



## Photocell Detectors

## RAR...

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The photocell detectors are designed for use with burner controls, for the supervision of yellow-flame oil flames.

They are used especially in connection with burner controls for the control and supervision of large-capacity burners.

The RAR... and this Data Sheet are intended for use by OEMs which integrate the flame detectors in their products!

### Use

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The RAR... flame detectors are used for the supervision of yellow-burning oil flames.

They are designed for use with the following types of burner controls: LAL..., LAE1..., LAE10..., LOK16..., LFS1.1...

## Warning notes

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**To avoid injury to persons, damage to property or the environment, the following warning notes must be observed!**

### **Do not open, interfere with or modify the flame detector!**

- All activities (mounting, installation and service work, etc.) must be performed by qualified staff
- Before making any wiring changes in the connection area, completely isolate the plant from mains supply (all-polar disconnection). Ensure that the plant cannot be inadvertently switched on again and that it is indeed dead. If not observed, there is a risk of electric shock hazard
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals. If this is not observed, there is a risk of electric shock
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state. If this is not observed, there is a risk of loss of safety functions and a risk of electric shock
- Fall or shock can adversely affect the safety functions. Such flame detectors or burner controls must not be put into operation, even if they do not exhibit any damage. If this is not observed, there is a risk of loss of safety functions and a risk of electric shock

## Mounting notes

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- Ensure that the relevant national safety regulations are complied with
- The flame detector plugs into the burner (the detector's clamp engages on the burner's light metal flange)

## Installation notes

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- Always run the high-voltage ignition cables separate from the unit and other cables while observing the greatest possible distances

## Electrical connection of the flame detector

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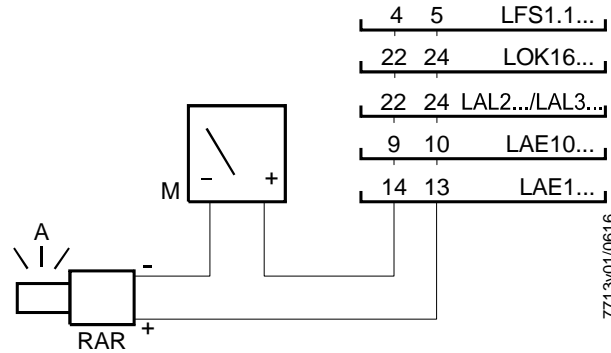
It is important to achieve practically disturbance- and loss-free signal transmission:

- Never run the detector cable together with other cables
  - Line capacitance reduces the magnitude of the flame signal
  - Use a separate cable
- Observe the permissible detector cable lengths (refer to *Type summary* and *Technical Data*)

## Commissioning notes

The intensity of light radiation on site is checked by measuring the detector current.

Measuring circuit for measuring the detector current



Legend

A Incidence of light  
M Microammeter (DC), internal resistance 5,000  $\Omega$

For the minimum detector currents required, refer to the Data Sheet of the relevant burner control.

## Standards and certificates



Note!  
Only in connection with burner controls!



EAC Conformity mark (Eurasian Conformity mark)



ISO 9001:2008  
ISO 14001:2004  
OHSAS 18001:2007



China RoHS  
Hazardous substances table:  
<http://www.siemens.com/download?A6V10883536>

## Service notes

Each time a unit has been replaced, check to ensure that wiring is in an orderly state and that the wires are firmly connected.

## Disposal notes



The flame detector contains electrical and electronic components and must not be disposed of together with household waste.  
Local and currently valid legislation must be observed.

## Mechanical design

- Housing made of dust-proof duroplast
- Photocell is under protective glass
- Flame detector can be supplied with or without flange (version 4 241 8855 0) and clamp (refer to «Type summary»)

## Type summary


Artikel-Nr.	Type reference	Length of detector cable *)	Clamp and flange	Photocell made of
BPZ:RAR9	RAR9	Max. 100 m	Without clamp / flange	Silicon
BPZ:RAR9(1)	RAR9(1)	Max. 100 m	With clamp and flange with radius	Silicon
BPZ:RAR9(2)	RAR9(2)	Max. 100 m	With clamp and flange straight	Silicon

\*) The information in the data sheet for the relevant burner control also apply


When ordering, please give the type reference according to «Type summary».

