm ² + 4x 0.75 mm ² + 5x 2.5 mm ² , 1x 15-pin female TYCO connector, 1x RJ45 connector, integrated shield fixing, can be used in cable drag chains	
8CCH0005.11120-1	Hybrid cable for connecting 8BVE to 8CVI or 8DI, length 5 m, 2x 2x 0.34 mm ² + 4x 0.75 mm ² + 5x 2.5 mm ² , 1x 15-pin female TYCO connector, 1x RJ45 connector, integrated shield fixing, can be used in cable drag chains	
8CCH0007.11120-1	Hybrid cable for connecting 8BVE to 8CVI or 8DI, length 7 m, 2x 2x 0.34 mm ² + 4x 0.75 mm ² + 5x 2.5 mm ² , 1x 15-pin female TYCO connector, 1x RJ45 connector, integrated shield fixing, can be used in cable drag chains	
8CCH0009.11120-1	Hybrid cable for connecting 8BVE to 8CVI or 8DI, length 9 m, 2x 2x 0.34 mm ² + 4x 0.75 mm ² + 5x 2.5 mm ² , 1x 15-pin female TYCO connector, 1x RJ45 connector, integrated shield fixing, can be used in cable drag chains	
8CCH0010.11120-1	Hybrid cable for connecting 8BVE to 8CVI or 8DI, length 10 m, 2x 2x 0.34 mm ² + 4x 0.75 mm ² + 5x 2.5 mm ² , 1x 15-pin female TYCO connector, 1x RJ45 connector, integrated shield fixing, can be used in cable drag chains	
	Expansion cables	
8BCA0003.1111A-0	ACOPOSMulti expansion cable, length 3 m, 3x 1.5 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA0003.1312A-0	ACOPOSMulti expansion cable, length 3 m, 3x 4 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA0003.1513A-0	ACOPOSMulti expansion cable, length 3 m, 3x 10 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA0005.1111A-0	ACOPOSMulti expansion cable, length 5 m, 3x 1.5 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA0005.1312A-0	ACOPOSMulti expansion cable, length 5 m, 3x 4 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA0005.1513A-0	ACOPOSMulti expansion cable, length 5 m, 3x 10 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA01X5.1111A-0	ACOPOSMulti expansion cable, length 1.5 m, 3x 1.5 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA01X5.1312A-0	ACOPOSMulti expansion cable, length 1.5 m, 3x 4 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
8BCA01X5.1513A-0	ACOPOSMulti expansion cable, length 1.5 m, 3x 10 mm ² , integrated shield plate, can be used in cable drag chains, UL/CSA listed	
	Fan modules	
8BXF001.0000-00	ACOPOSMulti fan module, replacement fan for ACOPOSMulti modules (8BxP/8B0C/8BVI/8BVE/8B0K)	
	Shield component sets	
8SCS000.0000-00	ACOPOSMulti shield component set: 1 shield plate 1x type 0, 1 hose clamp, B 9 mm, D 12-22 mm	
8SCS009.0000-00	ACOPOSMulti shield component set: 1x ACOPOSMulti holding plate SK8-14, 1x shield connection clamp SK14	
	Terminal blocks	
8TB2104.2010-00	4-pin screw clamp, single row, spacing: 5.08 mm, label 1: numbered serially	
8TB3102.201C-11	2-pin screw clamp, single row, spacing: 7.62 mm, label 1: numbered serially, C keying: 10	
8TB4103.203C-10	3-pin screw clamp, single row, spacing: 10.16 mm, label 3: +DC -DC PE, keying C: 010	

Table 1: 8BVE0500HC00.000-1 - Order data

3 Technical data

Model number	8BVE0500HC00.000-1
General information	
Cooling and mounting method	Cold plate or feed-through mounting
Certifications	
CE	Yes
KC	Yes
UL	cULus E225616 Power conversion equipment
DC bus connection	
Voltage	
Nominal	750 VDC
Continuous power depending on fuse ¹⁾	
10 A	6 kW ²⁾
20 A	12 kW ²⁾
50 A	30 kW ²⁾
Continuous current depending on fuse ¹⁾	
10 A	8 A _{eff}
20 A	16 A _{eff}
50 A	40 A _{eff}
Reduction of continuous power at ambient temperatures starting at 40°C	1.25% per °Kelvin
Reduction of continuous power depending on installation elevation	
Starting at 500 m above sea level	10% per 1000 m
Reduction of continuous power depending on cooling method	No reduction
Peak current depending on fuse	
10 A	20 A
20 A	40 A
50 A	100 A
Power dissipation with continuous power	200 W
Design	ACOPOSmulti backplane
24 VDC supply	
Input voltage	25 VDC ±1.6%
Continuous power depending on fuse ¹⁾	
12 A	240 W ²⁾
30 A	600 W ²⁾
Max. power consumption	5 W
Reduction of continuous power at ambient temperatures starting at 40°C	1.25% per °Kelvin
Design	ACOPOSmulti backplane
DC bus cable outlet ³⁾	
Quantity	2
Fuse protection	
Type	2x fuse ø 14 x 51 mm
Tripping characteristic	Ultra fast-acting
Rated current ⁴⁾	10 / 20 / 50 A
Protective measures	
Fuse-dependent overload protection	
10 A	No (overload indicated via LED, dry alarm contacts present)
20 A	No (overload indicated via LED, dry alarm contacts present)
50 A	No (overload indicated via LED, dry alarm contacts present)
Short circuit and ground fault protection	Yes
Max. distance between two expansion modules	5 m
Design	
DC+, DC-, PE	Male connector
Shield connection	Yes
Terminal connection cross section	
Flexible and fine wire lines	
With wire end sleeves	0.5 to 16 mm ²
Approbation data	
UL/C-UL-US	20 to 6 AWG
CSA	20 to 6 AWG
Terminal cable cross section dimension of shield connection	12 to 22 mm
24 VDC auxiliary supply cable outlet	
Quantity	2
Output voltage	
DC bus voltage (U _{DC}): 260 to 315 VDC	25 VDC * (DC bus voltage / 315)
DC bus voltage (U _{DC}): 315 to 800 VDC	24 VDC ±6%

