



## M-7002

4-channel AI, 5-channel DI and 4-channels Relay Output Module

### Features

- Voltage and Current Inputs
- $\pm 240$  Vrms Overvoltage Protection
- High Resolution: 16 bit
- 2500 Vdc Intra-module Isolation
- Sink and Source Type Digital Inputs
- Photocouple Isolation
- Support Relay Outputs
- DIN-Rail Mountable
- Dual Watchdog
- Wide Operating Temperature Range: -25 to +75°C



### Introduction

The M-7002 is a 16-bit, 4-channel differential analog inputs 5-channel digital inputs and 4-channels for relay output. All of its channels are Form A type relay module that provides programmable input range on all analog channels ( $\pm 150$  mV,  $\pm 500$  mV,  $\pm 1$  V,  $\pm 5$  V,  $\pm 10$  V,  $\pm 20$  mA,  $0 \sim 20$  mA and  $4 \sim 20$  mA) and digital output can be set alarm output with short-circuit protection and overload protection. Each analog channel is allowed to configure an individual range and has 240 Vrms high overvoltage protection. Jumper selectable for voltage or current input. The sampling rate of M-7002 is changeable; there are fast mode and normal mode for your consideration. M-7002 also has qualification for 4 kV ESD protection as well as 2500 VDC intra-module isolation.

### System Specifications

Model	M-7002
<b>Communication</b>	
Interface	RS-485
Bias Resistor	No (Usually supplied by the RS-485 Master. Alternatively, add a tM-SG4 or SG-785.)
Format	N, 8, 1
Baud Rate	1200 to 115200 bps
Protocol	DCON Modbus/RTU
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
<b>LED Indicators/Display</b>	
System LED Indicator	Yes, 1 as Power/Communication Indicator
I/O LED Indicators	-
7-segment LED Display	Yes
<b>Isolation</b>	
Intra-module Isolation, Field-to-Logic	2500 Vdc
<b>EMS Protection</b>	
ESD (IEC 61000-4-2)	$\pm 4$ kV Contact for each Terminal
EFT (IEC 61000-4-4)	$\pm 4$ kV for Power Line
Surge (IEC 61000-4-5)	$\pm 3$ kV for Power Line
<b>Power</b>	
Reverse Polarity Protection	Yes
Input Range	+10 ~ +30 Vdc
Consumption	1.8 W
<b>Mechanical</b>	
Dimensions (L x W x H)	123 mm x 72 mm x 35 mm
Installation	DIN-Rail or Wall Mounting
<b>Environment</b>	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

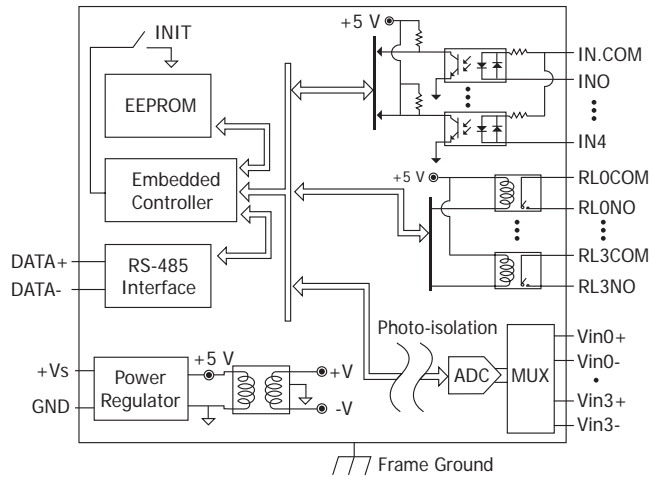
### Applications

- Building Automation
- Machine Automation
- Remote Diagnosis
- Factory Automation
- Remote Maintenance
- Testing Equipment

