

# SpotOn *ANALOG & USB*



## *Sophisticated Analog and Digital Beam Positioning System*

### *Main Features*

- Real time measurement of laser displacement down to  $\pm 0.1\mu\text{m}$
- Analog bandwidth up to 60 kHz
- Parallel modes of operation: analog and digital data
- Built in high precision power supply
- External trigger for synchronized data acquisition
- Multiple device control via USB (up to 8 devices)
- TCP/IP Communication protocol and remote control
- ActiveX software for integration in customer's application program



**DUMA OPTRONICS LTD.**

1st Hazait St., P.O.Box 3370 Neshar 20306, Israel Tel:972-4-8200577 Fax: 972-4-8204190  
Website:<http://www.duma.co.il> E-mail:[sales@duma.co.il](mailto:sales@duma.co.il)



# Specifications

|   |  |
|---|--|
| <b>Photodetector</b>                                  | 9*9mm dual axis silicon Lateral Effect (default)<br>4*4mm dual axis silicon Lateral Effect (optional)  |
| <b>Usable beam size range</b>                         | 50 $\mu$ m < diameter < 8 mm for 9*9mm version<br>50 $\mu$ m < diameter < 3 mm for 4*4mm version   |
| <b>Position resolution</b>                            | Better than $\pm 1\mu$ m typical for 9*9mm version, with averaging<br>Better than $\pm 0.5\mu$ m typical for 4*4mm version, with averaging<br><b>Special:</b> <u><math>\pm 0.1\mu</math>m for a <math>\pm 1</math>mm dynamic range using the 4*4mm PSD</u><br><u><math>\pm 0.2\mu</math>m for a <math>\pm 2</math>mm dynamic range using the 9*9mm PSD</u> |
| <b>Position accuracy</b>                              | $\pm 25\mu$ m over 8mm diameter using HeNe beam of 0.8mm   |
| <b>Calibrated spectral range</b>                      | 350 - 1100 nm  |
| <b>Power Input range (*)</b>                          | High Amplification module : 1 $\mu$ W - 250 $\mu$ W<br>Low Amplification module : 10 $\mu$ W - 2500 $\mu$ W  |
| <b>Power accuracy (*)</b>                             | $\pm 5\%$  |
| <b>Power Supply Voltage (Vs)</b>                      | $\pm 18$ V   |
| <b>Current Consumption (Is)</b>                       | 200mA  |
| <b>Data Update Rate (**)</b>                          | <b>Display Mode</b> - Digital 40 Hz for single head<br><b>Scope Mode</b> - Digital 4kHz up to 2000 points in memory (position)<br>8kHz up to 4000 points in memory (power)<br><b>Analog Mode</b> - 30kHz max speed for 9*9mm PSD, or<br>60kHz max speed for 4*4mm PSD  |
| <b>Response time (Analog)</b>                         | <60 $\mu$ S for 9x9mm PSD<br><20 $\mu$ S for 4x4mm PSD   |
| <b>Minimum detectable Deviation (CW/Pulsed) (***)</b> | 1mV (CW) / 5mV (Pulsed) in Analog Mode   |
| <b>Environmental</b>                                  | Operating temperature T <sub>opt</sub> : 0° - 50°C   |
| <b>Weight</b>   | Sensor head with 3m long cable 175gr   |
| <b>ND Filters</b>                                     | Optional per special order (ND / Red filter / BandPass filter)   |

(\*) To maintain full calibration accuracy, attenuating optical filters (ND) may be necessary for operation with beams greater than 1mW. Saturating “non-linear” effects depend on the beam size, type and wavelength. Caution should be exercised when using the lateral effect detector above 1-3mW.

(\*\*) Data Update Rate at Display and Remote Modes depend on computer resources and other application programs that run on same computer in parallel.

