

CDP3K/4K Series



- Up to 12 kW in 3U
- Hot Swap N+1 Redundant
- Single Phase or Three Phase Input
- Rack Option for 3 Modules
- Single Wire Current Sharing
- 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
Input Current	• 3 kW: 19 A at 230 VAC single phase, 11 A/phase at 208 VAC 3 phase • 4 kW: 25.5 A at 230 VAC single phase, 15 A/phase at 208 VAC 3 phase
Inrush Current	• 50 A max
Power Factor	• 0.99 for single phase, 0.95 for 3 phase
Input Protection	• 3 kW: Internal 25 A fuse • 4 kW: Internal 30 A fuse
Transient Protection	• MOV and gas discharge tube

Output

Output Voltage	• 27 VDC or -54 VDC nominal
Output Voltage Trim	• 19 to 30 VDC or -40 to -59 VDC programmable
Minimum Load	• No minimum load required
Start Up Delay	• 1 s max
Start Up Rise Time	• 250 ms
Hold Up Time	• >20 ms at low line
Line Regulation	• $\pm 0.5\%$ using remote sense
Load Regulation	• $\pm 0.5\%$ using remote sense
Over/Undershoot	• 1% at turn on/off
Transient Response	• 3% max deviation, 500 μ s recovery time for a 25% load change
Ripple & Noise	• $\pm 1\%$ pk-pk, 20 MHz bandwidth
Overvoltage Protection	• 29 to 32.5 VDC or -59.5 to -60.0 VDC, recycle input to reset
Overtemperature Protection	• Shutdown at +95 °C measured internally with auto restart
Overload Protection	• 110-140% with auto recovery, constant power mode
Temperature Coefficient	• 0.02% /°C
Remote Sense	• Compensates for up to 0.5 V drop
Remote On/Off	• On = TTL High or Open • Off = TTL Low
Current Share	• Single wire $\pm 5\%$ at full load
ORing Diodes	• Built in

General

Efficiency	• 90% typical for 230 VAC
Power Density	• 3 kW: 9.9 W/In ³ • 4 kW: 11.33 W/In ³
LED Indicators	• AC OK (amber), DC OK (green) and TEMP OK (green)
MTBF	• 300 kHrs per Bellcore standard

Environmental

Operating Temperature	• 0 °C to +50 °C, derate linearly from 2.2%/°C to 65 °C
Cooling	• Internal ballbearing fan
Operating Humidity	• >95% RH, non-condensing
Storage Temperature	• -40 °C to +70 °C
Operating Altitude	• 3000 m
Shock	• MIL-STD-810F, NEBS compliant to Bellcore GR63
Vibration	• IEC68-2-27, MIL-STD-810E, Telcordia GR-63-CORE, GR-487-CORE

EMC & Safety

Emissions	• FCC Part 15 and CISPR22 level A conducted, Bellcore GR-1089-Core
Harmonic Currents	• EN61000-3-2
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 2 Perf Criteria B
Radiated Immunity	• EN61000-4-3, 10 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria B
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 V rms Perf Criteria A
Dips & Interruptions	• EN61000-4-11 100% 10 ms, 30% 10 ms 30% 500 ms, 60% 100 ms, 60% 1000 ms, 100% 5000 ms Perf Criteria B
Safety Approvals	• EN60950, UL1950, CSA22.2 No. 650, CE Mark LVD

Models and Ratings

Voltage Set Point	Output Voltage Range ⁽²⁾	Output Current	Standby Output	Max Power	Model Number ⁽¹⁾
27 VDC	+20 to +29 VDC	148.8 to 102.4 A	5.0 V/0.5 A	3000 W	CDP3KPS24
-54 VDC	-40 to -58 VDC	74.4 to 51.2 A			CDP3KPS48
27 VDC	+20 to +29 VDC	199.8 to 137.8 A	5.0 V/0.5 A	4000 W	CDP4KPS24
-54 VDC	-40 to -58 VDC	99.9 to 68.9 A			CDP4KPS48

