



# FRAME LIGHT BARRIERS OGWSD / OGWTI

WITH IO-LINK

 **di-soric**

# FRAME LIGHT BARRIERS FOR RANGE DETECTION OF OBJECTS

## Several benefits combined

Frame light barriers from di-soric can be installed quickly and are immediately operational due to perfect alignment and the calibration of transmitter and receiver. They also detect very quickly moving objects independent of position in the entire detection range and are ideally suited for counting processes and for range detection.

## OGWTI SERIES IN FORK FORMAT

Compact, open fork format for integration in assembly machines



### Shared benefits of OGWTI

#### Universal use possible

due to high degree of flexibility: Many fields of application due to static and dynamic object detection, sensor modes and IO-Link: [more on page 4/5](#)

#### Suited for highly dynamic applications

due to extremely short activation time of only 0.05 ms – independent of size of detection range

## OGWTI – Special benefits and properties

Installation location	The preferred installation location of the OGWTI is <b>within</b> machines and conveyor lines
Environment	Industrial machinery environment
Setting	Directly at the sensor using membrane keypad and via IO-Link
Switching outputs	2 switching outputs
Teaching input	1
Variants	4 sizes, detection range of at least 30 x 30 mm to a maximum of 100 x 100 mm
Typical industries	Assembly and handling technology, packaging technology, measurement and testing

## No application gets left out

Due to the variety of sizes and formats, the high resolution and ultra-fast reaction time, our frame light barriers make optimal, process-reliable solutions possible – always tailored to the application and the installation space available.

## OGWSD SERIES IN FRAME DESIGN

Robust frame design, with impact protection and removable crossbar for conveyor technology

### and OGWSD:

#### Detection of even the smallest objects

from Ø 0.7 mm thanks to high resolution, depending on size

#### Sustainably durable

due to exceptionally stable metal housing and connectors and high protection class IP67



## OGWSD – Special benefits and properties

Installation location	The OGWSD is usually installed <b>outside of</b> machines
Environment	Harsh machine environment with strong mechanical stresses
Setting	Directly at the sensor using potentiometer and via IO-Link
Switching outputs	1 switching output
Variants	7 sizes, detection range of at least 25 x 22 mm to a maximum of 300 x 398 mm
Typical industries	Assembly and handling technology, packaging technology, machine tools, rubber and plastics

# IDEAL FOR INDUSTRY 4.0 SYSTEM DESIGNS

## Frame light barriers with IO-Link

Frame light barriers are conventionally used to detect falling objects, usually in counting applications. With the 4 sensor modes of the OGWSD and OGWTI, new, additional application fields are made possible.

### 4 sensor modes through IO-Link for maximum flexibility

<b>Static</b>	For the detection of falling objects, position-independent presence check of objects
<b>Dynamic</b>	Ideal for the detection of very small, falling objects, very process-reliable, high functional reserve in case of soiled optics, detection of objects guided in a tube.
<b>Shading</b> only via IO-Link	Evaluation of light intensity at receiver for feature check, position check and presence check
<b>Peak value</b> only via IO-Link	Evaluation of maximum shading of falling objects for verification and differentiation of falling objects



### Supportive, smart IO-Link functions for frame light barriers

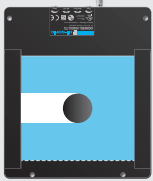
<b>Diagnostic function</b> <b>Stability</b>	Shows when object detection is impaired, for example due to soiling. After cleaning and sufficient functional reliability established, the status bit is reset.
<b>Calibration</b> in installation situation	With this function, the sensor in the mechanical installation situation is calibrated to the measured value 0. With the calibration, the influence of reflections can be minimized – small objects can thereby be better detected under critical installation situations.
<b>Autoteach</b>	This function is available for learning falling objects.
<b>Process value zone</b>	Zone in which a falling object was detected - up to 4 zones, depending on size.

# APPLICATION FIELDS AND BENEFITS VIA IO-LINK

## More than counting – a sensor for 8 application fields

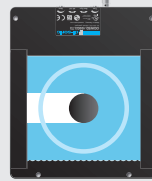
Because of IO-Link configurations precisely matched to the application fields, the versatile frame light barriers in the OGWTI and OGWSD series will win you over in many different detection and checking tasks.

