

Configurable Power Supply

600 Watts ZC Series

XPiQ inc.

Intelligent Design Quality Product



- Meets EN61000-3-2, -3
- Up to 5 Outputs Plus 5V Standby
- Low Voltage Outputs Down to 1.8V
- Hot Swap or Chassis Mount
- Oring Diodes On All Outputs (Hot Swap Modules)
- 1U, 19" Rack Mount for 2 units
- International Safety Approvals with CE (LVD)

Specification

Input

- AC Input Voltage 85-264 VAC
- Input Frequency 47-63 Hz
- DC Input Voltage 48 VDC nominal (optional)
- Power Factor 0.99
- Harmonic Current Meets EN61000-3-2
- Inrush Current Limited to 30A peak
- Input Protection Internal 15A fuse

Output

- Output Voltage 1.8 VDC to 12 VDC
- Output Power 600W
- Output Voltage Adj $\pm 5\%$ min, See models chart
- Minimum Load 0 minimum load for all outputs
- Line/Load Regulation $\pm 2\%$ for V1, V2 and V3, $\pm 3\%$ for V4 and V5
- Ripple & Noise $> 2.5V$ output: 50mV or 1% whichever is greater $\leq 2.5V$ output: 2% maximum
- Transient Response 4% max deviation, 300 μs recovery time for a 25% load change
- Temperature Co-eff. 0.02%/°C
- Hold Up Time 20ms minimum
- Remote Sense Up to 0.25 V compensation on V1, V2 and V3
- Overvoltage Protection V1, V2 and V3 only, recycle input to reset
- Overcurrent Protection Standard with auto recovery
- Overtemperature Protection Logic high signal for overtemp conditions
- Current Sharing $\pm 10\%$ for V1, V2 and V3 with "H" option

General

- Efficiency 75% typical at full load
- Power Density 6.8 W/in³
- MTBF 200,000 hrs per Bellcore
- Isolation Voltage 3000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
- Signals PSU Enable, AC Fail, DC OK, Global Inhibit, overtemp
- LED Indicators 2 status indicators
- Size 5.0" x 11.0" x 1.6"
- Weight 3.3 lbs (1.5 kgs.)

Environmental

- Operating Temperature 0°C to 70°C, Full power to 50°C derate from 50°C to 70°C at 2.5%/°C
- Cooling 3 Internal ball bearing fans
- Humidity $< 95\%$ RH, non-condensing
- Storage Temperature -40°C to +85°C

Safety and EMC

- Safety Approvals UL1950, CSA C22.2 No 950 per cUL, EN60950 CE Mark LVD
- EMI/EMC EN61000-3-2, -3, EN55022 and FCC 20780 part 15J Class B conducted with rack, Class A stand alone
- Immunity & Surge Meets EN61000-4-4, -5

