

## CPB1K/1K5 Series



- Universal PFC Input
- Low Profile (61 mm)
- Wide Output Voltage Adjustment
- Remote On/Off
- Power Good Signal
- Remote Sense
- Peak Current Available

## Specification

## Input

Input Voltage	• 85-264 VAC (120-370 VDC)
Input Frequency	• 47-63 Hz
Input Current	• 19 A at 115 VAC
Inrush Current	• 40 A at 230 VAC
Power Factor	• 0.98/0.95 at 115/230 VAC
Earth Leakage Current	• 1.5 mA max at 230 VAC/60Hz

## Output

Output Voltage	• See tables
Output Voltage Trim	• See tables
Minimum Load	• No minimum load required
Start Up Time	• 400 ms typical at 230 VAC, 100% load
Hold Up Time	• 20 ms typical at 100% load
Drift	• $\pm 0.4\%$ max
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• $\pm 1.0\%$ max 0-100% load
Ripple & Noise	• $\pm 1.0\%$ pk-pk, 20MHz BW
Overvoltage Protection	• 110-130% Vnom, recycle input to reset
Overtemperature Protection	• Operates in the event of fan failure or if the operating temperature / derating criteria is exceeded
Overload Protection	• Operates at 105% of rated current (101% of pk rating), <5 s auto recovery, >5 s recycle input to reset
Temperature Coefficient	• $\pm 1.25\%$ max -20 °C to +50 °C
Remote Sense	• Compensates for up to 0.3 V drop max if not required, sense terminals must be connected locally i.e +S to +M and -S to -M on CN1
Remote On/Off	• 12 V 3 mA applied between RCG & RC2 will inhibit the output of the unit and the fan

## General

Efficiency	• See tables
Isolation	• 3000 VAC Input to Output 2000 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 130 kHz PFC, 200 kHz PWM

## Environmental

Operating Temperature	• -20 °C to +70 °C, derate linearly from +50 °C to 50% at +70 °C
Relative Humidity	• 20-90% non-condensing
Storage Temperature	• -20 °C to +75 °C
Shock	• 20 G 11 ms, once each x, y and z axis
Vibration	• 2 G, 10 Hz to 55 kHz, 3 min periods for 60 min along each x, y and z axis

## EMC &amp; Safety

Emissions	• EN55022, level B conducted EN55022, level A radiated
ESD Immunity	• EN61000-4-2, level 2 contact, level 3 air
Radiated Immunity	• EN61000-4-3, level 3
EFT/Burst	• EN61000-4-4, level 3
Surge	• EN61000-4-5, level 3 line to line, level 4 line to ground
Safety Approvals	• EN60950, UL60950, cUL (CSA 60950)

