



Features

- Accurate, traceable measurement of prevailing visibility (MOR)
- Versatile and easy to install
- Easy to integrate
- Robust and dependable
- Weatherproof design reduces need for maintenance

Dependable operation of automated observation networks is a must today. Maritime observing systems need to work in inhospitable environments and also meteorological institutes face tough productivity and performance prerequisites. Vaisala Visibility Sensor PWD50 answers these needs with a mixture of robustness, dependability, versatility, and reliability. PWD50 measures visibility from 10 m to 50 km (from 32 ft to 31 mi).

Accurate visibility measurement

Calibrated with reference to a highly accurate transmissometer, PWD50 uses the proven forward-scatter measurement principle to report meteorological optical range (MOR). The sensor optics are well-protected against contamination: the optical components point downwards, and hoods protect the lenses against precipitation, spray, and dust. This weatherproof design helps to sustain accurate measurement results.

Versatility

PWD50 architecture allows for easy integration to existing or newly designed systems in a cost-efficient manner. The sensor can be mounted on existing masts in many ways. The electrical interfaces are in a single cable. Versatility

is further enhanced with various options, such as pole masts, a selection of mounting adapters, power supply cabinets, and a modem for long distance communication.

Robust and dependable

The downward-facing sensor hoods protect the optical surfaces from contamination, resulting in low maintenance needs and costs. The optional hood heaters prevent the build-up of ice and/or snow in the optical path.

Solid track record

Tens of thousands of PWD series sensors have been installed all around the world. They have undergone rigorous test programs. In the field, the sensors have

demonstrated very low failure rates. They have proved their robustness in the harshest Antarctic climate and most demanding conditions, ranging from offshore to desert and from airport to roadside.



PWD50 reports meteorological visibility reliably from 10 meters to 50 kilometers (from 32 feet to 31 miles).

Technical data

Measurement performance

Operating principle	Forward scatter measurement with 45° scattering angle
Measurement interval	15 s
Reporting range of MOR (visibility)	10–50 000 m (32–164 000 ft)
Reporting resolution	1 m (3 ft)
Reporting uncertainty in operational conditions	±10 % at 10–10 000 m (32–32 800 ft) ¹⁾ ±20 % at 10–50 km (6.2–31 mi)
Measurement error (instrument consistency)	+2.5 %

1) Fulfills ICAO Annex 3: ±50 m (164 ft) up to 600 m (1968 ft)

Operating environment

Operating temperature	–40 ... +60 °C (–40 ... +140 °F)
Storage temperature	–40 ... +60 °C (–40 ... +140 °F)
Operating humidity	0–100 %RH
Maximum operating wind speed	60 m/s (134 mph)
Sensor orientation	Align receiver to look away from bright lights (sun or flashing beacons)
IP rating	IP66

Inputs and outputs

Power supply	12–50 V DC (electronics) 24 V AC or 24 V DC for heater option
Average power consumption	3 W (peak 10 W) With optional luminance sensor: 5 W With optional hood heaters: 65 W
Outputs	Serial line RS-232 or RS-485 (2-wire) 3 relay controls (open collector) Analog output current: 0–1 mA or 4–20 mA 8-m power/data cable (standard) with connector at PWD end
Auxiliary data in data messages	Low visibility alarms. 3 adjustable alarm limits to set the 3 relay controls. Hardware status (fail/warning). 3rd relay control output can also be driven by hardware status.

Mechanical specifications

Weight	3 kg (6.61 lb)
Material	Aluminum
Dimensions (H × W × L)	146 × 404 × 695 mm (5.75 × 15.91 × 27.36 in)

Compliance

Compliance marks	CE
EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) as amended by 2015/863
Electromagnetic compatibility (EMC)	IEC 61326-1, industrial environment CISPR 32 / EN 55032, Class B
Corrosion and salt mist	VDA 621-415

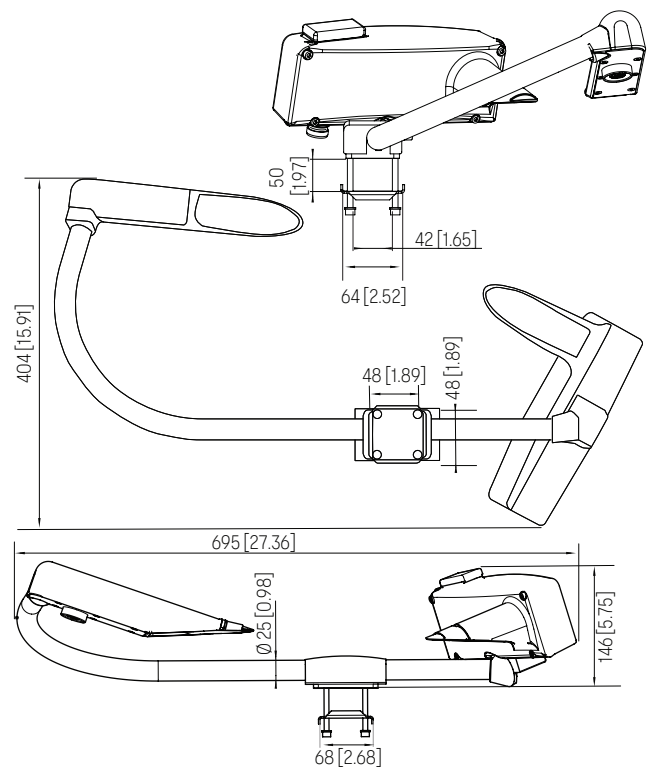
Spare parts

Transmitter circuit board	PWT11
Transmitter optics module (includes PWT11 and lens)	DRW214776
Controller/Receiver for PWD50	PWC50

Options and accessories

Fiberglass mast, 2.1 m (6 ft 11 in), Ø 60–86 mm (2.36–3.39 in), frangible, white	PWFM210
Aluminum mast, 3 m (9 ft 10 in), Ø 60 mm (2.36 in), white	DKP203W
Aluminum mast, 2 m (6 ft 7 in), Ø 60 mm (2.36 in), white	DKP202W
Interface unit for powering	BOX221/BOX222
Luminance sensor	PWL111
Hood heaters for harsh winter conditions	PWH111
Support arms for mast installations	Various ¹⁾
Mounting clamps for mast top installations	Various ¹⁾
Calibration set (2-point calibration)	PWA12
Calibration set (3-point calibration)	PWA13
Maintenance cable (USB) for BOX221 and BOX222	219688

1) For the options, contact Vaisala sales.



PWD50 dimensions



In addition to meteorological observation networks, PWD50 is also well-suited for use in offshore operations.