XDC Series

6 kW and 12 kW
Digital DC Power Supply

Voltage Range 0-10 VDC to 0-600 VDC
Current Range 0-600 A to 0-10 A

3fl 208 VAC input
(optional 3fl 342-500 VAC HV input)
Power Factor Correction (PFC)
Zero voltage „soft“ switching for low noise,
high efficiency and high reliability
Constant power mode
Digital processing with 16-bit control for high accuracy
Ten 99-step Auto Sequence programs for easy benchtop
programming of complex test routines
Ten store/recall setup locations
Digital keypad, directional arrows and
digital encoded knobs for fast and tactile front panel operation
Nine self-protection mechanisms Isolated analog
programming and readback standard
RS-232 standard
GPIB (IEEE 488.2 with SCPI) optional
LabView® and LabWindows® drivers
CANbus communications link option for multiple
unit current sharing and addressing
Bright Vacuum Fluorescent Display with
status annunciators, alarms and over/under trip point indication
Front panel soft calibration
Remote sense with 5 V line loss compensation
CE, CSA, UL approvals; FCC compliant

The new digitally controlled 6kW XDC Series represents today’s state-of-the-art technology in high power, programmable DC supplies. It has been designed for rack mounted ATE and OEM use as well as „burn-in“, magnet charging and „on-the-bench“ test & measurement applications that require high power in a relatively small package. Packaged in a 3U (5.25 in.) high chassis, the XDC provides 20% more power than competitive 5kW products at a comparable price. An embedded controller gives the XDC a unique, menu driven „auto sequencing“ capability that allows powerful and timesaving test programs to be entered and saved via the front panel. The availability of up to ten different programs of 99 steps each allows user programming of voltage sequences (steps, ramps, etc.) of varying duration to construct automated and semiautomatic test setups. A technician can single step through a sequence, run „n“ times or run continuously when triggered from the front panel or remotely. This stand-alone capability allows test programming to be off loaded from other programmers and processors. Usage ranges from constructing simple voltage ramps, to battery charging and simulation of battery voltage at engine start-up, to component tests, to MIL 704E testing.

Tests unique to your application are now possible using the XDC’s powerful auto sequencing capability. In addition to the ten auto sequencing programs, ten store/recall registers are available for quick recall of complete setups. RS-232 is standard, as is fully isolated analog control. GPIB (IEEE 488.2 with SCPI) control is an available option. A CANbus hardware link is an option for linking multiple units together for higher current with master/slave current sharing. The GPIB/CANbus option provides multiple addressing capability and eliminates the need for multiple GPIB cards and multiple GPIB addresses. In addition to zero-voltage or „soft“ switching for better noise performance, efficiency and reliability, power factor correction (PFC) assures lower input current draw and low harmonic current generation in order to meet CE requirements. The XDC offers three different front panel digital control choices. Included is a numerical keypad for fast, accurate data input, digital encoder knobs for incremental adjustments with analog feel and up/down arrow keys for menu selections or incremental adjustments. The unit has extensive self-protection mechanisms.

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General Specifications XDC 6kW (Specifications are subject to change without notice.)

Operational AC Input Voltage	3f 190-242 VAC (optional 3f 342 - 500 VAC) 3 wire and safety ground, 47-63 Hz
Switching Frequency	Nominal 35 kHz (70 kHz output ripple)
Time Delay	5 s maximum from power on until output stable
Voltage Mode Transient Response Time	<3 ms for output voltage to recover within 0.75% of its rated voltage after a step change in load current from 50% to 100% of rated output or from 100% to 50%
Maximum Voltage Differential	±600 VDC from output to safety ground
Remote On/Off and Interlock	4-15 V signal or TTL-compatible input, selectable logic
Remote Analog Programming Inputs	Voltage and current programming inputs; 0-5 V, 0-10 V (default) voltage sources. galvanically isolated from supply output
Remote Analog Monitoring	Voltage and current monitor outputs 0-5 V, 0-10 V (default) ranges for 0-100% of output. Galvanically isolated from supply output.
Remote Programming and Monitoring Accuracy	<±0.3% of full scale output
Maximum Remote Sense Line Drop Compensation	5 V/line (Line drop is subtracted from total voltage available at supply output.)
Operating Temperature Range	0 to 50° C
Storage Temperature Range	–40 to 85° C
Humidity Range	30 to 95% RH, non-condensing
Front Panel Voltage and Current Control	Rotary encoder knobs or keypad entry
Front Panel Voltage Control Resolution	0.002% with keypad
AC Input Connector Type	4-terminal, wire clamp connector with strain relief cover
Main Output Connector	10 V to 100 V models: nickel-plated copper bus bars with bus bar shield; 150 V to 600 V models: 4-terminal wire clamp connector with strain relief
Weight (one unit)	Approximately 34 kg (70 lb.)
Approvals	CE-marked units meet IEC 1010-1 safety standard and EN50081-2 and EN50082-2 EMC standards. Additional standards: CSA C22.2 No. 1010.1, UL 3111-1, and FCC, part 15, Class A EMI standard, CSA certified, UL listed.

