

The Qzero flame detector relay is a safety switch for monitoring the presence of flames via ionization electrodes or UV sensors.

A redundant 3 channel architecture with diagnostics ensures safety even for applications intended for continuous operation.

For continuous operation with UV detection, sensors must be of the self-checking type or equipped with a shutter controlled by external safety logic.

Qzero could be used to monitor burner flame in conjunction with automatic flame safeguards or PLCs, it can also be used where manual or semiautomatic control is allowed.

Qzero could be used also like fire alarm system to detect any flame, spark or electric arc when used with UV sensors (up to 10 detectors allowed).

A relay contact is activated when the presence of flame is detected, while a second relay contact signals the failure when the presence of flame is not confirmed by all the independent channels.



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.

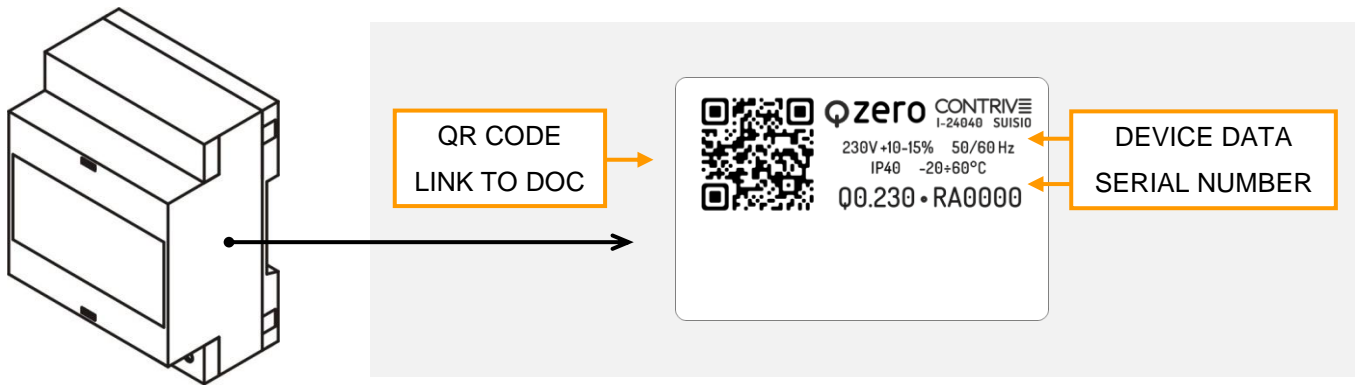
Any warnings provided by CONTRIVE must be promptly provided to the end user.

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CERTIFICATION

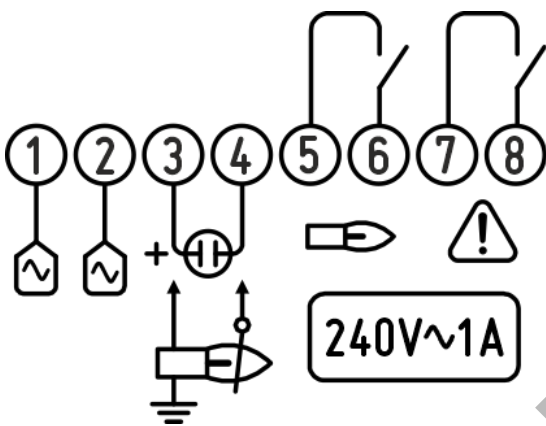
- Gas Equipment Directive (2009/142/EC)
 - Low Voltage Equipment Directive (2014/35/EC)
 - EMC Directive (2014/30/EC)
- IN CONJUNCTION WITH:
EN298 EN746-2 EN60730-1 EN13611

- EU type certification
CE xxxxXXxxxx
- ~~Eurasian Customs Union~~
MEETS TECHNICAL SPECIFICATIONS OF
RUSSIAN FEDERATION, BELARUS AND KAZAKHSTAN



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.



