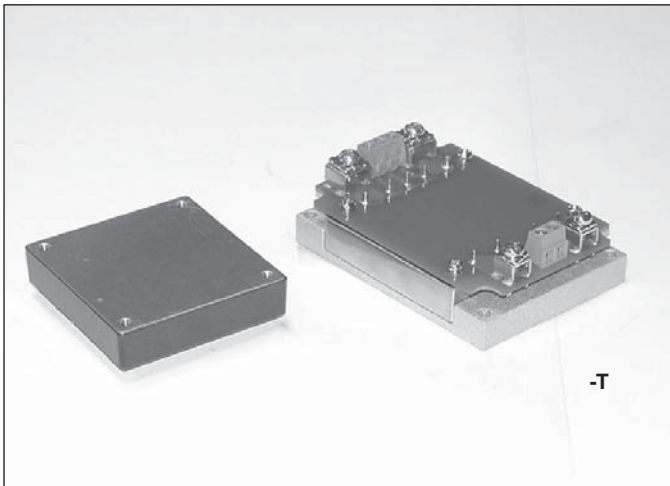


## HAE75W SERIES

DC/DC Single Output: 75 Watts

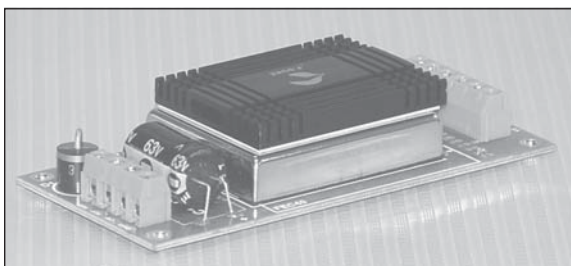


### Features

- 4:1 wide input range 9-36V & 18-75V
- Single output 75 watts
- Industry Standard ½ brick footprint
- High efficiency up to 90%
- Regulated output and short circuit protection
- 2250VDC isolation
- Zero load operation
- Output voltage trim
- Six-sided continuous shield
- Overload and over voltage protection
- High operating temperature +88°C
- Remote ON/OFF
- Under voltage lockout

### General Specifications

<b>Input Voltage:</b>	24VDC (9 - 36) 48VDC (18 - 75)
<b>Efficiency:</b>	Model dependant 87 - 90%
<b>Switch Frequency:</b>	300KHz
<b>Voltage Trim:</b>	+10% to -20% external voltage trim
<b>Under Voltage Shutdown:</b>	7.5V for 24V input models, 16V for 48V input models
<b>Minimum Load:</b>	Zero
<b>Load Regulation:</b>	Typically ±0.3%
<b>Protection:</b>	Short circuit continuous Hiccup mode Over voltage protection Under voltage lockout Over temperature protection
<b>Isolation:</b>	2250VDC
<b>EMC:</b>	EN55022 Class A
<b>Immunity:</b>	EN61000-4
<b>Remote ON/OFF:</b>	Negative logic control - standard Positive logic control - option
<b>Case Material:</b>	Steel
<b>Operating Temp:</b>	-40°C to +82°C (with derating), with suitable heatsink. Consult detailed information on website. 105°C maximum case temperature.
<b>Dimensions &amp; Weight:</b>	61 x 57.9 x 12.7mm 97g



KAE option

### Description

The **HAE75W** series DC/DC converters are a new range of **High Power Density** modules, specially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique profile application. Cooling is via the module's baseplate, which can operate up to +105°C and with five heatsink options to choose from, it provides total flexibility in the final configuration of the system.

Two input options with 4:1 range and terminal block option, provide added flexibility for a wide range of industrial and Telecom applications.

External voltage trim/adjustment is an added feature that allows for fine tuning of system voltage settings.

**For more detailed information on the HAE75W series,  
visit our website**

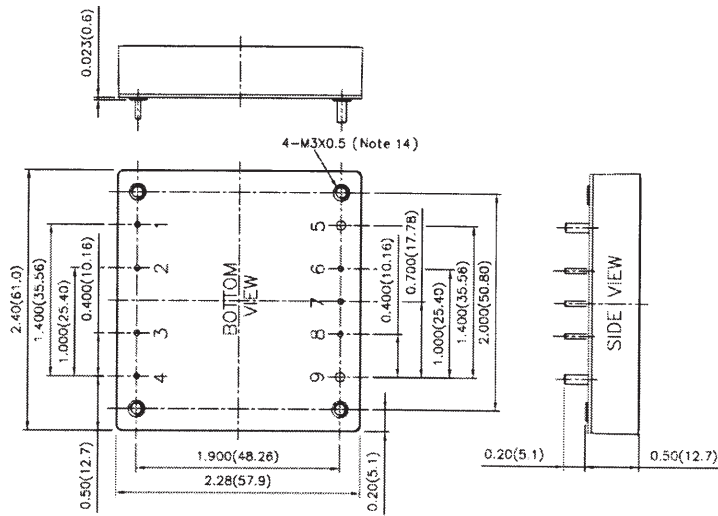
### Options

<b>Remote ON/OFF:</b>	For positive logic control add -P (HAE75-24S05W-P)
<b>Heatsinks:</b>	Various heatsinks available, see table
<b>T:</b>	Terminal block connector option add-T (HAE75 - 24S12W-T)
<b>KAE:</b>	Stand alone units with output voltage trim and heat sink

Model	Input V	Output	
		V	A
HAE75 - 24S05W	24V	5V	15.0A
HAE75 - 24S12W		12V	6.3A
HAE75 - 24S15W		15V	5.0A
HAE75 - 24S24W		24V	3.2A
HAE75 - 24S28W		28V	2.7A
HAE75 - 24S48W		48V	1.6A
HAE75 - 48S05W	48V	5V	15.0A
HAE75 - 48S12W		12V	6.3A
HAE75 - 48S15W		15V	5.0A
HAE75 - 48S24W		24V	3.2A
HAE75 - 48S28W		28V	2.7A
HAE75 - 48S48W		48V	1.6A

# HAE75W SERIES

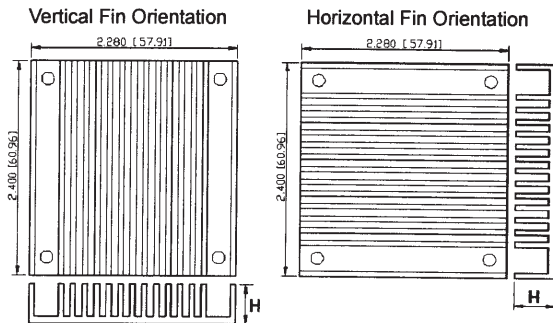
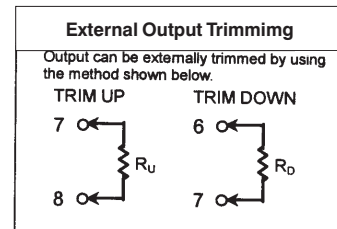
DC/DC Single Output: 75 Watts



Pin 1,2,3,4,6,7,8. DIA. 0.040 (1.02mm)  
 Pin 5,9. DIA. 0.080 (2.03mm)  
 All dimensions in inches (mm)  
 Tolerance :x.xx±0.02 (x.x±0.5)  
 x.xxx±0.01 (x.xxx±0.25)  
 Pin pitch tolerance ±0.01 (0.25)  
 Pin dimension tolerance ±0.004(0.1)

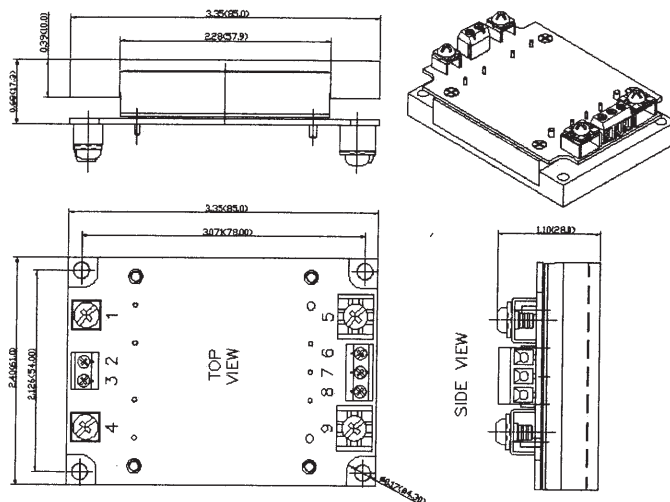
Product Options Table	
Option	Suffix
Negative remote ON/OFF logic 0.20" pin length (standard)	-
Negative remote ON/OFF logic 0.145" pin length	-L
Negative remote ON/OFF logic 0.11" pin length	-K
Positive remote ON/OFF logic 0.20" pin length	-P
Positive remote ON/OFF logic 0.145" pin length	-S
Positive remote ON/OFF logic 0.11" pin length	-M

Pin Connection		
PIN	Define	Diameter
1	- INPUT	0.04 Inches
2	CASE	0.04 Inches
3	CTRL	0.04 Inches
4	+ INPUT	0.04 Inches
5	- OUTPUT	0.08 Inches
6	- SENSE	0.04 Inches
7	TRIM	0.04 Inches
8	+ SENSE	0.04 Inches
9	+ OUTPUT	0.08 Inches



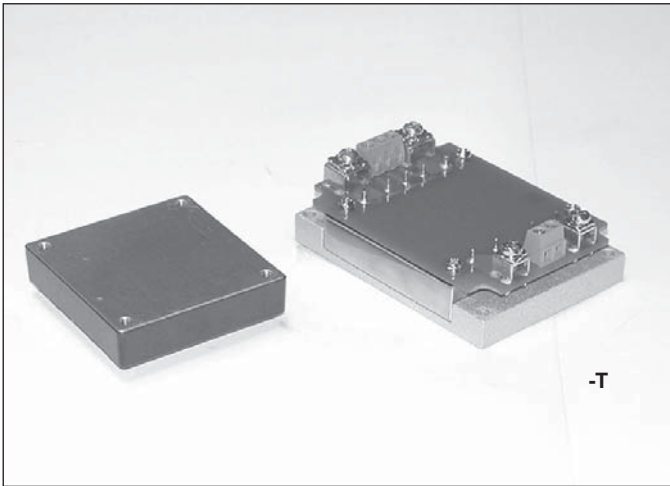
Pin Orientation		P/N
Vertical	H=0.240(6.10)	7G-0023A-F
	H=0.450(11.43)	7G-0021A-F
Horizontal	H=0.240(6.10)	7G-0022A-F
	H=0.450(11.43)	7G-0024A-F

