

Originally formed as Everett Edgcumbe, High Voltage Instruments Ltd. has been at the forefront of test instrument design since its formation in the year 1900. Since then the company name has changed to Edgcumbe Instruments Ltd and the Metrohm brand was created. The Metrohm brand is held in the highest esteem internationally for product quality, innovation and value for money. ISO9001 accreditation represents a testament of our high quality standards and we have been certified for more then 20 years to date.

Our range of products includes Live Line Testers, High Voltage Indicators, High Voltage Detectors, High Voltage Phase Comparators. Live Line Indicators, and Wireless Phase Comparators. Our products are now used and approved by the major electricity boards in United Kingdom and have been continuously proven fit for purpose in the field for more than 50 years.

Across time, we have been able to research and develop custom versions of our products as per the requirements of the major power distribution boards or rail network companies in the United Kingdom. Major companies that use our products on a daily basis include Scottish Power, Network Rail, Western Power Distribution, Northern Ireland Electricity, London Underground, and UK Power Networks.

Following a takeover by T&R Group in November 2020, High Voltage Instruments manufacturing facilities were moved to a more spacious, top of the line manufacturing complex located in Guildford, Surrey, in early 2022. Since then we have been providing new and returning customers with the same high quality products and have been continuously working towards innovating and staying at the forefront of the test instruments market.

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LLT Live Line Testers



Features:

- All in one kit
- Up to 33kV voltage testing
- Overhead lines phasing
- Proven in the field world-wide
- High reliability
- Lightweight and easy to transport
- Robust heavy duty case
- -25°C to +55°C operating temperature range
- Self test facility
- Shock & drop resistant

The Live Line Tester Kits (LLT) have been specifically designed to perform measurements for both live voltage testing and phasing on overhead lines, in substations and within switchgear compartments. Every kit includes all necessary components to effectively carry out these tests. Individual kits are available for system voltages of 3.3kV, 6.6kV, 11kv, 13.8kV and 33kV (50/60Hz).

The lower voltage versions are predominantly used in Universities and Hospitals while the higher voltage kits are more suitable for work on high voltage power lines. The equipment has been designed to operate within the temperature range: -25 °C to +55 °C.



Overhead Line Testing

Designed to comply with the requirements of IE-C1243 part 2, the LLT uses long established techniques for high voltage measurement. All readings are displayed on an analogue meter, the housing of which can be rotated through 240 degrees to ensure a perfect viewing position.

A battery-operated proving unit allows the equipment to be tested before and after measurements have been made and can also be used to check full scale deflection on the meter. Adaptors are available to allow Bowthorpe Rods to be connected for testing of raised conductors and a Repeater Station can be supplied to replicate meter readings at ground level. Space is reserved in the carry case for such accessories.

All components are housed within a heavy duty carry case with secure compartments. Manufactured using high quality fiberglass, rods and polycarbonate mouldings, the equipment is suitable for both indoor and outdoor use, including wet conditions.

Each kit comprises of the following: Live line tester with earth lead, Phasing rod with phasing lead, 2 extension rods, 2 bent end adaptors, 2 overhead line adaptors, Proving Unit with batteries, Polymer Cleaning Kit, and Instruction manual.



Live Line Tester kit details

Tester	3.3kV	6.6kV	11kV	13.8kV	33kV
Resistor Chain	22.5ΜΩ	52.5MΩ	75ΜΩ	100mΩ	225ΜΩ
Measuring	5kV	10kV	15kV	20kV	40kV
RangeAccuracy	±5% FSD				
Movement	100uATB	100uATB	100uATB	100uATB	100uATB
Length	1025mm	1025mm	1025mm	1025mm	1025mm
Weight:	1.4kg	1.4kg	1.4kg	1.4kg	2.3kg

Phasing Rod	3.3kV	6.6kV	11kV	13.8kV	33kV
Resistor Chain	22.5MΩ	52.5MΩ	75ΜΩ	100mΩ	225ΜΩ
Length	1025mm	1025mm	1025mm	1025mm	1025mm
Weight:	1.4kg	1.4kg	1.4kg	1.4kg	1.6kg



