

Sorensen™

XG Series

AMETEK®
PROGRAMMABLE POWER



EASY SYSTEM INTEGRATION

850, 1500 & 1700 Watt DC Programmable Power Supplies

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Sorensen XG 850, 1500 & 1700 Series

Up to 1700W of Power in a 1U Power Supply

The Sorensen XG 850, 1500 & 1700 Series are industry leading programmable DC power supplies designed for test, production, laboratory, OEM and quality assurance applications. Sitting at the top of the family, the XG 1700, is a high power density 1700 Watt, 1U programmable power supply with constant voltage and constant current modes, automatic cross-over and numerous features enabling cost effective, easy system integration.

Key Features

- Standard Digital Interfaces – USB & RS232
- Auxiliary 5V / 15V outputs
- LXI Ethernet and Isolated analog interfaces
- Power Factor Correction – PFC & universal AC input
- Sleep Mode – Auto “sleeps” after period of non-use (1500 & 1700 only)
- Easy “cover on” soft calibration
- Programmable fold-back protection delay

Applications

- Burn-in
- Compliance Testing
- Materials Research
- Process Control
- Product Validation
- Automotive Electronics
- Rack ATE Systems
- Battery Charging

Features and Benefits

Easy Integration

The Sorensen XG Series of system power supplies are designed for ease of integration into automated test and other equipment. The XG Series has many control and indication signals such as shutdown, constant voltage (CV) vs. constant current (CC) mode indication, OVP, OCP, OTP, and so on. In addition, the analog control range is free selectable, enabling the XG to replace existing power supplies with little or no system engineering required.

Free selectable analog control range

Most DC power supplies provide a 0 to 5 or 0 to 10 V analog control range to control the DC output from zero to full DC output range. With the XG, the analog control range is free selectable starting at 0V to an upper range between 2V and 10V. In other words, the analog programming interface range is freely adjustable.

Auxiliary DC output channels with control

In many ATE systems one or more low power, fixed voltage supplies are needed to provide electrical power for any periphery within the ATE cabinet. For this purpose, the XG provides two standard auxiliary DC output channels. Both auxiliary power channels are controllable directly from the front-panel or through SCPI commands. With these channels, it is possible to drive output-disconnect or polarity-reversal relays, without needing a complicated computer controlled relay board.

Variable Fan Speed Control

The XG Series innovative approach to fan speed is determined by internal heat sink temperature. This allows the fans to adjust to a constant optimal speed when the output of the supply is being pulsed. This also reduces noise and increases fan life.

Remote Serial Programming

Digital programming is flexible and easy, because in addition to precise, digital encoder front panel control and simultaneous voltage and current displays, the XG includes standard RS232 and USB remote control interfaces. It also offers optional GPIB and LXI Class C Ethernet control inputs. Commonly used, SCPI compliant, device drivers are available to support system applications. To allow for fast programming and to unload your system controller, DC voltage or current sequences can be programmed into a specific memory location, using compliant SCPI commands. The XG supports autonomous program sequencing with the capability to upload and execute pre-programmed test routines including the operation of the auxiliary outputs, minimizing command latency and system controller overhead and thereby maximizing system throughput.

Simple Multi-Channel Serial Control

The XG Series, like most of the Sorensen DC power supplies, provides a multi-channel control system. With this method, it is possible to configure many power supplies into a one-master, multi-slave, single multi-channel power-sub-system. One master can control up to 30 slave-units through a simple cable (RS-485) using RJ-45 connectors

This method of multi-channel control is much easier to manage from a software programming point of view and provides much less complexity from an interfacing and wiring point of view (one single GPIB or IP address controlling multiple DC output channels).

The XG is a programmable DC power supply that operates as a voltage or current source. XG supplies are targeted to the Research and Development, Production Test, and OEM markets. The XG product family consists of three power ranges: 850, 1500 and 1700 watts. Each power range is comprised of 11 or 12 models with varying output voltage and current ratings. The models are categorized into three general groups from a design / manufacturing perspective:

| | |
|------------------------------|---|
| XG 850W Model Range: | 6-220 (6V, 220A) up to 600-2.8 (600V, 2.8A) |
| XG 1500W Model Range: | 8-187.5 (8V, 187.5A) up to 600-2.6 (600V, 2.6A) |
| XG 1700W Model Range: | 6-110 (6V, 110A) up to 600-1.4 (600V, 1.4A) |

Key Modes

Power Saving Standby Mode (1500/1700 only)

When the XG 1500/1700 has been in an idle state, the supply can go into "sleep mode", much like a computer monitor. This will allow the user to save energy and minimize lab noise. Since an XG left in sleep mode is still "on" the user will have quicker access to an enabled output.

