Operating Instructions

SAFE7CHECK

Pro Logger

TRIO Smartcal Pty Ltd

The SAFETCHECK Pro Logger (STC Pro Logger) is an electrical Portable Appliance Tester (PAT), designed and manufactured in Australia. The STC Pro Logger ensures the electrical safety of appliances is compliant with the requirements of the current Australian and New Zealand Standard AS/NZS 3760 (In-service safety inspection and testing of electrical equipment).

The STC Pro Logger is unique in that it ensures an appliance is correctly connected prior to running a test sequence. Most, if not all other testers, will pass an appliance even if it is not connected in accordance with the standard.

With the STC Pro Logger, testing Electrical Safety of Appliances has never been as simple, fast, accurate, thorough and safe. You can test the safety of Class 1 (earthed) appliances, Class 2 (double insulated) appliances, Fixed and Portable RCD's and extension leads in accordance with the standard, simply and efficiently. There is no interpretation, no ambiguity, just a simple PASS or FAIL.

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The testing of appliances with the STC Pro Logger

The **STC Pro Logger** will test most 240V 50Hz single phase class 1 and 2 electrical appliances and extension leads to comply with the current electrical safety standard AS/NZS 3760. Any appliances with characteristics which may require modified test parameters (in accordance with the standard) may be found in the "Other Appliances" menu. If you experience difficulties or doubts in testing certain appliances please contact TRIO Smartcal

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Frequency of electrical safety testing

(Guide only)

The minimum recommended frequency of safety testing of electrical equipment is specified in Australian Standard for in service testing AS/NZS 3760.

Type of environment in which equipment is used	Earthed appliance	Double insulated appliance	Extension cords
Factories, shops & places of work manufacturing, repair, maintenance or construction	6 months	12 months	6 months
Office environment where equipment is not subject to constant flexing of the supply cord	5 years	5 years	12 months
Other commercial environments, e.g. tea rooms, office, kitchens, health care studios, with no protection	12 months	12 months	6 months
Construction and Demolition sites	3 months	3 months	3 months
Hire equipment	Before each hire	Before each hire	Before each hire

Note: *Some organisations may alter these periods based on a documented risk assessment, undertaken in accordance with the process sepecified in AS/NZS 4360 (see AS/NZS 3760 "Frequency of Inspection and Tests")*

Function and basic technical specification

Mains Power Outlet Check

The mains power outlet supplying the STC is checked for the existence of an Earth and Active-Neutral transposition.

Earthed appliances are tested for:

- Electrical continuity <=100K Ohm
- Earth continuity <=1 Ohm @ 200mA
- Insulation resistance >=1M Ohm (250/500V DC Selectable)

Note: *If the appliance requires mains power to energise its On/Off switch (and the switch must be "on" to complete the mains electrical circuit), the* ***STC Pro Logger*** *can conduct a Current Leakage Test (Run Test) to ensure Leakage Current is <= 5mA.*

Double insulated appliances are tested for:

- Connection test (unique to the **STC Pro Logger**) Ensures the stainless steel cloak is correctly in place:
  - to provide a return path for any leakage current during the insulation resistance test; and
  - provides grater operator protection from electric shock
- Electrical continuity <= 100K Ohm
- Insulation resistance >= 1M Ohm (250/500V DC Selectable)

Note: *If the appliance requires mains power to energise its On/Off switch (and the switch must be "on" to complete the mains electrical circuit), the* ***STC Pro Logger*** *can conduct a Current Leakage Test (Run Test) to ensure Leakage Current is <= 1mA.*

Extension cords are tested for:

- Insulation resistance >= 1M Ohm
- Earth circuit continuity <= 1.0 Ohm @ 200mA
- Electrical continuity for resistance Active / Neutral 10K Ohm nominal
- Connection polarity (transposition of active and neutral)

Test duration

- 3.5 seconds

Electrical stress test parameters

- Insulation 500V DC / 250V DC
- Earth circuit 200mA nominal

Run test (leakage current tets)

- Seperate 15A Run Socket for user safety (no switched earth)
- 240V AC @ 15A for the duration of the test

Data Logging

- Complete user control of Data Logging functions:
  - Logging can be switched on/off
  - Fields can be switched on/off
- Uses Keyboard and/or Scanner
- Actual Time & Date stored with each test record
- Stores 500 or 1000 records
- Records are easily uploaded to a PC
- Records are always appended to memory and to PC's data file

Display

LCD to indicate

- Pass/Fail
- Possible fault conditions
- User information

LEDs to indicate

- Red (Fail / Reset)
- Green (Start / Ready)

Power requirements

240V +/- 10% @ 50Hz
(The mains power outlet supplying the STC is checked for both the existence of an Earth and Active-Neutral transposition)

Test inlets

- Flush mounted mains plugs for test purposes (both IEC and standard 240V), protected from accidental application of 240V 50Hz mains voltage
- Flush mounted 240V socket

Operating instructions

- On screen prompts displayed and clearly labelled switches
- Step by step instructions detailed in this Manual

Warranty period

12 months from date of purchase

Extended warranty

By registering online at *www.triosmartcal.com.au* an extended warranty of 6 months will be offered

Calibration period

Recommended every 12 months

Repairs and calibration

We recommend that the **STC Pro Logger** is returned to an authorised service centre for repair and/or calibration. In doing so you are assured that any recent basic enhancements to the hardware and/or software (applicable to your **STC Pro Logger**) will be included in the repair or calibration as a matter of policy (at no extra cost). Contact TRIO Smartcal Pty Ltd for details.

Included Accessories

- DownLoader CD including Manuals
- Mains power cord
- Test lead for earthed appliances
- Test lead for double insulated appliances
- Stainless steel cloak
- Calibration Certificate
- RS232 Interface Cable

Optional Accessories

- RCD Tester (10mA & 30mA Portable & Fixed RCDs c/w integrated Isolation Transformer)
- High Current Earth Tester (200mA continuity,10A routine and 25A type tests)
- Scanner
- Keyboard
- Upgrade from 500, 1000 or 2000 stored records
- Large stainless steel cloak
- Test tags
- Inspect software (Electronic Logbook)
- Removable lid

Note: *TRIO Smartcal Pty Ltd reserves the right to change specifications at any time without notice.*

Preparation of the appliance prior to safety testing

General visual inspection

1 Ensure the appliance to be safety tested has no obvious mechanical faults and is free from external damage.

2 Inspect the supply lead for any damage, defects or loose terminals in the accessories, connectors, plugs or outlet sockets. Common faults encountered:

a) Frayed or damaged supply lead.

b) Exposed conductors and/or covered by insulation tape.

c) Abrasions in the outside insulation jacket.

d) Supply lead anchorage at plug or appliance entry.

3 Check that any controls, alarms and replaceable protective devices accessible to the operator, are of correct rating and in good working order.

4 Inspect all switches and speed controls for mechanical operation; ensure switches and controls are clear of any obstruction, e.g. filings, swarf, metal particles, grease, etc.

5 Confirm all identity tags/labels etc. pertaining to the frequency of safety testing are correctly attached and records of all test/inspections are kept to ensure the safety integrity and history of the appliance.

6 Unroll extension leads/rolls and inspect as above.

Identify the appliance to be tested

Examine the appliance to be tested and identify whether the appliance is an earthed appliance, a double insulated appliance or an extension cord.

Earthed appliances should always have an earth pin on their plug, and will normally have exposed metal components.

