SGC

starter-generator controller

Introducing the SGC

The SGC is a generator control unit (GCU) and start controller combined into one. This collaboration not only allows more functionality and performance, but enables efficiency in terms of wires, weight, space and the effort to install and maintain.

The SGC is digital which provides it with unique capabilities. This allows it to not only adapt to different aircraft with different starter-generators and different electrical systems, but to provide intelligent control and oversight, etc.

The SGC allows parallel-series start-up capability if desired. This provides for more powerful starts particularly useful on some single shaft turboprops like the TPE-331.

The SGC can also augment the starter's performance by increasing starter generator field excitation as needed to improve acceleration and allow more efficient energy transfer.

The SGC can gauge battery condition as soon as the starting current flows and if determined too weak, discontinue the start.

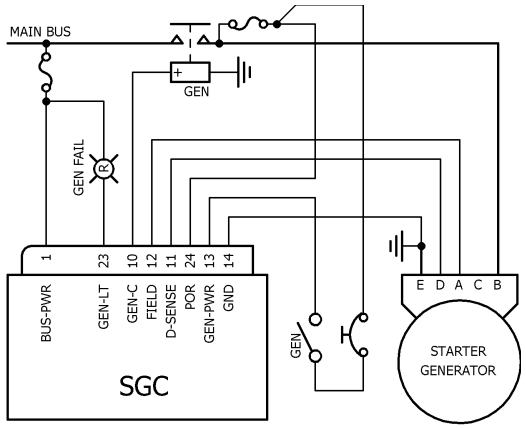
To generate electrical power and replenish the batteries once an engine is running, the SGC will perform generator control but also provide current limitation. Where a normal GCU will take the generator offline if the immediate battery recharge current is more than what the generator may supply, the SGC will instead allow a desired gradual replenishment of the batteries after each start by employing current limitation.

The SGC is all solid-state which improves reliability since it contains no moving parts.

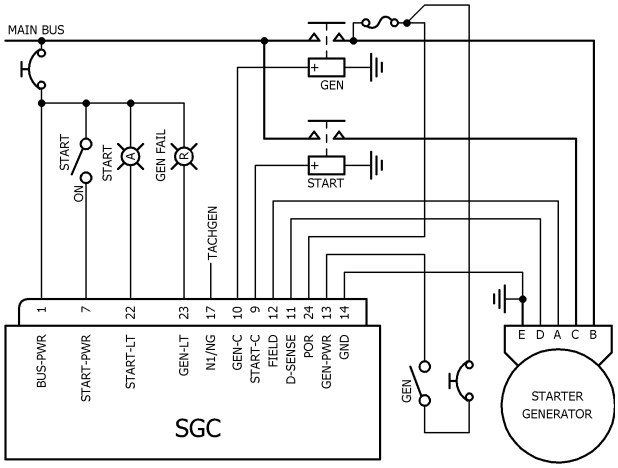
Features

- ✔ Generator control
  - Current limitation
  - Over and under voltage protection
  - Reverse and over-current protection
- ✔ Starter control
  - Standard or parallel-series starting
  - Selectable start field augmentation
- ✔ Adaptability
  - Not locked into any one engine, starter-generator or aircraft model
- ✔ Simple check out and troubleshoot
  - via maintenance interface to laptop / tablet PC running our SetView software
- ✔ Shares real-time parameters
  - such as generator current with connected monitor and control instrumentation (RS232 and CAN bus)
- ✔ Compact
  - line-replaceable unit that contains no moving parts like relays, potentiometers, etc.

