



Gas Burner Controls

LME...

Gas burner controls for the supervision of 1- or 2-stage gas burners of small to medium capacity (typically up to 350 kW), in intermittent operation.

The LME... and this Data Sheet are intended for use by OEMs which integrate the burner controls in their products.

Use, features

| | |
|-----------------|---|
| <p>Use</p> | <p>LME... burner controls are used for the startup and supervision of 1- or 2-stage gas burners in intermittent operation. The flame is supervised by an ionization probe or flame detector QRA... with ancillary unit AGQ3... or blue-burning flames with blue-flame detectors QRC...</p> <p>In terms of housing dimensions, the LME... are identical with the LGB... and LMG... burner controls (refer to «Type summary»).</p> <ul style="list-style-type: none"> - Burner controls conforming to EN 298 - For gas burners with fans conforming to EN 676 |
| <p>Features</p> | <ul style="list-style-type: none"> - Undervoltage detection - Air pressure supervision with functional check of the air pressure switch during startup and operation - Electrical remote reset facility - Multicolor indication of fault status and operational status messages - Limitation of the number of repetitions - Accurate control sequence thanks to digital signal handling - Controlled intermittent operation after 24 hours of continuous operation |

Warning notes



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

Do not to open, interfere with or modify the unit!

- All activities (mounting, installation and service work, etc.) must be performed by qualified staff
- Before making any wiring changes in the connection area of the LME..., completely isolate the burner control from the mains supply (all-polar disconnection)
- Ensure protection against electric shock hazard by providing adequate protection for the burner control's connection terminals
- Check the connecting lines of the air pressure switch for short-circuits (connection terminals 3, 6 and 11)
- Press the lockout reset button / operation button only manually (applying a force of no more than 10 N) without using any tools or pointed objects
- Fall or shock can adversely affect the safety functions. Such units must not be put into operation, even if they do not exhibit any damage
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state and make the safety checks as described in «Commissioning notes»

Engineering notes

- When used in connection with actuators, there is no position feedback signal from the actuator to the burner control
- When used in connection with actuators, the requirements of EN 676 must be observed
- The running times of the actuators must match the burner control's program. An additional safety check of the burner control together with the actuators is required
- When substituting burner controls type LGB... or LMG... by LME..., the AGQ1... or AGQ2... ancillary unit must be replaced by the AGQ3...

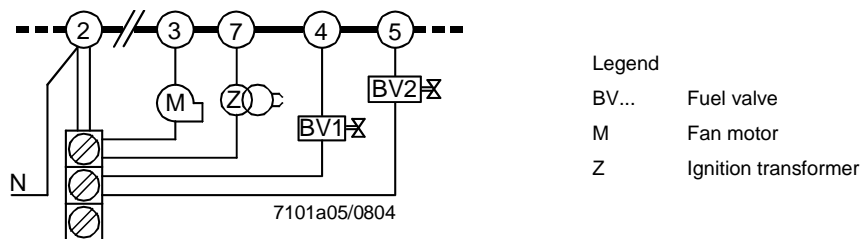
Mounting notes

- Ensure that the relevant national safety regulations are complied with

Installation notes

- Always run the ignition cables separate from the unit and other cables while observing the greatest possible distance
- Do not mix up live and neutral conductors
- Install switches, fuses, earthing, etc., in compliance with local regulations
- The connection diagrams show the burner controls with earthed neutral conductor. In networks with nonearthed neutral conductor and ionization current supervision, terminal 2 must be connected to the earth conductor via an RC unit (type reference ARC 4 668 9066 0). It must be made certain that local regulations are complied with (e.g. protection against electric shock hazard) since AC 230 V / 50 Hz mains voltage produces peak leakage currents of 2.7 mA
- Make certain that the maximum permissible current rating of the connection terminals will not be exceeded
- Do not feed external mains voltage to the control outputs of the unit. When testing the devices controlled by the burner control (fuel valves, etc.), the LME... must not be connected
- In the case of burners with no fan motor, an AGK25 must be connected to terminal 3 of the unit, or else the burner cannot reliably be started up
- For safety reasons, feed the neutral conductor to terminal 2. Connect the burner components (fan, ignition transformer and gas valves) to the neutral distributor as shown below in figure 7101a05. The connection between neutral conductor and terminal 2 is prewired in the base

Example



Legend

- | | |
|-------|----------------------|
| BV... | Fuel valve |
| M | Fan motor |
| Z | Ignition transformer |

Wiring of neutral conductors!

Electrical connection of flame detectors

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

- Never run detector cables 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»)
- The ionization probe is not protected against electric shock hazard
- Locate the high-voltage ignition electrode and the ionization probe such that the ignition spark cannot arc over to the ionization probe (risk of electrical overloads) and that it cannot adversely affect the supervision of ionization
- Insulation resistance
 - Must be a minimum of 50 M Ω between ionization probe and ground
 - Soiled detector holders reduce the insulation resistance, thus supporting creepage currents
- Earth the burner in compliance with the relevant regulations; earthing the boiler alone does not suffice

Commissioning notes

- When commissioning the plant for the first time or when doing maintenance work, make the following safety checks:

| | Safety check to be carried out | Anticipated response |
|----|---|---|
| a) | Burner startup with previously interrupted line to the flame detector | LME11...: Max. 3 repetitions LME2...: Lockout at the end of «TSA» |
| b) | Burner operation with simulated loss of flame. For that purpose, cut off the gas supply | LME11...: <ul style="list-style-type: none"> Establishment of flame at the end of «TSA» → Max. 3 repetitions No establishment of flame at the end of «TSA» → Lockout LME2...: Lockout |
| c) | Burner operation with simulated air pressure failure (not with atmospheric burners) | Immediate lockout |

Standards and certificates



Conformity to EEC directives
 - Electromagnetic compatibility EMC (immunity)
 - Directive for gas-fired appliances

89 / 336 / EEC
 90 / 396 / EEC



ISO 9001: 2000
 Cert. 00739



ISO 14001: 2004
 Cert. 38233

Identification code to EN 298

| | |
|--------------------------------|--------------------|
| LME11... | F M C L X N |
| LME21... / LME22... / LME23... | F T L L X N |
| LME44... | A M L L X N |

Service notes

- Use the KF8872 service adapter for short periods of time only

Disposal notes



The unit 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

- | | |
|----------------------------|--|
| LME... | <ul style="list-style-type: none">• Units of plug-in design like their predecessor types LGB... and LMG... (refer to «Dimensions»)• The housing is made of impact-proof, heat-resistant and flame-retarding plastic. It is of plug-in design and engages audibly in the base• The housing accommodates the<ul style="list-style-type: none">- microcontroller for the control sequence and the control relays for load control- electronic flame signal amplifier (ionization)- lockout reset button with its integrated 3-color signal lamp (LED) for operational status and fault status messages and the socket for connecting the OCI400 interface adapter |
| Indication and diagnostics | <ul style="list-style-type: none">• Multicolor indication for operational status and fault status messages• Transmission of operational status and fault status messages and detailed service information via additional OCI400 interface adapter and ACS400 / ACS410 PC Windows software |
| Versions | <ul style="list-style-type: none">• Burner capacity unlimited (thermal output on startup ≤ 120 kW)• 3 repetitions in the event of loss of flame during operation (LME11...) |

Type summary (other types of burner controls on request)

The type references given below apply to the LME... burner control without plug-in base and without flame detector. For ordering information on plug-in bases and other accessories, refer to «Ordering».

