# Operating Operations

F01099y

VARIO

# Sensor box SB

**for connecting several sensors to the ES61 power supply**

**BA-en-1025-2507**

ellex
electrostatic innovations

# List of contents

## Dear customer

The sensor box SB is used to extend the sensors that can be connected to the ES61 power supply. Furthermore, the installation effort can be reduced by placing the sensor box in the immediate vicinity of the sensors.

The sensor box SB is characterized by the following features:

- up to 10 digital sensor connections
- 2 analog sensor connections
- small dimensions
- easy installation
- solid design

Please read the operating instructions carefully before using the appliance. This will help you to avoid danger to persons and property.

If you have any questions, suggestions or ideas for improvement, simply give us a call. We greatly appreciate the feedback from the users of our appliances.

# 1. Outline of appliance Sensor box SB

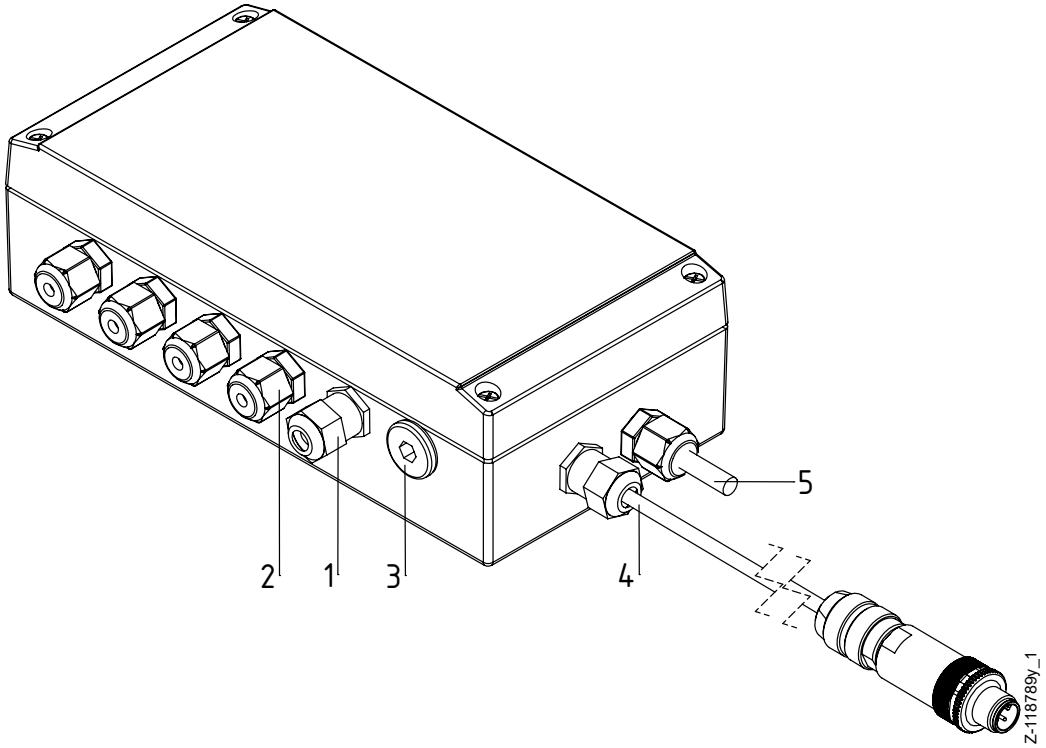


*Fig. 1:*
*Sensor box SB*

1 Analog sensor input
2 Digital sensor input
3 Blanking plug for closing unused sensor inputs
4 Connecting cable to the ES61 power supply
5 Supply voltage connecting cable 24 V DC

## 1.1 Variants

The sensor box is available with 2, 6 or 10 digital sensor connections. The dimensions of the housing change depending on the number of digital sensor connections (see chapter 8 "Dimensions”, page 18).

The length of the connecting cable to the sensor input of the ES61 power supply and the connection of the supply voltage can be individually selected in a range between 5 and 95 dm in 5 dm steps.

# 2. Safety

The units have been designed, built and tested using state-of-the-art engineering, and have left the factory in a technically and operationally safe condition. If used improperly, the units may nevertheless be hazardous to personnel and may cause injury or damage. Read the operating instructions carefully and observe the safety instructions.

For warranty conditions, please refer to the General Terms and Conditions (GTC), see www.eltex.de.

## 2.1 Proper use

The sensor box is used to connect several compatible sensors to the ES61 power supply.

The manufacturers will not assume any liability and warranty if the units are used improperly or used outside the intended purpose.

Modifications or changes made to the devices are not permitted.

Use only original Eltex spare parts and equipment.

## 2.2 Identification of risks and hazards

Possible risks and hazards resulting from the use of the units are referred to in these operating instructions by the following symbols:

**Warning!**
This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in serious personal injuries.

**Caution!**
This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in damage to property.

## 2.3 Work and operational safety

**Warning!**
Carefully observe the following notes and the complete chapter 2 "Safety", page 6!
Always observe the rules and regulations applying in your country with reference to electrical appliances.

