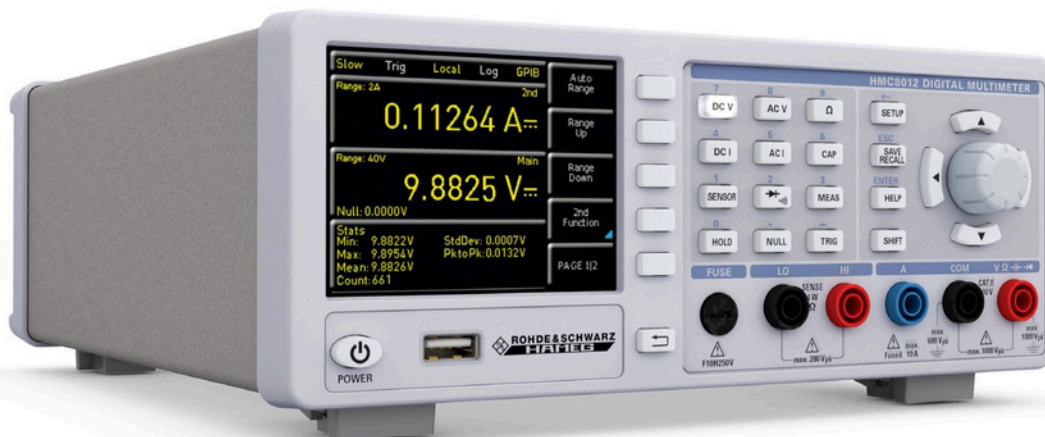


Digital Multimeter HMC8012



HMC8012 - rear view of
GPIB-version



HZC95
19" rackmount kit 2RU



HZ15 (included)
Silicon test lead with safety
connector and probe



- R 5 3/4-Digit Display (480,000 Counts)
- R Simultaneous Display of 3 Measurements,
e.g. DC + AC + Statistics
- R Up to 200 Measurements per Second
- R DC Basic Accuracy 0,015%
- R 12 Measurements Functions: DCV, DCI, True RMS, ACV and ACI,
Frequency, 2- and 4-Wire Resistance, Capacitance, Continuity,
Diode Test, Temperature, Power
- R Crisp color TFT display for excellent readability
- R Resolution: 1 μ V, 100 nA, 1m Ω , 1pF, 1Hz, 0,1 $^{\circ}$ C
- R True RMS Measurement AC, AD + DC
- R Mathematic Functions: Limit Testing, Minimum/Maximum,
Average, Offset, DC Power, dB, dBm
- R Temperature Measurements with Platinum Sensors
(PT100/PT500/PT1000)
- R Data Logging in .CSV-Format to Internal Memory or USB-Stick
- R Interfaces: USB-TMC and Ethernet (LXI in Preparation),
optional IEEE-488 (GPIB)
- R SCPI commands widely compatible with Agilent 34410A

Digital Multimeter HMC8012

All data valid at 23°C ±5K after 90 minutes warm-up and with 5 3/4 digits.

DC Specifications DC Accuracy in ± (% of reading + % of range):					
Function	Range1)	Test Current Voltage drop	Input Impedance	1 Year 23 °C ± 5 K	Temp. Coefficient 0-18 °C, 28-55 °C
DC Voltage	400,000 mV		10 MΩ / >10 GΩ	0,015+0,002	
	4,00000 V		10 MΩ / >10 GΩ	0,015+0,002	0,0010+0,0005
	40,0000 V		10 MΩ	0,020+0,002	0,0008+0,0003
	400,000 V		10 MΩ	0,020+0,002	0,0010+0,0005
	1000,00 V		10 MΩ	0,025+0,002	0,0015+0,0005
	400,000 Ω			0,050+0,005	0,0015+0,0005
Resistance (2/4-wire) 2)	4,00000 kΩ	1 mA		0,015+0,002	0,0020+0,0005
	40,0000 kΩ	1 mA		0,015+0,002	0,0020+0,0002
	400,000 kΩ	100 µA		0,030+0,003	0,0020+0,0002
	4,00000 MΩ	10 µA		0,060+0,005	0,0020+0,0002
	40,0000 MΩ	1 µA		0,250+0,003	0,0020+0,0002
	250,000 MΩ	100 nA		2,000+0,010	0,0020+0,0002
	20,0000 mA	460 nA 10 MΩ (parallel)		0,05+0,010	0,0080+0,0005
					0,200+0,0005
DC Current 4)	200,000 mA	<0,30 V		0,05+0,010	0,008+0,0010
	2,00000 A	<0,27 V		0,25+0,070	0,008+0,0010
	10,0000 A 3)	<0,2 V		0,25+0,070	0,012+0,0015
	4000 Ω	<0,60 V		0,05+0,010	0,010+0,0010
Continuity	5 V	1 mA		0,05+0,010	0,005+0,0005
Diode Test		1 mA			0,005+0,0005

