DURAN® electrónica

DURTOX RS485 IP65

ELECTROCHEMICAL DETECTORS FOR THE DETECTION OF TOXIC GASES AND OXYGEN

Installation & User Manual

bsi. ISO 9001 Quality Management FS82426

DURTOX IP65

INDEX

1. DURTOX Electrochemical technology detectors

DURTOX are detectors using electrochemical technology for the detection of toxic gases and Oxygen O_2.

Available gases	Standard range	Installation height aprox.	Coverage area aprox.
Sulphidric acid H_2S	0-100ppm	1,50m from floor	100 m²
Ammonia NH_3	0-100ppm	30cm from ceiling	75 m²
Nitrogen dioxide NO_2	0-20ppm	40/50cm from floor	100 m²
Oxygen O_2	0-25% vol	1,70 to 2m from floor	100 m²
*Nitrogen Monoxide NO	0-100ppm	1m from floor	25 m²
Cloro Cl_2	0-10ppm	1m from floor	100 m²
Sulfur Dioxide SO_2	0-20ppm	30/40cm from floor	75 m²

* This gas is extremely difficult to detect in air, due to its rapid conversion into NO2 upon coming into contact with oxygen (O_2).

Communication formats

• Addressable RS485 with 4-wire connection, compatible with DURGAS and EUROSONDELCO control panels, up to 16 detectors can be installed in parallel in the same loop. Versions with local relay output are available optional.

Applications

Boiler rooms, laboratories, cogeneration, pharmaceutical industries, fermentation rooms, climatic chambers, water treatment plants, etc.

Special features

• Provided with a 12bit microprocessor allowing total control over the sensor status.

• Thermal compensation that allows a correct response from each of the electrochemical sensors when faced with temperature variations, except for DURTOX O_2, which due to its different functioning does not require such a feature.

• Self-testing hardware.

• Digital filter based on variable samplings of the sensor average values.

• Auto-Zero automatic adjustment. This special feature monitors zero value in relation to sensor response and electronics. The following protocol is used for this: Every 30 minutes an automatic test is performed, if drift is over 2% above or below the scale total value, it will readjust itself to zero, otherwise it will be shown as a reading.

• Other features accessible with factory based methodology allow us to check on the sensor remaining useful life, date of manufacture, date of last calibration and serial number.

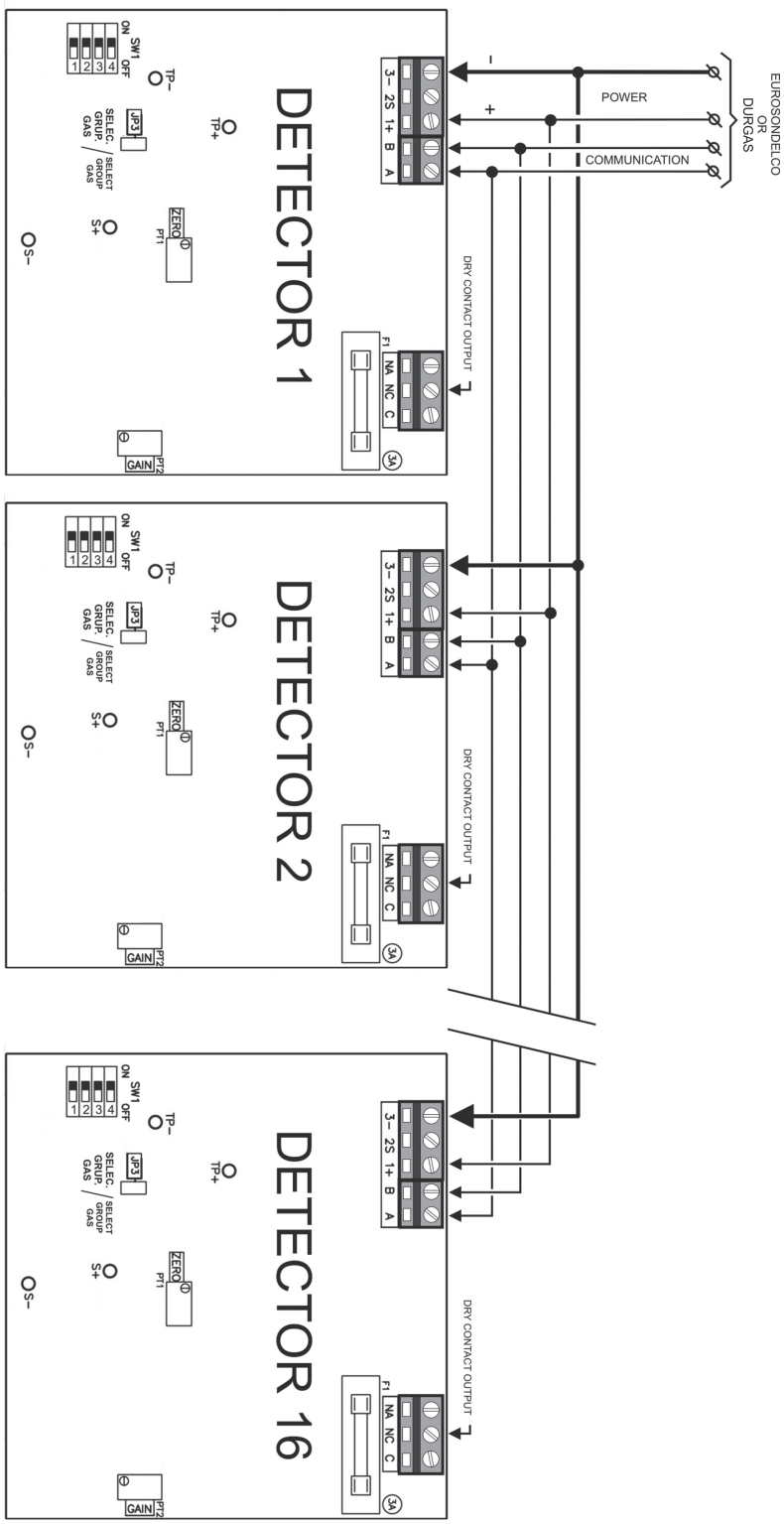
2. RELAY OUTPUT (optional)

