ICP DAS

Features

- Multifunction (4 AI, 2 DI and 2 DO)
- 2 Voltage Input Channels and 2 Current Input Channels
- Digital Input Channels can be used as 16-bit Counters
- Digital Output Channels can be used as Voltage Input Limit Alarms
- 4 kV ESD and EFT Protection
- 120 VDC Overvoltage Protection
- Adjustable Sampling Rate
- Dual Watchdog
- 2500 VDC Intra-module Isolation
- Configurable Power-on Value Settings
- Configurable Safe Value Settings

CE FC RoHS

tM-AD4P2C2

4-channel Isolated AI, 2-channel Isolated DI and
2-channel Isolated DO Module

Introduction

The tM-AD4P2C2 is a multifunction module that includes 4 analog input channels, 2 digital input channels and 2 digital output channels. The module provides a programmable analog input range that includes 2 voltage input channels (±1 V, ±2.5 V, ±5 V, and ±10 V) and 2 current input channels (±20 mA, 0 ~ 20 mA and 4 ~ 20 mA). The analog inputs provide a high overvoltage protection of 120 VDC and an adjustable sampling rate. The module supports sink-type digital output with short circuit protection and the digital outputs can be used as voltage input limit alarms. The digital inputs are source-type and all digital input channels can be used as 16-bit counters. There are options for configuring power-on and safe digital output values. 4 kV ESD protection and 2500 VDC intra-module isolation are also provided. The tM-AD4P2C2 supports the DCON, Modbus RTU and Modbus ASCII protocols, which can be configured via software.

Applications

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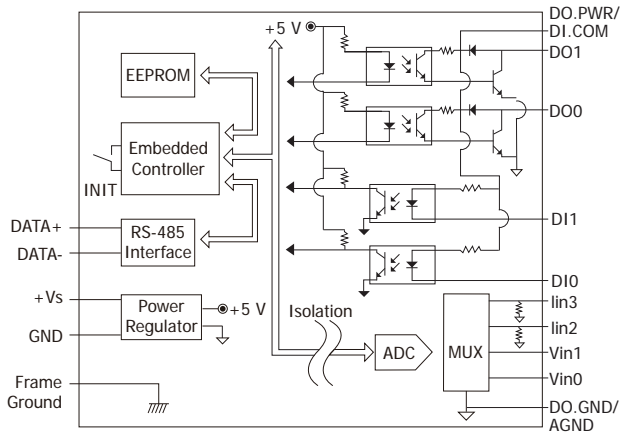- Semiconductor Fabrication
- Control Systems

System Specifications

CPU Module	
Watchdog Timer	Yes, Module (2.3 seconds), Communication (Programmable)
Isolation	
Intra-module Isolation	2500 V$_{DC}$
EMS Protection	
EFT (IEC 61000-4-4)	±4 kV for Power
EFT (IEC 61000-4-2)	±4 kV Contact for Each Terminal ±8 kV Air for Random Point
LED Indicators	
Status	1 x Power and Communication
COM Ports	
Ports	1 x RS-485
Baud Rate	1200 ~ 115200 bps
Data Format	(N, 8, 1), (N, 8, 2), (O, 8, 1), (E, 8, 1)
Protocol	DCON, Modbus/RTU, Modbus/ASCII
Power	
Reverse Polarity Protection	Yes
Consumption	1 W Max.
Powered from Terminal Block	Yes, 10 ~ 30 V$_{DC}$
Mechanical	
Dimensions (W x L x H)	52 mm x 98 mm x 27 mm
Installation	DIN-Rail Mounting
Environmental	
Operating Temperature	-25 ~ +75 °C
Storage Temperature	-30 ~ +75 °C
Humidity	10 ~ 95% RH, Non-condensing

