

# OsiSense

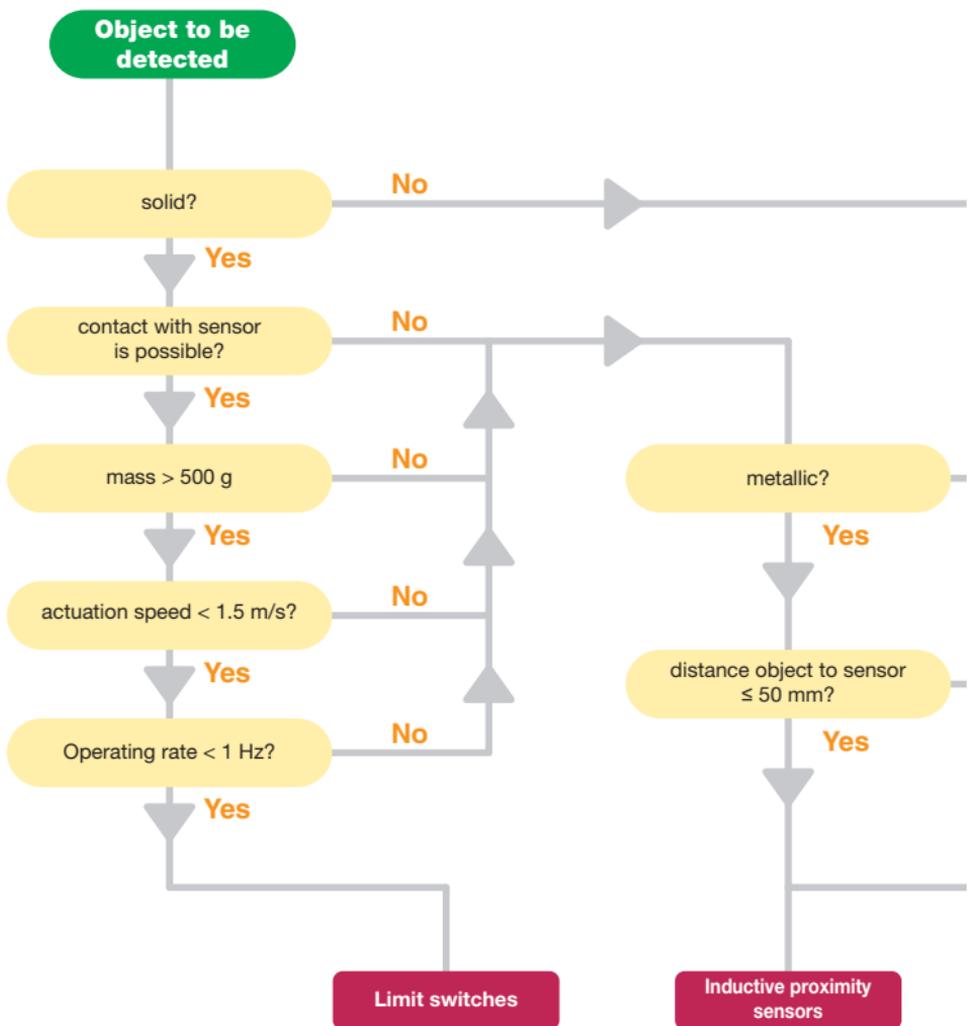
Choose the best sensing solution

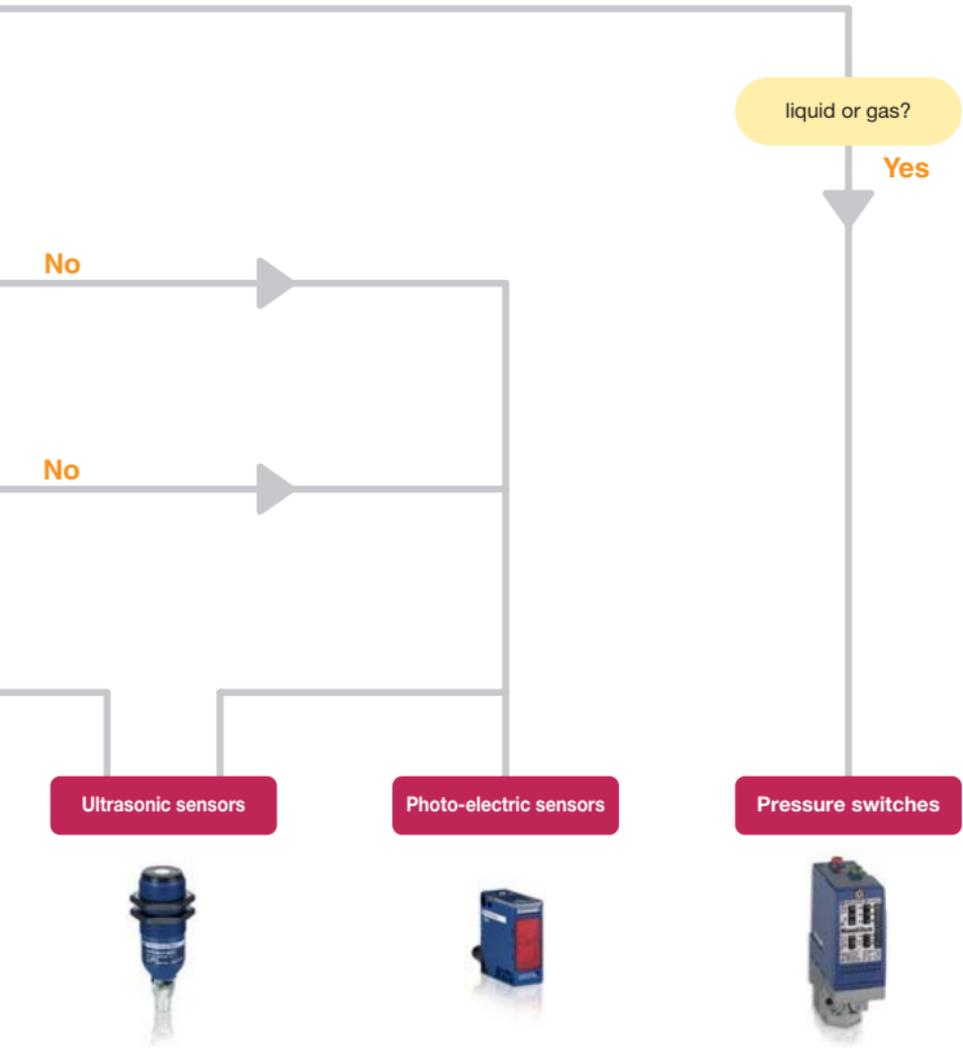


Choose & Use\*

**Schneider**  
Electric

# Choose the best sensing solution





liquid or gas?

Yes

No

No

Ultrasonic sensors

Photo-electric sensors

Pressure switches



# Sectors



	XC			XS		
Machine tools						
Food & beverage						
Packaging						
Hoisting						
Conveying						
Assembly						
Wood industry						
Automotive industry						
Paper industry						
Mines and minerals						
Pumping and water treatment						
Railroad and embedded vehicles						
Lifts & Escalators						
Service industry & building						



Recommended



Possible



Unsuitable



XX			XU			XM		

# XC Limit switches

## Technologies



Detection of all solid object by contact  
Intuitive and easy to install  
Dry contact and positive opening contact.

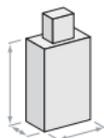


Head could be blocked with external materials (chips, sawdust,...)  
Slow actuation speed (<math><1.5\text{m/s}</math>)  
Low operating rates due to mechanical contact (~1Hz)  
wear of contact

## Choice criteria

### 1 - Choose the body

according to the environment:  
location to install and requested duty  
Choose size of product and material of body.



### 2 - Choose a head

according to the «object» to be detected  
Detection movement type:  
linear, rotary, multidirectional  
Plunger, lever, spring rod or cat whiskers

### 3 - Choose the contact

according to the automation function to achieve  
Snap action or slow break , 2, 3 or 4 contacts; NO, NC...



