CONTRIVE

Quad

AUTOMATIC BURNER CONTROL SYSTEM

The burner control unit Quad is suitable for the control of direct ignition burners up to 350 kW, pursuant to EN 746-2.
Flame control by means of UV scanner or ionization rod (even shared with ignition).
Time and cycle are configurable: the same device can be used to control different types of gas and oil burners, meeting all relevant requirements.
A led-bar flame signal indicator and an advanced self-diagnostic system provides the display of either the cycle status, lockouts and failures.
Remote control and supervision of the burner can be implemented through traditional electrical wiring, or through built-in communication line.
Optional TraxGateways are available for conversion of TraxBus to standard fieldbus (like PROFIBUS-DP).

SAFETY INFORMATION

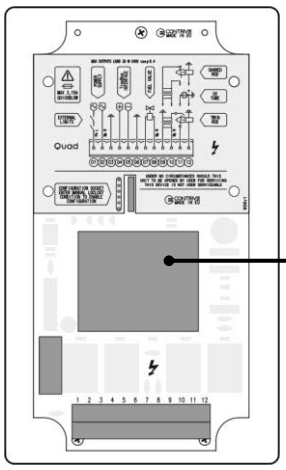
Read and understand this manual before installing, operating, or servicing this unit. This unit must be installed according to this manual and local regulations. The drawings may show units without covers or safety shields to illustrate details. Disconnect power supply and follow all usual safety precautions before carrying out any operation on the device. Be sure to reinstall covers or shields before operating any devices.
The device is not user serviceable, a faulty device must be put out of order and sent back for servicing.

CONTRIVE manufactures products used as components in a wide variety of industrial systems and equipment. The selection and application of products remain the responsibility of the equipment manufacturer or end user.
CONTRIVE accepts no responsibility for the way its products are incorporated into the final system design. All systems or equipment designed to incorporate a product manufactured by CONTRIVE must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation of that part.
Any warnings provided by CONTRIVE must be promptly provided to the end user.

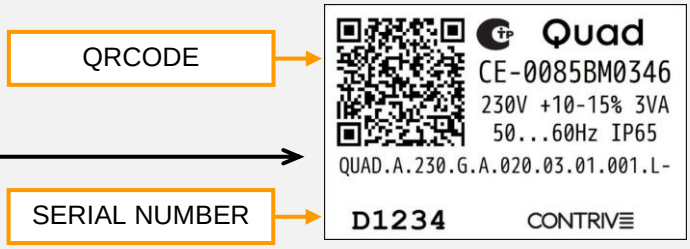
CONTRIVE guarantees for two years from the date of manufacture of its product to replace, or, at its option, to repair any product or part thereof (except fuses and with some limitations for tubes and photocells) which is found defective in material or workmanship or which otherwise fails to conform to the description of its sales order. CONTRIVE makes no warranty of merchantability or any other warranty express or implied. CONTRIVE assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products.

CONFORMITY

- Gas Equipment Directive (90/396/EEC)
- Low Voltage Equipment Directive (73/23/EEC)
- Machinery Directive (89/392/EEC)
- EMC Directive (89/336/EEC)
- EN298 compliant
- EN230 compliant
- EN746-2 compliant
- DVGW type certification No. CE-0085BM0346
- Certified by Gosstandart pursuant to GOST-R

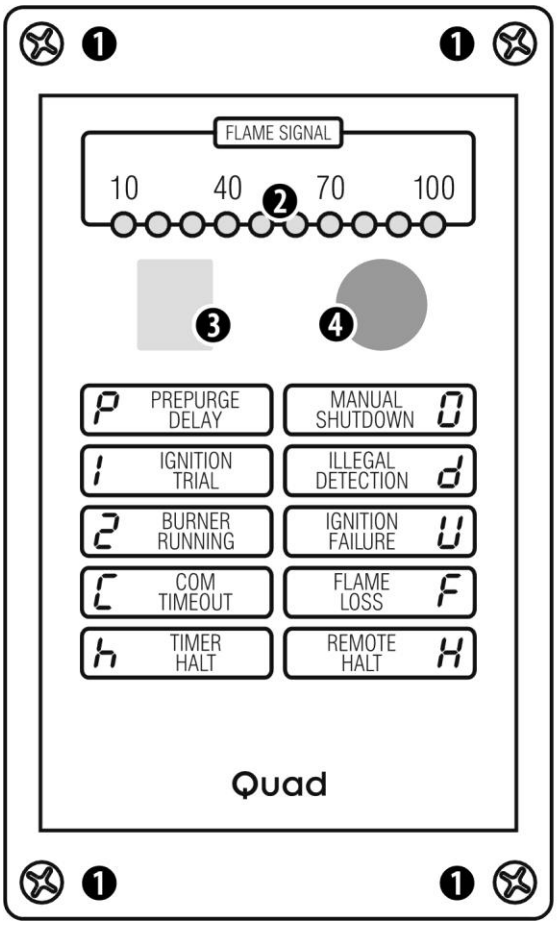


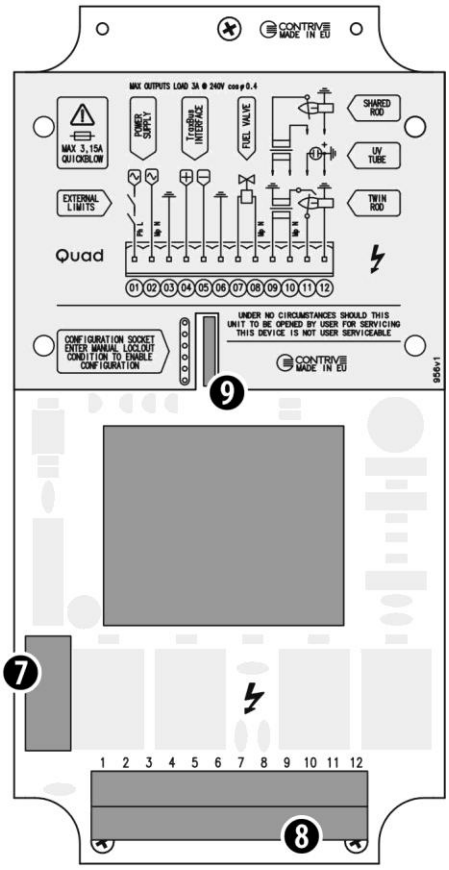
INTERNAL LABEL



Please perform the following tasks after receiving the product:

- Inspect the unit for damage. If the product appears damaged upon receipt, contact the shipper immediately.
- Verify receipt of the correct power supply voltage option by checking the label.
- If you have received the wrong model or the device does not function properly, contact your supplier.



