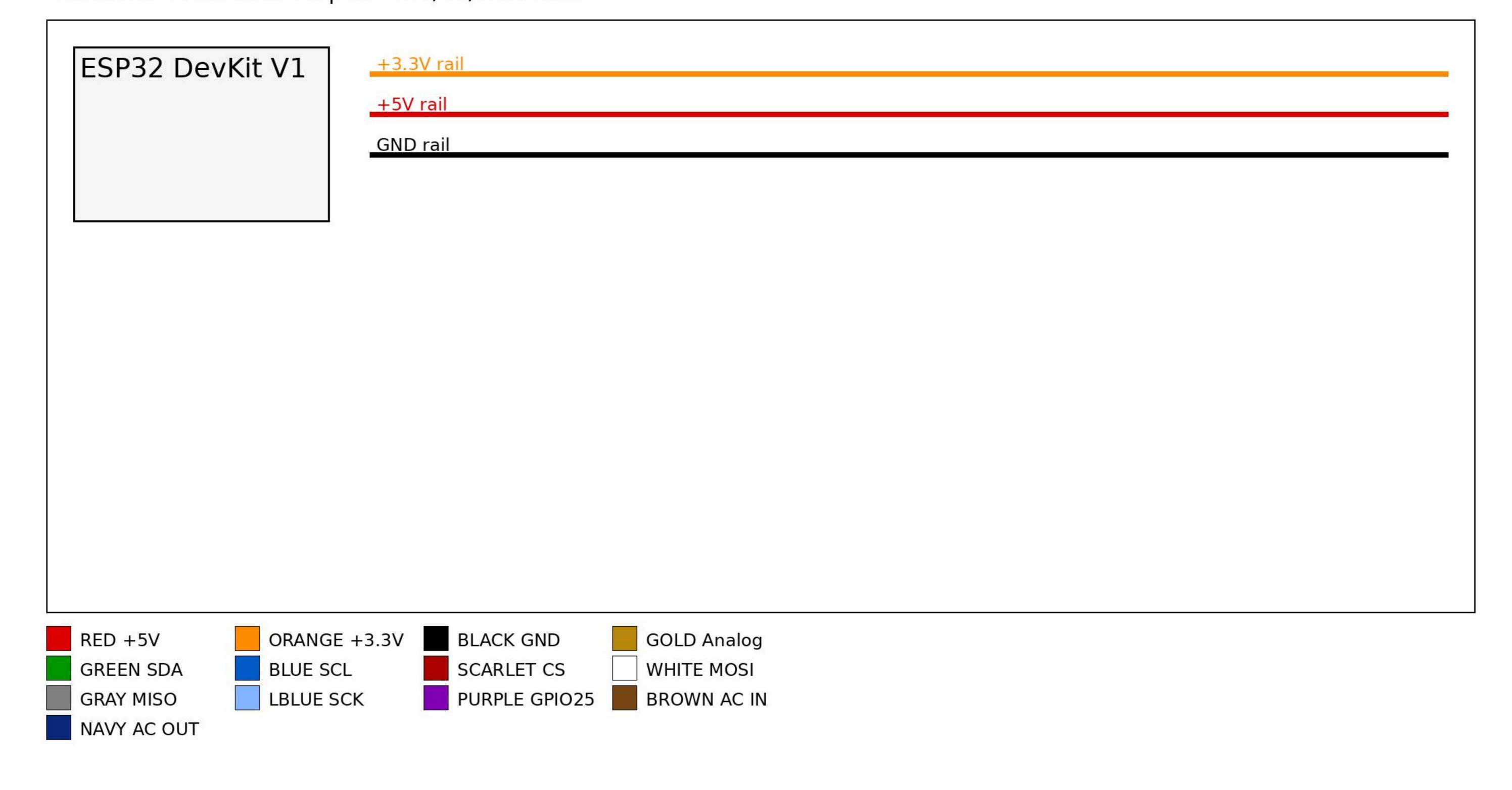
