NETWORK SWITCH BOX · PARTS

Boat 1 · A6a · v10.5 · aluminum 11.8 x 8.3 x 3.9 in, glued to the hull at the stern; R to X on the surge board

A



Box, CXCESNS cast aluminum
11.8 x 8.3 x 3.9 in, IP66. Back face glued to the hull
1 · have

B



Switch, Teltonika TSW202
5.2 x 4.81 x 1.74 in. 8 PoE ports, 2 SFP. DIN clip
1 · have

C



Supply, Mean Well DDR-120B-48
24 V in, 54.0 V out, trimmer sealed. On the switch's rail
1 · have

D



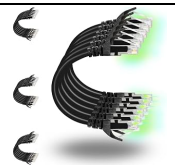
SFP module, 10GTEK SFP-T
In SFP port 9, for Starlink. Data only
1 · have

E



Bulkhead jacks, Alrhso IP67 RJ45
Hole about 7/8 in (check the part)
9 · have

F



Patch cords, 6 in and 1 ft
Premade Cat6, jack to switch port
9 · have

G

right-angle RJ45

Right-angle plugs or adapters
At the switch, where a straight plug cannot turn. Which way: open
up to 9 · pick

H



DIN rail, one piece
About 8 in, level on the top long wall: switch, supply, blocks
1 · have

I



Line 6 blocks, DIN screw
Block 1 (+), block 2 (–), end plate, 2 end stops
2 · have (kit)

J



Gland PG9, nylon
Hole 10. 5/8 in, sealant filled
1 · count the stock

K

flat red and black duplex

16/2 duplex tinned, line 6
The 24 V feed; an offcut makes the jumpers
the run · have

L



Self-fusing tape, XFasten
Over each jack's outside face and plug
1 roll · have

M



Dielectric grease
Thin smear on each plug outside. Never NO-OX-ID
1 tube · have

N

small sealant tube

Berkland 4000 UV sealant
Fills the PG9 round the oval 16/2
a little · check shelf

O

small crimp sleeves

Ferrules 16 AWG, labels
A ferrule on each core under a screw
about 8 · have (kit)

P

epoxy and gray grit

Heat bed: West, #120 grit
Glues the back face to the hull; beds the rail
1 batch · have

Q

short stainless screws

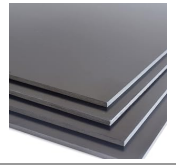
Rail screws, 316
In blind tapped holes, not through the wall
about 4 · pick

R



Surge protectors, ETH-SP-G2
On the surge board. 2 ports and a ground tab underneath
5 · have

S



The surge board
About 16 x 7 in, G10 or sealed ply. Bulkhead not picked
1 · pick

T

small tinned bar

Tinned bus bar, small
Five screws and a stud. About 3 x 1 in (a guess)
1 · pick

U

green wire, ring lugs

Drains: 16 AWG green, lugs, M5
One per protector, 16 in or shorter (maker)
5 sets · pick

V

green 6 AWG cable

6 AWG green tinned lead
Bar to the lightning copper, a foot or two at most
1 · check shelf

W

black outdoor cable

Outdoor Cat6, premade
Post cameras, fisheye, Starlink to their protectors
4 · measure; 5 on hand

