



I-7016(D)

M-7016(D)

2-ch 4-wire Strain Gauge Input Module

Features

- 2 Strain Gauge Measurement
- High Resolution: 16-bit
- Excitation Voltage Output: 0 ~ +10 V
- 50 Hz Event Counter for Digital Input
- High/Low Alarm for Digital Output
- Linear Mapping Function
- Built-in Dual Watchdog



Introduction

Not only can the I-7016 process data from a load cell or a strain gauge, it also features linear mapping that can be used to directly convert the resulting data into weight via a user-defined correspondent table. The I-7016 supports full-bridge strain gauges and provides 2 Analog Input channels, 1 excitation voltage output channel, 1 Digital Input channels and 4 Digital Output channels. The module provides a programmable input range (± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 V, and ± 2.5 V) and each Analog Input channel can be individually configured. Excitation voltage output can be in the range of 0 ~ +10 V, with a 40 mA driving efficiency. Digital Output channels can also be set as high or low alarm outputs. The M-7016 supports both the Modbus RTU and DCON protocols, which can be configured via software, and all hardware specifications are the same as the I-7016.

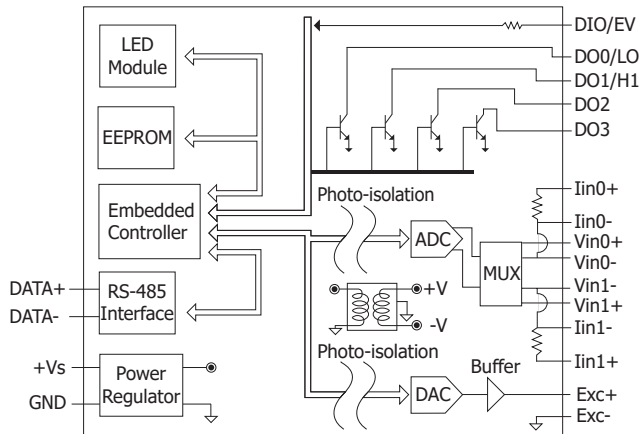
Specifications

| Model | I-7016 M-7016 | I-7016D M-7016D |
|------------------------------|-------------------------------------------------------------------------|-------------------------------|
| CPU Module | | |
| Watchdog Timer | Module, Communication (Programmable) | |
| Display | | |
| Type | - | 5-Digit 7 Segment LED Display |
| Isolation | | |
| Intra-module Isolation | 1500 VDC | |
| EMS Protection | | |
| EFT (IEC 61000-4-4) | ± 4 kV for Power Line | |
| ESD (IEC 61000-4-2) | ± 4 kV Contact for Each Terminal ± 8 kV Air for Random Point | |
| LED Indicators | | |
| Status | 1 x Power and Communication | |
| Digital Input/Counter | | |
| Channels | 1 | |
| Type | Dry Contact | |
| Sink/Source (NPN/PNP) | Source | |
| ON Voltage Level | Close to GND | |
| OFF Voltage Level | Open | |
| Max. Counts | 65535 (16-bit) | |
| Frequency | 50 Hz | |
| Input Impedance | 3 k Ω | |
| Overvoltage Protection | ± 30 VDC | |
| Digital Output | | |
| Channels | 4 | |
| Type | Open Collector | |
| Sink/Source (NPN/PNP) | Sink | |
| Load Voltage | +3.5 ~ +50 VDC | |
| Load Current | 30 mA/channel | |
| Power on Value | Programmable | |
| Safe Value | Programmable | |

