

BATTERY MODULE

- 24V, 12Ah battery capacity (2x 12V batteries in series)
- Small mounting footprint
- 1.5m power leads included
- PT1000 sensor for battery module temperature included
- Includes a centre-tap terminal with auto-resettable fuse
- 3 year warranty (except for batteries which are considered a service part)

PRODUCT DESCRIPTION

The UZK24.122 battery module utilizes two non-spillable maintenance-free VRLA lead-acid batteries (connected in series) that are assembled in one package with all the required wiring included.

The UZK24.122 comes with the sensor board UZS24.100 which contains a temperature sensor and a center-tap connection terminal. The sensor board enables to monitor and charge the two batteries individually and precisely, extending the service life of the batteries and making matching of replacement batteries unnecessary. Usage of the sensor board is optional, the DC-UPS will also function without the sensor board installed.

The battery module is available in two different options. It can be ordered as UZK-module with batteries or as UZO-module without batteries, so these can be procured separately and installed at a later date to avoid outdated batteries.

SHORT-FORM DATA

Battery type	VRLA	
Battery life	3 to 5 years	Nominal, acc. EUROBAT
Battery voltage	DC 24V	Nominal
Battery capacity	12Ah	Nominal
Battery current	Max. 40A Max. 4A Max. 3.5A	Discharging current Charging current Centre Tap current
Recommended charging voltage	27.8V 27.5V 27.15V 26.8V	At +10°C At +20°C At +30°C At +40°C
Self-discharge rate	3%/month	At +20°C
Battery fuse	2* 35A	ATOF® 287 035 from Littelfuse
Temperature sensor	PT1000	
Temperature range	-10°C to +40°C -15°C to +50°C -20°C to +50°C	For charging For discharging For storage
Size (WxHxD)	203x186x125mm	
Weight	9400g 900g	UZK24.122 UZO24.122

ORDER NUMBERS

- UZK24.122** Battery module with batteries
- UZO24.122** Battery module without batteries
- UZB12.121** Battery replacement 12V, 12Ah, 2pcs needed for one battery module

MAIN APPROVALS

For details and the complete approval list, see chapter 11.



UL 508



ATEX (planned)



IECEx (planned)



Class I Div 2 (planned)

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The information given in this document is correct to the best of our knowledge and experience at the time of publication. If not expressly agreed otherwise, this information does not represent a warranty in the legal sense of the word. As the state of our knowledge and experience is constantly changing, the information in this data sheet is subject to revision. We therefore kindly ask you to always use the latest issue of this document (available under www.pulspower.com).

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WARNING Risk of electrical shock, fire, personal injury or death.

- Turn power off before working on the device. Protect against inadvertent re-powering.
- Do not modify or repair the unit.
- Use caution to prevent any foreign objects from entering the housing.
- Do not use in wet locations or in areas where moisture or condensation can be expected.
- Do not touch during power-on, and immediately after power-off. Hot surfaces may cause burns.

1. INTENDED USE

This module is designed for installation in an enclosure and is intended for the general professional use such as in industrial control, office, communication, and instrumentation equipment.

Do not use this module in equipment, where malfunction may cause severe personal injury or threaten human life.

2. INSTALLATION INSTRUCTIONS

This device may only be installed and put into operation by qualified personnel.

Before initial use, check the last charging which is marked on the battery. If it is older than 9 months, replace the battery.

Do not install the battery fuse until the installation work is complete.

This device does not contain serviceable parts, except the fuse or replacement battery. If malfunction should occur during installation or operation, first check the fuse and battery for proper functionality. If the unit is damaged or if the malfunction continues, immediately turn power off and send device to the factory for inspection.

Replacement fuses must be of the same type or an UL listed fuse with the same nominal value and characteristics.

Do not short-circuit the battery poles or power wires and always check correct battery polarity.

Mount the device on a flat surface.

Do not install the battery module upside down.

Place the battery module in a cool area inside a cabinet.

Shorten the (+) and (-) wires as needed for the DC-UPS between the battery module and the DC-UPS. If separate wires are used, do not use wires smaller than 6mm² (10 AWG).

