

Operating instructions

UV sensor UVS 10



Translation from the German

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Safety

Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. These instructions can also be found at www.docuthek.com.

Explanation of symbols

•, 1, 2, 3... = Action
 ▷ = Instruction

Liability

We will not be held liable for damages resulting from non-observance of the instructions and non-compliant use.

Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

DANGER

Indicates potentially fatal situations.

WARNING

Indicates possible danger to life and limb.

CAUTION

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

Transport

On receipt of the product, check that the delivery is complete (see Part designations). Report any transport damage immediately.

Storage

Store the product in a dry place. Ambient temperature: see Technical data.

Checking the usage

UVS 10

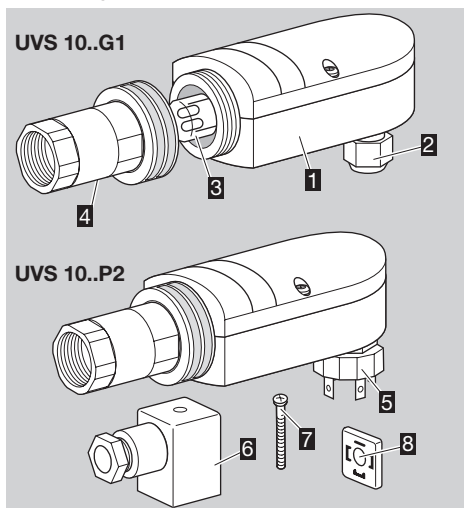
UV sensor for flame control of gas burners, only in conjunction with Elster Kromschöder automatic burner control units IFS, IFD, PFS and PFD, flame detectors IFW or PFF or burner control units BCU or PFU.

This function is only guaranteed when used within the specified limits—see also “Technical data”. Any other use is considered as non-compliant.

Type code

Code	Description
UVS	UV sensor
10	Series 10
D	Quartz glass heat guard
L	Quartz glass heat guard lens
0	Rp 1/2 internal thread
1	Rp 1/2 internal thread and cooling air connection
2	1/2 NPT internal thread
3	1/2 NPT internal thread and cooling air connection
4	UVS 1 Adapter (28 mm (1.1"))
G1	Electrical connection
P2	M20 cable gland
P2	4-pin plug, with socket

Part designations



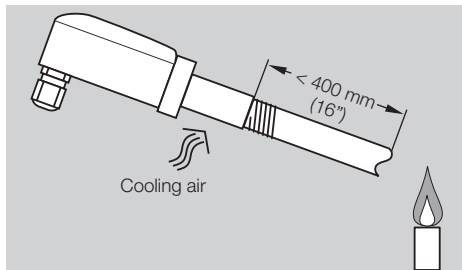
- 1** Housing
- 2** Cable gland
- 3** UV tube
- 4** Adapter with quartz glass
- 5** Plug
- 6** Socket
- 7** Retaining screw
- 8** Seal

Installation

! CAUTION

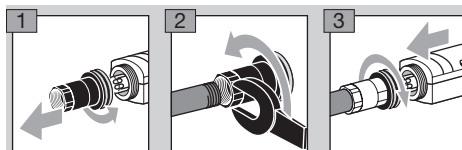
Please observe the following to ensure that the UVS is not damaged during installation:

- Use UV sensor only in conjunction with Elster Kromschöder automatic burner control units, flame detectors or burner control units.
- Cool UV sensor with filtered air when subject to higher temperatures (see “Accessories”). In addition, this protects the sensor from dirt and condensation.

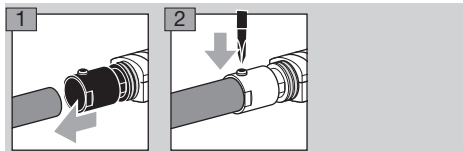


- ▷ Max. distance between UVS and flame < 400 mm (16").
- ▷ It can be fitted using a 1/2" viewing tube that should be aligned on the first flame third, as this is where the highest UV radiation is generally found. The inside of the steel tube should not be coated and the tube should be directed at the flame from above so that no dirt collects in front of the UV sensor.
- ▷ The UVS..L with quartz glass lens must be precisely aligned with the flame.
- ▷ The UV sensor may only be exposed to the UV light of its own flame. It should be protected from other sources of ultraviolet light, e.g. neighbouring flames (this must be observed when monitoring pilot and main burners in particular), ignition sparks, arcs from welding devices or lamps emitting ultraviolet light.
- ▷ Do not expose the UV sensor viewing opening to direct sunlight.
- ▷ Supply cooling air to cool and protect the optical system from soiling and condensation.
- ▷ Max. cable length in accordance with the specifications for automatic burner control units IFS, PFS, PFD, flame detectors IFW, PFF or burner control units BCU, PFU.

