Features

- Multi-function=4 AO + 4 DI + 4 DO
- Source Type Current Output
- 16-bit Analog Output
- Individual Channel Configuration
- Open Wire Detection for Current Output
- 8 kV ESD Protection
- Power-on Value Setting
- Safe Value Setting
- Wide Operating Temperature Range: -25 to +75°C

M-7024U   M-7024UD
4-channel Analog Output,4-channel Digital Input and 4-channel Digital Output Module

Introduction

The M-7024U is a multi-function module that includes 4 analog output channels, 4 digital input channels, 4 digital output channels. It provides a programmable output range on all analog outputs channels (0 ~ 5 V, +/-5 V, 0 ~ 10 V, +/-10 V, +4 ~ +20 mA or 0 ~ +20 mA). Each analog output channel can be configured for an individual range and the module also features per-channel open wire detection for +4 ~ +20 mA outputs, together with 8 kV ESD Protection as well as 2500 V_{DC} intra-module isolation. Options for configuring power-on and safe values are also included.

Applications

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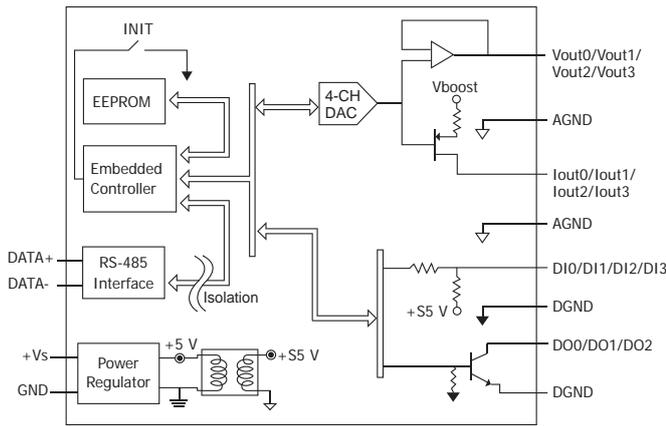- Factory Automation
- Remote Maintenance
- Testing Equipment

System Specifications

Model	M-7024U	M-7024UD
Communication		
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) (N, 8, 2) (E, 8, 1) (O, 8, 1)	
Baud Rate	1200 to 115200 bps	
Protocol	Modbus RTU, DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
LED Indicators/Display		
System LED Indicator	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	4 LEDs as Analog Output Fault Indicators 4 LEDs as Digital Input Indicators 4 LEDs as Digital Output Indicators
7-segment LED Display	-	
Isolation		
Intra-module Isolation, Field-to-Logic	2.5 kV$_{DC}$	
EMS Protection		
ESD (IEC 61000-4-2)	±8 kV Contact for each Terminal	
EFT (IEC 61000-4-4)	±4 kV for Power Line	
Surge (IEC 61000-4-5)	-	
Power		
Reverse Polarity Protection	Yes	
Input Range	+10 ~ +30 V$_{DC}$	
Consumption	4 W	4.5 W
Mechanical		
Dimensions (L x W x H)	123 mm x 72 mm x 35 mm	
Installation	DIN-Rail or Wall Mounting	
Environment		
Operating Temperature	-25 to +75°C	
Storage Temperature	-40 to +85°C	
Humidity	10 to 95% RH, Non-condensing	