ORDERING CODES								ZC
CODE	V1	V2	V3	CODE	V4	CODE	V5	
01	1.8 V @ 70 A	2.5 V @ 50 A	12 V @ 10A	PA	+3.3 V @ 3 A	PD	+1.8 V @ 3 A	
02	1.8 V @ 70 A	3.3 V @ 50 A	12 V @ 10A	NA	-3.3 V @ 3 A	ND	-1.8 V @ 3 A	
03	1.8 V @ 70 A	5.0 V @ 50 A	12 V @ 10A	PB	+5.0 V @ 3 A	PE	+2.5 V @ 3 A	
04	2.5 V @ 100 A	-	12 V @ 10A	NB	-5.0 V @ 3 A	NE	-2.5 V @ 3 A	
05	2.5 V @ 70 A	3.3 V @ 50 A	12 V @ 10A	PC	+12.0 V @ 3 A	PF	+3.3 V @ 3 A	
06	2.5 V @ 70 A	5.0 V @ 50 A	12 V @ 10A	NC	-12.0 V @ 3 A	NF	-3.3 V @ 3 A	
07	3.3 V @ 100 A	-	12 V @ 10A	-	-	PG	+5.0 V @ 3 A	
08	3.3 V @ 70 A	2.5 V @ 50 A	12 V @ 10A	-	-	NG	-5.0 V @ 3 A	
09	3.3 V @ 70 A	5.0 V @ 50 A	12 V @ 10A	-	-	PH	+5.2 V @ 3 A	
10	5.0 V @ 100 A	-	12 V @ 10A	-	-	NH	-5.2 V @ 3 A	
11	5.0 V @ 70 A	2.5 V @ 50 A	12 V @ 10A	-	-	-	-	
12	5.0 V @ 70 A	3.3 V @ 50 A	12 V @ 10A	-	-	-	-	
13	1.8 V @ 70 A	2.5 V @ 50 A	5 V @ 10A	XX	N/C	PD	+1.8 V @ 3 A	
14	1.8 V @ 70 A	3.3 V @ 50 A	5 V @ 10A	-	-	ND	-1.8 V @ 3 A	
15	2.5 V @ 100 A	-	5 V @ 10A	-	-	-	-	
16	2.5 V @ 50 A	3.3 V @ 50 A	5 V @ 10A	-	-	-	-	
17	3.3 V @ 100 A	-	5 V @ 10A	-	-	-	-	
18	2.5 V @ 50 A	2.5 V @ 50 A	5 V @ 10A	-	-	-	-	

