



# SREGS-400U-02

## 400 Watt Power Management Unit

### Typical Applications:

- Remote Power Generation
- Power Regulation from Alternative sources, ex. wind or solar
- Unmanned Air Vehicles (UAV's) and Unmanned Ground Vehicles (UGV's)

### Featuring:

- 3 Phase AC primary input, 25 - 95 VACrms.
- Configurable to support LiPo, Lilon, LifePO4, NiCad, NiMH, SLA, and Lead Acid Battery Backup.
- Three simultaneous output voltages, 20 - 30 VDC 13 Amps, 10 - 13 VDC 13 Amps, and 4.8 - 8 VDC 7 Amps
- MIL-SPEC circular connectors
- Operates up to 91% efficiency at peak power.
- Provides automatic switching for DC ground power, and back up battery sources



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## Specifications



Output:	Conditions	Min	Max	Input:	Conditions	Min	Max
Main Output:	13A/400W Max	20 VDC*	30 VDC*	Alternator Input Voltage:	3Ø 0 - 1 KHz	29 VAC	95 VAC
Secondary Output:	13A/156W Max	10 VDC*	13 VDC*	Backup Battery:	LiPO, Lilon, LifePO4, NiCad, NiMH, SLA, Lead Acid*	24 VDC	32 VDC
Tertiary Output:	10A/49W Max	4.8 VDC*	8 VDC*	External Shore Power:	DC	24 VDC	32 VDC
Maximum Total Power:			400 Watts	Battery Switch Time:	No interruption of Output		250nS
Peak Efficiency:			91%	<b>Mechanical: Conditions</b>			
Self Protection:	Overvoltage, Undervoltage, Overcurrent, Reverse EMF			Enclosure Material:	Black Anodized Aluminum		
Maximum Overload Current:	Up to 10mS duration		125%	Dimensions:	77 mm x 79 mm x 226 mm		
Output Ripple, Maximum:	p-p All Outputs		500mV	Weight:	886g		
Voltage Regulation:	All outputs		+/-500mV	Connectors:	MIL-SPEC Circular Connectors		
Status Signal:	5V High Impedance			Design Standard:	MIL-STD 1275D		
Battery Charger Type:	Basic, Cell monitoring, or Full balance charging options available			Conformal Coating:	MIL-I-46058C Type UR		
Back-up Battery Charging:	LiPO, Lilon, LifePO4, NiCad, NiMH, SLA, Lead Acid*		900mA	Cooling:	14 CFM Fan, may be replaced by forced air		
				Operating Temperature:	-20C to 55C Ambient		
				Storage Temperature:	-40C to 85C		

