



SGENS-100A-01

100 Amp Rectification and Regulation Unit

Typical Applications:

- Unmanned Air Vehicles (UAV's) and Unmanned Ground Vehicles (UGV's)
- Remote Power Generation
- Auxiliary Power Units (APUs)

Featuring:

- 3 Phase AC input, 20 - 55 VDC output, up to 100 Amp Output.
- Internal DC-DC regulator provides secondary output from 6 - 28 VDC up to 15 Amps
- Operates up to 96% efficiency at peak power.
- Parallel connection to system batteries with microprocessor controlled charge limiting configurable to support LiPo, Lilon, LifePO4, NiCad, NiMH, SLA, and Lead Acid Batteries.
- Voltage regulation achieved by microprocessor controlled throttle modulation.
- Optional data via RS-232



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100 Amp Power Management Unit



Specifications



Output:	Conditions	Min	Max	Input:	Conditions	Min	Max
Main Output:	100A/5000W Max	20 VDC*	55 VDC*	Alternator Input Voltage:	3Ø 0 - 1 KHz	15 VAC	50 VAC
Secondary Output:	15A/350W Max	6 VDC*	28 VDC*	Backup Battery:	LiPO, Lilon, LifePO4, NiCad, NiMH, SLA, Lead Acid*	20 VDC	55 VDC
Tertiary Output:				External Shore Power:	N/A		
Maximum Total Power:			5000 W	Battery Switch Time:	No interruption of Output		N/A
Peak Efficiency:	Primary/Secondary		96%/91%	Mechanical: Conditions			
Self Protection:	Inherently protected when properly integrated into generator systems			Enclosure Material:	Black Anodized Aluminum		
Maximum Overload Current:	Up to 10mS duration		125%	Dimensions:	195 mm x 123 mm x 70 mm		
Output Ripple, Maximum:	p-p All Outputs		500mV	Weight:	1250g		
Voltage Regulation:	PID to Throttle			Connectors:	MIL-C-5015 CA-Bayonet		
Status Signal:	5V High Impedance			Design Standard:	MIL-STD 1275E		
Battery Charger Type:	Parallel to primary output w/ factory adjustable current limit			Conformal Coating:	MIL-I-46058C Type UR		
Maximum Output Amperage:	100A from Alternator 140A from Alternator and Battery			Cooling:	Heat sink plate, 80C Max		
				Operating Temperature:	-20C to 55C Ambient		
				Storage Temperature:	-40C to 85C		

