



THE EASTERN SPECIALTY COMPANY

Electric Vehicle Service Equipment (EVSE)

TEST SYSTEM

OPERATIONS MANUAL

SAE J1772-COMPLIANT

PRODUCT:

Test System 200 (TS200)

PATENT # US 9684037 B2

Rev 2.2_ 20190704

© 2019 TESCO - The Eastern Specialty Company

All Rights Reserved.

Specifications are subject to change without prior notice.

LIMITED WARRANTY & LIMITATION OF LIABILITY

TESCO warrants to the original purchaser that it will correct all defects in material and/or workmanship in the instrument, test equipment or software covered by this warranty (herein called "**PRODUCT**"), provided that TESCO is notified of such defect within the warranty period (set forth below) in accordance with paragraph four of this Warranty.

WARRANTY PERIOD. The warranty period shall begin on the date of shipment of the PRODUCT or the date of the issuance of this warranty certificate, whichever is later. If no warranty period is specified below and signed by an authorized DISTRIBUTOR of TESCO, the Warranty Period shall be one (1) year. In no event shall this Warranty remain in effect for more than the stated Warranty Period plus two (2) months after the date of shipment. TESCO's sole obligation and the purchaser's sole remedy under this Warranty is limited to repair or replacement, at TESCO's option, free of charge, F.O.B. TESCO's factory at Bristol, PA of any workmanship and/or part which in TESCO's sole judgment shows evidence of defect. On-site Warranty repairs will be made when in TESCO's judgment the PRODUCT cannot practically be shipped to TESCO's factory. Any modifications, additions or upgrades made to the PRODUCT or control software after this warranty becomes effective shall not extend the term of this warranty.

COVERAGE. The warranty set forth above shall be applicable only if the PRODUCT:

1. Is used for the specific purpose for which it was intended;
2. Is operated in accordance with instructions, if any, supplied by TESCO;
3. Has not been modified, neglected, altered, tampered with, vandalized, abused or misused, or subjected to accident, fire, flood or other casualties;
4. Has not been repaired by unauthorized persons;
5. Has not had its serial number altered, defaced or removed;
6. Has not been connected, installed or adjusted other than in accordance with the instructions, if any, furnished by TESCO.

The warranty set forth herein DOES NOT APPLY to defects resulting from ordinary wear, tear and usage, or any cause, similar or dissimilar, not resulting solely from defective material and/or workmanship.

The Warranty set forth herein shall NOT be effective unless:

1. Notice of defect is given to TESCO by phone, fax, email or mail as soon as the defect is discovered.
2. Notice of defect contains the following information: PRODUCT serial number, PRODUCT model number, date of original installation, and an accurate and complete description of the defect including the exact circumstances leading to the defect.
3. The defective PRODUCT or part is returned only upon authorization from TESCO as evidenced by the issuing of a Return Merchandise Authorization (RMA) number, and that the transportation charges are prepaid (except that TESCO may, at its option, appoint a qualified DISTRIBUTOR to make field inspections of the PRODUCT for which purpose the purchaser shall permit such DISTRIBUTOR to enter upon its premises and examine the PRODUCT).
4. The Return Merchandise Authorization (RMA) number is written on the shipping label and all paperwork defective PRODUCT or part.
5. The defective PRODUCT or part is returned in the original packing or packing approved by TESCO

TESCO is not responsible for drayage charges, damages or labor costs incurred in conjunction with failure, removal or reinstallation of any PRODUCT, all of which shall be at the purchaser's expense. TESCO is not responsible for special, incidental or consequential damages, whether resulting from breach of warranty, negligence or any other reason.

TESCO manufactured parts will be available for a minimum period of at least two years after the manufacture of a PRODUCT has been discontinued.

TESCO will provide original purchaser during the Warranty Period, unlimited telephone consulting time for PRODUCT trouble shooting/servicing and for the first thirty (30) days of the Warranty Period, unlimited telephone consulting time for the purpose of PRODUCT/software application.

THE WARRANTY CONTAINED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES AND TESCO MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OR CONDITION, DESIGN, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER.

No other Warranty, express or implied, is authorized by TESCO, and no DISTRIBUTOR of TESCO or any other person has any authority to amend, extend, modify, enlarge or otherwise alter the foregoing warranty and disclaimers in any way whatsoever, except as provided for in an Extended Limited PRODUCT Warranty Agreement.



THE EASTERN SPECIALTY COMPANY

TESCO – The Eastern Specialty Company

925 Canal Street Bristol, PA, 19007

Phone: 215.785.2338

e-mail: info@tescometering.com

Web Site: www.tescometering.com

TABLE OF CONTENTS

1.0	INTRODUCTION	6
1.1	Introduction	7
1.2	Contacting TESCO	7
1.3	General Safety Summary	7
1.4	Description of Safety-related Icons	8
1.5	Protective Earth / Grounding	8
1.6	Key Features	9
1.6.1	T200 – EVSE Tester Key Features	9
1.6.2	PL200 – EV Load Emulator Key Features	9
1.7	Standard Features	10
1.7.1	T200 – EVSE Tester Standard Features.....	10
1.7.2	PL200 – EV Load Emulator Standard Features	10
1.8	General Specifications	11
1.8.1	Input Characteristics.....	11
1.8.2	Dimensions	11
1.8.3	Environment	11
1.9	Electrical Specifications	11
1.9.1	Measurements Accuracy	11
1.9.2	Load Current Capability	12
1.10	About this Operations Manual	12
2.0	INSTALLATION	13
2.1	Introduction	14
2.2	Unpacking and Inspection	14
2.3	Set up, Airflow and Cooling Considerations	14
2.3.1	Setup and Placement	14
2.3.2	Airflow.....	15
2.3.3	Cooling considerations.....	16
2.4	Main & Auxiliary Power Supply	16
2.5	Connection and Power-Up	16

2.5.1	Sequence of Connection and Power-Up.....	17
2.5.2	Power-Down and Sequence of Disconnection	17
3.0	EVSE TESTER FUNCTIONS.....	18
3.1	Introduction.....	19
3.2	Front Panel Features	19
3.2.1	T200 Front Panel.....	19
3.2.2	T200 Navigation Keys	20
3.2.3	PL200 Front Panel.....	21
3.2.4	PL200 Rear Panel	22
3.3	The Graphical User Interface (GUI) Storyboard	23
3.3.1	Graphical User Interface (GUI) Sections	23
3.3.2	SELECTING REGISTERED EVSE TO TEST	24
3.3.3	LOAD TEST PROCESS.....	27
3.3.4	MANUAL TEST.....	28
3.3.5	NEW/EDIT TEST PROCEDURE.....	29
3.3.6	NEW/EDIT EVSE INFORMATION	30
3.3.7	SETTINGS	31
3.3.8	STATUS	32
3.3.9	PC CONNECT	33
3.3.10	UPDATING FIRMWARE OF T200 & PL200.....	34
3.3.11	SYSTEM CALIBRATION (SYSCAL)	35
4.0	REMOTE OPERATIONS.....	36
4.1	Introduction.....	37
4.2	Connectivity.....	37
4.3	Instrument Controller Capabilities.....	38
4.4	Setup of Remote Access	38
4.5	Remote Access Functionality	38
4.5.1	CONNECTIVITY HOOKUP.....	38
4.5.2	MAIN MENU	39
4.5.3	TEST SETUP FOR AUTO TEST.....	40
4.5.4	TEST STATUS.....	40
4.5.5	TEST RESULTS	41
4.5.6	TEST CONFIGURATION.....	42
4.5.7	NEW/EDIT TEST CONFIGURATION.....	43

5.0	MAINTENANCE.....	44
5.1	Introduction.....	45
5.2	Replacing the Fuse	45
5.3	Cleaning the PL200 AIR Filter	46
5.4	Cleaning the Instrument External Surface	48
5.5	Lithium Battery Consideration	48

1.0 INTRODUCTION

1.1	Introduction	7
1.2	Contacting TESCO	7
1.3	General Safety Summary	7
1.4	Description of Safety-related Icons	8
1.5	Protective Earth / Grounding	8
1.6	Key Features	9
1.6.1	T200 – EVSE Tester Key Features	9
1.6.2	PL200 – EV Load Emulator Key Features	9
1.7	Standard Features	10
1.7.1	T200 – EVSE Tester Standard Features.....	10
1.7.2	PL200 – EV Load Emulator Standard Features	10
1.8	General Specifications	11
1.8.1	Input Characteristics.....	11
1.8.2	Dimensions	11
1.8.3	Environment	11
1.9	Electrical Specifications	11
1.9.1	Measurements Accuracy	11
1.9.2	Load Current Capability	12
1.10	About this Operations Manual	12

1.1 Introduction

The TESCO's Electric Vehicle Supply Equipment (EVSE) Test System, referred as Instrument, tests energy delivery accuracy using a transactional mode compatible with HB44. It provides complete test capabilities for EVSE systems conforming to J1772-2017. Full communications signal analysis and safety checking of the EVSE connection is provided.

The Instrument is composed of an EVSE tester (TXXX series) and EV Load Emulator (PLXXX series). TXXX products are precise EVSE testers and PLXXX products provide a range of maximum load capabilities. Testing EVSE performance to HB44 and HB130 requires very flexible load. At a minimum, tests must be conducted at (1) no load, (2) starting load of 0.5A, (3) light load of <10% of Control Pilot (CP) specified available load, and (4) full load of at least 85% of the Control Pilot (CP) specified available load current, or at 7.2kWH. Since the Control Pilot specified load is not known until the test begins and may be any value up to the maximum rating of the charger. The PLXXX will adjust and provide the required load condition.

The Instrument tests AC Level 1 (up to 32A), AC Level 2 systems up to 50 A.

1.2 Contacting TESCO

To contact TESCO, call one of the following telephone numbers:

- Technical Support: 215.785.2338
- Calibration/Repair 215.785.2338

Or, visit our website at www.tescometering.com.

To view, print, or download the latest manual supplement, please visit:
www.tescometering.com.

1.3 General Safety Summary

This manual contains information and warnings that must be observed to ensure safe operation and keep the Instrument in a safe condition. Operation or service in conditions or in a manner other than specified could compromise safety. For the correct and safe use of this Instrument, it is essential that both operating and service personnel follow accepted safety procedures in addition to the safety precautions specified.

In this manual, a **WARNING** identifies conditions and actions that pose hazard(s) to the user; a **CAUTION** identifies conditions and actions that may damage the Instrument or the test equipment.

WARNING  

To avoid electrical shock, personal injury, or fire hazard:

- The Instrument must not be switched ON if it is damaged or suspected to be faulty.
- Do not operate the Instrument in wet, condensing, dusty, or explosive gas conditions.
- If the equipment is used in a manner not specified in this manual, the protection provided by the Instrument may be impaired.
- Whenever it is likely that safety protection has been impaired, the Instrument must be made inoperative and be secured against any unintended operation. Inform qualified maintenance or repair personnel.
- Safety protection is likely to be impaired if, for example, the Instrument shows visible damage or fails to operate normally.

1.4 Description of Safety-related Icons

ICONS	DESCRIPTION
	Risk of danger. Important information. See manual.
	Hazardous voltage. Risk of electrical shock.

1.5 Protective Earth / Grounding

Protection Class 1 of IEC 61140 – The Instrument operates with a protective earth/ground connection via the protective earth/grounding conductor of the charging station (EVSE) in compliance to the J1772 standard. The protective earth/ground connects before the ac line and neutral connections when the J1772 coupler and CombiTac cable is inserted into the Instrument's front panel connectors.

WARNING  

To avoid electrical shock or personal injury, do not intentionally or unintentionally interrupt the protective ground conductor inside or outside the Instrument. Interrupting the protective ground conductor is likely to make the Instrument dangerous. Intentional interruption is prohibited.

1.6 Key Features

The Instruments features are listed in the following sections:

1.6.1 T200 – EVSE Tester Key Features

- Accurate Energy Measurement
- Uses EVSE Connector J1772:201710
- Input Voltage Range: 90 to 264 VAC
- Input Current Range: 50 Amps (max)
- Innovative GUI on a 5" LCD Screen
- Easy to use – select a site and press “test”
- Extremely fast, full accuracy is achieved in less than five seconds at any power level
- Light weight, water tight, crush proof, and dust proof case
- Performs all accuracy and safety tests
- All information for sites, equipment, test procedures and test results are stored in internal database

1.6.2 PL200 – EV Load Emulator Key Features

- Safe and easy to use
- Provides full load emulation of electric vehicle behavior for the EVSE
- Completes the Pilot Control Signal Network
- Provides Proximity Detection Circuit
- Displays charging state based on SAE J1772 Standard and load mode information
- Fully controlled and monitored by the T200 EVSE Tester

1.7 Standard Features

1.7.1 T200 – EVSE Tester Standard Features

	GRAPHICAL USER INTERFACE Displayed on a 5" 800x480, full color TFT LCD screen
	ETHERNET 100 BaseT with support for: Web Services, Remote Control, Database Access
	USB PORTS 2X USB with support for: Device, External Memory Storage, Keyboard, Mouse
	GPS (GLOBAL POSITIONING SYSTEM) Integrated GPS system provides location information for automatic determination of test site and database access
	GFCI (GROUND FAULT CIRCUIT INTERRUPTER) Provision is provided to test the GFCI functionality of the EVSE.
	RS232 Legacy port for specialized test configurations.
	INTERNAL BATTERY 10.8V 4800 mAh Lithium-Ion battery pack provides power at system startup and during fault testing. Battery automatically recharges during testing operations. The unit can also be plugged directly into a standard AC outlet for recharging.
	PL INTERFACE Provides communications and power to any Programmable Load (PL Series).

1.7.2 PL200 – EV Load Emulator Standard Features

	AC LEVEL 1 Provides appropriate load current required up to 32A
	AC LEVEL 2 Provides appropriate load current required up to 50A.
	PROGRAMMABLE LOAD CURRENT MODES Capable in handling different testing modes: No Load (NL), Starting Load (SL), Light Load (LL) & Full Load (FL).
	EV COMMUNICATION PROTOCOL AC: Control Pilot + Proximity Detection

1.8 General Specifications

1.8.1 Input Characteristics

AC Test Voltage	90 – 264V
AC Test Current	0 – 50A
AC Test Freq	50 – 60Hz
AUX AC Supply	110V

1.8.2 Dimensions

PARAMETERS	T200 – EVSE TESTER	PL200 – EV LOAD EMULATOR
Height:	Lid is closed: 6.9" (17.6 cm) Lid is open: 18" (45.72 cm)	12.7" (32.0 cm)
Width:	18.5" (47 cm)	14.6" (37.15 cm)
Depth:	14.1" (35.7 cm)	18.9" (42.86 cm)
Weight:	15.0 lbs (6.7 kg)	34 lbs (15.4 kg)

1.8.3 Environment

Operating Temp (Min / Max)	-20 ^o C / +50 ^o C (-4 ^o F / +122 ^o F)
Storing Temp (Min / Max)	-30 ^o C / +60 ^o C (-22 ^o F / +140 ^o F)

1.9 Electrical Specifications

1.9.1 Measurements Accuracy

The accuracies stated include the calibration uncertainty. In the following specifications, uncertainty is stated in coverage factor k=2, equivalent to 96% confidence level, in accordance with accepted metrology practices.

