3S-AT-DS18B20

DESCRIPTION

Ambient temperature is the air temperature in the environment where the PVs are placed. It is measured in **degrees Celsius (°C)** by using a sensor or a thermometer. In order to ensure the most accurate reading, the **Ambient Temperature Sensor** should be placed in the shade and in a well-ventilated space allowing air to circulate freely.

The **Maxim DS18B20** is a digital Ambient Temperature sensor for universal applications, as well as for solar photovoltaic projects. It contains a digital temperature probe, which provides 9-bit to 12-bit Celsius temperature measurements, and the communication of this sensor can be done through a one-wire bus protocol .The **DS18B20 Ambient Temperature Sensor** is protected by a **plastic radiation shield** with 4 aspirated plates, which protect the sensor from direct sunlight and allows air to pass freely. The SEVEN Ambient Temperature Sensor is designed to be connected to the SEVEN Irradiance Sensor Box which provides ambient temperature values via RS485 through the Modbus RTU protocol to dataloggers.

FEATURES

▶ DS18B20 Digital Temperature Probe:

The DS18B20 is a temperature sensor that provides 9-to-12-bit temperature readings. Its communication can be done via a one-wire bus protocol. The DS18B20 is more significant in terms of temperature measurement accuracy, conversion time, transmission distance and resolution. It offers more convenient operation and more satisfying effects for users.

▶ UV Resistant Solar Radiation Shield:

This solar radiation shield protects the DS18B20 digital temperature sensor from rain, snow and radiated heat. Thanks to the curved shape and color of the plates, the air flow can pass through the shield to prevent radiated temperatures from roofs and surrounding surfaces from affecting the temperature readings. To facilitate the installation, this radiation shield is equipped with mounting holes, and it is required to be used for Ambient Temperature Measurements as per IEC617241.

3S-AT-DS18B20

▶ **DS18B20 Digital Temperature Probe:**

The unique one-wire structure of the DS18B20 digital temperature sensor has an output that connects directly to the Irradiance Sensor. Therefore, using the DS18B20 Temperature Sensor can make the system structure more reliable.

TEST

All SEVEN products are tested before delivery. The Test certificate can be delivered to the customers along with the products, as per buyer request.

The Test of the ambient temperature sensor is carried out by comparing it with a reference temperature sensor that has been calibrated. During this test, data is taken from both temperature sensors for certain predetermined values and the test process ends with the evaluation of this data.

WARRANTY

SEVEN Sensor provides a 5-year warranty on its products, which guarantees their proper functioning. The warranty certificate is also delivered with the products, but this does not include loss or damage due to misuse of the sensor.

COMMUNICATION

The communication between the DS18B20 Ambient Temperature Sensor and the datalogger is done through the Irradiance Sensor, which is supplied with a Modbus RTU protocol. The Irradiance Sensor communicates directly with the datalogger and transfers all data collected by the Ambient Temperature Sensor in an accurate manner. Thus, the communication process will be easier and more convenient in terms of wires, costs and efficiency. Seven Sensor provides also different output options such as Analog 4 - 20 mA and RS485.

DIMENSION & INSTALLATION

As per IEC 61724-1 Temperature sensors should be placed at least 1m away from the nearest PV module and in locations where they will not be affected by thermal sources or sinks, suck as exhausts from inverters or equipment shelters, asphalt or roofing materials, etc.

The sensor can be mounted on a surface through the 3 holes in the bottom plastic plate by bolts. The sensor is designed as a "plug and run" system. Thus, to run the sensor, a two-pin connector must be connected to the Seven Irradiance Sensor Box.
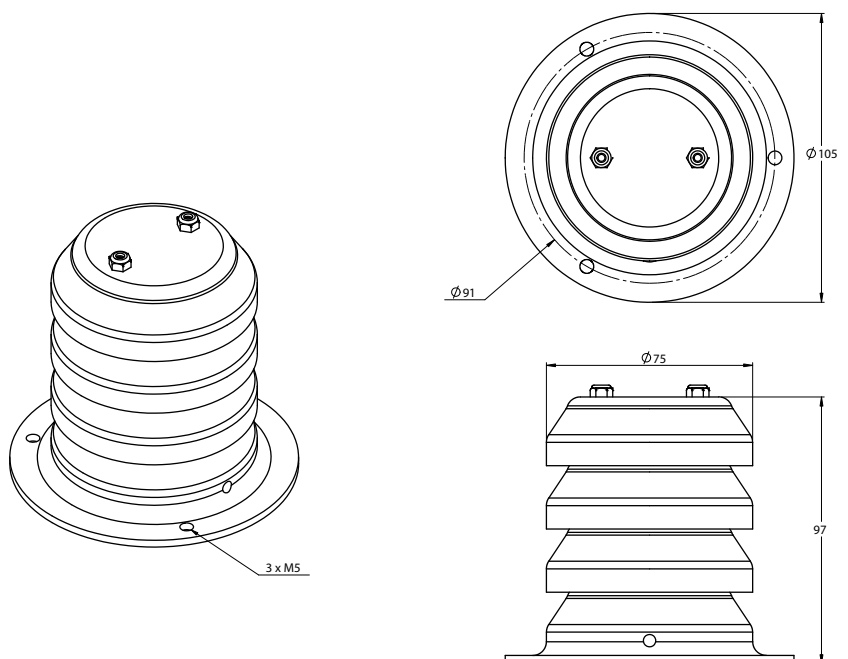
3S-AT-DS18B20

The Maxim DS18B20 is a digital Ambient Temperature sensor for universal applications, as well as for solar photovoltaic projects. It contains a digital temperature probe, which provides 9-bit to 12-bit Celsius temperature measurements, and the communication of this sensor can be done through a one-wire bus protocol .

Note: Module temperature sensor directly connected to irradiance sensor box (3S-IS...) or sensor box (3S-C...) by two pin connector which is not required any cabeling works.

TECHNICAL DATA

General Information	
Sensor Type	*DS18B20 digital temperature probe*
Measuring Range	*Measures temperature from -55°C to 125°C (-67°F to +257°F)*
Uncertainty	*± 0.5 ^{0}C, IEC61724-1 Compliance*
Sensor Housing	*Stainless steel tube, 6 mm diameter, 50 mm length, 4 aspirated plates*
Cable	*3 m or 1,5 m PUR Cable, UV resistant*
Protection	*IP67*
Shield	*4 plates UV plastic protection Shield*
Connection	*One-Wire-Bus technique*
Resolution	*0,1 ^{0}C, IEC61724-1 Compliance*
Output	*2 pin connectors to deliver Temperature Data to Irradiance sensor*
DS18B20 Structure	
VCC	*Power Input Terminal*
DQ	*Digital Signal Input / Output Terminal*
GND	*Power Ground*

```
        ┌──────────────────────────────────────┐
        │    1            2            3        │
        │    │            │            │        │
        └────┼────────────┼────────────┼────────┘
             │            │            │
            VCC           DQ          GND
```