VT12 MK2
VOLTAGE INDICATOR

Instruction Manual

MARTINDALE ELECTRIC

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GENERAL SAFETY INFORMATION: Always read before proceeding.

Warning
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.

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.

This product must only be used by a competent person capable of interpreting the results under the conditions and for the purposes for which it has been constructed. Particular attention should be paid to the Warnings, Precautions and Technical Specifications. Always check the unit is in good working order before use and that there are no signs of damage to it. Do not use if damaged.

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

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

REMEMBER: SAFETY IS NO ACCIDENT

MEANING OF SYMBOLS:

CE **Equipment complies with relevant EU Directives**

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

Caution - risk of electric shock

Caution - risk of danger & refer to instructions

Equipment protected by double or reinforced insulation (Class II)

Suitable for live working

Thank you for buying one of our products. For safety and 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. INTRODUCTION

1.1 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.

1.2 Description

The VT12 is a voltage indicator used for proving circuits are dead i.e. not hazardous live. It is constructed in accordance with the latest safety standards.

The voltage indicator has the following features:

- DC and AC Voltage tests up to 690V
- Continuity test with optical and acoustical indication up to 500 kΩ
- Single pole phase test
- Automatic AC/DC detection
- Bright LED indication
- Indication of voltage above the ELV level when batteries flat
- Ergonomic and robust housing
- Probe-tip protection
- Fully meets BS EN 61243-3:2010
- Measurement Category CAT IV 300V, CAT III 600V

1.3 Battery Installation

Refer to Section 4.1 (Battery Replacement) for the battery installation instructions for the VT12.

2. PRODUCT SPECIFIC SAFETY INFORMATION

Measurement Category III (CAT III) is applicable to test and measuring equipment connected to the distribution part of the building's low-voltage MAINS installation.

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

2.1 Precautions

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

⚠ Warnings

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 and cable. 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 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 expose the operator to a shock hazard. Always check the voltage indicators specified limits before use. The voltage indicator must only be used in low voltage systems of CAT IV up to 300V, of CAT III up to 600V, and within the operating temperature and humidity range specified.

Do not use the voltage indicator if the battery casing is not fitted.

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

Do not use the voltage indicator in damp conditions.

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

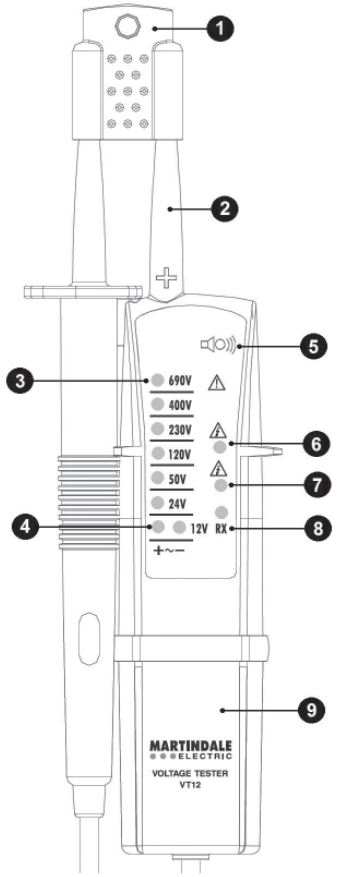
Avoid severe mechanical shock or vibration and extreme temperature.

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.

To avoid corrosion from leaking batteries, remove the batteries when the unit is not in use for an extended period.

3. OPERATION

3.1 Description of VT12 Elements and LED Indicators



1. Probe tip protection
2. Positive probe
3. Voltage threshold indicators
4. Polarity indicators
5. Buzzer
6. Phase indicator
7. ELV indicator
8. Continuity indicator
9. Battery casing

Polarity Indicators
When connected to a DC voltage source either the + or – LED's 4 will illuminate dependant on polarity. The positive probe 2 is on the main body and is marked with +.

When connected to an AC voltage source both the + and – LED's 4 will illuminate. The polarity LED's 4 will illuminate when the voltage source is ≥ 12V AC rms or DC.

Voltage thresholds
The voltage threshold LED's 3 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 55V AC rms then the 12V, 24V and 50V LED's will illuminate, if 690V AC rms all voltage threshold LED's 3 from 12V to 690V will illuminate.

ELV indicator
If the batteries are low or exhausted a hazardous live voltage will not be indicated by the polarity or voltage threshold LED's, but an indication of a voltage above the ELV limit (50V) will continue to be indicated by the ELV LED 7.

Continuity indicator
The continuity LED RX 8 will illuminate to indicate continuity of a circuit under test.

Phase Indictor
The phase LED 6 indicates the presence of AC voltage when the unit is used as a single pole phase detector.

