

Introduction

The tM-DA1P1R1 is an RS-485 Interface module that offers 1 analog output channel, 1 digital input channel and 1 relay output channel. Analog output resolution is 12-bit with an output range of 0~10V and 0~20mA. The Digital input channel is dry contact type and provides a 16-bit counter function. The Relay output type is a Form C, and all I/O terminals provide 4 kV ESD protection and 3 kV intra-module isolation.

System Specifications

Communication	
Interface	RS-485
Format	(N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)
Baud Rate	1200 ~ 115200 bps
Protocol	DCON, Modbus/RTU, Modbus/ASCII
Watchdog	Communication (Programmable)
LED Indicators	
Power	1 LED as Power Indicator
Isolation	
Intra-module Isolation, Field-to-Logic	2500 Vdc
EMS Protection	
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
Power	
Reverse Polarity Protection	Yes
Powered from Terminal Block	Yes, 10 ~ 30 Vdc
Consumption	1.8 W Max.
Mechanical	
Dimensions (W x L x H)	52 mm x 98 mm x 27 mm
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Humidity	10 ~ 95% RH, Non-condensing

Features

- Isolated Analog Output
- Isolated Digital Input
- Power Relay Output
- Configurable Power-on Value Settings
- Configurable Safe Value Settings
- 4 kV ESD Protection
- 3 kV Intra-module Isolation
- Wide Operating Temperature Range: -25 ~ +75°C



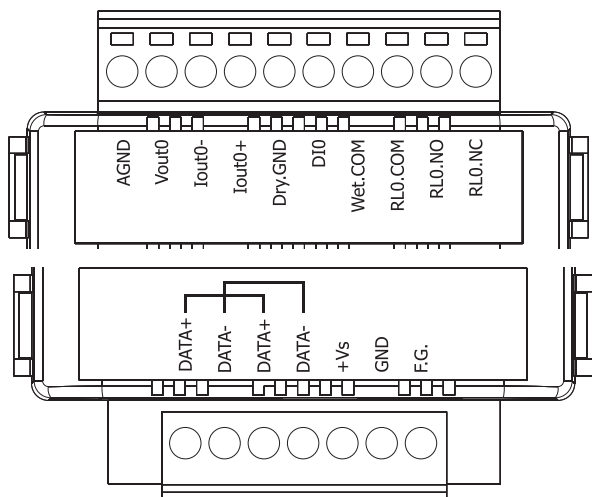
Applications

- Industrial Automation
- Industrial Machinery
- Building Automation
- Dimmer Control
- Food and Beverage Systems
- Semiconductor Fabrication
- Control Systems

