Connecting GTR V1.0 with Pi 3B+/4 by 3 wires, (2 wires which are serial connection and 1 wire is ground [GND]).
With 3 wires for serial connections made you no longer need the use of USB cable. *1

- **Raspberry Pi 3B+/4B and GTR V1.0 both use 3.3 V logic..**

- **The idea is to connect (see Wiring Diagram below) the TX and RX from the Raspberry Pi to the ARM Processor's RX and TX on the GTR V1.0 board.**

Therefore, do the following:

- **Connect TXD0 (Raspberry Pi's TX) from Raspberry Pi 3B+/4B connector TO the ARM USART1_RX (RX1) from GTR V1.0 board's Raspberry Pi connector.**
- **Connect RXD0 (Raspberry Pi's RX) from Raspberry Pi 3B+/4B connector TO the ARM USART1_TX (TX1) from GTR V1.0 board's Raspberry Pi connector.**
- **Connect GND from Raspberry Pi 3B+/4B Connector TO GND from GTR V1.0 Raspberry Pi connector.**

DO NOT connect the Raspberry Pi 5V and 3.3V PINS to the GTR 1.0 board. Connecting the 5V and 3.3V PINS would bypass the fuses on the Raspberry Pi board and could cause issues to BOTH the Raspberry Pi board and the GTR V1.0 board. In fact, I recommend powering the Raspberry Pi from an independent and separate 5V power supply but connect the GND on the Raspberry Pi power supply to the GND on the GTR V1.0 board.

