Building the mrusk G1000 panel

Part list for PFD+MFD

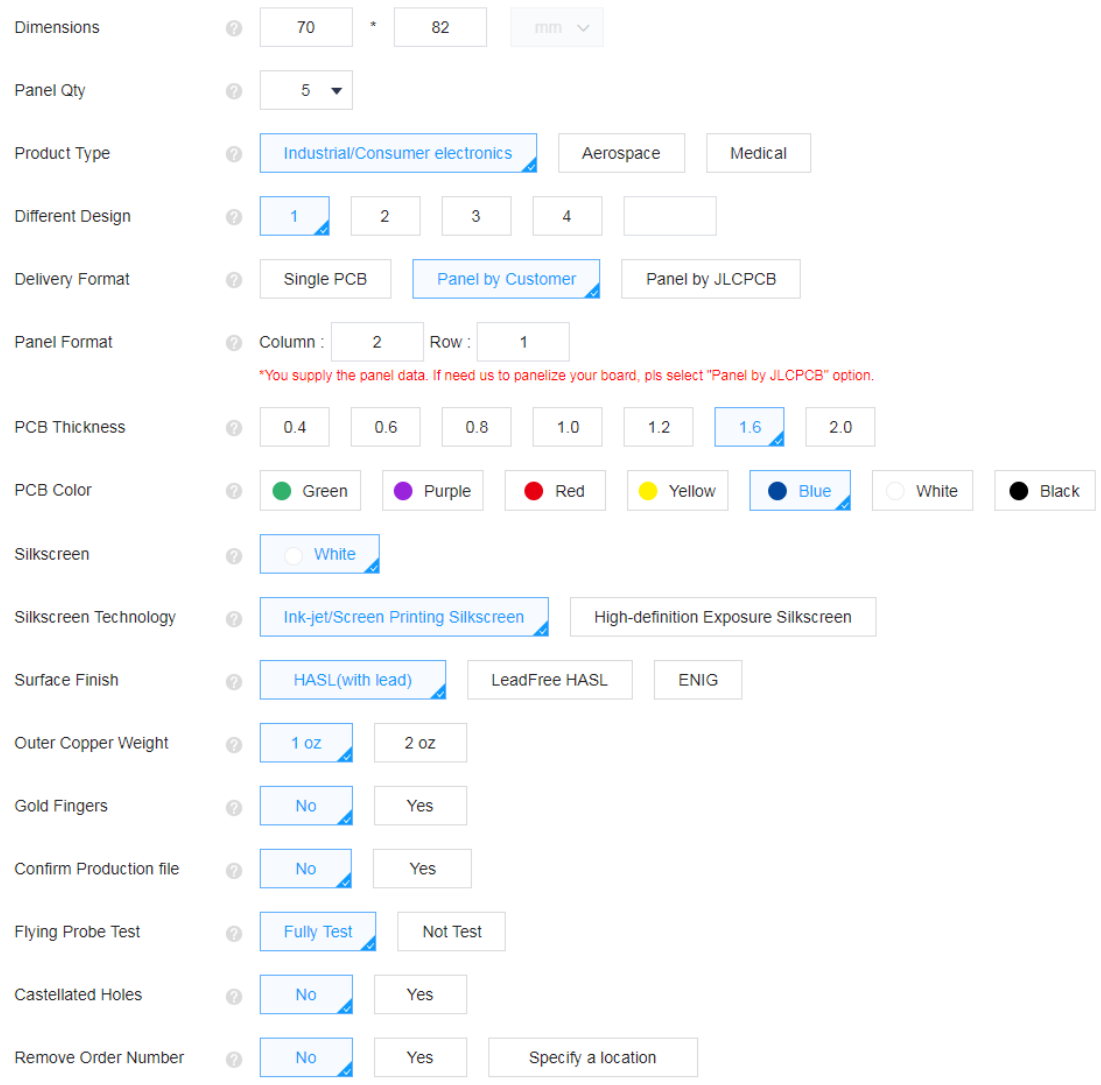
Part	Type	Amount	Source
PCB set		1	mrusk
Encoder	EC11	26	https://www.ebay.de/itm/182373237976
ALPS	RKJXT1F42001	2	https://www.ebay.de/itm/164837499516
Switch	6x6x5mm	52	https://www.reichelt.de/kurzhubtaster-6x6mm-hoehe-5-0mm-12v-vertikal-taster-9302-p44579.html
IDC Header	6 pin	18	https://www.ebay.de/itm/362257230215
IDC Plug	6 pin	34	https://www.ebay.de/itm/183463370948
IDC Header	8 pin	8	https://www.ebay.de/itm/312078634350
IDC Plug	8 pin	16	https://www.ebay.de/itm/312252897256
IDC Header	14 pin	8	https://www.ebay.de/itm/312078591715
IDC Plug	14 pin	9	https://www.ebay.de/itm/312252873182
Pin Header	Single row	Ca. 300 pins	https://www.reichelt.de/40pol-stiftleiste-gerade-rm-2-54-sl-1x40g-2-54-p19506.html
Pin Header	Double row	Ca. 70x2 pins	https://www.reichelt.de/2x40pol-stiftleiste-gerade-rm-2-54-sl-2x40g-2-54-p19498.html
Resistor 1/4W	10 kΩ	10	
74HC4067	Module	10	https://www.ebay.de/itm/265408479238
Screw	M3x5mm	30	
Screw	M2x5mm	20	
Ribbon cable	14pin (Split for 6 and 8)		https://www.reichelt.de/flachbandkabel-awg28-14-pol-grau-10m-ring-awg-28-14g-10m-p47653.html
Display	VS104T-003	2	https://de.aliexpress.com/item/4000156062102.html
Arduino MEGA 2560		1	
For OPTIONAL Backlight			
LED white 1206	white	24	https://www.reichelt.de/led-smd-3216-1206-warmweiss-900-mcd-120--led-ll-1206-ww-p156359.html
Resistor 1206	100 Ω	24	https://www.reichelt.de/smd-widerstand-1206-100-ohm-250-mw-1--vis-crcw12061002-p238101.html

