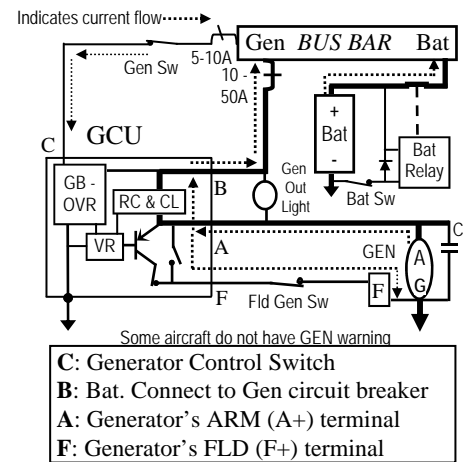
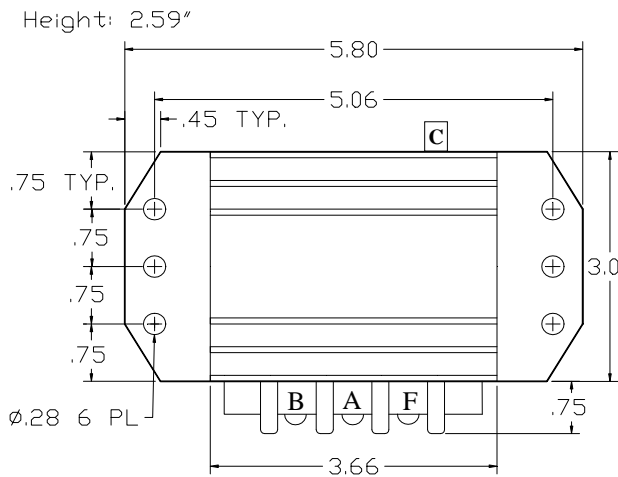


G1XX1P, G2XX1P GENERATOR CONTROLLER UNITS (GCU) FOR "TYPE B" GENERATORS



Product Specification, Function Chart and Cross-Reference

Function ⇒	V.R.	R.C.	C.L.		OVP	GOI	VR I	CL I	OVI		Replacement Cross Reference	
Part Number	Voltage Regulation Level	Reverse Current Protection	Current Limiter or Current Regulator		OV Protection	Gen Out Light	Volt Reg Light	CL Light	OV & GFP Light	Pins Out	Manufacturer or OEM	Part Number
G1101P	14.2 ± .2V	Yes	9 ± 1A	10A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1121P	14.2 ± .2V	Yes	11 ± 1A	12A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1151P	14.2 ± .2V	Yes	14 ± 1A	15A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1201P	14.2 ± .2V	Yes	18 ± 2A	20A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1251P	14.2 ± .2V	Yes	23 ± 2A	25A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1351P	14.2 ± .2V	Yes	33 ± 2A	35A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G1501P	14.2 ± .2V	Yes	46 ± 2A	50A	16 ± .4V	Yes	Yes	Yes	Yes	4		
G2101P	28.3 ± .4V	Yes	9 ± 1A	10A	32 ± .8V	Yes	Yes	Yes	Yes	4		
G2151P	28.3 ± .4V	Yes	14 ± 1A	15A	32 ± .8V	Yes	Yes	Yes	Yes	4		
G2201P	28.3 ± .4V	Yes	18 ± 2A	20A	32 ± .8V	Yes	Yes	Yes	Yes	4		
G2251P	28.3 ± .4V	Yes	23 ± 2A	25A	32 ± .8V	Yes	Yes	Yes	Yes	4		
G2401P	28.3 ± .4V	Yes	38 ± 2A	40A	32 ± .8V	Yes	Yes	Yes	Yes	4		
G2501P	28.3 ± .4V	Yes	48 ± 2A	50A	32 ± .8V	Yes	Yes	Yes	Yes	4		

VR: Voltage Regulation. RC: Reverse Current. CL: Current Limit.
 OVP: Over-Voltage (OV) Protection. GOI: Generator Out Indicator.
 VRI: Field on & Field-to-Ground Short Protection. OVI: OV Indicator.

This GCU is for experimental aircraft, OEM, Military and non-aviation application. To use it in a TC'ed aircraft, first obtain FAA or CAA approval

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Title		Production Information				Drawn By		Approved By		Released to		
Model No		G1XX1P, G1XX1P-H, G2XX1P, G2XX1P-H		Rev		Femi G. Ibitayo		<i>FGIbitayo</i>				
Drawing No		Z46PI1				Rev		Date		Page		
		B		B		12/13/11		12/13/11		1-2-1		
Rev	B	Rearranged & added picture.							Classification		Minor	
Rev	A	Revised GO light section. Added G1151P & clarified the table.							Classification		Minor	

G1XX1P, G2XX1P GENERATOR CONTROLLER UNITS (GCU) FOR “TYPE B” GENERATORS

The GXXX1P series Generator Controller Units (GCU) replace some comparable vibrating point or carbon pile Voltage Regulators used with 10 to 50A DC generators in 12V and 24V applications. The GCU consists of some or all the following functions: Voltage Regulator (VR) and generator build-up, Reverse Current (RC) protection, Current Regulator or Limiter (CL) and GCU system Trouble-Shooting Lights (TSL). The GCU will cause a generator with >1.6V residual voltage to build-up.

