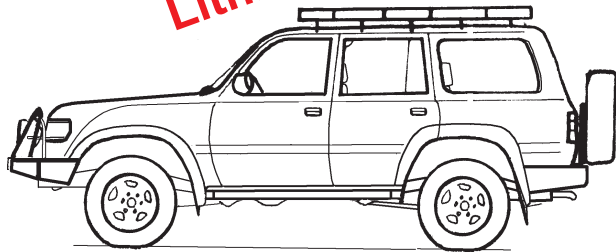


IBS Intelligent Battery System 
the ultimate Battery System

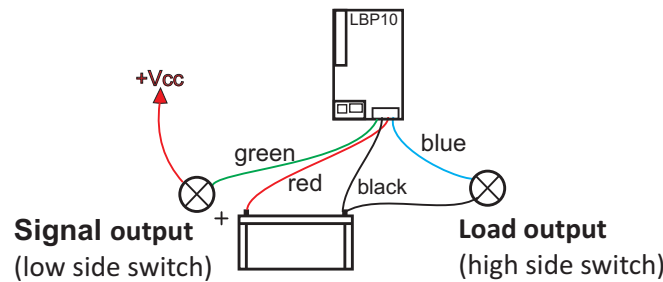
10A Low Batterie Protection

Lithium compatible

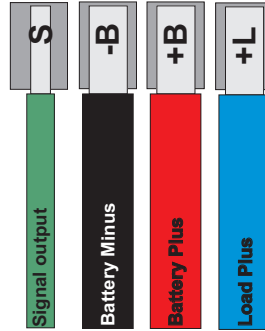


Installation

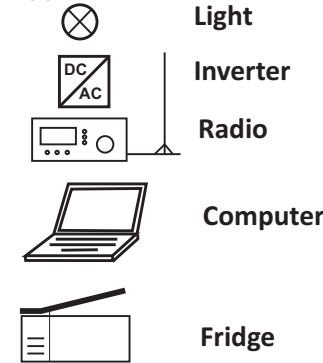
Wiring



Connection cable to LBP10:



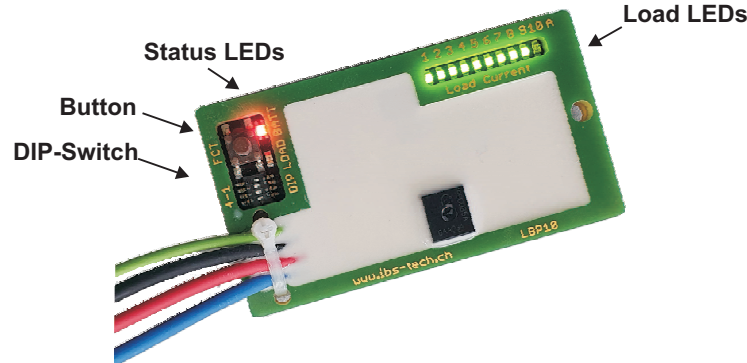
appliances



Batt LED and Load LED display:

Batt LED	Load LED	Lead-Main	Lithium-Main	Lead-Aux	Lithium-Aux
★		> 13.5V	> 13.5V	> 13.5V	> 13.5V
●		> 12.5V	> 13.2V	> 12.5V	> 12.7V
●		12.0V-12.5V	12.6V-13.2V	11.8-12.5V	12.0-12.7V
●		< 12.0V	< 12.6V	< 11.8V	< 12.4V
★		< 11.6V	< 12.2V	< 11.4V	< 12.0V
★	●	Deep disch.	Deep disch.	Deep disch.	Deep disch.
	●	Load discon.	Load discon.	Load discon.	Load discon.

* For a 24V system, the voltage levels are twice as high



Users Manual

Basic Function Description

The deep discharge protection switches off the appliance when reaching the set total discharge value (about 11.6V), whereby the **Load Led** lights up red. When charging again, or when the battery voltage reaches the upper switching value (about 12.6V), the load is automatically switched back on, with the **Load Led** going out.

The load current is displayed with 10 green LEDs, from 1-10A. **If the load is too high, all 10 load current LEDs will flash** and the LBP10 will turn off the load of appliance as well. Another function of the LBP10 is the battery voltage indication by means of the **Batt Led**, which displays the voltage in three stages (see Batt and Load LED display table). The LBP10 is equipped with a signal output (Open Collector) for early warning before the load is switched off.

Connection panel additional functions

DIP switch settings:

DIP Switch	Off (default)	On
1 measuring method	Current sensing (RiCT)	voltage sensing
2 Battery type	Lead Battery	Lithium Ion Battery
3 Application	Starter Battery	Bord Battery (AUX)
4 Runflat emergency FCN	Disabled	Enabled

DIP-Switch1: The RiCT measurement accurately measures the cut-off value via the internal resistances. The voltage measurement can be used if the load is only controlled by the voltage.

