



ISO 9001



## Burner Controls

## LMG2...



**Burner controls for the supervision of single- or two-stage forced draught gas or gas / oil burners of small to medium capacity (typically up to 350 kW) in intermittent operation.**

**The burner controls are certified to EN 230 and EN 298.**

**They carry the CE mark based on the directives for gas appliances and electromagnetic compatibility.**

**The LMG2... and this data sheet are intended for use by OEMs which integrate the burner controls in their products.**

### Use

Burner controls of the LMG2... range are used for the startup and supervision of single- or two-stage gas or gas / oil burners in intermittent operation.

The flame is supervised with a detector electrode or UV flame detector QRA... (with ancillary unit AGQ2...A27).

LMG21... / LMG22... in the same housing replace burner controls LGB21... / LGB22... (refer to «Type summary») and, with the help of the respective adapters, burner controls LF17... and LFM1... (refer to «Ordering»).

Application-specific features:

- Detection of undervoltages
- Air pressure supervision with function check of air pressure monitor during startup and operation
- Electric remote reset
- Indication of error code and flame signal by means of LEDs in the lockout reset button
- Precise program times thanks to the digital processing of signals

#### Available versions

- **LMG21... / LMG22...** For unlimited burner capacities (output on startup  $\leq 120$  kW)  
Locking in the event of loss of flame during operation
- **LMG25...** For burner capacities  $\leq 120$  kW  
Three repetitions in the event of loss of flame during operation

## Warning notes



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

- It is not permitted to open, interfere with or modify the unit!
- Before performing any wiring changes in the connection area of the LMG2..., the burner control must be completely isolated from the mains supply!
- Check wiring and all safety functions!  
⇒ Risk of explosion
- Press lockout reset button / operating button **only** manually (applying a force of no more than 10 N), **without** using any tools or pointed objects!
- Check the connecting wires of the air pressure monitor for short-circuits (terminals 3, 6 and 11)!

## Engineering notes

- On applications with actuators, the actuator does not feed a position checkback signal to the burner control.  
The actuator running times must be matched to the burner control's program. An additional safety check of the burner with the actuator must be made!

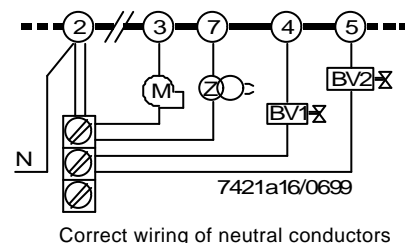
## Mounting notes

- The relevant national safety regulations must be complied with!
- Locate the ignition and detector electrode such that
  - the ignition spark cannot arc over to the detector electrode!⇒ Risk of electric overloads
  - the ignition spark cannot adversely affect ionization supervision!

## Installation notes

- Installation and commissioning work may **only** be carried out by qualified staff!
- Observe the permissible length of the detector cables!  
⇒ Refer to «Technical data»
- Always run ignition cables separate from the unit and other cables while observing the greatest possible distances!
- Before putting the burner control into operation, check wiring carefully!
- Install switches, fuses, earthing, etc., in compliance with local regulations!
- The connection diagrams shown apply to burner controls with earthed neutral. In the case of ionization current supervision in networks with **non-earthed** neutral, terminal 2 **must** be connected to the earth conductor via an RC unit (part no. ARC 4 668 9066 0)!
- **Do not exceed** the maximum permissible switching capacity of the connection terminals!
- **No** mains voltage **may** feed back to the control's output terminals from an external supply or source.  
When checking the functioning of devices controlled by the burner control (gas valves, etc.), the burner control **may never** be plugged in!
- In the case of burners with no fan motor, an AGK25 **must** be connected to terminal 3 of the burner control, or else the burner cannot reliably be started up!
- For safety reasons, feed the neutral conductor to terminal 2.  
As shown below, the burner components (fan, ignition transformer and gas valves) must be connected to the neutral distributor!  
The connection between neutral distributor and terminal 2 is prewired.

## Example



## Electrical connection of ionization current and UV detectors

### It is important to achieve practically loss-free signal transmission

- The cable length may not exceed 20 m
- Never run the detector cable together with other cables
  - Line capacitances reduce the magnitude of the flame signal
  - Use a separate cable
- Insulation resistance
  - Between detector electrode and ground: minimum 50 MΩ
  - Soiled detector electrode holders reduce insulation resistance, thus supporting creepage currents
- Earth the burner in compliance with the relevant regulations; earthing the boiler alone does not suffice
- Observe the polarity  
Burner controls LMG2... detect wrong polarity of live and neutral, in which case they initiate lockout at the end of «TSA»

## Mechanical design

### Burner controls LMG2...

- Plug-in design like predecessor type LGB2... (refer to «Dimensions»)
- Housing made of impact-proof, heat-resistant plastic
- Housing accommodates the
  - control of the microcontroller with PCB relay for load control
  - electronic flame signal amplifier (ionization)
  - lockout reset button with integrated red fault indication lamp and green flame signal lamp

### Plug-in base

- Made of impact-proof, heat-resistant plastic
- Available with screw terminals AGK11
- Cable entry optionally
  - from the front or laterally by means of cable gland holders AGK65 or cable holders AGK66
  - from below through two holes of 16.2 mm dia.
- Provided with catches on the two narrow sides which engage in the burner control's housing
  - must audibly click when plugging in the LMG2...
  - to disengage, a screwdriver must be **slightly** tilted in the guiding slots; then, the burner control slightly lifts
- For length and width of plug-in base and positions of fixing holes, refer to «Dimensions»

## Type summary

The type references contained in the following table refer to LMG2... with **no** plug-in base and **with no** flame detector. For ordering information on bases and other accessories, refer to «Ordering».

