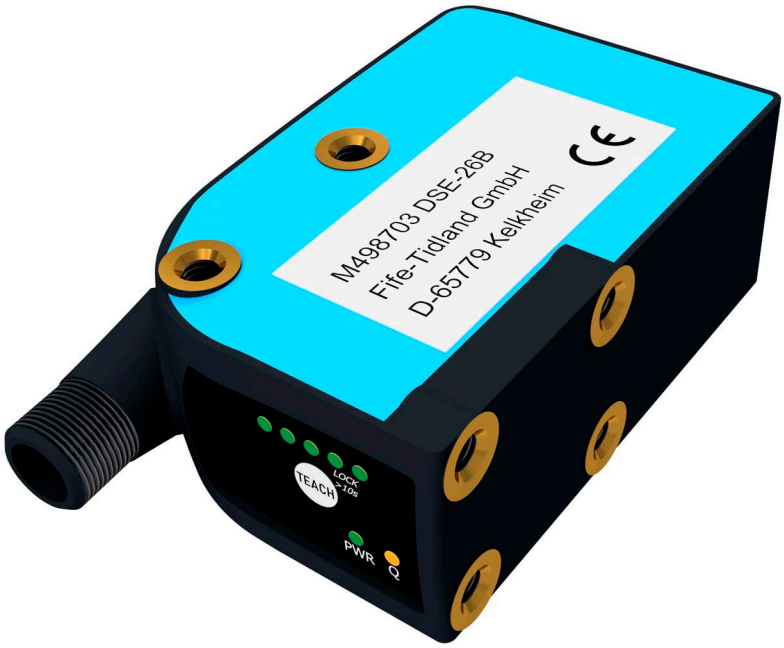
FIFE GUIDING SOLUTIONS

A MAXCESS BRAND

FIFE DSE-26B

Operating Instructions



EN

Line Sensor
Edition 01/2026

MI 1108 1 A

1 INTRODUCTION

About these operating instructions

These Operating Instructions describe the installation, commissioning, operation, and maintenance of the **DSE-26B line sensor** and provide important instructions for proper use.

The operating instructions must be carefully stored and must always be available at or near the customer's system during the service life of the sensor.

The operating Instructions must be inserted in the technical documentation for the machine / system in which the product is used.

Translation of the original Operating Instructions:
These Operating Instructions are a translation. The original Operating Instructions were composed in German.

Target groups

These Operating Instructions are directed to both the *system construction master* as well as the *operator* who uses the sensor in production line.

Read operating instructions
The Operating Instructions must be read and used by *all* persons who have the responsibility of installing, commissioning, operating and maintaining the sensor.
→ Retain for later use as a reference.

2 SAFETY INSTRUCTIONS

Important information

To ensure safe and problem-free operation of the DSE-26B sensor it must be

- properly shipped and stored,
- properly mounted and placed in operation,
- properly used and carefully maintained.

Proper operation and careful maintenance will ensure a long service life for the sensor.

Please note the following:

- The content of these operating instructions
- Any safety instructions that are printed on the unit
- The requirements of the machine manufacturer
- Applicable national, state and local requirements for accident prevention and environmental protection

Information about safety instructions

The safety instructions and symbols described in this section are used in these Operating instructions. They are used to avoid possible dangers for users and to prevent material damage.

SIGNAL WORD
Source of danger and its results.

⇨ Avoiding dangers

Signal words

The signal word **DANGER** indicates an immediate danger of serious injury or death.

The signal word **WARNING** indicates a possible danger which could lead to serious injury or death.

The signal word **CAUTION** refers to a possible danger which could lead to slight to moderate injury.

The signal word **ATTENTION** refers to a possible danger which could lead to material damage.

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Symbols

Reference to general hazards that may result in bodily injuries

Refers to danger of injury caused by crushing

Refers to danger of injury caused by cutting

Refers to general hazards that will result in damage to the device or system

Read operating instructions
Follow these operating instructions for proper and safe use.
Keep for future use.

Additional markings

- Bulleted list

• Instructions

1. Instructions which must be processed in the specified order

2. End of the instructions

→ Reference or cross-reference

► Additional information

Note:
Reference to important information.

Personnel requirements

The tasks listed in these operating instructions may only be carried out by appropriately qualified personnel commissioned by the operator. The responsibilities of the personnel for the work on the system must be clearly defined by the operator.

Assembly, maintenance, troubleshooting, disassembly:
- Specialized staff
  → Mechatronics engineer, industrial mechanic, etc.

Electrical connection or disconnection:
- Specialized staff
  → Only by a qualified electrician

Commissioning and control during operation:
- Specialized staff
  → Machine and system operators, etc.
- Personnel or trainees trained and supervised by the system operator

Repair:
Specialized staff
→ Service technician of Fife-Tidland GmbH

Preventing hazards

- No changes may be made to the sensor.
- The parameters specified in Section *Technical Data* must be observed.
- Only accessories and replacement parts that have been approved by Fife-Tidland GmbH may be used.
- The sensor may not be used as a support, handle or step. There is a danger that the sensor will become damaged, resulting in personal injury.

Residual risks

Installing the product in a machine/system makes it possible to form clamping, squeezing and cutting points.

Despite a safe design and supplementary protective measures, residual risks may remain for the machine / system in which the product is installed. These risks must be recorded in a risk assessment by the machine / system builder and taken into consideration in the operating instructions.

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3 PRODUCT DESCRIPTION

Proper usage

The DSE-26B line sensor

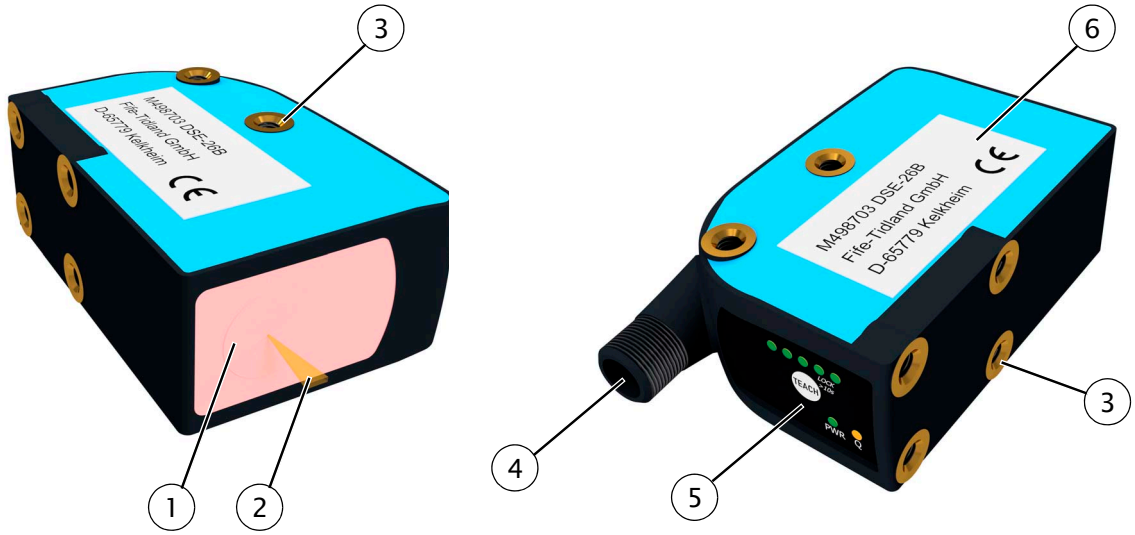
- is used for non-contact measurement of the lateral offset of a material web being guided.
- is intended for use on machines or systems.
- is suitable for
  - center guiding on a thin printed line,
  - edge guiding on a printed line,
  - guiding on a material edge.
- works reliably with smooth, rough, dull or glossy material surfaces.
  ► This sensor can also be used with low color contrast between the background and printed line.
  ► Guiding is also possible with dashed lines, discontinuous pattern or discontinuous edges. The free spaces between the lines or pattern must not be too large, since guiding is blocked during that time.
- is intended for use in indoor areas.
- is intended for continuous operation.
- must not be changed or opened.
- must only be used in accordance with its intended purpose and in a technically flawless condition.

Reasonably foreseeable misuse

- Operation outside of the technical specifications is not permitted.
- Operation in areas where there is a danger of explosions is prohibited.
- Use by private users is prohibited.
- The sensor may not be used as a support, handle or step.
- Use as a safety-related component in accordance with the EU Machinery Directive for the purpose of protecting persons and machines is not permitted.
- Any use other than the designated use is not permitted.

Product overview

The DSE-26B line sensor works with white LED light.



1 Protector
covers the light source and receiver
2 Light
3 Threads for mounting the sensor
4 Connection cable to a Fife processor
5 Operating and display elements
6 Nameplate

Figure 3.1: DSE-26B sensor

The light source in the DSE-26B sensor generates a light spot on the surface of the material being scanned. Differences in contrast in this area will be sensed by the receiver (two photodiodes). The difference in contrast could be produced for example by a printed line. In this case the line is the reference for control.