DIP-Switch2: Selection of lead or lithium type battery.

DIP-Switch3: With the AUX (bord battery) setting, the cut-off value is approx. 0.2V lower than when the starter battery is set.

DIP-Switch4: The runflat function keeps the load in emergency powered on below the deep discharge value until the runflat safety off level is reached. This can lead to a deep discharge and should only be activated in an emergency. After activating this DIP switch function, the runflat function must be started by pressing the button for 10 seconds. Press the button again for 10 seconds to switch off the runflat function. If the button is pressed for 10 seconds without changing the DIP-Switch4, all LEDs will flash.

Button functions

Reset function of the shutdown (Load turn off)

After the deep discharge protection has switched the Load off, the appliance can be switched on again without supplying any charge by pressing the button. The appliance is fed until the depth discharge value is reached again. If the battery charge is lower than safety turn off no further reset (further Load re-activation) with button is possible anymore, the battery should be connected to a charger immediately. If the battery is Lithium-Type with BMS it might be the battery electronics turns off before LBP10 safety turn off value, in this case battery has first to be charged!

Manual load disconnection

If the appliance is no longer to be supplied with power, the button can be used to disconnect the load manually from the battery (pressing the button for 5 seconds).

Activate / deactivate runflat

After pressing the button for 10 seconds, the runflat function is activated and the load is fed until runflat safety off. After pressing the button again for 10 seconds the runflat function is deactivated. (If DIP-switch 4 is activated).

Installation Instructions

Function signal output green

The green signal output (Open Collector, LowSide Switch) allows to shut down a system before the power is turned off. The signal output will be switched on 30 seconds after the low battery criteria is valid. 2 minutes later the load is switched off.

With this signal output can be fed:

(load < 50mA, fused by automatic internal fuse)

- small relay
- solid state relay
- opto-coupler (LED)
- alarm buzzer
- alarm LED

All these listed appliances must be connected to system voltage + 12V or + 24V, **no mains voltage!**

LBP10

The deep discharge protection is measured on the cable length of the battery plus (red) and minus battery (black) cables. The original cable length to the battery should be retained. If the cables still need to be extended, disconnect cables + B (red) and -B (black) near deep discharge protection and extend with 1.5mm² (3m connection length) or 2.5mm² (5m connection length). The connection cables load plus (blue) and signal connection (green) can be extended or shortened as desired. The electronic module is 100% protected against overload or short circuit.



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MADE IN SWITZERLAND

Distributor:

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Areas of application

LBP10

Battery monitoring for appliances up to 10A.

Technical specifications

To ensure that the deep discharge protection does not switch off when starting larger appliances (eg. compressor refrigerators), a time delay with hysteresis $dU = 0.6V$ is built in.

The deep discharge protection (basic module LBP10) is electronically protected against reverse polarity, overload, reverse feed and spike impulses. The module is equipped with microcontroller technology (μC) and switches in high-side switch technology.

Other IBS products:

- Dual battery systems for vehicle use (classic and DC/DC charger)
- Ultra Sine Inverter 150W-1600W 12V and 24V
- Mobile and portable solar systems
- Batteries Lithium (LiFePO₄), **12V**:50/100/180Ah **24V**:160Ah
- Low Battery Protection 8A/10A/16A

Warranty, liability

Unless otherwise stated, the IBS equipment is guaranteed for 2 years. Our warranty expressly excludes all liability for direct and indirect damages, e.g. Business interruption, loss of use and other financial losses.

The warranty includes the repair or replacement of a defective device by IBS.

Technical specifications

LBP10

System voltage (automatic detection)	12 or 24V
Supply voltage range	8-16V & 16-32V
System voltage detection	automatically
Current consumption module LBP10	1-10mA
Load current electronically protected	max 10A
Load output	High Side Switch
Signal output (green wire)	max 50mA (OC)
Signal output	Low Side Switch

The following values are U_o with RiCT measurement

Switch-off value lead on Main	12.0V
Switch-off value lithium on Main	12.6V
Switch-on value lead on Main	12.6V
Switch-on value lithium on Main	13.2V
Switch-off value lead on Aux	11.8V
Switch-off value lithium on Aux	12.4V
Switch-on value lead on Aux	12.6V
Switch-on value lithium on Aux	13.2V
Runflat safety off	10.0V

Battery size	freely selectable
Battery type	lead or lithium

Temperature working range	-20 ° .. +80 ° C
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Housing	GRP/FR4, Silicone
Circuit Board (Print)	IPC3 (MIL/SPACE)
Dimensions	78x43x7 (12) [mm]

Sealing degree	Silicone, IP65
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Protection:

- against reverse polarity
- against overload, short circuit
- against reverse feed
- against surge and spike impulses, E24 protection

In the event of damage caused by incorrect installation, negligence, accident or misuse, any liability is rejected.