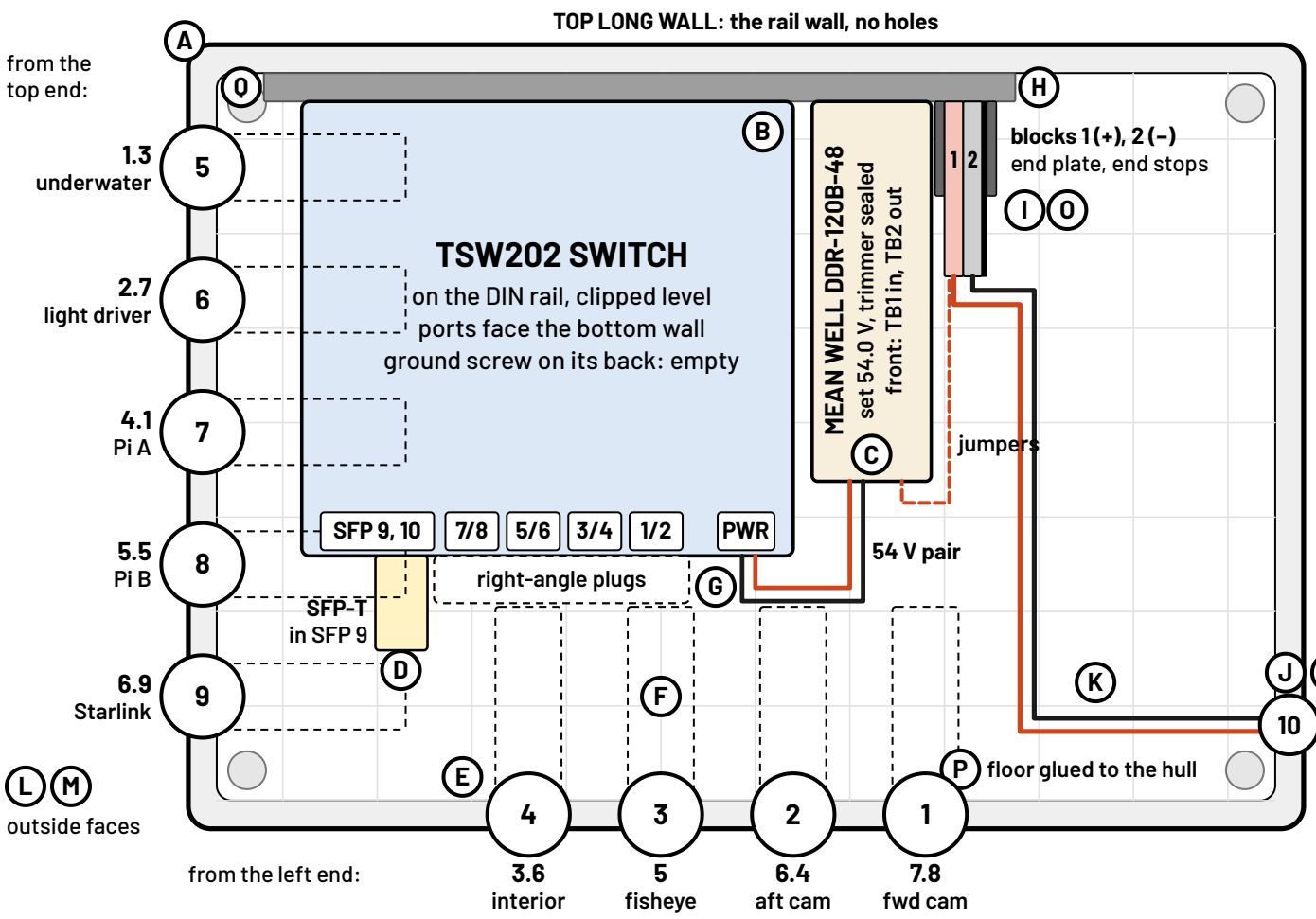
X

network cable

Indoor Cat6, premade
Protectors to jacks 1-4, 9; runs to jacks 5-8
9 · measure, then buy

NETWORK SWITCH BOX · LAYOUT

lid off, looking at the back face · about to scale, 1 grid square = 1 in · one rail, as A6a

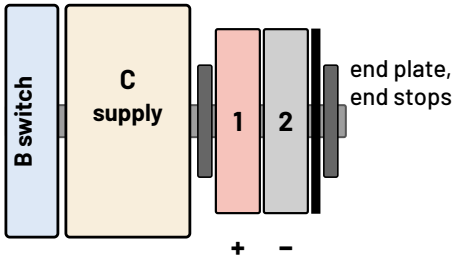


ONE DIN RAIL, LEVEL

On the top long wall, about 8 in long: the switch, the supply, then the two line 6 blocks (A6a). Screws in blind tapped holes, rail bedded in the grit epoxy (Claude's pick).

