Ultrasonic sensors, configurable by software

OsiSense XX

Catalogue

Simply easy!™

Telemecanique Sensors

Rugghölzli 2
CH - 5453 Busslingen
Tel. +41 (0)56 222 38 18
Fax +41 (0)56 222 10 12
mailbox@sentronic.com
www.sentronic.com

Contents

Ultrasonic sensors OsiSense XX

Cylindrical, Ø 18 mm, configurable by software

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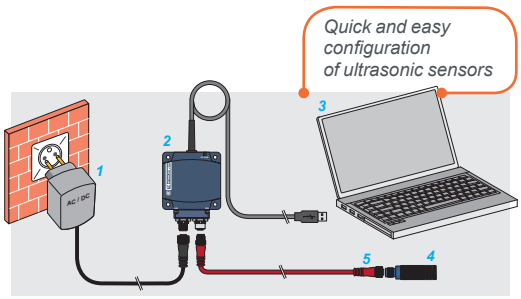
Ultrasonic sensors
OsiSense XX
XX Configuration Software

XX Configuration Software



1: Power supply, provided with 4 adapters
*2: Configuration interface **XXZBOX01***
3: XX Configuration Software, installed on a PC
*4: Ultrasonic sensor **XXS●●** or **XXA●●***
5: M12-M12 cable

Telemecanique Sensors is now offering a new solution for configuring ultrasonic OsiSense XX sensors. This software enables users to quickly find the optimal sensing solution for their applications. An interface unit connects the sensor to the PC via a USB connection.

> **Easy configuration to unique applications**
The configuration software has more than 20 parameters that can be modified to suit the machine application. The parameters can be saved in PDF format for quick, easy reference.

> **Real-time sensor performance display**
One of the best functions of the new software is the ability to troubleshoot and visualize the effects of the parameters on the configured sensor. The “echo display” function shows the exact position of any false echoes. The recording function can record the values of the echoes in an .xlsx or .xml file for extended periods of time.

> **Quick duplication of programmed settings**
Optimal parameters set on one sensor can be saved and loaded on other units of the same reference. This function reduces time and effort.

> The interface can be used to configure specific configurable models of OsiSense XX ultrasonic sensors (XXS●● & XXA●●).

XX Configuration Software for ultrasonic sensors

> XX Configuration Software is available in English, French, German, Spanish, Italian, and Chinese. It can be installed using the setup file in the USB key provided with the configuration kit or downloaded directly from the website www.tesensors.com.

> Recommended PC performance:
> Windows OS: 7 SP1 (x86 & x64), 8.1 (x86 & x64), or 10 (x86 & x64)
> Internet Explorer: 6.0 or higher
> Disk space: 800 MB or higher
> RAM memory: 2 GB or higher
> Processor speed: 1 GHz or higher
> Display resolution: 1360 x 768 or higher

Ultrasonic sensors configuration interface XXZBOX01

Ultrasonic sensors configuration kit XXZKIT01

References

Description	Reference	Weight kg
Ultrasonic sensors configuration interface		
Configuration interface provided with: 1 power supply *(1)* 1 UK adapter 1 SAA adapter 1 US adapter 1 EU adapter	**XXZBOX01**	0.400
Ultrasonic sensors configuration kit		
Plastic case including: 1 configuration interface XXZBOX01 1 power supply *(1)* 1 UK adapter 1 SAA adapter 1 US adapter 1 EU adapter 1 cable of 1 m, with M12 connectors (5-pin male/female) 1 USB Flash Drive/USB key, including: the setup file for XX Configuration Software, ReadMe file, instruction sheet, tutorial, and the OsiSense XX catalog.	**XXZKIT01**	1.200

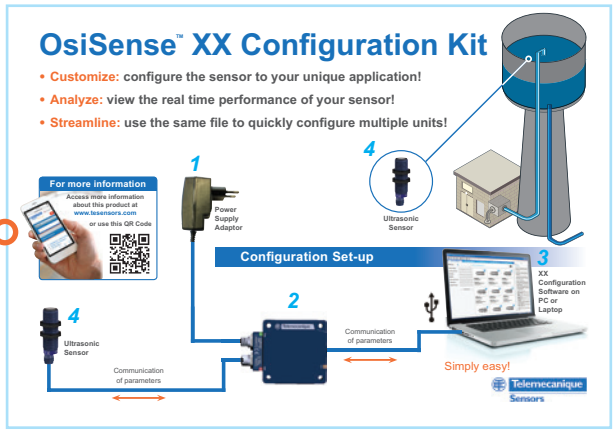
(1) Power supply: 24 V ⎓, 0.5 A min., with M12 connector.

