BFI Automation

Operating instructions

FLAME SCANNER COMPACT VERSION 100

100 (UV)

BFI Automation

Content

1 | General aspects

1.1 Introduction

These operating instructions are a helpful guide for ensuring the successful and safe operation of the Flame Scanner. They contain important information on how to operate the system safely, correctly and efficiently. Observing the operating instructions will help to prevent hazards, reduce costs of repair and downtimes and increase the reliability and life of the device.

All illustrations and drawings in these operating instructions are shown for illustration purposes and do not contain details for design.

The operating instructions always have to be accessible at the device. They have to be read and applied by each person who is required to work with/on the device:

- operation
- troubleshooting during operation
- servicing
- maintenance (upkeep, inspection, repair) and/or
- transport

This should be confirmed by the operating company in writing.

1.2 Warning notes

The following warning notes are used in these operating instructions:

⚠ DANGER

This warning level indicates an imminent hazardous situation.
If the hazardous situation is not prevented, this will result in death or severe injury.
Follow the instructions that accompany this warning to prevent the risk of death and severe personal injury.

⚠ WARNING

This warning level indicates a potentially hazardous situation.
If the hazardous situation is not prevented, this may result in death or severe injury.
Follow the instructions that accompany this warning to prevent the potential risk of death and severe personal injury.

⚠ CAUTION

This warning level indicates a potentially hazardous situation.
If the hazardous situation is not prevented, this may result in slight or moderate injuries.
Follow the instructions that accompany this warning to prevent the injury of persons.

CAUTION

This warning level indicates potential damage to property.
If this situation is not prevented, it may result in damage to property.
Follow the instructions that accompany this warning to prevent damage to property.

NOTICE

A notice indicates additional information that will make the handling of the device easier.

1.3 Copyright protection

These operating instructions have to be treated as confidential. They may only be used by authorised staff. Access by third parties may only be granted upon written agreement of BFI Automation.

All documents are protected in keeping with the German copyright law.

The disclosure and reproduction of documentation, in whole or in part, as well as the exploitation and communication of its content shall not be permitted unless expressly stated otherwise. Offenders are liable for prosecution and the payment of damages.

We reserve all rights to exercise industrial property rights.

1.4 Disposal information

The Flame Scanner is equipped with electrical and electronic components and must be disposed separate from household waste. Follow the local and actual regulations for waste disposal.

1.5 Warranty

Read these operating instructions carefully and in full before operating the Flame Scanner!

The manufacturer is not liable for damage or operating malfunctions that result from the operating instructions not being observed.

The operating company has to supplement the operating instructions with operating instructions on the basis of national regulations on accident prevention and environmental protection, including information on supervision and notification requirements with respect to special operating circumstances, e.g. regarding organisation of work, working processes and staff deployed.

The recognised technical rules for safe and professional working also have to be observed in addition to the operating instructions and the regulations on accident prevention applicable to the country and place of use.

The warranty shall become void, for example, in the event of:
- inappropriate use
- use of impermissible equipment
- incorrect connection
- prior works that are not part of the supplied product or service
- non-use of original spares and accessories
- conversion, if this has not been harmonised with BFI Automation
- non-performance of specified maintenance work
- Repair work on the device that is not carried out by BFI employees

NOTICE

It is recommended that the operator of the device concludes a service contract with BFI Automation. This guarantees that the device is regularly checked by our service staff and ensures that any required wearing and spare parts are available without long delivery periods.

1.6 Obligation of the operating company

The Flame Scanner may cause hazards if it is operated inappropriately or in an improper condition.

The operating company is under the obligation to operate the machine in proper state only. The operating company has to secure hazardous areas that exist between BFI devices and the customer's own equipment.

The operating company has to appoint and instruct responsible staff:

- Only deploy trained or instructed staff.
- Clearly set out the responsibilities of the staff with regard to operation, set-up, maintenance and repair.
- Regularly check that staff are safety conscious and aware of hazards and are observing the operating instructions.
- Before starting work, staff who are assigned to work with/on the device have to have read and understood the operating instructions, in particular the chapter on "Safety", as well as the relevant regulations.
- The operating instructions and relevant regulations have to be stored in such a way that they are accessible to operating and maintenance staff.
- Set out who will have responsibility for device operation and ensure that this person has the authority to overrule any unsafe instructions of third parties.

NOTICE

Generally valid legal and other binding regulations on accident prevention and environmental protection have to be observed and instructed, in addition to the operating instructions.

1.7 Liability disclaimer

All technical information, data and guidance on device operation that are contained within these operating instructions are, to the best of our knowledge, correct at the time of printing, taking into account our present understanding and experience.

We reserve the right to make technical changes with respect to the further development of the flame amplifier outlined in these operating instructions. No claims can be made based on the specifications, illustrations and descriptions of these operating instructions.

We shall not be liable for damage or operating malfunctions that result from operating errors, inappropriate repairs or the non-observance of the operating instructions. We expressly state that only original spare parts and accessories approved by us may be used. This also applies to the components of other manufacturers that have been used.

