

# **BSM Interfaces**

**Ian Pain**

## **BSM Interfaces**

» *Doc Pack Section 6*

- A. MASTER ASSEMBLY ICD 3D MODEL AND 2D VIEWS
- B. STRUCTURE, THERMOMETRY
- C. PCAL
- D. LAUNCH LATCH
- E. OPTICS
- F. CRYO-HARNESS
- G. MCU
- H. FPU SIMULATOR
- I. INSTRUMENT SIMULATOR

### **Not true interfaces:**

- **BSMe - MCU**
- **Common Procurement items**
  - **PACS Motors**
  - **LAM Launch latch**

## **BSM ICD configuration control**

- **Formal ICD's written by higher level sub-systems (eg structure) to minimize documentation load**
- **ATC ICD's controlled internally as Annexures to Design Description**
- **ATC ICD Annex controls what information has been issued externally.**
- **ATC ICD master table (section 12.2 page 69) indicates the ATC document and the expected external matching document.**

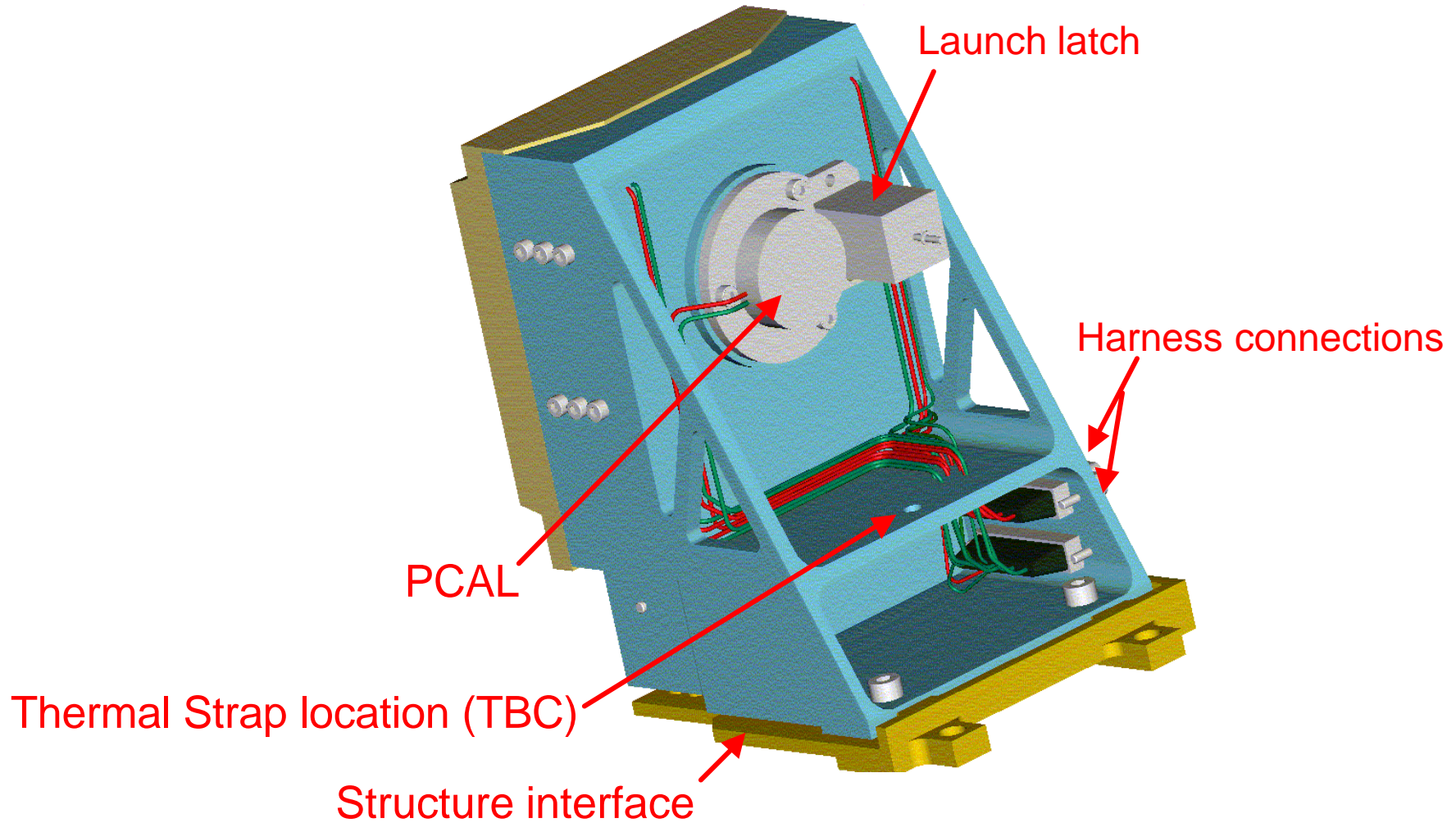
# SPIRE BSM Detailed Design Review

30th July 2001



