

VT25 / VT28 VOLTAGE TESTER

Instruction Manual



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:

 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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Specifications

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 VT25 and VT28 are voltage testers used for proving circuits are dead i.e. not hazardous live. They are constructed in accordance with the latest safety standards.

They have the following features:

- ◆ AC and DC Voltage testing up to 690V
- ◆ LCD indication of AC and DC voltage (VT28 only)
- ◆ Continuity test with optical and acoustical indication up to 500 kΩ
- ◆ Single pole phase test
- ◆ Phase rotation test
- ◆ Auto-power On/Off
- ◆ Automatic AC/DC detection
- ◆ Indication of voltage above the ELV level when batteries flat
- ◆ Probe-tip protection
- ◆ Torch
- ◆ Measurement Category CAT IV 600V, CAT III 1000V
- ◆ Fully meets BS EN61243-3:2010

1.3 Battery Installation

Refer to Section 4.1 (Battery Replacement) for the battery installation instructions for the VT25 and VT28.

2. PRODUCT SPECIFIC SAFETY INFORMATION

Measurement Category II (CAT II) is applicable to test and measuring equipment connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.

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 tester 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 tester 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 tester should **not be used**.

Make sure the voltage tester 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 tester must be proven using a suitable proving device or a known good voltage source. **Do not use** the voltage tester if any expected indication LED's fail to illuminate correctly during proving.

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

The specified measurement category means the voltage tester will be safe to the user if inadvertently connected to a voltage up to 1000V AC/DC to earth on a CAT III or CAT II installation and 600V AC/DC to earth on a CAT IV installation. It **does not** mean it can be used to test for a voltage beyond its maximum specified limits.

The voltage tester must only be used on CAT IV installations up to 600V to earth, on CAT III and CAT II installations up to 690V to earth, and within the operating temperature and humidity range specified.

If the removable probe tip covers are not fitted to the probes, the measurement category becomes CAT II 1000V, and the voltage tester **must not be used** on CAT III or CAT IV installations to avoid the risk of shorting high energy circuits and arc flash.

Do not use the voltage tester if the battery cover is not fitted.

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

Do not use the voltage tester during rain or precipitation.

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

Cautions

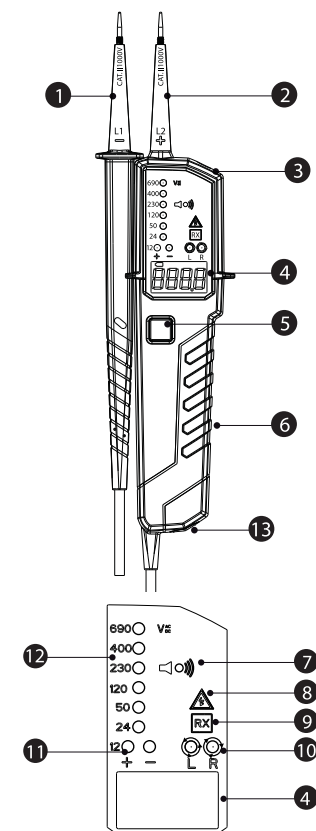
Avoid severe mechanical shock or vibration and extreme temperature.

If the voltage tester 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 tester.

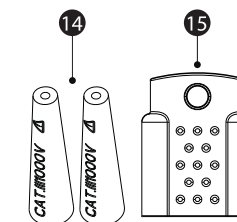
To avoid corrosion from leaking batteries, remove the batteries when the unit is not in use for an extended period.

3. OPERATION

3.1 Description of VT25/VT28 Elements and LED Indicators



- 1 Test probe L1
- 2 Test probe L2
- 3 Torch
- 4 LCD (VT28 only)
- 5 Torch button
- 6 Main body
- 7 Buzzer
- 8 ELV warning and single pole test indicator
- 9 Continuity indicator
- 10 Phase rotation indicators
- 11 12V and polarity indicators
- 12 Voltage threshold indicators
- 13 Battery compartment



- 14 Removable probe tip covers
- 15 Probe tip protective cover

Polarity indicators 11

When connected to a DC voltage source either the + or – LED's 11 will illuminate dependant on polarity. The positive probe 2 is on the main body and is marked with L2 and +.

When connected to an AC voltage source both the + and – LED's 11 will illuminate.

The polarity LED's 11 will illuminate when the voltage source is $\geq 12V$ AC rms or DC.

Voltage threshold indicators 12

The voltage threshold LED's 12 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 24V and 50V LED's will illuminate, if 690V AC rms all voltage threshold LED's 12 from 24V to 690V will illuminate.

ELV warning and single pole test indicator 8

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 8.

The ELV LED 8 also indicates the presence of AC voltage when the unit is used as a single pole phase detector.

Continuity indicator 9

The continuity LED RX 9 will illuminate to indicate continuity of a circuit under test.

Buzzer 7

The buzzer will sound when:
Voltage above the ELV LED 8 threshold is present, or AC voltage is detected when used as a single pole phase tester, or circuit continuity is detected.

3.2 Auto-power On/Off

The voltage tester automatically powers on when it detects continuity, AC or DC voltage >10V approx. or a live phase on probe L2 (single pole test).

