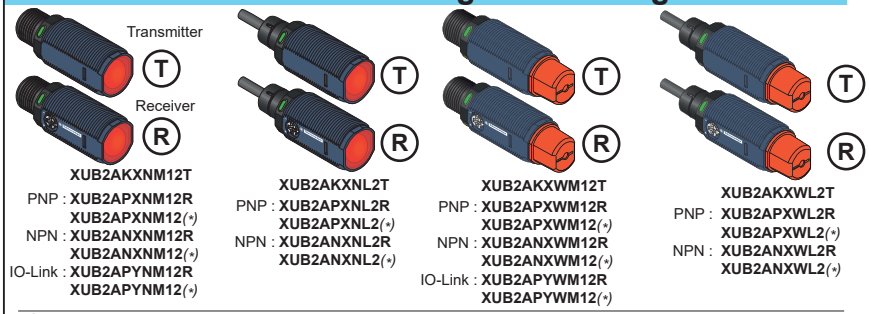
Photo-electric sensors - Straight or 90° angled version

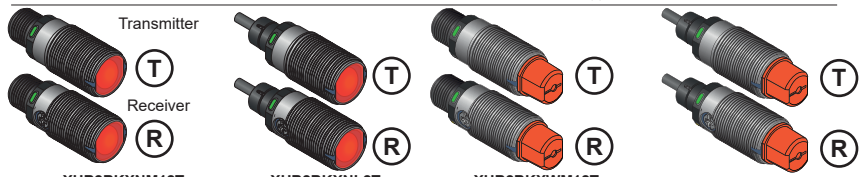


XUB2AKXNM12T
PNP : **XUB2APXNM12R**
XUB2APXNM12(*)
NPN : **XUB2ANXNM12R**
XUB2ANXNM12(*)
IO-Link : **XUB2APYNM12R**
XUB2APYNM12(*)

XUB2AKXNL2T
PNP : **XUB2APXNL2R**
XUB2APXNL2(*)
NPN : **XUB2ANXNL2R**
XUB2ANXNL2(*)

XUB2AKXWM12T
PNP : **XUB2APXWM12R**
XUB2APXWM12(*)
NPN : **XUB2ANXWM12R**
XUB2ANXWM12(*)
IO-Link : **XUB2APYWM12R**
XUB2APYWM12(*)

XUB2AKXWL2T
PNP : **XUB2APXWL2R**
XUB2APXWL2(*)
NPN : **XUB2ANXWL2R**
XUB2ANXWL2(*)



XUB2BKXNM12T
PNP : **XUB2BPXNM12R**
XUB2BPXNM12(*)
NPN : **XUB2BNXNM12R**
XUB2BNXNM12(*)
IO-Link : **XUB2BPYNM12R**
XUB2BPYNM12(*)

XUB2BKXNL2T
PNP : **XUB2BPXNL2R**
XUB2BPXNL2(*)
NPN : **XUB2BNXNL2R**
XUB2BNXNL2(*)

XUB2BKXWM12T
PNP : **XUB2BPXWM12R**
XUB2BPXWM12(*)
NPN : **XUB2BNXWM12R**
XUB2BNXWM12(*)
IO-Link : **XUB2BPYWM12R**
XUB2BPYWM12(*)

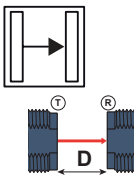
XUB2BKXWL2T
PNP : **XUB2BPXWL2R**
XUB2BPXWL2(*)
NPN : **XUB2BNXWL2R**
XUB2BNXWL2(*)

(*): Sold by pair (1 Transmitter + 1 Receiver)

XU●●●●T = Transmitter alone
XU●●●●R = Receiver alone

To choose your sensor, scan the 2D code on the right

Thru-beam



Model	D
XUB2 Axial	30m / *98.4 ft*
XUB2 Radial	17 m / *55.8 ft*

Package Content
(Example)

http://qr.tesensors.com/XU0022

Scan the code to access this Instruction Sheet and all product information in different languages or you can visit our website at: www.telemecaniquesensors.com

We welcome your comments about this document. You can reach us through the customer support page on your local website.

ECOLAB IO-Link CE UKCA cULus

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
- Disconnect all power before servicing equipment.
- Do not connect this device to AC power.
- The power voltage must not exceed the rated range.

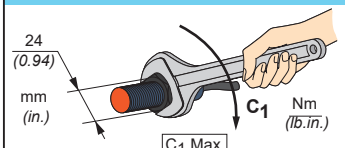
Failure to follow these instructions will result in death or serious injury.

WARNING

IMPROPER SETUP OR INSTALLATION
- This equipment must only be installed and serviced by qualified personnel.
- Read, understand, and follow the compliance below, before installing the XUB Photo-electric sensor.
- Do not tamper with or make alterations on the unit.
- Comply with the wiring and mounting instructions.
- Check the connections and fastening during maintenance operations.
- The proper functioning of the XUB photoelectric sensor and its operating line must be checked regularly and according to the application (for example number of operations, level of environmental pollution, etc.).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

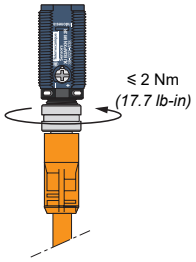
Mounting and Tightening torques



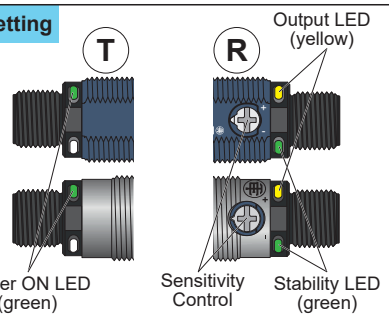
	C_1 Max.
XUB2A●●●	1 (8.85)
XUB2B●●●	2 (17.7)

CAUTION

DEGREE OF PROTECTION DETERIORATION
Do not apply excessive tightening torque on the sensor during the installation process.
Failure to follow these instructions can result in injury or equipment damage.