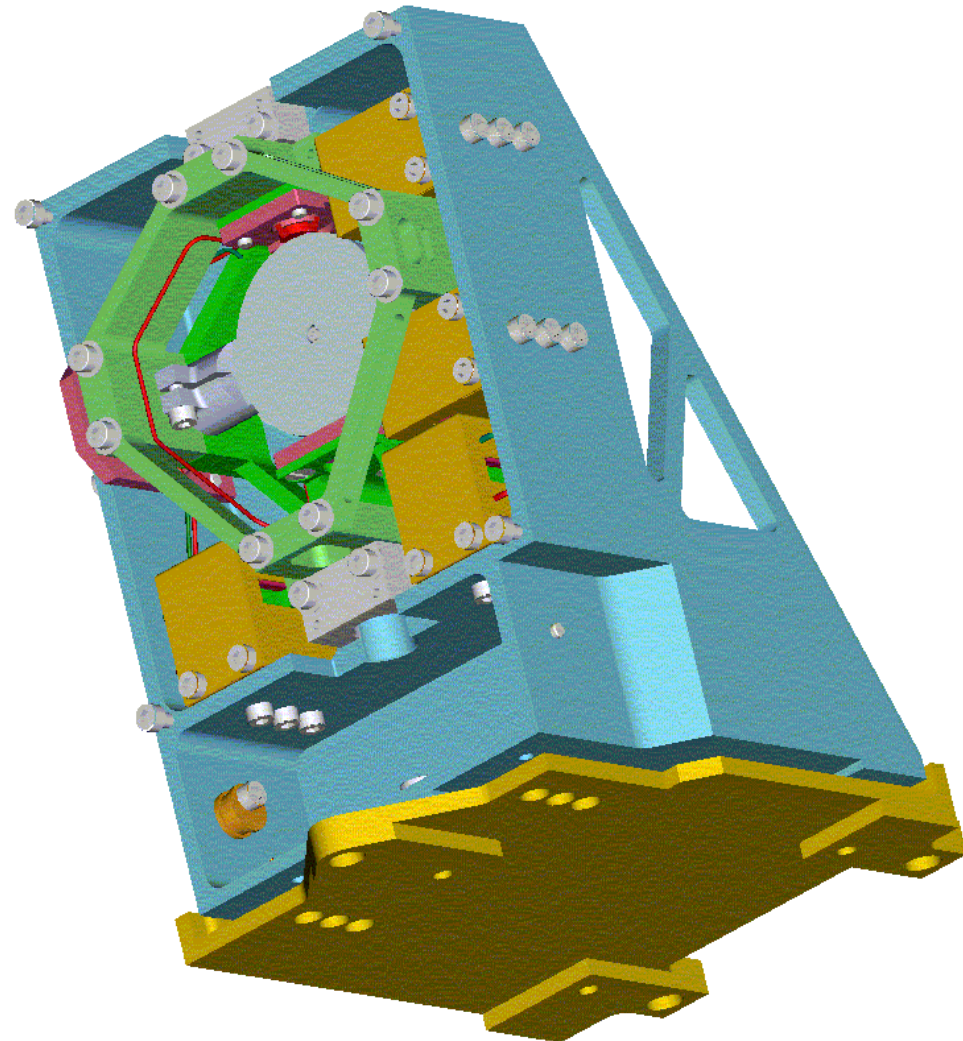
ID	Sub-System	Organisation responsible <sup>1</sup>	External ICD document	Internal ATC ICD document	Internal ATC ICD drawing/ file
1	BSM-SPIRE	RAL	Instrument Requirements Document (IRD). SPIRE-RAL-PRJ-000034 v0.30 May.00	SPIRE-ATC-PRJ-000587 Annex A	SPIRE-BSM-021-001-001
2.1	Structure – BSM	MMSL	ICD Structure - Mechanical I/F SPIRE-MSS-PRJ-000xxx v1.0 April 2001	SPIRE-ATC-PRJ-000587 Annex B	SPIRE-BSM-021-002-001
2.2	Structure – BSM	MMSL			SPIRE-BSM-021-002-002 (IGES file)
2.3	Thermometry	RAL			TBD
3	Photometer Calibration Source - BSM	UoW, Cardiff	TBD	SPIRE-ATC-PRJ-000587 Annex C	SPIRE-BSM-021-003-001
4	Launch Latch - BSM	LAM (TBC)	Spectrometer mirror mechanism design description LAM.SPI.PJT.NOT.200008 Ind 3	SPIRE-ATC-PRJ-000587 Annex D	SPIRE-BSM-021-004-001
5.1	Optics – external finish	LAM	Optical System Design Description SPIRE-LAM-PRJ-000447 Draft 1 18.Dec.00	SPIRE-ATC-PRJ-000587 Annex E	SPIRE-BSM-021-005-001
