

FAULT INDICATOR

TYPE **FLA3.1VL**

for overhead lines

General description

The fault indicator type FLA3.1VL is used in overhead lines of a network. The indicator can be mounted under live conditions with the help of an adapter and a hot stick. The indication is done by an ultra bright flashing LED.

The FLA3.1VL can communicate to a remote control via a bidirectional wireless connection. In this way all settings of the indicator can be adjusted at any time without removing the indicator from the powered line. The FLA3.1VL stands out for the great flexibility of the adjustments that can be done. Beside the basic settings of the indicator like trip current, response delay, reset time, etc., the FLA3.1VL can be adapted to auto-reclosers in the network. This provides an optimized fault indication and also allows the indication of different fault types. Permanent and temporary faults can be distinguished and indicated separately by an additional green bottom LED.

The bidirectional connection between the remote control and the fault indicator allows to read out the present current of the monitored network and the internal temperature of the indicator with the remote control at any time.

The fault indicator type FLA3.1VL can be connected to the remote indication interface type RIS. This allows an easy-to-install and retrofittable integration of the overhead line indicators into remote monitoring systems.

Features and Options

Three fixed threshold methods:	Faults can be detected by a manually adjusted fixed absolute trip current or an automatically adjusted trip current on basis of the current load and a fixed factor or a scaling factor.
di/dt fault detection:	Faults can also be detected on basis of current load deviation with subsequent voltage loss.
Enhanced detection and filtering:	- Detection and filtering of temporary faults by adaption to auto-reclosers - Filtering of over-currents which not result in network outtages - Inrush current restraint up to 2sec after network energization
Voltage detection:	Two threshold levels can be selected for a better detection of the voltage status - voltage off level: At which percentage of U_n the voltage is to be considered as off - voltage on level: At which percentage of U_n the voltage is to be considered as on
Full wireless configuration:	All settings can be changed and read-out with the handheld remote type HS control or by the remote indication interface type RIS-FS. Also current loads, voltage status and temperature read-outs can be wirelessly read-out as live data.
Remote indication:	Faults, resets and voltage or current status changes can be remotely indicated.
Data-Logging:	Regular data read-outs of current loads, voltage status and internal temperature are configurable in short intervals.

Advanced fault detection

The fault indicator type FLA3.1VL provides two methods to detect faults. The absolute threshold detection method works with a selected fixed or an automatically calculated absolute threshold. This method can be disabled when not required.

