



Size: 4.88in x 2.17in x 5in
(124mm x 55mm x 127mm)

FEATURES

- Universal 85-277VAC or 120-390VDC Input
- DC OK Function
- Active PFC
- Double Sided Conformal Coating, Salt-Spray Proof, Explosion-Proof
- Operating Altitude up to 5000m
- High Efficiency
- Output Short Circuit, Over Current, Over Voltage, and Over Temperature Protection
- OVC III (Safety According to EN61010)
- Input Under-Voltage Protection
- Safety According to ATEX, IECEx Increased Safety Type Explosion Proof Certification
- Safety According ANSI/ISA 71.04-2013 G3, IEC/UL62368, and UL508

DESCRIPTION

The PSDMF480 series of AC/DC converters offers 480 watts of power in a 4.88" x 2.17" x 5" DIN rail package. This series consists of single output models with a wide input voltage range of either 85-277VAC or 120-390VDC. Each model features high efficiency, active PFC, and DC OK function. It is protected against output short circuit, over current, over voltage, and over temperature conditions and has safety according to ANSI/ISA 71.04-2013 G3, IEC/UL62368, and UL508.

MODEL SELECTION TABLE

Model Number	Input Voltage Range	Output Voltage ⁽¹⁾	Output Current	Output Voltage Adjustable Range ⁽¹⁾	Output Power	Maximum Capacitive Load	Ripple & Noise	Efficiency	Certification
PSDMF480-24S	85-277VAC (120-390VDC)	24V	20A	24-28V	480W	100000µF	100mV	95%	UL/EN
PSDMF480-48S		48V	10A	48-56V	480W	25000µF	150mV	95.5%	

SPECIFICATIONS

All specifications are based on Ta=25°C, Humidity <75%, Nominal Input Voltage, and Rated Output Load unless otherwise noted. We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
	INPUT SPECIFICATIONS					
Input Voltage Range	Rated Input (Certified Voltage)		100		240	VAC
	AC Input		85		277	
	DC Input		120		390	VDC
Maximum Input Voltage	Lasts for 2h without damage				305	VAC
Input Voltage Frequency			47		63	Hz
Input Switching Voltage			75		85	VAC
Input Turn-Off Voltage			60		70	VAC
Input Current	115VAC				5	A
	230VAC				2.5	
Inrush Current	Cold Start	115VAC			15	A
		230VAC			35	A ² s
Inrush Current Integral (I ² t)	Cold Start	115VAC		0.2		A ² s
		230VAC		0.8		
Power Factor	Rated Load	115VAC	0.99			
		230VAC	0.97			
THD	230VAC, rated load			2		%
Input Fuse	Built-In Fuse			8		A
DC OK Signal	Resistive Load		30VDC/1A Max.			
Hot Plug			Unavailable			
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Output Voltage Accuracy	Full Load Range			±1.0		%
Line Regulation	Rated Load			±0.25		%
Load Regulation	0%-100% Load			±0.5		%
Power Consumption ⁽²⁾	230VAC, Rated Load	24V		24		W
		48V		21.6		
Output Power			See Table			
Output Current			See Table			
Maximum Capacitive Load			See Table			
Ripple & Noise ⁽³⁾	20MHz bandwidth (Peak-to-Peak Value)	24V			100	mV
		48V			150	
Hold-Up Time	115VAC/230VAC			22		ms
Start-Up Delay Time	115VAC/230VAC, rated load			400		ms
Rise Time	115VAC/230VAC, rated load			25		ms
DC OK Relay	Operation Voltage	24V		21.6		V
		48V		43.2		
	Release Voltage	24V		19.2		
		48V		38.4		

