UNDERGROUND CABLE FAULT LOCATING EQUIPMENTS & SYSTEMS

COMPAC 20 **Cable Fault Locating System**

Description

Cable Fault Locating System COMPAC 20 is prime system to provide quick, effective, accurate and safe fault location. Specifically designed for service, industrial and power utility companies. It is a multi functional system in a trolley mounting design. The HV surge tester, DC High voltage test set, Arc reflection and Burn / Proof test is given for cable fault location of short circuit, open circuit, high resistance, and intermittent and sheath faults.

Pre-location
After identifying the type of fault, pre-location of fault can be determined using the latest pre-location methods such TDR, MIM, ICM is provided in this system.

TDR Mode
A narrow electromagnetic pulse with a fast rise time is sent in the cable that reflects back from the fault point /far end where the impedance was change. The VOP for each cable depending on the cable dielectric material is set. The distance to the fault is then computed automatically and displayed on pre-locator.

ICM Mode
It is a current transient analysis method of pre-location of fault. During a breakdown or flashover at the fault, transient's waves are generated that oscillate back to the source end which is utilized through a linear current coupler and store and displayed on pre-locator.

MIM Mode
It is a arc stabilizing mode, faults are stabilized by creating a temporary arc at the fault point through an arc reflection filter and reduce the resistance value of fault as short circuit, and displayed on pre-locator with reference graph.

DC Test
Used to check the di-electric strength of insulation in the cable and prove the integrity to identify and confirm fault conditions with a test voltage up to 20kV and current of 50 mA. The over current trip is provided for protection to the system under test in the event of the cable under test breaking down.

Pin - Point
Accurate pin-pointing of cable fault is carried out using surge wave tester with the help of surge wave receiver in acoustic method. The maximum output voltage of 16 kV in three selectable 4, 8 and 16 kV ranges with 1500 Joules of energy.

Proof / Burn Test
Using the available DC high voltage of 20 kV outputs, the maximum current is applied for stabilizing the unstable cable faults. This allows easier and quick pre-location and pin-pointing of the unstable faults.

Application

The Cable Fault Locating System COMPAC 20 is used to perform DC high pot test, Pre-location of fault distance with the help of pre-locator unit and Pin-point underground cable fault in acoustic method with the help of suitable Surge wave receiver and Pin-point sheath faults in power transmission and distribution networks or service provider companies.

Features

- Optimized surge energy for switchable capacitors values for each range.
- Pin-point location of cable faults in Low, Medium and High voltage cables by acoustic method.
- Perform DC / Proof test up to 20 kV
- Burn test up to 20 kV
- Output voltage selectable in three ranges 4, 8 and 16 kV.
- Full energy delivering capacity at each select range.
- High energy of 1500 Joules
- Adjustable output voltage from 0 to 100 % of selected range.
- Single manual Impulse for pre-location of cable faults.
- Cyclical pulse repetition for precise pin-pointing of cable faults in acoustic Method.
- Fully protected operation with three safety interlocks.
- In-built current coupler for pre-location of cable faults distance on ICM mode.
- Emergency OFF facility
- Pre-location of cable faults distance with TDR, ICM, MIM mode.
- Internal memory > 100 echo-grams.
- Menu driven operation.
- Interactive menu - guidance
- Big LCD touchscreen color display.
- Maximum measuring range up to 64km
- Automatic discharging facility of cable under test, in case of power failure or after switching off.
- Continues operation for extended period in case of pin-point difficult cable faults.
- Rugged construction and easy to carry on site.

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Specifications

Operating Mode Surge, MIM, DC / Proof Test Pre-location

Surge Mode

Output Ranges	0 - 4, 8, 16 kV selectable & continuously variable
Output Energy	1500 Joules full energy at each range
Impulse Mode	Single and Auto
Auto Impulse Sequence	1.5, 3 and 6 seconds intervals or as per customer request
Indication	ON / OFF lamp indication Respective mode select lamp indication Analog moving coil meter for output voltage (kV) Indication Over Heat indication

ARC / SIM Mode

Application	Pre-location of high resistance intermittent faults
Working Voltage	16 kV max
Surge Carrying capacity	1500 Joules Max
Indication	Visual lamp indication of ARC/SIM
ARC Stabilization Time	20 ms approx

HV DC Test Mode

Output Voltage Ranges	20 kV continuously variable
Output / Proof Test Current	1, 10, 20 mA
Burn Current	60 mA
Indication	Analog moving coil meter for output voltage (kV) Indication Analog moving coil meter for output leakage current (mA) Indication Leakage current trip lamp indication
Protection	Over current tripping