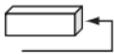
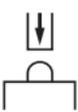
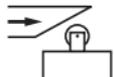
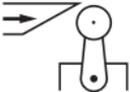
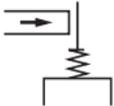
Snap  
recommended

### 4 - Choose the electrical connection

according to facility standards or machine requirements...  
M12connector or screw clamp terminal with different tapped cable entries

# XC Limit switches

## Details

	<p>presence of target for mechanical stop</p>		 <p>end plunger</p>
	<p>Cam by 30° precise guidance &lt; 1mm Linear movement</p>	<p>Detection of machine internal pieces (cams, end stop..)</p>	 <p>roller plunger or roller lever</p>
	<p>Cam by 30° medium guidance ~5mm</p>		 <p>roller lever</p>
	<p>Plan face or cylindrical target Linear or angular movement Not precise guidance ~10mm</p>		<p>Direct detection of objects (in manufacturing or material handling process)</p>
	<p>Any moving part Multi-directional movement Guidance &gt; 10mm</p>	 <p>"Cat's whiskers"</p>	

# XS Proximity sensors

## Technologies



Detection of all metals (Fe, Al, Cu, ...) without contacts (no touch)

High operating rates, fast response time and no wear, due to solid state technology for output  
Excellent resistance to industrial environments



Detects only metal objects  
Short sensing distance -> 60mm

## Choice criteria

### 1 - Choose the body size

and the sensing distance



$\varnothing \times L$

XS1, 2, 4, 5, 6

according to the environment:

location to install and requested sensing distance

Size of product (diameter and length) and sensing distance.

The diameter is expressed in metric units-threaded like a screw  
(Example: M8 for a diameter of 8mm...)



W x H x D

XS7, 8



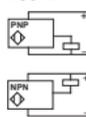
choose a sensing distance double than distance object sensor

### 2 - Choose the output type

according to the load compatibility (contactor, PLC...)

DC3 wires 24V PNP, NPN, DC or AC/DC 2 wires 24-240V...

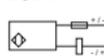
DC3 24 V



AC/DC 24...240 V



DC2 24 V



48VDC possible refer to web or essential

### 3 - Choose the electrical connection

according to facility standards or machine requirements...

Cable, connector (M8, M12 in DC, 1/2» in AC/DC), screw clamp terminals.

### 4 - Choose the output signal & function.

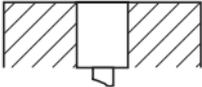
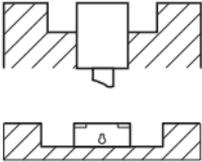
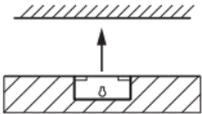
according to the automation function to achieve

Discrete (NO, NC, NO+NC)...

# XS Proximity sensors

## Details

<p>Metal</p> 	<p>Distance sensor / target 0 to 20mm</p>	<p>Detection of machine internal pieces (cams, end stop..)</p>	 <p>XS cylindrical</p>
<p>Metal</p> 	<p>Distance sensor / target 0 to 60mm</p>	<p>Detection link to material handling (trolley, wagon,...) Direct detection of objects (metallic: engine block, can...)</p>	 <p>XS square or flat</p>

	<p>Sensors suitable for flush mounting in metal: No clearance required</p> <p> The classical choice</p>
	<p>Sensors not suitable for flush mounting in metal: Side clearance required. Sensing distance greater than that for a standard flush mountable model</p>
	<p>Sensors suitable for flush mounting by teaching The maximum sensing distance according to the environment. Background suppression possible.</p>

# XX Ultrasonic sensors

## Technologies



Detection of any materials without contact (no touch)  
Insensitive to color, transparency and coefficient of reflection  
Very good resistance to industrial environments.



Sensitive to important changes of temperature, air flow, humidity  
Sound-absorptive materials and oddly-shaped objects are difficult to detect.

## Choice criteria

### 1 - Choose the body size

and the sensing distance



according to the environment:  
location to install and requested sensing distance  
Size of product (cylindrical or flat) and sensing distance  
Material of body.



