SENSOR SOLUTIONS



3S-MC-M-PT1000

Multi PT1000
Modbus Converter

USER MANUAL

USER MANUAL TABLE OF CONTENTS

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Waste Disposal



This symbol indicates that the product is subject to European Union regulations on separate waste disposal. This applies to both the product itself and any accessories bearing the same symbol. Such products must not be disposed of as unsorted household waste.

Note: *SEVEN reserves the right to make changes to this document without prior notice.*

Pinarcay OSB Mahallesi 11. Cadde, No: 35, Corum Organize Sanayi Bolgesi 19200 Merkez / Corum / Türkiye
• **Phone:** +90 364 230 1233 • **Website:** www.sevensensor.com • **E-mail:** teknik@sevensensor.com

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1. Introduction

The Multi PT1000 Modbus Converter is part of the SEVEN product range, which includes professional, smart measurement devices for environmental and industrial applications such as PV plants. Up to 8 PT1000 temperature sensors can be connected to the Multi PT1000 Modbus Converter. The connected PT1000 sensors can be selected as module or ambient temperature sensors according to customer requirements. Two types of Multi PT1000 Modbus Converter are available. The product list with product codes is given in Table 1.

Type	Product Code	Name	Application	Output
1	**3S-MC-M-PT1000**	Multi PT1000 Modbus Converter (8 inputs)	Module / Ambient	Modbus RTU
2	**3S-MC-M-PT1000-3T**	Multi PT1000 Modbus Converter (3 inputs)	Module / Ambient	Modbus RTU

Table 1 - Product List and Product Codes



Figure 1 - Product Model

The measured module or ambient temperature data is transmitted to data loggers and receiving units over a 3-wire RS485 bus using the Modbus RTU protocol.

2. Multi PT1000 Modbus Converter Installation

It is recommended that the products be operated before installation to make sure that all system components work properly. A general diagram of the installation steps is given below.

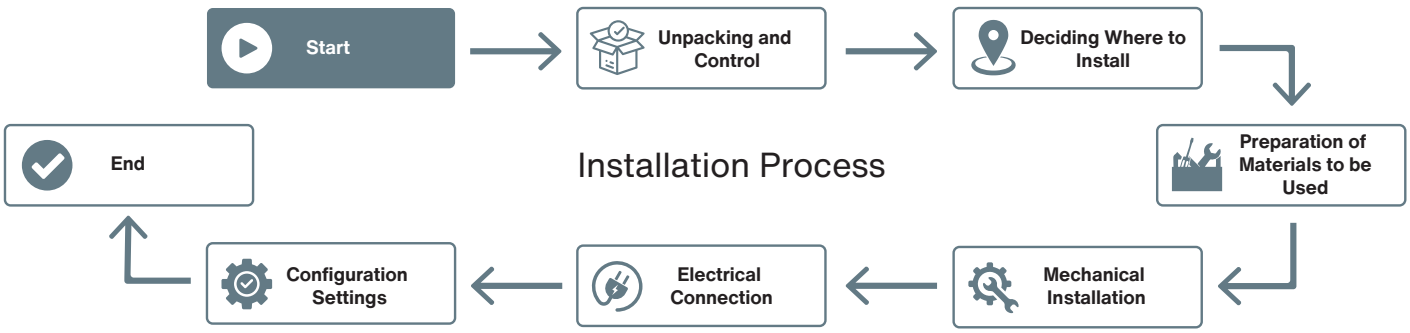

Diagram 1 – Installation Process

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2.1. Unpacking and Control

When you receive the product, check carefully that the package contents are complete. If any component is missing, damaged or defective, contact SEVEN Sensor Solutions.

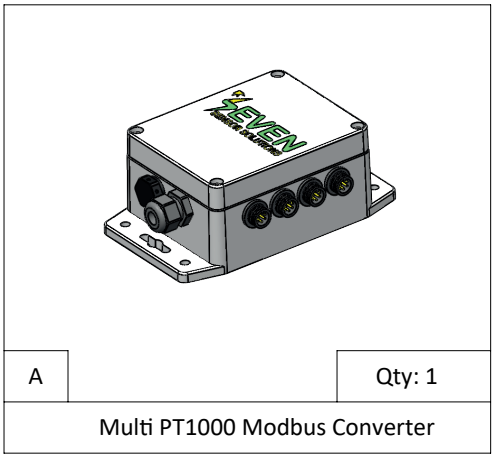

Figure 2 - 3S-MC-M-PT1000

2.2. Field Requirements and Considerations

Each site is different and has its own challenges. Therefore, the installation of the product may vary from site to site. First, it must be decided where the product will be installed. It is recommended that the product be securely mounted on a flat, stable, and vibration-free surface in a shaded area, away from direct sunlight, at a height of at least 30–40 cm above ground level. During installation, care must be taken to ensure that the connectors and cable connections on the enclosure are not subjected to mechanical stress, that the cables are not excessively bent, and that no strain is applied to the connection points.

