

Section

L

Selection GuideL-2

- PS5R Series
 - DIN Rail Switching L-3
- PS3E Series
 - Metal Frame Switching. L-10



Selection Guide

	PS5R	PS3E
Appearance		
Page	L-3	L-10
Housing	Plastic	Metal
Mounting	DIN Rail or surface mount	"L" bracket or DIN rail bracket
Wattage Range	7.5W to 240W	10W to 150W
Input Voltage	100 to 240VAC nominal, (85 to 264VAC), 47 to 63 HZ 110-340VDC nominal (105 to 370VDC)	100 to 240VAC nominal, (85 to 264VAC), 47 to 63 HZ 110-340VDC nominal (105 to 370VDC)
Output Current Ratings	5VDC: 1.5A, 2.5A 12VDC: 0.6A, 1.2A, 2.5A 24VDC: 0.30A, 0.60A, 1.3A, 2.1A, 4.2A	— 0.90A, 1.4A, 2.5A, 4.4A, 8.4A, 12.5A 0.50A, 0.70A, 1.3A, 2.4A, 4.2A, 6.3A
Typical Efficiency	12VDC: 73% to 75% 24VDC: 75% to 85%	74% to 80% 78% to 82%
Voltage Adjustments	+/-10% (V.ADJ control on front)	+/-10% (V.ADJ control on front)
Output Voltage Fluctuation	Due to input voltage change: 0.4% maximum	12V: 48mV maximum 24V: 96mV maximum
	Due to output load change: 1.5% maximum	12V: 120mV maximum 24V: 150mV maximum
	Due to ambient temperature change: 0.05% maximum	12V: 150mV maximum 24V: 290mV maximum
Ripple Voltage	2% peak to peak maximum (including noise)	150mV maximum
Over Voltage Protection (input)	105% typical	105% typical
Over Current Protection (output)	120% minimum (Zener or auto reset)	120% minimum (Zener or auto reset)
Inrush Current	50A maximum (cold start at 200VAC)	40A maximum (cold start at 200VAC)
Leakage Current (output)	0.75mA maximum at 60hz	0.75mA maximum at 60hz
Operating Temperature	-10° to +60°C (14° to 140°F)	-10° to +60°C (14° to 140°F)
Vibration Resistance	45m/s ² (approximately 4.5G) 10 to 55hz, 2 hours on each of 3 axes	20m/s ² (approximately 2G) 10 to 55hz, 1 hour on each of 3 axes
Shock Resistance	294m/s ² , 3 shocks on each of 6 axes	200m/s ² , 1 shock on each of 3 axes
Weight (approximate)	150g to 600g (depending on model)	240g to 800g (depending on model)
Termination	M3.5 phillip/slotted, spring loaded, captive (fingersafe)	IEC Style screw terminals (fingersafe)
Approvals	Conforms to EMC Directives EN50081-2 and EN50082-2. LVD Directives EN60529 and EN60950.	
	 Cert. No. BL980213332392  UL 508 Listed File # E177168	  UL 1950 Recognized File # E141913
	 Cert. No. B961113332372  UL 1950 Recognized File # E141913 FCC Class A certified (EN550011)	

PS5R Series — Switching Power Supplies

The PS5R offers a sleek, compact, ergonomic design, worldwide approvals, and broad range of output capacities.

With UL 508 Listing, additional savings in space and cost can be realized as no derating is necessary.

Key features of the PS5R series include:

- No jumpers or dip switches
- Universal AC input (85 to 264 V AC) (except 100W)
- DC compatible input (105 to 370V DC)
- Unique spring-up, fingersafe terminals (ideal for ring lug terminated wire)
- DIN rail or panel mount
- Six output capacities
- UL508 Listing
- CE marking according to both LVD and EMC
- Fused input
- Auto resetting output overcurrent protection
- Output voltage adjust ($\pm 10\%$)



Conforms to
 EMC Directives EN50081-2 and EN50082-2.
 LVD Directive: EN60529.
 Certified to EN60950.
 240W also conforms to EN61000-3-2



Cert. No.
 BL980213332392



UL 508 Listed
 File # E177168



Part Numbers	5VDC output	PS5R-A05	PS5R-B05*	—	—	—	—	
	12VDC output	PS5R-A12	PS5R-B12	PS5R-C12	—	—	—	
	24VDC output	PS5R-A24	PS5R-B24	PS5R-C24	PS5R-D24	PS5R-E24	PS5R-G24	
Output Capacity		7.5W	15W	30W	50W	100W	240W	
Input	Input Voltage (single-phase, 2-wire)	100 to 240VAC nominal (85 to 264V AC), 50/60Hz (47 to 63Hz) 110 to 340VDC nominal (105 to 370VDC)				100 to 120VAC, 50/60Hz 200 to 240VAC, 50/60Hz (jumper selectable) 240 to 370VDC		100 to 240VAC, 50/60Hz 110 to 340VDC
	Input Current (typical)	0.17A at 100VAC 0.11A at 200VAC	0.3A at 100VAC 0.2A at 200VAC	0.68A at 100VAC 0.45A at 200VAC	1.15A at 100VAC 0.75A at 200VAC	2.5A at 100VAC 1.5A at 200VAC		4A at 100VAC
	Internal Fuse Rating	2A	2A	3.15A	3.15A	4A		6.3A
	Inrush Current	50A maximum (at cold start at 200V AC)						
	Leakage Current (at no load)	0.75mA maximum (60Hz, measured in conformance with UL, CSA, VDE)						
	Typical Efficiency	73% at 12V 75% at 24V	75% at 12V 79% at 24V	75% at 12V 75% at 24V	79% at 24V	85% at 24V	83% at 24V	
	Overvoltage Protection	Outputs turns off at 105% (typical)						
Output	Voltage and Current Ratings	5V, 1.5A 12V, 0.6A 24V, 0.3A	5V, 2.5A 12V, 1.2A 24V, 0.6A	12V, 2.5A 24V, 1.3A	24V, 2.1A	24V, 4.2A	24V, 10A	
	Voltage Adjustments	±10% (V.ADJ screw on top)						
	Output Holding Time	20ms minimum (at full rated input and output)						
	Rise Time	200ms maximum (at full rated input and output)						150ms maximum
	Line Regulation	0.4% maximum						
	Load Regulation	1.5% maximum						
	Fluctuation due to Ambient Temperature Change	0.05% maximum						
	Ripple Voltage	2% peak to peak maximum (including noise)						
Overload Protection	120% typical (Zener-limiting)			120% typical, auto reset				
Operation Indicator	LED							
Parallel Operation	PS5R-A	PS5R-B	PS5R-C	PS5R-D	PS5R-E	PS5R-G		
	No	No	No	No	Yes	Yes		
Dielectric Strength	Between input and output terminals: 3,000V AC, 1 minute Between input terminals and housing: 2,000V AC, 1 minute Between output terminal and housing: 500V AC, 1 minute							
Insulation Resistance	Between input and output terminals/input terminals and housing: 100MΩ minimum (500V DC megger)							
Operating Temperature	-10 to +60°C (14° to 140°F) (see derating curves)							
Storage Temperature	-30 to +85°C (-22° to 185°F)							
Operating Humidity	20 to 90% relative humidity (no condensation)							
Vibration Resistance	45m/s ² , 10 to 55Hz, 2 hours on each of 3 axes					10 to 50Hz, 0.75mm p-p, 2 hrs on each of 3 axes		
Shock Resistance	294m/s ² , 3 shocks in each of 6 directions							
Dimensions (H x W x D)	2.76" x 1.77" x2.95" (70 x 45 x 75mm)	3.74" x 1.77" x2.95" (95 x 45 x 75mm)	3.74" x 3.54" x2.95" (95 x 90 x 75mm)	3.74" x 3.54" x2.95" (95 x 90 x 75mm)	5.71" x 3.54" x 2.95" (95 x 145 x 75mm)	5.51" x7.87" x 4.72" (140 x 200 x 120mm)		
	Spring-up, fingersafe terminals with captive M3.5 screws							
IP protection	IP20 (finger safe)							
Approvals	Cert. No. BL980213332392			UL 508 Listed File #E177168		Also Certified for EN61000-3-2		