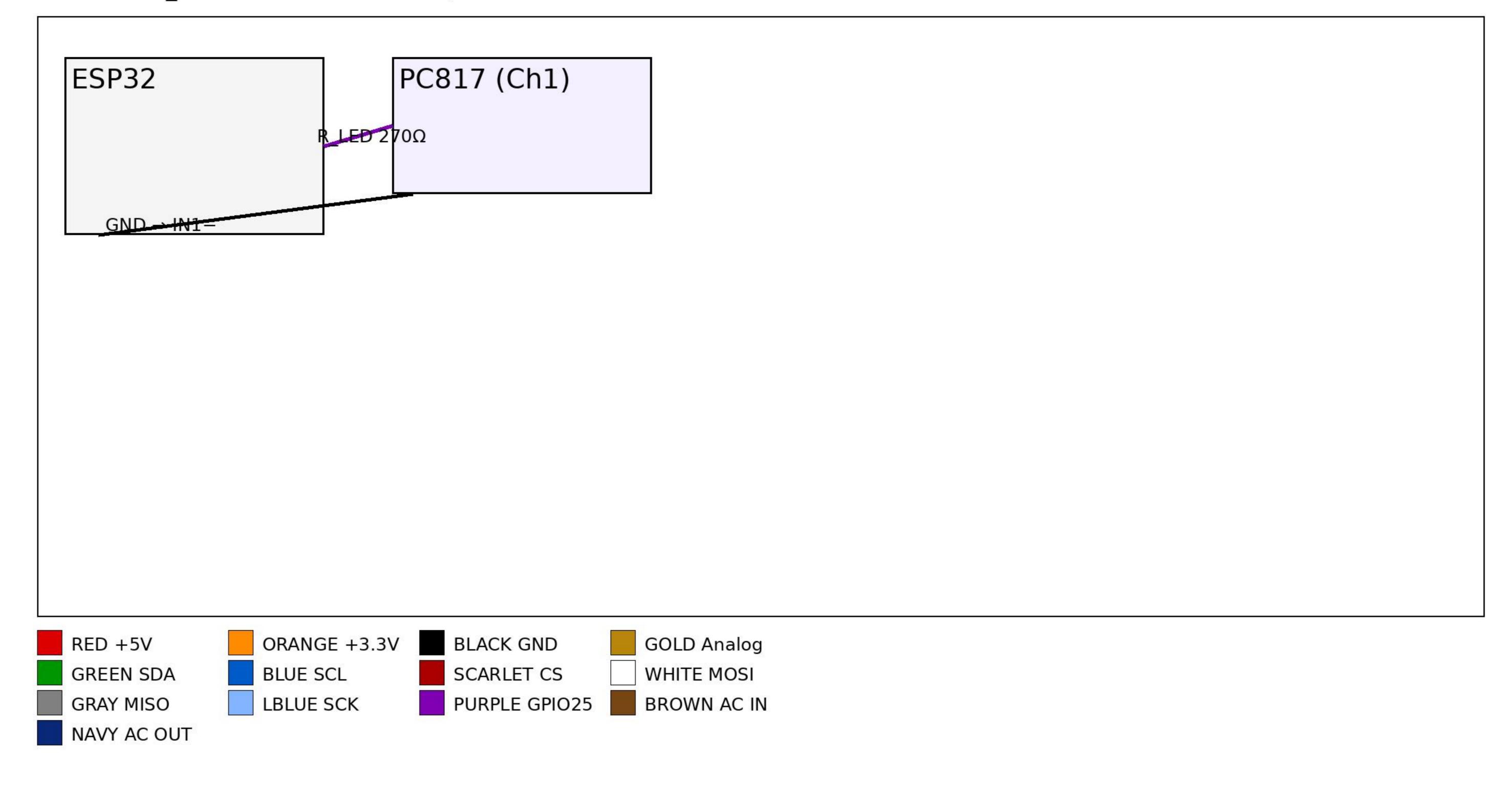
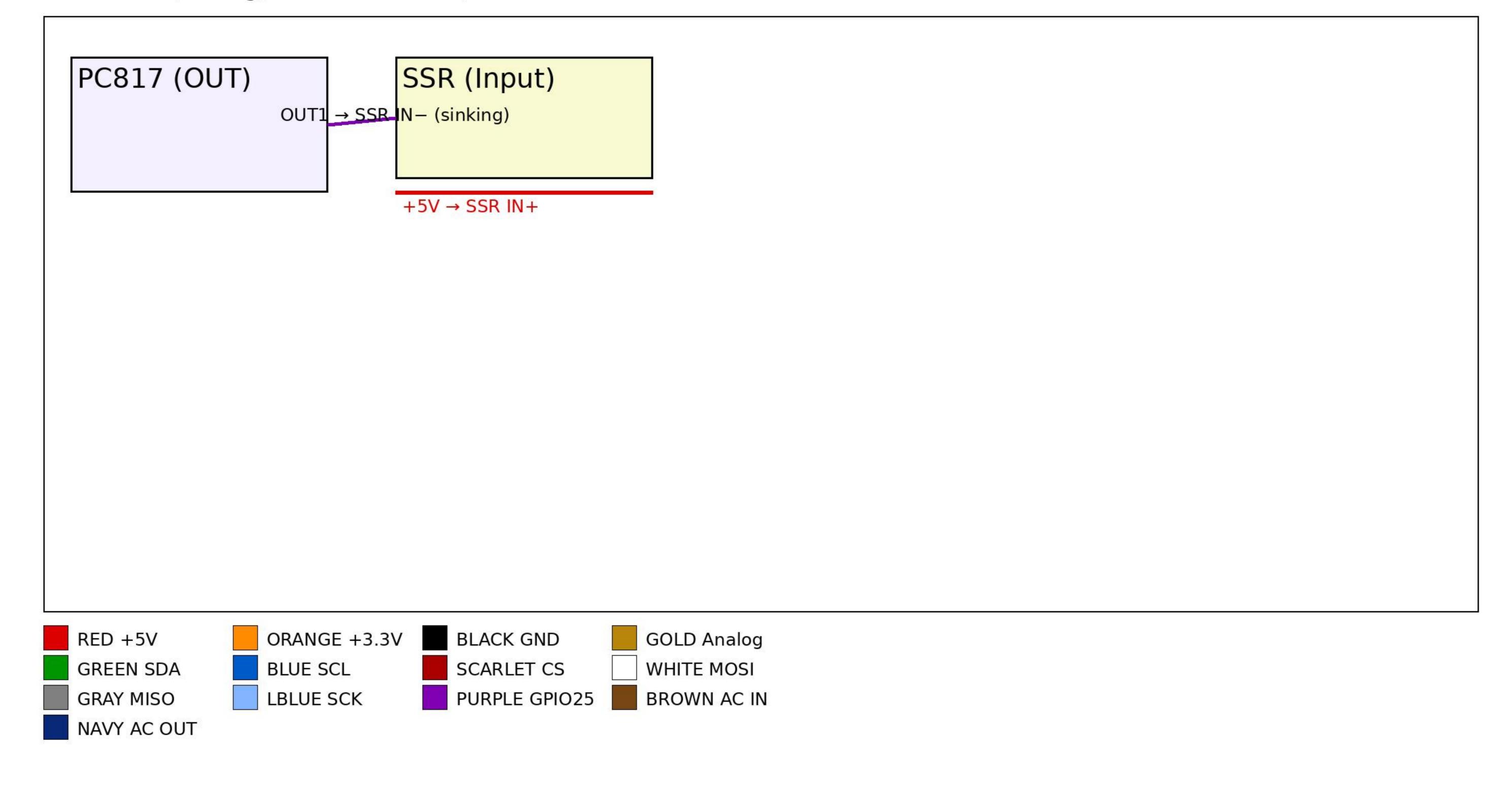
Frame 1
Mount ESP32 on base. Prepare 3.3V/5V/GND rails.



