ICS Triplex T8431C

Trusted TMR 40-Channel Analog Input Module

ICS Triplex T8431C is the conformally coated 40-channel Trusted TMR analog input module. T8431C receives process measurements from field loops and provides triplicated signal processing with channel, line-fault and module diagnostics.



Technical Specifications

Product Identity	
Manufacturer	Rockwell Automation, Inc.
Model	T8431C
Platform	Trusted TMR
Product type	Analog input module
Coating	Conformal coating, C suffix
Functional Configuration	
Input channels	40
Typical process signal	4–20 mA
FTA current-conversion resistor	250 Ω
Performance & Power	
Measurement range	0–22 mA / 0–5.5 V
Current resolution	3.906 µA
IMB supply	20–32 V DC
Channel-to-channel isolation	None
Environment	
Operating temperature	0–60 °C

Selected original manufacturer pages follow on pages 3–7.

Compatibility & Selection Guide

System compatibility. Use the Trusted IEC 61131 TOOLSET and System Configuration Manager for module assignment, engineering units, thresholds and diagnostic variables. Match the FTA, cable and hardware/firmware revision. For Series C units dated T2108 or later, verify the applicable correction for product notice 2025-08-002 before deployment.

Wiring & Installation Reference

Analog-loop and termination checks

Process loops. 40 analog inputs · Typical 4–20 mA service

FTA conversion. 250 Ω · Check loop loading with redundant modules

Cable keying. Remove pins 1, 4 and 5 · Key both strips for companion slots

Mounting and handling

Inspect the module. Use static precautions. Do not install a damaged housing or bent connector pins, and do not open the housing.

Check cable and slot keys. Fit the correct field cable and check the module-specific key positions before inserting the module.

Seat and lock. Open the ejector tabs, insert without force, press the top and bottom fascia fully home, then close both ejectors until locked.

Installation precautions. Use static precautions and inspect connector pins before installation. Do not force the module into a slot or remove its housing. Review the complete FTA wiring and applicable product-notice/firmware status before commissioning.

View terminal diagram (PDF) · PDF page 4 | View mounting diagram · PDF page 3

Manufacturer sources: ICSTT-RM273Q-EN-P, August 2021 / Trusted System declaration, ICSTT-CT004L-EN-E; suffix C denotes conformal coating / Product Notice 2025-08-002, version 1.0, August 2025.

Installation

Module insertion and removal

Before installation, visually inspect the module for damage. Ensure that the module housing appears undamaged and inspect the I/O connector at the back of the module for bent pins. If the module appears damaged or any pins are bent, do not install the module. Do not try to straighten bent pins. Return the module for replacement.

Ensure that the module is of the correct type.

Record the module type, revision and serial number of the module before installation.



WARNING: The module contains static sensitive parts. Static handling precautions must be observed. Specifically ensure that exposed connector pins are not touched. Under no circumstances should the module housing be removed.

To install the module:

1. Ensure that the field cable assembly is installed and correctly located.
2. Release the ejector tabs on the module using the release key. Ensure that the ejector tabs are fully open.
3. Holding the ejectors, carefully insert the module into the intended slot.
4. Push the module fully home by pressing on the top and bottom of the module fascia.
5. Close the module ejectors, ensuring that they click into their locked position.

The module should mount into the chassis with a minimum of resistance. If the module does not mount easily, do not force it. Remove the module and check it for bent or damaged pins. If the pins have not been damaged, try reinstalling the module.

Field cable selection

I/O cables suitable for use with the Trusted® TMR 24 Vdc Analog Input Module are detailed in these publications:

- Trusted I/O Companion Slot Cables Product Description, publication ICSTT-RM311 (PD-TC200)
- Trusted I/O SmartSlot Cables Product Description, publication ICSTT-RM313 (PD-TC500)

The publications listed above also detail the types of Field Termination Assembly (FTA) or Versatile Field Termination Assembly (VFTA) that may be used with this type of module.

