

Do you need INSTRUMENTS for measuring electrical parameters?

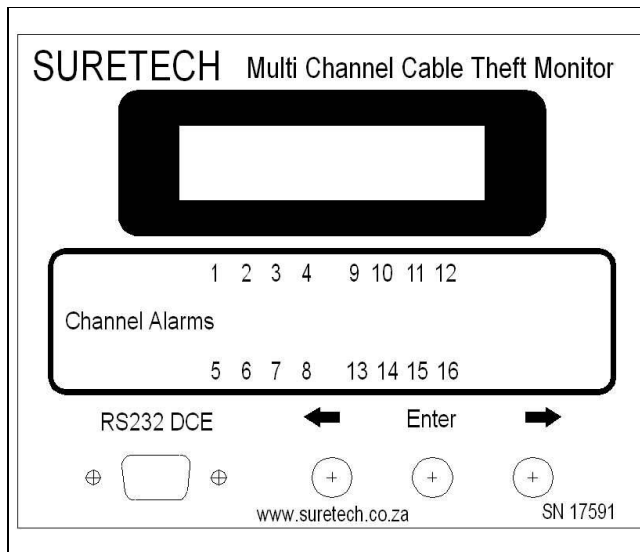
THE cost effective instrument for condition monitoring of earth resistance, cable armouring etc

SURETECH EARTH-LOSS MONITOR

The SURETECH Earth-Loss Monitor (ELM) measures the resistance to earth of cable armouring in such a way that the user can actually LOCATE the earth loss. This resistance should normally be very low value. If however an earth becomes disconnected due to theft, or corrosion, or a fault, then the SURETECH ELM will detect this. System voltages from mains (380 / 220V) as well as higher voltage MV systems can have their earth resistance continuously monitored. A range of output formats are available, such as relay contact, 4-20mA, RS232 etc.

General Features:

- Each device / transformer / motor feed cable can be individually monitored for earth continuity
- Up to 16 separate resistance channels can be monitored
- Earth resistance is displayed and output to a LCD panel (from 1ohm to 1000ohm)
- Differentiates between earth sense cable loss and actual earthing / armoring loss
- Low voltage DC measuring signals are used to perform measurement, and so will not damage other sensitive equipment
- Sensing inputs are protected against earth fault voltages appearing across the earth (up to 250Volts)
- Options include RS232 output for direct input to a PLC or SCADA
- Standard operations: threshold relay output has normally open and closed contact
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- Earth channel's resistance threshold is pre-settable by means of simple three key user interface
- Alarms are raised when earth resistance exceeds the pre-set threshold
- Thresholds are settable at 2, 5, 10, 20, 50, 100, 200, 500 ohms
- Easy interface to multiple cables
- Transient suppression on inputs and outputs
- Wide range of auxiliary Power Supply options available, from 90-260V ac/dc, and battery supplies
- Inputs, outputs, and auxiliary power supply are galvanically isolated (optional)
- Backup to provide you support for design, application, installation, and maintenance information
- Interface wiring spaced ready for standard industrial wiring terminals (6mm pitch)
- Patent pending

