Trusted 20 Channel Isolated AI/DI FTA Loop Powered

Product Overview

The Trusted® 20 Channel Isolated Analogue Input/Digital Input (AI/DI) Field Termination Assembly (FTA), Part Number: T8833, is designed to act as the main interface between a field device generating a 4 20 mA signal and the Isolated Analogue Input Module, Part Number: T8433.

Features:

- 20 isolated input channels per FTA.
- Standard DIN rail compatibility.
- Simple installation and connection.
- Loop powered operation.

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PREFACE

In no event will Rockwell Automation be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment. The examples given in this manual are included solely for illustrative purposes. Because of the many variables and requirements related to any particular installation, Rockwell Automation does not assume responsibility or reliability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, with respect to use of information, circuits, equipment, or software described in this manual.

DISCLAIMER

It is not intended that the information in this publication covers every possible detail about the construction, operation, or maintenance of a control system installation. You should also refer to your own local (or supplied) system safety manual, installation and operator/maintenance manuals.

REVISION AND UPDATING POLICY

This document is based on information available at the time of its publication. The document contents are subject to change from time to time. The latest versions of the manuals are available at the Rockwell Automation Literature Library under "Product Information" information "Critical Process Control & Safety Systems".

TRUSTED RELEASE

This technical manual was updated for **Trusted Release 4.0**.

LATEST PRODUCT INFORMATION

For the latest information about this product review the Product Notifications and Technical Notes issued by technical support. Product Notifications and product support are available at the Rockwell Automation Support Centre at
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At the Search Knowledgebase tab select the option "By Product" then scroll down and select the Trusted product.

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https://rockwellautomation.custhelp.com/app/answers/detail/a_id/50871

This will get you to the login page where you must enter your login details.

IMPORTANT	A login is required to access the link. If you do not have an account then you can create one using the "Sign Up" link at the top right of the web page.

DOCUMENTATION FEEDBACK

Your comments help us to write better user documentation. If you discover an error, or have a suggestion on how to make this publication better, send your comment to our technical support group at http://rockwellautomation.custhelp.com

SCOPE

This manual specifies the maintenance requirements and describes the procedures to assist troubleshooting and maintenance of a Trusted system.

WHO SHOULD USE THIS MANUAL

This manual is for plant maintenance personnel who are experienced in the operation and maintenance of electronic equipment and are trained to work with safety systems.

SYMBOLS

In this manual we will use these notices to tell you about safety considerations.

	SHOCK HAZARD: Identifies an electrical shock hazard. If a warning label is fitted, it can be on or inside the equipment.
	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which can cause injury or death, property damage or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can cause injury or death.
	CAUTION: Identifies information about practices or circumstances that can cause property damage or economic loss.
	BURN HAZARD: Identifies where a surface can reach dangerous temperatures. If a warning label is fitted, it can be on or inside the equipment.
	This symbol identifies items which must be thought about and put in place when designing and assembling a Trusted controller for use in a Safety Instrumented Function (SIF). It appears extensively in the Trusted Safety Manual.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
NOTE	Provides key information about the product or service.
TIP	Tips give helpful information about using or setting up the equipment.

WARNINGS AND CAUTIONS

WARNING: EXPLOSION RISK

Do not connect or disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations or equivalent

AVERTISSEMENT - RISQUE D'EXPLOSION

Ne pas connecter ou déconnecter l'équipement alors qu'il est sous tension, sauf si l'environnement est exempt de concentrations inflammables ou équivalente

MAINTENANCE

Maintenance must be carried out only by qualified personnel. Failure to follow these instructions may result in personal injury.

CAUTION: RADIO FREQUENCY INTERFERENCE

Most electronic equipment is influenced by Radio Frequency Interference. Caution should be exercised with regard to the use of portable communications equipment around such equipment. Signs should be posted in the vicinity of the equipment cautioning against the use of portable communications equipment.

