

M35 Series

6.5 Digital Multimeter



Interface:

STD. USB / OPT. GPIB or RS-232
(Conform to USBTMC & IEEE-488.2)



M3500A High Precision 6.5 Digital Multimeter

- **Stability & Accuracy:**
7.5 Digits Technology

General Functions:

DCV, ACV, DCI, ACI (up to 3A), 2W Ω , 4W Ω , Frequency, Period, Diode, Continuity, Thermocouple, RTD, Limits, Ratio, MX+B, %, dBm, dB, Min/Max, Null, Trigger, Filter, Memory

Features:

- Support 10/20-Channel Scanner Card for Data Log Application
- Data Transfer Rate: 2000 Readings/Sec.
- Basic DCV Accuracy: 0.0035 % (1 Year)
- Basic ACV Accuracy: 0.06 % (1 Year)
- 6.5 Digits Measurement: 1 PLC
- High Noise Immunity Capability
- Free Software: PT-TOOL (SCPI Commands) & PT-LINK
- Rack-Mounted Compatibility

Dimension & Weight: (for Rack)

213.6(W) x 88.6(H) x 370(D) mm, 3706 g

Optional Accessories:

- M3500-opt01: 10-Channel Scanner Card
- M3500-opt03: BNC to Banana Adapter
- M3500-opt04: GPIB Card
- M3500-opt05: RTD Adapter
- M3500-opt06: RS-232 Card
- M3500-opt07: Kelvin Probe
- M3500-opt08: 4-Wire Test Leads
- M3500-opt09: 20-Channel Scanner Card
- M3500-opt10: Shorting Plug

M3510A/M3511A High Speed/ Economy 6.5 Digital Multimeter

General Functions:

DCV, ACV, DCI, ACI (up to 10A), 2W Ω , 4W Ω , Frequency, Period, Capacitance, Diode, Continuity, Thermocouple, RTD, Limits, Ratio, MX+B, %, dBm, dB, Min/Max, Null, Trigger, Filter, Memory

Features:

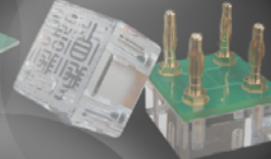
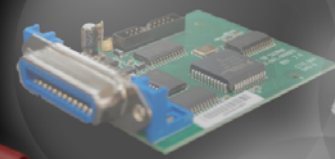
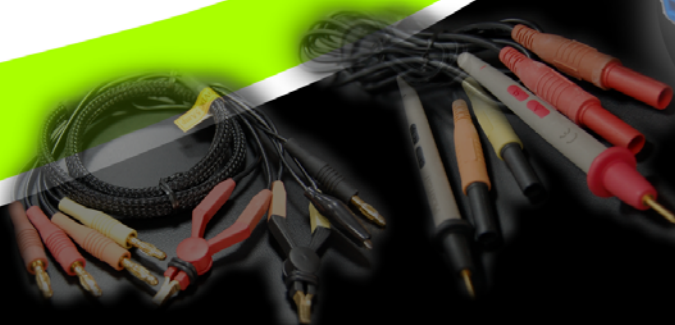
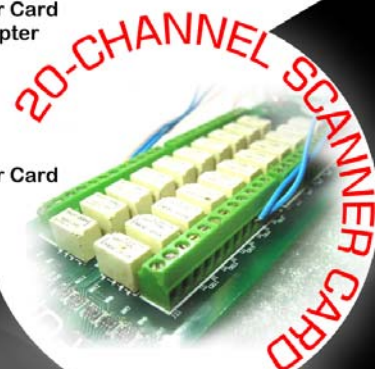
- High Speed: 50 K Readings/Sec. (M3510A)
- Dual Displays & Dual Measurements
- Capacitance Measurement
- Wide Range Current Measurement (Max. 10 A)
- Thermocouple Measurement (M3510A)
(Built-In a Cold Junction Compensator)
- Basic DCV Accuracy: 0.009 % (1 Year)
- Free Software: PT-TOOL (SCPI Commands) & PT-LINK
- Rack-Mounted Compatibility

Dimension & Weight: (for Rack)

214.6(W) x 88.6(H) x 280.7(D) mm, 2230 g

Optional Accessories:


- M3500-opt04: GPIB Card
- M3500-opt06: RS-232 Card
- M3500-opt07: Kelvin Probe
- M3500-opt08: 4-Wire Test Leads
- M3500-opt10: Shorting Plug
- M3500-opt11: K Type Thermocouple Cable (M3510A)