### Recognition and counting of falling objects



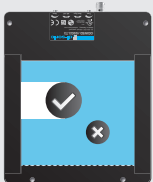
Falling objects are recognized in the detection range.  
(Sensor mode: static)

### Recognition and counting in tubes



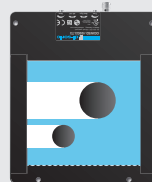
Falling objects guided in a tube are recognized.  
(Sensor mode: dynamic)

### Verification of falling objects



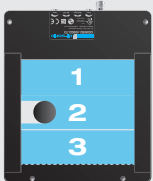
Falling objects are recognized on the basis of maximum shading.  
(Sensor mode: peak value)

### Differentiation of falling objects



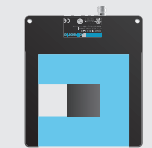
Two falling objects are recognized on the basis of maximum shading.  
(Sensor mode: peak value)

### Recognition of falling position



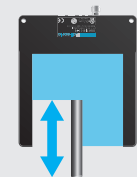
Detection of range of falling position of objects through zone evaluation.  
(IO-Link: process value)

### Presence check



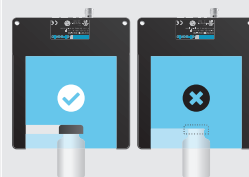
Recognize presence of objects.  
(Sensor mode: shading, static)

### Position check

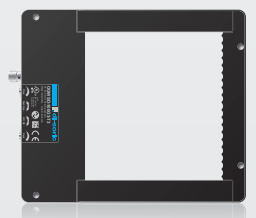


Recognize position of flat, submersing objects in the detection range.  
(Sensor mode: shading)

### Feature check



Recognize presence of features based on shading.  
(Sensor mode: shading)



# FRAME LIGHT BARRIERS

## OGWSD WITH IO-LINK

**The robust, fast series with an activation time of 0.05 ms for conveyor technology – can be immediately installed and operational**

The robust OGSWD in the frame design are range sensors that recognize objects independent of object position in the detection range. They are eminently suited for the detection of very small parts. The multifunctionality of the OGSWD series is expanded with the additional sensor modes for detection of submersing objects and for differentiation and verification of larger objects.

### Dual operating concept

Via 4 potentiometers and IO-Link

### Operating elements

- Sensitivity
- Static / dynamic
- NO / NC
- Switch-off delay

### Connection

Connector M8, 3-pin, compatible with market standard and predecessor products

### Push-pull output

pnp or npn function in one device

### Frame format

### Removable crossbar

for more flexibility in the applications



### No blind zone

The mechanical recess matches the detection range

### Impact protection

Extremely resistant, resilient protection of optics from damage

### Position-independent object detection

Easy handling and commissioning

### Activation time 0.05 ms – independent of size

Ideal for the recognition of very quickly falling objects in highly dynamic processes

### Recognition of objects from Ø 0.7 mm (depending on size)

Small, falling objects can be recognized process-reliably in the entire detection range of the OGSWD with the “dynamic” sensor mode, even in case of soiling

### IO-Link - Ready for digitization

Sensor identification, configuration and diagnosis, remote maintenance option, quick exchange of sensor due to parameter storage in IO-Link master

### 4 sensor modes: new application fields for frame light barriers

In addition to the recognition of falling objects, the OGSWD is suited for feature, presence and position checks within the detection range

# ALWAYS IN THE FRAME

## The right size for any application

7 sizes with detection ranges from a minimum of 25 x 22 mm to a maximum of 300 x 398 mm ensure that the OGWSD can provide the appropriate frame for any application.

### Compact design with small dimensions

- Robust metal housing in frame design with impact protection for the optics, durable in operation with extremely high mechanical stresses
- Optimal ratio between housing width and detection range
- Narrow crossbar
- Operating elements and connectors oriented in the center for easier assembly
- Drilling distances and detection ranges identical to predecessor products
- Depth only 15 mm