One of the most user-friendly ultrasonic sensor configuration software solutions

Ultrasonic sensors
OsiSense XX
XX Configuration Software

Configuration software presentation

Principle



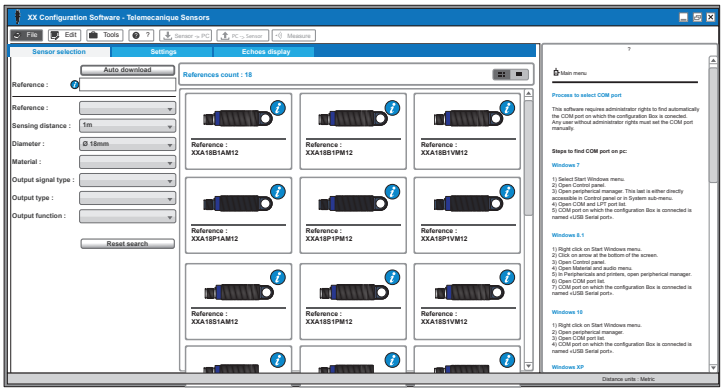
1: Power supply, provided with 4 adapters
*2: Configuration interface **XXZBOX01***
3: XX Configuration Software, installed on a PC
*4: Ultrasonic sensor **XXS●●** or **XXA●●***

Setting examples

Sensor selection

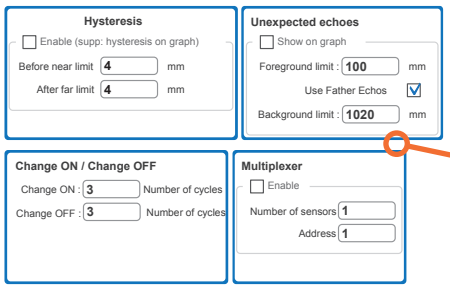
> This page is used to manually select or auto-download the XX reference sensor to be configured. Once a reference has been selected, the user can start the configuration process.

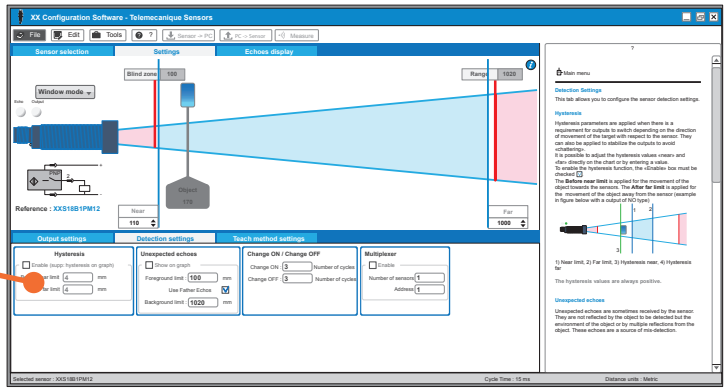
> There are **4** methods of selection.
The **Reset search** button can reinitialize the search, regardless of the method used.
1: Direct selection from the full reference list
2: Selection through reference
3: Manual search using criteria
4: Automatic sensor detection



Detection settings

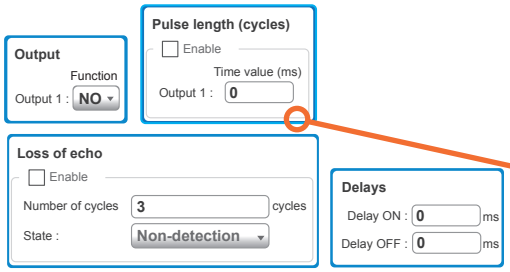
> This tab is used to configure the sensor detection settings.

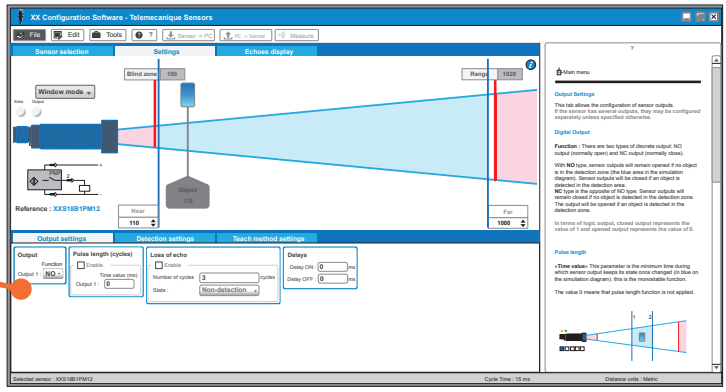




Output settings

> This page enables the configuration of sensor outputs. If the sensor has several outputs, they may be configured separately, unless specified otherwise.