Table 2: 8BVE0500HC00.000-1 - Technical data

Model number	8BVE0500HC00.000-1
Fuse protection	
Type ⁵⁾	Blow-out fuse ø 10x38 mm
Tripping characteristic	Fast-acting
Rated current	12 / 30 A
Protective measures	
Overload protection	Yes
Short circuit protection	Yes
Max. distance between two expansion modules	5 m
Design	
24 VDC, COM	Male connector
Shield connection	No
Terminal connection cross section	
Flexible and fine wire lines	
With wire end sleeves	0.25 to 6 mm ²
Approbation data	
UL/C-UL-US	22 to 10 AWG
CSA	22 to 10 AWG
Alarm contacts ⁶⁾	
Quantity	2
Type	
Alarm contact 1	Normally closed contact
Alarm contact 2	Normally open contact
Electrical isolation	
Alarm contact - ACOPOSmulti module	Yes
Alarm contact - Alarm contact	Yes
Nominal voltage	30 VDC
Maximum current	1 A
Switching delay	3 ms
Max. number of switching cycles	100,000
Protection	
Overload protection	No
Short circuit protection	No
Operating conditions	
Permissible mounting orientations	
Hanging vertically	Yes
Lying horizontally	Yes
Standing horizontally	No
Installation at elevations above sea level	
Nominal	0 to 500 m
Maximum ⁷⁾	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 ⁸⁾	55°C
Storage	-25 to 55°C
Transport	-25 to 70°C
Relative humidity	
Operation	5 to 85%
Storage	5 to 95%
Transport	Max. 95% at 40°C
Mechanical characteristics	
Dimensions ⁹⁾	
Width	53 mm
Height	317 mm
Depth	
Cold plate	212 mm
Feed-through mounting	209 mm
Weight	Approx. 2.6 kg
Module width	1

Table 2: 8BVE0500HC00.000-1 - Technical data

- Valid in the following conditions: 750 VDC DC bus voltage, 5 kHz switching frequency, 40°C ambient temperature, installation elevation <500 m above sea level, no derating due to cooling type.
- The specified values take into consideration a reserve of 17% of the rated current (recommended by the fuse manufacturer).
- Shielded cables must be used. B&R recommends the ACOPOSmulti 8BCA expansion cables.
- For a 10 A rated current, type 5011806.10 fuses from Siba (www.sibafuses.com) must be used.
For a 20 A rated current, type 5011806.20 fuses from Siba (www.sibafuses.com) must be used.
For a 50 A rated current, type 5020106.50 fuses from Siba (www.sibafuses.com) must be used.
- For example, a fuse of type KLKD0xx from Littelfuse (www.littelfuse.com) can be used (xx is the rated current for the fuse; only fuses up to a rated current of 30 A are permitted to be used).

- 6) The alarm contacts are only activated in situations that lead to components being overloaded inside the module. The alarm contacts must therefore be monitored externally.
 Triggering the DC bus or 24 VDC circuit breaker does not result in components being overloaded inside the module, so an alarm contact is not activated!
 The alarm contacts are triggered if:
- The load on the damping resistors is >100% (OLD LED lights up).
 - The expansion module's outgoing 24 VDC circuit is thermally overloaded (OL24 LED is lit).
 - The expansion module's outgoing DC bus circuit is thermally overloaded (OLDC LED is lit).
- When activating the alarm contacts, the ACOPOSmulti drive system should be switched off in order to prevent damage to the expansion module.
- 7) 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.
- 8) 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.
- 9) 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 Status indicators