Type of flame detector	Type reference LMG2...	tw s min. <sup>1)</sup>	t1 s min.	TSA s max.	t3n s ca.	t3 s ca.	t4 s ca.	t10 s min. <sup>1)</sup>	t11 s max. <sup>2)</sup>	t12 s max. <sup>2)</sup>	Behavior in the event of flame fail. dur. operat.
<b>Burner controls for pre-purging with low flame air volume, without actuator control</b>											
Detector electrode (FE) or	LMG21.130A27 <sup>3)</sup>	2.5	7	3	2	2	8	5	-	-	Lockout
	LMG21.230A27 <sup>4)</sup>	2.5	20	3	2	2	8	5	-	-	Lockout
UV detector QRA... with	LMG21.330A27 <sup>4)</sup>	2.5	30	3	2	2	8	5	-	-	Lockout
	LMG21.350A27 <sup>4)</sup>	2.5	30	5	4	2	10	5	-	-	Lockout
AGQ2...A27	LMG21.550A27 <sup>4)</sup>	2.5	50	5	4	2	10	5	-	-	Lockout
<b>Burner controls for pre-purging with nominal air volume, with actuator control</b>											
Detector electrode (FE) or	LMG22.130A27 <sup>3)</sup>	2.5	7	3	2	3	8	3	12	12	Lockout
	LMG22.230A27 <sup>4)</sup>	2.5	20	3	2	3	8	3	16.5	16.5	Lockout
UV detector QRA... with	LMG22.233A27	2.5	20	3	2	3	8	3	30	30	Lockout
	LMG22.330A27 <sup>4)</sup>	2.5	30	3	2	3	8	3	12	11	Lockout
AGQ2...A27	LMG22.330A270 <sup>4)5)</sup>	2.5	30	3	2	3	8	3	12	11	Lockout
<b>Burner controls for pre-purging with low flame air volume, without actuator control</b>											
Detector electrode (FE) or	LMG25.230A27	2.5	20	3	2	2	8	5	-	-	Max. 3 repet.
	LMG25.330A27	2.5	30	3	2	2	8	5	-	-	Max. 3 repet.
UV detector QRA... with	LMG25.350A27	2.5	30	5	4	2	10	5	-	-	Max. 3 repet.
AGQ2...A27											

Legend	tw	Waiting time	t4	Interval «TSA <sub>Ende</sub> -BV2» or «BV1-LR»
	t1	Checked pre-purge time	t10	Specified time for air pressure signal
	TSA	Ignition safety time	t11	Programmed opening time for actuator «SA»
	t3	Pre-ignition time	t12	Programmed closing time for actuator «SA»
	t3n	Ignition time during «TSA»		
	1)	Max. 65 s	4)	Also suited for use with direct fired air heaters
	2)	Max. running time available for actuators «SA», the actuator's running time must be shorter	5)	Without integral fuse; use only in connection with bases AGK86... or with an external microfuse of max. 6.3 A (slow)
	3)	Also suited for use with flash-steam generators		


## Ordering

<b>Burner control</b>	refer to «Type summary»
<b>Flame detectors</b>	
– Detector electrode	delivered by others
– UV detector QRA...	refer to data sheet 7714
<b>Plug-in base with screw terminals</b>	<b>AGK11</b>
<b>Cable gland holder</b>	<b>AGK65</b>
– For inserting in the plug-in base	
– For 5 x Pg11, one each on the narrow sides, three on the wide side	
<b>Cable holder</b>	<b>AGK66</b>
– For inserting in the plug-in base	
– With six knockout holes for cable entries (without cable tension relief)	
- 1 x 8.8 mm dia. and 1 x 17 mm dia. (laterally)	
- 3 x 7 mm dia. (on the front)	
- 1 x rectangular opening 6 x 20 mm (on the front)	
<b>Pedestal</b>	<b>AGK21</b>
– For increasing the height to that of the LFM... or LFI7... (refer to «Dimensions»)	
<b>RC unit</b>	<b>ARC 4 668 9066 0</b>
For supervision of the ionization current in networks with a <b>non</b> -earthed neutral	
<b>PTC resistor (AC 230 V)</b>	<b>AGK25</b>
To generate load on terminal 3 (used with burners with no fan motor, e.g. atmospheric gas burners)	
<b>Ancillary unit for UV supervision</b>	<b>AGQ2.1A27</b> (cable length 500 mm) <b>AGQ2.2A27</b> (cable length 300 mm)
Can be fitted under the plug-in base; for dimensions, refer to «Dimensions»	
<b>Actuators</b> (refer to data sheet 7808)	<b>SQN3...</b>
<b>Actuators</b> (refer to data sheet 7804)	<b>SQN7...</b>
<b>Actuators</b> (refer to data sheet 7806)	<b>SQN9...</b>
<b>Service adapter</b>	<b>KF8872</b>
For checking the functioning of the burner controls on the burner plant	
– Functional check with indicator lamps	
<u>Note:</u> with no load on the output terminals, the respective indicator lamp may light up!	
– Detector current measurement with jacks of 4 mm dia.	
<b>Test case</b>	<b>KF8843</b>
For checking the functioning of the burner controls away from the burner	
<b>Adapter / replacement types</b>	
<b>No rewiring required</b>	

New type of burner control	Adapter type	Predecessor type
LMG21... with adapter	KF8853-K	LFI7...
	KF8880	LFM1... / 1...-F
LMG22... with adapter	KF8853-K	LFI7...
	KF8880	LFM1...

