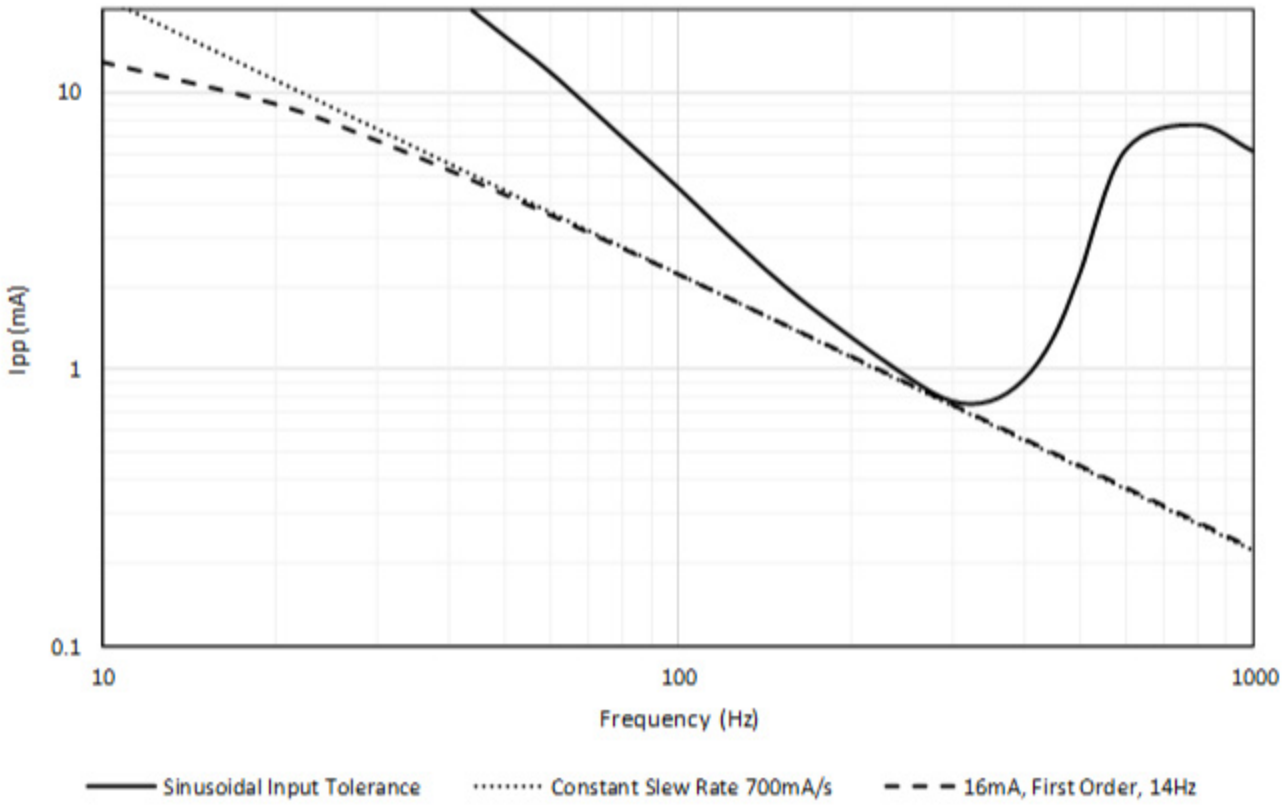
Figure 32 - Analogue Input Slew Tolerance



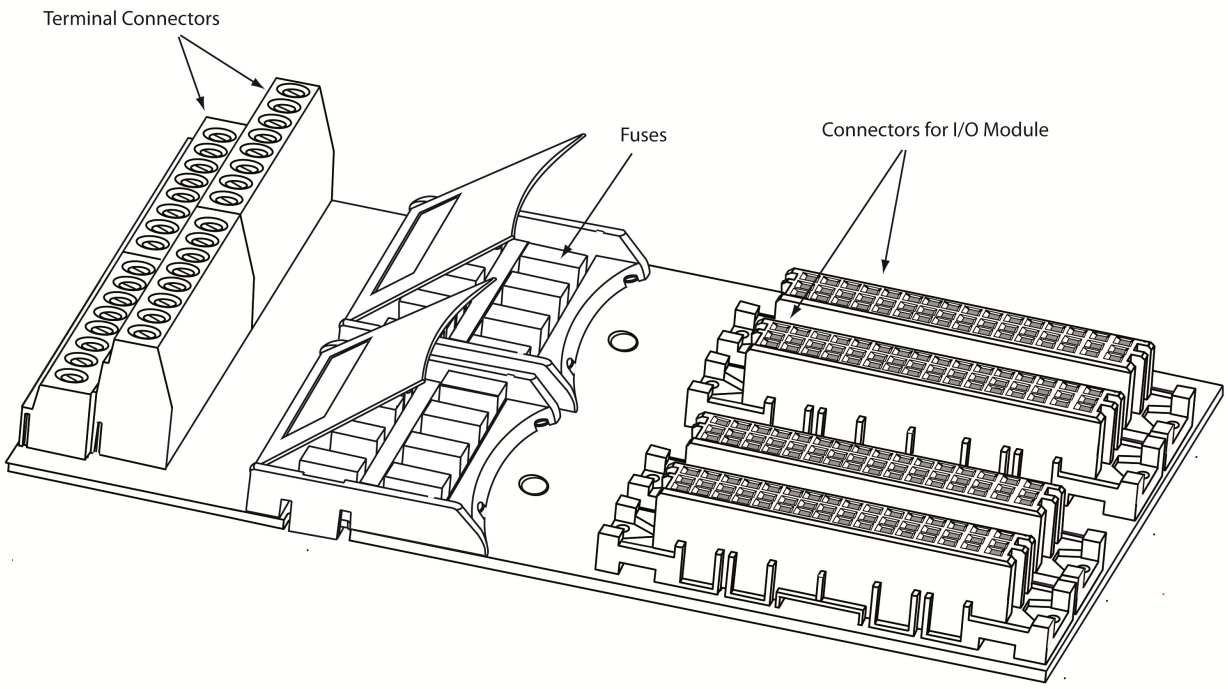
Transgression of the slew rate limits identified above may lead to channel failure resulting from diagnostics otherwise designed to verify that channels are operating within their defined safety accuracy.