Voltage Reading	0.04%
Current Reading	0.04%
Active Energy ± 0.01KWh	0.10%
Apparent Energy ± 0.01Vah	0.10%

1.9.2 Load Current Capability

Max Power	12kW
Circuit Protection	60 Amps Double Breaker
Load Setting Error	<2%

1.10 About this Operations Manual

This manual provides complete information for using the EVSE TS200 Tester and EV Load Emulator. Details on operating it from the front panel and remotely are covered in the following topics:

- Connection and System Start-Up
- Front Panel Features
- Graphical User Interface (GUI) Storyboard
- Remote Operation using PC Application
- Product Maintenance

2.0 INSTALLATION

2.1 Introduction 14

2.2 Unpacking and Inspection 14

2.3 Set up, Airflow and Cooling Considerations 14

 2.3.1 Setup and Placement14

 2.3.2 Airflow15

 2.3.3 Cooling considerations16

2.4 Main & Auxiliary Power Supply 16

2.5 Connection and Power-Up 16

 2.5.1 Sequence of Connection and Power-Up.....17

 2.5.2 Power-Down and Sequence of Disconnection17

2.1 Introduction

This chapter provides instructions for unpacking and installing the Instrument.

Read this chapter before you operate the Instruments. Instructions for cable connections can be found here.

2.2 Unpacking and Inspection

The Instruments are shipped in a container designed to prevent damage during shipping.

Inspect the Instruments carefully for damage, and immediately report any damage to the shipper. A packing list is included in the packaging. When you unpack the Instruments, check for all the standard equipment listed and check the shipping order for any additional items ordered. Report any shortage to the place of purchase, to your distributor, or directly to TESCO.

2.3 Set up, Airflow and Cooling Considerations

2.3.1 Setup and Placement

The Instruments are suitable for bench top use, as long as there is sufficient space to allow adequate ventilation. The Instruments can be vertically oriented as well. Please see suggested placement per setup.

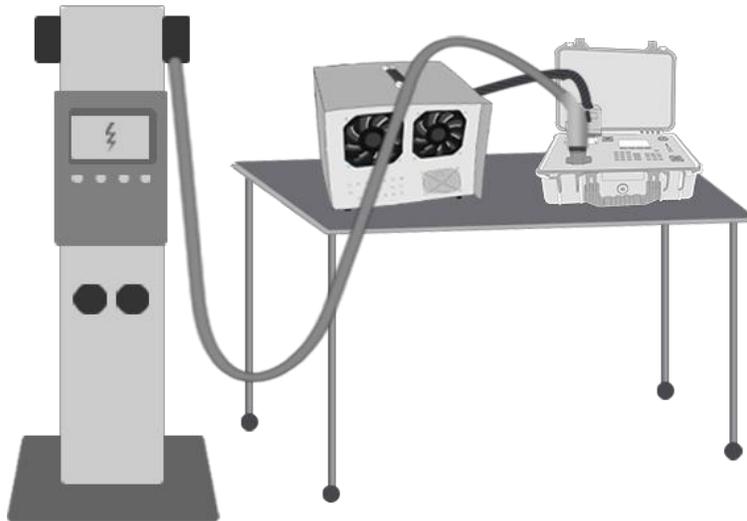


Figure 2.3a Suggested Benchtop Setup

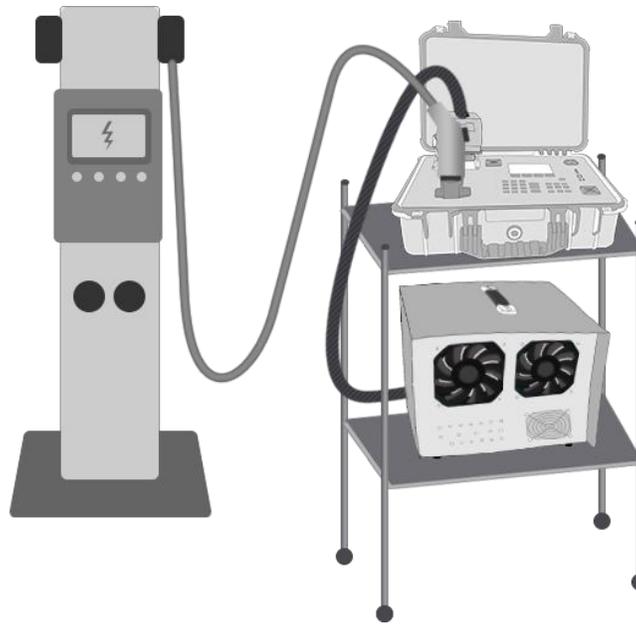


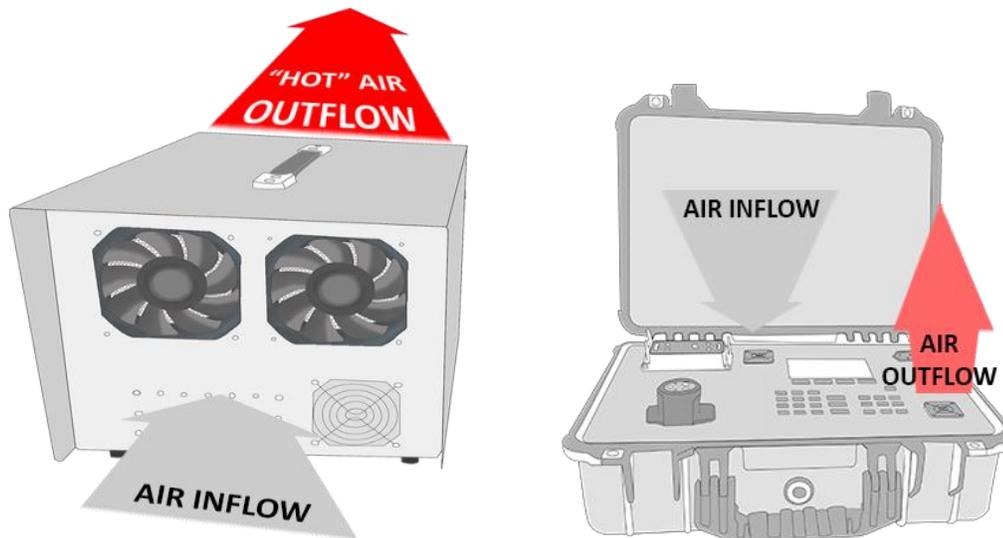
Figure 2.3b Suggested Vertically Oriented Setup

2.3.2 Airflow

WARNING

Note of the Instrument's airflow as indicated in the illustration below. This is applicable for both bench top and rack-mounted use.

PL200 air outflow can be hot to extremely hot particularly when testing at higher load current or power. Please allow enough back space of at least 2 meters for the PL200 air outflow.



2.3.3 Cooling considerations

CAUTION

Damage caused by overheating may occur if the area around the air intake is restricted, the intake air is too warm, or the air filter becomes clogged.

The inlet and exhaust holes must be clear of obstruction. The air entering the instrument must be between 5 °C and 35 °C. Make sure that exhaust from another instrument is not directed into the fan inlet. Check and clean the air filter every 30 days or more frequently if the Instrument is operated in a dusty environment.

2.4 Main & Auxiliary Power Supply

The Instrument can be powered by its internal rechargeable battery or auxiliary AC line. The battery is capable of up to 8 hours of continuous operation. The battery charge status icon can be seen in the top right corner of the T200 LCD screen.

Fully charging the battery may require up to 5 hours and may be done with the unit on or off.

The auxiliary power source is protected by a 6A fuse in L1 & L2 individually. An AC line power cord is provided.

WARNING

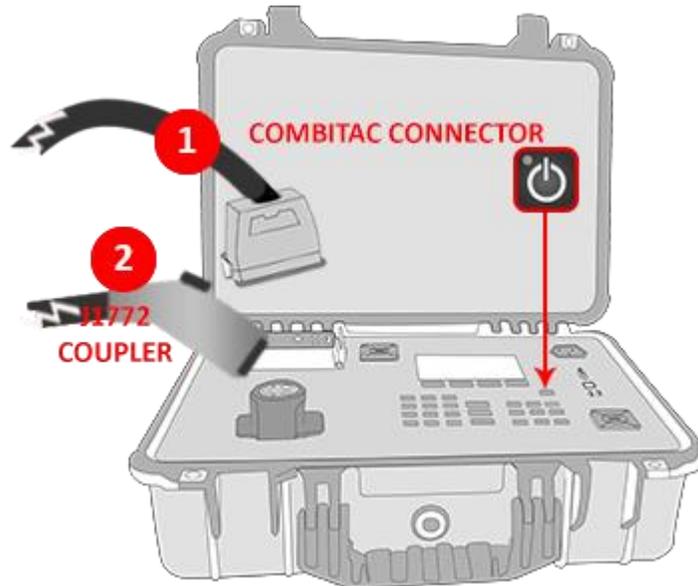
To avoid electrical shock, personal injury, or fire hazard, connect the factory supplied power cord to a properly grounded AC power outlet to charge the unit when not being used with an EVSE charger.

Do not charge the unit when it is connected to an EVSE charger.

2.5 Connection and Power-Up

The instrument's connector employs a "make first, break last" system where upon insertion, the ground connection is established first before making power connection and maintain ground until after power connections are broken. This system helps ensure a safer connection.

2.5.1 Sequence of Test Connection and Power-Up



- 1- Connect the COMBITAC of PL200 to the LOAD & CONTROL connector of T200.
- 2- If connected, unplug the 120VAC AUX power cord. Then, connect the Coupler of EVSE to the J1772 connector of T200.
- 3- To Power ON, press the POWER button for at least 2 seconds.

2.5.2 Power-Down and Sequence of Disconnection

WARNING

T200 should be turned off properly before the connectors are disconnected.

- 1- To turn off T200, return to Main Menu and press the power button for at least 2 seconds. A dialog box appears to confirm shut-down. See Storyboard in the next chapters for more detail.
- 2- Disconnect the Coupler of EVSE to the J1772 connector of T200.
- 3- Disconnect the CombiTac of PL200 to the LOAD & CONTROL connector of T200.

3.0 EVSE TESTER FUNCTIONS

3.1	Introduction	19
3.2	Front Panel Features	19
	3.2.1 T200 Front Panel.....	19
	3.2.2 T200 Navigation Keys	20
	3.2.3 PL200 Front Panel.....	21
	3.2.4 PL200 Rear Panel	22
3.3	The Graphical User Interface (GUI) Storyboard	23
	3.3.1 Graphical User Interface (GUI) Sections	23
	3.3.2 SELECTING REGISTERED EVSE TO TEST	24
	3.3.3 LOAD TEST PROCESS.....	27
	3.3.4 MANUAL TEST.....	28
	3.3.5 NEW/EDIT TEST PROCEDURE.....	29
	3.3.6 NEW/EDIT EVSE INFORMATION	30
	3.3.7 SETTINGS	31
	3.3.8 STATUS	32
	3.3.9 PC CONNECT	33
	3.3.10 UPDATING FIRMWARE OF T200 & PL200.....	34
	3.3.11 SYSTEM CALIBRATION (SYSCAL)	35

3.1 Introduction

This chapter is a reference for the functions and locations of the Instrument's front panel features and provides brief descriptions of each feature for quick reference. **Please read this information before operating the Instrument.** Front panel operating instructions for the Instrument are provided in this chapter and Remote Operating instructions are in Chapter 4.

3.2 Front Panel Features

Front panel features (including all controls, displays, indicators, and terminals) are shown in Figure 3.2a for T200 and Figure 3.2b for PL200. Each front panel feature is briefly described in Table 3.3a and Table 3.3b.

3.2.1 T200 Front Panel

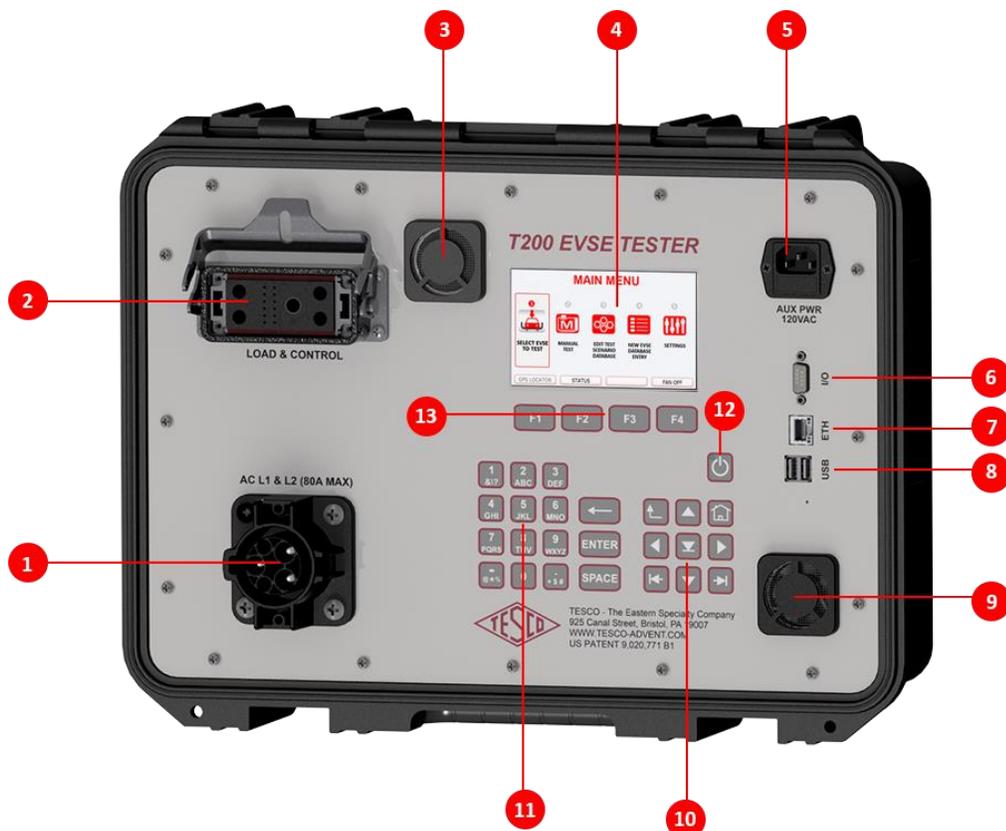


Figure 3.2.1a T200 Front Panel

NUMBER	DESCRIPTION
1	J1772 Connector – EVSE Coupler
2	Load And Control Connector – PL200 CombiTac The LOAD and CONTROL connector provide serial communications & power supply to PL200 as well as the L1, L2, Protective GND, CP & PROX lines.
3	Air Inlet
4	TFT LCD Screen. 5" 800x480, full color TFT LCD screen
5	Aux Power Inlet (120 VAC)
6	RS232 Com Port
7	Ethernet Com Port
8	2X USB Port
9	Exhaust Fan
10	Navigational Keypad
11	Alpha-Numeric Keypad
12	Power Button
13	Soft Keys