M3500A - Characteristics

Function	Range ²	Resolution	Input Resistance	1 Year Accuracy
DCV ³	100.0000 mV	0.1 μV	> 10 GΩ	0.0050+0.0035
	1.000000 V	1.0 μV	> 10 GΩ	0.0040+0.0007
	10.00000 V	10 μV	> 10 GΩ	0.0035+0.0005
	100.0000 V	100 μV	10 MΩ	0.0045+0.0006
	1000.000 V	1 mV	10 MΩ	0.0045+0.0010
Function	Range	Resolution	Shunt Resistance	1 Year Accuracy
DCI	10.00000 mA	10 nA	5.1 Ω	0.050+0.020
	100.0000 mA	100 nA	5.1 Ω	0.050+0.005
	1.000000 A	1 μA	0.1 Ω	0.100+0.010
	3.00000 A	10 μA	0.1 Ω	0.120+0.020
Function	Range	Resolution	Test Current	1 Year Accuracy
Ohm (2&4W)	100.0000 Ω	100 μΩ	1 mA	0.010+0.004
	1.000000 KΩ	1 mΩ	1 mA	0.010+0.001
	10.00000 KΩ	10 mΩ	100 μA	0.010+0.001
	100.0000 KΩ	100 mΩ	10 μA	0.010+0.001
	1.000000 MΩ	1 Ω	5 μA	0.010+0.001
	10.00000 MΩ	10 Ω	500 nA	0.040+0.001
	100.0000 MΩ	100 Ω	500 nA/10 MΩ	0.800+0.010
Diode	1.00000 V	10 μV	1 mA	0.010+0.020
Continuity	1000.00 Ω	10 mΩ	1 mA	0.010+0.030
Function	Range	Resolution	Frequency (Hz)	1 Year Accuracy
ACV (TRMS)	100.0000 mV	0.1 μV	3 - 5	1.00+0.04
			5 - 10	0.35+0.04
			10 - 20 K	0.06+0.04
			20 K - 50 K	0.12+0.05
			50 K - 100 K	0.60+0.08
	100 K - 300 K	4.00+0.50		
	1.000000 V	1.0 μV	3 - 5	1.00+0.03
			5 - 10	0.35+0.03
10 - 20 K			0.06+0.03	
750.0000 V	1 mV	20 K - 50 K	0.12+0.05	
		50 K - 100 K	0.60+0.08	
		100 K - 300 K	4.00+0.50	
ACI (TRMS)	1.000000 A	1 μA	3 - 5	1.00+0.04
			5 - 10	0.30+0.04
			10 - 5 K	0.10+0.04
	3.000000 A	10 μA	3 - 5	1.10+0.06
			5 - 10	0.35+0.06
		10 - 5 K	0.15+0.06	
Function	Range		Frequency (Hz)	1 Year Accuracy
Frequency & Period	100 mV		3 - 5	0.10
			5 - 10	0.05
	750 V		10 - 40	0.03
			40 - 300 K	0.01

M3500A - General Specifications


Item	Description	Item	Description
Power Supply	100V/120V/220V/240V \pm 10 %	Warm-Up Time	2 Hours
Power Cord Freq.	50Hz/60Hz \pm 10 %	Language	SCPI-1993, IEEE-488.2
Power Consumption	25 VA Max. (16 W Average)	Dimension	213.6(W) x 88.6(H) x 370.0(D) mm
Operating Environment	0 ~ 40°C	Weight	3706 g
Storage Environment	-40°C ~ 70°C	Safety	IEC61010-1, EN61010-1, UL61010-1
Operating Altitude	Up to 2000 m	EMC	EN61326
Operating Humidity	Max. Relative Humidity 80 % for Temp. up to 31°C Decreasing Linearly to 50 % Relative Humidity at 40°C	Interface	STD. USB OPT. GPIB or RS-232
		Warranty	1 Year
		Certificate	CE & UL
		Recycle Level	

- \pm (% of Reading + % of Range, 23°C \pm 5°C), at 6 1/2 digits with 2-hour warm-up.
- Measurement over 20 % at all ranges is allowable except the ranges 750 ACV, 1000 DCV & 3 A/10 A (M3510A & M3511A). The range 750V is limited to 100 KHz.
- Use continuous integrating A/D converter. Input bias current: Less than 30 pA at 25°C. Input protection: 1000 V at all ranges.
- The specifications are for 2-hour warm-up condition, 10 PLC and they're relative to calibration standards. The accuracy is \pm (% of Reading + % of Range, 23°C \pm 5°C).
- M3511A neither provides the selection of the range 3A, nor supports the thermocouple measurement.
- Bandwidth: 3 Hz. Specifications are for sine wave input > 5 % of range. For < 50 KHz and inputs within 1 % to 5 % of range, the error 0.3 % of range must be added. For inputs within 50 KHz to 100 KHz, the 0.35 % of range must be added.

