MFT1711, MFT1721, MFT1731 and MFT1741
Multifunction Tester



- **Two and three wire non-trip loop testing for RCD protected circuits**
- **Type-B RCD and 3-phase RCD testing for industrial applications with no Earth**
- **3-terminal earth test and stakeless testing for electrode resistance measurement**
- **Internal memory and Bluetooth® communications**
- **EN61010 CAT IV safety rating and tough IP54 case**
- **Megger Loop impedance Confidence Meter™**
- **RCD coil impedance immunity**

DESCRIPTION

The MFT1701 series is a range of 4 instruments for testing low voltage electrical installations to BS7671. They provide all the tests required to complete the necessary electrical certification for industrial, commercial and domestic fixed wiring installations, including:

- TRMS System voltage and frequency measurement
- Insulation test at 100 V*, 250 V, 500 V and 1000 V Including 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 start - no need to press TEST so leaving both hands free to hold probes
- Resistance range up to 100 kΩ with fast continuity buzzer at selectable thresholds
- Earth loop test
- 2 and 3 wire non-trip range
- 2 wire Hi current including phase to phase
- Prospective fault current measurement up to 20 kA
- RCD testing including:
  - Type AC, A, S, B* and programmable RCDs
  - 3-phase RCDs*
  - Auto-test routine
  - Fault (Touch) voltage display
- Earth spike testing
  - 2-pole/3-pole**
  - ART**
  - Stakeless techniques **

* Model dependent
** Optional accessories required

The MFT1741 also includes:

- Confidence Meter™ – An adaptive loop test and display method for electrically noisy circuits
- Enhanced loop testing hardware – To remove the effects of RCD on loop impedance values

The Confidence Meter™ technology is ideal for enhanced Earth Loop Impedance testing in electrically noisy environments. Traditional Loop Impedance methods are susceptible to circuit noise during the measurement phase. If the AC waveform changes during this period, from noise or harmonics, the distortion can create significant variation from test to test.

The Confidence Meter™ analyses and adjusts for these variations and provides a far more stable result every time, removing the need for repeated tests.

In addition, the MFT1741 also supports a hardware measurement technique, removing the influence of any RCD or RCBO on the measured loop impedance value.

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

The unique modern styling allows it to be operated while stood on the floor, a ladder-shelf or platform, hung around the neck or handheld. Dual TEST and LOCK buttons - one pair at each end - makes the testers easy to operate left or right handed.

Quick to pick up and use, the controls are colour coded to make range selection easy and fast. They also reduce the chance of using the wrong function or range.

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Multifunction Tester

The large crystal clear backlit display uses the patented Megger digital/analogue arc, providing indication of fluctuating readings while the dual digital readout shows precise values of key measurements simultaneously with the test parameters, 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 MFT1701 series 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 MFT1731 features internally rechargeable batteries and charger with a charge time of less than 4 hrs.

Fully compliant with all requirements of IEC 60364 derived standards including VDE 0100 and BS 7671, the MFT includes all the latest measurement technology in a light-weight compact design, fully protected and usable on single phase and 3 phase installations.

Key measurement functions include two and three wire non-trip loop test technology for fast repeatable results, comprehensive testing of RCDs including type B, and integrated 3-terminal and stakeless clamp techniques for earth electrode testing.

The MFT1731 and MFT1741 include built-in memory and Bluetooth® communications for uploading test results to CertSuite Certification Software (Visit **CertSuite.info**).

The MFT1701 series has been designed for tough environments and ultimate reliability. Features include a rubber over mould for extra protection and grip, IP54 protection against dust and water and an EN61010 CAT IV safety rating. Its class leading input protection ensures the MFT 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 colour coded rotary switches with results clearly displayed on the high contrast, dual measurement, backlit display. Included with the instrument: standard 3-wire leadset and a mains test lead, a switched probe for fast and easy testing*, a full 12-month calibration certificate and warranty upgradeable to 3 years. The MFT1711 and MFT1721 are supplied in a robust moulded case, and the MFT1731 and MFT1741 is supplied in a large soft pouch with plenty of additional space for optional extras like a few tools and the earth electrode test kit, comprising 2 spikes and 3 long test leads.

* model dependant

PRODUCT SELECTION CHART

	MFT1711	MFT1721	MFT1731	MFT1741
Insulation ranges				
100 V		n	n	n
250 V, 500 V	n	n	n	n
1000 V	n	n	n	n
Test voltage display	n	n	n	n
Adjustable buzzer threshold		n	n	n
Continuity and resistance ranges				
200 mA test	n	n	n	n
15 mA test		n	n	n
Adjustable buzzer threshold	n	n	n	n
Loop testing				
2 and 3 wire non-tripping L-PE 50 V ~ 280 V	n	n	n	n
2 wire Hi current L-N 50 V ~ 280 V	n	n	n	n
2 wire phase to phase L-L 50 V ~ 500 V		n	n	n
PSCC and PFC (20 kA max.)	n	n	n	n
Max. Zs display	n	n	n	n
R1 + R2 value		n		
Touch voltage display on faulty earth	n	n	n	n
Earth electrode test				
2 and 3 pole **			n	n
3 pole ART and Stakeless method **			n	n
RCD tests				
1/2, 1, 5 x I and ramp RCD test	n	n	n	n
Auto RCD test	n	n	n	n
Type AC, A and S RCDs	n	n	n	n
Type B (pure DC) RCDs		n	n	n
Programmable RCD	n	n	n	n
3-phase RCD (no earth)		n	n	n
30, 100, 300 and 500 mA RCD	n	n	n	n
10 mA and 1000 mA RCD	10mA	n	n	n
Other features				
Supply measurement	n	n	n	n
True RMS	n	n	n	n
Leakage current measurement **		n	n	n
Phase rotation		n	n	n
Calibration certificate	n	n	n	n
Rechargeable batteries (charger included)			n	n
SP5 Switched probe included		n	n	n
Warranty upgradeable to 3 years FREE	n	n	n	n
On board memory with Bluetooth® download			n	n
CAT IV 300 V / CAT III 600 V	n	n	n	n
Hard moulded case	n	n		
Soft pouch with additional storage			n	n
Confidence Meter™ noise reduction				n
New hardware loop test platform				n

