

# Vision sensors

## OsiSense XUW

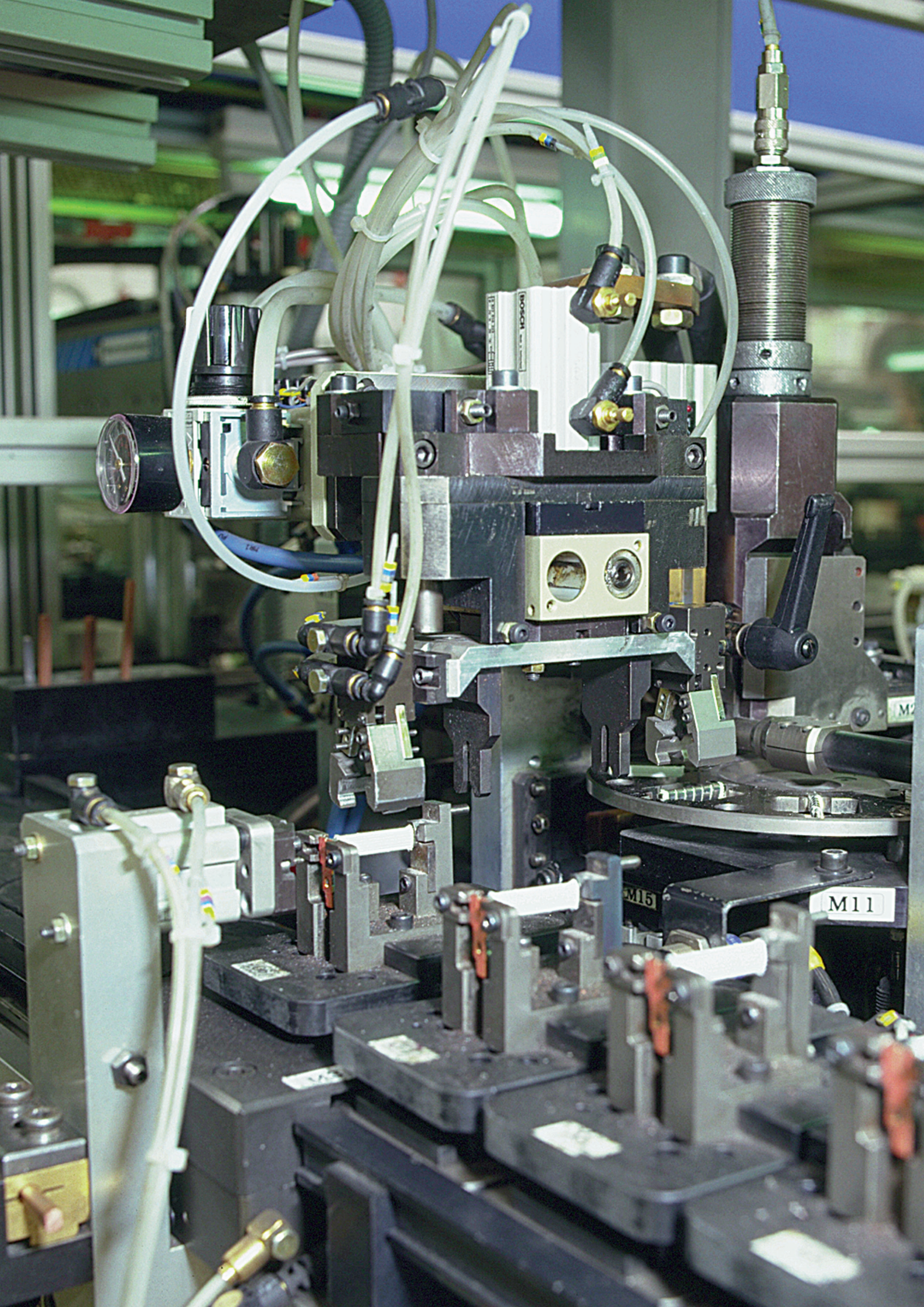
Catalogue



Telemecanique

Sensors







# A high performance vision sensor that is simple to install and configure

The new **OsiSense XUW** vision sensor assists quality control of your manufactured parts.

Configuration of the sensor is simplified due to an intuitive configuration interface and interactive online help.

## > Integrate it easily in your machines

The compactness of the OsiSense XUW vision sensor enables easy installation at the point where the parts must be checked.

## > Reduce configuration time

Configure the sensor in only 3 simple steps.

## > Evolve with your production

The use of 5 mixable interface tools means that you can add up to 32 simultaneous checks on a part.