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SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
PROTECTION					
Short Circuit Protection	Constant Current	115	125	140	%
Over Current Protection	115VAC/230VAC, Constant Current, self-recovery	110	125	140	%Io
Over Voltage Protection	Output Off or Clamping, Self Recovery	24V Output	32		VDC
		48V Output	60		
Over Temperature Protection ⁽⁴⁾	230VAC, Rated Load	Over Temperature Protection Start		95	°C
		Over Temperature Protection Release	60		
ENVIRONMENTAL SPECIFICATIONS					
Operating Temperature		-40		+85	°C
Storage Temperature		-40		+85	°C
Operating Humidity	Non-Condensing	10		95	%RH
Storage Humidity	Non-Condensing	20		90	%RH
Altitude				5000	m
Power Derating	Operating Temperature Derating @AC Input	-40°C to -30°C	2		% / °C
		-30°C to +60°C	0		
		+60°C to +80°C	3.75		
	Operating Temperature Derating @DC Input	-40°C to -30°C	2		% / °C
		-30°C to +60°C	0		
		+60°C to +80°C	2		
Input Voltage Derating	85VAC-100VAC	1		% / VAC	
	100VAC-277VAC	0		% / VAC	
	120VDC-140VDC	1		% / VDC	
	140VDC-390VDC	0		% / VDC	
MTBF	MIL-HDBK-217F @25°C	702,000			H
	MIL-HDBK-217F @40°C	504,000			
High and Low Voltage Crossing	Contact factory for test suggestion				NB/T 31111-2017
GENERAL SPECIFICATIONS					
Typ. Efficiency	230VAC				See Table
Isolation Test ⁽⁵⁾	Electric Strength Test for 1min. Leakage Current <5mA	Input-⊕	2500		VAC
	Electric Strength Test for 1min. Leakage Current <10mA	Input-Output	4000		
	Electric Strength Test for 1min. Leakage Current <5mA	Output-⊕	1500		
Insulation Resistance	Environment Temperature: 25±5°C Relative Humidity: <95%, Non-Condensing Test Voltage: 500VDC	Input-⊕	500		MΩ
		Input-Output	500		
		Output-⊕	500		
Switching Frequency ⁽⁶⁾	PFC	58		77	kHz
	DC-DC	40		130	
Leakage Current	240VAC			1.5	mA
ENVIRONMENTAL CHARACTERISTICS					
High and Low Temperature Working	+85°C, -40°C				GB2423.1, IEC60068-2-1
Sinusoidal Vibration	10-500Hz, 2g, three directions of X, Y, Z axis				GB2423.10, IEC60068-2-6
Salt Mist	+35°C, 5%NaCl, 48h				GB2423.17, IEC60068-2-11
Alternating Hot and Humid	+25°C, 95%RH - +60°C, 95%RH				GB2423.4, IEC60068-2-30
Low Temperature Storage	-40°C				GB2423.1, IEC60068-2-1
High Temperature Storage	+85°C				GB2423.2, IEC60068-2-2
High Temperature Aging	+60°C				GB2423.2, IEC60068-2-2
Normal Temperature Aging	+25°C				GB2423.1, IEC60068-2-1
Temperature Shock	-40°C to +85°C				GB2423.22, IEC60068-2-14
Temperature Cycle	-25°C to +60°C				GB2423.22, IEC60068-2-14
Hot and Humid	+85°C, 85%RH, 12h				GB2423.50, IEC60068-2-67
High Temperature Elevation	+60°C, 54KPa				GB2423.26, IEC60068-2-41
Low Temperature Elevation	-25°C, 54KPa				GB2423.25, IEC60068-2-40
Constant Humid and Hot	+40°C, 95%RH				GB2423.3, IEC60068-2-78
Random Vibration	5-10Hz, ASD 0.3-10g ² /Hz, three directions of X, Y, Z axis				GB/T 4798.2-2008, IEC60721-3-2
Sinusoidal Vibration Response	10-150Hz, 1g, three directions of X, Y, Z axis				GB/T 11287-2000, IEC60255-21-1
Sinusoidal Vibration Endurance Test					
Sinusoidal Impulse Response					
Sinusoidal Impact Endurance Test	15g, pulse duration 11ms, three times in each direction of X, Y, Z axis				GB/T 114537-1993, IEC60255-21-2
Packaging Drop	1m, one corner, three edges and six sides				GB2423.8, IEC68-2-32

SPECIFICATIONS

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SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
PHYSICAL SPECIFICATIONS						
Weight			2.17lbs (0.985kg)			
Dimensions (L x W x H)			4.88in x 2.17in x 5in (124mm x 55mm x 127mm)			
Case Material			Metal (AL5052, SUS304)			
Cooling			Free Air Convection			
SAFETY & EMC CHARACTERISTICS⁽⁷⁾⁽⁸⁾						
Safety Standards			UL61010-1 Safety Approved & EN62368-1 (Report)			
Safety Class			Design Refers to IEC/UL62368-1, UL508 Class I, ANSI/ISA71.04-2013			
Emissions	CE (Input Port)	CISPR32/EN55032	150K-30MHz	Class B		
	CE (Output Port)	CISPR32/EN55032	150K-30MHz	Class A		
	RE	CISPR32/EN55032	30MHz-2GHz	Class B		
	Voltage Flicker	EN61000-3-3		Fulfilled		
	Harmonic Current	IEC/EN61000-3-2		Class A and Class D		
Immunity	ESD	IEC/EN61000-4-2	Contact ±8kV/Air ±15kV	Perf. Criteria A		
	RS	IEC/EN61000-4-3	20V/m	Perf. Criteria A		
	EFT	IEC/EN61000-4-4 (Input Port)	±4kV	Perf. Criteria A		
		IEC/EN61000-4-4 (Output Port)	±2kV	Perf. Criteria A		
	Surge	IEC/EN61000-4-5 (Input Port)	L to N ±3kV/L or N to PE ±6kV	Perf. Criteria A		
		IEC/EN61000-4-5 (Output Port)	Line to Line ±1kV/Line to Ground ±2kV	Perf. Criteria A		
	CS	IEC/EN61000-4-6	0.15-80MHz 20Vr.m.s	Perf. Criteria A		
	AC Power Port Harmonics	IEC61000-4-13	Class 3	Perf. Criteria A		
	Harmonic and Network Signal			Perf. Criteria A		
	Low Frequency Immunity			Perf. Criteria A		
	PFMF	IEC/EN61000-4-8	30A/m	Perf. Criteria A		
	Voltage Dips, Short Interruptions and Voltage Variations Immunity	IEC/EN61000-4-11	0% of 100VAC, 0VAC, 20ms	Perf. Criteria A		
			40% of 100VAC, 40VAC, 200ms	Perf. Criteria C		
70% of 100VAC, 70VAC, 500ms			Perf. Criteria A			
0% of 200VAC, 0VAC, 20ms			Perf. Criteria A			
40% of 200VAC, 80VAC, 200ms			Perf. Criteria A			
Voltage Interruption	IEC/EN61000-4-11	70% of 200VAC, 140VAC, 500ms	Perf. Criteria A			
		0% of 200VAC, 0VAC, 5000ms	Perf. Criteria C			

