DURAmax DC UPS

Uninterruptible power supply
Manual

3184830000/00/11.2025

Manufacturer
Weidmüller Interface GmbH & Co. KG
Klingenbergstraße 26
32758 Detmold, Germany
T +49 (0) 5231 14-0
F +49 (0) 5231 14-292083
www.weidmueller.com

Importeur UK
Weidmüller LTD.
Centourion Court Office Park
Meridian East, Leicester, LE19 1TP

Document nr. 3184830000
Revision 00/11.2025

Contents

1 About the documentation

The documentation is part of the product. The documentation is intended for the operator of the product and for all persons who interact with the product during its life cycle.

► Read the documentation completely before handling the product.

► Keep the documentation after reading.

► Ensure that all persons who handle the product have access to the documentation.

► If you forward the product to third parties, please also forward the documentation and all applicable documents.

1.1 Graduated warnings

The warnings are graduated according to the severity of the hazard.

⚠ DANGER

A note with the signal word DANGER warns of a hazard that will result in serious injury or death if not avoided.

⚠ WARNING

A note with the signal word WARNING warns of a hazard that can result in serious injury or death if not avoided.

⚠ CAUTION

A note with the signal word CAUTION warns of a hazard that can result in injury if not avoided.

ATTENTION

A note with the signal word ATTENTION warns of a hazard that can result in damage or malfunction to the product if not avoided.

1.2 Symbols used

The following symbols may be present in the documentation and on the product.

Symbol	Meaning
	Warning of dangerous electrical voltage
	Note on documentation or reference to additional documents
	The work described may only be performed by a qualified electrician.
	Note on required tool
	Information next to this symbol is not safety-relevant, but it supports correct and effective working practices.

1.3 Design elements

– The dash indicates a listing that does not include any action steps.

◇ The rhombus indicates a prerequisite that must be met before the next action step.

► The black triangle indicates an action step.

☑ The checkbox symbol indicates a result or a intermediate result.

[► Page 6] Square brackets enclosing a grey triangle and a reference target indicate a cross-reference within the document.

1.4 Complete documentation

Please also observe the following documents. You can find all documents in the Weidmüller Support Center or in the product catalogue.

– DURAmax DC UPS Manager software manual (3184840000)
– DURAmax DC UPS operating instructions (3075410000)
– DURAeco LA-BAT operating instructions (2814330000)
– CP DC UPS TF installation instructions (1477620000)

1.5 Dimensions of the standard mounting position

The technical data includes the dimensions for height, width and depth of a device.
The dimensions and all position designations such as left, right, top and bottom refer to the standard mounting position.

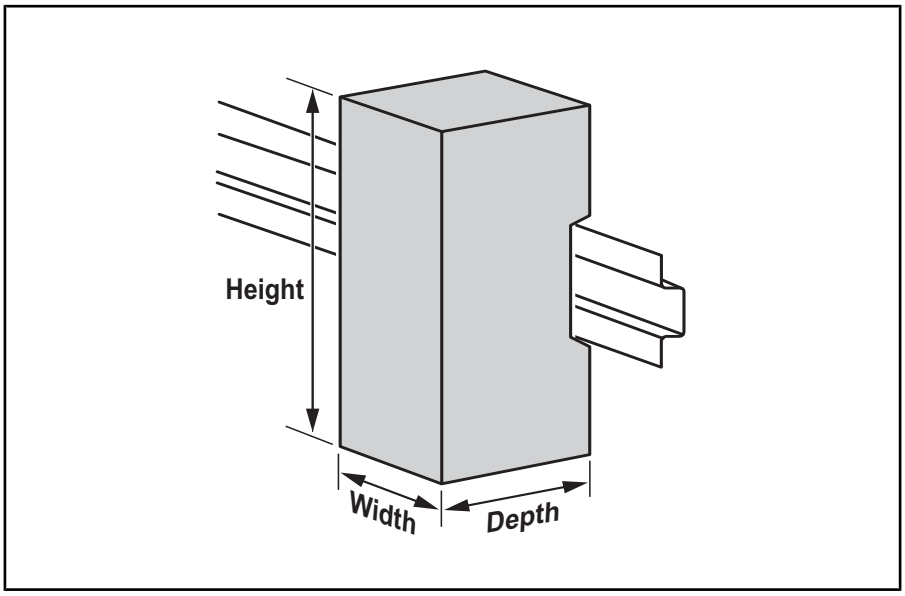


fig. 1 Device in standard mounting position

1.6 Described versions

This documentation describes the DURAmax DC UPS with the following hardware versions (HVN) and software versions (SVN):

Order no.	UPS	HVN	SVN
2934940000	DURAmax DC UPS 24V 5A	1.0.0	1.0.0
2934950000	DURAmax DC UPS 24V 10A	1.0.0	1.0.0
2934960000	DURAmax DC UPS 24V 20A	1.0.0	1.0.0
2934970000	DURAmax DC UPS 24V 40A	1.0.0	1.0.0

2 Safety

To prevent damage, read and follow the instruction notes below.

2.1 General safety notes

- The device must only be installed by qualified electricians who are familiar with national and international laws, provisions and standards.
- The device must not be opened, modified or converted. Repairs may only be completed by Weidmüller.
- The device becomes hot during operation.
- Before cleaning, the device must be de-energised.
- The device is only intended for the application described in this document (see **Intended use**). Any other use is not permitted and may result in accidents or damage to the device.
- If the device is used in a manner not specified by the manufacturer, the protection it provides may be impaired.
- The device conforms to degree of protection IP20. Adequate protection against contact with live parts and ingress of dust and water must be ensured through installation in a suitable housing (such as a control cabinet).
- The connection cables must be resistant to temperatures that are 50 K higher than the maximum ambient temperature.
- The electrical system must be installed in accordance with the general rules of electrical engineering and by qualified specialists:
  - Electric shocks can cause life-threatening injuries. Protect yourself by wearing the prescribed protective clothing and using insulated tools.
  - Before working on electrical installations, the absence of voltage must be verified. Make sure the system is secured against being switched on again.
  - When planning, ensure that the fuses and connection cables are adequately dimensioned.
  - To ensure optimum functioning and safety of electrical devices, make sure that sufficient air circulation is available. Maintain at least 50 mm of free space for air intake both above and below the device.

UL: Safety instructions for installation and operation in CLASS I, DIVISION 2 environment

- For use with UL/C-UL listed devices only.
- Only suitable for use in environments where there is an explosion risk classified as CLASS I, DIVISION 2, GROUPS A, B, C and D, T4 or in environments where there is no risk of explosion.
- These devices are open-type devices that are to be installed in an enclosure suitable for the environment and can only be accessed with the use of a tool or key.

– WARNING - Explosion hazard - Do not disconnect equipment input power or communication module while the circuit is live or unless the area is known to be free of ignitable concentrations.

2.2 Cybersecurity

General notes

In order to achieve an effective protection against cyberattacks, every operator of industrial plants must develop a comprehensive security strategy and implement a cybersecurity concept in practice. It is also the operator's responsibility to continuously adapt the implemented cybersecurity measures to technological developments. Weidmüller products and solutions are designed to be part of such a security strategy and help ensure a secure infrastructure.

Devices, systems, machines and networks must be protected against unauthorised access. Components should only be connected to a company network or the internet if necessary and only if appropriate security measures such as firewalls and network segmentation have been implemented.

Further information about the topic of cybersecurity can be found on the Weidmüller industrial security website. Please observe the following documents:

– Industrial Product Security Guideline
– Security Data Sheets

For information on known vulnerabilities and current security advisories related to Weidmüller products, please visit the Weidmüller Security Advisory Board.

If you have identified a potential security vulnerability related to a Weidmüller product, please report it via the Coordinated Vulnerability Disclosure process.

Productspecific notes

Please observe the following notes to minimise risks such as data loss, unauthorised access or system compromise.

– Install updates immediately to ensure that you are always using the latest supported version. Using outdated or unsupported versions can increase the risk of cyber attacks. You can download the latest software and firmware files from the product catalog.
– Updates for the DURAmax DC UPS firmware and for the DURAmax DC UPS Manager will be provided for a period of five years. Detailed information on the update process can be found in the DURAmax DC UPS Manager manual.
– Ensure that the PC operating the UPS Manager software has the latest Windows update installed, that up-to-date virus protection is active, and that the PC is connected to a secure network. Please note that the data exchanged between the UPS control unit and the software is neither signed nor encrypted.
– Administrator rights are required to install the DURAmax DC UPS Manager. It is the operator's responsibility to revoke these rights after installation. Using the software with administrator rights poses significant cyberrisks.
– After the first login to the DURAmax DC UPS Manager, you will be prompted to change the password. Choose a secure password in accordance with the Industrial Product Security Guideline. Always treat your login credentials as confidential. Never share your login credentials.

– The DURAmax DC UPS Manager is locked after 5 minutes of inactivity. You can log in again with your password.
– Lock the PC on which the DURAmax DC UPS Manager is installed when leaving your workplace.
– The operator is responsible for preventing unauthorised access to the USB port of the UPS control unit.

2.3 Intended use

The devices of the DURAmax DC UPS product family are control units used to establish an uninterruptible power supply (UPS). Short-term interruptions or dips in the mains voltage are bridged so that the connected loads continue to be supplied interruption-free. DURAmax DC UPS devices are intended for use with a Weidmüller PROmax or PROtop power supply; technically equivalent power supplies may also be used. The UPS control unit is combined with a Weidmüller power supply and at least one Weidmüller battery module to form a DC UPS system. Direct operation of a DURAmax DC UPS on a 24 V DC network is not permitted.

The device is designed for use in industrial environments and may only be operated within the technical specifications described (see the technical data for each device). The DURAmax DC UPS is intended exclusively for installation in enclosed areas (e.g. lockable control cabinets).

2.4 Personnel

Only persons who are qualified for the respective task may work with the products described in this documentation. Based on their training and experience, qualified personnel are capable of recognising risks and avoiding potential hazards when working with the products. Only trained personnel may operate the product and carry out maintenance work. They must also have read the operating instructions in their entirety.

Please keep the operating instructions where they can be viewed by the operating personnel at all times.

3 System description

This chapter describes the product features that apply to all device variants. Individual descriptions can be found in the chapter Product descriptions [► Page 38].

3.1 Product family

fig. 2 Device variants

Product family The DURAmax product family consists of the following devices:

Product designation	Order number
DURAmax DC UPS 24V 5A	2934940000
DURAmax DC UPS 24V 10A	2934950000
DURAmax DC UPS 24V 20A	2934960000
DURAmax DC UPS 24V 40A	2934970000

System solution The UPS control unit is combined with a Weidmüller power supply and at least one Weidmüller battery module to form a DC UPS system.

3.2 Functional principle

The UPS control unit detects the failure or drop in the DC input voltage and immediately switches to buffer mode. The battery module supplies the connected load for a defined period. As soon as the mains voltage returns to normal, the UPS control unit switches back to normal mode and recharges the battery module. Battery charging follows a temperature-compensated UI characteristic. Outside the temperature range of −15 to +50 °C, the UPS control unit prevents the battery module from being charged or discharged. An LED display together with various signal outputs provides comprehensive status monitoring of the DC UPS system. The connected battery modules are tested cyclically for availability.

3.3 Type plate

The type plate is located on the side of the device.

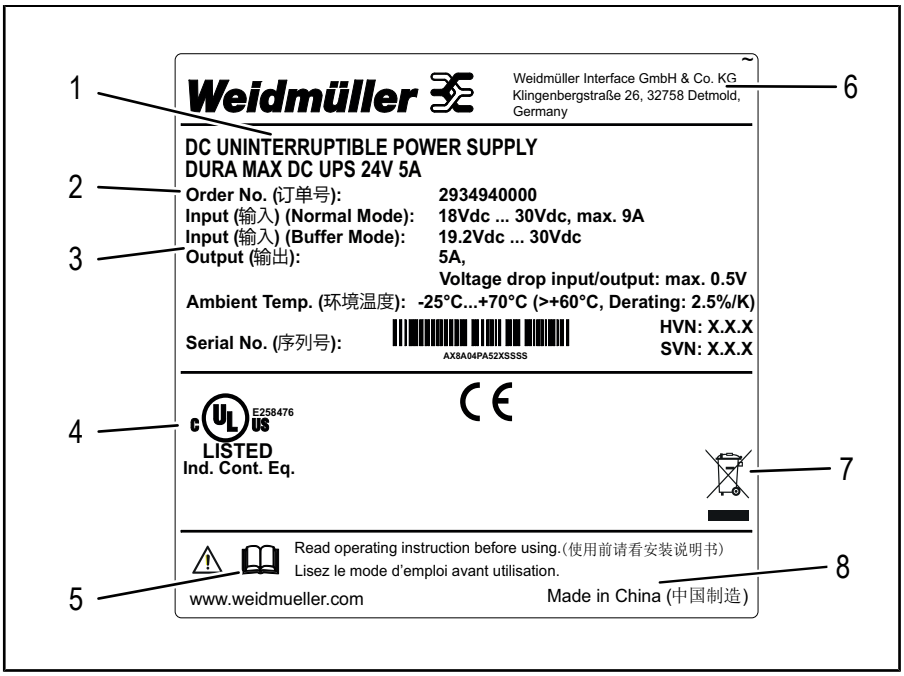


fig. 3 Type plate (example)

1 Product designation
2 Order number
3 Technical specifications
4 Approval and conformity markings
5 Safety notes
6 Manufacturer
7 Disposal symbol
8 Place of manufacture

3.4 QR code

The QR code on the front leads to the product page of the respective device in the Weidmüller eShop.

3.5 Connections

All connections and interfaces are located on the front of the device.

