



M-2004

4-port Digital Temperature Sensor Module with Daisy-Chain Wiring

Introduction

The M-2004 is a digital temperature sensor module that provides four ports for 2- or 3 wire DS18B20 digital temperature sensor input. The DS18B20 temperature sensor has a high accuracy of $\pm 0.5\text{ }^{\circ}\text{C}$ when measuring temperatures between -10 and $+85\text{ }^{\circ}\text{C}$, with a total measurement range of between -55 and $+125\text{ }^{\circ}\text{C}$. Up to 20 DS18B20 sensors can be connected to each port on the M-2004 module in a daisy-chain arrangement with a maximum wiring distance of 100 meters. The M-2004 module is fully RoHS compliant, and features 4 kV ESD protection as well as 3000 VDC intra-module isolation.

System Specifications

Communication Interface	
Interface	RS-485
Bias Resistor	Yes, 1k Ω bias resistor by switch selectable
Format	N81, N82, E81, O81
Baud Rate	1200 to 115200 bps
Protocol	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	-
Isolation	
Intra-module Isolated, Field-to-Logic	3000 VDC
EMS Protection	
ESD (IEC 61000-4-2)	$\pm 4\text{ kV}$ Contact for each Terminal
	$\pm 8\text{ kV}$ Air for Random Point
EFT (IEC 61000-4-4)	$\pm 4\text{ kV}$ for Power
Surge (IEC 61000-4-5)	$\pm 2\text{ kV}$ for power liner
Power	
Reverse Polarity Protection	Yes
Input Voltage Range	+10 ~ +48 VDC
Power Consumption	0.5 W
Mechanical	
Dimensions (W x L x H)	33 x 117 x 88 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 $^{\circ}\text{C}$ to +75 $^{\circ}\text{C}$
Storage Temperature	-30 $^{\circ}\text{C}$ to +80 $^{\circ}\text{C}$
Relative Humidity	10 ~ 95% RH, Non-condensing

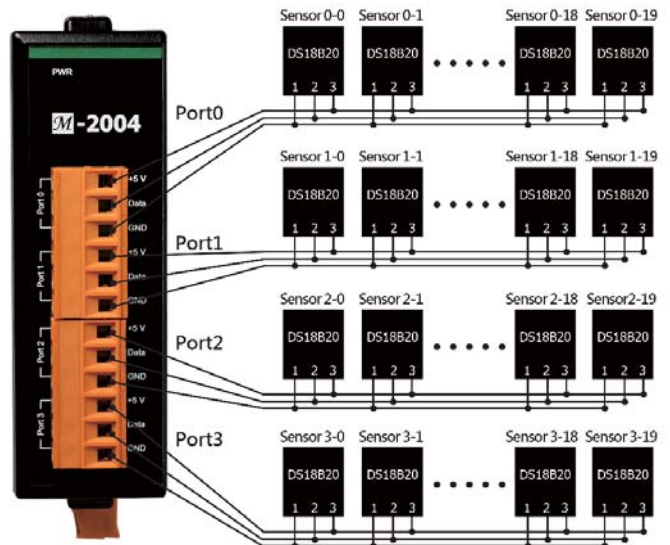
Features

- 4-Port DS18B20 Sensor Input Module
- 2/3-wire DS18B20 Wire Connection
- Max 20 Sensors per Port
- MMax. Distance of 100 m per Port when using Daisy-Chain Wiring
- Measures Temperatures from -55 to $+125\text{ }^{\circ}\text{C}$
- $\pm 0.5\text{ }^{\circ}\text{C}$ Accuracy from -10 to $+85\text{ }^{\circ}\text{C}$
- 4 kV ESD Protection
- 3000 VDC Intra-module Isolation, Field to Logic
- RoHS Compliant
- Wide Operating Temperature Range: -25 to $+75\text{ }^{\circ}\text{C}$



Applications

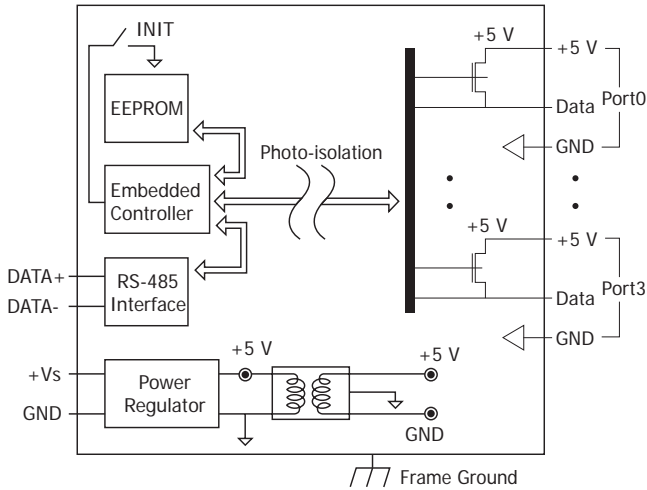
- Temperature Measurement
- Environment Monitoring
- Tunnel Monitoring
- Building Monitoring



