MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

AMIKON cover followed by applicable original manufacturer pages

TRICONEX / SCHNEIDER ELECTRIC

3564

DIGITAL INPUT MODULE

Manufacturer guide: Tricon v10 Systems

OFFICIAL SOURCE

Tricon Technical Product Guide, Part No. 9791007-024, Rev 0, November 2012

Applicable source pages included: 22, 44

The following pages retain the original manufacturer content, aspect ratio and colours.

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

64-Point Digital Input Modules

Each 64-point Digital Input (DI) module has three isolated channels which independently process all data input to the module. A microprocessor on each channel scans each input point, compiles data and transmits it to the Main Processors on demand. Then input data is voted at the Main Processors just prior to processing to ensure the highest integrity.

All Digital Input Modules sustain complete, ongoing diagnostics for each channel. A failure on any channel activates the Fault indicator which in turn activates the chassis alarm. A TMR module is guaranteed to operate properly in the presence of a single fault and may operate properly with certain kinds of multiple faults.

All Digital Input Modules support hot-spare modules and require a separate external termination panel (ETP) with a cable interface to the Tricon controller backplane. Each module is mechanically keyed to prevent improper installation in a chassis.

The Model 3504E High-Density Digital Input Module continuously verifies the ability of the Tricon controller to detect transitions to the opposite state. On this TMR module, all critical signal paths are 100 percent triplicated for guaranteed safety and maximum availability. Each channel conditions signals independently between the field and the Tricon controller.

The Model 3564 Single Digital Input Module is optimized for safety-critical applications where low cost is more important than maximum availability. On single modules, only those portions of the signal path which are required to ensure safe operation are triplicated. Special self-test circuitry detects all stuck-On and stuck-Off fault conditions in less than half a second. If a single module detects an input fault, it reports that point as Off, which may cause a glitch during switch-over to a hot-spare module.

64-Point Digital Input Module Specifications

Model Number	3564	3504E
Type	Single, DI	TMR, DI
Voltage	24 VDC	24 or 48 VDC[a]
Points	64, commoned	64, commoned, DC coupled
DC Range	15-30 VDC	20-72 VDC
Maximum Voltage	36 VDC	72 VDC
Switching Level		24 V / 48 V
OFF to ON[b]	> 15 VDC	>18 VDC / >32 VDC
ON to OFF[c]	< 6 VDC	< 6 VDC / <11 VDC
Nominal Turn-On	2-3 mA	negligible
Typical Hysteresis	4 VDC	4 VDC/7 VDC
Input Delay		
Off to On/On to Off	< 2 ms/< 2 ms	< 10 ms/< 10 ms
Minimum Point Isolation	1,500 VDC	n/a
Nominal Input Impedance	> 3.0 KΩ	> 30 KΩ
Nominal Field Power Load		
Per On point	0.2 watts	negligible
@ maximum field voltage	0.5 watts	negligible
Diagnostic Indicators		
Input Status	1 per point	1 per point
Module Status	PASS, FAULT, ACTIVE	PASS, FAULT, ACTIVE
Stuck Test	On and Off	On and Off
Color Code	Dark Red	Dark Red

a. The voltage is selected using the TriStation 1131 software.
b. Off to On transition is guaranteed at or above this level but it might occur at a lower voltage, depending on the module's hysteresis.
c. On to Off transition is guaranteed at or below this level but it might occur at a higher voltage, depending on the module's hysteresis.