

## Technical Information

# Flame Detector KLC 20 / KLC 21

for all kind of flames with intermittent  
burner operations



## 1 | Short Description

The flame detector KLC 20 is a compact flame detector, which is special designed for blue burning combustion systems. The patented evaluation of the flame signal is based on the flicker frequencies of the flame. A microprocessor enables the evaluation and conversion of the flame signal into digital information to provide an output signal for burner control boxes. All flames will be detected by an automatic sensitivity control. Adjustments during commissioning and maintenance are not necessary!

Due to international standards the flame detector KLC 20 will only detect signals caused by the flicker of the flame and no signal from continuous radiation and all kinds of constant frequency. These are signals caused by disturbing light sources, e.g. fluorescent tubes or background radiation from hot refractories will be cut off, so that unwanted influences are not possible.

The flame detector is equipped with an optical interface to get online information about monitoring of flame signal and serial number.

**This technical information provides an overview of the technical data of the KLC 20 and its application as well as ordering data and accessories. Only the original operating instructions for the KLC 20 in the currently valid version are binding.**

## 2 | Safety Instruction

The KLC 20 is a safety component, so it is absolutely forbidden to open, to manipulate or to misuse this flame detector! Replace the flame detector in case of any damage, fall, shock, moisture, wetness or influences, which can destroy the flame detector, even though it is not recognizable! Repair works are strictly prohibited!

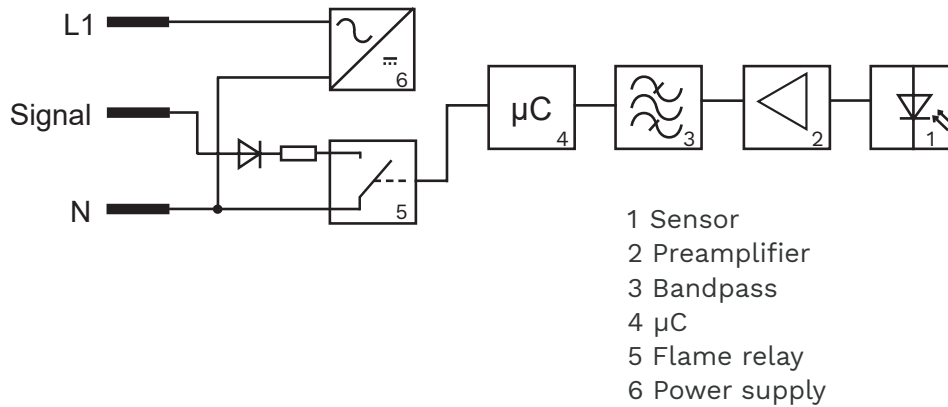
Before working at the flame detector switch off the power supply. Before first commissioning or replacement of the device check the wiring!

### 3 | Technical Data

|                                 |   |
|---------------------------------|---|
| Input                           | AC 230/240 V (-15/+10%)<br>AC 115 V (optional)<br>Frequency 50 – 60 Hz<br>AC/DC 24 V (optional)   |
| Consumption                     | max. 6 mA   |
| Output                          | Switch-On Delay after energizing from safety relevant self check to final operating condition typical 2 s<br>Switch-On delay after Flame On typical 0.5 s<br>Switch-Off time after Flame Off <0.6 s<br>max. switching current 15 mA<br>max. switching power 0.3 W<br>max. switching voltage 280V AC / 400V DC |
| Optical Features                | Spectral range 380 – 1150 nm,<br>Peak wavelength 920 nm<br>Flicker frequencies 15 – 400 Hz  |
| Switch on frequency             | 52 Hz for oil applications or 25 Hz for gas applications dominant flicker frequency   |
| Switch off frequency            | 15 Hz dominant flicker frequency<br>Acceptable loss of flame signal ca. 280 ms<br>Disturbing frequency cut off > 35Hz (optionally)  |
| Operating Temperature           | -20 to +60 °C   |
| Humidity                        | max. 95%, no condensation permitted<br>Optional for higher temperatures   |
| Operating position              | any position  |
| Kind of protection              | IP 21   |
| Protection Class                | II  |
| Weight                          | 0.029 kg  |
| Max. length of connection cable | The size of the cable is determined by the cable/ conduit length while also considering the bias-reducing potential allowable which is normally indicated in the data sheet of the burner control or system. The signal strength has to be maintained at the correct level.                                   |
| Applied standards               | EN298:2012-11<br>EU/2016/426  |
| Certification                   | CE0085BP0001*   |