RAIL, RIGHT END

from the front, not to scale



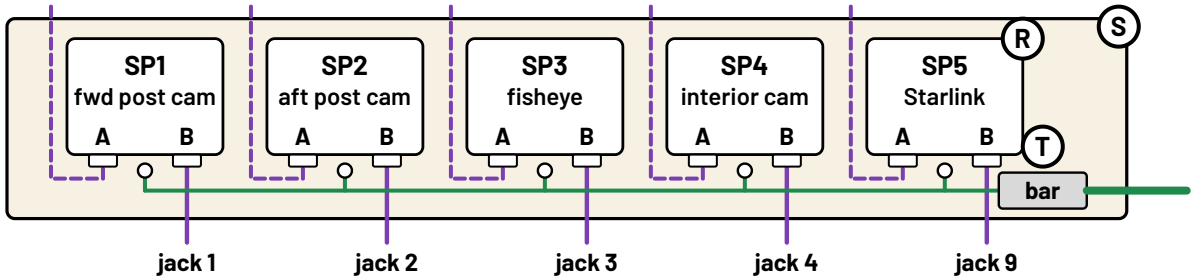
Block 1 (+), block 2 (–): line 6 in, jumpers out to the supply's TB1.

HOLES

All 2.4 in up from the back face (a guess). Jacks about 7/8 in, PG9 5/8 in. Not drilled: 11, 12, 13. Nothing in the top wall or the lid. Dashed at the walls: each jack's inside body and plug, high near the lid. Letters = page 1.

SURGE BOARD, NEAR THE DECK

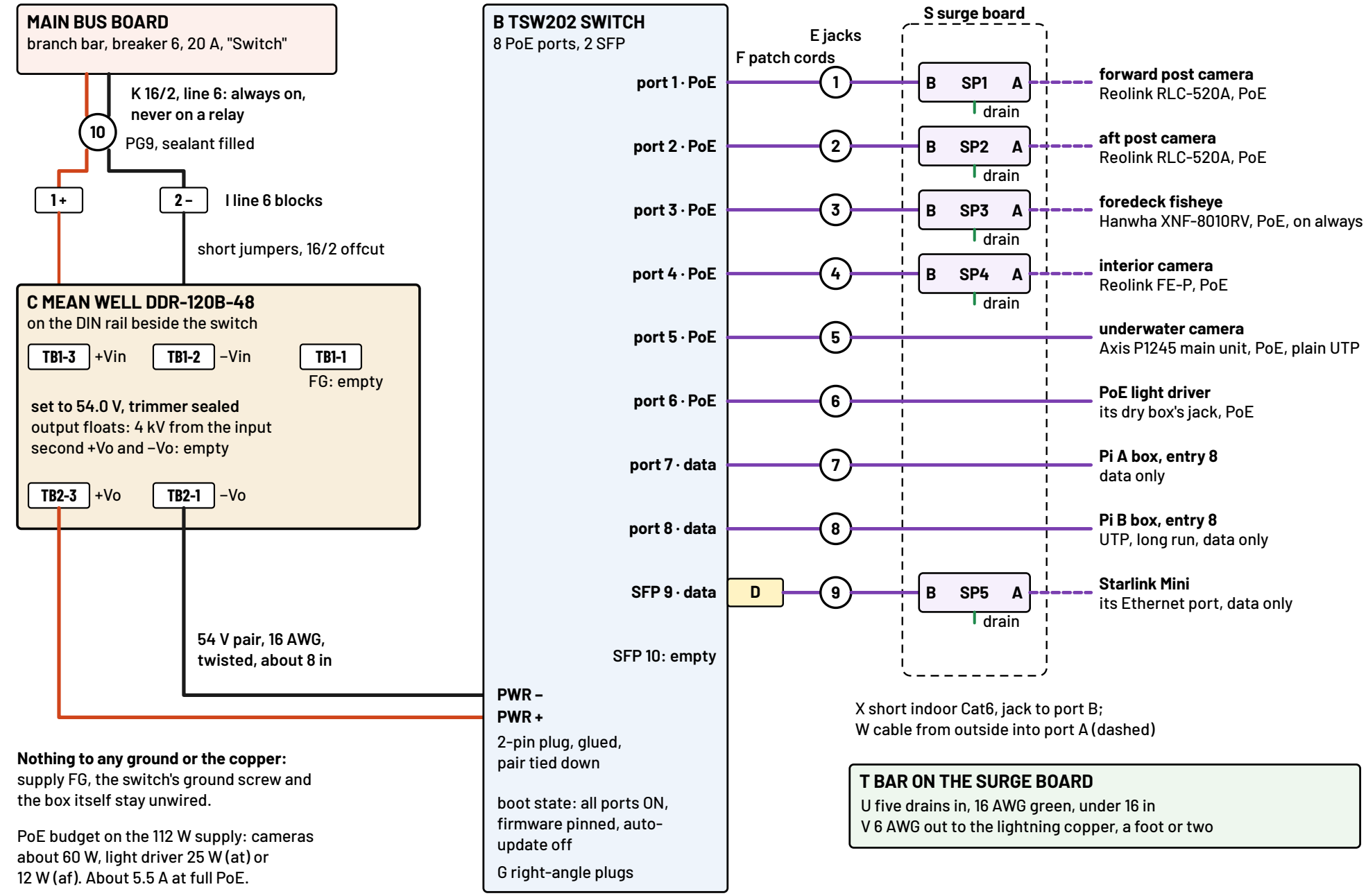
not in this box · face view, not to scale · board, bar and bulkhead not picked