LEDs and Setting

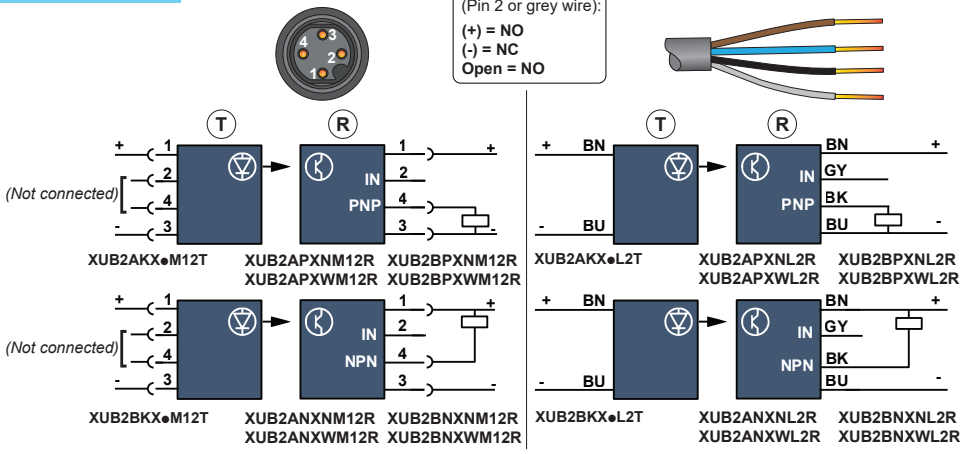


Wiring diagrams

M12 Connector - 4 pins

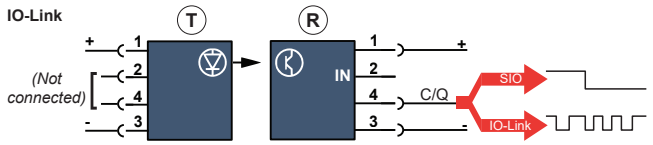
Control input IN
(Pin 2 or grey wire):
(+) = NO
(-) = NC
Open = NO

2 m Cable - 4 wires



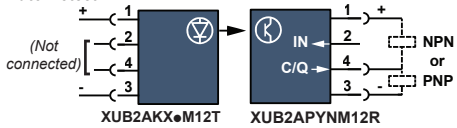
XUB2AKX●M12T — **XUB2APXNM12R** **XUB2APXWM12R** — **XUB2BPXNM12R** **XUB2BPXWM12R**
XUB2AKX●L2T — **XUB2APXNL2R** **XUB2APXWL2R** — **XUB2BPXNL2R** **XUB2BPXWL2R**
XUB2BKX●M12T — **XUB2ANXNM12R** **XUB2ANXWM12R** — **XUB2BNXNM12R** **XUB2BNXWM12R**
XUB2BKX●L2T — **XUB2ANXNL2R** **XUB2ANXWL2R** — **XUB2BNXNL2R** **XUB2BNXWL2R**

IO-Link



Pin	Signal	Definition
1	+	+ 24 Vdc
2	IN	+ = NO - = NC Open = NO
3	-	0 Vdc
4	Q	Switching signal (SIO)
	C	Communication IO-Link

Auto-Detect NPN / PNP



XUB2AKX●M12T
XUB2BKX●M12T
XUB2APYNM12R
XUB2APYWM12R
XUB2BPYNM12R
XUB2BPYWM12R

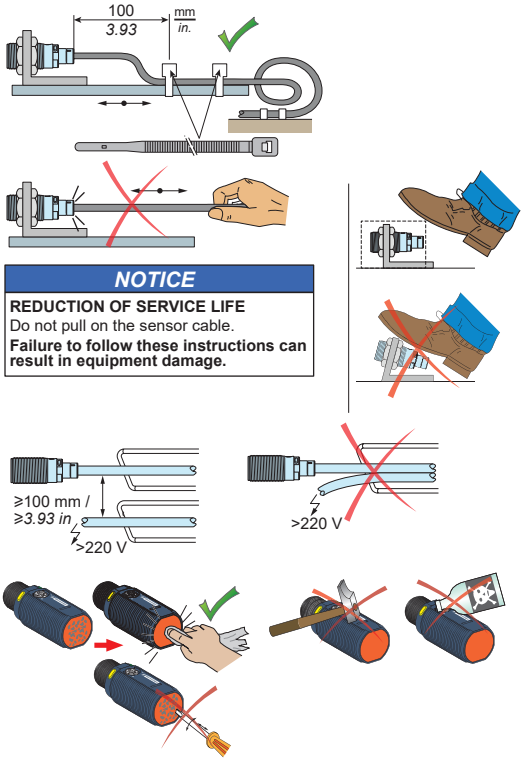
CAUTION

INOPERABLE EQUIPMENT DUE TO CYBER ATTACK ON IO-LINK
- Apply external cybersecurity protection on IO-Link Master device.
- Download IO-Link Description files only from these web severs: https://telemecaniquesensors.com/global/en/support/iolink or https://ioddfinder.io-link.com/#/

Failure to follow these instructions can result in injury or equipment damage.

IO-Link data tables and IODD files are online : Scan the 2D code, above

Mounting, wiring and maintenance precautions



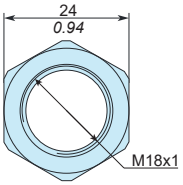
NOTICE

REDUCTION OF SERVICE LIFE
Do not pull on the sensor cable.
Failure to follow these instructions can result in equipment damage.

