



# Ring Main Unit Switchboard Tester

ELECTRICAL+INDUSTRIAL | TOOLS+TECHNOLOGIES

**TMAC**<sup>TM</sup>  
THEW &  
McCANN  
GROUP

ACTIVE INNOVATION



## BEFORE YOU START

### GENERAL PRECAUTIONS



**Read and understand this guide before operating this equipment.**

The TMAC Ring Main Unit Switchboard Tester is to be only used by qualified personnel and must be used in conjunction with the user's own working and safety procedures, without compromising the integrity of the TMAC product supplied.

Follow all safety instructions contained within this guide.

### QUALIFIED PERSON

A qualified person is one who is familiar with the installation, construction, operation or maintenance of the equipment and the hazards involved. In addition this person is competent, trained and authorized to undertake the work involved in accordance with established safety and working procedures.

### SAFETY SYMBOLS USED IN THE GUIDE



**Hazard Identification** - This is a general warning sign. It is used to alert the user to potential hazards. Any information that follows this symbol must be obeyed to avoid possible harm.

## BEFORE YOU START



**Hazard Identification** – Ensure you check that the RMUs' you are testing are on the approved switchboard list below.

Having checked that the RMU you are about to test is on the approved switchgear list then carry out the 'Self Test' procedure prior to and on completion of testing to ensure your tester is working correctly.

## Approved Switchgear

### Compatible Switchgear

Type of RMU	Type	Voltage	Model ID	Year	Prove Dead	Phase out	Comments
ABB	RMU	11	Safelink	All	OK	OK	
ABB	RMU	11	Safeplus	All	OK	OK	
Lucy	RMU	11	All	All	OK	OK	
Merlin Gerin	RMU	11	SM6	All	OK	OK	
Merlin Gerin	RMU	11	RM62	post 2001	OK	OK	
Fluokit	RMU	11	M24	N/A	OK	OK	Remove Neon's First – Neon's affects impedance of the test circuit.
Siemens	RMU	11	8DJ10	N/A	OK	OK	
Hawkey Siddeley	Switchgear	11	Eclipse	All	OK	OK	
Areva	Switchgear	33	WSA 6/36-2/623	N/A	OK	OK	

### List current at AUGUST 2007

### Incompatible Switchgear

Type of RMU	Type	Voltage	Model ID	Year	Prove Dead	Phase out	Comments
Merlin Gerin	RMU	11	RM6	pre 2001	NO	NO	
Siemens	RMU	22	8DJ10	N/A	OK	NO	R1+B2 switches to self test mode; B1+R2 OK
Holec	RMU	-	SVS	LED DC supply	NO	NO	Shows "live" when dead; shows "in phase" when out of phase

### List current at AUGUST 2007

#### WARNING

Users should be aware that the TMAC Switchgear Tester was developed as a general-purpose instrument for testing a variety of switchgear conforming to IEC 61243.5 - Live working - Voltage detectors - Part 5: Voltage Detecting Systems (VDS) with a range of threshold voltages presented by capacitive voltage dividers.

Because of the wide variety of switchgear in existence, to a variety of standards both current and superseded, it is not possible to give a universal warranty as to the correct operation of the Switchgear Tester on every RMU or switch.

Therefore it is important to check that the TMAC Switchgear Tester is approved for the switch to be tested.

The table above lists all compatible and incompatible switchgear for which the TMAC Switchgear Tester has been proven. This list will be updated from time to time as new switchgear is added.

If in doubt regarding the operability of the TMAC Switchgear Tester on a particular type of switchgear, please contact TMAC. We will contact the switchgear manufacturer to confirm its correct operability.

Alternatively, contact the switchgear manufacturer directly, and quote the specifications of the Switchgear Tester for an opinion.

For obsolescent or obsolete switchgear, correct operability can generally only be proven by controlled test. TMAC would be pleased to assist in such testing where we are able to do so.