| Flame detector | Type reference | Main voltage | tw approx. s | t1 min. s | TSA max. s | t3n approx. s | t3 approx. s | t4 approx. s | t22 approx. s ²⁾ | t10 min. s ³⁾ | t11 min. s ¹⁾ | t12 min. s ¹⁾ | For replacing of |
|--|----------------|--------------|--------------|-----------|------------|---------------|--------------|--------------|-----------------------------|--------------------------|--------------------------|--------------------------|------------------------------|
| Burner controls for 1-stage burners without communication (up to 120 kW output) | | | | | | | | | | | | | |
| Ionization probe (ION) | LME11.330A2 | AC230V | 2.5 | 30 | 3 | 2 | 2 | --- | --- | 5 | --- | --- | |
| Burner controls for 2-stage burners without communication, without actuator control | | | | | | | | | | | | | |
| Ionization probe (ION) or flame detector QRA... with AGQ3... | LME21.130A1 | AC 120 V | 2.5 | 7 | 3 | 2 | 2 | 8 | --- | 5 | --- | --- | LGB21.130A27 |
| | LME21.130A2 | AC 230 V | 2.5 | 7 | 3 | 2 | 2 | 8 | --- | 5 | --- | --- | LGB21.130A27 LMG21.130A27 |
| | LME21.230A2 | AC 230 V | 2.5 | 20 | 3 | 2 | 2 | 8 | --- | 5 | --- | --- | LGB21.230A27 LMG21.230A27 |
| | LME21.330A1 | AC 120 V | 2.5 | 30 | 3 | 2 | 2 | 8 | --- | 5 | --- | --- | |
| | LME21.330A2 | AC 230 V | 2.5 | 30 | 3 | 2 | 2 | 8 | --- | 5 | --- | --- | LGB21.330A27 LMG21.330A27 |
| | LME21.350A1 | AC 120 V | 2.5 | 30 | 5 | 4 | 2 | 10 | --- | 5 | --- | --- | LGB21.350A17 |
| | LME21.350A2 | AC 230 V | 2.5 | 30 | 5 | 4 | 2 | 10 | --- | 5 | --- | --- | LGB21.350A27 LMG21.350A27 |
| | LME21.550A2 | AC 230 V | 2.5 | 50 | 5 | 4 | 2 | 10 | --- | 5 | --- | --- | LGB21.550A27 LMG22.550B27 |
| Burner controls for 2-stage burners without communication, with actuator control | | | | | | | | | | | | | |
| Ionization probe (ION) or flame detector QRA... ⁴⁾ with AGQ3... | LME22.131A2 | AC 230 V | 2.5 | 7 | 3 | 2 | 3 | 8 | --- | 3 | 12 | 12 | LGB22.130A27 LMG22.130A27 |
| | LME22.232A2 | AC 230 V | 2.5 | 20 | 3 | 2 | 3 | 8 | --- | 3 | 16.5 | 16.5 | LGB22.230A27 LMG22.230A27 |
| | LME22.233A2 | AC 230 V | 2.5 | 20 | 3 | 2 | 3 | 8 | --- | 3 | 30 | 30 | LMG22.233A27 |
| | LME22.331A1 | AC 120 V | 2.5 | 30 | 3 | 2 | 3 | 8 | --- | 3 | 12 | 12 | --- |
| | LME22.331A2 | AC 230 V | 2.5 | 30 | 3 | 2 | 3 | 8 | --- | 3 | 12 | 12 | LGB22.330A27 |
| Burner controls for 2-stage burners | | | | | | | | | | | | | |
| Blue flame detector QRC... | LME23.331A2 | AC 230 V | 2.5 | 30 | 3 | 2 | 3 | 8 | --- | 3 | 12 | 12 | LGB32.330A27 |
| | LME23.351A2 | AC 230 V | 2.5 | 30 | 5 | 4 | 1 | 10 | --- | 3 | 12 | 12 | LGB32.350A27 |

Legend

| | |
|-----|---|
| tw | Waiting time |
| TSA | Safety time |
| t1 | Prepurge time |
| t3 | Preignition time |
| t3n | Postignition time |
| t4 | Interval between ignition «Off» and «BV2» |
| t10 | Specified time for air pressure signal |
| t11 | Programmed opening time for actuator «SA» |
| t12 | Programmed closing time for actuator «SA» |
| t22 | 2nd safety time |

- 1) Max. running time available for actuator «SA»
The actuator running time must be shorter
- 2) t22 + response time of flame relay
- 3) Max. 65 s
- 4) Only used for AC 230 V





Type summary (other types of burner controls on request) [cont'd]

| Flame detector | Type reference | Main voltage | tw min. s | t1' min. s | TSA max. s | t3n approx. s | t3 approx. s | t4 approx. s | t22 approx. s | t10 min. s ²⁾ | t11 min. s ¹⁾ | t12 min. s ¹⁾ | For replacing of |
|--|----------------|--------------|-----------|------------|------------|---------------|--------------|--------------|---------------|--------------------------|--------------------------|--------------------------|------------------|
| Burner controls for atmospheric burners | | | | | | | | | | | | | |
| Ionization probe (ION) or flame detector QRA... ⁴⁾ with AGQ3... | LME44.056A2 | AC 230 V | 16 | 9 | 5 | 4 | 2 | 10 | 5 | --- | --- | --- | LGB41.255A27 |
| | LME44.057A1 | AC 120 V | 16 | 9 | 5 | 4 | 2 | 10 | 8 | --- | --- | --- | LGB41.258A17 |
| | LME44.057A2 | AC 230 V | 16 | 9 | 5 | 4 | 2 | 10 | 8 | --- | --- | --- | LGB41.258A27 |

Legend

- tw Waiting time
- TSA Safety time
- t1' Purge time
- t3 Preignition time
- t3n Postignition time
- t4 Interval between ignition «Off» and «BV2»
- t10 Specified time for air pressure signal
- t11 Programmed opening time for actuator «SA»
- t12 Programmed closing time for actuator «SA»
- t22 2nd safety time

- 1) Max. running time available for actuator «SA»
The actuator running time must be shorter
- 2) t22 + response time of flame relay
- 3) Max. 65 s
- 4) Only used for AC 230 V

| | | |
|---|---|---------------------------|
| | Gas burner control , without plug-in base | refer to «Type summary» |
| | Connection accessories for small burner controls | refer to Data Sheet N7201 |
| | - Plug-in base AGK11... | |
| | - Cable holders AGK65..., AGK66, AGK67... | |
| | - Cable strain relief elements for AGK67... | |
| | Connection accessories for small burner controls | refer to Data Sheet N7203 |
| | - Plug-in base AGK13... | |
| | - Plug-in housing AGK56... | |
| | - Accessories AGK68... | |
| | Flame detectors | |
| | - Ionization probe | supplied by thirds |
| | - Flame detector QRA2... or QRA10... | refer to Data Sheet N7712 |
| | - Blue-flame detector QRC1... | refer to Data Sheet N7716 |
| | Diagnostics tool | refer to Data Sheet N7614 |
| | - Interface adapter OCI400 | |
| | - PC Windows software ACS400 | |
| | Actuators SQN3... | refer to Data Sheet N7808 |
| | Actuators SQN7... | refer to Data Sheet N7804 |
| | Actuators SQN9... | refer to Data Sheet N7806 |
|  | RC unit | ARC 4 668 9066 0 |
| | For the supervision of ionization currents in networks with nonearthed neutral conductor | |
|  | PTC resistor (AC 230 V) | AGK25 |
| | For producing a burden on terminal 3 (on burners with no fan motor, e.g. atmospheric gas burners) | |
|  | Ancillary unit for UV supervision | |
| | - Cable length 500 mm | AGQ3.1A27 |
| | - Cable length 300 mm | AGQ3.2A27 |
| | Can be fitted under the plug-in base (for size, refer to «Dimensions») | |
|  | Service adapter | KF8872 |
| | - For checking the functioning of the burner controls on the burner plant | |
| | - Functional test with signal lamps | |
| | Note: With no load on the output terminals, the relevant signal lamp may light up. | |
| | - Detector resistance measurement with a jack of 4 mm diameter | |