Table 3.2.1b

3.2.2 T200 Navigation Keys

Symbol	Description
 or 	Performs one of the following: <ul style="list-style-type: none"> • Selects the NEXT or PREVIOUS MENU item. • Moves the SELECTED LINE UP or DOWN • Select an Item from a dropdown menu
 or 	Performs one of the following: <ul style="list-style-type: none"> • Moves the cursor left/right of the current character in text boxes. • Moves the selection left/right of the current selected cell in tables.
 or 	Selects the NEXT or PREVIOUS TAB item.
	Performs one of the following: <ul style="list-style-type: none"> • Takes action on the selected menu item. • In Drop Down, causes the drop down to occur, or retracts it after selecting an item.
	Takes action on the selected menu item.
	Deletes the previous character.
	Returns to the previous screen
	Returns to the MAIN MENU screen.
   	Function Keys

3.2.3 PL200 Front Panel

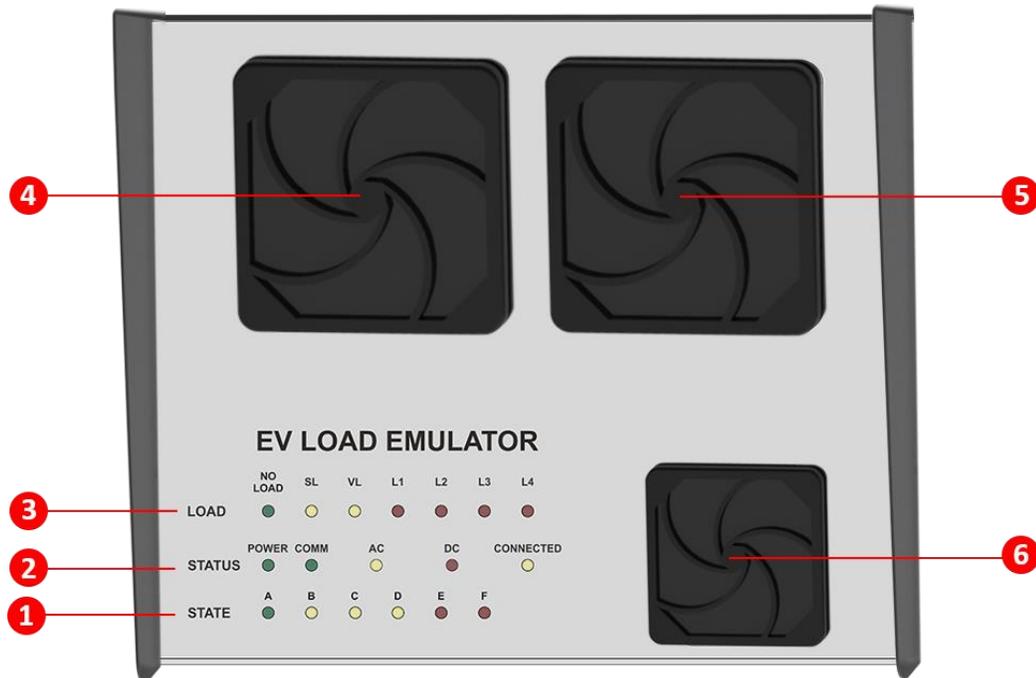


Figure 3.2.3. PL200 Front Panel

NUMBER	DESCRIPTION
1	Control Pilot State Indicator
2	Power and Communication Status (POWER & COMM Indicator) Load Test Configuration (AC or DC Indicator) Proximity Detection Status (Connected Indicator)
3	LED Indicators of Test status and Activated Current Loads
4	Left Fan for Load Heaters (Big Fan 1)
5	Right Fan for Load Heaters (Big Fan 2)
6	Fan for Variable Load (VL) Controller (Small Fan)

Table 3.2.3a

CATEGORY	LED INDICATOR	DESCRIPTION
LOAD	NO LOAD	Indicates a No Load Current Test is Running
	SL	Indicates a Start Up Load Current Test is Running
	VL	Indicates a the variable load is activated.
	L1, L2, L3, L4	Encoded Active Elements
STATUS	POWER	Power is Present
	COMM	RS485 Communication is Established
	AC	AC Test Mode

	CONNECTED	[OFF] Proximity Detection status is Not Connected [ON] Proximity Detection status is Connected [BLINKING] Proximity Detection status is EVSE Lock Pressed
STATE	A	Control Pilot Status is State A
	B	Control Pilot Status is State B
	C	Control Pilot Status is State C
	D	Control Pilot Status is State D
	E	Control Pilot Status is State E
	F	Control Pilot Status is State F

Table 3.2.3b

3.2.4 PL200 Rear Panel

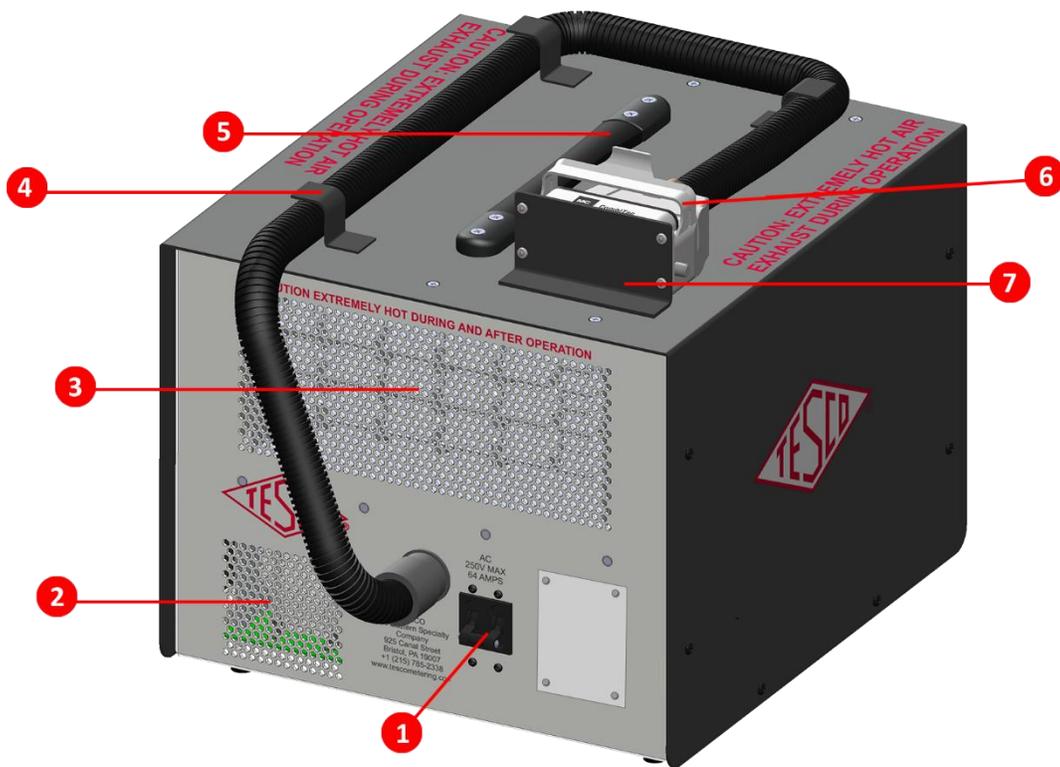


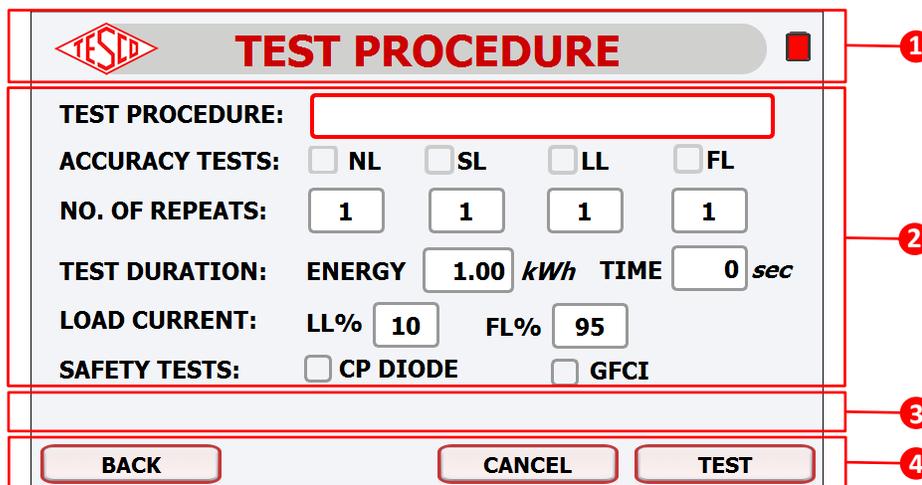
Figure 3.2.3. PL200 Rear Panel

NUMBER	DESCRIPTION
1	AC Circuit Breaker
2	Air Exhaust of Variable Load
3	Air Exhaust of Load Heaters
4	CombiTac Conduit Holder
5	Strap Handle
6	CombiTac Connector
7	CombiTac Park Station Holder

3.3 The Graphical User Interface (GUI) Storyboard

3.3.1 Graphical User Interface (GUI) Sections

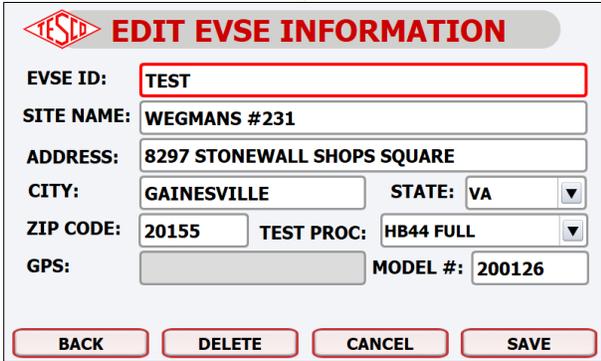
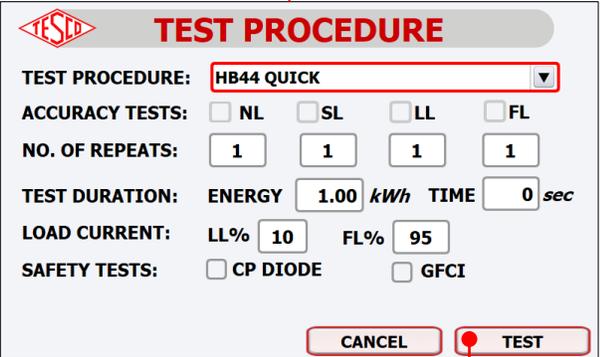
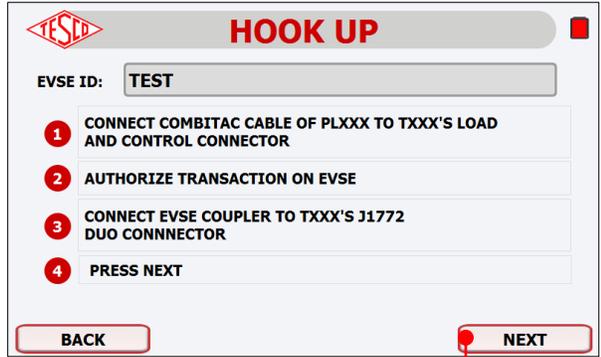
The user interface is divided into four sections.



NUMBER	DESCRIPTION
1	Screen Title
2	Screen Data
3	Status/Info Message
4	Soft Keys