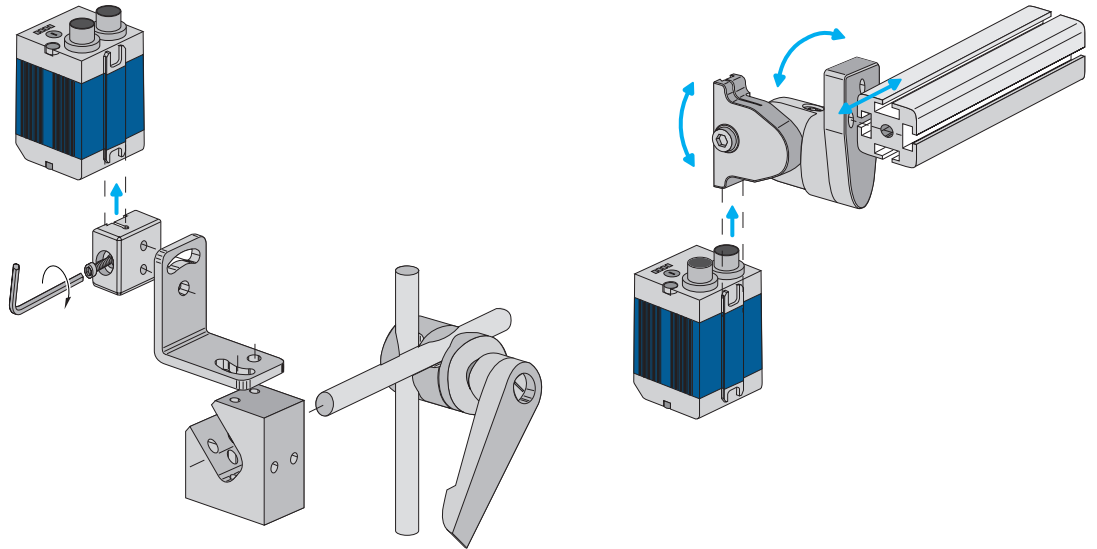
Simply easy!™



# > Integrate it easily in your machines

The OsiSense XUW vision sensor is one of the most compact on the market. This compactness enables easy installation in your machines at the point where the part must be checked. Numerous mounting accessories enable easy positioning, orientation and fixing of the sensor. Its flexible and adjustable lighting eliminates unwanted reflections in order to obtain the best possible image and optimise your checking.

The **most compact** on the market



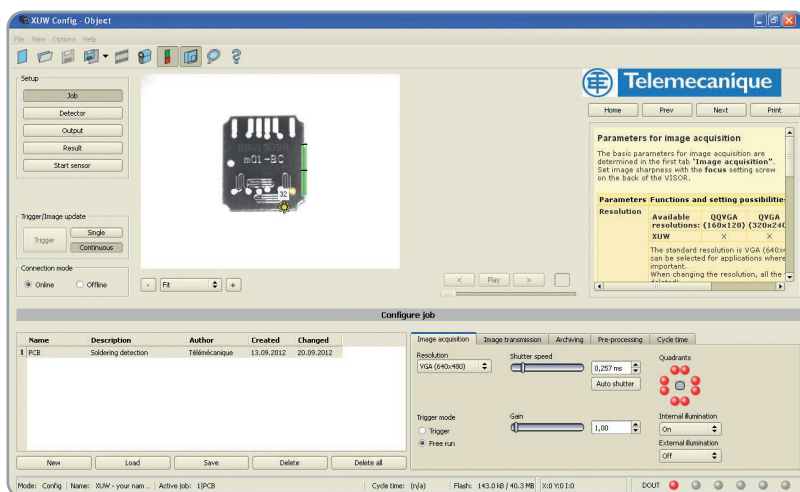
# > Reduce configuration time

Nothing could be faster or simpler than configuring the OsiSense XUW vision sensor. The configuration interface, installed on your PC, guides you by offering predefined parameters.