## Option : Terminal Block (Suffix-T)



# HAE100 SERIES

DC/DC Single Output: 100 Watts

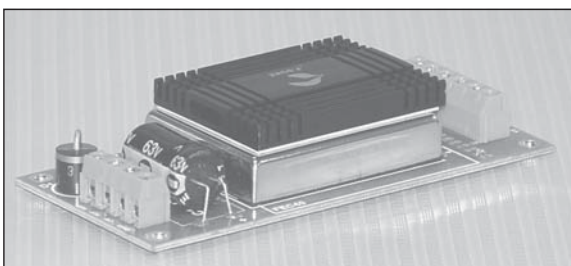


## Features

- 2:1 wide input range 9-36V & 18-75V
- Single output 100 watts
- Industry Standard ½ brick footprint
- High efficiency up to 90%
- Regulated output and short circuit protection
- 2250VDC isolation
- Zero load operation
- Output voltage trim
- Six-sided continuous shield
- Overload and over voltage protection
- High operating temperature +88°C
- Remote ON/OFF
- Under voltage lockout

## General Specifications

<b>Input Voltage:</b>	24VDC (18 - 36) 48VDC (36 - 75)
<b>Efficiency:</b>	Model dependant 87 - 90%
<b>Switch Frequency:</b>	300KHz
<b>Voltage Trim:</b>	+10% to -20% external voltage trim
<b>Under Voltage Shutdown:</b>	16V for 24V input models, 34V for 48V input models
<b>Minimum Load:</b>	Zero
<b>Load Regulation:</b>	15 - 72mV model dependent
<b>Protection:</b>	Short circuit continuous Hiccup mode Over voltage protection Under voltage lockout Over temperature protection
<b>Isolation:</b>	2250VDC
<b>EMC:</b>	EN55022 Class A
<b>Immunity:</b>	EN61000-4
<b>Remote ON/OFF:</b>	Negative logic control - standard Positive logic control - option
<b>Case Material:</b>	Steel
<b>Operating Temp:</b>	-40°C to +82°C (with derating), with suitable heatsink. Consult detailed information on website. 105°C maximum case temperature.
<b>Dimensions &amp; Weight:</b>	61 x 57.9 x 12.7mm 97g



KAE option

## Description

The **HAE100** series DC/DC converters are a new range of **High Power Density** modules, specially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique profile application. Cooling is via the module's baseplate, which can operate up to +105°C and with five heatsink options to choose from, it provides total flexibility in the final configuration of the system.

With a 2:1 input range and terminal block option, provide added flexibility for a wide range of industrial and Telecom applications.

External voltage trim/adjustment is an added feature that allows for fine tuning of system voltage settings.

**For more detailed information on the HAE100 series, visit our website**

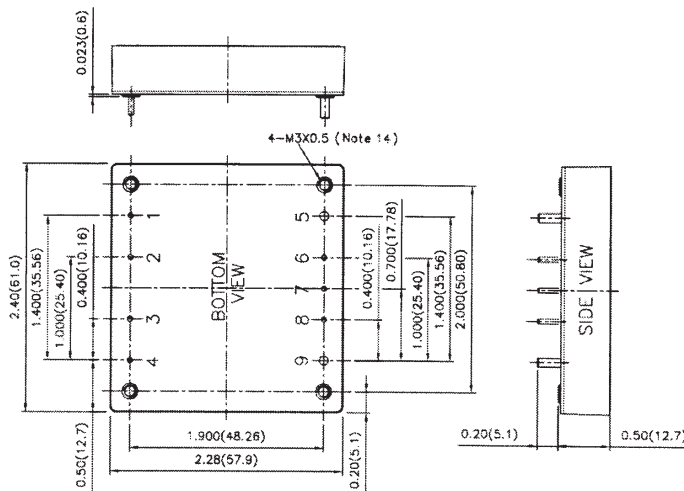
## Options

<b>Remote ON/OFF:</b>	For positive logic control add -P (HAE100-24S05-P)
<b>Heatsinks:</b>	Various heatsinks available, see table
<b>T:</b>	Terminal block connector option add-T (HAE100-24S12-T)
<b>KAE:</b>	Stand alone units with output voltage trim and heat sink

Model	Input V	Output	
		V	A
HAE100 - 24S05	24V	5V	20.0A
HAE100 - 24S12		12V	8.4A
HAE100 - 24S15		15V	6.7A
HAE100 - 24S24		24V	4.2A
HAE100 - 24S28		28V	3.6A
HAE100 - 24S48		48V	2.1A
HAE100 - 48S05	48V	5V	20.0A
HAE100 - 48S12		12V	8.4A
HAE100 - 48S15		15V	6.7A
HAE100 - 48S24		24V	4.2A
HAE100 - 48S28		28V	3.6A
HAE100 - 48S48		48V	2.1A

# HAE100 SERIES

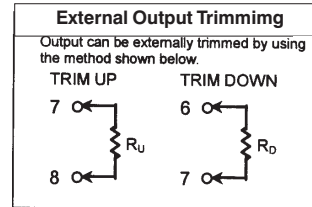
DC/DC Single Output: 75 Watts



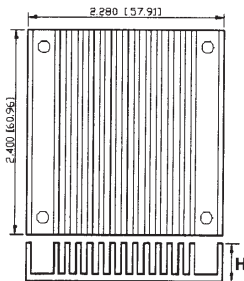
Pin 1,2,3,4,6,7,8. DIA. 0.040 (1.02mm)  
 Pin 5,9. DIA. 0.080 (2.03mm)  
 All dimensions in inches (mm)  
 Tolerance :x.xx±0.02 (x.xx±0.5)  
 x.xxx±0.01 (x.xx±0.25)  
 Pin pitch tolerance ±0.01 (0.25)  
 Pin dimension tolerance ±0.004(0.1)

Product Options Table	
Option	Suffix
Negative remote ON/OFF logic 0.20" pin length (standard)	-
Negative remote ON/OFF logic 0.145" pin length	-L
Negative remote ON/OFF logic 0.11" pin length	-K
Positive remote ON/OFF logic 0.20" pin length	-P
Positive remote ON/OFF logic 0.145" pin length	-S
Positive remote ON/OFF logic 0.11" pin length	-M

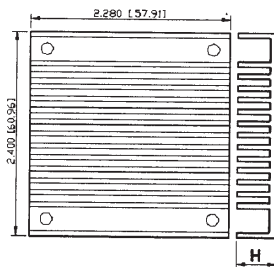
Pin Connection		
PIN	Define	Diameter
1	- INPUT	0.04 Inches
2	CASE	0.04 Inches
3	CTRL	0.04 Inches
4	+ INPUT	0.04 Inches
5	- OUTPUT	0.08 Inches
6	- SENSE	0.04 Inches
7	TRIM	0.04 Inches
8	+ SENSE	0.04 Inches
9	+ OUTPUT	0.08 Inches



Vertical Fin Orientation

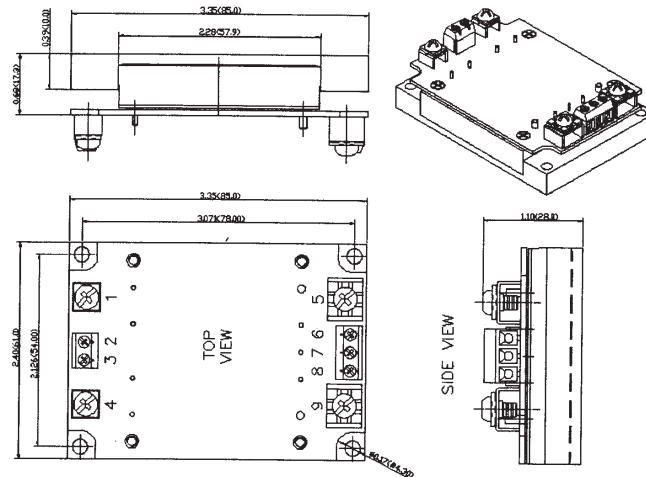


Horizontal Fin Orientation



Pin Orientation		P/N
Vertical	H=0.240(6.10)	7G-0023A-F
	H=0.450(11.43)	7G-0021A-F
Horizontal	H=0.240(6.10)	7G-0022A-F
	H=0.450(11.43)	7G-0024A-F

Option : Terminal Block (Suffix-T)



# PH SERIES

DC/DC Single Output: 50-300 Watts



## Features

- 24V, 48V, 110V and 300VDC input options
- Output power: 50W, 75W, 100W, 150W and 300W
- Wide output voltage trim 'F' series modules
- Wide Baseplate operating temperature -20°C to 85°C
- Parallel and N+1 redundancy operation 'F' series models
- Fully isolated and regulated output
- International safety approvals, CE marked
- OVP and overload protection
- Overtemperature protection
- Suitable for harsh environments

## General Specifications

<b>Input Voltage:</b>	<b>24VDC</b> (18 - 36) <b>48VDC</b> (36 - 72) <b>110VDC</b> (82 - 185) <b>280VDC</b> (200 - 400)
<b>Efficiency:</b>	Model dependent 68 - 90%
<b>Output Voltage:</b>	3.3V to 48VDC (refer to table)
<b>Output Voltage Trim:</b>	<b>F</b> series: -60% to +20% (2-3V ±20%) <b>S</b> series: ±10% (by external resistor network)
<b>Line Regulation:</b>	Typically 0.4%
<b>Load Regulation:</b>	Typically 0.8%
<b>Isolation:</b>	Input - Output 2500VAC/3000VAC
<b>Safety:</b>	UL60950, EN60950
<b>Protection:</b>	Constant current limiting Overvoltage protection Thermal protection
<b>Operating Temp:</b>	-20°C to +85°C Baseplate temperature
<b>Cooling:</b>	Conduction cooling via Baseplate
<b>Remote ON/OFF:</b>	Short = ON , Open = OFF
<b>Parallel Operation:</b>	F series models
<b>Inverter Good Signal:</b>	F series provides inverter good status

### Dimensions & Weight:

	L	W	H	W
PH50S	86	41	12.7mm	100gm
PH75S	86	41	12.7mm	100gm
PH100S	86	64	12.7mm	150gm
PH150S	86	72	12.7mm	150gm
PH75F	86	64	12.7mm	150gm
PH100F	86	83	12.7mm	180gm
PH150F	86	83	12.7mm	180gm
PH300F	86	146	12.7mm	250gm

## Description

The **PH** series DC/DC converters are a range of "**High Power Density**" modules, especially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique profile application.