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

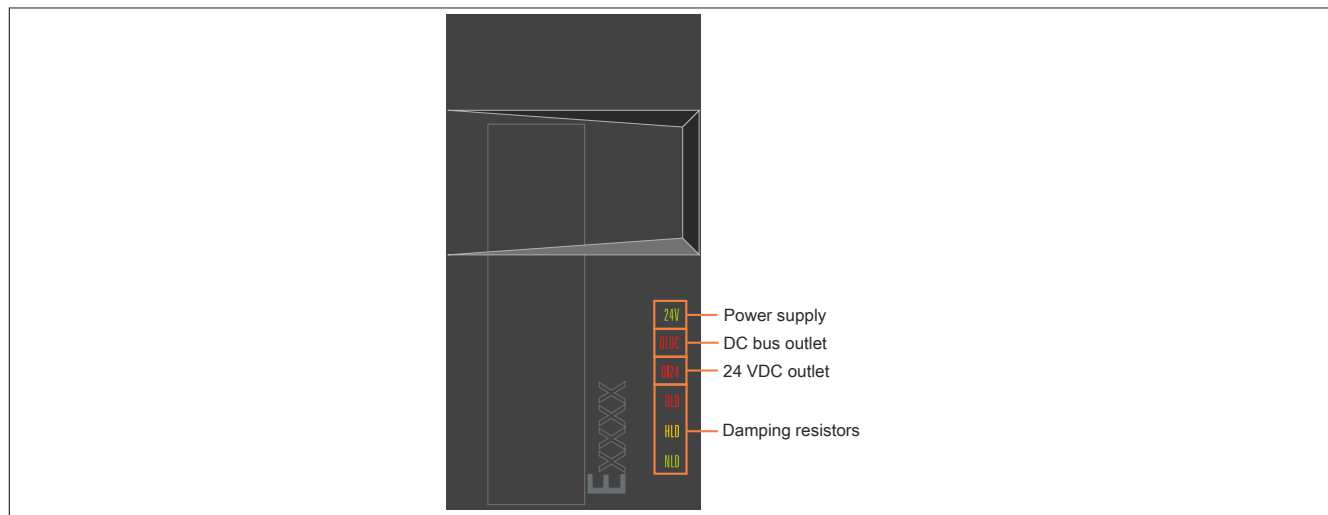


Figure 1: 8BVE expansion modules - Status indicator groups

4.1 LED status indicators

Status indicator group	Label	Color	Function	Description
Power supply	24 V	Green	24 V OK	The 24 V module power supply voltage is within the tolerance range.
DC bus outlet ¹⁾	OLDC	Red	Overload	DC bus outlet is overloaded <ul style="list-style-type: none"> The alarm contacts are activated. ²⁾ <div style="border-left: 2px solid black; padding-left: 10px; margin-top: 10px;"> <p>Caution!</p> <p>There is the danger of both DC fuses being damaged after the OLDC LED is lit (overload of DC bus outlet). For this reason, they should be replaced as a precaution after the OLDC LED is lit.</p> </div>
24 VDC outlet ¹⁾	OL24	Red	Overload	The 24 VDC outlet is overloaded. <ul style="list-style-type: none"> The alarm contacts are activated. ²⁾
Damping resistors	OLD ¹⁾	Red	Load >100%	The damping resistors are overloaded. <ul style="list-style-type: none"> The alarm contacts are activated.
	HLD	Orange	75% < Load < 100%	The load on the damping resistors is high. <ul style="list-style-type: none"> The alarm contacts are not activated. ²⁾
	NLD	Green	Load <75%	The load on the damping resistors is in the normal range. <ul style="list-style-type: none"> The alarm contacts are not activated.

Table 3: LED status indicators - 8BVE expansion modules

1) The LED lights after overload occurs until power is disconnected from the module.

2) The alarm contact remains enabled until the cause of the overload has been eliminated and power has been disconnected from the module.

