

# MFT1500/2 Series

## Combined Insulation, Loop & RCD Tester



- **Combined 16th Edition testing**
- **Guaranteed non-tripping loop test range**
- **Backlit display and selector ranges**
- **Illuminated Switch Probe**
- **Selectable Touch Voltage**
- **Touch (fault) voltage and display**
- **Calibrated earth loop test lead**
- **Calibration certificate**

### DESCRIPTION

New for 2005, the MFT1500 series multifunction tester has been revised to include some additional new features:

Called the MFT1500/2 series, they retain all the essential features necessary for testing domestic, commercial and industrial fixed wiring, and now include the following:

- PFC measurement on both loop test ranges
- Selectable Fault (Touch) voltage 25 V or 50 V
- Fault (Touch) voltage display
- New Megger lead set included with all instruments
- DC test functions for RCDs

All instruments test in accordance with International Standards and National Wiring Regulations including BS7671 (16th Edition wiring regulations) and European Standard EN61557.

In addition, the MFT1500/2 series also meets or exceeds the requirements of EN61010-1 Category III 480 V (max) phase-phase.

The MFT1501/2 is available in 2 options, the standard MFT150/2 and MFT1502/2, which includes useful additional facilities such as backlit display and range switches, plus the unique Megger illuminated switched probe.

The unique modern styling of the instruments allows it to be operated whilst stood on the floor, a ledge, hung around the neck with the supplied neck strap, or held in the hand.

The tough case provides enough protection to withstand the rough and tumble of daily use and to be stowed in a tool bag or in the carry case (MFT1502/2).

### FEATURES

The MFT1500/2 Series instruments use the patented Megger digital/analogue arc display. The analogue arc provides an indication of fluctuating readings, while the digital readout providing the ability to record accurate results.

All test functions are selectable from the main panel, with no hidden ranges or functions to forget.

Special functions include:

### VOLTAGE MEASUREMENT

- AC/DC Volt meter provides a means of measuring the supply voltage independently of any other test functions, eliminating the need to carry a separate multimeter. Automatic selection of AC or DC measurement up to 500 V a.c./d.c.

### CONTINUITY TESTING

- **200 mA continuity** from 0.01  $\Omega$  to 99.9 k $\Omega$  exceeds all current requirements for testing final ring circuit conductors, and bonding of services.
- **Automatic continuity testing** commences the moment the test probes touch the circuit to be tested, allowing fast testing with both hands free.

- **Fast Continuity buzzer** is a fast buzzer tone, with no delay on each test for the buzzer to sound, saving valuable operator time. This test includes a fast safety check for the presence of a voltage as the test probes are connected to the circuit.
- **Variable buzzer threshold** controls the limit at which the continuity buzzer stops sounding. Selected from 2  $\Omega$  to 100  $\Omega$  in 6 steps.
- **Lead Null** stores the test lead resistance and deducts this value from the continuity result, even if the instrument is switched off. Thus reducing the chance of possible measurement errors.

### Insulation testing:

- **Insulation test at 250 V, 500 V and 1000 V** for testing low voltage applications. A 1000 V warning is issued prior to performing the 1000 V insulation test.
- **Live circuit warning** when performing insulation or continuity measurements a live circuit warning is displayed and an audible warning sounded if connected to a circuit with a voltage greater than 25 V (15 V for continuity testing).
- **Safety lockout** at voltages greater than 55 V during continuity and insulation testing, the instrument automatically warns the operator and inhibits any testing, preventing accidental damage to the instrument and full protection to the operator.
- **The 'Auto discharge'** facility safely discharges all circuits after an insulation test, preventing accidental shock from a stored charge on a long cable during or after disconnection.

### LOOP TESTING

- **Low current loop test** is a 3 wire non-tripping 0.01  $\Omega$  loop test designed to prevent RCD tripping by using a sophisticated 15 mA loop test pioneered by Megger Limited. This NO-TRIP test ensures the RCD **will not** trip whilst performing a loop impedance test.
- **High current loop test** at 25 A provides a fast loop test where no RCD is fitted, or for Ze measurement on the incoming side of an RCD.
- **Supply Voltage and Polarity indication** upon connection to the mains supply the polarity and voltage are displayed to show correct wiring of the socket under test or test lead connections. This function also provides a warning of live voltages while continuity or insulation testing.
- **Phase-Phase** Phase-Neutral and Phase-Earth Loop Tests are possible. No danger of damage from accidental 3-phase connection.
- **Wide supply voltage;** allows loop measurements from 55 V to 480 V. No damage if accidentally connected across phases.
- **Prospective Short-circuit Current (PSC)** A dedicated PSC range, using either the 25 A high current loop test or no-trip test, is provided for rapid measurement of Loop currents, both at the socket outlet and distribution board. The PSC ranges from 1 A to 19.9 kA with a

resolution of 1 A, 10 A and 100 A depending on range. All the loop and PSC tests are auto-ranging.

