SHORT-CIRCUIT INDICATOR TYPE **MF**

surface-mounted

General description

The short-circuit indicator type MF can be used in radial networks with one input and open-ring networks. The device detects short-circuits by measuring the phase-currents. A fault is identified when the current is exceeding an adjusted threshold. Detected faults will be displayed by one LED per phase.
The fault indicator type MF consists of one weather-proof display unit for surface-mounted installation and three sensors for the current measurement of each phase. The sensors have a rigid housing and their interior is fully sealed from the environment. The sensors are divisible and can be retrofitted on the cables.
The device is power supplied by an exchangeable long-life lithium battery. To extend the battery lifetime an external power supply can be equipped as an option.

The type MF is available in two versions:

Version MF-L:	The potential-free connections between the sensors and the display unit are done by fibre optic cables. The sensors can be mounted on screened and unscreened cables.
Version MF-S:	The connections between the sensors and the display unit are done by copper cables. The sensors must be mounted on screened cables only.

Features and Options

2nd short-circuit pass-through:	Indication of a second short-circuit pass-through by double blinking
Two configurable relays:	Two relays, configurable by DIP switch. Relays can be configured as permanent or wipe contact and as NO or NC contact.
Optional reset input:	For reset by recovering external power supply
Optional three relays:	Third relay for low battery indication
Optional sensor reset:	Sensor reset on recovering network current (only for MF-S and net current of 20A upwards)
Optional power supplies:	10-110 V DC or 110 / 230 V AC power supply with optional lithium backup battery

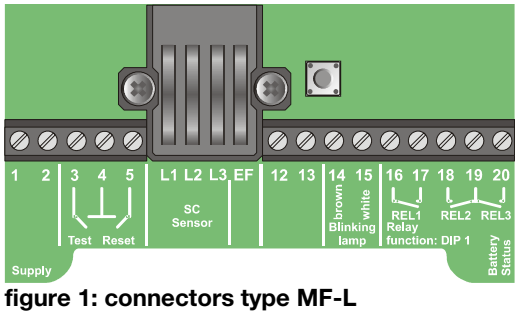


figure 1: connectors type MF-L

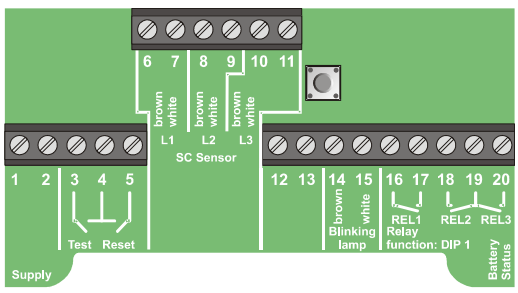


figure 2: connectors type MF-S

External Connectors

Connectors 1 - 2:	Optional external power supply
Connectors 3 - 4:	Remote test input
Connectors 4 - 5:	Remote reset input
Connectors 14 - 15:	Blinking lamp type BL4.1 / BL6
Connectors 16 - 19:	SCADA NO/NC relay contacts 1 and 2
Connectors 19 - 20:	Optional SCADA NO/NC relay contact for empty battery remote indication
Type MF-L	
Optical terminals L1 - L3:	3x short-circuit sensors type LK
Type MF-S	
Connectors 6 - 11:	3x short-circuit sensors type SK

