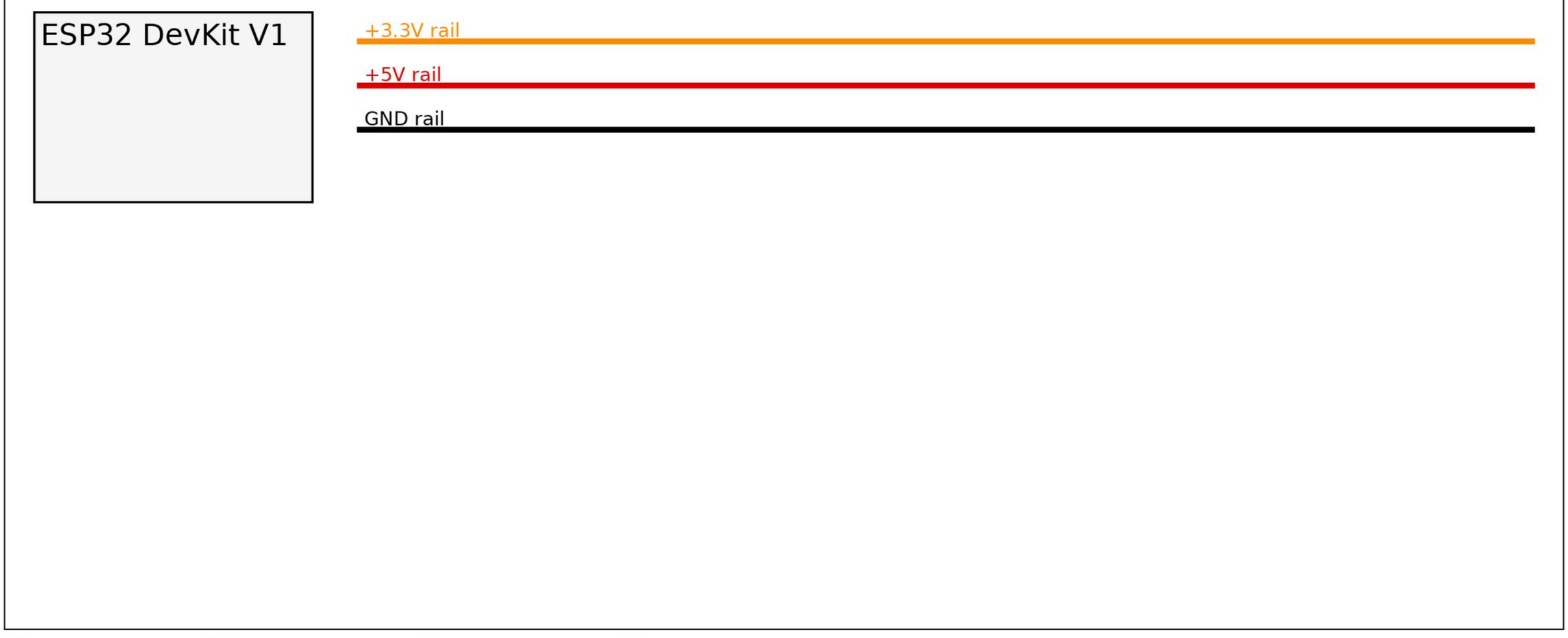
Wiring Storyboard – Frame 1

Frame 1

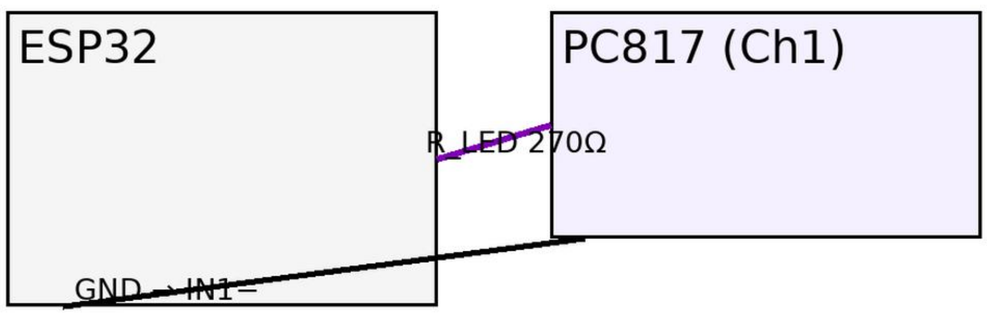
Mount ESP32 on base. Prepare 3.3V/5V/GND rails.



