DURAN® electrónica

STANDGAS HC, HC PRO & HC With three programmable levels

STAND-ALONE DETECTORS FOR EXPLOSIVE GASES BY CATALYTIC TECHNOLOGY

Installation & User Manual



bsi. ISO 9001 Quality Management FS82426

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STANDGAS

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1. PRESENTATION

STANDGAS HC & HC PRO are stand-alone detectors for explosive gases using catalytic technology (pellistor) for a detection range from 0 to 100% LEL. Silicon vapours resistant sensors (HDMS)
It is also available in HC version with three programmable relay outputs.

Available formats and gases



STANDGAS HC & HC 3 LEVEL MODELS
Available for natural gas-methane, butane-propane, and hydrogen.



STANDGAS HC PRO

Available for methane – natural gas, hydrogen, butane, propane, heptane, hexane, pentane, methanol, styrene, ethane, ethanol, ethylene, propylene, acetone, ammonia, cyclohexane, cyclopentane, dioxane, butyl acetate, ethyl acetate, acetic acid, isobutyl alcohol, isopropilic alcohol, decane, benzene, iso-octane, methyl ethyl ketone (butanone), nonane, propanol, toluene, xilene, kerosene, propyl alcohol, methyl isobutyl ketone.
For other gases, please consult. A special version for the detection of acetylene is also available.

Other features

- Optical indications for sensor fault.
- 1 programmable alarm relay and up to 3 in three programmable levels HC model.
- Selection of gas to detect using a jumper.
- Silicon vapours resistant sensors (HDMS).

Do not use these detectors in environments where there might be presence of hydrogen sulphide, fluorine, methyl chloride, trichloroethylene, sulphur dioxide, silicon vapours or sulphuric acid: the presence of these gases could either inhibit sensor response or damage it.

Not use lighters in order to verify its functioning, you can destroy the sensor. For that purpose, use a gas bottle with a correct concentration.

Not drill the detector box, it will make its IP level of protection and its guarantee useless

Not manipulate the detector with tension.

Not use this detector in atmospheres with hydrogen sulphide , fluoride, methyl chloride o trichloroethylene. The presence of any of them could destroy the sensor or inhibit its response.

Not install the detector near of heating sources, ovens, radiators, cookers, etc.

Install the detector with gas input facing to the ground and at required height according to the gas to be detected.

The detector can be interfered by some kind of cleaning products. Avoid handling and using them near to the detector.

2. RELAY MODULE FUNCTIONING

The stand-alone detectors STANDGAS HC and STANDGAS HC PRO are provided of a relay output with the following parameters:

SW1	ON position	OFF position	Programming
*1	Activated	Deactivated	Initial status: Idle mode relay[1]
*2	Instantaneous	Retarded	Relay disconnection type[2]
3	5min. retard	15m	Relay disconnection retard[3]
4	Alarm 20% L.E.L.	Alarm 50% L.E.L.	Relay alarm activation level[4]

[1] Idle mode relay. It allows to select an activated relay without alarm, or a deactivated relay. For use with electrovalves it is advisable for the relay to be activated when in idle mode.

[2] Relay disconnection type. It allows to select the instantaneous disconnection of the relay once alarm condition is over or if retard selected is used.

[3] Relay disconnection delay. It allows to select a delay or the instantaneous disconnection once the level selected has disappeared as an alarm condition. It has no effect if INSTANTANEOUS was previously selected.

[4] Relay alarm activation level. allows local and independent selection, choosing between two levels, of the level at which we want the relay to activate.

