

6½-Digit Precision Multimeter HM8112-3

HM8112-3



HM8112-3S: Multimeter
with built-in Scanner Card
(8+1 channels, 2 and 4 wire)



HZ42 19" Rackmount kit 2RU



Precise temperature
measurement with sensor



- ✓ 6½-digit display (1,200,000 counts)
- ✓ Resolution: 100nV, 100pA, 100μΩ, 0.01°C/F
- ✓ DC basic accuracy 0.003%
- ✓ 2-wire/4-wire measurements
- ✓ Measurement intervals adjustable from 0.1...60 s
- ✓ Up to 100 measurements transmitted to PC per second
- ✓ True RMS measurement, AC and DC+AC
- ✓ Mathematic functions: limit testing, minimum/maximum, average and offset
- ✓ Temperature measurements with platinum (PT100/PT1000) and Ni (K and J types) sensors
- ✓ Internal data logger for up to 32,000 measurement results
- ✓ Offset correction
- ✓ Galvanically isolated USB/RS-232 Interface, optional IEEE-488
- ✓ optional: Scanner Card (8+1 Channels each 2 and 4 wire)

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All data valid at 23°C after 30 minute warm-up

DC specifications

Ranges:	0.1 V; 1 V; 10 V; 100 V; 600 V
Input impedance	
0.1 V, 1.0 V:	> 1 GΩ
10 V, 100 V, 600 V:	10 MΩ
Accuracy:	Values given are in ± (% of reading (rdg.) + % of full scale (f.s.))

Range	1 year; 23°C ± 2°C		Temp. coefficient 10...21°C + 25...40°C
	%rdg.	%f.s.	
0.1 V	0.005	0.0006	0.0008
1.0 V	0.003	0.0006	0.0008
10.0 V	0.003	0.0006	0.0008
100.0 V	0.003	0.0006	0.0008
600.0 V	0.004	0.0006	0.0008

Integration time:	0.1 s	1...60 s
Display range:	120.000 digit	1,200.000 digit
600 V range:	60.000 digit	600.000 digit
Resolution:	1 μV	100 nV
Zero point		
Temperature drift:	better than 0.3 μV/°C	
Long-term stability:	better than 3 μV for 90 days	

AC specifications

Measurement ranges:	0.1 V; 1 V; 10 V; 100 V; 600 V
Measurement method:	true rms DC or AC coupled (not in 0.1 V range)
Input impedance:	
0.1 V, 1 V:	1 GΩ < 60 pF
10 V...600 V:	10 MΩ < 60 pF
Response time:	1.5 sec to within 0.1 % of reading
Accuracy:	For sine wave signals > 5 % of full scale.
Values given are in ± (% of reading + % of full scale); 23°C ± 2°C for 1 year	

Range	20 Hz...1 kHz	1...10 kHz	10...50 kHz	50...100 kHz	100...300 kHz
0.1 V	0.1+0.08	5+0.5 (5kHz)			
1.0 V	0.08+0.08	0.15+0.08	0.3+0.1	0.8+0.15	7+0.15
10.0 V	0.08+0.08	0.1+0.08	0.3+0.1	0.8+0.15	4+0.15
100.0 V	0.08+0.08	0.1+0.08	0.3+0.1	0.8+0.15	
600.0 V	0.08+0.08	0.1+0.08			

Temperature coefficient 10...21°C and 25...40°C; (% rdg. + % f.s.)	
at 20 Hz...10 kHz:	0.01 + 0.008
at 10...100 kHz:	0.08 + 0.01
Crest factor:	7:1 (max. 5 x range)
Integration time:	0.1 s 1...60 s
Display range:	120.000 digit 1,200.000 digit
600 V range:	600.00 digit 600.000 digit
Resolution:	1 μV 100 nV
Overload protection:	
(V/Ω-HI to V/Ω-LO) and to chassis:	
Measurement ranges:	all
all the time	850 V _{peak} or 600 V _{DC}
Maximum input voltage LOW against chassis/safety earth:	250 V _{rms} at max. 60 Hz or 250 V _{DC}