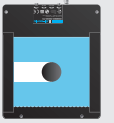
Type designation	Item no.	Housing dimensions	Detection range	Ø Resolution dynamic	Ø Resolution static
OGWSD-25G3-T3	213347	65.5 x 55 x 15 mm	25 x 22 mm	0.7 mm	1 mm
OGWSD-40G3-T3	213348	108.5 x 70 x 15 mm	40 x 49 mm	0.7 mm	1 mm
OGWSD-70G3-T3	213349	121.5 x 100 x 15 mm	70 x 62 mm	1.5 mm	2 mm
OGWSD-100G3-T3	213103	151.5 x 130 x 15 mm	100 x 92 mm	2.5 mm	3 mm
OGWSD-150G3-T3	213350	201.5 x 180 x 15 mm	150 x 142 mm	3 mm	5 mm
OGWSD-250G3-T3	213351	301.5 x 280 x 15 mm	250 x 242 mm	5 mm	8 mm
OGWSD-300G3-T3	213352	457 x 330 x 15 mm	300 x 398 mm	5 mm	10 mm

# APPLICATION EXAMPLES

## OGWSD

Machine tools

### Ejection check for lathe



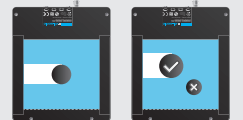
In a lathe, electrical contacts are produced with a diameter less than 1 mm. The lathed parts produced are conveyed from the machine and a backlog needs to be avoided. A frame light barrier from the OGWSD series recognizes objects falling out in the entire detection range. Through dynamic evaluation, quickly falling, small objects are reliably recognized even in case of strong soiling. Impact protection protects the optics of the OGWSD from damage.

Frame light barrier  
**OGWSD-40G3-T3**



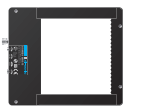
Packaging technology

### Counting objects in a tubular bag machine



Several different objects are packaged in a tubular bag. The frame light barriers of the OGWSD series, which are available in many sizes, are suitable for counting in this situation. Parts falling are reliably detected in the detection range of the frame light barrier. Adjustable pulse stretching ensures error-free counting processes. Target specifications for piece counts in the bag can be effortlessly monitored. If necessary, in the **Peak value** sensor mode, the type of object can be monitored based on the maximum shading.

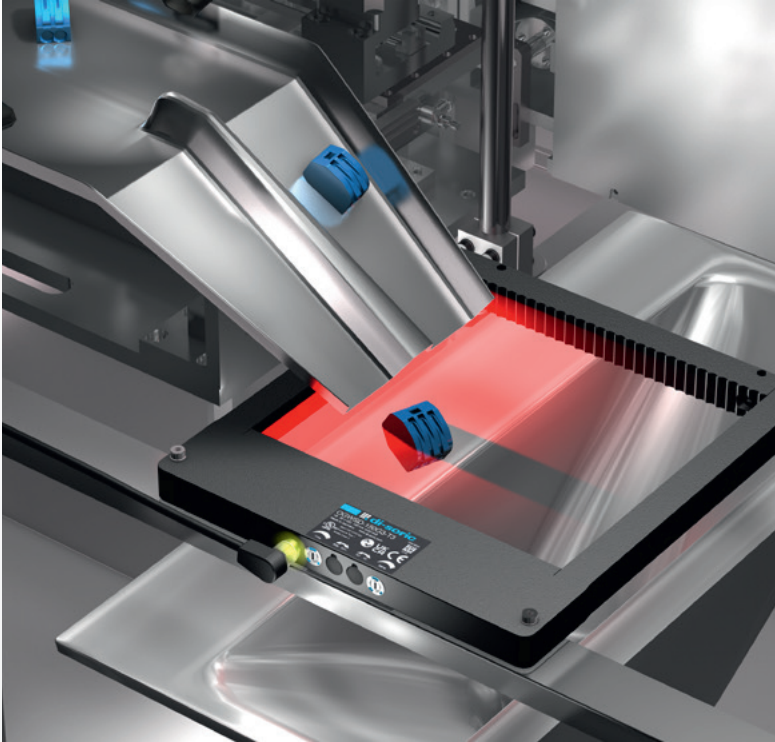
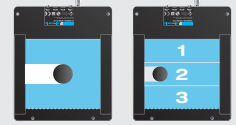
Frame light barrier  
**OGWSD-100G3-T3**





Assembly and handling technology

## Counting good / bad parts, determining falling position



A vision sensor checks electrical contacts and sorts these into good and bad parts. Good and bad parts are separated and slide downward individually and fall through different regions (zones) of a frame light barrier from the OGWSD series. The frame light barrier has up to four zones. It recognizes the zone through which parts are currently falling and transfers counting signals and information to the zone with the IO-Link process data.

