

# M-6018-16

16-channel Universal Analog Input Module

## Features

- 16-channel Differential Analog Input
- Current, Voltage or Thermocouple Input
- Adjustable CJC Offset
- Open Thermocouple Detection
- Dual Watchdog

## Introduction

The M-6018-16 is an analog input module that includes 16 differential analog input channels. The voltage input range can be from ±15 mV to ±2.5 V, the current input range can be either +4 to +20 mA, 0 to +20 mA, or ±20 mA, and types J, K, T, E, R, S, B, N, C, L, M, LDIN43710 thermocouple can be used for the thermocouple input. Overvoltage protection of up to 120 VDC is provided. The module also features per-channel open wire detection for the thermocouple input types, and provides 4 kV ESD protection as well as 3000 VDC intra-module isolation.

## Applications

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

## System Specifications

| | |
|---|---|
| **CPU Module** | |
| Watchdog Timer | Module, Communication (Programmable) |
| **Isolation** | |
| Intra-module Isolation | 3000 VDC |
| **EMS Protection** | |
| EFT (IEC 61000-4-4) | ±4 kV for Power Line |
| ESD (IEC 61000-4-2) | ±4 kV Contact for each Terminal<br>±8 kV Air for Random Point |
| Surge (IEC 61000-4-5) | ±1 kV for Power Line |
| **LED Indicators** | |
| Status | 1 x Power and Communication |
| **COM Ports** | |
| Ports | 1 x RS-485 |
| Baud Rate | 1200 to 115200 bps |
| Data Format | (N, 8, 1) (N, 8, 2) (E, 8, 1) (O, 8, 1) |
| Protocol | Modbus RTU, DCON |
| Bias Resistor | 1 kΩ (DIP switch selectable) |
| **Power** | |
| Reverse Polarity Protection | Yes |
| Input Range | +10 ~ +48 VDC |
| Consumption | 0.5 W |
| **Mechanical** | |
| Dimensions (mm) | 116 x 120 x 64 (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 |

## I/O Specifications

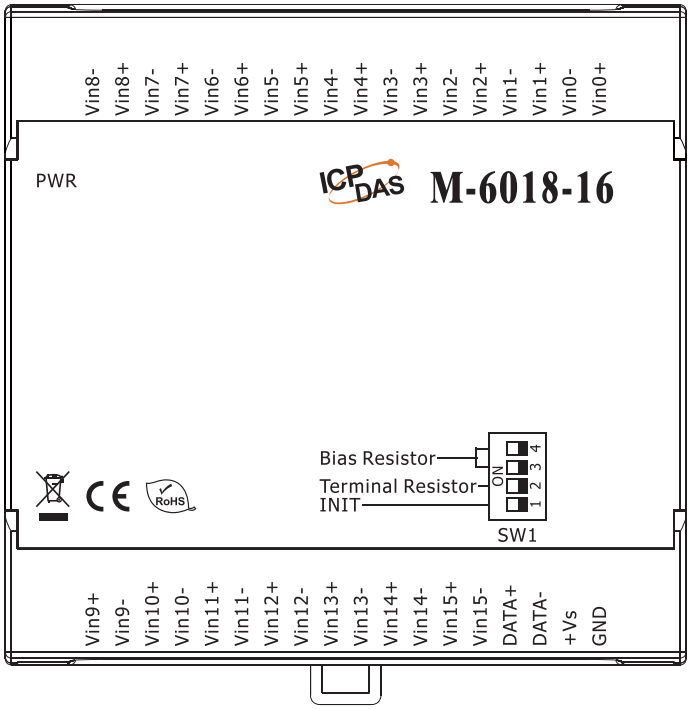
| | | |
|---|---|---|
| **Analog Input** | | |
| Channels | | 16 Differential |
| Sensor Types | Thermocouple | J, K, T, E, R, S, B, N, C |
| | Voltage | ±15 mV, ±50 mV, ±100 mV,<br>±500 mV, ±1 V, ±2.5 V |
| | Current | ±20 mA, 0 ~ 20 mA, 4 ~ 20 mA<br>(requires an optional external<br>125 Ω resistor) |
| Resolution | | 16-bit |
| Accuracy | | 0.1% of FSR |
| Sampling Rate | | 10 Hz (Total) |
| Input Impedance | | > 400 kΩ |
| Common Voltage Protection | | 25 VDC |
| Overvoltage Protection | | 120 VDC |
| Open Wire Detection<br>(for thermocouple only) | | Yes |
| Individual Channel Configuration | | - |

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## Thermocouple Type

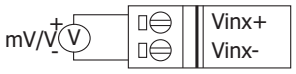
| Type Code | Thermocouple Type | Temperature Range |
|---|---|---|
| 0E | J | -210 to +760°C |
| 0F | K | -270 to +1372°C |
| 10 | T | -270 to +400°C |
| 11 | E | -270 to +1000°C |
| 12 | R | 0 to +1768°C |
| 13 | S | 0 to +1768°C |
| 14 | B | 0 to +1820°C |
| 15 | N | -270 to +1300°C |
| 16 | C | 0 to +2320°C |

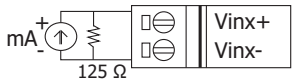
## Pin Assignments



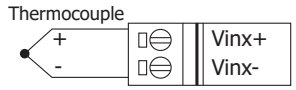

## Wire Connections

**M-6018-16**

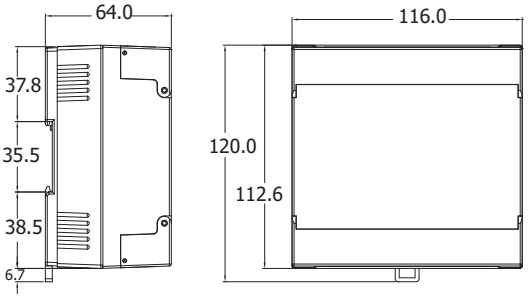



Requires an Optional External 125 Ω Resistor

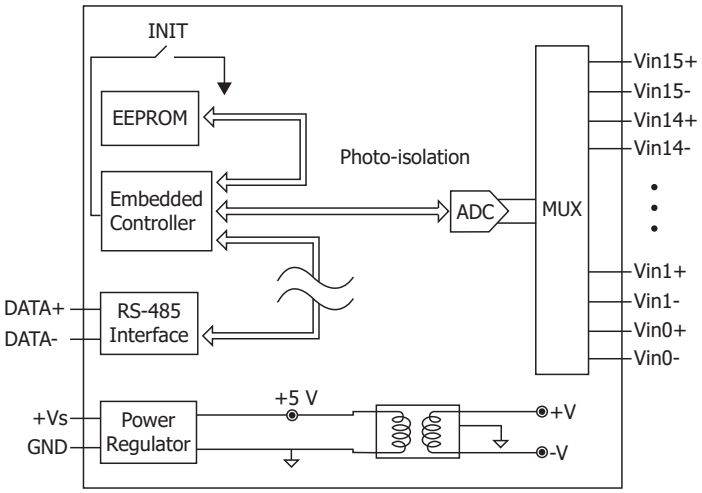



## Dimensions (Units: mm)




Left View | Front View

## Internal I/O Structure




## Ordering Information

| | |
|---|---|
| **M-6018-16 CR** | 16-channel Thermocouple/Voltage/Current Input Module using the DCON and Modbus Protocols (RoHS) |

## Accessories

| | |
|---|---|
| **2AB125R** | 125 Ω, 0.1% DIP Resistor used for Current Type Input Modules |

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