METRALINE | DMM15
Universal TRMS Multimeter

- Resolution: 100 μV, 100 mΩ, 10 μA
- TRMS measurement
- Precision temperature measurement
- Automatic and manual measuring range selection
- Digital display with additional analog scale
- Measured value memory, HOLD, MIN / MAX value
- Overload and blown fuse indicators
- IP 40 protection
- 3 year guarantee
- Protective rubber cover (optional)
- DAkkS calibration (optional)

Features

Automatic Blocking Sockets (ABS) *
Automatic blocking sockets prevent incorrect connection of measurement cables and inadvertent selection of the wrong measured quantity. This significantly reduces danger to the user, the instrument and the system under test, and eliminates it entirely in many cases.

Automatic / Manual Measuring Range Selection
Measured quantities are selected with the rotary switch. The measuring range is automatically matched to measured values. The measuring range can be selected manually as well with the help of the AUTO/MAN key.

Display of Negative Values at the Analog Scale
Negative values are also displayed at the analog scale for zero-frequency quantities, allowing for observation of measured quantity fluctuation around the zero-point.

Storage of Measured Values
By pressing the HOLD/MIN/MAX key, the currently displayed measurement value can be „frozen” in the display. The minimum and maximum values which were present at the input of the measuring instrument after activation of the MIN/MAX mode can be selectively „retained” with the MIN/ MAX function. The most important application is the determination of the minimum or maximum value during long-term observation of measurement quantities. MIN/MAX has no effect on the analog display; it continues to display the current measurement value.

Continuity Test
Allows for the detection of short-circuits and interrupted conductors. In addition to displaying test results, an acoustic signal can also be generated if desired.

Power Saving Circuit
The device is switched off automatically if the measured value remains unchanged for a period of approximately 10 minutes, and if none of the controls are activated during this time. Automatic shutdown can be deactivated.

Protective Cover for Harsh Conditions (optional)
The instrument is protected against damage in the event of impacts or dropping by means of a soft rubber cover with tilt stand. The rubber material also assures that the instrument does not wander if it is set up on a vibrating surface.

RMS Measurement with Distorted Waveshapes
The measuring method applied allows for RMS measurement for alternating signals (AC) in voltage and current measurement, independent of the waveshape up to 1 kHz (for non-sinusoidal signals as well).

* Patented (patent no. DE 10 2005 062 624, US 7,439,725)
Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/VDE 0411-1
- Safety requirements for electrical equipment for measurement, control and laboratory use

EN 60529
VDE 0470, Part 1
- Test instruments and test procedures
- Protection provided by enclosures (IP code)

IEC 61326/EN 61326
- Electromagnetic compatibility (EMC)

Voluntary Manufacturer’s Guarantee

36 months for material and workmanship
1 ... 3 years for calibration (depending on application)

Characteristic Values

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>600 mV 100 µV</td>
<td>600</td>
<td>10 MΩ // &lt; 40 pF</td>
<td>±0.1 MΩ // 50 pF</td>
<td>5</td>
<td>Cont. V</td>
</tr>
<tr>
<td></td>
<td>60 V 10 mV</td>
<td>600</td>
<td>5 MΩ // &lt; 40 pF</td>
<td>±0.4 MΩ // 50 pF</td>
<td>5</td>
<td>Cont. A</td>
</tr>
<tr>
<td></td>
<td>600 V 100 mV</td>
<td></td>
<td>5 MΩ // &lt; 40 pF</td>
<td>±0.4 MΩ // 50 pF</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voltage drop at approx. range limit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60 mA 10 µA</td>
<td>600</td>
<td>100 mV</td>
<td>1.0 + 5 (&gt; 10 D)</td>
<td>1.5 + 5 (&gt; 10 D)</td>
<td>Cont.</td>
</tr>
<tr>
<td></td>
<td>600 mA 100 µA</td>
<td></td>
<td>700 mV</td>
<td>1.5 + 5 (&gt; 10 D)</td>
<td>1.5 + 5 (&gt; 10 D)</td>
<td>Cont.</td>
</tr>
<tr>
<td></td>
<td>6 A 1 mA</td>
<td>10 A</td>
<td>300 mV</td>
<td>1.0 + 5 (&gt; 10 D)</td>
<td>1.5 + 5 (&gt; 10 D)</td>
<td></td>
</tr>
<tr>
<td>Open-circuit voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meas. current at range limit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 Ω 100 mΩ</td>
<td>max. 1 V</td>
<td>max. 250 µA</td>
<td>1 + 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 kΩ 1 Ω</td>
<td>max. 1 V</td>
<td>max. 100 µA</td>
<td>0.7 + 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 kΩ 10 Ω</td>
<td>max. 1 V</td>
<td>max. 12 µA</td>
<td>0.7 + 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 kΩ 100 Ω</td>
<td>max. 1 V</td>
<td>max. 1.2 µA</td>
<td>0.7 + 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 MΩ 10 kΩ</td>
<td>max. 1 V</td>
<td>max. 50 nA</td>
<td>2.0 + 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 V 1 mV</td>
<td>max. 3 V</td>
<td>1 + 5</td>
<td>±(±% rdg. + ... d)</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ω</td>
<td>600 Ω 100 mΩ</td>
<td></td>
<td>max. 1 V</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 kΩ 1 Ω</td>
<td>600</td>
<td>max. 250 µA</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60 kΩ 10 Ω</td>
<td></td>
<td>max. 12 µA</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>600 kΩ 100 Ω</td>
<td>600</td>
<td>max. 500 µA</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>600 kΩ 100 Ω</td>
<td></td>
<td>max. 1.2 µA</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 MΩ 10 kΩ</td>
<td></td>
<td>max. 50 nA</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 V 1 mV</td>
<td></td>
<td>1 + 5</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>600 Ω 0.1 Ω</td>
<td></td>
<td>max. 1 V</td>
<td>±(±% rdg. + ... K)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TYP K</td>
<td></td>
<td>±50.0 ... 400.0 °C</td>
<td>±0.1 °C</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