Wiring Storyboard – Frame 2

Frame 2

GPIO25 → R_LED 270Ω → PC817 IN1+; GND → IN1−.

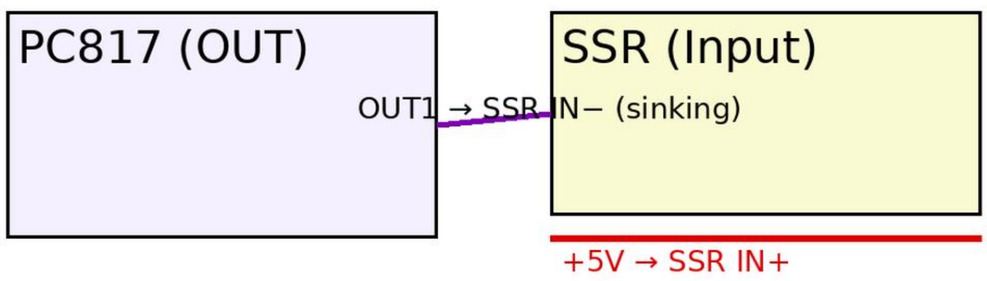


RED +5V
ORANGE +3.3V
BLACK GND
GOLD Analog
GREEN SDA
BLUE SCL
SCARLET CS
WHITE MOSI
GRAY MISO
LBLUE SCK
PURPLE GPIO25
BROWN AC IN
NAVY AC OUT

Wiring Storyboard – Frame 3

Frame 3

PC817 OUT (sinking): OUT1 → SSR IN−; +5V → SSR IN+.

