Operating Manual BKS 010

Digital microprocessor controlled web guide

Version 1.42 03/06 pw

Software Version 1.40

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

Diese Bedienungsanleitung ist auch in deutsch erhältlich.
Bitte kontaktieren Sie die Vertretung im zuständigen Land.

1 Safety Instructions

1.1 Description conditions

a) High 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 informations, that, if ignored, could cause heavy mecanical 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.

1.2 List of safety instructions

Proper function of the FMS web guide is only guaranteed with the recommended application of the components. In case of other arrangement, heavy malfunction can be the result. Therefore, the installation instrucions on the following pages must be followed strictly.

Local installation regulations are to preserve safety of electric equipment. They are not taken into consideration by this operating manual. However, they have to be followed strictly.

Bad earth connection may cause electric shock to persons, malfunction of the total system or damage of the control unit! It is vital to ensure that proper earth connection is done.

The processor board is mounted directly behind the operation panel. Improper handling may damage the fragile electronic equipment! Don’t use rough tools as screwdrivers or pliers! Don’t touch processor board! Touch earthed metal part to discharge static electricity before removing operation panel!

Disconnect power supply before open the housing!

Table of Contents

2 Definitions

Left and Right:
Left and right are always seen in direction of the running web (fig. 1).

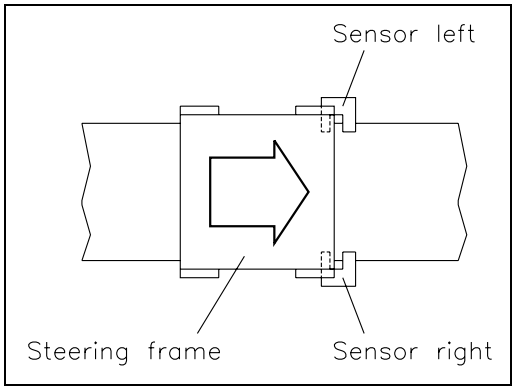

Fig. 1: Left and right K100007e

3 System Components

The BKS010 consists of the following components (refer also to fig. 2):

Steering frame

- According to the maximum web width
- Driven by a DC-Servo-Motor
- With integrated location slot for sensor attachment

Electronic control unit

- For all control functions
- With operation panel for all functions
- The control unit is integrated to the steering frame and pre-wired. The housing complies with IP20

Sensors

- For edge detection
- 1 or 2 analogue Sensors
- The sensors are full wired and equipped with a plug with fixing thread M8x1.
- Included are 2 Sensor brackets for left or right edge detection

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4 System Description

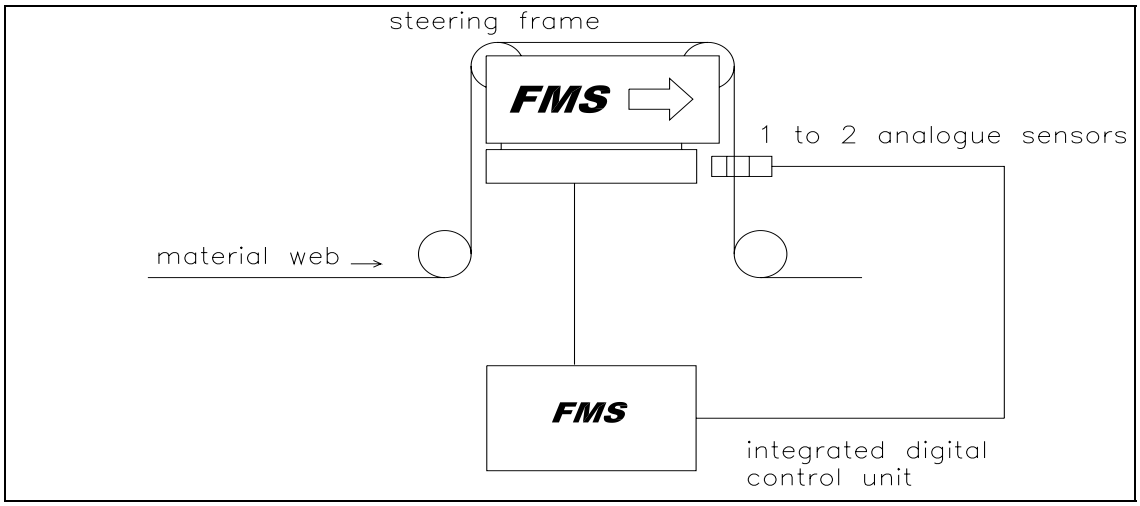

fig. 2: Basic structure of the BKS100 web guide K100006e

4.1 Functional description

The sensors locate the position of the web edge and send this information as an analogue signal to the electronic control unit. The control unit compares the position feedback signal with the reference. If there is a difference the steering frame will be adjusted.

