

Applications

For more complex sensing needs, refer to www.SeSensors.com, the Essential Guide to Sensing or the Sensors General Catalog for information relative to the sensors described below.

XC for special applications

The most comprehensive offering of special limit switches dedicated to severe environments and heavy duty service. Mainly for: hoisting, handling, mining, minerals and metals and other harsh environmental constraints (foundry, welding and automotive industries etc...)	
Severe duty for hoisting and material handling applications	
Specifically designed products for belt shift monitoring	
Cross Limit Switches - Dedicated products for overhead cranes and block hoists for end of travel control	

Safety detection

One of the most comprehensive offerings of industrial safety switches on the market, complemented by a range of safety light curtains and safety mats for dangerous machines in industrial segments. Example: packaging, handling, robotics, machines tools, presses, automotive market.	
Detection of gates or cover openings	
Guard switches with mechanical actuator	
Rotary lever and spindle-operated guard switches for hinge 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 offerings of inductive sensors for general purpose as well as assembly machines, robotics, machine-tools, machining, packaging, materials handling, conveying and food and beverage industry.	
Rotation control, ferrous/non-ferrous detection	
Plastic case sensors for double insulation and chemical environment compliance	
Miniature cylindrical format plain, smooth barrel 4 mm and 6.5 mm or M5 for assembly applications	
Stainless steel and plastic housings for dedicated food & beverage applications	
Capacitive sensors XT range for detection of insulating or conductive materials	

NOTE: Sensors described in this catalog with the exception of the safety detection products are designed to be used for standard industrial presence sensing applications. These sensors do not include the self-checking redundant circuitry necessary to allow for their use in safety applications.

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XU for special applications

A dedicated offering of application specific products for packaging, handling, assembly, conveying, food & beverage, complete the general purpose offer.	
Detection of transparent materials	
Mark readers, luminescence sensors, color sensors	
Label detection	
Liquid detection	
Laser technology sensors	

XG RFID inductive identification system

With OsiSense® XG, discover the RFID system that is comprised of 13.56 MHz electronic tags and networks. OsiSense® XG is simple to install, configure and has the ability to connect to other open RFID systems. Designed for the conveying, material handling, logistic and building sectors for various functions: flexible production work-hops, traceability, access control.	
Compact stations with integrated controller and antenna	
13.56 MHz electronic tags	
Portable RFID terminal and network connection boxes	

Interfaces and I/Os

Simplify machine architectures by connecting the sensors and actuators distributed throughout your machines via fieldbus or AS-Interface.	
IP67 distributed I/O, optimized block interface modules, plastic enclosure	
IP67 distributed I/O, modular system interface modules	
Advantys™ AS-Interface IP20 and IP67 cabling system	

The information and dimensions in this catalog are provided for the convenience of our customers. While this information is believed to be accurate, Schneider Electric reserves the right to make updates and changes without prior notification and assumes no liability for any errors or omissions.