Technical data

| | | |
|-------------------|--|---|
| General unit data | Mains voltage | AC 120 V +10 % / -15 % AC 230 V +10 % / -15 % |
| | Mains frequency | 50...60 Hz ±6 % |
| | Power consumption | 12 VA |
| | External primary fuse (Si) | max. 10 A (slow) |
| | Mounting position | optional |
| | Input current at terminal 12 | max. 5 A |
| | Weight | approx. 160 g |
| | Safety class | I |
| | Degree of protection | IP 40 (to be ensured through mounting) |
| | Perm. cable length terminal 1 | max. 1 m at a line capacitance of 100 pF/m (max. 3 m at 15 pF / m) |
| | Perm. cable length from QRA... to AGQ3...A27 (lay separate cable) | max. 20 m at 100 pF / m |
| | Remote reset laid separately | max. 20 m at 100 pF / m |
| | Perm. cable length terminals 8 and 10 | max. 20 m at 100 pF / m |
| | Perm. cable lengths other terminals | max. 3 m at 100 pF / m |

| Current rating | At $\cos\varphi \geq 0.6$ | At $\cos\varphi = 1$ |
|--------------------------------|--|----------------------|
| - Terminal 3 | Max. 2.7 A (15 A for max. 0.5 s → only LME2...) | Max. 3 A |
| - Terminals 4, 5, 7 and 9 (11) | Max. 1.7 A | Max. 2 A |
| - Terminal 10 | Max. 1 A | Max. 1 A |

Environmental conditions

| | |
|-----------------------|-------------------|
| Storage | DIN EN 60721-3-1 |
| Climatic conditions | class 1K3 |
| Mechanical conditions | class 1M2 |
| Temperature range | -20...+60 °C |
| Humidity | < 95 % r.h. |
| Transport | DIN EN 60 721-3-2 |
| Climatic conditions | class 2K2 |
| Mechanical conditions | class 2M2 |
| Temperature range | -20...+60 °C |
| Humidity | < 95 % r.h. |
| Operation | DIN EN 60 721-3-3 |
| Climatic conditions | class 3K3 |
| Mechanical conditions | class 3M3 |
| Temperature range | -20...+60 °C |
| Humidity | < 95 % r.h. |



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

Flame supervision with ionization probe

| | |
|---|--|
| | At mains voltage UN = AC 230 V 1) |
| Detector voltage between ionization probe and ground (AC voltmeter $R_i \geq 10 \text{ M}\Omega$) | AC 115...240 V |
| Switching threshold (limit values): Switching on (flame on) (DC ammeter $R_i \leq 5 \text{ k}\Omega$) Switching off (flame off) (DC ammeter $R_i \leq 5 \text{ k}\Omega$) | $\geq \text{DC } 1.5 \text{ }\mu\text{A}$ $\leq \text{DC } 0.5 \text{ }\mu\text{A}$ |
| Detector current required for reliable operation | $\geq \text{DC } 3 \text{ }\mu\text{A}$ |
| Switching threshold in the event of poor flame during operation (LED flashes green) | Approx. DC 5 μA |
| Short-circuit current between ionization probe and ground (AC ammeter $R_i \leq 5 \text{ k}\Omega$) | Max. AC 100...300 μA |

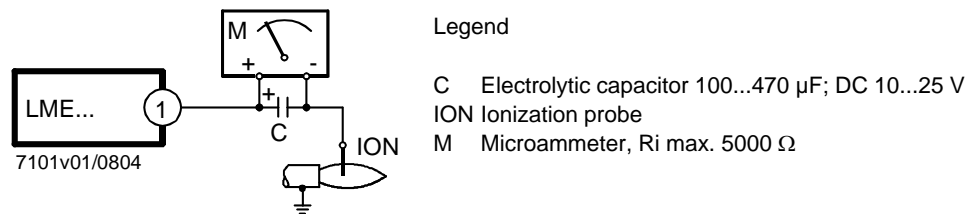
1) For applications outside the European Community, operation at mains voltage AC 230 V $\pm 10 \%$ is ensured

Note

With the same quality of flame, the detector current with the LME... may be another than that with the LMG... / LGB...

Flame supervision with ionization is accomplished by making use of the conductivity and rectifying effect of the flame. The flame signal amplifier only responds to the DC current component of the flame signal. A short-circuit between ionization probe and ground causes the burner to initiate lockout.

Measuring circuit



For detector currents, refer to « Technical data ».

Technical data (cont'd)

Flame supervision with AGQ3... and UV detector QRA...

| | |
|--|---------------------------------------|
| Mains voltage | AC 230 V +10 % / -15 % |
| Mains frequency | 50...60 Hz ±6 % |
| Perm. cable length from QRA... to AGQ3... (lay separate cable) | max. 20 m |
| Perm. cable length from AGQ3... to LME... | max. 2 m |
| Weight of AGQ3... | approx. 140 g |
| Mounting position | optional |
| Degree of protection | IP 40, to be ensured through mounting |
| Power consumption | 4.5 VA |

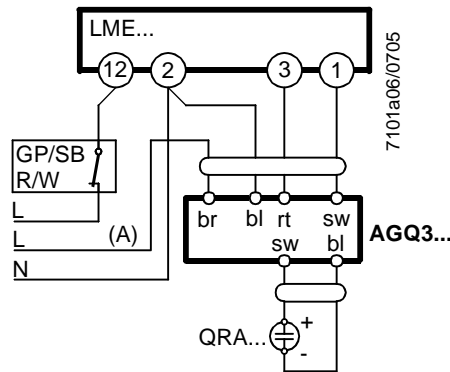
| | At mains voltage U _n | |
|--|---------------------------------|-------------------------|
| | AC 220 V | AC 240 V |
| Detector voltage at QRA... (with no load) | | |
| Terminal 3 off (refer to control sequence) | DC 400 V | DC 400 V |
| Terminal 3 on (refer to control sequence) | DC 300 V | DC 300 V |
| Detector voltage Load by DC measuring instrument R_i > 10 MΩ | | |
| Terminal 3 off (refer to control sequence) | DC 380 V | DC 380 V |
| Terminal 3 on (refer to control sequence) | DC 280 V | DC 280 V |
| DC current detector signals with UV detector QRA... | | |
| Measurement at the UV detector QRA... | Min. required 200 µA | Max. possible 500 µA |

Ancillary unit AGQ3...

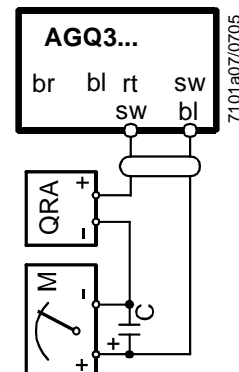
In connection with LME... burner controls, use of UV ancillary unit AGQ3... is mandatory.

- (A) Correct functioning of aged UV cells can be checked as UV test with a higher supply voltage across the UV cell after controlled shutdown until terminal 3 on.

Connection diagram



Measuring circuit for measuring the UV detector current



Measurement made at the UV detector QRA...