Extension Rods	All versions
Length	907mm
Weight:	0.65kg



Bent End Adaptors	All versions	
Length	675mm	
Weight:	0.27kg	

Proving Unit	Voltage Output 3 to 5kV
Dimensions	185 x 145 x 120 mm
Weight:	1.6kg



Overhead Line Adaptors	All versions	
Height	100mm	
Weight:	0.08kg	





HVD

High Voltage Detectors



Features:

- Automatic alarming above threshold voltage as default
- Fast response time, less than 1 second
- High Impact ABS body
- Proven in the field world-wide
- Self test facility
- Easy to use and Lightweight (0.6kg)
- Suitable for indoor/Outdoor use
- -25°C to +55°C operating temperature range
- Shock & drop resistant
- Standard safety yellow (other colours available)
- Various rod adaptors available to suit different operating rod styles
- Easy access for battery replacement

High Voltage Detectors (HVD's) are widely used throughout the electricity industry to determine that high voltage lines are de-energized prior to work being carried out, ensuring the safety of personnel. Designed to comply with relevant IEC standards, HVD's are available for use on system voltages up to 275kV.

HVD's are battery operated electronic contact devices that give clear indication of the status of the line under test both visually, by means of super-bright LED's and audibly with a high intensity buzzer. This ensures clear indication even in conditions of bright sunlight and high background noise.



Overhead Line Testing

The voltage setting to trigger activation (or threshold setting) can be set in accordance with IEC standards or in consultation with the user where detectors are used on a range of system voltages. All detectors have the facility to self check before and after use.

Each HVD standard kit comprises the following components housed within a purpose designed ABS heavy duty carry case:

- High Voltage Detector (HVD)
- Y Contact electrode
- Hook Contact Electrode
- Rod adaptor
- Polymer cleaning kit
- Instruction Manual

High Voltage Detector kit details

High Voltage Detectors (HVD's)

Visual Indication (Safe Condition): Green LED flashes at 2Hz

Voltage Present (Alarm Condition): Red LED flashes at 2Hz and Buzzer sounds with 3.1kHz tone, modulated at -70dBA at 1.5m.

Response Time: <1 second

Battery: 9v PP3-C IEC 6LF22



Contact Electrodes

Three sizes of aluminum hook are available in 40, 60 and 100mm. Alternatively, a straight 40mm stainless steel studelectrode, or Y contact electrode can be supplied.



Contact Electrode Extensions

To distance the detector away from any source of interference. Four sizes of electrode extension are available in 100, 250, 650, and 1000mm.



Rod Adaptors

Rod Adaptors are available for connecting to various operating poles shown from left to right are Bowthorpe, KP (Karl Pfisterer) and Universal Starwheel types.



Proving Unit

In addition to the self-test facility an external battery operated proving unit is available to check the completely assembled kit (threshold voltage dependent).

Output Voltage: 1100v P to P \pm 100v into a 20M Ω load.



High Voltage Detector types

A wide range of models are available to cover most distribution and transmission voltages used throughout the world. The following table contains a list of all the variations of High Voltage Detectors available.