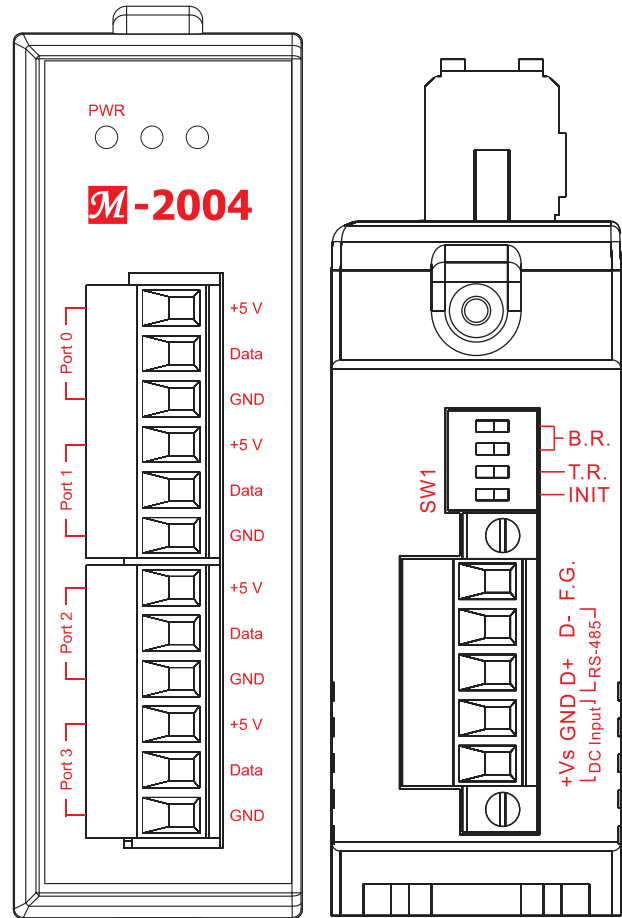
I/O Specifications

Analog Input	
Port	4
Wiring	2-wire or 3-wire
Sensor Type	DS18B20
Temperature Measurement Range	$-55\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$
Resolution	12-bit
Accuracy	$\pm 0.5\text{ }^{\circ}\text{C}$ (See Note 1)
Sampling Rate	1 Hz
Number of Sensors per Port	20
Sensor Wiring Length	Max. 100 m per Port
Note :1 $\pm 0.5\text{ }^{\circ}\text{C}$ Accuracy from $-10\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$	

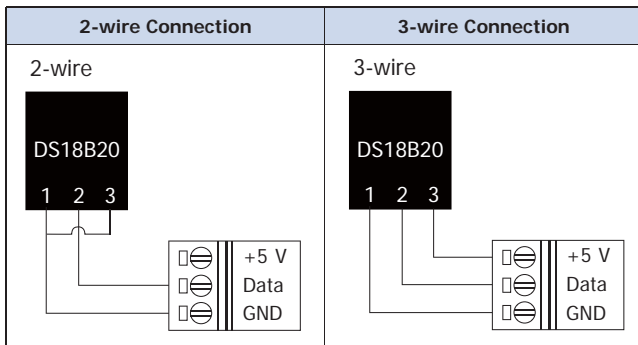
Internal I/O Structure



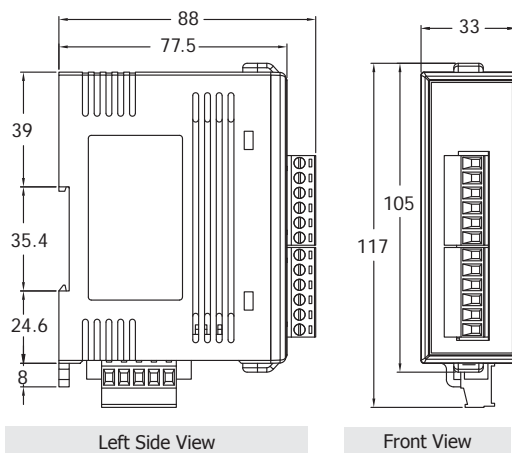
Pin & Terminal Assignments



Wire Connections






Dimensions (Units: mm)



Ordering Information

M-2004 CR	4-Port Digital Temperature Sensor Module with Daisy-Chain Wiring (RoHS)
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Accessories

 CA-TP1-M100-L020 CR	3-wire DS18B20, Stainless steel, 2M (-30 °C ~ 125 °C) (RoHS)
 CA-TP1-M200-L020 CR	3-wire DS18B20, copper nickel plated, 2 M (-30 °C ~ 125 °C) (RoHS)
 tM-7520U CR	RS-232 to RS-485 Converter (RoHS)