BT15-510

Battery discharger user manual

User manual

Issue: 2(55)

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.

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Software version

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

If there is any doubt, contact your dealer.

Contents

Installation and safety instructions

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 to the discharger:

- Read the installation instructions contained in this manual carefully. For future reference, put the manual in an accessible place.

- Fix 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 the 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 will 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, unplugged it immediately from the supply socket and from the battery socket and contact a retailer.

Introduction

The Piktronik battery discharger is fully automatic device to control 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, discharger can and will automatically bias discharging current based on the battery voltage, set discharging parameters or any safety reasons.
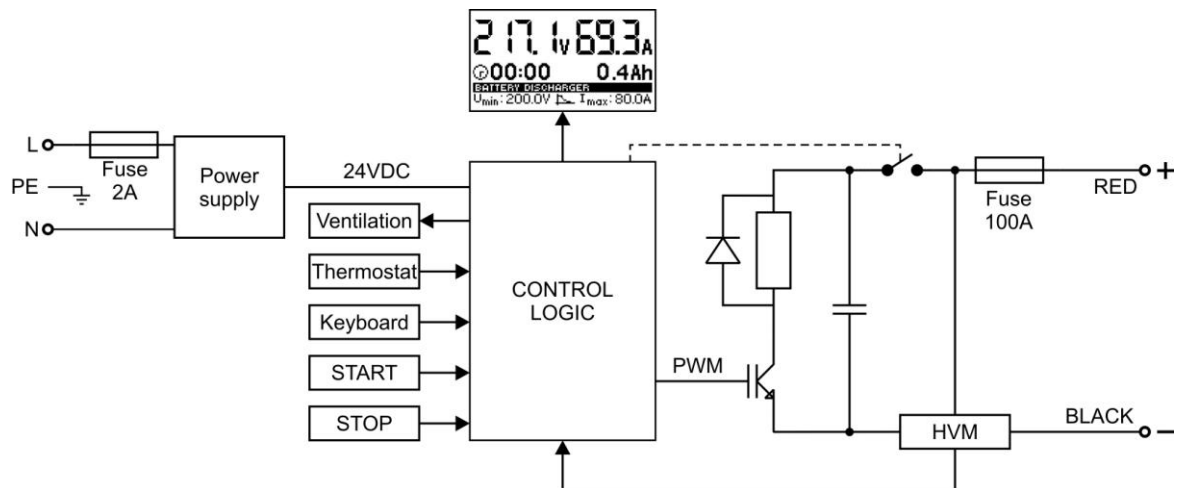
Handling and operation

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.