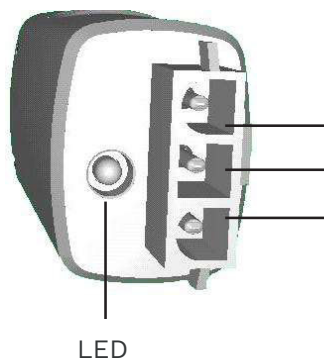
\*only versions with the function „Disturbing frequency cut-off,, (DFC)

## 4 | Block diagram



## 5 | Connector Diagram KLC 20

Type of control box Dungs / Satronic / Lamtec

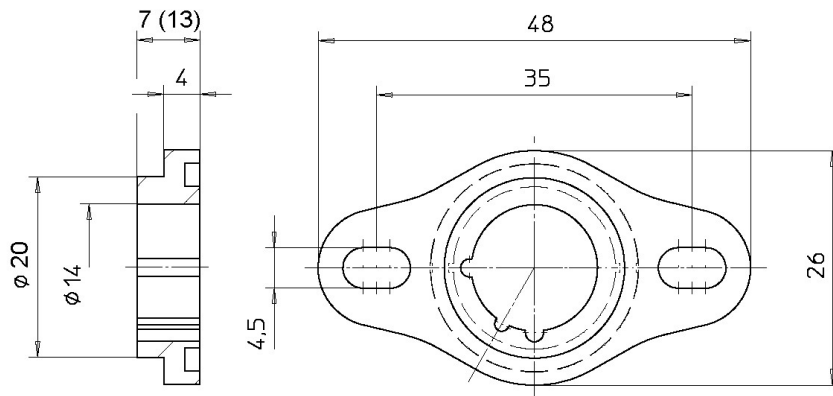


| Type of control box<br>Wire colour | MPA22      | BT300 | DKO 9..<br>DKW 9..<br>DMO 9.. | TMO<br>720-4 |
|------------------------------------|------------|-------|-------------------------------|--------------|
| Blue terminal no.:                 | 12 – 5 N   | LDR-  | 2                             | 2            |
| Black terminal no.:                | 12 – 3 Ion | LDR+  | 1                             | 1            |
| Brown terminal no.:                | 6 – 17 L1  | L     | 9                             | 9            |

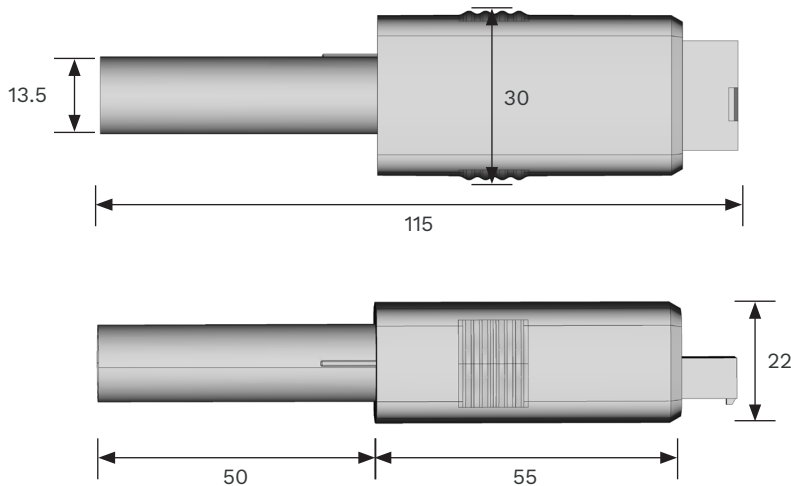
LED

## 6 | Mounting flange KLC

The mounting flange KLC serves for to the admission, attachment and adjustment of the flame detector. Two overall heights with 7 and 13mm are available. By means of an O-ring, the mounting flange KLC can be simply sealed to the burner housing.