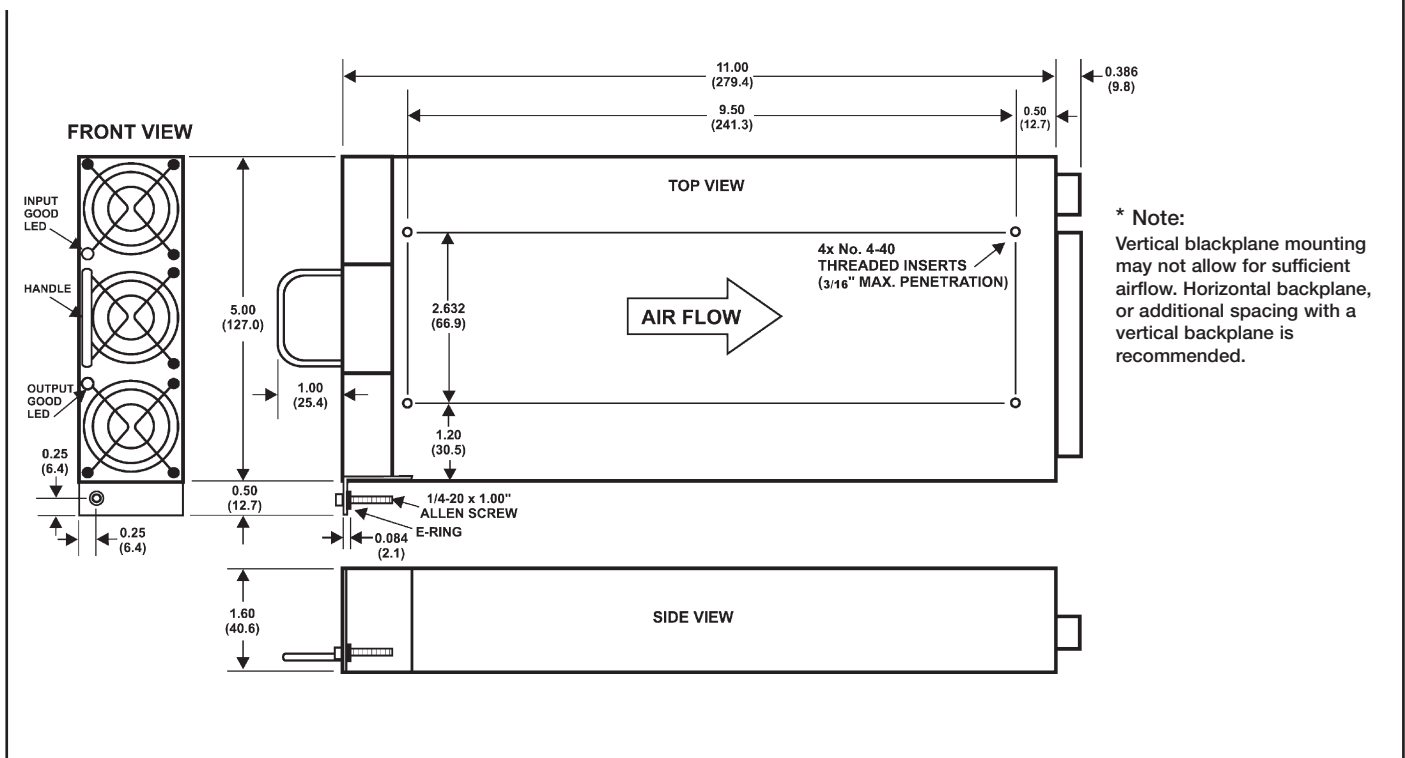
Notes

1. For module codes 13 to 18, V4 may have an unregulated output but this output is not useable. XX is the only option code available for V4 and only $\pm 1.8V$ output is available for V5.
2. V4 is user adjustable from 2.8 VDC to 14.75 VDC codes define setpoint at factory.
3. V5 is user adjustable from 1.7 VDC to 8.12 VDC codes define setpoint at factory.

PART NUMBER ORDERING SCHEME								
Series	AC or DC Input	Hotswap or Chassis	V1-V3 Code	Polarity of V4	V4 Output Code	Polarity of V5	V5 Output Code	Option Code
ZC	A6=AC D6=DC	H=Hotswap C=Chassis	01 to 18	P = Positive N = Negative	A to C	P = Positive N = Negative	D to H	L = Low Leakage I = I ² C Module M = Low Leakage & 12C

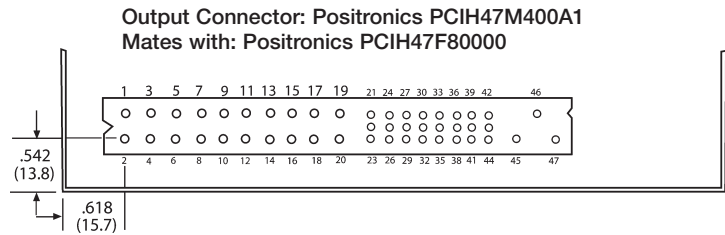
Example: ZCA6H06NCNG is AC input, Hotswap chassis with V1 = 2.5V/70A, V2 = 5V/50A, V3 = 12V/10A, V4 = -12V/3A, V5 = -5V/3A.

Mechanical Details



Pin Connections

PIN STAGING		MATING CONNECTOR BOARD
Pins	Length	Has mating Positronics connector and terminal block connections for AC input, DC outputs and control and monitoring signals. Order No. ZC6 INTBD
1-20	0.300"	
21-26	0.250"	
27	0.150"	
28-44	0.250"	
45-47	0.450	



PIN CONNECTIONS			
Pin	Function	Pin	Function
1	+V1 Out	25	Spare
2	+V1 Out	26	+5V, 1A Standby
3	+V1 Out	27	Enable*
4	+V1 Out	28	Spare
5	+V1 Out	29	V1 External Trim
6	+V1 Out	30	+V1 Sense
7	V1 & V2 Return	31	-V1 Sense
8	V1 & V2 Return	32	V2 External Trim
9	V1 & V2 Return	33	+V2 Sense
10	V1 & V2 Return	34	-V2 Sense
11	V1 & V2 Return	35	V1 Current Share
12	V1 & V2 Return	36	+V3 Sense
13	V1 & V2 Return	37	-V3 Sense
14	+V2 Out	38	DC Power Good
15	+V2 Out	39	Global Inhibit
16	+V2 Out	40	Overtmp. Warning
17	+V2 Out	41	V2 Current Share
18	+V2 Out	42	AC Power Fail
19	V3 Return	43	Spare
20	+V3 Out	44	V3 Current Share
21	V4 Out	45	Chassis Ground
22	Signal Ground	46	AC Line
23	V5 Out	47	AC Neutral
24	V4 & V5 Return		

Note: * For unit to operate, pin 27 must be at TTL LO or shorted to pin 22. All returns and signal ground are connected together.