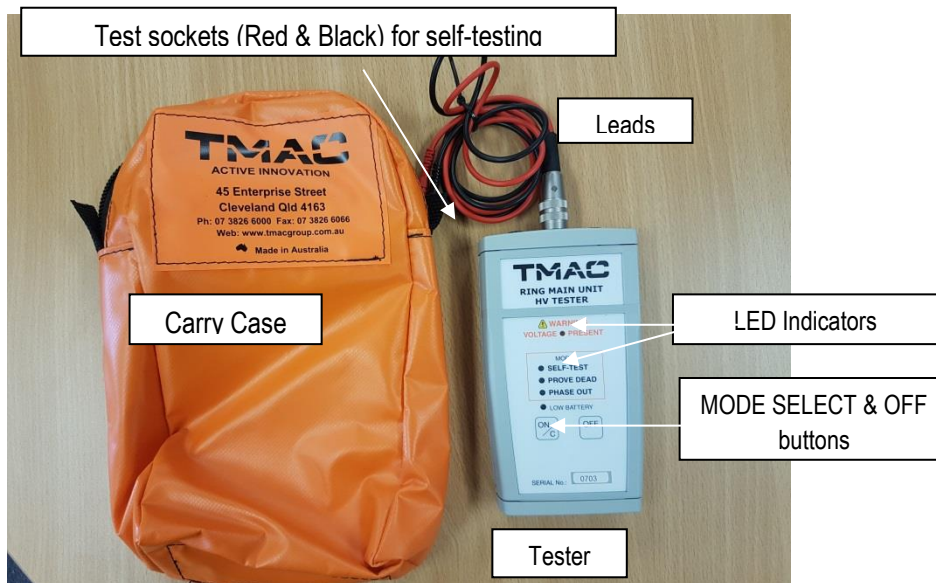
**DO NOT test a ring main unit without first checking that it is on the approved list!**

## INTRODUCTION

The TMAC Switchgear tester is used in much the same way as a set of test lamps. A voltage indicator (LED) and buzzer signal the presence of a voltage in excess of defined limits. The instrument is suitable for proving dead and phasing out HV switchgear such as ring main units which are fitted with a capacitive voltage divider. The Switchgear Tester acts as an all-purpose indicator when connected to the voltage divider output sockets.



**Hazard Identification** – The Switchgear Tester must **NOT** be used as a tester for LV mains circuits



## SELF TEST

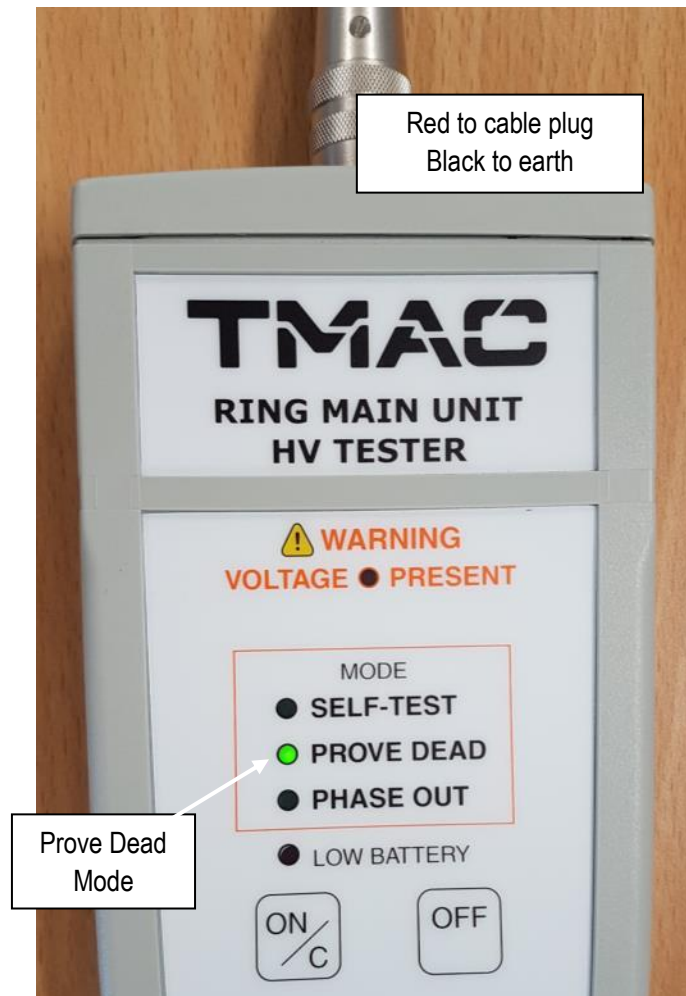
The self-test function checks the TMAC Switchgear Tester's leads and all internal components. A self-test must always be performed before and after any test sequence to prove the tester operation.

