MiniOFS

MiniOFS is a low price sensor for **visibility**. The performance is not as good as for the OFS Mk2 but it will work fine for many applications like multi sensor fog warning systems.

The sensor is sensitive for particles in a zone about 25 cm ahead of the location of the sensor that limit the visibility in the air. These particles are normally the microscopic water particles constituting fog, but they may also be snowflakes, raindrops or air pollutants. But the particle density must be high enough to limit the visibility to lower than about 2000 meters. The sensor is heated to a few degrees above ambient temperature in order to keep moisture away

The sensor produces **two** kinds of **output signals**:

About the analog output:

The microprocessor controls the analog output giving the visibility directly (VIS =1 km gives 1 Volt, and VIS = 500 meters gives 0.5 Volt etc up to 4000 meters). If the optical receiver is saturated by for instance sunlight or reflections from an

object in the sensitive zone like an insect or fallen snow covering the front the output will be about 5 Volt.

About the RS232 output:

The calculated data is presented in digital form as an ASCII string on the RS232 output, 1200 baud 8N1, that is transmitted "streaming" every 30 seconds. This string can be received by many loggers with RS232 inputs but also by a PC via the serial port and with a terminal program like Hyper Terminal (part of WINDOWS).

This is an example of an output string:

amb= 100 alfa=0.0012 VIS= 2500

The first figure – the amb parameter is proportional to the measured ambient solar light level, the measurement is not very accurate but it may be useful for instance to tell if it is day or night.

The second figure is the so called extinction coefficent often called alfa. The relation between the extinction and visibility is alfa=3/VIS. The alfa parameter can be used for monitoring trends in visibility when the visibility is larger than 4000 meters. But note that the absolute accuracy in alfa is limited in such cases.

The third figure – the VIS parameter - is the measured visibility in meters.

If the optical receiver is saturated by for instance sunlight or reflections from an object in the sensitive zone like an insect or fallen snow covering the front the visibility displayed visibility value will be 5000 and the output can be:

amb=050 alfa=0.0000 VIS= 5000

Some short data of the OFS sensor:

Dimensions:	65,5*42*30.5 mm, for details see drawing
Weight	about 170 grams
Warm up time	about 1 minute
Current consumption	<100 mA from a 12 Volt (8-14) supply
Outputs:	analog 0-5 Volt and digital RS232
Update time:	30 seconds
Temp. range:	-20 to +50 deg C
Optical output power	about 3 mW from an IR LED - eye safe, laser safety class 1 M
Wavelength:	850nm
Housing:	Anodized aluminum, openings sealed with O-rings.
Visibility range	Visibilities from 4 km – down to 20 meters

Mounting.

The sensor should be mounted so that it "looks" horizontal and roughly north. There must not be anything in the sightline closer than 5 to 10 meters. Outside a cone of about 30 degrees angle objects can be tolerated at down to 2 about meter. There are two M3 holes which can be used for the assembly. One suggestion is to use a piece of L-profile.
The sensor is delivered with a 4-wire cable connected.

Mini fog sensor.

28.0

44.0

64.0

Plastic lenses

Block

Receiver

Transmitter

Wires

PCB

Sealing