GOSSEN METRAWATT

METRAmax 2
Analog Multimeter

3-348-792-03
4/6.16

- **Voltage measurement:**
  0...100/300 mV/1 V=; 0...3 /10 /30 /100 /300 V=/~
- **Current measurement:**
  0...100 µA/1/10/100 mA/1/3 A =/~
- **Zero point:** selectable on the left or at mid-scale
- **Accuracy:** Class 2 =/3 ~



CE

Range of Applications

- Schools
- Vocational schools
- Craft shops

The handheld multimeter METRAmax 2 was developed in cooperation with a renowned German manufacturer of educational systems and thus meets the actual demands set in teaching and vocational training.
Thanks to its excellent overload capacity, optional zero setting either at mid-scale or left as well as automatic battery shutdown, the meter is not only suited for students' exercises but also for balancing tasks and service applications.

Features

Safe handling

The connection sockets and connection plugs of the measurement cables, which are available as accessory equipment, are protected against accidental contact.

Range selector switch

All measuring ranges and measuring functions can be conveniently selected with a clear, central rotary switch.

Rugged housing design

The rugged plastic housing and the spring-loaded bearing jewels of the moving-coil mechanism protect the meter against damage in the case of mechanical stress. The protective rubber cover and the carrying pouch offer special protection under adverse operating conditions. Both are available as accessories.

Special technical qualities

- „Galvanometer operation"
  due to „left" zero position of the pointer, switchable to „mid-scale"
- High, constant input impedance
  during voltage measurement due to electronic amplifier
- Automatic battery shutdown after 45 minutes
- Expansion of the current measuring range to 10 A
  by means of accessory shunt

Applicable Standards and Regulations

IEC 61010-1/ **DIN EN 61010-1/** **VDE 0411-1**	Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements
DIN EN 60529 **DIN VDE 0470-1**	Test instruments and test methods – Degrees of protection provided by enclosures (IP code)
DIN EN 61326-1 **VDE 0843-20-1**	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

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Characteristic Values

Measuring ranges

Direct and alternating voltage	Internal resistance ⎓	Internal resistance ~	Direct and alternating current	Voltage drop
100 mV ⎓	10 MΩ		100 µA ⎓/~	55 mV
300 mV ⎓	10 MΩ		1 mA ⎓/~	55 mV
1 V ⎓	10 MΩ		10 mA ⎓/~	55 mV
3 V ⎓/~	10 MΩ	1 MΩ	100 mA ⎓/~	55 mV
10 V ⎓/~	10 MΩ	1 MΩ	1 A ⎓/~	53 mV
30 V ⎓/~	10 MΩ	1 MΩ	3 A ⎓/~	51 mV
100 V ⎓/~	10 MΩ	1 MΩ		
300 V ⎓/~	10 MΩ	1 MΩ		

Influence quantities and nominal ranges of use

Temperature in the range of 0 ... +40 °C: ±2%/10 K at ≂

Frequency for all measuring ranges: ±2.5 % in the range of 30 Hz ... 1.5 kHz
±5 % in the range of 1.5 kHz ... 3 kHz

Display

Mechanism	Moving-coil mechanism with core magnet
Scale	mirror-backed
Scale length	*black scale:* 87 mm in the range of V, A, 0 ... 3/10 *red scale:* 62 mm in the range of V, A, -10/-3 ... 0 ... +3/+10

Accuracy at Reference Conditions

Class 2	for direct current
Class 3	for alternating current

Reference Conditions

Ambient temperature	+ 23 °C ±2 K
Position of use	horizontal
Frequency	50 ... 60 Hz

Waveshape and its evaluation

A sinosoidal waveshape is used as the basis for the measurement of alternating quantities. The meters feature one-way rectification, are calibrated in RMS values and evaluate the arithmetic mean value.

Ambient Conditions

Storage temperatures	–25 ... 65 °C (without battery)
Relative humidity	max. 75%, no condensation allowed

Power Supply

Battery	9 V flat cell battery IEC 6 L R61 (IEC 6 F 22) automatic battery shutdown after 45 min.

Overload Protection

Fusible link	F 3,15 H/250 V according to DIN VDE 0820 part 22/EN 60127-2 protects the current measuring circuits in the case of overload. The measurement mechanism is protected by two diodes with inverse-parallel connection.

