

METRAHit[®] 30M

Precision Digital Multimeter

3-348-979-03
5/3.03

- **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 μ V
DC and AC+DC Current: 100 pA
- **TRMS AC+DC**
- **Milliohmeter with 2 and 4-wire connection**
Resolution: 0.1 m Ω
- **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
- **DKD calibration certificate included**



DKD

DIN EN ISO/IEC 17025

QUALITY MANAGEMENT SYSTEM



DQS certified per
DIN EN ISO 9001 Reg.-No.1262



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 disabled.

Protective Cover for Rugged Use

A soft rubber cover with tilting stand 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 METRAWin[®]10/METRAHit[®] analysis software and a PC which has been connected to the multimeter via the METRAHit[®]BD232 IR adapter.

Infrared Measurement Data Transmission

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 $\pm(\dots\% \text{ rdg.} + \% \text{ R})$		Frequency Range in Hz	Overload Capacity ³⁾				
		1,200,000 ¹⁾	120,000 ¹⁾	12,000 ¹⁾	—	\approx	—	\approx ^{4) 5)}		Value	Duration			
V	100 mV	0.1 μ V	1 μ V	10 μ V	> 1 G Ω	> 1 G Ω // < 50 pF	0.005 + 0.0006 ⁶⁾	0.08 + 0.06 ⁷⁾ 0.1 + 0.1	45 ... 65 10 ... 1 k	650 V eff sine	continuous			
	1 V	1 μ V	10 μ V	100 μ V	> 1 G Ω	10 M Ω // < 50 pF	0.0030 + 0.0004	5 + 0.5 0.08 + 0.06 ⁷⁾ 0.1 + 0.1	1 k ... 5 k 45 ... 65 10 ... 1 k					
	10 V	10 μ V	100 μ V	1 mV	10 M Ω	10 M Ω // < 50 pF	0.0030 + 0.0004	0.2 + 0.1 5 + 0.5	1 k ... 10 k 10 k ... 50 k					
	100 V	100 μ V	1 mV	10 mV	10 M Ω	10 M Ω // < 50 pF	0.0030 + 0.0006	0.08 + 0.06 0.1 + 0.1 0.2 + 0.1 3 + 0.1	45 ... 65 10 ... 1 k 1 k ... 10 k 10 k ... 50 k 50 k ... 100 k					
	600 V ²⁾	1 mV	10 mV	100 mV	10 M Ω	10 M Ω // < 50 pF	0.0040 + 0.0010	0.08 + 0.06 0.2 + 0.1 3 + 0.1	45 ... 65 10 ... 1 k 1 k ... 10 k					
	Approx. Voltage Drop at Upper R Limit						—	\approx ^{4) 5)}						
	mA	100 μ A	100 pA	1 nA	10 nA	150 mV	150 mV	0.02 + 0.002	0.08 + 0.06 0.1 + 0.1 0.2 + 0.1			45 ... 65 10 ... 1 k 1 k ... 5 k	0.18 A	continuous
		1 mA	1 nA	10 nA	100 nA	1.5 V	1.5 V							
		10 mA	10 nA	100 nA	1 μ A	150 mV	150 mV							
		100 mA	100 nA	1 μ A	10 μ A	1.5 V	1.5 V							
					Open-Circuit Voltage	Meas. Current at Upper R Limit	$\pm(\dots\% \text{ rdg.} + \% \text{ R})$							
Ω	100 Ω	0.1 m Ω	1 m Ω	10 m Ω	3 V	1 mA	0.005 + 0.001 ⁶⁾	250 V eff sine	10 min.					
	1 k Ω	1 m Ω	10 m Ω	100 m Ω	3 V	1 mA	0.005 + 0.001 ⁶⁾							
	10 k Ω	10 m Ω	100 m Ω	1 Ω	3 V	100 μ A	0.005 + 0.001							
	100 k Ω	0.1 Ω	1 Ω	10 Ω	3 V	10 μ A	0.005 + 0.001							
	1 M Ω	1 Ω	10 Ω	100 Ω	3 V	1 μ A	0.05 + 0.002							
	10 M Ω	10 Ω	100 Ω	1000 Ω	3 V	100 nA	0.5 + 0.02							
Ω \Rightarrow)	100 Ω			10 m Ω	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		$\pm(0.05\% \text{ rdg.} + 0.08 \text{ K})$ ⁸⁾			250 V eff Sinus	10 min.			
	-210.0 ... +1200.0 °C	0.1 °C	0.1 °C	1 °C	J (Fe-CuNi)		$\pm(0.7\% \text{ rdg.} + 0.3 \text{ K})$ 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 \approx : $U_E = 10 \dots 30 \text{ mV}_{\text{eff}}$ + additional error of 0.5% R
1 V \approx : $U_E = 0.1 \dots 0.3 \text{ V}_{\text{eff}}$ + 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)

