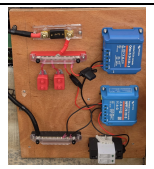
BACKUP BATTERY BOARD · PARTS

Boat 1 · A10 · v10.5 · the Dyness and its board as built (photo, Nov 3), every planned change drawn in

A



The board, as built
Plywood, standing by the Dyness. No bond wire
1 · on the boat

B



Backup battery, Dyness 24V 100Ah
20.9 x 8.11 x 8.54 in, 42.6 lb, M8 posts
1 · on the boat, strapped

C



Post boots, red and black, M8
Cover both posts (5/16 in)
1 · buy (Buy list)

D



Main fuse: 30 A ANL, holder
Renogy. Top of the board. The off switch for work
1 · on the board

E

6 AWG cable in split loom

Battery leads, 6 AWG red, black
In split loom, 72 in at most
1 · on the board

F



Victron Orion-Tr 24/24-5
Isolated. Main battery charges this one
1 · on the board

G



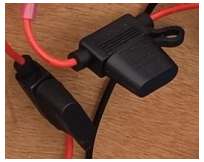
Victron SmartSolar 75/10
From its two 50 W panels. LOAD empty
1 · on the board

H



PV surge module, NanQue
Type 2, 250 V DC, on its base. PE to its own PV –
1 · on the board

I



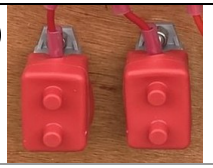
Sealed inline blade holders
Orion-Tr out 10 A; 75/10 out 15 A
2 · on the board

J



Bus bar pair, red and black covers
150 A, 10 screws each
1 · on the board

K



Auto-reset stud breakers, 5 A
Pi B, Iridium B on the board; pump 2's comes off the main board
3 · 2 on the board, 1 to move

L



Auto-reset stud breaker, 20 A
Backup converter's input. A spare BFXM 20 A (Sep 7)
1 · have

N



Surge diode 1.5KE33CA
Across pump 2's pair. Either way round
1 · have (20-pack)

P



Backup converter, Orion-Tr Smart 24/24-17
Isolated. Beside the Dyness, off the board
1 · coming (due Nov 9)

Q

sealed bilge switch

Johnson Ultima Switch 36303
Pump 2's float switch, at the pump
1 · coming (due Nov 12)

R

duplex wire

Wire: 14/2, 12/2, 16/2 or 18/2
14/2 loads; 12/2 converter; 16/2 or 18/2 Orion-Tr on/off
1 · have (rolls)

S



Ring lugs and ferrules
M8 at the posts; studs as they come; ferrules on the remote plug
1 · have