The **Voltage Regulator (VR)** controls the Generator’s field to keep the aircraft electrical system voltage at the specific 14V or 28V. This “type B” GCU, with ground on one side of the field, electronically switches power to the other side of the field to keep the Generator output voltage at the VR set point. As long as the Generator output voltage is less than the VR set point, the switch is closed, current flows, and the Generator’s output increases. When the Generator’s output voltage exceeds the VR set point, the switch opens, current flow stops, and the Generator’s output decreases.

A GREEN light on the unit shows VR and GCU output. The GCU will cause a generator with >1.6V residual voltage to build-up.

The **Generator On-line (GO)** circuit, through a low resistance path, builds-up the generator output from residual voltage to over the normal battery voltage. When the Generator’s output Voltage exceeds the battery voltage, the GO light and the instrument panel GEN OUT lights will turn off. The light will turn on if the generator drops off-line due to OV trip or field ground-fault protection function.

The **Current Limiter (CL)** controls the maximum output current the Generator can produce. It turns off the field excitation (current) when the generator output current exceeds the CL set point (determined by the generator’s current rating). It allows normal field excitation when the generator output is below the GCU CL set point.

The **Reverse Current (RC) Protection** circuit blocks the battery current from going back to the generator. It allows current to flow only from the generator to the battery and system.

Field Ground Fault Protection (GFP). The GFP circuit monitors the field current for indication of a ground short. If it senses a field- to-ground short, the GFP circuit will turn off the Voltage Regulator, thus removing excitation from the field circuit. When the GFP activates, the output will remain off, the OV and LV lights come on until the Master or Alt switch is reset.

The on-unit system **Trouble-Shooting Lights, TSL**, identify how the system is operating and, helps with system testing and trouble-shooting. The lights indicate Generator Off/On-line (GO, Red), Current Limit (CL, RED), Voltage Regulation (VR, GREEN and GFP, RED, Field-to-Ground short), and Over-Voltage Protection (OVP, Red). The VR TSL has three-color states: **Red, Green or Off**. When there is no power applied to the unit, the TSL is **Off**.

A **Red** TSL with the Bat and Fld switches **on** indicates an internal or external ground short in the Gen field circuit.

A **Green** TSL with means there is power coming out of the GCU. With the engine on, a Green TSL and a bus voltage of 13.8V to 14.4V for 12V system and 27.9V to 28.7V for 24V system, means the system is operating correctly. A sustained bus voltage of 11V to 13V (12V system) and 27.9V to 28.7V (24V system) means an open generator field or field wire. Unless the GCU is damaged, the TSL should be Green when the master switch is on. Very slow flickering Green TSL with engine on indicates high resistance between the red wire and bus. With the engine off, battery on, the voltage on the field (and F terminal) is usually 0.1 to 2V less than what is on the Battery (B) terminal. With the engine and master switches on, the field voltage will vary between 0.5 to 13V (12V system) and 1.0 to 27V (24V system) depending on the system load.

SPECIFICATIONS

Part No.	Voltage Regulation	OV Protection	Current Limit	RC Protection	Field Current	Field Current	Part No.
G1XX1P	14.2 ± 0.4V	16.0 ± 0.4V	Indicated by “XX” in P/N Page 1-2-1	Yes	5 Amp	8 Amp	G1XX1P-H
G2XX1P	28.3 ± 0.4V	32.0 ± 0.8V		Yes	5 Amp	8 Amp	G2XX1P-H
		Temperature	Operating: -55 °F to +165 °F Storage: -65 °F to +180 °F		Weight 1 LB.	Replacement for P/Ns See Page 1-2-1	

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Title	Production Information				Drawn By		Approved By		Released to	
Model No	G1XX1P, G1XX1P-H, G2XX1P, G2XX1P-H			Rev		Femi G. Ibitayo		<i>FPG Ibitayo</i>		
Drawing No	Z46PI1			Rev	B	Date	12/13/11	Date	12/13/11	Page 1-2-2
Rev	B	Rearranged & added picture.						Classification	Minor	
Rev	A	Revised GO light section. Added G1151P & clarified the table.						Classification	Minor	