



The Uninterruptible EIB Power Supply produces and monitors the EIB system voltage. The bus line is decoupled from the power supply with the integrated choke.

The power supply is connected to the bus line with a bus connection terminal. A reset is triggered by pressing the reset push button and lasts for 20 seconds (regardless of the duration of the push button action). The bus line is disconnected from the power supply and the bus devices connected to this bus line are returned to their initial state. If the line should be disconnected for a longer period, the bus connection terminal must be removed from the power supply.

Up to two 12 V sealed lead acid batteries can be connected as a back-up energy supply for the EIB system voltage in the event of mains failures. The batteries are charged via the SU/S 30.640.1 during normal operation. The charging voltage is temperature-controlled using a temperature sensor. If a mains failure occurs, the SU/S 30.640.1 is then supplied by the batteries. The temperature sensor must always be connected to ensure that the battery is charged correctly!

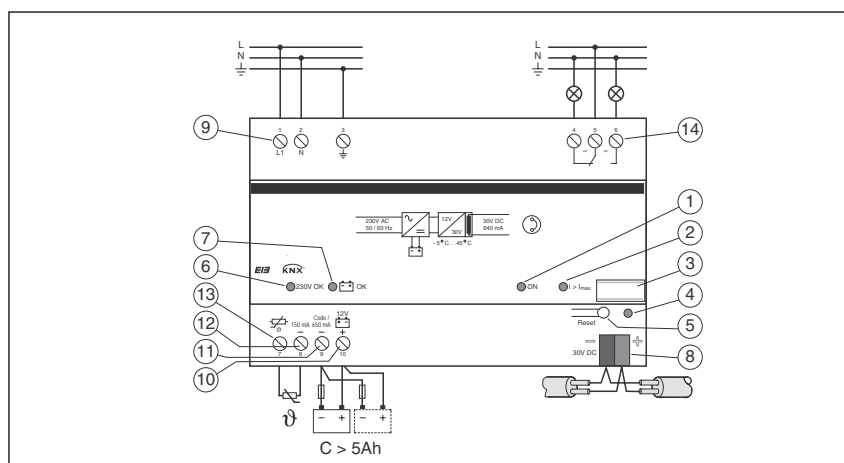
A fault in the Uninterruptible EIB Power Supply is reported and stored via a potential-free changeover contact. The following faults cause a switching operation at the changeover contact: mains failure, battery fault, overvoltage and overload or short circuit.

Technical data

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|--|---------------------------------------|---|
| Power supply | - Nominal voltage | 230 VAC +10/-15%, 45 ... 65 Hz |
| | - Power consumption | < 60 VA |
| | - Power loss | < 10 W |
| EIB output | - Number 1 line with integrated choke | |
| | - Output voltage | 30 VDC +1/-2 V, SELV |
| | - Nominal current | 640 mA, short circuit proof |
| | - Sustained short-circuit current | < 1.5 A |
| | - Mains failure back-up time | 200 ms (without connected battery) |
| Battery back-up | - Battery type | Sealed lead acid battery |
| | - Number | Max. 2 in parallel |
| | - Nominal voltage | 12 VDC |
| | - Battery capacity | Preferably 1 Ah, 7 Ah, 12 Ah, 17 Ah |
| | - Mains failure back-up time | Dependent on battery capacity |
| | - Nominal charging current of battery | 650 mA (terminals 9 + 10), for battery capacities > 5 Ah 150 mA (terminals 8 + 10) for battery capacities < 5 Ah |
| | - Temperature control | Temperature-controlled adjustment of charging voltage via temperature sensor |
| Potential-free changeover contact | - Nominal voltage | 230 V AC or 12/24 V AC/DC |
| | - Max. switching current | 6 A AC or 4 A DC |
| | - Min. switching current | 100 mA (at U < 30 V AC/DC) |
| Operating and display elements | - Green LED | „ON“: output voltage is OK |
| | - Red LED | „>I _{max} “: overload or short circuit |
| | - Reset push button | Reset starts when the push button is pressed and lasts 20 s |
| | - Red LED | Reset at the EIB output |
| | - Green LED | Main voltage is OK |
| | - Green LED | Battery is OK |
| Connections | - Power supply | 3 screw terminals |
| | - Battery connection | 2 screw terminals |
| | - Temperature sensor | 2 screw terminals |
| | - Changeover contact | 3 screw terminals |