Buzzer
The buzzer will sound when:
Voltage above the 50V LED threshold 3 is present
or AC voltage is detected when used as a single pole phase tester
or circuit continuity is detected.

3.2 Low Battery Check
Before and after each use short the test probes of the voltage indicator together and check for an audible tone.

If there is no audible tone the batteries need to be replaced (see section 4.1 Battery Replacement).

Do not use the unit if the batteries need replacing.

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 and after use, verify the voltage indicator is functioning correctly with a proving device (PD690 or PD700 is recommended), or a known good voltage source. **Do not use** the voltage indicator if any expected LED fails to illuminate correctly during proving.

Also check the buzzer sounds during proving.

Note: The LED's that illuminate during proving will depend on the magnitude of the proving unit output or the voltage source. For example if the voltage source is 230V AC rms, the ELV LED and all voltage threshold LED's except the 400V and 690V LED's must illuminate.

If only the ELV LED illuminates during proving then check the batteries.

⚠ 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 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.

3.5 Testing for the Presence of Hazardous Live Voltage

⚠ Warning
Hold the voltage indicator and test probe behind the finger guards. Never touch the exposed metal test prods or any part of the voltage indicator forward of the finger guards while applied to hazardous voltages.

If testing at locations with high background noise levels, always determine whether the buzzer is perceptible before relying solely on

the buzzer indication.
While taking all required safety precautions connect both test probes 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 (see section 3.1).

The buzzer will also sound if voltage is present.

Note: The individual LED indications, including the ELV LED, are not to be used for measuring purposes.

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.

Voltage indicators that draw a relatively low current when testing for hazardous live voltages may not be able to suppress the interference voltage sufficiently to avoid indicating the presence of a hazardous live voltage when none is present.

The VT12 will not suppress typical levels of interference voltage as defined by the test for interference voltage in the standard EN 61243-3:2010.

If there is any doubt as to whether a voltage indication is hazardous live or interference, then an alternative voltage indicator capable of distinguishing between the two should be used, or alternative tests should be performed.

3.7 Single Pole Phase Test
⚠ Warning
Single pole phase testing is not suitable to determine if a circuit is not hazardous live. A double pole voltage test should always be used for that purpose.

While taking all required safety precautions connect the positive test probe ❷ to the UUT (Unit or location under test).

The phase indicator LED ❻ will illuminate and the buzzer will sound if the presence of AC voltage >100 V is detected.

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

The continuity indicator LED RX ❽ will illuminate and the buzzer will sound to indicate circuit continuity.

Do not rely solely on the buzzer as an indication of continuity. Always check the LED indications as the buzzer also sounds to indicate the presence of voltage.

4. MAINTENANCE
4.1 Battery Replacement
⚠ To avoid shock or injury, disconnect the voltage indicator from any external circuits before proceeding.

To gain access to the battery compartment ❾, loosen the screw securing the battery compartment cover and pull back the cover. Fit 2 new 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A).

Replace the battery cover and tighten the screw.

Note: Do not mix old and new batteries.

4.2 Cleaning
Wipe the voltage detector with a cloth soaked with alcohol or mild non-conductive detergent. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the voltage detector. Allow the voltage detector to thoroughly dry before use.

4.3 Repair & Service
There are no user serviceable parts in this unit other than those that may be described in section 4. 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 and the fuse.

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 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
VT12
Voltage Indicator

VOLTAGE DETECTOR
Maximum working voltage: 690V DC & AC rms
Nominal voltage threshold indications: 12, 24, 50, 120, 230, 690V AC/DC
Nominal voltage threshold tolerance: Conforms to BS EN61243-3:2010
Range detection: Automatic
Response time: <0.5s
Frequency range: DC, 0-65Hz
Test current: In<3.5mA / Is<50mA
Duty ratio: 30s ON (operated) / 240s OFF (recovery)
Auto power on: >12V DC/AC rms
Overvoltage protection: 690V DC or AC rms

SINGLE POLE PHASE TEST
Voltage range: 100 to 690V AC rms
Frequency range: 45 to 65 Hz
Overvoltage protection: 690V DC or AC rms

CONTINUITY
Resistance range: 0 to 500 kΩ
Test current: 3μA
Overvoltage protection: 690V DC or AC rms

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

GENERAL
Power: 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)
Battery power consumption: 250mW approx. (max 30mA)
Dimensions: 205(L) x 67(W) x 27(D) mm
Weight packed: 130g approx.
Includes: 2 x 1.5V AAA batteries, instructions

SAFETY
Conforms to BS EN61243-3, BS EN61010-1 CAT IV 300V, CAT III 600V.
Class II, Double Insulation
Pollution Degree: 2
IP rating: IP54
EMC
Conforms to BS EN61326-1

Check out what else you can get from Martindale:

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- Continuity Testers
- Electricians' Kits
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- 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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