TIS CHECKBOX

INSTRUCTION MANUAL VERSION 1.00

NOTE
THE INSTRUMENT MUST ONLY BE USED BY SUITABLY TRAINED AND COMPETENT PERSON(S).

CONTENTS

Optional Accessories / Test Leads:

Part Number: TIS172ML Description: Universal three wire 4mm 13A Mains lead.

Part Number: TIS173DB Description: Three wire distribution board lead set complete with crocodile clips and probes.

Part Number: TIS25 Description: Universal large padded carry case.

INTRODUCTION & SAFETY

TIS Checkbox is a professional, multifunctional field checkbox, intended for use with all makes and models of installation test instruments.

In addition to its durable body and simple operation it boasts the following features:

- Insulation calibration with test voltages up to 1000 V,
- LowΩ and continuity accuracy verification,
- Continuity and insulation of measurement leads verification,
- Hi Current and “No-trip loop” impedance measurement verification
- Verification of RCD trip-out time measurement, including test current verification - 30 mA X1/X5.
- Voltage and frequency calibration (A calibrated Multimeter to be used to verify mains voltage & frequency).
  Recommended Multimeter(s):

TIS201

TIS280

Please visit our web site: www.testinstrumentsolutions.co.uk to explore the full range of test instruments we provide.

The TIS Checkbox is designed for accuracy verification whilst on-site testing, this product does not replace the need to have the instrument calibrated periodically.

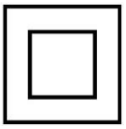
(Please refer to the manufacturers recommended calibration interval)

Safety Warnings and Precautions must be read and understood before the instrument is used.

It is advised that the user is observed during use.

- **The instrument should not be used if any part of it is damaged.**
- **Replacement fuses must be of the correct type and rating, failure to fit the correctly rated fuse may result in a safety hazard / damage to the TIS Checkbox.**
- **The polarity of the mains input must be verified before powering the TIS Checkbox, failure to do so may result in a safety hazard / damage to the TIS Checkbox.**
- **Damaged leads / accessories must not be used in conjunction with the TIS Checkbox as this may result in a safety hazard / damage to the TIS Checkbox.**
- **Do not use the TIS Checkbox on supply systems with a voltage greater than 250V.**
- **Do not disassemble, risk of electric shock – service intervention or adjustment procedure is allowed to be carried out only by a competent authorized person.**

Caution: Risk of Electric Shock



Equipment protected throughout by Double Insulation (Class II)

Equipment complies with relevant EU Directives

Do not dispose in normal waste stream.

The TIS Checkbox is manufactured and tested to the following standards:

- **EN 61326 – Electromagnetic Compatibility Regulations.**
- **EN 61010 – Safety Regulations.**

