



# SC-200U-01

## 200 Amp Portable Starter-Alternator Control System

### Typical Applications:

- Safely starting Unmanned Air Vehicles (UAV's) and Unmanned Ground Vehicles (UGV's)

### Featuring:

- Simple intuitive operation
- Durable and Environmentally sealed
- Wide input voltage range, 20 - 56 VDC
- Sensorless 3 phase commutation
- Auto shutdown on fault detection

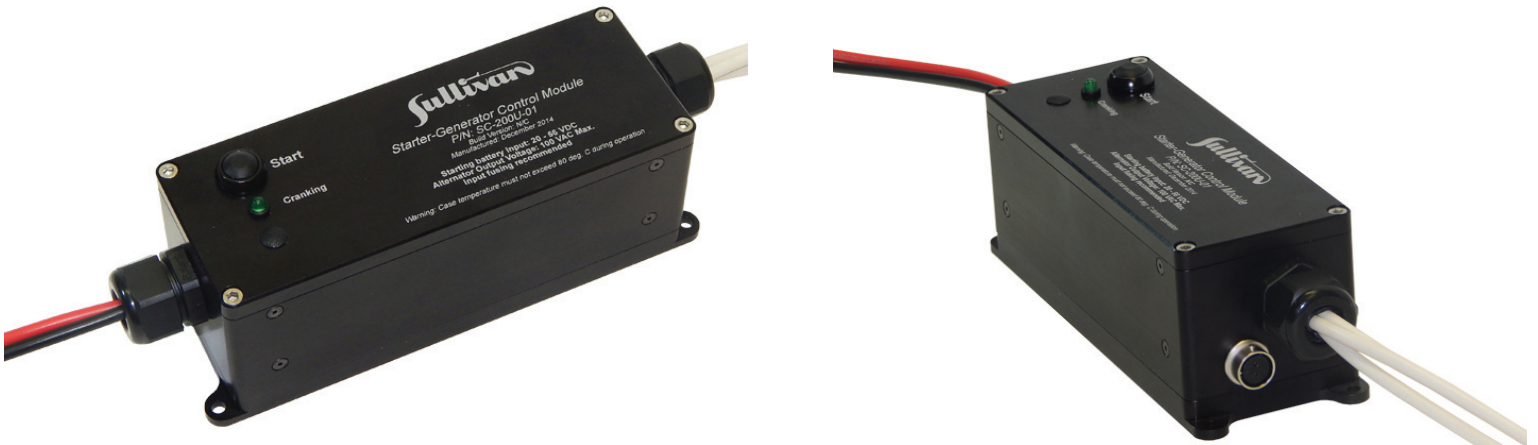


# SC-200U-01

200 Amp Portable Starter-Alternator Control System



# Specifications



Mechanical:	Conditions
Starting Current:	200A Max Surge* 75A Max Continuous
Input Voltage:	20 to 56 VDC
Maximum Feedback Voltage:	100 VAC 3Ø
Electrical Protections:	Optional over temperature alert, auto shut down on fault detection
Environmental Protection:	IP-56
Storage Temperature:	-40C to 85C
Dimensions:	230 mm x 70 mm x 70 mm
Weight:	1.1 Kg

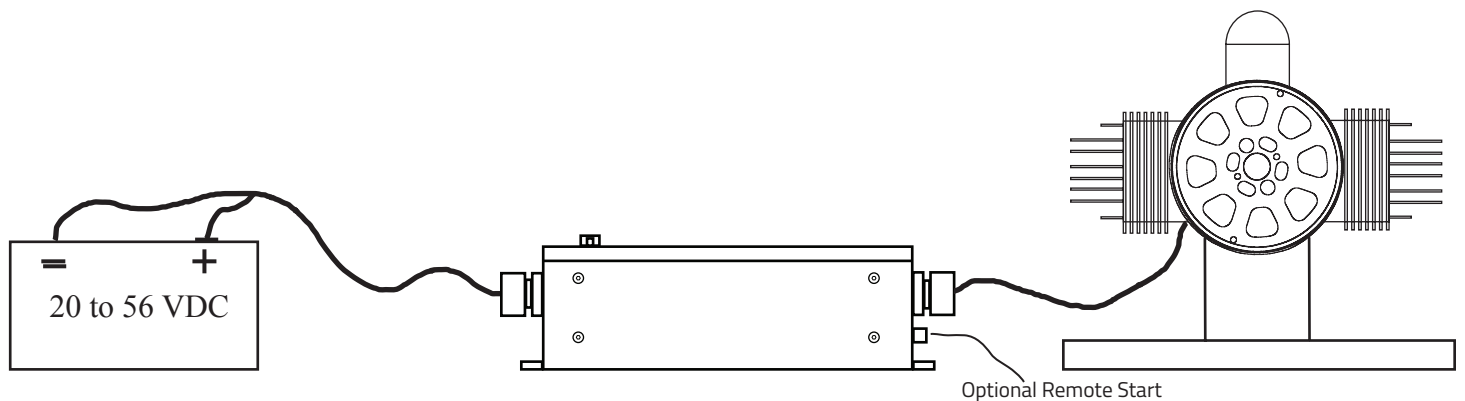
\* Surge = V (supply) / R (alternator)