Option

A digital production data acquisition to signal controller extends the range of applications for the sensor inside the digital network environment.

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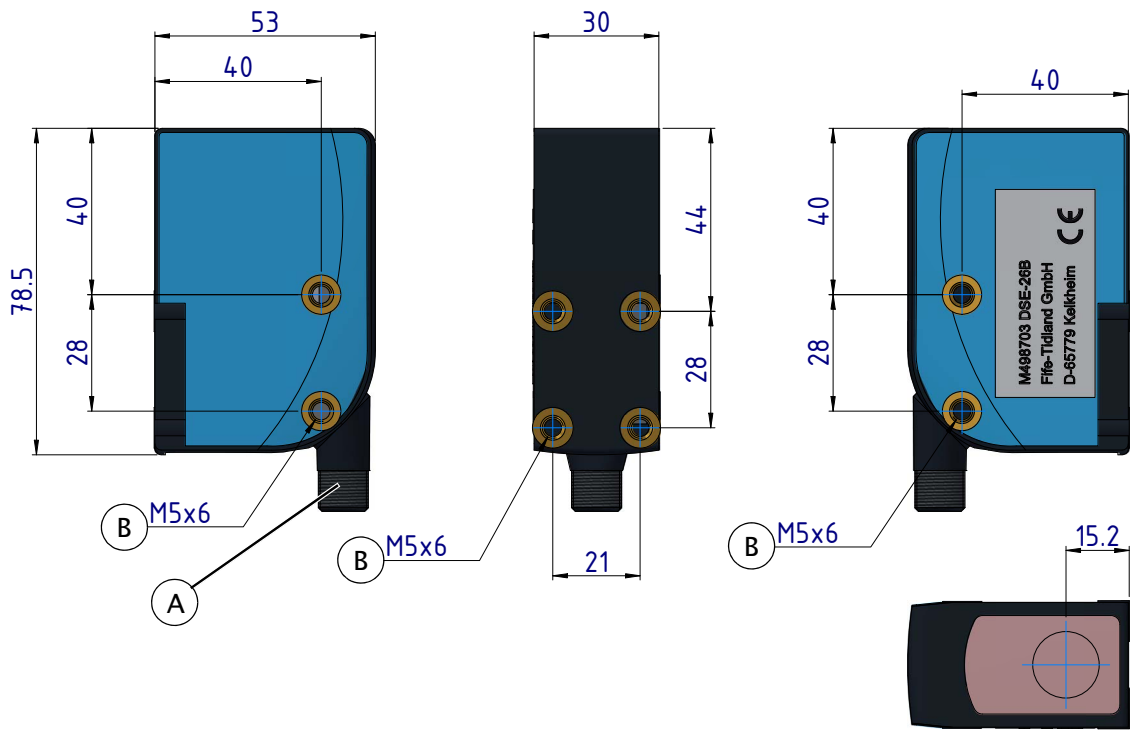
4 INSTALLATION

Scope of delivery

- DSE-26B sensor
  The model designation and the serial and part number are on the nameplates on the housing.
  → item 6 in *Figure 3.1, page 3-2*
- Operating Instructions

Dimensions

Sensor



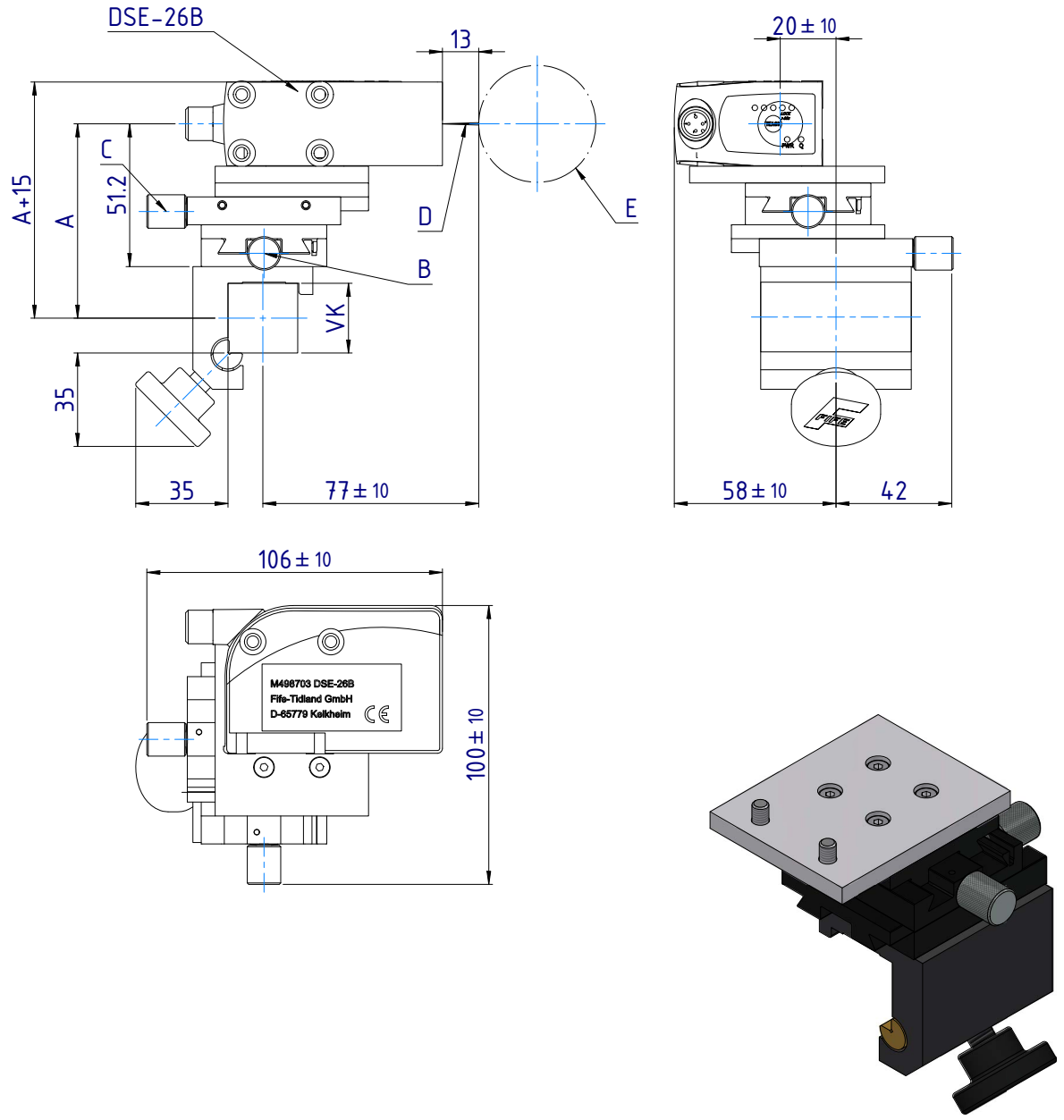
A Cable connection

B Threads for mounting the sensor

Figure 4.1: DSE-26B dimensions

Sensor bracket

Type MAMB



A Distance between center of square bar and optical axis
→ table below
B Fine positioning (right / left, ±10mm))
C Fine adjustment for focus (±10mm)
D Light
E Support rod or roller
VK Square bar

