

Introduction

The **BKC – MT RS485-MB** is an industrial-grade, high-accuracy temperature sensor designed for precise thermal monitoring in demanding environments. It utilizes a Pt1000 RTD sensor element housed in a durable, self-adhesive aluminium block for reliable surface temperature measurement.

Equipped with **RS-485 communication** and operating on the **Modbus RTU protocol**, the device ensures stable and noise-resistant data transmission over long distances. With a wide input voltage range and compact, IP67-rated enclosure, the BKC – MT RS485-MB is ideal for integration into SCADA systems, data loggers, and other industrial automation platforms. This manual provides complete guidance on installation, electrical wiring, communication configuration, and software operation, enabling smooth setup and integration for field engineers and system integrators.

It ensures **high accuracy** through the use of a **specially formulated thermo-conductive adhesive Glue**, which enhances thermal contact between the sensor and the target surface.

Technical Specification

Parameter	Specification
Model	BKC – MT RS485-MB
Interface	RS485
Sensor Element & Type	Pt1000, RTD (Resistance Temperature Detector)
Operating Range	-50°C to 120 °C
Supply Voltage	24VDC (5 to 36Vdc)
Accuracy	Class A
Sensor Housing	Self-adhesive aluminium block (30x12x6mm)
Sensor Cable	Teflon-coated 3 meters,
Case material	Powder Coated Aluminium
Module temperature sensor	Sensor element -50°C to 600 °C (Fluke Calibration 9144 Metrology Well (Fluke 724 Temperature Calibrator)
Case size / protection level	80mm x 75 mm x 57 mm / IP 67

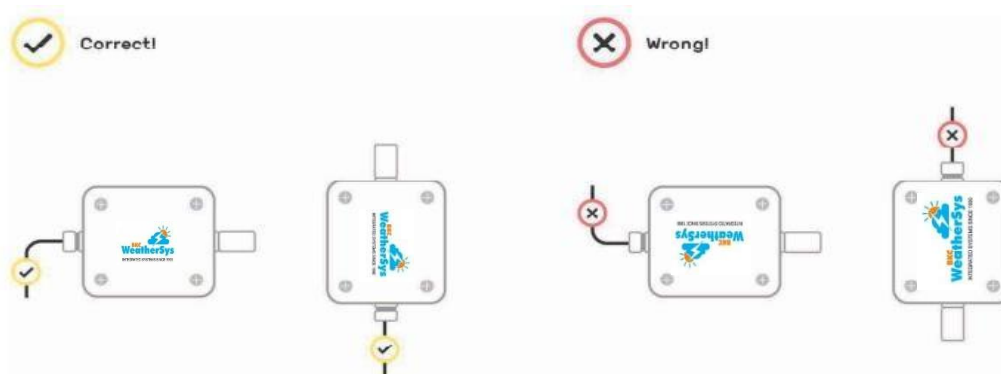
Safety Instructions:

- Installation and assembly of electrical equipment must be performed only by personnel who are electrically qualified.

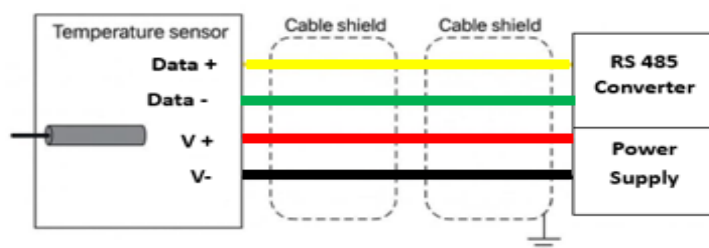
Warranty:

One year standard warranty applied excludes physical damage

Mounting and Installing Instruction:



Wiring Diagram:

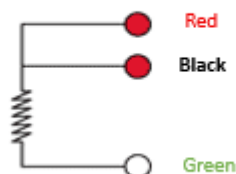


BKC – MT RS485-MB

2 wires Configuration



3 wires Configuration



Wiring Instructions:

Sensor Connection for 2 wires

- Red wire → RTD (+)
- Black wire → RTD (-)

Sensor Connection for 3 wires

- Green wire → F (+)
- Red wire → RTD (-)
- Black wire → RTD (+)

RS-485 Communication:

- **Yellow Wire** → Connect to **RS-485 D (+)**
- **Green Wire** → Connect to **RS-485 D (-)**

Power Supply:

- **Red Wire (V⁺)** → Connect to the **positive terminal** of the power supply
- **Black Wire (V⁻)** → Connect to the **negative terminal** of the power supply

NOTE: DC Supply Voltage Range from 5 VDC to 36 VDC .

Communication Protocol (Default Values)

Parameter	Value
Modbus Address	1
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bit	1
Register	Input Register (30001)

Temperature Calculation Logic

- If MSB = 0: Temperature = Data / 10
- If MSB ≠ 0: Temperature = (Data - FFFA) / 10

Software Configuration :

BKC MT Integrator_SS01 is a configuration and diagnostic software for the **BKC-MT RS485-MB** temperature sensor. It facilitates easy setup of Modbus communication parameters such as device address, baud rate, parity, and stop bits. It also allows real-time monitoring and testing of sensor data over RS485 using the Modbus RTU protocol.

