

# AC/DC Rectifier/Front End

## 4000 Watts CDP4K Series

**XPiQ inc.**

Intelligent Design Quality Product



- Hot Swap N + 1 Redundant
- Single Phase or Three Phase Input
- Rack Option for 3 Modules
- Single Wire Current Sharing
- Power Factor Corrected
- Constant Power Characteristics
- International Safety Approvals

## Specification

### Input

- Input Voltage**
  - 180-264 VAC single phase (nominal 208 VAC 3 phase optional)
- Input Frequency**
  - 47-63 Hz
- Inrush Current**
  - 50 A max
- Input Current**
  - 25.5 A at 180 VAC full load single phase, 15 A/phase at 180 VAC full load 3 phase
- Remote On/Off**
  - On = TTL high or open, Off = TTL low
- Input Fusing**
  - 30 A internal
- Transient Protection**
  - MOV and Gas Tube

### Output

- Output Voltage**
  - 27 VDC or -54 V DC nominal
- Output Power**
  - 4,000 Watts
- Minimum Load**
  - No minimum load required
- Output Voltage Range**
  - 19 to 30 or -40 to -59 VDC programmable
- Line/Load Regulation**
  - ±0.5% using remote sense, otherwise ±5%
- Ripple & Noise**
  - ±1% pk-pk
- Transient Response**
  - 3% Max deviation 500 μs recovery time for a 25% load change
- Start-up Time**
  - 2 seconds max
- Hold Up Time**
  - >20 ms at low line
- Output Rise Time**
  - 250 ms
- Overshoot/Undershoot**
  - 1% at turn on/off
- Temperature Coefficient**
  - 0.02%/°C
- Overvoltage Protection**
  - 29.5 V to 30.5 V or -58.5 V - 59.5 V recycle input to reset
- Overcurrent Protection**
  - 110% to 140% with auto recovery Constant power mode

- Overtemperature Protection**
  - Shutdown at +95 °C with auto reset
- Remote Sense**
  - Compensates for up to 0.5 V loss
- Current Share**
  - Single wire ±5% at full load
- Oring Diodes**
  - Built in

### General

- Efficiency**
  - 90% typical at 230 VAC
- Power Factor**
  - 0.99 for single phase input, 0.95 for 3 phase input
- MTBF**
  - 300,000 hrs per Bellcore-std
- LED Indicators**
  - AC OK (Amber), DC OK (Green) Temp OK (Green)
- Size**
  - 5.00" x 5.00" x 14.12" (not including handle)

### Environmental

- Operating Temperature**
  - 0 °C to +50 °C, derate linearly 2.2%/°C to +65 °C
- Cooling**
  - Internal ball bearing fan
- Humidity**
  - <95% RH, non-condensing
- Storage Temperature**
  - 40 °C to +70 °C
- Shock & Vibration**
  - MIL STD-810F NEBS Compliant to Bellcore GR63

### EMC & Safety

- Safety Approvals**
  - UL1950, CSA 22.2 No. 650 EN60950, CE Mark LVD
- EMI/EMC**
  - Meets EN61000-3-2, -3 CISPR22 and FCC Part 15 Class A Bellcore GR-1089-Core
- Immunity and Surge**
  - Meets EN55082-2 (EN61000-4-2, -3, -4, -5) Performance criteria A

# OUTPUT VOLTAGE & CURRENT RATINGS

**CDP4K**

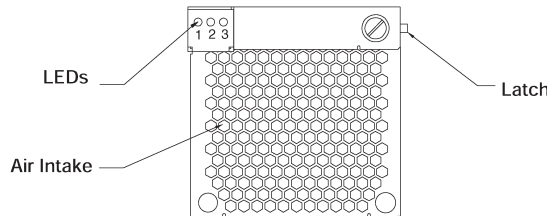
Voltage Set Point	Output Voltage Range <sup>(2)</sup>	Output Current	Standby Output	Max Power	Model Number <sup>(1)</sup>
27 VDC	20 to 29 VDC	199.8 to 137.8 A	5.0 V/0.5 A	4,000 W	CDP4KPS24
-54 VDC	-40 to -58 VDC	99.9 to 68.9 A	5.0 V/0.5 A	4,000 W	CDP4KPS48

