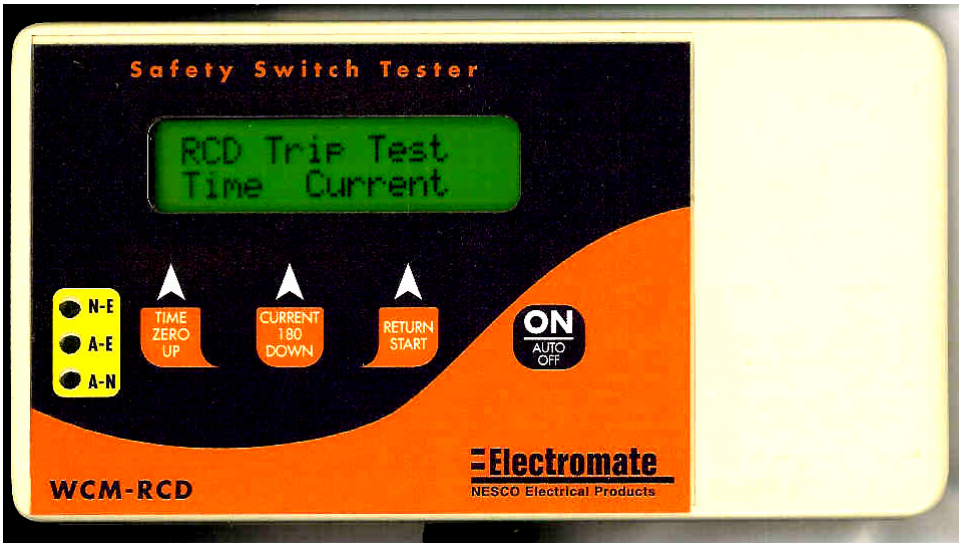
WCM-RCD & WCM-RCDm



Software Interface program for the WCM-RCDm tester

REVISION 1.4 November 2004

Developed by Wavecom Instruments Pty Ltd
Ph: (08) 8331 8892
Int: (+61) 8 8331 8892
Email: admin@wavecom.com.au
www.wavecom.com.au

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SAFETY WARNING

As with any Electrical appliance, SAFETY must always be observed. Testing appliances & RCD's is no exception, in fact the opposite. MORE care must be taken to ensure personal safety is met.

Although the WCM-RCD & WCM-RCDm has been designed to meet stringent standards & requirements, no device can completely protect with incorrect use.

These tests should be conducted by a Competent and suitably trained person.

Switchboards should only be accessed by an Electrician.

Always ensure the following for safety.

- ***Your equipment is in good repair.***
- ***Follow user instructions***
- ***Double check power supply connection (LEDs)***
- ***Always use specified fuses and protection devices.***
- ***Do not use leads that require repair or are damaged.***
- ***If you're not sure, call a Licensed engineer/electrician.***

COMPETENT PERSON

To ensure that specified electrical equipment used to perform certain work is inspected, tested and tagged, the regulations require that a competent person (such as a licensed electrician) be employed.

A person competent to undertake Inspection and Testing of electrical equipment must therefore have:

1. Knowledge and practical experience of electricity and its hazards.
2. A clear understanding of precautions to avoid danger.
3. The ability to recognise, at all times, whether it is safe for work to continue.
4. The capability to carry out visual examinations of electrical equipment.
5. The competency to carry out RCD tests on electrical equipment and Switchboards.
6. The knowledge of how to use the relevant testing instruments, interpret and record the results for compliance with the Standard/work place requirements.
7. The ability to recommend the frequency of testing, if required.
8. To report any hazardous issues or situations.

Due to the potential hazards of electrical testing all care must be taken.

Disclaimer:
LIMITED Warranty:

The Manufacturer warrants its products against defects in materials and workmanship for a period of 12 months from the date of purchase. During the warranty period, manufacturer will repair (or at its option replace at no charge) the product that proves to be defective. This warranty does not apply if the product has been damaged by accident, abuse, misuse or miss-application or as a result of service or modification by anyone other than the manufacturer of WCM-RCD & WCM-RCDm.

WCM-RCD & WCM-RCDM or its Manufacturer IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY. The Distributors of this product cannot assume liability or responsibility for any loss or damage resulting from the use of this Device.

The manufacturer of WCM-RCD & WCM-RCDm reserves the right to discontinue models at any time, or change specification, price or design, without notice and any obligation.

Ph: (08) 8331 8892
Int: (+61) 8 8331 8892
Email: admin@wavecom.com.au
www.wavecom.com.au

Visual Inspection

- Physical: No damage or component defects to accessories, plugs, outlet sockets or connectors

- No Cracks & Abrasions

- No Exposed Inner cores or conductors (flexible) supply cords are not twisted and distorted.

