

5.4 Connecting the monitoring interface

Basic information

- The monitoring interface controls the available energy in the energy storage.
- The external wiring (e.g. PLC input) must supply the switching signal (+24 V) with a ground reference via a high-impedance resistor (1 kΩ - 100 kΩ).
- Typical fall times at 1 kΩ - 100 kΩ: level below 5 V < 4 ms.

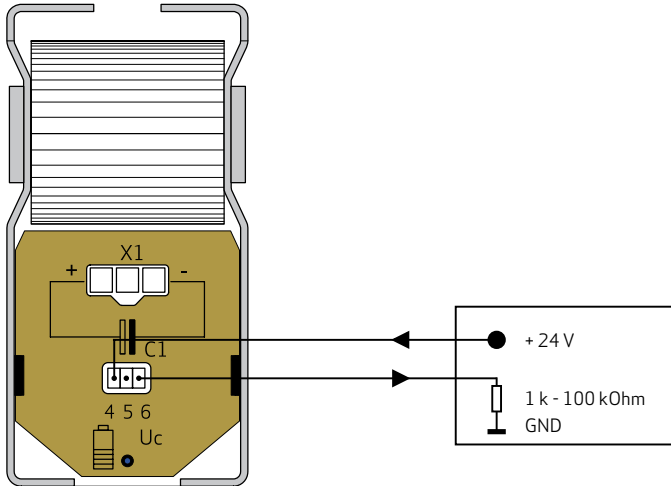


Fig. 10: Monitoring interface, top of housing

- ☒ Connect switching signal "+24 V" to terminal "4".
- ☒ Connect the output signal from terminal "6" to ground via a resistor (1 kΩ - 100 kΩ).

Evaluate output signal

High signal at terminal "6"

The available energy is within the permissible tolerance band for standby mode or for operation.

Low signal at terminal "6"

The available energy is outside the tolerance band for standby mode.

The following causes are possible:

- The DEU-SU is in charging mode and is not yet ready for operation.
- Loss of power.
- The DEU-SU is faulty.

This context is further illustrated in the following figure (Fig. 11).

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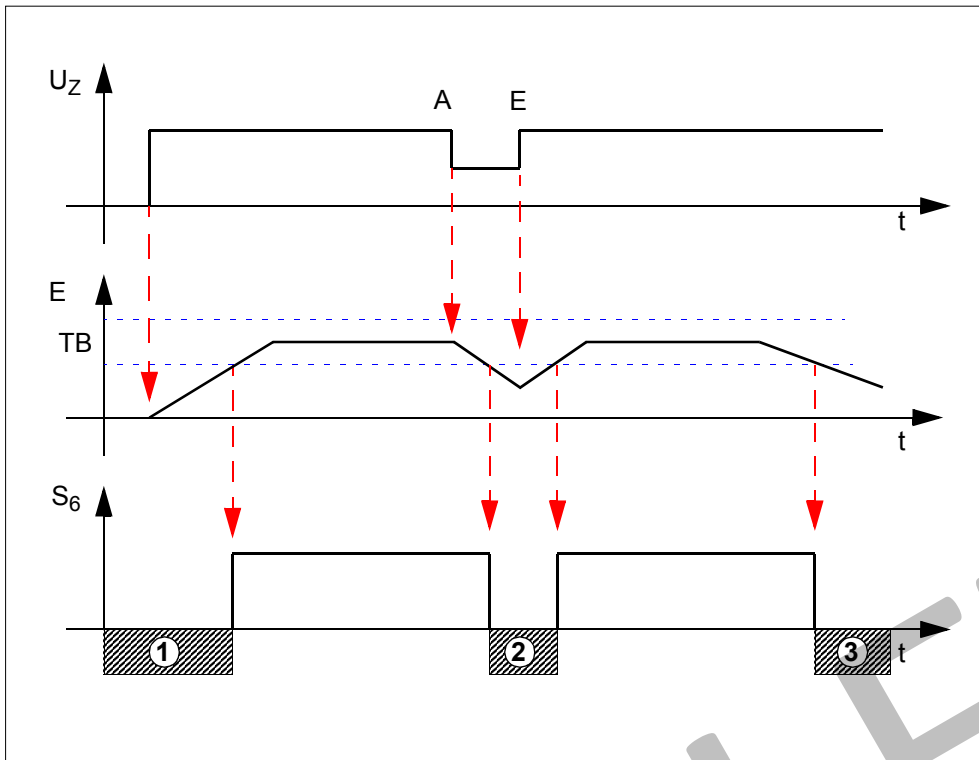


Fig. 11: Monitoring interface signal at terminal "6"

U_z	DC link voltage	1	DEU-SU in charging mode
E	Available energy	2	Loss of power
TB	Tolerance band for standby mode	3	DEU-SU faulty
S_6	Output signal at terminal "6"		
A	Begin power loss		
E	End power loss		

The DEU-SU is in charging mode ①

- Check whether there has been a loss of power.
- If power was not lost:
 - Wait approx. 10 seconds until the energy storage is charged (if DEU-EM units are connected, the waiting time will increase accordingly).
 - ✓ After approx. 10, the low signal switches to a high signal.