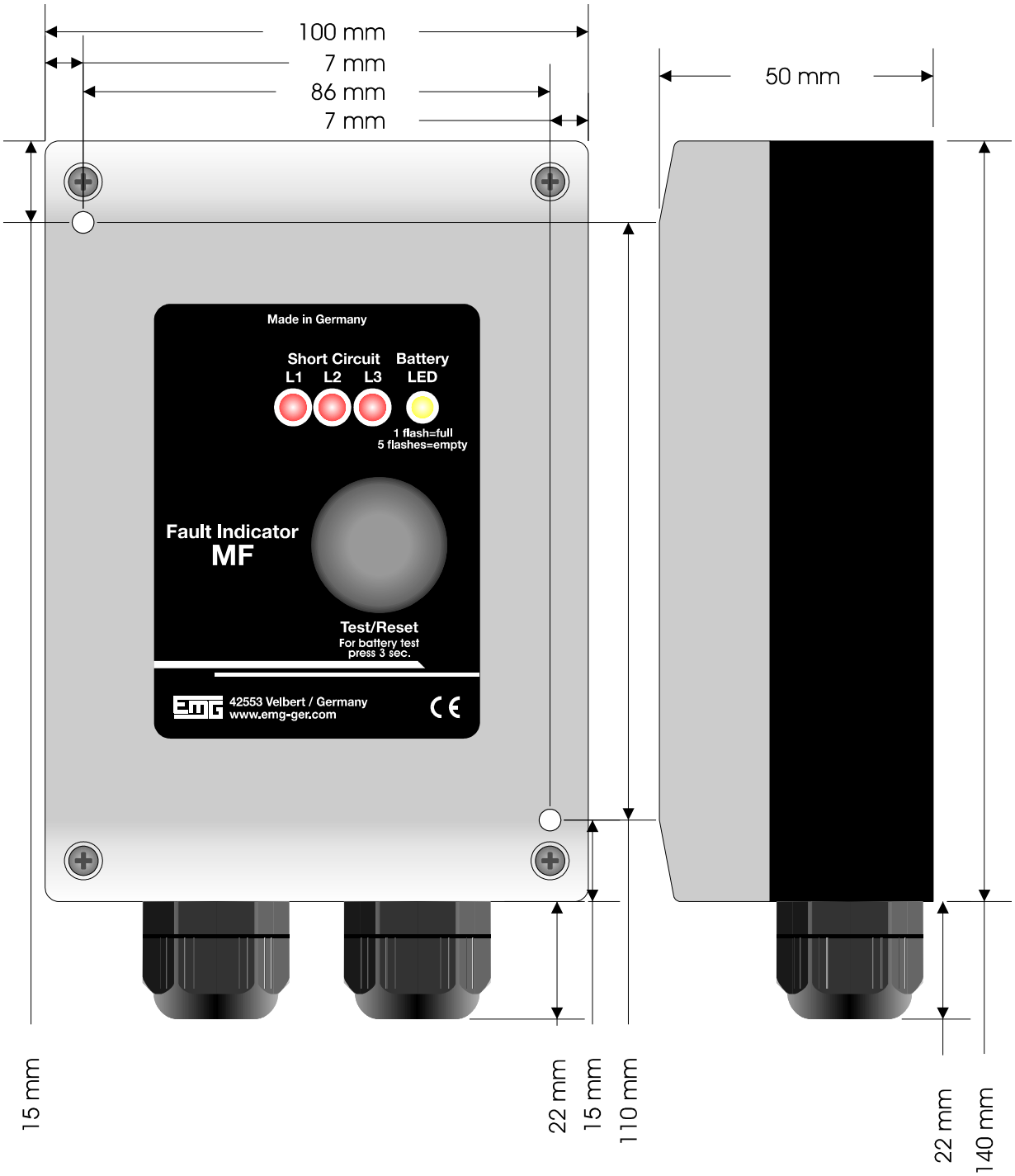
Elektro-Mechanik EM GmbH
Ringstr. 4 – D-42553 Velbert / Germany
Tel: +49-2053-422890 – Fax: +49-2053-422899
www.emg-ger.com

General Data

Subject	Value
MF-L short-circuit current	adjustable: 200 / 300 / 400 / 500 / 600 / 800 / 1000 * A (±10 %)
MF-S short-circuit current	adjustable: 200 / 400 / 600 / 800 / 1000 * A (±10 %)
Response delay	adjustable: 40 / 60 / 80 / 160 * ms optional: up to 16 adjustable values ranging from 20ms to 500ms
Indication unit	suitable for panel installation
Indication of a) short-circuit b) battery	 a) one red LED for each phase b) one yellow LED
Reset of the indicator	a) manual by push-button b) connection for a potential-free remote reset c) time: 1 / 2 / 4 / 8 * hours after fault d) optional: self-acting after recovering of external power supply e) optional: self-acting after recovering net current (Only for MF-S and network current of 20A upwards)
On site function test a) function test b) battery test	by push-button a) the button has to be pressed for 1 second b) the button has to be pressed for 3 seconds
Dimensions: display unit	(WxHxD) 100 mm x 162 mm x 50 mm
Protection class: display unit	IP65
Protection class: sensors	IP67
Internal type test	According to IEEE 495-2007
Operation temperature range	-20°C to +70°C
Power supply	lithium battery (LiSOCl2) type AA / 3.6V / 2600 mAh optional: 10-110 V DC with backup battery type AA / 3.6V / 2600 mAh optional: 110/230 V AC with backup battery type AA / 3.6V / 2600 mAh
SCADA contacts	2x NO/NC contacts Optional: 1x additional relay for empty battery remote indication Configurable at site by DIP switch: - contact type (NO or NC) - permanent / wipe contact (100ms) max. 230 V AC / max. 2 A / max. 30 W
Current sensors	**MF-L** 3x short circuit sensors type LK (fibre optic cable) **MF-S** 3x short circuit sensors type SK (copper cable) diameter: 22-42** mm connection cable length: 3* m (** Other diameter ranges for all standard cables are available.)