*Factory Adjustable

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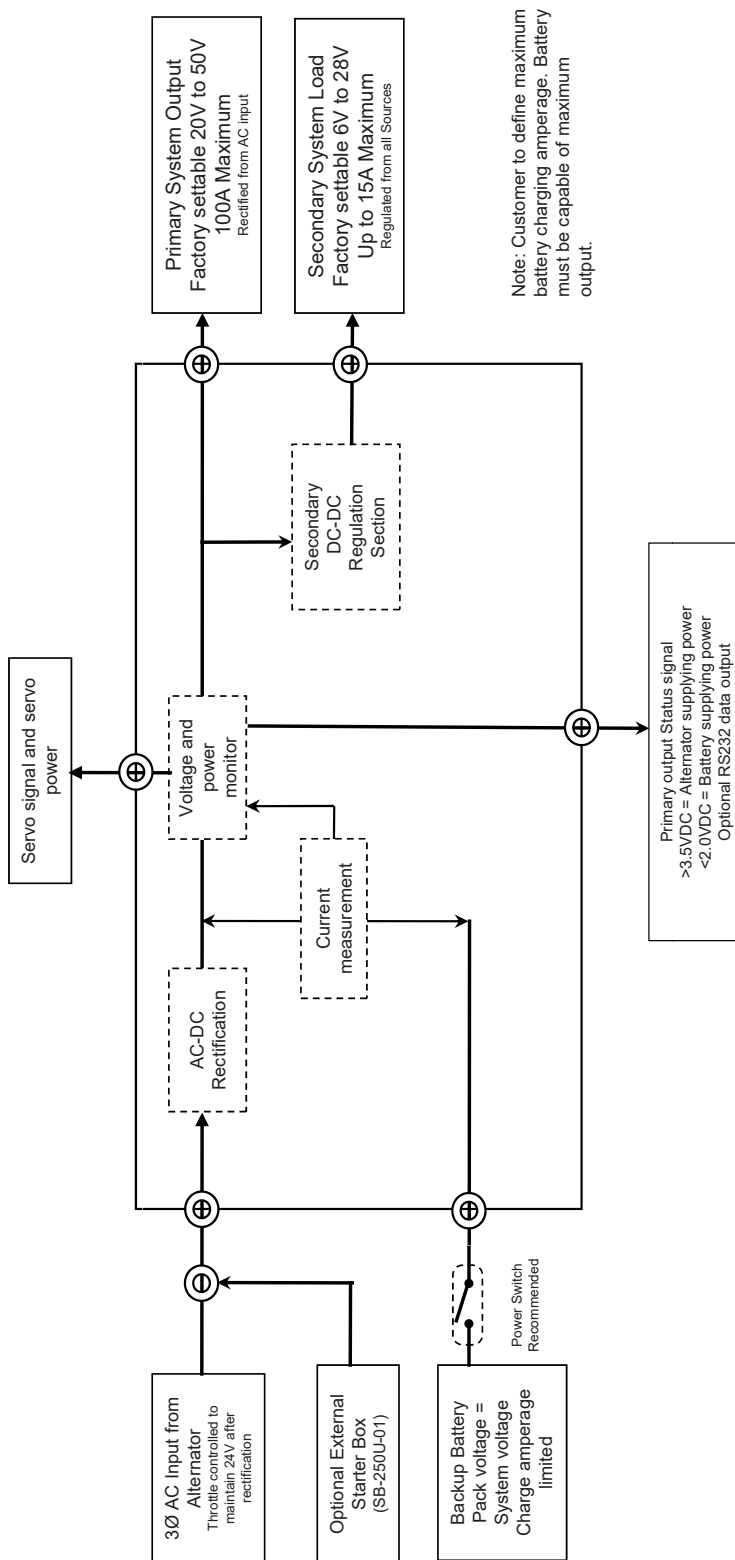


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 Baltimore MD 21237
 (410) 732-3500
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SGENS-100A-01 PMU Block Diagram