### RCD TESTING:

- **10 mA to 1000 mA RCD ranges.** All standard RCDs from 10 mA to 1000 mA are fully supported. All standard RCD test functions are available with both 0° and 180° phase angle at 1/2I, I and 5I up to 300 mA.
- **RCD Ramp test** measures the RCD trip current. The ramp test displays the actual trip current on all RCD ranges instead of trip time. Ideal for identifying nuisance tripping RCDs. The current is stepped up from 1/2I to x1I in 200 ms steps.
- **Fault (Touch)** voltage can now be set for either 25 V or 50 V depending on application.
- **Fault/Touch Voltage** can also be displayed up to 100 V on a selectable bargraph.
- **DC sensitive, RCD test option enables testing at 1/2I, I and 5I.**

### GENERAL FEATURES:

- **Quick to pick up and use** by using colour coded ranges and no hidden functions the MFT1500/2 takes minutes to learn how to use. Function buttons are colour matched to the test mode to ensure easy operation.
- **Visible and audible Safety warning** features are paramount with live circuit warning and protection circuitry. 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, the MFT1500/2 inhibits further testing and a warning beeper sounds for extra safety.
- **Large easy-to-read LCD** using the patented Megger digital/analogue arc technology - combining high speed analogue clarity with digital stability. Making it easy to read even in low light level.
- **Economical with batteries** by incorporates an auto shut off facility that operates after 5 minutes of inactivity, reducing wasted battery consumption.
- **Innovative test lead connection** has been developed for the MFT1500/2 series. The unique shutter system allows only those combinations of test leads permitted for safe testing to be connected. Unsafe or unnecessary options cannot be connected.
- **Rubber over-moulded case** and lid. The ergonomic rubber moulding provides a secure comfortable hold, whilst providing maximum protection with IP54 weather proof rating.
- **Calibration certificate**
- **3 year warranty**

### MFT1502/2 Additional features

**Illuminated Switched probe** shines a new light on testing.

A fully featured test probe allows for single-handed operation and test status indication. Probe features include:

- **Remote test button** for single-handed testing in difficult locations, the test button duplicates the instrument test button in all test modes.
- **LED Torch** using a built-in WHITE LED light provides illumination to the probe tip, providing essential lighting in low light conditions.
- **Red/Green Status LED** duplicates the warning display on the main instrument display. A RED LED indicates a voltage present on an insulation range. A GREEN LED indicates the instrument is displaying a valid test result.
- **Three Interchangeable probe tips** are supplied in standard shrouded, removable shrouded and an extended probe tip to provide the ideal probe tip option.
- **Illuminated display and selector ranges.** Not only the backlight, but also the selector dials are illuminated to allow for use in difficult low-light conditions. Range or function change automatically operates the backlight, or by manual selection.
- **Instrument and document carry case** is supplied to transport the instrument as well as any necessary test leads, documents, drawings etc.

**SPECIFICATION**

**Supply Voltage range**

**Voltage a.c.:**

0 V - 500 V 50/60Hz  $\pm 2\%$   $\pm 2$  digits

**Voltage d.c.:**

0 V - 500 V  $\pm 2\%$   $\pm 2$  digits

Polarity indicated above 10 V

**Insulation test ranges (to EN 61557-2)**

**Short circuit current:** <2 mA

250 V 0.01 M $\Omega$  - 99.9 M $\Omega$

500 V 0.01 M $\Omega$  - 299 M $\Omega$

1000 V 0.01 M $\Omega$  - 499 M $\Omega$   
 $\pm 2\%$   $\pm 2$  digits up to 99 M $\Omega$

250, 500 and 1 kV into 1 mA (BS7671, HD384 and IEC364)

**Output voltage:** +20% - 0% at rated load or less

**Live circuit warnings**

**Insulation:**

25 V threshold

**Continuity:**

>15 V threshold

**Insulation**

25 V visual warning

55 V visual, audible and test inhibit

**Phase to earth:**

>280 V visual, audible and test inhibit

**Continuity (to EN 61557-4)**

**Ohms:**

0.01  $\Omega$  - 99.9  $\Omega$  ( $\pm 2\%$   $\pm 2$  digits)

100  $\Omega$  - 99.9 k $\Omega$  ( $\pm 5\%$   $\pm 2$  digits)

**Buzzer**

Selectable limits of 2  $\Omega$ , 5  $\Omega$ , 10  $\Omega$ , 20  $\Omega$ , 50  $\Omega$ , 100  $\Omega$

Open circuit voltage 4-5 V d.c.