5 Dimension diagram and installation dimensions

5.1 Cold plate

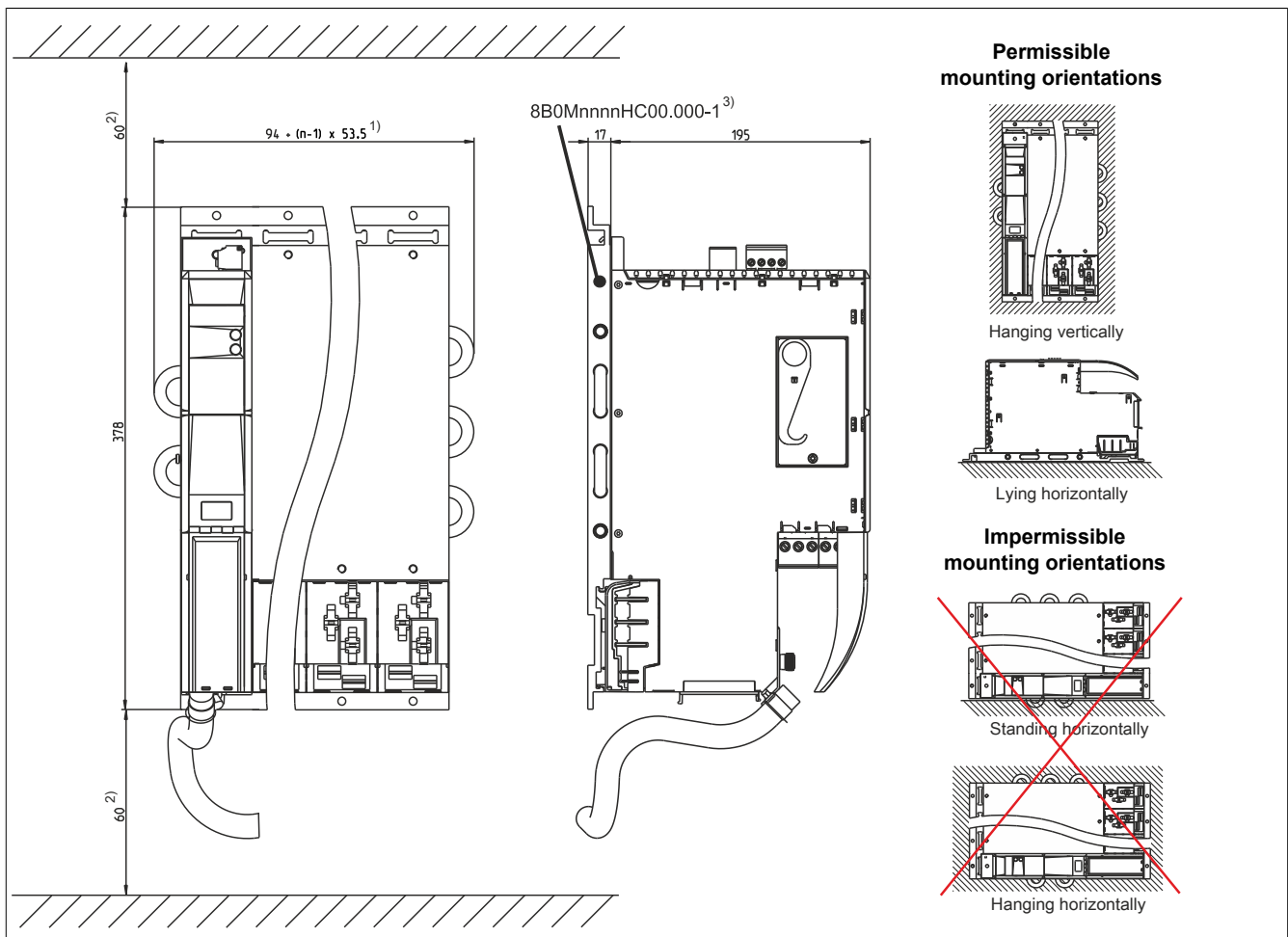


Figure 2: Cold plate - Dimension diagram and installation dimensions

- 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.

5.2 Feed-through mounting

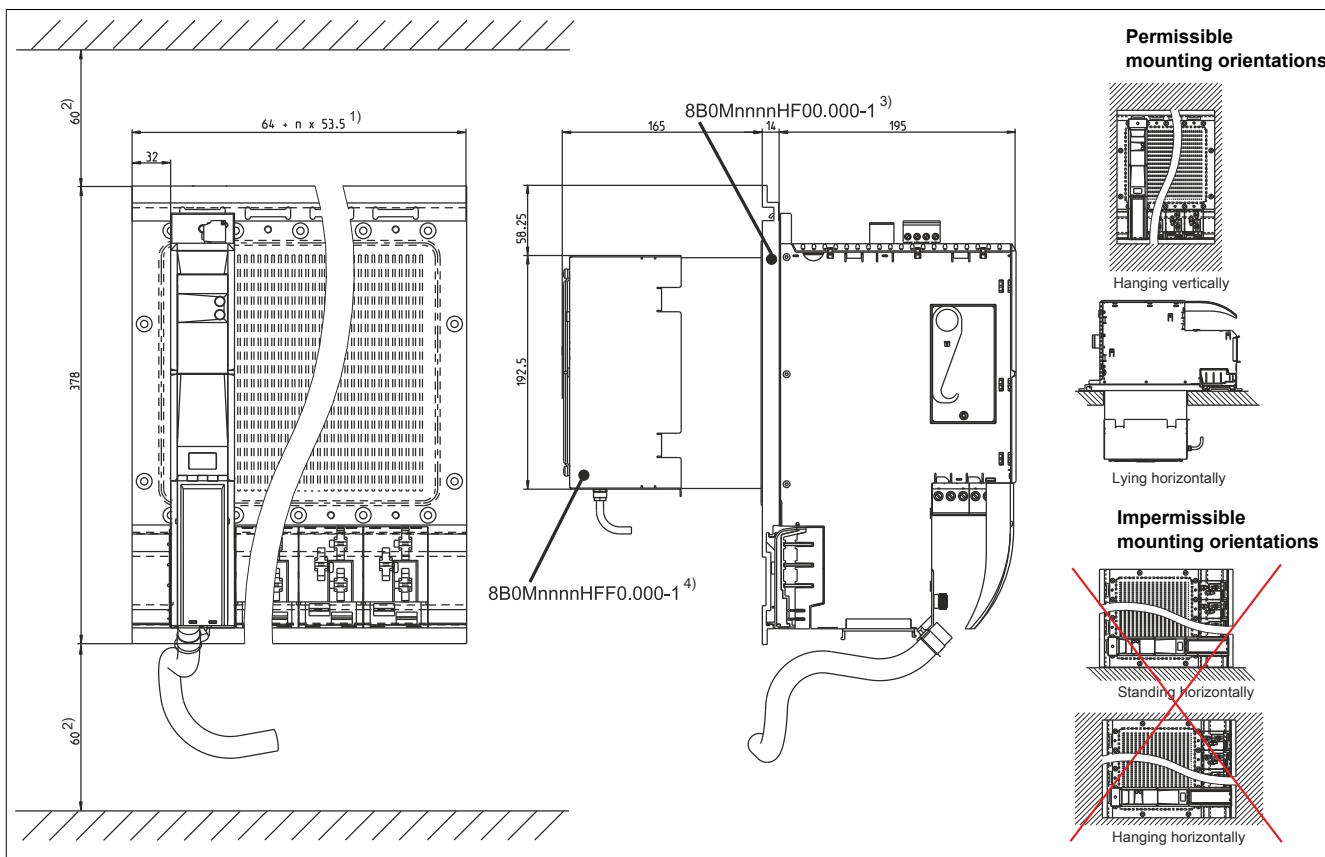


Figure 3: Feed-through mounting - Dimension diagram and installation dimensions

- 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) nnnn indicates the number of slots (e.g. 0160 refers to 16 slots).
- 4) 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.