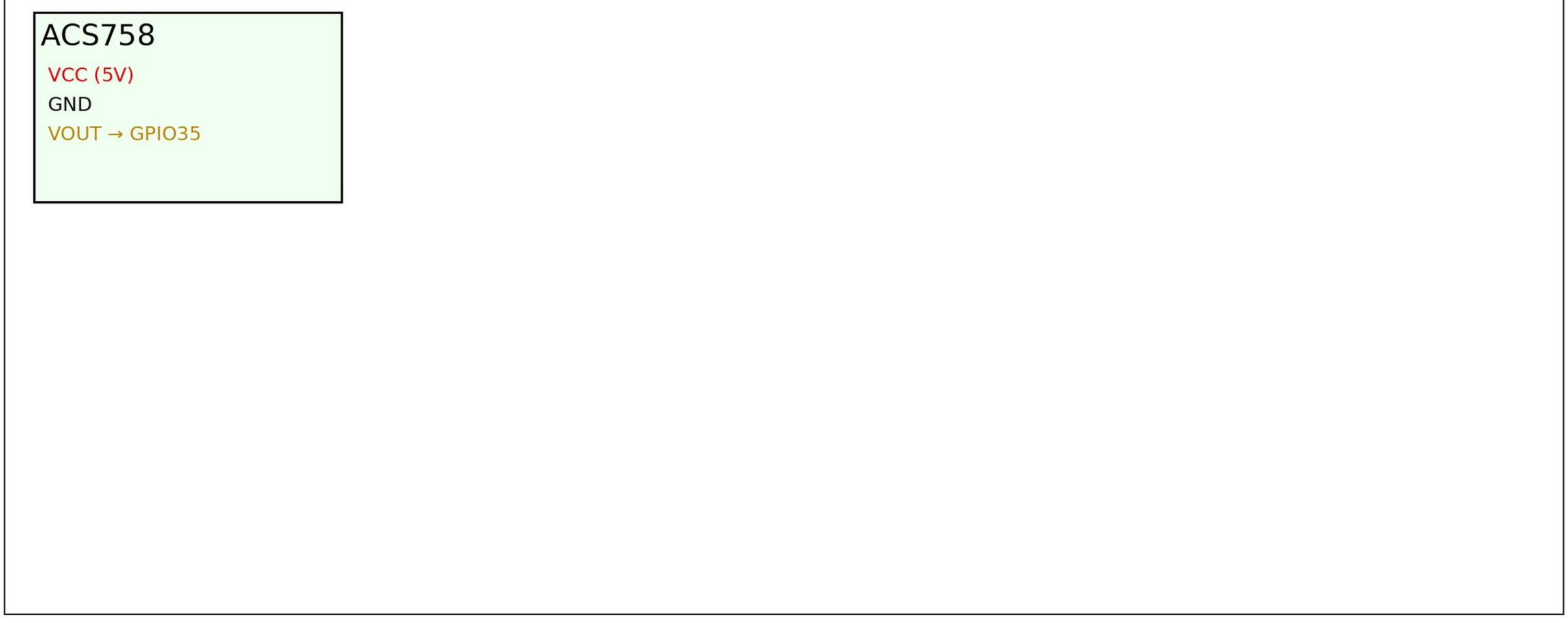


RED +5V
ORANGE +3.3V
BLACK GND
GOLD Analog
GREEN SDA
BLUE SCL
SCARLET CS
WHITE MOSI
GRAY MISO
LBLUE SCK
PURPLE GPIO25
BROWN AC IN
NAVY AC OUT

Wiring Storyboard – Frame 4

Frame 4

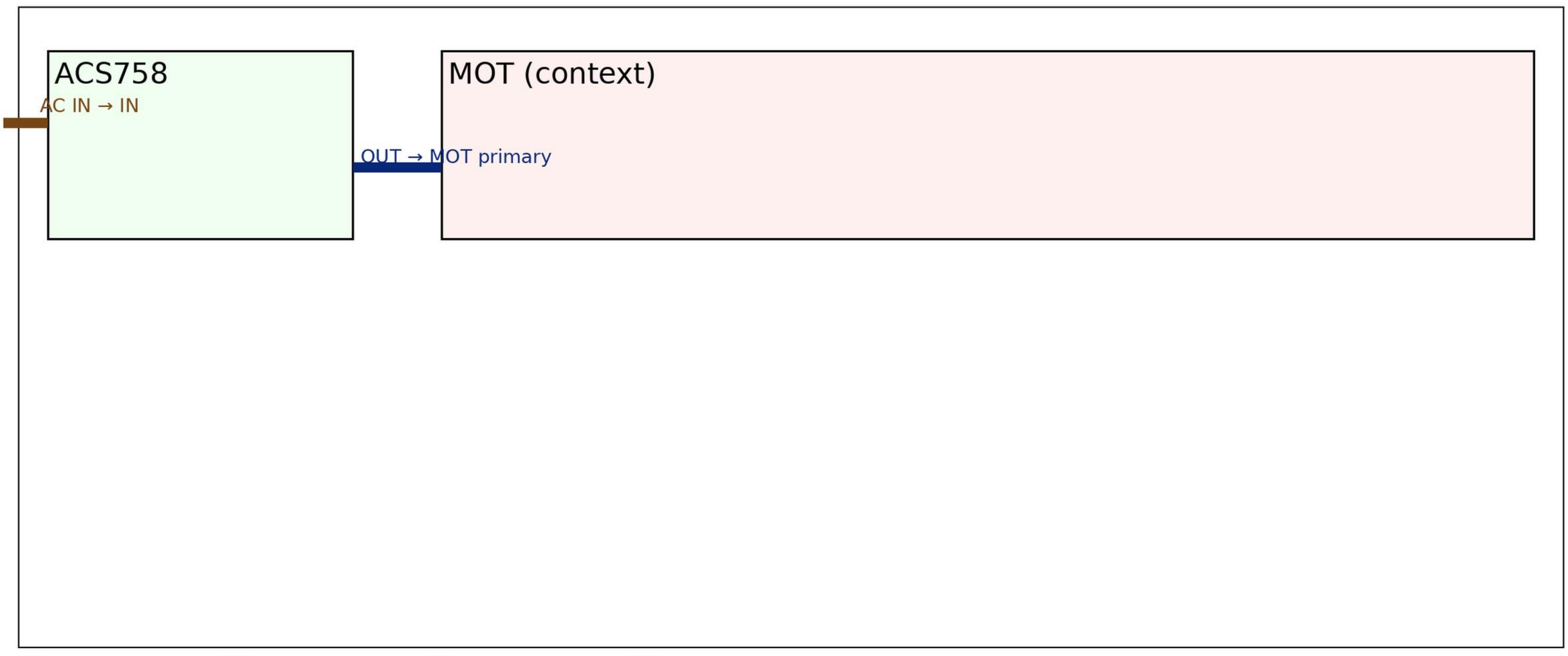
ACS758: VCC 5V, GND, VOUT → GPIO35 (Analog GOLD).