| | | |
|----------------------------------|--|---|
| | - Cable cross-section for all screw terminals | multi-core 0.2 – 2.5 mm ² single-core 0.2 – 4.0 mm ² |
| | - EIB output | Bus connection terminal (black/red) |
| Type of protection | - IP 20, EN 60 529 | |
| Ambient temperature range | - Operation | - 5 °C ... + 45 °C |
| | - Storage | - 25 °C ... + 55 °C |
| | - Transport | - 25 °C ... + 70 °C |
| Design | - Modular installation device, proM | |
| Housing, colour | - Plastic housing, grey | |
| Mounting | - On 35 mm mounting rail, DIN EN 50 022 | |
| Dimensions | - 90 x 144 x 64 mm (H x W x D) | |
| Mounting depth/width | - 68 mm/ 8 modules at 18 mm | |
| Weight | - 0.5 kg | |
| Certification | - EIB-certified | |
| CE norm | - In accordance with the EMC guideline and the low voltage guideline | |

Device connection



- | | |
|---|--|
| <ul style="list-style-type: none"> 1 Green LED (output voltage OK) 2 Red LED (overload/short circuit) 3 Label carrier 4 Red LED (reset) 5 Reset push button 6 Green LED (mains voltage OK) 7 Green LED (battery OK) 8 Bus connection terminal 9 Mains supply | <ul style="list-style-type: none"> 10 Battery connection „+“ 11 Battery connection „650mA/Temp. sensor „-“ 12 Battery connection „150 mA/Temp. sensor „+“ 13 Connection for Temp.sensor „+“ 14 Connection for potential-free changeover contact |
|---|--|

Note

During normal operation, the potential-free changeover contact is closed between terminals 4 and 5. In case of a fault, it is closed between terminals 5 and 6.

If a total battery capacity of less than 5 Ah is connected to the Uninterruptible EIB Power Supply SU/S 30.640.1, the battery is connected to terminals 8 („150 mA -“) and 10 („12 V +“) while the temperature sensor is connected to terminals 7 („0“) and 9 („Code/650 mA -“).

If a total battery capacity of more than 5 Ah is used, the battery is connected to terminals 9 („Code/650 mA -“) and 10 („12 V +“) while the temperature sensor is connected to terminals 7 („0“) and 8 („150 mA“).

If a battery is used, the temperature sensor must always be connected!

Installation and commissioning

Switch on the mains voltage once the device has been correctly installed. The green „ON“ LED and the green „230 V OK“ LED light up. If a battery is connected, the green „Battery OK“ LED also lights up. All the other LEDs are switched off. The device is functioning correctly.

The battery test is carried out automatically at 15 minute intervals. It can take up to 15 minutes after switching on the mains voltage until a possible battery fault is indicated. It can also take 15 minutes for the „Battery OK“ LED to relight up once the cause of the fault has been rectified.

A battery test can be triggered manually by pressing the reset push button. In this case, a reset is always carried out simultaneously.

If a faulty battery is connected or the polarity of the battery connection is reversed, the green „ON“ LED for the battery flashes.

Planning and application**Device application**

The Uninterruptible EIB Power Supply SU/S 30.640.1 is particularly suitable for the supply of:

- installations with sophisticated requirements as regards the functional reliability of the EIB installation (e.g., for security applications or fault monitoring)
- installations requiring a back-up supply for the EIB voltage for up to 16 hours
- installations with fault reporting and storage of fault signals in the event of mains failure, battery fault, overload, short circuit, overvoltage and voltage drop

Back-up supply

The SU/S 30.640.1 can buffer the connected EIB line for at least 200 ms without a connected battery in the event of a mains failure.

