WING BOX · PARTS

Boat 1 · A17 · v10.5 · below the deck where the wing's wires enter the hull · a fuse or a surge part on every slip ring wire

A



Box, TICONN IP67 ABS, 5.9 x 5.9 x 3.5 in, with plate
Amazon B0B87THLGC, $19.99
1 · buy

B



Surge parts, Taidacent RS-12V/2S
M1 compass, M2 tip meter, M3 actuator CAN
3 · have

C



Surge diode 1.5KE33CA
Across the ring's 24 V, after the fuse
1 · have; check the bag

D



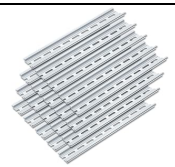
5 A blade fuse, sealed inline holder
The box's own fuse. Holder tied to the plate
1 · have

E



DIN screw terminals UK2.5B
9 blocks, bridge bars, 2 end stops
9 · have

F



DIN rail, 35 mm, about 4.8 in
Cut from an 8 in VAMRONE rail
1 · have

G



Glands: PG9 x4, PG7 x1
All on the bottom wall. Sizes open. No vent
5 · check

H



Ferrite cores, mix 31
One on each hull cable, outside, glued down
3 · have

I

three shielded cables, not picked

Hull cables from the slip ring
Not picked. Must seal in a PG9 at the can wall
3 · not picked

J



Shielded Cat6, about 5 ft, plugs cut off
To the USB hub box. 23 AWG, likely solid
1 · have

K

flat two-core cable

16/2 tinned duplex, line 14
24 V from its 5 A breaker, backup-fed bar
1 · have (roll)

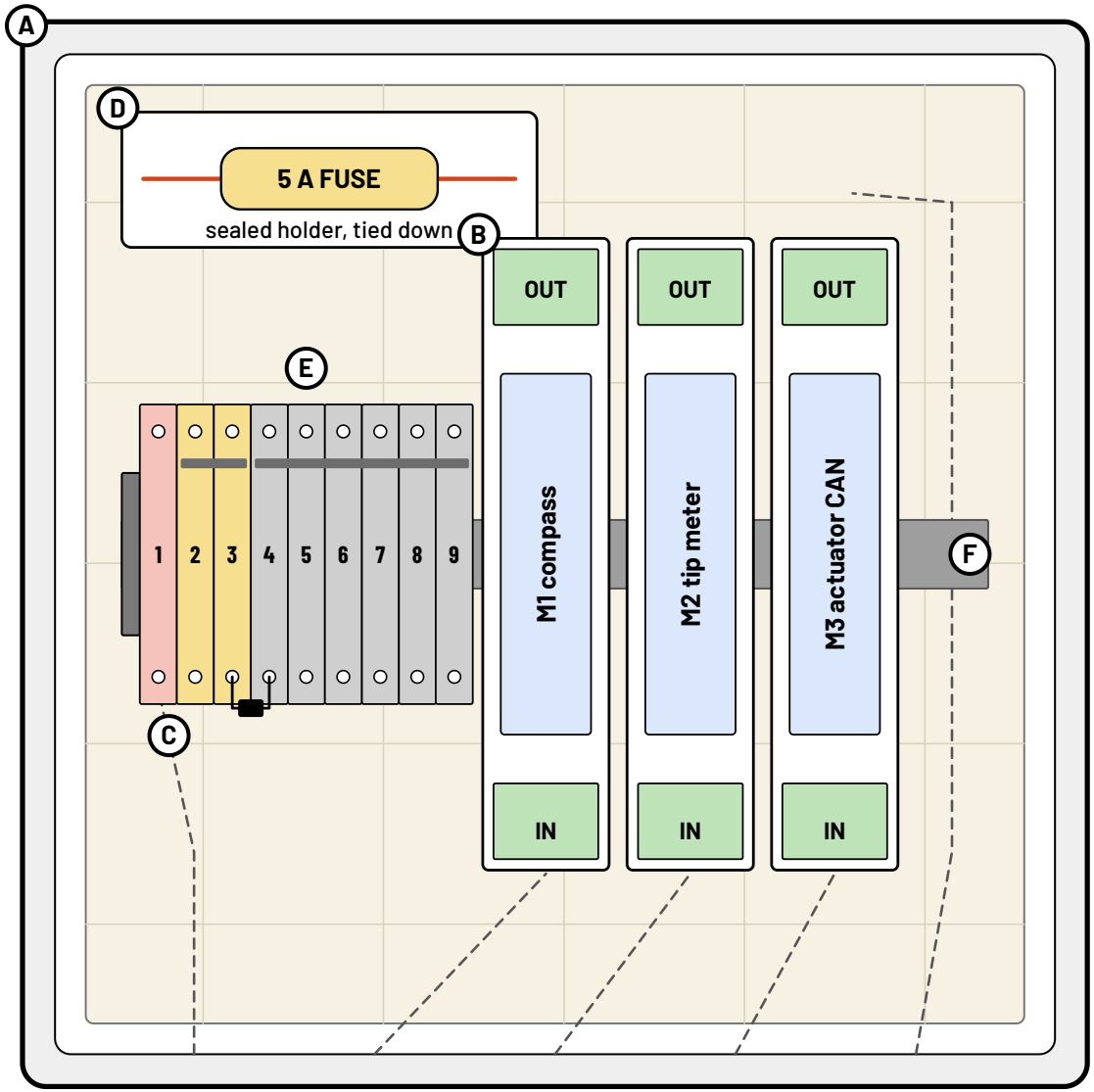
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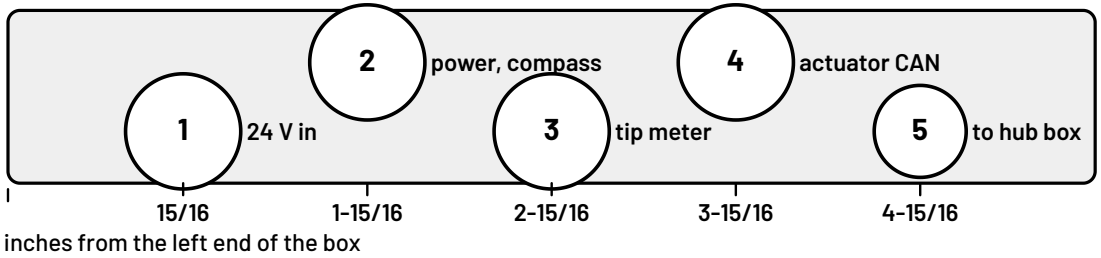
ferrules, heat shrink, sealant

