

# SCOPE

## CFL PL2+ Cable Fault Prelocator



Identify cable faults quickly and  
precisely with CFL PL Series

## The Product

### Cable Fault Prelocator

Underground cable faults cannot be avoided due to many factors such as ageing, moisture ingress, road widening, infrastructure improvement, digging carried out for repairs of other underground utilities etc.

These faults generally take long time to detect and hence long time to repair the damaged cables and restore the power supply. Long outages cause heavy production loss to industries, revenue loss to power distribution companies and inconvenience to consumers. This calls for quick fault location and restoration of power supply in minimum possible time.

An ordinary fault locating kit comprising of Surge Generator and Pinpointing set can take long time to locate fault point. SCOPE offers Prelocator instruments that can give the fault distance to help the operator for reaching the spot quickly and pinpointing the fault in a short time.

The new generation CFL PL2+ Cable Fault Prelocator from SCOPE is the ultimate solution for locating underground cable faults in minimum time. It uses advanced technology for fault distance measurement which helps even an unskilled operator to locate the fault accurately.

CFL PL2+ portable Prelocator is used for identification of fault types in underground cables and the distance of fault. These products are designed to find out various types faults in the cable such as Open Circuit, Short Circuit, Splice in Cable, High Resistance, Moisture Ingress, etc. Various modes of operation combined with advanced features offers user the most effective solution for the job.



- 1. 1.5.7 inch LCD Display
- 2. "Reset" button
- 3. Quick Access Function Keys
- 4. "Impedance Match" / "Balance" Knob
- 5. RS-232 Port
- 6. Battery Charging Socket

### Application Area

- Underground Power Cables
- Signaling and Control Cables
- Communication / Telecom Cables
- Overhead Cable Lines
- IT / Computer Network Cables
- Television Cables

## Measurement Modes

### Low Voltage Pulse-echo / Time Domain Reflectometer (TDR)

Time Domain Reflectometer (TDR) works on the same basic principle as radar. In this mode of operation, the Prelocator sends a low voltage, high frequency wave / pulse periodically into the cable under test. If the cable has constant impedance and is properly terminated, all of the sent energy will be equally dissipated across the cable. If there is any fault or, abnormality in the cable (like joint etc.) there will be a change of impedance at that point. As a result of the same, a part or all of the pulse energy is reflected back to the sending end of the instrument. Based on the velocity of propagation and the time difference between instant of transmitting the pulse and receiving back the reflected pulse, the distance to fault point from the sending end gets calculated.

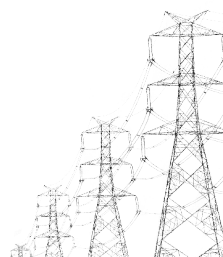
TDR method is useful for identifying Open Circuit Faults, Short Circuit Faults, Low Resistance Faults, Cable Joints and Ingress of Moisture. TDR mode can also be used to measure the length of a healthy cable and determination of VoP for a known length of healthy cable.

### Secondary Impulse / Arc Reflection / Multiple Impulse Method (SIM/ARC/MIM)

Localization of the cable faults with a high fault resistance is usually difficult using low-voltage TDR method. To localize these types of faults, the Prelocator need to be used in conjunction with the CFL SG Series High Voltage Surge Generator (Thumper) and ARC / SIM filter. The essence of the Arc Reflection Method is that with the help of CFL SG Series High Voltage Surge Generator, a short-time electric arc is created in the place of cable damage and this arc time gets prolonged by the use of ARC / SIM filter. Synchronously with the arc, the Prelocator performs the measurement. Thus, we can transform the high resistance fault into a low resistance fault or short circuit fault and the fault location can be identified easily with the simultaneous application of TDR by Prelocator. However, to achieve this, the Prelocator need to be coupled properly with the Surge generator and ARC / SIM filter in ARC / SIM mode. Multiple signatures of Arc Reflection Method (ARC) or, Secondary Impulse Method (SIM) are taken in quick succession and they are compared together to identify the fault location most clearly. This is known as Multiple Impulse Method (MIM).

## Features

- Compact, Lightweight and Rugged
- User friendly operation
- Wide measurement range up to 50km
- Highest measurement accuracy up to 0.04%
- High speed sampling of 100MHz
- Multiple waveform comparison with Subtraction mode to show waveform differences
- Zoom function for detailed review of the waveform
- Asynchronous interference & noise suppression
- Adjustable Gain and Balance
- Inbuilt Cable Library for easy setup and testing
- Inbuilt memory to store 100 waveforms
- RS-232 port for communication
- High resolution 5.7" Monochrome LCD display
- Mains as well as Inbuilt Rechargeable Battery operated
- Housed in IP67 class molded case



## Specification

Parameters	CFL PL2+			
Modes of Operation	<ul style="list-style-type: none"> <li>TDR: Time Domain Reflectometry / Low Voltage Pulse-echo</li> <li>SIM / MIM / ARC: Secondary Impulse / Arc Reflection / Multiple Impulse</li> </ul>			
Sampling Rate	100MHz			
Measurement Range	Up to 50km			
Measurement Accuracy	0.04% to 0.4%			
Best Resolution	0.1m			
Pulse Amplitude (OCV)	10V			
Pulse Width	10nS to 100µS			
Output Impedance	25Ω to 600Ω			
Velocity of Propagation (VoP) / Propagation Factor (PF) Settings	Parameter	PF	V/2	V/2
	From	1.000	50m/µS	50m/µS
	To	3.000	150m/µS	150m/µS
Memory	100 Waveforms			
Connectivity	RS-232			
Cable Library	>100 Settings			
Display	5.7" Monochrome, LCD			
Battery	Rechargeable Lithium Ion, Suitable for 8 hour operation			
Charger Input Supply	90V to 264V AC, 47 to 63 Hz, Single Phase			
Environmental	-10°C to +50°C, up to 95% RH (Non-Condensing)			
Dimension	270mm x 240mm x 120mm			
Weight	2.5 kg			

## Standard Accessories

TDR Cable, 2m Long	2 No.
Trigger Cable, 2m Long	2 No.
Mains Input / Battery Charger Cable	1 No.
Operation Manual	1 No.
Soft Carrying Bag for Main Instrument and other accessories	1 No.
Factory Test and Calibration Report	1 No.

