Burner Controls

RMO88.53...
RMO/PP88.53A1
RMG88.62...
RMG/M88.62...

Microcontroller-based burner controls for the supervision of single- or multi-stage forced draft gas / oil burners in intermittent operation.
Oil throughput above 30 kg / h and a maximum capacity above 120 kW when firing on gas.

The RMO... / RMG... and this Data Sheet are intended for OEMs which integrate the burner controls in their products.

Use, features

Use

The burner controls are designed for the startup and supervision of single- or multi-stage forced draft burners in intermittent operation. The RMO... is for use with forced draft oil burners, the RMG... for forced draft gas burners.
When firing on oil, yellow-burning flames are supervised with photoresistive detectors QRB1B..., and blue-burning flames with blue-flame detectors QRC... When firing on gas, the flame is supervised with an ionization probe or flame detector QRA... (with ancillary unit AGQ2...A27).

Firing on oil

- Forced draft oil burners to EN 267
- Burner controls for use with atomization oil burners of monoblock design to EN 230

Firing on gas

- Forced draft gas burners to EN 676
- Burner controls to EN 298

Application-specific features

When firing on oil
- Contact for preheating the oil
- Monitoring of time for preheating the oil
- Limitation of the number of repetitions

When firing on gas
- Monitoring of air pressure with functional check of the air pressure switch during startup and operation

General
- Undervoltage detection
- Electrical remote reset
- Accurate and reproducible program sequence owing to digital signal handling
- Controlled intermittent operation after 24 hours of continuous operation
- Multicolor display of status and error messages

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!

- All activities (mounting, installation and service work, etc.) must be carried out by qualified staff
- Before performing any wiring changes in the connection area, completely isolate the burner control from the mains supply (all-polar disconnection)
- Ensure that wiring is in an orderly state
- Check to ensure that wiring is in an orderly state and that the wires are firmly connected
- Press the lockout reset button of the burner control or the reset button extension AGK20.43 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

Engineering notes

- 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

Mounting notes

- Ensure that the relevant national safety regulation are complied with

Installation notes

- Observe the permissible lengths of the detector cables (refer to «Technical data»)
- Always run the high-voltage ignition cables separately while observing the greatest possible distances to the unit and to other cables
- Install switches, fuses, earthing, etc., in compliance with local regulations
- Ensure that the maximum permissible current ratings will not be exceeded (refer to «Technical data»)
- 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 burner control must never be connected
- Phase and neutral conductors may not be interchanged

Electrical connection of ionization probe and flame detector

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

- The cable length must not exceed 1 m
- Never run the detector cable together with other cables
  – Line capacitance reduces the magnitude of the flame signal
  – Use a separate cable
- Observe the permissible lengths of the flame detector cables (refer to «Technical data»
- Insulation resistance
  – Must be a minimum of 50 MΩ between ionization probe and ground
  – Soiled detector holders reduce the insulation resistance, thus supporting creep age currents
- Earth the burner in compliance with the relevant regulations; earthing the boiler alone does not suffice

Only when firing on gas

- Observe the polarity
  With supervision of the ionization current, the burner controls can detect wrong polarity of live and neutral conductors, in which case they initiate lockout at the end of «TSA»
- The ionization probe must be protected against electric shock hazard
- Locate the ionization probe such that
  – the ignition spark cannot arc over to the ionization probe (risk of electrical overloads)
  – the ignition spark cannot adversely affect supervision of the ionization current
- In networks with nonearthed neutral conductor and ionization current supervision, terminal 6 must be connected to burner ground

Commissioning notes

- Prior to commissioning, ensure that wiring is in an orderly state
- When commissioning the plant or when doing maintenance work, make the following safety checks:

	Safety check	Anticipated response
a)	Burner startup with flame detector darkened or with open-circuit to the ionization probe	Lockout at the end of «TSA»
b)	Burner startup with flame detector exposed to extraneous light (only when firing on oil)	Lockout after no more than 25 seconds or immediate lockout during the prepurge time
c)	Burner operation with simulated flame failure; for that purpose, darken the flame detector during operation and maintain that status or interrupt the gas supply	Firing on oil: Repetition followed by lockout at the end of «TSA» Firing on gas: immediate lockout after the flame has extinguished
d)	Burner startup with response from air pressure switch (only when firing on gas)	Lockout at the end of the waiting time «tw»
e)	Burner operation with simulated loss of air pressure (only when firing on gas)	Immediate lockout

Norms and certificates

CE

Conformity to EEC directives
- Electromagnetic compatibility EMC (immunity) 89 / 336 EEC
- Directive for gas appliances 90 / 396 EEC
- Low-voltage directive 73 / 23 EEC

ISO 9001: 2000
Cert. 00739

ISO 14001: 1996
Cert. 38233

Type reference	DVGW	TÜV CERT	
RMO88.53A1	---	x	x
RMO88.53A2	---	x	---
RMO/PP88.53A1	---	---	x
RMG88.62A1	X	x	x
RMG88.62A2	X	x	---
RMG/M88.62A2	X	x	---

Service notes

- Each time a unit has been replaced, check to ensure that wiring is in an orderly state. Make the safety checks as listed in «Commissioning notes»

Disposal notes

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

Mechanical design

The housing of the burner controls is made of impact-proof, heat-resistant and flame-retarding plastic.

The housing accommodates the

- microcontroller which controls the program sequence, and the relays for load control
- electronic flame signal amplifier (for the ionization probe when firing on gas, for the flame detector when firing on oil)
- lockout reset button with its integrated 3-color signal lamp for status and error messages and the socket for connecting the interface adapter OCI400
- terminals (maximum 15) for connecting the Riello base (part nos. 2061506 and 2221314)
- Central fixing screw for securing the housing to the Riello base (part nos. 2061506 and no. 2221314)

Display and diagnosis

- Multicolor display of status and error messages
- Transmission of status and error messages and detailed service information via additional interface adapter OCI400 and PC Windows software ACS400

Type summary

Type references Riello and HVAC Products

Riello	HVAC Products
RMO88.53A1	LMO88.530A1RL
RMO88.53A2	LMO88.530A2RL
RMO/PP88.53A1	LMO88.531A1RL
RMG88.62A1	LMO88.620A1RL
RMG88.62A2	LMO88.620A2RL
RMG/M88.62A2	LMO88.621A2RL

Firing on oil

Typ reference	Mains voltage	tw max.	TSA max.	t1 min.	t3 min.	t3n min.	t4 min.	t8 min.	t42 min.	Response in the event of loss of flame during operation
RMO88.53A2	AC 220...240 V [1])	2 s	5 s	23 s	22 s	7 s	7 s	---	7 s	Maximum 3 repetitions, followed by lockout
RMO88.53A1	AC 100...120 V	2 s	5 s	23 s	22 s	7 s	7 s	---	7 s	
RMO/PP88.53A1	AC 100...120 V	2 s	5 s	23 s	22 s	7 s	7 s	120 s	7 s	

Firing on gas

Type summary	Mains voltage	tw [2]) max.	TSA max.	t1 min.	t3n min.	t4 min.	t10 max.	t11 min.	t12 min.	Response in the event of loss of flame during operation
RMG88.62A2	AC 220...240 V [1])	2 s	3 s	25 s	2 s	10 s	10 s	---	15 s	Lockout
RMG88.62A1	AC 100...120 V	2 s	3 s	25 s	2 s	10 s	10 s	---	30 s	Lockout
RMG/M88.62A2	AC 220...240 V [1])	2 s	3 s	20 s	2 s	10 s	10 s	35 s	30 s	Lockout

Legend

TSA	Ignition safety time	t8	Postpurge time
tw	Waiting time	t42	Interval «BV2-BV3»
t1	Prepurge time	t10	Specified time for air pressure signal («LP» time)
t3	Preignition time	t11	Programmed opening time for actuator «SA»
t3n	Postignition time	t12	Programmed closing time for actuator «SA»
t4	Interval «BV1-BV2»		

[1]) For applications outside the European Community, operation at mains voltage AC 200...240 V ±10 % is ensured