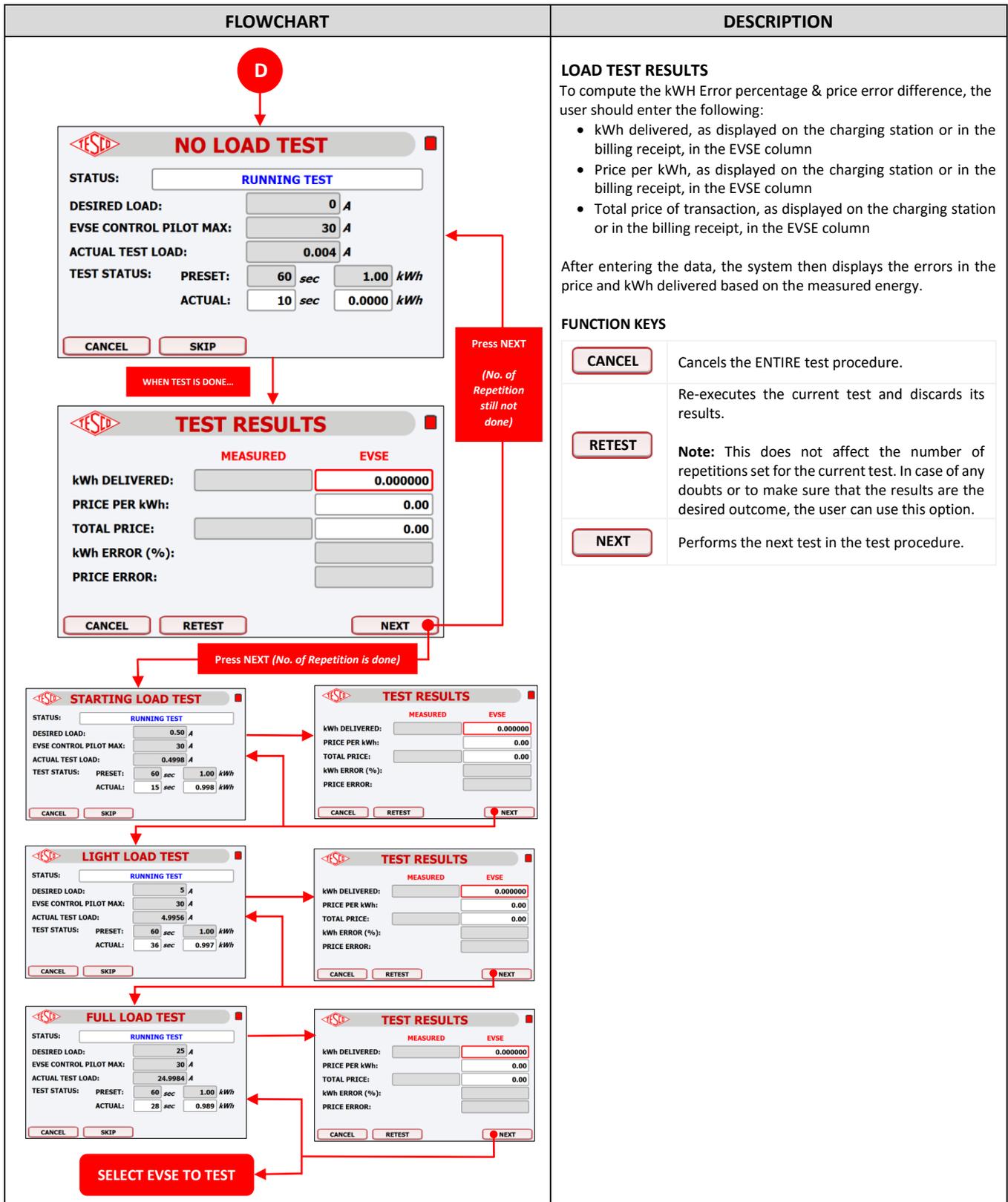
3.3.2 SELECTING REGISTERED EVSE TO TEST

FLOWCHART	DESCRIPTION																								
	<p>MAIN MENU The main menu contains the primary functions of the EVSE Tester.</p> <p>Keypad actions: Press the following numeric keys to execute a menu item or use the arrow keys to highlight the desired icon or key and press enter.</p> <table border="1"> <tr> <td>1</td> <td>Opens a list of EVSE tests that are ready to be executed.</td> </tr> <tr> <td>2</td> <td>Opens a screen to create a manual test.</td> </tr> <tr> <td>3</td> <td>Opens a screen to create a new test procedure or edit an existing one, and execute the test.</td> </tr> <tr> <td>4</td> <td>Opens a screen to create a new EVSE information or edit an existing one.</td> </tr> </table> <p>SOFT (FUNCTION) KEYS</p> <table border="1"> <tr> <td>PC CONNECT</td> <td>Establishes connection to a Windows or Linux terminal when using a PC application.</td> </tr> <tr> <td>SYSCAL</td> <td>Displays System Calibration (SYSCAL) Procedure.</td> </tr> <tr> <td>STATUS</td> <td>Displays the status screen of T200, PL200 & Battery.</td> </tr> <tr> <td>SETTINGS</td> <td>Displays Settings information like Time, Date, & IP Address.</td> </tr> </table> <p>SELECT EVSE TO TEST This function is used to select which EVSE to test. The EVSE tests in the database are displayed in alphanumeric order.</p> <p>To access Select EVSE to Test, press '1' on the MAIN MENU screen or use the arrow keys to select the first item and press enter.</p> <p>Keypad Actions: Pressing any alphanumeric key moves the list so that the first entry with that number/letter is displayed. As additional characters are typed, the list continually updates with only those with matching characters.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>NEW</td> <td>Opens a screen to add a new EVSE site entry in the database.</td> </tr> <tr> <td>EDIT</td> <td>Opens a screen to edit the contents of the site entry in the database that is currently selected.</td> </tr> <tr> <td>TEST RESULTS</td> <td>Opens a new window with the test result information of the highlighted EVSE ID.</td> </tr> <tr> <td>TEST</td> <td>Goes immediately to the test process.</td> </tr> </table>	1	Opens a list of EVSE tests that are ready to be executed.	2	Opens a screen to create a manual test.	3	Opens a screen to create a new test procedure or edit an existing one, and execute the test.	4	Opens a screen to create a new EVSE information or edit an existing one.	PC CONNECT	Establishes connection to a Windows or Linux terminal when using a PC application.	SYSCAL	Displays System Calibration (SYSCAL) Procedure.	STATUS	Displays the status screen of T200, PL200 & Battery.	SETTINGS	Displays Settings information like Time, Date, & IP Address.	NEW	Opens a screen to add a new EVSE site entry in the database.	EDIT	Opens a screen to edit the contents of the site entry in the database that is currently selected.	TEST RESULTS	Opens a new window with the test result information of the highlighted EVSE ID.	TEST	Goes immediately to the test process.
1	Opens a list of EVSE tests that are ready to be executed.																								
2	Opens a screen to create a manual test.																								
3	Opens a screen to create a new test procedure or edit an existing one, and execute the test.																								
4	Opens a screen to create a new EVSE information or edit an existing one.																								
PC CONNECT	Establishes connection to a Windows or Linux terminal when using a PC application.																								
SYSCAL	Displays System Calibration (SYSCAL) Procedure.																								
STATUS	Displays the status screen of T200, PL200 & Battery.																								
SETTINGS	Displays Settings information like Time, Date, & IP Address.																								
NEW	Opens a screen to add a new EVSE site entry in the database.																								
EDIT	Opens a screen to edit the contents of the site entry in the database that is currently selected.																								
TEST RESULTS	Opens a new window with the test result information of the highlighted EVSE ID.																								
TEST	Goes immediately to the test process.																								

FLOWCHART	DESCRIPTION								
<p style="text-align: center;">B</p> 	<p>NEW/EDIT EVSE INFORMATION</p> <p>For more details, see 3.3.6 NEW/EDIT EVSE INFORMATION.</p>								
<p style="text-align: center;">A</p> 	<p>TEST PROCEDURE (SHOW MODE: All information is read-only)</p> <p>For more details, see section 3.3.5 NEW/EDIT TEST PROCEDURE.</p>								
<p style="text-align: center;">C</p> 	<p>HOOK UP DIAGNOSTICS</p> <p>This is a set-up guide to connect the EVSE Tester (T200) and the EV Programmable Load Emulator (PL200) as well as the EVSE Tester (T200) and the EVSE (EV Charging Station).</p> <p>DATA</p> <table border="1" data-bbox="829 1312 1466 1669"> <tr> <td data-bbox="829 1312 971 1575">LOAD & CONTROL CABLE (COMBITAC)</td> <td data-bbox="971 1312 1466 1575">Connect the PL200's CombiTac connector to the EVSE Tester (T200). This connection does the following: <ul style="list-style-type: none"> Connects the EVSE Lines (L1, L2, GND, PROX, CONTROL PILOT) from the T200 to PL200. Provides Power & Ground to the PL200. Provides RS485 Communication of T200 & PL200. </td> </tr> <tr> <td data-bbox="829 1575 971 1669">J1772</td> <td data-bbox="971 1575 1466 1669">This is the EVSE J1772 coupler connection of the EVSE Tester (T200) & the EVSE Charging Station.</td> </tr> </table> <p>FUNCTION KEYS</p> <table border="1" data-bbox="829 1732 1466 1864"> <tr> <td data-bbox="829 1732 1019 1785">BACK</td> <td data-bbox="1019 1732 1466 1785">Returns to the previous screen.</td> </tr> <tr> <td data-bbox="829 1785 1019 1864">NEXT</td> <td data-bbox="1019 1785 1466 1864">Proceeds to the Connection Diagnostics.</td> </tr> </table>	LOAD & CONTROL CABLE (COMBITAC)	Connect the PL200's CombiTac connector to the EVSE Tester (T200). This connection does the following: <ul style="list-style-type: none"> Connects the EVSE Lines (L1, L2, GND, PROX, CONTROL PILOT) from the T200 to PL200. Provides Power & Ground to the PL200. Provides RS485 Communication of T200 & PL200. 	J1772	This is the EVSE J1772 coupler connection of the EVSE Tester (T200) & the EVSE Charging Station.	BACK	Returns to the previous screen.	NEXT	Proceeds to the Connection Diagnostics.
LOAD & CONTROL CABLE (COMBITAC)	Connect the PL200's CombiTac connector to the EVSE Tester (T200). This connection does the following: <ul style="list-style-type: none"> Connects the EVSE Lines (L1, L2, GND, PROX, CONTROL PILOT) from the T200 to PL200. Provides Power & Ground to the PL200. Provides RS485 Communication of T200 & PL200. 								
J1772	This is the EVSE J1772 coupler connection of the EVSE Tester (T200) & the EVSE Charging Station.								
BACK	Returns to the previous screen.								
NEXT	Proceeds to the Connection Diagnostics.								

FLOWCHART	DESCRIPTION																										
	<p>CONNECTION DIAGNOSTIC (POP-UP) This pop-up window checking the connection for the LOAD and CONTROL cable (CombiTac).</p> <p>Diagnostic Icons</p> <table border="1"> <tr> <td></td> <td>The connection diagnostics is still pending.</td> </tr> <tr> <td></td> <td>The connection diagnostics is in process of checking.</td> </tr> <tr> <td></td> <td>The cables are NOT properly connected.</td> </tr> <tr> <td></td> <td>The cables are properly connected.</td> </tr> </table> <p>If ANY of the results is the program will automatically return to the previous window.</p> <p>If ALL the results are the program will automatically proceed to the next window.</p> <p>LOAD TEST This is the screen for a load test where the test can be a No Load (NL) Test, Starting Load (SL) Test, Light Load (LL) Test, and/or Full Load (FL) Test.</p> <p>The OPERATIONAL SEQUENCE is detailed below:</p> <table border="1"> <tr> <td>STEP 1</td> <td>Status: “READY TO TEST” The application is waiting for the user to press the START button to begin testing.</td> </tr> <tr> <td>STEP 2</td> <td>Status: “INITIALIZING TEST” The application is configuring the system with the desired load current, test time, and energy required.</td> </tr> <tr> <td>STEP 3</td> <td>Status: “WAITING FOR EVSE TO CHANGE STATE” This sequence ensures that the system is in charging mode (State C) before actual test process starts.</td> </tr> <tr> <td>STEP 4</td> <td>Status: “RUNNING TEST” Testing is ongoing while live data is displayed.</td> </tr> <tr> <td>STEP 5</td> <td>Status: “TEST COMPLETED” When the test completes, the screen automatically goes to the TEST RESULTS screen.</td> </tr> </table> <p>FUNCTION KEYS Before the test starts, the screen shows the following buttons:</p> <table border="1"> <tr> <td></td> <td>Returns to the previous screen.</td> </tr> <tr> <td></td> <td>Starts the test.</td> </tr> </table> <p>When the test starts, the screen shows the following buttons:</p> <table border="1"> <tr> <td></td> <td> Cancels the ENTIRE test procedure and returns to either the Select EVSE to Test screen or the Manual Test screen based from where you started.</td> </tr> <tr> <td></td> <td> Skips the running test or re-executes it if it still needs to repeat based from its number of repetitions.</td> </tr> </table>		The connection diagnostics is still pending.		The connection diagnostics is in process of checking.		The cables are NOT properly connected.		The cables are properly connected.	STEP 1	Status: “READY TO TEST” The application is waiting for the user to press the START button to begin testing.	STEP 2	Status: “INITIALIZING TEST” The application is configuring the system with the desired load current, test time, and energy required.	STEP 3	Status: “WAITING FOR EVSE TO CHANGE STATE” This sequence ensures that the system is in charging mode (State C) before actual test process starts.	STEP 4	Status: “RUNNING TEST” Testing is ongoing while live data is displayed.	STEP 5	Status: “TEST COMPLETED” When the test completes, the screen automatically goes to the TEST RESULTS screen.		Returns to the previous screen.		Starts the test.		Cancels the ENTIRE test procedure and returns to either the Select EVSE to Test screen or the Manual Test screen based from where you started.		Skips the running test or re-executes it if it still needs to repeat based from its number of repetitions.
	The connection diagnostics is still pending.																										
	The connection diagnostics is in process of checking.																										
	The cables are NOT properly connected.																										
	The cables are properly connected.																										
STEP 1	Status: “READY TO TEST” The application is waiting for the user to press the START button to begin testing.																										
STEP 2	Status: “INITIALIZING TEST” The application is configuring the system with the desired load current, test time, and energy required.																										
STEP 3	Status: “WAITING FOR EVSE TO CHANGE STATE” This sequence ensures that the system is in charging mode (State C) before actual test process starts.																										
STEP 4	Status: “RUNNING TEST” Testing is ongoing while live data is displayed.																										
STEP 5	Status: “TEST COMPLETED” When the test completes, the screen automatically goes to the TEST RESULTS screen.																										
	Returns to the previous screen.																										
	Starts the test.																										
	Cancels the ENTIRE test procedure and returns to either the Select EVSE to Test screen or the Manual Test screen based from where you started.																										
	Skips the running test or re-executes it if it still needs to repeat based from its number of repetitions.																										

3.3.3 LOAD TEST PROCESS



3.3.4 MANUAL TEST

FLOWCHART	DESCRIPTION				
	<p>MANUAL TEST</p> <p>This function is used as a quick method to execute tests with or without saving the results.</p> <p>To access the Manual Test from the MAIN MENU screen, press '2' or use the arrow keys to navigate through the screen and press enter once its icon is highlighted.</p> <p>After filling out all the necessary fields, press "F4" (TEST) to start the test. If the entered EVSE ID doesn't match with an existing record in the database, a "DO YOU WANT TO SAVE EVSE?" dialogue box prompts.</p> <p>If the user chooses "YES", the test and its results will be saved in the database. If "NO", the test will proceed but the test and its results will not be saved in the database.</p> <p>However, if the entered EVSE ID has a match, a "EVSE ID ALREADY EXISTS. SAVE RESULTS TO EXISTING RECORD?" dialogue box prompts.</p> <p>If the user chooses "YES", the test will proceed and its results will be added to the existing record. If "NO", the test will proceed but its results will not be added to the existing record. If "CHANGE ID", the user will be redirected to the Manual Test screen to enter a new EVSE ID.</p> <p>For more information regarding the EVSE ID, please refer to section 3.3.6 NEW/EDIT TEST PROCEDURE.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>CANCEL</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>TEST</td> <td>Proceeds to the Hook Up screen.</td> </tr> </table>	CANCEL	Returns to the previous screen.	TEST	Proceeds to the Hook Up screen.
CANCEL	Returns to the previous screen.				
TEST	Proceeds to the Hook Up screen.				