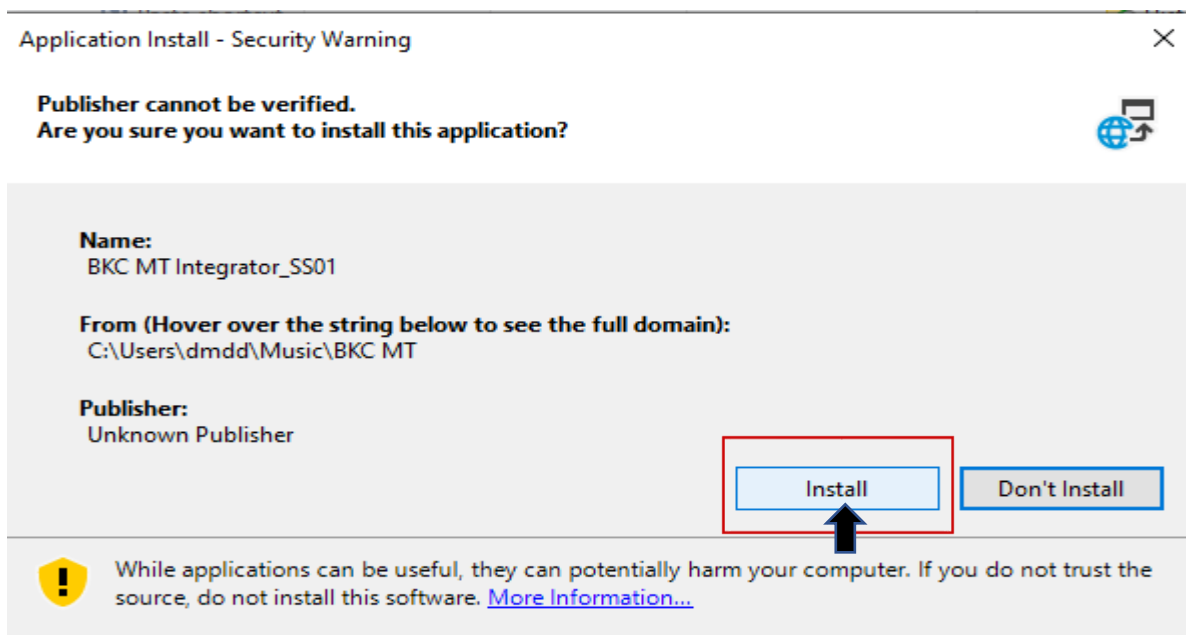
The software is designed for engineers and field technicians to simplify integration, testing, and commissioning of sensors used in industrial environments.

Download The Software:

NOTE : "It is available as a free download for buyers of the sensors."

Using BKC MT Integrator_SS01

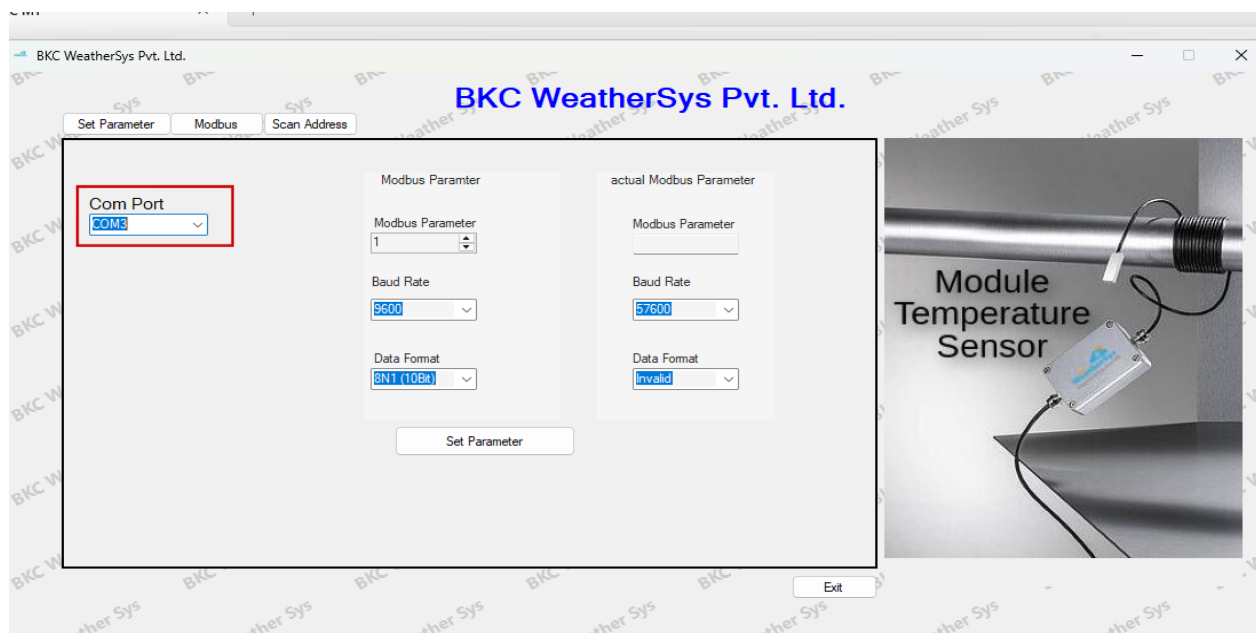
1. Launch the BKC MT Integrator_SS01 software.



