

DURTOX H₂ 4-20 mA

EARLY DETECTION OF HYDROGEN LEAKS FROM LITHIUM-ION BATTERIES.

The use of lithium-ion batteries is now globally widespread. Fields of application include: Electric vehicles, forklifts, buses, solar panel energy storage, and consumer electronics.

Their technology can make them hazardous products, especially during the charging process, or when exposed to temperatures exceeding 60°C, and they can even produce spontaneous combustions releasing more than 100 toxic and/or explosive gases, such as H₂, CO, CO₂, O₂, CH₄, C₂H₄, C₂H₆, C₃H₈, among others.

Added to this problem is the difficulty of extinguishing this type of fire when it occurs.

Three risk levels can be determined based on capacity:

Level 1 - low risk - batteries with a charge level of < 1kWh.

Level 2 - medium risk - batteries with charge level between 1-50 kWh.

Level 3 - high risk - batteries with a charge level of > 50 kWh.

Therefore it is essential to detect some of the gases generated in the initial moments of these reactions early, principally H₂, CO and CO₂

To try to minimise these risks, DURÁN ELECTRÓNICA has developed equipment for the prompt detection of hydrogen, forming part of the DURTOX family of products.

DURTOX H₂ incorporates an electrochemical cell capable of measuring very small quantities of this gas (from 0 ppm and up to 500ppm). This technology allows us to surpass the speed and precision of others, which detect using pellistors or catalytic pearls, which start to measure as of 200ppm-400ppm and at the same time are more dependent on ambient moisture and temperature, thus allowing the corrective measures required to be advanced and thereby avoid more dangerous situations.



LOW MAINTENANCE:

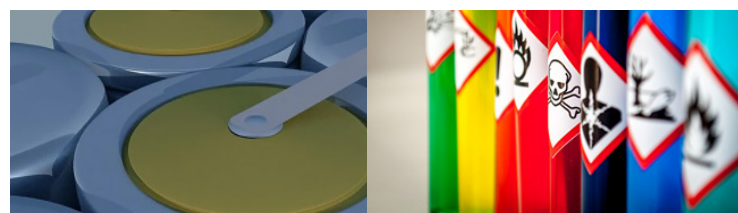
The DURTOX H₂ detectors for toxic gas detection incorporate the latest technologies in electrochemical sensors and control by microprocessors for improved and effective selective detection of the different target gases, thus achieving a low cross sensitivity with other possible gases present in the atmosphere.

The microprocessor continuously controls the general state of the detector, obtaining data such as sensor status, temperature, hardware status, loss of sensor sensitivity through use and the passage of time, making the necessary compensations and automatic reset to zero.

To do this, we use algorithms that monitor the zero adjustment factor in relation to the sensor's sensitivity and ambient temperature every 30 minutes.

If drift is higher or lower than 2% of the scale's total value, zero is automatically readjusted; otherwise, the datum obtained by the microprocessor will be displayed as a normal reading.

The capsules containing the sensors and electronics are pre-calibrated and exchangeable on site also reducing maintenance costs in this way.



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OPTIONS AVAILABLE:

- > DURTOX 4-20mA analogue output
- > DURTOX 4-20mA analogue output plus 2 alarm outputs by C-NA-NC potential-free relay.

There are other versions in RS485. PLEASE ENQUIRE.

MAIN CHARACTERISTICS

Supply voltage.	From 10 to 30V, nominal 12-24V DC.
Approx. consumption	22/25 mA @ 12V and 25/35 @ 24V.
Analogue connection.	4-20mA, three-wire.
Detection range.	From 0 to 500ppm linear at full scale
Output load resistance range.	330Ω between 12-15V 500 Ω between 15-24V.
Initial stabilisation time.	95 s for total operation @25°C. 1 h maximum specifications @ 25°C.
Initial start-up delay.	± 60s
T90 Response time	< 60s
Expected useful life	± 2 years
Optical indicators of sensor and loop failures	By two-colour internal LED
Optional alarm outputs.	2 Dry contact volt-free C-NC-NA 3A @250V AC fuse-protected (non capacitive) 50 and 100 ppm respectively**
Protection grade and box material.	IP65, Makrolon + ABS mix.
Recommended cable type.	Sleeve 3 wires 3x1.5m ² Ø, 6 wires version 2 alarm outputs. By cable glands PG9 6-10mm ² .
Cable input.	-10°C to +50°C
Temperature range.	15% to 90% RH.
Humidity range.	800-1100 mbar. (80-110 Kpa).
Atmospheric pressure range.	

 ** Check programming availability for other alarm levels

Characteristics in conditions of 20 °C, 50% RH 1000 mbar (100 Kpa)

FUNCTIONING:

Upon receiving voltage, a stabilisation time of 1 min will begin.

During this time the output current will be about 2mA.

Once the stabilisation time has ended, the output current will become 4mA, zero in the absence of gas. The fault led will light up in case of an internal failure, when the output current exceeds 21mA or drops below 2mA.