Output Auto Start Mode (Auto Restart)

The Auto Start mode establishes the state of the output of the power supply after recovery from a complete power cycle (all front panel LEDs are not illuminated), or after recovery from a PC failure or reboot. If Auto Start mode is set to On, the power supply output will return to its previous value. Also, after the loss of any remote digital control, the XG unit will remain active in its last programmed setting and will not disrupt any test process.

Auxiliary Auto Start Mode

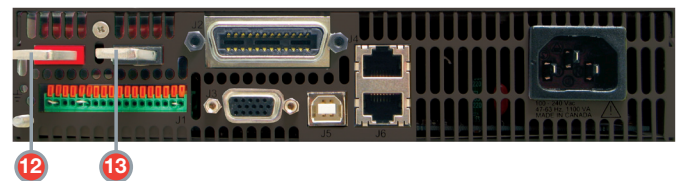
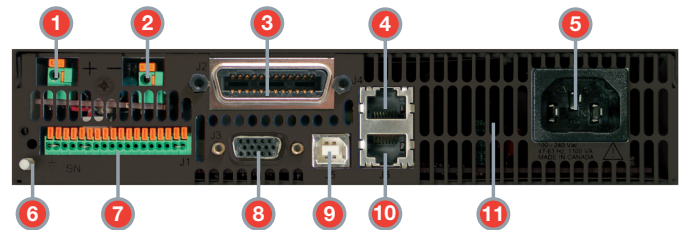
The Auxiliary Auto Start mode determines the state of the auxiliary output after a complete power cycle (all front panel LEDs are not illuminated). With Auxiliary Auto Start mode turned to On, the auxiliary output will be activated after the power supply is powered up again.

Foldback Mode

Foldback mode is used to disable the output when a transition is made between the operating modes. The power supply will turn off/disable the output and lock in foldback mode after a specified delay if the power supply transitions into CV mode or into CC mode, depending on the foldback mode settings. This feature is particularly useful for protecting current or voltage sensitive loads. Foldback can be set to trigger a switch when transitioning from CV to CC mode or from CC to CV mode.



Quick-connect spring-terminal-block



Rear Panel Connectors

| | |
|----|---|
| 1 | DC output connector positive (60-600 V) |
| 2 | DC output connector negative (60-600 V) |
| 3 | LAN or GPIB connector (optional) |
| 4 | RS-232/RS485 Connector in port |
| 5 | AC input |
| 6 | Chassis ground screw |
| 7 | Control connector |
| 8 | Auxiliary output and isolated control connector |
| 9 | USB connector |
| 10 | RS-485 connector out port |
| 11 | Fan Exhaust Vents |
| 12 | DC output bus bar positive (6-40 V) |
| 13 | DC output bus bar negative (6-40 V) |

Sorensen XG 850, 1500 & 1700 Series

850 Watt, 1500 Watt & 1700 Watt DC Programmable Power Supplies

| AC Line Input Specifications | | | |
|--|---|--------------------------------|--------------|
| Operational AC Input Voltage/Frequency | 85–265 Vac continuous, 47–63 Hz, single phase | | |
| Power Factor Correction | 0.99@100/200 Vac, rated output power | | |
| Programming Mode | APG | Digital | |
| Voltage Programming Accuracy (mV) ¹ | ± 0.5% of rated output voltage, max (0-4V/4K range) | ± 0.1% of rated output voltage | |
| Current Programming Accuracy (mV) ¹ | ± 1% of rated output current, max (0-4V/4K range) | ± 0.2% of rated output current | |
| Output Performance Specifications | | | |
| Transient Response Time ² | Less than 1 ms for 6 V to 60 V models. Less than 2 ms for 80 V to 600 V models* | | |
| Environmental Specifications (Indoor use) | | | |
| Operating Temperature Range | 32°F to 122°F, 100% load (0°C to 50°C) | | |
| Regulatory Approvals | | | |
| Safety | CSA 22.2 No. 61010-1 and UL61010-1. Marked with c(UL) us, CE EN61010-1 | | |
| EMC | Complies with EN55022, Class A, FCC Part 15A for conducted emissions Complies with EN55022, Class A, FCC Part 15A for radiated emissions Complies with EN61000-4 series of standards for immunity | | |
| Mechanical Specifications | | | |
| XG 1500 / 1700 Watt (W×H×D) | 16.8 x 1.7 x 19.0 inch (429 x 43.6 x 483 mm without rack mount ears) | | |
| XG 850 Watt (W×H×D) | 8.4 x 1.7 x 19.0 inch (214 x 43.6 x 483 mm) | | |
| XG 1500 / 1700 Watt Weight | 22 lb (10 kg) | | |
| XG 850 Watt Weight | 11 lb (5 kg) | | |
| Cooling | Forced air cooling by internal fans | | |
| Feature | XG 850 | XG 1500/1700 | Order Option |
| USB Interface | Standard | Standard | |
| RS232 Interface | Standard | Standard | |
| Power Factor Correction | Standard | Standard | |
| Isolated Analog Interface | Standard | Option | MIA |
| GPIB, IEEE 488.2 | Option | Option | MGA |
| LXI Class C Ethernet | Option | Option | MEB |
| Rackmount Angle Brackets | Option | Option | RM-XG1 |
| Rackmount Kit for 1 unit | Option | N/A | RM-S-XG1 |
| Rackmount Kit for 2 units | Option | N/A | RM-D-XG1 |
| Model Number Description | | | |
| <p style="text-align: center;">XG 33 - 25 (XXX)</p> <p>Series ——— Voltage ——— Current ——— Options</p> | | | |