Loss of power ② (Fig. 11)

- If a loss of power is detected by the monitoring interface, at least 80 % of the stored energy will remain. This energy can be used to securely stop the application.
- Be sure to keep in mind that shutting down the application may release energy which will cause the DC link voltage to increase.
- If the increase in DC link voltage is large enough, the energy will be used to recharge the energy storage. If the energy storage is charged enough so that the energy is once again within the permissible tolerance band for standby mode, the result will be a high signal at terminal "6", which could be misinterpreted as a return of the power supply.
 - Check whether there has been a loss of power.

The DEU-SU is not working properly ③ (Fig. 11)

- If there is a low signal at terminal "6", even though
- the DEU-SU has been in operation (charged) for some time, and
 - there has not been a loss of power,
- then the DEU-SU is faulty.
- Contact the manufacturer immediately for information on how to proceed.

5.5 Disconnecting the DEU-SU

Basic information

- As long as the energy storage of the DEU-SU (with or without a DEU-EM) is charged with energy, the DEU-SU must **not** be disconnected from the DC link. This is indicated by the flashing control LED on the top of the housing.
- To rule out a malfunction by the LED, it is essential that you actually observe the LED flashing before it goes out. This is the only way to ensure that it is safe to work on the DEU-SU.

Procedure

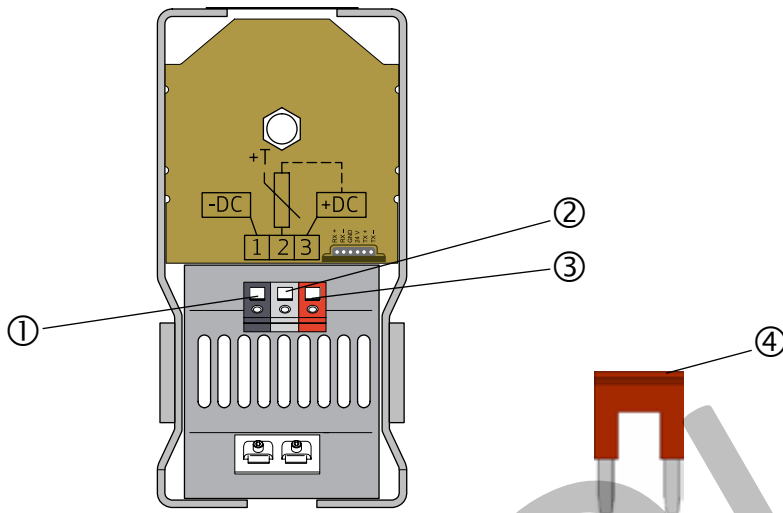


Fig. 12: Discharging the DEU-SU

- ☒ Disconnect the application from the power supply.
- ☒ Connect the discharge bridge ④ between terminals "-DC" ① (black terminal) and "BR" ② (gray terminal) on the DEU-SU.
 - ✓ The DEU-SU is then discharged.
 - ✓ After the DEU-SU has been fully discharged, the control LED no longer flashes.
- ☒ Once it is fully discharged, wait at least another 30 seconds.
- ☒ Using a voltmeter, establish that no voltage is applied between terminals "-DC" ① (black terminal) and "+DC" ③ (red terminal).
- ☒ Disconnect the DEU-SU from the DC link.
 - ✓ The discharge bridge should remain connected as long as the DEU-SU is disconnected from the DC link.
- ☒ Reconnect the application to the power supply.

5.6 Forming the DEU-SU

Basic information

- If the DEU-SU has gone without voltage for more than one year, it needs to be formed. If this is not done, the DEU-SU could be damaged when the power supply is switched on.
- The production date is indicated on the nameplate (►► page 7, Fig. 2).
- During forming, the DEU-SU is connected to the DC link voltage but is not operational.