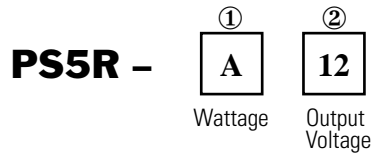
Specifications

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1. For dimensional drawings, see page L-8.
2. For usage instructions, see page L-6.
3. *12.5W for 5VDC model.

Part Number Guide

Part Numbering Guide



Part Number Codes

	Description	Code
① Wattage	7.5W	A
	15W (12.5W for 5VDC models)	B
	30W	C
	50W	D
	100W	E
	240W	G
② Output Voltage	5VDC	05 (A and B models only)
	12V DC	12 (A, B, C models only)
	24V DC	24 all models



Part Number List

Part Numbers: PS5R Series

Output Capacity	Output Voltage	Input Voltage	Part Number
7.5W	5V DC	100 to 240VAC/ (110 to 340 VDC)	PS5R-A05
	12V DC		PS5R-A12
	24V DC		PS5R-A24
15W*	5V DC	100 to 240VAC/ (110 to 340 VDC)	PS5R-B05
	12V DC		PS5R-B12
	24V DC		PS5R-B24
30W	12V DC	100 to 240VAC/ (110 to 340 VDC)	PS5R-C12
	24V DC		PS5R-C24
50W	24V DC	100 to 240VAC/ (110 to 340 VDC)	PS5R-D24
100W	24V DC	100 to 120 VAC 200 to 240 VAC (240-370 VDC)	PS5R-E24
240W	24V DC	100-240VAC (110-340VDC)	PS5R-G24



1. For dimensional drawings, see page L-8.
2. For usage instructions, see page L-6.
3. For accessories, see page L-6.
4. *12.5W for 5VDC models.

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Accessories

Part Numbers: PS5R Accessories

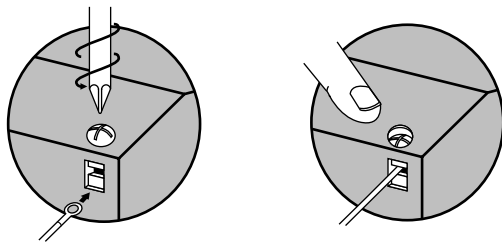
Appearance	Description	Part Number
	DIN rail (1000mm)	BNDN1000
	DIN rail clip	BNL5

Installation Instructions

Time-Saving Spring-up Terminals

The innovative terminals on the PS5R series use a special, spring-loaded screw. This makes installation as easy as pushing down and turning with a screwdriver. Installation time is cut in half since the screws do not need to be backed out to install wiring. The screws are held captive once installed and are 100% finger-safe. Screw terminals accept bare wire or ring or fork connectors.

1. Insert the wire connector into the slot on the side of the power supply.
2. Using a Phillips screwdriver, push down and turn the screw.

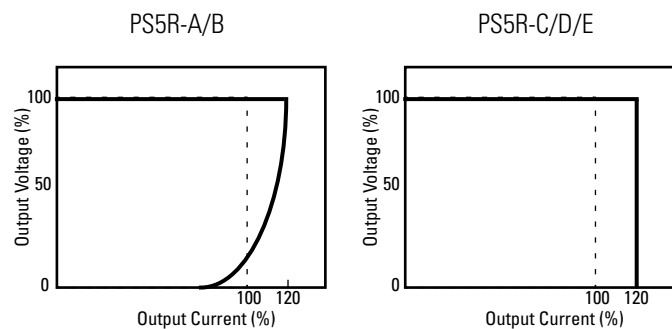


The wire is now connected, and the screw terminal is finger-safe!

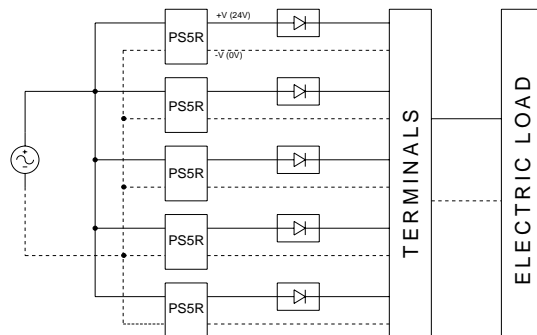
Front Panel (terminals)

Terminal	Name	Description
V. ADJ	Voltage adjustment	Adjusts within $\pm 10\%$; turn clockwise to increase output voltage
DC ON	Operation indicator	Green LED is lit when output voltage is on
+V, -V	DC output terminals	+V: Positive output terminal -V: Negative output terminal
	Frame ground	Ground this terminal to reduce high-frequency currents caused by switching
L, N	Input terminals	Accept a wide range of voltages and frequencies (no polarity at DC input)
NC	No connection	Do <i>not</i> insert wires here, as this may damage the power supply

