CHEROKEE INTERNATIONAL

"The Powerful Choice"

CRP1400 Hot Swap Telecom Series

1400 Watt Power Factor Corrected

Single Output Bulk Power Supplies

Features

- Power Factor and Harmonic Current Corrected
- CE (LVD) marked & CB Test Report
- UL1950, CSA22.2-234, TUV to EN60950
- Over Current & Over Voltage Protection
- Current sharing Single
- Remote Sense
- Alarm & Status LED indicators
- AC Input Undervoltage Protection & Signal
- Remote Vo Control, 0-10 VDC analog input
- Remote On/Off, Signal & Switch
- Current Monitoring sense terminals (0 to full load provides) 0V to 6 VDC (5mA)
- Two DC Ball Bearing Field Replaceable Fans

1400 Watts

Specifications

INPUT SPECIFICATIONS

INPUT VOLTAGE RANGE: 176-264 VAC Continuous Range operation from 47-63 Hz. Internally fused for 250 VAC; BLN type. **Input Frequency Transient:** 47-400Hz per Bellcore TR-TSY000947. Leakage: 3 mA max.

LOW AC VOLTAGE PROTECTION:

- To protect the power supply, this circuit will shut down the power supply If the AC drops below 75V ±5V.
- The power supply will come back up through a soft start when he AC voltage is above 80V ±5V.

INRUSH CURRENT: Maximum of 10 amps.

POWER FACTOR AND HARMONIC CORRECTION: Compliant to EN61000-3-2 down to 10% load. Power factor 0.99% typical at full load.

EFFICIENCY (Nominal line, full load with Isolation Diodes): V1 of 56VDC, 87% (90% typical at 80% load and nominal line). V1 of 28VDC, 86%.

OUTPUT SPECIFICATIONS (DC)

OUTPUT VOLTAGE SETTING:

CRP1400K1BD: 21-28.5 VDC, set to 27.25 ±0.1v (Default selection).
CRP1400L1BD: 42-57 VDC, set to 54.5 ±0.1V (Default selection).

- 1100W max. @ 50°C with vin of 85VAC
- 1400W max. @ 50°C with vin of 176VAC

OPERATING POWER: Full power from 0°C to 50°C; derate linearly to 50% at 70°C. The supply will also operate from -40°C through to 0°C but the supply may not meet ripple and noise specifications.

SELF-LIMITING & SELF-PROTECTING: Self limits output power to compensate for elevated temperature up to 70°C ambient.

TURN ON TIME: 2 seconds maximum (before Current Walk In time)

CURRENT WALK IN: 8 to 16 seconds from 0 to 90% load (Per Bellcore).

REGULATION TOTAL (Line, Load & Initial Setting): With or without Isolation diode at remote sense points, 0.5%, from 0 to full load.

OUTPUT RIPPLE & NOISE: 30mv rms max. with any 3kHz portion rom 10kHz to 20Mhz, 250mV max. peak to peak from DC to 100MHz.

VOICE FREQUENCY NOISE: 32dBrnc without battery connected.

TEMPERATURE COEFFICIENT: 0.01% / °C.

VOLTAGE DRIFT: 0.1% max. for any 8 hour period.

DYNAMIC RESPONSE: 5% step load 10 to 90% recovery in 4 msec.

HOLD-UP TIME: At full load, low line, output will remain in regulation for a minimum of 30 msec after loss of AC input power.

OVERSHOOT & UNDERSHOOT: Following turn-on/off or (Enable/Inhibit), the output voltage overshoot or undershoot shall be less than 2% of nominal output voltage.

REMOTE SENSE: Compensates up to 500mV cable drop.

ISOLATION/ORing DIODE: Required on all Hot-Swap Rectifiers.

CURRENT SHARE:
Circuit enables power supply to current share within ±5% of full load.

- Output ORing diode is used for N+1 redundancy.
- Compares output current signal to "Share" signal from other power supplies.
- Will not cause an alarm at system no load.

CAPACITOR DISCHARGE: Upon removal of a power supply, all capacitors shall discharge to 5% of their steady state voltage within one minute per Bellcore TR-EOP-000151.