WIRING DIAGRAM

01	POWER SUPPLY	(PHASE)
02	POWER SUPPLY	(NEUTRAL)
03	FLAME DETECTOR POSITIVE	(GROUND FRAME, UV+)
04	FLAME DETECTOR NEGATIVE	(ROD, UV-)
05	FLAME DETECTED OUTPUT CONTACT	
06	FLAME DETECTED OUTPUT CONTACT	
07	SYSTEM FAILURE OUTPUT CONTACT	
08	SYSTEM FAILURE OUTPUT CONTACT	

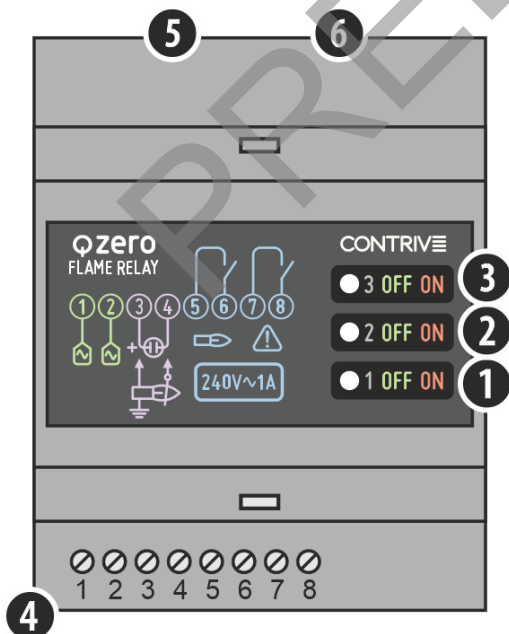
LAYOUT

1	CHANNEL 1 INDICATOR	(RED: FLAME ON)
2	CHANNEL 2 INDICATOR	(RED: FLAME ON)
3	CHANNEL 3 INDICATOR	(RED: FLAME ON)
4	TERMINAL BOARD	
5	POWER SUPPLY FUSE	(UNDER THE COVER)
6	FLAME RELAY OUTPUT FUSE	(UNDER THE COVER)

INCOHERENT DISPLAY OF THE INDICATORS MEANS MALFUNCTION

USE POWER, SIGNAL, AND CONTROL CABLE COMPLYING WITH ALL REGULATIONS, SUITABLE FOR THE TYPE OF OPERATION. 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 mm². 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. KEEP ALL OTHER CABLES, ESPECIALLY THOSE OF UV SENSOR OR IONIZATION ROD, AS FAR APART AS POSSIBLE.



PLC AS A CONTROL UNIT

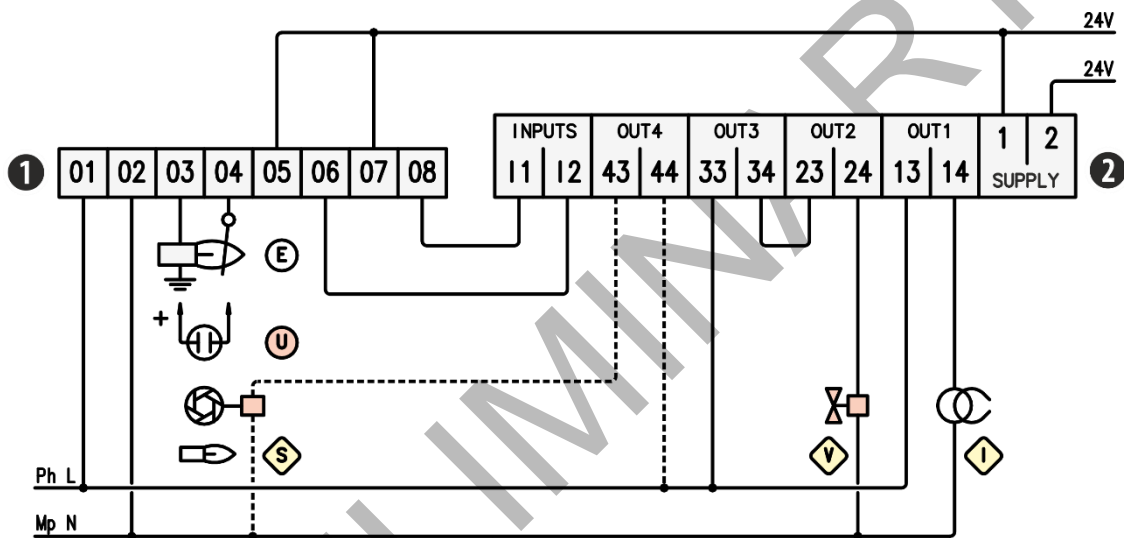
Qzero can be used as a flame detection unit in systems that use certified fail-safe PLCs for burner management. The figure shows a simple example in which the Qzero output contacts are connected to specific inputs of the controller:

- Input I1: active with flame detected
- Input I2: active in case of Qzero malfunction

In the example, the controller manages the ignition transformer connected to the contact between terminals 13-14 and a single fuel valve managed by two outputs in series between terminals 23-24 and 33-34 to guarantee safety redundancy.