- Fuse / Over load protection (if fitted)

- Labelling and markings and the warning indications of the maximum load to be connected to the device, is legible and intact

Damaged Insulation Melted, Cuts, abrasions, Iron filings in Insulation or Insulation tape on lead

- Flexible cords and Leads are effectively anchored (Glands and Grommets intact)

- Covers/guards, in place and secure as intended by the supplier/manufacturer

- Safety devices and systems are in good working order. (Ie. Overload latches & buttons)

- No Dust & Dirt that obstructs exhausts and ventilation.

- Button Test ensure trip button test carried daily or before each use which ever is the shorter

- All controls are working properly and are secure and aligned.

RCD Testing

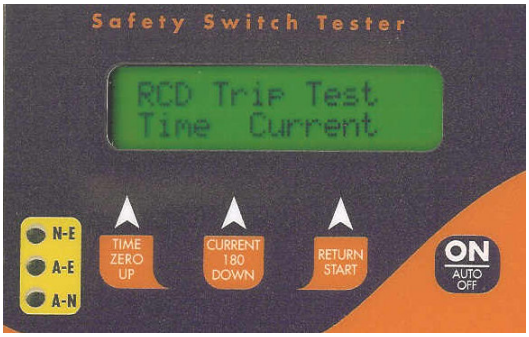
NOTE: Where ANY RCD testing is carried out on any circuit that is protected by an RCD in the main switchboard (upstream), it is highly likely to trip this upstream RCD when performing RCD trip time or trip current tests, before any down stream (portable) RCD devices. The RCD in the switchboard will trip faster, due to increased upstream levels of leakage current from the additional circuits and devices connected to it. The fixed RCD's may also have better connectivity, sensitivity and mechanical mechanism causing this to happen.

To avoid tripping large areas in the work places monitored by the switchboard RCD it is suggested that an RCD isolation transformer be used. (TnT-ISOT) These are designed specifically for the purposes of field RCD tripping.

Due to the electronic design method implemented in the WCM-RCD & RCD/M an isolation transformer with an additional small inductive load eg 5 watt globe plug in parallel is required to complete the transformers internal circuit which will cause effective tripping if the isolated RCD device.

DO NOT use these Transformers for any other purpose.

To return to main menu, press and release the RETURN/START Button.



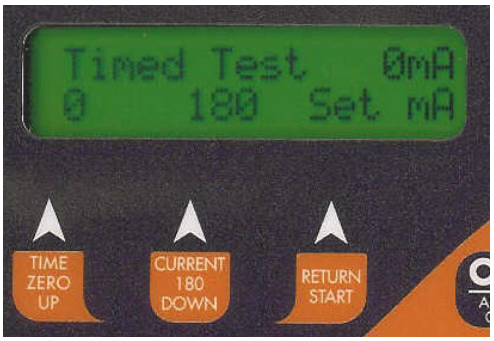
Main RCD Trip Test Menu displays 2 options

– RCD Trip Time
=TZU button

- **RCD Trip Current**
- **CAUTION Pressing this button at this point will cause tripping if RCD fitted.**
  - **=C1D Button**

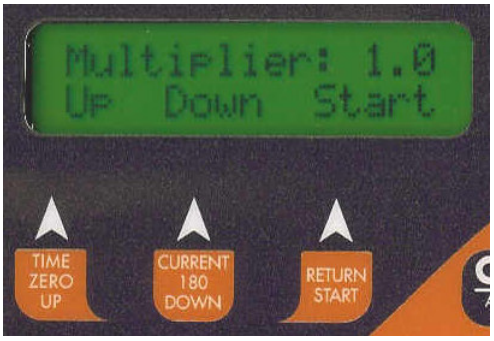
1. RCD Trip Time.
Press TZU button for this option and the following menu appears.

Trip Time Testing: This principal of testing is designed to trip RCD devices at a fixed current and to determine the trip time of the RCD device.
This function is factory set to 30mA for fast testing the user can set the trip current to X0.5, X1.0, X 5 Multiplier values of the set current of the RCD.

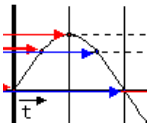


I.E. 30mA X 0.5 =15mA
30mA X 1.0 = 30mA RCD
30mA X 5.0 = 150mA
(This also is effective on any set test current of the tester from 5mA to max 500mA output.)

These tests should result from no-trip, trip to faster trip times respectively.



