Overview

SIMATIC sensors PXS200

- M30 K1 compact range,
- M18S compact range,
- K21 compact range,
- K08 compact form

Selection table

SIMATIC PXS200

	M30 K1 compact range									
	Fixed sensor head				Swivel-mounted sensor head				Separate sensor head	
Sensing range (cm)	**6 ... 30**	**20 ... 130**	**40 ... 300**	**60 ... 600**	**6 ... 30**	**20 ... 130**	**40 ... 300**	**60 ... 600**	**6 ... 30**	**20 ... 130**
Operating mode										
• Diffuse sensor	■	■	■	■	■	■	■	■	■	■
• Reflex sensor	■	■	■	■	■	■	■	■	■	■
Output										
• 1 switching output	■	■	■	■	■	■	■	■	■	■
Adjustment										
• 2 potentiometers	■	■	■	■	■	■	■	■	■	■
Connection										
• M12 connector	■	■	■	■	■	■	■	■	■	■
Degree of protection										
• IP65	■	■	■	■	■	■	■	■	■	■
See page	**2/27**									

A configurator for fast product selection and ordering in the Internet can be found at
www.siemens.com/simatic-sensors/px

SIMATIC PXS200

	K08 compact range			M18S compact range					
				Straight sensor head			Angled sensor head		
Sensing range (cm)	**5 ... 40**	**0 ... 80**	**0 ... 40**	**2 ... 25**	**2.5 ... 40**	**5 ... 70**	**2 ... 25**	**2.5 ... 40**	**5 ... 70**
Operating mode									
• Diffuse sensor	■			■	■	■	■	■	■
• Reflex sensor			■	■	■	■	■	■	■
• Thru-beam sensor		■							
Output									
• 1 switching output				■	■	■	■	■	■
• 2 switching outputs	■	■	■						
• Frequency output				■	■	■	■	■	■
Adjustment									
• Teach-in	■	■	■	■	■	■	■	■	■
Connection									
• M12 connector	■	■	■	■	■	■	■	■	■
Degree of protection									
• IP67	■	■	■	■	■	■	■	■	■
See page	**2/36**			**2/31**					

A configurator for fast product selection and ordering in the Internet can be found at
www.siemens.com/simatic-sensors/px

2

SIMATIC PXS200

	M18S compact range, 2 switching outputs				K21 compact range		
	Straight sensor head		Angled sensor head				
Sensing range (cm)	**2.5 ... 40**	**5 ... 70**	**2.5 ... 40**	**5 ... 70**	**2 ... 25**	**2.5 ... 40**	**0 ... 80**
Operating mode							
• Diffuse sensor	■	■	■	■	■	■	
• Reflex sensor					■	■	
• Thru-beam sensor							■
Output							
• 1 switching output					■	■	■
• 2 switching outputs	■	■	■	■			
• Frequency output					■	■	
Adjustment							
• Teach-in	■	■	■	■	■	■	■
Connection							
• M8 connector					■	■	■
• M12 connector	■	■	■	■			
• Cable					■	■	■
Degree of protection							
• IP67	■	■	■	■	■	■	■
See page	**2/31**				**2/34**		

A configurator for fast product selection and ordering in the Internet can be found at
www.siemens.com/simatic-sensors/px

Overview

M30 design with fixed sensor

The Sonar proximity switches of M30 K1 compact range are ready-to-use all-in-one units with a cylindrical M30 enclosure. They differ with regard to their range, their functional scope and their adjustment or programming capability.

- Operates as diffuse sensor or reflex sensor
- Adjustable via 2 potentiometers
- Electronic switching output
- Connection via M12 connector, 3-pole or 4-pole, Type E, F

Design

Standard version

In the standard version, the devices have a permanently installed sensor.

Version with separate sensor

M30 design with separate sensor

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. For 3RG6. 12 devices, the sensor is in an M18 sleeve, for 3RG6. 13 devices, the sensor is installed in an M30 sleeve with a length of 25 mm in each case.

Two nuts are supplied for fixing. The connecting lead, which is 1.6 m long, is cast onto the sensor. The connection to the evaluation electronics located in the M30 enclosure of the compact range is established via the preassembled coaxial cable plug. The plug-in socket is installed on the end face of the enclosure.

