

KEWTECH

KT400DL

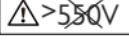
Loop Impedance & PSC / PFC Tester

Operating Instructions



1. Safety

1.1 Equipment Markings

	Caution - refer to the instruction manual.
	Construction is double insulated.
	Product should be recycled as electronic waste.
	Conforms to EU standards.
	Prohibited to use on Electrical Systems which use voltages above 550V.
CAT IV 300V	Measurement Category IV is applicable to testing and measuring circuits at the origin of the installations supply. They are utility level CAT checks. This part of the installation is expected to have a minimum of one level of over-current protective device between the transformer and connecting points of the measuring circuit. This tester's voltage rating for CAT IV locations is 300V, where the voltage is Phase (line) to Earth.
CAT III 500V	Measurement Category III is applicable to testing and measuring circuits connected after the source of the building's low-voltage MAINS installation. This part of the installation is expected to have a minimum of two levels of over-current protective devices between the transformer and connecting points of the measuring circuit. Examples of CAT III are measurements on devices installed after the main fuse or circuit breaker fixed within the building installation. Such as distribution boards, switches and socket outlets. This tester's voltage rating for CAT III location is 500V where the voltage is Phase (line) to Earth.

1.2 Operational Safety

The KT400DL is designed to be used by skilled persons in accordance with safe methods of work. If the KT400DL is used in a manner not specified by Kewtech, the protection provided by it may be impaired.

Inspect the product before using. If any damage is visible; such as cracks in the casing, damage to any accessories, leads or probes, the unit should not be used.

Do not operate the KT400DL with the battery cover off as this will compromise the insulated safety barrier.

To maintain safety, ensure serviceability and to monitor accuracy of the KT400DL, the tester should be checked on a checkbox such as the Kewtech FC2000 checkbox at regular intervals.

Although fully protected against over voltage up to 440V, the tester should only be used on 230V systems.

Contents

KT400DL Loop Impedance and PSC/PSF Tester

KAMP 12 Mains lead

Batteries

Carry Case

Manual

Optional

ACC063 distribution board lead set

Kewcheck R2 - socket test lead adapter

Lightmates – test lead adapters for lighting points

2. DESCRIPTION

The KT400DL is a no trip and high current, high resolution digital earth loop impedance tester.

2.1 Features

- No Trip LOOP L-E test
- High current L-E loop test
- High current, High resolution L-E loop test
- High current, High resolution L-N loop test
- AC Voltage VLN - VLE - VNE
- Distribution network operator polarity test pad
- PFC / PSC measurements
- Hands free function
- Polarity, voltage present LED
- Auto switch off function for battery preservation.

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2.2 Indication

The white display backlight will illuminate on switching on and during testing. To preserve battery life the backlight will switch off after approximately 4 seconds of inactivity. The unit will automatically power off after approximately 3 minutes of inactivity. To switch the tester back on after auto power off, press any button.



LCD display shown in the no trip loop function.

3. USAGE



3.1 Battery Installation

Unit requires 4 x AA batteries.

Ensure that all test leads are removed before installing batteries. Remove the rubber over-mould and battery cover on the reverse of the unit. Install the new batteries ensuring correct polarity as indicated. After installing batteries and before use ensure the battery cover and over-mould are correctly fitted, switch on the unit and check for correct operation.

Dispose of used batteries as per the local authority's guidelines.

3.2 Operation

Loop No Trip L-E

This is a three wire test to measure Z_s where the circuit is protected by an RCD. Where possible non-essential electrical equipment should be disconnected to reduce the chance of the RCD tripping as a result of leakage build up.

Turn the rotary dial to the Loop No Trip L-E position. Allow the tester to conduct a self test and check the incoming voltage and polarity.

Voltage L-N will be displayed and Volts Present LED will illuminate green. Push TEST. Loop result will be displayed with voltage L-N.

Hi current loop modes

Unlike most testers that only measure the resistance of the Loop, the high current mode of the KT400DL will measure the true Impedance of the Loop which includes an element of reactance. This can be significant where the distribution board is close to the mains supply transformer and the KT400DL's method is therefore much more accurate than older Loop testing techniques.

You should be aware that because of this there may well be variations in readings compared to ordinary loop testers or to the no-trip function

of this tester, particularly when the measurement is made near to the mains supply transformer.

Loop Hi Current L-E in 3-wire Testing

This Hi current test is used to measure Ze at the distribution board before any RCD or Zs where the circuit is not protected by an RCD.

Turn the rotary dial to the Loop Hi L-E Position. Voltage L-N will be displayed and green volts present LED will illuminate green if conditions are correct. Push TEST.

Loop result is the true loop impedance and will be displayed with Voltage L-N.

Loop Hi Resolution L-E (and L-N) in 3 wire Testing

This Hi current high resolution test is used to measure Ze at the distribution board which is close to a transformer and gives a 0.001Ω resolution. It also has to be conducted before any RCD in the circuit or can be used to measure Zs where the circuit is not protected by an RCD. Turn the rotary dial to the Loop Hi high resolution L-E (or L-N) Position. Voltage L-N will be displayed and green volts present LED will illuminate green if conditions are correct. Push TEST.