5.2	Optics – BSM	RAL	TBD		SPIRE-BSM-021-005-002
5.3	Baffles – BSM	RAL	TBD		SPIRE-BSM-021-005-003
6	Cryo-Harness	RAL / MSSL	SPIRE Harness Definition. SPIRE-RAL-PRJ-000608 Issue: 0.3 30.May.01 Harness routing : TBD (MSSL)	SPIRE-ATC-PRJ-000587 Annex F	SPIRE-BSM-021-006-001
7.1	MCU-BSM	LAM	Agreement by both parties on ATC design description and Annex G	SPIRE-ATC-PRJ-000587 Annex G	SPIRE-BSM-021-007-001
7.2	On Board Software - BSM	LAM			TBD
8	Photometer Bolometer Arrays - BSM	MSSL	ICD Structure - Mechanical I/F SPIRE-MSS-PRJ-000xxx v1.0 April 2001	Sub-System Specification EMC/ exported vibration ???	
9	Spectrometer Bolometer Arrays - BSM	MSSL	ICD Structure - Mechanical I/F SPIRE-MSS-PRJ-000xxx v1.0 April 2001	Sub-System Specification EMC/ exported vibration ???	
10	FPU Simulator - BSM	TBD	TBD	TBD	
11	Instrument Simulator - BSM	TBD	TBD	TBD	