Created: May 17, 2016
 Revised: January 11, 2017



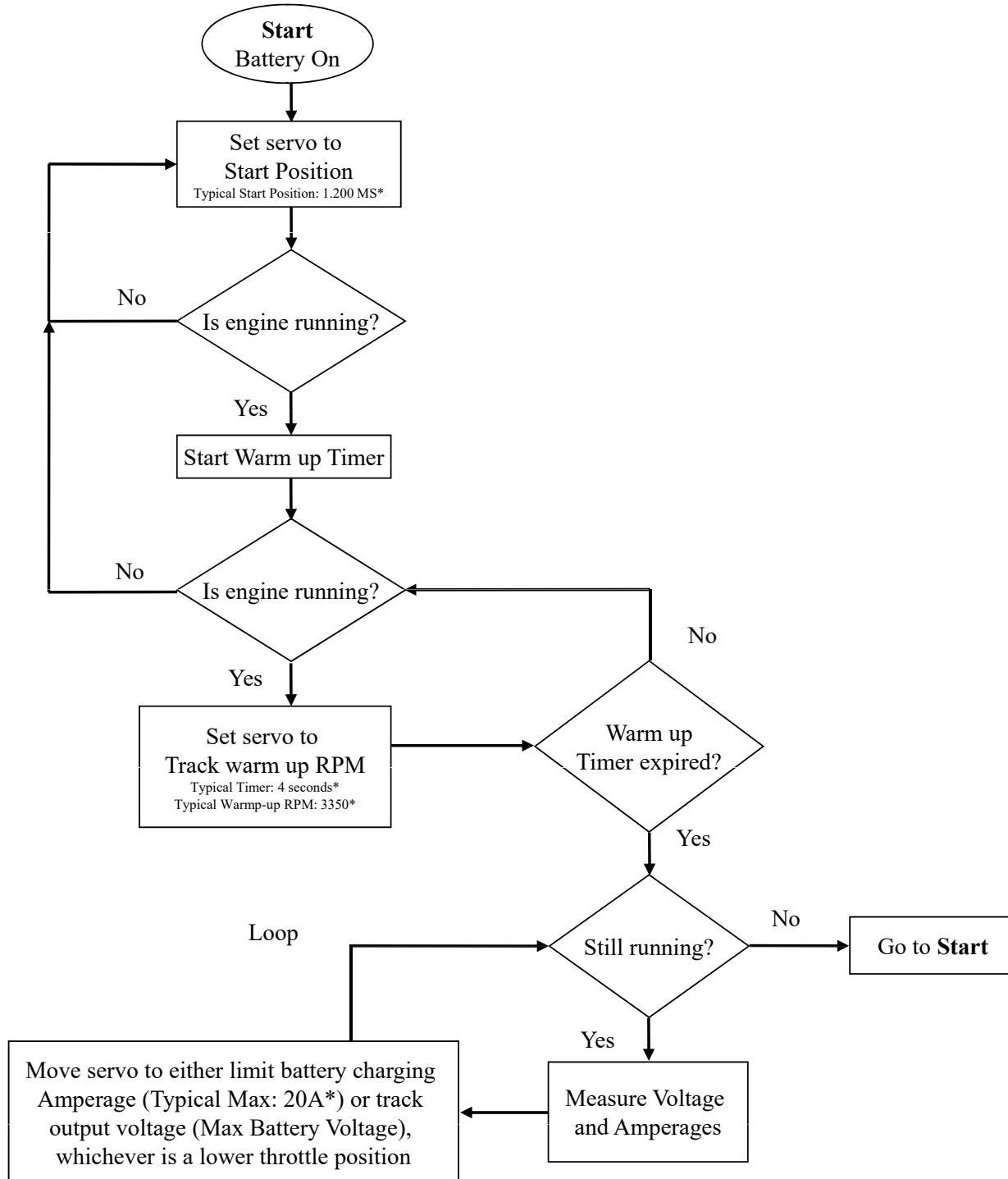
General Notes:

- Customer responsible for fusing all loads
- All connections are Circular Connectors
- All outputs are filtered to 100Mhz to 1 Ghz and include protection against Reverse Polarity and Transients
- RS-232 Optional Outputs; RPM , Battery Amperage (bidirectional), System Amperage, System Voltage, Servo Position, Board Temperature

For engineering use only.
 For further information contact:
 Sullivan Products
 (410) 732-3500
 www.sullivanuv.com

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SGENS-100A-01 Main Flow Chart 2017-01-11