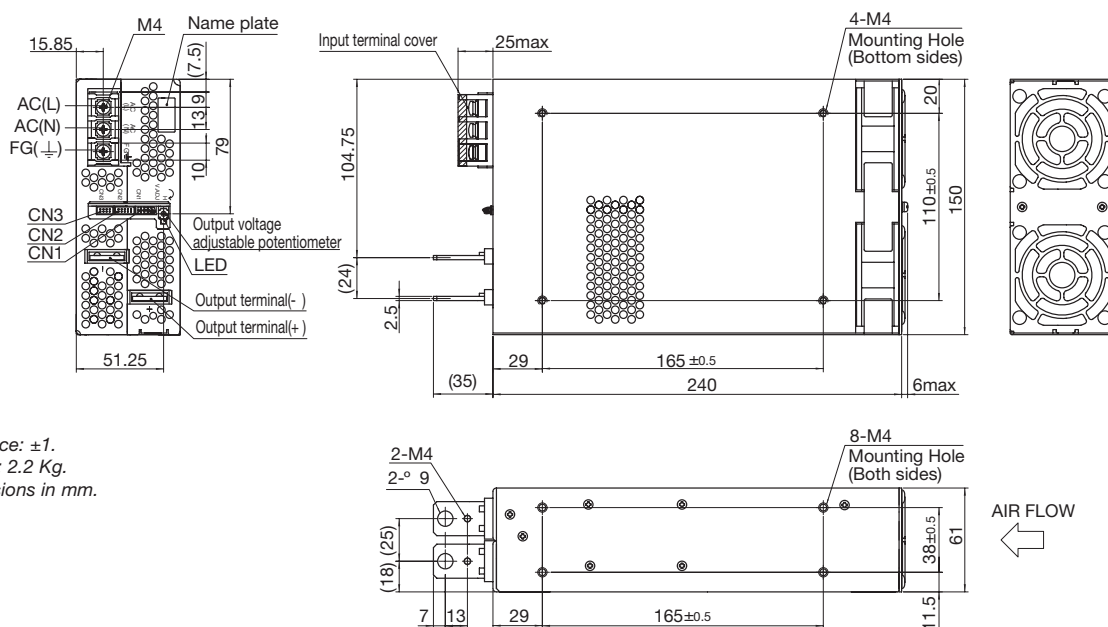
**Models and Ratings**

Input Voltage	Current		Regulation		Ripple & Noise <sup>(2)</sup>	Efficiency <sup>(3)</sup>	Model Number
	Max	Peak	Line	Load			
3.3 V (2.64 - 3.96)	200 A	-	20 mV	40 mV	120 mV	76%	CPB1KPS3V3
5.0 V (3.96 - 6.00)	200 A	-	20 mV	40 mV	120 mV	81%	CPB1KPS05
7.5 V (5.25 - 8.25)	134 A	-	36 mV	60 mV	150 mV	83%	CPB1KPS7V5
12 V (8.25 - 13.20)	88 A	-	48 mV	100 mV	150 mV	84%	CPB1KPS12
15 V (10.50 - 16.50)	70 A	-	60 mV	120 mV	150 mV	84%	CPB1KPS15
24 V (16.50 - 26.40)	44 A	51 A <sup>(1)</sup>	96 mV	150 mV	150 mV	86%	CPB1KPS24
36 V (25.20 - 39.60)	29 A	-	114 mV	150 mV	200 mV	86%	CPB1KPS36
48 V (38.40 - 56.00)	22 A	-	192 mV	300 mV	200 mV	86%	CPB1KPS48

**Notes**

1. Peak current duration 10 s max with duty cycle ≤ 35% 170-264 VAC only.
2. Measured over a 20 MHz bandwidth from 0 °C to +50 °C.
3. Measured at nominal 230 VAC input and 100% load.

**Mechanical Details**



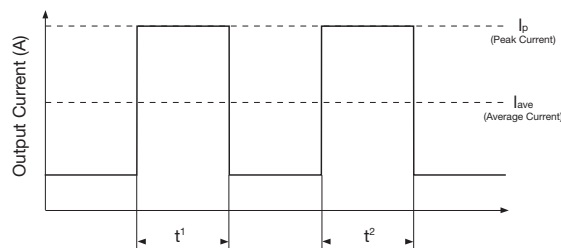
**Notes:**

1. Tolerance: ±1.
2. Weight: 2.2 Kg.
3. Dimensions in mm.

CN1/CN2 PIN CONNECTIONS		
Pin	Function	
1	+M	+ Output Voltage Monitoring
2	+S	+ Remote Sensing
3	-M	- Output Voltage Monitoring
4	-S	- Remote Sensing
5	VB	Voltage Balance
6	CB	Current Balance
7	TRM	Adjustment of Output Voltage
8	-S	- Remote Sensing
9	RC2	Remote On/Off
10	RCG	Remote On/Off Ground

**Peak Current Conditions:**

- 170-264 VAC
- $t^1 \leq 10$  s
- $I_p \leq$  Rated peak current
- $I_{ave} \leq$  Rated current
- Duty =  $\frac{t^1}{t^1 + t^2} \times 100$  [%] ≤ 35%



CN3 PIN CONNECTIONS		
Pin	Function	
1	-S	- Remote Sensing
2	-S	- Remote Sensing
3	AUX	Auxiliary Output (12V/0.1A)
4	RC1	Remote On/Off
5	AUXG	AUX Ground
6	N.C	No Connection
7	PG	Power Good Signal
8	PGG	Power Good Ground

Mating Connector & Terminal - CN1, CN2 & CN3				
	Connector	Mating Connector	Terminal	Manufacturer
CN1	S10B-PHDSS	PHDR-10VS	Reel SPHD-002T-P0.5	J.S.T
CN2			Loose BPHD-001T-P0.5	
CN3	S8B-PHDSS	PHDR-8VS	BPHD-002T-P0.5	



