

VAISALA

Visibility Sensor PWD20W
 for Wind Energy Industry



Features

- Certified by Deutscher Wetterdienst
- Accurate and traceable measurement of prevailing visibility
- Hood heaters prevent ice accumulation
- Robust and versatile
- Unique algorithm ensures no flicker interference
- Mean time between failures (MTBF) in excess of 20 years
- Easy installation

PWD20W is a visibility sensor with a special algorithm designed for wind turbine installations.

Limit Your Light Emissions

Flashing lights can be disturbing so it is smart to dim them to the optimal level. With the help of PWD20W you can be in conformity with the regulations, such as the German General Administrative Regulation for the Marking and Lightning of Obstacles to Air Navigation. At the same time you can create a comfortable living environment for the surrounding community.

The conditions on top of a wind turbine require a robust device, like PWD20W. Its performance and reliability have proven to be top-class. The hood heaters prevent ice accumulation on the device. A special firmware ensures that flashing lights near the visibility sensor are not mixed with light pulses from the sensor. Thousands of PWD sensors are installed worldwide in demanding applications in all kinds of climates. They are installed on wind turbines both onshore and offshore. With PWD series sensors you get the best-in-class measurement performance and unparalleled reliability.

Our failure rate statistics indicate a mean time between failures (MTBF) clearly in excess of 20 years. You will also benefit from our fast delivery.

The FAA and other leading aviation authorities have placed their confidence in us. Our visibility sensor is also certified by Deutscher Wetterdienst.

Especially for Wind Turbines

Wind turbines are usually equipped with two red obstruction lights each. These obstruction lights flash at set intervals by day and night. Residents in the vicinity of a wind turbine complain of the brightness of the obstruction lights at night. Visibility data is used to control the intensity of these obstruction lights, thereby reducing the disturbance to the neighbours, yet not undermining aviation safety.

PWD20W software has been specially designed for the wind turbine application. The infrared light emitted by obstruction lights may significantly disturb conventional visibility sensors. However, PWD20W filters out the interference to eliminate the effect

of obstruction lights on the visibility measurement. Red LED lights interfere with neither the visibility measurement nor the control of the lights.

Wherever Visibility Measurement Is Needed

With a measurement range of 10 to 20 000 meters (32 to 65 600 feet), PWD20W offers long-range visibility measurement for onshore and offshore obstruction lights, offshore obstruction lights for vessels, met mast equipment. The standard model PWD20 can be used in diverse applications covering harbors, coastal areas, heliports, wind parks – indeed, any locations or areas where visibility measurement is necessary.



Technical Data

Visibility Measurement Performance

Operating principle	Forward scatter measurement
Observation range of MOR (Meteorological Optical Range)	10 ... 20 000 m (32 ... 65 600 ft)
Accuracy	±10 % at 10 ... 10 000 m (32 ... 32 800 ft) ±15 % at 10 ... 20 km (2.6 ... 12 mi)

Operating Environment

Operating temperature	-40 ... +60 °C (-40 ... +140 °F)
Operating humidity	0 ... 100 %RH
IP rating	IP66

Inputs and Outputs

Power supply	12 ... 50 VDC (electronics) 24 VAC or 24 VDC for heater option
Maximum power consumption	3 W (electronics with dew heater at 12 VDC) With optional luminance sensor: 2 W, 24 V With optional hood heaters: 65 W, 24 V
Outputs	Serial data line may be used either as RS-232 or RS-485 (2-wire) level signals 3 relay controls (open collector) Analog output current: 0 ... 1 mA or 4 ... 20 mA 8-m power/data cable standard. The PWD end is equipped with connector.
Auxiliary data	Low visibility alarms in the data messages. 3 adjustable alarm limits to set the 3 relay controls. Hardware status (fail/warning) in the data messages. Third relay control output can also be driven by hardware status.

Mechanical Specifications

Weight	3 kg (6.61 lb)
Dimensions (H × W × L)	199 × 404 × 695 mm (7.83 × 15.91 × 27.36 in)

Compliance

EMC Compliance	
Radiated emissions	CISPR 16-1 CISPR 16-2
Radiated susceptibility	IEC 61000-4-3, 10 V/m
Conducted emissions	CISPR 16-1 CISPR 16-2
Conducted susceptibility	IEC 61000-4-6
EFT immunity	IEC 61000-4-4
ESD immunity	IEC 61000-4-2
Surge	IEC 61000-4-5

Spare Parts and Accessories

Pole mast
Interface unit with power supplies: 115/230 VAC
Interface unit with power supplies, transient protection and relays: 230 VAC
Luminance sensor PWL111
Hood heaters for harsh winter conditions
Support arm for mast installations
Pole clamp kit for mast top installations
Calibration set PWA12
Maintenance cable PWDRSCABLE

