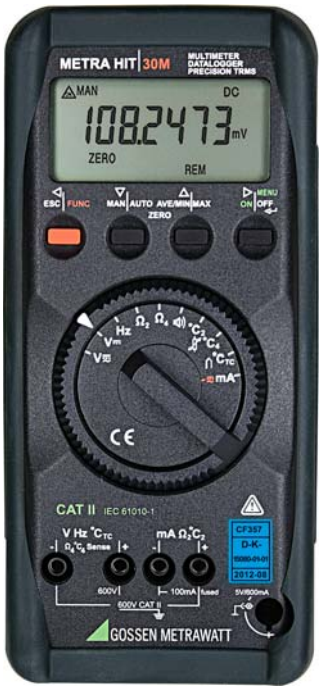
GOSSEN METRAWATT

METRAHIT 30M
Precision Digital Multimeter

3-348-979-03
8/8.14

- **Precision multimeter** (V, mA, Ω, Hz, °C/°F) and data logger
- **1,200,000 digit display range**
  High resolution for:
  DC/AC+DC voltage: 100 nV/1 µV
  DC and AC+DC Current: 100 pA
- **TRMS** AC+DC
- **Milliohmmeter with 2 and 4-wire connection**
  Resolution: 0.1 mΩ
- **Precision temperature meter,** °C and °F
  for Pt100/Pt1000 sensors with 2/4-wire connection,
  Resolution: 0.01 °C/°F
  for J and K thermocouples, resolution: 0.1 °C/°F,
  internal or external reference junction can be selected
- **Large capacity measurement value memory:** 128 kB
- **Windows software** for remote control, parameter settings, processing and graphic representation of measurement values via RS 232 interface as accessory
- **DAkkS calibration certificate included**

DAkkS
Deutsche
Akkreditierungsstelle
D-K-15080-01-01
DAkkS Calibration Certificate as Standard Feature



Applications

The 30M multimeter is a high performance, precision measuring instrument for R&D labs, industrial applications, universities, government authorities, testing stations, manufacturing and QA. With a display range of 1,200,000, as well as exceptional accuracy and long-term stability, it fulfills all of the demands of calibration and R&D labs. Battery operation allows for mobile use of the instrument for demanding maintenance work and calibration tasks. An optional mains power pack can be utilized for stationary, long-term operation.

Features

TRMS Measurement for Distorted Waveshapes

The utilized measuring method allows for TRMS measurements for up to 100 kHz at crest factors of up to 10, independent of the waveshape.

Sampling Rate

The sampling rate determines the interval at which the respective measurement value is saved to memory. Depending upon measured quantity and resolution, the interval can be set within a range of 0.01 s to 60 s.

Automatic and Manual Measuring Range Selection

The desired measured quantity is selected with the rotary switch. The measuring range is automatically adapted to the measured quantity. The measuring range can also be selected manually.

Averaging Filter

A digital filter (1/2/4/8/16 measurement values) is used to smooth noisy measurement signals.

Storing MIN-MAX Values to Memory

In addition to displaying the current measurement value, the minimum or maximum value can be continuously updated and stored to memory at the selected sampling rate.

Continuity Testing

Continuity testing allows for the detection of short-circuits and interruptions. An acoustic signal can be generated in addition to a visual display.

Overload Protection

The instrument is protected against overloading in all measuring functions. All current measuring ranges are equipped with a self-resetting, electronic fuse.

Battery Saver Circuit

The instrument is shut down automatically if the measurement value remains unchanged for approximately 10 minutes, and if none of the operating elements have been activated during this time. Automatic shut-down can be deactivated.

Protective Cover for Rugged Use

A soft rubber cover with tilting stand and probe holder protects the instrument from damage due to impacts or drops. The rubber material provides the instrument with a secure stance, even if it has been set up on a vibrating surface.

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Memory Mode

The instrument is equipped with a 128 kB measurement value memory with backup battery. The memory can be laid out in 1 to 15 blocks. New values can be written to memory, even after completion of a given measurement without loss of data, until the maximum capacity of 30,000 measurement value has been used up. The data can be stored to intermediate memory, or uploaded directly to a PC. The system records measurement values in relative time. Use as a real-time data logger is not possible.
Depending upon the measured quantity, the interval can be set in steps of 10 ms, 100 ms, 1 s, 10 s and 60 s. Individual measurement values can also be saved to memory by pressing a key.
The contents of the memory can be read out with the help of METRAwin10/METRA*Hit* analysis software and a PC which has been connected to the multimeter via the BD232 IR adapter.