Block diagram

Discharging workflow

1. Connection to the battery

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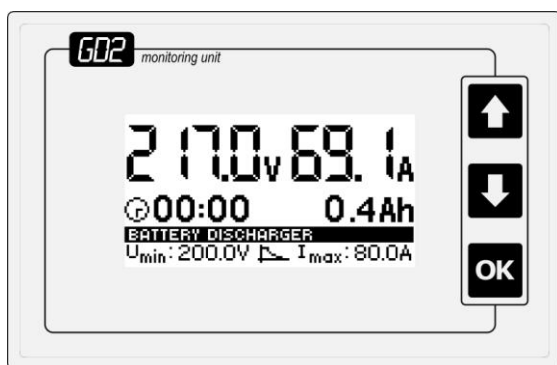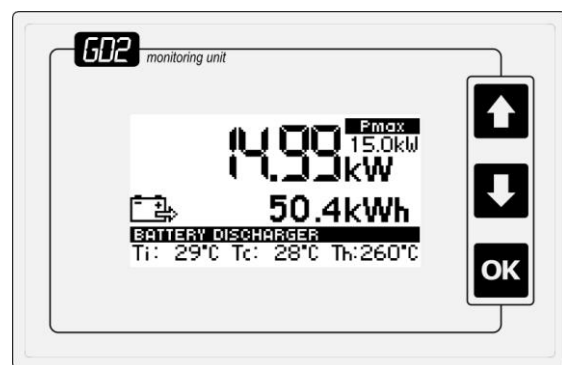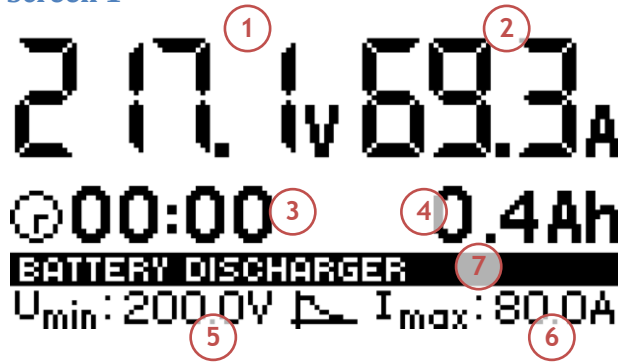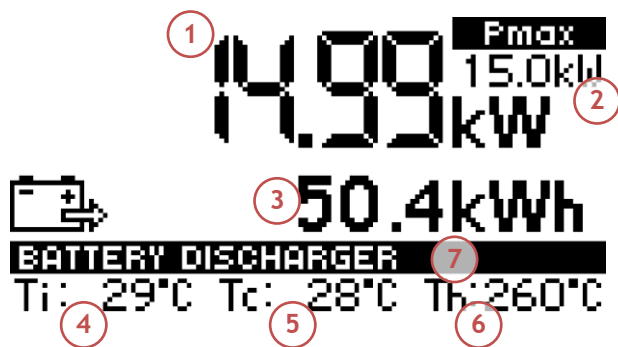

Screen 1   Screen 2

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	The discharge was temporally interrupted by pressing [STOP] button. By pressing [START] button the discharge starts-up from the point where it was interrupted.

Technical specifications

Feeding terminals

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

Battery terminals

- Minimum working voltage: 60 V
- Maximum working voltage: 510 V
- Maximum discharging power: 15 kW
- Peak discharging current: 78 A
- Fuse: 100 A
- Cable length: 4 m

General

- Dimensions: 425 x 325 x 610 mm
- Weight: 26 kg
- Ventilation: forced
- Air flow rate: 1600 m3/h

Protections and safety

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

Constant current operating limits

Discharging current	Minimum battery voltage	Maximum battery voltage	Maximum power
10 A	60 V	510 V	5,1 kW
20 A	60 V	510 V	10,2 W
30 A	75 V	500 V	15,0 kW
40 A	100 V	375 V	15,0 kW
50 A	125 V	300 V	15,0 kW
60 A	150 V	250 V	15,0 kW
70 A	175 V	214 V	15,0 kW

Constant power operating limits

Discharging power	Minimum battery voltage	Discharging power	Minimum battery voltage
2 kW	60 V	10 kW	158 V
4 kW	100 V	11 kW	166 V
6 kW	122 V	12 kW	173 V
7 kW	132 V	13 kW	180 V
8 kW	141 V	14 kW	187 V
9 kW	150 V	15 kW	193 V

