

DIOC-16

16-Channel Digital Input/Output, Relays, and Analog Output Module for TMX Data Acquisition Systems

MODULE OVERVIEW

The DIOC-16 is a multi-function module that provides digital inputs, digital outputs, relays, and analog outputs. It is ideal for R&D, industrial monitoring, and control applications.

Connections are made via D-Sub (digital I/O and analog outputs) and separate plugs with screw terminals for the relay outputs and high voltage digital inputs.



MODULE HIGHLIGHTS

- 16 low voltage (TTL) digital inputs
- 16 low voltage (TTL) digital outputs with direct or arbitrary modes
- Four analog outputs with multiple modes including direct, pulse train, arbitrary, sine, and triangle
- Two normally open 250V relays
- 8 high voltage (up to 150V) digital inputs
- Built-in counter and timer functions including frequency, quadrature, gated pulse, pulse width, and edge separation

ORDERING INFORMATION

Module Part Number: 32850060

ITEM	PART NO.	DESCRIPTION
SC-TMX	41047000	Soft Carry Case for TMX
HC-TMX	41047010	Hard Transport Case for TMX
TMX-E	42885000	TMX Expansion Chassis for up to three additional Input Modules
TMX-OS	14004600	TMX Offline Software for 1 user
TMX-DAT	26801350	Additional 1 TB Data Capture Drive
AstroDock	42832500	PC Docking Station for use with TMX removable drives

DIOC-16 DETAILED SPECIFICATIONS

GENERAL	
Channels Per Module	46 total (16 digital inputs, 16 digital outputs. 2 relay outputs, 4 analog outputs, 8 high voltage digital inputs)
Connectors	One 4-pin 5.08mm One 9-pin 5.08mm for high voltage digital inputs One 37-pin D-sub female for TTL digital inputs and outputs One 25-pin D-sub female for DAC outputs and aux voltage outputs
Update Rate	200 KHz max (100 KHz when using more than 3 modules with the TMX-E or TMX-R)
Isolation	Yes, high voltage digital inputs and relays only
DIGITAL INPUTS/OUTPUTS	
Digital Inputs	16 (TTL or switch closure with 4.7K pullup to 5V)
Digital Outputs	16 (TTL, +/- 7 mA)
Digital Output Modes	Direct (menu or host) controlled or arbitrary digital pattern (DPAT) generator
HIGH VOLTAGE DIGITAL INPUTS	
Channels per Module	8 (Operation at 10V minimum, 150V maximum, 5 μ s min pulse width)
Rated Voltage	150V CAT II
Isolated Input Max Burden	1 mA
Isolated In Transient Protection	250V
ANALOG OUTPUTS	
Analog DAC Outputs	Four
DAC output voltage range	+/- 10V (not inclusive of voltage drop across DAC output impedance)
DAC output resistance	50 ohm (In series with output)
DAC output maximum current	10 mA
DAC output voltage accuracy	+/- 0.05 V
Output DAC resolution / speed	12 bit / 1 MHz maximum
RELAY OUTPUTS	
Relay outputs	Two, normally open contacts
Relay withstand voltage	1500 VDC (contacts to TMX chassis)
Relay rated voltage / current	250 VAC / 250 VDC / 10Amp
COUNTER TIMER	
Counter / Timer Modes	Gated time-frequency counter, cycle-based frequency, pulse counter, gated pulse counter, quadrature counter (x1, x2, x4 encodings, with or without Z-reset), pulse width detector, period width, duty cycle detector, and edge separation timer
Number of 32-bit Counters	8 pairs (16 total)
Frequency ctr range	1500 VDC (contacts to TMX chassis)
Frequency ctr accuracy	250 VAC / 250 VDC / 10Amp
Pulse counter range	0.2 Hz - 500 KHz (47 Hz - 50 KHz for cycle-based frequency counter)
Pulse counter speed	+/- 0.03% of measurement + .0002 Hz
Pulse width accuracy	4000000000 maximum span. (16 bit display resolution)
Pulse width range	10 MHz maximum (50 ns min pulse width)
Period width accuracy	.003% of measurement + .00167% of span + 0.03 μ s
Period width range	1 μ s - 2500000 μ s
Edge separation accuracy	.002% of measurement + .00167% of span + 0.02 μ s
Edge separation range	1 μ s - 5000000 μ s

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