



Features

- Accurate, traceable measurement of prevailing visibility (MOR)
- Detects precipitation type
- Measures the intensity and accumulation of precipitation
- Estimates snow accumulation
- Robust and dependable
- Weatherproof 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 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 sustain accurate measurement results.

Proven measurement principles

PWD52 identifies precipitation type by accurately estimating the water content of precipitation using Vaisala RAINCAP® rain sensor, and combines this information with optical forward scatter and temperature measurement. These 3 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

The 3 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 look-down geometry protects the optical surfaces from contamination, resulting in low maintenance needs and costs. The optional hood heaters prevent the buildup of ice and snow in the optical path.

Solid track record

Tens of thousands of PWD series sensors have been installed 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 Antarctic 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
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 (2.6–31 mi)
Measurement error (instrument consistency)	±2.5 %
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 (threshold)	0.05 mm/h (0.0020 in/h) or less, within 10 minutes
Precipitation reporting resolution	Intensity 0.01 mm/h Accumulation 0.01 mm
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)

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

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.

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

Mechanical specifications

Weight	3 kg (6.61 lb)
Material	Aluminum
Dimensions (H × W × L)	167 × 404 × 695 mm (6.57 × 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

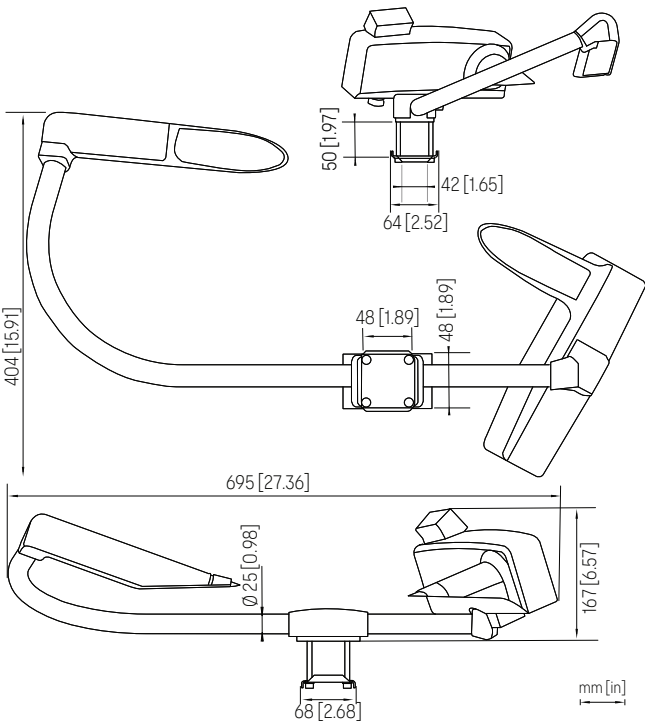
Options and accessories

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.

Spare parts

Transmitter circuit board	PWT11
Transmitter optics module (includes PWT11 and lens)	DRW214776
Controller/Receiver for PWD52	PWC52
RAINCAP (double plate) (PWD22, PWD52)	PWR211SP



PWD52 dimensions