[2]) Max. 20 s, when «CPI» or «LP» are not in the idle position

Ordering

	Burner control including plug-in base	refer to «Type summary»
	Photoresistive detector (refer to Data Sheet 7714)	**QRB1B...**
	Blue-flame detector (refer to Data Sheet 7716)	**QRC1...**
	**Ancillary unit for UV supervision** - Cable length 500 mm - Cable length 300 mm	 **AGQ2.1A27** **AGQ2.2A27**
	Diagnostic tool (refer to Data Sheet 7614) - Hardware - Software	 **OCI400** **ACS400**
	**Lockout reset button extension**	**AGK20.43**

Technical data

General unit data	Mains voltage	
	- RMO88.53A2, RMG88.62A2	AC 220...240 V +10 % / -15 % [1] [1]) For applications outside the European Community, operation at mains voltage AC 200...240 V ±10 % is ensured
	- RMG/M88.62A2	AC 220...240 V +10 % / -15 %
	- RMO88.53A1, RMG88.62A1, RMO/PP88.53A1	AC 100...120 V +10 % / -15 %
	Mains frequency	50...60 Hz ±6 %
	External primary fuse (Si) - Only RMO88.53A1 and RMO/PP88.53A1	T6,3H250V (IEC 60 127-215)
	Built-in fuse (F) - Not for RMO88.53A1 and RMO/PP88.53A1	T6,3H250V (IEC 60 127-215)
	Power consumption	20 VA
	Mounting position	optional
	Weight	approx. 260 g
	Safety class	I
	Degree of protection	IP 20 (user must ensure min. IP 40 when built in)
	Tightening torque fixing screw M4	max. 0.8 Nm
	Perm. cable length thermostat	max. 20 m at 100 pF / m
	Perm. cable length oil preheater	max. 20 m at 100 pF / m
	Perm cable length air pressure switch	max. 1 m at 100 pF / m
	Perm. cable length CPI	max. 1 m at 100 pF / m
	Perm. cable length gas pressure switch	max. 20 m at 100 pF / m
	Perm. cable length detector cable	max. 1 m
	Perm. cable length remote reset	max. 20 m at 100 pF / m
	Undervoltage protection, switch-off voltage	
	- RMO88.53A2, RMG88.62A2	approx. AC 165 V (AC 160...170 V)
	- RMO88.53A1, RMG88.62A1, RMO/PP88.53A1	approx. AC 65 V (AC 60...70 V)
	- RMG/M88.62A2	approx. AC 165 V (AC 160...175 V)

Max. perm. amperage at cosφ ≥ 0.6	RMO88.53A2	RMO88.53A1 RMO/PP88.53A1	RMG88.62A2 RMG/M88.62A2	RMG88.62A1
Terminal 1	5 A	5 A	5 A	---
Terminal 2	---	---	---	5 A
Terminal 3	---	---	0.5 A	0.5 A
Terminal 4	---	---	---	1 A
Terminal 5	1 A	1 A	1 A	---
Terminal 7	---	---	5 A	---
Terminal 10	1 A	1 A	---	5 A
Terminal 11	5 A	5 A	---	---
Terminal 12	2 A ²)	2 A ²)	1 A	1 A
Terminal 13	1 A	1 A	2 A ²)	1 A
Terminal 14	1 A	1 A	1 A	2 A ²)

²) 3 A at a maximum of 150,000 switching cycles

Environmental conditions

Transport	DIN EN 60 721-3-2
Climatic conditions	class 2K2
Mechanical conditions	class 2M2
Temperature range	-20...+70 °C
Humidity	< 95 % r.h.
Operation	DIN EN 60 721-3-3
Climatic conditions	class 3K5
Mechanical conditions	class 3M2
Temperature range	-5...+60 °C -20...+60 °C (only for RMG/M88.62A2)
Humidity	< 95 % r.h.

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

Flame supervision with ionization probe (only when firing on gas)

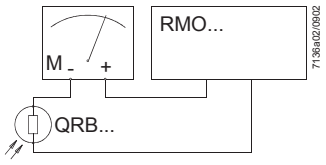
	At mains voltage UN = AC 100...120 V	At mains voltage UN = AC 220...240 V ¹)
Detector voltage across ionization probe and ground (AC voltmeter, Ri ≥ 10 MΩ)	AC 50...120 V	AC 115...240 V
Switching threshold (limit values): Switching on (flame on, DC ammeter Ri ≤ 5 kΩ) Switching off (flame off, DC ammeter Ri ≤ 5 kΩ)	≥ DC 1.5 µA ≤ DC 0.5 µA	
Detector current recommended for reliable operation	≥ DC 6 µA	
Maximum short-circuit current between ionization probe and ground (AC Ri ≤ 5 kΩ)	AC 50...150 µA	AC 100...300 µA

¹) For applications outside the European Community, operation at mains voltage AC 200...240 V ±10 % is ensured

Flame supervision is accomplished by making use of the conductivity and rectifying effect of the flame.

The flame signal amplifier responds only to the DC component of the flame signal.
→ A short-circuit between ionization probe and ground causes the burner control to initiate lockout!

Measuring circuit



For detector currents, refer to «Technical data»

Legend

C Electrolytic capacitor 100...470 µF; DC 10...25 V
FE Ionization probe
M Microammeter, Ri max. 5000 Ω

Flame supervision with AGQ2...A27 and flame detector QRA...

Mains voltage	AC 230 V +10 % / -15 %
Mains frequency	50...60 Hz ±6 %
Perm. cable length from QRA... to AGQ2...A27 (lay separate cable)	max. 20 m
Perm. cable length from AGQ2...A27 to RMG88.62A2	max. 2 m
Weight of AGQ2...A27	approx. 140 g
Mounting position	optional
Degree of protection	IP 40
Power consumption	4.5 VA

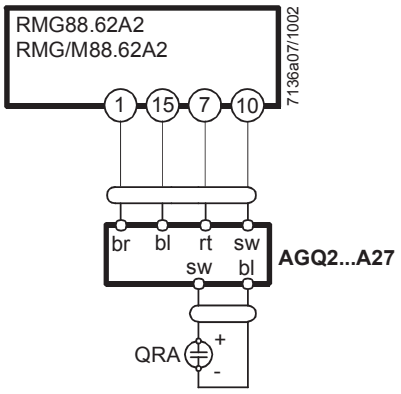
	At mains voltage U_N	
	AC 220 V	AC 240 V
Detector voltage at QRA... (with no load)		
Until the end of «tw» and after controlled shutdown	DC 400 V	DC 400 V
After the end of «tw»	DC 300 V	DC 300 V
Detector voltage Load by DC measuring instrument Ri > 10 MΩ		
Until the end of «tw» and after controlled shutdown	DC 380 V	DC 380 V
After the end of «tw»	DC 280 V	DC 280 V
DC current detector signals with flame detector QRA...	**Min. required**	**Max. possible**
Measurement at the flame detector	DC 200 µA	DC 500 µA

Ancillary unit AGQ2...A27

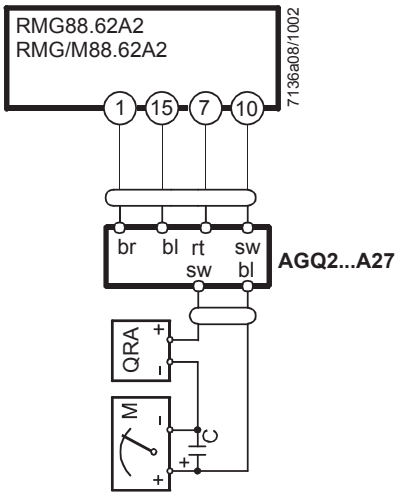
In connection with burner controls RMG88.62A2 / RMG/M88.62A2, use of the UV ancillary unit AGQ2...A27 is mandatory.

Operation with permanent line:
UV test with higher supply voltage across the UV cell on startup and after controlled shutdown.

