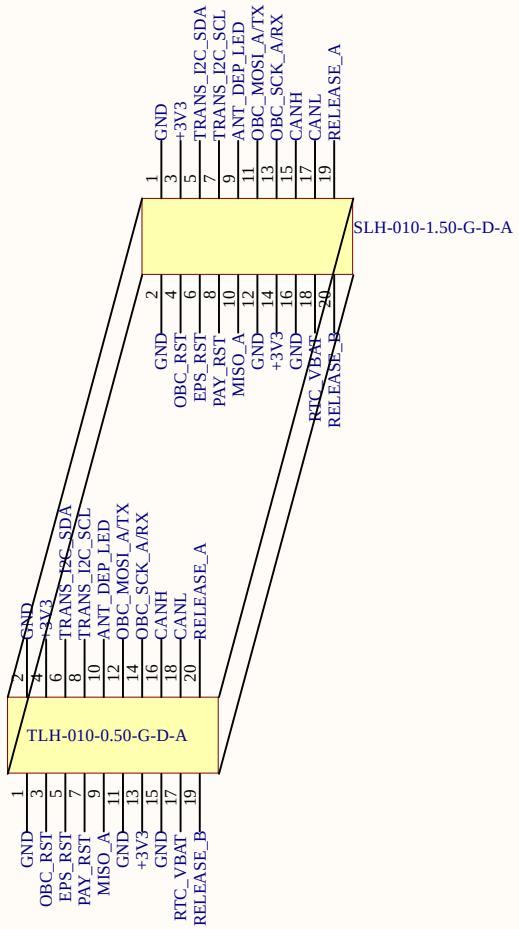
Satellite +Y Face

OBC PCB

View looking down through the TOP of OBC

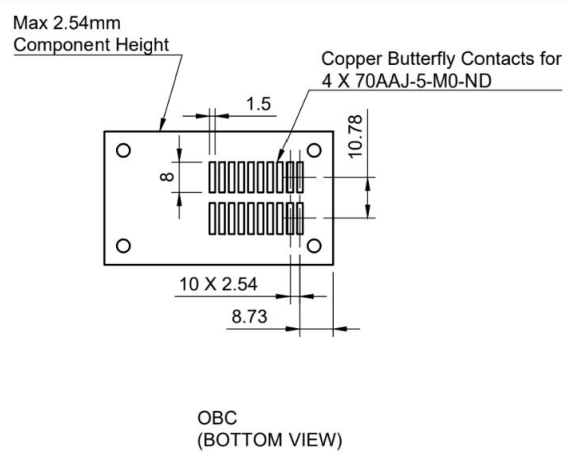
EPS PCB

View looking from the TOP of the satellite DOWN

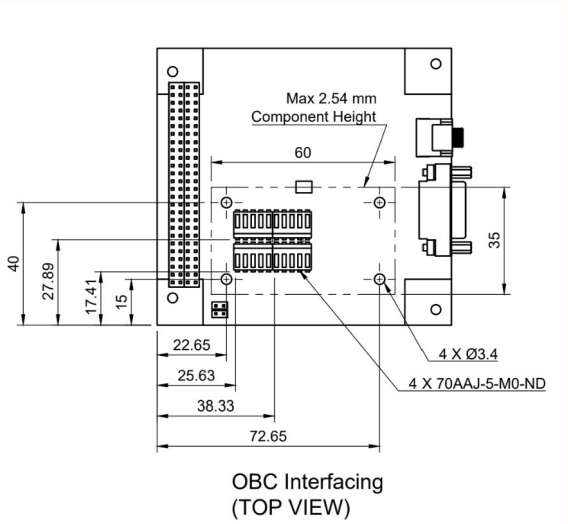


Satellite +X Face

[OLD] V2 Interface Drawings



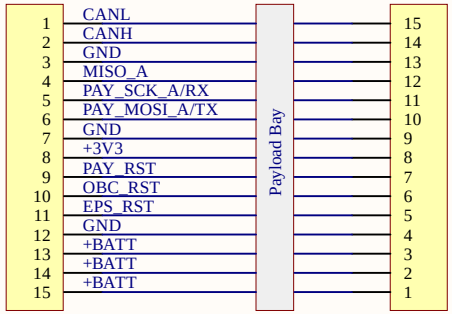
Butterfly Connector (70AAJ-5-M0-ND)
5x1 pins per connector, 2x2 connectors, 10x2 pins total
Note use of the 5-pin variant (4-pin is shown in datasheet)