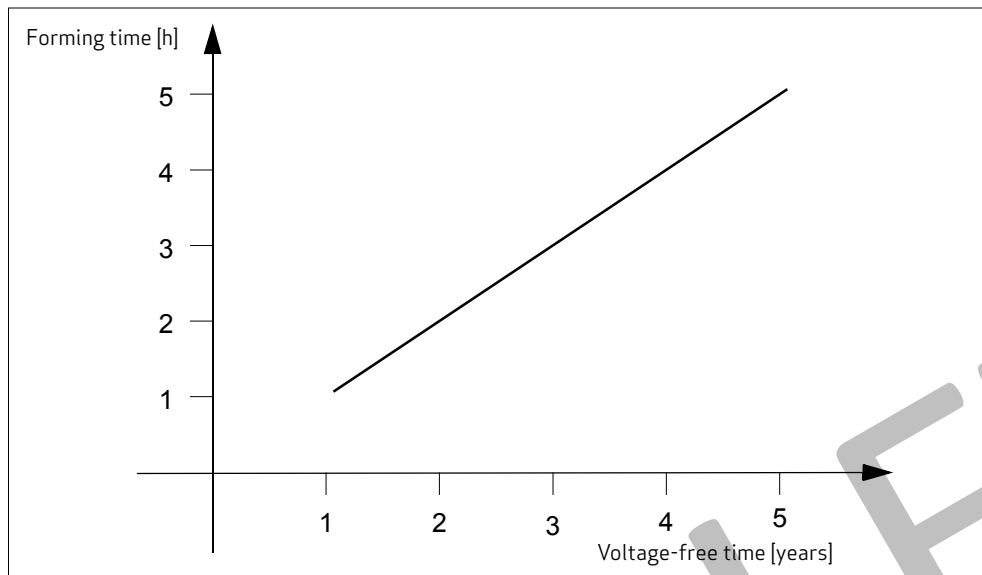


Fig. 13: Forming time as a function of the voltage-free time

Procedure

- ☒ Connect the DEU-SU to the DC link (►► Section 5.1, page 14).
 - ✓ The DEU-SU is formed (charged).
- ☒ Allowed the unit to be formed for a period that corresponds to the voltage-free time (►► Figure 13).
 - ✓ After this, the application can be released.

6. OTHER ACTIVITIES

6.1 Cleaning the DEU-SU



DANGER!

Danger to life!
Cleaning fluids may penetrate into the housing and cause a short circuit.
 Only clean the housing if it is de-energized.



DANGER!

Danger to life!
Cleaning fluids containing alcohol may lead to explosions.
 Only use cleaning agents that do not contain alcohol.



WARNING!

Danger of injury!
Touching of hot surfaces may lead to burn injuries.
 Before cleaning the DEU-SU, switch off the device for at least 30 minutes.



CAUTION!

Property damage!
Cleaning fluids may penetrate into the housing and cause a short circuit or damage components.
 Wipe down the housing with a moist cloth only.

- Only use cleaning agents that do not contain alcohol.
- Only clean the housing when it is de-energized.
- Wipe down the DEU-SU using a moist cloth only.

6.2 Servicing the DEU-SU

The DEU-SU does not require servicing.

If the DEU-SU has gone without voltage for more than one year, it needs to be formed (► page 20, Section 5.6 "Forming the DEU-SU").

6.3 Repairing the DEU-SU

A faulty DEU-SU can only be repaired by the manufacturer.

6.4 Disposing of the DEU-SU

- Disconnect the DEU-SU (► page 19, Section 5.5 "Disconnecting the DEU-SU").
- Remove the DEU-SU.
- Send the DEU-SU back to the manufacturer.

7. EXPANSION MODULE DEU-EM (OPTION)

The optionally available Expansion Module (DEU-EM) increases the energy storage capacity of the DEU-SU. It is supplied with a connection cable featuring connectors that are protected against polarity reversal.

7.1 Technical data

Ambient conditions	See DEU-SU (▶ Section 2.7, page 8)
Usable storage capacity	Approx. 2 kW _s (CB33255-001) Approx. 4 kW _s (CB33255-002)
Width	100 mm (3.94 in)
Depth	201 mm (7.91 in)
Height	300 mm (11.81 in)
Weight	Approx. 4.1 kg (9.03 lb) (CB33255-001) Approx. 6.2 kg (13.67 lb) (CB33255-002)

7.2 Transport/storage/installation

See DEU-SU (▶ Section 4, page 11).

7.3 Connecting an Expansion Module to the DEU-SU



CAUTION!