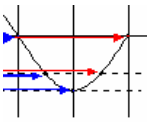
TZU - 0 deg



This starts the tripping process in the positive half of the mains supply cycle. (50HZ Aust/NZ).
Press F1 – The preset mA test current (and multipler) will be induced on to the mains supply and begins the trip test in the positive half of the sine wave.

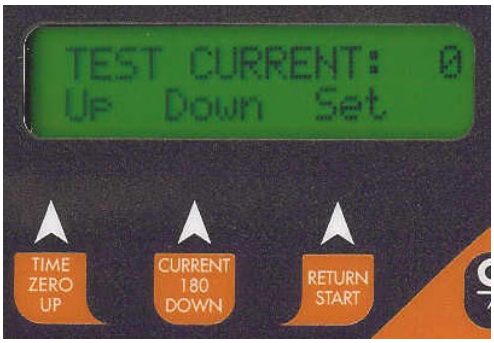
Ph: (08) 8331 8892
Int: (+61) 8 8331 8892
Email: admin@wavecom.com.au
www.wavecom.com.au

C1D - 180 deg



This starts the tripping process in the negative half of the mains supply cycle. (50HZ Aust/NZ).
Press F2 – The Preset mA test current will then be used in the following test and begins the trip test in the negative half of the sine wave.

Change Test mA



– Change test mA This allows the user to set the trip current level. 5mA to 500mA

To **exit** menu, press and release the F3 button.

The WCM-RCD /m displays and maintains the last, set trip current value.

If the user wishes to change the value of the trip current the following steps enable the changes.

Press and release SRS button to display test current.

Up - This button raises the trip current in 1mA increments to 500mA. Hold the button and the value will scroll faster the longer depressed. Once 500mA limit is reached the value will then loop over and start again from 0mA.

Down - This button decreases the trip current in 5mA increments. Hold the button and the value will scroll faster the longer depressed. Once 0mA limit is reached the value will then loop over and start again from 500mA.

Set - This button sets the selected current for the next trip time test. The TnT+ will then return to the current trip time test screen.

The displayed trip time is in milliseconds. This is the time taken for the RCD device to trip once the injected fault current has been applied, either from the start of the +ve half of ac cycle or the start of the – ve half ac of cycle.

The WCM-RCD / m injects a true fault current value using a real time compensation calculation of the actual voltage at the time of test. Hence delivering a true and accurate trip current. No further compensation due to voltage fluctuations is required.

Voltage range 40 – 140V ac.
If the mains supply is off or out side operating voltage range the display will show "out of voltage range". Tester is unable to calculate the required compensation current.

As stated above this screen sets the multiplier of the set test current. Use the **TZU** or **C1D** keys to scroll through the multipliers X0.5, X1.0, X5.0 of the set current.

Maximum output current = 500mA..
I.E if set test current were 100mA then 100 X 5.0 =500mA.
If set test current = 200mA then maximum out put 5 x 200ma =1A is out of range. Unit will not deliver this output current and display on Screen "OUT of RANGE".

Press SRS to START test.

WCM-RCD display will display test result after mains supply has tripped. This will remain until SRS key is pressed or the unit is left to time out and automatically shut down. (Factory Set at 20 seconds)

CAUTION Pressing SRS at this point will cause tripping if RCD fitted to circuit.

TRIP CURRENT TEST. This testing principal is designed to trip RCD devices using a ramping up current, to determine the trip current of the RCD device. This useful test allows the user to determine circuit leakage load/pre-loading of RCD circuit. This can assist in determining nuisance tripping issues or determining RCD performance if suspected faulty or inconsistent in performance. The WCM-RCD has a nominal leakage current of 2mA, which should be added to the result of test.
E.G. if RCD tripped at 22mA + 2mA(TnT+)=24mA trip current.

RCD Current trip test. Press C1D 

for this option.