PCB Set

Shortcut	Usage	Amount	Panel Size	Panels needed
APL	Autopilot (MFD only)	1	2 x 1	1
FMS	Flight Management System	2	2 x 1	1
Enc	Single Encoder (Volume, Heading)	6	4 x 4	1
DualEnc	Dual Encoder	10	2 x 4	2
FF	Frequency Flip Flop Key	4	4 x 5	1
Range	Range/Pan knob	2	2 x 3	1
Softkey	Softkey bar	2	1 x 1	2
MUX	Multiplexer carrier	2	1 x 1	2
HAT	Connector to Arduino MEGA 2560	1	1 x 2	1

MICRO_HAT and NANO_HAT are for Arduino Pro Micro and Arduino Nano respectively, but are not really recommended due to performance and driver issues.

Order using the Gerber files at https://jlcpcb.com. Set the parameters according to the screenshot below (example is for APL board). Dimensions are determined automatically from the Gerber file. Select “Panel by Customer” and set Columns / Rows according to the table above. PCB Color blue if you like and make sure the “Stencil” at the bottom of the page is not selected. Minimum Quantity is 5 panels each.



Special mounting instructions

MUX Board

- Mount Multiplexers on **BOTTOM** side, parts facing **UPWARDS** (see picture). Spacing by headers with additional separator from further header pins.
- MUX 6 is optional and can be left free.
- Solder IDC sockets first and MUX boards last when all pins were tested.

ENC and DENC Boards

- Use 2x3 header pin, not IDC connector. Remove plastic pin underneath the encoder. Space is needed for header pins.
- Each ENC board has one free input (connect to FF boards).
- Connector on DENC board is facing to the outside

RANGE Board

- Solder pin header from bottom so that the pins do not appear on top side.