To bridge longer periods of mains failure, the SU/S 30.640.1 can be provided with a back-up supply using a 12 V DC battery. The mains failure back-up time is dependent on the load connected to the EIB line and the battery capacity.

ABB offers four different batteries with various capacity. The battery module AM/S 12.1 is a DIN rail mounted device, while the sealed lead acid batteries SAK7, SAK12 and SAK17 can be installed in a separate, universal distribution board.

When the Uninterruptible EIB Power Supply SU/S 30.640.1 is used at full capacity (64 bus devices), the sealed lead acid batteries buffer the EIB system voltage for the following mains failure back-up times:

Battery Module, 12 V DC, MDRC, AM/S 12.1

Battery capacity: 1 Ah
Mains failure back-up time: 10 min.*

Sealed Lead Acid Battery, SAK7

Battery capacity: 7 Ah
Mains failure back-up time:
- up to 2.5 h* (1 x SAK7)
- up to 5 h* (2 x SAK7 in parallel)

Sealed Lead Acid Battery, SAK12

Battery capacity: 12 Ah
Mains failure back-up time:
- up to 5.5 h* (1 x SAK12)
- up to 11 h* (2 x SAK12 in parallel)

Sealed Lead Acid Battery, SAK17

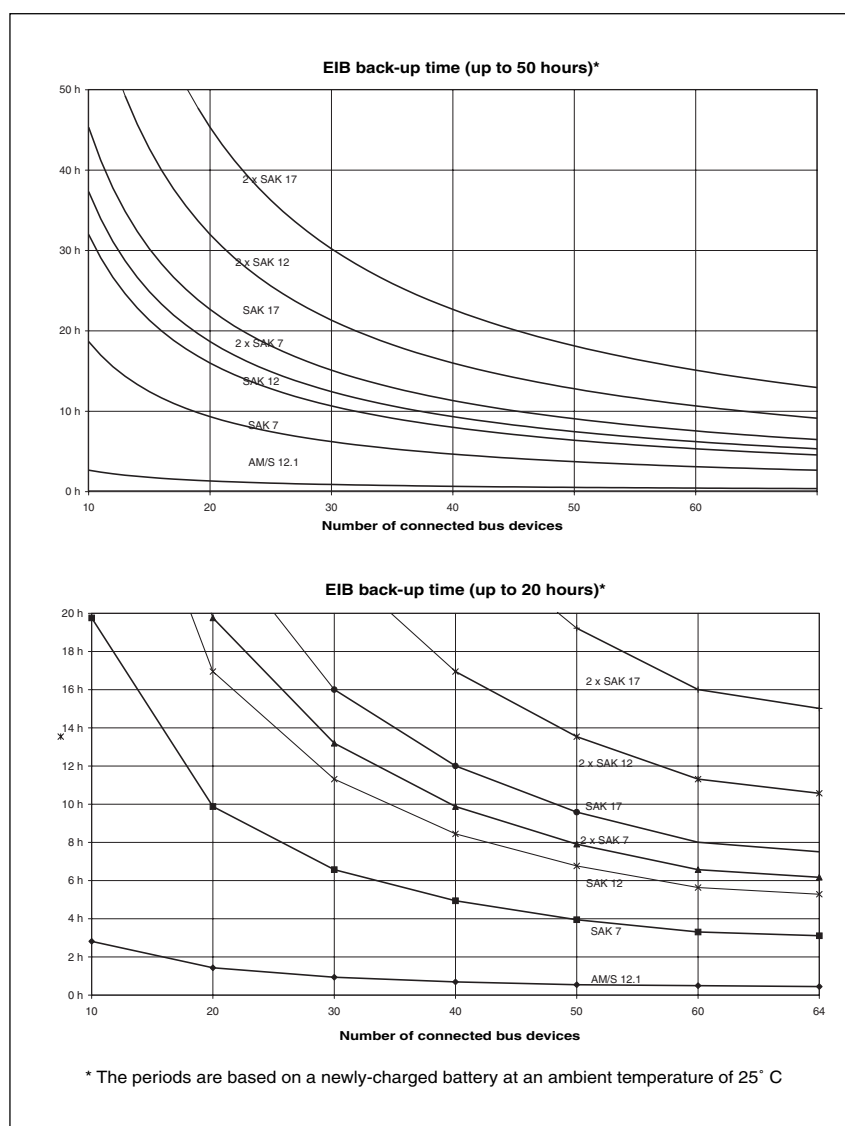
Battery capacity: 17 Ah
Mains failure back-up time:
- up to 8 h* (1 x SAK17)
- up to 16 h* (2 x SAK17 in parallel)

