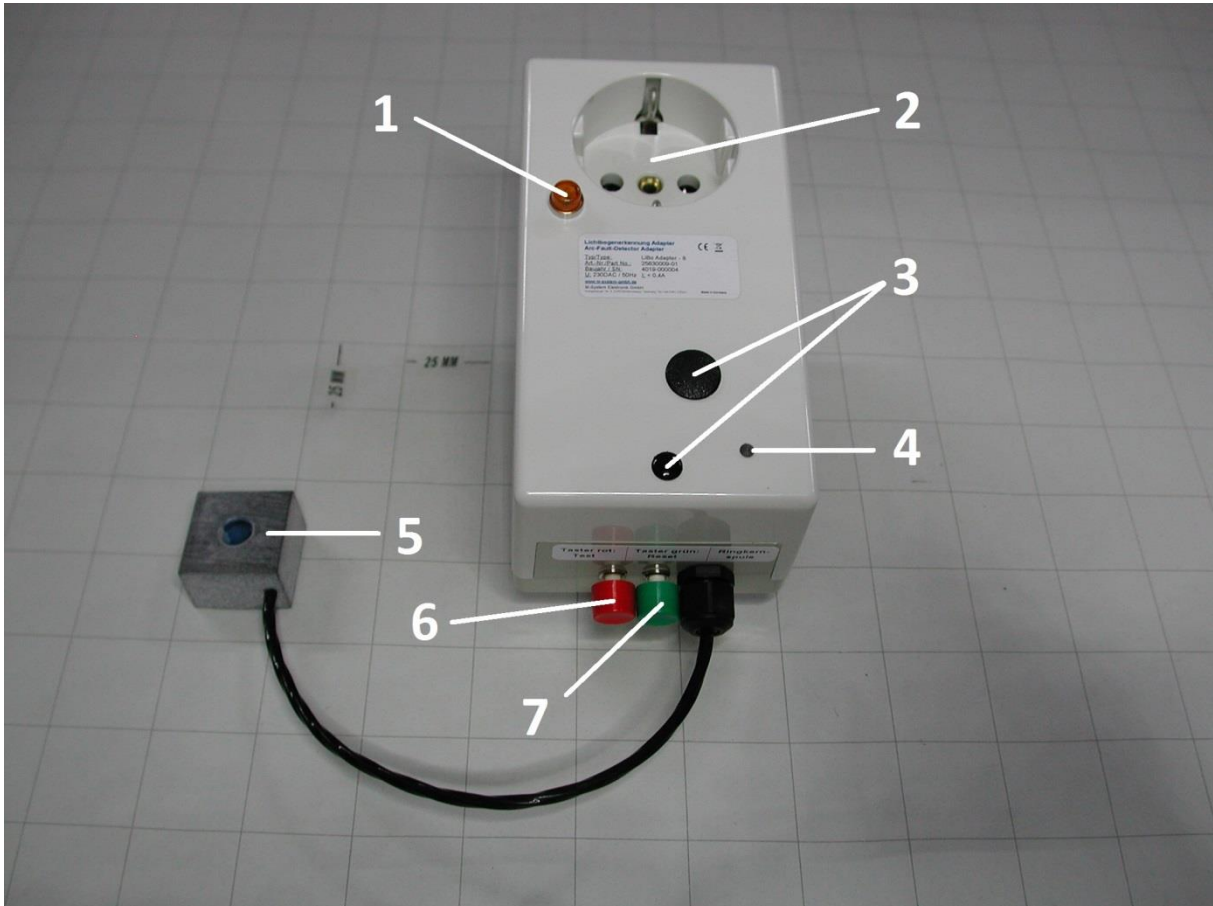


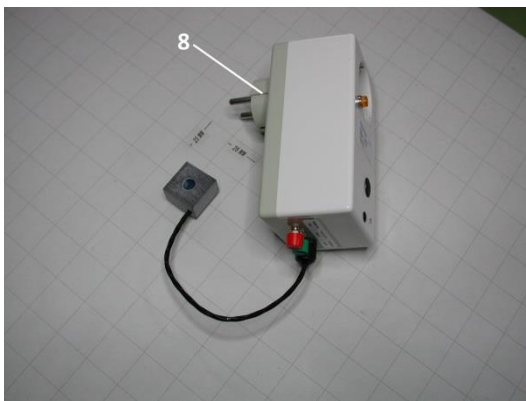
## Arc Detection LiBo Adapter -8 und -16

