

# M3522A SPECIFICATIONS<sup>1</sup>

## DC CHARACTERISTICS

Function	Range	Resolution	Input Resistance	1-Year Accuracy <sup>2</sup>
DCV	100.0000 mV	0.1 µV	> 10GΩ	0.0050+0.0035
	1.000000 V	1.0 µV	> 10GΩ	0.0035+0.0005
	10.00000 V	10 µV	> 10GΩ	0.0030+0.0004
	100.0000 V	100 µV	10MΩ	0.0045+0.0006
	1000.000 V	1 mV	10MΩ	0.0045+0.0010

Function	Range	Resolution	Shunt Resistance	1-Year Accuracy
DCI	1.000000 µA typ	1 pA	10.1 KΩ	0.050+0.025
	10.00000 µA typ	10 pA	10.1 KΩ	0.050+0.025
	100.0000 µA typ	100 pA	105.0 Ω	0.050+0.025
	1.000000 mA	1 nA	105.0 Ω	0.050+0.020
	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
	3.000000 A	10 µA	0.1 Ω	0.200+0.020
	10.00000 A	10 µA	0.005 Ω	0.220+0.025

Function	Range	Resolution	Test Current	1-Year Accuracy
2WΩ <sup>3</sup> / 4WΩ	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 µΩ	10 µA	0.010+0.001
	1.000000 MΩ	1 Ω	10 µA	0.010+0.001
	10.00000 MΩ	10 Ω	1 µA	0.040+0.001
	100.0000 MΩ	100 Ω	1 µA   10 MΩ	0.800+0.010
	1000.000 MΩ	1000 Ω	1 µA   10 MΩ	3.000+0.010

Function	Range	Resolution	Charge Current	1-Year Accuracy
DIODE	10.00000 V	10 µV	1 mA	0.008+0.010
CONTINUITY <sup>4</sup>	1000.000 Ω	10 mΩ	1 mA	0.008+0.020

## FREQUENCY & PERIOD

Function	Range	Frequency (Hz)	1-Year Accuracy
FREQUENCY & PERIOD	100 mV to 750 V <sup>5</sup>	3 - 10	0.07
		10 - 100	0.03
		100 - 1k	0.02
		1k - 300k	0.004

## AC CHARACTERISTICS

Function	Range	Resolution	Frequency (Hz)	1-Year Accuracy
ACV (TRMS)	100 mV to 750 V <sup>5</sup>	0.1 µV to 1 mV	3 - 5	1.00+0.04
			5 - 10	0.35+0.04
			10 - 20k	0.06+0.04
			20k - 50k	0.12+0.05
			50k - 100k	0.60+0.08
			100k - 300k	4.00+0.50
ACI (TRMS)	100.0000 µA to 3.000000 A	100 pA to 10 µA	3 - 5	1.00+0.04
			5 - 10	0.30+0.04
			10 - 5k	0.10+0.04
			5k - 10k (typ) <sup>6</sup>	0.10+0.04
			3 - 5	1.00+0.04
			5 - 10	0.30+0.04
			10 - 5k	0.10+0.04
			5k - 10k (typ)	0.10+0.04
			3 - 5	1.00+0.04
			5 - 10	0.30+0.04
10 - 5k	0.10+0.04			
5k - 10k (typ)	0.10+0.04			
ACI (TRMS)	1.000000 A to 10.00000 A	1 µA to 10 µA	3 - 5	1.00+0.04
			5 - 10	0.30+0.04
			10 - 5k	0.10+0.04
			5k - 10k (typ)	0.10+0.04
			3 - 5	1.00+0.06
			5 - 10	0.35+0.04
			10 - 5k	0.23+0.04
			5k - 10k (typ)	0.23+0.04
			3 - 5	1.10+0.06
			5 - 10	0.40+0.06
10 - 1k	0.23+0.04			
1k - 5k	1.00+0.07			

