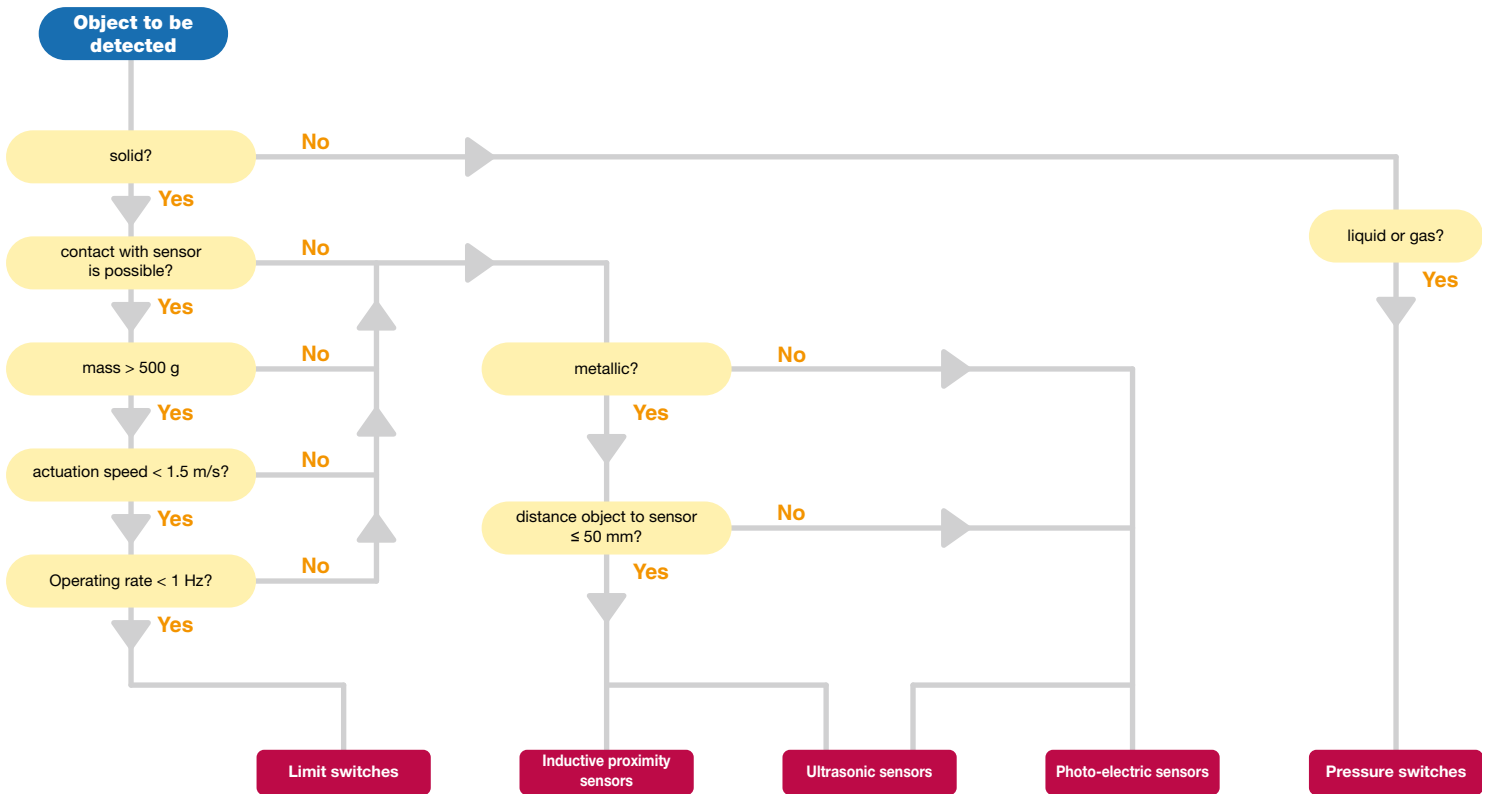


# Telemecanique Sensors

## Choose the best sensing solution Osisense



Sectors	XC 	XS 	XX 	XU 	XM 
---------	--	--	--	--	--


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

**XC Limit switches**

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 (<1.5m/s)  
Low operating rates due to mechanical contact (~1Hz)  
wear of contact.