Version with swivel sensor

These devices correspond functionally to the other devices of M30 K1 compact range. They are particularly suitable for applications where the standard type cannot be used due to space limitations.

M30 design with swivel sensor

The ultrasonic sensor is hinged with a swivel arm to the tubular enclosure of the signal evaluator. This allows rotation about the cylinder axes as well as perpendicular movement at about 100° to the cylinder axis.

Passive reflector

With the Sonar proximity switches of M30 K1 compact range, a 3RX1 910 passive reflector can be clamped onto the sensor head (see "Accessories").

Where space is limited, objects can be detected which are perpendicular to the Sonar proximity switch (which reduces the installation depth). The blind zone is therefore reduced by about 6 cm.

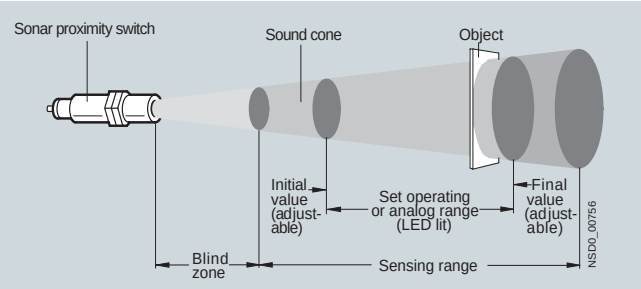
M30 K1 compact range

Function

Range definition and adjustability

Objects within the preset operating range or analog range will be reliably detected causing the switching output or analog output to change state.

The blind zone must be kept clear of any objects since this might cause false outputs. Objects at a distance from the sensor that is outside the set operating range limits will not be signaled at the switching output.



Sound cone

Modes

Standard operating mode, diffuse sensor

An object entering the sound cone from any direction causes the output signal to change when it enters the preset sensing range.

Reflex sensor

If a reflector is permanently fixed within a set operating range, the Sonar proximity switch will be operated by all objects that lie between the Sonar proximity switch and the reflector, even those that absorb sound.

Technical specifications

Type		3RG60 .2	3RG60 .3	3RG60 .4	3RG60 .5
Sensing range	cm	6 ... 30	20 ... 130	60 ... 600	40 ... 300
Standard target	cm	1 × 1	2 × 2	10 × 10	5 × 5
Hysteresis *H*	mm	10	10	60	20
Repeat accuracy *R*	mm	± 0.45	± 2	± 9	± 5
Operational voltage (DC)	V	12 ... 30 (including ± 10% residual ripple, at 12 … 20 V sensitivity reduced by approx. 20%)			
Rated operational current I_e					
• NO contact	mA	300			
• NC contact	mA	300			
No-load supply current I_0	mA	max. 50			
Ultrasonic frequency	kHz	400	200	80	120
Switching frequency *f*	Hz	8	4	1	2
Response time	ms	80	110	400	200
Power-up delay t_v	ms	280	280	280	280
Switching status display		Yellow LED			
Enclosure material		Brass, nickel-plated; CRASTIN converter cover; epoxy resin converter surface			
Degree of protection		IP65; IP68 with separate sensor		IP65	
Ambient temperature					
• During operation	°C	–25 ... +70			
• 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						
3RG60 12–3..00 	6 ... 30	300	1 NO	–	▶	**3RG60 12–3AD00**
	20 ... 130	300	1 NO	–	▶	**3RG60 13–3AD00**
	40 ... 300	300	1 NO	–	▶	**3RG60 15–3AD00**
	60 ... 600	300	1 NO	–	▶	**3RG60 14–3AD00**
3RG60 13–3..00 	6 ... 30	300	1 NC	–	▶	**3RG60 12–3AC00**
	20 ... 130	300	1 NC	–	▶	**3RG60 13–3AC00**
	40 ... 300	300	1 NC	–		**3RG60 15–3AC00**
	60 ... 600	300	1 NC	–	▶	**3RG60 14–3AC00**
3RG60 15–3..00 						
3RG60 14–3..00 						
Swivel sensor						
3RG60 25–3..00 	6 ... 30	300	1 NO	–		**3RG60 22–3AD00**
	20 ... 130	300	1 NO	–		**3RG60 23–3AD00**
	40 ... 300	300	1 NO	–		**3RG60 25–3AD00**
	60 ... 600	300	1 NO	–		**3RG60 24–3AD00**
	6 ... 30	300	1 NC	–		**3RG60 22–3AC00**
	20 ... 130	300	1 NC	–		**3RG60 23–3AC00**
	40 ... 300	300	1 NC	–		**3RG60 25–3AC00**
	60 ... 600	300	1 NC	–		**3RG60 24–3AC00**
Separate sensor						
3RG60 12–3..01 	6 ... 30	300	1 NO	–		**3RG60 12–3AD01**
	20 ... 130	300	1 NO	–		**3RG60 13–3AD01**
	6 ... 30	300	1 NC	–		**3RG60 12–3AC01**
	20 ... 130	300	1 NC	–		**3RG60 13–3AC01**