Only **3 steps and it's done!**

**Configuration in 3 steps**  
 1 Program  
 2 Tools  
 3 Inputs/Outputs

**Connected mode or simulation mode**



**Interactive online help** available at each step of the configuration

**Lighting adjustment**



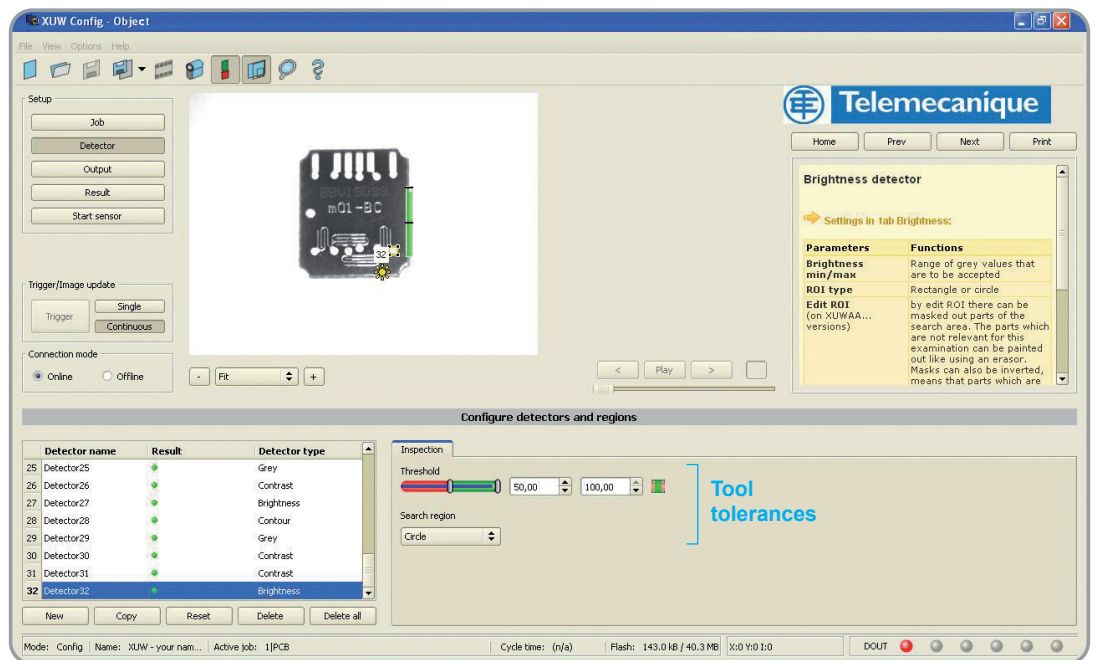
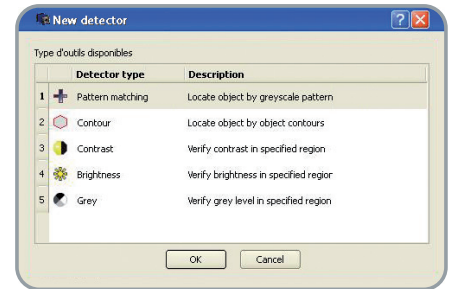
# > Evolve with your production

## The configuration interface offers you 5 tools with “unrestricted” usage

5 tools  
32 checks

By using these 5 tools, up to 32 different checks can be performed on the same manufactured part. The tolerance of the tools is adjustable in order to set the acceptable limits.

Select from these 5 tools for optimum checking of your manufactured parts



## Traceability of your configurations and checks saved

All images (good and bad), as well as configuration data, can be saved either in the sensor memory or on the network





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# Photo-electric sensors

## OsiSense XUW

### Vision sensors for inspection of manufactured parts

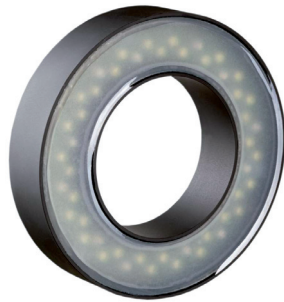
Product type		Vision sensors, configurable via PC software	
		White light	Red light
Applications		For manufactured parts: <ul style="list-style-type: none"> <li><input type="checkbox"/> quality control, presence, position, orientation, sorting, integrity</li> <li><input type="checkbox"/> marking checks</li> <li><input type="checkbox"/> guiding and gripping</li> </ul>	
Type of lighting		8 LEDs	
Focal length		6 mm and 12 mm, adjustable by potentiometer	
Detection distance/ size of field of vision		Focal length 6 mm	Minimum distance: 6 mm for a 5 x 4 mm field of vision. Maximum distance: 350 mm for a 260 x 175 mm field of vision.
		Focal length 12 mm	Minimum distance: 30 mm for an 8 x 6 mm field of vision. Maximum distance: 650 mm for a 250 x 170 mm field of vision.
Resolution		WVGA: 736 x 480 pixels	
Materials		Front face: PMMA. Enclosure: ABS and aluminium M12 connectors: metal	
Degree of protection		IP 65/67, depending on connector	
Operating temperature		0...50 °C	
Dimensions (without connectors)		65 x 45 x 45 cm	
Nominal voltage		24 V $\overline{\text{DC}}$	
Type of discrete I/O		4 outputs/2 inputs, PNP or NPN	
Configuration software		Number of jobs	2 jobs, selectable by discrete input
		Parts inspection tools	5 tools: pattern matching, contour, contrast, brightness and grey-scale level. These tools can be combined to obtain up to 32 check zones in a single job.
		Frequency and cycle time	25 images/second max. Typical cycle times: pattern matching (40 ms), contour (60 ms), contrast (4 ms), brightness (4 ms) and grey-scale level (4 ms).
Network interfaces		Ethernet IP	
Certifications		CE	
References		<b>XUWSA06W and XUWSA12W</b>	<b>XUWSA06R and XUWSA12R</b>
Page		12	12



More technical information on [www.tesensors.com](http://www.tesensors.com)



Additional lighting			Accessories
Direct linear lighting	Ring lighting	Back-lighting	Brackets, clamps, pre-wired connectors and jumper cables