Electrical Safety

Safety class	II per IEC 61010-1/DIN EN 61010-1/ VDE 0411-1
Measuring category	300 V CAT III
Nominal voltage	300 V
Contamination degree	2
Test voltage	3.7 kV~

Electromagnetic Compatibility EMC

Interference emission	EN 610326-1:2006 class B
Interference immunity	EN 610326-1:2006 EN 610326-2-1:2006

Mechanical Design

Protection: Housing IP 50, Terminals IP 20

Extract from table on the meaning of IP codes

IP XY (1st digit X)	Protection against foreign object entry	IP XY (2nd digit Y)	Protection against the penetration of water
0	not protected	0	not protected
1	≥ 50.0 mm dia.	1	vertically falling drops
2	≥ 12.5 mm dia.	2	vertically falling drops with enclosure tilted 15°
3	≥ 2.5 mm dia.	3	spraying water
4	≥ 1.0 mm dia.	4	splashing water
5	dust protected	5	water jets
6	dust-tight	6	powerful water jets

Dimensions	100 x 140 x 35 mm
Weight	approx. 0.3 kg

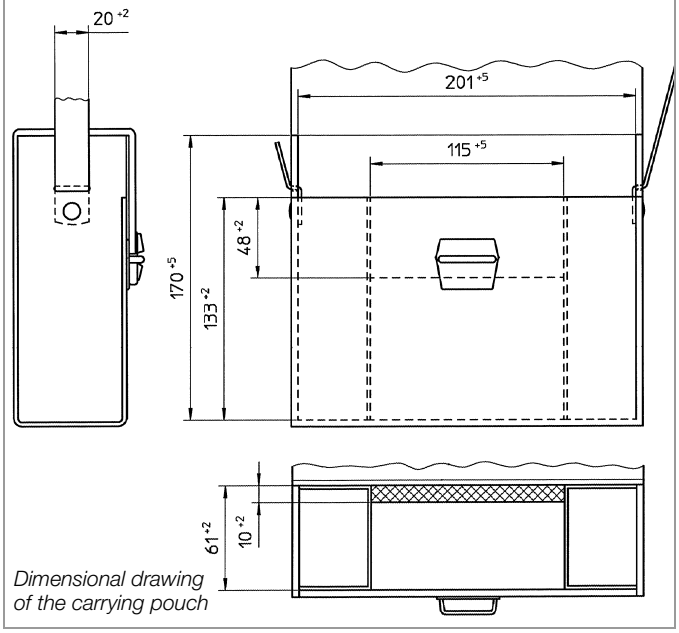
Standard Equipment

1 multimeter (without cable set)
1 battery
1 operating instructions

Accessories

Carrying pouch F841

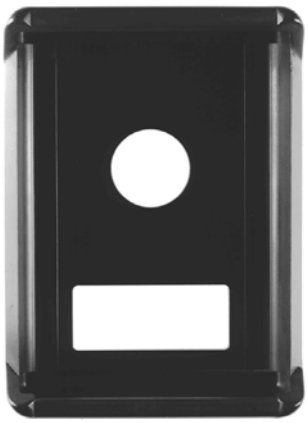




Dimensional drawing of the carrying pouch

Protective rubber cover GH19





Protective rubber cover as viewed from the top
Opening at the bottom for mechanical zero point setting



Protective rubber cover as viewed from the bottom
with guide rails for fastening the test probes

Cable set KS 17-ONE



Cable set KS 17-2



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Order Information

Description	Type	Article Number
Hand-held analog multimeter	METRAmax 2	M102A
Carrying pouch	F841	Z104A
Protective rubber cover	GH19	Z104B
Cable set (1 pair of measurement cables) 1.2 m, with VDE-GS symbol 600 V CAT III 1 A[1], 600 V CAT II 16 A[2]	KS17-ONE	Z110K
Cable set (1 pair of measurement cables) 1.2 m, with VDE-GS symbol 1000 V CAT III 1 A[1], 600 V CAT IV 1 A[1], 1000 V CAT II 16 A[2]	KS17-2	GTY3620034P0002

[1] with safety cap applied
[2] without safety cap applied

For additional information concerning accessories please refer to

- *the catalog „Measuring Instruments and Testers“*
- *our website www.gossenmetrawatt.com*