Key

rdg. = reading (measured value)
d = digit

Reference Conditions

Ambient temperature + 23 °C ± 2 K
Relative humidity 40 ... 60%
Measured quantity
- frequency 45 ... 65 Hz
- waveshape Sinusoidal

Battery voltage 3 V ± 0.1 V
**Influencing Quantities and Influence Error**

<table>
<thead>
<tr>
<th>Influencing Quantity</th>
<th>Sphere of Influence</th>
<th>Measured Quantity / Measuring Range</th>
<th>Influence Error (^{(1)})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>0 °C ... +21 °C and +25 °C ... +40 °C</td>
<td>600 mV (\sim) 6 ... 600 V (\sim) 60 mA ... 600 mA (\sim) 6 A / 10 A (\sim) 600 Ω</td>
<td>± 1.0 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.75 + 1</td>
<td>± 0.15 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15 + 2</td>
<td>± 0.5 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.15 + 2</td>
<td>± 0.5 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 Hz ... 45 Hz</td>
<td>60 mA (\sim) 600 mA (\sim) 6 A (\sim) 600 Ω</td>
<td>± 0.25 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td>&gt; 65 Hz ... 1 kHz</td>
<td>0.75 + 1</td>
<td>± 0.25 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 Hz ... 45 Hz</td>
<td>0.15 + 2</td>
<td>± 1.0 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td>&gt; 65 Hz ... 500 Hz</td>
<td>0.15 + 2</td>
<td>± 1.0 % rdg. + ... digits</td>
</tr>
<tr>
<td></td>
<td>&gt; 65 Hz ... 800 Hz</td>
<td>0.15 + 2</td>
<td>± 1.0 % rdg. + ... digits</td>
</tr>
</tbody>
</table>

**Crestfactor CF**

Test signal: Rectangle 55 Hz, no DC component

\[
\text{Crestfactor } CF = \frac{U_{\text{eff}}}{U_{\text{in}}} = \frac{U_{\text{in}}}{\sqrt{T_1 - T}}
\]

The admissible crest factor \( CF \) of the alternating quantity to be measured depends on the display value. Crest factor 4 at the end of range, it is increased accordingly when the range is reduced. However, due to input protection, voltage is limited to 1000 V, therefore the admissible crest factor in the 600 V ranges is half as high.

**Power limiting**: voltage \( \times \) frequency max. \( 3 \times 10^6 \text{ V} \times \text{Hz} \)

**Response Time** (after manual range selection)

<table>
<thead>
<tr>
<th>Measured Quantity / Measuring Range</th>
<th>Response Time</th>
<th>Analog Display</th>
<th>Digital Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V ), ( V ) (\sim), ( A ), ( A ) ... 80% of the upper range limit</td>
<td>0.7 s</td>
<td>1.5 s</td>
<td>from 0 to 80% of the upper range limit</td>
</tr>
<tr>
<td>600 Ω / 600 Ω (\sim), 50 Hz, 60 Hz sine</td>
<td>6 V / 60 V, 600 V (\sim)</td>
<td>1.5 s</td>
<td>from ( \infty ) to 50% of the upper range limit</td>
</tr>
<tr>
<td>200 Ω / 400 °C (\sim), 6 V / 60 V</td>
<td>1.5 s</td>
<td>5 s</td>
<td>from 0 to 50% of the upper range limit</td>
</tr>
</tbody>
</table>

**Display**

LCD panel (65 mm x 50 mm) with analog and digital display including unit of measure, type of current and various special functions.

