

# OPT2015

High-performance distance sensor



Operating Instructions

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## 1. Proper Use

This wenglor product has to be used according to the following functional principle:

### High-performance distance sensor

High-performance distance sensors which use the principle of transit time measurement determine the distance between the sensor and the object according to the principle of transit time measurement. These sensors have a large working range and are therefore able to detect objects over large distances.

Selected sensors are distinguished by WinTec (wenglor interference free technology). This technology allows black or shiny surfaces to be reliably detected even in extremely inclined positions. It is possible to mount several sensors next to or across from each other without them influencing each other.

## 2. Safety Precautions

### 2.1. Safety Precautions

- This operating instruction is part of the product and must be kept during its entire service life.
- Read this operating instruction carefully before using the product.
- Installation, start-up and maintenance of this product has only to be carried out by trained personal.
- Tampering with or modifying the product is not permissible.
- Protect the product against contamination during start-up.
- Not a safety component in accordance with the EU Machinery Directive.

### 2.2. Laser/LED warning



#### Laser Class 1 (EN 60825-1)

Observe all applicable standards and safety precautions.

## 3. EC Declaration of Conformity

The EC declaration of conformity can be found on our website at [www.wenglor.com](http://www.wenglor.com) in download area.



RoHS

## 4. Technical Data

<b>Optical Data</b>	<b>OPT2015</b>
Working range	0,2...100,2 m
Working range analog	0,2...100,2 m
Measuring range	100 m
Reference reflector/reflector sheet	4 × OPT2030
Linearity	0,05 %
Switching hysteresis	13...50 mm
Light Source	Laser (rot)
Wave Length	660 nm
Service life (amb. temp. = 25 °C)	100000 h
Laser Class (EN60825-1)	1
Beam Divergence	< 2 mrad
<b>Electrical Data</b>	
Supply Voltage*	18...30 V DC
Current Consumption (operating voltage = 24 V)	< 100 mA
Switching Frequency	50 Hz
Response Time	10...200 ms
Measure Rate	1...100/s
Temperature Drift	<0,5 mm/k
Temperature Range	-25...60 °C
Number of switching outputs, configurable as PNP, NPN or push-pull	3
Switching Output Voltage Drop	< 2,5 V
Switching Output Switching Current	200 mA
Error Output	yes
Error Output Switching Current	200 mA
Analog Output	0...10 V
Current Load Voltage Output	<1 mA
Analog Output	4...20 mA
Current Output Load Resistance	<500 Ω
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Resolution	4...20 mm
<b>Mechanical Data</b>	
Adjustment	Teach-In
Housing	Plastic
Protection	IP68
Connection	M12 × 1, 8-polig
Protection Class	III

\* Supply voltage residual ripple may not exceed 10 % (within the specified voltage range).

## Measuring Range:

The Sensors' measuring range is determined by object remission and the size of the reflector.

Type of reflector	Mounting distance
OPT2030	5...100 m*
	0,2...10 m

\* when using 4 reflectors

In order that the Sensor functions properly, the whole light spot of the Sensor has to hit the reflector. Please chose the suitable reflector!

## Light Spot Diameter

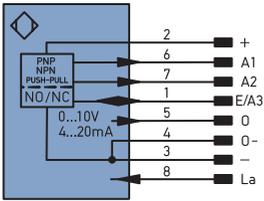
Working Distance	0	10 m	40 m	100 m
Light Spot Diameter	5 mm	< 20 mm	< 80 mm	< 200 mm

Dependence of Hysteresis and Resolution on the Sampling Rate on white (90 % Remission)

Selected sampling rate in Hz	OPT2015	
	Default setting for min. hysteresis in mm	Resolution in mm
100	40	20
50	35	14
20	30	12
10	25	10
5	20	8
2	15	6
1	13	4

## 4.1. Connecting the Sensor

514



### Switching laser light off via pin connection:

If the “La” pin is open or connected to negative, the laser is on.

If positive voltage is applied, the laser is off.

#### Legend

+	Supply Voltage +
-	Supply Voltage 0 V
~	Supply Voltage (AC Voltage)
A	Switching Output (NO)
Ā	Switching Output (NC)
V	Contamination/Error Output (NO)
Ȳ	Contamination/Error Output (NC)
E	Input (analog or digital)
T	Teach Input
Z	Time Delay (activation)
S	Shielding
RxD	Interface Receive Path
TxD	Interface Send Path
RDY	Ready
GND	Ground
CL	Clock
E/A	Output/Input programmable
	IO-Link
PoE	Power over Ethernet
IN	Safety Input
OSSD	Safety Output
Signal	Signal Output
Bl-D+/+	Ethernet Gigabit bidirect. data line (A-D)

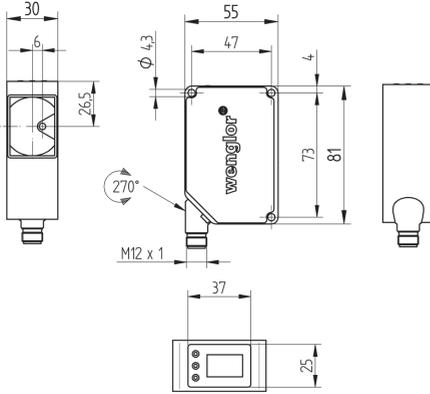
PT	Platinum measuring resistor
nc	not connected
U	Test Input
Ū	Test Input inverted
W	Trigger Input
Q	Analog Output
O-	Ground for the Analog Output
BZ	Block Discharge
AWV	Valve Output
a	Valve Control Output +
b	Valve Control Output 0 V
SY	Synchronization
E+	Receiver-Line
S+	Emitter-Line
±	Grounding
SrR	Switching Distance Reduction
Rx+/-	Ethernet Receive Path
Tx+/-	Ethernet Send Path
Bus	Interfaces-Bus A(+)/B(-)
La	Emitted Light disengageable
Mag	Magnet activation
RES	Input confirmation
EDM	Contactor Monitoring
EN <sub>max</sub>	Encoder A/A (TTL)

