



FMS Ultrasonic Sensor For Web Guiding Systems Instruction Manual

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Installation Manual
US01B.M8 / US04B.M8

Ultrasonic sensor for web guiding systems
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Safety instructions

All safety-related regulations, local codes, and instructions that appear in the manual or on equipment must be observed to ensure personal safety and to prevent damage to the equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Do not stress the equipment over the specification limits neither during assembly nor operation. To do so can be potentially harmful to persons or equipment in the event of a fault to the equipment.

2.1 Presentation of safety information

The following safety symbols appear in this manual.

2.1.1 Danger that could result in minor or moderate injuries



Danger, warning, caution



Failure to follow wiring instructions in this manual may result in equipment damage or personal injury.

2.1.2 Note regarding the proper function



Note

Note regarding proper operation Simplification of operation Ensuring function

General safety information



The Material Sensors may not be stressed over the specification limits either during assembly or operation.



The attachment points for the Sensors on the machine frame must be properly designed. The used mounting screws must be of the right size.

Product information

3.1 System description

The ultrasonic sensors can detect a very wide range of web materials including transparent films. The sensors are not suitable for sound permeable materials (e.g. netlike or open weave textiles). They are factory set and don't need any adjustments or calibration. The main advantage of these sensors is the save detection of transparent films of all sizes. The sensor is almost insensitive to changes of material planarity or dust thanks to an optimized sensor and micro-processor controlled ultra-sound transmission.

3.2 Dimensions

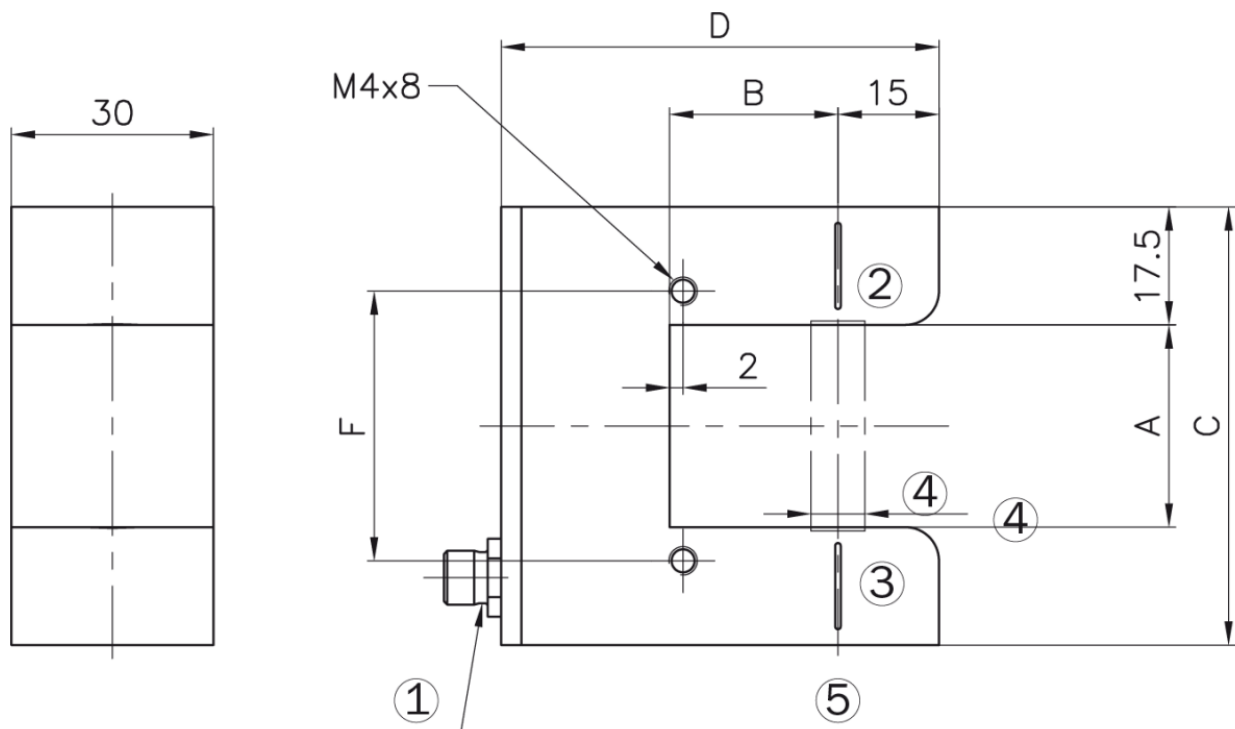


Figure 1: Dimensions

US01_04B.ai

Dimensions mm (In.)		
	USO1B.M8	USO4B.M8
(A)Fork width	30 (1.18)	90 (3.54)
(B)Fork depth	25 (0.89)	80 (3.15)
(C)Sensor hight	65 (2.56)	125 (4.92)
(D)Sensor length	65 (2.56)	120 (4.92)
(F) Bore distance	40 (1.57)	100 (4.92)
(4) Detection range	8 (0.31)	8 (0.31)

Table 1: Dimensions

Terms	
Position	Description
1	LED in plug
2	Marking of the center of the sensor detection area
3	Marking of the center of the sensor detection area
5	Side of the ultrasonic transmitter

Table 2: Terms

Scope of delivery

3.3.1 Included

material sensor, installation manual

3.3.2 Not included

screws, washers, mounting bracket, cable

3.3 Scope of delivery

Installation

4.1 Preparation

The sensors are defined as “partly completed machinery” according to the Directives 2006/42/EC, Article 2. In order to assure proper functionality of the parts and guarantee the essential health and safety requirements of operators working with it, the following conditions for the assembly must be met:

4.2 General safety information



The Material Sensors may not be stressed over the specification limits either during assembly or operation.