The installation or use of non-approved spare and accessory parts and any unauthorized retrofits and modifications are not permitted for safety reasons and exclude any liability by BFI Automation for consequential damages.

BFI Automation is liable for possible errors or omissions with the exclusion of additional claims entered into in the framework of the warranty obligations conceded to in the contract. Claims for damages, on whatever legal basis they may be, shall be excluded.

Translations into foreign languages are carried out in good faith. We cannot accept any liability for translation errors; this also applies where the translation has been carried out or has been commissioned by us. The original text alone shall be binding.

Descriptions and illustrations do not necessarily depict the delivered product or a possible spare parts order. Drawings and graphics are not to scale.

1.8 Declaration of conformity

BFI Automation

EU Konformitätserklärung
EC Declaration of Conformity

Produkt *Product*	**Kompaktflammenwächter** *Compact Flame Controller*
Typ *Type*	**CFC100** *CFC100*

Hiermit erklären wir, dass der bezeichnete Flammenwächter, in seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheitsanforderungen folgender EU-Richtlinien entspricht:

This is to confirm that the below described system in its design and type of construction complies with the provisions of the Directive of the Council of the European Communities on the approximation of the laws of the member states relating to:

Anwendungsbereich *Field of application*	EU/2016/426		EU-Gasgeräteverordnung *EU Gas Appliances Regulation*
Richtlinien *Directives*	2014/34/EU		Explosionsschutzrichtlinie *Explosion protection directive*
	2014/30/EU		EMV Richtlinie *EMV directive*
	2011/65/EU		RoHS Richtlinie *RoHS directive*
Benannte Stelle *Notified body*	Kiwa Nederland B.V.	0063	
CE-Zerifikat vom *CE certificate from*	21.04.2018	CE0085DQ0104	Baumusterprüfbescheinigung *Type examination certificate*
Gültig bis *Valid until*	19.02.2028		
Normen *Standards*	EN 298:2012; EN IEC 63000:2018		

Ausgestellt durch
Issued by: BFI Automation GmbH

Rechtsverbindliche Unterschrift
Legally binding signature

BFI Automation
ppa. E. Röllecke
BFI Automation GmbH
Ruegenstrasse 7 . 42579 Heiligenhaus . Germany
T +49 2056 989 46 0 . info@bfi-automation.de
www.bfi-automation.de

Name	Funktion *Function*	Ort, Datum *Place, Date*
Eberhard Röllecke	Prokurist *Authorized Officer*	Heiligenhaus, den 27.11.2025

BFI Automation GmbH
Ruegenstrasse 7
42579 Heiligenhaus . Germany
T +49 2056 989 46-0
info@bfi-automation.de
www.bfi-automation.de

1.9 Address of the manufacturer

BFI Automation GmbH
Ruegenstrasse 7
42579 Heiligenhaus, Germany

Tel.: +49 2056 98946-0
Fax: +49 2056 98946-42

E-Mail: info@bfi-automation.de
Internet: www.bfi-automation.com

2 | Safety

2.1 Intended use

The Flame Scanner Compact Version is intended exclusively for the monitoring of flames. The fields of application of this Flame Scanner Compact Version are flame detections for continuous and 72 h operation on gas, oil and mixed fuel burner, oil fired diffusion flames, gas flames on duct burner and reheatings.

⚠ WARNING

Danger when improperly used!
The device may cause hazards if it is not used as intended and/or for any other purposes.
The device has to be used only for the purposes for which it is intended.
The procedures described in the operating instructions have to be observed.

The manufacturer/supplier shall not be liable for damage resulting from use for non-intended purposes. The user/operating company alone shall bear the risk.

2.2 Requirements on persons

NOTICE

Work on/with the device may only be performed by persons authorized to do so based on their training and qualification. Furthermore, such persons have to have been commissioned by the operating company.

Do not allow any persons who are being apprenticed, educated, instructed or on a general training programme to work on the device without the constant supervision of an experienced person.

Persons who are under the influence of drugs, alcohol or medication that affects reactivity shall not be permitted to carry out work on the device.

Connection, set-up, maintenance and repair work may only be carried out by qualified specialist staff.

This device may cause hazards if it is operated inappropriately by untrained staff or if it is not used for its intended purpose.

Generally valid legal and other binding regulations on accident prevention and environmental protection in addition to basic health and safety requirements have to be observed. The operating company has to instruct its staff accordingly.

2.3 Safety instructions

The following instructions on accident prevention have to be observed when operating the Flame Scanner Compact Version:

NOTICE

Only operate the device if it is in a proper state!