M3510A & M3511A - Characteristics

Function	Range	Resolution	Input Resistance	1 Year Accuracy
DCV	100.0000 mV	0.1 μ V	10 M Ω	0.0080+0.0045
	1.000000 V	1.0 μ V	10 M Ω	0.0090+0.0010
	10.00000 V	10 μ V	10 M Ω	0.0120+0.0020
	100.0000 V	100 μ V	10 M Ω	0.0120+0.0020
	1000.000 V	1 mV	10 M Ω	0.0200+0.0030
Function	Range	Resolution	Shunt Resistance	1 Year Accuracy
DCI	10.00000 mA	10 nA	5.1 Ω	0.050+0.020
	100.0000 mA	100 nA	5.1 Ω	0.050+0.010
	1.000000 A	1 μ A	0.1 Ω	0.150+0.020
	3.00000 A	10 μ A	0.1 Ω	0.200+0.030
	10.00000 A	10 μ A	0.005 Ω	0.250+0.050
Function	Range	Resolution	Test Current	1 Year Accuracy
Ohm (2&4W)	100.0000 Ω	100 $\mu\Omega$	1 mA	0.020+0.005
	1.000000 K Ω	1 m Ω	1 mA	0.020+0.002
	10.00000 K Ω	10 m Ω	100 μ A	0.020+0.002
	100.0000 K Ω	100 m Ω	10 μ A	0.020+0.002
	1.000000 M Ω	1 Ω	1 μ A	0.020+0.004
	10.00000 M Ω	10 Ω	0.1 μ A	0.100+0.004
	100.0000 M Ω	100 Ω	0.1 μ A/10 M Ω	1.500+0.005
Diode	1.00000 V	10 μ V	1 mA	0.020+0.020
Continuity	1000.00 Ω	10 m Ω	1 mA	0.020+0.030
Function	Range	Resolution	Frequency (Hz)	1 Year Accuracy
ACV ⁶ (TRMS)	100.0000 mV	0.1 μ V	10 - 20 K	0.12+0.05
			20 K - 50 K	0.25+0.05
			50 K - 100 K	0.65+0.08
			100 K - 300 K	4.80+0.80
	1.000000 V	1.0 μ V	10 - 20 K	0.12+0.04
750.0000 V	1 mV	20 K - 50 K	0.25+0.05	
		50 K - 100 K	0.65+0.08	
		100 K - 300 K	4.80+0.80	
ACI ⁶ (TRMS)	1.000000 A	1 μ A	10 - 1 K	0.20+0.04
			1 K - 5 K	1.00+0.10
	3.00000 A ⁵	10 μ A	10 - 1 K	0.30+0.06
			1 K - 5 K	1.50+0.15
	10.00000 A	10 μ A	10 - 1 K	0.50+0.12
		1 K - 5 K	2.50+0.20	
Function	Range		Frequency (Hz)	1 Year Accuracy
Freq. & Period	100 mV ~ 750 V		10 - 40	0.03
			40 - 300 K	0.02
Function	Range		Test Current	1 Year Accuracy
Capacitance	1 nF		10 μ A	2.0+0.80
	10 nF		10 μ A	1.0+0.50
	100 nF		100 μ A	1.0+0.50
	1 μ F		100 μ A	1.0+0.50
	10 μ F		100 μ A	1.0+0.50
	100 μ F		1 mA	1.0+0.50
	1000 μ F		1 mA	1.0+0.50
	10000 μ F		1 mA	2.0+0.50
Function	Type	Range		1 Year Accuracy
Thermocouple ⁵	B	600°C ~ 1820°C		1.5°C
	C	0°C ~ 2316°C		1.5°C
	E	-250°C ~ 1000°C		1.5°C
	J	-210°C ~ 1200°C		1.0°C
	K	-200°C ~ 1372°C		1.0°C
	N	-200°C ~ 1300°C		1.0°C
	R	0°C ~ 1767°C		1.5°C
	S	0°C ~ 1767°C		1.5°C
T	-250°C ~ 400°C		1.5°C	

M3510A & M3511A - General Specifications

Item	Description	Item	Description
Power Supply	100V/120V/220V/240V \pm 10 %	Warm-Up Time	2 Hours
Power Cord Freq.	50Hz/60Hz \pm 10 %	Language	SCPI-1993, IEEE-488.2
Power Consumption	25 VA Max. (5 W Average)	Dimension	214.6(W) x 88.6(H) x 280.7(D) mm
Operating Environment	0 ~ 50°C	Weight	2230 g
Storage Environment	-40°C ~ 70°C	Safety	IEC61010-1, EN61010-1, Meas. CAT II 600 V, CAT I 1000 V, Pollution Degree 2
Operating Altitude	Up to 2000 m	EMC	EN61326
Operating Humidity	The Same as M3500A	Interface	STD. USB OPT. GPIB or RS-232
		Warranty	1 Year
		Certificate	CE
		Recycle Level	

For more information, please refer to the user's manuals.

The specifications are subject to change without notice due to design improvements.