



VAISALA

Visibility Sensor PWD50

Features

- Accurate, traceable measurement of prevailing visibility
- Versatile and easy to install
- Easy to integrate
- Robust and dependable
- Weather-proof 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 measure 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 weather-proof 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

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 climates 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 |
| Observation range of MOR | 10 ... 50 000 m (32 ... 164 000 ft) |
| Accuracy | ±10 % at 10 ... 10 000 m (32 ... 32 800 ft) ±20 % at 10 ... 50 km (6.2 ... 31 mi) |

Operating Environment

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

Inputs and Outputs

| | |
|---------------------------|---|
| Power supply | 12 ... 50 VDC (electronics) 24 VAC or 24 VDC 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 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

| | |
|------------------------|--|
| IP rating | IP66 |
| Weight | 3 kg (6.61 lb) |
| Dimensions (H × W × L) | 140 × 404 × 695 mm (5.51 × 15.91 × 27.36 in) |

Compliance

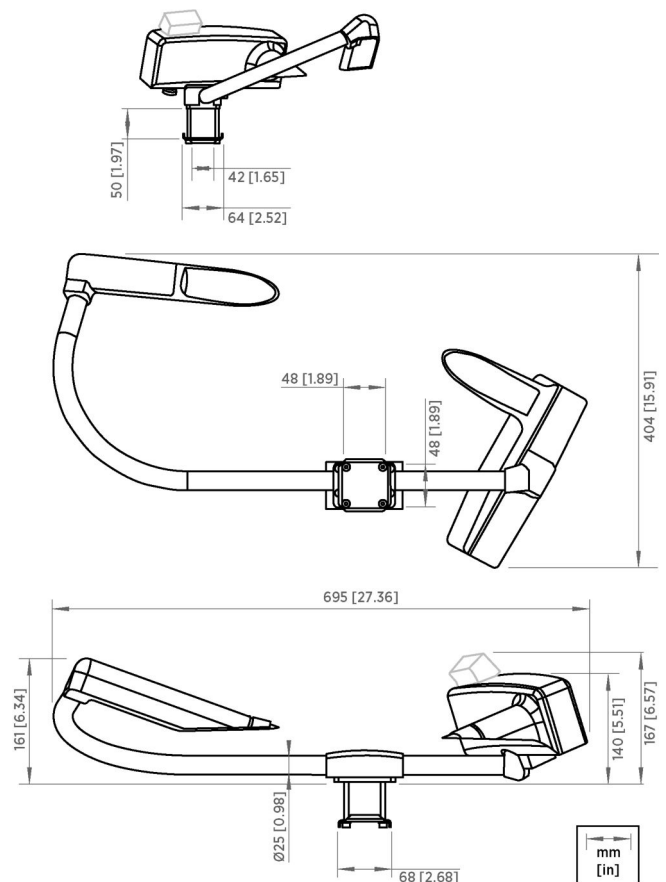
EMC Compliance

| | |
|--------------------------|--------------------------|
| 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 |
| 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 16385ZZ |
| Maritime insulator |



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

Published by Vaisala | B211069EN-C © Vaisala 2018

All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. Any reproduction, transfer, distribution or storage of information contained in this document is strictly prohibited. All specifications — technical included — are subject to change without notice.