Legend

| | | | |
|--------|---|----|-------|
| C | Electrolytic capacitor 100...470 µF; DC 10...25 V | bl | Blue |
| M | Microammeter R _i max. 5,000 Ω | br | Brown |
| QRA... | UV detector | gr | Grey |
| GP | Gas pressure switch | rt | Red |
| SB | Safety limit thermostat | sw | Black |
| R | Control thermostat or pressurestat | | |
| W | Limit thermostat or pressure switch | | |

Flame supervision with QRC...
(only LME23...)

| | Detector current required (with flame) | Perm. detector current (without flame) | Possible detector current with flame (typically) |
|---------------|--|--|--|
| QRC... | Min. 70 μ A | Max. 5.5 μ A | Max. 100 μ A |

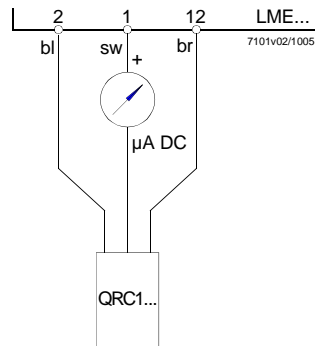
The values given in the table above only apply under the following conditions:
 - Mains voltage AC 230 V
 - Ambient temperature 23 °C

Green LED for operational status indication

| | Detector current in operation: - Flame signal instable - Green LED flashing | Detector current in operation: - Flame signal stable - Green LED steady on |
|---------------|---|--|
| QRC... | < 45 μ A | > 45 μ A |

The values given in the table above only apply under the following conditions:
 - Mains voltage AC 230 V
 - Ambient temperature 23 °C

Measuring circuit for detector current



Legend

- μ A DC DC microammeter with an internal resistance of $R_i = \text{max. } 5 \text{ k}\Omega$
- bl Blue
- sw Black
- br Brown

As an alternative to detector current measurement, the OCI400 / ACS400 diagnostics tool can be used. In that case, the DC microammeter is not required.

Functions

| | |
|--|---|
| Preconditions for burner startup | <ul style="list-style-type: none"> • Burner control must be reset • All contacts in the line are closed, request for heat • No undervoltage • Air pressure switch «LP» must be in its no-load position or CPI or wire link 2 • Fan motor or AGK25 is closed • Flame detector is darkened and there is no extraneous light |
| Undervoltage | <ul style="list-style-type: none"> • Safety shutdown from the operating position takes place should mains voltage drop below about AC 175 V (at $U_N = AC\ 230\ V$) • Restart is initiated when mains voltage exceeds about AC 185 V (at $U_N = AC\ 230\ V$) |
| Controlled intermittent operation | After no more than 24 hours of continuous operation, the burner control will initiate automatic controlled shutdown followed by a restart. |
| Reversed polarity protection with ionization | If the connections of live conductor (terminal 12) and neutral conductor (terminal 2) are mixed up, the burner control will initiate lockout at the end of «TSA». |
| Control sequence in the event of fault | If lockout occurs, the outputs for the fuel valves, the burner motor and the ignition equipment will immediately be deactivated (< 1 second). |

| Cause | Response |
|---|---|
| Mains failure | Restart |
| Voltage below undervoltage threshold | Safety shutdown |
| Voltage above undervoltage threshold | Restart |
| Extraneous light during «t1» | Lockout |
| Extraneous light during «tw» | Prevention of startup, lockout after 30 seconds at the latest |
| No flame at the end of «TSA» | LME11...: Max. 3 repetitions, followed by lockout at the end of «TSA» LME2...: Lockout at the end of «TSA» |
| Loss of flame during operation | LME11...: <ul style="list-style-type: none"> • Establishment of flame at the end of «TSA» → Max. 3 repetitions • No establishment of flame at the end of «TSA» → Lockout LME2...: Lockout |
| «LP» is welded in working position | Prevention of startup, lockout after 65 seconds at the latest |
| «LP» is welded in normal position | Lockout on completion of «t10» |
| No air pressure signal after completion «t10» | Lockout |
| «CPI» contact is open during «tw» | Prevention of startup, lockout after 60 seconds at the latest |

In the event of lockout, the LME... remains locked and the red signal lamp (LED) will light up. The burner control can immediately be reset. This state is also maintained in the case of mains failure.

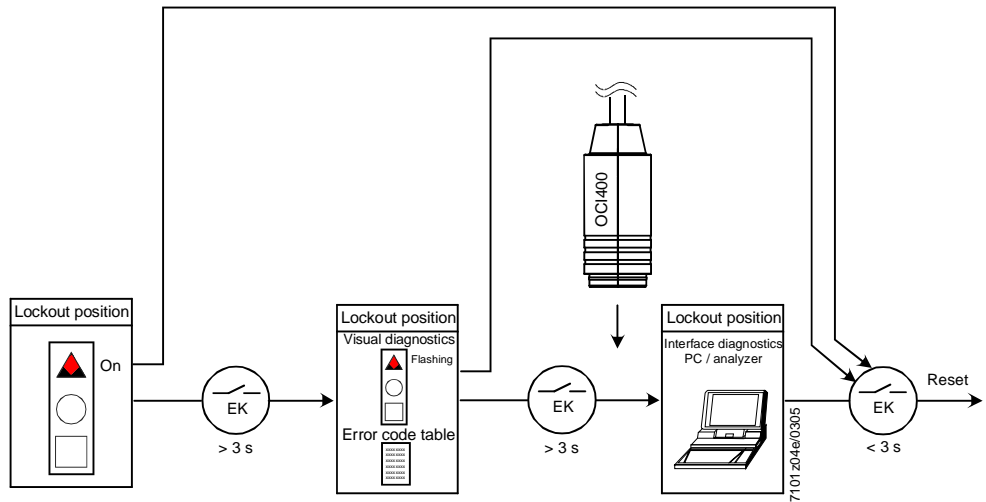
| | |
|---|---|
| Resetting the burner control | When lockout occurs, the burner control can immediately be reset. To do this, press the lockout reset button for about 1 second (< 3 seconds). The LME... can only be reset when all contacts in the line are closed and when there is no undervoltage. |
| Limitation of repetitions (only LME11...) | If no flame is established at the end of «TSA», or if the flame is lost during operation, a maximum of 3 repetitions per controlled startup can be performed via «R», or else lockout will be initiated. Counting of repetitions is restarted each time a controlled startup via «R» takes place. |

Operation, indication, diagnostics (cont'd)

Diagnostics of the cause of fault

After lockout, the red fault signal lamp will remain steady on. In that condition, visual diagnostics of the cause of fault according to the error code table can be activated by pressing the lockout reset button for more than 3 seconds. Pressing the reset button again for at least 3 seconds, interface diagnostics will be activated (for more detailed information, refer to Data Sheet N7614).

