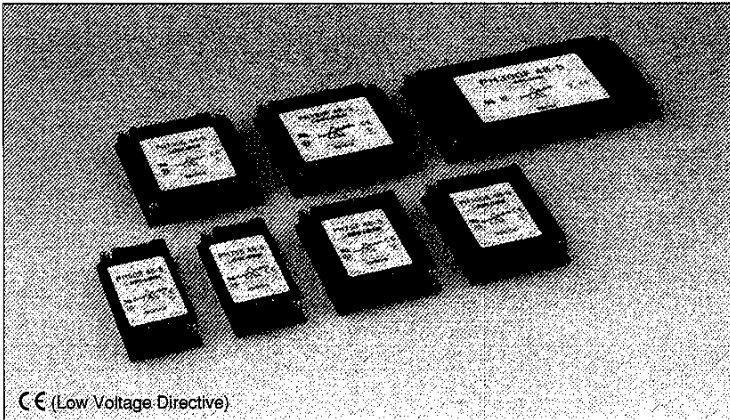


# PH-SERIES

Single output DC-DC converter  
50W ~ 300W

**LAMBDA**  
DENSEI-LAMBDA



CE (Low Voltage Directive)

## Model name PH 300 F 280-5

Output power: 300W  
Nominal input voltage: 280V  
Name of series: PH  
Function: F: Full function, S: Simple function  
Nominal output voltage: 5V

### Features

- CE marking (Low Voltage Directive)
- Compact DC-DC power module  
Input: DC24V, DC48V, DC110V, DC280V  
Output type: 50W, 75W, 100W, 150W, 300W  
High power density: 31W/inch<sup>2</sup> (300W type)
- Wide baseplate temperature: -20 ~ +85°C  
Conduction cooling
- N+1 parallel redundant operation (F-type)
- 2 year warranty

### Specifications

1. Input voltage range	DC24V input type: DC18 ~ 36V, DC48V input type: DC36 ~ 76V DC110V input type: DC82 ~ 185V, DC280V input type: DC200 ~ 400V
2. Output voltage range	F type: -60 ~ +20% (2V and 3V types: ±20%), S type: ±10% (By TRM terminal and external resistor) Output voltage range is different according to input voltage.
3. Parallel operation	F type: N+1 redundant operation. Output current balancing (PC terminal)
4. Line regulation	0.4%, within nominal input voltage range at constant load (3.3V output: 20mV)
5. Load regulation	0.8%, no load to full load at constant input voltage (3.3V output: 40mV)
6. Cooling	Conduction cooling (Heatsink & airflow has to be chosen according to instruction manual)
7. Operating ambient temperature	Baseplate temperature: -20 ~ +85°C (output derating is different according to condition) Ambient temperature: above -20°C
8. Withstand voltage	Input to output: 3.0kVAC, input to baseplate: 2.5kVAC for 1 min. (DC24V input type: input to output: 2.0kVAC, Input to baseplate: 2.0kVAC for 1 min.)
9. Safety standard	Approved by UL1950, CSA950, C-UL and EN60950 (BSI)
10. Functions	In all models: Over voltage protection, Over current protection, Thermal protection, ON/OFF control (CNT terminal) Additional in F type: Remote sensing, Remote on/off control (CNT terminal), Inverter good signal (IOG terminal), Auxiliary power supply for external signal (AUX terminal)

### Product lineup

Model name	Output voltage	Output current	Output power	UL	CSA	EN		
PH50S24 (24Vin)	PH50S24-3.3	3.3V	10A	33W	Δ	Δ	Δ	
	PH50S24-5	5V	10A	50W	Δ	Δ	Δ	
	PH50S24-12	12V	4.2A	50.4W	Δ	Δ	Δ	
	PH50S24-15	15V	3.4A	51W	Δ	Δ	Δ	
	PH50S24-24	24V	2.1A	50.4W	Δ	Δ	Δ	
	PH50S24-28	28V	1.8A	50.4W	Δ	Δ	Δ	
PH100F24 (24Vin)	PH100F24-2	2V	20A	40W	Δ	Δ	Δ	
	PH100F24-3	3V	20A	60W	Δ	Δ	Δ	
	PH100F24-5	5V	20A	100W	Δ	Δ	Δ	
	PH100F24-12	12V	8.4A	100.8W	Δ	Δ	Δ	
	PH100F24-15	15V	6.7A	100.5W	Δ	Δ	Δ	
	PH100F24-24	24V	4.2A	100.8W	Δ	Δ	Δ	
PH300F24	PH100F24-28	28V	3.6A	100.8W	Δ	Δ	Δ	
	PH300F24-28	28V	10.8A	302.4W	Δ	Δ	Δ	
	PH50S48 (48Vin)	PH50S48-3.3	3.3V	10A	33W	Δ	Δ	Δ
		PH50S48-5	5V	10A	50W	○	○	○
		PH50S48-12	12V	4.2A	50.4W	○	○	○
		PH50S48-15	15V	3.4A	51W	○	○	○
PH50S48-24		24V	2.1A	50.4W	○	○	○	
PH50S48-28		28V	1.8A	50.4W	○	○	○	
PH75S48 (48Vin)	PH75S48-3.3	3.3V	15A	49.5W	Δ	Δ	Δ	
	PH75S48-5	5V	15A	75W	○	○	○	
	PH75S48-12	12V	6.3A	75.6W	○	○	○	
	PH75S48-15	15V	5A	75W	○	○	○	
	PH75S48-24	24V	3.2A	76.8W	○	○	○	
	PH75S48-28	28V	2.7A	75.6W	○	○	○	

Model name	Output voltage	Output current	Output power	UL	CSA	EN	
PH75F48 (48Vin)	PH75F48-2	2V	15A	30W	○	○	○
	PH75F48-3	3V	15A	45W	○	○	○
	PH75F48-5	5V	15A	75W	○	○	○
	PH75F48-12	12V	6.3A	75.6W	○	○	○
	PH75F48-15	15V	5A	75W	○	○	○
	PH75F48-24	24V	3.2A	76.8W	○	○	○
PH100S48 (48Vin)	PH75F48-28	28V	2.7A	75.6W	○	○	○
	PH100S48-3.3	3.3V	20A	66W	Δ	Δ	Δ
	PH100S48-5	5V	20A	100W	○	○	○
	PH100S48-12	12V	8.4A	100.8W	○	○	○
	PH100S48-15	15V	6.7A	100.5W	○	○	○
	PH100S48-24	24V	4.2A	100.8W	○	○	○
PH150S48 (48Vin)	PH100S48-28	28V	3.6A	100.8W	○	○	○
	PH150S48-3.3	3.3V	30A	99W	Δ	Δ	Δ
	PH150S48-5	5V	30A	150W	○	○	○
	PH150S48-12	12V	12.5A	150W	○	○	○
	PH150S48-15	15V	10A	150W	○	○	○
	PH150S48-24	24V	6.3A	151.2W	○	○	○
PH150F48 (48Vin)	PH150S48-28	28V	5.4A	151.2W	○	○	○
	PH150F48-2	2V	30A	60W	○	○	○
	PH150F48-3	3V	30A	90W	○	○	○
	PH150F48-5	5V	30A	150W	○	○	○
	PH150F48-12	12V	12.5A	150W	○	○	○
	PH150F48-15	15V	10A	150W	○	○	○
PH150F48 (48Vin)	PH150F48-24	24V	6.3A	151.2W	○	○	○
	PH150F48-24	24V	6.3A	151.2W	○	○	○
	PH150F48-24	24V	6.3A	151.2W	○	○	○
	PH150F48-28	28V	5.4A	151.2W	○	○	○

- Request customer specification for further details of specifications, outline, characteristics, etc. Read the instruction manual before usage.
- Contact us about delivery before ordering.