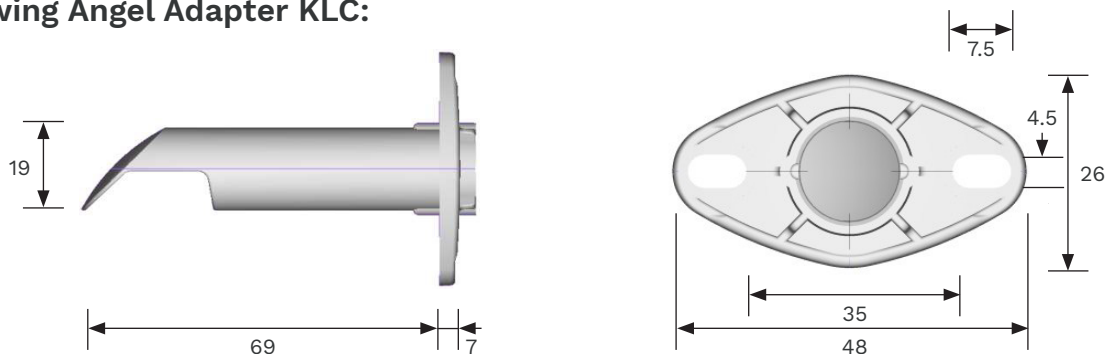


## 7 | Dimensions



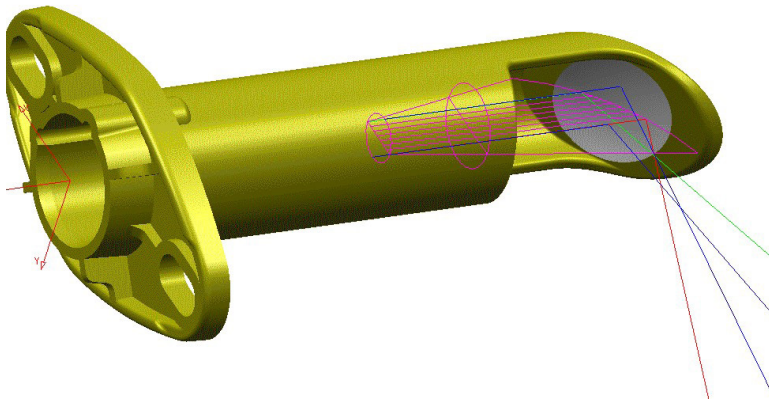
All dimensions in mm

### Viewing Angel Adapter KLC:



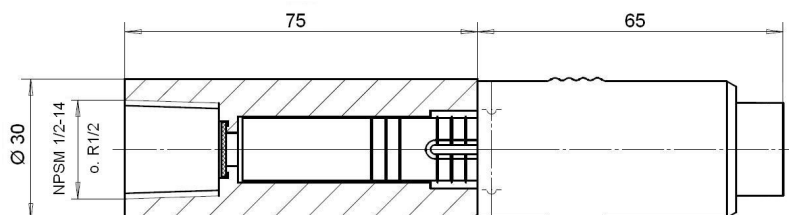
## 8 | Viewing Angel Adapter KLC for radial adjustment

With the optionally available viewing angle adapter by means of an optimally formed out reflector surface the radial adjustment of the KLC 20 is accomplished to the flame axle. The angle adapter replaces the mounting flange KLC. Separate type of flame detector is not necessary therefore. With maintenance work the reflector surface is to be controlled on possible contamination and if necessary it is to clean with a clean, soft and lint free cloth. The angel adapter is offered in two different styles. The standard mirror is prone to scratches and the stainless steel mirror which is much more robust.



## 9 | Adapter ADP

The adapter ADP makes it possible to mount the flame detector series KLC with axial adjustment directly to the combustion chamber. The integrated quartz glass prevents the withdraw of heat gases from the burner. In case of higher temperature at the surface the ADP is heat insulated up 180°C.



## 10 | Function Disturbing frequency cut off

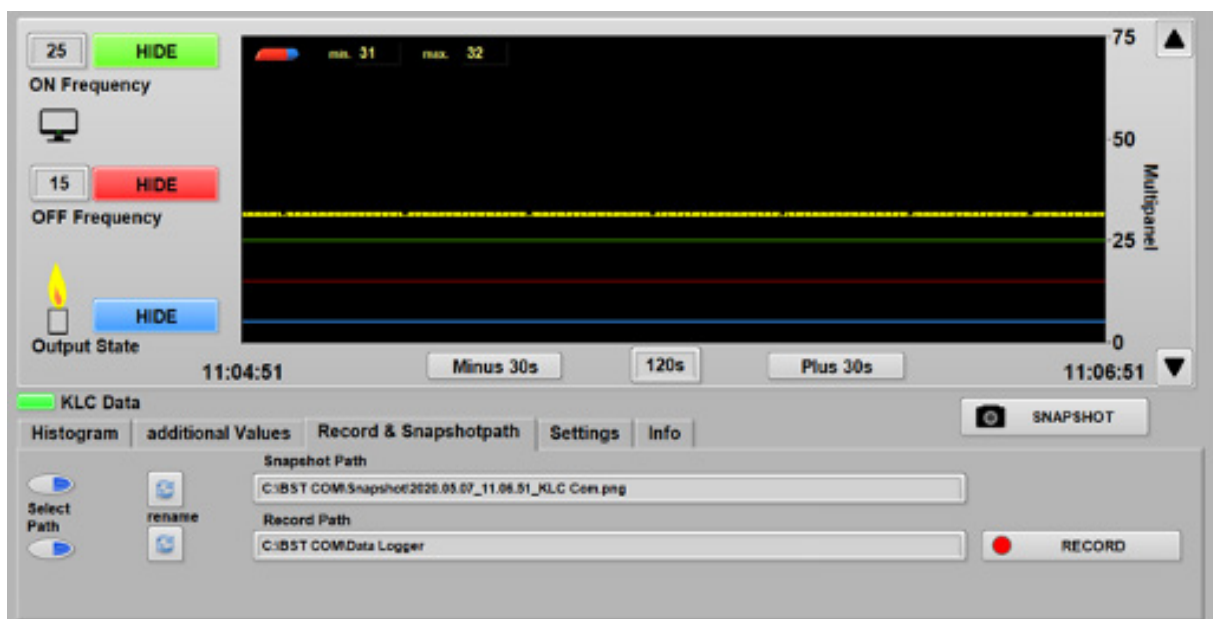
The KLC 20 is optionally available with the function disturbing frequency cut off. With this option the KLC 20 detects only real flames, which are characterized by unsteady changing flicker frequencies. Constant light and every constant frequency e.g. from fluorescent tube or other electrical lamp, are cut off and won't lead to a permanent flame detection. In this case the KLC 20 will switch the output a first but after a period of about 5 seconds the KLC 20 will switch the output off again. During revision it has to be kept in mind that this property is intended and no malfunction.

