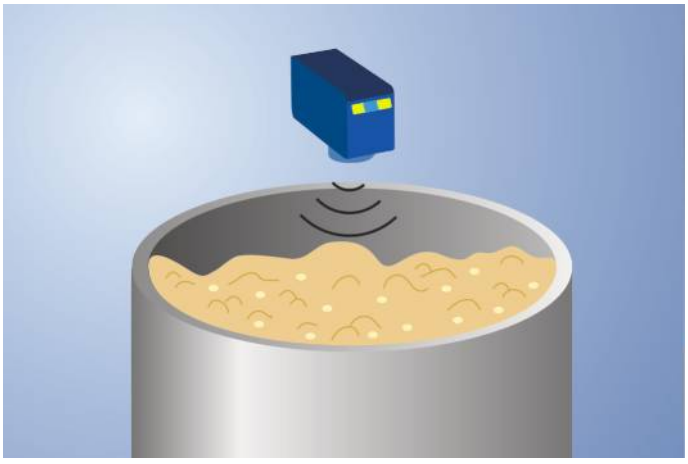
Reflex Sensor

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 by the object. They detect almost every object and are suited especially for the filling level monitoring of fluids or bulk material or the detection of transparent objects. The sensor detects objects independent from their material, aggregate state, color or transparency. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and distance values.



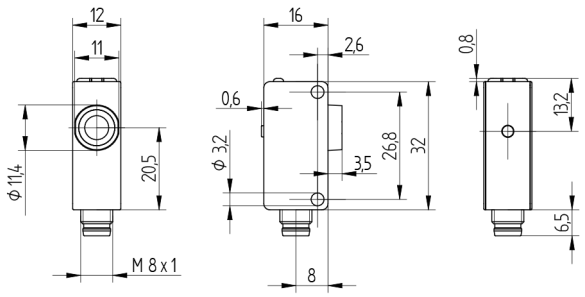
Technical Data

Ultrasonic Data	
Working range, reflex sensor	30...400 mm
Working range, through-beam sensor	1...800 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
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
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.	260
Control Panel No.	A23
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

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

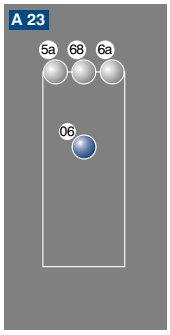
Complementary Products

IO-Link Master
Software

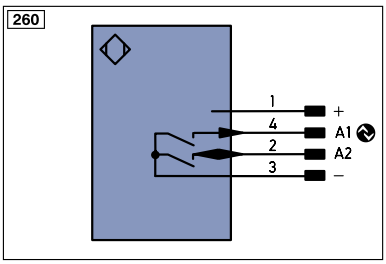


1 = Sensing Face
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel



06 = Teach Button
5a = Switching Status Display, O1
68 = Supply Voltage Indicator
6a = Switching Status Display, O2

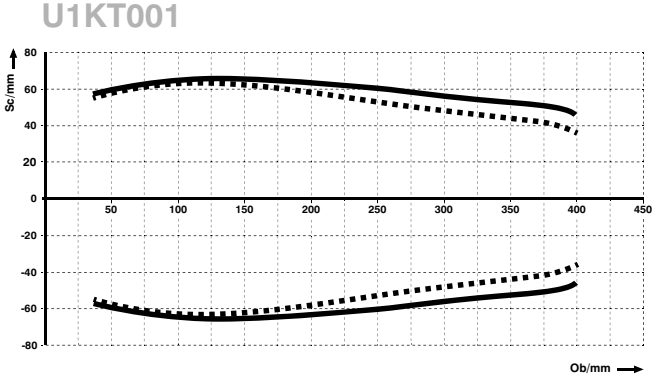


Legend

+	Supply Voltage +	PT	Platinum measuring resistor	$EN_{A\overline{RS422}}$	Encoder A/$\overline{A}$ (TTL)
–	Supply Voltage 0 V	nc	not connected	$EN_{B\overline{RS422}}$	Encoder B/$\overline{B}$ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	EN_A	Encoder A
A	Switching Output (NO)	$\overline{U}$	Test Input inverted	EN_B	Encoder B
$\overline{A}$	Switching Output (NC)	W	Trigger Input	A_{MIN}	Digital output MIN
V	Contamination/Error Output (NO)	W–	Ground for the Trigger Input	A_{MAX}	Digital output MAX
$\overline{V}$	Contamination/Error Output (NC)	O	Analog Output	A_{OK}	Digital output OK
E	Input (analog or digital)	O–	Ground for the Analog Output	SY In	Synchronization In
T	Teach Input	BZ	Block Discharge	SY OUT	Synchronization OUT
Z	Time Delay (activation)	$A_{\overline{W}}$	Valve Output	O_{LT}	Brightness output
S	Shielding	a	Valve Control Output +	M	Maintenance
RxD	Interface Receive Path	b	Valve Control Output 0 V	rsv	reserved
TxD	Interface Send Path	SY	Synchronization	Wire Colors according to DIN IEC 757	
RDY	Ready	SY–	Ground for the Synchronization	BK	Black
GND	Ground	E+	Receiver-Line	BN	Brown
CL	Clock	S+	Emitter-Line	RD	Red
E/A	Output/Input programmable	⏚	Grounding	OG	Orange
	IO-Link	SnR	Switching Distance Reduction	YE	Yellow
PoE	Power over Ethernet	Rx+/–	Ethernet Receive Path	GN	Green
IN	Safety Input	Tx+/–	Ethernet Send Path	BU	Blue
OSSD	Safety Output	Bus	Interfaces-Bus A(+)/B(–)	VT	Violet
Signal	Signal Output	La	Emitted Light disengageable	GY	Grey
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White
$EN_{0\overline{RS422}}$	Encoder 0-pulse 0-$\overline{0}$ (TTL)	RES	Input confirmation	PK	Pink
		EDM	Contactor Monitoring	GNYE	Green/Yellow

Characteristic response curve

Measurement of the sonic cone on a 100 × 100 mm plate



Ob = Object
Sc = Sonic cone width

Standard
Narrow