Double insulated appliances may be identified by the double insulation ⧈ symbol, and/or by the absence (i.e. not broken off) of an earth pin on a moulded socket.

1 Many double insulated tools are colour coded blue.

2 If any doubt exists about the design type of an appliance, the appliance should be tested as an earthed appliance.

Preparation of an earthed appliance to be safety tested

1 Switch any/all switches 'ON'.

2 Set any speed control to 'FULL ON' (Maximum speed).

3 Preparation for earthed appliance to be safety tested is now complete and may be connected to the **STC Pro Logger.** *(see Safety Testing Earthed Appliances)*

Preparation of a double insulated appliance to be safety tested

1 Switch any/all switches 'ON'.

2 Set any speed control to 'FULL ON' (Maximum speed).

3 Preparation for a double insulated appliance to be safety tested requires the appliance to be wrapped in a stainless steel cloak taking care to make contact with all metal components and the exterior of the appliance where hand contact is normally possible.

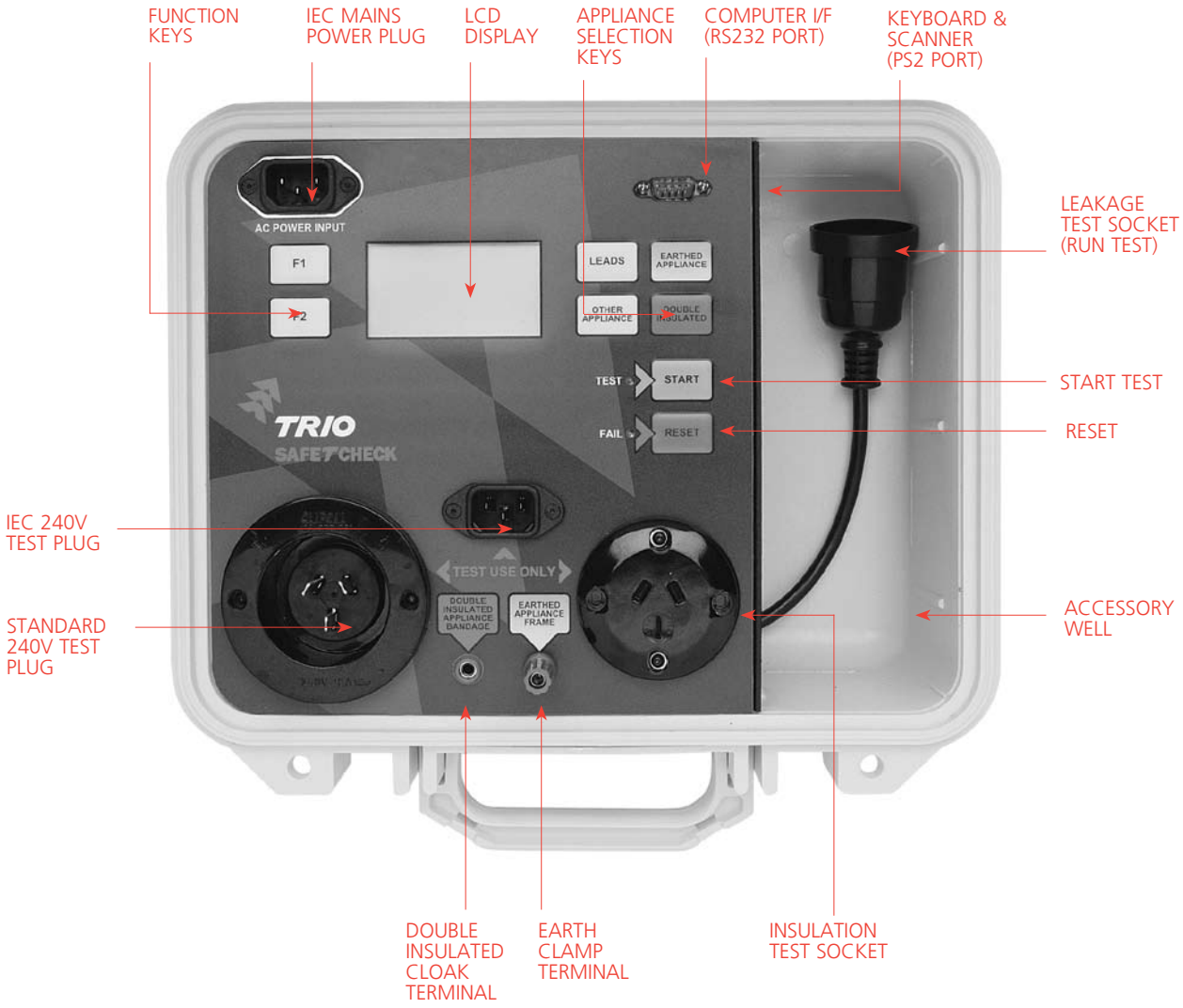
4 The double insulated appliance is now ready to be safety tested and may be connected to the **STC Pro Logger.** *(see Safety Testing Double Insulated Appliances)*

Note: *The above description regarding the inspection and testing of electrical appliances is a guide only. Please refer also to the current standard AS/NZS 3760.*

WARNING

Upon completion of a successful safety test and removal of test lead and/or stainless steel cloak, please ensure all switches/speed controls are returned to their 'OFF' position.

Operating the STC PRO Logger



Place the **STC Pro Logger** on a convenient non-conductive working surface. Plug the mains power lead into the STC via the IEC mains power socket at the top left of the unit. Insert the mains plug into a correctly wired and earthed mains power outlet. The following sequence will occur:

1 TRIO logo appears on the Liquid Crystal Display (LCD); (If the Data Logging function is turned on the Time and Date; and Memory used is displayed. Pressing reset will display the Company Logo);

2 There is a short beep; and

3 The TEST and FAIL Leds flash momentarily.

The **STC Pro Logger** is now ready to perform Appliance Safety Testing.

Any departure from these conditions may mean the STC Pro Logger has a fault and should be returned for repair.

Note: *If a message appears on the LCD indicating an Active-Neutral reversal or an Earth fault then there is a problem with the power outlet supplying the* ***STC Pro Logger.*** *Either fault must be corrected prior to proceeding or an alternate power outlet must be used to power the* ***STC Pro Logger.***

Safety testing earthed appliances

1 Ensure the **STC Pro Logger** is in the self test mode i.e. TRIO logo appears on the LCD.

2 Plug the appliance to be tested into the socket labelled TEST USE ONLY provided on the front panel of the **STC Pro Logger**. The appliance should be connected directly and not via an extension lead.

3 Connect the GREEN earthing lead to the unit via the green terminal.

4 Connect the GREEN earthing lead to a convenient metal (Conductive) portion of the appliance under test.

If any earthed appliance has one or more metal components which are possibly not connected together, the overall test must be repeated with the EARTH clamp connected to each metal component in turn.

5 Switch the appliance to be tested 'ON'
Note: *Any or all switches must be "on" to ensure testing of the appliance's complete electrical circuit.*

6 If the appliance to be tested has a variable speed control fitted, turn the control fully 'ON' or to be highest speed, this will connect Active/ Neutral direct to the internal windings.

7 Select EARTHED APPLIANCE.
The **STC Pro Logger** is now ready to test the appliance.

Note: *If Data Logging is switched on then additional information will be requested. See section entitled "Data Logging"*

The green indicator alongside "Start" will now be flashing. During testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.