6 Wiring

6.1 8BVE0500Hx00.000-1 - Pinout overview

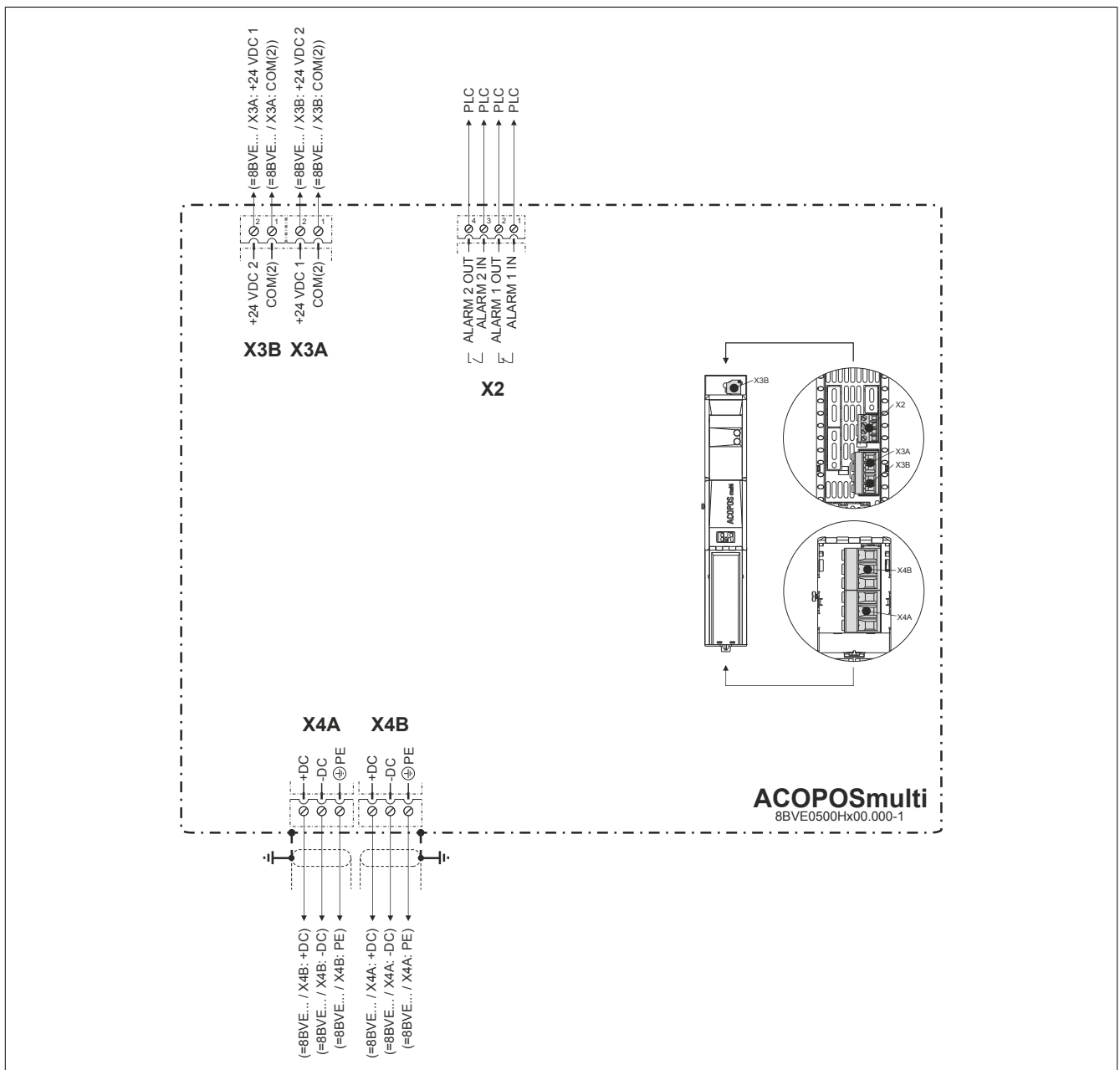


Figure 4: 8BVE0500Hx00.000-1 - Pinout overview

6.2 Additional PE connection on 8BVE expansion modules

An additional PE connection must be made between two 8BVE expansion modules in order to meet the conditions necessary for the ACOPOSmulti drive systems main connection on all 8B0M mounting plates that are connected using 8BVE expansion modules. This additional PE connection must be made with the same wire cross section as the PE wire used for the DC connection (at least 2.5 mm² with protected wiring or 4 mm² with unprotected wiring).

Information:

If the wiring of the X4 connectors between 8BVE expansion modules is carried out with a wire cross section 10 mm² copper or higher, an additional PE connection is not required.

The PE connection must always be made between the first and last 8BVE expansion modules in the ACOPOSmulti drive system.