ENa	Encoder A
ENb	Encoder B
A <sub>MIN</sub>	Digital output MIN
A <sub>MAX</sub>	Digital output MAX
A <sub>OK</sub>	Digital output OK
SY <sub>in</sub>	Synchronization In
SY <sub>OUT</sub>	Synchronization OUT
OLt	Brightness output
M	Maintenance
rsv	reserved

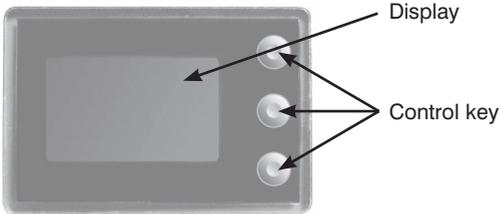
#### Wire Colors according to DIN IEC 757

BK	Black
BN	Brown
RD	Red
OG	Orange
YE	Yellow
GN	Green
BU	Blue
VT	Violet
GY	Grey
WH	White
PK	Pink

## 4.2. Housing Dimensions



## 4.3. The Control Panel



## 5. Mounting Instructions

All applicable electrical and mechanical regulations, standards and safety precautions must be adhered to when installing and operating the Sensor. The Sensor must be protected against mechanical influences. Install the device such that its installation position cannot be inadvertently changed. The wenglor mounting system is recommended for installing the Sensor. Additionally a suiting reflector or reflex foil has to be mounted.

## 6. Initial Start-Up

### 6.1. Initial Start-Up

Connect the Sensor to supply power (18 to 30 V DC). The display view appears.

The Sensor is ready for operation after 2 seconds. The following table provides an overview of typical, additional deviations during the warm-up phase.

Time (min.)	0	1	2	5	10	15
Deviation (mm)	$\pm 10$	$\pm 7$	$\pm 6$	$\pm 2$	$\pm 1$	0

Switch to the configuration menu by pressing any key.

#### Note:

If no settings are adjusted in the configuration menu for a period of 30 s, the Sensor is automatically returned to the read-out view. The Sensor accesses the last used menu view when a key is once again activated.

If a setting is adjusted, it becomes active when the configuration menu is exited.

The keys are used for navigation, and for configuring settings.

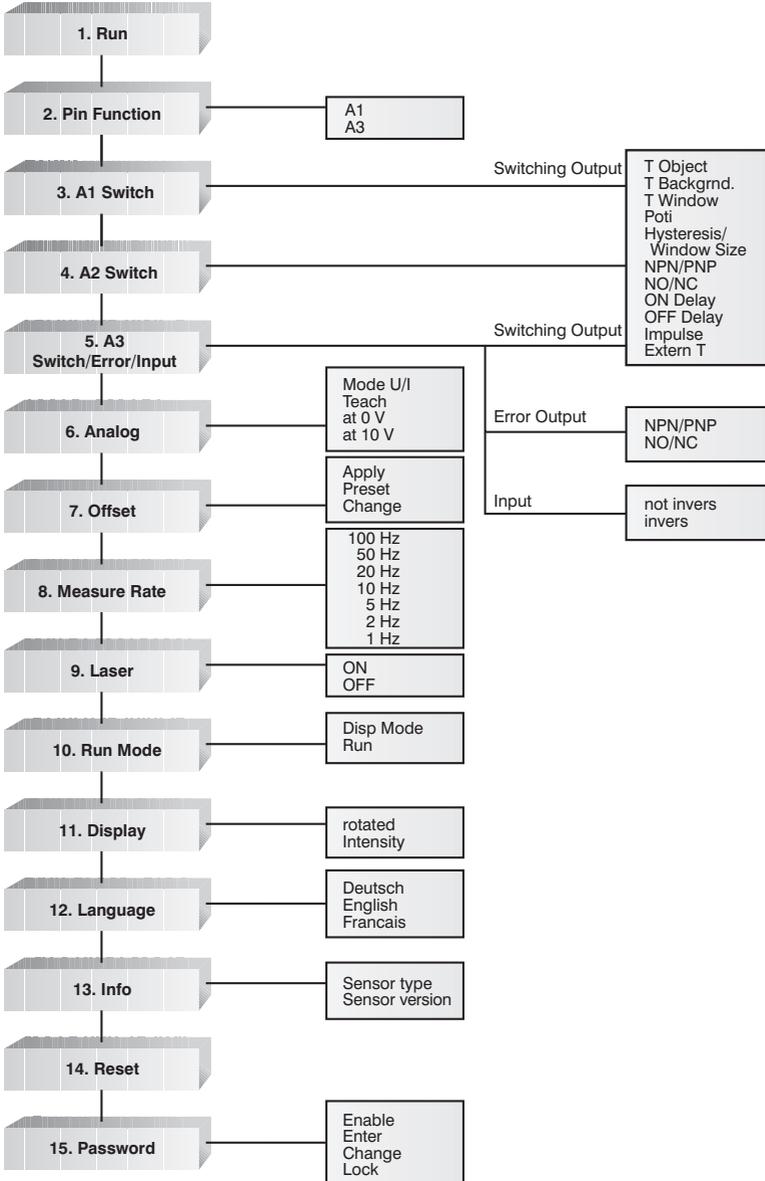
**Important:** Do not use any sharp objects to press the keys when configuring settings, because they might otherwise be damaged.

