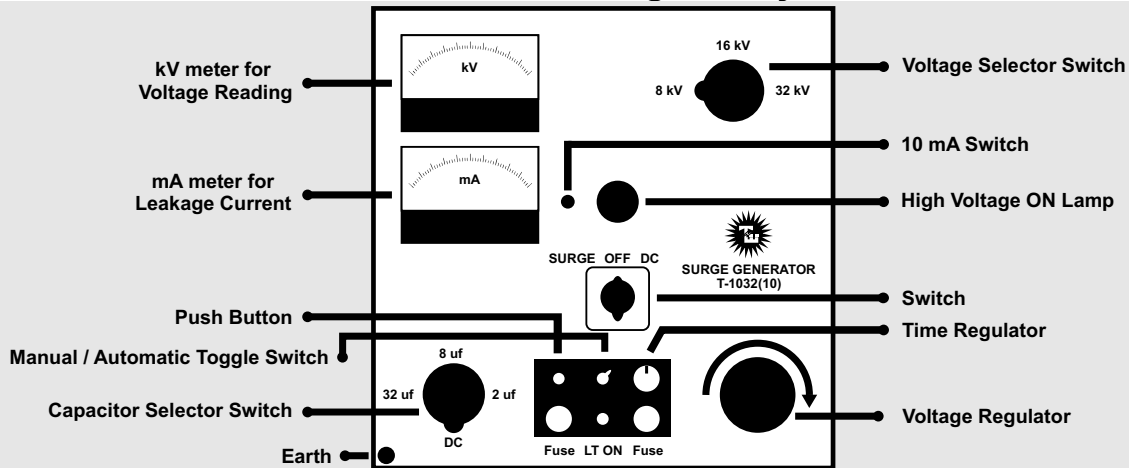


## Surge Generator T-1032(10)

- For fault location in LT to HT 33 kV cables.
- Inbuilt DC high voltage testing up to 32 kV.
- Inbuilt burn down facility(burning) suitable for high resistance faults.
- Output current of more than 200 mA.
- Thumping(Surge) up to 32 kV with 1000 Joules energy on 8, 16, 32 kV ranges for pinpointing the fault.
- Inbuilt ICM & Decay coupler to connect with Reflectometer T-510 for finding distance to the fault.
- High safety features.



## Description

It is used to produce high voltage surges, perform DC high voltage testing and provide burning facility.

### Inbuilt Pressure testing(Hipot test)

Perform DC high voltage testing up to 32 kV to find out which phase is faulty and determine its breakdown voltage and the leakage current.

### Inbuilt Burn down facility

In case of high resistive faults we require burning, Burning will reduce the breakdown voltage of the fault and it will be easy to pre-locate and pinpoint. Hence, burning facility of **more than 200 mA** is provided.

### Thumper

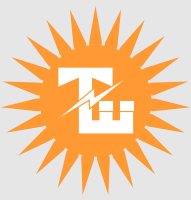
It produces high voltage surges up to 32 kV with 1000 joules energy. With **Reflectometer T-510** the high voltage surge produced by the Surge Generator are used to **find the distance to the underground cable fault**. These high voltage surges will create an electromagnetic signal along the cable and a flash over will occur at the fault point leading to acoustic signal, **Digipoint** will identify these signals and indicate the route of the cable to **pinpoint the exact location of the fault**.

# Technical Data

## General

Ranges	Output Voltage	Output Current(Burning)
1	0 - 8 kV	More than 200 mA
2	0 - 16 kV	More than 90 mA
3	0 - 32 kV	More than 35 mA