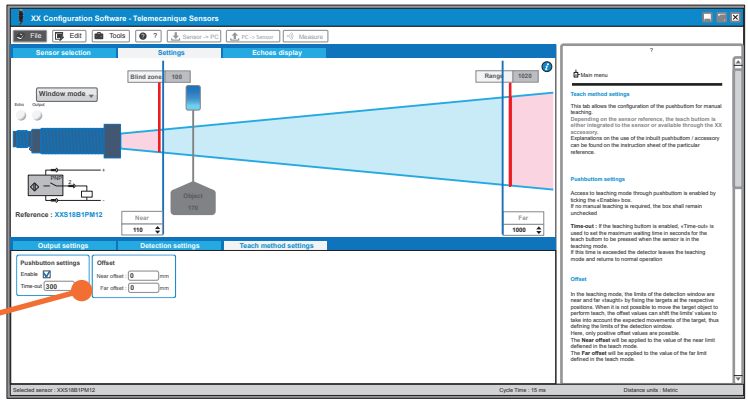


Configuration software presentation *(continued)*

Setting examples *(continued)*

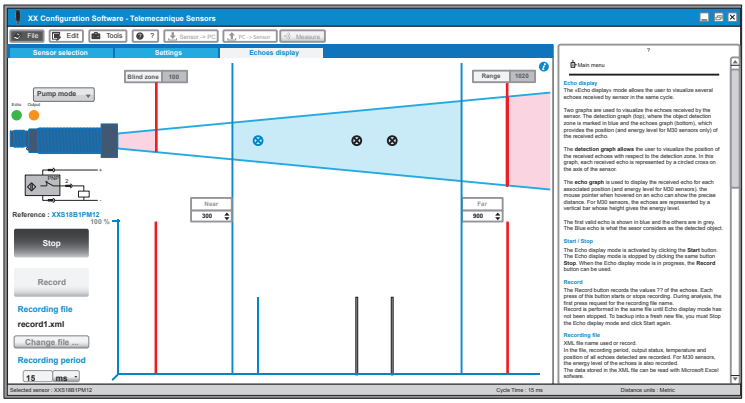
Teach method settings

> This tab allows the configuration of the pushbutton for manual teaching. Depending on the sensor reference, the teach button is either integrated in the sensor or available through the teach pushbutton **XXZPB100** (see page 10).



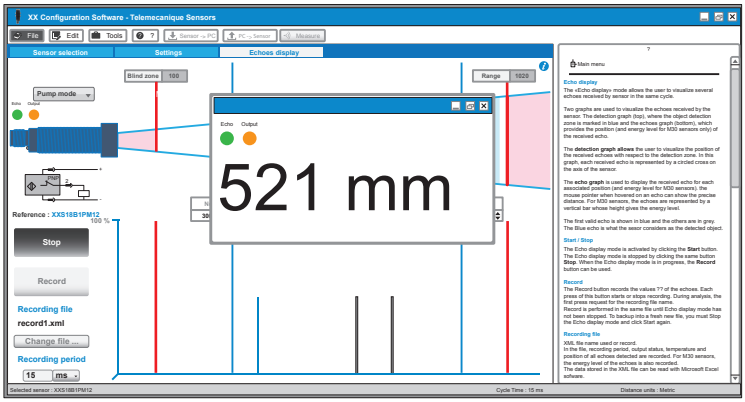
Echo display mode

> With the “echo display” mode, the user can visualize several echoes received by the sensor in the same cycle.
> The first valid echo is shown in blue and the others in gray. The blue echo is what the sensor considers as the detected object.
> It is also possible to record the data over extended periods of time using the “record” function.



Measure mode

> The “measure” button opens a pop-up window giving a real-time numerical display of the position of the object in mm or inches.

