

# GOSSEN METRAWATT

Safety through Competence



**METRAHIT** | **ENERGY**  
TRMS POWER | MULTIMETER

TRMS Power Multimeter

# METRAHIT | ENERGY – The Key Player



Foto: Thomas Max Müller



## COSTS AND QUALITY UNDER CONTROL

**The new, professional METRAHIT ENERGY multimeter is going beyond all previous limits.**

The multimeter is still the most commonly used tool in all professions in the fields of electronics and electrical engineering.

Gossen Metrawatt's new, professional **METRAHIT ENERGY** multimeter is exceeding all previous performance limits.

All important power factors can be acquired with simultaneous current and voltage measurement. The momentary measured value, for example active power along with the corresponding voltage and current values, as well as alternating voltage frequency or power factors, appear at the extended triple display.

With a measuring resolution of 60,000 digits, performance provided by this battery powered, hand-held instrument is comparable to that of a high-end benchtop multimeter.

In particular when acquiring energy consumption for modern devices like cell phones, TV sets and household appliances such as refrigerators etc., it's important to measure momentary energy consumption, and to perform continuous measurements over a longer period of time as well. Real-time data storage with enough capacity for up to 62,000 measured values allows for measurement as a data logger, e.g. for the duration of an entire day.

In addition to other important multimeter functions such as resistance, temperature, capacitance and frequency measurement (for voltage and current), as well as continuity and diode testing, the **METRAHIT ENERGY** also offers measuring functions for crest factor, conductivity, duty cycle, dB and cable length, and even harmonic analysis for voltage and current up to the 15<sup>th</sup> harmonic. Measured values for individual harmonics and total harmonic distortion THD can be displayed as absolute values (in V or A), as well as relative to the fundamental harmonic (as a percentage).

The instrument's ability to acquire and record mains disturbances is unique amongst handheld multimeters. Voltage dips and swells with durations of greater than ½ period, as well as voltage peaks of longer than 1 ms and relative transients with rise times of greater than 0.5 µs are recorded along with event time, extreme value and duration if applicable. This makes it possible to clarify disturbances at electrical consumers and power generating equipment. The **METRAHIT ENERGY** provides you with a single-phase mains quality measuring instrument (PowerQuality tool) in a handy format.

With its diverse range of possible applications, the **METRAHIT ENERGY** fulfills your most exacting demands.

## RANGE OF APPLICATIONS

The METRAHIT ENERGY measuring instrument is predestined for universal use in electrical engineering, electrical installation, laboratory applications, training, telecommunication etc.

### Technical laboratories, testing and inspection institutes

The multifunctional METRAHIT ENERGY measuring system is capable of ascertaining instantaneous power consumption as well as energy consumption over a lengthy period of time. The measurement of energy consumption for consumer electronics, communications devices, IT equipment and household appliances such as refrigerators is thus one of the most important applications.

### Power utilities, industrial companies

Disturbances at electrical consumers and power generating equipment can be clarified with the single-phase mains analyzer. Mains disturbances can be acquired and recorded. Voltage dips and swells are recorded along with event time, extreme value and duration if applicable.

### Industrial companies, manufacturers, distributors

As an OEM product, the METRAHIT ENERGY can be laid out for special applications or special customer requirements.



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## UNIQUE



The automatic blocking sockets prevent incorrect connection of the measurement cables, as well as selection of the wrong measured quantity.



Easy replacement of the batteries and the fuse is assured by the battery and fuse compartment.



The LCD panel with triple digital display measures 65 x 36 mm and features crystal blue light for excellent contrast. Background illumination can be activated at any time in the event of poor light conditions.



Retraceable substantiation and documentation of the instrument's technical specifications for, amongst other functions, test equipment monitoring for the fulfillment of DIN EN ISO 90000-9004.

### Additional features:

- TRMS measurement, specified up to 100kHz
- Power measurement: active, reactive and apparent power with extreme values, power factor
- Energy measurement: active, reactive and apparent energy, mean power value with adjustable observation period and maximum value
- Mains quality analysis: recording of over and undervoltage, dips, swells, voltage peaks and transients in 0, 50 and 60 Hz systems with 6, 60 and 600 V measuring ranges
- Harmonic analysis: RMS values and distortion components up to the 15th harmonic at 16.7, 50, 60 and 400 Hz
- Instrument is completely remote controllable without activating the rotary switch or changing current sockets
- Auto-ranging with peak value monitoring for the prevention of invalid measuring ranges
- High-voltage comparator: prevents switching between the low and high impedance functions when voltage is present

- Crest factor display (up to 1 kHz) in U, I AC+DC
- All current ranges from 600  $\mu$ A to 10 A via the same socket: with auto-ranging and manual range selection
- % duty cycle measurement: 2% to 98%
- Acoustic continuity test with adjustable threshold value
- 1 kHz - 3 dB low-pass filter can be activated, e.g. for measurements at frequency converters
- Active fuse monitoring: blown fuse notification even when no voltage is present
- Internal real-time clock for data storage with reference to time
- Acoustic/optical indication
- Auto power off with adjustable time from 10 to 59 minutes
- Integrated, electrically isolated infrared interface through a window in the housing for data exchange with a PC
- Current measurement by means of current clamp transformers with adjustable transformation ratios via the "Clip" menu