The attachment points for the Sensors on the machine frame must be properly designed. The used mounting screws must be of the right size.



For correct installation and operation, follow the electrical wiring diagram and instructions in this manual.

4.3 Electrical connections

The sensor will be mounted with two M4 screws to a bracket. The bracket itself is fixed to the location rail or to the flange of the steering frame or linear actuator. The bracket varies depending on system configuration (steering

frame size, manual or motorized sensor adjustment, etc.). It is not part of the supply and must be ordered separately. If the sensor is used with an integrated web guide controller within an FMS steering frame FMS-webMASTER, the sensor is connected with a cable 4×0.14mm² of the respective length.

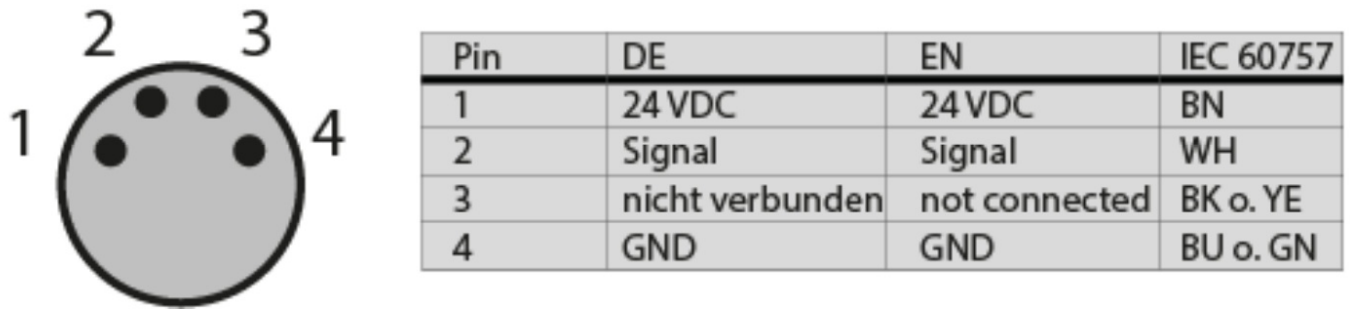


Figure 2: Pin assignment Pin_Assignment_Sensorkabel_Farben_Stecker.ai

Operation

5.1 Denomination of the sensor position

Left and right are always seen in direction of the running web.