UVS 10 with internal thread adapter



UVS 10 with UVS 1 adapter



Cable selection

- ▷ Use mains cable suitable for the type of operation and complying with local regulations.
- ▷ Signal line $\leq 2.5 \text{ mm}^2$.
- ▷ The cable gland on the UVS 10..G1 or on the socket of the UVS 10..P2 is suitable for cable diameters of 7 to 13 mm.

Cable installation

- ▷ Avoid external electrical interference.
- ▷ Lay cables individually and, if possible, not in a metal conduit.
- ▷ Do not lay UV cable and ignition cable together but lay them as far apart as possible.

Wiring

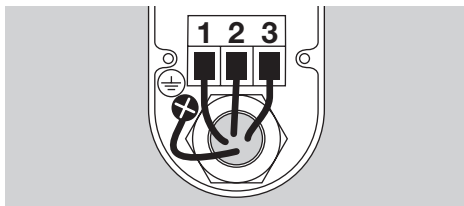
⚠ WARNING

Electric shocks can be fatal! Before working on possible live components ensure the unit is disconnected from the power supply.

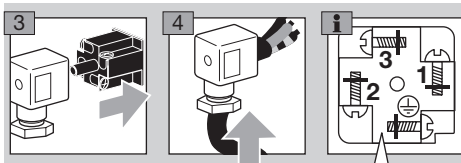
- 1 Disconnect the system from the electrical power supply.
- 2 Shut off the gas supply.

UVS 10..G1

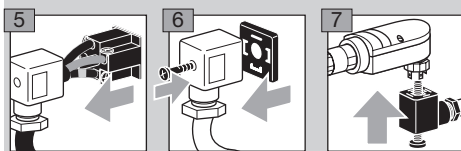
- 3 Route the cables through the M20 cable gland.
- 4 Wire the UV sensor as shown in the wiring diagram for the correctly selected automatic burner control unit, flame detector or burner control unit, including the PE wire.



UVS 10..P2



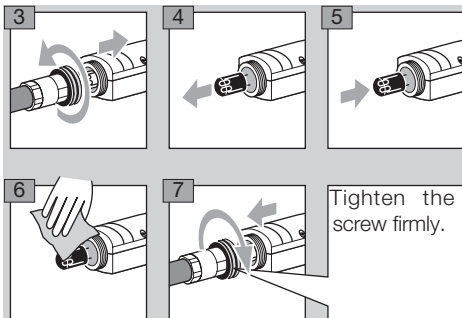
Wire the socket as shown in the wiring diagram for the correctly selected automatic burner control unit, flame detector or burner control unit, including the PE wire.



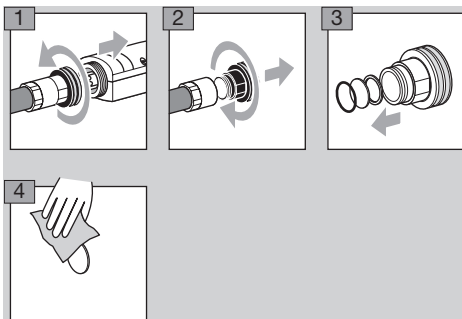
Maintenance

Replacing the UV tube

- ▷ The UV tube in the UV sensor must be replaced after approx. 10,000 operating hours (approx. 1 year) as its service life has expired (see "Accessories").
- 1** Disconnect the system from the electrical power supply.
- 2** Shut off the gas supply.
- ▷ Do not touch the new UV tube with bare fingers.



Cleaning or replacing the quartz glass disc



- 5** Follow the reverse procedure when reassembling.
- ▷ For a quartz glass lens, ensure that the lens curvature points towards the flame.

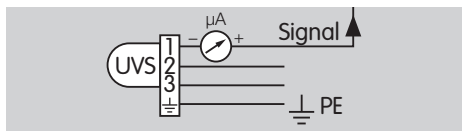
Assistance in the event of malfunction

⚠ WARNING

- Electric shocks can be fatal! Before working on possible live components ensure the unit is disconnected from the power supply!
- Fault-clearance must only be undertaken by authorised, trained personnel!
- Unauthorised repairs on the UV sensor will cancel our guarantee. Unauthorised repairs or incorrect electrical connections can cause the UV sensor to become defective. In this case fail-safe operation can no longer be guaranteed!
- (Remote) resets may only be conducted by authorised personnel with continuous monitoring of the burner to be repaired.
- Safe operation only in conjunction with Elster Kromschroder automatic burner control units, flame detectors or burner control units.