## Accessories (to be ordered separately)

Item	Part number
Flange with radius	4 241 8855 0
Flange straight	4 241 8898 0
Clamp	4 199 8806 0

Type reference	Description
<b>AGG09</b> 	<b>IP40 Kit for RAR...</b> - Cable sealing element Ø 5...8 mm 

## Technical data

General data	Safety class	II
	Degree of protection	IP20
		 <b>Note!</b> IP40 to DIN EN 60529, at relative design of cable entry (e.g. AGG09)
	Mounting position	optional
	Weight	approx. 85 g
	Cable connection	Screw terminals for min. 0.5 mm <sup>2</sup> and max. 1,5 mm <sup>2</sup> wire cross section
	Cable with ferrules	Adapt at stranded wire cross section
	Detector cable	Supplied by customer
	Cable type	Recommended: H05VV-F 2 x 0.75 Application standards should be observed.
	Environmental conditions	<b>Storage</b>
Climatic conditions		class 1K3
Mechanical conditions		class 1M2
Temperature range		-20...+60 °C
Humidity		< 95 % r.F.
<b>Transport</b>		DIN EN 60 721-3-2
Climatic conditions		class 2K2
Mechanical conditions		class 2M2
Temperature range		-20...+60 °C
Humidity		< 95 % r.h.
<b>Operation</b>		DIN EN 60 721-3-3
Climatic conditions		class 3K5
Mechanical conditions		class 3M2
Temperature range		-20...+60 °C
Humidity		< 95 % r.h.
Installation altitude		Max. 2,000 m above sea level



### Warning!

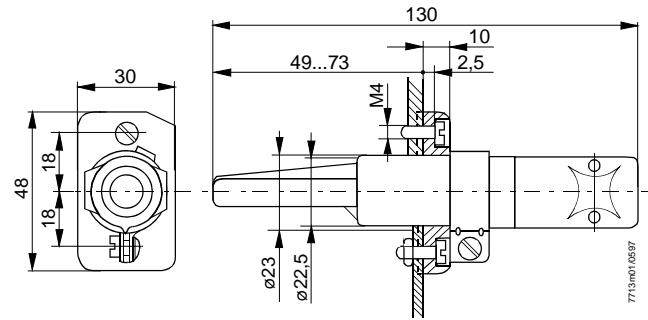
**Condensation, formation of ice and ingress of water are not permitted!**  
**If not observed, the safety functions are no longer ensured and there will be a risk of electric shock!**

## Function

With this type of flame supervision, the radiation of oil flames in the visible band of the light spectrum is used for generating the flame signal. The light-sensitive element is a photocell. When illuminated, it generates DC voltage, causing a current to flow to the input of the flame signal amplifier. Hence, the RAR... is an active detector. The photocell is insensitive to infrared radiation so that glowing firebrick in the combustion chamber cannot produce a flame signal.

## Dimensions

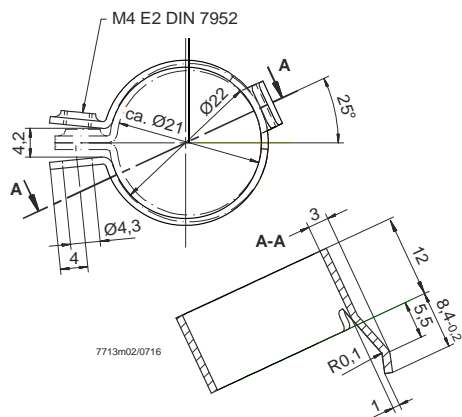
Dimensions in mm



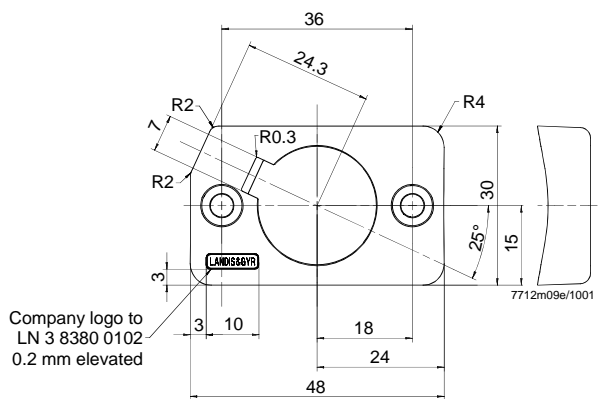
## Accessories

### 4 199 8806 0

Clamp for direct mounting on the burner



### 4 241 8855 0



### 4 241 8898 0

