

Smart choice for power

xantrex



## XTR 850

Programmable DC  
Power Supplies



[www.programmablepower.com](http://www.programmablepower.com)



The XTR Series is the new standard for powerful, programmable DC power systems. Designed for test, production, laboratory, OEM and quality assurance applications, the XTR provides a wealth of features to ensure accuracy and greater efficiency. It puts clean, reliable power at your disposal and delivers stable, variable output voltage and current for a broad range of development, test and system requirements.

### **Highest Power Density**

High frequency, soft switching technology in the XTR Series provides up to 850 Watts in a 1U half-rack package. This represents the highest power density available from any manufacturer. With 12 models, there is a configuration available to meet every application.

### **Comprehensive Digital and Analog Interface Options**

The XTR comes standard with USB 2.0, RS-232, RS-485, isolated and non-isolated analog interfaces to provide a comprehensive set of options to connect to a PC or other network device. This design provides the convenience of being able to accommodate a wide range of installation configurations. Ethernet and GPIB interfaces are available as options.

### **Scalable, Multi-Unit Design**

XTR power supplies can be connected in parallel or series to produce greater current or voltage output for your applications. This scalability allows you to build rack-mounted systems with the XTR that exactly meet your existing requirements, while allowing for future expansion.

### **Multi-Channel Support**

Up to 30 XTRs can be connected easily via an RS-485 bus to provide the ultimate flexibility in remote programming. This eliminates the cost and complexity of requiring GPIB cards in each unit.

Once connected, multiple power supplies can be controlled via a single LAN, USB 2.0, GPIB, RS-232 or RS-485 interface. This provides an efficient option to centrally manage each XTR needed for your applications.

### **Straightforward Front Panel Controls**

The XTR is equipped with a unique push-button encoder and function selector dial to provide a simple, uncluttered front panel. Both voltage and current can be set quickly and easily using these two controls. Front panel access can be locked out to ensure secure remote operation. This streamlined front panel layout results in fast, intuitive set-up and operation of the XTR.

### **High Reliability**

To guarantee long-term trouble-free performance, the XTR was designed with reliability in mind. Soft-switching technology ensures higher mean time between failure (MTBF) by eliminating high voltage transients found in conventional hard-switching power supplies which can cause premature failure of power components.

Xantrex engineers also rigorously tested the XTR during the design phase using Highly Accelerated Life Testing (HALT). This rigorous test procedure combines powerful thermal and vibration technologies to stress a product beyond its rated specifications. HALT testing allows our engineers to uncover and correct design issues early in the development cycle. This care in design and comprehensive testing ensures the XTR exceeds the reliability and quality standards of both Xantrex and our customers.

### **Five-Year Warranty**

The XTR is backed by a comprehensive five-year warranty, the longest in the market. Our superior design and testing techniques result in highly reliable products that will provide you with years of trouble-free performance.

# XTR 850 Electrical Specifications for 6 V to 600 V Models

Models	6-110	8-100	12-70	20-42	33-25	40-21	60-14	80-10.5	100-8.5	150-5.6	300-2.8	600-1.4
<b>Output Ratings</b>												
Output Voltage <sup>1</sup>	6 V	8 V	12 V	20 V	33 V	40 V	60 V	80 V	100 V	150 V	300 V	600 V
Output Current <sup>2</sup>	110 A	100 A	70 A	42 A	25 A	21 A	14 A	10.5 A	8.5 A	5.6 A	2.8 A	1.4 A
Output Power <sup>3</sup>	670 W	810 W	850 W	850 W	835 W	850 W	850 W	850 W	860 W	850 W	850 W	850 W
<b>Line Regulation</b>												
Voltage (0.005% of rated output voltage + 2 mV) <sup>4</sup>	2.3 mV	2.4 mV	2.6 mV	3.0 mV	3.7 mV	4 mV	5 mV	6 mV	7 mV	9.5 mV	17 mV	32 mV
Current (0.01% of rated output current + 2 mA) <sup>5</sup>	13 mA	12 mA	9 mA	6.2 mA	4.5 mA	4.1 mA	3.4 mA	3.1 mA	2.9 mA	2.6 mA	2.3 mA	2.1 mA
<b>Load Regulation</b>												
Voltage (0.005% of rated output voltage + 2 mV) <sup>6</sup>	2.3 mV	2.4 mV	2.6 mV	3.0 mV	3.7 mV	4 mV	5 mV	6 mV	7 mV	9.5 mV	17 mV	32 mV
Current (0.02% of rated output current + 5 mA) <sup>7</sup>	27 mA	25 mA	19 mA	13.4 mA	10 mA	9.2 mA	7.8 mA	7.1 mA	6.7 mA	6.1 mA	5.6 mA	5.3 mA
<b>Output Noise (rms, 300 kHz)</b>												
Voltage	8 mV	8 mV	8 mV	8 mV	8 mV	8 mV	8 mV	8 mV	8 mV	10 mV	25 mV	50 mV
Current <sup>8</sup>	200 mA	180 mA	120 mA	75 mA	60 mA	45 mA	35 mA	25 mA	20 mA	16 mA	10 mA	6 mA
<b>Output Ripple (p-p, 20 MHz)</b>												
Voltage	50 mV	50 mV	50 mV	50 mV	50 mV	50 mV	50 mV	80 mV	80 mV	100 mV	150 mV	250 mV
Maximum Recommended Remote Sense	1 V	1 V	1 V	1.5 V	2 V	2 V	3 V	5 V	5 V	5 V	5 V	5 V
<b>Line Drop Compensation per Line<sup>9</sup></b>												
Up-prog. Response Time, 0~Vmax <sup>10</sup>	60 ms	60 ms	60 ms	60 ms	60 ms	60 ms	60 ms	100 ms	100 ms	100 ms	150 ms	250 ms
Down-prog. Response Time: Full Load	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	80 ms	100 ms	150 ms	150 ms	250 ms
Down-prog. Response Time: No Load	300 ms	400 ms	500 ms	600 ms	700 ms	800 ms	900 ms	1000 ms	1200 ms	1800 ms	2200 ms	3500 ms
Over-Voltage Trip Point	0.5–7.5 V	0.5–10 V	1–15 V	1–24 V	2–39 V	2–44 V	3–66 V	3–95 V	3–125 V	3–180 V	5–330 V	5–660 V
Efficiency <sup>11</sup>	75/77%	77/80%	81/84%	82/85%	83/86%	83/87%	83/87%	83/87%	83/87%	83/87%	83/87%	83/87%