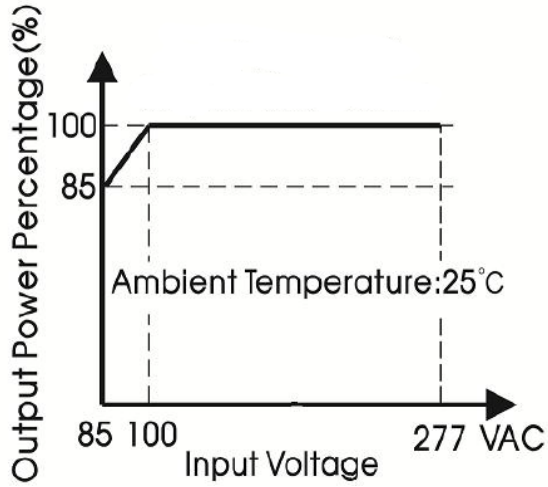
NOTES

- When the output voltage rises, the total power of the product should not exceed the rated power
- See characteristic curve for more details.
- The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor. Contact factory for more information.
- Over Temperature Protection: put the product into a high temperature box. After the ambient temperature stabilizes, increase the temperature slightly (3°C to 5°C) and the load remains unchanged. After the product reaches thermal equilibrium, increase the temperature until the product triggers over-temperature protection.
- Remove the screw at the mark  when the product is subjected to withstand voltage test;
 - The gas discharge tube built into the device effectively protects the power supply against damage by asymmetric disturbance variables (eg EN 61000-4-5). Each power supply's continuous withstands voltage test will cause extremely high load to the power supply. Therefore, unnecessary loading or damage to the power supply due to excessive test voltage should be avoided. If necessary, disconnect the gas discharge tube built into the device to use a higher test voltage. After successful completion on the test, reconnect the gas discharge tube. See installation diagram below for specific operation methods.
- The power supply has two converters with two different switching frequencies
- This product is Listed to applicable standards and requirements by UL.
- Perf. Criteria:
 - The equipment shall continue to operate as intended without operator intervention
 - After the test, the equipment shall continue to operate as intended without operator intervention
 - Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with manufacturer's instructions.
- The room temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m.
- In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability.
- Customization is available, contact factory for more details.
- Out case needs to be connected to PE of system when the terminal equipment is in operation.
- Output voltage can be adjusted by the ADJ, clockwise to increase.
- Our products should be classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.

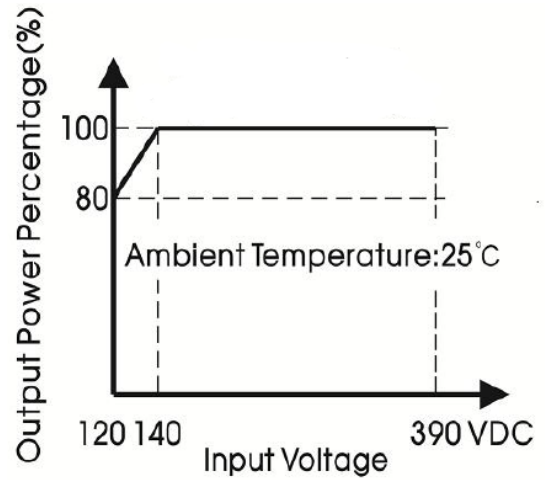
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CHARACTERISTIC CURVES