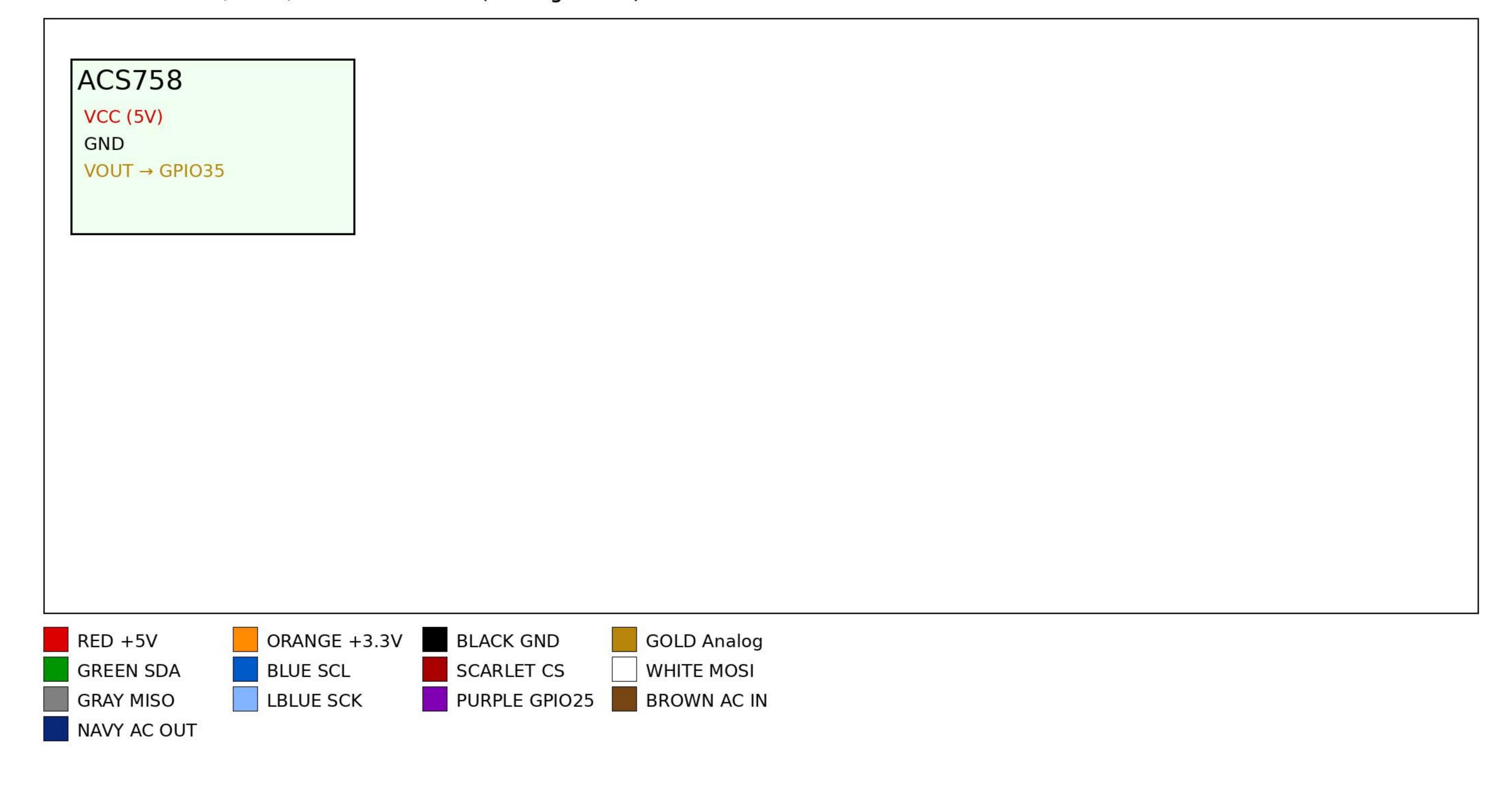
Frame 2
GPIO25 \rightarrow R_LED 270 Ω \rightarrow PC817 IN1+; GND \rightarrow IN1-.



