SIEMENS

7419

ISO 9001

CE

Gas Burner Controls LGD1...

Gas burner controls for the startup, control and supervision of atmospheric gas burners (without fan) in intermittent operation.

The LGD1... and this Data Sheet are intended for use by OEMs which integrate the burner controls in their products!

Use

Gas-fired heating boilers with or without d.h.w. heating, direct-fired air heaters, and dark radiators.
Control of one or 2 fuel valves and one external ignition device.
The flame is supervised with an ionization probe.

Warning notes

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

Do not open, interfere with or modify the unit!

- Before performing any wiring changes in the connection area of the LGD1..., 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 wiring and all safety functions prior to commissioning
- 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 may not be put into operation, even if they do not exhibit any damage

Mounting notes

- Ensure that the relevant national safety regulations are complied with

Installation notes

- Installation work must be carried out by qualified staff
- Do not mix up live and neutral conductors

Electrical connection of ionization probe

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

- The ionization probe is not protected against electric shock hazard
- Locate the ignition electrode and ionization probe such that the ignition spark cannot arc over (risk of electrical overloads)
- Always run the high-voltage ignition cables separate from the unit and other cables while observing the greatest possible distances
- Observe the permissible lengths of the detector cables (refer to «Technical data»)
- The connection diagrams shown apply to burner controls with earthed neutral conductor. In the case of ionization current supervision in networks with nonearthed neutral conductor, terminal 2 must be connected to the earth conductor via an RC unit (part no. ARC 4 668 9066 0). In that case, it must be made certain that the relevant national safety regulations are complied with (e. g. electric shock hazard protection), since AC 230 V / 50 Hz mains voltage results in a leakage current of 2.7 mA

Commissioning notes

- Commissioning and maintenance work must be carried out by qualified staff
- When commissioning the plant or when doing maintenance work, make the following safety checks:

	Safety check	Anticipated response
a)	No flame signal at the end of «TSA»	Lockout
b)	Loss of flame in the operating position	Restart followed by lockout at the end of «TSA»

Service notes

- Check wiring and all safety functions each time a unit has been replaced

Standards

- CE conformity according to the directives of the European Union
  – Electromagnetic compatibility EMC 89 / 336 EEC
  – Directive for gas appliances 90 / 396 EEC
- Identification code to EN 298 A T C L X N

Disposal notes

The unit contains electrical and electronic components and may not be disposed of together with household garbage.
Local and currently valid legislation must be observed.

Mechanical design

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
- electronic flame signal amplifier
- lockout reset button with its integrated signal lamp

Type summary

L G D 1 2 . 0 1 A 2 7

- Mains frequency 50...60 Hz
- Voltage
  2: AC 220...240 V
- Ignition safety time "TSA"
  1: ≤ 10 s
  3: ≤ 3 s on request
  5: ≤ 5 s
  9: ≤ 50 s
  only for applications with pilot burners whose heat load does not exceed 0.25 kW!
- Waiting time "tw"
  0: ≥ 1.5 s
- Control outputs for the gas valves
  2: 2 control outputs

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Ordering

Gas burner controls (without plug-in base) — refer to «Type summary»

Electrical connections — refer to Data Sheet 7201
- Plug-in base AGK11...
- Cable holders AGK65..., AGK66, AGK67...
- Cable strain relief elements for AGK67...

Electrical connections — refer to Data Sheet 7203
- Plug-in base AGK13
- Plug-in housing AGK56
- Cover AGK68

Flame detectors
- Ionization probe — supplied by thirds

Test unit — **KF8890**
- With signal lamp and manual / automatic function
  (refer to documentation B7985)

RC unit — **ARC 4 668 9066 0**
- For ionization current supervision in networks with nonearthed neutral conductor

Technical data

General unit data

Mains voltage	AC 220 V +10 %....AC 240 V –15 %
Mains frequency	AC 220...240 V; 50 Hz ±5 % AC 220 V; 60 Hz ±5 %
Unit fuse	
- Externally	min. T6.3H250V
- Internally	T4H250V
Power consumption	max. 10 VA
Perm. terminal rating	
- Terminal 1 «R / W / GP / SB»	max. 2 A
- Terminals 4 and 5 «BV...»	max. 0.5 A; cos φ > 0.4
- Terminal 7 «Z»	max. 0.5 A; cos φ > 0.4
- Terminal 10 «AL»	max. 0.5 A; cos φ = 1
Degree of protection	IP 40 to DIN EN 60 529 (when integrated)
Mounting position	optional
Weight	approx. 140 g

Environmental conditions

Transport	DIN EN 60 721-3-2
Climatic conditions	class 2K2
Mechanical conditions	class 2M2
Temperature range	-20...+70 °C
Humidity	< 85 % r.h.
Operation	DIN EN 60 721-3-3
Climatic conditions	class 3K5
Mechanical conditions	class 3M2
Temperature range	0...+60 °C
Humidity	< 60 % r.h.