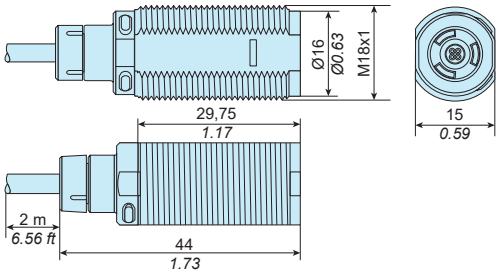
Dimensions

1 mm = *0.0393 in.*

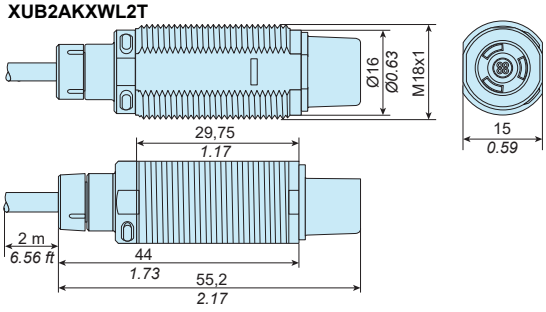
mm / *in.*



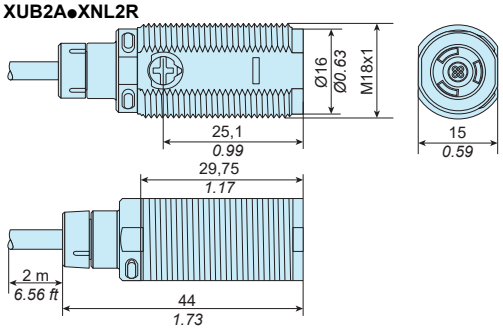
XUB2AKXNL2T



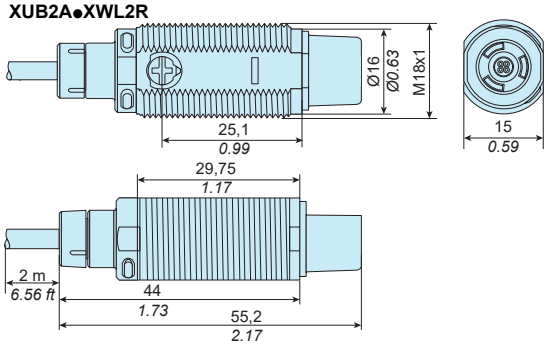
XUB2AKXWL2T



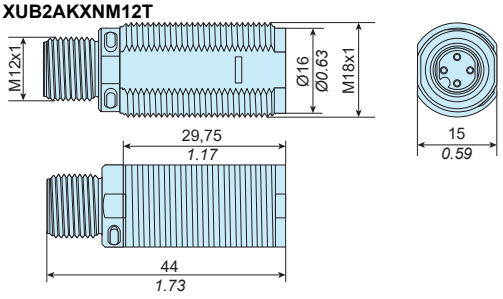
XUB2A●XNL2R



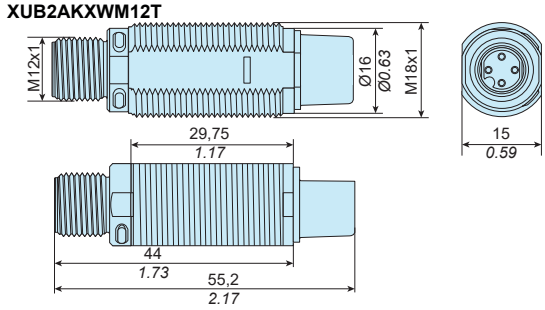
XUB2A●XWL2R



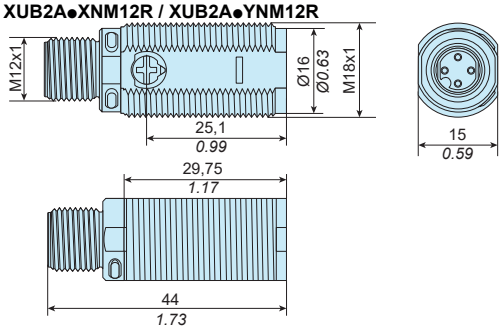
XUB2AKXNM12T



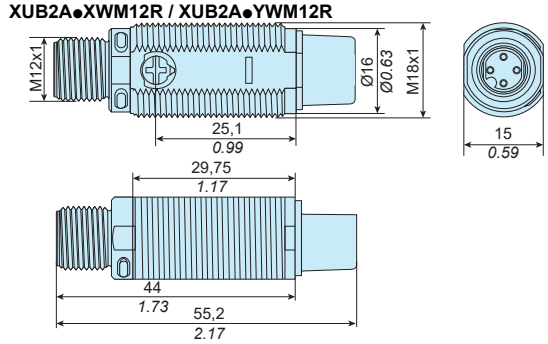
XUB2AKXWM12T



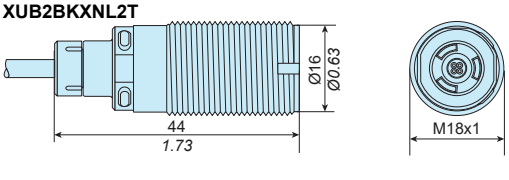
XUB2A●XNM12R / XUB2A●YNM12R



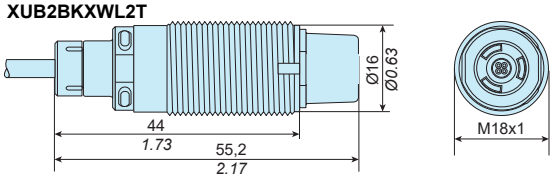
XUB2A●XWM12R / XUB2A●YWM12R



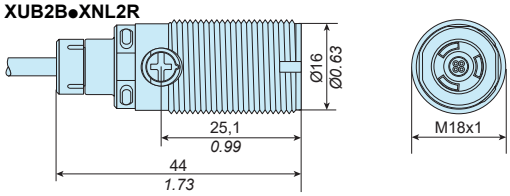