The following sequence activates the diagnostics of the cause of fault:



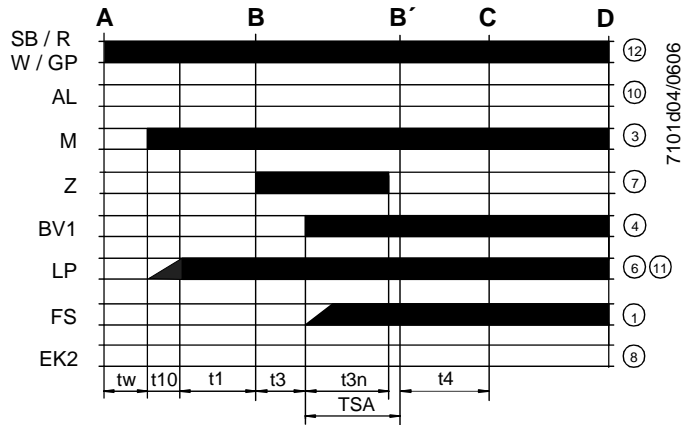
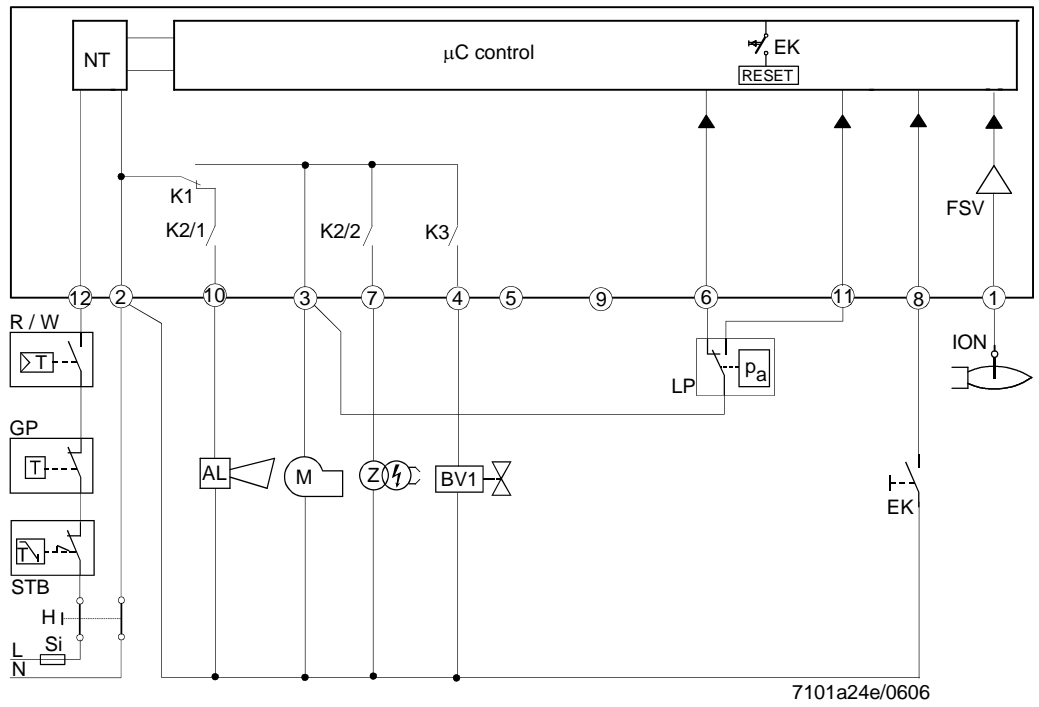
| Error code table | | |
|--|------------------|---|
| Red blink code of signal lamp (LED) | «AL» at term. 10 | Possible cause |
| 2 blinks • • | On | No establishment of flame at the end of «TSA» - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition equipment |
| 3 x blinks • • • | On | «LP» faulty - Loss of air pressure signal after «t10» - «LP» is welded in normal position |
| 4 blinks • • • • | On | Extraneous light when burner startup |
| 5 blinks • • • • • | On | Time out «LP» - «LP» is welded in working position |
| 6 blinks • • • • • • | On | Free |
| 7 blinks • • • • • • • | On | Too many losses of flame during operation (limitation of repetitions) - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner |
| 8 x blinks • • • • • • • • | On | Free |
| 9 blinks • • • • • • • • • | On | Free |
| 10 blinks • • • • • • • • • • | Off | Wiring error or internal error, output contacts, other faults |
| 14 blinks • • • • • • • • • • • • • • | On | CPI contact not closed |

During the time the cause of fault is diagnosed, the control outputs are deactivated

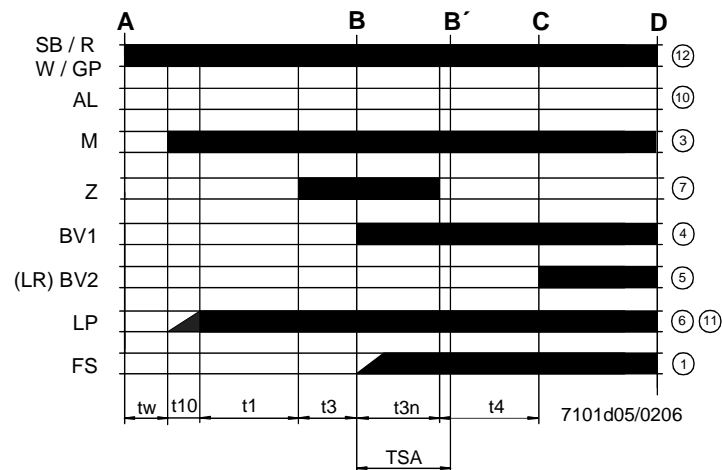
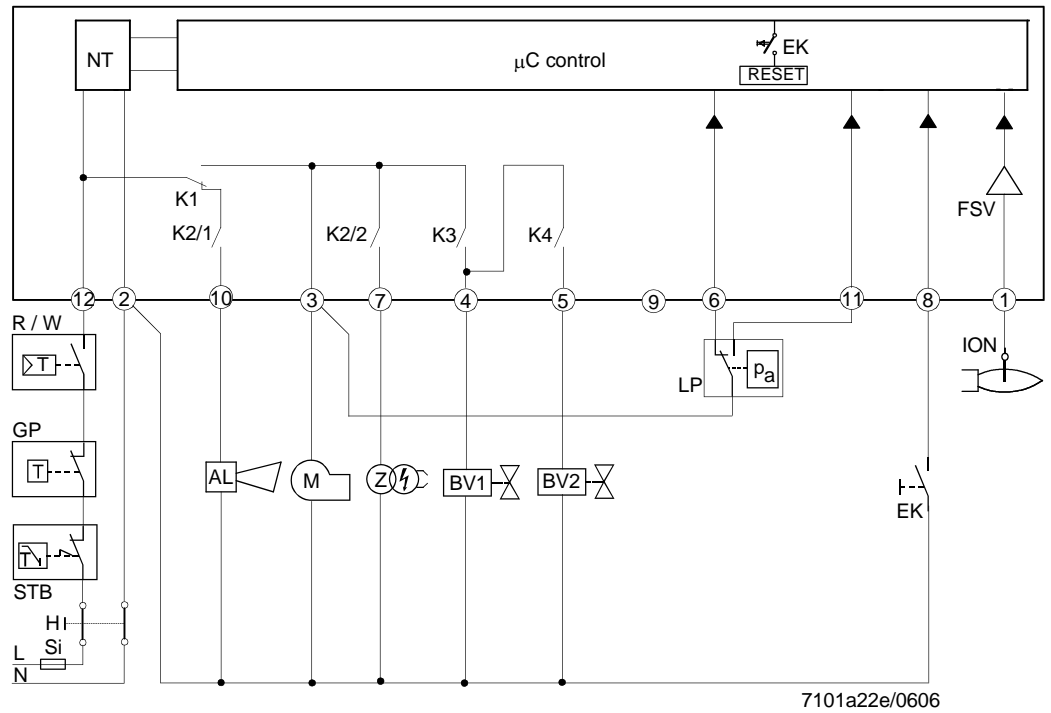
- Burner remains shut down
- External fault indication remains deactivated
- Fault status signal «AL» at terminal 10, according to the error code table

The diagnostics of the cause of fault is quit and the burner switched on again by resetting the burner control. Press the lockout reset button for about 1 second (< 3 seconds).

Connection diagram and control sequence LME11...



Connection diagram and control sequence LME21...

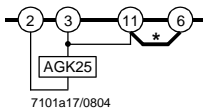


Application examples only LME11... / LME21... / LME22...