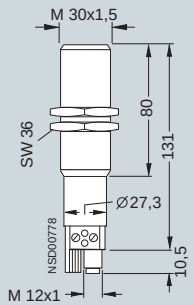
▶ Preferred type, available from stock.

M30 K1 compact range

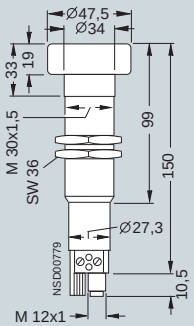
Dimensions

With fixed sensor

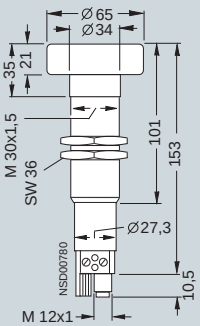
3RG 6. 12–3..00
3RG 6. 13–3..00



3RG 6. 15–3..00

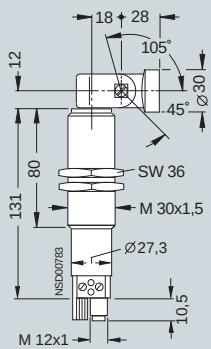


3RG 6. 14–3..00

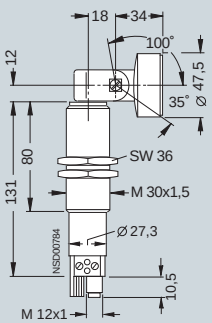


With swiveling sensor

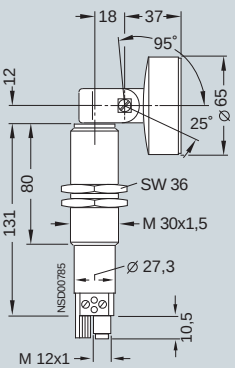
3RG 6. 22–3..00
3RG 6. 23–3..00



3RG 6. 25–3..00

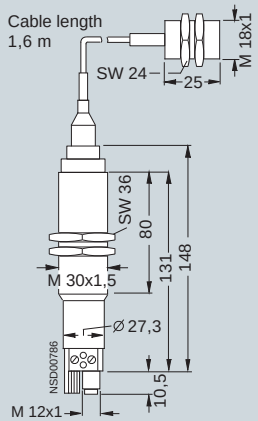


3RG 6. 24–3..00

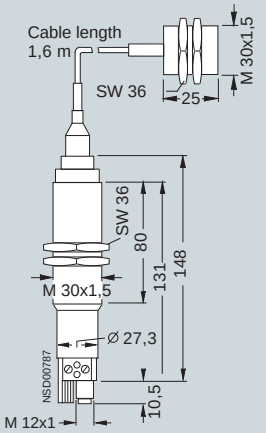


With separate sensor

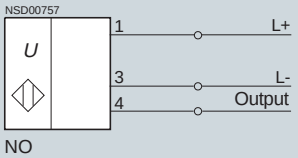
3RG 6. 12–3..01



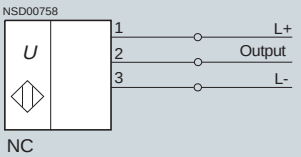
3RG 6. 13–3..01



Schematics



NO



NC

View from rear onto device

Overview

M18S design

The Sonar proximity switches of the M18S compact series are ready-to-connect complete units in a cylindrical enclosure.

