

NBC 12V 4B



1 Introduction

NBC 12V 4B is a complete solution to use only one product to control and charge one or four independent batteries 12V 7.2Ah acid lead. The batteries are recharged and monitored independently even when they are connected in series between them.

2 Functionality

NBC 12V 4B is the ideal solution to recharge and analyze 12V batteries, remaining always connected to the battery without any risk and without need to disconnect the battery from the equipment. This allow to maintain the battery always charged also through long (up to months) idle period. NBC 12V 4B provides a maximum current up to 0.3A each stage. This product is suitable for standard batteries (acid lead) which normal charge could be evaluated at 0.057A per each Ah of capacity. Each stage is equipped with its own microprocessor to allow analysis on the battery behavior.

Battery status monitoring during normal function (in presence of main voltage):

- Battery disconnected or short circuit (battery LED LIT with RED color, alarm output ACTIVATED).
- Battery connected and charged, voltage higher than 12.8V (Battery LED LIT with GREEN color, alarm output NOT ACTIVATED).
- Battery connected and in charging, voltage in the range 11.5V - 12.8V (Battery LED blinking RED and GREEN, alarm output NOT ACTIVATED).
- Battery connected with voltage lower than 11.5V, battery is considered not compliant with the required specifications "battery damaged" (battery LED LIT with RED color, alarm output ACTIVATED).

Battery status monitoring during emergency condition (lack of main voltage power supply):

In an emergency status, so when the battery starts running, the device allows you to track the battery voltage. When the battery voltage drops below 9.5V the device will give an alarm (RED LED ON and alarm output ENABLED).

NBC 12V 4B uses a single universal supply voltage (V_{in} from 110-230VAC).

3 General Technical Data

GENERAL TECHNICAL DATA	
Input Voltage	110÷230 Vac, 50÷60 Hz
Battery charger voltage (no load)	13,6 V
Max Current (for battery stage)	0.300 A Max
Battery type	12V – 7,2Ah acid lead
Connection cables sections	Battery cables: min 0.75 mm ² / Alarm cables: min 0,35 mm ²
Protections	Short circuit, over current, over temperature. Automatic restart after fault removal.
Housing	Box IP 20, Thickness 22.5mm, Height 115mm, Width 105mm
Battery Full Charging Time	24 h
Working Temperature	0° ÷ 50°C
Storage Temperature	-5° ÷ +70°C

4 Battery Status

The control unit is able to detect certain conditions that allow an analysis of the status of the battery

Battery status during normal function (in presence of main voltage)			
Battery status	(Led Batt.)	Output Alarm	Description
Battery disconnected, short circuit or discharge	On Red	Alarm On (Closed)	Voltage lower than 11.5V
Battery connected and charged	On Green	Alarm Off (Open)	Voltage higher than 12.8V
Battery connected in charge	Blink Red / Green	Alarm Off (Open)	Voltage in the range 11.5V - 12.8V

Battery status during emergency condition (lack of main voltage)			
Battery status	(Led Batt.)	Output Alarm	Description
Battery worn out	On Red	Alarm On (Closed)	Voltage lower than 9.5V
Battery connected and charged	On Green	Alarm Off (Open)	Voltage higher than 9.5V

The analysis of the status of the battery is the same for all 4 stage in the 4B version.

5 Connectors

Input:

Name	Description	Range V	Max I
N	Neutral	110-230Vac	250mA
F	Phase	110-230Vac	250mA

Output:

