

# XFR 1.2 kW

## XFR 1.2 kW Programmable DC Power Supply with Zero Voltage "Soft Switching"



### Provides 1.2 kW of DC Power for OEM Applications

The Xantrex XFR 1.2 kW programmable DC power supply provides clean, reliable power for research, product development, production test applications, and OEM applications where high power and a wide adjustment of output voltage or current are required in a 19-inch rack package. The XFR 1.2 kW is packaged in a 1.75-inch (1 U) high chassis and offers twenty percent more power than any competitive product in a similar package.

The supplies have excellent thermal management allowing for units to be stacked in rack mounts without any ventilation space required between each unit. They also offer high reliability with zero voltage, or "soft switching", which virtually eliminates switching transients for high efficiency, decreased heat generation, and reduced stress on the switching transistors.

#### Product Features

- ▶ Zero voltage "Soft Switching"
- ▶ Simultaneous front panel display of output voltage and current
- ▶ Constant voltage or constant current operation
- ▶ Remote sense with 5 V line loss compensation
- ▶ LabVIEW® and LabWindows® drivers

#### Protection Features

- ▶ Over voltage protection
- ▶ Over temperature protection

#### Options

- ▶ Isolated analog control (ISOL)
- ▶ RS-232 interface card
- ▶ GPIB interface card
- ▶ GPIB-multichannel

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# XFR 1.2 kW

## XFR 1.2 kW Programmable DC Power Supply with Zero Voltage “Soft Switching”

### Electrical Specifications <sup>1</sup>

Models	6-200	7.5-140	12-100	20-60	35-35	40-30	60-20	100-12	150-8	300-4	600-2
<b>Output Ratings</b>											
Output Voltage	0-6 V	0-7.5 V	0-12 V	0-20 V	0-35 V	0-40 V	0-60 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current	0-200 A <sup>8</sup>	0-140 A	0-100 A	0-60 A	0-35 A	0-30 A	0-20 A	0-12 A	0-8 A	0-4 A	0-2 A
Output Power	1200 W	1050 W	1200 W	1200 W	1225 W	1200 W	1200 W	1200 W	1200 W	1200 W	1200 W
<b>Line Regulation <sup>2</sup></b>											
Voltage	2.5 mV	2.5 mV	2.5 mV	2.5 mV	2.5 mV	2.5 mV	2.5 mV	2.5 mV	2.5 mV	5 mV	10 mV
Current	20 mA	10 mA	10 mA	4 mA	4 mA	4 mA	4 mA	2 mA	2 mA	1 mA	1 mA
<b>Load Regulation <sup>3</sup></b>											
Voltage	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	5 mV	10 mV	60 mV
Current	20 mA	10 mA	8 mA	8 mA	5 mA	5 mA	9 mA	4 mA	4 mA	4 mA	4 mA
<b>Meter accuracy</b>											
Voltage (0.5% of Vmax + 1 count)	0.07 V	0.09 V	0.13 V	0.3 V	0.4 V	0.5 V	0.7 V	1.1 V	1.6 V	4 V	7 V
Current (0.5% of Imax + 1 count)	2.5 A	1.5 A	1.1 A	0.7 A	0.45 A	0.4 A	0.3 A	0.13 A	0.09 A	0.05 A	0.03 A
<b>Output Noise (0-20 mHz)</b>											
Voltage (p-p)	50 mV	50 mV	55 mV	50 mV	50 mV	50 mV	55 mV	55 mV	60 mV	115 mV	190 mV
<b>Output Ripple (rms)</b>											
Voltage	5 mV	5 mV	5 mV	8 mV	8 mV	8 mV	6 mV	8 mV	13 mV	22 mV	50 mV
Current	530 mA	250 mA	250 mA	300 mA	60 mA	60 mA	15 mA	12 mA	6 mA	3 mA	1 mA
<b>Drift (8 hours) <sup>4</sup></b>											
Voltage (0.05% of Vmax)	3 mV	3.75 mV	6 mV	10 mV	17.5 mV	20 mV	30 mV	50 mV	75 mV	150 mV	300 mV
Current (0.05% of Imax)	200 mA	70 mA	50 mA	30 mA	17.5 mA	15 mA	10 mA	6 mA	4 mA	2 mA	1 mA
<b>Temperature Coefficient <sup>5</sup></b>											
Voltage (0.02% of Vmax/°C)	1.2 mV	1.5 mV	2.4 mV	4 mV	7 mV	8 mV	12 mV	20 mV	30 mV	60 mV	120 mV
Current (0.03% of Imax/°C)	60 mA	42 mA	30 mA	18 mA	10.5 mA	9 mA	6 mA	3.6 mA	2.4 mA	1.2 mA	0.6 mA
<b>Program Slew Rate <sup>6</sup></b>											
Rise Time	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	170 ms	170 ms	170 ms	170 ms
Fall Time	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	170 ms	170 ms	170 ms	170 ms
OVP Adjustment Range (5% to 110% of Vmax)	0.3-6.6 V	0.375-8.25 V	0.6-13.2 V	1-22 V	1.75-38.5 V	2-44 V	3-66 V	5-110 V	7.5-165 V	15-330 V	30-660 V
Efficiency: <sup>7</sup>	75%	78%	81%	81%	83%	83%	86%	84%	84%	85%	85%

