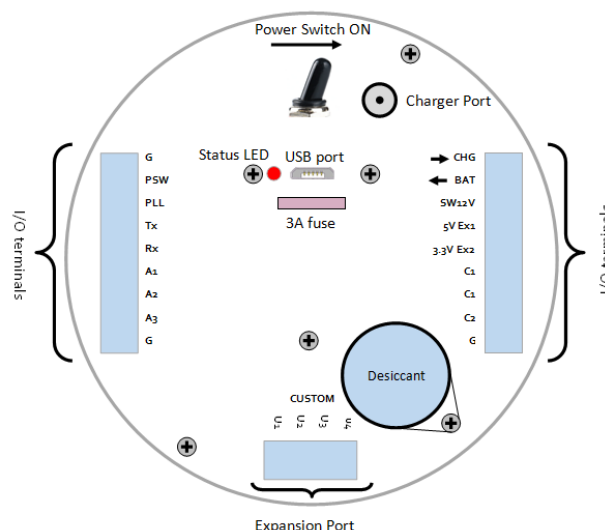


Work Instruction: Adding RS485 kit

It is possible to order a kit to upgrade an existing Ai1 from a RS232 port to a RS485 port with an internal adapter. This requires that the CUSTOM port is not already used by another internal option. This converts the CUSTOM port (with terminals U1-U4) into a RS485 port (see CUSTOM port below). Commonly this is to communicate with a YSI EXO2 or ProDSS sonde.

The RS485 kit includes the adapter PCB, a new CUSTOM port label and a silicone dome. Two labels are provided, one a generic RS485 label and one for use with an EXO2 sonde with the sonde cable color codes used. Follow these steps for modifications of the Ai1:



1. Turn off the Ai1 before opening
2. Open the Ai1 Cannister
 - Remove the 6 x M6 bolts holding the white acrylic top into the Ai1 cannister
3. Remove the CR300 to expose the main PCB



Remove the M3 nylon nut holding the CR300 board in position



Gently lift the CR300 board out from the 2x17 pin header. Pay close attention to the alignment for when the board is returned

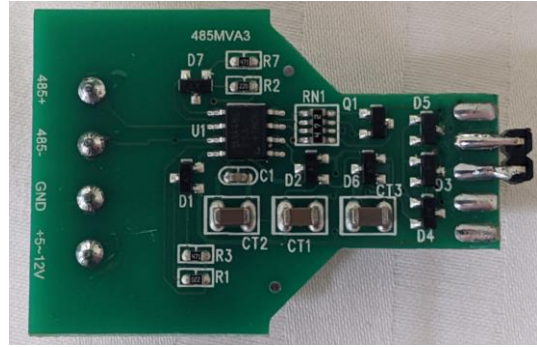
4. Remove the main PCB from the Ai1 frame

Remove the main PCB from the frame by removing the two M3 nylon nuts as shown in the figure below. The PCB will lift out from the frame allowing access to both sides of the board. The front side is shown in the photos below, the rear side is the side closest to the frame



5. Solder RS485 PCB to the rear of the main board.

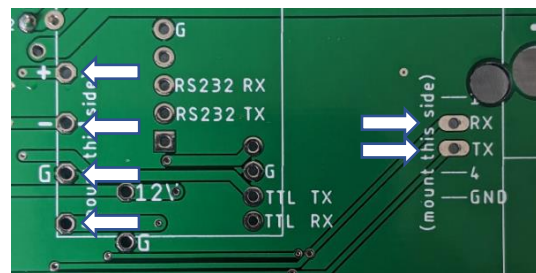
RS485 Adapter with pre-soldered header pins



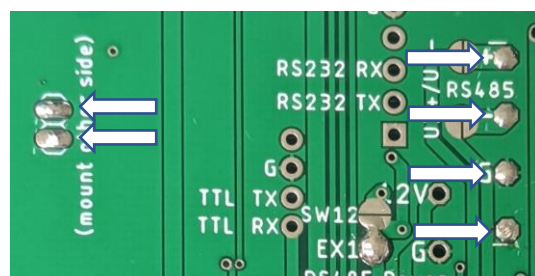
Location to mount RS485 adapter on the rear of the board. Note instruction on PCB silkscreen "Mount This Side" behind the adapter



Locate RS485 into holes marked +/-G/- and RX/TX. Note the instructions (mount this side) to ensure the right side is used. The white arrows note the holes for the pre-fitted headers



Solder from the front side, making sure all 6 pins are soldered correctly. Use side cutters to cut solder pads close to flush

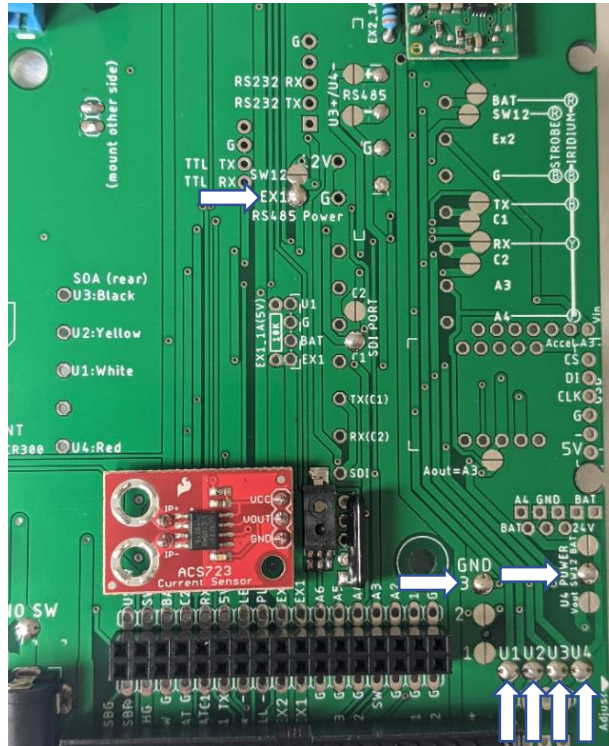


6. Solder Jumpers to configure adapter operation

A total of 7 solder pad jumpers are used to configure the adapter. Some may already be soldered depending on the original configuration. The pads to solder are:

- U1 / U2 / U3 / U4 to connect the adapter to the terminals on the bottom of the Ai1
- GND 3 to connect U3 to GND
- U4 POWER SW12 to connect U4 to SW12
- RS485 Power Ex1 to power the interface from Ex1 which is normally 5V

The location of each solder pad jumper is highlighted with the WHITE arrow



7. Apply silicone dome to the rear of the modem on the CR300 to prevent the metal housing shorting on any of the completed solder pads



8. Return all parts following the reverse sequence of steps 4, 3 and 2. Ensure that the CR300 board is carefully aligned in the 2 x 17 DIN pin headers or damage may occur. See photo in section 3 to see how the CR300 is mounted
9. Open the clear bottom plate to access the blue terminals and apply the best label for the **CUSTOM port**. It is recommended to use the SONDE label if an EXO2 is used as the color coding matches the sonde bulkhead connector, otherwise use the RS485 label.

10. Wire bulkhead connector wires:

Pin 1 (SDI12)	Orange	C1
Pin 2 (GND)	Black	GND
Pin 3 (Power)	Red	SW12
Pin 4 (Shield)		
Pin 5 (RS485)	Yellow	RS485- (A)
Pin 6 (RS485)	White	RS485+ (B)

It is possible that the RS485 wires may need to be reversed. If the sonde fails to respond, swap Yellow and White wires