FF Board

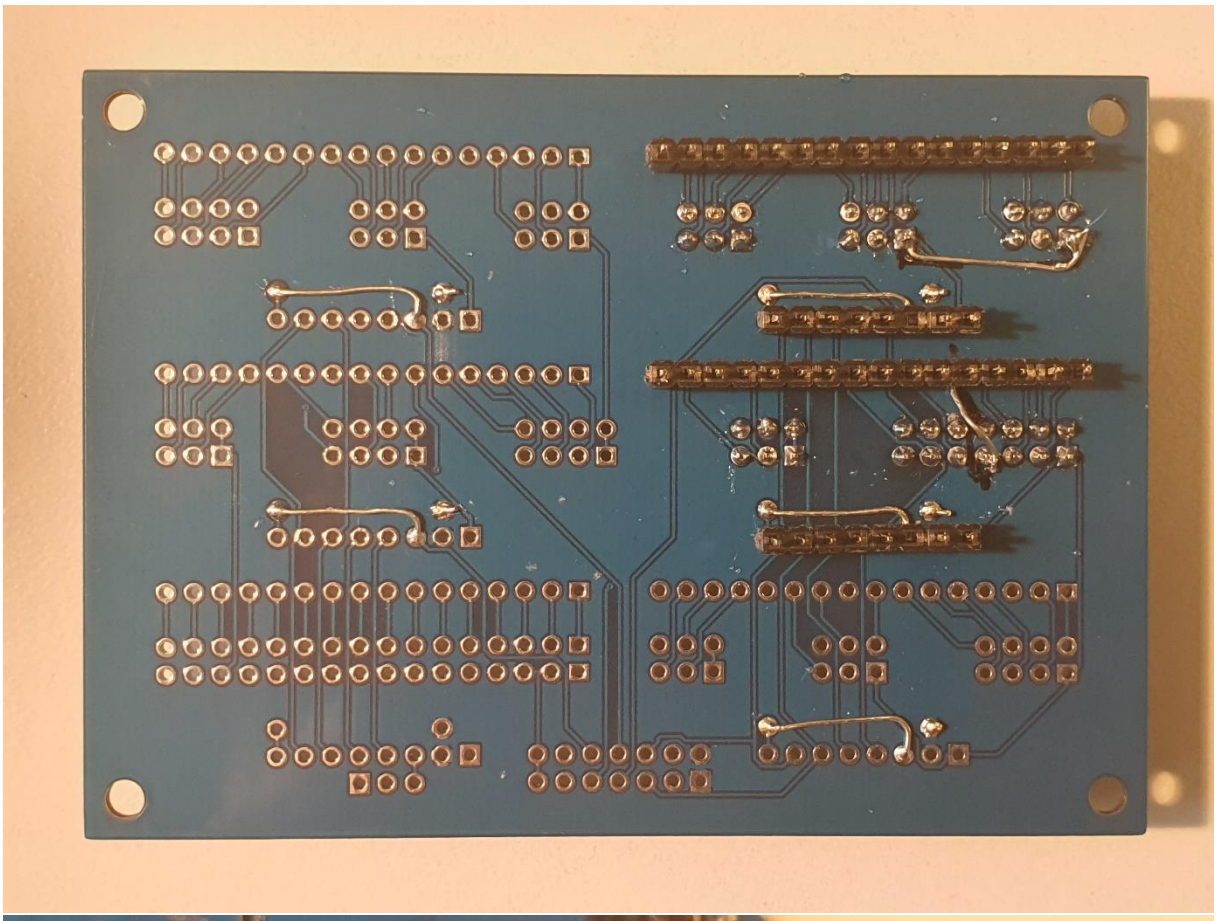
- Wire J1 directly to ENC board next to it.

