# A1 PI A BOX

BUY 1 · CHECK SHELF 3 · COMING 1 · COUNT 2 · HAVE 21

The main computer. Inboard aft of the settee, its back glued to the hull below the waterline for cooling. Wired to the lightning copper by its bond stud.



**The box (CXCESNS aluminum)**
Holds Pi A. Its back face is glued to the hull to shed heat.
HAVE **Qty 1** two on hand: mark one Pi A



**Compute module (Raspberry Pi CM5)**
The main computer.
HAVE **Qty 1**



**Carrier board (Geekworm X1500)**
The CM5 plugs into it; two card slots for the drive and the AI card.
HAVE **Qty 1** prove both slots



**4 TB drive (WD Blue SN5000)**
Stores logs, video and sound.
CHECK SHELF **Qty 1** shipped Sep 23



**AI card (Hailo-8L)**
Spots boats in camera pictures.
HAVE **Qty 1**



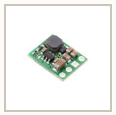
**CAN board (Waveshare 2-CH CAN FD HAT)**
Joins Pi A to both CAN data buses, isolated.
HAVE **Qty 1** terminator jumpers off



**Watchdog WD-A (Arduino Nano Every)**
Restarts Pi A if it hangs; holds the motor kill line.
HAVE **Qty 1**



**WD-A relay (AEDIKO 5 V, 1 channel)**
Cuts Pi A's 24 V to restart it. Off means Pi A on.
HAVE **Qty 1**



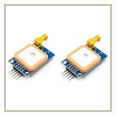
**WD-A 5 V supply (Pololu D36V6F5)**
5 V for the watchdog that the relay never cuts.
HAVE **Qty 1**



**Opto board (HiLetgo PC817, 4 channel)**
Carries the alive line and the motor kill line as light, no wire across.
HAVE **Qty 1**



**Safe-mode resistors, 15k and 22k**
Drop WD-A's 5 V to about 3 V for Pi A pin 37.
HAVE **Qty 2** check the kit has both values



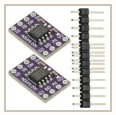
**GPS A (hiBCTR NEO-7M)**
Position.
HAVE **Qty 1**



**GPS lead, SMA wall plug to SMA male**
Takes the GPS coax through the wall to the board.
BUY **Qty 1** the 2-pack covers Pi B too



**Motion sensors A1 and A2 (Adafruit BNO085)**
Boat motion and heading.
CHECK SHELF **Qty 2** shipped Sep 10



**Iridium A isolator (ADuM1201)**
Keeps the Iridium serial line electrically apart.
HAVE **Qty 1** count the bag



**5 V converter (Mean Well DDR-60L-5)**
5 V 12 A for Pi A and the hub's lead. Cannot put 24 V on the Pi.
COMING **Qty 1** due Oct 13 to 15



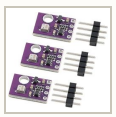
**3 A fuse on the hub's 5 V lead**
Protects the short lead to the USB hub box.
COUNT **Qty 1** about 4 holders short boat wide



**Surge diode (1.5KE33CA)**
Clamps spikes on the 24 V feed.
HAVE **Qty 1**



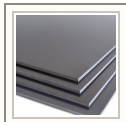
**DIN rail and screw terminals**
Every outside wire lands here first.
HAVE **Qty 1 strip**



**Humidity board (AHT30)**
Reads the air inside the box.
HAVE **Qty 1**



**Desiccant pack**
Dries the air at first setup.
HAVE **Qty 1**



**Board plate, 1/8 in G10**
Everything mounts on it.
HAVE **Qty 1** one sheet makes one plate



**Heat pads (Thermal Grizzly Minus Pad 8)**
Carry CM5 heat to the hull-glued wall.
HAVE **Qty 2**



**Ethernet wall jack (Alrhso)**
Network cable to switch port 7.
HAVE **Qty 1**



**Split gland (Altelix PG25, 4 port)**
Lets two USB leads out with their plugs on.
CHECK SHELF **Qty 1** tracker still says coming



**Cable glands, PG7 x8 and PG9 x1**
Seal each cable where it enters.
COUNT **Qty 9**



**Breather vent**
Lets the box breathe, keeps water out.
HAVE **Qty 1**



**Ferrite on the GPS coax**
Soaks up surge on the one cable from outside.
HAVE **Qty 1**

Also: a 1/4-20 bond stud with a green 6 AWG wire to the lightning copper (6 AWG on hand: count). The INA226 current meter is in the Compute Bay Plan but not on the boat (the three went back); Claude's view: leave it out.

# A1A USB HUB BOX

BUY 2 · PICK FIRST 1 · CHECK SHELF 3 · COUNT 1 · HAVE 7

Beside Pi A. Holds the USB hub and everything that plugs into it, plus the wing's two readers. Two USB leads go to Pi A.

no photo

**The box**
Holds the hub, readers and adapters.
**Looks:** Not picked. The two aluminum boxes on hand are probably too small (a guess).
PICK FIRST **Qty 1**



**USB hub (StarTech USB210AIND)**
10 USB ports, runs off Pi A's 5 V.
**Looks:** Gray DIN-rail block with a row of ports.
HAVE **Qty 1**




**AIS receiver (dAISy 2+)**
Hears ships' AIS signals.
**Looks:** Small board in a case, BNC antenna socket, mini USB.
HAVE **Qty 1**



**AIS antenna jumper, SO-239 to BNC**
Joins the antenna's coax to the dAISy.
**Looks:** 1 ft black coax, a round socket one end, a BNC plug the other.
BUY **Qty 1** Amazon B087Q49GS1, $12.99



**Wing reader (Waveshare USB to 2CH RS485)**
Reads the tip wind meter and the wing compass.
**Looks:** Small DIN-rail case, USB lead, screw terminals.
CHECK SHELF **Qty 1** shipped Oct 7



**Wing CAN adapter (DSD TECH SH-C30G)**
Talks to the wing trim actuator. Its lead goes straight to Pi A.
**Looks:** Small black USB stick with a screw terminal.
HAVE **Qty 1**