* **Please note:** Other values can be ordered.

Display unit



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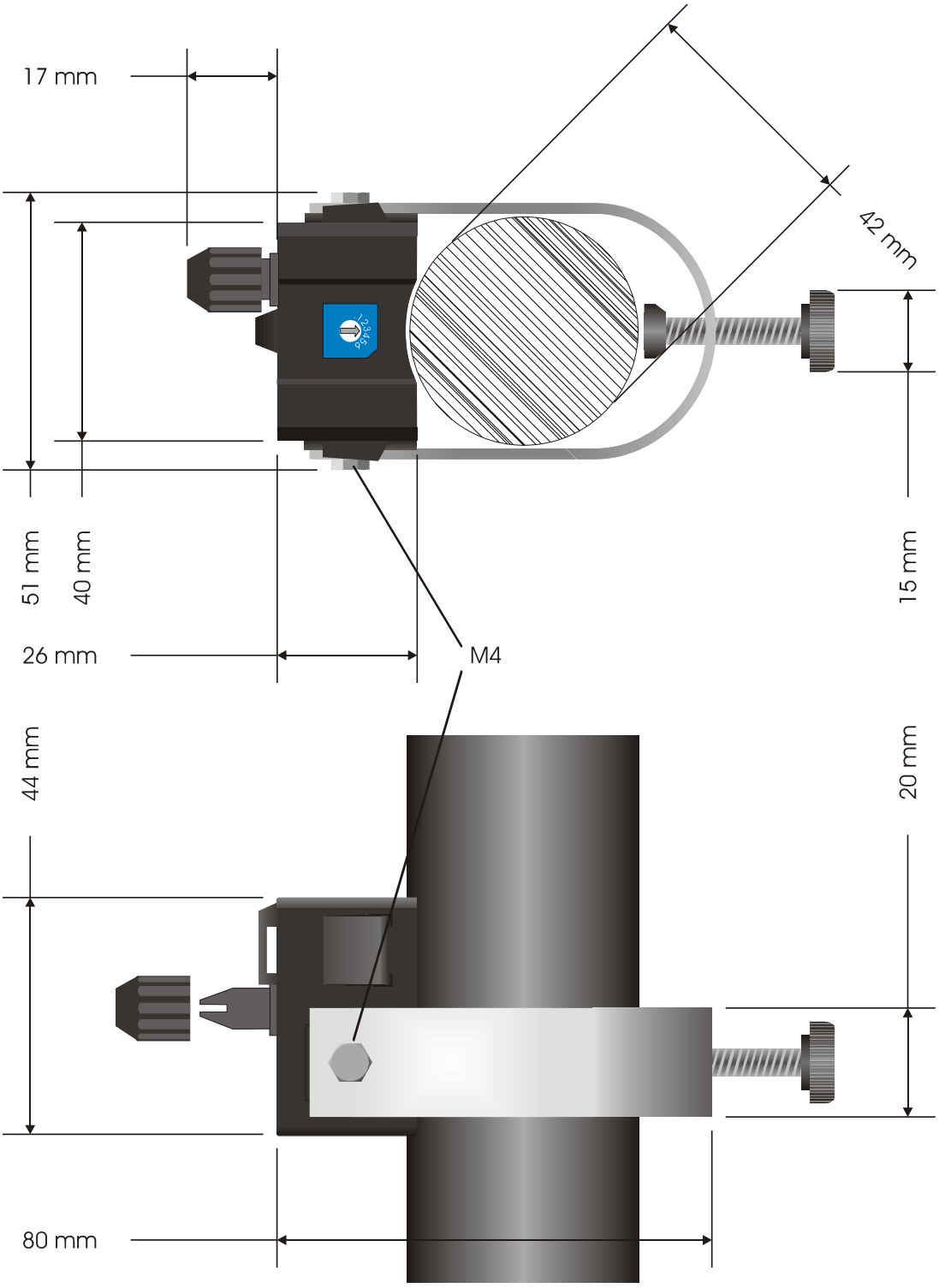
Sensor type LK



