SIEMENS

7782

Flame safeguard LFS1...

Flame safeguard with approval for continuous operation for the supervision of oil flames and gas flames in applications with an ionization probe and a photocell detector RAR9. Flame safeguard for intermittent operating mode with UV flame detectors QRA2 / QRA2M / QRA4 / QRA4M / QRA10 / QRA10M.

LFS1 and this Data Sheet are intended for OEMs using the LFS1 in or on their products.

Use, features

Use

LFS1 units are designed for the supervision of oil burners and gas burners in combination with control unit LEC1, burner control LME39.xxxRP, or with programmable logic controllers. Typical fields of application range from industrial burners up to the highest security level SIL3 and in the field of ship burners.

Flame supervision:

- Takes place with photocell detector RAR9 with approval for continuous operation, in the case of LFS1.1 (firing on oil).
- Takes place with an ionization probe with approval for continuous operation or with UV flame detector QRA2 / QRA2M / QRA4 / QRA4M / QRA10 / QRA10M in intermittent operation, in the case of LFS1.2 (firing on gas).

Use, features

The flame detectors are used in conjunction with control unit LEC1 or with freely programmable controllers in the following applications:

- **Dual supervision of burners** / supervision of the main flame or of the ignition and main flame by 2 flame safeguards with the same or different flame detectors
- **Multiflame supervision** / plants with several burners whose flames must be supervised individually by one or several flame detectors, but whose startup and supervision is carried out centrally and simultaneously by only one control unit
- The flame safeguards are also used as **flame indication units** in combustion plants with manual startup

Features

- Flame signal display via multicolor LED signal lamp
- Flame signal display via DC 0...10 V output signal (display only)
- Can be parameterized via BC interface communication interface
- Potential-free signal contacts with double insulation
- Undervoltage detection

Supplementary documentation

Type (ASN)	Title	Documentation number	Document type
LEC1	Control unit	CC1N7761	Data Sheet
AGK11.7	Connection accessories for small burner controls	CC1N7201	Data Sheet
AZL21 / AZL23	Display and operating units	CC1N7542	Data Sheet
LFS1	Flame safeguard	CC1A7782	User documentation
ACS410	PC software for microprocessor controlled burner controls and flame safeguards	CC1J7352	Installation and Operating Instructions
OCI410	BC interface between flame safeguard and PC	CC1N7616	Data Sheet
OCI460	Cloud gateway	CC1N7600 *)	Data Sheet
QRA4 / QRA4M	UV flame detector	CC1N7711	Data Sheet
QRA2 / QRA2M QRA10 / QRA10M	UV flame detector	CC1N7712	Data Sheet
RAR9	Photocell detector	CC1N7713	Data Sheet

*) On request

Standards and certificates (continued)

Marine approvals:
Det Norske Veritas: Classification A A A A
Germanischer Lloyd: Classification A
Bureau Veritas EC Code: 31

SIL3 classification to EN 13611:2014:

Suitable for use in safety-related, industrial applications up to safety level SIL3 (safety integrity level 3).

The following parameters apply:

Type (ASN)	Flame detector	Operating mode	Safety integrity level up to	PFHD [1/h]	MTTFD [y]	SFF
LFS1.11A1 LFS1.11A2	RAR9	Continuous operation	SIL3	1.80E-08	6500	≥99%
LFS1.21A1 LFS1.21A2	Ionization probe	Continuous operation	SIL3	1.80E-08	6500	≥99%
LFS1.21A1 LFS1.21A2	QRA2 / QRA2M, QRA4 / QRA4M, QRA10 / QRA10M	Intermittent	SIL2	2.30E-07	510	≥99%
LFS1.21A1 LFS1.21A2	Ionization probe + QRA2 / QRA2M, QRA4 / QRA4M, QRA10 / QRA10M	Intermittent	SIL2	2.30E-07	510	≥99%

Note
The information on the safety integrity level (SIL) relates to a designed lifetime of up to 10 years.

Life cycle

The flame safeguard has a designed life cycle* of 250,000 burner startup cycles which, under normal operating conditions in heating mode and nominal switching loads, corresponds to approx. 10 years of service (starting from the date of manufacture on the nameplate). For industrial applications with reduced switching loads of a maximum of 0.1 A, the flame safeguard has an increased designed life cycle* of up to 1,000,000 burner startup cycles.

This life cycle is based on the endurance tests specified in standards EN 13611 and EN 298. A summary of the conditions has been published by the European Control Manufacturers Association (Afecor) (www.afecor.org).

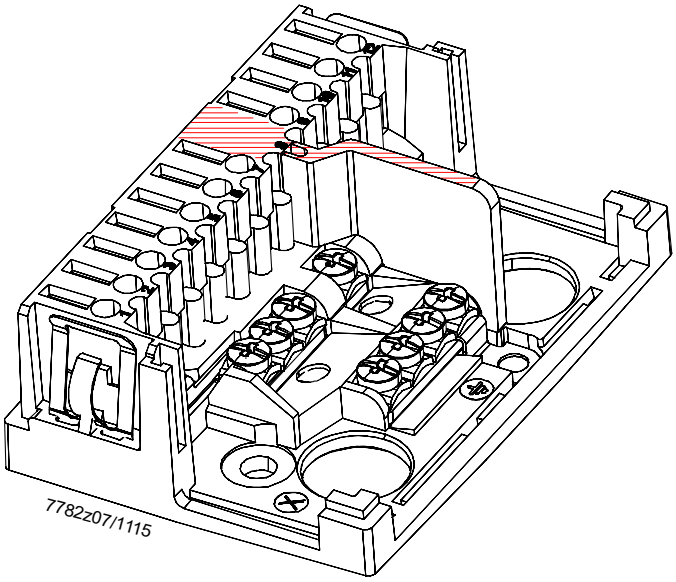
* The designed life cycle is based on use of the flame safeguard according to the manufacturer's data sheet. In this case, it is advisable to perform a safety check or replace the unit. The designed life cycle is not the warranty time specified in the Terms of Delivery.

Commissioning notes

Concerning connection diagram 7782a06, connection example of two manually operated burners: Ensure that the drop-out delay time of external relay **d** is not greater than 50 ms.

Mounting notes

- Ensure that the relevant national safety regulations are complied with
- The flame safeguards can be mounted in any position on the burner, in the control cabinets, or on the control panels
- The plug-in base AGK11.7 is available for mounting and is designed for cable entry from the front, the side, or below.
  4 earth terminals provide connections for the earth conductors of burner plant components such as the ignition transformer. The flame safeguards themselves are double-insulated; refer to the *Installation notes* chapter
- The separating plate must be connected so that it is flat/level with the plug-in base; refer to red hatched area



- The separating plate must only be plugged into terminal 8