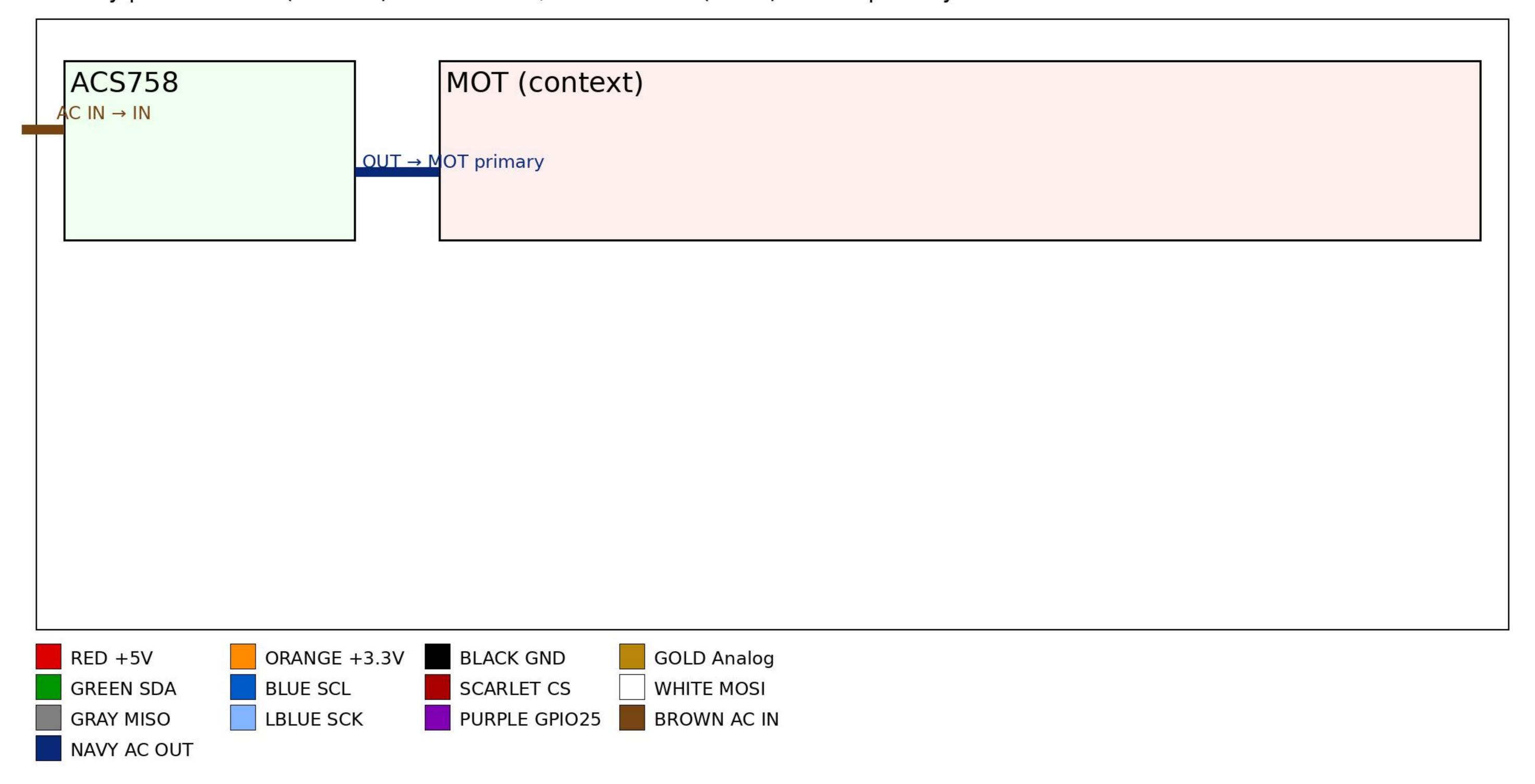
Frame 3
PC817 OUT (sinking): OUT1 → SSR IN-; +5V → SSR IN+.



