



# ITI User Guide

---

ISOBUS Test Interface

## Table of Contents

Introduction .....	3
References .....	3
Terms and Definitions .....	3
Package Contents.....	3
General Description .....	4
Internal Chassis Layout .....	5
Connectors Pin out Definitions .....	6
Troubleshooting.....	8
Calibration.....	9
Software Drivers .....	9
Customer Service .....	10
Revision Information.....	10
Figure 1 Package Contents.....	3
Figure 2 Top Panel view .....	4
Figure 3 ITI bottom View.....	5
Figure 4 ITI Internal View .....	5
Figure 5 MAIN Connector Pin out .....	6
Figure 6 In-Cab Connector Pin out.....	7
Table 1 Main Connector Pin out Description.....	6
Table 2 In-Cab Connector Pin out Description.....	7
Table 3 J1 Pin out Description.....	7
Table 4 J2 Pin out Description.....	8
Table 5 J3 Pin out Description.....	8
Table 6 Troubleshooting .....	9
Table 7 Revision Information .....	10

## Introduction

This document is to describe the operation and functionality of the ISOBUS Test Interface unit.

## References

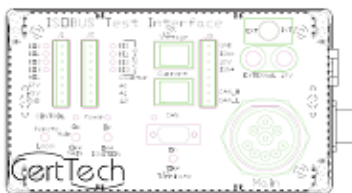
ISO/FDIS 11783 documents

## Terms and Definitions

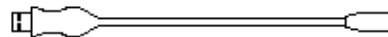
AEF	Agricultural Industry Electronics Foundation
ECU	Electronic Control Unit
ITI	ISOBUS Tester Interface
ISO	International Standards Organization
NC	No Connect
TBC	Terminal Bias Circuit

## Package Contents

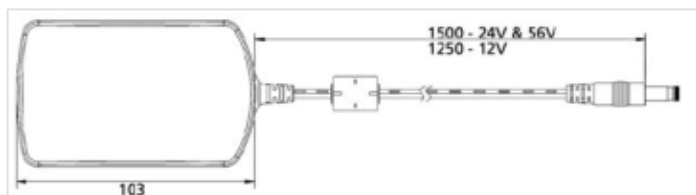
Item	QTY	Description
1	1	ISOBUS Test Interface unit
2	1	2' long USB cable
3	1	12 Vdc AC/DC Power Adapter
4	3	8 pin modular connector
-	1	Driver CD for CAN and NI6008 devices
-	1	User Manual



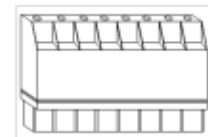
Item 1



Item 2



Item 3



Item 4

Figure 1 Package Contents

## General Description

The ITI box is designed to allow software developers an interface between an ECU and the AEF ISOBUS conformance test suite. There are currently two versions of the ITI box, one with an internal CAN module (TE00001-10) and one without (TE00001-11). This document will reference version TE0001-10 throughout.



Figure 2 Top Panel view

Outputs (See Figure 2 items 7, 8 and 9):

- 4 Open collector (TTL, LVTTTL, CMOS Compatible) digital output lines – item 9
- 1 analog output at 12 bits software timed – item 9
- 12V (5A max) and 5V (200mA max) constant supplies – item 9
- Displays Voltage and Current on 2 3.5 digit LCD meters - items 7 and 8

Inputs (See Figure 2 items 6 and 10):

- 4 – 12V max digital input lines – item 10
- 1 – 32bit, 5 MHz and 2.0V high to 0.8V low input voltage counter – item 10
- 3 – 12 bit, 10 kS/s, 144kΩ and +/-10V analog inputs. - item 10
- MAIN and In-Cab connectors used to interface with the ECU. – item 6

The ITI unit has 5 manual toggle switches (See Figure 2):

1. The CONTROL switch allows the activation of the manual or auto modes for turning On/OFF the MAIN/ECU powers.
2. When the CONTROL switch is set to REMOTE, the MAIN switch applies power to the MAIN connector Pin 3 (item 6), and J3-3.
3. When the CONTROL switch is set to REMOTE, the IGNITION switch applies power to the MAIN connector Pin 4 (item 6), J3-4 and the In-Cab connector Pin 7.

