

# MFT1500/2 and MFT1552 Series Multifunction Tester

## Quick Start Guide

### SAFETY WARNINGS

- **Safety Warnings** and **Precautions** must be read and understood before the instrument is used. They **must** be observed during use.
- The circuit under test must be switched off, de-energised and **isolated before** test connections are made when carrying out insulation and continuity tests.
- Continuity of protective conductors and earthed equipotential bonding of new or modified installations **must** be verified **before** carrying out an earth fault loop impedance test, or RCD test.
- Circuit connections and exposed metalwork of an installation or equipment under test **must not** be touched.
- The live circuit warning and Automatic discharge are additional safety features and **should not** be regarded as a substitute for normal safe working practices.
- **Do not move** the rotary switch positions while a test is in progress.
- The LCD 'neon' voltage indicators cannot reveal a Neutral - Earth reversal. They **cannot** be relied upon to identify circuit correctness and are for guidance only.
- After insulation tests, capacitive circuits must be allowed to discharge **before** disconnecting test leads.
- The instrument should **not** be used if any part of it is damaged.
- Test leads, probes and crocodile clips **must** be in good order, clean and with no broken or cracked insulation.
- Ensure that hands remain behind guards of probes/clips when testing.
- U.K. Safety Authorities recommend the use of fused test leads when measuring voltage on high energy systems.
- Replacement fuses **must** be of the correct type and rating. Failure to fit the correctly rated fuse will result in damage to the instrument in the event of an overload.






## NOTE

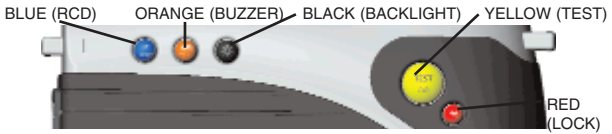
### THE INSTRUMENT MUST ONLY BE USED BY SUITABLY TRAINED AND COMPETENT PERSONS

Users of this equipment and/or their employers are reminded that Health and Safety Legislation requires them to carry out valid risk assessments of all electrical work so as to identify potential sources of electrical danger and risk of electrical injury such as inadvertent short circuits.

Where the assessments show that the risk is significant then the use of fused test leads constructed in accordance with the HSE guidance note GS38 'Electrical Test Equipment for use by Electricians' should be used.

#### Symbols used on the instrument are:

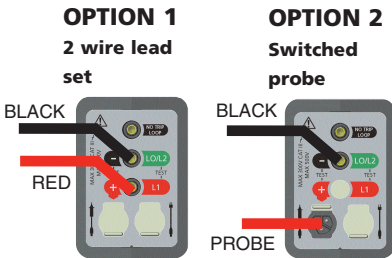
-  Caution: risk of electric shock
-  Caution: refer to accompanying notes
-  Equipment protected throughout by Double Insulation (Class II)
-  Equipment complies with current EU directives.
-  Equipment must not be connected to installations >500 V.



### Backlight (MFT1502/MFT1552 only)

Intelligent mode - operates automatically. To switch to manual mode, press the RED lock and the BLACK backlight buttons together.

### Voltage, Continuity and Insulation testing



### Voltage measurement (V)

#### Range switch set to (V) range

The MFT1500 will automatically display circuit voltage up to 500 V a.c./d.c.

## Continuity Measurement [ $\Omega$ ]

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### Range switch set to [ $\Omega$ ] range

#### Test Lead options 1 or 2

The MFT1500 will automatically display continuity resistance when connected.

#### Lead Null

Short test leads together and press the YELLOW test button on the instrument or Switched Probe.

#### Continuity Buzzer

The buzzer will sound automatically when a circuit is made (default threshold  $<2 \Omega$ )

#### Buzzer Threshold

Select BUZZER range and press the ORANGE button until required range is displayed.

Options,  $2 \Omega$ ,  $5 \Omega$ ,  $10 \Omega$ ,  $20 \Omega$ ,  $50 \Omega$ , and  $100 \Omega$

**Warning:** Ensure the circuit to be tested is disconnected and isolated before starting testing.

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## Insulation testing [ $M\Omega$ ]

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### Range switch set to [250 V, 500 V or 1 kV] range

#### Test Lead Options 1 or 2

For insulation voltage range select 250 V, 500 V or 1 kV as required.

