DURAN® electrónica

STANDGAS HC & HC PRO

STAND-ALONE DETECTORS FOR EXPLOSIVE GASES

Installation & User Manual

Certificate nº FS82426

STANDGAS

TABLE OF CONTENTS

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)

Available formats and gases

STANDGAS HC

Available for natural gas-methane, butane-propane, and hydrogen.

STANDGAS HC PRO

Available for natural gas-methane, hydrogen, butane, propane, heptane, hexane, pentane, methanol,styrene, ethane, ethanol, ethylene, propylene, acetone, ammonia, acetylene, cyclo-hexane, cyclo-pentane, dioxane, butyl acetate, ethyl acetate,acetic acid, iso-butyl alcohol, iso-propyl alcohol, decane, benzene, octane, methyl ethyl ketone, nonane, propanol, toluene, xylene. Other gases, consult.

Other features

- **Optical indications for sensor fault.**
- **Programmable alarm relay.**
- **Selection of gas to detec 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's response or damage it.

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 retard	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.

[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.

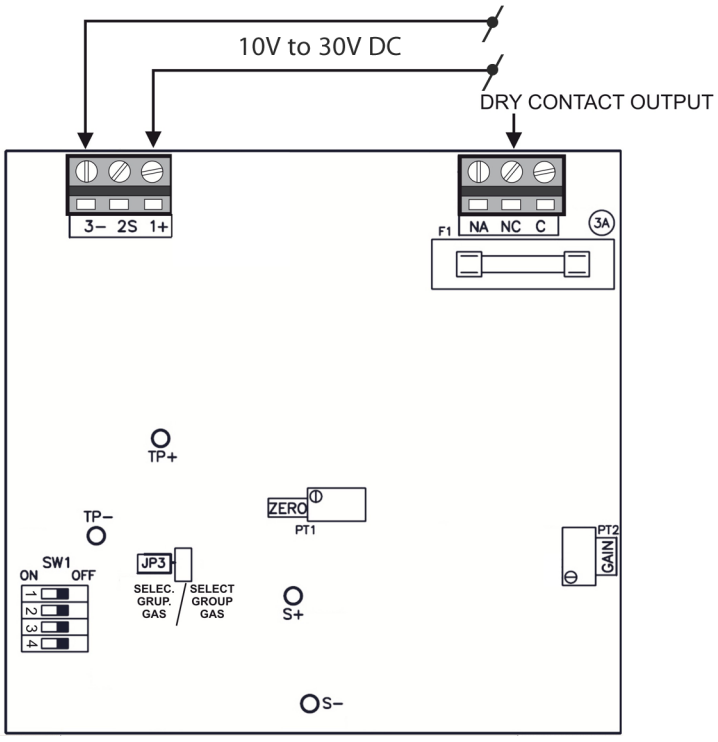
[3] Relay disconnection retard. It allows to select a retard or the instantaneous disconnection since the level selected has disappeared as an alarm condition. It has no effect if INSTANTANEOUS was previously selected.

[4] Relay alarm activation level. It allows to select, in between two, the relay actuation level, local and independently.

PROGRAMMING DEFAULT:

Activated, instantaneous –no retard–
20% LEL alarm

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

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	▼

Group	Gas	Relative response	Installation height
1	Methane	100%	30 cm from ceiling ▲
	Hydrogen		30 cm from ceiling ▲
	Methanol		100 cm from floor ▶
2	Ethane	75%	100 cm from floor ▶
	Ethanol		100 cm from floor ▶
	Ethylene		100 cm from floor ▶
	Propane		30 cm from floor ▼
	Propylene		30 cm from floor ▼
3	Acetone	55%	30 cm from floor ▼
	Ammonia		30 cm from floor ▼
	Cyclo-Hexane		30 cm from floor ▼
	Cyclo-Pentane		30 cm from floor ▼
	Dioxane		30 cm from floor ▼
	Ethyl Acetate		30 cm from floor ▼
	Iso-Propyl Alcohol (IPA)		30 cm from floor ▼
	Methyl Ethyl Ketone (MEK)		30 cm from floor ▼
	Butane		30 cm from floor ▼
	Hexane		30 cm from floor ▼
	Pentane		30 cm from floor ▼
	Propanol		30 cm from floor ▼
	Propyl Alcohol		30 cm from floor ▼
4	Butyl Acetate	42%	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 ▼
	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 ▼
	Iso-Butyl Methyl Ketone		30 cm from floor ▼

5. EXTERNAL OPTICAL INDICATIONS: messages & functioning

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, it is neither required, nor recommendable recalibration once installed.

ZERO OUTPUT VERIFYING

Before proceeding the detector should be operating for 1 hour minimum in a clean ambient, 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).
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).

7. TECHNICAL CHARACTERISTICS

	STANDGAS HC	STANDGAS HC PRO
Technology	Catalytic sensor and microprocessor	Catalytic sensor and microprocessor
Power supply	10V to 30V DC (2 wires +/-)	10V to 30V DC (2 wires +/-)
Max. consumption	130mA to 12V DC with relay activated	110mA to 12V DC with relay activated
Loop max. resistance	250Ω	250Ω
Max current output	21.3 mA (Tip)	21.3 mA (Tip)
Fault loop current	< 2mA	< 2mA
Exp gases measurement range	0-100% LEL (5% methane), linear in full scale	0-100% LEL (5% methane), linear in 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 specifications-
H_2S resistance	Yes (tipical 1000ppm/hour)	Yes (tipical 1000ppm/hour)
Response time T50/T90	6s / 10s resp.	3s / 8s resp
Useful life (MTBF)	4 years approximately	4 years approximately
Maintenance period	Annual – recommended-	Annual – recommended-
Temperature range	-10ºC to +50ºC	-10ºC to +50ºC
Humidity range	0 to 95% HR without condensation	0 to 95% HR without condensation
Atmospheric pressure limit	80 to 110 kPa (0.8 to 1.1 bar)	80 to 110 kPa (0.8 to 1.1 bar)
Fault sensor optical indications	External	External
Status optical indications	External	External
Relay programmable alarm	1 programmable relay output module in between 2 levels (20% LEL / 50% LEL), instant/retarded disconnection, retard disconnection programming and initial relay idle state/activated.	1 programmable relay output module in between 2 levels (20% LEL / 50% LEL), instant/retarded disconnection, retard disconnection programming and initial relay idle state/activated
Coverage area	16 m^2 approx.	16 m^2 approx.
Protection grade	IP65	IP65
Box material	Makrolon & ABS	Makrolon & ABS
Cable Diameter	6-10mm^2 -for maintenance IP65-	6-10mm^2 -for maintenance IP65-
Dimensions (mm) & weight (gr) IP65	120x160x60 / 288	120x160x60 / 288

8. GUARANTEE

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 always 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 the fulfillment of the terms of this warranty.

Guarantee 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 non authorized personnel by DURAN ELECTRONICA, transportation costs of the equipments.

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

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