XUB2BKXNL2T



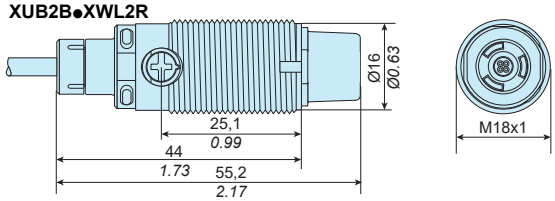
XUB2BKXWL2T



XUB2B●XNL2R

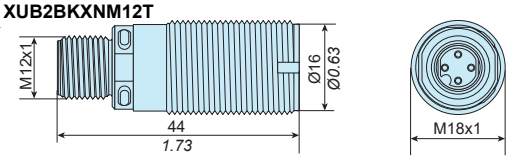


XUB2B●XWL2R

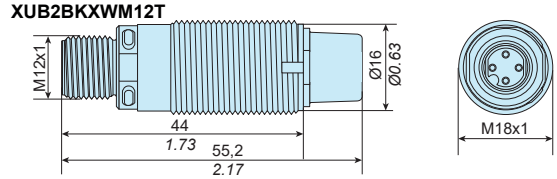


IO-Link

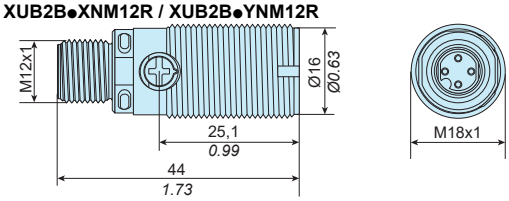
XUB2BKXNM12T



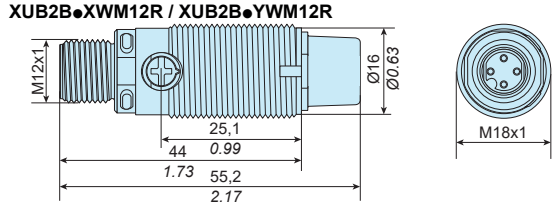
XUB2BKXWM12T



XUB2B●XNM12R / XUB2B●YNM12R



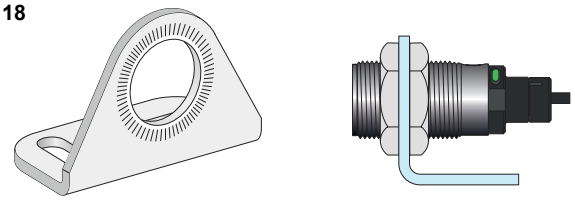
XUB2B●XWM12R / XUB2B●YWM12R



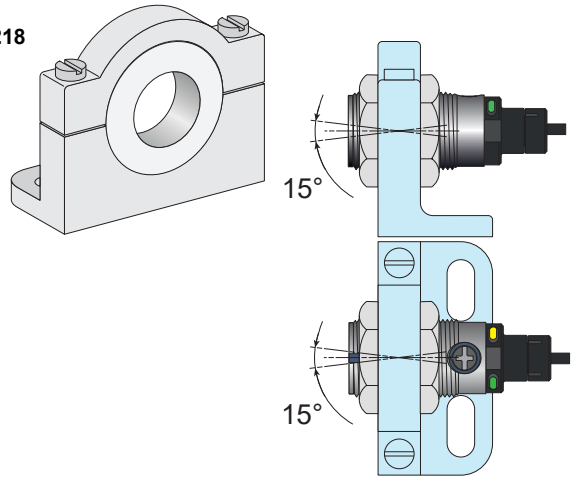
Accessories

Mounting brackets (to order separately)

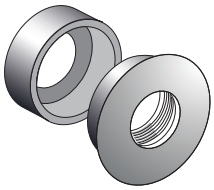
XUZA118



XUZA218



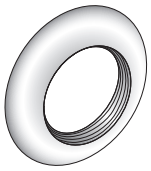
XUZASB001



(See Instruction Sheet: EAV2211101)