Press the YELLOW test button on the instrument or on the switched probe to activate the test.

#### Insulation Test lock

Press the YELLOW test and RED lock buttons together to lock on the insulation test mode.

The warning triangle is displayed during test lock.

To disable test lock press the YELLOW test button again.

#### Warning:

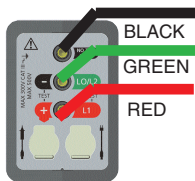
Hazardous voltages may be continuously present on the test probes when the test button is locked down.

## Non tripping loop test [NO TRIP]

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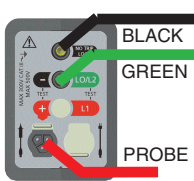
### OPTION 1

3 wire measurement



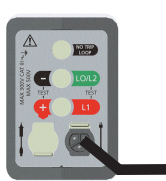
### OPTION 2

Switched Probe



### OPTION 3

Mains plug test lead



**Range switch set to the [NO TRIP]**

**Test Lead Options 1, 2 or 3**

**NOTE:** A 3-Wire connection must be used.

Select when loop testing circuits with RCD protection fitted.

- 1) Firmly connect the GREEN lead to EARTH, the BLACK lead to NEUTRAL and the RED lead to PHASE. (Alternatively insert the plug into an installation socket) (OPTION 3).
- 2) Supply voltage and polarity are displayed.
- 3) The test will 'beep' and automatically start when a voltage is detected.
- 4) Measured L-PE loop value is displayed.

The test can be repeated by pressing the YELLOW test button.

**Warning:** Live voltages present on test circuits during tests.

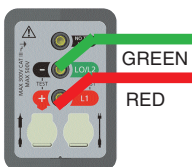
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## High current loop test [Hi]

For use on circuits with NO RCD protection fitted.

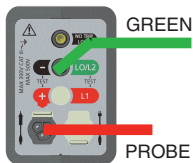
### OPTION 1

2 wire lead set



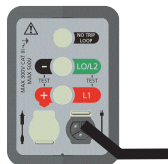
### OPTION 2

Switched probe



### OPTION 3

Mains plug test lead



**Warning:** The LCD 'Neons' are invalid when using the two wire connection and should be ignored.

## **Range switch set to [Hi] range**

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### **Test Lead set: Options 1, 2 or 3**

#### **Phase-Earth loop impedance**

- 1) Connect the GREEN lead to EARTH and the RED lead to PHASE or plug into 13 Amp socket.
- 2) Supply voltage will be displayed.
- 3) The test will beep and automatically start when voltage is detected.
- 4) Measured loop value is displayed.
- 5) To repeat, press the YELLOW test button.

#### **Phase-Neutral loop impedance**

Same connections to instrument as above but connect GREEN lead to NEUTRAL and RED lead to PHASE.

#### **Phase-Phase loop impedance**

Same connections to instrument as above but connect the GREEN lead to 2nd PHASE and the RED lead to 1st PHASE.

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## **Bonded Metalwork Testing [Hi]**

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### **Test Lead set: OPTION 1 or 2**

- 1) Connect the GREEN lead to the bonded metalwork.
- 2) Connect the RED lead to PHASE.
- 3) Supply voltage is displayed.
- 4) The test will 'beep' and automatically start when voltage is detected.
- 5) Measured resistance value is displayed.

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## **PFC Measurement [PFC Hi]**

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**NOTE:** High current 25 A measurement.

### **Range switch set to [PFC Hi]**

**Using test lead OPTION 1, 2 or 3,** connect the test leads as follows:

#### **Phase-Earth PFC**

GREEN lead to EARTH and the RED lead to PHASE.

#### **Phase-Neutral PFC**

GREEN lead to NEUTRAL and RED lead to PHASE.

#### **Phase-Phase PFC**

GREEN lead to 2nd PHASE and the RED lead to 1st PHASE.

- 1) The supply voltage is displayed and the test will beep, and automatically start when voltage is detected.
- 2) Measured PFC result is displayed.

## **No Trip PFC Measurement (NO TRIP PFC)**

### **Range switch set to [NO TRIP PFC]**

Using Non Tripping loop test lead options 1, 2 or 3 - connect the leads as shown.