Connect the sensor board to the DC-UPS by using control wires with a minimum wire size of 0.5mm² / 20AWG.

Install the device in an enclosure providing protection against electrical, mechanical and fire hazards. Ensure sufficient ventilation by following the requirements of the EN 50272-2.

CAUTION: The unit contains wet cell batteries. Ventilation of the installation room in accordance with the rules of Canadian Electrical Code, part 1 is required if used in Canada.

The battery module is for use in a controlled environment. Do not use the device in pollution degree 3 areas without additional protection or in applications where a degree of protection better than IP00 is required.

Do not use batteries other than the original batteries supplied by the manufacturer to avoid conflicts with agency approvals.

The maximum surrounding air temperature is +50°C. The operational temperature is the same as the ambient or surrounding air temperature and is defined as the air temperature 2cm below the device.

3. INSTRUCTIONS FOR BATTERY STORAGE

Do not store batteries or battery modules at temperatures higher than 25°C or performance and lifetime may change.

Do not store discharged batteries. Keep batteries fully charged!

Charge retention is important to get the longest battery life. Stored batteries which are not fully charged age faster than charged batteries.

Do not store batteries longer than 9 months without charging or performance and lifetime may change. Every 9 months or whenever the open circuit voltage (OCV) falls below 25.2V, the battery module should be charged. Apply a charging voltage of 27.6V (at 25°C) for 72 hours. Batteries with an OCV below 24V must not be charged anymore and must be disposed.

4. INSTRUCTIONS FOR REPLACING BATTERIES

Batteries need to be replaced periodically. The time interval depends on the ambient temperature in which the battery is used and, on the number, and depth of discharge cycles. In a typical application it is recommended to replace the batteries at least every 2 years.

Disconnect battery fuse before replacing the battery.

Regarding disposal of used batteries see chapter 5.

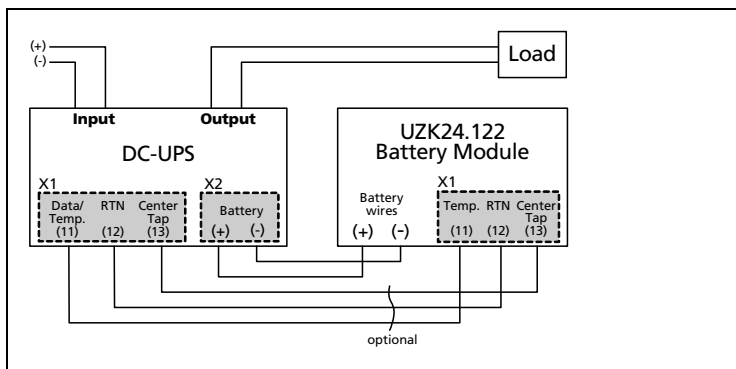
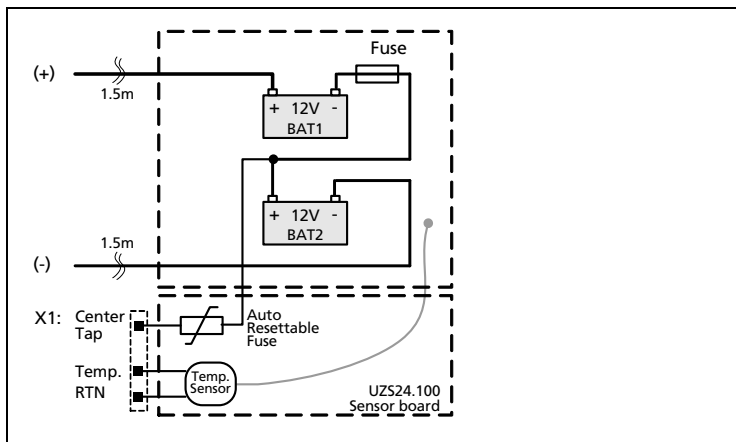
5. INSTRUCTIONS FOR DISPOSAL OF THE BATTERIES

Batteries must be completely discharged before replacement and can be returned to the supplier of the battery module or the battery manufacturer for disposal.

Always dispose batteries through a recycling organization.