T9831/2/3 Termination Assemblies for Analogue Inputs

There are three termination assemblies for use with analogue input modules for simplex, dual and triple modular redundant configurations.

A T9831 termination assembly is for a simplex application and has terminations for 16 non-isolated analogue inputs. It supports one T9431 or T9432 analogue input module. The T9832 and T9833 termination assemblies support 16 isolated analogue inputs for dual and triple modular redundant arrangements of analogue input modules. Illustrated is the T9832 termination assembly:

Figure 33 - Digital/Analogue Input Termination assembly



The termination assembly protects each sensor input signal by a 50 mA fuse. Fuses can be replaced without removing an I/O module or termination assembly.

Analogue Input Termination Assembly

A T9831 termination assembly is for a simplex configuration and has terminations for 16 non-isolated digital inputs. The T9832 and T9833 termination assemblies support 16 isolated digital inputs for dual and triple modular redundant arrangements of digital input modules.

Table 30 - T9831/2/3 Analogue Input TA Specification

Attribute	Value
Functional Characteristics	
Field connections	16; Wiring: Conductor cross section maximum 1.31mm^2 (16 AWG); Stripping length 6mm (¼ in.)
Number of input modules supported	
T9831	One
T9832	Two
T9833	Three
Electrical Characteristics	
Input channel fuses	50 mA, 125 V, Type T manufactured by Littelfuse
Channel load	(135 ± 0.2 %) Ω
Channel isolation:	

Table 30 - T9831/2/3 Analogue Input TA Specification

Attribute	Value
T9831	None
T9832/T9833	± 1.5 kVdc Maximum withstanding for 1 minute
Maximum field loop power dissipation	0.08 W for each field loop (0.27 BTU/hr)

T9451 Digital Output Module, 24Vdc, 8 channel

The T9451 digital output module has 8 channels for a maximum of 8 field elements and can switch 1 A at 32 Vdc for each device. It features voltage and load current monitoring on each channel, reverse current protection and short and open circuit line monitoring. It is designed to always be able to switch off an output when demanded. No single failure in the module can cause a stuck-on failure. The module supports dual redundant power feeds for field devices without the need for external diodes.

The output module isolates the processor module from the output channel control and data management circuits, thus protecting the processor module from possible faults in the output control circuits and field connections. An output channel protection activates when the channel load exceeds a safe limit. And, a reverse voltage protection circuit in each output channel verifies that externally applied voltages do not supply current flow into the module outputs.

The module has self-checking functionality. Short circuit and open circuit line monitoring is supplied on all outputs (see article 605753 on the Rockwell Automation Knowledgebase website). Internal diagnostics do ongoing functionality checks ensuring that the output channel command data is correctly transferred to the output. The processor module initiates a test sequence on each output channel, checking for 'stuck-on' and 'stuck-off' conditions on the output switch pairs. Front panel LEDs give module, channel and field connection status indications. These status indications can also be connected to application variables and viewed at the Workbench.

When a controller uses a pair of digital output modules in a dual configuration, the two fail-safe output switches on each channel are combined in a parallel arrangement so that they automatically form a fault-tolerant output configuration.

The AADvance Workbench has settings for individual digital output channels:

- You can specify a shutdown state for an output channel that defines how the output will behave when the module is in a shutdown mode.
- You can disable the line test feature for an output that disables detection of a no-load condition (e.g. for used output channels).

T9451 Digital Output Module Specification

Table 31 - Digital Output Module Specification

Attribute	Value
Functional Characteristics	
Output channels	8
Performance Characteristics	