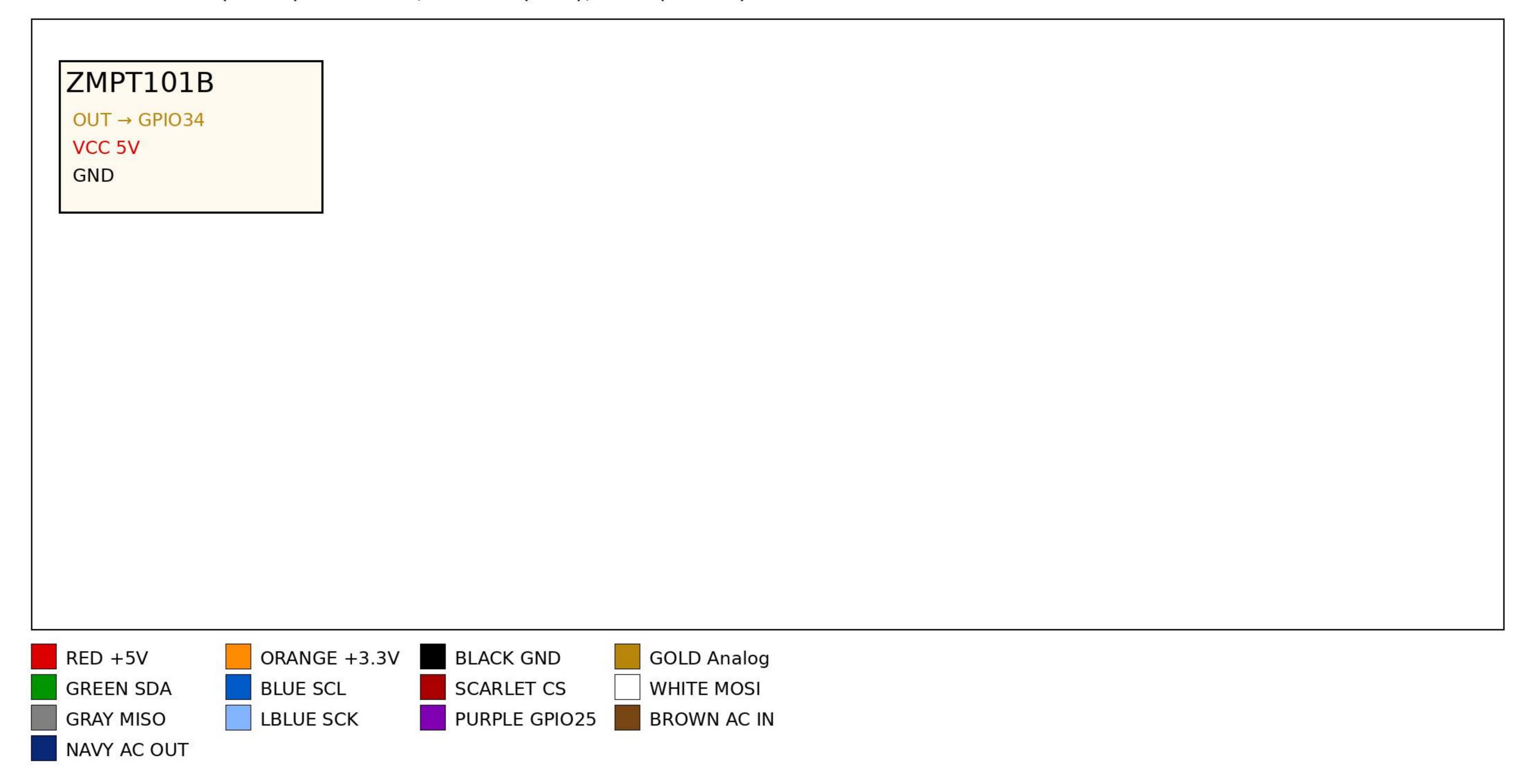
Frame 4
ACS758: VCC 5V, GND, VOUT → GPIO35 (Analog GOLD).



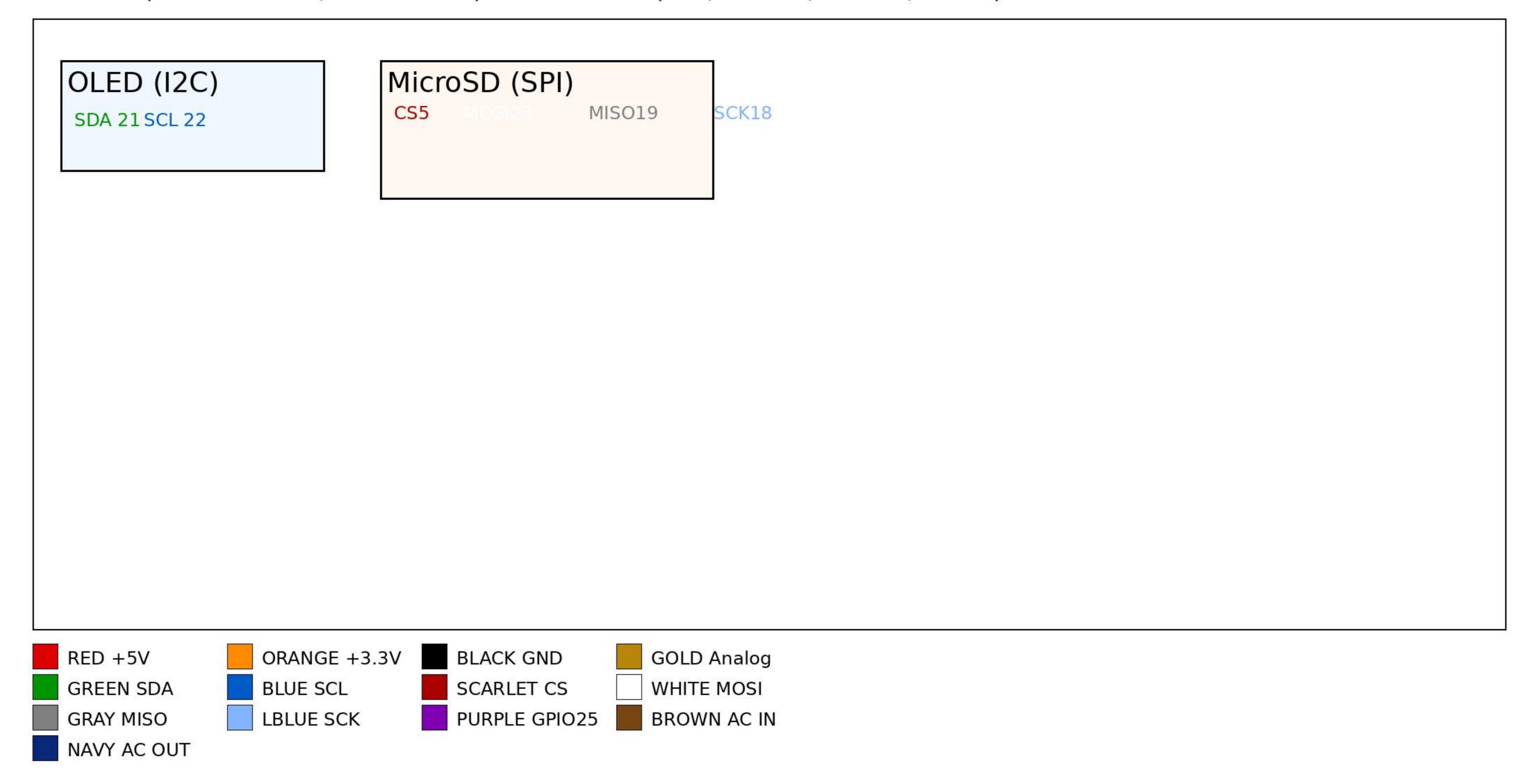
Frame 5
Primary path: AC Line (BROWN) → ACS758 IN; ACS758 OUT (NAVY) → MOT primary.



