ICP DAS

I-7060(D)

M-7060(D)

M-7060P

M-7060PD

4-channel Isolated Digital Input and 4-channel Relay Output Module

▣ Features

- ■ I-7060(D)/M-7060(D)
    - ☐ 2 Form A and 2 Form C Signal Relay Output
    - ☐ ±2 kV EFT protection for Power Line
- ■ M-7060P(D)
    - ☐ 2 Form A and 2 Form C Power Relay Output
    - ☐ ±4 kV EFT protection for Power Line
    - ☐ ±3 kV Surge protection for Power Line
- ■ Sink- and Source-type for Digital Input
- ■ Digital Input Channels can be used as 16-bit Counters
- ■ Configurable Power-on Value Settings
- ■ Configurable Safe Value Settings
- ■ Dual Watchdog
- ■ Wide Operating Temperature Range: -25 to +75°C

CE FC RoHS

■ Introduction

The 7060 series provides 4 digital input channels, 2 Form A and 2 Form C signal relay output channels, while the M-7060P provides 4 digital input channels, 2 Form A and 2 Form C power relay output channels. All digital input channels can be used as 16-bit counters. In addition, the digital input channels can be selected either as sink- or source-type via wire connections. The "D" versions of the 7060 series provide eight LED indicators that can be used to monitor the status of the digital input and relay output. The "M" versions of the 7060 series support both the Modbus RTU and DCON protocols, which can be configured via software. There are also options for configuring power-on and safe values. 4 kV ESD protection and 3750 V_{DC} intra-module isolation are also provided to enhance noise protection capabilities in industrial environments. The 7060 series is the ideal solution for small signal switching applications, while the M-7060P is the perfect solution for high power applications.

■ System Specifications

| Model	I-7060	M-7060	M-7060P
	I-7060D	M-7060D	M-7060PD
Communication			
Interface	RS-485 Modbus RTU, DCON		
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	DCON	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	-	-	-
	Yes, 8 LEDs as Digital Input/Relay Output Indicators		
7-segment LED Display	-		
Isolation			
Intra-module Isolation, Field-to-Logic	3750 V_{DC}		
EMS Protection			
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal		
	±8 kV Air for Random Point		
EFT (IEC 61000-4-4)	±2 kV for Power Line	±4 kV for Power Line	
Surge (IEC 61000-4-5)	-	±3 kV for Power Line	
Power			
Reverse Polarity Protection	Yes		
Input Range	+10 ~ +30 V_{DC}		
Consumption	1 W	1 W	1.4 W
	1.4 W	1.4 W	1.8 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		

■ Applications

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

■ I/O Specifications

Model		I-7060	M-7060	M-7060P
		I-7060D	M-7060D	M-7060PD
Relay Output				
Channels		4 (Form A × 2, Form C × 2)		
Relay Type		Signal Relay		Power Relay
Form A Relay	Contact Rating	0.6 A @ 125 V_{AC} 2 A @ 30 V_{DC}		16A @ 250 V_{AC} 10 A @ 30 V_{DC}
	Min. Contact Load	10 uA @ 10 mV		100 mA @ 6 V
	Contact Material	Gold-plated silver		Silver Tin Alloy
	Operate Time	3 ms		10 ms
	Release Time	2 ms		5 ms
	Mechanical Endurance	1 x 10^8 ops.		1 x 10^7 ops.
	Electrical Endurance	5 × 10^5 ops.		1 × 10^5 ops.
Form C Relay	Contact Rating	0.6 A @ 125 V_{AC} 2 A @ 30 V_{DC}		NO:10 A @ 250 V_{AC} NC:6 A @ 250 V_{AC}
	Min. Contact Load	10 uA @ 10 mV		100 mA @ 6V
	Contact Material	Gold-plated silver		Silver Tin Alloy
	Operate Time	3 ms		10 ms
	Release Time	2 ms		5 ms
	Mechanical Endurance	1 x 10^8 ops.		1 x 10^7 ops.
	Electrical Endurance	5 × 10^5 ops.		1 × 10^5 ops.
Surge Strength		1500 V_{DC}		2500 V_{DC}
Power-on Value		Yes		
Safe Value		Yes		
Digital Input/Counter				
Channels		4		
Type	Dry Contact	-		
	Wet Contact	Sink/Source		
ON Voltage Level		+1 V_{DC} Max.		+4 V_{DC} Max.
OFF Voltage Level		+4 ~ 30 V_{DC}		+10 ~50 V_{DC}
Counters	Max. Count	65535 (16-bit)		
	Max. Input Frequency	100 Hz		
	Min. Pulse Width	5 ms		
Input Impedance		3 kΩ		10 kΩ
Overvoltage Protection		±35 V_{DC}		±70 V_{DC}