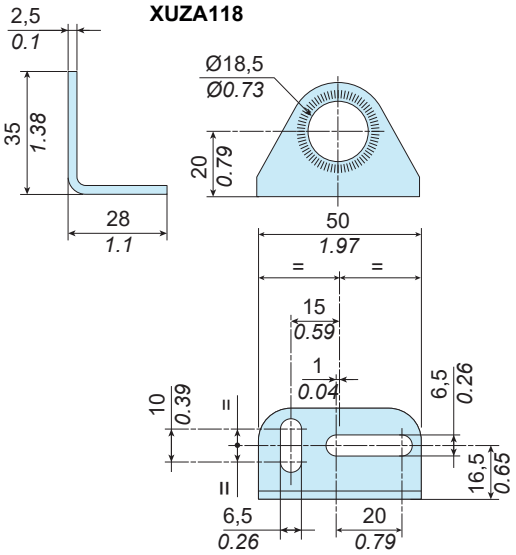
XUZASB002

XUZASB003

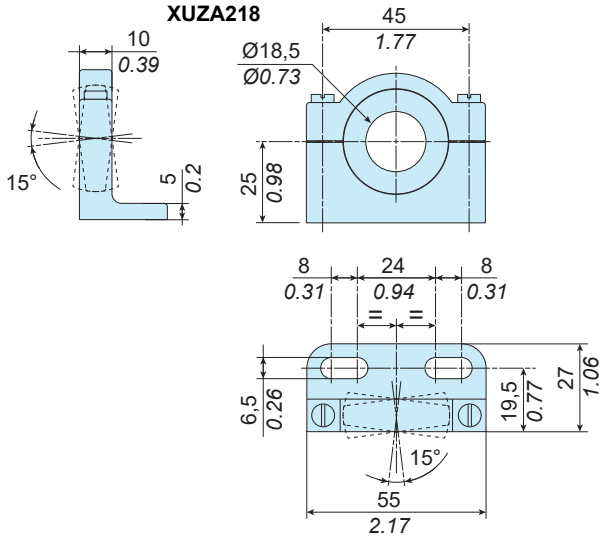


Dimensions

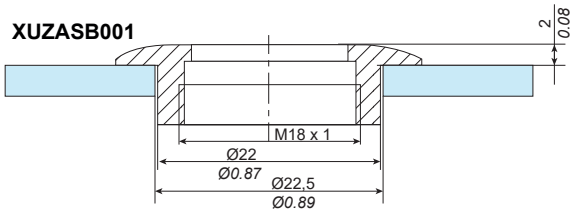
XUZA118



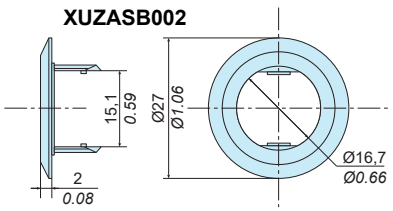
XUZA218



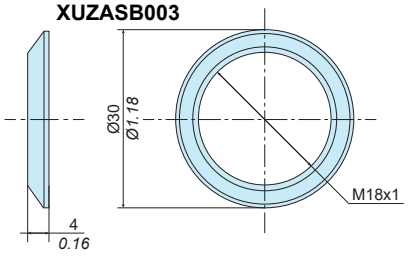
XUZASB001



XUZASB002

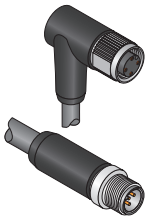


XUZASB003



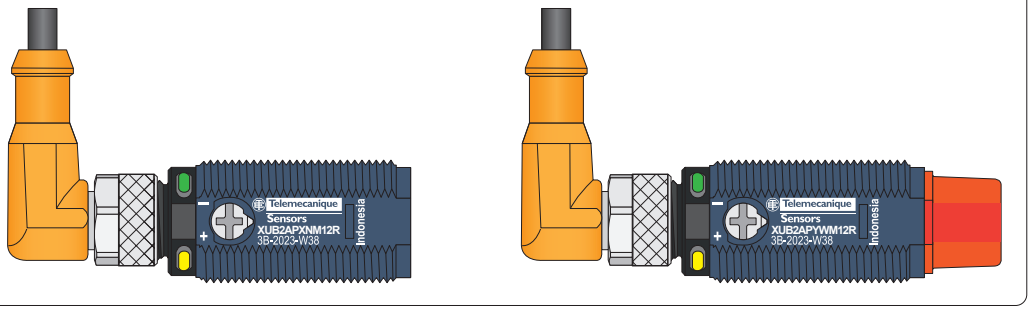
Pre-Wired connectors (examples)

PVC cable for general use
PUR cable for severe industrial environments

M12, 4 pins					M12 - M12, 4 pins				
									
Cable length	PVC	PUR	PVC	PUR	Jumper length	PVC	PUR	PVC	PUR
2 m / *6.56 ft.*	XZCPV1141L2	XZCP1141L2	XZCPV1241L2	XZCP1241L2	1 m / *3.28 ft.*	XZCRV1511041C1	XZCR1511041C1	XZCRV1512041C1	XZCR1512041C1

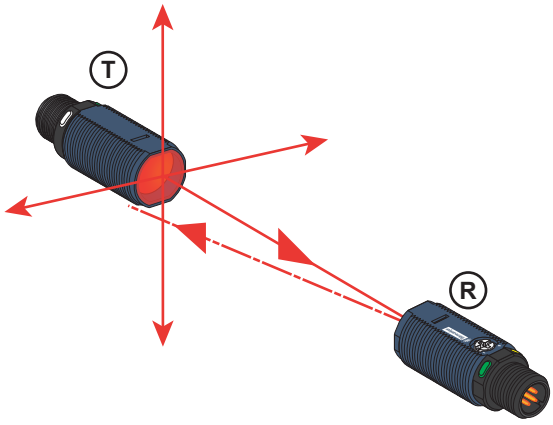
Other cable references are available in our online catalog. Please visit our website at: www.telemecaniquesensors.com
Or you can ask us through the customer support page on your local website.

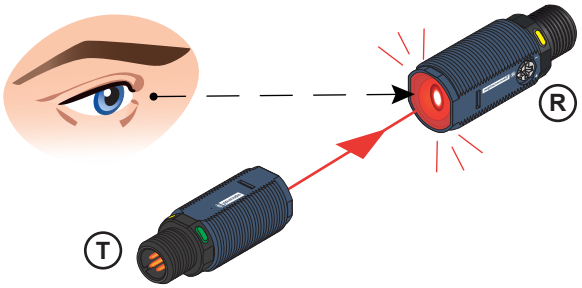
Cable direction with angled connector



Sensor Position Alignment

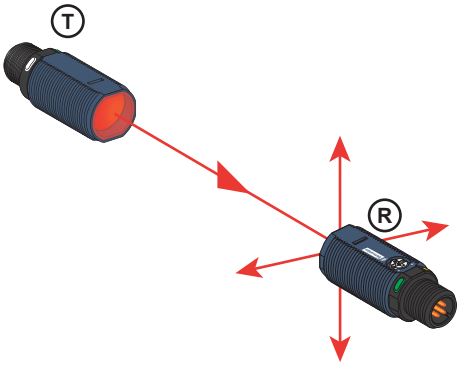
- To align the sensors, start by adjusting the transmitter.
- Keep looking on the receiver while translating the transmitter, up/down and left/right.
- When the emitted light by the transmitter is visible on the receiver, the alignment is acceptable.