The voltage tester will automatically power off 5 seconds after ceasing to detect voltage or continuity.

3.3 Torch ③

Pressing the torch button ⑥ will turn on the torch and power up the voltage tester.


The torch ③ will automatically power off after 10 seconds.

3.4 Low Battery Check

Before and after each use short the test probes of the voltage tester together.

On the VT25, check for an audible tone and a bright Rx LED ⑨ indication.

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

On the VT28 if the batteries need replacing  will be displayed in the top left corner of the LCD.

Do not use the unit if the batteries need replacing.

3.5 Removable Probe Tip Covers

The probes are fitted with removable probe tip covers ⑭ allowing the probes to comply with GS38.

Where access to test points may require extended probe tips, the probe tip covers may be removed.

If removed, the voltage tester **must not** be used on CAT III or CAT IV installations.

3.6 Operating Duty Ratio

The voltage tester 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 tester is only ON for 2 seconds then the OFF period need only be 16 seconds.

3.7 Proving Check

Before and after use, verify the voltage tester is functioning correctly with a proving device (PD690 or PD700 is recommended), or a known good voltage source. **Do not use**

the voltage tester if any LED's fail 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 ⑧ and all voltage threshold LED's (12) except the 400V and 690V LED's must illuminate.

If only the ELV LED ⑧ illuminates during proving then check the batteries.

Warning

If the proving device or voltage source exceeds the specified limits of the voltage tester the voltage tester 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 tester'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.

3.8 Testing for the Presence of Hazardous Live Voltage

Warning

Hold the voltage tester and test probe behind the finger guards. Never touch the exposed metal test prods or any part of the voltage tester 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 tester LED's (see section 3.1).

The buzzer will also sound if a voltage is present.

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

3.9 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 testers 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 VT25 and VT28 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 tester capable of distinguishing between the two should be used, or alternative tests should be performed.

3.10 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 test probe marked L2 ② to the UUT (Unit or location under test).

The ELV LED ⑧ will illuminate and the buzzer will sound if the presence of AC voltage >100V is detected.

3.11 Phase Rotation Test

While taking all required safety precautions connect the test probes L1 and L2 to the phases to be tested.

The phase to phase voltage will be indicated by the voltage threshold LED's ⑫ or for the VT28 also by the LCD ④.

The direction of the phase rotation will be indicated by one of the green phase rotation LED's ⑩ marked **L** (left rotation) and **R** (right rotation).

Note: The method of phase sequence

detection relies on capacitive coupling to earth through the user. If the insulation/grounding conditions of the installation under test or user are not satisfactory then the test results may be impaired.

3.12 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(9) 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 (13), use a coin or flat blade screwdriver to turn the battery door anti-clockwise until the dots align.

Pull out the battery door.

Fit 2 new 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A).

Replace the battery door and turn it clockwise until the dots align and the door is flush with the main body.

Note: Do not mix old and new batteries.

4.2 Calibration

To maintain the integrity of measurements made using your instrument, Martindale Electric recommends that it is returned at least once a year to an approved Calibration Laboratory for recalibration and certification. 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

4.3 Cleaning

Wipe the voltage tester 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 tester. Allow the voltage tester to thoroughly dry before use.

4.4 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 batteries.

4.5 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.



Voltage Indicator

Maximum working voltage: 690V DC & AC rms
Nominal voltage threshold indications: 12, 24, 50, 120, 230, 400, 690V AC/DC
Nominal voltage threshold tolerance: Conforms to BS EN61243-3:2010
Polarity indication: from 12V DC/AC rms
Range detection: Automatic
Response time: <1s at 100% of each nominal voltage
Frequency range: DC, 16 to 400Hz
Test current (I_t): <3.5mA at 690V
Duty ratio: 30s ON (operated) / 240s OFF (recovery)

LCD (VT28 only)

Voltage range: 10V to 690V (DC, 16 to 400Hz)
Resolution: 0.1V
Accuracy: $\pm (3\% + 5 \text{ dgts})$

Single Pole Phase Test

Voltage range: 100 to 690V AC rms
Frequency range: 50 to 60 Hz

Phase Rotation Test

Voltage range: 120 to 400V AC rms (phase to earth)
Frequency range: 50 to 60Hz

Continuity

Resistance range: 0 to 500k Ω + 50%
Overvoltage protection: 690V DC or AC rms

Environmental

Temperature: (operating) -10°C to 55°C,
(storage) -20°C to 70°C, non condensing
Humidity (operating & storage): Max 85% R.H.
Altitude: up to 2000m

General

Power: 2 x 1.5V, AAA alkaline batteries (IEC LR03, NEDA 24A)
Battery consumption: 80mA approx.
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 EN61243-3:2010 CAT IV 600V, CAT III 1000V
Removable probe caps for GS38 compliance
Class II, double Insulation
Pollution degree: 2
IP rating: IP64

EMC

Conforms to BS EN61326-1

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- Phase Rotation Testers
- Proving Units
- Socket Testers
- Thermometers & Probes
- Test Leads
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