- **R** ports down. Port A from outside, port B to this box (Claude's pick, all five)
- **W** dashed: cable from outside (SP4: indoor)
- **X** solid: short indoor Cat6 to the jacks
- **U** 16 AWG green drains, under 16 in, M5 screw and serrated washer at each tab
- **V** 6 AWG green to the lightning copper, short and straight, a foot or two at most

NETWORK SWITCH BOX · WIRING

how it connects · boxes = blocks and supply pins, circles = holes · not to scale



Nothing to any ground or the copper: supply FG, the switch's ground screw and the box itself stay unwired.

PoE budget on the 112 W supply: cameras about 60 W, light driver 25 W (at) or 12 W (af). About 5.5 A at full PoE.

24 V, 54 V · 0 V · network cable · surge drain · dashed purple = cable from outside, before the protector

NETWORK SWITCH BOX · EVERY WIRE

blocks and holes numbered as on pages 2 and 3

LINE 6 BLOCKS, ON THE RAIL

Beside the supply, on the switch's rail. Ferrule on every core.

Block	Job	Wires
1	+24 V in	in: gland 10 red (P1). out: jumper to supply TB1-3 +Vin (P3)
2	0 V	in: gland 10 black (P2). out: jumper to TB1-2 –Vin (P4)

SUPPLY C, DDR-120B-48

Pin	Job	Wire
TB1-1	FG	empty: the box is wired to nothing
TB1-2	–Vin	from block 2 (P4), 16 AWG black, about 3 in
TB1-3	+Vin	from block 1 (P3), 16 AWG red, about 3 in
TB2-1	–Vo	to switch PWR – (P6), 16 AWG black, about 8 in
TB2-3	+Vo	to switch PWR + (P5), 16 AWG red, about 8 in, twisted with P6
others		the second –Vo and +Vo: empty