Notes:

- 1) 240.000 / 480.000 counts except in 1000 V and 10 A range
- 2) Specifications are for 4-wire measurement; 2-wire measurement using NULL function.
- 3) Maximum current load at >5 A is 30 seconds, followed by a pause of >30 seconds
- 4) At 250 V maximum

AC Specifications AC Accuracy in ± (% of reading + % of range):				
Function	Range1)	Frequency	1 Year 23 °C ± 5 K	Temp. Coefficient 0-18 °C, 28-55 °C
AC Voltage 2)	400,000 mV	10 Hz–20 Hz		
	4,00000 V	20 Hz–45 Hz	3,0+0,05	0,01+0,01
	40,0000 V	45 Hz–20 kHz	1,5+0,05	0,01+0,01
	400,000 V	20 kHz–50 kHz	0,3+0,05	0,01+0,01
	750,00 V 6)	50 kHz–100 kHz	1,0+0,05	0,02+0,01
	20,0000 mA		3,0+0,05	0,05+0,01
AC Current 5)	200,000 mA	kHz	1,5+0,05	0,01+0,01
	2,00000 A	20 Hz–40 Hz	0,5+0,05	0,01+0,01
		40 Hz–1 kHz	2,5+0,05	0,01+0,01
		1 kHz–5 kHz 3)	2,5+0,05	0,01+0,01
	10,0000 A	kHz–10 kHz 3)		

Notes:

- 1) 240.000 / 480.000 counts except in 750 V and 10 A range
- 2) Specifications are for sinusoidal curves. Input impedance is 1 MΩ parallel <100 pF
- 3) Except 10 A range
- 4) Maximum current load at >5 A is 30 seconds, followed by a pause of >30 seconds
- 5) At 250 V maximum
- 6) For ACV measurements and frequencies above 50 kHz the user is required to choose an appropriate measurement range.

Frequency Counter Specifications Frequency Accuracy in ± (% of reading):				
Function	Range1)	Frequency	1 Year 23 °C ± 5 K	Temp. Coefficient 0-18 °C, 28-55 °C
AC Voltage 2)	all ranges	5 Hz–700 kHz	K 0,01	0,005
AC Current 2)	20 mA, 200 mA	5 Hz–10 kHz	0,01	0,005
	2 A, 10 A	5 Hz–5 kHz	0,01	0,005

Notes:

- 1) Display of frequency available as 2nd measurement for main functions ACV and ACI
- 2) Input sensitivity: >7,5 % of full scale (5 Hz–400 kHz) resp. >20 % (400–700 kHz)

Frequency Counter Resolution			
Setting	Measurement time	Display range	Resolution
Slow	1 s	999,999 kHz	1 Hz
Medium	100 ms	999,99 kHz	10 Hz
Fast	10 ms	999,9 kHz	100 Hz

Capacitance Specifications Capacitance Accuracy in $\pm$ (% of reading + % of range):				
Function	Range	1 Year 23 °C $\pm$ 5		Temp. Coefficient 0-18 °C, 28-55 °C
Capacitance	5,000	K	2,0+2,5	0,02+0,002 0,02+0,002
	nF	1,0+2,0	1,0+0,5	0,02+0,002 0,02+0,002
	50,00	1,0+0,5	1,0+0,5	0,02+0,002 0,02+0,002
	nF	2,0+1,0		
	500,0			
	nF			
	5,000			

General Information	
Power supply:	115 V / 230 V $\pm$ 10%, adjustable voltage selector on rear panel; Frequency 50Hz / 60Hz
Power consumption:	25 W max., 12 W typ.
Ambient temperature:	0 ... 55 °C (operating); -40 ... +70 °C (storage)
EMC compliance:	DIN EN 61326-1, DIN EN 55011
Safety compliance:	DIN EN 61010-1, CAN/CSA-C22.2 No. 61010-1-12
Measuring Category:	CAT II, 600 V; CAT I, 1000 VDC, 750 VAC RMS
Dimensions (W x H x D):	222 x 88 x 280 mm
Weight:	approx. 2.7 kg
Warm-up time:	90 minutes