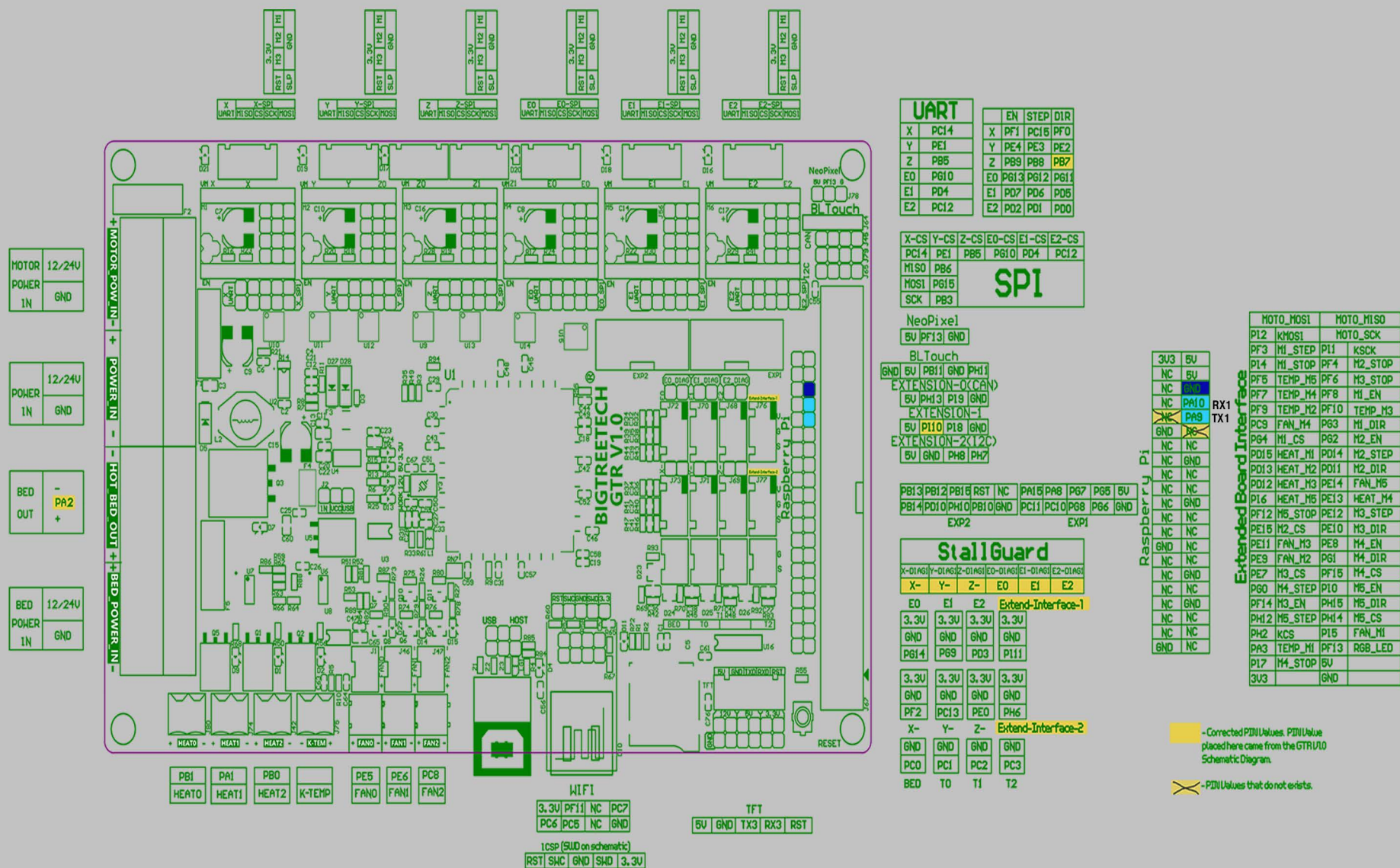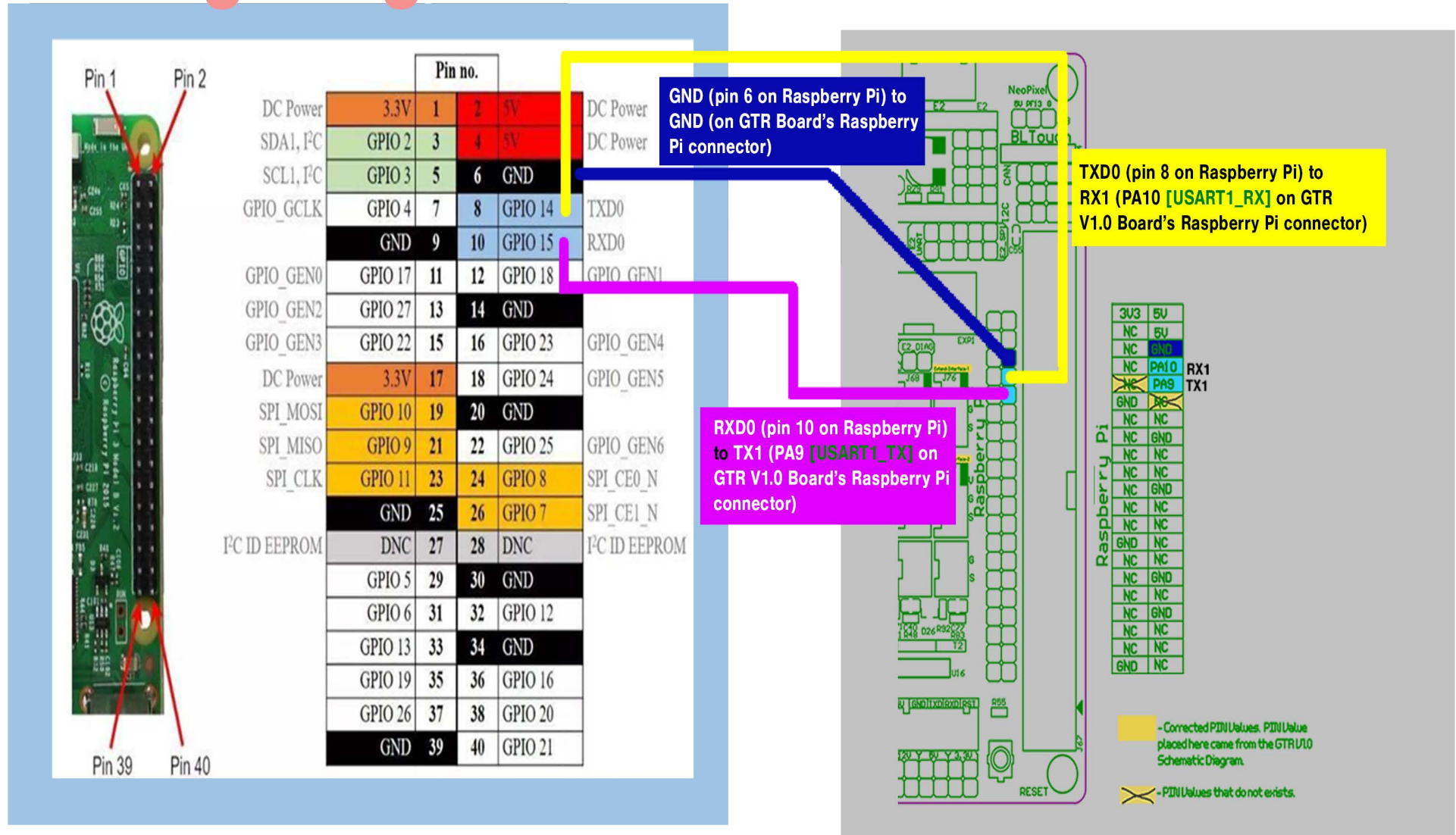## Pi 3B+/4 @ GPIO connector: PINS used: TXD0, RXD0 and GND (8-10-6):

