SIMATIC PXO opto proximity switches
Functionality and highlight

Diffuse sensor (energetic sensor)

The light from the emitter falls on an object and is reflected in a diffuse pattern. Part of this reflected light reaches the receiver located in the same device. If the intensity of the received light is sufficient, the output is switched.
The sensing range depends on the size and color of the object involved as well as its surface texture. The sensing range can be varied within a wide range by means of the built-in potentiometer. The energetic sensor can therefore also be used to detect different colors.

Diffuse sensor with background suppression

Diffuse sensors with background suppression can detect objects up to a specific sensing range. All objects beyond this range are suppressed. The focus level can be adjusted. The background is suppressed due to the geometric constellation between the emitter and the receiver.

Retroreflective sensors

The light from the emitter diode is focused through a lens and directed via a polarization filter to a reflector (principle of a 3-way mirror). Part of the reflected light passes through another polarization filter and reaches the receiver. The filters are selected and aligned in such a way that only the light reflected from the reflector reaches the receiver and not the light reflected from other objects within the beam range.

Thru-beam sensors

Thru-beam sensors comprise an emitter and a receiver. The emitter is aligned in such a way that the greatest possible amount of pulsed light from the emitter diode reaches the receiver. The receiver evaluates the incoming light to clearly separate it from the ambient light and other light sources.

Sensors for Ex Zone 2/22

The K80 ATEX optical proximity switches are approved according to EU Guideline 94/9/EG (ATEX) Appendix VIII

The approval is for:

- Gas EX II 3G EEx nA II T6 X and
- Dust EX II 3D IP65 T 80 °C X

The functionality of the optical proximity switches with ATEX approval is identical to that of the standard proximity switches.

Highlights

- Extremely precise and quick-acting with pin-point locating ability
- High performance even across large distances
- Small, compact housing
- Reliable measurement even in the smallest spaces with Mini-Sensor (K20/K21)
- Degree of protection up to IP68
- Adjustable ranges
- Simple commissioning (Teach-In)
- UL/CSA approvals
- Version for use in Ex zone 2/22 (K80 form)
- Precise sensing of smallest objects with fiber-optic sensors or fork sensors
- Sensing or distance measurement on large distances with laser distance sensors

SIMATIC Sensors	Version	Form
PXO100	Cylindrical version, mini	D4, M5, M12
PXO200	Cylindrical versions	M18S, M18, L18
PXO300	Cubic version, mini	K21, K21R, K20, L20, C20
PXO400	Cubic version, small	K31, K30
PXO500	Cubic version	C40, L50, L50HF, L50HF, adv., C50
PXO600	Cubic version, large	K80, L80HF, L90L
PXO800	Special device amplifiers	GL, LV70

Overview of SIMATIC PXO opto proximity switches

	SIMATIC PXO100					SIMATIC PXO200					SIMATIC PXO300						
																	
Type	D4, M5		M12			M18S			M18	L18	K21		K20		L20		PXO 370 C20
Operating mode																	
• Diffuse sensor	■		■			■					■						
• Diffuse sensor with background suppression									■				■		■		
• Retroreflective sensor				■			■					■		■		■	
• Thru-beam sensor		■			■			■		■							
• Contrast sensor																	■
• Color sensor																	
• Distance measurement																	
Sensing range																	
• 1.8 cm to 3 cm																	
• 5 cm to 10 cm	■												■		■		
• 12 cm to 15 cm									■								■
• 20 cm to 30 cm		■	■														
• 40 cm to 50 cm						■*)								■			
• 60 cm to 70 cm				■		■*)					■						
• 1 m to 1.5 m																■	
• 2 m to 3 m							■					■					
• 4 m to 6 m					■			■									
• 12 m to 15 m																	
• 15 m to 20 m																	
• 30 m																	
• 50 m										■							
Output																	
• Electronic contact	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
• Relay																	
• Analog																	
Direct communication with the PLC																	
Operating voltage																	
• 24 VDC	■	■				■	■	■	■	■	■	■	■	■			■
• 20 ... 265/320 VAC/DC																	
Connection																	
• M8 connector	■	■									■	■	■	■			■
• M12 connector			■	■	■	■	■	■	■	■							
• Cable	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
• Terminals																	
Special features																	
• Timer function																	
• Surplus light						■	■	■									
• Transparent objects														■			
• Approval for Ex Zone 2/22																	
Light type																	
• Visible light			■	■	■	■	■	■			■	■	■	■			
• Infrared light	■	■															
• Laser light, red										■					■	■	■
• Laser light, infrared																	
• White light, pulsed																	
Product selection code	3RG7030	3RG7040	3RG7120	3RG7121	3RG7122	3RG7640 3RG7650	3RG7641 3RG7651	3RG7642 3RG7652	3RG7134	3RG7135 3RG7175	3RG7400 3RG7420	3RG7401 3RG7421	3RG7404	3RG7401	3RG7407	3RG7406	3RG7408

*) = Depending on implementation

SIMATIC PXO400				SIMATIC PXO500							SIMATIC PXO600						SIMATIC PXO800	
																		
K31				K30			C40				L50			C50	K80				L80	PXO650 L90L	PXO830 GL	PXO840 LV70
3RG7010	3RG7014	3RG7011	3RG7012	3RG7010	3RG7011	3RG7012	3RG7240	3RG7244	3RG7241	3RG7241	3RG7056	3RG7057	3RG7056	3RG7050	3RG7200 3RG7210	3RG7204 3RG7214	3RG7201 3RG7211	3RG7202 3RG7212	3RG7256	6GR1654	6GR180	6GR181