# KLC 10 (formerly known as KLC 1000)




CE
0085

# Technical information

## UV - flame detector KLC 10 for oil -, gas- and dual fuel burners for intermittent burner operations

### Description

The KLC 10 is a compact UV flame detector, which has been developed for single flame combustion which produces little light or radiation in the visible spectrum and has very low flame modulation/flicker frequency. The design of the UV sensor ensures that the flame detector does not react to background radiation from hot refractory or from any other infra-red light source.

The flame detector is equipped with an optical interface which visibly indicates the flame signal intensity. The KLC 10 can be connected directly to the ionisation or LDR input of the control box. It is compatible in its physical dimensions and connection capability to other series KLC flame detectors. All KLC accessories are identical and therefore this reduces the variety of components used in production and makes it simpler for field application and service.

The flame detector KLC 10 has been developed to meet the requirements of European Standards EN298:2012-11 for burner management control units which make a ‘no-flame’ check after normal burner shut down when the flame amplifier is permanently energised.

## Safety Instruction

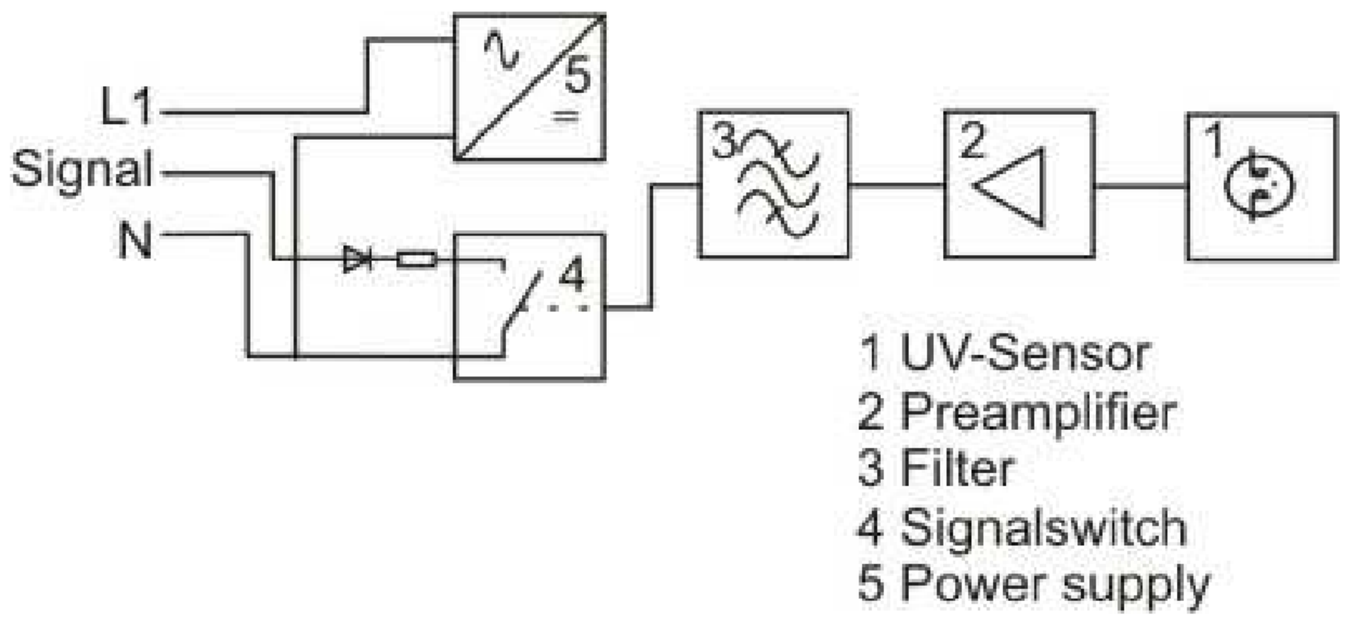
The KLC 10 is a safety component, and repair or adjustment must never be attempted. Replacement of the flame detector is recommended in all cases of damage, due to impact shock, excessive moisture, or other problems rendering it inoperable. Repair work must never be attempted and is strictly forbidden by the relevant European Standards.