- **Analog**
  - Scale length: 55 mm in all ranges
  - Scaling: 0 ... ± 60 with 61 scale divisions in all ranges
  - Polarity display: With automatic switching
  - Overload display: Triangle
  - Measuring rate: 20 measurements per second

- **Digital**
  - Display / char. height: 7-segment characters / 15 mm
  - Number of places: \( \pm \) 6 ... 6000 steps
  - Overflow display: \( 9 \) appears
  - Polarity display: \( \pm \) sign is displayed if plus pole is connected to \( \perp \)
  - Measuring rate: 2 measurements per second

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1) For temperature: specified error valid starting with temperature changes as of 10 K.
2) For frequency: specified error valid starting with display values as of 300 digits.
3) With zero balancing
4) After the \( \pm \) symbol appears at the display
METRALINE | DMM15
Universal TRMS Multimeter

Power Supply
Battery
2 x 1.5 V AA size batteries, alkaline manganese per IEC LR6 or equivalent rechargeable NiCd battery

Service life
With alkaline manganese:
approx. 750 hours for V, A-
approx. 200 hours for V, A-

Battery test
- is displayed automatically if battery voltage drops to below approximately 2.1 V.

Electrical Safety
Safety class
II per IEC 61010-1:2010/EN 61010-1:2010/
VDE 0411-1:2011
Measuring category
CAT III
Nominal voltage
600 V
Pollution degree
2
Test voltage
5.2 kV~ per IEC 61010-1/EN 61010-1

Electromagnetic Compatibility (EMC)
Interference emission
EN 61326-1: 2006 class B
Interference immunity
EN 61326-1: 2006
EN 61326-1-2: 2006

Fuses
Fuse links for all ranges
up to 600 mA
FF 1.6 A/1000 V, 6.3 mm x 32 mm,
switching capacity: 10 kA at 1000 V– with ohmic load, protects all current measuring
ranges up to 600 mA in combination with
power diodes
Fuse links for all
ranges up to 10 A
FF 10 A/1000 V, 10 mm x 38 mm,
switching capacity: 30 kA at 1000 V with
ohmic load, protects 6 A and 10 A ranges
to 1000 V

Ambient Conditions
Accuracy range
0 °C ... + 40 °C
Operating temp.
-10 °C ... + 50 °C
Storage temperature
-25 °C ... + 70 °C without batteries
Relative humidity
45 ... 75%, no condensation allowed
Elevation
to 2000 m

Mechanical Design
Protection
IP 40, IP 20 at the connector jacks
per VDE 0470, part 1 / EN 60529
Dimensions
84 mm x 195 mm x 35 mm
Weight
Approx. 350 gr. with battery

Standard Equipment
1. Digital-Multimeter
2. 2 x 1.5 V AA size batteries
1. set of measurement cables KS17-2
1. Short-form operating instructions
Detailed operating instructions are available on our website www.gossenmetrawatt.com.

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Article Number</th>
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</thead>
<tbody>
<tr>
<td>Analog-digital multimeter</td>
<td>METRALINE DMM15</td>
<td>M195A</td>
</tr>
<tr>
<td>Accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>protective rubber holster with</td>
<td>GH18</td>
<td>GTZ3212000R0001</td>
</tr>
<tr>
<td>carrying strap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAkkS calibration certificate</td>
<td>DAKS</td>
<td>Z195A</td>
</tr>
<tr>
<td>for METRALINE DMM15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast reacting surface temperature sensor, type K (NiCr-Ni) –50 ... +400 °C</td>
<td>TF400SURFACE</td>
<td>Z102E</td>
</tr>
<tr>
<td>Clip-on current transformer, 30 mA ... 150 A ... 1000:1, ±2.5 %, 1 mA/A</td>
<td>WZ12D</td>
<td>Z219D</td>
</tr>
<tr>
<td>Clip-on current sensor 60 / 600 A mm ... 40 / 400 A ~ ... 10 mV / A or 1 mV / A</td>
<td>Z13B</td>
<td>Z213B</td>
</tr>
<tr>
<td>Carrying pouch</td>
<td>F829</td>
<td>GTZ3301000R0003</td>
</tr>
<tr>
<td>Imitation leather carrying pouch</td>
<td>F836</td>
<td>GTZ3302000R0001</td>
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<tr>
<td>for one METRAHIT® and accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imitation leather carrying pouch</td>
<td>F840</td>
<td>GTZ3302001R0001</td>
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<td>for two METRAHIT® and accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard case for 1 METRAHIT® and</td>
<td>HC20</td>
<td>Z113A</td>
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<tr>
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<td>Hard case for two METRAHIT®,</td>
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<td>Z113A</td>
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<tr>
<td>adapter and accessories</td>
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<tr>
<td>Fuses (pack of 10)</td>
<td>F1.6 A / 1000 V</td>
<td>Z190C</td>
</tr>
<tr>
<td>Fuses (pack of 10)</td>
<td>10 A / 1000 V</td>
<td>Z190L</td>
</tr>
</tbody>
</table>

For additional information on accessories, please refer to
• our „Measuring Instruments and Testers“ catalogue
• our website www.gossenmetrawatt.com

Prepared in Germany • Subject to change without notice • A pdf version is available on the Internet

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