NOTE: The ITI supports up to 5 Amps from a local power supply and up to 10 Amps from an external power supply. Main and Ignition lines are controlled either programmatically or manually from toggle switches.

4. The Terminate switch applies a 120ohm load to the internal CAN bus.
5. The SUPPLY switch allows an external supply to power any ECU. The binding posts below the switch are used to connect the external supply.

## Internal Chassis Layout

The four screws (See Figure 3) on the bottom of the unit hold the two pieces of the chassis housing together.

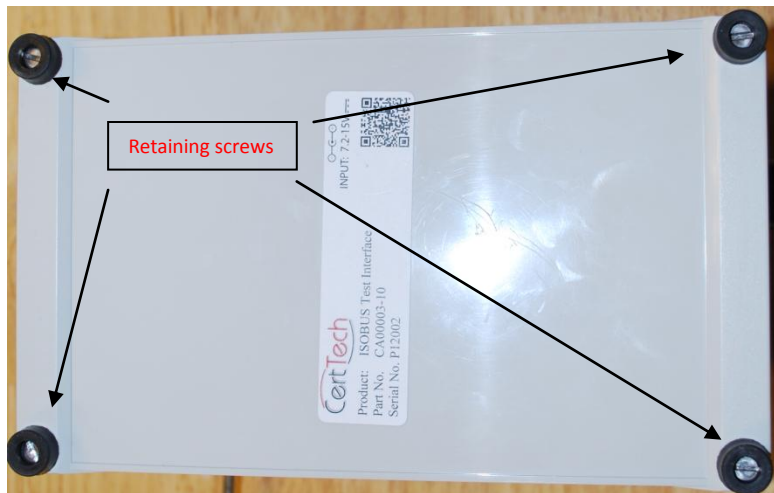


Figure 3 ITI bottom View

If the retaining screws and lid are removed the internal hardware will be exposed (See Figure 4).

NOTE: If this is a TE00001-10 unit the lid will contain the CAN device.



Figure 4 ITI Internal View

## Connectors Pin out Definitions

The ITI box has two ECU interface connectors (Main and In-Cab). There are also 3 other test connectors that will allow a variety of test modes (J1, J2 and J3). See below for the defined pin outs.

Table 1 Main Connector Pin out Description

Main Connector Pin Number	Pin Description
1	GND – Chassis GND – It is connected to the internal ground of the ITI Box
2	ECU GND – It is connected to the internal ground of the ITI Box
3	PWR – Dirty Power – this is controlled by the Main POWER switch or an internal relay if in remote mode.
4	ECU PWR – this is controlled by the IGNITION POWER switch or an internal relay if in remote mode.
5	NC
6	TBC_PWR
7	TBC_RTN
8	CAN-H
9	CAN-L

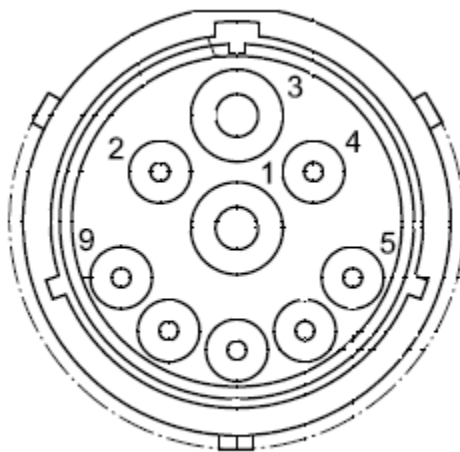


Figure 5 MAIN Connector Pin out

Table 2 In-Cab Connector Pin out Description

In-Cab Connector Pin Number	Pin Description
1	NC
2	CAN-L
3	CAN-L
4	CAN-H
5	CAN-H
6	TBC_PWR
7	ECU PWR – this is controlled by the IGNITION POWER switch or an internal relay if in remote mode. (Same as Main)
8	TBC_GND
9	ECU GND – It is connected to the internal ground of the ITI Box (Same as Main)

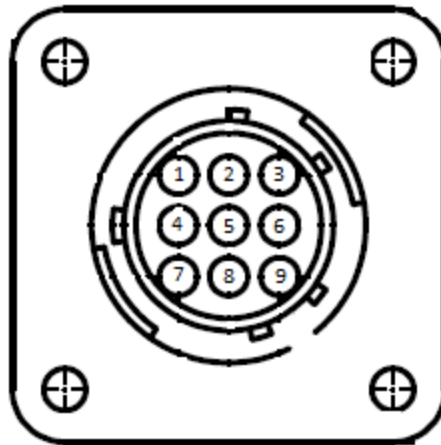


Figure 6 In-Cab Connector Pin out

The connectors J1-J3 are located on the front panel (See Figure 2).

