BFI Automation
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SYSTEM 3000 / 4000

COMPACT FLAME CONTROLLER
8.30 8.40 8.70

TECHNICAL DESCRIPTION

EDITION: TB 8.30-8.40-8.70-SZ1

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Compact flame controller
8.30 8.40 8.70

- Flame scanner with integrated flame controller
- DIN-DVGW, DIN-CERTCO approved, tested by TÜV
- For intermittent , continuous and 72-hour operation
- Type 8.30 (UV): recommended for pure gas and oil/gas mixture fuels
- Type 8.40 (VIS-IR): recommended for pure oil fuels in diffusion burners
- Type 8.70 (IR): recommended for gas fuels in radiant-surface burners and for waste gases
- Adjustable sensitivity
- Analogue flame intensity output
- Optical state indication
- Non-wearing sensors
- Protection IP 65

Function

The integral method in the respect. spectral range is used for the flame radiation analysis of the compact flame controller.

After pre amplification, the unwanted portion of constant light is withdrawn from the output signal. The subsequent sensitivity adjustment permits a signal suppression for the adaptation to the respect. burner condition.
The subsequently connected band pass filter achieves that modulation of the typical flame radiation of the primary combustion zone is evaluated only , and outside light signals from neighbouring burners can be differentiated from the individual burner.

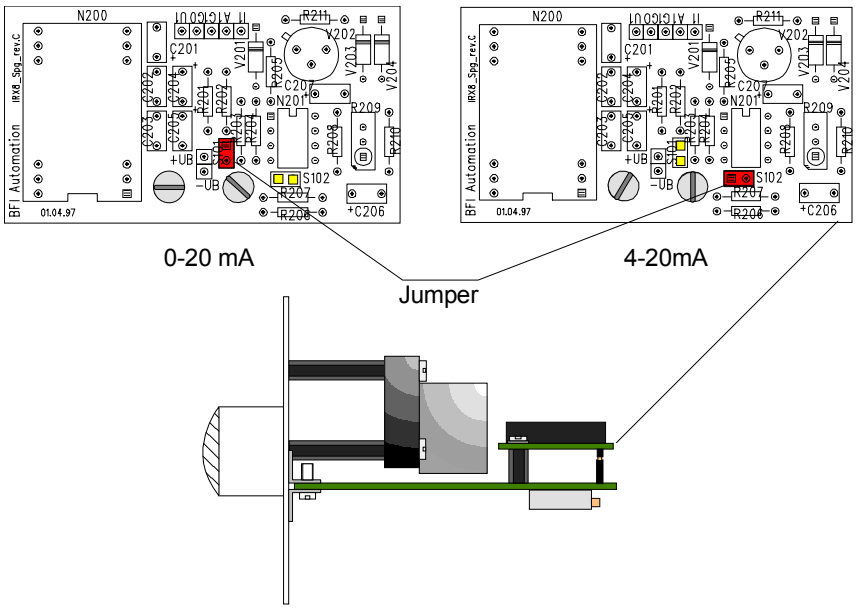
The further functional groups integrate the signal processing for the dynamic monitoring channel, which, by means of a dark-phase monitoring, continuously checks the failure-safety of the unit.

A component defect leads to an immediate switch-off of the flame-relay, which is available as a potential-free changeover contact.

The switching state „flame on“ is displayed by a yellow LED on the rear side of the unit, just as the intensity of flame, which is displayed by a flashing green LED.
A flame intensity output 0(4) - 20 mA can be used for external displays. The range can be selected by jumper see drawing on page 3.

The safety switch-off time, which always depends on the fuels to be detected, is factory adjusted to 1 sec. Longer switch-off times in acc. to local specifications available as option.