Title: EPS-OBC Interface		
Size: A4	Number: 1	Revision: v1.5
Date: 2019-07-24		Sheet 1 of 8
File: C:\Users\..\eps-obc.SchDoc		Drawn By: Jaden Reimer

EPS PCB

Hirose DF13 15-Pin Header:
https://www.digikey.ca/product-detail/en/hirose-electric-co-ltd/DF13A-15P-1.25H-21/H125988CT-ND/9489726



PAY-SSM PCB

Hermetic connector (15 pins, Glenair 177-705H or 177-706H)
https://www.datasheets360.com/pdf/2123725778547446062

Premade wires (15 pins, 28 AWG)
Similar to https://www.digikey.ca/short/j037h5
Connections not flipped within cable's wires
Needs to be hand-crimped on the payload bay side for the hermic connector

Title	EPS-PAY Interface		
Size	Number		Revision
A4	2		v1.5
Date:	2019-07-24	Sheet 2 of 8	
File:	C:\Users\..\eps-pay.SchDoc	Drawn By: Jaden Reimer	

EPS PCB

Mini DSUB-25 Connector

Buffer needed on EPS for C and D gate signals

Systems PCB

Outside of satellite
Only for testing/debugging

DSUB-25 Connector

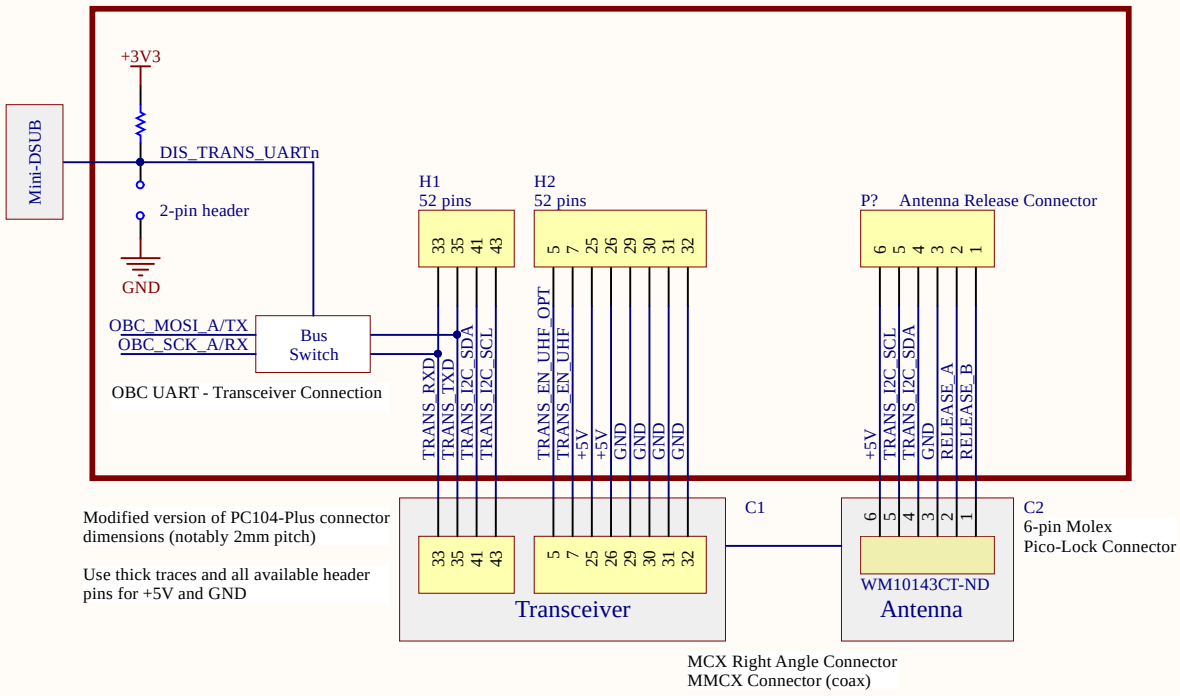
Spliced Cable
Connections are flipped within the cable's wires, so the pin numbers match on both ends