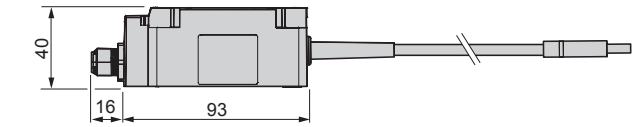


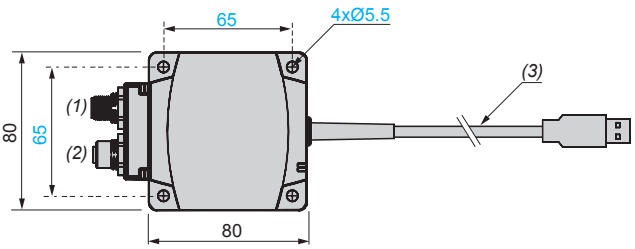
Ultrasonic sensors
OsiSense XX
Configuration interface XXZBOX01

Characteristics

Supply characteristics			
Rated supply voltage (Ue) with protection against reverse polarity		**V**	24 V ⎓
Voltage limits		**V**	14…30 V ⎓ (ripple: 10% max)
Consumption		**W**	4 (consumption excluding sensor)
LED indicators			
LED indicators	Power supply		Green LED
	PC communication		Orange LED
	Error		Red LED
Communication			
Data communication baud rate		**bps**	19,200
Connection			
Maximum cabling distance between sensor and interface		**m**	3
Electrical connection to sensor			M12 female connector
Connection to PC or laptop			0.5 m USB cable , A type connector
Environment characteristics			
Compliance to regulations			CE
Degree of protection	Conforming to IEC 60529		IP 40
Storage temperature		**°C**	-20…+45
Operating temperature		**°C**	0…+45
Relative humidity			< 95%, without condensation

Dimensions

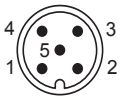




(1) Male M12 connector, 5-pin: power supply
(2) Female M12 connector, 5-pin: sensor
(3) Cable length: 0.5 m (USB cable A type connector): PC

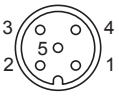
Connections

Interface connector for power supply adapter (M12 male)



Pin number	Wire color	Description
1	BN: Brown	+14…30 V ⎓
2	WH: White	Output 2 *(4) (5)*
3	BU: Blue	0 V ⎓
4	BK: Black	Output 1 *(4)*
5	–	Not used *(6)*

Interface connector for sensor (M12 female)



Pin number	Description
1	Power out to sensor
2	Software communication
3	0 V ⎓
4	Software communication
5	Not used *(6)*

(4) Output is only active during the "echo display" mode and "measure" mode.
(5) Output 2 is not available on all sensors.
(6) The 5th pins of the M12 male and M12 female connectors are electrically connected to one another.

ECOLAB certified

Ultrasonic sensors

OsiSense XX, General purpose
Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

XXA18P1●M12

XXS18P1●M12

XXA18B1●M12
XXA18S1●M12

XXS18B1●M12
XXS18S1●M12

XXZPB100

Ultrasonic sensors

Sensors with solid-state digital output, M12 connector

Sensors	Sensing distance (Sn) Adjustable	Function/output	Sensing axis	Reference	Weight
	m				kg
Ø 18 Plastic	1	NO or NC *(1)*/ PNP	Straight	**XXS18P1PM12**	0.033
			90° angled	**XXA18P1PM12**	0.040
Ø 18 Nickel-plated brass	1	NO or NC *(1)*/ PNP	Straight	**XXS18B1PM12**	0.050
			90° angled	**XXA18B1PM12**	0.055
Ø 18 Stainless steel 316L	1	NO or NC *(1)*/ PNP	Straight	**XXS18S1PM12**	0.050
			90° angled	**XXA18S1PM12**	0.055

Sensors with analog output, M12 connector

Sensors	Sensing distance (Sn) Adjustable	Analog output *(2)*	Sensing axis	Reference	Weight
	m				kg
Ø 18 Plastic	1	4-20 mA	Straight	**XXS18P1AM12**	0.033
		0-10 V	Straight	**XXS18P1VM12**	0.033
		4-20 mA	90° angled	**XXA18P1AM12**	0.040
		0-10 V	90° angled	**XXA18P1VM12**	0.040
Ø 18 Nickel-plated brass	1	4-20 mA	Straight	**XXS18B1AM12**	0.050
		0-10 V	Straight	**XXS18B1VM12**	0.050
		4-20 mA	90° angled	**XXA18B1AM12**	0.055
		0-10 V	90° angled	**XXA18B1VM12**	0.055
Ø 18 Stainless steel 316L	1	4-20 mA	Straight	**XXS18S1AM12**	0.050
		0-10 V	Straight	**XXS18S1VM12**	0.050
		4-20 mA	90° angled	**XXA18S1AM12**	0.055
		0-10 V	90° angled	**XXA18S1VM12**	0.055

Accessories

Description	For use with sensor	Reference	Weight kg
Teach pushbutton **Input:** M12 female connector **Output:** M12 male connector	XXS18●● XXA18●●	**XXZPB100**	0.035

Configuration interface and configuration kit for the synchronization function

See pages 6 to 9.