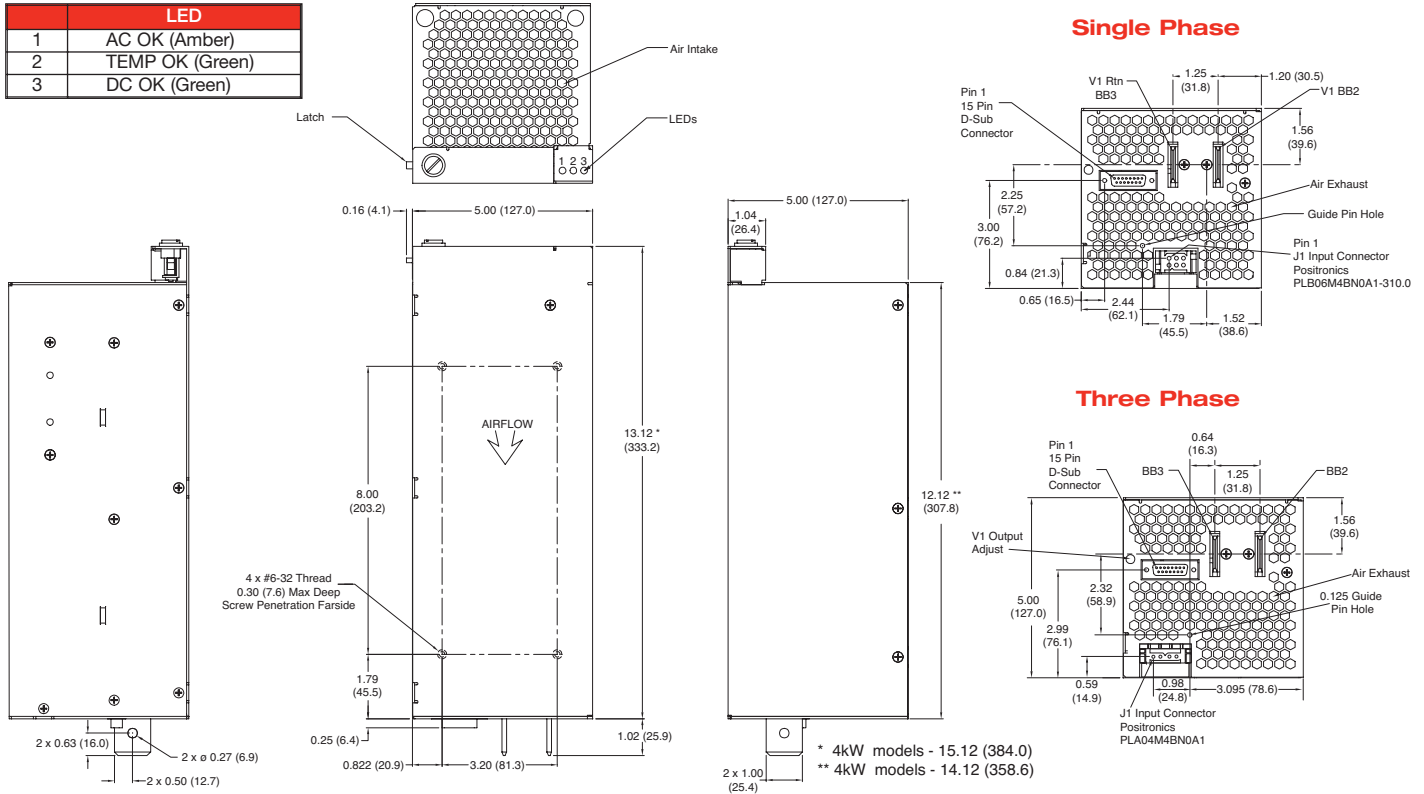
Notes

- For optional 3 phase AC input, add suffix '-3P' to the model number.
- CDP3KPS24 is factory set to 27 V, CDP3KPS48 is factory set to -54 V. Voltages within each range are available, please consult sales.

Mechanical Details

Dimensions in inches (mm)

Weight: CDP3K - 4.85 kg (10.7 lbs)
CDP4K - 11.0 kg (13.5 lbs)



Pin Connections

SIGNALS CONNECTOR		
Pin	Function	Description
1	5Vsb	+5 V 500 mV 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 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 to 9.2 V, WRT pin 14 ⁽¹⁾
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

INPUT CONNECTOR			
Single Phase		Three Phase	
Pins	Function	Pin	Function
1 & 4	Chassis ground	1	Line 1
2 & 5	Line (L)	2	Line 2
3 & 6	Neutral	3	Line 3
		4	Chassis ground

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

MATING CONNECTOR			
Connection	Manufacturer	Housing	Pins/Socket
Control Status	AMP	205205-2	205090-1
1 Phase Input	Positronics	PLB06F0000	FC114N2 pins
3 Phase Input	Positronics	PLA04F8000	FC114N2 pins
DC Output	Elcon	538-17-00100	N/A

- 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.
 - PGood, ON/OFF, AC Fail and Temp. OK are referenced to the 5Vsb return, all other signals are referenced to the OV rail.

Input

- Input**
 - 3 independent AC feeds, with rear panel Phoenix contact part # 1703034
- Leakage Current**
 - <3500 µA maximum (per module).
- Input Protection**
 - Each module has all input lines internally fused for 30 A.