**Test current:**

>200 mA @ 2  $\Omega$

**Test Lead null:**

Up to 9.99  $\Omega$  (zero uses Test Button)

**Loop test ranges (to EN 61557-3)**

Line/Earth(Single phase)

**25 A**

0.01  $\Omega$  - 9.99  $\Omega$  ( $\pm 5\%$   $\pm 0.03 \Omega$ )

10.0  $\Omega$  - 89.9  $\Omega$  ( $\pm 5\%$   $\pm 0.5 \Omega$ )

90  $\Omega$  - 899  $\Omega$  ( $\pm 5\%$   $\pm 5 \Omega$ )

900  $\Omega$  - 3.00 k $\Omega$  ( $\pm 5\%$   $\pm 20 \Omega$ )

**Supply:**

55 V - 280 V 45 Hz to 65 Hz

**Phase to phase**

**25 A**

0.01  $\Omega$  - 1 9.99  $\Omega$

( $\pm 5\%$   $\pm 0.03 \Omega$ )

**Supply:**

55 V - 480 V 45Hz to 65Hz

**Low current Loop (NO TRIP)**

**15 mA**

0.01  $\Omega$  - 2.00 k $\Omega$  ( $\pm 5\%$   $\pm 0.03$  ohms  $\pm$  Noise Margin).

**Supply:**

55 V - 270 V 45Hz to 65Hz

**Prospective Shortcircuit Current PSC**

Prospective fault current = Nominal Voltage/Loop Resistance

Accuracy is therefore derived from the loop test.

1 A - 199 A 1 A resolution

0.02 kA - 1.99 kA 10 A resolution

2.0 kA - 19.9 kA 100 A resolution

**RCD ranges (to EN-61557-6)**

**Supply:**

100 V - 270 V 45Hz to 65Hz

**Ranges:**

1000 mA, 500 mA, 300 mA, 100 mA, 30 mA, 10 mA

**Type:**  $1/2I$  -  $1/2$  times the selected RCD rated current.

**I** - One times selected RCD rated current.

**5I** - Five times **I** RCD rated current.

**RAMP** - A ramp test that displays actual trip current .

**DC sensitive** - A DC test current at  $1/2I$ , **I** and **5I**.

**Current accuracy:**

No trip ( $1/2I$ ) +0%, -10%

Trip (**I**) +1-%

**Trip time accuracy:**

$\pm 1\%$   $\pm 1$  ms

Touch (Fault) voltage: 0 V to 100 V error  $\pm 5\%$  to +15%  $\pm 0.5$  V

**Selection:** 25 V or 50 V

**Power Supply**

8 x 1.5 V Alkaline cells type LR6

**Fuses**

Replaceable 500 mA (F) HBC 10 kA 500 V

Non-replaceable 7 A (SIBA 70-065-63) x 2

Non-replaceable 1 A

**Remote Probe:** MFT1502/2 only

**Torch feature:** 5mm WHITE LED 1500 mcd

**Safety:**

CLASS 1 LED to IEC 60825:2001 Interchangeable tips

**Battery:**

1 x 9 V Alkaline cell type PP3

**Fuse:**

Non-replaceable 7 A (SIBA 70-065-63)

**Safety**

Double insulated to IEC1010-1:2001, Installation Category III, 300 V phase to earth, 500 V phase to phase.

In addition Probe designed to meet IEC 1010-031:2002, Double insulated to Installation Category III, 300 V phase to earth, 500 V phase to phase.

**EMC**

In accordance with IEC 61326 including amendment No. 1

**Environmental**

**Operating range:**

-5 to +40°C

**Operating Humidity:**

90% RH at 40°C max

**Storage temperature:**

-25 to 65°C

**Maximum altitude:**

2000 m

Dust and water protection: Instrument IP54, Probe no rating

**Physical**

**Dimensions:**

150 mm high x 85 mm wide x 235 mm deep

(6 in. x 3.5 in. x 9.5 in.)

**Weight:**

1440 gms (3lb)

**EN61557:**

Complies with the following parts of 61557, electrical safety in low voltage systems up to 1000 V a.c. and 1500 V d.c.-

Equipment for testing, measuring or monitoring of protective measures:-

Part 1- General Requirements

Part 2- Insulation resistance

Part 3- Loop resistance

Part 4- Continuity

Part 6- Residual Current Devices (RCD)

Part 10- Combined Measuring Equipment

**ORDERING INFORMATION**

Item (Qty)	Order No.	Item (Qty)	Order No.
Multifunction Tester Standard	MFT1501/2	Instrument/Document carry case	
Multifunction Tester with Illuminated switch probe	MFT1502/2	<b>Optional accessories for MFT1501/2 and MFT1502/2</b>	
Multifunction Tester Standard (European)	MTF1501/2E	Replacement 3 wire test lead set	6220-796
Multifunction Tester with Illuminated switch probe (European)	MFT1502/2E	Fused prod and clip set	6180-405
<b>Accessories included with MFT1501</b>		Standard switched probe	6220-606
User Guide on CD	6172-831	Illuminated switched probe	6311-089
3 wire test lead		Test lead with Schuko plug	6231-593
Crocodile clips (red, black and Green)		Test lead with UK mains plug	6231-601
Mains plug (BS1363) test lead		Test lead with USA mains plug	6220-643
<b>Additional accessories with MFT1502</b>		Earth bond test lead set	6231-586
As MFT1501/2 plus:		Instrument/Document carry case	6420-143
Illuminated switched probe		Illuminated probe tip set	6121-562
		Euro earth bond test lead (Schuko)	TBA

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**MFT1500\_2\_DS\_en\_V02**

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