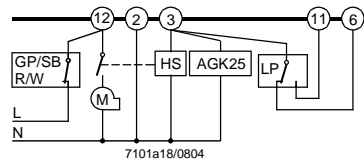


The suitable wiring schemes are merely examples which must be verified in the individual case depending on application!

Burner without fan and without «LP»



Only for burner with fan control via auxiliary contactor «HS» with «LP»



* Note: Different from LGB...

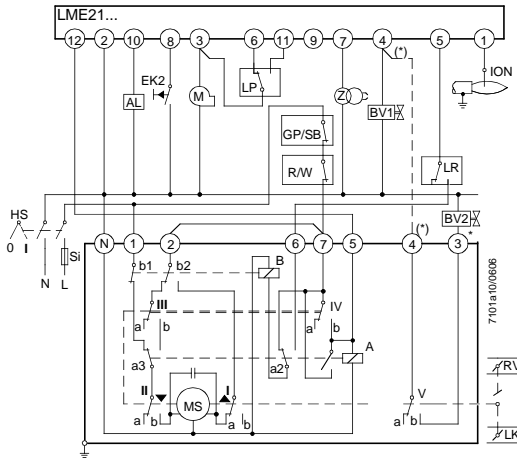
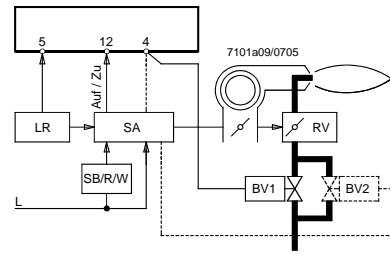
Application examples



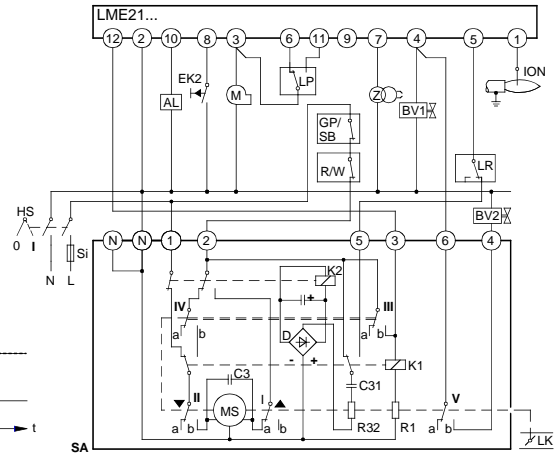
The suitable wiring schemes are merely examples which must be verified in the individual case depending on application!

Control of actuators of 2-stage or 2-stage modulating burners. Controlled prepurging «t1» with low-fire air volume. Same low-fire actuator position during startup and operation.

For information about actuators «SA»:
 SQN3...: Refer to Data Sheet N7808
 SQN7...: Refer to Data Sheet N7804
 SQN9...: Refer to Data Sheet N7806



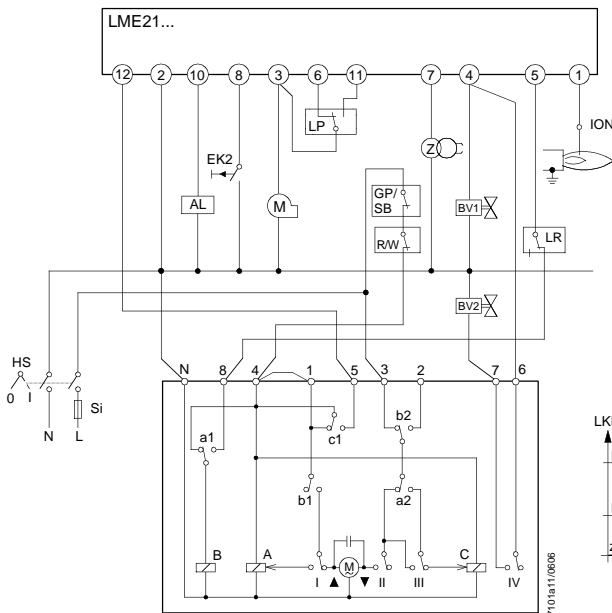
SQN3...121... / 2-stage control



SQN91.140... / 2-stage control

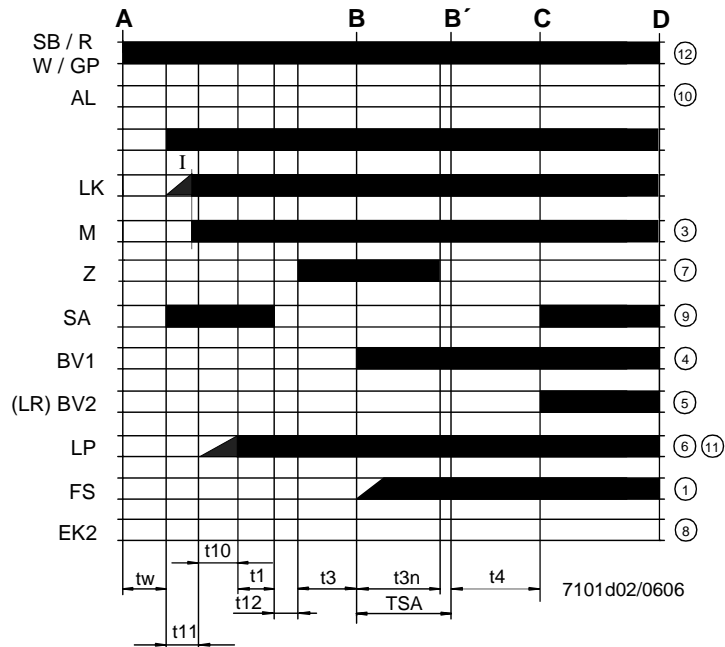
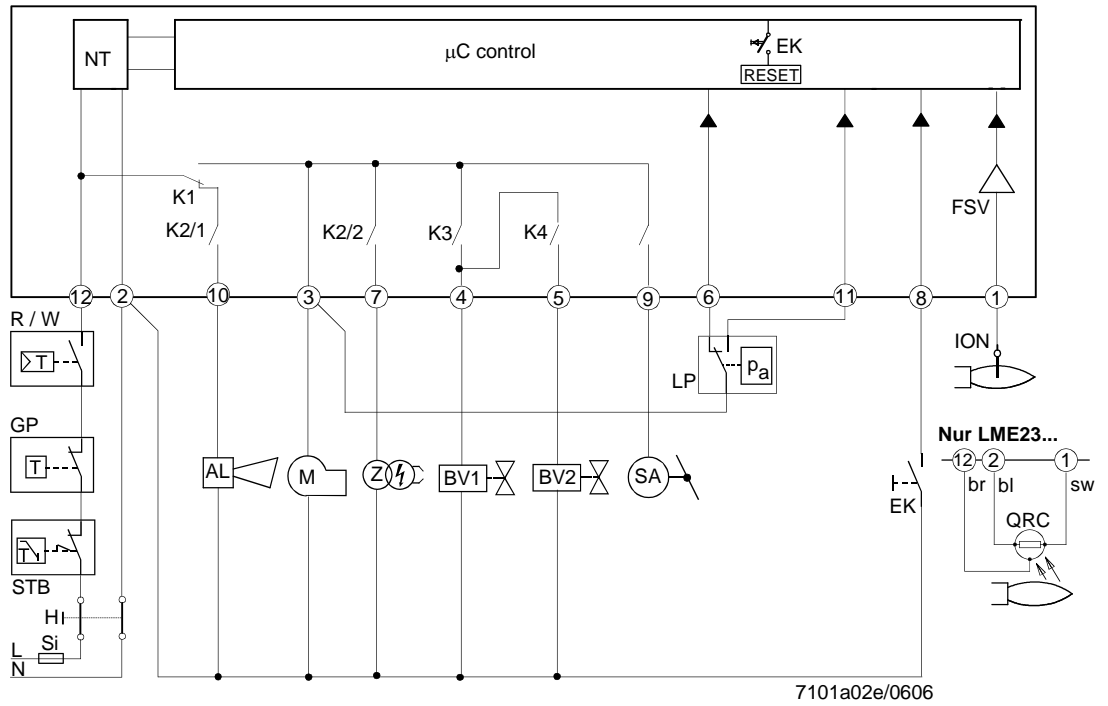
*** Note**

With 2-stage modulating burners (with gas regulation damper «RV»), «BV2» and the dotted connection between terminals (*) are not required.