DC connection between 2 8BVE expansion modules

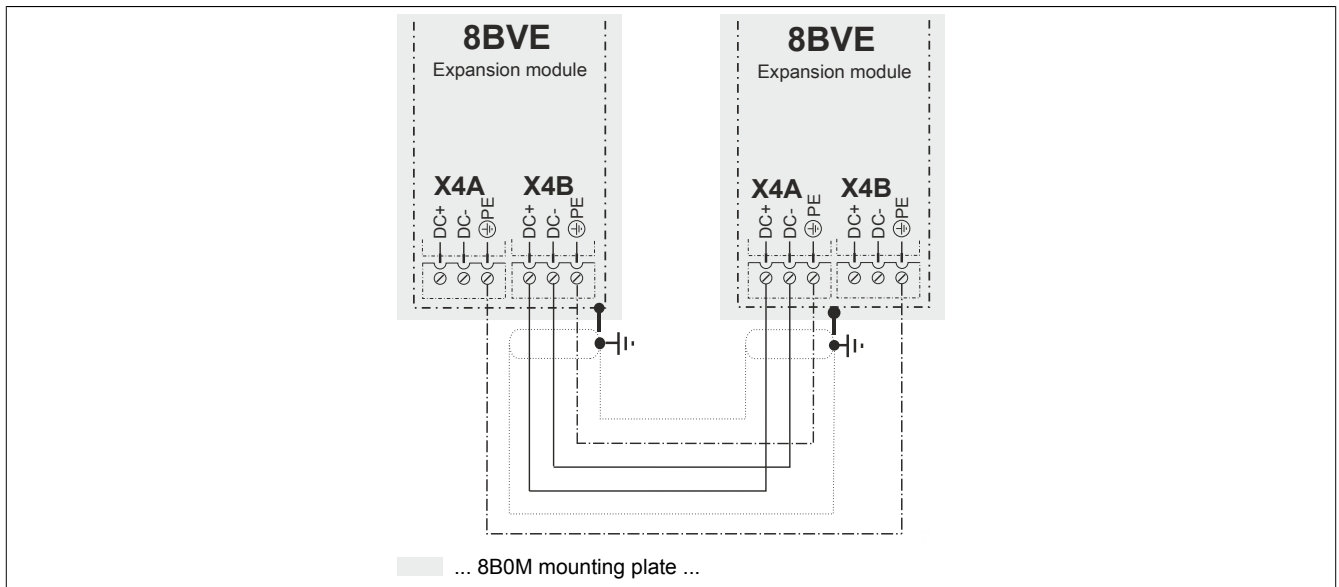


Figure 5: DC connection between 2 8BVE expansion modules

DC connection between 8BVE expansion modules

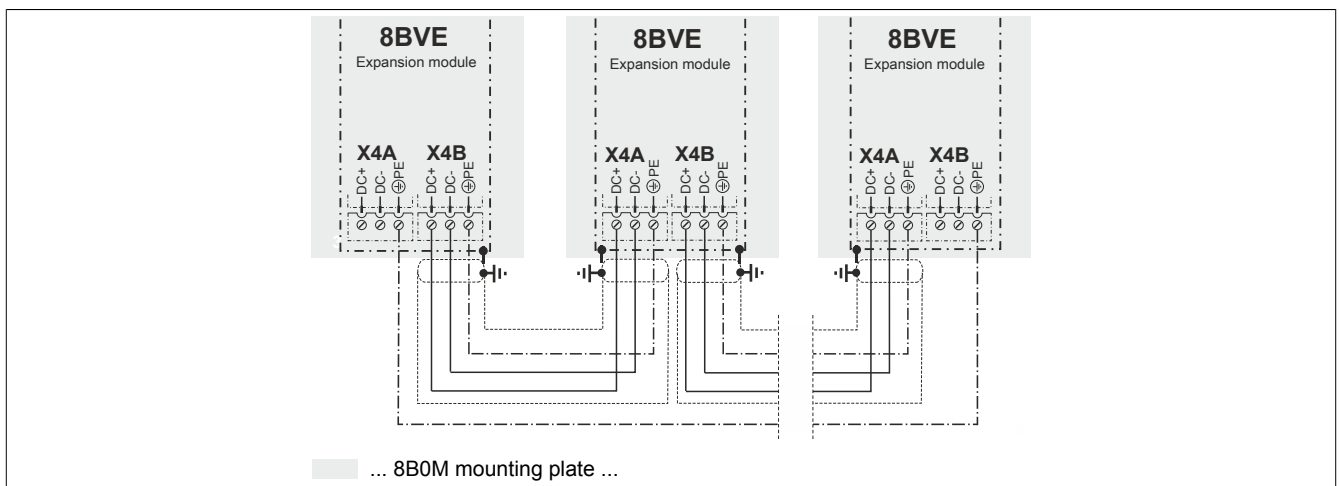


Figure 6: DC connection between 8BVE expansion modules

Connection between two 8BVE expansion modules in combination with 8CVI inverter modules