- Any work involving the units must be carried out by qualified electricians (see chapter 3.4 "Connecting the sensors", page 9, chapter 5 "Maintenance", page 14).
- Sensors for analog evaluation (see chapter 6.2 "Additional sensors", page 16) must be fed into the housing via the metal cable glands (3, Fig. 3) and connected via the 4-pole terminals (6, Fig. 3). Shielded cables with a shield on both ends must be used for this purpose (see chapter 3.4.1 "Analog sensors", page 10).
- A 24 V DC supply voltage provided by the customer is required to operate the sensor box SB (see chapter 3.6 "Supply voltage connection", page 12).
- Only one power supply may be connected in the device (see chapter 3.6 "Supply voltage connection", page 12).
- Check the sensor box, all connected devices and the electrical wiring at regular intervals for any damage. Any damaged components must be repaired or replaced before continuing to operate the devices or the appropriate devices must be taken out of operation.
- The IP54 protection class applies only if the lid of the housing is closed and the cable entries are covered.
- Only compatible sensors (see chapter 6 "Compatible sensors", page 15) can be operated with the sensor box (see chapter 3.4 "Connecting the sensors", page 9).
- Unused outputs must remain closed with blanking plugs (see chapter 3.4 "Connecting the sensors", page 9, chapter 4.1 "Startup", page 13, chapter 5 "Maintenance", page 14).
- Before startup, the user must ensure that the sensor box is correctly mounted, that the sensor box is correctly installed on the ES61 power supply and the external power supply as well as that the sensors are correctly installed on the sensor box (see chapter 4.1 "Startup", page 13).

## 2.4 Technical advance

The manufacturer reserves the right to make changes to the technical specifications without prior notice in order to adapt the units to state-of-the-art engineering. Eltex will provide the latest information on any changes or modifications in the operating instructions on request.

# 3. Installation and assembly

## 3.1 Assembling the housing

The housing has mounting holes for installation. For more information on the dimensions and position of the mounting holes, see chapter 8 "Dimensions”, page 18.

## 3.2 Removing the cover

Before connecting sensors and cable glands, the 4 fastening screws (1) must be completely loosened and the cover (2) removed. The fastening screws are secured to the cover so that they cannot be lost.

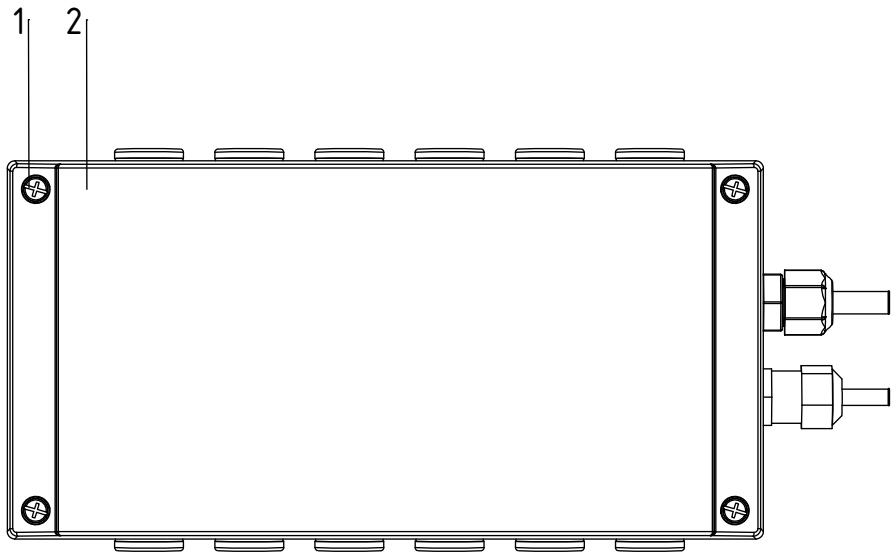


*Fig. 2: Sensor box SB/A2D10 with cover*

1 Fastening screws
2 Cover

## 3.3 Assembling the cable glands

All sensor inputs are sealed with blanking plugs on delivery. Before commissioning, replace the blanking plugs on the outputs used with the cable glands supplied. Please refer to chapter 3.4 "Connecting the sensors”, page 9.

**Warning!**
Unused outputs must remain closed with blanking plugs.

### 3.4 Connecting the sensors

**Warning!**

- Sensors may only be connected by qualified electricians.
- Only compatible sensors (see chapter 6 "Compatible sensors", page 15) can be operated with the sensor box.
- Unused outputs must remain closed with blanking plugs.

The sensor cables are fed into the housing via the cable glands (3, 4) and connected to the PCB terminals (5, 6).