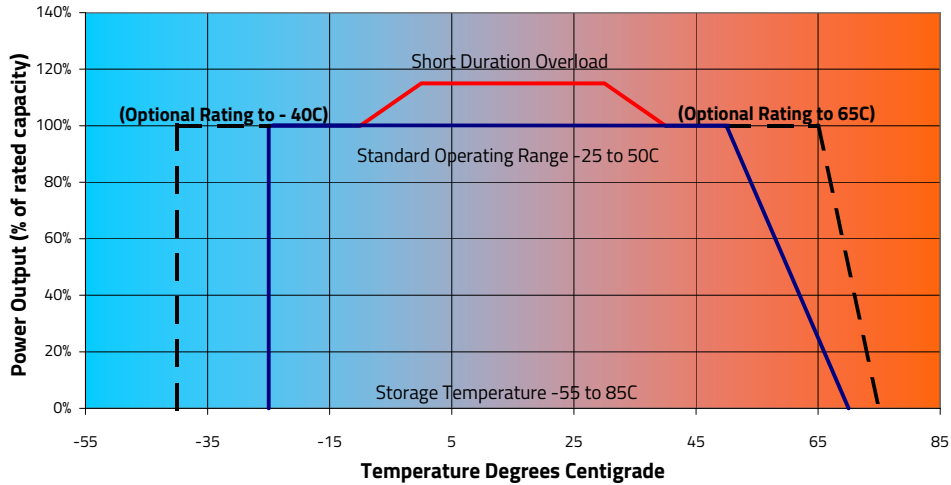


Drawn: 2016-08-13
Revised: 2017-01-11
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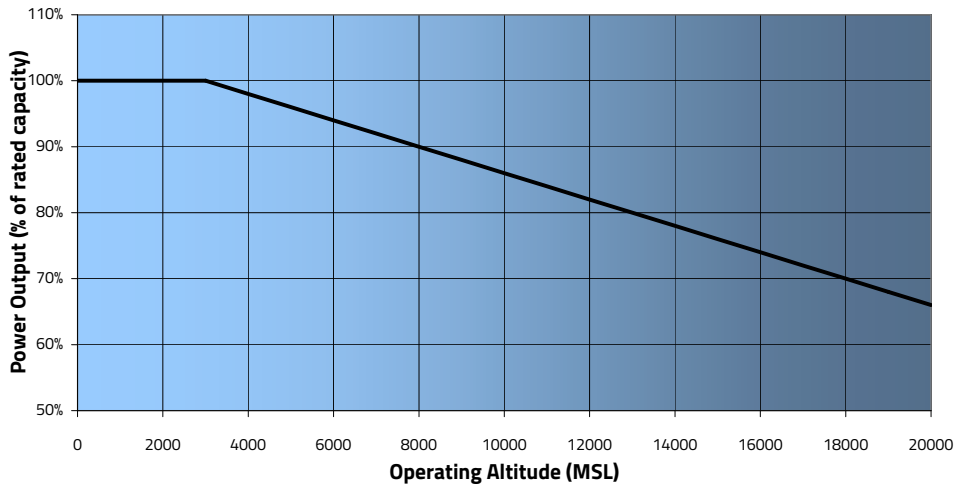
*Typical values are adjustable

Performance

Allowable Storage and Operating Temperature Profile



Power Derating due to Altitude



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.

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

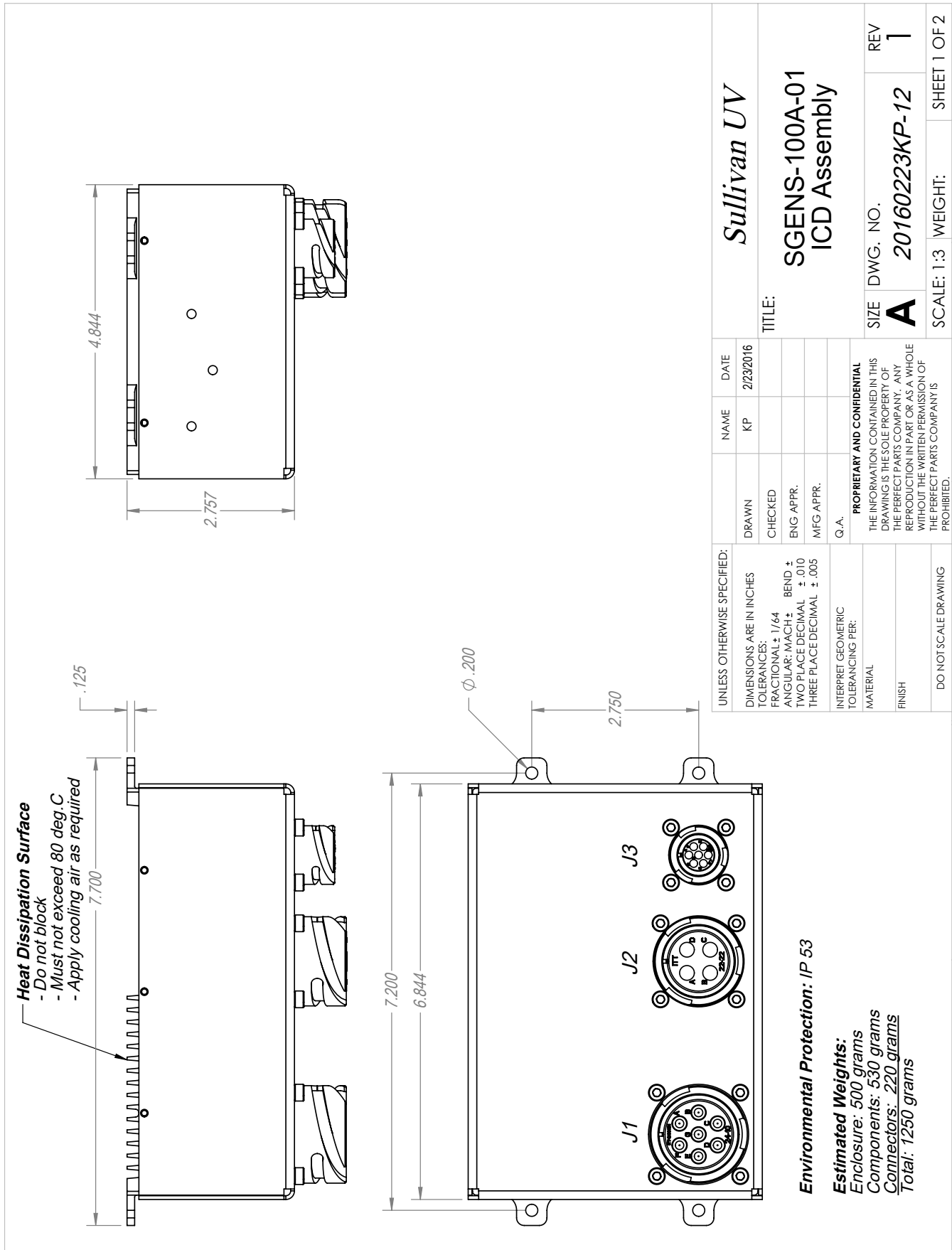
At 3800 RPM, a 225W load with a 90% efficient regulator and 80% efficient alternator, the torque load would be $0.419\text{HP} * 5252 / 3800 = 0.579 \text{ Ft-Lbs}$.