* PROGRAMMING DEFAULT:

1-Activated,2-instantaneous 3-no delay-
4-20% LEL alarm

LEVELS AND STATES PROGRAMMING OF STANDGAS HC 3 LEVELS DETECTORS RELAY:

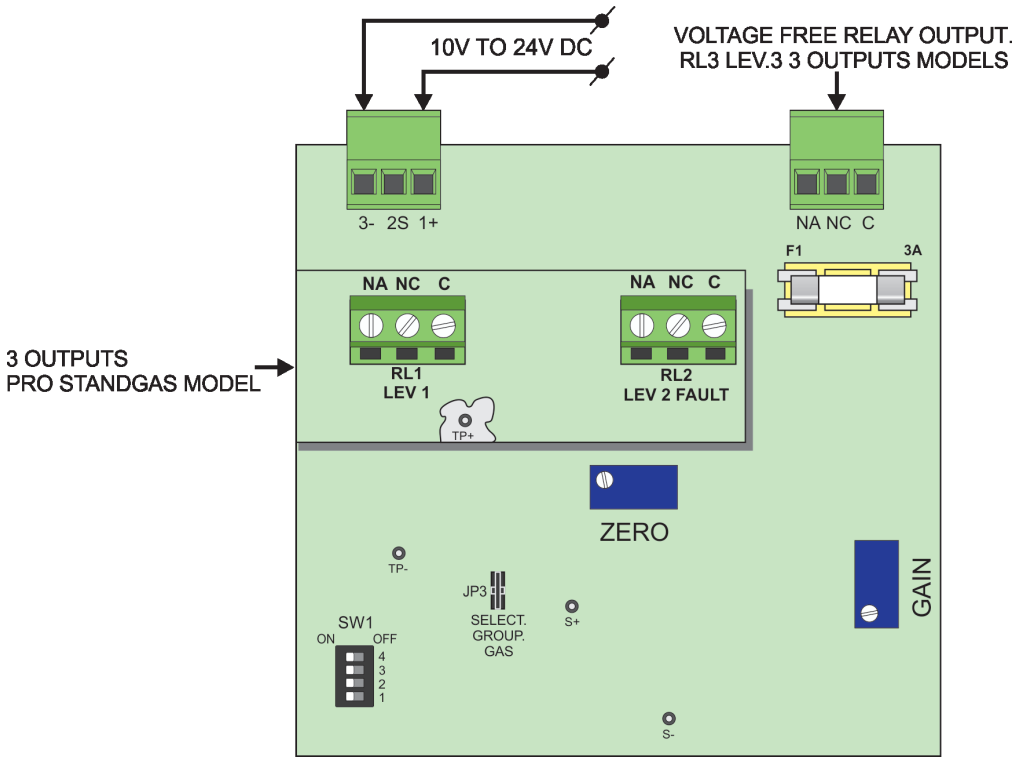
PROGRAMMING				ON RELAYS AT REST + FAULT		
2 LEVELS SW1				RELÉS		
1	2	3	4	RL1%	RL3%	RL2
ON	ON	ON	ON	05	10	FAULT-RELAY ON
OFF	ON	ON	ON	10	15	FAULT-RELAY ON
ON	OFF	ON	ON	15	20	FAULT-RELAY ON
OFF	OFF	ON	ON	20	30	FAULT-RELAY ON
ON	ON	OFF	ON	30	40	FAULT-RELAY ON
OFF	ON	OFF	ON	40	50	FAULT-RELAY ON
ON	OFF	OFF	ON	50	60	FAULT-RELAY ON
OFF	OFF	OFF	ON	60	70	FAULT-RELAY ON

3 LEVELS WITHOUT FAULT SW1				RELAYS OFF AT REST WITHOUT FAULT			
1	2	3	4	RL1%	RL3%	RL2%	
ON	ON	ON	OFF	05	15	10	RELAY OFF
OFF	ON	ON	OFF	15	25	20	RELAY OFF
ON	OFF	ON	OFF	25	35	30	RELAY OFF
OFF	OFF	ON	OFF	35	45	40	RELAY OFF
ON	ON	OFF	OFF	45	55	50	RELAY OFF
OFF	ON	OFF	OFF	55	65	60	RELAY OFF
ON	OFF	OFF	OFF	65	75	70	RELAY OFF
OFF	OFF	OFF	OFF	75	85	80	RELAY OFF

NOTES:
RL1-Level 1- additional module relay, protection with C-NA-NC dry contact 3A not interchangeable fuse
RL2- Level 2 or fault, according additional module programming, protected with C-NA-NC dry contact 3A not interchangeable fuse
RL3- Level 3 Relay in detector, protected with C-NA-NC dry contact 3A interchangeable fuse.
Programmed relay as fault will always be active at rest.
All programmed as level relays will have a 20 s fixed deactivation delay, once it is detected a level lower than the one programmed.

