EVCA210/EVCA210-UK
Electric vehicle charge-point adaptor

- Push Button for PE Pre-Test
- Push button for CP Error "E" simulation
- Push button for PE Error (Earth Fault) simulation
- Rotary switch providing PP State simulation
- Rotary Switch providing CP State simulation
- Type 2 Charging Plug for charging points with panel mounted socket outlet or fixed cable with vehicle connector
- Type 1 Charging Plug for charging points with fixed cable and vehicle connector
- (Example Mitsubishi PHEV) – option for the EVCA210/standard on the EVCA210-UK
- IP54 Rating
- Carrying Case
- CAT II 300V Rating
- Comply with Low Voltage Directive LVD 2014/35

DESCRIPTION

The Megger EVCA210/EVCA210-UK are compact, simple to use adapters designed to perform all the functions required by the electrical contractor to fully test Mode 3 AC Electric Vehicle Charge-points. Specially designed to comply with UK, European and other International wiring regulations and standards, the EVCA210/EVCA210-UK may be used on all single and three phase electric vehicle charge points, with appropriate connectors. They are designed to test the function and safety of a charging point. The adapters allow you to conduct tests using appropriate single or multifunction test instruments on EV charging points in accordance with IEC/EN 61851-1 and IEC/HD 60364-7-722. Charging points should be tested as part of the initial installation and repeated periodically.

The Megger EVCA210/EVCA210-UK test adaptors are designed to simulate the connection of an electrical vehicle to the charging point under test. Connection of the adapter enables the operator to trigger the charging process by selecting the appropriate Proximity Pilot (PP) and Control Pilot (CP) states.

Test instruments can be connected using either the front mounted mains socket or the 4mm connection ports L1, L2, L3, N, PE. 2 additional CP signal terminals give the operator the ability to measure the CP signal using an oscilloscope.

In addition, the adapters have a manual PE Pre-Test feature that allows the user to test for dangerous voltages present on the PE, prior to any other testing of the charge point. If this test fails, testing must cease as potentially dangerous voltages may be present on the PE and faults must be investigated and rectified before continuing. The adapters also integrate two further manual tests: CP Error – simulates an error on the control pilot circuit; and a PE Error – where a disconnection of the PE circuit is produced. Both test ensure correct disconnection of the output of the charge point. Before carrying out testing with this adaptor, it is recommended that the user familiarize themselves with the relevant standards:
IEC 61851-1:2017, Electric vehicle conductive charging system - Part 1: General requirements

EVCA210/EVCA210-UK
Electric vehicle charge-point adaptor

IEC 60364-7-722:2018 Low-voltage electrical installations - Part 7-722: Requirements for special installations or locations - Supplies for electric vehicles and any documentation relating to the charging station itself.

The Megger EVCA210-UK is provided with 2 connection cables as standard, a Type 2 connector for charging points with panel mounted socket outlet or fixed cable with vehicle connector and a Type 1 connector for charging points with fixed Type 1 cable connector – as found on the Mitsubishi PHEV.
The Megger EVCA210 is supplied with the Type 2 plug only.

	EVCA210	EVCA210-UK
Input voltage 250 V (single phase system) / 430 V (three phase system),	■	■
Push Button for PE Pre-Test	■	■
Rotary switch providing PP State simulation	■	■
Rotary Switch providing CP State simulation	■	■
Push button for CP Error "E" simulation	■	■
Push button for PE Error (Earth Fault) simulation	■	■
Measurements on live conductors (L1, L2, L3 and N) and on PE conductor	■	■
Mains Socket: EVCA210-UK - 13A UK socket EVCA210 - Schuko socket (CEE 7/3)	■	■
CP signal test, two 4 mm ports for connection to an oscilloscope	■	■
CAT II 300 V	■	■
IP Rating IP54	■	■
Type 2 Plug for charging points with panel mounted socket outlet or fixed cable with vehicle connector.	■	■
Type 1 Plug for charging points with fixed cable and vehicle connector – Supplied with EVCA210-UK as standard		■
Soft Carry Case	■	■

