

HIRDLS



HIGH RESOLUTION DYNAMICS LIMB SOUNDER

Originator: Lucy Lanham

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Subject / Title: STH to IFC Interface Control Document (ICD)

Contents / Description / Summary:

This document defines the interface between the HIRDLS Structural/Thermal Hardware Subsystem (STH) and the In-Flight Calibration Subsystem (IFC).

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Keywords: STH, IFC, interface

Purpose (20 characters maximum): Interface definition

Oxford University
Atmospheric, Oceanic & Planetary Physics
Parks Road
Oxford OX1 3PU
United Kingdom

University of Colorado at Boulder
Center for Limb Atmospheric Sounding
3300 Mitchell Lane, Suite 250
Boulder, Colorado 80301-2296
United States of America

Advanced Technology Center
Lockheed Martin Space Systems
Missiles & Space Operations
3251 Hanover Street
Palo Alto, CA 94304-1191
United States of America

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SP-HIR-216

STH to IFC Interface Control Document (ICD)

Approved by:

/s/ John G. Whitney, HIRDLS Program System Engineer Date

/s/ Raymond L. von Savoye, HIRDLS Instrument System Engineer Date

/s/ Nigel Morris, UK Programme Manager Date

/s/ Christopher L. Hepplewhite, Oxford Project Manager Date

Log of Changes

Rev.	Date	Section	Change Description
	98-03-09		Initial Release
A	98-12-02	2.1	Added SP-HIR-111 Thermal Requirements Document
		2.2	Added TC-LOC-074 Instrument Mass Report
		3.1.1	FIG1 – Added “P” & “S” designators to “J” numbers Changed overall tolerance to +/-0.1 Added profile tolerance Deleted connector descriptions Changed precision of mounting hole locations to 2 decimal places FIG2 – Moved Center of Mass location to Notes. Changed overall tolerance to +/-0.1 FIG3 – Changed overall tolerance to +/-0.5 Changed IRCF Z location of reference hole “R” from “438” to “404.13” per TCP #028 dated 98-05-07. Changed precision of mounting hole locations to 2 decimal places Added “Shurlok” and “w/ SS Free Running Helicoil” to insert description. Deleted FIG4
		3.1.2	Deleted redundant information
		3.1.3	Deleted redundant information
		3.1.4	Deleted redundant information
		3.1.5	Deleted “(TBC)”, 2 places
		3.3	Added “See SP-HIR-111 Thermal Requirements Document” Deleted redundant information
B	00-03-28	Sig. Page	Updated to reflect current program responsibilities
		2.1	Modified reference to ITS, Added current release dates
		2.2	Removed Mass Report from list of Information Documents
		3.1.1	Figure 2: Changed BEU height to 81 mm removed depiction of COM
		3.1.4	Referred Mass Properties requirements to the ITS and SSDs
		3.2	Removed subsection heading. Changed to Electrical Grounding and Bonding. Added bonding requirement
		3.3	Added reference to section 3.4 of the Thermal Interface Requirements Doc.
		Figure 1	Revised J631P and J633P connector locations
		Figure 2	Deleted Center of Mass coordinates
		Figure 3	Added vent gasket detail, Removed TBDs

TABLE OF CONTENTS

1.0 SCOPE	1
2.0 DOCUMENT REFERENCES	1
2.1 Applicable Documents	1
2.2 Information Documents	1
3.0 INTERFACE REQUIREMENTS	3
3.1 Mechanical	3
3.1.1 Mechanical Interface Figures	3
3.1.2 Mounting	3
3.1.3 Alignment & Reference Coordinate Frames	3
3.1.4 Mass Properties	3
3.1.5 Venting	3
3.2 Electrical	3
3.3 Thermal	4

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1.0 Scope

This Interface Control Document (ICD) defines the specific design implementation of the mechanical, electrical, and thermal (conductive) interfaces between the Structure/Thermal Subsystem (STH) and the In-flight Calibrator Subsystem (IFC). The interfaces between these two subsystems are limited to mechanical and thermal (conductive) interfaces between the STH mid-wall panel and Blackbody Electronics Unit (BEU), and electrical grounding.

2.0 Document References

2.1 Applicable Documents

The documents listed below are a part of this ICD to the extent specified herein. In the case of a conflict between the contents of this ICD and any Applicable Document, this ICD shall take precedence.

GSFC 424-28-21-13	Instrument Technical Specification (ITS)	00-02
SP-HIR-200G	IICD System Section	97-12-01
SP-HIR-111	Thermal Interface Requirements	99-05-08

2.2 Information Documents

The documents listed below are for information only and are explicitly not, by reference, part of this ICD.

SP-HIR-031	Structure/Thermal Subsystem Specification	Current Revision
SP-HIR-044	In-flight Calibrator Subsystem Specification	Current Revision

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3.0 Interface Requirements

3.1 Mechanical

3.1.1 Mechanical Interface Figures

BEU mechanical interface figures = SP-HIR-216-Figure 1 & Figure 2

BEU/STH interface drawing = SP-HIR-216- Figure 3

3.1.2 Mounting

As shown in FIG3.