Loop result is the true loop impedance and will be displayed with Voltage L-N.

Lead Configuration for Hi Current 2-wire Testing.

Both the Loop Hi current L-E and Loop Hi resolution L-E (and L-N) tests can be conducted in two wire mode by using the ACC063 test leads (not included with the instrument, available as an option).

To arrange the test leads in 2-wire mode pull the blue prod or crocodile clip off the blue test lead and plug the Blue probe into the back of the Green 4mm connector as shown overleaf.

You will now have the Earth and Neutral leads connected together ready

for connection to the Earth or Neutral conductor to be tested.

NB: In two wire mode the loop measurement, voltage displayed and PSC/PFC results will pertain to the L-E or L-N circuit to which the test leads have been connected.



Hands Free

Prods in 2 wire testing configuration

The Hands Free function can be used with any loop measurement. Select the loop measurement required with the rotary dial. Press the Hands Free button HANDSFREE will be displayed on the screen. Once the tester is connected, correct voltage and polarity is confirmed a loop test will be conducted without TEST being pressed.

Volts L-N/ L-E / N-E

Voltage L-N is the tester's default setting. By pressing VOLTS LN-LE-NE the voltage displayed will be toggled. The voltage displayed can be toggled before or after a loop test is carried out.

PFC / PSC

After a loop test has been carried out the calculated PCF or PSC can be displayed by selecting PFC L-E / PSC L-N. See note under lead configuration for Hi current two wire testing when used in two wire mode.

Polarity Test Pad

It is a little known fact that a system can be reverse wired at the distribution board with Live (Phase) to earth/neutral and earth/neutral to Live (Phase). In this condition the sockets will all work and conventional

loop testers will show and test that everything is correct despite this very dangerous wiring condition.

Although extremely rare, this dangerous condition can exist so if your test shows this fault do not proceed.

Touch the touchpad area next to the test button. There should be no change in the indication given. If the Voltage/Polarity LED flashes Red and a warning tone is emitted when the touchpad is touched a potentially dangerous polarity reversal exists. Do not proceed. If in any doubt advise the customer to contact the electricity supply company immediately.

4. MAINTENANCE AND SERVICE

If required, clean with a damp cloth and mild detergent. Do not use abrasives or solvents.

With the exception of the batteries there are no user serviceable parts.

Contact Kewtech for parts and technical assistance.

WARRANTY - 2 years manufacturer's when registered on the website:
Kewtechcorp.com/product-registration

ExpressCal, Unit 6, Shaw Wood Business Park, Shaw Wood Way, Doncaster DN2 5TB

T: 01302 761044 E: expresscal@kewtechcorp.com

5. SPECIFICATION

Voltage	
Range	Accuracy
0 to 260 V	± (3% + 3 digits)

No Trip L-E Loop Test

(No trip L-E mode, 3 wire testing, Phase - Neutral - Earth all connected)

Range	Accuracy
0.00 to 99.99 Ω	$\pm (5\% + 5 \text{ digits})$
100.0 to 499.9 Ω	$\pm (3\% + 3 \text{ digits})$

Hi I L-E Loop Test

(Hi I L-E mode, 3 wire testing, Phase - Neutral - Earth all connected)

Auto Range	Accuracy
0.00 to 500.0 Ω	$\pm (3\% + 3 \text{ digits})$

Hi-Resolution, Hi I L-E / L-N Loop Test

(Hi I L-E/L-N mode, 3 wire testing, Phase - Neutral - Earth all connected)

Range	Accuracy
0.000 to 9.999 Ω	$+ (3\% + 30 \text{ m}\Omega)$
10.00 to 99.99 Ω	$+ (3\% + 3 \text{ digits})$
100.0 to 500.0 Ω	$+ (3\% + 3 \text{ digits})$

Supply Voltage	195 - 260V (50 - 60 Hz)
Overprotection	440V

The following are details of the operating ranges for individual functions compliant with the performance requirements of EN61557

	Measurement Range	Operating Range EN61557	Other
Loop No Trip	0.010 Ω - 500 Ω	1.04 Ω - 500 Ω	230 V 50 Hz
Loop Hi-I	0.01 Ω - 500 Ω	1.04 Ω - 500 Ω	230 V 50 Hz

Power supply	4 x AA LR6 Batteries
Battery life	50 hours
Overvoltage category	CAT III 500V CAT IV 300V
Operating temperature	0 - 40°C
Storage temperature	-10 to 60°C
Operating humidity	80% @ 31°C to 50% @ 40°C
Safety compliance	BSEN 61010-2-030:2010
EMC compliance	BSEN 61326-2-2:2013
Performance standard	BSEN 61557-1:2007 BSEN 61557-3:2007
Probes	GS38 compliant
Dimension (mm)	180mm x 85mm x 50mm
Weight (g)	Approximately 450g

For repair and calibration please return to us at :

EXPRESSCAL

Electrical Testing Services

Express Cal

Unit 6, Shaw Wood Business Park, Shaw Wood Way, Doncaster DN2 5TB

0345 646 1404 (Select option 2)

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