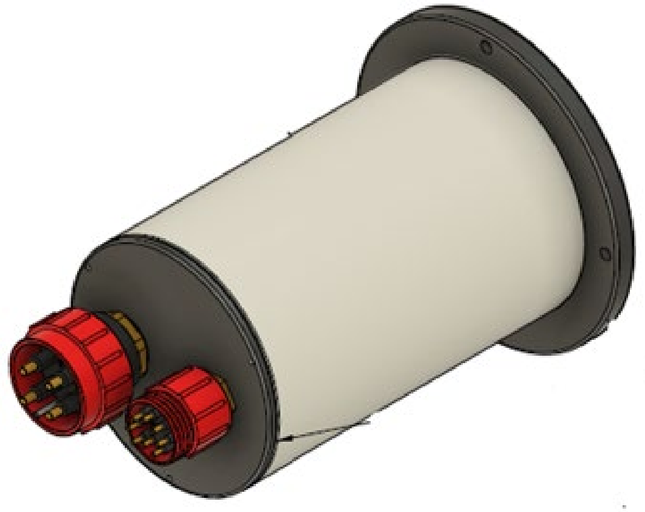
DPPM Guidance from Consultations

DPPM Guidance

1. DPPM Connectors
2. DPPM I/O
3. DPPM System Integration Updates

DPPM Connectors



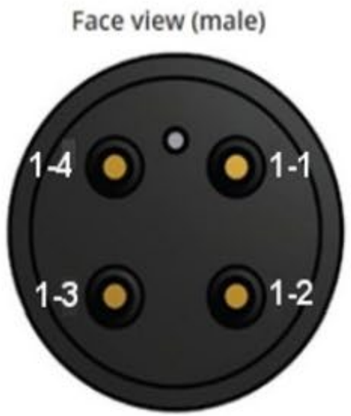
- Connectors on DPPM are MALE
- Connectors on AUV system side should be FEMALE
  - Teams must be able to connect and disconnect the DPPM from their system
- Links to connector specification sheets can be found in the BUILD Rules Document, Appendix E. Linked below as well:
  - SubConn 4 pin power connector: http://ocean-innovations.net/OceanInnovationsNEW/SubConn/high_power_4_contacts.pdf
  - SubConn 8 pin payload connector: http://ocean-innovations.net/OceanInnovationsNEW/SubConn/circular_6-8and10_contacts.pdf
- The DPPM housing and connectors provided prior to the competition will be identical to the DPPM used during the competition
- For guidance on integrating the specified female connectors into teams' systems, we recommend consulting with an industry representative familiar with SubConn connectors.

