TIS EV-TEST100

[redacted] User manual

Release EN 1.01 - 09/09/2021

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1. PRECAUTIONS AND SAFETY MEASURES

The adapter has been designed in compliance with IEC/EN61010-1 guidelines relevant to electronic measuring adapters. For your safety and in order to prevent damaging the adapter, please strictly follow the procedures described in this manual and read carefully all notes preceded by symbol ⚠. Before and after carrying out measurements, observe the following instructions:

- Do not carry out any measurement in humid environments.
- Do not carry out any measurements in case gas, explosive materials or flammables are present, or in dusty environments.
- Avoid any contact with the circuit under test if no measurement is in progress.
- Avoid any contact with exposed metal parts, with unused measuring probes, circuits, etc.
- Do not carry out any measurement in case you find anomalies in the adapter such as deformation, breaks, substance leaks, absence of display on the screen, etc.
- Pay special attention when measuring voltages higher than 25V AC, since a risk of electrical shock exists.

In this manual, and on the adapter, the following symbols are used:


Warning: observe the instructions given in this manual; improper use could damage the adapter or its components.


Adapter with double insulation


AC Voltage


Ground reference

1. PRELIMINARY INSTRUCTION

CAUTION

- The adapter can be used for **AC VOLTAGE** measurements on installations with CAT III 300V to ground
- Do not use the adapter on loads with technical specifications different by the same described in § 7
- Do not use the adapter if the protection conditions on the circuit are limited or protection devices are damaged.
- Do not use the adapter in circuits with voltages and currents higher than the rated ones
- Do not carry out any measurement in case you find anomalies in the adapter such as deformation, breaks, substance leaks, absence of display on the screen, etc.

2. GENERAL DESCRIPTION

The TIS EV-TEST100 model is an adapter designed to interface with the electric car charging stations' sockets (**EVSE** - **E**lectrical **V**ehicle **S**upply **E**quipment) and perform electrical safety tests on these devices. The adapter is capable of simulating the presence of an electric vehicle in order to measure the output voltage signals from the charging stations as well as fault conditions. TIS EV-TEST100 can be used in combination with the following TIS electrical safety tester in EVSE AUTO Sequence Mode, or other appropriate electrical safety testers in Manual Mode (please see § 5.3):

Model (*)	Construction category	FW version
TIS MFT-PRO	CAT IV 300V	2.00 (or higher)
TIS MFT-PRO+	CAT IV 300V	2.06 (or higher)

(*) The list of available models can be changed without notice. In case of doubt contact the after-sales service

The adapter has the following features:

- Use for EVSE stations with charging modes 2 and 3
- Test cable with Type 2 connectors (IEC 62196-2)
- Vehicle simulation via Control Pilot system (CP state)
- Cable current capacity simulation via Proximity Pilot system (PP state)
- Fault PE simulation condition
- Fault condition simulation on the Control Pilot (Fault E)
- Efficiency check of internal station energy meter (LOAD section)
- LED indications for system phase detection
- Terminals for connection to HT tester
- Protection fuse on LOAD section
- Test in compliance with IEC/EN61851-1 and IEC/EN60364-7-722 guidelines

3. PREPARATION FOR USE

3.1. INITIAL CHECKS

Before shipping, the adapter has been checked from an electric as well as a mechanical point of view. All possible precautions have been taken so that the adapter is delivered free of damage. However, a thorough check of the adapter is recommended in order to detect any damage suffered during transport. In case anomalies are found, immediately contact the forwarding agent. Also check whether the packaging contains all parts indicated in § 7.1.1. In case of discrepancy, please contact the Dealer. Should the adapter be returned, please follow the instructions given in § 8.

CAUTION
Should the adapter be used differently from what is specified by the manufacturer, the protection provided may be impaired

