Operation Manual
AZS01B/ AZS04B BlueFLash

Optical Edge Sensor for Web Guides

Version 1.2 01/2017 NS

This operation manual is also available in English.
Please contact your local FMS representative.

Diese Bedienungsanleitung ist auch in Englisch erhältlich.
Bitte kontaktieren Sie Ihren nächstgelegene FMS Vertretung.

Table of Contents

1 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.

1.1 Description Conditions

a) Danger of health injury or loss of life

Danger

This symbol refers to high risk for persons to get health injury or loss life. It has to be followed strictly.

b) Risk of damage of machines

Caution

This symbol refers to information, that, if ignored, could cause heavy mechanical damage. This warning has to be followed absolutely.

c) Note for proper function

Note

This symbol refers to an important information about proper use. If not followed, malfunction can be the result.

The Material Sensors may not be stressed over the specification limits neither during assembly nor 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.

2 Functional Description

AZS BlueFlash sensors are optical edge sensors for the detection of all opaque materials. They are used in web guiding applications where the material edge needs to be detected fast and where demanding accuracy is required. The CCD-array based receiver module detects and maps the material edge with high resolution. Signal processing is microcontroller based using sophisticated software algorithm. The short 1ms cycle time allows the BlueFlash handle very fast material speeds. The used ultra linear, high resolution material edge mapping system provides to BlueFlash clear advantages compared to ultrasonic sensors. They are factory set and don't need any calibration. Two standard sizes cover a large material bandwidth. BlueFlash sensors are compatible with the full line of FMS web guide controllers and steering frames.