**XS Proximity sensors**

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



**XX Ultrasonic sensors**

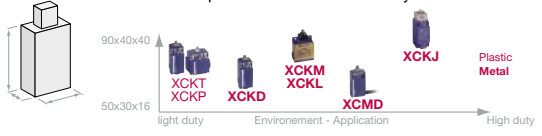
Detection of all objects  
Insensitive to color  
Very good resolution

Sensitive to humidity  
Sound-absorbing materials  
difficults to detect



**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...

**4 - Choose the electrical connection**

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

**1 - Choose the body size and the sensing distance**

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...)

**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 24V AC/DC 24...240V DC2 24V

**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)...

**1 - Choose the body size and the sensing distance**

according to the environment:  
location to install and requested sensing distance  
Size of product (diameter and length) and sensing distance.  
Material of body

**2 Choose the output signal**











according to the load compatibility (contactor, PLC...)  
Discrete (NO, NC, NO+NC)





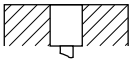
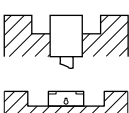
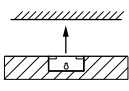
**3 choose the output type**




according to the automation function to achieve  
DC3 wires PNP, NPN, DC or AC/DC 2 wires 24-240V...  
3/4 wires.

**4 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.

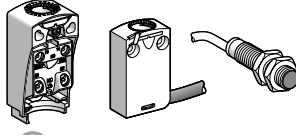
	presence of target for mechanical stop	Detection of machine internal pieces (cams, end stop...)	
	Cam by 30° precise guidance < 1mm Linear movement		
	Cam by 30° medium guidance ~5mm	Direct detection of objects (in manufacturing or material handling process)	
	Plan face or cylindrical target Linear or angular movement Not precise guidance ~10mm		
	Any moving part Multi-directional movement Guidance > 10mm		

	Distance sensor / target 0 to 20mm	Detection of machine internal pieces (cams, end stop...)	
	Distance sensor / target 0 to 60mm	Detection link to material handling (trolley, wagon,...) Direct detection of objects (metallic: engine block, can...)	
	Sensors suitable for flush mounting in metal: No clearance required The classical choice		
	Sensors not suitable for flush mounting in metal: Side clearance required. Sensing distance greater than that for a standard flush mountable model		
	Sensors suitable for flush mounting by teaching The maximum sensing distance according to the environment. Background suppression possible.		

	Detection of ha... surface perpen... detection axis u...
	Detection of po... according to an... sound could be... sensors receive... In this case use... reflex (reflective... NO product bec...
	Detection of so... use the sensor... (reflective) mod... NO product bec...

Electrical connections

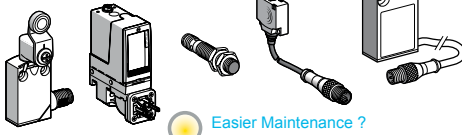
sensors with cable / sensors with terminals



Follow the instruction sheet for electrical connection.

Sensors with connector (Male on sensor)

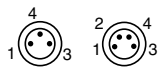
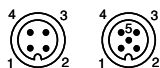
Could be directly mounted on sensor or remote connector.



Easier Maintenance ?  
Prefer sensors with connector or terminals.

Connector type

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

<b>M8</b> 3 or 4 pins in DC		<b>1/2"</b> 3 pins in AC or AC/DC
<b>M12</b> 4 or 5 pins in DC		<b>DIN</b> connector in hydraulic

ny materials without contact (no touch)  
color, transparency and coefficient of reflection  
distance to industrial environments.

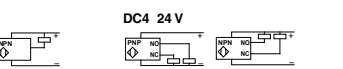
portant changes of temperature, air flow,  
ective materials and oddy-shaped objects are  
ect.

**ze**  
**stance**

environment:  
all and requested sensing distance  
(cylindrical or flat) and sensing distance  
/.