Contact Zentro-Elektrik for complete product specifications.

Electrical Specifications[1] for the XDC 6 kW Series (Specifications are subject to change without notice.)

Model	XDC 10-600	XDC 20-300	XDC 40-150	XDC 60-100	XDC 80-75	XDC 100-60	XDC 150-40	XDC 300-20	XDC 600-10
Output Ratings:									
Output Voltage [2]	0-10 V	0-20 V	0-40 V	0-60 V	0-80 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current [3]	0-600 A	0-300 A	0-150 A	0-100 A	0-75 A	0-60 A	0-40 A	0-20 A	0-10 A
Output Power	6000 W	6000 W	6000 W	6000 W	6000 W	6000 W	6000 W	6000 W	6000 W
Line Regulation: [4]									
Voltage (0.01% of Vmax)	1 mV	2 mV	4 mV	6 mV	8 mV	10 mV	15 mV	30 mV	60 mV
Current (0.05% of Imax ± 5 mA)	305 mA	155 mA	80 mA	55 mA	42.5 mA	35 mA	25 mA	15 mA	10 mA
Load Regulation: [5]									
Voltage (0.05% of Vmax + 5 mV)	10 mV	15 mV	25 mV	35 mV	45 mV	55 mV	80 mV	155 mV	305 mV
Current (0.1% of Imax + 20 mA)	620 mA	320 mA	170 mA	120 mA	95 mA	80 mA	60 mA	40 mA	30 mA
Meter Accuracy:									
Voltage (0.15% of Vmax)	15 mV	30 mV	60 mV	90 mV	120 mV	150 mV	225 mV	450 mV	900 mV
Current (0.15% of Imax)	900 mA	450 mA	225 mA	150 mA	113 mA	90 mA	60 mA	30 mA	15 mA
Output Noise (0-20 MHz):									
Voltage (p-p)	75 mV	75 mV	75 mV	100 mV	100 mV	100 mV	150 mV	250 mV	350 mV
Output Ripple (rms):									
Voltage (p-p)	10 mV	10 mV	15 mV	15 mV	15 mV	20 mV	20 mV	30 mV	80 mV
Current6	3100 mA	1600 mA	750 mA	450 mA	320 mA	230 mA	120 mA	50 mA	25 mA
Drift (30 minutes): [7]									
Voltage (0.04% of Vmax)	4 mV	8 mV	16 mV	24 mV	32 mV	40 mV	60 mV	120 mV	240 mV
Current (0.6% of Imax)	3600 mA	1800 mA	900 mA	600 mA	450 mA	360 mA	240 mA	120 mA	60 mA
Drift (8 hours): [8]									
Voltage (0.02% of Vmax)	2 mV	4 mV	8 mV	12 mV	16 mV	20 mV	30 mV	60 mV	120 mV
Current (0.04% of Imax)	240 mA	120 mA	60 mA	40 mA	30 mA	24 mA	16 mA	8 mA	4 mA
Temperature Coefficient: [9]									
Voltage (0.04% of Vmax/°C)	4 mV	8 mV	16 mV	24mV	32 mV	40 mV	60 mV	120 mV	240 mV
Current (0.06% of Imax/°C)	360 mA	180 mA	90 mA	60 mA	45 mA	36 mA	24 mA	12 mA	6 mA
OVP Adjustment Range:									
(5% to 103% of Vmax)	0.5-10.3 V	1-20.6 V	2-41.2 V	3-61.8 V	4-82.4 V	5-103 V	7.5-154.5 V	15-309 V	30-618 V
Efficiency [10]	85%	87%	87%	89%	89%	90%	90%	91%	91%

1 All electrical specifications are represented at the full operating temperature range for all models, unless otherwise stated.
2 Minimum output voltage is <0.15% of rated voltage at zero output setting for 10 V, 20 V, 40 V, 60 V, 80 V, and 100 V models and <0.3% for 150 V, 300 V, and 600 V models.
3 Minimum output current is <0.2% of rated current at zero setting when measured with rated load resistance.
4 For input voltage variation over the AC input voltage range, with constant rated load.
5 For 0-100% load variation, with constant nominal line voltage.
6 Current mode noise is measured from 10% to 100% of rated output voltage, full current, unit in current mode.
7 Maximum drift over 30 minutes with constant line, load, and temperature, after power up.
8 Maximum drift over 8 hours with constant line, load, and temperature, after 30 minute warm-up.
9 Change in output per °C change in ambient temperature, with constant line and load.
10 Typical efficiency at nominal input voltage and full output power.

XDC 6 kW Options:

GPIB-XDC	Multi-channel GPIB Interface card (16-bit)
CAN-XDC	Multi-channel CANbus interface
HV-Input	3f 342-500 VAC 3 wire and safety ground, 47-63 Hz

Contact Zentro-Elektrik for custom voltage and current combinations and other options.