2.3. Preparation of Materials to be Used in the Installation

The materials needed during installation are provided by SEVEN. The user should prepare only the following hand tools and personal protective equipment.



Figure 3 - Materials to be Used in Installation

Pinarcay OSB Mahallesi 11. Cadde, No: 35, Corum Organize Sanayi Bolgesi 19200 Merkez / Corum / Türkiye
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2.4. Installation

Place the converter box in the area where it will be mounted. Prepare four M5x12 hex-head bolts and M5 Fibre nuts. Tighten the bolts with an 8 mm wrench to fix the converter box in place.

During installation, follow the installation instructions of the external sensor being used.

Note: *The installation instructions for the Module Temperature and Ambient Temperature Sensors can be accessed via these links.*
• Module Temperature Sensor User Manual:
https://www.sevensensor.com/files/d/en/3S-MT-PT1000_Module-Temperature-Sensor_User-Manual.pdf
• Ambient Temperature Sensor User Manual:
https://www.sevensensor.com/files/d/en/3S-AT-PT1000_Ambient-Temperature-Sensor_User-Manual.pdf

Note: *To make maintenance easier, especially in rooftop projects, the device should be mounted in an easily accessible location.*

Note: *The plate thickness must be at least 2 mm to ensure adequate structural strength. For plates thicker than 5 mm, the bolt length must be increased accordingly.*

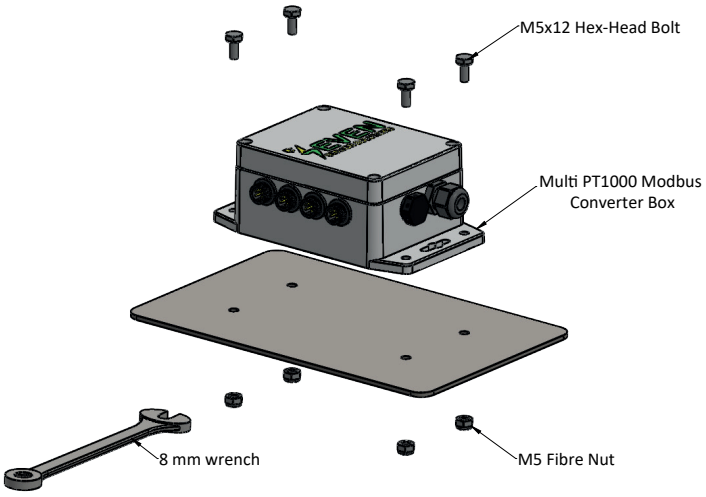

Figure 4 - 3S-MC-M-PT1000 Installation Diagram

2.5. Maintenance and Repair

Check the sensors and electrical enclosures periodically for damage, deterioration or disconnection; signs of moisture or pests in the enclosures; loose cabling; disconnected temperature sensors; brittle connections; and other possible issues.

According to the IEC 61724-1:2021 standard, the monitoring system should be inspected at least once a year, and preferably at more frequent intervals.

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3. Connections

The Modbus converter box has waterproof and UV-resistant connectors. The minimum bending radius of the cables is 35 mm.

The Multi PT1000 Modbus Converter has an electrically isolated, half-duplex, 3-wire RS485 interface for configuration, communication and firmware update.

The supply voltage of the Multi PT1000 Modbus Converter is 12-30 V DC. The recommended supply voltage is 24 V DC.

The communication and power cable of the Multi PT1000 Modbus Converter must always be routed separately from AC/DC cables.

Note: *The installation and electrical connections of SEVEN sensors must be carried out by a qualified electrician.*

Wire Assignment for Power & Communication	
RS485 A / Data (+)	Green
RS485 B / Data (-)	Yellow
RS485 Signal Ground	Red
Power Supply (+)	Brown
Power Supply (-)	White
Protective Earth	Black