To eliminate reflections generated by light from the sensor.	To ensure a consistent image of reflective or irregularly-shaped parts.	To highlight a silhouette and through holes, based on the shadow play principle.	Brackets and clamps for fixing and mounting sensors and lighting devices.
LED, white or red	LED, white or red	LED, red	Pre-wired connectors and jumper cables for connection of sensors and lighting devices.
–	–	–	
–	–	–	
–	–	–	
Front face: PMMA Enclosure: ABS	Front face: PMMA Enclosure: aluminium	Front face: acrylic Enclosure: aluminium	
IP 65	IP 65	IP 30	
0...50 °C	0...50 °C	0...35 °C	
45 x 45 x 24 mm	Ø 115 mm, depth 25 mm	47 x 47 x 15 mm 94 x 94 x 10 mm 133 x 133 x 10 mm	
24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
CE	CE	CE	
<b>XUZLW001 and XUZLR001</b>	<b>XUZLW002 and XUZLR002</b>	<b>XUZLR033, XUZLR063 and XUZLR103</b>	<b>XUZASW00●, XZC●B●● and XGSZ●2E45●●</b>
12	12	12	12 and 13



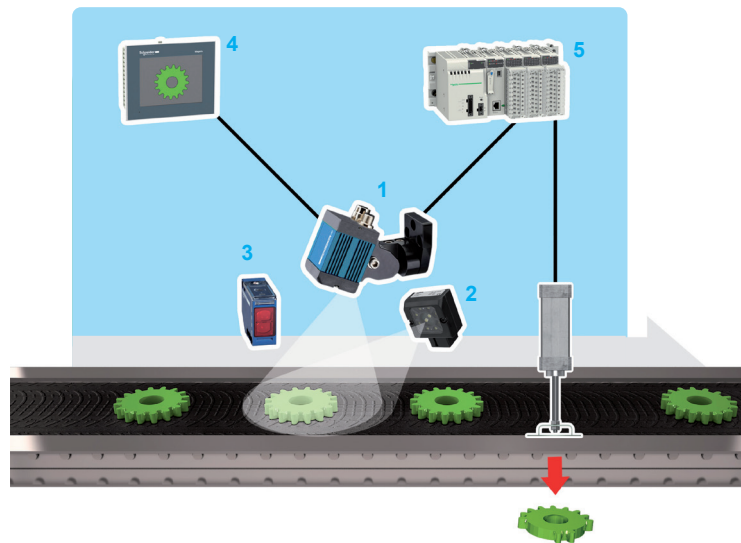
More technical information on [www.tesensors.com](http://www.tesensors.com)

# Photo-electric sensors

## OsiSense XUW

Vision sensors for inspection of manufactured parts

### General



- 1 : Vision sensor XUW.
- 2 : Additional lighting.
- 3 : Photo-electric sensor.
- 4 : Human/machine interface.
- 5 : Automation platform.



Vision sensor



Direct linear lighting

With high industrial production rates and a constant need to improve quality and boost profits, industrial companies are increasingly anxious to automate their production methods.

Vision sensors for the inspection of manufactured parts provide an answer to these concerns.

Vision sensors, such as OsiSense XUW, allow checking of high rate production operations and ensure good repeat accuracy of checking. These XUW sensors can also be used to manage object flows.

#### Types of application for manufactured parts:

- quality control
- presence
- position, orientation, sorting, integrity
- checking markings
- guiding and gripping

#### Operating principle

Once the application to be created is well defined, i.e. when "good" and "bad" parts have been identified, implementation of the XUW vision sensors is simple.

The sensor is configured via the software. This software is supplied on CD-ROM and must be installed on a PC. An image of the "good" part and its acceptance tolerances are saved in the XUW sensor memory. Once the sensor has been configured, it is independent. The PC is no longer required.

Inspection results: the "good part" or "bad part" result is obtained via discrete outputs or Ethernet IP network outputs.

The inspection of parts is therefore simple to perform.

#### Presentation

The Telemecanique Sensors "vision" offer comprises:

- 4 vision sensors
- additional lighting (if necessary, depending on the application)
- configuration software
- fixing, mounting and cabling accessories

#### OsiSense XUW vision sensors

The main characteristics of these sensors are as follows:

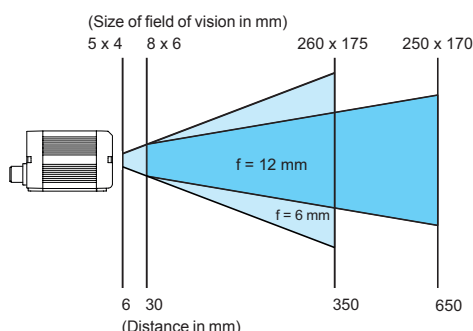
- a grey-scale image
- compact size: 45 x 45 x 65 mm
- rugged construction: metal enclosure and connections
- connection by M12 connector
- a wide range of focal adjustment, for image sharpness
- white or red light, via LED (integrated and adjustable)
- integrated lens:
  - 12 mm focal length: high precision and long distance
  - 6 mm focal length: for close object and wide field of vision