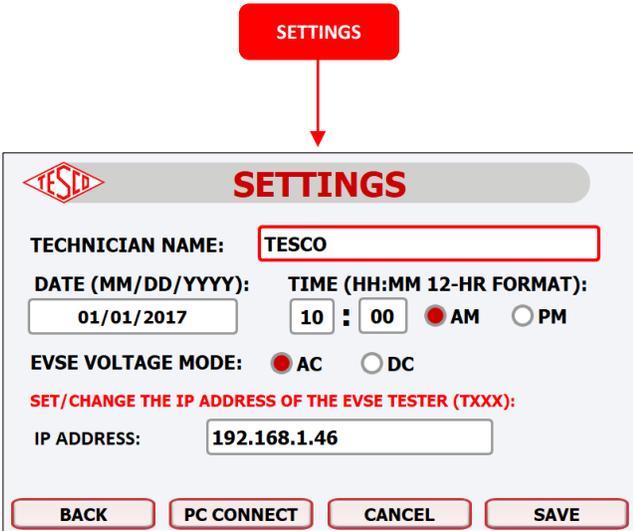
3.3.5 NEW/EDIT TEST PROCEDURE

FLOWCHART	DESCRIPTION																														
	<p>TEST PROCEDURE This function allows the user to create, edit, or delete a test procedure. It can be modified according to the different standards set by the user.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>NEW</td> <td>Allows the user to create a new test procedure.</td> </tr> <tr> <td>DELETE</td> <td>Deletes the current test procedure from the database. NOTE 1</td> </tr> <tr> <td>CANCEL</td> <td>Abandons any edits done to the current test procedure and returns to the previous screen.</td> </tr> <tr> <td>SAVE</td> <td>Saves the current data into the database and returns to the previous screen.</td> </tr> </table> <p>NOTE 1: The default test procedures – HB44 QUICK, HB44 FULL, HB44 ACCURACY – cannot be deleted.</p> <p>DATA</p> <table border="1"> <thead> <tr> <th>TEST PROCEDURE</th> <td>Name of the test procedure where 16 characters are allowed.</td> </tr> </thead> <tbody> <tr> <td rowspan="4">ACCURACY TEST</td> <td>NL EVSE will be placed in State C but no load will be present. There should be no energy flow registered.</td> </tr> <tr> <td>SL A load of 0.5 amps will be applied.</td> </tr> <tr> <td>LL A load, as specified in the LL% parameter, will be applied and a load of (LL%) x (EVSE CONTROL PILOT MAX) is delivered.</td> </tr> <tr> <td>FL A load, as specified in the FL% parameter, will be applied. A load of (FL%) x (EVSE CONTROL PILOT MAX) is delivered.</td> </tr> <tr> <td>NO. OF REPEATS</td> <td>Each of the accuracy tests is repeated based on the value set by the user and it can automatically be repeated up to 99 times.</td> </tr> <tr> <td>KWh/TIME PRESETS</td> <td>The test will run until the specified number of kilowatt-hours or amount of time is obtained, whichever comes first. If one of the two is set to zero, it will be ignored.</td> </tr> <tr> <td rowspan="2">CURRENT</td> <td>LL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Light Load Test. Default: 15%.</td> </tr> <tr> <td>FL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Full Load Test. Default: 85%</td> </tr> <tr> <td rowspan="3">SAFETY TESTS</td> <td>Select any of the following tests to perform as part of this procedure:</td> </tr> <tr> <td>CP DIODE A test to determine if the system responds correctly if the diode is not present based on the following error conditions: 1. Shorted diode 2. Open (busted) diode</td> </tr> <tr> <td>GFCI A test of the Charging Station’s GFCI circuit to verify if it trips at the appropriate level.</td> </tr> </tbody> </table> <p>NEW TEST PROCEDURE This function allows the user to create a new test procedure.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>CANCEL</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>SAVE</td> <td>Saves the entered or filled in data into the database and returns to the previous screen.</td> </tr> </table>	NEW	Allows the user to create a new test procedure.	DELETE	Deletes the current test procedure from the database. NOTE 1	CANCEL	Abandons any edits done to the current test procedure and returns to the previous screen.	SAVE	Saves the current data into the database and returns to the previous screen.	TEST PROCEDURE	Name of the test procedure where 16 characters are allowed.	ACCURACY TEST	NL EVSE will be placed in State C but no load will be present. There should be no energy flow registered.	SL A load of 0.5 amps will be applied.	LL A load, as specified in the LL% parameter, will be applied and a load of (LL%) x (EVSE CONTROL PILOT MAX) is delivered.	FL A load, as specified in the FL% parameter, will be applied. A load of (FL%) x (EVSE CONTROL PILOT MAX) is delivered.	NO. OF REPEATS	Each of the accuracy tests is repeated based on the value set by the user and it can automatically be repeated up to 99 times.	KWh/TIME PRESETS	The test will run until the specified number of kilowatt-hours or amount of time is obtained, whichever comes first. If one of the two is set to zero, it will be ignored.	CURRENT	LL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Light Load Test. Default: 15%.	FL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Full Load Test. Default: 85%	SAFETY TESTS	Select any of the following tests to perform as part of this procedure:	CP DIODE A test to determine if the system responds correctly if the diode is not present based on the following error conditions: 1. Shorted diode 2. Open (busted) diode	GFCI A test of the Charging Station’s GFCI circuit to verify if it trips at the appropriate level.	CANCEL	Returns to the previous screen.	SAVE	Saves the entered or filled in data into the database and returns to the previous screen.
NEW	Allows the user to create a new test procedure.																														
DELETE	Deletes the current test procedure from the database. NOTE 1																														
CANCEL	Abandons any edits done to the current test procedure and returns to the previous screen.																														
SAVE	Saves the current data into the database and returns to the previous screen.																														
TEST PROCEDURE	Name of the test procedure where 16 characters are allowed.																														
ACCURACY TEST	NL EVSE will be placed in State C but no load will be present. There should be no energy flow registered.																														
	SL A load of 0.5 amps will be applied.																														
	LL A load, as specified in the LL% parameter, will be applied and a load of (LL%) x (EVSE CONTROL PILOT MAX) is delivered.																														
	FL A load, as specified in the FL% parameter, will be applied. A load of (FL%) x (EVSE CONTROL PILOT MAX) is delivered.																														
NO. OF REPEATS	Each of the accuracy tests is repeated based on the value set by the user and it can automatically be repeated up to 99 times.																														
KWh/TIME PRESETS	The test will run until the specified number of kilowatt-hours or amount of time is obtained, whichever comes first. If one of the two is set to zero, it will be ignored.																														
CURRENT	LL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Light Load Test. Default: 15%.																														
	FL% is the fraction of the EVSE CONTROL PILOT MAX current that will be used for the Full Load Test. Default: 85%																														
SAFETY TESTS	Select any of the following tests to perform as part of this procedure:																														
	CP DIODE A test to determine if the system responds correctly if the diode is not present based on the following error conditions: 1. Shorted diode 2. Open (busted) diode																														
	GFCI A test of the Charging Station’s GFCI circuit to verify if it trips at the appropriate level.																														
CANCEL	Returns to the previous screen.																														
SAVE	Saves the entered or filled in data into the database and returns to the previous screen.																														

3.3.6 NEW/EDIT EVSE INFORMATION

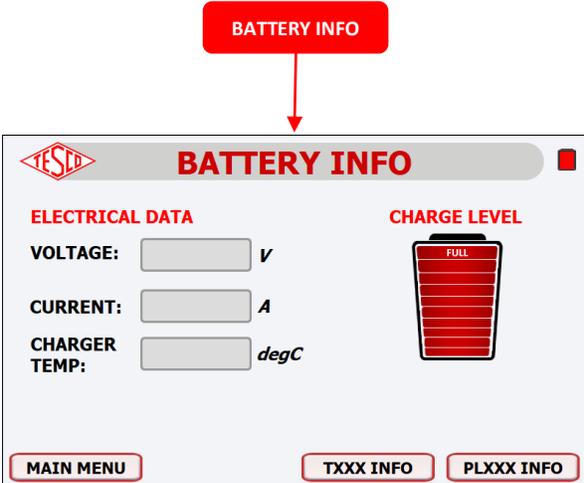
FLOWCHART	DESCRIPTION																																										
<p>MAIN MENU</p> <p>1 TEST EVSE 2 MANUAL TEST 3 NEW/EDIT TEST PROCEDURE 4 NEW/EDIT EVSE INFORMATION</p> <p>PC CONNECT SYSCAL STATUS SETTINGS</p> <p>NEW EVSE INFORMATION</p> <p>EVSE ID: <input type="text"/></p> <p>SITE NAME: <input type="text"/></p> <p>ADDRESS: <input type="text"/></p> <p>CITY: <input type="text"/> STATE: <input type="text"/></p> <p>ZIP CODE: <input type="text"/> TEST PROC: <input type="text"/></p> <p>GPS: <input type="text"/> MODEL #: <input type="text"/></p> <p>EDIT EVSE CANCEL SAVE</p> <p>SELECT EVSE TO TEST</p> <table border="1"> <thead> <tr> <th>TEST</th> <th>Wegmans #231</th> <th>8297 Stonewall Shops Squ...</th> </tr> </thead> <tbody> <tr> <td>VA-00216-001-001</td> <td>Wegmans #231</td> <td>8297 Stonewall Shops Squ...</td> </tr> <tr> <td>VA-00216-001-002</td> <td>Wegmans #231</td> <td>8297 Stonewall Shops Squ...</td> </tr> <tr> <td>VA-00216-001-003</td> <td>Wegmans #231</td> <td>8297 Stonewall Shops Squ...</td> </tr> <tr> <td>VA-00216-001-004</td> <td>Wegmans #231</td> <td>8297 Stonewall Shops Squ...</td> </tr> <tr> <td>VA-00216-002-001</td> <td>Wegmans #231</td> <td>8297 Stonewall Shops Squ...</td> </tr> </tbody> </table> <p>SEARCH EVSE ID : <input type="text"/></p> <p>NEW EDIT TEST RESULTS TEST</p>	TEST	Wegmans #231	8297 Stonewall Shops Squ...	VA-00216-001-001	Wegmans #231	8297 Stonewall Shops Squ...	VA-00216-001-002	Wegmans #231	8297 Stonewall Shops Squ...	VA-00216-001-003	Wegmans #231	8297 Stonewall Shops Squ...	VA-00216-001-004	Wegmans #231	8297 Stonewall Shops Squ...	VA-00216-002-001	Wegmans #231	8297 Stonewall Shops Squ...	<p>NEW EVSE INFORMATION</p> <p>This function allows the user to create a new database entry by filling out the necessary information for the EVSE. The user can also edit an existing EVSE by pressing 'F3' (EDIT EVSE).</p> <p>To access the New/Edit EVSE Information from the MAIN MENU screen, press '4' or use the arrow keys to navigate through the screen and press enter once its icon is highlighted.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>EDIT EVSE</td> <td>Proceeds to the Select EVSE to Test screen.</td> </tr> <tr> <td>CANCEL</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>SAVE</td> <td>Saves the entered data into the database and returns to the previous screen.</td> </tr> </table> <p>DATA</p> <table border="1"> <tr> <td>EVSE ID</td> <td>Name of the EVSE ID where 16 characters are allowed.</td> </tr> <tr> <td>SITE NAME</td> <td>Name of the site that the EVSE is located where 32 characters are allowed.</td> </tr> <tr> <td>ADDRESS</td> <td>Address of the test site (street, block, etc.).</td> </tr> <tr> <td>CITY</td> <td>Name of the city of the test site.</td> </tr> <tr> <td>STATE</td> <td>Name of the state/province of the test site.</td> </tr> <tr> <td>ZIP</td> <td>Zip code of the state/province of the test site.</td> </tr> <tr> <td>TEST PROC</td> <td>Initial test procedure assigned to the EVSE.</td> </tr> <tr> <td>GPS</td> <td>Displays the T200 GPS coordinates near the EVSE that represent the EVSE's location. NOTE 2</td> </tr> <tr> <td>MODEL</td> <td>(OPTIONAL) Model name of the EVSE under test.</td> </tr> </table> <p>NOTE 2: The T200 should be within a 5-meter radius of the EVSE/Charging Station in order to acquire a more accurate GPS coordinate.</p>	EDIT EVSE	Proceeds to the Select EVSE to Test screen.	CANCEL	Returns to the previous screen.	SAVE	Saves the entered data into the database and returns to the previous screen.	EVSE ID	Name of the EVSE ID where 16 characters are allowed.	SITE NAME	Name of the site that the EVSE is located where 32 characters are allowed.	ADDRESS	Address of the test site (street, block, etc.).	CITY	Name of the city of the test site.	STATE	Name of the state/province of the test site.	ZIP	Zip code of the state/province of the test site.	TEST PROC	Initial test procedure assigned to the EVSE.	GPS	Displays the T200 GPS coordinates near the EVSE that represent the EVSE's location. NOTE 2	MODEL	(OPTIONAL) Model name of the EVSE under test.
TEST	Wegmans #231	8297 Stonewall Shops Squ...																																									
VA-00216-001-001	Wegmans #231	8297 Stonewall Shops Squ...																																									
VA-00216-001-002	Wegmans #231	8297 Stonewall Shops Squ...																																									
VA-00216-001-003	Wegmans #231	8297 Stonewall Shops Squ...																																									
VA-00216-001-004	Wegmans #231	8297 Stonewall Shops Squ...																																									
VA-00216-002-001	Wegmans #231	8297 Stonewall Shops Squ...																																									
EDIT EVSE	Proceeds to the Select EVSE to Test screen.																																										
CANCEL	Returns to the previous screen.																																										
SAVE	Saves the entered data into the database and returns to the previous screen.																																										
EVSE ID	Name of the EVSE ID where 16 characters are allowed.																																										
SITE NAME	Name of the site that the EVSE is located where 32 characters are allowed.																																										
ADDRESS	Address of the test site (street, block, etc.).																																										
CITY	Name of the city of the test site.																																										
STATE	Name of the state/province of the test site.																																										
ZIP	Zip code of the state/province of the test site.																																										
TEST PROC	Initial test procedure assigned to the EVSE.																																										
GPS	Displays the T200 GPS coordinates near the EVSE that represent the EVSE's location. NOTE 2																																										
MODEL	(OPTIONAL) Model name of the EVSE under test.																																										

3.3.7 SETTINGS

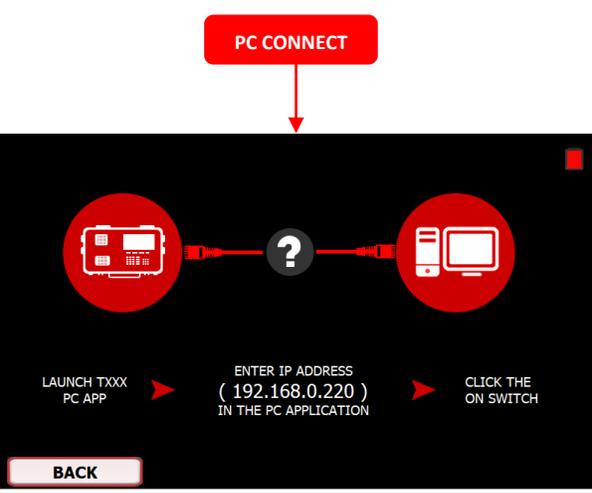
FLOWCHART	DESCRIPTION																		
	<p>SETTINGS This function allows the user to change the settings of the T200. To access Settings from the MAIN MENU screen, press 'F4' (SETTINGS).</p> <p>FUNCTION KEYS</p> <table border="1" data-bbox="846 478 1481 785"> <tr> <td>BACK</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>PC CONNECT</td> <td>Establishes a connection to a Windows or Linux-based computer/machine.</td> </tr> <tr> <td>CANCEL</td> <td>Cancels any changes made to the settings.</td> </tr> <tr> <td>SAVE</td> <td>An "ARE YOU SURE?" dialog box prompts. If the user chooses "YES", the current data is saved into the database and the user is returned to the previous screen. If "NO", it will return to Settings.</td> </tr> </table> <p>DATA</p> <table border="1" data-bbox="846 842 1481 1031"> <tr> <td>TECHNICIAN NAME</td> <td>Name of the technician that operates the EVSE Tester</td> </tr> <tr> <td>DATE</td> <td>Current date</td> </tr> <tr> <td>TIME</td> <td>Current time</td> </tr> <tr> <td>EVSE VOLTAGE MODE</td> <td>Type of EVSE charging voltage where AC is the default mode.</td> </tr> <tr> <td>IP ADDRESS</td> <td>Internet Protocol (IP) address of the EVSE Tester.</td> </tr> </table>	BACK	Returns to the previous screen.	PC CONNECT	Establishes a connection to a Windows or Linux-based computer/machine.	CANCEL	Cancels any changes made to the settings.	SAVE	An "ARE YOU SURE?" dialog box prompts. If the user chooses "YES", the current data is saved into the database and the user is returned to the previous screen. If "NO", it will return to Settings.	TECHNICIAN NAME	Name of the technician that operates the EVSE Tester	DATE	Current date	TIME	Current time	EVSE VOLTAGE MODE	Type of EVSE charging voltage where AC is the default mode.	IP ADDRESS	Internet Protocol (IP) address of the EVSE Tester.
BACK	Returns to the previous screen.																		
PC CONNECT	Establishes a connection to a Windows or Linux-based computer/machine.																		
CANCEL	Cancels any changes made to the settings.																		
SAVE	An "ARE YOU SURE?" dialog box prompts. If the user chooses "YES", the current data is saved into the database and the user is returned to the previous screen. If "NO", it will return to Settings.																		
TECHNICIAN NAME	Name of the technician that operates the EVSE Tester																		
DATE	Current date																		
TIME	Current time																		
EVSE VOLTAGE MODE	Type of EVSE charging voltage where AC is the default mode.																		
IP ADDRESS	Internet Protocol (IP) address of the EVSE Tester.																		