*(1) Output function (NO or NC) and mode (window, reflex, proximity, pump) are selectable using the **XXZPB100** remote teach pushbutton.*
*(2) Selectable using the **XXZPB100** remote teach pushbutton.*

Ultrasonic sensors

OsiSense XX, General purpose
Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

PF120213

XZCPV11V12L●●

PF120214

XZCPV12V12L●●

XZ_524_CPMFS17008

XZCP1141L●

XZ_524_CPMFS17006

XZCP1241L●

XZCC12FDM50B

XZCC12FCM50B

XX_519_CPFJR16005

XXZB118

Accessories *(continued)*

Description	Type	Length m	Reference	Weight kg
Connection accessories for synchronization function				
Pre-wired connector 5-pin, 5-wire female M12 connector/ bare wires PVC cable	Straight	2	**XZCPV11V12L2**	0.090
		5	**XZCPV11V12L5**	0.201
		10	**XZCPV11V12L10**	0.360
	Elbowed	2	**XZCPV12V12L2**	0.090
		5	**XZCPV12V12L5**	0.201
		10	**XZCPV12V12L10**	0.360
Connection accessories without synchronization function				
Pre-wired connector 5-pin, 4-wire female M12 connector/ bare wires PVC cable	Straight	2	**XZCP1141L2**	0.090
		5	**XZCP1141L5**	0.190
		10	**XZCP1141L10**	0.370
	Elbowed	2	**XZCP1241L2**	0.090
		5	**XZCP1241L5**	0.190
		10	**XZCP1241L10**	0.370
Female M12 connector 5-pin, Pg 7 cable gland	Straight	–	**XZCC12FDM50B**	0.020
	Elbowed	–	**XZCC12FCM50B**	0.020

Mounting accessory			
Description	**For use with sensor**	**Reference**	**Weight kg**
Fixing clamp *(1)*	XXS18●● XXA18●●	**XXZB118**	0.010

(1) Recommended to use in applications below 0°C.

Ultrasonic sensors

OsiSense XX, General purpose
Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

Sensor type			XX●18●1PM12	XX●18●1AM12	XX●18●1VM12
General characteristics					
Conformity to standards			EN/IEC 60947-5-2, UL 508, and CSA C22.2 n°14		
Compliance with regulations			CE (based on EMC directive 2014/30/EU), NEC (ANSI/NFPA 70), CEC (CSA C22), UNECE R10		
Product certifications			cULus with class 2 power supply, E2, EAC, RCM , and ECOLAB		
Nominal sensing distance (Sn)		**m**	1 (adjustable)		
Blind zone (in diffuse mode the object is not detected in this zone)		**m**	0.105		
Detection window			Remotely adjustable or by using external teachbutton **XXZPB100**		
Transmission frequency (transmitter resonance)		**kHz**	200		
Differential travel		**mm**	4	–	–
Repeat accuracy (repeatability)			0.1 %		
Minimum size of object to be detected			Cylinder Ø 1 mm up to sensing distance of 0.6 m		
Tilt angle with 100 x 100 mm target			± 7° at 1 m, ± 35° at 0.5 m		
Materials	Case		XX●18P●●: PBT XX●18B●●: Nickel-plated brass XX●18S●●: Stainless steel 316L		
	Sensing face		Epoxy, resin, and rubber		
Connection			M12 connector - 5-pin		
Supply characteristics					
Rated supply voltage (Ue) with protection against reverse polarity		**V**	12…24 V ⎓		24 V ⎓
Voltage limits (including ripple)		**V**	10…30 V ⎓	10…30 V ⎓	14…30 V ⎓
Current consumption, no-load		**mA**	< 30	< 30	< 30
Output characteristics					
LED indicators	Output state		Yellow LED	Yellow LED	Yellow LED
	Echo state		Green LED	Green LED	Green LED
Switching capacity (with overload and short-circuit protection)			< 100 mA	–	–
Resistive load impedance		Ω	–	12 V ⎓: load ≤ 250 Ω 24 V ⎓: load ≤ 850 Ω	≥ 1 kΩ
Voltage drop		**V**	< 2	–	–
Internal temperature compensation			Yes	Yes	Yes
Maximum switching frequency		**Hz**	11	–	–
Delays	First-up	**ms**	120	180	180
	Response	**ms**	45	–	–
	Recovery	**ms**	45	100	100
Environment characteristics					
Degree of protection	Conforming to IEC 60529 and EN/IEC 60947-5-2		IP 65, IP 67		
Storage temperature		**°C**	- 40…+ 80		
Operating temperature		**°C**	- 25…+ 70 *(1)*		
Relative humidity			< 95%, without condensation		
Vibration resistance	Conforming to IEC 60068-2-6		Amplitude ± 1 mm (f = 10…55 Hz)		
Mechanical shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms, in all 3 axes		
Resistance to electromagnetic interference			Conforming to EN/IEC 60947-5-2 and UNECE R10-05		