Operating area
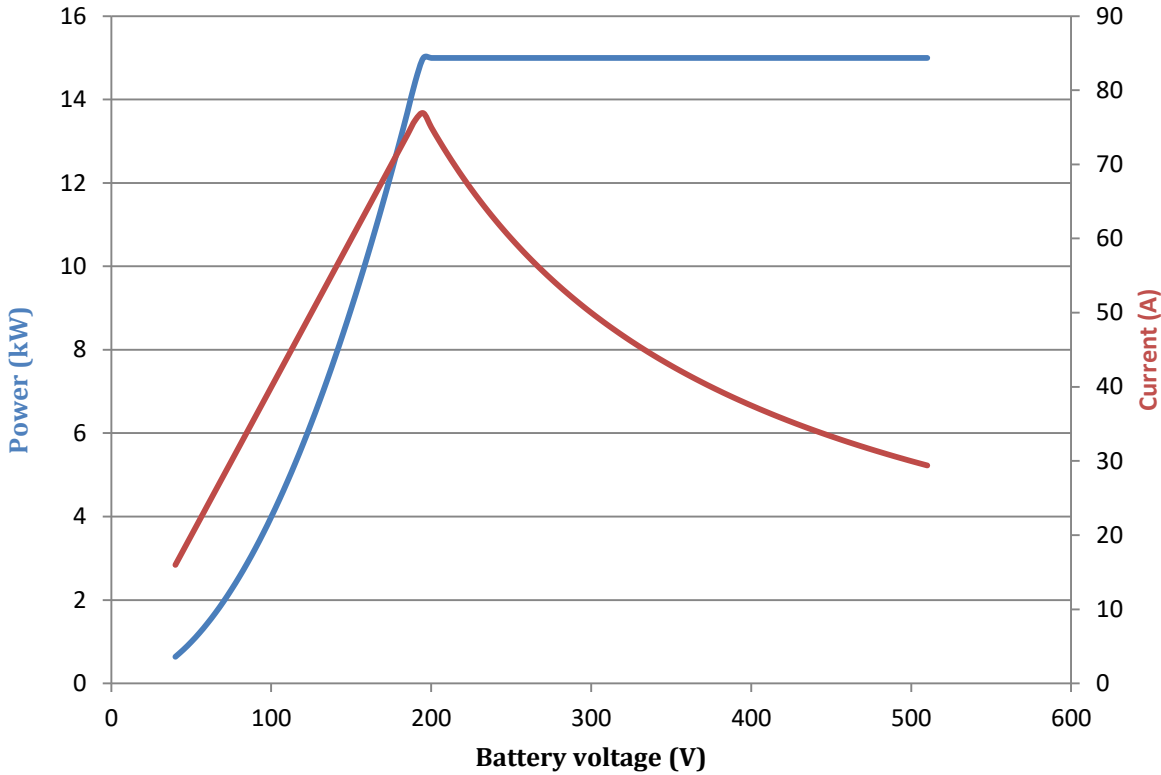
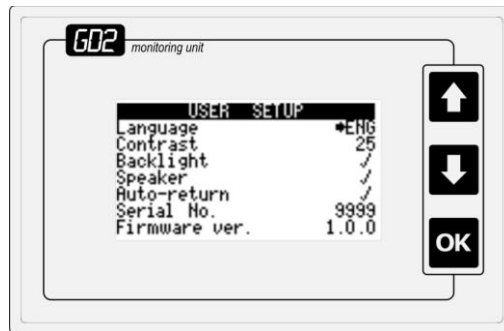## Power derating (over temperature protection)
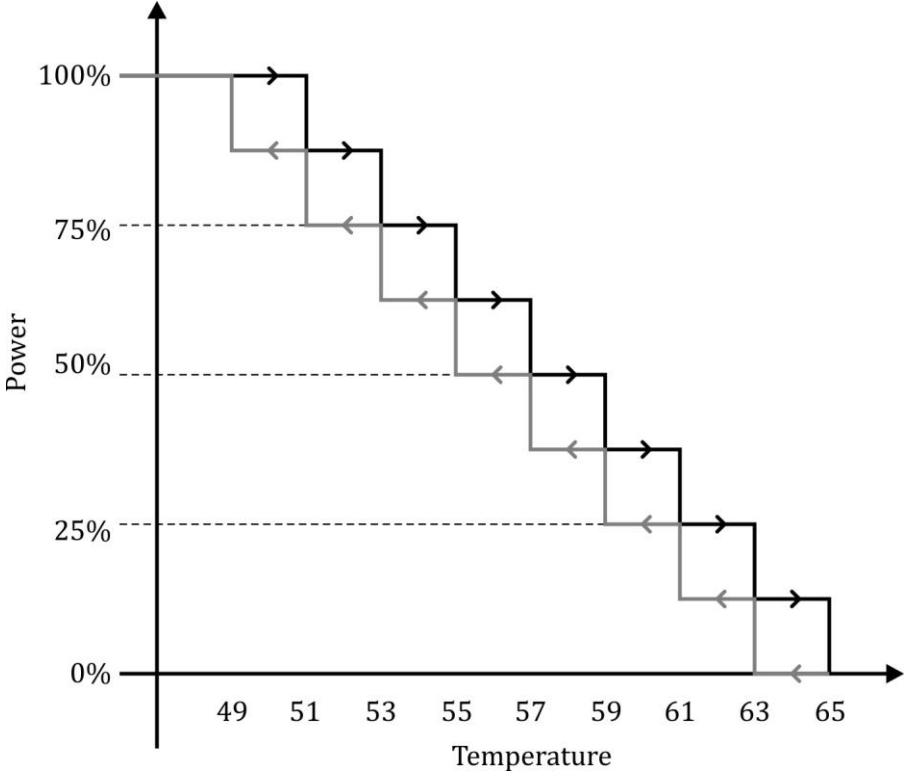
GD2BD parameter settings