**Prior to commissioning the unit; please carefully check that the wiring connections have been made correctly. Also, before removing or checking the flame detector please ensure the power supply is switched-off.**

## Technical Data

| | |
|---|---|
| Input: | AC 230 V ~ (-15/+10 %)<br>Frequency 50 – 60 Hz<br>Consumption 5, 5 mA |
| FET-Output: | Switch-On delay after Flame-On typically 0, 5 sec.<br>Switch-Off time after Flame-Off < 0, 5 sec.<br>max. switched current 15 mA<br>max. switched power 0,3 W<br>max. switched voltage 280V AC / 400 V DC |
| Optical Features: | Spectral range 185 – 260 nm<br>Acceptable loss of flame signal ca. 200 ms |
| Adjustment: | radial, left<br>optional axial (reduced sensitivity at approx. 40%) |
| Lifetime of the UV-tube: | > 10.000 h |
| Operating Temperature: | -20ºC to +60°C (temperatures >50°C reduces the lifetime of the UV-tube) |
| Humidity | max. 95%, no condensation permitted |
| Operating position: | Any position |
| Kind of protection: | IP 41 |
| Protection Class: | II |
| Protection against Electric shock: | DIN/EN 60730-2-5 |
| Weight: | 0,028 kg |
| Max'm length of connection cable: | 1 m (options available for longer cables) |
| Certification: | CE-0085BS0448 |

## Block diagram



## Mounting instructions

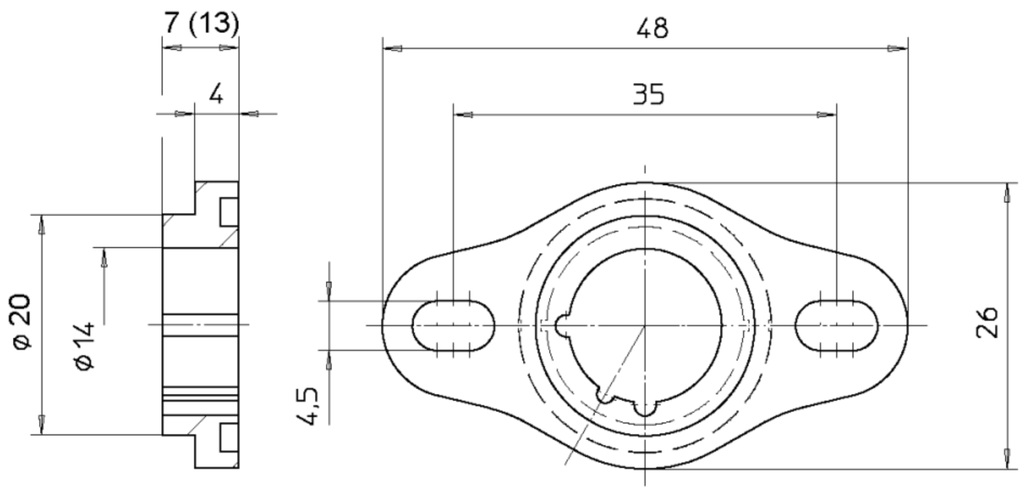
The KLC 10 should be mounted as close as practical to the flame and on the same axis. The flame detector is compact and should be mounted with the KLC mounting flange or other suitable holder having a 14mm Ø opening. Fix the detector in the holder taking care to protect the sensor from other light sources.
To avoid any problems at start-up; please avoid alignment of the KLC detector with the ignition spark electrode as the flame detector may react with the ignition spark and cause burner shut-down during the air pre-purge/ignition start-up sequence. The maximum length of the connection cable must be in accordance with the technical data. Please ensure that the flame detector connection cable is kept well apart and is completely separated from high-energy igniters- and power cables to avoid electrical interference problems.

