VI-15000 VOLTAGE INDICATOR

Instruction Manual



MARTINDALE ELECTRIC

⚠ ALWAYS READ THESE INSTRUCTIONS BEFORE PROCEEDING

Thank you for buying one of our products. For safety and a full understanding of its benefits please read this manual before use. Technical support is available from 01923 441717 and support@martindale-electric.co.uk.

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1. SAFETY INFORMATION

⚠ REMEMBER: SAFETY IS NO ACCIDENT

These instructions contain both information and warnings that are necessary for the safe operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

Particular attention should be paid to the Warnings, Precautions and Technical Specifications.

Please keep these instructions for future reference. Updated instructions and product information are available at: www.martindale-electric.co.uk

1.1 Meaning of Symbols and Markings

⚠ **Caution - risk of danger & refer to instructions**

⚠ **Caution - risk of electric shock**

⧈ **Equipment protected by double or reinforced insulation (Class II)**

Suitable for live working

≂ **Both direct and alternating current (AC and DC)**

CAT IV **(Measurement Category IV)** is applicable to test and measuring equipment connected at the source of the building's low-voltage MAINS installation.

For further information on measurement categories visit www.martindale-electric.co.uk/measurement_categories.php

CE **Equipment complies with relevant EU Directives**

End of life disposal of this equipment should be in accordance with relevant EU Directives

1.2 Precautions

This product has been designed with your safety in mind, but please pay attention to the following warnings and cautions before use.

⚠ Warnings

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding 30V AC rms, 42V AC peak or 60V DC.

Where applicable other safety measures such as the use of protective gloves, goggles etc. should be employed.

The voltage indicator must only be used by a skilled and competent person who is familiar with the relevant regulations, the safety risks involved and the consequent normal safe working practices.

Before each use the voltage indicator should be examined for damage, cracks, cuts or scratches to the housing, cable and prods. The cable has black outer and contrasting inner insulation, to allow damage to the cable to be easily identified. If there is any doubt the voltage indicator should **not be used**.
Make sure the voltage indicator is dry, clean and free from dust, grease and moisture while in use to avoid the danger from electric shock due to surface leakage.

Before and after each use, the voltage indicator must be proven using a suitable proving device or a known good voltage source. **Do not use** the voltage indicator if any expected voltage indication LED's fail to illuminate correctly during proving.

Testing for a voltage that exceeds the specified limits of the voltage indicator may damage the voltage indicator and may expose the operator to a shock hazard. Always check the voltage indicators specified limits before use.

The voltage indicator must only be used on installations up to 1000V to earth, and within the operating temperature and humidity range specified.

Always keep your fingers behind the finger guards. Never touch the exposed metal prod tips.

Do not use the voltage indicator during rain or precipitation.

The different indicating signals of the voltage detector (including the ELV limit indication) are not to be used for measuring purposes.

The voltage indicator must not be dismantled or modified in any way by unauthorized persons. The safety of the voltage indicator cannot be guaranteed under such circumstances and **must not be used**.

⚠ Cautions

Avoid severe mechanical shock or vibration and extreme temperature.

If the voltage indicator has been stored or transported in temperatures outside its normal operating range it should be given sufficient time to stabilise in the environment where it is to be used. An acclimatisation time of at least 2 hours is required prior to operation of the voltage indicator.

1.3 Safety Advice

Depending on the internal impedance of the voltage detector there will be a different capability of indicating the presence or absence of operating voltage in case of the presence of interference voltage.

A voltage detector of relatively low internal impedance, compared to the reference value of 100 kΩ, will not indicate all interference voltages having an original voltage value above the ELV level. When in contact with the parts to be tested, the voltage detector may discharge temporarily the interference voltage to a level below the ELV, but it will be back to the original value when the voltage detector is removed.

When the indication "voltage present" does not appear, it is highly recommended installing earthing equipment before work.

A voltage detector of relatively high internal impedance, compared to the reference value of 100 kΩ, may not permit to clearly indicate the absence of operating voltage in case of the presence of interference voltage.

