

Operating Instructions

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METRALINE VC SENSE DC (M611U)

Current Voltage Tester

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1. Safety instructions

Read and follow these instructions carefully and completely in order to ensure safe and proper use.

The instructions must be made available to all persons who use the device.

Keep for future reference.

General

- The device may only be used by qualified electricians in the commercial field.
- Observe and comply with all safety regulations which are applicable for your work environment.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the device.
- The functioning of active medical devices (for example pacemakers, defibrillators) and passive medical devices may be affected by voltages, currents and electromagnetic fields generated by the tester and the health of their users may be impaired. Implement corresponding protective measures in consultation with the manufacturer of the medical device and your physician. If any potential risk cannot be ruled out, do not use the device.

Accessories

- Use only the specified accessories (included in the scope of delivery or listed as options) with the device.

Handling

- The tester may be used only within the specified measurement ranges and in low-voltage installations up to $1000\text{ V}_{\text{AC}}/1500\text{ V}_{\text{DC}}$.

- Hold the tester and accessories by the designated grip areas only, the display elements must not be covered.
- Before and after use, always conduct the self-test and check that the tester is in perfect working order (e.g. on a known voltage source).
- Use the device in undamaged condition only.
- Ensure that the probes make good contact. Inspect the device before use. Pay particular attention to damage, interrupted insulation or kinked cables. Damaged components must be replaced immediately.
- Use the accessories and all cables in undamaged condition only. Inspect accessories and all cables before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the device or its accessories don't function flawlessly, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If the device or accessories are damaged during use, for example if they're dropped, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the device or accessories (e.g. loose parts in the housing), permanently remove the device/accessories from operation and secure them against inadvertent use.
- The devices and accessories of Gossen Metrawatt GmbH are designed such as to ensure optimum compatibility with the Gossen Metrawatt GmbH products that are expressly provided for them. Unless otherwise expressly confirmed in writing by Gossen Metrawatt GmbH, they are not intended and suited for use with other products.
- The device and the accessories may only be used for the tests/measurements described in the documentation for the device.

- The tester complies with all EMC regulations. Nevertheless, in rare cases it may disturb electric devices with its electrical field or the tester may be disturbed by electrical devices.
- The tester switches on when it detects continuity, or an AC or DC voltage of above approx. 6 V, or a live phase on L2.
- Do not move or remove as far as possible the test probes until testing/measurement has been completed. Unwanted sparking may otherwise occur due to test current.
- The tester automatically powers off after approx. 10 sec of no signal at the test probes.
- The torch light automatically switches off after approx. 30 sec.

Emissions

- The tester complies with all EMC regulations. Nevertheless, in rare cases it may disturb electric devices with its electrical field or the tester may be disturbed by electrical devices.

2. Application

Please read this important information!

2.1 Intended use / Use for intended purpose

The METRALINE VC SENSE DC is an universal applicable tester for voltage, current, continuity and rotary field testing, and for various additional tests. The tester is constructed according to the latest safety regulations and guarantees safe and reliable working.

Safety of the user, as well as that of the device, is only assured when it's used for its intended purpose.

2.2 Use for other than intended purpose

Using the device for any purposes other than those described in these device operating instructions is contrary to use for intended purpose. Use for purposes other than those intended may result in unforeseeable damage!

2.3 Liability and guarantee

The warranty provided by Gossen Metrawatt GmbH, and its liability, are governed by the applicable contractual and mandatory statutory provisions.

Operating conditions

• Do not use the device and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).

• Do not use the device and its accessories after extraordinary stressing due to transport.

• Do not expose the device to direct sunlight.

• Only use the device and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).

• Do not use the device in potentially explosive atmospheres. Danger of explosion!

• Do not use the device in atmospheres subject to fire hazard. Danger of fire

Regular batteries

- Without batteries the device only has a limited functionality: If the batteries are empty or if there are no batteries inserted into the device, only the LED for dangerous voltage lights up if a voltage of $50\text{ V}_{\text{AC}}/120\text{ V}_{\text{DC}}$ is present.

Therefore, if possible, operate the device with batteries.