EVCA210/EVCA210-UK
Electric vehicle charge-point adaptor

SPECIFICATIONS

Input voltage	Up to 250 V (single phase system) / up to 430 V (three phase system)
Input Frequency	50/60 Hz,
PE Pre-Test	Yes - Push button
CP Error "E" simulation	Push button
PP Simulation	NC, 13 A, 20 A, 32 A, 63 A
CP States	A, B, C, D
CP Error "E"	Yes
PE Error (Earth fault)	Yes
Measuring Ports L1, L2, L3, N and PE	Max. 250/430 V, CAT II 300 V, max. 10 A
Mains socket	Max. 250 V, CAT II 300 V max. 10 A, **Note**: Do not load mains socket simultaneously with measuring ports!
CP Signal Test Ports	Approx. +/-12 V, CAT 0 (under normal condition) In case of wrong wiring or error of the charging station these terminals
Measurement category	CAT II 300 V
Altitude above sea level.	2000 m max.
Dimensions (W × H × L)	mm x mm x mm ? (without connection cable and test cable)
Weight	Approx: 780g
IP-rating	IP54
CE directive	Low Voltage Directive LVD 2014/35/EU
Safety	IEC/EN 61010-1:2010 IEC/EN 61010-2-030:2010
Working temperature range	0 ... +40 °C
Storage temperature range	-10 ... +50 °C
Reference humidity range	10 ... 60% relative humidity w/o condensation
Working humidity range	10 ... 85% relative humidity w/o condensation

ORDERING INFORMATION

Description	Part number
EVCA210-UK (UK Mains Socket)	**1012-732**
Included accessories	
Type 1 Charging Plug Type 2 Charging Plug EVCA210 Carry Case Instruction Manual	

Description	Part number
EVCA210 (Schuko Mains Socket)	**1013-317**
Included accessories	
EVCA210 Type 2 Charging Plug Soft Carry Case Instruction Manual	
Optional accessories for EVCA210 & EVCA210-UK	
EVCA210 Soft Carry Case	1013-318
Type 1 Charging Plug	1013-319
Type 2 Charging Plug	1013-320

SALES OFFICE
Megger Limited
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
E UKsales@megger.com

EVCA_DS_en_V02a
www.megger.com
ISO 9001

Megger®

MFT1741+
Multifunction Tester

- Testing of Electric Vehicle Charge Points*
- Enhanced non-trip loop impedance measurement technology
- "Confidence meter" measurement analysis (patent pending)
- Full single and 3 phase compliant installation testing
- 10 mA to 500 mA 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 MFT1741+ 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
  - Testing of Electric Vehicle Charge Points RCD's*
  - 3-phase RCDs
  - Auto-test routine
  - EV Charge Point RCD Testing
- Earth spike testing
  - 2-pole/3-pole*, ART* and Stake-less* techniques

* With appropriate optional accessories.

New Loop Impedance testing technology:

The MFT1741+ 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 10mA 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.

New electric vehicle charge point testing

The MFT1741+ includes an automatic EV Charge Point RCD test sequence, including the 6 mA dc test*. Test results can be reviewed or saved to memory and reviewed later.

MFT1741+
Multifunction Tester

APPLICATIONS:

The MFT1741+ 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 MFT1741+ 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 MFT1741+ 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 MFT1741+ features internally rechargeable batteries and charger with a charge time of less than 4 hrs, so reducing the cost of ownership.

The new MFT1741+ 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 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.

PRODUCT SELECTION CHART

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

* requires optional accessory

MFT1741+
Multifunction Tester

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	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

For test environments see service data

RCD tests

Supply up to 100 mA	48 V ~ 480 V (45 Hz ~ 65 Hz)	
Supply up to 500 mA	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%
EV	30 mA ac, 6 mA dc (Mode 1 + 2)	

(Mode 1 + 2)

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

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% ±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

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)
220 mm H x 390 mm W x 285 mm D

IP rating IP54

Calibration temperature
+20 °C

Temperature co-efficient
<0,1% per °CFor test environments see service data.

ORDERING INFORMATION

Description	Order Code
MFT1741+-BS	1012-611
Included accessories	
Printed quick start guide	
Full user guide on CD	
Calibration certificate	
Switched probe SP5	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	1002-736
Large soft pouch with extra storage	1007-463
Optional accessories	
Fused 10 A test lead set (red/blue/green) with prods and clips	1001-975
XTL30 Extension Test Lead 30 m	2007-998
XTL50 Extension Test Lead 50 m	2207-997
Cigar lighter adapter for battery charging.	6280-332
Switched Probe SP5 (silicone)	1001-687
MCC1010 Current measuring clamp	1010-516
MVC1010 Voltage inducing clamp, calibration check pcb (for stakeless test) and lead	1010-518
Electrode kit	1001-810
Test and carry pouch	1006-408
3 Pole Earth Test Kit	6210-160
ETK30 (3 Pole Earth Test Kit)	1010-176

SALES OFFICE
Megger Limited
Archcliffe Road Dover
CT17 9EN England
T +44 (0) 1304 502101
E UKsales@megger.com

MFT1741+_DS_en_V02
www.megger.com
ISO 9001

Megger®