



M-7002-G

4-ch AI, 5-ch DI and 4-ch Relay Module

Features

- Voltage and Current Inputs
- Sink- or Source-type Digital Input
- Relay Outputs
- High Resolution: 16-bit
- High Over-voltage Input Protection
- High Common Voltage Protection
- Photocoupler Isolation
- Built-in Dual Watchdog



Introduction

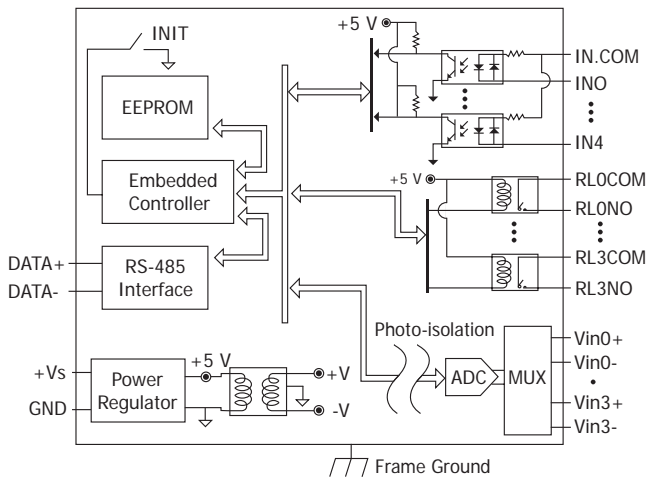
The M-7002 module features 16-bit resolution, 4 differential analog inputs, 5 digital inputs, and 4 Form A relay outputs. The analog channels on the module offer programmable input ranges of ± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA, 0-20 mA, and 4-20 mA, while the digital outputs can be set to provide an alarm with short circuit and overload protection. Each analog channel can be configured individually and is protected against high over-voltage input up to 240 Vrms. The input type (voltage or current) can be selected via a jumper. The M-7002 offers two sampling rates: fast mode and normal mode. Additionally, the M-7002 is qualified for 4 kV ESD protection and has intra-module isolation of up to 2500 VDC.

Specifications

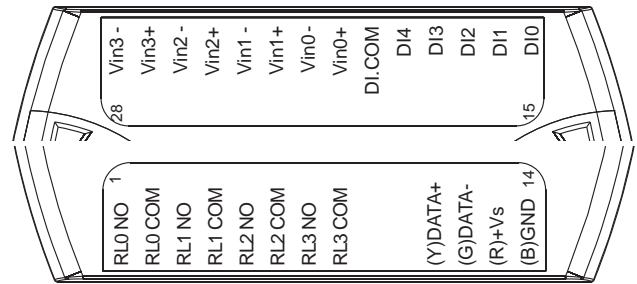
CPU Module	
Watchdog Timer	Module, Communication (Programmable)
Display	
Type	5-Digit 7 Segment LED Display
Isolation	
Intra-module Isolation	2500 VDC
EMS Protection	
EFT (IEC 61000-4-4)	± 4 kV for Power Line
ESD (IEC 61000-4-2)	± 4 kV Contact for Each Terminal
Surge (IEC 61000-4-5)	± 3 kV for Power Line
LED Indicators	
Status	1 x Power and Communication
Analog Input	
Channels	4 Differential
Type	Voltage, Current
Range	± 150 mV, ± 500 mV, ± 1 V, ± 5 V, ± 10 V, ± 20 mA, 0 ~ 20 mA, 4 ~ 20 mA (Jumper selectable)
Resolution	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 Ω , Current: 139 Ω
Common Voltage Protection	± 200 VDC
Overvoltage Protection	240 Vrms
Individual Channel Configuration	Yes
Digital Input/Counter	
Channels	5
Type	Wet Contact
Sink/Source (NPN/PNP)	Sink/Source
ON Voltage Level	+10 ~ +50 VDC
OFF Voltage Level	+4 VDC Max.