* The periods are based on a newly-charged batteries at full capacity utilisation of the Uninterruptible EIB Power Supply SU/S 30.640.1.

The minimum back-up times are displayed in the following diagrams dependent on the number of supplied EIB devices. The first diagram shows back-

up times on a large scale (back-up supply for up to 50 hours). The second diagram shows back-up times on a smaller scale (up to 20 hours).

EIB Back-up times



Installation and connection of the Battery Module AM/S 12.1

The Battery Module AM/S 12.1 is a DIN rail mounted device and can simply be snapped onto the mounting rail under the Uninterruptible EIB Power Supply SU/S 30.640.1 in the distribution board. The connection of the Battery Module to the SU/S 30.640.1 is shown in the following wiring diagram. The connection of more than one Battery Module to the SU/S 30.640.1 is not permitted.

The Battery Module is connected to the SU/S 30.640.1 using standard cable (single-core or multi-core, recommended cable cross-section: 0.75 – 1.5 mm²). A four-core cable is required – two cores for charging/ discharging and two cores for the temperature-controlled adjustment of the charging voltage (the temperature sensor is integrated in the AM/S 12.1).

The temperature sensor must always be connected to ensure that the battery is charged correctly!

The maximum time required to charge the Battery Module is 10 hours.

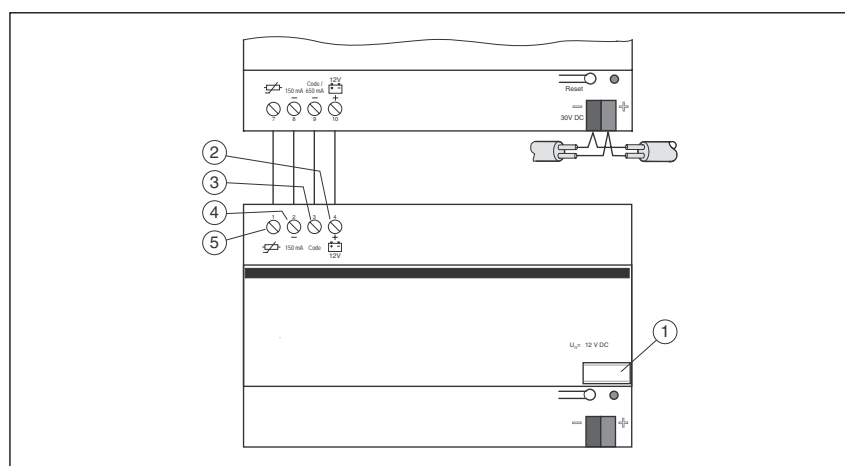
Installation and connection of the sealed lead acid batteries SAK7, SAK12, SAK17

Up to 2 batteries of the same capacity can be connected in parallel to the Uninterruptible EIB Power Supply SU/S 30.640.1. The sealed lead acid batteries must be connected to the SU/S 30.640.1 with the Cable Sets KS/K 4.1 and KS/K 2.1.

If only one sealed lead acid battery is connected, the Cable Set Basic KS/K 4.1 must be used. If two sealed lead acid batteries are connected in parallel, the second battery must be connected using the Cable Set Extension KS/K 2.1.

A replaceable fuse and a temperature sensor for the temperature-controlled adjustment of the charging voltage are integrated in Cable Set Basic KS/K 4.1; Cable Set Extension KS/K 2.1 contains a replaceable fuse.