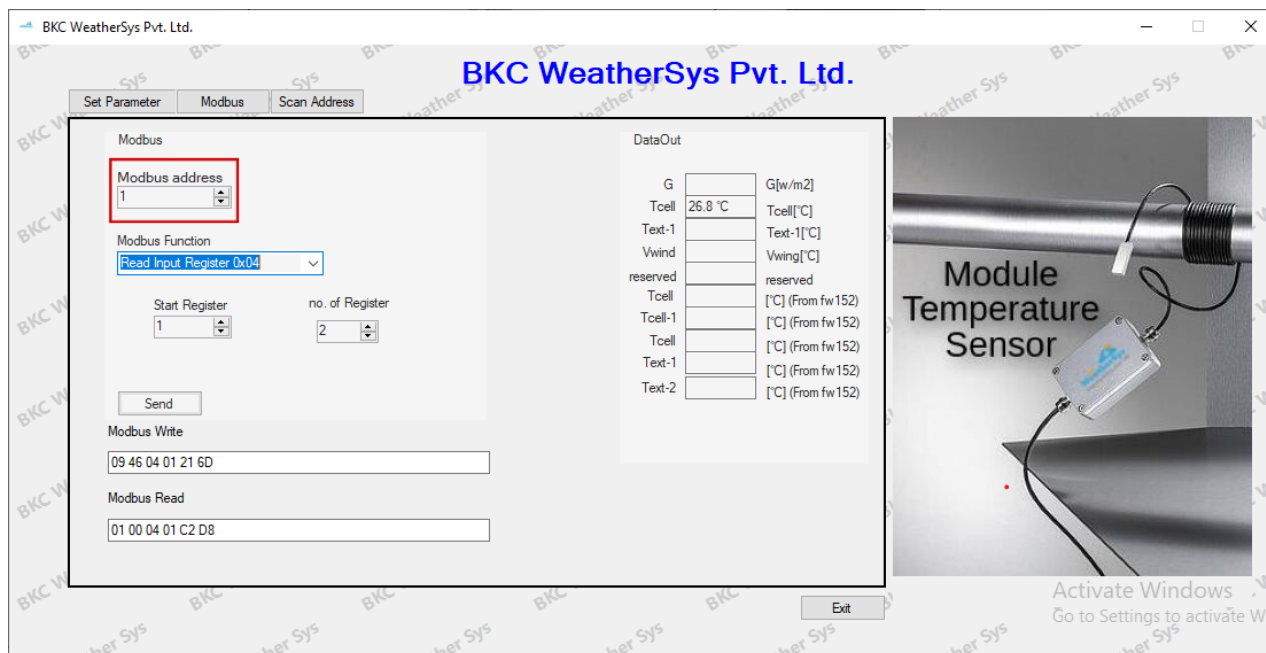
Step 2: Select Communication Protocol

Open the Software BKC MT Integrator_SS01 .

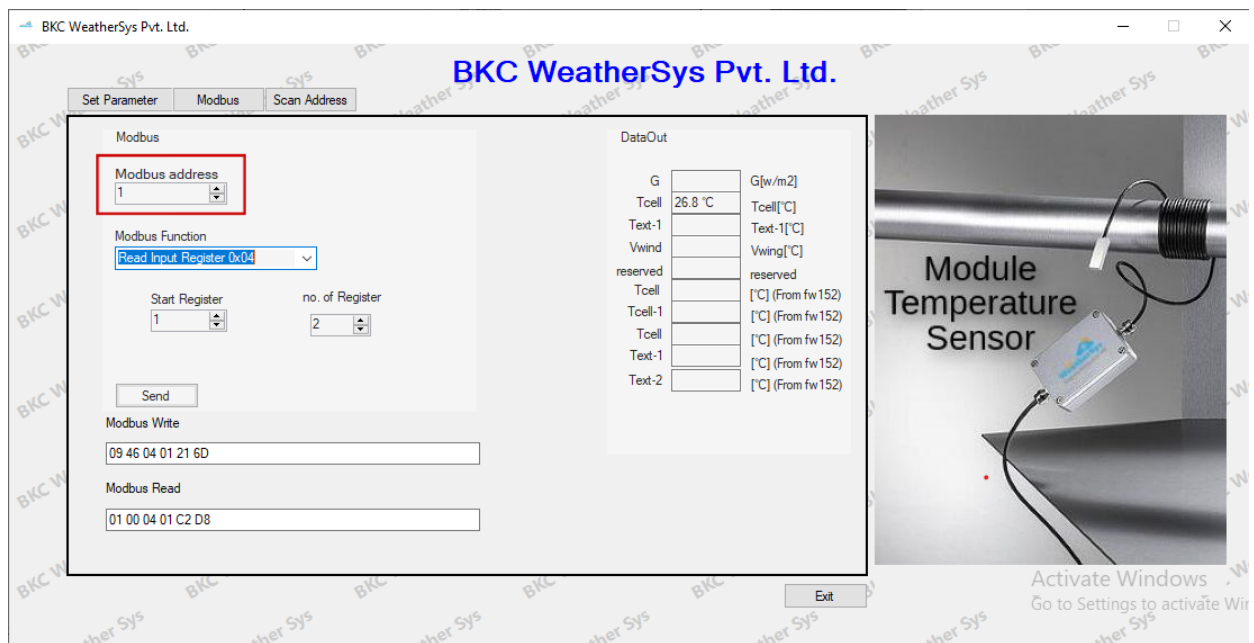
The software automatically scans for available COM ports on startup.