Sheath Faults (Optional)

Output Voltage	0 - 6 kV continuously variable
Burn Current	60 mA

Pre-location

Voltage of transmitting pulse	30V
Width of transmitting pulse	40 ns-3.56 µs
Voltage withstand	400V AC (50/60Hz)
Output impedance	5 - 80 Ohm
Measuring range	0 64km
Sampling rate	100MHz (10ns)
Propagation velocity	90-300m/µs
Number of Echograms Memories	> 100
Display	8.4 inches, 640x480dots, Touch screen and Color LCD
Location Error: TDR and MIM mode	≤±1m when detecting range ≤4 km ≤±4m when detecting range >4 km
ICM mode	≤±4m when detecting range ≤4 km ≤±16m when detecting range >4Km
Charging Voltage	Input: 110 265V AC Output: 8.4V±10%DC
Operation time of rechargeable batteries	Approx. 5 h
Operating temp.	-20 ~ +50 °C
Storage temp.	-40 ~ +60 °C

General Specification

Power Supply	230 V AC ± 10%, 50 / 60 Hz Single phase
Over Load Protection	Input current Limiter switch Fast blow fuse in mains and controlled supply
Safety Protection	Variac Zero inter-lock Output cable plugs inter-lock HV Switch inter-lock Mode Switch inter-lock Over Heat protection Emergency OFF switching
Earth Discharge	Soft automatic discharge through in-built solenoid
Operating Temp.	0 Deg C ~ 55 Deg C
Storage Temp.	- 5 Deg C ~ 60 Deg C
Dimensions	600 (L) x 600 (W) x 1000 (H) mm with Rubber wheels
Weight	180 Kg Approx.

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001:2015

CE

TELEMETRICS

TELEMETRICS EQUIPMENTS PVT. LTD.

Working Principle

The HV surge tester SWT ignites an arc or spark at the fault. This results in a transient, i.e. a spreading and repeatedly reflected travailing wave between the fault and the surge wave generator. Inductive couplers record this transient wave with the help of a pre-locator unit and convert in to fault distance.

Surges of high energy are applied to the fault at the set voltage and time interval for pin-pointing the exact spot on the cable length.

These surges create noise and vibrations at the fault site. The intensity of the noise and vibrations get attenuated during their travel to the ground surface. A ground microphone and a sensitive surge wave receiver SLE90 carried on the route of the cable on the pre-located area pin-point the exact spot of the fault in minimum time.

The high voltage DC test up to 20 kV is carried out to check the dielectric strength or insulation of cable on DC test mode. The respective voltage and leakage current is indicated on the meters.

Function

The COMPAC 20 system is used to pin-point of cable faults location. It is basically a variable DC high voltage power supply, connected to a high voltage capacitor bank. The value of capacitance is usually selectable by parallel, series parallel and series combination.

This combination being linked with suitable voltage taping to give the constant energy output on low voltage / high capacitance or high voltage / low capacitance in surge mode.

In DC test mode the internal capacitor is isolated through a mode selection switch. This high voltage output is applied to the cable under test through a spark discharge device.

The cable fault pre-locator is a microprocessor based equipment and can be used to pre-locate fault distance with different mode.

Standard Accessories

- HV Output Cable 10 sq mm single core screen cable 15 meter length with heavy duty clamp wound on cable drum
- Mains supply 1.5 sq. mm 3 core cable 15 meter length wound on cable drum
- Yellow / Green 10 sq mm earthing cable 15 meter length with heavy duty clamp wound on cable drum
- For TDR single core shielded cable 15 meter length wound on cable drum
- Hard discharge rod
- Instruction / Operating Manual
- Printer Software CD for Pre-locator
- Rexin Cover

Standard Warranty	**One Year**
Other models available	**Cable Fault Locating System COMPAC 40 (SWT - 0 - 8, 16, 32kV - 1000J or 2000J, DC Test - 40kV - 10mA)** **Cable Fault Locating System COMPAC 32 (SWT - 0 - 8, 16, 32kV - 1000J or 2000J, DC Test - 32kV - 10mA)**
Associated receiver use to pin-point cable faults	**Surge wave receiver SLE90 or SLE200**
Associated receiver use to pin-point Sheath faults	**Sheath Fault Locator EFL 1 (Optional)**

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