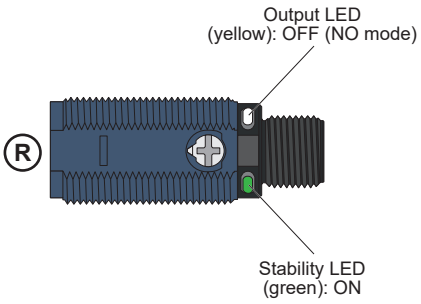




Sensor Position Adjustment

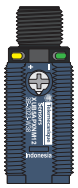
- For a stable detection, verify on the receiver if the green LED is on.
- If the green LED is off, translate the receiver up/down and left/right. When the setting is optimal, the Output LED (yellow) is off (NO mode) and the Stability LED (green) is lit.
- Check sensor operation with the object and adjust the sensor, if necessary.





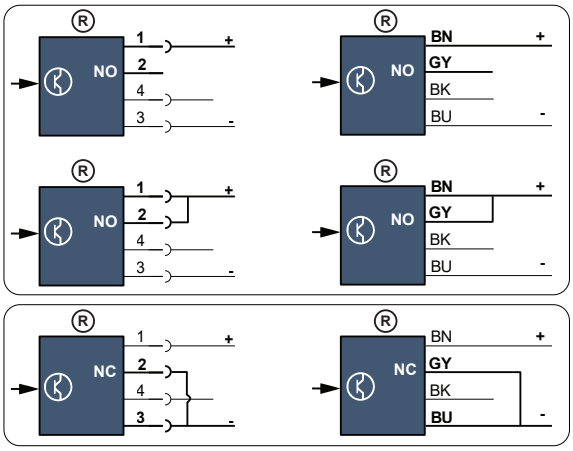
Diagnostic LEDs

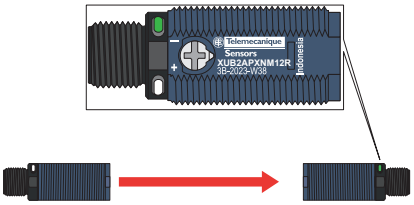
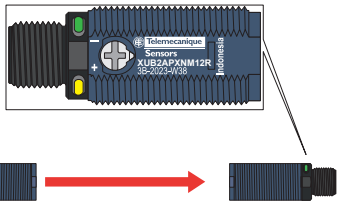
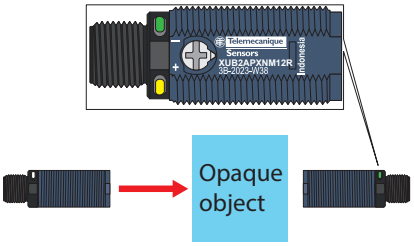
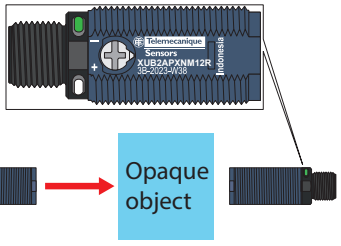
[1]: Only for IO-Link version



	LED		Description	Corrective Action
Output LED (yellow)	Blinking[1]	2 Hz	Communication issue detected	Perform a Power Off/Power On cycle. The sensor restarts with factory settings.
		3 Hz	Output short-circuit Output overload Undervoltage Overtemperature	Remove the short circuit Verify that the load current is < 100 mA Verify that the sensor power voltage is 12...24 Vdc Reduce ambient temperature of the sensor or replace the sensor.
	ON		Sensor output is ON	-
	OFF		Sensor output is OFF	
Stability LED (green)	OFF		Inconsistent quality of detection	Check the sensor sensitivity adjustment (See next page).
	Dim			
	Bright		Consistent quality of detection	-

Output mode setting: NO or NC (NO by default)

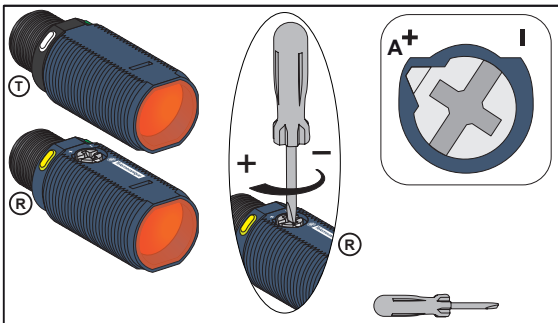
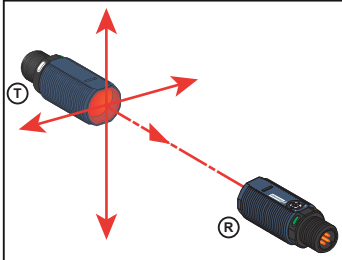
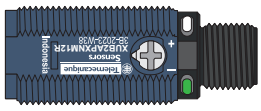
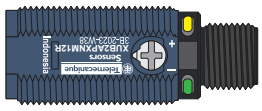
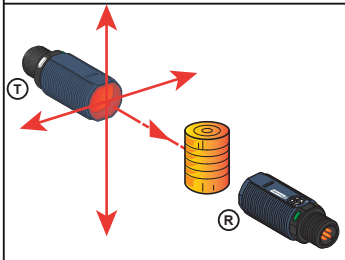
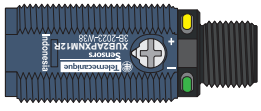
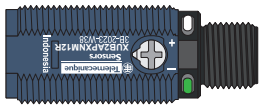
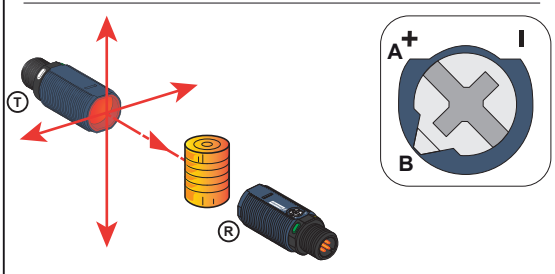
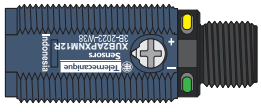