The RS485 model optional relay output of DURTOX is programmed with the following default values:

Activated, instantaneous –no delay-

Alarm: 5ppm for NH3 and <17% for O2, 5 ppm for H_2S, 5ppm for NO_2, 5ppm for NO, 2ppm for CL_2 y 2ppm for SO_2.

3. CONNECTIONS



4. ADDRESSING RS485 DETECTORS

Before connecting DURTOX detectors to EUROSONDELCO or DURGAS, they must be addressed. If more than one detector is connected to the same loop, assign a number to each of them following table 1.

Table 1- NUMBERING DETECTORS USING SW1 (addressing)

Detector	1	2	3	4
01	On	On	On	On
02	Off	On	On	On
03	On	Off	On	On
04	Off	Off	On	On
05	On	On	Off	On
06	Off	On	Off	On
07	On	Off	Off	On
08	Off	Off	Off	On
09	On	On	On	Off
10	Off	On	On	Off
11	On	Off	On	Off
12	Off	Off	On	Off
13	On	On	Off	Off
14	Off	On	Off	Off
15	On	Off	Off	Off
16	Off	Off	Off	Off

5. OPTICAL INDICATORS: Indications and functioning of LEDs

- Fast intermittent: during initialization and recognition of the loop by the module line.

- Periodic intermittent: normal functioning. Time between blinking, in seconds, will correspond with the addressing number assigned to the detector (1 to 16).

- 6-blink burst: Line failure. An A-B communication cable is cut.

- 1 second cadence: failure or short circuit in the A-B communication lines. More than 5 minutes have passed without the detector being able to communicate with the module line.

6. TEST

No on-site adjustment or calibration is allowed as, due to the technology used, these operations can only be carried out in factory.
Perform a bump test at least once a year using appropriate test gas bottles for each gas. Using any other means could poison or destroy the sensor and, therefore, invalidate the warranty.
All detectors manufactured by DURAN ELECTRONICA are factory calibrated with the pattern gas appropriate for each gas. Therefore any kind of tampering is neither necessary nor advisable once installed.

7. TECHNICAL CHARACTERISTICS

Technology	12bit Microprocessor and electrochemical sensors
Power	10 to 15V (DC)
Maximum consumption aprox.	43mA at 12V DC
Useful life	> 2 Other gases 2 years (in clear air)
Resolution	1 ppm CO, 2 ppm NH_3, 0,1 ppm NO_2, H_2S, Cl_2, SO_2, 0,5 ppm NO, and 2% O_2
Repeatability	$\pm$ 1% Full scale
Initialization stabilization delay – all outputs	Approx. 5 minutes
T90 response time	SO_2 y NH_3 ≤30s - H_2S ≤ 20s - O_2 ≤ 15s NO ≤40s - Cl_2 ≤ 60s - NO_2 ≤20s
Temperature and humidity ranges	-10ºC to +50ºC 20-90% Rh
Working atmospheric pressure	90-110 KPa
Maximum allowed air velocity	<0.1-0.5m/s (depending gas)
Maintenance periods	1 year - recommended -
Protection grade	IP65
Housing material	Makrolon & ABS
Alarm relay (optional)	Switched output dry contact 3A 250VAC fuse protected
Cable gland material and cable diameter	ABS 6-10mm^2
Cable type and communication system	4 wire shielded (power 2 x 1,5 + 2 x 0,25 twisted pair A and B communications) RS485
Maximum installation distance	*1000m
Dimensions (mm) & weight (gr)	125 x 150 x 63 / 300

* Power supply cable cross section and maximum distances vary depending on the quality of the cable used and the distribution of the detectors throughout cable length.

8. WARRANTY

DURTOX detectors are guaranteed against any manufacturing defect for 1 year after the acquisition of the equipment. If, during this period of time, any anomaly is detected, please inform your provider or installer.

Warranty covers the full repair of the equipment which DURAN ELECTRONICA Technical Service considers to be defective, with the purpose of bringing it back to normal use. This warranty will be valid as long as the equipment has been installed by a competent person, and always following the specifications contained in this manual. Negligent installation or use will exempt DURAN ELECTRONICA from any responsibility from damages caused to objects and/or people, and from the fulfillment of the terms of this warranty. In case of improper handling, or not respecting the conditions, characteristics and observations described in this manual, DURAN ELECTRONICA WILL NOT HOLD ITSELF RESPONSIBLE FOR DAMAGES CAUSED BY IMPROPER USE OF THIS PRODUCT.

Warranty does not include: installations, periodic tests and maintenance, damages caused by inadequate handling, inappropriate use, negligence, overload, inadequate power or equipment abandonment, tension deviations, defective installations and all other external causes, repairs or amendments made by personnel not authorized by DURAN ELECTRONICA or transportation costs of the equipment.

DURAN ELECTRONICA reserves the right to carry out improvements or to include modifications to the equipment without prior notice.

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