

## Specifications ODS *Black-Line* Select - 2 & Select - 10



HT / High target temperature (1000°C) versions and VHT (1300°C) as well as VVHT (1500 up to 2200°C) are also available.

### Short Stand-off Models

### Long Stand-off Models

	ODS 205	ODS 230	ODS 280	ODS 330	ODS 445	ODS 455	ODS 510	ODS 550	ODS 650	ODS 775
Measuring range (~Full Scale)	50 mm	100 mm	200 mm	300 mm	500 mm	100 mm	200 mm	300 mm	500 mm	750 mm
Measuring range	180-230 mm	180-280 mm	180-380 mm	180-480 mm	200-700 mm	400-500 mm	400-600 mm	400-700 mm	400-900 mm	400-1150 mm
Center distance	205 mm	230 mm	280 mm	330 mm	450 mm	450 mm	500 mm	550 mm	650 mm	775 mm
Nomimnal digital resolution	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Resolution: Minnimum range *)	< 0.01 mm	< 0.01 mm	0.01 mm	0.01 mm	0.01mm	< 0.01 mm	0.01 mm	0.01 mm	0.01mm	0.01
Resolution: Maximum range *)	< 0.01 mm	< 0.01 mm	0.02 mm	0.03 mm	0.07mm	< 0.02 mm	0.02 mm	0.04 mm	0.10 mm	0.10
Measurement Linearity *)	< ± 0.01 mm	± 0.02 mm	± 0.04 mm	± 0.09 mm	± 0.20 mm	± 0.04 mm	± 0.06 mm	± 0.15 mm	± 0.15 mm	± 0.30
Updating frequency *)	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz	2 kHz/10 kHz
Temperature deviation	± 0.03% FS/C°	± 0.03%FS/C°	± 0.03% FS/C°	± 0.03%FS/C°	± 0.03%FS/C°	± 0.03%FS/C°	± 0.03%FS/C°	± 0.03%FS/C°	± 0.03%FS/C°	± 0.03%FS/C°
Light source Red/ wave length	LASER 650 nm	LASER 650nm	LASER 650 nm	LASER 650nm	LASER 650nm	LASER 650nm	LASER 650nm	LASER 650nm	LASER 650nm	LASER 650nm
Size of spot	Ø 0.5 mm	Ø 0.6 mm	Ø 0.7 mm	Ø 0.8 mm	Ø 0.5 mm	Ø 0.6 mm	Ø 0.7 mm	Ø 0.8 mm	Ø 1 mm	Ø 1 mm
Laser protection class ****)	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2	IEC 2

Output data:		Electrical data:		Environment data:		Physical data:	
Analog output:	**) 4-20 mA or 1-9 V	Supply voltage:	22 - 36 VDC	Operating temperature:	0 - +45 °C	Dimensions:	120*95*31.5 mm
Digital output:	**) RS232 or RS422 or Ethernet	Power consumption:	max 4.5 W	Storage temperature:	-20 - +70 °C	Weight:	390 g
115200 baud rate for 2 kHz outputfrequency				Humidity non condensing:	: Max 90 % RH	M12 Connector:	12 pin male code A
460800 baud rate for10 kHz outputfrequency				Degree. of protection:	IEC IP65	Housing:	Aluminium/Glass Windows

\*) Static measurement on white paper at measuring/sampling frequency, without any averaging of the serial output signal: 2·6 » 2 times the standard deviation.

\*\*) Analog output Resolution: 14 Bit DAC's are used for the conversion of the 18 bit digital distance result, an integer value with a nominal resolution of 0.01 mm.

\*\*) Serial/Digital and Analog output are updated at the measuring frequency of 2 kHz/10 kHz except if the Simple Average Filter is activated.

\*\*) 10kHz measuring frequency requires RS422, Ethernet is a Serial Interface option for distance measurement only.

\*\*) Laser class IEC 3R may be needed for some HT and VHT sensor versions.