Cooling is by the module's Baseplate, which can operate up to +85°C, providing design engineers with total flexibility in the final configuration of their system.

Wide output voltage trim/adjustment is an added feature that allows for a wide range of output voltage options.

'F' Series models allow for parallel operation and a wider output voltage.

**For more detailed information and application notes on PH Series, visit our website**

## Options

N/A

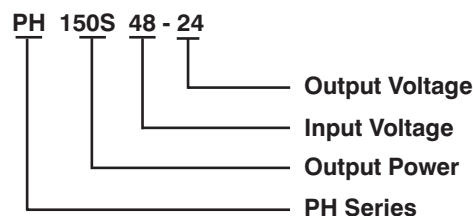
# PH SERIES

## DC/DC Single Output: 50 - 300 Watts

Model	Output		Power W
	V	A	
PH50S24 - 3.3	3.3V	10A	33W
PH50S24 - 5	5V	10A	50W
PH50S24 - 12	12V	4.2A	50.4W
PH50S24 - 15	15V	3.4A	51W
PH50S24 - 24	24V	2.1A	50.4W
PH50S24 - 28	28V	1.8A	50.4W
PH100F24 - 2	2V	20A	40W
PH100F24 - 3	3V	20A	60W
PH100F24 - 5	5V	20A	100W
PH100F24 - 12	12V	8.4A	100.8W
PH100F24 - 15	15V	6.7A	100.5W
PH100F24 - 24	24V	4.2A	100.8W
PH100F24 - 28	28V	3.6A	100.8W
PH300F24 - 28	28V	10.8A	302.4W
PH50S48 - 3.3	3.3V	10A	33W
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 - 3.3	3.3V	15A	49.5W
PH75S48 - 5	5V	15A	75W
P75S48 - 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
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
PH75F48 - 28	28V	2.7A	75.6W
PH100S48 - 3.3	3.3V	20A	66W
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
PH100S48 - 28	28V	3.6A	100.8W
PH150S48 - 3.3	3.3V	30A	99W
PH150S48 - 5	5V	30A	150W
PH150S48 - 12	12V	12.5A	150W
PH150S48 - 15	15V	10A	150W
PH150S48 - 24	24V	6.3A	151.2W
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 - 24	24V	6.3A	151.2W
PH150F48 - 28	28V	5.4A	151.2W

Model	Output		Power W
	V	A	
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 - 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 - 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 - 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
PH75F110 - 24	24V	3.2A	76.8W
PH75F110 - 28	28V	2.7A	75.6W
PH150S110 - 5	5V	30A	150W
PH150S110 - 12	12V	12.5A	150W
PH150S110 - 15	15V	10A	150W
PH150S110 - 24	24V	6.3A	151.2W
PH150S110 - 28	28V	5.4A	151.2W
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
PH150F110 - 24	24V	6.3A	151.2W
PH150F110 - 28	28V	5.4A	151.2W
PH300F110 - 2	2V	60A	120W
PH300F110 - 3	3V	60A	180W
PH300F110 - 5	5V	60A	300W
PH300F110 - 12	12V	25A	300W
PH300F110 - 15	15V	20A	300W
PH300F110 - 24	24V	12.6A	302.4W
PH300F110 - 28	28V	10.8A	302.4W

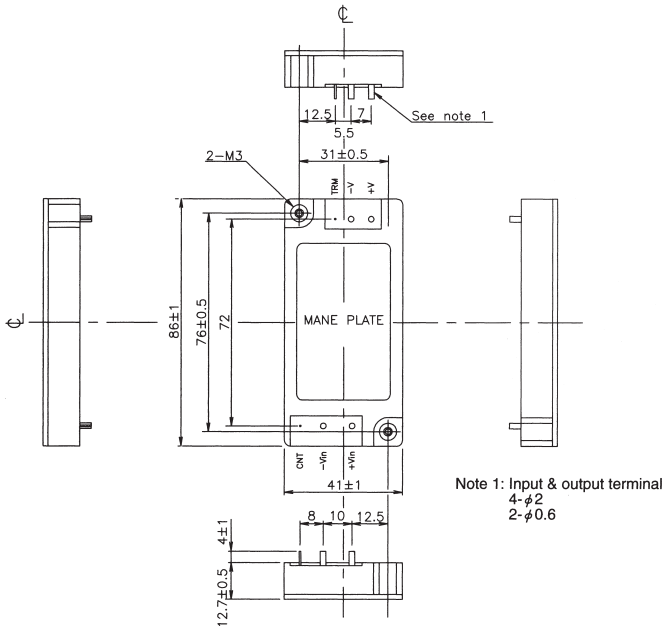
Model	Output		Power W
	V	A	
PH50S280 - 3.3	3.3V	10A	33W
PH50S280 - 5	5V	10A	50W
PH50S280 - 12	12V	4.2A	50.4W
PH50S280 - 15	15V	3.4A	51W
PH50S280 - 24	24V	2.1A	50.4W
PH50S280 - 28	28V	1.8A	50.4W
PH75S280 - 3.3	3.3V	15A	49.5W
PH75S280 - 5	5V	15A	75W
PH75S280 - 12	12V	6.3A	75.6W
PH75S280 - 15	15V	5A	75W
PH75S280 - 24	24V	3.2A	76.8W
PH75S280 - 28	28V	2.7A	75.6W
PH75F280 - 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
PH75F280 - 28	28V	2.7A	75.6W
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 - 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 - 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
PH150F280 - 28	28V	5.4A	151.2W
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