- Specifications indicate typical performance at 25° C ±5°C, nominal line input of 120 VAC.
- For input voltage variation over the AC input voltage range, with constant rated load.
- For 0-100% load variation, with constant nominal line voltage.
- Maximum drift over 8 hours with constant line, load, and temperature, after 30-minute warm-up.
- Change in output per °C change in ambient temperature, with constant line and load.
- Measured with stepped 0-10 V analog programming source and a resistive load.
- Typical efficiency at 100 VAC input and rated output power.
- Derate output current on 6 V model by 1.5 A per °C for operating temperatures 30-50°C.

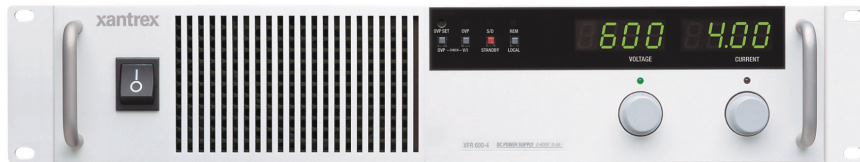
### General Specifications

Operational AC Input Voltage	85-130 VAC or 190-264 VAC, 1 phase (17 A @ 120 VAC; 8.8 A @ 230 VAC typical), 47-63 Hz. Automatic range detect.
Switching Frequency	6 V to 40 V models: nominal 78 kHz (156 kHz output ripple); 60 V to 600 V models: nominal 62.5 kHz (125 kHz output ripple).
Remote Analog Programming	Voltage and current programming inputs (source must be isolated): 0-5 K, 0-10 k resistances; 0-5 V, 0-10 V (default) voltage sources
Remote Analog Monitoring	Voltage and current monitor outputs 0-5 V, 0-10 V (default) ranges for 0-100% of output
Dimensions (HxWxD)	1.7 x 19.0 x 20.0" (43.2 x 429.4 x 508.1 mm)
Weight	Approximately 18 lb (8.2 kg)
Warranty	5 years
Approvals	CE-marked units meet: EN61010-1, EN61000-6-2 and EN61000-6-4; UL Listed to UL3111-1; CSA certified to CSA C22.2 No 1010.1; Meets USA EMC standard; FCC, part 15B, class A; Meets Canadian EMC standard: ICES-001, Class A.

Note: Specifications are subject to change without notice.

# XFR 2.8 kW

## XFR 2.8 kW Programmable DC Power Supply with Zero Voltage "Soft Switching"



### Provides 2.8 kW of DC Power for OEM Applications

The Xantrex XFR 2.8 kW programmable DC power supply provides clean, reliable power for research, product development, and production test applications. The supplies are ideal for OEM applications where high power and a wide adjustment of output voltage or current are required in a full 19-inch rack package.

The XFR 2.8 kW has excellent thermal management allowing for units to be stacked in rack mounts without any ventilation space required between each unit. The supplies offer high reliability with zero voltage, or "soft switching", which virtually eliminates switching transients for high efficiency, decreased heat generation, and reduced stress on the switching transistors.

#### Product Features

- ▶ Zero voltage "Soft Switching"
- ▶ Simultaneous front panel display of output voltage and current
- ▶ Constant voltage or constant current operation
- ▶ Standby mode
- ▶ Remote sense with 5 V line loss compensation
- ▶ LabVIEW® and LabWindows® drivers

#### Protection Features

- ▶ Over voltage protection
- ▶ Over temperature protection

#### Options

- ▶ Isolated analog control (ISOL)
- ▶ RS-232 interface card
- ▶ GPIB interface card
- ▶ GPIB-multichannel