HVD Type	Description	System Voltage	Threshold Voltage
HVD01/2A	HVD 11KV 2.5KV TH MA	11kV	2.5KV
HVD01/2B	HVD 11KV 1KV TH MA	11kV	1KV
HVD03/2A	HVD 33KV 4KV TH MA	33kV	4KV
HVD03/2B	HVD 33KV 5KV TH MA	33kV	5KV
HVD03/2C	HVD 33KV 14KV TH SA	33kV	14KV
HVD03/2D	HVD 25KV 7.5KV TH SA	25 - 30kV	7.5KV
HVD04/2A	HVD 11/33KV 3.6KV TH MA	11kV / 33kV	3.6KV
HVD04/2B	HVD 11/33KV 2.5KV TH MA	11kV / 33kV	2.5KV
HVD04/2C	hvd 11/33kv 1.2kv th ma	11kV / 33kV	1.2KV
HVD05/2A	HVD 66KV 8KV TH MA	66kV	8KV
HVD06/2A	HVD 132KV 9KV TH MA	132kV	9KV
HVD06/2B	HVD 132KV 15KV TH MA	132kV	15KV
HVD06/2C	HVD 132KV 12KV TH MA	132kV	12KV
HVD06/2D	HVD 132KV 20KV TH MA	132kV	20KV
HVD07/2A	HVD 66/132KV 9KV TH MA	66/132kV	9KV
HVD08/2A	HVD 6.6KV 1.5KV TH MA	6.6kV	1.5KV
HVD08/2B	HVD 6KV 200V TH SA	0-6kV	200V
HVD09/2A	HVD 3.3/6.6KV 0.75KV TH MA	3.3/6.6kV	0.75KV
HVD10/2A	HVD 6.6/33KV 1.2KV TH MA	6.6/33KV	1.2KV
HVD11/2A	HVD 11/66KV 2.5KV TH MA	11/66KV	2.5KV
HVD12/2A	HVD 2.2/3.3KV 0.5KV TH MA	2.2/3.3KV	0.5KV
HVD13/2A	HVD 6.6/132KV 2.5KV TH MA	6.6/132KV	2.5KV
HVD13/2B	HVD 6.6/132KV 1KV TH MA	6.6/132KV	1KV
HVD14/2A	HVD 33/132KV 6KV TH MA	33/132KV	6KV
HVD14/2B	HVD 33/132KV 6KV TH MA	33/132KV	6KV
HVD15/2A	HVD 11/132KV 3.8KV TH MA	11/132KV	3.8KV
HVD16/2A	HVD 33/66KV. 10KV TH MA	33/66KV	10KV
HVD16/2B	HVD 33/66KV 4KV TH MA	33/66KV	4KV
HVD17/2A	HVD 250KV 1KV TH SA	250KV	1KV
HVD31/2A	HVD 11KV 0.7KV TH SA	11KV	0.7KV
HVD32/2A	HVD 11/33KV 2.5KV TH SA	11/33KV	2.5KV
HVD33/2A	HVD 44/132KV 10KV TH SA	44/132KV	10KV
HVD34/2A	HVD 11/33KV 1.5KV TH SA	11/33KV	1.5KV
HVD34/2B	HVD 11/33KV 2.5KV TH SA	11/33KV	2.5KV
HVD35/2A	HVD 2-11KV DEAD BREAK TESTER	2-11KV	100V
HVD36/2A	HVD 3.3/96KV 1.5KV TH SA	3.3/96KV	1.5KV
HVD37/2A	HVD 66/132KV 9KV TH SA	66/132KV	9KV

High Voltage Detector types

HVD Type	Description	System Voltage	Threshold Voltage
HVD38/2A	HVD 132KV. 9KV TH SA	132KV.	9KV
HVD40/2A	HVD 110/220KV 17KV TH SA	110/220KV	17KV
HVD41/2A	HVD 22/33KV 6.5KV TH SA NZ SPE	22/33KV	6.5KV
HVD42/2A	HVD 50/220KV 15KV TH SA NZ SPE	50/220KV	15KV
HVD43/2A	HVD 11/33KV 2KV TH SA NZ SPEC	11/33KV	2KV
HVD44/2A	HVD 11KV 1.5KV TH SA	11KV	1.5KV
HVD45/2A	HVD 22/115KV. 4KV TH SA	22/115KV	4KV
HVD45/2B	HVD 22/115KV. 5KV TH SA	22/115KV	5KV
HVD46/2A	HVD 22/24KV. 1KV TH SA	22/24KV	1KV
HVD46/2B	HVD 22KV 2.5KV TH SA	22KV	2.5KV
HVD47/2A	HVD 33KV 1KV TH SA	33KV	1KV
HVD47/2B	HVD 33KV DEAD BREAK TESTER	33KV	0.6KV
HVD47/2D	HVD 34KV DEAD BREAK TESTER	34kV	0.6kV
HVD47/2E	HVD 66KV DEAD BREAK TESTER	66kV	0.6kV
HVD48/2A	HVD 1/245KV. 0.4KV TH SA	1/245KV	0.4KV
HVD49/2A	HVD 11/220KV 2.5KV TH SA	11/220KV	2.5KV
HVD50/2A	HVD 2.4/36KV 0.75KV TH SA	2.4/36KV	0.75KV
HVD52/2A	HVD 275KV 25KV TH SA	275KV	25KV
HVD53/2A	HVD 15/85KV 2.5KV TH SA	15/85KV	2.5KV
HVD54/2A	HVD 10/38KV 4.8KV TH SA	10/38KV	4.8KV
HVD55/2A	HVD 10/36KV 2.5KV TH SA	10/36KV	2.5KV
HVD55/2B	HVD 12/36KV 2.5KV TH SA	12/36KV	2.5KV
HVD56/2A	HVD 230V 12KV TH SA	230KV	12KV
HVD57/2A	HVD 5/36KV 1KV TH SA	5/36KV	1KV
HVD57/2B	HVD 5/36KV	5/36KV	1KV
HVD57/2C	HVD 36KV 5KV TH SA	36KV	5KV
HVD58/2A	HVD 12kV 2.5kV TH SA	12kV	2.5KV
HVD59/2A	HVD 25/33kV 9kV TH SA	25/33kV	9KV
HVD60/2A	HVD 60/220kV 15kV TH SA	60/220kV	15KV
HVD61/2A	HVD 33/275kV 6kV TH SA	33/275kV	6KV
HVD62/2A	HVD 600V/110kV 600V TH SA	600/110kV	600V
HVD63/2A	HVD 69kV 8kV TH SA	69kV	8KV
HVD64/2A	HVD 3.4kV 1kV TH SA	3.4kV	1.0kV
HVD64/2B	HVD 3.3kV 0.75kV TH SA	3.3kV	0.75kV
HVD65/2A	HVD 6.6/38KV 1.2KV TH SA	6.6/38kV	1.2KV
HVD66/2A	HVD 3.3/33kV 1kV TH SA	1.5/36kV	1KV
HVD66/2B	HVD 1.5/36kV 1kV TH SA	1.5/33kV	1KV
HVD67/2A	HVD 161kV 12kV TH SA	161kV	12KV
HVD68/2A	HVD 150kV 12kV TH SA	150kV	12KV