3 Dimensions

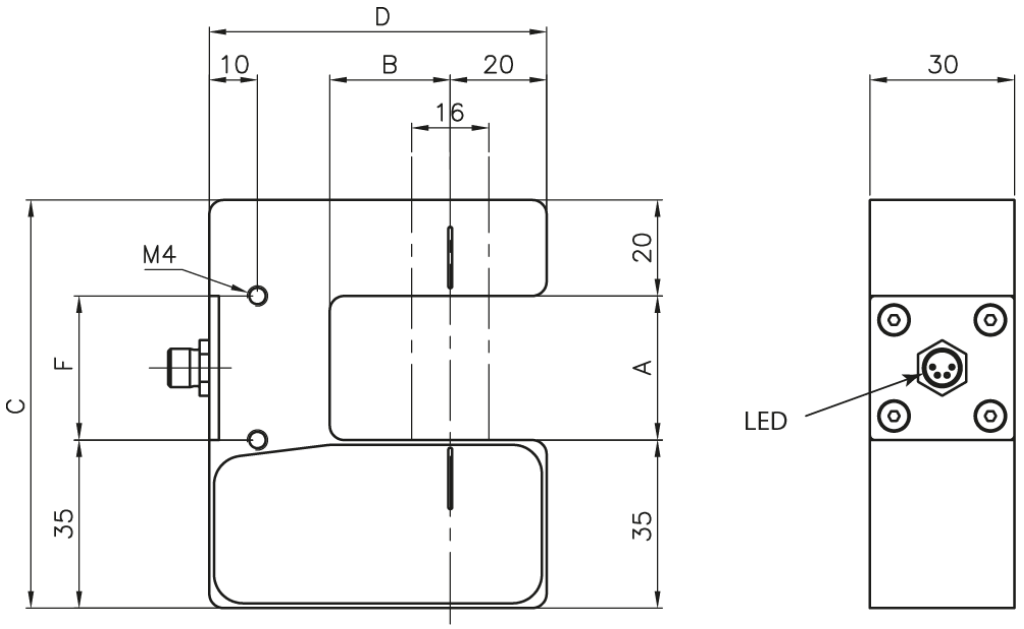


Fig. 1: AZS01B

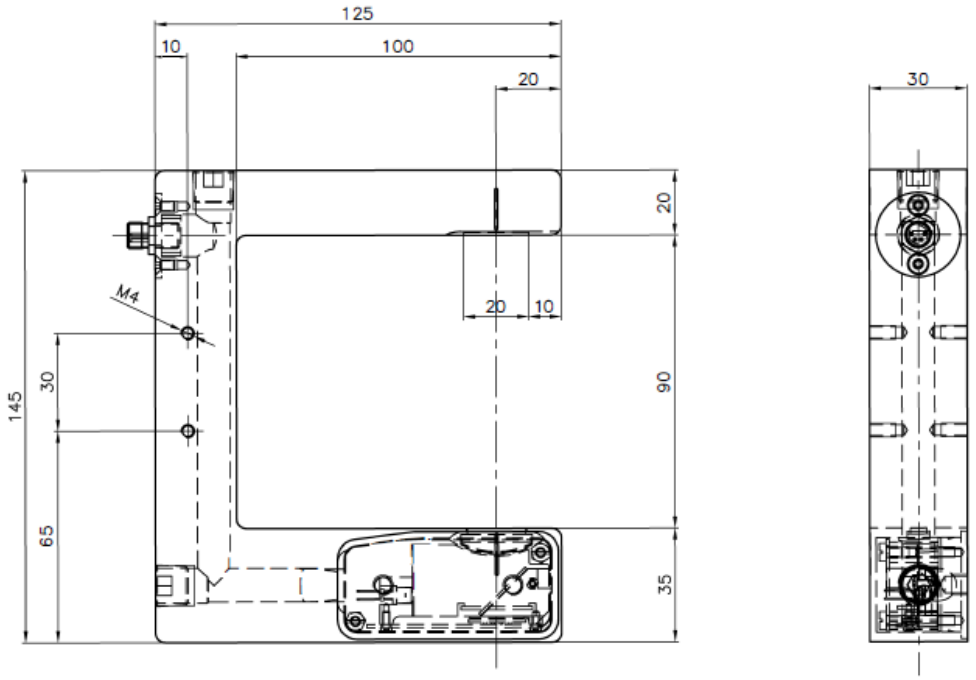


Fig. 1a: AZS04B

Sensor	AZS01B		AZS04B	
	mm	in	mm	in
(A) Throat width	30	1.18“	90	3.54“
(B) Throat depth	25	0.98“	80	3.15“
(C) Sensor height	85	3.35“	145	5.71“
(D) Sensor length	70	2.76“	125	4.92“
(F) Hole distance	30	1.18“	30	1.18“

4 Assembly Preparations

4.1 Assembly Conditions

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

Caution

The Material Sensors may not be stressed over the specification limits neither during assembly nor operation.

Caution

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

Caution

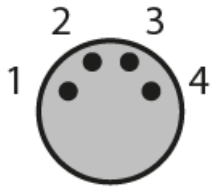
For correct installation and operation, follow the electrical wiring diagram and instructions in this manual.

5 Installation

5.1 Mounting the Sensor

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 linear unit. The bracket varies depending on system configuration (steering frame size, manual or motorized sensor adjustment, etc.). It must be ordered separately.

5.2 Wiring



Pin	DE	EN	IEC 60757
1	24 VDC	24 VDC	BN
2	Signal	Signal	WH
3	nicht verbunden	not connected	BK o. YE
4	GND	GND	BU o. GN

Fig. 2: Sensor Connector in front view with its pin assignment. The table lists the wire colour corresponding to the signal names. Pin_Assignment.ai

Electrical Connections:

If the sensor is used with a built-in web guide controller in the steering frame FMS-webMASTER series, the sensor is connected with a cable 4x0.14mm² of the respective length. **Fig. 2** shows the sensor connector in front view with its pin assignment. The table lists the wire colour corresponding to the signal names.

6 Operation

6.1 Right or Left Hand Position of the Sensor

Definition of Left and Right: Seen in direction of the running web.

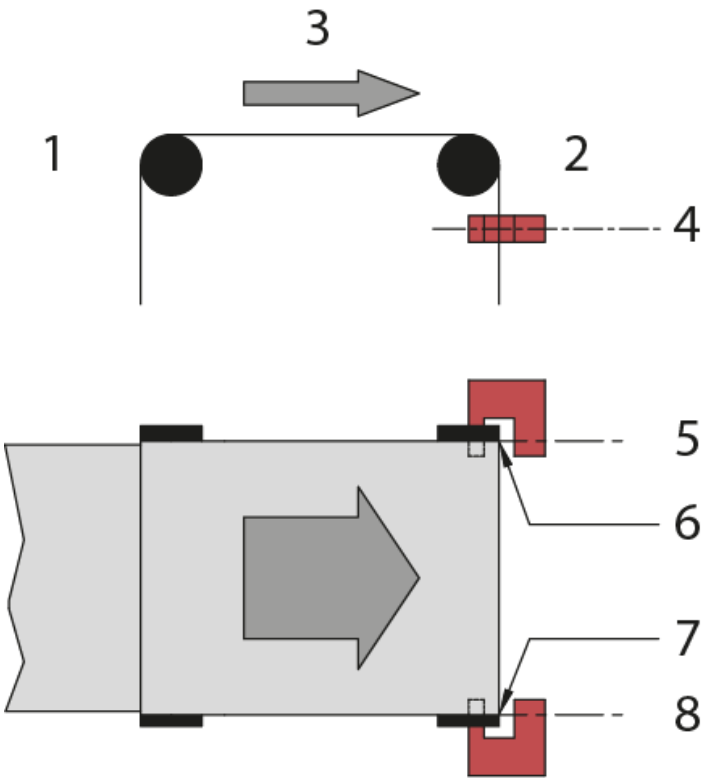


Fig. 3: Position of the sensors according to the web BKS309

1	Web entry side	2	Web exit side
3	Direction of moving web	4	Material sensor(s)
5	Left hand sensor axis	6	Left hand web edge
7	Right hand sensor axis	8	Left hand web edge

