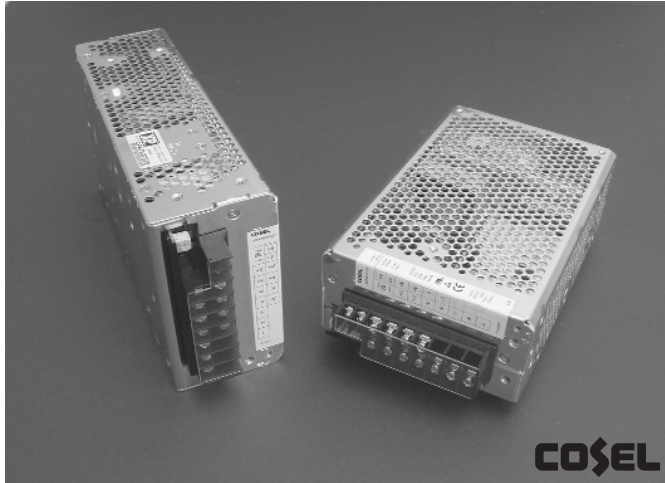


AC-DC Chassis Mount

600-1000 Watts CPK Series



THE XPERTS IN POWER

- Up to 2 kW Peak Rating
- Wide Output Voltage Adjustment
- Up to 500 W Convection Cooled
- Optional Conformal Coating
- Optional Remote ON/OFF
- Optional AC, DC & Fan Fail Signals

Specification

Input

- Input Voltage • 85-264 VAC (120-350 VDC)
- Input Frequency • 47-63 Hz
- Inrush Current • 20/40 A typical at 115/230 VAC
- Power Factor • 0.98 typical at 230 VAC at 100% load
- Earth Leakage Current • 0.75 mA max at 230 VAC 60Hz for 0.50 mA add suffix '-E', for 0.15 mA add suffix '-G'

Output

- Output Voltage • See Table
- Output Voltage Adjustment • See Table
- Minimum Load • No minimum load required
- Start Up time • 500 ms max at 100 VAC 100% load
- Hold Up time • 20 ms typical at 100 VAC 100% load
- Initial Set Accuracy • ±1% max
- Drift • ±0.4%
- Line Regulation • ±0.4% from low line to high line
- Load Regulation • ±0.7% max from 0-100% load
- Ripple & Noise • ±0.8% max pk-pk 20 MHz bandwidth
- Overvoltage Protection • 115-140% of Vnom, recycle input to restart
- Overcurrent Protection • 101% of peak current auto recovery
- Remote ON/OFF (Optional) • Add suffix '-R' to model number ON 4.5-12.5 V (open circuit) between RC+ and RC-OFF 0 to 0.5 V (short circuit) between RC+ and RC-

General

- Efficiency • 86-89% dependent on model
- Isolation • 3000 VAC Input to Output
2000 VAC Input to Ground

- Switching Frequency • 85 kHz ±15% active PFC
130 kHz ±15% forward converter
- Vertical Terminal block • Add suffix '-T' to model numbers
- Din Rail Mounting • Add suffix '-NI' to model numbers
- Fan Fitted • Add suffix '-F' to model number (only available on 24 V units)
- N+1 Operation • Option '-W' & external oring diodes
- Alarms (Optional) • For AC fail, DC fail and fan fail add suffix '-W' to model number
- Conformal Coating • Add suffix '-L' to model numbers

Environmental

- Operating Temperature • -10 °C to +70 °C (fan cooled)
Derate linearly above +50 °C to 60% load at +70 °C.
For convection cooled rating - See Derating Curves
- Storage Temperature • -20 °C to +75 °C
- Relative Humidity • 20-90% RH non-condensing
- Shock • 20 G, 11 ms once each, X, Y & Z axis
- Vibration • 2 G, 3 min period, 60 min each along X, Y & Z axis

EMC & Safety

- Emissions • EN55022 level B conducted (level A with option E not available with option G) EN55022 level B radiated
- ESD Susceptibility Radiated Susceptibility • EN61000-4-2 Level 2 contact Level 3 air
- EFT/Burst • EN61000-4-3 Level 3
- Surge • EN61000-4-4 Level 4
- EN61000-4-5 Level 3 line to line
Level 4 line to ground
- Safety Approvals • UL60950, C-UL (CSA60950), EN60950, EN50178