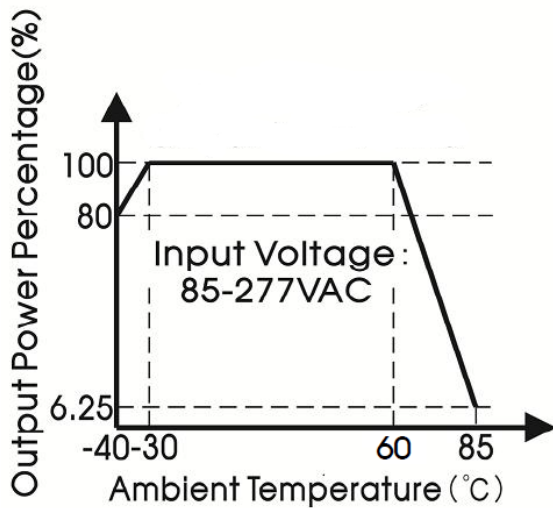
Input Voltage vs. Output Power Curve



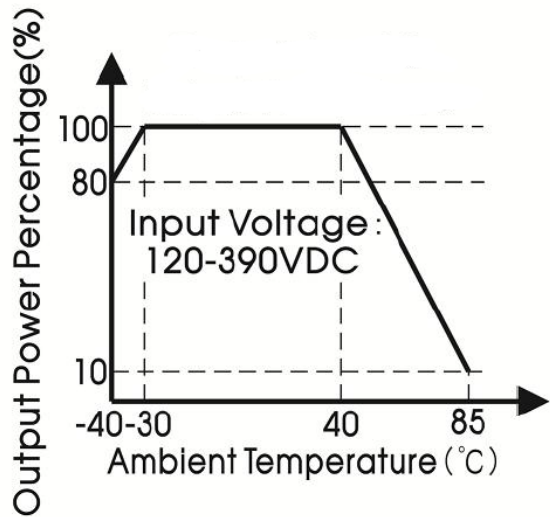
Input Voltage vs. Output Power Curve



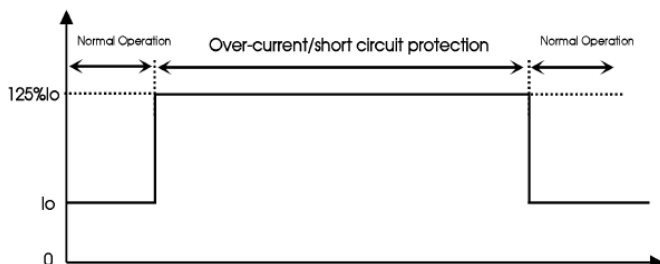
Temperature vs. output Power Curve



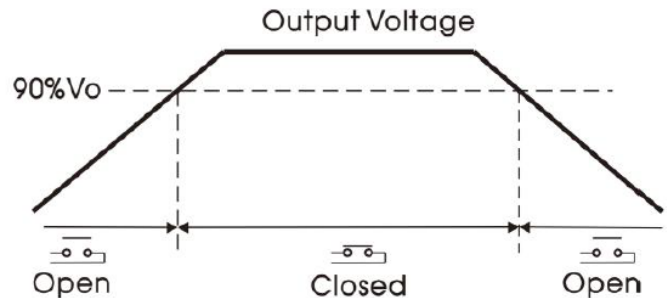
Temperature vs. Output Power Curve



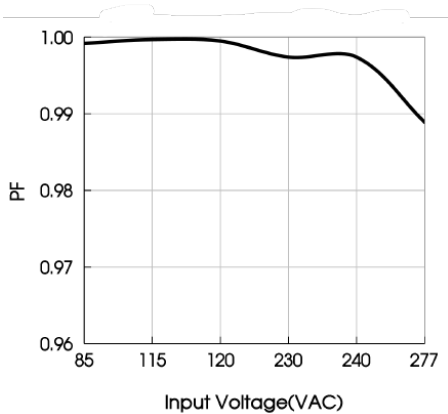
Over-Current/Short Circuit Protection Curve (Typ.)



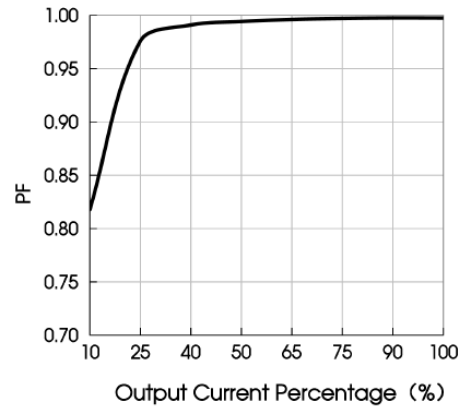
DC OK Behavior Curve (Typ.)



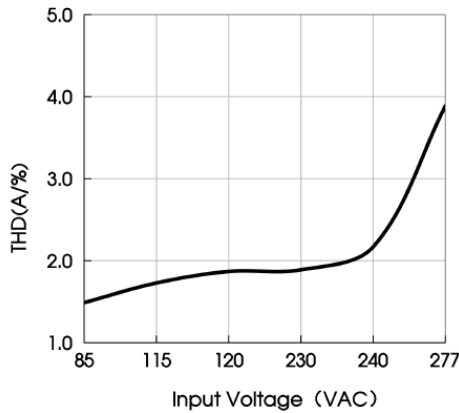
Input Voltage vs PF (Full Load)



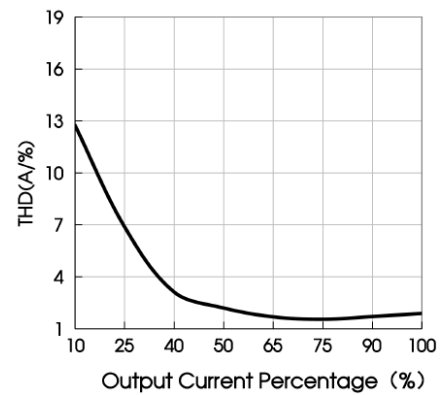
Output Load vs PF (Vin=230VAC)



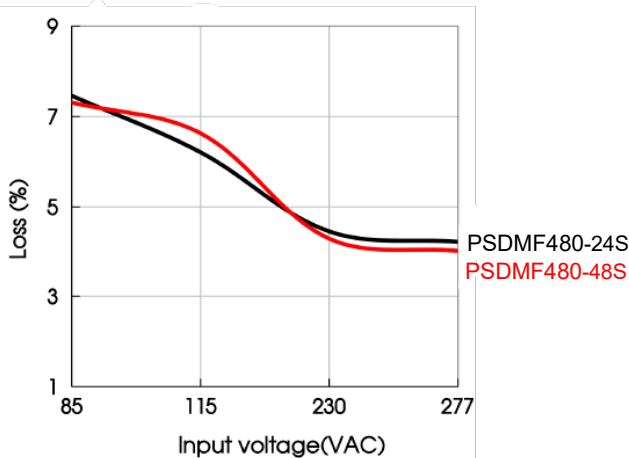
Input Voltage vs THD (Full Load)