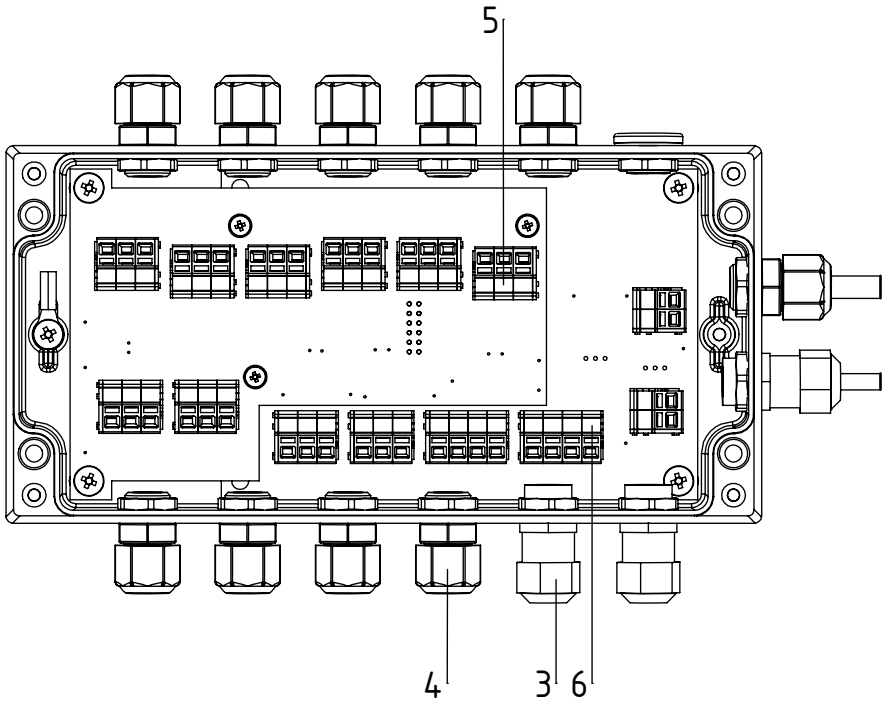


*Fig. 3: Sensor box SB/A2D10 without cover*

3/4 Cable glands
5/6 PCB terminals

### 3.4.1 Analog sensors

Sensors for analog evaluation must be fed into the housing via the metal cable glands (3, Fig. 3) and connected via the 4-pole terminals (6, Fig. 3). Shielded cables with a shield on both ends must be used for this purpose.

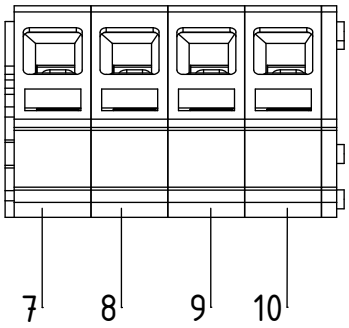


*Fig. 4: 4-pole terminal block*

Z-118789y_3

7 Digital sensor input
8 Analog sensor input
9 GND (ground)
10 +24 V DC output

### 3.4.2 Digital sensors

Sensors for digital evaluation are fed into the housing via the plastic cable glands (4, Fig. 3) and connected via the 3-pole terminals (5, Fig. 3). The number and position of the 3-pole terminals varies depending on the device version.

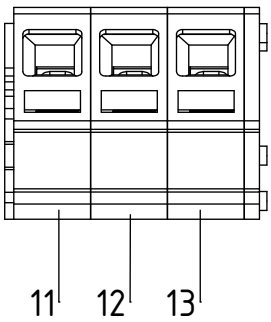


*Fig. 5: 3-pole terminal block*

Z-118789y_4

11 Digital sensor input
12 GND (ground)
13 +24 V DC output

## 3.5 Sensor input ES61 power supply

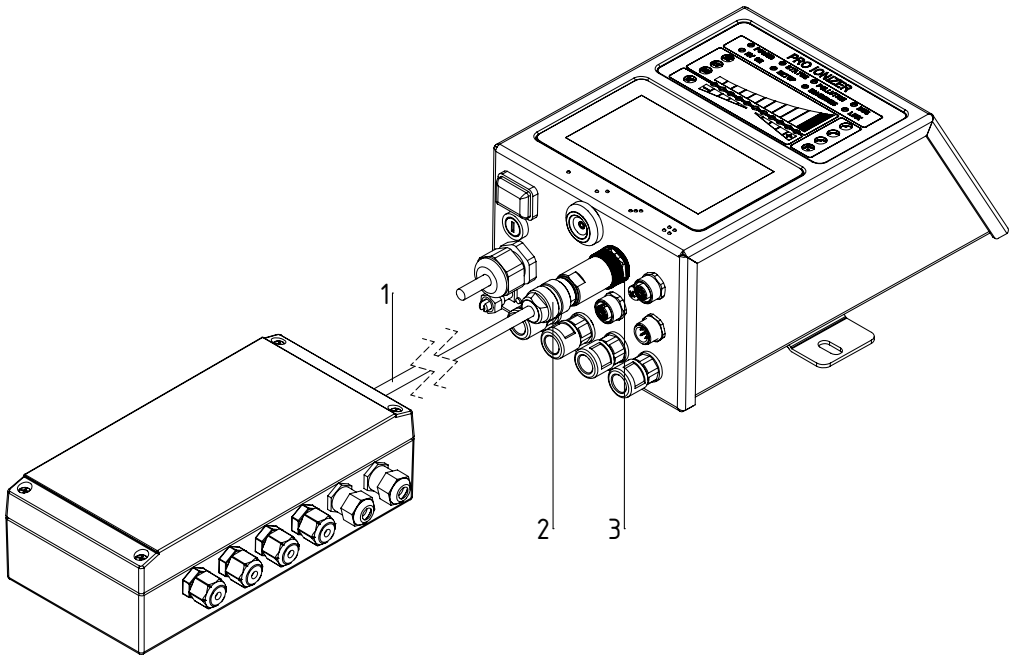


*Fig. 6:*
*ES61 sensor input connection*

1 Connecting cable
2 Cable plug
3 ES61 power supply

The cable plug (2) of the connecting cable (1) must be connected to the sensor connection of the ES61 power supply (3).