- ▲ Navigation up.
- ▼ Navigation down.
- ▶ Accept the selected setting, exit the menu (arrow points away from the display).
- ◀ Acknowledge the selected menu item (arrow points towards the display).

## 6.2. Default Settings

		OPT2015
Pin Function		A1: Switching output
		A2: Switching output
		A3: Error output
Outputs	Teach Mode	Object
	Switching threshold	1000 mm
	Hysteresis	20 mm
	Window Size	50 mm
	PNP/NPN	PNP
	NO/NC	NO
	ON Delay	0 ms
	OFF Delay	0 ms
Error Output	Impulse	0 ms
	PNP/NPN	PNP
A3 Input	NO/NC	NO
	invers	
Analog	U/I	U
	0 V	200 mm
	10 V	100200 mm
Offset	Specification Offset	0 mm
Measure Rate		20 Hz
Laser		On
Run Mode	Display Mode	Distance
Display	Intensity	Screensaver
Language		German
Password	Enable	Off
	Enter	0

## 7. Functional Overview



## 7.1. RUN

The Sensor can be switched to the display mode by pressing the ► key.

## 7.2. Pin Function

The Pin Function serves to determine the function of the pin. The pins can each take on different functions.

Designation	Function																				
<b>A3</b>	<b>Configuration of Pin A3</b>																				
<table border="1"> <thead> <tr> <th></th> <th>A3</th> </tr> </thead> <tbody> <tr> <td>▲</td> <td>○ Switch</td> </tr> <tr> <td>◀</td> <td>○ Error</td> </tr> <tr> <td>▼</td> <td>○ Laser</td> </tr> <tr> <td></td> <td>○ Offset</td> </tr> <tr> <td></td> <td>○ Ext T A1</td> </tr> <tr> <td></td> <td>○ Ext T A2</td> </tr> </tbody> </table>		A3	▲	○ Switch	◀	○ Error	▼	○ Laser		○ Offset		○ Ext T A1		○ Ext T A2	<p>By pressing the button ▲ and ▼ Pin A3 can be configured as:</p> <table border="0"> <tr> <td>○ a switching output</td> <td>○ an input for application of the offset</td> </tr> <tr> <td>○ an error output</td> <td>○ a Teach-Input for A1</td> </tr> <tr> <td>○ an input for switching on/off the transmitted light.</td> <td>○ a Teach-Input for A2 (if A2 available)</td> </tr> </table>	○ a switching output	○ an input for application of the offset	○ an error output	○ a Teach-Input for A1	○ an input for switching on/off the transmitted light.	○ a Teach-Input for A2 (if A2 available)
	A3																				
▲	○ Switch																				
◀	○ Error																				
▼	○ Laser																				
	○ Offset																				
	○ Ext T A1																				
	○ Ext T A2																				
○ a switching output	○ an input for application of the offset																				
○ an error output	○ a Teach-Input for A1																				
○ an input for switching on/off the transmitted light.	○ a Teach-Input for A2 (if A2 available)																				

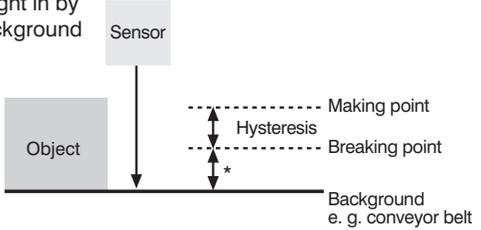
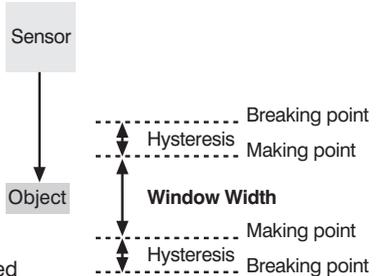
The adjusted function of the pins is displayed figuratively in the menu “Run Mode”:

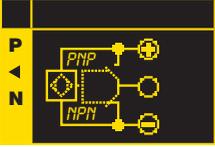
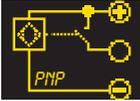
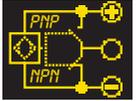
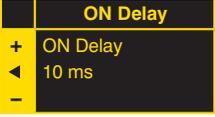
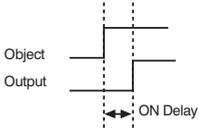
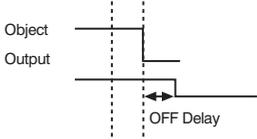
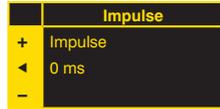
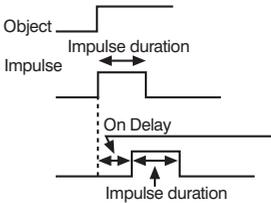
(T1) (T2)	Teach-Input A3 for A1 or A2
(A1) (A2) (A3)	Switch output
(AN)	Analog output
(IN)	Input
(F)	Error output

## 7.3. A1/A2/A3 Switch

Basic settings for the individual switching outputs are selected in the A1/A2/A3 Switch menu.

