

Triconex 3625N

24 VDC TMR Digital Output Module

Manufacturer	Triconex
Model / order number	3625N
Product identification	24 VDC TMR Digital Output Module
System / family context	Tricon Nuclear Equipment

Verified scope

The nuclear-equipment table maps 3625N to standard 3625: 32 commoned TMR outputs, configurable supervised or non-supervised. Technical mapping does not establish unit qualification.

Engineering checks before replacement

- Retain N-suffix identity, assembly revision and qualification records.
- Check point demand and the separate 10 A termination-panel limit.
- Preserve each output supervision mode and diagnostic threshold.
- Verify minimum load, leakage and fast-load response.

Original manufacturer source reference

Planning and Installation Guide for Tricon v9-v11 Systems, 9700077-019, June 2014. Original PDF pages 50, 51, 152, 153, 154, 155.

Open manufacturer document (hosted copy)

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Request model verification or a quotation

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Tricon v10.x Equipment Certified for Use in Nuclear 1E Applications

Invensys has qualified specific Tricon version 10 products for use in 1E (safety-related) applications in accordance with EPRI Report TR-107330, "Generic Requirements Specification for Qualifying Commercially Available PLC for Safety-Related Applications in Nuclear Power Plants." EMC testing was performed in accordance with US Nuclear Regulatory Commission (NRC) Regulatory Guide 1.180, Revision 1, "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems." The NRC issued a Safety Evaluation Report (ADAMS Accession Number ML120900890) for Triconex Topical Report 7286-545-1-A, Revision 4.

All of the information (specifications, simplified schematics, installation guidelines, and so on) for standard equipment also applies to nuclear equipment. The following table lists the model numbers of Tricon 10.x equipment certified for use in Nuclear 1E applications and identifies the standard model to see for information about the equipment.

Table 6 Tricon v10.x Equipment Certified for Use in Nuclear 1E Applications

Model Number	Description	See this Standard Model
Modules and Chassis		
8110N2	Main Chassis	8110
8111N	Expansion Chassis	8111
8112N	Remote Expansion Chassis	8112
8310N2	High-Density Power Module, 120 V	8310
8311N2	High-Density Power Module, 24 VDC	8311
8312N2	High-Density Power Module, 230 VAC	8312
3008N	Enhanced Main Processor III, 16 Mb	3008
4200N	Remote Extender Module	4200
4200-3N	Remote Extender Module (Set)	4200-3
4201N	Remote Extender Module	4201
4201-3N	Remote Extender Module (Set)	4201-3
4352AN	Tricon Communication Module (TCM)	4352A
4352BN	Tricon Communication Module (TCM)	4352B
3701N2	0-10 VDC, Differential DC Coupled, TMR	3701
3703EN	0-5 VDC or 0-10 VDC, Differential, Isolated, TMR	3703E
3721N	0-5 VDC or -5 to +5 VDC, Differential, DC Coupled, TMR	3721
3805HN	4-20 mA, Current Loop, DC Coupled, TMR	3805H
3501TN2	115 VAC, Opto-isolated, Non-commoned, TMR	3501T
3502EN2	48 VAC/VDC, Commoned in Groups of 8, Self-Test, TMR	3502E
3503EN2	24 VAC/VDC, Commoned in Groups of 8, Self-Test, TMR	3503E

Table 6 Tricon v10.x Equipment Certified for Use in Nuclear 1E Applications

Model Number	Description	See this Standard Model
3601TN	115 VAC, Opto-isolated, Non-commoned TMR	3601T
3603TN	120 VDC, Opto-isolated, Commoned, TMR	3603T
3607EN	48 VDC, Opto-isolate, Non-commoned, TMR	3607
3623TN	120 VDC, Opto-isolated, Commoned, Supervised, TMR	3623T
3625N	24 VDC, Supervised/Non-supervised, Commoned, TMR	3625
3511N	Pulse Input, Differential, AC Coupled, TMR	3511
3708EN	Thermocouple, Differential, Isolated, TMR	3708
3636TN	Relay Output, Normally Open, Non-triplicated	3636T
8105N	Blank Module Panel	8105
8107N	Seismic Balance Module	Contact Invensys