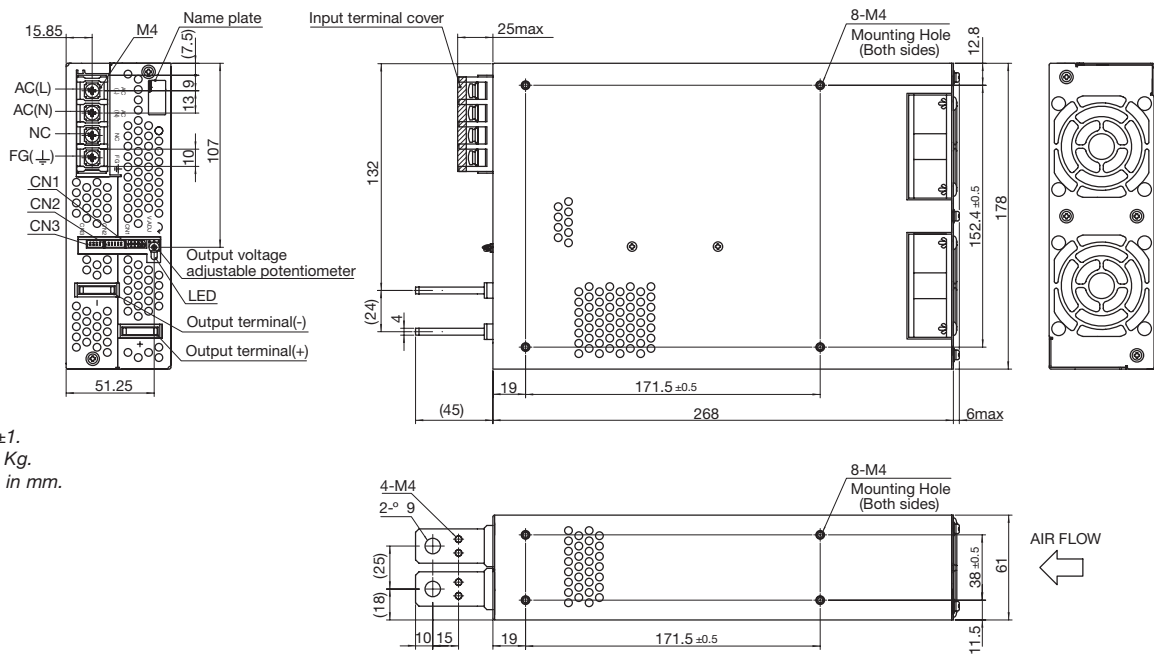
**Models and Ratings**

Input Voltage	Current		Regulation		Ripple & Noise <sup>(3)</sup>	Efficiency <sup>(4)</sup>	Model Number <sup>(3)</sup>
	Max	Peak	Line	Load			
3.3 V (2.64 - 3.96)	300 A	-	20 mV	40 mV	120 mV	75%	CPB1K5PS3V3
5.0 V (3.96 - 6.00)	300 A	-	20 mV	40 mV	120 mV	81%	CPB1K5PS05
7.5 V (5.25 - 8.25)	200 A	-	36 mV	60 mV	150 mV	81%	CPB1K5PS7V5
12 V (8.25 - 13.20)	125 A	-	48 mV	100 mV	150 mV	82%	CPB1K5PS12
15 V (10.50 - 16.50)	100 A	-	60 mV	120 mV	150 mV	86%	CPB1K5PS15
24 V (16.50 - 26.40)	70 A <sup>(1)</sup>	105 A <sup>(2)</sup>	96 mV	150 mV	150 mV	86%	CPB1K5PS24
36 V (25.20 - 39.60)	47 A <sup>(1)</sup>	70 A <sup>(2)</sup>	114 mV	150 mV	200 mV	86%	CPB1K5PS36
48 V (38.40 - 56.00)	35 A <sup>(1)</sup>	-	192 mV	300 mV	200 mV	86%	CPB1K5PS48

**Notes**

- At low input voltage i.e. 115 V nom derate to 65 A, 42 A and 32 A.
- Peak current duration 10 s max with duty cycle ≤ 35% 170-264 VAC only.
- Measured over a 20 MHz bandwidth from 0 °C to +50 °C.
- Measured at nominal 230 VAC input and 100% load.

**Mechanical Details**



**Notes:**

- Tolerance: ±1.
- Weight: 3.4 Kg.
- Dimensions in mm.

CN1/CN2 PIN CONNECTIONS		
Pin	Function	
1	+M	+ Output Voltage Monitoring
2	+S	+ Remote Sensing
3	-M	- Output Voltage Monitoring
4	-S	- Remote Sensing
5	VB	Voltage Balance
6	CB	Current Balance
7	TRM	Adjustment of Output Voltage
8	-S	- Remote Sensing
9	RC2	Remote On/Off
10	RCG	Remote On/Off Ground

CN3 PIN CONNECTIONS		
Pin	Function	
1	-S	- Remote Sensing
2	-S	- Remote Sensing
3	AUX	Auxiliary Output (12V/0.1A)
4	RC1	Remote On/Off
5	AUXG	AUX Ground
6	N.C	No Connection
7	PG	Power Good Signal
8	PGG	Power Good Ground

**Output Voltage Adjustment**

60-110% of the rated output voltage is achieved by:

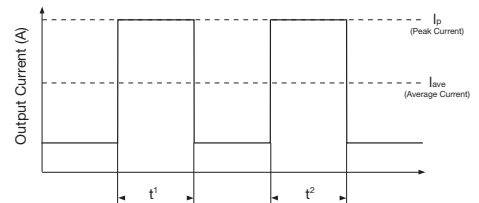
- Using on-board potentiometer
- Applying a voltage externally between TRM & -S on CN1 or CN2
- Connecting a resistor externally between TRM & -S on CN1 or CN2

The external voltage level is calculated below and should not be less than -0.7 V or more than 3.0 V.

$$\text{External Trim Voltage} = \frac{\text{Required Vout} \times 2.5}{\text{Vnom}}$$

**Peak Current Conditions:**

- 170-264 VAC
- $t^1 \leq 10 \text{ s}$
- $I_p \leq \text{Rated peak current}$
- $I_{ave} \leq \text{Rated current}$
- Duty =  $\frac{t^1}{t^1 + t^2} \times 100 [\%] \leq 35\%$



Mating Connector & Terminal - CN1, CN2 & CN3				
Connector	Mating Connector	Terminal	Manufacturer	
CN1	S10B-PHDSS	PHDR-10VS	Reel SPHD-002T-P0.5	J.S.T
CN2	S10B-PHDSS	PHDR-10VS	Loose BPHD-001T-P0.5	
CN3	S8B-PHDSS	PHDR-8VS	BPHD-002T-P0.5	