8 Test results will be indicated via:

a) A PASS or FAIL appearing on the LCD;

b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and

c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

WARNING

To avoid uncertain results when testing an earthed appliance, ensure that:

1 The earth clip is securely attached to the metal frame.

2 It has been disconnected from all other equipment.

3 The test is conducted on an insulated (not metal) benchtop.

Note 1: *A FAIL indicating "poor continuity" denotes lack of a circuit path between the Active and Neutral of the appliance. If the appliance switch is on and this error occurs then go to the RUN TEST.*

Note 2: *For a FAILED earthed appliance known to be fitted with metal oxide varistors (MOVs) test again using Class 1 (250V) test under OTHER APPLIANCES.*

Evaluation of in-service testing results for earthed appliances

Where the **STC Pro Logger** identifies an appliance which fails to comply with the test criteria, the equipment shall be:

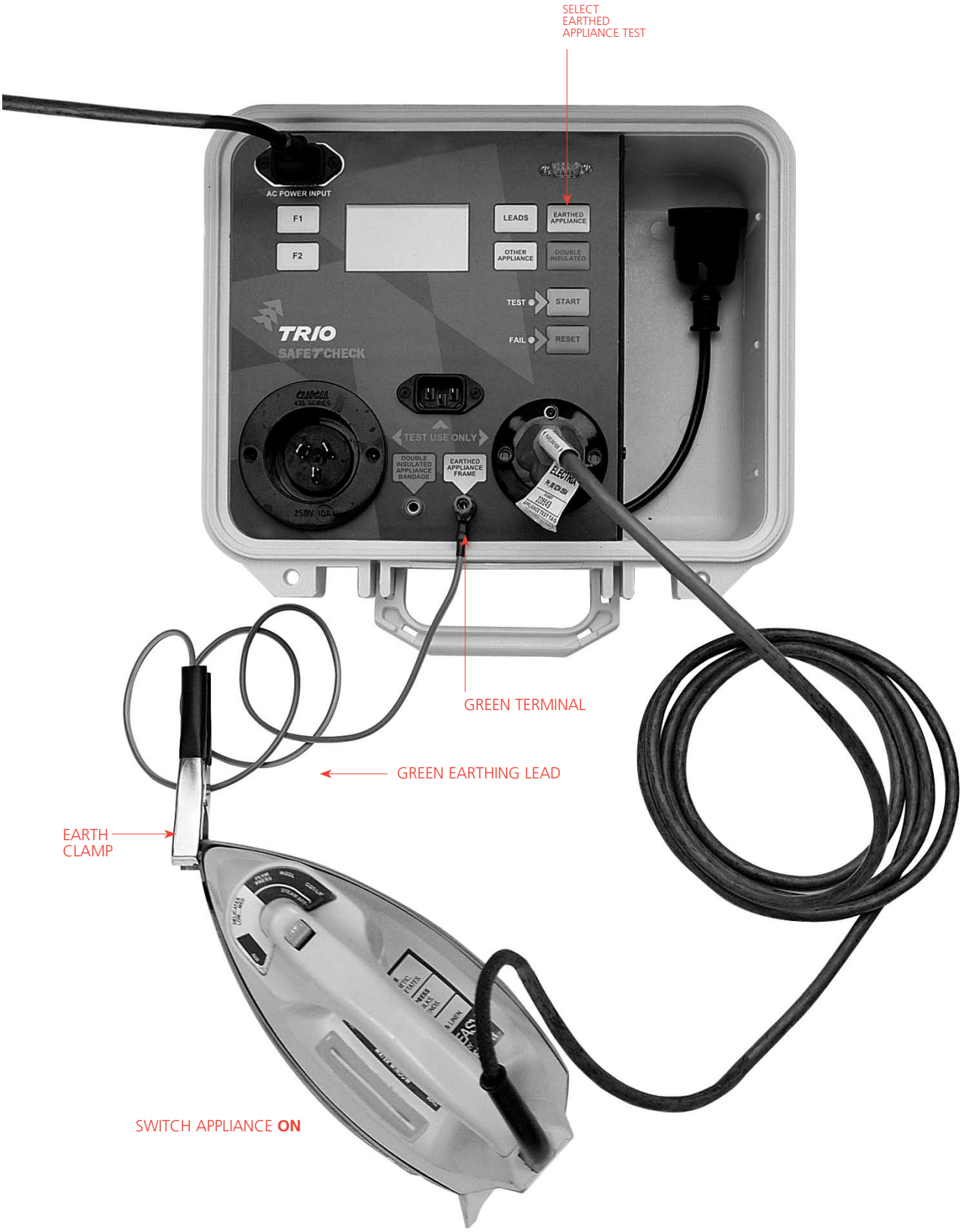
1 Withdrawn from service immediately and have a label attached to it warning against further use.

2 Repaired by the appropriately qualified person and retested after repair.

3 Refit test identity tags/labels etc. and log test in safety history records.

WARNING

Upon completion of a successful safety test and removal of test lead and/or stainless steel cloak, please ensure all switches/speed controls are returned to their 'OFF' position.


SELECT
EARTHED
APPLIANCE TEST
AC POWER INPUT
F1
F2
LEADS
EARTHED APPLIANCE
OTHER APPLIANCE
DOUBLE INSULATED
TEST
START
FAIL
RESET
TRIO
SAFE7CHECK
TEST USE ONLY
DOUBLE INSULATED APPLIANCE BANDAGE
EARTHED APPLIANCE FRAME
250V 10A
GREEN TERMINAL
GREEN EARTHING LEAD
EARTH
CLAMP
SWITCH APPLIANCE **ON**

Safety testing double insulated appliances

1 Plug the double insulated appliance to be tested into the socket labelled TEST USE ONLY provided on the front panel of the **STC Pro Logger**.

Note: *The appliance must be plugged in directly, and not via extension leads.*

2 Switch the appliance to be tested 'ON

Note: *Any or all switches must be "on" to ensure testing of the appliance's complete electrical circuit.*

3 If the appliance to be tested has a variable speed control fitted, turn the control fully 'ON' or to the highest speed, this will connect Active/Neutral direct to the internal windings.

4 Wrap the appliance in the stainless steel cloak, taking care to make contact with all metal components and the exterior of the appliance where human hand contact is normally possible.

The stainless steel cloak may also be woven metal cloth mesh, conductive braid, aluminium foil, or other suitable flexible conductor with low resistance (less than 100 Ohms).

Note: *The wrapped appliance should be on an insulated bench to avoid earthing the measurement circuit in the* ***STC Pro Logger****.*

5 Connect the stainless steel cloak to the 'BLUE' socket for DOUBLE INSULATED APPLIANCES on the **STC Pro Logger**.

6 Select DOUBLE INSULATED.
The **STC Pro Logger** is now ready to test the appliance.

Note: *If Data Logging is switched on then additional information will be requested. See section entitled "Data Logging"*

The green indicator alongside "Start" will now be flashing. During testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.

Test results will be indicated via:

a) A PASS or FAIL appearing on the LCD;

b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and

c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

7 The **STC Pro Logger** will check that the stainless steel cloak and connecting lead is correctly applied, since the correct establishment of the test environment is vital to the correct verification of insulation resistance in a double insulated appliance.

The verification of a correctly wrapped and connected stainless steel cloak is made by the **STC Pro Logger** by measuring the capacitance between the electrical circuit in the double insulation appliance and the stainless steel cloak.

Begin tests by pressing START. During the testing cycle the operator may apply stress to the appliance supply lead and plug in order to detect any intermittent faults.

