SIEMENS

7711

Flame detector QRA4…

QRA4 UV flame detector for use with Siemens burner controls for the supervision of gas and oil flames.

The QRA4 and this Data Sheet are intended for use by OEMs which integrate the flame detectors in their products.

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Smart Infrastructure

Use

The QRA4 is used for the supervision of gas flames, yellow-/blue-burning oil flames, and for ignition spark proving in intermittent operation.

The QRA4 is for use with the following types of burner control:

QRA4.U	QRA4M.U	Burner control	Data Sheet
●	---	LFL	N7451
●	---	LFE1	N7461
●	---	LFE10	N7781
●	●	LFS1	N7782
●	---	LGB2/LGB4 with AGQ1.xA27 UV ancillary unit	N7435
●	---	LME21.xxxC2/LME22.xxxC2 with AGQ3.xA27 UV ancillary unit	N7101
●	---	LME39.xxxC2 with AGQ3.xA27 UV ancillary unit	N7106
●	---	LME41.xxxC2/LME44.xxxC2 with AGQ3.xA27 UV ancillary unit	N7101
●	---	LME71 / LME72 / LME73 / LME76	N7105
●	●	LMV26.300Ax with AGM60.1 switch unit	N7547
●	●	LMV27.100Ax	N7541
●	●	LMV36.520Ax with AGM60.4 switch unit	N7544
●	●	LMV37.4	N7546
●	---	LMV5 with AGQ1.xA27 UV ancillary unit	N7550

Other burner controls on request.

The QRA4 can also detect flames caused by the combustion of green fuel blends with fuel oil. Green fuels are liquid energy carriers that are produced synthetically on the basis of renewable energies. Hydrogen produced by electrolysis using green electricity can be synthesized into a liquid energy source when combined with carbon obtained from CO2. The associated combustion is carbon neutral. Examples of green fuels include the paraffinic fuel OME (oxymethylene ethers 3, 4, and 5 – OME) and hydrogenated vegetable oils (HVO).

Warning notes

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! Siemens will not assume responsibility for damage resulting from unauthorized interference!

- All activities (mounting, installation and service work, etc.) must be performed by qualified personnel
- 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
- Halogen lamps, welding equipment, special lamps or ignition sparks may produce sufficient radiation for the detector's UV cell to ignite. X-rays and gamma radiation can also generate erroneous flame signals. If this is not observed, there is a risk of loss of safety functions
- The QRA4 must not be put into operation following impact or shock; even if it does not exhibit any visible damage, its safety functions may be impaired. If this is not observed, there is a risk of loss of safety functions and a risk of electric shock

Mounting notes

Ensure that the relevant national safety regulations are complied with.

Installation notes

Always run the detector cable separate from other cables, especially from high-voltage ignition cables, while observing the greatest possible distance.

Electrical connection of the flame detector

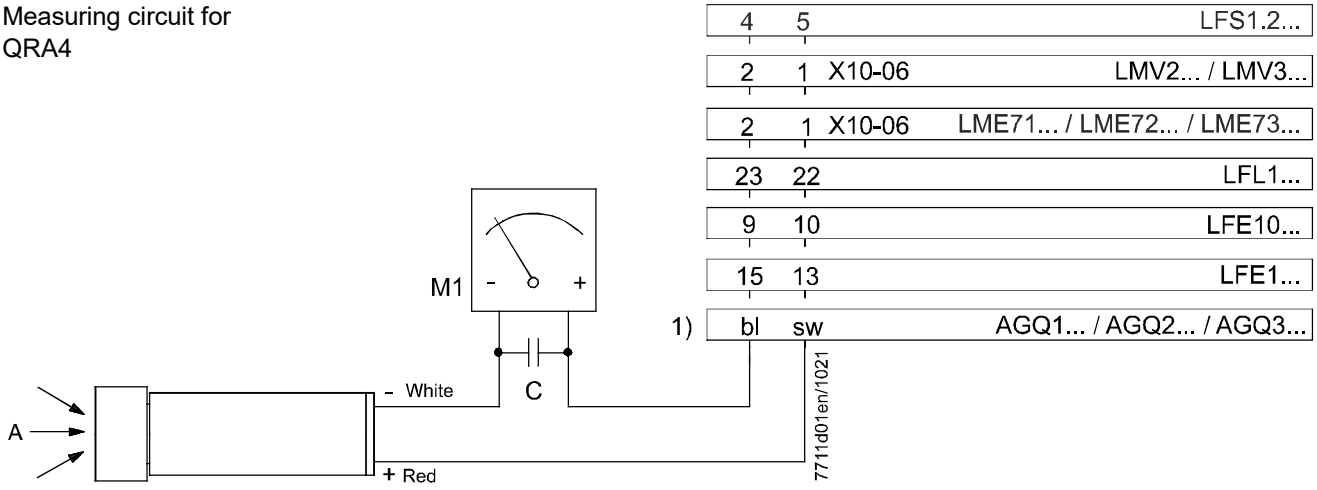
It is important to achieve practically disturbance- and loss-free signal transmission:

- 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 lengths of the detector cable (refer to «Technical data» of burner control / basic documentation used)
- The connecting wires must be run through protective tubing (made of plastic or earthed metal)

Commissioning notes

Trouble-free burner operation is ensured only if the intensity of UV radiation at the QRA4 mounting location is high enough for the detector to reliably respond during each half-wave. The **intensity of UV radiation** at the detector's location is **checked by measuring the detector current** (refer to Data Sheet of the respective burner control)

Measuring circuit for QRA4



Legend

1) Microammeter connection between AGQ1.xA27 / AGQ2.xA27 / AGQ3.xA27 UV ancillary unit and QRA4
A Incidence of radiation
M Microammeter (DC), internal resistance ≤5,000 Ω
C Electrolytic capacitor 100...470 µF, DC 10...25 V

Standards and certificates

Note!
Only in connection with burner controls!

EAC Conformity mark (Eurasian Conformity mark)

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

Service notes

The UV cell is glued inside the housing and cannot be removed. When the UV cell reaches the end of its service life, the entire QRA4 must be replaced.

Disposal notes

The QRA4 contains electrical and electronic components and must not be disposed of together with domestic waste. Local and currently valid legislation must be observed.

Mechanical design

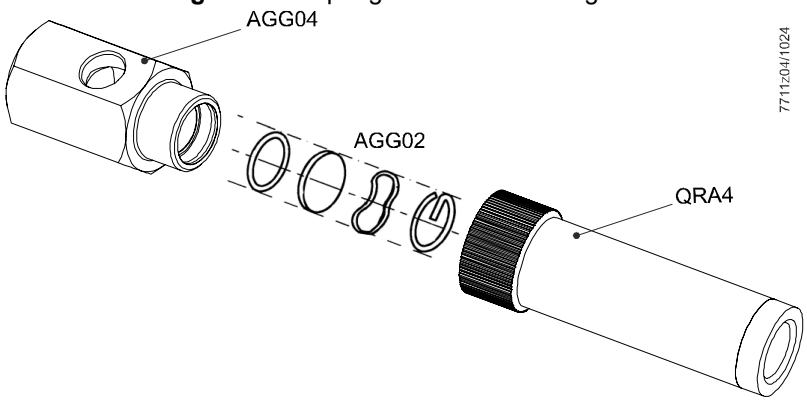
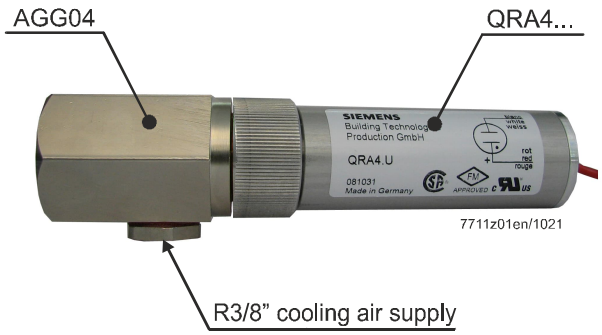
QRA4	QRA4 for frontal illumination. Aluminum housing with ¾"-14 NPSM connecting thread, for fastening the detector to the burner or boiler. Connecting wires of approx. 1.8 m in length for the electrical connection. ½"-14 NPSM thread for a fitting to fasten a flexible ½" metal conduit (e.g., Menzel) for protecting the connecting wires.

Ordering

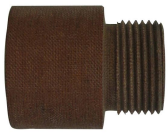
Article no.	Type	Sensitivity
BPZ:QRA4.U	QRA4.U	Normal
BPZ:QRA4M.U	QRA4M.U	High

When ordering, please give the complete type reference according.