All Dimensions in Inches (mm)

Application Notes

- Maximum power must not exceed the following: 500 watts for V1 and V2 combined, 171 watts for V3, V4 and V5 combined, or 600W for total unit.
- For units with V1 over 70 amps, that output actually consists of the V1 and V2 outputs in parallel. In this mode the V1 and V2 output pins must be connected to one another and the V1 and V2 current share pins connected to each other. The V1 plus sense and minus sense pins are connected to the V2 plus sense and minus sense pins, respectively. All connections are external to unit.
- The DC Power Good signal monitors the V1, V2 and V3 outputs only.
- DESCRIPTION and INTERCONNECTION OF LOGIC SIGNALS
ENABLE, DC POWER GOOD, AC POWER FAIL, OVERTEMP WARNING and INHIBIT pin connections come from the equivalent of an open collector circuit with an internal pull up 10K resistor to +5V.
ENABLE. Pin must be shorted to ground in order for outputs to function. The connection may also be achieved by means of an external open collector or open FET drain circuit, i.e., when the external transistor is turned on, the power supply is enabled. This is the inverse of the inhibit function below.
DC POWER GOOD. Provides Logic High signal when V1, V2 and V3 reach a prescribed level.
AC POWER FAIL. Provides a Logic High signal pulse when the AC line voltage ceases. Pulse occurs a minimum of 4 milliseconds before outputs go out of regulation. Pulse duration is 4 milliseconds up to tens of milliseconds depending on load. Signal is logic high rather than low (typical in non-redundant power supplies) so that there is no signal ambiguity when redundant power supplies are operated from different AC phases.
OVERTEMP WARNING. Provides a Logic High signal when exit air temperature approaches an unacceptable level.
GLOBAL INHIBIT. Shuts down the outputs but not the standby supply or the fans. As with the Enable pin above, it is achieved by shorting the pin to ground or turning on an external transistor. Acts as the inverse of the Enable pin.
- Connecting all output signals together for units in an N+1 Rack. Normally signals are used for identifying status of each module in paralleled unit configuration. If it is desired to connect all the signals together to treat the complete rack as a single power supply, the following (or equivalent) must be done. The AC Power Fail, DC Power Good and Overtmp Warning signals of each module are each connected to the anode of a BAV99 diode, the other side of which goes to the base of a 2N2222A. The collectors of all the AC Power Fail transistors are connected to form a single AC Power Fail chassis signal. The same is done for the DC Power Good and Overtmp Warning signals. The resultant system signals are then provided in a Logic Low form.