Infrared Data Interface

The measuring instrument includes a serial, duplex data interface for remote control and transmission of data via infrared light.

Characteristic Values

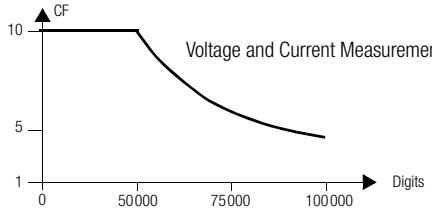
Meas. Function	Measuring Range	Resolution at Measuring Range Upper Limit			Input Impedance		Inherent Deviation at Max. Resolution under Reference Conditions ±(...% rdg. + % R)		Frequency Range in Hz	Overload Capacity [3]	
		1,200,000 [1]	120,000 [1]	12,000 [1]	—	≂	—	≂ [4] [5]		Value	Duration
V	100 mV	0.1 µV	1 µV	10 µV	> 1 GΩ	> 1 GΩ // < 50 pF	0.005 + 0.0006 [6]	0.08 + 0.06 [7]	45 … 65	600 V eff sine	continuous
								0.1 + 0.1	10 … 1 k		
								5 + 0.5	1 k … 5 k		
	1 V	1 µV	10 µV	100 µV	> 1 GΩ	10 MΩ // < 50 pF	0.0030 + 0.0004	0.08 + 0.06 [7]	45 … 65		
								0.1 + 0.1	15 … 1 k		
								0.2 + 0.1	10 … 10 k		
								5 + 0.5	10 k … 50 k		
	10 V	10 µV	100 µV	1 mV	10 MΩ	10 MΩ // < 50 pF	0.0030 + 0.0004	0.08 + 0.06 0.1 + 0.1 0.2 + 0.1 1 + 0.1 3 + 0.1	45 … 65 15 … 1 k 10 … 10 k 10 k … 50 k 50 k … 100 k		
	100 V	100 µV	1 mV	10 mV	10 MΩ	10 MΩ // < 50 pF	0.0030 + 0.0006				
	600 V [2]	1 mV	10 mV	100 mV	10 MΩ	10 MΩ // < 50 pF	0.0040 + 0.0010	0.08 + 0.06	45 … 65		
								0.2 + 0.1	10 … 1 k		
								3 + 0.1	1 k … 10 k		
					Approx. Voltage Drop at Upper R Limit						
					—	≂	—	≂ [4] [5]			
mA	100 µA	100 pA	1 nA	10 nA	150 mV	150 mV	0.02 + 0.002	0.08 + 0.06	45 … 65	0.18 A	continuous
	1 mA	1 nA	10 nA	100 nA	1.5 V	1.5 V		0.1 + 0.1	10 … 1 k		
	10 mA	10 nA	100 nA	1 µA	150 mV	150 mV		0.2 + 0.1	1 k … 5 k		
	100 mA	100 nA	1 µA	10 µA	1.5 V	1.5 V					
					Open-Circuit Voltage	Meas. Current at Upper R Limit	±(...% rdg. + % R)				
Ω	100 Ω	0.1 mΩ	1 mΩ	10 mΩ	3 V	1 mA	0.005 + 0.001 [6]			600 V eff sine	10 min.
	1 kΩ	1 mΩ	10 mΩ	100 mΩ	3 V	1 mA	0.005 + 0.001 [6]				
	10 kΩ	10 mΩ	100 mΩ	1 Ω	3 V	100 µA	0.005 + 0.001				
	100 kΩ	0.1 Ω	1 Ω	10 Ω	3 V	10 µA	0.005 + 0.001				
	1 MΩ	1 Ω	10 Ω	100 Ω	3 V	1 µA	0.05 + 0.002				
	10 MΩ	10 Ω	100 Ω	1000 Ω	3 V	100 nA	0.5 + 0.02				
Ω 🔊	100 Ω			10 mΩ	3 V	1 mA	0.05 + 0.01				
Hz	1 Hz [2] ...	0.000 001 Hz					0.05% rdg.			600 V	continuous
	100 kHz	0.1 Hz									
					Sensor						
°C/°F	– 200.00 ... +850.00 °C	0.01 °C	0.1 °C	1 °C	Pt 100 / Pt 1000		±(0.05% rdg. + 0.08 K) [8]			600 V eff sine	10 min.
	– 210.0 ... +1200.0 °C	0.1 °C	0.1 °C	1 °C	J (Fe-CuNi)		±(0.7 % rdg. + 0.3 K) [9]			600 V eff sine	
	– 270.0 ... +1372.0 °C				K (NiCr-Ni)						