To perform the self-test:

1. Plug the leads into the test sockets in the top of the Switchgear Tester. The **red lead** must plug into the **red socket** and the **black lead** into the **black socket**.
2. Press "ON/C" button for "SELF TEST" and its' LED is working correctly.
3. If the TMAC Switchgear Tester is operational, the buzzer will sound continuously and the voltage indicator will light continuously. You cannot deselect the test mode with the "ON/C" button while the leads are plugged in for testing.
4. Once checked switch the unit off and unplug the leads.
5. To check the other LED's – Press the "ON/C" button and the "SELF TEST" LED will light, press the "ON/C" again for the "PROVE DEAD" LED and press "ON/C" again for the "PHASE OUT" LED to prove both are working correctly.



## TESTING TO PROVE DEAD



## ALL THREE PHASES MUST BE PROVEN DEAD TO CONFIRM THE CABLE IS DE-ENERGISED.

To prove dead:

1. Perform self-test and confirm operation of the TMAC Switchgear Tester.
2. Select "Prove Dead" using the mode select button "ON/C".
3. Plug black lead into an earth test point (or other earth point).
4. Plug red lead into A phase test socket on the switchgear.
5. If the cable is NOT LIVE there will be no indication by either the voltage indicator or the buzzer.
6. If the cable is LIVE the buzzer will sound continuously and the voltage indicator will light continuously.
7. Repeat steps 3-5 for B and C phases to confirm that the cable is de-energised.
8. Perform self test to confirm the TMAC Switchgear Tester is still operational.
9. Press the "OFF" button to switch off.

## PHASING OUT

To phase out:

1. Perform self-test and confirm operation of the TMAC Switchgear Tester.
2. Select “Phase Out” using the mode select button “ON/C”.
3. Plug the leads into the switchgear test points of the circuits to be proved. Expected indications for all combinations are shown in the table below.
4. If two cable phase cores are IN PHASE then there will be no indication.
5. If two cable phase cores are OUT OF PHASE, the buzzer will sound continuously and the voltage indicator will light continuously.
6. Perform self-test to confirm operation of the TMAC Switchgear Tester.
7. Press the “OFF” button to switch off.

