

Pyranometer Delta-T SPN1

ISO 9060 Class B, measures global and diffuse irradiance, solid state



Description

- Measures global (total) and diffuse irradiance in W/m^2
- WMO sunshine threshold: $120 W/m^2$ direct beam
- No routine adjustment or polar alignment
- No moving parts, shade rings or motorised tracking
- Works at any latitude
- Unique ground glass dome
- Wideband thermopile sensors
- Near ideal spectral and cosine response
- Standard output sensitivity
- Matches or exceeds the ISO Class B standard and the WMO Good Quality standard for a solar pyranometer in all respects apart from the spectral response - which is accurate to $\pm 10\%$ over 0.4 to $2.7 \mu m$

Specifications

| Characteristic | Description / Value |
|---------------------------|--|
| Spectral range | 0 to $> 2000 W/m^2$ |
| Resolution | $0.6 W/m^2 = 0.6mV$ |
| Analog output sensitivity | $1mV = 1 W/m^2$ |
| Analog output range | 0 ... 2500 mV |
| Sunshine status threshold | $120 W/m^2$ |
| Sunshine status output | No sun = open circuit Sun = short circuit to ground |
| Accuracy: sunshine status | $\pm 10\%$ sun hours with respect to the threshold |

| Characteristic | Description / Value |
|---|---|
| Accuracy: cosine correction | ± 2% of incoming radiation over 0 ... 90° zenith angle |
| Accuracy: azimuth angle | ± 5% over 360° rotation |
| Quality Standard | SPN1 matches or exceeds ISO First Class standard and WMO Good Quality standard for solar pyranometers in all respects apart from spectral response - which is accurate to ±10% over 0.4 to 2.7 μm |
| Overall Accuracy | ± 5% daily integrals |
| Global (Total) | ± 5% ± 10 W/m ² hourly averages |
| Diffuse Radiation | ± 8% ± 10 W/m ² individual readings Accuracy figures give 95% confidence limits, i.e. 95% of individual readings will be within stated limits under normal climactic conditions. |
| Power requirements | 2 mA (excluding heating power) 5 ... 15 VDC |
| Heating power | 12 ... 15 VDC, up to 1.5 A |
| Heating control | Continuously variable up to 20 W output for external temperatures below 0°C |
| Lowest snow & ice-free temperatures (with heating in use) | -20°C at 0 m/s wind speed -10°C at 2 m/s wind speed |
| Temp coefficient | ± 0.02% per °C typical (-20 ... +70°C) |
| Temperature range | -40 ... +70°C |
| Recalibration / stability | Factory calibration recommended every 2 years |
| Spectral response | 400 ... 2700 nm |
| Spectral sensitivity variation | 10% typical |
| Latitude capability | -90 ... +90°C |
| Connection | 8-pole plug (M12) |
| Cable | 8-wire cable, length: 5 m |
| Environmental | IP67 sealing |
| Mounting options | 3 x M5 tapped holes in base; 108 mm pcd, 120° spacing |
| Size / weight | 140 mm (diameter) x 100 mm (height), 940g |
| Manufacturer | Delta-T Devices Ltd. |

Sensor connection diagram

| Function | Plug Pin No. | Sensor Cable Wire Colour | Meteo-40 Analog Voltage / Digital | Supply Sensor |
|--------------------|--------------|--------------------------|-----------------------------------|---------------|
| Global irradiance | 1 | white | Ax a | |
| Diffuse irradiance | 2 | brown | Ax+1 a | |
| Signal ground | 3 | green | Ax b, Ax+1 b | |
| Sun status | 4 | yellow | Dx | |
| Ground | 5 | grey | | GND |
| Supply | 6 | pink | | 4 ... 15 VDC |
| Heating | 7 | blue | | 12 VDC |
| Heating | 8 | red | | GND |

Sunshine Pyranometer SPN1

