Megger

MFT1700/1800 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, RCD or earth testing
- **Do not touch** circuit connections and exposed metalwork of an installation or equipment under test. Under fault conditions the system earth could become hazardous live.
- **Do not touch** the earth stakes, test leads and their terminations (including connections to the earthing system under test) if an installation earth fault can arise unless adequate precautions are taken.
- The 'live circuit warning' and 'Automatic discharge' functions 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.
- **Do not operate** the instrument or connect it to any external system if it shows any visible signs of damage or if it has been stored for prolonged periods in unfavourable conditions.
- **Do not operate** the instrument or connect it to any external system if the battery compartment or casing is open or any parts of the case (including keypad, selector switch, display window, etc.) are missing.
- **Always disconnect** the instrument from all systems while batteries are being changed or the fuse replaced
- **Do not replace** the rechargeable cells in the MFT1731 and 1835 with non-rechargeable "dry" cells and attempt to charge the cells. This can cause explosion or fire.
- **Do not operate** the charging equipment supplied with the MFT1731 or MFT1835 in damp or wet environments or outside. All test leads must be removed from the instrument while charging.
- After insulation tests, capacitive circuits must be allowed to discharge before disconnecting test leads. Locking the Insulation test ON **should only be used** where there is no risk of a circuit holding a charge.

- 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.
- All test leads supplied with the instrument form part of the measuring circuit of the instrument. They **must not** be modified or changed in any way, or be used with any other electrical instrument or appliance.
- A plug severed from the power cord **MUST** be destroyed, as a plug with bare conductors is hazardous in a live socket outlet.
- 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.
- Special precautions are necessary when operating in situations where "live" earths may be encountered: isolation switches and fuses (not supplied with this instrument) must be used.
- Special precautions are necessary when working near high tension systems (MV and HV): rubber gloves and shoes (not supplied with this instrument) should be worn.
- Special precautions are necessary when working in wet conditions or in agricultural areas: observe the local safety standards and take all necessary special precautions applicable to the particular location and do not touch the test leads with bare hands.

LIVE EARTH SAFETY PRECAUTIONS

- A 'Live' earth is one that carries current from the mains supply, or could do so under fault conditions. The following warnings apply in addition to those listed previously.
- All persons involved **must be trained** and competent in isolation and safety procedures for the system to be worked on. They **must be** clearly instructed not to touch the earth electrode, test stakes, test leads, or their terminations if any 'Live' earths may be encountered. It is recommended that they wear appropriate rubber gloves, rubber soled shoes, and stand on a rubber mat.
- The earth electrode under test **should be** isolated from the circuit it is protecting before testing commences. If this is not possible, ART (attached Rod Technique) may be used to measure electrode resistance.
- The instrument terminals **should be** connected to the system under test through isolation switches that are rated to handle the likely maximum fault voltages and currents that could be encountered at the installation. The isolation switch **must be** open whilst any personal contact is made with the remote test stakes, or the connecting leads, e.g. when changing their position.
- The instrument terminals **should be** connected to the system under test through fuses that are rated to handle the likely maximum fault voltages and currents that could be encountered at the installation.

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

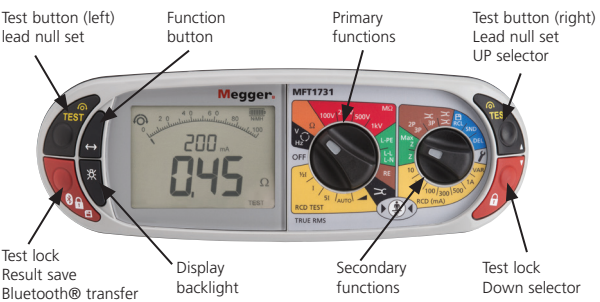
Users of this equipment and/or their employers are reminded that Health and Safety Legislation requires them to carry out valid risk assessments of all electrical work so as to identify potential sources of electrical danger and risk of electrical injury such as inadvertent short circuits . Where the assessments show that the risk is significant then the use of fused test leads constructed in accordance with the HSE guidance not GS38 'Electrical Test Equipment for use by Electricians ' should be used .

This instrument is internally protected against electrical damage when used for the purposes of testing low voltage electrical installations as defined herein. If used in a manor other than those defined in this user guide the protection capabilities could be impaired with potential risk to the operator and the instrument.