Accessories

Article no.	Type	Designation
BPZ:AGG02	**AGG02**	**Heat insulation glass** with spring washer and O-ring 
BPZ:AGG04	**AGG04**	**Mounting coupling** Adapter of QRA4-NPSM thread for a European pipe thread (G1"). 
BPZ:AGG15	**AGG15**	**Heat insulating piece** between QRA4 and mounting coupling AGG04. (Bag with 5 pieces) 

AGG04 fastening coupling



AGG15 thermal insulator

Technical data

General unit data	Average life of UV cell	Approx. 10,000 hours at max. +50 °C, higher ambient temperatures reduce considerably the cell's life
	Perm. combustion chamber pressure	Max. 150 mbar
	Degree of protection	IP54 (to be ensured through mounting)
	Mounting position	Optional
	Weight	Approx. 180 g
	Device safety class	II (double-insulated)
	Length of connecting wires	
	• QRA4	Approx. 180 g
	• AGG02 thermal insulation glass	Approx. 10 g
	• AGG04 fastening coupling	Approx. 270 g
	• AGG15 thermal insulator	Approx. 100 g
	Conduit for protective sleeve (Menzel sleeve)	½"-14NPSM thread

Notes
Lifetime of the UV cell
UV cells and the QRA4 are subject to wear and tear and must be replaced as part of regular maintenance, at the latest at the end of the average lifetime of the UV cell. The lifetime of the UV cell corresponds to approx. 10,000 hours at a maximum of +50°C; higher ambient temperatures reduce the lifetime considerably.

Environmental conditions	**Storage**	
	Temperature range	-20...60 °C
	Humidity	<95% r.h.
	Transport	
	Temperature range	-20...60 °C
	Humidity	<95% r.h.
	Operation	
	Temperature range	-20...60 °C
	Humidity	<95% r.h.
	Installation altitude	Max. 2,000 m above sea level

Caution!
Condensation, formation of ice and ingress of water are not permitted!
If this is not observed, there is a risk of loss of safety functions and a risk of electric shock.

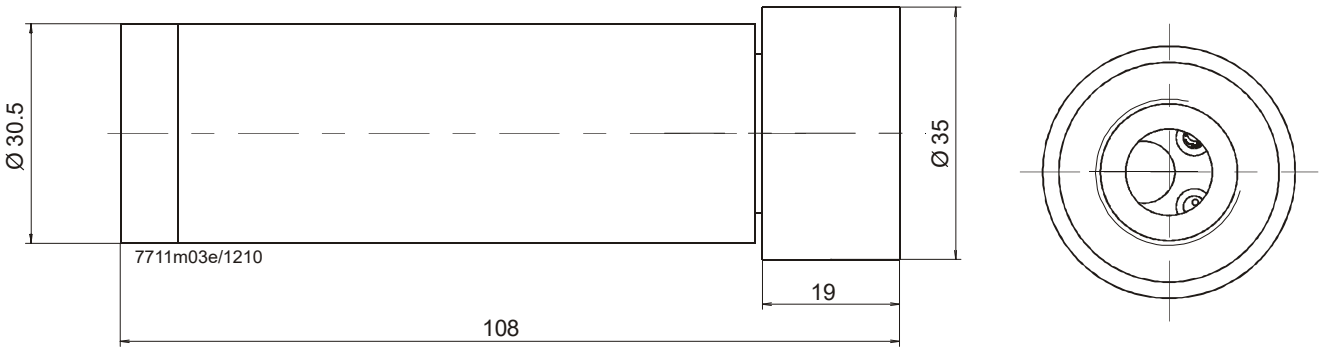
Function

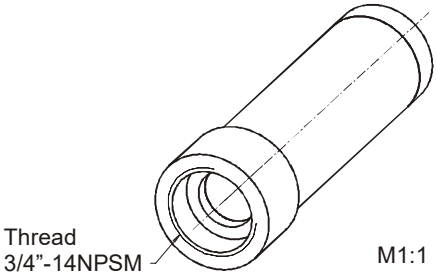
With this type of flame supervision, the UV radiation emitted by gas or oil flames is used to generate the flame signal. The radiation detector is a UV-sensitive cell with 2 electrodes, which ignite when illuminated with radiation in the 190...270 nm range of the spectrum, thereby triggering a current in the flame detector circuit. The UV cell does not respond to glowing firebrick in the combustion chamber or to daylight.

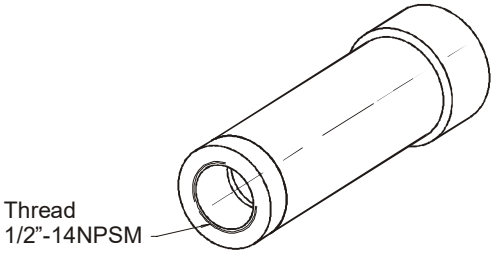
Dimensions

Dimensions in mm

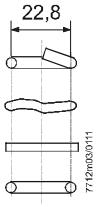
QRA4







Heat insulation glass
AGG02



Mounting coupling
AGG04