OVERCURRENT PROTECTION: 102%-110% constant current with automatic recovery.

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Specifications (cont'd)

OVERVOLTAGE PROTECTION:

CRP1400K:

- OVP Non-latching type: Customer adjustable. Shall be higher than 109% to 111% of the output voltage.
- OVP latching type: Absolute voltage of 29.6 to 30.4 VDC at no load measured on the power supply side of the Oring diode.
- The dynamic output voltage OVP trip point is 32.5 V max.
- This is a factory fixed setting. (It is defined as a voltage that may be present for a period no longer than 100 msec).
- There is a test pin going to the anode of the ORing diode or factory test.

CRP1400L:

- OVP Non-latching type: Customer adjustable. Shall be higher than 109% to 111% of the output voltage.
- OVP latching type: Absolute voltage of 59.9 to 60.2 VDC at no load measured on the power supply side of the ORing diode.
- The dynamic output voltage OVP trip point is 65 V max.
- This is a factory fixed setting. (It is defined as a voltage that may be present for a period no longer than 100 msec).
- There is a test pin going to the anode of the ORing diode for factory test.

REVERSE VOLTAGE PROTECTION: To 100% of rated output current.

SAFETY SPECIFICATIONS

CE: Marked
UL: Recognized to UL1950
CSA: Certified to CSA22.2 No. 950 & No. 234
TUV: Licensed to IEC950 and EN6095

Hipot	Qualification Type Test	Production Test
Input-to-Output	4242 VDC Min	2121 VDC Min
Input-to-Case	2121 VDC Min	2121 VDC Min
Output-to-Case	500 meg ohms	500 meg ohms
Main Transformer	3000 VAC	NA

ALARM INDICATORS & CONTROL SIGNALS:

Description	Signal	LED Indicator
Output OK	Yes	Green
Supply Standby	Yes	Amber
Supply Fail	Yes	Red
Current Limit	Yes	Amber
Overvoltage	Yes	Amber
Overtemp	Yes	Amber (Same as Fan Fail LED Indicator)
AC Undervoltage	Yes	NA
Fan Fail	Yes	Amber (Same as Overtemp LED Indicator)

ALARM CIRCUIT: An electronic relay closure in series with a 10K resistor signal to the controller. The contact rating of the relay is 0.01 amp minimum. The open circuit voltage is 12VDC.

POWER SUPPLY FAIL SIGNAL: Lights a power supply fail indicator (Red LED) if output is below :

- CRP1400K of 20.5 ±1V.
- CRP1400L of 41 ±1V.

This circuit continues to work if the main fuse blows.

- Opens current share relay.
- Closes alarm relay.

OVERTEMPERATURE: This section is divided into 2 subsets; Thermal Shutdown and Fan Failure. The difference being that the overtemperature shutdown will shutdown the power supply but not latch it. It will latch the overtemp indicator so that a field service tech will know that there was excessive ambient or internal temperature. The fan failure circuit will latch the power supply.

OVERTEMPERATURE/THERMAL SHUTDOWN:

- Two temp sensing circuits are ORed together to light the overtemperature indicator (Amber LED) and shuts down the power supply due to overheating (Including overheating caused by blocked airflow).
- Ckt#1 senses in-take ambient (Shutdown temperature of 75 °C ±3 °C).
- Ckt#2 senses internal temp in hottest place.
- Power supply restarts when it is sufficiently cooled.
- Indicator will latch up.

FAN FAILURE CIRCUIT:

- Circuit detects a fan failure based on fan speed.
- This circuit latches the power supply Off.
- Lights the overtemperature indicator (Amber LED).
- A fan failure consists of the following:
  - Fan shorted
  - Fan open
  - Fan stalled

The following does NOT(& Should NOT) trip the fan fail circuit:

- A power supply failure
- A power supply in standby mode
- Operation below maximum allowed ambient temperature power up

DC OUTPUT OK SIGNAL:

- Lights the output OK indicator (Green LED) when the DC output is above:
  - CRP1400K of 20.5 ±1VDC.
  - CRP1400L of 41 ±1VDC
- Opens alarm relay.

