**Power management board   
– project card**

**Card author: Jakub Mnich (**[**jakub.mnich@student.pwr.edu.pl**](mailto:jakub.mnich@student.pwr.edu.pl)**) Creation date: 29.10.2016**

**Sub-module to: Universal Flying Platforms (UFP)**

The aim of this project is to create a power distribution and management board for electronic devices used in Enix copters and possibly other constructions to follow. The device should be able to communicate with higher-level systems via a standard serial bus.

**Objectives:**

1. Single module weight < 15g (without mounting screws)
2. Four M2 screws used for attaching to a copter
3. Adapted to universal mounting points in Enix copter. Should fit inside the copter over the logic level converter – it must not interfere with goldpin conncetions of the converter.
4. 7,4 – 20V input voltage.
5. Able to provide at least 2A at 3,3V and 5A at 5V.
6. 10x5V terminals, 10x3,3V terminals, 1xRPI USB power terminal
7. No ready-to-use voltage conversion modules and no linear stabilizers (even LDO). The converters can use dedicated ICs.
8. I2C bus at 5V for communication. Device is required to provide the following measurements:
   1. 5V bus current
   2. 3,3V bus current
   3. Input voltage (battery)
9. 8 low power (<50mA) 5V channels driven with commands via I2C.
10. 2 high power (<2A) battery voltage channels driven with commands via I2C.
11. Rigid construction due to possible hard landings.
12. High reliability – no makeshift solutions.
13. Cheap microcontroller.
14. Possible use of not more than 1 3D-printed part.

The constructor is required to provide a working prototype before the final set of parts for more than 10 such devices will be ordered.

**References:**

1. Enix physical design (in Autodesk Inventor) https://github.com/jmnich/UFP\_Enix\_Physical]