Connection diagram



Measuring circuit



Measurement made at flame detector

Legend

C	Electrolytic capacitor 100...470 µF; DC 10...25 V	bl	Blue
M	Microammeter Ri max. 5000 Ω	br	Brown
QRA...	Flame detector	rt	Red
		sw	Black

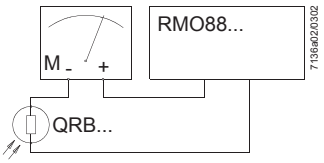
Flame supervision with QRB1B... (only when firing on oil)

At mains voltage U_N = AC 100...120 V or U_N = AC 220...240 V [1])

	Detector current			
	Minimum required (with flame)	Recommended for reliable operation	Maximum permitted (without flame)	Maximum possible with flame (typically)
QRB1B...	DC 25 µA	DC 35 µA	DC 5.5 µA	DC 100 µA

[1]) For applications outside the European Community, operation at mains voltage AC 200...240 V ±10 % is ensured

Measuring circuit for detector resistance measurement



For detector currents, refer to «Technical data»

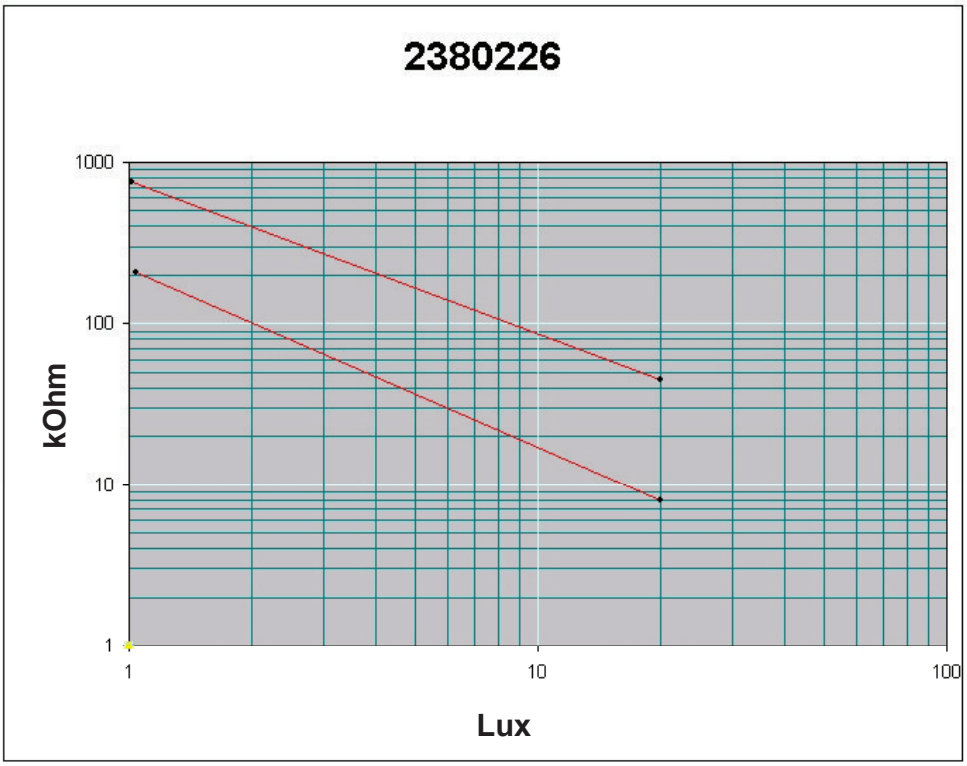
Legend

QRB1B...	Photoresistive detector
M	Microammeter, Ri max. 5000 Ω

As an alternative to the detector resistance measurement, the diagnostic tool OCI400 / ACS400 can be used. In that case, use of a DC microammeter is not required.

Flame supervision with Riello photoresistive detector no. 2380226

Photoresistive detector	Switching off (flame off)	Switching on (without flame)
No. 2380226	100...200 kΩ	300...450 kΩ



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Function

Preconditions for startup

- Burner control is reset
- All contacts in the line are closed
- Only when firing on gas:
  – Air pressure switch «LP» is in its idle position
  – CPI contact is closed
- No undervoltage
- Heat demand contact is closed
- Flame detector is darkened, no extraneous light

Undervoltage

RMO88.53A1 RMO/PP88.53A1 RMG88.62A1	RMO88.53A2 RMG88.62A2	RMG/M88.62A2
Safety shutdown from operating position in the event mains voltage drops below approx. AC 65 V	Safety shutdown from operating position in the event mains voltage drops below approx. AC 165 V	Safety shutdown from operating position in the event mains voltage drops below approx. AC 165 V
Repetition in the event mains voltage exceeds approx. AC 80 V	Repetition in the event mains voltage exceeds approx. AC 175 V	Repetition in the event mains voltage exceeds approx. AC 180 V

Controlled intermittent operation

After no more than 24 hours of continuous operation, the burner control will automatically initiate a safety shutdown followed by an unshortened repetition of startup.

CPI

Only when firing on gas:
During the startup phase at the beginning of the waiting time «tw», the CPI (Closed Position Indicator) contact in the gas valve «BV1» is checked by the RMG88.62... / RMG/M88.62... to ensure it is closed. When the CPI contact subsequently opens, there is no response from the burner control during the times «t10 / t1 / t12». From program phase «B», that is, at the start of the safety time «TSA», the CPI contact is continuously checked to ensure it is open. If not, lockout will occur.

Oil preheater

Only when firing on oil:
When the oil is sufficiently preheated, contact «OW» in the external oil preheater closes. The closed position is monitored during the entire prepurge time «t1» (refer to illustration 7136d01, «Program sequence»).

Monitoring of time of oil preheater

If the oil preheater's release contact does not close after 600 seconds, lockout will be initiated.

Postpurging (only RMO/PP88.53A1)

When the heat demond contact opens, the motor continues to run in accordance with the postpurge time «t8».

Air damper control (only RMG/M88.62A2)

Checked air damper control to ensure ignition in the ignition load position. The predefined position must be reached on completion of the programmed closing time «t12» for the actuator. Otherwise, lockout will be initiated.

Detection of extraneous light

Only when firing on oil:
If extraneous light is detected, lockout will take place within the period of time «t3». Before a demand for heat is received (standby phase), only extraneous light is indicated by the red-green flash light in the lockout reset button. Extraneous light is indicated for a maximum of 25 seconds. If extraneous light is detected for a longer period of time, lockout will be initiated.

Only when firing on gas:
If extraneous light is detected, lockout will take place within the periods of time «t1» and «t12». During the times «t0» and «tw», only extraneous light is indicated by the red-green flash light in the lockout reset button. Extraneous light is indicated for a maximum of 25 seconds. If extraneous light is detected for a longer period of time, lockout will be initiated.

Flame supervision

When changing from the operating state to standby or repetition (only when firing on oil), a flame signal is permitted for a period of 10 seconds after the heat demand contact has opened. Otherwise, lockout will occur.

Loss of air pressure

Only when firing on gas:
If air pressure switch «LP» changes to its idle position during the prepurge time «t1», the program will return to the beginning of «t10». Loss of air pressure during «t1» may occur no more than 4 times. If loss of air pressure occurs on completition of «t1», the burner control will immediately initiate lockout.

Fuse

If fuse is blown due to overload, the unit´s life expectancy will be shortened.

Control sequence in the event of fault

If lockout occurs, the outputs for the fuel valves and ignition will immediately be deactivated (< 1 second).

Cause	Response
General	
Mains failure	Repetition with unshortened program sequence
Voltage has dropped below the undervoltage threshold	Repetition with unshortened program sequence
Burner does not ignite after «TSA»	Lockout
Afterburn time > 10 seconds	Lockout
Only when firing on oil	
Loss of flame during operation	Maximum 3 repetitions, followed by lockout
Oil preheater's release contact does not close	Lockout 600 seconds after demand for heat
Oil preheater's release contact opens and closes more than 5 times during «t1»	Lockout
Extraneous light during «t0» and «tw»	Red-green signal lamp steady on, lockout after 25 seconds
Extraneous light during «t1»	Lockout
Only when firing on gas	
Loss of flame during operation	Immediate lockout
Contacts of air pressure switch «LP» have welded in their idle position	Lockout 10 seconds after the end of «t10»
«CPI» contact is open during «tw»	Lockout after approx. 20 s
Ignition load position not reached before start of «TSA»	Immediate lockout
Contacts of air pressure switch «LP» have welded in their working position	Prevention of startup and lockout after about 20 seconds
Loss of air pressure during «t1»	Maximum 4 repetitions at the start of «t10», followed by lockout
Loss of air pressure after the fuel valve has opened	Immediate lockout
Extraneous light during «t0» and «tw»	Red-green signal lamp flashes, lockout after 25 seconds
Extraneous light 5 seconds after completion of «tw» until start of «TSA»	Lockout

Lockout

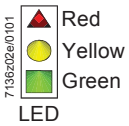
In the event of lockout, the burner control remains locked (lockout cannot be changed) and the red signal lamp will light up. This status is also maintained in the event of a mains failure.

