GOSSEN METRAWATT

METRAHIT PM TECH, PM XTRA, PM TUNE, ETECH, EXTRA
Professional Multimeters
METRAHIT EU PRO & ESPECIAL
Special Multimeters

- Digital Hand-Held Multimeters with TRMS Measurement amongst other features including:
  VAC TRMS, VAC+DC TRMS, VDC, dB, Hz(V), Hz(A), Ω, V⬦⊢,
  °C / °F with thermocouple (TC)
- Resolution of 60,000 counts, can be changed to 6000 via the menu, display illumination can be activated for difficult lighting conditions

METRAHIT PM TECH / ETECH
- Direct Current measurement with increased accuracy and current measurement, via clamp current transformer and sensors
- Broad range capacitance measurement

METRA HIT PM XTRA / TECH / EU PRO & METRAHIT EXTRA / ETECH / ESPCIAL
- Special low-impedance alternating voltage measurement (1 MΩ)
- 1 kHz / -3 dB low-pass filter can be activated
- Temperature measurement with Pt100/Pt1000 resistance sensor

METRA HIT PM XTRA / PM TUNE / EXTRA
- Direct current measurement from 10 nA to 10 A, 16 A for short periods
- Temperature measurement with Pt100/Pt1000 resistance sensor
- Broad range capacitance measurement
- TRMS AC and AC + DC bandwidth 100 kHz
- **METRAHIT PM TUNE**: faster display refresh for adjustment work

METRAHIT EU PRO / ESPECIAL
- Special instrument for the performance of measurements at current transformer circuits

CAT IV

3 YEARS WARRANTY

MADE IN GERMANY

Applications

The instruments of the Professional series (E and high resolution series) are extremely rugged, reliable digital multimeters with housings made of impact resistant ABS.
With a resolution of 60,000 counts and up to 26 different measuring functions, they've been developed for professional use.

Features

Three Connector Jacks with Automatic Blocking Sockets (ABS) *

All current ranges are implemented via a single connector jack which prevents any possibility of operator error. Auto-ranging is available in all current measuring ranges. Also the automatic blocking sockets prevent incorrect connection of the measurement cables, as well as selection of the wrong measured values. Danger to the user, the instrument and the device under test resulting from operator error is eliminated to a great extent.
* Patented (patent no. EP 1801 598, US 7,439,725)

Overload Protection

The instrument is safeguarded for up to 1000 V in all measuring functions by overload protection. Voltages of greater than 1000 V and current of greater than 10 or 16 A are indicated acoustically. Dangerous contact voltages are indicated when the 1 kHz low-pass filter is activated.
The FUSE display appears at **METRA HIT PM XTRA / PM TUNE / EXTRA** and **METRAHIT PM TECH / ETECH** instruments in order to indicate that the fuse for the current measuring input has blown.

RMS Value with Distorted Waveshape

The utilized measuring method allows a waveshape independent RMS measurement (TRMS AC and AC+DC) for voltage and current (**METRA HIT PM XTRA / PM TUNE / EXTRA** up to 100 kHz).

Selectable Filter for V AC Measurement

A 1 kHz low-pass filter can be selected if required, for example to measure the motor voltage at electronic frequency converters. The input signal is checked by a voltage comparator for dangerous voltages as long as the low-pass filter is activated. A high-voltage symbol appears at the display if dangerous voltage is present.

Measuring 5 V Square-Wave Signals with the METRA HIT PM XTRA / PM TUNE / EXTRA

This function allows to test circuits and transmission cables by measuring the frequency and the duty cycle of pulses with amplitudes of 2 to 5 V and frequencies of 100 Hz to 1 MHz.

Analog Scale for Quick Trend Display – Bar Graph or Pointer

The analog scale (with additional negative range for zero-frequency quantities) allows for faster recognition of measured value fluctuation than is possible with a digital display.
The instrument can be switched back and forth between bar graph and pointer display via the menu.

Automatic or Manual Measuring Range Selection

Measurement functions are selected by a rotary dial and a function key. The measurement range selection is done automatically according to the input signal. Manual measurement range selection is possible via function key.

METRA**HIT** PM TECH, PM XTRA, PM TUNE, ETECH, EXTRA
METRA**HIT** EU PRO & ESPECIAL

Measurement with current clamps and sensors

Current clamps and sensors are used for current measurements without interrupting the circuit under test and for high currents above 16 Amps. All E series multimeters offer convenient measurement with current clamps.

The measured current value is automatically calculated for the user with the help of the adjustable clamp factor.

Fast Acoustic Continuity Test

Testing for short circuit connection and circuit interruption is possible with the selector switch in the ⊏⟩⟩ position. The threshold value for acoustic response can be set to 1, 10, 20 ... 500 Ω in 10 Ohm steps.

