

HSS VPF-710 Visibility Sensor

Features

- Measures visibility AND fog density
- Proven accuracy, reliability and repeatability
- Self-test and monitoring system
- Very low power requirements
- Long and trouble-free operational life
- Minimal maintenance requirements and running costs

The VPF-710 digital visibility sensor is designed for accurate measurement of visibility and has been in operation for over 20 years. It is a compact, robust instrument with excellent time proven performance and is suitable for use in extreme conditions.

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 - 3°C the heated version is recommended (please refer to the variants overleaf).

The VPF-710 Visibility Sensor comes with 2 years warranty as standard.



The sensor is a single lightweight unit and can easily be installed by one person.

The sensor includes as standard:

- Sensor head of high quality aluminium construction which is hard anodised to give a superior finish that does not require painting.
- RS-232C digital output
- Window de-misters
- Power line surge arrestors
- Signal line surge arrestors
- Self-test and monitoring system
- 6 metre power and signal cable
- Waterproof mini-connectors
- Calibration reference certificate
- Manual

Available VARIANTS see overleaf

- Heating
- Advanced self test and monitoring system
- Alternative RS-422 Output
- Ambient Light Sensor
- Weather Station Module

Available ACCESSORIES see overleaf

- Stainless Steel Mounting Kit
- Calibration Kit
- Transit Case

For sensor specifications please refer to HSS brochure

VARIANTS

RS-422 communications - where there is 12 metres or more between the sensor and control computer RS-422 configuration is required.

Heated version - the sensor is fitted with window de-misters allowing operation of the sensor in temperatures down to -3°C . However, where the temperature drops below -3°C for more than a couple of hours a day the heated version is recommended. This version will provide error free operation in conditions down to -50°C .

Ambient light sensor - allows ambient light conditions to be measured according to ICAO (4 level and with specific angle of view). Designed for use with RVR (Runway Visual Range) systems on airfields and for use with Allard's Law if night time visibility conditions are to be determined according to this instead of using the standard Meteorological Optical Range values (MOR).

Weather station module - provides 3 analogue inputs (0-10 V) allowing the VPF-710 to be used as a weather station. Output is a single time correlated data string.

Advanced self-test and monitoring see right panel

ACCESSORIES



Calibration reference kit - recommended for end-user confidence checks and re-calibration. The kit contains a carrying case, zero plugs and a calibration plaque to a specific EXCO value. One kit can be used on any number of sensors.



Stainless steel mounting kit - includes a U-bolt and fasteners to secure the sensor to any pole with a diameter between 40 - 64 mm.



Transit case - scientific case lined with 3 inch foam to hold the sensor securely in place in extreme handling conditions.



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VPF-710 sensor as part of a weather station

Self-test and monitoring system

The sensor condition and performance can be monitored remotely using the self-test diagnostic software which comes as standard to monitor:

- Optical Source Power
- Transmitter Window Contamination
- Non-Volatile Memory Check Sum Test
- EPROM Check-Sum Test
- Restart Occurrence
- Sensor Sample Interrupt Verification
- RAM Read/Write Verification
- Register Read/Write Verification
- A/D Control Signal Test
- A/D Conversion Accuracy Check
- Forward-Scatter Background Illumination Level

Increased levels of diagnostic testing are available as an option see below.

Advanced self-test and monitoring system

In addition to the above functions this option will also allow you to monitor:

- Forward-Scatter Receiver Sensitivity
- Forward-Scatter Receiver Window Contamination
- Power Supply Voltages
- Input Voltage Check (Battery Check- DC Powered Sensors Only)

The HSS range is in continuous development therefore specifications may change without prior notice.



HSS Sensors are manufactured by Biral to rigorous ISO 9001:2000 quality standards