

CUS200LD

SPECIFICATIONS

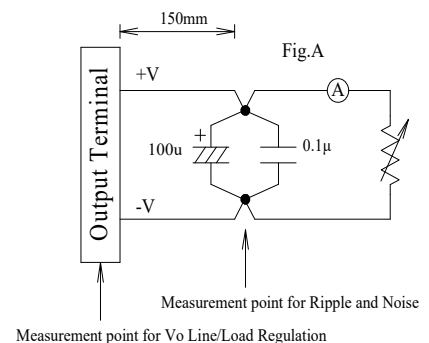
CA850-01-01C

ITEMS	MODEL	CUS200	CUS200	CUS200	CUS200	CUS200	CUS200	CUS200	CUS200	CUS200	
		LD-3	LD-4	LD-5	LD-7R5	LD-12	LD-15	LD-24	LD-28	LD-48	
1	Nominal Output Voltage	V	3.3	4.2	5	7.5	12	15	24	28	48
2	Maximum Output Current @ Convection cooling	A	24	24	24	16	10	8	5	4.3	2.5
	Maximum Output Current @ Conduction cooling (*12)	A	30	30	30	20	12.5	10	6.3	5.4	3.15
	Peak Output Current (*13)	A	40	40	40	26.6	16.7	13.4	8.4	7.2	4.2
3	Maximum Output Power @ Convection cooling	W	79.2	100.8	120.0	120.0	120.0	120.0	120.0	120.4	120.0
	Maximum Output Power @ Conduction cooling (*12)	W	99.0	126.0	150.0	150.0	150.0	150.0	151.2	151.2	151.2
	Peak Output Power (*13)	W	132.0	168.0	200.0	199.5	200.4	201.0	201.6	201.6	201.6
4	Efficiency @ Convection cooling (Typ.) 115/230 VAC (*1)	%	82/83	85/87	87/89	87/90	86/89	86/89	86/89	86/89	87/89
	Efficiency @ Conduction cooling (Typ.) 115/230 VAC (*1)	%	82/83	85/87	87/89	88/90	87/89	87/89	87/89	87/90	88/90
5	Input Voltage Range (*2)	-	85 - 265 VAC (47-63Hz)								
6	Input Current @ Convection cooling (Typ.) 115/230 VAC (*1)	A	0.9 / 0.5	1.1 / 0.6	1.3 / 0.7						
	Input Current @ Conduction cooling (Typ.) 115/230 VAC (*1)	A	1.1 / 0.6	1.4 / 0.7	1.6 / 0.8						
7	In-rush Current (Typ.) (*1)(*3)	A	20 / 40 at Cold Start								
8	PFHC	-	Designed to meet IEC61000-3-2								
9	Power Factor (Typ.) 115/230 VAC (*1)	-	0.95 / 0.85	0.95 / 0.88	0.95 / 0.90						
10	Output Voltage Range	%	+10 / -10	+10 / -10	+10 / -10	+10 / -15	+10 / -10	+10 / -10	+10 / -10	+10 / -10	+10 / -10
11	Maximum Ripple & Noise (*1)(*4)(*5)	mV	120	120	120	120	150	150	150	200	200
12	Maximum Line Regulation (*4)(*6)	mV	13	16	20	30	48	60	96	112	192
13	Maximum Load Regulation (*4)(*7)	mV	26	33	40	60	96	120	192	224	384
14	Temperature Coefficient (*4)	-	Less than 0.02% / °C								
15	Over Current Protection (*8)	A	> 40.40	> 40.40	> 40.40	> 26.87	> 16.87	> 13.54	> 8.49	> 7.28	> 4.25
16	Over Voltage Protection (*9)	V	3.80 - 5.44	4.83 - 6.51	5.75 - 7.50	8.63 - 10.87	13.80 - 17.40	17.25 - 21.75	27.60 - 34.80	32.20 - 40.60	55.20 - 69.60
17	Hold-up time (Typ.) (*1)	ms	20								
18	Leakage Current (*10)	-	0.75mA max								
19	Parallel Operation	-	No								
20	Series Operation	-	Possible								
21	Operating Temperature (*11)	-	-25°C ~ +70°C, start up at -40°C								
22	Operating Humidity	-	10 - 95%RH (No condensing)								
23	Storage Temperature	-	-40°C ~ +85°C								
24	Storage Humidity	-	10 - 95%RH (No condensing)								
25	Cooling (*12)	-	Convection or Conduction Cooling								
26	Withstand Voltage	-	Input-FG : 2kVAC (20mA), Input-Output : 3kVAC (20mA), Output-FG : 500VAC (100mA)								
27	Isolation Resistance	-	More than 100MΩ at 25°C,70%RH, Output - FG : 500VDC								
28	Vibration	-	At no operating, 10-55Hz (Sweep for 1min.) Maximum 19.6m/s <sup>2</sup> X,Y,Z 1 hour each								
29	Shock	-	Less than 196m/s <sup>2</sup>								
30	Safety	-	Approved by IEC/UL/CSA/EN 62368-1, Designed to meet GB4943.1								
31	EMI (*1)	-	Designed to meet EN55011-B, EN55032-B, FCC-Class B								
32	Immunity	-	Designed to meet IEC61000-4-2 (Level 2,3), IEC61000-4-3 (Level 3), IEC61000-4-4 (Level 3), IEC61000-4-5 (Level 3,4), IEC61000-4-6 (Level 3), IEC61000-4-8 (Level 4), IEC61000-4-11								
33	Weight (Typ.)	g	430								
34	Size (L x W x H)	mm	160 x 62 x 31 (Refer to the Outline Drawing)								