Frame 6
ZMPT101B: OUT (GOLD) → GPIO34; VCC 5V (RED); GND (BLACK).

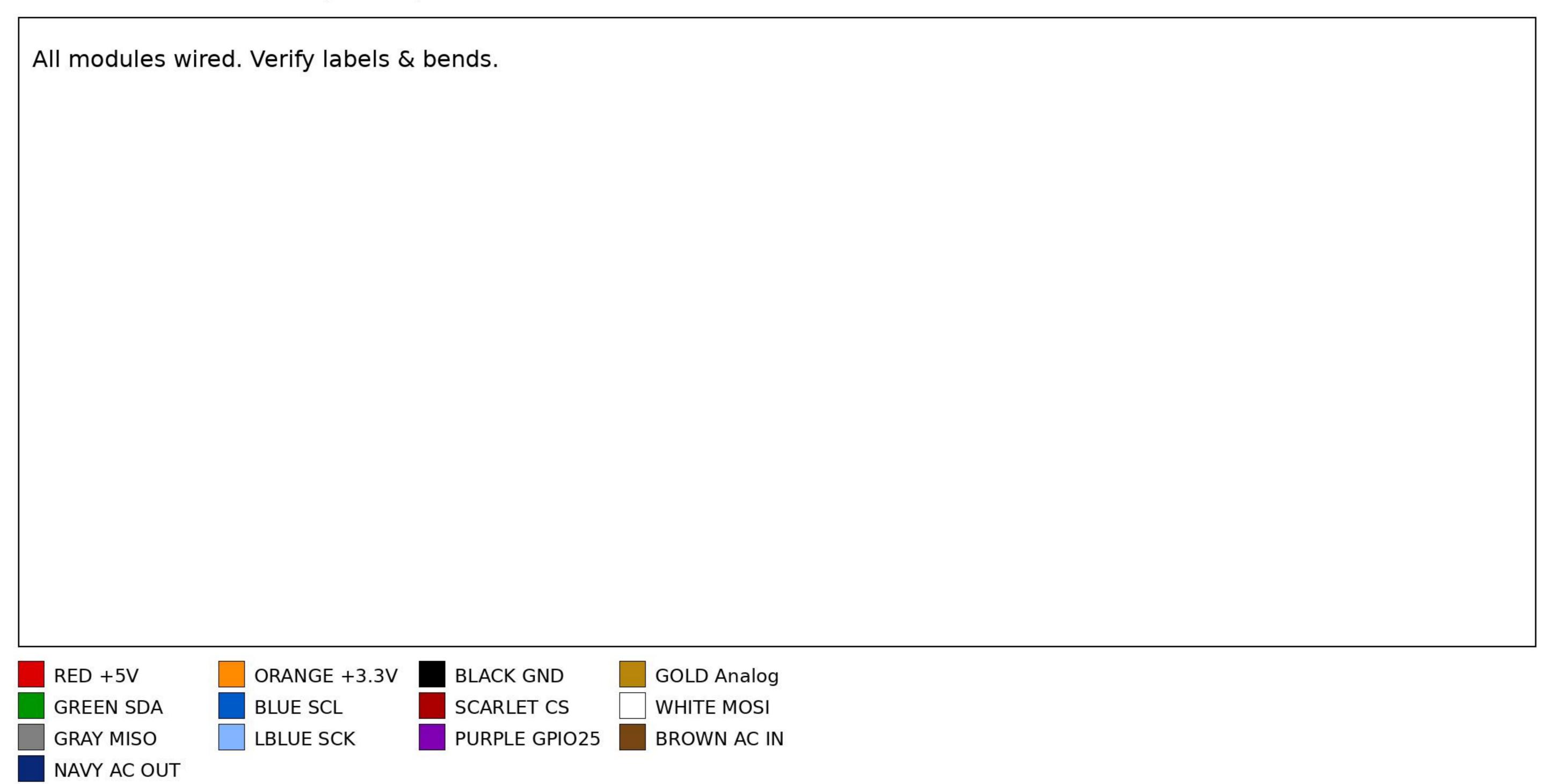


Frame 7
OLED I2C (SDA 21 GREEN, SCL 22 BLUE) + MicroSD SPI (CS5, MOSI23, MISO19, SCK18).



Frame 8

Final harness check: labels, combs, neat bends.



Close-up: pc817_ssr_modes

PC817 + SSR: Sinking vs Source

Sinking (recommended)	Source (alternate)
GPIO25 (PURPLE) → R_LED 270Ω → PC817 IN+ PC817 OUT → SSR IN-, +5V → SSR IN+	GPIO25 (PURPLE) → R_LED 270Ω → PC817 IN+ PC817 OUT+ → SSR IN+, SSR IN- → GND

ACS758 Terminal Close-up (M5, ≥4-6 mm² / 25 mm² shown) IN: BROWN cable with ring lug → tighten M5 (2.5-3.0 Nm) OUT: NAVY cable with ring lug → tighten M5 (2.5-3.0 Nm) Header: VCC 5V (RED), GND (BLACK), VOUT → GPIO35 (GOLD)

Close-up: acs758_terminal_closeup

Close-up: zmpt101b_close	JP	

ZMPT101B Close-up (OUT/VCC/GND + Trim)

OUT → GPIO34 (GOLD)
VCC → 5V (RED)
GND → GND (BLACK)
Trim pot: adjust gain, then lock with paint if needed