Automatic Storage of Measured Values *

The DATA function automatically saves the digitally displayed measured value after stabilisation in. Acoustic signaling is also used to indicate whether the new measured value deviates from the initial reference value by less or more than 0.1% of the measuring range.
* Patented

Min-Max Data Storage

Comparable to the slave-pointer function of an analog instrument, the device saves the highest and lowest measured values after the MIN/MAX function has been activated or reset. These extreme values can be queried at the display.

Battery Charging Status – Power Saving Circuit

The battery charging status is indicated by means of four symbols.

The device is switched off automatically if the measured value remains unchanged for a period of between 10 and 59 minutes (adjustable), and if none of the controls are activated during this time. Automatic shutdown can be deactivated by switching the instrument to continuous operation.

The standby mode of the infrared interface can be switched off.

Protective Rubber Holster for Rugged Conditions

The instrument is protected against damage in the event of impacts or dropping by means of a soft rubber holster with tilt stand and test probe holder. The rubber material also assures that the instrument does not slide if it is set up on a vibrating surface.

Infrared Data Interface

The device can be remotely configured, and momentary and stored measurement data can be read out via the bidirectional infrared interface. The USB X-TRA interface adapter and **METRAwin10** software are required (see accessories). Interface protocol and device driver software for LabVIEW® (National Instruments™) are available upon request.

DAkkS Calibration Certificate

Each multimeter is individually adjusted, subjected to final inspection and calibrated. Adherence to the specification is confirmed by means of the included DAkkS calibration certificate, which is valid worldwide (recognized by EA and ILAC. Upon expiry of the user-defined calibration interval (recommended intervals: 1 to 3 years) the multimeters can be recalibrated at our DAkkS calibration laboratory at any time.

Applicable Regulations and Standards

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

Functional overview

Function	PM XTRA PM TUNE EXTRA	PM TECH ETECH	EU PRO ESPECIAL
Voltage V_{DC} (Ri $\geq$ 9 MΩ)	✓	✓	✓
Voltage V_{AC} TRMS (Ri $\geq$ 9 MΩ)	✓	✓	✓
Voltage Lo[1] V_{AC} TRMS (Ri = 1 MΩ)	✓	✓	✓
Voltage V_{AC+DC} TRMS (Ri $\geq$ 9 MΩ)	✓	✓	✓
Frequency Hz @ V_{AC} or @ Lo [1] V_{AC}	... 300 kHz	... 300 kHz	... 300 kHz
Low-pass filter 1 kHz	@ V_{AC} / @ LoV_{AC}		
Bandwidth @ V_{AC+DC} or V_{AC}	100 kHz	20 kHz	
Frequency MHz @ 5V TTL	0.1 Hz...1 MHz	—	—
Duty cycle %	2.0 % ... 98 %	—	—
Voltage level measurement dB	✓	✓	✓
Resistance Ω	✓	✓	✓
Continuity test @I_{CONST} = 1 mA	✓	✓	✓
Diode measurement @I_{CONST} = 1 mA	✓	✓	✓
Temperature measurement °C/°F with thermocouple (TC)	Type K		
Temperature measurement °C/°F RTD	Pt100/Pt1000		—
Capacitance measurement F	✓	✓	—
Current A_{DC}	600 mA/6 mA 60 mA/600 mA 6 A/10 A (16 A)	60 mA/600 mA 6 A/10 A (16 A)	6 A/10 A (16 A)
Current A_{AC+DC} TRMS			
Current A_{AC} TRMS			
Bandwidth @ A_{AC+DC} or A_{AC}	10 kHz		
Frequency Hz @ A_{AC}	... 60 kHz		
Measurement with clamp ammeter with adjustable transfer factor	mV / A mA / A	mV / A A / A	
Data logger function [2] (memory)	16 Mbit	—	—
Relative value measurement ΔREL	✓	✓	✓
Zero point ZERO	✓	✓	✓
MIN/MAX/DATA Hold	✓	✓	✓
IR-interface (38.4 kBd)	✓	✓	✓
Power pack connector socket	✓	—	—
Protective rubber holster	✓	✓	—
Fuse	10 A / 1000 V	10 A / 1000 V	—
Protection [3]	IP52	IP52	IP52
Measuring category	1000 V CAT III 600 V CAT IV		600 V CAT II
Calibration	DAkkS	DAkkS	DAkkS

[1] Alternating voltage measurement with specially reduced input impedance
[2] 16 Mbit = 2048 kByte = 61,600 measured values, sampling rate adjustable from 0.1 seconds to 9 hours
[3] IP65 is available in model METRAHIT OUTDOOR (M240O). More informationen about this model is provided in our Measuring and Test Technology catalog and at our website www.gossenmetrawatt.com.