Wiring Storyboard – Frame 5

Frame 5

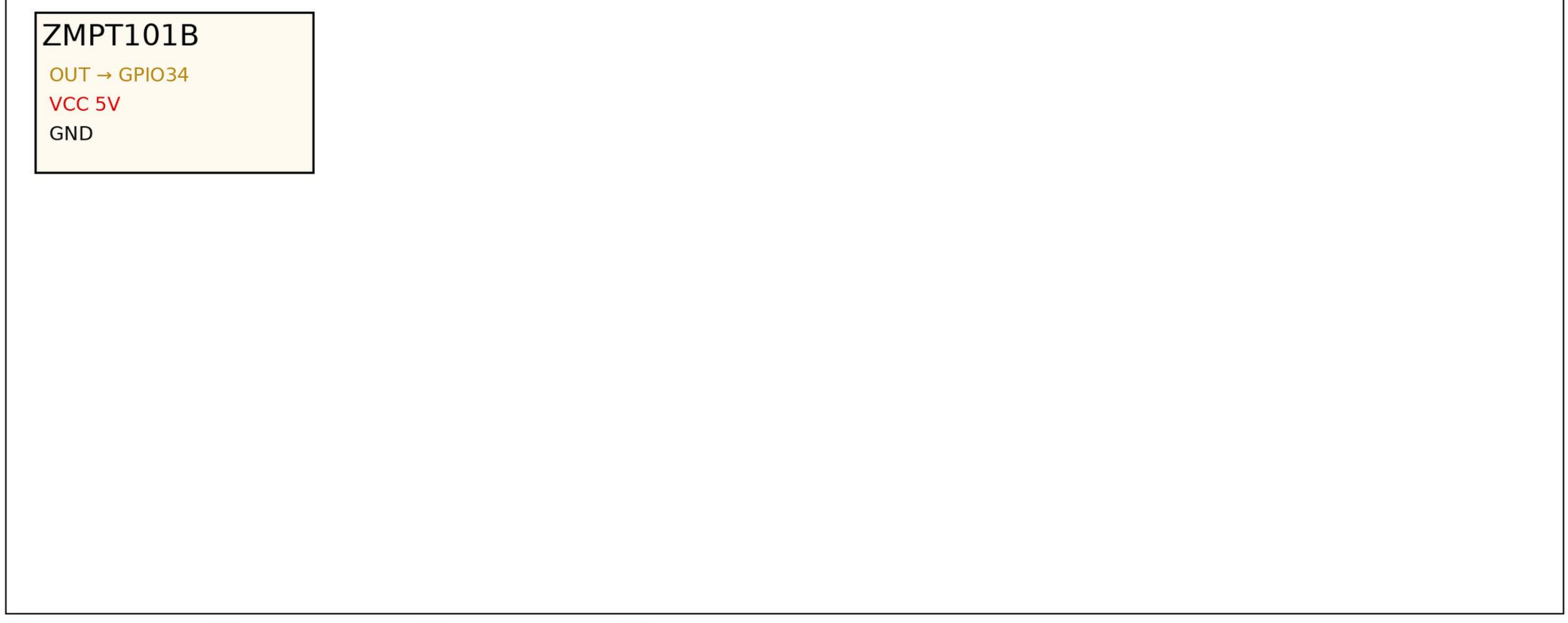
Primary path: AC Line (BROWN) → ACS758 IN; ACS758 OUT (NAVY) → MOT primary.



