

GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 910

Typical Instrument Systems Interfaces Schematics

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1. Scope

The purpose of this document is to define the minimum requirements for the preparation of typical interface schematic and signaling principles standardization between ICSS system and other equipments for onshore and offshore oil and gas installations.

2. Reference documents

The equipment shall satisfy the requirements and regulations of the country of installation and specific standards referred to in this specification.

Where national regulations exist, their provisions and those of the standards and codes to which they refer shall apply, supplementing or amending the provisions of this document.

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
Not applicable	

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP ELE 135	Low Voltage Power Switchgear and Controlgear Assembly
GS EP INS 000	Contractor Document Requirements
GS EP INS 102	Instrumentation Identification
GS EP INS 135	Cybersecurity Requirements for Industrial Information Systems (SII)
GS EP INS 197	Process Standard Functions
GS EP INS 198	Safety and Fire & Gas Standard Functions

3. Terminology and Definitions

There are five types of statements in this specification, the “shall”, “should”, “may”, “can” and “must” statements. They are to be understood as follows:

Shall Is to be understood as mandatory. Deviating from a “shall” statement requires derogation approved by Company.

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Should	Is to be understood as strongly recommended to comply with the requirements of the specification. Alternatives shall provide a similar level of protection and this shall be documented.
May	Is to be understood as permission
Can	Is to be understood as a physical possibility
Must	Expresses a regulatory obligation
Company	TOTAL E&P or any TOTAL E&P subsidiary
Contractor	Any Party that has signed a Contract with Company for the Engineering, Procurement, Construction, and Installation in part(s) or in full of a project.
Vendor	The package Vendor sub-contracted by the Contractor or by Company
Supplier	The Party that manufactures or supplies equipment, either individually or as a Packaged unit for the project.

3.1 Abbreviations

The following terms and abbreviations are used in this document.

CCR	Central Control Room
ECS	Electrical Control System
ESD	Emergency Shut Down
FAT	Factory Acceptance Test
FCW	Full Control Well
FGS	Fire and Gas System
GS	Company's General Specification
HIPS	High Integrity Protection System
HVAC	Heat Ventilation & Air Condition
ICSS	Integrated Control and Safety System
IFAT	Integrated Factory Acceptance Test
IMS	Instrument Management System
I/O	Input / Output
IS	Intrinsically Safe
ITR	Instrument Technical Room
MCC	Motor Control Center
MMS	Machine Monitoring System
OCWR	Overall Control Wells & Riser
OFMS	Overall Flow Metering System
OLT	Oil Loading Terminal

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OWS	Operator WorkStation
PAGA	Public Address & General Alarm
PCS	Process Control System
PB	Push Button
PSS	Process Safety System
RDV	Deluge Valve
SIE	Enterprise Information System
SII	Industrial Information System
UCP	Unit Control Panel
UPS	Uninterrupted Power Supply
VSDS	Variable Speed Drive System

4. General

The objective of the Typical System Interface Schematic is to provide an immediate understanding of all interfaces between ICSS and other equipments to which they relate functionally. It shall be possible to identify on this schematic all the elements involved in term of technical interfaces, involving ICSS and other equipments.

The typical system interface schematics shall be developed during basic engineering and generally updated during detailed engineering.

The typical system interface schematic shall be produced in sufficient detail in order to:

- Ensure the overall signaling philosophy and function is well defined
- Facilitate interface standardization
- Clearly indicate technical and/or contractual interfaces and battery limits in schematic form
- Enable to identify testing requirement of equipment and its interface with ICSS.

Each set of system interface schematic should show the hardwired and serial interfaces between the equipment and the ICSS. Typically the equipment to be addressed includes:

- Electrical Control System (ECS)
- Oil Loading Terminal (OLT)
- Overall Control Wells & Riser (OCWR)
- Instrument Management System (IMS)
- Machine Monitoring System (MMS)
- Overall Flow Metering System (OFMS)
- Full Control Wells (FCW)
- UFR Monitoring System

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- MCCs
- VSDs
- Dampers
- Deluge valves
- On/Off valves
- Motor Operated Valve (MOV)
- Process and Utilities UCPs, i.e. Air Compressor & Dryer, Gas turbine driven Gas compressor, etc.
- HVAC system
- Fire Extinguisher & Addressable Fire Detection
- PAGAs
- Fire Water Pump Package
- Water Mist Package
- Emergency Diesel Generator (EDG)
- Wellhead Control Panel (WHCP)
- Hydraulic Power Unit (HPU)
- Uninterrupted Power Supply (UPS)
- HIPPS Valve system
- Metering system
- Tank Gauging System (TGS)
- Instrument packages, i.e. chemical injection packages, methanol injection package.

Typical system interface schematic between SII and SIE, Wifi and SII, and other related cyber security issue shall refer to [GS EP INS 135](#).

The list of typical system interface schematics given in this document shall not be considered as exhaustive list.

Even though the typical system interface schematics shall be developed during basic engineering and generally updated during detailed engineering, however the list of all required system interface schematics shall be issued and defined during pre-project phase so that FEED contractor can further establish and develop the system interface schematics for all project specific requirement.

5. Minimum Requirements

System interface schematics are schematic diagram split into individual interface between ICSS and an equipment.