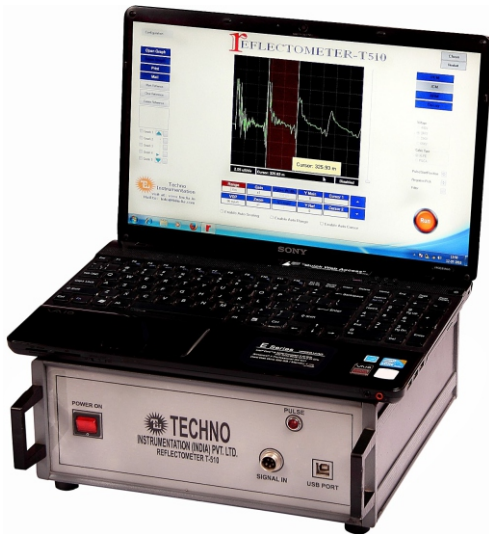
<b>Output Energy</b>	1000 Joules Energy on each range
<b>Supply Voltage</b>	Suitable to operate on mains (220 - 240 VAC, 45 Hz - 60 Hz) or portable generator
<b>Auto Discharge</b>	Built in
<b>Surge Timing</b>	Manual mode or 5 to 15 sec in Auto mode
<b>Signal Output</b>	To work with Reflectometer T-510
<b>Operating Temperature</b>	-10 to 50 degree Celcius
<b>Storage Temperature</b>	-10 to 70 degree Celcius
<b>Dimensions</b>	50 x 50 x 73 cm (Lbh)
<b>Weight</b>	125 Kg (approx.)
<b>Protection Features</b>	Zero start interlock, Range interlock, Automatic discharge, Auto OFF in case of power supply break, High voltage ON lamp, Over load protection, Over current protection
<b>Accessories Included</b>	High voltage output cable (25 meter), Lt cable (15 meter), Earthing cable (15 meter), Discharge Rod, Discharge rod lead (5 meter)



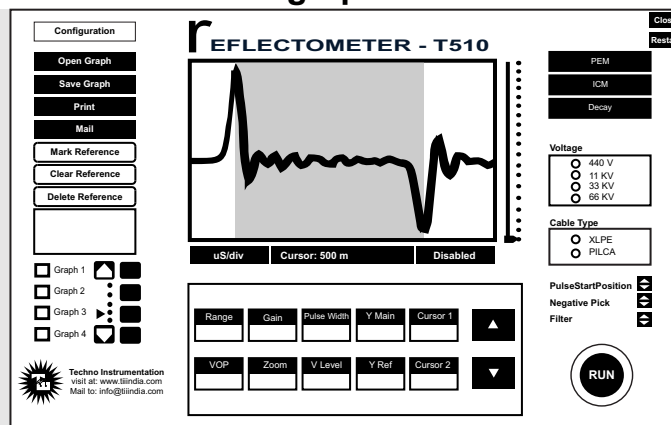
# Techno Instrumentation(India) Pvt. Ltd.

Manufacturer of underground power cable fault locators

## Reflectometer T-510



- Pulse Echo, Impulse current and Decay method provided to get the distance to almost all types of faults.
- Laptop based 15 inch display with user friendly interface for easy operation.
- Online support of experts to review fault graphs.
- Comparison feature of any 5 graphs for review and analysis to get more accurate results.
- Velocity of propagation(VOP) control makes it easy to precisely pre-locate faults in cables with different velocity.
- Automatic storage of more than 10 lakh fault graphs.



### Description

It is a laptop based digital time domain reflectometer used for finding the distance to the fault from one end of the cable (Pre-Location).

### Pulse echo method

Low voltage pulses are injected into the cable to locate open or short circuit low resistive faults up to 200 ohm(measured by multimeter) only. Provides total length of the cable.

### Impulse current method(ICM)

High voltage surges with the help of surge generator are injected into the power cables. It gives the fault distance of almost all types of faults including low resistive, high resistive and intermittent faults.

### Decay method

Decay method is most suitable for accurate pre-location of **Flashing faults**.

### Interactive software

The interactive menu based graphical user interface makes it easy for even a layman to pre-locate the fault distance. The software automatically saves all the test results for future review and analysis with a huge storage capacity of more than 10 lakh graphs. It also allows us to compare any 5 selected graphs to review the fault conditions for more accurate result.

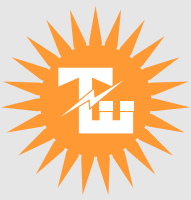
# Technical Data

## General

<b>Pulse Amplitude</b>	30 V peak to peak
<b>Amplitude Range</b>	100 mV/div to 10 V/div
<b>Pulse Width</b>	50 nanosecond to 5 microsecond in Pulse Echo Mode
<b>Range</b>	50 m to 50 km
<b>Sampling Rate (Band Width)</b>	200 MHz
<b>Trigger Range</b>	1 V to 15 V
<b>VOP Range (Half)</b>	50 m/microsecond to 150 m/microsecond
<b>Interface</b>	USB
<b>Power</b>	230 VAC
<b>Dimensions</b>	32 x 32.5 x 13 cm (Lbh)
<b>Weight</b>	6.22 Kg (approx.)
<b>Accessories Included</b>	Laptop, Signal cable, Pulse echo cable, USB cable, Power cord, Instructions manual