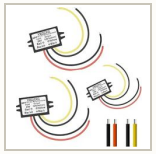
**DO sensor cable (FTDI USB-RS485)**
Reads the oxygen sensor.
**Looks:** USB plug on a 6 ft cable, bare wire end.
HAVE **Qty 1**



**Sea-Bird cable (FTDI USB-RS232, 0 V)**
Reads the SBE 45.
**Looks:** USB plug on a 6 ft cable, bare wire end.
BUY **Qty 1** Amazon B00DEED3GM, $23

no photo

**SDI-12 adapter (Tindie)**
Reads the BaroVUE and HygroVUE.
**Looks:** Small USB board.
CHECK SHELF **Qty 1** shipped Sep 10



**24 to 12 V converter (YRDZXG)**
12 V for the BaroVUE and HygroVUE only. No fuse (Mike, Oct 14).
**Looks:** Black sealed block with wire leads.
HAVE **Qty 1**



**Surge diode (1.5KE33CA)**
At the 12 V converter's input.
**Looks:** Black body, wire legs.
HAVE **Qty 1**



**DIN rail and terminals**
Hub and reader clip on; the wing cable lands here.
**Looks:** Gray blocks on a rail.
HAVE **Qty 1 strip**



**Split gland (Altelix PG25, 5 port)**
USB leads and the AIS coax pass with plugs on.
**Looks:** Black gland, slit rubber seal.
CHECK SHELF **Qty 1** tracker still says coming



**Cable glands (bottom wall)**
DO, SBE 45, SDI-12, wing cable, 24 V feed.
**Looks:** Black nylon nut, rubber insert.
COUNT **Qty about 6** sizes wait on the box

Open: where the MOTU M2 hydrophone interface sits (here or its own box). The hub's ports: SDI-12, SBE 45, DO sensor, wing reader, dAISy, SBMS0, MOTU M2; three spare.

# A2 PI B BOX

BUY 1 · PICK FIRST 3 · CHECK SHELF 2 · COUNT 1 · HAVE 15

The backup computer, a few feet from Pi A, bolted through the settee panel. Runs on the emergency battery and floats: no wire ties it to Pi A or the lightning copper.



**The box (CXCESNS aluminum)**
Holds Pi B. No bond stud, ever.
HAVE **Qty 1**



**Compute module (Raspberry Pi CM5)**
The backup computer.
HAVE **Qty 1**



**Carrier board (CM5 IO Board)**
The CM5 plugs into it; one card slot.
HAVE **Qty 1** no order on record: check which carrier is which



**256 GB drive (fanxiang S500 Pro)**
Pi B's copy of the boat's state.
HAVE **Qty 1**



**CAN board (Waveshare 2-CH CAN FD HAT)**
Joins Pi B to both buses, isolated so Pi B still floats.
HAVE **Qty 1**



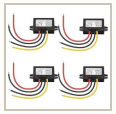
**Watchdog WD-B (Arduino Nano Every)**
Wakes Pi B, reads the lightning detector, keeps the strike log.
HAVE **Qty 1**



**WD-B relay (AEDIKO 5 V, 1 channel)**
Cuts Pi B's 24 V to restart it. Off means Pi B on.
HAVE **Qty 1**



**WD-B 5 V supply (Pololu D36V6F5)**
5 V for WD-B and the lightning detector.
HAVE **Qty 1**



**5 V converter (Klnuoxj)**
Pi B's own 5 V on the floating negative.
CHECK SHELF **Qty 1** 8 shipped Aug 21: count



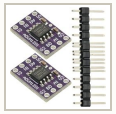
**GPS B (hiBCTR NEO-7M)**
Backup position.
HAVE **Qty 1**



**GPS lead, SMA wall plug to SMA male**
GPS coax through the wall.
BUY **Qty 1** same 2-pack as Pi A. Open: a metal plug in Pi B's wall breaks its no-metal rule



**Motion sensor B (Adafruit BNO085)**
Backup motion and heading.
CHECK SHELF **Qty 1** shipped Sep 10



**Iridium B isolator (ADuM1201)**
Keeps the Iridium B serial line apart.
HAVE **Qty 1**



**Opto board (PC817), alive line**
Receives Pi A's alive signal as light.
PICK FIRST **Qty 1** docs unclear if the second board goes here



**Surge diodes (1.5KE33CA)**
At the 5 V converter's and WD-B's inputs.
HAVE **Qty 2**

no photo

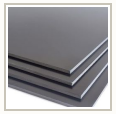
**5 V surge diode, detector lead**
Clamps spikes on the lightning detector's 5 V.
PICK FIRST **Qty 1**



**DIN rail and terminals**
Every outside wire lands here first.
HAVE **Qty 1 strip**



**Humidity board and desiccant**
Reads and dries the inside air.
HAVE **Qty 1 each**



**Board plate, G10**
Everything mounts on it.
PICK FIRST **Qty 1** second plate from the 4 mm sheet (a guess)



**Ethernet wall jack (Alrhso)**
Network cable to switch port 8, plain unshielded.
HAVE **Qty 1**



**Cable glands, PG7 x6 (bottom face)**
Seal each cable.
COUNT **Qty 6**



**Breather vent**
Lets the box breathe.
HAVE **Qty 1**

Open: the fuse in Pi B's feed (the Compute Bay Plan says in this box, the Electronics plan says on the emergency battery's fuse strip). The level shifter is gone: the lightning board now runs at 5 V.

# A3 CENTRAL NODE

PICK FIRST 2 · CHECK SHELF 2 · COUNT 4 · HAVE 20

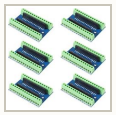
The main control box near the battery and the main bus board: fires the drogue releases, switches the loads, drives the steering, reads the sensors, holds the charging stop.