Included

1   multimeter in HC20 hard case
1   pair of safety measurement cables with 4 mm test probes, 1000 V CAT III, 600 V CAT IV (KS17-2)
2   batteries, 1.5 V, type AA
1   DAkkS calibration certificate
1   protective rubber holster
1   condensed operating instructions*, English/German
*   Detailed operating instructions are available for download on the Internet at www.gossenmetrawatt.com

Voluntary Manufacturer's Guarantee

36 months for materials and workmanship

1 to 3 years for calibration (depending upon application)

METRA**HIT** PM TECH, PM XTRA, PM TUNE, Etech, Extra
METRA**HIT** EU PRO & Especial

Specifications

Meas. Function	Measuring Range	Resolution at Upper Range Limit 59 999	5999	Input Impedance ⎓	~ / ⎓	Intrinsic Uncertainty under Reference Conditions for High Resol 59999 counts ±(... % rdg. + ... d) ⎓	±(... % rdg. + ... d) ~ [1]	±(... % rdg. + ... d) ⎓ [1]	Overload Capacity [2] Value	Time
V	600 mV	10 µV	100 µV	≥ 9 MΩ	≥9 MΩ // < 50 pF	0.09 + 5 with ZERO *)	0.5 + 30	1 + 30	1000 V DC AC RMS Sine	continous
	6 V	100 µV	1 mV	≥ 9 MΩ	≥9 MΩ // < 50 pF	0.05 + 5	0.5 + 9	1 + 30		
	60 V	1 mV	10 mV	≥ 9 MΩ	≥9 MΩ // < 50 pF	0.05 + 5	0.5 + 9	1 + 30		
	600 V	10 mV	100 mV	≥ 9 MΩ	≥9 MΩ // < 50 pF	0.05 + 5	0.5 + 9	1 + 30		
	1000 V	100 mV	1 V	≥ 9 MΩ	≥9 MΩ // < 50 pF	0.09 + 5	0.5 + 9	1 + 30		

Meas. Function	Measuring Range		Display range for reference voltage U_{REF} = 0.775 V	Intrinsic Uncertainty	Overload Capacity Value	Time
dB	600 mV~		−48 dB ... −2 dB		1000 V DC AC RMS Sine	continous
	6 V~		−28 dB ... +18 dB			
	60 V~	0.01 dB	−8 dB ... +38 dB	0.1 dB (U > 10 % MB)		
	600 V~		+2 dB ... +58 dB			
	1000 V~		+22 dB ... +63 dB			

Meas. Function	Measuring Range	59999	5999	Voltage drop, approx. at upper range limit ⎓	~ [1]	⎓ [1]	⎓	~ [1]	⎓ [1]	Overload Capacity Value	Time
A	600 µA	10 nA	100 nA	150 mV	150 mV		0.5 + 5 with ZERO *)	1 + 10	1.5 + 30	0.7 A	continous
	6 mA	100 nA	1 µA	200 mV	200 mV		0.5 + 5	1 + 10	1.5 + 30		
	60 mA	1 µA	10 µA	200 mV	200 mV		0,1 + 5 with ZERO *)	1 + 10	1.5 + 30		
	600 mA	10 µA	100 µA	300 mV	300 mV		0.2 + 5	1 + 10	1.5 + 30	10 A: ≤ 5 min [10]	
	6 A	100 µA	1 mA	300 mV	300 mV		0.9 + 10	1 + 10	1.5 + 30	16 A: ≤ 30 s [10]	
	10 A	1 mA	10 mA	600 mV	600 mV		0.9 + 10	1.5 + 10	1.5 + 30		

(PM XTRA / PM TUNE / EXTRA / PM (E)TECH / EU PRO / Especial)

Meas. Function	Factor 1:1/10/100/1000	Input	Input impedance		Intrinsic Uncertainty	Overload Capacity
A⌇	0.06/0.6/6/60 A	60 mA	Current measuring input (A socket ⚡)		Specification see current ranges A~ plus clamp current transformer error	Measuring input 0.7 A continous 10 A: 5 min
	0.6/6/60/600 A	600 mA				
	6/60/600/6 000 A	6 A				
A⌇	0.6/6/60/600 A	600 mV	Voltage measurement input (V socket) Ri = 1 MΩ/9 MΩ		Specification see voltage measuring ranges V~ [1]	Measuring input 1000 V RMS max. 10 s
	6/60/600/6 000 A	6 V				