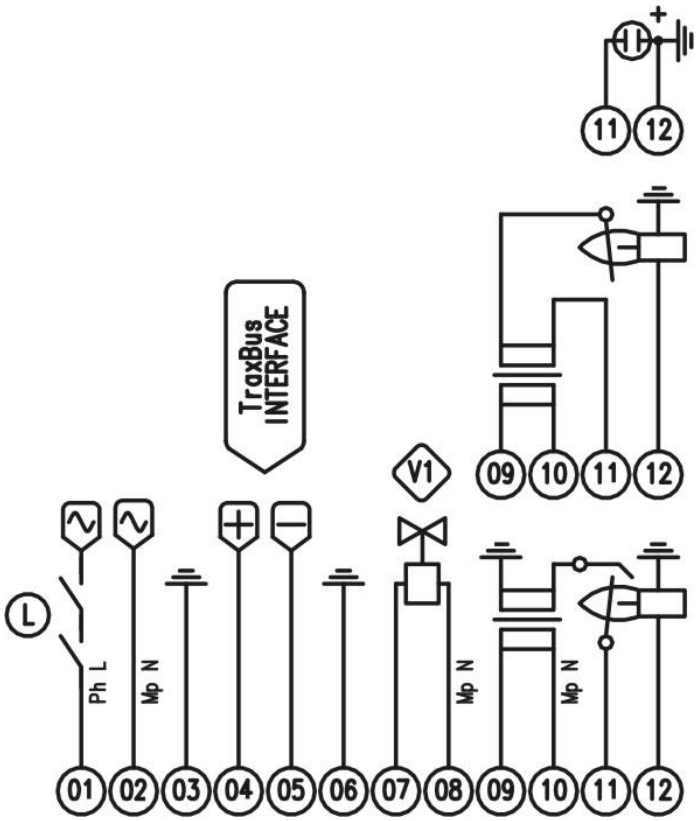


FRONT PANEL

FITTING SCREWS	**1**
FLAME SIGNAL BARGRAPH	**2**
STATUS DISPLAY	**3**
RESET / SHUTOFF BUTTON	**4**

INTERNAL

7	POWER SUPPLY FUSE
8	TERMINAL BOARD
9	EXPANSION SOCKET



WIRING DIAGRAM

01	POWER SUPPLY PHASE	
02	POWER SUPPLY NEUTRAL	
03	GROUND	
04	TRAXBUS INTERFACE POSITIVE	
05	TRAXBUS INTERFACE NEGATIVE	
06	GROUND	
07	GAS VALVE	(V1)
08	POWER SUPPLY NEUTRAL	
09	IGNITION TRANSFORMER OUTPUT	
10	POWER SUPPLY NEUTRAL	
11	FLAME DETECTOR INPUT	(ROD, UV-)
12	GROUND	
L	EXTERNAL LIMITS	

USE POWER, SIGNAL AND CONTROL CABLE SUITABLE FOR THE TYPE OF OPERATION AND COMPLYING WITH ALL REGULATIONS DO NOT ROUTE CONNECTIONS TOGETHER WITH FREQUENCY CONVERTER CABLES OR CABLES EMITTING STRONG FIELDS PROVIDE RELIABLE CONNECTION TO PE (PROTECTION EARTH) AND BURNER FRAME, RECOMMENDED WIRE GAUGE: 4 mm^2 ALL ELECTRONIC SYSTEMS MUST BE SUPPLIED BY A DEDICATED TRANSFORMER IN A TN-S EARTHING SYSTEM

USE UNSCREENED HIGH-VOLTAGE CABLE FOR IGNITION AND IONIZATION ROD LINES, LAYING CABLES INDIVIDUALLY, AVOIDING METAL CONDUITS. KEEP HIGH VOLTAGE IGNITION CABLES AS SHORT AS POSSIBLE, AVOIDING LOOPS AND KEEP ALL OTHER CABLES, ESPECIALLY THOSE OF UV OR IONIZATION ROD, AS FAR APART AS POSSIBLE

POWER SUPPLY FUSE

The device and following burner loads are protected by means of an embedded POWER SUPPLY FUSE [7]:

- TERMINAL 07 : GAS VALVE V1
- TERMINAL 09 : IGNITION TRANSFORMER

This fuse must be replaced only with same type and value component: 3,15 A quickblow (5x20mm).

STATUS DISPLAY

The STATUS DISPLAY [3] gives, at any time, a clear indication about the working conditions of both the burner and the equipment, making it easier to detect any failure occurring in the system or the device.

CYCLE

0	**MANUAL SHUTDOWN** UNIT HAS BEEN PUT OUT OF SERVICE FROM PUSH BUTTON. PUSH AGAIN TO RESTORE.
h	**TIMER SHUTDOWN** BURNER HAS BEEN TURNED OFF BY OPTIONAL INTERNAL TIMER.
H	**REMOTE SHUTDOWN** BURNER HAS BEEN TURNED OFF BY REMOTE CONTROL THROUGH FIELDBUS.
P	**PREPURGE** PURGE OF COMBUSTION CHAMBER OR DELAY FOR ILLEGAL FLAME PROVING.
1	**IGNITION** 1^{ST} SAFETY TIME. BURNER IGNITION TRIAL WITH PILOT GAS OPEN.
2	**PILOT BURNER ON** PILOT GAS VALVE IS OPEN, BURNER ON UNTIL SHUTDOWN, LOCKOUT OR FAILURE
4	**POSTCOMBUSTION** WAITING FOR FLAME QUENCHING AFTER LOCKOUT OR SHUTDOWN REQUEST.
8.	**POSTPURGE** PURGE OF COMBUSTION CHAMBER, SHOWN TOGETHER WITH ASSOCIATED CODE.

WARNINGS

SELF-TEST
SELF DIAGNOSIS, EVERY TIME THE UNIT IS POWERED OR THE BURNER IS STARTED.

LIFETIME EXPIRED
MAINTENANCE REQUIRED AFTER 500.000 IGNITIONS. PUSH AGAIN TO START ANYWAY.

CONFIGURATION
UNIT IN CONFIGURATION MODE THROUGH COMMUNICATION LINK.

LOCKOUTS

STANDBY
WAITING FOR RESET WHEN PROGRAMMED FOR STANDBY MODE AFTER POWER-ON.

ILLEGAL DETECTION
PARASITE FLAME DETECTION DURING PRE-PURGE, POSTPURGE OR POSTCOMBUSTION.

IGNITION FAILURE
NO FLAME DETECTED AT THE END OF IGNITION TRIAL, 1ST SAFETY TIME.

FLAME LOSS
FLAME QUENCHING DURING NORMAL BURNER OPERATION.

COMMUNICATION TIMEOUT
MISSING COMMANDS FROM REMOTE SUPERVISOR.

RESETABLE FAILURES

IGNITION DEVICE FAILURE
IGNITION DEVICE UNPLUGGED, DEFECTIVE OR NOT WORKING PROPERLY.

GAS VALVE FAILURE
GAS VALVE UNPLUGGED, DEFECTIVE OR NOT WORKING PROPERLY.

OUTPUT RELAYS FAILURE
SHORT CIRCUIT ON OUTPUT RELAYS CONTACT SAFETY RELAY WILL DISCONNECT LOADS.

SUPERVISOR ILLEGAL COMMAND
SUPERVISOR SENT AN ILLEGAL COMMAND (i.e.: RESET WHILE SYSTEM IS RUNNING).

MISSING GROUND JOINT | SOFT JUMP
POOR SPARK RETURN PATH (I.E.: BAD GROUND CONNECTION TO BURNERS HEAD).

STRONG EMI | CONFIG ERROR
ELECTRO MAGNETIC INTERFERENCE ABOVE ADMISSIBLE LIMIT, CONFIGURATION ERROR.

TIMEBASE FAILURE
MISMATCH BETWEEN 1ST AND 2ND TIMEBASE GENERATORS.

SYSTEM WATCHDOG
MICROPROCESSOR ISN'T OPERATING PROPERLY.

