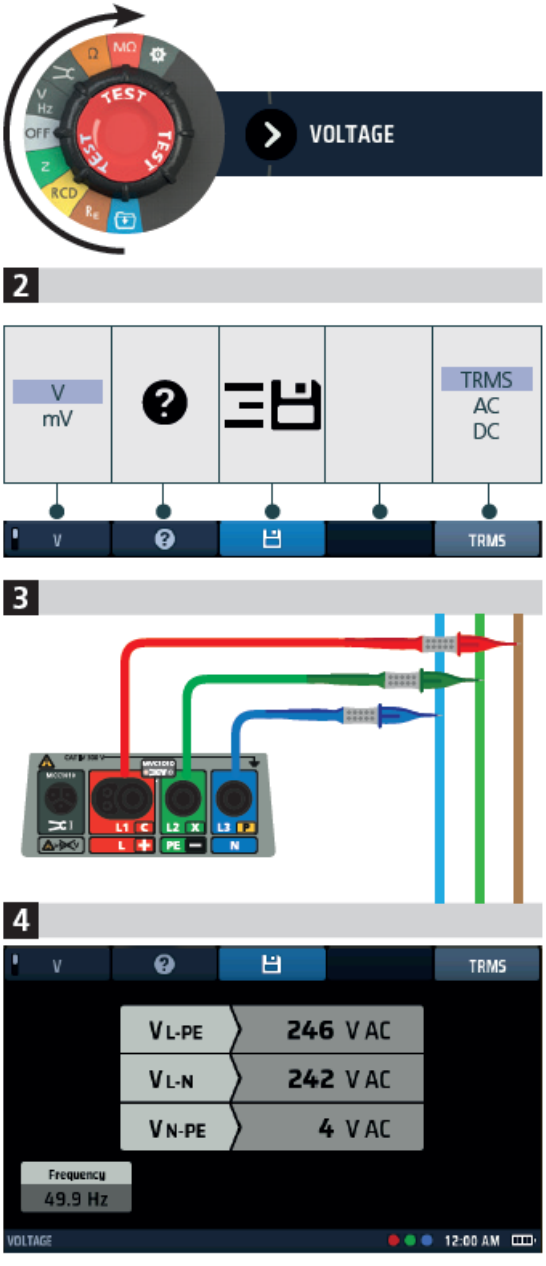
Megger MFT-X1 Multi Function Tester User Guide

