



## Burner controls

## LME39...

**Burner controls for the supervision of 1- or 2-stage gas or gas / oil burners of small to medium capacity, with or without fan in intermittent operation.**

**The LME39... and this Data Sheet are intended for use by OEMs which integrate the burner controls in their products.**

### Use, features

Use	<p>LME39... are used for the startup and supervision of 1- or 2-stage gas or gas / oil burners in intermittent operation. The flame is supervised by an ionization probe or flame detector type QRA... with ancillary unit AGQ3...A27 for gas / oil forced draft burners.</p> <ul style="list-style-type: none"> <li>- For gas burners with or without fan to EN 298: 2003</li> <li>- For gas burners with fans conforming to EN 676</li> <li>- For oil burners to EN 230: 2005</li> </ul>
Features	<ul style="list-style-type: none"> <li>- Undervoltage detection</li> <li>- Air pressure supervision with function check of the air pressure switch during startup and operation</li> <li>- Electrical remote reset facility</li> <li>- Multicolor indication of fault status and operational status messages</li> <li>- Limitation of the number of repetitions</li> <li>- Accurate control sequence thanks to digital signal handling</li> <li>- Controlled intermittent operation after 24 hours of continuous operation</li> <li>- BCI interface</li> </ul>

### Supplementary documentation

Product Range Overview LME.....	Q7101
Basic Documentation LME39.....	P7106

## Warning notes

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**To avoid injury to persons, damage to property or the environment, the following warning notes must 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 LME39..., 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 disconnected, there is a risk of electric shock hazard
- 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 («LP» between terminals 2 and 6)
- 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»
- The data line for the AZL2... display and operating unit or other accessories, such as the OC1410... (plugs into the BCI interface), must be connected or disconnected only when the burner control is dead (all-polar disconnection), since the BCI interface does not ensure safe separation from mains voltage

## Engineering notes

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- When used in connection with actuators, there is no position feedback signal from the actuator to the burner control
- 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
- If the communication interface (jack RJ11) is not used, protection against electric shock hazard must be provided (jack must be covered up)

## Mounting notes

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Ensure that the relevant national safety regulations are complied with.

Siemens supplies the LME39... burner controls with the factory settings as specified in «Type summary».

The OEM can change the Siemens default settings to meet its own requirements.

With the LME39..., the burner control's characteristics are determined primarily through parameterization. Every time the unit is recommissioned, the parameter settings must be checked. The LME39... must never be transferred from one plant to another without matching the parameters to the new plant.



### Caution

Parameters and settings may only be changed by **qualified staff**.

If parameters are changed, responsibility for the new parameter settings is assumed by the person who – in accordance with the access rights – has made parameter changes on the respective access level.

After parameterization, the OEM must check to ensure that safe burner operation will be warranted.

The OEM which made the settings is always responsible for the parameters, their settings and compliance of the respective application with the relevant national and international standards and safety regulations, such as EN 676, EN 267, EN 1643, etc.

Siemens, its suppliers and other Group Companies of Siemens Ltd. do not assume responsibility for special or indirect damage, consequential damage, other damage, or damage resulting from wrong parameterization.



### Warning

If the factory settings are changed, all changes made must be documented and checked by the OEM.

The OEM is obliged to mark the unit accordingly and to include at least the list of device parameters and settings in the burner's documentation.

Siemens also recommends attaching an additional mark on the LME39... in the form of an adhesive label. As specified in EN 298, the label should be easy to read and wipe proof.

The label with a maximum size of 70 x 45 mm can be attached to the upper part of the housing.

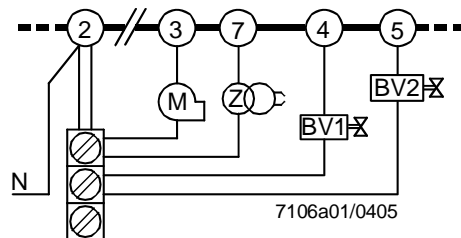
Example of label:

OEM logo	
Product no. / part no.: 1234567890ABCD	
<b>Caution! OEM settings:</b>	
Parameter no.	
225 = 30 s (t1)	226 = 2 s (t3)
230 = 10 s (t4)	234 = 0 s (t8)
240 = 1 (repetition)	
257 = 2 s (t3n)	TSA = t3n + 0.,7 s
259 = 30 s (t11)	
260 = 30 s (t12)	