Current specifications

Ranges:	100 μA; 1 mA; 10 mA; 100 mA; 1 A
Integration time:	0.1 s 1...60 s
Display ranges:	120.000 digit 1,200.000 digit
1 A range:	100.000 digit 1,000.000 digit
Resolution:	1 nA 100 pA
Accuracy:	DC 45 Hz...1 kHz 1...5 kHz
(1 year; 23°C ± 2°C)	0.02 + 0.002 0.1 + 0.08 0.2 + 0.08
Temperature coefficient /°C: (%rdg. + %f.s.)	10...21°C 25...40°C
	0.002+0.001 0.01+0.01
Voltage:	< 600 mV...1.5 V
Response time:	1.5 s to within 0.1 % of reading
Crest factor:	7:1 (max 5 x range)
Input protection:	fuse, FF 1 A 250 V

Resistance

Ranges:	100 Ω, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ
Integration time :	0.1 s 1...60 s
Display ranges :	120.000 digit 1,200.000 digit

Resolution:	1 mΩ 100 μΩ
Accuracy:	Values given are in ± (% of reading. + % of full scale)

Range	1 year; 23°C ± 2°C		Temp. coefficient / °C	
	%rdg.	%f.s.	10...21°C	25...40°C
100 Ω	0.005	0.0015	0.0008	0.0008
1 kΩ	0.005	0.001	0.0008	0.0008
10 kΩ	0.005	0.001	0.0008	0.0008
100 kΩ	0.005	0.001	0.0008	0.0008
1 MΩ	0.05	0.002	0.002	0.002
10 MΩ	0.5	0.02	0.01	0.01

Measurement current:	Range	Current
	100 Ω, 1 kΩ	1 mA
	10 kΩ	100 μA
	100 kΩ	10 μA
	1 MΩ	1 μA
	10 MΩ	100 nA
max. measurement voltage:	approx. 3 V	
Overload protection:	250 V _p	

Temperature measurement

PT100/PT1000 (EN60751):	2- and 4-wire measurement
Range:	-200...+800°C
Resolution:	0.01 °C; measurement current 1 mA
Accuracy:	± (0.05 °C + sensor tolerance + 0.08 K)
Temperature coefficient	
10...21°C and 25...40°C:	< 0.0018 °C/°C
NiCr-Ni (K-type)	
Range:	-270...+1372°C
Resolution:	0.1 °C
Accuracy:	± (0.7 % rdg. + 0.3 K)
NiCr-Ni (J-type)	
Range:	-210...+1200°C
Resolution:	0.1 °C
Accuracy:	± (0.7 % rdg. + 0.3 K)

Frequency and period specifications

Range:	1 Hz...100 kHz
Resolution:	0.00001...1 Hz
Accuracy:	0.05 % of reading
Measurement time:	1...2 s

Interface

Interface:	USB/RS-232 (HO820), IEEE-488 (option)
Data rate (RS-232) :	9600 or 19200 Baud
Functions:	Control / Data fetch
Inputs:	Function, range, integration time, start command
Outputs:	Measurement results, function, range, integration time (10 ms...60 s)

Miscellaneous

Time to change range or function	approx. 125 ms with DC voltage, DC current, resistance
	approx. 1 s with AC voltage, AC current
Memory:	30,000 readings/128 kB
Safety class:	Safety class I (EN 61010)
Power supply:	105...254 V~; 50/60 Hz, CAT II
Power consumption:	approx. 8 W
Operating temperature:	+5...+40°C
Storage temperature:	-20...+70°C
Rel. humidity:	5...80% (non condensing)
Dimensions (W x H x D) :	285 x 75 x 365 mm
Weight:	approx. 3 kg

Accessories supplied:	Line cord, Operating manual, USB/RS-232 Interface (HO820), PVC test lead (HZ15), Interface cable (HZ14)
Optional accessories:	
HO112	Scanner Card (Installation only ex factory) as HM8112-3S
HO880	IEEE-488 (GPIB) Interface (galvanically isolated)
HZ10S/R	Silicone test lead,
HZ13	Interface cable (USB) 1,8m
HZ42	19" Rackmount kit 2RU
HZ72	GPIB-Cable 2m
HZ887	Temperature probe