



Operating and Installation Manual

Sash distance sensor Type DS-TRD-02

for registering the sash position of fume cupboards



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The art of handling air

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1 General information

This manual describes the sash distance sensor type DS-TRD-02 for registering the sash position of fume cupboards. The voltage signal from the sensor is connected to the EASYLAB Controller TCU3 and is required for demand-based variable flow rate control.

To ensure complete function of the sash distance sensor it is essential to read the provided operating and installation manual before starting any work, and to comply with it. The manual must be given to the facilities manager when handing over the system. The facilities manager must include the manual with the system documentation.

The manufacturer does not accept any liability for any malfunction or damage resulting from non-compliance with this manual or non-compliance with relevant statutory regulations.

Other applicable documentation

In addition to this manual, the following documents apply:

- Project-specific wiring documents

Symbols used in this manual



Danger!

Designates danger to life and limb due to electrical voltage.



Warning!

Designates danger to life and limb.



Important!

Designates danger that can cause minor personal injury or damage to property.

2 Safety and correct use

General information regarding safety

Only skilled qualified personnel are allowed to perform the described work.
Only skilled qualified electricians are allowed to work on the electrical system.
Comply with the corresponding statutory regulations and accident prevention regulations during all work on EASYLAB components.

General safety measures

• Large temperature differences

Condensation can damage the electronics beyond repair. If the sash distance sensor has been kept in an unheated area, wait at least 2 hours before switching on the supply voltage for commissioning.

• Foreign matter and liquids

If liquid gets into the sash distance sensor, let the sash distance sensor completely dry before commissioning. Remove foreign matter, if any.

If the device emits a smell or smoke, have it checked by the manufacturer.

Handling the measuring wire

The measuring wire is pulled back into the sensor housing by spring force. To avoid physical injuries and damage to the sash distance sensor, it is essential to follow the instructions below.

- The measuring wire is not allowed to be extended beyond the specified maximum extension length.
- The measuring wire holder is not allowed to be twisted.
- The measuring wire must be guided at right angles to the wire outlet.
- The measuring wire is not allowed to spring back loose, it must be held taught by the spring force of the wire drum at all times.
- The measuring wire is not allowed to be kinked or crushed.

Correct use

The sash distance sensor is used for registering the sash position of fume cupboards, and permits demand-driven, variable flow rate control.

- Only connect the sash distance sensor to an EASYLAB Controller TCU3 used for fume cupboard control (equipment function FH-xxx)
- Only install the sash distance sensor in such a way that the wire guidance described in this manual is complied with
- Observe the technical data of the sash distance sensor

Incorrect use

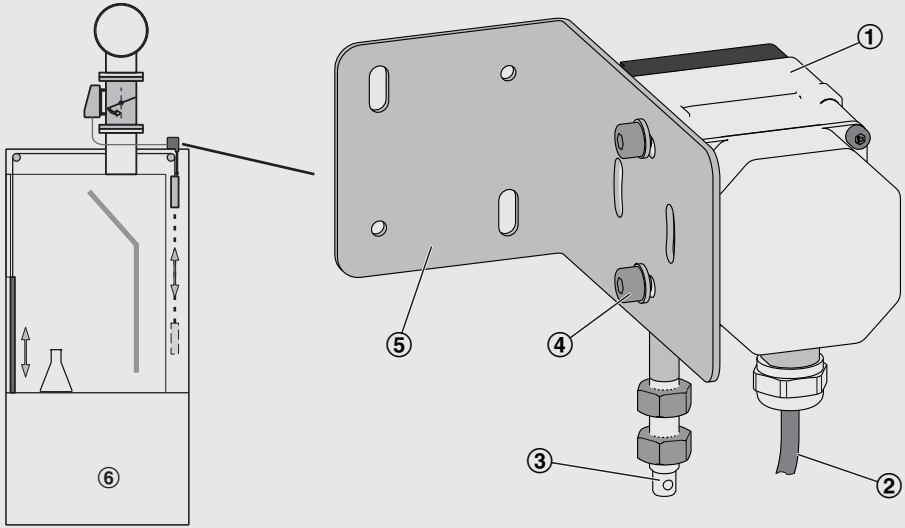
Do not use the sash distance sensor outdoors, in wet areas, or in potentially explosive atmospheres.

Residual risks

Failure of the sash distance sensor has effects on the flow rate control of the fume cupboard.