6.2 Adjustment of the Sensors

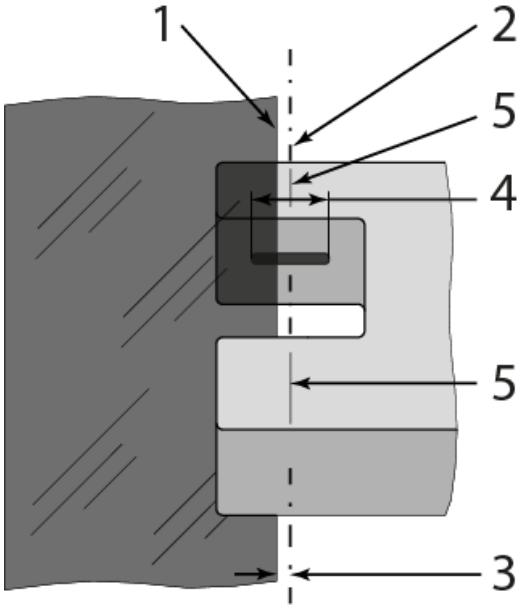


Fig. 4: **Position of the sensors according to the web**

1	Material edge	2	Centre axis of detection range
3	Material offset	4	Detection range
5	Positioning reference marks		

1. Loosen the fixation nut on the bracket and slide the sensor into position.
2. Position the web in the sensor
3. The positioning marks provide a quick and precise alignment of the sensor to the reference edge.
4. Align sensor axis to the web edge
5. Tighten the fixation nut with the sensor in the new position.
6. The sensor will be properly positioned if the web edge runs through the sensor axis covering half of the transmitter or receiver (ref. to **Fig. 4**).
7. The LED in the connector socket will be active if the web is positioned in the centre of the sensor area.
8. Tighten the fixation nut.
9. The sensor is now ready for use.

7 Trouble Shooting

Error	Cause	Corrective action
Small measuring range.	Edge has moved outside the sensor detection band	Adjust sensor more accurately to the centre measuring range. Adjust reference position (see **Fig. 4**)
Sporadic drop-outs	Sensor-transmitter or receiver is dirty (material sedimentations)	Clean sensor with wet cloth
BKS guides web edge immediately out of the sensor	Sensor is mounted on the wrong side	Mount sensor to the correct side (right sensor for „Edge right“, etc., see **Fig. 3**)
	Sensor is connected to the wrong socket	Connect sensor plug to the correct socket (left plug to left socket, etc.)
With mesh material BKS guides web edge out of the sensor area	Frequency of the sensor signal causes malfunction of the web guiding controller	Update firmware of BKS309 controller to 3.42
Steering frame does not move	No signal; sensor not correctly connected	Connect sensor correctly according to screw terminal arrangement and installation guide of web guide controller
	No signal; cable interruption	Replace cable or send sensor to FMS
	No signal; sensor defect	Send sensor to FMS; use other sensor
	Sensor supply not present	Check 24V supply
	Sensor signal is 0V. The sensor is fully covered	Adjust sensor more accurately to the web edge; centre measuring range
	Sensor signal is 10V. The sensor is uncovered	Adjust sensor more accurately to the web edge; centre measuring range

8 Technical Data

Parameter	AZS01B.M8 / AZS04B.M8
Detection range	16 mm [0.63“]
Resolution	0.06 mm [0.002“]
Measuring rate	2 ms
Linearity	±0.05% @ -10 to 50°C [@ 14 to 122°F]
Output Signal	to 10 VDC
Power Supply	24VDC (18 to 30VDC)
Connector	M8 connector 4-pole
Temperature Range	-10 to 50°C [14 to 122°F]
Protection Class	IP 60

FMS Force Measuring Systems AG
Aspstrasse 6
8154 Oberglatt (Switzerland)
Tel. 0041 1 852 80 80
Fax 0041 1 850 60 06
info@fms-technology.com
www.fms-technology.com

FMS USA, Inc.
2155 Stonington Avenue
Suite 119
Hoffman Estates,, IL 60169
(USA)
Tel. +1 847 519 4400
Fax +1 847 519 4401
fmsusa@fms-technology.com

FMS (UK)
Aspstrasse 6
8154 Oberglatt (Switzerland)
Tel. +44 (0)1767 221 303
fmsuk@fms-technology.com

FMS (Italy)
Aspstrasse 6
8154 Oberglatt (Switzerland)
Tel. +39 02 39487035
fmsit@fms-technology.com