Title: EPS-SYS Interface		
Size: A4	Number: 3	Revision: v1.5
Date: 2019-07-24		Sheet 3 of 8
File: C:\Users\..\eps-sys.SchDoc		Drawn By: Jaden Reimer

Bus switch: TC7WB66CFK (active high output enable, US8 package)
https://www.digikey.com/product-detail/en/toshiba-semiconductor-and-storage/TC7WB66CFKLF-CT/TC7WB66FKLF-CTCT-ND/9866120

2-pin header: 61300211121
https://www.digikey.com/product-detail/en/wurth-electronics-inc/61300211121/732-5315-ND/4846823

EPS PCB



OBC UART - Transceiver Connection

Modified version of PC104-Plus connector dimensions (notably 2mm pitch)

Use thick traces and all available header pins for +5V and GND

MCX Right Angle Connector
MMCX Connector (coax)

Transceiver stacked on top of EPS PCB using header pins

Transceiver customized to use +5V supply, not +3.3V

Comms signals routed from OBC through EPS board

WARNING: In UHF Manual and Protocol Rev. 2, the connector pinout diagram on p. 11, for each of H1 and H2, rows 1 and 2 are flipped i.e. H1 and H2 are placed correctly, but the bottom left in the image should be H1, pin 1, and the top left should be H2, pin 2

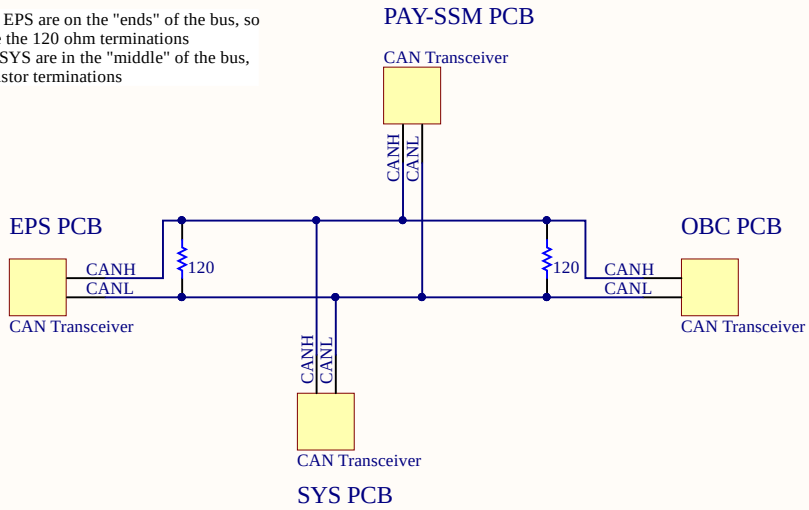
Header layout based on UHF_UTAT_Conn_Pinout.pdf (add En UHF Opt. and En UHF just in case)

RxD and TxD are the UART lines with respect to the transceiver (i.e. transceiver receives UART on RxD and transmits UART on TxD)

RELEASE_A and RELEASE_B can be used as Antenna Deployment GPIO from OBC

Title	Communications	
Size: A4	Number: 4	Revision: v1.5
Date: 2019-07-24		Sheet 4 of 8
File: C:\Users\..\com.SchDoc		Drawn By: Jaden Reimer