3 Product description

Product overview



- ① Sensor housing
- ② Connecting cable
- ③ Measuring wire

- ④ Screws / U-washers
- ⑤ Mounting bracket
- ⑥ Fume cupboard

Functional description

The sash distance sensor DS-TRD-02 is used for registering the opening distance of the sash of a fume cupboard. The actual value signal is connected to a EASYLAB Controller TCU3 and produces demand-driven, variable control of the extract air volume flow

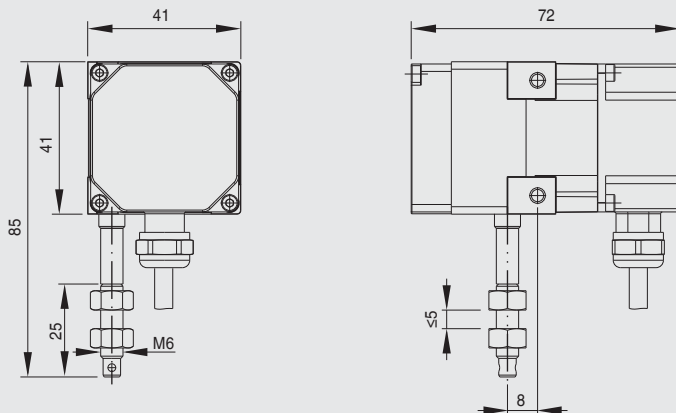
Due to the large coverage of the sensor, it is appropriate for all kinds of fume cupboard (even walk-in types) with an adjustable range of the sash up to 1750 mm. The mounting bracket permits an extremely wide range of installation orientations.

Measuring range

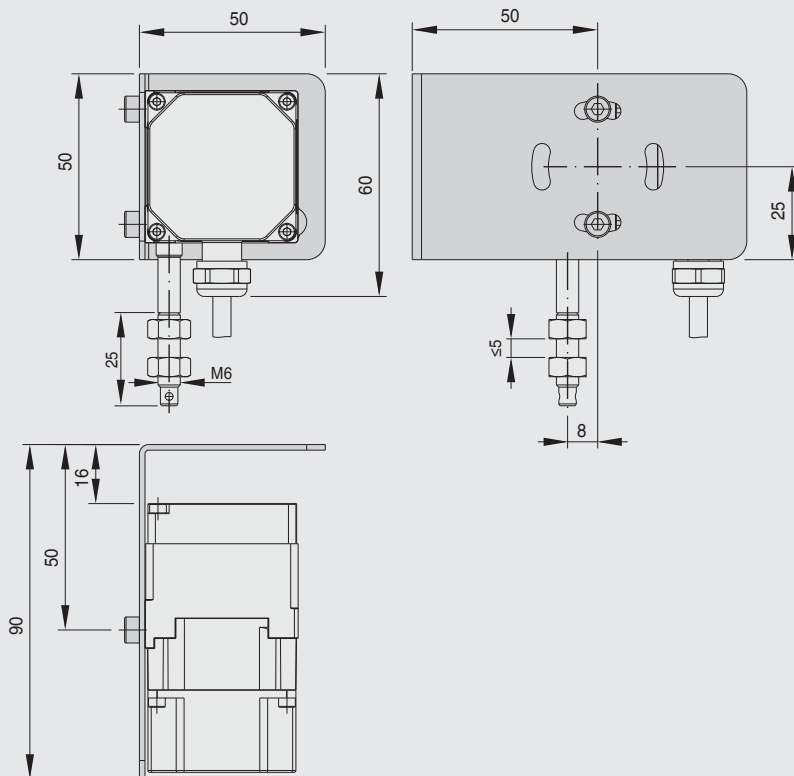
The maximum extension length of the measuring wire is 2100 mm. Of this, the effective measuring length is 1750 mm. The usable area can start directly at the sash distance sensor or when the measuring wire has been extracted by 350 mm. Detailed information on design and areas of application can be found on our website and in the LABCONTROL design manual.

4 Technical data

Dimensions



With mounting bracket



4 Technical data

5 Transport, storage and packaging

Technical data	
Supply voltage	12 V DC from the TCU3 controller
Connecting cable	approx. 3 m, three-strand
Sensor characteristics	Resolution 0.55 mm Linearity $\pm 0.35\%$
Measuring range	1750 mm
Acceptable temperature range	-10 °C to +80 °C
Ambient pressure	Atmospheric pressure
Acceptable humidity	5 to 95% (non-condensing)
Protection level	IP 65
Extraction force	min. 2 N

Delivery check

Check delivered items immediately after arrival for transport damage and completeness. In case of any damage or an incomplete shipment, inform the shipping company and your TROX contact person immediately.

A complete shipment includes:

- DS-TRD-02 sash distance sensor
- Mounting material (mounting bracket, screws)
- Operating and Installation Manual

Transport on site

- If possible, take the sensor in its transport packaging up to the installation location.
- Do not remove the protective wrapping until just before installation.

Storage

If you need to store the sensor temporarily, make sure that the following conditions apply:

- Leave the unit in its packaging and do not expose it directly to the effects of weather.
- Store the unit in a dry place and away from direct sunlight.

