



■ Features :

- ZVT technology to reduce power dissipation and improve efficiency
- Various output configuration is selectable
- Remote Control on every individual output module
- Remote Sense on every individual output module (MS-75, 150, 300)
- Built in active PFC, PF>0.95
- Universal AC input/ full range
- Built in parallel function (MS-300)
- Fan alarm function
- Forced air cooling
- 2.5 inch profile



Output Configuration Guide

MP [] [] [] [] [] [] [] [] - []

SLOT1 SLOT2 SLOT3 SLOT4 SLOT5 SLOT6 SLOT7

→ 450W/650W/1K0(1000W)
→ Modular Power with PFC

※450W/650W(5SLOT) Parallel or option code →
※1000W(7SLOT) (See Table 1.)

Example: MP-1000- A 2 E H S 2 K

SLOT1 → O/P: 2V@25A
SLOT2,3 → O/P: 12V@25A
SLOT4 → O/P: 24V@6.5A
SLOT5 → O/P: 5V@10A
 12V@4.2A
SLOT6,7 → O/P: 48V@6.3A

Single output (MS-150) 1 SLOT (150W max.)		Single output (MS-300) 2 SLOT (300W max.)		Single output (MS-75) 1 SLOT (75W max.)		Dual output (MD-100) 1 SLOT (100W max.)	
Voltage code	Voltage	Voltage code	Voltage	Voltage code	Voltage	Voltage code	Voltage
A	2V	*2A	2V	L	3.3V	R	5V
B	3.3V	2B	3.3V	M	5V	S	5V
C	5V	2C	5V	N	12V	T	5V
D	7.5V	*2D	7.5V	O	15V	U	15V
E	12V	2E	12V	P	24V	V	24V
F	15V	2F	15V	Q	48V	W	12V
G	18V	*2G	18V			X	12V
H	24V	2H	24V				15V
I	27V	*2I	27V				15V
J	33V	*2J	33V				
K	48V	2K	48V				

*Non-standard products, tailor-made for special order with minimum quantity limitation

SPECIFICATION

MODEL	PFC-450	PFC-650	PFC-1000
INPUT	VOLTAGE RANGE		85 ~ 264VAC 120 ~ 370VDC
	FREQUENCY RANGE		47 ~ 63Hz
	POWER FACTOR		PF>0.95/230VAC PF>0.98/115VAC at full load
	EFFICIENCY Note.1		85% typ.
	AC CURRENT		5A/115VAC 2.5A/230VAC
	INRUSH CURRENT		20A/115VAC 40A/230VAC
	LEAKAGE CURRENT		<1mA/240VAC
OUTPUT	TOTAL OUTPUT POWER		450W max. 650W max. 1000W max.
PROTECTION	OVER TEMPERATURE		
	Thermal switch detect on the heatsink of power MOSFET Protection type : Shut down o/p voltage, recovers automatically after temperature goes down		
FUNCTION	FAN ALARM		
	Output shutdown when FAN is malfunction		
	REMOTE CONTROL		
ENVIRONMENT	RC+/RC-: 0 ~ 0.8V or Short, Power ON RC+/RC-: 4 ~ 12V or Open, Power OFF		
	AUXILIARY POWER(AUX)		
	12V@0.1A(only for Remote ON/OFF)		
SAFETY & EMC (Note 5)	REMOTE INHIBIT CONTROL		
	On individual output module RC+/RC-: 0 ~ 0.8V or OPEN, POWER ON RC+/RC-: 4 ~ 12V POWER OFF		
	WORKING TEMP.		
	-20 ~ +70°C (Refer to output load derating curve)		
	WORKING HUMIDITY		
OTHERS	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY		
	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT		
	±0.03%/°C (0 ~ 50°C)		
	VIBRATION		
10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes			
SAFETY & EMC (Note 5)	SAFETY STANDARDS		
	UL60950-1, TUV EN60950-1, EN60601-1(Optional) Approved		
	WITHSTAND VOLTAGE		
	I/P-O/P: 3KVAC I/P-FG: 1.5KVAC O/P-FG: 0.5KVAC		
	ISOLATION RESISTANCE		
I/P-O/P, I/P-FG, O/P-FG: 100M Ohms/500VDC			
EMI CONDUCTION & RADIATION			
Compliance to EN55022 (CISPR22) Class B			
HARMONIC CURRENT			
Compliance to EN61000-3-2,-3			
EMS IMMUNITY			
Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, Light industry level, criteria A			
OTHERS	DIMENSION		
	254*127*63.5mm (L*W*H) 278*127*63.5mm (L*W*H) 278*177.8*63.5mm (L*W*H)		
PACKING			
----- 2.16Kg(typ.); 6pcs / 14Kg / 1.34CUFT -----			