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


You will enter the first page of setup, which requires no PIN code to change 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 Write-access PIN code on the second page:
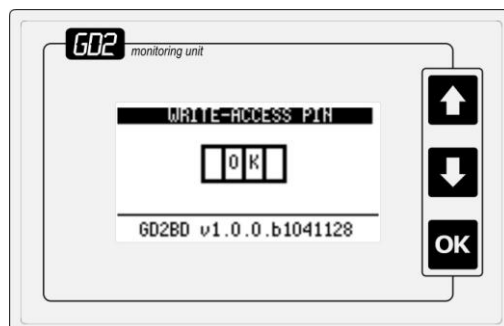
When entering a PIN code, press [OK] to enter edit mode. Then select the first digit with [UP] / [DOWN] and press [OK] to proceed to the next digit. Repeat the procedure until all digits are entered. If you have entered a valid PIN code, you will be granted permission to change all parameters. If not, 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 PIN code.

USER SETUP	
Language	➡ENG
Contrast	25
Backlight	✓
Speaker	✓
Auto-return	✓
Serial No.	9999
Firmware ver.	1.0.0

P1.1	Language	
	Select the desired language. Currently, English and German languages are supported	
	Range: [ENG] / [DEU]	
P1.2	Contrast	
	Select contrast of 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 ▇▇▇▇

        ┌──┬──┐
        │ O│ K│
        └──┴──┘

    ─────────────────────────
      GD2BD v1.0.0.b1041128
```

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

```
▇ DISCHARGING PARAMETERS ▇
Discharge current  80.0A
Min.batt.voltage  200.0V
Ah limit           0000A
Time limit         --:--

Max. voltage      440.0V
Max. power        15.0kW
```

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: 0.0A – 96.0A
P2.2	Min. batt. voltage
	Minimum battery voltage at which discharging will be terminated or discharging stop voltage.
	Range: 42.0 V – 510.0 V
P2.3	Ah limit
	Range: 0 Ah – 199 Ah (Set to 0Ah for Off).
P2.4	Time limit
	Maximum discharging duration. When discharging time exceeds 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	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: 42 V –510 V
P2.6	Max. power
	Maximum discharging power.
	Range: 0 kW – 15.0 kW

Error messages and error codes

List of all messages and error codes is provided below:

ERROR 01: Battery disconnected

ERROR 02: WDT error

ERROR 03: Battery voltage too low

ERROR 04: Overheat

ERROR 05: Supply voltage too low

ERROR 06: Overheat thermostat tripped

ERROR 07: Discharging element failure

ERROR 08: Battery voltage too high

ERROR 09: Output stage faulty

ERROR 10: Temperature sensor faulty