NON RESETABLE FAILURES

PUSH BUTTON FAILURE
PUSH BUTTON FOUND CLOSED AT SELF TEST. FAILURE OR AVOID PUSHING DURING TEST.

SYSTEM ERROR
PROGRAM ERRORS, CORRUPTION IN FIRMWARE MEMORY.

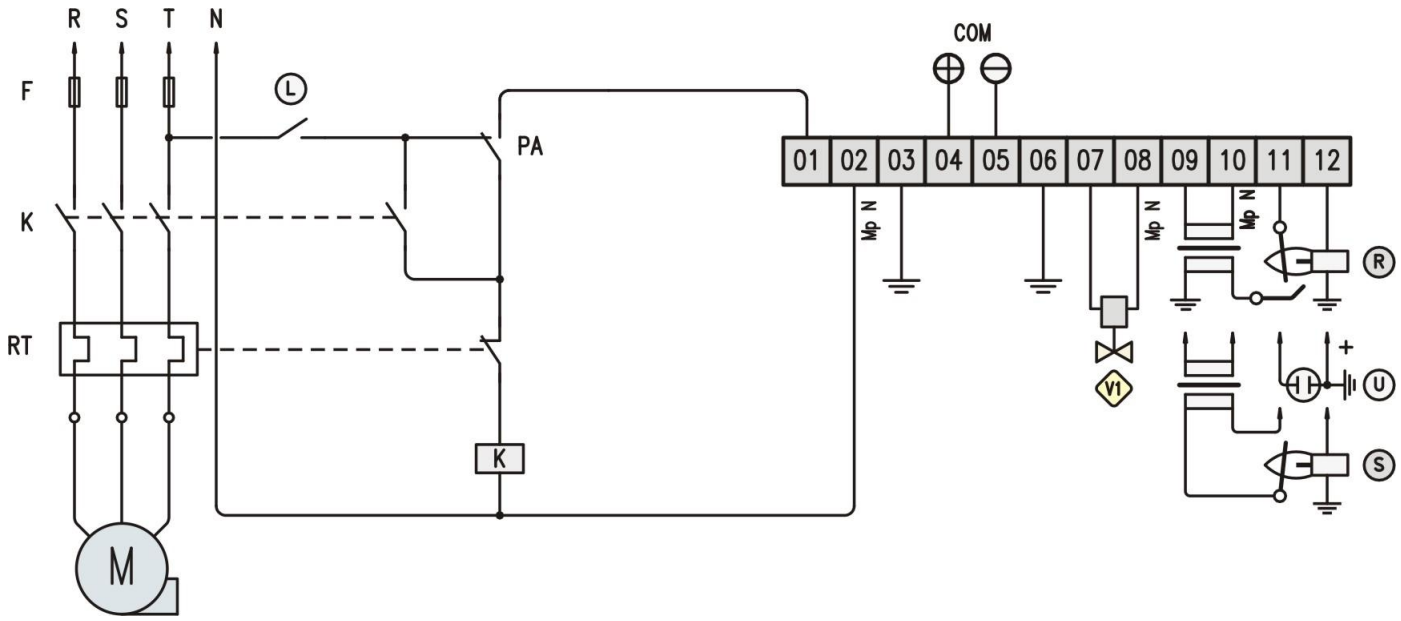
MASTER SAFETY RELAY FAILURE
SHORT CIRCUIT ON SAFETY RELAY CONTACT. OUTPUT RELAYS WILL DISCONNECT LOADS.

GAS BURNER

When the equipment is used for gas burners, the prescriptions set forth in the European Standard EN298 (including any further revision) must be completely fulfilled, along with the specific requirements of any National regulation in force in the Country where the equipment is installed.
Combustion air and optional process limits are controlled by external circuitry.
A complete self test is deployed at power-on and at any reset from lockout, possible failures are reported on the front panel display.
Depending on the configuration, the system starts the prepurge time (autostart) or waits for manual start-up (standby mode). A flame simulation test is carried out during Prepurge.
The gas valve will be activated only if the ignition device is detected (power supply current) during preignition time.
The gas valve remains open during the programmed safety time, if a valid flame signal is detected within the safety time the valve is kept open: the burner is on. The system will lockout if no flame is detected.
Flame quenching during burner operation will force the system to lockout, recycle or respark.
There are different options to stop the burner:

- switching off the power supply;
- pressing the front panel button (manual shutdown);
- remote communication command (remote halt);
- internal timer (if enabled).

A postcombustion time (max 20 seconds) is allowed after a lockout or shutdown request, followed by pospurge.
The device can stop the burner after programmed auto shutoff time (5m to 20h50m) of continuous operation and restart again, providing that all the equipment and burner safety tests are successfully performed.



L	EXTERNAL LIMITS
F	LINE FUSE
K	BLOWER POWER RELAY
RT	BLOWER THERMAL PROTECTION
M	BLOWER MOTOR
V1	GAS VALVE

PA	LOW AIR PRESSURE SWITCH
R	DUAL ROD CIRCUIT
U	UV SENSOR
S	SINGLE ROD CIRCUIT
COM	TraxBus INTERFACE

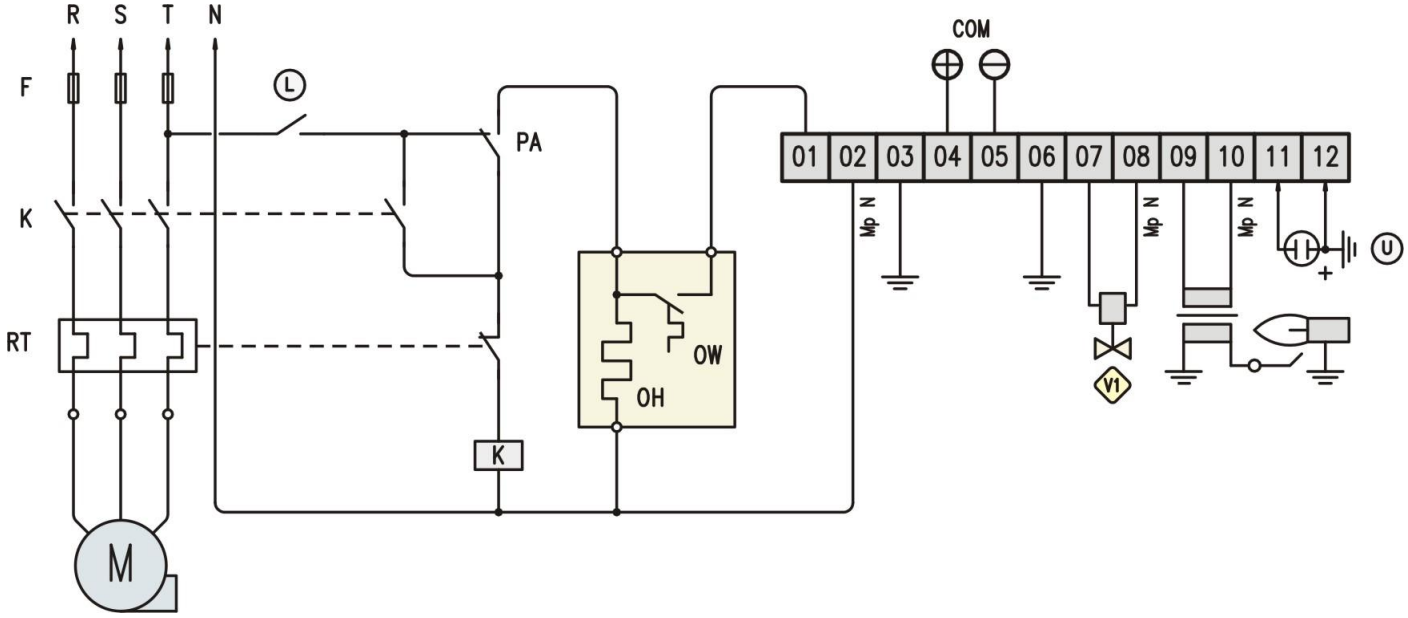
ALL SAFETY SWITCHES SHOULD BE APPROVED AS LIMIT CONTROLS
THE USE OF ELECTRONIC SWITCHES MAY CAUSE ERRATIC OPERATIONS