Contents

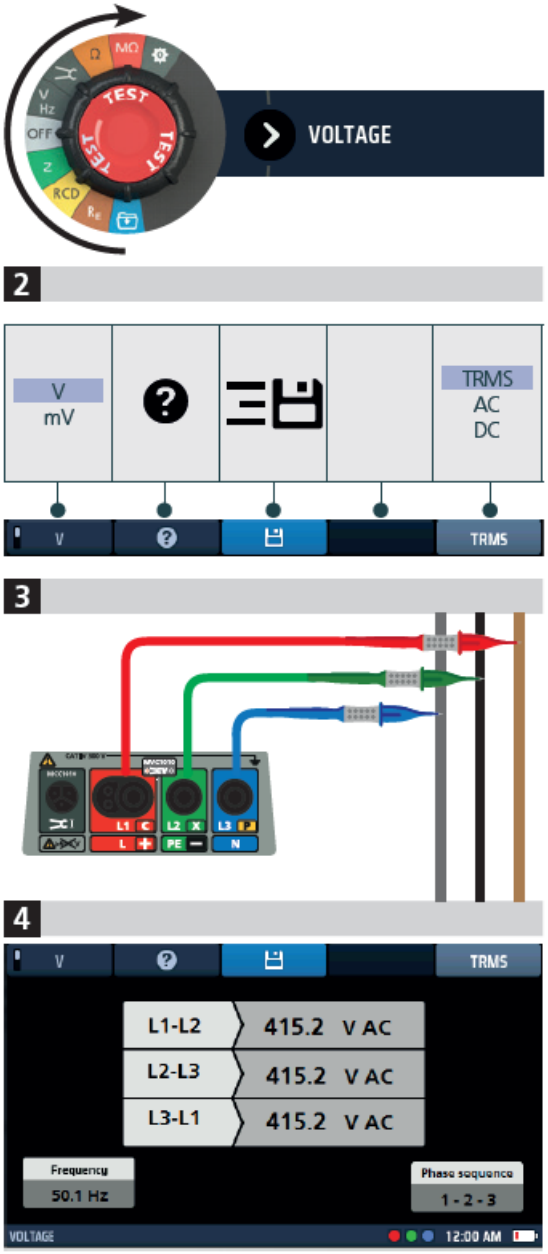
Megger MFT-X1 Multi Function Tester

Voltage tests

1 Phase (V Hz)

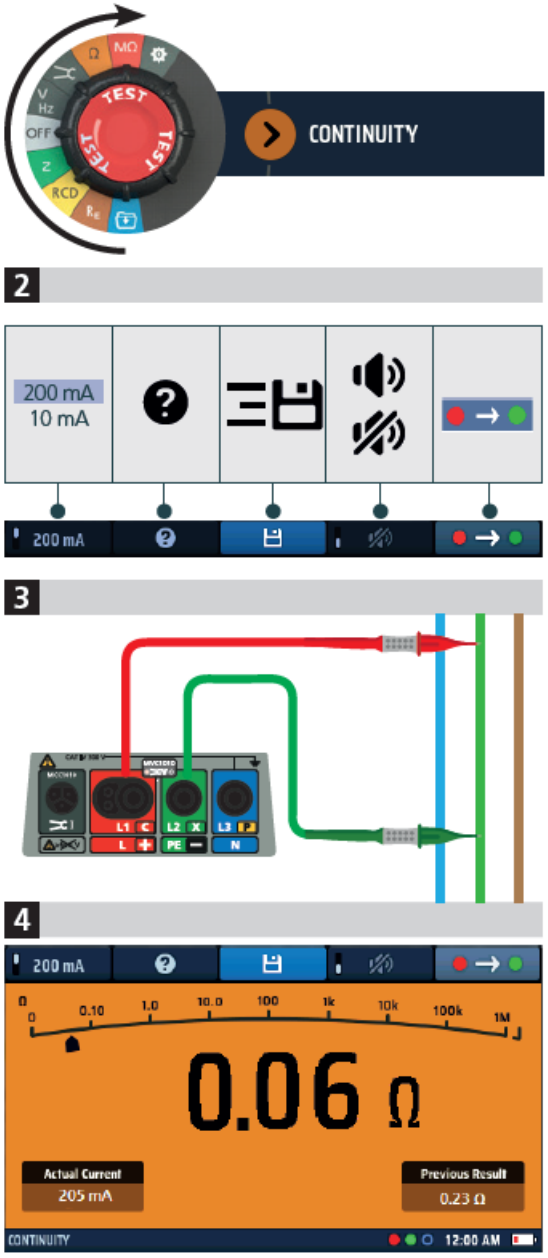


3 Phase Voltage / Sequence (V Hz)

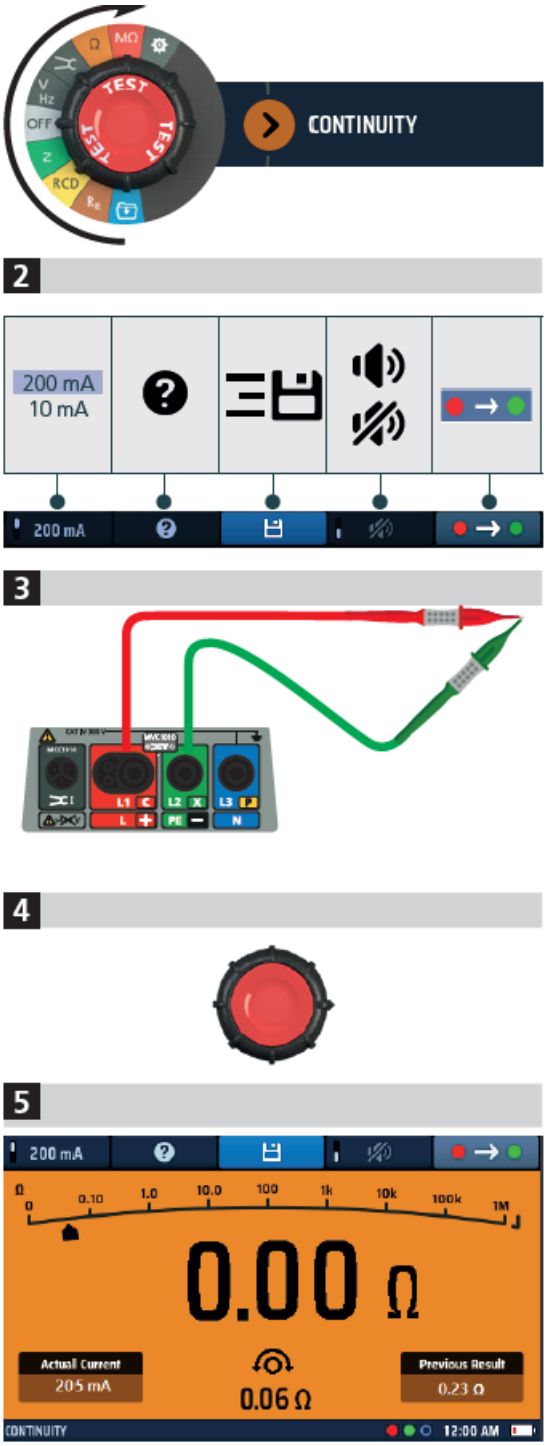


Continuity tests

Single Direction Test (Ω)

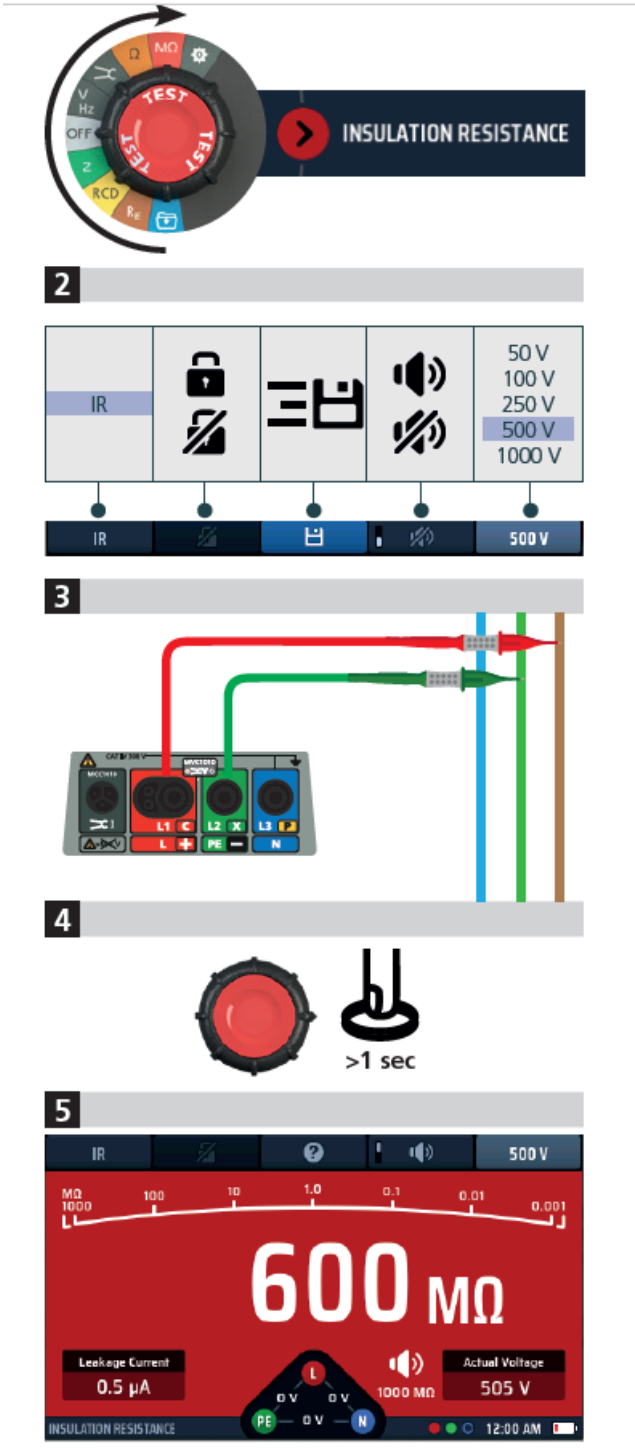


Test Lead Null (Ω)