Overcurrent Protection Characteristics



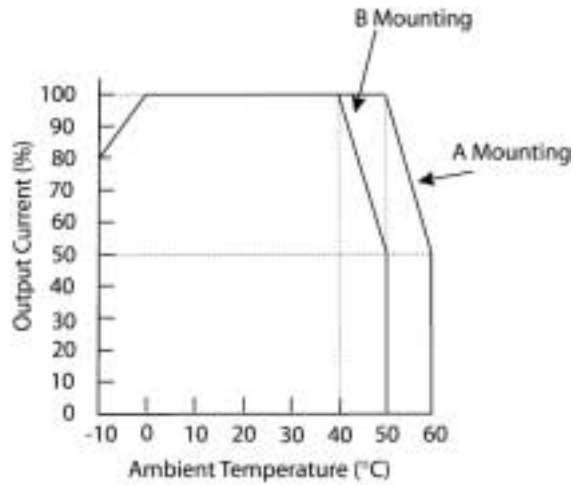
Parallel Operation



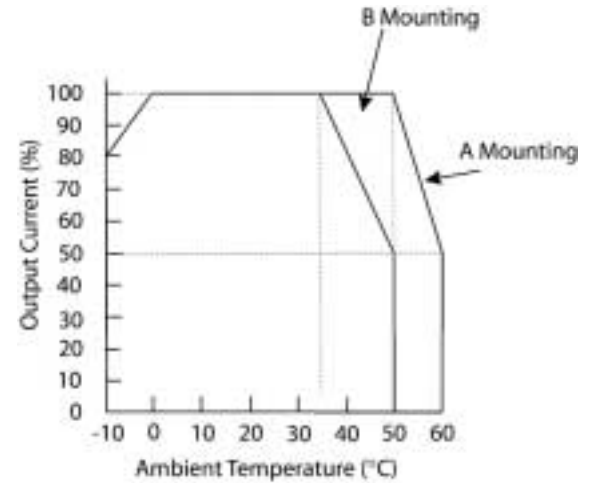
Parallel operation only recommended for PS5R-E24 and PS5R-G24.