**Notes**

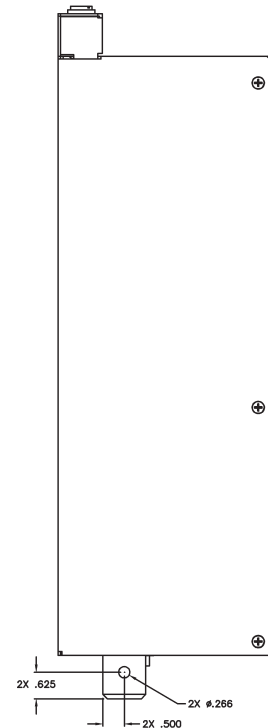
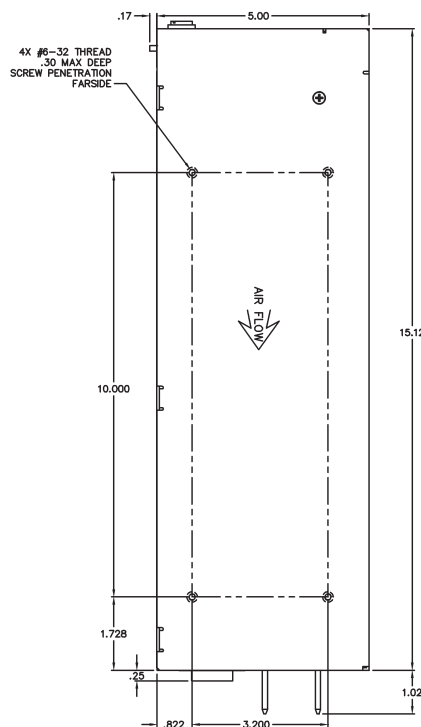
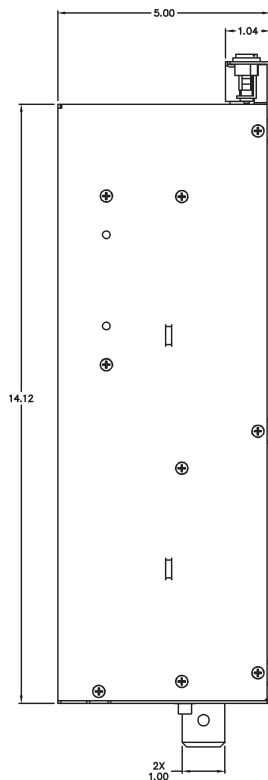
1. For optional 3 phase AC input, add suffix '-3P' to model number.
2. CDP4KPS24 is factory set to 27 V/148 A, CDP4KPS48 is factory set to -54 V/83 A. Voltages between each range are available - consult factory.

## Mechanical Details - Module

Weight : 13.5 lbs, 6.11 kg

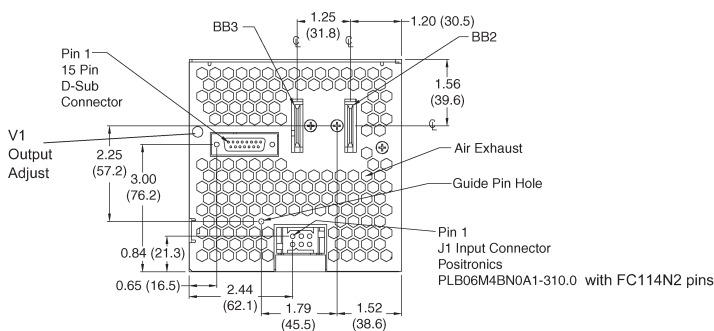


LEDs	
1	AC Good (Amber)
2	Temp OK (Green)
3	DC Good (Green)

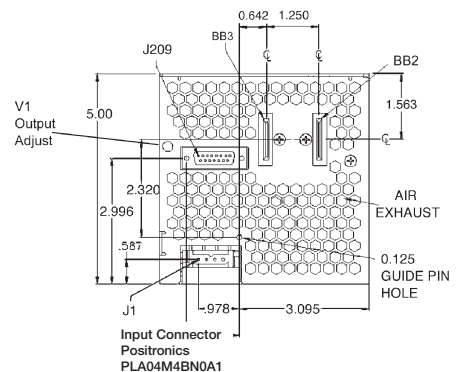


Single Phase

3 Phase



Input Mating Connector is: Positronics PLB06F0000 with FC114N2 pins.