\*Factory Adjustable

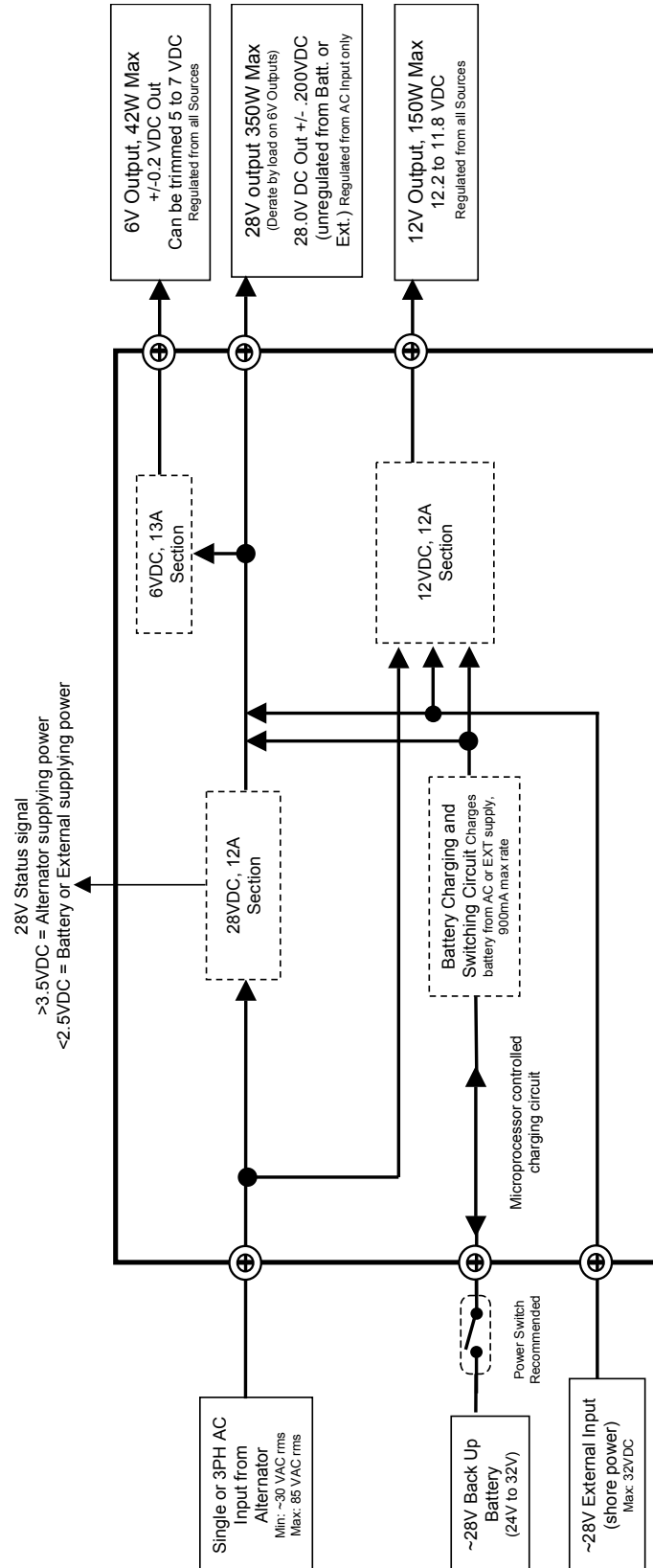
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### SULLIVAN UV SREGS-400U-02 PMU Block Diagram