4.2 Steering frame

The steering frame consists of a fixed lower and a moveable upper frame that supports the rollers. The upper frame is activated by a DC-Servo-Motor. A location slot for easy sensor attachment is integrated to the steering frame.

4.3 Electronic control unit

The electronic control unit contains a micro-processor that handles all calculations and communications. The DC-Servo-Motor to drive the steering frame, the rotary switch and potentiometer are integrated.

4.4 Analogue sensors

Adjustment is done automatically. The sensors provide a signal of 0...10V. Edge and center guiding (2 sensors) applications can also be done.

5 Dimensions

5.1 Dimensions of the steering frames

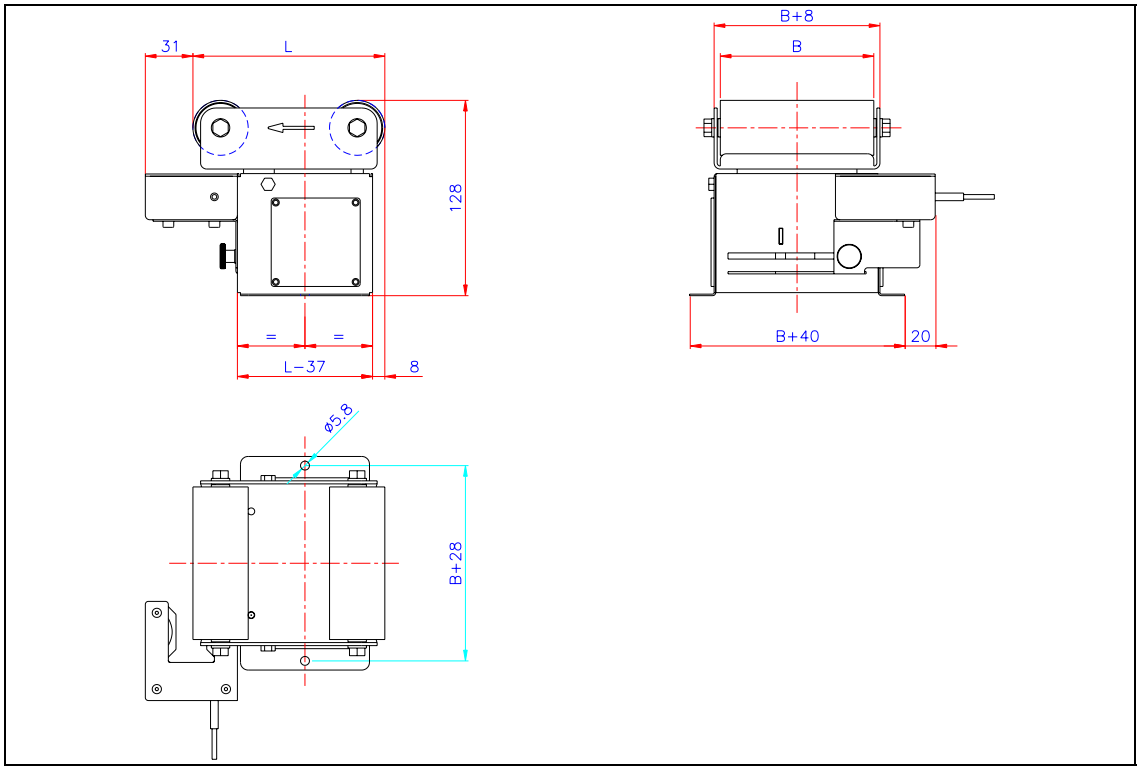

fig 3: Basic structure with dimensions (BKS010) K0103261

The FMS-BKS010 steering frames are built with 3 basic sizes available. Standard dimensions are as follows (special dimensions on request):

Type	**BKS010.0100. 0125.036.D**	**BKS010.0150. 0125.036.D**	**BKS010.0200. 0150.036.D**
Width (dimension B mm)	**100**	**150**	**200**
Lenght (L mm)	**125**	**125**	**150**
Roller diameter (mm)	**36**	**36**	**36**

6 Installation and Wiring

⚠ Caution

Proper function of the FMS web guide is only guaranteed with the recommended application of the components. In case of other arrangement, heavy malfunction can be the result. Therefore, the installation instructions on the following pages must be followed strictly.

