

## Connectors

The image contains two circuit diagrams. The left diagram, titled "STM32 BM", shows a pull-up resistor R9 (10k) connected between the BOOT0 pin and the 5V supply. The right diagram, titled "3.3V Regulator", shows a voltage regulator IC7 (AMS1117-3.3) with its VIN pin connected to a 5V supply through a 100nF capacitor C16. The GND pin is connected to ground. The VOUT pin is connected to the 3V3 supply through a 10uF capacitor C14, with a 100nF capacitor C15 connected between the 3V3 supply and ground.

## Display

The diagram shows a 1.8 inch TFT Display connected to a DSP1 module. The DSP1 module has pins for VCC, SCK, LED, SDA, A0, SS, GND, and RST. The display has pins for SCL\_K, MOSI, TFTSS, and TFTRST. The connections are as follows:

- VCC is connected to 5V.
- SCK is connected to SCL\_K.
- LED is connected to 3V3.
- SDA is connected to MOSI.
- A0 is connected to TFTSS.
- SS is connected to TFTRST.
- GND is connected to GND.
- RST is connected to GND.

1.8 inch TFT Display

### Additional Status LEDs

The diagram shows three identical LED circuits connected to a 3V3 supply. Each circuit consists of a resistor (R2, R3, or R4) in series with an LED (LED1, LED2, or LED3). The LEDs are connected to GND. LED1 is labeled 'Green' and LED2 and LED3 are labeled 'Red'.

[illegible]

### SX1278 LoRa RF Module

The diagram shows the SX1278 LoRa RF Module (IC6) connected to a 3V3 supply and ground. The module's pins are: GND, MOSI, DI01, DI02, DI03, VCC, MISO, GND, and ANT. The MOSI pin is connected to the MOSI pin of the SX1278 module. The DI01 pin is connected to the SCLK pin of the SX1278 module. The DI02 pin is connected to the NSS pin of the SX1278 module. The DI03 pin is connected to the DIO0 pin of the SX1278 module. The VCC pin is connected to the VCC pin of the SX1278 module. The MISO pin is connected to the RST pin of the SX1278 module. The GND pin is connected to the GND pin of the SX1278 module. The ANT pin is connected to the ANT pin of the SX1278 module. The SX1278 module has pins: MOSI, SCLK, SS, SXDI00, SXST, and GND. The SXST pin is connected to the ANT pin of the SX1278 module. The GND pin is connected to ground. The SX1278 module is connected to an antenna (J7) via a 4-pin connector. The antenna pins are: ANT, G, G, and G. The antenna is connected to ground.

### STM32 Voltage Filtering & Stabilisation

The diagram illustrates a voltage filtering and stabilization circuit for the STM32. It starts with a 3V3 input connected to an inductor L1 (39nH). This is followed by a series of capacitors connected to ground: C19 (1uF), C20 (10nF), C21 (100nF), C22 (100nF), C23 (100nF), C24 (100nF), and C25 (4.7uF). The output is labeled 3V3A.

### STM32 Oscillators

The left diagram illustrates an external oscillator circuit. It features an HC-49S 8MHz crystal (Y2) connected between the OSCIN and OSCOUT pins. Two 10pF capacitors (C28 and C27) are connected to the input and output of the crystal, respectively, to ground. The right diagram shows an internal oscillator circuit. It uses an MC306 32.768kHz crystal (Y3) connected between the OSC32IN and OSC32OUT pins. Two 22pF capacitors (C18 and C26) are connected to the input and output of the crystal, respectively, to ground.

### Controller & PC USB Port

The schematic illustrates the electrical connection between a microcontroller's USB interface (J9) and a standard PC USB Type-C port (J8).

**Controller Side (J9):**

- A 5V power supply is connected to pin 1 (MH1) via a 33Ω resistor (R13).
- Pins 2 (D-) and 3 (MH2) are connected to ground.
- Pins 4 (D+) and 3 (MH2) are connected to ground via a 33Ω resistor (R14).
- A decoupling capacitor C17 and a diode B are connected across the 5V supply.

**PC Side (J8):**

- VBUS and GND pins are connected to the 5V supply and ground respectively.
- Differential signal pairs DP1/DP2 and DM1/DM2 are connected to the PCUSB D+ and D- signals.
- Shield pins (CC1, CC2, SBU2, SBU1) are connected to ground via 5.1kΩ resistors (R15, R16).

Title			
TARS Base Station			
Size	Number	Revision	
A3	Bottom PCB / Main PCB	REV. A	
Date:	12.28.2022	Sheet 1 of 1	
File:	F:\GITHUB\...\MCU.SchDoc	Drawn By:	Fvnn Raddatz