|  |
| --- |
| Interface Control Document Template |

XXXXXXXX (Sub detector name)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Prepared by** | *Signature* |  | **Accepted by** | *Signature* |
|  | |  |  | |
|  | |  |  | |
|  | |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Approved by** | ***Function*** | ***Date*** | ***Signature*** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

|  |  |
| --- | --- |
| **Summary** |  |
| **Annexes** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Document Change Record** | | | | |
| **Edition** | | **Revision** | **Date** | **Modified pages** | **Observations** |
| **1** | | **0** |  |  |  |
|  | |  |  |  |  |
|  | |  |  |  |  |
|  | |  |  |  |  |
|  | |  |  |  |  |
|  | |  |  |  |  |

|  |  |
| --- | --- |
| **Distribution** | ***See Distribution list at the end of this document*** |

*Template V1.0*

**- Table of Contents -**

[1. INTRODUCTION 3](#_Toc414357636)

[1.1. Scope of the document 3](#_Toc414357637)

[1.2. Applicable Documents (AD) 3](#_Toc414357638)

[1.3. Reference Documents (RD) 3](#_Toc414357639)

[1.4. List of abbreviations 3](#_Toc414357640)

[2. General Interface Description 4](#_Toc414357641)

[3. Mechanical Interface 4](#_Toc414357642)

[3.1. Coordinate system 4](#_Toc414357643)

[3.2. Mechanical concept 4](#_Toc414357644)

[3.3. Critical dimensions 4](#_Toc414357645)

[3.4. Weights 4](#_Toc414357646)

[3.5. Positioning and alignment constrains 4](#_Toc414357647)

[4. Electrical Interface 4](#_Toc414357648)

[4.1. Block diagram 4](#_Toc414357649)

[4.2. Connection diagram 4](#_Toc414357650)

[4.3. List of Connectors 4](#_Toc414357651)

[4.4. Cabling and connecting sheets 5](#_Toc414357652)

[4.5. Electrical Circuit of the grounding 5](#_Toc414357653)

[4.6. Power Consumption 5](#_Toc414357654)

[4.7. Other electrical interfaces 5](#_Toc414357655)

[5. Fluid Interface (if needed) 5](#_Toc414357656)

[5.1. Gas system Interface 5](#_Toc414357657)

[5.2. Liquid system Interface 5](#_Toc414357658)

[6. Thermal Interface (if needed) 6](#_Toc414357659)

[7. CABLING 6](#_Toc414357660)

[8. POWER 6](#_Toc414357661)

[9. Test interfaces 6](#_Toc414357662)

# INTRODUCTION

## Scope of the document

Scope of the document.

Note: Unless otherwise stated, this document does not address software interfaces.

## Applicable Documents (AD)

|  |  |  |  |
| --- | --- | --- | --- |
| **Applicable Documents (AD)** | | | |
| **AD** | **Title** | **Reference** | **Version** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Reference Documents (RD)

|  |  |  |  |
| --- | --- | --- | --- |
| **Reference Documents (RD)** | | | |
| **RD** | **Title** | **Reference** | **Version** | |
|  |  |  |  | |
|  |  |  |  | |
|  |  |  |  | |

## List of abbreviations

|  |  |  |  |
| --- | --- | --- | --- |
| **List of Abbreviations** | | | |
| **MSE** | Mechanical System Equipment | PW | Power |
| **EL** | Electrical System Equipment |  |  |
| **CB** | Cabling |  |  |

# General Interface Description

# Mechanical Interface

## Coordinate system

## Mechanical concept

## Critical dimensions

For every interfaced couple of systems a drawing with a functional dimensions and tolerances and if needed:

* Dimensions and tolerances
* Surface treatments and status
* Frame of reference axes
* attachment points: position, center distances, diameters, tolerances
* flatness
* position of the center of gravity (with tolerances)
* mounting specifications (torque, washers, brake type, heat seals, etc..)
* connectors (type, identification, position),
* location of the marking label.

## Weights

Estimated weights with margin and tolerances

## Positioning and alignment constrains

For every subsystem:

* Positioning constrains: position of q subsystem from another
* Alignment constrains: absolute/or relative alignment precision for a system from another AND requested precision for the verification of this alignment.

# Electrical Interface

## Block diagram

It should indicate all electrical interfaces, including redundancies:

* power: the type of power (regulated, unregulated, heating), number of lines for each type;
* remote control: control type (relays, digital ...), the number of each type of control
* insulation;

Other interfaces: clock, other instruments, ...

## Connection diagram

This is a general wiring diagram showing the names of cables, connectors, equipment, ...

## List of Connectors

For each connector on should indicate:

* The location (eg equipment A);
* the name of the connector;
* type (manufacturer's name + complete reference);
* the general function (eg power ...)
* coded pins, keying;
* the precise limits of the respective supplies;
* the principle of shield connections and grounding policy.

## Cabling and connecting sheets

For every connector and every pin it will be specified:

* the signal type (analog, digital, power, RF, ...),
* the waveform (period, duty cycle, maximum value, minimum value)
* a graphical representation for complex signals (ramp, modulation ...),
* the category (transmitter or receiver)
* the reference of the pining of the connector,
* the electrical diagram of the interfaced circuit.

## Electrical Circuit of the grounding

A diagram will indicate how are connected or isolated mechanical grounds, shieldings ...

The maximum contact resistance will be defined.

## Power Consumption

For each functional mode and each line of power, the average power and peak power, combined with the current measurement, will be given.

## Other electrical interfaces

This section defines all other electrical interfaces (clock s, other instruments ...).

# Fluid Interface (if needed)

For every fluid it will be indicated:

* the type of fluid,
* the reference of the mechanical interface to which it relates,
* the pressure,
* the flow,
* the constraints of cleanliness of the fluid.

## Gas system Interface

## Liquid system Interface

# Thermal Interface (if needed)

For the subsystems:

* Limit temperatures: during storage, for switching power, in operation
* Thermal dissipation: in and out of operation

# CABLING

# POWER

# Test interfaces

These are the specific interfaces related to the test equipment:

* MSE interfaces: mechanical assembly test ... ;
* ESE interfaces: electrical interfaces with the test and verification systems;
* OSE interfaces: reference cubes, or targets for the surveys ...

**DISTRIBUTION LIST**

|  |  |  |  |
| --- | --- | --- | --- |
| **INTERNAL Distribution** |  | **EXTERNAL Distribution** | |
|  | **Name** | **Laboratory** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |