

RINGLINE EARTH TEST TRANSMITTER RLTXERTH



Features

- Intrinsically safe for hazardous applications
- Built in surge / lightning protection
- Earth values may be continuously trended to monitor isolation conditions of field bus
- Programmable
- Easy connection

Detailed information

The Ringline earth leakage transmitter is encapsulated in a foot mounted plastic housing with flying leads for circuit connection. It is designed to continuously monitor any earth leakage from the Ringline field bus. The transmitter provides two 10 bit transmissions, which are proportional to any leakage between the Ringline Signal (Signal to earth) and Common (Common to earth) wires and earth. Each signal only uses a single channel out of a possible 128 or 192. The channel addresses of each signal are stored in an onboard EEPROM.

Each transmitter has a pair of wires (blue & white) to connect it to the Ringline field bus and a single wire (green with yellow stripe) to terminate to earth. There is an additional wire (green) to facilitate the programmable addressing process.

The transmitter receives operating power from the Ringline field bus and at the same time encodes the status of earth leakage back onto the bus.

Intrinsically safe applications require a minimum housing protection of IP54 and at least 500V isolation from earth for monitored interlocks.

Applications

The transmitter identifies earth leakage caused by water and/or dust in switches and junction boxes, or damaged cables. Although Ringline can tolerate a single earth on the system, multiple earths can cause partial shorts on the two-wire that can cause the system to fail to safety. This transmitter negates the need to manually check for earths with a meter as part of a regular maintenance program. Partial earths may be identified and cleared during normal maintenance before the problem can cause a shutdown.

Internally the transmitter performs a similar function to a moving coil meter with a 100k ohm impedance.

Technical Specifications

Power supply	7.4V RMS from the Ringline field bus
Power Consumption	Peak 2.6mA Ave 1.6mA
Isolation Earth To Ringline	Solid state relay at 300 volts
Input Range	1 Meg ohm to dead short measured to earth connection
Resolution	2 signals - 10 bit each - 0 to 1023 decimal
Analog Update Rate Ringline 128	1.64 seconds
Analog Update Rate Ringline 192	2.408 seconds
Sig/Com to Earth Measurement Rate	12 x Analog Update Rate
Ringline Address Programming	Channel A = value of resistance 'com' to earth Channel B = value of resistance 'sig' to earth
Operating Temperature Range	-30 — +75 °C
Dimensions	75 (w tabs) / 55 (w body) x 40(h) x 27(d) mm Ø3mm mounting holes - 65mm apart
I.S. Certification	Ex ia – IECEx TSA 08.0031X
Readings	

< 100 = > 1meg ohm	system operating within tolerances
500 = 100k ohm	partial earth detected, scheduled maintenance recommended
> 900 = <10k ohm	earth detected, maintenance is required before a combination of earths could lead to downtime

For SCADA and other data retrieval systems, the formula below enables the calculation of an approximate resistance-to-earth based on the raw value from the transmitter:

$$100 \times (1023 - \text{value}) / \text{value} = \text{resistance in k}\Omega$$

Diagram

