

Module Datasheet

Introduction

SensOper MC-EX-TC4 Thermocouple Input module is an expansion module that can be use with MC-CPU-CM4-Gx CPU module. The major functionality of this module was for measure temperature. Hence this module includes four input terminals for collect temperature readings. Further, this thermocouple module use I2C via SPI interface for read temperature values. Moreover, this module includes I2C address configurable DIP switches and bit resolution of this module is 14 bit. The module expansion is supported by board-to-board connector with 40 pins.

Features

14-bit Resolution 	Integrated Cold Compensation Junction 	Din Rail Mounting 	Detect Thermocouple shorts 	Version Availability K-, J-, -,T-, S-, R- and E Type
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Expansion

This module supports maximum one unit for single Bus expansion.

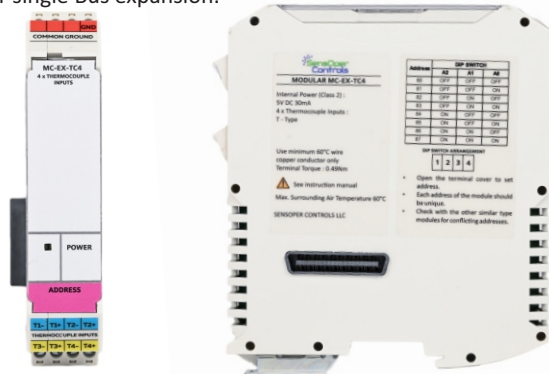


Figure 1: Front and Side view of Thermocouple Input module

Specifications

Table 1: Thermocouple Input expansion module specifications

Range of Products	Modular Industrial Controller
Product Type	I/O Expansion
Programming	MAX31855 via SPI
Address Configuration	DIP Switches
Range of Readings	-270 °C to +1800 °C (depends on type of Thermocouple)
Thermocouple	Versions available for K-, J-, N-, T-, S-, R-, and E-Type
Resolution	14-Bit, 0.25°C Resolution
Accuracy	±2°C for K-type thermocouple
I/O Expandability	40 pin board to board connectivity

Electrical & Mechanical

Table 2: Thermocouple Input expansion module Electrical Characteristics

Electrical	
Rated Supply Voltage	24V DC
Power Consumption	32.6 - 40.4 W

Table 3: Thermocouple Input expansion module Mechanical Characteristics

Mechanical	
Electrical Connection	Removable screw terminal block for inputs and outputs(pitch 5.08 mm)
Mounting	Top hat TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.54 rail conforming to IEC 60715
Height	113.6 mm
Depth	99.60 mm
Width	22 mm
Module Weight	0.21 kg

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Environmental

Table 4: Thermocouple Input expansion module Compatible Environmental Features

Relative Humidity	10-95% without consideration in operation
IP Degree of Protection	IP 20
Operating Temperature	-10 to +85 Celsius (14 to 185 Fahrenheit)
Storage Temperature	-25 to +85 Celsius (-13 to 185 Fahrenheit)
Operating Altitude	0 to 2000m
Storage Altitude	0 to 3000m
Stock Resistance	15 gn for 11 ms