- Maximum output voltage is guaranteed to be 0.1% of the rated voltage at zero output setting, using the front panel or digital remote programming modes.
- Maximum output current is guaranteed to be 0.2% of the rated current at zero output setting, using the front panel or digital remote programming modes, and when measured with rated load resistance.
- Total output power is also based on AUX1 Output Voltage (5 V) and AUX1 Output Current (0.5 A) and AUX2 Output Voltage (15 V) and AUX2 Output Current (0.5 A).
- From 85–132 Vac or 170–265 Vac, constant load.
- From 85–132 Vac or 170–265 Vac, constant load.
- From no load to full load, constant input voltage.
- For load voltage change, equal to the unit voltage rating, constant input voltage.
- For 6 V models the current ripple is measured at 2–6 V output voltage and full output current. For all other models, the current ripple is measured at 10–100% output voltage and full output current.
- When using remote sense, the total of the load voltage and the load line drops must not exceed the rated output of the power supply. For example, for an XTR 6-110 in an application with 1 V of load line loss (0.5 V/Line), the maximum available load voltage would be 6–1= 5 V. Note: The unit may operate at higher output voltages than this, but there is no guarantee that the power supply will meet performance specifications. Ultimately, the upper limit of the output voltage will be determined by internal circuitry of the power supply (non-adjustable.)
- With rated, resistive load.
- At 100/200 Vac input voltage and maximum output power.

Applies to all footnotes: Programming and Readback: RS-232, RS-485, USB built in, GPIB, Ethernet optional.  
Specifications are guaranteed from 1% to 100% of the rated output voltage, current, and power.

## Environmental Specifications (Indoor use)

Operating Temperature Range	32°F to 122°F, 100% load (0°C to 50°C)
Storage Temperature Range	-4°F to 158°F (-20° C to 70°C)
Operating Humidity Range	30–90% RH (no condensation)
Storage Humidity Range	10–95% RH (no condensation)
Operating Altitude	Up to 6,500 feet (2,000 m)
Installation Category	II (IEC 1010-1)
Pollution Degree	2 (IEC 1010-1)

## 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 B, FCC Part 15B for conducted emissions
	Complies with EN55022, Class A, FCC Part 15A for radiated emissions
	Complies with EN61000-4 series of standards for immunity
Warranty	Five Years

# XTR 850 General Specifications

Programming Mode	APG	ISOL	Digital
Voltage & Current Output Voltage Programming	0-100% Voltage control range is 0.0 to 2.0 - 10.0V in 0.1V increments		
Voltage & Current Output Resistive Programming	0-100% Resistive control range is 0.0 to 2.0 - 10.0V in 0.1V increments		
Output Voltage and Current Monitor	0-100% Output Voltage Monitor range is 0.0 to 2.0 - 10.0V in 0.1V increments		
Voltage Programming Accuracy <sup>1</sup>	± 0.5% of rated output voltage, max (0 to 4.0V / 4K Ohm range) ± 0.5% of rated output voltage, typical in other ranges		± 0.1% of rated output voltage
Current Programming Accuracy <sup>1</sup>	± 0.5% of rated output current, max (0 to 4.0V / 4K Ohm range) ± 0.5% of rated output current, typical in other ranges		± 0.2% of rated output current
Voltage Feedback Accuracy	± 1% of rated output voltage		± 0.1% of rated output voltage
Current Feedback Accuracy	± 1% of rated output current		± 0.2% of rated output current
Isolation (Prog and Readback Lines)	With respect to chassis potential: 500 V	With respect to: chassis potential: 500 V negative or positive main output 1500 V negative or positive auxiliary output 300 V	
Parallel Operation	Up to 4 units in master slave mode		
Series Operation	Up to 2 units (with external diodes)		
Constant Voltage (CV) Constant Current (CC) Indicator	CV: TTL High (4-5 V) CC TTL Low (0-0.6 V)		
Shutdown Control <sup>2</sup>		Logic low 0.0 - 1.4 V Logic high 2.0 - 15 V Dry contact compatible	
AUX On/Off Control		TTL level or dry contact compatible	
Power Supply Status Signal		TTL high: OK (4-5 V) TTL low: fail (0-0.6 V)	
Interlock Enable/Disable		Dry contact. Open/Short: On or Off programmable	