Meas. Function	Measuring Range	59999	5999	Open-circuit voltage	Meas. curr. @ range limit	±(... % rdg. + ... d)	Overload Capacity
Ω	600 Ω	10 mΩ	100 mΩ	< 1.4 V	approx. 250 µA	0.1 + 5 with ZERO*)	1000 V DC AC RMS Sine
	6 kΩ	100 mΩ	1 Ω	< 1.4 V	approx. 65 µA	0.1 + 5 with ZERO*)	
	60 kΩ	1 Ω	10 Ω	< 1.4 V	approx. 7.5 µA	0.1 + 5	
	600 kΩ	10 Ω	100 Ω	< 1.4 V	approx. 0.75 µA	0.2 + 5	max. 10 s
	6 MΩ	100 Ω	1 kΩ	< 1.4 V	approx. 0.1 µA	0.5 + 5	
	60 MΩ	1 kΩ	10 kΩ	< 1.4 V	approx. 30 nA	5 + 10	
🔊	600 Ω	—	0.1 Ω	approx. 9 V	approx. 1 mA const.	3 + 5	
⊶	6.0 V [3]	—	1 mV	approx. 9 V	approx. 1 mA const.	0.5 + 3	

Meas. Function	Measuring Range	59999	5999	Discharge resist.	U_{0 max}	±(... % rdg. + ... d)	Overload Capacity
F PM XTRA Extra	60 nF	—	10 pF	10 MΩ	0.7 V	1 + 10 [4] with ZERO *)	1000 V DC AC RMS Sine max. 10 s
	600 nF	—	100 pF	1 MΩ	0.7 V	1 + 6 [4]	
	6 µF	—	1 nF	100 kΩ	0.7 V	1 + 6 [4]	
PM TUNE PM TECH Etech	60 µF	—	10 nF	12 kΩ	0.7 V	1 + 6 [4]	
	600 µF	—	100 nF	3 kΩ	0.7 V	5 + 6 [4]	

Meas. Function	Measuring Range	59999	5999	f_{min} [5]	±(... % rdg. + ... d)		Overload Capacity
Hz (V)	600.00 Hz	0.01 Hz	0.1 Hz				Hz (V) [6]: Hz(A⌇)[6]: 1000 V
Hz (A)	6.0000 kHz	0.1 Hz	1 Hz	1 Hz	0.05 + 5 [8]		max. 10 s
Hz (A⌇)	60.000 kHz	1 Hz	10 Hz				
Hz (V)	300.00 kHz	10 Hz	100 Hz	10 Hz			Hz (A): [7]

Meas. Function	Measuring Range	59999	5999		±(... % rdg. + ... d)	> 2 V ... 5 V	Overload Capacity
MHz PM XTRA Extra PM TUNE	600 Hz ... 1 MHz	0.01 ... 100 Hz	0.1 ... 1 kHz	1 ... 100 Hz	0.05 + 5	> 2 V ... 5 V	1000 V max. 10 s
% PM XTRA	2.0 ... 98 %	—	0.01 %	15 Hz ... 1 kHz	0.1 R + 5 d	> 2 V ... 5 V	
	5.0 ... 95 %	—	0.01 %	1 kHz ... 10 kHz	0.2 R per kHz + 5 d	> 2 V ... 5 V	
Extra PM TUNE	10... 90 %	—	0.01 %	10 kHz ... 50 kHz	0.5 R per kHz + 5 d	> 2 V ... 5 V	

Meas. Function	Measuring Range	59999	5999		±(... % rdg. + ... d)	Overload Capacity
°C/°F	Pt 100	− 200.0 ... + 850.0 °C			0.3 + 15 [9]	1000 V DC/AC RMS Sine max. 10 s
	Pt 1000	− 150.0 ... + 850.0 °C	0.1 °C		0.3 + 15 [9]	
	K (NiCr-Ni)	− 250.0 ... + 1372.0 °C			1% + 5 K [9]	

[1] Specified accuracy is valid as of 3% of the measuring range.
With short-circuited test probes: residual value of 1 to 30 d at zero point due to the TRMS converter (exception: mV AC range, 60 counts). See frequency influence on page 4.
[2] At 0 °C ... + 40 °C
[3] Displays up to max. 6.0 V, "OL" in excess of 6.0 V.
[4] Applies to measurements at film capacitors and battery operated
[5] Lowest measurable frequency for sinusoidal measuring signals symmetrical to the zero point
[6] Overload capacity of the voltage measurement input:
power limiting: frequency x voltage max. 6 x 10⁶ V x Hz for U > 100 V

[7] Overload capacity of the current measurement input:
See current measuring ranges for maximum current values.
[8] Input sensitivity, sinusoidal signal, 10% to 100% of the measuring range
[9] Plus sensor deviation
[10] Off-time > 30 min and T_A ≤ 40 °C
*) without ZERO max. ± 15 digit

Key:
d = counts, R = measuring range, rdg. = measured value (reading)