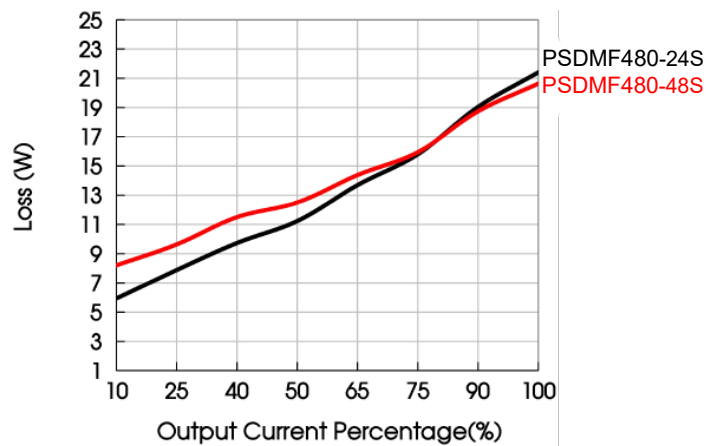
Output Load vs. THD (Vin=230VAC)



Input Voltage vs Loss (Full Load)

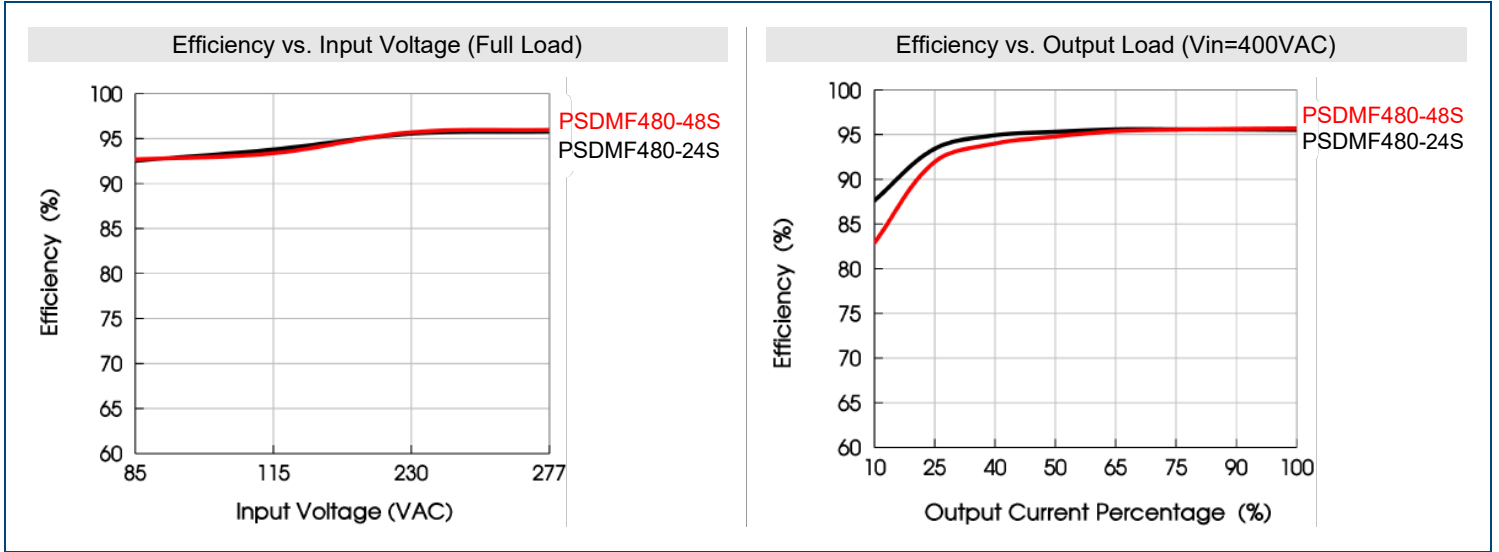


Output Load vs. Loss (Vin=230VAC)