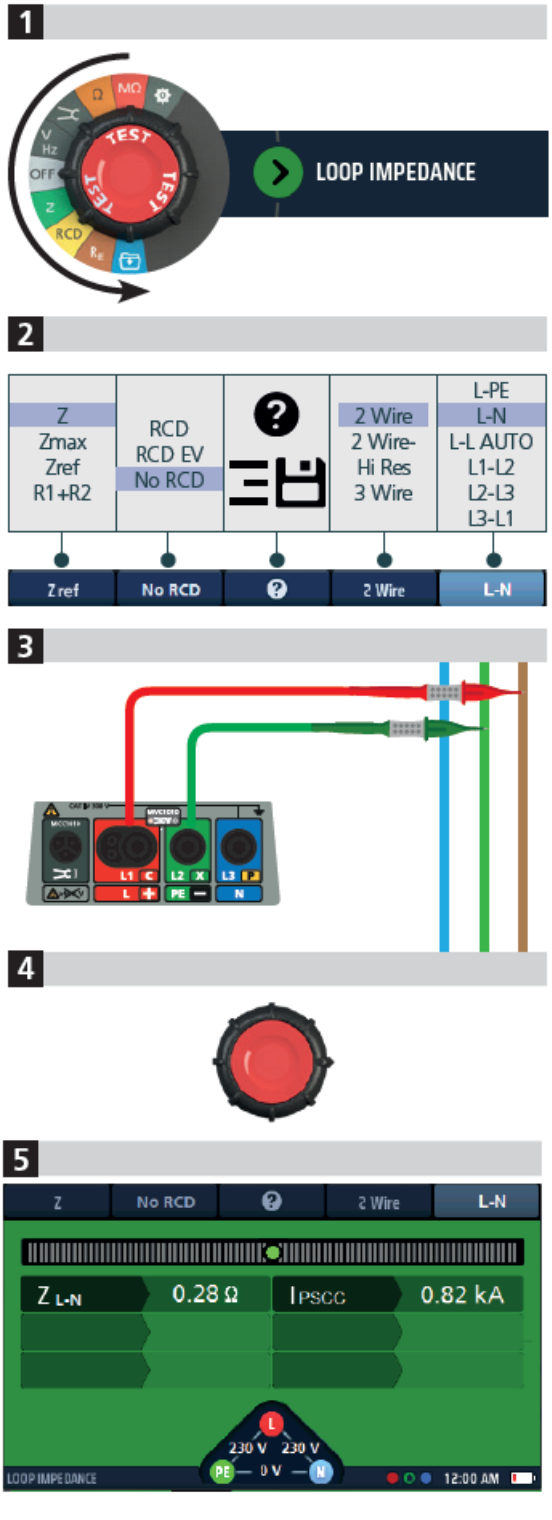
Insulation tests

Standard Insulation (IR) test

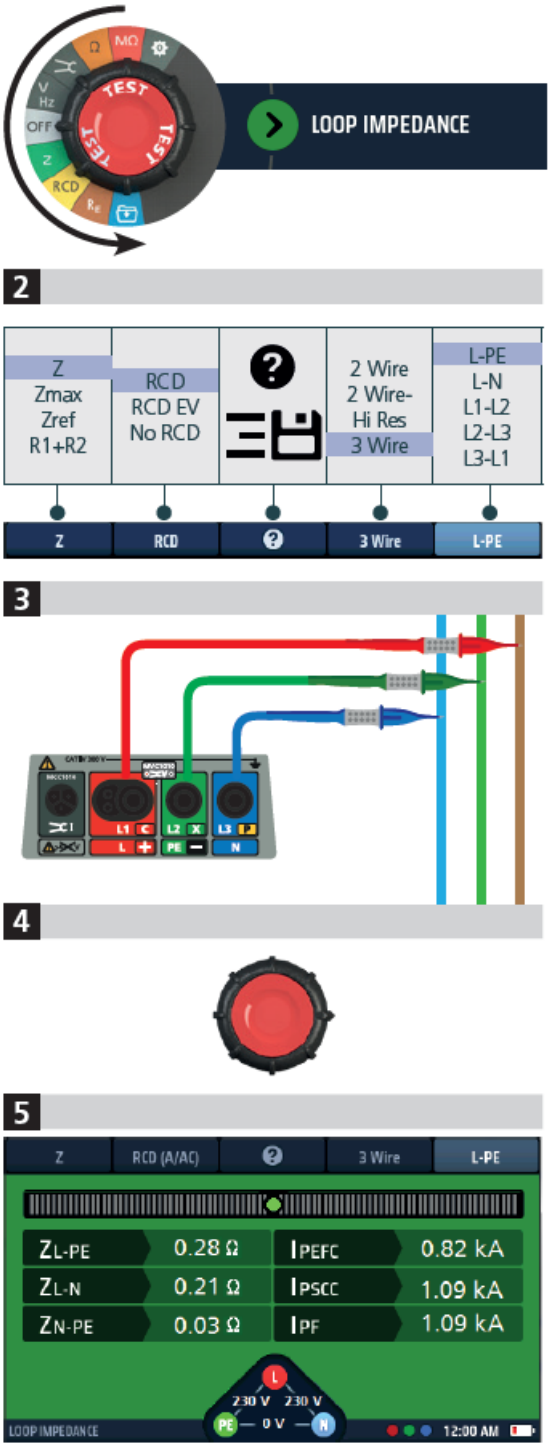


Loop Impedance

2 wire test (Z)