Temperature Derating Curves

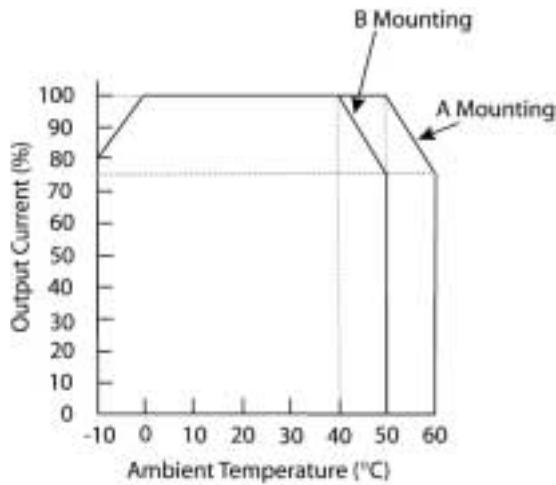
PS5R-A/B



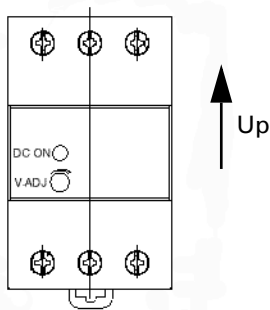
PS5R-C/D



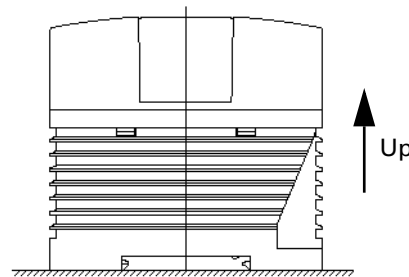
PS5R-C/D



A Mounting

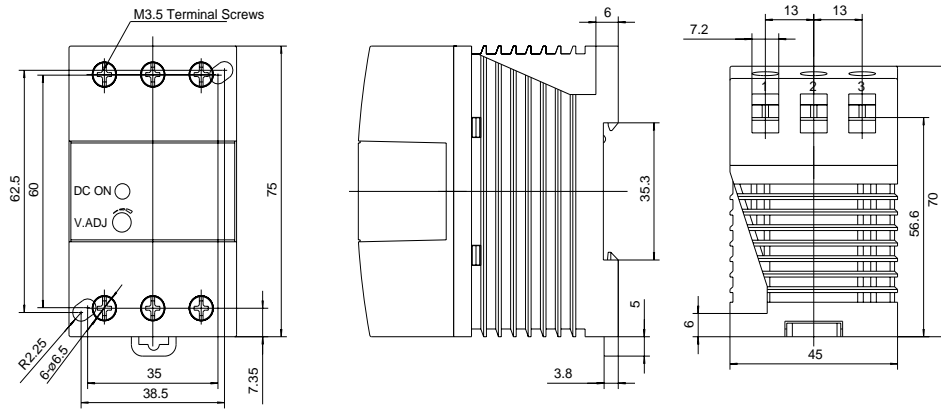


B Mounting

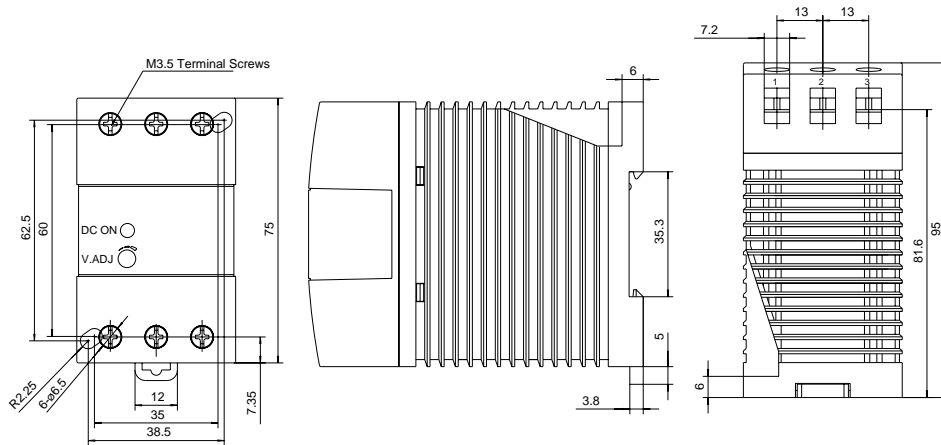


Dimensions

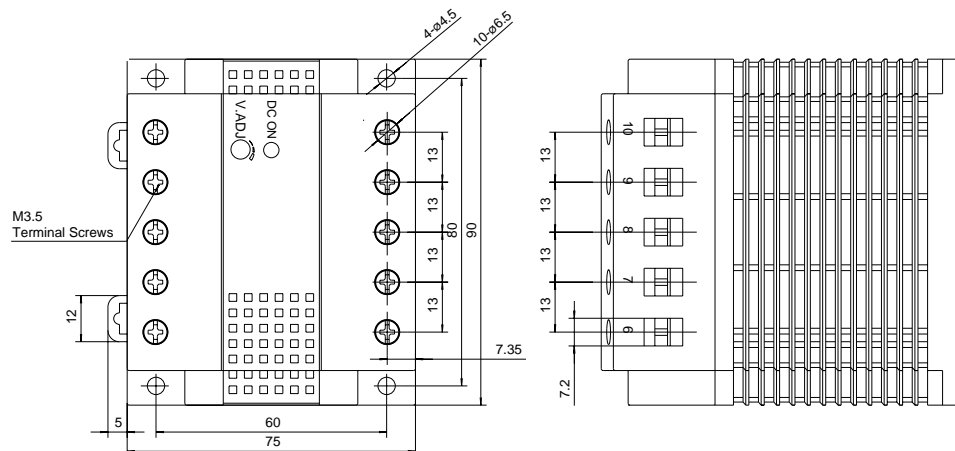
PS5R-A



PS5R-B



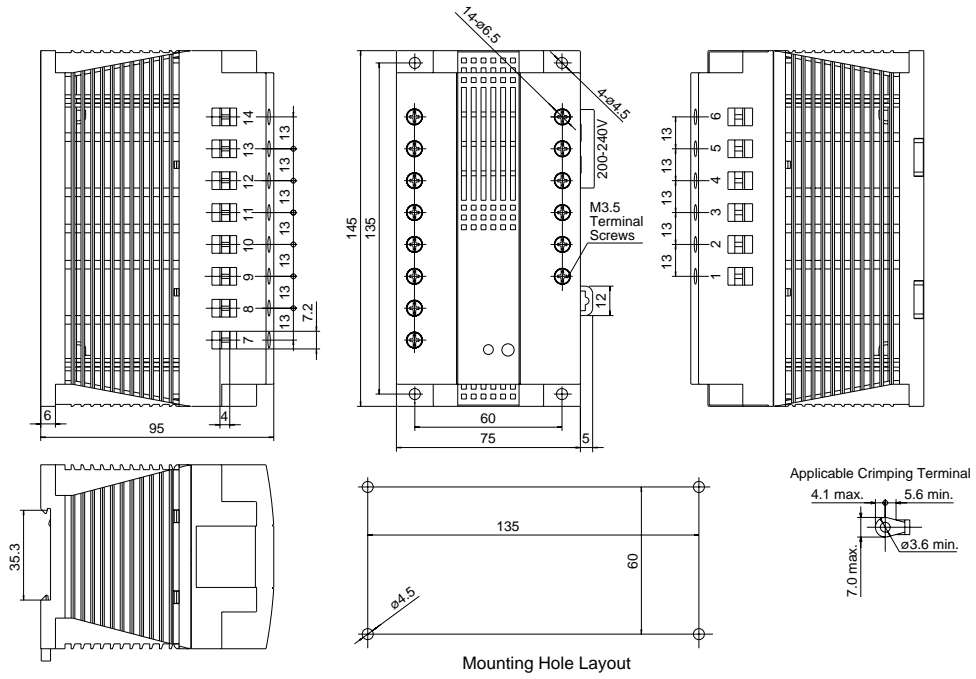
PS5R-C
PS5R-D



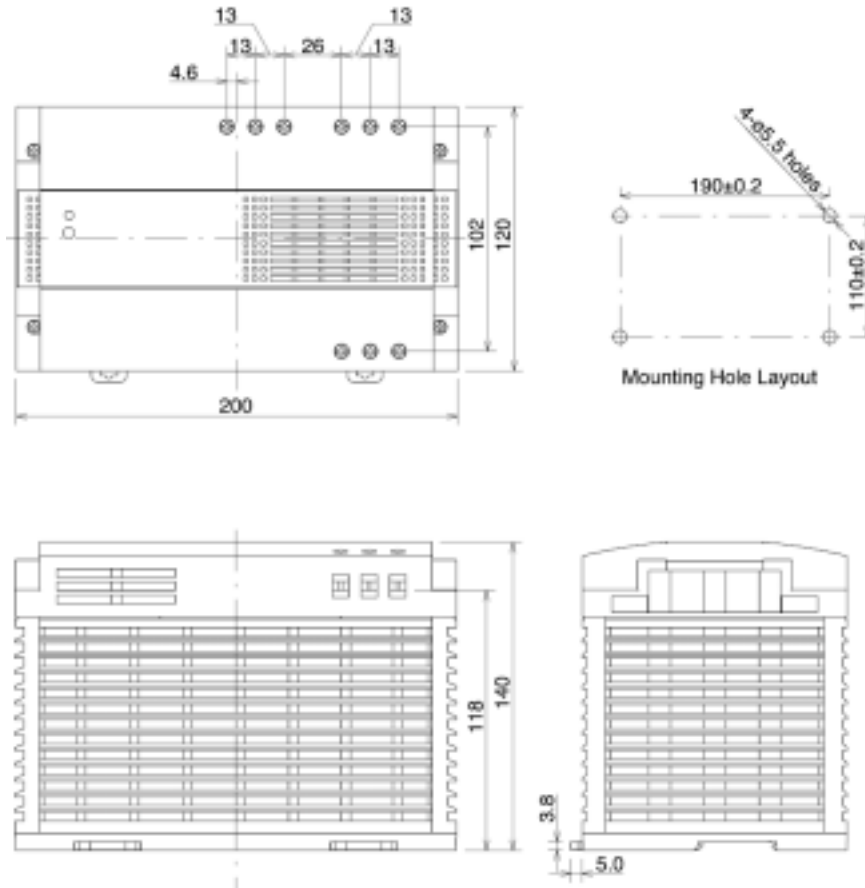
(all dimensions in mm)

Dimensions con't

PS5R-E



PS5R-G



(all dimensions in mm)

PS3E — Metal Frame Switching Power Supplies

The PS3E series of industrial switching power supplies offers universal input from 100 to 240VAC (110 to 340VDC compatible).