GTR V1.0 @ Raspberry pi connector: RX1, TX1 and GND (8-10-6)

BIGTREETECH® GTR V1.0

UART

			EN	STEP	DIR
X	PC14	X	PF1	PC15	PF0
Y	PE1	Y	PE4	PE3	PE2
Z	PB5	Z	PB9	PB8	PB7
E0	PG10	E0	PG13	PG12	PG11
E1	PD4	E1	PD7	PD6	PD5
E2	PC12	E2	PD2	PD1	PD0

SPI

X-CS	Y-CS	Z-CS	E0-CS	E1-CS	E2-CS
PC14	PE1	PB5	PG10	PD4	PC12
MISO	PB6				
MOSI	PG15				
SCK	PB3				

NeoPixel

5V	PF13	GND

BLTouch

GND	5V	PB11	GND	PH1

EXTENSION-0(CAN)

5V	PH13	P19	GND

EXTENSION-1

5V	P110	P18	GND

EXTENSION-2(I2C)

5V	GND	PH8	PH7

EXP2

PB13	PB12	PB16	RST	NC	PA15	PA8	PG7	PG5	5V
PB14	PD10	PH10	PB10	GND	PC11	PC10	PG8	PG6	GND

EXP1

StallGuard

X-DIAG1	Y-DIAG1	Z-DIAG1	E0-DIAG1	E1-DIAG1	E2-DIAG1
X-	Y-	Z-	E0	E1	E2

E0	E1	E2	Extend-Interface-1
3.3V	3.3V	3.3V	3.3V
GND	GND	GND	GND
PG14	PG9	PD3	P111

3.3V	3.3V	3.3V	3.3V
GND	GND	GND	GND
PF2	PC13	PE0	PH6

X-	Y-	Z-	Extend-Interface-2
GND	GND	GND	GND
PC0	PC1	PC2	PC3
BED	T0	T1	T2

Raspberry Pi

3V3	5V
NC	5V
NC	GND
NC	PA10	RX1
	PA9	TX1
GND	
NC	NC
NC	GND
NC	NC
NC	NC
NC	GND
NC	NC
NC	NC
NC	GND
NC	NC
NC	NC
NC	GND
NC	NC
NC	NC
GND	NC

