

Overview

SIMATIC sensors PXS100

- K0 compact range,
- 3SG16 compact form,
- Sonar thru-beam sensor

Selection table

SIMATIC PXS100



	K0 compact range				Sonar thru-beam sensor	3SG16 compact form
	Fixed sensor head		Separate sensor head			
Sensing range (cm)	6 ... 30	20 ... 100	6 ... 30	20 ... 100	5 ... 150	20 ... 100
Operating mode						
• Diffuse sensor	■	■	■	■		■
• Reflex sensor						■
• Thru-beam sensor					■	
Output						
• 1 switching output	■	■	■	■	■	
• 2 switching outputs						■
• Analog output 0 ... 10 V	■	■	■	■		
Adjustment						
• 1 potentiometer	■	■	■	■		
• Jumper plug						■
Connection						
• M8 connector					■	
• M12 connector	■	■	■	■	■	
• Cable					■	
• Terminals						■
Degree of protection						
• IP65	■	■	■	■		■
• IP67					■	
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A configurator for fast product selection and ordering in the Internet can be found at www.siemens.com/simatic-sensors/px

SIMATIC PXS sonar proximity switches

SIMATIC PXS100

K0 compact range

Overview



K0 compact range with separate and fixed sensor

The Sonar proximity switches of K0 compact range are ready-to-use units with a rectangular enclosure. They are available with two sensing ranges.

- Operate as diffuse sensors
- Adjustable via potentiometer
- Can be synchronized
- Temperature compensation
- Solid-state outputs:
 - switching output
 - analog output
- Connection via M12 connector, type F

Design

The devices of K0 compact range are supplied in the standard version with permanently installed sensors.

The devices of K0 compact range can also be supplied with separate sensors. Due to its small dimensions, the sensor is especially suitable in confined spaces.

The ultrasonic sensor is installed in a cylindrical enclosure separated from the other electronics. In 3RG63 42 devices, the sensor is installed in an M18 shell and in 3RG63 43 devices it is installed in an M30 shell with a length of 25 mm in both cases.

Two nuts are supplied for fixing. The connecting lead of 1.6 m length is molded onto the sensor. The connection to the evaluation electronics located in the enclosure of K0 compact range is established via the preassembled coaxial cable plug. The plug-in socket is installed on the end face of the enclosure.

Function

K0 compact range is designed for simple applications. The devices are only suitable for operation as diffuse sensors.



The sensors can be supplied with analog outputs. The end of operating range or analog range can be set using a potentiometer.

Up to 6 devices can be synchronized with each other.

Technical specifications

Type		3RG63 42	3RG63 43
Sensing range	cm	6 ... 30	20 ... 100
Standard target	cm	1 × 1	2 × 2
Hysteresis <i>H</i>	mm	5	10
Repeat accuracy <i>R</i>	mm	± 0.45	± 1.5
Operational voltage (DC)	V	10 ... 35 (including ± 10% residual ripple, at 10 ... 18 V sensitivity reduced by approx. 30%)	
Rated operational current <i>I_e</i>	mA	100	
No-load supply current <i>I₀</i>	mA	max. 35	
Ultrasonic frequency	kHz	400	200
Switching frequency <i>f</i>	Hz	8	5
Response time	ms	70	90
Power-up delay <i>t_v</i>	ms	7	7
Switching status display		Yellow LED	
Enclosure material		CRASTIN; epoxy resin converter surface	
Degree of protection		IP65; IP68 with separate sensor	
Ambient temperature			
• During operation	°C	0 ... +55	
• During storage	°C	-40 ... +85	