○ : Safety standard approved  
Δ : Conforms to safety standard

Power Module

# PH-SERIES

## Product lineup

Model name		Output voltage	Output current	Output power	UL	CSA	EN
PH300F48 (48Vin)	PH300F48-2	2V	60A	120W	○	○	○
	PH300F48-3	3V	60A	180W	○	○	○
	PH300F48-5	5V	60A	300W	○	○	○
	PH300F48-12	12V	25A	300W	○	○	○
	PH300F48-15	15V	20A	300W	○	○	○
	PH300F48-24	24V	12.6A	302.4W	○	○	○
PH300F48-28	28V	10.8A	302.4W	○	○	○	
PH50S110 (110Vin)	PH50S110-5	5V	10A	50W	○	○	○
	PH50S110-12	12V	4.2A	50.4W	○	○	○
	PH50S110-15	15V	3.4A	51W	○	○	○
	PH50S110-24	24V	2.1A	50.4W	○	○	○
	PH50S110-28	28V	1.8A	50.4W	○	○	○
PH75S110 (110Vin)	PH75S110-5	5V	15A	75W	○	○	○
	PH75S110-12	12V	6.3A	75.6W	○	○	○
	PH75S110-15	15V	5A	75W	○	○	○
	PH75S110-24	24V	3.2A	76.8W	○	○	○
	PH75S110-28	28V	2.7A	75.6W	○	○	○
PH75F110 (110Vin)	PH75F110-2	2V	15A	30W	○	○	○
	PH75F110-3	3V	15A	45W	○	○	○
	PH75F110-5	5V	15A	75W	○	○	○
	PH75F110-12	12V	6.3A	75.6W	○	○	○
	PH75F110-15	15V	5A	75W	○	○	○
PH150S110 (110Vin)	PH150S110-24	24V	3.2A	76.8W	○	○	○
	PH150S110-28	28V	2.7A	75.6W	○	○	○
	PH150S110-5	5V	30A	150W	○	○	○
	PH150S110-12	12V	12.5A	150W	○	○	○
	PH150S110-15	15V	10A	150W	○	○	○
PH150F110 (110Vin)	PH150F110-2	2V	30A	60W	○	○	○
	PH150F110-3	3V	30A	90W	○	○	○
	PH150F110-5	5V	30A	150W	○	○	○
	PH150F110-12	12V	12.5A	150W	○	○	○
	PH150F110-15	15V	10A	150W	○	○	○
PH300F110 (110Vin)	PH300F110-24	24V	6.3A	151.2W	○	○	○
	PH300F110-28	28V	5.4A	151.2W	○	○	○
	PH300F110-2	2V	60A	120W	○	○	○
	PH300F110-3	3V	60A	180W	○	○	○
	PH300F110-5	5V	60A	300W	○	○	○

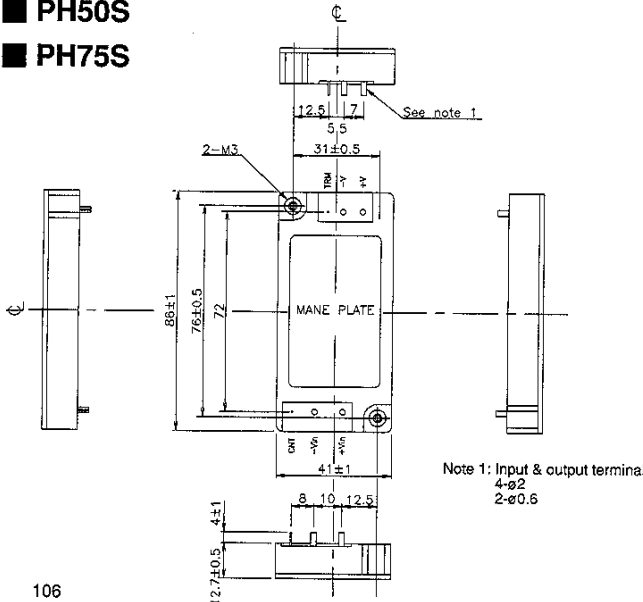
Model name		Output voltage	Output current	Output power	UL	CSA	EN
PH50S280 (280Vin)	PH50S280-3.3	3.3V	10A	33W	△	△	△
	PH50S280-5	5V	10A	50W	○	○	○
	PH50S280-12	12V	4.2A	50.4W	○	○	○
	PH50S280-15	15V	3.4A	51W	○	○	○
	PH50S280-24	24V	2.1A	50.4W	○	○	○
	PH50S280-28	28V	1.8A	50.4W	○	○	○
PH75S280 (280Vin)	PH75S280-3.3	3.3V	15A	49.5W	△	△	△
	PH75S280-5	5V	15A	75W	○	○	○
	PH75S280-12	12V	6.3A	75.6W	○	○	○
	PH75S280-15	15V	5A	75W	○	○	○
	PH75S280-24	24V	3.2A	76.8W	○	○	○
	PH75S280-28	28V	2.7A	75.6W	○	○	○
PH75F280 (280Vin)	PH75F280-2	2V	15A	30W	○	○	○
	PH75F280-3	3V	15A	45W	○	○	○
	PH75F280-5	5V	15A	75W	○	○	○
	PH75F280-12	12V	6.3A	75.6W	○	○	○
	PH75F280-15	15V	5A	75W	○	○	○
	PH75F280-24	24V	3.2A	76.8W	○	○	○
PH100S280 (280Vin)	PH100S280-3.3	3.3V	20A	66W	△	△	△
	PH100S280-5	5V	20A	100W	○	○	○
	PH100S280-12	12V	8.4A	100.8W	○	○	○
	PH100S280-15	15V	6.7A	100.5W	○	○	○
	PH100S280-24	24V	4.2A	100.8W	○	○	○
	PH100S280-28	28V	3.6A	100.8W	○	○	○
PH150S280 (280Vin)	PH150S280-3.3	3.3V	30A	99W	△	△	△
	PH150S280-5	5V	30A	150W	○	○	○
	PH150S280-12	12V	12.5A	150W	○	○	○
	PH150S280-15	15V	10A	150W	○	○	○
	PH150S280-24	24V	6.3A	151.2W	○	○	○
	PH150S280-28	28V	5.4A	151.2W	○	○	○
PH150F280 (280Vin)	PH150F280-2	2V	30A	60W	○	○	○
	PH150F280-3	3V	30A	90W	○	○	○
	PH150F280-5	5V	30A	150W	○	○	○
	PH150F280-12	12V	12.5A	150W	○	○	○
	PH150F280-15	15V	10A	150W	○	○	○
	PH150F280-24	24V	6.3A	151.2W	○	○	○
PH300F280 (280Vin)	PH300F280-2	2V	60A	120W	○	○	○
	PH300F280-3	3V	60A	180W	○	○	○
	PH300F280-5	5V	60A	300W	○	○	○
	PH300F280-12	12V	25A	300W	○	○	○
	PH300F280-15	15V	20A	300W	○	○	○
	PH300F280-24	24V	12.6A	302.4W	○	○	○
PH300F280-28	28V	10.8A	302.4W	○	○	○	