6. FUNCTIONAL DIAGRAM

UZK24.122

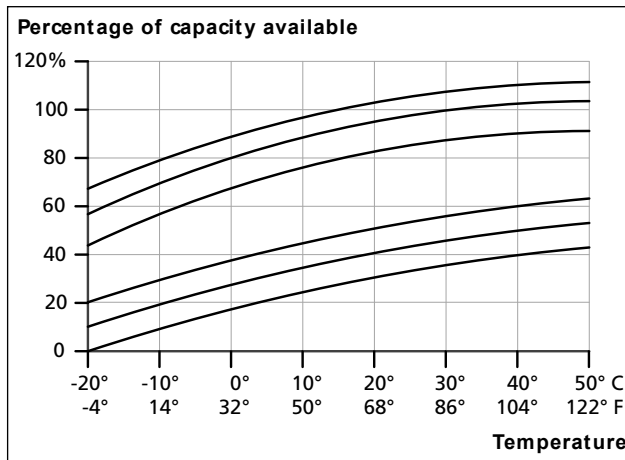


7. ENVIRONMENT

Operational temperature *)	-10°C to +40°C	For charging Frequently charging below +5°C reduced the lifetime of the battery
	-15°C to +50°C	For discharging
Storage temperature	-20°C to +50°C	For storage and transportation Recommendation: For best performance and lifetime do not store at temperatures higher than 25°C.
Humidity	5 to 95% r.h.	IEC 60068-2-30 Do not energize while condensation is present
Vibration sinusoidal	±4mm at 16.7Hz fixed frequency for 1hour	Vibration in vertical mounting orientation according to IEC/EN 61056-1
Shock	free fall from 20cm onto a wooden floor	Shock with bottom down orientation according to IEC/EN 61056-1
Altitude	0 to 6000m	
Degree of pollution	2	According to IEC 62477-1, not conductive

*) Operational temperature is the same as the ambient temperature and is defined as the air temperature 2cm below the unit.

Fig. 7-1 **Temperature Effects in Relation to Battery Capacity**

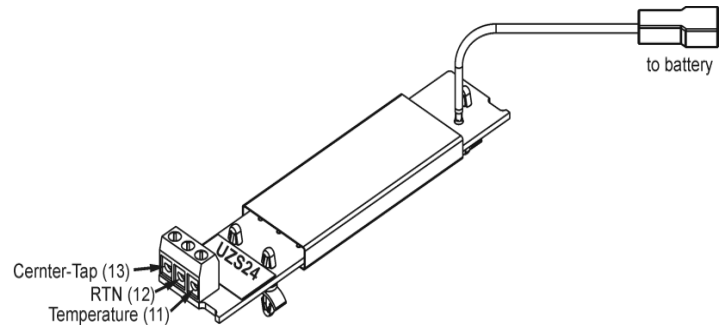


8. SENSOR BOARD

The battery module includes a monitoring and protection board. This board contains a temperature sensor and a center-tap connection with an auto-resettable fuse to protect the center-tap wire between the battery module and the DC-UPS control unit.

The sensor board enables to monitor and charge the two batteries individually and precisely, extending the service life of the batteries and making matching of replacement batteries unnecessary.

Usage of the sensor board is optional, the DC-UPS will also function without the sensor board installed.



9. TERMINALS AND WIRING

The terminals are IP20 Finger safe constructed and suitable for field- and factory wiring.

Signal and center tap terminals	
Type	Screw terminals
Maximal wire size, solid wire	1.5mm ²
Maximal wire size, stranded wire	1.5mm ²
American Wire Gauge	AWG 26-14
Maximal wire diameter	1.5mm (including ferrules)
Wire stripping length	5mm
Screwdriver	Slotted 3x0.5mm
Recommended tightening torque	0.45Nm

Instructions:

- a) Follow national installation codes and installation regulations!
- b) Ensure that all strands of a stranded wire enter the terminal connection!
- c) Unused terminal compartments should be securely tightened.
- d) Ferrules are allowed.