OUTPUT VOLTAGE & CURRENT RATINGS

CPK

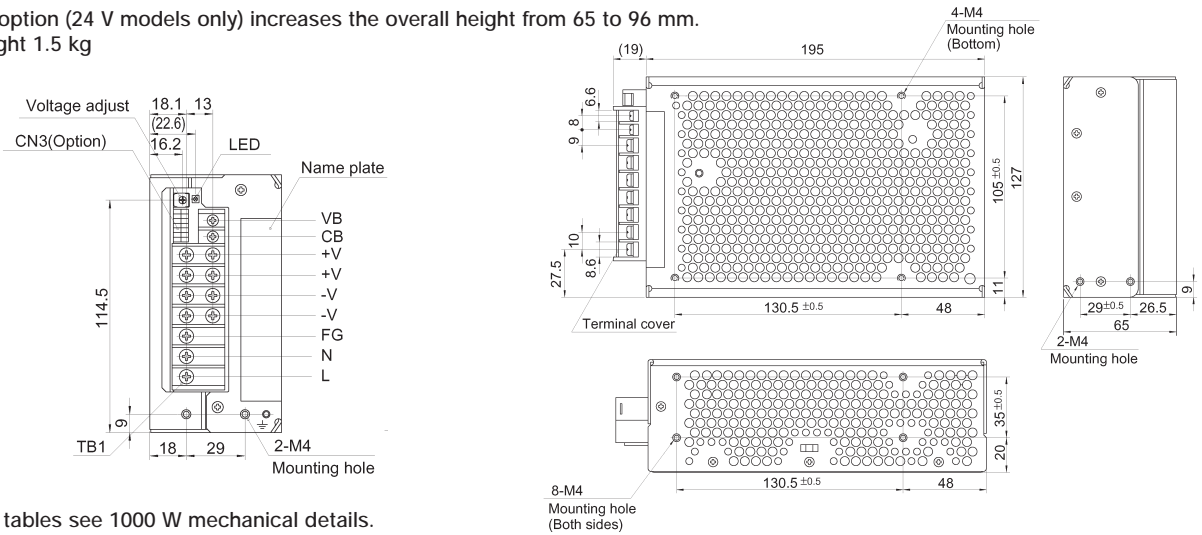
Output Voltage	Output Current (85-130 VAC IN)			Output Current (180-264 VAC IN)			Efficiency ⁽³⁾	Model Number
	Max	Fan ⁽¹⁾	Peak ⁽²⁾	Max	Fan ⁽¹⁾	Peak ⁽²⁾		
24.0 V (21.6-27.0 V)	14.0 A	21.0 A	25.0 A	15.0 A	25.0 A	31.0 A	86%	CPK600PS24
30.0 V (27.0-33.0 V)	11.0 A	16.5 A	20.0 A	12.0 A	20.0 A	24.5 A	87%	CPK600PS30
36.0 V (33.0-41.0 V)	9.0 A	14.0 A	16.5 A	10.0 A	16.5 A	20.5 A	87%	CPK600PS36
48.0 V (41.0-52.8 V)	6.5 A	10.5 A	12.5 A	7.0 A	12.5 A	15.5 A	89%	CPK600PS48
24.0 V (21.6-27.0 V)	17.0 A	25.0 A	42.0 A	19.0 A	31.5 A	63.0 A	88%	CPK750PS24
30.0 V (27.0-33.0 V)	13.5 A	20.0 A	33.5 A	15.0 A	24.5 A	50.0 A	88%	CPK750PS30
36.0 V (33.0-41.0 V)	11.0 A	16.5 A	28.0 A	12.5 A	20.5 A	42.0 A	89%	CPK750PS36
48.0 V (41.0-52.8 V)	8.0 A	12.5 A	21.0 A	9.0 A	15.5 A	31.5 A	89%	CPK750PS48
24.0 V (21.6-27.0 V)	21.0 A	33.0 A	63.0 A	25.0 A	42.0 A	83.0 A	88%	CPK1KPS24
30.0 V (27.0-33.0 V)	16.5 A	26.0 A	50.0 A	20.0 A	33.5 A	66.0 A	88%	CPK1KPS30
36.0 V (33.0-41.0 V)	14.0 A	22.0 A	42.0 A	16.5 A	28.0 A	55.0 A	89%	CPK1KPS36
48.0 V (41.0-52.8 V)	10.5 A	16.5 A	31.5 A	11.5 A	21.0 A	41.5 A	89%	CPK1KPS48

Notes

1. Add suffix '-F' to model number to receive unit with fan fitted (24 V units only) alternatively 60 CFM system airflow must be provided.
2. Peak rating is valid for each model number and is not dependent on whether the max rating is convection or fan cooled.
3. Efficiency is specified at 230 VAC and 100% load.