3.2. ADAPTER POWER SUPPLY

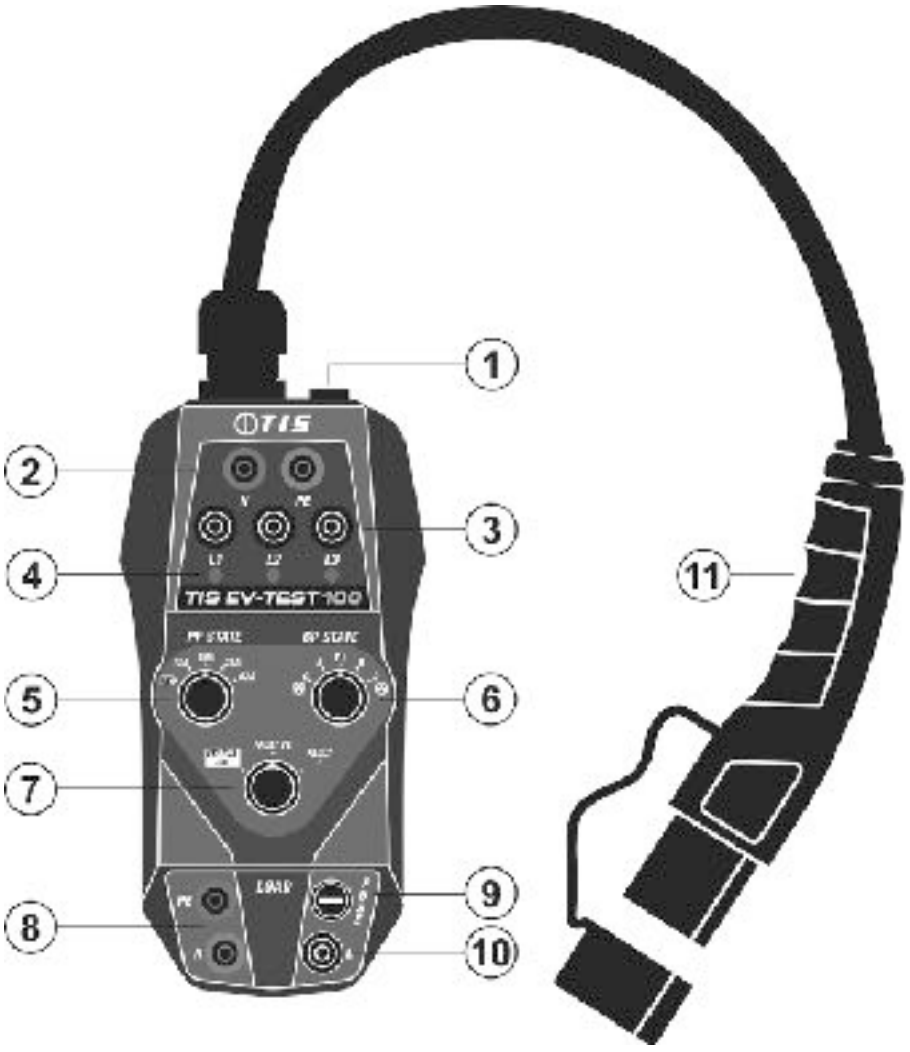
The adapter is powered directly by the charging station via integrated plug cable.

3.3. STORAGE

In order to guarantee accurate measurement, after a long storage time, wait for the adapter to come back to normal condition (see § 7).

4. NOMENCLATURE

4.1. DESCRIPTION OF THE ADAPTER



CAPTION:

1. Input for connection to HT instrument via C100EV cable
2. Terminals N, PE for connection to HT instrument
3. Terminals L1, L2, L3 for connection to HT instrument
4. LED for phase presence detection
5. PP state selector
6. CP state selector
7. FAULT PE, FAULT E function selector
8. N, PE terminals for external load connection
9. LOAD section protection fuse
10. Terminal L for external load connection
11. Type 2 plug cable for connection to EVSE

Fig. 1: Description of the adapter

4.2. FUNCTION DESCRIPTION OF PP STATE SELECTOR

Position	Description
NC	EVSE disconnected
13A	EVSE connected with maximum current of 13A
20A	EVSE connected with maximum current of 20A
32A	EVSE connected with maximum current of 32A
63A	EVSE connected with maximum current of 63A

4.3. FUNCTION DESCRIPTION OF CP STATE SELECTOR

Position	Description
A	Electric vehicle disconnected
B	Electric vehicle connected, not ready for charging
C	Electric vehicle connected, ready for charging, ventilation not required
D	Electric vehicle connected, ready for charging, ventilation required

4.4. FUNCTION DESCRIPTION OF FAULT SELECTOR

Position	Description
STATUS OK	No fault simulation
FAULT PE	Fault condition simulation on PE protective conductor (EVSE does not recharge)
FAULT E	Fault condition simulation on the Control Pilot (EVSE does not recharge)