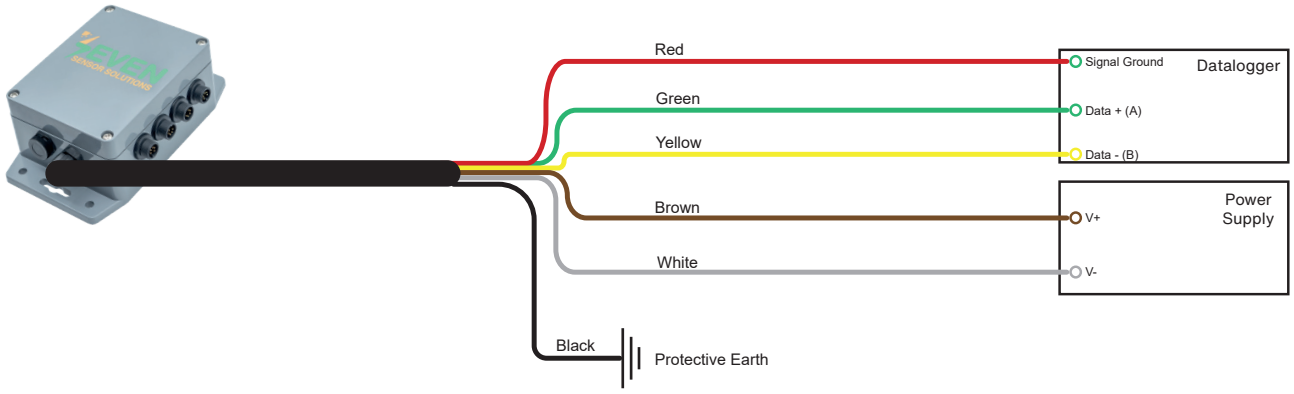

Figure 5 - Connection of the 3S-MC-M-PT1000 to the Datalogger

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4. 3S-MC-M-PT1000 Configuration and Communication

Once the Multi PT1000 Modbus Converter is installed and its connections are completed as shown in Figure 5, it starts measuring automatically.

Attention must be paid to the following points:

- A measurement test must be performed on the Multi PT1000 Modbus Converter using the Configuration Tool, and its proper operation in the field must be verified.

- The sensor's factory-default Modbus communication settings are Modbus ID: 1, Baud Rate: 9600, and Parity: None/1.

- If multiple Modbus devices are operated on the same network, a unique device ID must be assigned to each device.

4.1. 3S-MC-M-PT1000 Configuration Tool

The Configuration Tool is a software tool used to test the communication of the Multi PT1000 Modbus Converter (3S-MC-M-PT1000) and to configure the Modbus communication parameters.

A computer with a Windows® operating system, a USB-RS485 converter defined as a serial COM port, and Configuration Tool software compatible with the 3S-MC-M-PT1000 are required for configuration and testing.

To use the Configuration Tool, follow the instructions in the relevant User Interface Manual:
https://www.sevensensor.com/files/d/en/3S-MC-M-PT1000_Multi-PT1000-Modbus-Converter_GUI.pdf

4.2. Modbus RTU Technical Specifications

The Modbus addresses and features required for the Multi PT1000 Modbus Converter to communicate with systems such as data loggers are given in the table below.

ID-Dec	ID-Hex	Register	Range	Resolution	Description
300**22**	0x16	External Temperature 1	-40...+85°C	0,1 °C	The value measured by the temperature sensor 1
300**23**	0x17	External Temperature 2	-40...+85°C	0,1 °C	The value measured by the temperature sensor 2
300**24**	0x18	External Temperature 3	-40...+85°C	0,1 °C	The value measured by the temperature sensor 3
300**25**	0x19	External Temperature 4	-40...+85°C	0,1 °C	The value measured by the temperature sensor 4
300**26**	0x1A	External Temperature 5	-40...+85°C	0,1 °C	The value measured by the temperature sensor 5
300**27**	0x1B	External Temperature 6	-40...+85°C	0,1 °C	The value measured by the temperature sensor 6
300**28**	0x1C	External Temperature 7	-40...+85°C	0,1 °C	The value measured by the temperature sensor 7
300**29**	0x1D	External Temperature 8	-40...+85°C	0,1 °C	The value measured by the temperature sensor 8

Note: *The table above lists the addresses that need to be monitored by the user for the Multi PT1000 Modbus Converter Hardware (HW) 3.0 and Software (SW) 4.0 versions. If you need detailed information about different software versions, other Modbus and SunSpec addresses beyond those listed, or the software features of these addresses, you can download the detailed Modbus map from the link below.*

https://www.sevensensor.com/download

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5. Contact Details

Please feel free to contact us if you face any difficulties during installation or configuration.

Address: Pinarcay OSB Mahallesi 11. Cadde, No: 35, Corum Organize Sanayi Bolgesi 19200 Merkez/Corum

Phone: +90 553 228 74 55

E-mail: teknik@sevensensor.com

Website: www.sevensensor.com

Technical Support Portal: https://www.sevensensor.com/support

Through the portal, you can create and follow your support requests, view our responses, and check the status of your requests.

For easier access and to receive notifications regarding your support requests, you can also download our Meetlys application:

- iPhone / iPad: Meetlys – App Store
- Android: Meetlys – Google Play
- Windows: Meetlys – Microsoft Store