SQN7...244 / 2-stage control

Connection diagram and control sequence LME22... / LME23...



Application examples



The suitable wiring schemes are merely examples which must be verified in the individual case depending on application!

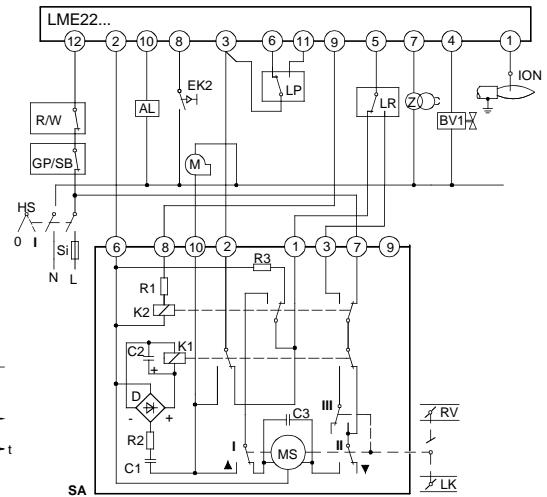
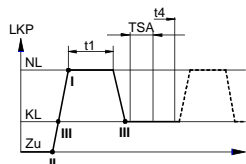
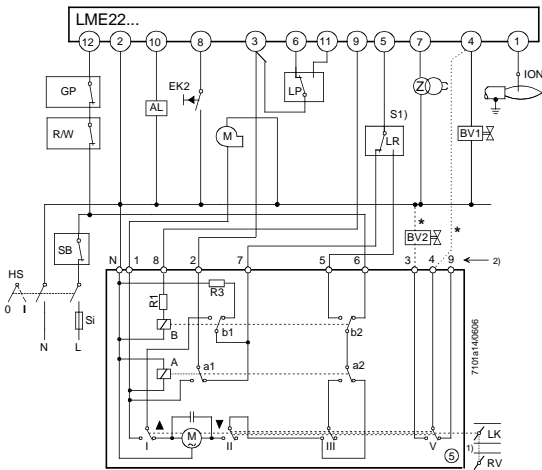
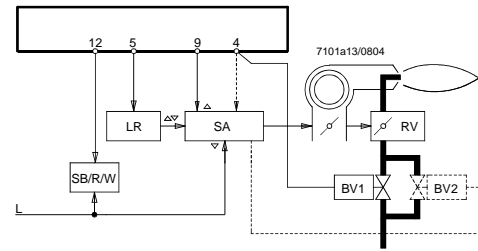
Control of actuators of 2-stage or 2-stage modulating burners. Controlled prepurging «t1» with nominal load air volume.

For information about actuators «SA»:

SQN3...: Refer to Data Sheet N7808

SQN7...: Refer to Data Sheet N7804

SQN9...: Refer to Data Sheet N7806

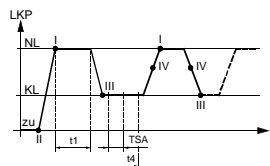
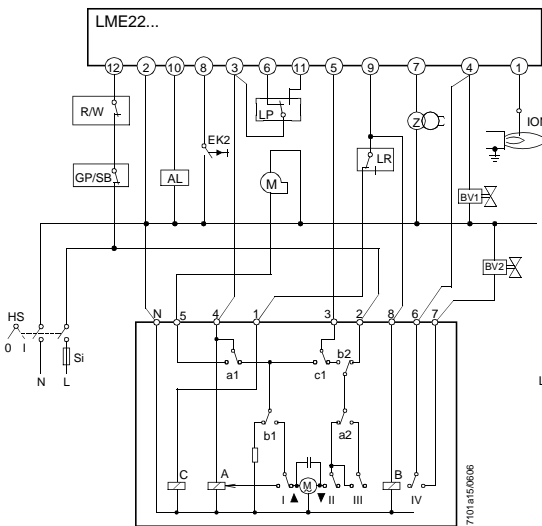


SQN3...151... or SQN3...251...

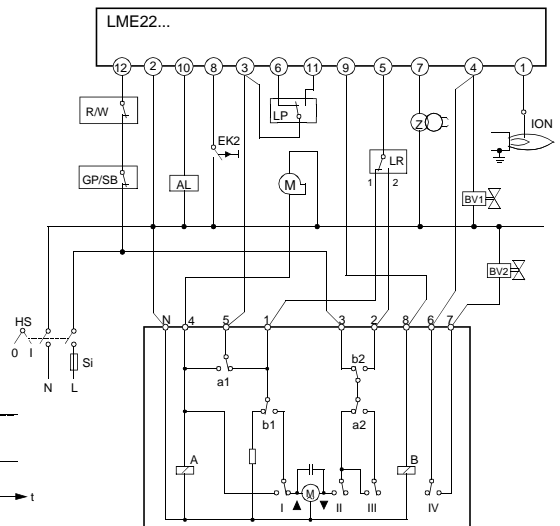
* Note

With 2-stage modulating burners (with gas regulation damper «RV»), «BV2» and the dotted connection between terminals (*) are not required.