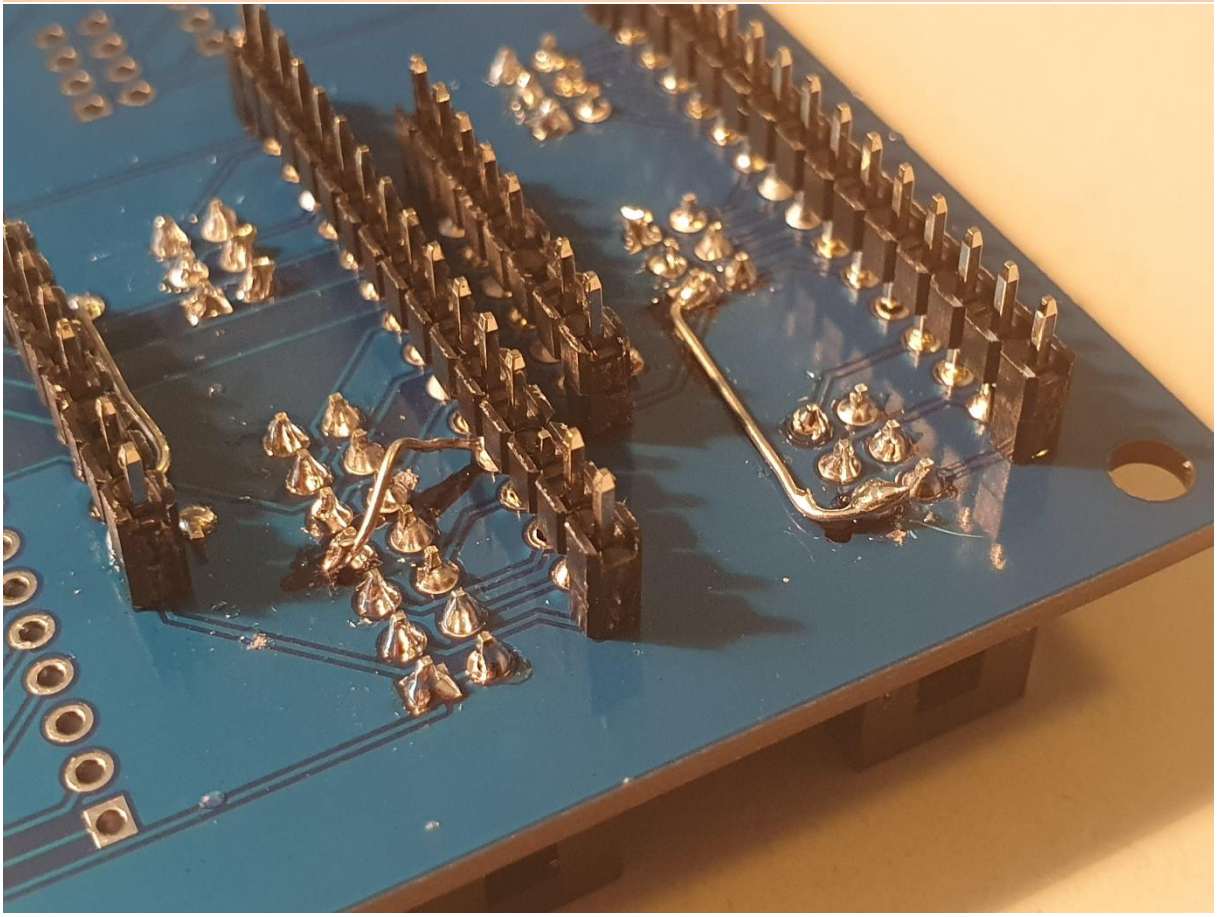
HAT board

- Solder header connection to MEGA2560 on bottom side.
- One 14 pin cable per unit, two slots are spare.