Variant 1: 8CVI inverter modules to both 8BVE expansion modules

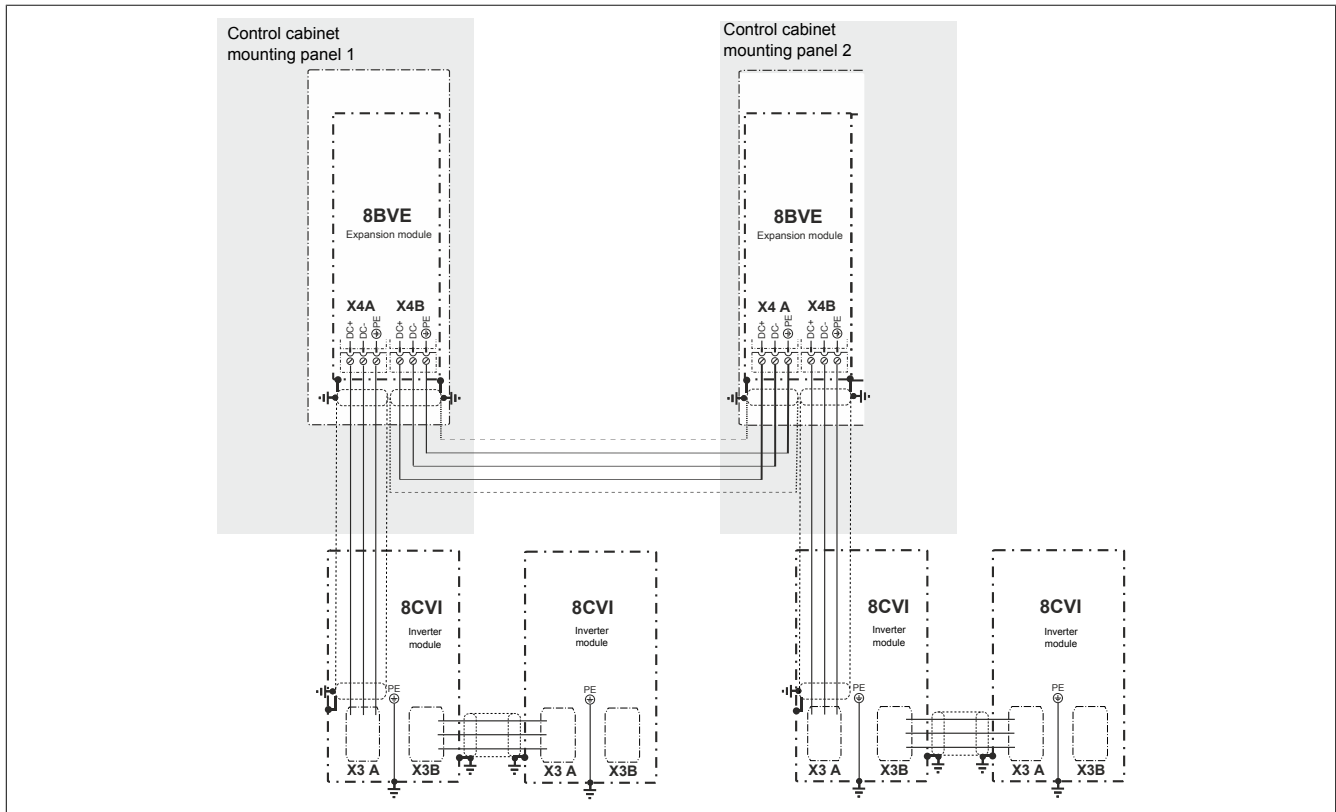


Figure 7: 8CVI inverter module to both 8BVE expansion modules

Variant 2: 8CVI inverter modules to the last 8BVE expansion module

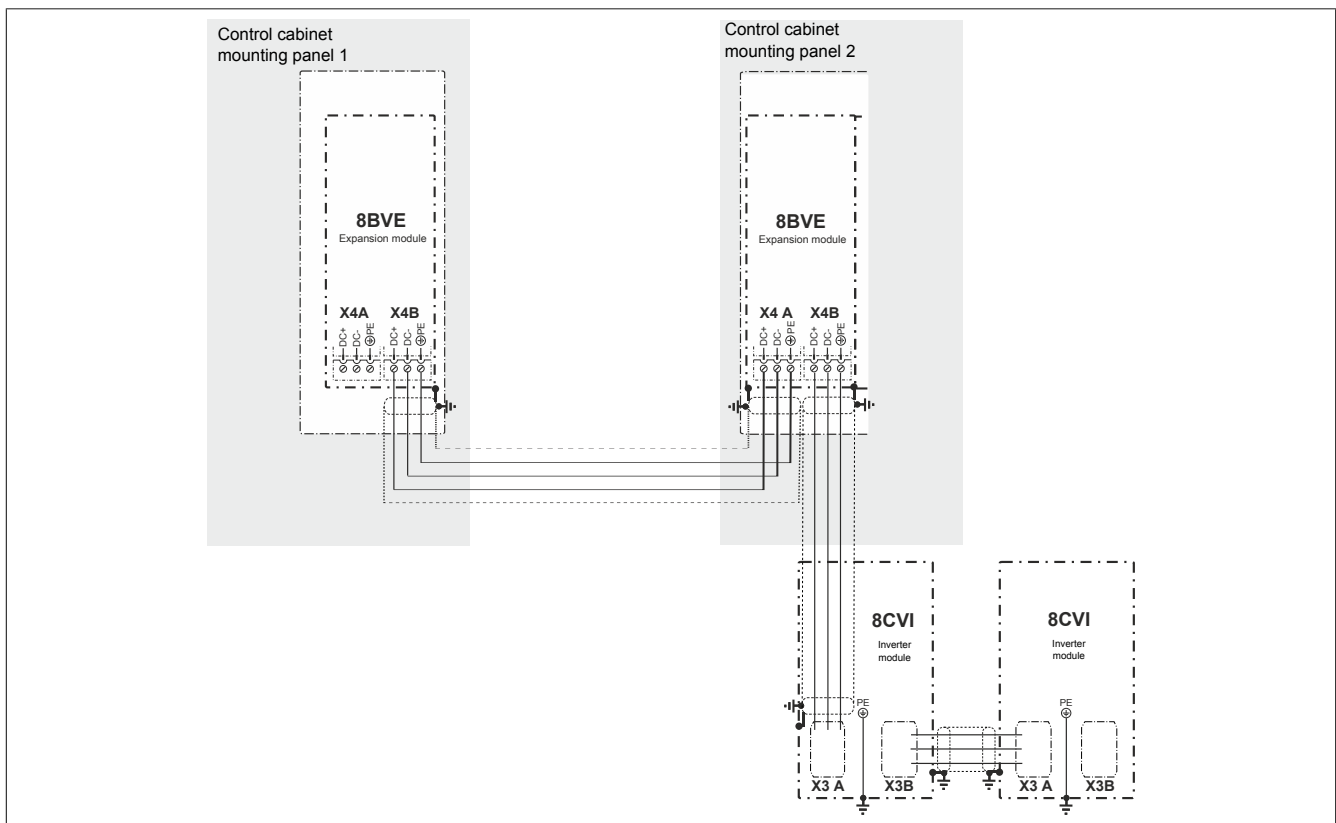


Figure 8: 8CVI inverter modules to the last 8BVE expansion module

6.3 Connector X2 - Pinout

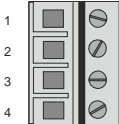
X2	Pin	Description	Function
	1	ALARM 1 IN	Alarm contact 1 IN (N.C.)
	2	ALARM 1 OUT	Alarm contact 1 OUT (N.C.)
	3	ALARM 2 IN	Alarm contact 2 IN (N.O.)
	4	ALARM 2 OUT	Alarm contact 2 OUT (N.O.)

