
BACK OF MODULE TEMPERATURE SENSORS INSTALLATION AND USER MANUAL



VISIONSEN



Sensor Technology



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WARRANTY CONDITIONS

Products manufactured by VSIAS under the brand VISIONSEN are warranted by VSIAS against defects in material and workmanship under normal use and service conditions for two years from the date of shipment, unless otherwise stated in the relevant product manual.



Product manuals can be viewed online at www.visionsen.com.

Products not manufactured by VSIAS but resold by VSIAS are warranted only to the limits extended by the original manufacturer.

VSIAS's liability under this warranty is limited to the repair or replacement (at VSIAS's discretion) of defective products, which will be the sole and exclusive remedy under this warranty.

The customer assumes all costs associated with removing, reinstalling, and shipping to VSIAS any products deemed to be defective. VSIAS undertakes the return costs of these products.

This warranty will not apply to products that have been subject to alteration, misuse, neglect, improper servicing, acts of god or accidents of god, or have been damaged in transit.

Warranty for installation services performed by VSIAS, such as programming according to customer specifications, electrical connections to products manufactured by VSIAS, and product-specific training, are part of VSIAS's product warranty.

“VSIAS disclaims all warranties and conditions, express, implied or statutory, regarding the products, except as expressly stated herein, to the fullest extent permitted by applicable law.”

H ELP

“Products cannot be returned without prior permission. The contact information below goes directly to VSIAS Engineering Industry Inc. Co. is aimed at its customers. Please use the contact addresses for the product you are returning.”



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S AFETY

“THIS SCOPE RELATES TO THE INSTALLATION, USE, MAINTENANCE AND WORKING ON OR AROUND SENSORS, TRIPOTS, MOUNTING STANDS AND ANY EQUIPMENT AND PARTS.

FAILURE TO INSTALL AND OPERATE SENSORS, TRIPOTS, MOUNTING STANDS AND ALL KINDS OF EQUIPMENT AND PARTS PROPERLY, FAILURE TO MAINTAIN THEM AND FAILURE TO OBSERVE THE WARNINGS INCREASES THE RISK OF DEATH, ACCIDENT, SERIOUS INJURY, MATERIAL DAMAGE AND PRODUCT FAILURE. TAKE ALL REASONABLE PRECAUTIONS TO AVOID THESE HAZARDS. BEFORE PERFORMING ANY WORK, CONSULT YOUR ORGANIZATION'S SAFETY COORDINATORS AND OCCUPATIONAL HEALTH EXPERTS FOR PROCEDURES AND REQUIRED PROTECTIVE EQUIPMENT..”

Use sensors, tripods, mounting stands and any equipment and parts only for the purposes for which they were designed. Do not exceed design limits. Be familiar with and follow all instructions provided in the product manuals. The guides can be accessed at www.visionsen.com or other contact addresses. You are responsible for compliance with applicable laws and regulations, including safety regulations, and for the integrity and location of any structure or system to which sensors, tripods, mounting stands and any equipment and parts are installed. Installation sites should be evaluated by a qualified engineer and handled by experienced technical personnel. If you have questions or concerns regarding the installation, use or maintenance of electrical connections of the systems, consult a licensed and qualified engineer or experienced technical personnel.

GENERAL

- Obtain necessary approvals and permits before performing field or installation work.
- Comply with occupational health guidelines.
- Use only qualified personnel for the installation, use and maintenance of all connections of mechanical parts. It is highly recommended to use licensed and qualified contractors.
- Read all applicable instructions carefully and understand the procedures thoroughly before starting work..

- If any drilling or cutting operations are to be performed during the assembly phase, wear eye protection and take other appropriate safety precautions.
- Do not allow installed products to be intervened by other than authorized personnel.
- Use only manufacturer-recommended parts, materials and tools.

ELECTRIC

- You could be killed or suffer serious bodily injury if a tripod, attachment, or tool you are installing, building, using, or maintaining comes into contact with overhead or underground power lines.
- Maintain a distance between overhead power lines and the structure to be installed that is at least one and a half times the height of the structure or the distance required by applicable code, whichever is greater.
- Before carrying out field or installation work, inform people or institutions that may be affected by the installation.
- Follow all electrical rules. Electrical equipment and related devices must be installed by licensed and experienced personnel.