The ES61 power supply must have the sensor input. Furthermore, the display integrated in the power supply or the field bus communication is required to display the sensor data and setting of the parameters.

### 3.5.1 Configuration of the ES61 power supply

When using the sensor box, the ES61 power supply must be configured accordingly. Please refer to the ES61 operating instructions.

### 3.5.2 Compatibility of the ES61 power supply

The ES61 power supply supports the evaluation of sensors connected via the sensor box with software version V6.7.0 and higher. Software version V1.9.3 or higher is required to display the sensor data correctly on the display integrated in the ES61 power supply.

### 3.6 Supply voltage connection

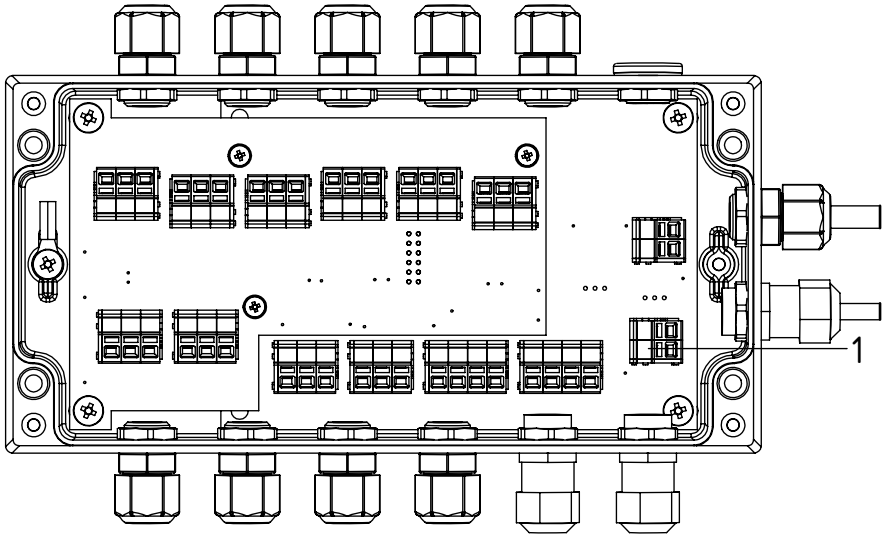


*Fig. 7: Sensor box SB/A2D10 without cover*

Z-118789y_13

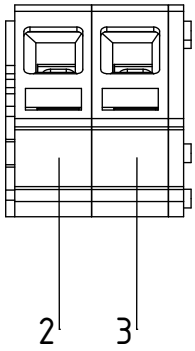


*Fig. 8: 2-pole terminal*

Z-118789y_12

1 2-pole terminal for supply voltage 24 V DC
2 Input 24 V DC
3 GND (ground)

A 24 V DC supply voltage provided by the customer is required to operate the sensor box SB.

Connect the factory-connected cable to the voltage (wire labeled “1”) and the ground (wire labeled “2”).

**Warning!**
Only one power supply may be connected in the device.

# 4. Operation

## 4.1 Startup

Before startup, the user must ensure that the sensor box is correctly mounted, that the sensor box is correctly installed on the ES61 power supply and the external power supply as well as that the sensors are correctly installed on the sensor box.

The sensor box is now ready for operation.

During operation, the housing must be closed and all sensor inputs must be connected.

To view the sensor data on the display integrated in the ES61 power supply and to set the parameters for the correct evaluation of the individual sensor connections, please refer to the operating instructions for the ES61 power supply.

# 5. Maintenance

**Warning!**

- Repairs and maintenance work must be carried out by qualified electricians only.
- All sensor inputs must be connected during operation.

When used as intended, the sensor box does not require any special maintenance.

# 6. Compatible sensors

In this chapter you will find a selection of compatible sensors. Other sensors may also be compatible. Please consult the operating instructions for the ES61 power supply.