Frame light barrier  
**OGWSD-150G3-T3**



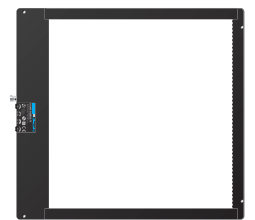
Rubber and plastics

## Plastics profile presence check



With an extrusion machine, long profiles are produced from plastic material. After exiting the machine, the presence of the profile is continually monitored. Large, mechanically robust frame light barriers of the OGWSD series are ideally suited for checks. The detection ranges are up to 300 x 398 mm. Large and small profiles are recognized position-independently within the mechanical opening. The sensitivity setting of the sensor is adjusted intuitively via a potentiometer directly on the sensor.

Frame light barrier  
**OGWSD-250G3-T3**



# FRAME LIGHT BARRIERS

## OGWTI WITH IO-LINK

**The compact, fast series with an activation time of 0.05 ms for integrating assembly machinery – can be immediately installed and operational**

The compact OGWTI in the fork design are range sensors that recognize objects independent of object position in the detection range. They are eminently suited for the detection of very small parts. The multifunctionality of the OGWTI series is expanded with the additional sensor modes for detection of submersing objects and for differentiation and verification of larger objects.

### Dual operating concept

- Via membrane keypad and IO-Link

### Membrane keypad for setting on the sensor

- Teach
- Sensitivity
- Static / dynamic
- NO/NC
- Calibration in installation situation

### Connection

- Connector M8, 4-pin (up to 2 switching outputs)

### Push-pull output

- pnp or npn function in one device

### 1 Multifunction input or 2 switching outputs

- Maximum flexibility with inputs and outputs - e.g. for signaling soiling, parallel operation

### Position-independent object detection

Easy handling and commissioning

### Activation time 0.05 ms - independent of size

Ideal for the recognition of very quickly falling objects in highly dynamic processes

### Recognition of objects from Ø 0.7 mm (depending on size)

Small, falling objects can be recognized process-reliably in the entire detection range of the OGWTI with the **dynamic** sensor mode, even in case of soiling

### IO-Link - Ready for digitization

Sensor identification, configuration and diagnosis, remote maintenance option, quick exchange of sensor due to parameter storage in IO-Link master

### 4 sensor modes: new application fields for frame light barriers

In addition to the recognition of falling objects, the OGWTI is suited for feature, presence and position checks within the detection range

### Open fork format



### Practically no blind spots

Object detection already a few millimeters from the front edge of the leg

### Compact size:

Little space required - optimized for installation in machinery

# AN OPEN END

## Extensive room for numerous possible solutions

4 sizes with the detection ranges from a minimum of 30 x 30 mm to a maximum of 100 x 100 mm ensure that the OGWTI can find their place in any frame light barrier application in machinery.

### Slim design with small dimensions

- Compact metal housing in a small size:  
Robust, small design, ideal for integration in compact machinery
- Width of the central portion only 34 mm in all sizes
- Operating elements and connectors oriented in the center for easier assembly
- Thickness and leg width each only 12 mm  
for easy integration in assembly machinery