CHECKBOX DESCRIPTION & MAINTENANCE

Figure 1.0

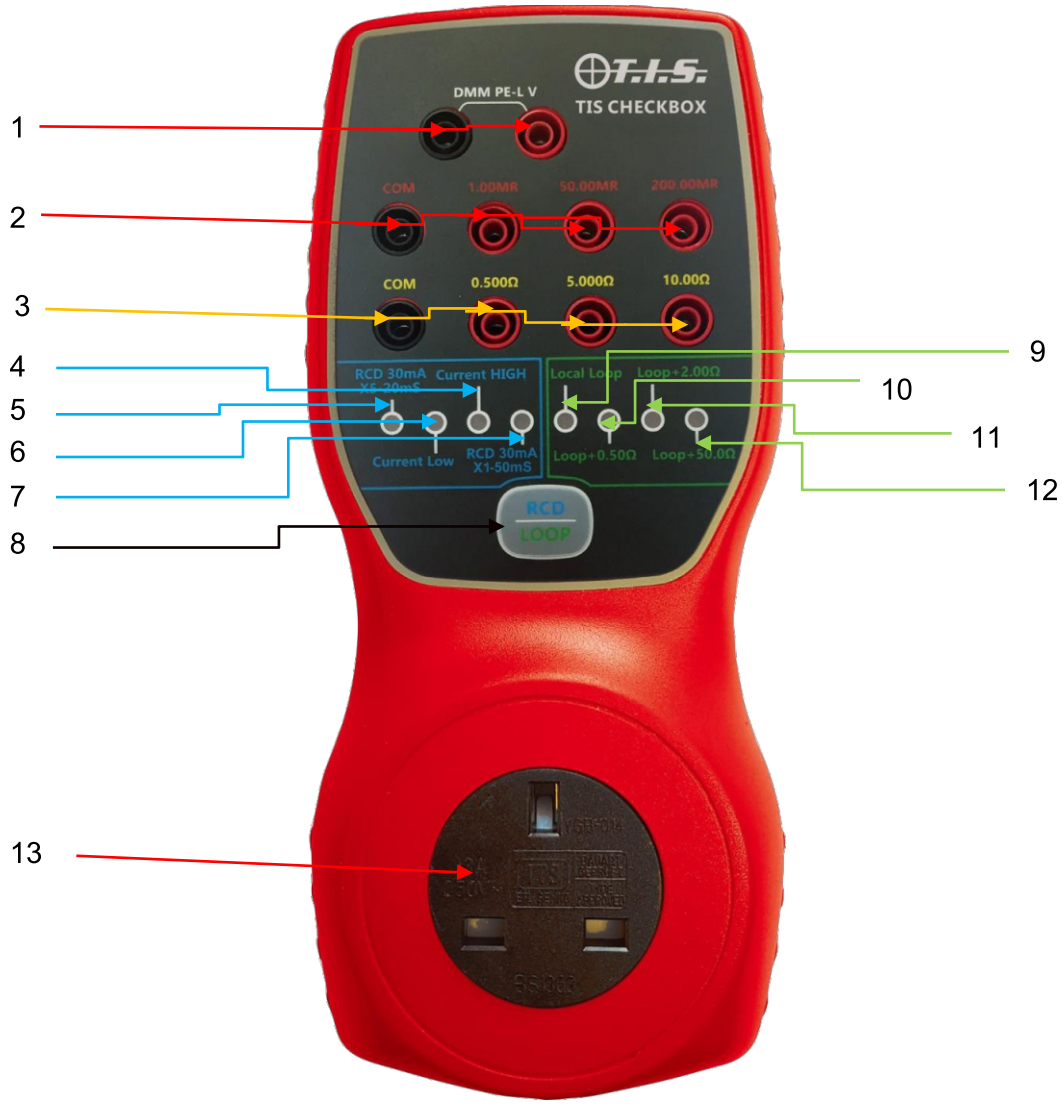
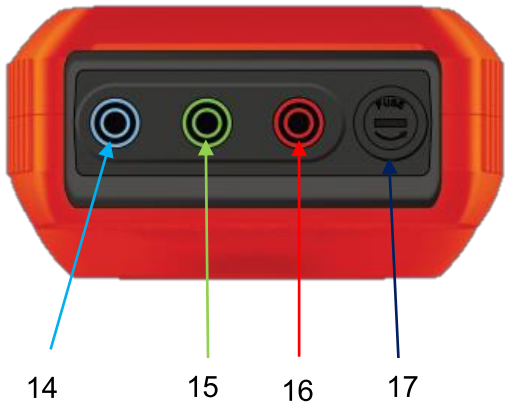


Figure 1.1



1 Voltage / frequency L-PE Multimeter output.

2 Insulation resistances outputs.

3 LowΩ and continuity resistances outputs.

⚠Caution – do not use test currents higher than 300 mA.

4 Incorrect test current indication for RCD trip-out time function verification (appropriate LED lights if test current is too high).

5 RCD 30mA X1 test calibration function selected.

6 Incorrect test current indication for RCD trip-out time function verification (appropriate LED lights if test current is too low).