- Use batteries in undamaged condition only. Risk of explosion and fire in the case of damaged batteries!

Inspect the batteries before use. Pay particular attention to leaky and damaged batteries.

- Only use the device with inserted and secured battery compartment lid. Otherwise, dangerous voltages may

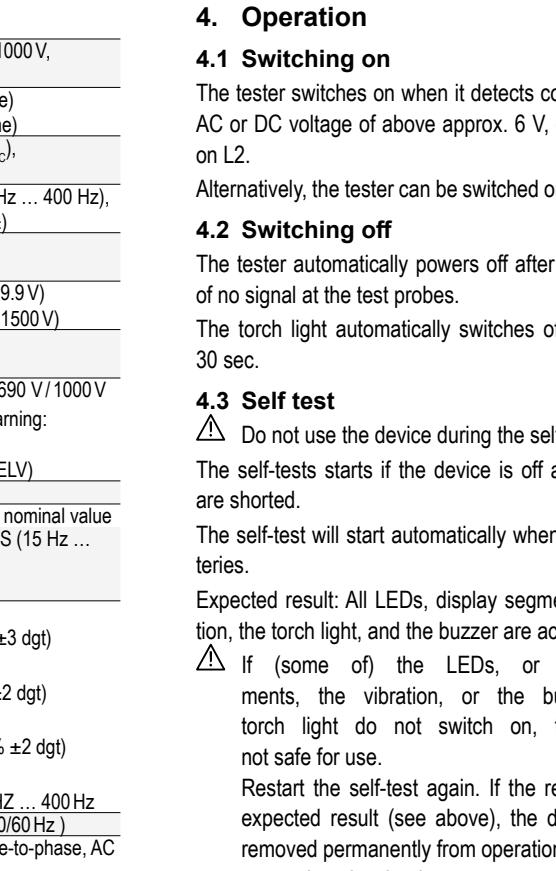
- occur at the battery contacts under certain circumstances.

Measurement cables and establishing contact

- Never touch conductive ends (for example of test probes).
- Use the device in undamaged condition only.
- Ensure that the probes make good contact. Inspect the device before use. Pay particular attention to damage, interrupted insulation or kinked cables. Damaged components must be replaced immediately.
- Use the accessories and all cables in undamaged condition only. Inspect accessories and all cables before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the device or its accessories don't function flawlessly, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If the device or accessories are damaged during use, for example if they're dropped, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the device or accessories (e.g. loose parts in the housing), permanently remove the device/accessories from operation and secure them against inadvertent use.
- The device and the accessories may only be used for the tests/measurements described in the documentation for the device.

Emissions

- The tester complies with all EMC regulations. Nevertheless, in rare cases it may disturb electric devices with its electrical field or the tester may be disturbed by electrical devices.



