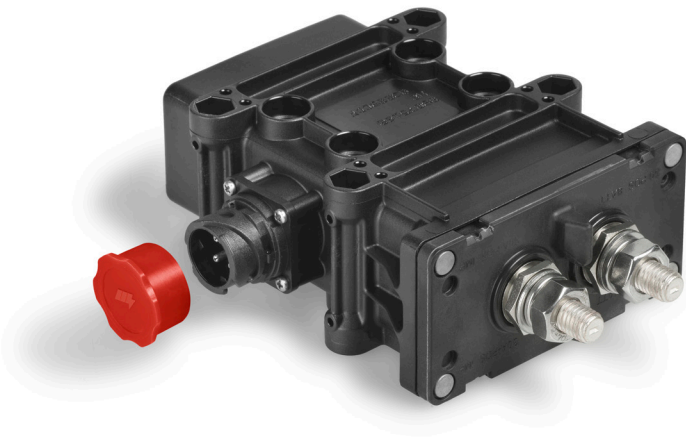




Description

The Heavy Duty Bi-Stable Relay disconnects the positive pole of the battery from the vehicle electrical system without any delay. Based on magnetic principles, it absorbs current only during the commuting phase or when switched from OFF to ON and vice versa. It has immediate switch ON and immediate switch OFF, positive disconnection and 250A or 500A current rating.

Ordering Information

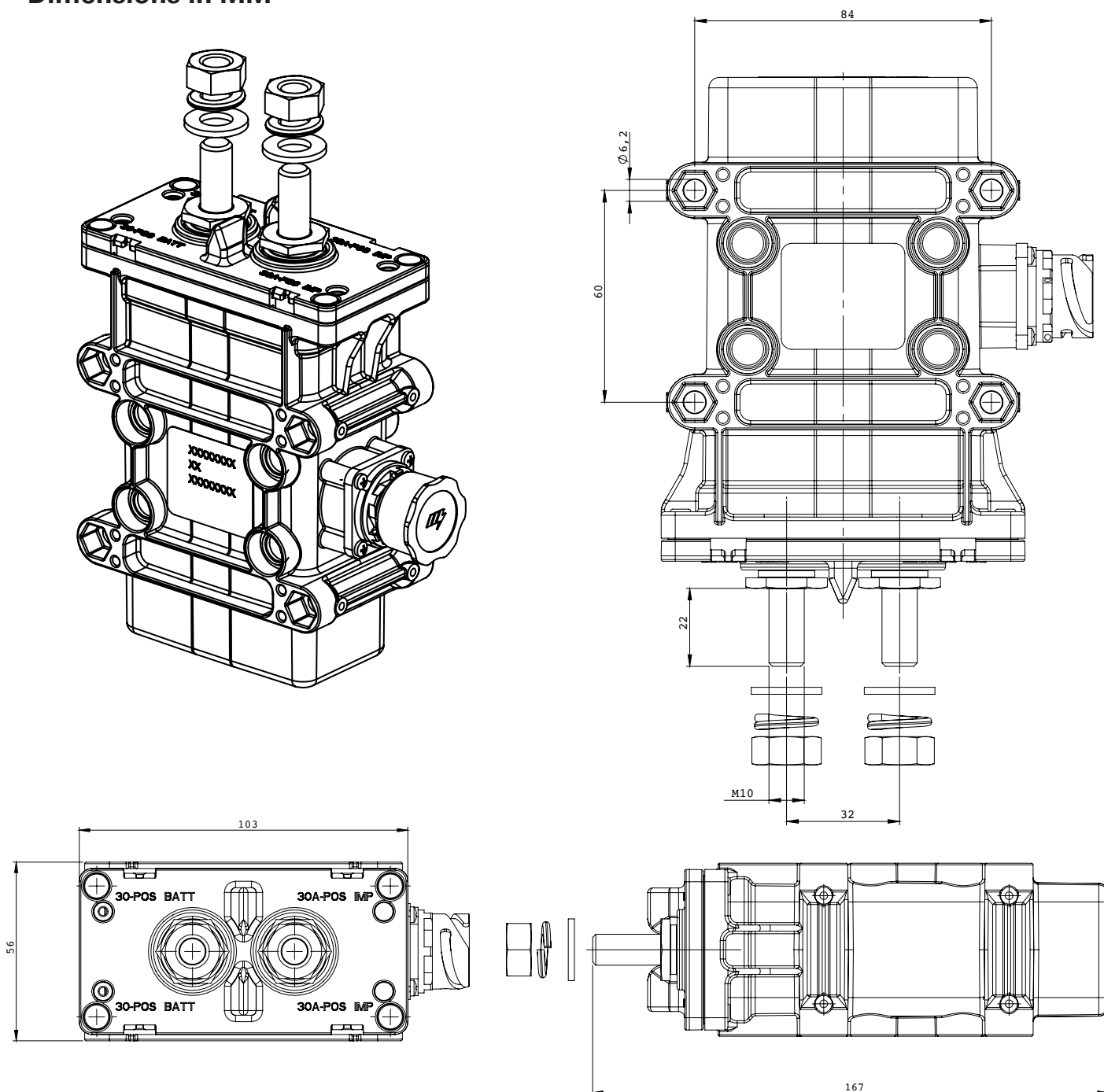
PART NUMBERS	DESCRIPTION
14.389.01	Heavy Duty 250A Battery Main Switch

