



# 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 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-headed 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 website technical reference section. [http://www.allweatherinc.com/reference/toc\\_techref.html](http://www.allweatherinc.com/reference/toc_techref.html)

SENSORS

## SPECIFICATIONS

<b>Performance</b>	
Measurement Range	33 ft to 20 miles (10 m to 32 km)
Accuracy	±15% RMSE
Measurement Type	MOR or Extinction Coefficient
Averaging Intervals	3, 5, or 10 min
Measurement Units	miles or km
Operating Principle	Dual Technology - direct attenuation and forward-scatter
Light Source	Infrared LED (865 nm ± 35 nm)
Detector	Silicon Photodiode
Principal Scatter Angle	35 degrees
Communication	RS-485 or RS-232
Output Interval	Programmable: Interrogate, 10 s, 1 min, or 10 min
Baud Rate	Programmable: 300, 1200, 2400, 4800, or 9600 bps
Output Format	ASCII characters - 8 data bits, 1 stop bit, no parity
<b>Analog Output Option</b>	
Output Voltage	0–1 V
Output Impedance	100 Ω
<b>Handheld Terminal Port</b>	
Baud Rate	1200 bps
Serial Port Parameter Setting	8-N-1 (8 data bits, no parity, 1 stop bit)
<b>Power Requirements</b>	
Supply Voltage	115 V AC, 50 - 60 Hz, 200 W
<b>Environmental</b>	
Operating Temperature	-40 to +136°F (-40 to +55°C)
Storage Temperature	-58 to +158°F (-50 to +70°C)
Relative Humidity	0–100%, condensing
Wind	up to 120 knots (220 km/h)
Hail	up to 0.5" (1.3 cm) diameter
Ice Buildup	up to 0.5"/h (1.3 cm/h)
Elevation	-100 to 10,000 ft ASL (-30 to 3030 m ASL)

## ORDERING INFORMATION

Part Number	Description
8364-E	Dual Technology Visibility Sensor
M403326-00	Day/Night sensor assembly
M488173-01	Unistrut mounting hardware (control unit)
M488174	230 Vac conversion kit
T600503-00	Signal cable, specify length
M492557	Power cable, specify length
M104744	Calibrator
M488317-00	Galvanized Mounting Pipe Kit
M488150	Grounding kit
M488175	Handheld Terminal kit
11903	Backup battery kit

## DIMENSIONS & WEIGHTS

Sensor Assembly	61" L × 19" W × 21" H (155 cm × 48 cm × 53 cm)
Controller Assembly	14" W × 16" H × 8" D (35 cm × 40 cm × 20 cm)
Weight	74 lbs (33 kg)
Shipping Weight	135 lbs (61 kg)



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