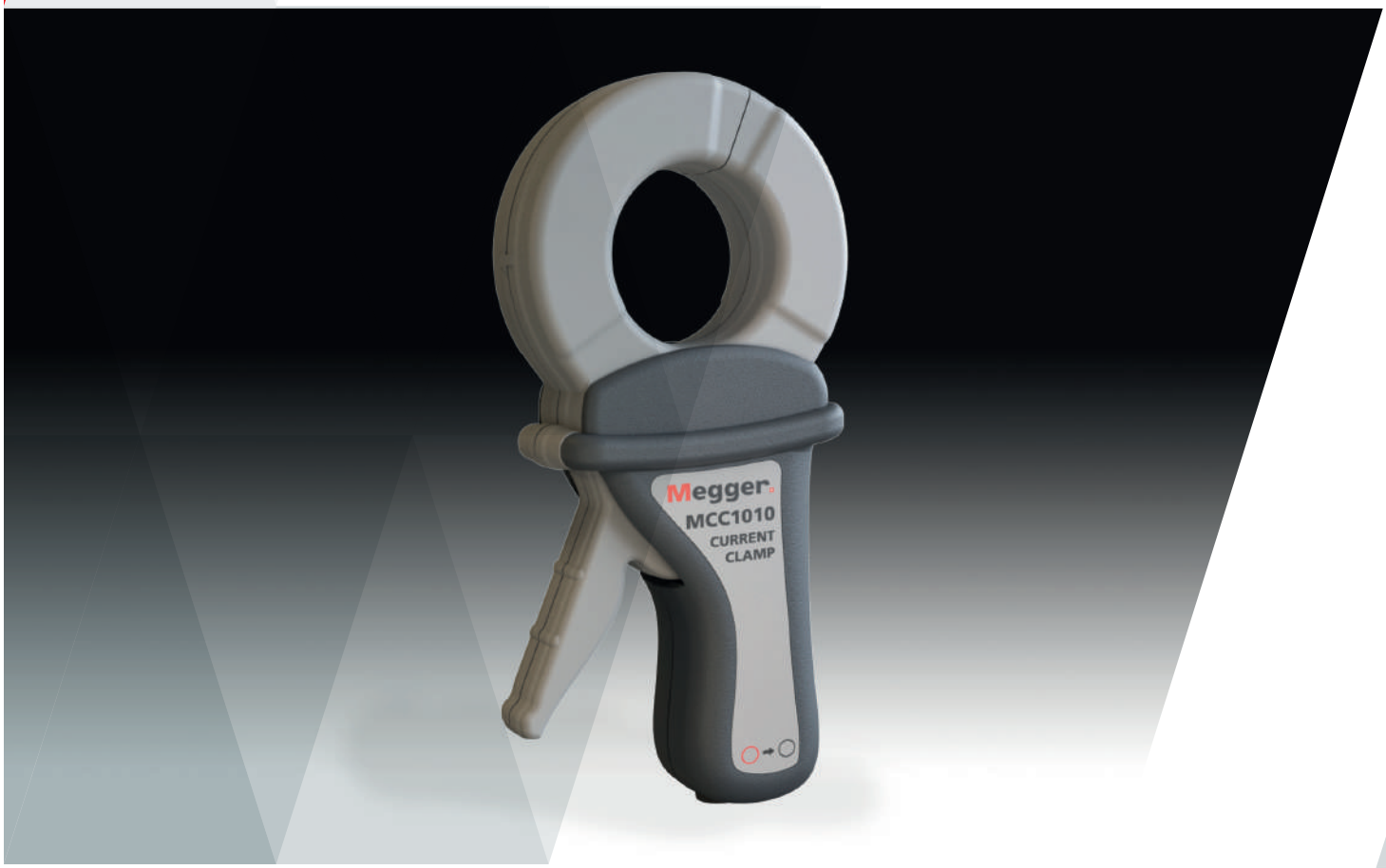
Megger



MCC1010 and MVC1010

User Guide

Contents

Safety Warnings

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Safety warnings and precautions must be read and understood before the MCC1010 / MVC1010 is used. They must be observed during use.
- Do not leave the MCC1010/MVC1010 connected to the system under test when not in use.
- Do not touch circuit connections and exposed metalwork of the installation or equipment under test.
- Always keep your hand behind the tactile barrier.
- Do not use the MCC1010/MVC1010 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 use the MCC1010/MVC1010 or connect it to any external system if the casing is open or any parts of the case are missing.
- Do not use the MCC1010/MVC1010 or connect it to any external system if the MCC1010/ MVC1010 lead is damaged in any way.
- Always connect the MCC1010/MVC1010 to the compatible Megger earth testing product before clamping it around the item being tested.
- Always inspect the compatible Megger earth testing product, MCC1010/MVC1010 and connection cable prior to every use. Replace any defective parts immediately.
- Always use extreme caution when clamping around bare conductors: under fault conditions, potentially high voltages and currents may be present and may pose a shock hazard.

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

Users of this equipment and/or their employers are reminded that National 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 may be appropriate.

The safety warnings provided in this document are indicative of safe practice and shall not be considered exhaustive. Additionally, they are not intended to replace local safety procedures where the instrument is being used.

Symbols used on the MCC1010/MVC1010 are:

Icon	Description
	Caution: refer to User Guide
	Equipment protected throughout by Double Insulation
	Equipment complies with current EU directives.
	Do not dispose of in the normal waste stream.
	Equipment can be clamped around and removed from hazardous live conductors (IEC 61010-2-032 Type A clamp)
CAT IV 600 V	Overvoltage category IV is for equipment installed at or near the origin of the electrical supply to a building 600 V refers to the rms phase-to-earth voltage that this instrument can withstand to the over- voltage category IV rating