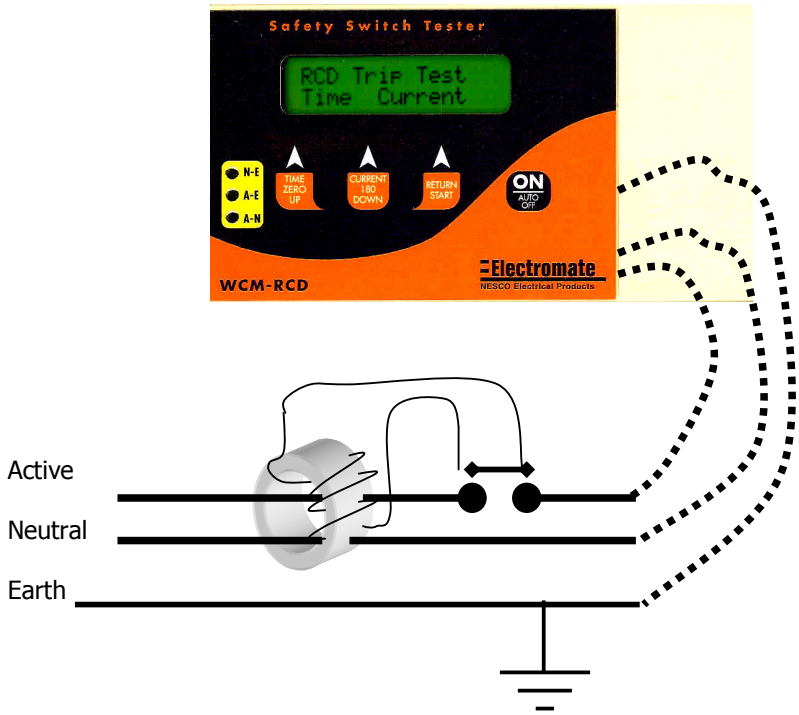
CAUTION Pressing C1D at this point will cause tripping if RCD fitted to circuit.

The Trip Current Test will ramp the mA current up until the RCD breaker trips. Current range 2.55 - 500mA. This test can run up to 10 sec to ramp current through full range if RCD faulty or not fitted.

Repeated testing in this mode will cause heating of TnT+. Should over heating occur the internal temperature sensor will cause display to indicate "over temp allow to cool"

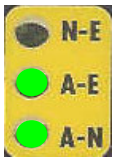
This requires the WCM-RCD device to be best left unplugged for several minutes allowing unit to cool.

CAUTION continuous ramp current testing will cause unit to over heat.

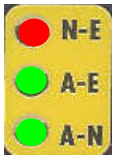


Mains Supply tester.

If this red light is on **DO NOT CONTINUE** to test as the mains supply earth has a problem. This light will glow brighter as the voltage difference increases between neutral and the earth on the supply mains. (If working with a generator this is most likely to occur, consult an electrician before proceeding)



If both green lights are on and no red. **Mains Supply is ok. Continue to test.**



If both N-E & A-E lights light up, **Consult an Electrician,** as there is a fault with the Mains Supply

SPECIFICATIONS FOR WCM-RCD /m

RCD Tester:

Trip Current Range	2.55 – 500mA, 1mA steps repeatability >1mA Factory set Default trip current 30mA
Fast Test	Modes of 0.5, 1.0, 5 X set trip current.
Time Trip	0 – 2500 milli Sec 0.0001Seconds Resolution
Ramp Current Test	2.55 – 500mA, 5mA steps
Voltage Test Range	40 – 140Vac
Frequency Range	20Hz to 440Hz accuracy (@50 & 60Hz <1%@90Vac) (@400Hz ±5%)
Trip test	0 & 180 deg waveform from zero crossing
Temp cut out	65°C.
Warning indicators	Out of voltage range No trip indication. Mains supply wiring condition monitor.
Battery Operated	9vdc ≅ 20mA standby mode.
Auto Off	Approx 20seconds after no button operation.
Mains Supply load	Nil. High input impedance may require minimum 3 watt balanced load to complete A-N circuit.

WCM-RCDm only

Memory	8Mbit storage
Real time clock.	Date, hours 24hr, minute, seconds

Ph: (08) 8331 8892
Int: (+61) 8 8331 8892
Email: admin@wavecom.com.au
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Display:

LCD 2 x 16 Characters 5.5mm or 9.2mm high model dependant.

Mechanical:

Case ABS plastic
Size: 170L x 85W x 33D
Weight: 550 grams

Safety:

The instrument in general meets the requirements of relevant IEC, AS & CE.
Safety Class II (Double insulated)
Tester Fuse Protected. HBC 1A. **Only** use HBC fuses.

Calibration:

As the WCM-RCDm is a solid state electronic device with no serviceable components or adjustments the manufacturer recommends a calibration alignment procedure be carried out every 2 years. For conformity checks to standards and references.

Accessories supplied:

Soft Case
Operator Manual
Manufacturers Compliance Certificate.

Optional Products or Accessories:

WinPATS	CE (PDA software)
WinPATS	Server
WinPATS	Lite
RCD-Compac	Connection Lead to PC WCM-RCDm (only)
RCD-ComPDA	Connection Lead to PDA WCM-RCDm (only)
WIN-PDA	
WinPATS	WCM-1200 Scanner 232
WinPATS	PDA Laser Scanner
WinPATS	WCM-1200 Scanner USB
TnT-ISOT	Isolation Transformer for RCD testing.
TnT	Appliance tester
TnT+	Appliance tester c/w power tests leakage tester & rcd tester.