Distance Sensor

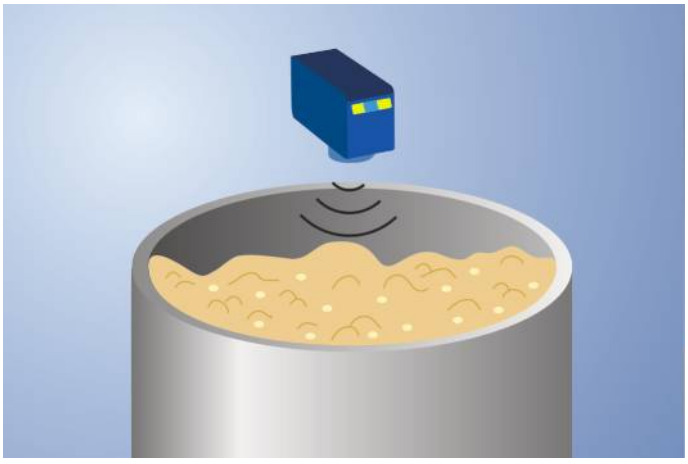
U1KT002

Part Number



- **2 mutually independent switching outputs**
- **Miniature design**
- **Ready for Industrie 4.0 with IO-Link version 1.1**
- **Reflex and through-beam operation mode are possible**

These ultrasonic sensors evaluate the sound reflected from the object. They detect almost any object regardless of the material and its condition. They are therefore especially well suited for monitoring fill levels of liquids and bulk goods and for detecting transparent objects. The measured value can be read out via IO-Link, and the sensor can be optimally adapted to the application. The sensor can be used in reflex mode operation and as an ultrasonic through-beam sensor.



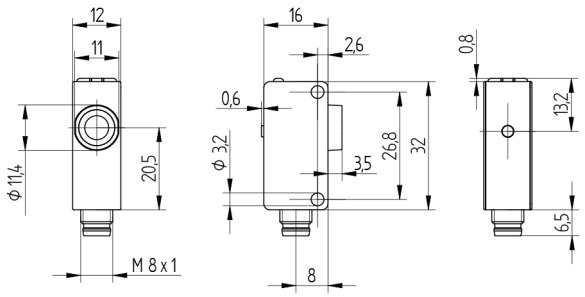
Technical Data

Ultrasonic Data	
Working range, reflex sensor	30...400 mm
Working range, through-beam sensor	1...800 mm
Setting Range	30...400 mm
Reproducibility maximum	4 mm
Linearity Deviation	4 mm
Resolution	0,5 mm
Ultrasonic Frequency	325 kHz
Opening Angle	< 12 °
Service Life (T = +25 °C)	100000 h
Switching Hysteresis	1 % *
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 20 mA
Switching frequency, reflex sensor	30 Hz
Switching frequency, through-beam sensor	70 Hz
Response time, reflex sensor	17 ms
Response time, through-beam sensor	8 ms
Temperature Range	-30...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Synchronous Mode	up to 40 sensors
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Data Storage	yes
Protection Class	III
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic, PC
Housing Material	Plastic, PC+ABS
Sensing face	Epoxy resin/glass bubble mixture
Sensing face	Plastic, PC+ABS
Sensing face	Plastic, PU
Degree of Protection	IP68
Connection	M8 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1106,71 a
NPN NO	●
Programmable error output	●
IO-Link	●
Connection Diagram No.	373
Control Panel No.	A23
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

* Referring to the switching distance, at least 2 mm.

Complementary Products

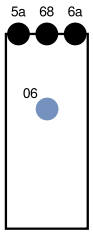
IO-Link Master
Software



1 = Sensing Face
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

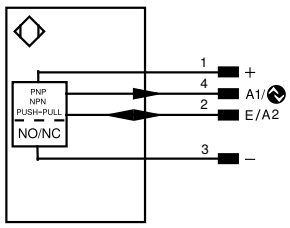
Ctrl. Panel

A 23



06 = Teach Button
5a = Switching Status Indicator, A1
68 = supply voltage indicator
6a = Switching Status Indicator, A2

373

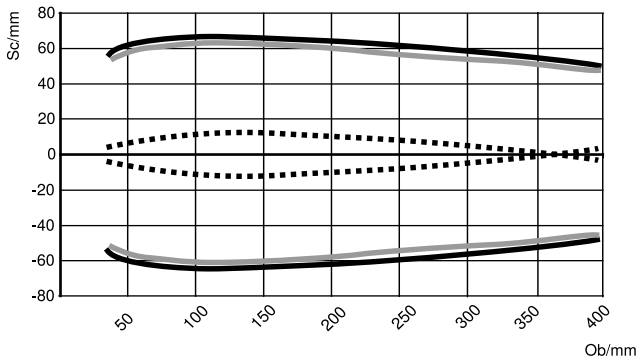


Legend					
+	Supply Voltage +	nc	Not connected	ENBRS422	Encoder B/B̄ (TTL)
–	Supply Voltage 0 V	U	Test Input	ENA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENB	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W–	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	AOK	Digital output OK
V̄	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	ower 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
BI_D+/–	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN0 RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	ENARS422	Encoder A/Ā (TTL)		

Characteristic response curve

Characteristic curves show the position of the center or the front edge of the measured object (100 × 100 mm plate) at the time of switching.

U1KT



Ob = Object

Sc = Sonic cone width

- Standard sonic cone (center of the measured object)
- Narrow sonic cone (center of the measured object)
- Standard sonic cone (front edge of the measured object)

Specifications are subject to change without notice V2-13.02.2024