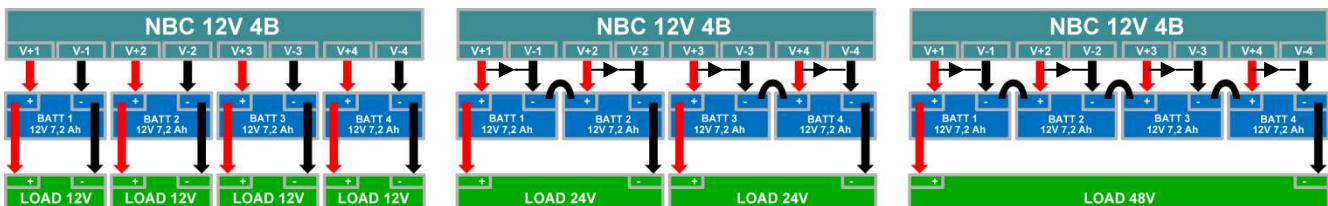
Name	Description	Range V	Max I
V+1	Battery voltage + (1 channel)	5-15Vdc	0.300A
V-1	Battery voltage - (1 channel)	5-15Vdc	0.300A
A11	Optoisolated NPN type Alarm 1 (Collector)	0-30Vdc	0.05A
A12	Optoisolated NPN type Alarm 1 (Emitter)	0-30Vdc	0.05A
V+2	Battery voltage + (2 channel)	5-15Vdc	0.300A
V-2	Battery voltage - (2 channel)	5-15Vdc	0.300A
A21	Optoisolated NPN type Alarm 2 (Collector)	0-30Vdc	0.05A
A22	Optoisolated NPN type Alarm 2 (Emitter)	0-30Vdc	0.05A
V+3	Battery voltage + (3 channel)	5-15Vdc	0.300A
V-3	Battery voltage - (3 channel)	5-15Vdc	0.300A
A31	Optoisolated NPN type Alarm 3 (Collector)	0-30Vdc	0.05A
A32	Optoisolated NPN type Alarm 3 (Emitter)	0-30Vdc	0.05A
V+4	Battery voltage + (4 channel)	5-15Vdc	0.300A
V-4	Battery voltage - (4 channel)	5-15Vdc	0.300A
A41	Optoisolated NPN type Alarm 4 (Collector)	0-30Vdc	0.05A
A42	Optoisolated NPN type Alarm 4 (Emitter)	0-30Vdc	0.05A

6 Connection diagram

independent batteries (Load 4 x 12V)

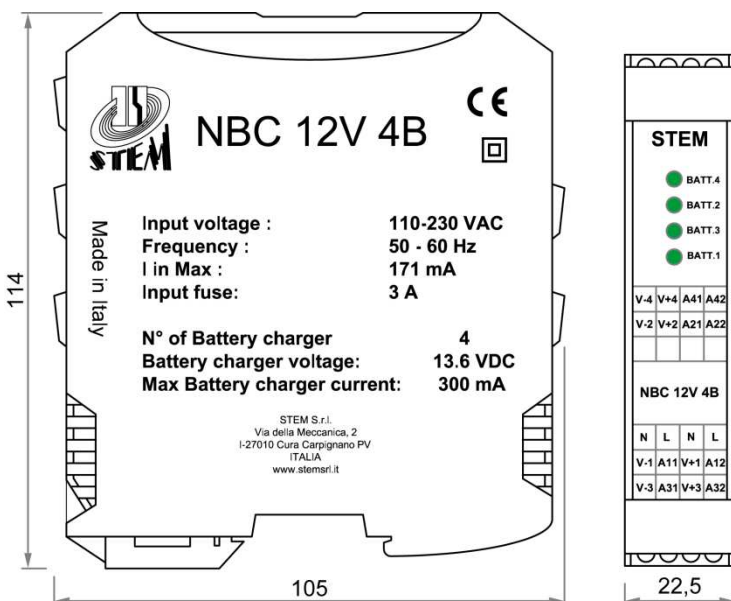
batteries in series (Load 2 x 24V)

batteries in series (Load 1 x 48V)



*In case of connecting in series batteries, it is necessary to insert a bypass diode which protects the battery charger if the battery has an open element, preventing any current passing through the device. The model and sizing of the diodes must be evaluated based on the electrical characteristics of the load.

7 Mechanical



Assembly:

Installation must be performed by authorized personnel only. The NBC12V4B unit must be assembled in a suitable operating area (switch cabinet, protective housing, at least IP 54). The unit is installed by clipping it to a standard 35 mm top-hat rail in accordance with EN 50022.

Service and Inspection:

No servicing is required. In order to ensure lasting, trouble-free operation, regular inspection of the following is required:
 - correct LED status
 - closed connections.
 In the event of damage or wear and tear, the damaged system component must be replaced.

Liability coverage is void under the following circumstances:

- if instructions are not followed
- non-compliance with safety regulations
- installation and electrical connection not performed by authorized personnel
- non-implementation of functional checks.