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3. CONNECTIONS



4. PROGRAMMING AND GAS GROUP SELECTION

STANDGAS HC & HC PRO detectors are provided with a microprocessor for functioning control. This is a great advantage due that, through software and adequate algorithms, these detectors can be reprogrammed at installation for auto-calibration and sensitivity auto-adjust without using gas. In addition, it allows selecting among an extensive list of gases without ordering new detectors or storing detectors calibrated for different gases.

Remove JP3 located at the vertical module with the detector powered. Watch carefully the external LED blinking (see table 1 below).

When the number of LED blinking fits in with the gas group to be detected, place JP3 jumper again and watch that the corresponding LED confirms its memorized group position by the number of blinkings.

Note: If JP3 is removed and after 90s no group has been chosen, the last memorized group will be automatically chosen. Default programming is GR1.

Table 1

GR1	☼	1 Blink
GR2	☼☼	2 Blink
GR3	☼☼☼	3 Blink
GR4	☼☼☼☼	4 Blink
GR5	☼☼☼☼☼	5 Blink

STANDGAS HC & HC 3 LEVEL MODELS

Group	Gas	Relative response	Installation height
1	Methane	100%	30 cm from ceiling ▲
	Hydrogen		30 cm from ceiling ▲
	Natural gas		30 cm from ceiling ▲
2	Butane	55%	30 cm from floor ▼
	Propane		100 cm from floor ▼

STANDGAS HC PRO

Group	Gas	Relative sensitivity	Installation height
1	Methane	100%	30 cm from ceiling ▲
	Hydrogen		30 cm from ceiling ▲
	Ammonia		30 cm from ceiling ▼
2	Ethane	75%	100 cm from floor ▼
	Ethanol		100 cm from floor ▼
	Ethylene		100 cm from floor ▼
	Propane		100 cm from floor ▼
	Propylene		100 cm from floor ▼
	Cyclo-Pentane		30 cm from floor ▼
	Methanol		100 cm from floor ▼
3	Cyclo-Hexane	60%	30 cm from floor ▼
	Dioxane		30 cm from floor ▼
	Iso-Propyl Alcohol (IPA)		30 cm from floor ▼
	Butane		30 cm from floor ▼
	Hexane		30 cm from floor ▼
	Pentane		30 cm from floor ▼
	Propyl Alcohol		30 cm from floor ▼
4	Butyl Acetate	45%	30 cm from floor ▼
	Iso-Octane		30 cm from floor ▼
	Heptane		30 cm from floor ▼
	Toluene		30 cm from floor ▼
	Xylene		30 cm from floor ▼
	Kerosene		30 cm from floor ▼
	Acetone		30 cm from floor ▼
	Benzene		30 cm from floor ▼
5	Acetic Acid	25%	30 cm from floor ▼
	Decane		30 cm from floor ▼
	Iso-Butyl Alcohol		30 cm from floor ▼
	Nonane		30 cm from floor ▼
	Styrene		30 cm from floor ▼
	Propanol		30 cm from floor ▼
	Iso-Butyl Methyl Ketone		30 cm from floor ▼
	Ethyl Acetate		30 cm from floor ▼
	Methyl Ethyl Ketone (MEK)		30 cm from floor ▼

Acetylene: only configurable at factory exclusive model for his gas.
height of instalations: 180 cm from floor.

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5. EXTERNAL OPTICAL INDICATIONS:

These detectors are provided with a LED to indicate the following states:

- Switch off: Detector without tension.
- Periodical blink: Periodicity will correspond to the assigned number of the selected detection group.
- 6 blinking burst: Alarm state -activated relay -.
- 1s interval ON/OFF: Sensor fault.

6. TEST & RECALIBRATION

All detectors manufactured by DURAN ELECTRONICA have been calibrated at factory with target gas. Therefore, recalibration once installed is neither required, nor recommendable.

ZERO OUTPUT VERIFYING

Before proceeding the detector should be operating for 1 hour minimum in a clean environment, being sure that there are no presence of gases affecting to the detector.