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

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

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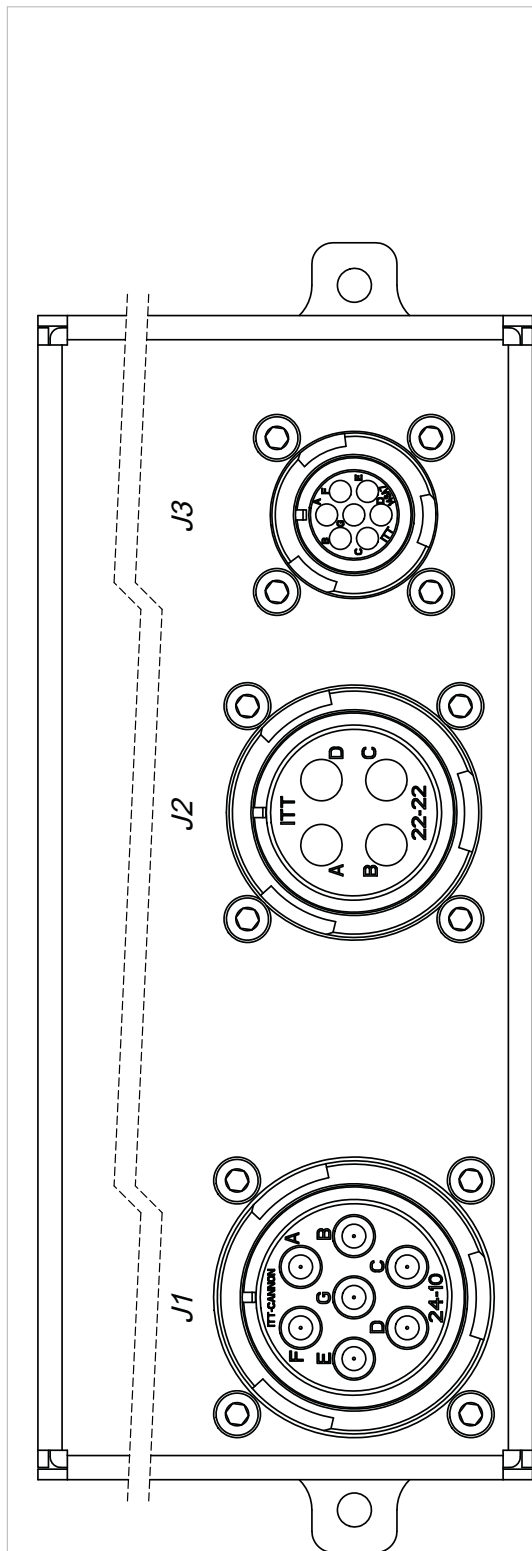


UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		KP	2/23/2016
TOLERANCES:			
FRACTIONAL: $\pm 1/64$	DECIMAL: $\pm .010$		
ANGULAR: MACH \pm	BEND: \pm		
TWO PLACE DECIMAL $\pm .005$	THREE PLACE DECIMAL $\pm .005$		
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
MATERIAL	PROPRIETARY AND CONFIDENTIAL		
FINISH	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.		
DO NOT SCALE DRAWING			

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TITLE: SGENS-100A-01 ICD Assembly	
SIZE	DWG. NO.
A	20160223KP-12
SCALE: 1:3	WEIGHT:
	SHEET 1 OF 2

SGENS-100A-01

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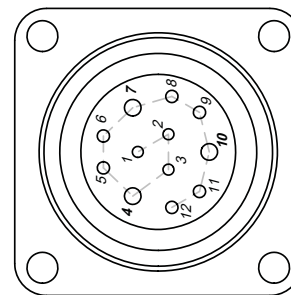


Connector J1: Input Power
 ITT CANNON MIL-C-5015 CA-Bayonet
 P/N: CA3102E24-10PB109
 Mates with: CA3106E24-10SBF80
 Pin A: Alternator Phase U
 Pin B: Alternator Phase V
 Pin C: Alternator Phase W
 Pin D: Battery I/O (+)
 Pin E: Battery I/O (+)
 Pin F: Battery I/O (-)
 Pin G: Battery I/O (-)
 *** Note: Phase order does not matter for Alt. input ***
 8G wires for all

Connector J2: Primary output to Loads
 ITT CANNON MIL-C-5015 CA-Bayonet
 P/N: CA3102E22-22SB109
 Mates with: CA3106E22-22PBF80
 Pin A: Load (-)
 Pin B: Load (-)
 Pin C: Load (+)
 Pin D: Load (+)
 6G or 8G wires for all

Connector J3: Secondary output and Signals
 ITT CANNON MIL-C-5015 CA-Bayonet
 P/N: CA3102E14-SA7SB109
 Mates with: CA3106E14-SA7PBF80
 Pin A: Secondary output (+), 16 AWG
 Pin B: Secondary output (-), 16 AWG
 Pin C: Throttle Servo Output(-), 16-22 AWG
 Pin D: Throttle Servo Output(+), 16-22 AWG
 Pin E: Throttle Servo Output(-), 16-22 AWG
 Pin F: Spare, N/C
 Pin G: Spare, N/C

Used when RS-232 Communication Option is Selected



Connector J3: 6V out and Signals
 Cinch C48 / MIL-C-26500 Bayonet type
 P/N: C48-10R14-12PN-102
 Mates with: C48-16R14-12SN (straight)
 Pin 1: Throttle Servo Output(+), 20-22 AWG
 Pin 2: Throttle Servo Output(+), 20-22 AWG
 Pin 3: Throttle Servo Output(-), 20-22 AWG
 Pin 4: Secondary output (-), 16AWG (optional)
 Pin 5: N/C
 Pin 6: N/C
 Pin 7: Secondary output (+), 16 AWG (optional)
 Pin 8: N/C
 Pin 9: N/C
 Pin 10: RS-232 Ground (-), 16-20 AWG
 Pin 11: RS-232 Transmit (Tx), 20-24 AWG
 Pin 12: RS-232 Receive (Rx), 20-24 AWG

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DIMENSIONS ARE IN INCHES	DRAWN	KP	2/23/2016	TITLE: SGENS-100A-01 ICD Assembly	
TOLERANCES:	CHECKED				
FRACTIONAL: ± 1/64	ENG. APPR.				
ANGULAR: MACH ±	MFG APPR.				
TWO PLACE DECIMAL ± 0.10	Q.A.			SIZE	REV
THREE PLACE DECIMAL ± 0.005				A	1
INTERPRET GEOMETRIC TOLERANCING PER:	PROPRIETARY AND CONFIDENTIAL		DWG. NO.		SCALE: 1:3
MATERIAL	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.		20160223KP-12		WEIGHT:
FINISH	DO NOT SCALE DRAWING		1		SHEET 2 OF 2