OBC and EPS are on the "ends" of the bus, so they have the 120 ohm terminations
PAY and SYS are in the "middle" of the bus, so no resistor terminations



Title	CAN Bus	
Size: A4	Number: 5	Revision: v1.5
Date: 2019-07-24		Sheet 5 of 8
File: C:\Users\..\can.SchDoc		Drawn By: Jaden Reimer

2-Pos Right Angle Battery Connector
Samtec SAM9552-ND:
https://www.digikey.ca/products/en?keywords=sam9552-nd

Flight model connectors should have gold mating finish

Load switch: TPS22959DNYT

Trace width calculator:
https://www.4pcb.com/trace-width-calculator.html

+BATT is the raw voltage across the battery pack (ignoring connection to EPS)

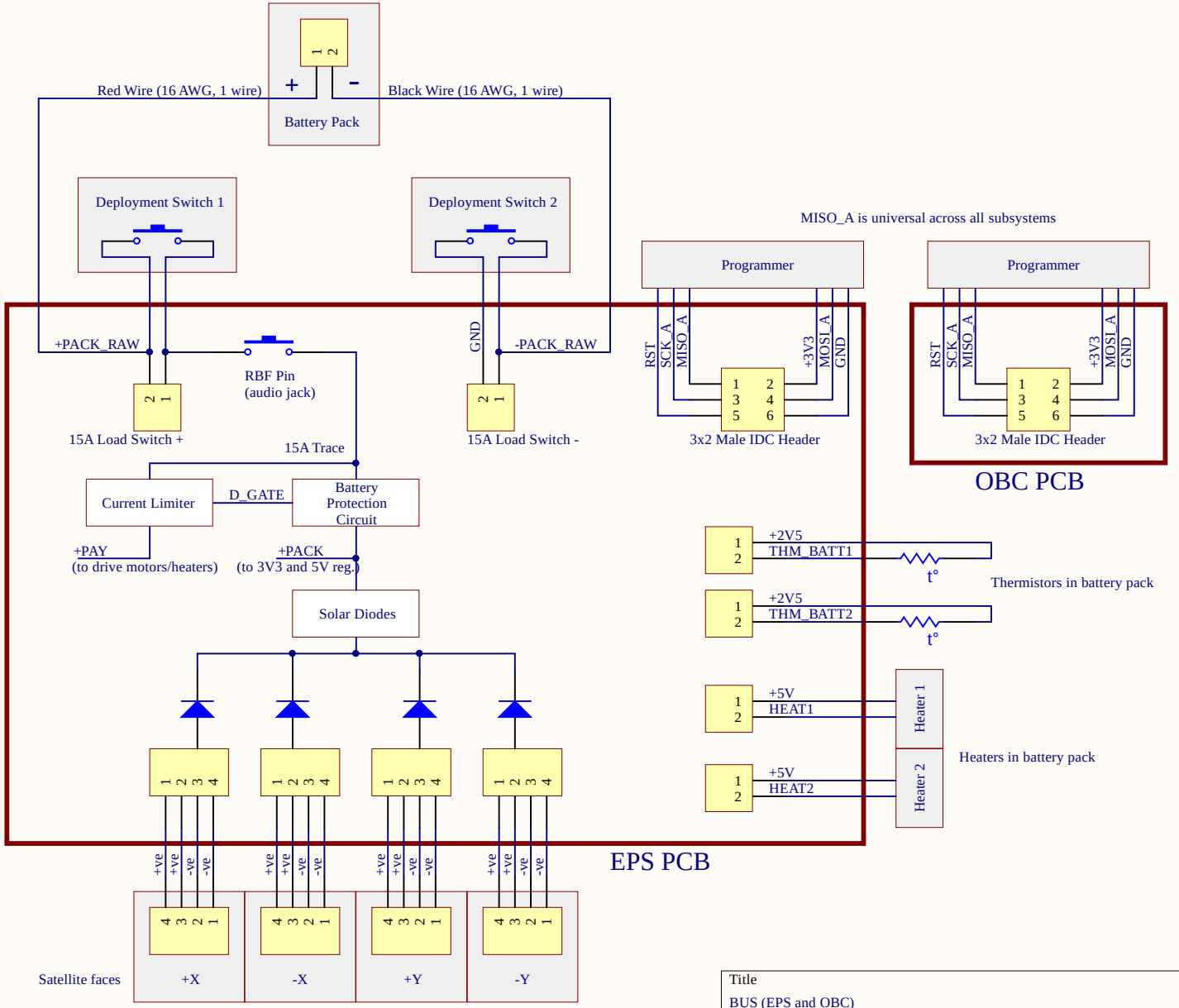
+PACK is the voltage from the battery pack to the EPS board (after deployment switches and RBF pin)