WORKING AT HEIGHT AND WEATHER

- Be extremely careful when working at height.
- Use proper equipment and safety practices.
- Keep mechanical and electrical parts away from untrained or unnecessary personnel during installation and maintenance. Take precautions to prevent elevated tools and objects from falling.
- Wind, rain, snow, lightning, etc. Do not carry out any work or maintenance in harsh weather conditions such as.
- Periodically (at least once a year) check for corrosion, stress cracks, frayed cables, loose cable clamps, cable tightness, etc. Check for wear and damage and take necessary corrective action.
- Check electrical ground connections periodically (at least once a year).

“VSIAS employees reserve the right to refuse service for products exposed to contaminants that may cause health or safety problems.”

INFO

Back of module temperature sensors are sensors used to measure the temperature of solar panels. These sensors are used to detect temperature changes of solar panels. It provides the necessary temperature data to take safety precautions in case of overheating and to evaluate the temperature and energy parameters promised to the investor.

Back of module temperature sensors are sensors that measure the temperature of the mounted surface for solar power plants and industrial applications under environmental conditions. These sensors generally consist of components capable of precise measurement. Back of module temperature sensors are also used in many different industries and scientific applications.

These sensors generally have a structure that protects the sensor sensor from external environmental conditions that do not affect the temperature parameter and measurement accuracy.

is placed. It is very important that it comes into contact with the surface being measured. It has a structure that can convert temperature values into analog or digital signals or read by control systems.

Back of module temperature sensors are used in many important applications such as increasing energy efficiency and ensuring product quality. It is widely used in systems to ensure precise measurement and accuracy.

P RODUCT INTRODUCTION

Back of module temperature sensors, produced under the Visionsen brand, are used wherever industrial process control, scientific research, energy management, agriculture and greenhouse cultivation, industrial automation and environmental measurement are needed, especially in solar power plants.

Depending on the end user's system preference, both analog outputs and digital communication via Modbus (RS485) are available. Visionsen MB Series back of module temperature sensors feature a microprocessor structure that stores calibration data, eliminating the need to reprogram data loggers or SCADA systems when installing a new switchboard.

Back of module temperature sensors have a UV-resistant protective structure. Thanks to this structure, it is not affected by external environmental conditions and provides the most accurate temperature parameter to the end user. It gives the most accurate response to temperature changes.

Thanks to its product range, Visionsen can produce back of module temperature sensors at different sensitivity levels.

Visionsen back of module temperature sensors provide durability and reliability for outdoor environments with IP68 standard communication and power cables. It also provides easy installation during the installation phase with its M12 circular connector.

INSTALLATION

The sensor element is mounted directly behind the desired panel.

Determine the desired location for placement of the sensor block behind the panel.

Remove the 3M double-sided tape on the sensor.

Monofacial Panel: Attach the sensor to the back surface of the cell located at the center of the cell closest to the center of the panel.

Bifacial Panel: Unless stated otherwise, place the sensor in the middle of one of the cells one above the cell closest to the center of the panel.

Clean the surface thoroughly (do not use glass cleaner) and let dry.

After placing the sensor in the appropriate place, support the tape with your hand for 15 seconds to ensure that the tape adheres well to the surface.

After placing the sensor on the panel, complete the sensor installation with extra tape or zipper clamps from appropriate parts of the panel to prevent the cable from sagging and the tape from opening.

M **ECHANICAL INSTALLATION**

MTS-MB series back of module temperature sensors can be placed on the desired surface with the help of the M4 screw holes on the connection apparatus, or with the help of clamps for pipe type placements.

E **LECTRICAL INSTALLATION**

Back of module temperature sensors are produced with 4-wire RTD PT1000 Class (1/3 DINB) 3 m high quality PUR FLEX cable with waterproof IP68 connector.

POWER CONNECTION

The minimum supply voltage for MB Series back of module temperature sensors models is 9 V DC. 12V DC voltage is recommended to ensure reliable performance. It is recommended to protect the output of the power supply with a fast-blow fuse with a maximum rating of 250 mA.

POWER CONSUMPTION

Back of Module Temperature Sensor-MB Voltage (V DC)	Current (mA)	Power (mW)
9	8	72
12	6	72
24	3	72

Maximum power consumption 72 mW at highest input voltage.

