



**SPIRE**  
**Specification Document**

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Subject: **HERSCHEL SPIRE INTERFACE DOCUMENT REQUIREMENTS**

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**AS ISSUED FOR SPIRE INTERFACE REVIEW, November 2000**

To: SPIRE Project  
From: John Delderfield

**INTERFACE DOCUMENTS**

I recently had a SPIRE CONFIGURABLE DOCUMENTS' TREE: SPIRE-RAL-PRJ-000033, Issue 0.4 J.D. 17/10/00 posted on DMS. People will recall that I noted at our recent meetings that the ICDs needed to be re-sequenced to better reflect instrument hierarchy. Rather than re-issue the whole tree right now, knowing that some people have already promised comments on it, let me just note the re-ordered ICD section, splitting the DRCU to be as it now is, two units. This limb of the tree now looks like:

FIRST/Planck Instrument Interface Document(IID)	
Part B for SPIRE (SCI-PT-IIDB/SPIRE-02124) SPIRE-ESA-DOC-000275	
SPIRE Systems Budgets	SPIRE-ATC-PRJ-000450
SPIRE Envelope/Accommodation Drgs.	
SPIRE Harness Definition	SPIRE-RAL-DOC-TBD
SPIRE Optics Config. Control	SPIRE-LAM-XLS-TBD

SPIRE INSTRUMENT REQUIREMENTS SPECIFICATION	
SPIRE-RAL-PRJ-000034	
Operating Modes for SPIRE	SPIRE-RAL-DOC-000320
On-Board Software (URD)	SPIRE-IFS-PRJ-000444

<b><u>SPIRE SUB-SYSTEM REQUIREMENTS ( incl S/W)</u></b>	
Digital Processing Unit (DPU)	SPIRE-IFS-PRJ-000462
Detector Readout and Control Unit (DRCU) to split	SPIRE-SAP-PRJ-000461
Structure incl. baffles, straps, thermometry & harness routing.	SPIRE-MSS-PRJ-000427
Mirrors and optical stops	SPIRE-LAM-PRJ-00457
Beam Steering (Chopping) Mirror Assembly	SPIRE-ATC-PRJ-000460
Spectrometer Mechanisms	SPIRE-LAM-PRJ-000459
Photometer & Spectrometer Stim./Calibrators	SPIRE-QMW-PRJ-00454
Filters, beam splitters and dichroics	SPIRE-QMW-PRJ-00454
Helium3 Cooler	SPIRE-SBT-PRJ-000458
Detector Subsystems+ JFET modules	SPIRE-JPL-PRJ-000456

<b><u>SPIRE SUB-SYSTEM ICDs</u></b>	
Digital Processing Unit (DPU)	SPIRE-IFS-DOC-TBD
Instrument Control Unit (ICU)	SPIRE-SAP-DOC-TBD
Detector Readout Unit (DRU)	SPIRE-SAP-DOC-TBD
Structure incl. baffles, straps, thermometry & harness routing.	SPIRE-MSS-DOC-TBD
Mirrors and optical stops	SPIRE-LAM-DOC-TBD
Beam Steering (Chopping) Mirror Assembly	SPIRE-ATC-DOC-TBD
Spectrometer Mechanisms	SPIRE-LAM-DOC-TBD
Photometer & Spectrometer Stim./Calibrators	SPIRE-QMW-DOC-TBD
Filters, beam splitters and dichroics	SPIRE-QMW-DOC-TBD
Helium3 Cooler	SPIRE-SBT-DOC-TBD
Detector Subsystems+ JFET modules	SPIRE-JPL-DOC-TBD

*Note: The IID and ICDs are listed in priority so that an I/F between two systems is only detailed in the document listed the higher.*

As noted above, ICDs shall reference higher docs. for I/Fs if appropriate, not repeat details. The whole instrument harness between units is pulled out in the above scheme and so lower ICDs shall only call up

connector ID and short functional description. Some of the subsystem ICDs may be small enough to be incorporated into their subsystem requirements documents, e.g "Filters, beam splitters and dichroics" may be a case in point although even in this instance the bare optical component needs to be mounted with flight absorber around its periphery to permit its proper sub-system level characterisation.

Bruce is considering the project progress and setting documents in place + reviewing them. He will probably attach this note to a document aimed at progressing this process, and mentioning names! Let me specify items for contents lists of the ICDs, based on Colin's previous big VISIO diagram:

<b>Unit</b>	<b>Document number</b>	<b>At least I/Fs to</b>
Digital Processing Unit (DPU)	SPIRE-IFS-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Operating Modes</b></li> <li>• ICU</li> <li>• DRU</li> </ul>
Instrument Control Unit (ICU)	SPIRE-SAP-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>DPU</b></li> <li>• DRU</li> <li>• BSM</li> <li>• Spectrometer Mechanism</li> <li>• Stimuli/Calibrators</li> <li>• HE3 Cooler</li> </ul>
Detector Readout Unit (DRU)	SPIRE-SAP-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>DPU</b></li> <li>• ICU</li> <li>• Detectors/JFETS modules</li> </ul>
Structure incl. baffles, straps, thermometry & harness routing;	SPIRE-MSS-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• Mirrors/Stops</li> <li>• BSM</li> <li>• Spectrometer Mechanism</li> <li>• Stimuli/Calibrators</li> <li>• Filters,etc.</li> <li>• HE3 Cooler</li> <li>• Detectors/JFETS modules</li> </ul>
Mirrors and optical stops	SPIRE-LAM-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>Structure etc.</b></li> <li>• Spectrometer Mechanism</li> <li>• Stimuli/Calibrators</li> <li>• Filters,etc.</li> <li>• Detectors/JFETS modules?</li> </ul>
Beam Steering (Chopping) Mirror Assembly (BSM)	SPIRE-ATC-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Operating Modes</b></li> <li>• ICU</li> <li>• <b>Structure etc.</b></li> </ul>
Spectrometer Mechanisms;	SPIRE-LAM-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Operating Modes</b></li> <li>• ICU</li> <li>• <b>Structure etc.</b></li> </ul>

Unit	Document number	At least I/Fs to
Photometer & Spectrometer Stimuli/Calibrators	SPIRE-QMW-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>ICU</b></li> <li>• <b>Structure etc.</b></li> <li>• <b>Mirrors/Stops</b></li> </ul>
Filters, beam splitters and dichroics	SPIRE-QMW-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Structure etc.</b></li> <li>• <b>Mirrors/Stops</b></li> </ul>
Helium3 Cooler	SPIRE-JPL-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>ICU</b></li> </ul>
Detector Subsystems+ JFET modules	SPIRE-SBT-DOC-TBD	<ul style="list-style-type: none"> <li>• <b>IIDB + Instrument Requirements on I/Fs</b></li> <li>• <b>Harness Definition</b></li> <li>• <b>Optics Config Control</b></li> <li>• <b>Operating Modes</b></li> <li>• <b>DRU</b></li> <li>• <b>Structure etc.</b></li> <li>• <b>Mirrors/Stops</b></li> <li>• <b>HE3 Cooler</b></li> </ul>

I'm sure people working on the project will quickly bring me up to speed where things need amending above!

The emboldened I/Fs in the r.h. column above are interfaces “looking up” the system and only need to be referenced for compliance. This means that the I/Fs for some of the lower sub-systems may be put as a section in their requirements documents...unless people like generating paper.

Note that there are standard build requirements that have I/F implications, such as thermal, power, EMC and these should be put in the I/F documents IF they have not been covered elsewhere.