8 If the verification test passes the **STC Pro Logger** will continue with the double insulated appliance test.

Failure of this verification for double insulation appliances may be for one or more of the following reasons:

a) The double insulated appliance is not correctly wrapped or connected to the 'BLUE' socket for double insulated appliances.

b) The assumed double insulated appliance is in fact, an earthed appliance and the incorrect identification and/or an incorrect test selection has been made.

c) The double insulated appliance is connected to the **STC Pro Logger** via an extension cord.

d) The appliance is earthed via another path such as a metal earthed bench.

e) Both active (A) and neutral (N) leads are open circuited in the appliance. E.g. failure to turn 'ON' appliance switch(es).

f) The resistance of the stainless steel cloak around the appliance is too high.

g) The appliance has extremely low inherent capacitance between the external surface and the internal electrical circuit. This may apply to some very small appliances with minimum internal circuitry e.g. a plastic bedlamp.

9 Test results will be indicated via:

a) A PASS or FAIL appearing on the LCD;

b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and

c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

Note 1: *A FAIL indicating "poor continuity" denotes lack of a circuit path between the Active and Neutral of the appliance. If the appliance switch is on and this error occurs then go to the RUN TEST.*

Note 2: *For a FAILED double insulated appliance known to be fitted with metal oxide varistors (MOVs) test again using Class 2 (250V) test under OTHER APPLIANCES.*

Evaluation of in-service testing results

Where the **STC Pro Logger** identifies an appliance/tool which fails to comply with the test criteria the equipment shall be:

1 Withdrawn from service immediately and have a label attached to it warning against further use.

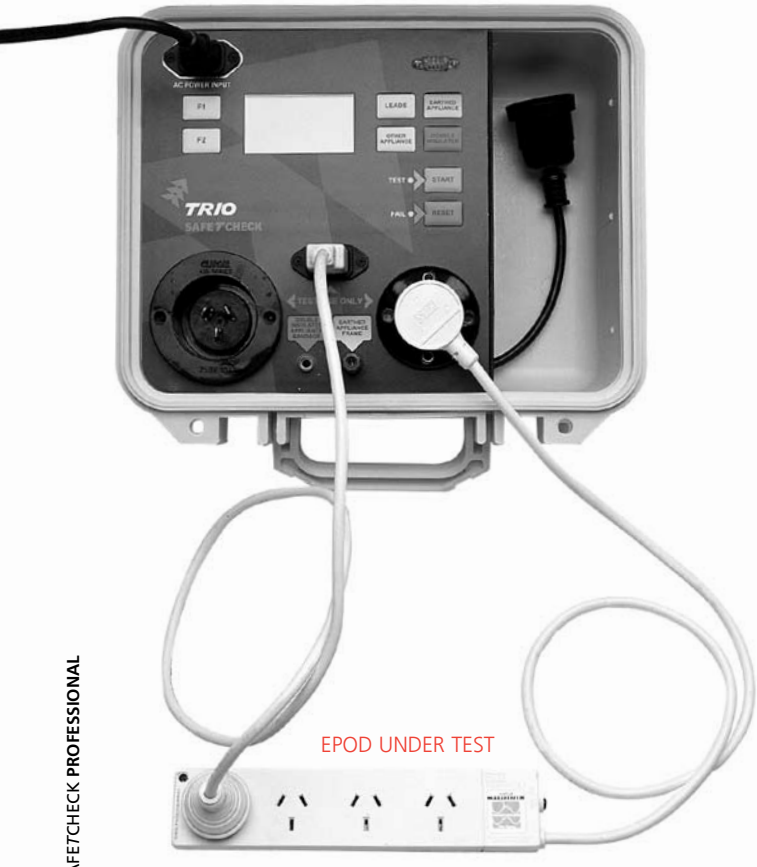
2 Repaired by the appropriately qualified person and retested after repair.

3 Refit test identity tags/labels etc. and log test in Safety history records.

WARNING

Upon completion of a successful safety test and removal of test lead and /or stainless steel cloak, please ensure all switches/speed controls are returned to their 'OFF' position.

Safety testing extension leads



1 Plug the extension lead into the plug and socket labelled TEST USE ONLY provided on the front panel of the **STC Pro Logger.**

2 Select LEADS.
The **STC Pro Logger** is now ready to test the appliance. The green indicator alongside "Start" will now be flashing.

Note1: *The appliance should be on an insulated bench to avoid earthing the measurement circuit in the **STC Pro Logger**.*

Note2: *If Data Logging is switched on then additional information will be requested. See section entitled "Data Logging"*

3 During the testing cycle the operator may apply stress to the lead and plug in order to detect any intermittent faults.

4 Test results will be indicated via:

a) A PASS or FAIL appearing on the LCD;

b) A Fail will be indicated by a continuous beep and the red indicator flashing alongside "Reset"; and

c) A Pass will be indicated by a short beep and the green indicator flashing alongside "Start".

Note 1: *If the extension lead has a fixed socket (as in extension reels), this must be connected to the fixed test plug on the **STC Pro Logger** with a short TEST extension lead of rated voltage and current, which has been previously tested and verified SAFE. Normally, extension leads must be tested individually and not cascaded.*

Note 2: *For a FAILED EPOD known to be fitted with metal oxide varistors (MOVs) test again using EPOD (250V) test under OTHER APPLIANCES.*

Note 3: *Each socket of the EPOD must be tested in turn.*

Note 4: *Long extension lead may fail if it is left coiled. Be sure to uncoil leads prior to testing. This must be done to visually inspect the lead in any case.*

Safety testing other appliances

The **STC Pro Logger.** is capable of testing many electrical appliances with unusual characteristics. The "Other Appliances" menu is used to select the test suitable for any of these appliances. The user may scroll though the list by using the F1 and F2 keys.

Appliances such as those fitted with surge protection or MOVs (Metal Oxide Varistors) may be tested at 250V (instead of 500V):

- Class 1 250V
- Class 2 250V
- EPOD 250V

Appliances requiring the mains voltage to be applied to activate the On/Off switch, shall have their leakage current checked:
(See Section entitled Run Testing)

- Class 1 Run Test
- Class 2 Run Test

An earth continuity test may be conducted by selecting:

- Earth only test

Appliances employing Mineral Insulated Metal Sheath (MIMS) such as stoves and electric jugs may be tested performing a run test by selecting:

- MIMS Run Test

RCDs rated at 10mA, 30mA either portable or fixed may be tested by selecting one of the following:

- 10mA Portable RCD
- 30mA Portable RCD
- 10mA Fixed RCD
- 30mA Fixed RCD

Note: *The RCD Tester is an option for* ***STC Pro Logger*** *(See Section entitled RCD Testing)*

Appliances employing a PIEZO starter such as the starter on a gas oven may be tested by performing a run test. To do this select:

- PIEZO Run Test

Note: *New tests may be added to the "Other Appliance" menu from time to time. For details regarding upgrades contact TRIO.*

Run testing (Leakage current test)

Overview

The run test for earthed appliances (Class 1) and double insulated appliances (Class 2) are leakage current test modes to be used only for appliances that must be energised to operate a switching circuit.

Run testing earthed appliances

1 Ensure the appliance is switched off.
2 Plug the appliance into the separate RUN TEST socket.
3 Connect the GREEN earthing lead to the **STC Pro Logger** via the green terminal.
4 Connect the GREEN earthing lead clamp to a convenient earthed metal point on the appliance under test.