10. PROTECTION FEATURES

Degree of protection	IP00	According to EN/IEC 60529
Class of protection	III	According to EN/IEC 61140
Internal input fuse	2*35A	DC-Fuse (blade type) ATOF® 287 035 from Little fuse Replacement fuses must be of the same type or an UL listed fuse with the same nominal value and characteristics.
Isolation	1100Vac	Isolation voltage between power to chassis

Mrz. 2023 / Rev. 1.0 DS-UZK24.122-EN
All parameters are typical values specified at 25°C ambient temperature unless otherwise noted.

11. APPROVED, FULFILLED OR TESTED STANDARDS

UL 508



UL Certificate
Listed equipment for category NMTR - Industrial Control Equipment
Applicable for US and Canada
E-File: E198865

UL 61010-2-201
(only UZO24.122)



UL Certificate
Listed equipment for category NMTR - Electrical Equipment for Measurement, Control and Laboratory Use - Particular requirements for control equipment
Applicable for US and Canada
E-File: E198865

IEC 61010-2-201

CB Report

CB Scheme Certificate
Electrical Equipment for Measurement, Control and Laboratory Use - Particular requirements for control equipment

ATEX
(planned)



Agency Certificate (Bureau Veritas)
EN 60079-0 Explosive atmospheres - General requirements
EN 60079-7, EN 60079-15 Equipment protection by type of protection "e" and "n"
Certificate: t.b.d
Temperature Code: t.b.d
Type of Protection: t.b.d

IECEX
(planned)

IECEX

IECEX Certificate
IEC 60079-0 Explosive atmospheres - General requirements
IEC 60079-7, IEC 60079-15 Equipment protection by type of protection "e" and "n"
Certificate: t.b.d
Temperature Code: t.b.d
Type of Protection: t.b.d

Class I Div 2
(planned)



UL Certificate
Listed equipment for category NRAD - Listed equipment Industrial Control Equipment for Use in Hazardous Locations
Applicable for US and Canada
E-File: t.b.d
Temperature Code: t.b.d
Groups: t.b.d

Labs



Paint Wetting Impairment Substances Test (or LABS-Test)
Tested for Zone 2 and test class C1 according to VDMA 24364-C1-LW for solvents and water-based paints

12. REGULATORY PRODUCT COMPLIANCE

EU Declaration of Conformity



The CE mark indicates conformance with the
- EMC directive
- RoHS directive

REACH Regulation (EU)



Manufacturer's Declaration
EU regulation regarding the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) fulfilled.
EU Regulation (EC) 1907/2006.

Battery Directive (EU)
(only UZB12.121)



Battery recycling marking indicates conformity with with European Directive on batteries and accumulators and waste batteries and accumulators.
Batteries which are brought to the market by PULS are registered within Germany in the register of the responsible authority.
For information on battery registration in other EU countries, please contact the local PULS sales office.
The battery must be recycled at the end of life in accordance with local and national laws and regulations.

WEEE Regulation
(only UZO24.122)



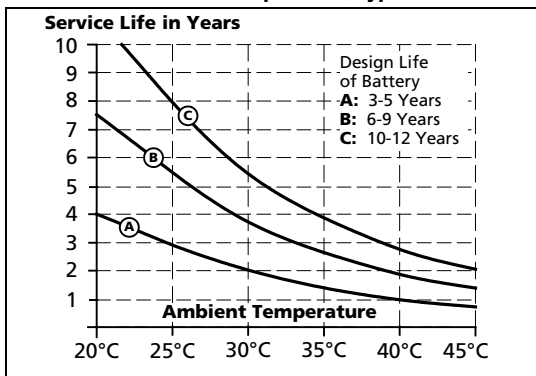
PULS brand EEE recycling marking indicates the conformity with European Regulation on Waste Electrical and Electronic Equipment (WEEE)
PULS brand EEE are registered within Germany in the register of the responsible authority as business to business (B2B) units.
For information on EEE registration in other EU countries, please contact the local PULS sales office.
PULS brand EEE must be recycled at the end of life in accordance with local and national laws and regulations.

14. RECOMMENDATIONS FOR A LONG BATTERY LIFE

Temperature:

The temperature has the most impact on the service life. The higher the temperature, the earlier the wear-out phase of the battery begins. The wear-out results in a degradation of battery capacity. Place the battery module in a cool location, e.g. near the bottom of the control cabinet. Do not place the battery module near heat generating devices. Do not overcharge batteries!