SWITCH B, TSW202

Where	What
PWR +, –	2-pin plug: P5 and P6. Plug glued in, pair strain-relieved. No loose barrel plug
ground screw	empty (on its back)
ports 1-8	patch cords N1 to N8 to jacks 1 to 8, right-angle at the switch, tied within 2 in of each plug
SFP 9	SFP-T module (upper cage, marked 1), patch cord N9 to jack 9
SFP 10	empty

WIRE AND ENDS

16 AWG inside: the 16/2 cores and offcut jumpers, ferrules on. 16/2 colors drawn red (+) and black (–): read the roll. Every network cable premade, none crimped on the boat. Label both ends. Tie each patch cord down within about 2 in of each plug. No coils in the box.

HOLES, BY NUMBER

All 2.4 in up from the back face (a guess). Bottom wall from the left end, end walls from the top end. Not drilled: 11 (no ground lead), 12 (SFP 10), 13.

Hole	Wall, in	Inside	Outside cable, far end
1	bottom 7.8	port 1, 1 ft	short indoor Cat6 (S6) from SP1 port B. Fwd post camera, PoE
2	bottom 6.4	port 2, 1 ft	S7 from SP2 port B. Aft post camera, PoE
3	bottom 5	port 3, 6 in or 1 ft	S8 from SP3 port B. Fisheye, PoE, on always
4	bottom 3.6	port 4, 6 in or 1 ft	S9 from SP4 port B. Interior camera, PoE
5	left 1.3	port 5, 1 ft	plain UTP from the Axis main unit. No protector; shield broken at the camera end
6	left 2.7	port 6, 1 ft	Cat6 to the light driver's dry box. No protector. PoE
7	left 4.1	port 7, 1 ft	Cat6 to Pi A box entry 8. Data
8	left 5.5	port 8, 1 ft	UTP, long run, to Pi B box entry 8. Data
9	left 6.9	SFP-T, 1 ft	S10 from SP5 port B. Starlink. Data
10	right 7.2	PG9	16/2 line 6: red → block 1 in, black → block 2 in

AT EACH JACK, OUTSIDE FACE

A thin smear of grease on the plug, plug in, then self-fusing tape stretched to twice its length, half-overlapped, from the jack's threads over the plug and 1 to 2 in down the cable. Drip loop below. Inside faces: no tape.

SURGE BOARD, NEAR THE DECK

Unit	Port A, from outside	Port B to	Drain
SP1	fwd post camera, outdoor Cat6 (S1)	jack 1 (S6)	G1 → bar screw 1
SP2	aft post camera, outdoor Cat6 (S2)	jack 2 (S7)	G2 → screw 2
SP3	fisheye, outdoor Cat6 (S3)	jack 3 (S8)	G3 → screw 3
SP4	interior camera, indoor Cat6 (S4)	jack 4 (S9)	G4 → screw 4
SP5	Starlink, outdoor Cat6 (S5)	jack 9 (S10)	G5 → screw 5
bar	stud: 6 AWG green tinned (G6) to the lightning copper		

Drains: 16 AWG green tinned, under 16 in (maker's limit), ring lugs, an M5 316 screw and nut with the maker's serrated washer at each tab. 6 AWG lead: heavy-wall tinned lugs, glue-lined heat-shrink; at the copper a 1/4 in silicon-bronze bolt, bright metal, paste, then tape. Coil spare near this board in 8 in coils, the outside side apart from the switch side.

BEFORE WIRING

Supply: set to exactly 54.0 V, then seal the trimmer with paint. Switch: the five bench checks of Build Guide 11.1, then pin that firmware, auto-update off, boot state all ports ON. Push the SFP-T module into SFP 9. Read off the switch which way the right-angle plugs must point before ordering them.

STILL OPEN

Right-angle plug direction. Which bulkhead takes the surge board; board, bar and 6 AWG lead not picked. Conformal coat on the switch. Firmware to pin (Pending 88). Whether the outdoor Cat6 on hand is shielded (Pending 367).