Additional functions and management of additional inputs and outputs can be integrated into the PLC. For further details, refer to the specific documentation of the PLC.

The system is suitable for permanent operation when the flame is detected by an ionization electrode. If the flame is detected by UV sensors, a controlled shutdown must be provided within 24 hours of operation.



E	ELECTRODE
U	UV SENSOR

V	FUEL VALVE
I	IGNITION TRANSFORMER
S	ELECTRO OPTICAL SHUTTER

1	Qzero FLAME RELAY
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2	FAIL-SAFE PLC
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For permanent operation with UV sensors, expensive self-checking devices can be used.

A valid alternative could be our UV8 sensor, which incorporates an electro-optical shutter (in the diagram it is controlled by the PLC output contact at terminals 43-44).

This shutter must be activated periodically (generally the regulations require within 1 hour of operation of the burner). The shutter is activated to verify that the flame signal is quenched and then immediately the surveillance must be restored. This test typically needs to be completed within 1 second.

TECHNICAL DATA

POWER SUPPLY

VOLTAGE	115 or 230 V +10-15%
FREQUENCY ¹	50/60 Hz
POWER CONSUMPTION	5 VA MAX
POWER DISSIPATION	2 W MAX

FLAME DETECTION

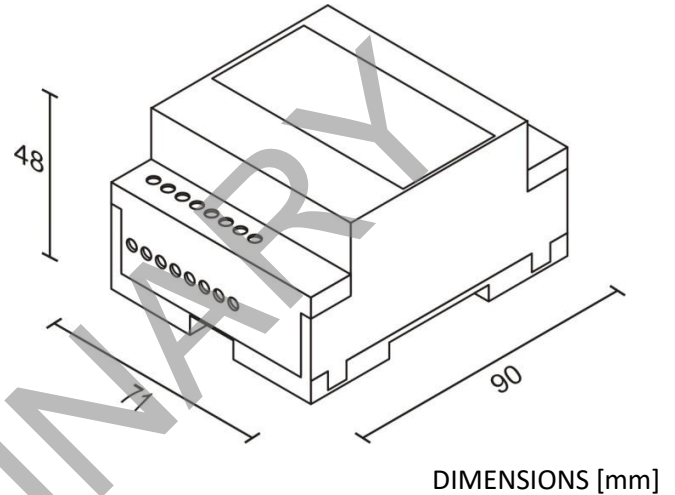
MINIMUM IONIZATION CURRENT	> 1 μ A
CURRENT LIMITATION	2 mA
UV DETECTORS ALLOWED	10 MAX
DETECTOR LINE LENGTH	< 50 m
DETECTOR VOLTAGE	250 Vac
DETECTOR INSULATION	> 50 M Ω

OUTPUTS

SWITCHING VOLTAGE	250 VAC MAX 120 VDC MAX
SWITCHING CURRENT	2 A MAX
LOAD CURRENT	1 A @ 250VAC 2 A @ 30VDC
MINIMUM CURRENT	1 mA @ 5 V
MECHANICAL ENDURANCE	15 x 10 ⁵ OPERATIONS

ENVIRONMENT

OPERATING TEMPERATURE	-40...85 °C
STORAGE TEMPERATURE	-40...85 °C
RELATIVE HUMIDITY	NON CONDENSING 90% MAX
MOUNTING POSITION	ANY
ENCLOSURE	Polycarbonate UL94-V0
OVERALL DIMENSIONS	71 x 90 x 58 mm
PROTECTION CLASS (EN 69529)	IP40
WEIGHT	350 g



THIS UNIT CAN BE INSTALLED ON ANY STANDARD EN-50022 RAIL BY SIMPLE SNAP-IN



CONTRIVE S.r.l. I-24040 SUISIO (Bergamo) via Enrico Fermi 18

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