*(1) For applications below 0°C, it is recommended to use the **XXZB118** fixing clamp (see page 11).*

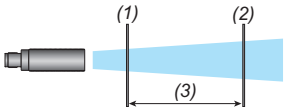
Ultrasonic sensors

OsiSense XX, General purpose
Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

Operating diagrams for digital output sensors

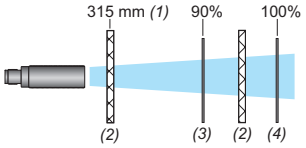
Settings with teach procedure

Window mode



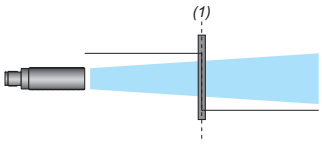
(1): Near limit
(2): Far limit
(3): Sensing window

Reflex mode



(1) In reflex mode, the position of the reflector must be at least 315 mm away from the sensor.
(2): Reflector
(3): Near limit
(4): Far limit

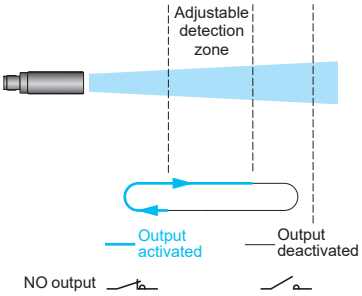
Proximity mode



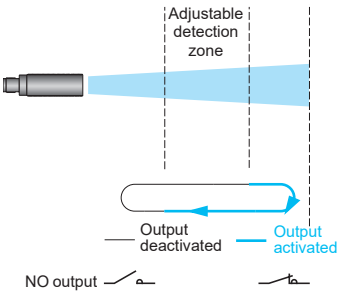
(1) Switch point

Pump/Hysteresis mode

Emptying (stored in high threshold memory)

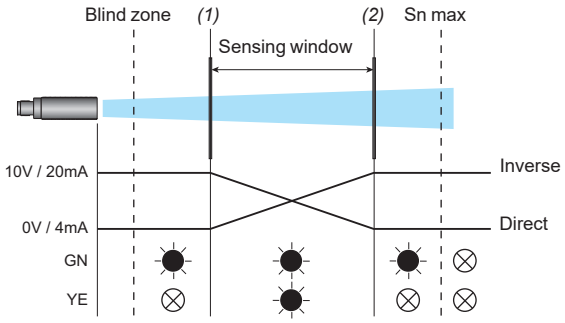


Filling (stored in low threshold memory)



Operating diagram for analog output sensors

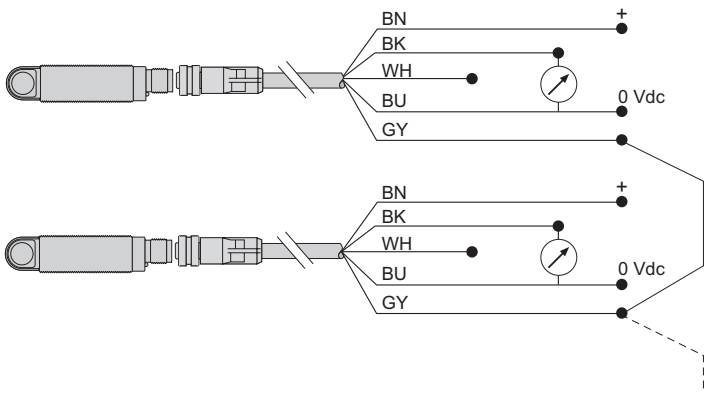
Near and far limits setting with teach procedure



GN: Green LED
YE: Yellow LED
⊗ : OFF
● : ON

(1): Near limit
(2): Far limit

Diagram for the synchronization function (side by side application)



***NB**: To enable synchronization between several sensors, all of the wires of pin no.5 (gray) must be electrically connected together.*
A maximum of 8 sensors can be synchronized. To enable "Multiplexer" function for the sensors, use the XX Configuration Software.
Without synchronization or multiplexing, the sensors must be at least 50 cm away from each other in order to avoid mutual interference.

