

# USB 150

Optical Displacement Sensor using advanced laser technique, a line scan camera and digital signal processing algorithms.



## Specifications

### Measurement data

Measuring range	50 --- 250 mm
Centre distance	150 mm
Resolution	0.01 --- 0.03 mm
Linearity	± 0.05 mm
Reproducibility	± Resolution
Updating frequency	1000 Hz
Temperature deviation	app. ± 0.03% of FS/°C
Light source	visible laser (655 nm)
Size of light spot	app. Ø 2 mm
Laser protection class	IEC 2

### Output data

Digital output as Binary or ASCII      USB 2.0  
 ASCII protocol see backside of Data sheet.

### Environment data

Operating temperature	0 - +50 °C
Storage temperature	-20 - +70 °C
Humidity (non condensing)	Max 90 % RH
Degree of protection	IEC IP65

### Physical data

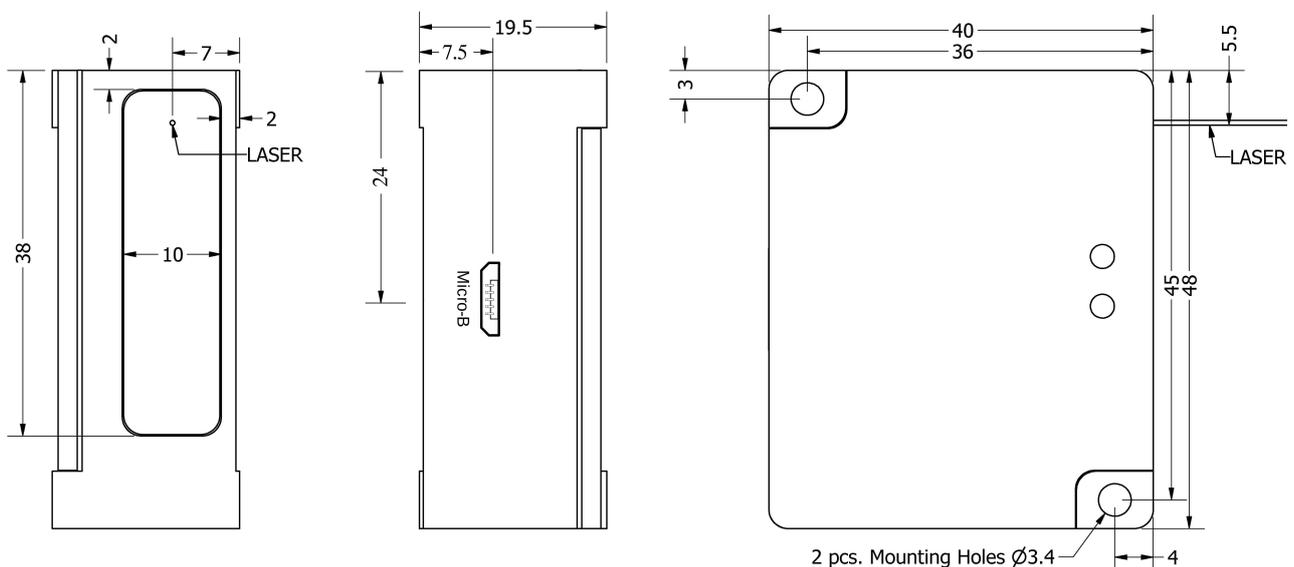
Dimensions WxHxD	48x40x19.5 mm
Weight exc. Cable	55 g
Connector	USB micro-B
Housing	aluminium/glass

### Electrical data

Supply voltage	5 V via USB connector
Power consumption, max	0.75 W

Specifications subject to change without notice

## Dimensions



## ASCII mode PROTOCOL

The sensor can be set to output data in ASCII format instead binary format. The sensor is default delivered in binary mode and to switch to ASCII mode the ASCII text "ASON" has to be transmitted to the sensor. To switch the sensor back to binary mode the text "ASOFF" has to be send to the sensor.

To achieve full measurement speed (1000 Hz) in ASCII mode the baud rate has to be 115200 baud or above. If the baud rate is 38400 the output frequency of the sensor will only be 333 Hz (This only applies for ASCII mode. If the sensor is in Binary mode it will always give out the full measurement frequency of 1000 Hz).

Measurements output format in ASCII Mode: The measurements are send as 5 digits in mm (for results less than 5 digits there is a leading zero) with point separator and with LF (Line feed) and CR (Carriage Return).

Example: "1"; "0"; "3"; "."; "4"; "3"; "LF"; "CR"; "1"; "0"; "3"; "."; "4"; "1"; "LF"; "CR"; etc.

Equals: 103.43  
103.41  
099.41  
088.52  
000.00

### ASCII Commands:

**ASON** : Starts ASCII Mode (the sensor will continue in ASCII mode also after it has been switched OFF and ON).

**ASOFF** : Stops ASCII Mode (the sensor will continue in BINARY mode also after it has been switched OFF and ON).

**RAVG + 4 digits** : Setup the running average filter. Has to be 0 or 2-1000. If the wished filter size has less than 4 digits then preset zero values has to be used (example: RAVG0050). Returns "RAVG OK" or "RAVG ERROR".

**ZEROSP + 3 digits** : Setup Zero suppression. Has to be less than the RAVG value. If the wished filter size has less than 3 digits then leading zero has to be used (example: ZEROSP049). Returns "ZEROSP OK" or "ZEROSP ERROR".

**SIMAVG + 3 digits** : Setup Simple Average filter. Has to be 0 (=disabled) or 2-200. If the wished filter size has less than 3 digits then leading zero has to be used (example: SIMAVG005). Returns "SIMAVG OK" eller "SIMAVG ERROR".

**MEDIAN + 3 digits** : Setup Median filter. Only Odd numbers 3-101 or 0 (= disabled). If the wished filter size has less than 3 digits then leading zero has to be used (example: MEDIAN021). Returns "MEDIAN OK" or "MEDIAN ERROR".

**BAUD + 6 digits** : Setup Baud rate. Has to be: 038400, 11522, 230400, 460800, 921600. At 38400 Baud a leading zero has to be used. (example: BAUD038400). Returns "BAUD OK" or "BAUD ERROR".

**ODMON** : Enable ON DEMAND Mode.

**Q** : Send one single measurement ( works only if "ON DEMAND MODE" is enabled).

**ODMOFF** : Disable ON DEMAND Mode.

**STATUS** : Read out select settings + serial number.

Example:

```
SENSOR STATUS:  
FIRMWARE VERS: 100.01  
SERIAL NUMBER: 181020  
RUNNING AVG: 50  
ZERO SUPPRESSION: 49  
SIMPLE AVG: 20  
ON DEMAND MODE: OFF  
MEDIAN: 31  
BAUD: 38400
```