- 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 (product no. 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 120 V / 50 Hz or AC 230 V / 60 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 LME39... 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
- To prevent mixup of different types of burner controls, the LME39... must always be used in connection with grey plug-in bases AGK11.6. Make absolutely certain that the live conductor for the control thermostat or pressurestat «R / W» is tapped after the gas pressure switch «GP» and the safety limit thermostat «STB» and connected to terminal 11 (refer to «Connection diagram»)
- Connecting cable from LME39... to AZL2... or from LME39... to OCI400 / OCI410...: Since the BCI interface has no safe separation from mains voltage, the connecting cable between LME39... and AZL2..., or LME39... and OCI400 / OCI410..., must conform to certain specifications. Siemens has specified the cable for use under the burner hood (cable supplied by Hütter; refer to «Technical data»). When using cables of other manufacture, Siemens' requirement will not necessarily be met
- Do not lay the connecting cable from the LME39... to the AZL2... together with other cables. Use a separate cable
- Service operation with a longer connecting cable from LME39... to AZL2..., or from LME39... to OCI410...: If a longer cable is required for service work for example (short-time, <24 hours), note that above usage under the burner hood no longer applies and, for this reason, the cable can be subjected to increased mechanical stress. In that case, extra cable sheathing is required (e.g. heat shrink tubing)
- Both the cable and the AZL2... display and operating unit must be shipped and stored so that no damage due to dust and water can occur when used in the plant later on
- To ensure protection against electric shock hazard, make certain that, prior to switching on power, the cable is correctly connected to the AZL2...
- The AZL2... must be used in a dry and clean environment
- For safety reasons, feed the neutral conductor to terminal 2. Connect the burner components (fan, ignition transformer and fuel valves) to the neutral distributor as shown below in the illustration. The connection between neutral conductor and terminal 2 is prewired in the base



Example



Legend

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

Correct 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 MΩ 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	Expected response Supply state (factory setting):
a)	Burner startup with previously interrupted line to the flame detector	Lockout at the end of «TSA» → Max. 3 repetitions
b)	Burner operation with simulated loss of flame. For that purpose, cut off the fuel supply	<ul style="list-style-type: none"> <li>• Establishment of flame at the end of «TSA» → Max. 3 repetitions (can be parameterized) → Factory setting: Lockout</li> <li>• No establishment of flame at the end of «TSA» → Lockout</li> </ul>
c)	Burner operation with simulated air pressure failure (not with atmospheric burners)	Immediate lockout

After installation and commissioning, the parameterized values and settings must be **documented** by the person / heating engineer responsible for the plant. These data can be printed out with the help of the ACS410 PC software, for example, or must be written down. The documentation must be checked by the expert and then kept in a safe place.



On the OEM access level of the LME39..., it is possible to make parameter settings that differ from application standards. When setting the parameters, it must be made certain that the application will run safely in accordance with legal requirements.

Prior to commissioning, the following points must be checked:

- The correct time parameter settings, especially the settings of the safety and pre-purge times
- The correct functioning of the flame detector in the event of loss of flame during operation (including the response time); with extraneous light, during the pre-purge time and, when there is no establishment of flame, at the end of the safety time
- Air pressure
- Safety loop (e.g. STB)
- Minimum gas pressure (GP)

## Standards and certificates

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

2004/108/EC  
90/396/EEC  
2006/95/EC



ISO 9001: 2000  
Cert. 00739



ISO 14001: 2004  
Cert. 38233



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Identification code to EN 298 / EN 230	
LME39.100...	F T C L B N
LME39.400...	A B C L B N

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## Life cycle

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LME... burner controls have a designed lifetime\* of 250,000 burner startup cycles which, under normal operating conditions in heating mode, correspond to approx. 10 years of usage (starting from the production date given on the type field). This lifetime is based on the endurance tests specified in standard EN 298 and the table containing the relevant test documentation as published by the European Association of Component Manufacturers (Afecor) ([www.afecor.org](http://www.afecor.org)).

The designed lifetime is based on use of the burner controls according to the manufacturer's Data Sheet and Basic Documentation. After reaching the designed lifetime in terms of the number of burner startup cycles, or the respective time of usage, the burner control is to be replaced by authorized personnel.

\* The designed lifetime is not the warranty time specified in the Terms of Delivery

## Disposal notes

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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

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LME39...

- 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
- Burner controls LME39... and plug-in base AGK11.6 are silver-grey (RAL7001)
- The housing accommodates the
  - 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
- The AZL2... display and operating unit is for direct connection to the burner control. All safety-related digital inputs and outputs of the system are monitored by the contact feedback network. Operation and parameterization of the LME39... is accomplished with the AZL2... or via the OCI410... / ACS410
- Unlimited burner capacity (thermal output on startup  $\leq 120$  kW)
- 3 repetitions in the event of loss of flame during operation (can be parameterized)

Indication and diagnostics

- Multicolor indication of operational status and fault status messages
- Forwarding of operational status messages, fault status messages and full service information via additional OCI400 / OCI410... interface adapter and Windows ACS410 PC software

Display and communication

RJ11 jack for connection of the AZL2... display and operating unit or the OCI410... interface adapter for communication and parameterization via Windows ACS410 PC tool.