- Can be operated as diffuse sensor or thru-beam sensor
- Adjustable via teach-in (switching output only)
- Electronic outputs:
  - Switching output
  - Frequency output, suitable for connection to LOGO!
- Connected via M12 connector
  - 4-pole, type F (1 output)
  - 5-pole, type G (2 outputs)

Design

M18S compact range can be supplied with an aligned sensor head or an angled sensor head. The small physical size of the sensors makes them ideal for applications where space is limited.

Function

Available as diffuse sensors and reflex sensors. The sensors can be supplied with switching or frequency outputs. Due to their wide range and a minimized close range, they are suitable for a wide variety of applications.

Programming

The sensors with a switching output can be set via the device terminals by means of a teach-in function. For the sensors with a frequency output, the range can be set via the wiring. Evaluation can be performed in a PLC or in a LOGO! mini PLC.

M18S compact range

Technical specifications

Type M18S		6GR62 22, 6GR62 32	6GR62 21, 6GR62 31	6GR62 23, 6GR62 32
Number of outputs		**1**	**1**	**1**
Sensing range	cm	2 ... 25 or 0 ... 25	2.5 ... 40 or 0 ... 40	5 ... 70 or 0 ... 70
Adjustment range	cm	3.5 ... 25 or 9 ... 25	4 ... 40 or 11.5 ... 40	7.5 ... 70 or 20 ... 75
Standard target	cm	2 × 2		
Hysteresis *H*	mm	10 or 2		10 or 3
Repeat accuracy *R*	mm	± 1 (frequency output ± 2.5)		
Operating voltage (DC)	V	20 ... 30 (including ± 10% residual ripple)		
Rated operating current I_e	mA	150		
No-load supply current I_0	mA	Max. 20		
Ultrasonic frequency	kHz	400	300	200
Switching frequency *f*	Hz	10		5
ON-delay	ms	50		100
Power-up delay	ms	20		
Switching status display		Yellow LED		
Enclosure material		Brass, nickel-plated; CRASTIN converter cover; epoxy resin converter surface		
Degree of protection		IP67		
Ambient temperature				
• Operation	°C	–25 ... +70		
• Storage	°C	–40 ... +85		

Type M18S		6GR62 21, 6GR62 31	3RG62 23, 6GR62 33
Number of outputs		**2**	**2**
Sensing range	cm	2.5 ... 40	5 ... 70
Adjustment range	cm	4 ... 40	7.5 ... 70
Standard target	cm	2 × 2	
Hysteresis *H*	mm	10	
Repeat accuracy *R*	mm	± 1 (frequency output ± 2.5)	
Operating voltage (DC)	V	20 ... 30 (including ± 10% residual ripple)	
Rated operating current I_e	mA	375	
No-load supply current I_0	mA	max. 20	
Ultrasonic frequency	kHz	300	200
Switching frequency *f*	Hz	10	5
ON-delay	ms	50	100
Power-up delay	ms	20	
Switching status display		2 yellow LEDs	
Enclosure material		Brass, nickel-plated; CRASTIN converter cover; epoxy resin converter surface	
Degree of protection		IP67	
Ambient temperature			
• Operation	°C	–25 ... +70	
• Storage	°C	–40 ... +85	