OIL BURNER

When the equipment is used for oil burners, the prescriptions set forth in the European Standard EN230 (including any further revision must be completely fulfilled, along with the specific requirements of any National regulation in force in the Country where the equipment is installed.
Combustion air and optional process limits are controlled by external circuitry.
A complete self test is deployed at power-on and at any reset from lockout, possible failures are reported on the front panel display.
Depending on the configuration, the system starts the prepurge time (autostart) or waits for manual start-up (standby mode). A flame simulation test is carried out during Prepurge.
Ignition device is activated during Prepurge time for oil burners (long preignition).
The fuel valve will be activated only if the ignition device is detected (power supply current) during preignition time.
The fuel valve remains open during the programmed safety time, if a valid flame signal is detected within the safety time the valve is kept open: the burner is on. The system will lockout if no flame is detected.
Flame quenching during burner operation will force the system to lockout, recycle or respark.
There are different options to stop the burner:

- switching off the power supply;
- pressing the front panel button (manual shutdown);
- remote communication command (remote halt);
- internal timer (if enabled).

A postcombustion time (max 20 seconds) is allowed after a lockout or shutdown request, followed by pospurge.
The device can stop the burner after programmed auto shutoff time (5m to 20h50m) of continuous operation and restart again, providing that all the equipment and burner safety tests are successfully performed.



L	EXTERNAL LIMITS
F	LINE FUSE
K	BLOWER POWER RELAY
RT	BLOWER THERMAL PROTECTION
M	BLOWER / PUMP MOTOR
V1	FUEL VALVE

OH	OIL HEATHER
OW	OIL THERMOSTAT
PA	LOW AIR PRESSURE SWITCH
U	UV SENSOR
COM	TraxBus INTERFACE

QUAD USES UV SCANNER FOR OIL, INCREASING SAFETY AND RELIABILITY
IGNITION DEVICE MUST BE SUITABLE FOR LONG PREIGNITION TIMES

PARAMETERS

BEHAVIOUR AT POWER ON – LOCKOUT

Q101	START-UP MODE	AUTOSTART	A
		STANDBY	S

BEHAVIOUR DURING PREPURGE

Q305	PREPURGE TIME	1” …	001
	DEFAULT 1”	… 250”	250

BEHAVIOUR DURING IGNITION

Q401	PRE-IGNITION TIME	0,5”	
Q402	STARTUP SAFETY TIME	2” …	02
	DEFAULT 3”	… 25”	25

BEHAVIOUR DURING OPERATION

Q507	OPERATING SAFETY TIME	1” …	01
	DEFAULT 1”	… 12”	12
Q508	ALLOWED POSTCOMBUSTION TIME	< 20”	
Q509	AUTO-SHUTOFF TIME	00:05 …	01
		20:50 …	FA
Q510	AUTO-SHUTOFF MODE	OFF	–
		MANUAL	M
		AUTOMATIC	A
Q512	FLAME LOSS	LOCKOUT	L
		RECYCLE	C
		RESPARK	K

BEHAVIOUR DURING POSTPURGE

Q602	POSTPURGE TIME	1” …	001
	DEFAULT 1”	… 250”	250

COMMUNICATION SETTINGS

Q701	ZONE (SEGMENT)	00 …	
		… ZZ	
Q702	UNIT (NODE)	00 …	
		… ZZ	
Q703	BAUD RATE	4800	
		9600	
		19200	
		38400	
Q704	TIMEOUT	OFF	
		00’ 04”…	
		… 16’ 40”	

LOCKOUT DUE TO COMMUNICATION TIMEOUT CAN OCCUR DURING NORMAL CYCLE, WHEN COMMUNICATION TIMEOUT IS ENABLED

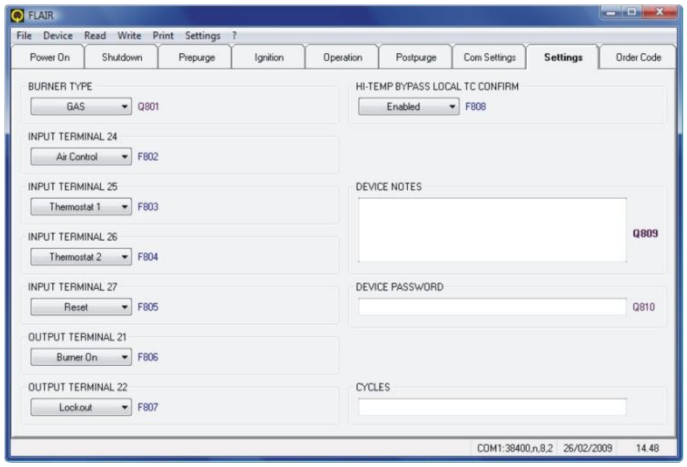
GENERAL SETTINGS

Q801	BURNER TYPE	GAS	G
		OIL	O
F809	DEVICE NOTES		
F810	DEVICE PASSWORD		

HARDWARE

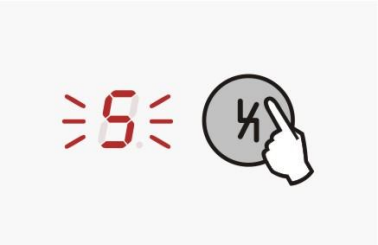
Q001	POWER SUPPLY VOLTAGE	230 Vac	230
		115 Vac	115
Q002	ENCLOSURE	LIGHT ALUMINIUM	N
		STANDARD ALUMINIUM	A
		LOW PROFILE ALUMINIUM	B
		POLYCARBONATE	P

CONFIGURATION



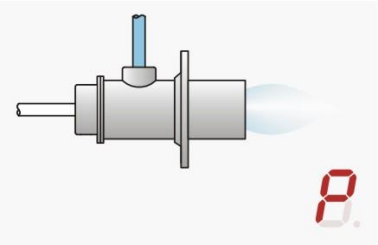
The device is configurable using the free software tool *QPro* thru the communication line (terminals 4 and 5, by means of *TraxInterface*[3] or *TraxGateway*) or from the expansion socket (by means of specific adapter).

The unit must be in manual shutdown to enter configuration environment: display shows an horizontal dash while linked. Some parameters are password protected. and can be modified by authorized users or by factory.



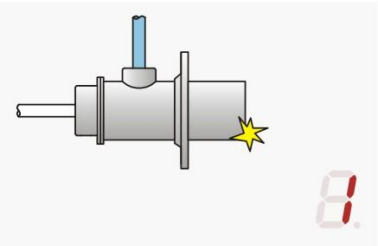
Q101 – START-UP MODE

At power-on, once the self-test has been successfully completed, the unit waits in STANDBY mode until a reset operation is performed from local push button or through a fieldbus remote command. Setting AUTOSTART mode, the cycle starts automatically, unless the units has been turned off while in lockout.