Time parameters

The most important time parameters for the program:

- Prepurge time (t1)
- Preignition time (t3)
- Postignition time (t3n)
- Interval (t4)
- Postpurge time (t8)
- Opening time for actuators (t11)
- Closing time for actuators (t12)

Both the prepurge time and the safety times are safety-related and can be changed by the OEM with the help of the display and operating unit.

## Type summary (other types of burner controls on request)

The product nos. given below applies to the LME39... 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	Product no.	Main voltage	tw max. s	TSA max. s	t1 (P225) min. s	t1' (P256) min. s	t3 (P226) approx. s	t3n (P257) ap- prox. s	t4 (P230) approx. s	t8 (P234) min. s	t10 (P224) max. s	t11 (P259) min. s <sup>1)</sup>	t12 (P260) min. s <sup>1)</sup>	t22 ap- prox. s	2)
<b>Burner controls for 2-stage burners with actuator control and communication</b>															
Ionization probe (ION) or flame detector QRA... <sup>3)</sup> with AGQ3...A27	LME39.100A1	AC 120 V	2.5	(3) t3n + 0.7	30	---	3	2.3	10	0	65	30	30	---	1
	LME39.100A2	AC 230 V	2.5	(3) t3n + 0.7	30	---	3	2.3	10	0	65	30	30	---	1
Setting range	min.	---	---	0.7	0	---	1	0	1	0	---	0	0	---	1
	Max.	---	---	4.7	75	---	37.5	4	75	240	---	75	75	---	4
Increment	(s)	---	---	0.147	0.294	---	0.147	0.147	0.294	4,851	---	0.294	0.294	---	1
<b>Burner controls for atmospheric, 2-stage burners without actuator control with communication</b>															
Ionization probe (ION) or flame detector QRA... <sup>3)</sup> with AGQ3...A27	LME39.400A1	AC 120 V	2.5	(5) t3n + 0.7	---	14.5	1.7	4	9	0	---	---	---	5	1
	LME39.400A2	AC 230 V	2.5	(5) t3n + 0.7	---	14.5	1.7	4	9	0	---	---	---	5	1
Setting range	min.	---	---	0.7	---	0	1	0	1	0	---	---	---	0	0
	Max.	---	---	4.7	---	75	37.5	4.2	75	1237	---	---	---	8	4
Increment	(s)	---	---	0.147	---	0.294	0.147	0.147	0.294	4,851	---	---	---	0.147	1

### Note on parameterization:

Use the AZL2... or ACS410 to always set the exact value of the required time (multiples of increments of 0.147 seconds, 0.294 seconds or 4,851 seconds).

When parameterizing minimum or maximum times, the possibility of a  $\pm 7\%$  tolerance must be taken into consideration.

For **minimum** values: The value to be parameterized must be at least 7% **greater**.

For **maximum** values: The value to be parameterized must be at least 7% **smaller**.



Example: t1min shall be set to 30 s  
 Calculation:  $30 \text{ s} + 7\% = 32.1 \text{ s}$   
 Value to be parameterized: Must be equal to or **greater** than the calculated value (e.g. 32.34 s)

Example: TSAmax. shall be set to 5 s  
 Special case here: TSA is set directly via the change of t3n using the following formula:  
 **$t3n = TSA - 0.7 \text{ s}$**

Calculation:  $5 \text{ s} - 7\% = 4.65 \text{ s}$   
 $t3n = 4.65 \text{ s} - 0.7 \text{ s} = 3.95 \text{ s}$

Value t3n to be parameterized: Must be equal to or **smaller** than the calculated value (e.g. 3.822 s)

Legend	tw	Waiting time	t4	Interval between ignition «Off» and «BV2»
	TSA	Safety time	t8	Postpurge time
	t1	Prepurge time	t10	Specified time for air pressure signal
	t1'	Purge time	t11	Programmed opening time for actuator «SA»
	t3	Preignition time	t12	Programmed closing time for actuator «SA»
	t3n	Postignition time	t22	2nd safety time
	1)	Maximum running time available for actuator «SA». The actuator's running time must be shorter		
	2)	Repetition (maximum number of startups per controlled start)		
	3)	Only AC 230 V		