Property damage!

If the DEU-SU is connected to the DC link, this may destroy the Expansion Module.

- ☒ Before connecting the expansion model, disconnect the DEU-SU from the DC link. (▶ page 19, "Disconnecting the DEU-SU").

- ☒ Disconnect the DEU-SU from the DC link (▶ page 19, "Disconnecting the DEU-SU").

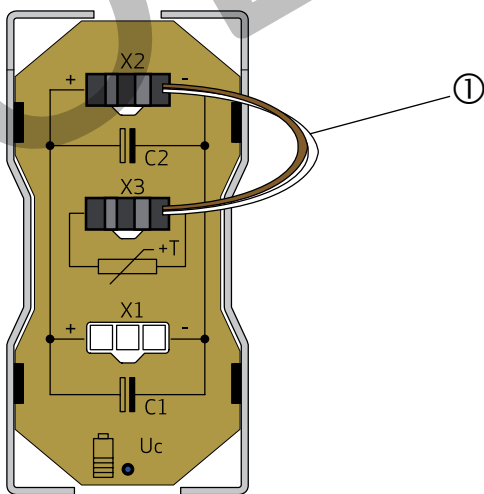


Fig. 14: Discharging the Expansion Module (top of housing)

- ☒ Connect the supplied connection cable ① to X2 and X3 on the Expansion Module and wait approx. 30 seconds.
 - ✓ The Expansion Module is discharged.

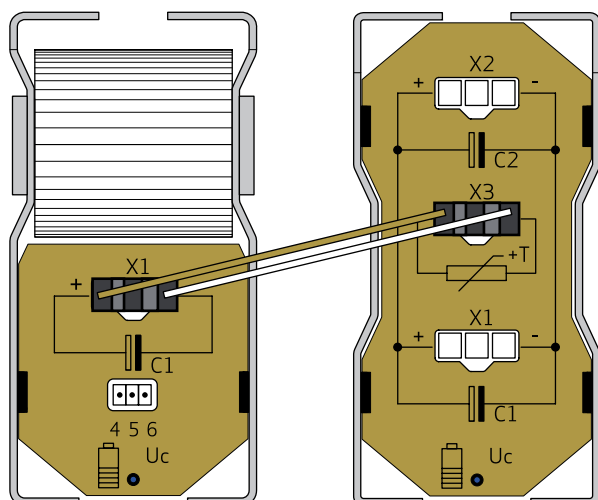


Fig. 15: Discharging the DEU-SU (top of housing)

- ☒ Disconnect the connection cable from X2 on the Expansion Module, connect it to X1 on the DEU-SU and wait approx. 30 seconds.
- ✓ The DEU-SU is then discharged.

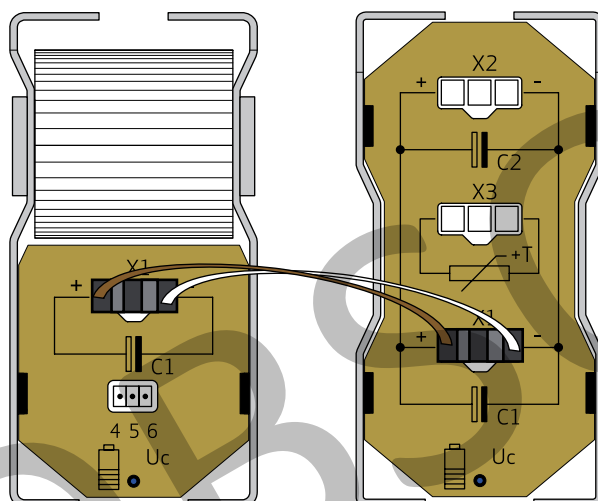


Fig. 16: Connecting the DEU-SU and Expansion Module (top of housing)

- ☒ Disconnect the connection cable from X3 and connect it to X1 on the Expansion Module.
- ✓ The DEU-SU and Expansion Module are now connected.

7.4 Connecting an additional Expansion Module

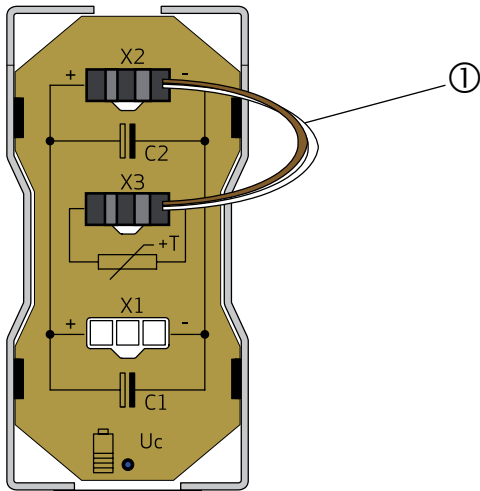


Fig. 17: Discharging the Expansion Module 2 (top of housing)

- ☒ Connect the supplied connection cable ① to X2 and X3 on the Expansion Module 2 and wait approx. 30 seconds.
- ✓ The Expansion Module 2 is discharged.