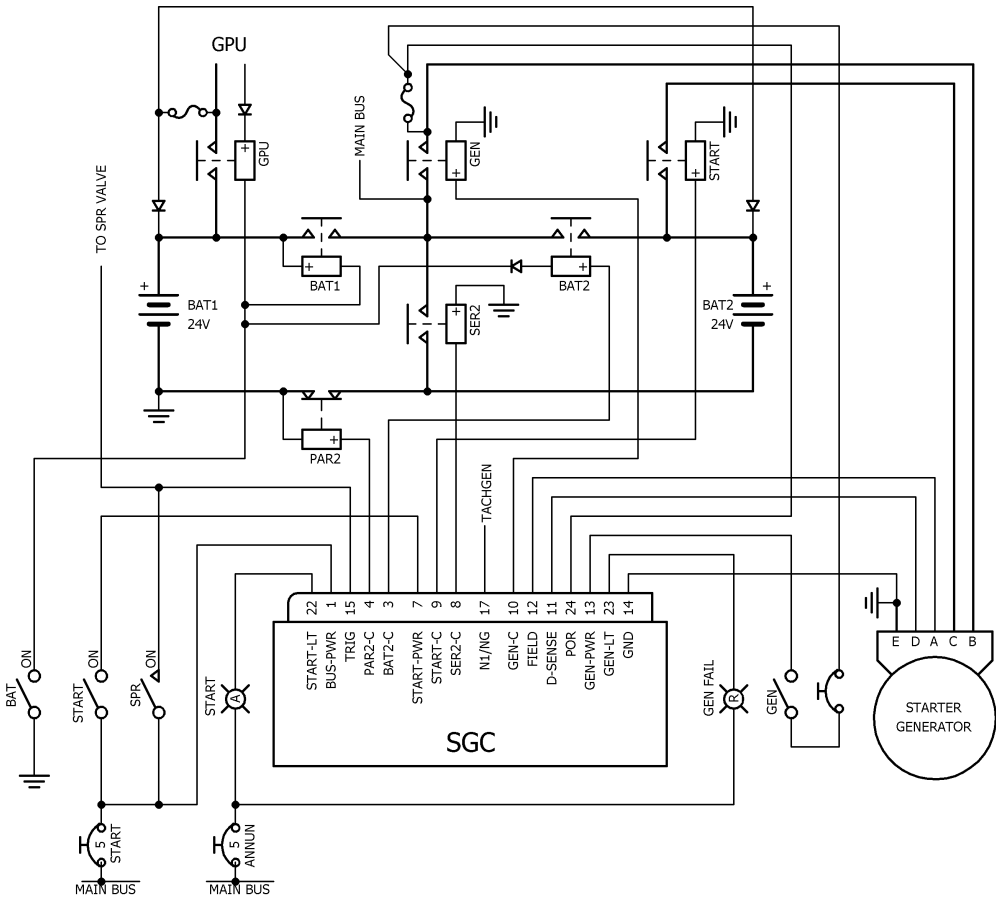
Option 1 – generator control



Option 2 – generator control & basic start



Option 3 – generator control & parallel-series start



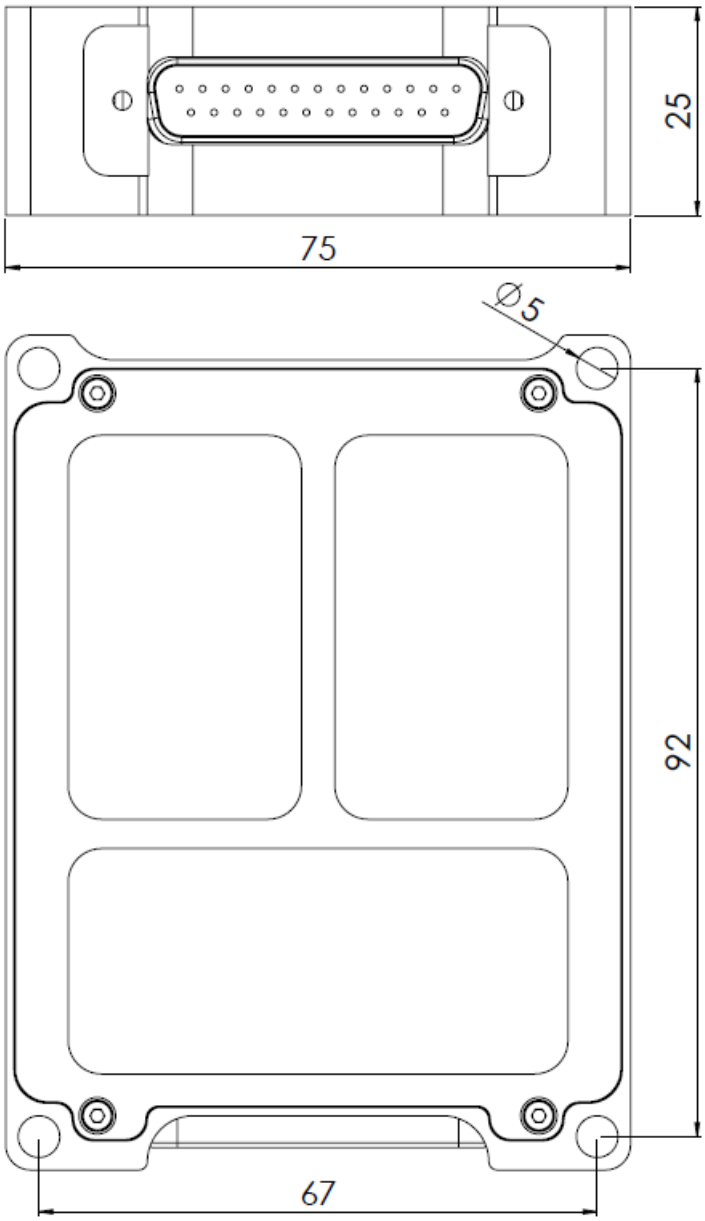
Pin-outs (male 25-pin d-sub)