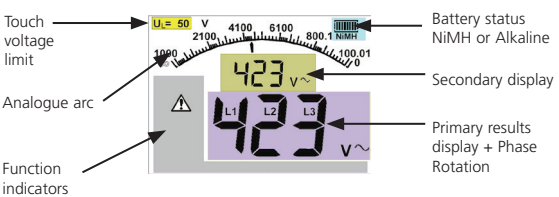
Symbols used on the instrument are:

⚠	Caution: refer to accompanying notes
≥600V	Maximum nominal system voltage of 600 V
CE	Equipment complies with current EU directives
CATIV 300V	Equipment complies with 'C tick' requirements
	Maximum 300 V a.c. CAT IV to earth
	Instrument protected by 2 x F2A 600 V 50 kA fuses
	This equipment should be recycled as electronic waste
12Vdc	12 Vdc charger socket

Instrument overview



Display layout



Megger

Megger Limited
Archcliffe Road
Dover
Kent, CT17 9EN
England
T + 44 (0) 1304 502100
F + 44 (0) 1304 207342
E uksales@megger.com

Megger
4271 Bronze Way
Dallas TX 75237-1019
U.S.A.
T +1 (800) 723-2861 (U.S.A. only)
T +1 (214) 333-3201 (International)
F +1 (214) 331-7399 E ussales@megger.com

Megger
Z.A. Du Buisson de la Couldre
23 rue Eugène Henaff
78190 TRAPPES
France
T +33 (0) 1 30.16.08.90
F +33 (0) 1 34.61.23.77
E infos@megger.com

Megger Pty Limited
Unit 26 9 Hudson Avenue
Castle Hill
Sydney NSW 2125
Australia
T +61 (0)2 9659 2005
F +61 (0)2 9659 2201
E ausales@megger.com

Megger Limited
Unit 106-550 Alden Road
Markham ON L3R 6A8
Canada
T +1 416 298 9688 (Canada only)
T +1 416 298 6770
F +1 416 298 0848
E casales@megger.com

This instrument is manufactured in the United Kingdom.

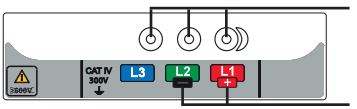
The company reserves the right to change the specification or design without prior notice.

MFT1700--MFT1800--2008-330_QS_en_V01

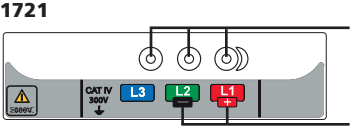
Part No 2008-330- - Printed in England - 03/16
www.megger.com

Terminal panel

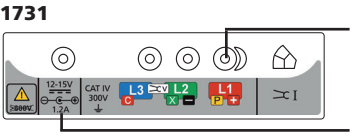
1711



1721



1731



Voltage/Frequency/Phase Rotation [V, Hz, ROT]

Main range knob (left)	2nd range knob	Terminal connections	Separate leads	Mains lead connections	User action
Volts/Hz V Hz	Not used	L1 L2		LN	None
ROT V Hz	Not used	L1 L2 L3		Not suitable	Press ↔

MEASUREMENT: Automatic. Large display shows Volts AC, small display shows frequency

Phase rotation: L1 : L2 : L3 = Normal L1 : L3 : L2 = Reversed

Warnings: Maximum voltage range 600 Vac

SETUP options: NONE

Continuity measurement [Ω] - Measures resistance of conductors

Main range knob (left)	2nd range knob	Terminal connections	Separate leads	Mains lead connections	User action
Ω	Not used	+ —		L-N L-E	Auto-matic on contact

MEASUREMENT: Automatic on connection. Large display shows resistance, small display shows test current.

Lead Null: To null leads, connect test leads together and press TEST. Null indicator appears. To remove, Open circuit leads and press TEST.

Functions: ↔ Buzzer ON/OFF

Buzzer threshold: Buzzer sounds below 2 Ω. To change limit go to SETUP

Warnings: Live circuit test inhibit at 3 V

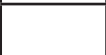
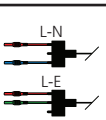
SETUP options:

Test current: 200 mA / 15 mA

Auto reverse testing: On/Off

Continuity buzzer threshold:
0.5 Ω, 1 Ω, 2 Ω, 5 Ω, 10 Ω, 20 Ω, 50 Ω and 100 Ω

Insulation measurement [MΩ]

Main range knob (left)	2nd range knob	Terminal connections	Separate leads	Mains lead connections	User action
100V ↔ 1kV 250 V – 500 V MFT1711	Not used	+ –			Press and hold TEST button

MEASUREMENT: Press TEST to start. Keep pressed until measurement stabilises.
Release TEST button to discharge circuit.

Test Lock: Hold down TEST button and press LOCK. To release press TEST.

Functions: ↔ Insulation "Pass threshold" buzzer ON/OFF

Buzzer threshold: Sounds above 0.5 MΩ, adjustable in SETUP.