Step 3: Choose Modbus Address 1-247



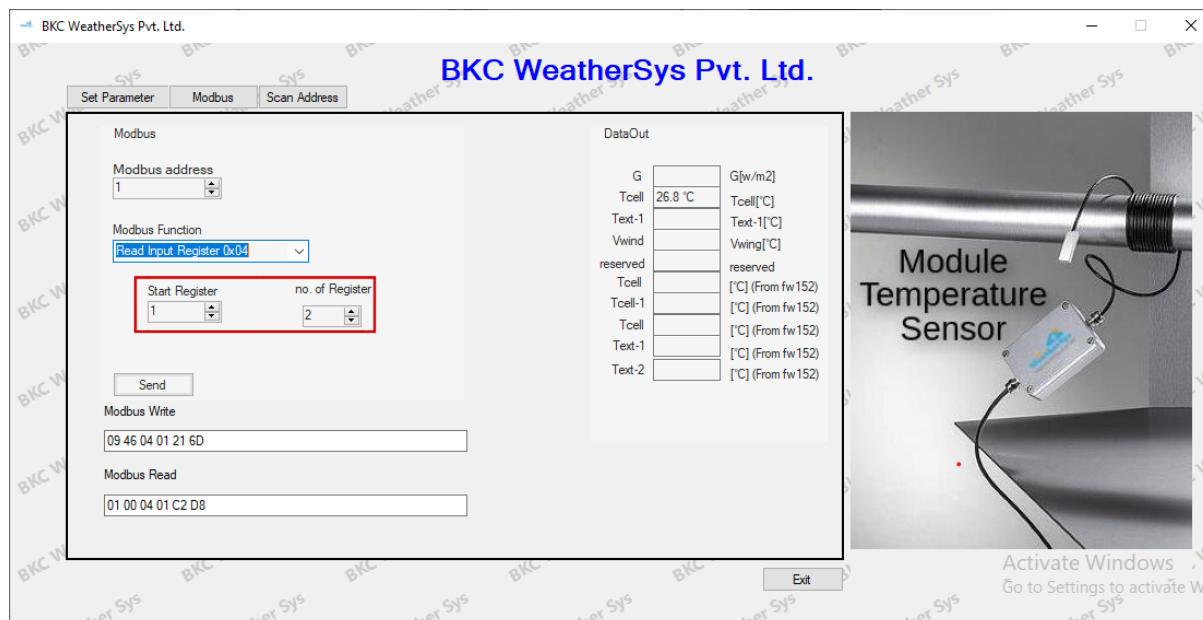
Step 4 : Set Modbus Function as Read Input Register 0x04



