

Specialist in high voltage instrumentation, automation and installation,

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## **Bowdens Rightway Pathfinder Mk10 – GSM Operational Instructions (South Africa Version)**

PATHINDER Mk10 GSM – portable overhead line fault passage indicator with GSM monitor  
The Mk10 is an instrument for fault location on unearthed overhead line networks.

It identifies Earth faults and Phase to Phase faults.

It is built into a watertight polycarbonate enclosure, suitable for being left outdoors for extended periods of time. It should not be used as a permanently installed FPI.

It is for use at about 5 metres from the over head line conductors. It can be used at any point along the conductor span.

When fault current is sensed a flag will flip to 'RED' and an Alarm text message will be sent to the receiving mobile, free standing PC base station.

The message received will be as programmed during the commissioning. See 'Commissioning Procedure' data sheet.

### CONTROLS

There are two control switches:

ON/OFF - this switch also conducts a function check every time the unit is switched ON.

Sensitivity Switch – should be switched according to the fault level.

HIGH	–	faults currents above 14A (under 150MVA)
LOW	-	faults above 70A (over 150MVA)

### TIME DELAY

It has a 50mS delay when its threshold current is exceeded before it alarms or 'flags'.

This delay allows for the effects from Magnetisation Inrush Current or other non fault transients to clear before 'FLAG' operation to indicate fault current passage. It is a 'go – no go' device at levels of current depending on setting.

The moment that 50mS is reached the Mk10 will 'FLAG' if the residual field from the conductors above is above the 'High' or 'Low' setting.

### INSTALLATION ON SITE

1. Position Mk10 on pole as shown below and secure with elasticated strap or nylon buckle belt.
2. Hold a mobile phone with same type of system SIM card near Mk10 and confirm good signal strength.
3. Select sensitivity and switch 'ON'.
4. The Mk10 will carry out auto-check and Flag with flip red to black. A message will be sent to the receiving mobile. The message will be as programmed at commissioning

Typical Message:

#### Screen Message

- |                             |  |
|-----------------------------|--|
| Mk10-GSM                    | - Unit Identification  |
| Dorking                     | - this is the location - maximum 17 characters.                        |
| Health Check>> Daily Report | - Options Never, daily, 7 days or 28 days                              |
| Battery OK                  | -  |
| Signal 20(📶 📶 - - -)        | - Signal level value and Bar graph.<br>99(? - - -) is maximum strength |
| Test FPI Reset              | - Signifies the unit is Reset in the Alert Mode.                       |
5. To test Alarm signal, swipe magnet over Mk10 Coil. Flag will flip to 'Red'.  
Receiving mobile phone will receive message with time stamp of receipt on the network.  
Typical message:  
Mk10-GSM  
BB123  
FPI ALARM

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- Switch off unit (no alarm will be sent) and repeat 3 and 4 above.  
Leave switch ON . The Mk10 is now in the Alert Mode and will report to the receiving mobile when Alarmed by fault current.

### ALARM RESET

When the MK10 is alarmed the RED Flag will drop and a GSM SMS message sent to the mobile phone or PC.

After 2 minutes the Mk10 resets itself to the ALERT mode ready for any subsequent fault and sends a RESET message to the mobile phone or PC.

The RED FLAG auto resets after 2 minutes or when manually reset, whichever occurs first.

### SENSITIVITY

When a Sensitivity setting is chosen the other sensitivity is not immobilised. Thus if two Mk10's are placed on the same pole, but one set at 'high' and the other at 'low' sensitivity and fault current flows the following will happen:

<b>Mk10 Setting</b>	<b>Faults over approx. 70A</b>	<b>Fault current under approx. 70A</b>
High	Will operate	Will operate
Low	Will operate	Will not operate

If a Mk10 was set to 'high' sensitivity at 5 metres and load current was sufficient (ie above threshold) the instrument would flag.

Equally it would flag at low currents if the instrument was place too close to the conductors.

The relative position with conductors, value of fault current and load current are all factors to be considered when setting up the Mk10.

### Type of OHL

The OHL distribution system in the UK is unearthed on wood or concrete poles with either flat, triangular or wishbone conductor configuration. The Mk10 has been designed for this system.

It should not be used on double circuit 'H' pole lines, lattice structures, vertical formation conductors, mixed voltage lines or 'tee off' poles.

The Mk10 is responsive to a value of magnetic field and will respond to magnetic fields regardless of the field source or position of source relative to the instrument. On a clean OHL pole with no other field source save the conductors this is no problem.