Figure 4.2: DSE-26B with sensor bracket MAMB

Type	A	VK
MAMB-25 smooth	69,5	25
MAMB-30 smooth	73,5	30

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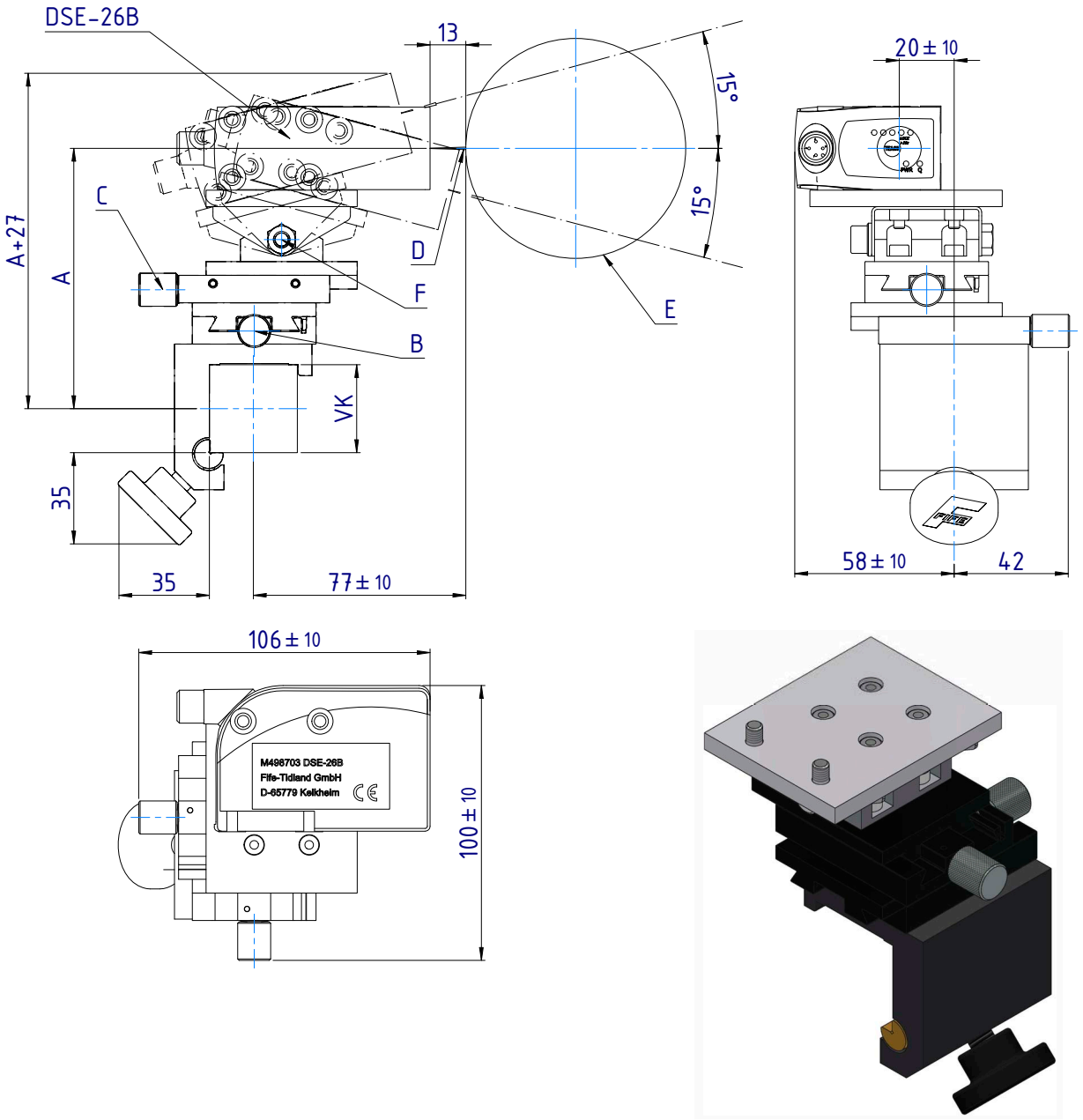
Type MAMB, tilt



A Distance between center of square bar and optical axis
→ table below
B Fine positioning (right / left, ±10mm))
C Fine adjustment for focus (±10mm)
D Light
E Support rod or roller
F Angle setting
VK Square bar

Figure 4.3: DSE-26B with sensor bracket MAMB, tilt

Type	A	VK
MAMB-25 smooth, tilt	89,5	25
MAMB-30 smooth, tilt	93,5	30

Fine adjustment on the Sensor bracket

Fine positioning

This setting allows for precise positioning of the light spot on the line/material edge being scanned.
→ B in *Figure 4.2, page 4-2* and *Figure 4.3, page 4-3*

Fine adjustment for focus

The fine adjustment of the distance between sensor and material web must be made so that the light spot appears well focused on the material web.
→ C in *Figure 4.2, page 4-2* and *Figure 4.3, page 4-3*

Transport and storage

- The sensor and/or the unit on which the sensor is mounted must be secured against slipping during transport.
- The sensor should be stored in a cool, clean and dry place, if possible in the original packaging.
  → *Ambient conditions, page 13-1*
- The sensor must not be stored in the vicinity of powerful magnetic fields.
  ► The electronic components of the sensor may be damaged.

Mounting

Mounting location

- Protection class: IP65
- Operating temperature: 0°C ... 60°C
- Storage temperature: 0°C ... 75°C
- Relative humidity: 5% to 85% non-condensing
- Indoor application
- Protected from vibrations
- Do not place close to strong magnetic fields:
  ► The electronic components may be damaged.
- Do not place close to strong electrostatic fields:
  ► The electronic components may be damaged.
- Do not mount in places where there is a risk of explosions.

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- Distance between sensor and material being scanned: 13 mm
- The material web must be guided in the area where the light spot appears (guide point) by a support rod or support roller. A plane change is not permitted.
- Protect the receiver of the sensor against extraneous light.

Mounting arrangement with different materials

non-reflective materials

- Mount the sensor perpendicular to the material web so that all of the light from the sensor is reflected into the receiver

reflective materials

Examples:
Glossy laminates, metallic materials, glossy films

- Mount the sensor at an angle of 15° from perpendicular
  ► This will cause a portion of the sensor light to be reflected away from the receiver.
  → *Figure 4.4*

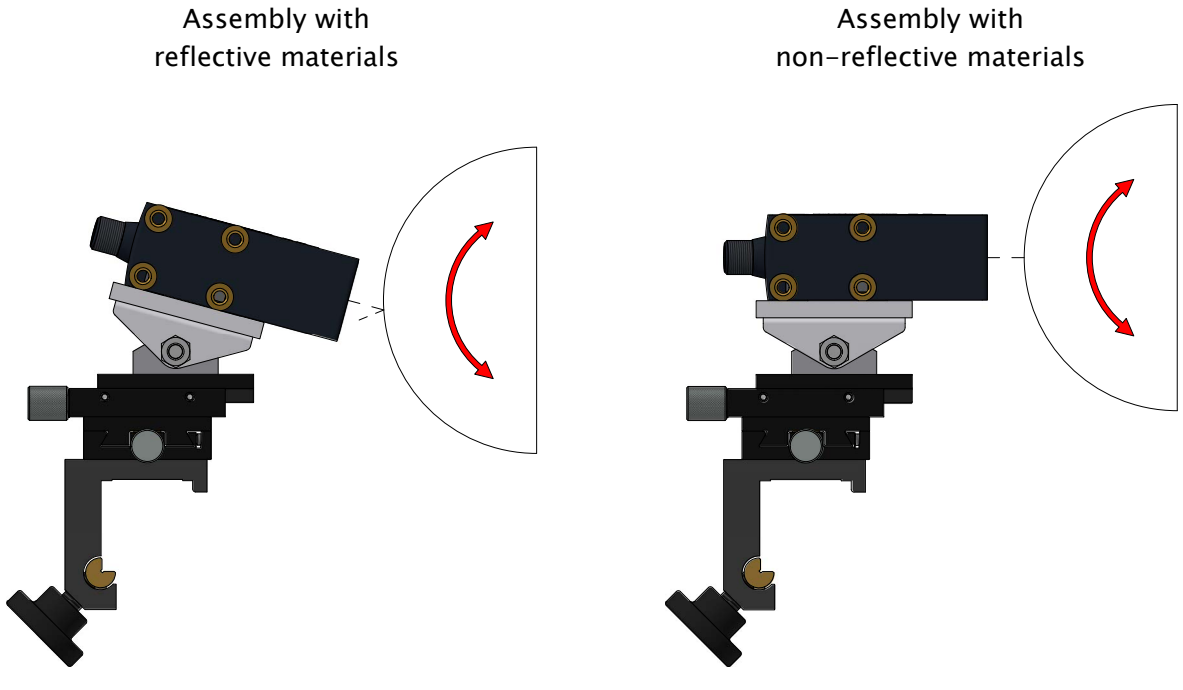

Figure 4.4: DSE-26B and different material types

Note:
The PWR LED flashes with error number 4 if the angle is not set correctly and must be corrected to approx. 15°.
→ *PWR LED display, page 12-1*

Fasten the sensor mechanically

WARNING - Danger of injury due to moving parts of the system and the material web in operation
⇨ Assembly tasks on the sensor must only be performed when there is no electrical power in the system.

1. Unpack the sensor and check them for damage
   ► If a component is damaged, it must not be installed or placed in operation.
2. Have suitable tools and mounting material ready to use
3. Turn off the machine/system and protect it against being turned on again
4. Protect the area around the assembly location against unauthorized entry
5. Mount the sensor on the sensor bracket
   ► Holes with M5 threads are available on the housing for mounting the sensor
   → *Figure 4.1, page 4-1*
   → *Figure 4.2, page 4-2*
   → *Figure 4.3, page 4-3*

   ATTENTION - Using long bolts introduces the risk of a short-circuit and destroying the electronics that are located inside the housing.
   ⇨ Please note when assembling sensor that only the original M5x6 bolts or similar ones should be used.
   ⇨ Tighten the M5 fastening screws to a max. torque of 1,3 Nm.
6. Slide the pre-mounted sensor module onto the square bar in the machine/system and fasten it with the star grip
   ► The correct **mounting arrangement** must be selected depending on the customer's web material.
   → *Mounting arrangement with different materials, page 4-5*
7. Set the sensor to a distance of 13 mm from the material web using the fine adjustment
   → C in *Figure 4.2, page 4-2* or *Figure 4.3, page 4-3*

Continue installation with:
→ *Electrical connection, page 4-7*

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Electrical connection

Safety instructions

ATTENTION
The sensor could be damaged.

⇨ The safe function of the sensor and the system is only guaranteed if it is properly installed.

