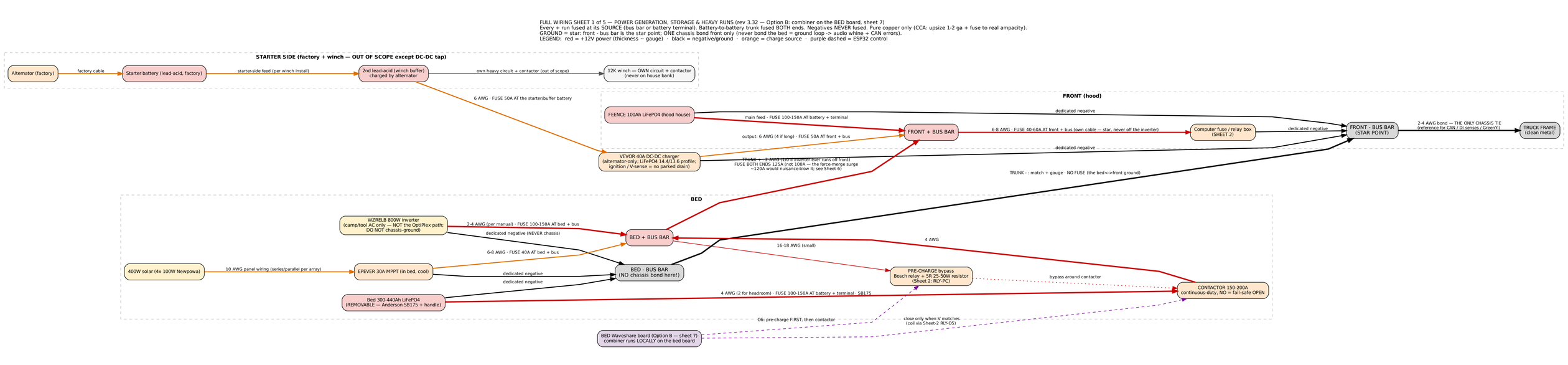
FULL WIRING SHEET 1 of 5 — POWER GENERATION, STORAGE & HEAVY RUNS (rev 3.32 — Option B: combiner on the BED board, sheet 7)
Every + run fused at its SOURCE (bus bar or battery terminal). Battery-to-battery trunk fused BOTH ends. Negatives NEVER fused. Pure copper only (CCA: upsize 1-2 ga + fuse to real ampacity).
GROUND = star: front - bus bar is the star point; ONE chassis bond front only (never bond the bed = ground loop -> audio whine + CAN errors).
LEGEND: red = +12V power (thickness ~ gauge) · black = negative/ground · orange = charge source · purple dashed = ESP32 control
STARTER SIDE (factory + winch — OUT OF SCOPE except DC-DC tap)
Alternator (factory)
factory cable
Starter battery (lead-acid, factory)
starter-side feed (per winch install)
2nd lead-acid (winch buffer) charged by alternator
own heavy circuit + contactor (out of scope)
12K winch — OWN circuit + contactor (never on house bank)
6 AWG · FUSE 50A AT the starter/buffer battery
FRONT (hood)
FEENCE 100Ah LiFePO4 (hood house)
main feed · FUSE 100-150A AT battery + terminal
dedicated negative
FRONT + BUS BAR
6-8 AWG · FUSE 40-60A AT front + bus (own cable — star, never off the inverter)
Computer fuse / relay box (SHEET 2)
dedicated negative
FRONT - BUS BAR (STAR POINT)
2-4 AWG bond — THE ONLY CHASSIS TIE (reference for CAN / DI senses / GreenYI)
TRUCK FRAME (clean metal)
output: 6 AWG (4 if long) · FUSE 50A AT front + bus
VEVOR 40A DC-DC charger (alternator-only; LiFePO4 14.4/13.6 profile; ignition / V-sense = no parked drain)
dedicated negative
TRUNK + : 2 AWG (120 if inverter ever runs off front)
FUSE BOTH ENDS 125A (not 100A — the force-merge surge ~120A would nuisance-blow it; see Sheet 6)
TRUNK - : match + gauge · NO FUSE (the bed<->front ground)
BED
WZRELB 800W inverter (camp/tool AC only — NOT the OptiPlex path; DO NOT chassis-ground)
2-4 AWG (per manual) · FUSE 100-150A AT bed + bus
dedicated negative (NEVER chassis)
BED + BUS BAR
16-18 AWG (small)
4 AWG
400W solar (4x 100W Newpowa)
10 AWG panel wiring (series/parallel per array)
EPEVER 30A MPPT (in bed, cool)
6-8 AWG · FUSE 40A AT bed + bus
dedicated negative
dedicated negative
BED - BUS BAR (NO chassis bond here!)
PRE-CHARGE bypass Bosch relay + 5R 25-50W resistor (Sheet 2: RLY-PC)
bypass around contactor
CONTACTOR 150-200A continuous-duty, NO = fail-safe OPEN
Bed 300-440Ah LiFePO4 (REMOVABLE — Anderson SB175 + handle)
4 AWG (2 for headroom) · FUSE 100-150A AT battery + terminal - SB175
O6: pre-charge FIRST; then contactor
close only when-V matches (coil via Sheet-2 RLY-O5)
BED Waveshare board (Option B — sheet 7) combiner runs LOCALLY on the bed board