Resetting the burner control

If lockout occurs, the burner control can immediately be reset. To do this, keep the lockout reset button depressed for about 1 second.

Operation

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

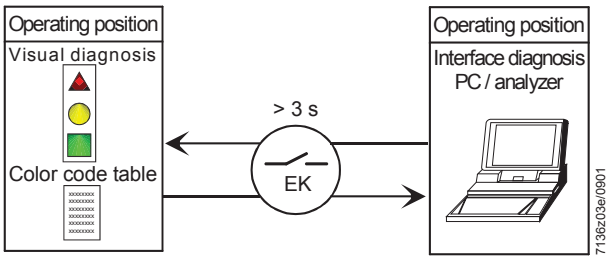


The multicolor LED is the key indicating element for both the visual diagnosis and the interface diagnosis.

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

There are 2 diagnostic choices:
1. Visual diagnosis: Indication of operating state.
2. Interface diagnosis: With the help of the interface adapter OCI400 and PC software ACS400 or flue gas analyzers of different makes.

Visual diagnosis:
In normal operation, the different operating states are displayed in the form of color codes according to the color code table below. The interface diagnosis is activated by pressing the lockout reset button for at least 3 seconds (refer to Data Sheet 7614). If, by accident, the interface diagnosis has been activated, in which case the slightly red light of the signal lamp flickers, it can be deactivated by again pressing the lockout reset button for at least 3 seconds. The moment of switching over is indicated by a yellow light pulse.



Indication of operating state

During startup, indication is according to the following table:

Color code table		
Sequences used	Color code	Color
«tw», standby with permanent phase, waiting statuses	❍❍❍❍❍❍❍❍❍❍❍❍	Off
Oil: Oil preheater on Gas: Prepurging	●.....	Yellow
Ignition phase, ignition controlled	● ❍● ❍● ❍● ❍● ❍●	Yellow-off
Operation, flame o.k.	❑.....	Green
Operation, poor flame (when detector current drops below the recommended level for reliable operation)	❑ ❍❑ ❍❑ ❍❑ ❍❑ ❍	Green-off
Undervoltage, built-in fuse	● ▲● ▲● ▲● ▲● ▲●	Yellow-red
Fault, alarm	▲.....	Red
Extraneous light	▲ ❑ ▲ ❑ ▲ ❑ ▲ ❑ ▲ ❑ ▲	Red-green
Error code output (e.g. 2 blinks)	▲▲ ❍▲▲ ❍▲▲ ❍	Red-off

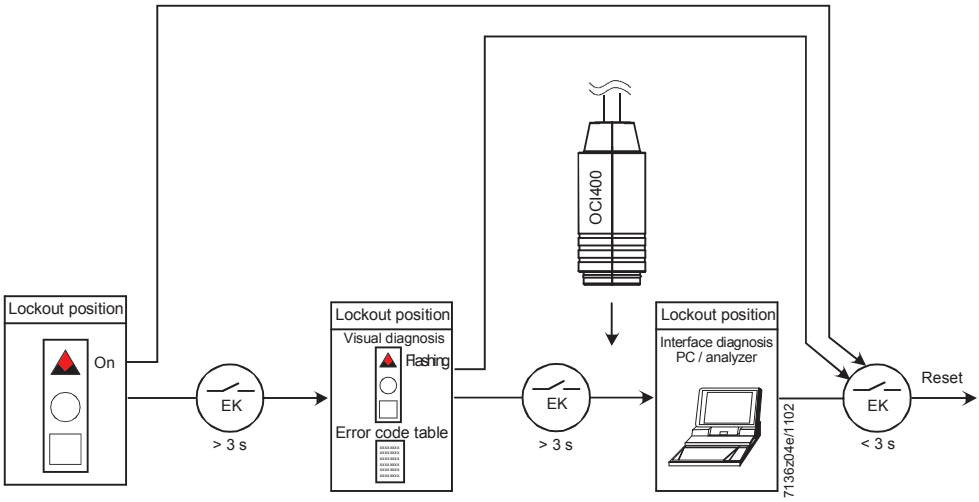
Legend

.....	Steady on		
●	Yellow	❍	Off
▲	Red	❑	Green

Diagnosis of cause of fault

After lockout, the red fault signal lamp remains steady on. In that condition, the visual diagnosis 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, the interface diagnosis will be activated. The interface diagnosis works only if the lockout reset button AGK20.43 extension is not fitted. For more detailed information, refer to Data Sheet 7614.

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



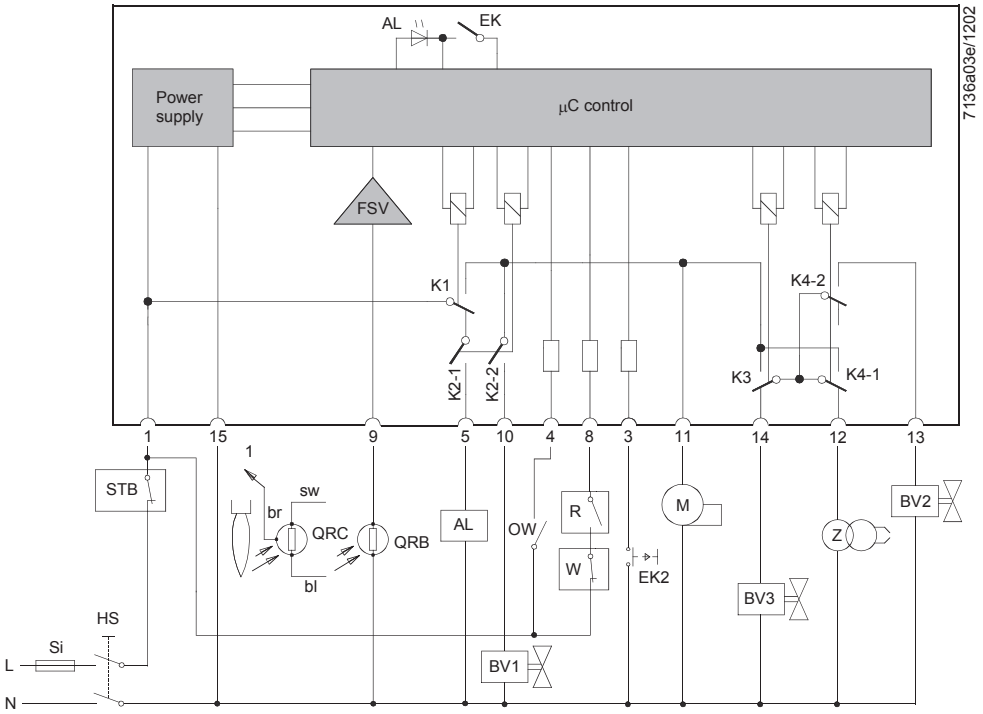
Error code table			
Oil RMO88.53... RMO/PP88.53...	Gas RMG88.62... RMG/M88.62...	Blink code	Possible cause
x	x	2 x blinks • •	No establishment of flame at the end of «TSA» - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner, no fuel - Faulty ignition
---	x	3 x blinks • • •	Faulty air pressure switch
x	x	4 x blinks • • • •	Extraneous light
x	x	5 x blinks • • • • •	«CPI» contact is open during «tw»
---	x	6 x blinks • • • • • •	- Faulty actuator - Actuator position not reached - Cams incorrectly adjusted
x	x	7 x blinks • • • • • • •	Loss of flame during operation - Faulty or soiled fuel valves - Faulty or soiled flame detector - Poor adjustment of burner
x	---	8 x blinks • • • • • • • •	Monitoring of oil preheater time
x	x	9 x blinks • • • • • • • • •	Free
x	x	10 x blinks • • • • • • • • • •	Wiring error or internal error, output contacts; faults that cannot be detected, such as simultaneous faults