Output current preselection



Assembly

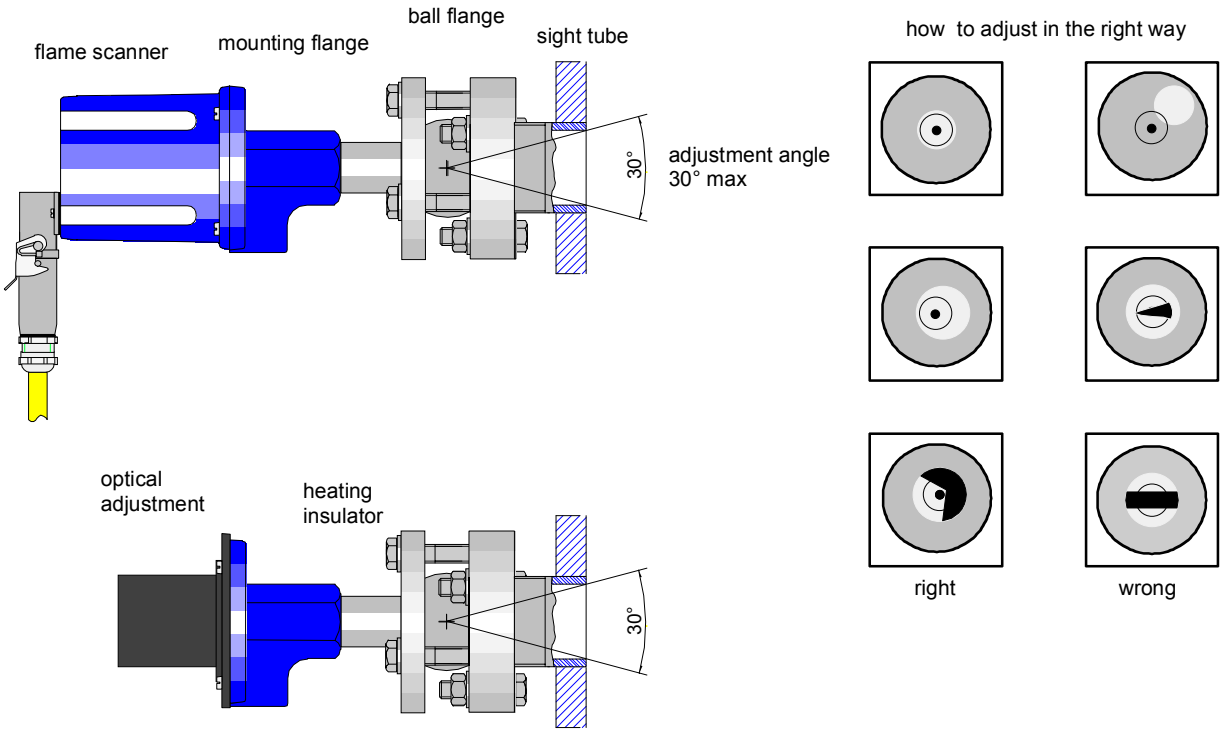
The correct positioning of the sight tube to the flame with less vibrations is an important requirement for an optimised flame control. The assembly must ensure the primary combustion zone is inside the visible angle of the flame monitoring device for all loads. This is the only for to discriminating flame control. The extension of the sight axis may not cross the first third of other flames.

Length and diameter of the sight tube are directly related to the available flame radiation, because the visibility angle of the device is defined. The maximum length 'L' of a sight tube is related to the tube's diameter 'd'.

d	1"	1,5"	2"
L	0,5m	0,8m	1,1m

The tube should be as short as possible. A diameter of 2" is recommended.

The right adjustment is shown in the following drawing. The optical adjustment device BFI 235 is available ex stock (part-no.: P 106)



The compact flame controller is delivered with a flange for quick assembly. The device is equipped with a supply for purge air which prevents the lens of contamination with dust and a subsequent damage.

The optimised assembly kit consists of heating insulator, blocking valve and ball flange.
These mechanical devices are also available on demand.

Installation

The pin configuration of the plug connector is shown in the terminal connection diagram.

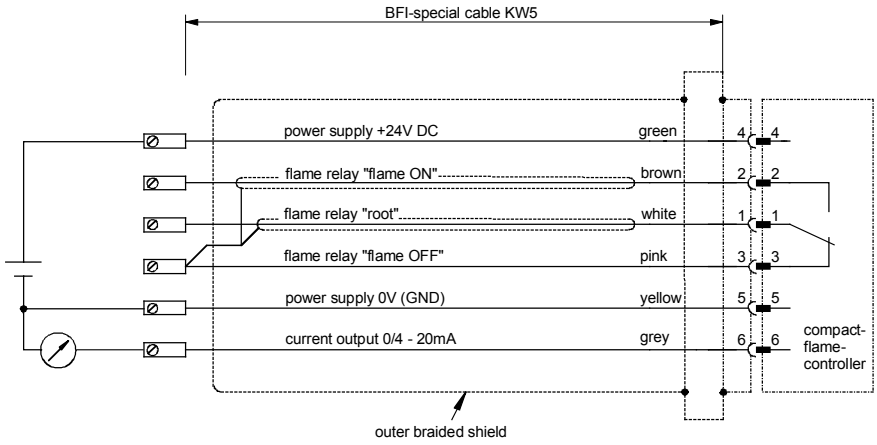
The flame intensity output has no potential separation from the power supply, It is related to the power supply ground. If there will be any problem in this case an isolation amplifier can be delivered on demand.

A maximum shunt resistance of 250Ω should not be exceeded.