3.3.8 STATUS

FLOWCHART	DESCRIPTION																																				
<p>The flowchart illustrates the navigation sequence for the STATUS menu. It starts with a red box labeled 'STATUS' at the top. An arrow points down to a screenshot of the 'TXXX INFO' screen. This screen has a header with the TESCO logo and 'TXXX INFO'. Below the header are several data fields: A5 SW VER, M4 SW VER, FPGA SW VER, LINUX KERNEL VER, FE TEMP (degC), and IP ADDRESS. At the bottom of the screen are four buttons: MAIN MENU, UPDATE TXXX, PLXXX INFO, and BATTERY INFO. From the 'UPDATE TXXX' button, an arrow points to a red box labeled 'UPDATE'. From the 'BATTERY INFO' button, an arrow points to a red box labeled 'BATTERY INFO'. From the 'PLXXX INFO' button, an arrow points down to a screenshot of the 'PLXXX INFO' screen. This screen has a header with the TESCO logo and 'PLXXX INFO'. Below the header are data fields: APPLICATION VER, BOOTLOADER VER, CASE TEMPERATURE MONITORING (with sub-fields for VARIABLE LOAD TEMP and HEATER LOAD TEMP, both in degC). At the bottom are four buttons: MAIN MENU, UPDATE PLXXX, TXXX INFO, and BATTERY INFO. An arrow from the 'UPDATE PLXXX' button points to a red box labeled 'UPDATE'.</p>	<p>TXXX INFO</p> <p>This contains all the information about the T200. To view the T200 Info, press 'F3' (STATUS) from the MAIN MENU screen, 'F3' (TXXX INFO) from PLXXX Info, or 'F3' (TXXX INFO) from Battery Info.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>MAIN MENU</td> <td>Returns to the MAIN MENU screen.</td> </tr> <tr> <td>UPDATE TXXX</td> <td>Displays the T200 Software Update procedure.</td> </tr> <tr> <td>PLXXX INFO</td> <td>Displays the PL200 information.</td> </tr> <tr> <td>BATTERY INFO</td> <td>Displays the T200 battery information.</td> </tr> </table> <p>DATA (All information is read-only)</p> <table border="1"> <tr> <td>A5 SW VER</td> <td>Displays the application software version.</td> </tr> <tr> <td>M4 SW VER</td> <td>Displays the metrology software version.</td> </tr> <tr> <td>FPGA SW VER</td> <td>Displays the software version of the FPGA code.</td> </tr> <tr> <td>LINUX KERNEL VER</td> <td>Displays the software version of the Linux Kernel.</td> </tr> <tr> <td>FE TEMP (degC)</td> <td>Displays the temperature in degree Celsius of the Front-End Circuitry.</td> </tr> <tr> <td>IP ADDRESS</td> <td>Displays the IP address set for T200.</td> </tr> </table> <p>PLXXX INFO</p> <p>This contains all the information about the PL200. To view the PLXXX Info, press 'F3' (PLXXX INFO) from the TXXX Info or 'F4' (PLXXX INFO) from the Battery Info.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>MAIN MENU</td> <td>Returns to the MAIN MENU screen.</td> </tr> <tr> <td>UPDATE PLXXX</td> <td>Displays PL200 Software Update procedure.</td> </tr> <tr> <td>TXXX INFO</td> <td>Displays the T200 information.</td> </tr> <tr> <td>BATTERY INFO</td> <td>Displays the T200 battery information.</td> </tr> </table> <p>DATA (All information are read-only)</p> <table border="1"> <tr> <td>APPLICATION VER</td> <td>Displays the application software version of the PL200.</td> </tr> <tr> <td>BOOTLOADER VER</td> <td>Displays the bootloader version of the PL200.</td> </tr> <tr> <td>VARIABLE LOAD TEMP</td> <td>Displays the case temperature in degree Celsius of PL200's variable load controller</td> </tr> <tr> <td>HEATER LOAD TEMP</td> <td>Displays the case temperature in degree Celsius of PL200's load heater container.</td> </tr> </table>	MAIN MENU	Returns to the MAIN MENU screen.	UPDATE TXXX	Displays the T200 Software Update procedure.	PLXXX INFO	Displays the PL200 information.	BATTERY INFO	Displays the T200 battery information.	A5 SW VER	Displays the application software version.	M4 SW VER	Displays the metrology software version.	FPGA SW VER	Displays the software version of the FPGA code.	LINUX KERNEL VER	Displays the software version of the Linux Kernel.	FE TEMP (degC)	Displays the temperature in degree Celsius of the Front-End Circuitry.	IP ADDRESS	Displays the IP address set for T200.	MAIN MENU	Returns to the MAIN MENU screen.	UPDATE PLXXX	Displays PL200 Software Update procedure.	TXXX INFO	Displays the T200 information.	BATTERY INFO	Displays the T200 battery information.	APPLICATION VER	Displays the application software version of the PL200.	BOOTLOADER VER	Displays the bootloader version of the PL200.	VARIABLE LOAD TEMP	Displays the case temperature in degree Celsius of PL200's variable load controller	HEATER LOAD TEMP	Displays the case temperature in degree Celsius of PL200's load heater container.
MAIN MENU	Returns to the MAIN MENU screen.																																				
UPDATE TXXX	Displays the T200 Software Update procedure.																																				
PLXXX INFO	Displays the PL200 information.																																				
BATTERY INFO	Displays the T200 battery information.																																				
A5 SW VER	Displays the application software version.																																				
M4 SW VER	Displays the metrology software version.																																				
FPGA SW VER	Displays the software version of the FPGA code.																																				
LINUX KERNEL VER	Displays the software version of the Linux Kernel.																																				
FE TEMP (degC)	Displays the temperature in degree Celsius of the Front-End Circuitry.																																				
IP ADDRESS	Displays the IP address set for T200.																																				
MAIN MENU	Returns to the MAIN MENU screen.																																				
UPDATE PLXXX	Displays PL200 Software Update procedure.																																				
TXXX INFO	Displays the T200 information.																																				
BATTERY INFO	Displays the T200 battery information.																																				
APPLICATION VER	Displays the application software version of the PL200.																																				
BOOTLOADER VER	Displays the bootloader version of the PL200.																																				
VARIABLE LOAD TEMP	Displays the case temperature in degree Celsius of PL200's variable load controller																																				
HEATER LOAD TEMP	Displays the case temperature in degree Celsius of PL200's load heater container.																																				

FLOWCHART	DESCRIPTION												
	<p>BATTERY INFO To view the Battery info, press 'F4' (BATTERY INFO) from TXXX Info or PLXXX Info.</p> <p>FUNCTION KEYS</p> <table border="1" data-bbox="876 399 1494 535"> <tr> <td>MAIN MENU</td> <td>Returns to the Main Menu screen.</td> </tr> <tr> <td>TXXX INFO</td> <td>Displays T200 Information.</td> </tr> <tr> <td>PLXXX INFO</td> <td>Displays PL200 Information.</td> </tr> </table> <p>DATA (All information are read-only)</p> <table border="1" data-bbox="876 609 1494 808"> <tr> <td>VOLTAGE (V)</td> <td>Displays the battery voltage in volts.</td> </tr> <tr> <td>CURRENT (A)</td> <td>Displays the battery charging/discharging current in amperes. The positive value signifies that the battery is charging while the negative value signifies that the battery is discharging.</td> </tr> <tr> <td>CHARGER TEMP (degC)</td> <td>Displays the temperature in degree Celsius of the battery charger IC.</td> </tr> </table>	MAIN MENU	Returns to the Main Menu screen.	TXXX INFO	Displays T200 Information.	PLXXX INFO	Displays PL200 Information.	VOLTAGE (V)	Displays the battery voltage in volts.	CURRENT (A)	Displays the battery charging/discharging current in amperes. The positive value signifies that the battery is charging while the negative value signifies that the battery is discharging.	CHARGER TEMP (degC)	Displays the temperature in degree Celsius of the battery charger IC.
MAIN MENU	Returns to the Main Menu screen.												
TXXX INFO	Displays T200 Information.												
PLXXX INFO	Displays PL200 Information.												
VOLTAGE (V)	Displays the battery voltage in volts.												
CURRENT (A)	Displays the battery charging/discharging current in amperes. The positive value signifies that the battery is charging while the negative value signifies that the battery is discharging.												
CHARGER TEMP (degC)	Displays the temperature in degree Celsius of the battery charger IC.												

3.3.9 PC CONNECT

FLOWCHART	DESCRIPTION						
	<p>PC-CONNECT This function is used as a pre-requisite for the Remote Operation in Chapter 4.</p> <p>To access PC Connect, press 'F1' from the main menu or 'F2' from Settings.</p> <p>PC Connect should be established with a correct IP address in order for the T200 PC application to connect with T200.</p> <p>FUNCTION KEYS</p> <table border="1" data-bbox="876 1480 1502 1543"> <tr> <td>BACK</td> <td>Returns to the previous screen.</td> </tr> </table> <p>COMMUNICATION STATUS</p> <table border="1" data-bbox="876 1585 1502 1711"> <tr> <td></td> <td>Serial Communication is NOT established.</td> </tr> <tr> <td></td> <td>Serial Communication is established.</td> </tr> </table> <p>Note:</p> <ul style="list-style-type: none"> • IP address of T200 should be in correct format. • IP address can be modified in the Settings screen. 	BACK	Returns to the previous screen.		Serial Communication is NOT established.		Serial Communication is established.
BACK	Returns to the previous screen.						
	Serial Communication is NOT established.						
	Serial Communication is established.						

3.3.10 UPDATING FIRMWARE OF T200 & PL200

FLOWCHART	DESCRIPTION														
<p>The flowchart illustrates the update process. It starts with a red 'UPDATE' button pointing to a screen titled 'SELECT UPDATE TYPE'. This screen has two main options: 'USB STORAGE' (highlighted with a red box) and 'SERVER UNAVAILABLE OVER-THE-AIR'. Below these are buttons for 'BACK', 'STORAGE INFO', 'OTA INFO', and 'NEXT'. From 'STORAGE INFO', the flow goes to 'STORAGE INFORMATION' which lists requirements like FAT32 format and 50MB free space. From 'OTA INFO', it goes to 'OVER-THE-AIR INFORMATION' which details server connection requirements. Both 'STORAGE INFORMATION' and 'OVER-THE-AIR INFORMATION' have 'BACK' buttons. From 'STORAGE INFORMATION', the flow goes to 'VIA USB STORAGE' which shows a file selection screen with a 'BACK', 'SCAN USB', and 'START UPDATE' button. From 'OVER-THE-AIR INFORMATION', the flow goes to 'VIA OVER-THE-AIR UPDATE' which shows a download status screen with a 'BACK' and 'UPDATE' button.</p>	<p>USB STORAGE/ON-THE-AIR (OTA) INFORMATION Either updating PL200 or T200, the user can view the storage information by pressing 'F2' (STORAGE INFO) and the OTA information by pressing 'F3' (OTA INFO).</p> <p>Note:</p> <ol style="list-style-type: none"> 1. The USB storage device should have a FAT32 file system format and with at least 50 MB of free space. 2. In the storage device, create this directory: "[USB DRIVE]:\T200\UPDATE". 3. Save the ".TXXX" (T200) or ".bin" (PL200) file in the UPDATE folder. 4. For OTA, it is required that the system is connected to a stable internet via the LAN/Ethernet cable. <p>USB STORAGE UPDATE To update T200, go to TXXX Info from Settings and press 'F2' (UPDATE TXXX). For PL200, press 'F3' (PLXXX INFO) to access PLXXX Info then press 'F2' (UPDATE PLXXX).</p> <p>Since USB Storage is the default selection, press 'F4' (NEXT) to proceed and select the T200 or PL200 file to use for the update. If the file is not found, press 'F3' (SCAN USB) to scan the USB storage or use your PC to check if the file is properly stored in the USB storage.</p> <p>Once the file is found, select it using the arrows keys and press 'F4' (START UPDATE) to start the update for either the T200 or PL200.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>BACK</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>SCAN USB</td> <td>Scan USB content to refresh.</td> </tr> <tr> <td>START UPDATE</td> <td>Starts updating the T200/PL200 firmware using the USB storage. During this process, the T200/PL200 will not be usable until update is complete.</td> </tr> <tr> <td>UPDATE</td> <td>Starts updating the T200/PL200 firmware using OTA. During this process, the T200/PL200 will not be usable until update is complete.</td> </tr> </table> <p>For the PL200 update, the system will be set to BOOT mode. PL200 LED indicator will flash based on the following status:</p> <table border="1"> <tr> <td>BOOT MODE</td> <td>State E LED & State F LED are both activated</td> </tr> <tr> <td>No Valid Application Software</td> <td>State D LED is activated</td> </tr> <tr> <td>Application Software is available</td> <td>State C LED is activated</td> </tr> </table>	BACK	Returns to the previous screen.	SCAN USB	Scan USB content to refresh.	START UPDATE	Starts updating the T200/PL200 firmware using the USB storage. During this process, the T200/PL200 will not be usable until update is complete.	UPDATE	Starts updating the T200/PL200 firmware using OTA. During this process, the T200/PL200 will not be usable until update is complete.	BOOT MODE	State E LED & State F LED are both activated	No Valid Application Software	State D LED is activated	Application Software is available	State C LED is activated
BACK	Returns to the previous screen.														
SCAN USB	Scan USB content to refresh.														
START UPDATE	Starts updating the T200/PL200 firmware using the USB storage. During this process, the T200/PL200 will not be usable until update is complete.														
UPDATE	Starts updating the T200/PL200 firmware using OTA. During this process, the T200/PL200 will not be usable until update is complete.														
BOOT MODE	State E LED & State F LED are both activated														
No Valid Application Software	State D LED is activated														
Application Software is available	State C LED is activated														