During the time the cause of fault is diagnosed, the control outputs are deactivated.
- Burner remains shut down
- External fault indication remains deactivated
- Fault signal «AL» is activated

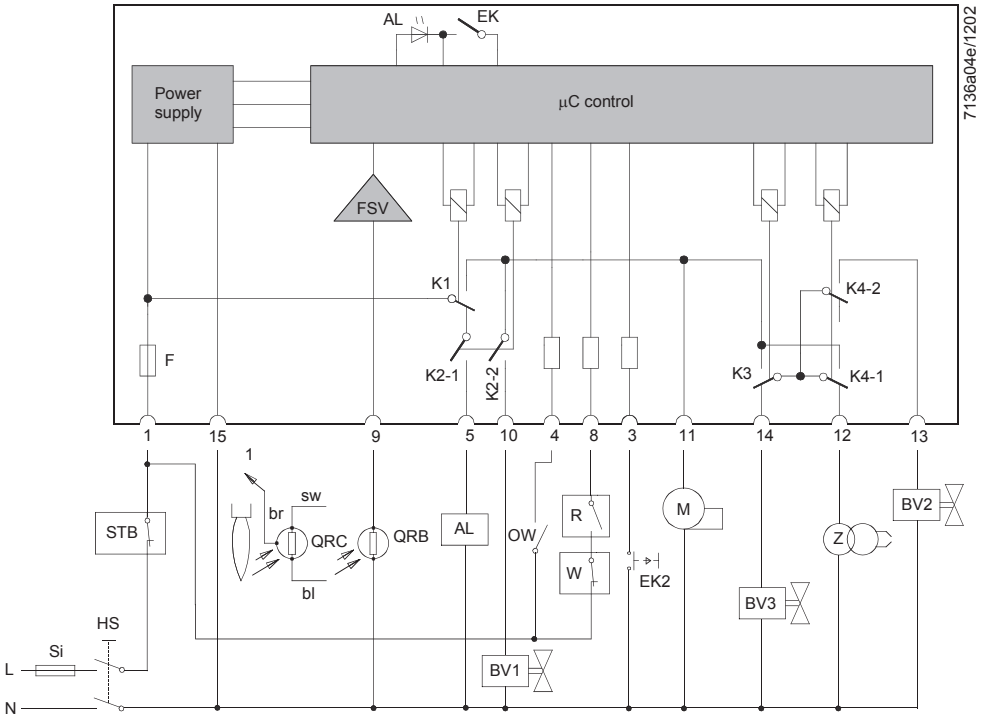
The fault diagnosis is quit and the burner switched on again by resetting the burner control. To do this, press the lockout reset button for about 1 second.