5. OPERATING INSTRUCTIONS

5.1. TEST ON EVSE

1. Connect the adapter to the **In1** input of the HT multifunction instrument using the C100EV supplied cable (see Fig. 1 – part1)
2. Connect the L1, PE and N terminals (see Fig. 1 - parts 2, 3 and 4) of the adapter respectively to **B1**, **B3** and **B4** inputs of the TIS MFT-PRO or TIS MFT-PRO+ multifunction testers by using the cables supplied together
3. Connect the Type 2 plug cable (see Fig. 1 - part 11) to the EVSE
4. Move the PP STATE selector (see Fig. 1 - part 5) to the **NC** position
5. Move the CP STATE selector (see Fig. 1 - part 6) to the **A** position
6. Move the FAULT selector (see Fig. 1 - part 7) to the **STATUS OK** position
7. Select the "EVSE Test" mode on the TIS MFT-PRO or TIS MFT-PRO+ multifunction testers
8. Press the **GO/STOP** button on the TIS MFT-PRO or TIS MFT-PRO+ multifunction testers and follow the guided test procedure (see the related user manual)
9. The full color digital display will then guide you through the connections and settings for each test. Where a change of settings is required the relevant information on screen will flash red
10. Please note that the EVSE will need be turned off and then back on again to move onto the next RCD test. This is to allow the internal RCDs within the EVSE to reset

CAUTION
For detailed instructions on the use of the adapter, refer to the user manual of the TIS MFT-PRO or TIS MFT-PRO+ multifunction testers to which it must be connected

Please note that our
TIS1908 EVSE Test Report
is available for the
manual recording of tests

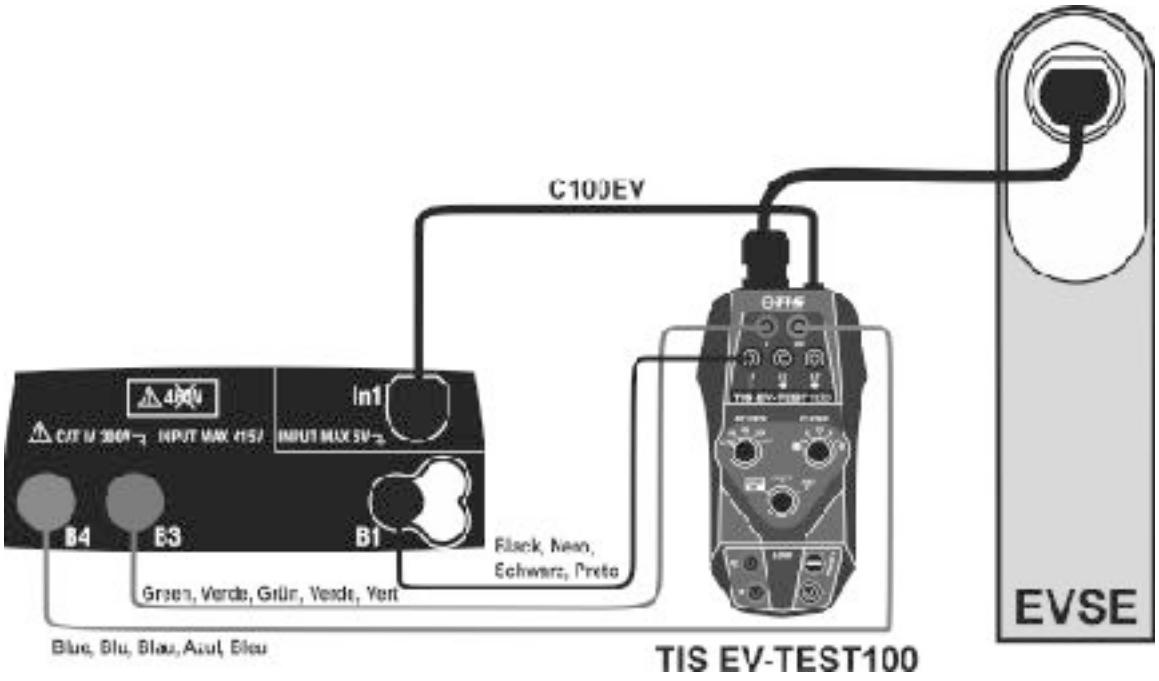


Fig. 2: Use of the adapter for testing EVSE with MFT-PRO instrument

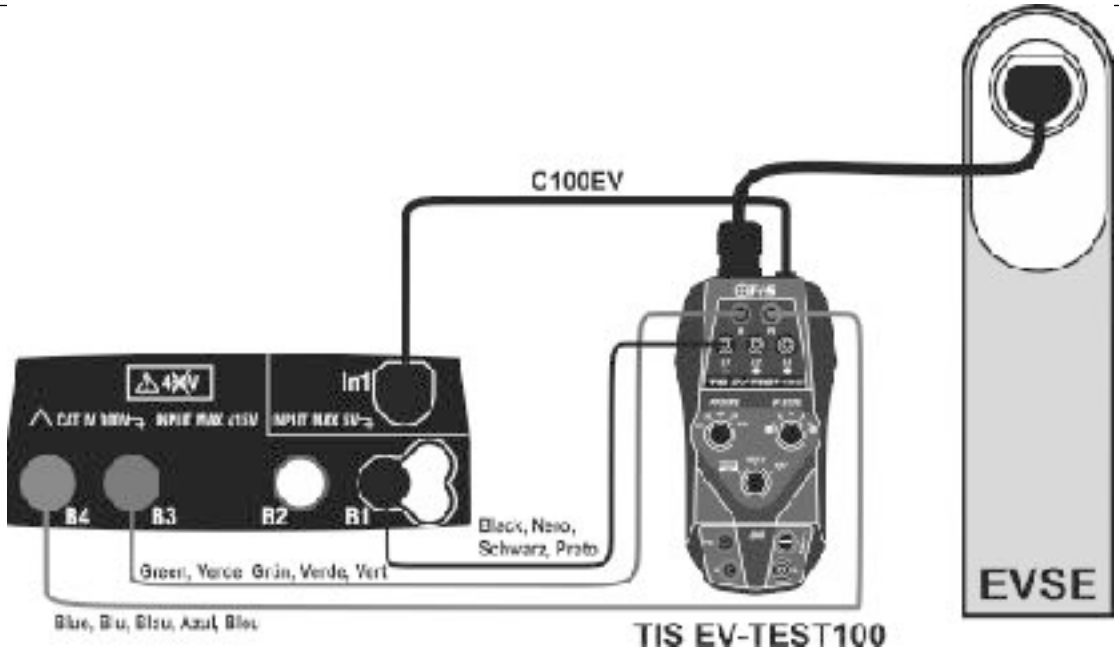


Fig. 3: Use of the adapter for testing EVSE with MFT-PRO+ instrument

5.2. EFFICIENCY CHECK OF EVSE ENERGY METER

The adapter allows to perform a test in order to evaluate the efficiency of the energy meter inside the EVSE. Consider the following steps:

1. Connect an external load with max absorbed current 10A AC to the input terminals L, N, PE (see Fig. 1 - parts 8 and 10) of LOAD section
2. Set the three switches to the positions: STATUS OK, C or D (CP STATE), and 13A, 20A, 32A or 63A (PP STATE)
3. Refer to the instructions of the EVSE under test for the energy meter reading.

5.3. MANUAL SEQUENCE MODE TEST ON EVSE

1. Continuity Test

➢ Connect the TIS EV-TEST100 to the EVSE charging unit
➢ Set PP State to NC, set CP State to A and set Fault to OK
➢ Connect one lead from your continuity tester to the PE socket on the TIS EV-TEST100 and the other lead to an Earth Point on the circuit
➢ Carry out the Continuity Test

2. Insulation Test

➢ Leave all TIS EV-TEST100 dial settings as for the Continuity Test in point 1)
➢ Now using your Insulation Tester, check the Insulation integrity between L1 (also L2 & L3 for 3 Phase), N & PE

3. Status Checks

➢ To check that the EVSE will deliver power to the vehicle, set the PP State dial in accordance with the system, set the CP State dial to C and the Fault dial to OK. You should be able to hear the EVSE turn on and there should be visual indication that power is on

➢ To check that the EVSE will cut power in the event of an Earth Fault, set the Fault into PE. You should be able to hear the EVSE turn off and there should be visual indication that power is off

➢ To check that the EVSE will cut power in the event of an Electric Fault, set the Fault to E. Power should remain off and there should be visual indication that power is off

4. Loop Impedance Tests

➢ Set the PP State to reflect your system power, CP State to C and Fault to OK. Connect your Loop tester to L1 (L2 & L3 for 3 Phase), N & PE and carry out the Loop Tests

5. RCD Tests

➢ Please note that not all MFTs and RCD Testers are capable of testing A Type & 6mA B Type RCDs

➢ Leave all settings as per point 4) above. Connect your RCD Tester as per point 4) above. Using your RCD Tester, check the A Type RCD in the EVSE - this is best done using a Ramp Test feature

➢ There should also be a 6mA B Type RCD as part of the EVSE. Reset the whole device and set your RCD Tester to test the B Type RCD in the EVSE - this is best done using a Ramp Test feature

6. MAINTENANCE

CAUTION
• Only skilled and trained technicians should perform maintenance operations. Before carrying out maintenance operations, disconnect all cables from the input terminals. • Do not use the adapter in environments with high humidity levels or high temperatures

6.1. CLEANING THE ADAPTER

Use a soft and dry cloth to clean the adapter. Never use wet cloths, solvents, water, etc.

