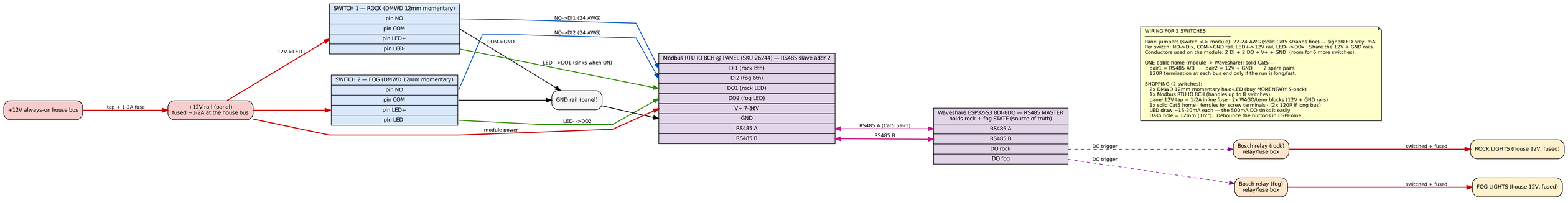
2014 RAM 1500 Carputer — SWITCH PANEL, 2x DMWD 12mm momentary halo-LED buttons (Rock + Fog) on the Modbus IO 8CH
Each switch = 4 pins (NO + COM contact, LED+ + LED-). Contact -> a DI (signal only). LED -> a DO (Waveshare drives it = shows true state).
LED is 12-24V with a BUILT-IN resistor: LED+ to 12V, LED- to DO, NO external resistor. Verify pin polarity with a meter (markings are tiny).
LEGEND: blue = contact->DI · green = LED- ->DO (sink) · red = +12V · black = GND · magenta = RS485 · purple dashed = DO->relay
+12V always-on house bus
tap + 1-2A fuse
+12V rail (panel)
fused ~1-2A at the house bus
12V->LED+
module power
SWITCH 1 — ROCK (DMWD 12mm momentary)
pin NO
pin COM
pin LED+
pin LED-
SWITCH 2 — FOG (DMWD 12mm momentary)
pin NO
pin COM
pin LED+
pin LED-
NO->DI1 (24 AWG)
NO->DI2 (24 AWG)
COM->GND
LED- ->DO1 (sinks when ON)
LED- ->DO2
GND rail (panel)
Modbus RTU IO 8CH @ PANEL (SKU 26244) — RS485 slave addr 2
DI1 (rock btn)
DI2 (fog btn)
DO1 (rock LED)
DO2 (fog LED)
V+ 7-36V
GND
RS485 A
RS485 B
RS485 A (Cat5 pair1)
RS485 B
Waveshare ESP32-S3 8DI-8DO — RS485 MASTER
holds rock + fog STATE (source of truth)
RS485 A
RS485 B
DO rock
DO fog
DO trigger
DO trigger
Bosch relay (rock)
relay/fuse box
Bosch relay (fog)
relay/fuse box
switched + fused
switched + fused
ROCK LIGHTS (house 12V, fused)
FOG LIGHTS (house 12V, fused)
WIRING FOR 2 SWITCHES
Panel jumpers (switch <-> module): 22-24 AWG (solid Cat5 strands fine) — signal/LED only, mA.
Per switch: NO->DIx, COM->GND rail, LED+->12V rail, LED- ->DOx. Share the 12V + GND rails.
Conductors used on the module: 2 DI + 2 DO + V+ + GND (room for 6 more switches).
ONE cable home (module -> Waveshare): solid Cat5 —
pair1 = RS485 A/B · pair2 = 12V + GND · 2 spare pairs.
120R termination at each bus end only if the run is long/fast.
SHOPPING (2 switches):
2x DMWD 12mm momentary halo-LED (buy MOMENTARY 5-pack)
1x Modbus RTU IO 8CH (handles up to 8 switches)
panel 12V tap + 1-2A inline fuse · 2x WAGO/term blocks (12V + GND rails)
1x solid Cat5 home · ferrules for screw terminals · (2x 120R if long bus)
LED draw ~15-20mA each — the 500mA DO sinks it easily.
Dash hole = 12mm (1/2"). Debounce the buttons in ESPHome.