Description

The *Sensor Monitor 5.0* (SM5) is designed to monitor up to eight channels equipped with different types of sensors including photodiodes , temperature probes and many more.

It features high precision input amplifiers, customizable range, offset and linearity correction via display and keys, large LCD with backlight, energy efficient DC power supply and standardized mounting fixtures.

This module can be easily mounted to panels of any width requiring just a rectangular mounting hole according to DIN 43700. It will be fixed with supplied screw clamps.
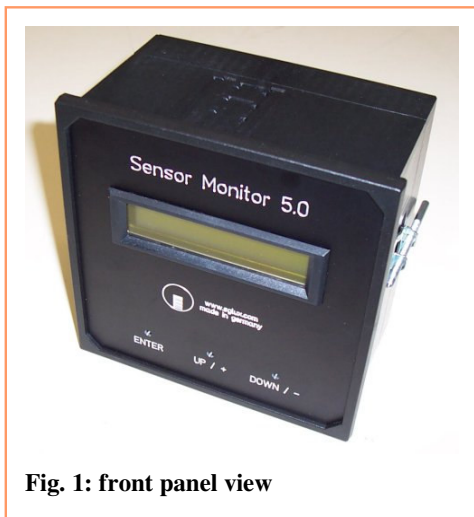

Fig. 1: front panel view

For simplified mounting and replacing we use a plugable screw terminal system. Some sensor probes will be connected via shielded sub-D plugs.

Features of Model DO1

- single channel photodiode input
- supply voltage range 12 V … 24 V DC with surge and polarity protection
- low power consumption
- measurement ranges: UV index 0...40, power 0...1000 mW/cm² (photo current 0...490 nA)
- LC display with 20x2 characters with backlight
- 3 keys to change display values and to set up customizable parameters
- user defined parameters are stored in none-volatile memory

Important Notes

Please consider any possible action to protect the sensitive photodiode input against electrostatic discharge (ESD). Not to do so may damage the appliance and voids warranty.

Please also care that there is no ground loop on the photodiode input connection as this may give wrong measurements.

Installation

- Put the Sensor Monitor 5.0 into the rectangular front panel cut-out, slip the screw clamps into opposing dovetail guides and fix the screw.

- Connect the supplied sensor probes sub-D plug to the mating socket on the backside and fix it with screws.

- Connect a DC supply voltage of 12 to 24 Volts to the 2-terminal screw clamp as shown in Fig. 2.

- Connect supplied cable plug to the sub-D (RS232) socket on the back side and fix it with screws. Connect the other side of the cable with a COM port of your computer. Adjust port to 19200 baud, 8 databit, no parity, 1 stopbit (8N1)

Normal operation

After applying supply voltage the SM5 shows the state of initialization on the display.

Afterwards it starts measuring the signal from the photodiode and displaying the result continuously. By default the photo current is shown first.

Now you can cycle through the different display modes by pressing the UP or DOWN keys. The model DO1 supports power density and dose mode. Please read the chapter *calibration*.
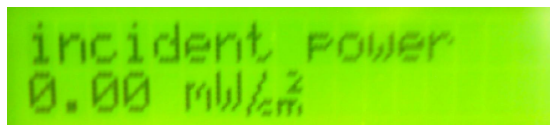
Start the dose measurement with the down button. Press down to stop the measurement. Pressing the down button a third time resets the dose measurement.
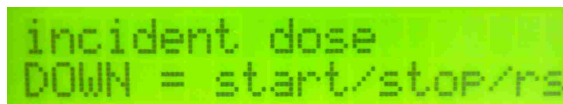
By starting the program "Nullmodem_COM1.ht" (or _COM2.ht – depending on port of connection) you get all data in a storable ASCI file.

Configuration

By pressing the **ENTER** switch you can cycle through all configuration options.
Press **UP** or **DOWN** to increment or decrement the displayed parameter. Use **ENTER** to accept value and advance to next.

We recommend only to change the linear amplification.

We recommend not to change this value.

```
Set Rng Amps P=400.0
W=1e-3 M=1e4 400.000
```

We recommend not to change this value.

```
Set Rng Powr P=25.00
W=1e-3 M=1e4 25.000
```

Please do not change.

```
Set Rng Dosg P=250.0
W=1e-3 M=1e4 250.000
```

Here you can chose the function of relay 1. Default is relay on at current < thresh. UP/Down is changing the function.

```
Set Relay 1 function
ON = current < tresh
```

Now you can adjust a threshold for relay 1.

```
Set Relay 1 treshold
W=0.0 M=100.0 30.0%
```

Relay 2 has the default function "on at starting a dose measurement".

```
Set Relay 2 function
ON = dose msrmt runs
```

Please do not change.

```
Set Timer Trimming
P=0 W=-20 M=+20  0
```

Chose the default measurement type here (current/intensity/dose)

```
Set Default MSR-Mode
P=1 W=1 M=3       1
```

Last option is to decide to preserve actual values in non-volatile memory for next power-up. Press **UP** to store them permanently or **DOWN** key to leave and continue measurement.

```
Save data in EEPROM?
UP = Yes, DOWN = No
```

Calibration

The default parameters in shipping condition used were: Linearity = 1.000; Range factor = 19.505; Offset = -3.

For customization purposes we recommend to adjust only the linearity (better say slope) and offset values.

The shipped calibration may become incorrect if used with a different UV light source, with a burnt out (very old) light source or for DUTs that are not GaN-photodiode based.

Physical Dimensions

Parameter	*Unit*	*Value*
Panel width x height	mm	144 x 144
Module depth	mm	85
Mounting hole width x height	mm	137 x 137

Absolute Maximum Ratings
Exceeding these limits may decrease lifetime or destroy the module or parts of it immediately.

Parameter	*Unit*	*Value*
Operation Temperature range *	°C	0 … +70
Storage Temperature range *	°C	-25 … +85
Supply voltage (DC)	V	12…24

in non condensing environment only

Electrical Characteristics
 (at 25 °C unless otherwise noted)

Parameter	*Unit*	*min*	*Value typ.*	*max*
Supply voltage	V	11	24	30
Power dissipation *(at 24 V supply voltage)*	W	0.1	0.4	0.5

Photo current input channel

Parameter	*Symbol*	*Unit*	*Value min*	*Value max*
Photo current range*	Ip	nA	0	2550
Dose	P	J/cm²	0	$2*10^9$
Power density	S	mW/cm²	0	63,75

*although Power density are displayed the photo current will be measured and translated into the other two values – please
see chapter calibration for further information*

All technical data in this data sheet may be subject to change at any time without prior notice. Please
visit our website to gather the latest version of this file. Although we reviewed these data very
carefully there may be errors.

Without written approval you must not use this appliance in applications where men or animals may
be injured in case of failure or malfunction of this device.