Input Mating Connector is: Positronics PLA04F8000 with FC114N2 pins.

## Module Connection Charts

### OUTPUT (BUS BAR)

Bus Bar	Function
BB2	V1 for +27 V or V1 RTN for -54 V
BB3	V1 RTN for +27 V or V1 for -54 V

### INPUT CONNECTOR - SINGLE PHASE

Pin No.	Function
1,4	Chassis Ground
2,5	Line (L)
3,6	Neutral

### INPUT CONNECTOR - 3 PHASE

Pin No.	Function
1	Line 1
2	Line 2
3	Line 3
4	Chassis Ground

### SIGNALS CONNECTOR

Pin No.	Function	Description
1	5Vsb	+5 V 500 mA Standby
2	5Vsb Rtn	Return of 5Vsb
3	Module Present	Module Detection
4	PGood	TTL High when DC OK, WRT Pin 2
5	On/Off	TTL Low turns output OFF, WRT Pin 2
6	I share	Active Current Share
7	Mod-Ena	Connect to Pin 14 to enable output
8	OVP Test Point	For internal use
9	AC Fail	TTL High when AC OK, WRT Pin 2
10	V Program	+2.0 V to 9.2 V, WRT Pin 14 <sup>(1)</sup>
11	V1 Sense	+ Sense, Local Sense if open circuit
12	I Monitor	1 V + 40 mV/A (0 A = 1 V)
13	Temp. Ok	TTL High when Temp OK, WRT Pin 2
14	V1 Sense -	- Sense, Local Sense if open circuit
15	N/C	No Connection

#### Notes

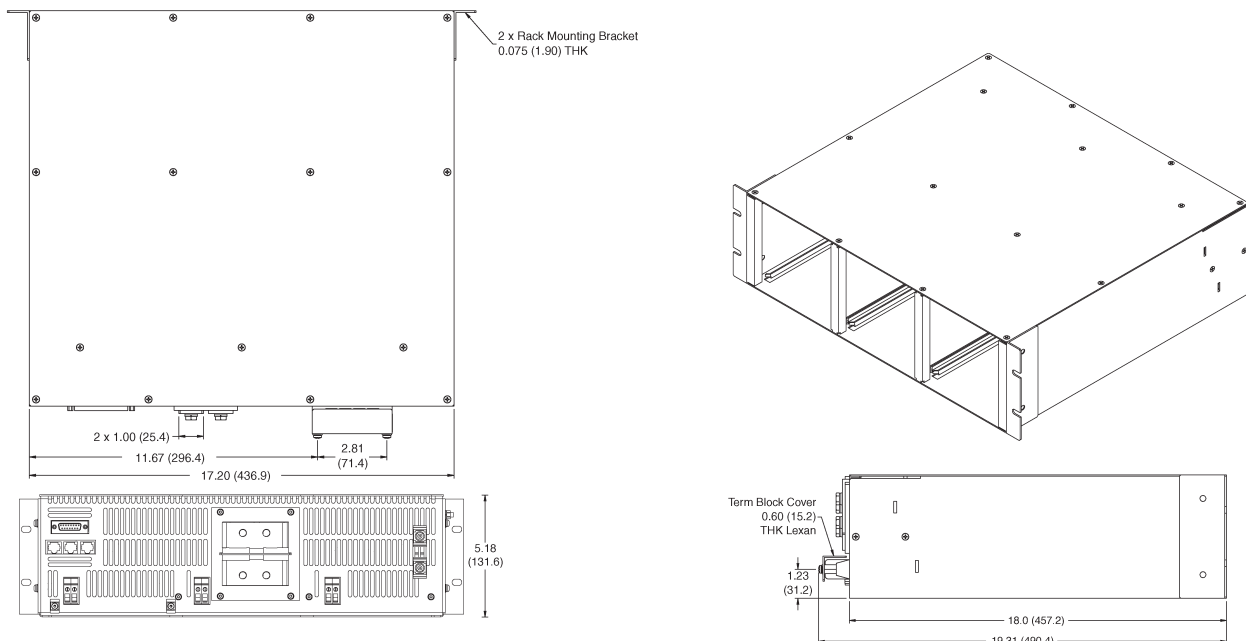
- For 24 V version, output voltage is 19 V with 2 V applied to Pin 10 WRT Pin 14. For each additional 1 V applied to Pin 10 the output voltage increases by 1.375 V.  
For -48 V version, output voltage is -40 V with 2 V applied to Pin 10 WRT Pin 14. For each additional 1 V applied to Pin 10 the output voltage increases by -2.375 V.

