## VAISALA

#### www.vaisala.com

### Vaisala Background Luminance Sensor LM21



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

The 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**

The LM21 is a precision photometer with a verified photopic spectral response. The LM21 measures the total amount of light coming in from an angle of 6 degrees, and converts the measured data to cd/m2. The LM21 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.

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

#### Comprehensive Self-Diagnostics

The LM21 is an intelligent, standalone sensor. To ensure reliable and uninterrupted operation, the LM21 has extensive self-monitoring functions with high power heating features. The LM21 measures and compensates for the attenuation effect of window contamination. It ensures that measurement accuracy is maintained between window cleaning, 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 the LM21 is traceable to international measurement standards for luminous intensity. The 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 the LM21 calibration.

The calibration coefficients for light intensity have been defined during factory calibration, and stored in the LMA21 memory. The calibration is done automatically when the LMA21 is connected to the Vaisala Background Luminance Sensor LM21. The 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 the LMA21.

#### **Features/Benefits**

- Intelligent, stand-alone 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



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

## **Technical Data**

#### Operational

| Measuring range      | 2 40 000 cd/m <sup>2</sup> |
|----------------------|----------------------------|
| Measurement accuracy | 10 %                       |

# OpticalSpectral response400 ... 700 nm, Photopic<br/>according to CIE standardsPeak wavelength553 nmField of view6°Effective diameter of reception lens24 mm

#### Electrical

| Connection             | power/signal cable provided           |
|------------------------|---------------------------------------|
| Power supply           | 10 VDC to 38 VDC,                     |
|                        | or alternatively 8 VAC to 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        |
|                        | limiters and transient suppressors    |

#### Environmental

| Operating temperature | -55 +65 °C |
|-----------------------|------------|
| Operating humidity    | 0 100 %RH  |

#### Mechanical

| Weight       | 1.2 kg                          |  |
|--------------|---------------------------------|--|
| Cable length | 2.3 m                           |  |
| Color        | white                           |  |
| Housing      | aluminum, weatherproof          |  |
| Mounting     | with a mounting clamp onto      |  |
|              | the LM21 Support Arm of LT31 or |  |
|              | Optional Support Arm of FS11    |  |

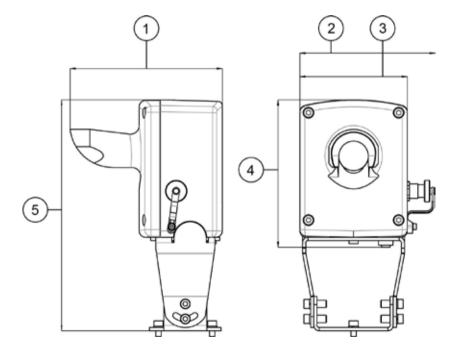
#### Electromagnetic compatibility

| The LM21 sensor is CE-compliant. This compliance has been |                  |  |
|---|------------------|--|
| verified according to the following EMC directives:       |                  |  |
| IEC 61326-1   | Industrial Class |  |
| EN 61326-1  | Industrial Class |  |
|   |                  |  |

#### Dimensions

Dimensions in mm.

- 1. Length: 142 mm
- 2. Width (with plug): 126 mm
- 3. Width (without plug): 100 mm
- 4. Height (without bracket): 137 mm
- 5. Height (with bracket): 215 mm



VAISALA

Please contact us at www.vaisala.com/requestinfo



Ref. B210425EN-B ©Vaisala 2015 This material is subject to copyright protection, with all copyrights retained by Vaisala and its individual partners. All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. The reproduction, transfer, distribution or storage of information contained in this brochure in any form without the prior written consent of Vaisala is strictly prohibited. All specifications — technical included — are subject to change without notice.

www.vaisala.com

Scan the code for more information