### Instruction Manual, Technical Data and Important notice from the Manufacturer

Article No.25630009-01 (for -8) und 25630010-01 (for -16)



**Image 1:** LiBo Adapter with Toroid Coil -8 (5), Housing with plug socket (2), Mains Control Lamp (1), Duo-LED Red/Green (4), Cover Caps (3), red Push-button „Test“ (6), green Push-button „Reset“ (7)



**Image 2:** Mains plug (8)

## General remarks

The adapter unit shown consists of the toroid coil sensor, available in two sizes, and a plug housing with control lamps and control elements.

The adapter's mains plug (Image 2, Pos. 8) will be plugged into a standard plug socket (230VAC, 50Hz). Into the plug socket of the adapter (Image 1, Pos. 2), a mains-based switch-off unit can be plugged in.

The cable to be monitored for arcs will be fed through the toroid coil with inner diameter of 8mm (-8) or 16mm (-16), independent of the feed through direction.

### 1. Mains applied, Getting started, Status memory

After feeding the live DC cable to be monitored through the toroid coil (Image 1, Pos. 5), the adapter will be connected to mains (230VAC, 50Hz).

At first use the red LED (Image 1: Pos. 4) will be on for a short period of time (self-test) and shows green afterwards, the unit is now ready for use. If the red LED stays on, make a reset by pushing the green push-button (Image 1, Pos. 7) for 2 seconds. If the LED stays red after the reset, you need to calibrate the unit following the procedures in chapter 6. from this manual.

If there is a loss of mains power and mains comes back, the LED (Image 1, Pos. 4) will be red for a short period of time (Mains control lamp (Image 1, Pos.1) is off) and finally change to the status prior to mains loss (Alarm(Red) or normal operation(Green)).

**If the mains control lamp (Image 1, Pos. 1) is on, the plug socket (Image 1, Pos.2) is energized.**

### 2. Duo-LED Red/Green (Image 1, Pos. 4)

This LED is green during normal operation and faultless circuitry, assuming a calibration was performed (see chapter 6. for more details).

This LED is red if an arc is detected or the circuitry has a fault (including the toroid coil sensor (Image 1: Pos. 5) or the calibration range has been exceeded or fallen below.

### 3. Test

The test function checks the components and finally the proper operation of the unit. Test will be performed when pressing the red push-button "Test" (Image 1, Pos.6) for 2 seconds. During pressing, the LED (Image 1, Pos.4) stays red, when releasing the push-button and proper operation of the circuitry, the LED shines green again.

If there is a fault during testing, the LED stays red. If you have tried out reset (see chapter 5.) and calibration (see chapter 6.) and the LED shows still red, you need to return the adapter to the manufacturer.

#### 4. Automatic test following E DIN EN 63027

In the background an automatic test for the unit is performed about every 24h. A pseudo-arc is generated in the toroid coil and processed by the circuitry. If there is no fault in the circuitry, an alarm (red LED) will not be generated and the test remains undetected. In case of a fault, the LED (Image 1: Pos. 4) shines red, the plug socket (Image 1, Pos 2) is no longer energized and the mains control lamp is off. If a reset or calibration (see chapter 5. and 6. ) are not successful, the unit needs to be returned to the manufacturer.

#### 5. Reset

By pressing the green push-button „Reset“ (Image 1, Pos. 7) for 2 seconds after the LED went red because of an arc detection, the red LED will shine green again if there is no other fault in the circuitry. Pushing the red and green push-buttons (Image 1, Pos. 6+7 ) simultaneously for 2-4 seconds a calibration is performed (see chapter 6.)