3.1.3 Alignment & Reference Coordinate Frames

BEU datum = Center of reference hole marked “R” (0, 0, 0) LRCF

BEU axes A1, A2, A3 shown in Figure 1.

	LRCF	IRCF conversion:
unit vector	A1	-Z
unit vector	A2	+Y
unit vector	A3	+X

Angular alignment tolerance = none (non-critical).

3.1.4 Mass Properties

The mass properties of the subsystems are specified in the ITS, GSFC 424-28-21-13, paragraph 5.1 and the associated Subsystem Specification Documents, SP-HIR-031 and SP-HIR-044.

3.1.5 Venting

BEU venting is provided by 2 vent-patches in the base of the BEU box such that gas transport is facilitated through the EU compartment bulkhead. Each vent-patch on the BEU will be composed of a mesh of 1 mm diameter holes each with total area 56.5 mm². A raised shoulder and compliant viton seal (gasket) will surround each vent hole between the BEU base and the STH. The compressed (installed) gasket thickness is 1.5 mm.

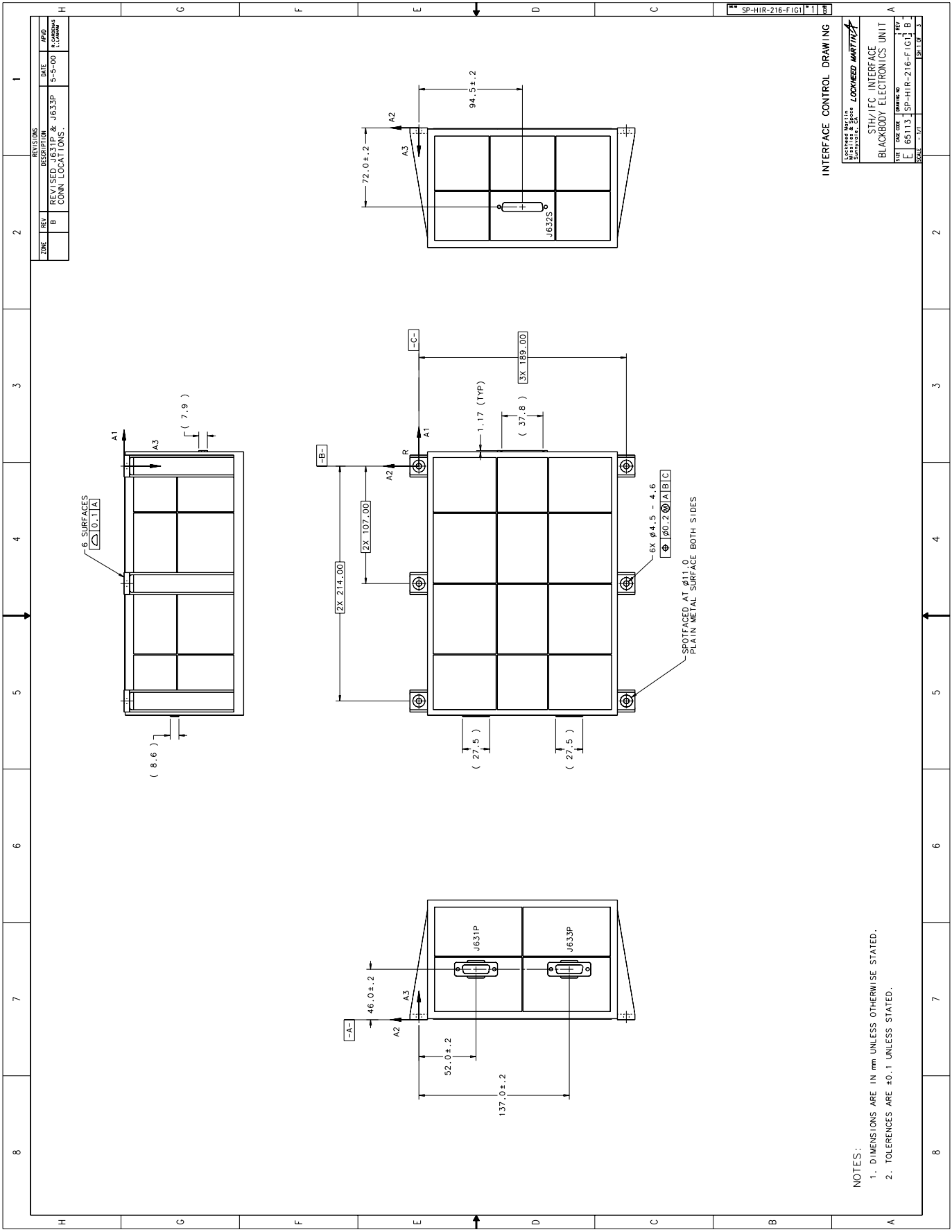
3.2 Electrical Grounding and Bonding

Grounding will be provided through contact with the mounting feet to a conductive foil on the STH mid-wall panel. The BEU mounting feet will be clean and free of coatings.

The dc resistance across each bond joint shall be less than 2.5mΩ.

3.3 Thermal

The STH to IFC thermal interface shall be as specified in SP-HIR-111, Thermal Interface Requirements Document, section 3.4.



NOTES:
1. DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
2. TOLERANCES ARE ±0.1 UNLESS STATED.

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