
	DRCU Declared Mechanical Parts List (DMPL)	 SAp-SPIRE-NC-0100-03 Issue: 1.0 Date: 11/02/03 Page: 1/10
---	---	---

HERSCHEL/SPIRE

DRCU Declared Mechanical Parts List (DMPL)

Reference: SAp-SPIRE-NC-0100-03
Issue: 1.0
Date: 11/02/03

	Function	Name	Date	Visa
Prepared by	Mechanics Product Assurance	Nathalie Colombel	11/02/03	
Verified by	Mechanical Engineer	Thierry Tourrette		
Approved by	PA Manager			
Authorized by	Project Manager	Jean-Louis Auguères		

DOCUMENT STATUS and CHANGE RECORD



Date	Issue	Affected pages
19/11/01	0.0	Draft
11/02/03	1.0	1 "Preliminary" removed from document title 8 Addition of item 51-3 9 Precision item 52-1 Addition of item 52-3 10 61-3 removed item 61-1 & 61-2 Subcontractor not known yet

List of acronyms

AD / RD	Applicable / Reference Document
ADP	Acceptance Data Package
CDR	Critical Design Review
CEA	Commissariat à l'Energie Atomique
DCU	Detector Control Unit
DML	Declared Material List
DMPL	Declared Mechanical Part List
DPL	Declared Processes List
DRCU	Detector Readout and Control Unit
EIDP	End Item Data Package
FCU	FPU Control Unit
FIRST	Far InfraRed and Sub millimeter Telescope
FM	Flight Model
FMECA	Failures Modes Effects & Criticality Analysis
FPU	Focal Plane Unit
FS	Flight Spare
GSE	Ground Support Equipment
HIFI	Heterodyne Instrument for First
ICD	Interface Control Document
LAM	Laboratoire d'Astrophysique de Marseilles
MAIV	Manufacturing, Assembly, Integration Verification
MCU	Mechanisms Control Unit
MGSE	Mechanical Ground Support Equipment
N/A	Not Applicable
PA / QA	Product / Quality Assurance
PACS	Photoconductor Array Camera & Spectrometer
PCB	Printed Circuit Board
PDR	Preliminary Design Review
PSU	Power Supply Unit
QM	Qualification Model
RFA	Request For Approval
RT	Room Temperature
S/C	SpaceCraft
SAP	Service d'Astrophysique
SCU	Subsystems Control Unit
SPIRE	Spectral & Photometric Imaging Receiver
TBC	To Be Confirmed
TBD	To Be Defined

TABLE OF CONTENTS

1	Purpose	5
2	Documentation.....	5
2.1	Applicable documents.....	5
2.2	Reference documents.....	5
3	Subassembly and equipment codes.....	5
4	Codes used in the list.....	6
4.1	Environment codes	6
4.2	Approval codes	6
5	Mechanical parts groups.....	7

	DRCU Declared Mechanical Parts List (DMPL)	 SAp-SPIRE-NC-0100-03 Issue: 1.0 Date: 11/02/03 Page: 5/10
---	---	---

1 Purpose

This document lists the mechanical parts expecting to be used in the SPIRE DRCU QM, FM, FS.

2 Documentation

2.1 Applicable documents

If necessary, the following documents will describe subsystems physically contained in the DRCU. These documents are to be written.

MCU DMPL	Subsystem under LAM Marseilles responsibility physically contained in the FCU box.
PSU DMPL	Subsystem to be furnished by a subcontractor (with spatial experience) under SAp responsibility.

2.2 Reference documents

ECSS-Q-70A	Materials, mechanical parts and processes
PSS-01-700 2.0	The technical reporting and approval procedure for materials and processes

CNES Guide for science projects EEE, Materials, Processes Lists

3 Subassembly and equipment codes

Subassembly codes		Names	Responsibility	
DRCU		Detector Readout and Control Unit	SAp	
	FCU	FPU (Focal Plane Unit) Control Unit	SAp	
		MCU	Mechanisms Control Unit	LAM
		SCU	Subsystems Control Unit	SAp
		PSU	Power Supply Unit	SAp
	DCU	Detector Control Unit	SAp	

4 Codes used in the list

4.1 Environment codes

These codes are used to indicate the type of environment to which the material is subjected.

'Radiation' Code	
Code	Meaning
G	Geostationary orbit
L	Low Earth orbit
B	Radiation belt
I	Interplanetary
P	Planetary

For components, which are attached outside the satellite, 'S' is added for Shadow if the material is in the shade or 'L' for Light if the material is in the illuminated area.

'Environment' Code	
Code	Meaning
V	Vacuum
H	Hermetic
M	Manned
E	High pressure

'Temperature' Code	
Code	Meaning
1	$0 \leq 100$ K
2	$101 \leq 200$ K
3	$201 \leq 300$ K
etc.	etc.

The given temperature code correspond to the operating temperature. If needed, the thermal cycle is described by two values, e.g.: 3/5.

4.2 Approval codes

These codes refer to:

- Comments made by the user or sub-contractor laboratory on use of the material in question;
- Comments from the 'higher level' (the instrument manager in charge of drawing up the list).

'Approval' Code	
Code	Meaning
A	Approved: use without restriction.
D	Approved with waiver: the mechanical part does not comply with requirements but is used for fonctionnal reasons. Waiver number is entered in subcolumn 9-1.
P	Decision pending: mechanical part for which an evaluation report or waiver is necessary.
O	Open: new mechanical part for which an examination or evaluation is under way.
C	Eliminated: mechanical part, which is no longer used.

