Piktronik

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BT15-100

Battery Discharger User's Manual

User's Manual

Issue: 1

General Information

The manufacturer accepts no liability for any consequences resulting from inappropriate, negligent or incorrect installation or adjustment of the optional operating parameters of the equipment.

The contents of this guide are believed to be correct at the time of printing. In the interests of a commitment to the policy of continuous development and improvement, the manufacturer reserves the right to change the specification of the product or its performance, or the contents of the guide, without notice.

Software version

This product is supplied with the latest version of software. The software version of the GD2BD unit can be checked by pressing the [OK] button while turning on the charger and switching to the write-access screen.

If there is any doubt, contact your dealer.

Issue number: 1
Software version: ab 1.0.0

Contents

Installation and Safety Instructions

The Piktronik battery discharger has been designed to provide safety and reliability. It is necessary to observe the following precautions in order to avoid damage to persons and the discharger:

- Read the installation instructions in this manual carefully. For future reference, store the manual in an accessible place.
- Mount the discharger to a stable and flat surface. In case of installation on an elevated surface, it is recommended to check carefully that the discharger is securely placed.
- Ensure all ventilation ports are not obstructed to avoid overheating. Do not put the discharger near heat sources. Make sure that free space around the discharger is sufficient to provide adequate ventilation.
- Protect the discharger from water infiltration. Do not pour liquids inside the case.
- To avoid damaging the power cord, do not put anything on it or place it where it could be walked on. It the cord becomes damaged or frayed, replace it immediately.
- Do not lengthen the supplying cables.
- Do not try to service the discharger yourself. Opening the cover may expose you to shocks or other hazards.
- If the discharger does not work correctly or if it has been damaged, unplug it from the supply socket and from the battery socket immediately and contact the retailer.

Introduction

The Piktronik battery discharger is a fully automatic device that controls the efficiency state of a battery, whether used or new. It has been designed to replace the classical power resistor. Being an automatic electronic device, it will closely monitor battery voltage and discharging current. Besides battery voltage and discharging current, several other values are also measured and displayed on the graphical display, such as elapsed discharging time, discharged Ah, discharging power and others.

Depending on the discharging parameters set by the user, two basic modes of operation are possible: constant current mode or constant power mode. If needed, the discharger can and will automatically bias discharging current based on the battery voltage, set discharging parameters or any safety reasons.

Handling and Operation

Battery discharger is turned on with the ENABLE switch. There are following elements to interact with the battery discharger:

- Display area, showing relevant data, device setup and error messages
- [UP], [DOWN] and [OK] keys for setup and information display interaction
- [ENABLE] switch, discharge [START] and discharge [STOP] buttons.

Discharging Workflow

1. Connection to the battery

Connect the charger to the battery respecting the polarity. The red wire must be connected to the battery plus terminal and the black wire must be connected to the battery negative terminal.

2. Powering the discharger

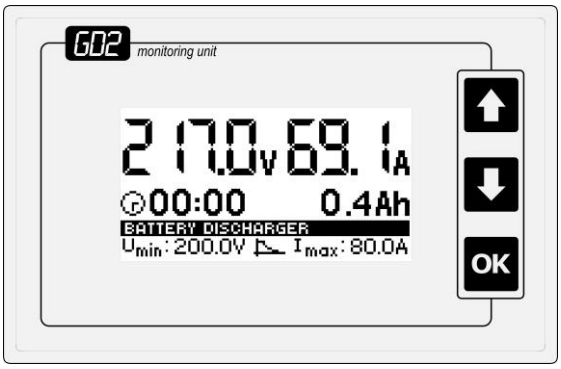
Connect the battery discharger AC power plug to the Schuko socket-outlet.

3. Parameter settings

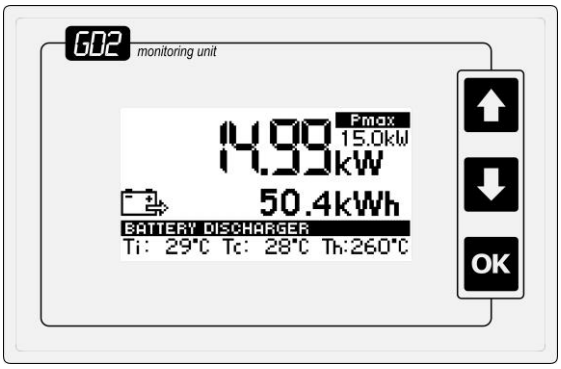
Before discharging can be started, discharging parameters like discharging current, discharging stop voltage, discharge timer etc. must be set or verified. Please see next chapter for the details on setting discharging parameters.

