

M/V Gizmo core 12v elec energy components			-- Note separate house & starter systems with crossover switching, each with alternators
House bank and charging sources		Install	Notes
Batteries	*4x Victron LiFePO4 Battery 12.8V/100Ah Smart	4/2022	
" management	*Victron Lynx 500A BMS with 2x Lynx Distributors	4/2022	Victron's top-of-the-line BMS, also manages solar and shorepower charging
Main eng alternator	Leece-Neville 8LHA207OVB 130a	1/2000	Leece-Neville likely original equipment, but rebuilt 5/2011
" regulator	Balmar MC-618H regulator	4/2022	Includes SG200 & app for regulator monitoring/configuration. Helm gauge also displays house bank current (and inaccurate state of charge). Located under top galley step.
	Victron SolidSwitch 104	4/2022	Protects main alternator if Lynx needs to shut down house bank. Also under top step.
	*VictronOrion-Tr Smart 30A DC-DC charger	4/2022	Uses excess starter bank alternator to further charge house bank
Solar Panels	2x Kyocera KD140SX-UPU	8/2012	280W total with custom tilting rack (that also works with mast crutch for storage / low bridges).
" regulator	Victron SmartSolar MPPT 100/30	3/2019	
Shorepower	*Victron Multiplus Inverter/Charger	4/2022	Rated 120A charging, 3000W inversion
	*Victron SmartShunt 500A/50mV	4/2022	Measures current output of the main alternator & DC-DC charger, also starter bank voltage
	**Victron Cerbo GX & GX Touch 50 screen	4/2022	Monitors electric power system & more, including off boat data collection & display. Located behind panel above main breaker panels.
	* = these components can be configured and monitored with Victron Connect Bluetooth app		
	** = Cerbo monitoring & more accessible via boat WiFi, and if online at Victron Remote Monitoring		
	Gizmo VRM guest view:		https://vrm.victronenergy.com/installation/105905/share/ea38a0bd
Starter Bank	2x Odyssey ODX-AGM31, CA 1379 cca 1150	4/2022	More cranking amps than previous batteries, bought at Autozone w 4 yr warranty
eng alternator	stock Volvo Penta 450hp VP TAM74C	1/2000	Max amperage unknown, but likely about 60
shorepower	trickle charge from Multi 12/2000/80		
Notes on power usage			
Currently the boat rarely gets shore power, and according to my VRM stats it consumes about 115ah/day at her mooring, with solar charging often covering refrigeration and monitoring.			
Consumption is higher when cruising but usually so is engine alternator time. Dual alternator house bank charging can produce about 125A, even at low RPMs and high states of charge.			
Inverter is not currently used much -- only for microwave, the Visio display, and various chargers -- but it can fully power the microwave oven directly from the new lithium house bank.			
The biggest DC load is a Lewmar 185TT 4kw bow thruster, which has never shut down due to battery overload, and works fine with the lithium bank, even without the engine on.			
In fact, I think that the major DC cabling is oversize at mostly 4/0 gauge.			

Navigation devices on NMEA 2000 network #1					
		location	function	note	Configuration/Updates
1	LT-1000 GPS/Heading	Antenna Mast	GPS/Heading		Lars Tran software tool
2	B>riton T41	Fly Bridge	AP display	also rudder angle & more	Via Simrad GO5
3	B&G Triton Pilot Keypad	Fly Bridge	AP control		
4	Furuno TZT2 12" MFD	Fly Bridge	Chart, Radar, FishF	DRS4D-NXT radar & 520-PLD 600W ducer	Furuno download
5	Furuno FI70 instrument	Fly Bridge	Instrument	display Nav, engine, depth, etc	Via TZT2
6	Furuno FI70 instrument	Fly Bridge	Instrument	display Nav, engine, depth, etc	
7	Vesper Cortex	Fly Bridge cabinet starboard	AIS, GPS, WiFi	Handset = alternate instrument display	Cortex Onboard app
8	Airmar DST850	Forward Cabin (under floor)	Depth, Speed, Temp	Calibrates by CAST app	Airmar CAST app
8	Simrad OP12 keypad	Lower Helm	AP control		Via GO5
9	Simrad GO5 XSE	Lower Helm	AP, chart ++ & LINK	includes StructureScan transducer	
10	Furuno FI70 instrument	Lower Helm	Instrument	mainly substitute for old Ritchie compass	
11	Actisense NGT-1-USB	Lower Helm (behind)	Gateway	to TZ PC Nav & Acti apps like NMEA reader	PC: NGT-1 updates
12	Actisense EMU-1	Lower Helm (below)	Engine monitor	Converts VP analog guages to N2K	PC: Actisense ToolKit
13	Simrad AC12 ap controller	Lower Helm (cabinet behind)	AP	runs hydraulic solinoid	Via GO5
14	Maretron FFM 100	Engine Room port fwd	Fuel flow	needs servicing or replacements	
Network #1 backbone is mostly thick gray Mini cable, with terminators at mast base and engine room forward port overhead					