Ferrules, heat shrink, sealant
Berkland 4000 UV in gland 1 (oval 16/2)
1 · have (kits)

WING BOX · LAYOUT

lid off, looking in · about to scale, 1 grid square = 1 in · parts where the earlier box plan put them





RAIL, LEFT TO RIGHT

- **1** — 24 V in
- **2-3** — fused 24 V, to ring 1
- **4-9** — ground bar: the 24 V negative
- **M1** — compass pair, from hole 2
- **M2** — tip meter pair, from hole 3
- **M3** — actuator CAN pair, from hole 4

Surge parts B stand IN end down;
their OUT ends take the Cat6.
Gray bar = bridged
Letters = page 1
Dashed = where each cable runs

HOLES, ALL IN THE BOTTOM WALL

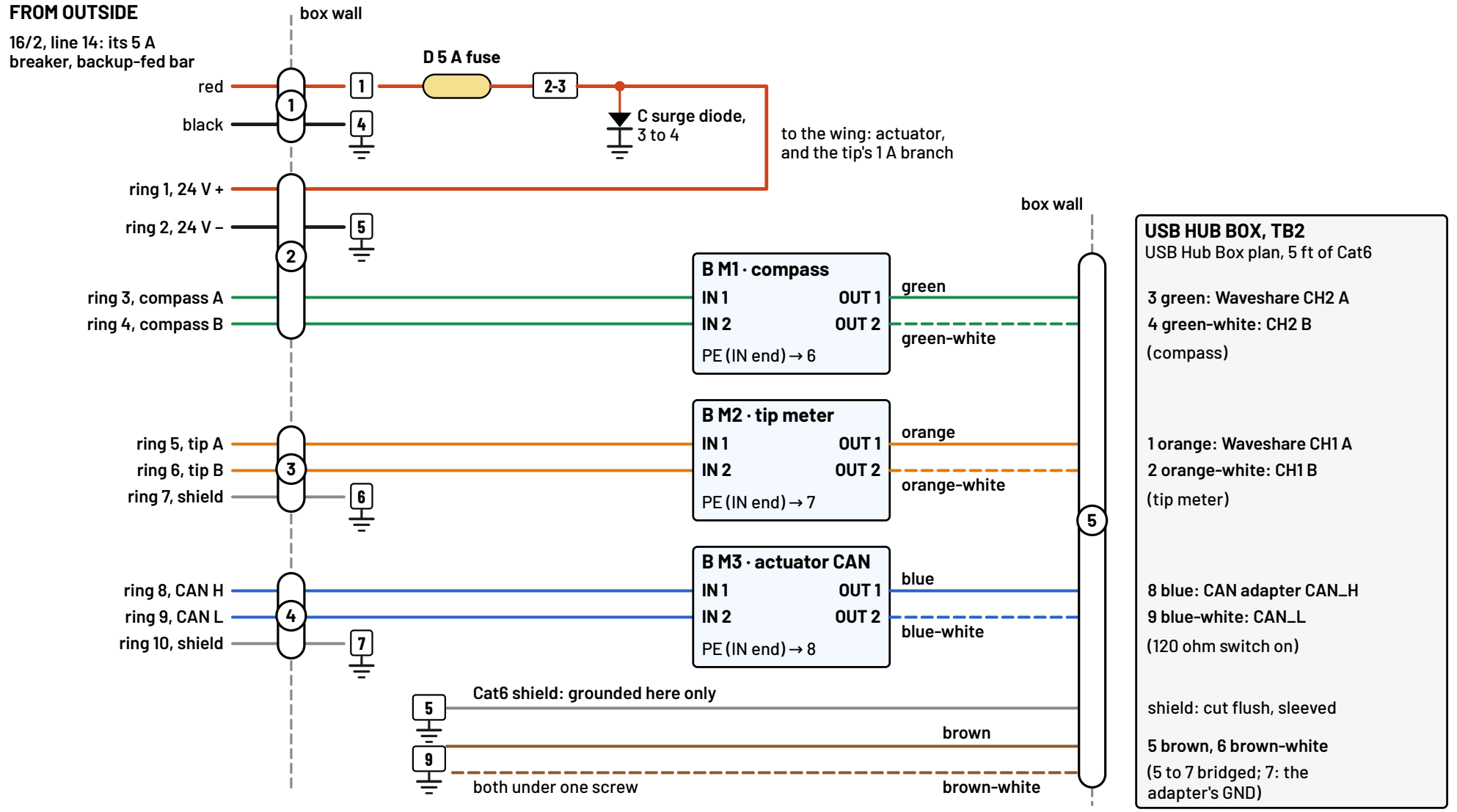
1	24 V in: K, the 16/2	**PG9**
2	hull cable P (I): 24 V, compass	**PG9**
3	hull cable T (I): tip meter	**PG9**
4	hull cable C (I): actuator CAN	**PG9**
5	J, the Cat6, out to the hub box	**PG7**

PG9: 5/8 in hole. PG7: 1/2 in hole. Sizes open:
read each cable against its gland before drilling.
Upper row 2-5/16 in, lower row 1-3/16 in
up from the back. Keep clear of the lid flange.
H: a ferrite on each hull cable, just below its
gland, outside the box, glued down.

Guesses: the plate size and the surge parts'
width; that they fit is not checked. If they do
not, the next size up of the same box (A17).

WING BOX · WIRING

how it connects · numbers in boxes = rail blocks, numbers in circles = glands · not to scale



GROUND BAR: BLOCKS 4 TO 9, BRIDGED = THE 24 V NEGATIVE

4: 16/2 black, diode · 5: ring 2, Cat6 shield · 6: M1 PE, ring 7 shield
7: M2 PE, ring 10 shield · 8: M3 PE · 9: Cat6 brown pair
Nothing in this box goes to the lightning copper.

WHY THIS BOX

Every slip ring wire gets a fuse or a surge part here,
so a strike on the mast stops in this box. Nothing in it thinks.
The actuator's CAN stays on its own link, off both boat buses.
Hull cable colors are not known until the cables are picked.

24 V · ground · compass pair · tip meter pair · actuator CAN · Cat6 brown · shield · dashed = the white-striped wire of each pair

WING BOX · EVERY WIRE

rail blocks numbered left to right as on page 2

THE RAIL, BLOCK BY BLOCK

b = bottom screw (gland side), t = top screw. One wire per screw, except the Cat6 brown pair on 9t (Box Wiring Sheets v10.5, page 42: both together).