All data valid at 23°C $\pm$ 5K after 90 minutes warm-up and with 74 digits

Additional Specifications	
DC voltage	
Measuring Method	Sigma Delta analog/digital converter
Input Resistance	>10 G Ω (selectable for ranges 400 mV / 4 V
CMRR	10 M Ω (on all ranges)
SMRR	120 dB for VCM <500 V, 1 k Ω unbalance in the LO-line and
	5 measurements/second
AC voltage	
Measuring Method	>60 dB for 50 or 60 Hz $\pm$ 0,1% and 5
Overload protection	measurements/second
Input Resistance	60 pA for 25 °C
Crest Factor	1000 V for all ranges AC coupled True RMS
CMRR	measurement
	1 M Ω parallel <100 pF (on all ranges)
	Max. 10 (0,5% additional measurement
	uncertainty)
Overload protection	>60 dB 1 k Ω in the LO-line and frequency <60
AC current / DC current	Hz 750 Vrms (for all ranges)
Shunt Resistance	13,75 Ω for 20 mA; 1,25 Ω for 200 mA; 25 m Ω
Overload protection	for 2 A, 10 A
Resistance	
Measuring Method	Fuse: F10H250V on the front panel 2-wire and
Overload protection	4-wire
Continuity	
Measuring Method	1000 V for all ranges 1 mA constant current
Threshold value	Adjustable in 1 Ω steps
Response Time	200 measurements/second
Overload protection	1000 V 1 mA constant current
	Adjustable in 10 mV steps
	10 measurements/second
	1000 V Resistance measurement with platinum
Diode Test	
Measuring Method	sensor
Threshold value	PT100, PT500, PT1000
Response time	2-wire, 4-wire
Overload protection	1000 V Min/Max/Average/Standard deviation
	NULL key, offset via keyboard
Temperature	
Measurement method	dB: Reference level via keyboard or NULL key
Sensor types	dBm: Reference impedance 50/75/600 Ω or
Connection	freely selectable
Overload protection	
Math Functions	
Statistics	
Relative measurement	
Logarithmic	
functions	
Data logging	
Number of measuring counts	Internal: 50,000; external: defined by USB stick capacity.
Rate Log	Min.: 5 ms typ. (in accordance to measuring function and
Duration Log	resolution) Max: 3.600 s
Data Log	Internal: 250 s...50.000 h; external: defined by USB stick
	capacity
	Main, 2nd, Time-Stamp
Interfaces	
Programming	USB 2.0 (TMC and CDC/VCP), Ethernet 10/100
	(LXI in Preparation), IEEE-488/GPIB optional
	SCPI, compatible with Agilent 34401A and 34410A

Reading Rates				
Function	Setting	Resolution	Display	Reading Rates (per sec.)
AC Voltage	Slow	5 $\frac{7}{4}$	400,000	5
	Medium	4 $\frac{7}{4}$	40,000	10
	Fast	4 $\frac{7}{4}$	40,000	200
DC Voltage	Slow	5 $\frac{7}{4}$	400,000	5
	Medium	4 $\frac{7}{4}$	40,000	10
	Fast	4 $\frac{7}{4}$	40,000	200
AC Current	Slow	5 $\frac{7}{4}$	200,000	5
	Medium	4 $\frac{7}{4}$	20,000	10
	Fast	4 $\frac{7}{4}$	20,000	200
DC Current	Slow	5 $\frac{7}{4}$	200,000	5
	Medium	4 $\frac{7}{4}$	20,000	10
	Fast	4 $\frac{7}{4}$	20,000	200
Resistance (2-wire)	Slow	5 $\frac{7}{4}$	400,000	5
	Medium	4 $\frac{7}{4}$	40,000	10
	Fast	4 $\frac{7}{4}$	40,000	50
Resistance (4-wire)	Slow	5 $\frac{7}{4}$	400,000	5
	Medium	4 $\frac{7}{4}$	40,000	10
	Fast	4 $\frac{7}{4}$	40,000	25
Frequency	Slow	6	999,999	1
	Medium	5	99,999	10
	Fast	4	9,999	100
Diode		4 $\frac{3}{4}$	40,000	10
Continuity		4 $\frac{3}{4}$	40,000	200
Temperature		4	999,9	10

Accessories supplied: Line cord, printed operating manual, HZ15 Silicon test lead with safety connector and test probe, 1m (black + red), Software-CD
Recommended accessories:

HZ812 PT100 Temperature probe 2-wire
 HZ887 PT100 Temperature probe 4-wire 19"
 HZC95 rackmount kit 2RU for HMC series



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