Extended Board Interface

MOTO_MOSI		MOTO_MISO	
P12	KMOSI	MOTO_SCK	
PF3	M1_STEP	P11	KSCK
P14	M1_STOP	PF4	M2_STOP
PF5	TEMP_M5	PF6	M3_STOP
PF7	TEMP_M4	PF8	M1_EN
PF9	TEMP_M2	PF10	TEMP_M3
PC9	FAN_M4	PG3	M1_DIR
PG4	M1_CS	PG2	M2_EN
PD15	HEAT_M1	PD14	M2_STEP
PD13	HEAT_M2	PD11	M2_DIR
PD12	HEAT_M3	PE14	FAN_M5
P16	HEAT_M5	PE13	HEAT_M4
PF12	M5_STOP	PE12	M3_STEP
PE15	M2_CS	PE10	M3_DIR
PE11	FAN_M3	PE8	M4_EN
PE9	FAN_M2	PG1	M3_CS
PE7	M3_CS	PF15	M4_CS
PG0	M4_STEP	P10	M5_EN
PF14	M3_EN	PH15	M5_DIR
PH12	M5_STOP	PH14	M5_CS
PH2	KCS	P15	FAN_M1
PA3	TEMP_M1	PF13	RGB_LED
P17	M4_STOP	5V	
3V3		GND	

Motor Power In: MOTOR 12/24V, POWER IN GND
Power In: 12/24V, GND
Bed Out: – PA2 +
Bed Power In: BED 12/24V, POWER IN GND

HEAT0 PB1, HEAT1 PA1, HEAT2 PB0, K-TEMP
FAN0 PE5, FAN1 PE6, FAN2 PC8

WIFI

3.3V	PF11	NC	PC7
PC6	PC5	NC	GND

ICSP (SWD on schematic)

RST	SWC	GND	SWD	3.3V

TFT

5V	GND	TX3	RX3	RST

- Corrected PIN1 Values. PIN Value placed here came from the GTR V1.0 Schematic Diagram.
- PIN Values that do not exists.

Wiring Diagram:

GND (pin 6 on Raspberry Pi) to GND (on GTR Board's Raspberry Pi connector)

TXD0 (pin 8 on Raspberry Pi) to RX1 (PA10 [USART1_RX] on GTR V1.0 Board's Raspberry Pi connector)

RXD0 (pin 10 on Raspberry Pi) to TX1 (PA9 [USART1_TX] on GTR V1.0 Board's Raspberry Pi connector)

The GTR V1.0 board's Raspberry Pi Connector PINS line up so that each connection is in the same position on both connectors (Raspberry Pi Connector and GTR V1.0 board's Raspberry Pi Connector).

You also have to change some settings in the Raspberry pi 3B+/4B operating system.

Raspberry Pi 3B+/4B Changes that need to be made:

Login to your Raspberry Pi.

Swapping ports used by GPIO and Bluetooth

The first thing to change in the serial connection is to swap the ports used by the GPIO pins and the internal Bluetooth chip. We need to add a line in the boot config file on the boot partition.

Log in to the Pi   with SSH on the IP address used.

Type in   sudo nano /boot/config.txt

Move the cursor to the end of the file by cursor and add:

dtoverlay=pi3-miniuart-bt

save the file and exit the editor by control+O, hit enter then hit control+X

Disabling the serial console

Moving to another config file, where part of the code must be deleted to disable serial console.

Type in   sudo nano /boot/cmdline.txt

Look for following string (text) and delete it

console=serial0,115200

Note: This baud rate must be the same speed set in Marlin and in Octoprint!

save the file and exit the editor by control+O, hit enter then hit control+X

Rebooting RPi

For all changes to take effect, please reboot your Raspberry Pi

Type in Sudo reboot

Adding the serial port in Octoprint

Last part of the configuration is in the Octoprint web interface. Open your browser and type either "octoprint.local" or the IP address of the Pi.   You might be greeted with the welcome wizard, please go through it first.

