

ESP32 Serial Bridge PCB:

After completing some Prototype Serial Bridges I decided to construct a PCB to make assembling much easier.

A few things were taken into account:

- All Gliders in our club have RS232 Sockets in the Cockpit connected to FLARM.

In order to be able to still use them I had to either disable sending data via Wifi or to switch the TX-wires coming from the ESP32 and the Cockpit Socket to the FLARM RX line. In the Prototypes I used Relays. Here I used a MAX3222 for COM1

- All our gliders have a ELT ACK-E04 installed. They are wired to the FLARM to receive GPS data via the NMEA input plug. This feature is only available up to 9600 baud.

When running FLARM output with 9600 baud I cannot get messages from other traffic.

So setting FLARM to 19200 baud and sending GPS data via ESP32 on 9600baud on COM2 was the solution.

- BUT the PCB should also cover the Option without ELT and using 3 regular COM Ports.

- Jumper wires and/or solder points can be soldered in certain spots to customize the PCB

- Power Supply is given via a extra PCB and connected via solder Pins. It is prepared for:

<https://de.aliexpress.com/item/32868241470.html>

<https://www.aliexpress.com/item/4001184669298.html>

I do not recommend to use converters with potentiometers to adjust the voltage.

Use the 3,3V version.

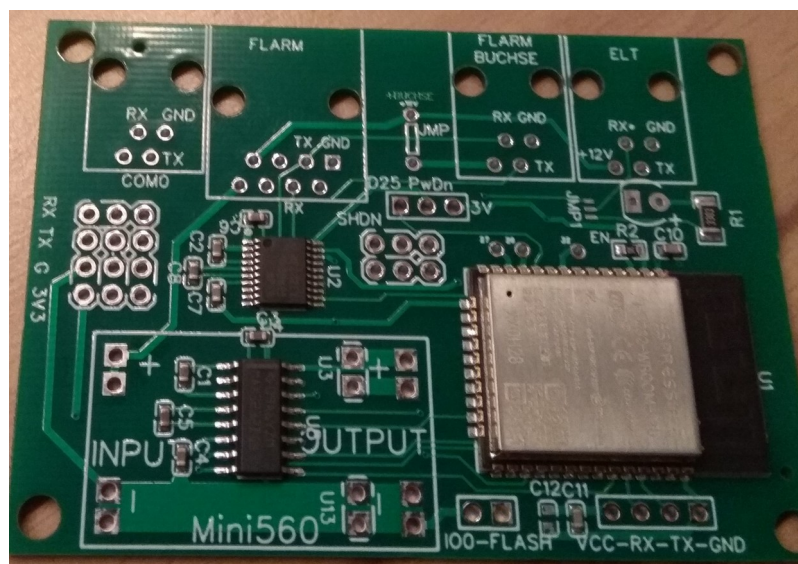
The Power consumption is around 200mA on 3,3V. So powering the PCB via LXNAX 5V output is possible. Here you can use a linear regulator to get 3.3V like AMS1117.

- Bluetooth is a problem in the software. So most users don't implement it to the Serial Bridge.

If you want to use a H-06 Serial-Bluetooth converter you can solder it to the marked place. It gives TTL-Level direct from ESP32 COM1. I would not use the TX pin. - It would give a conflict.

- For any reason there is the so called „brownout Problem“ when Wifi is switched on.

So the brownout detection has to be switched off when activating the Access point.



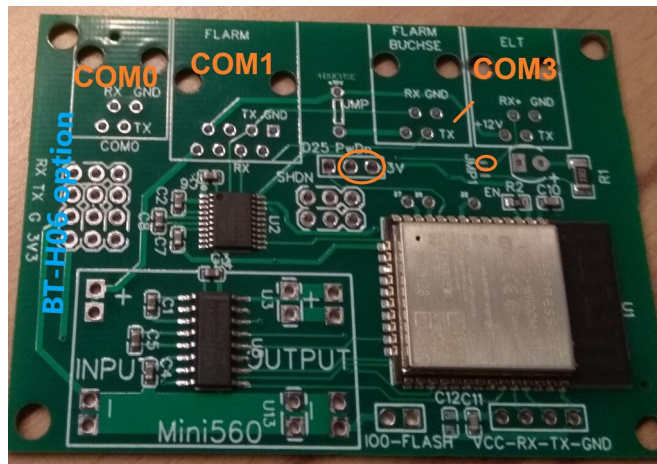
How to use the PCB:

1.) 3 COM Ports – NO Cockpit Socket:

If you do not need 12V on COM3, cut the pcb-line where marked by the orange line.