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

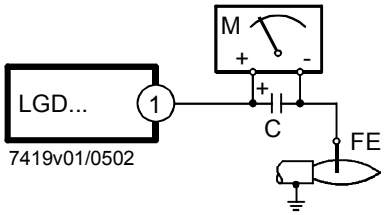
Flame supervision

Safety time operation «TSAmax.»	< 1 s
Ionization current for operation	> 9 µA
Required ionization resistance of ionization probe and cable against earthed burner components	> 50 MΩ
Capacitance of detector cable and ionization probe	max. 1 nF
Min. switching threshold → Limit value	
- Switching on	0.9 µA
- Switching off	0.3 µA
Perm. cable length	max. 3 m

Times

Waiting time «tw»	min. 1.5 s
Ignition safety time «TSAmax»	5 s / 10 s / 50 s (3 s on request)
Ignition delay time «t30»	2...3 s (from establishment of flame to max. «TSA» at an ionization current of = 1 µA)

Measurement circuit



Legend

C Electrolytic capacitor 100...470 µF; DC 10...25 V
FE Ionization probe
M Microammeter, Ri max. 5,000 Ω

For detector currents, refer to «Technical data».

Function

Control program in the event of fault

In the event of any type of fault, the gas valves will immediately be shut and ignition switched off.

Lockouts are indicated by an integrated and external fault signal lamp «Alarm».

The LGD1... makes possible lockout indication and reset only if the control thermostat is closed.

In the case of extraneous light during the waiting phase, the burner will not be started up.

Restart will take place after loss of flame during operation.

Lockout

Lockout will occur in case the burner does not ignite if, at the end of «TSA», there is no flame signal.

Reset

After lockout, the LGD1... must be manually reset with the reset button.

☞ A reset may be made no earlier than 10 seconds after lockout. If this is not observed, the reset will not be made correctly.

Flame supervision

The flame is supervised with an ionization probe.

The d.c. component (ionization current) produced by the flame generates the flame signal which is fed to the input of the flame signal amplifier.

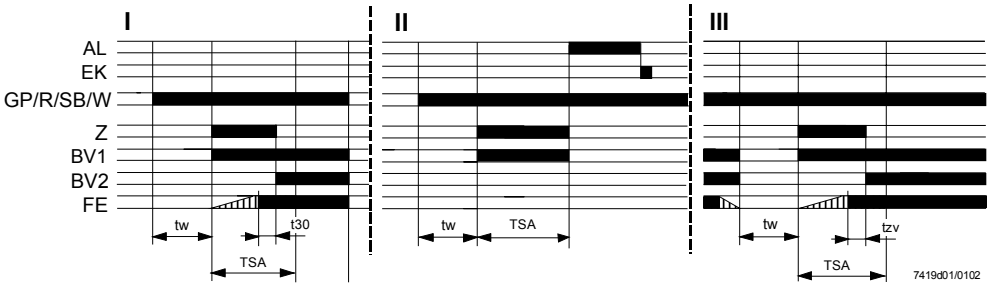
The amplifier is designed such that it responds only to the d.c. component of the flame signal.

This ensures that a short-circuit between ionization probe and ground cannot simulate a flame signal.

Reversed polarity protection

In the case live and neutral conductors are interchanged, lockout will occur on completion of «TSA».

Sequence diagram

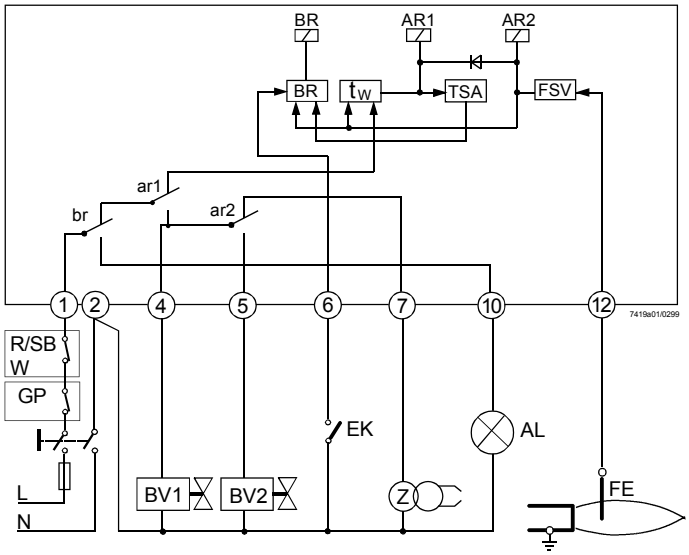


Legend

AL	Fault signal (alarm)	GP	Gas pressure switch
BV...	Fuel valve	R	Control thermostat or pressurestat
EK	Reset button	SB	Safety limit thermostat
FE	Ionization probe	W	Limit thermostat or pressure switch
		Z	Ignition transformer
TSA	Ignition safety time		
tw	Waiting time	▬	LGD1... control signals
t30	Ignition delay time	▭	Required input signals

I Normal burner startup, operation and shutdown
II No establishment of flame during «TSA»
III Operation followed by loss of flame and restart

Connection diagram



Legend

AL	Fault signal (alarm)	FSV	Flame signal amplifier
AR...	Load relay	GP	Gas pressure switch
BR	Lockout relay	R	Control thermostat or pressurestat
BV...	Fuel valve	SB	Safety limit thermostat
EK	Reset button	W	Limit thermostat or pressure switch
FE	Ionization probe	Z	Ignition transformer

Dimensions

Dimensions in mm

LGD1... with plug-in base AGK11... and cable gland holder AGK65...