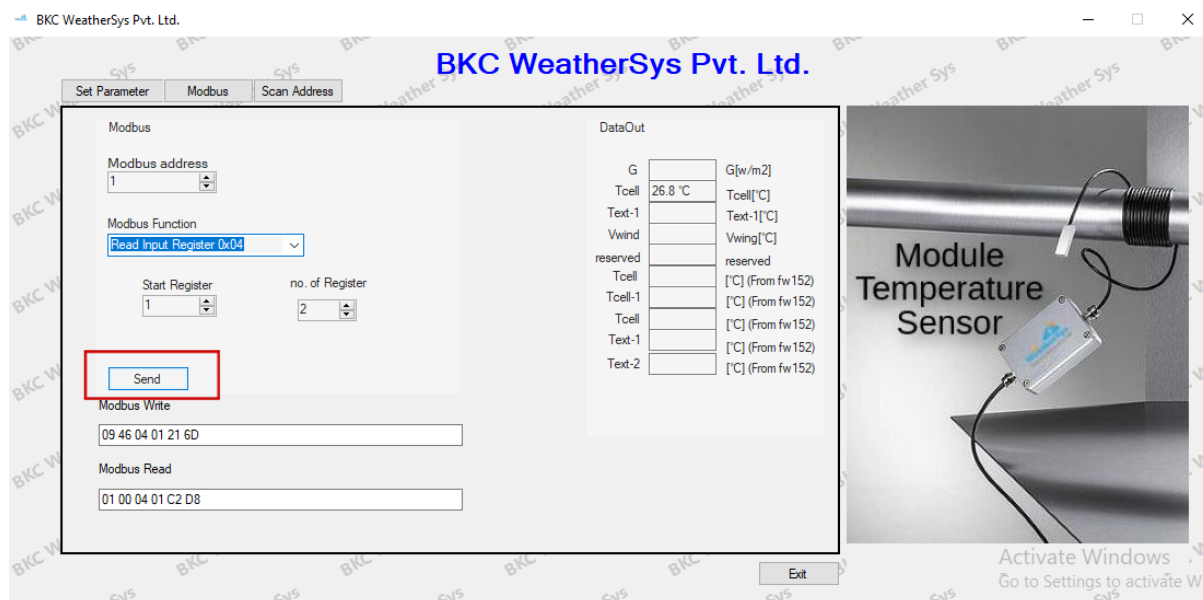
Step 5 : Set Register Parameters

Start Register: Enter 1

Number of Registers: Enter 2

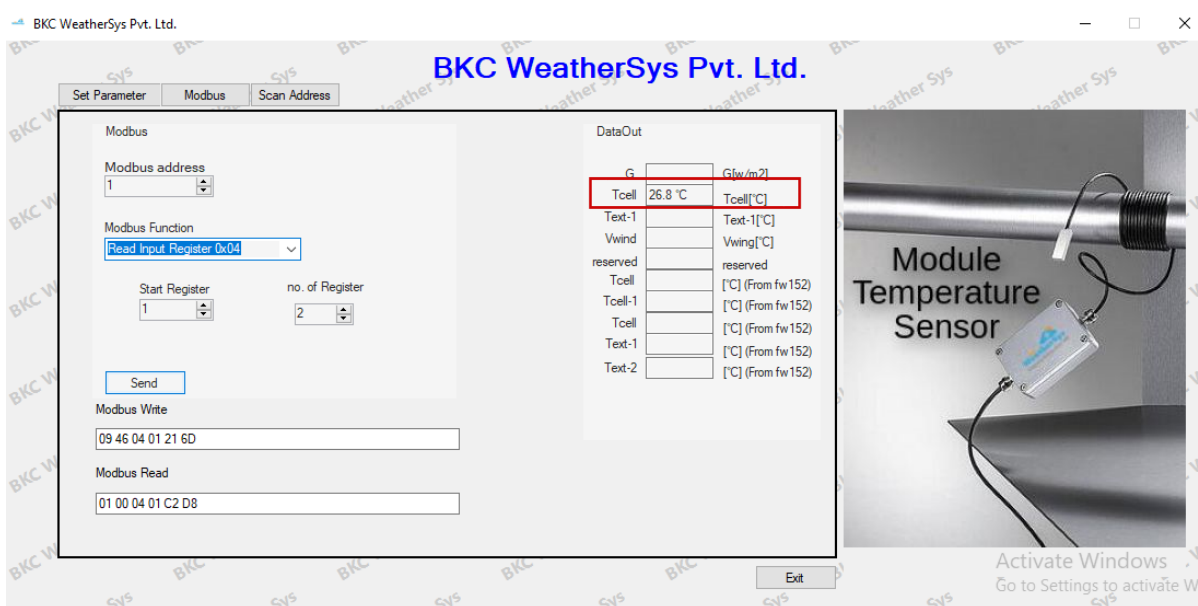


Step 6 : Initiate Communication



Click on the “Send” or “Read” button to retrieve and display the sensor data in real time.

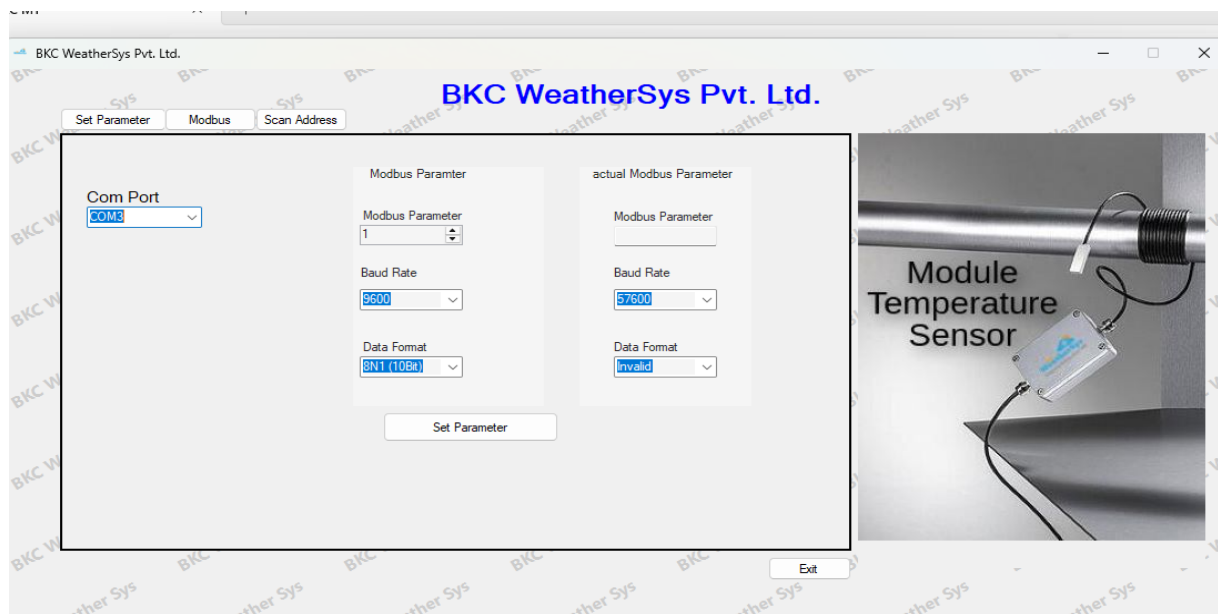
Step 7: The **temperature data** from the BKC – MT RS485-MB sensor will be displayed on the **Tcell** field within the **BKC MT Integrator_SS01** software interface.