#### **Phase to Earth PFC**

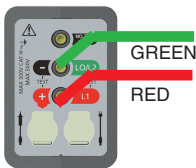
- 1) The supply voltage is displayed and the test will beep, and automatically start when sufficient voltage is detected.
- 2) The measured PFC result is displayed.

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## **RCD testing**

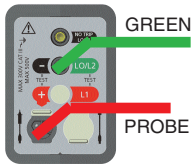
### **OPTION 1**

**2 wire measurement**



### **OPTION 2**

**Switched probe**



### **OPTION 3**

**Mains plug test lead**



### **1/2I, I and 5I RCD trip timing [RCD]**

**Warning:** The LCD 'Neons' are invalid when using the two wire connection and should be ignored.

#### **Test Lead OPTION 1,2 or 3**

Select 1/2I, I or 5I as required.

- 1) Ensure the right hand RCD range switch [**mA**] is set to the correct range for the RCD under test.
- 2) Connect the test leads to the RCD as shown above.
- 3) Press the YELLOW test button on the instrument or the switch probe.

On 1/2I the message >1999 ms is displayed after 2 seconds.

**NOTE:** The message 'TrP' will be displayed if the RCD trips unexpectedly..

On I the trip time is displayed (or >400 ms if RCD fails to trip).

On 5I the trip time is displayed (or >40 ms if RCD fails to trip).

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## **RCD auto test sequence (MFT1552)**

### **To start the RCD auto test**

- 1) Connect the RED test lead to the "Live" terminal of the RCD and GREEN and BLACK test leads to the earth conductor. Alternatively connect the mains plug test lead to a supply outlet.
2. Select the AUTO RCD TEST on the main range knob and the

RCD current rating on the small range knob. DC test [DC]

3. Press the TEST button. Reset the RCD each time it trips.
4. To recall test results repeatedly press the LOCK button. To indicate each test result, segments of the bar graph are displayed as below:  
no bars =  $1/2I$  test, one bar =  $I$  test, five bars =  $5I$  test

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## DC test [DC]

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### Test Lead OPTION 1,2 or 3 as required

- 1) Select the appropriate RCD rated current on the rotary switch.
- 2) Select  $1/2I$ ,  $I$  or  $5I$  on the left hand rotary switch.
- 3) Use the BLUE button to cycle through the test options, selecting DC and the polarity of the test ( $0^\circ/180^\circ$ ).
- 4) Press the YELLOW test button.
- 5) The trip time will be displayed.
- 5) If the RCD fails to trip, ">\*\*\* ms" will be displayed.  
\*\*\* = Trip test duration.

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## Time Delayed (Selective) RCDs

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The Selective RCD test is enabled by a long press on the blue degree button. As Selective RCD test mode is enabled the MFT will emit a long beep and the display will show the exclamation mark (!) symbol. Once selected perform the RCD tests in the same way as normal RCDs (see RCD testing above).

To disable Selective RCD mode, press the degree button for two seconds.

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## 0° or 180°

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On either the  $I$ ,  $5I$  or DC test, to switch between  $0^\circ$  and  $180^\circ$  press the BLUE  $0^\circ/180^\circ$  button.

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## Ramp Test [

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### Test Lead OPTION 1, 2 or 3 as required

A test current from  $1/2I$  to  $1I$  will be applied during which the RCD should trip.

- 1) Set the range select to the RAMP symbol.
- 2) Set the RCD range switch [mA] to the current rating of the RCD.
- 3) Press the YELLOW test button.
- 4) Results are displayed in mA.
- 5) If RCD fails to trip the message ">\*\*\*mA" is displayed.

\*\*\* = Final test current applied

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## Batteries

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Uses 8 x 1.5 V AA (LR6) alkaline dry cells. Rechargeable batteries **must not** be used.


Low battery voltage is indicated by the  $\text{---}$  symbol in the display. If there are no display images replace the batteries.

To replace batteries, **disconnect test leads**. Remove the battery cover and carefully remove the battery carrier.

Replace with new batteries. Do not mix old and new batteries

**Warning: OBSERVE CORRECT POLARITY.** Incorrect battery polarity could damage the instrument and invalidate the warranty.

## Spare fuse

A blown fuse is indicated by the  symbol. To replace the fuse: Disconnect test lead and remove the battery cover, replace fuse with spare provided: type: 500 mA (F) HBC 10 kA 500 V

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