Packaging

Properly dispose of packaging material.

6 Installation

Installation of the sash distance sensor and the wire guide depends on the space available at the fume cupboard.
Important installation details are described below in general terms.



Important!

Risk of injury if the wire is guided in the zone occupied by people.
Guide the wire so it does not represent a danger to people.

Installation of the sash distance sensor

Every installation orientation is possible, but vertical wire guidance downwards is recommended. This prevents dirt or liquid getting inside the sensor through the wire outlet.

Installation orientations and fixing

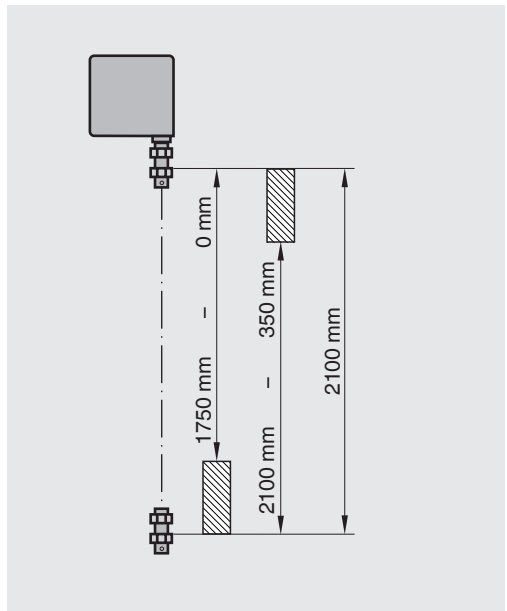
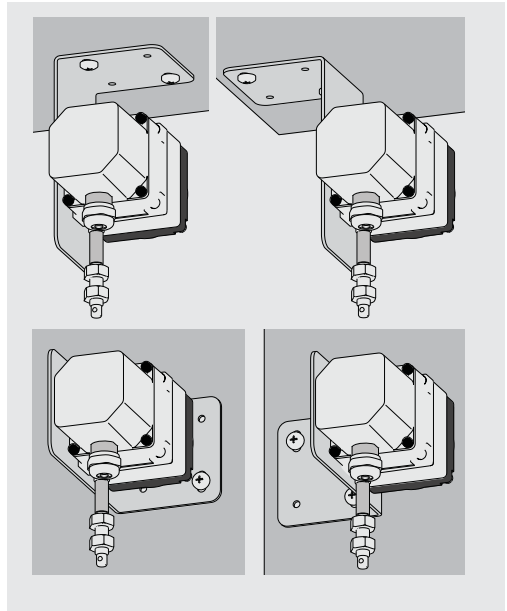
- Direct fixing
Vertical or horizontal wire guide
- Fixing with mounting bracket
Vertical or horizontal wire guide

Arrangement of the usable measuring wire length

The maximum extension length of the measuring wire is 2100 mm. Of this, the effective measuring length is 1750 mm. The usable area can start directly at the sash distance sensor or when the measuring wire has been extracted by 350 mm.

- Measuring range at the start of the measuring wire
0 to 1750 mm
- Measuring range up to the end of the measuring wire
350 to 2100 mm

The effect of actuator action is automatically detected during commissioning of the Controller TCU3. This means it does not matter whether the sash opens or closes when the measuring wire is extended.



6 Installation

Fixing of the measuring wire

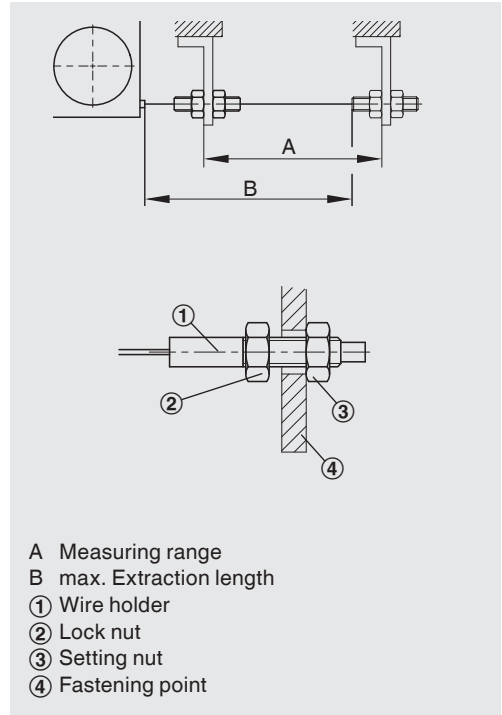
Check the maximum extension length following installation of the sash distance sensor, see figure. The wire holder can be secured using the setting and lock nut, e.g. onto a bracket. Do not twist the measuring wire when tightening the lock nut.



Important!