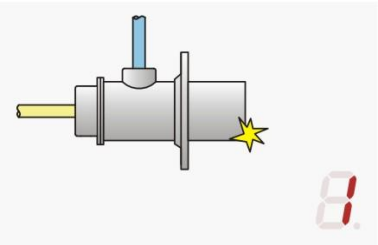
Q305 – PREPURGE TIME

Set prepurge time in forced draught burners according to EN 676 requirements. Any air valve and/or butterfly valve controlled by external process must be kept open during the whole prepurge time.
During this time an illegal flame test is carried out.



Q401 – PRE-IGNITION TIME

The ignition transformer is turned on 500 ms before the gas valve to check the correct operation before to open the gas.
This is a fixed time and cannot be changed.

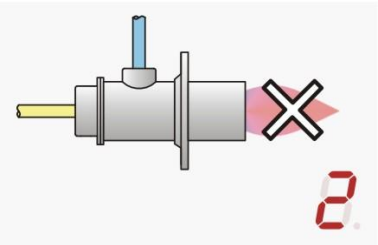


Q402 – STARTUP SAFETY TIME

Set the correct time following EN 746-2 (or other relevant) requirements:

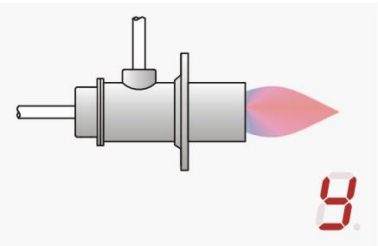
Natural draught burners ≤ 70 kW → 10” > 70 kW → 5”
IGNITION POWER ≤ 33% NOMINAL POWER WITH MAXIMUM OF 350 KW

Forced draught burners ≤ 350 kW → 5” >350kW→3”
IGNITION POWER ≤ 10% NOMINAL POWER WITH MAXIMUM OF 350 KW



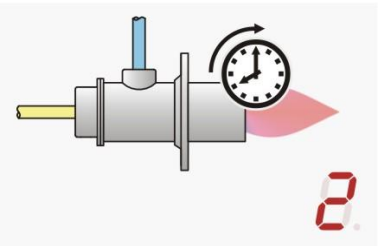
Q507 – OPERATING SAFETY TIME

If the flame fails during operation, gas valve is switched off within this safety time that must be in accordance with relevant application standards (default for EN 298 is 1” and must not exceed 3” including valves closing time for EN 746-2).



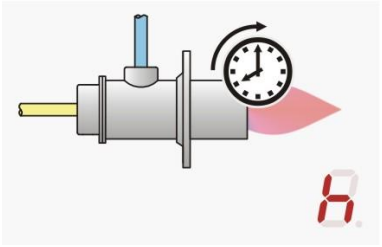
F508 – ALLOWED POST-COMBUSTION TIME

The flame signal is allowed for 20” once gas valve has been closed.
Lockout occurs if the flame is detected after the post-combustion time.



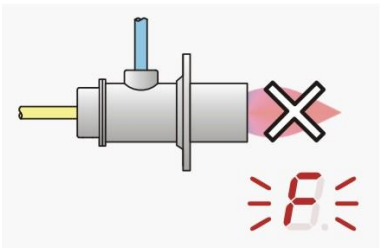
Q509 – AUTO SHUT-OFF TIME

An automatic shutoff is performed after the specified time since burner on.



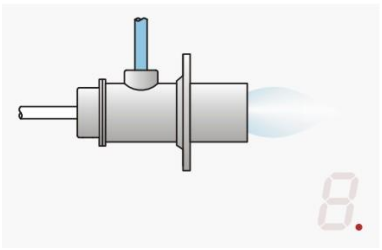
Q510 – AUTO SHUT-OFF MODE

Behavior after an automatic shut-off. In AUTOMATIC mode a complete burner restart cycle is deployed, performing the test of the whole system, as per Standard requirements, within 24 hours of continuous operation.
In MANUAL mode the burner waits for reset.



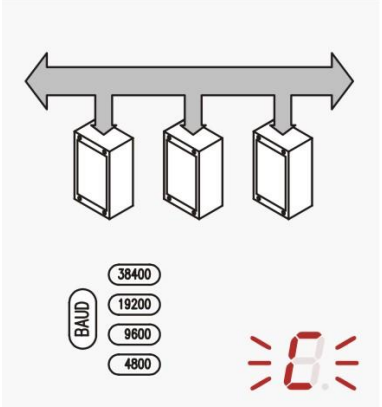
Q512 – FLAME LOSS

Determines the behavior at flame loss during normal burner operation.
For burners with occasionally unstable flame signal a single recycle (including prepurge) or direct respark can be attempted. The setting is to be determined on the basis of burner capacity and relevant application standard.



Q602 – POSTPURGE TIME

Follow EN 676 requirements to set correct postpurge time in forced draught burners. Any air valve and/or butterfly valve controlled by external process must be kept open during the whole postpurge time.
During this time an illegal flame test is carried out.



Q701 – ZONE (SEGMENT)

Communication identifier: group or zone belonging the burner control.
All alphanumeric (uppercase/lowercase) characters are valid identifiers.

Q702 – UNIT (NODE)

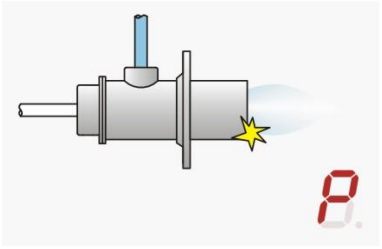
Communication identifier: burner control unit within a given area, group or zone.
All alphanumeric (uppercase/lowercase) characters are valid identifiers.

Q703 – BAUD RATE

Communication baud rate: 4800, 9600, 19200, 38400.

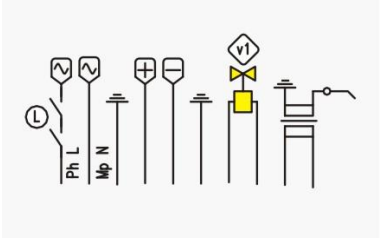
Q704 – COMMUNICATION TIMEOUT

Communication timeout up to 1000 seconds (4” step). Set 0 to disable.



Q801 – BURNER TYPE

Selecting OIL type burner the ignition device will be activated also during the prepurge to allow the detection of oil leakage that will be ignited, leading to an illegal flame detection. Application and settings must be made in accordance to EN 230 (or other relevant standard) requirements.



