

# Laboratory Power Supply

## ZAS Series

### High Power Programmable DC Power Supply 600W – 7200W / 10VDC – 120VDC



- Zero voltage soft switching technique, low ripple and noise
- Use of reliable digital encoder for voltage and current setting
- Micro controller for digital programming
- Constant Voltage / Constant Current Mode with auto mode crossover
- LabView and LabWindows drivers
- Active PFC at the input with wide input window
- Four digit seven segment LED display for voltage and current read back
- 19" rack mount suitable for ATE and OEM applications
- Parallel operation with active Current Sharing
- RS232, RS485, GPIB interface for external programming
- Galvanic isolated analog programming and mounting surface
- Optional: Ethernet interface card-kit



Units for Laboratory and Test

ZAS Series of programmable DC Laboratory Power Supplies are most flexible and reliable AC/DC Power Systems for OEM, Industrial and Laboratory applications. These are designed with excellent thermal management and can be conveniently stacked in 19" rack mounts without any space between them for ventilation. The zero voltage soft-switching technique employed in them virtually eliminates the switching transients to derive lower noise, which is closer to linear level. This technique also helps increasing the overall conversion efficiency which in turn decreases the heat generation, thus reducing the stress on the power components which results in greater reliability.

#### Input:

Input voltage	600W, 1200W: 95..264VAC, 45..63Hz, p Phase, 2400W: 175..264VAC, 45..63Hz, 1 phase 3600W, 7200W: 300...457VAC, 45..63Hz, 3 phase, 4 wire
Power Factor	0,99 typ., full load, nominal line
Switching frequency	45kHz nominal
Inrush current	limited by NTC

#### Output:

Output DC voltage	see table
Output DC current	see table
Time delay	7s max. from power ON until output stable voltage <45mV p-p
Output Noise (90-20MHz) Rippel (RMS)	see table
Efficiency	minimum 80%, typical
Hold up time	20ms
Constant Voltage (CV), constant current (CC) mode with auto crossover	

#### Regulation:

Line regulation	voltage 0.1% $V_{out}$ current 0.1% $I_{out}$
Load regulation	voltage 0.1% $U_{out}$ current 0.1% $I_{out}$
Voltage mode transient Response	<200µs, for load change 40..90%
Stability	0.05%
Temperatur Coefficient	Voltage 0.05% ( $V_{max}/^{\circ}C$ ) Current 0.05% ( $I_{max}/^{\circ}C$ )
Overvoltage control	yes

#### Protection:

Voltage differential	min. ± 600VDC, output to safety ground
Over temperature protection	Through 90°C thermal switch on heat sink
Over voltage control	yes
Over voltage protection	programmable through rotary encoder or digital interface
Remote sensing	yes

#### Environmental conditions:

Operating temperature	0..+50°C, Derating>40°C, 2.5%/°C
Storage temperature	-20..+70°C
Humidity	≤ 90% RH non condensing
Cooling	Internal forced air cooling from front to rear side with zero stacking

#### Safety:

Safety standard	EN60950
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#### EMC / EMI:

	EN55022, class A
	EN61000-4-2, 3, 4, 5, 6, 8,11 level 3
	EN61000-3-2, 3

#### Operation and Control:

Parallel operation	with active Current Sharing
Sense operation	possible
Meters	LED display Voltage: set voltage, set overvoltage 7 Segment, 4 Digit Current: set current, 7 Segment, 4 Digit Accuracy 0.2% +/-3 counts
Front panel controls	Digital rotary encoder for voltage, current and over voltage set
Last set memory	yes
Remote ON/OFF Display	LED for CV, CC, Remote, Output ON, Trip, Remote, Uset, Iset, OVset, Set Mode