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SPECFICATIONS

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

Insulation 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)	

Loop test

Live to earth/neutral supply
48 V ~ 280 V (45 Hz ~ 65 Hz)

Live to live supply (not MFT1711)
48 V ~ 500 V[††] (45 Hz ~ 65 Hz)

L-N/L-L tests	±5% ±5 digits
L-E tests [†]	
0.1 Ω ~ 39.9 Ω	±5% ±5 digits ± noise margin
40.0 Ω ~ 1000 Ω	±10% ±5 digits
Display range	0.01 Ω ~ 1000 Ω
Live to earth PFC range	20 kA
Live to live PSCC range	20 kA

[†] Reference conditions apply

[††] MFT1711 280 V

For test environments see service data

RCD tests

Supply up to 100 mA	48 V ~ 480 V** (45 Hz ~ 65 Hz)	
Supply up to 1 A	48 V ~ 280 V	
RCD type	Type AC, A, S Type B (pure dc)	
No trip test	(1/2xI)	–10% ~ –0%
Trip test	(1xI, 2xI and 5xI)	+0% ~ +10%

Ramp test

Touch voltage

(0 ~ 253 V)	+5% +15% ±0.5 V
Trip time	±1% ±1 ms
Trip current	±5%

Step increments

VAR (variable RCD selection)

10 mA ~ 50 mA	1 mA steps
50 mA ~ 500 mA	5 mA steps
500 mA ~ 1000 mA	10 mA steps

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

MFT1711 and MFT1721:
IEC LR6 type AA alkaline
(6 cells - supplied)

MFT1731 and MFT1741:
1.2 V NiMH
(rechargeable pack of 6 – supplied)

Mains charger for on-board re-charging (4 hours typical) 12 V car charger (cigar lighter lead - optional)

Earth / 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	Rp and Rc 100 kΩ @ 50 V 5 kΩ @ 25 V
2 and 3 pole method	(0.01 Ω ~ 1.999 kΩ) ±2.0% ±5 digits ART method (1.00 Ω ~ 1.999 kΩ) ±5.0% ±5 digits**
Stakeless method (1.00 Ω ~ 199 Ω)	±7.0% ±5 digits**

Current

(via optional clamp meter)
±5.0% ±3 digits.

Range	0.1 mA to 200 A ac
Resolution	0.1 mA

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MV sensor input

(NOT MFT1711 or MFT1721)

Including temperature (third party module)

±1.0% ±2 digits

Range 0.0 mV to ±199.9 mV dc

Resolution 0.1 mV

Data storage

(MFT1731 and MFT1741)

Capacity: 1000 results

Bluetooth® communication

Safety 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

EMC IEC61326 edition 2 location class B

Operating temperature range and humidity

-10 °C ~ +55 °C
90% R.H. at +40 °C max

Storage temperature range and humidity

-25 °C ~ +70 °C

Maximum altitude 2000 m

Weight (instrument and case)

1 kg (with batteries, excluding case)

Dimensions (instrument and case)

MFT1711 and MFT1721

150 mm H x 85 mm W x 235 mm D

MFT1731 and MFT1741

220 mm H x 390 mm W x 285 mm D

IP rating IP54

Calibration temperature

+20 °C

Temperature co-efficient

<0,1% per °C

For test environments see service data.

* Model dependent

** Optional accessories required

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ORDERING INFORMATION

Description	Order Code
MFT1711-BS	1008-121
MFT1721-BS	1008-123
MFT1731-BS	1008-128
MFT1731-PS	1008-130
MFT1741-BS	1009-986
Included accessories	
Quick start guide	
Calibration certificate	
Switched probe SP5 (not supplied with MFT1711)	1002-774
Neck strap - Megger embroidered	2001-509
3 Wire lead set with prods and clips	1001-991
Mains plug test lead (BS1363)	6220-810
AC battery charger (MFT1731 and MFT1741 only)	1002-736
Optional accessories	
Fused 10 A test lead set (red/blue/green) with prods and clips	1001-975
ETL30 Extension Test Lead 30 m	1000-215
ETL50 Extension Test Lead 50 m	1000-217
Cigar lighter adapter for battery charging.	6280-332
Switched Probe SP5 (silicone)	1001-687
MCC1010 Current measuring clamp	1010-516
MVC1010 Voltage Clamp	1010-518
Electrode kit (MFT1731 & MFT 1741 only)	1001-810
Test and carry pouch	1006-408
Large soft pouch with extra storage	1007-463
3 Pole Earth Test Kit	6210-160
ETK30 (3 Pole Earth Test Kit)	1010-176

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