Device connection



- 1 Label carrier
- 2 Battery connection „+“
- 3 Code (temp. sensor „-“)
- 4 Battery „“ 150 mA
- 5 Connection temp. sensor

When connecting the batteries SAK7, SAK12 and SAK17 with the Cable Sets KS/K 4.1 and KS/K 2.1, it should be ensured that the coloured cable cores are wired to the terminals as follows (see also the wiring diagram at the beginning):

Terminal 7: white
Terminal 8: yellow
Terminal 9: black
Terminal 10: red

The maximum required charging time of the sealed lead acid batteries is:

- SAK7: 16 h (1 x SAK7)
or 32 h (2 x SAK7 in parallel)
- SAK12: 28 h (1 x SAK12)
or 56 h (2 x SAK12 in parallel)
- SAK17: 39 h (1 x SAK17)
or 78 h (2 x SAK17 in parallel)

The batteries must be recharged immediately after being discharged!

Connection of the potential-free changeover contact

Both the normally open (NO) or normally closed (NC) contact of the potential-free changeover contact can be used to route fault signals. It is therefore possible to indicate via an indicator lamp, for example, whether the line is functioning correctly or a fault has occurred. The signal can also be routed automatically to a service technician via a telephone dialling device, for example.

Function and operation

Reset

Press the reset pushbutton to carry out a reset. The red „Reset“ LED lights up. The reset lasts approx. 20 seconds, regardless of the duration of the push button action. The bus line is disconnected from the power supply and the bus devices connected to the bus line are returned to their initial state. The “Reset” LED is extinguished when the reset has finished.

Battery life span

Due to the service life of the batteries, they should be replaced approx. every four years to guarantee the minimum specified mains failure back-up time.

Fault

The Uninterruptible EIB Power Supply permanently monitors the bus line, the mains power supply and the battery voltage. The green „ON“ LED is extinguished when a fault occurs. The cause of the fault is indicated by the LEDs directly on the device and routed via the potential-free changeover contact.

In the event of an overload or overvoltage at the EIB output, the fault signal is stored, i.e., the potential-free changeover contact and the corresponding LED remain in the fault state, even if the cause for the fault signal is no longer present and the EIB line is again supplied with voltage. In this case, the installation will continue to function correctly but a service technician must eliminate the problem as otherwise faults may continue to occur in the future.

If the fault is rectified, the stored alarm can be acknowledged and deleted by pressing the reset pushbutton once. The potential-free contact returns to the normal position and the LED lights for normal operation. A bus reset is carried out when the reset push button is pressed a second time.

If the fault is not rectified, pressing the reset push button will indeed carry out a bus reset, however the fault remains stored and the potential-free changeover contact and the LED remain in the fault state.

Monitoring the bus line

Overload/short circuit: In the event of an overload of the bus line, the red LED „ I_{max} “ lights up. If the overload generates bus currents of more than 1.2 A (e.g. during a short circuit), the output voltage is automatically limited and the green „ON“ LED is extinguished. A transient overload generally does not lead to problems in the installation. If the bus line experiences an overload or short circuit for longer than 10 seconds, the potential-free changeover contact also switches to the fault state. The fault signal is stored.

Overvoltage: If an overvoltage occurs on the bus line, the red LED „ I_{max} “ starts to flash. The potential-free changeover contact goes into the fault state. The Uninterruptible EIB Power Supply automatically carries out a bus reset. The red „Reset“ LED lights up during the reset. The fault signal is stored.

If an overload and overvoltage occur simultaneously, the signal for overvoltage has higher priority, i.e., the LED „ I_{max} “ flashes and a bus reset is carried out automatically. The fault signal is stored.

Monitoring the power supply

During a mains failure, the bus line is supplied by the connected battery, i.e., no faults occur in the installation. If the mains voltage fails, the potential-free changeover contact switches to the fault state and the LED „230 V AC OK“ extinguishes. If the mains voltage recovers, the potential-free changeover contact reverts to the normal position and the LED lights up green. The fault signal is not stored.