The SC-200U-01 module is designed to provide a simple and intuitive way to control Sullivan three phase Starter-Alternators for engine cranking. The module is utilized between the engine mounted Starter-Alternator and a suitable DC power source for ground operation, bench testing, and performance evaluations. It can also be installed permanently for on board starting applications.

Driving the Starter-Alternator as a motor requires that the SC-200U-01 convert the 20-56VDC input from batteries, or a bench supply, to a modulated three phase AC signal that is coordinated to the relative position of the rotor and stator. This process is commonly referred to as commutation. Commutation by the SC-200U-01 is done without the need for any external sensors through the detection of small feedback pulses that return from the Starter-Alternator as it is energized. Although more complicated to control than a sensor type system, this method results in a very simple three wire connection on the output and two wire connection to the battery and is universal to all Sullivan Starter-Alternators.

Unlike conventional brushless motor controllers, that are only designed for driving with a limited input voltage, the SC-200U-01 can tolerate voltages on its output that are much greater than the input voltage being used to drive it. This is critical for Starter-Alternator applications because the voltage generated as the engine RPM increases is usually much higher than the nominal DC buss voltage of the vehicle. Conventional motor controllers are not built to handle these high feedback voltages and can potentially be damaged if used this way.

As a leading supplier of Starters, Alternators, and Power Systems for UAVs Sullivan brings over 10 years of experience into the design of the SC-200U-01. Please feel free to contact our staff for more information or to discuss other products or solutions that we may be able to provide.



# SC-200U-01

## 200 Amp Portable Starter-Alternator Control System

**DC Supply Input**  
-2 Conductors, 10 AWG

**Starter - Alternator Connection**  
-3 Conductors, 10AWG

**Remote Crank Control**  
-Hirose # RM12BRD-2S  
-2 Conductor 5V, N/O  
-Momentarily Close circuit to crank

**General Notes:**

- Reversing any two "Starter-Alternator Connection" leads will reverse the engine's direction of rotation during cranking
- DC Supply and Starter-Alternator Connection Cables should be 2.5 m in length or less (8.2'). For longer distances increase wire size to reduce voltage losses
- Maximum Starting Current ~200A Surge, 75A Continuous.  
Surge current calculation:  $Current (max) = V(supply) / R (alternator)$
- REQUIRED: DC Source capable of providing adequate input voltage and current. Fusing protection should be provided at the source if the current requirements are unknown to avoid damage from overloading.
- A minimum 5 second delay between crank attempts is required. Internal controls prevent quicker activation.
- In the event Starter Does Not Operate, check LED Crank indicator. Failure to light when activating module indicates inadequate input voltage. If the LED lights but the starter alternator does not respond then the three phase connections should be checked. Any other problems should be diagnosed by Sullivan. No internal components are user serviceable.

UNLESS OTHERWISE SPECIFIED:	DRAWN	NAME	DATE	<b>Sullivan UV</b>	
DIMENSIONS ARE IN INCHES	CHECKED	KP	12/11/2014	<b>SC-200U-01 Start Controller ICD</b>	
TOLERANCES:	ENG APPR.			SIZE	REV
FRACTIONAL: 1/64	MFG APPR.			<b>A</b>	<b>06262015KP-07</b>
ANGULAR: MACH ±	Q.A.			SCALE: 1:2	WEIGHT: SHEET 1 OF 1
TWO PLACE DECIMAL ± .010	<b>PROPRIETARY AND CONFIDENTIAL</b>				
THREE PLACE DECIMAL ± .005	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE PERFECT PARTS COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE PERFECT PARTS COMPANY IS PROHIBITED.				
INTERPRET GEOMETRIC TOLERANCING PER:	DO NOT SCALE DRAWING				
MATERIAL	1 2 3 4 5				
FINISH	1				