⚠ Caution

Local installation regulations are to preserve safety of electric equipment. They are not taken into consideration by this operating manual. However, they have to be followed strictly.

6.1 Mounting the Steering Frame

When mounting the steering frame, the direction indicated on the frame side must correspond with the web running direction.

The fixed lower frame can be easily fitted to the machine frame with the overhanging part. Attach the appropriate sensor brackets to the sensors and then to the frame before installing the frame on the machine.

The steering frame BKS010 is pre-wired; therefore is no wiring other then a 24V power connection necessary by the customer.

6.2 Connecting the Electronic Control Unit

Connect 24VDC (18…36), min. 0.5A to electronic unit. Connect according to fig. 8.

⚠ Caution

Bad earth connection may cause electric shock to persons, malfunction of the total system or damage of the control unit! It is vital to ensure that proper earth connection is done.

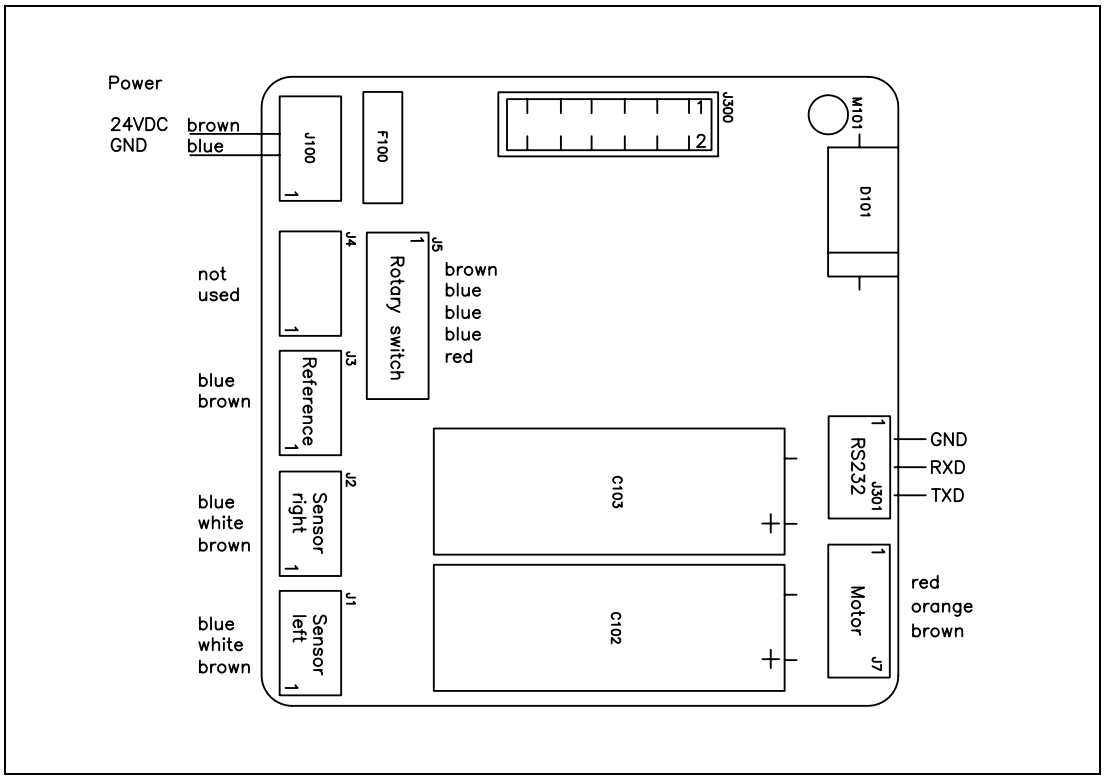

fig 8: Control board layout **K010009e**

6.3 Mounting the Sensors

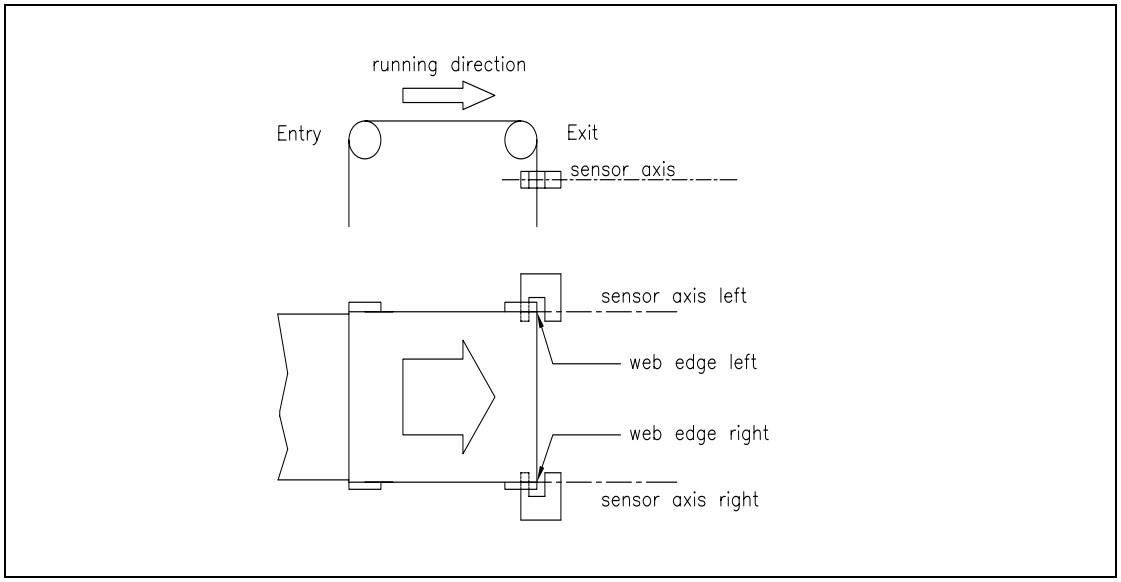

fig. 4: Position of the sensors according to the web K400005e

The sensors will be mounted by brackets to the integrated location slot of the steering frame.

Note

Take care that the plugs are connected properly (plug sensor left to socket left, etc.; refer to fig. 5). If the plugs are exchanged, malfunction can be the result.

6.4 Open the housing

The housing of the electronic control unit can be opened by unscrewing the 4 philips screws on the operation panel and pulling out the operation panel carefully.

⚠ Caution

The processor board is mounted directly behind the operation panel. Improper handling may damage the fragile electronic equipment! Don't use rough tools as screwdrivers or pliers! Don't touch processor board! Touch earthed metal part to discharge static electricity before removing operation panel!

⚠ Caution

Disconnect power supply before open the housing!