"Good" part  
(marking complete)



"Bad" part  
(marking incomplete)





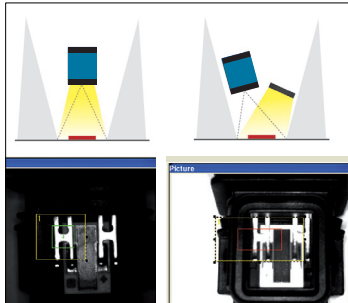


Figure 1: Direct linear lighting

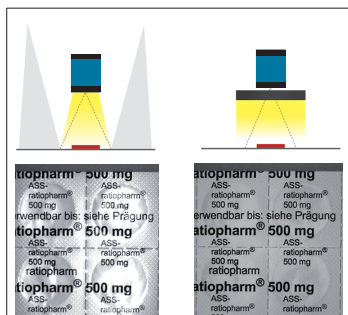


Figure 2: Ring lighting

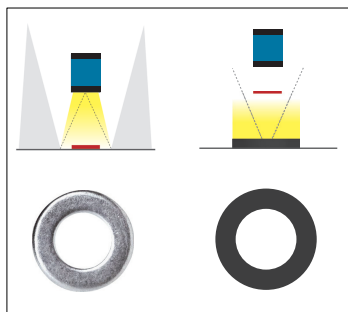
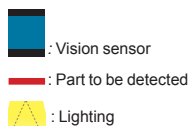


Figure 3: Back-lighting

Key for the 3 figures:



### Presentation (continued)

#### Configuration software (see following pages)

In 5 simple steps, without any special training, the configuration software allows the user to:

- obtain the image quality needed to view the flaw being detected
- select the appropriate tool for the required inspection and set tolerances:
  - pattern matching
  - contour
  - contrast
  - brightness
  - grey-scale level
- assign inspection results to the discrete outputs or to the network outputs
- test the jobs created and view statistics
- save the jobs and set up the sensor

Inspections can be viewed using “viewer” mode.

#### Additional lighting

XUW sensors have integrated lighting.

However, it may be necessary to add further lighting for correct viewing of the flaw being sought.

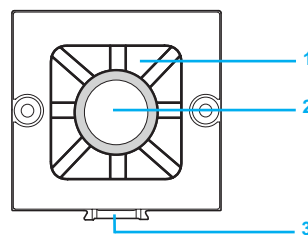
Three types of lighting, with white or red light, are offered:

- **direct linear lighting** to eliminate a reflection, on a part, generated by direct light from the sensor (Figure 1).
- **ring lighting** gives a consistent and uniform image of a highly reflective or irregularly-shaped part, for example a sheet of aluminium foil (Figure 2).
- **back-lighting** based on the shadow play principle, makes it possible to obtain more sharply contrasted contours. Object = black, light = white (Figure 3).

#### Accessories

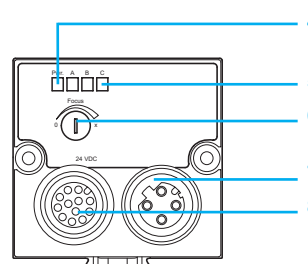
To simplify the installation of lighting, Telemecanique Sensors offers installation and adjustment accessories, jumper cables and pre-wired connectors in PUR.

### Description of vision sensors



#### On the front panel:

- 1 LED lighting. White or red light, depending on model
- 2 Lens. Focal length 6 or 12 mm, depending on model
- 3 Dovetail fixing



#### Rear view:

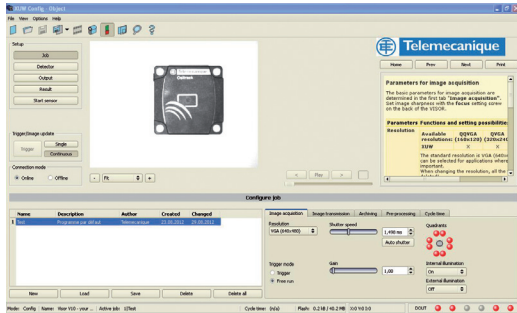
- 4 Operating LED: green
- 5 A, B and C outputs LED: yellow
- 6 Focal adjustment potentiometer
- 7 Metal M12 connector, for connection to the Ethernet IP network
- 8 Metal M12 connector, for the power supply and the inputs/outputs

In 5 steps, the software installed on a PC allows you to configure your application. The software is supplied on CD-ROM, in English, French and German.

