

Sorensen SGX Series

4-150 kW

Programmable Precision High Power DC Power Supply

10-1000 V

- High Power Density: Up to 15 kW in 3U, 30 kW in a 6U chassis
- Wide Voltage Range: 0-10V up to 0-1000V, from 4 to 30 kW
- Fast Load Transient Response: Protection from undesired voltage excursions
- Low Ripple and Noise
- Intuitive Touch Screen Display
- Parallelable up to 150 kW
- Sequencing: Free system controller & speed up test
- Low audible noise: Temperature controlled variable speed fans



5-6000 A



208

400

480

ETHERNET



LXI RS232

Next Generation DC Supply

The Sorensen SGX Series represents the next generation of high power programmable DC power supplies. The SGX Series is designed for exceptional load transient response, low noise and the highest power density in the industry. With a full 15 kW available down to 20 V output in a 3U package the SGX leads the industry in power density. The power density is enhanced by a stylish front air intake allowing supplies to be stacked without any required clearance between units.

At the heart of the SGX series is a 5 kW power module. Depending on the output voltage, one to six modules can be configured in a single chassis to deliver 5 kW to 30 kW of power.

Combinations of these chassis can then be easily paralleled to achieve power levels up to 150 kW. Paralleled units operate like one single supply providing total system current.

Advanced Intelligent Control

The SGX combines onboard intelligent controls with the outstanding power electronics common to all SG family supplies. These controls enable sophisticated sequencing, constant power mode and save/recall of instrument settings. Looping of sequences makes the SGX ideal for repetitive testing.

The SGX Series is operated from the intuitive, easy-to-use front panel touch screen display. Quickly access output programming parameters, measurements, sequencing, configuration and system settings from the touch screen interface. Functions and parameters can be directly selected from the touch screen or by using the encoder selector button. The control resolution is adjusted by a dynamic rate change algorithm that combines the benefits of precise control over small parameter changes with quick sweeps through the entire range.

Additionally, the instrument can be controlled via LXI Ethernet and RS232 standard control interfaces, as well as through the optional GPIB control interface.

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AMETEK[®]
PROGRAMMABLE POWER