When the indication "voltage present" appears on a part that is expected to be disconnected from the installation, it is highly recommended confirming by another means (e.g. use of an adequate voltage detector, visual check of the disconnecting point of the electric circuit, etc.) that there is no operating voltage on the part to be tested and to conclude that the voltage indicated by the voltage detector is an interference voltage.

A voltage detector declaring two values of internal impedance has passed a performance test of managing interference voltages and is (within technical limits) able to distinguish operating voltage from interference voltage and has a means to directly or indirectly indicate which type of voltage is present.

2. INTRODUCTION

2.1 Inspection

Examine the shipping carton for any sign of damage. Inspect the unit and any accessories for damage. If there is any damage then consult your distributor immediately.

2.2 Description

The Martindale VI-15000 is a development of the VI13700 which is widely specified to ensure the electrical safety of users when proving dead i.e. not hazardous live. It is constructed in accordance with the latest safety standards.

The voltage tester has the following features:

- Tests for DC and AC Voltage up to 1000V
- Automatic AC/DC detection
- Bright LED indication
- Full voltage indication function without batteries
- Protective resistor in probe to limit current in the event of cable damage
- Contrasting colour of inner sheath to highlight cable damage
- Ergonomic and robust housing
- Retractable shrouds
- Meets fully GS38 and BS EN61243-3:2014
- Measurement category CAT IV 1000V

3. OPERATION

3.1 Description of LED Indicators



Polarity indication:

When connected to a DC voltage source either the + or – 50V LED will illuminate dependant on polarity. The prods are marked red (positive input) and black (negative input).

When connected to an AC voltage source both the + and – 50V LED's will illuminate.

Voltage thresholds:

The voltage threshold LED's will illuminate when the magnitude of the voltage source is at a value approaching or greater than the corresponding marked voltage. For example if the voltage source is 50V AC rms then only the 50V LED's will illuminate, if 690V AC rms or higher (up to 1000V) all six LED's will illuminate.

3.2 Use of Test Prod Shrouds

The shrouds around the test prods are normally sprung forwards to IP 2X rating and are retractable.

For optimum safety, the shrouds should be allowed to spring forward freely whenever the prod tips are removed from a location under test.

If desired, and before the unit is connected to any source of voltage, the shrouds can be locked back by pushing and twisting 90°.

The prod tips will be exposed by 3 ± 0.5mm. In this position they are GS38 compliant.



3.3 Operating Duty Ratio
The voltage indicator should be operated (ON) for a maximum period of 30 seconds. This should be followed by a recovery period (OFF) of 4 minutes.

The operating duty ratio is 8 to 1, so if the voltage indicator is only ON for 2 seconds then the OFF period need only be 16 seconds.

3.4 Proving Check
Before each use the voltage indicator should be examined for damage, cracks, cuts or scratches to the housing, cable and prods. The cable has black outer and contrasting inner insulation, to allow damage to the cable to be easily identified. If there is any doubt the voltage indicator should **not be used**.

Before and after use, verify the voltage indicator is functioning correctly with a proving device (PD690, PD700 or PD710 is

recommended), or a known good voltage source. **Do not use** the voltage indicator if any expected voltage indication LED's (50, 120, 230, 400, 690V) fail to illuminate correctly during proving.

The LED's that illuminate during proving will depend on the magnitude of the proving unit output or the voltage source. See table 1.

Table 1. Required LED indications during proving

VI-15000 LED's	Voltage source 230V 50Hz	Proving unit type		
		PD430 or PD440	PD690 or PD700	PD710
+ 50V	On	On	On	Only + or - On*
- 50V	On	On	On	
120V	On	On	On	On
230V	On	On	On	On
400V	Off	On	On	On
690V	Off	Off	On	On

* Illumination of the 50V polarity LED's depends on the polarity of the connections to the PD710. Always reverse the connections to the PD710 to check the other 50V LED.

⚠ **Warning**
If the proving device or voltage source exceeds the specified limits of the voltage indicator the voltage indicator may be damaged and the operator may be exposed to a shock hazard. Always check the specification of the proving device or the voltage magnitude of the voltage source before proceeding with a proving check.