A broad range of outputs are available to supply 12 or 24VDC, with output capacities up to 150 watts.

Key features of the PS3E series include:

- Universal AC input (85 to 264 VAC)
- DC compatible input (105 to 370VDC)
- Remote ON/OFF functions are available with 100 and 150W models
- Finger-safe terminals
- Optional DIN rail brackets
- Fused inputs
- Auto resetting output overcurrent protection
- Output voltage adjust ($\pm 10\%$)
- Conformity to FCC class A and VCCI 1
- Conformity to EN550011 Class A
- Remote sensing capability on 100 and 150W models
- CE marking according to Both EMC and LVD



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Conforms to **Both**:

EMC Directives: EN50081-2 and EN50082-2.

LVD Directives: EN60529 and EN60950.



Cert. No.
B961113332372



File # LR88916



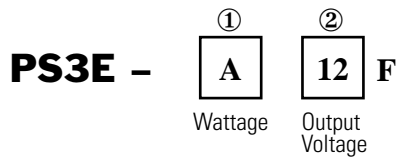
UL 1950 Recognized
File #E141913

Model	12VDC	PS3E-A12F	PS3E-B12F	PS3E-C12F	PS3E-D12F	PS3E-E12F	PS3E-F12F	
	24VDC	PS3E-A24F	PS3E-B24F	PS3E-C24F	PS3E-D24F	PS3E-E24F	PS3E-F24F	
Output Capacity		10W	15W	30W	50W	100W	150W	
Input	Input Voltage (single-phase, 2-wire)	100 to 240VAC nominal (85 to 264 VAC), 50/60Hz (47 to 63Hz) 110 to 340VDC nominal (105 to 370VDC compatible)					100 to 120VAC nominal (85 to 132VAC) 200 to 240VAC nominal (170 to 264VAC) 110 to 340VDC nominal (105 to 370VDC compatible)	
	Input Current (typical)	0.25A at 100VAC	0.37A at 100VAC	0.68A at 100VAC	1.15A at 100VAC	2.5A at 100VAC	3.7A at 100VAC	
		0.16A at 200VAC	0.23A at 200VAC	0.45A at 200VAC	0.75A at 200VAC	1.5A at 200VAC	2.1A at 200VAC	
	Inrush Current	20A maximum (cold start at 100VAC)					10A maximum (cold start at 100VAC)	
		40A maximum (cold start at 200VAC)					40A maximum (cold start at 200VAC)	
Leakage Current (at no load)	0.75mA maximum (60Hz, measured in conformance with UL, CSA, VDE)							
Typical Efficiency	74% at 12VDC 78% at 24VDC	75% at 12VDC 78% at 24VDC	77% at 12VDC 79% at 24VDC	77% at 12VDC 79% at 24VDC	80% at 12VDC 82% at 24VDC	80% at 12VDC 82% at 24VDC		
Output	Voltage and Current Ratings	12V, 0.9A 24V, 0.5A	12V, 1.4A 24V, 0.7A	12V, 2.5A 24V, 1.3A	12V, 4.4A 24V, 2.4A	12V, 8.4A 24V, 4.2A	12V, 12.5A 24V, 6.3A	
	Voltage Adjustable	±10% (using V.ADJ adjustment)						
	Output Holding Time	20ms minimum (at rated input and output)						
	Start Time	200ms maximum (at rated input and output)					1s maximum (at rated input and output)	
	Rise Time	100ms maximum (at rated input and output)						
	Fluctuation due to Input Voltage	12V: 48mV maximum 24V: 96mV maximum						
	Fluctuation due to Load Change	12V: 100mV maximum 24V: 150mV maximum						
	Fluctuation due to Ambient Temperature Change	12V: 120mV maximum 24V: 240mV maximum			12V: 150mV maximum 24V: 290mV maximum			
	Ripple Voltage	180mV p-p maximum (-10 to 0°C)					12V: 250mV p-p maximum (-10 to 0°C) 24V: 300mV p-p maximum (-10 to 0°C)	
		150mV p-p maximum (0 to 50°C)					12V: 200mV p-p maximum (0 to 50°C) 24V: 250mV p-p maximum (0 to 50°C)	
	Overcurrent Protection	105% minimum						
Overvoltage Protection	120% typical (Zener limiting)	120% typical (auto reset)						
Operation Indicator	LED							
Dielectric Strength	Between input and output terminals: 3,000VAC, 1 minute Between input terminals and housing: 2,000VAC, 1 minute Between output terminal and housing: 500VAC, 1 minute							
Insulation Resistance	Between input and output terminals/input terminals and housing: 100MΩ minimum (500VDC megger)							
Operating Temperature	-10° to +60°C (14° to 140°F) (see derating curves)							
Storage Temperature	-30° to +85°C (-22° to 185°F)							
Operating Humidity	20 to 90% relative humidity (no condensation)							
Vibration Resistance	20m/s ² (approximately 2G), 10 to 55Hz, 1 hour on each of 3 axes							
Shock Resistance	200m/s ² (approximately 20G), 11ms, 1 shock on each of 3 axes							
Dimensions (H x W x D)	3.8" x 1.38" x 3.39" (97 x 35 x 86mm)	3.8" x 1.38" x 3.39" (97 x 35 x 86mm)	3.8" x 1.38" x 4.5" (97 x 35 x 114.5mm)	3.8" x 1.46" x 5.8" (97 x 37 x 147.5mm)	3.8" x 2.13" x 7.87" (97 x 54 x 200mm)	3.8" x 2.56" x 7.87" (97 x 65 x 200mm)		
Weight (approximate)	240g	250g	280g	360g	700g	800g		



Part Number Guide

Part Numbering Guide



Part Number Codes

	Description	Code
① Wattage	7.5W	A
	15W	B
	30W	C
	50W	D
	100W	E
	150W	F
② Output Voltage	12VDC	12
	24VDC	24