Monitoring the battery voltage

A battery test is carried out automatically at 15 minute intervals. It is also possible to manually trigger a battery test by pressing the reset push button. If a battery fault is present, the potential-free changeover contact switches to the fault state and the „Battery OK“ LED for the battery is extinguished. If the polarity of the battery connection is reversed, the „Battery OK“ LED flashes. Once the cause of the fault is rectified, the potential-free changeover contact reverts to the normal position and the LED lights up green. The fault signal is not stored.

If no batteries are connected, the „OK“ LED for the battery does not light.

Note:

It can take up to 15 minutes after the connection of the mains supply before a possible battery fault is indicated. Once the fault has been rectified, it can also take 15 minutes for the potential-free changeover contact to revert to the normal position and the LED to extinguish.

Diagnostics table

Using the LEDs and the potential-free changeover contact, it is possible to diagnose the status of the SU/S 30.640.1. The following table indicates the state of the SU/S 30.640.1 and the action that must be taken to restore normal operation.

| "230 V AC OK" LED | "Battery OK" LED | "ON" LED | "I > I _{max} " LED | Changeover contact | "Reset" LED | Status of SU/S 30.640.1 | Action |
|-------------------|------------------|---------------|-----------------------------|--------------------|-------------|---|---|
| green | green | green | OFF | Neutral | OFF | Normal operation | |
| green | green | green | OFF | Neutral | red | Reset is active | Wait 20 s |
| green | green | green | flashes red | Fault | red | Overvoltage, automatic reset is active | Wait 20 s, rectify cause of overvoltage, acknowledge fault, carry out reset |
| green | green | green | flashes red | Fault | OFF | Overvoltage fault signal is stored, error is rectified | Acknowledge fault, carry out reset |
| OFF | green | green | OFF | Fault | OFF | Mains failure, battery operation | Check mains voltage |
| green | OFF | green | OFF | Fault | OFF | No battery, battery fault or discharged battery | Check battery connection, replace fuse or battery if necessary |
| OFF | OFF | OFF | OFF | Fault | OFF | Mains failure without battery, battery fault or discharged battery | Check mains voltage, charge battery (check connection or replace battery if necessary) |
| green | green | green/ OFF | red | Fault | OFF | Overload or short circuit | In the event of a short circuit, rectify the cause of the short circuit. In the event of overload, reduce the number of bus devices, acknowledge fault, carry out reset |
| OFF | green | green/ OFF | red | Fault | OFF | Overload or short circuit and mains failure, battery operation | In the event of a short circuit, rectify the cause of the short circuit. In the event of overload, reduce the number of bus devices, check mains voltage, acknowledge fault, carry out reset |
| green | OFF | green/ OFF | red | Fault | OFF | Overload or short circuit, no battery, battery fault or discharged battery | In the event of a short circuit, rectify the cause of short circuit. In the event of overload, reduce the number of bus devices, acknowledge fault, carry out reset, check battery connection, replace fuse or battery if necessary |
| green | green | green/ OFF | flashes red | Fault | OFF | Overvoltage | Rectify cause of overvoltage, acknowledge fault, carry out reset |
| OFF | green | green/ OFF | flashes red | Fault | OFF | Overvoltage and mains failure, battery operation | Rectify cause of overvoltage, check mains voltage, acknowledge fault, carry out reset |
| green | OFF | green/ OFF | flashes red | Fault | OFF | Overvoltage and no battery, battery fault or discharged battery | Rectify cause of overvoltage, acknowledge fault, carry out reset, check battery connection, replace fuse or battery if necessary |
| green | green | green | red | Fault | OFF | Overload, output voltage OK | Reduce number of bus devices, acknowledge fault, carry out reset |
| OFF | green | green | red | Fault | OFF | Overload, output voltage OK, mains failure, battery operation | Reduce number of bus devices, check mains voltage, acknowledge fault, carry out reset |
| green | OFF | green | red | Fault | OFF | Overload, output voltage OK, mains operation, no battery, battery fault or discharged battery | Reduce number of bus devices, check battery connection, replace fuse or battery if necessary, acknowledge fault, carry out reset |
| - | flashes green | - | - | Fault | OFF | Battery defective or polarity of battery connection is reversed | Check battery connection, replace battery if necessary, carry out reset |