Analog Input Module Specifications

Model Number	3704E	3720	3721
Voltage	0-5V or 0-10V[1], + 6%	0-5VDC, + 6%	0 to 5 VDC or -5 to +5 VDC[1], + 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

1. The voltage is selected using TriStation 1131.

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 backplane. Each module is mechanically keyed to prevent improper installation in a configured chassis.

The Model 3805H module has been modified to support increased inductive

loads. It is fully compatible for use in all applications of the 3805E module.

The Model 3806E and Model 3807 modules are optimized for turbomachinery control.

The Model 3806E High Current AO Module has two 20 to 320 mA outputs to drive servo actuators.

The Model 3807 BiPolar AO Module has four -60 to + 60 mA outputs to drive servo coils in servo-control applications. The termination panel for the Model 3807 contains four hard-wired coil diagnostic inputs. The Model 3807 is designed for control applications only, and should not be used in safety applications.

Analog Output Module Specifications

Model Number	3805E/3805H	3806E	3807
Type	TMR, AO	TMR, AO	TMR, AO
Output current range	4-20 mA output (*+6% overrange)*	4-20 mA and 20-320 mA	-60 to 60 mA
Number of points	8 output	6 (4-20 mA) output; 2 (20-320 mA) output	4 bipolar output
Isolated points	No, commoned return, DC coupled	No, commoned return, DC coupled	No, commoned return, DC coupled
Resolution	12 bits	12 bits	13 bits
Output Accuracy	<0.25% (in range of 4-20 mA) of FSR (0-21.2 mA), from 32° to 140° F (0° to 60° C)	<0.25% (in range of 4-20 mA) of FSR (0-21.2 mA and 0-339.2 mA), from 32° to 140° F (0° to 60° C)	< 0.25% (in range of -60 to 60 mA) of Full Scale Range (FSR), from 0° to 60° C. FSR = 120 mA.
External loop power (reverse voltage protected)	+42.5 VDC, maximum +24 VDC, nominal	+42.5 VDC, maximum +24 VDC, nominal	24 VDC –15%/+20%, +5% ripple
Output loop power requirements		Max. load vs. external loop voltage	
Load (Ohms)	Loop power required	*4-20 mA* *16-320 mA*	Independent; For ± 60mA, maximum load is 150 ohms and is independent of variations in external loop power supply voltage.
250	> 20 VDC (1 amp minimum)	20 VDC ≤ 275 ≤15	
500	> 25 VDC (1 amp minimum)	24 VDC ≤ 475 ≤25	
750	> 30 VDC (1 amp minimum)	28 VDC ≤ 650 ≤40	
1000	> 35 VDC (1 amp minimum)	32 VDC ≤ 825 ≤50	
Over-range protection	+42.5 VDC, continuous	< +42.5 VDC	+36 VDC, continuous
Switch time on leg failure	< 10 ms, typical	< 10 ms, typical	< 10 ms, typical
Diagnostic Indicators			
Module status (one each per module)	PASS, FAULT, ACTIVE, LOAD, PWR1, PWR2	PASS, FAULT, ACTIVE, LOAD, PWR1, PWR2	PASS, FAULT, ACTIVE, LOAD, PWR1, PWR2
Color code	Pea green	Light green	Light green