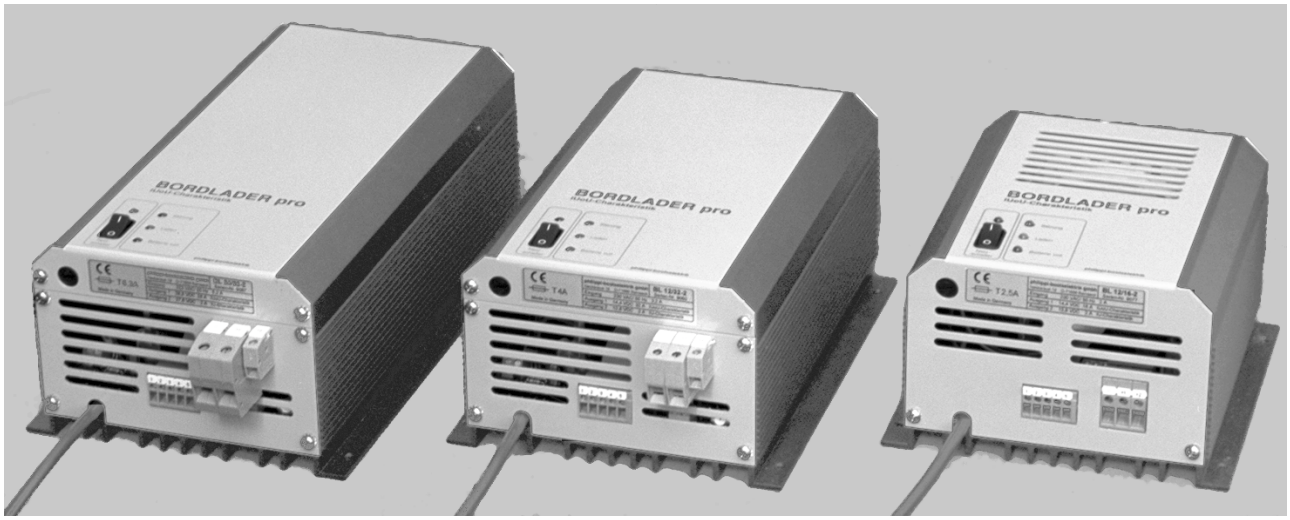
BORDLADERpro

with IU0U Characteristics

BL 12/xx, BL 24/xx
BL 12/xx-2, BL 24/xx-2



Introduction

„philippi BORDLADERpro“ are designed to to charge all types of lead as well as gel accumulators on yachts and pleasure crafts. These on-board chargers are able to charge a on-board battery (IU0U characteristic) and a starter battery (IU-characteristic) at the same time. A second starter battery may be connected if required.

Features

Complete DC power supply on-board

These Chargers are able to provide for the complete DC power supply on-board, while at the same time charging the on-board batteries with combined IU0U-characteristic. Separately, a second charger step with IU-characteristic charges the starter battery. -The tickle charge is suitable for a permanent winter charging of both batteries.

Automatic charging process

The newly developed control eliminates dangerous gassing. Optimal charging conditions result from the IU0U characteristic curves and automatic temperature compensation of output voltage ensures optimum charging conditions and prolonged battery life.

Permanent Connection

The charger may remain permanently connected without danger to the batteries. The BL -2 with a second output will charge two separate batteries such as starter and service batteries simultaneously. The tickle charge is ideal for maintaining both batteries topped up through the winter. With no main circuit on or when the charger is disonnected there is a very low reverse current (less than 1mA) to the batteries and no power consumption.

Protection aganist Reversed Polarity

Battery charger and its electronics will not be damaged by reversed polarity connection.

Sea Water Resistant Materials

The aluminium housing of the chargers is sea-water resistant and finished in a plastic protective coating. Screws are in stainless steel. Transformers are hermetically sealed and thus protected against humidity.

Caution

Check the tension and polarity of the battery before connecting! Any modification to the charger renders the warranty viod. It is not possible to operate the charger output in combination with a multi battery isolator.

Installation

Chargers should not be installed in the battery space nor a gasoline engine room nor where the fuel tanks are located, due to explosion hazard arising from gassing vapours (oxyhydrogen) of batteries or gasoline fumes. Please ensure that chargers are installed where is sufficient air circulation to cool the power electronics and transformer. Please ensure that the chargers are properly fastened down mechanically.