## 6.1 Speed sensors

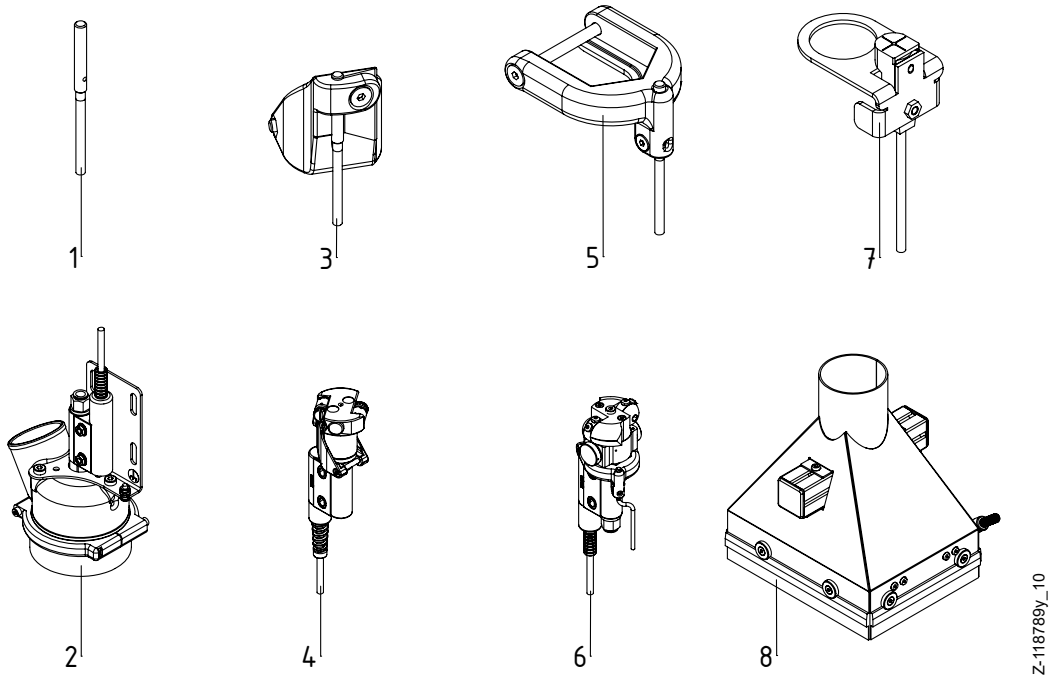


*Fig. 9:*
*Speed sensors*

| Sensor | Use in the device | Sensor retrofittable | max. current consumption (manufacturer specification) | Eltex article number |
|---|---|---|---|---|
| 1 | Static Combi Cleaner SCC-P (2) | No | 10 mA | 118468 |
| 3 | Ionblower nozzle R36E with rotating nozzle Type V (4) | No | 10 mA | 118485 |
| 5 | Ionblower nozzle R36E with rotating nozzle Type C (6) | Yes | 10 mA | 118762 |
| 7 | Static Combi Cleaner SCC (8) | Yes | 15 mA | 118308: cable length 1 m<br>118929: cable length 5 m |

## 6.2 Additional sensors

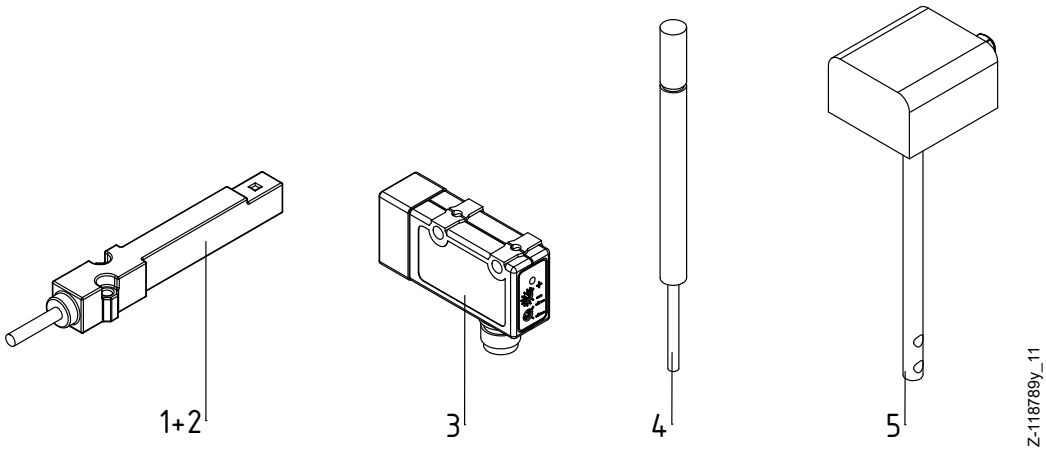


*Fig. 10: Sensors*

| Sensor | Article | max. current consumption (manufacturer specification) | Eltex article number |
|---|---|---|---|
| 1 | E-field sensor IZD10-110 (measuring range ± 0,4 kV) | 40 mA | 114944 |
| 2 | E-field sensor IZD10-510 (measuring range ± 20 kV) | 40 mA | 118599 |
| 3 | Gloss ensor for metal detection | 20 mA | 118848 |
| 4 | Humidity sensor / Temperature sensor | 10 mA | 118849 |
| 5 | Air flow monitor | 25 mA | 118850 |

# 7. Technical specifications

| | |
|---|---|
| Supply voltage | 24 V DC ±10 % |
| max. power input | 12 W |
| Operating ambient temperature | +5...+50 °C (+41...+122 °F) |
| Stockage temperature | -20...+80 °C (-4...+176 °F) |
| Ambient humidity | max. 80 % RH, non-dewing |
| Sensor connections analog | 0 to 2 |
| Sensor connections digital | 0 to 10 |
| Housing type | Aluminum |
| Protection class | IP54 according to EN 60529 |
| Housing dimensions | |
| up to 6 digital sensor connections | 160 x 100 x 62 mm, [L x W x H] (without cable gland) |
| 10 digital sensor connections | 200 x 100 x 62 mm, [L x H x H] (without cable gland) |
| Weight | ca. 1 kg (without cable) |