CAUTION:

The module PCBs contains static sensitive components. Static handling precautions must be observed. DO NOT touch exposed connector pins or attempt to dismantle a module.

ISSUE RECORD

Issue	Date	Comments
2	Sep 05	Format
3	Aug 06	Termination
4	Jun 16	Rebranded and updated to incorporate IEEE standards with correction of typographical errors and also standardise the Relative Humidity Range and Operating Temperature statements in the Specification Section.
5	Dec 18	Updated Specifications table. Updated graphics in various sections. Updated header and footer to display Rockwell Automation publication number. Added trademarks statement.

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1. Description

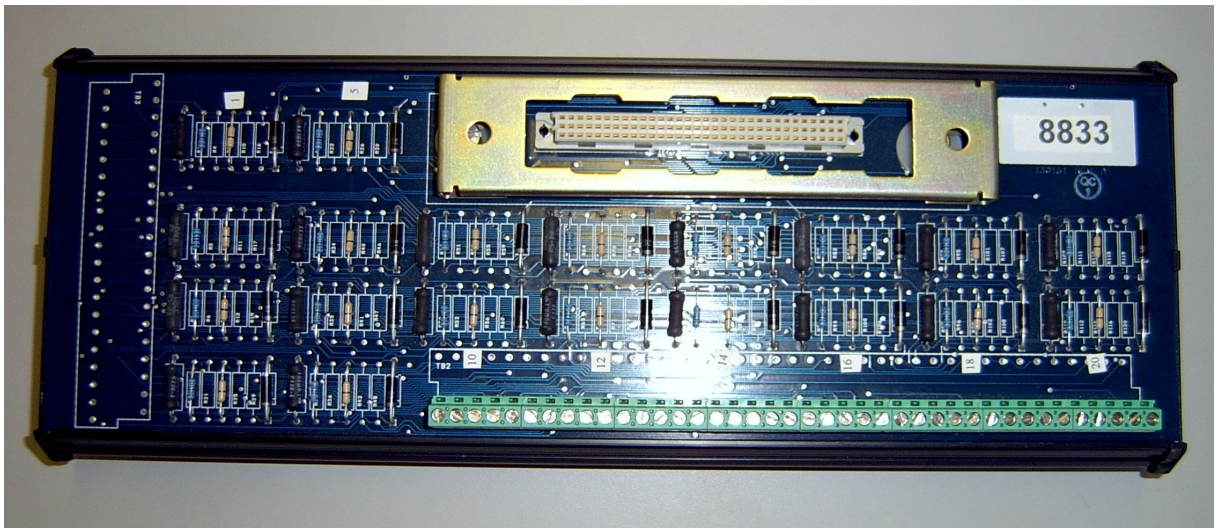

Figure 1 T8833 Layout

The Trusted 20 Channel Isolated Analogue Input FTA (T8833), provides termination for a maximum of 20 input channels from various types of field devices which generate a current loop signal. When used with a Trusted TMR Isolated Analogue Input Module (T8433) each of the inputs is loop powered and individually isolated. Figure 2 below shows the configuration of a single channel.

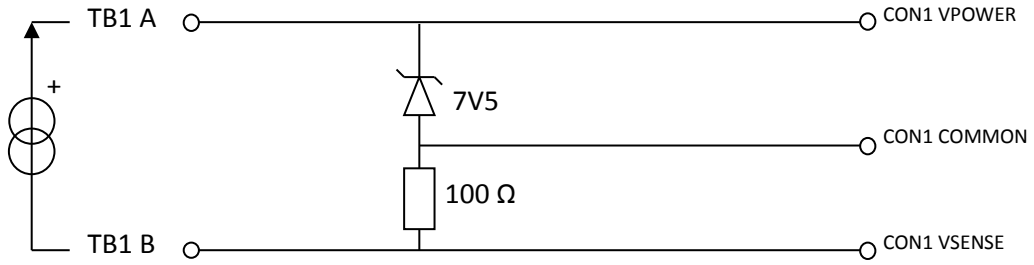

Figure 2 Single Channel Schematic

The FTA is configured so that the 4-20 mA field current loop signal connects to TB1 A and the loop return connects to TB1 B. The current loop signal is then converted into a voltage by the circuit in Figure 2. This voltage is split into a 7.5 Vdc low current power supply to power the isolation amplifiers on the input module (VPOWER) and the precision 0-2 V current sense signal (VSENSE) connected to the input module. Both of these voltages are referenced to (COMMON).