1
LOOP IMPEDANCE
2
Z
Zmax
Zref
R1+R2
RCD
RCD EV
No RCD
2 Wire
2 Wire-
Hi Res
3 Wire
L-PE
L-N
L-L AUTO
L1-L2
L2-L3
L3-L1
Z ref
No RCD
2 Wire
L-N
3
4
5
Z
No RCD
2 Wire
L-N
Z L-N
0.28 Ω
IPSCC
0.82 kA
230 V
230 V
0 V
LOOP IMPEDANCE
12:00 AM

3 wire test (Z)

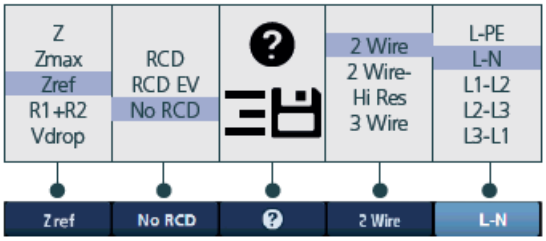


Vdrop (Step 1 – Zref)

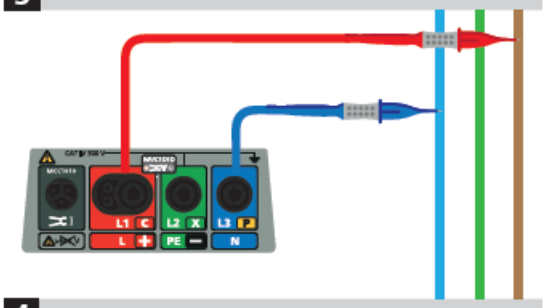
1


Ω
MΩ
V
Hz
OFF
Z
RCD
TEST
TEST
LOOP IMPEDANCE

2


Z
Zmax
Zref
R1+R2
Vdrop
RCD
RCD EV
No RCD
2 Wire
2 Wire-
Hi Res
3 Wire
L-PE
L-N
L1-L2
L2-L3
L3-L1
Zref
No RCD
2 Wire
L-N

3

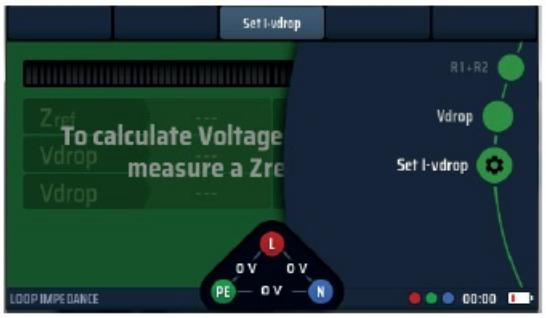

L1
L2
L3
L
PE
N

4

5

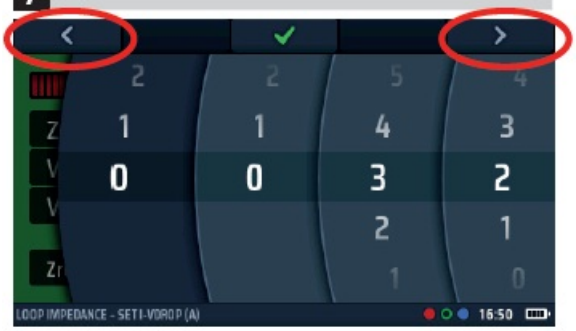

Zref
NO RCD
2 Wire
L-N
Zref
0.94 Ω
Ipscc
0.24 kA
L
232 V
232 V
PE
0 V
N
LOOP IMPEDANCE
16:37

6

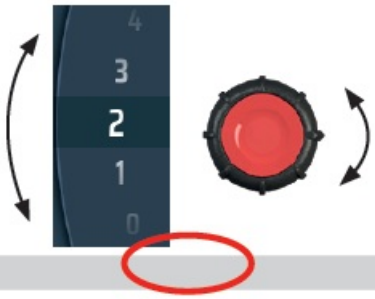


Step 2 continued

7



Set the maximum circuit current
Stellen Sie den maximalen Kreisstrom ein
Définir le courant de circuit maximal
Establecer la corriente máxima del circuito