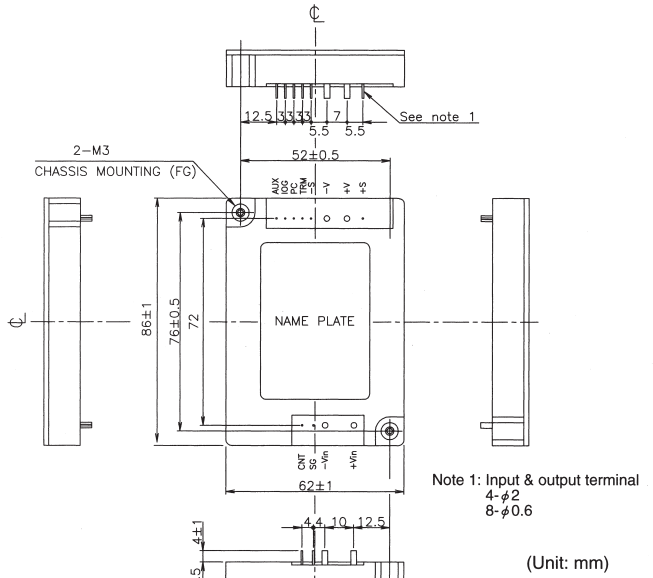
# PH SERIES

DC/DC Single Output: 50 - 300 Watts

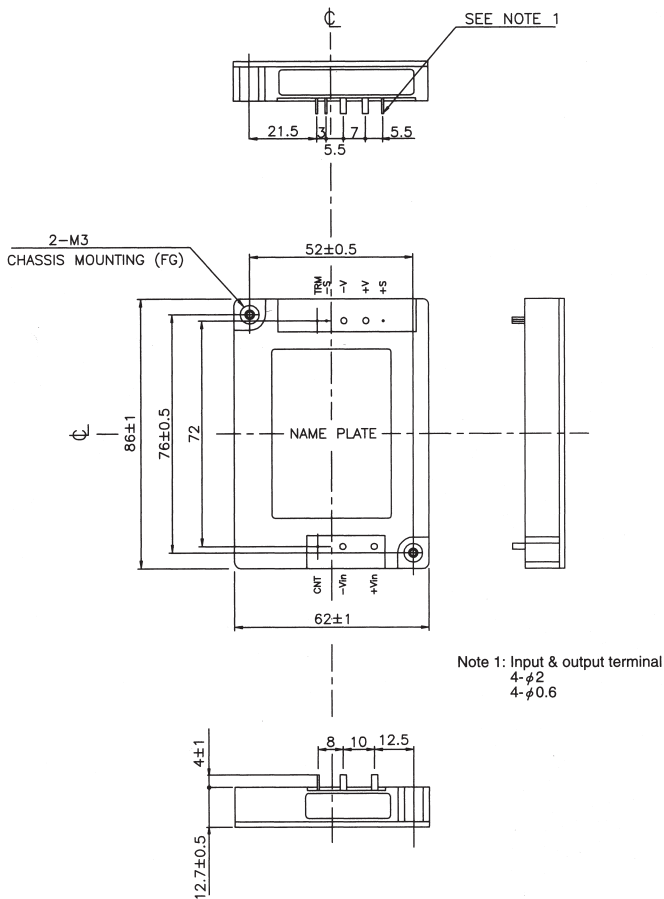
## PH50S & PH75S



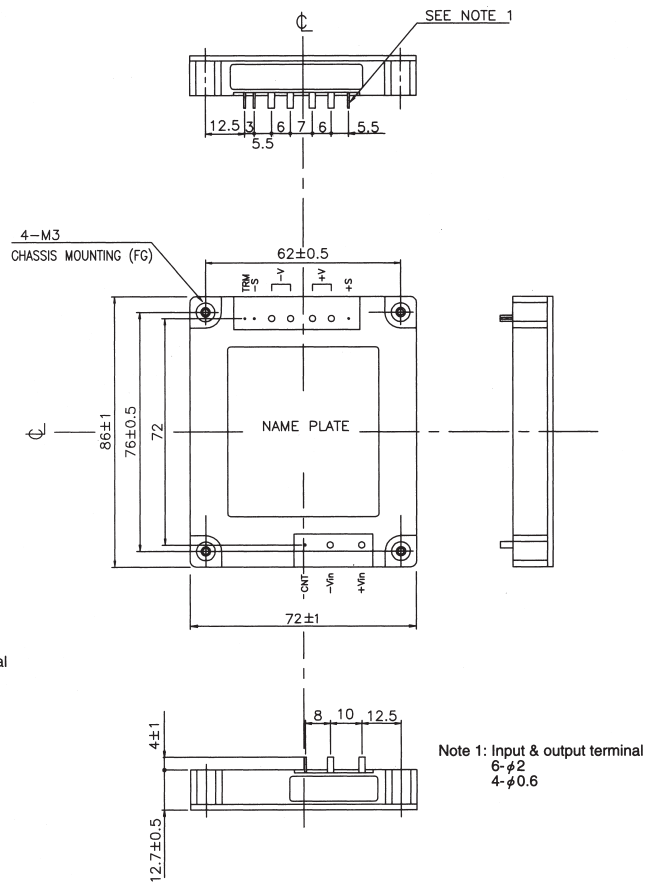
## PH75F



## PH100S



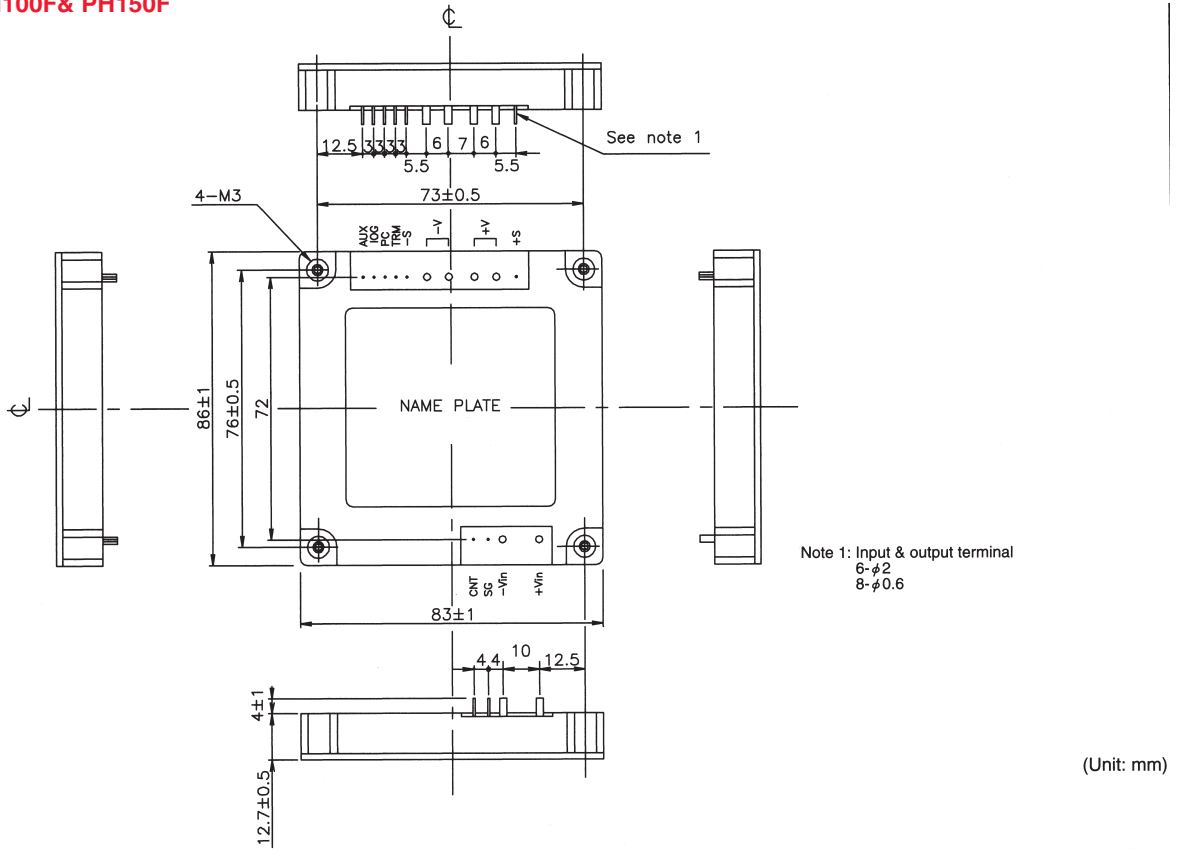
## PH150S



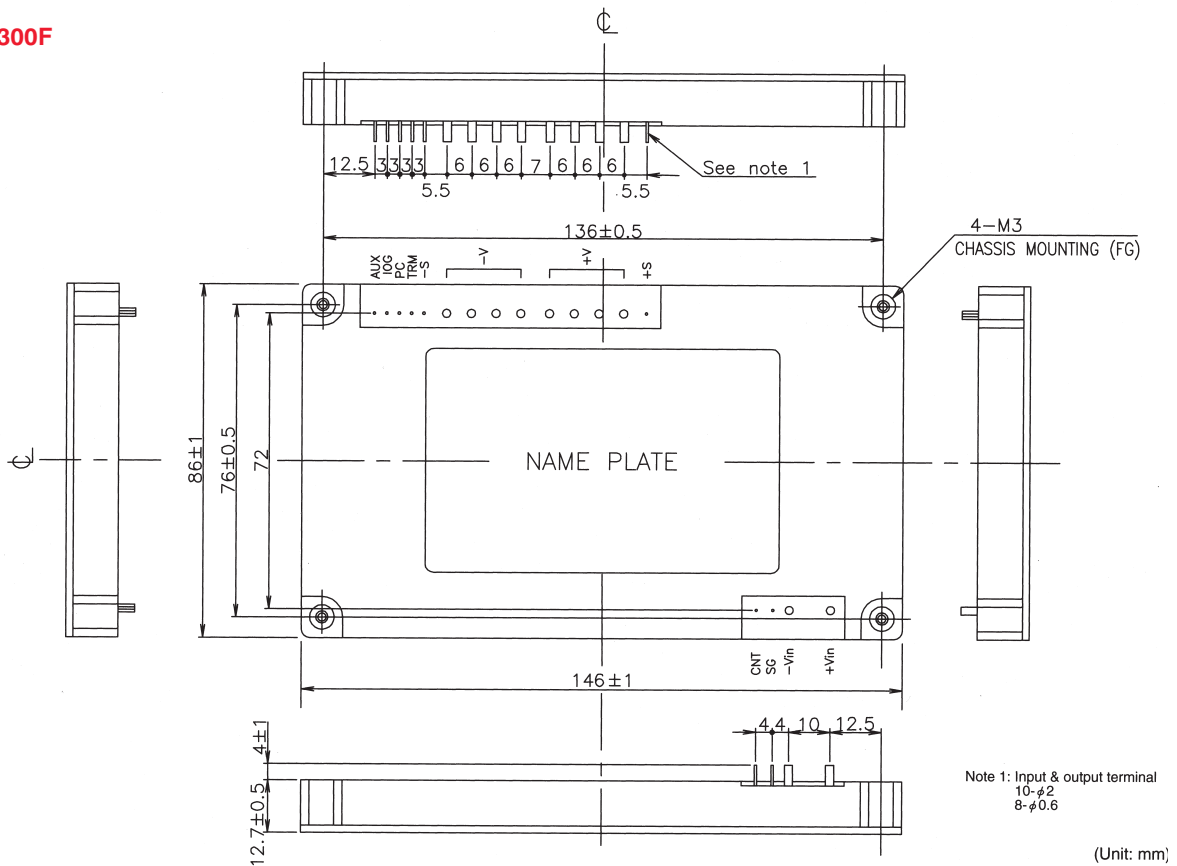
# PH SERIES

DC/DC Single Output: 50 - 300 Watts

## PH100F& PH150F

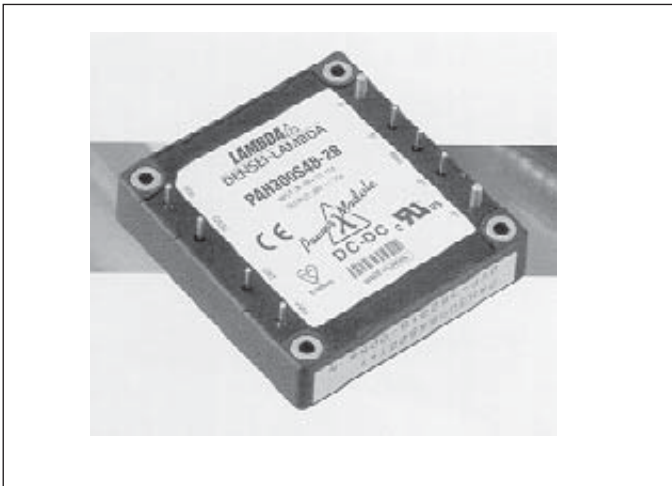


## PH300F



# PAH50-200 SERIES

DC/DC Single Output: 50 - 200 Watts



## Features

- Telecom 48V input voltage
- Five power levels 50 - 200 watts
- Output voltage options 3.3V - 28V
- Wide output external voltage trim
- -40°C to +100°C operation Baseplate temperature
- Fully isolated input - output
- Overload and overvoltage protection
- Safety approvals and CE marked
- EMC: EN55022, Immunity to EN61000-4
- High efficiency up to 90%
- Industry standard Half Brick
- Suitable for customer designed power supplies

## General Specifications

<b>Input Voltage:</b>	48VDC (36 - 76)
<b>Efficiency:</b>	Model dependent 80 - 90%
<b>Output Voltage:</b>	3.3 - 28VDC (refer to table)
<b>Output Voltage Trim:</b>	PAH50 - 150: 2.5/3.3V: $\pm 10\%$ 5V: -40% - +15%, 12.28V: -40% - +10% PAH200: -40% - +10%
<b>Line Regulation:</b>	Typically 0.4%
<b>Load Regulation:</b>	Typically 0.8%
<b>Isolation:</b>	Input - output: 1.5K VAC
<b>Safety:</b>	UL60950, EN60950
<b>Protection:</b>	Constant current limiting Overvoltage protection Thermal protection
<b>Operating Temp:</b>	-40°C to +100°C Baseplate temperature
<b>Cooling:</b>	Conduction cooling via Baseplate
<b>Remote ON/OFF:</b>	ON/OFF Control minus logic. OVP manual reset
<b>Parallel Operation:</b>	No
<b>Dimensions &amp; Weight:</b>	61 x 57.9 x 12.7mm 90 - 100g

## Description

The **PAH50-200** series DC/DC converters are a range of “**High Power Density**” modules, specially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique mechanical profile requirements.