## 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	IP40 (to be ensured through mounting) (if RJ11 jack is not covered, only IP10)
	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 (lay separate cable)	Max. 20 m at 100 pF / m
	Perm. input voltage terminals 6 and 11	AC 120 V +10% / -15% AC 230 V +10% / -15%
	Perm. cable lengths other terminals	Max. 3 m at 100 pF / m
	Possible input current terminals 6 and 11	0.5 mA

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	Max. 1.7 A	Max. 2 A
- Terminal 10	Max. 1 A	Max. 1 A

Connecting cable Display → BCI	<b>Signal cable</b>	Color white Unshielded Conductor 4 x 0.141 mm <sup>2</sup>
	Supplier	Reference: Hütter <a href="http://www.huetter.co.at/telefonkabel.htm">http://www.huetter.co.at/telefonkabel.htm</a> Order number: on request
	Location	Under the burner hood (extra measures required for compliance with SKII EN 60730-1)
Environmental conditions	<b>Storage</b>	DIN EN 60721-3-1
	Climatic conditions	Class 1K3
	Mechanical conditions	Class 1M2
	Temperature range	-20...+60 °C
	Humidity	<95% r.h.
	<b>Transport</b>	DIN EN 60 721-3-2
	Climatic conditions	Class 2K2
	Mechanical conditions	Class 2M2
	Temperature range	-20...+60 °C
	Humidity	<95% r.h.
	<b>Operation</b>	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!**

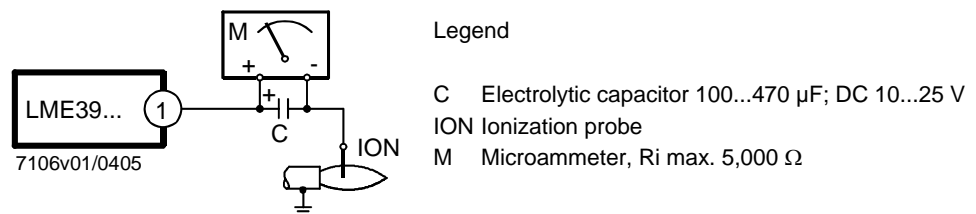
**Flame supervision  
with ionization probe**

	At mains voltage	
	UN = AC 120 V <sup>1)</sup>	UN = AC 230 V <sup>1)</sup>
Detector voltage between ionization probe and ground (AC voltmeter $R_i \geq 10\text{ M}\Omega$ )	AC 50...120 V	AC 115...230 V
Switching threshold (limit values):		
Switching on (flame on) (DC ammeter $R_i \leq 5\text{ k}\Omega$ )	$\geq$ DC 1.5 $\mu$ A	$\geq$ DC 1.5 $\mu$ A
Switching off (flame off) (DC ammeter $R_i \leq 5\text{ k}\Omega$ )	$\leq$ DC 0.5 $\mu$ A	$\leq$ DC 0.5 $\mu$ A
Detector current required for reliable operation	$\geq$ DC 3 $\mu$ A	$\geq$ DC 3 $\mu$ A
Switching threshold in the event of poor flame during operation (LED flashes green)	Approx. DC 5 $\mu$ A	Approx. DC 5 $\mu$ A
Short-circuit current between ionization probe and ground (AC ammeter $R_i \leq 5\text{ k}\Omega$ )	Max. AC 50...150 $\mu$ A	Max. AC 100...300 $\mu$ A

<sup>1)</sup> For applications outside the European Community, operation at mains voltage  
AC 120 V / AC 230 V  $\pm 10\%$  is ensured

Flame supervision with ionization probe 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».

**Flame supervision with AGQ3...A27 and UV detector QRA...**

Only in connection with LME39...A2 (AC 230 V)!

Mains voltage	AC 230 V +10% / -15%
Mains frequency	50...60 Hz ±6%
Perm. cable length from QRA... to AGQ3...A27 (lay separate cable)	Max. 20 m
Perm. cable length from AGQ3...A27 to LME39...A2	Max. 2 m
Weight of AGQ3...A27	Approx. 140 g
Mounting position	Optional
Degree of protection	IP40, to be ensured through mounting
Power consumption	4.5 VA