Warnings: Ensure circuit to be tested is disconnected and isolated.
Live circuit warning at 25 V or 50 V (Default 50 V)

SETUP options: Insulation buzzer threshold: 0.5 MΩ, 1 MΩ, 2 MΩ, 3 MΩ, 4 MΩ, 5 MΩ, 7 MΩ, 10 MΩ, 50 MΩ, 100 MΩ, 500 MΩ (Default 0.5 MΩ)

RCD testing [ms] – Measures trip times of RCD

Main range knob (left)	2nd range knob	Terminal connections	Separate leads	Mains lead connections	User action
1/2xI ↔ 5xI AUTO VAR	10µA ↔ 1A model dependant	L1 L2 See note	 See note	 See note	Press TEST button

Note: Third lead can be connected. The third lead will enable reverse polarity detection.

MEASUREMENT: Press and release TEST button.

Supply: L-E = 90 Vac - 280 Vac L1(in) -L2(out) = 90 Vac – 480 Vac (Phase - Phase)

Functions: ↔ 0° and 180° (Quick press), Type AC, A, S, B selection (Press and hold)

RCD AUTO — MFT1700 series run 1/2xI, 1xI(0°), 1xI(180°), 5xI(0°), 5xI(180°) automatically.
MFT1800 series run 1/2xI, 1xI(0°), 1xI(180°), 2xI(0°), 2xI(180°) & 5xI(0°), 5xI(180°)

RCD VAR — Adjustable RCD trip current. Use  and to adjust current.

Warnings: Touch voltage >50 V

SETUP options: Touch voltage 25 V, 50 V (Default 50 V)

RCD ramp testing [mA] – Measures trip current of RCD

Main range knob	2nd Range knob	Terminal connections	Separate leads	Mains lead connections	User Action
	30mA ↔ 1A	L1 L2			Press TEST button

Note: Third lead can be connected. The third lead will enable polarity detection.

MEASUREMENT: Press and release TEST button.

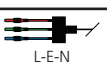
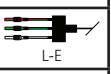
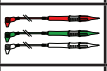
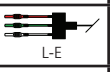
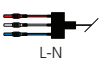
Functions: ↔ Fast Ramp  - Pass/Fail test between 50% and 100% of range

Slow Ramp  – Displays trip current in mA

Warnings: Touch voltage >50 V
Reverse polarity

SETUP options: Touch voltage 25 V, 50 V (Default 50 V)

Loop impedance testing [Ω] – Measures circuit loop impedance

Main range knob (left)	2nd Range knob (right)	Terminal connections	Separate leads	Mains lead connections	User Action
Z L-E (3Lo)	Z NOT MFT1710	L1 L2 L3		 L-E-N	Auto-matic (Disable in Setup)
Z L-E (2Hi)		L1 L2		 L-E	
Z L-E (2Lo)		L1 L2		 L-E	
Z L-N N-L		L1 L3 See note	 See note	 L-N	

Note: Third lead can be connected. The third lead will enable reverse polarity detection

MEASUREMENT: Press TEST to start. L-E tests start automatically.

Functions ↔ 3Lo, 2Hi, 2Lo

Supply: L-E = 500 Vac - 280 Vac
L-L, L-N = 50 Vac – 480 Vac

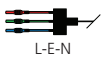
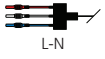
Zmax: Zmax — Stores maximum loop measurements on small display and most recent loop measurement on larger display

Warnings: Over voltage
Reverse polarity (with mains plug test lead)

SETUP options: Auto start on connection ON/OFF

Note: Third lead can be connected. The third lead will enable polarity detection.

Loop impedance R1+R2 testing [Ω] (MFT1721 only)

Main range knob (left)	2nd Range knob (right)	Terminal connections	Separate leads	Mains lead connections	User Action
Z L-E (3Lo)	Zref then R1 + R2	L1 L2 L3		 L-E-N	NONE
Z L-N N-L		L1 [ ] L3		 L-N	

Note: Third lead can be connected. The third lead will enable reverse polarity detection.

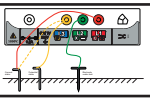
MEASUREMENT: Select Zref and make measurement at Ze (or Zdb). This is automatically saved.

Functions: ↔ 3Lo, 2Hi

Zref & R1+R2 Select R1+R2 mode and make measurement as normal (Zs).
Zref automatically deducted from Loop (Zs) value to give R1+R2 value.

Earth testing [Ω] (MFT1731 only)

2 pole and 3 pole methods
(for clamp methods, see user guide)

Main range knob	2nd Range knob	Terminal connections	Separate leads	User Action
Re	2P 3P	Re		Press and release TEST button

MEASUREMENT: Press TEST to start.

Warnings: Over voltage

SETUP options: None