Part Number List

Part Numbers: PS3E Series

Output Capacity	Output Voltage	Input Voltage	Part Number	
10W	12V DC	100 to 240VAC nominal (110 to 340VDC)	PS3E-A12F	
	24V DC		PS3E-A24F	
15W	12V DC		PS3E-B12F	
	24V DC		PS3E-B24F	
30W	12V DC		PS3E-C12F	
	24V DC		PS3E-C24F	
50W	12V DC		PS3E-D12F	
	24V DC		PS3E-D24F	
100W	12V DC		100 to 120VAC nominal 200 to 240VAC nominal	PS3E-E12F
	24V DC			PS3E-E24F
150W	12V DC	PS3E-F12F		
	24V DC	PS3E-F24F		



1. For dimensional drawings, see page L-17.
2. For usage instructions, see page L-16.
3. For accessories, see page L-13.

Accessories

Part Numbers: PS3E Accessories

Description	Appearance	Use with	Part Number
DIN rail (1000mm)		DIN rail brackets: PS9Z-3E4C, PS9Z-3E4D, PS9Z-3E4F	BNDN1000
DIN rail clip		DIN rail : BNDN1000	BNL5
DIN rail brackets		PS3E-A, PS3E-B, PS3E-C	PS9Z-3E4C
		PS3E-D,	PS9Z-3E4D
		PS3E-E, PS3E-F	PS9Z-3E4F
Short "L" bracket		PS3E-A, PS3E-B	PS9Z-3E2B
		PS3E-C	PS9Z-3E2C
		PS3E-D	PS9Z-3E2D
		PS3E-E	PS9Z-3E2E
		PS3E-F	PS9Z-3E2F
Long "L" bracket		PS3E-A, PS3E-B	PS9Z-3E3B
		PS3E-C	PS9Z-3E3C
		PS3E-D	PS9Z-3E3D
		PS3E-E	PS9Z-3E3E
		PS3E-F	PS9Z-3E3F
Mounting Brackets		PS9Z-3E1B	
		PS9Z-3E1C	
		PS9Z-3E1D	
		PS9Z-3E1E	
		PS9Z-3E1F	



Mounting screws provided with DIN rail brackets.

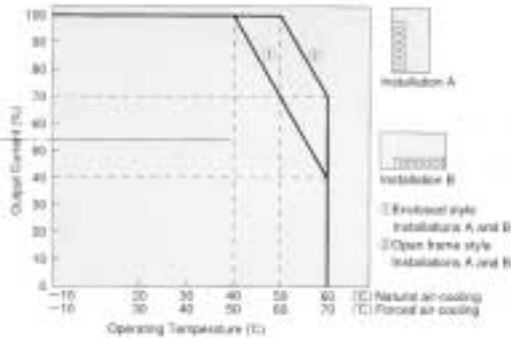
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Characteristics and Terminal Designations

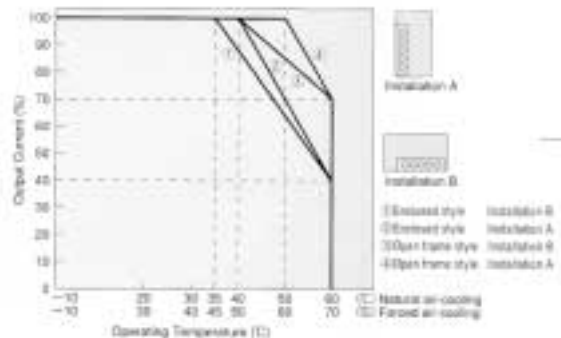
CHARACTERISTICS

• Output Current vs Operating Temperature Characteristics (Derating Characteristics)

(PS3E-A/B/C/D)

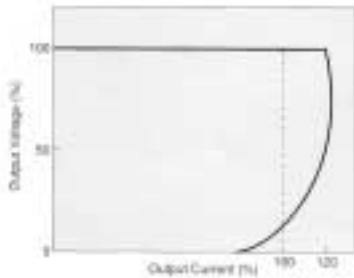


(PS3E-E/F)

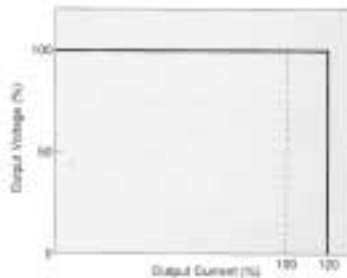


• Overcurrent Protection Characteristics

(PS3E-A/B)

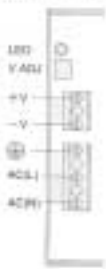


(PS3E-C/D/E/F)

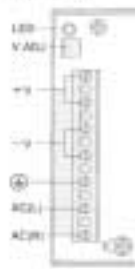


TERMINAL DESIGNATIONS

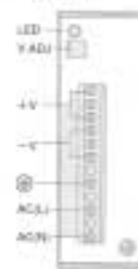
(PS3E-A/B/C/D)



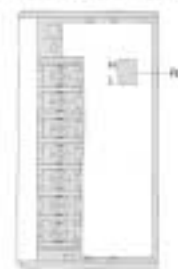
(PS3E-E)



(PS3E-F)



(Remote ON/OFF Function Type)



(Front View)

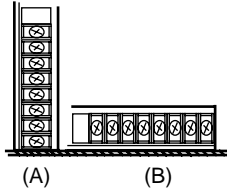
Terminal	Name	Remarks
V.ADJ	Output Voltage Adjustment	Allows adjustment within $\pm 10\%$. Turning clockwise increases the output.
LED	Operational Indicator (Green)	Illuminates when output voltage is on.
+V, -V	DC Output Terminals	+V: Positive output terminal, -V: Negative output terminal
\oplus	Frame Ground Terminal	Be sure to ground this terminal to reduce excess noise caused by switching.
AC	Input Terminal	Accepts a wide range of voltages and frequencies.
+S, -S	Remote Sensing Terminals	Compensates for voltage drops along the output line. Remove jumpers when using remote sensing. When remote sensing is not used, connect jumpers between terminals +S and +V and between terminals -S and -V. Connect the load to terminals +V and -V.
RC	Remote Control Terminal	Output is turned off while input voltage (5V) is applied to the terminals (H: \oplus , L: \ominus) (Remote ON/OFF function type only)

Installation Instructions

Instructions

• Notes for Installation

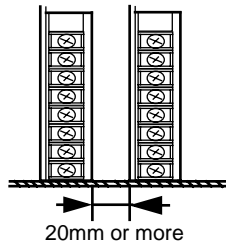
1. PS3E switching power supplies can be installed in either (A) or (B) direction shown below. For PS3E-E/F types, output current vs operating temperature.