Block	Job	Wires
1	24 V in	b: gland 1 red (16 AWG). t: fuse D in lead
2	fused 24 V, 2-3 bridged	t: fuse D out lead. b: gland 2, ring 1 (24 V + to the wing)
3	fused 24 V	b: surge diode C. t: spare
4	ground bar, 4-9 bridged	b: surge diode C. t: gland 1 black (16 AWG)
5	ground	b: gland 2, ring 2 (24 V –). t: Cat6 shield pigtail, sleeved
6	ground	b: M1 PE lead. t: gland 3 shield (ring 7), sleeved
7	ground	b: M2 PE lead. t: gland 4 shield (ring 10), sleeved
8	ground	b: M3 PE lead. t: spare
9	ground	t: Cat6 brown and brown-white, both bare under one screw. b: spare

OFF THE TERMINALS

Part	Wires
Fuse D	In lead → 1t, out lead → 2t (the holder's own leads). 5 A blade
Diode C	3b to 4b, either way round. Legs in heat shrink
M1 (B)	IN 1 ← gland 2 compass A (ring 3). IN 2 ← compass B (ring 4). PE (IN end) → 6b. OUT 1 → Cat6 green. OUT 2 → green-white
M2 (B)	IN 1 ← gland 3 tip A (ring 5). IN 2 ← tip B (ring 6). PE (IN end) → 7b. OUT 1 → Cat6 orange. OUT 2 → orange-white
M3 (B)	IN 1 ← gland 4 CAN H (ring 8). IN 2 ← CAN L (ring 9). PE (IN end) → 8b. OUT 1 → Cat6 blue. OUT 2 → blue-white
All three	PE screw on the OUT end: empty. Same order both sides: A or CAN H on 1, B or CAN L on 2

CABLES IN, BY GLAND

Hull cables are not picked: their core colors are not known, so each core is named by its slip ring wire. Label every core at both ends.

Gland	Cable	Cores
1	16/2, line 14	red → 1b, black → 4t
2	hull cable P	ring 1 24 V + → 2b. ring 2 24 V – → 5b. ring 3 compass A → M1 IN 1. ring 4 compass B → M1 IN 2
3	hull cable T	ring 5 tip A → M2 IN 1. ring 6 tip B → M2 IN 2. ring 7 shield → 6t
4	hull cable C	ring 8 CAN H → M3 IN 1. ring 9 CAN L → M3 IN 2. ring 10 shield → 7t

GLAND 5: THE CAT6 OUT, CORE BY CORE

Core	Here	Hub box TB2
orange	M2 OUT 1	1: Waveshare CH1 A
orange-white	M2 OUT 2	2: CH1 B
green	M1 OUT 1	3: Waveshare CH2 A
green-white	M1 OUT 2	4: CH2 B
brown	9t	5: Waveshare PE, ch 1
brown-white	9t	6: Waveshare PE, ch 2
blue	M3 OUT 1	8: CAN adapter CAN_H
blue-white	M3 OUT 2	9: CAN adapter CAN_L
shield	5t, pigtail	trimmed flush, sleeved

BEFORE WIRING

Buy the box (Amazon B0B87THLGC). Lay the parts on its plate first; if they do not fit, the next size up of the same box (A17). Rail, left to right: end stop, terminals 1 to 9, M1, M2, M3, end stop, each surge part IN end down. Bridge bars 2 to 3 and 4 to 9. Check the diode bag holds the 1.5KE33CA, not the 1N5408. Line 14 dead: battery switch and backup converter off, or lift the feeder's lug at its breaker.

SETTINGS, NOT IN THIS BOX

RS-485 terminators off at the hub box's reader. The actuator link's two 120 ohm ends: the actuator and the hub box's CAN adapter (switch on). CAN 250 kbps.

WIRE AND ENDS

Feed: the 16/2's own red and black, 16 AWG. Surge part ground leads: short 16 AWG black offcuts of the 16/2 (Claude's pick; not in the guides). Ferrule on every stranded end. The Cat6 is likely solid 23 AWG: bare into the screws, no ferrule, strapped within a few inches of the box. Shields: braid or drain twisted into a short pigtail, sleeved; Cat6 pair foils folded back and trimmed. Diode legs in heat shrink. Gland 1 filled with Berkland 4000 UV (oval 16/2). A ferrite on each hull cable just below its gland, outside, glued down; none on the 16/2 or the Cat6. Drip loop on every cable. Nothing goes to the lightning copper.

STILL OPEN

Which cable each hull cable is, so its colors, size and shield. Each gland's size (drawn PG9 and PG7). Where Pi B's wing CAN adapter joins the actuator link: if here, a sixth hole, not drawn. This box's spot against the lightning copper's 12 in rule. That the parts fit the box.