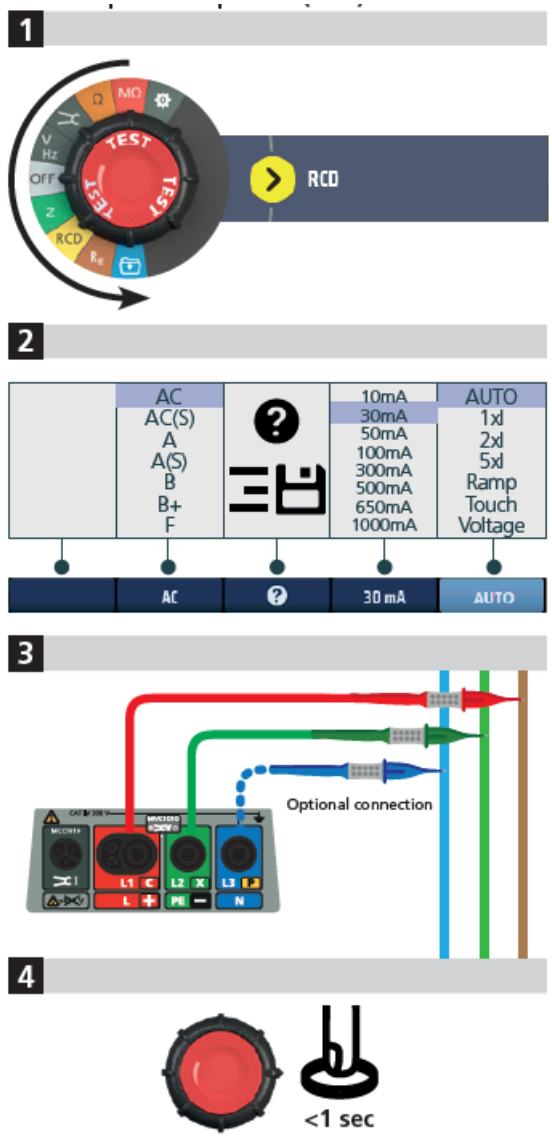


8

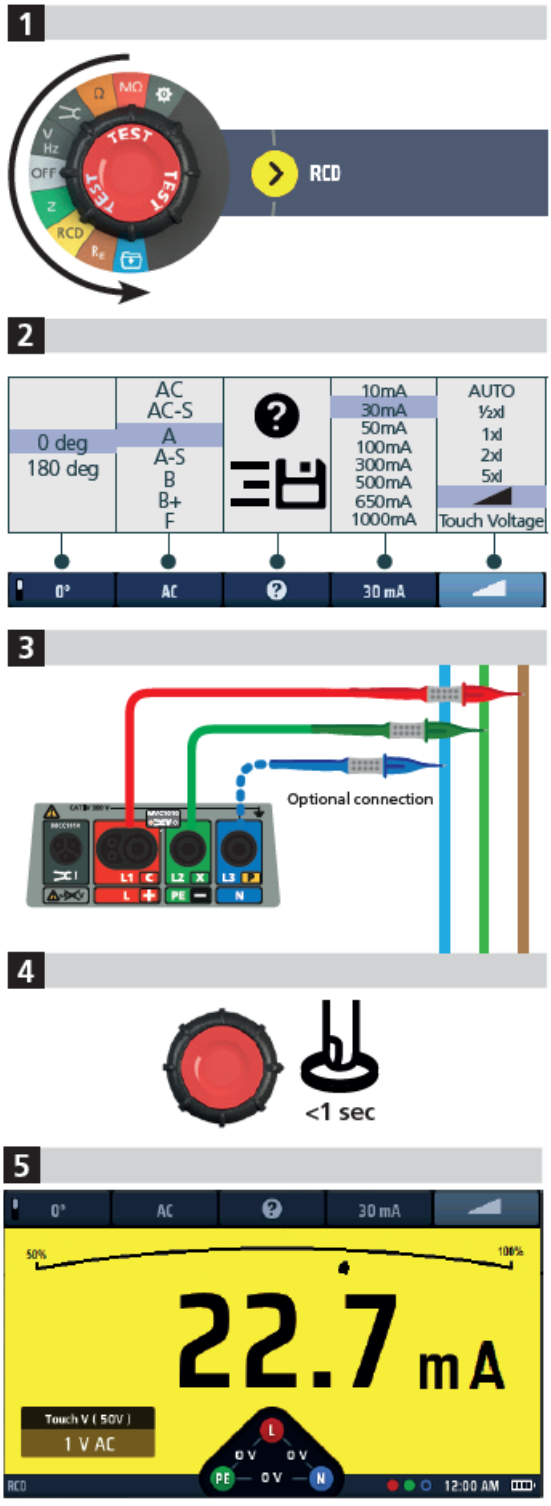
9

RCD tests

Auto Sequence Trip Time (RCD)

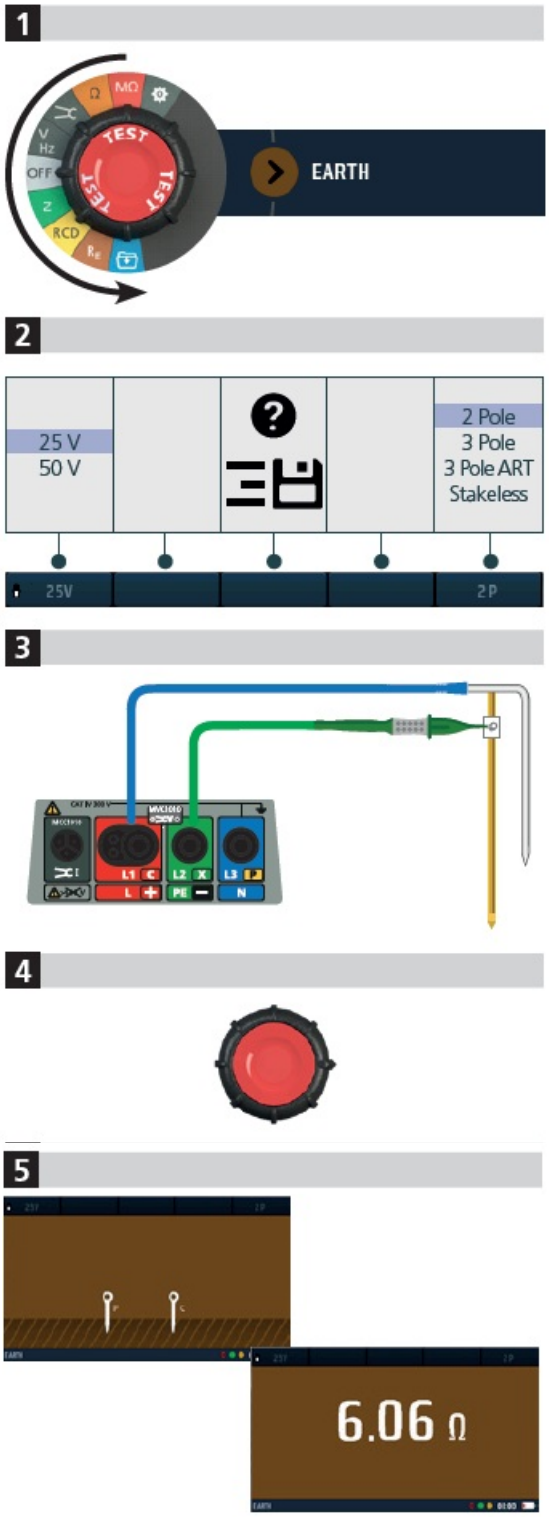


RCD Trip Current (Ramp)