2. Mount the switching power supply on a metallic surface that provides adequate heat dissipation. Be sure to prevent heat built-up around the power supplies.

3. Maintain 20mm clearance between the power supplies.

4. Use mounting screws of a proper length so that screws do not penetrate more than 6mm into the housing of switching power supply.



• Adjustment of Output Voltage

The output voltage can be adjusted within $\pm 10\%$ of the rated output voltage by using the V. ADJ control on the front.

Turning the V.ADJ clockwise increases the output voltage. When using a higher output voltage, reduce the output current to make sure that the output capacity is within the rating. Note that overvoltage protection may work when increasing the output voltage.

• Overcurrent Protection

The output voltage drops automatically when an overcurrent flows due to an overload or short circuit. Normal voltage is automatically restored when the load returns to normal conditions.

• Overvoltage Protection

PS3E-A

PS3E-A uses a zener diode for overvoltage protection. If the output voltage is reduced by overvoltage (120% or more), replace the zener diode to restore the output voltage.

PS3E-B/C/D/E/F

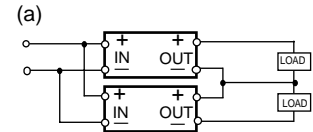
The output is turned off by overvoltage protection when an overvoltage is generated. When an output voltage is reduced by overvoltage (130% or more), turn the input off and after one minute, turn the input on again.

• Input Surge Current

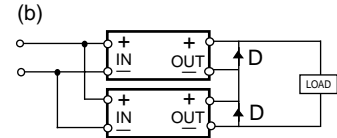
PS3E-A/B/C/D uses a power thermistor in inrush control circuit. Since the limit control varies with the temperature, surge current is increased at high temperatures. Note your selection of switches and fuses.

• Series Operation

The following series operation is allowed



For the series operation shown in figure (b), insert a Schottky diode.



• Notes for Operation

1. Welded fuses indicate that the internal circuits are damaged. If welded fuses are found in the internal circuits, contact IDEC for repair.
2. Avoid overload or short-circuit for a long period of time or you may damage the internal components.
3. Not suitable for parallel operation.

Notes for Safety

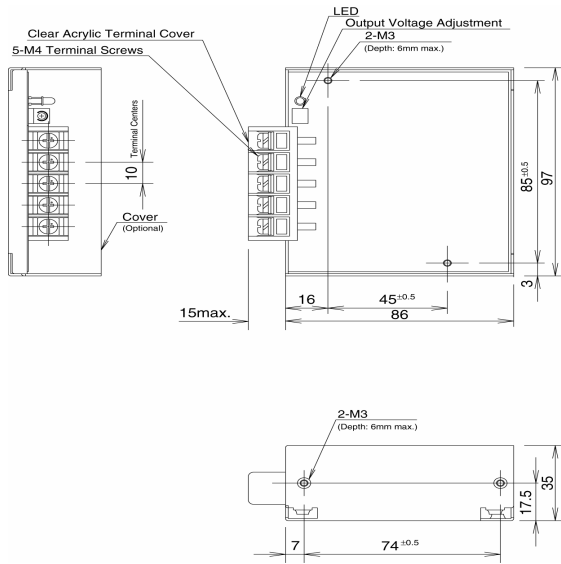


For the use of switching power supplies, observe the following notes.

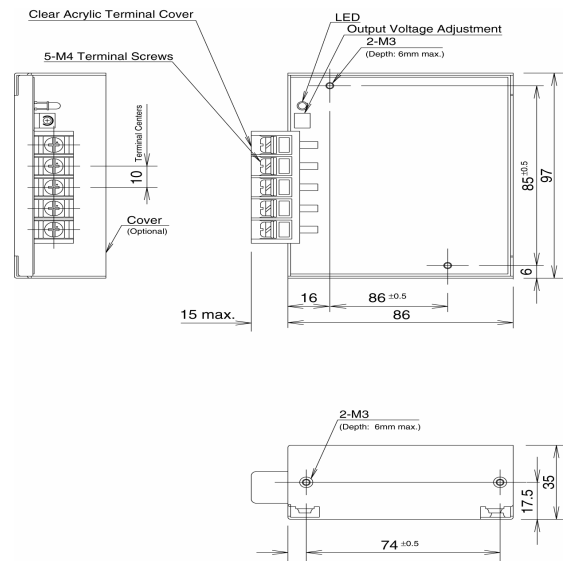
- Do not use switching power supplies with electric equipment whose malfunction or inadvertent operation may damage the human body or life directly.
- Voltage and output current should not exceed the ratings. If voltage and output current exceed the ratings, electric shock, fire, or malfunction may occur.
- Do not touch the switching power supplies when input voltage is applied, or electric shock may occur.
- Ensure protection against malfunction or damage caused by the malfunction of switching power supplies into the final product.
- Operating temperatures should not exceed the ratings. Be sure to note the derating characteristics. If the operating temperature exceeds the ratings, electric shock, fire, or malfunction may occur.
- Welded fuses indicate that the internal circuits are damaged. If the welded fuses are found in the internal circuits, contact IDEC for repair.
- Do not use the switching power supplies for recharging batteries.

