Reflex Sensor
with Analog Output

UMF402U035
Part Number

- **Digital and analog output**
- **Stainless steel housing**
- **Synchronous and multiplex mode**
- **Temperature drift eliminable**

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 sensors can be adjusted easily by the 4-digit 7-segment display. Convenient programming and quick diagnosis is possible via the IO-Link interface.
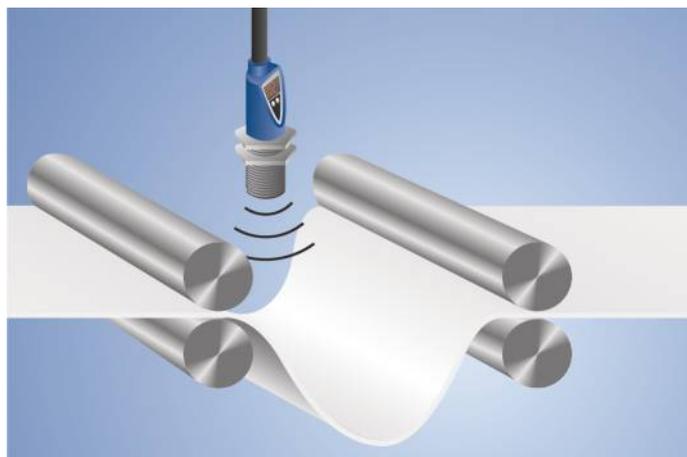
Technical Data

Ultrasonic Data	
Working Range	50...400 mm
Measuring Range	350 mm
Reproducibility maximum	1 mm
Linearity Deviation	3 mm
Resolution	0,1 mm
Ultrasonic Frequency	300 kHz
Opening Angle	< 12 °
Service Life (T = +25 °C)	100000 h
Switching Hysteresis	2 mm
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 40 mA
Switching Frequency	20 Hz
Response Time	25 ms
Temperature Range	-25...60 °C
Number of Switching Outputs	1
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	100 mA
Analog Output	0...10 V/4...20 mA
Synchronous Mode	up to 40 sensors
Multiplex Mode	up to 16 sensors
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.0
Protection Class	III
Mechanical Data	
Setting Method	Teach-In
Housing Material	Stainless Steel; Plastic
Degree of Protection	IP67
Connection	M12 × 1; 4/5-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	727,87 a

Error Output	●
PNP NO/NC switchable	●
Analog Output	●
IO-Link	●

Connection Diagram No.	**184**
Control Panel No.	**U1**
Suitable Connection Equipment No.	**2** **35**
Suitable Mounting Technology No.	**130**

Complementary Products

Analog Evaluation Unit AW02
Baffle Plate Z0023, Z0024
IO-Link Master
PNP-NPN Converter BG2V1P-N-2M
Software

1 = Sensing Face
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel

U1
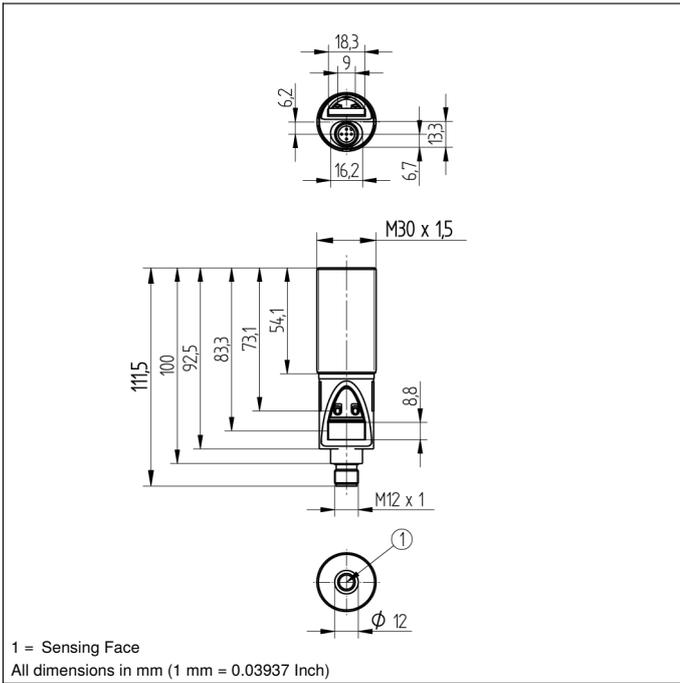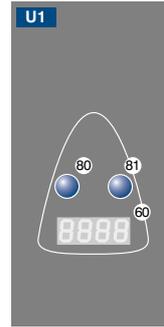
60 = Display
80 = Mode Button/Switching Status Indicator
81 = Plus Button/Error Warning

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4...20mA
0...10V
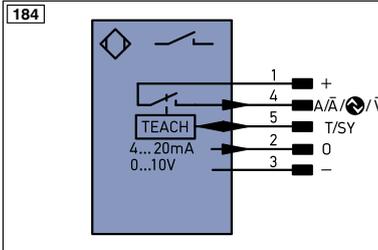
Legend

+	Supply Voltage +	PT	Platinum measuring resistor	EN$_{ARS422}$	Encoder A/Ā (TTL)
−	Supply Voltage 0 V	nc	not connected	EN$_{BRS422}$	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	EN$_A$	Encoder A
A	Switching Output (NO)	Ū	Test Input inverted	EN$_B$	Encoder B
Ā	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
V̄	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$_{MW}$	Valve Output	0$_{LT}$	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$_{0RS422}$	Encoder 0-pulse 0-0̄ (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

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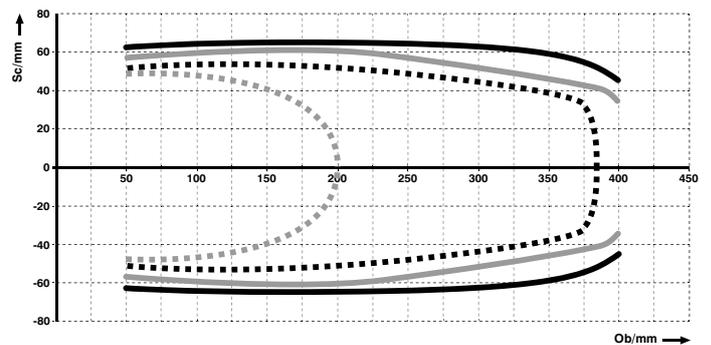
Ob = Object
Sc = Sonic cone width

Standard
Medium-width
Narrow
Extra-narrow