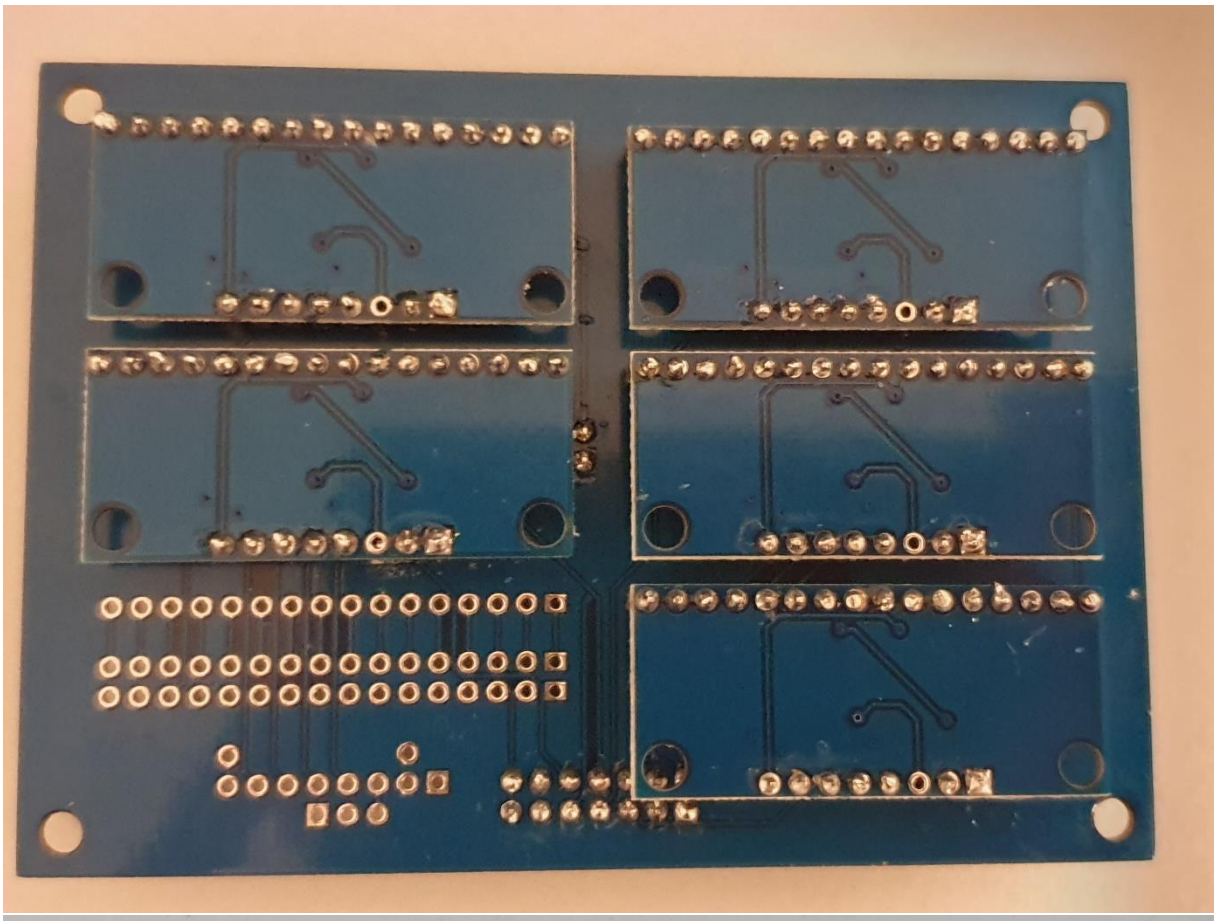
MUX Inputs

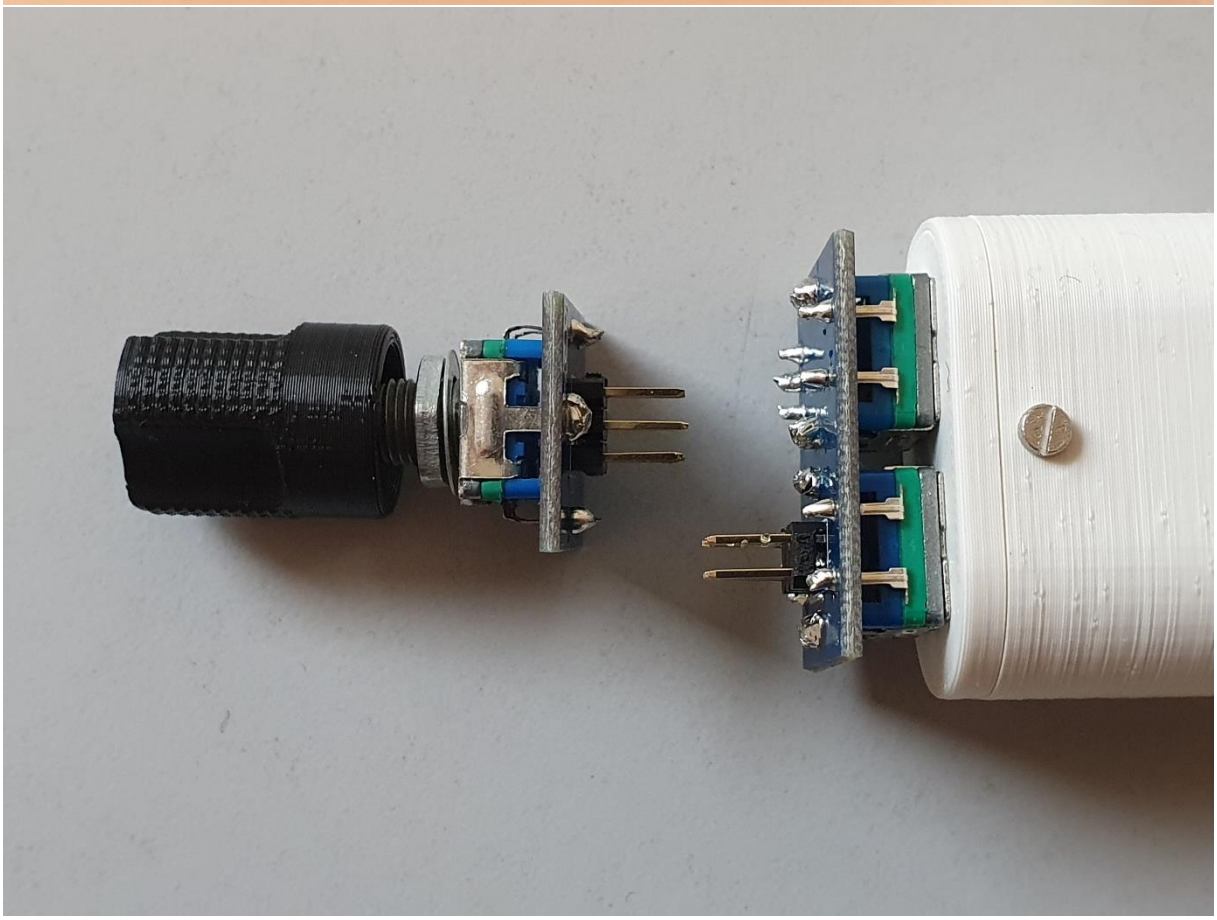
DENC1	NAV
DENC2	COM
DENC3	CRS/BARO
DENC4	ALT
DENC5	FMS
ENC1	NAV VOL
ENC2	COM VOL
ENC3	HDG
DENC6	spare