### Programming and Interface:

Remote analog programming	Voltage and current, input isolated 0..5V (default), or 0..10V or 0..4.85k for 0..100%
Remote analog monitoring	Isolated voltage and current monitoring output 0..5V (default), or 0..10V
Accuracy, monitoring and programming	0.5% for 0..100% output
Remote sense compensation	max., 1V/wire
Digital interface	RS232, standard

### Electrical connections:

Input	600W:	10A, 250V line socket
	1200W:	16A, 250V line socket/3core
	2400W:	3 way terminal 30A, 415V terminal block/3core
		20A,250V line cord without plug
	3600W:	4 way terminal 30A, 250V terminal block
	7200W:	4 way terminal 30A, 250V terminal block

### Physical specification:

Dimensions, weight	600W, 1200W:	19"x1Ux450mm (wxhxd), 7kg
	2400W:	19"x2Ux450mm (wxhxd), 13kg
	3600W:	19"x3Ux550mm (wxhxd), 22kg
	7200W:	19"x6Ux550mm (wxhxd), 30kg

### Types:

Output Voltage/Current (V)/(A)	Leistung (W)	Eingang Spannung (V)/Phase	Bestell-bezeichnung
0-10V/0-60A	600	65-264 /1	ZAS600/10/60
0-20V/0-30A	600	65-264 /1	ZAS600/20/30
0-30V/0-20A	600	65-264 /1	ZAS600/30/20
0-40V/0-15A	600	65-264 /1	ZAS600/40/15
0-60V/0-10A	600	65-264 /1	ZAS600/60/10
0-120V/0-5A	600	65-264 /1	ZAS600/120/5
0-20V/0-60A	1200	95-264 /1	ZAS1200/20/60
0-30V/0-40A	1200	95-264 /1	ZAS1200/30/40
0-40V/0-30A	1200	95-264 /1	ZAS1200/40/30
0-60V/0-20A	1200	95-264 /1	ZAS1200/60/20
0-80V/0-15A	1200	95-264 /1	ZAS1200/80/15
0-120V/0-10A	1200	95-264 /1	ZAS1200/120/10
0-30V/0-80A	2400	175-264 /1	ZAS2400/30/80
0-40V/0-60A	2400	175-264 /1	ZAS2400/40/60
0-60V/0-40A	2400	175-264 /1	ZAS2400/60/40
0-80V/0-30A	2400	175-264 /1	ZAS2400/80/30
0-120V/0-20A	2400	175-264 /1	ZAS2400/120/20
0-20V/0-180A	3600	300-475 /3	ZAS3600/20/180
0-30V/0-120A	3600	300-475 /3	ZAS3600/30/120
0-40V/0-90A	3600	300-475 /3	ZAS3600/40/90
0-60V/0-60A	3600	300-475 /3	ZAS3600/60/60
0-80V/0-45A	3600	300-475 /3	ZAS3600/80/45
0-120V/0-30A	3600	300-475 /3	ZAS3600/120/30
0-30V/0-240A	7200	300-475 /3	ZAS7200/30/240
0-40V/0-180A	7200	300-475 /3	ZAS7200/40/180
0-60V/0-120A	7200	300-475 /3	ZAS7200/60/120
0-80V/0-90A	7200	300-475 /3	ZAS7200/80/90
0-120V/0-60A	7200	300-475 /3	ZAS7200/120/60

