

Thermopile Pyranometer

The SEVEN Thermopile Pyranometer is part of the SEVEN meteorological sensor range, which includes professional, smart sensors featuring a digital interface for environmental and photovoltaic applications.

The SEVEN pyranometer 3S-TP-MB-A is designed to meet the “**ISO 9060:2018, fast-response, spectrally flat and Class A**” and “**IEC 61724-1:2021 Class A**” standards. Equipped with cutting-edge thermopile detector and diffuser technology, this **high-precision device features low zero-offset behavior and the lowest non-stability characteristics**. Falling into the **fast-response and spectrally flat** subcategories, the SEVEN pyranometer offers low-zero-offset behavior, maximizing measurement accuracy. This advanced technology device is ideal for meeting the highest standards in solar energy system performance monitoring.



The SEVEN pyranometer includes three status LEDs. Through these LED indicators, the power and communication status of the sensor can be monitored. In addition, the device includes a humidity sensor, a pressure sensor, a tilt-angle sensor and two temperature sensors. The 3S-TP-MB-A Pyranometer is protected against condensation and moisture formation with an airtight vacuum design, natural ventilation, molecular sieve (moisture absorber), and an internal humidity sensor. These additional features ensure multi-parameter environmental monitoring, allowing for precise adjustments and accurate readings under varying conditions. The integrated sensors contribute to the device's overall reliability and performance, making it a robust solution for solar energy systems, meteorology, and different applications.

Measured irradiance, humidity and temperature data are transmitted to data loggers and other receiving units via serial RS485 interface with Modbus RTU protocol.

Benefits and Features

- ISO 9060:2018 Class A (Secondary Standard)
- IEC 61724-1:2021 Class A Monitoring
- Status LEDs
- Advanced Detection Technology
- Fast-Response
- Spectrally Flat
- Low Zero-Offset Behavior
- IP68 Sealing Level
- Design Against Condensation and Moisture Risk
- Multi-Parameter Monitoring
- Fast & Simple to Install
- Free Software Update
- SunSpec Compliant
- SEVEN Remote Setup Service
- SEVEN Customer Support
- 5 Year Warranty