PIN	DIR	FUNCTION	DESCRIPTION
1	IN	BUS-PWR	BUS POWER INPUT
3	OUT	BAT2-C	SECOND BATTERY CONTACTOR
4	OUT	PAR2-C	PARALLEL SWITCHING CONTACTOR
7	IN	START-PWR	START POWER INPUT
8	OUT	SER2-C	SERIES SWITCHING CONTACTOR
9	OUT	START-C	STARTER CONTACTOR
10	OUT	GEN-C	GENERATOR CONTACTOR
11	IN	D-SENSE	D SENSE INPUT (WIRED TO TERMINAL D ON S/G)
12	OUT	FIELD	FIELD OUTPUT (WIRED TO TERMINAL A ON S/G)
13	IN	GEN-PWR	GEN POWER INPUT
14	GND	GND	GROUND
15	IN	TRIG	TRIGGER INPUT FOR PARALLEL TO SERIES SWITCHING
17	IN	N1/NG	GAS-GENERATOR SPEED INPUT (WIRED TO TACH-GEN)
18	I/O	CAN-L	CAN BUS INTERFACE LOW
19	I/O	CAN-L	CAN BUS INTERFACE HIGH
20	IN	RX232	RS232 INTERFACE INPUT
21	OUT	TX232	RS232 INTERFACE OUTPUT
22	OUT	START-LT	START LIGHT INDICATOR
23	OUT	GEN-LT	GEN FAIL LIGHT INDICATOR
24	IN	POR	POINT OF REGULATION (GEN SENSE)
25	GND	GND	GROUND

General Specifications

1	Generator Regulation Voltage Factory Set to	28.0 V
2	Generator Regulation Voltage Adjustable Range	27.0 V – 29.0 V
3	Generator Contactor Pull-in Voltage (pin 24 relative to pin 1)	0.1 V – 0.2 V
4	Generator Reverse Current Drop-out (pin 11 relative to pin 14)	0.06 V – 0.4 V
5	Generator Over-voltage Trip Point (highest of pin 24 or 13 relative to pin 14)	32.5 ± 0.5 V
6	Generator Over-voltage Trip Time	0.03 – 0.05 sec
7	Operating Temperature Range	-40 to +85 ºC
8	Max. Operating Altitude	55,000 feet
9	Dimensions	100 x 75 x 25mm
10	Max. Weight	180 g (0.4 lb)

Unit Outline



1. The SGC uses a 25-pin DSUB (M24308 series) male connector. The recommended mating receptacle (female) for it is the M24308/2-3
2. The unit is secured through four 5mm holes on each corner accepting AN3 bolts