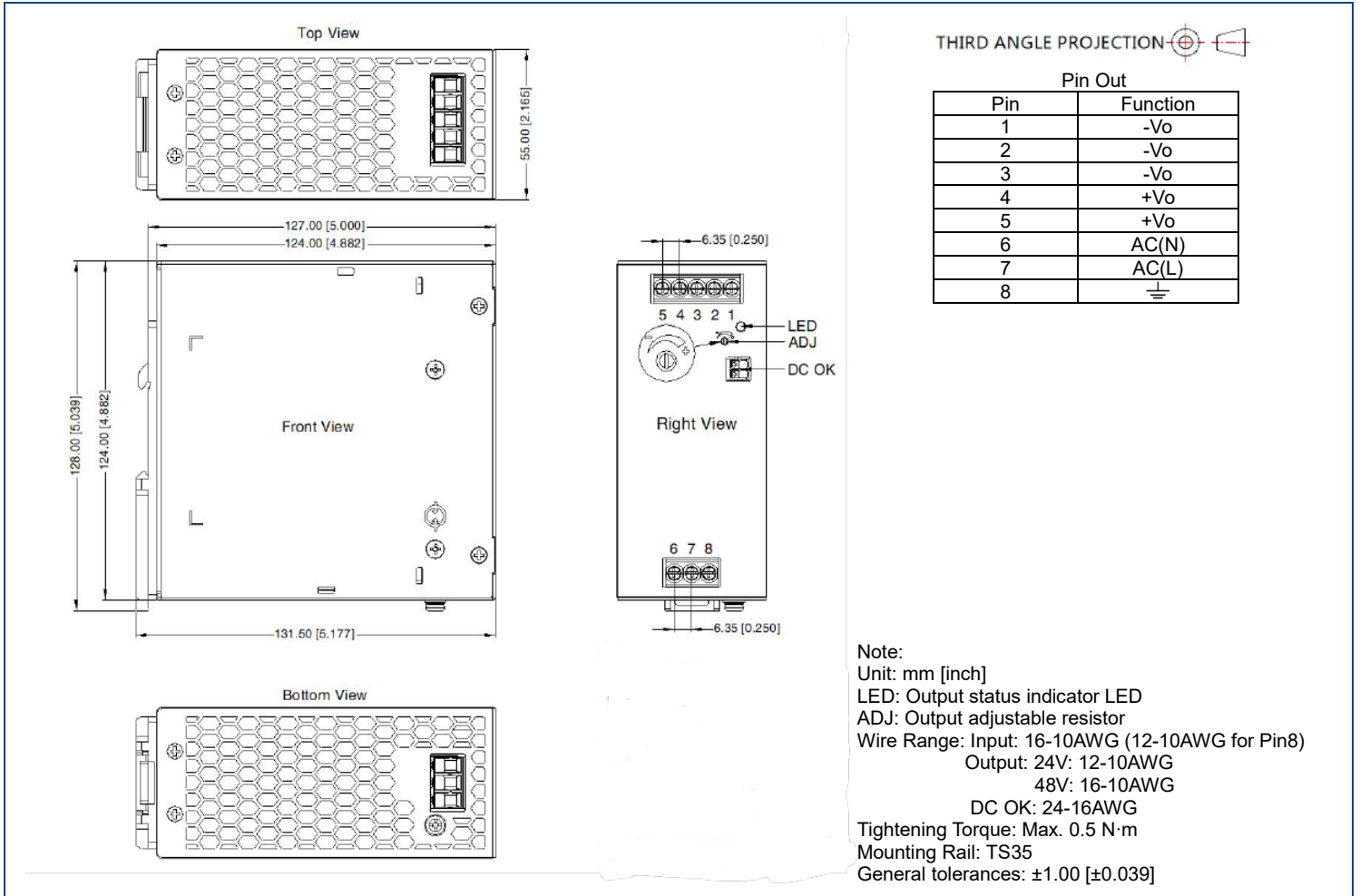


Note:
 1. All curves are for 24V output, measured at input 230VAC, 50Hz, output I_o , ambient temperature 25°C, unless otherwise stated
 2. With input voltage between 85-100VAC and a DC input between 120-140VDC the output power must be derated as per the temperature derating curves
 2. This product is suitable for applications using natural air cooling. For applications in a closed environment, please contact factory.

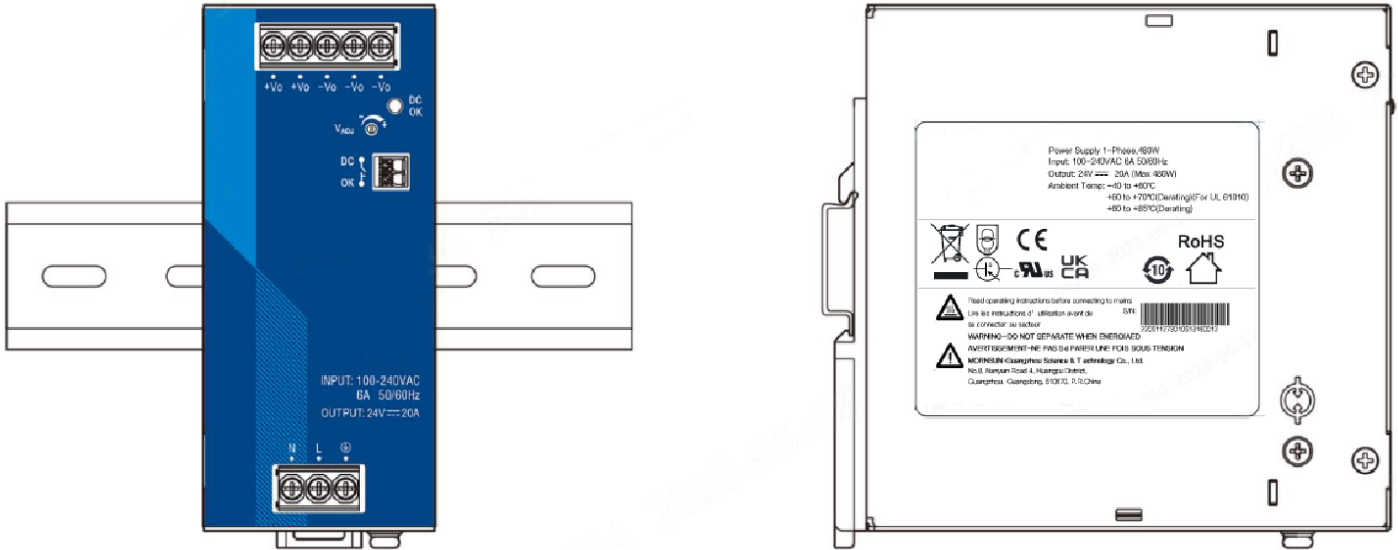
EFFICIENCY GRAPHS



MECHANICAL DRAWINGS



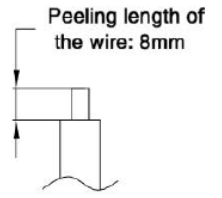
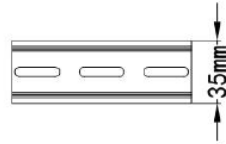
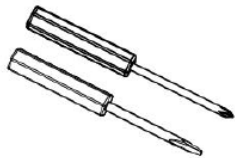
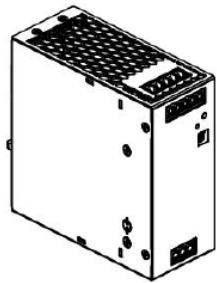
INSTALLATION



Note: Keep the following installation clearances: 20mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device is loaded permanently with more than 50% of the rated power. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply).