# BSM - Structure Interfaces



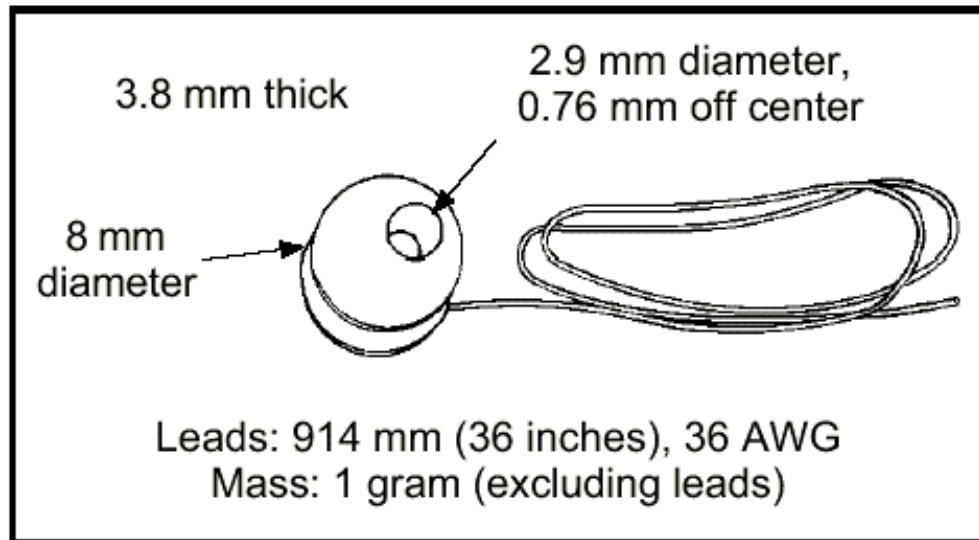
## **(B) Structure Interface**

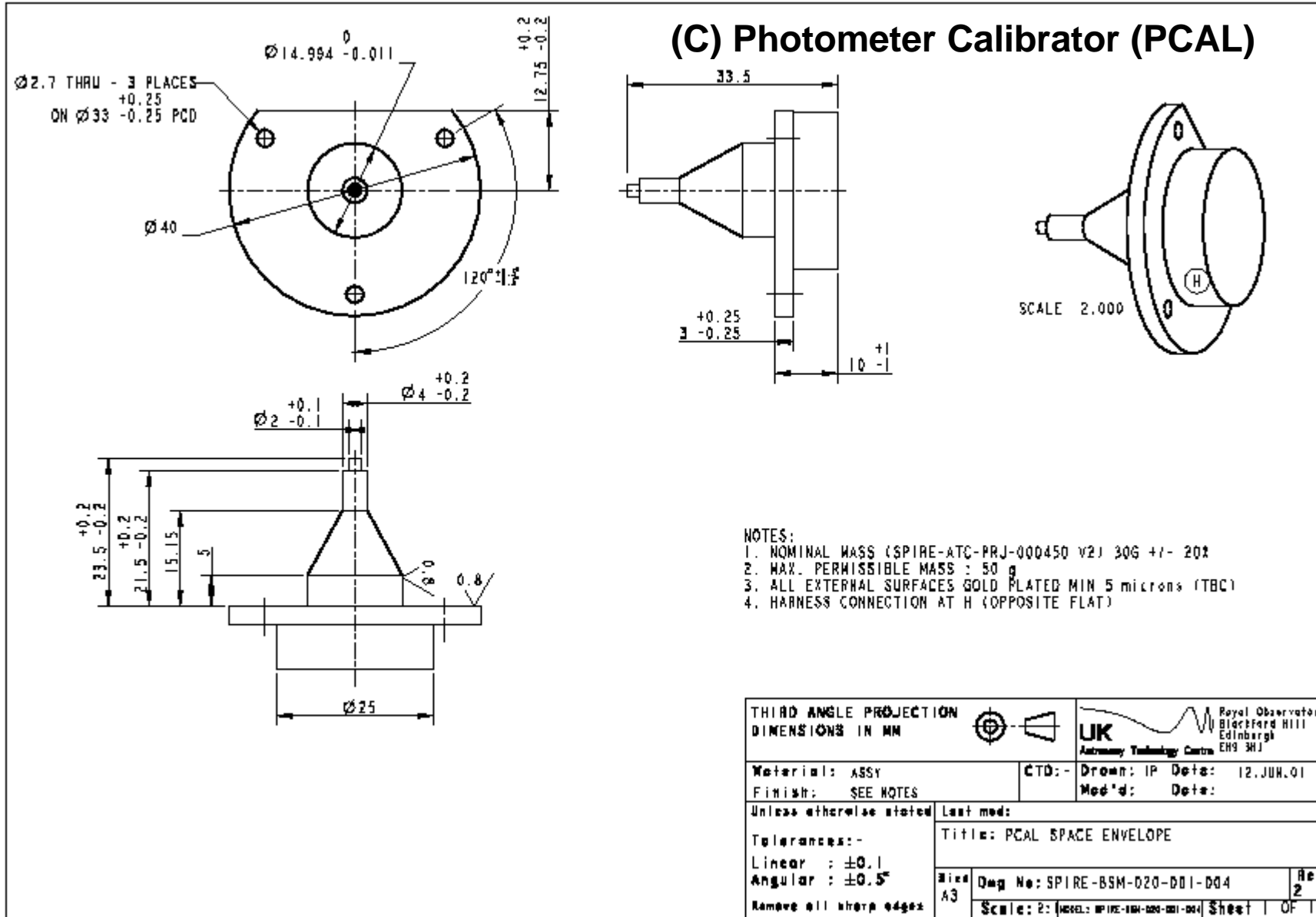
- **Interface Shoe**
- **3 x shoulder bolts or sleeved dowels (8-32 UNC) to MSSL requirements**
- **Thermal Strap**
- **Harness Connections**



## (B) Thermometry

- 2 x Cernox 1030 thermistors, Copper canister mount
- Prime and Redundant devices
- Harness through to WE