#### 6. Calibration

If there is a disturbance on the cable to be monitored and the red LED is on (Image 1, Pos. 4) and if the red LED will not shine green after reset (see chapter 5.), there will be a fault in the sensor's circuitry or the voltage created by the disturbance is outside the calibration range. In this case you press simultaneously the “Test” push-button (Image 1, Pos.6) and the “Reset” push-button (Image 1, Pos. 7) for 2-4 seconds. The circuitry automatically adjusts itself to the new voltage. After that, a self-test is performed. If this test is positive, the green LED will be on again as well as the mains control lamp (Image 1, Pos. 1). Calibration can be performed at any time during normal operation. If the LED stays red after calibration, please pull the cable to be monitored out of the toroid coil and retry a calibration. If the LED goes green, the adapter cannot adjust itself to the specific disturbance on the cable to be monitored, arc detection will not be possible any more. If the LED stays red without the cable to be monitored, unplug the adapter from mains, unplug any switch-off unit from the plug-socket (Image 1, Pos. 2 ) and return the adapter to the manufacturer.

#### 7. Cover Caps (Image 1, Pos. 3)

There are two black cover caps on the surface of the adapter's housing. **Only the manufacturer is allowed to remove these caps.**

## 8. Fuse (Image 3, Pos. 1)

If the adapter is not working after connecting it to mains, please check out first if the plug socket of mains is energized (230VAC, 50Hz). If mains is OK, the fuse inside the adapter could be blown.

### **Changing of the fuse is only allowed for skilled electric personnel!**

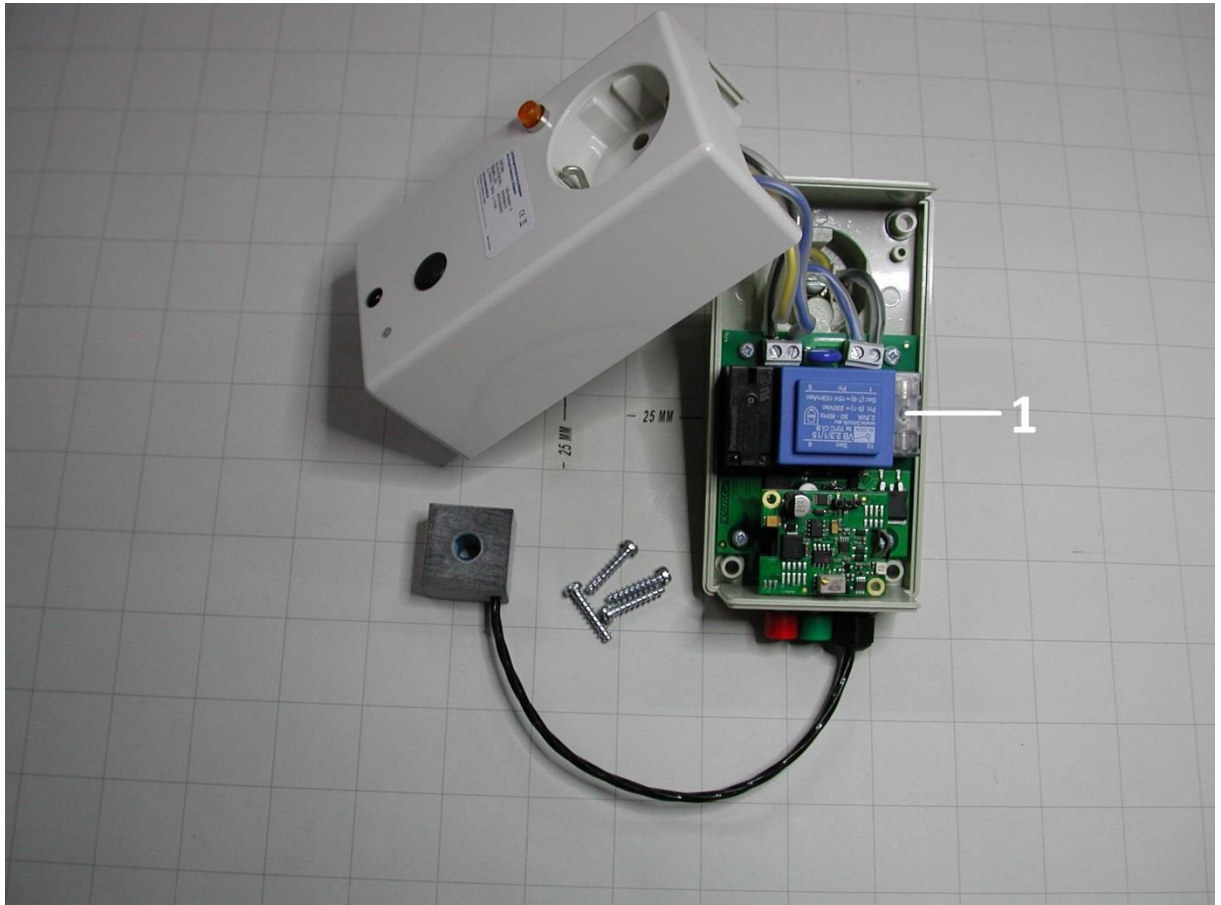
To control the fuse and possibly change it (factory-made data: 0,4A slow blow 5x20mm fuse) unplug the adapter from mains and unplug any switch-off unit from the plug socket (Image 1, Pos. 2). After removal of 4 screws and the top side of the housing you will see the fuse holder (Image 3, Pos. 1). The cover of the fuse holder needs to be removed upwards carefully. The fuse will be taken out of the holder carefully, be checked and replaced eventually. After that, the cover of the fuse holder will be reinstalled.