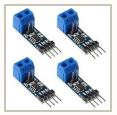
**The box (TICONN IP67, about 16 x 12 x 6 in)**
Holds the node.
HAVE **Qty 1** one of the Aug 16 TICONN boxes: check the size



**Node computer (NUCLEO-G431KB)**
Runs the node, talks to the Pis over CAN.
HAVE **Qty 1** check it says G431KB



**Nano screw carrier (AITRIP)**
The Nucleo plugs in; every wire under a screw.
HAVE **Qty 1**



**CAN board (SN65HVD230)**
Joins the Nucleo to the control bus.
HAVE **Qty 1**



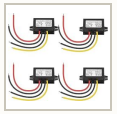
**CAN surge module (Taidacent RS-12V/2S)**
Soaks up surges on the CAN drop.
HAVE **Qty 1**



**Output expander (Waveshare MCP23017)**
16 more on/off lines for the relays and slow inputs.
HAVE **Qty 1**



**Resistors: expander pull-downs, 1k wiper**
Make a reset read OFF; protect the steering feedback line.
PICK FIRST **Qty about 17** the pull-down value is not written



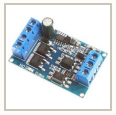
**5 V converter (KInuoxj)**
5 V for the Nucleo and logic.
CHECK SHELF **Qty 1** count the 8



**Relay board 1 (HiLetgo 24 V, 8 ch)**
Relay channels 1 to 8: loads, release enable, charging stop.
HAVE **Qty 1**



**Relay board 2 (HiLetgo 24 V, 8 ch)**
Channels 9 to 13: camera UV, Orion-Tr, puller reverse, bilge 2, horn.
CHECK SHELF **Qty 1** two orders in August: look



**Release switches (600 W MOS module)**
One per release channel 1 to 6: fire the drogue lids and pullers.
HAVE **Qty 6** nine 2-packs on hand



**Release feed fuse holder**
On the release feed.
PICK FIRST **Qty 1** may be redundant with its 30 A breaker



**Horn fuse, 5 A**
Protects the horn's run up the post.
COUNT **Qty 1** holders short boat wide



**Input board (Fafeicy 8 ch)**
Reads the two Water Witch bilge switches.
HAVE **Qty 1**



**Puller reversing relays (MY2NJ, 24 V)**
Run each cord puller backward for a shore test.
HAVE **Qty 4**



**Diodes (1N5408)**
One at each puller relay's input.
HAVE **Qty 4**



**Puller fuse holders (DIN, 5 x 20 mm)**
One slow-blow fuse per cord puller.
COUNT **Qty 4** say how many came Oct 11



**Puller fuses (QBGTFAK kit)**
Size set at the first puller hookup.
HAVE **Qty 4**



**Steering drive (Pololu G2 24v13)**
Drives the steering actuator.
HAVE **Qty 1** solder its terminal blocks at the bench



**Logic screw strip (Hxchen, 8 way)**
Screw landing for the drive's logic pins.
HAVE **Qty 1**



**Steering power-cut relay (HiLetgo 30 A)**
Cuts the actuator if the drive sticks on.
HAVE **Qty 1**



**Barometer (BME280)**
Outside air pressure through the vent.
HAVE **Qty 1**



**Humidity board (AHT30)**
Reads the air inside the box.
HAVE **Qty 1**



**Temperature probe chains (DS18B20)**
Six battery probes (the battery trip) and cabin air.
HAVE **Qty about 8**



**Surge diode (1.5KE33CA)**
At the 24 V input.
HAVE **Qty 1**



**DIN rail and terminals**
Every field wire, and the charging stop landing.
COUNT **Qty about 85**



**Glands: PG7 x3, PG9 x5, PG11 x5, PG13.5 x2, + feeder**
Seal each cable.
COUNT **Qty 16** release trunks: 3 cables for 2 glands (Mike's call)

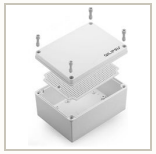


**Breather vent**
The barometer reads through it.
HAVE **Qty 1**

# A15 RELEASE NODE B

PICK FIRST 1 · CHECK SHELF 1 · COUNT 1 · HAVE 10

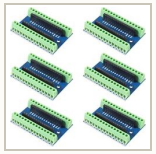
The second drogue release, at the stern by the transom boxes, on the house bus. Fires horn B of drogue boxes 1 and 2, so the central node is not the only box that can release.



**The box (QILIPSU, small, with plate)**
Holds the node.
**Looks:** Gray plastic box with a mounting plate.
HAVE **Qty 1** two bought Aug 16



**Node computer (NUCLEO-G431KB)**
Runs the node.
**Looks:** White board, USB at one end.
HAVE **Qty 1** check it says G431KB



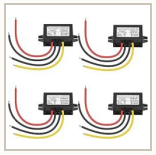
**Nano screw carrier (AITRIP)**
Every wire under a screw.
**Looks:** Green board, screw terminals.
HAVE **Qty 1**



**CAN board (SN65HVD230)**
Joins the Nucleo to the house bus.
**Looks:** Small blue board.
HAVE **Qty 1**



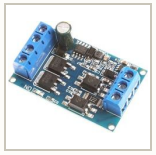
**CAN surge module (Taidacent RS-12V/2S)**
Soaks up surges on the CAN drop.
**Looks:** Narrow white DIN-rail block.
HAVE **Qty 1**



**5 V converter (Klnuoxj)**
5 V for the Nucleo.
**Looks:** Small black sealed block.
CHECK SHELF **Qty 1** count the 8



**Enable relay (HiLetgo 30 A)**
The only thing that puts 24 V on this node's release bus.
**Looks:** One big relay can on a small board.
HAVE **Qty 1**



**Release switches (600 W MOS module)**
Horn B of drogue box 1 and of box 2.
**Looks:** Small board, big black transistor.
HAVE **Qty 2**



**Fuse**
Listed in the box; its feeder already has a 30 A breaker.
**Looks:** Sealed ATO holder.
PICK FIRST **Qty 1** whether it stays



**DIN rail and terminals**
Every field wire lands here first.
**Looks:** Gray blocks on a rail.
HAVE **Qty about 12**



**Surge diode (1.5KE33CA)**
At the 24 V input.
**Looks:** Black body, wire legs.
HAVE **Qty 1**



**Glands: PG7 x3, PG11 or PG13.5 x1**
CAN drop, feeder, two fire pairs.
**Looks:** Black nylon nuts.
COUNT **Qty 4** measure the 12/2 jacket for the feeder gland



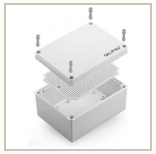
**Breather vent**
Lets the box breathe.
**Looks:** Black M12 screw plug.
HAVE **Qty 1**

Open: the fire pair cable to each drogue box is not named, and its gland differs between the guides (PG7 here, PG9 at the transom box).