Q001 – POWER SUPPLY VOLTAGE

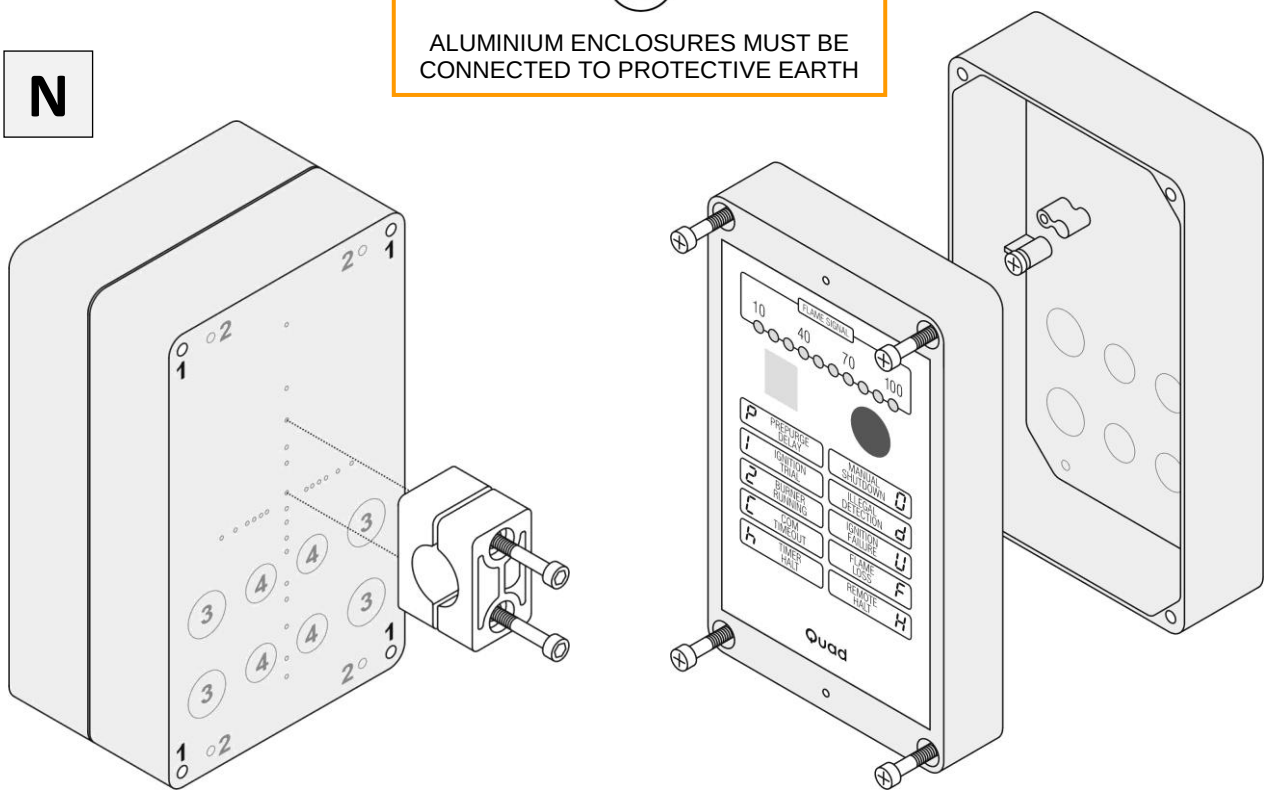
Power supply must be wired at terminal 01 and 02, for burner control unit and loads (gas valve and ignition transformer), both protected by the embedded fuse.
Optional safety interlock limits could be wired on the main supply phase.

Q002 – ENCLOSURE

Quad is available in 4 different enclosure options. Standard version is N, all other types are available on request. According to European Standard EN60529 a minimum protection degree IP40 must be guaranteed, raised to IP54 for open air application.

ALUMINIUM ENCLOSURES MUST BE CONNECTED TO PROTECTIVE EARTH

N

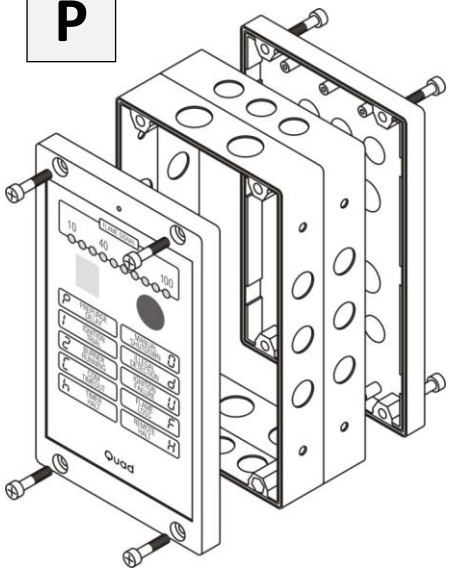


1	EXTERNAL FITTING HOLES (4) 4.2 mm SELF TAPPING OR M5 THREAD FORMING SCREW	106 x 186 mm
2	BREAKABLE FITTING HOLES (4) 4,0 mm DIAMETER	77 x 182 mm
3	BREAKABLE HOLES FOR WIRING (4) SUITABLE FOR PG11 CABLE GLAND	Ø 19,0 mm
4	BREAKABLE HOLES FOR WIRING (4) SUITABLE FOR PG9 CABLE GLANDS	Ø 15,5 mm

CAST ALLUMINIUM ALLOY EN AB 46100 IP65
OVERALL DIMENSION: 200 x 120 x 71 mm WEIGHT: 1130 g
ELECTROSTATIC POLYESTER POWDER COATING COLOR: GRAY

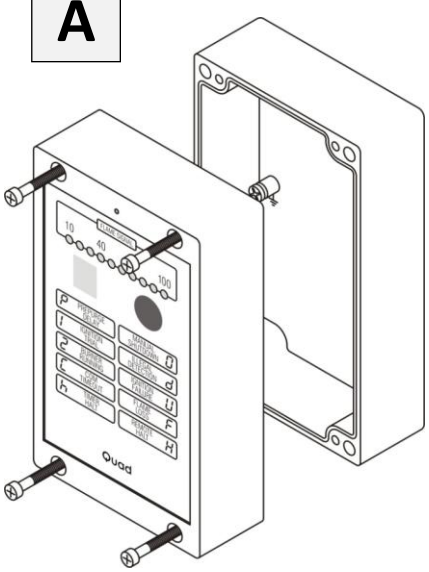
OPTIONAL FITTING CLAMPS FOR PIPES
VERTICAL MOUNTING OUTSIDE DIAMETER 6 … 76 mm
HORIZONTAL MOUNTING OUTSIDE DIAMETER 6 … 63 mm

P



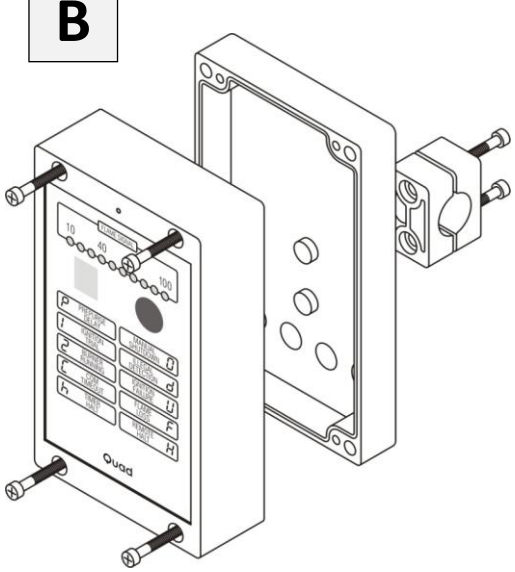
POLYCARBONATE UL-V0
200 x 120 x 96 mm | 750 g