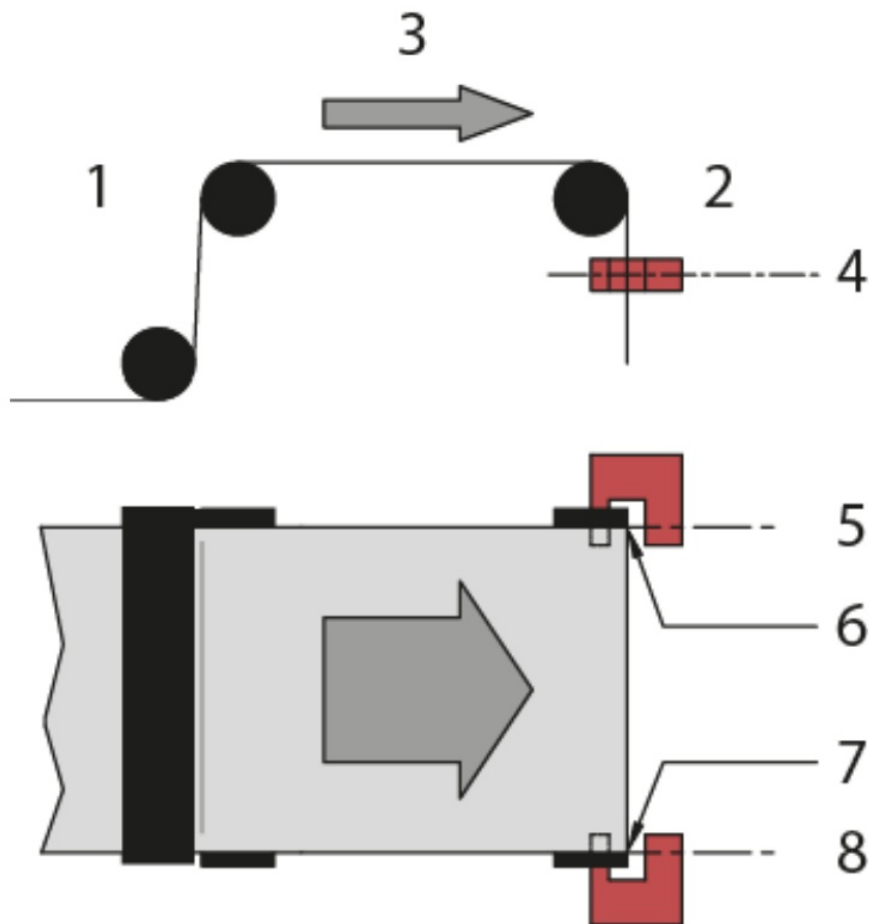


Figure 3: Terms on steering frames BKS_309.ai

Terms	
Position	Description
1	Entry side
2	Exit side
3	Rolling direction
4	Sensor axis
5	Sensor axis left
6	Web edge left
7	Sensor axis right
8	Web edge right

Table 3: terms sensor position

5.2 Alignment of the sensor

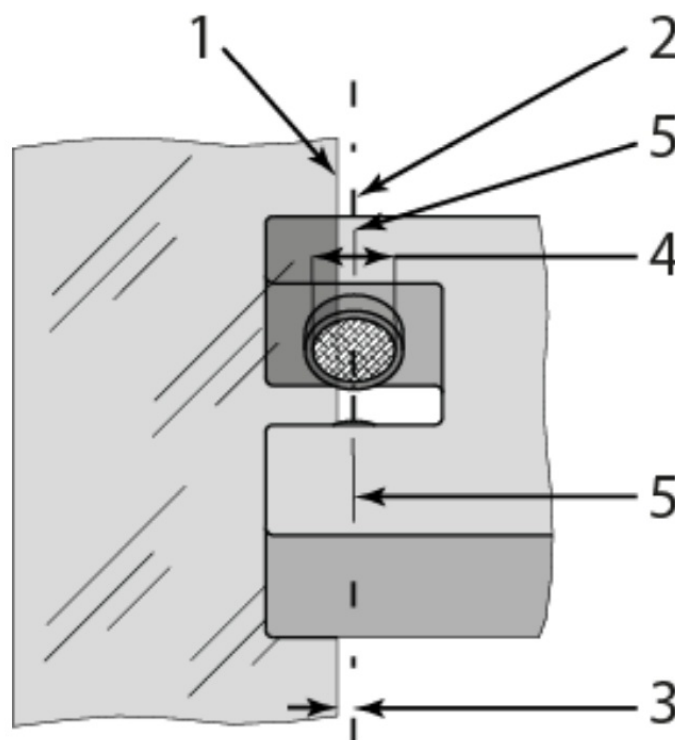


Figure 4: Alignment of the sensor

Terms sensor alignment	
Position	Description
1	Web edge
2	Sensor axis
3	Deviation of web edge to the sensor axis
4	Detection range of the sensor
5	Marking for mid of detection area

Table 4: Sensor alignment

- Loosen the fixing nut on the bracket and adjust the sensor.
- The positioning marks provide a quick and precise alignment of the sensor to the reference edge.
- Fix the sensor in the new position.
- The sensor will be properly positioned if the web edge goes through the sensor axis covering half of the ultrasonic transmitter or receiver (ref. to Fig. 4).

Troubleshooting

Causes and possible solutions for errors

Description of error	Cause	Corrective action
Limited control range	Edge has moved outside the sensor detection range	Adjust the sensor more accurately to the center of the measuring range.
Occasional control dropouts	Ultrasonic transmitter or receiver side is dirty	Clean sensor with a wet cloth
BKS guides web edge immediately out of the sensor detection area	The sensor is installed on the wrong side	Install sensor on the correct side (right sensor for „Edge right“, etc.
	Sensor is connected to the wrong socket	Connect sensor plug to the correct socket (left plug to the left socket, etc.)
The steering frame does not move at all	No signal; sensor not connected correctly	Connect sensor correctly according to screw terminal arrangement, follow the installation manual of web guide controller
	No signal; cable interruption	Replace the cable or send the sensor to FMS
	No signal; sensor defect	Send sensor to FMS; use another sensor
	No power supply	Check 24VDC supply
	The sensor signal is OV. The sensor is fully covered	Adjust sensor more accurately to the web edge; center measuring range
	The sensor signal is 10V. The sensor is uncovered	Adjust sensor more accurately to the web edge; center measuring range

Table 5: errors and solutions

Technical data


Technical data	
Parameter	USO1B.M8 / USO4B.M8
Detection range	8 mm [0.31"]
Resolution	0.2 mm [0.007"]
Measuring rate	2 ms
Output signal	0 to 10 VDC OV if detection area is fully covered 10V if detection area is not covered at all 5V if the material edge is centered in the detection area, LED is active
Power supply	24 VDC (18 to 30 VDC)
Connecting cable	M8 connector 4-pole
Temperature range	0 to 60 C [32 to 140 F]
Protection class	IP 67

Table 6: Technical data



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Documents / Resources

	<p>FMS Ultrasonic Sensor For Web Guiding Systems [pdf] Instruction Manual US01B.M8, US04B.M8, Ultrasonic Sensor For Web Guiding Systems</p>
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