4. Discharging

When you turn the [ENABLE] switch on, you will see the startup logo on the screen for a few seconds. If there are no errors, you will see the main screen (Screen 1). There is a total of 2 screens showing valuable information during discharging and you can scroll between them with the [UP]/[DOWN] keys. To start discharging of the battery, press the [START] button. Discharging can be manually interrupted at any point by pressing the [STOP] button or operating the [ENABLE] switch.

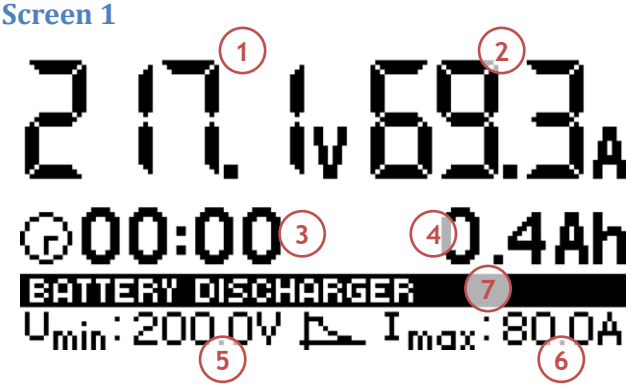


Screen 1



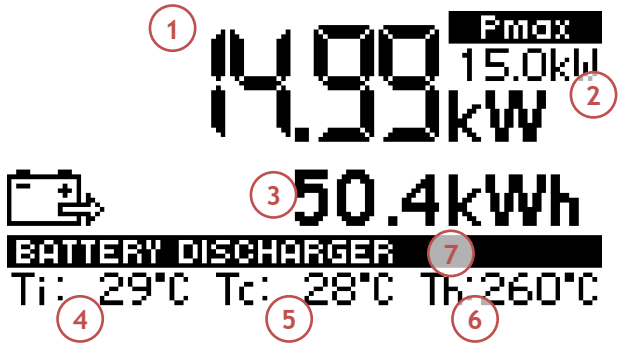
Screen 2

Screen 1



1 Battery voltage
2 Discharging current
3 Elapsed time
4 Discharge amount
5 Umin: discharge stop voltage
6 Imax: maximum discharging current
7 Status line

Screen 2



1 Instantaneous power
2 Pmax: maximum power (parameter)
3 Discharged energy
4 Ti: Internal temperature
5 Tc: Casing temperature
6 Th: Heater temperature (estimate)
7 Status line

Status Line Notifications

READY	Discharger ready
TURN-ON	Device initialization and precharge stage active
DISCHARGING	Battery discharging active
END (VOLTAGE)	Discharging stop voltage reached
END (TIME)	Automatic shut-off due to set timer (P2.4)
END (AH)	Automatic shut-off due to set discharge Ah limit (P2.3)
ERROR	Error present
PAUSED	Discharging was temporally interrupted by pressing the [STOP] button. By pressing the [START] button discharging starts again from the point at which it has been interrupted.

Technical Specifications

Feeding Terminals

- Input voltage: 230 V AC
- Input frequency: 50–60 Hz
- Input fuse: 2 A
- Absorbed power: < 200 W

Battery Terminals

- Minimum working voltage: 10 V
- Maximum working voltage: 100 V
- Maximum discharging power: 15 kW
- Peak discharging current: 200 A
- Fuse: 300 A
- Cable length: 4 m

