

Application notes



For use in applications in dual-fuel burners or oil burners, the oil supply must be equipped with two shutoff valves connected in series.

Observe the following:

EN 298:2012, Section 7.101.3.3 *Prepurge time for oil burner control systems and the corresponding application standards.*

Electrical connection of flame detectors

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

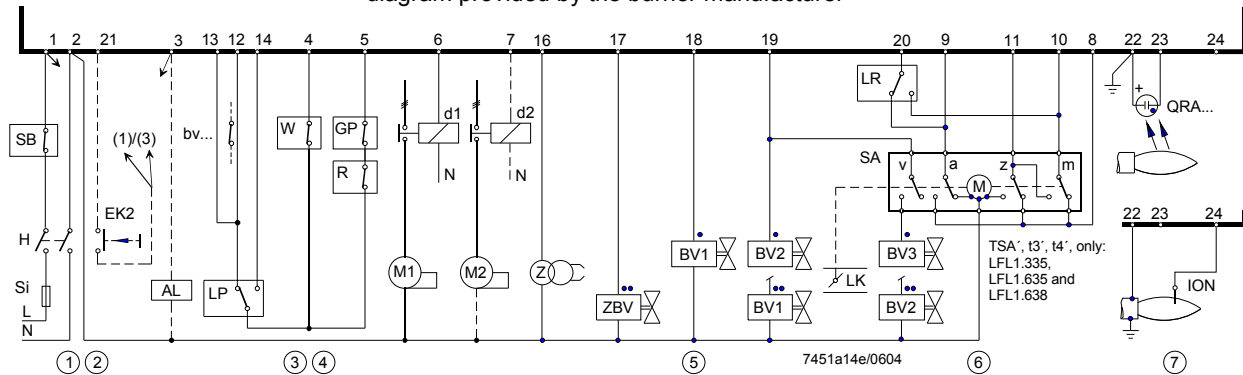
- Never run the detector cable together with other cables
 - Line capacitance reduces the magnitude of the flame signal
 - Use a separate cable
- Observe the maximum permissible detector cable lengths (refer to «Technical data»)
- 2 UV detectors QRA2 / QRA4 / QRA10 can be connected in parallel (observe the warning note)
- In connection with the QRA2 / QRA4 / QRA10, earthing of terminal 22 is mandatory
- The ionization probe is not protected against electric shock hazard
- Locate the ignition electrode and the ionization probe so that the ignition spark cannot arc over to the ionization probe (risk of electrical overloads) and that the ignition sparks cannot adversely affect the supervision of ionization
- Supervision with both ionization probe and UV detector QRA2 / QRA4 / QRA10 is possible, but for safety reasons – with the exception of the second safety time «t9»
 - only 1 flame detector may be active at a time. At the end of the second safety time, 1 of the detectors must be inactive, however, that is, the detected flame must have extinguished, e.g. by switching off the ignition valve via terminal 17

Commissioning notes

When commissioning the plant or when doing maintenance work, make the following safety checks:

	Safety check to be carried out	Anticipated response
a)	Burner start with flame detector darkened	Lockout at the end of «TSA»
b)	Burner start with flame detector exposed to extraneous light	Lockout after no more than 40 seconds
c)	Burner operation with simulated loss of flame; for that purpose, darken the flame detector in operation and maintain that state (not possible with ionization)	Lockout
d)	Burner startup with response from air pressure switch interruption	Start prevention / lockout during the prepurge time
e)	Burner operation with air pressure failure simulation	Immediate lockout

- Install switches, fuses, earthing, etc., in compliance with local regulations
- Decisive for the connection of the valves and other plant components is the plant diagram provided by the burner manufacturer



- ① Connect safety limit thermostat in the line (manual reset, e.g. «SB»)
 - ② Remote reset
When remote reset button «EK2» is connected between terminal 21 and
- terminal 3, only remote reset is possible
- terminal 1, both remote emergency shutdown and remote reset are possible
 - ③ Required switching capacities
- of the switching devices connected between terminals 12 and 4 (refer to «Technical data»)
- of the switching devices connected between terminals 4 and 14 (refer to «Technical data»)
- depending on the loads applied to terminals 16...19 (refer to «Technical data»)
 - ④ Air pressure supervision
If the air pressure is not monitored with air pressure switch «LP», terminal 4 must be connected to terminal 12, and terminal 6 to terminal 14. Terminal 13 is not used.
Control contacts of the other devices in the burner installation – if series-connected – are to be connected as follows:
- To terminal 4 or 5 → contacts which must be closed from startup to controlled shutdown → otherwise no start or shutdown
- To terminal 12 → contacts which must only be closed on startup → otherwise no start
- To terminal 14 → contacts which must be closed at the beginning of the preignition time at the latest, and which must stay closed until controlled shutdown occurs
- ☞ For use in oil applications, the oil supply must be equipped with two shutoff valves connected in series.
- Observe the following:
EN 298:2012, Section 7.101.3.3 *Prepurge time for oil burner control systems and the corresponding application standards.*
- ⑤ • Connection of fuel valves with direct spark flame burners. With 2-stage burners, «BV2» is connected in place of «BV3»
•• Connection of fuel valves with interrupted pilot burners
Direct connection of a fuel valve to terminal 20 is only permitted
- in plants with a main shutoff valve on the mains side (safety shutoff valve), which is controlled by terminal 18 or 19, and
- if 2-stage valves are used, provided they fully close when the first stage, controlled by terminal 18 or 19, is switched off
 - ⑥ For additional examples of air damper control, refer to «Connection examples». In the case of actuators with no end switch «z» for the fully CLOSED position of the air damper, terminal 11 must be connected to terminal 10 → otherwise no burner start.
 - ⑦ Simultaneous use of ionization and UV supervision is possible
For the permissible length and laying of detector cables, see *Flame supervision*