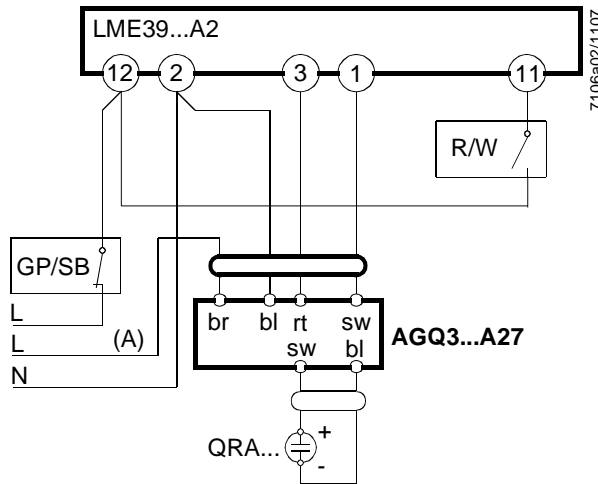
	At mains voltage Un	
	AC 220 V	AC 240 V
<b>Detector voltage at QRA... (with no load)</b>		
Terminal 3 off (refer to control sequence)	DC 400 V	DC 400 V
Terminal 3 on (refer to control sequence)	DC 300 V	DC 300 V
<b>Detector voltage Load by DC measuring instrument Ri &gt;10 MΩ</b>		
Terminal 3 off (refer to control sequence)	DC 380 V	DC 380 V
Terminal 3 on (refer to control sequence)	DC 280 V	DC 280 V
<b>DC current detector signals with UV detector QRA...</b>	Min. required	Max. possible
Measurement at the UV detector QRA...	200 µA	500 µA

Ancillary unit AGQ3...A27

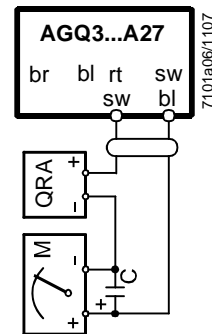
With LME39...A2 burner controls, use of the AGQ3...A27 UV ancillary unit is mandatory.

- (A) The correct functioning of aged UV cells can be checked with a UV test by applying a higher voltage to the UV cell after controlled shutdown until terminal 3 carries voltage.

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
- M Microammeter Ri max. 5,000 Ω
- QRA... UV detector
- GP Gas pressure switch
- SB Safety limit thermostat
- R Control thermostat or pressurestat
- W Limit thermostat or pressure switch

- bl Blue
- br Brown
- gr Grey
- rt Red
- sw Black

## Functions

Preconditions for burner startup	<ul style="list-style-type: none"> <li>• Burner control must be reset</li> <li>• All contacts in the line are closed, request for heat</li> <li>• No undervoltage</li> <li>• Air pressure switch «LP» or CPI must be in its no-load position, or DBR2 is connected</li> <li>• Fuel valve «BV1» is connected</li> <li>• Fan motor or AGK25 is connected</li> <li>• Flame detector is darkened and there is no extraneous light</li> </ul>
Undervoltage	<ul style="list-style-type: none"> <li>• Safety shutdown from the operating position takes place should mains voltage drop below about AC 85 V (at UN = AC 120 V)</li> <li>• Restart is initiated when mains voltage exceeds about AC 90 V (at UN = AC 120 V)</li> <li>• Safety shutdown from the operating position takes place should mains voltage drop below about AC 175 V (at UN = AC 230 V)</li> <li>• Restart is initiated when mains voltage exceeds about AC 185 V (at UN = AC 230 V)</li> </ul>
Controlled intermittent operation	After no more than 24 hours of continuous operation, the burner control initiates 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 initiates 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 are immediately 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»	<u>Factory setting:</u> Lockout at the end of «TSA»  <u>Can be parameterized:</u> Max. 3 repetitions, followed by lockout at the end of «TSA»
Loss of flame during operation	<u>Factory setting:</u> Lockout  <u>Can be parameterized:</u> <ul style="list-style-type: none"> <li>• Establishment of flame at the end of «TSA» → Max. 3 repetitions</li> <li>• No establishment of flame at the end of «TSA» → Lockout</li> </ul>
«LP» welded in working position	Prevention of startup, lockout after max. 65 seconds at the latest
«LP» 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 LME39... remains locked and the red signal lamp (LED) lights 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 LME39... can only be reset when all contacts in the line are closed and when there is no undervoltage.

Limitation of repetitions (can be parameterized)

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.

PC software ACS410

Duty of PC tool software:

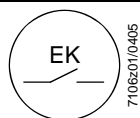
The PC tool is a component of the LME39... system and serves primarily as an operator module for the following basic tasks:

- Visualization of system status with the following data:
  - Parameters
  - Process data
- Configuration and parameterization of the basic unit (individual parameters)
- Reset

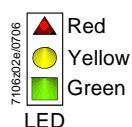


For operating and commissioning instructions, refer to User Handbook J7352.