In case this condition is not fulfilled, the detector must be subjected to a concentration of pure nitrogen with a 0.5l/min flow for 2 minutes minimum using the optional CECALIBR adaptor. Then proceed as indicated next:

1. Connect a measuring instrument between S+ and S- terminals, and thus tension must be 000V DC. If it is necessary, make an adjustment with the ZERO potentiometer until obtaining that measurement.

CALIBRATION WITH GAS

1. Set the detector for Group 1, as it is described on page 7 (STANDGAS HC) and 8 (STANDGAS HC PRO). (gas group selection table)
2. Insert CECALIBR adapter into the detector and release a precise mixture of methane, at 2,5% v/v, equivalent to 50% LEL, with a 0,5l/min flow and adjust the GAIN potentiometer until the measuring instrument indicates 1.0V DC between TP+ and TP- terminals.
3. Afterwards, do not forget to reprogram the detector again for the required gas group, as described on page 7 (STANDGAS HC) and 8 (STANDGAS HC PRO).



NOTE:

STANDGAS HC WITH THREE LEVELS:
In this case, voltage in the TP+/TP- terminals will be 0.65mv.

7. TECHNICAL CHARACTERISTICS

	STANDGAS HC & HC 3 LEVELS	STANDGAS HC PRO
Technology	Catalytic sensor and microprocessor	Catalytic sensor and microprocessor
Voltage supply	10V to 24V DC (2 wires +/-)	10V to 24V DC (2 wires +/-)
Maximum consumption	130mA at 12V DC with 3 active relays	110mA at 12V DC with relay active
Gas measuring range	0-100% L.E.L. (5% vol. Methane) -linear full scale-	0-100% L.E.L. (5% vol. Methane) -linear full scale-
Resolution	±1% L.E.L. of the measuring range	±1% L.E.L. of the measuring range
Zero deviation	± 10mV/year	± 7mV/year
Span deviation	± 10% L.E.L/year	± 9% L.E.L/year
Stabilization time	<15 minutes all specifications	<15 minutes all specification
Resistance to H_2S	Yes (1000 ppm/hour typically)	Yes (1000 ppm/hour typically)
T50/T90 response time	6s / 10s resp.	3s / 8s resp
Useful life (MTBF)	Approx. 3 years	Approx. 4 years
Maintenance periods	Annual –recommended-	Annual –recommended-
Temperature range	-10ºC to +50ºC	-10ºC to +50ºC
Humidity range	0 to 90% RH with no condensation	0 to 90% RH with no condensation
Atmospheric pressure limit	80 to 110 kPa (0.8 to 1.1 bar)	80 to 110 kPa (0.8 to 1.1 bar)
Alarm relays	1 programmable alarm level choosing between 2 levels (20% L.E.L. and 50% L.E.L.), instant/delayed disconnection with programming of the disconnection delay. Programming of the relay status at rest / activated. 3 levels models see page 6	1 programmable alarm level choosing between 2 levels (20% L.E.L. and 50% L.E.L.), instant/delayed disconnection with programming of the disconnection delay. Programming of the relay status at rest / activated.
Optical indication of sensor failure	External	External
Optical indication of status	External / Interior 3 level models	External
Coverage area	16/30 m^2 approx.	16/30 m^2 approx.
Protection grade	IP65	IP65
IP65 housing material	Makrolon & ABS	Makrolon & ABS
Cable diameter	6-10mm^2	6-10mm^2
Dimensions (mm) / peso (gr)	120x160x60 / 288	120x160x60 / 288

8. WARRANTY

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

Guarantee covers the full repair of the equipment which the DURAN ELECTRONICA Technical Department considers to be defective, with the purpose of bringing them back to their normal use. This warranty will be valid only when the equipment has been installed by a competent person, and always following the specifications contained in this manual. Its negligent installation or use will exempt DURAN ELECTRONICA from any responsibility on the 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 ELECTRÓNICA will not be held responsible for damages that may be incurred as a consequence of the incorrect use or installation of this product.

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

DURAN ELECTRONICA reserves the right to modify this manual without prior notice.

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