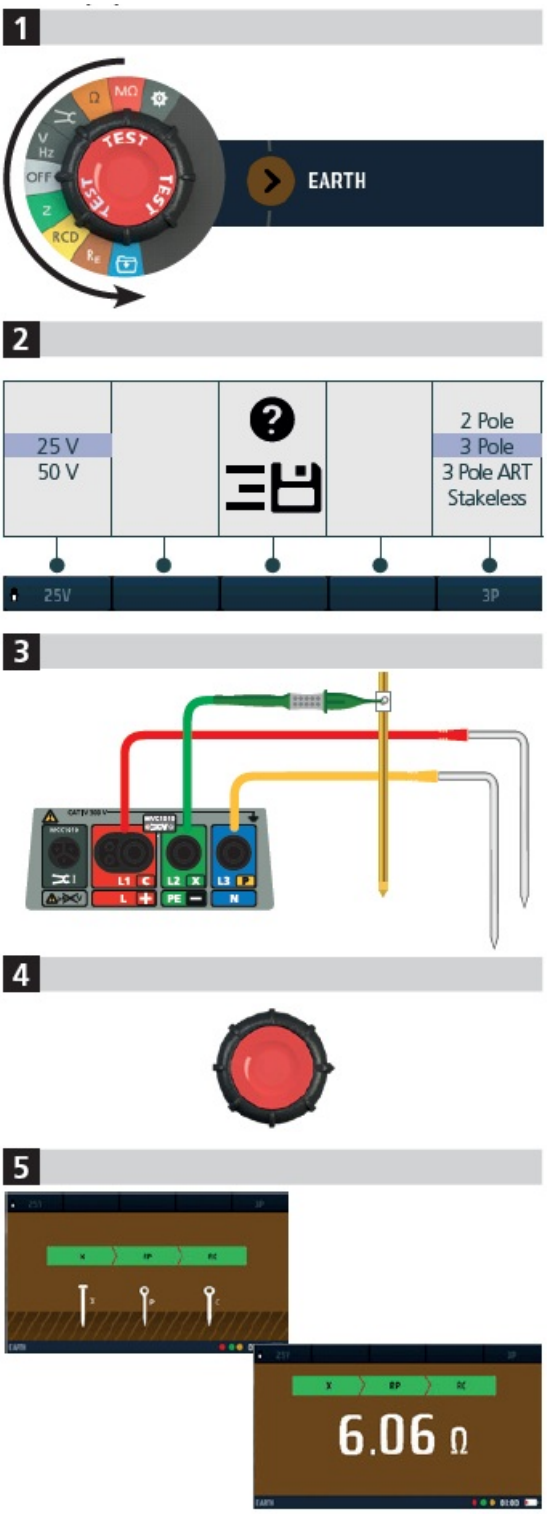


Earth Resistance

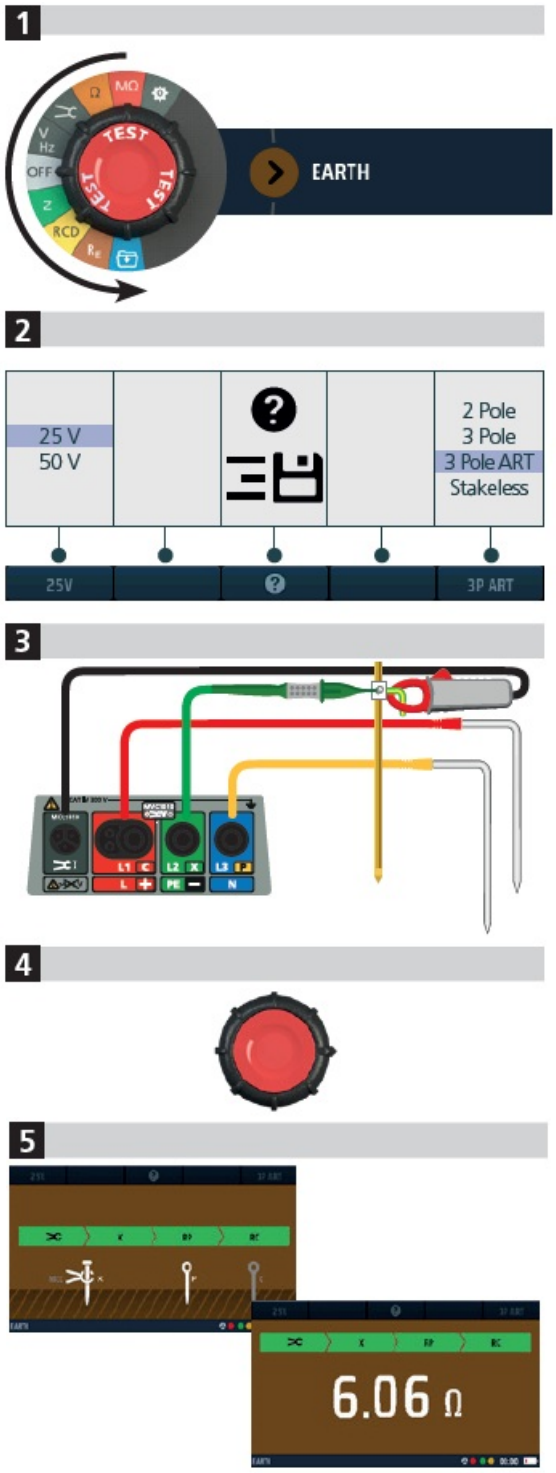
2 wire (RE)