Note: The safety warnings provided in this document are indicative of safe practice and shall not be considered exhaustive. Additionally, they are not intended to replace local safety procedures where the instrument is being used.

Introduction

Thank you for purchasing the Megger MCC1010 / MVC1010.

For your own safety and to get the maximum benefit from your instrument, please ensure that you read and understand the safety warnings and instructions in this manual before attempting to use the instruments.

This user manual describes the operation and functions of the MCC1010 / MVC1010:

- MCC1010
- MVC1010

Megger Instruments Limited reserves the right to change the specification of these instruments at any time without prior notice.

General description

The MCC1010 is a conventional AC current transformer (CT). For correct operation its output must be loaded with a burden resistor of appropriate value, which the attached instrument must provide. The voltage developed across the burden resistor is directly proportional to the primary AC current and the secondary output current is 1000 times smaller than the primary current.

The MVC1010 is used as a voltage transformer and is designed to work with compatible Megger earth testing products only. The secondary winding is driven by an AC waveform with a suitable peak value, usually as high as possible, but low enough not to activate the built-in overvoltage protection circuit.

The MVC1010 has a ratio of 1000:1 so that the voltage induced in a primary wire/cable will be 1000 times lower than the voltage driving the secondary coil. This reduced primary voltage drives current in the loop under test. The value of the current will be directly proportional to the loop impedance according to Ohm's law.

Preparations for use

Inspection

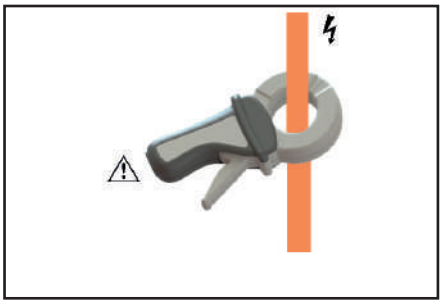
Before each use of the instrument, visually inspect the instrument case, test leads and connectors to confirm that their condition is good, with no damaged or broken insulation.

Preventive instrument maintenance

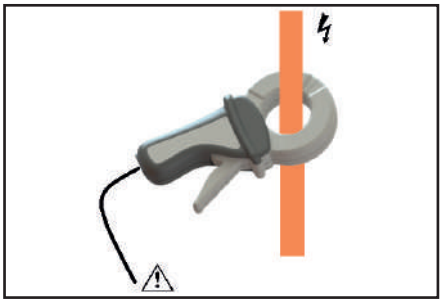
1. The MCC1010 / MVC1010 series of instruments require very little maintenance.
2. Test leads should be checked before use to ensure there is no damage.
3. When necessary, the instrument can be cleaned with a damp cloth. Clamp heads must be kept clean.
4. Do not use alcohol-based cleaners, as these may leave a residue.

