



AANDERAA INSTRUMENTS

DATA COLLECTING INSTRUMENTS FOR LAND SEA AND AIR

MIRA VISIBILITY SENSOR 3544.

(Forward scattering)

A compact and rugged visibility sensor designed for use with Aanderaa Weather Stations, Road Weather Stations and Environmental Monitoring Systems.



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 Modes, which can be 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

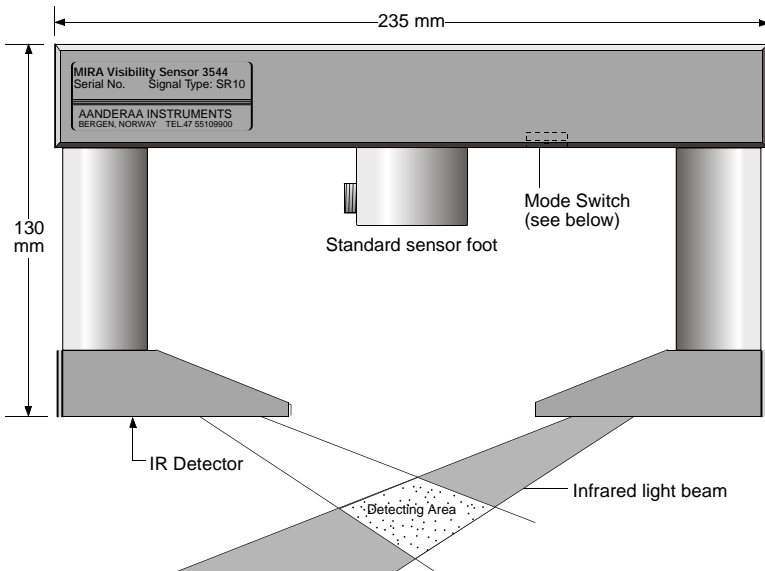
photocell thus giving a signal with good correlation to the visibility in the ambient air. The photo current which is proportional to the scattered light, is amplified, averaged, converted to visibility and stored in the sensor as a 10 bit digital signal ready to be read by the Sensor Scanning Unit or Datalogger.

If the sensor is 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 meters. This is taken into consideration when installing the sensor on the sensor arm of a Road Weather Station 4030 or Automatic Weather Station 2700.

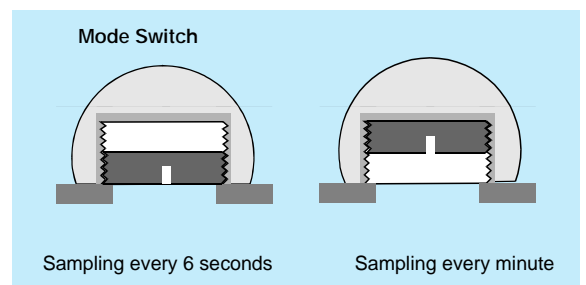
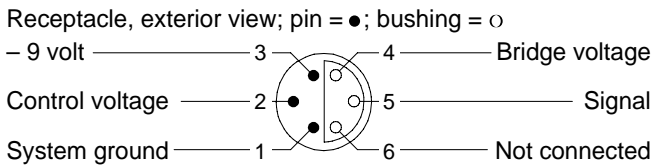
For direct connection to a Programmable Logic Controller PLC, a Signal Converter, part no. 3429 is available which will convert the data to 0-5VDC and 4-20mA signals.

SPECIFICATIONS FOR MIRA VISIBILITY SENSOR 3544



- Range:** 20 to 3000 m
- Output Type:** SR10
- Wave Length:** 880 nm
- Current consumption:** Normal 3.5 mA
Fast sampling rate 13 mA, 120 mA (max.)
- Operating Temp.:** -40 to + 50°C
- Material and Finish:** Aluminum, anodized 10-15µ
- Weight:** 1100 grams
- Electrical connection:** Standard sensor foot matching RWS 4030 or AWS Sensor Arm or Sensor Cable 2842
- Accessories:** Bracket 2808 (optional) Sensor cable 2842
- Warranty:** Two years against faulty material and workmanship

PIN CONFIGURATION



CALIBRATION

The sensor has nominal calibration coefficients which are the same for all 3544 sensors. To convert the raw data reading (N) made by the Datalogger 3660 to the corresponding engineering units, use the following general formula:

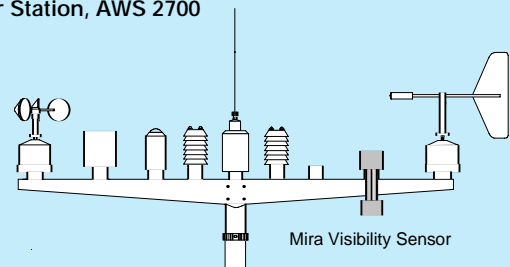
$Visibility(m) = A + BN + CN^2 + DN^3$, where the coefficients $A = -5.517E-01$, $B = 2.936 E +00$, $C = D = 0$.

Fields of Applications

Roads and Bridges



MIRA Visibility Sensor fastened to sensor arm on Road Weather Station, RWS 4030 or Automatic Weather Station, AWS 2700



Ports and Harbors



Latest version is on the Internet