| Output | | |
|-------------------------|--|-----------------------------|
| 1700 Models | Output Voltage ³ | Output Current ⁴ |
| XG 6-220 | 6 V | 220 A |
| XG 8-200 | 8 V | 200 A |
| XG 12-140 | 12 V | 140 A |
| XG 20-84 | 20 V | 84 A |
| XG 33-50 | 33 V | 50 A |
| XG 40-42 | 40 V | 42 A |
| XG 60-28 | 60 V | 28 A |
| XG 80-21 | 80 V | 21 A |
| XG 100-17 | 100 V | 17 A |
| XG 150-11.2 | 150 V | 11.2 A |
| XG 300-5.6 | 300 V | 5.6 A |
| XG 600-2.8 | 600 V | 2.8 A |
| 1500 Models | Output Voltage ³ | Output Current ⁴ |
| XG 8-187.5 | 8 V | 187.5 A |
| XG 12.5-120 | 12.5 V | 120 A |
| XG 20-76 | 20 V | 76 A |
| XG 30-50 | 30 V | 50 A |
| XG 40-38 | 40 V | 38 A |
| XG 60-25 | 60 V | 25 A |
| XG 80-19 | 80 V | 19 A |
| XG 100-15 | 100 V | 15 A |
| XG 150-10 | 150 V | 10 A |
| XG 300-5 | 300 V | 5 A |
| XG 600-2.6 | 600 V | 2.6 A |
| 850 Models | Output Voltage ³ | Output Current ⁴ |
| XG 6-110 | 6 V | 110 A |
| XG 8-100 | 8 V | 100 A |
| XG 12-70 | 12 V | 70 A |
| XG 20-42 | 20 V | 42 A |
| XG 33-25 | 33 V | 25 A |
| XG 40-21 | 40 V | 21 A |
| XG 60-14 | 60 V | 14 A |
| XG 80-10.5 | 80 V | 10.5 A |
| XG 100-8.5 | 100 V | 8.5 A |
| XG 150-5.6 | 150 V | 5.6 A |
| XG 300-2.8 | 300 V | 2.8 A |
| XG 600-1.4 | 600 V | 1.4 A |
| Line and Load | | |
| Line Regulation Voltage | (0.005% of rated output voltage +2 mV) ⁵ | |
| Line Regulation Current | (0.01% of rated output current +2 mA) ⁶ | |
| Load Regulation Voltage | (0.005% of rated output voltage + 2 mV) ⁷ | |
| Load Regulation Current | (0.02% of rated output current +5 mA) ⁸ | |

* Typical

1. Typical APG or isolated APG accuracy can be improved to max accuracy by user calibration at the specific range selected.
2. Time for the output voltage to recover within 0.05% at its rated output for a load change 10-90% of rated output current. Output set point 10-100%
3. Minimum output voltage is guaranteed to be ≤ 0.2% of the rated voltage at zero output setting.
4. Minimum output current is guaranteed to be ≤ 0.4% of the rated current at zero output setting when measured with rated load resistance.
5. From 85-132 Vac or 170-265 Vac, constant load.
6. From 85-132 Vac or 170-265 Vac, constant load.
7. From no load to full load, constant input voltage.
8. For load voltage change, equal to the unit voltage rating, constant input voltage.

Note: Full data sheet with detailed specs available at www.programmablepower.com
Note: All specifications are subject to change.

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