

VAISALA

Present Weather Detector PWD52



Features

- Accurate, traceable measurement of prevailing visibility
- Detects precipitation type
- Measures the intensity and accumulation of precipitation
- Estimates snow accumulation
- Robust and dependable
- Weather-proof design reduces need for maintenance
- Easy to install, easy to integrate

PWD52 provides a wide visibility measurement range and accurate present weather reporting.

Automated observation networks need to operate with maximum reliability. Maritime and aviation observing systems need to operate in extremely harsh conditions. Meteorological institutes face challenging productivity and performance requirements. Vaisala Present Weather Detector PWD52 answers these needs with a mixture of robustness, dependability, versatility, and reliability.

Accurate Visibility Measurement

Calibrated with reference to a highly accurate transmissometer, PWD52 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 sustain accurate measurement results.

Proven Measurement Principles

PWD52 identifies precipitation type by accurately estimating the water content of precipitation using Vaisala RAINCAP® sensor element, and combines this information with optical forward scatter and temperature measurement. These three independent measurements are processed through sophisticated algorithms to produce an accurate evaluation of the precipitation type according to the WMO and NWS code tables.

Robust and Dependable

Three measurement methods are used in PWD52 continuously, independently, and simultaneously, which reduces false alarm rates to a minimum. The identification of precipitation type is reliable due to sophisticated algorithmic processing of complementary data from multiple sources. These factors together produce exceptionally dependable data.

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, PWD 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.

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 (2.6 ... 31 mi)
Weather type identification	7 different types of precipitation (rain, freezing rain, drizzle, freezing drizzle, mixed rain/snow, snow, ice pellets) Precipitation (unknown type) Fog (mist), haze (smoke, sand) or clear
Weather type reporting	WMO 4680 (SYNOP), 4678 (METAR), and NWS code tables; 49 different codes supported from the WMO 4680 code table
Precipitation detection sensitivity	0.05 mm/h (0.0020 in/h) or less, within 10 minutes
Precipitation intensity measurement	0.00 ... 999.99 mm/h (0.00 ... 39.37 in/h)
Precipitation amount measurement	0.00 ... 99.99 mm (0.00 ... 3.94 in)
Amount of new snow	0.00 ... 999 mm (0.00 ... 39.33 in)

Operating Environment

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

Compliance

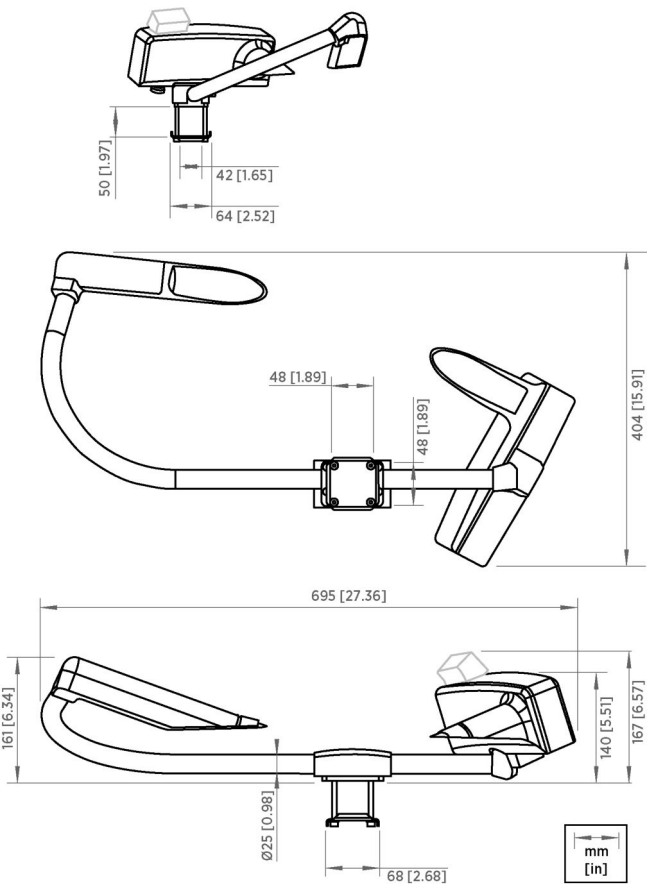
EMC Compliance	
Radiated emissions	CISPR 16-1 CISPR 16-2
Radiated susceptibility	IEC 61000-4-3, 10 V/m
Conducted emissions	CISPR 16-1 CISPR 16-2
Conducted susceptibility	IEC 61000-4-6
EFT immunity	IEC 61000-4-4
ESD immunity	IEC 61000-4-2
Surge	IEC 61000-4-5

Mechanical Specifications

IP rating	IP66
Weight	3 kg (6.61 lb)
Dimensions (H × W × L)	167 × 404 × 695 mm (6.57 × 15.91 × 27.36 in)

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
Enhanced weather detection option
Maritime insulator



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.

