

# MFT70

## Multifunction Tester



- **Simple color-coded test selection and large clear backlit display for ease of use**
- **Internal memory and Bluetooth® communications**
- **3-terminal ground test and stakeless testing for spike resistance measurement**
- **GFCI testing as defined in the ANSI/UL 943, CSA C22.2 No. 144.1 and ANCE NMX-J-520**
- **IEC61010 CATIV safety ratings and tough IP54 case**

### DESCRIPTION

The MFT70 Multifunction Tester is designed for testing low voltage electrical installations to fulfill the requirements of NFPA70 and the National Electrical Code. It provides all the tests required to complete the necessary electrical certification for industrial, commercial and domestic fixed wiring installations, including:

- System voltage and frequency measurement (TRMS)
- Insulation test at 100 V, 250 V, 500 V and 1000 V
- Input protection against live circuits up to 600 V even when insulation test is locked-on
- Continuity resistance at 200 mA or 15 mA
  - Automatic – no need to press TEST which leaves both hands free to hold probes
- Resistance range up to 100 kΩ
  - Fast continuity buzzer and selectable thresholds
- GFCI test
  - Ramp test displays trip current
- Ground testing
  - 2-pole
  - 3-pole
  - Attached Rod Technique (ART)
  - Stakeless techniques

This instrument is IEC 61010 CAT IV 300 V rated for connection to low voltage systems with no protective device, so it is safe for connection anywhere on the system up to the source transformer without risk of damage from large transient spikes.

The unique modern styling allows it to be operated while standing on the floor, a ladder-shelf or platform, hung around the neck or handheld. Dual TEST and LOCK buttons – one pair at each end – make the tester easy to operate with either the left or right hand.

Easy to pick up and use, the rotary controls are color coded to make range selection fast. They also reduce the chance of using the wrong function or range. The large crystal clear backlit display uses the patented Megger digital/analog arc, providing an indication of fluctuating readings. The dual digital readout shows precise values of key measurements and the test parameters simultaneously, such as the output voltage on insulation testing as well as the resistance value in MΩ.

Visible and audible safety warnings are paramount when testing high-energy systems, and the MFT70 includes full input protection and safety warnings when a hazardous voltage is present. If live voltages exist on a circuit during insulation or continuity testing, the voltage is displayed on the screen. If this voltage exceeds a safe level, further testing is inhibited and a warning beep sounds.

The MFT70 features internally rechargeable batteries with a charge time of less than 4 hours, which reduces the cost of ownership.

Fully compliant with all requirements of IEC60364 derived standards, the MFT70 includes all the latest measurement technology in a lightweight compact design and is fully protected and usable on single phase and three phase installations.

The MFT70 combines quick continuity resistance with a number of insulation resistance tests as well as testing of GFCIs, alleviating the need for multiple separate function test instruments.

The unit includes built in memory and Bluetooth® communications for downloading of memory using Megger Download Manager (supplied) for simple form filling of test results.

The MFT70 is designed for tough environments and ultimate reliability. Features include a rubber over mold for extra protection and grip, IP54 protection against dust and water and an IEC61010 CAT IV safety rating. Its class leading input protection ensures the MFT70 can withstand accidental misuse and voltage transients when other testers can't.

All this in an intuitive and easy to use instrument with no hidden menus or complicated screens. Tests are easily selected using the color coded rotary switches with results clearly displayed on the high contrast dual measurement backlit display.

Included with the instrument are a standard 3-wire lead set and a mains test lead, a switched probe for fast and easy testing, a full 12-month calibration certificate, and 12-month warranty upgradeable to 3 years. The MFT70 is supplied in a robust molded case with plenty of additional space for optional extras like a few tools and the ground electrode test kit, comprising 2 spikes and 3 long test leads. FREE download software is also included with the MFT70.

\*Requires optional accessory

## APPLICATIONS

Electrical Installations, domestic, commercial and industrial

Ground rod testing

Solar

Maintenance

## FEATURES AND BENEFITS

Safety - IEC 61010 CAT IV 300 V means this is safe for connection up to the source transformer.

Low cost - one instrument means less cost upfront as well as lower cost of ownership with regards to service and calibration.

Compliance - fulfills the requirements of NFPA70 and the National Electrical Code.

Ease of use - simple rotary dials showing all tests available and no hidden menus.

Efficiency - built in memory allows results to be stored on the go and transferred to a Bluetooth® enabled device for full traceability.