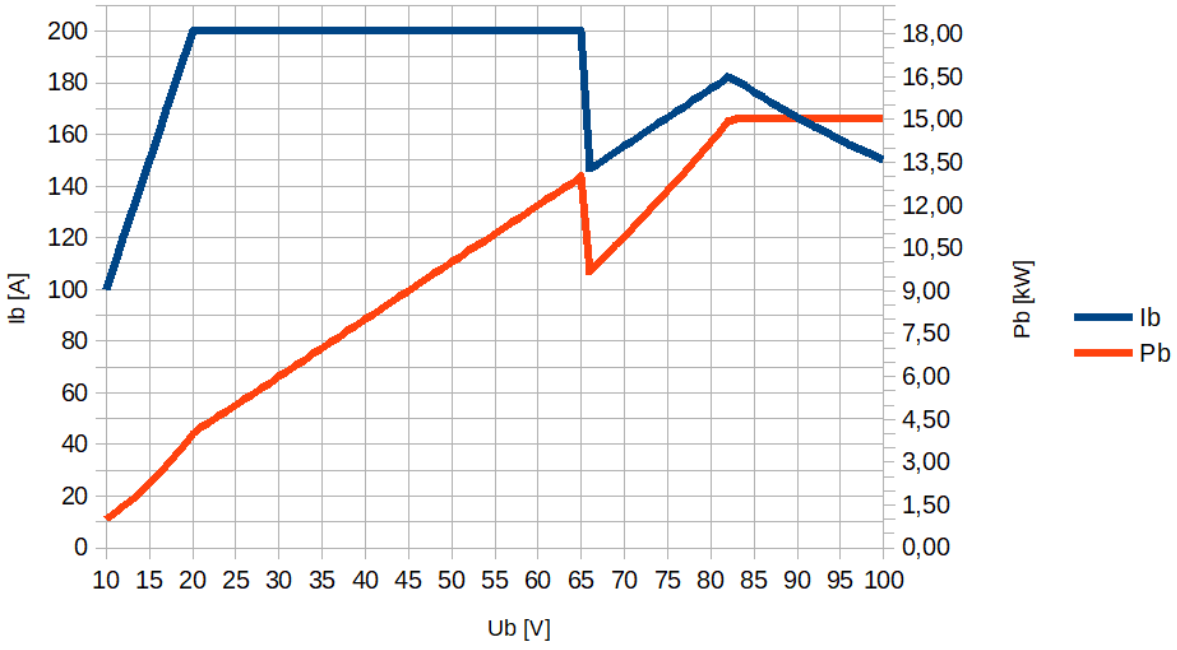
General

- Dimensions: 425 x 325 x 610 mm
- Weight: 30.5 kg
- Ventilation: forced
- Air flow rate: 1600 m3/h

Protections and Safety

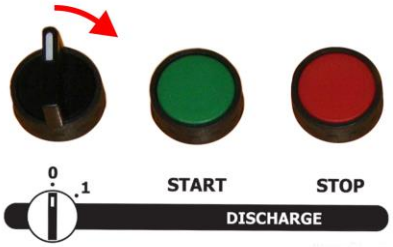
- Thermal protection
- Over current protection
- Reverse polarity protection
- Over voltage protection

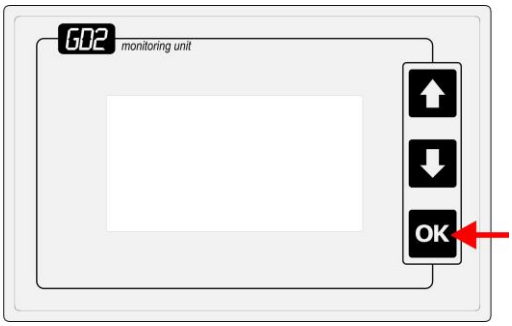
Operating Area



Parametereinstellungen bei GD2BD

Before the battery discharger can be used, it must be properly configured. To enter the discharging parameters setup, hold [OK] while you power on the battery discharger.

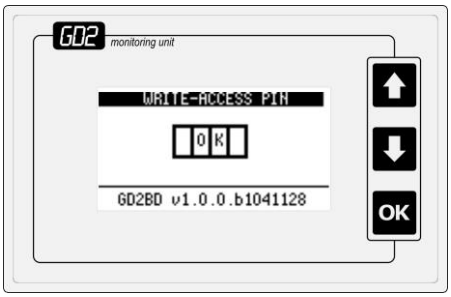




You will enter the first page of setup, which requires no PIN code to change the parameters.

Without the PIN code you can still browse through the parameters on the following pages. However, you cannot change them. The navigation is done by using the [UP] and [DOWN] button. Press [UP] or [DOWN] to select the next parameter. The parameter with focus will have a browse sign (>) in front of the value. When you reach the last parameter on the page, press the [DOWN] button again to go to the next page. Or, if you have reached the first parameter on the page, press [UP] to go to the previous screen. Holding [UP] or [DOWN] longer will let you jump to the next page directly without skipping through parameters.

To edit the parameters, you have to enter the write-access PIN code on the second page:



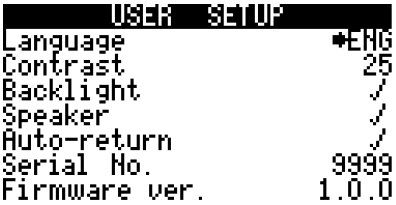
When entering the PIN code, press [OK] to enter edit mode. Then select the first digit with [UP]/[DOWN] and press [OK] to proceed to the next digit. Repeat the procedure until all digits are entered. If you have entered a valid PIN code, you will be granted permission to change all parameters. If not, you will have to wait 30 seconds to try again. Once a valid PIN is entered, the field will show OK.