SGX Series : Product Specifications

| Common | | | | | |
|--|--|-------------------------|---|-------------------------|--|
| RemoteSense | Terminals are provided to sense output voltage at point of load. Maximum line drop 5% of rated voltage per line for 40-100V models, line drop 1V of rated voltage per line for 10-20V models, 1.5V for 30V models, 2% of rated voltage per line for models 160V and greater. (Greater line drop is allowed, but output regulation specifications no longer apply). | | | | |
| Parallel Operation | Up to 5 units may be paralleled for additional current within the power supply single-unit specifications, with exception of the DC output current set accuracy. Additional paralleled SG units will add 0.3% inaccuracy per unit. To parallel more than 5 units, contact factory. | | | | |
| Series Operation | Up to 2 units (see Output Float Voltage) | | | | |
| Input | | | | | |
| Nominal Voltage 3 phase, 3 wire + ground | 208/230VAC (operating range 187-253VAC) 380/400VAC (operating range 342-440VAC) 440/480VAC (operating range 396-528VAC) | | | | |
| Frequency | 47 – 63Hz , 400Hz (400Hz @ 208VAC, for 6U units is optional modification and does not carry CE, UL or CSA markings) | | | | |
| Power Factor | >0.9 typical for 10V - 30V, 50V, 1000V and other models with optional "PF" modification. >0.75 typical for 208/220 VAC input (40V, 60V - 800V models, 0.9 available with modification "PF") >0.72 typical for 380/480 VAC input (40V, 60V - 800V models, 0.9 available with modification "PF") >0.69 typical for 440/480 VAC input (40V, 60V - 800V models, 0.9 available with modification "PF") | | | | |
| Protection (typical) | ½ cycle ride-through , typical, on all three phases, 3 cycle ride through on single phase; missing phase shutdown (800V model 6.4 msec on all 3 phases) | | | | |
| Programming & Read-back Specifications (with sense wires used) | | | | | |
| | Programming | | Read-Back/Monitoring | | |
| | Accuracy | Resolution | Accuracy | Resolution | |
| Front Panel Display | SGX (40-1000V) +/- 0.1% of voltage at full scale SGX (40-1000V) +/- 0.4% of current at full scale | SGX: 4.0 digits | SGX, Voltage: +/- 0.1% of full scale SGX, Current: +/- 0.4% of full scale | SGX: 4.0 digits | Knob control & Display read-back |
| | SGX (10-30V) 0.1% of set point +0.1% of voltage rating SGX (10-30V) 0.1% of set point +0.4% of current rating | | SGX (10-30V) 0.1% of actual +0.15% voltage rating | | |
| Remote Analog Interface | Voltage +/-0.25% of full scale Current (40-1000V) 0.8% of full scale , (10-30V) 1.0% of full scale | NA | (40-1000V) +/-1.0% of full scale (10-30V) +/-0.5% of full scale | NA | 25-pin D-sub connector (0~5V or 0~10V) |
| Remote Digital Interface | Voltage: +/- 0.1% of full scale, Current: +/- 0.4% of full scale | +/-0.002% of full scale | Voltage: +/- 0.1% of full scale Current: +/- 0.4% of full scale | +/-0.002% of full scale | RS-232C (Standard on SGX), Optional IEEE-488.2 and Optional LXI Compliant 10/100 base-T Ethernet (see Options) |
| OVP | +/- 1% of fullscale | +/-0.002% of full scale | | | Programming range: 5-110% Configured from front panel, remote analog or via optional digital inputs |
| User I/O | Disconnect & Polarity-reversal relay control (Only available with Ethernet Option) | | | | Digital 10-pin Molex type connector |
| Software | IVI & CVI drivers available under SUPPORT at: www.ProgrammablePower.com | | | | |
| Physical | 3U Models (10V-30V) | | 3U Models (40V-1000V) | | 6U Models (60V-600V) |
| Width | 19.00 in (48.3 cm) | | 19.00 in (48.3 cm) | | 19.00 in (48.3 cm) |
| Depth | 28.09 in (71.35 cm) | | 26.4 in (67.1 cm) | | 27.18 in (69.04 cm) |
| Height | 5.25 in (13.3 cm) | | 5.25 in (13.3 cm) | | 10.5 in (26.7 cm) |
| Weight | (4kW, 10V 15V) ≈<65 lbs (29 kg) (5kW, 20V 30V) ≈<65 lbs (29 kg) (8kW, 10V 15V) ≈<85 lbs (39 kg) (10kW, 20V 30V) ≈<85 lbs (39 kg) (12kW, 10V 15V) ≈<110 lbs (50 kg) (15kW, 20V 30V) ≈<110 lbs (50 kg) | | (5kW) ≈ ≤60 lbs (27 kg) (10kW) ≈ ≤75 lbs (34 kg) (15kW) ≈ ≤90 lbs (41 kg) | | (20kW) ≈ ≤140 lbs (64 kg) (25kW) ≈ ≤155 lbs (71 kg) (30kW) ≈ ≤170 lbs (78 kg) |
| Shipping Weight | Contact factory for more product & shipping weights | | | | |