- Do not remove or disable safety devices.
- Check for externally noticeable damage and defects prior to using the device! Immediately notify the appropriate authority/ person of any changes that occur (including changes in operating performance). If necessary, stop and secure the device immediately.
- Allow only authorised specialist staff to carry out set-up and/ or maintenance work.
- Replace worn or defective parts.
- Use suitable maintenance tools only.
- After repair work, refit all safety devices and carry out electrical and mechanical checks.
- Check the operating instructions for details of displays as well as switch-on and switch-off procedures.
- Prior to switching on the device, make sure that no-one can be endangered by the device!
- The operating company is responsible for ensuring that the device is only operated in a proper state and thataccount is taken of all the appropriate safety requirements and provisions.
- The operating instructions always have to be kept close to the device and be readily at hand.
- Any non-compliance with the safety instructions outlined in these operating instructions may lead to damage to property, personal injury or even death.

2.4 Safety devices

Check the safety equipment and locking devices on the device for safe operational condition.

Only operate the device if all safety devices are present and enabled. The operating company or operator of the Flame Scanner Compact Version is responsible for the proper operation of the device.

NOTICE

The device has been fitted with warning and danger signs for the protection of operating staff. These signs have to be observed. Damaged or illegible signs have to be replaced immediately.

2.4.1 Safety devices

The Flame Scanner Compact Version has been fitted with the following safety devices:

- Housing (protection against accidental contact)
- Pressure barrier (optional)
- Locking device (optional)
- Purge air connection
- Heating insulator (optional)

2.5 Safety instructions in case of maintenance and troubleshooting

- Deadlines set or indicated in the operating instructions for repetitive checks / inspections shall have to be observed!
- Appropriate workshop equipment is essential for performing maintenance work.
- In conformity with the electrical regulations, work on the electrical equipment of the system may only be carried out by an electrical specialist or by trained staff under the direction and supervision of an electrical specialist.
- The adjustment, maintenance and inspection activities and deadlines stipulated by BFI Automation, including information on the replacement of parts / assemblies, have to be observed! These tasks may only be carried out by authorised specialist staff.
- Operating staff have to be informed before maintenance or other special work is carried out. A supervisor has to be appointed.
- When working on the plug, the cable must be disconnected from the power supply.
- Screw connections which have been loosened during maintenance and servicing work, have to be tightened.
- If maintenance and repairs require safety devices to be dismantled, these devices have to be remounted and checked as soon as the maintenance and repair work has been completed.
- Operating and auxiliary materials as well as exchanged parts have to be disposed of in a safe and eco-friendly way.
- Spare parts supplied by BFI Automation or approved of by BFI Automation only may be used.

2.5.1 Electrical / electronic devices

⚠ DANGER

Danger to life caused by electrical current!
Contact with live wires or components presents a danger to life!
Prior to any work on the electrical equipment, disconnect the flame amplifiering system from the power supply network!

NOTICE

In keeping with the electrical regulations, work on electrical / electronic parts / components may only be carried out by electrical specialists.

Important rules of conduct:

- Check the device in regular intervals. Any defects or faults ascertained have to be corrected immediately. Switch off the device until the defects have been corrected.
- If work is required on live parts, a second person has to be assigned who can disconnect the power supply in case of an emergency. Only use insulated tools!

2.5.2 Testing in keeping with the German Workplace Safety Ordinance

In case of the coupling or installation of devices from various manufacturers or suppliers, the operating company has to carry out a precise test, prior to start-up, in keeping with the German Workplace Safety Ordinance (BetrSichV) in force and the applicable electrical regulations.

In case of queries, please get in touch with BFI Automation.

2.5.3 Safety test

⚠ WARNING

Danger of injury and material damage if improperly used!

Improper use of the Flame Scanner Compact Version can lead to injury or even death and to material damage!

In order to ensure correct operation, the Flame Scanner Compact Version must be tested several times for all applications by starting and stopping the burner several times. In all cases the flame relay must switch off reliably in case if the flame is not detected. Carry out these tests whilst several neighbouring burners are started and stopped and different boiler outputs are used. This is an indispensable prerequisite for a safe and correct operation of the device!

3 | Technical data

3.1 General characteristic features

- Flame Scanner with integrated amplifier and flame relay
- Tested by Kiwa Nederland B.V.
- Approved for continuous operation
- Sensor type: UV tube
- For gas, oil and mixed fuel firing
- For oil fire monitoring on diffusion flames
- For gas flames on duct burner and reheating
- Adjustable thresholds for both channels separately via hand held terminal
- Analog output flame intensity 0(4) to 20 mA
- Flame analysis via hand held terminal
- LED status display for flame relay (LED Yellow) and flame intensity (LED Green)
- No additional wiring to external Flame Amplifiers
- Type of protection IP 65

3.2 Electrical system, optical system, mechanical system

Spectral sensitivity UV	185 nm to 260 nm
Angle of view	2,7°
Self checking	fully electronic (every second) and alternating mechanically (approx. every 2 minutes)
Power supply	24 V DC
Current consumption	max. 200 mA
Design	according to protection class III SELV
Current output	0/4...20 mA, Ra < 250 Ω
Flame relay	1 changeover contact, potential-free, SELV max. 48 V switching voltage max. 1 A switching current (fused with 0,5 A) max. 30 W switching power