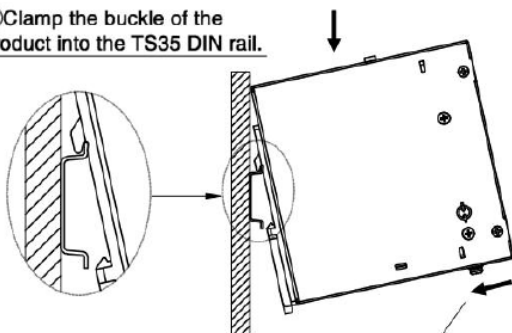
Materials required in the installation

1	Product	1 PC
2	Phillips screwdriver Slotted screwdriver	1 PC
3	TS35/7.5 or TS35/15	1 PC
4	16-10AWG wire	/ PCS
	The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing.	

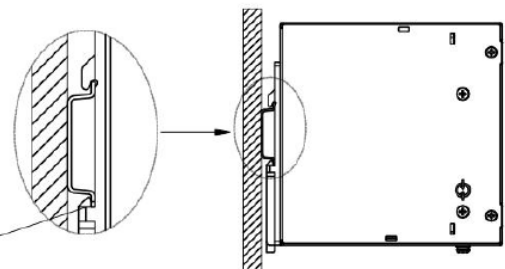


Installation steps ①-②

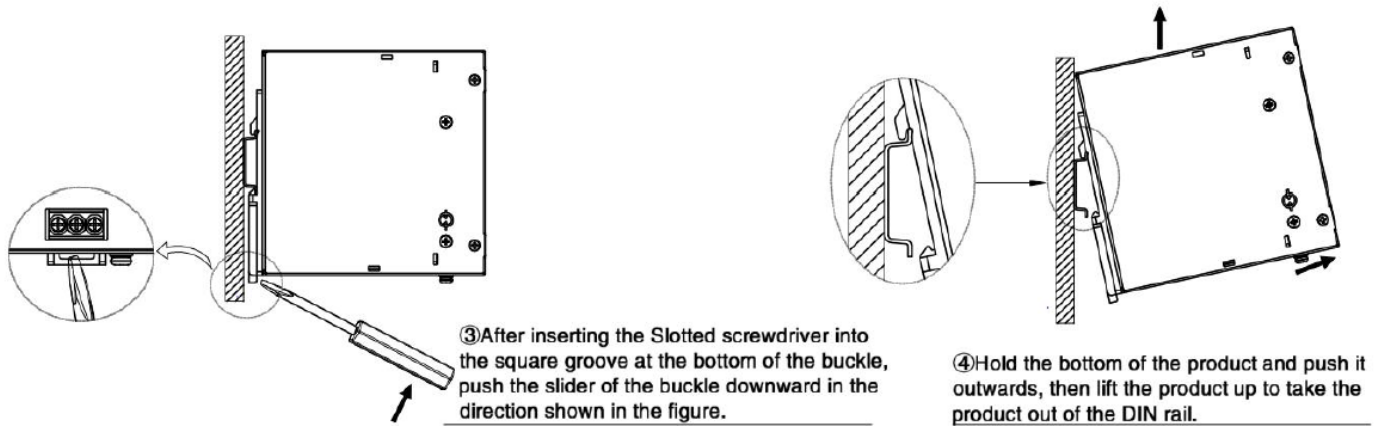
①Clamp the buckle of the product into the TS35 DIN rail.