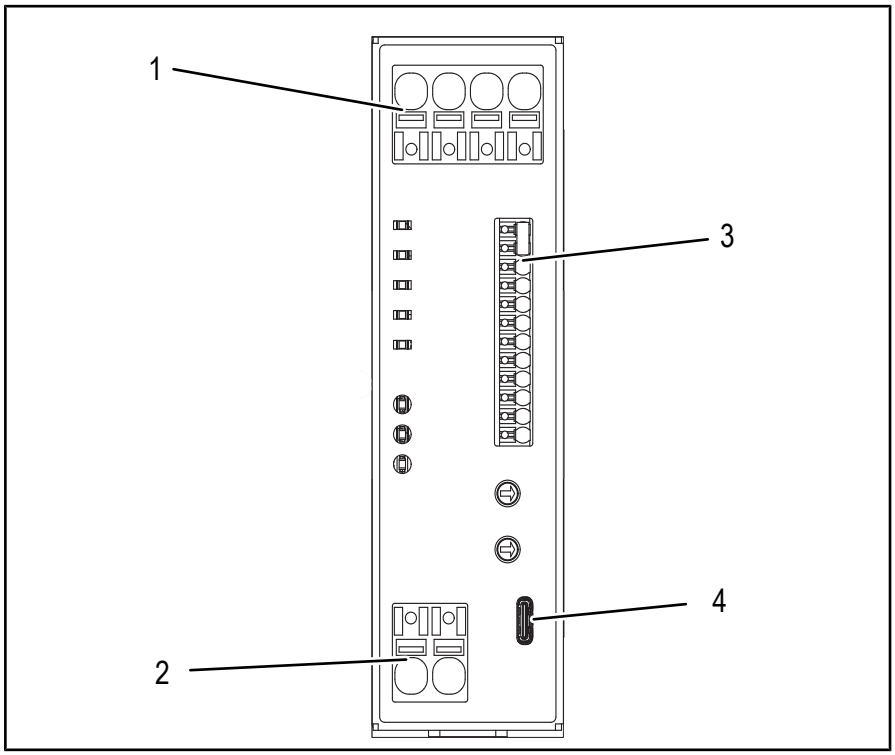


fig. 4 Connections and interfaces, schematic

1 Supply connection (X1, X2)	3 Signal connection (X3) with temperature sensor connection
2 Battery connection (X4)	4 Communication interface (USB-C)

The terminals of the supply connection and the battery connection use PUSH IN connection system.

Detailed connection data, such as wire cross-section and stripping length, can be found in the technical data of the respective device.

Supply connection (X1, X2)

The input terminals (X1) of the UPS control unit are designed for connection to a DC input voltage. The output terminals (X2) are used to connect the buffered load. If the upstream power supply fails, the load is supplied by the stored energy of the battery module.

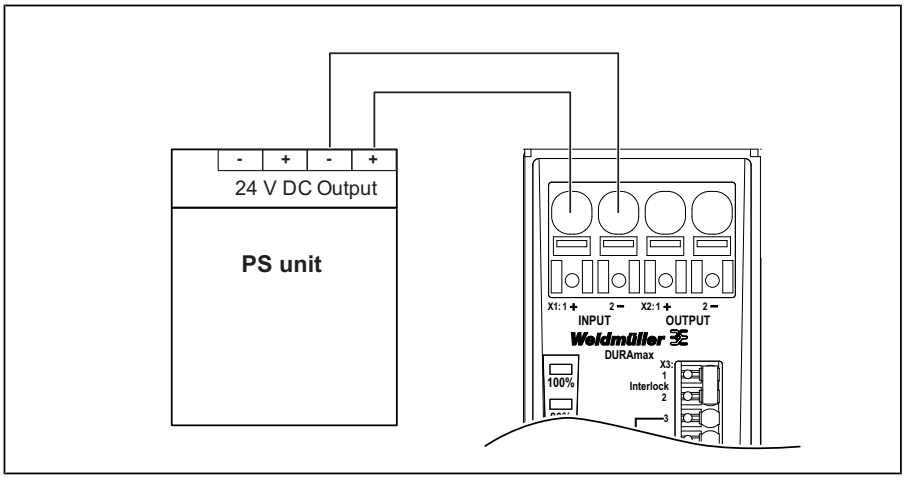


fig. 5 Basic circuit diagram: Input terminals X1 connected to power supply

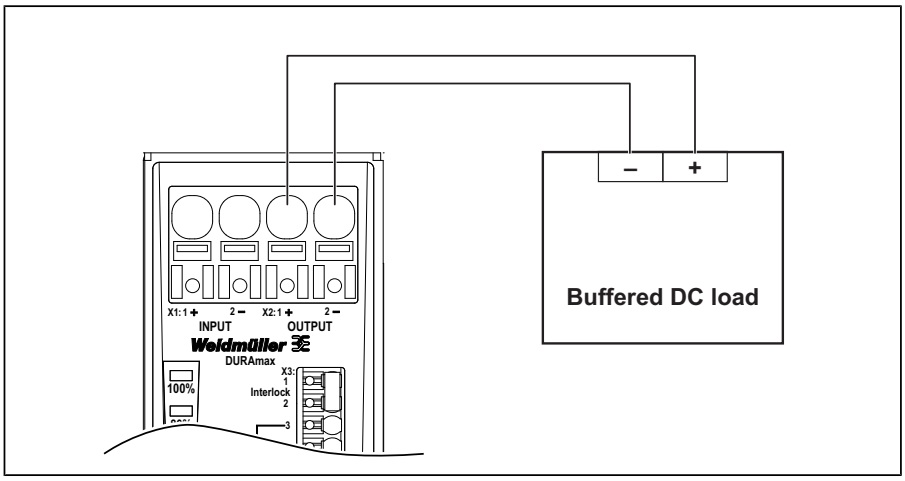


fig. 6 Basic circuit diagram: Output terminals X2 connected to load

Signal connection (X3)

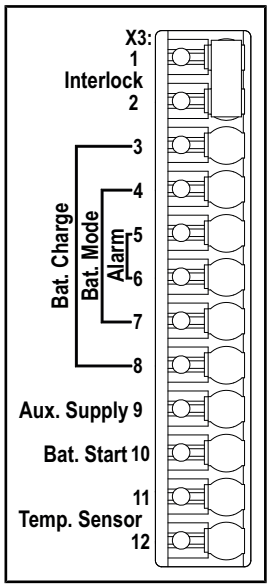
Three status relays are available for remote monitoring of the UPS control unit:

– Bat. Charge

– Bat. Mode

– Alarm

Active 24 V signals can be used at the outputs for connection to a controller. Two additional terminals are provided for connecting the Weidmüller battery module's temperature sensor.



Connection	Contacts	Signal characteristics
1 + 2	Interlock	Bridged: Normal mode [► Page 31] Not bridged: Buffer mode not possible
3 + 8	Bat. Charge	The relay contact is open when the battery module is charged to more than 90 % or when buffer mode is active.
4 + 7	Bat. Mode	The relay contact is closed when the UPS control unit is operating in buffer mode.
5 + 6	Alarm	The relay contact opens as soon as a fault is detected.
9	Aux Supply	Auxiliary voltage 24 V for V_{in} (X1) and V_{BATT} (X4) –0.5 V, 200 mA
10	Bat Start	Battery cold start function [► Page 30]
11 + 12	Temp sensor	Connection for external temperature sensor [► Page 17]

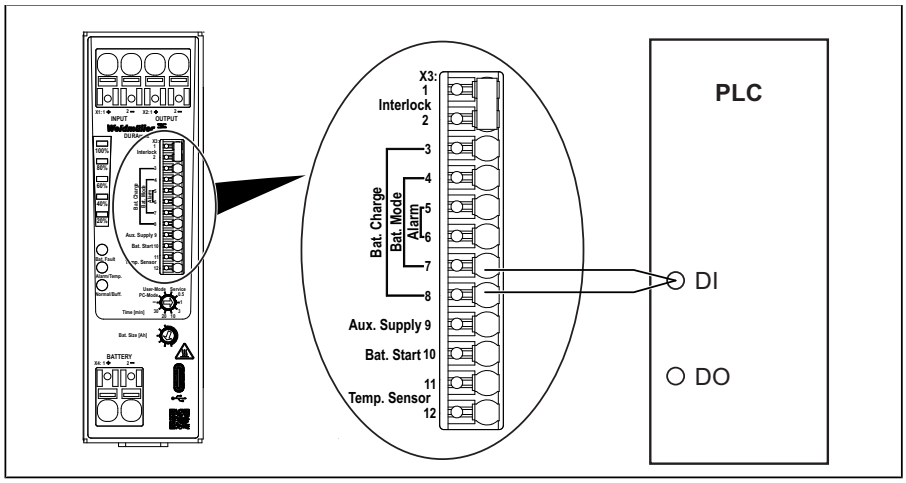


fig. 7 Basic circuit diagram: Signal connection to controller

Battery connection (X4)

The battery terminals are used for connecting the battery module. If the upstream power supply fails, the load is supplied interruption-free by the battery module.

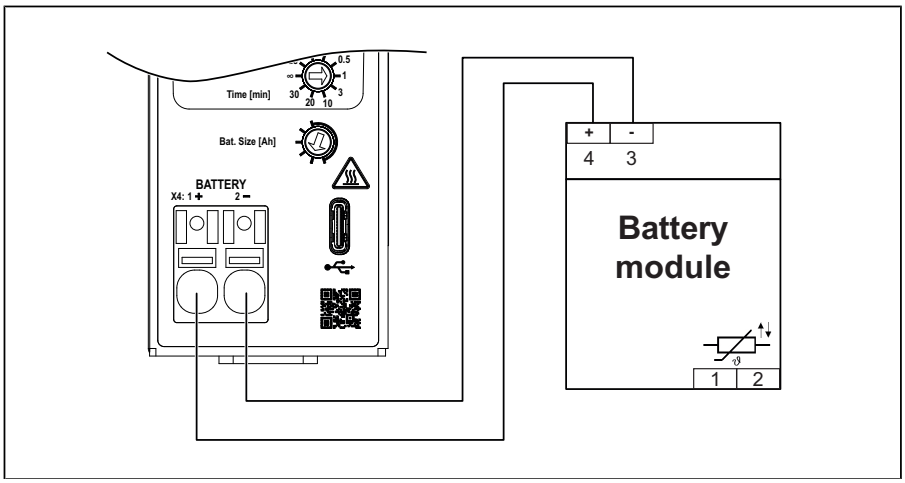
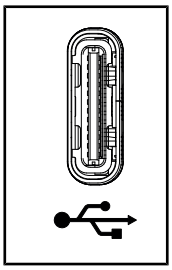


fig. 8 Basic circuit diagram: Battery connection

Communication interface



The communication interface is an isolated USB Type-C interface. The interface is intended for connection to a PC on which the **DURAmax DC UPS Manager** software is installed [► Page 58].

The operation of the software is described in the software manual [► Page 6].

3.6 Temperature sensor connection

All Weidmüller battery modules contain internal temperature sensors, which must be connected to connections 11 and 12 of the signal connection terminal (X3).

If an external temperature sensor is used, it must be installed between the UPS control unit and the battery module to ensure reliable functioning of the UPS control unit.

We recommend using only Weidmüller temperature sensors [► Page 64]. If other sensors are used, they must have a resistance of 100 kΩ ±5 % [► Page 38].

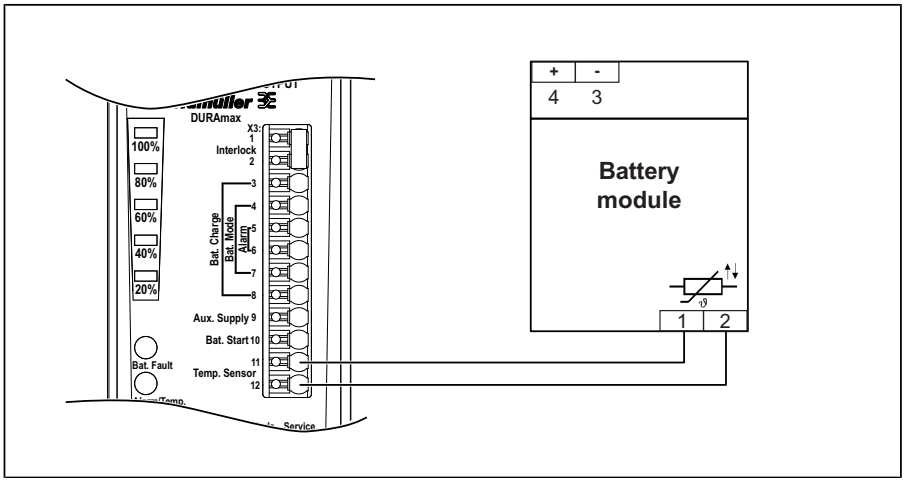


fig. 9 Temperature sensor connection

Operation without temperature sensor

If no temperature sensor is used, terminals 11 and 12 must be connected with a fixed resistor of 100 kΩ ±5 %.

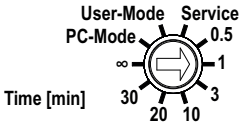
When a fixed resistor is used instead of a temperature sensor, the temperature-controlled adjustment of the charging curve is no longer carried out. In addition, the safety monitoring of the battery module is no longer active.

3.7 Rotary coding switch

The two rotary coding switches on the front of the device are used to set the UPS operating mode and the settings for the connected battery module. A suitable slotted screwdriver is required to operate the rotary coding switches [► Page 64].

Observe the information on operation [► Page 55].

Operating mode rotary coding switch



This rotary coding switch is used to set the operating mode and the buffer time of the battery module.

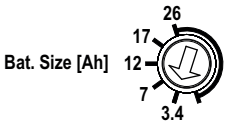
Setting	Meaning
0.5...30 min	After the configured buffer time has elapsed (±2 %), output X2 is switched off.
∞	When the deep discharge threshold of 19.2 V DC is reached, the battery module is disconnected.
User mode	The settings configured via the DURAmax DC UPS Manager are active [► Page 29].
PC mode	The settings configured via the DURAmax DC UPS Manager are active [► Page 29].
Service	Setting for service and maintenance activities

When the device switches off after the configured buffer time, the battery voltage is monitored for the deep discharge threshold. The device will also switch off if the deep discharge threshold is reached before the time expires.

Observe the detailed description of the operating modes [► Page 27].

If the configured buffer time is changed during operation, the timer restarts and the value is applied immediately.

Battery selection rotary coding switch



This rotary coding switch is used to select different battery sizes. The available sizes depend on the device and are indicated directly next to the rotary coding switch.

3.8 State-of-charge LED

The battery charge status is indicated in stages by green LEDs.