6.2. END OF LIFE

CAUTION: the symbol on the adapter indicates that the appliance and its accessories must be collected separately and correctly disposed of.

7. TECHNICAL SPECIFICATIONS

Input voltage:	190V ÷ 415V AC Phase-Phase, 50/60Hz ±5% 110V ÷ 240V AC Phase-Neutral, 50/60Hz ±5%
Connection to EVSE:	integrated cable with Type 2 plug, length 60cm
Recharging stations:	charging modes 2 and 3
PP Simulation:	NC,13A, 20A, 32A, 63A
CP Simulation:	status A, B, C, D, ventilation/not ventilation
Simulation EVSE fault:	Fault PE, Fault E
CP output signal:	PWM communication protocol, 12V
Allowed output load:	240V, 50/60Hz, max 10A AC
Protection fuse:	Fast type 250V/10A (5x20mm) (0.2x0.8in)
Safety:	IEC/EN61010-1
Reference guidelines:	IEC/EN61851-1, IEC/EN60364-7-722
Insulation:	double insulation
Measurement category:	CAT III 300V
Pollution degree:	2
Dimensions (L x W x H):	210 x 115 x 60mm (8 x 5 x 2in)
Weight (with integrated cable):	900g (32ounces)
Mechanical protection:	IP40
Working temperature:	0°C ÷ 40°C (32°F ÷ 104°F)
Working humidity:	<80%RH
Storage temperature:	-10°C ÷ 60°C (14°F ÷ 140°F)
Storage humidity:	<80%RH
Max operating altitude:	2000m (6562ft)

This adapter complies with requirements of EMC 2014/30/EU directive
This adapter complies with requirements of European Directive 2011/65/EU (RoHS) and 2012/19/EU (WEEE)

7.1. ACCESSORIES

7.1.1. Accessories provided

- Cable for connection to TIS MFT-PRO tester Code C100EV
- Carrying case
- User manual

8. ASSISTANCE

8.1. WARRANTY CONDITIONS

This adapter is warranted against any material or manufacturing defect, in compliance with the general sales conditions. During the warranty period, defective parts may be replaced. However, the manufacturer reserves the right to repair or replace the product. Should the adapter be returned to the After-sales Service or to a Dealer, transport will be at the Customer's charge. However, shipment will be agreed in advance. A report will always be enclosed to a shipment, stating the reasons for the product's return. Only use original packaging for shipment. Any damage due to the use of non-original packaging material will be charged to the Customer. The manufacturer declines any responsibility for injury to people or damage to property.

The warranty shall not apply in the following cases:

- Repair and/or replacement of accessories and battery (not covered by warranty).
- Repairs that may become necessary as a consequence of an incorrect use of the adapter or due to its use together with non-compatible appliances.
- Repairs that may become necessary as a consequence of improper packaging.
- Repairs which may become necessary as a consequence of interventions performed by unauthorized personnel.
- Modifications to the adapter performed without the manufacturer's explicit authorization.
- Use not provided for in the adapter's specifications or in the instruction manual.

Our products are patented and our trademarks are registered. The manufacturer reserves the right to make changes in the specifications and prices if required by improvements in technology.

8.2. ASSISTANCE

If the adapter does not operate properly, before contacting the After-sales Service, please check the conditions. Should the adapter still operate improperly, check that the product is operated according to the instructions given in this manual. Should the adapter be returned to the After-sales Service or to a Dealer, transport will be at the Customer's charge. However, shipment will be agreed in advance. A report will always be enclosed to a shipment, stating the reasons for the product's return. Only use original packaging for shipment. Any damage due to the use of non-original packaging material will be charged to the Customer.

TEST INSTRUMENT SOLUTIONS LTD
UNITS 12/14 LUDDITE WAY BUSINESS PARK, RAWFOLDS WAY, CLECKHEATON, BD19 5DQ
(T): 01274 752407
(F): 01274 870175
Email: **sales@tis-tic.co.uk**
Web: www.testinstrumentsolution.co.uk