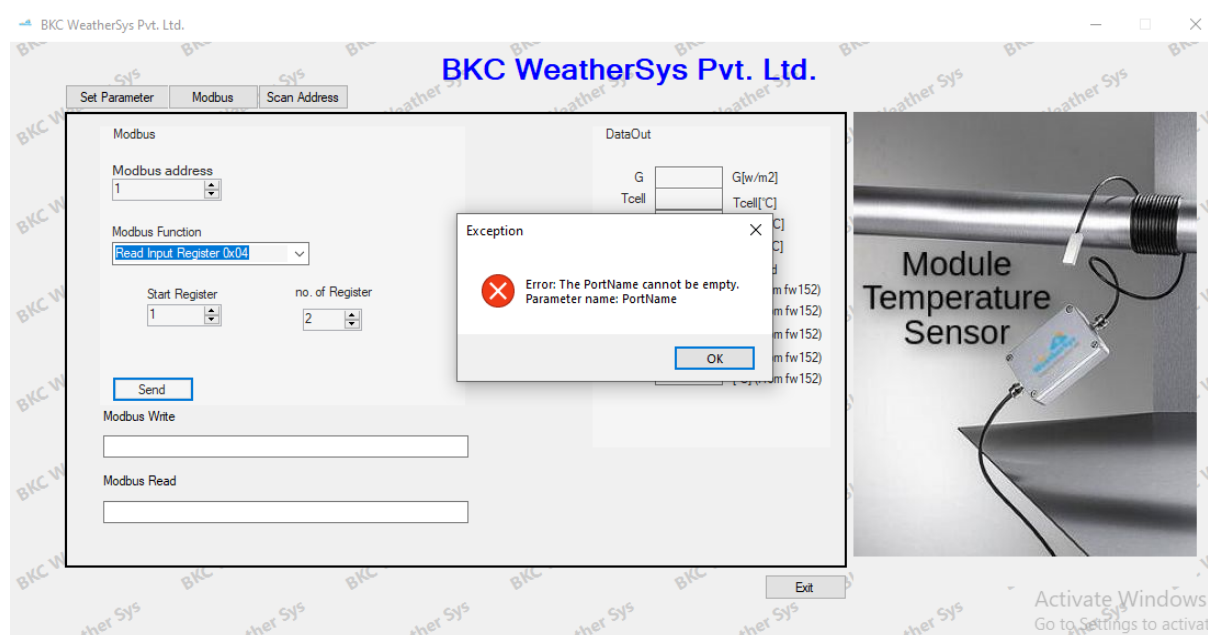
Troubleshooting

Issue	Solution
Port not opening	Ensure COM port exists and is not used by another program
Sensor not detected	Check all wiring connections and ensure sensor is powered
Can't set parameters	Ensure sensor is in configuration mode (power cycle it)
Incorrect temperature value	Verify data type, scaling formula, and register address
Software crashes	Reinstall software and ensure .NET dependencies are present
COM port not listed	Ensure USB-RS485 driver is installed and recognized by OS

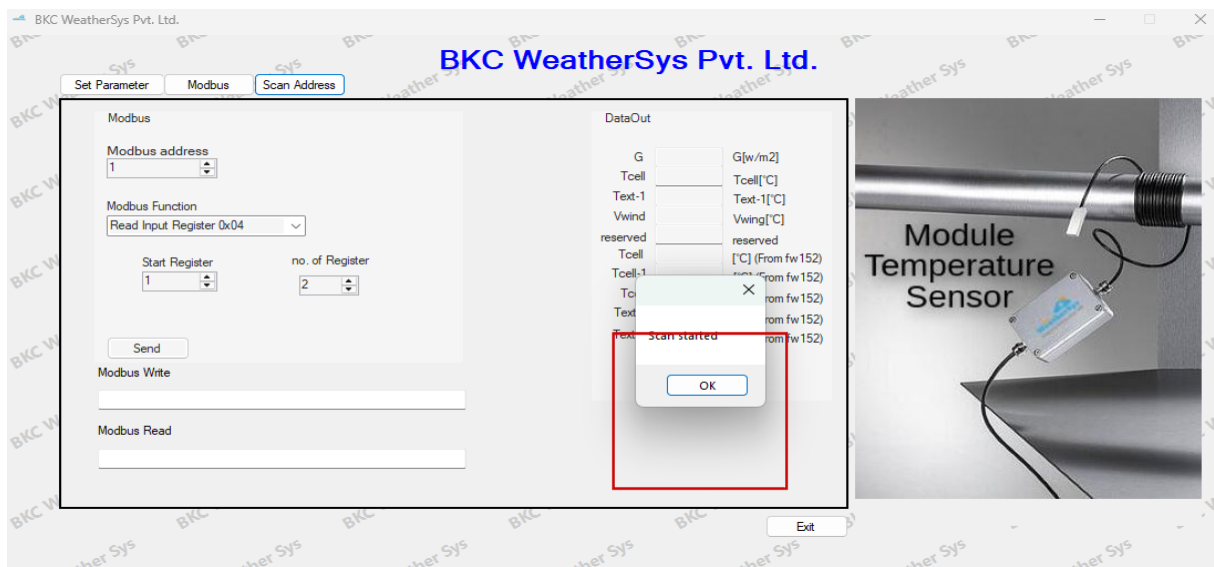
1.The software automatically scans for available COM ports on startup