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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 \equiv	8
		V \sim	100
		mA \equiv	20
		mA \approx	100
		100 Ω ... 100 k Ω	8
		1 M Ω	15
		10 M Ω	100
		Hz	50
°C	15		

Reference Conditions

Ambient Temperature	+23° C \pm 2 K
Relative Humidity	40 ... 60%
Measured Quantity	
Frequency	45 ... 65 Hz
Measured Quantity	
Waveshape	sine
Battery Voltage	3 V \pm 0.1 V
Power Pack Voltage	4.5 V \pm 0.2 V

Response Time

After Manual Range Selection at Maximum Resolution

Measured Quantity / Measuring Range	Response Time	Measured Quantity Step Function
V \equiv , V \sim , mA \equiv , mA \sim	max. 2 s	from 0 to 80% of measuring range upper limit
100 Ω ... 1 M Ω	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

Influence Variable	Influence Range	Measured Quantity / Measuring Range ¹⁾	Influence Effect ³⁾
Measured Quantity Waveshape	Crest Factor CF 1 ... 3 > 3 ... 5 10	V \sim , mA \sim	\pm 0.2% R
			\pm 0.5% R
			\pm 2% R
			The allowable crest factor (CF) for the periodic quantity to be measured is dependent upon the displayed value:
<p>Voltage and Current Measurement</p>			

Measuring Cycle

Measuring Function	Interval Depending Upon Resolution		
	1 200 000	120 000	12 000
V \equiv , mA \equiv	1 s	0.1 s	0.01 s
V \sim , mA \sim	—	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 (\leq 2 s at 1 Hz)	—	—

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 \pm dB
Common-Mode Interference Voltage	interference qty. max. 1000 V \sim 50 Hz, 60 Hz sine	V \equiv	> 90 dB
		300 mV ... 30 V \sim	> 80 dB
		300 V \sim	> 70 dB
		1000 V \sim	> 60 dB
Series-Mode Interference Voltage	interference qty. V \sim , respective measuring range nominal value, max. 1000 V \sim , 50 Hz, 60 Hz sine	V \equiv	> 60 dB
		V \sim	> 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

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Display

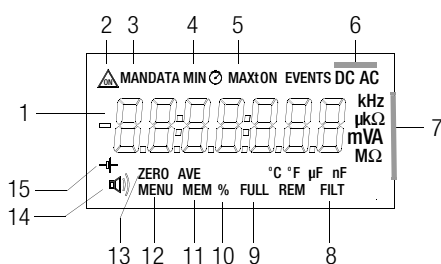
LCD field (65 mm x 30 mm) with digital display, including display of unit of measure, current type and various special functions.

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"



Digital Display Symbols

- 1 Digital display with decimal and polarity
- 2 Continuous operation
- 3 Manual measuring range selection
- 4 MIN value storage
- 5 MAX value storage
- 6 Selected current and voltage type
- 7 Unit of measure
- 8 Filter active
- 9 Message: measurement value memory full
- 10 Memory occupancy as percentage
- 11 Memory mode active
- 12 Menu mode active
- 13 Zero balancing
- 14 Continuity testing activated
- 15 Low battery

Display Refresh Rate

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

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 equipped with an electronic fuse (PTC). Current is reduced if overload occurs (approx. 450 mA). Voltage at the measuring current circuit may not exceed 250 V_{eff}.