Cooling is via the module’s base plate, which can operate up to +100°C, providing design engineers with total flexibility in the final configuration of their system.

Output voltage trim/adjustment is an added feature that allows for a wide range of output voltage options.

- **For more detailed information and application notes on the PAH50-200 series, visit our website.**

## Options

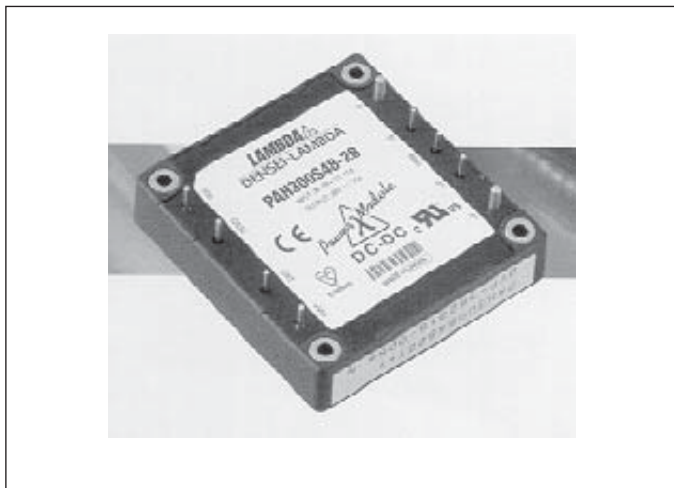
- P:** ON/OFF: Control plus logic, OVP manual reset
- V:** ON/OFF: Control minus logic, OVP auto recovery
- PV:** ON/OFF: Control plus logic, OVP auto recovery

Model	Output		Power W
	V	A	
PAH50S48 - 2.5	2.5V	11.7A	29.25W
PAH50S48 - 3.3	3.3V	11.7A	38.61W
PAH50S48 - 5	5V	10.0A	50.0W
PAH50S48 - 12	12V	4.2A	50.0W
PAH50S48 - 15	15V	3.4A	51.0W
PAH50S48 - 24	24V	2.1A	50.4W
PAH50S48 - 28	28V	1.8A	50.4W
PAH75S48 - 2.5	2.5V	17.5A	43.75W
PAH75S48 - 3.3	3.3V	17.5A	57.75W
PAH75S48 - 5	5V	15A	75.0W
PAH75S48 - 12	12V	6.3A	75.6W
PAH75S48 - 15	15V	5A	75.0W
PAH75S48 - 24	24V	3.2A	76.8W
PAH75S48 - 28	28V	2.7A	75.6W

Model	Output		Power W
	V	A	
PAH100S48 - 2.5	2.5V	23.4A	58.5W
PAH100S48 - 3.3	3.3V	23.4A	77.22W
PAH100S48 - 5	5V	20A	100.0W
PAH100S48 - 12	12V	8.4A	100.8W
PAH100S48 - 15	15V	6.7A	100.5W
PAH100S48 - 24	24V	4.2A	100.8W
PAH100S48 - 28	28V	3.6A	100.5W
PAH150S48 - 2.5	2.5V	35.0A	87.5W
PAH150S48 - 3.3	3.3V	35.0A	115.5W
PAH150S48 - 5	5V	30.0A	150.0W
PAH150S48 - 12	12V	12.5A	150.0W
PAH150S48 - 15	15V	10.0A	150.0W
PAH150S48 - 24	24V	6.3A	151.2W
PAH150S48 - 28	28V	5.4A	151.2W
PAH200S48 - 12	12V	16.7A	200.4W
PAH200S48 - 15	15V	13.4A	201.0W
PAH200S48 - 24	24V	8.4A	201.6W
PAH200S48 - 28	28V	7.2A	201.6W

# PAH300-450 SERIES

DC/DC Single Output: 300 - 450 Watts



## Features

- Input options: 24V and 48V
- Power levels 300 - 450 watts
- Output voltage options 12, 28 and 48V
- Wide output and external voltage trim
- -40°C to +100°C operation Baseplate temperature
- Fully isolated input - output
- Overload and overvoltage protection
- Safety approvals and CE marked
- High efficiency up to 90%
- Industry standard Half Brick
- Suitable for customer designed power supplies

## General Specifications

<b>Input Voltage:</b>	24VDC (18 - 36), 48VDC (36 - 76)
<b>Efficiency:</b>	Model dependent 87 - 92%
<b>Output Voltage:</b>	12 - 48VDC (refer to table)
<b>Output Voltage Trim:</b>	By external trim network
<b>Line Regulation:</b>	Typically 0.2%
<b>Load Regulation:</b>	12V/24mV, 28V/58mV, 48V/96mV
<b>Isolation:</b>	Input - output: 1.5K VAC
<b>Safety:</b>	UL60950-1, EN60950-1
<b>Protection:</b>	Constant current limiting Overvoltage protection Thermal protection
<b>Operating Temp:</b>	40°C to +100°C Baseplate temperature
<b>Cooling:</b>	Conduction cooling via Baseplate
<b>Remote ON/OFF:</b>	Short = ON, Open = OFF
<b>Parallel Operation:</b>	No
<b>Dimensions &amp; Weight:</b>	58 x 61 x 12.7mm 90 - 100g

Model	Input V	Output V	Output A	V Range	Power W
PAH300S24 - 12	24V	12V	25A	7.2 - 13.2V	300W
PAH300S24 - 28	24V	28V	11A	16.8 - 33.0V	300W
PAH350S24 - 28	24V	28V	12.5A	16.8 - 33.0V	350W
PAH300S48 - 12	48V	12V	25A	7.2 - 13.2V	300W
PAH300S48 - 28	48V	28V	11A	16.8 - 33.0V	300W
PAH350S48 - 12	48V	12V	29.2A	7.2 - 13.2V	350W
PAH350S48 - 28	48V	28V	12.5A	16.8 - 33.0V	350W
PAH450S48 - 28	48V	28V	16A	16.8 - 33.0V	450W
PAH450S48 - 48	48V	48V	9.4A	28.8 - 57.6V	450W

## Description

The **PAH300-450** series DC/DC converters are a range of **“High Power Density”** modules, specially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique mechanical profile requirements.

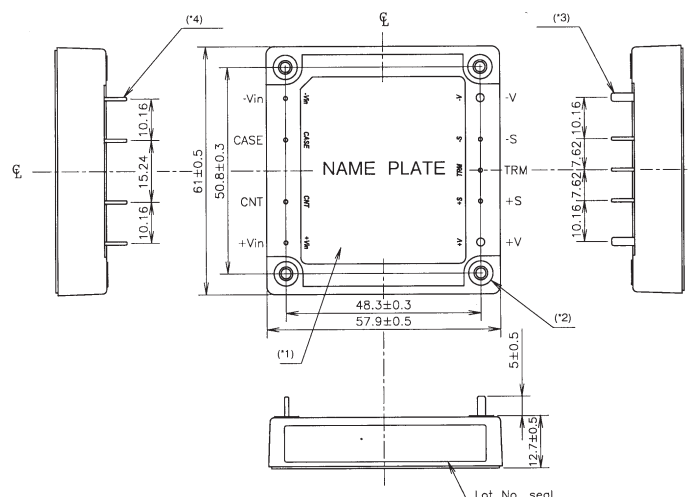
Cooling is via the module's base plate, which can operate up to +100°C, providing design engineers with total flexibility in the final configuration of their system.

Output voltage trim/adjustment is an added feature that allows for a wide range of output voltage options.

- For more detailed information and application notes on the **PAH300-450** series, visit our website.

## Options

N/A



# PH300-600 SERIES

DC/DC Single Output: 300 - 600 Watts



## Features

- Wide input DC range: Input options: 48V and 280V options
- Two power levels: 300 and 600 watts
- Output voltage options: 3.3V - 48V
- Wide output external voltage trim
- -20°C to +100°C operation Baseplate temperature
- Parallel and N+1 operation
- Fully isolated input - output
- Overload, Overvoltage and Overtemperature protection
- Safety approvals and CE marked
- High efficiency up to 88%
- Suitable for customer designed power supplies

## General Specifications

<b>Input Voltage:</b>	<b>48VDC</b> (36 - 76) <b>280VDC</b> (200 - 400)
<b>Efficiency:</b>	Model dependent 80 - 88%
<b>Output Voltage:</b>	3.3V to 48VDC (refer to table)
<b>Output Voltage Trim:</b>	12-28V models $\pm 10\%$ 3.3V, 5V, 48V models: -10% to +20% By external resistor network.
<b>Output Power:</b>	300 - 600 watts
<b>Line Regulation:</b>	Typically 0.4%
<b>Load Regulation:</b>	Typically 0.8%
<b>Isolation:</b>	48VDC input: Input - Output 1500VAC 280VDC input: Input - Output: 3000VAC
<b>Safety:</b>	UL60950, EN60950
<b>Protection:</b>	Constant current limiting Overvoltage protection Thermal protection
<b>Operating Temp:</b>	-20°C to +100°C Baseplate temperature
<b>Cooling:</b>	Conduction cooling via Baseplate
<b>Remote ON/OFF:</b>	ON = Short CNT to SG terminal, OFF = Open
<b>Parallel Operation:</b>	Yes (refer to instruction manual)
<b>Dimensions &amp; Weight:</b>	PH300S: 86 x 83 x 12.7mm 200g PH600S: 146 x 86 x 12.7mm 250g

## Description

The **PH300S & PH600S** series DC/DC converters are a range of **“High Power Density”** modules, especially suited for customer designed power supplies.