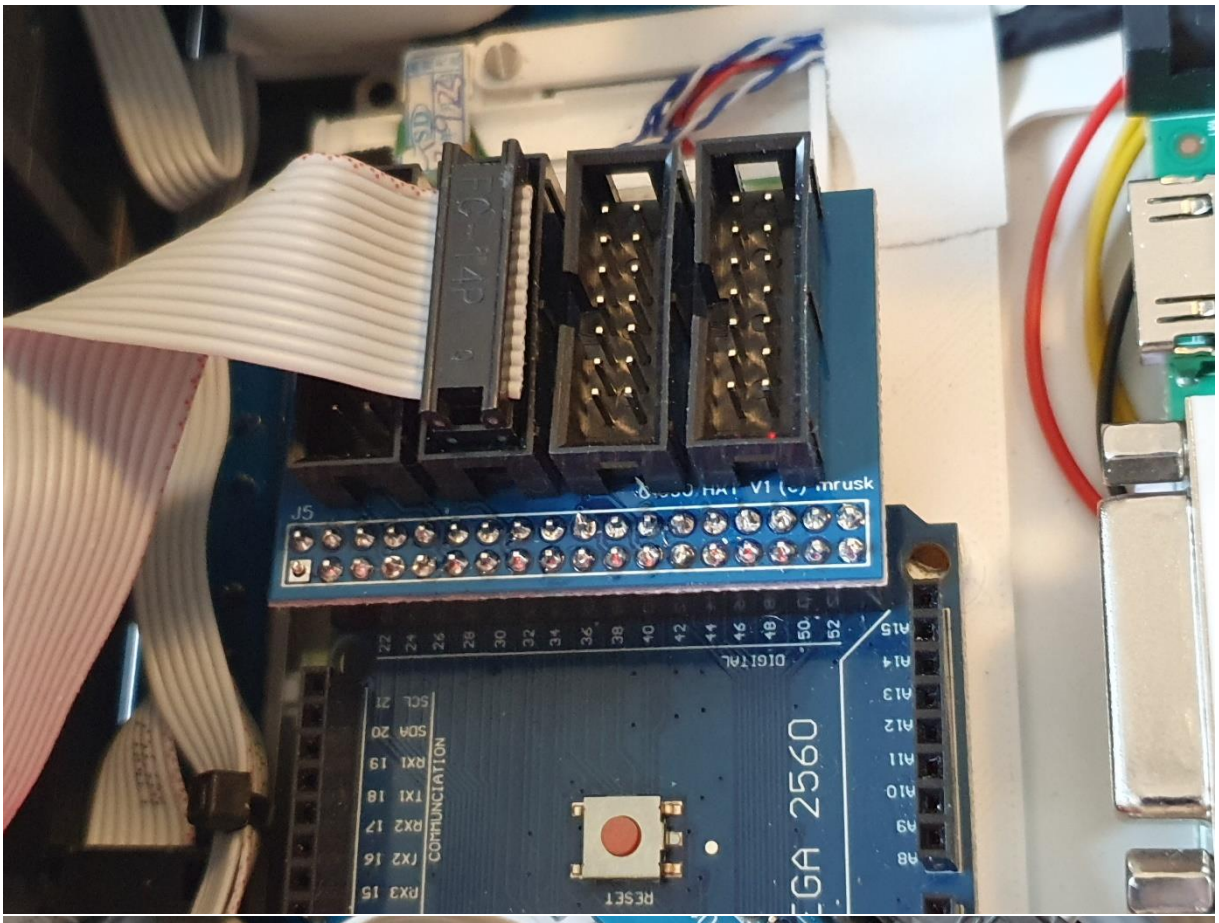




Photos are V1, bridges not needed on V2 boards.






J5
DIGITAL
RESET
COMMUNICATION
MEGA 2560