Module pin-out connections

This table describes the module pin-out connections:

Table 2 Field Connector Pin-out

	C	B	A
1	SmartSlot Link C	SmartSlot Link B	SmartSlot Link A
2			
3	Chan 28 (+)	Chan 14 (+)	Chan 0 (+)
4	Chan 28 (+)	Chan 14 (+)	Chan 0 (+)
5	Chan 29 (+)	Chan 15 (+)	Chan 1 (+)
6	Chan 29 (+)	Chan 15 (+)	Chan 1 (+)
7	Chan 30 (+)	Chan 16 (+)	Chan 2 (+)
8	Chan 30 (+)	Chan 16 (+)	Chan 2 (+)
9	Return	Return	Return
10	Chan 31 (+)	Chan 17 (+)	Chan 3 (+)
11	Chan 31 (+)	Chan 17 (+)	Chan 3 (+)
12	Chan 32 (+)	Chan 18 (+)	Chan 4 (+)
13	Chan 32 (+)	Chan 18 (+)	Chan 4 (+)
14	Chan 33 (+)	Chan 19 (+)	Chan 5 (+)
15	Chan 33 (+)	Chan 19 (+)	Chan 5 (+)
16	Chan 34 (+)	Chan 20 (+)	Chan 6 (+)
17	Chan 34 (+)	Chan 20 (+)	Chan 6 (+)
18	Chan 35 (+)	Chan 21 (+)	Chan 7 (+)
19	Chan 35 (+)	Chan 21 (+)	Chan 7 (+)
20	Return	Return	Return
21	Chan 36 (+)	Chan 22 (+)	Chan 8 (+)
22	Chan 36 (+)	Chan 22 (+)	Chan 8 (+)
23	Chan 37 (+)	Chan 23 (+)	Chan 9 (+)
24	Chan 37 (+)	Chan 23 (+)	Chan 9 (+)
25	Chan 38 (+)	Chan 24 (+)	Chan 10 (+)
26	Chan 38 (+)	Chan 24 (+)	Chan 10 (+)
27	Chan 39 (+)	Chan 25 (+)	Chan 11 (+)
28	Chan 39 (+)	Chan 25 (+)	Chan 11 (+)
29	Chan 40 (+)	Chan 26 (+)	Chan 12 (+)
30	Chan 40 (+)	Chan 26 (+)	Chan 12 (+)
32	Chan 41 (+)	Chan 27 (+)	Chan 13 (+)
32	Chan 41 (+)	Chan 27 (+)	Chan 13 (+)

Trusted module polarization and keying

All Trusted modules have been Keyed to prevent insertion into the wrong position within a chassis. The polarization comprises two parts: the module and the associated field cable.

Each module type has been Keyed during manufacture. The organization responsible for the integration of the Trusted System must key the cable by

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

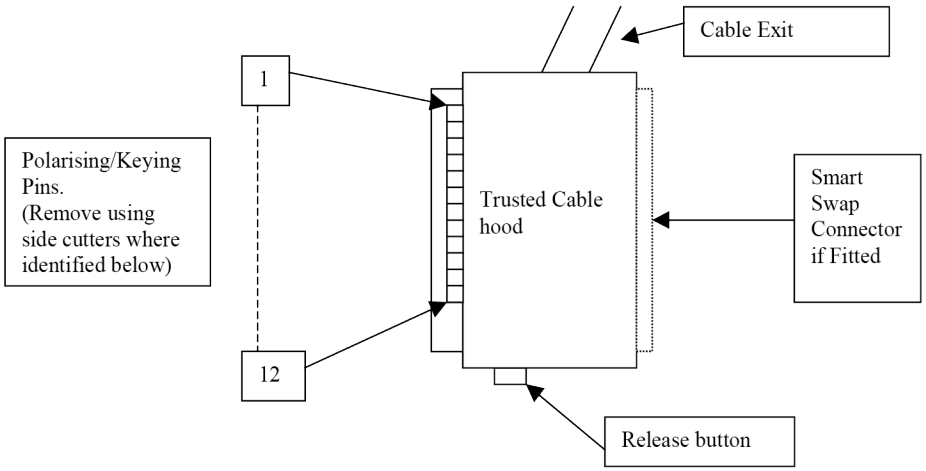


Figure 3: Module Polarization

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

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

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 µA
Safety Accuracy	±200 µA
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 ICSTT-TD003
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)