⇨ Electrical connections should always be made or disconnected on the sensor while there is no electrical power in the system.

⇨ When attaching the connector with the jack on the sensor, pay close attention to the guide and groove! The connector and jack must not be connected with incorrect orientation or by force, as this will destroy the sensor.

⇨ All cable connections must be fixed in place sufficiently tightly to ensure the required electrical connections.

⇨ Electrical lines must not be subjected to any mechanical loads.

Connecting the sensor electrically

WARNING – Danger of injury due to moving parts of the system and the material web in operation
⇨ All electrical connection work on the sensor must be carried out with no electrical power in the system.

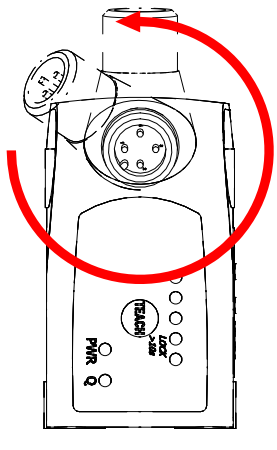
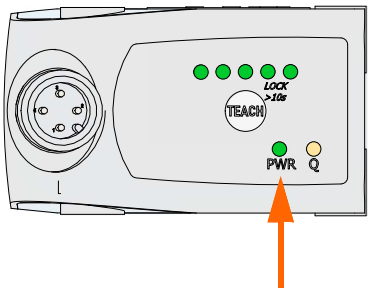


Figure 4.5: Cable connection, Rotates - maximum 270°

1. If necessary, turn the cable connection on the sensor in the desired direction
   → *Figure 4.5, page 4-7*
2. Connect the sensor to the controller according to the system diagram in the system documentation
   → *System diagram in the system documentation*
3. The installation of the sensor is complete. Commissioning can be carried out.
   → *Commissioning, page 6-1*

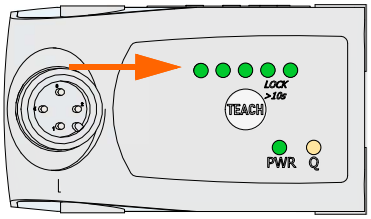
5 CONTROL AND DISPLAY ELEMENTS

The DSE-26B sensor has the following control and display elements:



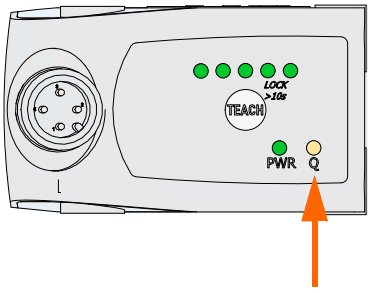
PWR LED

- Lit GREEN in normal operation
- Flashes to indicate an error:
  → *PWR LED display, page 12-1*



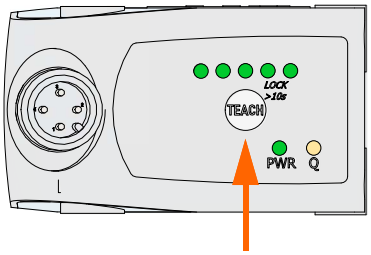
Bar graph

- Indicates the brightness value in normal operation (proportional, material-dependent)
  ► Cannot be adjusted by the customer.



LED Q

- OFF in normal operation
- For internal use only
  ► No function for the customer.



TEACH key

- For internal use only
  ► No function for the customer.

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6 OPERATION

Safety instructions

WARNING – Danger of injury by crushing
⇨ Do not place your hands on or near moving parts (rollers, material web, etc.) during operation.

WARNING – Danger of injury due to cutting on the edge of the material web
⇨ Do not place your hands on the edge of the (moving) material web during operation.

WARNING – Danger of injury when threading in the web
⇨ The web may only be threaded in, for example when changing the material web or after the web is torn, with the electrical power turned off and the machine stopped and protected against being turned on again.

Commissioning

Preconditions

- The sensor is securely mounted.
- The sensor is correctly connected electrically.

Preparation of the web guide controller

The web guide controller to which the sensor is connected must be prepared for use with a line sensor.

→ See the *Preparing the controller for use* section in the chapter describing the relevant web guide controller:
- D-MAXE with Operator Interface OI-TS (*page 7-1*)
- D-MAXE with Operator Interface OI-N (*page 8-1*)
- DP-20/DP-30/DP-20 Plus (*page 9-1*)
- Fife-500 (*page 10-1*)

Note:
When a complete system is delivered, the web guide controller has already been mostly calibrated in the factory. The same is not true for deliveries of individual parts or replacement parts, however.

Operation

Preconditions

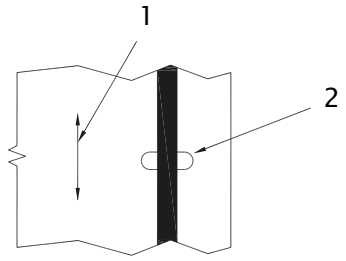
- The reference must be set up while the material web is stopped.
- Position the sensor so that the desired reference is centered in the sensor field of view.
  → B in *Figure 4.2, page 4-2* or *Figure 4.3, page 4-3*
- There must be no plane change of the material web in the area of the light spot.
  ► The material web is therefore to be guided by a support rod or support roller.
- The protector of the sensor must be clean.

Selecting suitable references

The operator must select a suitable reference (a line or an edge) that can be found again unambiguously within the sensor field of view on the material web.

Line

The material web is guided to the center of a printed line.



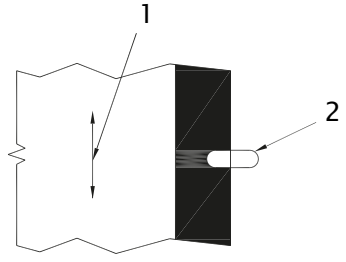
1 Direction of motion of the material web
2 Light spot (width 3.8 mm)

Figure 6.1: Line

- Lines can be continuous or broken
- Maximum line width 2.5 mm
- Minimum line width 0.25 mm with optimum contrast
- Depending on the width of the selected line, the distance to other edges or features on both sides of this line must be large enough that no other edges or features appear in the sensor's field of view.

Edge

The material web is guided to



1 Direction of motion of the material web
2 Light spot (width 3.8 mm)

Figure 6.2: Edge

- the edge of a material on a roller or support plate.
- the edge of a continuous printed sample.
- the edge of a line that is wider than 2.5 mm and has a continuous background.

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Setting up the reference on the controller

The reference is set up on the controller to which the setup menu is connected.

→ See section Setting up a reference in the section describing the relevant web guide controller:

- D-MAX(E) with Operator Interface OI-TS (*page 7-3*)
- D-MAX(E) with Operator Interface OI-N *(page 8-3*)
- DP-20/DP-30/DP-20 Plus (*page 9-3*)
- Fife-500 (*page 10-3*)

7 D-MAX(E) WITH OPERATOR INTERFACE OI-TS

Preparing the controller for use

Note:
Detailed information about sensor calibration is available in the "D-MAX Operating Instructions". "Supplementary Operating Instructions“ may also be available.

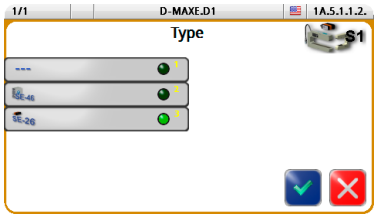
Precondition:
The SE-24B sensor is connected to the D-MAX(E) controller as specified in the system diagram to X5 or X9.

Placeholder **y**:
These places in the menu IDs depend on the currently selected job.

Select sensor type

- Press the Manual key to set the "Manual" operation mode

- Select menu 1y.5.1.1.2 *Type*
  ► Press the 6 button and hold it for 2 sec. → Button 5: Hardware → Button 1: Sensors → Button Sensor S1 .. Sensor S4: select the desired sensor → Button 2: Type



- Set the *Type* to SE-26

Selecting a reference type

Depending on the selected reference type, a distinction is made in set-up for:

- a (broken) line

or

- a material edge or (broken) print edge.

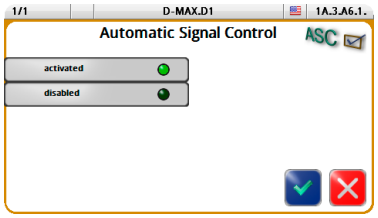
The properties of a reference are described in section *Selecting suitable references, page 6-2*.