Connection diagrams and internal diagrams

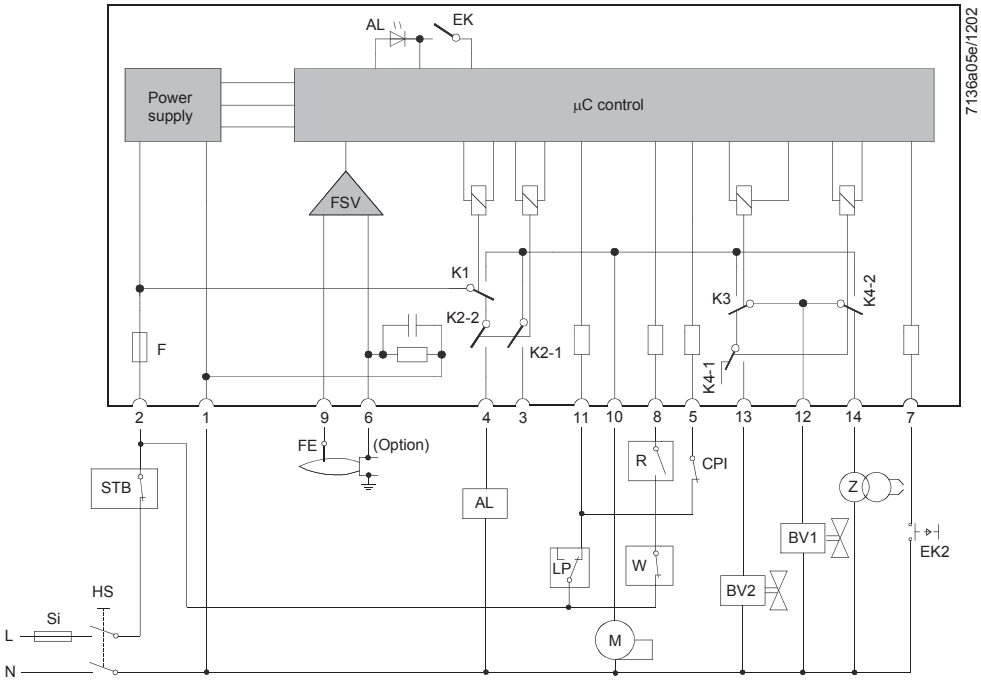
RMO88.53A1
RMO/PP88.53A1



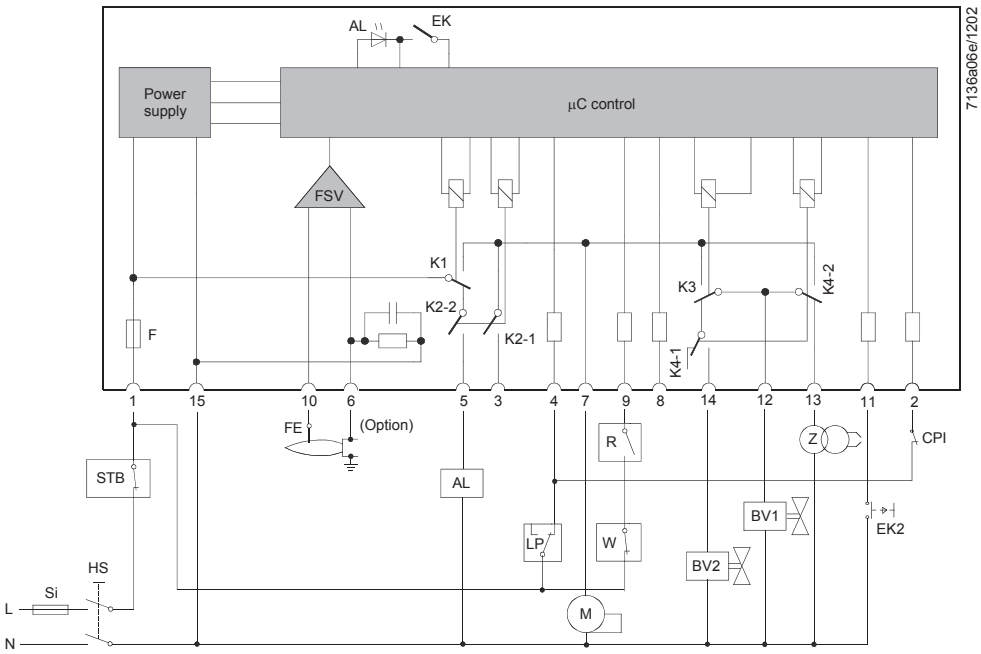
RMO88.53A2



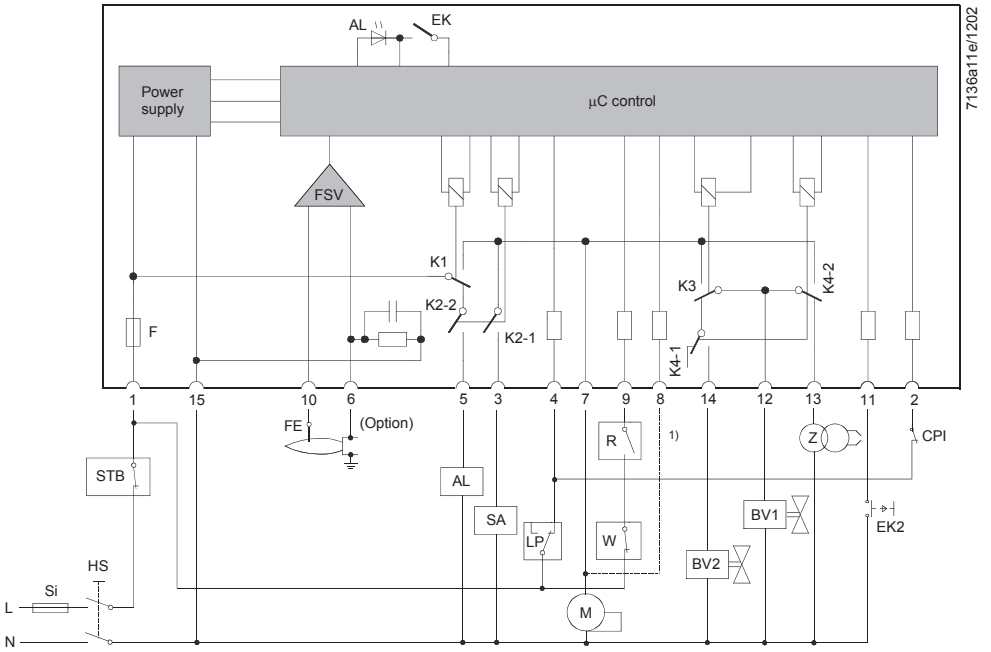
RMG88.62A1



RMG88.62A2



RMG/M88.62A2

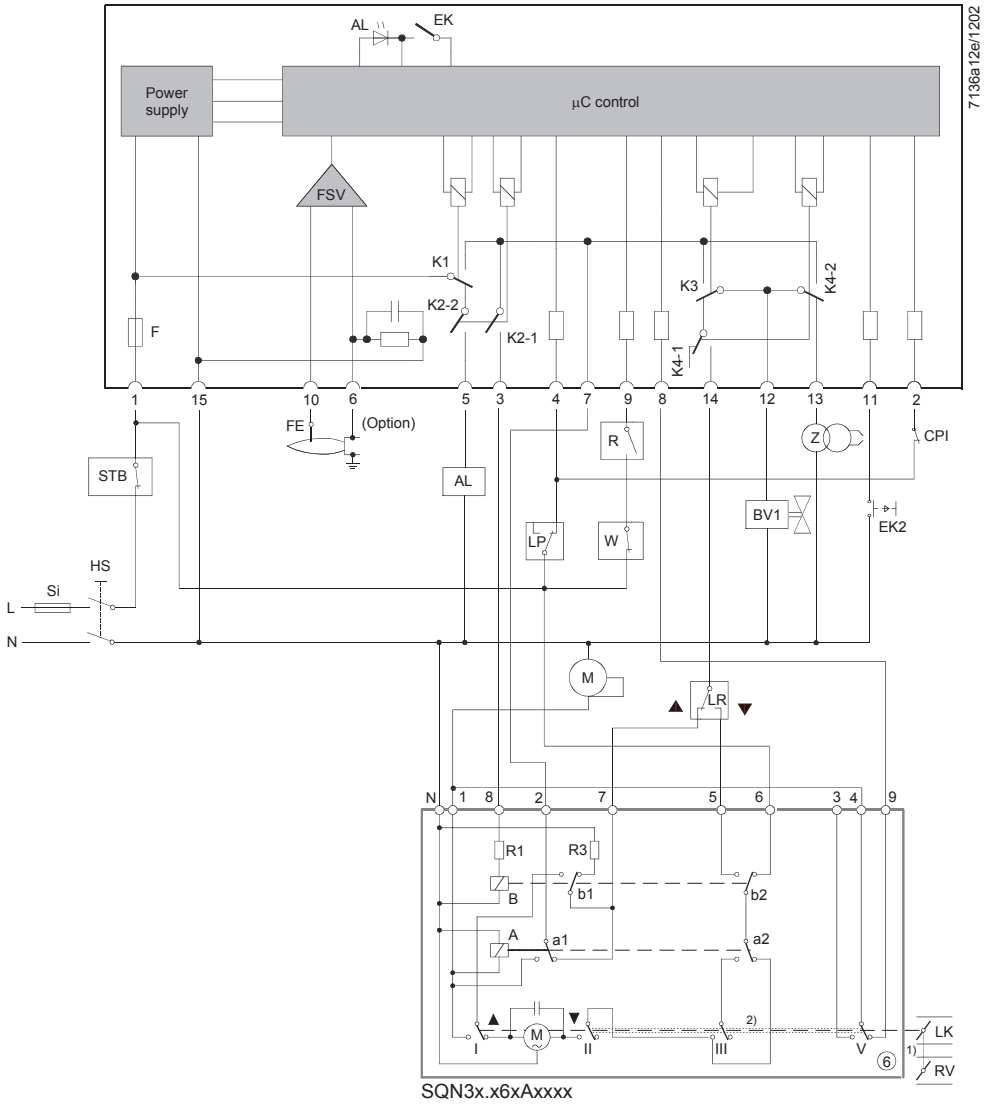


Legend

AL	Alarm device
BV...	Fuel valve
CPI	Closed Position Indicator
EK	Lockout reset button
EK2	Remote lockout reset button
F	Built-in fuse
FE	Ionization probe
FSV	Flame signal amplifier
HS	Main switch
K...	Contacts of control relay
LP	Air pressure switch
M	Burner motor
QRB1B...	Photoresistive detector
QRC...	Blue-flame detector
	bl Blue
	br Brown
	sw Black
R	Control thermostat or pressurestat
SA	Actuator
Si	External primary fuse
STB	Safety limit thermostat
OW	Release contact of oil preheater
W	Limit thermostat or pressure switch
Z	Ignition transformer

1) If the actuator receives no feedback signal from the ignition load position, a wire link must be fitted across terminals 7 and 8