- Request customer specification for further details of specifications, outline, characteristics, etc. Read the instruction manual before usage.
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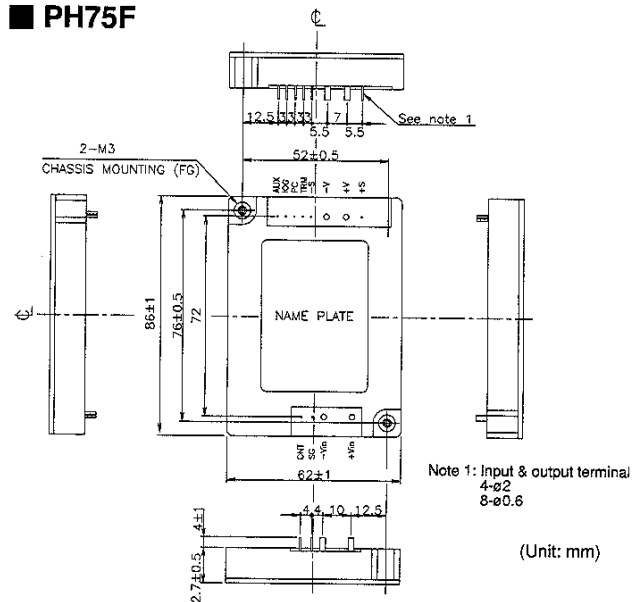
○ : Safety standard approved  
△ : Conforms to safety standard