# A4 BMS BOX (BATTERY WATCHMAN)

BUY 1 · PICK FIRST 3 · CHECK SHELF 2 · COUNT 2 · HAVE 7

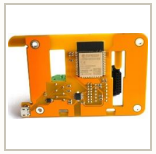
Bolted through the battery box's aft wall, minus side, glands facing down. Watches the 8 cell groups, both shunts and the pack temperature; controls nothing.



**The box (QILIPSU or Raculety IP65)**
Holds the watchman and balancer.
**Looks:** Small plastic box with a plate.
PICK FIRST **Qty 1** which of the boxes on hand is not written



**Battery watchman (Electrodacus SBMS0)**
Reads the cells, shunts and pack temperature; gives the battery percentage.
**Looks:** Bare green board with a touch screen. (Photo: the SBMS0.)
HAVE **Qty 1**



**WiFi/USB add-on board (Electrodacus)**
Streams the SBMS0's data to Pi A. Required.
**Looks:** Small board with a micro USB socket.
CHECK SHELF **Qty 1** paid Sep 2, no mail



**Balancer (JK-B2A8S)**
Evens out the 8 cell groups.
**Looks:** Board with an 11-pin harness.
HAVE **Qty 1**

no photo

**Ribbon breakout (Winford BRK2X6-L-DIN)**
The SBMS0's tap wires land on its screws.
**Looks:** 12-screw board on DIN clips.
CHECK SHELF **Qty 1** shipped Oct 5



**12-pin ribbon, female both ends**
SBMS0 to the breakout board.
**Looks:** Flat gray cable, two 2 x 6 plugs.
PICK FIRST **Qty 1** read the MECCANIXITY 6 in ribbon's plugs; else Amazon B07L9Q3R2K




**SBMS0 tap cable (22 AWG, 12 core, shielded)**
The nine taps and the thermistor pair.
**Looks:** Round gray cable.
HAVE **Qty 1 run**



**Balancer tap cable (ENERJOUR 18 AWG, 10 core)**
The JK's nine taps.
**Looks:** Round cable, 10 colored cores.
HAVE **Qty 1 run**



**Crimp butt splices, 22 to 18 AWG**
JK harness to the 10-core cable.
**Looks:** Red heat-shrink splices with glue inside.
COUNT **Qty 9** else Amazon B00JLKPP5A



**Pack thermistor (DROK 10K)**
The watchman's pack temperature.
**Looks:** Steel probe on a 39 in lead.
HAVE **Qty 1**



**Shunt sense pairs**
Two twisted pairs from the shunts on the bus board.
**Looks:** Cores from a stranded Cat6 patch cord.
PICK FIRST **Qty 2 pairs** the cords on hand are 1 ft at most



**Split gland (Altelix PG25, 4 port)**
The USB lead leaves with its plug on.
**Looks:** Black gland, slit rubber seal.
BUY **Qty 1** Amazon B0GYT3ZMDL, $6.99



**DIN rail**
The breakout and terminals clip on.
**Looks:** Aluminum rail.
HAVE **Qty 1**



**Glands: PG13.5, PG9 x2**
10-core, 12-core, shunt pairs.
**Looks:** Black nylon nuts.
COUNT **Qty 3**



**Breather vent**
Lets the box breathe.
**Looks:** Black M12 screw plug.
HAVE **Qty 1**

Mounting: four 1/4 in stainless bolts through the aft wall, holes bored oversize, filled with thickened epoxy and redrilled. Mike's call: swap the micro USB lead for a serial adapter on the add-on board's screw block (Pending, SBMS0 stream question).

# A9 BATTERY BOX, SIGNAL SIDE

BUY 1 · PICK FIRST 1 · CHECK SHELF 1 · COMING 1 · COUNT 1 · HAVE 6

The main bank, built and glued in, cells in for good. Only cells, links, probes and wire ends live inside. This page is the small parts still to fit.



### Cells (EVE MB31 314 Ah)

The main bank, 8 groups of 4.
**Looks:** Blue prismatic cells.
**HAVE** **Qty 32** in the box



### Cell nut cone washers, M6

One under every cell nut.
**Looks:** Small cone-shaped spring washers.
**CHECK SHELF** **Qty 64** second 50-pack shipped Sep 27



### Stack-to-stack jumper (copper braid)

Joins the two stacks at the forward end.
**Looks:** Flat braid with M6 holes.
**HAVE** **Qty 1**



### Fuse link wire, 30 AWG copper

A short fuse wire at each tap and shunt sense wire.
**Looks:** Very thin wire on a spool.
**BUY** **Qty 22 links** none on hand; the 30 AWG nichrome does not count



### Tap ring terminals for the cell posts

One ring per tap wire, 18 in all.
**Looks:** Small ring terminals.
**PICK FIRST** **Qty 18** the #10 rings on hand will not fit an M6 post



### WAGO 221-415 lever nuts

Join the six pack probes to the chain cable, no solder.
**Looks:** Clear 5-way lever connectors.
**COMING** **Qty 6** ordered Oct 14, count not logged



### Pack temperature probes (DS18B20)

The battery trip: any probe over 150 F isolates the bank.
**Looks:** Steel bullet on a lead.
**HAVE** **Qty 6**



### Watchman's thermistor (DROK 10K)

Held hard on a cell face.
**Looks:** Steel probe on a lead.
**HAVE** **Qty 1**



### Glands: PG16 x2, PG13.5, PG9, PG7

Mains, 10-core, 12-core, probe chain.
**Looks:** Black nylon nuts.
**COUNT** **Qty 5** PG16: 7 needed boat wide



### Breather vent

The box's breathing inlet.
**Looks:** Black M12 screw plug.
**HAVE** **Qty 1**



### Main fuse, 300 A Class T

Outside the aft wall, plus side.
**Looks:** Fuse in a black block.
**HAVE** **Qty 1**

> Mike's call: which six cells carry the pack probes (Claude's proposal: three per stack, two middle groups and one end group).