WARNING

The appliance will operate for 20 seconds (See Note 1) in the run test mode. Ensure rotating parts are NOT wrapped in the cloak. Appliances such as drills, angle grinders etc should be firmly restrained during the run test.

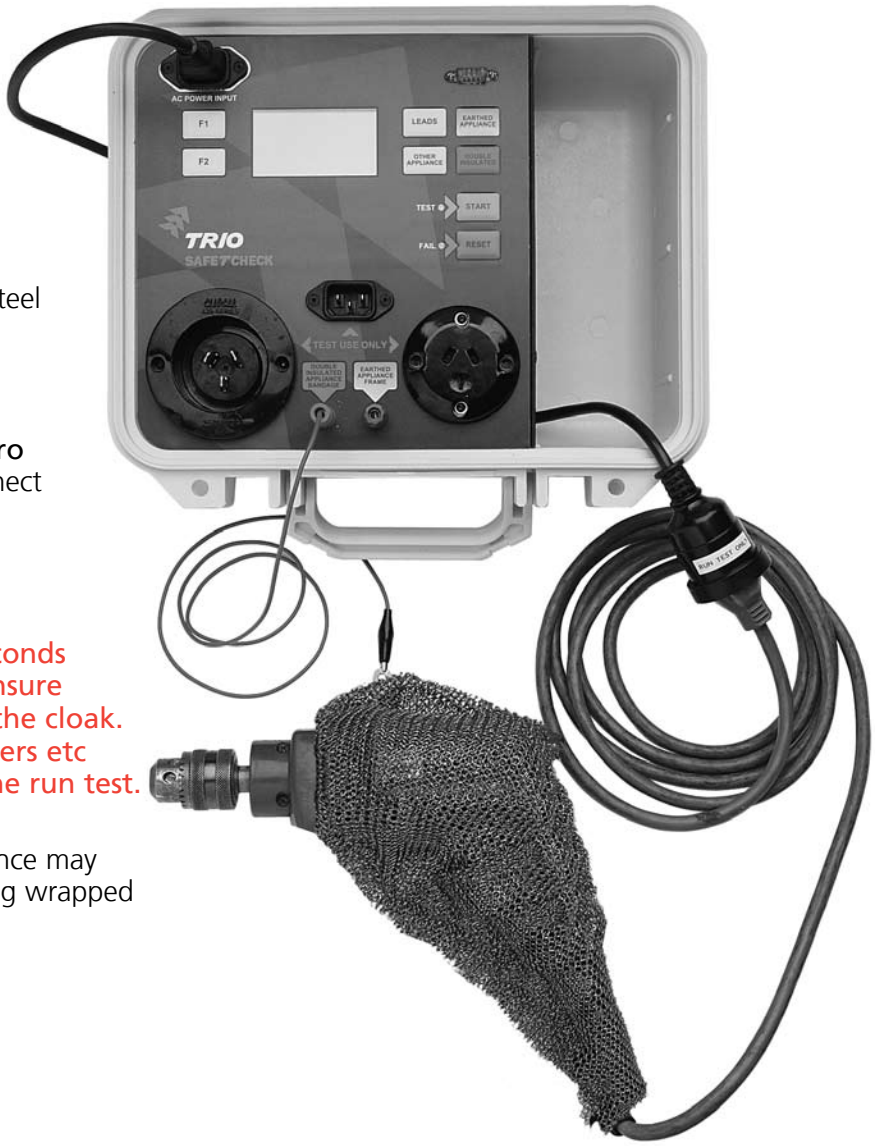
5 Switch the appliance on.
6 Select CLASS 1 RUN TEST under OTHER APPLIANCES (F1 and F2 keys move the selection of mode up or down respectively)
7 Press START button and follow the screen instructions. The appliance will operate for 10 seconds (See Note) during the run test.

Note 1: For Software Version 3.02 and above, this test runs for upto 15 seconds. Pressing RESET will terminate the run test at anytime. This does not abort the test result.

WARNING

Upon completion of a successful safety test please ensure all switches/speed controls are returned to their 'OFF' position

Run testing double insulated appliances



1 Ensure the appliance is switched off.

2 Wrap the appliance in the stainless steel cloak (please see warning below)

3 Plug the appliance into the separate RUN TEST socket.

4 Connect the BLUE lead to the **STC Pro Logger** via the blue socket and connect the BLUE lead clip to the stainless steel cloak as per diagram.

WARNING

The appliance will operate for 20 seconds (See Note 1) in the run test mode. Ensure rotating parts are NOT wrapped in the cloak. Appliances such as drills, angle grinders etc should be firmly restrained during the run test.

5 Switch the appliance on. (The appliance may need to be switched on prior to being wrapped in the cloak)

6 Select CLASS 2 RUN TEST under OTHER APPLIANCES using the F1 and F2 keys.

7 Press START button and follow the screen instructions.

Note 1: For Software Version 3.02 and above, this test runs for upto 15 seconds. Pressing RESET will terminate the run test at anytime. This does not abort the test result

WARNING

Upon completion of a successful safety test please ensure all switches/speed controls are returned to their 'OFF' position.

RCD Tester (Option)

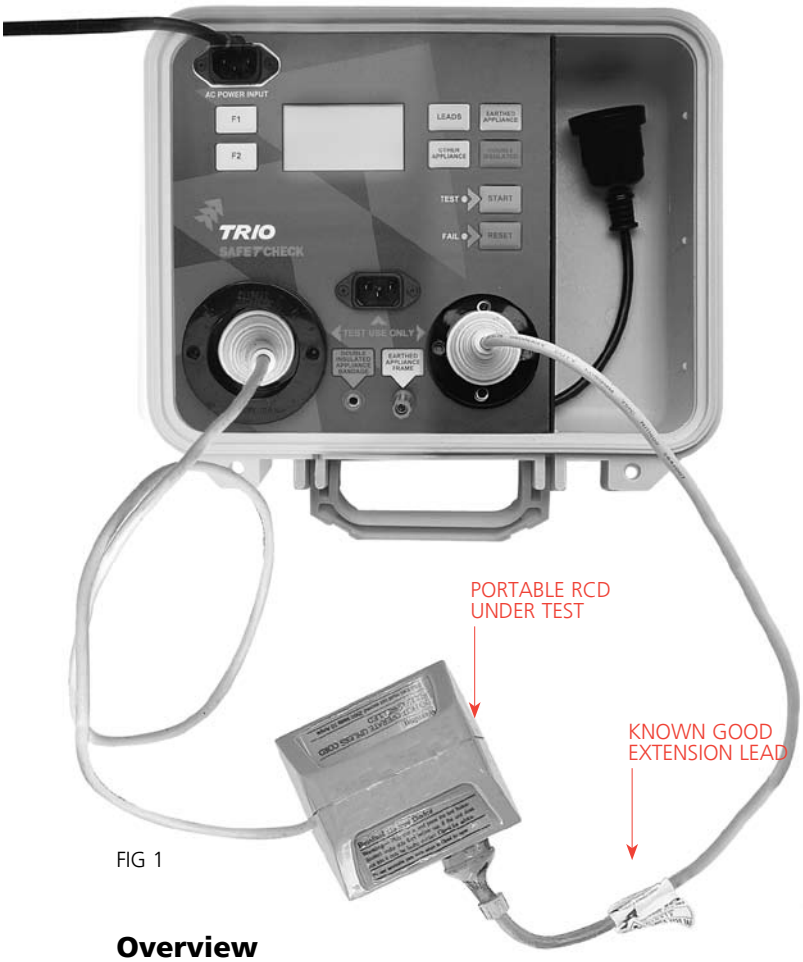


FIG 1

Overview

When fitted to the **STC Pro Logger** the RCD tester ensures 10mA, 30mA, portable or fixed RCDs comply with the Australian standard for Electrical Appliance Safety (AS/NZS 3760).