Module Dimensions

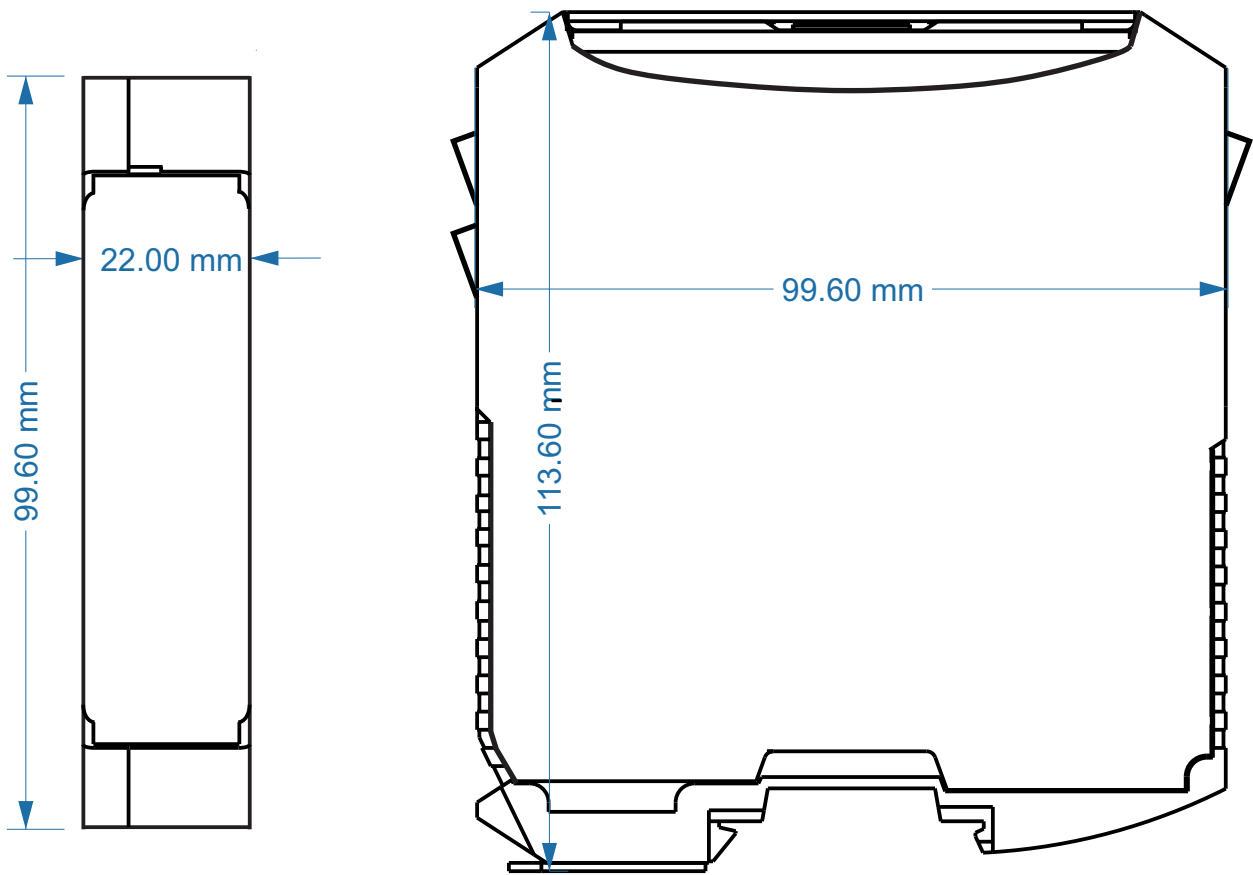


Figure 2: Front view and Side view Dimensions of Thermocouple Input module

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Module Expansion

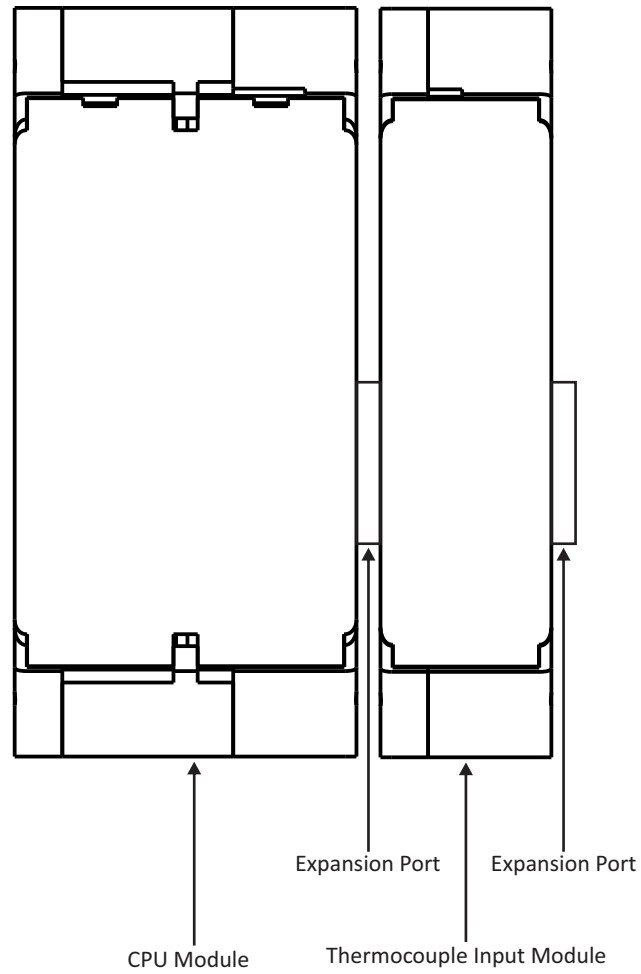


Figure 3: Expansion Modules connect with CPU Module

MC-EX-TC4 module have Male and Female port can be connected with CPU module or another expansion modules .



Figure 4: Expansion Port male and female ports