HVD - Dead Break Testers

HVD35/2A, HVD47/2B, HVD47/2D & HVD47/2E



Features:

- Designed for use on capacitive test points of separable connectors
- Automatic alarming above threshold voltage as default
- Able to test insulated polymetric cables in fused cable boxes
- Up to 66kV Range and 100V or 600V Threshold
- High Impact ABS body
- Self test facility
- Easy to use and Lightweight (0.6kg)
- Suitable for indoor/Outdoor use
- -25°C to +55°C operating temperature range
- Shock & drop resistant
- Easy access for battery replacement

Dead Break Testers are widely used throughout the electricity industry to determine that high voltage lines are de-energized prior to work being carried out thus ensuring safety of personnel.

Designed to comply with relevant IEC standards, the HVD35/2A, HVD47/2B, HVD47/2D, and HVD47/2E have been specifically designed for use on capacitive test points of separable connectors and on insulated polymetric cables in fused cable boxes. These instruments have a very low threshold voltage 100V for the 11kV Type and 600V for the 33kV, 34kV, and 66kV Types.

Dead Break Testers are battery operated electronic contact devices that give clear indication of the status of the line under test both visually, by means of super-bright LED's and audibly with a high intensity buzzer, this ensures clear indication even in conditions of bright sunlight and high background noises. All detectors have the facility to self-check before and after use.

Each Dead Break Tester kit comprises the following components housed within a purpose designed carry bag:

- High Voltage Detector (HVD)
- Contact electrode
- Short handle for use within confined spaces
- 250mm Contact Extension (HVD47/2B only)
- Polymer cleaning kit
- Instruction Manual

Other accessories are available depending on the configuration required.



HVI-15kV

High Voltage Indicator Kit



Features:

- Small and compact for use in confined spaces
- High immunity to interference fields
- Utilizes proven resistor chain method of measurement
- Proven in the field world-wide
- Self test facility
- Can be used on DC systems
- Suitable for indoor/Outdoor use
- -25°C to +55°C operating temperature range
- Clear safety limit marks
- Operator hand guard with viewing window
- Automatic battery check on Proving Unit
- Easy access for battery replacement

The High Voltage Indicator (HVI) is used to indicate the presence of voltage to ensure the safety of maintenance or installation personnel allowing the apparatus to be safely earthed. Voltage up to 15kV AC or DC, on busbars or within switchgear enclosures will be shown by means of neon indicators.