## GENERAL SPECIFICATIONS

POWER SUPPLY: 100V to 240V ±10%  
 POWER LINE FREQUENCY: 50/60/400Hz ±10%  
 POWER CONSUMPTION: 25VA MAX (5W AVERAGE)  
 OPERATING TEMPERATURE: 0°C TO 50°C  
 OPERATING HUMIDITY: MAXIMUM RELATIVE HUMIDITY 80% FOR TEMPERATURE UP TO 31°C  
 STORAGE TEMPERATURE: -40°C TO 70°C  
 OPERATING ALTITUDE: UP TO 2000 M  
 BENCH DIMENSIONS: 88.6(H)X214.6(W)X280.7(D) mm  
 WEIGHT: 2.23 KG  
 SAFETY: EN 61010-1:2010, IEC 61010-1:2010 (Third Edition)  
 MEASUREMENT CAT II 300V  
 POLLUTION DEGREE 2  
 EMC: EN61326-1:2013, EN61326-2-1:2013  
 EMISSION: CISPR 11:2009 +A1:2010, Class A  
 IMMUNITY: IEC 61000-4-2:2008 ~ IEC 61000-4-11:2004 +A1:2017  
 For more information, please contact Picotest  
 WARRANTY: ONE YEAR



## CAPACITANCE CHARACTERISTICS

Function	Range	Current	1-Year Accuracy
CAPACITANCE <sup>7</sup>	1 nF	10 µA	0.50+0.50
	10 nF	10 µA	0.40+0.10
	100 nF	100 µA	0.40+0.10
	1 µF	100 µA	0.40+0.10
	10 µF	100 µA	0.40+0.10
	100 µF	1 mA	0.40+0.10
	1 mF	1 mA	0.40+0.10
	10 mF	1 mA	0.80+0.10

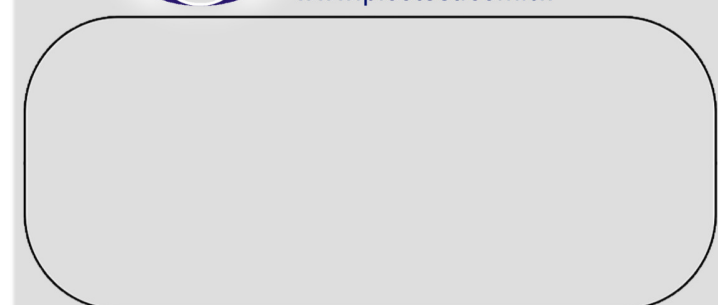
## TEMPERATURE CHARACTERISTICS<sup>8</sup>

Function	Type	1-Year Accuracy
RTD	PT100 (DIN/IEC 751)	Probe Accuracy + 0.05°C
THERMISTOR	5kΩ	Probe Accuracy + 0.1°C
THERMO-COUPLE <sup>9</sup>	K/J/T/E/N	Probe Accuracy + Reference Junction Accuracy + 0.3°C
	B/C/R/S	Probe Accuracy + Reference Junction Accuracy + 0.5°C

## MODEL COMPARISON

Items	Model	M3520A	M3521A	M3522A
		6 1/2 DMM	6 1/2 DMM	6 1/2 DMM
DCV Accuracy		75 ppm	35 ppm	30 ppm
Max Rdg Rate		300 rdgs/s	10K rdgs/s	100K rdgs/s
Max Memory		1K rdgs	1.5M rdgs	7.5M rdgs
DCI Range		10mA-3A	10mA-3A	1µA-10A
ACI Range		10mA-3A	10mA-3A	100µA-10A
Continuity/Diode		Yes/5V	Yes/5V	Yes/10V
Temperature	RTD, Thermistor	RTD, Thermistor	RTD, TCO, Thermistor	
2 & 3 Displays		N/A	N/A	Yes
DC CTR Test		N/A	N/A	Yes
SCPI Command		N/A	Yes	Yes
Digitize		N/A	N/A	Yes
Data Logging		N/A	Yes	Yes
Scanner Card		N/A	Yes	Yes
Graph		N/A	N/A	Histogram, Trend
Rear Terminals		N/A	Yes	Yes
USB & LAN		N/A	Yes	Yes
GPIB/RS-232		N/A	Optional	Optional