A



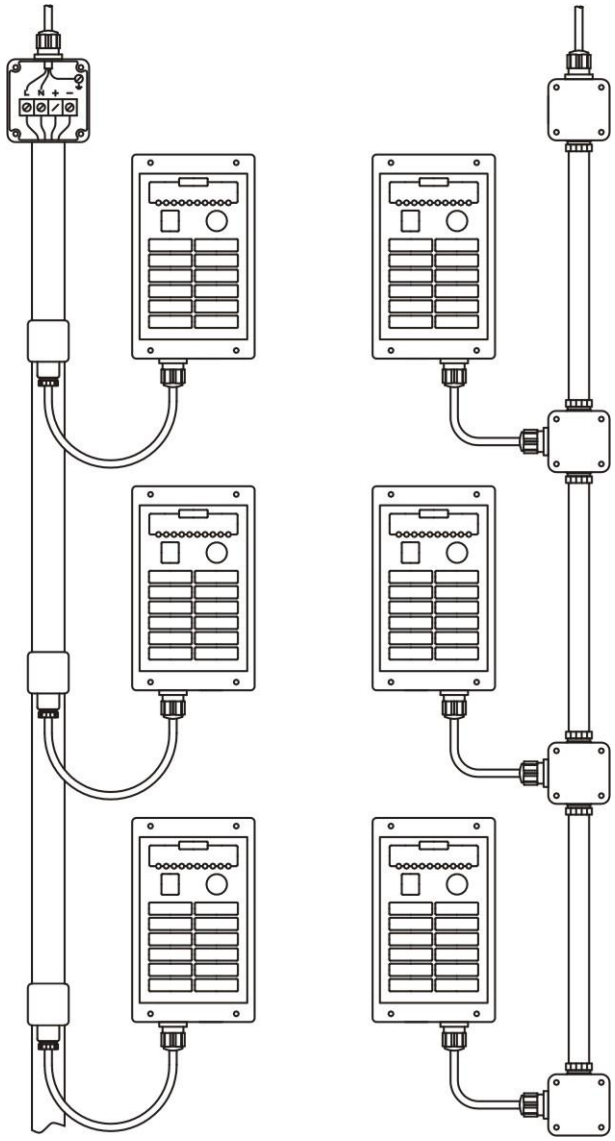
CAST ALUMINIUM ALLOY
200 x 120 x 92 mm | 1510 g

B



CAST ALUMINIUM ALLOY
200 x 120 x 71 mm | 1300 g

FIELDBUS REMOTE CONTROL



TraxBus using busbars or single wire lines
Ref. to TraxInterface[3] literature [B1300] for wiring details

Complete remote control and supervision is possible through built-in serial communication interface using proprietary fieldbus, designed for reliable operation in harsh industrial environments with simplified wiring.
Communication protocol could be easily implemented into any programmable controller for great efficiency and low cost. Ready to use gateways are available to convert TraxBus into standard industry fieldbus systems.
Typical communication time at different baud rates are summarized below.
Since any supervisor takes some time for internal processing, the real performance of the fieldbus must be computed adding such delay.

POLLING TIME FOR 1 BURNER

	4800	9600	19200	38400
COMMAND	15 ms	8 ms	4 ms	2 ms
ANSWER	15 ms	8 ms	4 ms	2 ms
OVERALL	30 ms	16 ms	8 ms	4 ms

POLLING TIME FOR 10 BURNERS

	4800	9600	19200	38400
COMMAND	150 ms	80 ms	40 ms	20 ms
ANSWER	150ms	80 ms	40 ms	20 ms
OVERALL	300 ms	160 ms	80 ms	40 ms

POLLING TIME FOR 100 BURNERS

	4800	9600	19200	38400
COMMAND	1,5 s	800 ms	400 ms	200 ms
ANSWER	1,5 s	800 ms	400 ms	200 ms
OVERALL	3,0 s	1600 ms	800 ms	400 ms

Messages to/from remote host supervisor must be ASCII characters, 8 bits, no parity, 1 or 2 stop bits.

COMMAND FROM SUPERVISOR TO PERIPHERALS

Commands are issued to peripherals within a single string terminated with Carriage Return.

< S N C KK <Cr>

<	Preamble (from master)
S	Segment, Zone identifier
N	Node, Unit identifier
C	Command
KK	Checksum
<Cr>	Carriage return

STATUS FROM PERIPHERALS TO SUPERVISOR

Peripherals will acknowledge all valid command received from supervisor:

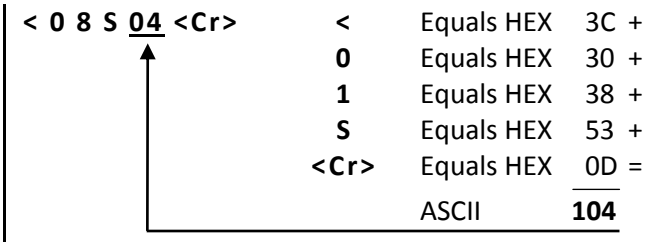
> S N T KK <Cr>

>	Preamble (to master)
S	Segment, Zone identifier
N	Node, Unit identifier
T	Status
KK	Checksum
<Cr>	Carriage return

S and N can be any alphanumeric character and must match the settings of the peripheral to be addressed.
Since Quad+Flair valid settings are within the range 01…FD, the maximum addressable units on a single bus are 252.
The special character * (star) can be used like wild card to send broadcast command: a star character instead of S will address all existing nodes, a star character instead of N will address the whole segment, two star characters will address all the connected units. Of course no acknowledge answer will be sent back after broadcast commands.

CHECKSUM CALCULATION

Each command must include a valid checksum KK to be executed, all the answers will include a valid checksum KK that can be optionally evaluated by supervisor.
KK is the ASCII figure of the sum of all characters HEX values, including Carriage Return. See example and use only last two characters, ignoring trailing ones (if any).



COMMAND LIST

H	BURNER HALT	Q	SHUTDOWN THE BURNER	
R	BURNER RUN	Q	RESTART THE BURNER FROM SHUTDOWN	
B	UNLOCK	Q	RESET THE BURNER FROM LOCKOUT, MUST BE CONFIRMED	§1
Y	UNLOCK CONFIRM	Q	CONFIRM THE RESET FROM LOCKOUT	
E	EXTEND	Q	FORCE THE BURNER TO PREPURGE UNTIL A 'COMPLETE' COMMAND IS RECEIVED	§2
C	COMPLETE	Q	COMPLETE THE PREPURGE TIME	
S	STATUS	Q	NO ACTION BUT STATUS REQUEST	

