SOCKET & SEE™

USER MANUAL 06/06

MULTIFUNCTION DIGITAL RCD TESTER

Tests RCDs, PFC, socket, mains voltage & polarity

PDRC380

Caution

We strongly advise reading and understanding this guide before the instrument is used. In particular note the safety issues that follow:-

- Although fully protected up to 600V AC this tester is for use on 230V AC circuits only.
- Always check the tester on a known correctly wired live socket outlet before and after use.
- Before use - check your tester for any damage to the plug, lead and cabinet.

CE BS EN 61010-1

At Socket & See our Engineers constantly look for improvement. If there is any aspect of your Socket & See tester you would like to comment on please visit our website at

www.socketandsee.co.uk

or email davidh@kewt.co.uk or Free Fax at 0800 7831385 with any suggestions.

We promise all communications will be acknowledged. We value YOUR opinion.

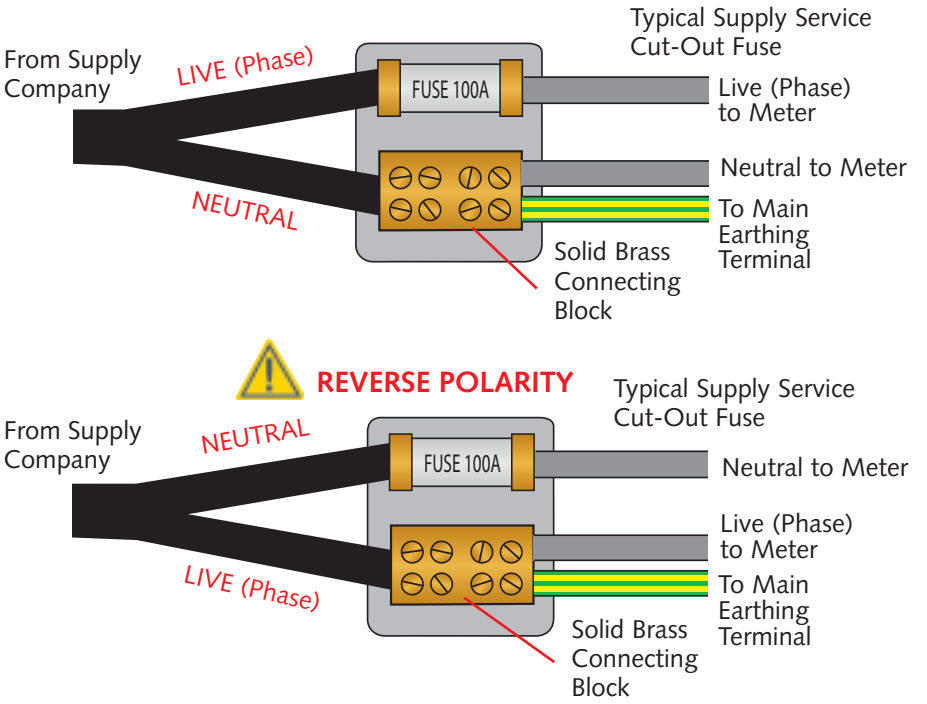
Operation overview

Your Socket & See tester has a special polarity test function.

It is a little known fact that a system can be reverse wired with Live (Phase) to earth/neutral and earth/neutral to Live (Phase) 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 miswire condition can exist so if your test shows this fault do not proceed - if in any doubt advise your customer to contact their supply company immediately.

Correct Polarity



Operation overview continued

The PDRC 380 is a multifunction tester testing 30mA and 100mA RCDs, mains voltage, correct socket wiring and polarity.

Correct socket wiring and correct polarity

At the Socket Test stage the PDRC 380 also accurately measures and displays the mains voltage in the LCD (Liquid Crystal Display).

A reminder of the correct voltage range 207-253V AC (Harmonised Standard BS 7697 HD 42S1) is given above the display.

If the Voltage Range is outside of this standard, stop testing – your customer should notify their electricity supply company of the problem.

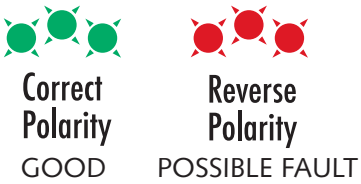
If the three socket LED's are GREEN (correct) and the correct voltage is displayed you can proceed to Polarity Test.

The reasons for Polarity Test are covered in detail on the previous page of this User Guide.

To carry out the test apply firm (thumb) pressure to the Polarity Test Pad, note this pad does not depress. The three Socket Test LED's should flash GREEN - everything is correctly wired **including Polarity** (live and earth/neutral are in the right place).

If the LED's change to flashing RED when you operate the Touch Pad - it is possible a very dangerous condition is present and you should advise your customer to contact their electricity supply company immediately.