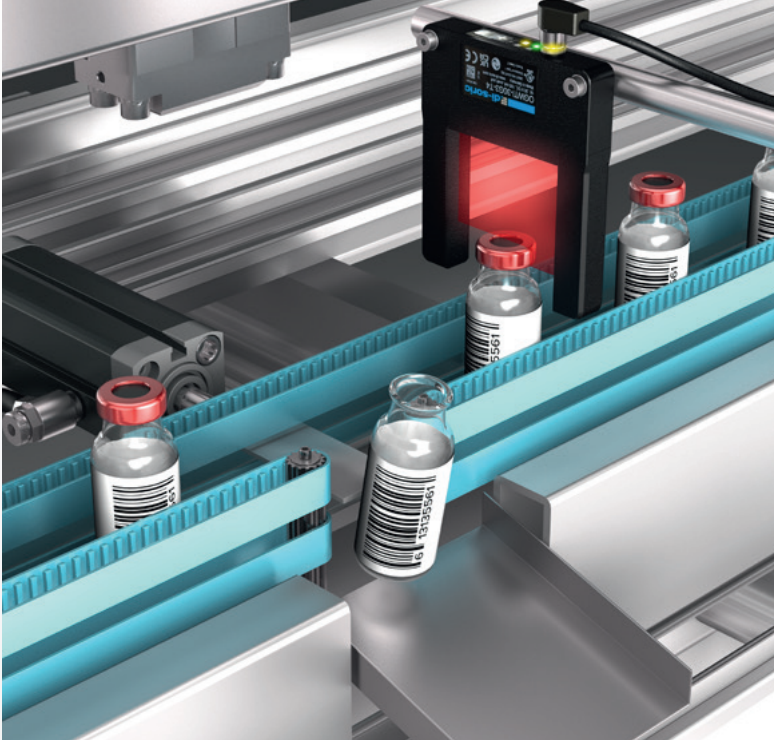
Type designation	Item no.	Housing dimensions	Detection range	Ø Resolution dynamic	Ø Resolution static
OGWTI-30G3-T4	213353	66 x 54 x 12 mm	30 x 30 mm	0.7mm	1 mm
OGWTI-50G3-T4	213354	86 x 74 x 12 mm	50 x 50 mm	1.0mm	1.5mm
OGWTI-80G3-T4	213355	116 x 104 x 12 mm	80 x 80 mm	1.5mm	2mm
OGWTI-100G3-T4	213356	136 x 124 x 12 mm	100 x 100 mm	2.5mm	3mm

# APPLICATION EXAMPLES

## OGWTI

### Packaging technology

#### Check: cap present?



Bottles made of glass are used for packaging liquid medications and vaccines. With high production speeds it must be ensured that the cap is present. With an activation time of 0.05 ms, frame light barriers from the OGWTI series meet high-speed requirements. The OGWTI in the fork design is operational immediately. The expanded detection range, the **Shading** sensor mode, and the IO-Link configuration make a format conversion to new containers possible in a few seconds.

Frame light barrier  
**OGWTI-50G3T4**



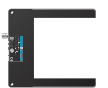
### Assembly and handling technology

#### Ejection control for assembly machine



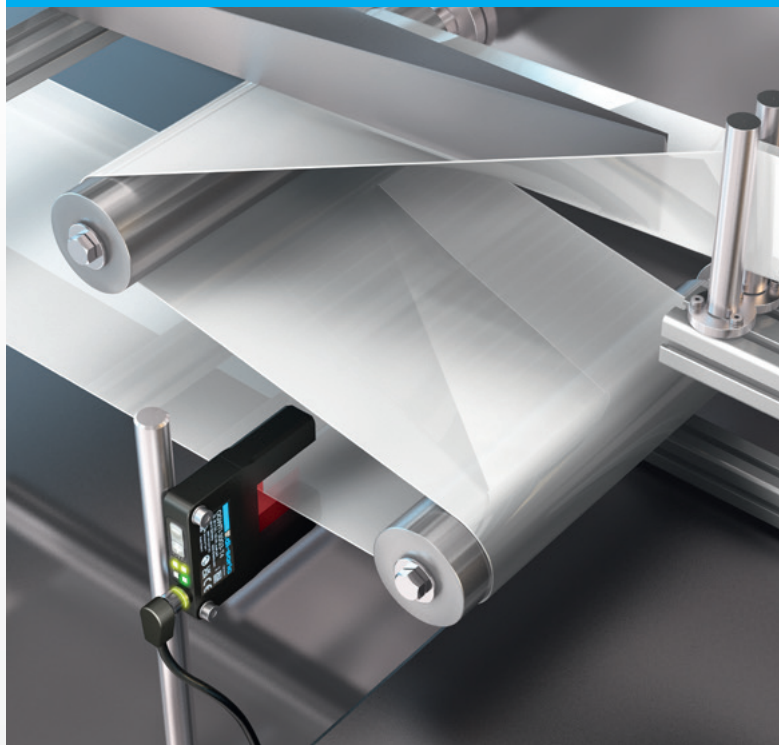
In an assembly machine, electromechanical switches are assembled and produced. The parts produced are conveyed from the machine and a backlog needs to be avoided. The compact frame light barrier from the OGWTI series can easily be integrated in the machine and monitors the material flow of finished parts. The second switching output and IO-Link optimize the availability of the system by monitoring the function and the degree of soiling of the sensor.