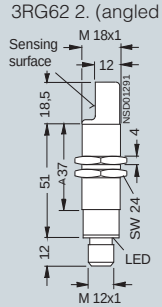
Selection and Ordering data

	Sensing range	Rated operational current	Switching output	Operating mode/ frequency output		Order No.
	cm	mA	pnp			
Straight sensor						
	2 ... 25	150	1 NO	Diffuse sensor	▶	**6GR62 32–3AB00**
	2.5 ... 40	150	1 NO	Diffuse sensor	▶	**6GR62 31–3AB00**
	5 ... 70	150	1 NO	Diffuse sensor	▶	**6GR62 33–3AB00**
	0 ... 25	150	1 NO	Reflex sensor	▶	**6GR62 32–3BB00**
	0 ... 40	150	1 NO	Reflex sensor	▶	**6GR62 31–3BB00**
	0 ... 70	150	1 NO	Reflex sensor	▶	**6GR62 33–3BB00**
	2 ... 25	150	–	280 … 2000 Hz 140 … 1000 Hz		**6GR62 32–3RS00**
	2.5 ... 40	150	–	160 … 1600 Hz 40 … 400 Hz		**6GR62 31–3RS00**
	5 ... 70	150	–	150 … 1400 Hz 75 … 700 Hz		**6GR62 33–3RS00**
	2.5 ... 40	375	2 NO	Diffuse sensor		**6GR62 31-3AH00**
	5 ... 70	375	2 NO	Diffuse sensor		**6GR62 33-3AH00**
	2.5 … 40	375	1 NC, 1 NO	Diffuse sensor		**6GR62 31-3AJ00**
	5 ... 70	375	1 NC, 1 NO	Diffuse sensor		**6GR62 33-3AJ00**
Angled sensor						
	2 … 25	150	1 NO	Diffuse sensor	▶	**6GR62 22–3AB00**
	2.5 … 40	150	1 NO	Diffuse sensor		**6GR62 21–3AB00**
	5 … 70	150	1 NO	Diffuse sensor	▶	**6GR62 23–3AB00**
	0 … 25	150	1 NO	Reflex sensor		**6GR62 22–3BB00**
	0 … 40	150	1 NO	Reflex sensor		**6GR62 21–3BB00**
	0 … 70	150	1 NO	Reflex sensor		**6GR62 23–3BB00**
	2 … 25	150	–	280 … 2000 Hz 140 … 1000 Hz		**6GR62 22–3RS00**
	2.5 … 40	150	–	160 … 1600 Hz 40 … 400 Hz		**6GR62 21–3RS00**
	5 … 70	150	–	150 … 1400 Hz 75 … 700 Hz		**6GR62 23–3RS00**
	2.5 … 40	375	2 NO	Diffuse sensor		**6GR62 21-3AH00**
	5 … 70	375	2 NO	Diffuse sensor		**6GR62 23-3AH00**
	2.5 … 40	375	1 NC, 1 NO	Diffuse sensor	▶	**6GR62 21-3AJ00**
	5 … 70	375	1 NC, 1 NO	Diffuse sensor	▶	**6GR62 23-3AJ00**
Accessories						
	Teach-in adapter, 4-pole				▶	**3RX4 010**
	Teach-in adapter, 5-pole				▶	**3RX4 020**

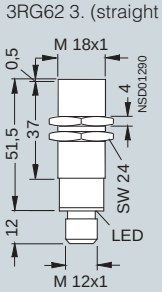
▶ Preferred type, available from stock.

Dimensions

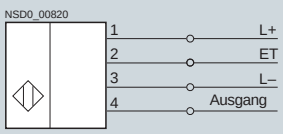
3RG62 2. (angled sensor)



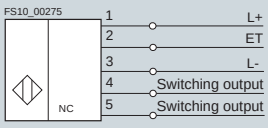
3RG62 3. (straight sensor)



Schematics



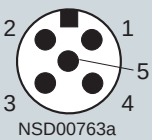
1 switching output/frequency output



2 switching outputs

NSD01042a

View from rear onto device



NSD00763a

View from rear onto device

SIMATIC PXS200

K21 compact range

Overview

K21 compact range

Sonar proximity switches from the K21 compact range are complete, prewired units in a miniature cubic enclosure.

- Operation as a diffuse sensor, reflex sensor or thru-beam sensor
- Adjustable via "teach-in" (with switching output only)
- Solid-state outputs:
  - Switching output
  - Frequency output, suitable for connection to LOGO!
- Wiring via M8 connector
  - 4-pole, type B

Benefits

- Simple, precise object recognition
- Also senses transparent objects and liquids
- Ultrasonic: Not influenced by the object's color or brightness
- Suitable for use in cramped conditions and tough environments
- High degree of protection IP67
- Configured using "teach-in"