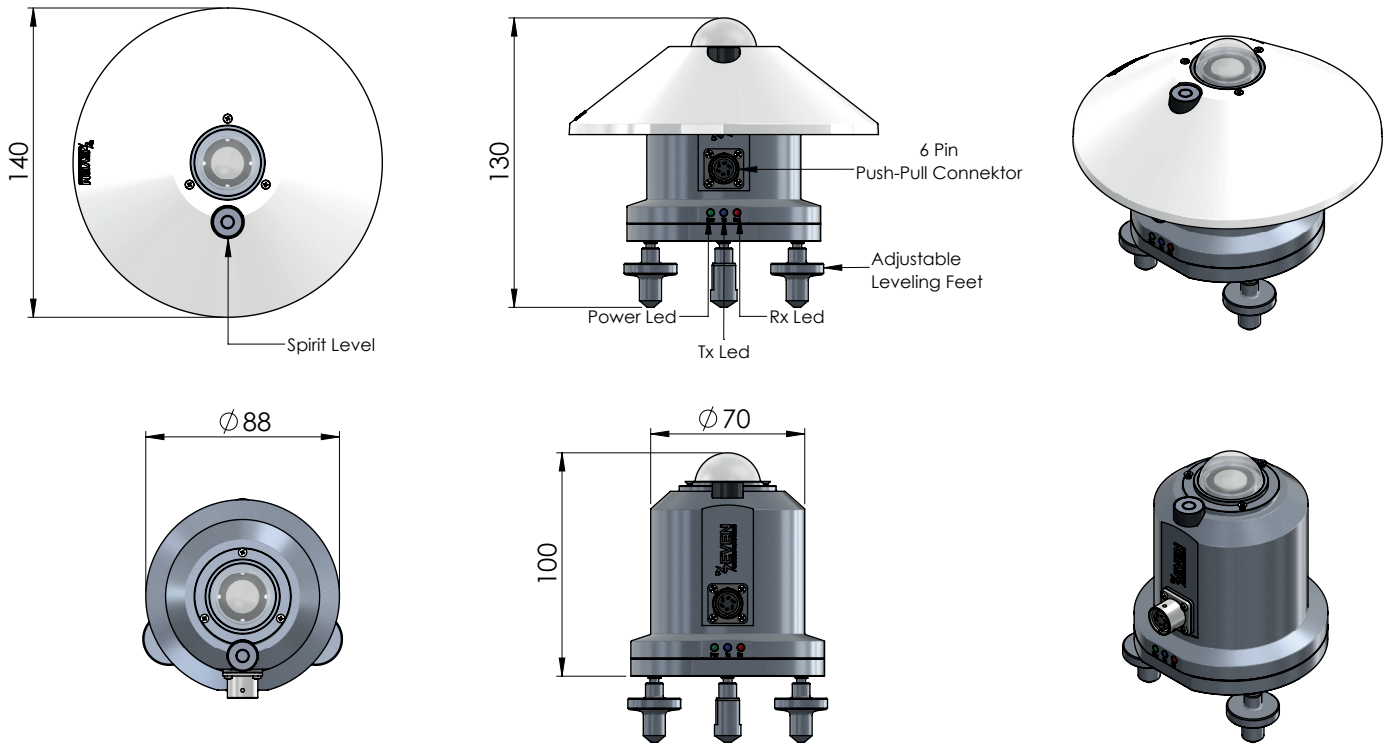
Technical Specifications

	3S-TP-MB-A
Measured Data	Global Horizontal (GHI) or POA Irradiance, Internal and Housing Temperature, Internal Humidity and Pressure, Sensor Tilt Angle
Sensor Type	Thermopile
Spectral range (50% points)	280...3000 nm
Irradiance Range	-20...+4000 W/m ²
Nominal Sensitivity	8...14 μ V/(W/m ²)
Response Time (95%)	<0,5 s (less than 10 s; Class A as per ISO 9060:2018 standard)

Technical Specifications

	3S-TP-MB-A
Zero Offset A - Thermal Radiation (200W/m ²)	± 1 W/m ² (± 7 W/m ² ; Class A as per ISO 9060:2018 standard)
Zero Offset B - Temperature Change (5K/h)	± 1,5 W/m ² (± 2 W/m ² ; Class A as per ISO 9060:2018 standard)
Total Zero Offset C - Total Zero Offset	± 3 W/m ² (± 10 W/m ² ; Class A as per ISO 9060:2018 standard)
Non-stability (change/year)	< 0,5% (± 0,8%; Class A as per ISO 9060:2018 standard)
Non-linearity (100 to 1000 W/m ²)	± 0,2% (± 0,5%; Class A as per ISO 9060:2018 standard)
Directional Response (at 1000 W/m ² 0 to 80°)	± 10 W/m ² (± 10 W/m ² ; Class A as per ISO 9060:2018 standard)
Spectral Error	± 0,2% (± 0,5%; Class A as per ISO 9060:2018 standard)
Temperature Response (-20°C to 50°C)	± 0,4% (± 1%; Class A as per ISO 9060:2018 standard)
Irradiance Resolution	0,1 W/m ²
Internal Humidity Range Accuracy Resolution	0%...100% ± 1% RH (20...70%) @ 25°C 0,1%
Internal Temperature Range Accuracy Resolution	-40°C...+85°C ± 0,1°C (5...60°C) @ 20...80% RH 0,1°C
Housing Temperature Range Accuracy Resolution	-40°C...+85°C ± 0,2°C 0,1°C
Sensor Tilt Angle Range Accuracy Resolution	0°...180° ± 0,5° 0,1°
Internal Pressure Range Accuracy Resolution	260...1260 hPa 0,5 hPa 0,1 hPa
Spirit Level Accuracy	<0,1°
Viewing Angle	2π sr
Data Output	RS485 up to 38400 Baud
Communication Protocol	Modbus RTU (Optional Modbus TCP/IP)
Output Rate	1/s
Operating Temperature Range	-40...+85°C
Power Supply	12...30 V DC
Power Consumption	45 mA @ 24 V DC
Cable Features	3x2x0,14 mm ² , 26 AWG LI2Y(st)CTP PUR Cable, UV and weather resistant
Cable Length	3 meter standard length (Custom lengths available.)
Galvanic Isolation	1000 V between power supply and RS485 Bus
IP Rating	IP 68
Dimensions	Ø140 × 130 mm
Sensor Housing Material	Anodized Aluminum
Shade Disk Material	ASA
Weight	0,78 kg
Standards	ISO 9060:2018, Fast Response Spectrally Flat Class A (Secondary Standard), IEC 61724-1:2021, Class A, ISO/TR 9901:1990, ISO 9847
Origin	TÜRKİYE

Technical Drawings of Thermopile Pyranometer



Note: All dimensions are in mm.

*** SEVEN has the right to make modifications on this documentation without notice.

*** Minor variations in tone or shade may occur on the mechanical parts of SEVEN thermopile pyranometers.