



## M-2224CI M-2228CI

Channel to Channel Isolation 4/8-channel differential analog Outputs

### Features

- 3000 VDC Channel-to-Channel Isolation
- M-2224CI: 4-channel differential analog outputs
- M-2228CI: 8-channel differential analog outputs
- Current, Voltage Output
- Open Wire Detection for Current Output
- RF Immunity
- Short Circuit Protection
- Dual Watchdog
- Wide Operating Temperature Range: -25 ~ 75 °C



### Introduction

The M-2228CI is a Channel to Channel Isolation analog output module that includes 8 differential analog output channels, and 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 provides an RF immunity level matching that defined by the IEC 61000-4-3 standard. Voltage and current outputs are programmable selectable, and the module also features per-channel open wire detection for +4 ~ +20 mA outputs, together with 4 kV ESD protection as well as 3750 VDC intra-module isolation. Options for configuring power-on and safe values are also included.

The M-2224CI has the same specifications as the M-2228CI but provides 4 differential analog output channels.

### System Specifications

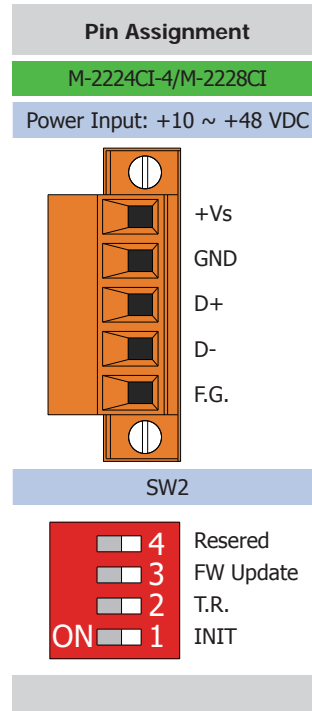
Module	M-2224CI	M-2228CI
<b>Communication</b>		
Interface	RS-485	
Bias Resistor	10 kΩ resistor	
Format	N81, N82, E81, O81	
Baud Rate	1200 to 115200 bps	
Protocol	Modbus RTU, DCON	
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)	
<b>LED Indicators/Display</b>		
System LED Indicator	Yes, 1 as Power/Communication Indicator	
I/O LED Indicators	-	
<b>Isolation</b>		
Intra-module Isolation, Field-to-Logic	3750 Vdc	
<b>EMS Protection</b>		
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal	
	±8 kV Air for Random Point	
EFT (IEC 61000-4-4)	±4 kV for Power Line	
Surge (IEC 61000-4-5)	±2 kV for Power Line	
<b>Power</b>		
Reverse Polarity Protection	Yes	
Input Range	+10 ~ +48 Vdc	
Consumption	6.0 W (Max.)	
<b>Mechanical</b>		
Dimensions (W x L x H)	33 mm x 176 mm x 130 mm	
Installation	DIN-Rail Mounting	
<b>Environment</b>		
Operating Temperature	-25 to +75 °C	
Storage Temperature	-30 to +80 °C	
Humidity	10 to 90% RH, Non-condensing	

### I/O Specifications

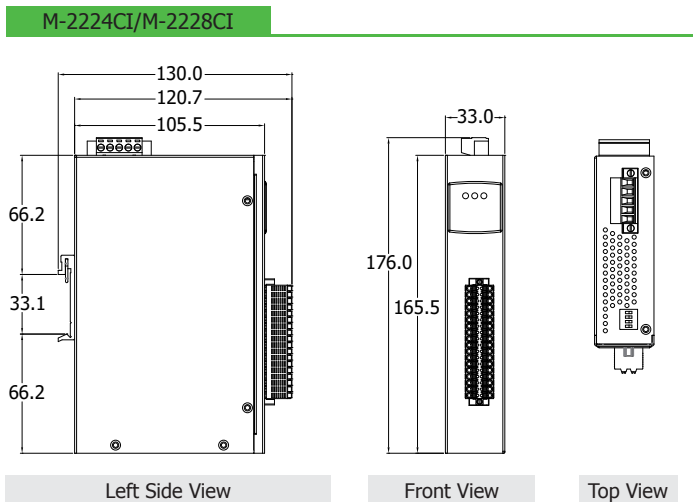
Module	M-2224CI	M-2228CI
<b>Analog Output</b>		
Channels	4 Differential	8 Differential
Type	Voltage	0 ~ +5 VDC, ±5 VDC, 0 ~ +10 VDC, ±10 VDC
	Current	0 ~ +20 mA, +4 ~ +20 mA
Resolution	12-bit	
Accuracy	±0.1% of FSR	
DA Output Response Time	10 ms per channel	
Programmable Output Slope	Voltage	0.0625 ~ 512 V/Second
	Current	0.125 ~ 1024 mA/Second
Current Output Capacity	500 Ω	
Voltage Output Capability	10 V @ 10 mA	
Channel-to-Channel Isolation	Yes, 3000 Vdc	
Open Wire Detection	Yes, +4 ~ +20 mA	
Short Circuit Protection	Yes	
Power-on Value	Yes	
Safe Value	Yes	

## Pin Assignments

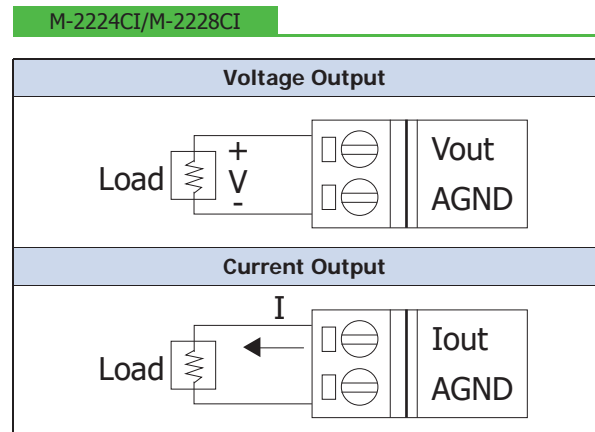
Pin Assignment		Terminal No.	Pin Assignment	
M-2224CI	M-2228CI		M-2224CI	M-2228CI
A00-	A00-	02	01 A00+	A00+
		04	03	
	A01-	06	05	A01+
		08	07	
A01-	A02-	10	09 A01+	A02+
		12	11	
	A03-	14	13	A03+
		16	15	
A02-	A04-	18	17 A02+	A04+
		20	19	
		22	21	
	A05-	24	23	A05+
		26	25	
		28	27	
A03-	A06-	30	29 A03+	A06+
		32	31	
		34	33	
	A07-	36	35	A07+



## Dimensions (Units: mm)



## Wire Connections



## Ordering Information

M-2224CI CR	4-ch Channel to Channel Isolation Differential Analog Output Module using the DCON and Modbus Protocols (RoHS)
M-2228CI CR	8-ch Channel to Channel Isolation Differential Analog Output Module using the DCON and Modbus Protocols (RoHS)

## Accessories

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

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)