## 11 | Diagnostic with BST com

With the read out tool KLC com, consisting of optical adapter with cable, interface (USB) and software, the following information can be read from the KLC 20:

- Impulses
- Serial Number
- Version / Edition
- present flicker frequency

For connection, place the optical adapter to the opening at the LED. Via the connection cable and the interface the a.m. information will be transferred to a Laptop or PC by using the special software. Further information is available in the manual KLC com.



## 12 | Overview of articles

| Article                                   | Version   | Part-No.     |
|---|---|--------------|
| Flame detector KLC 20/230, 25/15Hz, DFC   | Axial, with disturbing frequency cut off                  | 6011-1433-02 |
| Flame detector KLC 20/230, 52/15Hz, DFC   | Axial, with disturbing frequency cut off                  | 6011-1436-03 |
| Flame detector KLC 20/24, 25/15Hz, DFC    | Axial, with disturbing frequency cut off                  | 6011-1413-02 |
| Flame detector KLC 20/24, 52/15Hz, DFC    | Axial, with disturbing frequency cut off                  | 6011-1416-00 |
| Flame detector KLC21/230, 25/15Hz, SFA    | Axial, with disturbing frequency cut off                  | auf Anfrage  |
| Flame detector KLC21/230, 52/15Hz, SFA    | Axial, with disturbing frequency cut off                  | auf Anfrage  |
| Flame detector KLC21/24, 25/15Hz, SFA     | Axial, with disturbing frequency cut off                  | auf Anfrage  |
| Flame detector KLC21/24, 52/15Hz, SFA     | Axial, with disturbing frequency cut off                  | auf Anfrage  |
| Mounting flange KLC                       | overall height 7 mm                                       | 1550-4220-07 |
| Mounting flange KLC                       | overall height 13 mm                                      | 1550-4220-13 |
| Angle adapter KLC, standard mirror        | Accessories for radial mounting applications              | 1550-4225-10 |
| Angle adapter KLC, stainless steel mirror | Accessories for radial mounting applications              | 1550-4225-20 |
| ADP 10 – UV, heat insulated, R ½"         | Adapter for direct mounting applications, heat insulating | 6580-2031-00 |
| Connecting cable KLC                      | length 600 mm   | 6060-2220-06 |
| Connecting cable KLC                      | length 1000 mm  | 6060-2220-10 |
| Connecting cable KLC                      | length 2000 mm  | 6060-2220-20 |
| Connecting cable KLC                      | Length on request   | -            |
| Read out tool KLC-Com with Software       | optical adapter, USB-interface                            | 6040-4830-00 |
| Flame simulation device TG 10             | -   | 6030-0020-01 |
| RMF 1 / 230                               | Relais modul for 230 V AC                                 | 6040-0001-00 |
| RMF 1 / 24                                | Relais modul for 24 V DC                                  | 6040-0001-20 |





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### Disposal information

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



All data are without guarantee and refer to the product group. Product specific information is contained in the operating instructions. We reserve the right to make technical changes. | © BFI Automation GmbH 07.05.25

#### **BFI Automation GmbH**

Ruegenstr. 7  
42579 Heiligenhaus . Germany  
T +49 2056 989 46-0  
[info@flamონitec-bfi.com](mailto:info@flamონitec-bfi.com)  
[www.flamონitec.com](http://www.flamონitec.com)