| Model | I-7016 M-7016 | I-7016D M-7016D |
|--------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------|
| Strain Gauge, Load Cell Input | | |
| Channels | 2 | |
| Type | Full-Bridge Strain Gauge, Voltage, Current | |
| Range | ± 15 mV, ± 50 mV, ± 100 mV, ± 500 mV, ± 1 V, and ± 2.5 V, ± 20 mA | |
| Wiring | 4-wire | |
| Accuracy | $\pm 0.05\%$ of FSR | |
| Resolution | 16-bit | |
| Sampling Rate | 1-ch Mode: 10 Hz 2-ch Mode: 2 Hz (total) | |
| Impedance | 20 M Ω | |
| Overvoltage Protection | ± 5 VDC | |
| Excitation Voltage Output | | |
| Channels | 1 | |
| Range | 0 ~ +10 V | |
| Resolution | 16-bit | |
| Accuracy | $\pm 0.05\%$ of FSR | |
| Max. Load Current | 40 mA | |
| Power on Value | Programmable | |
| COM Ports | | |
| Ports | 1 x RS-485 | |
| Baud Rate | 1200 ~ 115200 bps | |
| Data Format | I-7000 M-7000 | (N, 8, 1) (N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1) |
| Protocol | I-7000 M-7000 | DCON Modbus RTU, DCON |
| Power | | |
| Reverse Polarity Protection | Yes | |
| Input Range | +10 ~ +30 VDC | |
| Consumption | 2.4 W | 3.0 W |

| | |
|-----------------------|-----------------------------|
| Model | I-7016(D), M-7016(D) |
| Mechanical | |
| Dimensions (mm) | 72 x 123 x 35 (W x L x H) |
| Installation | DIN-Rail Mounting |
| Environment | |
| Operating Temperature | -25 ~ +75 °C |
| Storage Temperature | -40 ~ +85 °C |
| Humidity | 10 ~ 95% RH, Non-condensing |

Internal I/O Structure



Pin Assignments






Applications

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

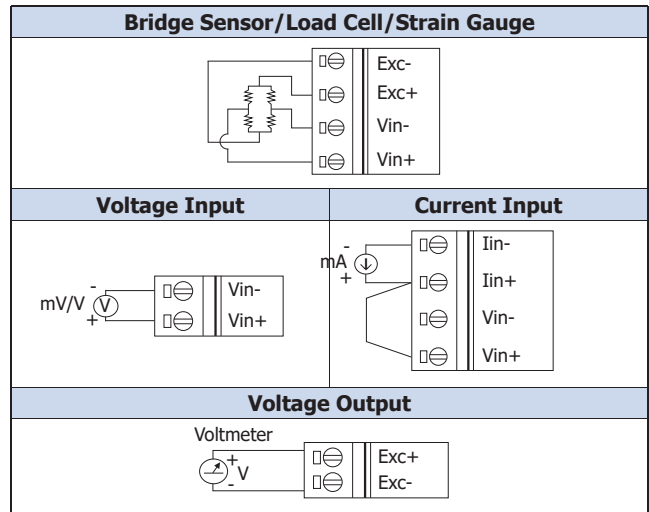
Ordering Information



| | |
|---------------------|------------------------------------------------------------------------------------------------------------|
| I-7016 CR | 2-ch 4-wire Strain Gauge Input Module using DCON Protocol (Blue Cover) (RoHS) |
| I-7016D CR | 2-ch 4-wire Strain Gauge Input Module with LED Display using DCON Protocol (Blue Cover) (RoHS) |
| I-7016D-G CR | 2-ch 4-wire Strain Gauge Input Module with LED Display using DCON Protocol (Gray Cover) (RoHS) |
| M-7016-G CR | 2-ch 4-wire Strain Gauge Input Module using DCON and Modbus Protocols (Gray Cover) (RoHS) |
| M-7016D-G CR | 2-ch 4-wire Strain Gauge Input Module with LED Display using DCON and Modbus Protocols (Gray Cover) (RoHS) |





Accessories

| | |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| tM-7520U CR |  Tiny Isolated RS-232 to RS-485 Converter (RoHS) |
| tM-7561 CR |  Tiny USB to Isolated RS-485 Converter with CA-USB18 Cable (RoHS) |
| tM-SG4 CR |  RS-485 Pull-high/Pull-low and Termination Resistor Module (RoHS) |

Wire Connections



| DI/Counter | Readback as 1 | Readback as 0 |
|-------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| | Open | Closed to GND |
| Dry Contact |  |  |

| Output Type | ON State Readback as 1 | OFF State Readback as 0 |
|-----------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Resistance Load |  |  |
| Inductance Load |  |  |