SPACELAB.GOLDS-UFSC.2020.06.001 REV A. ISSUE 0.1

GOLDS-UFSC Documentation

GOLDS-UFSC Documentation
SpaceLab, Universidade Federal de Santa Catarina, Florianópolis - Brazil

June 2020

GOLDS-UFSC Documentation
June, 2020

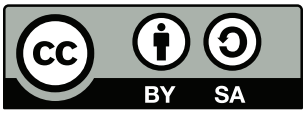
Project Chief:
Eduardo Augusto Bezerra

Authors:
Gabriel Mariano Marcelino
André Martins Pio de Mattos
Eduardo Augusto Bezerra

Contributing Authors:

Revision Control:

Version	Author	Changes	Date
0.1	Gabriel M. Marcelino	Document creation	2020/06/05



List of Figures

List of Tables

Contents

CHAPTER 1

Introduction

.

1.1 Mission Description

.

1.2 Mission Objectives

CHAPTER 2

Mission Requirements

.

CHAPTER 3

Mission Schedule

.

CHAPTER 4

Overall Description

.

4.1 General Diagrams

.

4.2 General Behaviour

.

4.3 Power Budget

.

4.4 Link Budget

.

4.5 PC-104 Bus

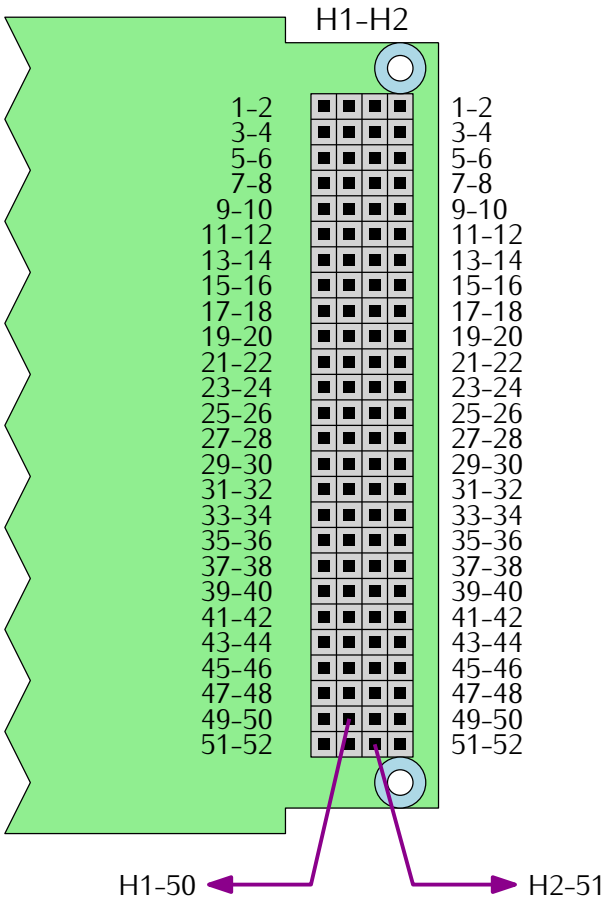


Figure 4.1: Reference diagram of the PC-104 bus.

Pin Row	H1 Odd	H1 Even	H2 Odd	H2 Even
1-2	-	-	-	-
3-4	-	-	-	-
5-6	-	-	BE_UART_RX	-
7-8	-	-	BE_UART_TX	-
9-10	-	-	-	-
11-12	-	-	BE_SPI_MOSI	BE_SPI_CLK
13-14	-	-	BE_SPI_CS	BE_SPI_MISO
15-16	-	-	-	-
17-18	-	PLX_EN	-	-
19-20	-	-	-	-
21-22	-	-	-	-
23-24	-	-	-	-
25-26	EDC_UART_TX	-	-	-
27-28	EDC_UART_RX	-	-	-
29-30	GND	GND	GND	GND
31-32	GND	GND	GND	GND
33-34	-	-	-	-
35-36	RD_SPI_CLK	-	ANT_VCC	ANT_VCC
37-38	RD_SPI_MISO	-	-	-
39-40	RD_SPI_MOSI	RD_SPI_CS	-	-
41-42	PLX_I2C_SDA	-	-	-
43-44	PLX_I2C_SCL	-	-	-
45-46	OBDH_VCC	OBDH_VCC	BAT_VCC	BAT_VCC
47-48	EDC_VCC	EDC_VCC	-	-
49-50	RD_VCC	RD_VCC	EPS_I2C_SDA	-
51-52	BE_VCC	BE_VCC	EPS_I2C_SCL	-

Table 4.1: PC-104 bus pinout.

Signal	Pin(s)	Used By	Description
GND	H1-29, H1-30, H1-31, H1-32, H2-29, H2-30, H2-31, H2-32	All	Ground reference
BAT_VCC	H2-45, H2-46	EPS	Battery terminals (+)
ANT_VCC	H2-35, H2-36	EPS, ANT	Antenna power supply (3.3 V)
OBDH_VCC	H1-45, H1-46	EPS, OBDH	OBDH power supply (3.3 V)
EDC_VCC	H1-47, H1-48	EPS, EDC	EDC power supply (5 V)
RD_VCC	H1-49, H1-50	EPS, TTC	Main radio power supply (5 V)
BE_VCC	H1-51, H1-52	EPS, TTC	Beacon power supply (5 V)
RD_SPI_CLK	H1-35	OBDH, TTC	CLK signal of the main radio SPI bus
RD_SPI_MISO	H1-37	OBDH, TTC	MISO signal of the main radio SPI bus
RD_SPI_MOSI	H1-39	OBDH, TTC	MOS signal of the main radio SPI bus
RD_SPI_CS	H1-40	OBDH, TTC	CS signal of the main radio SPI bus
EPS_I2C_SDA	H2-49	OBDH, EPS	SDA signal of the EPS I2C bus
EPS_I2C_SCL	H2-51	OBDH, EPS	SCL signal of the EPS I2C bus
BE_UART_RX	H2-5	EPS, TTC	EPS TX, Beacon RX (UART bus)
BE_UART_TX	H2-7	EPS, TTC	EPS RX, Beacon TX (UART bus)
EDC_UART_TX	H1-25	OBDH, EDC	OBDH RX, EDC TX (UART bus)
EDC_UART_RX	H1-27	OBDH, EDC	OBDH TX, EDC RX (UART bus)
PLX_EN	H1-18	OBDH, Payload X	Payload X enable (GPIO)
PLX_I2C_SDA	H1-41	OBDH, Payload X	SDA signal of the Payload X I2C bus
PLX_I2C_SCL	H1-43	OBDH, Payload X	SCL signal of the Payload X I2C bus

Table 4.2: PC-104 bus signal description.

CHAPTER 5

Subsystems

.

5.1 On-Board Data Handling

OBDH

5.2 Telemetry, Tracking and Command Module

TTC

5.3 Electrical Power System

EPS

5.4 Attitude Determination and Control System

ADCS

5.5 Mechanical Structure

.

5.6 Payloads

5.6.1 Environmental Data Collection

EDC

CHAPTER 6

Ground Segment

.

CHAPTER 7

Operation Planning

.