# A10 EMERGENCY BATTERY

BUY 1 · PICK FIRST 1 · HAVE 5

A bought battery, no box built. Feeds Pi B, Iridium B and the lightning detector, and stays apart from the main bank.




### Battery (Dyness 24 V 100 Ah)

The backup island's power.
**Looks:** Plastic case 20.9 x 8.11 x 8.54 in, 42.6 lb.
**HAVE** **Qty 1** strapped in



### 30 A fuse (Renogy ANL)

Within a few inches of the plus post.
**Looks:** Fuse in a black holder.
**HAVE** **Qty 1**



### Post boots, red and black

Cover the M8 posts.
**Looks:** Rubber boots.
**BUY** **Qty 2** or tape the posts



### Fused DIN strip

Feeds to Pi B, Iridium B, the 75/10, the Orion-Tr.
**Looks:** DIN fuse holders.
**PICK FIRST** **Qty 4** fuse sizes not set; holder count short



### DIN rail and terminals

The strip's landings.
**Looks:** Gray blocks on a rail.
**HAVE** **Qty 1 strip**




### Charger from the main bank (Victron Orion-Tr 24/24-5)

Keeps this battery charged, 90 minutes a day.
**Looks:** Blue case.
**HAVE** **Qty 1**




### Solar charger (Victron SmartSolar 75/10)

Charges it from its own two 50 W panels.
**Looks:** Blue case.
**HAVE** **Qty 1** the two panels: Buy list

# A7 MOTOR CONTROLLER BOX (VESC A)

BUY 3 · CHECK SHELF 1 · COMING 1 · COUNT 2 · HAVE 8

On the cockpit web at the motor. Boat 1's only motor controller. A bought sealed box with an aluminum cooling plate through its floor.

no photo

**The box**
Holds the controller and capacitors.
**Looks:** The bought sealed enclosure on hand (model not named).
HAVE **Qty 1**



**Motor controller (Flipsky 75200 Pro V2.0)**
Drives the motor.
**Looks:** Aluminum board with heavy leads.
HAVE **Qty 1**



**COMM plug leads (JST-PH 8 pin)**
Serial to Pi A and the motor sensor.
**Looks:** Small white plugs on thin leads.
HAVE **Qty 1**



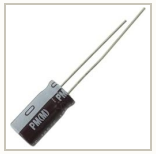
**CAN plug leads (JST-GH 5 pin)**
The control bus drop.
**Looks:** Tiny white plugs on thin leads.
HAVE **Qty 1**



**Motor sensor plug (Metri-Pack 150, 8 way)**
Mates the motor's gray sensor lead.
**Looks:** Gray sealed plug pair.
CHECK SHELF **Qty 1** shipped Sep 29



**Sensor dividers, 10k and 18k**
Only if the sensor's tops exceed 3.2 V.
**Looks:** Small striped resistors.
HAVE **Qty 4** check the kit has 18k



**Capacitors (Nichicon 1,000 uF 63 V)**
Steady the battery leads at the controller.
**Looks:** Black cans, stripe on minus.
HAVE **Qty 4**



**WAGO 221-415 lever nuts**
One joins the four plus tails, one the four minus.
**Looks:** Clear 5-way lever connectors.
COMING **Qty 2** ordered Oct 14



**Crimp butt splices, 22 to 18 AWG**
An 18 AWG tail on each capacitor leg.
**Looks:** Red heat-shrink splices.
COUNT **Qty 8** else Amazon B00JLKPP5A



**Power posts (MGI SpeedWare 3/8 in)**
The 2 AWG feed, controller leads and capacitor leads land here.
**Looks:** Black insulated stud posts.
HAVE **Qty 2**



**Ring lugs, 8 AWG, 3/8 in**
On the controller's own 8 AWG leads.
**Looks:** Red heat-shrink ring lugs.
BUY **Qty 2** Amazon B00NVCCAFW



**Ring lugs, 12 AWG, 3/8 in**
On the leads from the WAGOs.
**Looks:** Yellow heat-shrink ring lugs.
BUY **Qty 2** Amazon B073PGZC5V



**Neutral-cure silicone**
Glues the capacitors and WAGOs to the box floor.
**Looks:** Small tube.
BUY **Qty 1**



**Phase clamp ferrite, 1.0 in**
Over all three motor leads, for motor noise.
**Looks:** Big snap-on collar.
HAVE **Qty 1**



**Glands: PG7 x3, PG16 x5**
CAN, serial and kill, sensor; battery and phases.
**Looks:** Black nylon nuts.
COUNT **Qty 8** PG16 count first

Still to pick: the plugs for the PPM kill pin, the motor temperature pins and the shorted switch plug (read them off the board); the cooling plate size.

# A6 AFT JUNCTION

PICK FIRST 1 · COUNT 2 · HAVE 4

At the stern beside the network switch box. A patch panel, no computer: the post's wind and light cables, deck sensors and switched loads land on DIN terminals.