If the battery pack is connected to the EPS electronics (i.e. DS1, DS2, RBF all connected), +PACK = +BATT

If the battery pack is disconnected from the EPS electronics (i.e. one or more of DS1, DS2, RBF disconnected), +PACK = 0

Protection Circuit Limits:
Max charge = 4.190V, Charge release = 4.090V
Max discharge = 2.70V, Discharge release = 3.00V

Absolute Maximum Battery Voltage Range: 2.5V-4.2V

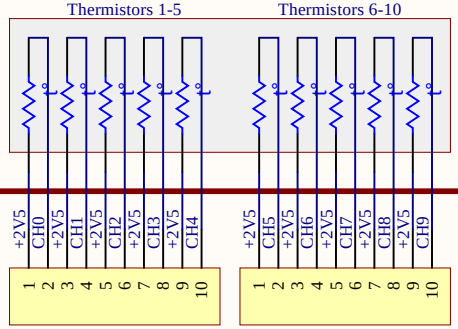


Title	BUS (EPS and OBC)	
Size: A4	Number: 6	Revision: v1.5
Date: 2019-07-24		Sheet 6 of 8
File: C:\Users\..\bus.SchDoc		Drawn By: Jaden Reimer

Start thermistor numbering from 0
to match ADC channel numbering

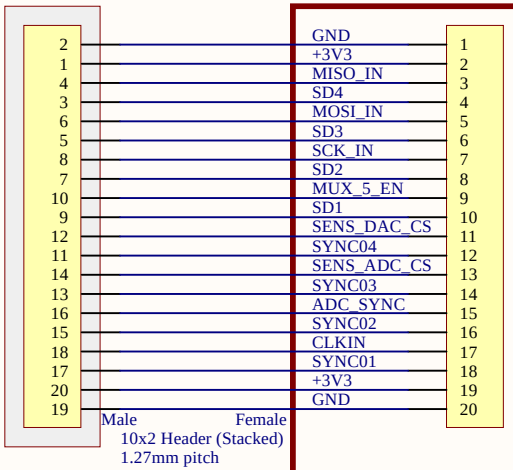
Thermistors (in microfluidics chips)

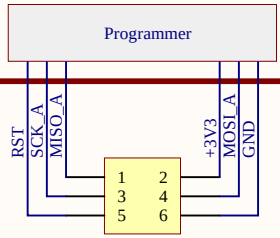
Thermistors 1-5 Thermistors 6-10



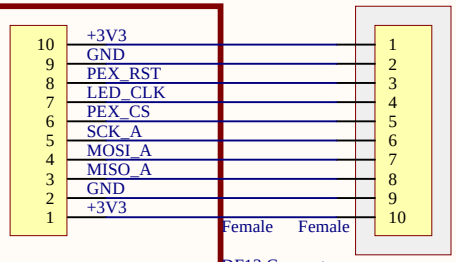
PAY-Optical PCB

(stacked on top of PAY-SSM)





PAY-LED PCB (x2)



PAY-SSM PCB

Actuation Plate Setup

2-pin DF13 connector:
https://www.digikey.ca/product-detail/en/hirose-electric-co-ltd/DF13A-2P-1.25H-21/H125743CT-ND/8594822