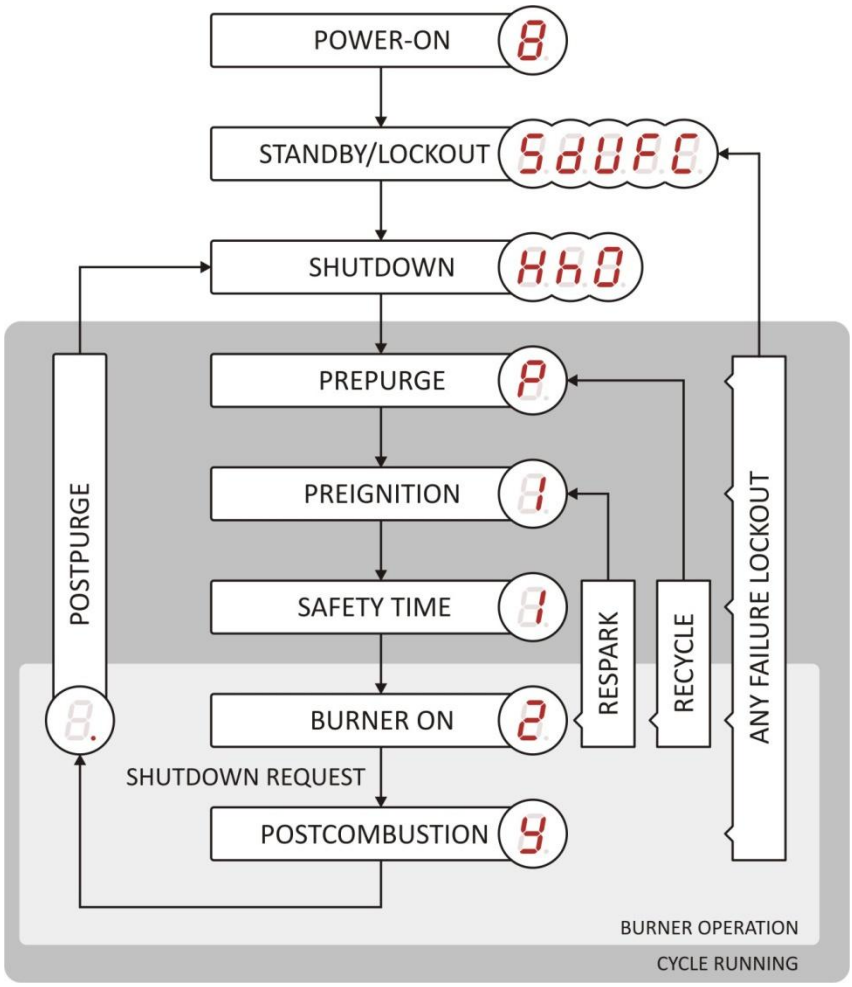
§1 THE SUPERVISOR MUST SEND A RESET CONFIRMATION WITHIN 25 SECONDS FROM PERIPHERAL ACKNOWLEDGE TO RESET COMMAND. AN UNCONFIRMED RESET COMMAND WILL BE CANCELLED AFTER 25 SECONDS. RECEIVING AN ILLEGAL RESET COMMAND (i.e.: RESET WHILE NOT IN LOCKOUT) A LOCKOUT WILL BE FORCED TO PREVENT DANGEROUS OPERATION.

§2 RECEIVING AN EXTEND COMMAND THE BURNER IS FORCED TO PREPURGE, IF THE BURNER IS RUNNING IT WILL BE TURNED OFF PERFORMING A COMPLETE RECYCLE INCLUDING SELF TEST. WHEN A 'COMPLETE' COMMAND IS RECEIVED, THE REMAINING PREPURGE TIME (IF ANY) WILL BE COMPLETED PROCEEDING TO NEXT CYCLE STEP.

STATUS LIST

S	STOP	Q	BURNER LOCKOUT OR FAILURE
0	MANUAL SHUTDOWN	Q	BURNER OUT OF SERVICE, SHUTDOWN FROM LOCAL PUSH BUTTON
H	HALT	Q	BURNER SHUTDOWN
P	PREPURGE	Q	PREPURGE IN PROGRESS
1	IGNITION	Q	BURNER IGNITION TRIAL IN PROGRESS
2	BURNER ON	Q	BURNER ON
g	LIFE EXPIRED	Q	POST-LOCKOUT MAINTENANCE ALERT
Y	POSTCOMBUSTION	Q	WAITING FOR FLAME QUENCHING
W	POSTPURGE	Q	POSTPURGE IN PROGRESS

PROGRAM SEQUENCE



A **SELF TEST** IS PERFORMED IN LESS THAN 1", ONCE SUCCESSFULLY COMPLETED THE BURNER IS READY TO START.

IF THE UNIT HAS BEEN TURNED OFF WHILE IN **LOCKOUT** OR PARAMETER Q101 HAS BEEN SET TO **STANDBY**, IT WILL BE NECESSARY TO RESET THE UNIT BY MEANS OF LOCAL PUSH BUTTON, OR FIELDBUS COMMAND.

A **FLAME SIMULATION** CHECK IS CONDUCTED DURING WAITING OR PREPURGE TIME.

AFTER THE PRESET **WAITING OR PREPURGE** TIME HAS ELAPSED, THE IGNITION DEVICE IS ACTIVATED AND VERIFIED, THEN THE PILOT VALVE IS OPEN.

PILOT PROVING PERIOD STARTS IF THE FLAME IS DETECTED WITHIN THE **SAFETY TIME**.

IF NO FLAME IS DETECTED DURING THE SAFETY TIME A FAULT LOCKOUT OCCURS.

FLAME FAILURES DURING OPERATION LEADS TO LOCKOUT RESTART OR RECYCLE DEPENDING ON Q512 PARAMETER SETTING.

A **SHUTDOWN REQUEST** FROM FIELDBUS COMMAND OR LOCAL PUSH BUTTON TURNS OFF THE BURNER, WAITING FOR ALLOWED POSTCOMBUSTION AND POSTPURGE TIME.

AN **AUTOMATIC SHUTOFF** OF THE BURNER CAN BE ACTIVATED, AFTER A PRESET TIME OF BURNER RUNNING. THE BURNER CAN WAIT FOR A MANUAL RESET OR RESTART IN AUTOMATIC MODE. A SELF TEST IS MADE AT EVERY RESTART.
THIS PARAMETER MAY BE SET IN THIS WAY ONLY IF THE BURNER CAN RESTART AS INTENDED IN ALL OPERATING PHASES.

TECHNICAL DATA

POWER SUPPLY

VOLTAGE	115 or 230 V +10-15%
FREQUENCY	50/60 Hz §1
LINE FUSE	3,15 A QUICKBLOW - 5x20mm
POWER CONSUMPTION	3 VA MAX
POWER DISSIPATION	2 W MAX
LIFECYCLE COUNTER	524288 IGNITIONS

§1 SINEWAVE, QUASI-SINEWAVE, SQUAREWAVE

FLAME DETECTION

MINIMUM IONIZATION CURRENT	> 1 µA
CURRENT LIMITATION	1 mA
SIGNAL DISPLAY	0…100 µA
DETECTOR LINE LENGTH	< 30 m
SINGLE ROD LINE LENGTH	< 1 m
DETECTOR VOLTAGE	250 Vac
DETECTOR INSULATION	> 50 MΩ

ENVIRONMENT

OPERATING TEMPERATURE	0…60 °C
STORAGE TEMPERATURE	-20…80 °C
PROTECTION CLASS (EN 69529)	IP65
RELATIVE HUMIDITY	90% MAX
MOUNTING POSITION	ANY

OUTPUTS

RATED VOLTAGE	250 Vac MAX
SWITCHING VOLTAGE	277 Vac MAX
LOAD CURRENT	3 A MAX
MINIMUM CURRENT	1 mA @ 5 V
BREAKING CAPACITY	750 VA MAX

COMMUNICATION INTERFACE

VOLTAGE	30 Vdc MAX
FIELDBUS	TraxBus
BAUD RATE	4800, 9600, 19200, 38400

CONFIGURATION

	Q002	Q001	Q801	Q101	Q305	Q402	Q507	Q602	Q512	Q510	
QUAD	N	230	G	A	020	03	01	001	L	-	DEFAULT

DEVICE CLASSIFICATION ACCORDING TO EN298	A / B	M / B	L / C / R	L	B	N (B)
DEVICE CLASSIFICATION ACCORDING TO EN230	A / B	I / T / M	L / C / R	L	B	N (B)

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