**The box (TICONN IP67, about 12 x 8 x 5 in)**
Holds the terminals and two small parts.
**Looks:** Gray plastic box with a plate.
HAVE **Qty 1**



**Motoring whites relay (HiLetgo 30 A)**
Turns on the two all-round whites when dark and the motor runs.
**Looks:** One big relay can on a small board.
HAVE **Qty 1**



**Post wind meter regulator (Pololu D36V6F5)**
5 V for the Calypso wind meter. Never 24 V into it.
**Looks:** Tiny green board, potted after wiring.
HAVE **Qty 1**



**Post feed fuses**
One per post feed.
**Looks:** Sealed inline holders.
PICK FIRST **Qty 2** sizes and count not written



**DIN rail and terminals**
Every conductor lands here.
**Looks:** Gray blocks on a rail.
COUNT **Qty about 60**



**Glands: PG7 x5, PG9 x3, PG11 x4, PG13.5 x2**
Post, sensors, loads, trunk.
**Looks:** Black nylon nuts.
COUNT **Qty 14**



**Breather vent**
Lets the box breathe.
**Looks:** Black M12 screw plug.
HAVE **Qty 1**

Open: whether the switch box's 24 V is a jumper from here or its own run (Mike to say). The post lights cable (4 core) is not named yet.

# A6A NETWORK SWITCH BOX AND SURGE BOARD

BUY 1 · PICK FIRST 2 · COUNT 1 · HAVE 9

At the stern beside the aft junction, glued to the hull for cooling, wired to nothing. Only the switch, its SFP module and its 48 V supply inside. The Ethernet surge protectors sit on their own board near the deck.



**The box (CXCESNS aluminum)**
Holds the switch and its supply.
**Looks:** Cast aluminum, 11.8 x 8.3 x 3.9 in.
HAVE **Qty 1**




**Network switch (Teltonika TSW202)**
Every network cable ends here; powers the cameras.
**Looks:** DIN-rail switch, 8 ports plus 2 SFP.
HAVE **Qty 1**



**SFP module (10Gtek SFP-T)**
Port 9, for Starlink.
**Looks:** Small plug-in module with an RJ45 socket.
HAVE **Qty 1**



**48 V supply (Mean Well DDR-120B-48)**
Power for the switch's PoE ports.
**Looks:** DIN-rail module.
HAVE **Qty 1** set to 54.0 V, seal the trimmer



**Surge diode (1.5KE33CA)**
At the 48 V supply's input.
**Looks:** Black body, wire legs.
HAVE **Qty 1**



**Side-wall DIN rail**
Switch and supply side by side.
**Looks:** Aluminum rail cut to length.
BUY **Qty 1** the 4 in pieces on hand are too short (a guess)



**Ethernet wall jacks (Alrhso)**
One per cable: ports 1 to 8 and SFP 9.
**Looks:** Round bulkhead jacks with caps.
HAVE **Qty 9** 16 on hand




**Self-fusing tape and dielectric grease**
Seal each jack's outside face.
**Looks:** Silicone tape roll; grease tube.
HAVE **Qty 1 each**



**Patch cords**
Each wall jack to its switch port.
**Looks:** Short Cat6 cords, 6 in and 1 ft.
HAVE **Qty 9**

no photo

**Right-angle plugs**
So no cord bends hard in the shallow box.
**Looks:** Right-angle Cat6 cords or adapters.
PICK FIRST **Qty about 9** read the direction off the switch



**Ethernet surge protectors (Ubiquiti ETH-SP-G2)**
On the board near the deck: cameras, Starlink, fisheye, interior camera.
**Looks:** Small plastic box, two RJ45 jacks, ground lead.
HAVE **Qty 5**

no photo

**Surge board, tinned bus bar, 6 AWG spur**
Holds the five protectors and grounds them to the lightning copper.
**Looks:** Small board on a bulkhead near the deck.
PICK FIRST **Qty 1** which bulkhead



**Gland PG9 and vent**
The 24 V feed in; breathing.
**Looks:** Black nylon nut; M12 plug.
COUNT **Qty 1 each**

The five Cat6 runs from the surge board down to the jacks wait on the board's spot (measure first).

# A16 TRANSOM TERMINAL BOX

COUNT 2 · HAVE 2

At the stern. Passive: a DIN strip only, one landing per conductor, between the release trunks from the central node and the drogue boxes and cord pullers.



**The box (about 12 x 8 x 5 in)**
Holds the strip.
**Looks:** Gray plastic box with a plate.
HAVE **Qty 1**



**DIN rail and terminals**
One landing per conductor, labeled both ends.
**Looks:** Gray blocks on a rail.
COUNT **Qty 12 to 16**



**Glands: PG11 x4, PG9 x3 (one plugged)**
Two trunks in; drogue fire pairs and puller cables out.
**Looks:** Black nylon nuts.
COUNT **Qty 7**



**Breather vent**
Lets the box breathe.
**Looks:** Black M12 screw plug.
HAVE **Qty 1**

Mike's call: the release trunks are three cables (one 14/4 fire, two 18/4 puller) for two glands, and the guides ban two release cables in one gland.

# DB DROGUE BOXES 1 AND 2

PICK FIRST 4 · CHECK SHELF 2 · HAVE 5

One per drogue, on the transom. Each lid is held by one strap over two horns. Horn A fires from the central node, horn B from Release Node B; either one alone cuts the strap.



**Box 1 (VEVOR fiberglass, 19.7 x 15.7 x 7.9 in)**
Holds drogue 1.
**Looks:** Gray fiberglass box with a door.
CHECK SHELF **Qty 1** shipped Sep 29, no delivery mail

no photo

**Box 2**
Holds drogue 2.
**Looks:** Not decided. Fiberglass, per the guide.
PICK FIRST **Qty 1** the TICONN box of Oct 3 is ABS, and may go to the wet lab

no photo

**Jordan series drogue (OceanBrake)**
Slows the boat in a storm.
**Looks:** 80 cones on yellow line, bridle, chain tail.
HAVE **Qty 2** check the chain tail came



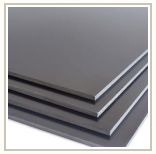
**Lid strap and hinge thread (Amsteel Blue 1/8 in)**
Holds the lid shut; sews the hinge.
**Looks:** Gray braided line.
HAVE **Qty 1 roll**




**Hinge cover (PKS Dacron sail tape, 3 in)**
Covers the sewn hinge.
**Looks:** White sail tape roll.
CHECK SHELF **Qty 2 rolls planned** one roll ordered: check it covers both lids




**Nichrome 80, 28 or 30 AWG**
Three coils per horn burn through the strap.
**Looks:** Fine wire on a spool.
HAVE **Qty 6 coils**