Battery capacity	Green LED bar display	
	Load	**Discharged**
100 %	On: 100 % charged Flashing: Charging	On: 100 % remaining
80 %	On: 80 % charged Flashing: Charging	On: 80 % remaining
60 %	On: 60 % charged Flashing: Charging	On: 60 % remaining
40 %	On: 40 % charged Flashing: Charging	On: 40 % remaining
20 %	On: 20 % charged Flashing: Charging	On: 20 % remaining

Note the LED states and the LED lighting sequence:

LED behaviour	Meaning
On	Status: Charged
Flashing	Status: Charging

Additionally, observe the status of the **Normal/Buff.** LED [► Page 20].
If the LED indicates the operating status **normal mode**, the battery module is being charged. In **buffer mode**, the battery module supplies connected loads with current. In the process, the battery module is discharged.

3.9 Operating status LED

The operating status and possible errors are indicated by three coloured LEDs.

The following table describes the meaning of the individual LED states in detail:

LED	LED state	Meaning
Battery error (Bat. Fault)	Red, steady	Battery connection reversed
		Battery module not connected
		Battery module defective
	Flashing red	Time limit reached
		Battery module undervoltage protection error
		Battery module surge current protection error
		Battery module surge protection error
	Off	No error / device de-energised
Alarm/temperature sensor (Alarm/Temp.)	Yellow, steady	Temperature sensor error
		Input undervoltage protection error
		Input surge protection error
		Output undervoltage protection error
		Output surge protection error
		Internal charger over-temperature protection error
		Buffer mode error
		Short-circuit error
		Surge current protection error
		Internal charger short-circuit error
		Internal charger surge current protection error
	Off	No error / device de-energised
Normal mode/buffer mode (Normal/Buff.)	Green, steady	Normal mode
	Green flashing	Buffer mode
	Off	Buffer time expired / device de-energised

Refer to the information on the exact meanings of the LED displays, including colours and flashing patterns [► Page 20].

Whenever the UPS control unit is switched off for functional reasons, the LEDs are also switched off to prevent complete battery discharge [► Page 27].

Refer to the further information on troubleshooting [► Page 59].

3.10 Operating modes

Normal mode

As long as the input voltage is within the permitted range and stable, the UPS control unit operates in normal mode. The connected devices are supplied directly from the external power source and, if necessary, the battery module is charged at the same time. This operating mode is the default state when the supply voltage is stable.

Buffer mode

In the event of a mains failure or if the input voltage falls below the minimum rated level, the DC UPS control unit automatically switches to buffer mode and the battery takes over the supply without interruption. Buffer mode ends when the supply voltage is stable again, when the final discharge voltage is reached, or when the configured buffer time expires. The maximum duration of buffer mode depends on three factors: the connected load, the battery capacity and the ambient temperature.

Redundant mode

In redundant mode, up to two UPS systems operate in parallel. This operating mode increases availability and fault tolerance. If one UPS control unit fails, the remaining unit automatically takes over the supply. Redundant mode is particularly recommended for safety-critical applications. A redundancy or diode module is required for operation in redundant mode. Only UPS control units of the same type may be connected in parallel. Load sharing and protective circuitry must be designed in accordance with the specifications. To ensure equal loading of both UPS control units, current symmetry is required. This is achieved by the following measures:

– Using cables with the same cross-section
– Ensuring equal cable lengths
– Matching the output voltage of the UPS control unit (X2)

Dynamic boost

Dynamic boost is a function that allows the output power to be increased for a short period, e.g. during sudden load demand or voltage dips. The UPS control unit provides additional energy for a limited time to stabilise the output voltage.

The effectiveness of dynamic boost depends on the operating mode of the UPS control unit. In buffer mode, up to 300 % is possible. In normal mode, the overload capability of the UPS control unit depends on the performance of the connected power supply. If the power supply is too weak, the UPS control unit switches from normal mode to buffer mode.

3.11 Temperature behaviour

DURAmax devices are rated for 100 % load within the temperature range of −25 °C to 60 °C.

ATTENTION

The device may be damaged or its performance may deteriorate if it is operated permanently outside the permitted operating range. Operate the device only within the specified range (see the technical data for each device).

Once the ambient temperature at the device exceeds 60 °C, derating of 2.5 %/K applies.

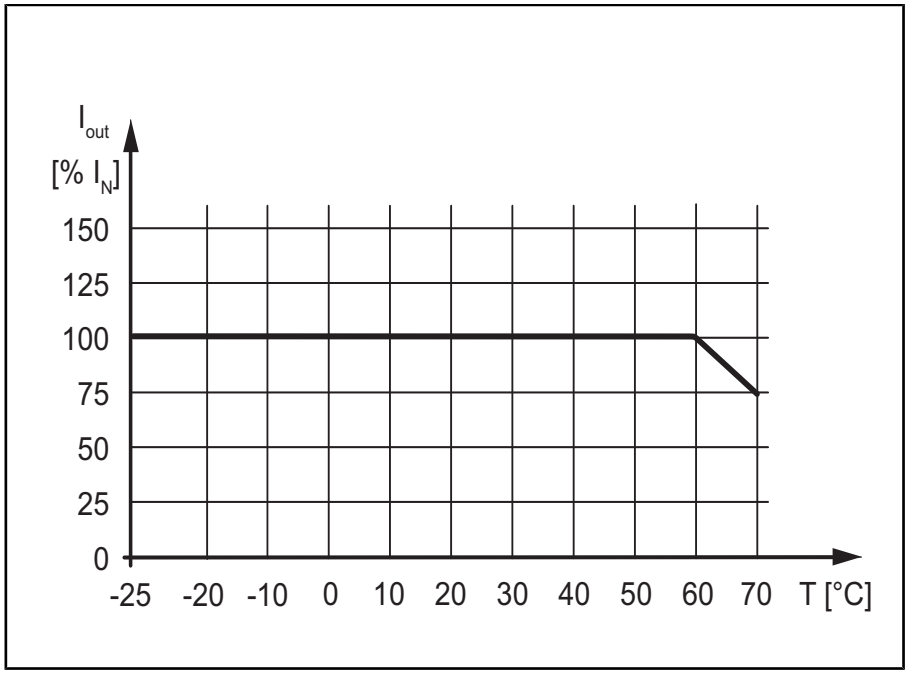


fig. 10 Derating

Use the DC UPS control unit only with a power supply that meets the specified rated values. If a power supply with deviating rated values is used, refer to the power supply's derating curve. Always use the lower value.

Observe the information on the required device clearances [► Page 35].

3.12 Protective functions

Overload protection

In normal mode and buffer mode, the output current is provided in hiccup mode. This means that operation can be resumed once the cause of the fault has been rectified.
The auxiliary outputs (Aux Output) and the charger output also operate in hiccup mode.

If the output current exceeds the maximum specified output current, the UPS control unit switches off. An overload is present when the output current is between 105 % and 605 % of the rated output current.

Short-circuit protection

In normal mode, the output current is provided in hiccup mode. This means that operation of the device can only be resumed once the cause of the fault has been eliminated.
The auxiliary outputs (Aux Supply) and the internal charger output also operate in hiccup mode.

If a short-circuit occurs at the supply output, the UPS control unit switches off (latch-off). A short-circuit is present when the output current exceeds 605 % of the rated output current.

In buffer mode, the output remains switched off. To resume operation, the voltage at the supply input or the battery connection must be removed and then re-applied.

Alternatively, the latch can be reset via the GUI. Further information can be found in the software manual.

Surge protection

The surge protection of the UPS control unit is activated as soon as the input voltage exceeds 32 V DC. In this case, the power supply switches off (latch-off). To resume operation, the voltage at the supply input or the battery connection must be removed and then re-applied.

Alternatively, the latch can be reset via the GUI. Further information can be found in the software manual.

Over-temperature protection

The over-temperature protection of the UPS control unit is activated as soon as the operating temperature at 100 % load reaches the point at which derating begins. In this case, the power supply switches off automatically (latch-off). The power supply remains switched off until the ambient temperature has returned to the normal operating range or the load has been reduced in accordance with the derating curve. To resume operation, the input voltage must be removed and then re-applied.

Observe the values specified in the derating curve to prevent the overheating of the module.

4 Buffer mode and functions

4.1 Battery modules

Weidmüller battery modules are available as accessories [► Page 64].

26 Ah and 38 Ah are customer-specific VRLA batteries that are not included in the Weidmüller portfolio. We recommend using the Genesis NP series from the battery manufacturer Enersys or the LP series from the manufacturer Leoch.

4.2 Parallel connection of battery modules

Connecting batteries in parallel increases the total capacity and extends the maximum buffer time. Observe the following safety notes and requirements.

Safety notes

- There is a risk of explosion if the battery is short-circuited. Never short-circuit the positive and negative terminals of the battery directly. Ensure correct polarity during connection and insulate any exposed cable ends.
- Excessive charge current can cause the battery to overheat and may lead to fire or explosion. Ensure that the charge current is configured according to the battery capacity and the manufacturer's specifications.
- If customer-specific battery modules are used, check whether they have an internal surge current protection device. If a short-circuit occurs without suitable surge current protection, fire and severe injuries may result. If the battery module does not contain an internal surge current protection device, a suitable external surge current protection device must be installed.

With Weidmüller battery modules, an external surge current protection device is not required, as this is already integrated in the battery modules.

The following requirements must be observed when establishing a parallel connection:

- Connect a maximum of two batteries in parallel.
- Use batteries of the same type and the same size.
- Use only batteries approved by Weidmüller.
- Use batteries with a maximum charging capacity of 50 Ah.
- When connecting two batteries in parallel, use cables of the same length.

We recommend using two new battery modules to ensure even loading.

The battery selection rotary coding switch is set to the capacity of a single battery module.
Example: For two battery modules of 1.2 Ah each, select the 1.2 Ah setting.

⚠ WARNING

Fire hazard due to high currents if no fuse protection is provided
In a parallel connection of battery modules with a capacity between 38 Ah and 50 Ah, very high balancing or short-circuit currents may occur if a fault arises in one of the batteries. Without separate fuse protection for each battery module, this can lead to overheating, cable fires and destruction of the batteries, which may result in severe injuries or life-threatening situations.

► Protect each battery module in a parallel connection using an appropriate external surge current protection device, such as an ATO fuse.

Fuse size

Taking cable cross-sections and operating conditions into account, we recommend the following fuse sizes:

– 15 A (time-lag) fuse per battery module for a 20 A UPS control unit
– 25 A (time-lag) fuse per battery module for a 40 A UPS control unit

An external temperature sensor must be connected to avoid functional limitations of the UPS control unit. As the UPS control unit has only one connection, only a single temperature sensor can be connected [► Page 64].
The external temperature sensor is placed between the two battery modules [► Page 26]. Parallel or series connection of temperature sensors is not permitted.

Observe the further information on the temperature sensor [► Page 17].

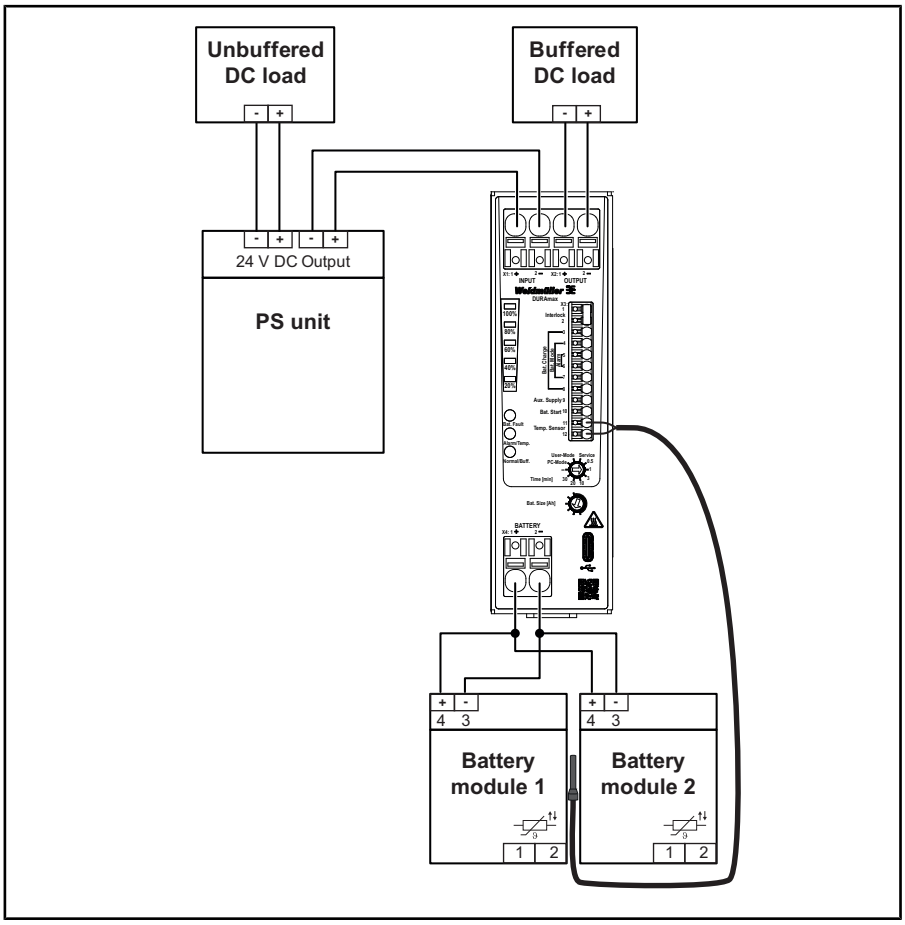
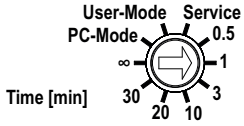


fig. 11 Parallel connection of batteries

4.3 Modes of operation



The desired operating mode can be set using the operating mode rotary coding switch [► Page 18].

Battery disconnection after the configured buffer time

The duration of the DURAmax buffer mode can be limited. Once the configured buffer time has elapsed, the UPS control unit switches off the connected loads in a controlled manner. This function protects the battery from deep discharge and ensures that a minimum capacity is retained for a restart or for an orderly shutdown. This ensures that the availability of the system remains predictable even during prolonged mains failures.

Functionality

During a mains failure, the UPS control unit automatically switches to buffer mode and starts the timing process. Once the configured maximum duration is reached, the UPS control switches off down the connected loads in a controlled manner. The UPS control unit remains in a safe state and awaits the restoration of the mains supply. The time-based disconnection is independent of the state of charge (SOC) or the battery voltage. If a protection limit is reached, such as undervoltage, the UPS control unit will also switch off before the configured buffer time expires.