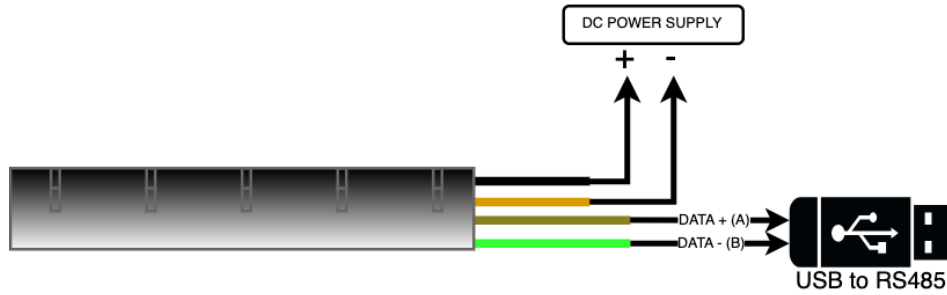
- Maximum input current 3 mA at lowest input voltage.
- Maximum inrush current 100 mA.

AN series (current output versions) where a 4 mA output can handle -40°C and a 20 mA full scale output can handle +85°C and a 0 V output can handle -40°C and 1.5 V set so that the full-scale output represents +85°C.

COMPUTER CONNECTION



Power supply units for portable computers such as laptops can produce large voltage peaks. This may damage the digital interface of the device. Make sure there is galvanic separation between the inputs and outputs of the transducer.



Cable Color	Definition
White	9-28 V DC (+)
Brown	9-28 V DC (-)
Yellow	Data (+)
Green	Data (-)

C OMMUNICATION

Visionsen Smart Tool software allows configuring Modbus®-based back of module temperature sensors and monitoring real-time data.

CONNECTION SETTINGS

After connecting it to your computer with the USB-RS485 converter, you can observe the COM Port, Baud Rate, Stop Bits, Parity and Address settings of the sensor with Modbus® RTU communication protocol with the help of the Visionsen Smart Tool software you downloaded from www.visionsen.com after the connection is made. After configuring your new connection settings, you can click the "Send Settings" button.

The screenshot displays the Visionsen Smart Tool software interface. The window title is "Visionsen Smart Tool". The interface is divided into four tabs: "Bağlantı Ayarları" (selected), "Register Adresleri", "Cihaz Ayarları", and "Kalibrasyon".

The "Bağlantı Ayarları" tab is active and contains two sections:

- Seri Bağlantı Ayarları**: This section includes a "COM Port" dropdown menu set to "COM3" with a "Yenile" button next to it. Below it is a "Baud Rate" dropdown menu set to "9600". The "Stop Bits" section has radio buttons for "1" (selected) and "2". The "Parity" section has checkboxes for "None" (checked), "Even", and "Odd". The "Address" field is a text input containing "1". A "Bağlantıyı Kes" button is located at the bottom of this section.
- Yeni Bağlantı Ayarları**: This section includes a "Baud Rate" dropdown menu set to "9600". The "Stop Bits" section has radio buttons for "1" (selected) and "2". The "Parity" section has checkboxes for "None" (checked), "Even", and "Odd". The "Address" field is an empty text input. An "Ayar Gönder" button is located at the bottom of this section.

REGISTER ADDRESSES

If you want to change the register addresses defined in the Modbus® map, the desired address can be written in the section of the relevant sensor and a new register address can be defined after pressing the "Send Settings" button.

Visionsen Smart Tool
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Bağlantı Ayarları
Register Adresleri
Cihaz Ayarları
Kalibrasyon

Işınım 1	31
Işınım 2	32
Sıcaklık 1	15
Sıcaklık 2	19
Nem	16
Basınç	17
Rüzgar Yön	21
Rüzgar Hız	20
Oransal Işınım	0
Kirlilik Anlık	0
Kirlilik Oto	33
Sıcaklık 3	40

Adresleri Değiştir

Ayar Gönder

Işınım 1	61 W/m ²	Basınç	NA	Kirli. Oto	NA
Işınım 2	0 W/m ²	Rüz Yön	NA	Oran. Işın.	NA
Sıcaklık 1	NA	Rüz Hız	NA		
Sıcaklık 2	NA	Sıcaklık 3	NA		
Nem	NA	Kirli. Anlık	NA		

Bağlantı Başarılı
⋮

MODBUS® TABLE AND CONFIGURATION SETTINGS

Default communication parameters for MTS-MB series back of module temperature sensors are as follows:

Modbus® Baud Rate:9600

Parity: None

Data Bits:1

Stop Bits:1

Address:1

If you are using the software on-premise, make sure the software is pre-installed on the laptop.

For more details about installation, monitoring and data recording, you can contact the contact addresses.

Adress		Type	Gain	Unit	Description
Hexadecimal	Decimal				
0x13	19	int16	10	°C	Module Temperature Sensor

TECHNICAL DRAWINGS

BACK OF MODULE TEMPERATURE SENSORS MODELS

- MTS-P
- MTS-AN
- MTS-MB

