



FAULT INDICATOR LODESTAR CLO.5 BM



SIMPLE SOLUTION FOR FAST FAULT DETECTION

EFFECTS OF IMPLEMENTATION AT ENERGY FACILITIES

 **ECONOMIC BENEFITS**
Stable and reliable power supply attracts investments and supports economic growth

 **REDUCTION OF UNDER-SUPPLY OF ELECTRICITY**
More consistent and steady flow of electricity to consumers, minimizing potential disruptions in power supply

 **REDUCTION OF COSTS FOR THE IMPLEMENTATION AND OPERATION OF EQUIPMENT**

 **IMPROVING THE RELIABILITY OF POWER SUPPLY TO CONSUMERS**
Investments in smart grid technologies, monitoring, management and diagnostics of power grids improve their reliability



No need of additional communication devices



Online monitoring is possible — devices include SMS-gateway. Data transmission to SCADA system using **DNP3 protocol**.



Detection of direction of all types of faults

BENEFITS

- **Minimum fault sensing 0,5A**
- Notification of events with GPS coordinates using the **Lodestar App mobile application**
- Installation on the line **without disconnecting the voltage** - using a simple hot stick tool
- **Dynamically changing sensitivity** based on a load current
- **Auto-Detect Network Frequency** — intellectual algorithms allow it to work in networks with frequency of 50 or 60Hz without reconfiguration
- Direct data transfer to the Scada system to the dispatcher using the **DNP3 protocol**
- Recording of waveforms and an accident log **with date and time**



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Types of registered events	PtP, PtG
Short circuit current sensitivity	20 A
Automatic fault current threshold adjustment	+
Zero sequence current sensitivity	0.5 A
Detection of direction of zero sequence current flow	+
Voltage monitoring	+
General description of devices	
Overhead line voltage range	6-35 kV
Grid's frequency	50/60 Hz
Visual indication	<ul style="list-style-type: none"> • Blinking ultra-bright LEDs; • detection range up to 100 m (during the day), up to 500 m (at night); • a set of sequences, depending on the capability of the model.
LED brightness	At least 20000 mcd per LED, 360° view
Number of alarms stored in the internal non-volatile memory	Up to 20 000
Remote control (for field config)	Bluetooth BLE (2,4 GHz)
Remote communication	Lodestar CLXX-Master is equipped with a GSM channel, for transmitting information from the indicators to the data collection server.
Types of actuation control	<ul style="list-style-type: none"> • Visual; • by short-range radio channel (handheld remote control); • remote via Komorsan & SCADA.
Reset display	<ul style="list-style-type: none"> • Voltage restoration; • by timer; • magnet; • from the portable control.
Indicator health control	<ul style="list-style-type: none"> • Magnet; • portable remote control; • remotely.
Changing settings (setpoints)	<ul style="list-style-type: none"> • On the short-range radio channel using a portable remote control; • remotely using the «KOMORSAN Web-client» software.
SMS notification	<ul style="list-style-type: none"> • Up to 5 phone numbers; • composition of the message: GPS coordinates, type of accident, serial number.
Reading GPS coordinates	Yes
Time to prepare the kit for repeated triggering	No more than 3 sec.
Integration with SCADA systems	<ul style="list-style-type: none"> • Connection to any existing SCADA easily via IEC 60870-5-104 by using KOMORSAN software; • built-in GSM modem (for Lodestar Master FPI); • data transmission to SCADA system using DNP3 protocol.
Source of power	<ul style="list-style-type: none"> • 3 removable lithium batteries (19 Ah) in Lodestar CLxx Master; • 1 removable lithium battery (19 Ah) in Lodestar CLxx S.
Total indication time	> 2000 hours
Indicator life	130000 hours
Battery life (in standby mode)	8-10 years
Thresholds	
Absolute current threshold	20±1000 A
Differential current threshold in A	20±500 A
Differential current threshold in %	50±500%
Current withstand (IEEE495, 4.4.7)	25 kA/500 ms
Inrush current restraint	0-200 ms
Setting the reset timer	Arbitrarily from 1 hour to 8 days
The minimum duration of the emergency process	0,02 s
Exploitation	
Installation location	On the overhead line (conductor)
Conductor diameters	5-40 mm
Installation on live line	+
Temperature range	Operating at an ambient temperature from - 40 °C to + 85 °C
Protection class	IP 68 according IEC
Impact of climatic environmental factors	<ul style="list-style-type: none"> • Resistant to UV radiation; • resistant to wind load of 40 m/s without ice and 23 m/s with ice with 35 mm wall thickness.
Impact of mechanical factors	<ul style="list-style-type: none"> • Corresponds to exploitation group M1; • resistant to galloping.