External Termination Panels with XLPE I/F Cables^a

9561-110N	Term Panel (3501TN2) with XLPE Cable	9561-110F
9561-810N	Term Panel (3501TN2) with XLPE Cable	9561-810F
9562-810N	Term Panel (3502EN2) with XLPE Cable	9562-810F
9563-810N	Term Panel (3503EN2) with XLPE Cable	9563-810F
9662-610N	Term Panel (3625N) with XLPE Cable	9662-610F
9662-810N	Term Panel (3625N) with XLPE Cable	9662-810F
9663-610N	Term Panel (3601TN) with XLPE Cable	9663-610F
9664-810N	Term Panel (3603TN, 3623TN) with XLPE Cable	9664-810F
9667-810N	Term Panel (3607EN) with XLPE Cable	9667-810F
9668-110N	Term Panel (3636TN) with XLPE Cable	9668-110F
9764-310N	Term Panel (3721N) with XLPE Cable	9764-310F
9782-110N	Term Panel (3708EN) with XLPE Cable	9782-110F
9783-110N	Term Panels (3721N, 3703EN, 3701N2) with XLPE Cable	9783-110F
9790-610N	Term Panels (3721N, 3703EN) with XLPE Cable	9790-610F
9792-610N	Term Panels (16–56 V Analog Input, 4–20 mA Nuclear EMC) with XLPE Cable	9792-610F
9794-110N	Term Panel (3511N) with XLPE Cable	9794-110F
9795-610N	Term Panel (3701N2) with XLPE Cable	9795-610F
9860-610N	Term Panel (3805HN) with XLPE Cable	9860-610F

External Termination Panels with XLPEJ I/F Cables^a

9561-110NJ	Term Panel (3501TN2) with XLPEJ Cable	9561-110F
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manufacturer. The inrush current must be used when calculating the required output switching power.

24 VDC Supervised or Non-Supervised Digital Output Modules

This figure is a simplified schematic for Models 3625 and 3625A, which are 32-point TMR Supervised or Non-Supervised Digital Output Modules with nominal ranges of 24 VDC.

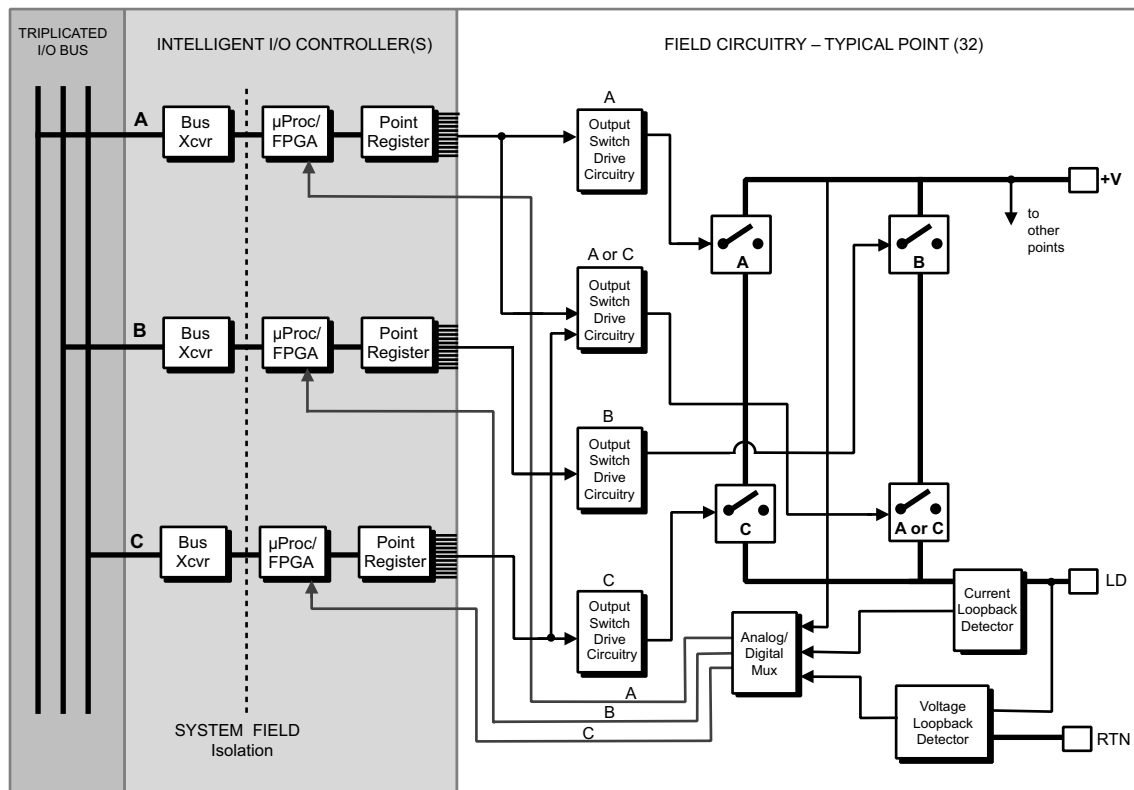


Figure 53 3625 and 3625A Simplified Schematic

Note For the 3625 module, field power is commoned to all points, so that if power is present on one point, it is present on all points. For the 3625A module, power is commoned in groups of 16 points and is separated by termination panels.

This figure shows the front panels of Model 3625 and Model 3625A.

