

Triconex 3502EN2

48 VAC/VDC TMR Digital Input Module

Manufacturer	Triconex
Model / order number	3502EN2
Product identification	48 VAC/VDC TMR Digital Input Module
System / family context	Tricon Nuclear Equipment

Verified scope

The nuclear-equipment table maps 3502EN2 to standard 3502E: 32 self-testing TMR inputs, nominal 48 VAC/VDC, commoned in groups of eight.

Engineering checks before replacement

- Preserve the complete N2 suffix and qualification evidence.
- Verify grouped commons and field-source voltage tolerances.
- Check both rising and falling thresholds and input delays.
- Review self-test effects on parallel input equipment.

Original manufacturer source reference

Planning and Installation Guide for Tricon v9-v11 Systems, 9700077-019, June 2014. Original PDF pages 50, 115.

Open manufacturer document (hosted copy)

This cover is an independent Sales PLC reference, not a manufacturer-issued datasheet. The following manufacturer pages retain their original text, layout and page numbering.

Request model verification or a quotation

info@amikon.cn | +86 18020776786

www.salesplcauto.com

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

3502E Specifications

This table lists the specifications for Model 3502E, which is a TMR Digital Input Module with a nominal input voltage of 48 VAC/VDC and a self-test feature.

Table 31 3502E Digital Input Specifications

Feature	Specification
Color code	Dark red
Number of input points	32, commoned in groups of 8
Input frequency range	DC or 47-63 Hz
Recommended input range	35-95 VAC/VDC
Maximum voltage	95 VAC/VDC
Switching level: Off to On	27 VAC/VDC typical, 32 VAC/VDC worst-case
Switching level: On to Off	14 VAC/VDC typical, 11 VAC/VDC worst-case
Typical hysteresis	7 VAC/VDC
Nominal turn-on	6 mA to 9 mA
Input impedance	> 2.9 k Ω nominal
Input delay: Off to On	< 8 ms
Input delay: On to Off	< 15 ms
Point isolation, opto-isolated	1,000 VAC minimum, 1,500 VDC minimum
Status indicator: On or Off state	1 per point
Status indicator: Module status	Pass, Fault, Active
Logic power	< 10 watts
Nominal field power load	1.0 watts per On point, 3.2 watts @ maximum field voltage
Leakage current to chassis @ 60 Hz	0.5 mA maximum per On point
Input diagnostic fault coverage:	
Maximum input toggle rate ^a	Every 100 ms
Minimum input toggle rate, On state	Not required
Minimum input toggle rate, Off state	Every 24 months (manually toggled by the user) ^b
Diagnostic glitch duration ^c	20 ms typical
Output voltage	< 1/2V _{IN}
Output impedance	< 4.22 k Ω

a. The maximum input toggle rate enables proper operation of I/O diagnostics and detection of all normally detectable faults.

b. For more information, see *Toggling Field I/O Points* on page 288.

c. V_{IN} is the voltage applied to an energized point. Output voltage is noticeable on an adjacent de-energized point for the duration of the diagnostic glitch. Be advised that the glitch output may falsely energize the paralleled input of another piece of equipment.