Specifications Overview

Amperage:	250A or 500A
Voltage Ratings:	12V/24V
Operating Temp:	-40°C to 85°C
Ingress Protection:	IP67/IP69K
Color:	Black
Counter-Connector:	4-Way DIN
Voltage Range:	10V to 32V @ 23°C
Max. Cranking Current:	1000A x 30 Sec.
Max. Peak Current (S.C.):	2000A x 5 Sec.
Quiescent Current:	0.6mA @ 12V 0.6mA @ 24V
Input Active Line Current:	2.5mA @ 12V 5mA @ 24V
Delay Time:	No Delay

* To guarantee the declared IP degree, all sealing parts shall be mounted (both on connector and single wire)

Dimensions in MM



ATTENTION

The following information must be reviewed before beginning the assembly:

- The installation instructions are to be thoroughly read.
- The installation should be carried out by qualified personnel with the relevant technical knowledge.
- The vehicle manufacturer's current technical notices and information on retrofitting must be followed.
- LITTELFUSE is not responsible for improper use of the product once installed.

Mechanical Fixation

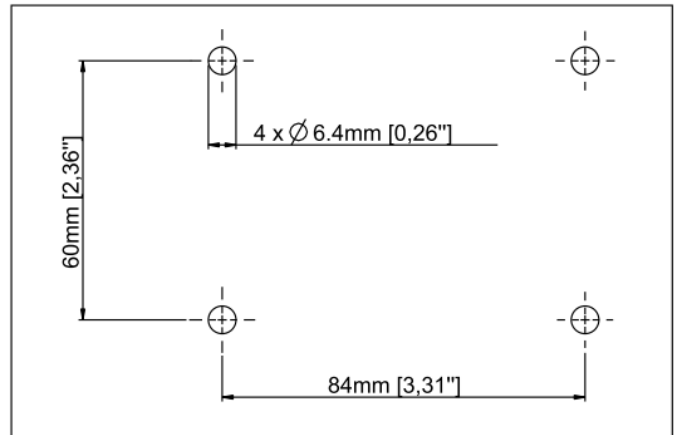
BATTERY MAIN SWITCH

Using 4 M6 bolts with a closing torque on nuts of $6 \pm 2 \text{ Nm}$ [$53,1 \pm 17,7 \text{ lbf} \cdot \text{in}$] fix the BMS to the chassis in a protected position:

- As close as possible to the battery (the cable length between the BMS and the battery pole should be $< 0,5 \text{ m}$ [$20''$]);
- At 0.8 m [$31,5''$] (at least) from the ground;
- Not exposed to gravel impacts;

The device can be installed in any orientation except with studs pointing to the ground; protections for studs are recommended (whether the BMS is installed inside or outside the battery box).