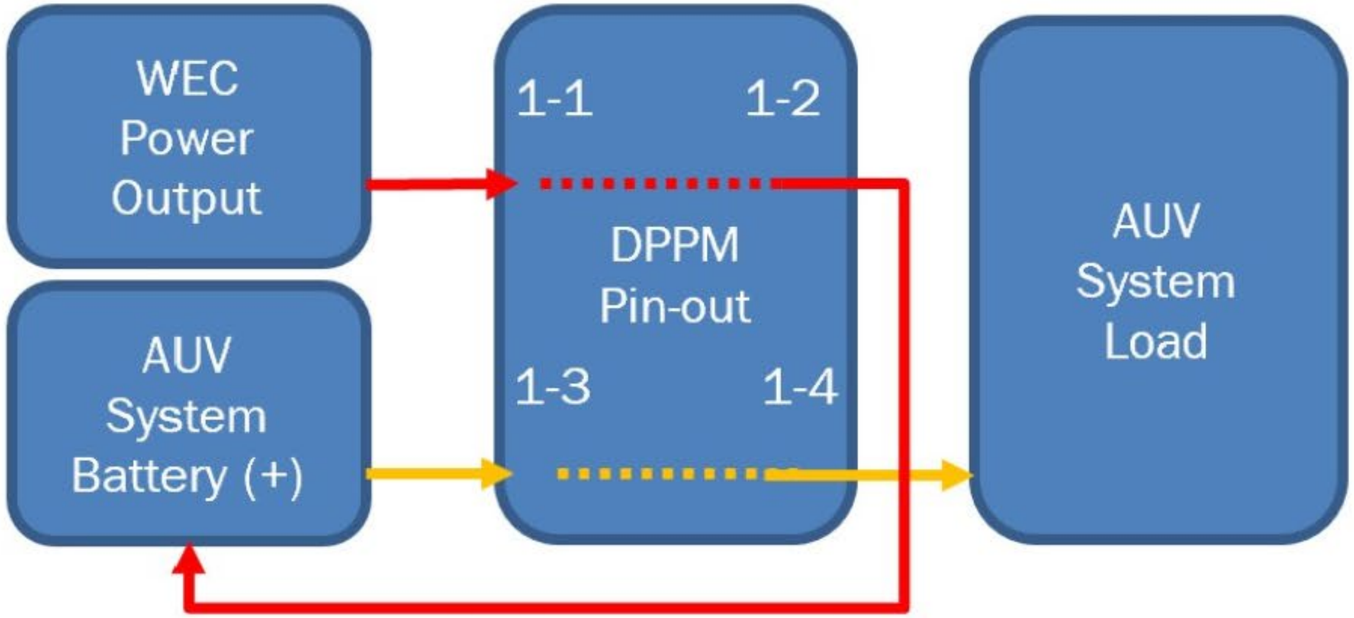
DPPM I/O

Updated pinout and block diagram for clarity

DPPM Power Connector Pins

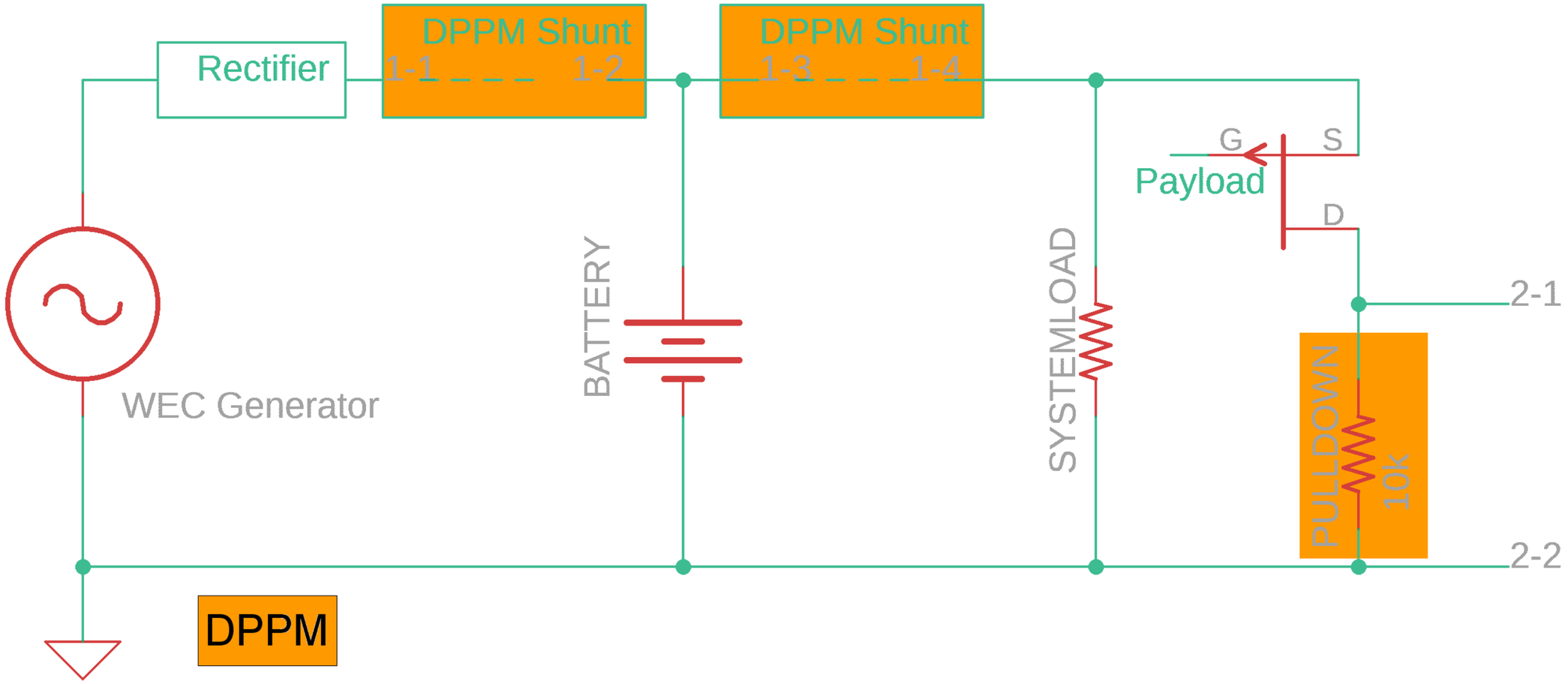
1-1 WEC DC Power IN
(to DPPM)
1-2 WEC Power OUT
(to AUV System Battery)
1-3 System Battery (+) IN
(to DPPM)
1-4 System Battery Power (+) OUT
(to AUV System Load)