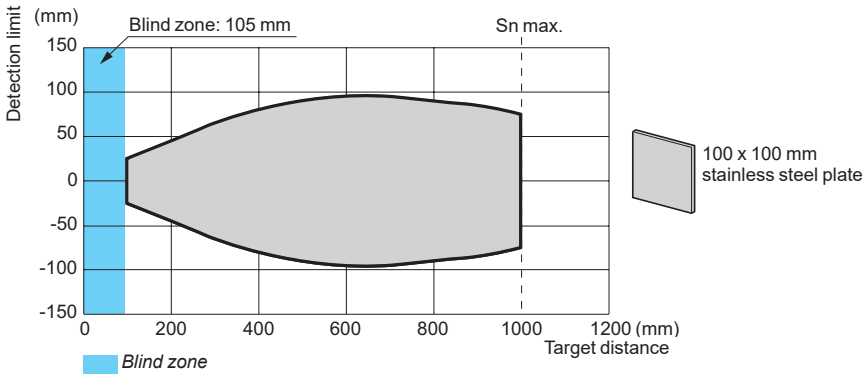
Curves, dimensions

Ultrasonic sensors

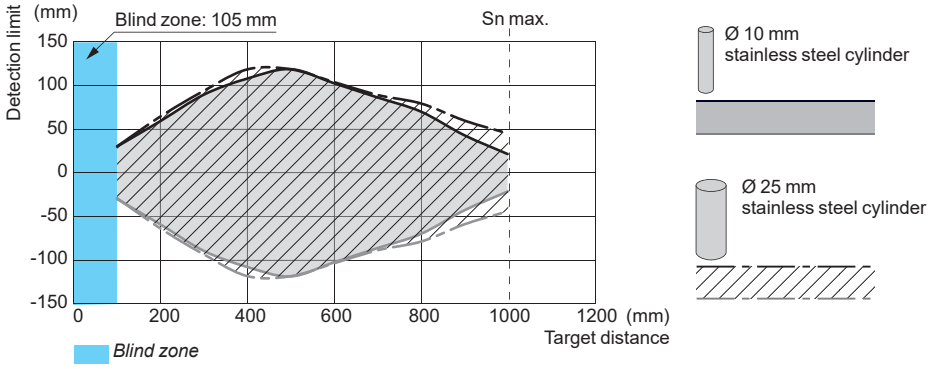
OsiSense XX, General purpose
Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

Curves

Detection curve with 100 x 100 mm square target



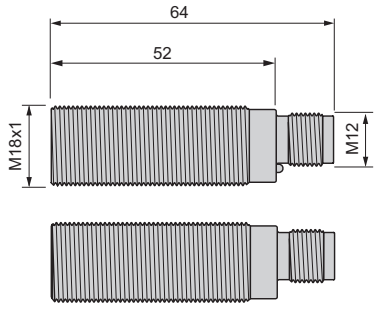
Detection curve with round bar



Dimensions

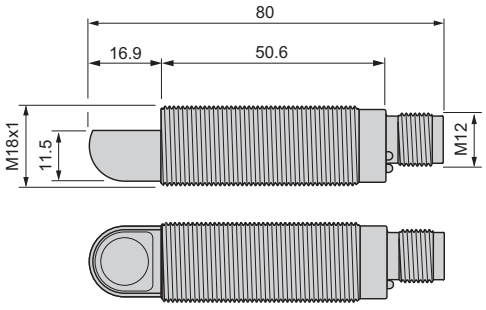
Plastic sensors, straight

XXS18P1●M12



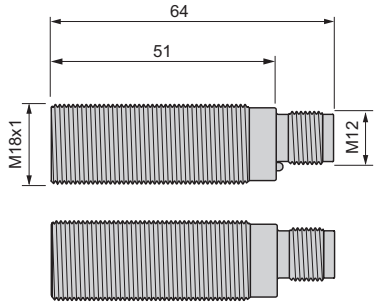
Plastic sensors, 90° angled

XXA18P1●M12



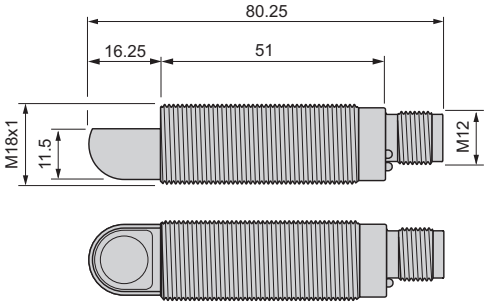
Nickel-plated brass and stainless steel sensors, straight