[1] Display places: 6½ for DC and Ω, 5½ for AC.
Resolution is adjustable for the storage and transmission of measurement values.
[2] Smallest measurable frequency with sinusoidal measuring signal, combined period and frequency measurement
[3] At 0 to + 40° C
[4] As of 10% of the measuring range. See page 3 for influences.
[5] DC components: max. 10% of measurement value
[6] ZERO appears at the display for active "zero balancing" function.
[7] Range 100mV ≂: U_E = 10 . . . 30 mV_{eff} + additional error of 0.5% R
1 V ≂: U_E = 0.1 . . . 0.3 V_{eff} + additional error of 0.3% R
[8] Plus sensor deviation
[9] Plus sensor deviation, internal or external reference junction can be selected

Key: R = measuring range, rdg. = reading (measurement value)

Influence Variables and Influence Effects

Influence Variable	Influence Range	Measured Quantity / Measuring Range [1]	Influence Effect ppm/K
Temperature	0° C ... +21° C and +25° C ... +40° C	V ⎓	8
		V ∼	100
		mA ⎓	20
		mA ≂	100
		100 Ω ... 100 kΩ	8
		1 MΩ	15
		10 MΩ	100
		Hz	50
		°C	15

Influence Variable	Influence Range		Measured Quantity / Measuring Range [1]	Influence Effect [3]
Measured Quantity Waveshape	Crest Factor CF	1 ... 3	V ∼, mA ∼	± 0.2% R
		> 3 ... 5		± 0.5% R
		10		± 2% R
	The allowable crest factor (CF) for the periodic quantity to be measured is dependent upon the displayed value: 			

Influence Variable	Influence Range	Measured Quantity / Measuring Range [1]	Influence Effect
Relative Humidity	75% 3 days device off	V, mA, Ω, Hz, °C	1 x inherent deviation

Influence Variable	Influence Range	Measuring Range	Damping ±dB
Common-Mode Interference Voltage	interference qty. max. 1000 V ∼	V ⎓	> 90 dB
	interference qty. max. 1000 V ∼ 50 Hz, 60 Hz sine	100 mV ... 10 V ∼	> 80 dB
		100 V ∼	> 70 dB
		600 V ∼	> 60 dB
Series-Mode Interference Voltage	interference qty. V ∼ , respective measuring range nominal value, max. 1000 V ∼ , 50 Hz, 60 Hz sine	V ⎓	> 60 dB
	interference qty. max. 1000 V —	V ∼	> 60 dB

[1] With zero balancing
[2] Inherent deviation values valid as of a display value of 10% of the measuring range
[3] Except for sinusoidal waveshape

Reference Conditions

Ambient Temperature	+23° C ±2 K
Relative Humidity	40 ... 60%
Measured Quantity Frequency	45 ... 65 Hz
Measured Quantity Waveshape	sine
Battery Voltage	3 V ±0.1 V
Power Pack Voltage	5 V ±0.2 V

Response Time

After Manual Range Selection at Maximum Resolution

Measured Quantity / Measuring Range	Response Time	Measured Quantity Step Function
V ⎓ , V ∼, mA ⎓ , mA ∼	max. 2 s	from 0 to 80% of measuring range upper limit
100 Ω ... 1 MΩ	max. 2 s	from ∞ to 50% of measuring range upper limit
Continuity	< 30 ms	
°C (Pt100)	max. 2 s	
> 10 Hz	max. 2 s	from 0 to 50% of measuring range upper limit

Measuring Cycle

Measuring Function	Interval Depending Upon Resolution		
	1 200 000	120 000	12 000
V ⎓, mA ⎓	1 s	0.1 s	0.01 s
V ∼, mA ∼	—	0.1 s	0.01 s
Ω / °C	1 s	0.1 s	0.01 s
°C (K, J)	1 s	0.1 s	0.01 s
Hz	1 s (≤ 2 s at 1 Hz)	—	—

Display

LCD field (65 mm x 30 mm) with digital display, including display of unit of measure, current type and various special functions.