Setting

The disconnection time in buffer mode is set in minutes. Typical values depend on the load profile, the desired bridging time and the required safety margin. The configured buffer time should be selected at approximately 10 % to 20 % below the expected maximum duration. This takes ageing effects and temperature dependencies into account.

Regularly check the load, temperature, SOC and overall condition, as all factors influence the service life of the UPS control unit.

Observe the information provided in the **DURAmax DC UPS Manager** software.

When the device switches off after the configured buffer time, the battery voltage is monitored for the deep discharge threshold. The device will also switch off if the deep discharge threshold is reached before the time expires [► Page 28].

Battery disconnection at the deep discharge threshold

This function protects the battery from harmful deep discharge. Once the battery voltage falls to 19.2 V DC, the UPS control unit automatically ends the supply to the loads. The protective threshold of 19.2 V DC applies regardless of the duration of buffer mode. Disconnection takes place immediately once the limit value is undershot. This threshold prevents irreversible deep discharge damage, preserves a minimum residual charge to protect the battery cells and ensures reproducible behaviour during long mains failures.

Functionality

If the battery voltage drops to 19.2 V DC due to the applied load and battery condition, the UPS control unit detects that the deep discharge threshold has been reached and immediately initiates the controlled switch-off of the loads. It then stops supplying energy from the battery and remains in a safe state until the mains supply is restored or a manual restart is performed. The voltage threshold takes precedence over time-based or state-based criteria: even if a different disconnection time or SOC limit value is configured, disconnection always occurs at 19.2 V DC.

ATTENTION

Once a battery module has been discharged to 19.2 V DC, it must be recharged promptly, as it may otherwise be destroyed.

For maximum availability, we recommend configuring sufficient buffer time and limiting the load so that the 19.2 V DC threshold is not reached under normal circumstances.

User mode

User mode is intended for a temporary connection of the UPS control unit to a PC or IPC via the USB interface. In this operating mode, the **DURAmax DC UPS Manager** software allows the following actions:

– Monitoring real-time data of the UPS control unit

– Configuring the operating parameters of the UPS

– Installing firmware updates

The configuration made is saved permanently in the UPS control unit; the connection can then be disconnected.

PC mode

PC mode is intended for a permanent connection of the UPS control unit to a PC or IPC via the USB interface. In this operating mode, the **DURAmax DC UPS Manager** software allows the following actions:

– Monitoring real-time data of the UPS control unit

– Configuring the operating parameters of the UPS control unit

– Installing firmware updates

If the connection between the UPS control unit and the PC is interrupted, the following occurs:

– The UPS control unit automatically applies the last configured parameters

– Real-time data is no longer displayed

– System events are no longer logged

In the event of a mains failure, the UPS control unit sends a signal. This signal triggers a controlled and safe shutdown of the IPC to prevent data loss and system damage. Refer to the software manual for further details. [► Page 6].

Service mode

Service mode must only be used by qualified electricians who are familiar with national and international laws, provisions and standards.

Service mode enables safe commissioning and maintenance work on the DURAmax DC UPS. In service mode, the internal charger is deactivated so that work on the battery module can be carried out safely.

Observe the information on battery replacement [► Page 56].

4.4 Cold start in buffer mode

The DURAmax DC UPS features a cold start function that enables the system to start from buffer mode even when no supply voltage is present at the input of the UPS control unit. In this process, the UPS control unit uses the energy of the connected battery module to supply itself and the connected loads. To use the cold start function, a temperature sensor must be connected [► Page 17].

The cold start function can be triggered via an external pushbutton. The pushbutton must close the following signal contacts for at least 3 seconds:

– Pin 9 (Bat. Start)

– Pin 10 (Aux. Supply)

If no external pushbutton is used, pins 9 and 10 must be bridged.

The autonomous operation of the UPS control unit ends automatically when one of the following conditions is met:

– The supply voltage at the input becomes available again.

– A disconnection condition is triggered, for example by the battery's deep discharge protection.

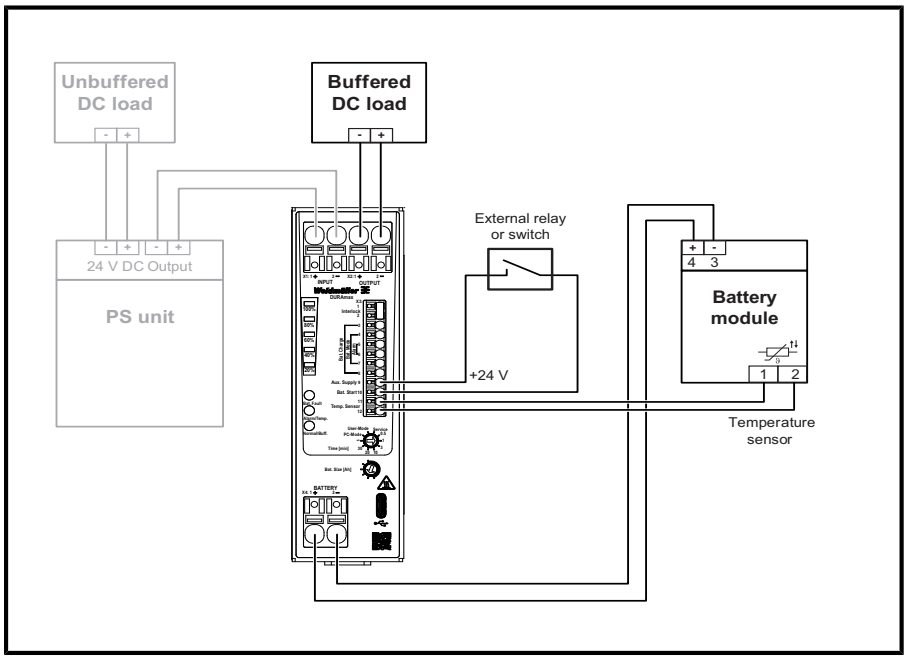


fig. 12 Battery cold start function

4.5 Interlock

The interlock input is located at connections 1 and 2 of the signal connection terminal (X3). There are three ways to enable or block buffer mode:

– **Bridge between the connections**
By default, a bridge is installed between connections 1 and 2. This bridge enables buffer mode. If the bridge is removed, buffer mode is blocked.

– **External switch**
Alternatively, buffer mode can be enabled or blocked using an external switch.

– **Applying a voltage**
Buffer mode is also enabled when 24 V is applied to pin 2 of the signal connection terminal.

Further information can be found in the technical data of the respective device.

If buffer mode is blocked and the UPS control unit is not supplied via the input terminals (X1), voltage continues to be applied to the UPS control unit because the battery module supplies power. To prevent the battery module from becoming deeply discharged, the ATO blade fuse of the battery module must be removed.

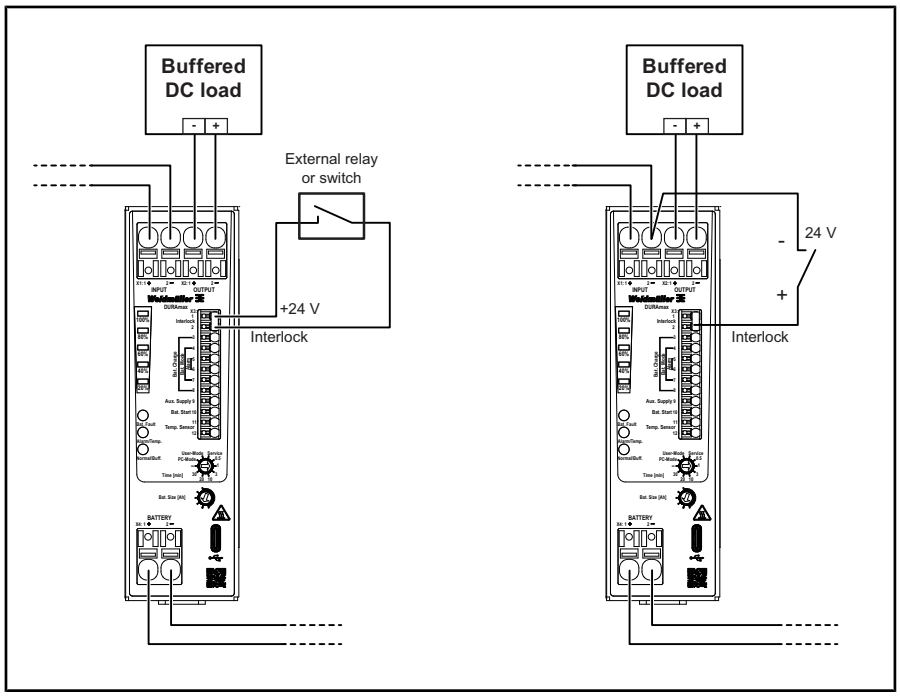


fig. 13 Interlock

4.6 Battery charging behaviour

The DURAmax DC UPS charges the connected battery in three phases:

– Constant current phase (Phase 1): In this phase, the battery is charged with constant current while the charge voltage continuously increases until it reaches the value V_{boost}. The state of charge (SOC) increases quickly and linearly.

– Constant voltage phase (Phase 2): As soon as the charge voltage reaches V_{boost}, the battery is charged at constant voltage. The charge current decreases steadily while the SOC continues to rise, approaching the value of 100 %.

– Float charge phase (Phase 3): In this phase, the voltage is reduced to the value V_{float} to maintain the SOC. The charge current decreases to a minimal value (20 %) to prevent overcharging and to keep the battery in optimal condition over time.

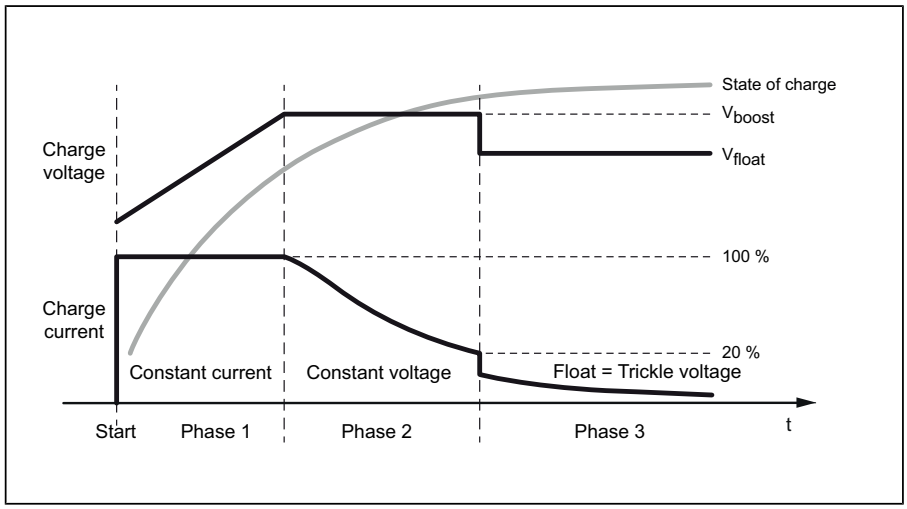


fig. 14 Example: Battery charging behaviour

4.7 Temperature-dependent battery behaviour

The maximum output current of the DURAmax UPS depends on the ambient temperature and the operating mode.

To avoid an over-temperature shutdown, the derating must be observed.

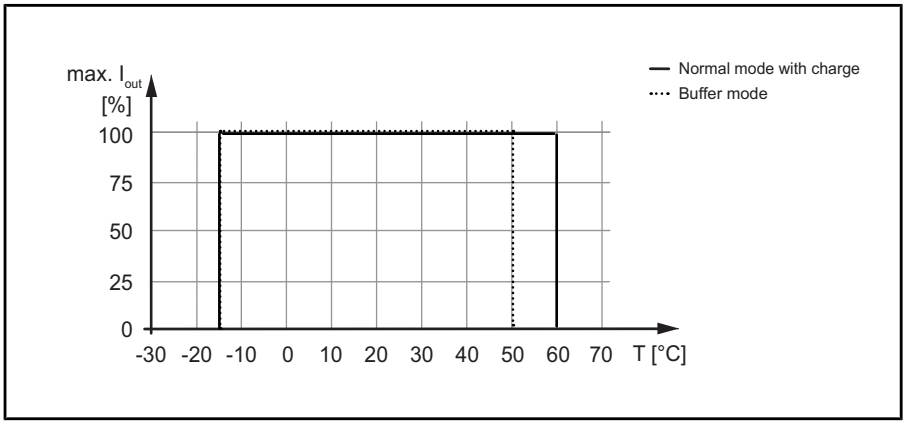


fig. 15 Temperature-dependent charging and discharging behaviour of the battery module

The DURAmax DC UPS automatically adjusts the charge voltage to the ambient temperature to ensure optimal charging and protection of the battery under varying conditions. At low temperatures, a higher voltage is used to improve charging capability. As the temperature increases, the system reduces the voltage to prevent the battery from overheating. This behaviour requires the connection of a temperature sensor [▶ Page 17].

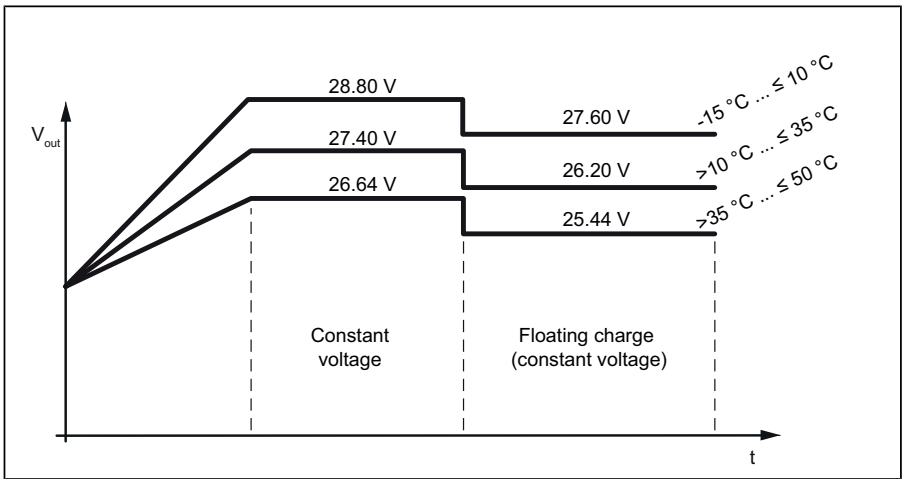


fig. 16 Battery charger voltage

4.8 Battery diagnostics

The DURAmax DC UPS automatically performs various battery diagnostics. This ensures continuous monitoring of whether the battery module is correctly connected and operational, as well as whether any cell short circuits have occurred in the battery. With the battery condition test, the condition of the battery is tested and monitored throughout its entire service life.