SQN90.220... / 2-stage modulating control

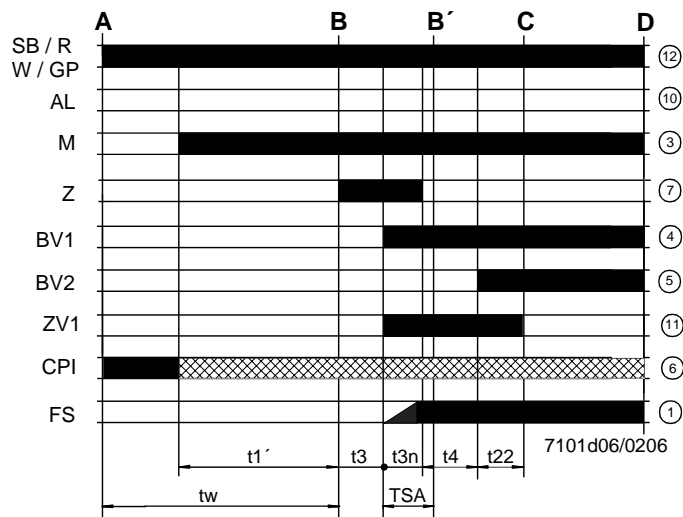
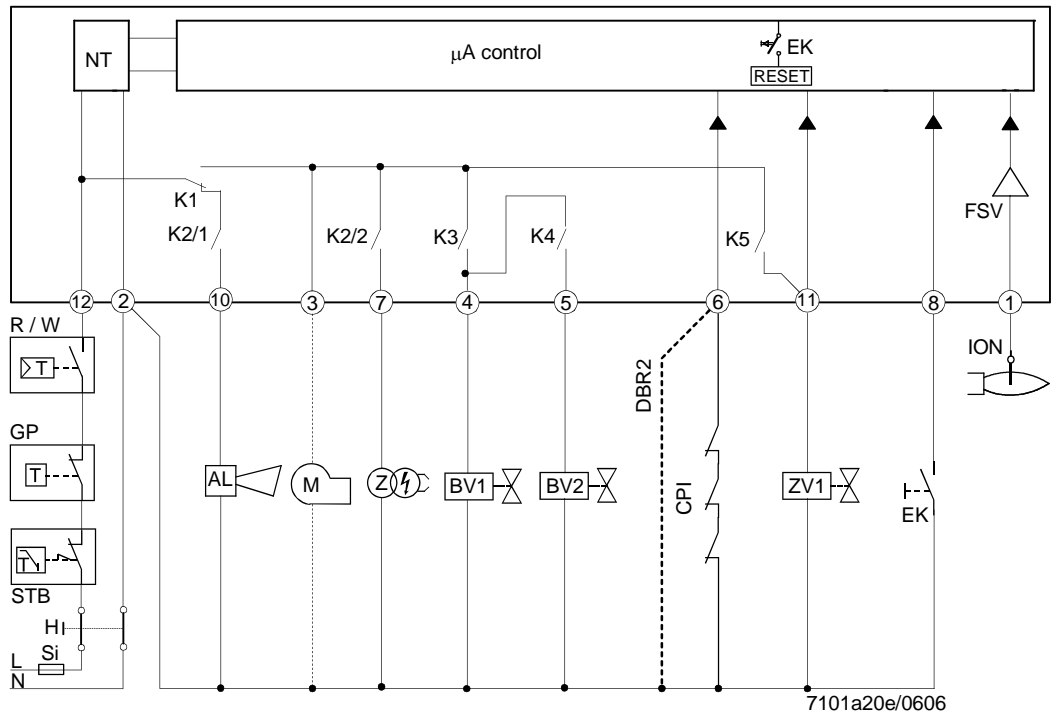


SQN7...454 / 2-stage control 1 wire control



SQN7...424 / 2-stage control 2 wire control

Connection diagram and control sequence LME44...



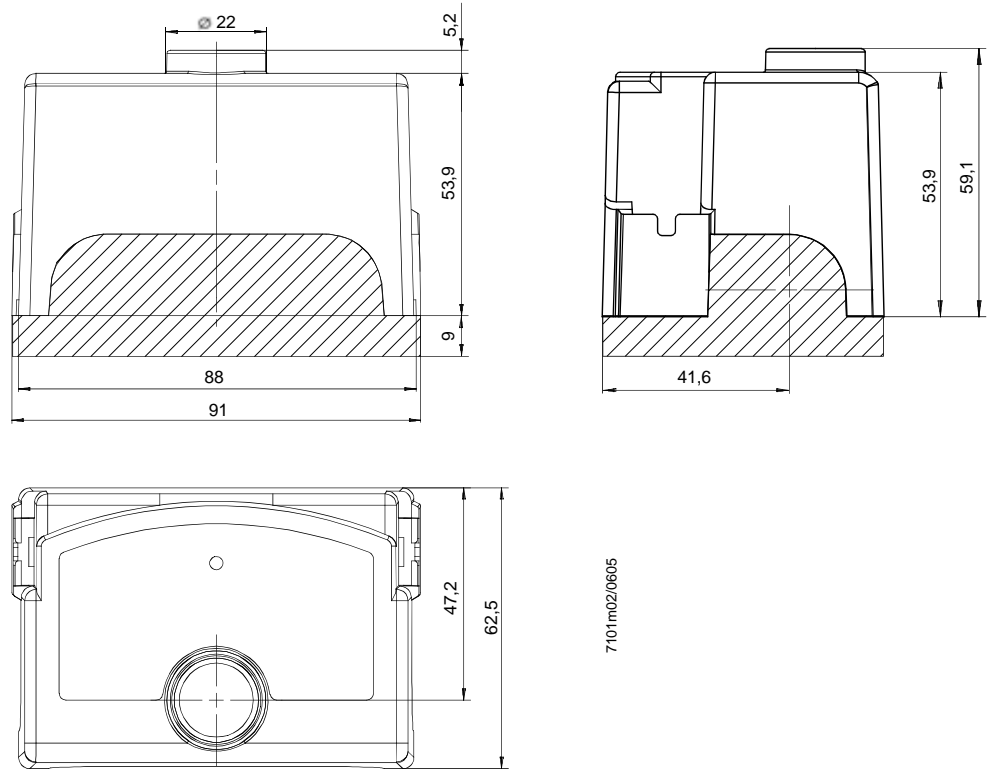
Legend

| | |
|----------|---|
| AGK25... | PTC resistor |
| AL | Error message (alarm) |
| BCI | Burner Communication Interface |
| BV... | Fuel valve |
| CPI | Closed Position Indicator |
| Dbr... | Wire link |
| EK... | Remote lockout reset button (internal) |
| EK2 | Remote lockout reset button |
| ION | Ionization probe |
| FS | Flame signal |
| FSV | Flame signal amplifier |
| GP | Gas pressure switch |
| H | Main switch |
| HS | Auxiliary contactor, relay |
| ION | Ionization probe |
| K1...5 | Internal relays |
| KL | Low-fire |
| LK | Air damper |
| LKP | Air damper position |
| LP | Air pressure switch |
| LR | Load controller |
| M | Fan motor |
| MS | Synchronous motor |
| NL | Nominal load |
| NT | Power supply |
| QRA... | Flame detector |
| QRC... | Blue-flame detector |
| | bl blue |
| | br brown |
| | sw black |
| R | Control thermostat / pressurestat |
| RV | Gas regulation damper |
| SA | Actuator SQN... |
| SB | Safety limit thermostat |
| STB | Safety limit thermostat |
| Si | External fuse |
| t | Time |
| W | Limit thermostat / pressure switch |
| Z | Ignition transformer |
| ZV | Pilot gas valve |
| A | Start command (switching on by «R») |
| B-B' | Interval for establishment of flame |
| C | Operating position of burner reached |
| C-D | Burner operation (generation of heat) |
| D | Controlled shutdown by «R» |
| | <ul style="list-style-type: none">• Burner will immediately be shut down• Burner control will immediately be ready for new startup |
| I | Cam I actuator |
| t1 | Prepurge time |
| t1' | Purge time |
| t3 | Preignition time |
| t3n | Postignition time |
| t4 | Interval between ignition «Off» and release of «BV2» |
| t10 | Specified time for air pressure signal |
| t11 | Programmed opening time for actuator «SA» |
| t12 | Programmed closing time for actuator «SA» |
| t22 | 2 nd safety time |
| TSA | Ignition safety time |
| tw | Waiting time |

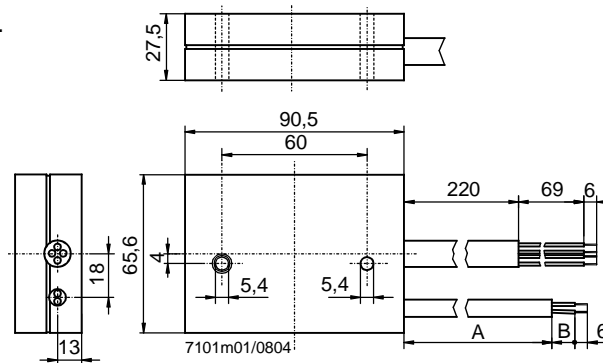
Dimensions

Dimensions in mm

LME...



Ancillary unit AGQ3...



| Type reference | Dimensions | |
|----------------|------------|----|
| | A | B |
| AGQ3.1A27 | 500 | 19 |
| AGQ3.2A27 | 300 | 34 |