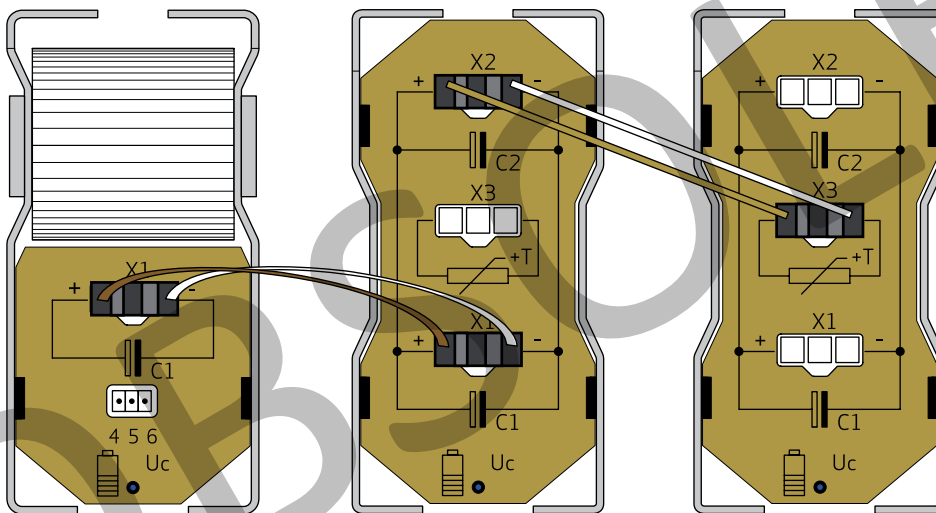


Fig. 18: Discharging the Expansion Module 1 (top of housing)

- ☒ Disconnect the connection cable from X2 on Expansion Module 2, connect Expansion Module 1 to X2 and wait approx. 30 seconds.
- ✓ The Expansion Module 1 is discharged.

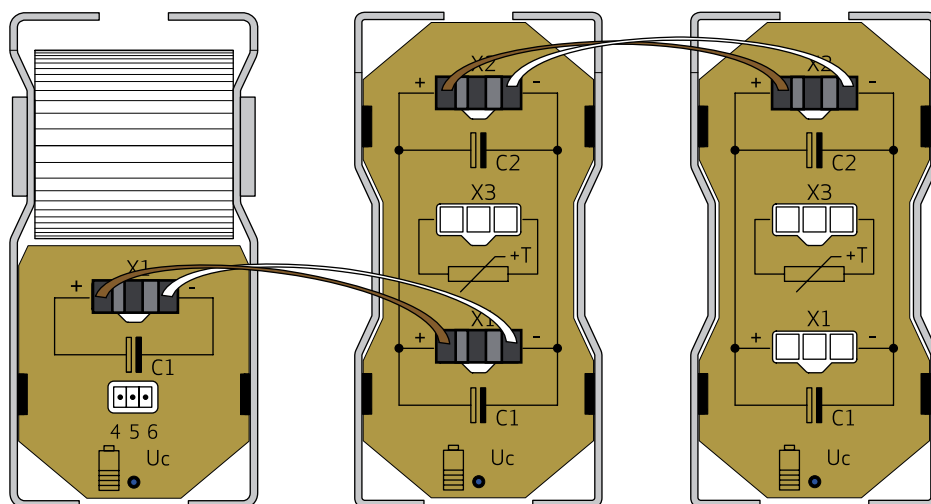


Fig. 19: Connecting the DEU-SU and two Expansion Modules

- ☒ Disconnect connection cable from X3 on the Expansion Module 2 and connect it with X2.
- ✓ The DEU-SU and two Expansion Modules are now connected.

7.5 Disconnecting the Expansion Module

See DEU-SU (► Section 5.5, page 19).

7.6 Other activities

See DEU-SU (► Section 6, page 21).

NOTES

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DEU-SU Operation Manual
DNS/Rev. D, April 2023, CB50579-001