Table 4: Connector X2 - Pinout

6.4 Connector X3A - Pinout

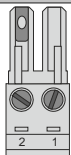
X3A	Pin	Description	Function
	1	COM(2)	+24 V output 1 0 V
	2	+24 VDC 1	+24 V output 1

Table 5: Connector X3A - Pinout

6.5 Connector X3B - Pinout

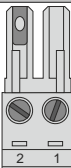
X3B	Pin	Description	Function
	1	COM(2)	+24 V output 2 0 V
	2	+24 VDC 2	+24 V output 2

Table 6: Connector X3B - Pinout

6.6 Connector X4A - Pinout

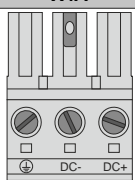
X4A	Description	Function
	+DC	U DC bus 1 +
	-DC	U DC bus 1 -
	PE	Protective ground conductor

Table 7: Connector X4A - Pinout

Information:

Shielded cables must be used. B&R recommends the ACOPOSmulti 8BCA expansion cables.

6.7 Connector X4B - Pinout

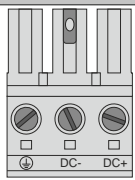
X4B	Description	Function
	+DC	U DC bus 2 +
	-DC	U DC bus 2 -
	PE	Protective ground conductor

Table 8: Connector X4B - Pinout

Information:

Shielded cables must be used. B&R recommends the ACOPOSmulti 8BCA expansion cables.

6.8 Input/Output circuit diagram

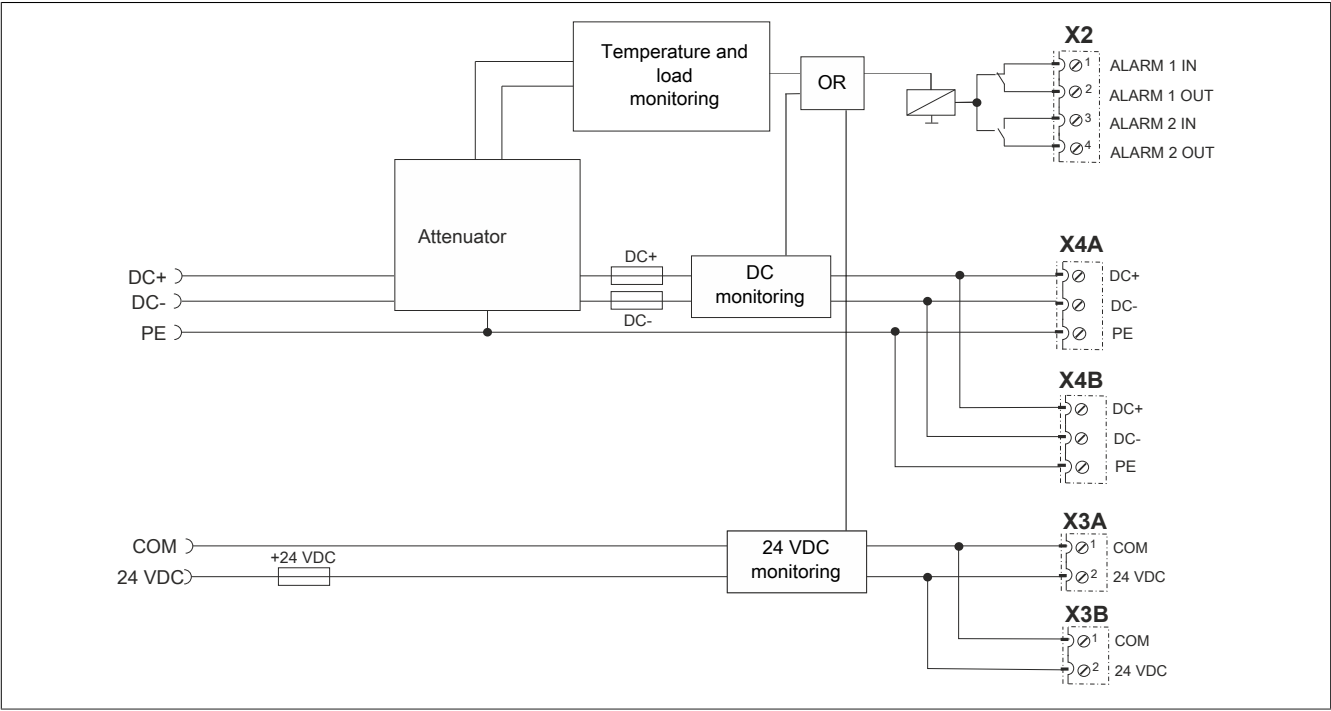


Figure 9: Input/Output circuit diagram for 8BVE expansion modules