

Load Tracker-LM

Faulted circuit indicator for underground cables



Load Tracker LM (Order no. 29-6015-000)



Load Tracker LM (Order no. 29-6028-000)



Load Tracker LM Acoustic

Product features

FCI-LT-LM series fault indicators are primarily designed for utility underground cables, where phase to phase spacing is limited. The closed core, cable clamping mechanism is designed to significantly reduce the proximity effect of adjacent cables and for easy installation and/or removal with a hot stick.

Coordination with circuit protection devices is accomplished through the use of a single fault trip curve. The shape of the curve is referred to as protection mated. Protection mated (PM) means the curve's shape is designed to coordinate with today's electronic protection devices and to avoid improper indication on circuit inrush. Through closer coordination and PPZ reset the frequency of false tripping is greatly reduced.

Constantly monitoring current magnitude (load), the fault indicator is installed at a point on the cable where the ground current return path has no influence. The fault curve is adjusted electronically in relation to the load and thus referred to as Load Tracking (LT).

Load Memory (LM) describes how quickly the characteristic curve is adjusted. The highest continuous current sensed for at least 60 seconds will establish a fault curve position in memory and hold it for 72 hours. If the load-current reaches or exceeds the stored value, a new fault curve position is registered and the memory time of 72 hours starts again. If load current does not meet or exceed the established level for 72 hours, the LT-LM will then sense and re-establish a new lower fault curve position.

The electronic system is encapsulated in a resin compound enabling the fault indicator to operate fully submersed according to IEEE standard. There are no moving mechanical parts to wear. Not dependent on cable size, "one size fits all".

Fault detection is indicated by a super bright flashing red LED, giving excellent all round visibility and/or by audible beeping sounder, ideal for locations where visual indication is a problem.

All version LT-LM indicators are reset by time, factory set at 4 hours. Special units also reset by current during a one time sequence known as Pulse-Pause-Zero. After detection of a fault (pulse) and a 28 second delay (pause), a current sensor is enabled for a further 28 seconds to reset the FCI if currents >5 A, 60 Hz are detected. If currents <5 A are detected (zero), no reset signal is sent. Thereafter the current sensor is disabled from resetting the FCI, and reset occurs by timing out of the counter or by manual means.

Remote indication is available as a separate fibre-optic cable assembly that is installed on a standard single phase unit by the end user. For connection to SCADA systems a distribution automation (D/A) relay is available and may be added by the end user at any time.

A non-replaceable lithium cell provides operational power. With an independent power supply the fault indicator is constantly "armed and ready" to register successive inrush faults at any time, including extended periods of circuit power loss. Verification of the cell is made by manually activating the FCI with a magnet.

Technical data	Load Tracker LM
Trip current	200 A/200 ms
Trip accuracy	±10 % at 20 °C, ±20 % over full trip characteristic at –40 to +85 °C
Trip vs. load factor	4 times (I_{trip} at 200 ms = $I_{\text{load}} \times 4$)
Minimum load current to start load tracking	40 A
Tracking delay	<60 sec
Peak load memory	72 h
Indication	<ul style="list-style-type: none"> ▪ Super bright red LED, 7,000 mcd, viewing angle 30° ▪ Audible beeping sound (only acoustic version)
Total flashing/beeping time	>1,000 hours
Flashing/beeping frequency	30 per min.
Reset	<ul style="list-style-type: none"> ▪ Current restoration: 5 A (10 A at trip current >600 A) ▪ Automatic reset by time: 4 h (±10 %) (2 h, 8 h, 24 h) ▪ Manual by magnet
Power supply	Lithium cells, shelf life 15 years
Rated voltage / frequency	Max. 50 kV (L–L), 60 Hz
Withstand current	25 kA sym. RMS/170 ms
EMI withstand	IEC 1000-4-2 (ESD, degree 4), IEC 1000-4-3 (HF, degree 3)
Cable diameter range	<ul style="list-style-type: none"> ▪ 22–50 mm ▪ 40–64 mm
Current transformer	Split core current transformer
Housing material	<ul style="list-style-type: none"> ▪ UV stable polycarbonate ▪ Metallic parts: stainless steel
Weight	260 to 395 g (depending on the version)
Temperature range	–40 to +85 °C

Order no.				
29 –	6	0	14 –	100
Load Tracker series	Trip current 200 A/200 ms	Reset	Conductor diameter	Additional indication
29	6 = Standard 8 = Acoustic	0 = PPZ, time, manual 1 = Current, time, manual 2 = Time, manual	14 = 22–40 mm 15 = 40–64 mm 28 = 22–50 mm	100 = Acoustic + red LED