Diagnostics	Interval (Phase 3)
Battery detection test:	1 x per minute
Battery cell short-circuit test	1 x per week
Battery state-of-health (SOH) test	1 x per month

While an automatic test is running, the battery charge status and the operating status may be affected.

5 Installation planning

5.1 Installation clearances

When installing a UPS control unit, minimum clearances to other devices and to enclosure components must be observed. This is the only way to ensure adequate air circulation and a long service life of the UPS control unit.
Also observe the temperature-dependent output performance (derating) and the temperature behaviour of the device [► Page 22].

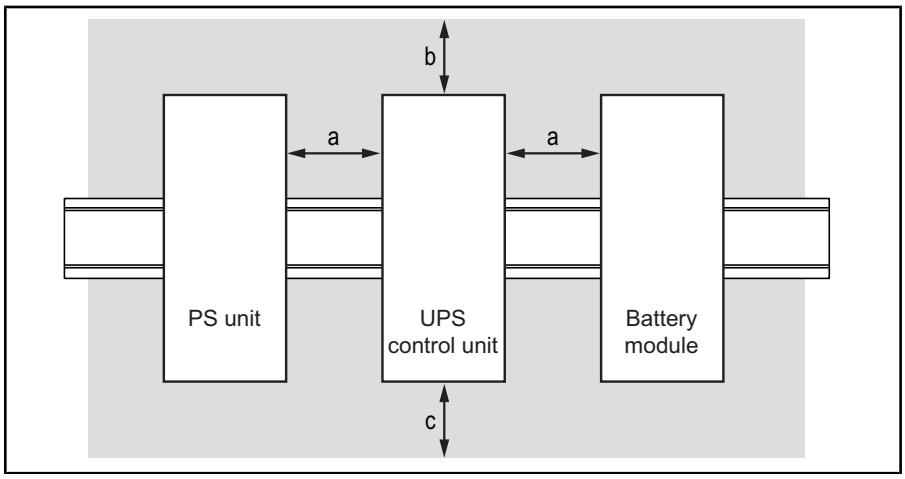


fig. 17 Minimum clearances

DURAmax DC UPS 24V 5A

Active neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	20 mm
b	Vertical clearance above	20 mm
c	Vertical clearance below	40 mm

Passive neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	0 mm
b	Vertical clearance above	40 mm
c	Vertical clearance below	40 mm

DURAmax DC UPS 24V 10A

Active neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	5 mm
b	Vertical clearance above	40 mm
c	Vertical clearance below	40 mm

Passive neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	0 mm
b	Vertical clearance above	40 mm
c	Vertical clearance below	40 mm

DURAmax DC UPS 24V 20A

Active neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	5 mm
b	Vertical clearance above	30 mm
c	Vertical clearance below	30 mm

Passive neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	0 mm
b	Vertical clearance above	30 mm
c	Vertical clearance below	30 mm

DURAmax DC UPS 24V 40A

Active neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	5 mm
b	Vertical clearance above	30 mm
c	Vertical clearance below	30 mm

Passive neighbouring components

Distance	Position	Minimum distance
a	Distance between devices	0 mm
b	Vertical clearance above	30 mm
c	Vertical clearance below	30 mm

5.2 Installation position

The standard installation position for a UPS control unit is installation on a horizontal rail.

Installation on a horizontal rail

For horizontal installation, adequate convection must be ensured, as well as compliance with the required device clearances.

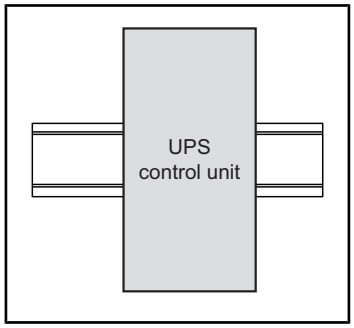


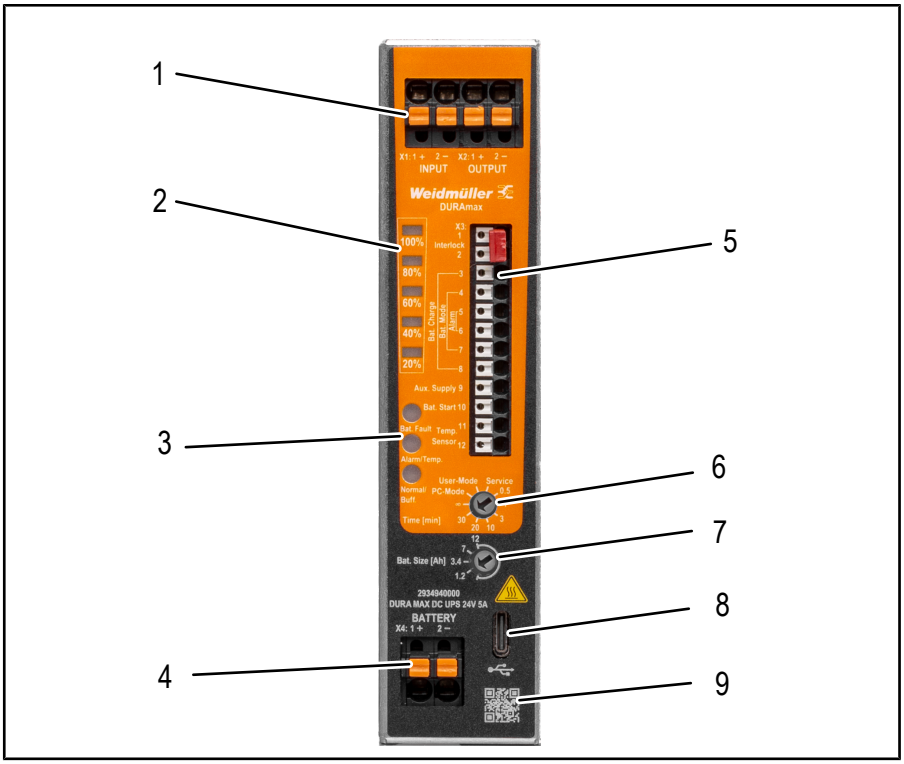
fig. 18 Horizontal installation

Observe the additional information on installation [► Page 50].

6 Product descriptions

6.1 DURAmax DC UPS 24V 5A

Device overview



1 Supply connection (X1, X2)
2 State-of-charge LED
3 Operating status LED
4 Battery connection (X4)
5 Signal connection (X3)
6 Operating mode rotary coding switch
7 Battery selection rotary coding switch
8 Communication interface (USB-C)
9 QR code

Block diagram

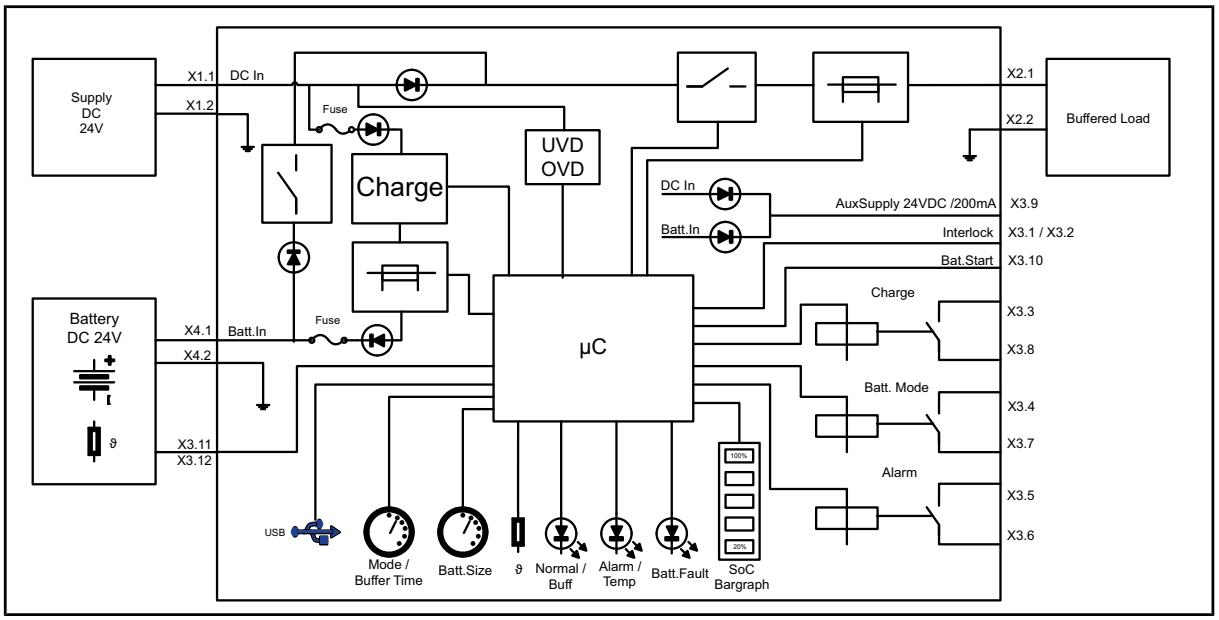


fig. 19 Block diagram

Connection data

	X1, X2, X4	X3
Connection system	PUSH IN	PUSH IN
Wire cross-section, solid (AWG)	1…2.5 mm² (18…14)	0.2…1.5 mm² (25…16)
Wire cross-section, flexible (AWG) [1]	1…2.5 mm² (18…14)	0.2…1.5 mm² (25…16)
Stripping length	10 mm	8 mm

1) Wire-end ferrules are required when using flexible conductors.

Technical data

Input data	
Rated input voltage	24 V DC
Voltage range	18...30 V DC
Max. input current	≤ 9.0 A
Input fuse	Internal, for internal charger only
Switch-on time for DC output	< 2 s
Switch-on time for internal charger output	< 7 s
Ramp-up time for DC output / internal charger output / aux. output	> 100 ms
Voltage drop during switchover (DC/battery input 24 V, threshold 21.6 V)	≥ 19.2 V DC
Current consumption charging / not charging	< 45 mA at 24 V DC / < 30 mA
Reverse-polarity protection (input and battery)	yes

Output data	
Output voltage range, normal/buffer mode	17.5…29.5 V DC, V_{in} −0.5 V DC at rated output current
Rated output current	max. 5 A
Derating [1]	2.5 %/K above 60 °C…70 °C

Output data	
Peak current reserve	
Normal mode	600 % I_{nom} for 600 ms [2]
Buffer mode	300 % I_{nom} for 2 ms

1) Derating curve [▶ Page 22]
2) Dependent on supplying power supply

Internal charger	
Charging characteristic	UI characteristic curve
Temperature coefficient	−48 mV/°C
Charge current	1.2 Ah = 0.2 A (default) 3.4 Ah = 0.5 A 7 Ah = 1.0 A 12 Ah = 1.5 A all: ± 0.1 A
Battery availability test	yes
Suitable for VRLA-AGM batteries (24 V battery modules)	yes
Parallel connection option for battery modules	Maximum of 2 units of the same size

Status indicators	
Temperature sensor connection	NTC 100 kΩ ±5 %
Status relay	30 V DC / AC, 1.0 A
Battery charge status (green LED)	100 % / 80 % / 60 % / 40 % / 20 %
Operating status (LED)	Battery fault (Bat. Fault) Alarm/temperature sensor (Alarm/Temp.) Normal/buffer mode (Normal/Buff.)

Ambient conditions	
Ambient temperature in operation	−25…+70 °C (−40 °C cold start)
Ambient temperature for storage, transport	−40...+85 °C
Max. perm. humidity, operation	5…95 % RH, non-condensing
Battery ambient temperature [1]	−15...+50 °C

1) Battery charging and discharging behaviour [▶ Page 33]

General data	
Height x Width x Depth (a x b x c) [1]	130 x 30 x 125 mm
Weight	0.5 kg
Degree of protection	IP20
Protection class	III
Pollution severity	2
Operating altitude, max.	5000 m
Efficiency, typ.	98 % (normal mode, without internal charger)
MTBF according to IEC 61709	> 1,000,000 h at 25 °C
Protection against reverse voltages from the load	≤ 35 V DC

1) Device orientation [▶ Page 7]

6.2 DURAmax DC UPS 24V 10A

Device overview

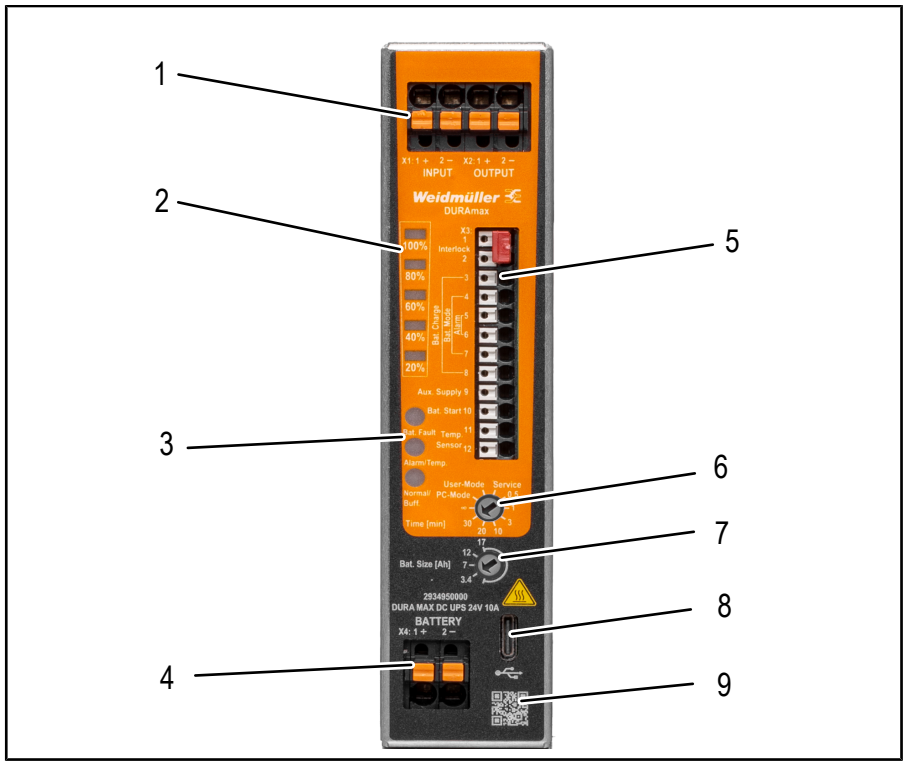


fig. 20 Device overview: DURAmax DC UPS 24V 10A, order number 2934950000

1 Supply connection (X1, X2)
2 State-of-charge LED
3 Operating status LED
4 Battery connection (X4)
5 Signal connection (X3)
6 Operating mode rotary coding switch
7 Battery selection rotary coding switch
8 Communication interface (USB-C)
9 QR code