Mechanical Details 600 Watts

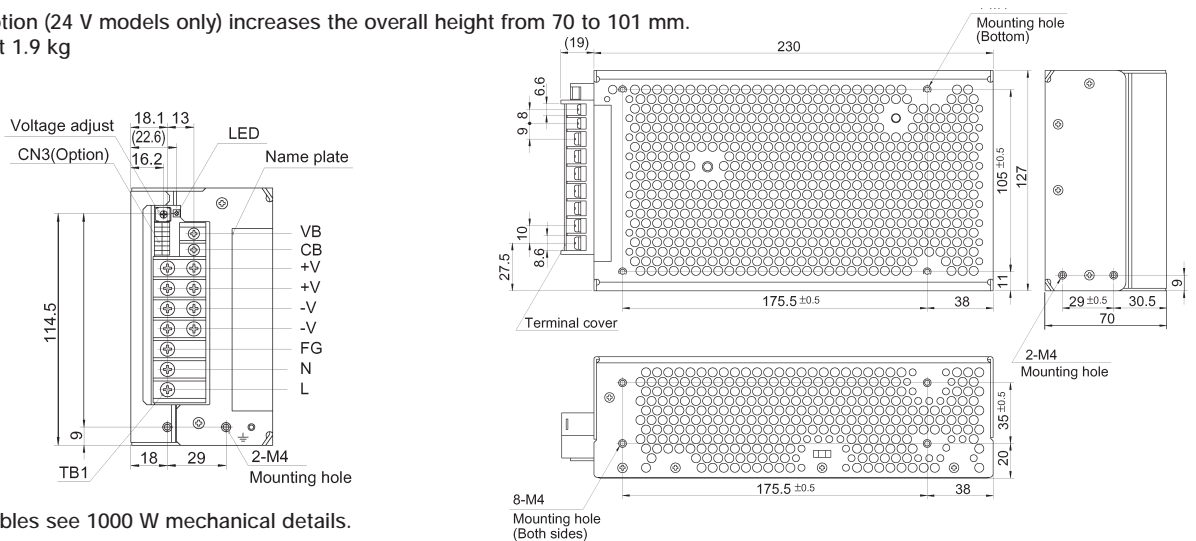
NOTE: '-F' option (24 V models only) increases the overall height from 65 to 96 mm.
Weight 1.5 kg



For pin out tables see 1000 W mechanical details.

Mechanical Details 750 Watts

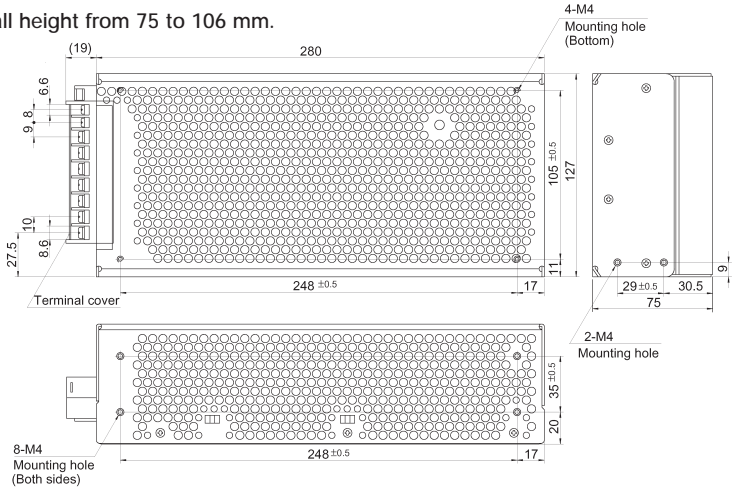
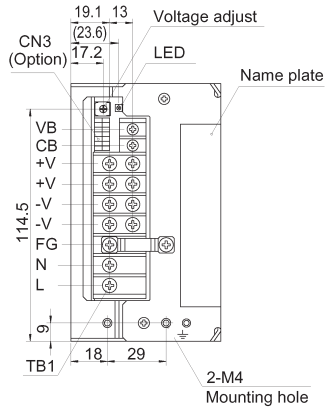
NOTE: '-F' option (24 V models only) increases the overall height from 70 to 101 mm.
Weight 1.9 kg



For pin out tables see 1000 W mechanical details.

