



Features

- Intelligent, standalone sensor
- Verified accuracy and photopic response
- Extensive self-diagnostics
- Window contamination measurement and compensation
- Optical path blockage detection
- High power heaters to prevent snow accumulation
- Calibration traceable to measurement standards
- Field calibration device available

Vaisala Background Luminance Sensor LM21 is an intelligent, standalone precision photometer.

Vaisala Background Luminance Sensor LM21 is a state-of-the-art luminance sensor for runway visual range (RVR) assessment. The background luminance has an effect on the distance from which the pilot can see the runway lights.

Resembles Human Eye

LM21 is a precision photometer with a verified photopic spectral response. It measures the total amount of light coming in from an angle of 6 degrees, and converts the measured data to cd/m^2 . The sensor sends the measurement data to the interface unit of a Vaisala transmissometer or forward scatter visibility sensor. The interface unit combines both the visibility and background luminance data into the same message and sends it to the main RVR computer.

LM21 can be connected to Vaisala Transmitter LT31 and Vaisala Forward Scatter Sensor FS11. LT31 and FS11 are connected using a RS-485 serial line.

Comprehensive Self-Diagnostics

LM21 is an intelligent, standalone sensor. To ensure reliable and uninterrupted operation, it has extensive self-monitoring functions with high power heating features. The sensor measures and compensates for the attenuation effect of window contamination. It ensures that measurement accuracy is maintained between window cleanings, and also extends the cleaning interval. The optical path clearance monitoring circuitry verifies that measurement is not affected by obstructions.

Easy to Calibrate

The calibration of LM21 is traceable to international measurement standards for luminous intensity. Vaisala Field Calibrator LMA21 is a unique field calibration device that is available for quick field calibration. It provides a stabilized and diffused white light beam for LM21 calibration.

The calibration coefficients for light intensity have been defined during factory calibration and stored in the LMA21 memory. Calibration starts automatically when LMA21 is connected to LM21. LM21 reads the calibration

coefficients from the LMA21 memory and performs the calibration. The status and result of the calibration is displayed with 5 LED indicators on the cover of LMA21.



LM21 measures the ambient light level or background luminance in RVR applications. In the picture, LM21 is installed on Vaisala Transmissometer LT31.

Technical Data

Measurement Performance

Measurement range	2 ... 40 000 cd/m ²
Accuracy	±10 %

Optical Specifications

Spectral response	400 ... 700 nm, photopic according to CIE standards
Peak wavelength	553 nm ± 5 nm
Field of view	6° (94 % of measured luminance)
Effective diameter of reception lens	24 mm (0.94 in)

Operating Environment

Operating temperature	-55 ... +65 °C (-67 ... +149 °F)
Operating humidity	0 ... 100 %RH

Inputs and Outputs

Connection	Power/signal cable provided
Power supply	10 ... 38 VDC, or alternatively 8 ... 28 VAC, 6 W
Heater power supply	28 VAC, 50 W
Output signal	RS-485 (RS-232), frequency output
Overvoltage protection	Power supply lines and output lines are protected by current limiting series resistors and transient suppressors

Mechanical Specifications

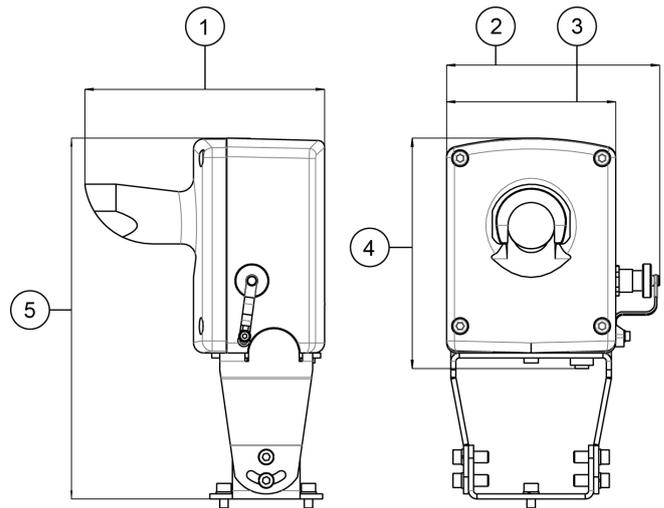
Weight	1230 g (2.71 lb)
Cable length	2.3 m (7 ft 7 in)
Color	White
Housing	Aluminum, weatherproof
Mounting	With a mounting clamp onto LM21 Support Arm of LT31 or Optional Support Arm of FS11

Compliance

LM21 sensor is CE compliant. The compliance has been verified according to the following EMC product family standards:

Electrical equipment for measurement, control and laboratory use - EMC Requirements IEC 61326-1: 2012-07 (Edition 2.0), Environment class: Industrial

Electrical equipment for measurement, control and laboratory use - EMC Requirements EN 61326-1: 2013-01 (Edition 2.0), Environment class: Industrial



LM21 dimensions in mm (inches)

- 1 Length: 142 mm (5.59 in)
- 2 Width (with plug): 126 mm (4.96 in)
- 3 Width (without plug): 100 mm (3.94 in)
- 4 Height (without bracket): 137 mm (5.39 in)
- 5 Height (with bracket): 215 mm (8.46 in)



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