## Technical data

### LMG2...

Operating voltage	AC 230 V +10 % / -15 %	Weight	
Mains frequency	50...60 Hz ±6 %	- Burner control	approx. 158 g
Power consumption	12 VA	- Plug-in base AGK11	approx. 80 g
Primary fuse	max. 10 A (slow)	- AGK65...	approx. 12 g
Mounting position	optional	- AGK66...	approx. 12 g
Input current at terminal 12	max. 5 A	Degree of protection	IP 40
<b>Environmental conditions</b>		perm. cable length terminal 1	
<b>Transport</b>	IEC 721-3-2	max. 1 m at 100 pF / m	
Climatic conditions	class 2K2	(max. 3 m at 15 pF / m)	
Temperature range	-40...+60 °C	perm. cable length terminals 8 and 10	
Humidity	< 95 % r.h.	max. 20 m at 100 pF / m	
Mechanical conditions	class 2M2	perm. cable length other terminals	max. 3 m at 100 pF / m
<b>Operation</b>	IEC 721-3-3	<b>Identification code to EN 298</b>	
Climatic conditions	class 3K5	<b>LMG21... / LMG22...</b>	<b>F T L L X N</b>
Temperature range	-20...+60 °C	<b>LMG25...</b>	<b>F T C L X N</b>
Humidity	< 95 % r.h.	<b>CE conformity</b>	
 <b>Condensation, formation of ice and ingress of water are not permitted!</b>		According to the directives of the European Union	
		Electromagnetic compatibility EMC	
		89 / 336 EEC incl. 92 / 31 EEC	
		Directive for gas appliances	90 / 396 EEC

Terminal rating	At cos φ ≥ 0.6	At cos φ = 1
- Terminal 3	max. 2.7 A (15 A during max. 0.5 s)	max. 3 A
- Terminals 4, 5 and 7	max. 1.7 A	max. 2 A
- Terminal 10	max. 1 A	max. 1 A

### Flame supervision with detector electrode

	At mains voltage U <sub>N</sub> = AC 230 V
Detector voltage across terminals 1 and 2 or ground (AC voltmeter R <sub>i</sub> ≥ 10 MΩ)	AC 115...230 V
Switching thresholds (limit values)	
Switching on (flame on) DC ammeter, R <sub>i</sub> ≤ 5 kΩ	≥ DC 1 μA
Switching off (flame off) DC ammeter, R <sub>i</sub> ≤ 5 kΩ	≤ DC 0.5 μA
Requested sensor current for reliable operation	≥ 2 μA
Max. short-circuit current across terminals 1 and 2 or ground (AC ammeter, R <sub>i</sub> ≤ 5 kΩ)	AC 50 μA



#### Note:

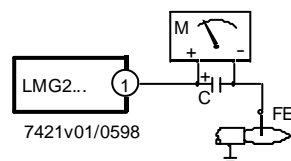
**With the same flame quality, the detector current with LMG2... is lower than with LGB2...!**

**Flame supervision takes place** by making use of the conductivity and rectifying effect of hot flame gases.

The **flame signal amplifier** responds **only** to the **DC current component** of the flame signal.

⇒ A short-circuit between detector electrode and ground causes the burner to initiate lockout

### Measurement circuit



For detector currents, refer to «Technical data».

### Legend

C	Electrolytic capacitor 100...470 μF; DC 10...25 V
FE	Detector electrode
M	Micrometer (R <sub>i</sub> max. = 5000 Ω)

## Flame supervision with AGQ2...A27 and UV detector QRA...

Operating voltage	AC 230 V +10 % / -15 %	Max. permissible cable lengths	
Mains frequency	50...60 Hz ±6 %	QRA... to AGQ2...A27 (separate cable)	20 m
		AGQ2...A27 to LMG2...	20 m
<b>Environmental conditions</b>			
<b>Transport</b>		IEC 721-3-2	Weight
Climatic conditions	class 2K2	AGQ2...A27	approx. 140 g
Temperature range	-40...+60 °C	QRA...	refer to data sheet 7714
Humidity	< 95 % r.h.		
<b>Mechanical conditions</b>		class 2M2	Mounting position
<b>Operation</b>		IEC 721-3-3	optional
Climatic conditions	class 3K5		Degree of protection
Temperature range	-20...+60 °C		IP 40
Humidity	< 95 % r.h.		Power consumption
			4.5 VA

At mains voltage U <sub>n</sub>		
	AC 220 V	AC 240 V
<b>Detector voltage at QRA... (with no load)</b>		
To the end of «t10» and after a controlled shutdown	DC 400 V	DC 400 V
From the beginning of «t1»	DC 300 V	DC 300 V
<b>Detector voltage Loading by DC meter R<sub>i</sub> &gt; 10 MW</b>		
To the end of «t10» and after a controlled shutdown	DC 380 V	DC 380 V
From the beginning of «t1»	DC 280 V	DC 280 V
<b>DC current detector signals with UV detector QRA...</b>	min. required	max. possible
Measurement made on UV detector	200 µA	500 µA

For UV detector QRA..., refer to data sheet 7712

### Ancillary unit AGQ2...A27

When used in connection with burner controls LMG2..., the UV ancillary unit AGQ2...A27 is required.

Using circuitry (A) or (B), the quench test on aging UV detectors can be made in two different ways:

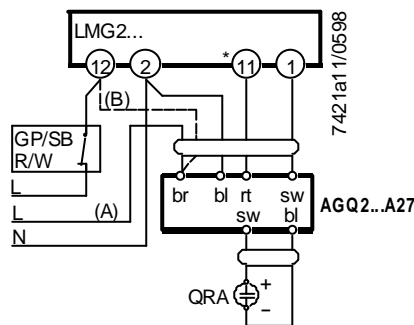
Legend

Type of circuitry:

- (A) Operation with a permanent line
- UV test at twice the supply voltage across the UV cell on startup and after a controlled shutdown

- (B) Operation with a controlled line
- UV test at twice the supply voltage on startup **only**, during the interval between controlled startup and air pressure signal
    - No voltage at the UV cell after a controlled shutdown
    - No** full substitute for mode (A) described above since an aged UV cell can regenerate itself