When testing portable RCDs the **STC Pro Logger** inserts an integrated isolation transformer into the circuit to ensure any fixed RCD (in the mains supply circuit) is not tripped.

When testing fixed RCDs the **STC Pro Logger** uses a battery to power the LCD display after the RCD under test has been tripped. This ensures the displayed test result is visible to the user for approximately 2 minutes after the mains power is tripped during testing.

Operation

Select the appropriate RCD test option from the "Other Appliance" menu; use the F1 and F2 keys to scroll up and down the list of options.

Portable RCDs (10 or 30mA)

Start the selected portable RCD test by pressing the "Start" button. A message on the LCD display will then instruct you to:

1 connect the portable RCD between the "Standard 240V Test Plug" and "Insulation Test Socket" on the front panel of the STC; and

2 ensure the RCD is enabled by pressing the reset button on the RCD.

Press the "Start" button to initiate the test. After the RCD trips, the trip time will be displayed in milliseconds together with a "Pass" or "Fail" message.

The **STC Pro Logger** will then prompt you to perform a 180° test by resetting the RCD and then pressing "Start" (this is an optional test, ensuring the RCD has been tested on both raising and falling edges of the mains cycle). After the RCD trips, the trip time will be displayed in milliseconds together with a "Pass" or "Fail" message.

Note: *In some cases an extension lead may be required to connect the Panel Plug and the female socket of the RCD under test.*

Fixed RCDs (10 or 30mA)

A Fixed RCD refers to an RCD in the mains power circuit supplying the **STC Pro Logger**.

Start the selected Fixed RCD test by pressing the "Start" button. A warning will be displayed stating "Power will fail during this test".

Press the "Start" button again to initiate the test. After the RCD trips, the trip time will be displayed in milliseconds together with a "Pass" or "Fail" message. The **STC Pro Logger** will provide power to the display while the RCD is reset and mains power is returned.

The **STC Pro Logger** will then prompt you to perform a 180° test by resetting the RCD and then pressing "Start" (this is an optional test, ensuring the RCD has been tested on both raising and falling edges of the mains cycle). After the RCD trips, the trip time will be displayed in milliseconds together with a "Pass" or "Fail" message. The screen will be active for 2 minutes to enable you to record the time.

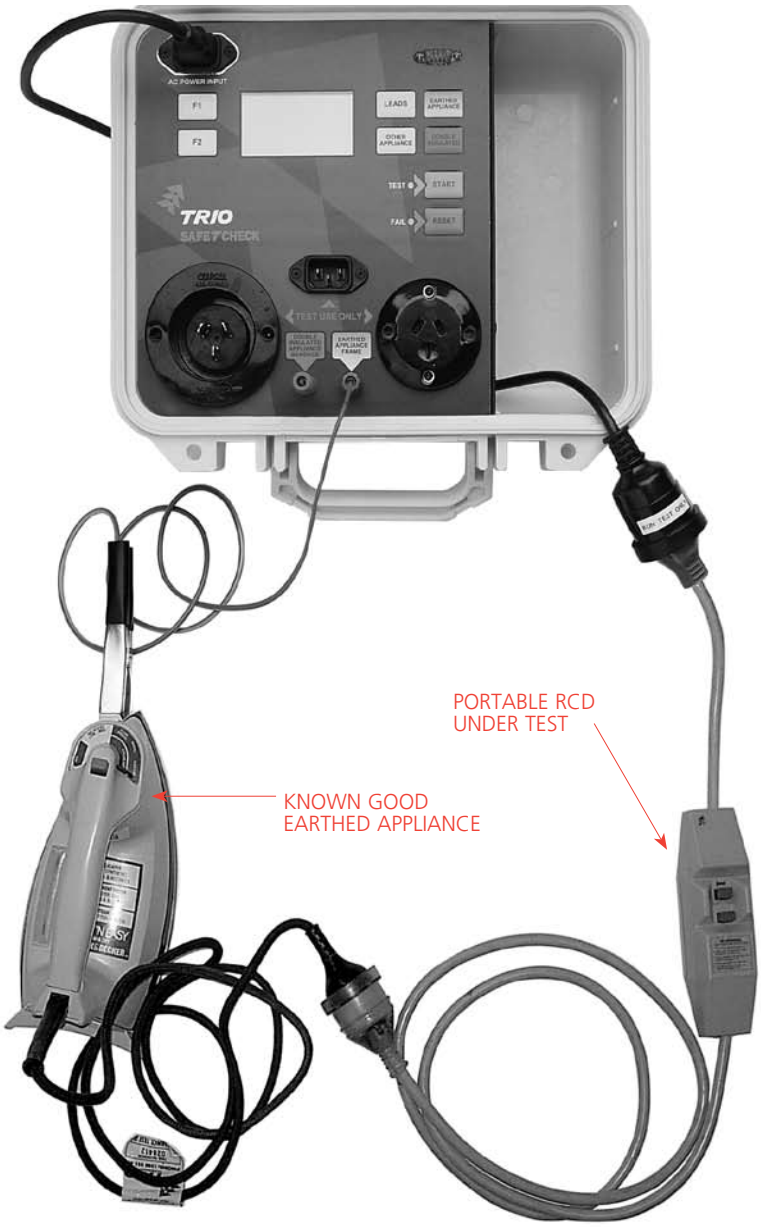


FIG 2

WARNING

1 When the **STC Pro Logger** is in the RCD test mode, 240VAC is present on the front panel Test Socket

2 Do not connect an appliance to a Portable RCD under test

3 When testing a Portable RCD do not use the front panel "IEC 240V Test Plug". Only use the "Standard 240V Test Plug"

4 Care should be taken when tripping any Fixed RCD (causing a sudden loss of mains power) that other equipment, reliant on power from that circuit, will not be damaged.

Testing In-Line Portable RCDs

When testing an In-line Portable RCD (i.e. an RCD as an integral part of an extension lead), the tests should be conducted to ensure the appliance is an electrically safe "extension lead":

1 The standard RCD test will check the operation of the RCD and the Active/Neutral polarity; then

2 If the Portable RCD (Fig 1) has a mechanical reset switch test it as an extension lead (in series with a known good extension lead, if required). this will check the RCDs earth continuity and insulation resistance; or

3 If the appliance (Fig 2) has an Electronic Reset Switch conduct a "Class 1 Run Test" on the Portable RCD (in series with a known good Earthed Appliance). When performing the Class 1 Run Test, and the screen message "Run Test (Leakage Current)" appears, it will be necessary to press the "Reset" button on the RCD in order to complete the circuit to the appliance when the bar graph appears.

NOTE: *It is important to understand that for Portable RCDs such as the Clipsal BODY GUARD 485 Series (Fig 1) and HPM Cat R5102 (Fig 2), an RCD test on its own is not sufficient to test the whole of the appliance as the male socket and lead supplying power to these RCDs is not tested for leakage. In any case, the standard RCD test, checks leakage at the rated trip current of the appliance (e.g. 30mA), where as the Current Leakage Test checks for leakage of 5mA or less.*

High current earth test (Option)

Overview

When fitted, the High Current Earth Test Option enables the user of the **STC Pro Logger** to apply any one of 3 test currents when testing earth circuits. The option consists of a fully integrated programmable constant current switch mode power supply capable of delivering up to 25A into the earth circuit of an electrical appliance under test.

