

Delta V

Fault Location for Underground LV Cables



Delta V

Locates Permanent and Intermittent faults, automatic operation detects fault activity 24 hours/day and capable of finding intermittent faults before another outage.

DELTA V uses the voltage gradient technique to locate faults on underground low voltage cables. It is especially effective when used with the **REZAP Fault Master** Low Voltage autorecloser on both intermittent and permanent faults.

DELTA V consists of several intelligent Remote Monitoring Nodes and a portable Handset. The Nodes are miniature transient recorders installed along the faulted feeder to record voltage drops during faults.

The Handset collects the information and collates the results to give a fault location.

INSTALLATION PROCEDURE

The topography of the cable is entered into the Handset using a simple graphic interface. It is not necessary for the exact cable configuration to be described, but it is important that major junctions in the backbone are identified. The Handset will then suggest the best locations for the Nodes.



Fault Location

The first Node is always fitted at the substation, ideally with a **REZAP Fault Master** to manage any fault activity. The remaining Remote Nodes are then installed in suitable premises on the faulted phase by simply plugging the Nodes into domestic sockets or fitting into UDBs. The location of each Node can be entered on-screen to allow the operator to find them again after the fault has been repaired. In general, the greater the number of nodes - the more accurate the fault location, but the system can operate with as few as three Nodes with simple cable topography.

INTERMITTENT FAULT OPERATION

In this case it is likely that the **REZAP Fault Master** will not trip immediately and normal supply will be maintained until fault current is detected. The Nodes then sense the voltage drop and record several cycles of data immediately prior to the **REZAP Fault Master** operation. Each record is time tagged permitting information from several fault events to be gathered.

In many cases the fault can be located successfully even if the **REZAP Fault Master** has not seen sufficient current to trip. The network can be revisited at any time and the data collected and used to calculate a fault location.

PERMANENT FAULT OPERATION

In this case the **REZAP Fault Master** will trip immediately, but the Nodes will be able to collect enough data to calculate a fault location. If necessary the process can be repeated to zero-in on a given location.

FAULT LOCATION

After a fault each Node can be visited and the data extracted using the Handset. The Handset guides the user through a menu to give the cable parameters necessary for an accurate location. The Handset then calculates a fault position based on the voltage gradient and the topography of the network. Results are presented in both graphical and text form, giving the fault location in metres from the nearest major cable junction.



KELVATEK

Power Centred

Head Office

Kelvatek Ltd
31 Ferguson Drive
Knockmore Hill Industrial Park
Lisburn BT28 2EX
Northern Ireland

Telephone +44 (0)28 9260 1133
Fax +44 (0)28 9267 3313

UK

Kelvatek Ltd
Bermuda Innovation Centre
St David's Way
Bermuda Park, Nuneaton
Warwickshire CV10 7SD

Telephone +44 (0)24 7632 0100
Fax +44 (0)24 7664 1172

Germany

Kelvatek Ltd
Zum Brückenberg 31A
59872 Meschede
Germany

Telephone +49 (0)2903 399 389
Fax +49 (0)2903 399 469

Poland

Kelvatek Poland Ltd. Sp. z.o.o
Ul. M. Bałuckiego 21/2
30-318 Kraków
Polska

Telephone +48 (0)12 266 0122
Fax +48 (0)12 269 0174

USA

Kelvatek Inc
4706 North Ravenswood Avenue
Chicago, IL 60640
USA

Telephone 773-598-4126
Fax 773-275-1289