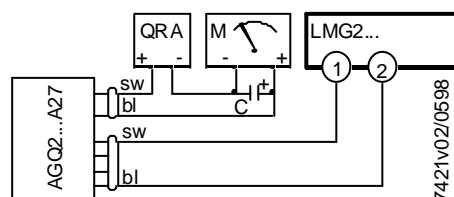
Connection diagram



AGQ2.1A27  
AQG2.2A27

Measurement circuit

Measurement made on UV detector

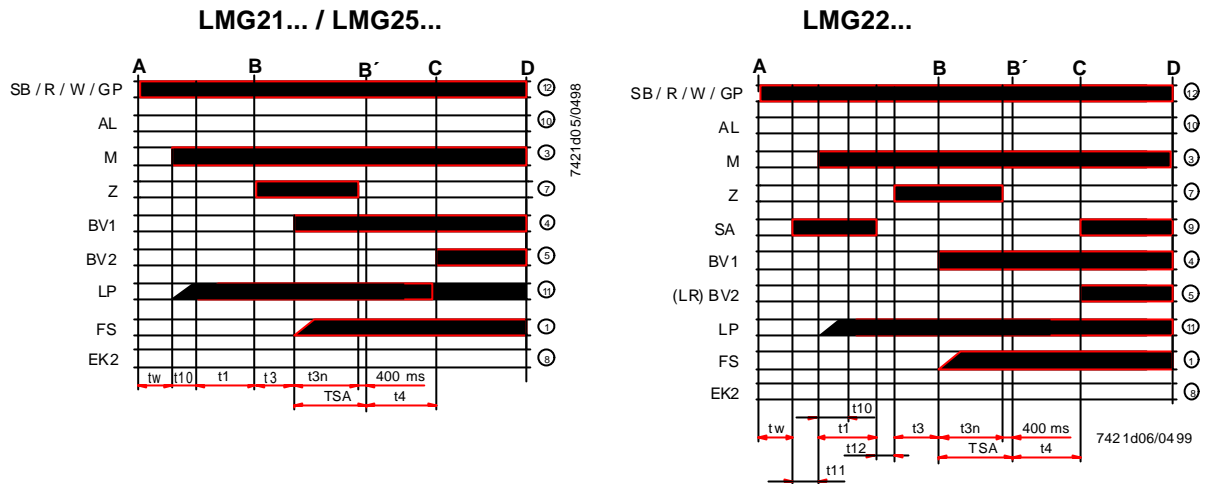


Legend

- C Electrolytic capacitor 100...470 µF; DC 10...25 V  
 bl blue  
 sw black  
 gr gray

- M Micrometer R<sub>i</sub> max. 5000 Ω  
 QRA... UV detector

## Functions



### Legend

A	Start command (switching on by «R»)	B-B'	Interval for establishment of flame
C	Operating position of burner reached	C-D	Burner operation (heating production)
D	Controlled shutdown by «R»		
	<ul style="list-style-type: none"> <li>• Burner is immediately shut down</li> <li>• Burner control is immediately ready for new startup</li> </ul>		
AL	Fault status signal (alarm)	M	Fan motor
BV...	Fuel valve	R	Control thermostat / pressurestat
EK2	Remote reset button	SA	Actuators
FS	Flame signal	SB	Safety limit thermostat
GP	Gas pressure monitor	W	Limit thermostat / pressure monitor
LP	Air pressure monitor	Z	Ignition transformer
LR	Load controller		

### Prerequisites for startup

- Burner control is reset
- All contacts in the line are closed
- Fan motor «M» or AGK25 is connected
- Air pressure monitor «LP» is in idle position
- No undervoltage

### Undervoltage

Safety shutdown in the event

- the mains voltage is lower than typically AC 160 V
- a restart is made when the mains voltage exceeds AC 195 V

### Checked intermittent operation

After no more than 24 hours of continuous operation, the burner control initiates a safety shutdown, followed by a restart.

### Reversed polarity protection

If the connections of line (terminal 12) and neutral (terminal 2) have been exchanged, the burner control will initiate lockout at the end of «TSA».

### Control program in the event of fault

- If a fault occurs, all outputs will immediately be deactivated (< 1 s)
- On restoration of power, a restart will be made with the full program sequence
- If the operating voltage drops below the undervoltage threshold (for threshold, refer to «Functions»), a restart will be made with the full program sequence
- If there is a premature faulty flame signal during «t1» ⇒ Lockout
- If the contact of the air pressure monitor «LP» has welded in the working position: prevention of startup and, after 65 seconds, lockout
- If the contact of the air pressure monitor «LP» has welded in the idle position: lockout at the end of «t10»
- If there is no air pressure on completion of «t10» ⇒ Lockout
- If the burner does not ignite during «TSA» ⇒ Lockout
- If flame is lost during operation
  - ⇒ LMG21... / LMG22... lockout
  - ⇒ LMG25... three repetitions

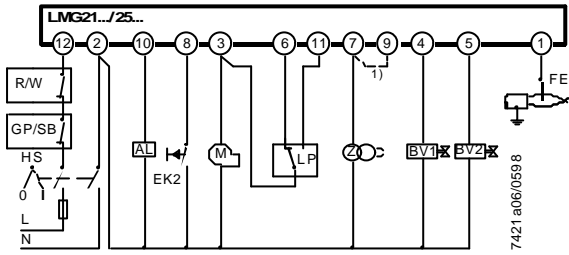
### Lockout

Lockout cannot be changed and takes place 10 seconds after safety shutdown. A mains voltage failure during that period of time leads to a restart.

### Resetting the LMG2...

When lockout occurs, the burner control can immediately be reset! In that case, keep lockout reset button depressed for a minimum of 0.5 seconds and a maximum of 3 seconds!

# Connection diagram LMG21... / LMG25...



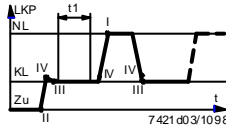
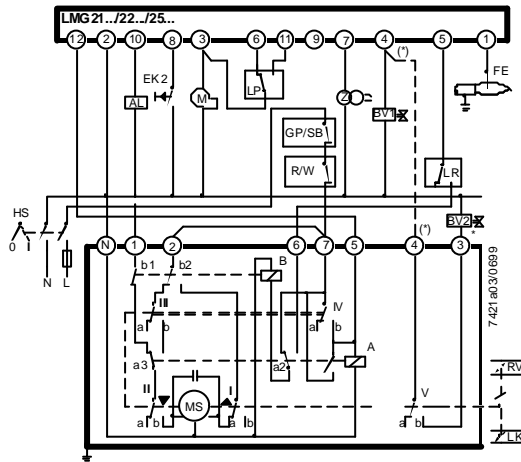
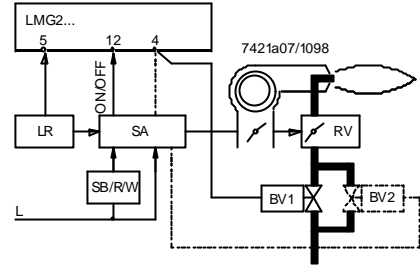
1) Wire link required only with LGB21...., not with LMG21... / LMG25...