Block diagram

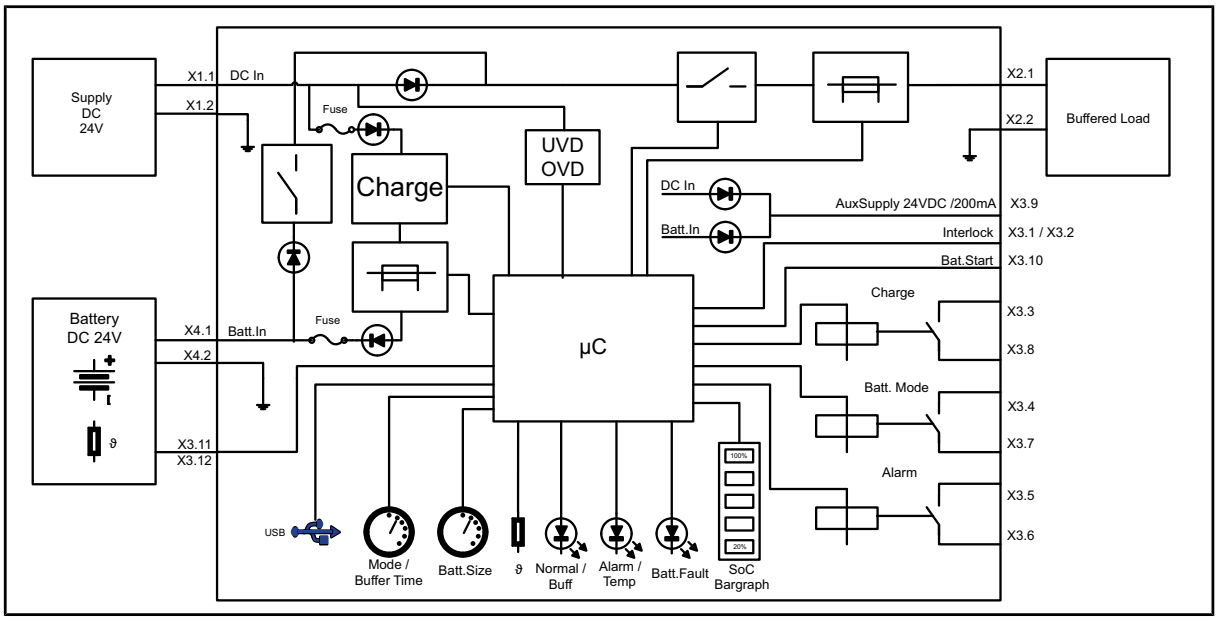


fig. 21 Block diagram

Connection data

	X1, X2, X4	X3
Connection system	PUSH IN	PUSH IN
Wire cross-section, solid (AWG)	1.5…2.5 mm² (16…14)	0.2…1.5 mm² (25…16)
Wire cross-section, flexible (AWG) [1]	1.5…2.5 mm² (16…14)	0.2…1.5 mm² (25…16)
Stripping length	10 mm	8 mm

1) Wire-end ferrules are required when using flexible conductors.

Technical data

Input data	
Rated input voltage	24 V DC
Voltage range	18...30 V DC
Max. input current	≤ 15.0 A
Input fuse	Internal, for internal charger only
Switch-on time for DC output	< 2 s
Switch-on time for internal charger output	< 7 s
Ramp-up time for DC output / internal charger output / aux. Output	> 100 ms
Voltage drop during switchover (DC/battery input 24 V, threshold 21.6 V)	≥ 19.2 V DC
Current consumption charging / not charging	< 45 mA at 24 V DC / < 30 mA
Reverse-polarity protection (input and battery)	yes

Output data	
Output voltage range, normal/buffer mode	17.5…29.5 V DC, V_{in} −0.5 V DC at rated output current
Rated output current	Max. 10 A
Derating [1]	2.5 %/K above 60 °C…70 °C

Output data	
Peak current reserve	
Normal mode	600 % I_{nom} for 600 ms [2]
Buffer mode	300 % I_{nom} for 2 ms

1) Derating curve [▶ Page 22]
2) Dependent on supplying power supply

Internal charger	
Charging characteristic	UI characteristic curve
Temperature coefficient	−48 mV/°C
Charge current	3.4 Ah = 0.5 A (default) 7 Ah = 1.0 A 12 Ah = 1.5 A 17 Ah = 2.0 A all: ± 0.1 A
Battery availability test	yes
Suitable for VRLA-AGM batteries (24 V battery modules)	yes
Parallel connection option for battery modules	Maximum of 2 units of the same size

Status indicators	
Temperature sensor connection	NTC 100 kΩ ±5 %
Status relay	30 V DC / AC, 1.0 A
Battery charge status (green LED)	100 % / 80 % / 60 % / 40 % / 20 %
Operating status (LED)	Battery fault (Bat. Fault) Alarm/temperature sensor (Alarm/Temp.) Normal/buffer mode (Normal/Buff.)

Ambient conditions	
Ambient temperature in operation	−25…+70 °C (−40 °C cold start)
Ambient temperature for storage, transport	−40...+85 °C
Max. perm. humidity, operation	5…95 % RH, non-condensing
Battery ambient temperature [1]	−15...+50 °C

1) Battery charging and discharging behaviour [▶ Page 33]

General data	
Height x Width x Depth (a x b x c) [1]	130 x 30 x 125 mm
Weight	0.5 kg
Degree of protection	IP20
Protection class	III
Pollution severity	2
Operating altitude, max.	5000 m
Efficiency, typ.	98 % (normal mode, without internal charger)
MTBF according to IEC 61709	> 1,000,000 h at 25 °C
Protection against reverse voltages from the load	≤ 35 V DC

1) Device orientation [▶ Page 7]

6.3 DURAmax DC UPS 24V 20A

Device overview

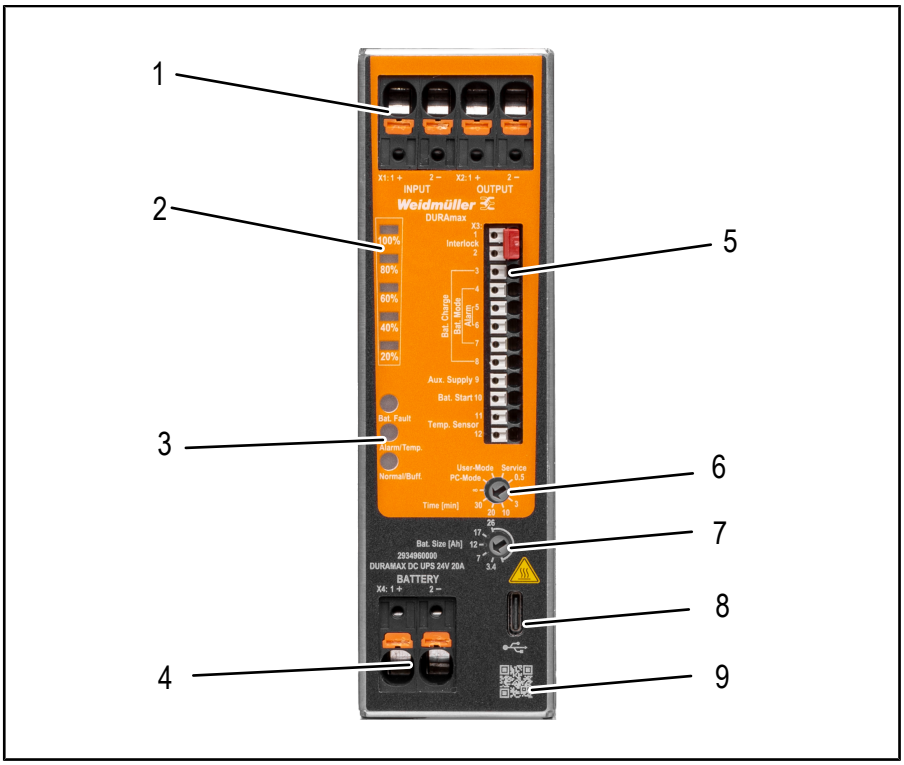


fig. 22 Device overview: DURAmax DC UPS 24V 20A, order number 2934960000

1 Supply connection (X1, X2)
2 State-of-charge LED
3 Operating status LED
4 Battery connection (X4)
5 Signal connection (X3)
6 Operating mode rotary coding switch
7 Battery selection rotary coding switch
8 Communication interface (USB-C)
9 QR code

Block diagram

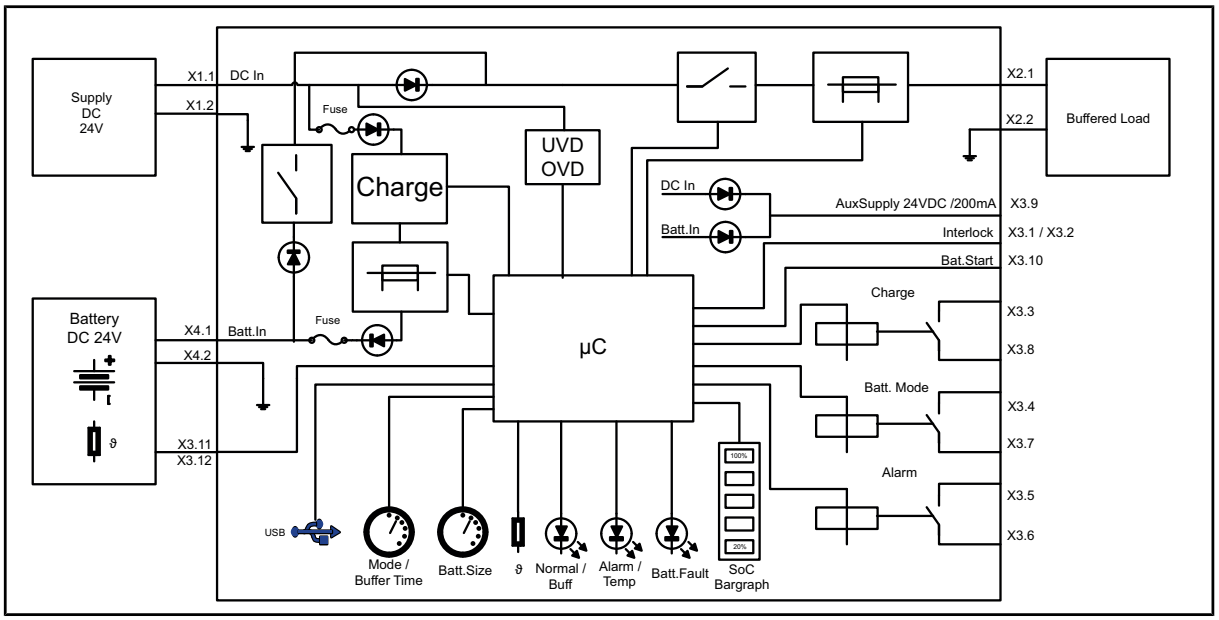


fig. 23 Block diagram

Connection data

	X1, X2, X4	X3
Connection system	PUSH IN	PUSH IN
Wire cross-section, solid (AWG)	4…6 mm² (12…10)	0.2…1.5 mm² (25…16)
Wire cross-section, flexible (AWG) [1]	4…6 mm² (12…10)	0.2…1.5 mm² (25…16)
Stripping length	12 mm	8 mm

1) Wire-end ferrules are required when using flexible conductors.

Technical data

Input data	
Rated input voltage	24 V DC
Voltage range	18...30 V DC
Max. input current	≤ 26.0 A
Input fuse	Internal, for internal charger only
Switch-on time for DC output	< 2 s
Switch-on time for internal charger output	< 7 s
Ramp-up time for DC output / internal charger output / aux. Output	> 100 ms
Voltage drop during switchover (DC/battery input 24 V, threshold 21.6 V)	≥ 19.2 V DC
Current consumption charging / not charging	< 60 mA at 24 V DC / < 30 mA
Reverse-polarity protection (input and battery)	yes
Output data	
Output voltage range, normal/buffer mode	17.5…29.5 V DC, V_{in} −0.5 V DC at rated output current
Rated output current	max. 20 A
Derating [1]	2.5 %/K above 60 °C…70 °C

Output data	
Peak current reserve	
Normal mode	600 % I_{nom} for 600 ms [2]
Buffer mode	300 % I_{nom} for 2 ms

1) Derating curve [▶ Page 22]
2) Dependent on supplying power supply

Internal charger	
Charging characteristic	UI characteristic curve
Temperature coefficient	−48 mV/°C
Charge current	3.4 Ah = 0.5 A (default) 7 Ah = 1.0 A 12 Ah = 1.5 A 17 Ah = 2.0 A 26 Ah = 3.0 A all: ± 0.1 A
Battery availability test	yes
Suitable for VRLA-AGM batteries (24 V battery modules)	yes
Parallel connection option for battery modules	Maximum of 2 units of the same size

Status indicators	
Temperature sensor connection	NTC 100 kΩ ±5 %
Status relay	30 V DC / AC, 1.0 A
Battery charge status (green LED)	100 % / 80 % / 60 % / 40 % / 20 %
Operating status (LED)	Battery fault (Bat. Fault) Alarm/temperature sensor (Alarm/Temp.) Normal/buffer mode (Normal/Buff.)