| 3.3 Symbols on the device or in the operating instructions | |
|--|--|
| Measurement category | CAT IV 600 V, CAT III 1000 V, CAT II 1000 V |
| Measurement duty | 30 s (on operation time) |
| Current consumption | 240 mA (recovery time) |
| from measured object | $I_s < 3.5\text{ mA}(\text{at } 1000\text{ V}_{\text{AC}})$, $I_s < 6\text{ mA}(\text{at } 1500\text{ V}_{\text{DC}})$ |
| Display range | $1\text{ V}_{\text{AC}} \dots 1000\text{ V}_{\text{AC}}$ (15 Hz ... 400 Hz), $1\text{ V}_{\text{DC}} \dots 1500\text{ V}_{\text{DC}}$ (±) |
| Display resolution | 0.1 V (1 V ... 29.9 V), 1 V (30 V ... 1500 V) |
| Display accuracy | ±1% ±1.5 V (1 V ... 29.9 V), ±1% ±3 dgt (30 V ... 1500 V) |
| Display overflow indication | 'OL' |
| LED display | 120 V / 230 V / 400 V / 690 V / 1000 V |
| Dangerous voltage warning: | $> 50\text{ V}_{\text{DC}}$ / $> 120\text{ V}_{\text{DC}}$ (Extra Low Voltage - ELV) |
| LED tolerances | DIN EN 61243-3 |
| Response time | <1 s at 100 % of each nominal value $1\text{ V}_{\text{AC}} \dots 1000\text{ V}_{\text{AC}}$ TRMS (15 Hz ... 400 Hz) |
| Voltage range | $1\text{ V}_{\text{DC}} \dots 1500\text{ V}_{\text{DC}}$ (±) |
| 100 mA ... 2 A | 0.02 ... 2 A A_{AC} (±3% ±3 dgt) |
| Resolution | 0.001 A |
| Current measurement | 2 ... 20 A_{AC} (±1% ±2 dgt) |
| Phase test | Resolution 0.01 A |
| Phase rotation test | 20 ... 200 A_{AC} (±1% ±2 dgt) |
| Frequency range | 40 Hz ... 400 Hz |
| Phase test | 100 V ... 1000 V (50/60 Hz) |
| Phase rotation test | 170 V ... 1000 V phase-to-phase, AC (40 Hz ... 70 Hz) |
| Continuity test | 0 Ω ... 500 kΩ = 50%, continuity sound if resistance < 20 Ω |
| Polarity indication | -DC symbol and DC symbol is on |
| Single-pole phase test | When the L2 probe is the positive (negative) potential, the polarity indication LED indicates '+DC' ('-DC'). |
| Two-pole phase rotation determination against earth | Result: |
| Resistance measurement | • The phase-to-phase voltage is indicated by the voltage LED segments and on the display. |
| Frequency measurement | • The R LED lights up for right rotary field. |
| Continuity test | • The L LED lights up for left rotary field. |
| Cable break detection | Measurement principle: The device detects the phase rising order to earth. |
| Temperature | Conduct a counter test, to verify the result. To do so, switch the test probes around; the expected result is swapped display of the result. |
| Humidity | Measurement principle: The device detects the phase rising order to earth. |
| Altitude | Connect both test probes to the object under test. |
| Protection class: | Frequency measurement: 0 Hz ... 800 Hz ±5% ±5 dgt; resolution: 1 Hz |
| Battery | Phase test: 2 ... 20 A_{AC} (±1% ±2 dgt) |
| Internal battery consumption | Phase rotation test: 100 V ... 1000 V (50/60 Hz) |
| Opening of current fork | Continuity test: 0 Ω ... 500 kΩ |

| 3.4 Included features | |
|--|---|
| METRALINE VC SENSE is characterized by the following features: | |
| • Measurement category: | CAT IV 600 V, CAT III 1000 V, CAT II 1000 V |
| • AC and DC voltage test up to $1000\text{ V}_{\text{AC}}$ and $1500\text{ V}_{\text{DC}}$ | |
| • Current measurement up to 200 A | |
| • Continuity test | |
| • Polarity indication | |
| • Single-pole phase test | |
| • Two-pole phase rotation determination against earth | |
| • Resistance measurement | |
| • Frequency measurement | |
| • Continuity test | |
| • Cable break detection | |
| • Auto-power on and off | |
| • Vibration and buzzer | |
| • Integrated torch light for measuring point illumination | |

| 3.5 Technical data | |
|---|--|
| Measurement category | CAT IV 600 V, CAT III 1000 V, CAT II 1000 V |
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| Current consumption | 240 mA (recovery time) |
| from measured object | $I_s < 3.5\text{ mA}(\text{at } 1000\text{ V}_{\text{AC}})$, $I_s < 6\text{ mA}(\text{at } 1500\text{ V}_{\text{DC}})$ |
| Display range | $1\text{ V}_{\text{AC}} \dots 1000\text{ V}_{\text{AC}}$ (15 Hz ... 400 Hz), $1\text{ V}_{\text{DC}} \dots 1500\text{ V}_{\text{DC}}$ (±) |
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| Display accuracy | ±1% ±1.5 V (1 V ... 29.9 V), ±1% ±3 dgt (30 V ... 1500 V) |
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| Phase test | Resolution 0.01 A |
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| Internal battery consumption | Phase rotation test: 100 V ... 1000 V (50/60 Hz) |
| Opening of current fork | Continuity test: 0 Ω ... 500 kΩ |

| 3.6 Phase rotation test | |
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