Display/Char. Height	7 Segment / 12 mm
Number of Places	6½
Overload Display	"OL" is displayed as of 1,250,000
Polarity Display	"–" sign is displayed when plus pole is connected to "–V"

Display Refresh Rate

V, mA, Ω, °C/°F	once per second
Hz	1 to 0.5 time per second

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Power Supply

Battery: 2 ea. 1.5 V mignon cells alkaline-manganese per IEC LR6

Service Life

Measuring Function with 2.5 Ah alkaline-manganese cells	Power Consumption in mA [1]	Service Life in Hours
V DC, mA DC, °C/°F	100	16 [2]
V (AC + DC), mA (AC + DC)	105	15 [2]
Transmission mode, sampling rate: 100 ms		
9600 baud	114	
19200 baud	108	

[1] in the case of new batteries consumption rises with decreasing battery voltage.
[2] in the case of intermittent operation

Battery Test: Automatic display of the " ⊣⊢ " symbol when battery voltage falls to below approx. 2.3 V

Battery Saver Circuit

The instrument is shut down automatically if the measurement value remains unchanged for approximately 10 minutes, and if none of the operating elements have been activated during this time. Automatic shut-down can be disabled.

Fuses

All current measuring ranges are protected by an internal 250 mA fuse. A defective fuse may only be replaced by GMC-I Service GmbH. Voltage at the measuring current circuit may not exceed 600 V_{eff}.

Electrical Safety

Protection Class	II per IEC/EN 61010-1:2001 /VDE 0411-1:2002
Measuring Category	II
Operating Voltage	600 V
Contamination Level	2
Test Voltage	3,7 kV~ per IEC/EN 61010-1:2001 /VDE 0411-1:2002

Electromagnetic Compatibility (EMC)

Interference emission	EN 61326:2006 class B
Interference immunity	EN 61326-1: 2006 EN 61326-2-1: 2006

Ambient Conditions

Operating Temp.	– 5 °C ... +50 °C
Storage Temperature	–25 °C ... +70 °C (without batteries)
Relative Humidity	max. 75%, no condensation allowed
Elevation	to 2000 m
Deployment	indoors; outdoors only within the specified ambient conditions
Warm-Up Time	5 min.

Mechanical Design

Protection: instrument: 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
5	dust protected	0	not protected
2	≥ 12.5 mm ∅	0	not protected

Dimensions	84 mm x 195 mm x 35 mm
Weight	approx. 350 gr. with batteries

Data Interface

Type	optical, via infrared light through the housing
Datenübertragung	serial, bidirectional (not IrDa compatible)
Protokoll	device specific
Baudrate	9600 baud
Funktionen	– select/query measuring functions and parameters – query/transmit current measurement data – read out stored measurement data

BD232 or USB-HIT plug-in interface adapters (see Accessories) allow for adaptation to common computer interfaces, namely RS232C or USB.

Applicable Regulations and Standards

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

Standard Equipment

1 multimeter
1 GH18 protective rubber cover for rugged use
1 KS17 cable set
2 batteries
1 operating instructions
1 DAkkS calibration certificate

Guarantee

3 years material and workmanship.
1 year to 3 years for calibration (depending upon use).

Accessories for Operation with PCs

BD232 Interface Adapter

With the help of the bidirectional adapter BD232 METRAHIT 30M multimeters can be configured via PC and the live measurement data can be transmitted to the computer. The adapter has no memory of its own, but can be used to read out data from the memory at the METRAHIT 30M. Up to 6 adapters can be cascaded for the creation of a multi-channel measuring system.

USB-HIT Interface Adapter

This adapter is functionally identical to the BD232 interface adapter, although bidirectional transmission takes place between the IR and the USB interface in this case.

It is not possible to set up a multi-channel system with this adapter.

METRAwin10/METRA*Hit* Software

METRAwin10/METRA*Hit* PC software is a multilingual, measurement data logging program for recording, visualizing, evaluating and documenting measured values from METRA HIT multimeters.

Communications between the PC and the measuring instrument(s) is established via available interfaces and memory adapters. Telephone modems can be interconnected as well.