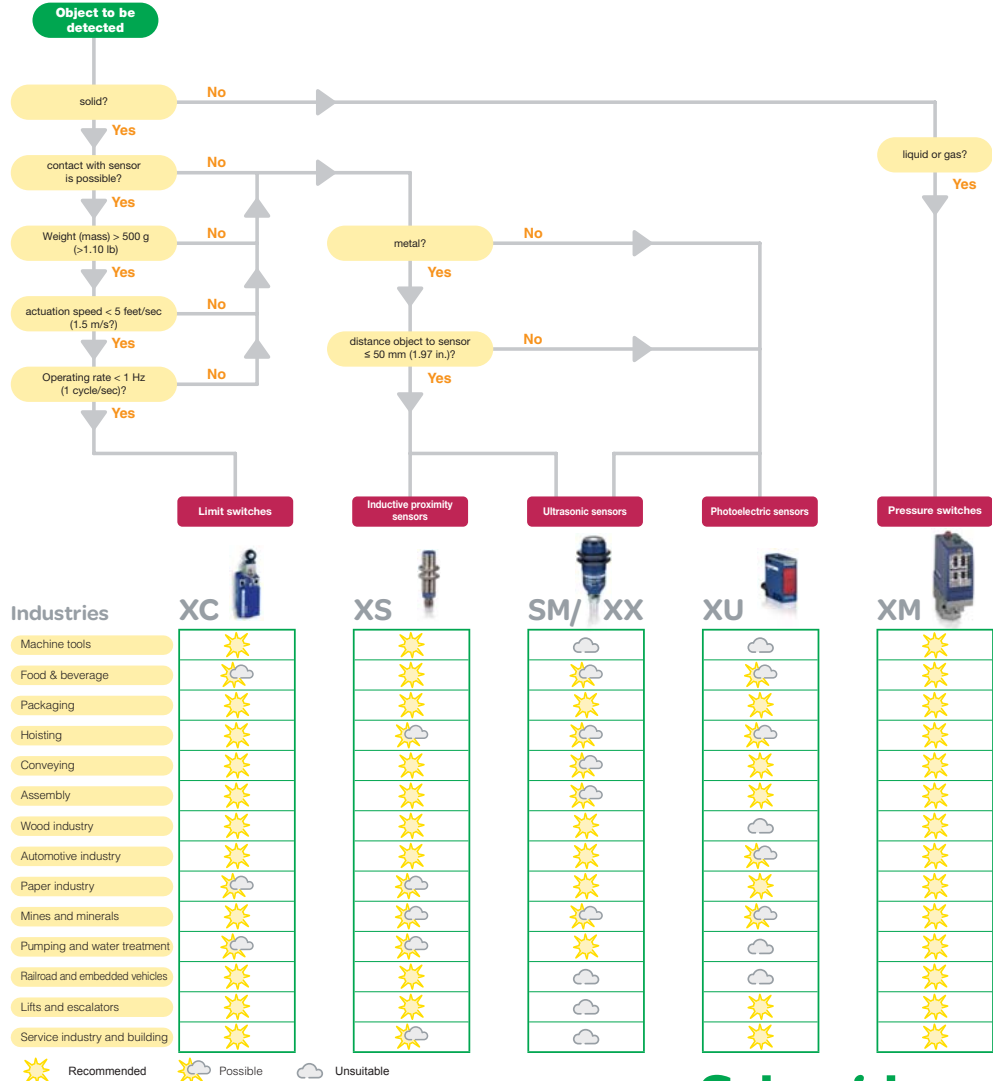
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OsiSense® Sensors

Choose the right sensing solution



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Technologies

XC Limit switches

- Detection of all solid objects by contact
- Intuitive and easy to install
- Volt free and positive opening contact

- Head could be blocked with external materials (chips, sawdust...)
- Slow actuation speed (<1.5 m/s)
- Low operating ratings limited to 1 cycle/second (~1Hz) or slower
- Mechanical contact may result in wear

XS Proximity sensors

- Detection of metals (Fe, Al, Cu, ...) without contact (no touch)
- High operating ratings, fast response time
- Excellent resistance to industrial environments

Detects only metal objects
Short sensing distance -> 60 mm (2.36 in.)

SM/XX Ultrasonic sensors

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

Sensitive to high air flow, humidity or rapid changes of temperature
Sound-absorbent materials and oddly-shaped objects may be difficult to detect.

XU Photoelectric sensors

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

Long ranges detection -> 60 m (196.85 ft)
High operating rate. Available with background suppression.

Not suitable for harsh environments: dirty, dusty
Temperature range limitations
Interference between photocells must be avoided.

XM Pressure switches and transmitters

Detection of fluids in contact with air, water, hydraulic oils, and some corrosive fluids from -14.5 to 8,700 PSI (-1 to 600 bar)
Discrete or analog output used to control or monitor pressure or vacuum thresholds in a hydraulic or pneumatic circuit.

Not suitable for detecting solid objects

Choice criteria

- 1 - Choose the body**
appropriate to the environment:
- Choose size, material and duty
- 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...
M12 connector or screw clamp terminal with different tapped cable entries

- 1 - Choose the body size and the sensing distance**
appropriate to the environment:
- Requested sensing range
- Size of product (diameter, length) and sensing range
- 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
- 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**
appropriate to the environment:
- Requested sensing range
- Size of product (cylindrical or flat) and sensing range
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)
- 3 Choose the output type**
according to the load compatibility (contactor, PLC...)
DC 3-wires PNP, NPN, or DC... Analog
3 or 4-wires.
- 4 Choose the electrical connection**
according to facility standards or machine requirements...
cable, connector (M8 or M12)

- 1 - Choose the body / the system and the sensing distance**
appropriate to the environment and requested accuracy of detection. Find a balance between location to install with access to the object (one or two sides), type of object, sensing distance and accuracy of detection desired.
- 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)

- 1 - Choose the family**
Choose the fluid, pressure range and fluid temperature
appropriate to the application.
If response time is not critical, consider
- Electromechanical pressure switch with contacts
If response time is critical or you need to monitor pressure, consider
- Electronic pressure sensor with solid-state or analog output
- 2 - choose the output type**
according to the load compatibility (contactor, PLC)
Contact C/0, DC3-wire, PNP, NPN, DC NO or NC, analog, or 3 or 4-wire
- 3 - Choose the electrical connection**
M12 connector, DIN43650A or screw clamp terminals with a tapped cable entry
- 4 - Choose the hydraulic fluid connection**
according to facility standards or machine requirements...
1/4" NPT female, G 1/4 BSP female...