### TABLE OF INDICATIONS FOR ALL TEST COMBINATIONS BETWEEN PHASES / CIRCUITS

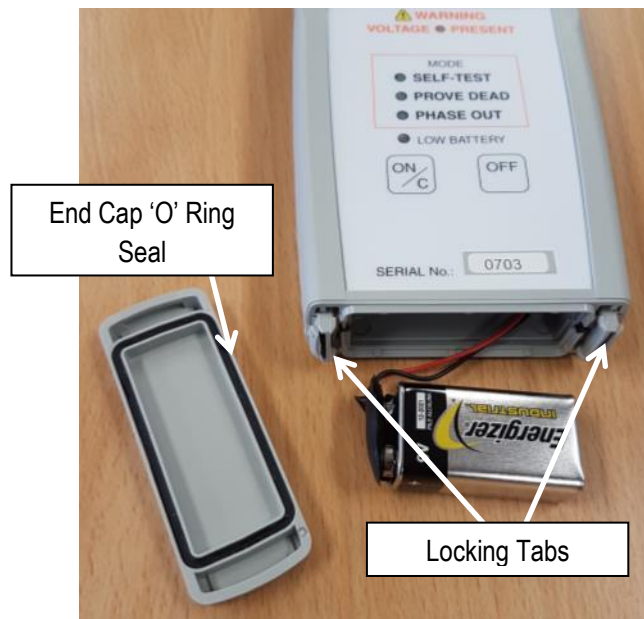
Connect leads between		Expected operation of buzzer and voltage indicator
Between phases circuit 1		Buzz + Voltage Indicator
Between phases circuit 2		Buzz + Voltage Indicator
A phase circuit 1	A phase circuit 2	No indications
A phase circuit 1	B phase circuit 2	Buzz + Voltage Indicator
A phase circuit 1	C phase circuit 2	Buzz + Voltage Indicator
B phase circuit 1	A phase circuit 2	Buzz + Voltage Indicator
B phase circuit 1	B phase circuit 2	No indications
B phase circuit 1	C phase circuit 2	Buzz + Voltage Indicator
C phase circuit 1	A phase circuit 2	Buzz + Voltage Indicator
C phase circuit 1	B phase circuit 2	Buzz + Voltage Indicator
C phase circuit 1	C phase circuit 2	No indications

## USER MAINTENANCE

### Battery Replacement

If the low-battery indicator lights, the battery must be replaced.

- Remove the battery cover by squeezing the two tags at the sides of the tester.
- Replace the battery in the normal manner.
- Replace the cover by aligning it with the housing, ensuring the waterproofing seal is in place. Strike the cover gently with the hand. It will click into place securely.
- The IP65 rating of the TMAC Switchgear Tester will be reinstated when the cover is replaced.



#### To test the low battery alarm:

- Insert the black lead into the black socket only, leaving the red lead free.
- Using the mode switch button "ON/C", switch to **self-test** mode.
- The low-battery light will light, and the voltage indicator light will flash intermittently, as well as the audible alarm will beep intermittently. This indicates the low-battery alarm circuit works correctly.

#### WARNING:

The self-test function confirms polarity of the leads during self-test. If the polarity is reversed the self-test is not successful.

However, **DO NOT** leave the red lead plugged into the black socket for any length of time, as this will drain and flatten the battery of the TMAC Switchgear Tester

### Specifications

- Battery voltage: 9V dc
- Battery type: 6F22 or equivalent
- Input Impedance: 10 MΩ
- Prove-dead threshold voltage: 10 V ac minimum
- Phase-out threshold voltage: 36 V ac minimum
- Maximum input voltage: 500 V ac
- Enclosure rating: IP65

## REPAIR

The end user must not repair or modify any component associated with this device without written permission from TMAC.

If repair is required, contact TMAC.

### TMAC

45 Enterprise St Cleveland

QLD 4163 Australia

Tel: (+61) 07 3826 6000

<http://www.tmacgroup.com.au/>

## DEFECTS / WARRANTY

### DEFECTS

Goods are warranted to be free from defects. Provided they have been used strictly as recommended and subjected only to fair wear and tear, Goods (including parts within) which are found to be defective within 90 days after delivery to the Buyer will be repaired or replaced at the option of the Seller and at its expense. Repair or replacement by the Seller is the exclusive remedies of the Buyer.

### WARRANTY

To the maximum extent permitted by law, the Seller makes no warranties, either express or implied, as to merchantability, fitness for purpose or otherwise with respect to the Goods other than in paragraph above and as required by statute. The Seller is not liable for any prospective profits or special, indirect or consequential damages or any general loss or damage, or for any expense resulting from use by the Buyer or others of defective Goods. The Seller's liability is limited to no more than the sale price of the Goods plus replacement delivery charges. Prior authority for the return of goods is required by the seller.

Please contact the seller by email [sales@tmacgroup.com.au](mailto:sales@tmacgroup.com.au), phone 07 3826 6000 or fax 07 3826 6066 for claims related to defective / warranty of goods provided.

FOR THE FULL TERMS AND CONDITIONS PLEASE REFER TO TMAC "STANDARD TERMS OF TRADE"