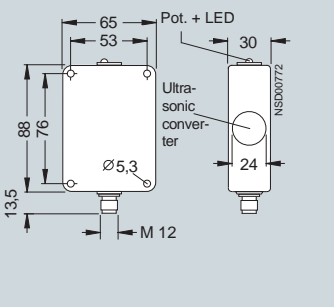
Selection and Ordering data

	Sensing range	Rated operational current	Switching output	Analog output	Order No.
	cm	mA	pnp		
Fixed sensor					
	6 ... 30	100	1 NO	–	▶ 3RG63 42-3AB00
	20 ... 100	100	1 NO	–	▶ 3RG63 43-3AB00
	6 ... 30	100	1 NC	–	3RG63 42-3AA00
	20 ... 100	100	1 NC	–	3RG63 43-3AA00
	6 ... 30	100	–	0 ... 10 V	▶ 3RG63 42-3JK00
	20 ... 100	100	–	0 ... 10 V	▶ 3RG63 43-3JK00
Separate sensor					
	6 ... 30	100	1 NO	–	▶ 3RG63 42-3AB01
	20 ... 100	100	1 NO	–	▶ 3RG63 43-3AB01
	6 ... 30	100	1 NC	–	3RG63 42-3AA01
	20 ... 100	100	1 NC	–	3RG63 43-3AA01
	6 ... 30	100	–	0 ... 10 V	▶ 3RG63 42-3JK01
	20 ... 100	100	–	0 ... 10 V	3RG63 43-3JK01

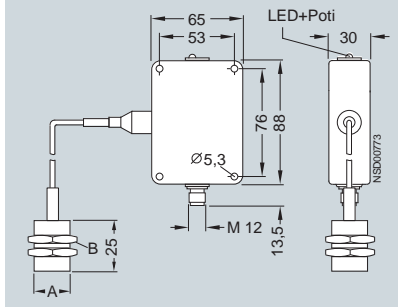
▶ Preferred type, available from stock.

Dimensions

3RG 63 4.-3..00



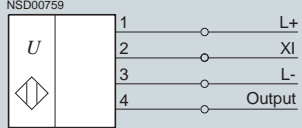
3RG 63 4.-3..01



Type	A	B
3RG63 42-3..01	M18	SW 24
3RG63 43-3..01	M30	SW 36

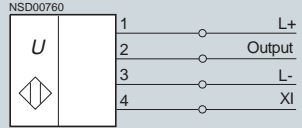
Schematics

NSD00759




NO or analog output

NSD00760



NC

View from rear onto device



NSD01042a

SIMATIC PXS sonar proximity switches

SIMATIC PXS100

3SG16 compact form

Overview



3SG16 compact form

The sonar proximity switch in compact form for DC is a complete, factory-assembled unit, ready for connection. It cannot be combined with devices from the compact range.

- Operates as diffuse sensor or reflex sensor
- Foreground and background suppression
- Adjustable by means of plug-in jumpers
- Solid-state outputs:
 - 2 switching outputs
- Terminal compartment with screw terminals

Design

All components are located in a single box-shaped enclosure. The ultrasonic converter and the terminal compartment are arranged on the same enclosure level.

The electrical connections are made via screw terminals in the terminal compartment; cable entry is through an M20 cable gland.

Aligning unit

To make it easier to align the Sonar proximity switch with the object to be detected, a 3SX6 287 aligning unit is available.

This unit allows swiveling about a horizontal and a vertical axis with an angle of rotation in each case of up to 30°.

Function

Range definition and adjustability

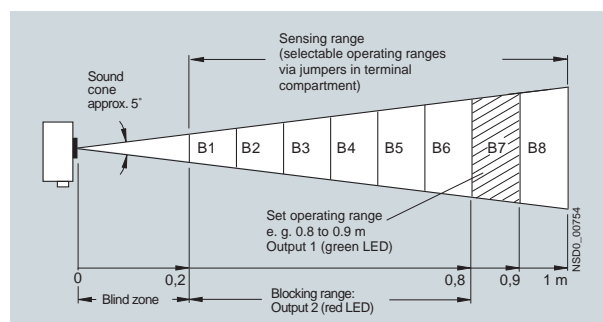
The sonar proximity switch outputs a signal while an object is located in the set operating range or inhibit range outside the blind zone (see figure).