### **Attention: Replace the fuse by same typ and electric parameters!**

Upon request the adapter can be delivered with different fuse parameters which are corresponding to the load (switch-off unit).

After the fuse change, both parts of the housing are joint together and fixed by the screws again. Make sure you are not violating the cables by bending or constrict them.

If the fuse is not blown and there is furthermore no function, you need to return the adapter to the manufacturer.



**Image 3: Adapter inside view with position of the fuse (1)**

**Technical data:**

- Supply Voltage: 230VAC +/- 10%, 50Hz
- Degree of Protection: IP2x (DIN 40050)
- Working- and Storage Temperature Range: -20 to +80 degree C
- Housing size : 120mm (L), 65mm (W), 55mm (H)
- German mains plug and plug socket, other countries upon request
- Arc Detection starts from about 40W of arc power
- Cable length of the toroid sensor cable: about 25 cm
- Direct current of the cable to be monitored:
  - Toroid coil -8 : minimum of 50A
  - Toroid coil -16: minimum of 100A (higher currents upon request)
- Plug socket output for loads, mains switched to plug socket by DPST relay
- Protection Earth (PE) of plug connected to PE of plug socket
- Factory-made fuse: 5x20mm, 0,4A, slow blow, inside the housing  
**Attention: please read carefully chapter 8 for safety advices!**
- Galvanic isolation between cable (Device under Test, DUT) and measuring unit
- Functionality as per E DIN EN 63027
- EG-Declaration of conformity available

### Important notice from the manufacturer

- Before using the adapter you should carefully read the Instruction Manual and the Technical Data. These documents including the Declaration of Conformity you will find on the homepage

[www.m-system-gmbh.de](http://www.m-system-gmbh.de)

under „Produkte“.

- An article- and series No. identifies the adapter.
- To make sure the adapter works normally over time, the manufacturer recommends a regular control of the sensitivity by means of a calibration by the technician who installed the sensor.
- The circuitry was developed following the generally recognized codes of practice, following also E DIN EN 63027 dated February 2018. With the factory-made settings, the circuitry works well on various PV-strings and DC-cables.
- Caused by a variety of disturbances on DC-cables, a calibration might not be successful for a proper operation of the adapter.
- Before placing an order the manufacturer presumes the test of an adapter on loan and for a certain amount of time to make sure the adapter is working properly in the application of the customer.
- Warranty corresponding to the General Terms and Conditions of the manufacturer.

If the customer cannot make sure that the adapter works properly in his application after calibration, the manufacturer can help with different proposals. This would mean a change of hard- or software, but also a statement that the adapter from M-System never will work properly in a specific application.

### Environmental notice

At the end of the product's life, no depollution is allowed via domestic waste. The product needs to be given to a professional collection point for recycling of electric and electronic products.





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Moosburg, October 7th, 2019