Wiring Storyboard – Frame 6

Frame 6

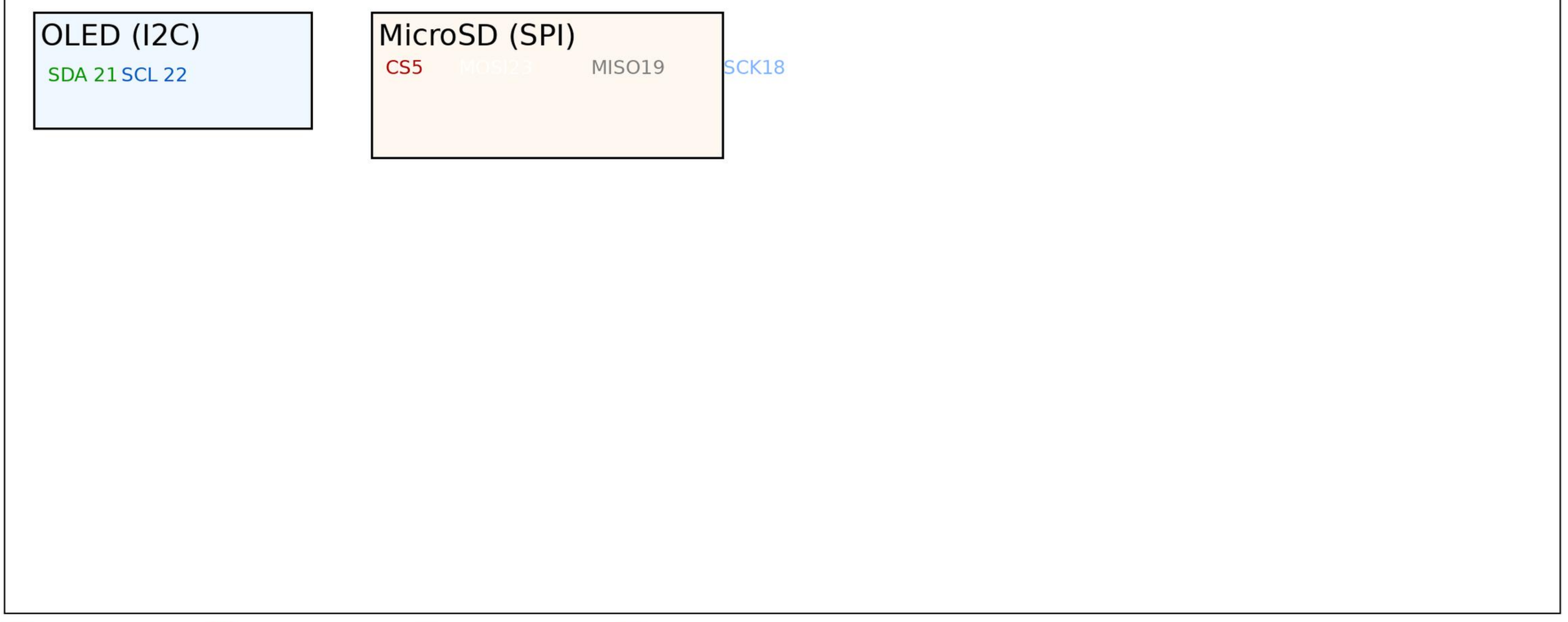
ZMPT101B: OUT (GOLD) → GPIO34; VCC 5V (RED); GND (BLACK).



Wiring Storyboard – Frame 7

Frame 7

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



- RED +5V
- ORANGE +3.3V
- BLACK GND
- GOLD Analog
- GREEN SDA
- BLUE SCL
- SCARLET CS
- WHITE MOSI
- GRAY MISO
- LBLUE SCK
- PURPLE GPIO25
- BROWN AC IN
- NAVY AC OUT

Wiring Storyboard – Frame 8

Frame 8

Final harness check: labels, combs, neat bends.

All modules wired. Verify labels & bends.