To access the menus relating to the High Current Earth Tests select F2 when the Company Logo is displayed on the Display. After pressing F2, scroll down the list of options (using the F1 and F2 keys) until the desired current range is displayed. The selected current setting may then be set to one of 2 modes:

1 Press Start for a "temporary setting" test where the selected test current is set until the **STC Pro Logger** is switched off. After the power is switched on again the test current will have reverted to 200mA; or

2 Press F2 for the selected test current to be set as the default test current for all future Earth Tests.

3 If an earth test is conducted then the selected current will displayed on the display prior to the test commencing.

Description of test settings

1 Continuity Test (200mA)

This is the default general purpose setting, suitable for all appliances including Electronic and IT. The earth resistance threshold is set to 1Ω.

2 Routine Test (10A)

Same test as applied to all electrical appliances during the manufacturing process. For manufacturers, the Routine Test is mandatory (conducted in accordance with AS/NZS 3100). The earth resistance threshold is set to 1Ω.

3 Type Test (25A)

Same test as applied to selected sample electrical appliances during the manufacturing process. For manufacturers the Type Test is mandatory (conducted in accordance with AS/NZS 3100). The earth resistance threshold is set to 0.2Ω.

NOTE 1: *The Type Test resistance threshold for AS/NZS 3100 is 0.1Ω. The threshold in the* ***STC Pro Logger*** *is 0.2Ω. A threshold of 1Ω at 25A is not possible due to the 12V maximum voltage set for this test; as stated in AS/NZS 3760. Due to this low resistance threshold, the Type Test (25A)* ***may not be suitable for extension leads.***

NOTE 2: *For STCs with serial nos. 10010, 10216, 10217, 10218, 10219 &10225 only the 200mA continuity test is conducted when performing a Leakage Current Test (Run Test) on an appliance. If that appliance also requires a high current earth test then the "Earth test only" should be used in conjunction with the run test.*

Data Logger operating instructions

TESTING WITH THE
STC PRO LOGGER

SET UP FOR UPLOADING
TEST RECORDS

Overview

When Data Logging is enabled, data relating to each electrical test conducted by the **STC Pro Logger** is stored in the STC's memory as a pass or fail. The standard **STC Pro Logger** is able to store up to 512 records (DL500) with an option to expand this to 1023 records (DL1000). The STC has an on-board real time clock to stamp the time and date on each recorded test.

If the Data Logging option is set to "On", whenever the **STC Pro Logger** is turned on, the Time & Date then the number of records used will be displayed prior to the company logo.

Additional data such as the Venue (Company Name, Site, Location) Comment etc. may be entered via a PS2 Keyboard and/or Scanner.

Records are stored permanently in the **STC Pro Logger** until they are deleted on mass. Each test record is appended to the last to ensure there is no accidental loss of data.

Each test saved may contain between 1 and 3 records dependent upon changes made to the header record or the addition of a comment record.

Records Uploaded from the **STC Pro Logger** to a PC may be imported directly into a Spreadsheet or any application capable of accepting comma delimited (CSV) files.

Operation

Data Logging may be switched On or Off via the F2 Menu. The F2 Menu is accessed by pressing F2 while the Company Logo is displayed on the LCD Display (this menu provides access to all options associated with the Data Logger). Any single F2 menu option is selected by scrolling up or down. To select the option press "Start" and to exit the menu press "Reset".

Note: *When using Data Logging, it is important to ensure the correct Time and Date values are set prior to commencing testing. Set the Time and Date via the F2 Menu in a 24Hr clock format.*

With the speed and ease of testing in mind, the **STC Pro Logger** has been designed to allow a user the flexibility to turn on or off the prompting for particular field information. If the prompt is turned off then the user will only have to enter data once for some fields and never for others.

For example if *Ask for Venue* is turned off then the **STC Pro Logger** will only ask once for the Company name, Site & Location. In the case of *Ask for Comment* the **STC Pro Logger** will never display the Comment Prompt unless a test fails.

Data Logger operating Instructions (continued)

Data entry may be via any PS2 keyboard and/or Scanner. If the scanner is used without a keyboard then it must have an "Enter" as a barcode terminator (see section entitled "Scanner setup").

If a test fails a visual inspection and the visual inspection prompt is turned on, then the electrical test is skipped and the user is prompted for a Comment.

Prompts for fields such as Company, Site and Location (The Venue) appear only after initiating a test. The prompt for Tag Number appears at the conclusion of a successful test, except in the case of RCD tests. For RCD tests the Tag Number is entered prior to the test. If the Electrical Test is unsuccessful the Tag Number is not stored.

If a test fails due to an electrical failure the user is prompted for a Comment instead of a Tag Number. The Comment maybe skipped if not required.

A warning in the form of the memory usage screen will appear if there are 10 or less records left in memory. For each test performed at that point, the reset button will have to be pressed to exit the message and continue the test. After the memory is full the STC Pro Logger will continue to perform electrical tests but there will be no data recorded. At this point the current stored test results should be uploaded to a PC and then deleted via the F2 menu.

The number of records used and the memory capacity (DL500 or DL1000) can be displayed by pressing F1 while the Company Logo is displayed on the LCD Display. The F1 key will also display details relating to the Time and Date; and the Software and Hardware versions installed in the **STC Pro Logger**. Pressing the reset button will return you to the Company Logo. When using the F2 Menu to upload stored data to a PC the number of records used and the overall memory capacity is also displayed.

F2 Menu options

Upload Test Results	Tranfers all stored data from the STC to a PC	
Delete Test Results	Deletes all test results stored in the STC	
Data Logging On/Off	Turns the Data Logging function On or Off	
Ask for Venue	Company	Turns prompt for the Company On or Off. If it is turned off it still must be entered on the first test. Field may not be empty.
	Site	Turns prompt for the Site On or Off. If it is turned off it still must be entered on the first test. Field may not be empty.
	Location	Turns prompt for the Location On or Off. If it is turned off it still must be entered on the first test. Field may not be empty.
Ask for Technician	Turns prompt for the Technician On or Off. If it is turned off it still must be entered on the first test. Field may not be empty.	
Ask for App Number	Turns prompt for the Appliance Number On or Off. Field may not be empty.	
Ask for Visual	Turns prompt for the Visual Pass/Fail On or Off. If set to On the field may not be empty.	
Ask for Tag Number	Turns prompt for the Test Tag Number On or Off. If set to On the field may not be empty.	
Ask for Comment	Turns prompt for the Comment On or Off. If it is turned off it will only appear in the case of a failed test.	
Set Time & Date	Enables setting of a 24Hr Real Time Clock (HH:MM DD-MM-YY).	

Note: *If the option is selected then a small rectangle (■) appears next to the option. Conversely, if the option is deselected then the rectangle does not appear.*

The Data Logger records the following in each data field:

Test header

		Field Length (Charachters)
Company	Name of Company responsible for the appliances (eg TRIO T & M)	16
Site	Specific Site for the above Company (eg Adelaide Office)	16
Location	Specific Location at the Company's Site (eg Workshop)	16
Technician	Name of person conducting the Appliance Testing (eg Rob)	16
Password	(Not implemented)	

Note: *The above fields occupy one record or row only*
A new record is created and stored only if one or more fields are altered.