Ambient conditions	
Ambient temperature in operation	−25…+70 °C (−40 °C cold start)
Ambient temperature for storage, transport	−40...+85 °C
Max. perm. humidity, operation	5…95 % RH, non-condensing
Battery ambient temperature [1]	−15...+50 °C

1) Battery charging and discharging behaviour [▶ Page 33]

General data	
Height x Width x Depth (a x b x c) [1]	130 x 38 x 125 mm
Weight	0.6 kg
Degree of protection	IP20
Protection class	III
Pollution severity	2
Operating altitude, max.	5000 m
Efficiency, typ.	98 % (normal mode, without internal charger)
MTBF according to IEC 61709	> 700,000 h at 25 °C
Protection against reverse voltages from the load	≤ 35 V DC

1) Device orientation [▶ Page 7]

6.4 DURAmax DC UPS 24V 40A

Device overview

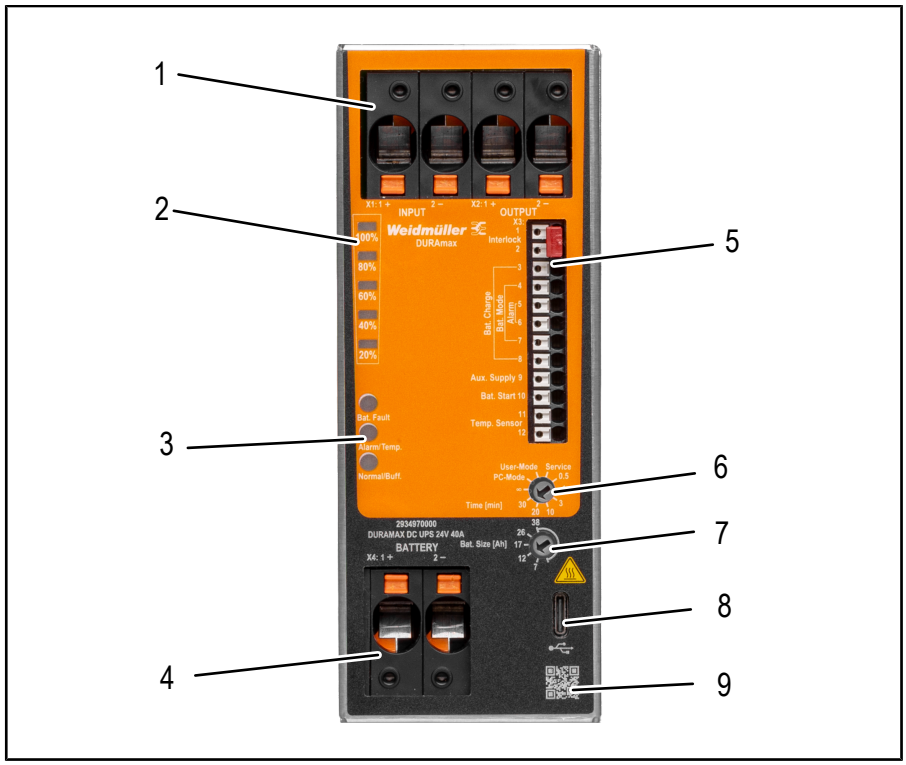


fig. 24 Device overview: DURAmax DC UPS 24V 40A, order number 2934970000

1 Supply connection (X1, X2)
2 State-of-charge LED
3 Operating status LED
4 Battery connection (X4)
5 Signal connection (X3)
6 Operating mode rotary coding switch
7 Battery selection rotary coding switch
8 Communication interface (USB-C)
9 QR code

Block diagram

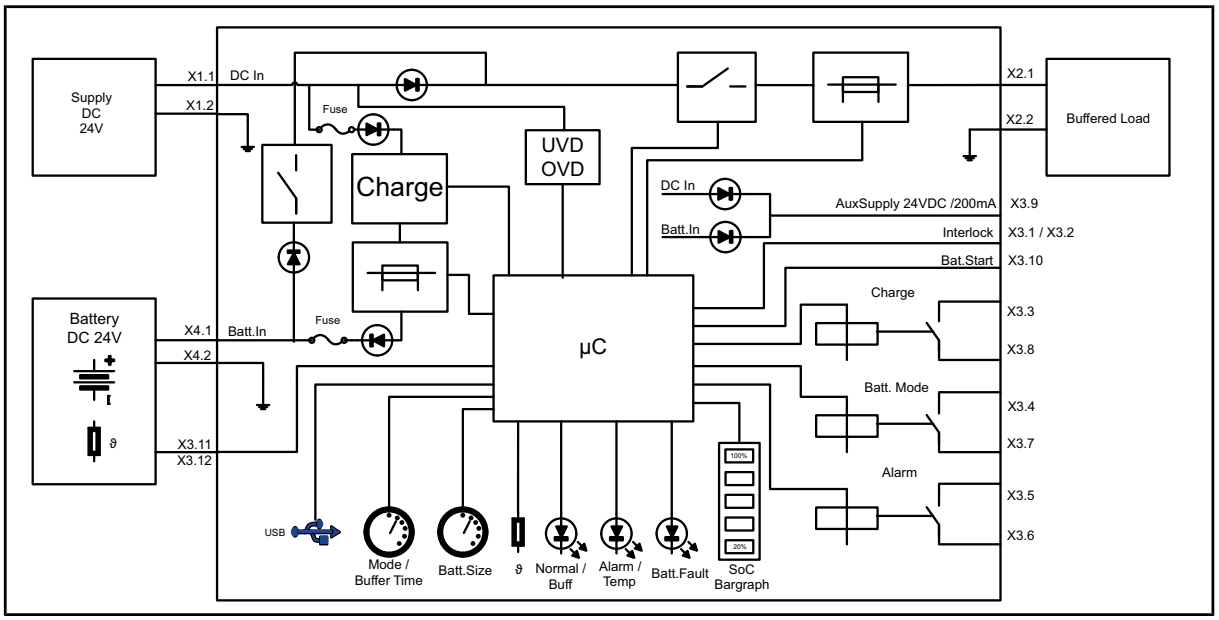


fig. 25 Block diagram

Connection data

	X1, X2, X4	X3
Connection system	PUSH IN	PUSH IN
Wire cross-section, solid (AWG)	10…16 mm² (8…6)	0.2…1.5 mm² (25…16)
Wire cross-section, flexible (AWG) [1]	10…16 mm² (8…6)	0.2…1.5 mm² (25…16)
Stripping length	18 mm	8 mm

1) Wire-end ferrules are required when using flexible conductors.

Technical data

Input data	
Rated input voltage	24 V DC
Voltage range	18...30 V DC
Max. input current	≤ 48.0 A
Input fuse	Internal, for internal charger only
Switch-on time for DC output	< 2 s
Switch-on time for internal charger output	< 7 s
Ramp-up time for DC output / internal charger output / aux. Output	> 100 ms
Voltage drop during switchover (DC/battery input 24 V, threshold 21.6 V)	≥ 19.2 V DC
Current consumption charging / not charging	< 82 mA at 24 V DC / < 30 mA
Reverse-polarity protection (input and battery)	yes
Output data	
Output voltage range, normal/buffer mode	17.5…29.5 V DC, V_{in} −0.5 V DC at rated output current
Rated output current	max. 40 A
Derating [1]	2.5 %/K above 60 °C…70 °C

Output data	
Peak current reserve	
Normal mode	600 % I_{nom} for 600 ms [2]
Buffer mode	300 % I_{nom} for 2 ms

1) Derating curve [► Page 22]
2) Dependent on supplying power supply

Internal charger	
Charging characteristic	UI characteristic curve
Temperature coefficient	−48 mV/°C
Charge current	3.4 Ah = 0.5 A 7 Ah = 1.0 A (default) 12 Ah = 1.5 A 17 Ah = 2.0 A 26 Ah = 3.0 A 38 Ah = 4.0 A all: ± 0.1 A
Battery availability test	yes
Suitable for VRLA-AGM batteries (24 V battery modules)	yes
Parallel connection option for battery modules	Maximum of 2 units of the same size

Status indicators	
Temperature sensor connection	NTC 100 kΩ ±5 %
Status relay	30 V DC / AC, 1.0 A
Battery charge status (green LED)	100 % / 80 % / 60 % / 40 % / 20 %
Operating status (LED)	Battery fault (Bat. Fault) Alarm/temperature sensor (Alarm/Temp.) Normal/buffer mode (Normal/Buff.)

Ambient conditions	
Ambient temperature in operation	−25…+70 °C (−40 °C cold start)
Ambient temperature for storage, transport	−40...+85 °C
Max. perm. humidity, operation	5…95 % RH, non-condensing
Battery ambient temperature [1]	−15...+50 °C

1) Battery charging and discharging behaviour [► Page 33]

General data	
Height x Width x Depth (a x b x c) [1]	130 x 50 x 125 mm
Weight	0.7 kg
Degree of protection	IP20
Protection class	III
Pollution severity	2
Operating altitude, max.	5000 m
Efficiency, typ.	98 % (normal mode, without internal charger)
MTBF according to IEC 61709	> 500,000 h at 25 °C
Protection against reverse voltages from the load	≤ 35 V DC

1) Device orientation [► Page 7]

7 Installation

7.1 Included in delivery

– 1 DURAmax DC UPS

– 1 mounting adapter, pre-assembled [► Page 63]

7.2 Unpacking the delivery

► Check the delivery for completeness.

► Check the delivery for transport damage.

► Dispose of all packaging in accordance with the local disposal guidelines. The cardboard packaging can be sent for paper recycling.

7.3 Notes on installation

⚠ WARNING

Risk of electric shock
Before working on the device, it should be completely disconnected from the mains and the absence of voltage must be verified.

ATTENTION

The device could be destroyed.
When handling the device, the protective measures against electrostatic discharge (ESD) have to be observed.

The device must only be installed by qualified electricians who are familiar with national and international laws, provisions and standards. The electrical system must be installed in accordance with the general rules of electrical engineering and by qualified specialists.

Observe the General safety notes [► Page 8].

7.4 Preparation for installation

Each device is factory-fitted with a mounting adapter for rail mounting. If the device is to be mounted directly on a wall, the mounting adapter must be removed and replaced with a wall adapter. Wall adapters are available as accessories [► Page 63].

A screwdriver max. 0.6 x 3.5 mm is required to carry out the work.

Fitting the mounting adapter

◇ No wall adapter is fitted on the device.

► Place the mounting adapter on the back of the device so that the fixing holes align.

► Screw the mounting adapter to the device.

Removing the mounting adapter

► Remove the screws securing the mounting adapter.

► Remove the mounting adapter from the device.

Fitting the wall adapter

◇ The mounting adapter has been removed.

► Place the wall adapter on the back of the device.

► Screw the wall adapter to the device.

Removing the wall adapter

► Remove the screws securing the wall adapter.

► Remove the wall adapter from the device.

7.5 Installing the device on a rail

◇ A mounting adapter is fitted to the device.

► Place the device from above onto a 35 mm DIN rail (e.g. Weidmüller TS 35x7.5).

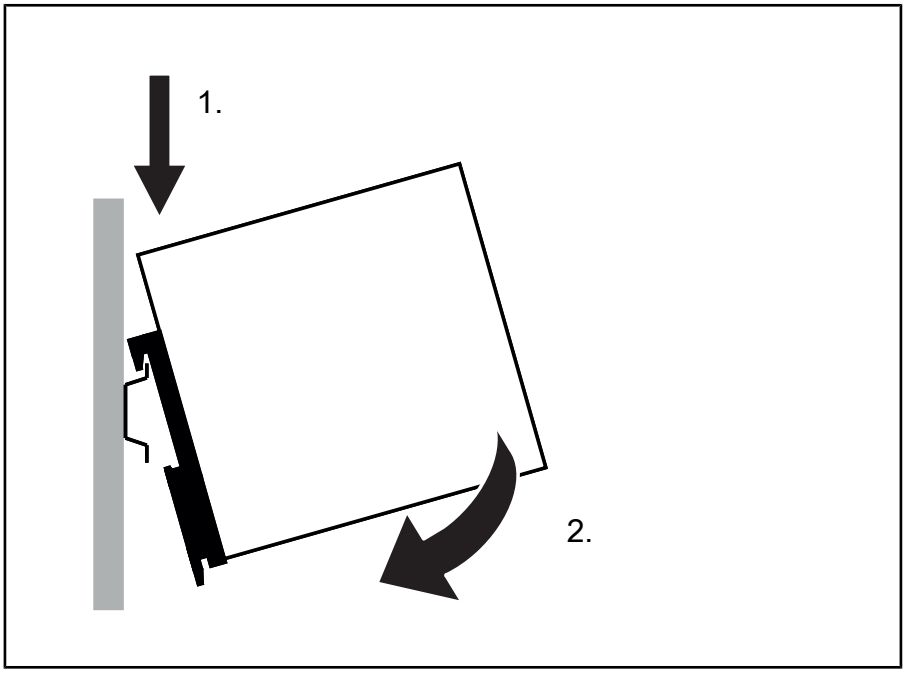


fig. 26 Installing the device on the DIN rail

► Swing the device downwards until it audibly locks into place.

► Ensure that the device is securely mounted.

7.6 Mounting the device on a wall

As an alternative to mounting the device on a DIN rail, it may be mounted directly on a wall.

A screwdriver max. 0.6 x 3.5 mm is required to carry out the work.

◇ A wall adapter is fitted to the device.

► Prepare the mounting screws on the wall.

► Hang the device onto the mounting screws and tighten the screws.

► Ensure that the device is securely mounted.

8 Commissioning

8.1 Commissioning procedure

⚠ WARNING

Dangerous contact voltage
Risk of fatal injury due to electric shock

► Carry out wiring work on the device only when the device is isolated from all voltage sources.

► Ensure that the installation location (control cabinet, etc.) is isolated from all voltage sources.

⚠ WARNING

Risk of fatal injury due to short circuit
The battery module is an active voltage source with a high short-circuit current capability.

✓ Before working on the device, remove the battery fuses.

► Select the charge current appropriate to the power of the battery module to prevent overheating of the battery module.

The device must only be put into operation by qualified electricians who are familiar with national and international laws, provisions and standards.

By default, the device is configured as follows:
- Buffer time: ∞
- Battery size: Smallest configurable value
- A bridge is inserted at the interlock input

A screwdriver max. 0.6 x 3.5 mm is required to carry out the work.

◇ The UPS control unit is mounted.

◇ The temperature sensor is connected, or a fixed resistor has been inserted instead [► Page 17].