- Plastic
- Metal

### 2 Choose the output signal & function

according to the automation function to achieve  
Discrete (NO, NC, NO+NC).....or analog (0-10V, 4-20mA)

DC3 24 V NO



DC4 24 V



### 3 Choose the output type

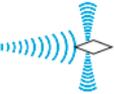
according to the load compatibility (contactor, PLC...)  
DC3 wires PNP, NPN, DC or AC/DC 2 wires...Analogue 3/4 wires

### 4 Choose the electrical connection

according to facility standards or machine requirements...  
Cable, connector (M8 or M12)

# XX Ultrasonic sensors

## Details

	<p>Detection of hard object with flat surface perpendicular to the detection axis up to 8m.</p>	<p>Diffuse (proximity) mode</p> 
	<p>Detection of pointy object: according to angle of reflection, sound could be reflected outside sensors receiver. In this case use the sensor in a reflex (reflective) mode. NO product becomes a NC product.</p>	<p>retroreflective mode</p> 
	<p>Detection of sound absorbing object use the sensor in a reflex (reflective) mode. NO product becomes a NC product.</p>	<p>retroreflective mode</p> 

# XU photo-electric sensors

## Technologies



Detection of any objects without contact (no touch), opaque, shiny or transparent. Direct detection of objects (cases, pallet...), persons, vehicles (trolley, wagon,...)

Long ranges detection -> 60m

High operating rate. Available with background suppression



Not suitable for harsh environments: dirty, dusty

Temperature range limitations

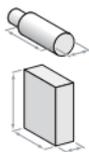
Risk of interference between photocell themselves

## Choice criteria

### 1 - Choose the body / the system

#### and the sensing distance

according to the environment and requested accuracy of detection  
Balance between location to install, access to the object one or two sides, type of objet, sensing distance and accuracy of detection desired.

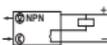
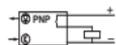


	XUB	XUM	XUK	XUX	
Size (mm)	Ø18x46	-	-	-	
ØxL LxHxP	-	11x33x20	18x50x50	30x92x71	
Sensing range	15 m	15 m	30 m	40 m	Thru beam
	4 m	5 m	7 m	14 m	Reflex
	0,6 m	1 m	1 m	2,1 m	Diffuse

### 2 - Choose the output type

according to the load compatibility (contactor, PLC...)  
DC3 wires 24V PNP, NPN, AC/DC 5 wires relay 24-240V...

DC3 24V



AC/DC Relay 24...240V



### 3 - Choose the electrical connection

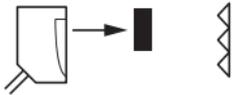
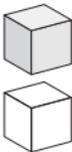
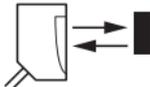
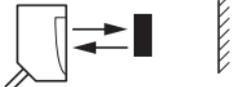
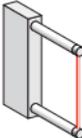
according to facility standards or machine requirements...  
Cable, connector (M8, M12), screw clamp terminals (XUX).

### 4 - Choose the output signal & function

according to the automation function to achieve  
Discrete (NO, NC, NO+NC)...

# XU photo-electric sensors

## Details

	<p>Opaque target accuracy ~1 mm Long range (up to 40m) (but necessary to install 2 parts 1 emitter &amp; receiver)</p>	<p>Thru beam or multimode + emitter</p> 
	<p>Opaque and non shiny target accuracy ~10 mm medium range (up to 15m) clean environment</p>	<p>Reflex or multimode + reflector</p> 
	<p>Same with shiny target</p>	<p>Polarised reflex or multimode + reflector</p> 
	<p>Target with sufficient reflective properties short range (up to 2m depend on target colour) clean environment</p>	<p>Diffuse or multimode</p> 
	<p>Same but short range independent of colour and/or with background suppression</p>	<p>Diffuse with background sup- pression or multimode</p> 
	<p>Very small target Limited available space High accuracy (&lt; mm)</p>	<p>XU Fork</p> 

# XM Pressure switches and transmitters

## Technologies



Detection of any industrial fluids with contact (air, water, hydraulics oils, corrosive fluids...) from -1 to 600 bars (-14.5 to 8000 Psi).