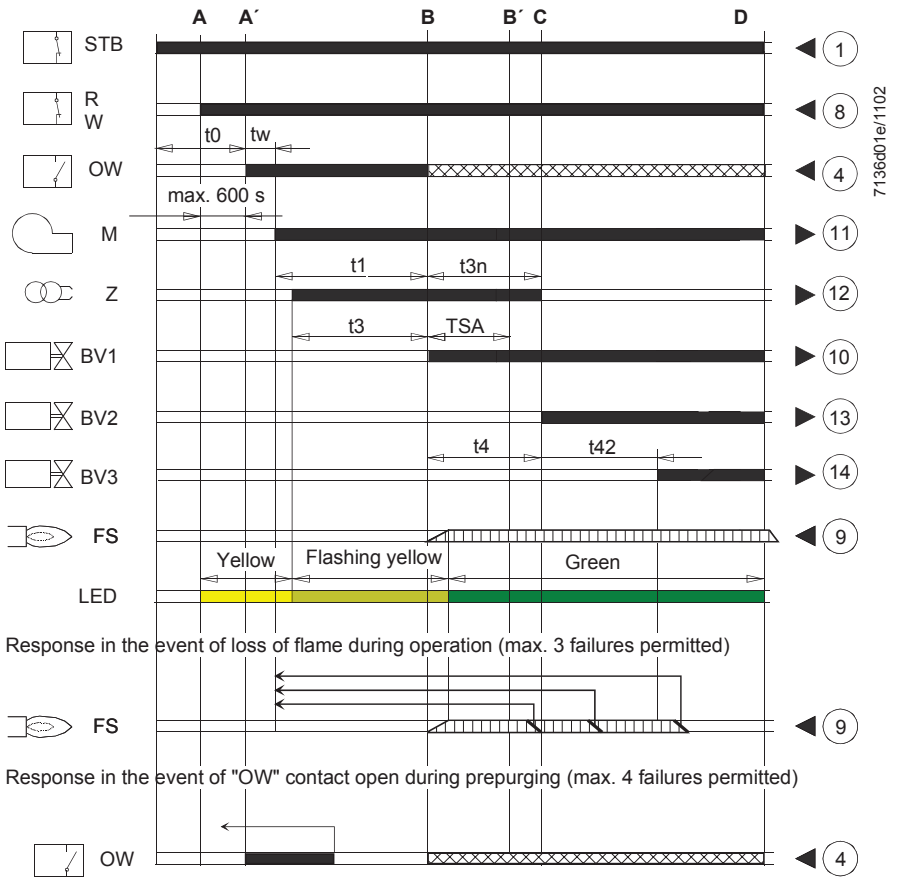
RMG/M88.62A2 with actuator



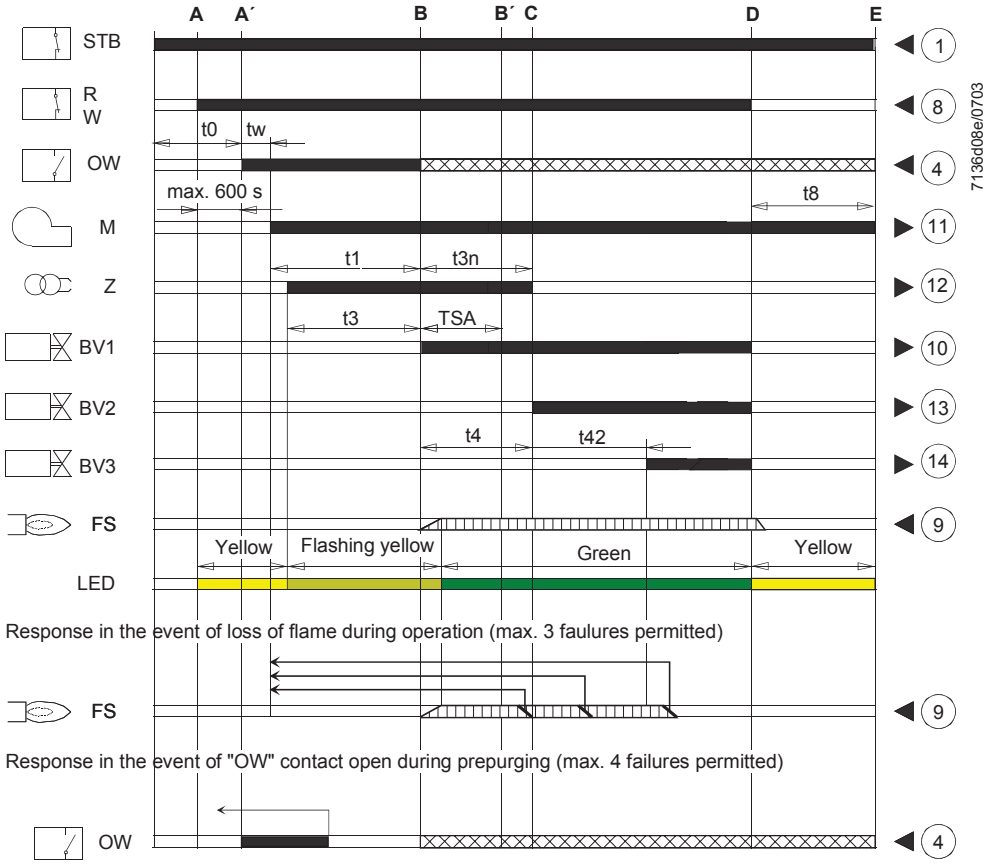
If the contacts of switch V welded in position 4 → 9, supervision of the ignition load position would be negated and would not be detected in operation. This means that the circuit is not safety relevant. It is only used for supervision purposes. The user must ensure that, in the event of failure (should the burner ignite at nominal load «NL»), no damage will occur.