If you have permission to change the parameters, the edit sign (➡) in front of the parameter value will be shown. To edit a parameter, press [OK]. Value to be edited will appear inverted. You can now change the value using the [UP]/[DOWN] keys. If you hold the key for a longer time, you will notice that values change faster and faster – this will help you select the desired value more quickly. When you enter the desired value, just press enter to store the value and proceed with other parameters.

Pressing the [OK] button when an ON-OFF parameter is selected will toggle the parameter value. Parameter value is [ON] when ☑ is shown.

Parameter Page 1 – User Setup

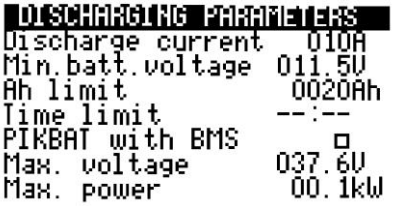
Parameters on this page can be changed by the user without entering the PIN code.



P1.1	Language Select the desired language. Currently, English and German languages are supported Range: [ENG]/[DEU]
P1.2	Contrast Select contrast of the LCD module. Range: 0–80
P1.3	Backlight Select this option if you want to turn on the backlight for the LCD module. Range: [Off]/[On]
P1.4	Speaker Turn the speaker on or off. Range: [Off]/[On]
P1.5	Auto-return Automatically return to the main screen when enabled. Range: [Off]/[On]
P1.6	Serial Number Read-only. Shows the serial number of the GD2BD unit.
P1.7	Firmware ver. Read-only. Shows the firmware version of the GD2BD unit.

Write-access PIN	Enter PIN code if you want to edit the parameters on following pages. If you do not enter the PIN code, you can still view the parameters, but you cannot change them (except on Page 1).

Parameter Page 2 – Discharging Setup



P2.1	Discharge current Maximum discharging current. Actual discharging current will depend on the battery voltage and the maximum power set by the parameter (P2.6). Range: 0.0–200 A
P2.2	Min. batt. voltage Minimum battery voltage at which discharging will be terminated or discharging stop voltage. Range: 10.0–100.0 V
P2.3	Ah limit Range: 0–1999 Ah (set to 0 Ah for Off).
P2.4	Time limit Maximum discharging duration. When discharging time exceeds the value set with this parameter, discharging will always be terminated, independent of other conditions. Function can be disabled when set to --:--. Range: --:-- – 23:59
P2.5	PIKBAT with BMS Enabled or disabled discharging with BMS
P2.6	Max. voltage Maximum starting voltage. If the voltage, at the beginning of the discharging process, is higher than this voltage, the charger does not start. Range: 10–100 V
P2.7	Max. power Maximum discharging power. Range: 0– 15.0 kW

Error Messages and Error Codes

List of all messages and error codes is provided below:

ERROR 01: Communication with power stage failure
ERROR 02: WDT error
ERROR 03: Battery voltage too low
ERROR 04: BMS Time-Out
ERROR 05: Overheat
ERROR 06: Supply voltage too low
ERROR 07: Overheat thermostat tripped
ERROR 08: Battery voltage to high
ERROR 09: Temperature sensor faulty
ERROR 10: Power stage faulty
ERROR 11: Internal error

PWRERR 01: Battery voltage high
PWRERR 02: Discharger temperature high during discharging
PWRERR 03: BMS time out failure
PWRERR 04: Problem with PWM regulation
PWRERR 05: Current not detected
PWRERR 06: Emergency stop
PWRERR 07: Bimetal disconnect
PWRERR 08: CRC error
PWRERR 09: Error 09
PWRERR 10: Error 10
PWRERR 11: Unknown error

BMS WARN 01: Cell voltage high
BMS WARN 02: Cell voltage low
BMS WARN 03: Temperature high
BMS WARN 04: Temperature low
BMS WARN 05: Battery warning

BMS ERR 64: Cell over voltage
BMS ERR 65: Cell under voltage
BMS ERR 66: Temperature high
BMS ERR 67: Temperature low
BMS ERR 68: Over current
BMS ERR 69: Over current
BMS ERR 70: SOC high
BMS ERR 71: SOC low
BMS ERR 80: Battery overvoltage
BMS ERR 81: Battery overvoltage

Piktronik d.o.o.
Cesta k Tamu 17
SI-2000 Maribor
T: +386 2 460 2250 | F: +386 2 460 2255
info@piktronik.com | www.piktronik.com