



Runway Visual Range Integrated or Stand-Alone

Overview

Combining the Model 8365 Dual Technology Visibility Sensor with a high accuracy Ambient Light Sensor (ALS), AWI's Runway Visual Range system measures the transparency of the atmosphere and calculates its extension coefficient. By integrating the Runway Light Intensity Measurement with the current extension coefficient, Runway Visual Range (RVR) values are determined.

Using both direct attenuation and forward scatter technologies the Model 8365 can measure airborne particle sizes once available only from a transmissometer while having the reliability and cost effectiveness of a forward scatter visibility sensor. Its precision and full compliance to ICAO recommendations makes it ideal for applications requiring the highest in performance and reliability, from CAT I to CAT IIIb airports along with aeronautical MOR and SYNOP measurements.

Accuracy by Design

Accurate measurement of visibility in all weather conditions, including heavy precipitation, fog, snow, smoke and blowing sand is limited in other sensors. Two-headed forward scatter visibility sensors that rely solely on light scattering techniques are blind to certain size airborne particles that do not reflect light. By measuring both the light attenuation and light scattering at the same time the Model 8365 computes ratiometric values to derive the most accurate answer. This measuring process cancels several variables during calculation and ensures that the visibility measurement is not affected by contaminants on the lenses, or by temperature effects on the emitters and electronics.



- Specifically built for Runway Visual Range (RVR) applications
- Unique dual sensor technology combines the accuracy of transmissometer and reliability and cost effectiveness of a forward scatter sensor
- Surpasses the requirements established by the FAA for AWOS systems
- Meets or exceeds ICAO recommendations, WMO requirements
- Measurements traceable to the FAA "Golden Standard"

By having two direct attenuation and two scatter values for every measurement the 8365 does not have to depend upon absolute measurements to be the most accurate sensor available today. This advantage means that measurements are independent of the effects of the environment, thereby maximizing accuracy, reducing recurring calibration, and minimizing maintenance requirements.

Scientifically Valid Chain of Calibration

Every Model 8365 is calibrated through a scientifically valid chain of reference. The response of the calibration device can be clearly traced to the "FAA golden standard transmissometer" at the FAA testing facility. This standard was established in direct comparison during certification of the sensor for aviation quality measurements.

Extensive Self-diagnostics

If one of the heads should fail the four-head configuration allows for continued operating with only three sensor heads. Built-in test (BIT) functions report the sensor head failure so that appropriate maintenance can be scheduled. The BIT functions also monitor power supply voltages, heater status, and indications of abnormal operation.

RVR Integrated or Stand-Alone

When purchased along with a complete AWOS system the RVR is integrated and becomes a key part of the overall meteorological display system. However, if only RVR is needed in one or more locations, AWI can configure a complete stand-alone application including an integrated display.

SENSORS

Specifications

Performance

Measurement range (MOR)	33 feet to 50 miles (10 meters to 80 kilometers)
Accuracy	±10%
Output interval	10 seconds or 1, 5, 10 minutes
Averaging interval	3, 5, 10 or minutes
Measurement	MOR or extinction coefficient
Units	kilometers or miles
Baud rate	300, 1200, 2400, 4800 or 9600 bps

Principle of Operation

Visibility Sensor	
Dual technology	both direct attenuation and forward scatter techniques
Light source	Infrared emitting diode
Wavelength	865nm ±35 nm
Detector	Silicon photodiode
Principle scatter angle	35°
Ambient Light Sensor	
Field-of-view	6°
Range	2-40,000 candelas/m ²
Runway Light Interface	
Hardware	RS-232 / Relay AWI Part 83359-A
Edge Light	CAT I, II, IIIa installations
Centerline Light	CAT IIIb
Range	0 – 5
Values	0, 15, 120, 500, 2500 & 10000 User configurable to individual runway installations

RVR

Output Interval	10 – 120 seconds
Averaging Intervals	1, 2, and 10 minutes
Trend	1, 2, and 10 minutes
Algorithms	
Daytime	Koschmieder's Law
Nighttime	Allard's Law
Reporting Range ¹	
Feet	0 – 6000
Meters	0 – 2000
Supported Sensors	1 - 16

¹ Output is given per FAA FMH-1 and ICAO Annex 3 reporting rules for resolution and range

Environmental

Operating	-40° C to +55° C
Storage	-50° C to +70° C
Relative humidity	0-100%, condensing
Wind speed	up to 120 knots
Hail	up to ½ inch diameter
Ice build-up	up to ½ inch per hour
Elevation	-100 to 10,000 feet ASL (-30 to 3030 meters ASL)

Communications	RS-232, RS-485
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U.S. Patent 5,373,367 Multiple Angle and Redundant Visibility Sensor
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RVR and MOR as part of an integrated AWOS system

Ordering Information

8365-A	Dual Technology Visibility Sensor, 115 Vac; includes sensor assembly and control unit
M488171	Ambient Light Sensor (required)
83359-A	Runway Light Setting Interface; 220 VAC
M488173	Unistrut mounting hardware (control unit)
M488174	230 Vac conversion kit
T600503	Signal cable, specify length
M492557	Power cable, specify length
M104744	Calibrator
83503-A	10' mast (sensor assembly)
M488150	Grounding kit
M488175	Handheld Terminal kit
11903	Backup battery kit
Stand-Alone Application	Call AWI Sales Engineer for configuration discussions



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