SPECIFICATION

1 SLOT Single output (150W) MS-150

OUTPUT (MS-150)	OUTPUT VOLTAGE CODE	MS-150A	MS-150B	MS-150C	MS-150D	MS-150E	MS-150F	MS-150G	MS-150H	MS-150I	MS-150J	MS-150K	
	DC VOLTAGE	2V	3.3V	5V	7.5V	12V	15V	18V	24V	27V	33V	48V	
	RATED CURRENT	25A	25A	25A	18A	13A	10A	8.5A	6.5A	5.8A	4.7A	3.2A	
	CURRENT RANGE	0 ~ 25A	0 ~ 25A	0 ~ 25A	0 ~ 18A	0 ~ 13A	0 ~ 10A	0 ~ 8.5A	0 ~ 6.5A	0 ~ 5.8A	0 ~ 4.7A	0 ~ 3.2A	
	PEAK LOAD Note.4	30A	30A	30A	20.7A	15A	11.5A	9.8A	7.5A	6.7A	5.4A	3.68A	
	RATED POWER	50W	82.5W	125W	135W	156W	150W	153W	156W	156.6W	155.1W	153.6W	
	RIPPLE & NOISE (max.) Note.2	50mVp-p	80mVp-p	80mVp-p	100mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	250mVp-p	250mVp-p	
	VOLTAGE ADJ. RANGE	1.6 ~ 2.6V	2.6 ~ 4V	4 ~ 6V	6 ~ 9V	9 ~ 13.2V	13.2 ~ 16.8V	16.8 ~ 20V	20 ~ 26.4V	25 ~ 31V	30 ~ 40V	40 ~ 53V	
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.3%	±0.3%	±0.3%	±0.2%	±0.2%	±0.2%	±0.2%	
	LOAD REGULATION	±2.0%	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load												
PROTECTION	OVER LOAD	121 ~ 150% rated output power				116 ~ 150% rated output power							
		Protection type : Constant current limiting, recovers automatically after fault condition is removed											
	OVER VOLTAGE	3 ~ 4V	4.1 ~ 5V	6.1 ~ 7.5V	9.1 ~ 11.2V	13.3 ~ 18V	16.9 ~ 22V	20.1 ~ 26V	26.5 ~ 35V	31.1 ~ 39V	40.1 ~ 48V	53.1 ~ 60V	
	Protection type : Shut down o/p voltage, re-power on to recover												

2 SLOT Single output (300W) MS-300

OUTPUT (MS-300)	OUTPUT VOLTAGE CODE	MS-300-2B		MS-300-2C		MS-300-2E		MS-300-2F		MS-300-2H		MS-300-2K			
	DC VOLTAGE	3.3V		5V		12V		15V		24V		48V			
	RATED CURRENT	50A		50A		25A		20A		12.5A		6.3A			
	CURRENT RANGE	0 ~ 50A		0 ~ 50A		0 ~ 25A		0 ~ 20A		0 ~ 12.5A		0 ~ 6.3A			
	PEAK LOAD Note.4	57.5A		57.5A		29A		23A		14.4A		7.2A			
	RATED POWER	165W		250W		300W		300W		300W		302.4W			
	RIPPLE & NOISE (max.) Note.2	80mVp-p		80mVp-p		150mVp-p		150mVp-p		150mVp-p		300mVp-p			
	VOLTAGE ADJ. RANGE	2.6 ~ 4V		4 ~ 6V		9 ~ 13.2V		13.2 ~ 16.8V		20 ~ 26.4V		40 ~ 53V			
	VOLTAGE TOLERANCE Note.3	±2.0%		±2.0%		±1.0%		±1.0%		±1.0%		±1.0%			
	LINE REGULATION	±0.5%		±0.5%		±0.3%		±0.3%		±0.2%		±0.2%			
	LOAD REGULATION	±1.0%		±1.0%		±0.5%		±0.5%		±1.0%		±1.0%			
SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load														
PROTECTION	OVER LOAD	116 ~ 150% rated output power													
		Protection type : Constant current limiting, recovers automatically after fault condition is removed													
	OVER VOLTAGE	4.1 ~ 5V		6.1 ~ 7.5V		13.3 ~ 18V		16.9 ~ 22V		26.5 ~ 35V		53.1 ~ 60V			
	Protection type : Shut down o/p voltage, re-power on to recover														