Depending upon device type, one or several of the following operating modes are possible:

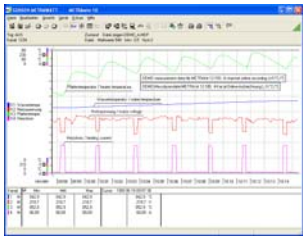
- **Device Configuration**
  Remote configuration and querying of device-specific functions and parameters, for example measuring function, measuring range and memory parameters. Frequently used device settings can be saved to configuration files for easy recall.
- **Online Recording of Measurement Data**
  Read-in, display and recording of momentarily measured data from the interconnected device
  – Number of measuring channels: Up to 10
  – Start recording: Manual, triggered by measured value, time triggered
  – Recording mode:
  > Time controlled with sampling interval of 0.05 s* ... 1 s ... 60 min.
  > Manually controlled
  > Measured value controlled in the event of exceeded limit/delta value
  – Recording duration: max. 10 million intervals

* Depending upon device type, measuring function, number of measuring channels and communication mode (e.g. via modem), sampling intervals of less than 1 s cannot be used.

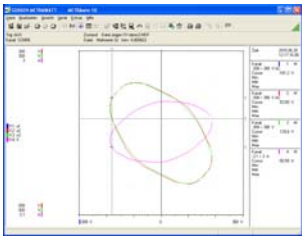
- **Reading Out and Visualizing Stored Data**
  If supported by the device: read-in and display of offline data recorded to device memory.

For purposes of analysis, data recorded online or read in from the device's memory can be displayed in various formats:

Y(t) Recorder Display for Up To 6 Channels

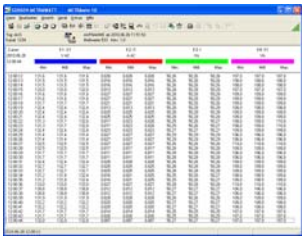


XY- Recorder Display for Up To 4 Channels



Multimeter Display for Up To 4 Channels

Tabular Display for Up To 10 Channels



System Requirements

METRAwin 10 (version 6.0) can be run on IBM compatible PCs with Microsoft Windows XP, VISTA and 7.

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Cordura Belt Pouch HitBag

for multimeters of the METRA HIT (with/without protective rubber cover) and METRAport series

Hard Case HC20

for multimeters (with/ without protective rubber cover GH18) and accessories

F836 Ever-Ready Case

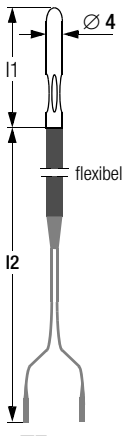
for multimeter (without protective rubber cover) and accessories

F829 Carrying Pouch

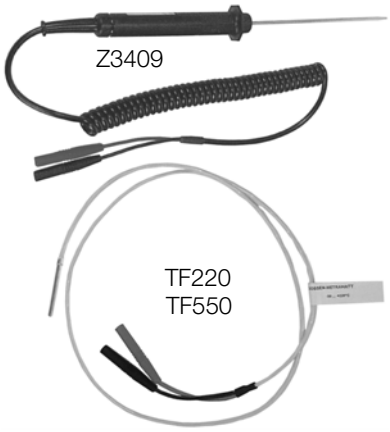
For multimeter (with or without GH18 protective cover) and accessories

Temperature Measurement with TF220

The TF220 is just one of many temperature sensors which can be selected from a wide ranging product spectrum. For further information regarding temperature sensors, as well as other accessories, please refer to our "*Measuring Instruments and Testers*" catalog or visit www.gossenmetrawatt.com



TF220



Milliohm Measurement with Type KC4 Kelvin Clips

Kelvin clips are suitable for establishing contact between the METRAHIT 30M and low-resistance devices under test. They compensate for influence resulting from cable and contact resistance. The KC4 set includes two clips with insulated, twist-resistant jaws and good clamping action. They can be used for establishing contact with very fine wires, up to rails and rods with a maximum diameter of 15 mm.

4-pole connection is highly advisable for the measurement of values of less than 30 Ω.

Milliohm Measurement with Type KC27 Kelvin Probe

Same usage as KC4, but with two 2 spring-loaded steel tips for piercing insulation coatings (e.g. on the outer skin of aircraft) and oxide layers (e.g. at oxidized battery contacts), in order to assure good contact for milliohm measurements, as well as for current and voltage measurements.

For further accessories please refer to the "Order Information" table on page 7.