**Horns and ledge, 1/4 in G10**
The strap's anchors on the lid.
**Looks:** Fiberglass sheet.
HAVE **Qty 1**



**Ejector pad (2 in PE foam)**
Pushes the drogue out when the lid opens.
**Looks:** Foam sheet, 16 x 12 in.
HAVE **Qty 2**

no photo

**Crimps, nichrome to copper**
Join each coil tail to its lead, potted in epoxy.
**Looks:** Not named.
PICK FIRST **Qty about 12 per box**

no photo

**Potted wire pass-throughs**
Fire wires through the transom.
**Looks:** Not named, hole size not written.
PICK FIRST **Qty 2 per box**

no photo

**Strap hole liners (PTFE tube)**
Line the strap holes.
**Looks:** 1/4 in OD tube; the piece bought went back.
PICK FIRST **Qty a few inches**
Mike's call

> Mike's call: keep the carbon steel U-bolt collars that came, or buy stainless (about $96 for eight).

# A11 IRIDIUM A AND B BOXES

PICK FIRST 1 · COMING 2 · COUNT 2 · HAVE 5

Two satellite modems, each in its own small box. A near Pi A on the main bank; B near Pi B on the emergency battery. Nothing shared, on purpose.



**The boxes (TICONN 5.9 x 5.9 x 3.5 in, with plate)**
One per modem.
**Looks:** Gray plastic box with a plate.
COMING **Qty 2** ordered Oct 9



**Modem (RockBLOCK 9603N)**
Sends and receives by Iridium satellite.
**Looks:** Small board in a case.
HAVE **Qty 2** one was shipped to Gunnison, CO: confirm both here



**Isolated 5 V converter (Mean Well DDR-15G-5)**
Powers the modem without tying its negative to the lightning copper.
**Looks:** DIN-rail module.
COMING **Qty 2** ordered Oct 9



**Surge diode (1.5KE33CA)**
At each converter's input.
**Looks:** Black body, wire legs.
HAVE **Qty 2**



**Short DIN rail**
For each converter.
**Looks:** Aluminum rail piece.
HAVE **Qty 2**



**Antenna (Maxtena M1621HCT)**
Under its own clear dome on deck.
**Looks:** Small white puck.
HAVE **Qty 2**



**Stub arrestor (PolyPhaser)**
Lightning protection on each antenna coax.
**Looks:** Short metal T fitting.
HAVE **Qty 2**



**Coax jumpers (LMR-240)**
Antenna to stub, stub to modem.
**Looks:** Black coax with N and SMA plugs.
COUNT **Qty 4** 2 in the order log



**Glands, PG7 x3 each**
Serial, coax, power.
**Looks:** Black nylon nuts.
PICK FIRST **Qty 6** a coax plug will not pass a PG7



**Breather vents**
Each box breathes.
**Looks:** Black M12 screw plug.
COUNT **Qty 2** vents short boat wide

# A12 LIGHTNING DETECTOR BOX

PICK FIRST 2 · COUNT 1 · HAVE 4

A tiny plastic box within 3 ft of Pi B, touching no metal. Wired to watchdog WD-B on a short shielded lead.



**Lightning detector (Playing With Fusion SEN-39003)**
Hears lightning up to about 25 miles off.
**Looks:** Small board. (Photo: an AS3935 board.)
HAVE **Qty 1** runs at 5 V, no level shifter



**The box (small plastic)**
Holds the board.
**Looks:** Small ABS project box.
PICK FIRST **Qty 1** a Zulkit box on hand probably does



**Screw block (Hxchen, 8 way)**
Soldered on the board's pin row; the lead lands under its screws.
**Looks:** Green 0.1 in screw block.
HAVE **Qty 1**

no photo

**Lead (Belden 6504FE, 6 core, shielded)**
Board to WD-B, under 3 ft.
**Looks:** Thin round cable.
HAVE **Qty 1** Mike's roll

no photo

**Nylon screws**
Mount the board, nothing metal.
**Looks:** Nylon screws and standoffs (M3 kit).
HAVE **Qty 4**

no photo

**5 V surge diode**
Across the lead's 5 V, inside the Pi B box.
**Looks:** Not picked.
PICK FIRST **Qty 1**



**Gland PG7 and vent**
The lead in; breathing.
**Looks:** Black nylon nut; M12 plug.
COUNT **Qty 1 each**

# A17 WING BOX

BUY 2 · PICK FIRST 2 · CHECK SHELF 1 · COUNT 3 · HAVE 2

Below the deck where the wing's wires come into the hull from the slip ring. Every ring wire gets a fuse or a surge part here, so a strike on the mast stops here.



**The box (TICONN 5.9 x 5.9 x 3.5 in, with plate)**
Holds the surge parts and fuse.
**Looks:** Gray plastic box with a plate.
BUY **Qty 1** picked Oct 12, never ordered: Amazon B0B87THLGC



**Surge modules (Taidacent RS-12V/2S)**
On the actuator's CAN pair, the tip wind meter's and the compass's RS-485 pairs.
**Looks:** Narrow white DIN-rail blocks.
CHECK SHELF **Qty 3** two shipped Sep 27; the third coming Oct 21+



**5 A fuse**
On the ring's 24 V pair.
**Looks:** Sealed inline holder.
COUNT **Qty 1**



**Surge diode (1.5KE33CA)**
Across the 24 V pair, after the fuse.
**Looks:** Black body, wire legs.
HAVE **Qty 1**



**Ground terminal and DIN rail**
Surge grounds, the cable's ground pair and shield land here.
**Looks:** Gray blocks on a rail.
HAVE **Qty 1 strip**



**Wing cable to the hub box (shielded Cat6)**
CAN, two RS-485 pairs, ground.
**Looks:** Black shielded Cat6, plugs cut off.
BUY **Qty 25 ft** Amazon B077H5LL5N, $14.98

no photo

**Hull cables from the slip ring**
Ring wires down through the deck into this box.
**Looks:** Not picked: how many, which cable.
PICK FIRST **Qty about 3**



**Deutsch DT plugs, contacts, crimp tool**
The ring's leads plug into the hull cables at the can wall.
**Looks:** Gray sealed plugs.
PICK FIRST **Qty about 6 pairs**
pin plan not written



**Glands: three PG9 at the can wall, plus this box's**
Seal the ring cables.
**Looks:** Black nylon nuts (uxcell PG9 10-pack).
COUNT **Qty about 6**



**Breather vent**
Lets the box breathe.
**Looks:** Black M12 screw plug.
COUNT **Qty 1**

# TIP WING TIP BOX

PICK FIRST 1 · CHECK SHELF 1 · COUNT 2 · HAVE 1

A small sealed box at the wing tip. The tip's 24 V branch feeds the wing compass straight and the wind meter through a 5 V converter.