Electrical connection

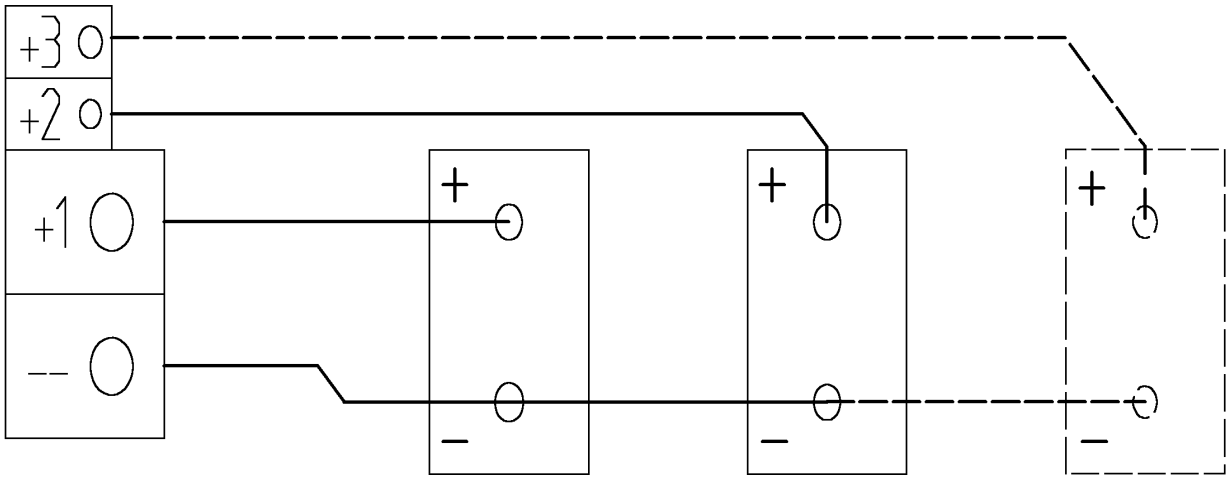
Shore-power connection

To avoid electric shock only use sockets with a terminal for the protective conductor. The 230 V / 50 Hz shore power connection must be made via the installation cable (3x 0,75mm²) with plug. To extend the cable only use conductors with protective connectors

Battery connection

The connection plugs are on the front of the housing. Please do the installation as shown in the wiring diagram. It is very important that the charging leads are connected directly to the batteries, to get the best performance of the charger. Battery leads connected to the charger should also be protected by appropriate protection devices -please see our sales catalogue. *Place the temperature sensor near the housing of the service battery.*

Wiring diagram



terminals charging wire	**sections**	**dimensions**			
		charger 8 A	**charger 16 A**	**charger 32 A**	**charger 48 A**
negative pole (-)	all batteries (-)	2,5 mm²	4,0 mm²	10,0 mm²	16,0 mm²
positive pole (+1)	service battery (+)	2,5 mm²	4,0 mm²	10,0 mm²	16,0 mm²
positive pole (+2)	starter battery (+)	2,5 mm²	2,5 mm²	2,5 mm²	2,5 mm²

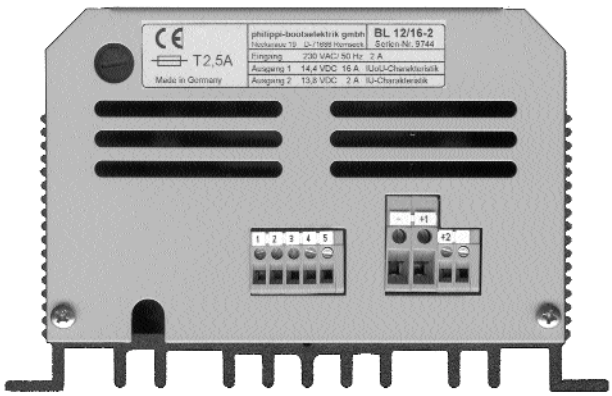
Temperature sensor and control panel (option)

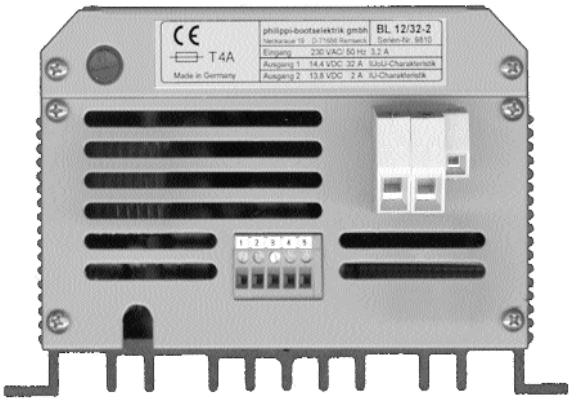
Connect the temperature sensor and the optional control panel at the front side of the housing as shown in table 2:

Table 2	colour of the cable	connetor on the housing	additional
temperature sensor	blue	1	put the temperature sensor at one of the service batteries
	brown	2	
control panel (accessory FB-P)	brown	3	
	black	4	
	blue	5	

If the temperature sensor is not connected, the charger loads the service battery with a maximum voltage of 14,4 V /13,8 V. These are the equivalent values for a battery temperature of 20°C

Design and performance





Mains fuse (Netzsicherung)

The mains fuse will damage when the transformer or the electronic is defective. Please replace it against a new one with the same size. Neither replace it with a shortend fuse. If the replaced mains fuse breaks immediate the charger has been damaged. Is this case please contact the manufacturer or inform your dealer.