I/O Specifications

Model	M-7024U	M-7024UD
Analog Output		
Channels	4	
Current Output Wiring	Source	
Range	0 ~+5 V$_{DC}$, ±5 V$_{DC}$, 0 ~ +10 V$_{DC}$, ±10 V$_{DC}$, 0 ~ +20 mA, +4 ~ +20 mA	
Resolution	16-bit	
Accuracy	±0.02%% of FSR	
DA Output Response Time	10 ms per channel	
Programmable Output Slope — Voltage	0.0625 ~ 512 V/Second	
Programmable Output Slope — Current	0.125 ~ 1024 mA/Second	
Current Output Capacity	1000 Ω	
Open Wire Detection	Yes, for 4 ~ 20 mA only	
Short Circuit Protection	Yes	
Power-on Value	Yes, Programmable	
Safe Value	Yes, Programmable	
Digital Input		
Channels	4	
Wet Contact — ON Voltage Level	+1 V$_{DC}$ Max.	
Wet Contact — OFF Voltage Level	+4 ~ 30 V$_{DC}$	
Dry Contact — ON Voltage Level	Close to GND	
Dry Contact — OFF Voltage Level	Open	
Dry Contact — Effective Distance for Dry Contact	500 M Max.	
Counters — Max. Count	65535 (16-bit)	
Counters — Max. Input Frequency	100 Hz	
Counters — Min. Pulse Width	5 ms	
Input Impedance	-	
Overvoltage Protection	+60 V$_{DC}$	
Digital Output		
Output Channels	4	
Type	Open Collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+3.5 V$_{DC}$ ~ +50 V$_{DC}$	
Max. Load Current	700 mA/Channel	
Overvoltage Protection	60 V$_{DC}$	
Overload Protection	1.4 A (with short-circuit protection)	
Power-on Value	Yes, Programmable	
Safe Value	Yes, Programmable	

■ Internal I/O Structure

■ Pin Assignments

■ Wire Connections

Voltage Output
Load — Voutx / AGND

Current Output
Load — Ioutx / AGND
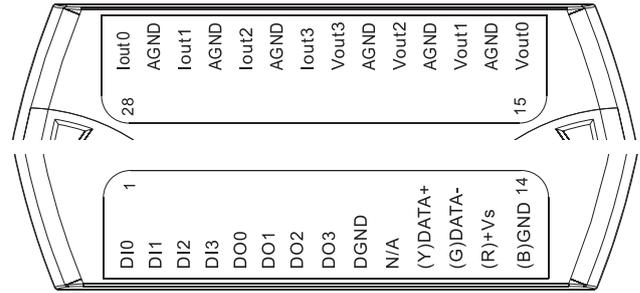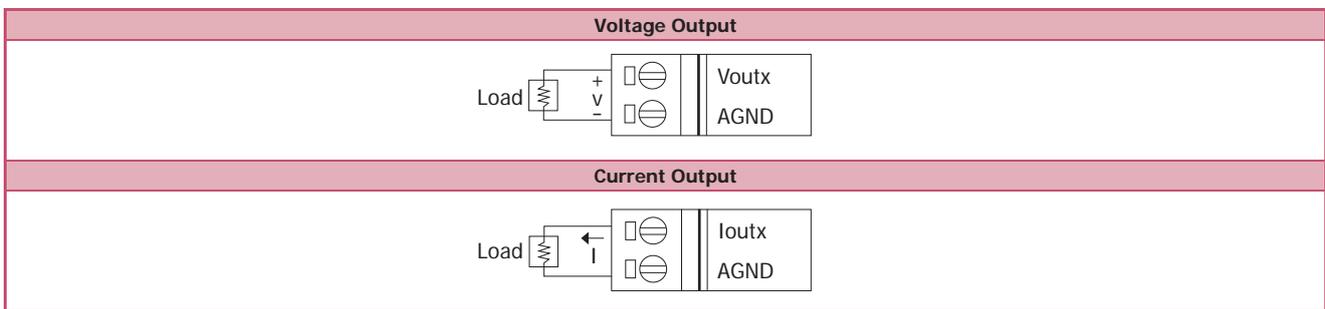
Digital Input/Counter	ON State Readback as 1	OFF State Readback as 0
	+1 V$_{DC}$ Max.	+4 ~ 30 V$_{DC}$
Wet Contact (Sink)	DIx / DGND +1 V$_{DC}$ Max.	DIx / DGND +4 ~ 30 V$_{DC}$
Dry Contact (Source)	DIx / DGND	DIx / DGND

Digital Output	ON State Readback as 1	OFF State Readback as 0
Open Collector (Sink)	LOAD — DOx / DGND 3.5 ~ 50 V$_{DC}$	LOAD — DOx / DGND 3.5 ~ 50 V$_{DC}$

■ Ordering Information

M-7024U CR	4-channel Analog Output,4-channel Digital Input and 4-channel Digital Output Module using the DCON and Modbus Protocols (Gray Cover) (RoHS)
M-7024UD CR	M-7024U with LED Display (Gray Cover) (RoHS)

■ 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	