Dark-On Normally Open (NO)	Light-On Normally Closed (NC)
	
The Output is ON	**The Output is OFF**
	
The Output is OFF	**The Output is ON**

Sensor Sensitivity Adjustment

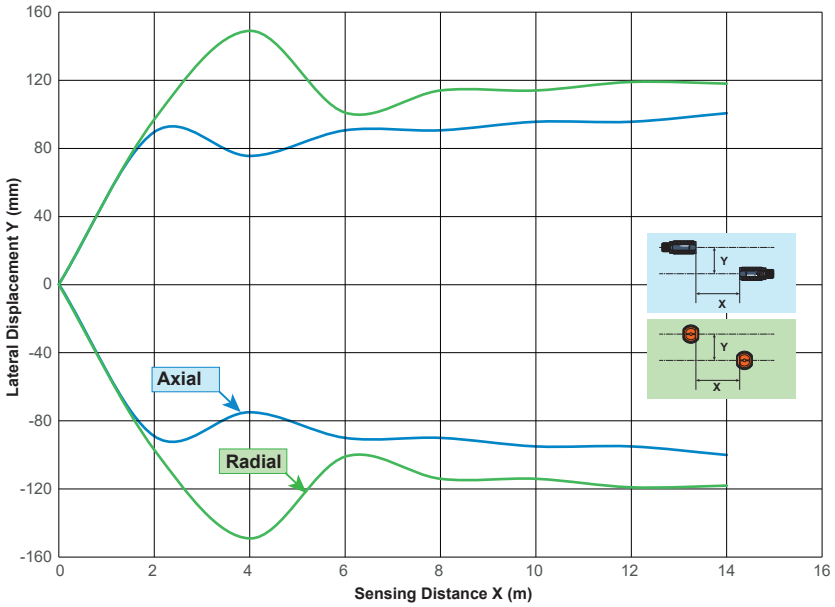
For accurate detection, follow the configuration below. (eg. Objects with holes or small size to obstruct the light beam).

Note: How to install in video, scan the code on the first page

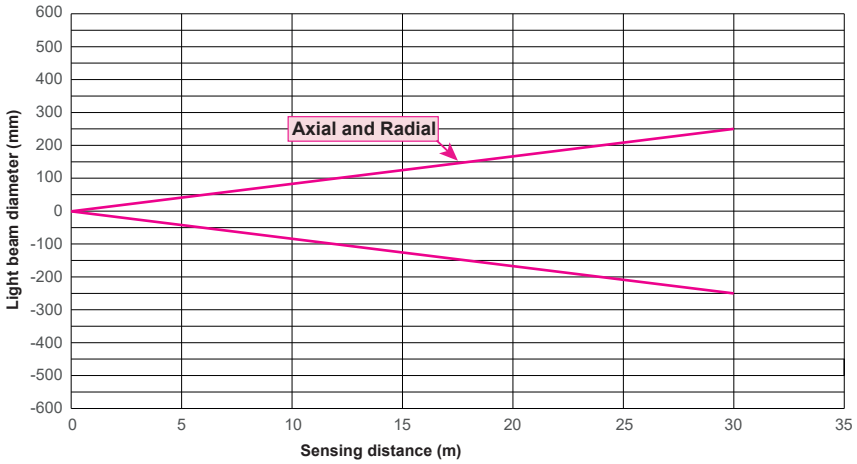
	NO	NC
 0,8 x 4 mm / *0.03 x 0.16 in.*	1-Before settings, start with the receiver potentiometer at the maximum position (resulting to point A).	1-Before settings, start with the receiver potentiometer at the maximum position (resulting to point A).
	2-Connect the two sensors to the power supply (see page 1 for the wire connection & page 7 for the power voltage), the power ON / Stability LED (green) switches on. Align the two sensors, as shown on the picture, until seeing the Output LED (yellow) switches off. Keep the two sensors within the sensing distance described in page 6. 	2-Connect the two sensors to the power supply (see page 1 for the wire connection & page 7 for the power voltage), the power ON / Stability LED (green) switches on. Align the two sensors, as shown on the picture, until seeing the Output LED (yellow) switches on. Keep the two sensors within the sensing distance described in page 6. 
	3-Put the object to detect between the 2 sensors. •If the receiver Output LED (yellow) switches on, the object detection is set correctly. 	3-Put the object to detect between the 2 sensors. •If the receiver Output LED (yellow) switches off, the object detection is set correctly. 
	•If the receiver doesn't detect the object (Output LED remained off), turn the potentiometer anticlockwise until the Output LED (yellow) switches on (resulting to point B). 	•If the receiver doesn't detect the object (Output LED remained on), turn the potentiometer anticlockwise until the Output LED (yellow) switches off (resulting to point B). 
	4-The Sensor is set and ready to detect ✓	4-The Sensor is set and ready to detect ✓