- The M3522A's specifications are for 1-hour warm-up condition, 10PLC and they're relative to calibration standards. For more M3520A/M3521A specification information, check on the Picotest website.
- ±(% of reading + % of range), (23°C ±5°C)
- The Null function must be used when the 2WΩ is selected.
- The Continuity measurement is available for 2WΩ.
- The Range 750V is limited to 100kHz.
- This means the characteristic performance, that 80% or more of products will meet. This data is not warranted, excluding measurement uncertainty, and is only valid at room in 23°C.
- The Null function must be used.
- The M3522A supports the thermocouple measurement only.
- The measured value excluded the test lead error.



LOCAL AGENCY INFORMATION



# M352XA

SERIES INCLUDES M3520A, M3521A, & M3522A

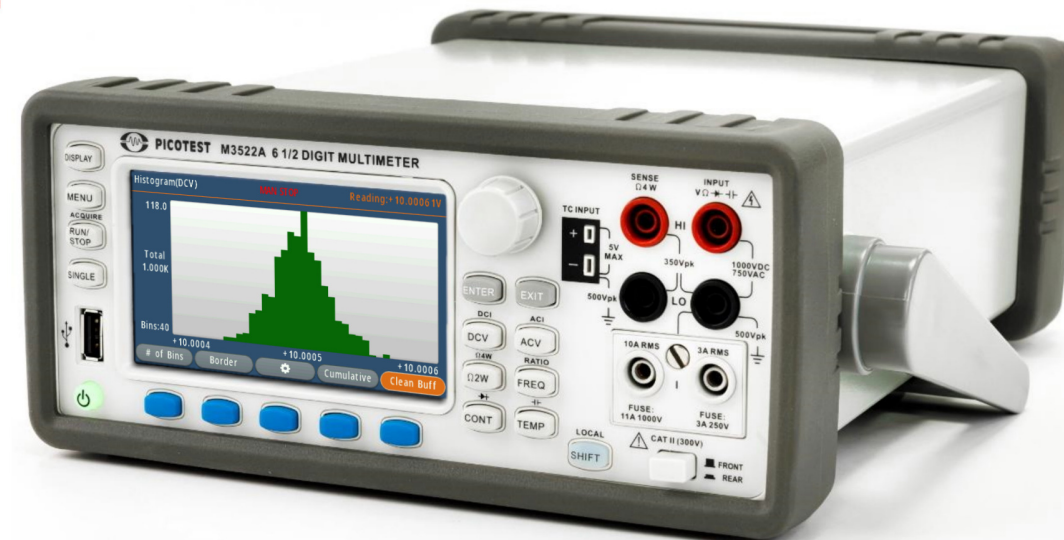
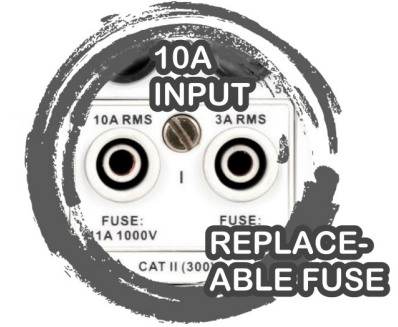
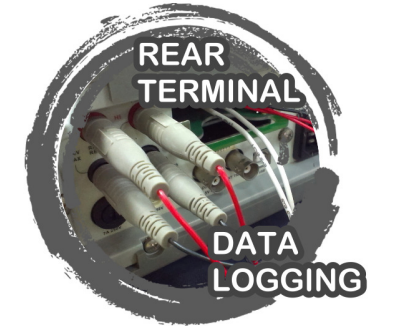
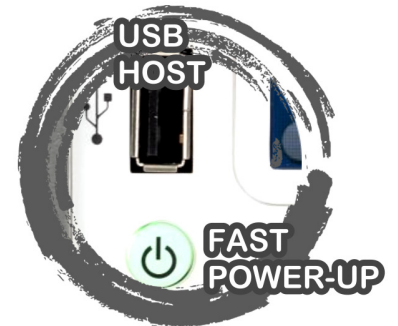
6 1/2 Digits 4.3" TRMS Digital Multimeter