- RED +5V
- ORANGE +3.3V
- BLACK GND
- GOLD Analog
- GREEN SDA
- BLUE SCL
- SCARLET CS
- WHITE MOSI
- GRAY MISO
- LBLUE SCK
- PURPLE GPIO25
- BROWN AC IN
- NAVY AC OUT

Close-up: pc817_ssr_modes

PC817 + SSR: Sinking vs Source

Sinking (recommended)

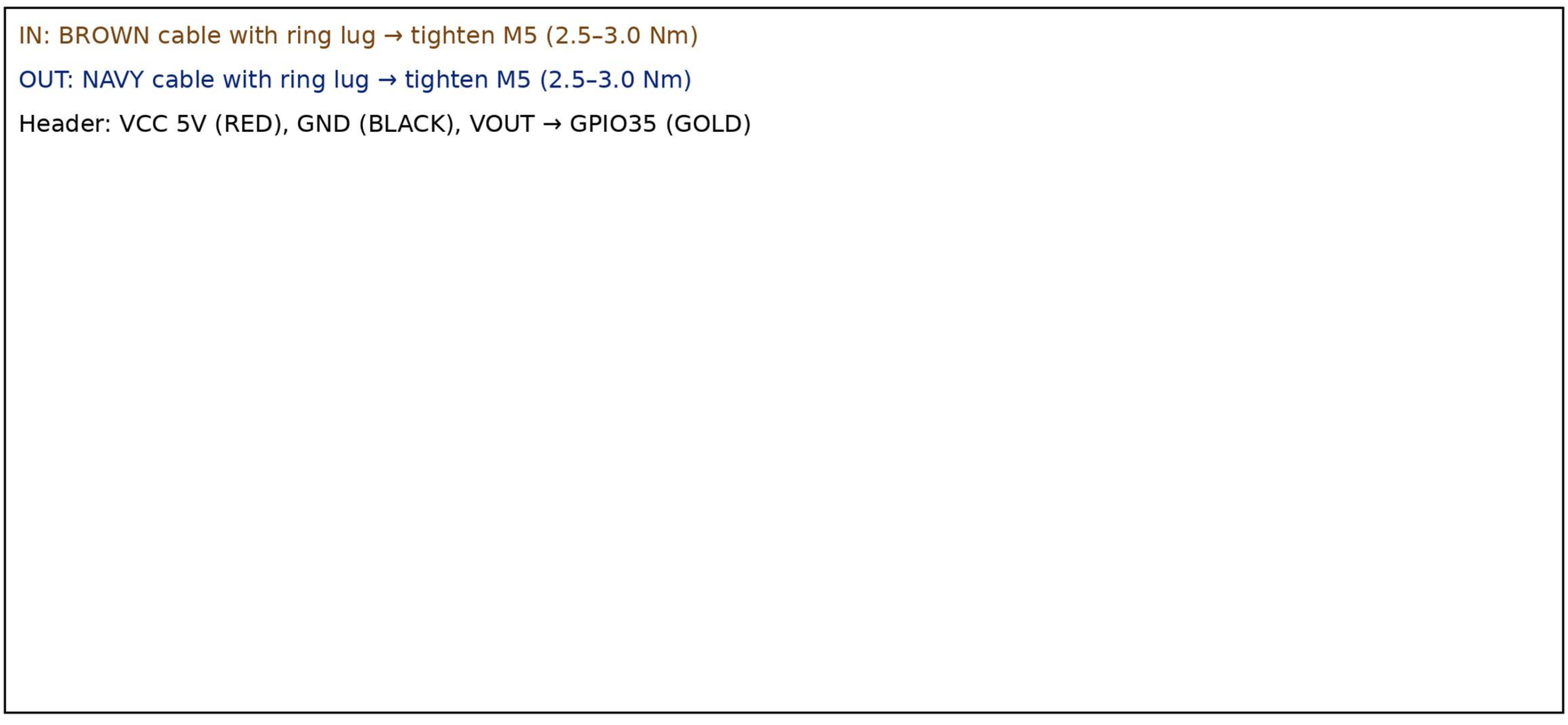
GPIO25 (PURPLE) → R_LED 270Ω → PC817 IN+
PC817 OUT → SSR IN−, +5V → SSR IN+

Source (alternate)

GPIO25 (PURPLE) → R_LED 270Ω → PC817 IN+
PC817 OUT+ → SSR IN+, SSR IN− → GND

Close-up: acs758_terminal_closeup

ACS758 Terminal Close-up (M5, ≥4–6 mm² / 25 mm² shown)



Close-up: zmpt101b_closeup

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