**Attention: For safety reasons and within the technical regulations, a controlled burner shut-down of the burner must occur and be guaranteed to happen at least once in every 24 hours of operation. With the Model KLC 10 it is mandatory that the Control Box Unit or Burner Management System is of the type which performs a flame check for 'no flame presence' on burner shut down. Such that both the burner is checked for possible 'after burn' and that the UV tube itself is checked for soundness in accordance with the European Standard EN298:2012-11. The Model KLC 10 can only be used with intermittent Control Units which perform this flame check on shut-down. Otherwise use the model KLC 11.**

If you are unsure about any application using this flame detector, please email, or fax the manufacturers or the authorised distributor.

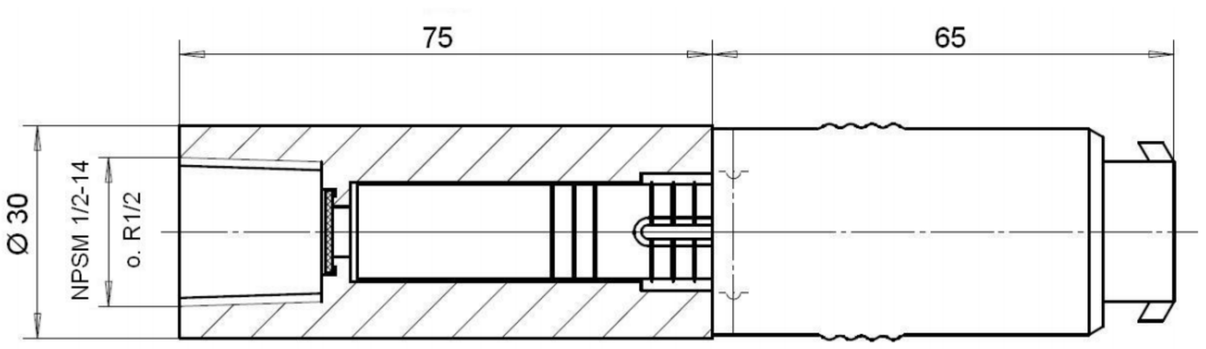
## Mounting flange KLC

The mounting flange allows the detector to be held and adjusted in a suitable position to view the flame. Two overall widths of 7mm and 13mm are available. An O-ring seal is available which will give the mounting flange an air tight seal to the burner housing if required.




## Adapter ADP

The adapter ADP enables to install the flame detector series KLC10 with optional axial direction directly at a combustion chamber. A quartz glass serves as a barrier and prevents the flow of heating gas from the combustion chamber. For the use of flame detector KLC at high ambient temperatures, a variant model of heat-insulating materials reduces the transition temperature.