Damage to the sash distance sensor possible. For installation and operation, the following points must be observed:

- The measuring wire is not allowed to be extended beyond the specified maximum extension length.
- The wire holder is not allowed to be twisted.
- The measuring wire must be guided at right angles to the wire outlet.
- The measuring wire is not allowed to spring back loose, it must be held taut by the spring force of the wire drum at all times.
- The measuring wire is not allowed to be kinked or crushed.



7 Wiring

For installation, wiring, and commissioning observe the recognised technical regulations, especially safety and accident prevention regulations.

For any wiring work follow the national and local regulations and guidelines for electrical installation.



Danger!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage during operation.

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

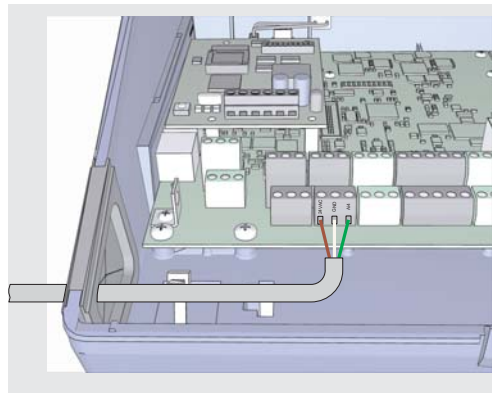
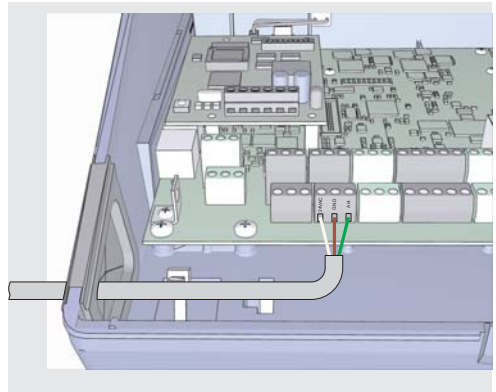
Connection to the EASYLAB Controller TCU3

Connect the connecting cable of the sash distance sensor to the EASYLAB Controller TCU3.

The connection must be made to the terminals identified with AI4. The terminal connections depend on the measuring range of the measuring wire that is used.

Terminal connections

- Measuring range 0 to 1750 mm
 - White to 12 V DC (supply voltage)
 - Brown to GND (ground)
 - Green to AI4 (signal voltage)
- Measuring range 350 to 2100 mm
 - White to GND (ground)
 - Brown to 12 V DC (supply voltage)
 - Green to AI4 (signal voltage)



8 Commissioning

9 Operation and maintenance

EasyConnect configuration software

TROX article no. B588NF4, consisting of

- Software licence
- USB-RS485 adapter
- Configuration cable

Connection socket for service and commissioning

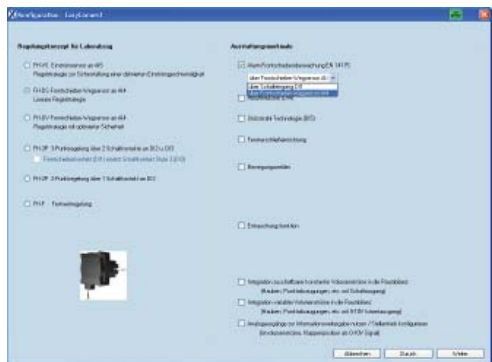
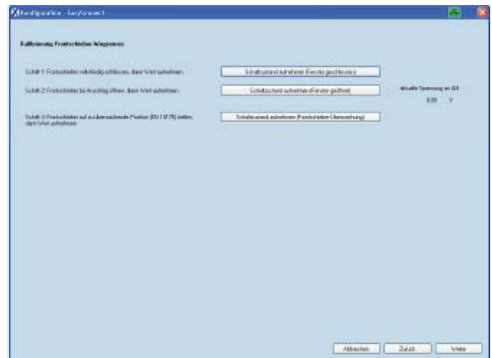
For configuration, maintenance, and diagnosis, connect a notebook to the connection socket of the control panel using the configuration cable and adapter.

Commissioning

In the commissioning wizard in the configuration software, select the control concept of the fume cupboard control with sash distance sensor and define the set flow rates.

Optionally, it is also possible to activate monitoring of the 500 mm position of the sash with the help of the sensor.

At the end of the configuration settings, the software performs a one-off electrical calibration of the sash limit positions. To do this, the sash must be fully closed or opened, and the particular limit position confirmed in the configuration software



Operation and maintenance

After commissioning and the setting of parameters, the controller will operate independently and require no intervention on the part of the plant operator.

In case of a malfunction, take the sensor and VAV controller out of operation and repair it before commissioning it again.

The measuring wire, wire drum, spring motor and potentiometer are not allowed to be greased or oiled.