XXS18B1●M12 and XXS18S1●M12



Nickel-plated brass and stainless steel sensors, 90° angled

XXA18B1●M12 and XXA18S1●M12



SENTRONIC AG Produkte, Support und Service
Rugghölzli 2
CH - 5453 Busslingen
Tel. +41 (0)56 222 38 18
Fax +41 (0)56 222 10 12
mailbox@sentronic.com
www.sentronic.com

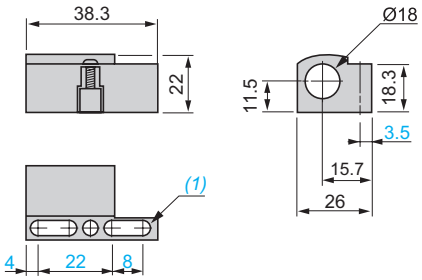
Ultrasonic sensors

OsiSense XX, General purpose

Cylindrical, plastic or metal, Ø 18 mm
Diffuse system, solid-state digital or analog output
Configurable by software

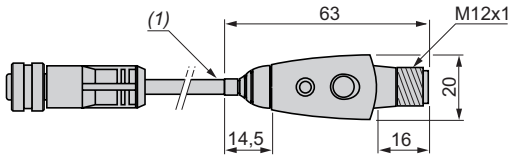
Dimensions *(continued)*

Fixing clamp XXZB118



(1) 2 elongated holes Ø 4 X 8 mm

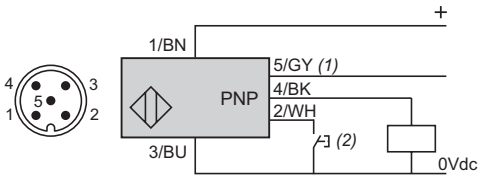
Teach pushbutton XXZPB100



(1) Cable length: 152 mm

Connections

Connector wiring

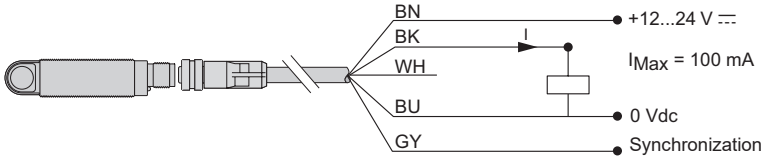


Pin number	Wire color	Digital output description	Analog output description	
			4-20 mA	0-10 V
1	BN: Brown	+12…24 V ⎓	+12…24 V ⎓	+14…24 V ⎓
2	WH: White	Input teach		
3	BU: Blue	0 V ⎓		
4	BK: Black	Output		
5	GY: Gray	Synchronization		

(1) Synchronization.
*(2) External setting pushbutton or **XXZPB100** remote teach pushbutton (see page 10).*

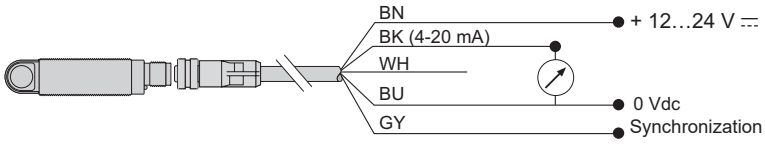
Wiring scheme (digital output NO or NC)

XXS18●1PM12 and XXA18●1PM12



Wiring scheme (analog output 4-20 mA)

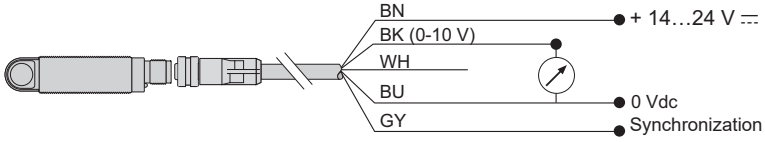
XXS18●1AM12 and XXA18●1AM12



4-20 mA:
- For 12 V ⎓, load ≤ 250 Ω
- For 24 V ⎓, load ≤ 850 Ω

Wiring scheme (analog output 0-10 V)

XXS18●1VM12 and XXA18●1VM12



0-10 V:
1 kΩ…∞

Product reference index