7 RCD 30mA X5 test calibration function selected.

8 RCD / Fault loop selection button.

(Press repeatedly to cycle through available options: Local LOOP, LOOP+0.5Ω, LOOP+2Ω, LOOP+50Ω, RCD 30mA X1, RCD 30mA X5)

9 Loop impedance test Local LOOP function selected.

10 Loop impedance test LOOP+0.5Ω function selected.

11 Loop impedance test LOOP+2Ω function selected.

12 Loop impedance test LOOP+50Ω function selected.

13 RCD / Fault loop calibration output (used for fault loop/trip-lock/line impedance and RCD trip-out time verification).

14 Neutral Terminal / Mains Input.

15 Earth Terminal / Mains Input

16 Live Terminal / Mains Input

17 Live Input Fuse – (F10A 250V 5mmX20mm)

FUSE REPLACEMENT

F (Quick Blow) 10 A / 250 V, 5 mm X 20 mm Ceramic general input protection fuse.

(Figure 1.1, Section 17)

WARNING

Disconnect any connected instrument/accessory and power off the TIS Checkbox before opening fuse compartment cover.

Replace blown fuse with original type only, failure to do so may cause a safety hazard and / or damage to the TIS Checkbox.

Cleaning

No special maintenance is required for the housing. To clean the surface of the instrument use a soft cloth slightly moistened with soapy water or alcohol. Then leave the instrument to dry totally before use.

Warning:

Do not use liquids based on flammable cleaning fluids or hydrocarbons.

Do not spill cleaning liquid over the instrument.

Periodic calibration

It is essential that the unit is regularly calibrated in order ensure that the technical specifications listed in this manual is guaranteed.

We recommend an annual calibration (52 Weeks).

An authorised technical person should perform the calibration. Please contact your dealer or manufacturer for further information.

Service

For repairs under warranty, or at any other time, please contact your distributor.

Unauthorized person is not allowed to open the Checkbox calibrator.

CHECKBOX OPERATION / RECOMMENDED VERIFICATION SEQUENCE

Recommended verification sequence and practice

Continuity Resistance verification

Connect instrument under test to the com & resistance range.
(Figure: 1.0 – Section: 3)
Continuity resistance specification

(0.500R +/-5%) +/- Instrument accuracy

(5.000R +/-2%) +/- Instrument accuracy

(10.00R +/-2%) +/- Instrument accuracy

Record Measurements.

Insulation Resistance verification

Connect instrument under test to the com & resistance range(s).
(Figure 1.0 – Section: 2)
Insulation resistance specification:

(1.00MR +/-1%) +/- Instrument accuracy

(50.00MR +/-1%) +/- Instrument accuracy

(200.0MR +/-1%) +/- Instrument accuracy

Record measurements.

Loop Impedance Verification - Local Loop

Connect Instrument under test to the 230V 13A socket (Figure 1.0 – Section13).

Check polarity of mains input & connect TIS Checkbox to mains outlet.

Select Local Loop range using the RCD/LOOP button (Fig. 1 Section 8).

Perform either Hi Current or NO-TRIP Impedance test.

Record measurement.

Loop Impedance Verification Loop +0.50R

Select Loop+0.50R range using the RCD/LOOP button (Fig. 1 Section 8).

Perform either Hi Current or NO-TRIP Impedance test.

Check that the loop impedance measurement has increased from the local loop impedance reading by a nominal of 0.50R

(Specification: +/-5% of Range), +/- Instrument accuracy

Record measurement.

Loop Impedance Verification Loop +2.00R

Select Loop+2.00R range using the RCD/LOOP button (Fig. 1 Section 8).

Perform either Hi Current or NO-TRIP Impedance test.

Check that the loop impedance measurement has increased from the local loop impedance reading by a nominal of 2.00R

(Specification: +/-5% of Range), +/- Instrument accuracy

Record measurement.

Loop Impedance Verification Loop +50.0R

Select Loop+50.0R range using the RCD/LOOP button (Fig. 1 Section 8).

Perform either Hi Current or NO-TRIP Impedance test.

Check that the loop impedance measurement has increased from the local loop impedance reading by a nominal of 50.0R

(Specification: +/-5% of Range), +/- Instrument accuracy

Record measurement.

RCD Test Verification (X5, 30.00mA)

Select RCD 30.00mA X5 range using the RCD/LOOP button (Fig. 1 Section 8).