**gnal & function**

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



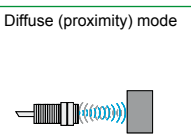
**pe**

load compatibility (contactor, PLC...)  
NPN, DC or AC/DC 2 wires...Analogue

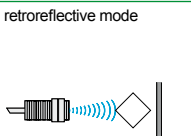
**onnection**

ility standards or machine requirements...  
or (M8 or M12)

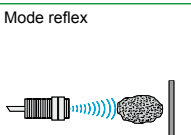
rd object with flat  
icular to the  
to 8m.



inty object:  
ngle of reflection,  
reflected outside  
er.  
: the sensor in a  
e) mode.  
comes a NC product.



und absorbing object  
in a reflex  
e.  
comes a NC product



**XU Proximity sensors**

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.

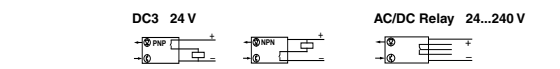
**1 - Choose the body / the system  
and the sensing distance**

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	-	-	-
ØxLxHxP	-	11x33x20	18x50x50	30x92x71
Sensing range	15 m	15 m	30 m	40 m
	4 m	5 m	7 m	14 m
	0,6 m	1 m	1 m	2,1 m
				Thru beam Reflex 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...



**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)....

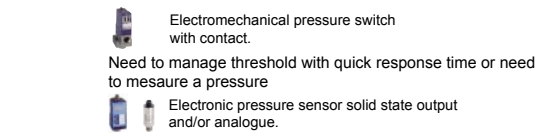
	Opaque target accuracy ~1 mm Long range (up to 40m) (but necessary to install 2 parts 1 emitter & receiver)	Thru beam or multimode + emitter
	Opaque and non shiny target accuracy ~10 mm medium range (up to 15m) clean environment	Reflex or multimode + reflector
	same with shiny target	Polarised reflex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

**XM Pressure switches and transmitters**

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 tresholds.

**1 - Choose the family**  
**Choose the fluid, fluid pressure and temperature**

according to the application  
Need to manage threshold without constraint of response time



**2 - choose the output type**

according to the load compatibility (contactor, PLC...)  
Contact C/0, DC3 wires PNP, NPN,DC NO or NC...  
Analog 3/4 wires

**3 - PHOSE 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...

	Detection of thresholds without constraints of response time Fixed or adjustable differential -1 to 500 Bars (-14.5 to 7250 Psi)	<b>XMLA/B</b>	
	Detection of thresholds with quick response time Adjustable differential -1 to 600 Bars (-14.5 to 8000 Psi)	<b>XMLF</b>	
	Transmission of continuous pressure variation with adjustment -1 to 600 Bars (-14.5 to 8000 Psi)		
	same without adjustment	<b>XMLG</b>	

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

Selected sensors	Choose in table	
<b>For limit switches and pressure switches</b>		
M12 4P	M12 4pin	female 
M12 5P	M12 5pin	
DIN connector	DIN connector	

**For inductives sensors**

Selected sensor	Choose in the table
XS...M8	M8 3pin
XS...M12	M12 4pin
XS...U20	1/2" 3pin

**For photo-electric sensors**

Selected sensor	Choose in the table
XU...M8	M8 4pin
XU...M12	M12 4pin
XUR...M8	M8 3pin

**For ultrasonic sensors**





Selected sensor	Choose in the table
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 special 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 industrial 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	



## 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...	

## XCC rotary encoders

A range of innovate 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	

## Schneider Electric Industries SAS

Head Office  
35, rue Joseph Monier - CS 30323  
F92500 Rueil-Malmaison Cedex  
France  
[www.tesensors.com](http://www.tesensors.com)

ART. 838968

Due to evolution of standards and equipment, characteristics indicated in texts and images in this document are binding only after confirmation by our departments.

Design : IGS-CP  
Photos : Schneider Electric  
Print :

[www.tesensors.com](http://www.tesensors.com)

04/2014

DIA4ED1091008EN