**ADP 1 0 - UV**

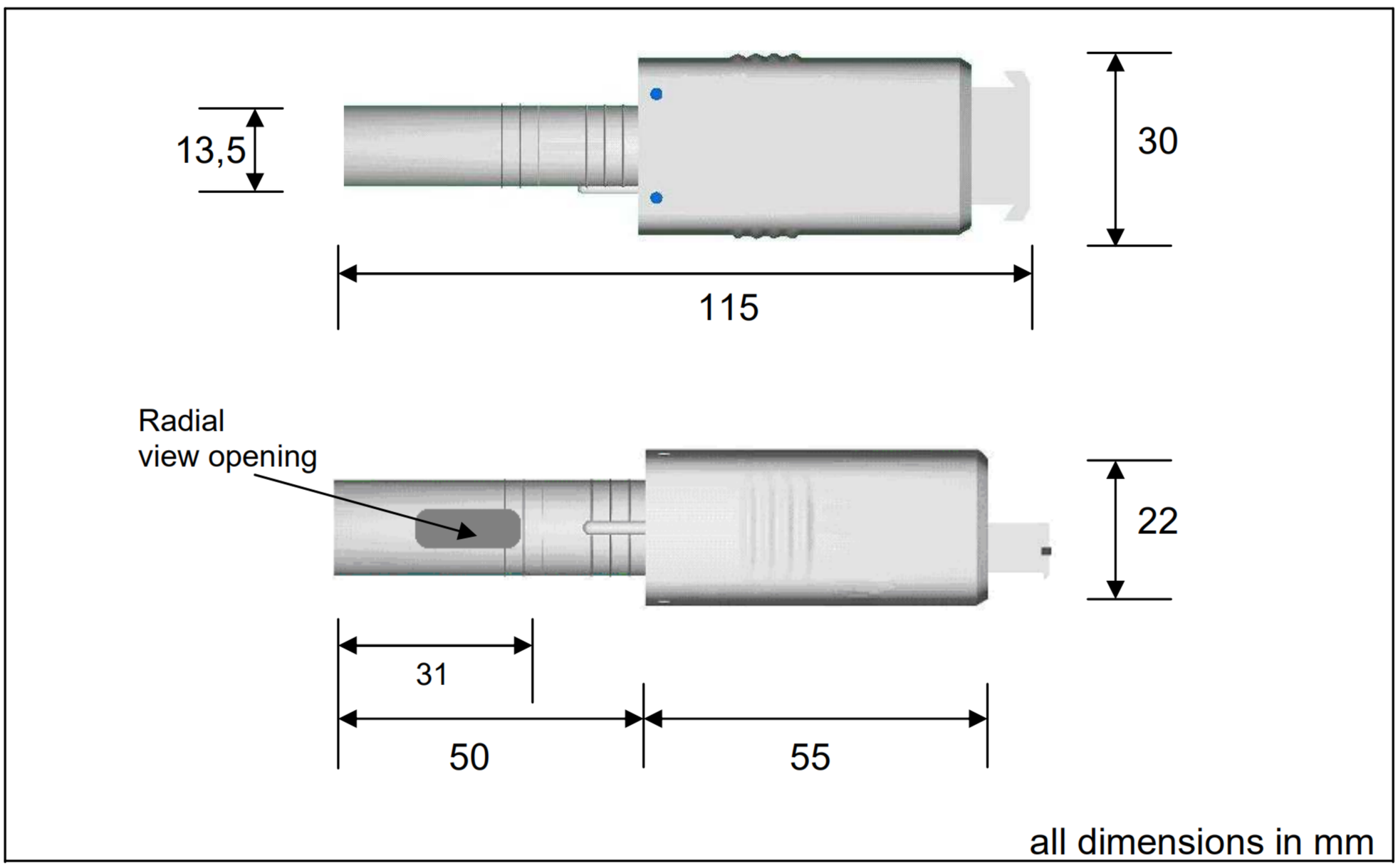
glass type
UV = quartz glass

thread
0 = NPSM ½"-14
1 = R ½"

material
1 = aluminum
2 = heat-insulating material

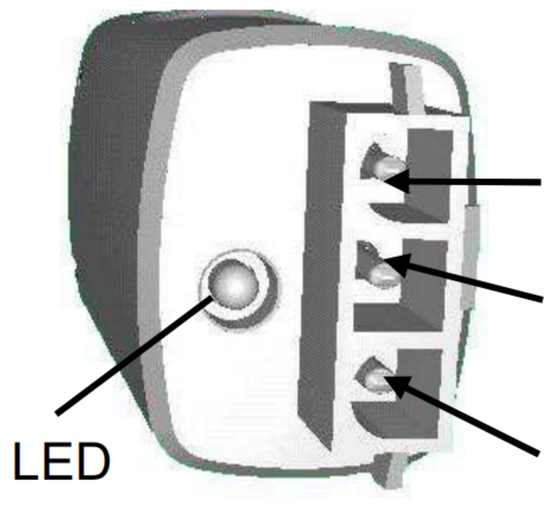
series
ADP = Adapter KLC

## Dimensions




## Connector Diagram KLC 10

Dungs Control Box




| | | |
|---|---|---|
| **Type of control box** | | MPA 22 |
| Blue | terminal no.: | **12 – 5 N** |
| Black | terminal no.: | **12 – 3 Ion** |
| Brown | terminal no.: | **6 – 17 L1** |