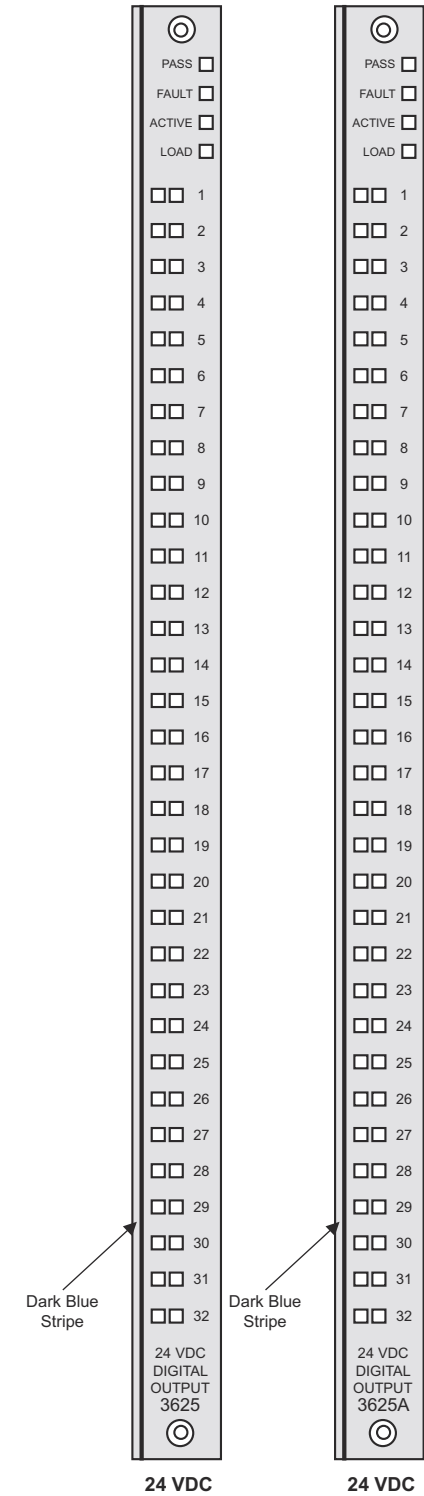


Figure 54 3625 and 3625A Front Panels

3625 and 3625A Specifications

This table lists the specifications for Models 3625 and 3625A, which are 32-point TMR Supervised or Non-Supervised Digital Output Modules. These modules are compatible with 16-point commoned field termination panels, and are intended for energize-to-trip and de-energize-to-trip applications. The 3625 and 3625A modules can be installed only in Tricon v10.2 and later systems.

The 3625A module has been modified to separate the field power supply into groups of 16 points while maintaining a common return. The 3625A module is fully compatible for use in all applications of the 3625 module.

CAUTION

Invensys recommends that the termination panels for the 3625 and 3625A modules are wired in parallel and powered from a single set of redundant field power sources. The 3625A module may be powered from four independent field power sources, but only if the voltage from those sources is within 5% of the highest voltage supplied. If this restriction is not followed, the module will still operate but may experience voter faults and generate an alarm.

Table 49 3625 and 3625A Digital Output Specifications

Feature	Specification
Color code	Dark blue
Number of output signals	32, commoned ^a
Recommended voltage range	16–32 VDC
Nominal voltage	24 VDC
Maximum voltage	36 VDC
Logic power	< 13 watts
Current ratings, maximum	1.70 ± 10% amps/ point, 5 amps surge/7 ms
Total module output current (all points)	10 amps/termination panel
Minimum required load	10 mA
Maximum output leakage	2.0 mA @ 24 VDC 2.5 mA @ 32 VDC
Fuses (field termination module)	Not required; output switches are self-protected against over-voltage, over-temperature, and over-current
Status indicator: On or Off state	1 per point
Status indicator: Module status	Pass, Fault, Load, Active
Status indicator: Field alarm ^b	Load (1 per point)
System-to-field isolation	1,500 VDC minimum
Point supervision	Can be programmed per point
Short/Open circuit detection threshold	Programmable per supervised point

Table 49 3625 and 3625A Digital Output Specifications (*continued*)

Feature	Specification
Output diagnostic fault coverage ^c :	
Maximum output toggle rate	Every 60 ms
Diagnostic glitch duration	2 ms maximum, 200 μ s typical
On-state voltage drop:	< 0.16 VDC typical @ 250mA
At backplane	< 1.12 VDC typical @ 1.7A
On-state voltage drop:	< 1.15 VDC typical @ 250mA
With external termination, 10-foot cable	< 3.33 VDC typical @ 1.7A
On-state voltage drop:	< 2.71 VDC typical @ 250mA
With external termination, 99-foot cable	< 8.92 VDC typical @ 1.7A
Inductive kick-back protection (reverse EMF)	Output switches are self-protected

- a. For the 3625 module, field power is commoned to all points, so that if power is present on one point, it is present on all points. For the 3625A module, field power is commoned in groups of 16 points and is separated by termination panels.
- b. Power must be supplied to all points, including unused points on non-commoned panels.
- c. The maximum output toggle rate enables proper operation of I/O diagnostics and detection of all normally detectable faults.

Note The 3625 and 3625A modules can be installed in low-density systems that have been upgraded to v10.2.x or later. For more information, see “Appendix I, Low-Density Chassis I/O Module Compatibility” in the *Field Terminations Guide for Tricon v9–v11 Systems*.