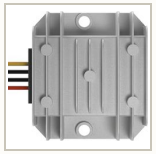
no photo

### The box

Holds the fuse, the converter and the splices.

**Looks:** Not picked, and not placed on the tip mount drawing.

PICK FIRST **Qty 1**



### 5 V converter (DROK, sealed)

5 V for the tip wind meter only. Never 24 V on the meter.

**Looks:** Small sealed block with leads.

HAVE **Qty 1**



### 1 A fuse

On the tip branch's 24 V.

**Looks:** Sealed inline holder.

COUNT **Qty 1** check the fuse kit has a 1 A



### Crimp butt splices

Compass and meter wires, no solder.

**Looks:** Heat-shrink splices with glue inside.

COUNT **Qty about 6**



### Wing compass (WitMotion HWT905)

The wing's angle and turn rate. On its own pad on the tip cap.

**Looks:** Small sealed puck with a lead.

CHECK SHELF **Qty 1** shipped Oct 5

> The tip wind meter (Calypso, RS-485) mounts on the tip; both Calypso meters shipped Sep 10 with no delivery mail.

# LD LIGHT DRIVER BOX

BUY 1 · COUNT 2 · HAVE 2

A small dry box for the PoE Texas light driver, which runs the two 4 in disc lights off switch port 6.

no photo

**Light driver (PoE Texas AT-LED-24V)**
Turns network power into power for the two lights.
**Looks:** Bare board.
HAVE **Qty 1**

no photo

**The box**
Keeps the bare board dry.
**Looks:** Small plastic box. Not picked.
BUY **Qty 1**



**Ethernet wall jack (Alrhso)**
The Cat6 from switch port 6.
**Looks:** Round bulkhead jack, outside taped.
HAVE **Qty 1**



**Glands for the two light leads**
Seal each lead.
**Looks:** Black nylon nuts.
COUNT **Qty 2**



**Breather vent**
If the box is plastic.
**Looks:** Black M12 screw plug.
COUNT **Qty 1**

# A18 WET LAB BOX

BUY 1 · PICK FIRST 1 · CHECK SHELF 2 · COMING 1 · COUNT 3 · HAVE 8

A small node on the house bus beside the wet lab: switches each pump and valve one at a time and reads the wet lab's sensors. Layout and wiring: Wet_Lab_Box_Layout_2026-10-15.

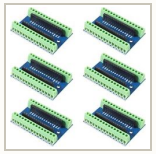


### Node computer (NUCLEO-G431KB)

Takes orders from Pi A over CAN, runs the relays, reads the sensors.

**Looks:** White board about 2 x 0.7 in, USB at one end.

BUY **Qty 1** both on hand are used



### Nano screw carrier (AITRIP)

Every wire under a screw.

**Looks:** Green board, screw terminals.

HAVE **Qty 1**



### CAN board (SN65HVD230)

Joins the Nucleo to the house bus.

**Looks:** Small blue board.

HAVE **Qty 1**

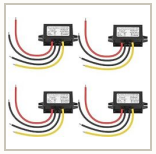


### CAN surge module (Taidacent RS-12V/2S)

Soaks up surges on the CAN drop.

**Looks:** Narrow white DIN-rail block.

COMING **Qty 1** Oct 21 or later



### 5 V converter (KInuoxj)

5 V for the Nucleo and the pressure sensor.

**Looks:** Small black sealed block.

CHECK SHELF **Qty 1** 8 shipped, 3 used



### Relay board (HiLetgo 24 V, 8 ch)

Switches the pumps and valves; two spare.

**Looks:** Red board, 8 blue relay cans.

CHECK SHELF **Qty 1** 2 spare of 4



### Input board (Fafeicy 8 ch)

Reads flow pulses and valve open/shut wires.

**Looks:** Blue board, 8 small chips. (Photo: other brand.)

HAVE **Qty 1**




### 24 V steady converter (XWST)

Holds the wet lab at 24 V. 10 A.

**Looks:** Finned aluminum block.

HAVE **Qty 1**



### DIN fuse holders

One per group: Gulper, pumps, valves, sensors, node.

**Looks:** Black block on the rail.

COUNT **Qty 5**



### DIN screw terminals

Every outside wire lands here first.

**Looks:** Gray blocks on a rail.

COUNT **Qty about 30**



### Diodes (1N5408)

One across each pump so the relays do not spark.

**Looks:** Black body, silver stripe to plus.

HAVE **Qty 3**



### Surge diode (1.5KE33CA)

Clamps spikes on the 24 V.

**Looks:** Black body, wire legs.

HAVE **Qty 1**



### Resistors 10k, 18k, two 4.7k

Pressure signal divider; temperature probe pull-ups.

**Looks:** MelkTemn kit.

HAVE **Qty 4**



### The box (about 12 x 8 x 5 in)

Holds it all.

**Looks:** Gray plastic box with a plate. (Photo: other size.)

PICK FIRST **Qty 1** the TICONN box of Oct 3 if that big



### Glands, PG7 x10 and PG9 x4

Seal each cable, bottom face.

**Looks:** Black nylon nuts.

COUNT **Qty 14**



### Breather vent

Lets the box breathe.

**Looks:** Black M12 screw plug.

HAVE **Qty 1**