



OBSERVATOR
instruments

VPF-710 Visibility Sensor

The VPF-710 Visibility sensor provides high quality visibility measurement in a compact and highly robust package.

The open design of the sensor head allows the free passage of air ensuring the visibility measurement is as accurate as possible in all conditions. Other features of the design ensure the correct response to all precipitation types as well as smoke and dust. The VPF-710 is highly resistant to disturbance from nearby light sources such as aviation obstacle warning lights, both constant and flashing. Even the latest generation of IR obstacle lights are not a problem.

The sensor is well suited to use in aviation applications due to the measurement accuracy, overall reliability and longevity. Full compliance with the visibility measurement requirements of the International Civil Aviation Organisation Runway Visual Range specification and easy integration of the Biral ALS-2 ambient light sensor makes VPF-710 particularly suited for use in Runway Visual Range (RVR) applications.

As standard the sensor is fitted with an extensive self-test monitoring capability which includes window contamination monitoring and output compensation. The VPF-710 can be AC mains or low voltage DC powered and hood heaters are available for use in areas prone to snow.

Features:

- Measures visibility and fog density
- Proven reliable measurement in all weather conditions
- Highly corrosion resistant hard coat anodised finish
- Window contamination monitoring and compensation
- Unaffected by obstacle warning lights
- Mains or DC powered
- 10m to 75Km measurement range



Sensor nearby motorway



Visibility sensor on Met station in sea

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Measurement Principle

The VPF-710 sensor uses forward scatter meter technology to measure visibility in all weather conditions. The sensor calculates EXCO (the atmospheric EXtinction COefficient) by measuring the amount of light scattered by small suspended particulates (ie fog, haze and smoke aerosols) and larger particles (ie rain, snow, ice pellets, drizzle and mist) passing through the sample volume. From this EXCO value the MOR (Meteorological Optical Range) and thus visibility is determined.

Data Output

The sensor is configured with RS-232C signal output as standard with RS-422 communications available as an option. The data is output in various ASCII data strings, such as a small compressed data string, expanded data string and monitoring data string amongst others. The unit can be set in either automatic or polled mode and data sent to a printer or to a PC for tagging, processing and archiving.

Maintenance, calibration, self test and monitoring

The sensor is fully calibrated at the time of manufacture. Routine maintenance, including a check on calibrations, can be performed easily by one person in a matter of a few minutes and a re-calibration (although this should never be required) takes only slightly longer. The sensor condition and performance can be monitored remotely using the self-test and monitoring system detailed overleaf.

Operation in temperature extremes

The sensor operates in temperatures ranging from -50°C to +60°C. For operation below -30°C the heated version is recommended (please refer to the variants overleaf).

Specifications

Measures	Visibility
Output	Serial Data
Range	10 m to 75 km (33 ft to 47 miles)
Accuracy	+/- 2%
Light source	infra-red
Light source wavelength	880 nm
*FSM angle used	45°
Measurement Geometry	horizontal
Sample volume size (cm ³)	400
Power supply	mains, battery or solar
Power requirements	
Sensor head	2.0 W
Window heaters	1.7 W
Hood heating option available	Yes
Hood heater power requirements	30 W
Operating temperature range	- 50°C to +60°C (-58°F to +140°F)
Humidity	0 - 100%
IP rating:	IP66
Weight	4.9kg DC / 6.1kg AC
Output rate (seconds)	10 to 300 (selectable)
Method of Construction	salt-dip brazing
Materials	hard-anodized aluminium
Reliability	> 8 years mean time before failure
Undisturbed sample volume	Yes



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