



MEGGER® CM300 & CM400

- Combines the functions of several instruments
- Stores measurements for up to 99 circuits
- Works with AVO® PowerSuite™ for Windows™
- RAMP RCD test measures the actual tripping current
- Designed to comply with International Safety Standards

Combined Installation Tester

DESCRIPTION

The MEGGER® CM300 and CM400 Combined Installation Testers are compact instruments which combine all the functions required to fully test domestic, commercial and industrial wiring. The CM300 has been specially designed for continental Europe, whereas the CM400 meets British Standards requirements.

Both instruments may be used on all internal wiring systems, single phase or three phase, Installation Category III, with rated voltages up to 300 V a.c. rms to earth.

The instruments may be used in stand-alone mode, noting readings as they are made. Alternatively, test results may be stored in internal memory for later downloading to a computer for storage, report generation, or analysis. A basic DOS download programme is included with the instruments. The instruments will also operate with the powerful and comprehensive software suite, AVO® PowerSuite™ for Windows™.

Test function is controlled by a large central rotary switch and buttons.

On connection to the mains supply, the polarity and the supply voltage is displayed, between 25 V and 500 V, to avoid accidental connection to a live circuit, and the supply frequency, between 16 Hz and 460 Hz may be displayed at the press of a button.

Insulation resistance tests may be carried out at rated voltages of 250 V, 500 V and 1000 V all of which are developed into a 1 mA load as specified

in International Standards and National Wiring Regulations.

Continuity tests are carried out with a test current in excess of 200 mA up to 2 Ω and with a resolution of 0,01 Ω. A separate switch position allows test lead resistances to be nulled up to value of 10 Ω. While the CM400 displays the test result directly, the CM300 takes two measurements with opposite polarity and displays the average. Each individual test result may be recalled at the press of a button. A simple, rapid continuity buzzer enables identification of open and short circuits.

Loop impedance measurement ranges are available to test between Phase and Earth, Phase and Neutral or between Phases with a resolution of 0,01 Ω. By simply pressing a button the display changes from loop impedance to a direct readout of Prospective Fault Current in kiloamperes.

Both instruments can verify the correct operation of general, delayed (selective) and d.c. sensitive RCDs for standard rated operating currents from 10 mA to 1000 mA. Safe two wire operation means that a Neutral connection is not required. A test at half the rated current enables the loop and contact voltage requirements of the wiring regulations to be evaluated. A ramp test identifies the actual tripping current as opposed to the rated tripping current.

The auto-ranging earth resistance function allows measurement of earth electrode resistance on TT systems.

APPLICATIONS

Safety of electrical systems is of paramount importance; all new installations and modifications to existing electrical systems must be checked to ensure that the electrical integrity has not been compromised. The CM300 and CM400 have been designed to provide a compact, easy to use instrument which allows all safety checks to be quickly accomplished.

Electricians, electrical contractors and maintenance engineers will find the comprehensive test facilities indispensable for their every day work.

The on board memory, download software and AVO® PowerSuite™ for Windows™ make it easy to save test results to a PC and to generate the necessary test certificates.

FEATURES AND BENEFITS

Replaces several instruments – saves cost and eases the problems of carrying several discrete instruments.

Stores measurements for up to 99 circuits – no chance of recording results incorrectly. Use with a PC running AVO® PowerSuite™ for Windows™ automates record keeping and certificate generation.

RCD ramp test measures the actual current at which an RCD trips – detects over sensitive RCDs for nuisance tripping.

Designed to comply with International Safety Standards – may be used safely on all internal wiring with a rated voltage of 300 V a.c. rms to earth.

SPECIFICATIONS

INSULATION RANGES

Nominal Test Voltage (d.c.)
250 V, 500 V, 1000 V into 1 mA load

Range 0,01 MΩ to 99,9 MΩ

Accuracy ±3% ± 2 digits

CONTINUITY RANGE

Test Current >200 mA into 0 - 2 Ω load

Open Circuit Voltage >4 V

Measurement Range 0,01 Ω to 99,9 Ω

Accuracy ±3% ± 2 digits

LOOP TESTING

PHASE/EARTH & EARTH RESISTANCE

Supply Voltage 100-280 V, 50/60 Hz

Range & Accuracy (at 230 V)

0,01 - 9,99 Ω	±5% ± 0,03 Ω
10,0 - 89,9 Ω	±5% ± 0,5 Ω
90 - 899 Ω	±5% ± 5 Ω
900 - 3,00 kΩ	±5% ± 0,02 kΩ

PHASE/NEUTRAL AND PHASE/PHASE

Supply Voltage 100-480 V, 50/60 Hz

Range & Accuracy (at 230/400 V)

0,01 - 19,99 Ω	±5% ± 0,03 Ω
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PROSPECTIVE FAULT CURRENT

Prospective Fault Current is calculated from the respective loop resistance. Ranges and accuracies are therefore derived from the relevant section above.