Order Information

Designation	Type	Article Number
Precision Digital Multimeter, See page 4 for standard equipment.	METRAHIT 30M	M230B
90 ... 250 V AC/5 V DC mains power pack	NA HIT 2X	Z218H
Accessories for Operation with PCs		
Single channel pack consisting of: BD232 bidirectional interface adapter, cable, METRAwin10/METRA*Hit* software	BD-Pack 1	Z215A
Bidirectional interface adapter	BD232	GTZ3242100R0001
RS 232 interface cable, 2 m long	Z3241	GTZ3241000R0001
METRAwin10/METRA*Hit* software update	Z3240	GTZ3240000R0001
Bidirectional interface adapter IR/USB for METRA HITs	USB-HIT	Z216A
Accessories for Voltage Measurement		
Probe for voltage measurements in power installations of up to 1000 V	KS30	GTZ3204000R0001
Accessories for Current Measurement		
Current sensors, current transformers and shunts see table on the next page		
Accessories for Temperature Measurement		
Pt100 temperature sensor for surface and immersion measurements from −40 to +600° C	Z3409	GTZ3409000R0001
Pt1000 temperature sensor, from −20 to +220 °C for measurements in household appliances in gases and liquids, stainless steel immersion tube dia. 3.2 mm	TF220	Z102A
Pt100 oven sensor, −50 to +550° C	TF550	GTZ3408000R0001
10 ea. Pt100 adhesive temperature sensor for −50 to +550° C	TS-Chipset	GTZ3406000R0001
Accessories for Low Voltage Measurement		
Kelvin clips (1 set) for 4-pole connection of low-resistance DUTs, cable length: 120 cm	KC4	Z227A
Kelvin probes (1 set) with double steel tips for 4-pole connection of low-resistance DUTs	KC27	Z227B
Cable set with 2 mm diameter steel tips and 120 cm cable, 1000 V / CAT II	KS17-S	Z110H

Designation	Type	Article Number
Accessories for Transport		
Imitation leather carrying pouch for METRA HIT and METRAmax	F829	GTZ3301000R0003
Cordura belt pouch for multimeters of the METRA HIT and METRAport series	HitBag	Z115A
Imitation leather ever-ready case with cable compartment	F836	GTZ3302000R0001
Ever-ready case for 2 METRA HITs, 2 adapters and accessories	F840	GTZ3302001R0001
Hard case for one METRA HIT and accessories	HC20	Z113A
Hard case for für two METRA HITs and accessories	HC30	Z113B

[D] Data sheet available

For further information on accessories please refer to our:

- *Measuring Instruments and Testers Catalog*
- *website www.gossenmetrawatt.com*