When used within switchgear, special bent end adaptors, 60° or 90°, are available as accessories. A battery powered electronic proving unit is available to allow the fully assembled indicator to be tested at site before and after use.

After carrying out a proving test, the HVI can be applied to the HV source, the neon indicators will show whether there is voltage present. The indication will start as low as 200V by means of flashing neon lights which will gradually increase their rate of flash until steady state is reached at 6.35KV (the phase to earth voltage on an 11kV system).

Each complete HV Indicator kit comprises:

- Indicator complete with earth lead
- Proving unit complete with batteries
- Polymer cleaning Kit
- Instruction Manual
- Carry Satchel

*Individual items can be supplied separately.



HVI - Switchgear Testing

High Voltage Indicator kit details

High Voltage Indicator		
Range	0.2 to 15kV 50/60HZ and DC	
Circuit Current	0.4mA nominal at 15kV 0.293mA nominal at 11kV	
Dielectric Test	20kV for 1 minute	
Length	485mm	
Diameter	32mm	
Weight	0.6kg	



Proving Unit		
Output Voltage	300V DC nominal	
Batteries	2 off C cells, IEC R14 or LR14	
Battery Low	2V DC nominal	
Length	255mm	
Diameter	37mm	
Weight	0.4kg	



WPC1000 & WPC2000

Wireless Phase Comparator Kits



WPC1000

Features:

- Automatic alarming above threshold voltage as default
- 11kV / 33kV Voltage Range for WPC1000
- 66kV / 132kV Voltage Range for WPC2000
- Positive Indication of phase relationship
- 50m operating range in free air
- Built in self-check facility
- 433.9mHz operating frequency
- Shock and drop resistant
- High impact ABS body
- -25°C to +55°C operating temp range
- Indoor/Outdoor use regardless of weather conditions
- Easy access for battery replacement
- Built in self-check facility
- Self Proving facility
- Various rod adaptors available

The WPC1000 & WPC2000 Wireless Phase Comparator kits utilize a Transmitter module and a Receiver module to determine the Phase Relationship between two energized conductors at the same nominal voltage and frequency, eliminating the need for connecting cables. Kits are designed to comply with IEC 61481 standards for system voltages up to 132kV.

The Transmitter (TX) and Receiver (RX) modules are battery-operated electronic contact devices that provide a clear visible indication of the line's status. They utilize super bright LED lights and a high-intensity buzzer to accurately determine the phase relationship between two points at the same nominal voltage and frequency. This ensures clear indication, even in challenging conditions such as bright sunlight and high background noise.

During voltage checking, the Transmitter unit establishes contact with the live conductor. If the conductor's voltage exceeds the threshold, the Transmitter triggers and initiates the automatic voltage checking sequence. If the line remains live after 5 seconds, both RED LEDs illuminate solid, and the Line Phase Angle transmits to the Receiver.

Similarly, the Receiver Unit performs Voltage Checking by making contact with the live conductor. If the voltage exceeds the threshold, the Receiver activates and starts the voltage checking sequence. If the line remains live after 5 seconds, the RED LED lights up solidly.

Furthermore, to determine the phase angle shift between the Transmitter and Receiver, certain conditions are considered. An IN PHASE Condition indicates a phase angle shift nominally ≤±10°, shown by solid RED and GREEN LEDs and a continuous buzzing sound. However, an OUT OF PHASE Condition indicates a phase angle shift nominally >±20°, represented by a solid RED LED.

Please note that each module requires suitable insulating operating rods for safe distance from the HV source to ensure optimal performance.



WPC2000

WPC1000 & WPC2000 Kit Details

WPC Receiver

Visual Indication (Safe Condition): 1 Red LED & 1 Green LED

Audible Indication: Buzzer sounding continuously



WPC Transmitter

Visual Indication (Safe Condition): 2 Red LED's



Rod Adaptors

2 x Bowthorpe Rod Adaptors or 2 x Universal Star Wheel Adaptors





Contact Electrodes

2 x 40mm Aluminum contact electrodes



Accessories Bag





WPC Switchgear Kit Details

The Wireless Phase Comparator Switchgear Kit amplifies the capabilities of the WPC by enabling High Voltage Phase Comparison in Switchgear cubicles. With the elimination of trailing wires, it minimizes the risk of tripping and fosters a safer testing environment. Moreover, it extends the Phasing distance within rooms, providing greater flexibility during testing procedures.