5 Mechanical parts groups

Code	Group	Used
51	Spacing parts (washers, spacers,...)	<input checked="" type="checkbox"/>
52	Connecting parts (bolts, nuts, rivets, inserts, clips, ...)	<input checked="" type="checkbox"/>
53	Bearing parts (ball-bearings, needle bearings, ...)	<input type="checkbox"/>
54	Separating parts (pyrotechnics, spring, cutters, ...)	<input type="checkbox"/>
55	Control parts (gears, ...)	<input type="checkbox"/>
56	Fluid handling parts (diffusers)	<input type="checkbox"/>
57	Heating parts	<input type="checkbox"/>
58	Measuring instruments (gauges, thermocouples, ...)	<input type="checkbox"/>
59	Optical passive equipment	<input type="checkbox"/>
60	Magnetic parts	<input type="checkbox"/>
61	Other parts	<input checked="" type="checkbox"/>



DRCU
Declared Mechanical Parts List (DMPL)



SAP-SPIRE-NC-0100-03
Issue: 1.0
Date: 11/02/03
Page: 8/10

Group 51 – Spacing parts

1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item no.	Trade identification or standard description	Type of part	1. Manufacturer 2. Distributor 3. Proc. Spec. no. Issue / Revision	1. Elementary functions 2. Main characteristics	1. Sub-system code 2. Equipment code 3. Use	1. Rad 2. Env 3. Temp	Criticality ¹	1. Justification 2. Subcontractor comments	Approval status	Comments ESA approval
51-1		Stainless steel Flatwasher	To be filled out	o		R I E V T 3/4	Not critical	1. Common use	A	
51-2		Stainless steel Lockwasher	To be filled out	o		R I E V T 3/4	Not critical	1. Common use	A	
51-3		Stainless steel ondulated washer	To be filled out	o Used to compensate the difference between thermal expansion coefficient		R I E V T 3/4	Not critical	1. Common use	A	

¹ As defined in ECSS-Q-70A §4.1.4 Criticality analysis



DRCU
Declared Mechanical Parts List (DMPL)



SAP-SPIRE-NC-0100-03
Issue: 1.0
Date: 11/02/03
Page: 9/10

Group 52 – Connecting parts

1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item no.	Trade identification or standard description	Type of part	1. Manufacturer 2. Distributor 3. Proc. Spec. no. Issue / Revision	1. Elementary functions 2. Main characteristics	1. Sub-system code 2. Equipment code 3. Use	1. Rad 2. Env 3. Temp	Criticality ¹	1. Justification 2. Subcontractor comments	Approval status	Comments ESA approval
52-1	Card-lock retainer Series 260 V260-4.80ET2K http://www.calmark.com/pdfs/260.pdf	Clamping device	1. Calemark@ Ireland 2. BCF MKM (France) 3.	<ul style="list-style-type: none"> o Clamping of electronic cards. o http://www.calmark.com/pdfs/260.pdf 	1. DRCU 2. DCU FCU/(MCU+SCU) 3. To clamp the electronic boards in the electronic boxes	R I E V T 3/4	Not critical	1. Already used in space applications Rosette Project landing module (MPE) Glove box control equipment one space station (Bradford Engineering Holland)	A	
52-2	A4-80 screw	Stainless steel screw	To be filled out			R I E V T 3/4	Not critical	1. Common use	A	
52-3	Heli Coil® inserts	Stainless steel AISI 302/304 inserts	To be filled out	<ul style="list-style-type: none"> o Installed in thread holes of pieces made of aluminium o Size indicative colour ink removed by dipping in isopropyl alcohol 	1. DRCU 2. DCU FCU/(MCU+SCU) 3.	R I E V T 3/4	Not critical	1. Common use for spatial application	A	

¹ As defined in ECSS-Q-70A §4.1.4 Criticality analysis



DRCU
Declared Mechanical Parts List (DMPL)



SAP-SPIRE-NC-0100-03
Issue: 1.0
Date: 11/02/03
Page: 10/10

Group 61 – Other parts

1	2	3	4	5	6	7	8	9		10
								9.1	9.2	
Item no.	Trade identification or standard description	Type of part	1. Manufacturer 2. Distributor 3. Proc. Spec. no. Issue / Revision	1. Elementary functions 2. Main characteristics	1. Sub-system code 2. Equipment code 3. Use	1. Rad 2. Env 3. Temp	Criticality ¹	1. Justification 2. Subcontractor comments	Approval status	Comments ESA approval
61-1	Multilayer FR4 PCB	Printed circuit Board with Epoxy glass FR4 isolator	1. Subcontractor 2. Subcontractor 3. Subcontractor procedure to be filled out	o See column 3	1. DRCU 2. DCU electronic boards, FCU/(MCU+SCU) electronic boards 3. PCB	R I E V T 3/4	Not critical	1. Space qualified subcontractor 2. Could be used for non-flying models	A	
61-2	Multilayer KERIMID PCB	Printed circuit Board with KERIMID isolator	1. Subcontractor 2. Subcontractor 3. Subcontractor procedure to be filled out	o See column 3	1. DRCU 2. DCU electronic boards, FCU/(MCU+SCU) electronic boards 3. PCB	R I E V T 3/4	Not critical	1. Space qualified subcontractor 2. Used for FM & FS	A	

¹ As defined in ECSS-Q-70A §4.1.4 Criticality analysis