Technical specifications

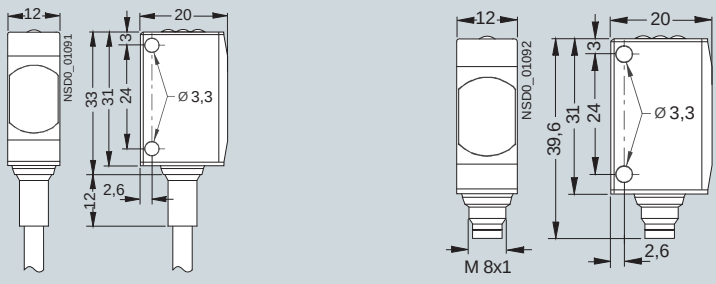
Type		6GR62 42	6GR62 41	6GR62 41-.P.. (receiver) 6GR62 41-.N.. (emitter)
Sensing range	cm	2 ... 25 or 0 ... 25	2.5 ... 40 or 0 ... 40	0 ... 80
Adjustment range	cm	4.5 ... 25 or 9.8 ... 25	4 ... 40 or 12 ... 40	–
Standard target	cm	2 x 2		–
Hysteresis *H*	mm	2.5	4	–
Repeat accuracy *R*	mm	± 1 (frequency output ± 2.5)		–
Operating voltage, including 10% residual ripple	V DC	20 ... 30		
Rated operating current I_e				
• Switching output, max.	mA	200		
• Frequency output, max.	mA	100		
No-load current I_0, max.	mA	20		
Ultrasonic frequency	kHz	400	300	
Switching frequency *f*	Hz	10	5	100
Response time	ms	50	75	5
Power-up delay t_v	ms	150		
Switching status indicator		Yellow LED		Yellow LED, green LED
Enclosure material		ABS / PMMA		
Transformer surface finish		Epoxy resin		
Degree of protection		IP67		
Ambient temperature				
• During operation	°C	-25 ... +70		
• During storage	°C	-40 ... +85		

Selection and Ordering data

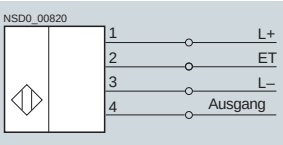
	Sensing range cm	Operating mode/ frequency output	Switching output	Connection		Order No.
K21 compact range						
	2.5 … 40	Diffuse sensor	NO contact	2 m cable	▶ A	**6GR62 41-0AB00**
		Diffuse sensor	NO contact	M8 connector	▶	**6GR62 41-7AB00**
		Diffuse sensor	NC contact	2 m cable	▶ A	**6GR62 41-0AA00**
		Diffuse sensor	NC contact	M8 connector	▶	**6GR62 41-7AA00**
	4 … 40	40 ... 400 Hz / 80 ... 800 Hz	-	2 m cable	▶ A	**6GR62 41-0RS00**
		40 ... 400 Hz / 80 ... 800 Hz	-	M8 connector	▶	**6GR62 41-7RS00**
	2 … 25	Diffuse sensor	NO contact	2 m cable	▶ A	**6GR62 42-0AB00**
		Diffuse sensor	NO contact	M8 connector	▶	**6GR62 42-7AB00**
		Diffuse sensor	NC contact	2 m cable	▶ A	**6GR62 42-0AA00**
		Diffuse sensor	NC contact	M8 connector	▶	**6GR62 42-7AA00**
	3.5 … 25	70 ... 500 Hz / 35 ... 250 Hz	-	2 m cable	▶ A	**6GR62 42-0RS00**
		70 ... 500 Hz / 35 ... 250 Hz	-	M8 connector	▶	**6GR62 42-7RS00**
	0 … 40	Retroflective sensor	NO contact	2 m cable	▶ A	**6GR62 41-0BB00**
		Retroflective sensor	NO contact	M8 connector	▶	**6GR62 41-7BB00**
		Retroflective sensor	NC contact	2 m cable	▶ A	**6GR62 41-0BA00**
		Retroflective sensor	NC contact	M8 connector	▶	**6GR62 41-7BA00**
	0 … 25	Retroflective sensor	NO contact	2 m cable	▶ A	**6GR62 42-0BB00**
		Retroflective sensor	NO contact	M8 connector	▶	**6GR62 42-7BB00**
		Retroflective sensor	NC contact	2 m cable	▶ A	**6GR62 42-0BA00**
		Retroflective sensor	NC contact	M8 connector	▶	**6GR62 42-7BA00**
	0 … 80	Thru-beam sensor emitter		2 m cable	▶ A	**6GR62 41-0NN00**
		Thru-beam sensor emitter		M8 connector	▶	**6GR62 41-7NN00**
		Thru-beam sensor receiver	NO contact	2 m cable	▶ A	**6GR62 41-0PB00**
		Thru-beam sensor receiver	NO contact	M8 connector	▶	**6GR62 41-7PB00**
		Thru-beam sensor receiver	NC contact	2 m cable	▶ A	**6GR62 41-0PA00**
		Thru-beam sensor receiver	NC contact	M8 connector	▶	**6GR62 41-7PA00**
Accessories						
	Teach-in adapter				▶	**3RX4 030**
	Mounting bracket				▶	**3RX7 308-0AA00**