## Application examples

Control of actuators of two-stage or two-stage modulating burners.  
Checked pre-purging «t1» with low flame air volume.  
Exactly the same low flame actuator positions during startup and operation!

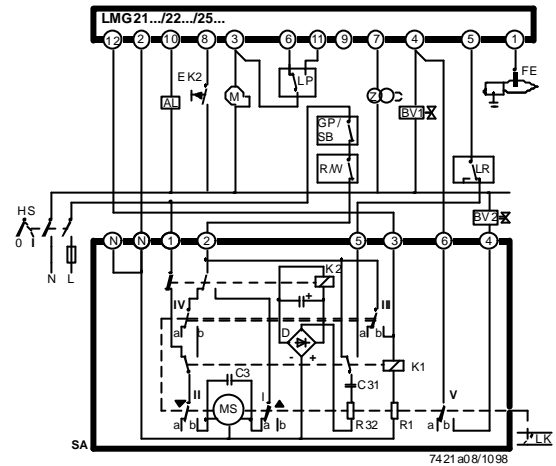
For information about actuators «SA»:

- SQN3...: refer to data sheet 7808
- SQN7...: refer to data sheet 7804
- SQN9...: refer to data sheet 7806

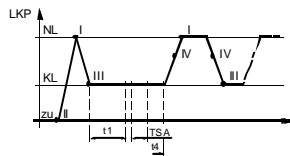
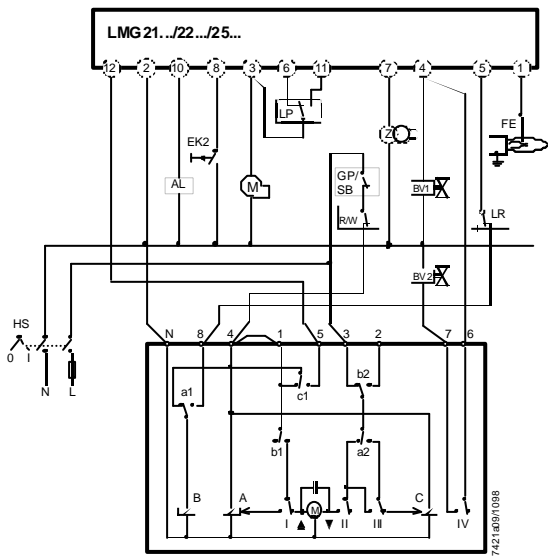


**SQN3...121... / two-stage control**

\* **Note:** with two-stage modulating burners (with gas regulation damper «RV»), «BV2» and the dotted connection between terminals (\*) are not required



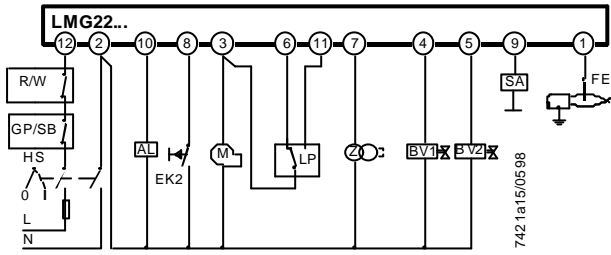
**SQN91.140... / two-stage control**



**SQN7...244 / two-stage control**



# Connection diagram LMG22...

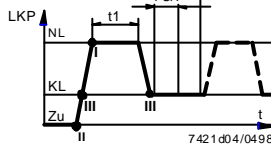
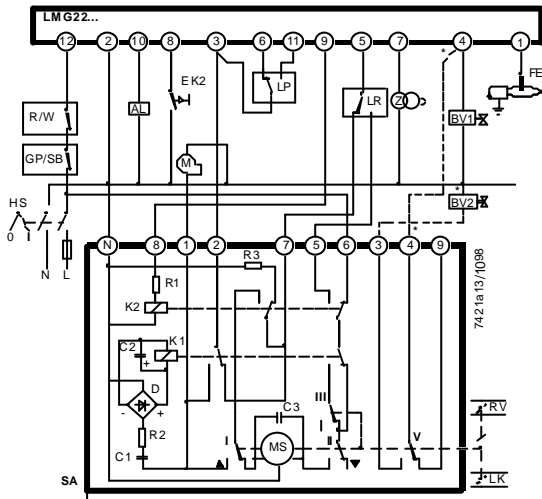
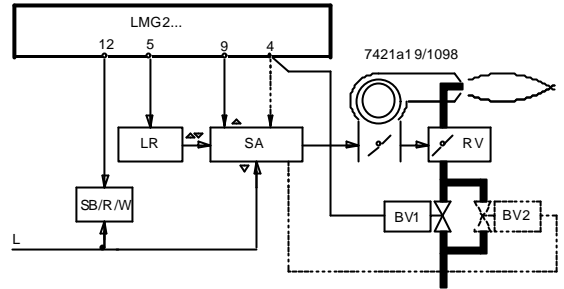


## Application examples

Control of actuators of two-stage or two-stage modulating burners.  
Checked pre-purging «t1» with nominal load air volume.