(\*\*\*) Conversion factor: 1mV = 1 $\mu$ m for 9\*9mm PSD      4.5mV = 1 $\mu$ m for 4\*4mm PSD (special version)  
2.5mV = 1 $\mu$ m for 4\*4mm PSD      2.25mV = 1 $\mu$ m for 9\*9mm PSD (special version)

## Power Supply Specifications

The SpotOn Analog - USB contains a universal switching power supply, as follows:

|                            |                           |
|----------------------------|---------------------------|
| <b>Input Voltage:</b>      | 90-264 Vac typical        |
| <b>Input Frequency:</b>    | 47-63Hz                   |
| <b>EMI:</b>                | Meet EN55022/FCC Class B  |
| <b>Output Wattage:</b>     | 10W                       |
| <b>Line Regulation:</b>    | 0.1% typical              |
| <b>Load Regulation:</b>    | +/-1.5 – 3% typical       |
| <b>Noise &amp; Ripple:</b> | Typical 1% peak to peak   |
| <b>Safety Standard:</b>    | UL1950 / EN60950 Class II |

## External trigger Specifications

For Single Mode only with Scope function!

|  |  |
|--|--|
| <b>Trigger Source (external digital):</b>  | TRIG_IN  |
| <b>Trigger mode (software selectable):</b> | Level Sensitive, configurable for TTL level high input |
| <b>Trigger latency:</b>                    | 25µs min, 50µs max                                     |
| <b>Trigger pulse width:</b>                | 40µs min   |
| <b>Input high voltage:</b>                 | 3.0V min, 15.0V absolute max                           |
| <b>Input low voltage:</b>                  | 0.8V max   |
| <b>Input leakage current:</b>              | ±1.0µA   |

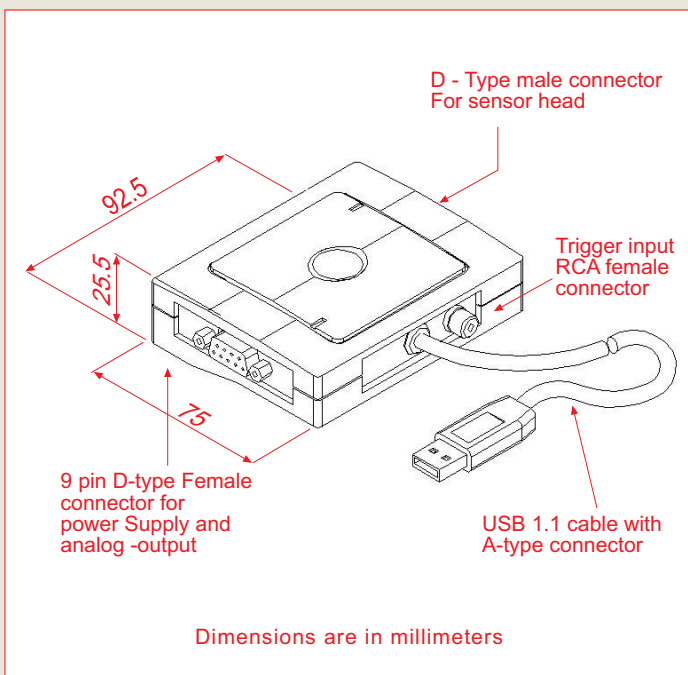
## Manifold Box

|                              |                              |
|------------------------------|------------------------------|
| <b>Device type:</b>          | USB 1.1 low-speed            |
| <b>Device compatibility:</b> | USB 1.1, USB 2.0             |
| <b>Weight:</b>               | 215 gram with 1.8m USB cable |
| <b>Supply current:</b>       | 20mA from USB port           |