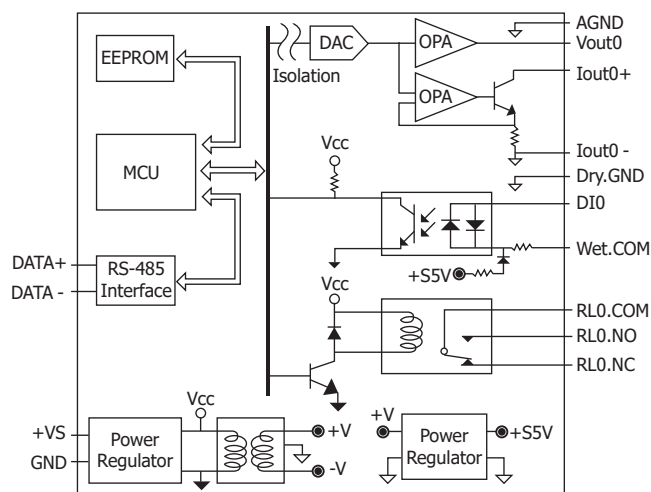
I/O Specifications

Analog Output		
Channels		1
Type		0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
Resolution		12-bit
Accuracy		+/-0.1% of FSR
DA Output Response Time		10 ms
Voltage Output Capability		20 mA
Current Load Resistance		500 Ω
Digital Input/Counter		
Channel		1
Type	Dry Contact	Source
	Wet Contact	Sink/Source
Wet Contact	On Voltage Level	+3.5 Vdc ~ +50 VDC
	Off Voltage Level	+1 VDC Max.
	Input Impedance	10 KΩ, 0.5 W
Dry Contact	On Voltage Level	Close to GND
	Off Voltage Level	Open
Counters	Max. Count	65535 (16-bit)
	Max. Input Frequency	100 Hz
	Min. Pulse Width	5 ms
	Overvoltage Protection	70 Vdc
Relay Output		
Channel		1
Type		Power Relay, Form C
Operating Load Voltage Range		250 V _{AC} or 30 V _{dc}
Max. Load Current		NO : 10 A @ 250 V _{AC} NC : 6 A @ 250 V _{AC}
Operating Time		15 ms max.
Release Time		5 ms max,
Mechanical Endurance		1 X 10 ⁷ OPS
Electrical Endurance		5 X 10 ⁴ OPS
Power On and Safe Value		Yes, Programmable

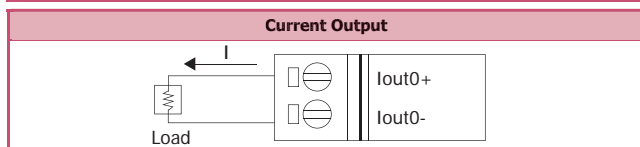
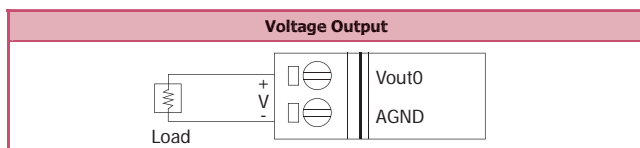
Pin Assignments



Block Diagram



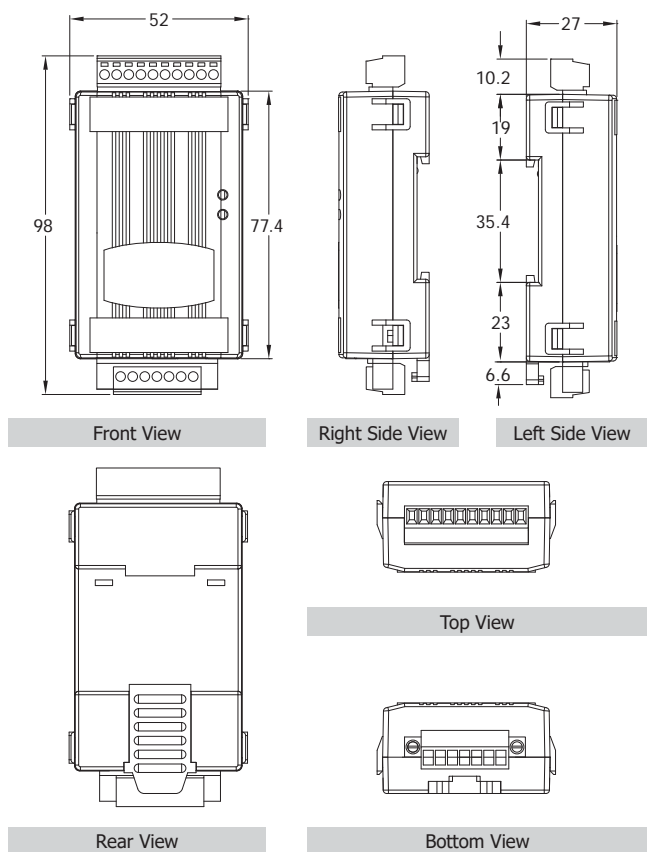
Wire Connections



Digital Input/Counter		
Wiring	ON State Readback as 1	OFF State Readback as 0
Dry Contact	Close to Dry.GND	Open
Wet Contact	+3.5 ~ +50 Vdc	+1 Vdc Max.

Relay Output		
	ON State	OFF State

Dimensions (Units: mm)



Ordering Information

tM-DA1P1R1 CR	1-channel Isolated Analog Output, 1-channel Isolated Digital Input and 1-channel Relay Output Module (RoHS)
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Related Products

	tM-7561 CR	Isolated USB to RS-485 Converter (RoHS)
	tM-7520U CR	Isolated RS-232 to RS-485 Converter (RoHS)

	tM-7510U CR	Isolated RS-485 Repeater (RoHS)
	MDR-20-24 CR	24W Single Output Industrial DIN-Rail Power Supply (RoHS)