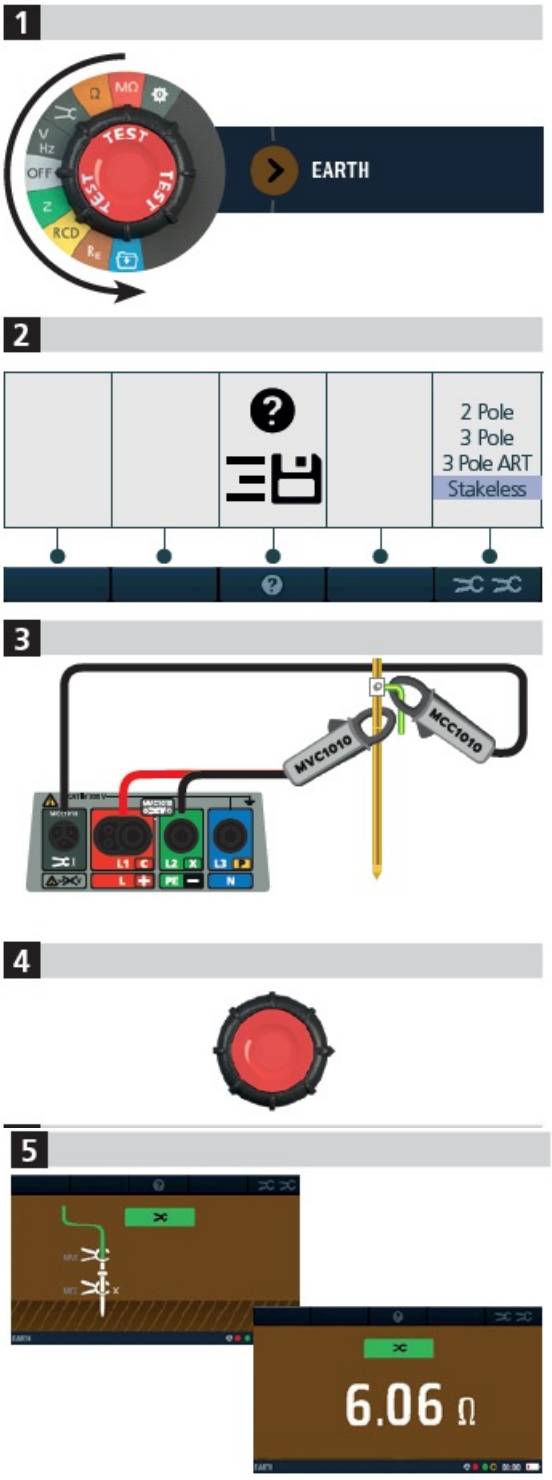
3 wire (RE)



3 wire + Clamp (ART)

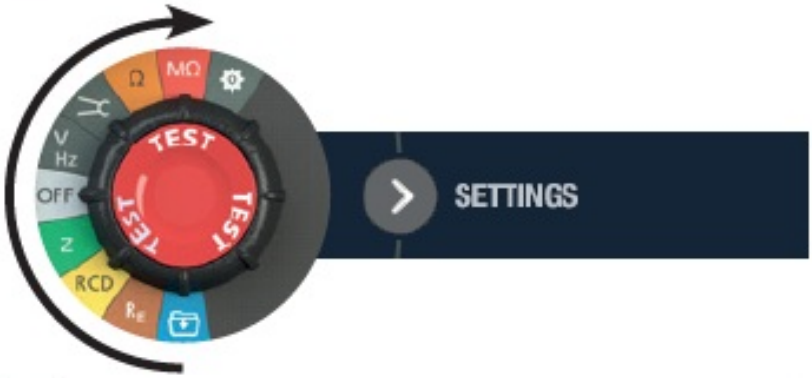


Stakeless (RE)