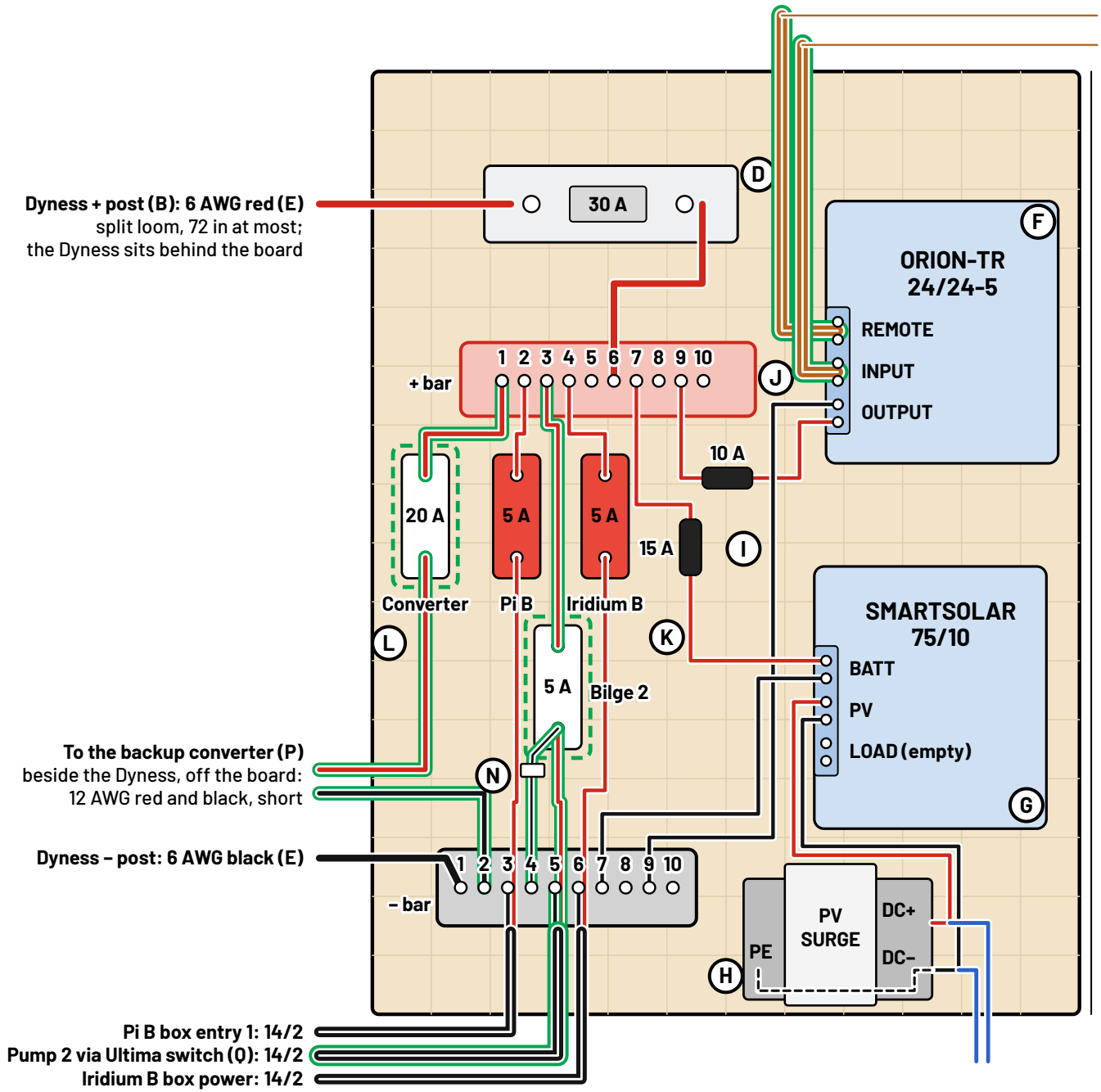
T

straps

Restraint: chocked shelf, 2 straps
Holds 42.6 lb upside down
1 · on the boat

BACKUP BATTERY BOARD · LAYOUT

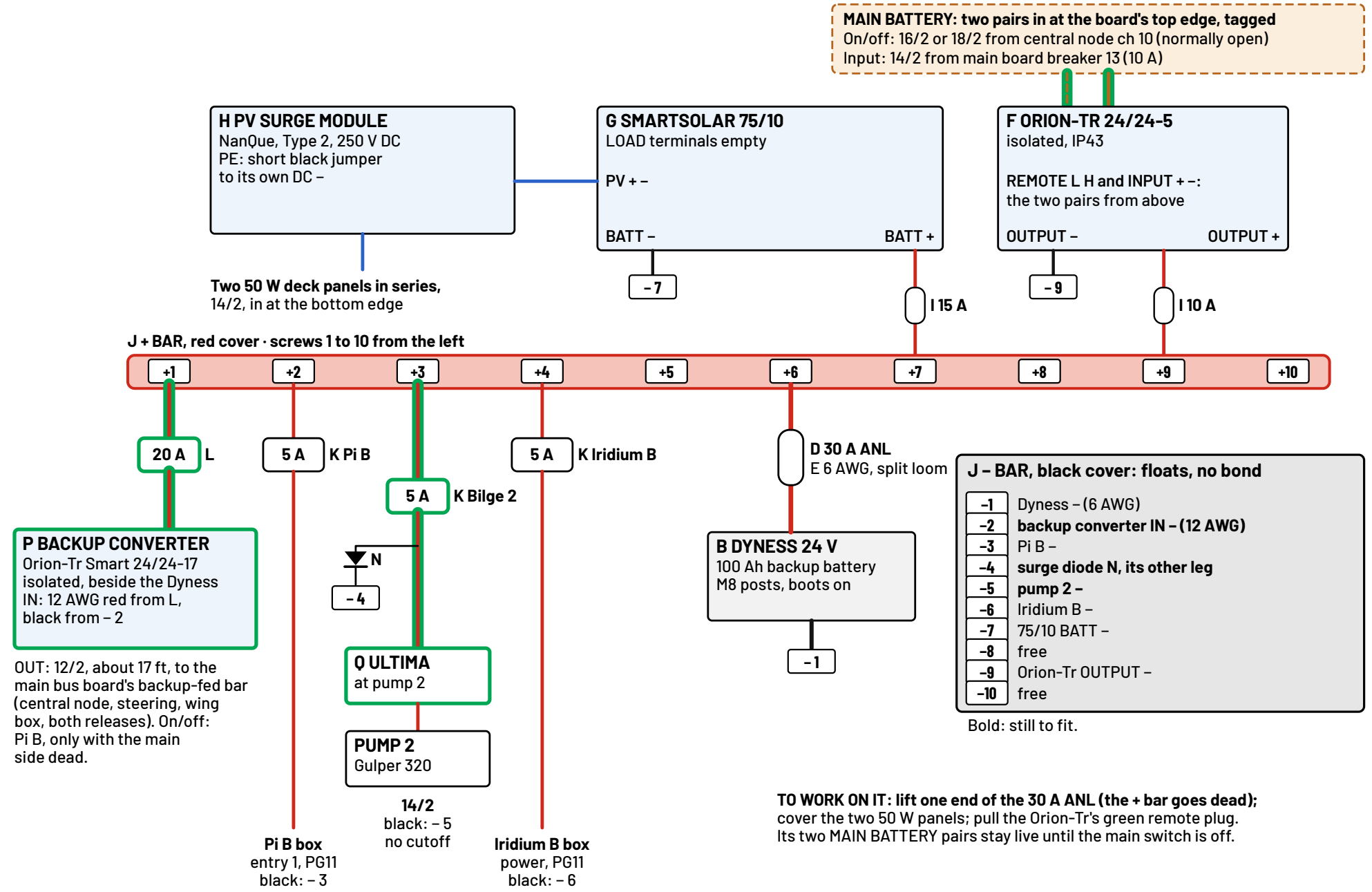
face view, board standing · 1 grid square = 1 in · spots as in Mike's photo of Nov 3



backup battery + · backup battery – (floats) · deck panel pair · main battery pair · still to fit · the guides give 16 x 12 in; the photo shows it standing tall

BACKUP BATTERY BOARD · WIRING

how it connects · + and – numbers are bar screws, as on page 2 · not to scale



backup battery + · backup battery – · deck panels · main battery side · still to fit · only the two isolated Victron converters touch both batteries

BACKUP BATTERY BOARD · EVERY WIRE

bar screws numbered from the left, as on pages 2 and 3

+ BAR, RED COVER

Screws numbered from the left, as on page 2. "On" means on the board now.

Screw	Job	Wire
1	Converter	12 AWG red, short, to the 20 A breaker's top stud. **To fit**
2	Pi B	red jumper to the Pi B breaker's top stud (on)
3	Pump 2	14 AWG red, short, to the Bilge 2 breaker's top stud. **To fit**
4	Iridium B	red jumper to the Iridium B breaker's top stud (on)
5		free
6	Battery in	6 AWG red from the ANL's right stud (on)
7	75/10 out	red through the 15 A holder from BATT + (on)
8		free
9	Orion-Tr out	red through the 10 A holder from OUTPUT + (on)
10		free

– BAR, BLACK COVER

The backup minus floats: no bond wire on the board, the bars or any case.