## SPECIFICATIONS

### Insulation test

Output voltage	-0% +20% at rated load or less
Voltage display	±3% ±3 digits ±0.5% of rated voltage
Short circuit current	1.5 mA nominal test current
Test current on load	1 mA at min pass values of insulation

### Measurement accuracy

1000 Volts	10 kΩ - 999 MΩ	±3% ±2 digits
500 Volts	10 kΩ - 500 MΩ	±3% ±2 digits
	>500 MΩ	±10% ±4 digits
250 Volts	10 kΩ - 250 MΩ	±3% ±2 digits
	>250 MΩ	±10% ±4 digits
100 Volts	10 kΩ - 100 MΩ	±3% ±2 digits
	>100 MΩ	±10% ±4 digits

### Resistance and continuity

	0.01 Ω - 99.9 Ω	±2% ±2 digits
	100 Ω - 99.9 kΩ	±5% ±2 digits
Open circuit voltage	5 V ±1 V	
Test current	(0 Ω - 2 Ω)	
	205 mA ±5 mA	
	15 mA ±5 mA	
	(user selectable)	

### GFCI Test

Intrinsic current accuracy:

Ramp test current: ±5% ±1 digit

Supply: 48 V - 280 V 45 Hz to 65 Hz

Max service error: ±10% ±2 digits

### Supply measurement

Voltage	10 V - 600 V (15 - 400 Hz) True RMS ±3% ± 1 V ±2 digits
Phase rotation indication	L1-L2-L3 and L1-L3-L2
Frequency	15 Hz - 99 Hz ±0.5% ±1 digit 100 Hz - 400 Hz ±2.0% ±2 digits
Frequency resolution	0.1 Hz

### Power supply

Charger for on-board recharging (4 hours typical)

12 V car charger (cigarette lighter lead - optional)

**Ground test**

Resolution	0.01 Ω
Current	0.45 mA or 4.5 mA
Noise rejection	20 V pk/pk (7 V rms)
Max probe resistances	R <sub>p</sub> and R <sub>c</sub> 100 kΩ @ 50 V 5 kΩ @ 25 V
2 and 3 pole method	(0.01 Ω - 1.999 kΩ) ±2.0% ±3 digits
ART method	(1.00 Ω - 1.999 kΩ) ±5.0% ±3 digits*
Stakeless method	(1.00 Ω - 199 Ω) ±7.0% ±3 digits*

**Current range**

(via optional clamp meter)	±5.0% ±3 digits
Range	0.1 mA to 200 A ac
Resolution	0.1 mA

**MV sensor input**

Including temperature (third party module)	±1.0% ±2 digits
Range	0.0 mV to ±199.9 mV dc
Resolution	0.1 mV

**Data storage**

Capacity:	1000 results Bluetooth® communication
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<b>Safety</b>	IEC 61010-1:2010 IEC 61010-30:2010 IEC 61010-031:2008 600 V Cat III / 300 V Cat IV (Max Phase to Phase 600 V) IEC 61557:2007 parts 1 to 10
<b>EMC</b>	IEC61326 edition 2 location class B

<b>Operating temperature range</b>	+14 °F - +131 °F (-10 °C - +55 °C)
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<b>Storage temperature range</b>	-13 °F - +158 °F (-25 °C - +70 °C)
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<b>Humidity</b>	90% R.H. at +104 °F (+40 °C) max
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<b>Maximum altitude</b>	2000 m
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<b>Weight</b>	2.2 lb (1 kg) with batteries, excluding case
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<b>Dimensions (instrument and case)</b>	6 in. H x 3 in. W x 9 in. D (150 mm H x 85 mm W x 235 mm D)
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<b>IP rating</b>	IP54
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<b>Calibration temperature</b>	+68 °F (+20 °C)
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<b>Temperature co-efficient</b>	<0.1% per °C
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\*Requires optional accessory for some ranges

Description	Order Code	Description	Order Code
MFT70	1007-044	<b>Optional accessories</b>	
<b>Included accessories</b>		Fused 10 A test lead set (red/blue/green) with probes and clips	1001-975
Neck strap - Megger embroidered	1007-161	XTL30 Extension Test Lead, 100 ft (30 m)	2007-997
3 wire lead set with prods and clips	1001-991	XTL50 Extension Test Lead, 165 ft (50 m)	2007-998
AC plug test lead	1007-087	Cigarette lighter adapter for battery charging	1004-183
AC battery charger	1002-736	ICLAMP current measuring clamp	1001-012
Ground electrode kit	1001-810	VCLAMP voltage inducing clamp, calibration check pcb (for stakeless test) and lead	1001-013
Switched Probe SP5	1007-157	Electrode kit	1001-810
		Soft carry case with lead/document pouch	1004-326