Fig. 14-1 Service life (according to EUROBAT) vs. ambient temperature, typ.

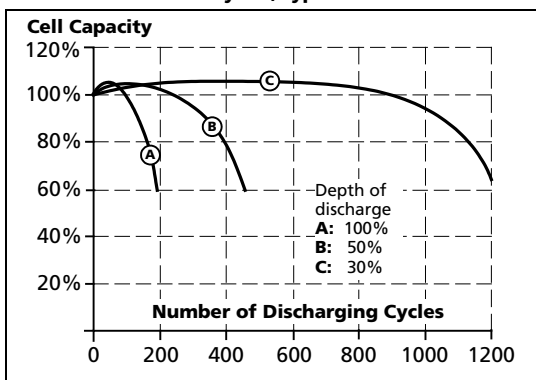


Number of discharge cycles and depth of discharge:

Do not discharge batteries more than necessary. Set buffer time limiter to the required buffer time. The number, as well as the depth of discharging cycles is limited. A replacement of the battery might be necessary earlier.

When choosing the battery capacity, always try to get the next higher capacity than required. The depth of discharge reduces the service life of the battery and limits the number of cycles.

Fig. 14-2 Battery degradation vs. discharging cycles, typ.



Store batteries fully charged

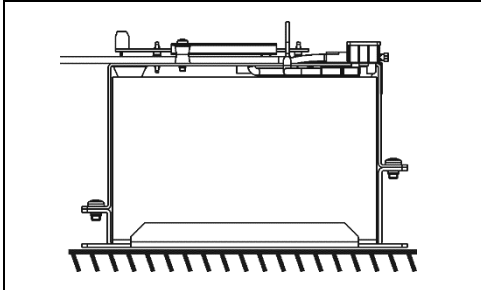
Do not store discharged batteries. Keep batteries fully charged!

Charge retention is important to get the longest battery life. Stored batteries which are not fully charged age faster than charged batteries. Batteries which are not in use should be recharged at least once a year. The higher the ambient temperature, the shorter the charging interval. At storage temperatures higher than 30°C, recharging should be done at least every nine months.

15. MOUNTING ORIENTATIONS

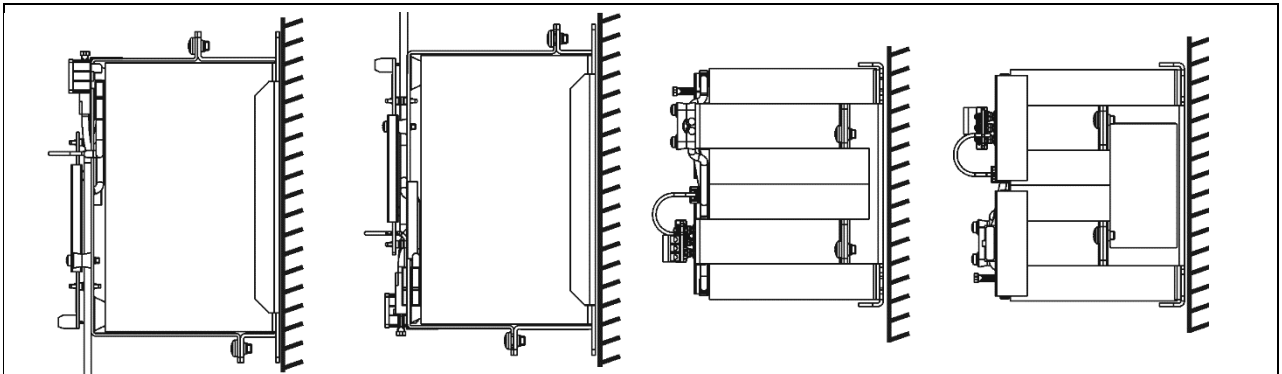
The standard mounting orientation is the vertical installation onto a flat surface.

Fig. 15-1 **Standard mounting orientation**



The following mounting orientations are also allowed:

Fig. 15-2 **Allowed mounting orientation**



Do not use the battery module in an upside-down position:

Fig. 15-3 **Forbidden mounting orientation**