Frame light barrier  
**OGWTI-80G3T4**



Packaging technology

## Path edge monitoring in sealed bag machine



With a sealed bag machine, products are packaged in non-transparent bags. Prior to the folding process of the bag, the position of the packaging film in the machine needs to be monitored. The compact frame light barrier from the OGWTI series checks in the **Shading** sensor mode the edge position of the film. The position can be evaluated with two fast switching outputs or as an IO-Link process value.

Frame light barrier  
**OGWTI-30G3T4**



Packaging technology

## Recognize and count tablets



In a packaging machine, tablets and pills are portioned and packaged individually into bags. The tablets are then conveyed assorted via filling hoppers and dosed via tubes. Several compact frame light barriers of the OGWTI series recognize and count small and large tablets in a sensor setting in the **Dynamic** sensor mode. Through the dynamic evaluation procedure, quickly falling, small objects can be safely recognized even in case of soiling through tablet dust.

Frame light barrier  
**OGWTI-30G3T4**



# MORE FLEXIBLE, MORE TRANSPARENT, MORE EFFICIENT PRODUCTION PROCESSES WITH IO-LINK

IO-Link is a worldwide communication standard according to IEC 61131-9. Sensors and actuators with an immense range of functions and capabilities become intelligent and active process devices in the field with IO-Link. Production processes thereby become more flexible, more transparent, more efficient and more cost-efficient. IO-Link transforms sensors into digital products and enables Industry 4.0 systems designs.

## DI-SORIC PRODUCTS AND THEIR IO-LINK BENEFITS

### 1 Configuration instead of specific hardware



Using a configuration coordinated with the application case, the areas of use of frame light barriers in machines and systems can be expanded without special hardware. The four sensor modes of the OGWSD and OGWTI series make many new application fields possible.

In the “static” sensor mode, moving and non-moving objects can be recognized. The sensor mode “dynamic” is ideally suited for the reliable detection of small, moving objects given a high degree of soiling.

The “peak value” sensor mode makes the differentiation and verification of falling objects possible.

The “shading” sensor mode makes checking objects for features, presence and position in the detection range of the sensor possible.

### 2 Preventive maintenance through diagnosis



The reliable function of sensors is of the highest importance in automation. IO-Link frame light barriers from di-soric with IO-Link transfer a status bit for functional reliability of the switching output in the process values. Stable operation of the sensor is thereby ensured through timely cleaning of the sensor.

Through the IO-Link diagnostic functions on device status and maximum and minimum process values, commissioning can be optimized and shortened. Diagnosis supports coordinated service cycles and the use of remote maintenance of systems.

### 3 Parallel operation: Fast signals and IO-Link communication



A frame light barrier from the OGWTI series checks the presence of caps on a high-performance packaging system. The extremely fast switching output with an activation time of 50  $\mu$ s is connected directly to the machine control. Simultaneously, process data are transferred cyclically on pin 4 via IO-Link for functional reliability.

Through the IO-Link configuration of switching points in parallel operation, changing formats in ongoing operation can be quickly and efficiently implemented.

Application "Check: cap present?" > see page 12

# UNIVERSAL ACCESSORIES

## CONNECTION TECHNOLOGY

In the area of connection technology, a wide variety of electrical contacts for customized industrial installation are available.



## SIGNAL PREPARATION

Logic distributors can link two sensors with one another (e.g. AND/OR function). Function adapters change switching signals (e.g. npn, pnp, inversion, pulse stretching), counter modules count switching signals.



## UNIVERSAL MOUNTING TECHNOLOGY

di-soric offers tailored bracket and fastening systems for all of its sensors, image processing systems, identification systems and lighting.



## CONFIGURATION AND TESTING DEVICES

Configuration and testing devices facilitate function tests of sensors. IOL Master and IOL Portable enable the display of measured values as well as the diagnoses and the configuration of IO-Link-capable sensors without additional control. The sensor tester is suited for pnp and npn sensors.



**IOL MASTER**

Operation on PC via USB



**IOL PORTABLE**

Handheld operation without PC



**SENSOR TESTER**

ST 7PNG

**SOLUTIONS. CLEVER. PRACTICAL.**

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