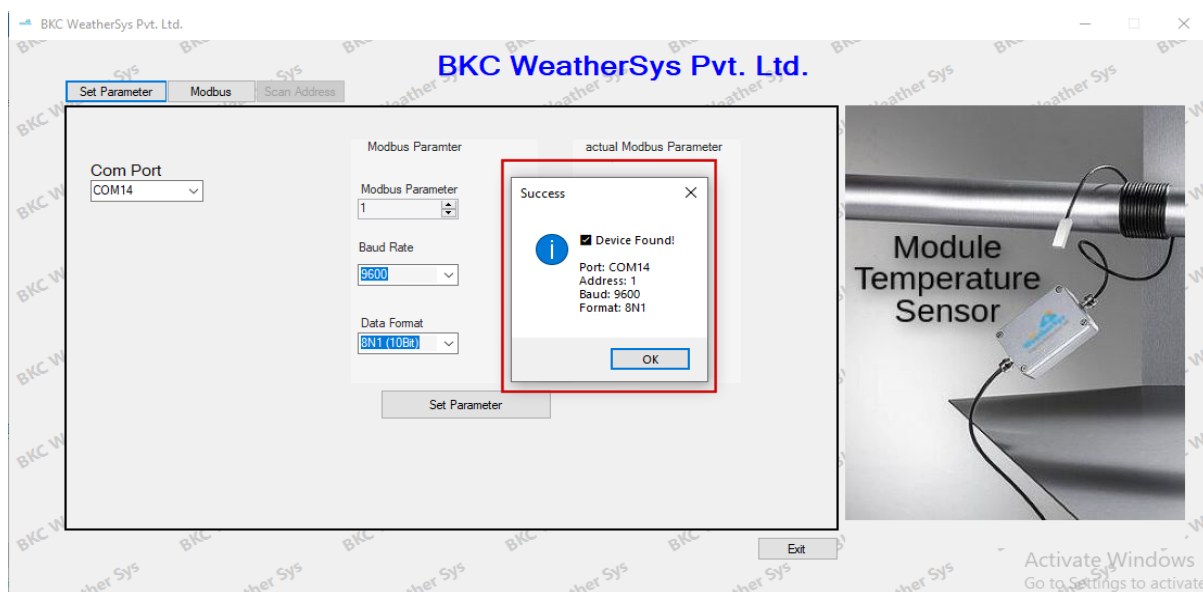
2.If no COM port is found, a warning message will be displayed and functionality will be disabled until resolved.



1. Click "Scan Device" to automatically detect Modbus address and baud rate.



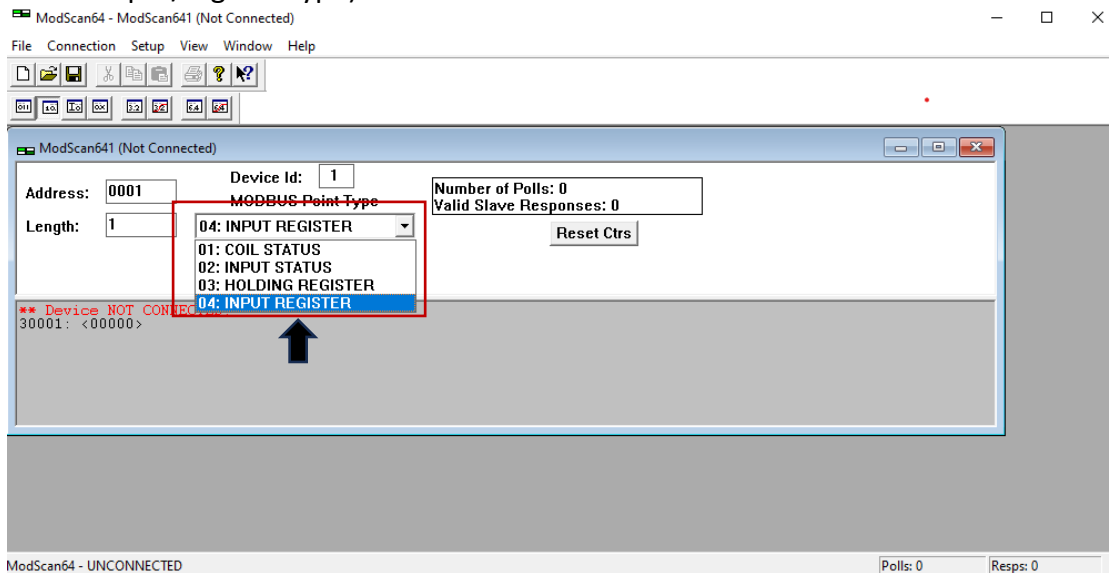
2. If the sensor is connected and responsive, it will display current settings.