### PH50S

### PH75S



### PH75F

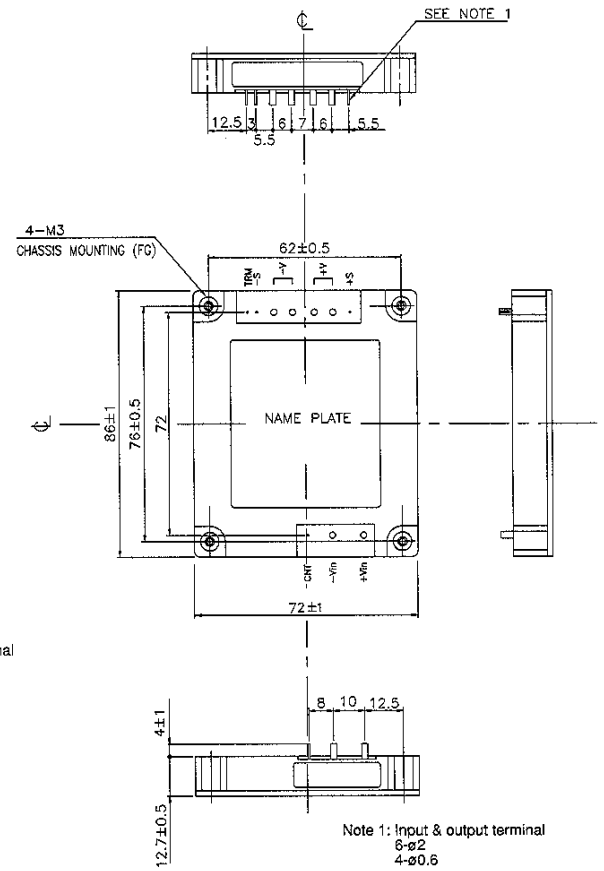
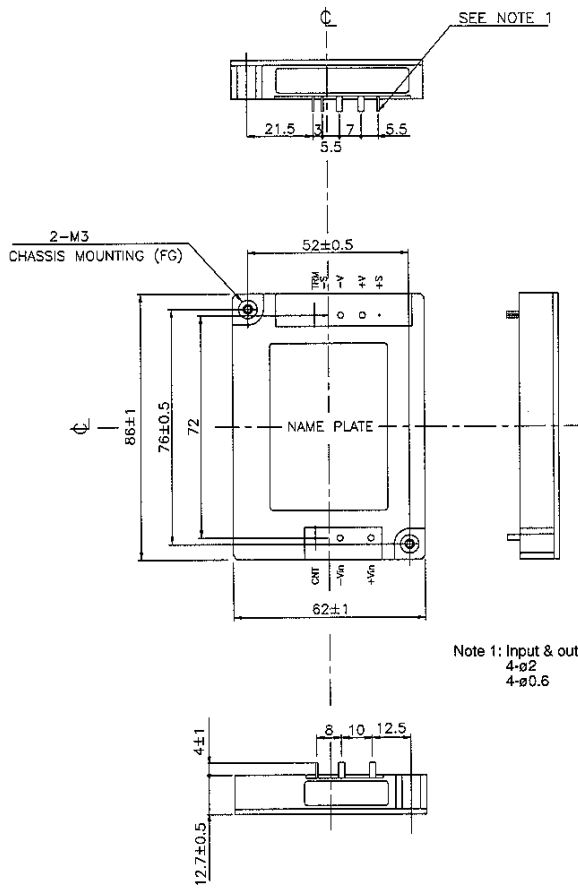


(Unit: mm)