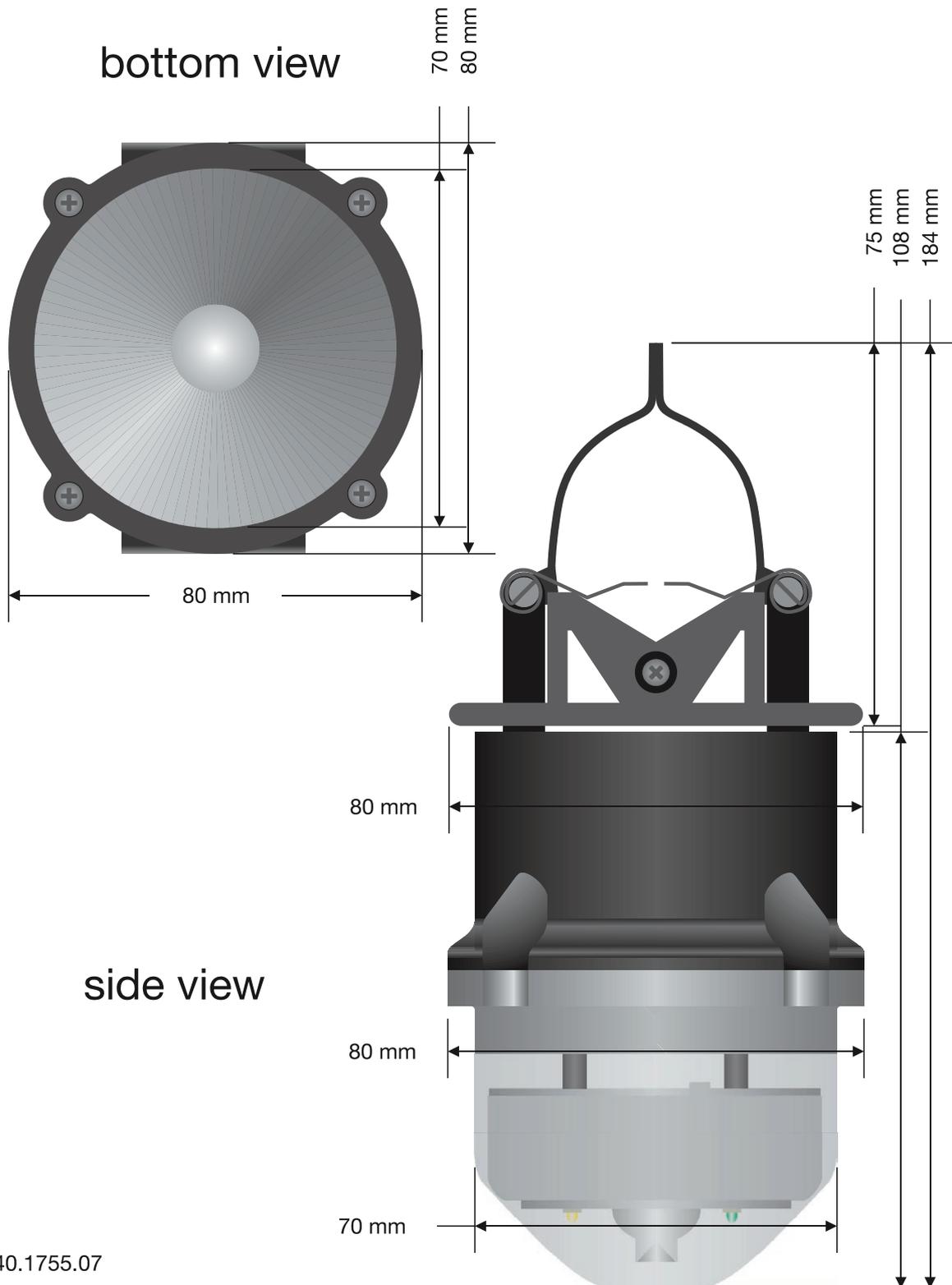
Additionally the fault indicator type FLA3.1VL provides a di/dt measurement method. This method analyses current load changes that happen within a certain amount of time. The level of load change can be adjusted.

A subsequent voltage loss is used as an additional criterion to assure correct detection of a fault. This method can also be disabled when not required.

