

# MFT1845 Multifunction Tester



- **Enhanced non-trip loop impedance measurement technology**
- **"Confidence meter" measurement analysis (patent pending)**
- **Full single and 3 phase compliant installation testing**
- **10 mA to 1 A single and 3 phase RCD testing**
- **Earth testing and stake-less testing for electrode resistance measurement\***
- **Simple colour-coded test selection**
- **Ambidextrous operation**
- **Internal memory and Bluetooth® communications**
- **EN61010 CAT IV safety rating and tough IP54 case**

## DESCRIPTION

The MFT1845 multifunction tester is an instrument designed for testing low voltage electrical installations and especially in locations that suffer from high electrical noise. It provides all the tests required to complete the necessary electrical certification for industrial, commercial and domestic fixed wiring installations, and includes:

- 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 impedance testing, with:
  - New 3 wire non-trip technology
  - New confidence meter measurement
  - 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\* and Stake-less\* techniques

\* with appropriate optional accessories

## New Loop Impedance testing technology:

The MFT1845 includes a new non-trip loop testing technology that:

- Prevents any influence the RCD may present to the total loop impedance value.
- Faster non-trip loop testing down to 8 seconds.

This technique also allows testing of loop impedance through 10 mA type AC and Type A RCDs.

## New "Confidence meter" measurement analysis (Patent pending)

Overlaying the new non-trip loop impedance measurement is the new Megger "Confidence meter". As loop impedance values can be dramatically affected by circuit noise, the Confidence Meter displays the degree of confidence in the accuracy of the measured loop impedance. Using the digital ARC to indicate the analytical process, the measurement is continually monitored and adjusted when circuit noise is present, resulting in a dramatically improved and repeatable test result.

## APPLICATIONS:

The MFT1845 offers a wide range of test functions, designed for all electrical installation testing and verification of low voltage building wiring and distribution testing scenarios. The MFT1845 is IEC 61010 CAT IV 300 V rated for safe connection anywhere within the LV network on single and 3 phase systems.

The unique modern styling allows it to be operated while stood on the floor, whilst up a ladder or platform, and optimised for hanging around the user's neck. Dual TEST and LOCK buttons - one pair at each end - makes the testers easy to operate left or right handed.

### General features:

Quick to pick up and use, the function controls are colour coded to make range selection easy and fast. They also reduce the chance of using the wrong function or range. The large crystal clear backlit display uses the 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 MFT1845 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 MFT1845 features internally rechargeable batteries and charger with a charge time of less than 4 hrs, so reducing the cost of ownership.

The new MFT1845 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. Included with the instrument: 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 warranty upgradeable to 3 years warranty free of charge. The MFT1845 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.

### PRODUCT SELECTION CHART

	MFT1845
<b>Insulation ranges</b>	
100 V	■
250 V, 500 V	■
1000 V	■
Test voltage display	■
Adjustable buzzer threshold	■
<b>Continuity and resistance ranges</b>	
200 mA test	■
15 mA test	■
Adjustable buzzer threshold	■

<b>RCD tests</b>	
1/2, 1, 5 x I and ramp RCD test	■
2 x I	■
Fast ramp	■
Auto RCD test	■
Type A, AC and RCDs	■
Type S RCDs	■
Type B (pure DC) RCDs	■
Programmable RCD	■
3-phase RCD (no earth)	■
10 mA	■
30, 100, 300 and 500 mA RCD	■
1000 mA RCD	■
<b>Loop testing</b>	
2 and 3 wire non-tripping L-PE	■
2-wire high current L~L and L~N	■
50 V to 480 V (L~N) 50 V to 280 V (L~PE)	■
Phase to Phase tests (L~L)	■
PSCC and PFC (20kA max)	■
Touch-voltage display (0 V~253 V)	■
<b>Earth test</b>	
2 pole *	■
3 pole *	■
3 pole ART technique *	■
Stakeless method *	■
<b>Other features</b>	
Supply measurement	■
True RMS	■
Current measurement *	■
Phase rotation	■
Backlight	■
Auto power-down	■
Calibration certificate	■
Rechargeable batteries / charger included	■
SP5 Switched probe included	■
3-year warranty (on registration)	■
On board memory with Bluetooth® download	■
CAT IV 300 V / CATIII 600 V	■
IP54	■
Confidence meter noise reduction	■
New hardware loop test platform	■

\* requires optional accessory

## 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

### 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	48 V ~ 500 V (45 Hz ~ 65 Hz)
L-N/L-L tests	±5% ±3 digits

### L-E tests <sup>†</sup>

0.1 Ω ~ 39.9 Ω	±5% ±5 digits ± noise margin
40.0 Ω ~ 1000 Ω	±10% ±5 digits

Display range	0.01 Ω ~ 999 Ω
Live to earth PFC range	20 kA
Live to live PSSC range	20 kA

<sup>†</sup> Reference conditions apply

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	(1/2xl) -10% ~ -0%
Trip test	(1xl, 2xl and 5xl) +0% ~ +10%

### Ramp test

Touch voltage	(0 ~ 253 V)	+5% +15% ±0.5 V
Trip time	±1% ±1 ms	
Trip current	±3%	

### 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

Batteries	IEC LR6 type AA alkaline (6 cells - supplied) or 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% ±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

(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

#### 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)

150 mm H x 85 mm W x 235 mm D

#### IP rating

IP54

#### Calibration temperature

+20 °C

#### Temperature co-efficient

<0,1% per °C

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### ORDERING INFORMATION

Description	Order Code
MFT1845-CH-DE-FR-IT	1009-988
MFT1845-SC-DE-NL-EN	1009-989
<b>Included accessories</b>	
Printed quick start guide	
Full user guide on CD	
Calibration certificate	
Switched probe SP5	1007-157
Neck strap - Megger embroidered	2001-509
3 Wire lead set with prods and clips	1001-991
Euro mains test lead SIA45 (not AU)	2000-674
AU/NZ plug test lead (AU only)	6220-828
AC battery charger	1002-736
<b>Optional accessories</b>	
Soft carry case with lead/document pouch	6420-143
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
Earth electrode kit	1001-810
3 Pole Earth Test Kit	6210-160

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