8-Point Supervised Digital Output Modules

Designed for the most critical applications, Supervised Digital Output (SDO) modules meet the needs of systems whose outputs remain in a single state for extended periods of time (in some applications, for years). An SDO module receives output signals from the Main Processors on each of three channels. Each set of three signals is then voted upon by a fully fault-tolerant quadruplicated output switch whose elements are mechanical power relays, so that one voted output signal is passed to the field termination.

Each SDO module has voltage and current loopback circuitry coupled with sophisticated online diagnostics that verify the operation of each output switch, the field circuit and the presence of a load. This design provides complete fault coverage without the need to influence the output signal.

The modules are called "supervised" because fault coverage is extended to include potential field problems. In other words, the field circuit is *supervised* by the SDO module so that the following field faults can be detected:

- Loss of power or blown fuse
- Open or missing load
- A field short resulting in the load being energized in error
- A shorted load in the de-energized state

Failure to detect field voltage on any output point energizes the power alarm indicator. Failure to detect the presence of a load energizes the load alarm indicator. When an optional secondary power supply is used, shorted loads in the Off state can be detected. (This feature is not provided on Model 3611E, an AC module.)

All SDO modules support hot-spare capability, and they require separate external termination panels (ETP) with a cable interface to the Tricon controller backplane.

8-Point Supervised Digital Output Module Specifications

Model Number	3611E	3617E
Nominal Voltage	115 VAC	48 VDC
Type	TMR, Supervised DO	TMR, Supervised DO
Points	8, commoned	8, commoned
Voltage Range	90-155 VAC	36-72 VDC
Frequency Range	47-63 Hz	n/a
Maximum Switching Power	2,000 VA (resistive)	150 W (resistive)
On State Voltage Drop[a]	< 2V, typical	< 2V, typical
Current Ratings, Maximum	2A per point 10A/AC cycle	1A per point 5A/10 ms
Minimum Required Load	50 mA	100 mA
Voltage Range of Secondary Power Supply	n/a	5.00 VDC ±.25 VDC
Chassis Leakage	1mA max. @ 60 Hz	n/a
Load Leakage	4 mA max.	4 mA max.
Fuses (on Field Termination)	1 per output (2.5A fast-acting)	1 per output (1.25A fast-acting)
Point Isolation	1,500 VDC, min.	1,500 VDC, min.
Diagnostic Indicators		
Output Status	POINT, PWR, LOAD,	POINT, PWR, LOAD,
Module Status	PASS, FAULT, ACTIVE	PASS, FAULT, ACTIVE
Color Code	Deep green	Mint green

a. **WARNING**: The voltage drop may be significantly higher in some applications.

Match your I/O module number in the first column with termination options on the right. An I/O module can be wired to a maximum of two termination panels, which may be of two different types—for example, commoned and non-commoned.

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
3501E 3501T	DI, 115 VAC/VDC, 32 pts.	9561-810F	9561-110F	9551-110F	n/a	n/a	9101-010F	n/a	9141-010F
3502E	DI, 48 VAC/VDC, 32 pts.	9562-810F	n/a	9552-610F	n/a	n/a	9101-010F	n/a	9142-010F
3503E	DI, 24 VAC/VDC, 32 pts.	9563-810F 9563-910F	n/a	9553-610F	9572-610F	n/a	9101-010F	BP9228-010F	9143-010F
3504E	DI, 24/48 VDC, non-isolated, 64 pts.	9566-810F, 24V 9565-810F, 48V	n/a	9750-310F, 24V 9750-410F, 48V	9570-610F, 24V n/a	n/a	n/a	BP9229-010F n/a	n/a
3505E	DI, 24 VDC, low threshold, 32 pts.	9563-810F 9563-910F	n/a	9553-610F	9572-610F	n/a	9101-010F	BP9228-010F	9143-010F
3510	PI, 20-20,000 Hz, 8 pts.	n/a	n/a	9753-110F	n/a	n/a	n/a	n/a	n/a
3511	PI, 20-20,000 Hz, 8 pts.	n/a	n/a	9753-110F	9793-110F	9794-110F	n/a	n/a	n/a
3515	Pulse totalizer, 24 VDC, 32 pts.	n/a	n/a	9753-110F	9572-610F	n/a	n/a	n/a	n/a
3564	DI, 24 VDC, single, 64 pts.	9566-710F	n/a	9553-610F	9571-610F	n/a	9101-010F	n/a	n/a
3601E	DO, 115 VAC, 16 pts.	9661-610F 9663-610F	9661-110F 9664-110F	9651-110F	n/a	n/a	9101-010F	n/a	9670-110F 9670-610F
3601T	DO, 115 VAC, 16 pts.	9663-610F	9664-110F	n/a	n/a	n/a	n/a	n/a	n/a
3603B	DO, 120 VDC, 16 pts.	n/a	9251–210	n/a	n/a	n/a	n/a	n/a	n/a
3603E	DO, 120 VDC, 16 pts.	9661-910F[a] 9664-810F[a]	n/a	9651-110F	n/a	n/a	9101-010F	n/a	9673-810F[a]
3603T	DO, 120 VDC, 16 pts.	9664-810F[a]	n/a	n/a	n/a	n/a	n/a	n/a	9673-810F[a]
3604E	DO, 24 VDC, 16 pts.	9662-810F	9662-110F	9653-610F	9671-610F	n/a	9101-010F	n/a	9671-810F
3607E	DO, 48 VDC, 16 pts.	9667-810F	9667-110F	9652-610F	n/a	n/a	9101-010F	n/a	9672-810F
3611E	DO, 115 VAC, 8 pts.	9661-510F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3613E	DO, 120 VDC, 8 pts.	9661-810F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3614E	DO, 24 VDC, 8 pts.	9662-910F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3615E	DO, 24 VDC, low power, 8 pts.	9662-710F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3617E	DO, 48 VDC, 8 pts.	9667-910F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3623	DO, 120 VDC, 16 pts.	9661-910F	n/a	9651-110F	n/a	n/a	9101-010F	n/a	n/a
3623T	DO, 120 VDC, 16 pts.	9664-810F	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3624	DO, 24 VDC, self-protected, 16 pts.	9662-610F	n/a	9653-610F	9671-610F	n/a	9101-010F	n/a	n/a
3625 3625A	DO, 24 VDC, self-protected, 32 pts.	9662-610F	n/a	9653-610F	9671-610F	n/a	9101-010F	n/a	9671-810F[b]
3636R 3636T	Relay output (non-triplicated), 32 pts.	n/a	9668-110F	9651-110F	n/a	n/a	9101-010F	n/a	n/a
3664	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]