Electrical Safety

Protection Class	II per IEC 1010-1:1990, IEC 1010-1/A2:1995 EN 61010-1:1993, EN 61010-1/A2:1995	
Overvoltage Category	II	III
Operating Voltage	600 V	300 V
Contamination Level	2	2
Test Voltage	3.7 kV~ per IEC 61010-1/EN 61010-1	

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Electromagnetic Compatibility (EMC)

Interference Emission	EN 61326: 2002 class B
Interference Immunity	EN 61326: 2002
	IEC 61000-4-2: 1995/A1: 1998
	Feature A
	8 kV atmospheric discharge
	4 kV contact discharge
	IEC 61000-4-3: 1995/A1: 1998
	Feature B
	3 V/m

Standard Equipment

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

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.

Guarantee

- 3 years material and workmanship.
- 1 year for calibration.

Mechanical Design

Protection	instrument: IP 50, terminals: IP 20
Dimensions	84 mm x 195 mm x 35 mm
Weight	approx. 350 gr. with batteries

Data Interface

Data Transmission	optical via infrared light through the housing (patented)
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With Interface Adapter as Accessory

Type	RS 232C, serial, per DIN 19241
Baud Rate, Bidirectional	METRAHit®BD232: 9600 baud

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)

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Accessories

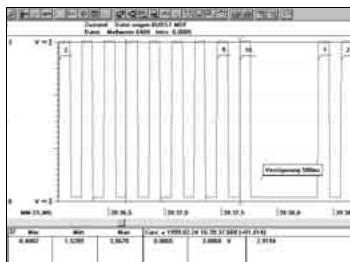
METRAHit[®] BD232 Interface Adapter

Parameters can be selected for the METRAHit[®] 30M multimeter, and measurement data can be transmitted to a computer with the help of the METRAHit[®] BD232 bidirectional adapter. The adapter does not include a memory: it is used to read out data from the memory at the METRAHit[®] 30M. It supports all measuring functions and data formats available with the METRAHit[®] 20 series, and is included in the user-friendly BD-Pack 1. Mixed operation with various METRAHit[®] 30/20/10 series devices is not possible.

METRAwin[®] 10/METRAHit[®] Software

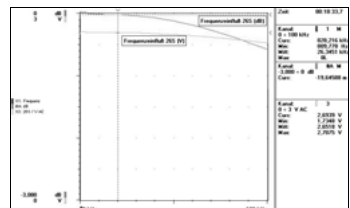
METRAwin[®] 10/METRAHit[®] software runs under Windows as of version 3.11, and is used for the processing and graphic representation of measurement data at a PC. Sampling can be performed manually, with an adjustable sampling interval, or signal dependent with adjustable hysteresis. Data storage can be controlled by means of two trigger thresholds per measuring channel.

• Y(t) Graph



Recorded measurement values from up to 4 channels are displayed as a line diagram at the monitor with a horizontal time axis, and are measured off with two cursors. Stored signals can be zoomed in or out along the amplitude and time axes. The time scale can be displayed in relative time.

• XY Graph



Recorded data from 2 to 4 channels are displayed at the monitor as an XY graph and are measured off with the cursor. As is also the case with all other display formats, all of the scales are freely adjustable.

• Multimeter Display



Transmitted measurement data from up to 4 channels appear at the monitor in digital format with an additional analog scale display in online operation, or as an analog pointer instrument with optional digital display.

• Table

Time	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10
00:00:00	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:01	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:02	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:03	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:04	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:05	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:06	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27	-20.27
00:00:07	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:08	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:09	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:10	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:11	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:12	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:13	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:14	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:15	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:16	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:17	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:18	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:19	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:20	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:21	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:22	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:23	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:24	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28
00:00:25	-20.24	-20.21	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28	-20.28

Recorded measurement data from up to 10 channels are displayed at the monitor in numeric format in an easy-to-read table.

• Mathematical Functions / Measurement Data Processing

High performance arithmetic functions allow for both off-line and online analysis, linking and graphic representation of measurement data.

Measurement data can be processed by means of computing and linearization functions. For example, mA signals from sensors or transducers can be directly represented as pressure or differential pressure values, as active power or in many other units of measure.

• Sampling (online)

Sampling can be performed manually (via mouse click), with an adjustable sampling interval (100 ms to 60 min.), or signal dependent with adjustable hysteresis. Data can be controlled with timer and window triggers, and can be automatically stored to memory as multiple data files. Recording is performed with a relative time scale.

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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



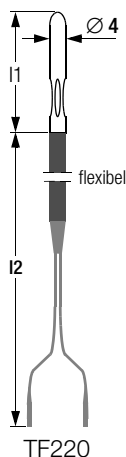
Hard case HC20

for multimeter (with 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.gmc-instruments.com



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 8.