General operating instructions - MCC1010

Test lead not connected

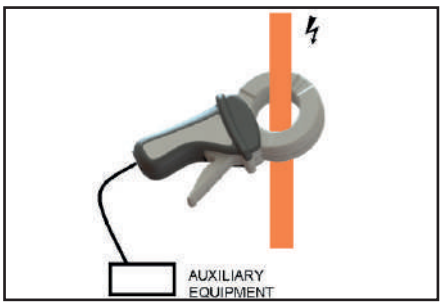


Auxiliary equipment not connected

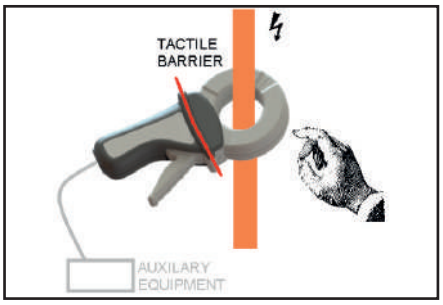


Test lead connected

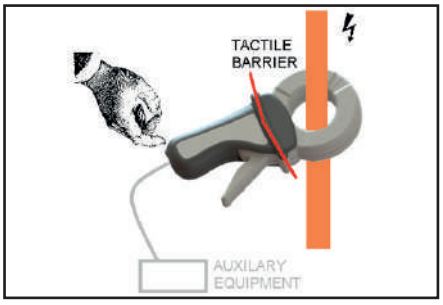
Auxiliary equipment connected



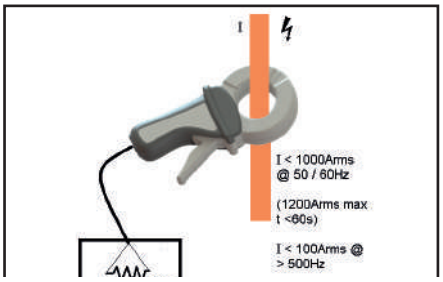
Hand not behind tactile barrier when MCC1010 clamped around a conductor.



Hand behind tactile barrier when MCC1010 clamped around a conductor.



Correct operating conditions for MCC1010



Specifications

MCC1010 Specifications

Specification	Detail
Step-down current ratio	1000:1
Sensitivity	1 mA/A

Primary current*	Accuracy of output signal	Phase shift of output signal
1 mA – 100 mA		not specified
0.1 A – 1 A		
1 A – 10 A		
10 A – 100 A	≤0.5%	
100 A – 1000 A	≤0.3%	

* Unless otherwise specified, reference conditions are: 22 ±3 °C, 75% humidity, sinusoidal current at 50/60 Hz, no DC offset, centred conductor, external magnetic field <40 A/m, load impedance (burden) ≤1 Ω

Maximum continuous current	1000 A at ≤500 Hz 100 A at >500 Hz
Frequency bandwidth	15 Hz – 10 kHz
Crest factor	≥6 for current up to 2000 A peak (300 A rms)
Influence of crest factor	≤1% for CF ≤4
Nominal load impedance	≤1 Ω (burden resistance)
Maximum output voltage	≤28 V peak (electronic limiter)
Influence of frequency	30 Hz – 5 kHz ≤0.25%
Safety	CAT IV 600 V Pollution degree 2
Influence of conductor position in the jaws	≤0.3% of amplitude
Load influence up to 5Ω	amplitude within specification up to 900 A ≤0.25% of amplitude above 900 A ≤0.1° on phase
Influence of DC offset	≤2% up to 20 A dc
Working voltage	≤600 V rms

Environmental Specifications

Specification	Detail
Operating temperature	-20 °C to +50 °C, <85% RH -4 °F to +122 °F, <85% RH (excluding ice or dirt in the jaws)
Storage temperature	-40 °C to +70 °C, <85% RH -40 °F to +158 °F, <85% RH
Influence of temperature	≤0.1% on amplitude phase within specification
Influence of humidity	amplitude and phase within specification (excludes ice or dirt on the jaws)
Max. conductor diameter	52 mm (2.04 in)