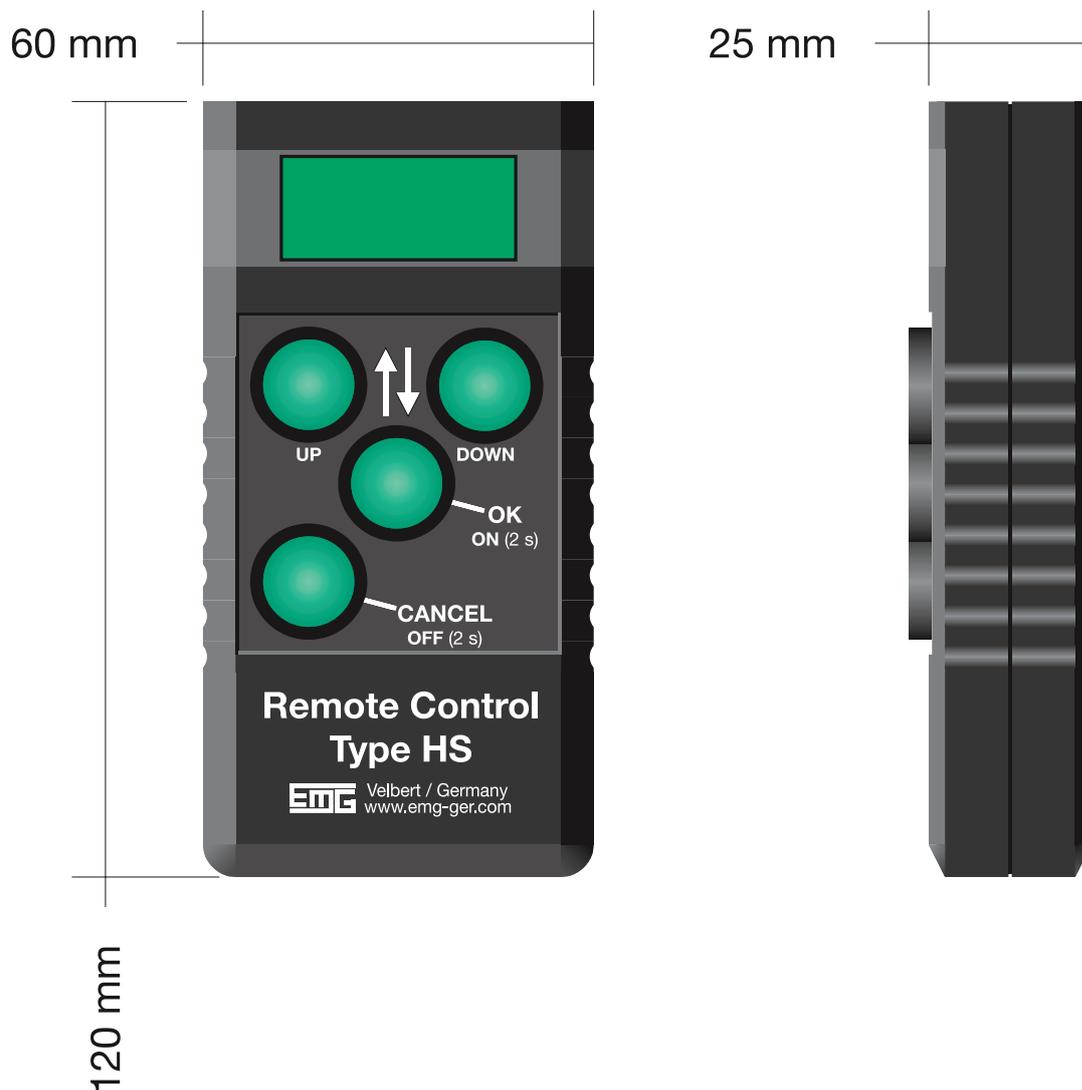


Subject	Value
trip current short-circuit (can be switched off completely)	a) standard mode: fixed trip value 10A to 800A (in steps of 10A) b) automatic mode: automatically adjusted 150% to 500% (in steps of 50%) of service current c) scaling automatic mode: automatically adjusted with flexible adjustment ratio based on service current, selectable from 20A to 800A
trip current earth-fault (can be switched off completely)	a) di/dt measurement and subsequent voltage loss: di: 5A to 100A (in steps of 5A) dt: 20ms at 50Hz / 16ms at 60Hz
response delay	selectable between 40 and 300 ms (in steps of 20 ms) *
voltage detection	two thresholds selectable a) voltage off detection level: from 20% to 90% of U_n (in steps of 10%) b) voltage on detection level: from 20% to 90% of U_n (in steps of 10%)
indication unit	suitable for installation on operating overhead lines
indication	a) faults: ultra-bright red LED b) status: yellow LED c) temporary faults: additional green LED
reset of the indicator	a) by remote control b) by time: selectable from 30 min to 12 h (in steps of 30 min) * c) by recovering service current: optional yes/no three reset current levels selectable d) by recovering net voltage: optional yes/no
on-site function test	by remote control
temperature read-out	temperature of the internal circuit
dimensions	diameter: 80mm height: 184mm
protection class	IP67
housing material	ABS HI100-NP, Carbotex K20 UVR
weight	0.600kg
type tests	according to IEEE 495-2007, EN 60068-2-11 2000-02, ASTM G44-99 (2005)
operation temperature range	-40°C to +70°C
accuracy	+/- 10%
cable diameter ranges	a) 10 mm - 28 mm reducible to 6 mm - 15 mm with included adapter b) 25 mm - 42 mm
power supply	2x lithium battery (LiSOCl ₂) type A / 3.6V / 3600 mAh
battery lifetime	approx. 10 years with 800 hours (without remote indication)
blinking frequency	30 per minute (0.5 Hz)
maximum operating voltage	<= 36kV
current withstand	25 kA / 170ms Sym. RMS
communication	433MHz bidirectional radio interface to remote control type HS and remote indication interface type RIS
remote indication	a) faults and the reset of the indicator b) current on/off events or voltage on/off events c) data-logging of current loads, voltage status, internal temperature

*PLEASE NOTE: other values can be ordered



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