Discrete or analog output to measure a pressure, control or monitor thresholds.



## Choice criteria

### 1 - Choose the family

#### Choose the fluid, fluid pressure and temperature

according to the application

Need to manage threshold without constraint of response time



Electromechanical pressure switch with contact.

Need to manage threshold with quick response time or need to measure a pressure



Electronic pressure sensor solid state output and/or analogue.

### 2 - Choose the output type

according to the load compatibility (contactor, PLC...)

Contact C/O, DC3 wires PNP, NPN, DC NO or NC...

Analog 3/4 wires

### 3 - Choose the electrical connection

Connector M12, DIN43650A or screw clamp terminals and tapped cable entry

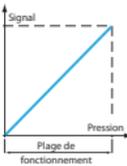
### 4 - Choose the hydraulic connection

according to facility standards or machine requirements...

G1/4A male, G1/4 female...

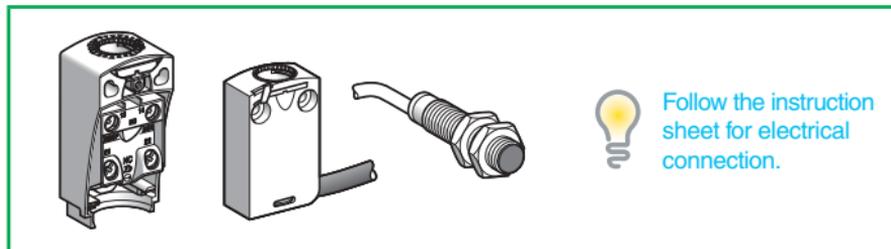
# XM Pressure switches and transmitters

## Details

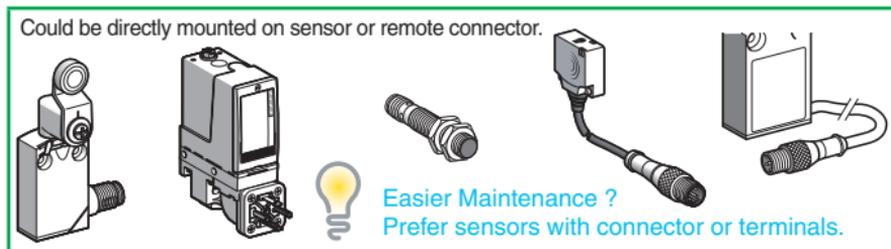
 <p>A graph with a vertical axis and a horizontal axis. A blue line starts at the origin, rises to a peak, falls to a trough, rises to a second peak, and falls to a second trough. Two horizontal lines are drawn: a red one at the top labeled 'PH' and a green one at the bottom labeled 'PB'. The peaks of the blue line are above the red line, and the troughs are below the green line.</p>	<p>Detection of thresholds without constraints of response time Fixed or adjustable differential -1 to 500 Bars (-14.5 to 7250 Psi)</p>	<p><b>XMLA/B</b></p>	 <p>A blue and grey industrial pressure switch with a red indicator light on top and a black connector on the side.</p>
	<p>Detection of thresholds with quick response time Adjustable differential -1 to 600 Bars (-14.5 to 8000 Psi)</p>	<p><b>XMLF</b></p>	 <p>A blue rectangular industrial pressure transmitter with a digital display and several buttons on the front.</p>
 <p>A graph with a vertical axis labeled 'Signal' and a horizontal axis labeled 'Pression'. A blue line starts at the origin and goes up to the right at a constant slope. Dashed lines form a rectangle around the line. The bottom horizontal axis is labeled 'Plage de fonctionnement'.</p>	<p>Transmission of continuous pressure variation with adjustment -1 to 600 Bars (-14.5 to 8000 Psi)</p>		
	<p>same without adjustment</p>	<p><b>XMLG</b></p>	 <p>A cylindrical industrial pressure transmitter with a black top and a silver body.</p>

# Electrical connections

sensors with cable / sensors with terminals



**Sensors with connector** (Male on sensor)



## Connector type

Different type of connector exist. They are function of, number of wires to connect, size of sensor, facility standards or machine requirements...