Mechanical Details 1000 Watts

NOTE: '-F' option (24 V models only) increases the overall height from 75 to 106 mm.
Weight 2.5 kg



PIN CONNECTIONS		
SYMBOL	FUNCTION	SCREW
VB	Voltage Balance	M3
CB	Current Balance	
+V	Output Terminal (+)	M4
+V	Output Terminal (+)	
-V	Output Terminal (-)	
-V	Output Terminal (-)	
FG	Frame Ground	
N	AC (N)	
L	AC(L)	

OPTIONAL CN3 PIN CONNECTIONS		
PIN	FUNCTION	SYMBOL
1	ROF + (-R)	RC+
2	ROF - (-R)	RC-
3-8	N/C	NC
9	LV Alarm (-W)	LV+
10	LV Alarm Ground (-W)	LV-
11-12	N/C	NC
13	PF Alarm + (-W)	PF+
14	PF Alarm Ground (-W)	PF-

Connector	Mating Connector	Terminal	Mfr
CN3	S148B-PHDSS	PHDR-14VS	J.S.T
		Chain: SPHD-002T-P0.5	
		Loose: BPHD-001T-P0.5	
		BPHD-002T-P0.5	

For mating loom kit for optional CN3 order part number "CPK CN3 LOOM"

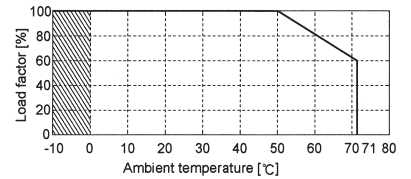
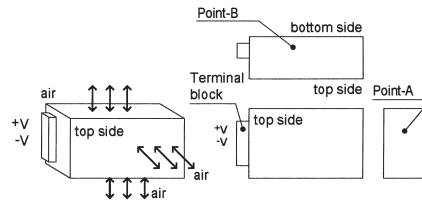
Average 21 A max per pin for TB1

Forced Air Cooling (60 CFM)

The temperature points A and B shown are marked on the psu chassis.

- Point A must be $\leq 60^{\circ}\text{C}$ and point B must be $\leq 65^{\circ}\text{C}$ at $T_a = 50^{\circ}\text{C}$.
- Point A must be $\leq 80^{\circ}\text{C}$ and point B must be $\leq 80^{\circ}\text{C}$ at $T_a = 70^{\circ}\text{C}$.

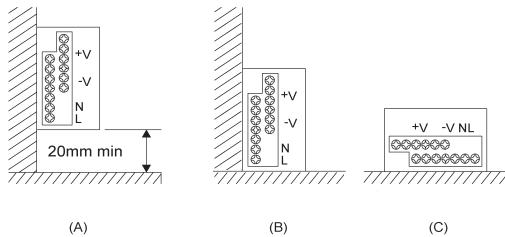
The confirmation of the temperatures of point A and B is not necessary if option fan "-F" is used.



Load factor is dependent on input voltage and is an average power figure. (See part number table).

Convection Cooled - Derating Curves

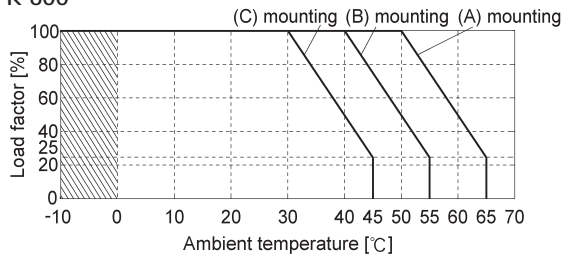
Convection Cooled



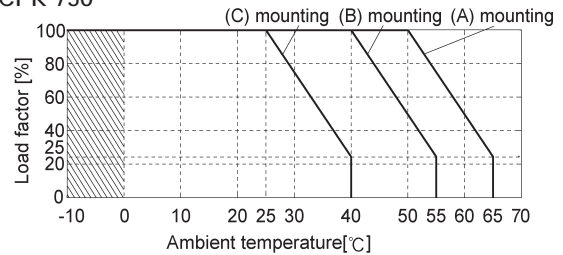
Installation Method

- Note: 1. Output ripple & noise may be outside specification. 2. Load factor dependent on input voltage (see part number table) and is an average power figure.