Designation	Function								
<b>T Object</b>	<b>Object Teach-In</b>								
<table border="1"> <thead> <tr> <th></th> <th>A1 Switch</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>T Object</td> </tr> <tr> <td>◀</td> <td>1000 mm</td> </tr> <tr> <td></td> <td>Current measurement point in mm</td> </tr> </tbody> </table>		A1 Switch	T	T Object	◀	1000 mm		Current measurement point in mm	<p>Distance to the object is taught in by pressing the T key:</p> <ul style="list-style-type: none"> <li>Align the spot to the object.</li> <li>Briefly press the T key.           <ul style="list-style-type: none"> <li>→ Switching distance to the object is set.</li> </ul> </li> <li>If necessary, readjust the switching distance with the help of the <b>Potentiometer</b> menu item.</li> </ul> <p>* OPT2015: <math>(\frac{\text{Hysteresis}}{2}) + 10 \text{ mm}</math></p>
	A1 Switch								
T	T Object								
◀	1000 mm								
	Current measurement point in mm								

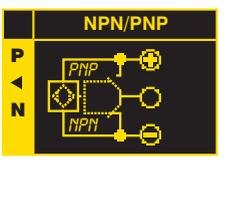
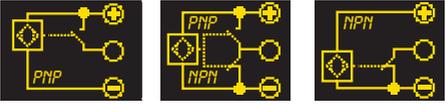
Designation	Function								
<b>T Background.</b>	<b>Background-Teach-In</b>								
<table border="1"> <thead> <tr> <th colspan="2">A1 Switch</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>T Background</td> </tr> <tr> <td>◀</td> <td>1000 mm</td> </tr> <tr> <td></td> <td>Current measurement point in mm</td> </tr> </tbody> </table>	A1 Switch		T	T Background	◀	1000 mm		Current measurement point in mm	<p>Distance to the background is taught in by pressing the <b>T</b> key, so that the background can be suppressed:</p> <ul style="list-style-type: none"> <li>Align the spot to the background (e.g. conveyor belt).</li> <li>Briefly press the <b>T</b> key.</li> <li>→ The background is suppressed.</li> </ul> <p>* OPT2015: <math>(\frac{\text{Hysteresis}}{2}) + 10 \text{ mm}</math></p> 
A1 Switch									
T	T Background								
◀	1000 mm								
	Current measurement point in mm								
<b>T Window</b>	<b>Teach-In a tolerance window</b>								
<table border="1"> <thead> <tr> <th colspan="2">A1 Switch</th> </tr> </thead> <tbody> <tr> <td>T</td> <td>T Window</td> </tr> <tr> <td>◀</td> <td>1000 mm</td> </tr> <tr> <td></td> <td>Current measurement point in mm</td> </tr> </tbody> </table>	A1 Switch		T	T Window	◀	1000 mm		Current measurement point in mm	<p>A window tolerance is taught in by pressing the <b>T</b> key:</p> <ul style="list-style-type: none"> <li>Align the spot to the object.</li> <li>Briefly press the <b>T</b> key.</li> </ul> <p>→ A tolerance window is set up around the measured distance. The window width value is adjustable (see below). The default value is 50 mm. If the measuring distance lies within the window width, the sensor is activated.</p> <p>When the window is taught in, the lower (L) and upper (H) switching points are displayed alternately in line 3.</p> 
A1 Switch									
T	T Window								
◀	1000 mm								
	Current measurement point in mm								
<b>Poti</b>	<b>Readjusting the switching distance</b>								
<table border="1"> <thead> <tr> <th colspan="2">Poti</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>T Poti</td> </tr> <tr> <td>◀</td> <td>1000 mm</td> </tr> <tr> <td>-</td> <td>Current measurement point in mm</td> </tr> </tbody> </table>	Poti		+	T Poti	◀	1000 mm	-	Current measurement point in mm	<p>The switching distance can be readjusted by pressing the + or the – key.</p>
Poti									
+	T Poti								
◀	1000 mm								
-	Current measurement point in mm								
<b>Hysteresis</b>	<b>Adjusting switching hysteresis</b>								
<table border="1"> <thead> <tr> <th colspan="2">Hysteresis</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>Hysteresis</td> </tr> <tr> <td>◀</td> <td>20 mm</td> </tr> <tr> <td>-</td> <td></td> </tr> </tbody> </table>	Hysteresis		+	Hysteresis	◀	20 mm	-		<p>The hysteresis value is adjusted by pressing the + or the – key. Minimum value: depends upon the sampling rate (see table page 6)</p>
Hysteresis									
+	Hysteresis								
◀	20 mm								
-									
<b>Window Size</b>	<b>Setting the desired window width</b>								
<table border="1"> <thead> <tr> <th colspan="2">Window Size</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>WindowSize</td> </tr> <tr> <td>◀</td> <td>50 mm</td> </tr> <tr> <td>-</td> <td></td> </tr> </tbody> </table>	Window Size		+	WindowSize	◀	50 mm	-		<p>(Can only be adjusted after Teach Window). The width (10 mm...1000 mm) of the tolerance window is selected by pressing the + or the – key. The default value is 50 mm.</p>
Window Size									
+	WindowSize								
◀	50 mm								
-									

Designation	Function
<b>NPN/PNP</b>  	<b>Configuring the outputs</b> <p>The output is preset to PNP. Pressing the <b>N</b> key sets the output to push-pull. Pressing the <b>N</b> key again sets the output to NPN.</p> <p>The respective circuit diagram indicates how the output is set:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>PNP</b></p>  </div> <div style="text-align: center;"> <p><b>Push-pull</b></p>  </div> <div style="text-align: center;"> <p><b>NPN</b></p>  </div> </div>
<b>NO/NC</b>  	<b>Configuring the outputs</b> <p>Outputs can be set up as normally open or normally closed by pressing the <b>NO</b> or the <b>NC</b> key. The respective circuit diagram is displayed.</p>
<b>ON Delay</b>  	<b>Adjusting ON Delay</b> <p>ON Delay can be set to a value within a range of 10 to 10.000 ms by pressing the + or the – key. If the value is set to “0 ms” the function is deactivated.</p> 
<b>OFF Delay</b>  	<b>Adjusting OFF Delay</b> <p>OFF Delay is adjusted within a range of 10 to 10.000 ms by pressing the + or the – key. OFF Delay is disabled if a impulse duration has already been selected. If this is the case, Impulse! appears at the control panel. If the value is set to “0 ms” the function is deactivated.</p> 
<b>Impulse</b>  	<b>Adjusting impulse duration</b> <p>Impulse duration defines how long the output signal remains in the activated state. Impulse duration can be set to a value within a range of 10 to 10.000 ms by pressing the + or the – key. After the selected impulse duration has elapsed, the output signal is returned to the deactivated state.. If the value is set to “0 ms” the function is deactivated.</p>  <p>Function can be combined with ON Delay.</p>

## 7.4. A3 Error /A3 Input

### 7.4.1. A3 Error

The error output is activated if no light signal is returned to the Sensor.