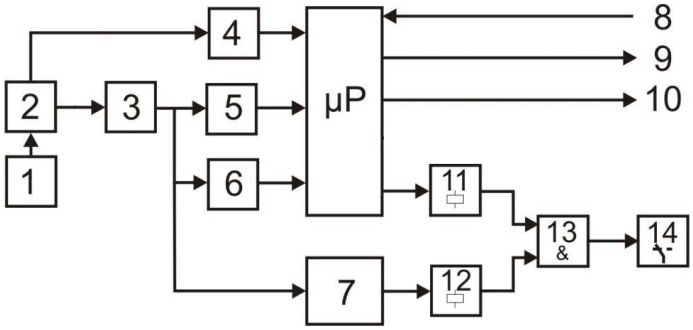
3.2 Electrical system, optical system, mechanical system

Thresholds	programmable via hand held terminal
Safety switch-off time	set by factory to 1 s, other switch-off times (2-5 s) available on request
Ambient temperature	-20 °C to +60 °C
Area switching	external selection via 24V DC signal
Electrical connection	Amphenol-Tuchel plug C16-1
Type of protection	IP 65
Sight port connection	1" female thread
Purge air Connection Volume Pressure	 ½" female thread 10 m³/h 0,02 bar over combustion chamber internal pressure
CE UL	CE0063 MH47747

3.3 Weight

Standard housing	approx. 1.5 kg

3.4 Device design - block diagram



1. Sensor
2. Preamplifier
3. Bandpass
4. DC part
5. Frequency part
6. Modulation part
7. Monitor channel
8. Sensitivity switch over
9. Analogue output 0(4) to 20mA
10. Interface to control panel
11. Flame relay
12. Monitor relay
13. AND-logic
14. Relay contacts

4 | Installation and connection

4.1 Scope of delivery

- Flame Scanner Compact Version 100
- Operating instructions
- Power supply unit (optional)
- Swivel Mount (optional)
- 3-way-ball-valve (optional)
- Heating insulator (optional)
- Pressure barrier (optional)
- Optical alignment device (optional)
- Hand held terminal (optional)

Refer to the order papers for the exact scope of delivery and compare with the delivery note.

Checking for completeness

Check the entire delivery for completeness against the accompanying delivery note. Please refer to our terms of sale and delivery otherwise.

Report any damage

After arrival of the device and accessories, notify the shipping agent, the insurance company and BFI Automation immediately in case of any damage caused by transport or inadequate packaging. Take steps to minimise and prevent further damage.

Report the insurance case to the insurance company without delay and transmit the full claim documents at once in order to expedite the claims settlement (at the latest in sufficient time before the expiry of any periods of preclusion and/or limitation relating to the compensation claims against third parties).

NOTICE

All installation and connection work may be carried out by qualified and approved specialist staff only!

Observe the legal stipulations and adjustment instructions of the plant operator!

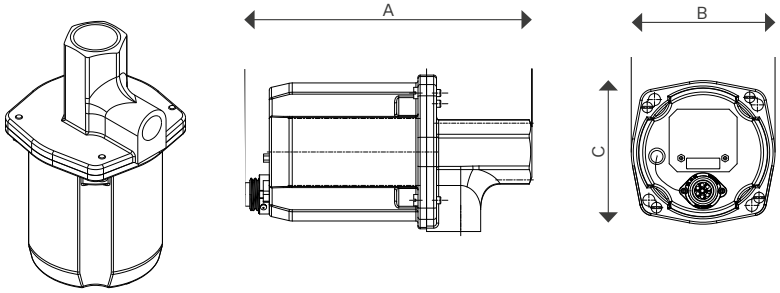
4.2 Packaging

The Flame Scanner Compact Version is shipped in different packaging materials.
The most frequently used packaging materials are cardboard and plastics (foils, foamed material).

NOTICE

Packaging has to be disposed of in an environmentally friendly way and in accordance with the relevant provisions on disposal.

4.3 Space requirement - Housings



ATEX Zone 2	
Standard housing	
Length A:	210 mm
Width B:	108 mm
Height C:	108 mm
Weight:	1.5 kg
Type:	100

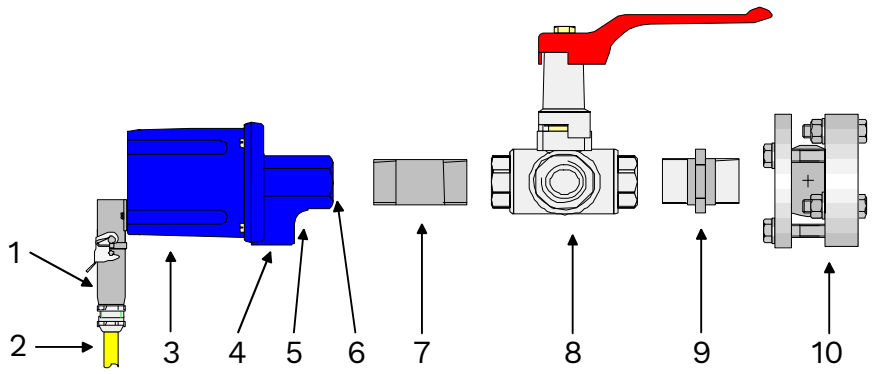
4.4.1 Installation - Standard housing

NOTICE

At a diameter of 1", the sighting tube should not be any longer than 50 cm. When doubling the length, double the diameter to 2"!