General

- Safety Approvals**
 - UL 60950, CSA 22.2 No. 650, TUV EN60950, CE Mark(LVD).
- EMI/EMC**
 - EN55022 Class B conducted.
- Immunity & Surge**
 - Meets EN61000-4-2, -3, -4, -5, -6, -11.
- Operating Temperature**
 - 0 °C to +70 °C with derating.
- Storage Temperature**
 - -40 °C to +85 °C

Output

- Output Power**
 - CDP3K: 9,000 Watts maximum output
 - CDP4K: 12,000 Watts maximum output
- Output Voltage**
 - Output is isolated/floating

Models & Ratings

Input	Output	Model Number
Single Phase AC (180-264 VAC)	-54 VDC	CDP3K-1U3R-N
Single Phase AC (180-264 VAC)	+27 VDC	CDP3K-1U3R-P
Three Phase AC (180-264 VAC)	-54 VDC	CDP3K-3U3R-N
Three Phase AC (180-264 VAC)	+27 VDC	CDP3K-3U3R-P
Single Phase AC (180-264 VAC)	-54 VDC	CDP4K-1U3R-N
Single Phase AC (180-264 VAC)	+27 VDC	CDP4K-1U3R-P
Three Phase AC (180-264 VAC)	-54 VDC	CDP4K-3U3R-N
Three Phase AC (180-264 VAC)	+27 VDC	CDP4K-3U3R-P

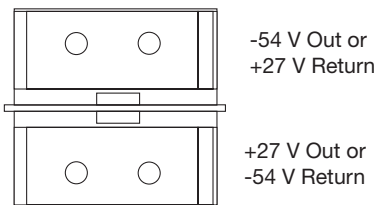
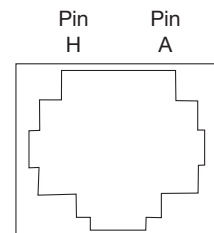
Electrical Connections

All electrical connections are made on the rear of the rack

Control / Status Connections

There are three RJ45 connectors on the rear panel of the chassis offering independent monitoring and control of each power supply module. These are listed below:

Pin	Designation	Description
A	+I Out	I Out signal of the rectifier for monitoring
B	0 V signal	Connected to signal ground
C	V prog	V prog input for three rectifiers
D	0 V signal	Connected to signal ground
E	I Share	One connection to additional CDP4K racks
F	Alarm	Rectifier output failure alarm signal
G	0 V signal	Connected to signal ground
H	ON/OFF	Remote ON/OFF input for the rectifier



DC Output Connection

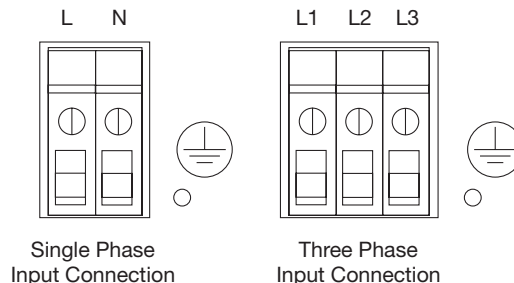
Outputs of all modules are paralleled for one common output connection via bus bars on the rear of the rack. Each bus bar has two studs (5/16-18 x 3/4).

AC Input Connection

Each power supply module has independent AC inputs. When connected to AC mains where the lines may be inverted, fuses or breakers per line should be applied, valued at 30 A (110 VAC) / 25 A (220 VAC) delayed action. Connection to AC inputs should utilize 12-8 AWG wire.

Ground Connection

An earth grounding stud is provided on the rear of the rack for each input connection. This grounding stud must be connected to protective earth in accordance with local norms, standards and rules.



Controls

The output voltage of the CDP3K/4K rectifier can be programmed locally or remotely.

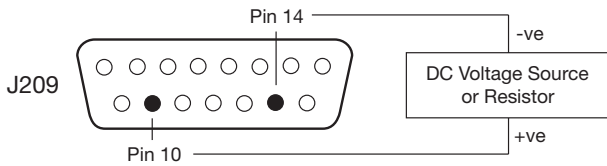
The units have been pre-configured in the factory for local programming using the potentiometer on the back of the unit next to the J209 connector.

There are two possible methods of remote programming to adjust the output voltage on the CDP3K/4K rectifiers:

1. Using a DC voltage source.
2. Using resistive programming.

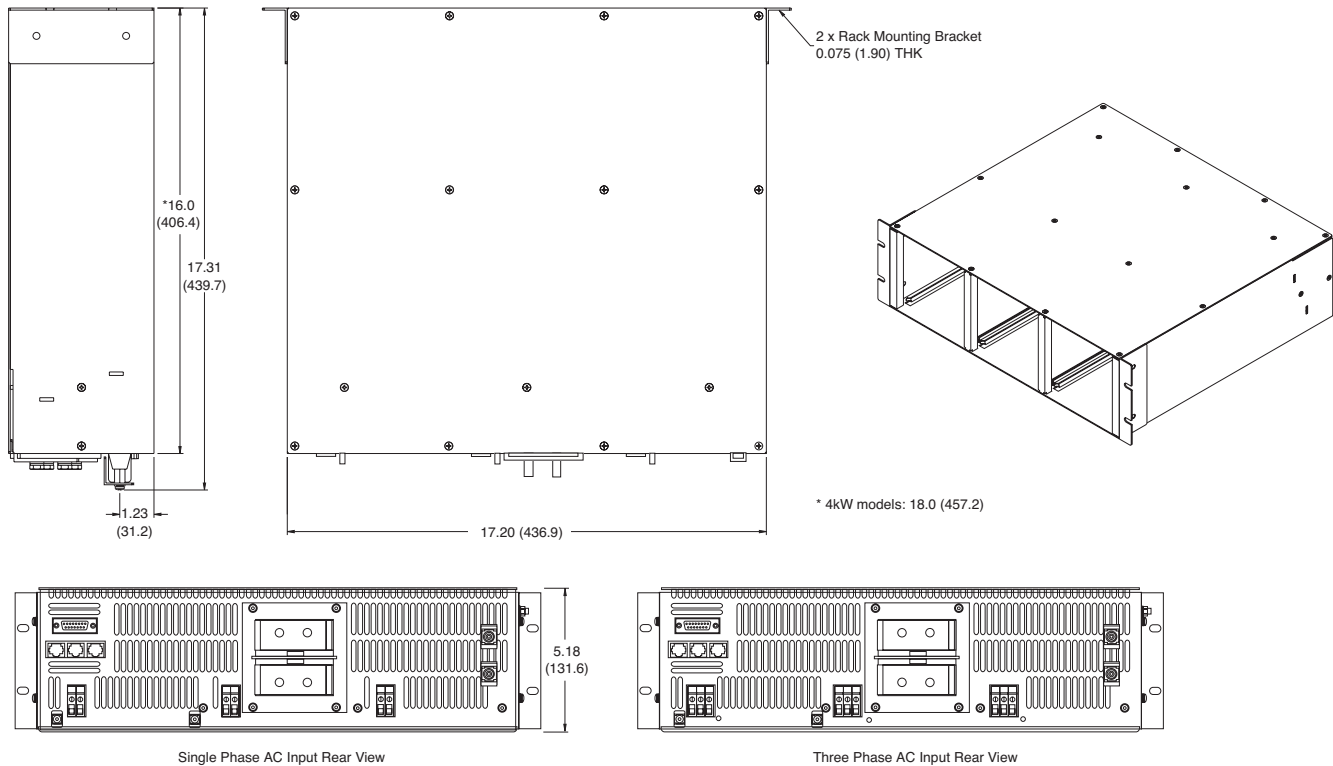
DC VOLTAGE SOURCE PROGRAMMING			
27 V Models		-54 V Models	
DC Voltage	Output Voltage	DC Voltage	Output Voltage
2 V	19.000 V	2 V	-40.000 V
3 V	20.375 V	3 V	-42.375 V
4 V	21.750 V	4 V	-44.750 V
5 V	23.125 V	5 V	-47.125 V
6 V	24.500 V	6 V	-49.500 V
7 V	25.875 V	7 V	-51.875 V
8 V	27.250 V	8 V	-54.250 V
9 V	28.625 V	9 V	-56.625 V

RESISTIVE PROGRAMMING			
27 V Models		-54 V Models	
Resistor Value	Output Voltage	Resistor Value	Output Voltage
7.70 KΩ	20 V	7.65 KΩ	-40 V
12.12 KΩ	21 V	12.19 KΩ	-42 V
17.94 KΩ	22 V	18.02 KΩ	-44 V
25.77 KΩ	23 V	26.23 KΩ	-46 V
36.80 KΩ	24 V	38.40 KΩ	-48 V
54.90 KΩ	25 V	56.10 KΩ	-50 V
88.60 KΩ	26 V	92.00 KΩ	-52 V
Open	27 V	Open	-54 V



Mechanical Details

Dimensions in inches (mm)



- Mounting**
 - The rack is designed for 19" rack mounting. Chassis requires additional support from below or via rear-mount support brackets.
- Airflow**
 - Front to back (Inlets may not be impeded).
- Clearance**
 - Care should be taken not to impede airflow from exiting the rear of the chassis. 15mm clearance is required to rear of chassis. The final 35mm of the chassis must have vertical clearance.
- Positioning**
 - Power supply modules have no fixed place requirements and positions may be interchanged at random.
- Fixing**
 - Each power supply module is locked in to the chassis via latch screw on the right side of the handle of each module.
- Transportation**
 - It is recommended that before any transportation is attempted the power supply modules are removed from the rack.