DPPM I/O

Sample implementation. Elements highlighted in orange are internal to the DPPM.



DPPM I/O

- Please reference slides 4 and 5 for pinout, block diagram, and sample implementation.
- Power from WEC passes through low resistance shunt (200μΩ) from 1-1 to 1-2
  - Measures the power going into the team's battery from the WEC
  - Power coming into 1-1 from WEC should be DC
- Power from team's system battery passes through low resistance shunt from 1-3 to 1-4
  - Measures the power going out of the battery to ALL the team's loads
- The dummy payload should be powered by applying 12-48V DC to pin 2-1
  - Teams should be able to turn the DPPM payload power on and off via pin 2-1
  - The DPPM will begin to draw 100W when the input voltage is between 12-48V for >5 seconds
  - The 10k pulldown resistor shown between pins 2-1 and 2-2 is internal to the DPPM
  - Pin 2-2 is connected to AUV's system ground
- The remaining pins on the 8 pin connector (2-3 through 2-8) should be no connects

DPPM System Integration Updates

- Teams may choose to integrate the DPPM ***in any desired orientation***
  - The intent of specifying the downward facing orientation was to enable teams to easily retrofit a commercially available ADCP in the future. Since ADCP integration is not anticipated in the SPLASH Contest, the orientation specification has been removed.
- The DPPM does not require a clear field of view.
  - The intent of specifying the DPPM must have no obstructions to its field of view was to enable teams to easily retrofit a commercially available ADCP in the future. Since ADCP integration is not anticipated in the SPLASH Contest, the clear field of view specification has been removed.

  Note: The DPPM does still require the face to be in contact with water when powered on for heat dissipation
- The face of the DPPM must be submerged ***while it is powered on*** via pin 2-1
  - Teams will be required to leave the DPPM submerged for a period of time after depowering to allow for heat dissipation
  - Teams are only required to supply power to pin 2-1 (payload power) during profiling missions

DPPM System Integration Updates

- Teams with 2-body systems ***may request to use 2 DPPMs*** if necessary to provide the required power inputs from the WEC and from the profiling body (see rules for deadline)
  - The non-Profiling body's DPPM will be responsible for measuring power from the WEC and should be placed in series with the rectified power from the WEC to the non-Profiling body's battery and all associated loads. Both wetmate connectors (Figure E-2 and E-3) must be connected, though pin 2-1 will not be used for the non-profiling body's DPPM.
  - The profiling body's DPPM will be responsible for measuring the profiling system efficiency and for scoring purposes by powering the 100W payload. This DPPM should be placed in series with the power input from the non-profiling body, profiling body's battery and the output to the profiling bodies loads (including the 100W payload). Both wetmate connectors (Figure E-2 and E-3) must be connected.
- On Day 2 and Day 3 of testing at Carderock, teams are expected to install the DPPM in the morning and remove the DPPM at the end of the day.
- Teams should design devices for their own commercialization plans, not to optimize for how the DPPM will measure.

Email and Links

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Official Rules Document

HeroX Platform