

NDVI Sensors

Radiometer to calculate normalized difference vegetation index



Overview

Designed to continuously measure reflectance for calculating the normalized difference vegetation index (NDVI). NDVI provides an approximation of canopy chlorophyll content and leaf area and is used to monitor green-up in the spring and senescence in the fall.

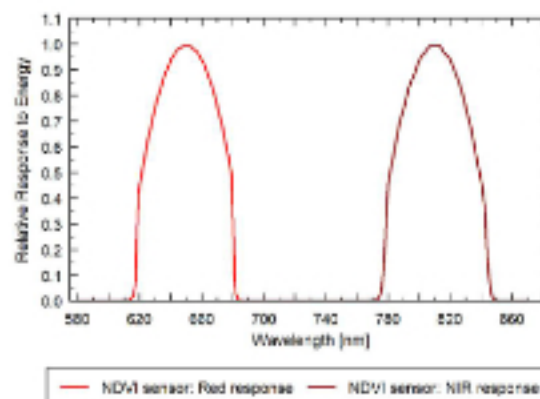
Key Features

Available as an analog option or SDI-12 digital output. A domed diffuser promotes self-cleaning to minimize errors from dust and debris.

$$NDVI = \frac{\rho_{NIR} - \rho_{Red}}{\rho_{NIR} + \rho_{Red}}$$

Output Types

Available as an analog option or SDI-12 digital output. Best measurements come from pairing upward- and downward-looking models.



	Analog Output		Digital Output	
	S2-111-SS (Upward-Looking)	S2-112-SS (Downward-Looking)	S2-411-SS (Upward-Looking)	S2-412-SS (Downward-Looking)
Power Supply	Self-powered			5.5 to 24 V DC
Output (sensitivity)	14 mV per W m ⁻² nm ⁻¹ (Red) 20 mV per W m ⁻² nm ⁻¹ (NIR)	12.5 mV per W m ⁻² nm ⁻¹ sr ⁻¹ (Red) 25 mV per W m ⁻² nm ⁻¹ sr ⁻¹ (NIR)	—	
Calibration Factor (reciprocal of sensitivity)	0.07 W m ⁻² nm ⁻¹ per mV (Red) 0.05 W m ⁻² nm ⁻¹ per mV (NIR)	0.08 W m ⁻² nm ⁻¹ sr ⁻¹ per mV (Red) 0.04 W m ⁻² nm ⁻¹ sr ⁻¹ per mV (NIR)	Custom for each sensor and stored in firmware	
Calibration Uncertainty	± 5 %			
Output Range	40 mV (Red) 40 mV (NIR)	15 mV (Red) 15 mV (NIR)	SDI-12	
Wavelength Ranges	Red detector = 650 nm ± 5 nm with 65 FWHM* NIR detector = 810 nm ± 5 nm with 65 FWHM*			
Measurement Range	2x full sunlight			
Measurement Repeatability	Less than 1 %			
Long-term Drift	Less than 2 % per year			
Response Time	Less than 1 ms		Less than 0.6 s	
Field of View	180°	30°	180°	30°
Directional (co-sine) Response	± 2 % at 45°; ± 5 % at 75° zenith angle			
Temperature Response	Less than 0.1 % per C			
Housing	Anodized aluminum body with acrylic diffuser			
IP Rating	IP68			
Operating Environment	-40 to 70 C; 0 to 100 % relative humidity			
Dimensions	30.5 mm diameter, 37 mm height	30.5 mm diameter, 34.5 mm height	30.5 mm diameter, 37 mm height	30.5 mm diameter, 34.5 mm height
Mass (5 m cable)	140 g			
Warranty	4 years against defects in materials and workmanship			

*FWHM = full-width half-maximum