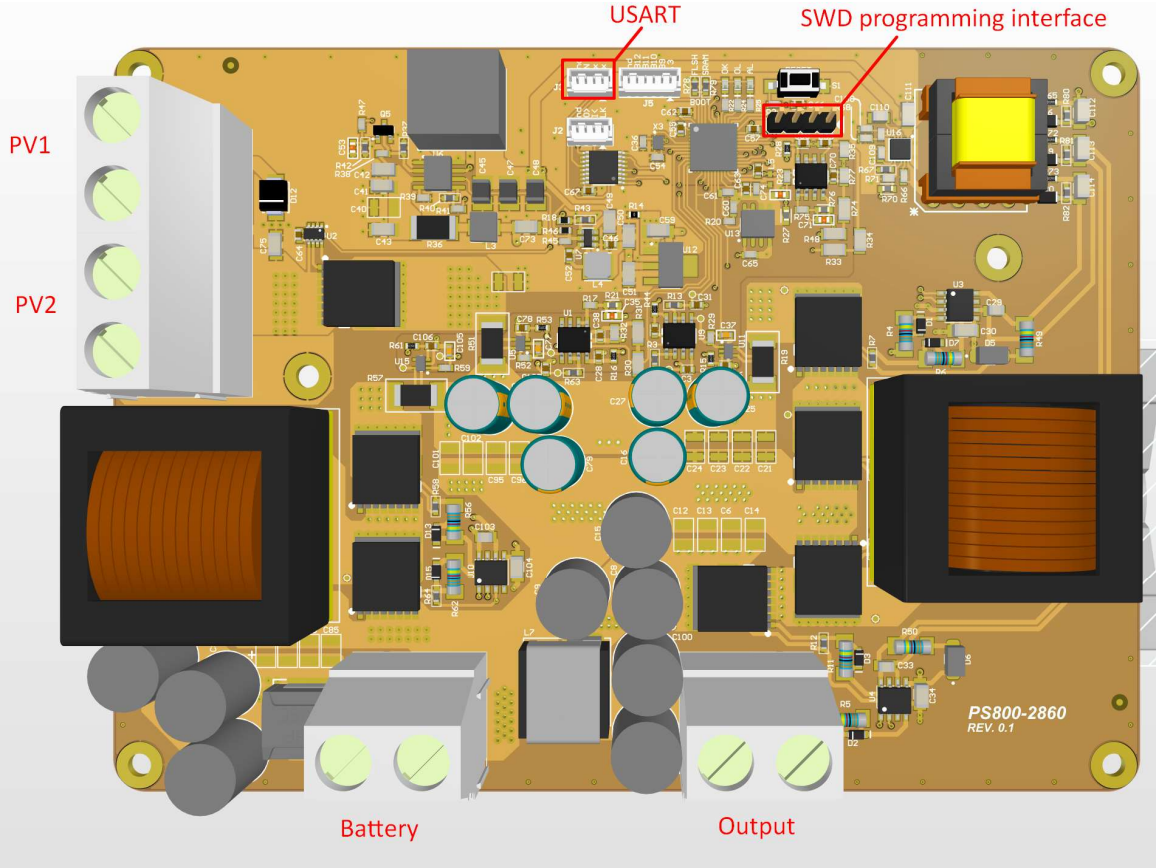

SWD programming interface pinout:

Pin	Function	Note
1	+3.3V	From board
2	SWDCLK	IN
3	GND	
4	SWDIO	I/O

USART interface pinout:

Pin	Function	Note
1	RX	In
2	TX	Out
3	nENABLE	Turn off the board power supply. +3…+20V
4	GND	

UART paired device must not exceed 3.3V “high” logic level voltage

USART settings:

N	Function	Value
1	Speed	115200 bps
2	Stop bit	1
3	Parity	N
4	Data bits	8

USART commands:

N	Function	Example*	Respond	Description
1	Start pool	03AAFFFFFFFF8B, where **03 AA** - command **FF FF FF FF** - payload **8B** – CRC8	33 bytes in total: 0000 [30 data bytes] CRC8 30 data bytes can be filled by any data needed Currently realized: 0x0000 – nonfunctional bytes 0xNNNN – PV voltage x100 0xNNNN – Bat voltage x100 0xNNNN – Bat current x100 0x0000 – non functional 0xNNNN – ERROR1 x100 0xNNNN – P1 component x100 0xNNNN – I1 component x100 0xNNNN – I1 clamp value x100 0xNNNN – PI1 saturation x100 0x0000 … not filled 0x0000 0xNN – CRC8	Starts or stops periodical data sending every 10ms time interval. The scope is firmware determined.
2	Disable	00AAFFFFFFFF0, where **00 AA** - command **FF FF FF FF** - payload **F0** – CRC8	No respond	Turns off all the switches, measurements functions keep working.
3	Discharge	02AAFFFFFFFA2, where **02 AA** – command **FF FF FF FF** - payload **A2** – CRC8	No respond	Turns top switch on and gives the battery voltage supply the output. Board goes to this mode only if Vin < Vbat.
4	Charge	01AA0000000007, where **01 AA** - command **0x0000** –voltage setpoint x100 **0x0000** – current setpoint x100 **07** – CRC8 Example of 28.8V and 1A limit: 01AA400B6400D1, where: 01AA – command 400B – (28.8 * 100) in LE order 6400 - (1 * 100) in LE order D1 – CRC8	No respond	Starts power flow from PV inputs to the battery. Voltage stabilized if the current below limit otherwise the voltage is current determined. Board goes to this mode only if Vbat < (voltage setpoint)

*-CRC8 polynomic value is 0x07

The board does not have an appropriate cooling system since it is the prototype stage. Keep the MOSFET's temperature below 130C during operation.

The board starts in "Disable" mode on power up.