- Measure the current in the flame signal cable (connect the positive pole of the measuring instrument to the cable from the automatic burner control unit and the negative pole to the cable from the UV sensor).

- ▷ The measured direct current must be greater than 1 μA (typically 20 μA).



? Fault

! Cause

• Remedy

Possible faults and suggested solutions

- ? A direct current is flowing, but no flame present.
- ! The UV sensor is influenced by the flames of other burners, e.g. by reflection on the furnace walls.
- Position the sensor so that it can only "view" its own dedicated flame (e.g. use viewing tube).
- ! Humidity inside the sensor.
- Vent sensor.
- ! The service life of the UV sensor has expired.
- Replace UV tube in the UV sensor (see "Maintenance").
- ! The sensitivity of the flame amplifier in the automatic burner control unit is too high.
- Adjust switching threshold on automatic burner control units with adjustable switch-off threshold.

- ? No direct current although the flame is burning.
- ! The UV sensor is dirty, e.g. sooted.
- Clean sensor or quartz glass.
- ! Humidity inside the UV sensor.
- Vent sensor.
- ! The distance between the UV sensor and the flame is too great.
- Reduce the distance.

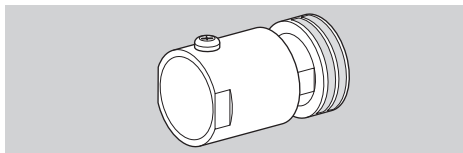
- ? The automatic burner control unit ignites in pulses.
- ! The sensor “sees” the ignition spark.
- Reposition the UV sensor so that it cannot “see” the ignition spark.
- Use an automatic burner control unit that is able to distinguish between an ignition spark and a flame signal.

- ? The intensity of the flame signal decreases after a longer period of operation.
- ! UV tube fault due to incorrect UV sensor connections.
- Remove the UV sensor and return for repair.
- Connect the UV sensor in accordance with the wiring instructions.

- ? The automatic burner control unit performs a fault lock-out during start-up or operation.
- ! The highly fluctuating flame signal temporarily exceeds the switch-off threshold.
- Reduce the distance between UV sensor and flame.
- Position the UV sensor so that it can “view” the flame without hindrance (e.g. smoke curtain).
- Replace quartz glass disc in the UV sensor with a lens (see “Accessories”).
- ! The switch-off threshold in the automatic burner control unit is set too high, e.g. BCU, PFU or IFD 258.
- Adjust switch-off threshold.

Accessories

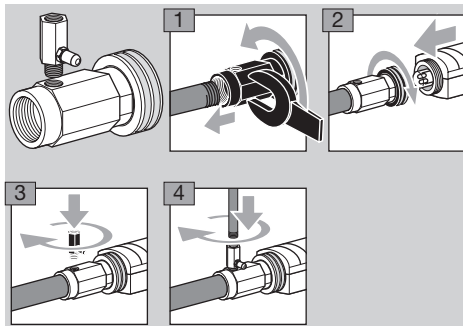
Adapter UVS 1 with quartz glass disc



Order No.: 7 496 061 5

Installation, see “Installation”.

Cooling air adapter with quartz glass disc

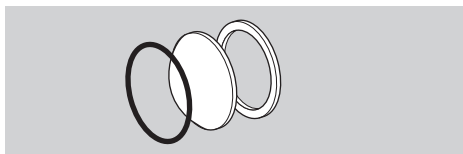


Rp 1/2, Order No.: 7 496 061 4

1/2 NPT, Order No.: 7 496 061 3

Nozzle for cooling air adapter, Order No.:
7 496 061 6

Quartz glass lens with seals



Order No. 7 496 061 1

Technical data

Aluminium housing with integrated heat guard,
with connection terminals.

Clamping range of the connection terminals:
 $\leq 2.5 \text{ mm}^2$.

Cable gland: for cable diameters of 7 to 13 mm.

Distance between UV sensor and flame:
300–400 mm.

UV tube: P578,

spectral range: 190–270 nm,

max. sensitivity: $210 \text{ nm} \pm 10 \text{ nm}$.

Service life of the UV tube:

approx. 10,000 operating hours.

Min. DC signal: $1 \mu\text{A}$.

Enclosure: IP 65.

Ambient temperature:

-40 to $+80^\circ\text{C}$ (-40 to $+176^\circ\text{F}$).

Weight: 280 g (0.6 lbs).

Max. length of cable UV sensor – automatic burner
control unit: see instructions for automatic burner
control unit.

Contact

If you have any technical questions, please contact
your local branch office/agent. The addresses are
available on the Internet or from Elster GmbH.

We reserve the right to make technical modifications
in the interests of progress.

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