OVERCURRENT MONITOR & SIGNAL: When the power supply is operating in a current limit mode, the current limit indicator (Red LED) will be On and a signal is issued through an optocoupler in series with 10K resistor.

OVERVOLTAGE MONITOR & SIGNAL: The overvoltage indicator (Red LED) will be latched On in either OVP condition. A signal through an optocoupler in series with 10K resistor will pulse during a non latching condition and will latch during a latching condition.

CURRENT MONITOR: Sends a current signal to the controller that is proportional to a percentage of the output current. (I.e. 1 ma=10% of full load) The voltage range of this circuit is 0-6 V.

TRUE AC INPUT VOLTAGE SENSING: Will sense voltage prior to the fuse and provide an alarm if Vin is less than 70VAC ±10VAC. A signal is issued through N.C. relay with 10K resistor in series.

STANDBY: The power supply can be put into this mode by:

- Locally – a switch on front panel.
- Power supply will remain in a standby mode until the Enable pin (short pin) is connected to the output RTN.

- Remote signal isolated. Customer to drive an optocoupler with 10 ma current with a maximum voltage of 12 VDC referenced to 48V RTN.
- The two circuits are ORed together.
- Shuts down the power supply.
- Opens share relay.
- Closes alarm relay.
- Lights a standby indicator (Amber LED).
- Clears all latches.
- The lamp test circuit will function when the power supply is in this mode.
- Does not light the power supply failure (Red LED) even though Alarm contacts close.

LAMP TEST:

- Lights all LED's on the power supply without affecting power supply operation.
- Continues to work if power supply is in standby mode or in the Run mode.
- Performed by a signal from the controller. A short to RTN will light up the LEDs.

REMOTE VOLTAGE ADJUST (CRP2800K1):

- 0-10V into the power supply, adjusts output voltage over a specified range (24V=19-30V). The current range is -1ma to +1ma.
    - 19V (Min. Vo)
    - 25V=54.5V (Nominal Vo)
    - 30V (Max.Vo)
- Customer may set the external jumper on the power supply to 1 of 2 nominal voltages (26.05 or 27.25VDC ±0.1V).

REMOTE VOLTAGE ADJUST (CRP2800L1):

- 0 - 10V into the power supply, adjusts output voltage over a specified range (48=38-60V), The current range is -1ma to +1ma.
    - 10V=38V (Min. Vo)
    - 25V=54.5V(Nominal Vo)
    - 0V=60V (Max. Vo)
- Customer may set the external jumper on the power supply to 1 of 2 nominal voltages (52.1 or 54.5VDC ±0.1V).

TEST POINTS: One each for V1 and V1 RTN on the front panel.

ENVIRONMENTAL CONDITIONS

TEMPERATURE RANGE: Operating –40 to +70°C. Storage: -40 to +85°C.

COOLING: Fan cooled forced air (2 field replaceable DC ball bearing fans) front to back.

ACCOUSTICAL NOISE: Less than 55dBA, 5 feet above floor and 2 feet from equipment, per Bellcore TR-TSY-000967.

HUMIDITY: 0 to 95%, non-condensing

ALTITUDE: Operating, -200 to +13,000 Feet per Bellcore. TR-EOP-000063. Derate the ambient temperature 1°C/1000 ft. above 10,000 ft. Non Operating, 40,000 ft.

VIBRATION: Meets TR-EOP-000063.

LIGHTNING PROTECTION: Per Bellcore TR-NWT-001089.

MTBF: 120,000 hours minimum per Bellcore TR-NWT-000332.

FIRE RESISTANCE: All components and sub-assemblies meets fire resistance criteria as per TR-EOP-000063.

ELECTROSTATIC DISCHARGE: Meets requirements of TR-EOP-000063.

SURGE VOLTAGES: The module shall withstand an oscillatory surge voltage having a test wave shape defined in ANSI/IEEE C 62.41-1980.

EARTHQUAKE: Shall remain operational when subjected to the earthquake criteria defined in TR-EOP-000063 (Zone 4).

DIMENSIONS: 4.75"H x 15"D x 4.06W.

CONNECTIONS: See mechanical drawings portion of the spec.