Screw	Job	Wire
1	Battery	6 AWG black from the Dyness – post, split loom (on)
2	Converter	12 AWG black to the backup converter's IN –. **To fit**
3	Pi B	the black of Pi B's 14/2
4	Surge diode	the diode's other leg, sleeved. **To fit**
5	Pump 2	the black of pump 2's 14/2. **To fit**
6	Iridium B	the black of Iridium B's 14/2
7	75/10 out	black from BATT – (on)
8		free
9	Orion-Tr out	black from OUTPUT – (on)
10		free

PARTS, TERMINAL BY TERMINAL

Part	Wires
ANL D	Left stud: Dyness + (6 AWG red, M8 lug at the post, boot on). Right stud: + 6
Orion-Tr F	REMOTE L, H: the on/off pair from node ch 10, one core each, ferrules; wire loop off. INPUT: the 14/2 from main board breaker 13. OUTPUT +: 10 A holder, + 9. OUTPUT –: – 9. Land each wire on the terminal marked on the case
75/10 G	BATT +: 15 A holder, + 7. BATT –: – 7. PV + and –: to the surge module's DC + and DC –. LOAD: empty
Surge H	DC +, DC –: the 75/10's PV pair and the panel pair, twisted bare under each clamp. PE: short black jumper to its own DC –
Breakers K, L	Top stud from the + bar, bottom stud out. Converter 20 A: + 1. Pi B: + 2. Bilge 2: + 3. Iridium B: + 4
Diode N	1.5KE33CA: one leg on the Bilge 2 breaker's bottom stud with pump 2's red, the other to – 4. Sleeved. Either way round

ORDER OF WORK (IN PLACE)

1. Lift one end of the ANL. Cover the two 50 W panels. Pull the Orion-Tr's green remote plug.
2. Mount the 20 A and Bilge 2 breakers, screws no longer than the board is thick. Jumpers from + 1 and + 3.
3. Mount the backup converter beside the Dyness. Its input pair, its 12/2 to the main board, its on/off pair from Pi B.
4. Pump 2's 14/2 and the surge diode. Pi B's and Iridium B's 14/2.
5. Main battery switch off. The Orion-Tr's two pairs in at the top edge; tag them.
6. Label the breakers Converter, Pi B, Iridium B, Bilge 2. Covers on. Boots on both posts. Panels last.
7. Close the ANL last.

CHECKS THE GUIDES CALL FOR

Trip-test every breaker at about twice its rating; it holds its rated current for minutes (Electronics plan 7.6).

CABLES OFF THE BOARD

Cable	Wire	Where
Dyness	6 AWG red, black	in split loom, 72 in at most: + post to the ANL; – post to – 1 (on)
Converter in	12 AWG pair, short	red from the 20 A breaker, black from – 2, off the left edge to the converter beside the Dyness. **To fit**
Converter out	12/2, about 17 ft	converter OUT + and – to the main bus board's backup-fed + and – bars (not on this board). **To fit**
Pi B	14/2	red from its breaker, black from – 3, bottom edge, to Pi B box entry 1 (PG11)
Iridium B	14/2	red from its breaker, black from – 6, bottom edge, to the Iridium B box's power entry (PG11)
Pump 2	14/2	red from the Bilge 2 breaker, black from – 5, bottom edge, to the Ultima switch and pump 2. No cutoff. **To fit**
Orion-Tr input	14/2, about 17 ft	from main board line 13 (10 A breaker), in at the top edge, tagged MAIN BATTERY. **To fit**
Orion-Tr on/off	16/2 or 18/2	from central node relay ch 10 (entry 16), in at the top edge, tagged MAIN BATTERY. **To fit**
Panels	14/2	the two 50 W in series, in at the bottom edge to the surge module (last)

SETTINGS

75/10: lithium, absorption 27.6 V, float 27.0 V. Orion-Tr: 27.0 V, float only, on 90 minutes a day and for the monthly exercise, by node ch 10. Backup converter: cutoff about 30 percent left, restart above it (exact volts open, from Victron's manual).

OPEN

Primelink unit B: on this battery or not. **Monthly exercise** to 25 percent, below the converter's 30 percent cutoff. **Pi B's side:** where pump 2's signals and the converter's on/off pair enter. **The Dyness:** does its cold cutoff block charging only; its standby draw. **Orion-Tr output fuse:** 10 A in the guides; the sizing rule gives 7.5 A for its 5 A.