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Wiring Diagram of Power up and Input Terminals

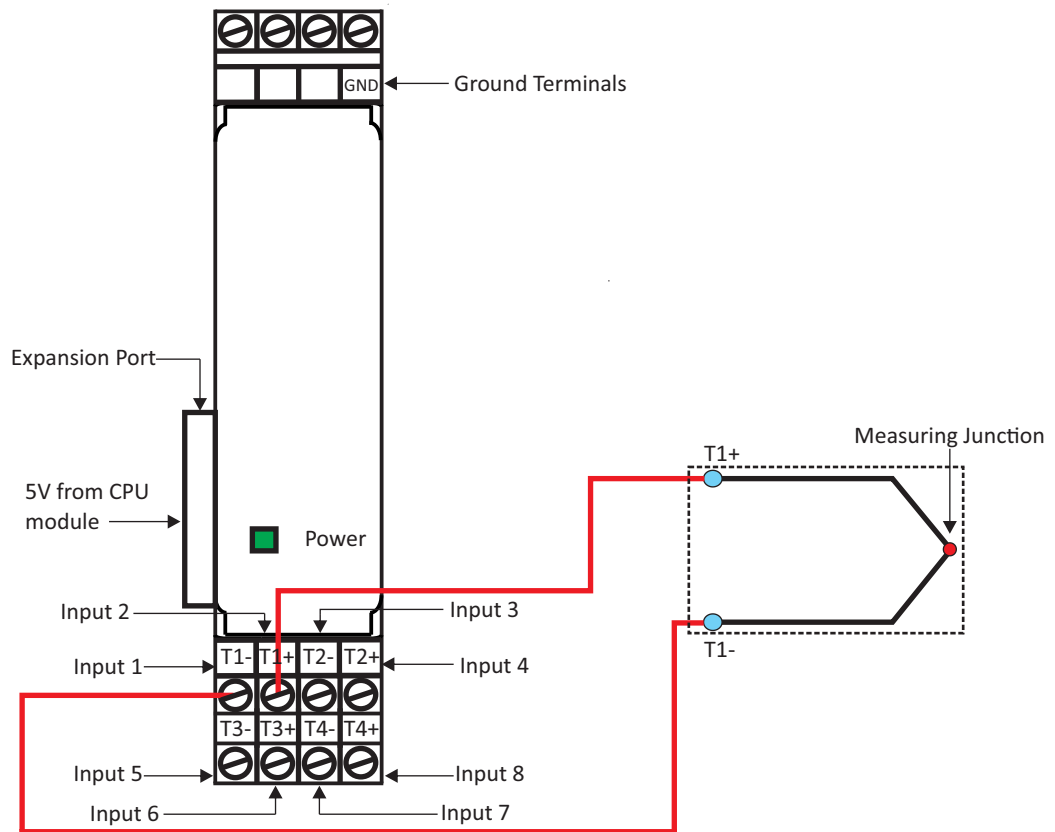


Figure 5: The wiring diagram of the Thermocouple Input Module.

Figure 5 shows how to power up the Thermocouple Input Module. Module operation will voltage provide via CPU module. If the wiring is correctly done the Power indication LED will turn on. Further, this wiring diagram shows how to receive signal from Thermocouple.

