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| **Data Item Description**  **IO List**  **DID E702-1** | | | | | | | | |
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# Purpose

The purpose of this Data Item Description (DID) is to provide instructions to the Integrator/Supplier to generate the list of equipment that will be connected to the ship’s Integrated Control System.

# Scope

This document contains the format and preparation instructions for developing an IO List that will be presented to the Purchaser. It applies to all Integrator/Supplier equipment that has control/monitoring data that is transferred to/from the ship’s Integrated Control System.

# Format

The document shall be supplied in Excel format and the columns should follow the same order as described below.

# Content

The IO List shall include, but will not be limited to, the following information. The Integrator/Supplier shall populate the fields that are within their scope of knowledge. Guidance can be provided by the Purchaser on suitable entry formats. The format of Excel spreadsheet shall include the columns listed in

Table 1- Column List

|  |
| --- |
| **IO List Columns** |
| ITEM |
| REVISION |
| SWBS # |
| SYSTEM |
| SIGNAL ID |
| EQUIPMENT |
| EQUIPMENT TAG |
| SIGNAL SUFFIX |
| IO TYPE |
| ELECTRICAL CHARACTERISTICS |
| UNITS |
| CALIBRATED MIN |
| CALIBRATED MAX |
| INSTRUMENT MIN |
| INSTRUMENT MAX |
| HIGH ALARM SETPOINT |
| HIGH HIGH ALARM SETPOINT |
| LOW ALARM SETPOINT |
| LOW LOW ALARM SETPOINT |
| RTU TAG |
| ECR |
| DNV-GL REQUIREMENT |
| DRAWING NUMBER |
| VFI REFERENCE |
| COMMENTS |

## Item Number

This is a sequential number that will be unique to the IO List.

## Revision

Specify what revision of this document corresponds to the latest change to that individual signal.

## SWBS #

Specify what SWBS number/area specifies that this signal is required from.

## System

This field represents the system to which the signal belongs, if the equipment cannot be used in any other system. Completion of this field requires the selection from the following options:

* System PBS (Example “429”)
* System Reference (Example “HPSW”)

Completion of this field is required by the Integrator/Supplier only if the system is known. If the system is not known, leave this field blank.

## Signal ID

Completion of this field is in the form, **0 – 99** etc. Completion of this field is mandatory by the Integrator/Supplier.

## Equipment

Equipment as described by the engineering team.

## Equipment Tag

The Purchaser’s equipment tag associated with the specific equipment.

## Signal Suffix

The combination of PDM Occurrence Name and this DID signal name gives the signal name that will be populated in the IPMS C&I Database, an example: PDM = “DGSA Receiver By-Pass Valve”; This DID = “Open”. Completion of this field is mandatory by the Integrator/Supplier.

## IO Type

This field is used to describe the type of signal, for example:

* (Discrete) Digital Input – DI;
* (Discrete) Digital Output – DO;
* (Discrete) Analogue Input – AI;
* (Discrete) Analogue Output – AO;
* Resistance Thermal Device – RTD;
* Serial Digital Input – SDI;
* Serial Digital Output – SDO;
* Serial Analogue Input – SAI; and
* Serial Analogue Output – SAO.

Completion of this field is mandatory by the Integrator/Supplier.

## Electrical Characteristics

This field provides a description of the signal electrical characteristics. Typical examples are listed as follows:

### Digital Inputs

* 2-wire, 0 to +24 V d.c. nominal (+32 V d.c. max.) digital (discrete) input;
* 2-wire, 0 to +10V, +/- 10 V d.c. typically wired to module terminals as shown overleaf;
* Voltage free (dry) contact or switch suitable for DCS 24 V d.c. wetting (See i. and ii. below); and
* Pulse input (pulse counter - max 1.5MHz, Nominally 5V d.c. or 24 V d.c.).

### Analogue Inputs

* 2-wire, 4 to 20 mA current loop input. (See ii. and iii. below); and
* Resistance Temperature Detector (RTD) PT-100 (IEC 751 standard 200 Ω = 175.86°C) or PT-1000 (500-1500 Ω);
* Thermocouples type K (E230 standard NiCr, with cold junction compensation).

### Outputs

* Volt free contacts, Typically 2 Amp rating (4 Amps possible on request), Normally open or closed per module (electrically isolated);
* 24 V d.c. switched, Typically 1 Amp rating (Module maximum of 8A);
* 0 to +/- 10V d.c. (External supply required);
* 4 to 20 mA, 24 V d.c. (External supply required).

Completion of this field is mandatory by the Integrator/Supplier.

## Calibrated Min

This field represents the lowest or minimum range that an equipment sensor can detect, expressed in Engineering Units, for example (0 Bar or 0°C etc). Completion of this field is mandatory by the Integrator/Supplier.

## Calibrated Max

This field represents the highest or maximum range that an equipment sensor can detect, expressed in Engineering Units, for example (100 Bar or 100°C etc). Completion of this field is mandatory by the Integrator/Supplier.

## Units

This field represents the engineering units, which are applicable to the signal. Completion of this field will be in the form of : “Kpa” or “l/min” or “RPM” or “XX0C” etc. Completion of this field is mandatory by the Integrator/Supplier.

## RTU Tag

The VSY equipment tag associated to the IO panel that this signal is terminated on (Example: 438.10-E1001)

## Instrument Min

This field represents the lowest or minimum range that an equipment sensor can detect, expressed in electrical characteristics, for example (4mA or 1 Volt etc). Decimals should be entered only where required/relevant but should not exceed 2 digits. Completion of this field is mandatory by the equipment Integrator/Supplier.

## Instrument Max

This field represents the highest or maximum limit of the range that an equipment sensor can detect expressed in electrical characteristics, for example, (20mA or 10 Volts etc). Decimals should be entered only where required/relevant but should not exceed 2 digits. Completion of this field is mandatory by the Integrator/Supplier.

## High High Alarm Setpoint

This field is used to specify the value of the high level alarm. Completion of this field requires the trigger level for initiation of the high level alarm. The high level alarm and is recorded in terms of engineering units for example (XX Bar or XX0C etc). If more than one high level alarm is required the Integrator/Supplier is invited to specify.

## High Alarm Setpoint

This field is used to specify the high level warning initiation point for the sensor. Completion of this field requires the value to be recorded in engineering units.

## Low Alarm Setpoint

This field is used to specify the low level warning initiation point for the sensor. Completion of this field requires the value to be recorded in engineering units. If more than one high level warning is required the Integrator/Supplier is invited to specify.

## Low Low Alarm Setpoint

This field is used to specify the value of the low level alarm. Completion of this field requires the trigger level for initiation of the low level alarm. The low level alarm and will be recorded in terms of engineering units for example (X Bar or X0C etc). If more than one low level alarm is required the Integrator/Supplier is invited to specify.

## ECR

If the equipment is an addition to the existing contractual baseline, then it requires an Engineering Change Order (ECR). This ECR number is generated by Aras Software in VSY.

## Class Requirement

This is the requirement number that specifies the need for this equipment.

## Drawing Number

This is the System drawing in which this signals can be found.

## VFI Reference

This refers to the Vendor Furnished Information document that relates to this specific equipment

## Comments

Any concerns or comments associated to this signal.