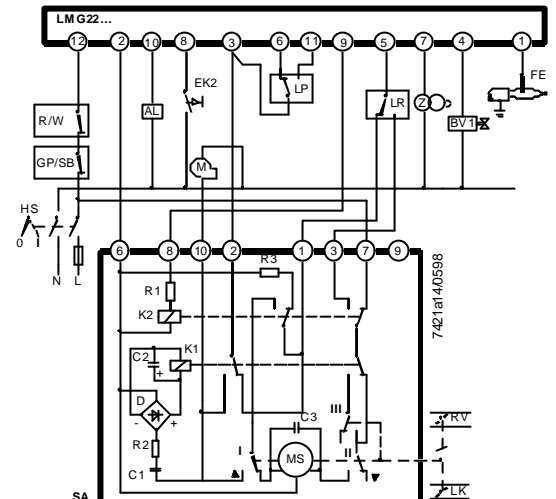
For information about actuators «SA»:

- SQN3...: refer to data sheet 7808
- SQN7...: refer to data sheet 7804
- SQN9...: refer to data sheet 7806

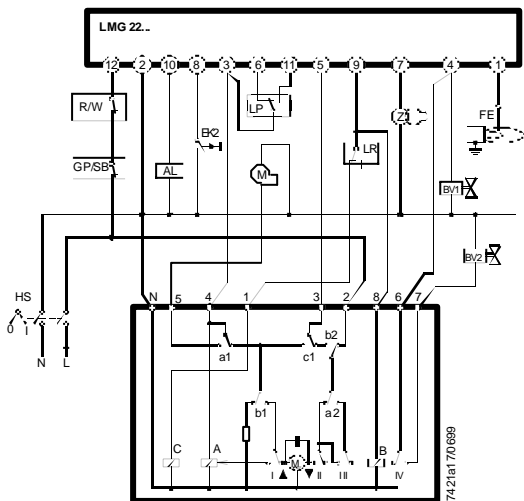


### SQN3...151... or SQN3...251...

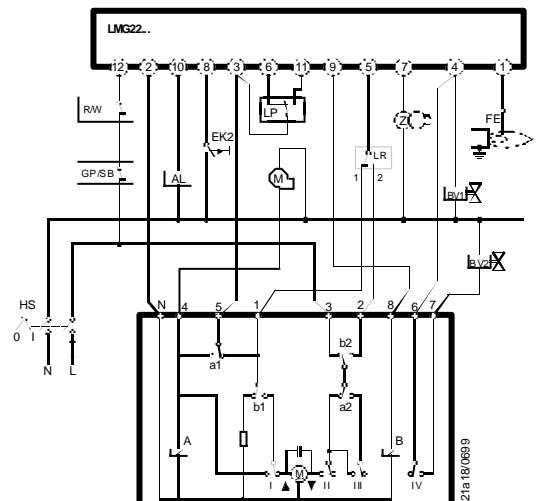
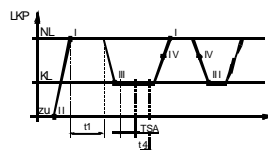
\* **Note:** with two-stage modulating burners (with gas regulation damper «RV»), «BV2» and the dotted connection between terminals (\*) are not required



### SQN90.220... / two-stage modulating control



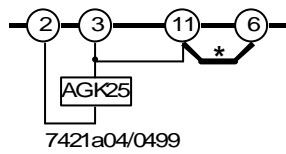
### SQN7...454 / two-stage control, single-wire control



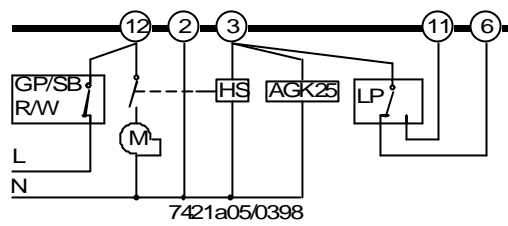
### SQN7...424 / two-stage control, two-wire control

## Other application examples

Burner without fan assistance and **without «LP»**



Burner with fan control via auxiliary contactor «HS» **with «LP»**

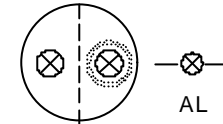
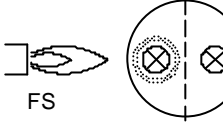


\* **Note:** different from LGB2...

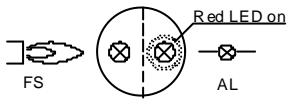
### Legend

AGK25...	PTC resistor	LP	Air pressure monitor
AL	Fault status signal (alarm)	LR	Load controller
BV...	Fuel valve	M	Fan motor
Dbr...	Wire link	MS	Synchronous motor
EK2	Remote lockout reset button	NL	Nominal load
FE	Detector electrode	QRA...	UV detector
FS	Flame signal	R	Control thermostat / pressurestat
GP	Gas pressure monitor	RV	Gas regulation damper
HS	Main switch	SA	Actuator SQN...
K1...4	Internal relays	SB	Safety limit thermostat
KL	Low flame	t	Time
LK	Air damper	W	Limit thermostat / pressure monitor
LKP	Air damper position	Z	Ignition transformer

## Operating concept

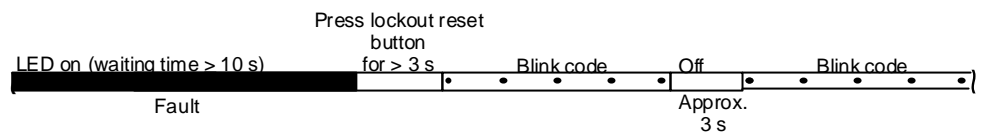
<ul style="list-style-type: none"> <li>• Burner control has initiated lockout ⇒ Red fault LED on</li> </ul> 	<ul style="list-style-type: none"> <li>• Reset Press lockout reset button for 0.5...3 s</li> <li>• Diagnosis of cause of fault <ul style="list-style-type: none"> <li>– Wait &gt; 10 s</li> <li>– Press lockout reset button for &gt; 3 s</li> <li>– Read blink code of red fault LED ⇒ «Error code table»</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Burner control in operation ⇒ Green flame signal LED on</li> </ul> 	<ul style="list-style-type: none"> <li>• Restart Press lockout reset button for 0.5...3 s</li> <li>• Read flame establishment time <ul style="list-style-type: none"> <li>– Press lockout reset button for &gt; 3 s</li> <li>– Read blink code of green flame signal LED ⇒ «Error code table»</li> </ul> </li> </ul>

## Diagnosis of cause of fault



After lockout, the red fault LED is steady on.