CPU Module and Expansion Module GPIO Connection Diagram

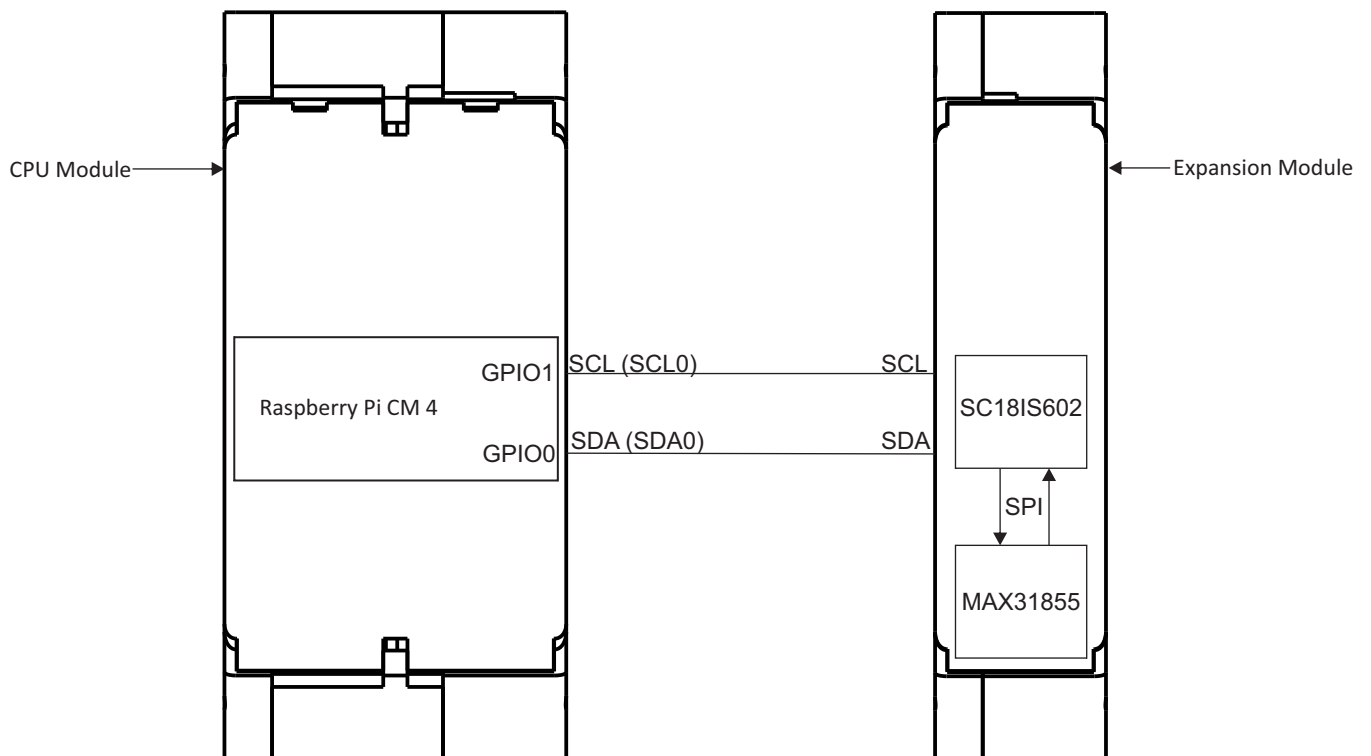


Figure 6: The GPIO connection with CPU module and Expansion Module.

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Table 5: DIP Switch Table.

Address	DIP Switch A2	DIP Switch A1	DIP Switch A0
40	OFF	OFF	OFF
41	OFF	OFF	ON
42	OFF	ON	OFF
43	OFF	ON	ON
44	ON	OFF	OFF
45	ON	OFF	ON
46	ON	ON	OFF
47	ON	ON	ON

***Read the Product label for more details about DIP switch configuration.**

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Revision History

The table shown below include the revision history of this document.

Revision Number	Date	Substantial Changes
0	18/3/2022	First Edition of Startup guide
1	-	-

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