



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS INS 180

**Point Gas Detector
standard function
- GD -**

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Rev.	Date	Notes



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1. Scope

The purpose of this document is to define the Standard Function for a gas detector(GD).

This detector can be optical (GDIR) or catalytic (GDC) type.

In order to assist in understanding, the document should be read in conjunction with **GS INS 150**, Design Methods for System Configuration Standard Functions.

This standard is generally used in relationship with the 2ooN logic Standard Function.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS INS 150	Design Method for System Configuration Standard Functions

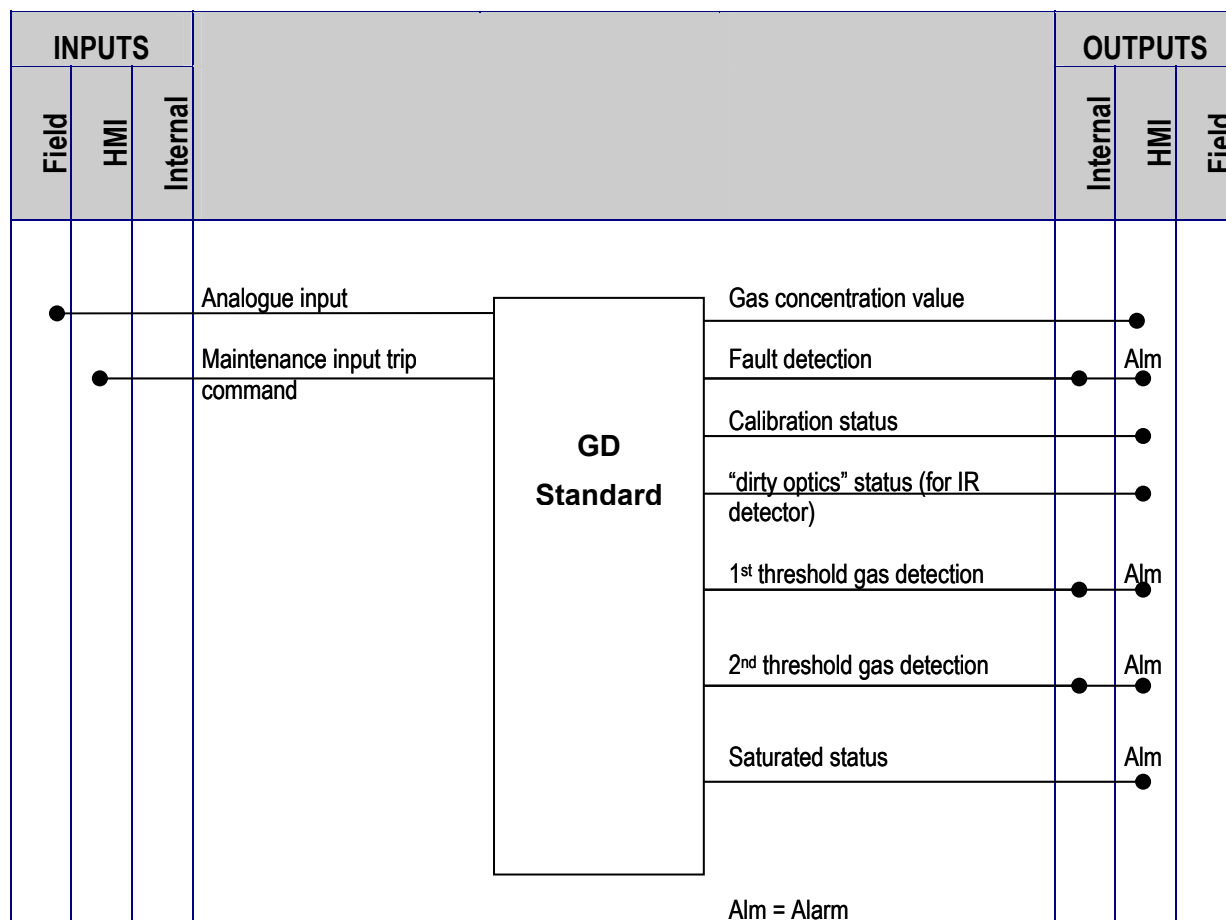
3. General description of functions

3.1 List of main functions

- 4-20 mA signal acquisition
- Conversion in engineering unit (% LFL- lower flammability limit)
- Fault detection (Open & Short circuit)
- 1st threshold gas detection
- 2nd threshold gas detection
- Status handling : calibration, "dirty optics" (for IR detector only), saturated
- Maintenance input trip command