\*Read instruction manual carefully, before using the power supply unit.

=NOTES=

- \*1. At 115VAC/230VAC, Ta=25°C, nominal output voltage and maximum output power.
- \*2. For cases where conformance to various safety specs (UL, CSA, EN) are required, input voltage range will be 100 ~ 240VAC (50-60Hz).  
Output derating required when Vin is less than 115VAC, refer output derating curve for details.  
Avoid operating the unit out of the specified input voltage range.
- \*3. Not applicable for the in-rush current to noise filter for less than 0.2ms.
- \*4. Please refer to Fig. A for measurement of Vo, line and load regulation and ripple voltage.
- \*5. Ripple & noise are measured at 20MHz by using a 150mm twisted pair of load wires terminated with a 0.1uF and 100uF capacitor.
- \*6. 85~265VAC, constant load.
- \*7. No load - full load, constant input voltage.
- \*8. Hiccup with automatic recovery.  
Avoid operating at over load or short circuit condition.
- \*9. OVP circuit shut down the output, manual reset (Re power on) to get output voltage.
- \*10. Measured by the each measuring method of UL, CSA, and EN (at 60Hz), Ta=25°C.
- \*11. Refer to output derating curve for details of output derating versus input voltage, ambient temperature and mounting method.  
- Load (%) is percent of maximum output power and maximum output current. Do not exceed its derating of maximum Load.  
- Maximum load start up at -40°C is possible. However, it may not fulfill all the specifications.
- \*12. For conduction cooling, Power supply should be mounted on an Aluminum plate or heat sink with bottom side of the chassis, recommended AL plate size is 400\*400\*2mm. Refer to the output derating curve for output derating vs. ambient temperature and base plate temperature.
- \*13. Refer to the next pages CA850-01-03\_ and CA850-01-04\_ for peak load definition and conditions.