**Please ask for connection details for all other types/manufacturers burner control boxes.**

## Operating Indicator LED

The flame detector KLC 10 indicates the following operating conditions and flame signal strengths via the built-in LED.

| | |
|---|---|
| LED is OFF: | KLC is not switched on – no power supply or ‘no flame’ is detected |
| LED is FLASHING: | KLC has detected a flame; the quality of the flame signal is indicated by the intensity of the flashing of the LED – fast flashing indicates a healthy flame signal and vice versa - slow flashing indicates a weak flame signal. |
| LED is ON: | KLC has detected the strongest level of flame signal. |

## Commissioning and Maintenance

The installation and commissioning must be done by qualified personnel only. Before energising the KLC flame detector please check the cable and wiring connections are in accordance to the diagram and instructions given above. For good maintenance which will ensure trouble free operation of the KLC flame detector; please keep the sight glass clean by wiping with a soft dry clean cloth. **Warning:** Do not use any kind of cleaning sprays or fluids.
During commissioning and after any cleaning maintenance, the flame detector should be checked, as the UV tube is subject to a natural ageing process and towards the end of its life span it is prone to malfunction. To check that the flame detector is sound we recommend the following procedures be followed:-

- Start the burner with the fuel supply closed-off or remove the flame detector from its mounting flange and cover the UV tube using a soft cloth to avoid touching the glass lens. The control box will lock-out at the end of the safety time due to absence of a flame signal.
- Remove the flame detector from its mounting flange. Start the burner while exposing the flame detector to an external UV radiation source such as a cigarette lighter flame, or a small gas flame (n.b. electric room lighting or a torch is inadequate). The burner Control Box must go to lock-out due to detecting an extraneous light source either immediately or at the end of the air pre-purge cycle, depending on the type/model of the Control Box.
- Close off the fuel supply or remove flame detector from its mounting flange and cover the UV tube using a soft cloth when the burner is in the "run" position. The control box must go immediately to lock-out resulting in the burner shutting down.

If any of these safety checks do not function as described i.e. they should always result in burner shutdown and control box lock-out; then it is essential to replace the flame detector with a new KLC flame detector. For safety and trouble free burner operation, we recommend that the flame detector should be replaced after every 10,000 hours of burner operation or approximately every 30months for a burner operating on an average of 10 hours per day.

## Overview of UV flame detectors and ancillary components available:

| Article | Version | Part-No. |
|---|---|---|
| Flame detector KLC 10/230 | optical direction radial | 611145021000 |
| Flame detector KLC 10/230, with high sensitivity | optical direction radial | 611145021160 |
| Flame detector KLC 10/230 | optical direction radial and axial** | 611145061000 |
| Flame detector KLC 10/230, with high sensitivity | optical direction radial and axial** | 611145061160 |
| Mounting flange KLC | overall height 7 mm | 665001010000 |
| Mounting flange KLC | overall height 13 mm | 665002010000 |
| ADP 11 – UV* | Aluminum, R ½“, quartz glass | 575010512210 |
| ADP 21 – UV* | heat-insulated up to 180°C, R ½“, quartz glass | 575010512230 |
| Connecting cable KLC | length of 300mm | 661030040100 |
| Connecting cable KLC | length of 350mm | 661035040100 |
| Connecting cable KLC | length of 600mm | 661060040100 |
| Connecting cable KLC | length of 1000mm | 661100040100 |
| Connecting cable KLC | length of 2000mm | 661200040100 |
| Connecting cable KLC | special lengths on request | |

* only for flame detector with an axial orientation
**(reduced sensitivity at approx. 40%)

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## Disposal information

The flame detector is equipped with electrical and electronic components and must be disposed separately from household waste. Please follow your local authority regulations for electrical component waste disposal.



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