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# 8. Dimensions

## 8.1 Sensor box with 2 digital sensor connections

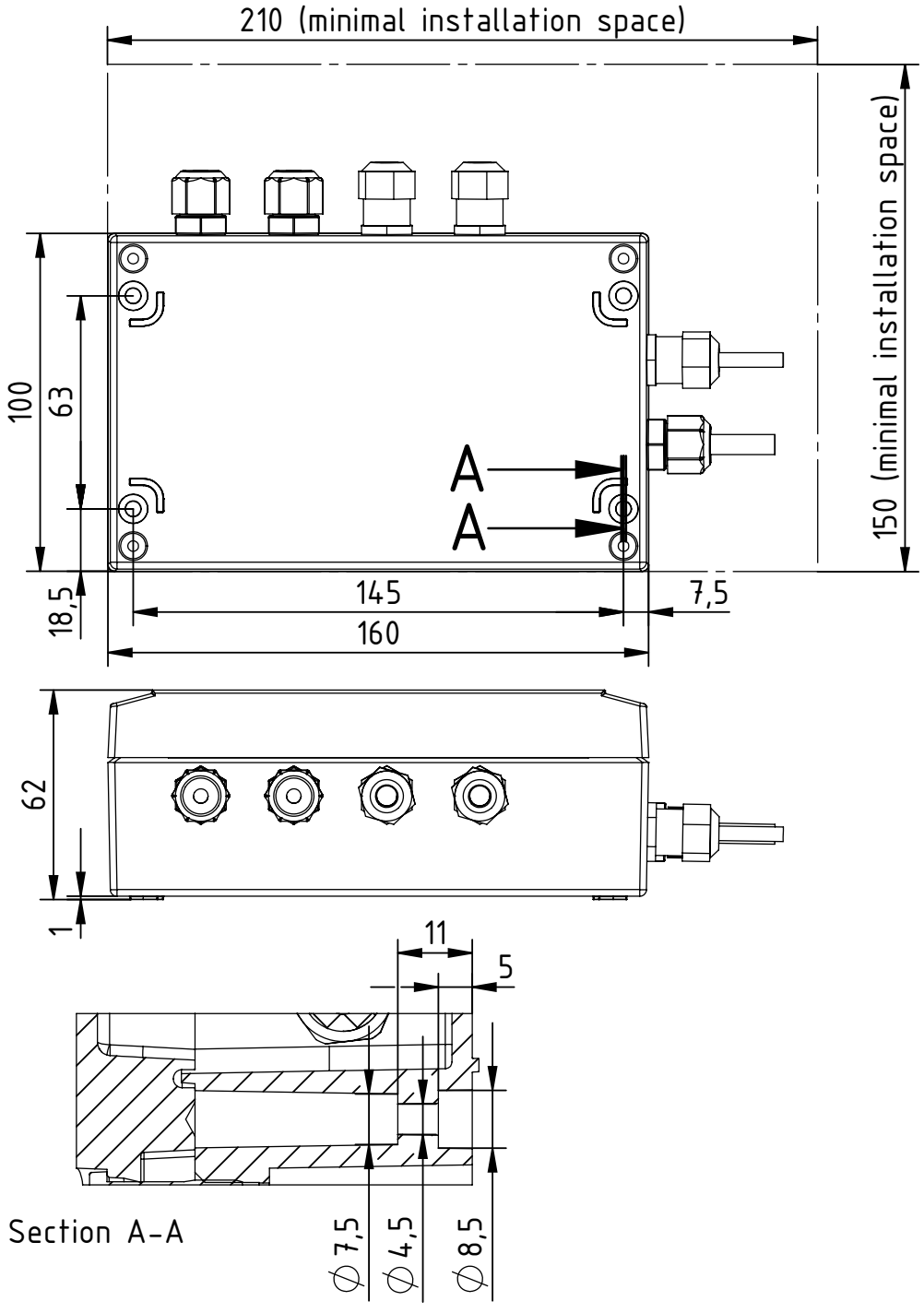


*Fig. 11: Dimensions Sensor box with 2 digital sensor connections*

## 8.2 Sensor box with 6 digital sensor connections

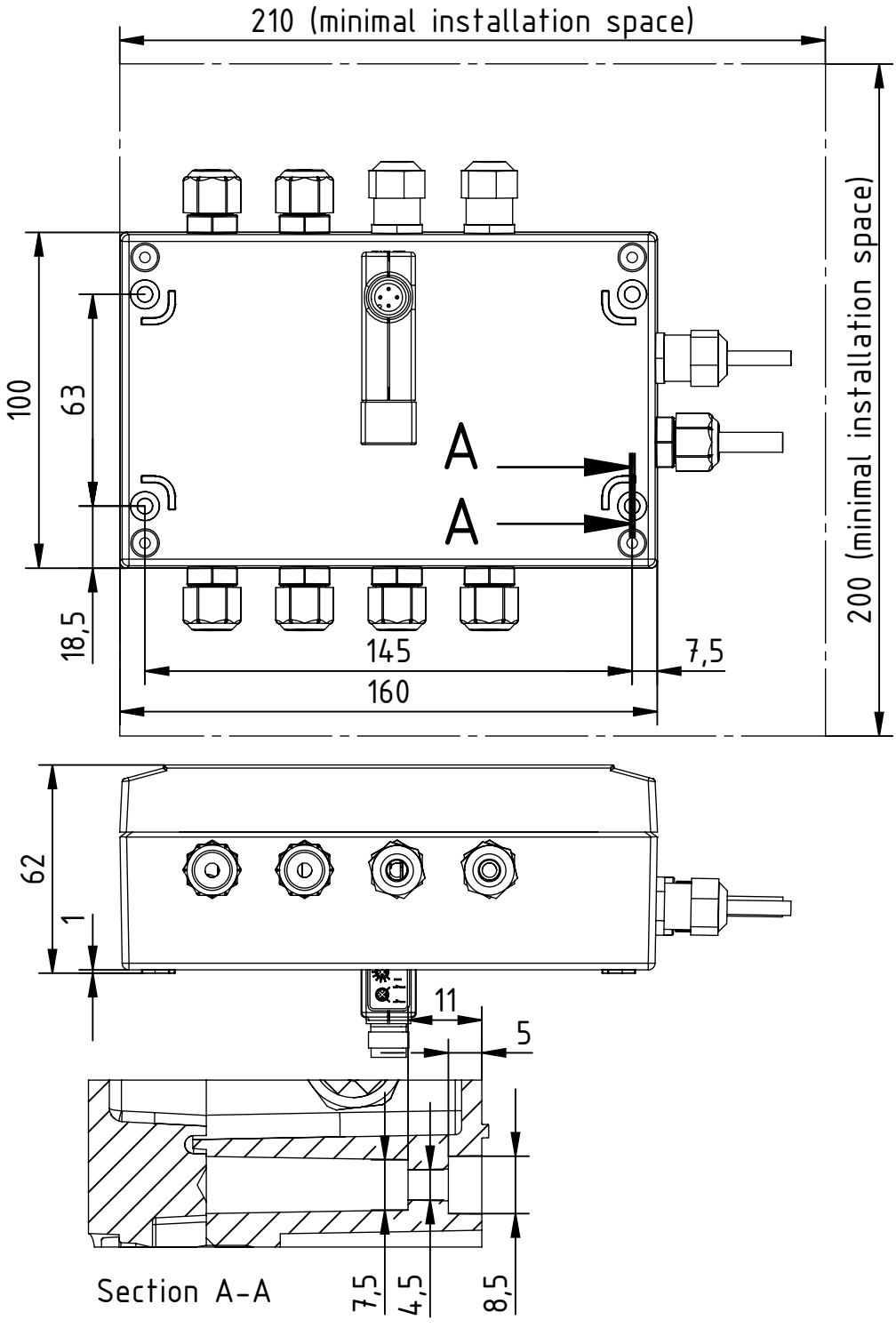


*Fig. 12: Dimensions Sensor box with 6 digital sensor connections*

## 8.3 Sensor box with 10 digital sensor connections

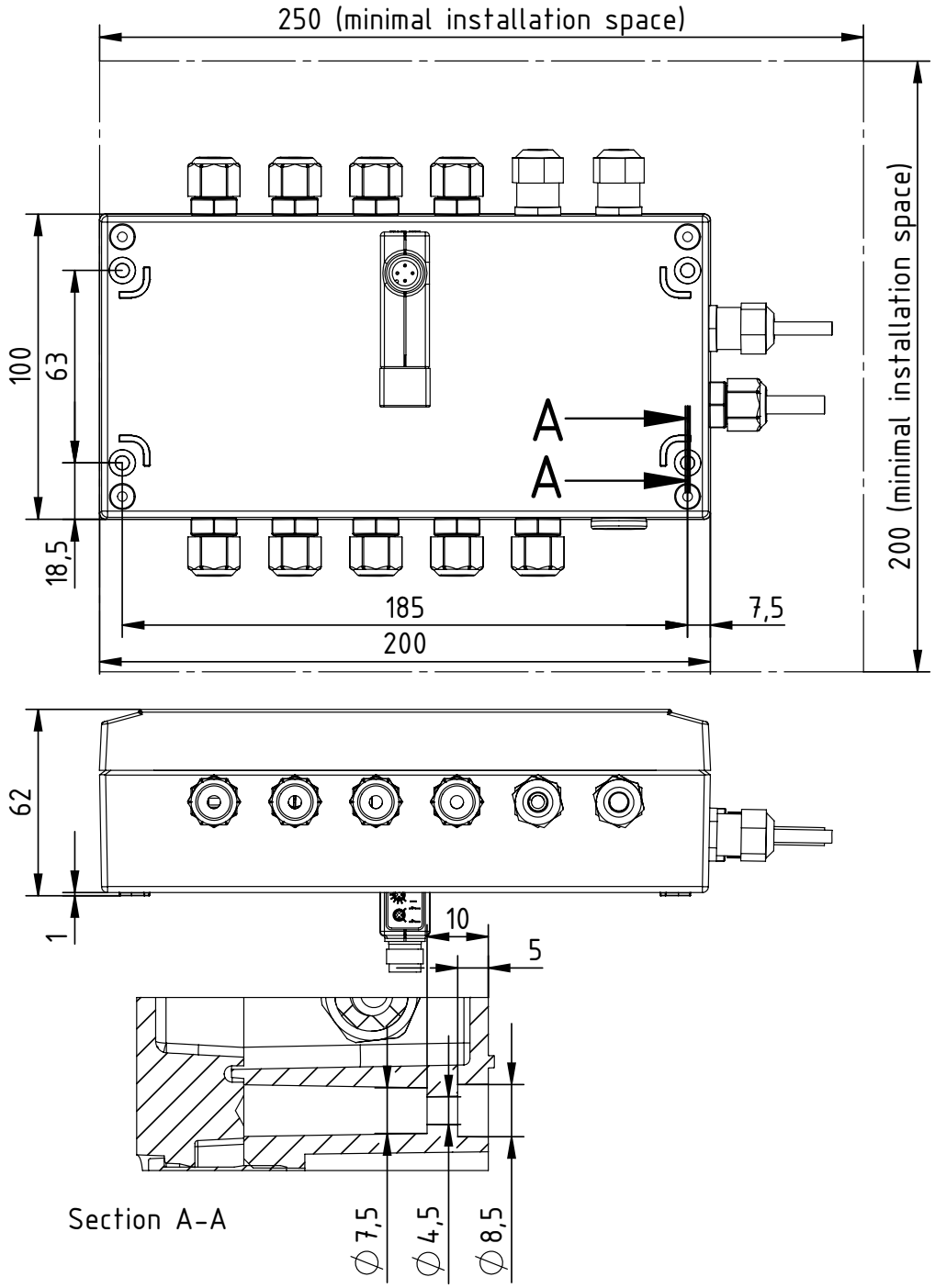


*Fig. 13: Dimensions Sensor box with 10 digital sensor connections*

# 9. Spare parts and accessories

## 9.1 Spare parts

| Article | Article-No. |
|---|---|
| Cable gland for analog sensor input | 118692 |
| Cable gland for digital sensor input | 109227 |
| Circular plug connector<br>Sensor connection to power supply ES61 | 118380 |
| Blanking plug | 101881 |
| Nut for fastening the cable gland<br>for digital sensor input | 102953 |
| Nut for fastening the cable gland<br>for analog sensor input | MCH00114 |
| Operating instrucions (specify language) | BA-xx-1025 |

## 9.2 Compatible sensors

| Article | Article-No. |