# PH-SERIES

## PH100S

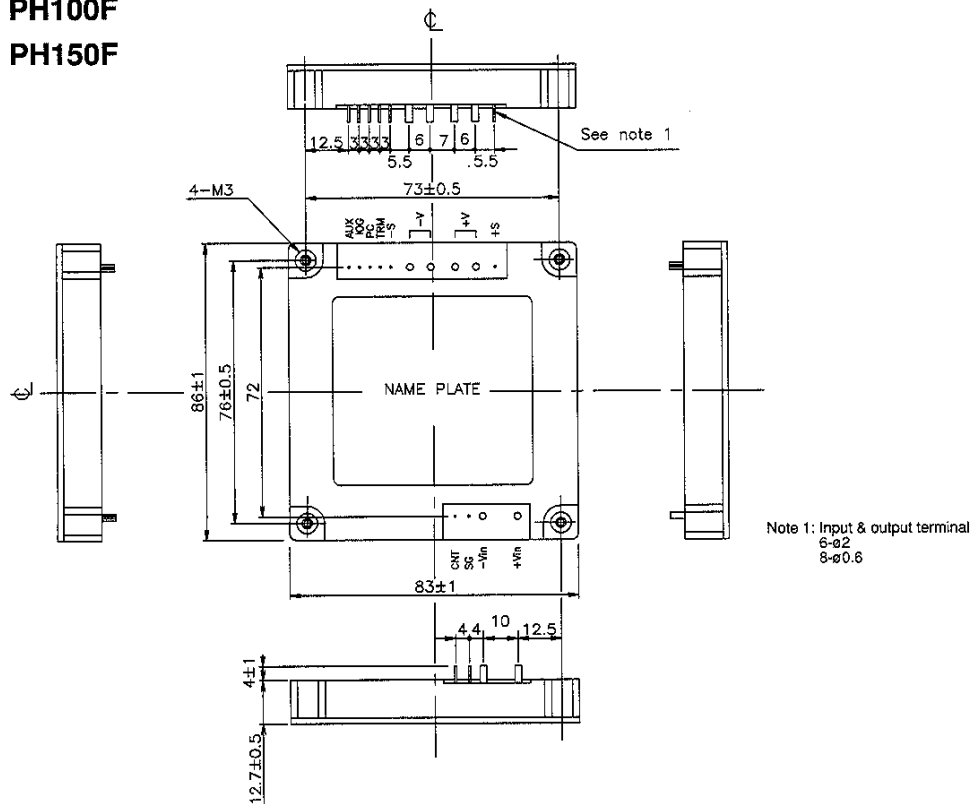
## PH150S



Power Module

## PH100F

## PH150F

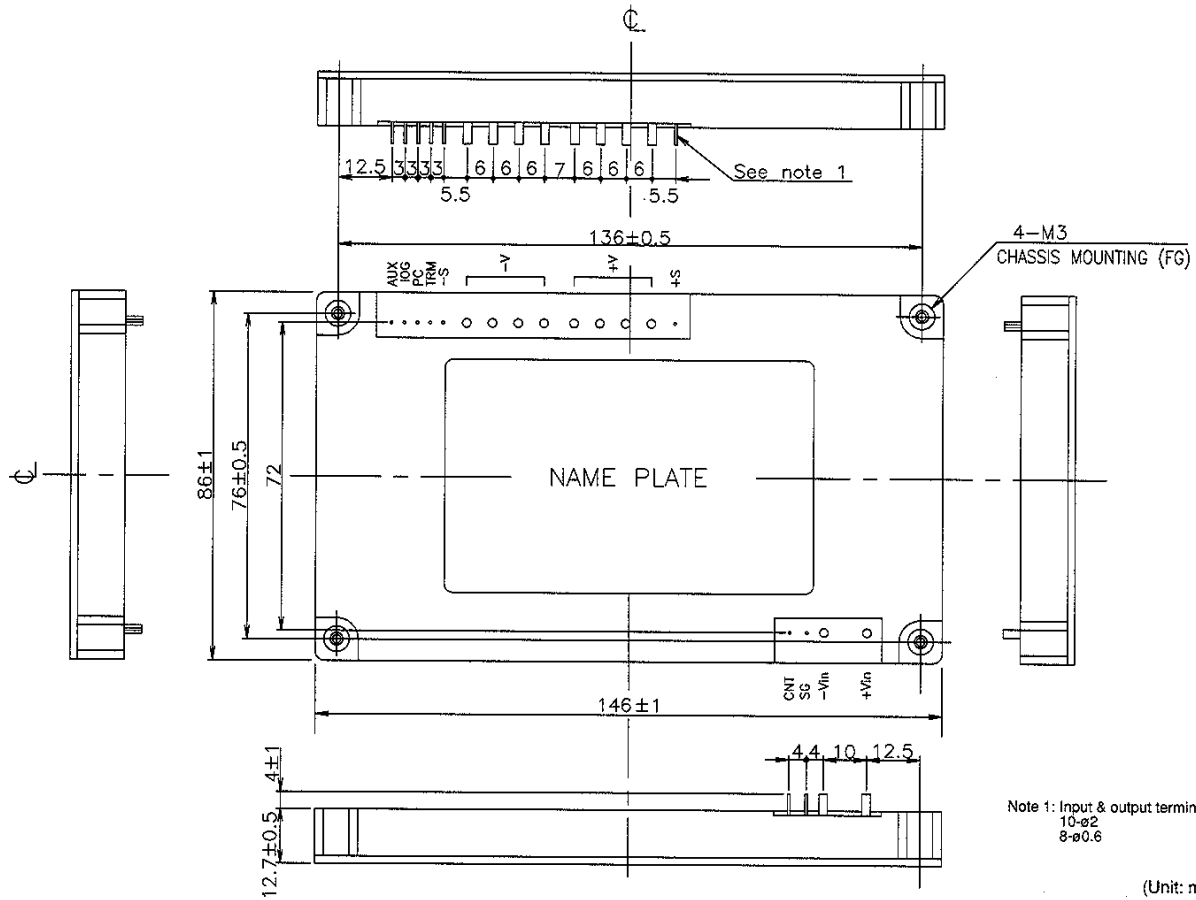


(Unit: mm)

# PH-SERIES

■ PH300F

Power Module



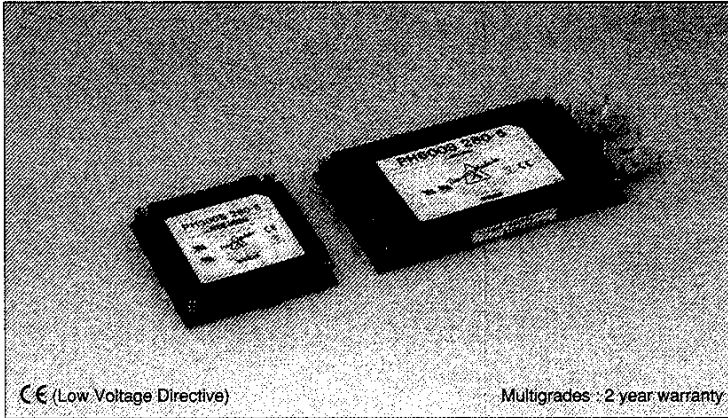
(Unit: mm)