As soon as you arrive at the home screen, open "Settings" (top right), head to "Serial Connection", then "Additional serial ports" and insert following:

/dev/ttyAMA0
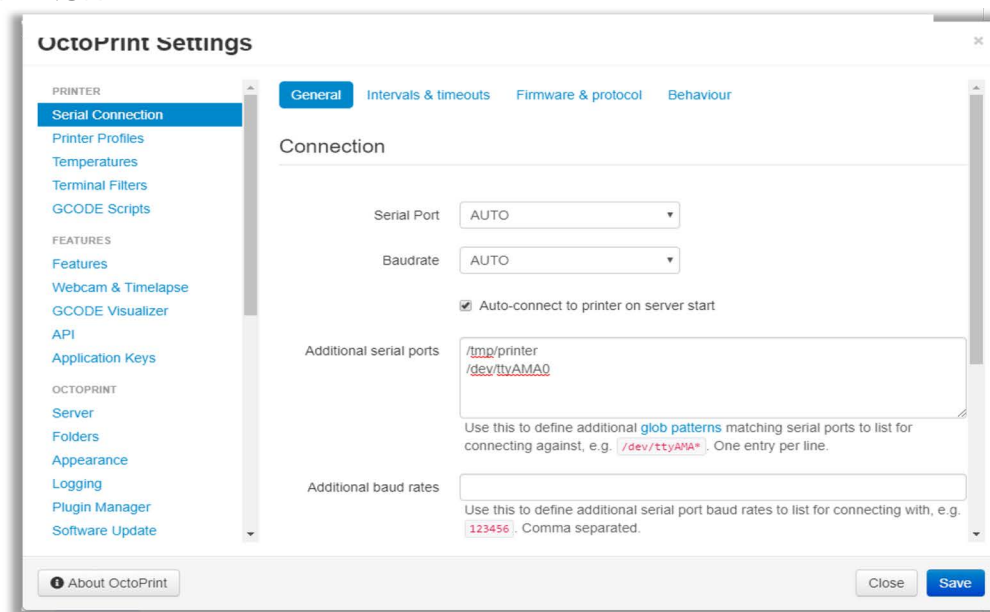
Save the change and reboot OctoPrint. After reboot, select the new port and connect to your printer. Making connection might take a few seconds longer then with USB.
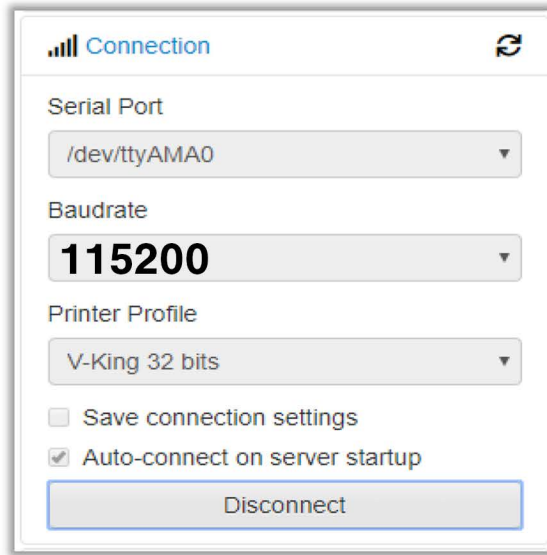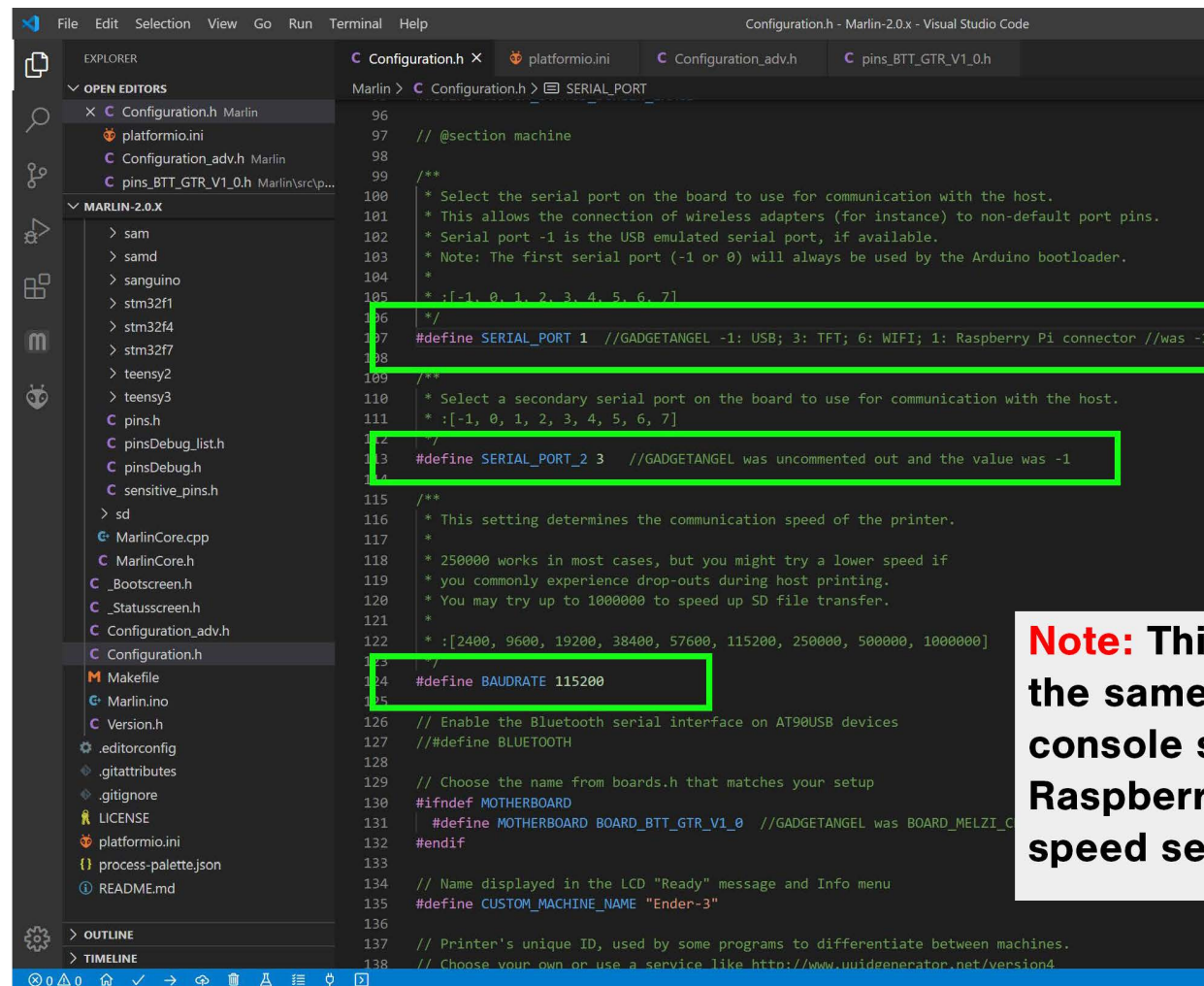
Note: This baud rate must be the same speed set in Marlin and for the console speed on the Raspberry Pi!

*1 **This information was taken from BIGTREETECH SKRV1.3 Guide 2019 - 6 .PDF and adjusted for the GTR V1.0 Board.**

Marlin 2.0.x Setup for Communicating with the Raspberry Pi via Serial Connection on GTR Board

- GTR Board has 4 numbers for SERIAL_PORT/SERIAL_PORT_2: -1 for USB port; 1 for serial connection on Raspberry Pi Interface; 3 for TFT port; 6 for WIFI port.

- The SERIAL_PORT in Marlin is the one you want to use to get all errors reported. The SERIAL_PORT_2 is the secondary port. The secondary port will only receive errors on the connections the secondary port sends out on.

- In Configuration.h set SERIAL_PORT to 1 and SERIAL_PORT_2 to 3 using these setting Marlin will use the TX1/RX1 on the Raspberry Pi Interface to communicate with Octoprint. The TFT (3) screen will receive secondary information.

Note: This baud rate must be the same speed set for the console speed on the Raspberry Pi and the same speed set in Octoprint!