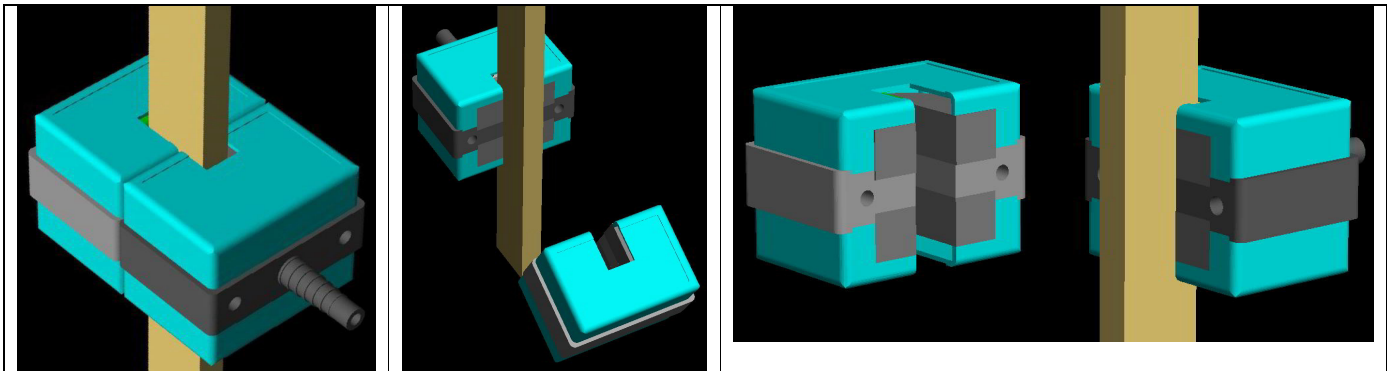


Why should you use an ELM?

- Monitor earth effectiveness and reduce cable theft
- Reduce danger to humans from earth loss
- Finding earthing problems is easily done by simply reading the earth resistance at each ELM.
- Reduce time to locate earth faults and save production time
- Detect unearthed equipment
- On-line condition monitoring of earthing integrity throughout your electrical system
- ELM can be directly networked into GSM radio, PC, PLC or SCADA system for better plant management

**OPTION A:
Earth bar injection CT:**

An earth bar, or earth cable, or NCCM (Non Current Carrying Metalwork) has a signal injected, which enables ELM to measure the earth resistance at this point in the earth network. This is compared with a previously stored threshold trip value, so when the earth-resistance threshold is exceeded an alarm is raised on that channel. Magnitude of 50Hz earth current is also continuously measured separately from earth resistance, and is available.