The sensing range between 0.2 and 1 m is subdivided into 8 equal operating ranges of 0.1 m. Each operating range B1 to B8 can be selected using a connector in the terminal compartment.

The Sonar proximity switch signals with one output and one LED in each case whether objects are located in the set operating range or in the so-called inhibit range that precedes it.

With the help of the supplied programming plug, two to eight of the separate operating ranges (B1 to B8) can be combined to form an extended operating range.

The switching range is defined by two programming plugs. The plug is fitted to a pin connector in the terminal compartment of the device. The possible pin assignments are shown in the cover of the terminal compartment.



Modes

Standard operating mode, diffuse sensor

The sonar proximity switch switches when an object enters the sound cone from any direction, output 14 (NO) outputs a 1-signal if the object is located within a set operating range (B1 to B8). Output 24 (SX) outputs a 1-signal if the object is in the inhibit range. Objects in the blind zone do not cause a utilizable signal change on outputs 14 and 24.

Reflex sensor

If a reflector is permanently fixed within a set operating range, the ultrasonic beam will be interrupted by all objects in the inhibit range even those that absorb sound.

In this case, output 14 (NO) changes to the 0-signal. In the case of reflective objects in the inhibit range, output 24 (SX) changes to the 1-signal at the same time.

Technical specifications

Type	3SG16 compact form	
Sensing range	cm	20 ... 100
Standard target	cm	2 × 2
Hysteresis <i>H</i>	mm	10
Repeat accuracy <i>R</i>	mm	± 2
Operational voltage (DC)	V	10 ... 35 (including ± 10% residual ripple, at 10 ... 18 V sensitivity reduced by approx. 30%)
No-load supply current <i>I</i> ₀	mA	< 60
Switching output		
• Rated operational current <i>I</i> _e	mA	150
• Voltage drop	V	2
• Residual current	mA	0.01
Ultrasonic frequency	kHz	200
Switching frequency <i>f</i>	Hz	4
Response time	ms	120
Power-up delay <i>t</i> _v	ms	280
Switching status display		Yellow LED
Enclosure material		CRASTIN; epoxy resin converter surface
Degree of protection		IP65
Ambient temperature		
• During operation	°C	-25 ... 70
• During storage	°C	-40 ... 85

Selection and Ordering data

	Sensing range	Rated operational current	Switching output	Connection	Order No.
	cm	mA	pnp		
3SG16 sonar proximity switches	20 ... 100	150	2 NO	Terminal compartment	3SG16 67-1BJ87

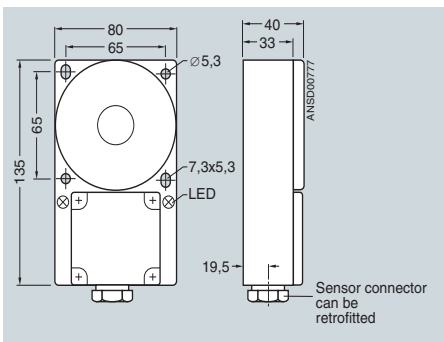
Accessories

Aligning unit

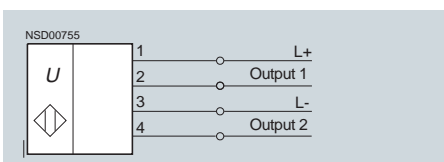
3SX6 287

▶ Preferred type, available from stock.

Dimensions



Schematics



SIMATIC PXS sonar proximity switches

SIMATIC PXS100

Sonar thru-beam sensor

Overview



Sonar thru-beam sensor

The sonar thru-beam sensor comprises an ultrasonic emitter and a receiver. The emitter and receiver circuits are installed in separate box-shaped enclosures of molded plastic.

- Operation as thru-beam sensor
- 3 measurement ranges can be set
- Solid-state output:
 - Switching output
- Connection
 - With 3 m cable
 - With M8 connector, 4-pole, type B
 - With M12 connector, 4-pole, type F

Function

Thru-beam sensor mode

The emitter of the sonar thru-beam sensor emits a narrowly focused continuous tone in the direction of the receiver.

