



ISO 9001



Gas Burner Controls

LGC22...

for atmospheric gas burners with pilot burners ≤ 250 W
and flue gas supervision



Burner controls for startup, control and supervision of single-stage atmospheric gas burners with pilot burners in intermittent operation, with flue gas supervision to EN 297.

The burner controls are tested to EN 298 and CE-certified in compliance with the directives for gas-fired appliances and electromagnetic compatibility.

The LGC22... and this data sheet are intended for use by OEMs that integrate the burner controls in their products!

Use

Typical field of use:

- Gas boilers with or without d.h.w. heating to EN 297

Flame supervision takes place by means of an ionization current detector electrode. The demand for heat is visually indicated (on the top of the casing).

Controlled are:

- The pilot gas valve (pilot burner ≤ 250 W)
- The main fuel valve
- External ignition equipment

Additional connection facilities for:

- Flue gas temperature detector QAK39...
- Safety fuel valve (especially on applications with liquefied gas)
- Gas pressure monitor
- Remote reset / alarm output
- Output for operating data (e.g. for external hours run counter)

Type summary

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- Burner control with input for flue gas temperature detector (flue gas supervision)
 - Flue gas temperature detector

LGC22.002C27x
QAK39...

For complete type references, please contact Landis & Staefa Rastatt.

Ordering

When ordering, please give complete type reference.

Technical data

Burner control

Mains voltage	AC 230 V +10 % / -15 %	Plug-in system	RAST5 with coding and locking
Mains frequency	AC 230 V / 50 Hz ±5 %	Unit fuses	
Power consumption	12 VA max.	– Internally	T4H250V
Degree of protection to IEC 529	IP 00	– Externally	T6.3H250V min.
– To be ensured after installation	IP 40 min.	Mounting position	optional
Perm. loading of terminals		Weight	250 g
– Control / thermal reset limit thermostat	AC 2 A max., $\cos\phi > 0.4$	Identification code to EN 298	A T C L X N
– BV1, BV2, SBV each	AC 0.5 A max., $\cos\phi > 0.4$		
– Ignition transformer	AC 0.5 A max., $\cos\phi > 0.4$		
– Alarm	AC 0.5 A max., $\cos\phi = 1$		
Cable lengths	3 m max.		

The maximum current may not be exceeded at any time. Components such as suppression condensers, electronic ignition modules, etc., may be used only after consulting Landis & Staefa!

Environmental conditions		CE conformity	
– Transport	IEC 721-3-2	According to the directives of the European Union	
Climatic conditions	class 2K2	Electromagnetic compatibility EMC	
Temperature range	-20...+70 °C	89/336 EEC incl. 92/31 EEC	
Humidity	< 85 % r.h.	Directive for gas appliances	90/396 EEC
Mechanical conditions	class 2M2	Emissions	EN 50081-1
– Operation	IEC 721-3-3	Immunity	EN 50082-2
Climatic conditions	class 3K5		
Temperature range	0...+60 °C		
Humidity	< 60 % r.h.		
Condensation, formation of ice and ingress of water are not permitted!			

Flame supervision

Switching thresholds (limit values))		Required insulation resistance of detector electrode and cable against earthed burner parts	> 50 MΩ
– Switching on	0.9 μA		
– Switching off	0.3 μA		
Max. short-circuit current	< AC 200 μA	Lay detector cable separate and protect it against condensation! Do not touch detector cable when under voltage!	
Max. parasitic capacitance of detector electrode	≤ 1 nF		

Flue gas supervision with flue gas temperature detector QAK39...

Switching thresholds		Voltage	< DC 12 V
– Switching off	63°C (+8.5°C / -5°C)	Current	< 50 μA
– Switching on	55°C (+7.5°C / -4°C)	Cable length	3 m max.

Lay flue gas detector cable completely separate from all other cables! Flue gas detector cable may be touched!

Times

Waiting time t_w	1.5...5 s	Safety time «Operation» TSE	5 s max.
Ignition time t_{IGN}	TSA max.	Flame stabilization time t_{stab}	2...3 s
Interval time t_I	5...8 s	(corresponding to a 2nd safety time	≤ 6 s)
Safety time «Pilot burner» start TSA	25...40 s	Flue gas supervision delay time	
(corresponding to t_{smax})		$t_{AÜE}$	approx. 13 min

Warning notes

- **In the geographical areas where DIN standards are in use, the installation must be in compliance with VDE requirements, particularly with the standards DIN / VDE 0100 and 0722!**
- **All regulations and standards applicable to the particular application must be observed!**
- **Installation and commissioning work must always be carried out by qualified personnel!**
- **To protect the burner control from electric overloads, both the ignition and the detector electrode must be located such that the ignition spark cannot arc over to the detector electrode!**
- **Observe the notes on the laying of detector cables (refer to «Technical data»)!**
- **Ignition cables must always be laid separately, maintaining the greatest possible distance to the unit and other cables!**
- **The electrical wiring of gas appliances must be made in compliance with national and local standards and regulations!**
- **LGC22... are safety devices. It is therefore not permitted to open, interfere with or modify the units!**
- **Check wiring carefully before putting the burner control into operation!**
- **The LGC22... must be completely isolated from the mains before performing any work on it!**
- **Check all safety functions when putting the burner control into operation or after performing service work!**
- **Ensure protection against electric shock on the unit and on all electrical connections through appropriate installation!**
- **Electromagnetic emissions must be checked from an application point of view!**

Functions

The sequence diagram below explains the program sequence.

Prerequisites for burner startup / operation

- Power supply within the specified range
- Burner control reset
- Control / thermal reset limit thermostat closed
- Correct flame signal present
- Gas pressure monitor contact closed
- Correct flue gas supervision signal present

If one of the required input signals is missing, the burner control will go to lockout until **all** prerequisites for burner startup are fulfilled.