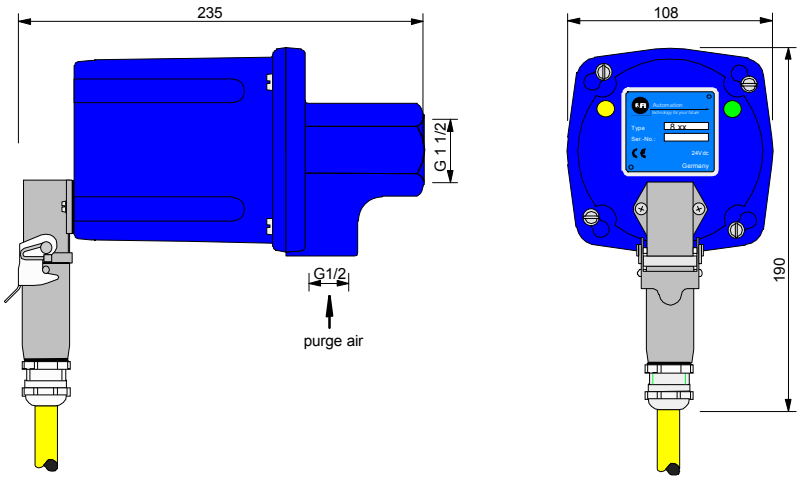
The device is immediately ready for operation after switching on the power supply.

Connection diagram

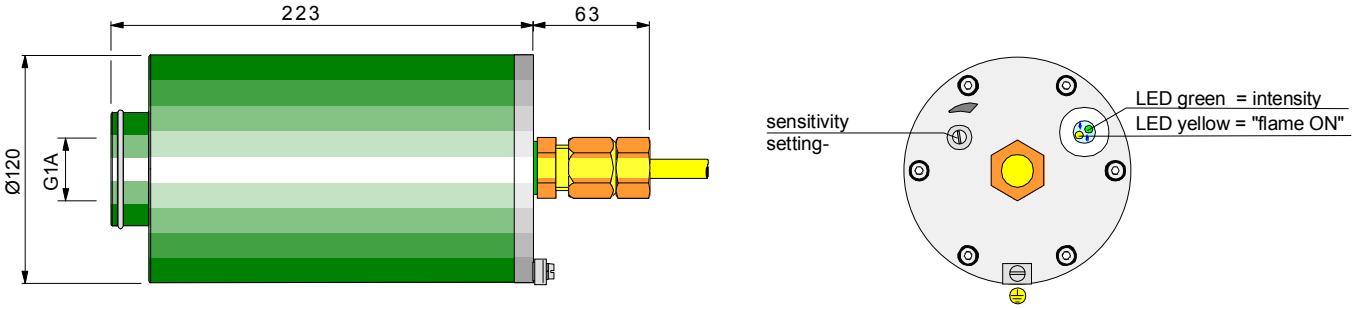
Pin/Terminal	Description	Colour of BFI special cable KW5
1	Flame relay: supply root	white
2	Flame relay: signal ‘flame ON’	brown
3	Flame relay: signal ‘flame OFF’	pink
4	Power supply: +24 V DC	green
5	Power supply: - 0 V (GND)	yellow
6	Current output: 0(4)-20 mA	grey



Standard housing



Ex-proofed housing



Class: EEx d IIC T 6
for PTB 87/1095

Acessories

Power supply 230/115V AC
Swivel mount 1“ with 2“ flange disk
Heating insulator 1”
3-way ball cock 1“
Pressure screw joint 5bar size 1“
Optical adjusting device

Technical data

Spectral sensitivity	
8.30 (UV)	270 to 420 nm
8.40 (VIS-IR)	300 to 1050 nm
8.70 (IR)	1050 to 2700 nm
Visual aperture	3 °
Input voltage	24 V DC +/-15%
Current consumption	approx. 300 mA
Ambient temperature	-20°C...+70°C
Operating temperature	the operating temperature should not exceed +85°C **This is for a short period only**
Current output	0(4)...20 mA (Shunt resistance R_a < 250 Ohm)
Flame relay	1 changeover contact, potential free VDE 0110, Class A max. 60 V switching voltage max. 1 A switching current max. 30 W switching power switching point "flame on"5(8) mA switching point "flame off"< 5(8) mA
Flame failure response time, switch off time	1 second, factory pre selected other switch off times on request
Sight tube connection	1" internal thread ISO 228
Purge air connection	1/2" internal thread ISO 228
Purge air quantity	10 Nm^3/h
Electrical connection	
Standard	dust-proof plug connector
Ex-proof-housing	3m cable, protection EEx d IIC T6
Housing dimensions	
Standard incl. flange	235 x 108 mm (length x diameter)
Ex-proof housing	223 x 120 mm (length x diameter)
Protection	IP 65 , NEMA 4
Weight	
Standard	1,0 kg
Ex-proof housing	3,5 kg

Electronic self-monitoring for the fail-safe function control of the device according VDE 0116, EN 230, EN 298, and TRD 411 to 414, meets the additional requirements of TRD 604 for 72 operating hour without capacity limitations,
DIN-DVGW and DIN-CERTCO approved, CE conformity