Control sequence

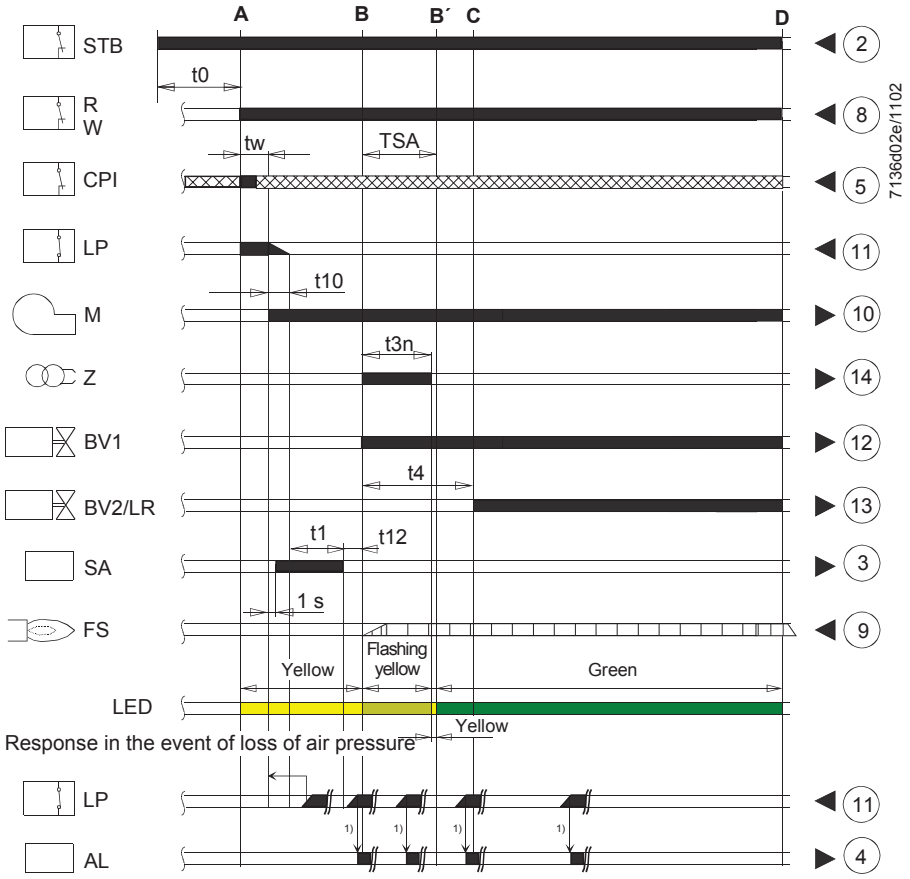
RMO88.53A1
RMO88.53A2



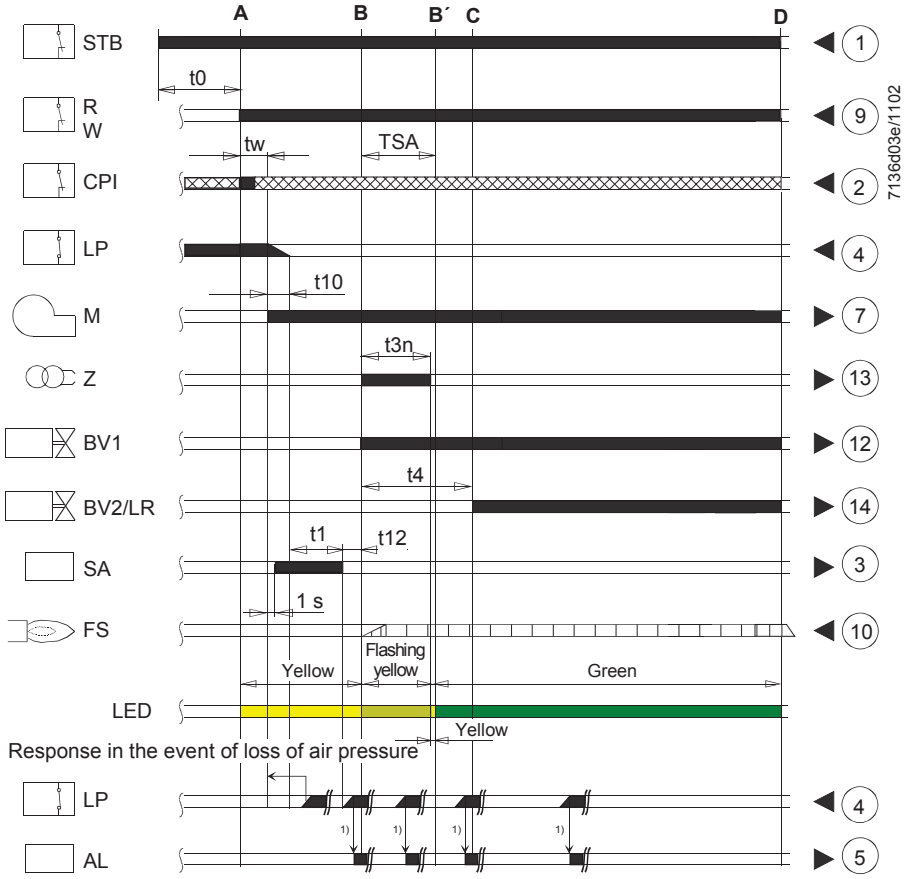
RMO/PP88.53A1



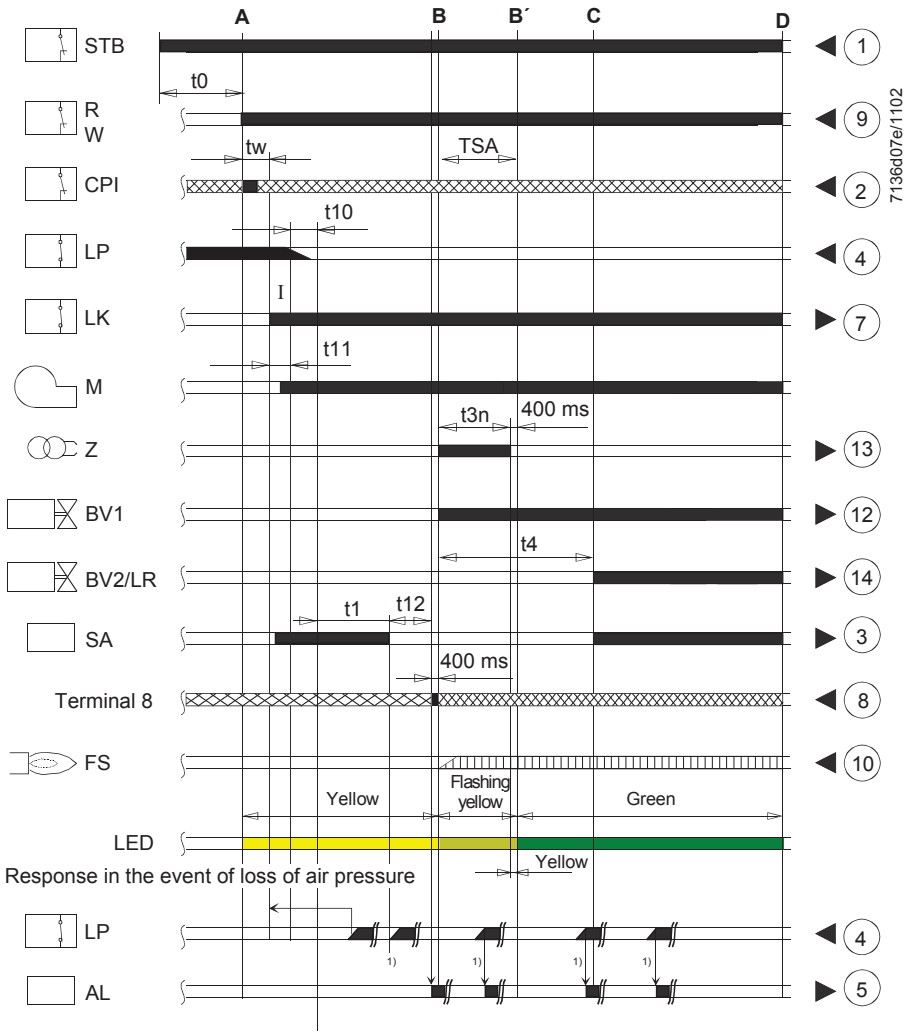
RMG88.62A1



RMG88.62A2



RMG/M88.62A2

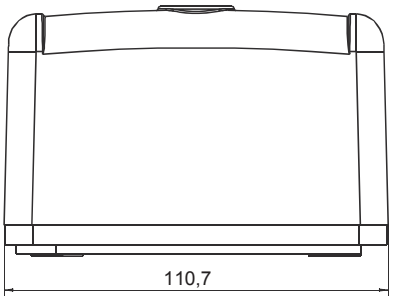


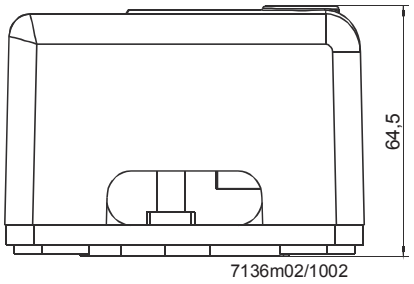
Legend

	Control signals of burner control	1)	Lockout
	Required input signals		
	Permitted input signals		
A´	Beginning of startup with burners using «OW»	C-D	Operation
A	Heat demand	D	End of operation
B	End of prepurging, start of «TSA»	D-E	Postpurging
B-B´	«TSA»	E	End od postpurging
C	Change to operation		
BV...	Fuel valve	R	Control thermostat or pressurestat
CPI	Closed Position Indicator	SA	Actuator
FS	Flame signal	STB	Safety limit thermostat
LP	Air pressure switch	OW	Release contact of oil preheater
LR	Load controller	W	Limit thermostat or pressure switch
M	Burner motor	Z	Ignition transformer
tw	Waiting time	t8	Postpurge time
TSA	Ignition safety time	t10	Specified time for air pressure signal
t0	Waiting for heat demand from «R»	t11	Programmed opening time for actuator «SA»
t1	Prepurge time	t12	Programmed closing time for actuator «SA»
t3n	Postignition time (ignition time during «TSA»)	t42	Interval «BV2-BV3»
t4	Interval «BV1-BV2»		

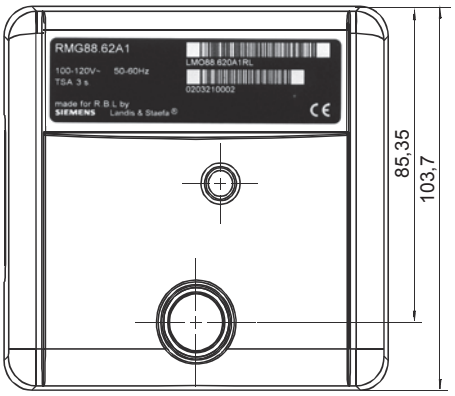
Dimensions

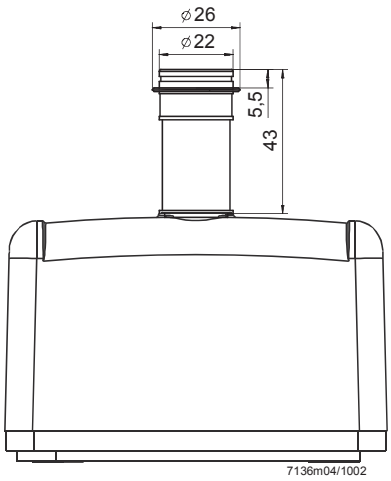
Dimensions in mm

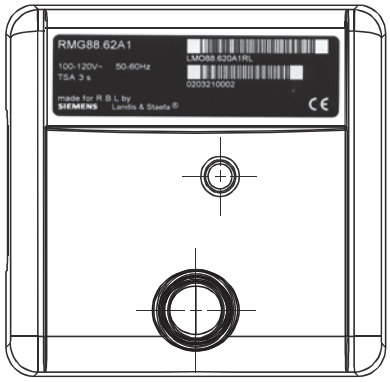




Burner control with plug-in base







Burner control complete with lockout reset but-ton extension AGK20.43 and plug-in base

Ordering Information: Part No. R83013073, R83013362

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