General Specifications XDC 12 kW

Operational AC input voltage	3-phase 190-242 VAC (optional 3-phase 342 - 500 VAC) 3 wire and safety ground, 47-63 Hz
Input Power Factor Correction	0.95 (standard version), 0.9 (HV version)
Remote analog programming	Voltage and current programming inputs; 0-5 V, 0-10 V (±1%) voltage sources (10 V default)
Remote analog monitoring	Voltage and current monitor outputs 0-5 V, 0-10 V (default) ranges for 0-100% of output (±1%)
Dimensions (HxWxD)	10.37 x 19.0 x 22.23" (263.4 x 482.6 x 564.6 mm)
Weight	170 lb (77 kg)
Regulatory approvals	CE, UL, CSA, and FCC compliant

Electrical Specifications[1] for the XDC 12 kW Series (Specifications are subject to change without notice.)

Models	10-1200	20-600	30-400	40-300	60-200	80-150	100-120	150-80	300-40	600-20
Output ratings:										
Output Voltage 1	0-10 V	0-20 V	0-30 V	0-40 V	0-60 V	0-80 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current 2	0-1200 A	0-600 A	0-400 A	0-300 A	0-200 A	0-150 A	0-120 A	0-80 A	0-40 A	0-20 A
Output Power	12000 W	12000 W	12000 W	12000 W	12000 W	12000 W	12000 W	12000 W	12000 W	12000 W
Line regulation: 3										
Voltage (0.01% of Vmax)	1 mV	2 mV	3 mV	4 mV	6 mV	8 mV	10 mV	15 mV	30 mV	60 mV
Current (0.1% of Imax)	1200 mA	600 mA	400 mA	300 mA	200 mA	150 mA	120 mA	80 mA	40 mA	20 mA
Load regulation: 4										
Voltage (0.05% of Vmax +5 mV)	10 mV	15 mV	20 mV	25 mV	35 mV	45 mV	55 mV	80 mV	155 mV	305 mV
Current (0.2% of Imax +40 mA)	2440 mA	1240 mA	840 mA	640 mA	440 mA	340 mA	280 mA	120 mA	100 mA	60 mA
Meter accuracy:										
Voltage (0.15% of Vmax)	15 mV	30 mV	45 mV	60 mV	90 mV	120 mV	150 mV	225 mV	450 mV	900 mV
Current (0.5% of Imax)	6 A	3 A	2 A	1.5 A	1 A	750 mA	600 mA	400 mA	200 mA	100 mA
Output noise (0-20 MHz):										
Voltage (p-p)	75 mV	75 mV	75 mV	75 mV	100 mV	100 mV	100 mV	150 mV	250 mV	350 mV
Output ripple (rms):										
Voltage	10 mV	10 mV	12 mV	15 mV	15 mV	15 mV	20 mV	20 mV	30 mV	80 mV
Current 5	6200 mA	3200 mA	2000 mA	1500 mA	900 mA	640 mA	460 mA	240 mA	100 mA	50 mA
Drift (30 minutes): 6										
Voltage (0.04% of Vmax)	4 mV	8 mV	12 mV	16 mV	24 mV	32 mV	40 mV	60 mV	12 mV	240 mV
Current (0.6% of Imax)	7200 mA	3600 mA	2400 mA	1800 mA	1200 mA	900 mA	720 mA	480 mA	240 mA	120 mA
Drift (8 hours): 7										
Voltage (0.02% of Vmax)	2 mV	4 mV	6 mV	8 mV	12 mV	16 mV	20 mV	30 mV	60 mV	120 mV
Current (0.4% of Imax)	480 mA	240 mA	160 mA	120 mA	80 mA	60 mA	48 mA	32 mA	16 mA	8 mA
Temperature coefficient: 8										
Voltage (0.04% of Vmax/°C)	4 mV	8 mV	12 mV	16 mV	24 mV	32 mV	40 mV	60 mV	120 mV	240 mV
Current (0.06% of Imax/°C)	720 mA	360 mA	240 mA	180 mA	120 mA	90 mA	72 mA	48 mA	24 mA	12 mA
OVP adjustment range:										
(0% to 103% of Vmax)	0-10.3 V	0-20.6 V	0-30.9 V	0-41.2 V	0-61.8 V	0-88 V	0-110 V	0-165 V	0-330 V	0-660 V
Efficiency: 9	85%	87%	87%	87%	87%	89%	89%	90%	91%	91%

1. Minimum output voltage is <0.15% of rated voltage at zero output setting.
2. Minimum output current is <0.2% of rated current at zero output setting when measured with rated load resistance.
3. For input voltage variation over the AC input voltage range, with constant rated load.
4. For 0-100% load variation, with constant nominal line voltage.
5. Current mode noise is measured from 10% to 100% of rated output voltage, full current, unit in CC mode.
6. Maximum drift over 30 minutes with constant line, load, and temperature, after power on.
7. Maximum drift over 8 hours with constant line, load, and temperature, after 30 minute warm-up.
8. Change in output per °C change in ambient temperature, with constant line and load.
9. Typical efficiency at nominal input voltage and full output power.

XDC 12 kW Options:

GPIB (IEEE 488.2 with SCPI)
CANbus communications link for multiple unit current sharing and addressing
High voltage input: 3-phase, 342-500 VAC

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