7 Operation

7.1 View of the operating panel

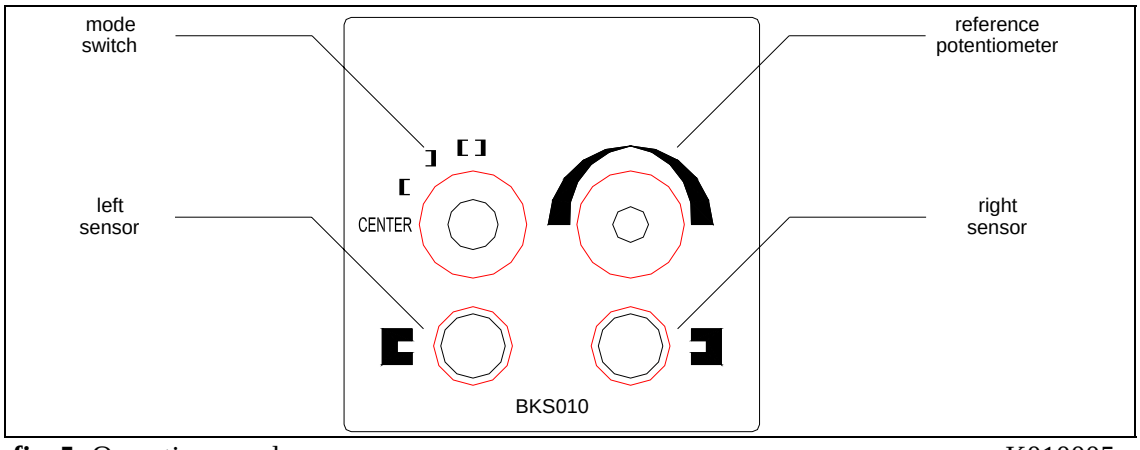

fig. 5: Operation panel K010005e

- Choose control mode: Activate mode by turning the rotary switch.
- To adjust the reference position turn the potentiometer. The potentiometer must be approximately in the middle otherwise the sensors are not in the center position.

Control mode	Function
Edge left **[**	The control unit drives the steering frame in a way that the left edge will follow to the reference position. 1 left sensor is necessary.
Edge right **]**	The control unit drives the steering frame in a way that the right edge will follow to the reference position. 1 right sensor is necessary.
Center guide **[ ]**	Guiding to the average value from left and right. This means the theoretical center line. 2 sensors are necessary.
Center	Frame moves to the center
Reference Potentiometer	To adjust the reference position in runtime

7.2 Adjustment of the sensors

- Align sensor axis to the web edge: Loosen the fixing knob on the bracket and adjust the sensor. Fix the sensor in the new position. The sensor will be positioned properly if the web edge goes through the sensor axis (center of active window; refer to fig. 6)
- Reference position is taken from the center of the sensor detection band (fig. 7). Using center guide, reference position is in the middle between the 2 sensor axis. The controller starts to guide the web to reference position and to hold this guide point.
- The reference position can be adjusted during operation by using the potentiometer.

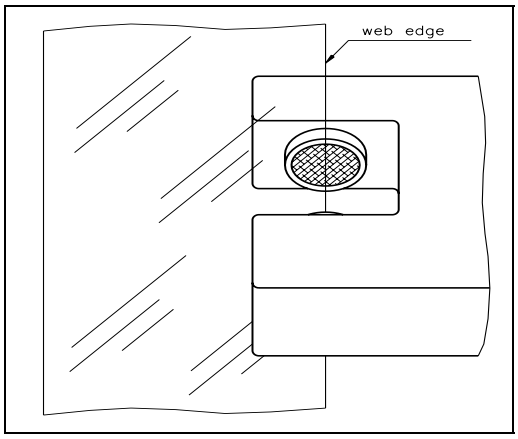

fig 6: Aligning of the sensor axis to the web edge K100004e

☞ **Note**

If the web leaves the sensor detection band, control is no longer effective. Hold the web edge strictly inside the sensor detection band.

☞ **Note**

If web is not running, it can't be guided properly to the reference position! The steering frame moves in the limit-of-travel position and may damage the web.

8 Trouble shooting

Error	Cause	Corrective action
Edge out of detection band	Edge has moved out of the sensor detection band	Adjust sensor more accurately to the web edge; Adjust reference position less with the potentiometer.
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.)
	Sensor is connected to the wrong socket	Connect sensor plug to the correct socket (left sensor plug to left socket, etc.)
Steering frame does not move	Rotary switch on center position	Switch on correct position.
	Power supply is incorrect	Check or correct power supply installation.
	Electronic control unit defect	Contact FMS customer service.
Steering frame move just to one side	Reference potentiometer in end position	Turn the potentiometer in approx. middle position.
Steering frame in end position	Link cable between sensor and frame bad	Check link cable between sensor and frame.

9 Technical data

Drive of steering frame	DC-Servo-Drive
Control modes	edge left / edge right / center guide (material width min. 50mm center guiding only)
Adjusting speed	15mm/s
Adjusting force	10N
Max. steering offset	+/-5 mm
Operation	Rotary switch / potentiometer
Analogue inputs	2 inputs 0...10V (for analogue edge signal)
Supply voltage	24VDC (18...36VDC) 0.5A
Temperature range	0 .. 45°C
Protection class	IP 20

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