MARKINGS: UL, CUL, TUV, CE & Cherokee name, part number, date code, serial no and bar code.

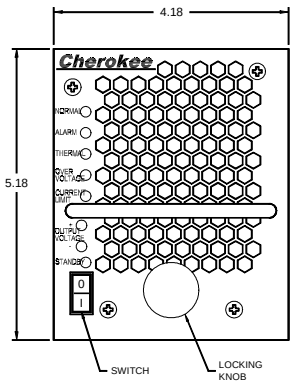
RELAY RATING (Alarm Contact): 0.01 Amp, 12VDC.

RELAYS: All relays are solid state type except the inrush bypass relay.

POTENTIOMETERS: No potentiometers are used.

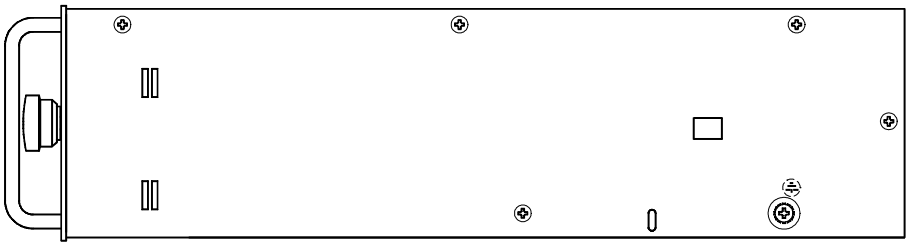
WARRANTY: One Year.

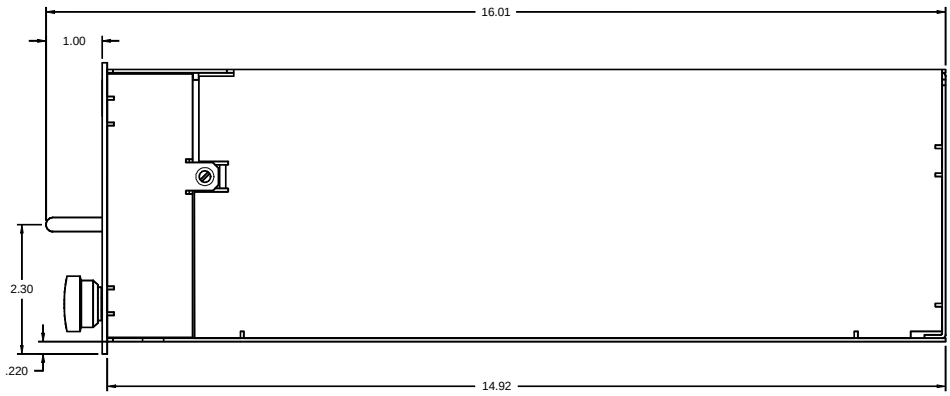
Outline/Interface

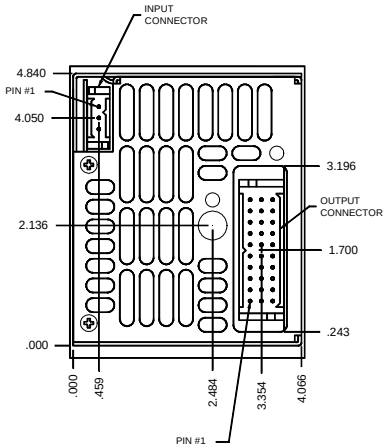


OUTPUT CONNECTOR	
PIN No.	FUNCTION
1,2,11,21	OUTPUT
3,13,22,23	OUTPUT RTN
4,14,19,24,26	CNTL SIGNALS RTN
5	- SENSE
6	REMVOLTADJ
7	CL_SIG
8	CURRMON
9	ISHARE
10	ENABLE
12	N/C
15	+ SENSE
16	N/U
17	V_SHIFT1
18	0V_SIGN
20	ALARM
25	V_SHIFT2
27	AC SENSE
28	0V_CNTL
29	LAMPTEST
30	REMOTE ON/OFF

INPUT CONNECTOR	
PIN No.	FUNCTION
1	CHASSIS GND
2	AC LINE
3	AC NEUTRAL







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