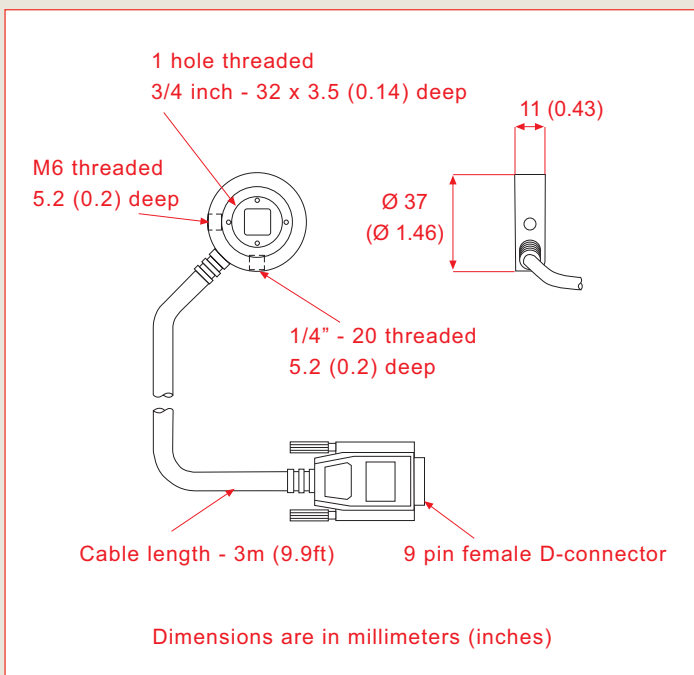
## Sensor Head

|                             |   |
|-----------------------------|---|
| <b>Dimensions (Default)</b> | 37 mm diameter, 11 mm long,<br>aligned to detector axes to $\leq \pm 0.5^\circ$ |
| <b>Type</b>                 | Dual-axis Lateral Effect sensor   |
| <b>Cable</b>                | 3m long, attached to sensor head  |

Manifold Box dimensions

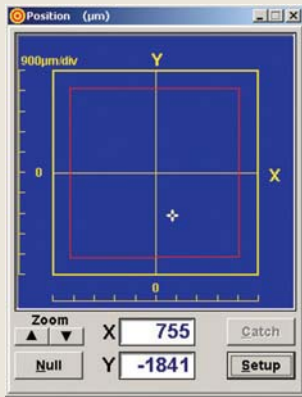


Sensor Head dimensions



# Software Presentations

## Position

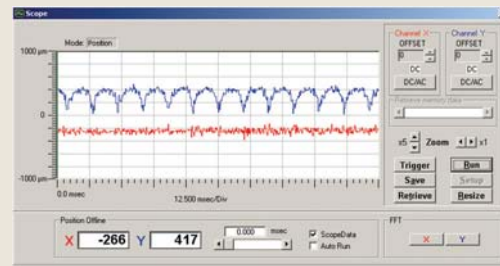


Real Time display of X,Y beam position.

### features:

Set relative center,  
Perform zooming, alarm setting, Average

## Scope



A simultaneous, real-time oscilloscope type display of beam position deviations (or power fluctuations) as a function of time. Up to 4K points can be saved at a time to memory, with zoom, hold, offset, DC/AC and triggering mode operations.

## Power



Display power with analog and digital displays.

### More features:

Change measuring units,  
load a filter file, perform ambient light suppression.

## Chart



Display changes in the X,Y position (or in Power) versus time, with autoscaling

## Main Software Features

- Real time display of Position and Power
- Three operation modes for digital data: Display, Scope and Remote operation
- Simultaneous presentations of Position, Power, Plot, Chart and Scope modes
- Data streaming via RS232 or TCP/IP
- Multiple systems operation
- Direct data logging to Excel files
- Scope Mode for saving and analyzing memory data (up to 4kHz Position, up to 8kHz Power)
- Position offset canceling for ambient light compensation

## Host Computer Requirements

Pentium III, 800 MHz with 128MB RAM, 15MB HDD free, one CD ROM, Windows 98/ME/2000/XP, VGA 8MB 1024X768 resolution, 16Bit, One (to eight) USB1.1 socket/s.

## Ordering Information

Complete system based on a Lateral Effect detector head, with a 3m long attached cable, an electronics box, a stabilized power supply, software and user manual on CD, carrying case. The **Low** type module operates at low amplification of 10 $\mu$ W-2500 $\mu$ W, while the **High** type module operates at high amplification of 1 $\mu$ W-250 $\mu$ W.

**SPOTANA-4-USB Low:**  
**SPOTANA-4-USB-High:**  
**SPOTANA-9-USB Low:**  
**SPOTANA-9-USB-High:**

System with 4mmx4mm PSD, Low Amp.  
System with 4mmx4mm PSD, High Amp.  
System with 9mmx9mm PSD, Low Amp.  
System with 9mmx9mm PSD, High Amp.

**NOTE:** All models can be delivered with a **special** version for **High Position Resolution**. Model name will include an "S" character.  
For example: SPOTANA-4S-USB-LOW.

### Optional Accessories:

- A variety of ND filters in housing (3/4"-32 thread), filters include: NG4, NG9, NG10.
- Additional hood (55mm length) for ambient light suppression

## DUMA OPTRONICS LTD.

1st Hazait St., P.O.Box 3370 Neshar 20306, Israel Tel:972-4-8200577 Fax: 972-4-8204190  
Website: <http://www.duma.co.il> E-mail: [sales@duma.co.il](mailto:sales@duma.co.il)