Details

	Presence of target for mechanical stop	Detection of machine internal pieces (cams, end stop...)	
	Precise alignment with roller Plunger <1 mm (0.04 in.) Linear movement		
	Alignment with roller lever ~5 mm (0.20 in.)	Direct detection of objects (in manufacturing or material handling process)	
	Linear or angular movement Alignment with rod ~10 mm (0.39 in.)		
	Multi-directional movement Alignment with whisker >10 mm (0.39 in.)		

	Sensing Range 0 to 20 mm (0 to 0.79 in.)	Detection of machine internal pieces (cams, end stop, gears)	
	Sensing Range 0 to 60 mm (0 to 2.36 in.)	Detection link to material handling (trrolley, wagon) Direct detection of objects (metallic: engine block)	
	Sensors suitable for flush mounting in metal: - No clearance required The common choice		
	Sensors not suitable for flush mounting in metal: - Side clearance required - Sensing distance greater than that of a standard flush mountable model		
	Sensors suitable for flush mounting by teaching the maximum sensing range according to the environment. Background suppression is possible.		

	For detection of hard objects with flat surface perpendicular to the detection axis up to 8 m (26.25 ft)	Diffuse (proximity) mode
	For detection of irregular objects: According to angle of reflection, sound could be reflected outside the sensor's receiver. In this case, use the sensor in a retro-reflective mode. NO product becomes a NC product.	Retro-reflective mode
	For detection of sound absorbing object use the sensor in a retro-reflective mode. NO product becomes a NC product.	Retro-reflective mode
	For detection any object regardless of shape or position.	Thru-Beam

	Opaque target - Sensing range up to 40 m (131.0 ft) - Requires an emitter and receiver	Thru beam or multimode + emitter
	Opaque and non-shiny target - Sensing range up to 14 m (45.0 ft) - Requires photoelectric sensor and retro-reflective accessory	Retro-reflective or multimode + reflector
	Opaque and shiny target - Sensing range up to 11 m (36.0 ft) - Requires polarized photoelectric sensor and polarized reflector accessory	Polarized retro-reflective or multimode + reflector
	Opaque and non-shiny target - Sensing range up to 2 m (6.56 ft) depending on target color	Diffuse or multimode
	Opaque target - Short range up to 2 m (6.56 ft) - Ignore objects located beyond suppression limit	Diffuse with background suppression or multimode
	Very small target - Limited available space - High accuracy (< mm)	XU Fork

	Detection of thresholds with no response time constraints Fixed or adjustable differential -14.5 to 7,250 PSI (-1 to 500 bar)	XMLA/B	
	Detection of thresholds requiring quick response time Adjustable differential -14.5 to 8,700 PSI (-1 to 600 bar)	XMLF	
	Transmission of continuous pressure variation with adjustment -14.5 to 8,700 PSI (-1 to 600 bar)		
	Transmission of continuous pressure variation without adjustment -14.5 to 8,700 PSI (-1 to 600 bar)	XMLG	

Electrical connections

Sensors with a cable or terminal

Be sure to follow the instruction sheet for proper electrical connection.

Sensors with a connector

Could be directly mounted on sensor or remote connector

Want easier maintenance? Try sensors with a connector or terminal.

Connector types

Different types of connectors are available. They vary for function, number of wires, size of sensor, facility standards or machine requirements.

M8 3 or 4-pin in DC		1/2" 3-pin in AC or AC/DC	
M12 4 or 5-pin in DC		DIN connector in hydraulic	

Choose a female connector or female pre-wired connector

Selected sensors	Choose in table
M12 4-pin	M12 4-pin
M12 5-pin	M12 5-pin
DIN connector	DIN connector

female

Connector: screw clamp
Pre-wired connector 2, 5 or 10m

For inductive sensors		For photoelectric sensors		For ultrasonic sensors	
Selected sensor	Choose in the table	Selected sensor	Choose in the table	Selected sensor	Choose in the table
XS...M8	M8 3-pin	XU...M8	M8 4-pin	SM/XX...M8	M8 3-pin
XS...M12	M12 4-pin	XU...M12	M12 4-pin	SM/XX...M8	M8 4-pin
XS...U20	1/2" 3-pin	XUR...M8	M8 3-pin	SM/XX 4-pin	M12 4-pin

Be sure to follow the instruction sheet for proper electrical connection.