SGX Series : Product Specifications

4-150 kW

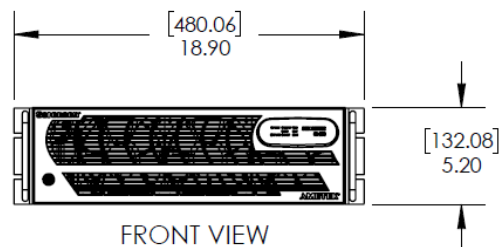
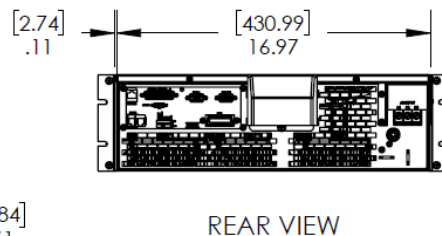
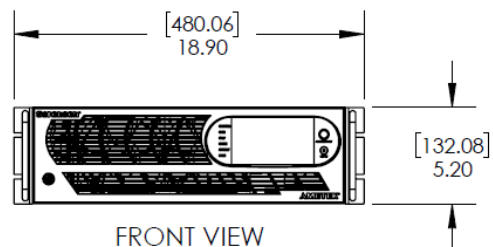
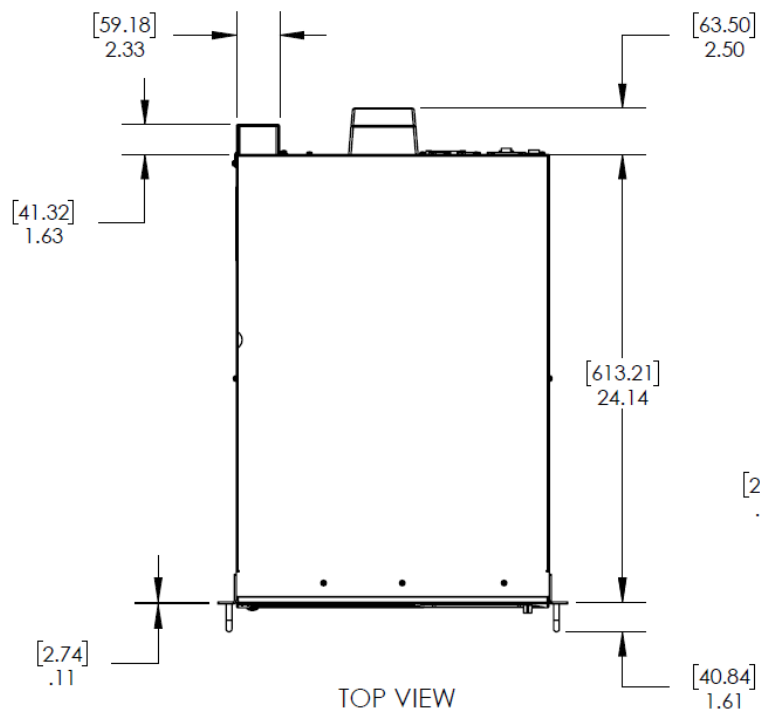
| Output | | | |
|---|--|---|--------------|
| Ripple & Noise (Voltage Mode, Typical) | See Output: Voltage & Current Ranges Chart below. Ripple and noise specified at full load, nominal AC input. Noise measured with 6 ft. cable, 1µF at load | | |
| Output Rise Time (40-1000V) | ≈<100 ms 10-90% of full scale typical - full resistive load (Contact factory for model specific slew rates) | | |
| Output Voltage Rise Time (10-30V) | Rise Time, ms, max | Condition | |
| | 10 | Measured from 10% to 90% of the output voltage change - resistive load, typical | |
| Output Voltage Fall Time (10-30V) | Fall Time, ms max | | Condition |
| | No Load | 100% CC Load | 100% CR Load |
| | 50 | 10 | 10 |
| Output Current Rise Time (10-30V) | Rise Time, ms max | Condition | |
| | 20 | Measured from 10% to 90% of the output current change - resistive load, typical | |
| Output Current Fall Time (10-30V) | Fall Time, ms max | Condition | |
| | 10 | Measured from 90% to 10% of the output current change - resistive load, typical | |
| Line Regulation (with sense wires used) | (±10% of nominal AC input, constant load) Voltage Mode: +/- 0.01% of full scale (40-800V) Current Mode: +/- 0.05% of full scale (40-800V) Voltage Mode and Current Mode: +/- 0.05% of full scale (10-30V) | | |
| Load Regulation (with sense wires used) | (no load to full load, nominal AC input). Voltage Mode: +/- 0.02% of full scale (40-800V) Current Mode: +/- 0.1% of full scale Voltage Mode: +/- 0.05% of full scale (10-30V) | | |
| Load Transient Response | Recovers within 1ms to +/- 0.75% of full-scale of steady-state output for a 50% to 100% or 100% to 50% load change | | |
| Efficiency | 87% typical at nominal line and max load | | |
| Stability | ±0.05% of set point after 30 minute warm-up and over 8 hours at fixed line, load and temperature, typical | | |
| Temperature Coefficient | 0.02%/ C of maximum output voltage rating for voltage set point, typical 0.03%/ C of maximum output current rating for current set point, typical | | |
| Output Float Voltage | Negative terminal within +/- 300 V of chassis potential. (We recommend the use of optional isolated analog interface.) Supplies in "series" have a system current limit of the lowest current supply in the system. | | |