METRA**HIT** PM TECH, PM XTRA, PM TUNE, Eᴛᴇᴄʜ, Exᴛʀᴀ
METRA**HIT** EU PRO & Eꜱᴘᴇᴄɪᴀʟ

Internal Clock

Time format	DD.MM.YYYY hh:mm:ss
Resolution	0.1 s
Accuracy	±1 min. per month
Temperature Influence	50 ppm/K

Influencing Quantities and Influence Error

Influencing Quantity	Sphere of Influence	Measured Quantity / Measuring Range [1]	Influence Error (...% rdg. + ... d) / 10 K
Temperature	−10 °C ... +21 °C und +25 °C ... +40 °C	V ⎓	0.2 + 10
		V ∼	0.4 + 10
		600 Ω ... 6 MΩ	0.5 + 10
		> 6 MΩ	1 + 10
		mA/A ⎓	0.5 + 10
		mA/A ⎓∼	0.8 + 10
		60 nF ... 600 μF	1 + 5
		Hz, dB	0.2 + 10
		°C/°F (Pt100/Pt1000)	0.5 + 10
		°C/°F thermocouple K	0.2 + 10

[1] With zero balancing

Influencing Qty.	Meas. Qty. / Meas. Range		Sphere of Influence	Intrinsic Uncertainty [3] ±(... % rdg. + ... d) METRA HIT PM XTRA METRAHIT PM TUNE METRAHIT PM TECH METRAHIT EU PRO METRAHIT Exᴛʀᴀ METRAHIT Eᴛᴇᴄʜ METRAHIT Eꜱᴘᴇᴄɪᴀʟ
Frequency	V_AC	600.00 mV	> 15 Hz ... 45 Hz	3 + 30
			> 65 Hz ... 1 kHz	2 + 30
			> 1 kHz ... 20 kHz	3 + 30
		6.0000 V ... 600.00 V [2]	> 15 Hz ... 45 Hz	2 + 9
			> 65 Hz ... 1 kHz	1 + 9
			> 1 kHz ... 20 kHz [4]	3 + 9
			> 20 kHz ... 100 kHz [4]	3.5 + 30
		1000.0 V [2]	> 15 Hz ... 45 Hz	2 + 9
			> 65 Hz ... 1 kHz	2 + 9
			> 1 kHz ... 10 kHz	3 + 30
	A_AC	600.00 μA ... 10.0000 A	> 15 Hz ... 45 Hz	3 + 10
			> 65 Hz ... 10 kHz	

[2] Power limiting: frequency x voltage max. 6×10^6 V x Hz for U > 100 V
[3] The accuracy specification for frequency response is valid within a display value range of 10% to 100% of the measuring range for both measuring modes with the TRMS converter in the AC and (AC+DC) ranges.
[4] **METRA HIT PM XTRA / PM TUNE** / Exᴛʀᴀ: frequency response up to 100 kHz, > 50 kHz plus 2.5 %
METRAHIT PM TECH / Eᴛᴇᴄʜ: frequency response up to 20 kHz,
METRAHIT EU PRO / Eꜱᴘᴇᴄɪᴀʟ: frequency response up to 20 kHz

Influencing Quantity	Sphere of Influence	Measured Quantity/ Measuring Range	Influence Error [5]
Crest factor CF	1 ... 3	V ∼, A ∼	± 1 % rdg.
	> 3 ... 5		± 3 % rdg.

[5] Except for sinusoidal waveshape

Influencing Quantity	Sphere of Influence	Measured Quantity	Influence Error
Relative humidity	75% 3 days instrument off	V, A, Ω, F, Hz, dB, °C	1 x intrinsic uncertainty
Battery voltage	2.0 to 3.6 V	V, A, Ω, F, Hz, dB, °C	Included in intrinsic uncertainty

Influencing Quantity	Sphere of Influence	Measured Quantity / Measuring Range	Damping
Common Mode Interference Voltage	Interference quantity max. 1000 V ∼	V ⎓	> 120 dB
	Interference quantity max. 1000 V ∼ 50 Hz ... 60 Hz, sine	6 V ∼, 60 V ∼	> 80 dB
		600 V ∼	> 70 dB
		1000 V ∼	> 60 dB
Series Mode Interference Voltage	Interference quantity: V ∼, respective nominal value of the measuring range, max. 1000 V ∼, 50 Hz ... 60 Hz, sine	V ⎓	> 50 dB
	Interference quantity max. 1000 V ⎓	V ∼	> 110 dB

Reference Conditions

Ambient temperature	+23 °C ±2 K
Relative humidity	40 ... 75%
Measured qty. frequency	45 ... 65 Hz
Measured qty. waveform	Sine
Battery voltage	3 V ±0.1 V

Response Time (after manual range selection)