Make a solder Point on the upper pads of JMP1 (little orange circle)

Connect PrDn with 3.3V (big orange circle)



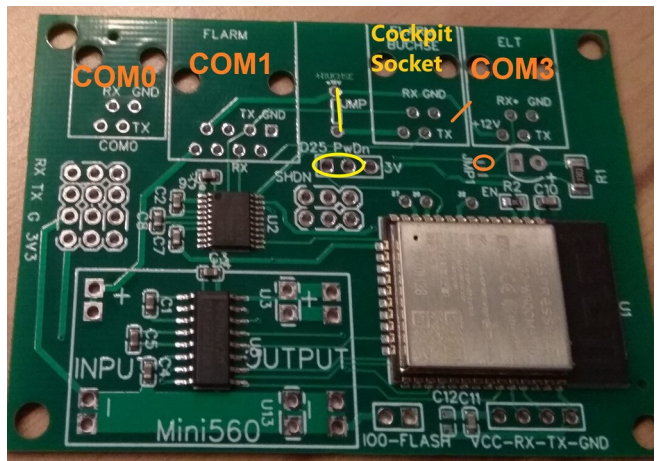
2.) 3 COM Ports – with Cockpit Socket:

COM 3 as under point 1

If you need 12V on the Cockpit Socket, make a connection where marked by the yellow line.

If you want to switch the RX line from COM 1 between Wifi and Cockpit Socket, make a connection where marked by a yellow circle.

! If you switch to Wifi, no plug must be in the cockpit socket. !



If you only want to give the cockpit socket a connection to RX on FLARM, the pins around PrDn (SHDN) can be left open.

See Table1: EN is hardwired to GND.

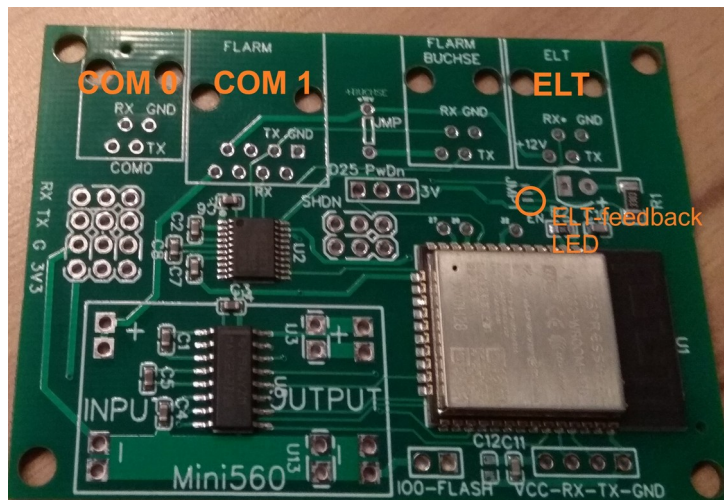
Table 1. MAX3222/MAX3237/MAX3241 Shutdown and Enable Control Truth Table

