

## Mira Visibility Sensor 3544 (forward scattering)



Visibility in the atmosphere is of great interest for road and sea traffic, and in aviation. The MIRA Visibility Sensor 3544 is designed to fulfill the demand for a small, low power unit to be operated with Aanderaa measuring stations. Visibility is often limited by fog and haze and the sensor is designed to detect these factors.

The sensor consists of an aluminum body containing all necessary solid state electronics and two vertical legs. It is furnished with a standard Aanderaa meteorological sensor foot. It is a rugged, watertight, corrosion free and solid state sensor with minimum maintenance requirements. In one leg of the body, an infrared (IR) light emitting diode is installed at an angle of 25 degrees. The opposite leg contains an IR photo detector. The diode and the photo-detector are protected against clogging by a cover.

The sensor has two operating modes, Normal and Fast sampling, selected by the Mode Switch. In Normal Mode (used when the sensor is solar-cell or battery powered), the sensor transmits an infrared light beam

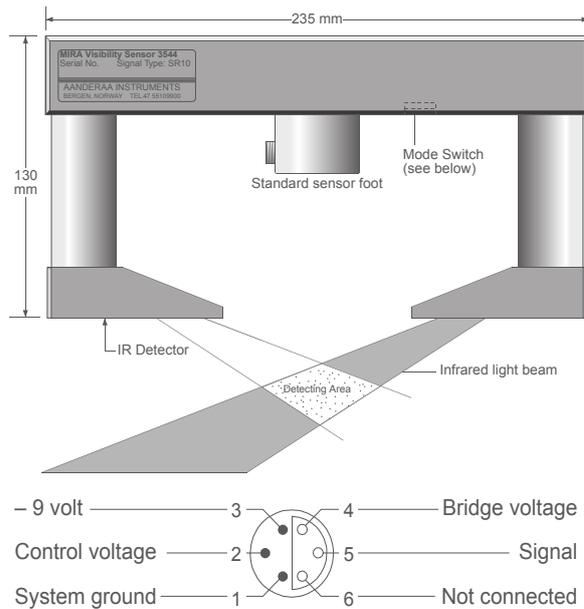
every minute. If fog or haze are present, forward scattered light from the particles will be detected by the photocell thus giving a signal with good correlation to the visibility in the ambient air. The photo current which is proportional to the scattered light, is amplified, averaged, converted to visibility and stored in the sensor ready to be read by the Datalogger.

If powered from Mains, fast sampling mode can be used to increase the number of samples taken in a measurement cycle. This will improve the accuracy of the sensor. In this mode the light beam is transmitted every 6 seconds.

To avoid false scattering from surrounding objects, the sensor must have free horizontal distance of at least 15 cm and a free vertical distance of more than 1 meter. This is taken into consideration when installing the sensor on the sensor arm.

For direct connection to a Programmable Logic Controller PLC, a Signal Converter, part no. 3429, is available for converting the data to 0-5VDC and 4-20mA signals.

# Specifications 3544

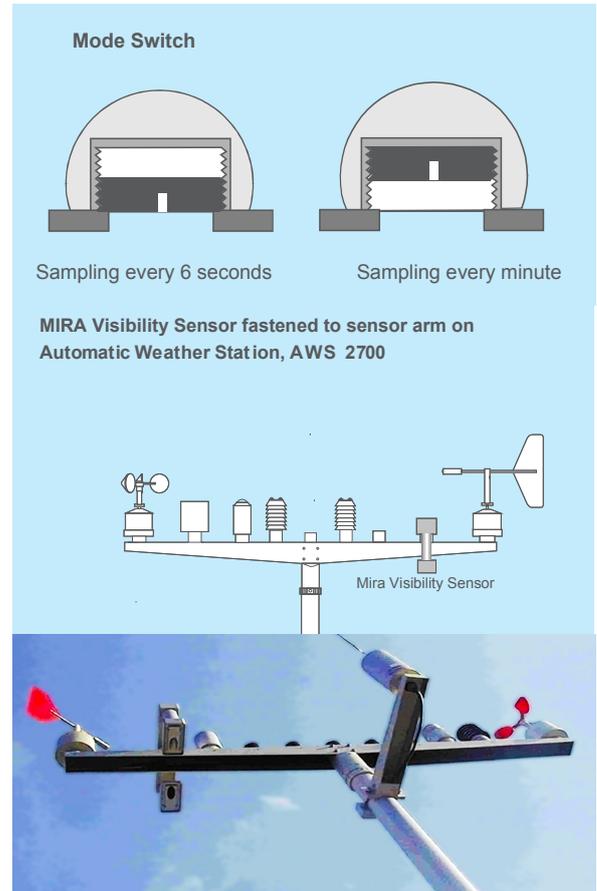
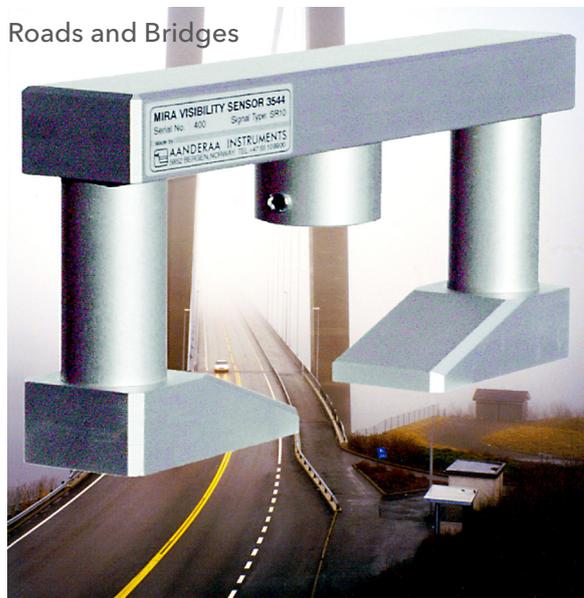


- Range:** 20 to 3000 meters
- Accuracy:** ±10%
- Output Signal:** SR10
- Wave Length:** 880nm
- Current Consumption:** Normal 3.5mA
- Fast sampling rate:** 13mA, 120mA (max.)
- Operating Temp.:** -40 to + 50°C
- Material & Finish:** Aluminum, anodized 10-15µ
- Weight:** 1100 grams
- Electrical Connection:** Standard sensor foot matching Automatic Weather Station/Smart-Guard Sensor Arm or Sensor Cable
- Accessories: (optional)** Bracket 2808,3494,3314  
Sensor cable 5327,5241, 5242,5243,5244  
Mast Cable 5235
- Warranty:** See Terms & Conditions, min. one year against faulty material and workmanship

## Calibration

The sensor has nominal calibration coefficients which are the same for all 3544 sensors. To convert raw data reading (N) from Datalogger to corresponding engineering units, use the following general formula:  $Visibility(m) = A + BN + CN^2 + DN^3$ , where the coefficients  $A = -5.517E-01$ ,  $B = 2.936 E +00$ ,  $C = D = 0$

## Roads and Bridges



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