

# Vaisala FS11 Visibility Sensor for RVR Applications



## Features/Benefits

- Especially built for Runway Visual Range (RVR) Applications
- Meets FAA and ICAO specifications for visibility measurement
- Selected by FAA
- Accurate and traceable measurement
- Mechanical design and high-power heating follow FAA guidelines
- Range up to 75 km
- Can also be used for aeronautical and SYNOP visibility measurements
- Composite fiber mast meets the frangibility requirements of airports

## Scientifically valid chain of calibration

Every Vaisala FS11 is calibrated through a scientifically valid chain of reference. The scattering response of the calibration device can be clearly traced to a reference FS11 visibility sensor, which is in continuous operation at Vaisala outdoor test field along with reference transmissometers and other instrumentation.

## Low maintenance need

The FS11 incorporates a new technique that measures and compensates for window contamination. It ensures unparalleled measurement accuracy throughout the interval between window cleanings. It also enables much longer window cleaning intervals than the former RVR visibility sensors. The unique system works by monitoring the total reflectance of the window surface. It automatically compensates for

visibility measurement errors caused by window contamination.

The sophisticated self-diagnostics and modular design allow for very short service times. The measurement fork and optional background luminance meter (LM21) are independent instruments that can be replaced quickly as pre-calibrated spare parts.

## Reliable operation in the harshest weather

Four main design features are combined in the FS11 to ensure reliable operation in the harshest weather. The first is the window contamination compensation technique. The second is the "head-down" design of the optical heads, which protects them against virtually all windblown particles (even those flying horizontally).

High-power heaters are the third feature, each with its own temperature monitoring and control mechanism to prevent snow accumulation during the heaviest snowstorm.

As a final measure, there is an optical path clearance monitoring circuitry to verify that measurement is not affected by obstructions.



# Technical Data

## Operational

Measurement range (MOR)	5 m ...75,000 m; 1, 3 and 10 min averaging
Accuracy	± 10 % range 5 m ... 10,000 m ± 20 % range 10,000 m ... 75,000 m
Scatter measurement accuracy	±3 %

## Optical

Operating principle	Forward scatter measurement
Scattering angle	42°
Light source	Near infrared Light Emitting Diode

## Electrical

Mains supply	100/115/230 VAC ±10 %, 50-60 Hz
Power consumption	300 VA maximum (60 VA + 240 VA defrosting heaters)
Outputs	Serial line RS-232 or opto-isolated RS-485 (2-wire) or optional data modem Separate RS-232 maintenance line

## Mechanical

Dimensions	2.8 m x 0.9 m x 0.5 m
Weight	37 kg
Mast	Frangible and hinged composite-fiber mast

## Environmental

Operating temperature	-40 ... +65 °C, optional -55 ... +65 °C
Operating humidity	0 ... 100 %
Wind speed	Up to 60 m/s

## Electromagnetic compatibility

CE compliant  
Compliance has been verified according to the following EMC directives:

Verification subject	Standard
Radiated emissions	EN55022
Radiated susceptibility	IEC 1000-4-3, 10 V/m
Conducted emissions	EN55022
Conducted susceptibility	IEC 1000-4-6
IFT immunity	IEC 1000-4-4
ESD immunity	IEC 1000-4-2
Surge	IEC 1000-4-5
Harmonics to the mains network	IEC 1000-3-2

## Accessories/Options

Calibration set	FSA11
Background luminance sensor	LM21
Battery backup	FSB101 typical backup time 30 min at 25 °C
Modem for long distance (> 1km) communication	DMX501
Obstruction light	FS110BS