Created: Nov. 13, 2012  
Revised: Jan. 7, 2015

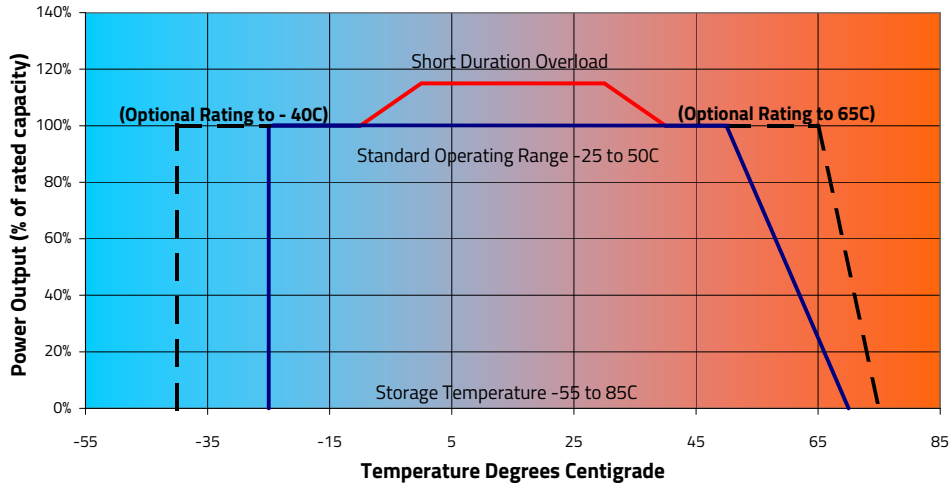


**General Notes:**

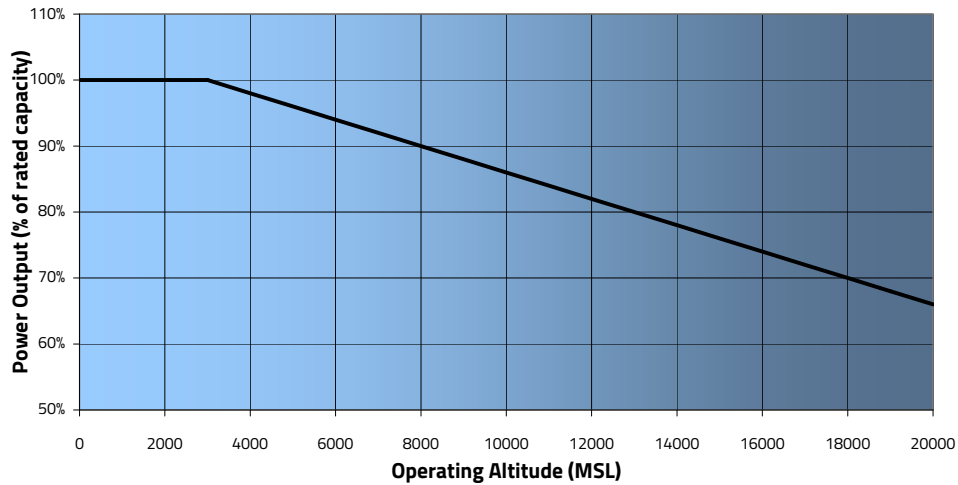
- Customer responsible for fusing all loads
- Battery recharges from External Input or AC input
- Enclosure type: 3CN SREGS 1
- All connections are MIL-5051 Circular Connectors
- All outputs are filtered to 100Mhz to 1 Ghz and include protection against Reverse Polarity and Transients

