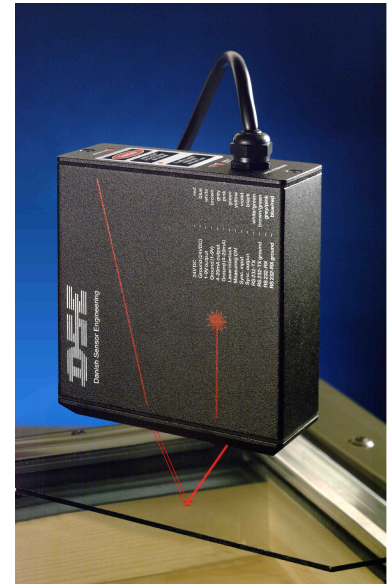


# OTS 60

An Optical Thickness Sensor  
using Laser Reflection Technique,  
on a CCD - Line Scan Camera and  
Advanced Digital Signal Processing.



## Specification

### Measurement data

Measuring range	50-70 mm
Center distance	60 mm
Resolution	0.01 mm
Reproducibility	0.01 mm
Linearity	±0.15 % of FullScale
Updating frequency	500 Hz
Temperature deviation	± 0.03% of FS/°C
Light source	Visible laser (655nm)
Laser line width	< 0.5 mm
Laser protection class	IEC 2

### Output data

Current output	4-20 mA
Digital output	RS232 or RS422
Baud rate	38400

### Environment data

Operating temperature	0 - +45 °C
Storage temperature	-20 - +50 °C
Humidity (non condensing)	Max 90 % RH
Degree of protection	IEC IP65

### Physical data

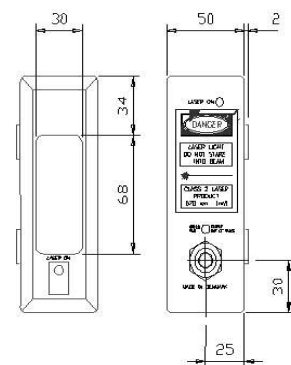
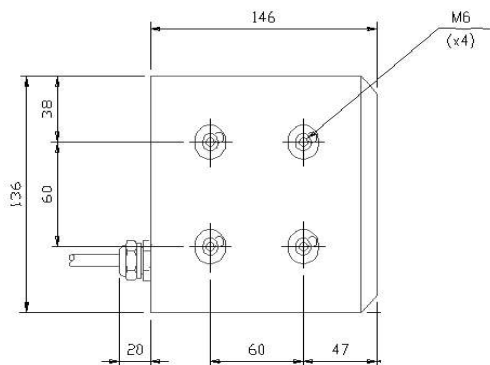
Dimensions	136×146×50 mm
Weight excl. Cable	1600 g
Cable length	2.5 m
Housing	Steel/aluminium/glass

### Electrical data

Supply voltage	18-36 VDC
Power consumption, max	4.5 W

January 2015; Specifications subject to change without notice

## Dimensions



# General description

The OTS sensor is an optical measuring device for non-contact precision measurement of the thickness of a single solid pane or two parallel panes made of glass or acrylic plastic. The measurement is performed by means of specular reflection i.e. like a mirror. A fine collimated laser beam is mirrored from the upper as well as the lower surfaces of the panes, and a CCD-camera records the images. This makes it possible for a Digital Signal Processor to calculate the distance between the uppermost and lowermost reflections i.e. the thickness.

The sensor is only suited for measurement on transparent and parallel surfaces that are highly reflective with a smooth and clean surface. Because of the measuring principle the accuracy is highly influenced by the (correct) angel between the target surface and the laser ray. Measuring performance is not very sensitive to tilting the sensor sideways and is not influenced by changes in measuring distance to/height over the surface.

The OTS 60 measuring system is a compact unit where optics, CCD-camera, and digital signal processing electronics are all integrated in the sensor housing. The sensor can be programmed with the specifications of the glass/plastic to be measured. For solid glass the index of refraction. For double glass windows units the thickness of the glass pane used and its index of refraction.

The sensor is delivered with a demo disk containing a program for a standard PC. The program receives data from the OTS 60 and displays the measured thickness on the screen. This program is also used for "writing" the relevant parameters for the measurement task to the sensor.

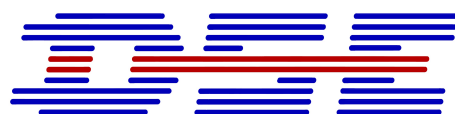
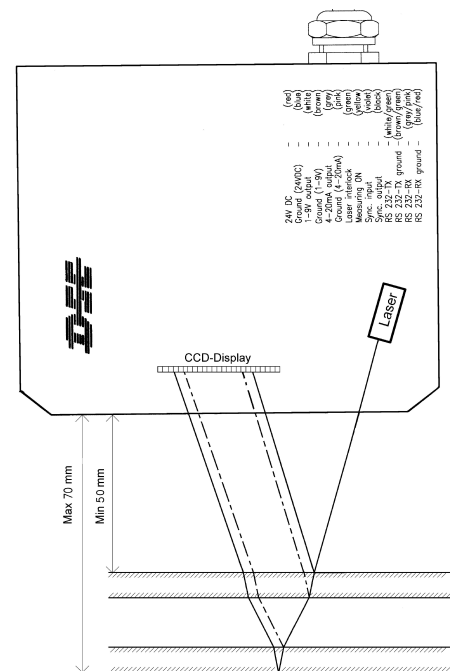
## Applications

The OTS 60 specifically, is developed for an on-line control task in the manufacturing of Double Glass Window Units.

Because of the non-contact measurement method, with only one sensor measuring the thickness from one side, the sensor is especially useful in industrial applications.

The OTS is designed to give a very reliable measuring performance with good measuring accuracy. The measured data is available on the RS232/RS422 digital output, and on analog output(4-20mA) with a resolution of 0.01 mm.

At the right a schematic drawing shows the measuring principle. The Digital Signal Processor within the sensor determines the distance between the images of the first and last reflections of the laser ray on the CCD-camera.



**Danish Sensor Engineering**  
DSE ApS • Nørrelundvej 8B • DK-2730 Herlev •  
Denmark  
Phone +45 39 66 71 44

[www.sensor.dk](http://www.sensor.dk) • [dse@sensor.dk](mailto:dse@sensor.dk)