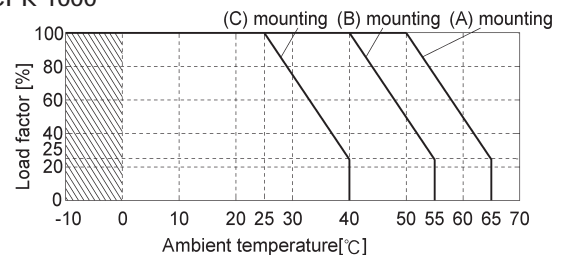
CPK 600



CPK 750



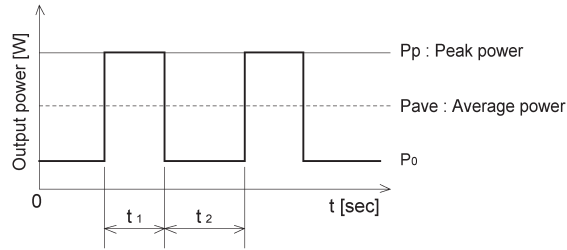
CPK 1000



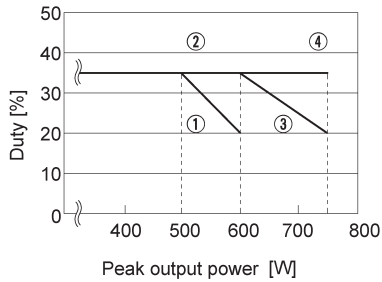
Peak Loading

3 conditions must be satisfied:

1. $t_1 \leq 10$ (second)
2. $P_{ave} = \frac{(P_{out1}) + (P_{out2})}{t_1 + t_2} \leq \text{rated power}$
3. $\text{Duty} = \frac{t_1}{t_1 + t_2} \leq 0.35$ (refer to graphs)

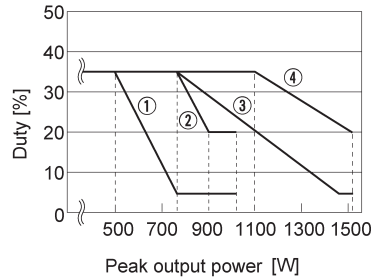


CPK 600

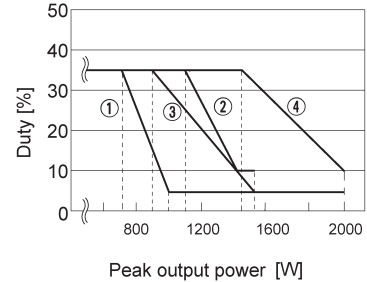


1. CPK115V convection
2. CPK115V forced air
3. CPK230V convection
4. CPK230V forced air

CPK 750



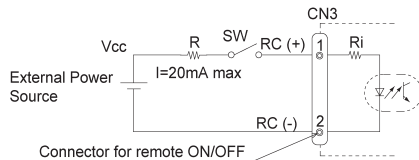
CPK1000



Remote ON/OFF

Option '-R'

Voltage Applied Between RC (+) and RC (-)	Output
SW ON (4.5 - 12.5 V open circuit)	ON
SW OFF (0-0.5 V short circuit)	OFF



Example of using Remote ON/OFF

If external power source is in the range of 4.5-12.5 V, current limit resistor R is not required. If external power source exceeds 12.5 V, current limit resistor R must be connected.

To calculate the current limit resistance use following equation:

$$R (\Omega) = \frac{V_{cc} - (1.1 + R_i \times 0.005)}{0.005}$$

Where;

V_{cc} = External Power Source

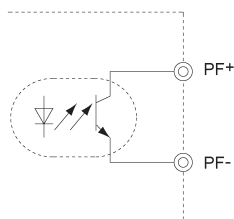
R_i = The internal resistance (780 Ω)

Remote ON/OFF circuit (RC (+), RC (-)) is isolated from input, output and FG.

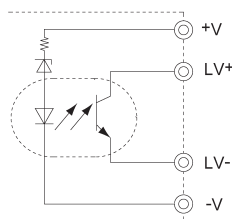
Alarms

Option "-W"

- W is available for detecting low input alarm (PF), detecting low output voltage (LV) and operating N+1 redundancy.
- Alarm specifications are shown in Table.
- Each alarm (PF, LV) is isolated from input, output and FG.



Internal circuit of PF



Internal circuit of LV

Alarm	Output of alarm
PF If line voltage falls below 85 VAC or fan stops	Open collector method Good: Low (0-08. V, 1 mA max) Fail: 50 V max
LV Notice: 1. When the output is over current (intermittent current), the alarm is unsettled status. 2. When parallel operating without connecting diode, LV alarm is not operating.	Open collector method Good: Low (0-08. V, 1 mA max) Fail: 50 V max