### Step 1: adjustment of image quality

This step is used to:

- adjust the focusing for image sharpness
- adjust the exposure time
- modify the number of lighting LEDs used or switch off the lighting
- use an external trigger (sensor) or an internal trigger (in continuous mode)



### Step 2: tool selection and setting of tolerances

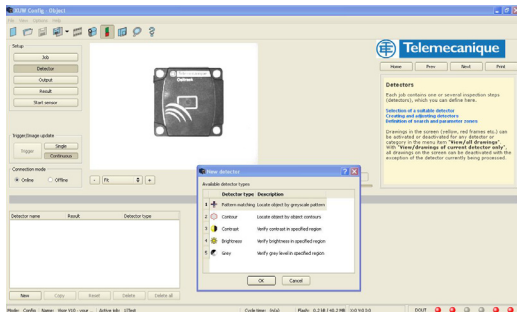
#### Tool selection

This step is used to select the tool or tools best suited to the required inspection.

The 5 inspection tools are:

- pattern matching (typical cycle time: 40 ms)
- contour (typical cycle time: 60 ms)
- contrast (typical cycle time: 4 ms)
- brightness (typical cycle time: 4 ms)
- grey-scale level (typical cycle time: 4 ms)

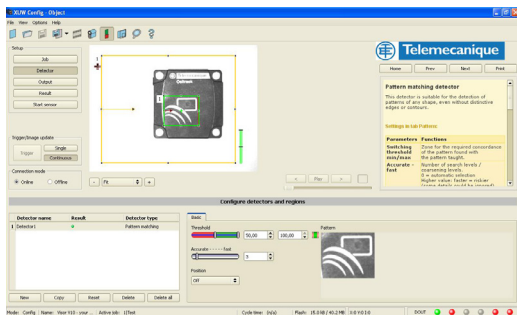
The 5 tools can be combined to obtain up to 32 check zones for a single part.



#### Setting of tolerances

This step is used to set the detection zone (in yellow), the teach zone (in green) and to set the tolerances of the tool or tools selected:

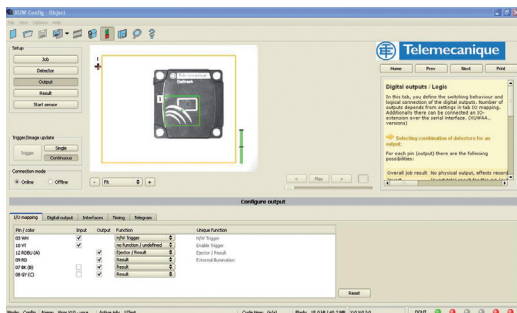
- acceptance threshold
- rotation angle
- mask modification
- position checking

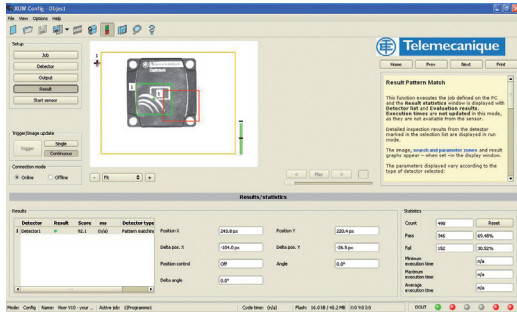


### Step 3: I/O module assignment

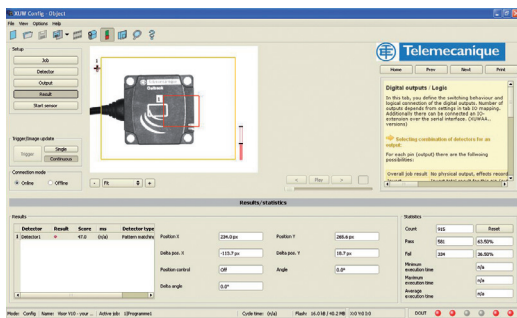
This step is used to:

- specify the assignment of discrete I/O
- configure the Ethernet IP network output
- assign logic functions for each output
- set a switching time

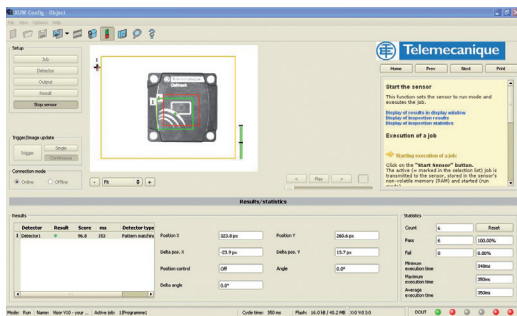




Good part: marking complies



Bad part: marking does not comply



#### Step 4: tests and results

This step is used for testing the jobs created on “good” and “bad” parts:

- good part: teach zone green and red and result bargraph green
- bad part: teach zone all red and result bargraph red
- score display (correspondence in relation to part saved, as %)
- display of X and Y positions
- display of rotation angle

#### Step 5: saving

This step is used to save the jobs in the vision sensor’s memory and to start the application.