ISO9001/RoHS CE/UKCA Approved & Certified

## M3522A Features

- Fast Power-Up
- 3-Channel DCV Measurement
- DC CTR Measurement
- Large 4.3" Display
- Real-Time Chart & Histogram
- DC & AC Current Up to 10A
- Capacitance Measurement Up to 10mF
- Thermocouple Measurement
- Sensitive Multi-Purpose Knob
- Replaceable Current Fuse
- Fast Measurement Setup
- Dual Display Measurement
- USB Host Datalogging & FW Upgrade (Time & Delay Setup)
- Rear Panel Measurement
- Fast Reading Rate: 100K Rdgs/s
- 7.5 Mega-Reading Storage Memory
- Compatible SCPI Commands
- True RMS, More Accurate
- Multi-Language Operation Selection
- Universal 100V-240V AC Input Power
- Standard USB & LAN Control Interfaces
- Optional GPIB/RS-232 Interface
- Supportive Multi-Point Data Acquisition



THE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE DUE TO DESIGN IMPROVEMENT.

## NEW 6 1/2 DIGIT DMM

M3522A is a versatile 6 1/2 digit DMM with several improvements at an affordable price. This unit is equipped with a 3-Channel DCV and thermocouple measurement capability. A large 4.3" display, fast power-up, dual displays, screen print, increased memory storage up to 7.5M readings, 10A current limit, fast & ergonomic measurement setting via an updated multi-purpose knob, LAN & USB control interfaces, fast measurement at 100K readings/s, multi-language system, and easy GPIB/RS-232 installation are all included. Firmware upgrades via the USB host are easy.

## FAST POWER-UP

The M352XA series features a fast, 2-second power-up. This means you can start measuring immediately, unlike typical DMMs which take 30 seconds or more to power up.

## 3-CHANNEL DCV TEST (incl. Optocoupler & DC CTR TEST)

Users can simultaneously measure three DCV sources. The Input HI, Sense HI, and Sense LO can resolve 1000V, 12V, and 12V respectively. Their grounds must be connected to Input LO. Then you can set the display to Multi-Channel through the soft-keys. For Optocoupler & DC CTR measurement, please download the related app note on the Picotest website [www.picotest.com.tw](http://www.picotest.com.tw) or contact your local distributor for more details.