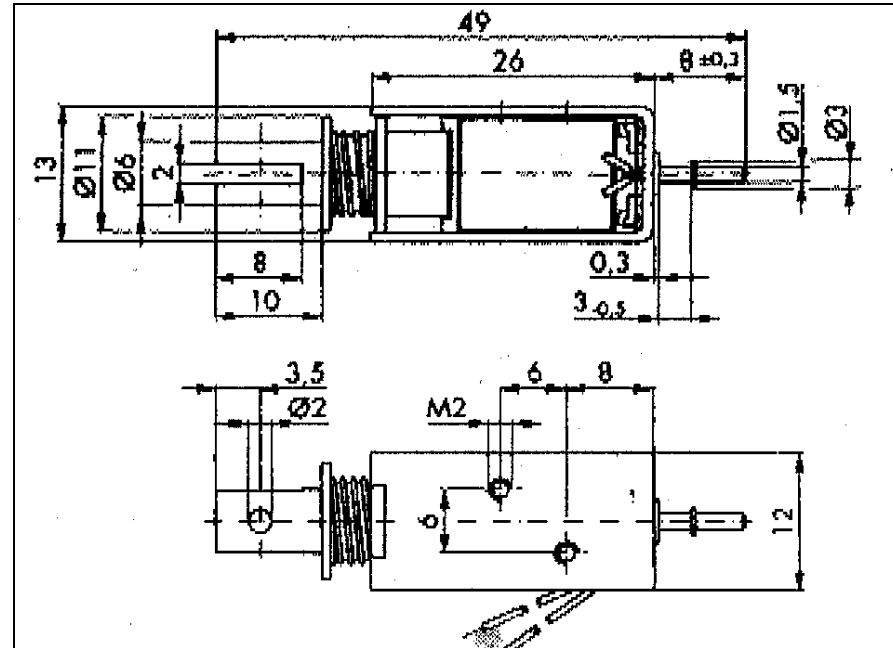




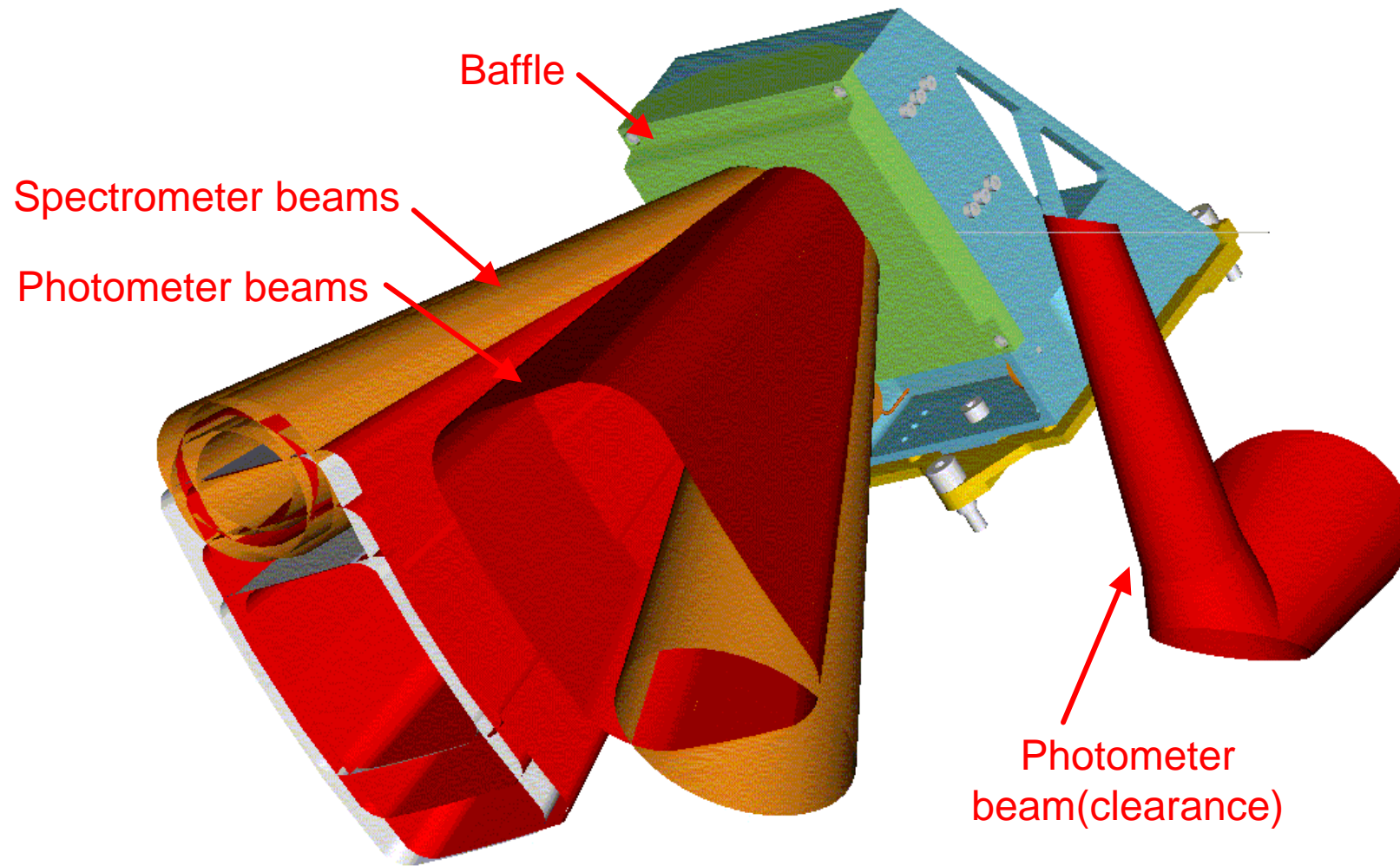


## (D) BSM Launch Latch

- Not a true interface, more of a common procurement
- Mounts to BSM structure
- Harness connection on BSM
- Heat sink via BSMs

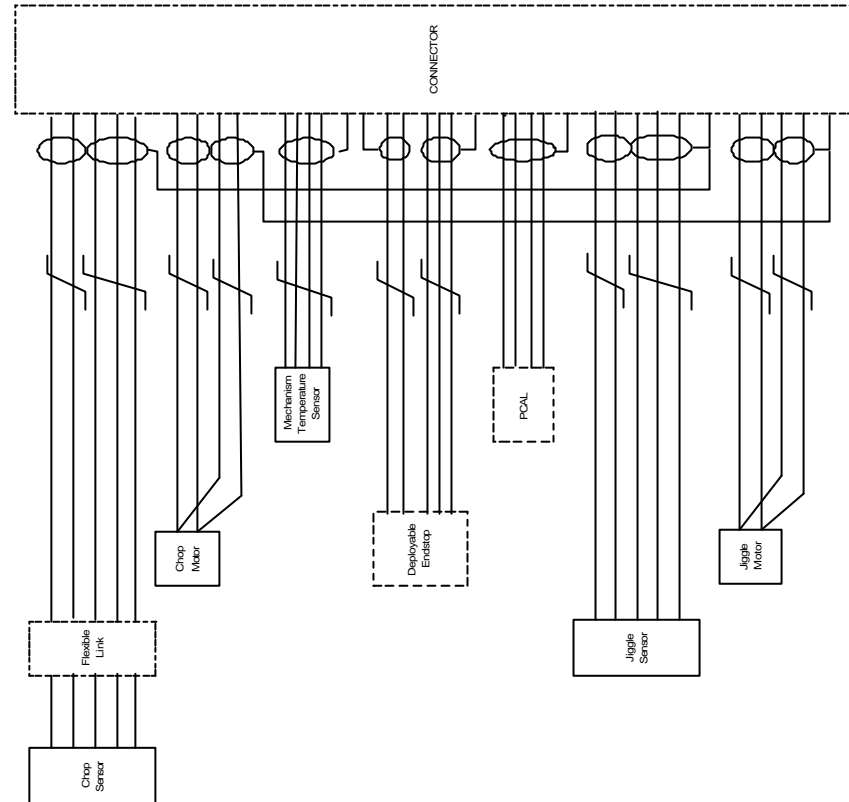


## (A,E) BSM 3D model & Optics Interface



## (F) Cryo-Harness Interface

- **Interface:**
  - **Connector (37 way MDM)**
  - **Harness & Pinout per RAL harness doc**
  - **Interface to Structure as part of mass & thermal budgets**
  - **Interface to MCU at connector**
  - **Interface in pass-through of**
    - PCAL
    - Thermometry



## **(G) MCU**

### **BSM to Warm Electronics Interface**

- **POSITION SENSOR INTERFACE**
- **ELECTRONICS TO SMEC PROCESSOR INTERFACE**
- **DEPLOYABLE END-STOP SIGNALS**
- **PCAL TO WARM ELECTRONICS INTERFACE**
- **ISOLATION**
- **CONNECTOR TYPE**

## **(G) MCU**

### **Software Requirements**

- **WAVEFORM COMMAND REQUIREMENTS**
- **CONTROL SYSTEM DIAGNOSTIC DATA**
- **CONTROL ALGORITHMS**
- **CHOP CONTROL**
- **JIGGLE CONTROL**
- **LAUNCH CONTROLS**

## **MPIA PACS Chopper Motor (MoU & procurement)**

- **Interface:**
  - **Mechanical Dimensions**
  - **Dimensional Repeatability**
    - Air Gap
    - Mechanical Foul
    - Mounting clearance
  - **Heat sink via BSM mounting**
  - **Wiring connections**
  - **Wire type (power dissipation)**