## Optional Accessories

- TDR Test Cable 5m / 10m / 20m / 25m / 35m / 50m Long
- Other length of TDR Test Cable are also available on request
- Long Cable can be supplied with Cable Drum

## Ordering Code

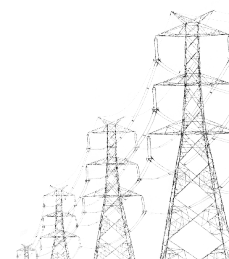
Example: CFL PL2+

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CFL PL2+

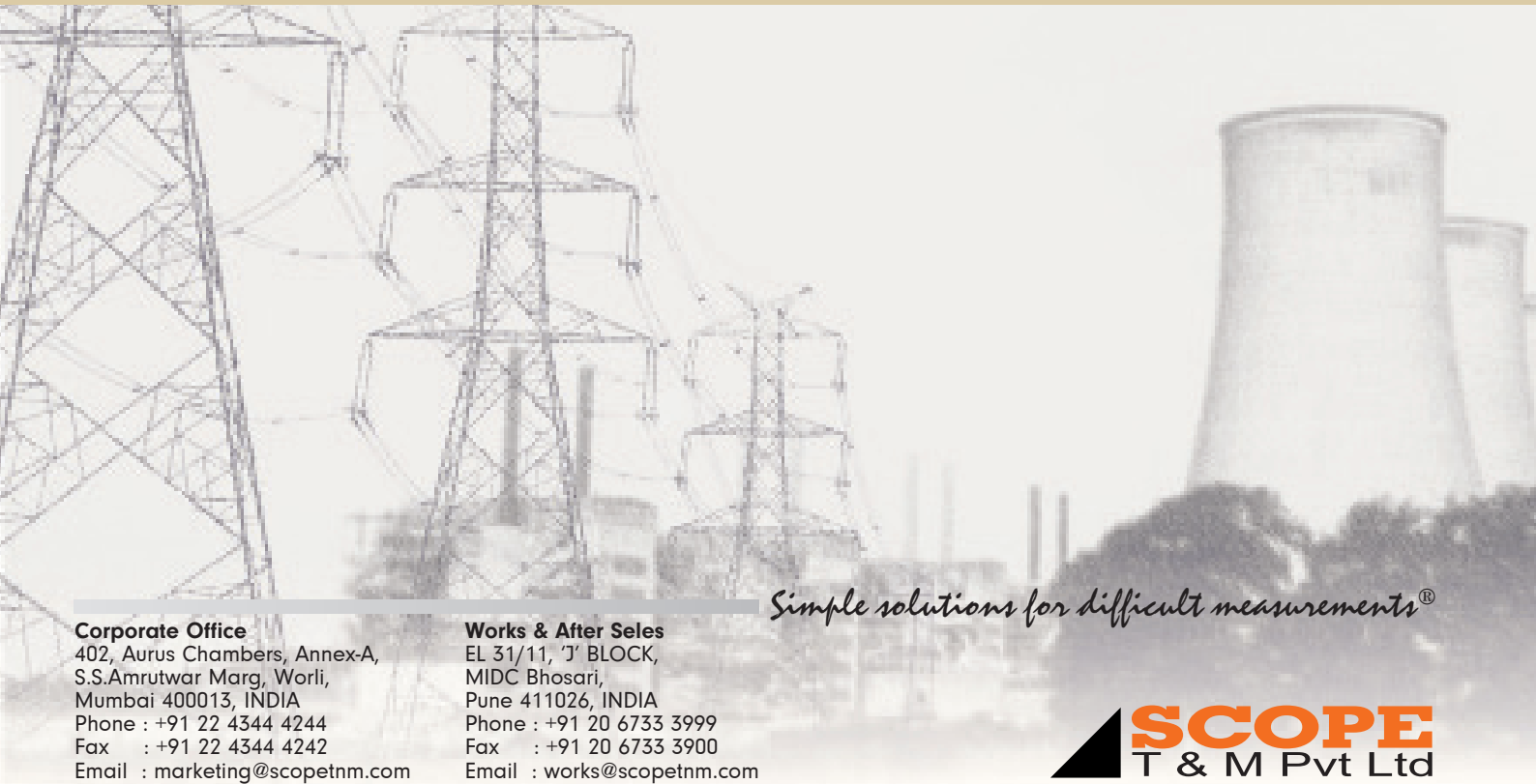
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F	Reserved												None	N
F	Reserved												Customised	Z
F	Reserved												Indian Plug	I
F	Reserved												Universal Plug	U
F	Reserved												Industrial Plug	V
N	None												230V ± 15%, 50/60Hz AC Input	R
Z	Customised												110V ± 15%, 50/60Hz AC Input	Q
F	Reserved												5m Test Lead Set	T
N	None												25m Test Lead Set	E
1	Manual Cable Drum												50m Test Lead Set	G
2	Motorised Cable Drum												Customised Test Lead Set	Z



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Distribution, Industry ...

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