This Polarity indication diagram is a reminder for the correct and incorrect polarity condition.



If everything in this section is a good test result you can proceed to RCD testing, see page seven.

Operation - a detailed view of the PDRC 380

Note numbers also indicate sequence of test.

2.
Three LED's show socket wiring status

1.
On/Off button

3.
Correct mains voltage indicated

5.
Selects RCD rating for 30mA and 100mA ($I\Delta n$)

6.
Selects test to be applied
x 1 - Trip
x 5 - Fast trip (30mA RCD only)
x 1/2 - No trip

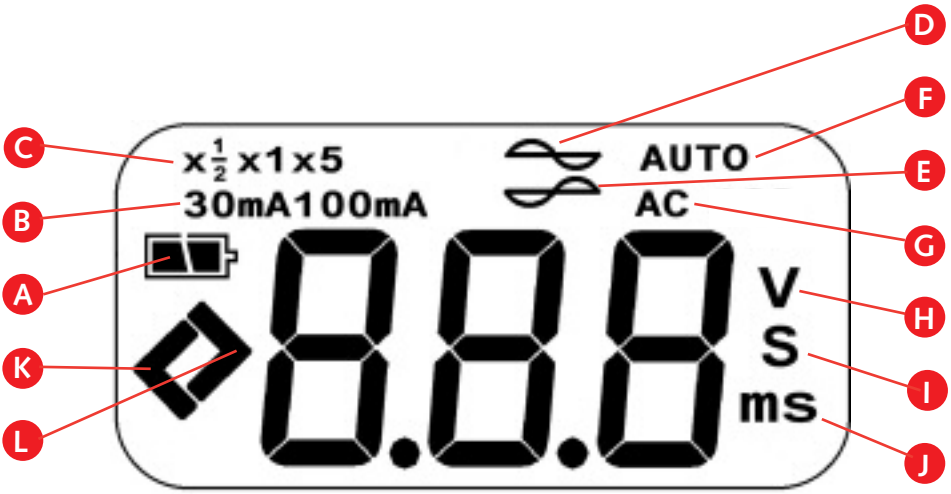
4.
Polarity Test

7.
Selects phase angle the test will start from
= 0^0 or
=180^0

8.
Manual or auto test sequence

9.
Push to start test

Overview of the display



A. Battery Condition (=good)

B. Indicates RCD rating selected ($I\Delta n$) 30mA or 100mA

C. This is the test multiplier selected e.g. for a 30mA RCD test will be made at 15mA, 30mA and 150mA

D/E. Phase Angle Test will start from = 0^0 (positive)

= 180^0 (negative)

F. Shows Auto Test sequence has been selected

G. Indicates the type of RCD being tested (AC = standard general purpose RCD)

H. AC Volts

I. Seconds

J. Milliseconds (thousandths of a second)

K. < Less Than

L. > Greater Than

RCD testing

Plug the tester in and switch on the mains supply.

1. Power ON/OFF - Pressing and releasing this button turns the PDRC 380 on - holding down for longer than 2 seconds turns the unit off (plus intelligent Auto Power Off is incorporated).

2. All three LEDs GREEN = CORRECT wiring status, any other indication (see back cover) - DO NOT PROCEED -investigation is required.

3. Check mains voltage is correct 207-253VAC
   Important note:
   All tests are inhibited until the mains voltage appears in the display

4. Polarity Test - this important test is discussed in full on pages three and four of this manual, please read.

5. This selects trip current of RCD 30mA or 100mA (IΔn). This information will be printed on the RCD being tested (in addition to the overall rated current of the RCD).

6. Select the multiplier for the test current that will be applied to the RCD under test e.g. for a 30mA RCD x1 = 30mA, x5 = 150mA, x$^1/_2$ = 15mA.

RCD testing

7. In manual mode this toggles between  0^0 phase angle and  180^0 phase angle.

8. Auto test is a very useful Socket & See feature, there are a total of six tests for 30mA RCDs x1, x5, $x^1/_2$ on each phase angle 0^0 and 180^0 and four tests for 100mA RCDs x1 and $x^1/_2$ again on each phase angle. Your tester defaults to manual operation on switch on and in this mode you control all the above tests.

   If the manual/auto button is pressed AUTO - appears in the display (see F page six). The PDRC 380 will now automatically select the test sequence for you.

   Example for 30mA RCD

   Press manual/auto button 8 - check the following appears in the display (as well as voltage)$x^1/_2$ 30mA  AUTO - Press test button 9 >2.00s should appear in the display (pass). In the display  has now changed to  . Press 9 again >2.00s should appear in the display, but $x^1/_2$ will change to x1 and the phase angle will be  press 9 - the RCD should trip and display the tripping time in ms. Reset the RCD - phase has changed to  Press 9 the RCD should trip (and will typically show around 10ms difference between tests at opposite phase angles).