Operation



Lockout reset button «EK» is the key operating element for resetting the burner control and for activating / deactivating the diagnostics functions.



The multicolor signal lamp (LED) in the lockout reset button is the key indicating element for visual diagnostics and interface diagnostics.

Both «EK» and LED are located under the transparent cover of the lockout reset button.

There are 3 diagnostics choices:

1. Visual diagnostics: Operational status indication or diagnostics of the cause of fault
2. Interface diagnostics: With the help of the OCI400 / OCI410 interface adapter and the ACS410 PC software or flue gas analyzers of different makes
3. On the display of the AZL2...

Visual diagnostics:

In normal operation, the different operating states are indicated in the form of color codes according to the color code table given below.

Operational status indication

During startup, status indication takes place according to the following table:

Color code table for multicolor signal lamp (LED)		
Status	Color code	Color
Waiting time «tw», other waiting states	○.....	Off
Ignition phase, ignition controlled	●○●○●○●○●○●	Flashing yellow
Operation, flame o.k.	□.....	Green
Operation, flame not o.k.	□○□○□○□○□○	Flashing green
Extraneous light on burner startup	□▲□▲□▲□▲□▲	Green-red
Undervoltage	●▲●▲●▲●▲●▲	Yellow-red
Fault, alarm	▲.....	Red
Error code output (refer to «Error code table»)	▲○ ▲○ ▲○ ▲○	Flashing red
Interface diagnostics	▲▲▲▲▲▲▲▲	Red flicker light

Legend

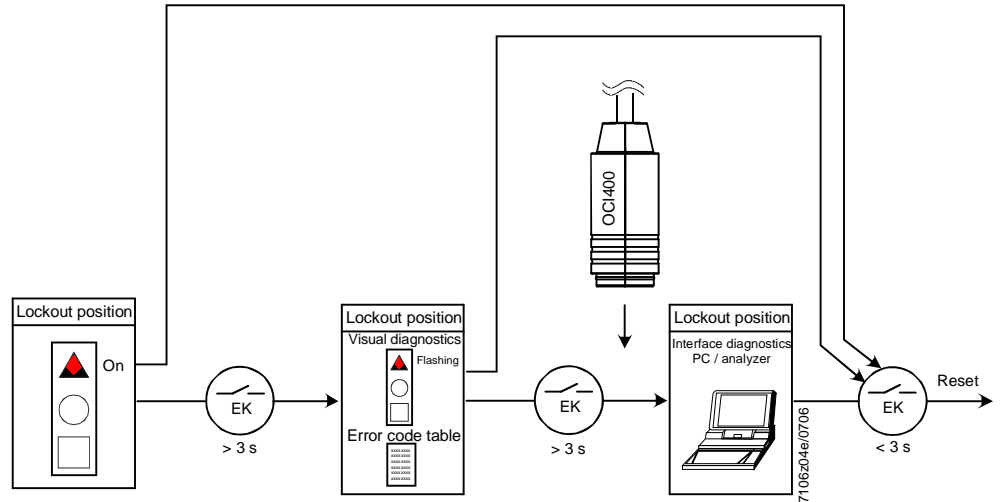
- |       |           |   |        |
|-------|-----------|---|--------|
| ..... | Steady on | ▲ | Red    |
| ○     | Off       | ● | Yellow |
|       |           | □ | Green  |

## Operation, indication, diagnostics (cont'd)

Diagnostics of the cause of fault

After lockout, the red fault signal lamp is 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 at least 3 seconds. Pressing the reset button again for at least 3 seconds activates interface diagnostics. If, by accident, interface diagnostics has been activated, in which case the slightly red light of the signal lamp flickers, it can be deactivated by pressing again the lockout reset button for at least 3 seconds. The instant of switching over is indicated by a yellow light pulse.