By using a ball-flange, the adjustment can be carried out easily ensuring that the ideal sighting point is set mechanically. The Flame Scanner Compact Version is supplied complete with a rapid-installation flange. This flange ensures the unproblematic disassembly of the flame scanner. It has a purge air connection, the construction of which prevents the soiling of the lens system without the dust-laden purge air damaging the lens. If temperatures of over 50 degrees Celsius occur at the flame scanner despite the inflow of cooling air caused by the heat dissipation of the sighting tube, heating insulator has to be used. In case of pressurised combustion, an additional 3-way-ball-valve has to be fitted for protection. The exit of hot gas after removal of the scanner is prevented, ensuring further cooling and purging of the arrangement.

The entire mechanical peripheral system can be supplied by BFI Automation.

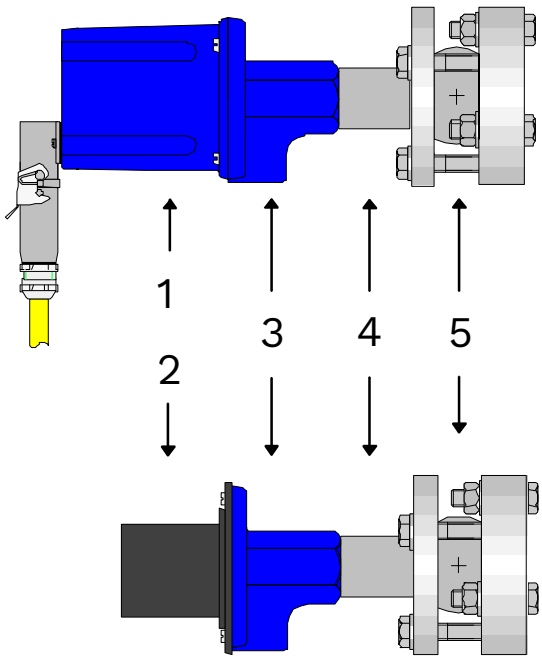


1. Harting plug
2. Special cable KW5
3. Flame Scanner Compact Version
4. Purge air connection
5. Purge air flange
6. Sighting tube connection
7. Heating insulator
8. 3-way-ball-valve
9. Double nipple
10. Swivel mount

4.4.1 Installation - Standard housing

NOTICE

All installation and connection work may be carried out by qualified and approved specialist staff only! The legal regulations as well as adjustment instructions of the plant operator have to be observed!



1 Flame Scanner Compact Version
2 Optical alignment device
3 Purge air flange
4 Heating insulator
5 Swivel mount

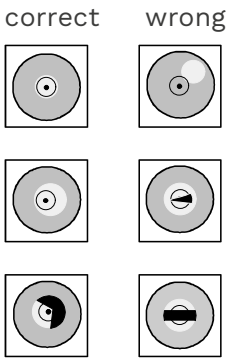
The Flame Scanner Compact Version has been provided with oblong holes for easy installation on the purge air flange. The sighting tube connection has been provided with a G1" internal thread.
In order to ensure perfect flame amplifiering, the correct and low-vibration position of the sighting tube relative to the flame is essential. The Flame Scanner Compact Version has to be aligned in such a way that a perfect visual image is set. For this purpose use the optical adjusting device (available as an accessory) as shown in chapter 4.4.5. The best setting results when a large visual field is achieved.

4.4.2 Vision images of the optical adjustment device

⚠ CAUTION

Danger of injuring the eyes by infrared and ultraviolet radiation and penetrating gases when checking the flame visually!
Wear filtering protective glasses!

Vision images of the optical adjustment device



NOTICE

The images appear mirror inverted in horizontal and vertical direction!

The length and the diameter of the sighting tube have a direct influence on the usable flame radiation as the visual angle of the lens system is defined. Without restriction of the visual range, the maximum length L of a sighting tube for conventional tube diameters D is as follows:

D:	1"	1.5"	2"
L:	0.5 m	0.8 m	1.1 m

For this reason, the sighting tube should always be as short as possible. A diameter of 2" is recommended.

NOTICE

At a diameter of 1", the sighting tube should not be any longer than 50 cm. When doubling the length, double the diameter to 2"!

4.4.3 Works setting of the Flame Scanner Compact Version

⚠ DANGER

Danger to life caused by combustion or explosion!
In case of incorrect installation or adjustment, uncontrolled combustion or explosions may be caused!
Observe the adjustment instructions of the plant operator!
Adjustment work may be carried out only by qualified and approved specialist staff!

Flame Scanner Compact Version with variable sensitivity settings are set to the highest value at the manufacturer's works.