VOLTAGE MEASUREMENT

25 - 500 V ±2% ± 2 digits

FREQUENCY MEASUREMENT

d.c., 16 - 460 Hz ±0,1% ± 1 digit

RCD TEST

Tests ½IΔn, IΔn, 150 mA, Ramp (5I on CM300 for 10, 30 and 100 mA RCDs.)

RCD Types General purpose, a.c or d.c. sensitive, and delayed (selective).

Supply Voltage 100 - 280 V 50 / 60 Hz

NO TRIP TEST (Optional on CM300)

Test Current IΔn -10% +0% for 2s

A tripped RCD shows <1999 ms.

Loop & Earth Resistance

<u>IΔn</u>	<u>Range</u>	<u>Accuracy</u>
10 mA	0,01 - 9,00 kΩ	±8% ± 0,10 kΩ
30 mA	1 Ω - 3,00 kΩ	±5% ± 17 Ω
100 mA	1 - 900 Ω	±5% ± 5 Ω
300 mA	0,1 - 300 Ω	±5% ± 1,7 Ω
500 mA	0,1 - 180,0 Ω	±5% ± 1 Ω
1000 mA	0,1 - 90,0 Ω	±5% ± 0,5 Ω

Contact Voltage

0,1 - 90,0 V +10% -0% ± 5 digits

TRIP TEST

Supply Voltage 200-280 V, 50/60 Hz

Note: a.c. sensitive RCDs rated less than 1000 mA, and d.c. sensitive RCDs rated less than 300 mA, may be tested on supply voltages as low as 100 V.

Test Current

General Purpose IΔn +10% -0% for 200 ms

Delayed [S] IΔn +10% -0% for 2000 ms

Timing 0,1 - 1999 ms ±1% ±1 ms

150 mA TEST

Test Current 150 mA ± 5% for 40 ms

Timing 0,1 - 40 ms ±1% ±1 ms

RAMP TEST

Test Current

<u>IΔn</u>	<u>Ramp Range</u>	<u>Accuracy</u>
10 mA	5 -15 mA	±5% ± 1 mA
30 mA	15 - 50 mA	±5% ± 1 mA
100 mA	50 - 150 mA	±5% ± 5 mA
300 mA	150 - 300 mA	±5% ± 5 mA
500 mA	250 - 500 mA	±5% ± 10 mA
1000 mA	500 - 1000 mA	±5% ± 20 mA

Timing 0,1 - 1999 ms ±1% ± 1 ms

POWER SUPPLY

6 x 1,5 V Alkaline Cells type LR6 **only**

For RCD, Loop and Earth Tests a mains supply of 100 to 280 V 50/60 Hz is also required.

ENVIRONMENTAL PROTECTION

IP40 - The instrument is designed for indoor use, or outdoor use if suitably protected.

TEMPERATURE RANGE

Operating -5°C to +40°C, 90% RH

Storage -25°C to +65°C, 95% RH @ 40°C

FUSES

User Changeable 500 mA 440 V HBC 10 kA

ORDERING INFORMATION

Item	Order Code	Optional Accessories	Order Code
Combined Installation Tester with UK Lead	CM400	Test Lead Set, 3-Wire . . . . .	.6231-592
Combined Installation Tester with European Lead	CM300	Carrying Case . . . . .	.6420-109
Included Accessories		Fused Prod and Clip Set . . . . .	.6180-405
Instruction Book – CM400 . . . . .	.6172-065	Earth Testing Kit, 3 Terminal . . . . .	.6210-160
Instruction Book – CM300 . . . . .	.6172-118	PC (AT - AT) RS232 link cable . . . . .	.25955-025
Test Lead Set, 2 – Wire with Prods . . . . .	.6231-591	Mains Test Lead (European) . . . . .	.6231-593
Crocodile Clip, Red . . . . .	.6280-283	Mains Test Lead (UK) . . . . .	.6231-586
Crocodile Clip, Black . . . . .	.6280-284		