| Output: Voltage and Current Ranges | | | | | | | | |
|------------------------------------|---------|---------|----------|----------|----------|----------|------------------------|-----------------------|
| Power | 3U | | | 6U | | | Ripple & Noise | |
| | 4/5 kW | 8/10 kW | 12/15 kW | 16/20 kW | 20/25 kW | 24/30 kW | rms (20 Hz-300 kHz) | p-p (20 Hz-20 MHz) |
| Voltage | Current | | | | | | | |
| 10 | 400 | 800 | 1200 | 1600* | 2000* | 2400* | 20 mV | 50 mV |
| 15 | 267 | 534 | 801 | 1068* | 1335* | 1602* | 20 mV | 50 mV |
| 20 | 250 | 500 | 750 | 1000* | 1250* | 1500* | 20 mV | 60 mV |
| 30 | 167 | 334 | 501 | 668* | 835* | 1002* | 20 mV | 60 mV |
| 40 | 125 | 250 | 375 | 500* | 625* | 750* | 20 mV | 75 mV |
| 50 | 100 | 200 | 300 | 400* | 500* | 600* | 20 mV | 75 mV |
| 60 | 83 | 167 | 250 | 333 | 417 | 500 | 20 mV | 75 mV |
| 75 | 67 | 133 | 200 | 267 | 333 | 400 | 20 mV | 100 mV |
| 80 | 63 | 125 | 188 | 250 | 313 | 375 | 20 mV | 100 mV |
| 100 | 50 | 100 | 150 | 200 | 250 | 300 | 20 mV | 100 mV |
| 160 | 31 | 63 | 94 | 125 | 156 | 188 | 25 mV | 150 mV |
| 200 | 25 | 50 | 75 | 100 | 125 | 150 | 25 mV | 175 mV |
| 250 | 20 | 40 | 60 | 80 | 100 | 120 | 30 mV | 200 mV |
| 300 | 17 | 33 | 50 | 67 | 83 | 100 | 30 mV | 200 mV |
| 330 | 15 | 30 | 45 | 61 | 76 | 91 | 30 mV | 200 mV |
| 400 | 12 | 25 | 38 | 50 | 63 | 75 | 30 mV | 300 mV |
| 500 | 10 | 20 | 30 | 40 | 50 | 60 | 50mV | 350 mV |
| 600 | 8 | 17 | 25 | 33 | 42 | 50 | 60 mV | 350 mV |
| 800 | 6.2 | 12.5 | 18.7 | 25* | 31.2* | 37.5* | 80 mV | 500 mV |
| 1000 | 5 | 10 | 15 | 20* | 25* | 30* | 100 mV | 650 mV |

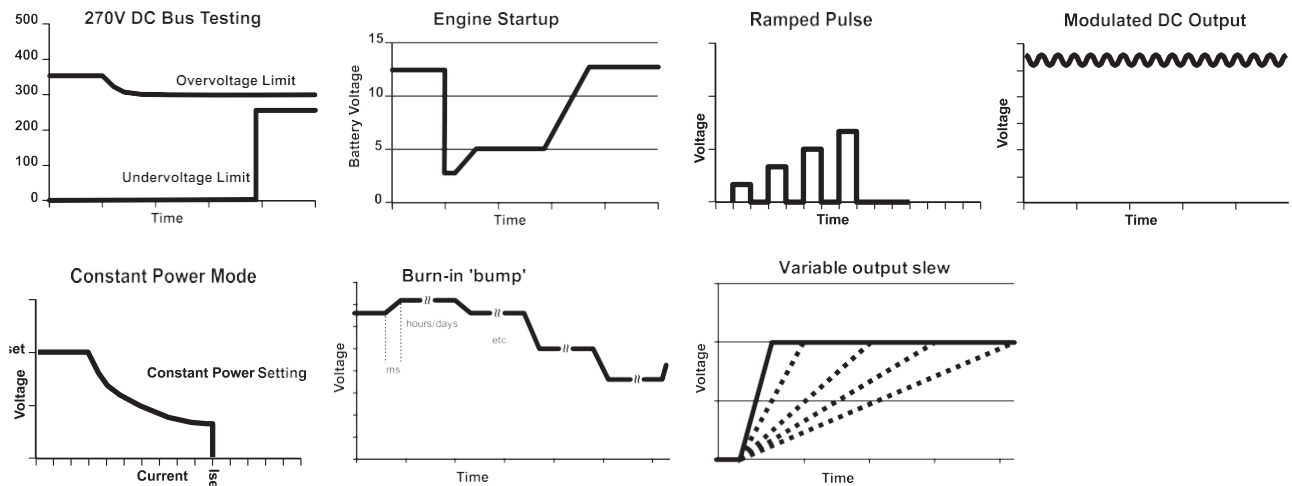
* By way of paralleling 3U supplies

Available Q3 2018

SGX Series : Product Diagram



Advanced Power Simulation



SGX model provides constant power mode allowing independent setting of the max voltage, current and power

