



Trusted TMR 24 Vdc Analog Input Module 40 Channel

PD-T8431 Issue 19

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removing the keying pieces from the cable so that they correspond with the bungs fitted to the associated module before fitting.

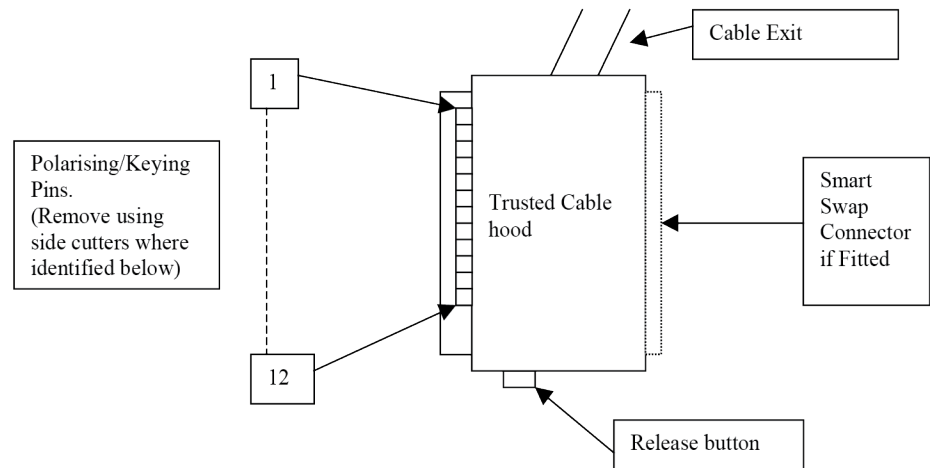


Figure 3: Module Polarization

For Cables with Companion Slot installations both keying strips must be polarized.

For this module (T8431) remove keying pins 1, 4, and 5.

Application

Module configuration

There is no configuration required to the physical Input Module. All configurable characteristics of the Module are performed using tools on the Engineering Workstation (EWS) and become part of the application or System.INI file that is loaded into the TMR Processor. The TMR Processor automatically configures the Input Module after applications are downloaded and during Active/Standby changeover.

The IEC 61131 TOOLSET provides the main interface to configure the Input Module. Details of the configuration tools and configuration sequence are provided in Trusted Toolset Suite Product Description, publication [ICSTT-RM249](#) (PD-T8082). There are three procedures necessary to configure the Input Module. These are:

1. Define the necessary I/O variables for the field input data and module status data using the Dictionary Editor of the IEC 61131 TOOLSET.
2. Create an I/O Module definition in the I/O Connection Editor for each I/O Module. The I/O Module definition defines physical information, e.g. Chassis and Slot location, and allows variables to be connected to the I/O channels of the Module.
3. Using the Trusted® System Configuration Manager, define custom LED indicator modes, per-channel threshold levels and noise filtering, and other Module settings.

T8431 Complex Equipment Definition

The T8431 I/O Complex Equipment Definition includes eight I/O boards, referenced numerically by Rack number:

Table 3 Complex Equipment Definition

Rack	I/O Board	Description	Data Type	Direction	No. of channels
1	THRSHIN	OEM Parameters	-	-	-
		Field Input Status	Integer	In	9
2	STATE	Field Input State	Integer	In	40
3	AI	Field Input Engineering Unit	Integer	In	40
4	THRSHOUT	Threshold data	Integer	Out	11
5	LINE_FLT	Line Fault Status	Boolean	In	40
6	DISCREP	Channel Discrepancy	Integer	In	3
7	HKEEPING	Housekeeping Registers	Integer	In	51
8	INFO	I/O Module Information	Integer	In	11

There are two OEM parameters included in the first rack (THRSHIN Board). These OEM parameters define the primary module position; declaring the Module's chassis and slot location. There is no need to define the secondary

The 'Primary Module is active' channel is set to nonzero if the primary module is the current Active Module, i.e. the Active Module is in the chassis and slot numbers defined within the OEM parameters.

The 'Active Module is simulated' channel is set to nonzero if the Active Module is being simulated, this will only be set if the Module is not present and the simulation enable has been set within the module's configuration in the System.INI file.

Sequence of Events configuration

Each Boolean Input Variable can be configured for automatic Sequence of Events (SOE) logging. This applies to the Input Status and Line Fault Status variables. A Boolean variable is configured for SOE during the variable definition in the Data Dictionary Editor. To select SOE, press the Extended Button in the Boolean Variable Definition Dialog Box to open the Extended Definition Dialog. Then check the box for Sequence of Events to enable the variable for automatic SOE logging.

During operation, the Input Module automatically reports time-stamped change of state information for the input data. The TMR Processor automatically logs change of state for configured SOE variables into the system SOE Log. The SOE Log can be monitored and retrieved using the SOE and Process Historian Package running on the EWS. This software package is described in Trusted Sequence of Events and Process Historian Package Product Description, publication [ICSTT-RM243](#) (PD-T8013).

System.INI file configuration

There are many operating characteristics of the Input Module that can be customized for a particular application. The System Configuration Manager is a tool that allows the user to configure the specific operating characteristics for each Module. Descriptions of the items that may be configured for the Trusted 24 Vdc Analog Input Module T8431 are contained in Trusted Toolset Suite Product Description, publication [ICSTT-RM249](#) (PD-T8082).

Certain characteristics apply to the entire Module and are considered Module Configurable Items. Other characteristics apply to individual input channels and are considered Channel Configurable Items. There are specific default settings for each of the configurable items. If the default settings are appropriate for a given application, customization of the module definition in the System Configuration Manager is not required.

Specifications

This table lists the module specifications:

Item	Description
Backplane (IMB) Supply	
Voltage	20 Vdc to 32 Vdc
Power	20 W
Field Supply	N/A
Maximum Power Dissipation	20 W
Module Location	T8100, T8300 I/O Module Slot
Isolation	
Field Common	50 V Reinforced (continuous) ¹ 250 V Basic (fault) ² [Type tested at 2436 Vdc for 60 s].
Channel to Channel	None
Fusing	None
Number of Inputs	40
Input	
Impedance (FTA)	250 Ohm
Impedance (module) ³	16.967 K Ohm
Current	0 mA – 22 mA
Voltage	0 Vdc – 5.5 Vdc
Thresholds	Configurable
Resolution (LSB)	3.906 μ A
Safety Accuracy	$\pm 200 \mu$ A
Calibration Accuracy ⁴	± 0.15 %
Intrinsic Safety	None - External barrier required
Sequence of Events	
Event Resolution (LSB)	1 ms
Time stamp Accuracy	± 10 ms
Operating Temperature	0 °C to +60 °C (+32 °F to +140 °F)
Storage Temperature	-25 °C to +70 °C (-13 °F to +158 °F)
Relative Humidity – Operating and Storage	10% – 95%, noncondensing
Environmental Specifications	Refer to Trusted 8000 Series International Safety and Environmental Approvals, publication ICSTI-ID003
Dimensions	
Height	266 mm (10.5 in)

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

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.

³ In the case where partner modules are fitted then the effective Module input impedance is halved.

⁴ Refer to T8094 Trusted Safety Manual for guidance on calibration maintenance.

Item	Description
Width	31 mm (1.2 in)
Depth	303 mm (12.0 in)
Weight	1.149 kg (2.5 lb)