At this stage, the cycle time for each check can be seen. Once the program has been saved in the sensor, the computer is no longer necessary. The sensor operates independently.

# Photo-electric sensors

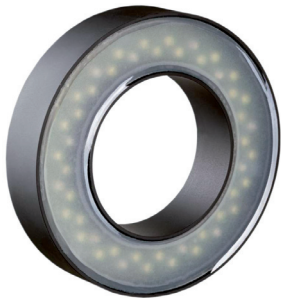
## OsiSense XUW

Vision sensors and additional lighting systems

Fixing and mounting accessories



XUWSA●●W  
XUWSA●●R



XUZL●002



XUZL●001



XUZLR033



XUZASW003



XUZASW002



XUZASW001



XUZASW009



XUZASW008



XUZASW006

### Vision sensors

Description	Nominal voltage	Focal length	Reference	Weight kg
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#### Vision sensors with white light

Vision sensor	24 V $\overline{\text{---}}$	6 mm	XUWSA06W (1)	0.160
		12 mm	XUWSA12W (1)	0.160

#### Vision sensors with red light

Vision sensor	24 V $\overline{\text{---}}$	6 mm	XUWSA06R (1)	0.160
		12 mm	XUWSA12R (1)	0.160

### Configuration software

Configuration of XUW vision sensors requires the use of software installed on a PC. The software is provided on a CD-ROM supplied with the sensor. Up-dates are available from our web site [www.tesensors.com](http://www.tesensors.com).

### Additional lighting (if necessary, depending on the application)

Description	Nominal voltage	Size in mm	Reference	Weight kg
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#### Direct linear lighting by LED

White light	24 V $\overline{\text{---}}$	45 x 45	XUZLW001 (2)	0.060
Red light	24 V $\overline{\text{---}}$	45 x 45	XUZLR001 (2)	0.060

#### Ring lighting by LED

White light	24 V $\overline{\text{---}}$	Ø 115	XUZLW002	0.150
Red light	24 V $\overline{\text{---}}$	Ø 115	XUZLR002	0.150

#### Back-lighting by LED

Description	Nominal voltage	Size in mm	Reference	Weight kg
Red light	24 V $\overline{\text{---}}$	47 x 47 x 15	XUZLR033	0.045
		94 x 94 x 10	XUZLR063	0.160
		133 x 133 x 10	XUZLR103	0.290

### Fixing and mounting accessories

Description	Reference	Weight kg
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#### Vision sensor fixing accessories

Dovetail bracket supplied with sensor XUWSA●●●	XUZASW001	0.014
Simple bracket	XUZASW002	0.017
2-axis dovetail clamp	XUZASW003	0.210

#### Lighting system fixing and connection accessories

Clamp for direct lighting XUZLW001 and XUZLR001 (supplied with the lighting system)	XUZASW001	0.014
Bracket for ring lighting XUZLW002 and XUZLR002	XUZASW009	0.140

#### Assembly accessories

Ø 12 mm fixing rod Length: 30 cm	XUZASW006	0.260
Mounting clamp for Ø 12 mm rod XUZASW006	XUZASW008	0.039
Mounting and adjustment clamp for 2 x Ø 12 mm tubes XUZASW006	XUZASW005	0.300

(1) The sensor is supplied with:

- a dovetail fixing clamp XUZASW001
- a CD-ROM containing: the configuration software and a user guide for the software and sensor (in French, English and German)
- a screwdriver and a hexagon key.

(2) Lighting systems XUZLW001 and XUZLR001 are supplied with fixing clamp XUZASW001 and a hexagon key.