### M8

3 or 4 pins in DC



### M12

4 or 5 pins in DC



### 1/2"

3 pins in AC or AC/DC



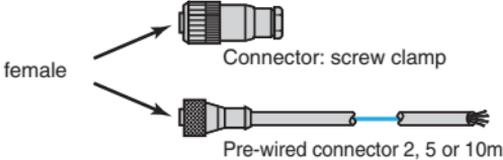
### DIN

connector in hydraulic



# Electrical connections

## Choose of female connector or female pre-wired connector

Selected sensors	Choose in table	
For limit switches and pressure switches		
M12 4P	M12 4pin	 <p>female</p> <p>Connector: screw clamp</p> <p>Pre-wired connector 2, 5 or 10m</p>
M12 5P	M12 5pin	
DIN connector	DIN connector	
For inductives sensors		
XS...M8	M8 3pin	
XS...M12	M12 4pin	
XS...U20	1/2" 3pin	
For photo-electric sensors		
XU...M8	M8 4pin	
XU...M12	M12 4pin	
XUR...M8	M8 3pin	
For ultrasonic sensors		
M8 3 pin	M8 3 pin	
M8 4 pin	M8 4 pin	
M12 4 pin	M12 4 pin	



Follow the instruction sheet for electrical connection.

# Applications

For more complex sensing needs, refer to [www.schneider-electric.com](http://www.schneider-electric.com), refer to Essential Guide of Detection or the Detection General Catalog for all information relative to sensors described below.

## XC for special applications

The most comprehensive offer of specials limits switches dedicated to severe environment and heavy duty service. Mainly for: hoisting handling, mining minerals metals and all others strong environmental constraints (foundry, welding automotive industries etc...)	
Severe duty for hoisting and materials handling applications	
Very well designed products for belt shift monitoring	
Cross Limit Switch. Dedicated products for overhead cranes and block hoists for end of travel control.	
Rotary Limit Switch	

## Safety detection

One of the most comprehensive offering of industrial safety switches on the market, complemented by a range of safety light curtains and safety mats for all the dangerous machines of all industrials sectors. Example: packaging, handling, robotics, machines tools, presses, automotive sector.	
Detection of gates or covers opening	
Guard switches with mechanical actuator	
Rotary lever and spindle operated guards switches for hinges guards	
Coded magnetic guard switches	
Detection of operators in free access zone	
Safety light curtains	
Safety mats	

# Applications

## XS for special applications

One of the most comprehensive catalogue of inductive sensors for general purpose plus for assembly machines, robotics, machine-tools, machining, packaging, materials handling, conveying..., and food and beverage industry.	
Rotation control, ferrous/non-ferrous discrimination, etc...	
Plastic case sensors for double insulation and chemicals environment compliance	
Miniature cylindrical format Plain 4 and 6.5mm or M5 for assembly applications...	
Stainless steel and plastic bodies for dedicated food & beverage applications	
Capacitive sensors XT range for detection of any object irrespective of material or conductivity	

## XU for special applications

An important choice of “applicative” products, mainly for dedicated offer for packaging, handling, assembly, conveying, food & beverage, complete the general purpose offer.	
Detection of transparencies materials	
Mark readers, luminescence sensors, color sensors	
Labels detection	
Aqueous liquid detection	
Laser technology sensors...	

# Applications

## XCC rotary encoders

A range of innovative rotary encoders that are open to field BUS and makes it much more simple to parameter the resolution. Mainly for Industry, packaging, cutting machines, robots, cranes, materials handling, automatic dispensers, printing shops, continuous processes, conveyor systems...

Incremental encoders, single turn or multiturns  
absolute encoders



Communicating absolute multiturn encoders



## XG RFID inductive identification system

With OsiSense XG, discover the RFID system, the most opened for a free choice of electronic tags and networks, and the simpler to install, connect and configure. Mainly for the conveying, material handling, logistic and building sectors... for various functions: flexible production workshops, traceability, access control...

Compact stations with integrated controller and antenna



13.56MHz electronic tags



Portable RFID terminal and network connection boxes



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