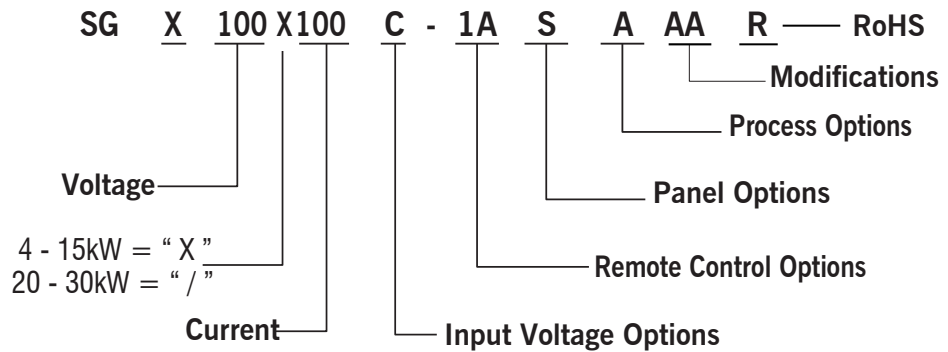
SGX / SGI Comparison Chart

| Feature | SGX | SGI |
|--------------------------------|----------|----------|
| Modular Design | • | • |
| Fast Load Transient | • | • |
| Parallelable | • | • |
| Analog & Digital Summing | • | • |
| Direct Front Panel V/I Control | • | • |
| Touch Screen | • | |
| Sequencing | • | • |
| Save/Recall Setups | • | • |
| System Power Readouts | • | • |
| Constant Power Mode | • | • |
| RS-232C | Standard | Standard |
| LXI Class C Ethernet | Standard | Optional |
| GPIO | Optional | Optional |

Environmental

| | |
|---|--|
| Operating Temperature | 0 to 50°C |
| Storage Temperature | -25° C to 65° C |
| Humidity Range | Relative humidity up to 95% non-condensing, 0° C – 50° C |
| Altitude | Operating full power available up to 5,000 ft. (~1,500 m), derate 10% of full power for every 1,000 feet higher; non-operating to 40,000 ft. (~12,000 m) |
| Cooling | Front and side air inlet, rear exhaust. Temperature controlled, variable speed fans. Units may be stacked without spacing. |
| Regulatory | Certified to UL/CSA 61010 and IEC/EN 61010-1 by a NRTL, CE Compliant, Semi-F47 Compliant. LVD Categories: Installation Category II: Pollution Degree 2; Class II Equipment: for Indoor Use Only, back panel not user accessible (see user manual for installation instructions) EMC Directive, EN 61326:1998 |
| Front Panel Dust Filter (Consult Factory) | 30 PPI (Pores Per Inch) - must ensure adequate airflow and / or derate max. temperature. 3U unit only. |

SGX Series



(For units with greater than 3 digits, Voltage/Current is represented in numeric format, e.g., above "100" represents 100A. For units at 1000 and above, the voltage is represented by the format "XKX", e.g, 1K2 = 1200V and 1K0 = 1000V)

Options and Accessories

| | |
|--|--|
| Input Voltage Options | C: Input Voltage 187 / 242VAC, 3 Phase D: Input Voltage 342 / 440VAC, 3 Phase E: Input Voltage 396 / 528VAC, 3 Phase |
| Remote Control Options | 0A: No Option 1A: IEEE-488.2 + RS-232C (Note: SGX comes standard with RS-232C and Ethernet) 1D: Isolated Analog Control 2A: Combined Options 1A+1D |
| Panel Options | S: Standard N: No Display |
| Process Options | AA: No option AB: Certificate of Calibration to ANSI / NCSL Z540-1 (includes Test Data) |
| Modifications | CV: 400Hz AC input @ 208 VAC (does not carry CE, CSA or UL marks) (6U only) STD on 3U PF: Passive power factor correction to 0.9 (Only applicable to 40V, 60V to 800V. Included in 10V-30V, 50V and 1000V.) |
| RoHS | R: Add an 'R' to the model number for RoHS compliant version Leave blank if RoHS version is not required |
| Accessories | 890-453-03: Paralleling Cable (for up to 5 units, requires one cable per unit placed in parallel) K550212-01: 3U Rack Slides (for 5kW, 10kW and 15kW models) K550213-01: 6U Rack Slides (for 20kW, 25kW and 30kW models) 5551082-01: Optional AC input cover kit - 3U unit only |
| Contact factory for other combinations | |