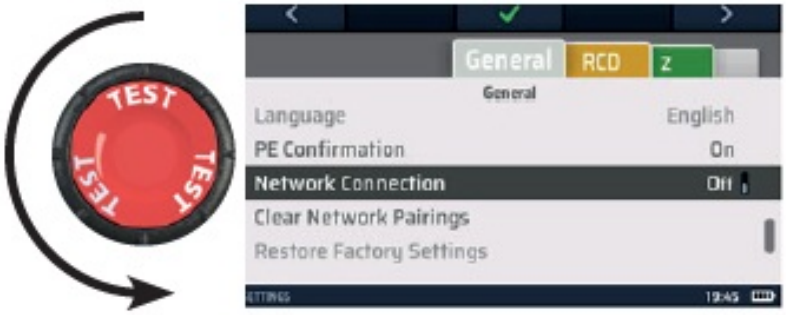


Connection and Download

1


Ω
MΩ
V
Hz
OFF
Z
RCD
TEST
SETTINGS

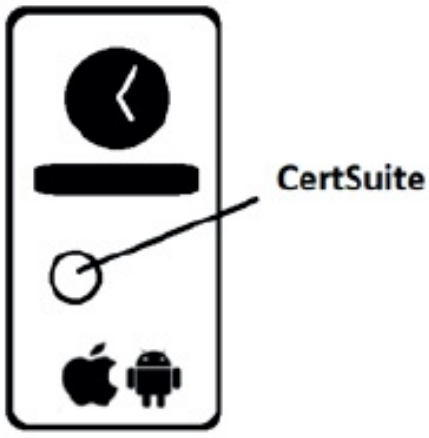
2

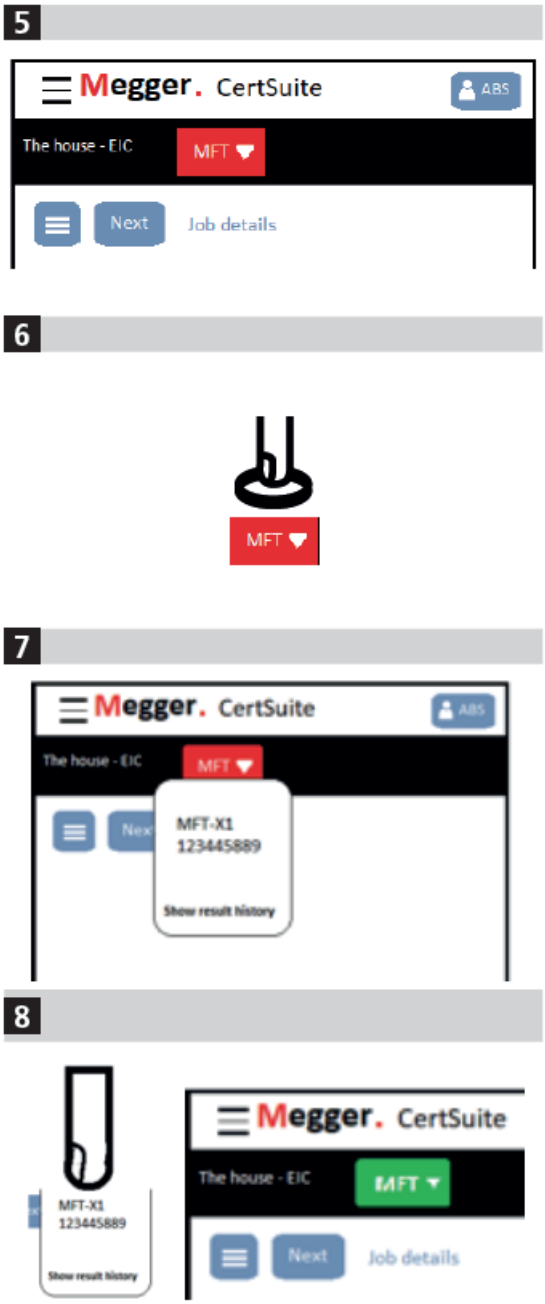

TEST
General
RCD
Z
General
Language
English
PE Confirmation
On
Network Connection
Off
Clear Network Pairings
Restore Factory Settings
SETTINGS
19:45

3


General
RCD
Z
General
Language
English
PE Confirmation
On
Network Connection
On
Clear Network Pairings
Restore Factory Settings
SETTINGS
19:45

4


CertSuite



Safety warnings

These safety warnings are indicative of safe practice and must be followed.
Additionally, they do not replace local safety procedures in the region where the instrument is used.
These safety warnings must be read and understood before the instrument is used. Retain for future reference.
This instrument must be operated only by suitably trained and competent people. Protection provided by the instrument, test leads or probes may be impaired if they are not used in a manner specified by the manufacturer.

- Local Health and Safety Legislation requires users of this equipment and their employers to carry out valid risk assessments of all electrical work to identify potential sources of 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 may be appropriate.
- Replacement fuses must be of the correct type and rating. Failure to fit the correctly rated fuse will result in fire hazards and damage the instrument in the event of an overload.
- Do not operate the instrument or connect it to any external system if it shows visible signs of damage or if it has been stored for prolonged time in an environment outside its specification.

- This product is not intrinsically safe. Do not use in an explosive atmosphere.
- The circuit under test must be switched off, de-energized, securely isolated, and proved dead 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 or RCD test.
- After an i sulation test, the instrument must be left connected until the circuit has been discharged to a safe voltage.
- 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, or their terminations (including connections to the earthing system under test) if an installation earth fault can arise, unless adequate precautions are taken.
- The Voltmeter function will operate only if the instrument is switched on and working correctly.
- The ‘live circuit warning’ and ‘automatic discharge’ features must be regarded as additional safety features and not a substitute for normal safe working practice which MUST be followed.
- Only Megger approved test leads must be used with this product.
- All test leads, probes and crocodile clips must be in good order, clean, and with no broken or cracked insulation. Verify the integrity of the test leads before use.
- The mains test lead provided with the instrument must only be used by suitably trained and competent persons. Never connect test probes, pins or other objects to the three lead plugs because of the danger of electrocution and arc explosion.
- Ensure that hands remain behind guards of probes/clips when testing.
- Always disconnect test leads from instrument and power down the instrument before disconnecting the battery module.
- The battery module must be replaced in a clean and dry environment.
- Do not heat or dispose of the battery in a fire. Do not subject the battery to strong impact, mechanical shock or excessive heat.
- Do not short-circuit or reverse the polarity of the battery module.
- Ensure every cell in the AA battery module is of identical type, and inserted in the correct orientation. Never mix rechargeable and non-chargeable cells.
- The instrument must be set to OFF before the instrument is prepared for shipping purposes.
- The fuse cover located under the battery module must be fitted correctly before connecting the battery module or
  protection will be compromised.
- There are no user serviceable parts inside the instrument. Other than opening the fuse cover for the purpose of replacing the fuses and performing firmware upgrades, do not disassemble the instrument.

Earth Test Warnings

When measuring resistance of an earth electrode while the distribution system is energised, the following additional warnings apply.

- 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 must 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 must 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.
- Special precautions are necessary when working in wet conditions or in agricultural areas: observe the local safetystandards and take all necessary special precautions applicable to the particular location and do not touch the test leads with bare hands.

Li-ION Battery Module

This instrument may be provided with a lithium-ion high energy battery module.

- Do not pierce, damage, disassemble or modify the battery module. The battery module contains safety and protection devices which, if tampered with, may cause the battery to generate heat, rupture or ignite.
- If a battery is suspected to be faulty, replace it with a Megger approved battery module.
- If an instrument is suspected to contain a faulty battery module, the module must be removed before the instrument is shipped.
- Do not ship a faulty battery module, either separately or connected to an instrument.
- The battery module must be charged only with an MBC2100 Li-ION battery charger in a dry environment. Li-ION battery care:
- Only use the charger supplied by Megger Instruments Limited.
- Please fully charge the Li-ion battery before using it for the first time. The green LED on the battery indicates normal charging. Disconnect the charger from the battery after the LED on the charger has changed to green colour.
- The red LED will come on if the cell temperature is outside of 0°C to 40 °C charging range.
- The red LED can also come on if the wrong charger has been used such that the charging current is greater than 4 A.

Installation Category Definitions

- CAT IV – Measurement category IV: Equipment connected between the origin of the low-voltage mains supply and distribution panel.
- CAT III -Measurement category III: Equipment connected between the distribution panel and electrical outlets.
- CAT II – Measurement category II: Equipment connected between the electrical outlets and user’s equipment.
- Measurement equipment may be safely connected to circuits at the marked rating or lower. The connection rating is that of the lowest rated component in the measurement circuit

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