▶ Preferred type, available from stock.
A: Subject to export regulations AL = N and ECCN = EAR99H

Dimensions

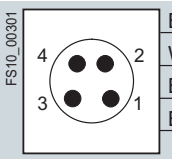


Schematics



1 switching output/frequency output

View from rear onto device



BN (1)	+ U_b
WH (2)	ET
BK (4)	Sw/freq output
BU (3)	0 V

M8 connector, type B, cable

SIMATIC PXS200

K08 compact form

Overview

K08 compact form

The Sonar proximity switches of K08 compact form are ready-to-use all-in-one units with a rectangular metal enclosure.

- 3 versions with different operating modes:
  - Diffuse sensors with background suppression
  - Reflex sensor
  - Thru-beam sensor:
- Diffuse sensor and reflex sensor:
  - Up to 6 devices can be synchronized
  - Adjustment per teach-in
- Solid-state outputs:
  - 1 pnp and 1 npn switching output
  - NO/NC adjustable
- Connection via M12 connector, 5-pole, rotatable by 90°, Type G

Technical specifications

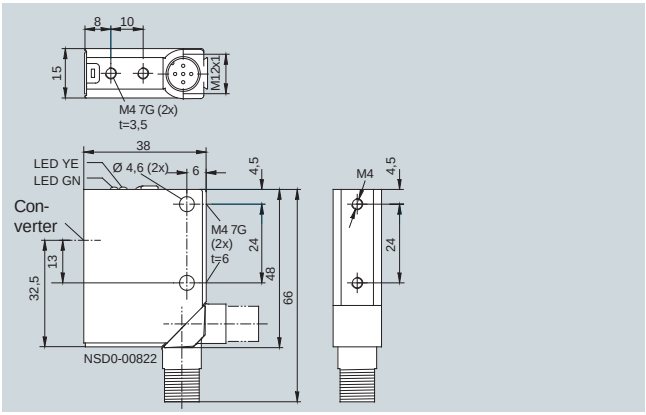
Type		3RG64 51–3CC00	3RG64 51–3DC00	3RG64 51–3SB00
Operating mode		Diffuse sensor	Reflex sensor	Thru-beam sensor
Sensing range	mm	50 ... 400	0 ... 400	0 ... 800
Adjustment range	mm	60 ... 400	160 ... 400	0 ... 800
Standard target	cm	2 × 2	2 × 2	2 × 2
Hysteresis *H*	mm	10	2	–
Repeat accuracy *R*	mm	± 1	± 1	–
Operational voltage (DC)	V	20 ... 30 (including ± 10% residual ripple)		
Rated operational current I_e	mA	150		
No-load supply current I_0	mA	Max. 25		
Ultrasonic frequency	kHz	300	300	300
Switching frequency *f*	Hz	8	8	250
Response time	ms	100	100	100
Power-up delay t_v	ms	250	250	250
Indicators				
• Switching status		Yellow LED		
• Operating voltage		Green LED		
Enclosure material		Metal		
Degree of protection		IP67		
Ambient temperature				
• During operation	°C	–25 ... +70		
• During storage	°C	–40 ... +85		

Selection and Ordering data

	Sensing range	Rated operational current	Switching output	Operating mode		Order No.
	cm	mA	pnp + npn			
Cubic form						
	5 ... 40	150	1 selectable NO/NC contact each	Diffuse sensor	►	**3RG64 51-3CC00**
	0 ... 40	150	1 selectable NO/NC contact each	Reflex sensor		**3RG64 51-3DC00**
	–	–	–	Thru-beam sensor emitter		**3RG64 51-3NN00**
	0 ... 80	150	1 NO each	Thru-beam sensor receiver		**3RG64 51-3SB00**

► Preferred type, available from stock.

Dimensions



Schematics