



Dual Technology Visibility Sensor Model 8364-E

Overview

The 8364-E Dual Technology Visibility Sensor measures transparency of the atmosphere and calculates its extension coefficient and meteorological optical range (MOR) values. Using both direct attenuation and forward scatter technologies the 8364-E 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 makes it ideal for applications requiring the highest in performance and reliability, such as aviation and meteorological studies.

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 8364-E computes ratio-metric 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.

By having two direct attenuation and two scatter values for every measurement the 8364-E does not have to depend upon



- Visibility measurements from 10 meters to 32 kilometers
- Unique dual sensor technology combines the accuracy of transmissometer and reliability and cost effectiveness of a forward scatter sensor
- Measurements traceable to the FAA "Golden Standard"
- Surpasses the requirements established by the FAA for AWOS systems

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 8364-E 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.

Dual-Technology Visibility Sensor

For more information on "Why four heads are better than two heads & even better than a transmissometer" see the AWI web site technical reference section. http://www.allweatherinc.com/reference/toc_techref.html

SENSORS

Specifications

Performance

Measurement range (MOR)	33 feet to 20 miles (10 meters to 32 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

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°

Electrical

Power	115 VAC or 240 VAC with step-down transformer option
Frequency	50-60 Hz
Power consumption	200 VA typical
Battery backup (option)	5 AH, 12 VDC (heaters not supported)

Mechanical

Dimensions	
Sensor assembly	61" L x 19" W x 21" H (1549 x 483 x 533 mm)
Control unit	16" H x 14" W x 8" D (400 x 350 x 200 mm)
Weight	74 lbs (33 kg)
Mounting	
Sensor assembly	2½ inch diameter mast
Control unit	unistrut

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)
Enclosure	NEMA 4x fiberglass

Communication	RS-232, RS-485
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Ordering Information

8364-E	Dual Technology Visibility Sensor, 115 Vac; includes sensor assembly and control unit
M403326-00	Day/Night sensor assembly (required)
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



All Weather, Inc.

1165 National Drive
Sacramento, CA 95834
Phone: 916 928-1000
USA Toll Free: 800 824-5873
Fax: 916 928-1165
www.allweatherinc.com