Dimensions

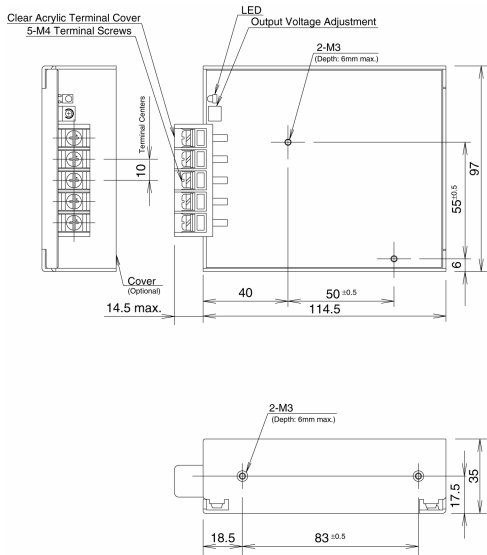
PS3E-A



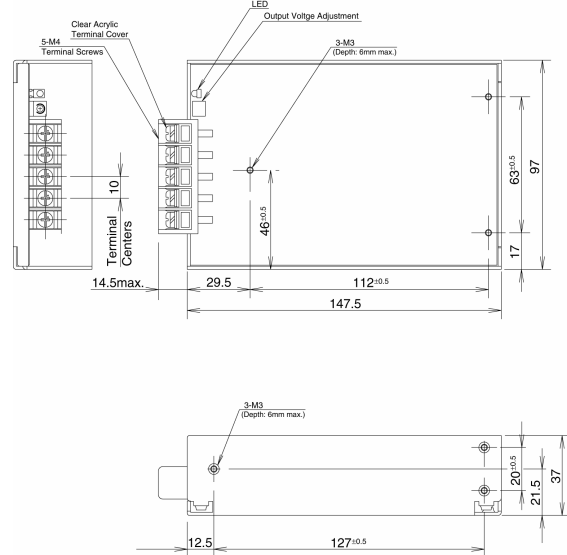
PS3E-B



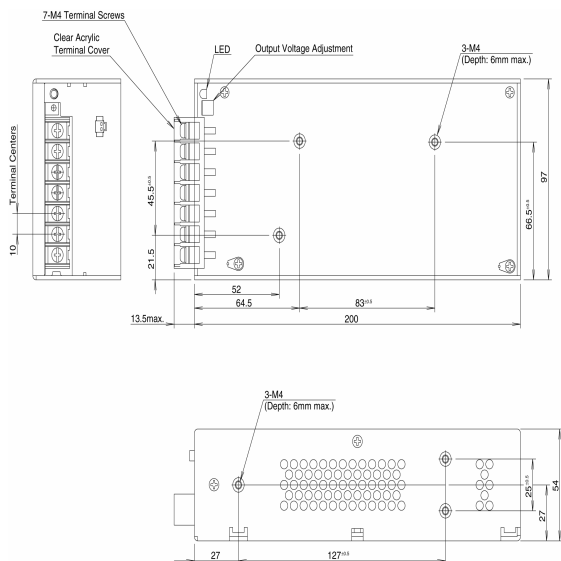
PS3E-C



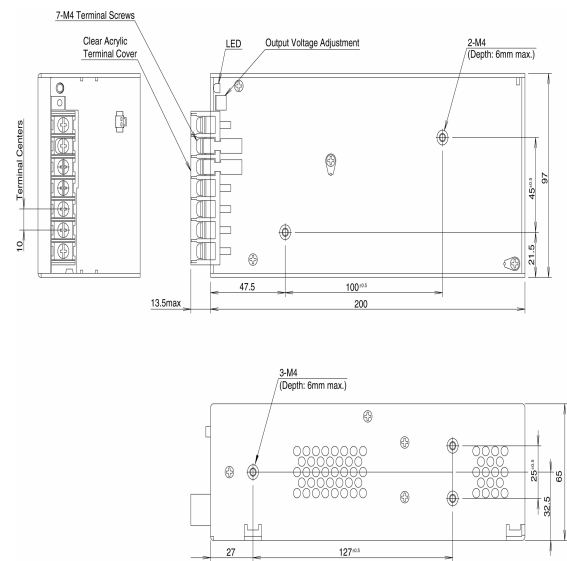
PS3E-D



PS3E-E



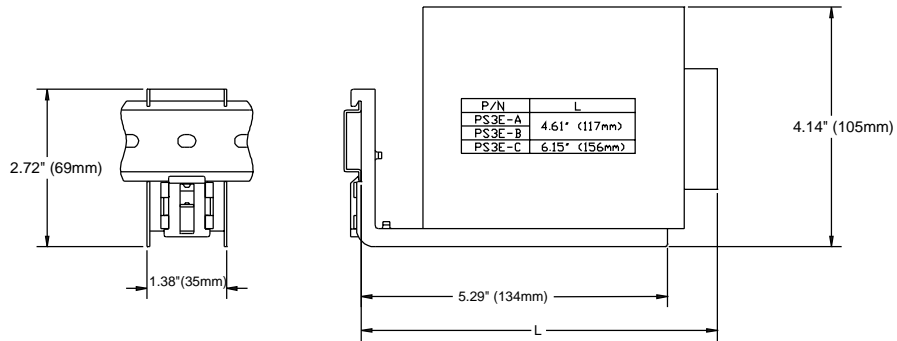
PS3E-F



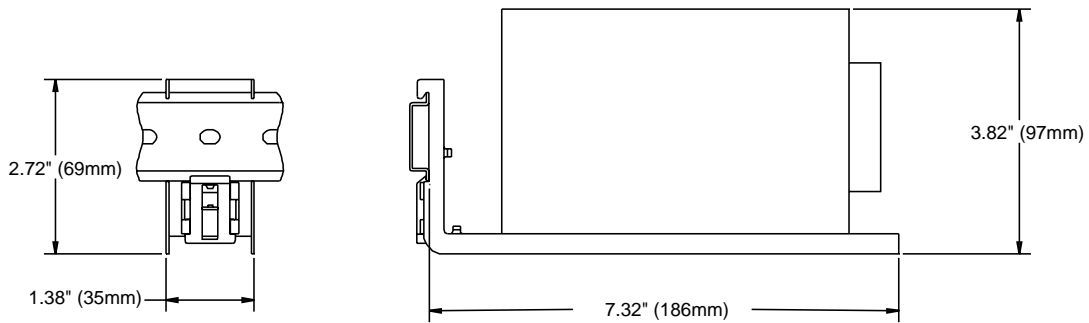
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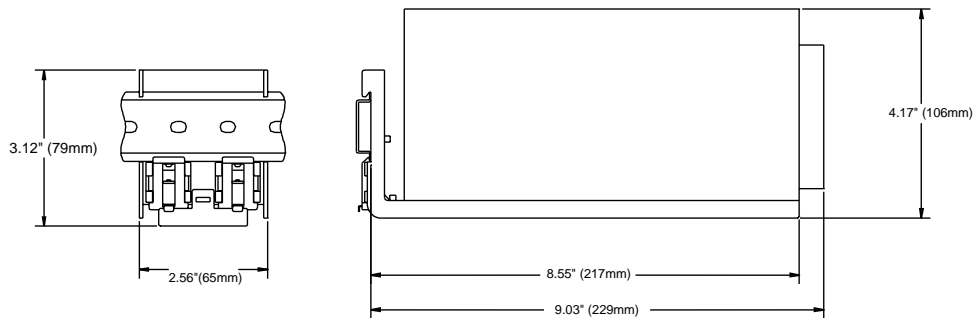
PS9Z-3E4C



PS9Z-3E4D



PS9Z-3E4F



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