3.3.11 SYSTEM CALIBRATION (SYSCAL)

FLOWCHART	DESCRIPTION																																																																																																	
<p>SYSCAL</p> <p>SYSTEM CALIBRATION</p> <p>THIS EVSE TEST SYSTEM IS A HIGHLY ACCURATE INSTRUMENT. PERIODICALLY, A SYSTEM CALIBRATION IS REQUIRED TO DETERMINE AND ADJUST THE INSTRUMENT'S ACCURACY TO MAINTAIN ITS SPECIFICATIONS.</p> <p>FOLLOW THESE STEPS BEFORE STARTING THE CALIBRATION:</p> <ol style="list-style-type: none"> CONNECT COMBITAC CABLE OF PLXXX TO TXXX'S LOAD AND CONTROL CONNECTOR CONNECT EVSE COUPLER IN TXXX'S J1772 DUO CONNECTOR PRESS START BUTTON TO START CALIBRATION <p>BACK START</p> <p>RESULTS 1</p> <table border="1"> <thead> <tr> <th></th> <th>MEASURED</th> <th>VALID RANGE</th> </tr> </thead> <tbody> <tr> <td>NO LOAD:</td> <td></td> <td>< 0.05A</td> </tr> <tr> <td>PL POWER SUPPLY:</td> <td></td> <td>< 0.25A</td> </tr> <tr> <td>POWER SUPPLY:</td> <td></td> <td>< 0.5A</td> </tr> <tr> <td>POWER SUPPLY W/ FAN:</td> <td></td> <td>< 1A</td> </tr> <tr> <td>VAR LOAD 4A DPT 0:</td> <td></td> <td>< 0.05A</td> </tr> </tbody> </table> <p>RESULTS 2</p> <table border="1"> <thead> <tr> <th></th> <th>MEASURED</th> <th>VALID RANGE</th> </tr> </thead> <tbody> <tr> <td>VAR LOAD 4A DPT 70:</td> <td></td> <td>1A ~ 3A</td> </tr> <tr> <td>VAR LOAD 4A DTP 140:</td> <td></td> <td>3A ~ 4.5A</td> </tr> <tr> <td>VAR LOAD 4A DPT 210:</td> <td></td> <td>3A ~ 4.5A</td> </tr> <tr> <td>VAR LOAD 4A DPT 255:</td> <td></td> <td>3A ~ 4.5A</td> </tr> <tr> <td>VAR LOAD 8A DPT 0:</td> <td></td> <td>< 0.05A</td> </tr> </tbody> </table> <p>RESULTS 3</p> <table border="1"> <thead> <tr> <th></th> <th>MEASURED</th> <th>VALID RANGE</th> </tr> </thead> <tbody> <tr> <td>VAR LOAD 8A DPT 70:</td> <td></td> <td>1A ~ 3A</td> </tr> <tr> <td>VAR LOAD 8A DTP 140:</td> <td></td> <td>3A ~ 6A</td> </tr> <tr> <td>VAR LOAD 8A DPT 210:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>VAR LOAD 8A DPT 255:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 2:</td> <td></td> <td>6A ~ 9A</td> </tr> </tbody> </table> <p>RESULTS 4</p> <table border="1"> <thead> <tr> <th></th> <th>MEASURED</th> <th>VALID RANGE</th> </tr> </thead> <tbody> <tr> <td>HEATER 3:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 2 & 3 SERIES:</td> <td></td> <td>3A ~ 4.5A</td> </tr> <tr> <td>HEATER 4:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 8:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 4 & 8 SERIES:</td> <td></td> <td>3A ~ 4.5A</td> </tr> </tbody> </table> <p>RESULTS 5</p> <table border="1"> <thead> <tr> <th></th> <th>MEASURED</th> <th>VALID RANGE</th> </tr> </thead> <tbody> <tr> <td>HEATER 6:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 7:</td> <td></td> <td>6A ~ 9A</td> </tr> <tr> <td>HEATER 6 & 7 SERIES:</td> <td></td> <td>3A ~ 4.5A</td> </tr> <tr> <td>HEATER 9:</td> <td></td> <td>1A ~ 3A</td> </tr> </tbody> </table>		MEASURED	VALID RANGE	NO LOAD:		< 0.05A	PL POWER SUPPLY:		< 0.25A	POWER SUPPLY:		< 0.5A	POWER SUPPLY W/ FAN:		< 1A	VAR LOAD 4A DPT 0:		< 0.05A		MEASURED	VALID RANGE	VAR LOAD 4A DPT 70:		1A ~ 3A	VAR LOAD 4A DTP 140:		3A ~ 4.5A	VAR LOAD 4A DPT 210:		3A ~ 4.5A	VAR LOAD 4A DPT 255:		3A ~ 4.5A	VAR LOAD 8A DPT 0:		< 0.05A		MEASURED	VALID RANGE	VAR LOAD 8A DPT 70:		1A ~ 3A	VAR LOAD 8A DTP 140:		3A ~ 6A	VAR LOAD 8A DPT 210:		6A ~ 9A	VAR LOAD 8A DPT 255:		6A ~ 9A	HEATER 2:		6A ~ 9A		MEASURED	VALID RANGE	HEATER 3:		6A ~ 9A	HEATER 2 & 3 SERIES:		3A ~ 4.5A	HEATER 4:		6A ~ 9A	HEATER 8:		6A ~ 9A	HEATER 4 & 8 SERIES:		3A ~ 4.5A		MEASURED	VALID RANGE	HEATER 6:		6A ~ 9A	HEATER 7:		6A ~ 9A	HEATER 6 & 7 SERIES:		3A ~ 4.5A	HEATER 9:		1A ~ 3A	<p>SYSTEM CALIBRATION</p> <p>This function allows you to automatically adjust the instrument's accuracy and calibrate PL200. From the main menu, press 'F2' (SYSCAL) to access System Calibration.</p> <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>BACK</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>START</td> <td>Starts the System Calibration process.</td> </tr> </table> <p>The system calibration process is an automatic procedure. After performing a certain number of tests, a dialogue box will prompt to confirm its completion or warn about its failure. In case of calibration failure, no changes will be done in the system.</p> <p>SYSTEM CALIBRATION RESULTS</p> <p>To view the results of the calibration, perform the following:</p> <ol style="list-style-type: none"> For the current results, press ▲ five times. For the previous results, press ▼ five times. <p>FUNCTION KEYS</p> <table border="1"> <tr> <td>BACK</td> <td>Returns to the previous screen.</td> </tr> <tr> <td>MAIN MENU</td> <td>Returns to the MAIN MENU screen.</td> </tr> <tr> <td>NEXT</td> <td>Proceeds to the next calibration result.</td> </tr> </table>	BACK	Returns to the previous screen.	START	Starts the System Calibration process.	BACK	Returns to the previous screen.	MAIN MENU	Returns to the MAIN MENU screen.	NEXT	Proceeds to the next calibration result.
	MEASURED	VALID RANGE																																																																																																
NO LOAD:		< 0.05A																																																																																																
PL POWER SUPPLY:		< 0.25A																																																																																																
POWER SUPPLY:		< 0.5A																																																																																																
POWER SUPPLY W/ FAN:		< 1A																																																																																																
VAR LOAD 4A DPT 0:		< 0.05A																																																																																																
	MEASURED	VALID RANGE																																																																																																
VAR LOAD 4A DPT 70:		1A ~ 3A																																																																																																
VAR LOAD 4A DTP 140:		3A ~ 4.5A																																																																																																
VAR LOAD 4A DPT 210:		3A ~ 4.5A																																																																																																
VAR LOAD 4A DPT 255:		3A ~ 4.5A																																																																																																
VAR LOAD 8A DPT 0:		< 0.05A																																																																																																
	MEASURED	VALID RANGE																																																																																																
VAR LOAD 8A DPT 70:		1A ~ 3A																																																																																																
VAR LOAD 8A DTP 140:		3A ~ 6A																																																																																																
VAR LOAD 8A DPT 210:		6A ~ 9A																																																																																																
VAR LOAD 8A DPT 255:		6A ~ 9A																																																																																																
HEATER 2:		6A ~ 9A																																																																																																
	MEASURED	VALID RANGE																																																																																																
HEATER 3:		6A ~ 9A																																																																																																
HEATER 2 & 3 SERIES:		3A ~ 4.5A																																																																																																
HEATER 4:		6A ~ 9A																																																																																																
HEATER 8:		6A ~ 9A																																																																																																
HEATER 4 & 8 SERIES:		3A ~ 4.5A																																																																																																
	MEASURED	VALID RANGE																																																																																																
HEATER 6:		6A ~ 9A																																																																																																
HEATER 7:		6A ~ 9A																																																																																																
HEATER 6 & 7 SERIES:		3A ~ 4.5A																																																																																																
HEATER 9:		1A ~ 3A																																																																																																
BACK	Returns to the previous screen.																																																																																																	
START	Starts the System Calibration process.																																																																																																	
BACK	Returns to the previous screen.																																																																																																	
MAIN MENU	Returns to the MAIN MENU screen.																																																																																																	
NEXT	Proceeds to the next calibration result.																																																																																																	

4.0 REMOTE OPERATIONS

4.1	Introduction.....	37
4.2	Connectivity.....	37
4.3	Instrument Controller Capabilities.....	38
4.4	Setup of Remote Access	38
4.5	Remote Access Functionality	38
4.5.1	CONNECTIVITY HOOKUP.....	38
4.5.2	MAIN MENU	39
4.5.3	TEST SETUP FOR AUTO TEST.....	40
4.5.4	TEST STATUS.....	40
4.5.5	TEST RESULTS	41
4.5.6	TEST CONFIGURATION.....	42
4.5.7	NEW/EDIT TEST CONFIGURATION.....	43

4.1 Introduction

Your EVSE Tester is capable of operating under the remote control of a pc application (also known as PC-APP), as well as under the direct control from the front panel.

WARNING

During the operation of load measurements while the instrument is connected to a PC terminal, do not disconnect the J1772 coupler or the CombiTac connector. An EVSE can supply lethal voltages.

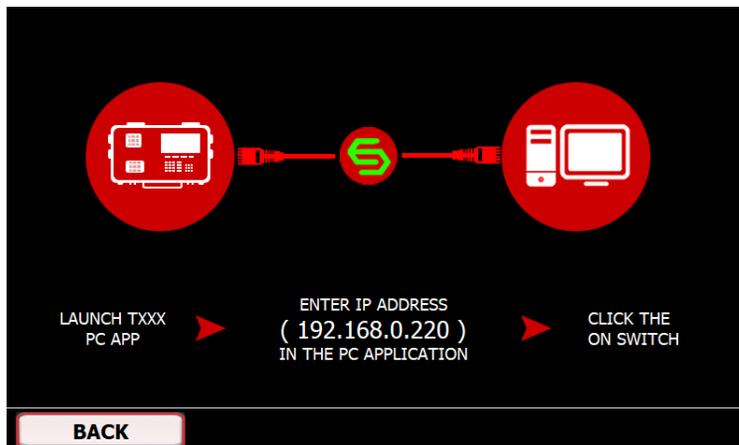
4.2 Connectivity

With the ever-increasing utilization of PCs and workstations and the ever-growing importance of operations based on distributed cooperation, local area networks (LANs) have become an indispensable component of the essential communication infrastructure that are based on Ethernet technology.

The T200 is fully capable of using Ethernet-based communication including ad-hoc via a crossover cable. Under remote control, a T200 operates as a talker/listener on the LAN bus.



When Remote Control successfully connects, the following display screen indicating the IP address of T200 is displayed.

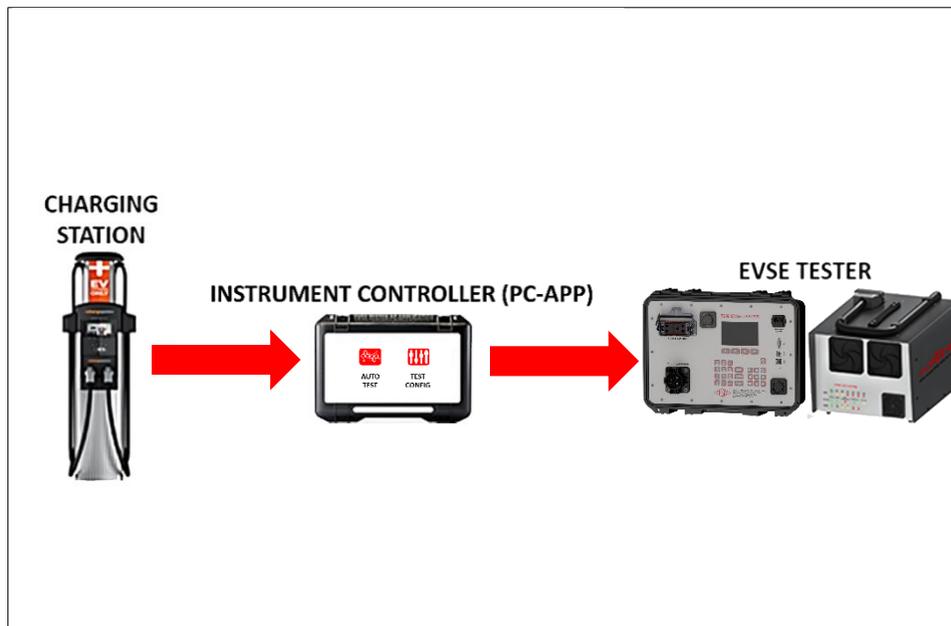


4.3 Instrument Controller Capabilities

The PC-APP has been created with the following capabilities:

- 1- Be able to set Run Test procedures with these parameters
 - a. Select the Type of Load Current to Test: No Load (NL), Startup Load (SL), Light Load (LL), Full Load (FL)
 - b. Set Test Duration by Test Time and/or Target Energy Per Type of Load Current Test
- 2- **AUTO TEST**
 - PC-APP loads preset/custom test script to input test parameters
 - EVSE Tester Responds with Results to PC-APP
 - PC-APP stores results locally
 - Results can be directly viewed in the PC-APP