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Order Information

Designation	Type	Article Number
Precision Digital Multimeter, See page 5 for standard equipment.	METRAHit [®] 30M	M230B
Hardware Accessories		
230 V~/4,5 V, 600 mA mains power pack for METRAHit [®] 30M	NA4/500	Z218A
Probe for voltage measurements in power installations of up to 1000 V	KS30	GTZ 3204 000 R0001
High-voltage probe: 3 kV/3 V	HV3	GTZ 3431 011 R0001
High-voltage probe: 30 kV/30 V (for direct voltage only)	HV30	GTZ 3431 001 R0001
Pt100 temperature sensor for surface and immersion measurements from -40 to +600 °C	Z3409	GTZ 3409 000 R0001
Pt1000 temperature sensor for measurements in household appliances in gases and liquids, stainless steel immersion tube dia. 3.2 mm, from -20 to +220 °C	TF220	Z102A
Pt100 oven sensor, -50 to +550 °C	TF550	GTZ 3408 000 R0001
10 ea. Pt100 adhesive temperature sensor for -50 to +550 °C	TS-Chipset	GTZ 3406 000 R0001
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 III	KS17S	Z110H
Carrying pouch	F829	GTZ 3301 000 R0003
Ever-ready case	F836	GTZ 3302 000 R0001
Ever-ready case for 2 METRAHit [®] S with METRAHit [®] Si232 and accessories	F840	GTZ 3302 001 R0001
Hard case (with room for 1 METRAHit [®] including GH18, 1 KS17-2 and 1 clip-on current transformer / sensor)	HC20	Z113A
Software Accessories		
Single channel pack consisting of: METRAHit [®] BD232 bidirectional interface adapter, cable, METRAwin [®] 10/METRAHit [®] software and installation instructions	BD-Pack 1	Z215A
Bidirectional interface adapter	BD232	GTZ 3242 100 R0001
RS 232 interface cable, 2 m long, (included with Z3231)	Z3241	GTZ 3241 000 R0001
METRAwin [®] 10/METRAHit [®] software update and installation instructions	Z3240	GTZ 3240 000 R0001

Designation	Type	Article Number
Accessory Clip-On Current Transformers and Sensors		
Adjustable clip-on current sensor 0.5 ... 20 A~, 1 mV/mA and 5 ... 200 A~, 1 mV/A, 48 ... 65 ... 500 Hz	WZ11B ^{D)}	Z208B
WZ12A ... D clip-on current transformers and sensors ^{D)} frequency range: 45...65 ... 500 Hz, clip opening: 15 mm max. cable diameter		
Clip-on current sensor 10 mA ... 100 A, 0,1 mV/mA	WZ12B	Z219B
Adjustable clip-on current sensor 1 mA ... 15 A, 1 mV/mA and 1 A ... 150 A, 1 mV/A	WZ12C	Z219C
Clip-on current transformer 30 mA ... 150 A, 1000:1 (≤ 125 A)	WZ12D	Z219D
Clip-on current sensor, active, with battery (service life: 30 h) measuring range: AC 20 A measuring range: DC 30 A frequency range: DC ... 20 kHz output: 10 mV/A clip opening: 19 mm max. cable dia.	Z201A	Z201A
Clip-on current sensor, active, with battery (service life: 50 h) measuring ranges: AC 20 A/200 A measuring ranges: DC 30 A/300 A frequency range: DC ... 10 kHz output: 10 mV/A or 1 mV/A clip opening: 19 mm max. cable dia.	Z202A	Z202A
Clip-on current sensor, active, with battery (service life: 50 h) measuring ranges: AC 200 A/1000 A measuring ranges: DC 300 A/1000 A frequency range: DC ... 10 kHz output: 1 mV/A clip opening: 32 mm max. cable dia.	Z203A	Z203A
AmpFLEX flexible current sensor ^{D)} 30/300 A, 3 V 300/3000 A, 3 V 1000 A, 1 V 1/10 kA, 1 V	AF033A AF33A AF11A AF101A	Z207A Z207B Z207D Z207C

^{D)} Data sheet available

Please refer to our *Measuring Instruments and Testers Catalog* for additional information concerning accessories.

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