|---|---|
| E-field sensor IZD10-110 with measuring range ±0,4 kV | 114944 |
| E-field sensor IZD10-510 with measuring range ±20 kV | 118599 |
| Gloss sensor for metal detection | 118848 |
| Humidity sensor / Temperature sensor | 118849 |
| Air flow monitor | 118850 |
| Speed sensor for R36E with rotary nozzle type C<br>for retrofitting | 118762 |
| Speed sensor for SCC for retrofitting | 118308:<br>cable length 1 m<br><br>118929:<br>cable length 5 m |

Please specify the article number when ordering.

# 10. Decommissioning / Disposal

The sensor box SB can be disposed of using the general waste disposal methods (electronic waste).

# EU-Declaration of Conformity

CE-1025-en-2504

Eltex-Elektrostatik-Gesellschaft mbH
Blauenstraße 67 - 69
D-79576 Weil am Rhein

declares in its sole responsibility that the product

**Sensor Box SB** (according to Eltex reference code)

complies with the following directives and standards.

| | |
|---|---|
| Relevant EU-Directive: | |
| **2014/35/EU** | Low Voltage Directive |
| Harmonized standard applied: | |
| EN 60204-1:2018 | Safety of machinery – Electrical equipment of machines – General requirements |
| Relevant EU-Directive: | |
| **2014/30/EU** | EMC Directive |
| Harmonized standards applied: | |
| EN 55011:2016 + A1:2017 + A11:2020 + A2:2021 | Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement |
| EN IEC 61000-3-2:2019 + A1:2021 | Electromagnetic compatibility (EMC) – Limits – Limit for harmonic current emissions (equipment input current ≤ 16 A per phase) |
| EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022 | Electromagnetic compatibility (EMC) – Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection |
| EN IEC 61000-6-2:2019 | Electromagnetic compatibility (EMC) – Generic standards – Immunity for industrial environments |
| Relevant EU-Directives: | |
| **2011/65/EU** | RoHS Directive |
| **(EU) 2015/863** | RoHS Delegated Directive |

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 07.04.2025
Place/Date

Lukas Hahne, Managing Director

# Eltex offices and agencies

**The addresses of all Eltex agencies can be found on our website at www.eltex.de**

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