Table 3 J1 Pin out Description

J1	NI-6008 Connection	Pin Description
DO0	P0.0	Digital Output
DO1	P0.1	Digital Output
DO2	P0.2	Digital Output
DO3	P0.3	Digital Output
AO1	AO 0	Analog Output
12Vdc	-	12Vdc
5Vdc	-	5Vdc
GND	-	Chassis GND

Table 4 J2 Pin out Description

<b>J2</b>	<b>NI-6008 Connection</b>	<b>Pin Description</b>
DI0	P1.0	Digital Input
DI1	P1.1	Digital Input
DI2	P1.2	Digital Input
DI3	P1.3	Digital Input
Counter	PFI 0	Event Counter
AI0	AI 0	Analog Input
AI1	AI 1	Analog Input
AI2	AI 2	Analog Input

Table 5 J3 Pin out Description

<b>J3</b>	<b>Pin Description</b>
GND	Chassis GND
IGN -	ECU GND
12V	12Vdc
IGN +	ECU PWR
5	NC
6	NC
CAN_H	CAN-H
CAN_L	CAN-L

## Troubleshooting

If problems occur with the unit it is recommended that the unit be shipped back to CertTech, L.L.C. for repairs (See the



Customer Service section for contact information).

Table 6 Troubleshooting

Problem	Possible Solution
Running automated test and power is not getting activated.	Check the Remote switch to ensure it is in the remote mode.
Running automated test and discretés are not getting activated correctly.	Check the NI 6008 driver for proper installation. Use NI MAX to manually activate the digital discrete. Also check to verify that the device is set to Dev1.
Internal power is not getting applied to the ECU.	Check the External power switch to ensure it is set to internal. Check fuse F1 (5 Amp).
External power is not getting applied to the ECU.	Check the External power switch to ensure it is set to external. Check fuse F2 (10 Amp).
The CAN bus fail to transmit or receive any data.	Check the Can bus driver for proper installation.
Driver Error	Reload the driver SW. If the problem persists contain CertTech customer service.

## Calibration

No calibration is required for this system.

## Software Drivers

Use the provided installation disk to load the hardware drivers (NI CAN and NI DAQMX).

1. Insert the provided installation disk into the conformance test PC.
2. Open windows explore to the installation disk contents.
3. Run the installer program.
4. Once the installer is complete reboot the PC.
5. Once the PC has completed its reboot, plug in the USB cable and wait for the PC to recognize the devices. (The TE00001-10 contains an NI USB-6008OEM1 and a USB-8473. The TE00001-11 only contains an NI USB-6008OEM1).
6. NI Measurement and Automation Explorer (NI MAX) was also installed. Open NI MAX and access the test panel for both devices under Devices and Interfaces. To use the NI USB6008OEM1 with the AEF Conformance Test Software, set the name in NI MAX to "Dev1". In the Test Environment Configuration XML file, check the checkbox next to the "Use Device Controller" and select "ITI" from the pull down selection.
7. Manual tests can be performed if desired.

## Customer Service

### Contact:

Email: [CustomerService@certtech.com](mailto:CustomerService@certtech.com)

Phone Number: 913-814-9770

Address: 14425 College Blvd. Suite 140  
Lenexa, KS 66215

Website: <http://www.certtech.com/>

## Revision Information

Table 7 Revision Information

<b>Rev.</b>	<b>Description</b>	<b>Date</b>
1.0	Initial Revision	6-8-2012
1.1	Footers modified, Terminals J1-J3 added, Rev info added	8-24-2012
1.2	Added TBC_PWR and TBC_RTN to Main and In-Cab connector tables	10-1-2012
1.3	Fuse values changed from 4 and 8 to 5 and 10 Amps.	9-6-2013

Microsoft Windows and Microsoft Word are registered trademarks of Microsoft Corporation.

National Instruments is a registered trademark of National Instruments Corporation.