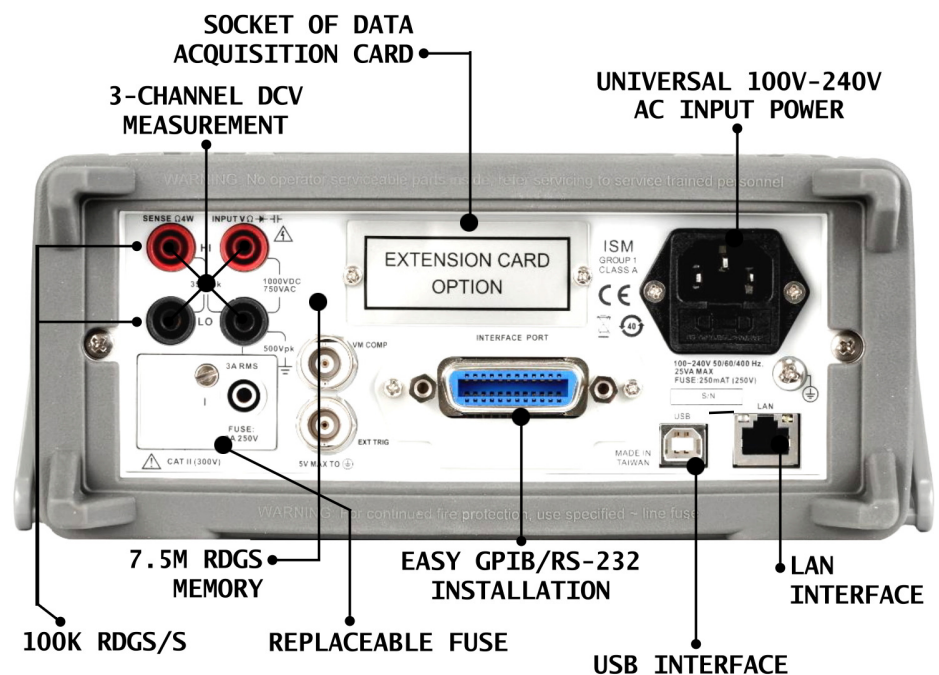
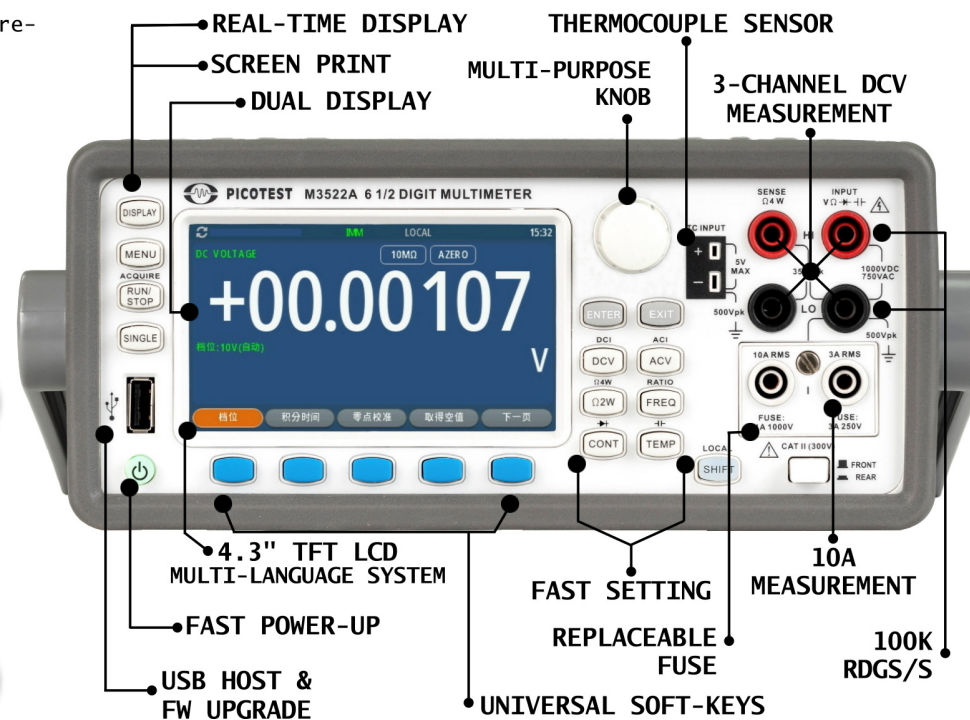
## 4.3" DISPLAY

The display not only has large, easy-to-read numbers, but can be changed to the dual display, 3-channel DCV modes, or switched to real-time display in a chart or a histogram style. The multi-language system supports for English, Russian, Japanese, or simple/traditional Chinese. A screen print can be captured and saved to external USB drive, plugged into the front panel USB connector after pressing the "DISPLAY" button for two seconds.

# M352XA

SERIES INCLUDES M3520A, M3521A & M3522A  
(The example below is M3522A)

6 1/2 Digits 4.3" TRMS Digital Multimeter



## DUAL DISPLAY FOR DUAL MEASUREMENT

This function allows you to measure and display two signals simultaneously. Further operational details can be found in the user's manual.

## MULTI-PURPOSE KNOB

With this knob, users can accurately select various settings and add numbers, and quickly press to confirm the setting. With this feature, you get your test setup in order easily and quickly.