Using a proven DC/DC power module as the building block, it allows design engineers to customise their design to suit their unique profile application.

Cooling is by the module’s Baseplate, which can operate up to +100°C, providing design engineers with total flexibility in the final configuration of their system. Parallel operation with power share allows larger power systems to be configured and international safety approvals allow for fast tracking of product design and approval. Wide output voltage trim/adjustment is an added feature that allows for a wide range of output voltage options.

**For more detailed information and application notes on PH300S - 600S series, visit our website**

## Options

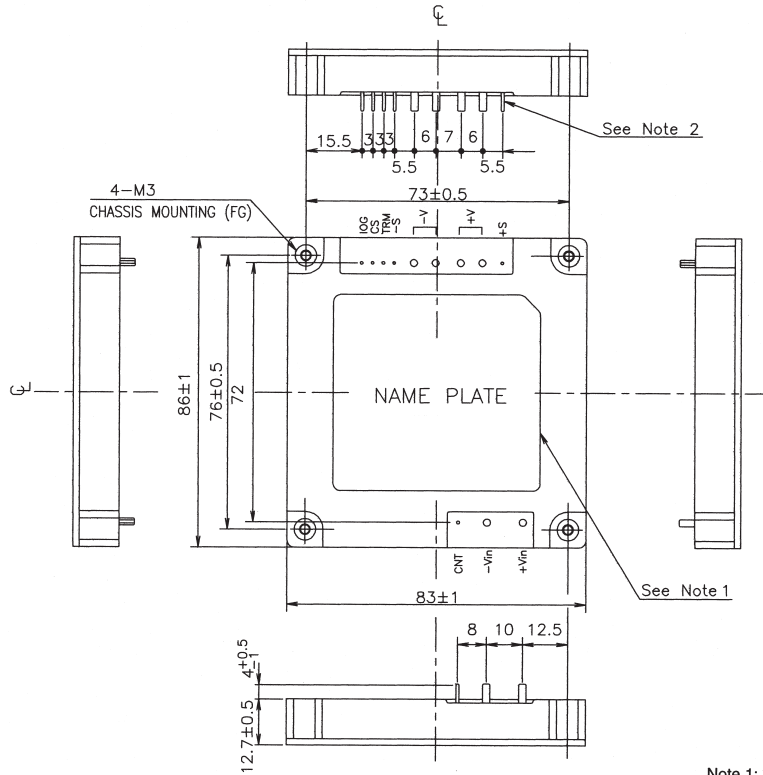
N/A

Model	Input V	Output		Power W
		V	A	
PH300S - 48 - 3.3	48V	3.3V	50A	150W
PH300S - 48 - 5	48V	5V	50A	250W
PH300S - 48 - 12	48V	12V	25A	300W
PH300S - 48 - 15	48V	15V	20A	300W
PH300S - 48 - 24	48V	24V	12.6A	300W
PH300S - 48 - 28	48V	28V	10.8A	300W
PH300S - 48 - 48	48V	48V	6.3A	300W
PH300S - 280 - 3.3	280V	3.3V	50A	165W
PH300S - 280 - 5	280V	5V	50A	250W
PH300S - 280 - 12	280V	12V	25A	300W
PH300S - 280 - 15	280V	15V	20A	300W
PH300S - 280 - 24	280V	24V	12.5A	300W
PH300S - 280 - 28	280V	28V	10.8A	300W
PH300S - 280 - 48	280V	48V	6.3A	300W
PH600S - 280 - 3.3	280V	3.3V	100A	330W
PH600S - 280 - 5	280V	5V	100A	500W
PH600S - 280 - 12	280V	12V	50A	600W
PH600S - 280 - 15	280V	15	40A	600W
PH600S - 280 - 24	280V	24V	25A	600W
PH600S - 280 - 28	280V	28V	21.5A	600W
PH600S - 280 - 48	280V	48V	12.5A	600W

# PH300-600 SERIES

DC/DC Single Output: 300 - 600 Watts

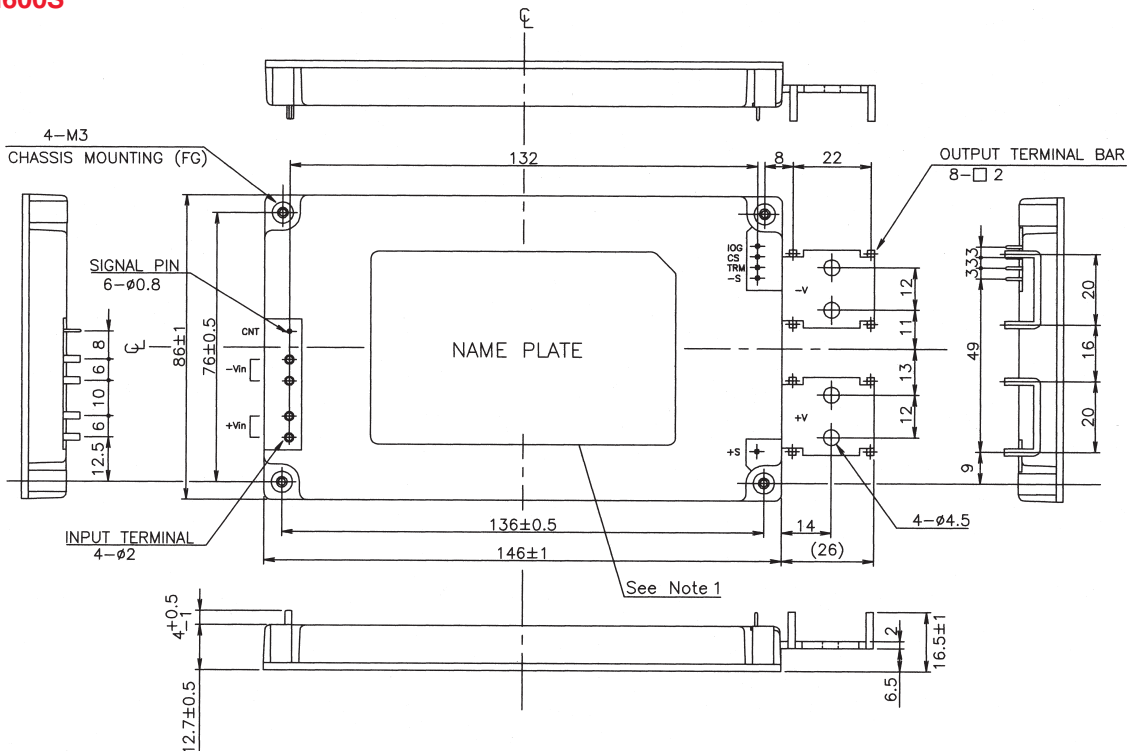
## PH300S



(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-φ2  
 6-φ8

## 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

# PAF450-700 SERIES

DC/DC Single Output: 450 - 700 Watts



## Features

- Input options: 24V, 48V and 280VDC
- Power levels: 450 - 700 watts, Full Brick
- Output voltage options: 3.3V - 48V
- Wide output external voltage trim
- Parallel operation with power sharing
- 100°C operation Baseplate temperature
- Fully isolated input - output
- Overload and overvoltage protection
- Safety approvals and CE marked
- High efficiency up to 90%
- Suitable for customer designed power supplies

## General Specifications

<b>Input Voltage:</b>	<b>24VDC</b> (19 - 36) <b>48VDC</b> (36 - 76) <b>280VDC</b> (200 - 400)
<b>Efficiency:</b>	Model dependent 78 - 91%
<b>Output Voltage:</b>	3.3 to 48VDC
<b>Output Voltage Trim:</b>	By external trim network. See table for output range.
<b>Line Regulation:</b>	Typically $\pm 0.2\%$
<b>Load Regulation:</b>	3.3V & 5V/100mV 12V/48mV 24V/56mV, 28V/56mV, 48V/96mV
<b>Isolation Voltage:</b>	Input - Output 3.0KVAC (280V inputs) Input - Output 1.5KVAC (24/48V inputs)
<b>Safety:</b>	UL60950-1, EN60950-1
<b>Protection:</b>	Constant current limiting Overvoltage protection
<b>Immunity:</b>	Thermal protection
<b>Operating Temp:</b>	-40°C to +100°C Baseplate temperature
<b>Cooling:</b>	Conduction cooling via Baseplate
<b>Remote ON/OFF:</b>	Yes (Short = ON, Open = OFF)
<b>Parallel Operation:</b>	Yes, with power share
<b>Dimensions &amp; Weight:</b>	117 x 61 x 12.7mm 200 - 250g

## Description

The **PAF450-700** series DC/DC converters are a range of **“High Power”** modules, especially suited for customer designed power supplies.

Using proven DC/DC power modules as the building block, it allows design engineers to customise their design to suit unique mechanical profile requirements.

Cooling is by the module’s Baseplate, which can operate up to +100°C, providing design engineers with total flexibility in the final configuration of their system.