NPN/PNP	Configuring the outputs
	<p>The error output is set to PNP, push-pull or NPN by pressing the P or the N key. The respective circuit diagram is displayed.</p> <div style="display: flex; justify-content: space-around; text-align: center;"> <div data-bbox="330 402 375 422">PNP</div> <div data-bbox="456 402 554 422">Push-pull</div> <div data-bbox="644 402 688 422">NPN</div> </div> 
NO/NC	Configuring the outputs
	<p>The error output is set up as normally open or normally closed by pressing the NO or the NC key. The respective circuit diagram is displayed.</p>

### 7.4.2. A3 Input

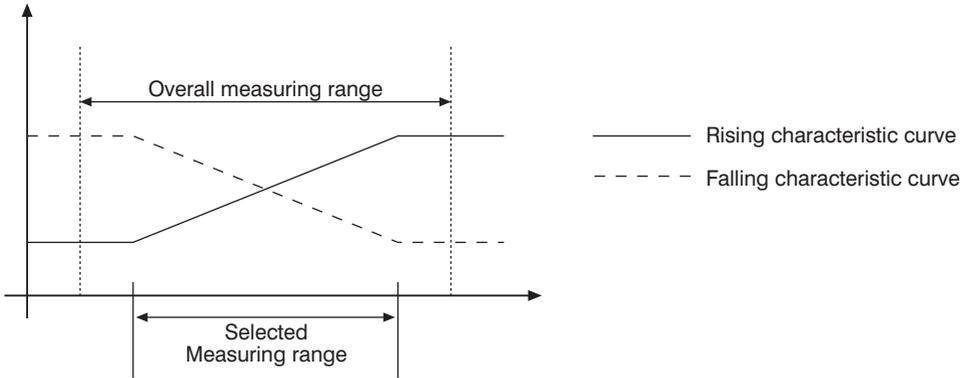
If Pin "A3" is used as input "Emitted light disengageable" or as input "Offset", the input can be set as an inverted or non-inverted input.

Designation	Function
not invers	Usage as non-inverted input
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>A3 Input</b></p> <p>▼ <input checked="" type="radio"/> not invers</p> <p>▶ <input type="radio"/> invers</p> </div>	<p>Normally, the input is at supply voltage "0". The functionality of the input is triggered upon applying a voltage &gt; 7 V.</p>
invers	Usage as inverted input
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>A3 Input</b></p> <p>▼ <input type="radio"/> not invers</p> <p>▶ <input checked="" type="radio"/> invers</p> </div>	<p>The input is normally at a voltage of &gt; 7 V. The functionality of the input is triggered upon applying a voltage &lt; 7 V.</p>

## 7.5. A1 Analog/Analog

The measuring range for the analog output can be freely selected within the specified working range with rising or falling characteristic curve.

The adjusted measuring range must have a value of at least 2 % of the total measuring range.



Analog		Settings of the analog output
▼	Mode U/I	<b>Mode U/I:</b> The analog output can be set up as either a current or a voltage output by pressing the U or the I key. The corresponding symbol is displayed.
▶	Teach-In	<b>Teach-In:</b> The momentary actual distance is assigned to a voltage value of 10 V or a current value of 20 mA by pressing the 10 V or the 20 mA key. The momentary actual distance is assigned to a voltage value of 0 V or a current value of 4 mA by pressing the 0 V or the 4 mA key. If necessary, the assigned distances can be readjusted with the help of menu items At 0 V or at 10 V.
▶	At 0 V	<b>At 0 V/at 4 mA:</b> The distance assigned to either 0 V or 4 mA is adjusted by pressing the + or the - key.
▶	At 10 V	<b>At 10 V/at 20 mA:</b> The distance assigned to either 10 V or 20 mA is adjusted by pressing the + or the - key.
▶	At 4 mA	
▶	At 20 mA	

## 7.6. Offset

The function offset serves to change the current measurement value to a certain other value. Here, the switching thresholds and the analog measurement ranges are changed as well.

The offset can take place optionally via a menu or externally via Pin A3.

