GlaStar Electrical Load Analysis, Fuse, Circuit Breaker, and Bus requirements, 6 Mar 2011 Version 2.2

Bus	Slot	Fuse / Circuit Breaker Size	Wire Size	Accessory	Wire Diag.	Ground Ops	Pre-Flight	Taxi	Takeoff Climb	Cruise	Apprch to Landing	Further LOAD Shedding possible	Comments
▼ Battery						**4.7**	**9.4**	**6.4**	**6.4**	**7.4**	**6.4**	**1.8**	
Battery	1	Fuse:5A	20	Fuel Primer Pump	2.0 2.7	0.0	3.0	0.0	0.0	0.0	0.0	0.0	Load involves a 2-50 Primer switch, Parker Solenoid, and Facet Fuel Pump...rough estimate at 5amps.
Battery	2	Fuse:5A	20	CD Ignition: Pilot Box Cylinders 1 & 2	2.1	0.0	1.3	1.3	1.3	1.3	1.3	1.3	LSE lists a 5A circuit breaker, but will use a fuse.
Battery	3	Fuse:10A	14	12V Power Outlet	1.9	1.0	0.0	0.0	0.0	1.0	0.0	0.0	IPhone / IPod in flight entertainment, flight planning & mgmt apps, IPad, etc.
Battery	4	CB: 5A	20	AoA Indicator	5.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	Advanced Flight Systems AoA Pro
Battery	5	Fuse:4A	18	GPS 696	6.3	3.5	3.5	3.5	3.5	3.5	3.5	0.0	Emergency assume use internal battery. The max draw is 3.5 amps, with the back light on full and XM connected. Note: The GDU370 lists 1.1amps.
Battery	6	-	-	Spare	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Spare slot
Battery	7	-	-	Spare	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Spare slot
Battery	8	Fuse:2A	20	Cabin Flr, Baggage, & Map Box Lights	3.4	0.17	0.0	0.0	0.0	0.0	0.0	0.0	Cabin floor (2) = .016amp per light Map box (1) = .016 amp per light Baggage lights (2) = .06amp per light, Total = .17amps
Battery	9	Fuse:2A	18	Panel / Ovhd Lights Navigation Lights Compass Light	3.0 3.2 5.1	0.0	1.1	1.1	1.1	1.1	1.1	0.0	Nav Lts = 1amp, Compass Lt = .02, Glareshield Lt = .08, Overhead Map Lts = .04, totaling 1.14amps
Battery	10	Fuse:15A	12	Endurance Bus	1.2								Provides power to 17AH brownout battery relay S704-1
▼ Main						**0.5**	**11.7**	**24.4**	**32.4**	**21.6**	**32.4**	**1.5**	
Main	1	CB: 5A	20	Alternator #1 Field Main 60Amp (L-60)	1.3	0.0	3.0	3.0	3.0	3.0	3.0	0.0	Estimate of 3amps for contactor.
Main	2	Fuse:5A	20	SL30 Com2	6.2	0.0	0.3	0.3	0.3	0.3	0.3	0.0	A separate 5amp CB or fuse should be installed for downline overload or short circuit protection p 14.
Main	3	Fuse:10A	18	Strobe Lights	3.1	0.0	0.0	7.0	7.0	7.0	7.0	0.0	Assume strobe lights OFF if need the AMPS for emergency.
Main	4	Fuse:7.5A	18	Landing Light	3.3	0.0	0.0	5.4	5.4	0.0	5.4	0.0	MR16 Halogen light (65W)
Main	5	Fuse:7.5A	18	Taxi Light	3.3	0.0	0.0	5.4	5.4	0.0	5.4	0.0	MR16 Halogen light (65W)
Main	6	Fuse:5A	22	PMA8000BT	6.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0	P. 38 All Power, and Ground wires shall be #22 gage wire Lighting #22 AWG, other wires minimum #24 AW. J2 connector Pins 8 and 9 connected through a 5 A breaker. Current draw of .5 typical (estimated), max of 2.5A stated in manual.
Main	7	CB: 5A	22	GRT EFIS #2 & AHRS #2	5.4	0.0	1.5	1.5	1.5	1.5	1.5	1.5	Display 1.2A, AHRS .25A, estimate @1.5A total. Display & AHRS power and ground use 22AWG
Main	8	Fuse:2A	20	SL30 Nav2	6.2	0.0	0.3	0.3	0.3	0.3	0.3	0.0	A separate 2amp CB or fuse should be installed for downline overload or short circuit protection p 14.