Mains switch

The battery charger may be switched ON or OFF by means of the mains switch. With the switch OFF the electronic control with the battery connected will require less then 1 mA only. If the charger is installed where it is not easily accessible, the switch may be permanently ON. In this case the battery charger is switched ON or OFF by means of an external switch in the power circuit.

Charging control

Three LEDs at the front of the housing indicates that the charger operates. The following table shows the operating condition of the charger

LED		operating condition
green (Batterie voll)	on	The connected service battery has arised his maximun capacity (100% full) and the thickle charge is running.
yellow (Laden)	on	The main charge is running.
red (Störung)	on	To protect the charger against overheat the operation is stopped when the temperature of the housing has reached 80 °C. The charging process starts automatically when the temperature of the housing is lower than 50

		°C. The red signal lamp will flash while the green or yellow lamp is also on.

When the charger is switched on (red lamp is illuminated) and none of the signal lamps come on, the battery is not connected, or the poles are reversed, or starting current is lower than 10 percent of the rated current.

Trouble-shooting guide

Mains control lamp is not on:
- Is the charger on ? Check the power cable
- Is the mains fuse broken ? Replace it against a new one with the same size. Neither replace it with a shortend fuse. If the second mains fuse breaks the second time the charger has been damaged. Please inform your dealer or contact the manufacturer.

Yellow Led (laden) is not illuminated while the charger is in operation
- The yellow charching indicator lamp is illuminatedwhen is charging current is higher than 10 percent of the rated current. Please switch on a 12V consumer for a second to increase the charging current. The yellow will be illuminated.

Charging voltage against battery temperature

-10	30	15	14,4			
0	30	15	14,4			
10	29,4	14,7	14,1			
20	28,8	14,4	13,8			
30	28,2	14,1	13,6			
40	27,6	13,8	13,4			
50	27	13,5	13,2			

Ratings

BORDLADERpro	**BL 12/32**	**BL 12/32-2**	**BL 12/48**	**BL 12/48-2**
Mains	AC 230 V/50 Hz			
Rated input current	3,0 A	3,2 A	4,4 A	4,6 A
Rated input performance	690 VA	730 VA	1010 VA	1050 VA
mains fuse	4 AT	4 AT	5 AT	5 AT
Rated output voltage	12 V			
Voltage IU (20°C)	14,4 V			
Voltage oU (20°C)	13,8 V			
Curves service battery	IUoU			
max. Charging current service battery	32 A	32 A	48 A	48 A
Curves starter battery		IU		IU
max. Charging current starter battery		2 A		2 A
Operation Temperature	-5 °C to 40 °C			
Weight	7,9 kg	7,9 kg	10,0 kg	10,0 kg
Dimensions WxDxH	180x115x280 mm		180x115x340 mm	

BORDLADERpro	BL 12/8	BL 12/8-2	BL 12/16	BL 12/16-2
Mains	AC 230 V/50 Hz			
Rated input current	0,85 A	1 A	1,85 A	2 A
Rated input performance	195 VA	230 VA	425 VA	460 VA
mains fuse	1 AT	1,25 AT	2,5 AT	2,5 AT
Rated output voltage	12 V			
Voltage IU (20°C)	14,4 V			
Voltage oU (20°C)	13,8 V			
Curves service battery	IUoU			
max. Charging current service battery	8 A	8 A	16 A	16 A
Curves starter battery		IU		IU
max. Charging current starter battery		2 A		2 A
Operation Temperature	-5 °C to 40 °C			
Weight	4,4 kg	4,4 kg	5,5 kg	5,5 kg
Dimensions WxDxH	180x115x170 mm		180x115x190 mm	

BORDLADERpro	BL 24/14	BL 24/14-2	BL 24/28	BL 24/28-2
Mains	AC 230 V/50 Hz			
Rated input current	2,2 A	2,4 A	4 A	4,2 A
Rated input performance	500 VA	550 VA	910 VA	960 VA
mains fuse	3,15 AT	3,15 AT	6,3 AT	6,3 AT
Rated output voltage	12 V			
Voltage IU (20°C)	14,4 V			
Voltage oU (20°C)	13,8 V			
Curves service battery	IUoU			
max. Charging current service battery	14 A	14 A	28 A	28 A
Curves starter battery		IU		IU
max. Charging current starter battery		2 A		2 A
Operation Temperature	-5 °C to 40 °C			
Weight	7,5 kg	7,5 kg	10 kg	10 kg
Dimensions WxDxH	180x115x280 mm		180x115x340 mm	

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