### Via menu

Designation	Function								
<b>Apply*</b>	<b>Accepting the value set in “Specification” as the distance.</b>								
<table border="1"> <thead> <tr> <th colspan="2">Apply</th> </tr> </thead> <tbody> <tr> <td><b>T</b></td> <td>Apply</td> </tr> <tr> <td>◀</td> <td>0 mm</td> </tr> <tr> <td><b>Z</b></td> <td>Current measurement point in mm</td> </tr> </tbody> </table>	Apply		<b>T</b>	Apply	◀	0 mm	<b>Z</b>	Current measurement point in mm	<p>Upon pressing the button <b>T</b>, the offset value set in the menu option <b>Specification</b> is accepted as the distance. Upon pressing the button <b>Z</b>, the offset function is reset and the real distance is displayed.</p>
Apply									
<b>T</b>	Apply								
◀	0 mm								
<b>Z</b>	Current measurement point in mm								
<b>Preset*</b>	<b>Teaching the offset value</b>								
<table border="1"> <thead> <tr> <th colspan="2">Preset</th> </tr> </thead> <tbody> <tr> <td><b>T</b></td> <td>Offset</td> </tr> <tr> <td>◀</td> <td>0 mm</td> </tr> <tr> <td><b>Z</b></td> <td>Current measurement point in mm</td> </tr> </tbody> </table>	Preset		<b>T</b>	Offset	◀	0 mm	<b>Z</b>	Current measurement point in mm	<p>Upon pressing the button <b>T</b>, the current distance is accepted as the specification offset. Upon pressing the button <b>Z</b>, the offset specification value is set to 0 (the offset is activated in the menu option <b>Apply</b>)</p>
Preset									
<b>T</b>	Offset								
◀	0 mm								
<b>Z</b>	Current measurement point in mm								
<b>Change</b>	<b>Changing the offset value that has been set in steps</b>								
<table border="1"> <thead> <tr> <th colspan="2">Change</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>Preset</td> </tr> <tr> <td>◀</td> <td>0 mm</td> </tr> <tr> <td>-</td> <td></td> </tr> </tbody> </table>	Change		+	Preset	◀	0 mm	-		<p>By pressing the keys + or - the adjusted specification offset (menu point Preset) can be changed stepwise upwards or downwards.</p>
Change									
+	Preset								
◀	0 mm								
-									

\*The currently set specification offset is displayed in line 3. The current distance is displayed in line 4.

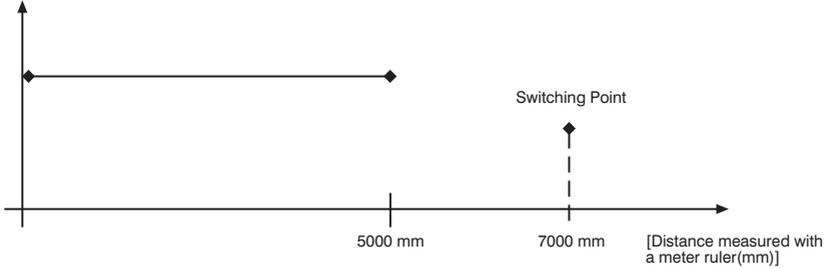
### Via Pin “A3”

Via the multifunctional pin A3, the offset equalization can be applied through an external trigger Sensor (corresponds to the menu **Offset** → **Apply** → **T**). Here, **A3** must be configured by means of the setting Offset as input (see “7.2. Pin Function” page 12).

In order to apply the Offset equalization, a voltage > 7 V should be applied at the input pin to trigger a positive flank. Here, the value set in the menu option **Preset** is accepted as the current distance.

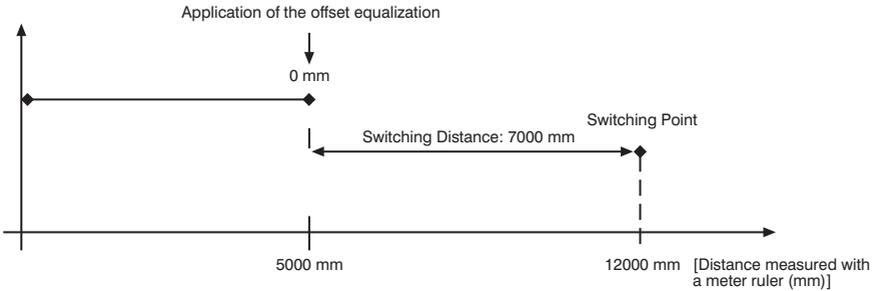
## Without Offset equalization:

In the diagram, the Sensor measures a distance of 5000 mm.  
The switching point is located 2000 mm distant, at 7000 mm.



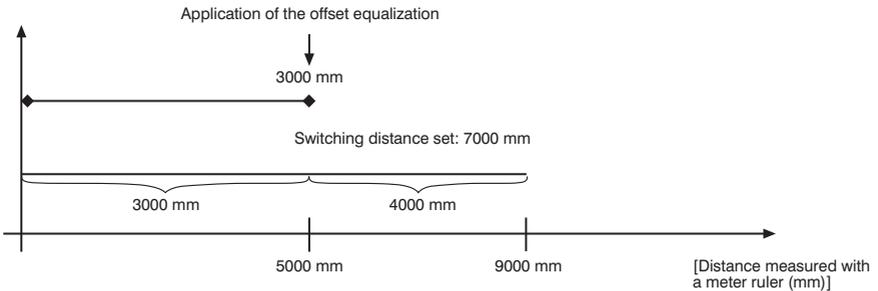
## With application of the offset equalization: Specification offset: 0 mm

In the diagram, the Sensor measures a distance of 5000 mm. The switching point is located 2000 mm distant, at 7000 mm. After application of the offset equalization, from the distance 5000 mm the distance becomes 0 mm. The switching distance thus gets displaced by 7000 mm to the actual 12000 mm.



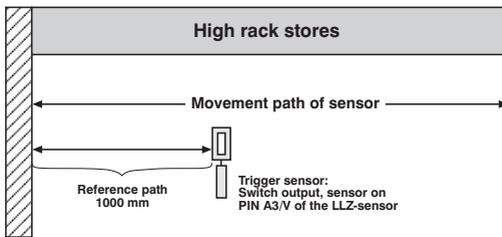
## Application of the offset equalization: Specification offset: 3000 mm

In the diagram, the Sensor measures a distance of 5000 mm. The switching point is located 2000 mm distant, at 7000 mm. After application of the offset equalization, from the distance 5000 mm the distance becomes 3000 mm. The switching distance thus gets displaced by 4000 mm to the actual 9000 mm.