Main	9	Fuse:2A	22	Dynon EFIS D6 Backup	5.5	0.0	1.0	1.0	1.0	1.0	1.0	0.0	The EFIS-D6 system-wide power requirement is 8 watts typical and 13 watts maximum. On a 12-volt system, this translates to about 1 amp max current draw. Dynon D-6 has it's own internal Li-Ion 2hr backup battery and will continue to run for 2hrs when DC Power Master = OFF.
Main	10	Fuse:30A	14	Pitot Heat	7.0	0.0	0.0	0.0	8.0	8.0	8.0	0.0	Aero Instruments AN512, estimate 8amps per Knuckoll's article. Using 30A fuse for warm up spike load.
Main	11	Fuse:1A	20	Low Voltage Warning	3.5.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	LED light (Amber)
Main	12	Fuse:7.5A	20	Start	1.1	0	5.0	0.0	0.0	0.0	0.0	0.0	Load involves a 2-10 Starter Switch (3A), and Starter contactor
▼ Endurance						**0**	**5.824**	**5.824**	**7.324**	**7.324**	**5.824**	**3.684**	
Endurance	1	Fuse:5A	20	GNS430W Main Pwr	6.1	0.0	1.6	1.6	1.6	1.6	1.6	1.6	See p. 3-11 Rev G manual for loads, and Figure H-2, p. H-4 for power / circuit breaker recommendation of typical installation. Typical listed at 1.6A
Endurance	2	Fuse:10A	20	GNS430W Comm Pwr	6.1	0.0	0.004	0.004	0.004	0.004	0.004	0.004	See p. 3-11 Rev G manual for loads, and Figure H-2, p. H-4 for power / circuit breaker recommendation of typical installation. Typical listed at RX = 4mA, and TX = 3.35A
Endurance	3	Fuse:5A	20	SC5 Clock	5.2	0.00	0.10	0.10	0.10	0.10	0.10	0.10	States to NOT put on Battery bus, has it's own internal small battery to hold time and setting preferences.
Endurance	4	Fuse:2A	20	Pitch Trim	4.0	0.0	0.25	0.25	0.25	0.25	0.25	0.25	1 pitch axix Ray Allen MAC servo with the TCW Safety-Trim Servo Controller 2amp fuse. Per email from TCW: The product draws about 0.05 amps steady state, when you run a servo, the corresponding servo current adds to that amount. With a typical ray allen servo the total current is typically less than 0.25 amps.
Endurance	5	Fuse:15A	12	Endurance Bus Feed									Power feed from Brownout battery.
Endurance	6	Fuse:5A	20	CD Ignition: Copilot Box Cylinders 3 & 4	2.1		1.3	1.3	1.3	1.3	1.3	0.0	LSE lists a 5A circuit breaker
Endurance	7	CB: 5A	22	GRT EFIS #1 & AHRS #1	5.3	0.0	1.5	1.5	1.5	1.5	1.5	1.5	Display 1.2A, AHRS .25A, estimate @1.5A total. Display & AHRS power and ground use 22AWG
Endurance	8	Fuse:7.5A	20	Auto Pilot	5.6	0.0	0.5	0.5	2.0	2.0	0.5	0.0	The autopilot itself draws less than 0.5 ampere. Most of the current required by the autopilot system is used by the servos (up to 1A per servo).
Endurance	9	Fuse:5A	16	Fuel Xfer & Carb Air Temp	2.6 2.8	0.0	0.03	0.03	0.03	0.03	0.03	0.03	PPA Controller .02, Two Facet Pumps when running + Controller = 4amps. Carb Air Temp Sensor .01 (wag estimate). Fuel Xfer in Cruise of 4.0 amps is an intermittent load to transfer Aux tanks to main fuel tanks.
Endurance	10	-	-	Spare	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Spare slot
Endurance	11	Fuse:3A	18	T22 Transponder	6.5	0.00	0.34	0.34	0.34	0.34	0.34	0.00	P. 14 Use a 3A circuit breaker for power supply protection to the TT21/TT22. Stark Avionics wired power and ground with 18AWG due to 20' run length aft of bulkhead A.
Endurance	12	Fuse:5A	22	EIS 4000	2.3	0.0	0.2	0.2	0.2	0.2	0.2	0.2	See figure 5a--Connector A Wiring for Model 4000.
				Overall Totals		**5.2**	**26.9**	**36.7**	**46.2**	**36.4**	**44.7**	**7.0**	
				Overall Totals x 1.25		**6.5**	**33.7**	**45.8**	**57.7**	**45.4**	**55.8**	**8.7**	
				Battery + Endurance		**4.7**	**16.1**	**13.1**	**14.6**	**15.6**	**13.1**	**5.3**	
				Main + Endurance		**0.5**	**16.2**	**28.9**	**38.4**	**27.6**	**36.9**	**5.2**	