**More information on back page >**

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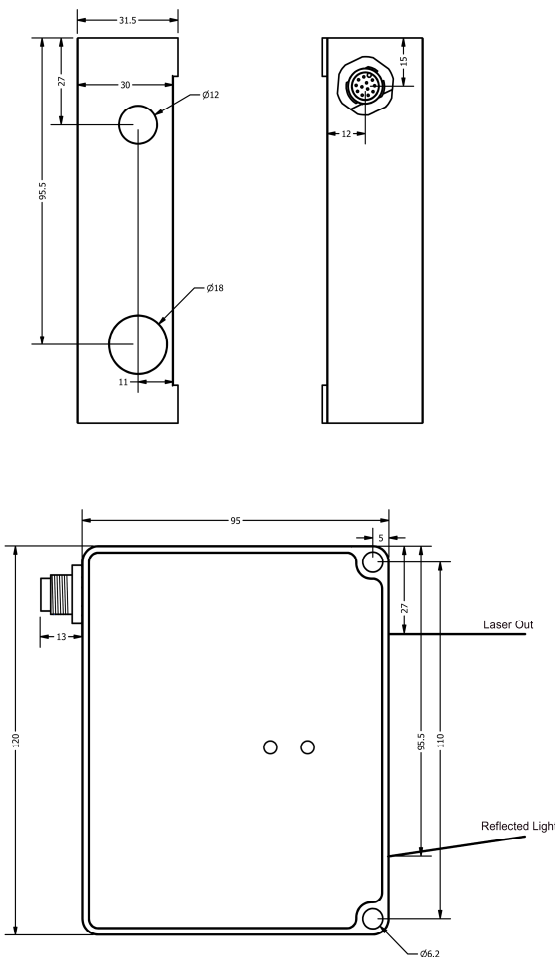
## Measuring frequency 2 & 10 kHz

Output rates are user specified, as the sensor can be programmed to make an average of up to 200 measurements (disregarding all zero/missing values) and output it as a single point. In this way the output rate can be lowered from 2000 Hz in steps down to 10 Hz. This is done with the Simple Average Filter.

The baud rate can also be changed. An output frequency of 2 kHz requires a baud rate of 115200, 10 kHz requires 460800. 38400 baud will reduce serial output to 1 kHz.

## Dimensions

Long Stand-off Model



## Filter & User Settings available

All NEW ODS Black-Line sensors have a programming / Select functionality.

There are 3 kinds of averaging filters, Median Filter, Simple Average and Running Average Filter. These filter settings can be set individually and operate simultaneously (and additive), as can most other user settings.

In Group Mode a running average is calculated over a user specified number of measuring points (group). The user also programs the sensor to disregard a number of bad (zero) / missing measuring points before calculating the average value. It is recommended to suppress the maximum number of "0" values. The running average value is calculated at full measuring frequency and is also used for converting the analog signal, either 4-20 mA or 1-9 V.

The Simple Average Filter compresses a number of measuring points, from 1 to 200, into one single output value by making an average disregarding any "0"/missing values present.

Several Median filters, actually from 3 to 31 is available, as well as Sample Hold Mode, where the last valid measurement value is kept as the output value in case of missing "0" measuring points.

Level Mode inverts the measuring values, in this setting the closer distances will be output as high values whereas distances far away will be output as low values.

## ODS High Temperature models

NEW ODS Black-Line sensors can be specified to measure up to 1000°C in HT form or 1300°C in VHT form with a **Red Diode**. When VVHT is specified a **Blue Diode** (405 nm) is used. Target temperature can reach 1500°C or even much higher if ordered so.

It is important to stress, that the HT specification only concerns the target temperature. Maximum sensor environment temperature is 45 °C. The HT specification can also be necessary when there is a risk of harmful false light as is the case with bright sunlight, both direct and reflected.

## ODS Thickness Measurement

NEW ODS Black-Line sensors are calibrated for measuring thickness when paired.

A **NEW ODS Black-Line** sensor will automatically turn itself into being either the Master or the Slave half part of a thickness measuring system when the serial interfaces are connected to an identical ODS sensor model.

The Master sensor reads the digital distance data as send from the Slave sensor over their RS232 or RS422 serial interfaces, and after taking its own distance information into account, it will output the change in thickness in its calculated digital form as well as a converted analog signal. The sensors must always be synchronized, and will measure on transparent targets alternately from one side or the other if they are wired to measure at 1 kHz (half) frequency.

A couple of ODS sensors will thus measure thickness or width without any control box or special calibration from the factory. ODS sensors can also be programmed to operate in Difference Mode instead of measuring thickness. This unique characteristic of the ODS sensors is also available in models of the ODS Grey-Line, Black-Line and Red-line families.