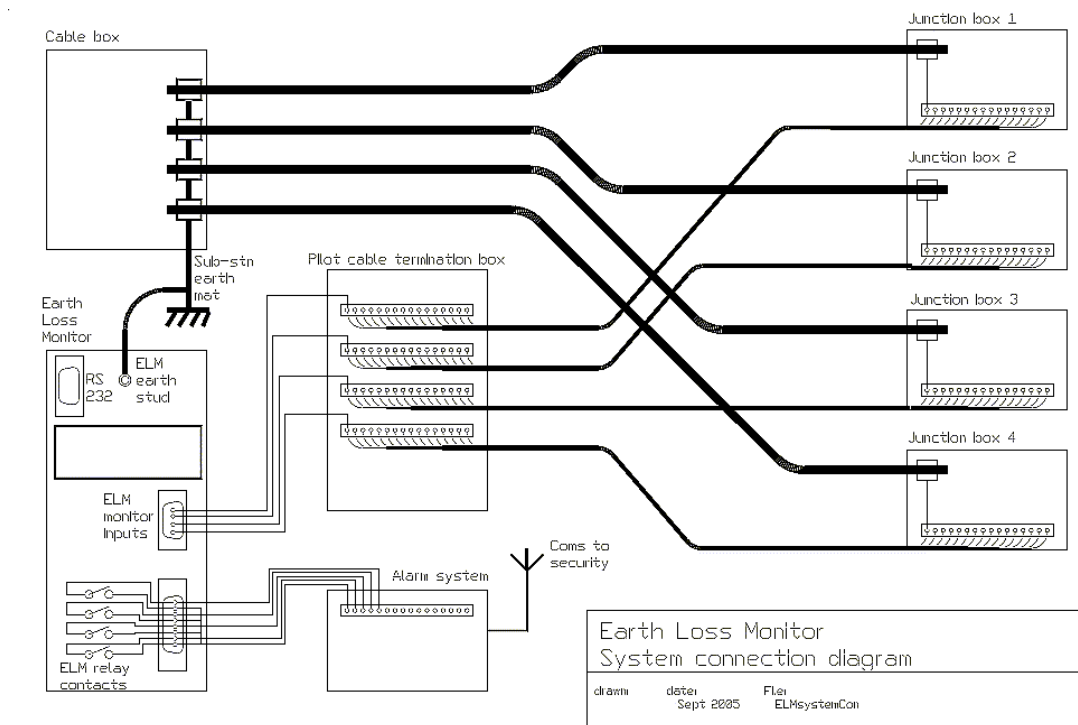


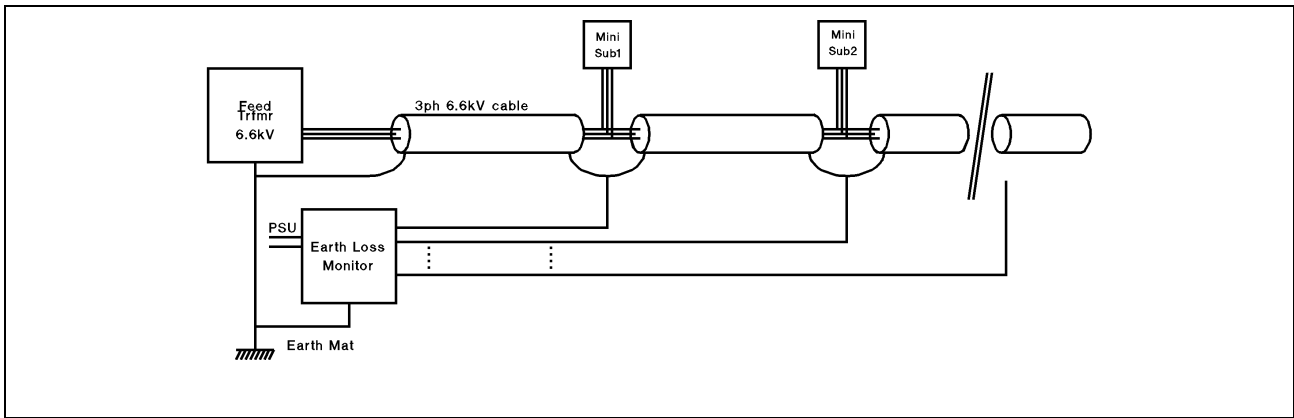
**OPTION B:
Cable continuity monitor option:**

The user can (optionally) specify the CTM operation that enables cable continuity determination in cases such as remote pumps or street lighting; the load is on for some time and off for some of the time. A key network component is installed at the load end, so that the CTM can detect it even when the load is not energised. When the load is energised then the load current is monitored and checked if within acceptable limits. When load is de-energised then CTM injects a high frequency test signal to determine whether the cable is still intact.

**OPTION C:
ELM using pilot cables:**

In some cases, this is the cheap option. If some spare pilot cores are available to transport the signal to the far end of the cable, then the signal is injected into the armouring at the far end. At each cable box or mini-substation on the network, an Earth-Loss sense cable is fitted. The ELM is supplied with auxiliary power from a 220Vac or 110Vac source. When a section of earthing / armouring becomes disconnected, then all of the ELM's furthest away from the feed transformer all will read a high resistance to earth. Locating earthing problems is easily accomplished by reading earth resistance on the ELM's LCD panel meter.





Pictured above: 16 Channel ELM

ELM General Specifications:

PARAMETER	CONDITIONS	MIN	NOM	MAX	UNIT
Measuring frequency			3000		Hz
Split core CT aperture (max cable size)				15 x 36	mm
Detection time	for Earth Loss		1		sec
Relay contact rating	250Vac		3		Amps
AC voltage on inputs	50Hz noise to be filtered			5	Volts ac
Fault voltage on pilot inputs				250	Volts ac/dc
Number of channels	(Order from factory)	1	4	16	Channels
Resistance threshold settings	2, 5, 10, 20, 50, 100, 200, 500				Ohms
Resistance Measurement accuracy			3		% fsd
Temperature	Operating range	0		50	Deg C
Aux Power Supply Voltage range		90		260	V ac / dc
Aux Power Supply - VA requirement		2		10	VA



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