4. Interface description

4.1 General description



4.2 Field interface description

Input signal features can be defined as below (to be checked with the Vendor):

- Signal = 0 mA detector in fault,
- 1,5 mA detector in calibration mode,
- 2 mA "dirty optics" status (only for IR detector),
- 4 mA 0 % LFL,
- 20 mA 100 % LFL,
- Signal > 20 mA detector in overrange (saturated)

5. Detailed description of functions

5.1 Status conditions

Values to be checked with the Vendor

Internal data	Calculation rules	Statuss
1 st threshold gas detection	Signal > 1 st high threshold (for DCS alarming and/or FGS logic)	ACTIVE
2 nd threshold gas detection	Signal > 2 nd high threshold (for DCS alarming and/or FGS logic)	ACTIVE
Fault detection	Signal is below 2.3 mA Or maintenance input trip command = ACTIVE (for DCS alarming and/or FGS logic)	ACTIVE
Calibration status	Signal is between 1 and 1,7 mA (for DCS animation only)	ACTIVE
“dirty optics” status	Signal is between 1,75 and 2.3 mA (for IR detector) (for DCS animation only)	ACTIVE
Saturated status	Signal is > overrange threshold (20 mA) (for DCS alarming only)	ACTIVE

5.2 Functional standard behaviour

When *ACTIVE*, calibration and “dirty optics” status have not to be regarded as alarms, but only as specific status.

The maintenance input trip command will force the activation of the fault status.

6. Tuning parameters and variables

PARAMETERS	ACCESS LEVEL
Min scale pre-set value	Engineer
Max scale pre-set value	Engineer
1 st high threshold pre-set value	Engineer
2 nd high threshold pre-set value	Engineer

7. Representation and animation description (HMI)

7.1 Events and values to be recorded

7.1.1 Events

- 1st threshold gas detection
- 2nd threshold gas detection
- Fault detection
- Saturated status
- Maintenance input trip command
- “dirty optics” status (for IR detector)
- calibration status

7.1.2 Analogue values

Gas concentration value (% LFL),

7.2 Alarm handling

Alarm Description	Priority
1 st threshold gas detection	Level 3
2 nd threshold gas detection	Level 3
Fault detection	Level 3
Saturated status	Level 3

7.3 Control display

The hereafter description gives examples of representation. However, they may be amended dependant on the DCS features.

Site layout animation with detector symbols



GD xxxx = detector tag name (black / hidden)

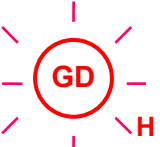
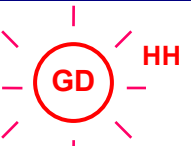
H = gas 1st threshold (red + flashing)

HH = gas 2nd threshold (red + flashing)

SAT = saturated status (red + flashing)

OPT = "dirty optics" status (red)

CA = calibration status (yellow)

Internal data	Display	Symbol	Frame
All alarms = INACTIVE		Green	NA
Gas 1 st threshold = ACTIVE and unacknowledged		Flashing red	NA
Gas 1 st threshold = ACTIVE and acknowledged		Red steady	NA
Gas 2 nd threshold = ACTIVE and unacknowledged		Flashing red	NA
Gas 2 nd threshold = ACTIVE and acknowledged		Red steady	NA
Saturated status = ACTIVE and unacknowledged		Red steady (FULL = flashing red)	NA
Saturated status = ACTIVE and acknowledged		Red steady (FULL = red steady)	NA
Saturation alarm = INACTIVE		(FULL = hidden)	NA

Internal data	Display	Symbol	Frame
Dirty optics = ACTIVE (with fault detection)	DO 	(DO = red steady)	As per AIS Standard Function
Dirty optics = INACTIVE		(DO = hidden)	
Calibration = ACTIVE (with fault detection)	CA 	(CA = yellow steady)	As per AIS Standard Function
Calibration = INACTIVE		(CA = hidden)	
Inhibit of the result of the associated voting logic		Green Red or Yellow	Yellow