Flame Scanner Compact Version with variable frequency filters have a high signal sensitivity on account of the preset low-frequency harmonisation. Flame Scanner Compact Version with a variable shutter are set at the manufacturer's works to Shutter open which ensures maximum radiation sensitivity.

Devices with an additional changeover system must be actively controlled by means of an external 24 V DC signal.

The switch-off time of the Flame Scanner Compact Version is set to 1 second at the factory. It is possible to set longer switch-off times.

4.4.4 Adaption of the Flame Scanner Compact Version to the firing

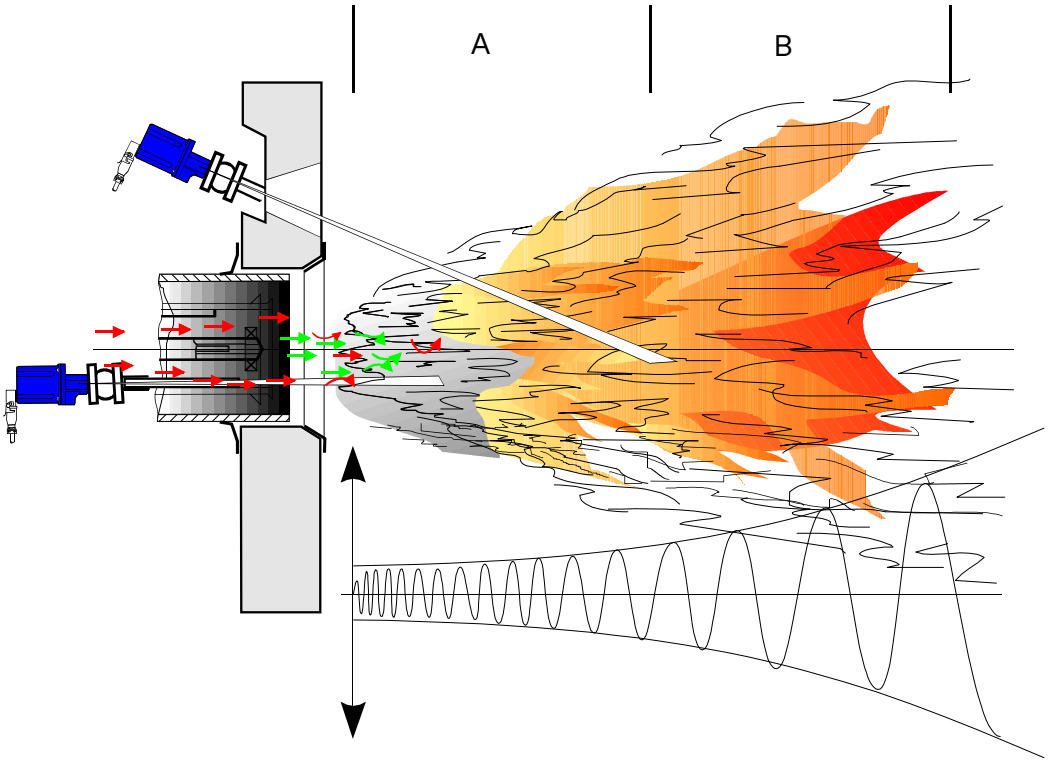
⚠ DANGER

Danger to life caused by combustion or explosion!
In case of incorrect installation or adjustment, uncontrolled combustion or explosions may be caused!
Observe the adjustment instructions of the plant operator!
Adjustment work may be carried out only by qualified and approved specialist staff!

NOTICE

All alignments and settings have to be carried out, when new spare parts have been fitted, the Flame Scanner Compact Version has been moved or the flame image has been changed (by additional fuel, new burner, change in the burner / air register, for example) as well as during all first installations!

For selective burner amplifiering, the device has to be installed in such a way that the primary combustion zone in all load ranges is inside the visual angle of the Flame Scanner Compact Version. The sight axle has to cut through the first third of the flame (A) of the own burner if possible. The extension of the sight axle must not cut through the first third of the flame of other burners.



4.5 Connection

⚠ DANGER

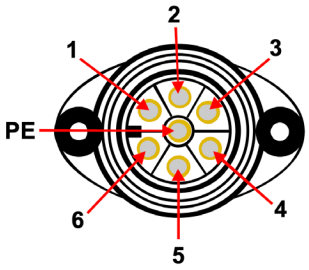
Danger to life caused by electrical current!
The safety instructions and local safety regulations have to be observed during connection!
The safety instructions and local safety regulations have to be observed during connection!
Have electrical connections made only by authorised specialist personnel!

For connection data, please refer to the chapter Technical data and to the following terminal diagram.
Ensure that the available supply voltage complies with the voltage indicated on the type plate.
Prior to connection, check the device and the connecting cables for visible damage.
For the contact assignment of the plug connector, refer to the following terminal diagram.

The output signal 0(4) to 20 mA for the flame intensity is not separate from the supply voltage so that the signal refers to the operating voltage ground. Should this result in problems, a corresponding isolating transformer can be supplied on request. The load of 250 ohm must on not account be exceeded.

