



QRB1...A with large flange and clamp



QRB1...A with small flange and clamp



QRB1...B with plug



QRB3... with flange and clamp

Photoresistive Flame Detectors

QRB1... QRB3...

Photoresistive detectors for use with Landis & Staefa burner controls, for the supervision of oil flames in the visible light spectrum.

The flame detectors are used primarily in connection with burner controls for small capacity burners.

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

Use

The QRB... are designed for the supervision of yellow-burning oil flames in connection with burner controls LAL..., LOA... and LMO...

For QRC... blue-flame detectors, refer to Data Sheet 7716.

Warning notes



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

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

- Before performing any wiring changes in the connection area of the QRB..., the burner control must be completely isolated from the mains supply (all-polar disconnection)
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals
- Check to ensure that wiring is in an orderly state
- Fall or shock can adversely affect the safety functions. Such detectors may not be put into operation even if they do not exhibit any damage

Mounting notes

- Ensure that the relevant national safety regulations are complied with
- Mounting work must be carried out by qualified staff

Installation notes

- Installation work must be carried out by qualified staff
- Observe the permissible length of the detector cable (refer to «Technical data»)
- Always run the detector cable separate from other cables, especially from the high-voltage ignition cable, while observing the greatest possible distance

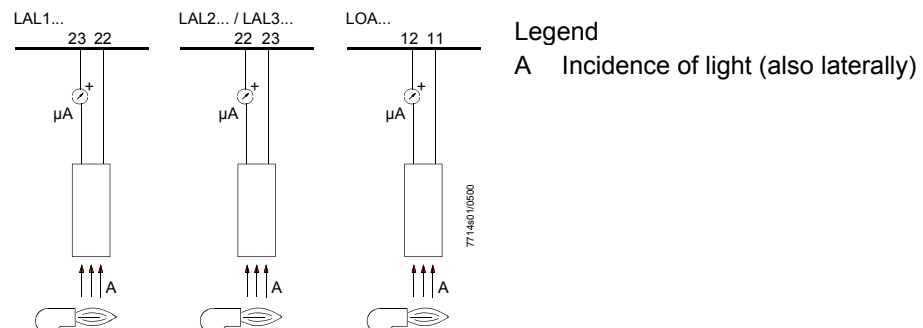
It is important to achieve practically disturbance- and loss-free signal transmission:

- 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 length of the detector cables (refer to «Technical data»)

Commissioning notes

- Commissioning work must be carried out by qualified staff
- Prior to commissioning the plant, check to ensure that wiring is in an orderly state
- The intensity of the radiation of light on site is checked by measuring the detector current

Measuring circuit



For the minimum detector current values required, refer to the Data Sheet of the relevant type of burner control.

Norms and certificates



Conformity to EEC directives
- Electromagnetic compatibility EMC (immunity)

89 / 336 EEC



ISO 9001: 2000
Certificate 00739



ISO 14001: 1996
Certificate 38233

Only in connection with
the burner control

All types of QRB...



Only QRB1...



Service notes

- Maintenance work must be carried out by qualified staff
- Each time a flame detector has been replaced, check to ensure that wiring is in an orderly state
- When cleaning the detector, never use burner cleansing spray. Always use a clean cloth

Mechanical design

Compact photoresistive flame detector with infused 2-wire thermoplastic cable.
The detector is available with normal or high sensitivity and with or without flange / clamp or soft plastic plug (refer to «Type summary»).

QRB1...A

Flame detector without soft plastic plug.
This type of detector is fitted with the help of a securing flange.
A guide groove in the securing flange and a cam on the detector clamp ensure vibration-free mounting and make certain that the detector is always correctly sited towards the flame.

Accessories

- Securing flange with 21 mm spacing for use with the QRB1...1
- Securing flange with 36 mm spacing for use with the QRB1...2
- Clamp

QRB1...B

Flame detector with soft plastic plug.
For mounting this type of detector on the burner, all that is required is a hole with a lateral groove (refer to «Dimensions»).

The sealing and securing ribs of the soft plastic plug hold the detector firmly in the hole. The guide spring guarantees correct alignment of the photoresistive element with the flame.

QRB3...

The detector is supplied with a protective tube of 17 mm diameter.
This type of detector is always secured with a flange and a clamp (refer to «Accessories»).

Type summary

Q R B 1 A - A 0 3 5 B 4 0 A

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Accessories

- 1: Small flange / clamp
- 2: Large flange / clamp

Plug

- A: Without plug
- B: With plug

Stripped length "m" in mm

End of cable

- A: Unstripped
- B: With ferrules

Visible cable length "l" in cm

Type of casing

- A: Standard casing length "g" = 50 cm
- B: Standard casing length "g" = 65 cm

Sensitivity

- A: Normal (black casing)
- B: High (red casing)

Available dimensions






l* (cm)	18 / 20	28 / 30	28 / 30	33 / 35	48 / 50	48 / 50	58 / 60	68 / 70	78 / 80	148 / 150
m (mm)	40	25	40	40	40	70	25	70	70	70

* With plug / without plug

QRB3...

Type reference	Flange	Clamp	Feature	Sensitivity
QRB3	Without	Without	Protective tube	Normal
QRB3(1)	With	With	Protective tube	Normal
QRB3S	Without	Without	Protective tube	High
QRB3S(1)	With	With	Protective tube	High

Accessories

	Item	For use with	Part number ¹⁾
	Flange with 21 mm spacing	QRB1...	4 241 1462 0
	Flange with 36 mm spacing	QRB1...	4 241 1600 0
	Clamp	QRB1...	4 186 1096 0
	Flange	QRB3...	4 286 1490 0
	Clamp	QRB3...	4 186 8806 0

¹⁾ When ordering individual items:

Items are supplied together with the flame detector, depending on the type of detector (refer to «Type summary»).

Ordering

When ordering, please give type reference according to «Type summary».
The QRB1... with plug is always supplied without flange / clamp, and vice versa.

Example

- QRB1...:**
- Normal sensitivity
 - Standard casing length 50 mm
 - Visible cable length 350 mm
 - Stripped length 40 mm
 - With ferrules
 - Without plug
 - Without flange / clamp

QRB1A-A035B40A

QRB1...: As above but with a small flange / clamp

QRB1A-A035B40A1

Technical data

General detector data

Degree of protection	IP 40
Mounting orientation	optional
Cable length for detectors used in connection with LOA... / LAL... / LMO...	max. 1.5 m
Detector cable	2 x 0.75 mm ² ; 5.1 mm dia.
Weight	
- QRB1... (depending on type)	approx. 20...35 g
- QRB3... (without cable)	approx. 35 g

Environmental conditions

Transport	DIN EN 60 721-3-2
Climatic conditions	class 2K2
Temperature range	-20...+60 °C
Humidity	< 95 % r.h.
Operation	DIN EN 60 721-3-3
Climatic conditions	class 3K5
Mechanical conditions	class 2M2
Temperature range	-20...+60 °C
Humidity	< 95 % r.h.



Condensation, formation of ice and ingress of water are not permitted!

Function

With this type of flame supervision, the radiation of oil flames in the visible light spectrum is used for generating the flame signal.

The light-sensitive element is a photoresistor.

When there is no light, the detector's resistance is in the MΩ range.

The resistance drops as the intensity of illumination increases (kΩ range).

In contrast to the selenium photocell of the RAR... detectors, glowing firebrick in the combustion chamber can be detected.

Dimensions

Dimensions in mm

