

# Laser Distance Sensor

## Triangulation

# P3EC401

Part Number

inspect  
award 2024



- 2 mutually independent switching outputs
- Integrated jump detection
- Intuitive operating concept
- Rugged aluminium housing
- Switching point independent of material, color and brightness

These laser distance sensors work with a fine red light beam and a high-resolution CMOS line. They determine the distance between the sensor and the object by means of the triangulation principle. Thanks to the integrated TripleA technology, the sensors offer high precision, temperature stability and material independence. This means they deliver accurate results even with objects of different materials, colors and shapes, as well as in fluctuating light and temperature conditions. The intuitive operating concept simplifies initial start-up and makes the sensors versatile all-rounders.

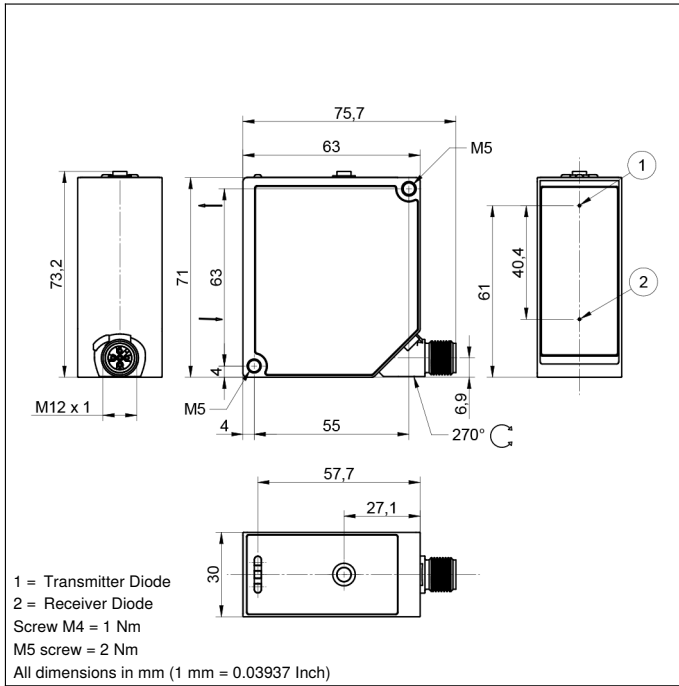


## Technical Data

Optical Data	
Working Range	150...1000 mm
Setting Range	150...1000 mm
Reproducibility maximum	350 $\mu$ m
Reproducibility: 1 Sigma	35 $\mu$ m
Linearity Deviation	850 $\mu$ m
Switching Hysteresis	< 0,5 %
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	20000 Lux
Light Spot Diameter	see Table 1
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	650 Hz
Response Time	< 0,5 ms
Temperature Drift	< 75 $\mu$ m/K
Temperature Range	-30...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 1,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
IO-Link Version	1.1
IO-Link transmission speed	COM3
Protection Class	III
FDA Accession Number	2311155-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Aluminum, anodised
Housing Material	Plastic, ABS
Degree of Protection	IP67
Connection	M12 x 1; 5-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	684,87 a
PNP NO	●
IO-Link	●
Connection Diagram No.	<b>243</b>
Control Panel No.	<b>X5</b>
Suitable Connection Equipment No.	<b>2   35</b>
Suitable Mounting Technology No.	<b>932</b>

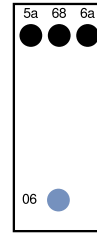
## Complementary Products

IO-Link Master	
Protective Screen	
Software	

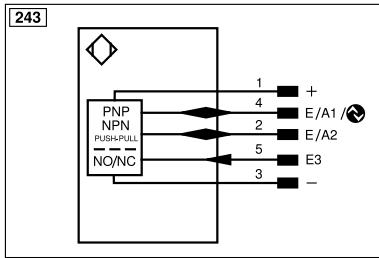


### Ctrl. Panel

X5



06 = Teach Button  
 5a = Switching Status Indicator, A1  
 68 = Power LED  
 6a = Switching Status Indicator, A2



Legend					
+	Supply Voltage +	nc	Not connected	EN <sub>BRS422</sub>	Encoder B/B̄ (TTL)
-	Supply Voltage 0 V	U	Test Input	ENA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	EN <sub>B</sub>	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W-	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	AOK	Digital output OK
ȳ	Contamination/Error Output (NC)	O-	Ground for the Analog Output	SY In	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
T	Teach Input	Amv	Valve Output	OLT	Brightness output
Z	Time Delay (activation)	a	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Colors according to DIN IEC 60757	
TxD	Interface Send Path	SY-	Ground for the Synchronization	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	±	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
	IO-Link	Rx+/-	Ethernet Receive Path	GN	Green
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
OSSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
Bl_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN <sub>o</sub> RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contacting Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	EN <sub>ARS422</sub>	Encoder A/Ā (TTL)		

Table 1

Working Distance	150 mm	575 mm	1000 mm
Light Spot Diameter	1 mm	1 mm	1 mm

