Analog Input Modules

Analog Input (AI) Modules includes three independent input channels. Each input channel receives variable voltage signals from each point, converts them to digital values, and transmits the values to the three Main Processor modules on demand. In TMR mode, one value is then selected using a mid-value selection algorithm to ensure correct data for every scan.

Sensing of each input point is performed in a manner that prevents a single failure on one channel from affecting another channel. Each Analog Input Module sustains complete, ongoing diagnostics for each channel. Failure of any diagnostic on any channel activates the Fault indicator for the module, which in turn activates the chassis alarm signal. The module's Fault indicator merely reports a channel fault, *not* a module failure—the module can operate properly with as many as two faulty channels.

Analog Input Modules support hot-spare capability, which allows online replacement of a faulty module.

Analog Input Modules require a separate external termination panel (ETP) with a cable interface to the Tricon controller backplane. Each module is mechanically keyed for proper installation in a Tricon chassis.

Analog Input Module Specifications

Model Number	3700/3700A	3701	3703E
Voltage	0-5V, + 6% (only 3700A)	0-10V	0-5V or 0-10V[a], + 6%
Type	TMR, AI	TMR, AI	TMR, AI
No. of Input Points	32, diff, DC coupled	32, diff, DC coupled	16, diff, isolated
Isolated Points	No	No	Yes
Input Update Rate	55 ms	55 ms	50 ms
Resolution	12 bits	12 bits	12 bits
Accuracy	< .15% of FSR, from 0° to 60° C	< .15% of FSR, from 0° to 60° C	< .15% of FSR, from 0° to 60° C
Input Resistance (load)	30 MΩ (DC), min.	30 MΩ (DC), min.	30 MΩ (DC), min.
Power-Off Resistance	30 KΩ (DC), typical	30 KΩ (DC), typical	30 MΩ (DC), min.
Common Mode Rejection	-80 dB (DC-100Hz), typical	-80 dB (DC-100Hz), typical	-90 dB @ 60Hz, min. -100 dB @ DC, min.
Common Mode Range	-12V to +12V peak	-12V to +12V peak	±200V peak
Leg-to-Leg Isolation	200 KΩ, typical	200 KΩ, typical	20 KΩ, typical
Normal Mode Rejection			
@ 8Hz @ 60Hz @ 120Hz	-3 dB -17 dB -23 dB	-3 dB -17 dB -23 dB	-3 dB -17 dB -23 dB
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	0-20 mA, 500 Ω shunt	0-20 mA, 250 Ω shunt for 5V 500 Ω shunt for 10V
Diagnostic Indicators			
Module Status	Pass, Fault, Active	Pass, Fault, Active	Pass, Fault, Active
Color Code	Yellow	Light yellow	Mustard yellow

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

3674	Dual DO, 24 VDC, self-protected, 32 pts.	9662-610F	n/a	9653-610F	9671-610F	n/a	9101-010F	n/a	9671-810F[b]
Module Model #	**Module Description**	**Commoned Term Panels**	**Non-Common. Term Panels**	**Basic Term Panels**	**Nonincendive Term Panels**	**RG 1.180 Term Panels**	**Fanned-out Cables**	**Bypass Panels**	**ERT Loop-Back Cables/Panels**
3805E 3805H	AO, 4–20 mA, 8 pts.	n/a	n/a	9853-610F	9861-610F	9860-610F	n/a	n/a	n/a
2870H	AO HART Interface	n/a	n/a	9853-610F	9861-610F	9860-610F	n/a	n/a	n/a
3806E	AO, 6 4–20 mA outputs, 2 20–320 mA outputs	n/a	n/a	9863-710F (special panel)	n/a	n/a	n/a	n/a	n/a
3807	AO, 4 bipolar -60 to 60 mA outputs	9881-810F	n/a	n/a	9871-810F	n/a	n/a	n/a	n/a
Module Model #	**Module Description**	**Upscale**	**Downscale**	**Basic Term Panels**	**Nonincendive Term Panels**	**RG 1.180 Term Panels**	**Fanned-out Cables**	**Bypass Panels**	**ERT Loop-Back Cables/Panels**
3706A	Thermocouple input, type J, K, T, differential, 32 pts.	9766-210F	9766-510F	n/a	9784-610F, upscale 9785-610F, downscale	n/a	n/a	n/a	n/a
3708E	Thermocouple input, type E, J, K, T, isolated, 16 pts.	9765-610F	9765-610F	n/a	9786-110F	9782-110F	n/a	n/a	n/a
Module Model #	**Module Description**	**3-Wire 4-20 mA**	**Voltage**	**2-Wire 4-20 mA**	**Nonincendive Term Panels**	**RG 1.180 Term Panels**	**Basic**		**RTD/TC/AI**
3700 3700A	AI, 0–5 VDC, differential, 32 pts.	n/a	9763-810F	9761-210F, 0–5 V 9771-210F, 0–5 V	9791-610F, current input 9787-110F, voltage input	9790-610F, current input 9792-610F, 4-20 mA, 0-5 V, 16 VDC-56 VDC field 9783-110F, voltage input 9764-310F, RTD/TC/AI input[c]	9753-110F, 0–5 V		9764-310F[c]
2770H	AI HART Interface	n/a	n/a	9761-210F, 0–5 V 9771-210F, 0–5 V	9791-610F, current input	9790-610F, current input	n/a		n/a
3701	AI, 0–10 VDC, differential, 32 pts.	n/a	9763-810F	9761-410F	n/a	n/a	9753-110F, 0–10 V		n/a
3703E[d]	AI, 0–5/0–10 VDC, isolated, 16 pts.	n/a	9763-810F	9762-210F, 0–5 V 9762-410F, 0–10 V 9771-210F, 0-5 V	9791-610F, current input 9787-110F, voltage input	9790-610F, 4–20 mA, 0–5 V 9792-610F, 4-20 mA, 0-5 V, 16 VDC-56 VDC field 9795-610F, 4–20 mA, 0–10 V 9783-110F, voltage input	9753-110F, 0–5/0–10 V		n/a
3704E[d]	AI, 0–5/0–10 VDC, non-isolated, 64 pts.	9765-210F, 0–5V	n/a	9760-210F, 0–5 V 9760-410F, 0–10 V	9789-610F, 4–20 mA	n/a	9750-210F, 4–20 mA 9750-810F, 0–5/0–10 V		n/a
3720	AI, 0–5 VDC, single-ended, 64 pts.	9765-210F, 0–5 V	n/a	9760-210F, 0–5 V	9789-610F, 4–20 mA	n/a	9750-210F, 4–20 mA 9750-810F, 0–5 V		n/a
3721[d]	AI, 0 to 5 VDC or –5 to +5 VDC, differential, 32 pts.	n/a	9763-810F	9761-210F, 0–5 V 9761-410F, 0–10 V 9771-210F, 0–5 V	9791-610F, current input 9787-110F, voltage input	9790-610F, 4–20 mA, 0–5 V 9792-610F, 4-20 mA, 0-5 V, 16 VDC-56 VDC field 9795-610F, 4–20 mA, 0–10 V 9783-110F, voltage input 9764-310F, RTD/TC/AI input[c]	9753-110F, 0–5 V		9764-310F[c]

a. Point blown-fuse indicator will not illuminate when point fuse is removed. Each point is commoned.

b. Point blown-fuse indicator will not illuminate when point fuse is removed. Each point is self-protected and commoned.

c. Signal conditioners must be ordered separately. A total of 16 is required for each termination panel.

d. Must be configured using the TriStation 1131 software.