### Example of application:

A OPT2015 is used in a high rack warehouse with varying ambient temperatures. To eliminate the temperature drift, a reference path of 1000 mm is specified to the Sensor as the specification offset. Through an external trigger Sensor, the specification offset is applied and given to the Sensor as the current distance. This ensures that the distance tallies with the value of the reference route with every trigger signal and thus, the varying ambient temperature has no influence on the measurement values of the Sensor.



## 7.7. Measure Rate

Reducing the measure rate improves resolution and reduces minimum selectable switching hysteresis. The respective minimum and maximum values are in the table on page 5.

Designation	Function		
<table border="1"> <thead> <tr> <th>MeasureRate</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>▼ ○ 100 Hz</li> <li>▶ ○ 50 Hz</li> <li>◀ ○ 20 Hz</li> <li>○ 10 Hz</li> <li>○ 5 Hz</li> <li>○ 2 Hz</li> <li>○ 1 Hz</li> </ul> </td> </tr> </tbody> </table>	MeasureRate	<ul style="list-style-type: none"> <li>▼ ○ 100 Hz</li> <li>▶ ○ 50 Hz</li> <li>◀ ○ 20 Hz</li> <li>○ 10 Hz</li> <li>○ 5 Hz</li> <li>○ 2 Hz</li> <li>○ 1 Hz</li> </ul>	Measure rate value
MeasureRate			
<ul style="list-style-type: none"> <li>▼ ○ 100 Hz</li> <li>▶ ○ 50 Hz</li> <li>◀ ○ 20 Hz</li> <li>○ 10 Hz</li> <li>○ 5 Hz</li> <li>○ 2 Hz</li> <li>○ 1 Hz</li> </ul>			

The measure rate which is best suited for the respective application can be selected from the predefined values by pressing the ▼ or the ▶ key.

## 7.8. Laser

Transmitted light can be either deactivated or activated with the help of the Laser menu.

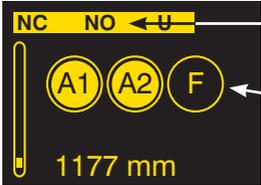
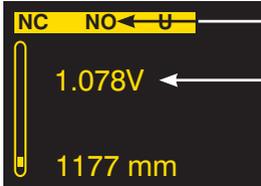
Designation	Function		
<table border="1"> <thead> <tr> <th>Laser</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>▼ ○ ON</li> <li>▶ ○ OFF</li> <li>◀</li> </ul> </td> </tr> </tbody> </table>	Laser	<ul style="list-style-type: none"> <li>▼ ○ ON</li> <li>▶ ○ OFF</li> <li>◀</li> </ul>	<p>ON: Switch transmitted light on</p> <p>OFF: Switch transmitted light off</p>
Laser			
<ul style="list-style-type: none"> <li>▼ ○ ON</li> <li>▶ ○ OFF</li> <li>◀</li> </ul>			

Transmitted light is deactivated or activated by pressing the ▼ or the ◀ key.

In case of the OPT2015 the laser diode can be switched off via pin 8, by connecting pin 8 to 24 V.

## 7.9. Run Mode

Which data will be read out to the display as measurement results are selected in the run mode menu.

Designation	Function
<div style="background-color: #333; color: #fff; padding: 5px;"> <div style="background-color: #000; color: #fff; padding: 2px; margin-bottom: 2px;">Run Mode</div> <div style="background-color: #000; color: #fff; padding: 2px; margin-bottom: 2px;">▼ DispMode</div> <div style="background-color: #000; color: #fff; padding: 2px; margin-bottom: 2px;">▶ Run</div> <div style="background-color: #000; color: #fff; padding: 2px;">▶</div> </div>	<p><u>DispMode:</u> What will appear at the monitor during display mode operation is selected by pressing the ▼ or the ▶ key:</p> <p><u>Distance:</u> The states of the individual outputs appear at the display.</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>Output configuration/ selected delays</p> <p>Status of the switch outputs of the error output or analog output (if used as analog output: the higher the analog value, the brighter the status display)</p> </div> </div> <div style="display: flex; justify-content: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 50px;"> <p>Measured analog voltage</p> </div> <div style="text-align: center;"> <p>Distance to the object</p> </div> </div> <p><u>Analog:</u> The analog output value appears at the display.</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>Output configuration/ selected delays</p> <p>Analog output value (U/I)</p> </div> </div> <div style="display: flex; justify-content: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 50px;"> <p>Measured analog voltage</p> </div> <div style="text-align: center;"> <p>Distance to the object</p> </div> </div> <p>Run: The device is switched to the display mode by pressing the ▶ key.</p>

## 7.10. Display

The display can be rotated and brightness can be adjusted with the help of the Display menu.

Display		Adjusting the display device
▼	rotated	<b>rotated:</b> The display is rotated 180° by pressing the ► key. The display can be returned to its original position by pressing the same key once again. <b>Intensity:</b> To adjust the display Intensity (see chapter 7.09.1)
▶	Intensity	

### 7.10.1. Intensität

Intensity		Set the display intensity
▲	<input type="radio"/> Min	<b>Min:</b> The intensity of the display is set to a minimum value. <b>Normal:</b> The intensity of the display is set to a medium value. <b>Max:</b> The intensity of the display is set to a maximum value. <b>Power save:</b> The display switches off after one minute without a button being pressed and automatically switches back on when a button is pressed.* <b>Screensaver:</b> The colors of the display are inverted every minute.  * <b>Note:</b> If none of the keys are activated for a given period of time, the display is switched to the energy saving mode and the intensity is reduced. The display is returned to the selected intensity as soon as any key is activated.
◀	<input type="radio"/> Normal	
▶	<input type="radio"/> Max	
▼	<input type="radio"/> Power save	
	<input type="radio"/> Screensaver	

## 7.11. Language

The desired menu language can be selected in the Language menu.