# Performance

### Allowable Storage and Operating Temperature Profile

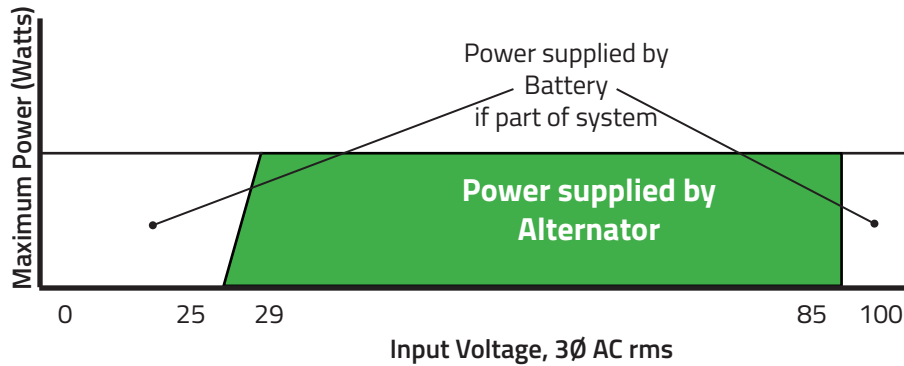


### Power Derating due to Altitude



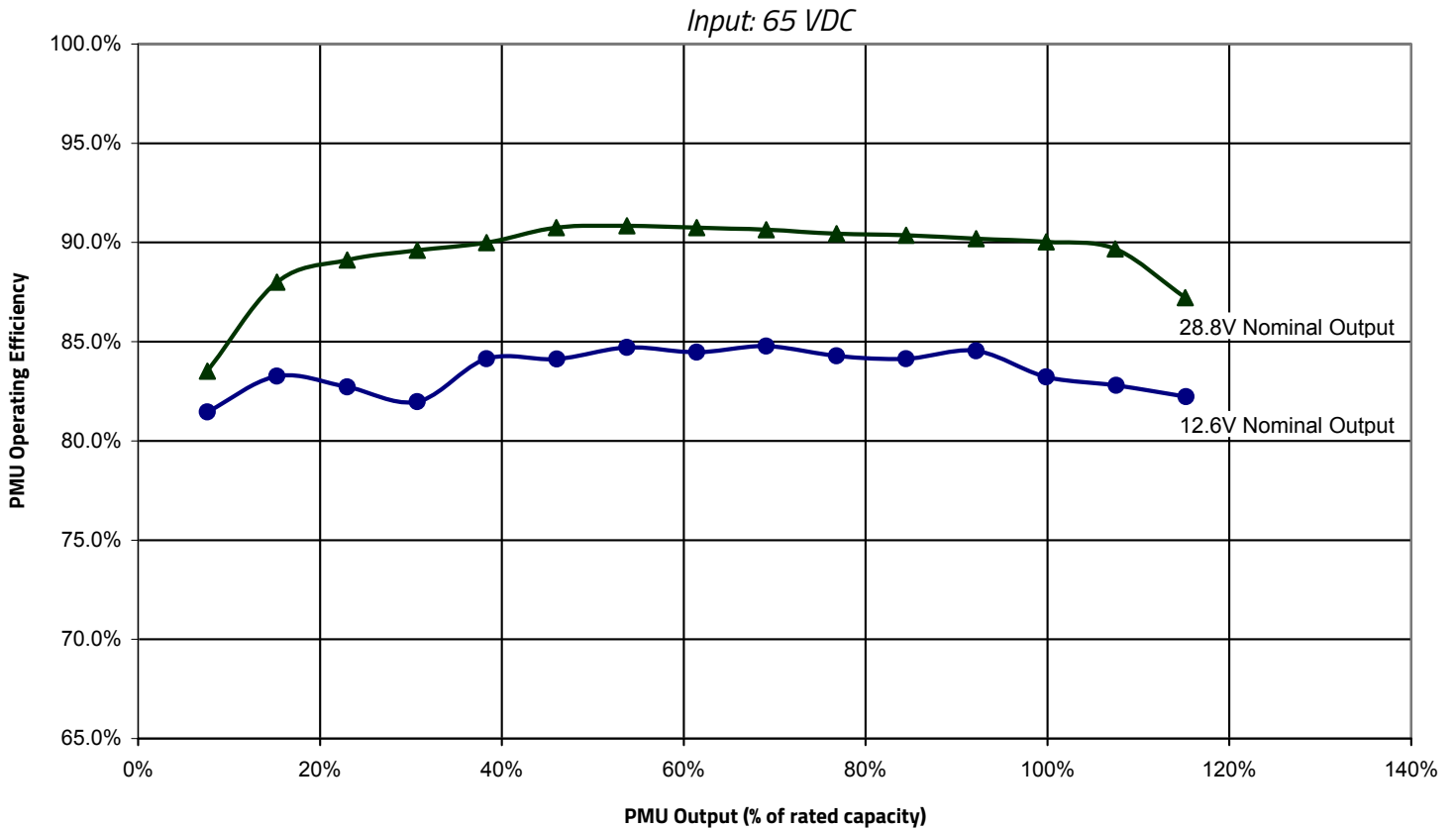
### Alternator Input Range

28V Primary Output



## Efficiency

Typical PMU Efficiency vs Output Current



### Engine load calculations

$$\text{Engine load} = \text{Output power} / \text{Regulator Efficiency} / \text{Alternator Efficiency}$$

Example: A 225W electrical load at 90% regulator efficiency and 80% alternator efficiency requires  $225 / 0.90 / 0.80 = 312.5\text{W}$  of engine power. At 746W/HP, this is 0.419 HP.

$$\text{Ft-Lbs of Torque} = \text{Horsepower} * 5252 / \text{RPM}$$

At 3800 RPM, a 225W load with a 90% efficient regulator and 80% efficient alternator, the torque load would be  $0.419\text{HP} * 5252 / 3800 = 0.579 \text{ Ft-Lbs}$ .

$$1 \text{ Ft-Lb} = 1.356 \text{ N-M}$$

0.579 Ft-Lbs of torque is 0.785 N-M.

# SREGS-400U-02

## 400 Watt Power Management Unit



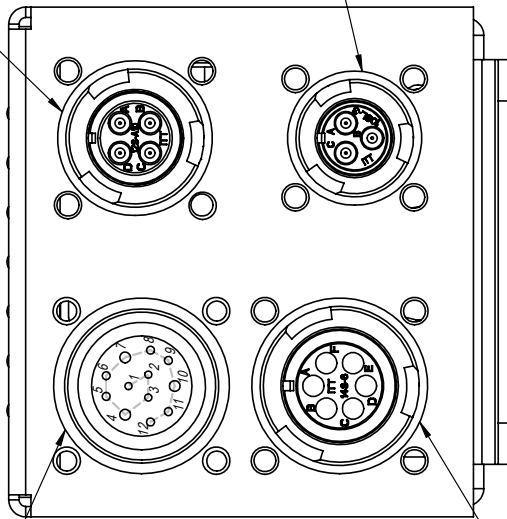
REVISIONS		
REV.	DESCRIPTION	DATE
1	Change J2 to Cinch 12 position connector	11/5/2014