## Overview

TECHNICAL DATA	
DC voltage measurement	0.1 mV ... 600 V
Intrinsic error for V DC	± 0.02 % rdg. + 15 d
AC voltage measurement	1 mV ... 600 V
Intrinsic error for V AC	± 0.2 % rdg. + 30 d
TRMS V	AC, AC + DC
Direct current measurement	10 µA ... 10 A
Intrinsic error, DC	± 0.05 % rdg. + 20 d
Alternating current measurement	10 µA ... 10 A
Intrinsic error, AC	± 0.5 % rdg. + 25 d
TRMS A	AC, AC + DC
Resistance measurement	10 mW ... 60 MW
Intrinsic error, resistance	± 0.1 % rdg. + 5 d
Low-resistance measurement	const. current I = 3 mA
Power and energy measurement	
Mains quality (PQ)	
Capacitance measurement	10 pF ... 600 µF
Intrinsic error, capacitance	± 1 % rdg. + 6 d
Temperature measurement, Pt 100/1000	-200° ... +850°
Thermocouple (type)	-260° ... +1372° (J, K)
Continuity test	
Diode test	6.0 V

TECHNICAL DATA	
Frequency measurement	0.01 Hz ... 1 MHz
Loop resistance	
Data/Min/Max storage	
Data storage (measured values)	16 Mbit (300,000)
Analog display, 35/36 graduations	Triple
Digital display (places/digits)	60 000
Display illumination	
Measurements per second	40 analog / 10 digital
Bandwidth	100 kHz
Interface	IR
Automatic blocking sockets	
Measuring category	CAT III / 600 V CAT IV / 300 V
Calibration certificate	DKD
Weight with batteries	400 g
Batteries / operating hours	2 x 1.5 V / 200
Dimensions (W x H x D)	89 x 199 x 43 mm
Protection	IP 52
Approvals and certificates	CE
Accessories / included	KS29 measurement cable set, rubber holster, DKD calibration cert., batteries

## DEVICES, SYSTEMS AND ACCESSORIES

ARTICLE	DESCRIPTION	ARTICLE NO.
Replacement	Fuses (pack of 10), FF (UR) 10A/1000V AC/DC	Z109L
<b>Accessories for Operation at a PC</b>		
USB-XTRA	Bidirectional interface adapter, IR-USB	Z216C
METRAwin10	Windows software including METRAHIT ENERGY	GTZ3240000R0001
<b>Temperature Measuring Accessories</b>		
Z3409	Standard Pt100 sensor, class A, for surface and immersion measurements, -40 to +600° C	GTZ3409000R0001
TF220	Pt1000 temperature sensor, class B, for measurement in gases and liquids, -50 to +220° C	Z102A
TF550	Pt100 oven sensor, class B, for measurements in ovens, refrigerators etc., -50 to +550° C	GTZ3408000R0001
TF550	Dip-stick oil temperature sensor, Pt1000, class B, -50 to +500° C, sensor: 3 mm dia. x 810 mm	Z102C
TF400 SURFACE	Fast reacting surface temperature sensor (T90 = 2 s), type K thermocouple (NiCr-Ni), -50 to +400° C	Z102E
<b>Adapters, Power Pack, Charger</b>		
PMA16	Power measuring adapter for METRAHIT ENERGY with Schuko adapter plug	Z228A
SM16	Current measuring adapter with Schuko adapter plug	GTM9070190E0001
NA X-TRA	Broad range variable power pack: 90 to 253 V AC / 5 V DC, 600 V CAT IV	Z218G
Z206D	NiMH quick charger for four AA rechargeable batteries	Z206D
<b>Pouches and Cases</b>		
HIT BAG	Rugged Cordura belt pouch for METRA HIT and METRAport multimeters	Z115A
HC20/HC30	Hard case for one/two METRAHIT multimeter(s) and accessories	Z113A/Z113B
<b>Current Sensors, Current Transformers, Flexible Current Sensors</b>		
Z13B	AC/DC current clamp sensor, 60 / 600A, 40 / 400 A	Z213B
CP30	AC/DC current clamp sensor, 0 to 30 A, 0 to 20 A, transformation ratio: 100 mV / A	Z201B
CP330	AC/DC current clamp sensor, 0 to 30 A / 300 A, 0 to 20 / 200 A, 10 mV / A or 1 mV / A	Z202B
CP1100	AC/DC current clamp sensor, 0 to 300 A / 1000 A, to 200 A / 1000 A, transformation ratio: 1 mV / A	Z203B
METRAFLEX 3000 I	Flex. AC current sensor, meas. range: 30/300/3000 A, transformation ratio: 100 mV / 10 mV / 1 mV / A, 1%,	Z207E
METRAFLEX 3000 M	frequency range: 10Hz to 20 kHz / 100 kHz, with battery, sensor length: 61 cm / 16 cm	
WZ12A	AC current transformer clamp, 15 to 180 A, 1 mA / A	Z219A
Z3511	AC current transformer clamp, 4 to 500 A, 1 mA / A	GTZ3511000R0001
Z3512	AC current transformer clamp, 0.5 to 1000 A, 1 mA / A	GTZ3512000R0001
Z3514	AC current transformer clamp, 1 to 2000 A, 1 mA / A	GTZ3514000R0001



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