For reading the cause of fault, refer to the blink code given in the following table:



Error code table	
Blink code	Possible cause
2 x blink ••	<ul style="list-style-type: none"> <li>• No establishment of flame at the end of «TSA» <ul style="list-style-type: none"> <li>– Faulty or soiled detector electrode</li> <li>– Faulty or soiled fuel valves</li> <li>– Poor adjustment of burner</li> </ul> </li> </ul>
3 x blink •••	<ul style="list-style-type: none"> <li>• Air pressure monitor does not close <ul style="list-style-type: none"> <li>– «LP» faulty</li> <li>– «LP» incorrectly adjusted</li> <li>– Fan motor does not run</li> </ul> </li> </ul>
4 x blink ••••	<ul style="list-style-type: none"> <li>• Air pressure monitor does not open or extraneous light on burner startup <ul style="list-style-type: none"> <li>– «LP» faulty</li> <li>– «LP» incorrectly adjusted</li> </ul> </li> </ul>
5 x blink •••••	<ul style="list-style-type: none"> <li>• Extraneous light during pre-purging <ul style="list-style-type: none"> <li>– Or internal device fault</li> </ul> </li> </ul>
7 x blink ••••••	<ul style="list-style-type: none"> <li>• Loss of flame during operation <ul style="list-style-type: none"> <li>– Poor adjustment of burner</li> <li>– Faulty or soiled fuel valves</li> <li>– Short-circuit between detector electrode and ground</li> </ul> </li> </ul>
8...17 x blink ••••••• ..... ••••••• •••••••	<ul style="list-style-type: none"> <li>• Free</li> </ul>
18 x blink •••••••• ••••••••	<ul style="list-style-type: none"> <li>• Air pressure monitor opens during pre-purging or operation <ul style="list-style-type: none"> <li>– «LP» incorrectly adjusted</li> <li>– Four times loss of flame during operation (LMG25)</li> </ul> </li> </ul>
19 x blink ••••••••• •••••••••	<ul style="list-style-type: none"> <li>• Faulty output contact <ul style="list-style-type: none"> <li>– Wiring error</li> <li>– External power supply on output terminal</li> </ul> </li> </ul>
20 x blink •••••••••• ••••••••••	<ul style="list-style-type: none"> <li>• Internal device fault</li> </ul>

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

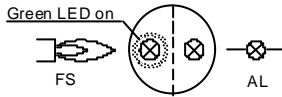
– The burner remains shut down

– Exception: fault status signal «AL» at terminal 10

The burner is switched on only after a reset is made.

– Press lockout reset button for 0.5...3 seconds

## Interrogation of flame establishment time

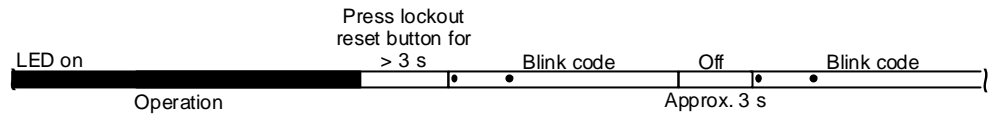


This function measures the flame establishment time with ionization supervision.

With the AGQ2..., this function cannot be used.

In the running position, the green flame signal LED is steady on.

The flame establishment time is read in the running position according to the following sequence:



When reading the flame establishment time, the burner is put out of operation.

Reading is in the form of a blink code as multiples of 0.4 s.

Diagnostics table		
Blink code	Flame establishment time with «TSA» = 3 s	Flame establishment time with «TSA» = 5 s
1 x blink •	≤ 0.4 s	≤ 0.4 s
2 x blink ••	≤ 0.8 s	≤ 0.8 s
7 x blink •••••••	≤ 2.8 s	≤ 2.8 s
12 x blink •••••••••••••• ••	---	≤ 4.8 s

- The flame establishment time is the period of time from the moment «BV1» opens to the moment the flame signal is detected for the first time
- The flame establishment time remains stored for one startup sequence and is re-ascertained the next time the burner is started up
- During the period of time the flame establishment time is interrogated, the fault status outputs are deactivated:
  - Burner remains shut down  
It is restarted only after a reset is made
  - Press lockout reset button for 0.5...3 seconds