4.4 Setup of Remote Access

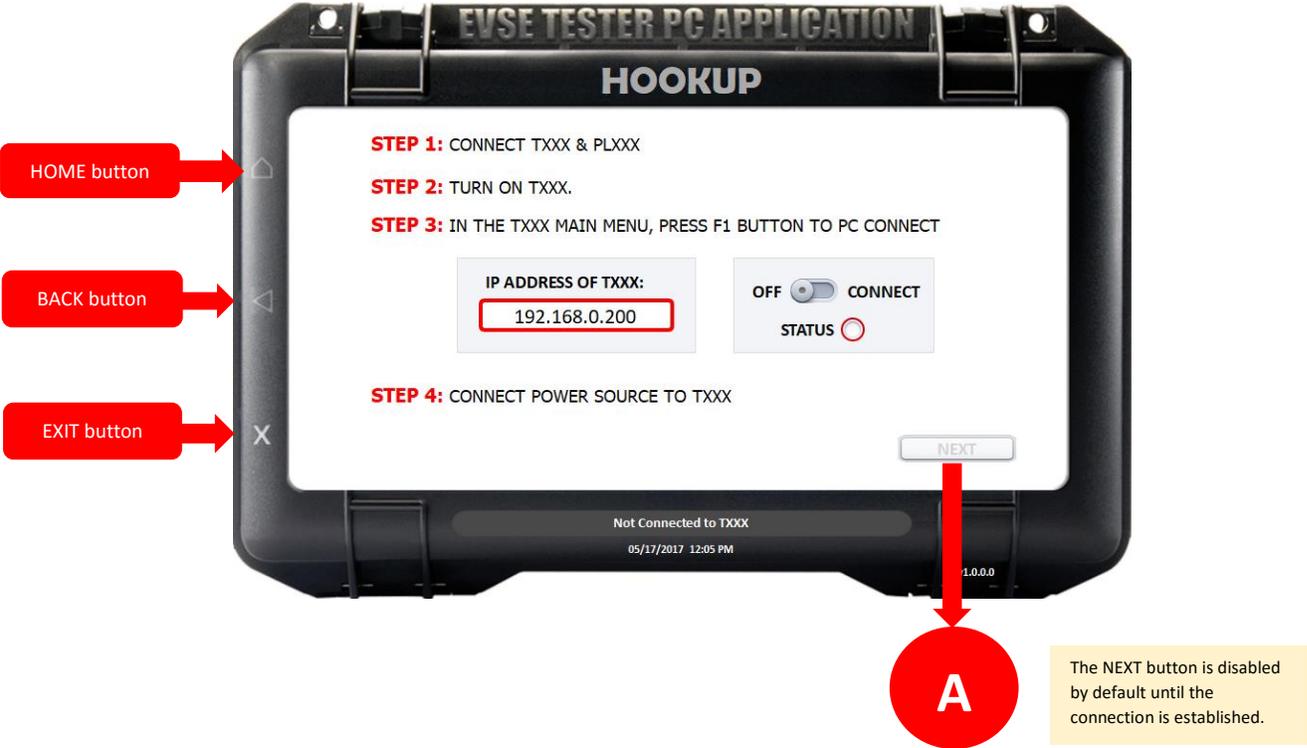


4.5 Remote Access Functionality

4.5.1 CONNECTIVITY HOOKUP

As soon as the application is launched, the hookup window appears.

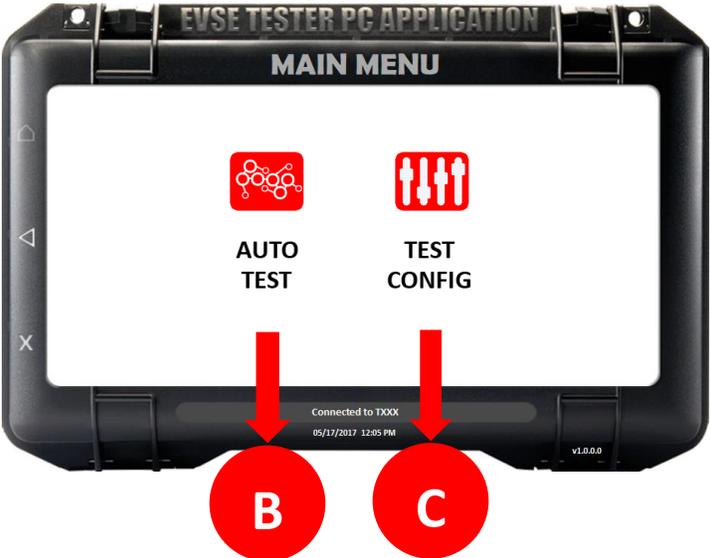
The technician needs to ensure that it has the right IP address of the EVSE Tester being used. By default, each T200 is set at **192.168.0.200**. Its IP address may change if a DHCP Server reassigns it.



4.5.2 MAIN MENU

The MAIN MENU has three selections:

- 1- **AUTO TEST & TEST CONFIG**
 - Creation of New & Edit of Test Configs to be used in Auto Test is accomplished in this selection



4.5.3 TEST SETUP FOR AUTO TEST

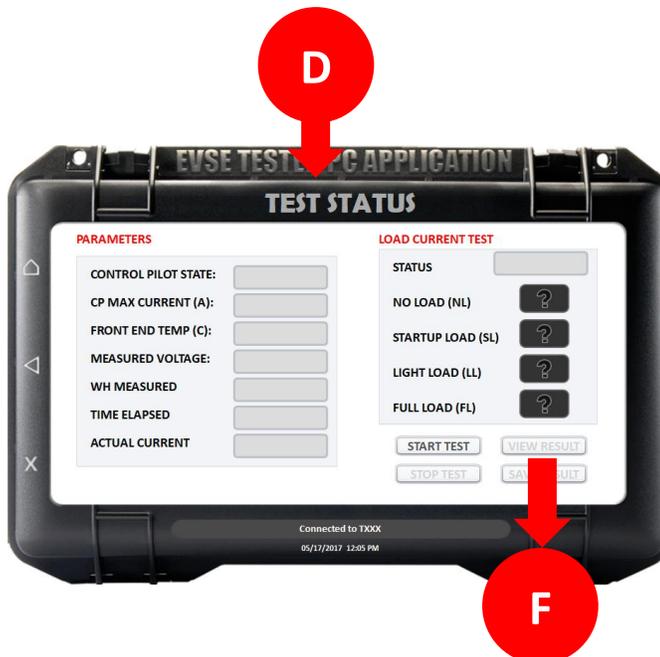
Selection of Test Configuration is accessible through a pull-down menu. New configs or modification of configs can be done through the Test Config selection in the Main Menu

An option for Power Supply called Simulated Power Source is added to support different test configurations that are only feasible as laboratory test cases.



4.5.4 TEST STATUS

The TEST STATUS screen allows a user to control a test and monitor status and parameters.



The Load Current Test used the following icons to indicate events:

ICONS	DESCRIPTION
	PENDING Test
	ON-GOING Test
	FAILED Test
	COMPLETED Test

Several Keys are provided for the following use:

START TEST = Button to start the test process

STOP TEST = To stop the test process while running

VIEW RESULT = After test is done, result can be viewed

SAVE RESULT = Pressing the **SAVE** button will open the save dialog box where you have the option to save the results on a specific location. The results are saved on an .XML file.

4.5.5 TEST RESULTS

The TEST RESULTS screen displays two important parameters commonly required in the test methodologies.



Pressing the **SAVE** button will open the save dialog box where you have the option to save the results to a specified location. The results are saved in an .XML file.

4.5.6 TEST CONFIGURATION

In the TEST CONFIGURATION screen, you can do the following:

- 1- Select a preset configuration & view its parametric information. There is an option to edit this configuration or save to a different test configuration name. Preset configurations cannot be overwritten.
- 2- Add/upload a new test configuration through an XML or text file.
- 3- Create new test configuration.



4.5.7 NEW/EDIT TEST CONFIGURATION

In the NEW or EDIT TEST CONFIGURATION screen, you can do the following:

- 1- Define or re-define the values of all parameters.
 - Pre-defined configurations cannot be overwritten but may be modified and saved to a different Test Procedure Name.
- 2- Unchecking any of the test types will automatically empty the values of its corresponding parameters.



Pressing the **SAVE** button will open the save dialog box where you have the option to save the results to a specified location as an .XML file.

5.0 MAINTENANCE

5.1	Introduction.....	45
5.2	Replacing the Fuse	45
5.3	Cleaning the PL200 AIR Filter	46
5.4	Cleaning the Instrument External Surface	48
5.5	Lithium Battery Consideration	48

5.1 Introduction

This chapter explains how to perform the routine user maintenance required to your Instrument in optimal operating condition.

The topics covered in this chapter include:

- Replacing the Fuse
- Cleaning the Air Filter
- Cleaning the Instrument External Surface
- Lithium Battery Consideration

5.2 Replacing the Fuse

The power fuses are accessible from T200's front panel. See Figure 5.2.



Figure 5.2 Fuse Location

WARNING

To avoid electrical shock or personal injury, ensure that the Instrument is switched off and disconnected by removing the line power cord from the power input socket before attempting to access the power fuse.

To access & replace the fuse, proceed as follows:

1. Disconnect line power.
2. Using a standard 5mm wide screwdriver, insert it to the slit and pull upwards until the cap and fuse are disengaged.
3. Remove and replace the fuse and push down the cap until it completely closes. Always replace with the approved fuse shown in Table 5.2.

Table 5.2. Approved Replacement Fuses

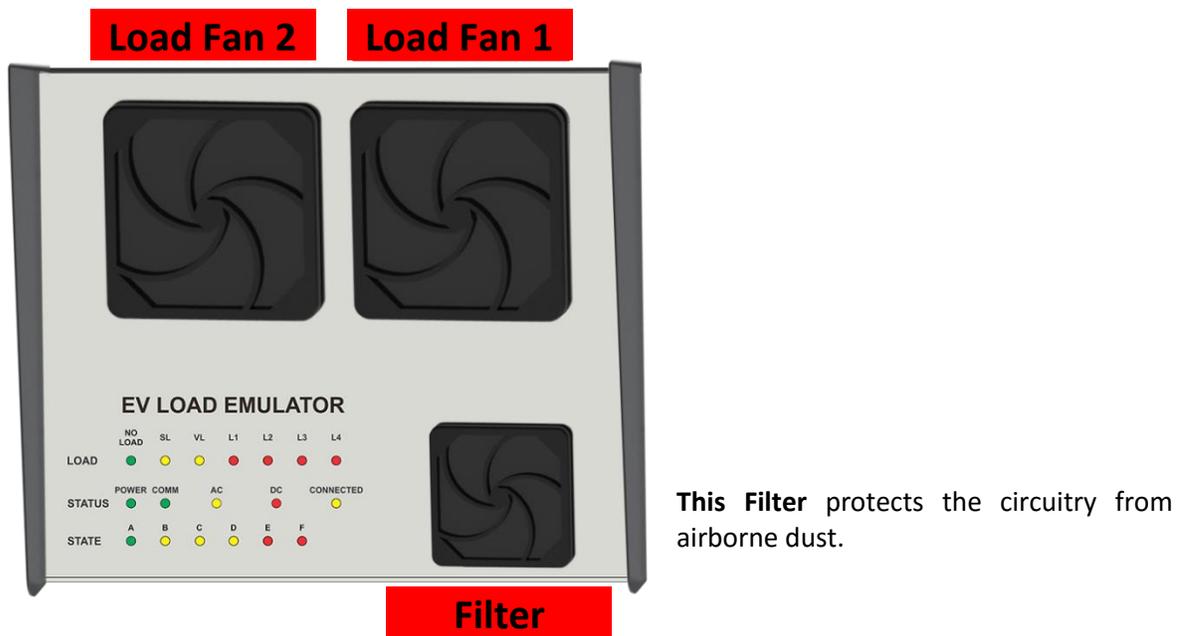
Description	Part Number	Manufacturer
Cartridge Fuses, 6A, 125VAC, 5.1 mm	5TT 6-R	Bel Fuse
Cartridge Fuses 125V 6A Medium Acting	0233006.MXP	Littelfuse

Note: This is applicable to all TXXX series.

5.3 Cleaning the PL200 AIR Filter

CAUTION 

Damage caused by overheating may occur if the area around the fans are restricted, the intake air is too warm, or the air filter becomes clogged. The air filter must be removed and cleaned at least every 30 days or more frequently if the Instrument is operated in a dusty environment.



This Filter protects the circuitry from airborne dust.

Figure 5.3a PL200 Filter Locations

To access & clean the air filter, proceed as follows

1. Disconnect line power.
2. The air filter is accessible from the front of PL200.
3. Remove the filter retainer by holding its two upper corners or two lower corners and pulling it outward until it disengages from the fan guard.
4. Remove the air filter that is in between the Filter Retainer and Fan Guard. See figure 5.3b.
5. Clean the filter by washing it in soapy water. Rinse and dry it thoroughly before reinstalling.
6. Place the filter at the back of the retainer.
7. Reinstall the retainer in the fan guard. The retainer is snapped on the four sides for the fan guard.

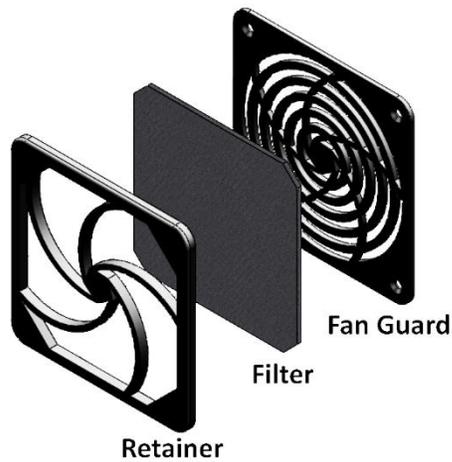


Figure 5.3b: Fan Filter Location

5.4 Cleaning the Instrument External Surface

Clean the exterior of the instrument using a soft cloth slightly dampened with either water or a non-abrasive mild cleaning solution that is not harmful to plastics.

CAUTION 

Do not use hydrocarbons or chlorinated solvents for cleaning. They can damage the plastic materials used in the Instrument.

5.5 Lithium Battery Consideration

T200 contains a lithium-ion battery (10.8V 4.8Ah UBBL25) that is used on operating the instrument as a portable device.

CAUTION 

When storing T200 for a long period of time, battery capacity should be charged. Do not store above 50°C (122°F) ambient temperature.

Do not leave batteries unused for extended periods of time, either in the product or in storage. When a battery has not been used for six months, check the charge status and charge or contact dealer for replacement.