Monitoring devices on NMEA 2000 network #2						
	All Maretron unless noted	location	function	note	Configuration/Updates	
1	LJ Capteurs	Antenna Mast	Wind, baro & temp			
2	GPS 200	Fly Bridge (starboard shelf)	GPS			
3	Yacht Device humidity	Fly Bridge (mast base)	Humidity	used by DSMs to calculate Dew Point		
4	DSM 250	Fly Bridge	Instrument display			
5	ALM 100	Fly Bridge	loud audio alarm	controlled by Maretron DSM's		
6	M12 Switch panel	Fly Bridge	light switching	not yet installed but switching on DSM		
7	Standard Horizon GX2400	Fly Bridge attaches	VHF/AIS receive	internal GPS too & data logging		
8	LTU GPS/Heading	Fly Bridge seat way fwd	Heading, GPS, baro			
9	USB100	Lower Helm (behind)	Gateway to PC	Maretron N2KAnalyzer on PC		
10	VDR100 voyage recorder	Lower Helm (behind)	Analysis			
11	Actisense WK1	Lower Helm (behind)	WiFi data	not installed		
12	Victron Venus	Lower Helm (behind)	Elec monitor/control			
13	Victron Cerbo (via Venus)	Breaker Panel	Elec display	Also displays tank levels and more temps		
14	DSM xxx	Lower Helm	Instrument			
15	M12 Switch Panel	Lower Helm	light switching	not configed but switching on DSM		
16	DSM 410	Breaker Panel	Instrument			
17	SIM 100	Breaker Panel	high bilge, smoke, etc	not yet installed smoke & CO2 sensors		
18	ALM 100	Breaker Panel	loud audio alarm			
19	M12 Switching module	Breaker Panel	Switching	Lights: eng room, nav, mast floods		
20	TEMP 100 #1	Engine Room fwd port	Eng block, boiler, hot water, frig			
21	TEMP 100 #2	Engine Room aft star	tranny, dripless, water pump, Victron bat			
22	DST100	Engine Room	Depth, Speed, Temp			
23	YDES-04	Engine Room	Eng & Fuel flow	Uses engine diagnostics port		
24	Offshore	Engine Room	Racor fuel pressure			
Network #2 backbone is blue Mid cable, with terminators at mast base and engine room aft starboard overhead						

Lynx Smart BMS 500 wiring in engine compartment				
Lynx multiconnector				
Pin	Name	Type	Function	
1	AUX voltage output +	System voltage positive	1a fuse red to Cerbo	Cable flat white 18awg to Cerbo
2	AUX voltage output -	System voltage negative	blk to Cerbo	" " ditto
3	Allow to charge		1a from AUX	Wire: red wire fused loop
4	Allow to charge		Red to Alarm relay #8	Wire: red unfused loop
5	Allow to discharge		1a from AUX	not installed
6	Allow to discharge		to SBP High	not installed
7	Alarm relay NC			n/a
8	Alarm relay COM		Red to ATC #4	Wire: red unfused loop
9	Alarm relay NO		to Solid Switch High	Thin bulk cable, blue wire
10	Remote on/off H	pull-up resistor	to circuit panel switch	Cable: round black 22awg to breaker panel lower right
11	Remote on/off L	Pull-down resistor	to circuit panel	" " ditto
Lynx Distributor #1 -- battery bank				
	Batteries 1, 2, 3, 4		Pos	100 amp fuse each
	Batteries 1, 2, 3, 4		Neg	
Lynx Distributor #2 -- major loads and charge sources, plus				
	Solid Switch		2a fuse on POS	Cable: flat white 16 awg (old SmartGuage)
			Neg	
	Balmar regulator		2a fuse on POS	Bulk round glass fuse, not used
			Neg	
	Main house feed from 400a fuse		Pos	
	Neg feed from bus bars		Neg	
	Solar		Pos	need fuse sizes but they are visible
			Neg	
	DC-DC		Pos	
			Neg	

Miscellaneous wiring					
Lewmar windlass	Purple = power, Brown = UP, White = DOWN				
Weema tank channels	#1 white starboard fuel 125 gallon or 140?				
Now to Cerbo tank inputs	#2 white port fuel				
in same 1-4 order	#3 black fresh water 100 gallon				
	#4 color _____ black water 50 gallon				
Carling MPower 12		M12 channel	old DCM#	fuse	old Maretron DCR for reference
	Nav Lights	1	2	5	Input what fuse fuse wiring
	Flood lights (fix fwd?)	2	6	10	12 forward bilge power 3a b/b
	Bow Power	3	4	5	10 eng rm bid LED 3a o/b
	Foward Engine Room Lights	4	8	5	08 old eng rm fixtures 3a r/b
	Aft Starboard Engine Room Light	5	10	8	06 deck (masthead) lts 4a b/b
	Bow Light (fix)	6	12	5	04 bow light 3a r/r
					02 nav lights 5a b/b
Surecall Boiler system					
Main Switch	Red to thermostat, red to Surecall controller, upper tab for neg 12v to light toggle tip				
Thermostat	Red - right post, Black second post	No ground found. Red to main switch. Blk to Surecall controller/			
2 speed fan switches	fused wire to center tab, fan wire to lower tab	Note different switch models for different fans (.7 for bigger galley unit)			
Unused wires					
below fwd strb engine hatch	yellow wire to BG-One oil in bilge alarm				
below circuit panel	spare power cables to various locations				