After switching on the supply voltage, the device is immediately ready for operation.

4.5.1 Terminal diagram

Occupancy of socket / plug	PIN	Internal connection AC/DC	Cable number	Colours of BFI special cable
	1		1	white
	2		2	brown
	3		3	pink
	4	+24V DC	4	green
	5	0V	5	yellow
	6	Output 4-20 mA	6	grey
	7	Switch over channel 2 with external 24 V DC	7	blue
		Not used		red

Connection of standard Compact Flame Controller with special cable KW6

	Internal			External	
Contact	**Core colour**	**Function**	**Burner control**	**mA-display**	**Power supply**
1	white	Flame relay lead	x		
2	brown	Flame relay Flame ON	x		
3	pink	Flame relay Flame OFF	x		
4	green	Power supply +24V DC			+24V DC / 200mA
5	yellow	Power supply GND		-	GND
6	grey	Analogue output + (0/4 to 20mA)		+	
7	blue	Switch over channel 2 with external 24 V DC	(x)		
	red	Not used			

4.6 Storage

Do not unpack any packed Flame Scanners Compact Version and accessories.

The following conditions apply to storage:

- Store in a dry place. Maximum relative humidity 60 %. In addition, It has to be assured that the floor in the storage area will remain dry through-out the storage period.
- Protect from direct sunlight. Storage temperature: 15 degrees to 25 degrees C (59 degrees to 77 degrees F).
- Store in a dustfree location.
- Avoid mechanical vibrations and damage.

5 | Description

5.1 Functional description

The compact flame controller CFC 100 disposes of a small banded UV sensitive detector unit which generates an impulse diagram proportional to the UV radiation. The following sensitivity setting allows a processing of the signal for the adaptation to the heating relations. Other functional groups contain among other things the signal processing for the dynamic monitor canal which checks the fail-safety of the device continuously.

A components defect leads to the immediate disconnection of the flame relay which is available as a potential free changeover contact for the burner control.

The switching state becomes additional shown by yellow LED at the back of the device. The flame intensity of the compact flame controller can be read directly in the device by means of a pulsating green LED. To the visualisation or remote indication a current output of 4-20 mA is available. The max. load of 500 Ω should not be exceeded.

The safety switch-off time for operation is put by factory on one second. Optionally longer safety switch-off times are possible if requested.

5.2 Hand held terminal HT 100

A flame analysis can be made with the hand held terminal HT 100 as well as sensitivity adjustment of both channels. All data of the CFC 100 can be shown.

NOTICE

More information about the HT 100 you will find in the document BA HT100 EN.

5.2.1 Menu item “Detector”

This menu item gives the following information about the device:

- Operating hours of CFC 100 and the UV tube
- Startup counter
- Firmware version

5.2.2 Menu item “Values”

Here all available values can be called:

- Actual value in digits and as bar indicator
- Average of xx measuring in digits (number can be edit)
- Shutter value
- Current output 4 to 20 mA in digits and as bar indicator
- Recorded max. value
- Recorded min. value
- Min.- and max. value reset

5.2.3 Menu item “Switch-off time”

By choosing this menu item the actual set switch-off time is displayed.

5.2.4 Menu item “Thesholds”

For both channels the thresholds can be shown and edit. The edit mode is password protected.
Following parameters can be chosen for each channel:

- 4 mA threshold
- 20 mA threshold
- ON threshold for the flame relay
- OFF threshold for the flame relay

5.2.5 Menu item “Quit”

By using this menu item the terminal action will be closed correctly.

5.2.6 Menu item “Password”

Here the password of the terminal is managed with following options:

- Log in (necessary for editing the thresholds)
- Changing
- Log out

5.2.7 Menu item “Language”

The hand held terminal can show the data in the following languages, which can be chosen in this menu item:

- German
- English

6 | Operation of the Flame Scanner

⚠ WARNING

Danger of injury and material damage if improperly used!
Improper use of the Flame Scanner Compact Version can lead to injury or even death and to material damage!
Operation of the Flame Scanner Compact Version only by authorised and qualified special personnel! Observe the operating instructions!

NOTICE

The response of the Flame Scanner Compact Version depends on the burner configuration as well as on the air flow and the spectral characteristic (wave length).

6.1 Test of the Flame Scanner

In order to ensure correct operation, the Flame Scanner Compact Version must be tested several times for all applications by starting and stopping the burner several times (the flame relay must reliably shut-down in all cases when there is no flame). Carry out these tests whilst several neighbouring burners are started and stopped and different boiler outputs are used. This is an indispensable prerequisite for a safe and correct operation of the device!

6.2 Opening/closing the device

NOTICE

The Flame Scanner Compact Version may only be opened / closed by qualified personnel!

7 | Maintenance, care and transport

The Flame Scanner Compact Version is maintenance-free except the UV tube.
For cleaning, use a moist cloth to wipe the housing from the outside only and clean the lens in regular intervals.

