



Picture shown may not reflect actual configuration

Cat® Weather Station
Class A

The Cat Microgrid Weather Station is a pre-engineered system that cost-effectively scales to Cat Microgrid Solution size and complexity. The Cat Weather station delivers best-practice PV performance tracking and correlation technology.

Features

Benefits
• Reliable performance in all weather conditions
• Standardized, pre-engineered system
• Preprogrammed system allowing quick field deployment
• Easy to install, prepackaged solution
• Includes weather station data logger, pyranometer, and module temperature sensor

Monitoring
• Plane of Array irradiance
• Global horizontal irradiance
• Back of module temperature
• Air temperature
• Relative humidity
• Wind speed
• Wind direction
• Barometric pressure

Data Logger
• Multi-purpose, compact measurement and control data logger
• Gathers data from pyranometer, weather station, and temperature module and makes it available over varied networks
• Installed in a pre-wired weather protective enclosure for quick and easy installation
• Integrated into Cat Connect for remote monitoring and data logging.

Pyranometer
• ISO first class pyranometer
• Measures solar radiation for the full solar spectrum range with a high quality blackened thermopile
• Desiccant filled drying cartridge prevents dew from forming on the inner sides of the domes
• Integrated bubble level and adjustable leveling screws enable the sensor to be leveled without using a leveling base
• Connects directly to the weather station and data logger

Weather Station
• Combined instrument for measuring local environmental conditions
• Measures air pressure, air temperature, wind speed, and humidity

Module Temperature Monitor
• Surface mount RTD in a ruggedized form factor.
• Measures back of the module temperature with high level of accuracy
• RTD housed within a specially designed self-adhesive aluminum disk.

Worldwide Product Support
• Cat dealers have over 1,800 dealer branch stores operating in over 200 countries
• Your local Cat dealer provides extensive pre-sale and post-sale support, including design consultation, service contracts, and all maintenance agreement.

Weather Station



CPU	ARM Cortex M4, running at 144 MHz
Internal Memory	> 30 MB flash for data storage > 80 MB flash for CPU drive / programs > 2 MB flash for operating system
Clock Accuracy	±1 min per month
USB Micro B	For direct connection to PC (limited power source during configuration), 2.0 full speed, 12 Mbps
10/100 Ethernet RJ45	For LAN connection
RS-232	For connecting RS-232 modems or serial sensors
Battery Terminal Pair (-BAT+)	For regulated 12 V power input or rechargeable 12 V VRLA for UPS mode
Charge Terminal Pair (-CHG+)	For 16 to 32 V from dc power converter or 12 or 24 V solar panel (10 W)
Power Consumption @ 12 Vdc	> 1.5 mA (sleep) > 5 mA (1 Hz scan with one analog measurement) > 23 mA (active processor always on) > 32 mA (Ethernet idle) > 51 mA (Ethernet active)
Best Analog Accuracy	±(0.04% of reading ± 6 µV) at 0° to 40°C
Best Effective Resolution	0.23 µV (±34 mV range, differential measurement, input reversal, 50/60 Hz f_{N1})
Operating Temperature Range	-40° to +70°C

Weather Sensor



Wind Speed	
Range	0.1 m/s to 60 m/s
Accuracy	±3% to 40 m/s | ±5% to 60 m/s
Resolution	0.01 m/s
Wind Direction	
Range	0-359°
Accuracy	±3% to 40 m/s | ±5% to 60 m/s
Resolution	1°
Temperature	
Range	-40°C to +70°C
Accuracy	±0.3°C @ 20°C
Resolution	0.1°C
Humidity	
Range	0-100%
Accuracy	±2% @ 20°C (10%-90% RH)
Resolution	1%
Dew Point	
Range	-40°C to +70°C
Accuracy	±0.3°C @ 20°C
Resolution	0.1°C
Pressure	
Range	300 to 1100
Accuracy	±0.5 hPa @ 25°C
Resolution	0.1 hPa
Sampling Rate	1 Hz
Operational Temperature Range	-40°C to +70°C
IP Rating	IP66
Weight	0.6 kg

Pyranometer



ISO Classification	Secondary Standard
Light Spectrum Waveband	285 to 2800 nm
Sensitivity	7 to 14 µV/W/m^2
Temperature Response	< 1% (-10° to +40°C)
Response Time	< 5 s (95% of final value)
Zero Offset	< 7 W/m2 (200 W/m^2)
Non-Stability	< 0.5% (change/year)
Non-Linearity	< 0.2% (0 to 1000 W/m^2)
Directional Error	< 10 W/m2 (up to 80° with 1000 W/m^2 beam)
Tilt Error	< 0.2%
Level Accuracy	0.1°
Impedance	10 to 100 Ω
Operating Temperature Range	-40° to +80°C
Typical Signal Output	0 to 15 mV (for atmospheric applications)
Maximum Irradiance	4000 W/m^2
Expected Daily Uncertainty	< 2%
Dome Diameter	5 cm (2 in.)
Width	15 cm (5.9 in.) with shield
Height	9.25 cm (3.64 in.)
Weight	0.9 kg (2 lb) with 10.1-m (33-ft) cable

Temperature Probe



Element Type	Precision 1000 Ohm class A platinum sensing element
Tolerance	± (0.15 + 0.002t)
Temperature Coefficient	TCR = 3850 ppm/K
Long-Term Stability	Maximum Ro drift 0.04% (after 1000 h at 400°C)
Measuring Current	0.1 to 0.3 mA
Temperature Range	-40° to +105°C
Disk Material	Anodized aluminum
Cable Jacket Material	Black semi-gloss PVC, UL VW-1 sunlight-resistant for outdoor use
Disk Diameter	2.54 cm (1.0 in.)
Overall Probe Length	6.35 cm (2.5 in.)
Overmolded Joint Dimensions	5.72 x 1.12 x 1.47 cm (2.25 x 0.44 x 0.58 in.)
Weight	90.7 g with 3.2 m cable (0.2 lb with 10.5 ft cable)

Materials and specifications are subject to change without notice.
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