**Connector J2: Back up Battery**  
 Cinch C48 / MIL-C-26500 Bayonet type  
 P/N: C48-10R14-12PN-102  
 Mates with: C48-16R14-12SN (straight)  
 Pin 1: Balance Cell 1 (+) / Cell 2 (-)  
 Pin 2: Balance Cell 1 (-) / Cell 2 (+)  
 Pin 3: Balance Cell 2 (+) / Cell 3 (-)  
 Pin 4: Primary (-)  
 Pin 5: Balance Cell 3 (+) / Cell 4 (-)  
 Pin 6: Balance Cell 4 (+) / Cell 5 (-)  
 Pin 7: Primary (+)  
 Pin 8: Balance Cell 5 (+) / Cell 6 (-)  
 Pin 9: Balance Cell 6 (+) / Cell 7 (-)  
 Pin 10: N/C  
 Pin 11: Balance Cell 7 (+) / Cell 8 (-)  
 Pin 12: Balance Cell 8 (+)  
 14G wires for Primary, 22G for Balance

**Connector J3: External DC Input and 28V Status**  
 ITT CANNON MIL-C-5015 CA-Bayonet  
 P/N: CA3102E12SA-10PB109  
 Mates with: CA3106E12SA-10SBF80 (straight)  
 CA3108E12SA-10SBF80 (90 deg.)\*\*  
 Pin A: External DC Input (+), 14G  
 Pin B: External DC Input (-), 14G  
 Pin C: 28V Regulation Status (+), 22G  
 Pin D: 28V Regulation Status (-), 22G

**Connector J1: Alternator AC Input**  
 ITT CANNON MIL-C-5015 CA-Bayonet  
 P/N: CA3102E10SL-3PB109  
 Mates with: CA3106E10SL-3SBF80 (straight)  
 CA3108E10SL-3SBF80 (90 deg.)\*\*  
 Pin A: Phase U  
 Pin B: Phase V  
 Pin C: Phase W  
 Note: Phase order does not matter  
 14G wires for all