1 SLOT Single output (75W) MS-75

OUTPUT (MS-75)	OUTPUT VOLTAGE CODE	MS-75L		MS-75M		MS-75N		MS-75O		MS-75P		MS-75Q			
	DC VOLTAGE	3.3V		5V		12V		15V		24V		48V			
	RATED CURRENT	15A		15A		6.3A		5A		3.2A		1.6A			
	CURRENT RANGE	0 ~ 15A		0 ~ 15A		0 ~ 6.3A		0 ~ 5A		0 ~ 3.2A		0 ~ 1.6A			
	PEAK LOAD Note.4	17.3A		17.3A		7.3A		5.8A		3.7A		1.8A			
	RATED POWER	49.5W		75W		75.6W		75W		76.8W		76.8W			
	RIPPLE & NOISE (max.) Note.2	80mVp-p		80mVp-p		150mVp-p		150mVp-p		150mVp-p		250mVp-p			
	VOLTAGE ADJ. RANGE	2.6 ~ 4V		4 ~ 6V		9 ~ 13.2V		13.2 ~ 16.8V		20 ~ 26.4V		40 ~ 53V			
	VOLTAGE TOLERANCE Note.3	±2.0%		±2.0%		±1.0%		±1.0%		±1.0%		±1.0%			
	LINE REGULATION	±0.5%		±0.5%		±0.3%		±0.3%		±0.2%		±0.2%			
	LOAD REGULATION	±1.0%		±1.0%		±0.5%		±0.5%		±0.5%		±0.5%			
SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load														
PROTECTION	OVER LOAD	116 ~ 150% rated output power													
		Protection type : Constant current limiting, recovers automatically after fault condition is removed													
	OVER VOLTAGE	4.1 ~ 5V		6.1 ~ 7.5V		13.3 ~ 18V		16.9 ~ 22V		26.5 ~ 35V		53.1 ~ 60V			
	Protection type : Shut down o/p voltage, re-power on to recover														