**CUS200LD**

OUTPUT DERATING

CA850-01-02A

**OUTPUT DERATING VERSUS INPUT VOLTAGE**

Maximum output power and output current derating vs. input voltage

CUS200LD-3

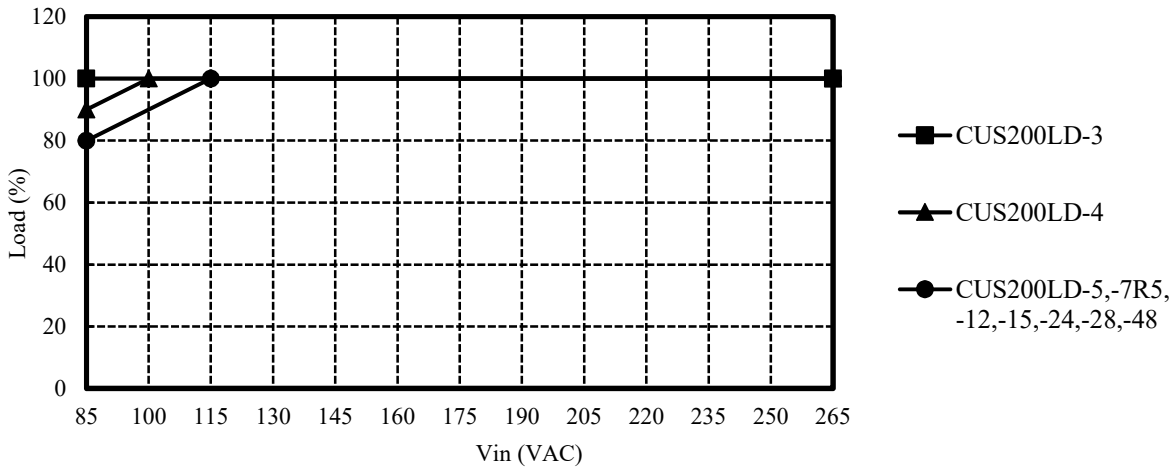
Input Voltage (VAC)	Load (%)
85~265	100

CUS200LD-4

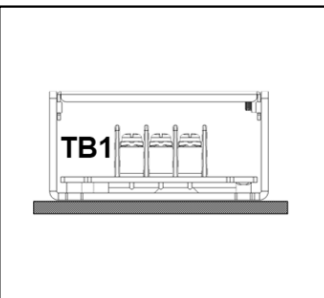
Input Voltage (VAC)	Load (%)
85	90
100~265	100

CUS200LD-5,-7R5,-12,-15,-24,-28,-48

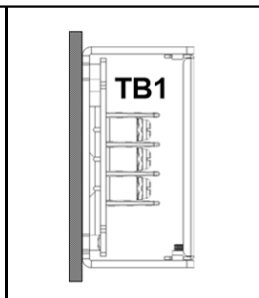
Input Voltage (VAC)	Load (%)
85	80
115~265	100



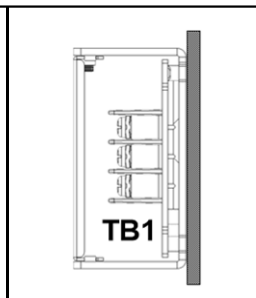
**MOUNTING A**  
(STANDARD MOUNTING)



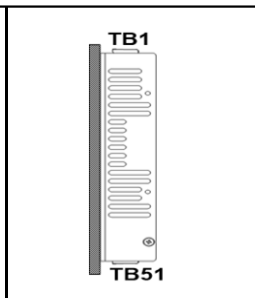
**MOUNTING B**



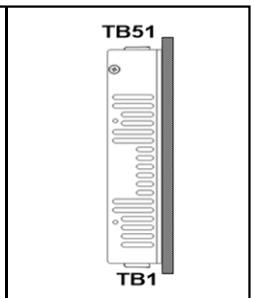
**MOUNTING C**



**MOUNTING D**



**MOUNTING E**



**CUS200LD**

OUTPUT DERATING

CA850-01-03

**OUTPUT DERATING VERSUS OPERATING AMBIENT TEMPERATURE (Ta)**

**1. CONDUCTION COOLING**

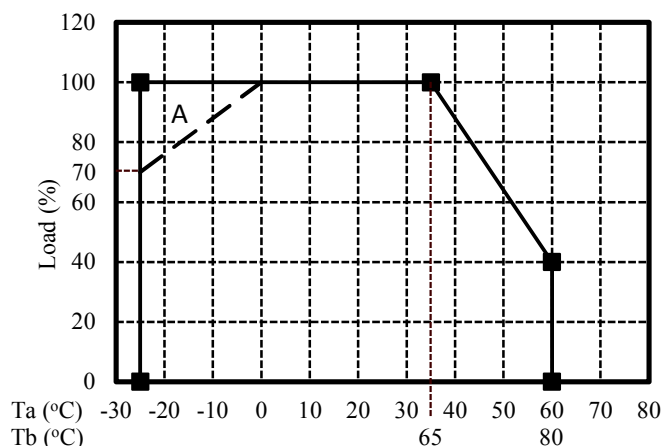
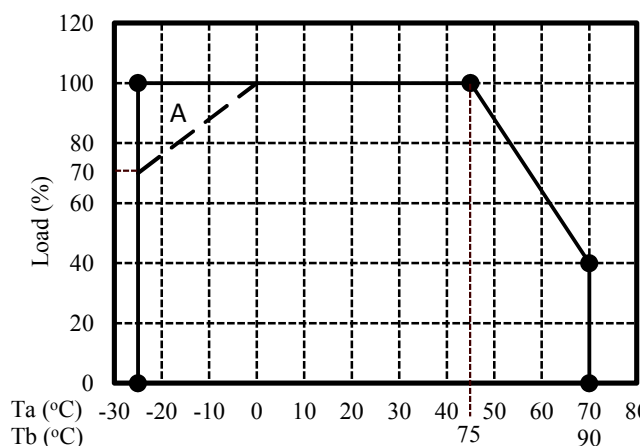
(1) Maximum output power and output current derating vs. ambient temperature and base plate temperature

Mounting A,B,C

Ta (°C)	Tb (°C)	Load (%)
-25 - +45	-25 - +75	100
+70	+90	40

Mounting D,E

Ta (°C)	Tb (°C)	Load (%)
-25 - +35	-25 - +65	100
+60	+80	40



Ta: Ambient Temperature

Tb: Base plate temperature, measured at the center of the bottom side of the power supply chassis

Please refer to the instruction manual for details.