Measured Quantity / Measuring Range	Response Time Digital Display	Measured Quantity waveshape
V ⎓ , V ∼, dB AV ⎓, A ∼	1.5 s	From 0 to 80 % of upper range limit value
600 Ω ... 6 MΩ	2 s	From ∞ to 50 % of upper range limit value
60 MΩ	5 s	
Continuity	< 50 ms	
°C (Pt 100)	Max. 3 s	
▸⊢	1.5 s	
60 nF ... 600 μF	Max. 2 s	From 0 to 50 % of upper range limit value
>10 Hz	1.5 s	

Data Interface

Type	Optical via infrared light through the housing
Data transmission	Serial, bidirectional (not IrDa compatible)
Protocol	Device specific
Baud rate	38,400 baud
Functions	– Select/query measuring functions and parameters
	– Query momentary measurement data
	– Read out stored measurement data

The USB X-TRA plug-in interface adapter (see accessories) is used for connection to the PC's USB port.

Internal Measured Value Storage
(METRA HIT PM XTRA / PM TUNE / Exᴛʀᴀ only)

Memory capacity   16 MBit (2 MByte) for approx. 61,000 measured values with date and time stamp

Power Supply

Battery	2 ea. 1.5 V mignon cell (2 ea. size AA), alkaline manganese per IEC LR6 (2 ea. 1.2 V NiMH rechargeable battery also possible)
Service life	with alkaline manganese (2600 mAh): approx. 200 hours
Battery test	Battery capacity display with battery symbol in 4 segments: ▧. Querying of momentary battery voltage via menu function.
Power OFF function	Multimeter is switched off automatically: – If battery voltage drops to below prox. 2.0 V – If none of the keys or the rotary switch are activated for an adjustable duration of 10 to 59 minutes, and the multimeter is not in the continuous operation mode
Power pack socket (**METRA HIT PM XTRA / PM TUNE / EXTRA** only)	If the NA X-TRA power pack has been plugged into the instrument, the batteries are disconnected automatically. Rechargeable batteries can only be recharged externally.

Display

LCD panel (65 mm x 36 mm) with analog and digital display including unit of measure, type of current and various special functions

Background illumination

Background illumination is switched off approximately 1 minute after it has been activated.

Analog

Display	LCD scale with bar graph or pointer, depending on the selected parameter setting
Scaling	With 4 division lines each, 1 bar/pointer corresponds to 500 counts at the digital display
Polarity display	With automatic switching
Overflow display	With the ▶ symbol
Measuring rate	40 measurements per second and display refresh

Digital

Display / char. height	7-segment characters / 15 mm
Resolution	59,999 counts
Overflow display	"OL" is displayed for ≥ 60,000 counts
Polarity display	"–" (minus sign) is displayed if plus pole is connected to "⊥"
Measuring rate	10 or 40 measurements per second with the Min-Max function except for the capacitance, frequency and duty cycle measuring functions
Refresh rate	all instruments except for **METRAHIT PM TUNE**: 2 times per sec., every 500 ms (Parameter „noFiL" is off by default) **METRAHIT PM TUNE**: 5 x/s (Parameter „noFiL" is on by default)

Acoustic Signals

For voltage	Intermittent signal at above 1000 V
For current	Intermittent signal at above 10 A Continuous signal at above 16 A

Fuse for METRA HIT PM XTRA / PM TUNE / EXTRA, METRAHIT PM TECH / ETECH

Fuse	FF (UR) 10 A/1000 V AC/DC; 10 mm x 38 mm, Switching capacity: 30 kA at 1000 V AC/DC, protects the current measurement input in the 600 µA through 10 A ranges

Electrical Safety

Per IEC 61010-1:2010/VDE 0411-1:2011

METRA HIT PM XTRA / PM TUNE / Extra, METRAHIT PM TECH / ETECH

Safety class	II	
Measuring category	III	IV
Operating voltage	1000 V	600 V
Pollution degree	2	
Test voltage	6.7 kV~	

METRAHIT EU PRO / METRAHIT ESPECIAL „for Current Transformers"
Special device for measurements at current transformers without fuse in the electrical circuit

Safety class	II	
Measuring category	600 V	CAT II
Pollution degree	2	
Test voltage	3.5 kV~	

Electromagnetic Compatibility (EMC)

Interference emission	EN 61326-1: 2013, class B
Interference immunity	EN 61326-1: 2013 EN 61326-2-1: 2013

Ambient Conditions

Accuracy range	0 °C ... +40 °C
Operating temp. range T_A	−10 °C ... +50 °C
Storage temp. range	−25 °C ... +70 °C (without batteries)
Relative humidity	40 ... 75 %, no condensation allowed
Elevation	Up to 2000 m
Deployment	Indoors, except within specified ambient conditions

