



3720

64-Point Isolated 0–5 VDC TMR Analog Input Module

Product scope

- Handles sixty-four isolated, single-ended 0–5 VDC analog input points.
- Refreshes the input image at a documented 10 ms rate.
- Supports software-selectable 12-bit or 14-bit conversion.

Manufacturer source

Tricon Product Guide 01-9302048-MM-001, Analog Input Module Specifications.

This web-optimized copy retains only product-relevant manufacturer information.

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3720 verified technical reference

64-Point Isolated 0–5 VDC TMR Analog Input Module

Exact product identity

Triconex 3720 is a 64-point isolated 0–5 VDC TMR analog input module with a 10 ms update rate and programmable 12- or 14-bit resolution.

Manufacturer	Triconex
Model	3720
Product family	Tricon v9–v11 Analog Input Modules
Product type	Isolated TMR Analog Input Module
Voltage range	0–5 VDC, +6%
Architecture	TMR analog input
Input points	64 single-ended
Isolation	Isolated
Input update rate	10 ms
Resolution	12 or 14 bits programmable
Accuracy	<0.15% FSR, 0°C to 60°C
Input resistance	10 M Ω minimum
Power-off resistance	140 k Ω typical
Leg-to-leg isolation	420 k Ω typical
Input overrange protection	150 VDC / 115 VAC continuous
Current range	0–20 mA, +6% overrange, 250 Ω shunt

Manufacturer source

Tricon Product Guide 01-9302048-MM-001, Analog Input Module Specifications.

Only facts that can be matched to the exact ordering code are included in this product reference.

Product Specifications

Analog Input Module Specifications

Model Number	3704E	3720	3721
Voltage	0-5V or 0-10V ^a , + 6%	0-5VDC, + 6%	0 to 5 VDC or -5 to +5 VDC ^a , + 6%
Type	TMR, AI	TMR, AI	TMR, AI
No. of Input Points	64, commoned	64, single-ended	32 differential, DC-coupled
Isolated Points	No	Yes	Yes
Input Update Rate	75 ms	10 ms	10 ms
Resolution	12 bits	12 bits or 14 bits programmable	12 bits or 14 bits programmable
Accuracy	< 0.25% of FSR from 0° to 60° C	< 0.15% of FSR from 0° to 60° C	< 0.15% of FSR from 0° to 60° C
Input Resistance (load)	30 MΩ (DC), min.	10 MΩ (DC), min.	10 MΩ (DC), min.
Power-Off Resistance	30 kΩ (DC), typical	140 kΩ (DC), typical	140 kΩ (DC), typical
Common Mode Rejection	n/a	n/a	-85 dB (DC - 100 Hz)
Common Mode Range	n/a	n/a	-12V to +12V peak
Leg-to-Leg Isolation	200 kΩ, typical	420 kΩ, typical	420 kΩ, typical
Normal Mode Rejection	-1 dB @ 8Hz -12 dB @ 60Hz -18 dB @ 120Hz	-3 dB @ 8Hz -17 dB @ 60Hz -23 dB @ 120Hz	-3 dB @ 23 Hz -8 dB @ 60 Hz -14 dB @ 120 Hz
Input Overrange Protection	150 VDC/115 VAC continuous	150 VDC/115 VAC continuous	150 VDC/115 VAC continuous
Current Range	0-20 mA, 250 Ω shunt for 5V 500 Ω shunt for 10V	0-20 mA (plus 6% over-range) with 250 Ω shunt resistor	0-20 mA with 250 Ω shunt resistor
Diagnostic Indicators			
Module Status	PASS, FAULT, ACTIVE	PASS, FAULT, ACTIVE, FIELD	PASS, FAULT, ACTIVE, FIELD
Color Code	Copper	Yellow	Yellow

a. The voltage is selected using the TriStation 1131 software.

Analog Output Modules

Analog Output (AO) modules receive output signals from the Main Processor module on each of three channels. Each set of data is then voted and a healthy channel is selected to drive the outputs. Each module monitors its own current outputs (as input voltages) and maintains an internal voltage reference to provide self-calibration and module health information.

Each channel on a module has a current loopback circuit which verifies the accuracy and presence of analog signals independently of load presence or channel selection. The module's design prevents a non-selected channel from driving an analog signal to the

field. In addition, ongoing diagnostics are performed on each channel and circuit of the module. Failure of any diagnostic test deactivates the faulty channel and activates the Fault indicator and the chassis alarm. The module Fault indicator merely indicates a channel fault, not a module failure. The module continues to operate properly with as many as two channels failed. Open loop detection is provided by a LOAD indicator which activates if the module is unable to drive current to one or more outputs.

The module provides for redundant loop power sources with individual power and fuse indicators called PWR1 and PWR2. External loop power

supplies for analog outputs must be provided by the user. A LOAD indicator activates if an open loop is detected on one or more output points. PWR1 and PWR2 are on if loop power is present.

AO modules support hot- spare capability, which allows online replacement of a faulty module.

AO modules require a separate external termination panel (ETP) with a cable interface to the Tricon controller backplane. Each module is mechanically keyed to prevent improper installation in a configured chassis.



3720 engineering review

64-Point Isolated 0–5 VDC TMR Analog Input Module

Configuration and integration

Triconex 3720 provides sixty-four isolated, single-ended analog inputs for 0–5 VDC field signals. Triplicated acquisition paths deliver each measurement to the main processors for fault-tolerant selection.

The module updates inputs in 10 ms and allows 12-bit or 14-bit resolution to be selected in the engineering configuration. Measurement accuracy is specified below 0.15% of full scale across the stated temperature range.

A separate external termination panel connects field wiring to the backplane. Confirm the required resolution, 250-ohm current shunts, field references and termination cable before replacement.

Installation attention

3720 resolution is programmable; preserve the 12/14-bit setting and verify the isolated single-ended termination path before moving channel data.

Verified functional points

Applications

- Aggregates dense banks of 0–5 VDC instrumentation in high-availability control cabinets.
- Reads 0–20 mA transmitter loops through the specified 250-ohm input shunt.
- Supports fast-changing process measurements where a 10 ms input refresh is required.

Scan Performance

- All sixty-four single-ended points are refreshed within the documented 10 ms input interval.
- Programmable 12-bit or 14-bit conversion lets the project balance resolution and configuration requirements.
- Full-scale error remains below 0.15% between 0°C and 60°C.

Isolation

- The input-point arrangement is identified as isolated rather than commoned.
- A 140-kilohm typical resistance is maintained when module power is removed.
- The field design still requires correct reference and shield treatment at the external termination panel.

Scaling

- The native voltage range is 0–5 VDC with the documented overrange allowance.
- A 250-ohm shunt supports 0–20 mA loop measurements at the input terminals.
- Engineering units and alarm limits must be recalculated if the selected conversion resolution changes.

Source record

Tricon Product Guide 01-9302048-MM-001, Analog Input Module Specifications.



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