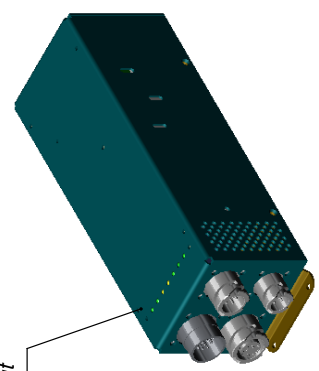
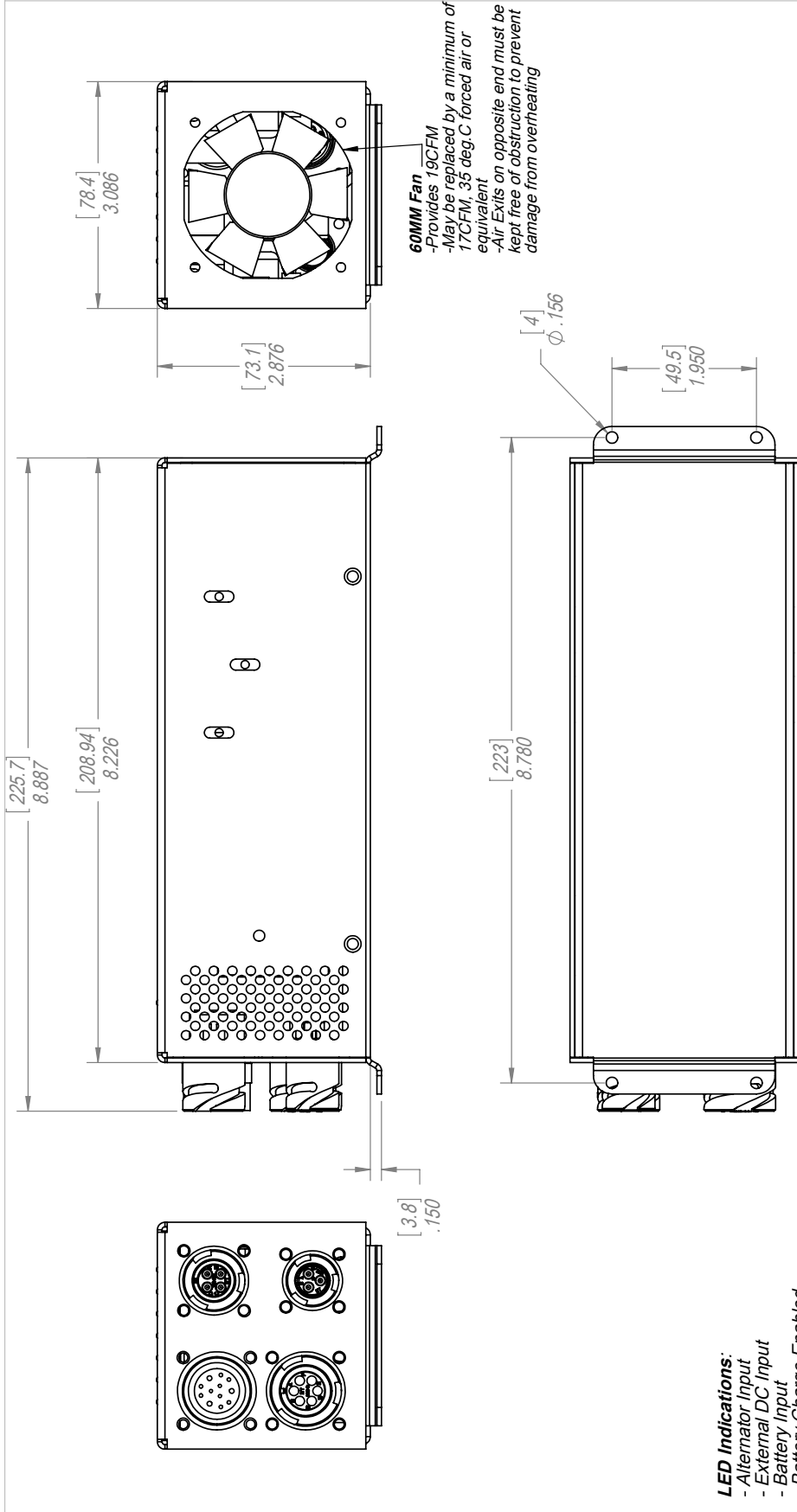
**Connector J4: 28V, 12V, 6V DC Outputs**  
 ITT CANNON MIL-C-5015 CA-Bayonet  
 P/N: CA3102E14S-6SB109 (straight)  
 Mates with: CA3106E14S-6PBF80 (90 deg)\*\*  
 CA3108E14S-6PBF80  
 Pin A: 28V Primary Output (+)  
 Pin B: 28V Primary Output (-)  
 Pin C: 12V Primary Output (+)  
 Pin D: 12V Primary Output (-)  
 Pin E: 6V Primary Output (+)  
 Pin F: 6V Primary Output (-)  
 16G wires for all



UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		KP	11/05/2014
TOLERANCES:			
FRACTIONAL: 1/64			
ANGULAR: MACH ±	BEND ±		
TWO PLACE DECIMAL ± .010			
THREE PLACE DECIMAL ± .005			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
DO NOT SCALE DRAWING			
Q.A. PROPRIETARY AND CONFIDENTIAL		Sullivan UV	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF THE PERFECT PARS COMPANY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF THE PERFECT PARS COMPANY IS PROHIBITED.		TITLE: SREGS-400U-02 Connection Diagram Rev-1	
SIZE	DWG. NO.	REV	
A		1	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1	

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KP	6/4/2015
TOLERANCES:	CHECKED		
FRACTIONAL: ± 1/64	ENG APPR.		
ANGULAR: MACH ± BEND ±	MFG APPR.		
TWO PLACE DECIMAL ± .010	Q.A.		
THREE PLACE DECIMAL ± .005	<b>PROPRIETARY AND CONFIDENTIAL</b>		
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MATERIAL	SCALE: 1:2		
FINISH	WEIGHT: 1		
DO NOT SCALE DRAWING	SHEET 1 OF 1		

*Sullivan UV*

**SREGS-400U-02**  
**ICD**

REV N/C  
 DWG. NO. 20150604KP-01  
 SIZE **A**