The receiver located opposite evaluates this ultrasonic signal. Interruption of the tone by an object will cause the output signal to change.

Adjustment of sensitivity

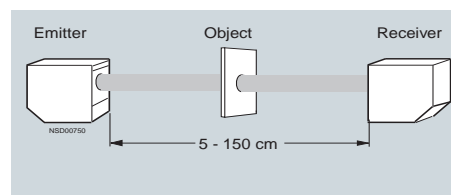
The sensitivity can be adjusted at the receiver module at terminal 2 (NO version) or 4 (NC version).

XI	Switching rate	Emitter/receiver distance
	Hz	cm
Not connected	100	< 150
L-	150	< 80
L+	200	< 40

Object detection

The minimum size of detectable objects depends on the distance between emitter and receiver. If the distance is less than 40 cm, objects 2 cm or larger will be detected. The gap with between two objects must be at least 3 mm.

If the distance is shorter, gaps of even < 1 mm can be detected. At maximum distance, objects greater than 4 cm in size can be detected. In this case the gaps between the objects must be > 1 cm.



Layout

Technical specifications

Type		3RG62 43-P (receiver)	3RG62 43-N (emitter)
Sensing range	cm	-	5 ... 150
Standard target	cm	2 x 2	
Operational voltage (DC)	V	20 ... 30 (including ± 10% residual ripple)	
Rated operational current I_e	mA	100	
No-load supply current I_0	mA	< 20	
Ultrasonic frequency	kHz	-	200
Switching frequency f			
• Up to 40 cm	Hz	200	-
• Up to 80 cm	Hz	150	-
• Up to 150 cm	Hz	100	-
Response time			
• Up to 40 cm	ms	2	-
• Up to 80 cm	ms	1.5	-
• Up to 150 cm	ms	1	-
Power-up delay t_v	ms	< 40	
Status indication		Green LED	
Enclosure material		CRASTIN; epoxy resin converter surface	
Degree of protection		IP67	
Ambient temperature			
• During operation	°C	0 ... +70	
• During storage	°C	-25 ... +85	

Sonar thru-beam sensor

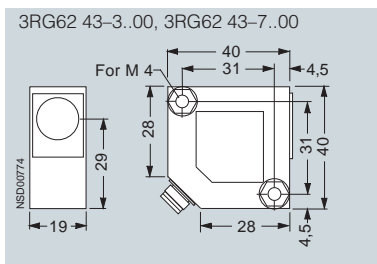
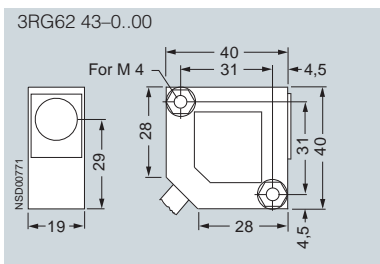
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Selection and Ordering data

	Sensing range	Rated operational current	Switching output	Connection	Order No.
	cm	mA	pnp		
	5 ... 150	100	1 NO	Cable, 3 m	▶ 3RG62 43-0PB00
	5 ... 150	100	1 NC	Cable, 3 m	3RG62 43-0PA00
	5 ... 150	–	Emitter	Cable, 3 m	▶ 3RG62 43-0NN00
	5 ... 150	100	1 NO	M 8 connector	3RG62 43-7PB00
	5 ... 150	100	1 NC	M 8 connector	3RG62 43-7PA00
	5 ... 150	–	Emitter	M 8 connector	3RG62 43-7NN00
	5 ... 150	100	1 NO	M12 connector	▶ 3RG62 43-3PB00
	5 ... 150	100	1 NC	M12 connector	3RG62 43-3PA00
	5 ... 150	–	Emitter	M12 connector	▶ 3RG62 43-3NN00

▶ Preferred type, available from stock.

Dimensions



Schematics