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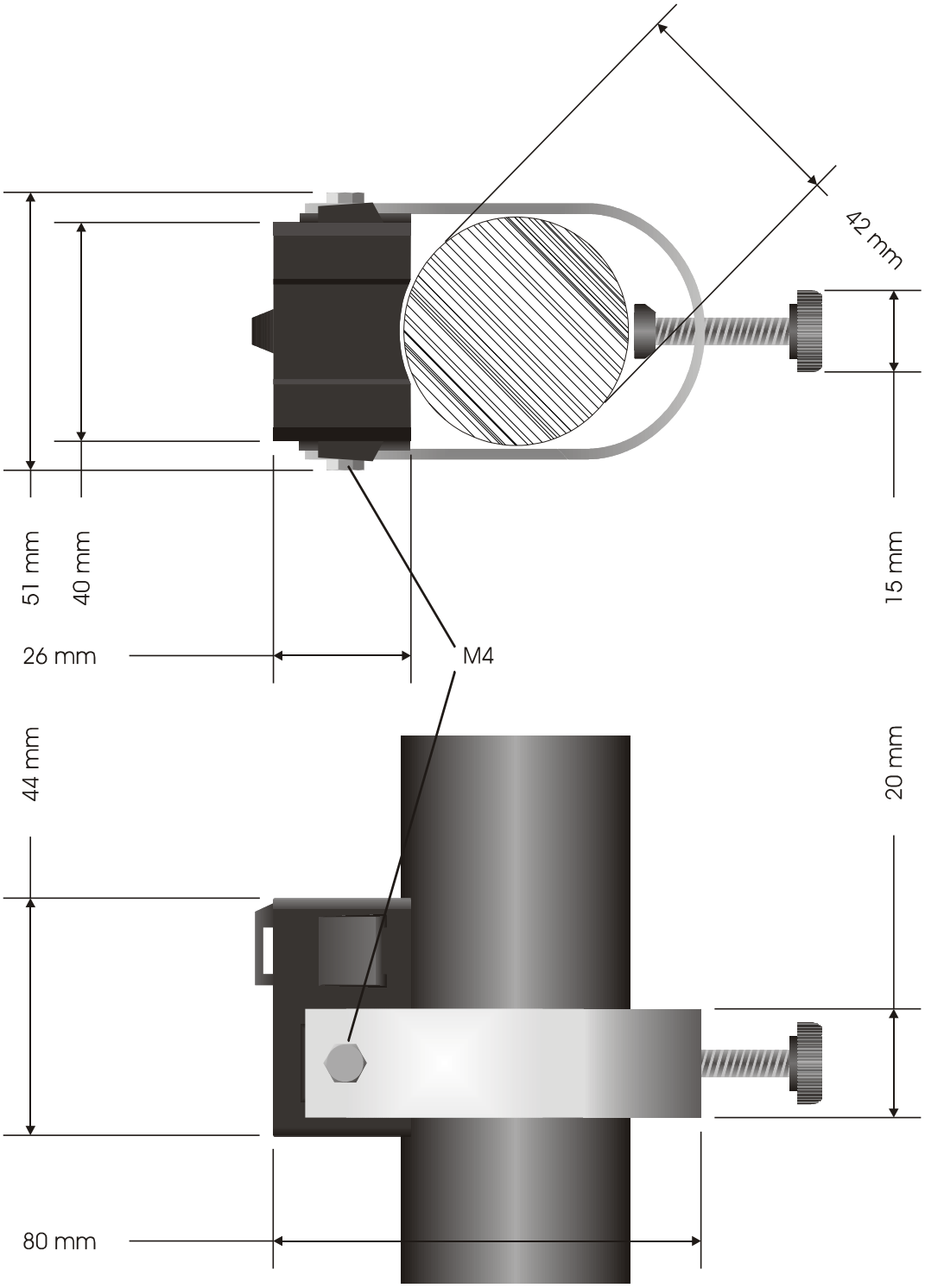
Sensor type SK



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