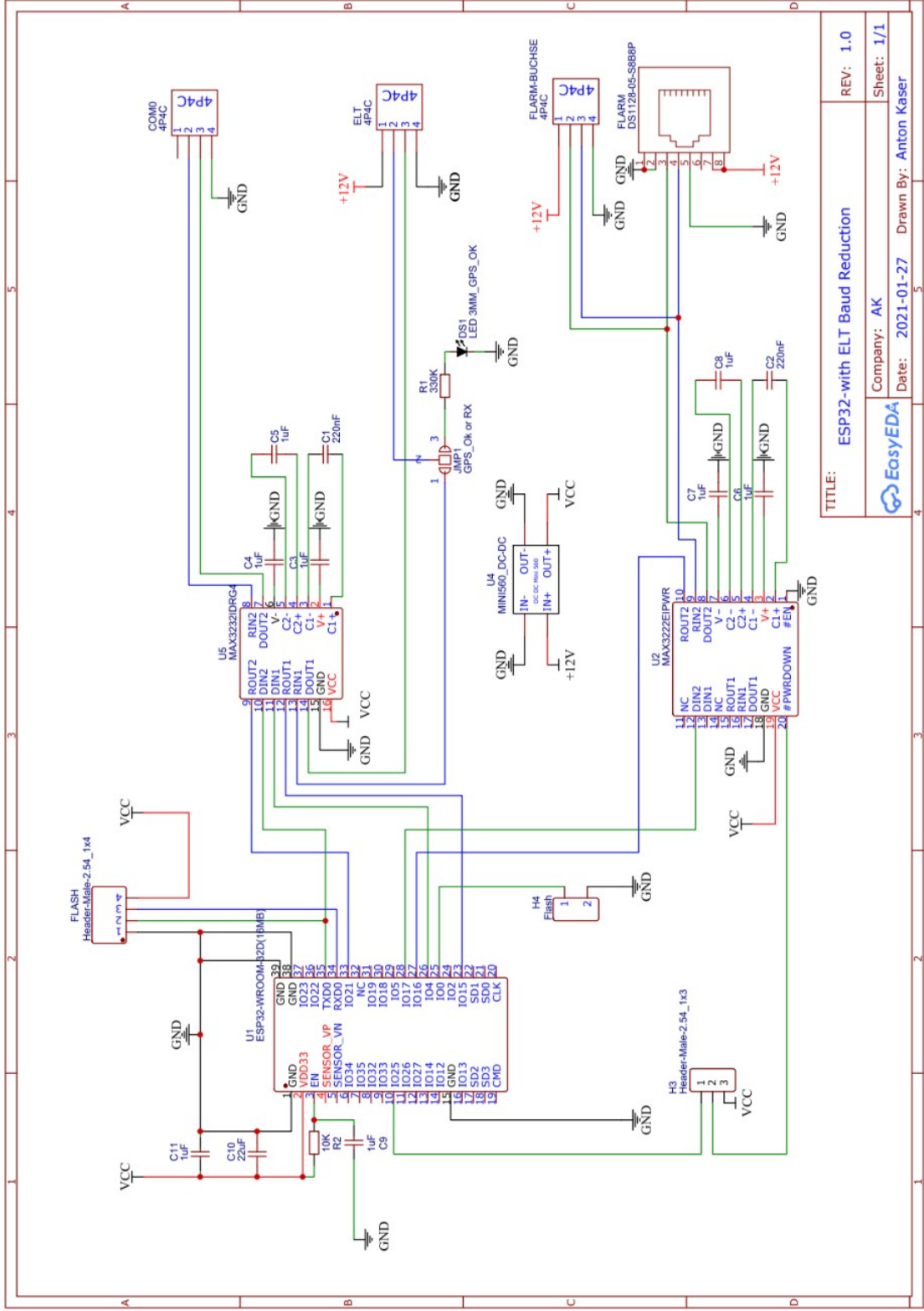
SHDN	EN	T_OUT	R_OUT	R_OUTB (MAX3237/ MAX3241)
0	0	High-Z	Active	Active
0	1	High-Z	High-Z	Active
1	0	Active	Active	Active
1	1	Active	High-Z	Active

3.) 2 regular COM Ports + E-04-ELT on COM3

Make a solder point where marked by the orange circle and put a 3mm LED in place.

The software has to be adopted to read GPS data from COM1 and write it to COM2 with 9600 baud.





TITLE:	ESP32-with ELT Baud Reduction	REV:	1.0
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