- Select job:
  Press the 4 key until the suitable controller type for
  - Line center (menu ID J or K)
  or
  - Material edge or print edge (menu ID L or M)
  is selected

Setting up the *ASC* function with broken line/edges

Turning on ASC blocking

- Select menu 1y.3.y6.1 *ASC Automatic Signal Control*
  ► Button 6 → Button 6: ASC → Button 1: ASC



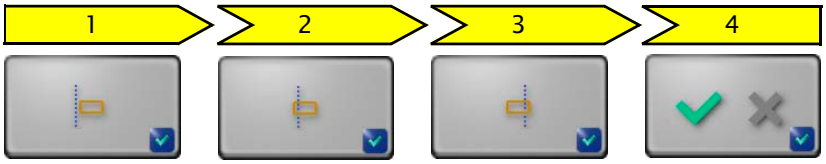
- Activate the *ASC* parameter

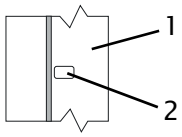
Setting up references

Setting up a (broken) line as a reference

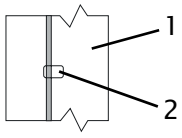
Calibrating the analog signal inputs of the D-MAX(E)

- Select menu 1y.3.y11.7.1
  ► Button 6 → Button 0: Calibrate sensor

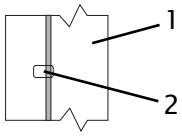




1. Determine the first reference value
   To do this position the line sensor so that the line is positioned to the left of the light spot.
   1 - Material web
   2 - Light spot



2. Determine the second reference value
   To do this position the line sensor so that the line is positioned on the left border within the light spot.



3. Determine the third reference value
   To do this position the line sensor so that the line is positioned on the right border within the light spot.

4. The result of the calibration is displayed and can be saved.

Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the D-MAX(E) web guide controller

Note:
The settings must be made for the selected job.

Setting the polarity

The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.

- Select menu 1y.3.y8
  ► Button 6 → Button 8: Polarity
- Set the *Polarity*

Setting the gain

The gain must be set optimally.

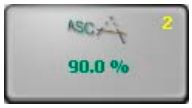
- Select menu 1y.3.y3
  ► Button 6 → Button 3: Gain
- Set the *Gain*

Set up for broken lines only

Adjusting the ASC limits

Set the values of the *ASC limits* to the range from -10% to +100%.

- Select menu 1y.3.y6. *ASC*
  ► Button 6 → Button 6: ASC



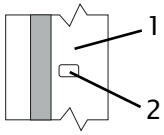
- Select menu 1y.3.y6.2 (Button 2)
  Enter threshold 1
  Typical value: +100%

- Select menu 1y.3.y6.3 (Button 3)
  Enter threshold 2
  Typical value: -10%

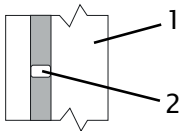
Setting up a (broken) material or print edge as a reference

Calibrating the analog signal inputs of the D-MAX(E)

- Select menu 1y.3.y11.5.1
  ► Button 6 → Button 0: Calibrate sensor



1. Determine the first reference value
   To do this position the line sensor so that the light spot is positioned completely outside the reference.
   1 - Material web
   2 - Light spot



2. Determine the second reference value
   To do this position the line sensor so that the light spot is positioned completely inside the reference.
3. Optional:
   The connected sensor field of view is entered in mm or inches.
   More details on the field of view can be found in the „Supplementary Operating Instructions" or in the overview in the system documentation.
   If the value is not known, the system can accept the suggested value.
4. The result of the calibration is displayed and can be saved.

Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the D-MAX(E) web guide controller

Note:
The settings must be made for the selected job.

Setting the polarity

The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.

- Select menu 1y.3.y8
  ► Button 6 → Button 8: Polarity
- Set the *Polarity*

Setting the gain

The gain must be set optimally.

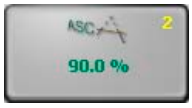
- Select menu 1y.3.y3
  ► Button 6 → Button 3: Gain
- Set the *Gain*

Set up for broken material edges or print edges only

Adjusting the ASC limits

Set the values of the *ASC limits* to the range from -90% to +90%.

- Select menu 1y.3.y6. *ASC*
  ► Button 6 → Button 6: ASC



- Select menu 1y.3.y6.2 (Button 2)
  Enter threshold 1
  Typical value: +90%

- Select menu 1y.3.y6.3 (Button 3)
  Enter threshold 2
  Typical value -90%

8 D-MAX(E) WITH OPERATOR INTERFACE OI-N

Preparing the controller for use

Note:
Detailed information about sensor calibration is available in the "D-MAX Operating Instructions". "Supplementary Operating Instructions“ may also be available.

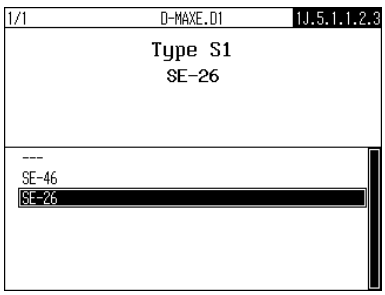
Precondition:
The SE-24B sensor is connected to the D-MAX(E) controller as specified in the system diagram to X5 or X9.

Placeholder **y**:
These places in the menu IDs depend on the currently selected job.

Select sensor type

F3 D

- Press the Manual key to set the "Manual" operation mode



- Select menu 1y.5.1.1.2 *Type*
  ► Press Enter key→ Hardware IOs → Sensor Setup → Sensor S1 .. Sensor S4: select the desired sensor → Type
- Set the *Type* to SE-26

Selecting a reference type

Depending on the selected reference type, a distinction is made in set-up for:

- a (broken) line

or

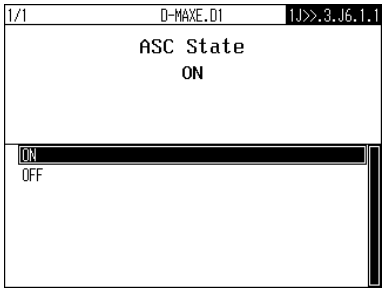
- a material edge or (broken) print edge.

The properties of a reference are described in section *Selecting suitable references, page 6-2*.

- Select job:
  Press the 4 key until the suitable controller type for
  - Line center (menu ID J or K)
  or
  - Material edge or print edge (menu ID L or M)
  is selected

Setting up the *ASC* function with broken line/edges

Turning on ASC blocking



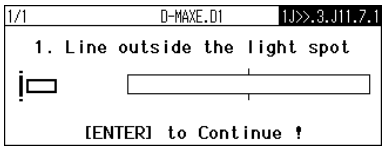
- Select menu 1y>>.3.y6.1 *ASC State*
  ► F6 key → ASC State
- set the *ASC* parameter to ON

Setting up references

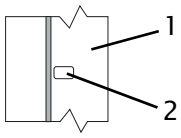
Setting up a (broken) line as a reference

Calibrating the analog signal inputs of the D-MAX(E)

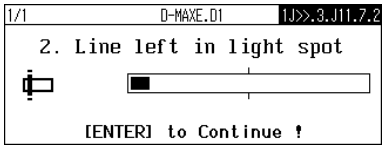
- Select menu 1y>>6 for calibration
  ► F6 key→ Calibration SE-26 ...



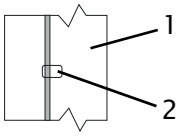
- Determine the first reference value



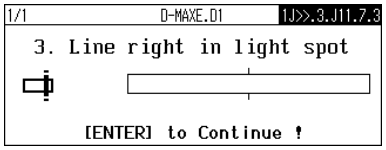
To do this position the line sensor so that the line is positioned to the left of the light spot.
1 - Material web
2 - Light spot



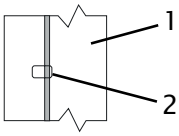
- Determine the second reference value



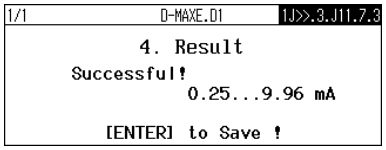
To do this position the line sensor so that the line is positioned on the left border within the light spot.



- Determine the third reference value



To do this position the line sensor so that the line is positioned on the right border within the light spot.



- The result of the calibration is displayed and can be saved.

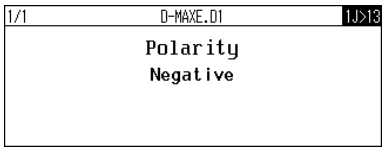
Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the D-MAX web guide controller

Note:
The settings must be made for the selected job.

Setting the polarity

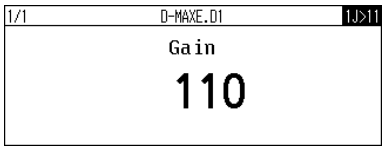
The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.



- Select menu 1y>>.3.y8
  ► F6 key → Polarity
- Set the *Polarity*

Setting the gain

The gain must be set optimally.



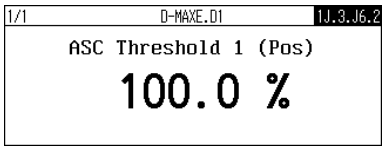
- Select menu1y>>.3.y3
  ► F6 key → Gain
- Set the *Gain*

Set up for broken lines only

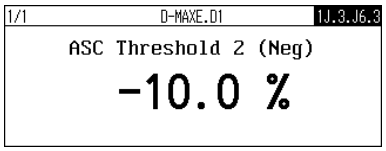
Adjusting the ASC limits

Set the values of the *ASC limits* to the range from -10% to +100%.