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Current Measuring Accessories All current sensors and transformers are equipped with a connector cable (1.2 to 1.5 m long) with 4 mm safety banana plugs									Suitable for METRA HIT
Type	**Designation**	**Measuring Range**	**Meas. Category**	**Max. Wire Dia.**	**Transformation Factor**	**Frequency Range**	**Intrinsic Uncertainty ±(% rdg. + ...)**	**Article Number**	**30M**
DC/AC Current Sensors with Voltage Output									
CP30	DC/AC clip-on current sensor, with battery mode (30 h)	5 mA ... 30 A	300 V / CAT III	25 mm	100 mV/A	DC...20 kHz (-1dB)	1 % +2 mA	Z201B	●
CP330	DC/AC clip-on current sensor, with 2 measuring ranges, battery mode (30 h)	0,5 ... 30 A 5 ... 300 A	300 V / CAT III	25 mm	10 mV/A; 1 mV/A	DC...20 kHz (-3 dB)	1 % + 50 mA 1 % + 100 mA	Z202B	●
CP1100	DC/AC clip-on current sensor, with 2 measuring ranges, battery mode (30 h)	0,5 ... 100 A 5 ... 1000 A	300 V / CAT III	32 mm	10 mV/A; 1 mV/A	DC...20 kHz (-1dB)	1 % + 100 mA 1 % + 500 mA	Z203B	●
Z13B	DC/AC clip-on current sensor, with 2 measuring ranges, battery mode (50 h)	0.2 ... 40 A~/60 A–; 0.5 ... 400 A~/ 600A–	300 V / CAT IV	50 mm	10 mV/A, 1 mV/A	DC...65 Hz ... 10 kHz	1,5 % 2,0 %	Z213B	●
AC Current Sensors with Voltage Output									
WZ12B	AC clip-on current sensor	10 mA~ ... 100 A~	300 V / CAT III	15 mm	100 mV/A	45 ... 65 ... 500 Hz	1.5% +0.1 mA	Z219B	●
WZ12C	AC clip-on current sensor, with 2 measuring ranges	1 mA~ ... 15 A~, 1 ... 150 A~	300 V / CAT III	15 mm	1 mV/mA, 1 mV/A	45 ... 65 ... 400 Hz	3% + 0.15 mA, 2% + 0.1 A	Z219C	●
WZ11B	AC clip-on current sensor, with 2 measuring ranges	0.5 ... 20 A~, 5 ... 200 A~	600 V / CAT III	20 mm	100 mV/A, 10 mV/A	30...48 ... 65 ... 500 Hz	1 ... 3%	Z208B	●
Z3512A	AC clip-on current sensor, with 4 measuring ranges	1 mA ... 1/10/100/ 1000 A~	600 V / CAT III	52 mm	1 V/A, 100 mV/A, 10 mV/A, 1 mV/A	10...48 ... 65 ... 3 kHz	0.5 ... 3%, 0.2 ... 1%	Z225A	●
METRAFLEX 3000	Flexible AC current sensor with 3 measuring ranges, battery mode (2000 h)	0,5 ... 30 A, 0,5 ... 300 A, 5 ... 3000 A	1000 V CAT III 600 V CAT IV	Circum-ference: 610 mm	100 mV/A, 10 mV/A, 1 mV/A	10 Hz ... 20 kHz	1% + 0.1 A 1% + 0.1 A 1% + 1 A	Z207E	●
METRAFLEX 300M	Flexible AC miniature current sensor with 3 measuring ranges, battery mode (150 h)	1 ... 3 A, 1 ... 30 A, 5 ... 300 A	1000 V CAT III 600 V CAT IV	Circum-ference: 160 mm	1 V/A, 100 mV/A, 10 mV/A	20 Hz ... 100 kHz	1% + 0.2 A 1% + 0.2 A 1% + 1 A	Z207M	●
AC Current Transformer with Current Output									
WZ12A	AC clip-on current transformer	15 ... 180 A~	300 V / CAT III	15 mm	1 mA/A	45 ... 65 ... 400 Hz	3%	Z219A	—
WZ12D	AC clip-on current transformer	30 mA ... 150 A~	300 V / CAT III	15 mm	1 mA/A	45 ... 65 ... 500 Hz	2.5% +0.1 mA	Z219D	■
WZ11A	AC clip-on current transformer	1 ... 200 A~	600 V / CAT III	20 mm	1 mA/A	48 ... 65 ... 400 Hz	1 ... 3%	Z208A	—
Z3511	AC clip-on current transformer	4 ... 500 A~	600 V / CAT III	30 x 63 mm	1 mA/A	48 ... 65 ... 1 kHz	3% +0.4 A	GTZ3511 000R0001	—
Z3512	AC clip-on current transformer	0.5 ... 1000 A~	600 V / CAT III	52 mm	1 mA/A	30...48 ... 65 ... 5 kHz	0.5% ... 0.7%	GTZ3512 000R0001	—
Z3514	AC clip-on current transformer	1 ... 2000 A ~	600 V / CAT III	64 x 150 mm	1 mA/A	30...48 ... 65 ... 5 kHz	0.5% +0.1 A	GTZ3514 000R0001	—
Shunt Resistors for Multimeters without Current Measuring Function									
NW300mA	Plug-in shunt resistor, encapsulated 1 Ω	0 ... 300 mA	300 V / CAT III	—	1 mV/mA	DC ...10 kHz	0.5%	Z205C	●
NW3A	Plug-in shunt resistor, encapsulated 0,1 Ω	0 ... 3 A	300 V / CAT III	—	100 mV/A	DC ...10 kHz	0.5%	Z205B	●

● without limitation ■ up to 120 A~

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GOSSEN METRAWATT

GMC-I Messtechnik GmbH
Südwestpark 15
90449 Nürnberg, Germany

Phone: +49 911 8602-111
Fax: +49 911 8602-777
E-mail: info@gossenmetrawatt.com
www.gossenmetrawatt.com