Hardware L432KC - Connection

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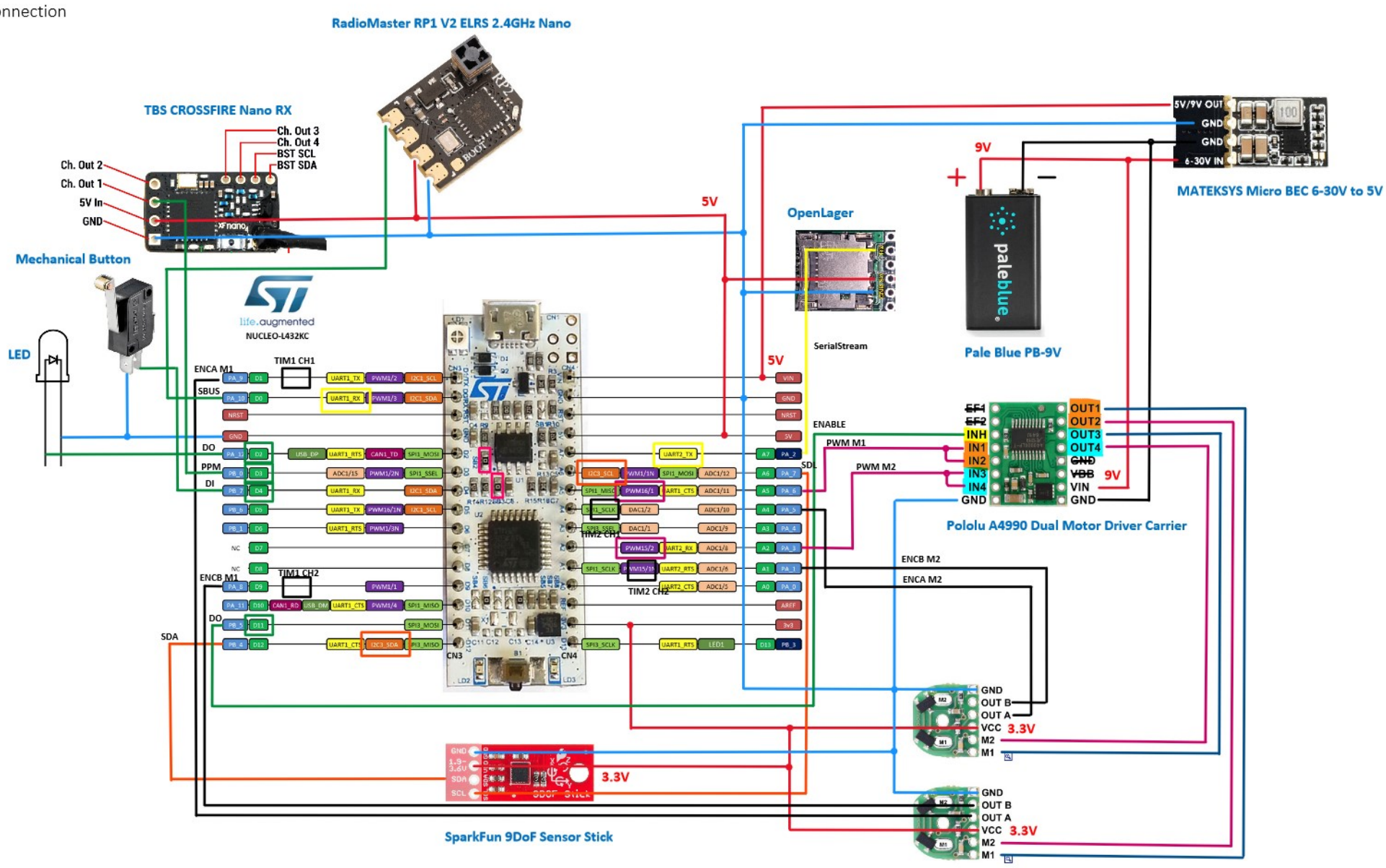

6.9 USART virtual communication

Thanks to SB2 and SB3, the USART interface of STM32 available on PA2 (TX) and PA15 (RX), can be connected to ST-LINK/V2-1. When USART is not used it is possible to use PA2 as Arduino Nano A7. Refer to *Table 7*.

Table 7. Virtual communication configuration

Bridge	State(1)	Description
SB2	OFF	PA2 is connected to CN4 pin 5 as Arduino Nano analog input A7 and disconnected from ST-LINK USART.
	ON	PA2 is connected to ST-LINK as virtual Com TX (default).
SB3	OFF	PA15 is not connected.
	ON	PA15 is connected to ST-LINK as virtual Com RX (default).

1. The default configuration is reported in bold style.

Table 1. Functional Truth Table

Input/Output					Functional State		
Phase A							
INH	IN1	IN2	OUT1	OUT2	Mode	Stepper Motor Operation	DC Motor Operation
L	X	X	Z	Z	Sleep	Low current consumption	Low current consumption
H	Z	Z	L	L	Brake: low side	No phase current	Low-side brake
H	L	L	L	H	Current driven negative	Negative phase current	Motor turns counterclockwise
H	L	H	L	L	Low-side recirculation	No current	Low-side brake
H	H	L	H	H	High-side recirculation	No current	High-side brake
H	H	H	H	L	Current driven positive	Positive phase current	Motor turns clockwise
Phase B							
INH	IN3	IN4	OUT3	OUT4	Mode	Stepper Motor Operation	DC Motor Operation
L	X	X	Z	Z	Sleep	Low current consumption	Low current consumption
H	Z	Z	L	L	Brake: low side	No phase current	Low-side brake
H	L	L	L	H	Current driven negative	Negative phase current	Motor turns counterclockwise
H	L	H	L	L	Low-side recirculation	No current	Low-side brake
H	H	L	H	H	High-side recirculation	No current	High-side brake
H	H	H	H	L	Current driven positive	Positive phase current	Motor turns clockwise

X = don't care, Z = high-impedance

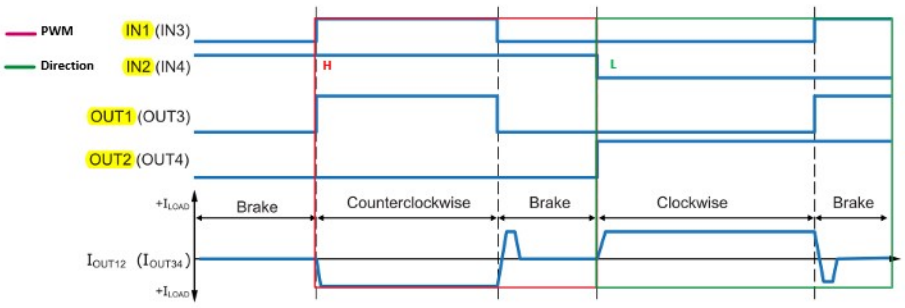

Figure 2. Brush DC Motor Input and Output Sequence Timing Diagram (phase B names shown in parentheses)

6.1 STM32 Nucleo-32 board layout

Figure 3. STM32 Nucleo-32 board top layout