- Select menu 1y.3.y6. *ASC*
  ► Enter key → Job Settings → ASC



- Select menu 1y.3.y6.2
  Enter *ASC Threshold 1 (Pos)*
  Typical value: +100%

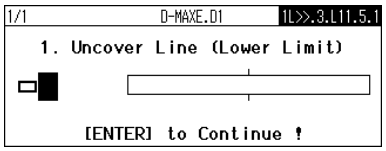


- Select menu 1y.3.y6.3
  Enter *ASC Threshold 2 (Neg)*
  Typical value: -10%

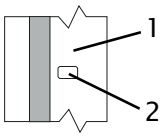
Setting up a (broken) material or print edge as a reference

Calibrating the analog signal inputs of the D-MAX(E)

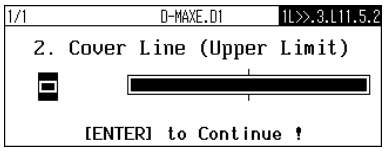
- Select menu 1y>>5 for calibration
  ► F6 key→ Calibration SE-26 ...



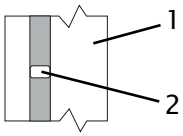
- Determine the first reference value



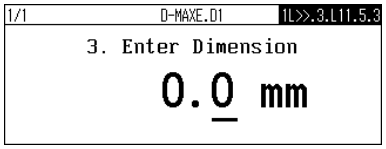
To do this position the line sensor so that the light spot is positioned completely outside the reference.
1 - Material web
2 - Light spot



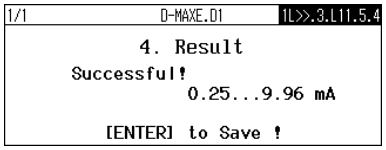
- Determine the second reference value



To do this position the line sensor so that the light spot is positioned completely inside the reference.



- Optional:
  The connected sensor field of view is entered in mm or inches.
  More details on the field of view can be found in the „Supplementary Operating Instructions" or in the overview in the system documentation.
  If the value is not known, the system can accept the suggested value.



- The result of the calibration is displayed and can be saved.

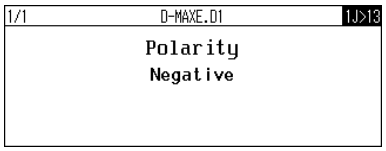
Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the D-MAX(E) web guide controller

Note:
The settings must be made for the selected job.

Setting the polarity

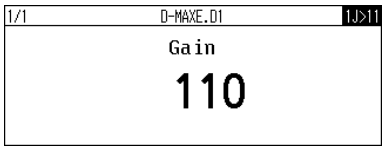
The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.



- Select menu 1y>>.3.y8
  ► F6 key → Polarity
- Set the *Polarity*

Setting the gain

The gain must be set optimally.



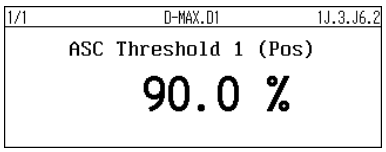
- Select menu1y>>.3.y3
  ► F6 key → Gain
- Set the *Gain*

Set up for broken material edges or print edges only

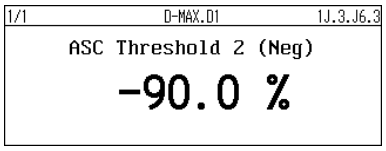
Adjusting the ASC limits

Set the values of the *ASC limits* to the range from -90% to +90%.

- Select menu 1y.3.y6. *ASC*
  ► Enter key → Job Settings → ASC



- Select menu 1y.3.y6.2
  Enter *ASC Threshold 1 (Pos)*
  Typical value: +90%



- Select menu 1y.3.y6.3
  Enter *ASC Threshold 2 (Neg)*
  Typical value: -90%

9 DP-20 / DP-30 / DP-20 PLUS

Preparing the controller for use

Note:
Detailed information about sensor calibration is available in the "DP-20 Operating Instructions", the "DP-30 Operating Instructions" or "DP-20 Plus Operating Instructions".

Note:
The DP-20 must be equipped with firmware version 1.05 or higher.

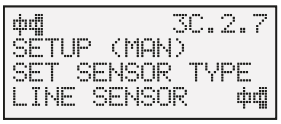
Precondition:
The DSE-26B sensor is connected to
- the DP-20 controller on input X4,
- the DP-30 controller on input X5 or
- the DP-20 Plus controller on input X4.

The calibration described here only applies to this input.

Placeholder **x**:
These places in the menu IDs depend on the selected reference type.

Select sensor type

- Press the Manual key to set „Manual“ operating mode



- Select menu 3x.2.7 *Sensor Type*
  ► Manual → Special → Set sensor type
- Set the *sensor type* to LINE SENSOR

Selecting a reference type

Depending on the selected reference type, a distinction is made in set-up for:

- a (broken) line
or
- a material edge or (broken) print edge.

The properties of a reference are described in section *Selecting suitable references, page 6-2*.

- Continue pressing the Sensor key until
  - Sensor line center - ⊕ (menu 3D) or
  - Material edge or print edge - ⊣ (menu 3E)

  is selected

Setting up the *ASC* function with broken line/edges

Selecting the ASC Source

- DP-20 controller: select menu 3x.5.3
  DP-30 controller: select menu 3x.5.4
  DP-20 Plus controller: select menu 3x.5.4
  ► Manual → Custom → ASC Source
- As *ASC source* select Line sensor - Line edge ⊣

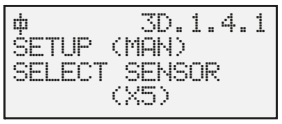
Switching on ASC Control

- DP-20 controller: select menu 3x.5.1
  DP-30 controller: select menu 3x.5.2
  DP-20 Plus controller: select menu 3x.5.2
  ► Manual → Custom → ASC Control
- Set the status of *ASC Control* to ON

Setting up references

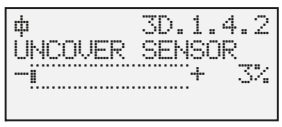
Setting up a (broken) line as a reference

Calibrating the analog signal inputs of the DP-20 / DP-30 / DP-20 Plus

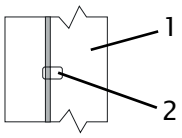


- Select menu 3D.1.4.1 *Select sensor*
  ► Manual → Basic → Calibration → Select Sensor
- DP-20 controller: select (X4)
  DP-30 controller: select (X5)
  DP-20 Plus controller: select (X4)
  ► line sensor - line center

- Press the ENTER key



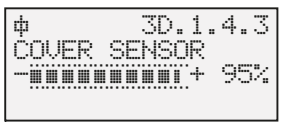
- Determine the first reference value



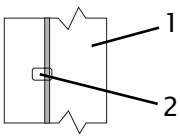
To do this position the line sensor so that the line is positioned on the left border within the light spot.

1 - Material web
2 - Light spot

- Press the ENTER key
  Wait a few seconds. The reference value will be determined.

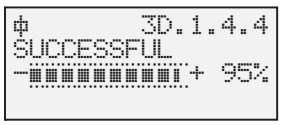


- Determine the second reference value



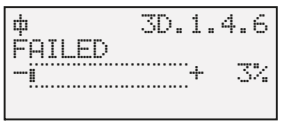
To do this position the line sensor so that the line is positioned on the right border within the light spot.

- Press the ENTER key
  The result will be determined.



The controller will return to the operator area if the calibration is successful.

OR



If there is not enough contrast for control, “FAILED” appears in the display.

- Cancel entries

Calibration of the sensor must be repeated until the process can be successfully completed.

Adjusting the DP-20 / DP-30 / DP-20 Plus controller

Note:
The settings must be made for reference type D - line center ⌖.

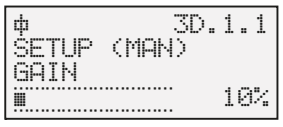
Setting the polarity

The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.

- Select menu 3D.1.3
  ► Manual → Basic → Polarity
- Set the *Polarity*

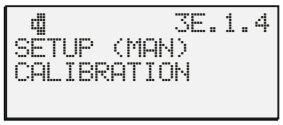
Setting the gain

The gain must be set optimally.

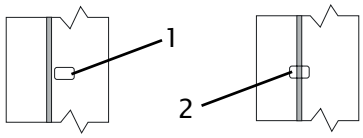


- Select menu 3D.1.1
  ► Manual → Basic → Gain
- Set the *Gain*

Set up for broken lines only

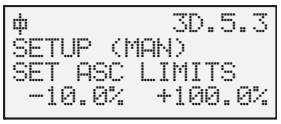


- Calibrate a material edge or print edge.
  → *Calibrating the analog signal inputs of the DP-20 / DP-30 / DP-20 Plus, page 9-5*



Position the sensor and line as follows for this calibration:
1. first reference value „Uncover sensor“
2. second reference value „Cover sensor“

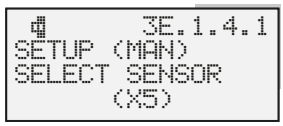
Set the ASC limits.