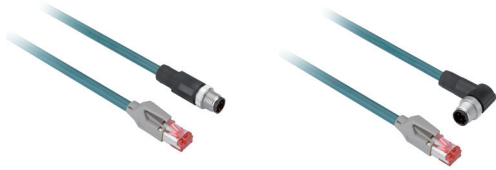
#### Cabling accessories



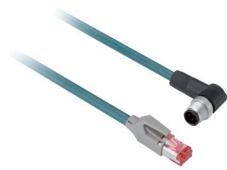
XZCPB44P14L●●



XZCPB45P14L●●



XGSZ12E45●●



XGSZ22E45●●



XZCRB4444P14L●●



XZCRB4545P14L●●



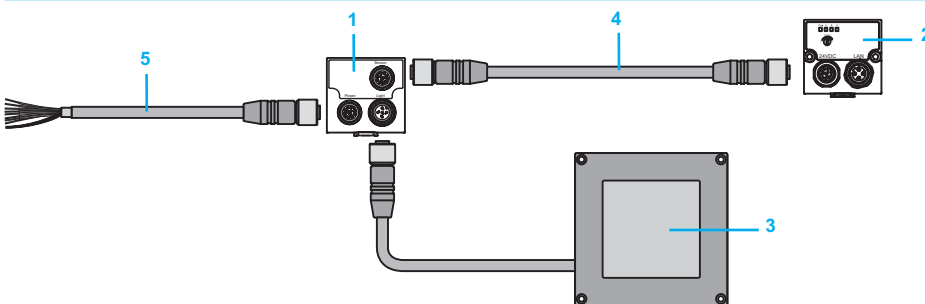
XUZSW003

Description	Cable material	Length	Reference	Weight kg
<b>For connecting the vision sensor: power supply and I/O</b>				
<b>Straight pre-wired connectors</b> shielded female M12 connector, 12-wire	PUR	5 m	XZCPB44P14L5	0.460
		10 m	XZCPB44P14L10	0.870
<b>Pre-wired elbowed connectors</b> shielded female M12 connector, 12-wire	PUR	5 m	XZCPB45P14L5	0.460
		10 m	XZCPB45P14L10	0.870
<b>For connecting the vision sensor directly to the PC when configuring, or to a network</b>				
<b>Ethernet jumper cables, M12 straight/RJ45</b> shielded cable, straight cabling	PUR	3 m	XGSZ12E4503	0.140
		10 m	XGSZ12E4510	0.440
<b>Ethernet jumper cables, M12 elbowed/RJ45</b> shielded cable, straight cabling	PUR	3 m	XGSZ22E4503	0.140
		10 m	XGSZ22E4510	0.440
<b>For connecting the vision sensor to additional lighting</b>				
<b>Jumper cable, female M12 straight/ female M12 straight</b> shielded cable, 12-wire	PUR	0.5 m	XZCRB4444P14L05	0.030
		2 m	XZCRB4444P14L2	0.120
<b>Jumper cable, female M12 elbowed/ female M12 elbowed</b> shielded cable, 12-wire	PUR	0.5 m	XZCRB4545P14L05	0.030
		2 m	XZCRB4545P14L2	0.120

#### For linking an XZCRB4●●●P14L● jumper cable, a back-lighting device and the sensor (see drawing below)

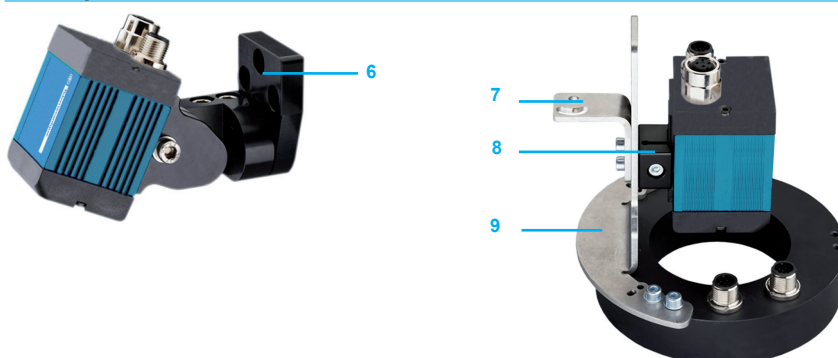
Description	Material	Size in mm	Reference	Weight kg
<b>Connection adaptor for back-lighting devices</b> supplied with a dovetail fixing clamp XUZASW001	ABS	45 x 45 x 25	XUZSW003	0.060

#### Use of the back-lighting connection adaptor



- 1 Connection adaptor XUZSW003
- 2 Vision sensor XUWSA●●●
- 3 Back-lighting XUZLR●●3
- 4 Jumper cable, female M12  
XZCRB4444P14L●● or XZCRB4545P14L●●
- 5 Pre-wired M12 connector,  
XZCPB44P14L●● or XZCPB45P14L●●

#### Examples of vision sensor installation



- 6 2-axis dovetail clamp XUZASW003
- 7 Simple bracket XUZASW002
- 8 Dovetail bracket XUZASW001  
(supplied with the sensor)
- 9 Bracket XUZASW009 for ring lighting

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X	
XGSZ12E4503	13
XGSZ12E4510	13
XGSZ22E4503	13
XGSZ22E4510	13
XUWSA06R	12
XUWSA06W	12
XUWSA12R	12
XUWSA12W	12
XUZASW001	12
XUZASW002	12
XUZASW003	12
XUZASW005	12
XUZASW006	12
XUZASW008	12
XUZASW009	12
XUZLR001	12
XUZLR002	12
XUZLR033	12
XUZLR063	12
XUZLR103	12
XUZLW001	12
XUZLW002	12
XUZSW003	13
XZCPB44P14L5	13
XZCPB44P14L10	13
XZCPB45P14L5	13
XZCPB45P14L10	13
XZCRB4444P14L2	13
XZCRB4444P14L05	13
XZCRB4545P14L2	13
XZCRB4545P14L05	13



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