I/O Specifications

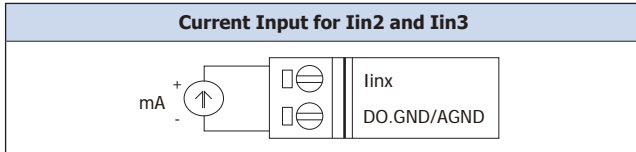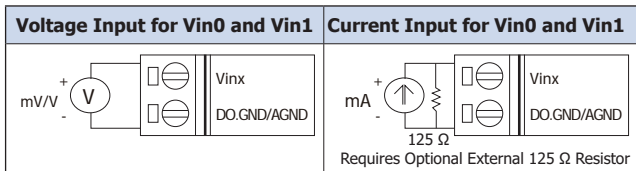| Analog Input	
Channels	Voltage: 2 Single-ended Current: 2 Single-ended
Range	Voltage: ±1 V, ±2.5 V, ±5 V, ±10 V Current: ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA
Resolution	Normal Mode: 14-bit Fast Mode: 12-bit
Accuracy	Normal Mode: ±0.1% Fast Mode: ±0.5%
Sampling Rate	Normal Mode: 10 Hz Fast Mode: 200 Hz
Input Impedance	Voltage: 10 MΩ Single-ended Current: 136 Ω
Overvoltage Protection	Voltage: 120 V$_{DC}$
Overcurrent Protection	Current: Yes, 50 mA @ 110 V$_{DC}$
Individual Channel Configuration	Yes
Zero Drift	±20 µV/°C
Span Drift	±25 ppm/°C
Digital Input/Counter	
Channels	2
Type	Wet Contact, Source
ON Voltage Level	+3.5 ~ +50 VDC
OFF Voltage Level	+1 VDC Max.
Max. Counts	65535 (16-bit)
Frequency	50 Hz
Min. Pulse Width	10 ms
Input Impedance	10 KΩ, 0.5 W
Overvoltage Protection	70 VDC
Digital Output	
Channels	2
Type	Isolated Open Collector (Sink)
Load Voltage	+3.5 ~ 50 VDC
Max. Load Current	700 mA/Channel
Overvoltage Protection	60 VDC
Overload Protection	1.4 A (with short circuit protection)
Short-Circuit Protection	Yes
Power on Value	Yes, Programmable
Safe Value	Yes, Programmable

■ Internal I/O Structure

■ Pin Assignments

■ Wire Connections

Voltage Input for Vin0 and Vin1	Current Input for Vin0 and Vin1
mV/V + − V	Vinx / DO.GND/AGND	mA + −	Vinx / DO.GND/AGND 125 Ω
	Requires Optional External 125 Ω Resistor

Current Input for Iin2 and Iin3
mA + −	Iinx / DO.GND/AGND
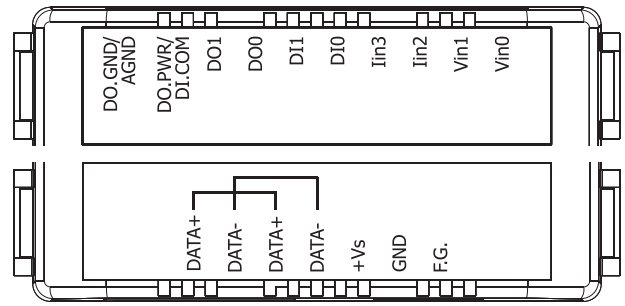
Digital Input/ Counter	ON State Readback as 1	OFF State Readback as 0
Source	+3.5 ~ +50 V_{DC}	OPEN or <1 V_{DC}
	DIx 10K — To other channels DO.PWR/DI.COM	DIx 10K — To other channels DO.PWR/DI.COM

Output Type	ON State Readback as 1	OFF State Readback as 0
Drive Relay	Relay ON	Relay OFF
	DO.PWR/DI.COM DOx DO.GND/AGND	DO.PWR/DI.COM DOx DO.GND/AGND
Resistance Load	DO.PWR/DI.COM DOx DO.GND/AGND	DO.PWR/DI.COM DOx DO.GND/AGND

■ Dimensions (Units: mm)

Left Side View

Front View

27, 10.2, 19, 35.4, 23, 6.6, 52, 98, 77.4
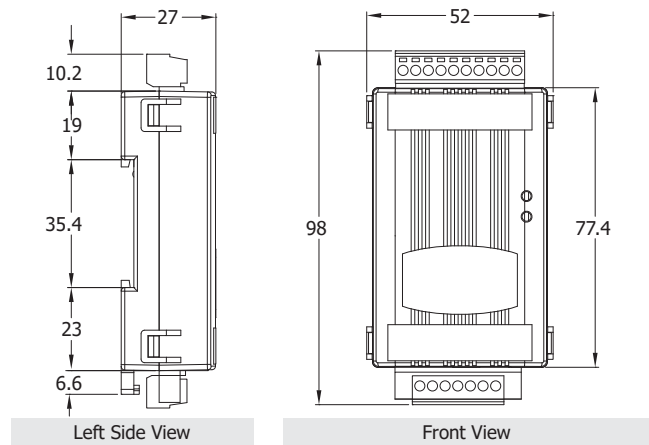
■ Ordering Information

tM-AD4P2C2 CR	4-channel Isolated AI, 2-channel Isolated DI (Wet) and 2-channel Isolated DO (Sink, NPN) Module (RoHS)