■ Internal I/O Structure
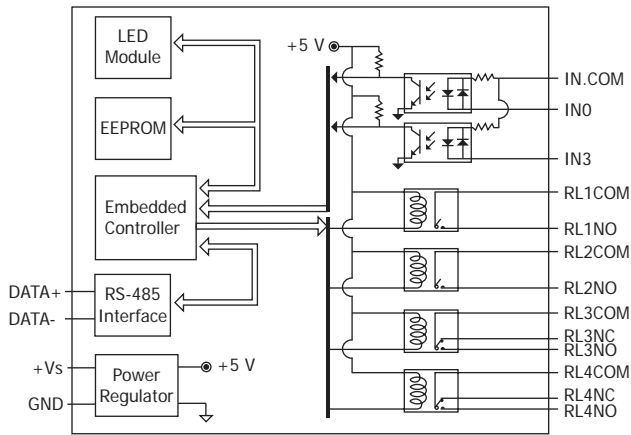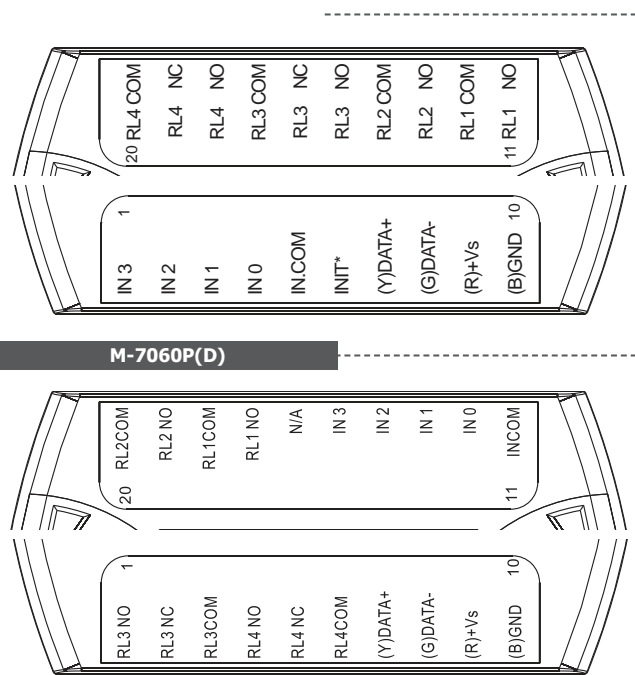
■ Wire Connections

Digital Input/ Counter	ON State Readback as 1	OFF State Readback as 0
I-7060(D)/ M-7060(D)	OPEN or <1 V$_{DC}$	+4 ~ +30 V$_{DC}$
M-7060P(D)	OPEN or <4 V$_{DC}$	+10 ~ +50 V$_{DC}$
Sink		
Source		

Output Type	ON State Readback as 1	OFF State Readback as 0
Relay Output in RL1 and RL2		
Relay Output in RL3 and RL4		

■ Pin Assignments

M-7060P(D)

■ Ordering Information

I-7060 CR	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON Protocol (Blue Cover) (RoHS)
I-7060-G CR	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON Protocol (Gray Cover) (RoHS)
I-7060D CR	I-7060 with LED Display (Blue Cover) (RoHS)
I-7060D-G CR	I-7060-G with LED Display (Gray Cover) (RoHS)
M-7060-G CR	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON and Modbus Protocols (Gray Cover) (RoHS)
M-7060D-G CR	M-7060-G with LED Display (Gray Cover) (RoHS)
M-7060P-G CR	4-channel Isolated Digital Input and 4-channel Relay Output Module using the DCON and Modbus Protocols (Gray Cover) (RoHS)
M-7060PD-G CR	M-7060P-G 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