Language		Set menu language
▼	<input type="radio"/> Deutsch	The menu appears in the selected language immediately after selection.
▶	<input type="radio"/> English	
▲	<input type="radio"/> Français	

The desired language is selected by pressing the ▼ or ► key. The desired language appears in the menus as soon as it has been selected.

## 7.12. Info

The following information regarding the Sensor is displayed in the Info menu:

- Sensor type
- Software version
- Serial number

## 7.13. Reset

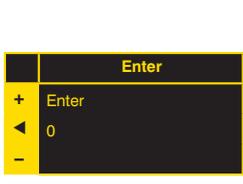
Sensor settings can be returned to their default values with the help of the Reset menu. Default settings are listed in section 6.2.

Reset	
<b>R</b> ◀ Press <R> for Reset	All of the selected sensor settings are returned to their default values by pressing the <b>R</b> key.

## 7.14. Password

Password settings can be entered in the password menu with the following four submenus.

Designation	Function										
<b>Enable</b>	<b>Switch Password Function On or Off</b>										
<table border="1"> <thead> <tr> <th colspan="2">Password</th> </tr> </thead> <tbody> <tr> <td>▼</td> <td>Enable</td> </tr> <tr> <td>▶</td> <td>Enter</td> </tr> <tr> <td>◀</td> <td>Change</td> </tr> <tr> <td></td> <td>Lock</td> </tr> </tbody> </table>	Password		▼	Enable	▶	Enter	◀	Change		Lock	<p>The <b>Enable</b> menu is accessed by pressing the ◀ key, where you can activate or deactivate the password function by selecting <b>Off</b> or <b>On</b>. After interruption of the power supply, the operation of the sensor is locked. Immediate blockage of the operation can be done in the sub-menu "Lock".</p>
Password											
▼	Enable										
▶	Enter										
◀	Change										
	Lock										
<b>Enter</b>	<b>Password Entry for Enabling the Sensor</b>										
<table border="1"> <thead> <tr> <th colspan="2">Password</th> </tr> </thead> <tbody> <tr> <td>▼</td> <td>Enable</td> </tr> <tr> <td>▶</td> <td>Enter</td> </tr> <tr> <td>◀</td> <td>Change</td> </tr> <tr> <td></td> <td>Lock</td> </tr> </tbody> </table>	Password		▼	Enable	▶	Enter	◀	Change		Lock	<p>The <b>Enter</b> submenu is accessed by pressing the ▶ key, where you can enter the password in order to enable the sensor.</p> <p>The desired password is entered by means of the + or – key. Press and hold the + or – key in order to scroll quickly through the numbers. Entry is acknowledged by pressing the ◀ key.</p> <p>The password is set to 0 upon shipment from the factory.</p>
Password											
▼	Enable										
▶	Enter										
◀	Change										
	Lock										
<table border="1"> <thead> <tr> <th colspan="2">Enter</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>Enter</td> </tr> <tr> <td>◀</td> <td>0</td> </tr> <tr> <td>–</td> <td></td> </tr> </tbody> </table>	Enter		+	Enter	◀	0	–				
Enter											
+	Enter										
◀	0										
–											
<b>Change</b>	<b>Change the Password</b>										
<table border="1"> <thead> <tr> <th colspan="2">Password</th> </tr> </thead> <tbody> <tr> <td>▼</td> <td>Enable</td> </tr> <tr> <td>▶</td> <td>Enter</td> </tr> <tr> <td>◀</td> <td>Change</td> </tr> <tr> <td></td> <td>Lock</td> </tr> </tbody> </table>	Password		▼	Enable	▶	Enter	◀	Change		Lock	<p>The <b>Change</b> submenu is accessed by pressing the ▶ key, where you can change the password.</p>
Password											
▼	Enable										
▶	Enter										
◀	Change										
	Lock										
<table border="1"> <thead> <tr> <th colspan="2">Change</th> </tr> </thead> <tbody> <tr> <td>+</td> <td>Change</td> </tr> <tr> <td>◀</td> <td>0</td> </tr> <tr> <td>–</td> <td></td> </tr> </tbody> </table>	Change		+	Change	◀	0	–		<p>The desired password is selected with the + or – key, and is acknowledged with the ◀ key. Press and hold the + or – key in order to scroll quickly through the numbers.</p>		
Change											
+	Change										
◀	0										
–											

Lock	Lock after Sensor
	<p>The sensor can be disabled with the help of this function, without interrupting supply power.</p> <p>The sensor is disabled and switched automatically to the password entry mode after pressing the ◀ key.</p>
	<p>A password must be entered in order to continue using the sensor.</p>

**Notes regarding password functions:**

If the password function has been activated, the password must be entered each time supply power to the Sensor is interrupted.

After pressing a key, the menu is automatically switched to the password entry mode.

The following user interface then appears:



After entering the correct password with the + or – key, the entire menu is enabled and the Sensor is ready for use.

- The password function is deactivated upon shipment from the factory.
- Passwords can be selected within a range of 0000 to 9999.

Be sure to make a note of the new password before exiting the “change password” function! If the password is forgotten, it must be overwritten with a master password. The master password can be requested by e-mail from [techbox@automationdirect.com](mailto:techbox@automationdirect.com).

## 8. Maintenance Instructions

- This wenglor Sensor is maintenance-free.
- It is advisable to clean the lens and the display, and to check the plug connections at regular intervals.
- Do not clean with solvents or cleansers which could damage the device.

## 9. Proper Disposal

wenglor sensoric gmbh does not accept the return of unusable or irreparable products. Respectively valid national waste disposal regulations apply to product disposal.