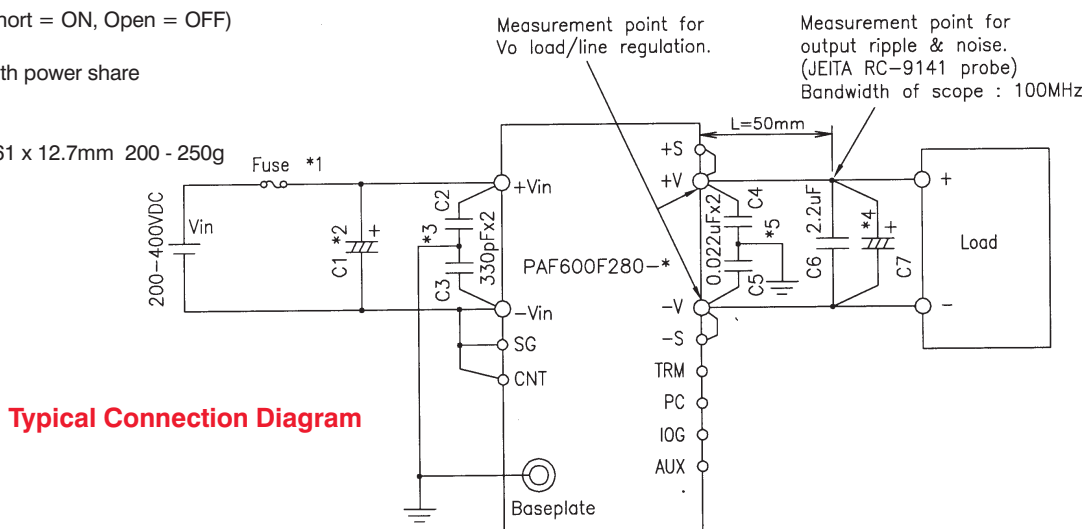
Wide output voltage trim/adjustment is an added feature that allows for a wide range of output voltage options.

**For more detailed information and application notes on PAF450 - 700 series, visit our website**

## Options

**Model Suffix: Blank** 4 x M3 tapped mounting inserts

**Model Suffix: T** 4 x 3.3mm non-threaded inserts

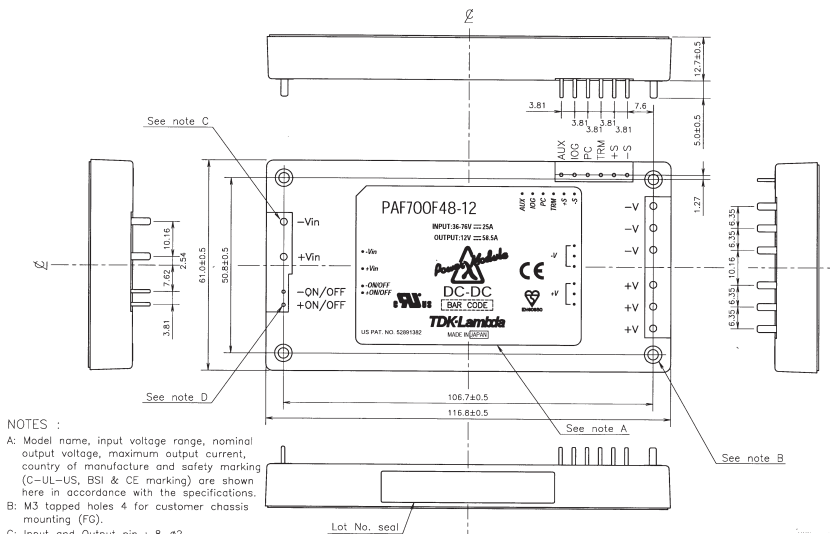


# PAF450-700 SERIES

DC/DC Single Output: 450 - 700 Watts

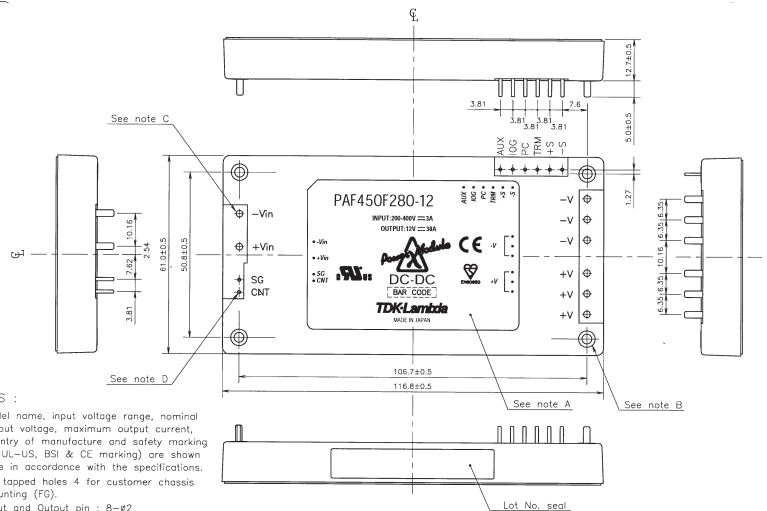
Model	Input V	Output V	Output A	Output Voltage Range	Power W
PAF500F24 - 12	24V	12V	42A	7.2 - 13.2V	504W
PAF500F24 - 28	24V	28V	18A	16.8 - 30.8V	504W
PAF600F24 - 12	24V	12V	50A	7.2 - 13.2V	600W
PAF600F24 - 28	24V	28V	21.5A	16.8 - 30.8V	600W
PAF500F48 - 3.3	48V	3.3V	80A	1.98 - 3.9V	264W
PAF500F48 - 5	48V	5.0V	80A	3.00 - 6.0V	400W
PAF500F48 - 12	48V	12V	42A	7.2 - 13.2V	500W
PAF500F48 - 28	48V	28V	18A	16.8 - 30.8V	500W
PAF600F48 - 12	48V	12V	50A	7.2 - 13.2V	600W
PAF600F48 - 28	48V	28V	21.5A	16.8 - 30.8V	600W
PAF700F48 - 12	48V	12V	58.5A	7.2 - 13.2V	700W
PAF700F48 - 28	48V	28V	25A	16.8 - 30.8V	700W
PAF450F280 - 12	280V	12V	38A	7.2 - 14.4V	456W
PAF450F280 - 24	280V	24V	19A	14.4 - 28.8V	456W
PAF450F280 - 28	280V	28V	16.5A	16.8 - 33.6V	462W
PAF450F280 - 48	280V	48V	9.5A	28.8 - 57.6V	456W
PAF600F280 - 12	280V	12V	50A	7.2 - 14.4V	600W
PAF600F280 - 24	280V	24V	25A	14.4 - 28.8V	600W
PAF600F280 - 28	280V	28V	21.5A	16.8 - 33.6V	600W
PAF600F280 - 48	280V	48V	12.5A	28.8 - 57.6V	600W

## PAF 24V / 48V



- NOTES :
- A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C-UL-US, BSI & CE marking) are shown here in accordance with the specifications.
  - B: M3 tapped holes 4 for customer chassis mounting (FG).
  - C: Input and Output pin : 8-#2
  - D: Signal pin : 8-#1
  - E: Unless otherwise specified dimensional tolerance :  $\pm 0.3\text{mm}$

## PAF 280V



- NOTES :
- A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C-UL-US, BSI & CE marking) are shown here in accordance with the specifications.
  - B: M3 tapped holes 4 for customer chassis mounting (FG).
  - C: Input and Output pin : 8-#2
  - D: Signal pin : 8-#1
  - E: Unless otherwise specified dimensional tolerance :  $\pm 0.3\text{mm}$

# PFE300 - 700 SERIES

AC/DC Single Output: 300-700 Watts



## Features

- Full brick AC/DC Power Module in one package
- Harmonic input correction: EN61000-3-2
- Universal input 85-264VAC with PFC
- Fully regulated outputs - PFE300S, PFE500F/S
- Unregulated 50-57 VDC output: PFE700
- Wide baseplate temperature -40°C to +100°C
- OVP, OCP and over temperature protection
- Safety: UL1950, EN60950
- Fully isolated input-output
- External components required for operation, refer to instruction manual
- PCB mounting
- Suitable for battery charging applications

## General Specifications

<b>Input Voltage:</b>	85 - 264VAC
<b>Power factor:</b>	Typically 0.95
<b>Output Voltage:</b>	12V, 28V, 48V
<b>Output Voltage Range:</b>	See table (PEF700 unregulated (50 - 57)
<b>Output Power:</b>	300 - 700 watts
<b>Efficiency:</b>	Model dependant 82 - 88%
<b>Load Regulation:</b> (PFE300/500)	12V: 48mV, 28V: 56mV, 48V: 96mV
<b>Load Regulation:</b> (PFE700)	50 - 57V
<b>Protection:</b>	Overload constant current with auto recovery Over voltage protection Over temperature
<b>Isolation Voltage:</b>	Input - Output 3000VAC
<b>Safety:</b>	UL60950-1, EN60950-1, CSA60950-1
<b>EMC:</b>	N/A
<b>Parallel Operation:</b>	PFE700S (Droop Mode) PFE500F (single wire power share)
<b>Remote Sense:</b>	Yes
<b>Operating Temp:</b>	12V: -40°C to +85°C Baseplate temperature 24/28V: -40°C to 100°C Baseplate
<b>Cooling:</b>	Conduction cooled
<b>Isolation Voltage:</b>	Input - Output 3000VAC
<b>Dimensions &amp; Weight:</b>	PFE300S/500S: 117 x 61 x 12.7mm 250g PFE700S: 117 x 61 x 12.7mm 250g PFE500F: 122 x 70 x 12.7mm 300g

## Description

The innovative **PFE** series is a “Full Brick” AC input power supply module, capable of operating up to +100°C base plate temperature.

It offers a **single device** containing power factor correction, regulation and primary secondary isolation, offering up to 50% space savings over previous power module solutions. These power modules meet the needs of many industrial, datacom, and telecom applications, particularly where high operating temperatures are required and space is at a premium.