SPECIFICATION

1 SLOT Isolated Dual output (100W) MD-100

OUTPUT (MD-100)	OUTPUT VOLTAGE CODE	MD-100R		MD-100S		MD-100T		MD-100U		MD-100V		MD-100W		MD-100X		
	DC VOLTAGE	5V	5V	5V	12V	5V	15V	24V	5V	24V	12V	12V	12V	12V	15V	15V
	RATED CURRENT	10A	8A	10A	4.2A	10A	3.4A	2.5A	8A	2.5A	3.4A	5A	3.4A	4A	2.7A	
	CURRENT RANGE	2 ~ 10A	0 ~ 8A	2 ~ 10A	0 ~ 5.8A	2 ~ 10A	0 ~ 4.7A	0.5 ~ 3A	0 ~ 10A	0.6 ~ 3A	0 ~ 4.7A	1 ~ 5A	0 ~ 5.8A	1 ~ 4.7A	0 ~ 4.7A	
	RATED POWER <small>Note.6</small>	90W		100.4W		101W		100W		100.8W		100.8W		100.5W		
	RIPPLE & NOISE (max.) <small>Note.2</small>	100mVp-p	100mVp-p	100mVp-p	150mVp-p	100mVp-p	150mVp-p	200mVp-p	100mVp-p	240mVp-p	120mVp-p	120mVp-p	120mVp-p	150mVp-p	150mVp-p	
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	4.75 ~ 5.5V	4.75 ~ 5.5V	11.4 ~ 13.2V	4.75 ~ 5.5V	14.2 ~ 16.5V	22.8 ~ 26.4V	4.75 ~ 5.5V	22.8 ~ 26.4V	11.4 ~ 13.2V	11.4 ~ 13.2V	11.4 ~ 13.2V	14.2 ~ 16.5V	14.2 ~ 16.5V	
	VOLTAGE TOLERANCE <small>Note.3</small>	±3.0%	±3.0%	±3.0%	±3.0%	±3.0%	±3.0%	±3.0%	±3.0%	±2.0%	±3.0%	±2.0%	±3.0%	±2.0%	±3.0%	
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±0.5%	±1.0%	±0.5%	±1.0%	±0.5%	±1.0%	
	LOAD REGULATION	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%	±1.0%	±2.0%	
SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load															
PROTECTION	OVER LOAD	116 ~ 150% rated output power Protection type : Shut down o/p voltage, re-power on to recover														
	OVER VOLTAGE	5.6 ~ 7.2V	5.6 ~ 7.2V	5.6 ~ 7.2V	13.3 ~ 17V	5.6 ~ 7.2V	16.6 ~ 22V	26.5 ~ 34V	5.6 ~ 7.2V	26.5 ~ 34V	13.3 ~ 17V	13.3 ~ 17V	13.3 ~ 17V	16.6 ~ 22V	16.6 ~ 22V	
NOTE	<p>1. The value changed by installing different output models. The efficiency in specification means output modules are composed by below five modules. 5V(Voltage code C)*2, 12V(Voltage code E)*1, 24V(Voltage code H)*2.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. 35% Duty cycle maximum within every 10 seconds. Average output power should not exceed the rated power.</p> <p>5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</p> <p>6. If the output voltage adjust to higher level, the rated current should be derated to meet the total rated power for both output(For MD-100 only).</p>															

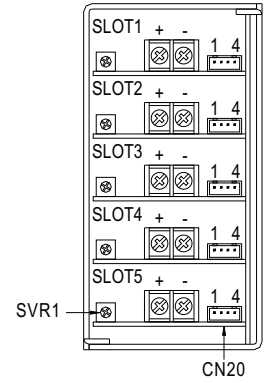
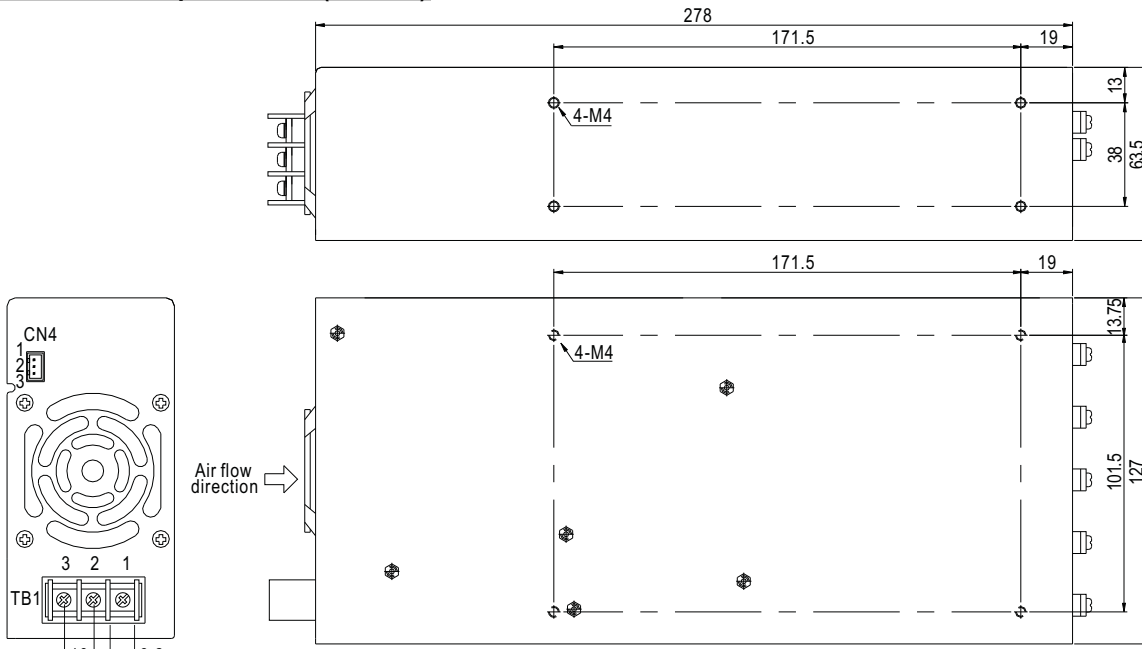
Table 1. Parellel code(MS300 only)