Mod scan Communication :

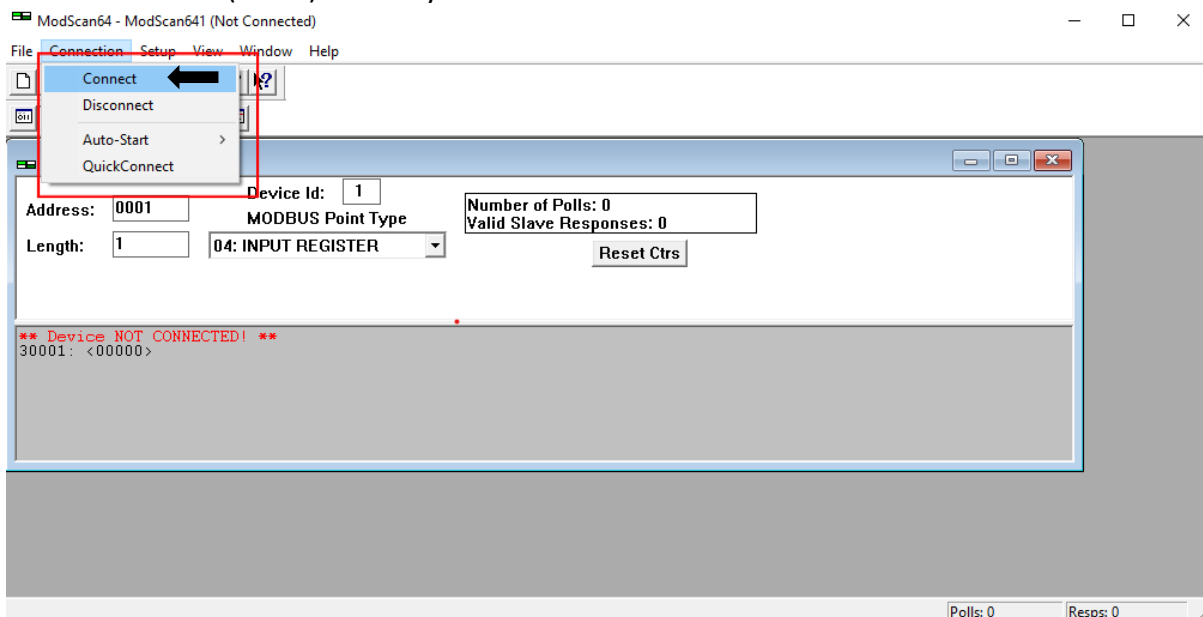
Step 1: Enter Slave ID and Register Address

- Enter the Device Address (Slave ID).
- Specify the Starting Register Address (e.g., 40001 or 30001 depending on input/register type).



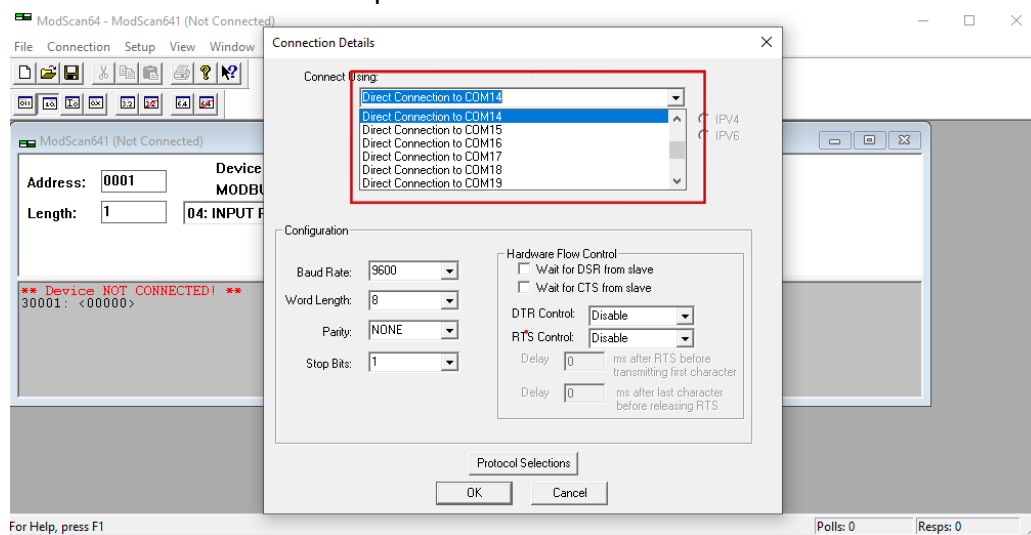
Step 2: Connect the Device

- Ensure the sensor/module is properly wired to the RS-485 network. Connect the RS-485 lines (A & B) correctly to the ModScan software via a USB to RS-485 converter



Step 3: Configure ModScan

- Launch the **ModScan32 / 64** software.
- Select the correct COM Port (matching the USB converter).
- Set Baud Rate, Parity, Data Bits, and Stop Bits to match the device communication settings (e.g., 9600, Even, 8, 1).
- Choose Modbus RTU as the protocol.



Step 4: Start Communication

- Click "Start" or "Poll" to begin scanning.
- Verify data response from the sensor.
- If no data appears, re-check wiring, baud rate, and slave ID settings.