Black carry bag



Operating Handles



Live Line Indicator Kits



Features:

- Can be used on DC high voltage overhead lines up to 3000V DC
- Earth lead and clamp attached to longlength handle
- Red LED indicators when voltage is detected
- Loud 70dB alarm when voltage is detected
- Audible indication: Buzzer, 3.1 kHz tone, modulated @ 2Hz
- Can be used on third rail installations
- Battery check function
- Standard Thresholds: 250V / 500V / 1000V
 DC
- Resistor Chain: $1.5M\Omega / 3M\Omega / 6M\Omega$
- Operating time: 5 minutes nominal

The High Voltage DC Live Line Indicator Kit (LLI) is a battery operated electronic unit that has been specifically designed to test DC systems, with relevance to Mass Transit Railway (Metro) & Tram based models. Although usually applied to overhead catenaries they can also be used on "third rail" installations. Proving that the system is de-energised, and can thus be safely earthed, is important to both maintenance staff and system security.

The DC LLI gives both visual (high intensity flashing red LED's) and audible (70dB) alarm should a conductor under test indicate as live. Three versions are available to cover the most common system voltages of 750V, 1500V and 3000V DC. Each version has a threshold setting of approximately 33% of system voltage, above which the line is deemed to be energised.

The unit is first armed with the test button which will cause the alarms to activate and upon releasing the button the red LED's will be replaced by green ones and the audible alarm will stop. The green condition will remain active for about 5 minutes during which time the unit can be applied to the line under test and if the threshold is exceeded the warning alarms will again be activated. Pressing the test button also performs a battery check. A universal "star wheel" adaptor is also available to connect to other operating poles and alternative clamps are available to suit various earthing systems, e.g., buried rail.

Each complete LLI kit comprises:

- DC Live Line Indicator with earth lead & clamp
- Bowthorpe Rod adaptor incorporated into indicator case moulding
- Universal Star wheel Adaptor
- Hook, Y and straight electrode
- Polymer cleaning kit
- Instruction manual



LLI Tester

TPT9000

Transformer Polarity Tester



Features

- Fast polarity testing of both voltage and current transformers.
- Compact and light
- Easy to use
- Smart detection of incorrect connection
- Proving unit included in the kit as standard
- Fused lead sets included for user safety
- Supplied in a protective case.
- Long battery life

The TPT9000 is used for determining the correct polarity of current and voltage transformers. The TPT9000 automatically detects if the transformer has been connected incorrectly. The set also includes a proving unit to check the correct operation of the unit in the field.

The TPT9000 is designed to be used on 'dead' systems (i.e., no externally supplied voltages are present on the test object). Do not connect the TPT9000 to a live system. Always check that the power to the device under test is off. and the circuit is isolated before making any connections.

Environment The TDT9000

The TPT9000 is designed for use in industrial and electrical substation environments.

Maximum altitude: 2000m

Temperature:

operating $0^{\circ}\text{C to }45^{\circ}\text{C}$ storage $-20^{\circ}\text{C to }60^{\circ}\text{C}$

Relative humidity: 90% noncondensing

Protection rating: IP20 in use

Supply requirements

The TPT9000 requires a single PP3 9V battery to operate. The battery level is automatically monitored, and the device will not perform a test if the battery voltage is below a useable level.

Overload protection

Each of the test leads must be fitted with a F500mA HRC fuse. This must be replaced with a fuse of the same type.

Test Leads

600V CAT IV fused test leads terminated in shrouded 4mm connectors.

TPT9000 Size

Tester: 118 x 79 x 32mm

With Proving Unit:143 x 79 x 32mm

Weight: 600g



Proving Unit Included

Contact Details

Get in touch with us easily

Fmail us!

Call us!

SALES@TRTEST.COM

+44(0)1483 207428

SALES@HVIL.COM

+44(0)141 4405800

Check out our websites!

WWW.TRTEST.COM

WWW.HVIL.COM

Visit our factory!

15-16 Woodbridge Meadows, Guildford, Surrey, GUI 1BJ United Kingdom