Code	SLOT1	SLOT2	SLOT3	SLOT4	SLOT5	SLOT6	SLOT7
X						----	----
1	○	○	○	○		----	----
2		○	○	○		----	----
3			○	○	○		
4				○	○	○	
5	○	○	○	○	○		
6		○	○	○	○	○	

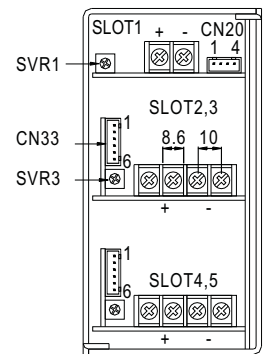
※Code X,1,2 for MP-450,MP-650
 ※Code X,1,2,3,4,5,6 for MP-1000

Mechanical Specification(MP-650)

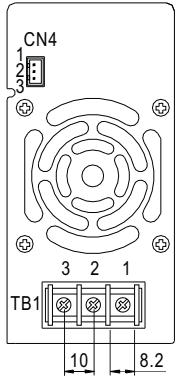
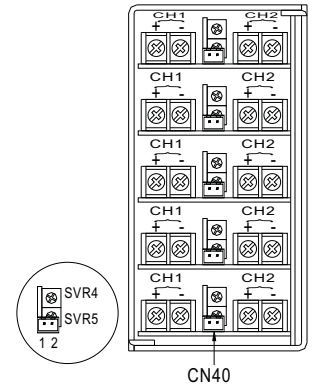
Case No.935 Unit:mm
(1 SLOT Single Output 75W,150W)



(2 SLOT Single Output 300W)



(1 SLOT Dual Output 100W)



Terminal pin number assignment (TB1):

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG

Remote Control (CN40)

Pin No.	Assignment
1	RC+
2	RC-

Mating Housing	Terminal
JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent

- NOTE: 1.Remote ON/OFF of CN4 turn ON/OFF entire power system.
2.Remote ON/OFF of CN20,CN33 turn ON/OFF individual output module.
3.SVR4 for CH2 of MD-100, SVR5 for CH1 of MD-100

AC Input Connector (CN4) : JST B3B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	RC+: Remote ON/OFF+	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	RC-: Remote ON/OFF-		
3	VCC: Auxiliary powr		

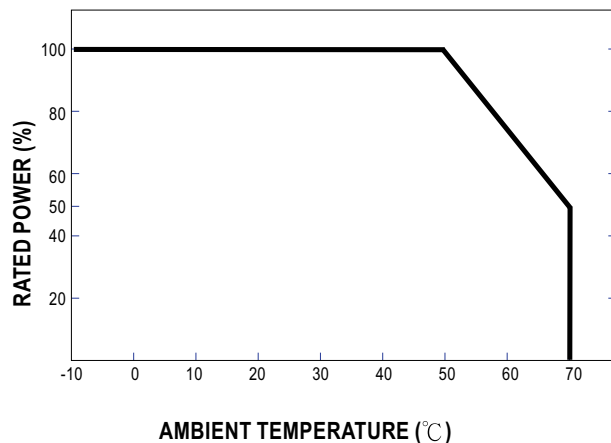
DC Output Connector (CN20) : JST B4B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	+S: +Remote sensing	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	-S: -Remote sensing		
3	RC+: +Remote ON/OFF		
4	RC-: Remote ON/OFF		

DC Output Connector (CN33) : JST B6B-XH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	+S: +Remote sensing	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	-S: -Remote sensing		
3	RC+: +Remote ON/OFF		
4	RC-: Remote ON/OFF		
5	P:Current share(MS-300)		
6	G(MS-300)		

Derating Curve



Static Characteristics