1. Typical APG or isolated APG accuracy can be improved to max accuracy by user calibration at the specific range selected  
 2. The shutdown input has user selectable negative logic operation via front panel or remote digital input/output

## AC Line Input Specifications

Rated AC Input Voltage/Frequency	100–240 Vac, 47–63 Hz
Operational AC Input Voltage/Frequency	85–265 Vac continuous, 47–63 Hz, single phase
Input Current (at 100/200 Vac)	11.5/6 A (850 W)
Inrush Current (100/200 Vac)	Less than: 25 A (850 W)
Power Factor Correction	0.99@100/200 Vac, rated output power

## Output Performance Specifications

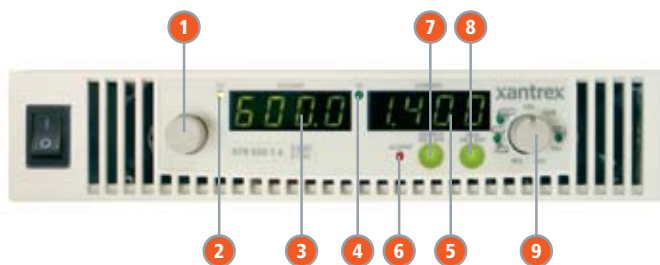
Temperature Coefficient	100 PPM/° C from rated output voltage, after a 30-minute warm-up
Drift (8 hours)	0.05% of rated output voltage & current over an 8 hour interval with constant line, load & temperature, after a 30-minute warm-up
Hold-up Time	Typical 20 ms at any rated input line.
Transient Response Time <sup>2</sup>	Less than 1 ms for 6 V to 60 V models. Less than 2 ms for 80 V to 600 V models
Meter Accuracy	0.5% of actual output voltage or current ± 1 count
Aux output <sup>1</sup>	+5 V: +0.4 V, – 0.5 V at 0.4 A +15 V: +1.2 V, – 1.4 V at 0.4 A
<b>Isolation</b>	
AC Input to Output AC Input to Chassis Output to Chassis <sup>3</sup>	1350 Vac 1350 Vac 500 Vac

1. Current: 0.51 A minimum guaranteed, 0.72 A typically available. Overcurrent protection (each output) is automatic, non-latching. When OCP is tripped the aux voltage folds back and will recover to nominal condition when the over current condition is removed (typ. <0.2A).  
 2. Time for the output voltage to recover within 0.5% at its rated output for a load change 10-90% of rated output current. Output set point 10-100%  
 3. For floating chassis ground applications, please contact application engineering for system design assistance.

## Mechanical Specifications

XTR 850 Watt (W×H×D)	8.4 × 1.7 × 19.0 inch (214 × 43.6 × 483 mm)
Weight	11 lb (5kg)
Cooling	Forced air cooling by internal fans

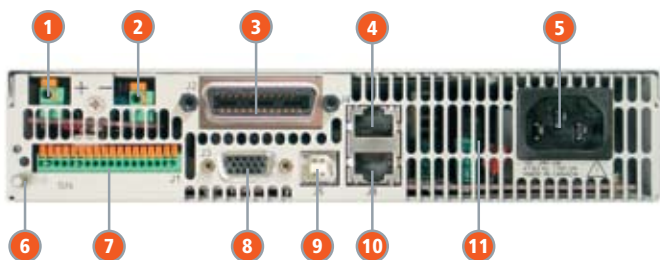
## Front Panel Display and Control



### Item Description

- |   |                           |
|---|---------------------------|
| 1 | Rotary knob/ENTER button  |
| 2 | Voltage mode LED (green)  |
| 3 | Voltage meter             |
| 4 | Current mode LED (green)  |
| 5 | Current meter             |
| 6 | Alarm indicator LED (red) |
| 7 | Output ON/OFF button      |
| 8 | Auxiliary ON/OFF button   |
| 9 | Rotary selection knob     |

## Rear Panel Connectors



### Item Description

- |    |   |
|----|---|
| 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)             |

## About Xantrex

Xantrex Technology Inc. ([www.xantrex.com](http://www.xantrex.com)) is a world leader in the development, manufacturing and marketing of advanced power electronic products and systems for the renewable, portable, mobile, and pro-grammable power markets. The company's products convert raw electrical power from any central, distributed, or backup power source into high-quality power required by electronic and electrical equipment. Head-quartered in Vancouver, British Columbia, the company has facilities in Arlington, Washington; Livermore, California; San Diego, California; Elkhart, Indiana; Barcelona, Spain; and Reading, England. Xantrex is publicly listed on the Toronto Stock Exchange under the ticker symbol "XTX".



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