Test detail

DD-MM-YYYY	Date of test	
HH:MM	Time of test (24 Hr Clock)	
Appliance Description	Description of Appliance under test (eg IEC Lead)	16
Appliance Number	Unique Appliance or Asset Number for each appliance	8
Visual Pass/Fail	Records if the appliance passed or failed a Visual Test. If the field is set to off it stores "N" (not used)	1
Tag Number	The Number of the Test Tag adhered to an appliance after a successful test	8
Earth Current	(Not implemented)	
Test Type	0 = Earthed Appliance, 1 = Double Insulated, 2 = Leads *(See full table over page)*	
Electrical Pass/Fail	Stores a Pass, Fail or Abort dependent on the result for each test	
IR	(Not implemented)	
ER	(Not implemented)	
EC	(Not implemented)	
RCD trip time (0° crossing)	Measured trip time for an RCD Test for the 0° crossing	
RCD trip time (180° crossing)	Measured trip time for an RCD Test for the 180° crossing	

Note: The above fields occupy one record or row only. A new record is created and stored after every test.

User comment

Comment	User comment field	16

Note: *The above field occupies one record or row only. A new record is created and stored only if a comment is added to the test.*

Data Logger operating instructions (continued)

Test Type

0	=	Earthed Appliance
1	=	Double Insulated
2	=	Leads
3	=	Class 1 250V
4	=	Class 2 250V
5	=	Class 1 Run Test
6	=	Class 2 Run Test
7	=	Earth only test
8	=	MIMS Run Test
9	=	EPOD 250V
10	=	10mA Portable RCD
11	=	30mA Portable RCD
12	=	10mA Fixed RCD
13	=	30mA Fixed RCD
14	=	PIEZO Run Test

Uploading data to the PC

To transfer data from the **STC Pro Logger** to a PC, each STC is shipped with a PC DownLoader utility. Instructions relating to the installation and operation of the STC Downloader Program are suppied with the **STC Pro Logger** CD. Records are appended to the memory at all times. Records can only be deleted on mass (see F2 Menu). This application enables data transfer from the STC to the PC via an RS232 cable.

The file format is a simple comma delimited (CSV) file. This format is able to be imported in to many applications including Microsoft Excel®.

Stored test records should be uploaded to a PC at the end of each testing session or at regular intervals. This will reduce the risk of losing test records stored in the STC Pro Logger.

Note 1: *The RS232 cable is a Null Modem or Crossover Cable. It is supplied with the* ***STC Pro Logger****.*

Note 2: *Some Notebook Computers do not have RS232 ports. If this is the case a USB to RS232 converter may be used.*

Keyboard

The **STC Pro Logger** has been designed to work with a standard PS2 101 keyboard. The keyboard can be used in parallel with a Scanner using a keyboard wedge.

The Mini Keyboard supplied as an accessory to the **STC Pro Logger** must be plugged into the Scanner/ Keyboard I/F prior to mains power being applied to the **STC Pro Logger**.

Note 1: *While the* ***STC Pro Logger*** *has been tested with a range of PS2 Keyboards, TRIO Smartcal can not guarantee that all makes of PS2 Keyboards will function with the Logger.*

Note 2: *For models with Software Versions 2.07s to 3.02 the shift key will have no effect on the number keys.*

Scanner

The **STC Pro Logger** has been designed to work with a standard Barcode Scanner (Laser or CCD). The scanner can work in parallel with a Keyboard using a keyboard wedge. Any suitable scanner should be set to operate as a PC/AT, PS2 30-80; US Keyboard; and minimum 50mS Inter-character Delay.

See Section "Scanner Setup" to program the scanners to work with the ***STC Pro Logger***.

The Scanner supplied as an accessory to the **STC Pro Logger** may be used in one of two modes: with or without an "Enter" as a terminator.

To setup the TRIO scanner, scan the following barcodes (from "start" to "end"):

Setup 1: Places a "Enter" at the end of each scanned barcode (Default)

Setup 2: Removes the "Enter" at the end of each scanned barcode

Scanner Setup:

Zebex Z3080 Scanner:

	Setup 1 (Default) (Auto Return ON)	Setup 2 (Auto Return OFF)
Start		
		
		
		
End		

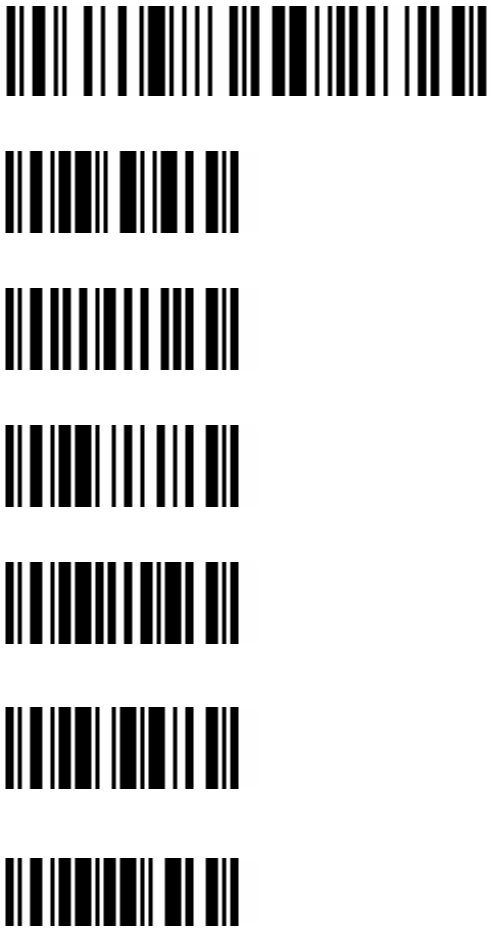
Note: *While the* ***STC Pro Logger*** *has been tested with a range of PS2 Scanners, TRIO Smartcal can not guarantee that all makes of PS2 Scanners will function with the Logger.*

Scanner Setup:

Cipher Lab 1000 Scanner:

STC Defaults

Start



End

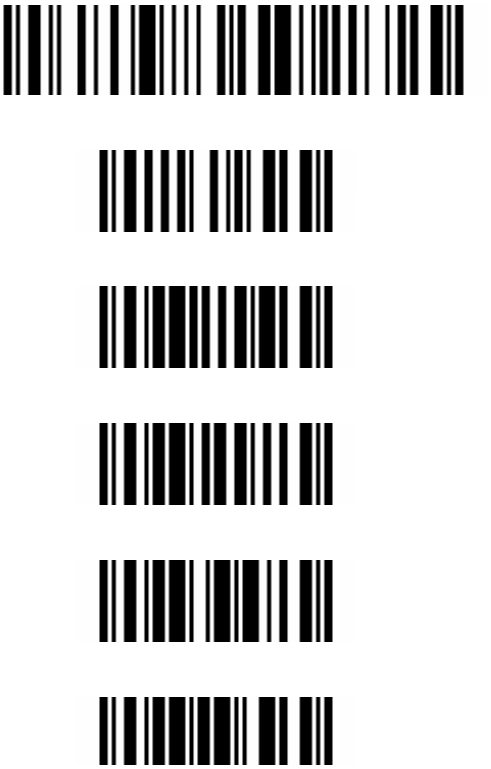
Auto Return OFF

Start

End

Auto Return ON

Start



End

Note: *While the* ***STC Pro Logger*** *has been tested with a range of PS2 Scanners, TRIO Smartcal can not guarantee that all makes of PS2 Scanners will function with the Logger.*

ADELAIDE

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