Voltage Line Monitor Unit
For Cable Systems

- **Provides LED warnings of any induced dangerous voltages to engineers planning to work trackside**
- **Provides alarms of any induced dangerous voltages to Operators at centralised control centre(s)**
- **Ideally suited to rail applications where metallic trackside cable exists**
- **Suitable for all copper and aluminium cable types**
- **Low cost implementations realised through use of simple and innovative design**
- **On-board buttons for Input Channel Test and Clear History**
- **Local LED status information**
- **Compatible with existing D&IT SCADA - widely used throughout UK rail networks**
- **Ability to inter-work with third party SCADA systems using standard relay operation**
- **GSM Option – SMS messages can be sent to Tech Support Engineers**

Introduction

The use of copper cable, is still widespread in many rail applications. Such cable is often subject to dangerous induced voltages from the rail environment making it unsafe (typically in fault conditions) for engineers working trackside. For 25kv ac electrification schemes, the level of induction into trackside cables will be related to the ac traction load and 25kv ac short circuit fault profile as well as the length of the parallel cable/track.

This D&IT Voltage monitoring system provides a means of monitoring voltages induced on these cables and generating alarms to alert engineering and operations staff of potentially lethal voltages in the trackside cable.

Product Overview

The voltage monitoring facility is realised by monitoring a spare pair in both Up Track and Down Track cables.

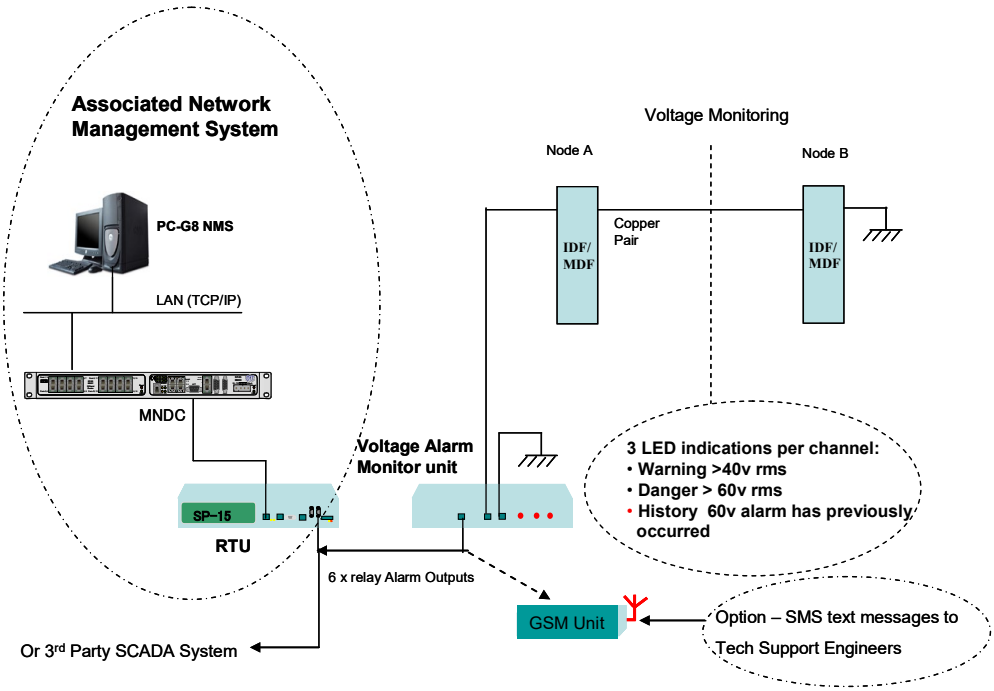
The VL monitor can output the alarms to a GSM unit, a 3rd party SCADA system or to a co-located D&IT Remote Terminal Unit (RTU) and associated Network Management System (NMS) as shown on the next page. Several versions of D&IT RTUs are available supporting Ethernet, Dial up and Serial (with integral VF copper line extension for up to 16km) communications links.

Each VL Monitor unit provides longitudinal voltage monitoring of these 2 cable pairs. The unit provides local indications (LEDs) and external alarm outputs for 3 conditions on each pair, namely when voltage thresholds of 40Vrms (Warning) and 60V rms (Danger) are exceeded and when there has been a history of “Danger” warnings – a “Clear History” (button switch) is also provided to allow the user to clear the illuminated Danger History LED(s) and associated alarm(s).

Each separate alarm output (6 in total) causes a relay to generate a signal that is detected on a Digital Input Module port in the co-located D&IT RTU or equivalent 3rd party device. The RTU detects the input condition and the resultant alarm(s) are forwarded to the associated/centralised Network Management System.

The engineer can check the status of the History LEDs before starting work in a particular cable section.

A Test facility (button switch) is provided to simulate hazardous voltages on both channels – all red LEDs will illuminate when the test button is pressed.



SPECIFICATION

Enclosure	1U (1.75") Aluminium ventilated enclosure Suitable for 19" and ETSI rack mounting
Weight	1.2kg
Power Consumption	5 watts Max (all relays activated)
Input Connector	1 x 15 way "D" type male
Input Signal	2 x rating 0-60v rms
Output Connector	1 x 15 way "D" type (high-density female)
Relay Output Signals	6 x contact rating 30VA (1A@30DC, 0.5A@120V AC non-reactive load) Maximum switched voltage 60V DC, 42.4V AC
Status Indication	7 x LEDs; Red LEDs 1-6 (Danger History, Danger & Warning for Ch 1 and 2), Green LED Pwr OK
Operator Buttons (2)	Input Chan Test Buttton & Clear History Button
Power	4-way Slim-line Trident
Power Supply	24V or 48V nominal (20V to 68V, 72V without damage), positive or negative ground permitted
Environmental	Meets requirement of EN 300 019-1 EEE producer registration number WEEE/HH0060TU
Safety	Complies with EN 60950
EMC	Meets the appropriate requirements of EMC Directive 89/336/EEC & 91/440/EEC

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