Mechanical Design

Housing	Impact resistant plastic (ABS)
Dimensions	200 x 87 x 45 mm (without protective rubber holster)
Weight	Approx. 0.35 kg with batteries
Protection	Housing: IP 52 (pressure equalization by means of the housing)

Table excerpt regarding significance of the IP code

IP XY (1st digit X)	Protection against penetration of solid particles	IP XY (2nd digit Y)	Protection against penetration by water
5	Dust protected	2	Dripping (15° inclination)

METRA**HIT** PM TECH, PM XTRA, PM TUNE, Etech, Extra
METRA**HIT** EU PRO & Especial

Accessories for Operation at a PC

Interface Adapter for USB Connection

The following functions can be executed with the USB X-TRA bidirectional interface adapter:

- Configure the **METRAHIT** multimeter from a PC.
- Transmit live measurement data to the PC.
- Read out data from memory at the **METRA HIT PM XTRA / PM TUNE / Extra**.

The adapter does not require a separate power supply.
Its baud rate is 38,400 baud.
A CD ROM is included which contains current drivers for Windows operating systems.

Application example

METRAwi®10/METRA*Hit*® Software

METRAwin®10/METRAHit® PC software is a multilingual, measurement data logging program for recording, visualizing and documenting measured values of multimeters of the **METRAHIT Advanced** and **Professional** as well as the **METRAHIT A** and **E Series**.

Communication between the PC and the measuring instrument(s) is established via available interface adapters.

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 to10
  - 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 event of exceeded limit/delta value
  - Recording duration max. 10 million intervals

* Depending upon device type, measuring function, number of measuring channels and communication (e.g. via modem), sample intervals of less than 1 s cannot be used.
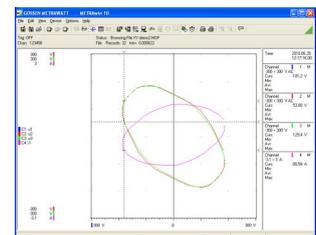
- **Reading Out and Visualizing Stored Data**
  If supported by the device: read-in and display of offline data recorded to device memory.

For purposes of analysis, data recorded online or read in from the device's memory can be displayed in various formats:
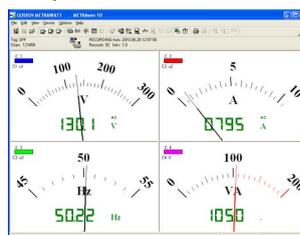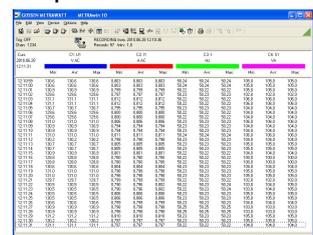
Y(t)-recorder display
for up to 6 channels
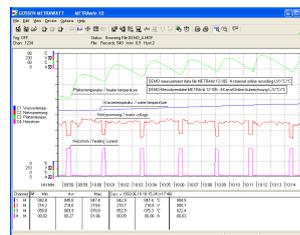
XY-recorder display
for up to 4 channels

Multimeter-display
for up to 4 channels

Tabular display
for up to 10 channels

System Requirements

METRAwin 10 (as of version 6.20) can be run on PCs, notebooks and tablets with Microsoft Windows® Vista, 7, 8 or 10.

Order Information

Designation	Type	Article Number
METRA HIT PM XTRA, METRAHIT PM TUNE, METRAHIT PM TECH, METRAHIT EU PRO, METRAHIT Extra, METRAHIT Etech, METRAHIT Especial multimeters 60,000 counts TRMS multimeter with direct, alternating and pulsating voltage measurement (TRMS values), direct, alternating and pulsating current measurement (TRMS values), frequency measurement, resistance measurement, continuity test, diode measurement and temperature measurement with type K thermocouples LCD with 15 mm characters, analog bar graph and background illumination Measuring categories: 600 V/CAT IV, 1000 V/CAT III Current measurement via clamp sensors with voltage output and adjustable clamp factor All multimeters include the KS17-2 measurement cable set, two mignon batteries, condensed operating instructions, CD ROM, DAkkS calibration certificate, hard case HC20		
Same as above but with additional broad range capacitance measurement, precision temperature measurement with Pt100 or Pt1000 platinum resistance thermometers, frequency and duty cycle measurement, clamp current transformer with current output, with power pack socket and IR interface, 2 MB data memory, protective rubber holster	**METRA HIT PM XTRA**	M250A
Same as **METRA HIT PM XTRA**, with faster display refresh activated	**METRAHIT PM TUNE**	M250T
Same as above but with additional broad range capacitance measurement, with additional current measurement via clamp current transformer with current output	**METRAHIT PM TECH**	M253A
Same as above Special device without integrated fuse for use in current transformer circuits	**METRAHIT EU PRO**	M252A
Accessories for operation at a PC		
IR-USB bidirectional interface adapter	USB X-TRA	Z216C
METRAwin 10 software	METRAwin 10	GTZ3240000R0001
Accessories for temperature measurement with resistance thermometer (METRA HIT PM XTRA / PM TUNE / Extra only)		
Pt100 temperature sensor for surface and immersion measurement, -40 to +600 °C	Z3409	GTZ3409000R0001
Pt1000 temperature sensor for measurement in gases and liquids, -50 to +220 °C	TF220	Z102A
Pt100 oven sensor, -50 to +550 °C	TF550	GTZ3408000R0001
Replacement fuse (METRA HIT PM XTRA / PM TUNE / Extra and METRAHIT PM TECH / Etech only)		
Fuses (pack of 10)	FF (UR) 10 A / 1000 V AC/DC	Z109L
Power pack (for **METRA HIT PM XTRA / PM TUNE / Extra** only)	NA X-TRA	Z218G
Protective rubber holster and carrying strap	GH X-TRA	Z104C