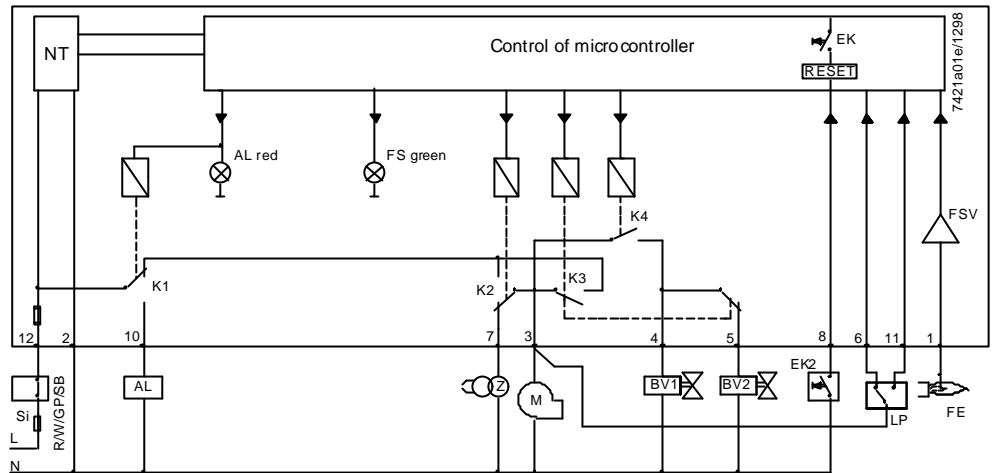


### Note:

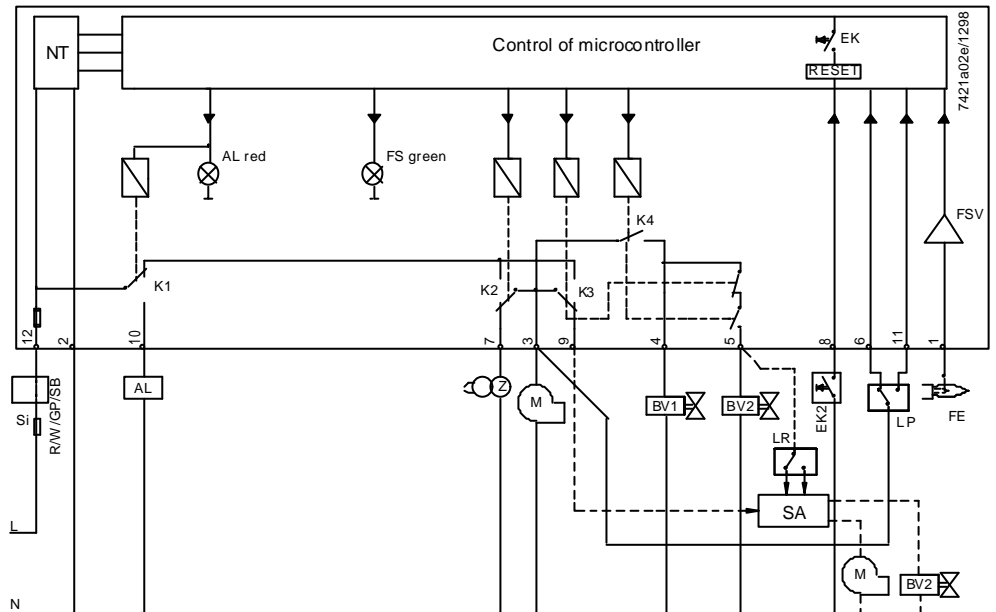
If ignition and ionization electrode are not correctly located, ignition effects on the detector electrode may lead to incorrect measurements.

# Internal diagram

## LMG21... / LMG25...



## LMG22...

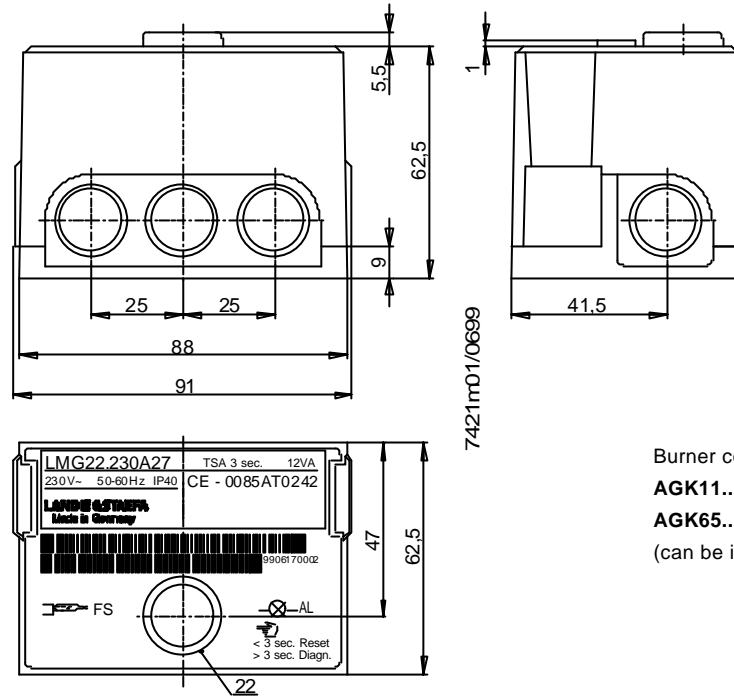


### Legend

EK	Lockout reset button (internal)	NT	Power section
FSV	Flame signal amplifier	Si	Fuse

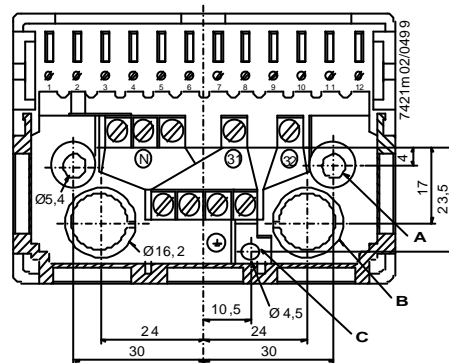
## Dimensions Burner control

Dimensions in mm



Burner control with plug-in base  
**AGK11...** and cable gland holders  
**AGK65...**  
(can be inserted in the base)

## Plug-in base



### AGK11...

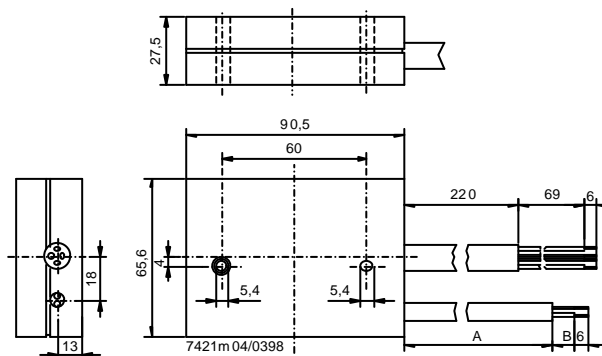
Plug-in base with screw terminals  
Hatched: position of cable gland holder or cable holder  
«B»: holes for cable entry  
«31», «32»: auxiliary terminals  
«N»: neutral terminals, connected to the neutral input (terminal 2)

Underneath: 4 earth terminals, joining a lug for earthing the burner

### Mandatory: (AGK11...)

Connection of earthing lug «C» and fixing screws in «A» to the burner ground (using a metric screw with a lockwasher or similar)

## Ancillary unit AGQ2...A27



Type reference	Dimensions	
	A	B
AGQ2.1A27	500	19
AGQ2.2A27	300	34

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