# PH300S/PH600S-SERIES

Single output 300W ~ 600W  
DC-DC power module

**LAMBDA**  
DENSEI-LAMBDA



CE (Low Voltage Directive)

Multigrades - 2 year warranty

## Model name

# PH 600 S 280-5

Output power      Nominal input voltage  
Name of series      Function      Nominal output voltage  
S: Simple function

## Features

- CE marking (Low Voltage Directive)
- Compact DC-DC power module  
Large power 300W/600W  
High power density: 61.6W/inch<sup>3</sup> (600W type)  
600W type: 146 × 86 × 12.7mm  
300W type: 83 × 86 × 12.7mm
- Wide baseplate temperature: -20 ~ +100°C  
Conduction cooling
- Wide input voltage range  
DC48V input: DC36 ~ 76V, DC280V input: DC200 ~ 400V
- 2 year warranty

## Specifications

1. Input voltage range	PH300S48(300W type): DC36 ~ 76V PH300S280(300W type)/PH600S280(600W type): DC200 ~ 400V
2. Output voltage range	± 10% (12V ~ 28V types), -10 ~ +20% (3.3V, 5V and 48V types) (by TRM terminal and external resistor) Output voltage range is different according to input voltage.
3. Line regulation	0.4%, within nominal input voltage range at constant load (3.3V output: 20mV)
4. Load regulation	0.8%, no load to full load at constant input voltage (3.3V output: 40mV)
5. Cooling	Conduction cooling (Heatsink & airflow has to be chosen according to instruction manual)
6. Operating ambient temperature	Baseplate temperature: -20 ~ +100°C (Output derating is different according to condition) Ambient temperature: above -20°C
7. Withstand voltage	DC48V input/input to output: 1.5kVAC, Input to baseplate: 1.5kVAC for 1 min. DC280V input/input to output: 3.0kVAC, Input to baseplate: 2.5kVAC for 1 min.
8. Safety standard	Approved by UL1950 , CSA950  (C-UL) and EN60950  (BSI)
9. Functions	Over voltage protection (Can be reset by external signal), Over current protection, Thermal protection Remote sensing, Remote on/off control, Inverter good signal (IOG terminal) CS terminal (Load current balancing is possible with external control circuit under parallel operation)

## Product lineup

	Model name	Output voltage	Output current	Output power	UL	CSA	EN
PH300S48 (input 48VDC)	PH300S-48-3.3	3.3V	50A	165W	○	○	○
	PH300S-48-5	5V	50A	250W	○	○	○
	PH300S-48-12	12V	25A	300W	○	○	○
	PH300S-48-15	15V	20A	300W	○	○	○
	PH300S-48-24	24V	12.6A	302.4W	○	○	○
	PH300S-48-28	28V	10.8A	302.4W	○	○	○
	PH300S-48-48	48V	6.3A	302.4W	○	○	○
PH300S280 (input 280VDC)	PH300S-280-3.3	3.3V	50A	165W	○	○	○
	PH300S-280-5	5V	50A	250W	○	○	○
	PH300S-280-12	12V	25A	300W	○	○	○
	PH300S-280-15	15V	20A	300W	○	○	○
	PH300S-280-24	24V	12.5A	300W	○	○	○
	PH300S-280-28	28V	10.8A	302.4W	○	○	○
	PH300S-280-48	48V	6.3A	302.4W	○	○	○
PH600S280 (input 280VDC)	PH600S-280-3.3	3.3V	100A	330W	○	○	○
	PH600S-280-5	5V	100A	500W	○	○	○
	PH600S-280-12	12V	50A	600W	○	○	○
	PH600S-280-15	15V	40A	600W	○	○	○
	PH600S-280-24	24V	25A	600W	○	○	○
	PH600S-280-28	28V	21.5A	602W	○	○	○
	PH600S-280-48	48V	12.5A	600W	○	○	○