NOTICE

Do not scratch the lens!

7.1 Forwarding instructions

NOTICE

Do not subject the appliance to heavy impacts during transport. Do not subject the appliance to any humidity!

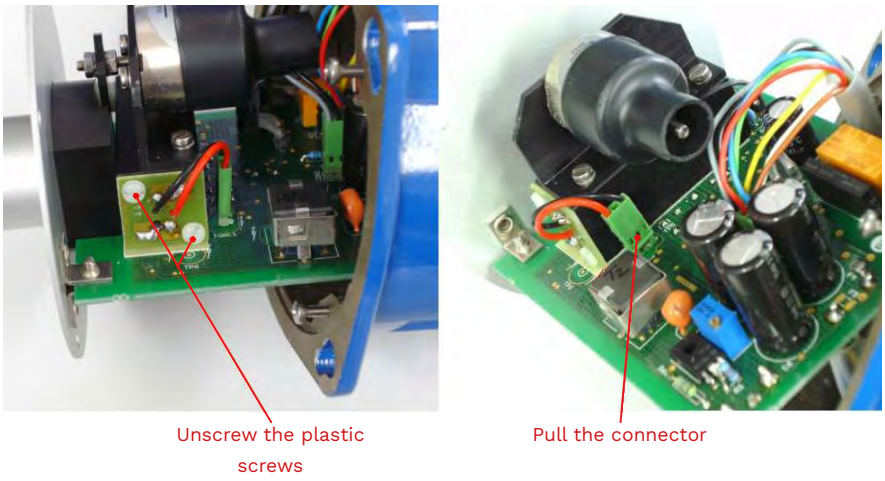
7.2 Forwarding instructions

NOTICE

The UV tube is an important part of the safety-related Flame Scanner Compact Version. *For replacement of single components only use original spareparts from BFI Automation because this is the only way to guarantee the safe function of the device.*

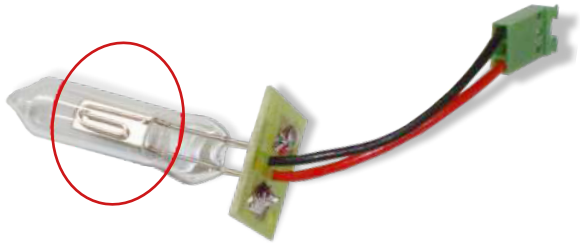
7.2.1 Removal of the tube

- Pull the device plug
- Disconnect the appliance from the purge air flange
- Open the 4 cross-head screws under the foam rubber disc
- Unscrew the 3 white plastic screws and pull the connector as shown in picture 1
- Pull out the tube-unit of the holding trestle



Picture 1: Position of plastic screws and connector

Pay attention to the mounting direction of the tube before removal. An arrow on the tube PCB shows the optical path. The spiral electrode points in direction of the flame and can be seen through the lense. See also picture 2



Picture 2: Details of the tube-unit with view to the spiral electrode

7.2.2 Mounting of the tube-unit

- Insert the tube-unit into the holding trestle
- Mount the PCB of the tube-unit with 2 plastic screws
- Put on the plug in the right direction (plug locks)
- Screw on the plastic screw carefully to the holding trestle. Pay attention not to destroy the UV-tube.
- Insert the device into the housing and fix it with the 4 cross-head screws
- Put on the purge air flange and fix it
- Connect the CFC 100 and reset the operating hour counter with the hand held terminal HT 100.

For more information take a look to BA HT100 EN.

8 | Failures

Problem	Display	Cause	Remedy
No flame-ON signal after the burner has been started	No mA output signal Yellow LED OFF Green LED OFF No data communication with the operating terminal	Flame Scanner Compact Version does not work	Check voltage supply Replace Flame Scanner Compact Version Check electrical connection
	Flame signal low Yellow LED OFF	Flame signal too low or below the starting threshold	Inspect Flame Scanner Compact Version Check flame, alignment, sighting tube and lens Check / set sensitivity and switching thresholds
	Flame signal above the starting thresholds Yellow LED OFF	Device or self-test fault	Possibly remove plug for 5 seconds then start the burner again Replace compact flame controller
	Flame signal above the starting thresholds Yellow LED ON Green LED ON	Relay contact or wiring problem	Check fuse in relay output circuit Check electrical connection
Burner fails	Flame signal drops. Below the shut-off threshold, the flame relay switched off.	No flame, weak flame signal	Check flame Check Flame Scanner Compact Version Check Flame Scanner Compact Version alignment, sight tube and lens Increase sensitivity setting Replace Flame Scanner Compact Version Check electrical connection
	Flame signal above shut-off threshold Yellow LED OFF	Device fault	Possibly remove plug for 5 seconds then start the burner again Replace Flame Scanner Compact Version

BFI Automation

BFI Automation GmbH
Ruegenstr. 7
42579 Heiligenhaus . Germany
T +49 2056 989 46-0
info@bfi-automation.de
www.bfi-automation.com