Without a temperature sensor or a fixed resistor, the UPS control unit can neither charge the battery nor switch to buffer mode.

► Remove the bridge at the interlock input to prevent the buffer mode from being started unintentionally.

The bridge will be used again later in the commissioning process.

► Set the operating mode rotary coding switch to the **Service** position.

► Install the remaining system components and wire them completely.

► Check that all connections are firmly in place.

Ensure that the polarity of the connections matches the markings to guarantee the correct functioning of the device.

► Set the operating mode rotary coding switch to the desired position.

► Insert the bridge at the interlock input to enable buffer mode.

► Reinsert the fuses in the battery module.

► Switch on the power supply.

► Check the function of the DC UPS system.

8.2 Example application

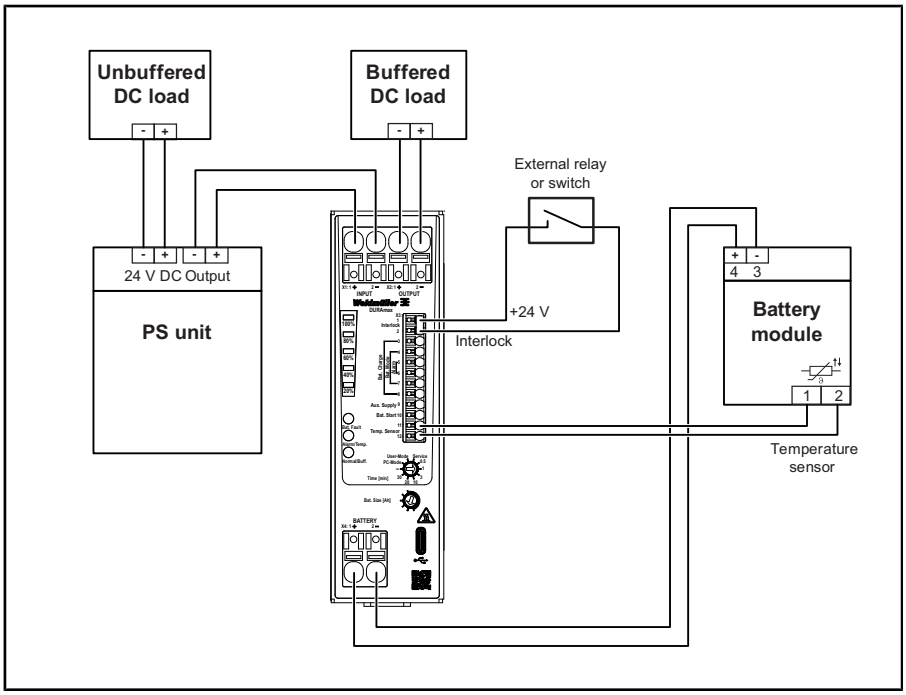


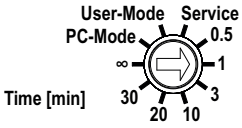
fig. 27 Example application

9 Operation

9.1 Setting the operating mode and buffer time

The operating mode rotary coding switch is used to set the operating mode for buffer operation as well as the buffer time. The possible settings are indicated directly next to the rotary coding switch [► Page 27].

A screwdriver max. 0.4 x 2.5 mm is required to adjust the rotary coding switch.

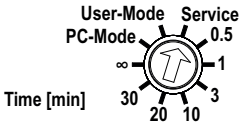


► Set the desired operating mode or buffer time on the rotary coding switch.

9.2 Setting Service mode

Observe the information on Service mode [► Page 29].

The following sequence must be observed when setting Service mode:



1. Set the operating mode rotary coding switch to the **Service** position.
2. Remove the fuses from the battery module.
3. Disconnect the wiring or battery connectors.

When recommissioning, proceed in the reverse order.

9.3 Replacing the battery module

⚠ WARNING

Risk of short circuit
A short circuit can cause damage to the device or result in injury.

► Connect the connections with the correct polarity.

► Avoid short circuits at the battery connection terminals.

► Do not open the maintenance-free battery modules.

The battery module must only be replaced by qualified electricians who are familiar with national and international laws, provisions and standards.

To ensure maximum capacity and service life, only use battery modules from the same production batch when replacing a battery module. Observe the latest commissioning date when storing the battery module. If stored for an extended period, recharge the battery module using a DC UPS.

Observe the information on Service mode [► Page 29].

When connecting battery modules in parallel, we recommend using two new battery modules to ensure even load distribution [► Page 24].

To replace the battery module, proceed as follows:

◇ The operating mode rotary coding switch is set to **Service** [► Page 55].

► Remove the fuses from the battery module.

► Remove the electrical conductors from the battery module.

► Remove the temperature sensor from the battery module.

► Remove the battery module from the DIN rail and replace it with a new battery module.

► Connect the temperature sensor.

► Connect the battery module to the battery connection of the UPS control unit, ensuring correct polarity.

► If a different battery size is used after replacement of the battery module, set the battery size using the battery selection rotary coding switch [► Page 57].

► Insert the fuses into the battery module.

9.4 Setting the battery size

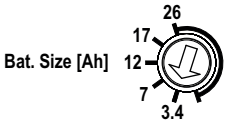
26 Ah and 38 Ah are customer-specific VRLA batteries that are not included in the Weidmüller portfolio. We recommend using the Genesis NP series from the battery manufacturer Enersys or the LP series from the manufacturer Leoch.

ATTENTION

The setting on the battery selection rotary coding switch must correspond to the actual battery capacity. The only exception is for batteries between 38 Ah and 50 Ah. When using these batteries, the maximum possible setting must be selected (e.g. 38 Ah). Incorrect settings negatively affect the charging and discharging behaviour of the battery and may trigger an error message in the UPS control unit.

For parallel connection, set the battery selection rotary coding switch to the capacity of a single battery module. Example: For two battery modules of 1.2 Ah each, select the setting 1.2 Ah. Observe the additional information on the parallel connection of battery modules [► Page 24].

A screwdriver max. 0.4 x 2.5 mm is required to adjust the rotary coding switch.



► Set the capacity of the connected battery module on the rotary coding switch.

9.5 Connecting the UPS control unit to a PC

The device must only be connected by qualified electricians who are familiar with national and international laws, provisions and standards.

Observe the information in the software manual for a successful and safe connection of the DC UPS control unit to a PC [► Page 6].

Use a compatible USB-C cable that meets the following requirements:
- The cable is not only a charging cable.
- The cable supports data transmission with at least USB 2.0.
- The cable is no longer than 3 metres.

The USB-C cable is used solely for data transmission. No power is transmitted.

Observe the information on User mode and PC mode [► Page 27].

◇ The operating mode rotary coding switch must be set to either User or PC mode.

► Connect the USB-C cable to the USB-C interface of the DC UPS control unit and to the USB interface of the PC.

9.6 Performing a firmware update

► Connect the UPS control unit to the PC [► Page 58].

► Follow the instructions in the software manual.

10 Troubleshooting

10.1 Faults

The LED states of the operating status LEDs indicate faults.

Observe the additional information on operating status [► Page 20].

Battery fault LED (Bat. Fault)

LED state	Meaning	Reference
Red, steady	Battery connection reversed	Battery replacement [► Page 56]
	Battery module not connected	
Flashing red	Battery module undervoltage protection error	Protective functions [► Page 23]
	Battery module surge current protection error	
	Battery module surge protection error	
Off	No error	

Alarm/temperature sensor LED (Alarm/Temp.)

LED state	Meaning	Reference
Yellow, steady	Temperature sensor error	Temperature sensor [► Page 17]
	Input undervoltage protection error	Protective functions [► Page 23]
	Input surge protection error	
	Output undervoltage protection error	
	Output surge protection error	
	Internal charger over-temperature protection error	
	Buffer mode error	Buffer mode [► Page 21]
	Short-circuit error	Protective functions [► Page 23]
	Surge current protection error	
	Internal charger short-circuit error	
	Internal charger surge current protection error	
Off	No error	

10.2 Reset

If necessary, the UPS control unit can be restarted.

For a reset via the **DURAmax DC UPS Manager** software, refer to the software manual [► Page 6].

For a reset without the software, proceed as follows:

► Remove the bridge at the interlock input [► Page 31].

☑ The UPS control unit will not switch to buffer mode.

Carry out both of the following steps:

► Disconnect the input supply at X1.

► Disconnect the UPS control unit and the battery module.

☑ The UPS control unit is now de-energised.

When recommissioning, proceed in the reverse order.

11 De-installation

11.1 Notes on de-installation

The device must only be de-installed by qualified electricians who are familiar with national and international laws, provisions and standards.

⚠ WARNING

Risk of electric shock
Before working on the device, it should be completely disconnected from the mains and the absence of voltage must be verified.

11.2 Removing the device from the rail

► Remove all cables.

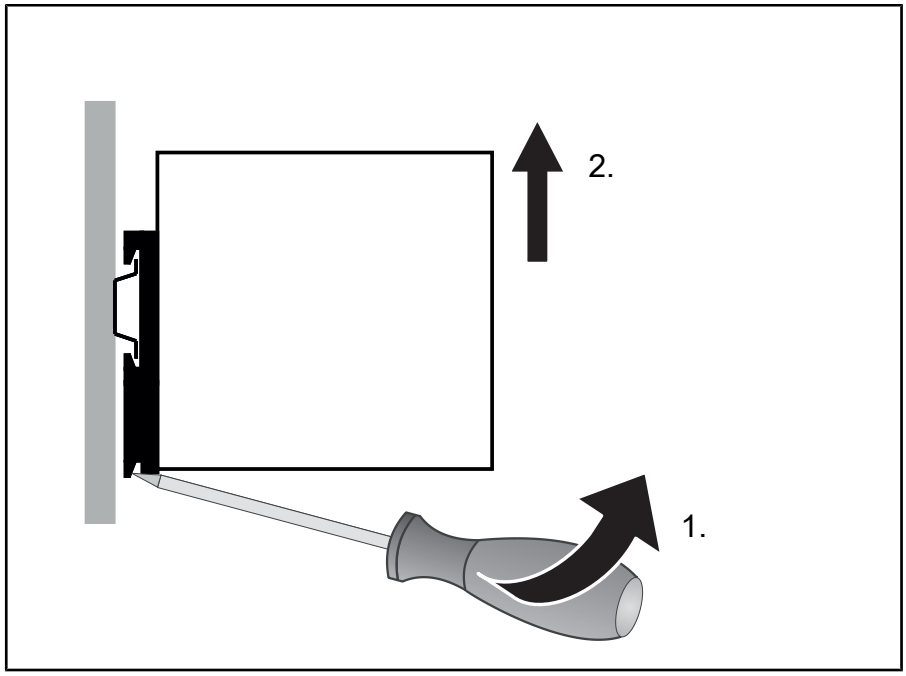


fig. 28 Removing the device from the rail

► Release the snap-in foot with a screwdriver.

► Lift the device off the rail.

11.3 Removing the device from the wall

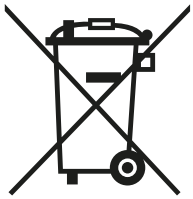
► Remove all cables.

► Unscrew the mounting screws.

► Lift the device off the wall.

12 Disposal

12.1 Disposing of the device



Products marked with this symbol are subject to Directive 2012/19/EU: Collection and recycling of electrical and electronic equipment (WEEE). These products contain substances that may be harmful to the environment and human health. They also contain substances that can be reused through targeted recycling. Products marked with a crossed-out rubbish bin must not be disposed of in unsorted municipal waste or household waste!

13 Accessories

Further information on accessories can be found in the Weidmüller product catalogue.

13.1 Mounting accessories

	CP A WALLADAPTER 30 MM	CP A WALLADAPTER 45 MM	MTA 30 MF	MTA 45 MF
Order No.	1461870000	1461850000	1251320000	1251310000
How to use	Wall adapter	Wall adapter	Mounting adapter	Mounting adapter
				
DURAmax DC UPS 24V 5A Order no. 2934940000	X	-	X	-
DURAmax DC UPS 24V 10A Order no. 2934950000	X	-	X	-
DURAmax DC UPS 24V 20A Order no. 2934960000	-	X	-	X
DURAmax DC UPS 24V 40A Order no. 2934970000	-	X	-	X

13.2 Battery modules

Description	Order No.	How to use
DURA ECO LA-BAT 24V 1.2AH	2789890000	Load supply in the event of a failure of the UPS control unit
DURA ECO LA-BAT 24V 3.4AH	2789900000	
DURA ECO LA-BAT 24V 7AH	2789910000	
DURA ECO LA-BAT 24V 12AH	2789920000	
DURA ECO LA-BAT 24V 17AH	2789930000	

13.3 Additional accessories

Description	Order No.	How to use
Temperature sensor CP DC UPS TF05	1444480000	Temperature monitoring
Temperature sensor CP DC UPS TF25	1444540000	Temperature monitoring
End bracket, width: 12 mm	1478990000	Secure seating on the rail
End bracket, width: 8 mm	1479000000	
Slotted screwdriver SDIS 0.4X2.5X75	2749790000	VDE-insulated screwdriver for working on the rotary coding switches
Slotted screwdriver SDIS 0.6X3.5X100	2749810000	VDE-insulated screwdriver for working on live parts

Glossary

SOC

The SOC (state of charge) indicates the current charge level of the battery module as a percentage of the usable capacity. This value shows how much energy is immediately available for buffer mode. It also supports runtime prediction. The state of charge is indicated as a percentage of the maximum capacity. The SOC is determined by measuring the current or the voltage. It depends on the load, the temperature and the battery type. A high SOC does not guarantee a long bridging time if the battery module has aged.

SOH

The SOH (state of health) indicates the health of the battery module compared with its condition when new, usually as a percentage. The value takes into account capacity loss, internal resistance and power output. SOH is influenced by various factors, such as the usage profile, charging and discharging behaviour, temperature, ageing of the battery module and storage conditions. As a result, the condition of the battery module may develop differently over time. If the SOH value becomes low, timely replacement of the battery module should be planned.

Weidmüller Interface GmbH & Co. KG
Klingenbergstraße 26
32758 Detmold, Germany
T +49 (0)5231 14-0
F +49 (0)5231 14-292083
www.weidmueller.com

Dokument-Nr. 3184830000
Revision 00/11.2025