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



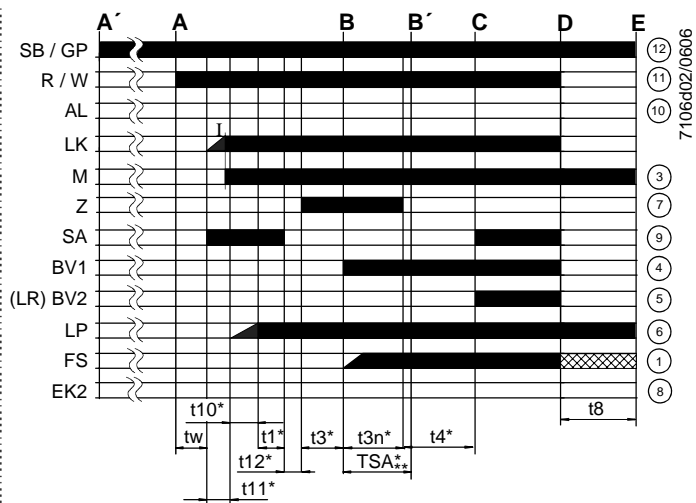
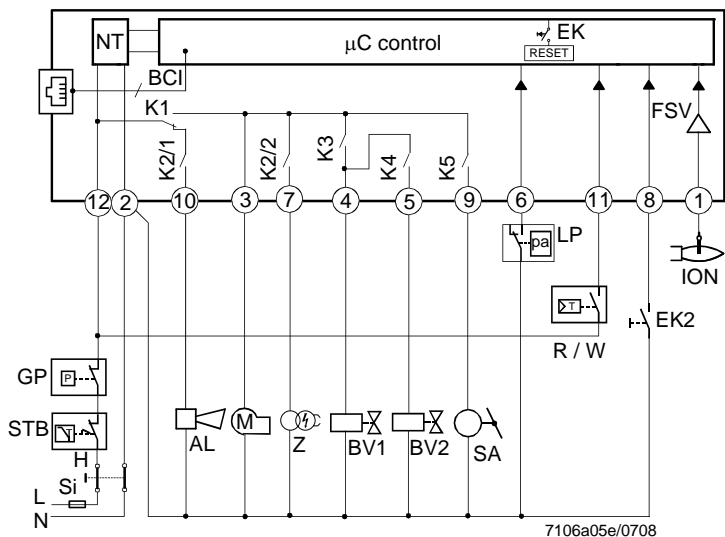
Error code table		
Red blink code of signal lamp (LED)	«AL» at term. 10	Possible cause
2 blinks	On	No establishment of flame at the end of «TSA» - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition equipment
3 x blinks	On	«LP» faulty - Loss of air pressure signal after «t10» - «LP» welded in normal position
4 blinks	On	Extraneous light when burner startup
5 blinks	On	Time out «LP» - «LP» 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 fault
14 blinks	On	CPI contact not closed

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

- 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).

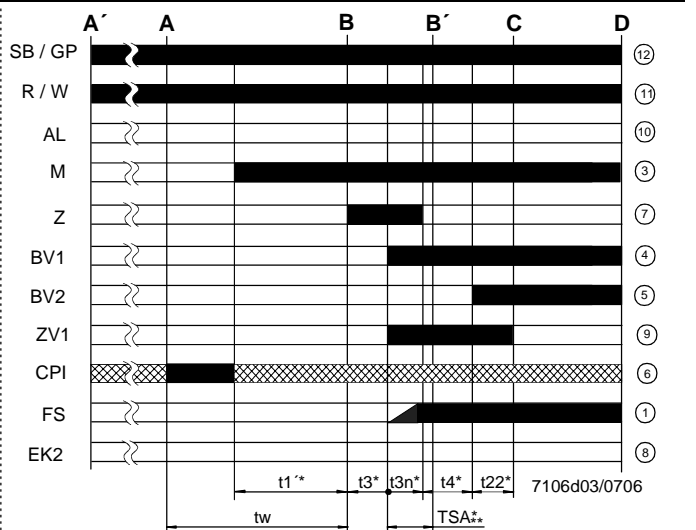
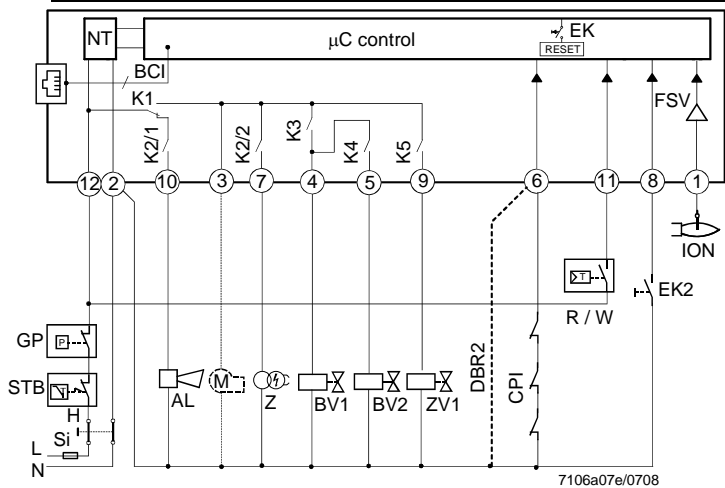
### Connection diagram and control sequence of LME39.100...