- DP-20 controller: Select menu 3D.5.2
  DP-30 controller: Select menu 3D.5.3
  DP-20 Plus controller: Select menu 3D.5.3
  ► Manual → Custom → ASC Limits
- Set the values of the *ASC limits*
  typical values: -10% and +100%

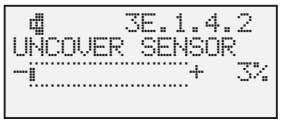
Setting up a (broken) material or print edge as a reference

Calibrating the analog signal inputs of the DP-20 / DP-30 / DP-20 Plus

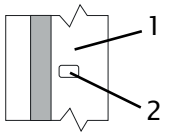


- Select menu 3E.1.4.1 *Select sensor*
  ► Manual → Basic → Calibration → Select sensor
- DP-20 controller: select (X4)
  DP-30 controller: select (X5)
  DP-20 Plus controller: select (X4)
  ► line sensor - print or material edge

- Press the ENTER key



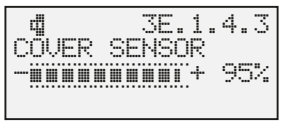
- Determine the first reference value



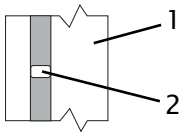
To do this position the line sensor so that the light spot is positioned completely outside the reference.

1 - Material web
2 - Light spot

- Press the ENTER key
  Wait a few seconds. The reference value will be determined.

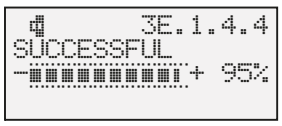


- Determine the second reference value



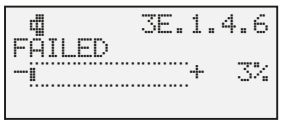
To do this position the line sensor so that the light spot is positioned completely inside the reference.

- Press the ENTER key
  The result will be determined.



The controller will return to the operator area if the calibration is successful.

OR



If there is not enough contrast for control, “FAILED” appears in the display.

- Cancel entries

Calibration of the sensor must be repeated until the process can be successfully completed.

Adjusting the DP-20 / DP-30 / DP-20 Plus controller

Note:
The settings must be made for reference type E - line edge.

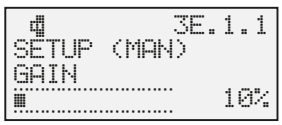
Setting the polarity

The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.

- Select menu 3E.1.3
  ► Manual → Basic → Polarity
- Set the *Polarity*

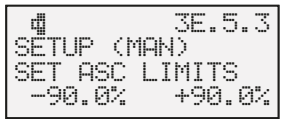
Setting the gain

The gain must be set optimally.



- Select menu 3E.1.1
  ► Manual → Basic → Gain
- Set the *Gain*

Set up for broken material edges or print edges only



Set the *ASC limits*.

- DP-20 controller: Select menu 3E.5.2
  DP-30 controller: Select menu 3E.5.3
  DP-20 Plus controller: Select menu 3E.5.3
  ► Manual → Custom → ASC Limits
- Set the values of the *ASC limits*
  typical values: -90% and +90%

10 FIFE-500

Preparing the controller for use

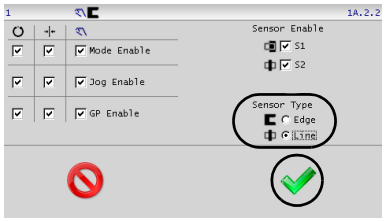
Note:
Detailed information about sensor calibration is available in the „FIFE-500 Operating Instructions“.

Precondition:
The SE-46C sensor must be connected to the FIFE-500 web guide controller according to the system diagram in the system documentation.

Placeholder **x**:
These places in the menu IDs depend on the selected reference type.

Select sensor type

- Press the Manual button to set „Manual“ operating mode



- Select menu 1x.2.2 *Control Options*
  ► Setup button → Right Arrow button → Control Options button
- Set the *sensor type* to **Line**
- Press the ENTER button

- Press the RETURN button to return to the operator level

Selecting a reference type

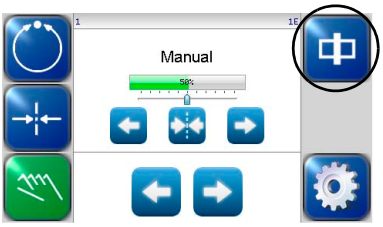
Depending on the selected reference type, a distinction is made in set-up for:

- a (broken) line

or

- a material edge or (broken) print edge.

The properties of a reference are described in section *Selecting suitable references, page 6-2*.

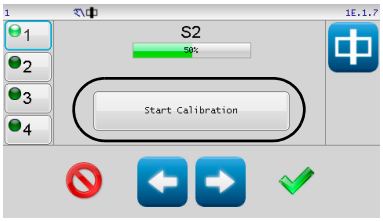


- Press the SENSOR key until the suitable controller type for
  - Line center (menu ID E)
  or
  - Material edge or print edge (menu ID D)
  is selected.

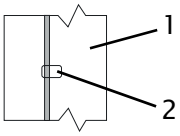
Setting up references

Setting up a (broken) line as a reference

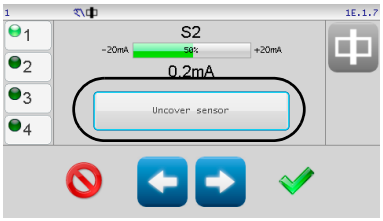
Calibrating the analog signal inputs of the FIFE-500



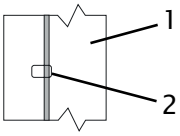
- Select menu 1E.1.7 *Sensor Setup*
  ► Setup button → Sensor Setup button
- Press the "Start Calibration" button



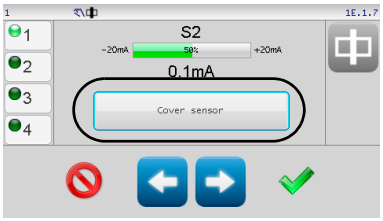
- first reference value
  To do this position the line sensor so that the line is positioned on the left border within the light spot.
  1 - Material web
  2 - Light spot



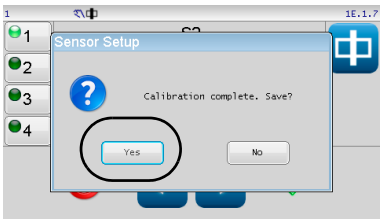
- Press the "Uncover sensor" key to determine the first reference value



- second reference value
  To do this position the line sensor so that the line is positioned on the right border within the light spot.



- Press the "Cover sensor" key to determine the second reference value



- Press the YES button to save the calibration

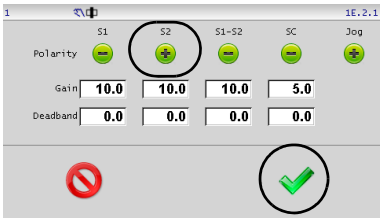
Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the FIFE-500 controller

Note:
The settings must be made for sensor mode E - line center (S2).

Setting the polarity

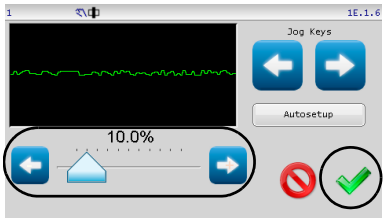
The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.



- Select menu 1E.2.1
  ► Setup button → Right Arrow button → Guide Settings button
- Set the *polarity* for S2
- Press the ACCEPT button to exit menu

Setting the gain

The gain must be set optimally.

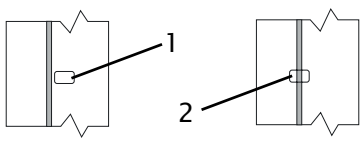


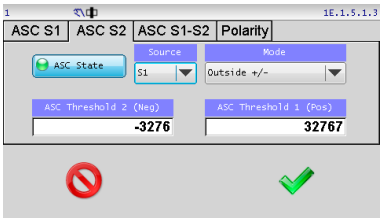
- Select menu 1E.1.6.
  ► Setup button → Gain button
- Set the *Gain*
- Press the ACCEPT button to exit menu

Set up for broken lines only

- Calibrate a material edge or print edge.
  → *Calibrating the analog signal inputs of the FIFE-500, page 10-5*

  Position the sensor and line as follows for this calibration:
  1. first reference value „Uncover sensor“
  2. second reference value „Cover sensor“





- Select menu 1E.1.5.1.3
  ► Setup button → ASC button→ ASC Settings button
- Select the **ASC S2** tab
- Activate **ASC State** (LED green)
- Select **S1** source

- Select **Outside** +/- mode
- Set ASC Threshold 1 (Pos)
  typical value: **32767** (+100%)
- Set ASC Threshold 2 (Neg)
  typical value: -**3276** (-10%)

- Press the ACCEPT button to exit menu

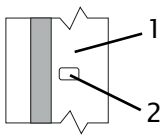
- Press ASC ON button

The "ASC ON" symbol appears in the menu header and in the operator level

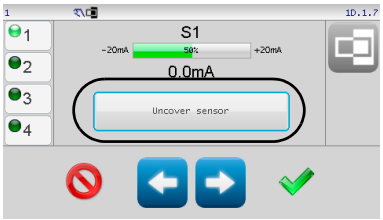
Setting up a (broken) material or print edge as a reference

Calibrating the analog signal inputs of the FIFE-500

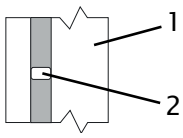
- Select menu 1D.1.7 *Sensor Setup*
  ► Press Setup button → Press Sensor Setup button
- Press the "Start Calibration" button



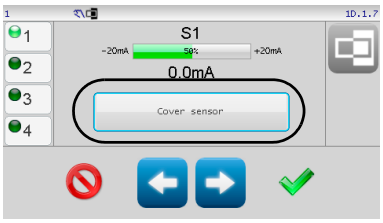
- first reference value
  To do this position the line sensor so that the light spot is positioned completely outside the reference.
  1 - Material web
  2 - Light spot



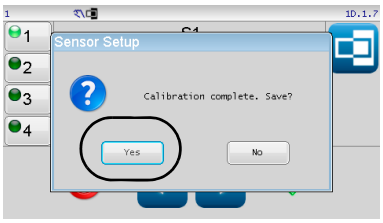
- Press the "Uncover sensor" key to determine the first reference value



- second reference value
  To do this position the line sensor so that the light spot is positioned completely inside the reference.