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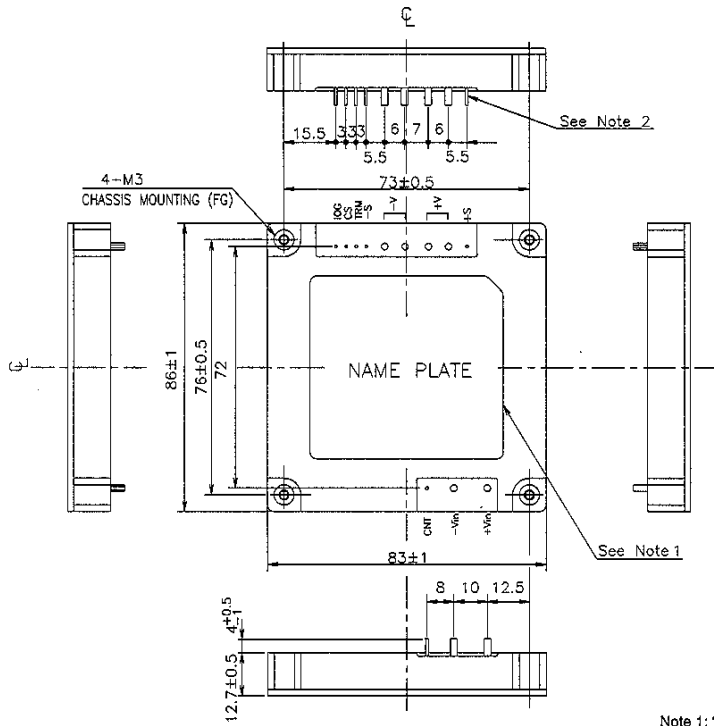
○ : Safety standard approved  
△ : Conforms to safety standard

Power Module

# PH300S/PH600S-SERIES

## PH300S

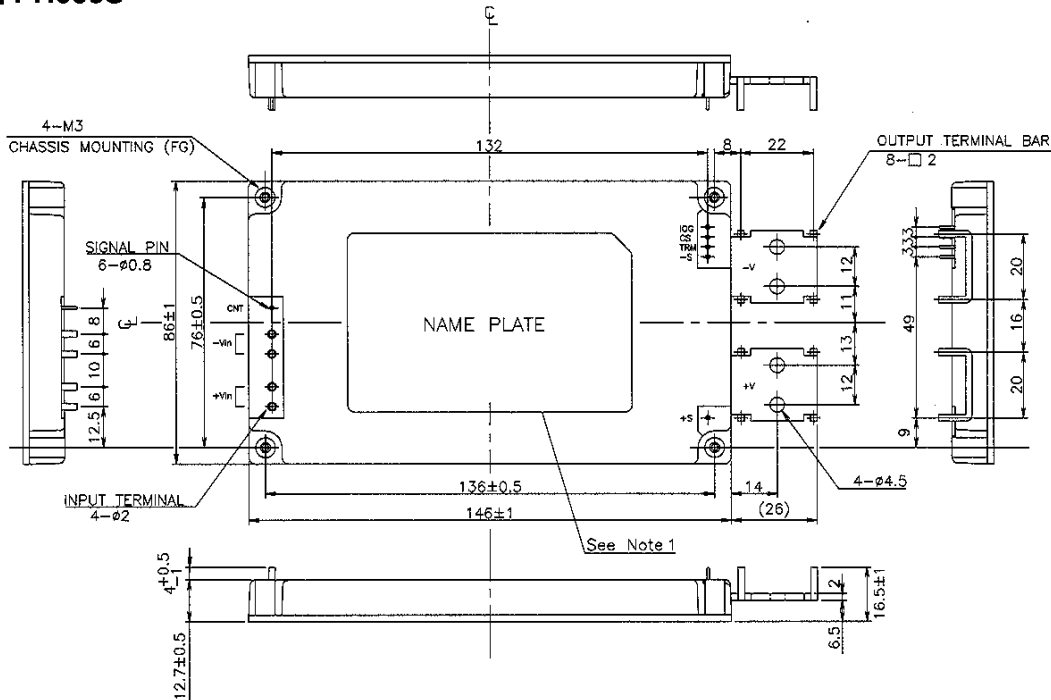
Power Module



(Unit: mm)

Note 1: \*Model name, Input voltage range, Nominal output voltage, Maximum output current and country of manufacture are shown here in accordance  
 Note 2: Input & output terminal.....6-ø2  
 6-ø8

## PH600S



(Unit: mm)

Note 1: \*Model name, input voltage range, Nominal output voltage, Maximum output current and country of manufacture are shown here in accordance