Description	Model No.	See
Documentation Sets		
Tricon *Planning and Installation*, *Field Terminations*, and *Communication* printed manuals	Contact Invensys	
Triconex User Documentation, includes all manuals in PDF format (CD-ROM)	Contact Invensys	

a. I/O Bus Expansion Cables are available in custom lengths. Please contact Invensys for more information.

Tricon I/O Modules

Voltage	Description	Type	Model No.	Points	For Details, See
Digital Input Modules					
115 VAC/VDC	Opto-Isolated, Non-Commoned	TMR	3501E/3501T	32	page 41
48 VAC/VDC	Commoned in Groups of 8, Self-Test	TMR	3502E	32	page 41
24 VAC/VDC	Commoned in Groups of 8, Self-Test	TMR	3503E	32	page 41
24/48 VDC	High-Density, DC Coupled	TMR	3504E	64	page 42
24 VDC	Low Threshold with Self-test, Commoned	TMR	3505E	32	page 41
24 VDC	Single, Opto-Isolated, Commoned	Single	3564	64	page 42
Pulse Input	Differential, AC Coupled	TMR	3511	8	page 43
Pulse Totalizer	Opto-isolated, Non-commoned	TMR	3515	32	page 44
Digital Output Modules					
115 VAC	Opto-Isolated, Non-commoned	TMR	3601E/3601T	16	page 45
120 VDC	Opto-Isolated, Non-commoned Opto-Isolated, Commoned	TMR	3603B, 3603E/3603T	16	page 45
24 VDC	Opto-Isolated, Non-commoned	TMR	3604E	16	page 45
48 VDC	Opto-Isolated, Non-commoned	TMR	3607E	16	page 45
115 VAC	Galvanically Isolated, Commoned., Supv.	TMR	3611E	8	page 47
48 VDC	Galvanically Isolated, Commoned, Supv.	TMR	3617E	8	page 47
120 VDC	Opto-Isolated, Commoned, Supervised	TMR	3623/3623T	16	page 46
24 VDC	Opto-Isolated, Commoned, Supervised	TMR	3624	16	page 46
24 VDC	Supervised/Non-Supervised, Commoned	TMR	3625/3625A	32	page 46
24 VDC	Opto-Isolated, Commoned	Dual	3664	32	page 48
24 VDC	Opto-Isolated, Commoned	Dual	3674	32	page 48
Relay Output	Non-triplicated, Normally Open	Non-triplicated	3636R/3636T	32	page 43
Analog Input Modules					
0-5 VDC	Differential, DC Coupled	TMR	3700A	32	page 49
0-10 VDC	Differential, DC Coupled	TMR	3701	32	page 49
0-5, 0-10 VDC	Differential, Isolated	TMR	3703E	16	page 49
0-5, 0-10 VDC	High-Density, Differential, DC Coupled	TMR	3704E	64	page 49
Thermocouple	Differential, DC Coupled	TMR	3706A	32	page 52
Thermocouple	Differential, Isolated	TMR	3708E	16	page 52

16-Point Supervised and 32-Point Supervised/Non-Supervised Digital Output Modules

Designed for the most critical control programs, 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 power transistors, 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.

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

16-Point and 32-Point Supervised Digital Output Module Specifications

Model Number	3623/3623T[a]	3624	3625/3625A[b]
Nominal Voltage	120 VDC	24 VDC	24 VDC
Type	TMR, Supervised DO	TMR, Supervised DO	TMR, Supervised/Non-Supervised DO
Output Signals	16, commoned	16, commoned	32, commoned
Voltage Range	90-150 VDC	16-30 VDC	16-32 VDC
Maximum Voltage	160 VDC	36 VDC	36 VDC
Voltage Drop	< 1.5 VDC, typical	< 1.5 VDC, typical	< 2.8 VDC @ 1.7A, typical
Power Module Load	< 10 watts	< 10 watts	< 13 watts
Current Ratings, Maximum	0.8A per point	0.7A per point	1.7A per point
	4A surge per 10 ms	4.8A surge per 10 ms	7A surge per 10 ms
Minimum Required Load	30 mA	30 mA	10 mA
Load Leakage	4 mA maximum	4 mA maximum	4 mA maximum
Fuses (on Field Termination)	1A fast-acting	n/a—self-protecting	n/a—self-protecting
Point Isolation	1,500 VDC/ 2500 VDC[c]	1,500 VDC	1,500 VDC
Diagnostic Indicators			
On or Off State	1 per point	1 per point	1 per point
Module Status	PASS, FAULT, ACTIVE	PASS, FAULT, ACTIVE	PASS, FAULT, LOAD, ACTIVE
Field Alarm	POWER, LOAD (1 per point)	POWER, LOAD (1 per point)	LOAD (1 per point)
Color Code	Steel blue	Turquoise green	Dark blue

a. CAUTION: Invensys highly recommends that you perform compatibility testing before selecting the Model 3623T module for use in applications that have field wiring lengths over 328 feet (100 meters), cable that is not twisted pair, or atypical loads such as smart devices, strobe lights, or klaxons.
b. CAUTION: Invensys highly recommends using a single set of redundant field power supplies for the 3625/3625A termination panels. For the 3625A module, if field power is supplied to the termination panels using four independent power sources, the voltage from all power sources must be maintained within 5% of the highest voltage supplied.
c. For 3623T.

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]