General Specifications

Specification	Detail
Casing protection	IP 40 with jaws closed
Operating altitude	2000 m
Output terminals	4 mm shrouded sockets
Electrical safety	IEC 61010-1:2010 + IEC 61010-2-030:2010 + IEC61010-2-032:2002
EMC	IEC61326-1
Weight	700 g
Dimensions	218 mm x 110 mm x 45 mm (8.58 in x 4.33 in x 1.77 in)
Colours	dark grey body, light grey jaws

MVC1010 Specifications

Specification	Detail
Insulation	Double insulation
Voltage rating	CAT IV 600 V
Current rating	1000 A for 20 minutes
Ingress protection	IP40
Operating temperature	-20 °C to +50 °C / -4 °F to 122 °F 0% to 85% RH at +35 °C / 95 °F
Storage temperature	-40 °C to +70 °C / -40 °F to 158 °F
Jaw opening	50 mm maximum (2.0 in)
Maximum conductor size	52 mm / 2.0 in
Electrical safety	IEC 61010-1:2010 + IEC 61010-2-030:2010 + IEC61010-2-032:2002
EMC	IEC61326-1
Dimensions	45 mm x 110 mm x 218 mm
Weight	700 g

Repair and Warranty

Instrument repair and spare parts

The instrument contains static sensitive devices, and care must be taken in handling the printed circuit board. If an instrument's protection has been impaired it should not be used, but sent for repair by suitably trained and qualified personnel. The protection is likely to be impaired if for example, it shows visible damage, fails to perform the intended measurements, has been subjected to prolonged storage under unfavourable conditions, or has been subjected to severe transport stresses.

NEW INSTRUMENTS ARE GUARANTEED FOR 1 YEAR FROM THE DATE OF PURCHASE BY THE USER.

Note: Any unauthorized prior repair or adjustment will automatically invalidate the Warranty.

Calibration, repair and spare parts

For service requirements for Megger Instruments contact:

Megger operate fully traceable calibration and repair facilities, ensuring your instrument continues to provide the high standard of performance and workmanship you expect. These facilities are complemented by a worldwide network of approved repair and calibration companies, which offer excellent in-service care for your Megger products.

Returning your product to Megger - UK and USA service centres

1. When an instrument requires recalibration, or in the event of a repair being necessary, a Returns Authorisation (RA) number must first be obtained from one of the addresses shown above. You will be asked to provide the following information to enable the Service Department to prepare in advance for receipt of your instrument, and to provide the best possible service to you.

- Model, e.g. MCC1010 / MVC1010
- Serial number, to be found on the underside of the case or on the calibration certificate.
- Reason for return, e.g. calibration required, or repair.
- Details of the fault if the instrument is to be repaired.

2. Make a note of the RA number. A returns label can be emailed or faxed to you if you wish.
3. Pack the instrument carefully to prevent damage in transit.
4. Ensure the returns label is attached, or that the RA number is clearly marked on the outside of the package and on any correspondence, before sending the instrument, freight paid, to Megger. Copies of the original purchase invoice and packing note should be sent simultaneously by airmail to expedite clearance through customs. In the case of instruments requiring repair outside the warranty period, an immediate quotation can be provided when obtaining the RA number.

Approved Service Centres

A list of Approved Service Centres may be obtained from the UK address above,

End of Life

WEEE Directive

The crossed out wheeled bin symbol placed on Megger products is a reminder not to dispose of the product at the end of its life with general waste.

Megger is registered in the UK as a Producer of Electrical and Electronic Equipment. The Registration No is WEE/ HE0146QT.

For further information about disposal of the product consult your local Megger company or distributor or visit your local Megger website.

Declaration of Conformity

Hereby, Megger Instruments Limited declares that radio equipment manufactured by Megger Instruments Limited described in this user guide is in compliance with Directive 2014/53/EU. Other equipment manufactured by Megger Instruments Limited described in this user guide is in compliance with Directives 2014/30/EU and 2014/35/EU where they apply.