

OPTION SHEET FOR NANOPOWER P31u

Customer Product ID: _____ (optional, enter your reference here)

Order number: _____

Example Use:

Option A	✓	= Yes
Option B		= No

1 Configuration Table

Battery Configuration See chapter 2			
	Onboard battery	BP4	BPX
P31u (8.4 V)			
P31u (8.4 V)			
P31u (16.8 V)			

Recommended Stack Connector Options See chapter 3				
P31u	B+B		B+E	
P31u + BP4	P31u: B BP4: G		P31u: B BP4: F	
P31u + BPX	P31u: B BPX: N/A		P31u: E BPX: N/A	
P31u + BP4 + BPX	P31u: B BP4: G		P31u: B BP4: F	

Power Output Options See chapter 4				
		Buck Converter 3.3 V	Buck Converter 5.0 V	Current Limit (A) (0.5, 1, 1.5, 2, 2.5)
H1-47	OUT-0			
H1-49	OUT-1			
H1-51	OUT-2			
H1-48	OUT-3			
H1-50	OUT-4			
H1-52	OUT-5			

I²C pull-up (Default 1500 Ω,) See chapter 5	
No Pull up resistor	

Kill Switch. See Chapter 6	
Self-locking kill switch circuit	
Non-locking kill switch circuit	

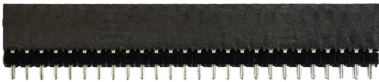
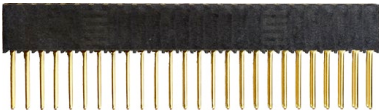
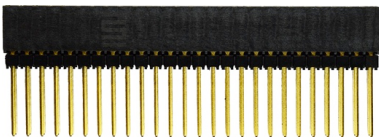
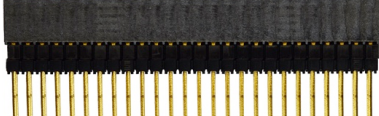

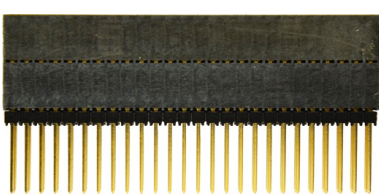

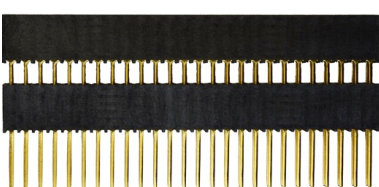
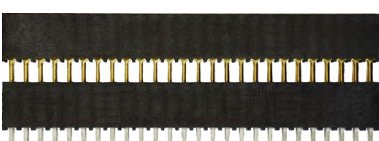
Misc. options	
Conformal coating (extra cost)	
ISS upgrade of NanoPower products to meet NASA and NanoRacks safety requirements for ISS launch. Including flight acceptance test of NanoPower products for ISS use (extra cost)	

2 Battery Configuration

The table shows the different kind of battery combinations available. There can be more than one mark per row.

3 Stack Connectors

The following types of Samtec connectors are the available types for this product. If another connector is needed, please contact GomSpace to get a quote for mounting another type.

		Samtec Part Number	Height of Housing [mm]
A		ESQ-126-12-S-D	11.1
B		SSQ-126-03-G-D	8.5
C		ESQ-126-14-G-D	11.1
D		ESQ-126-24-G-D	13.6
E		SSQ-126-01-F-D	8.5
F		SSQ-126-02-G-D ESQ-126-14-G-D	19.6
G		SSQ-126-02-G-D ESQ-126-12-S-D	19.6
B+B		SSQ-126-03-G-D SSQ-126-03-G-D	19.6
B+E		SSQ-126-03-G-D SSQ-126-01-F-D	19.6

3.1 Recommended Stack Connectors

For each of the battery configuration choices are two GomSpace recommended stack connectors. There is a recommended option for the P31u and one for the chosen battery. Note that the marking here only supplies the stack connector to the P31u, the recommended stack for the battery is chosen in their own option sheet. (Note if option “no stack connector” is selected, an additional jumper is needed, else Heater will not work)

4 Power Output Options

The P31u power output can be configured to you desired values (between 0.5 A and 2.5 A). Feel free to consult GomSpace at any time during this process.

The default settings are H1-47, H1-49, H1-51 is set for 5 V and H1-48, H1-50, H1-52 is set for 3.3 V, and current limit is set for 2 A.

Note that a current limit is dependent on environmental factors so make sure that you leave at least 25% safety margin in the chosen limit.

5 I²C Parameters

A total I²C pull-up resistance between 1 and 2 k Ω is recommended for 400 kHz operation on 3.3 V. This value has been calculated according to the I²C specification and user manual (available at: http://www.nxp.com/documents/user_manual/UM10204.pdf). It is recommended to place a pair of 1500 Ω resistors on a single subsystem and avoid putting resistors on every subsystem of the I²C bus. Adding multiple pull-up resistors will lower the total I²C pull-up resistance according to the formula of parallel resistors. It is important that the subsystem chosen to carry the pull-up resistors is never switched off. In fact, any subsystem that has pull-up resistors cannot be turned off, since the subsystem will then load the bus by the equivalent resistance of the resistors. A good subsystem to carry the pull-up resistors is the EPS.

Note: some I²C controllers does not like to be turned on in the absence of a I²C pull-up, and if only one set of resistors exist on the platform, this may give a problem with initializing the I²C controller during individual operation of the subsystems. (For example, single subsystem checkout, before integration). Adding an external pull-up during the subsystem checkout, or selecting a high-impedance I²C resistor of 100-500k Ω can solve this. This will only have a marginal effect once the satellite gets integrated.

6 Kill Switch

The self-locking option holds the kill switch circuit after a short pulse.

The non-locking option requires the switch to be hold closed, this option is required by several launchers today.

7 Disclaimer

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