Transport Accessories

HitBag Cordura Belt Pouch

For **METRA HIT** multimeters (with/without protective rubber holster) and METRAport

HC30 Hard Case

For two multimeters (with/without protective rubber holster) and accessories

F836 Ever-Ready Case
For multimeter and accessories

F829 Carrying Pouch
For multimeters (with/without protective rubber holster) and accessories

Designation	Type	Article Number
Imitation leather without protective rubber holster for **METRA HIT** and METRAmax	F829	GTZ3301000R0003
Cordura belt pouch for **METRA HIT** multimeters and METRAport	HitBag	Z115A
Imitation leather ever-ready case with cable compartment	F836	GTZ3302000R0001
Hard case for one **METRA HIT** and accessories	HC20	Z113A
Hard case for two **METRA HIT** and accessories	HC30	Z113A

For additional information regarding accessories please refer to:
- our Measuring and Test Technology catalog.
- our website www.gossenmetrawatt.com

METRA**HIT** PM TECH, PM XTRA, PM TUNE, Etech, Extra
METRA**HIT** EU PRO & Especial

Current Measuring Accessories

All current sensors and transformers are equipped with a terminal with 4 mm safety banana plugs

Type	Designation	Measuring Range	Meas. Category	Max. Wire Diameter	Transformation Factor	Frequency Range	Intrinsic Uncertainty ±(% rdg. + ...)	Article Number
DC/AC Current Sensors with Voltage Output								
CP30	DC/AC current clamp sensor, with battery mode (30 h)	5 mA to 30 A (DC / AC pk)	300 V / CAT III	25 mm	100 mV/A	DC...20 kHz (-3 dB)	1 % +2 mA	Z201B
CP330	DC/AC current clamp sensor, with 2 measuring ranges, battery mode (50 h)	Range: 0.5 ... 30 A Range: 5 ... 300 A (DC / AC rms)	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 current clamp sensor, with 2 measuring ranges, battery mode (50 h)	Range: 0.5 ... 100 A Range: 5 ... 1000 A (DC / AC rms)	300 V / CAT III	32 mm	10 mV/A; 1 mV/A	DC...20 kHz (-1 dB)	1 % + 100 mA 1 % + 500 mA	Z203B
CP1800	DC/AC current clamp sensor, with 2 measuring ranges, battery mode (50 h)	Range: 0.5 ... 125 A Range: 5 ... 1250 A (DC / AC rms)	300 V / CAT III	32 mm	10 mV/A, 1 mV/A	DC ... 20 kHz (-1 dB)	1% + 100 mA 1% + 500 mA	Z204A
AC Current Sensors with Voltage Output								
WZ12B	AC clamp 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 clamp 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 clamp 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 clamp 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
METRA-FLEX3000	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	176 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
METRA-FLEX300M	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	50 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 clamp current transformer	15 ... 180 A~	300 V CAT III	15 mm	1 mA/A	45 ... 65 ... 400 Hz	3%	Z219A
WZ12D	AC clamp 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 clamp current transformer	1 ... 200 A~	600 V CAT III	20 mm	1 mA/A	48 ... 65 ... 400 Hz	1 ... 3%	Z208A
Z3511	AC clamp current transformer	4 ... 500 A~	600 V CAT III	30 x 63 mm	1 mA/A	48 ... 65 ... 1 kHz	3% + 0.4 A	GTZ3511000R0001
Z3512	AC clamp current transformer	0.5 ... 1000 A~	600 V CAT III	52 mm	1 mA/A	30...48 ... 65 ... 5 kHz	0.5% ... 0.7%	GTZ3512000R0001