During this verification emphasis should also be placed upon the flexing of the voltage indicator's cable along its length, and particularly at the entry points to the hand held elements, to confirm that the cable has not been fractured.

Any unexpected display should be investigated and the VI-15000 **not used** unless all expected voltage indication LED's illuminate.

3.5 Testing for the Presence of Hazardous Live Voltage
⚠ **Warning**
Hold the voltage indicator and test prod behind the finger guards in a manner that will not obscure the voltage indication LED's. Never touch the exposed metal test prods or any part of the voltage indicator forward of the finger guards while applied to hazardous voltages.

While taking all required safety precautions connect both test prods to the UUT (Unit or location under test).

The polarity and voltage level of any voltage present will be indicated by the illumination of the voltage indicator LED's.

3.6 Interference (Phantom) Voltage
It is possible for wiring that is 'dead' to indicate the apparent presence of voltage at power frequency.

If wiring that is live is running in close proximity to the 'dead' wiring being tested, there can be capacitive or inductive coupling between the two, thereby causing interference (phantom) voltages.

⚠ Refer to section 1.3 for safety advice relevant to interference voltage.

4. MAINTENANCE

4.1 Periodic Testing
To maintain the integrity of the voltage indicator, Martindale Electric recommends that it is returned at least once a year to verify physical integrity, electrical specification and insulation integrity.

Martindale Electric is pleased to offer you this service. Please contact our Service Department for details.
Email: service@martindale-electric.co.uk
Tel: 01923 650660

4.2 Cleaning
⚠ **Warning**
To reduce the risk of surface leakage, this instrument must be kept in a clean condition.

⚠ **Warning**
Prior to cleaning, ensure that the instrument is disconnected from any voltage source.

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent or alcohol. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the unit. If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain in a dry environment for 2 hours before use.

4.3 Repair and Service
There are no user serviceable parts in this unit. Return to Martindale Electric if faulty. Our service department will quote promptly to repair any fault that occurs outside the guarantee period.

Before the unit is returned, please ensure that you have checked the unit.

4.4 Storage Conditions
The instrument should be kept in warm dry conditions away from direct sources of heat or sunlight, and in such a manner as to preserve the working life of the unit. It is strongly advised that the unit is not kept in a tool box where other tools may damage it.

5. WARRANTY AND LIMITATION OF LIABILITY

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's reasonable opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.

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Specification
VI-15000 Voltage Indicator



Electrical
Nominal voltage range: 50 - 1000V DC/AC rms
Nominal voltage threshold indications:
50, 120, 230, 400, 690V DC/AC rms
Voltage threshold tolerance: conforms to
BS EN61243-3:2014
Internal impedance at ELV a.c.: 355kΩ
AC/DC voltage detection: automatic
Range detection: automatic
Response time: < 0.1s
Frequency range: DC, 1 - 400 Hz
Test current: < 3.5mA at 1000V DC/AC rms
Duty ratio: 30s ON (operated) / 240s OFF (recovery)

Environmental
Temperature & Humidity (Operating & Storage): -10°C to 55°C ≤ 85% R.H.
Altitude: up to 2000m
Pollution degree 2

General
Power: from circuit under test
Dimensions: 205(L) x 67(W) x 27(D) mm
Weight: 130g approx.
Includes: instructions

Safety
Conforms to BS EN61243-3:2014 CAT IV 1000V
Class II, double insulation
IP rating: IP54 to BS EN60529

EMC
Conforms to BS EN61326-1

Check out what else you can get from Martindale:

- 18th Edition Testers
- Accessories
- Calibration Equipment
- Continuity Testers
- Electricians' Kits
- Environmental Products
- Full Calibration & Repair Service
- Fuse Finders
- Digital Clamp Meters
- Digital Multimeters
- Labels
- Microwave Leakage Detectors
- Motor Maintenance Equipment
- Multifunction Testers
- Non-trip Loop Testers
- Pat Testers & Accessories
- Phase Rotation Testers
- Proving Units
- Socket Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators
- Specialist Metrohm Testers (4 & 5kV)
- Specialist Drummond Testers

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