- Press the "Cover sensor" key to determine the second reference value



- Press the YES button to save the calibration

Note:
If an error occurs during the calibration, the error will appear in the menu and the calibration must be repeated.

Adjusting the FIFE-500 controller

Note:
The settings must be made for sensor mode D – Material edge or print edge (S1)

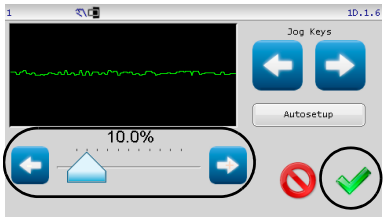
Setting the polarity

The guiding direction (polarity) must be checked depending on the mechanical installation direction of the system and adjusted if necessary.

- Select menu 1D.2.1
  ► Setup button → Right Arrow button → Guide Settings button
- Set the *polarity* for S1
- Press the ACCEPT button to exit menu

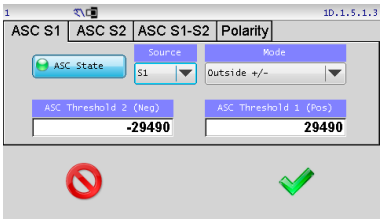
Setting the gain

The gain must be set optimally.



- Select menu 1D.1.6.
  ► Setup button → Gain button
- Set the *Gain*
- Press the ACCEPT button to exit menu

Set up for broken material edges or print edges only



- Select menu 1D.1.5.1.3
  ► Setup button → ASC button→ ASC Settings button
- Select the **ASC S1** tab
- Activate **ASC State** (LED green)
- Select **S1** source
- Select **Outside** +/- mode
- Set ASC Threshold 1 (Pos)
  typical value: **29490** (+90%)
- Set ASC Threshold 2 (Neg)
  typical value: -**29490** (-90%)

- Press the ACCEPT button to exit menu

- Press ASC ON button
  The "ASC ON" symbol appears in the menu header and in the operator level

11 MAINTENANCE

Maintenance

Safety instructions

WARNING – Danger of injury due to moving parts of the system and the material web in operation
⇨ Maintenance and cleaning work on the sensor must be carried out in de-energized state with the machine turned off and protected against being turned on again.

WARNING – Danger of injury when threading in the web
⇨ The web may only be threaded in, for example when changing the material web or after the web is torn, with the electrical power turned off and the machine stopped and protected against being turned on again.

Maintenance

No regular maintenance is required on the sensor.

Cleaning

Depending on the amount of ambient dirt and dust, the protector should be cleaned regularly with a lint-free cloth.

ATTENTION – The sensor could be damaged.
⇨ Do not use any chemical or aggressive cleaning agents or solvents to clean the sensor.

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Decommissioning

Safety instructions

WARNING - Danger of injury due to moving parts of the system and the material web in operation
⇨ Disassembly tasks on the sensor must only be performed when there is no electrical power in the system.

Decommissioning

1. Turn off the machine/system and protect it against being turned on again
2. Protect the area around the disassembly location against unauthorized entry
3. Disconnect the signal cable from the sensor
4. Unscrew the sensor from its bracket.
5. Store the sensor in the original packaging in a cool, clean and dry place
   → *Ambient conditions, page 13-1*

   OR

   Dispose of the sensor according to the national requirements

12 TROUBLESHOOTING

General errors

Fault	Possible cause	Remedy
No LED is lit on the sensor	Cable connections loose	Check the cable connections on the sensor and on the controller
	No voltage on the controller	Check the power supply on the controller
LEDs on the sensor are lit, but there is no light spot	The error cannot be corrected by the customer. Service required or the sensor must be sent to Fife-Tidland GmbH.	

PWR LED display

In the event of an error, the LED flashs with a certain pattern flashs n times for 0,5s on - 0,5s off, followed by 1s pause. The number of flashing pulses between two pauses encodes the error number "n".

"n"	Fault	Remedy
1	Undervoltage	Check power supply voltage
2	Overvoltage	
3	Overtemperature	The error is set at 65°C and canceled at 60°C.
4	Measurement signal too high (overexposure)	Set up the sensor (again), Check the assembly of the sensor - Is the material reflecting too strongly?
5	Calibration error	The error cannot be corrected by the customer. Service required or the sensor must be sent to Fife-Tidland GmbH.
6	General hardware error	

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13 TECHNICAL DATA

General information

Dimensions

→ *Figure 4.1, page 4-1*

Weight

100g

Ambient conditions

Ambient temperature: 0°C - 60°C
Storage temperature: 0°C - 75°C
Relative humidity: 5% - 85%, non-condensing

Protection class

IP65

Climate Class

3K3 (EN 60721)

Relative Humidity

2 (IEC 60664-1)

Materials used

Housing: Plastic, VISTAL®

Protector: PMMA (polymethylmethacrylate), glued
A data sheet can be requested on this material (EK0471).

Optical properties

Illumination

white light

Light source

RGB LED
100 000 lifetime hours

Light Spot Size

0.9 x 3.8mm

Distance between sensor and material web

13mm

Electrical connection

Power supply

12V - 24V

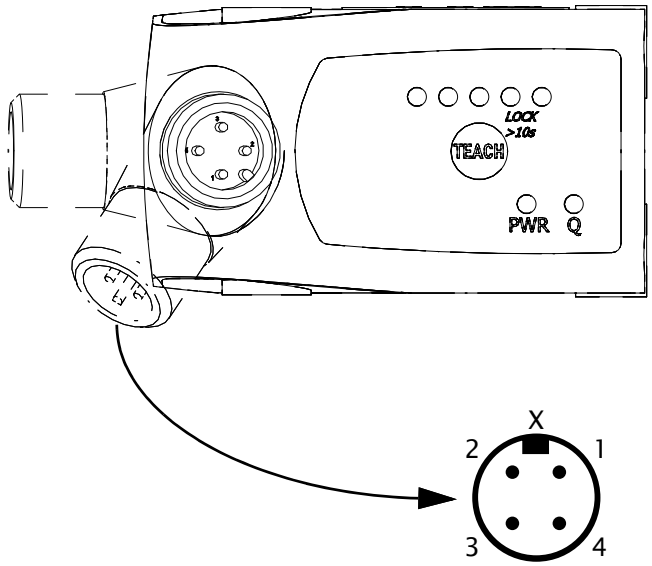
Supply current

150mA

Output signal

2 x 0 to 20mA, max. 300Ω
Digital data exchange via RS-485 when connected to selected FIFE web guide controllers

Pin assignment



1 Power supply
2 Output signal (RS-485)
3 P-GND
4 Output signal (analogue or RS-485)

X Key
Housing = Shield

Figure 13.1: M12 connector

Standards

The sensor was constructed in accordance with the standards and regulations of the European Union. A Declaration of Conformity is available.

14 SERVICE

Requests for Service

When requesting service, please have a copy of the order confirmation ready with the order number.

When ordering spare parts, please indicate part numbers, drawing numbers, type designations and configuration numbers.

Please be careful to keep all documents accompanying the product in a safe place. This will allow us to help you more quickly in the event that service is required.

Contact details

Fife-Tidland GmbH

Max-Planck-Straße 8
65779 Kelkheim
Germany

Siemensstraße 13-15
48683 Ahaus
Germany

Products / Accessories / Spare Parts / Returns

Phone: +49 - 6195 - 7002 - 0
E-mail: sales@maxcess.eu
Web: www.maxcess.com
Shop: mymaxcess.eu

For **repairs / returns**, after contacting us, you will receive a **Return Material Authorisation** (RMA document). Please send the products with the RMA document to the address indicated on it.

Technical service

Phone: +49 - 6195 - 7002 - 0
E-mail: service@maxcess.eu