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# XFR 2.8 kW

## XFR 2.8 kW Programmable DC Power Supply with Zero Voltage “Soft Switching”

Electrical Specifications <sup>1</sup>										
Models	7.5-300	12-220	20-130	33-85	40-70	60-46	100-28	150-18	300-9	600-4
<b>Output Ratings</b>										
Output Voltage	0-7.5 V	0-12 V	0-20 V	0-33 V	0-40 V	0-60 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current	0-300 A	0-220 A	0-130 A	0-85 V	0-70 A	0-46 A	0-28 A	0-18 A	0-9 A	0-4 A
Output Power	2250 W	2640 W	2600 W	2085 W	2800 W	2760 W	2800 W	2700 W	2700 W	2400 W
<b>Line Regulation <sup>2</sup></b>										
Voltage	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	15 mV	15 mV
Current	20 mV	20 mV	5 mV	4 mV	4 mV	3 mV	3 mV	3 mV	3 mV	3 mV
<b>Load Regulation <sup>3</sup></b>										
Voltage	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	3 mV	15 mV	15 mV
Current	20 mA	20 mA	10 mA	5 mA	5 mA	4 mA	4 mA	4 mA	4 mA	3 mA
<b>Meter Accuracy</b>										
Voltage (1% of Vmax + 1 count)	0.09 V	0.13 V	0.3 V	0.43 V	0.5 V	0.7 V	1.1 V	1.6 V	4 V	7 V
Current (1% of Imax + 1 count)	4 A	2.3 A	1.4 A	0.95 A	0.8 A	0.56 A	0.38 A	0.19 A	0.1 A	0.05 A
<b>Output Noise (0-20 mHz)</b>										
Voltage (p-p)	50 mV	50 mV	50 mV	60 mV	60 mV	60 mV	100 mV	100 mV	100 mV	175 mV
<b>Output Ripple (rms)</b>										
Voltage	5 mV	5 mV	7 mV	7 mV	7 mV	7 mV	14 mV	15 mV	20 mV	35 mV
Current	250 mA	150 mA	60 mA	60 mV	70 mA	30 mA	10 mA	7 mA	7 mA	3 mA
<b>Drift (8 hours) <sup>4</sup></b>										
Voltage (0.05% of Vmax)	3.75 mV	6 mV	10 mV	16.5 mV	20 mV	30 mV	50 mV	75 mV	150 mV	300 mV
Current (0.05% of Imax)	150 mA	110 mA	65 mA	42.5 mA	35 mA	23 mA	14 mA	9 mA	4.5 mA	2 mA
<b>Temperature Coefficient <sup>5</sup></b>										
Voltage (0.02% of Vmax/°C)	1.5 mV	2.4 mV	4 mV	6.6 mV	8 mV	12 mV	20 mV	30 mV	60 mV	120 mV
Current (0.03% of Imax/°C)	90 mA	66 mA	39 mA	25.5 mA	21 mA	13.8 mA	8.4 mA	5.4 mA	2.7 mA	1.2 mA
<b>Program Slew Rate <sup>6</sup></b>										
Rise time	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	170 ms	170 ms	170 ms	170 ms
Fall time	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	170 ms	170 ms	170 ms	170 ms
OVP Adjustment Range (5% to 110% of Vmax)	0.375-8.25 V	0.6-13.2 V	1-22 V	1.65-36.6 V	2-44 V	3-66 V	5-110 V	7.5-165 V	15-330 V	30-660 V
Efficiency: <sup>7</sup>	80%	82%	85%	85%	87%	90%	90%	90%	91%	91%

- Specifications indicate typical performance at 25° C ±5°C, nominal line input of 208 VAC.
- For input voltage variation over the AC input voltage range, with constant rated load.
- For 0-100% load variation, with constant nominal line voltage.
- Maximum drift over 8 hours with constant line, load, and temperature, after 30-minute warm-up.
- Change in output per °C change in ambient temperature, with constant line and load.
- Measured with stepped 0-10 V analog programming source and a resistive load.
- Typical efficiency at nominal input voltage and rated output power.

### General Specifications

Operational AC Input Voltage	190-264 VAC, 1-phase (24.3 A at 208 VAC; 20.5 A at 230 VAC typical), 47-63 Hz; Option: M2 3 phase 208 VAC input
Switching Frequency	Nominal 31 kHz (62 kHz output ripple)
Remote Analog Programming	Voltage and current programming inputs (source must be isolated): 0-5 k, 0-10 k (2%) resistances; 0-5 V, 0-10 V (default) voltage sources
Remote Analog Monitoring	Voltage and current monitor outputs 0-5 V, 0-10 V (default) ranges for 0-100% of output
Dimensions (HxWxD)	3.5 x 19.0 x 21.0" (88.9 x 429.4 x 533.5 mm)
Weight	Approximately 33 lb (15 kg)
Warranty	5 years
Approvals	CE-marked units meet: EN61010-1, EN61000-6-2 and EN61000-6-4; UL Listed to UL3111-1; CSA certified to CSA C22.2 No 1010.1; Meets USA EMC standard: FCC, part 15B, class A; Meets Canadian EMC standard; ICES-001, Class A.

Note: Specifications are subject to change without notice.