Digital Input/Counter	
Max. Counts	65535 (16-bit)
Frequency	50 Hz
Isolation	3750 VDC
Input Impedance	10 k Ω
Overvoltage Protection	± 70 VDC
Relay Output	
Channels	4
Type	Power Relay (Form A)
Contact Rating	5 A @ 250 VAC 5 A @ 30 VDC
Operate Time	6 ms
Release Time	3 ms
Electrical Endurance	10 ⁵ ops.
Mechanical Endurance	2 x 10 ⁷ ops.
Power on Value	Programmable
Safe Value	Programmable
COM Ports	
Ports	1 x RS-485
Baud Rate	1200 ~ 115200 bps
Data Format	(N, 8, 1)
Protocol	Modbus RTU, DCON
Power	
Reverse Polarity Protection	Yes
Input Range	+10 ~ +30 VDC
Consumption	1.8 W
Mechanical	
Dimensions (mm)	72 x 123 x 35 (W x L x H)
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-25 ~ +75 $^{\circ}$ C
Storage Temperature	-40 ~ +85 $^{\circ}$ C
Humidity	10 ~ 95% RH, Non-condensing

Internal I/O Structure



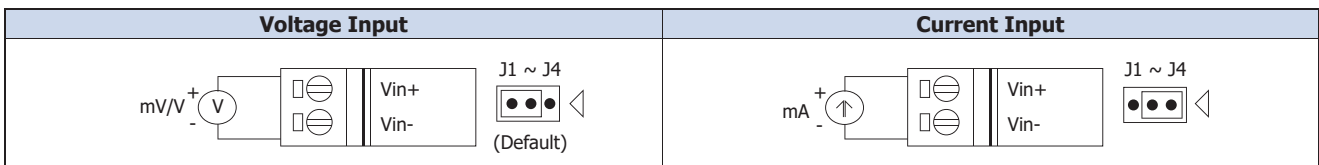
Pin Assignments



Applications

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

Wire Connections



Digital Input/Counter	Readback as 1 +10 ~ +50 VDC	Readback as 0 OPEN or <4 VDC
Sink	<p>DIx 10K DI.COM To other channels</p>	<p>DIx 10K DI.COM To other channels</p>
Source	<p>DIx 10K DI.COM To other channels</p>	<p>DIx 10K DI.COM To other channels</p>
Power Relay	ON State Readback as 1	OFF State Readback as 0
Relay Output	<p>RLx.COM AC/DC LOAD RLx.NO Relay Close To other channels</p>	<p>RLx.COM AC/DC LOAD RLx.NO Relay Open To other channels</p>

Ordering Information

M-7002-G CR	4-ch AI, 5-ch DI and 4-ch Relay Module using DCON and Modbus Protocols (Gray Cover) (RoHS)
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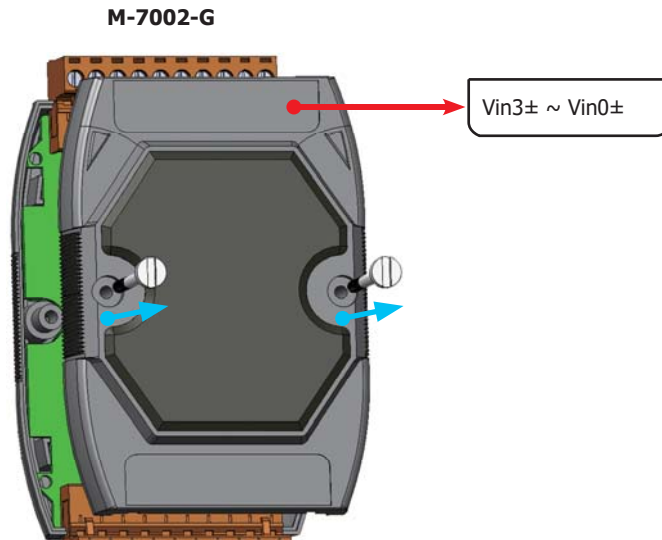
Accessories

tM-7520U CR	Tiny Isolated RS-232 to RS-485 Converter (RoHS)	I-7514U CR	Isolated 4-channel RS-485 Repeater/Hub/Splitter (Gray Cover) (RoHS)
tM-7561 CR	Tiny USB to Isolated RS-485 Converter with CA-USB18 Cable (RoHS)	SG-770 CR	7/14 channel Surge Protector (RoHS)
tM-SG4 CR	RS-485 Pull-high/Pull-low and Termination Resistor Module (RoHS)	SG-3000 Series	Signal Conditioning Modules for Thermocouple, RTD, DC Voltage, DC Current and Power Input Transformers

Jumper

Notice:

1. Remove the top cover of the module before adjusting the jumper. Additionally, some modules may have two screws on the back cover.



2. Users can locate the Jx/JPx jumpers on the board by checking the I/O labels on the cover.

Channel	Vin3±	Vin2±	Vin1±	Vin0±
Jumper	J4	J3	J2	J1