Detection curves

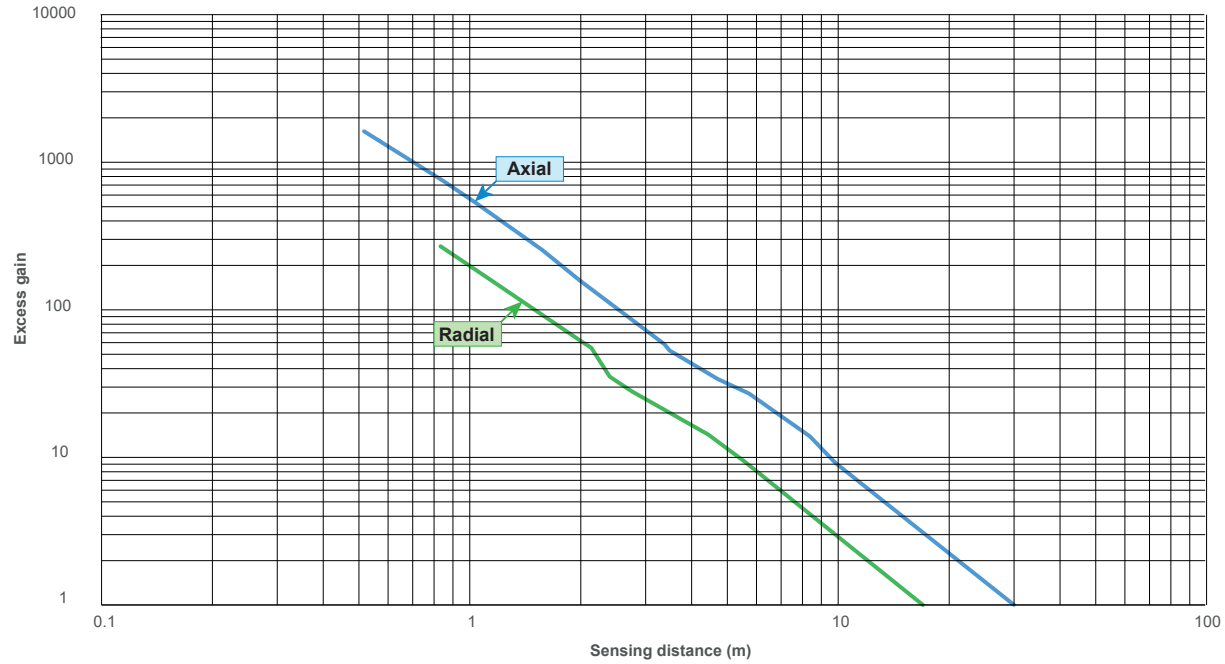
Lateral Displacement



Light beam diameter



Excess gain



Characteristics

Certification	CE - UKCA - cULus
Sensing Range (using a white paper 200 x 200) Max. sensing distance (excess gain=1)	Axial: 30 m - excess gain = 1 20 m - excess gain = 2 Radial: 17 m - excess gain = 1 12 m - excess gain = 2
Color of detection light beam	Red
Spot size of the light beam on the target	See light beam diameter curve
Hysteresis	2% < H < 20%
Sensing distance setting	Potentiometer 1 turn (~ 220 degrees) on the receiver
Output type	PNP / NPN or Autodetect PNP / NPN (with IO-Link)
ON Voltage drop	2 V max. (30 Vdc 100 mA)
Current consumption	Transmitter: < 20 mA Receiver: < 20 mA max. / IO-Link: <30 mA
Switching capacity	100 mA
First-up delay	< 100 ms / IO-Link: < 300 ms
Response time	0,5 ms max.
Recovery time	0,5 ms max.
Switching frequency	1000 Hz (In SIO Mode for IO-Link)
Electrostatic discharge immunity	4 kV (Contact), 8 kV (Air) conforming to **IEC 61000-4-2**
Electromagnetic field immunity	10 V/m conforming to **IEC 61000-4-3**
Fast transients immunity	Burst 2 kV - 5 kHz conforming to **IEC 61000-4-4**
Conducted disturbances immunity	10 V conforming to **IEC 61000-4-6**
Radiated disturbances emissions	Class A conforming to **EN 55011 / CISPR 11**
Power Voltage	Rated operational voltage: 12...24 Vdc Operating range: 10...30 Vdc (including ripple p-p 10% maximum) 
Product Protection	Power supply : Reverse polarity protection Output: Short circuit protection Reverse polarity protection
Light Immunity	Sunlight 40 kLx max. Incandescent light 10 kLx max. (at the receiver surface)
Artificial optical radiation	Class 0 (Risk exempt) conforming to **IEC 62471**
Ambient Temperature	Operating : - 30...+55 °C *(-22...+131 °F)*, Storage : - 40...+70 °C *(-40...+158 °F)*
Ambient Humidity	Operating : 35...95% RH, Storage : 35...95% RH
Degree of protection	**IP65**, **IP67** conforming to **IEC 60529** - **IP69K** conforming to **DIN 40050-9** (only for M12 connector version)
Vibration resistance	Frequency range: 10 Hz ... 55 Hz Acceleration: 7 g_n
Shock resistance	Peak acceleration: 30 g_n Duration of the pulse: 11 ms
Material	Housing: PBT/PC or Brass, Transparent Cover: PMMA, Back cap: MABS, Potentiometer screw: PBT Cable: PVC (for cable version) Plug (cable version): PA66

Manufacturer :
TMSS France
Tour Eqho - 2 avenue Gambetta
92400 Courbevoie
France

UK Representative :
Yageo TMSS UK Limited
2 North Park Road
Harrogate, HG1 5PA
United Kingdom