Select & perform 30.00mA X5 RCD Test.

Specification: 20.0mS +/-2mS, +/- Instrument accuracy

Neither current low nor current high LED's should illuminate whist conducting this test, however if the RCD current fails please refer to manufacturers specifications.

RCD Test Verification (30.00mA X1)

Select RCD 30.00mA X1 range using the RCD/LOOP button (Fig. 1 Section 8).

Select & perform 30.00mA X1 RCD Test.

Specification: 50.0mS +/-2mS, +/- Instrument accuracy

Neither current low nor current high LED's should illuminate whist conducting this test, however if the RCD current fails please refer to manufacturers specifications.

TECHNICAL SPECIFICATION

Function	Range	Specification
Continuity Resistance	Com/Null	The two com/null terminals can be used to short the Customer's leads to Null/Zero the lead resistance.
	Com/Null	
	0.500R	+/- 5% Maximum input current 350mA
	5.000R	+/- 2% Maximum input current 350mA
	10.000R	+/- 2% Maximum input current 350mA
Insulation Resistance	1.000MR	+/- 1% Maximum input voltage 1000V
	50.00MR	+/- 1% Maximum input voltage 1000V
	200.00MR	+/- 1% Maximum input voltage 1000V
Loop Impedance	"Local"	Loop impedance value of the socket + lead resistance
	+0.50R	"Local loop impedance + 0.50R +/- 5%
	+2.00R	"Local loop impedance + 1.00R +/- 5%
	+50.00R	"Local loop impedance + 50.00R +/- 5%
RCD Tests	1 X 30mA	50mS +/- 2mS
	5X 30mA	20mS +/- 2mS
AC Voltage	0-250V	(Mains Voltage) DMM will confirm mains voltage.

Please note that it is possible to use calibrated reference values provided in the validation / calibration certificate. As this would lower the uncertainty values, thus enabling better evaluation/ verification of tested instrument.

RECOMMENDED VERIFICATION PROCESS FORM

Instrument Under Test			
Manufacturer:			
Model Number:			
Type of Instrument:			
Serial Number:			
Traceable Information			
TIS Checkbox	Serial Number:		
Date of Calibration:		Certificate Number:	

Verification Process		
Function	Checkbox Value / Range	Measured Value:
Continuity >200mA Functionality	0.500Ω	Ω
	5.000 Ω	Ω
	10.00 Ω	Ω
Insulation Resistance 250V	1.00MΩ	MΩ
	50.00MΩ	MΩ
Insulation Resistance 500V	1.00MΩ	MΩ
	50.00MΩ	MΩ
	200.0MΩ	MΩ
Insulation Resistance 1000V	1.00MΩ	MΩ
	50.00MΩ	MΩ
	200.0MΩ	MΩ
AC Voltage	DMM Voltage Reading:	V
	Meter Under Test Reading:	V
Loop Impedance (Hi-Current Measurements)	Local Loop Impedance	Ω
	Local Loop +0.50Ω	Ω
	Local Loop +2.00Ω	Ω
	Local Loop +50.0Ω	Ω
Loop Impedance (No-Trip Measurements)	Local Loop +0.50Ω	Ω
	Local Loop +2.00Ω	Ω
	Local Loop +50.0Ω	Ω
RCD Current / Trip Times	30.00mA X5 0° – 20.00mS	mS
	30.00mA X5 180° – 20.00mS	mS
	30.00mA X1 0° - 50.00mS	mS
	30.00mA X1 180° - 50.00mS	mS

NEW INSTRUMENTS HAVE A WARRANTY PERIOD OF: 1 YEAR FROM THE DATE OF PURCHASE BY THE USER.

(A copy of the original purchase invoice may be requested to validate the purchase date).

Any unauthorized repair / adjustment will void the warranty.

For service / calibration / repair requirements, please contact:

UNIT 12/14, LUDDITE WAY BUSINESS PARK

RAWFOLDS WAY

CLECKHEATON

BD19 5DQ

Tel: 01274 752407

Email: Sales@testinstrumentsolutions.co.uk