This means that input module operates on the loop power of the field devices. This way each field device is isolated from the other devices and from ground.

The connector linking the 20 channels on the input module to the FTA is terminated at CON1 which is a 96-way socket. A row of screw terminal connectors (TB1) are used to connect the field wiring.

Unused inputs should be terminated by wiring a 24 V supply via a resistor (2K or 2K2) to the A terminal and wiring the B terminal to the associated zero volts.

2. Installation

The Trusted 20 Channel Isolated AI/DI FTA (T8833) is designed to be mounted on either of the TS32 or TS35 DIN rails in the horizontal or vertical positions as required. The location of the connectors on the FTA are shown in Figure 3.

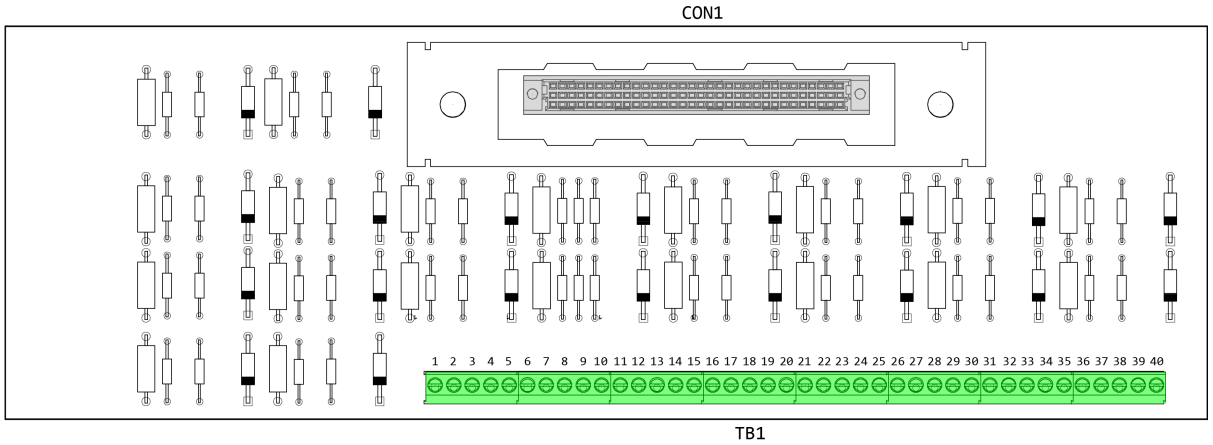

Figure 3 Connector Locations

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3. Associated Cable Selection

Refer to the Product Descriptions detailed below:

ICSTT-RM314 (PD-TC600) Trusted I/O SmartSlot Cables 60 Channel

ICSTT-RM315 (PD-TC700) Trusted I/O Companion Slot Cables 60 Channel

Note: 60 channel cables are used for this FTA due to the three wire per channel connection to the input module.

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4. Assembly Pinout Connections

4.1. CON1 Connections

CON1 is a 96 Way DIN 41612 socket. The connections are detailed below:

Pin	Row		
	A	B	C
1	N/C	N/C	N/C
2	N/C	N/C	N/C
3	CH1_VPOWER	CH1_COMMON	CH1_VSENSE
4	CH2_VPOWER	CH2_COMMON	CH2_VSENSE
5	CH3_VPOWER	CH3_COMMON	CH3_VSENSE
6	CH4_VPOWER	CH4_COMMON	CH4_VSENSE
7	CH5_VPOWER	CH5_COMMON	CH5_VSENSE
8	CH6_VPOWER	CH6_COMMON	CH6_VSENSE
9	CH7_VPOWER	CH7_COMMON	CH7_VSENSE
10	CH8_VPOWER	CH8_COMMON	CH8_VSENSE
11	CH9_VPOWER	CH9_COMMON	CH9_VSENSE
12	CH10_VPOWER	CH10_COMMON	CH10_VSENSE
13	CH11_VPOWER	CH11_COMMON	CH11_VSENSE
14	CH12_VPOWER	CH12_COMMON	CH12_VSENSE
15	CH13_VPOWER	CH13_COMMON	CH13_VSENSE
16	CH14_VPOWER	CH14_COMMON	CH14_VSENSE
17	CH15_VPOWER	CH15_COMMON	CH15_VSENSE
18	CH16_VPOWER	CH16_COMMON	CH16_VSENSE
19	CH17_VPOWER	CH17_COMMON	CH17_VSENSE

Pin	Row		
	A	B	C
20	CH18_VPOWER	CH18_COMMON	CH18_VSENSE
21	CH19_VPOWER	CH19_COMMON	CH19_VSENSE
22	CH20_VPOWER	CH20_COMMON	CH20_VSENSE
23	N/C	N/C	N/C
24	N/C	N/C	N/C
25	N/C	N/C	N/C
26	N/C	N/C	N/C
27	N/C	N/C	N/C
28	N/C	N/C	N/C
29	N/C	N/C	N/C
30	N/C	N/C	N/C
31	N/C	N/C	N/C
32	N/C	N/C	N/C

Table 1 CON1 Connections

4.2. TB1 Connections

TB1 is a row of screw terminals. Figure 3 shows how they are numbered. The connections are detailed below:

Pin	Service	Pin	Service
1	CH1_A	21	CH11_A
2	CH1_B	22	CH11_B
3	CH2_A	23	CH12_A
4	CH2_B	24	CH12_B
5	CH3_A	25	CH13_A
6	CH3_B	26	CH13_B
7	CH4_A	27	CH14_A
8	CH4_B	28	CH14_B
9	CH5_A	29	CH15_A
10	CH5_B	30	CH15_B
11	CH6_A	31	CH16_A
12	CH6_B	32	CH16_B
13	CH7_A	33	CH17_A
14	CH7_B	34	CH17_B
15	CH8_A	35	CH18_A
16	CH8_B	36	CH18_B
17	CH9_A	37	CH19_A
18	CH9_B	38	CH19_B
19	CH10_A	39	CH20_A
20	CH10_B	40	CH20_B

Table 2 TB1 Connections

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5. Specifications

Field supply	Field loop voltage 24 Vdc (nominal)
Power dissipation	0.315 W / channel (30 mA loop current); 6.3 W total maximum
Isolation Field Common Channel - Channel Circuits to chassis ground (Slider clamp / DIN rail)	 N/A 50 V Reinforced (continuous) (1) [Type tested at 1411 Vdc for 60 s]. 50 V Reinforced (continuous) (1) 250 V Basic (fault) (2) [Type tested at 2436 Vdc for 60 s].
Field Current Loop (Per Channel)	2 mA to 30 mA
Field Loop Volt Drop at 20 mA	9.5 V
Operating Temperature	0 °C to +60 °C (+32 °F to +140 °F)
Storage Temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative Humidity – Operating and Storage	10 % – 95 %, non-condensing
Environmental Specifications	Refer to Document ICSTT-TD003
Dimensions	
Height	120 mm (4.72 in)
Width	336 mm (13.23 in)
Depth	50 mm (1.97 in)
Weight	500 g (1.1 lb)

Note 1) 50 Vrms Secondary circuit derived from Mains, OVC II up to 300V.

Note 2) 250 Vrms Mains circuit, OVC II up to 300V. Exposure to voltages at these levels shall be temporally constrained consistent with the system MTTR.