The fully regulated PFE300 and PFE500-watt models are available in 12, 28 and 48 volt nominal outputs and can be adjusted over a  $\pm 20\%$  range.

A semi-regulated **PFE700-48** is also available, delivering 714 watts with a nominal output of 51 volts and can be operated as an intermediate bus converter, powering regulated DC-DC converters for multi-output applications.

The PFE series modules allow design engineers to design and manufacture their end product, containing a PFE power module as an integral part of the product ... especially for applications requiring a sealed assembly.

**For the manual and full application notes on PFE Series, visit our website**

## Options

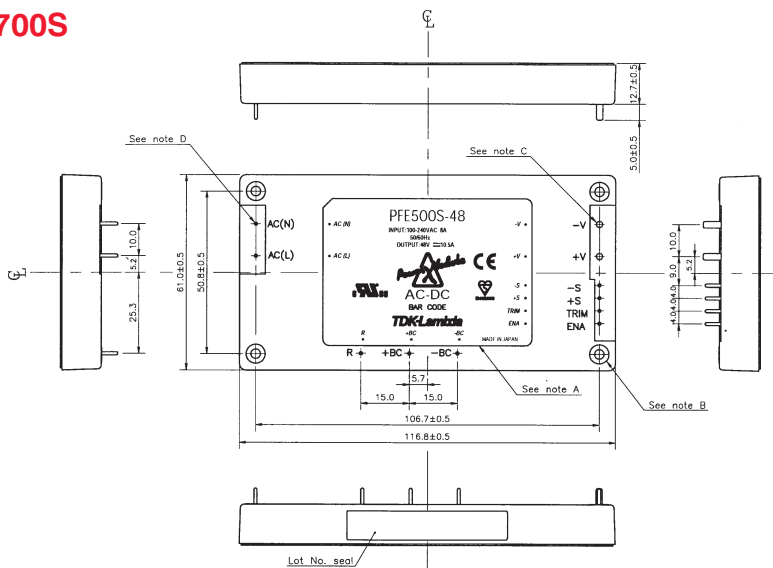
**PFE1000F** 1000W unit under development

Model	Output		Voltage Range	Power W
	V	A		
PFE 300S - 12	12V	25.0A	9.6 - 14.4V	300W
PFE500S - 12	12V	33.0A	9.6 - 14.4V	396W
PFE500F - 12	12V	42.0A	9.6 - 14.4V	504W
PFE300S - 28	28V	10.8A	22.4 - 33.6V	302W
PFE500S - 28	28V	18.0A	22.4 - 33.6V	504W
PFE500F - 28	28V	18.0A	22.4 - 33.6V	504W
PFE300S - 48	48V	6.3A	38.4 - 57.6V	302W
PFE500S - 48	48V	10.5A	38.4 - 57.6V	504W
PFE500F - 48	48V	10.5A	38.4 - 57.6V	504W
PFE700S - 48	51V	14.0A	N/A	714W

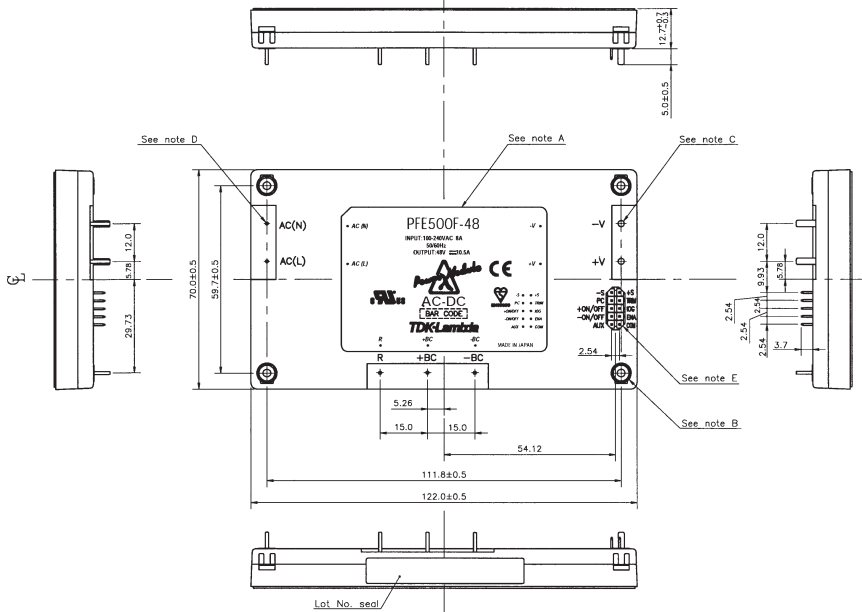
# PFE300 - 700 SERIES

AC/DC Single Output: 300-700 Watts

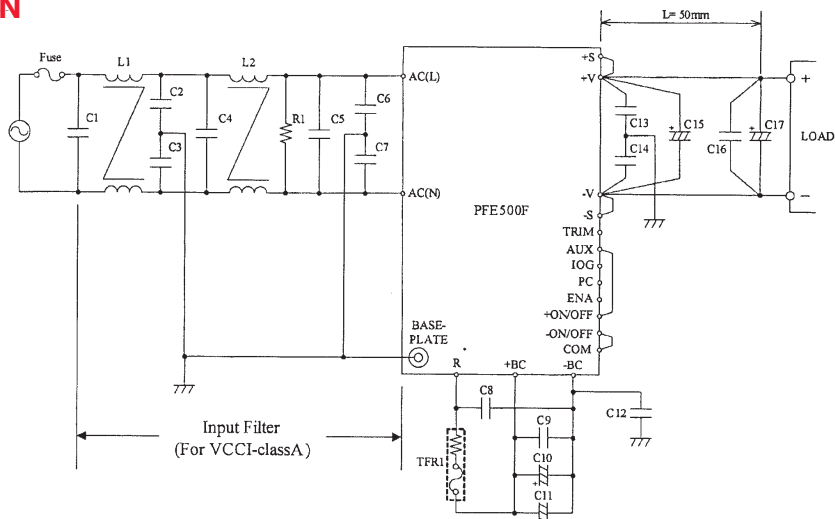
## PFE300S/ 500S/700S



## PFE500F



## BASIC CONNECTION



## PF/PR SERIES

### AC/DC Front End Power Modules: 500-1500 Watts



#### Features

- Wide input: 85 - 265VAC
- High power density modules, 500 - 1500 watts
- High voltage output 280/360VDC
- Power factor corrected @ 0.95 PF Series
- Wide Baseplate operating temperature -20°C to 85°C
- Parallel and N+1 redundancy operation
- Fully isolated and output
- International safety approvals and CE marked
- Full protection features
- Fully encapsulated, suitable for harsh environments

#### General Specifications - PF500A/PF1000A

<b>Input Voltage:</b>	85 - 265VAC
<b>Output Voltage:</b>	360VDC nominal $\pm 2\%$
<b>Output Current:</b>	4.2A maximum (refer to table)
<b>Aux. Output Voltage:</b>	12 - 20VDC @ 10mA
<b>Output Power:</b>	500 - 1500 watts (refer to table)
<b>Efficiency:</b>	90 - 94%
<b>Power Factor:</b>	0.95%
<b>Parallel Operation:</b>	Yes, refer to instruction manual
<b>Operating Temp:</b>	Baseplate temperature -20°C to +85°C
<b>Cooling:</b>	Conduction cooling by external heatsink to Baseplate and air flow
<b>Isolation:</b>	Input - Output 3000VAC
<b>Safety:</b>	UL1950, CSA234 and EN60950
<b>Protection:</b>	Over voltage protection Over temperature protection
<b>Regulation:</b>	Load $\pm 10\%$ , Line $\pm 5\%$
<b>Alarm Signal:</b>	Inverter Good Signal
<b>Dimensions &amp; Weight:</b>	PF500A: 83 x 86 x 12.7mm 160g PF1000A: 145 x 86 x 12.7mm 250g

#### General Specifications - PR500

<b>Input Voltage:</b>	85 - 132/170 - 265VAC Link Selectable
<b>Output Voltage:</b>	280VDC
<b>Output Current:</b>	3.15A maximum (refer to table)
<b>Aux. Output Voltage:</b>	18VDC @ 10mA
<b>Output Power:</b>	500 - 750 watts (refer to table)
<b>Efficiency:</b>	95%
<b>Power Factor:</b>	N/A
<b>Parallel Operation:</b>	N/A
<b>Operating Temp:</b>	Baseplate temperature -20°C to +85°C
<b>Cooling:</b>	Conduction cooling by external heatsink to Baseplate and air flow
<b>Isolation:</b>	Input - Output 3000VAC
<b>Safety:</b>	UL1950, CSA234 and EN60950
<b>Protection:</b>	N/A
<b>Regulation:</b>	280VDC (230 - 270V)
<b>Alarm Signal:</b>	N/A
<b>Dimensions &amp; Weight:</b>	83 x 86 x 12.7mm 90g

#### Description

The **PF500A/PF1000A & PR500** series provide a range of high power density 'Front End' power modules, especially suited for customer designed power supplies.

The DC bus of 280/360V is used to feed a range of 280 - 360V input DC/DC power modules that provide low voltage outputs from 3.3-48VDC (PH Series).

Using a proven power module as the building block, it allows design engineers to customise their design to suit their unique profile application.

Cooling is via the module's baseplate, which can operate up to +85°C, providing design engineers with total flexibility in the final configuration of their system.

Model	Input VAC	Output VDC	A	Power W
PF500A - 360	85 - 264V	360V	1.4A	500W
PF500A - 360	170 - 264V	360V	2.1A	756W
PF1000A - 360	85 - 264V	360V	2.8A	1008W
PF1000A - 360	170 - 264V	360V	4.2A	1512W
PR500 - 280	85 - 132V	280V	2.1A	500W
PR500 - 280	170 - 264V	280V	3.1A	750W

#### Options

N/A

For more detailed information on the PF/PR series, visit our website

# PF/PR SERIES

AC/DC Front End Power Modules: 500-1500 Watts

