



# UltraTEV Locator™

Portable Partial Discharge (PD) investigation system  
Locates, measures and records PD activity in all substation assets - including cables

## Benefits

- Locating and measuring PD activity to identify faults BEFORE they lead to failures
- Recording and analysing PD activity to provide valuable information on the actual condition of assets
- More effective asset management, reliability, efficiency and safety, at lower cost

## Features

- Ability to pinpoint PD activity to within 10cm
- Ultrasonic and TEV sensors for surface and internal PD
- Measures environmental conditions: temperature, pressure and humidity
- Records the severity of PD for diagnostic analysis
- Works with cables and overhead assets
- Tough, weatherproof case with built-in 13 hour battery life

### FACT

85% of disruptive substation failures are PD related

### FACT

The UltraTEV Locator™ is the most powerful multi-sensor PD investigation system on the market

### FACT

The TEV technique for detecting internal PD was developed by EA Technology in the late 1970's for on-line detection



# Multiple Functions

## 1. PD Location

Both TEV Probes are used to locate the source of the PD activity, using time-of-flight measurements between the two probes.

The latest electronics enable the system to calculate the site of the discharge to an accuracy of 0.3ns (nanoseconds), equivalent to 10cm.

## 2. PD Survey

In survey mode, a single probe is used in the same ways as our UltraTEV Detector™ and UltraTEV Plus+™ handheld instruments, to detect PD activity.

Both ultrasonic and TEV sensors are used. The magnitude of the PD is displayed along with a simple traffic light indicating the level of PD activity detected. Green indicates no significant discharge, amber indicates some activity, and red warns the activity is at a level that warrants further investigation.

Operators can use the default factory set threshold levels, or set their own.

## 3. PD Comparative Measurement

Operators have a range of options:

- Measure the surface PD activity using the ultrasonic mode, and compare the result with those taken from other similar assets.
- Listen to the surface PD activity from the audio output (the system heterodynes the ultrasonic signal for this purpose).
- Take TEV readings of internal PD activity at various points on the asset.
- Factor in readings of localised temperatures indicating hot spots.
- Factor in environmental conditions: ambient temperature, relative humidity and atmospheric pressure all of which can influence PD activity.
- Compare results with those taken from other similar assets and historical records.

## 4. Cable PD Activity

PD activity in cables is measured using a plug-in Radio Frequency Current Transformer (RFCT)

Results are displayed in pico Coulombs (pC) as numerical values.



## 5. PD Activity Recording

All of the measurements taken by the UltraTEV Locator™, including the audio output, can be saved to the system's internal memory. The saved data can be downloaded via the USB port to a memory device.

The files can then be read directly into a spreadsheet for inclusion in reports, etc.





## Valuable condition data

The UltraTEV Locator™ when used in conjunction with the UltraTEV Monitor™ provides operators with all the information they need to move towards full condition based asset management techniques.

The ability to gather data on the condition of assets is a key part of the process of upgrading to Condition Based Risk Management™ (CBRM). This is EA Technology's market-leading methodology, based on applying a Health Index to each asset and factoring in both the probability and consequences of their failure: an approach which is proven to improve asset reliability, availability and safety, while reducing the overall costs of asset maintenance and replacement.



## Driven by customer need

The addition of the UltraTEV Locator™ and UltraTEV Monitor™ to our portfolio is the direct result of listening carefully to what customers require from their new asset management systems.

# Operator friendly

Intuitive software accessed through easy-to-use touch screen menus.

1



Weatherproof carry case

2



Can be carried halter-style or over-the shoulder

3



High resolution touch-screen - can be operated through the carry case cover

4



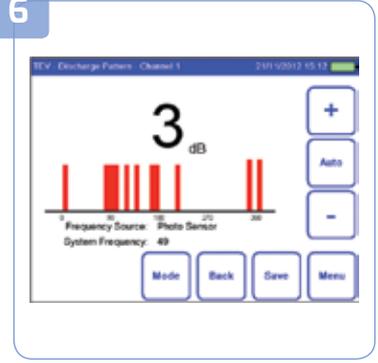
Simple touch-screen navigation between functions, including browser for stored data files

5



A phase reference is used to synchronise PD with the local power frequency, this is provided by either a plug in phase reference supplied with the instrument or optically from any nearby mains powered lighting source

6



The discharge pattern screen displays where the PD is occurring on a mains cycle time base. Patterns can be compared to distinguish between PD and electrical noise as PD is synchronised to the mains cycle.

7



USB port for easy transfer of stored PD activity data to PCs. Also makes it simple to download and install the latest software updates

8



Integral Function Checker confirms the instrument is operating correctly

# Specification: UltraTEV Locator™

TEV	
Sensor	Capacitive
Measurement Range	0 – 60dBmV
Resolution	1 dB
Max Pulses/Cycle	2216
Min Pulse Rate	10Hz (rolling displays only)
Precedence	0.3ns equivalent to 10cm
Discharge Pattern Phase Reference	Optical or plug-in

ULTRASONIC	
Measurement Range	-7dBµV to 68dBµV
Resolution	1 dB
Accuracy	±1 dB
Transducer Sensitivity	-65dB (0dB = 1volt/µbar RMS SPL)
Transducer Center Frequency	40 kHz
Transducer Diameter	16mm
Heterodyning Frequency	38.4 kHz

CABLE PD	
Sensor	RFCT
Measurement Range	0 – 25,000pC
Resolution	98pC
Accuracy	±98pC
Min Pulse Rate	10Hz

HARDWARE	
Enclosure	Self-colour injection moulded plastic case
Indicators	Colour back-lit LCD Charging indicator LED
Controls	Touch screen
Connectors	TEV/Ultrasonic Lemo mixed socket TEV Lemo mixed socket Cable PD BNC External Ultrasonic sensor Lemo multipole socket Non-contact temperature sensor Lemo multipole socket 3.5mm stereo headphone socket USB 1.1 port type-A receptacle 2.1mm 18V DC charger input
Headphones	Min. 8 ohms

ENVIRONMENTAL	
Operating Temperature	0 – 55 degrees C
Humidity	0 – 90% non-condensing
IP Rating	42

POWER SUPPLIES	
Internal Batteries	3.7V 27.2Ah Lithium-Ion
Typical Operating Time	approx. 13 hours
Battery Conservation	Automatic low battery voltage 'switch off'

# The UltraTEV Locator™ kit consists of...

- UltraTEV Locator Main instrument
- TEV/Ultrasonic Probe
- TEV/Magnetic Probe
- Ultrasonic Contact Probe
- Flexible Sensor
- Non-Contact Temperature Probe
- RFCT
- Peltor Neckband Headphones
- AC Reference Source
- Battery Charger
- Carry Case
- Operating Manual



## Plug-in accessory

The range of UltraTEV Locator™ functions can be greatly extended with this fully compatible accessory:

### UltraDish™

Ultrasonic directional microphone which enables operators to listen to PD activity on overhead assets.



# Global support

The UltraTEV Locator™ can be supplied and supported anywhere in the world, through our network of international sales offices and distribution partners. We provide excellent lifetime support for this system, including:

- Installation and commissioning
- Training
- Lifetime technical support
- Online data analysis and reports



## Our expertise

We provide world-leading asset management solutions for power plant and networks.

Our customers include electricity generation, transmission and distribution companies, together with major power plant operators in the private and public sectors.

Our products, services, management systems and knowledge enable customers to:

- Prevent outages
- Assess the condition of assets
- Understand why assets fail
- Optimise network operations
- Make smarter investment decisions
- Build smarter grids
- Achieve the latest standards
- Develop their power skills

Safer, Stronger,  
Smarter Networks

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