## TEMPERATURE TEST

The M3522A supports three kinds of temperature measurement:

- (1) RTD: PT100, D100, F100, PT385, PT3916, SPRTD, and RTD\_USER
- (2) Thermistor: 2252Ω, 5KΩ, 10KΩ, and NTC\_USER
- (3) Thermocouple: B, C, E, J, K, N, R, S, and T

## USB SLOT

A USB slot is available to copy data from the memory to a storage drive. Screen prints also can be saved. Firmware updates can also be performed through this USB slot. Please note that the drive format is limited to FAT 32.

## READINGS & MEMORY

The regarding rates and the memory storage of the M352XA series are superior to competitive models, especially the M3522A.

- (1) M3520A: Rate in 300 readings/s, memory with 1K readings
- (2) M3521A: Rate in 10K readings/s, memory with 1.5M readings
- (3) M3522A: Rate in 100K readings/s, memory with 7.5M readings

## DATA ACQUISITION

Setting up a start time and delay for DATALOGGING is easy to do with the M3521A/M3522A. You are also allowed to acquire data from diversified sources using one of the optional cards below.

- (1) M3500-opt01: 10-Channel Universal Scanner Card
- (2) M3500-opt09: 20-Channel Universal Scanner Card
- (3) M3500-opt12: 10-Channel Thermocouple Scanner Card
- (4) M352X-opt01: 10CH Scanner & 10CH Switch

## 10A MEASUREMENT

The M3522A can measure up to 10A through the front panel. The fuse replacement (with the same specification) is simple. The warranty covers damages via authorized repair only.

## QUICK FUNCTION SETUP

It's easy for you to setup M352XA series through the MENU operation. Pressing the function button for two seconds enters the measurement menu.

## UNIVERSAL AC POWER INPUT

The M352XA series uses a switching adapter. This not only reduces the DMM weight, but also allows you to use 100V - 240V AC power inputs. You do not have to change the voltage selection manually.

## DIVERSIFIED COMMUNICATION

The M3521A/M3522A is equipped with USB & LAN interfaces. You can also purchase a GPIB/RS-232 card. However, the above interfaces are not available on the M3520A.

## EASY GPIB/RS-232 ASSEMBLY

The M3521A/M3522A supports GPIB/RS-232 communication. You can purchase and it is simple to install the GPIB/RS-232 card yourself. Addition of this card is simple - remove the cover plate on the rear panel, plug the card connector into the main board, and fasten the screws. That's it!

### STANDARD CONTENTS:

Shipping Size/Weight: 40x31x20cm/5Kgs, Contents Included:

- M352XA 6 1/2 DMM x 1 pcs
- Test Leads x 1 set
- USB Cable x 1 pcs (N/A for M3520A)
- Power Cord x 1 pcs
- Spare Power Fuse x 1 pcs
- CD x 1 pcs
- Certificate of Calibration x 1 pcs

### OPTIONAL ACCESSORIES:

The optional accessories are listed at the bottom right. Buyers can purchase based on specific needs.

Please note that the M3521A and M3522A units are equipped with USB & LAN interfaces and support GPIB option. These interfaces are not available on the M3520A.

THE STANDARD CONTENTS AND THE OPTIONAL ACCESSORIES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

M3500-opt01:  
10CH Scanner Card



M3500-opt04:  
GPIB Card



M3500-opt06:  
RS-232 Card



M3500-opt07:  
Kelvin Probe



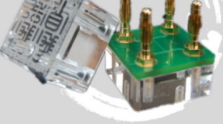
M3500-opt08:  
4-Wire Needle Probe



M3500-opt09:  
20CH Scanner Card



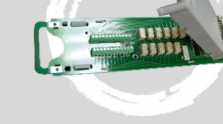
M3500-opt10:  
Shorting Plug



M3500-opt11:  
K-Type Thermocouple Cable



M3500-opt12:  
10CH Thermocouple Scanner Card



M352X-opt01:  
10CH Scanner & 10CH Switch