Control program under fault conditions

In the event of fault, the gas valves and ignition are always switched off. In case of extraneous light during the waiting time, the burner will not start. A restart takes place after a loss of flame during automatic operation.

Lockout

Lockout occurs if the burner does not ignite when no flame signal is present at the end of the safety time «Pilot burner» start. The LGC22... allows indication of the fault position and reset only when the contact of the control / thermal reset limit thermostat is closed. Lockouts are indicated by an external fault signal lamp (alarm).

Reset

After lockout, the LGC22... must be reset manually with the external reset button. **This must take place no earlier than 10 seconds after interlocking, since otherwise there will be no proper reset !**

Flame supervision

Flame supervision is accomplished with an ionization current detector electrode. The direct current (ionization current) flowing when a flame is present produces the flame signal, which is fed to the input of the flame signal amplifier. This amplifier is designed such that it responds only to the DC component of the flame signal. This ensures that a short-circuit between detector electrode and ground will not simulate a flame signal.

Flame stabilization phase

To avoid instabilities of the flame signal when switching from the pilot burner to the main burner, the safety time is extended to the flame stabilization time.

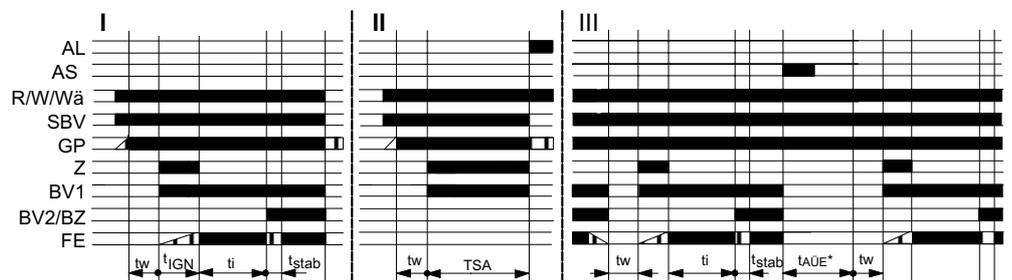
Flue gas supervision

If the flue gas temperature falls below the switching threshold of the flue gas temperature detector, the burner control will lock out. Automatic switching on takes place after completion of the flue gas supervision delay time earliest.

Reversed polarity protection

Live and neutral must be correctly connected. In case they are mixed up, lockout will occur at the end of the safety time «Pilot burner» start.

Sequence diagram



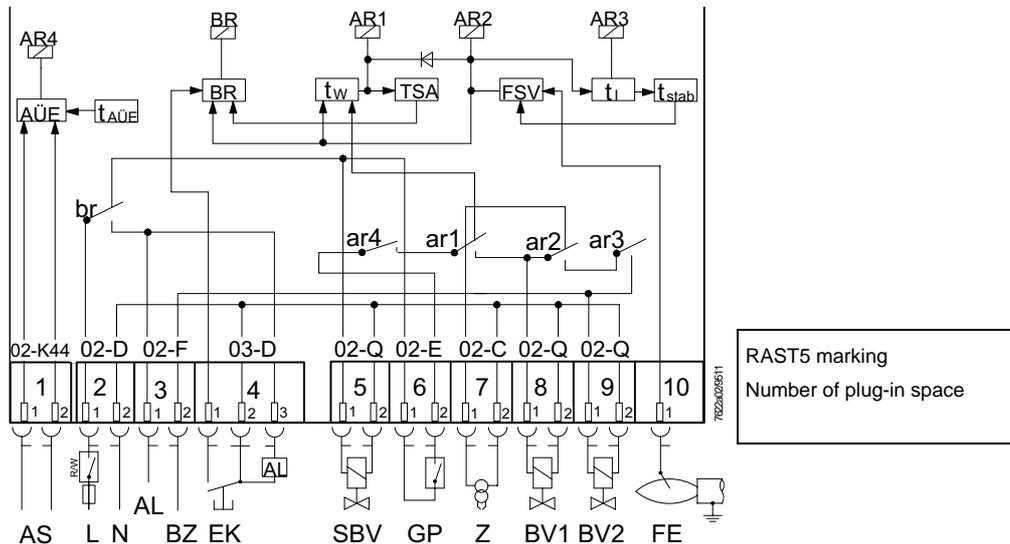
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- I Normal burner startup, operation and shutdown
- II No establishment of flame within TSA
- III Operation followed by loss of flame, restart and shutdown resulting from flue gas supervision

- Signal must be present
- ▤ Signal may be present

Connection diagram

LGC22...C...



Legend

AL	Fault status signal (alarm)	L	Live
AR..., ar...	Load relay	N	Neutral
AS	Flue gas temperature detector	R / W	Control / thermal reset limit thermostat
AÜE	Flue gas supervision	SBV	Safety fuel valve
BR..., br...	Fuel valve 1 (pilot gas valve)	tw	Waiting time on burner startup
BV1	Fuel valve 2 (main fuel valve)	tiGN	Interval from release of BV1 to flame establishment (always shorter than TSA)
BV2	Fuel valve 2 (main fuel valve)	TSA	Safety time «Pilot burner» start (refer to «Technical data»)
BZ	Indication of operation	ti	Interval from flame establishment to release of BV2
EK	Reset button	tstab	Flame stabilization time
FE	Ionization current detector electrode	tAÜE	Flue gas supervision delay time
FSV	Flame signal amplifier	Wä	Indication of heat demand
GP	Gas pressure monitor	Z	Output for external ignition equipment

Dimensions

Dimensions in mm

