



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS INS 152

**Line Monitored Digital Input
standard function
- DI _LM -**

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1. Scope

The purpose of this document is to define the Standard Function for a Line monitored Digital Input.

This standard is used for loops based on “energise to trip” principle (e.g. local Manual Call Points, push buttons included in the F&G matrix and ESD panels, local ESD push buttons) as well for linear heat sensing cables.

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

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

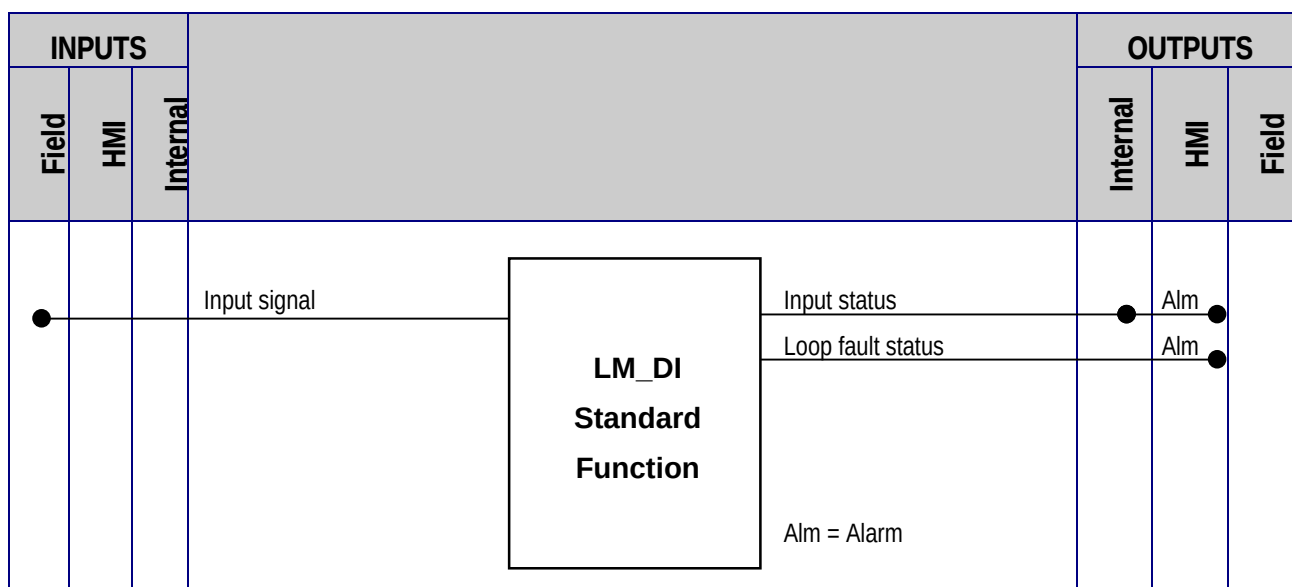
3.1 List of main functions

- ON / OFF signal acquisition,
- Alarm detection,
- Loop Fault detection (open & short circuits),

Signal acquisition is achieved through standard analogue inputs card. This analogue loop will include up to 4 individual contacts.

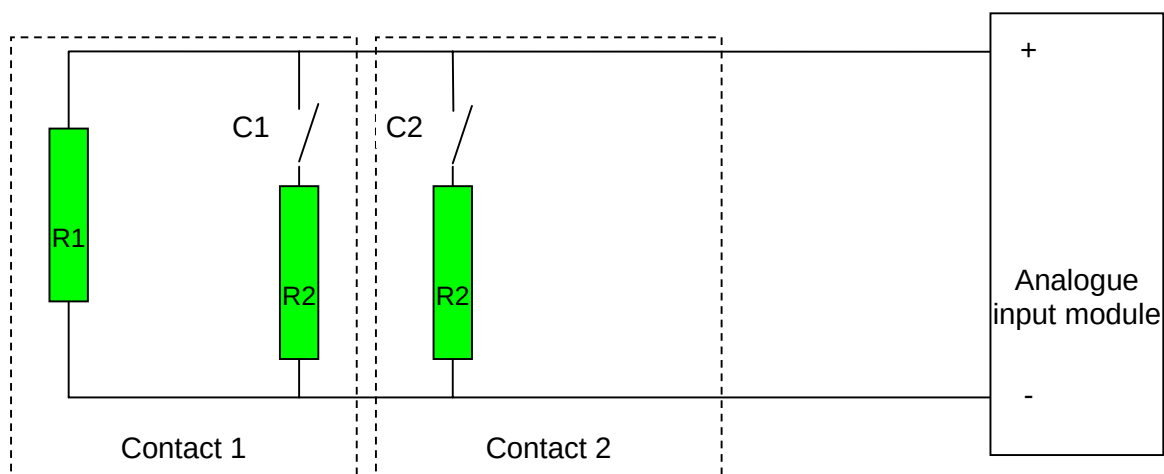
4. Interfaces description

4.1 General description



4.2 Field interface description

The field wiring principle for this type of ON / OFF data acquisition shall be designed as below (example showing 2 individual contacts) :



$R1 = 4.7 \text{ Kohm}$

$R2 = 3.3 \text{ Kohm}$

The resistors R1 and R2 shall be calculated to ensure the signal levels suit the system capabilities

Typical input signal characteristics:

Signal $\leq 0.8 \text{ mA}$	Loop status = <i>INVALID</i>	(open circuit),
Signal = 4 mA	Loop status = <i>NORMAL</i>	(loop healthy, no contacts activated),
Signal $\geq 7 \text{ mA}$	Loop status = <i>ALARM</i>	(at least 1 contact activated),
Signal $\geq 23.2 \text{ mA}$	Loop status = <i>INVALID</i>	(short circuit),

5. Detailed description of functions

5.1 Status definition

Internal data	Calculation rules	Status
Input status	7 mA < signal (at least 1 contact activated) < 23.2 mA	ALARM
	Else	NORMAL
Loop fault	Signal < 0.8 mA Or > 23.2 mA	ALARM
	Else	NORMAL

5.2 Functional standard behaviour

In the case of a short or open circuit detection (loop fault activated), the Input status will be forced *NORMAL* and the loop fault signal will generate an alarm. The input status will not failsafe on a loop fault.

6. Representation and animation description (HMI)

6.1 Events to be recorded

- Fault,
- Loop invalidity,

6.2 Alarm management

Alarm Description	Priority
Input alarm	Level 2 (for PSS)
	Level 3 (for SSS & FGS)
Loop fault alarm	Level 2

6.3 Data animation

Internal data	Display	Text	Frame
Input status = <i>NORMAL</i>	Tag name	Blue (process & safety displays)	NA
Input status = <i>ALARM</i> Alarm unacknowledged	Tag name	Flashing red	NA
Input status = <i>ALARM</i> Alarm acknowledged	Tag name	Steady red	NA
Loop fault= <i>ALARM</i> Alarm unacknowledged	Tag name	Blue	Flashing red (internal frame)
Loop fault= <i>ALARM</i> Alarm acknowledged	Tag name	Blue	Steady red (internal frame)
Communication or system fault = <i>ACTIVE</i>	Tag name	White	Magenta (external frame)