## Mechanical Details - Rack

CDP4K-1U3R - Single Phase Input

CDP4K-3U3R - 3 Phase Input

Polarity of rack must also be specified, add suffix '-P' for positive rack (27 V modules) or '-N' for negative rack (-54 V modules).



## Rack Connection Pin Charts

### INPUT CONNECTOR (3 POSITIONS)

Pin No	Description
1	Live
2	Neutral
Ground (PE)	Connection via M5 stud

#### Notes

Phoenix front 4HP762, 2 pole for 4mm<sup>2</sup> cable.

### DC OUTPUT TERMINALS

Positive Output	Lower Bus Bar
Negative Output	Upper Bus Bar

#### Notes

Each Bus Bar has two M8 x 15 threaded studs with 1" spacing.

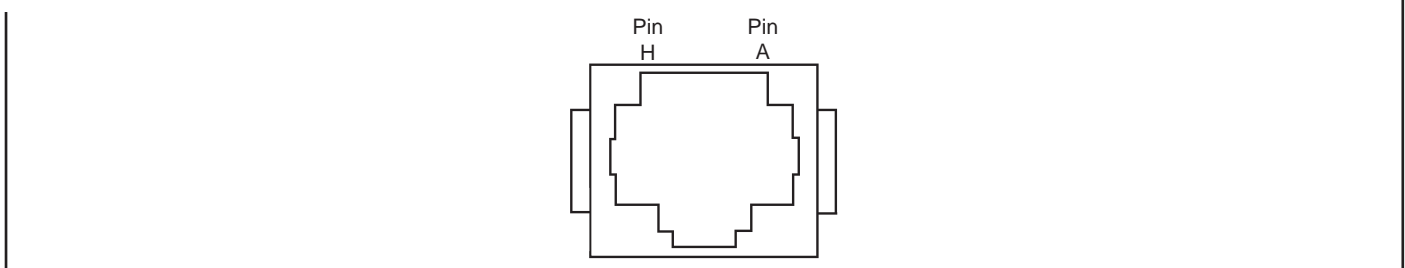
### ALARM CONNECTIONS

Pin No	Function	Description
1	5VSBRTN	+5V standby voltage return (floating max.100 V)
2	Temp OK	Open collector, pulled LOW when temperature OK WRT Pin 1
3	Power Good	Open collector, pulled LOW when output voltage within limits WRT Pin 1
4	AC Fail	Open collector, goes HIGH 2msec before loss of output regulation WRT Pin 1
5	Module Present	Open collector, pulled LOW when all modules present WRT Pin 1
6	Not used	
7	-V sense	Negative sense input
8	+V sense	Positive sense input
9	Not used	
10	Not used	
11	5VSBRTN	+5V standby voltage return (floating max 100 V)
12	5VSBRTN	+5V standby voltage return (floating max 100 V)
13	5VSB	+5V, 500mA standby voltage (floating max 100 V)
14	5VSB	+5V, 500mA standby voltage (floating max 100 V)
15	Not used	

### RJ45 (3 POSITIONS)

Pin	Function	Description
A	+Iout	Current monitor 1V + 40 mV/A
B	-Iout	On signal ground
C	+Vprog	V program
D	-Vprog	On signal ground
E	Ishare	Active Current Share
F	Alarm	Open collector, goes HIGH if temp too high, if AC fail, if DC not good or module missing WRT Pin G
G	Signal Ground	Connected to 0V via 22Ω
H	ON/OFF	Remote ON/OFF

### RJ45 Connector Pin Placement



#### Notes

The rectifiers and racks are available as +48 VDC front end versions with constant current output.  
 Model Numbers : CFP4KPS48FE for single phase input version, CFP4KPS48FE-3P for three phase input version.  
 Rack Model Numbers : CFP4K-1U3R-FE for single phase, CFP4K-1U3R-FE for three phase.

See website for detailed specifications & application notes