Battery Main Switch



EXTERNAL EMERGENCY SWITCH

Using 2 M6 bolts with a closing torque on nuts of $8 \pm 2 \text{ Nm}$ [$70,8 \pm 17,7 \text{ lbf} \cdot \text{in}$] and referring to the fixing diagram, fix the switch to the chassis in a protected position:

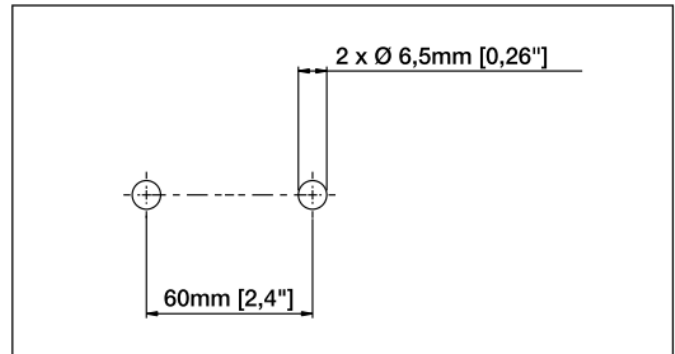
As close as possible to the driver door (the switch shall be clearly visible and easily accessible);

At 0.8 m [$31,5''$] (at least) from the ground;

Not exposed to gravel impacts.

If any other switch is used, it shall have minimum contact current rating of 5 mA (at 12 V and 24 V) and IP67/IP69K Protection Degrees

External Emergency Switch



4-Way DIN Connector: PIN OUTPUT

ACTIVE STATE		DESCRIPTION
C1	Low	Remote switch-ON command reading input line Active LOW signal
C2	Low	Remote switch-OFF command reading input line. Active LOW signal
C3	—	Device GND
C4	—	NOT USED

WARNINGS

- Osculati guarantees the product 24 months against fabrication defects, in compliance with applicable laws and terms of liability. All damages caused by improper - handling, installation, use, service or lack of service will void warranty. It is also excluded malfunctions attributable to outside phenomena, Littelfuse will take over the possible replacement of the defective product at its own discretion. In case of controversies or disputes related to the product and/or interpretation of the warranty conditions of the competent FORUM OF VERONA
- Osculati is not liable for any damage that can, directly, or indirectly, affect persons, objects and pets as a consequence of failure to comply with the indications included in this manual.
- Osculati reserves the right to change the features and data described in this manual without forewarning, in order to improve the product. This manual cannot be considered as a contract for a third party.

Electrical Connection

For the electrical connection of the Battery Main Switch to the vehicle system, refer to the wiring diagram by side.

COMMAND CONNECTIONS

- **S1** (dashboard push button or external chassis switch) is a switch for the device activation. It shall have minimum contact rating of 5mA (at 12V and 24V);
- **S2** (dashboard push button or external chassis switch) is a switch for the device activation. It shall have minimum contact rating of 5mA (at 12V and 24V);

S1 and S2 can be physically included in a unique device, having double momentary switching OFF and ON.

POWER CONNECTIONS

- Power cables with total section of 90 mm² [AWG 3/0] or more for each stud are recommended;
- Maximum closing torque on M10 studs: 19Nm [168,1 lbf*in].

Operations Modes

INPUT COMMANDS

Valid input switching commands are the following:

- Valid OFF command: S2 shall be kept to "OFF" state for TOFF>100ms
- Valid ON command: S1 shall be kept to "OFF" state for TON>100ms

Switching S1 or S2 for a time <100ms will not produce valid commands.

SWITCH-OFF

- With the Battery Main Switch in ON status, providing a valid switch-OFF command, the ECU drives the Battery Main Switch to OFF status 100ms after the S2 is switched to OFF.
- Battery Main Switch remains in OFF status until the next valid switch-ON command.

SWITCH-ON

- With the Battery Main Switch in OFF status, providing a valid switch-ON command, the ECU drives the Battery Main Switch to ON status 100ms after the S1 is switched to ON.
- Battery Main Switch remains in ON status until the next valid switch-OFF command.