### Output ripple:

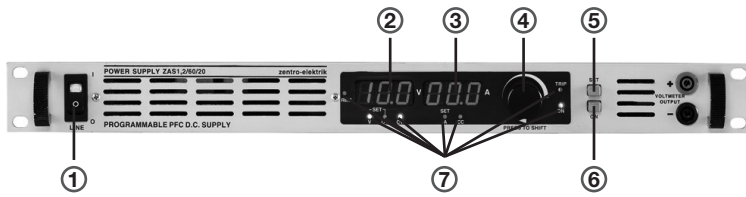
Output Voltage/Current (V)/(A)	Output Ripple Voltage (mV)	Output Ripple Current (mA)
0-10V/0-60A	<10mV	<20mA
0-20V/0-30A	<10mV	<10mA
0-30V/0-20A	<10mV	<10mA
0-40V/0-15A	<10mV	<10mA
0-60V/0-10A	<10mV	<10mA
0-120V/0-5A	<10mV	<10mA
0-20V/0-60A	<10mV	<20mA
0-30V/0-40A	<10mV	<10mA
0-40V/0-30A	<10mV	<10mA
0-60V/0-20A	<10mV	<10mA
0-80V/0-15A	<20mV	<10mA
0-120V/0-10A	<20mV	<10mA
0-30V/0-80A	<10mV	<20mA
0-40V/0-60A	<10mV	<20mA
0-60V/0-40A	<10mV	<10mA
0-80V/0-30A	<20mV	<10mA
0-120V/0-20A	<20mV	<10mA
0-20V/0-180A	<10mV	<20mA
0-30V/0-120A	<10mV	<10mA
0-40V/0-90A	<10mV	<10mA
0-60V/0-60A	<10mV	<10mA
0-80V/0-45A	<20mV	<10mA
0-120V/0-30A	<20mV	<10mA
0-30V/0-240A	<10mV	<20mA
0-40V/0-180A	<10mV	<20mA
0-60V/0-120A	<10mV	<10mA
0-80V/0-90A	<20mV	<10mA
0-120V/0-60A	<20mV	<10mA

### Options:

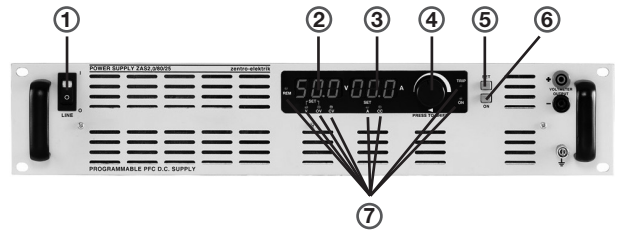
GPIO interface  
(remark: no RS232 interface when GPIO interface is chosen)  
RS485 Interface  
Ethernet Interface for 600W and 1200W units, CARD-KIT  
(Ethernet interface only on request)

# Laboratory Power Supply

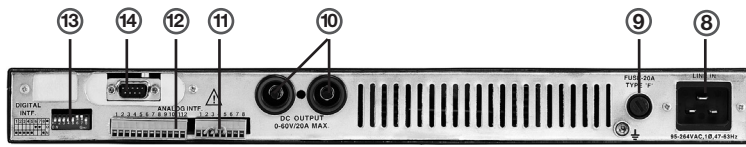
Front View 600W/1000W/1200W



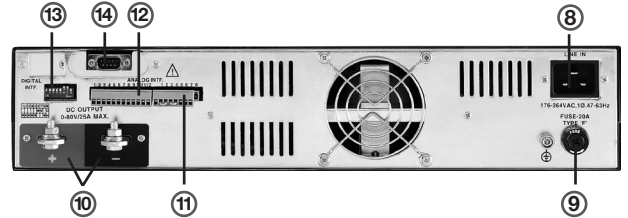
Front View 2000W/2400W



Rear View 600W/1000W/1200W



Rear View 2000W/2400W



## ZAS Front View

1. Main ON/OFF switch
2. Three digit display for output voltage / set voltage / set over voltage indication
3. Three digit display for output current / set current indication
4. Digital rotary encoder for output voltage, current and over voltage limit settings
5. Push switch to view set parameters in SET mode
6. Push switch for output ON / OFF control
7. LED indication for CV, CC, Output ON, Trip, Remote, Vset, Iset, OVset, and Set Mode

## ZAS Rear View

8. Line input
9. Input fuse
10. DC output terminals
11. 3.5mm 8Pin remote sense connector
12. 3.5mm 12Pin analog interface connector
13. DIP switch for remote analog and local mode interface
14. RS232 interface

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