Notes:

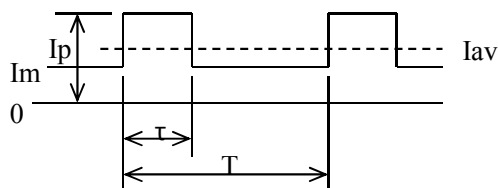
1. Maximum output power and output current must not exceed the derating curve of Ta and Tb.

2. Low Temperature Operation Area (A):

Output voltage may be fluctuated during start up or sudden change of load conditions in this area when input voltage is below 115VAC. Output voltage will be stable after power supply warm up, or the input voltage is higher than 115VAC. Please refer to the instruction manual for details.

(2) Definition of peak load operation

Average current definition:



$$I_{av} = I_p \times D + I_m \times (1-D)$$

Ip : Peak output current (A)

Im : Minimum output current (A)

Iav : Average output current (A)

D : Duty cycle,  $\tau/T$  (%)

Notes:

1. Operating period at peak output current ( $\tau$ ) is less than 10 seconds, duty is less than 35%

2. Average output power and output current is less than the Maximum output power and output current.

3. Peak output power and output current derating vs. input voltage and ambient temperature is same as the derating of maximum output power and output current.

CA850-01-04

**2. CONVECTION COOLING**

(1) Maximum output power and output current derating vs. ambient temperature

Mounting A

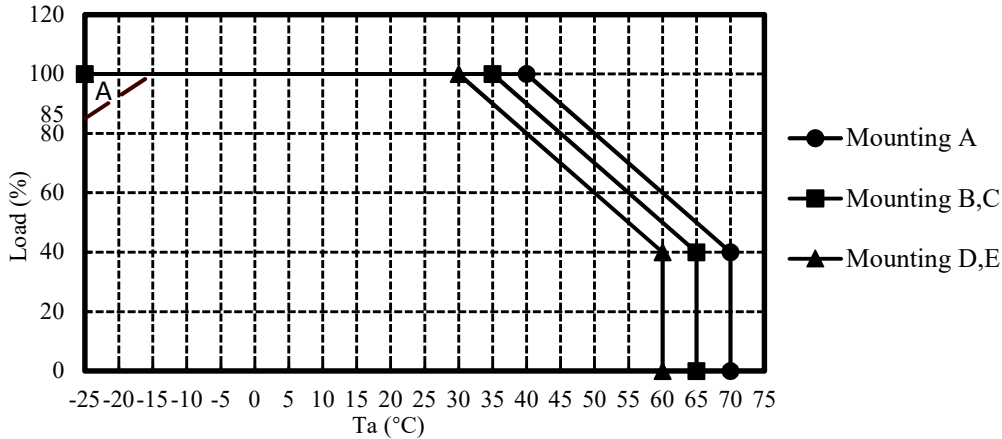
Ta (°C)	Load (%)
-25 - +40	100
+70	40

Mounting B,C

Ta (°C)	Load (%)
-25 - +35	100
+65	40

Mounting D,E

Ta (°C)	Load (%)
-25 - +30	100
+60	40

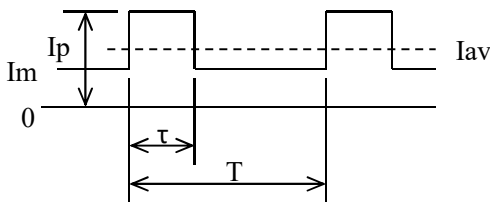


Notes:

1. Maximum output power and output current must not exceed the derating curve of Ta
2. Low Temperature Operation Area (A):  
Output voltage may be fluctuated during start up or sudden change of load conditions in this area when input voltage is below 115VAC. Output voltage will be stable after power supply warm up, or the input voltage is higher than 115VAC. Please refer to the instruction manual for details.

(2) Definition of peak load operation

Average output current definition:



- Ip : Peak output current (A)
- Im : Minimum output current (A)
- Iav : Average output current (A)
- D : Duty cycle,  $\tau/T$  (%)

$$I_{av} = I_p \times D + I_m \times (1-D)$$

Notes:

1. Operating period at peak output current ( $\tau$ ) is less than 5 seconds, duty is less than 35%.
2. Average output power and output current is less than the Maximum output power and output current.
3. Peak output power and output current derating vs. input voltage and ambient temperature is same as the derating of maximum output power and output current.