Flight model connectors should have gold mating finish

Positioning - Photodiode Setup

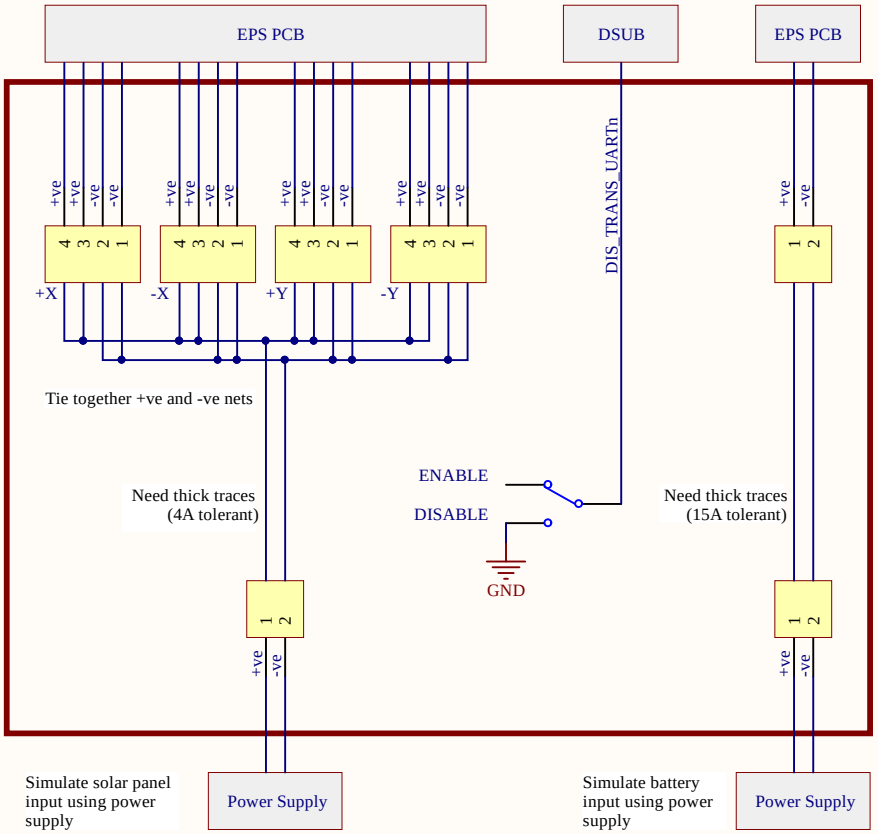
Title: Payload		
Size: A4	Number: 7	Revision: v1.5
Date: 2019-07-24		Sheet 7 of 8
File: C:\Users\..\pay.SchDoc		Drawn By: Jaden Reimer

DF13 Connector: DF13A-4P-1.25H(21)
https://www.digikey.ca/product-detail/en/hirose-electric-co-ltd/DF13A-4P-1.25H-21/H125082-CT-ND/5638961

Flight model connectors should have gold mating finish

Screw terminal connector: 732-2028-ND
https://www.digikey.ca/product-detail/en/wurth-electronics-inc/691102710002/732-2028-ND/2060524

Physical UART disconnect switch: JS202011AQN (only need to connect 2 of its pins)
https://www.digikey.ca/products/en?keywords=JS202011AQN



Samtec IPBT Power Mate (16AWG power connector)
https://www.digikey.ca/product-detail/en/samtec-inc/IPBT-102-H1-T-S-RA-K/SAM9552-ND/6678289

Flight model connectors should have gold mating finish

Screw terminal connector: 732-2028-ND
https://www.digikey.ca/product-detail/en/wurth-electronics-inc/691102710002/732-2028-ND/2060524

Systems PCB

Title: Systems (Debugging)		
Size: A4	Number: 8	Revision: v1.5
Date: 2019-07-24		Sheet 8 of 8
File: C:\Users\..\sys.SchDoc		Drawn By: Jaden Reimer