RCD testing

Reset the RCD, the display will show x5 and  push 9 the RCD will trip (usually faster than x1). Reset the RCD the phase angle is now  push 9 again for the final test.

The same automatic principle applies to 100mA RCDs except x5 test are not required for RCDs of this rating.

9. The push to test button must be operated to initiate test.

Socket Test Technology

The PDRC 380 uses our well proven Socket Testing patented technology to indicate the socket is correctly wired.

Plugging the unit in and switching on mains supply automatically initiates the socket test sequence.

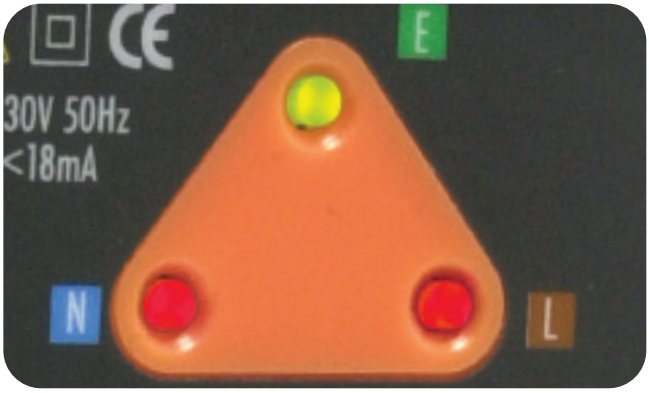
If the socket is correctly wired the LED's will be GREEN on this check.

If the socket is incorrectly wired one or more LED's will go to FLASHING RED to indicate there is a a socket miss-wire or other fault.

If flashing red (or orange) occurs using the touch pad at this stage, this should show where the socket wiring problem is – as per the example below.

A unique feature of your tester is the ability to display by the position of the red LED(s) where the problem is, EARTH, LIVE (Phase) or NEUTRAL.

A full list of wiring faults is shown on the back cover of this User Guide.



This is an example of 'Fault Locate' showing Live (Phase), neutral reverse.

Specifications

Features
Type AC breakers
30ma breakers x1/2 x1 x5 test currents
100ma breakers x1/2, x1 test currents
Unlimited number of RCD tests
RCD test polarity change
Auto / Manual test on both breakers
Full socket test and mains polarity test
Complies with EN61557 parts 1 and 6 (performance)
Complies with EN61010 (safety)
Complies with EN61326 (EMC)

RCD Test Range (to EN61557-6)

Supply voltage	195V – 253V AC 50Hz
Test current accuracy	(1/2 I) –0% to –10%
Test current accuracy	(I, 5I) +0% to +10%
Trip time accuracy	Up to 1 second +/-(1% + 1ms) Over 1 second +/-(1% +10ms)

Voltage measurement
Range 5V to 440V +/-(2% + 1V) over the working frequency range of 50Hz +/-0.5%

Socket test
Detects opens, shorts, wrong wiring, phantom conditions, phase reversal, out of limits voltage.

Fault Touch Voltage
Test terminated if >25V

Power
4 x AA batteries 'Alkaline' recommended
Battery life 10,000 tests
Fitted fuse 32mm 0.25A (F) HBC
Survives 440V over voltage test rated for 1 minute.

Environmental
Operating Temperature Range . . . . . 0˚C to 40˚C
Storage Temperature Range . . . . . -10˚C to +60˚C
Operating Humidity . . . . . 93% RH @ 40˚C
Size . . . . . .157mm x 89mm x 39mm
Weight 400g

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Condition Number	Wiring Condition	Supply Terminal			LED Display	Buzzer
		N	E	L		
		Socket Wiring				
1	Correct	N	E	L		Continuous
2	L-E reverse	N	L	E		Warble
3	L-N-E miswire	E	L	N		Warble
4	L-N reverse	L	E	N		Warble
5	L-N-E miswire	L	N	E		Warble
6	Faulty N / L-E miswire	NC	L	N		Warble
7	Faulty N / E miswire	NC	N	L		Warble
8	Faulty N	NC	E	L		Warble
9	Faulty N / L-E reverse	NC	L	E		Warble
10	Faulty E / L-N reverse	L	NC	N		Warble
11	Faulty E	N	NC	L		Warble
12	Faulty E / N miswire	E	NC	L		Warble
13	Faulty E / L-N miswire	L	NC	E		Warble
14	Faulty L / N-E miswire	L	N	NC		Warble
15	Faulty L / E miswire	N	L	NC		Warble
16	Faulty L / N-E miswire	E	L	NC		Warble
17	Faulty L / N miswire	L	E	NC		Warble
18	No Mains	NC	NC	NC		None

LED's will flash to indicate fault condition
NC=No Connection