## Software

<b>Interface</b>	Menu based Graphical User Interface (GUI), Microsoft Windows operating system
<b>Resolution</b>	1366 x 768 pixels
<b>Storage</b>	More than 10 lakh graphs in FLT (fault file) in Month:Date:Time format



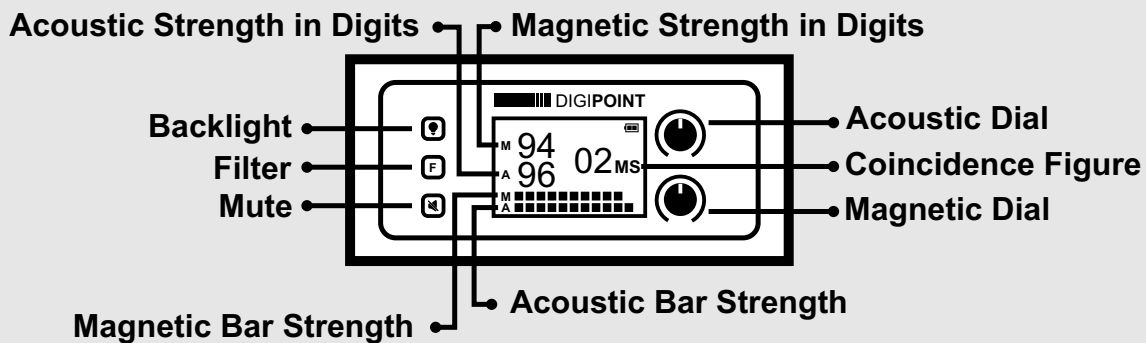
# Techno Instrumentation(India) Pvt. Ltd.

Manufacturer of underground power cable fault locators



## Digipoint

- Magnetic and Acoustic signal strength through bar graph and digits on LCD.
- Coincidence figure indicates the relative distance to the fault in milliseconds(ms).
- LCD screen with backlight feature for night.
- Background noise reduction and noise immunity.
- Built to withstand rugged field conditions with high grade acoustic and magnetic sensors.
- Filter and Mute function in the receiver unit.
- Easy, fast and accurate pinpointing.



## Description

It is used with a Surge Generator to determine the exact position of faults in underground power cables.

### Pinpointing the exact location of the fault

The surge generated by the surge generator will create an acoustic signal at the fault point. The Digipoint displays the strength of that signal through strength bars and digits on an LCD screen. The headphones help users to hear the sound generated.

### Route indication of cable under test

It indicates the route of the cable under test by sensing and amplifying the electromagnetic signals produced at the time of surging and displays the magnetic strength of those signals through strength bars and digits on an LCD screen.

### Coincidence Figure

Pinpointing the exact location of faults in cables which are laid inside pipe is very difficult because the air inside the pipe will lead to echo of sound which is generated at the fault point, leading to sound/acoustic signal of strength similar to the fault point at different parts of the cable, hence to pinpoint the exact location of fault in these conditions we use the **coincidence feature** of the Digipoint, which gives the **distance to the fault in milliseconds** with respect to your position.

# Technical Data

## Receiver

<b>Signal Input</b>	Balanced from sensor (Acoustic) From coil housed in receiver (Magnetic)
<b>Supply Current (No Signal)</b>	3 mA
<b>Input Resistance (Input to Ground)</b>	2 kilo-ohm
<b>Control</b>	Gain control for Acoustic signal and Sensitivity control for Magnetic signal
<b>Acoustic Indication</b>	Strength bar graph and digits on LCD and Sound through headphone
<b>Magnetic Indication</b>	Strength bar graph and digits on LCD
<b>Gain</b>	> 65 db (Acoustic) > 76 db (Magnetic)
<b>Frequency</b>	270 Hz to 3 KHz (Acoustic) 100 Hz to 10 KHz (Magnetic)
<b>Coincidence figure range</b>	0 to 99 milliseconds (ms)
<b>Supply</b>	12 V DC (AA battery x 8)
<b>Operation time</b>	> 30 hours
<b>Dimensions</b>	25.6 x 11 x 9 cm (Lbh)
<b>Weight</b>	1.4 Kg with batteries (approx.)

## Sensor

<b>Damping</b>	70 %
<b>Sensitivity</b>	0.02 V/mm/sec
<b>Connecting Cable length</b>	1.5 meter
<b>Dimensions</b>	8.5 cm (Diameter ) & 18 cm (Height)
<b>Weight</b>	1.1 kg with rod (approx.)

## Headphone

<b>General</b>	Dynamic headphones with padding and adjustable headband
<b>Impedance</b>	32 ohms