\* Times can be parameterized within the min. / max. limits

\*\* TSA = t3n + 0.7 s

### Connection diagram and control sequence of LME39.400...



\* Times can be parameterized within the min. / max. limits

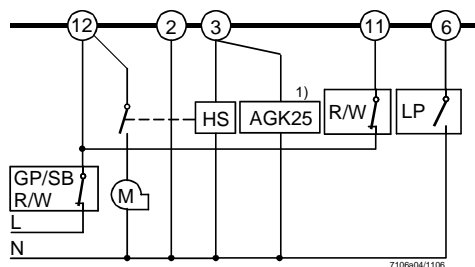
\*\* TSA = t3n + 0.7 s

### Other application examples



The connection diagrams shown are merely examples which must be adapted in the individual case depending on the application!

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






1) AGK25 is required only if an auxiliary relay with a coil resistance of  $\geq 50 \text{ k}\Omega$  is used



## Legend

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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"><li>• Burner is immediately shut down</li><li>• Burner control is immediately ready for new startup</li></ul>
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»
t8	Postpurge time
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
TSA	Ignition safety time
tw	Waiting time
AGK25...	PTC resistor
AL	Error message (alarm)
BV...	Fuel valve
CPI	Closed Position Indicator
DBR2	Wire link
EK	Lockout reset button (internal)
EK2	Remote lockout reset button
FS	Flame signal
GP	Gas pressure switch
HS	Auxiliary contactor, relay
ION	Ionization probe
KL	Low-fire
LK	Air damper
LP	Air pressure switch
LR	Load controller
M	Fan motor
MS	Synchronous motor
NL	Nominal load
QRA...	Flame detector
R	Control thermostat / pressurestat
RV	Gas regulation damper
SA	Actuator SQN...
STB	Safety limit thermostat
Si	External fuse
t	Time
W	Limit thermostat / pressure switch
Z	Ignition transformer
	Control signals
	Required input signals
	Permissible input signals

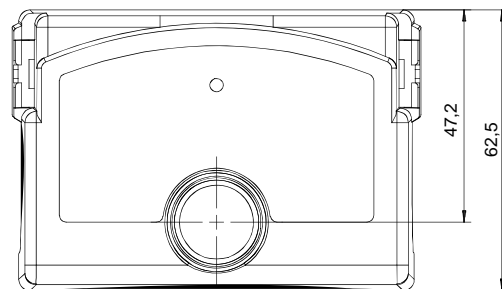
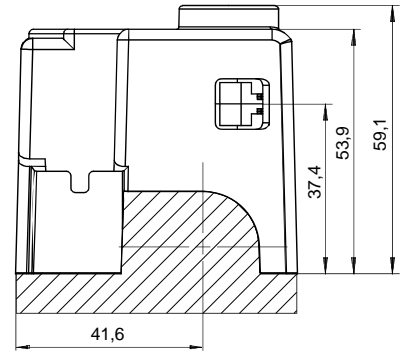
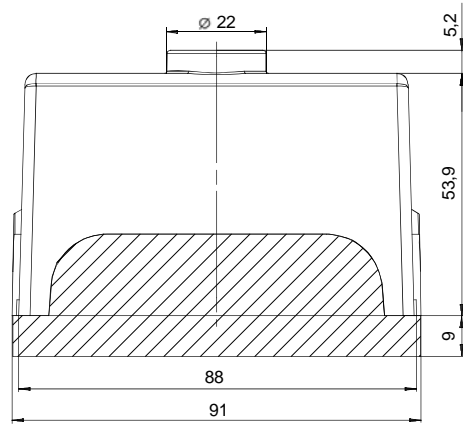
# Dimensions

Dimensions in mm

LME39...

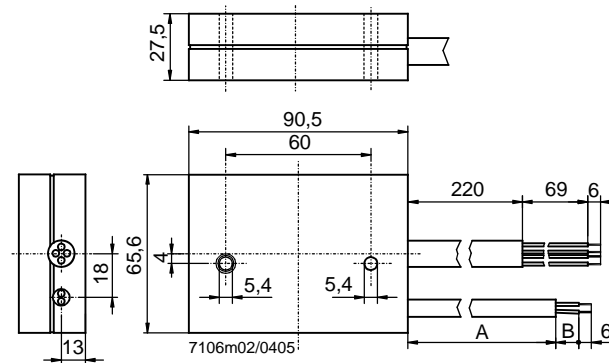


Plug-in base AGK11.6



7106m01/0405

Ancillary unit  
AGQ3...A27



Product no.	Dimensions	
	A	B
AGQ3.1A27	500	19
AGQ3.2A27	300	34