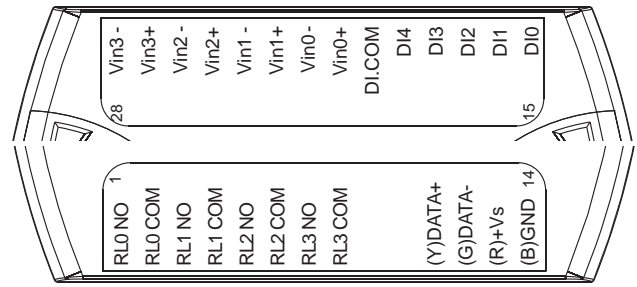
### I/O Specifications

Model	M-7002
<b>Analog Input</b>	
Channels	4
Wiring	Differential
Input Range	$\pm 150$ mV, $\pm 500$ mV, $\pm 1$ V, $\pm 5$ V, $\pm 10$ V, $\pm 20$ mA, $0 \sim 20$ mA, $4 \sim 20$ mA (Jumper selectable)
Resolution	12/16-bit
Accuracy	Normal Mode 0.1% Fast Mode 0.5%
Sampling Rate	Normal Mode 10 Hz Fast Mode 60 Hz
Input Impedance	Voltage 2 M Currnet 139 $\Omega$
Common Voltage Protection	$\pm 200$ Vdc
Individual Channel Configuration	Yes
Overvoltage Protection	240 Vrms
<b>Digital Input/Counter</b>	
Channels	5
Contact	Wet
Sink/Source (NPN/PNP)	Sink/Source
ON Voltage Level	10 ~ 50 VDC
OFF Voltage Level	+4 VDC Max.
Counter (50 Hz, 16-bit)	Yes
Input Impedance	10 k $\Omega$
Overvoltage Protection	$\pm 70$ VDC
Isolation Voltage	3750 Vdc
<b>Relay Output</b>	
Channels	4
Type	Power Relay (Form A)
Contact Rating	5 A @ 250 VAC 5 A @ 30 VDC
Surge Strength	3000 Vdc
Operate Time	6 ms
Release Time	3 ms
Mechanical Endurance	$2 \times 10^7$ ops.
Electrical Endurance	$10^5$ ops.
Power-on Value	Yes
Safe Value	Yes

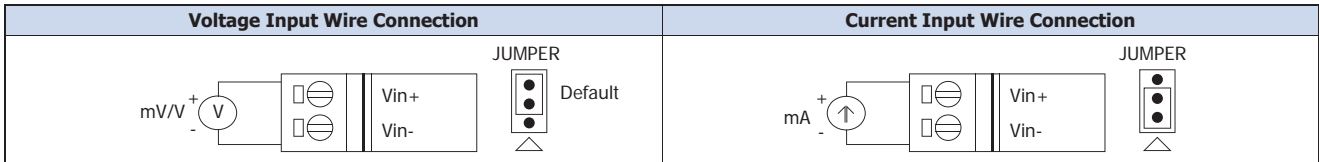
## Internal I/O Structure



## Pin Assignments



## Wire Connections



Digital Input/Counter	Readback as 1 +10 ~ +50 VDC	Readback as 0 OPEN or <4 VDC
Sink		
Source		

Power Relay	ON State Readback as 1	OFF State Readback as 0
Relay Output		

## Ordering Information

<b>M-7002 CR</b>	4-channel AI, 5-channel DI and 4-channels Relay Output Module using the DCON and Modbus Protocol (Gray Cover) (RoHS)
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## Accessories

	tM-7520U CR	RS-232 to RS-485 Converter (RoHS)
	tM-7561 CR	USB to RS-485 Converter (RoHS)
	tM-SG4 CR	RS-485 Bias and Termination Resistor Module (RoHS)

	I-7514U CR	4-channel RS-485 Hub (RoHS)
	SG-770 CR	7-channel Differential or 14-channel Single-ended Surge Protector (RoHS)
	SG-3000 Series	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Input Transformers