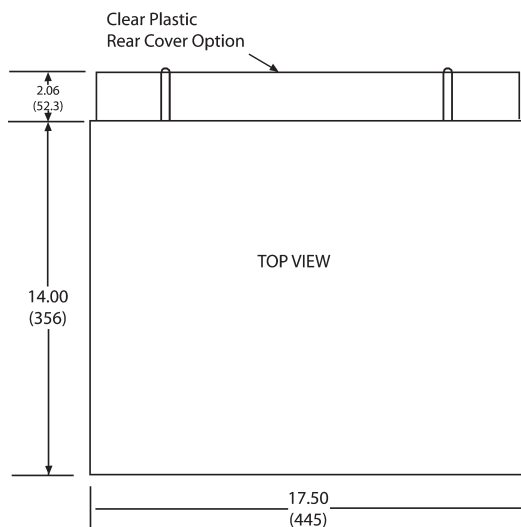
STANDARD RACK MODELS

Model	Input Connector Description	Input
ZC6A-1U2R-DFI ZC6A-1U2R-DRI ZC6A-1U2R-SFI ⁽¹⁾ ZC6A-1U2R-SRI ⁽¹⁾ ZC6A-1U2R-DFT ZC6A-1U2R-DRT ZC6A-1U2R-SFT ZC6A-1U2R-SRT	Dual Front IEC320 with Switch Dual Rear IEC320 with Switch Single Front IEC320 with Switch Single Rear IEC320 with Switch Dual Front Terminal Block Dual Rear Terminal Block Single Front Terminal Block Single Rear Terminal Block	AC
ZC6D-1U2R-DFT ZC6D-1U2R-DRT ZC6D-1U2R-SFT ZC6D-1U2R-SRT	Dual Front Terminal Block Dual Rear Terminal Block Single Front Terminal Block Single Rear Terminal Block	DC

Notes

- OK for 1+1 Redundant operation or total output power to 1000W.
- Add -C for Clear Plastic Rear Safety Cover.

Mechanical Details - 19 Inch Rack

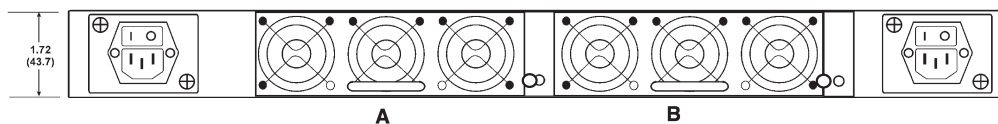


All dimensions in inches (mm)

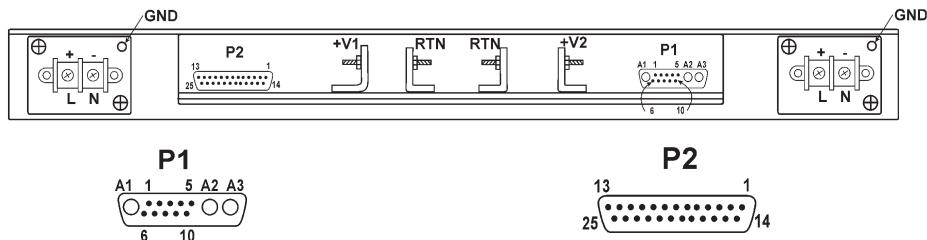
NOTES:

1. All outputs from the two modules are connected in parallel in the rack except the +5V 1A standby outputs which must be externally paralleled by connecting P2 pins 3 and 11 together.
2. The V1 and V2 Returns and V3, V4 and V5 Commons are all connected together in the rack. It is recommended, however, that the Returns and Commons be separately connected to their respective loads.
3. For details on I²C data (P2 pins 2, 12, 15, 16, 23 & 24), contact factory.
4. The Module Present outputs (P2 pins 4 & 22) are grounded when the module is plugged in.
5. Front view below shows dual IEC320 connectors; back view shows dual terminal block connectors.
6. Module A is on the left; module B is on the right.
7. Dual-feed input isolation diodes can be provided. Please contact factory.
8. For dual input racks, each input goes separately to the module on the same side of the rack.

Front View



Back View



P1 PIN CONNECTIONS			
Pins	Function	Pins	Function
A1	V3 Common	5	V4
A2	+V3	6	-V3 Sense
A3	+V3	7	-V2 Sense
1	+V3 Sense	8	-V1 Sense
2	+V2 Sense	9	V5 Common
3	+V1 Sense	10	V5
4	V4 Common		

P2 PIN CONNECTIONS			
Pins	Function	Pins	Function
1	Inhibit-B	14	Input Power Fail-B
2	Output Good/Data-B	15	Serial Clock-B
3	5V Standby-B	16	Interrupt-B
4	Module Present-B	17	Common
5	Spare 1	18	+V3 Sense
6	Spare 2	19	-V3 Sense
7	Spare 3	20	+V2 Sense
8	-V1 Sense	21	-V2 Sense
9	+V1 Sense	22	Module Present-A
10	Common	23	Interrupt-A
11	+5V Standby-A	24	Serial Clock-A
12	Output Good/Data-A	25	Input Power Fail A
13	Inhibit-A		