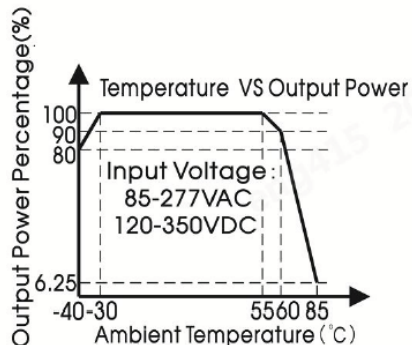
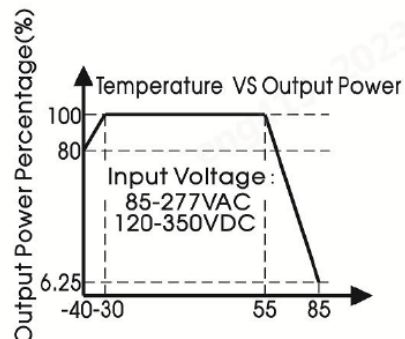
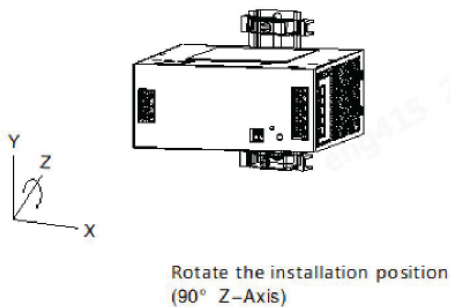
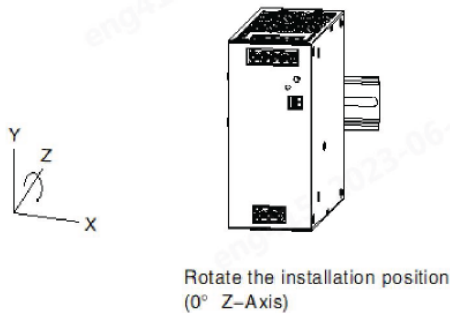
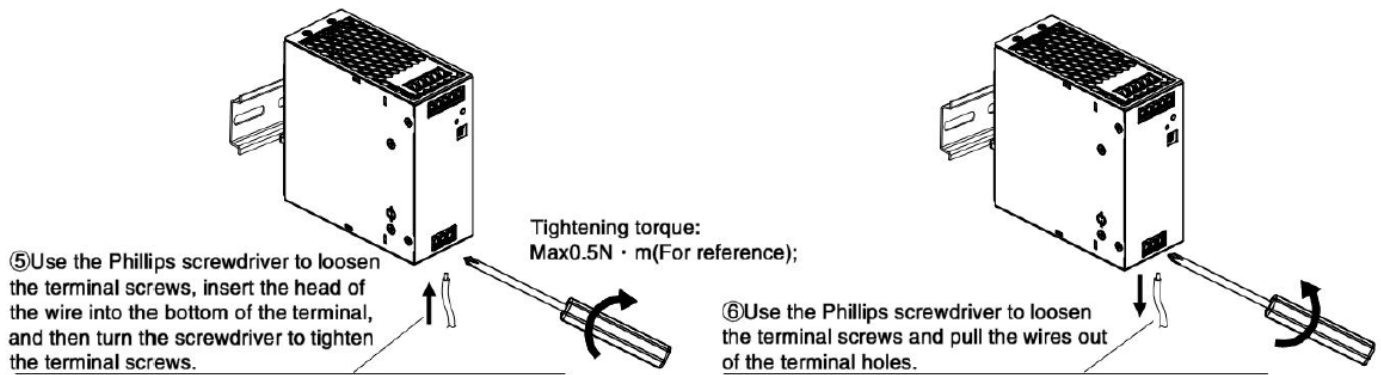
②Push the product vertically towards the TS35 DIN rail until hearing the sound of the buckle snapping into it.

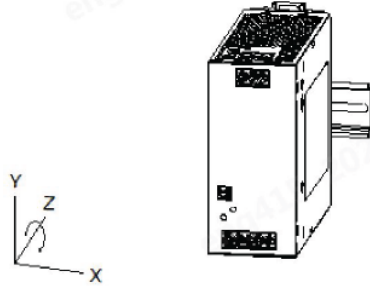


Disassembly steps ③-④

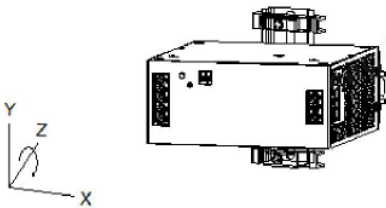
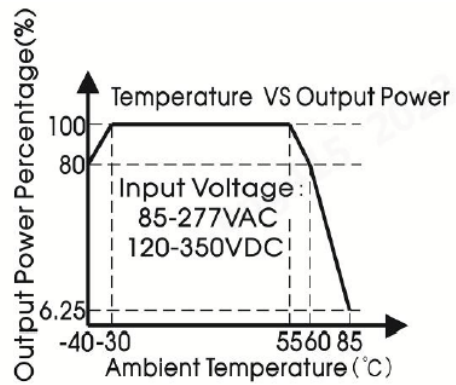


Wiring / Unwiring Steps ⑤-⑥

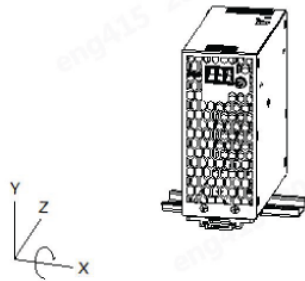
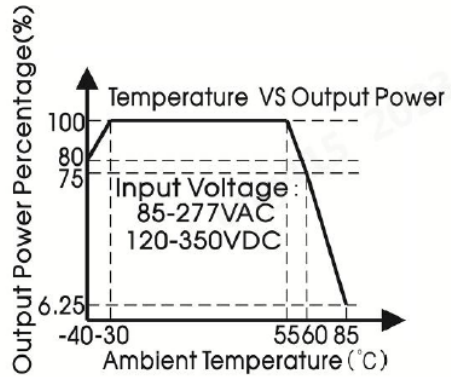




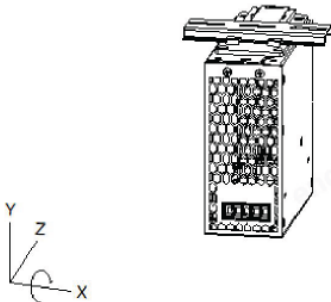
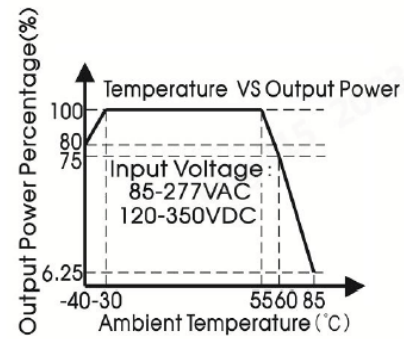
Rotate the installation position
(180° Z-Axis)



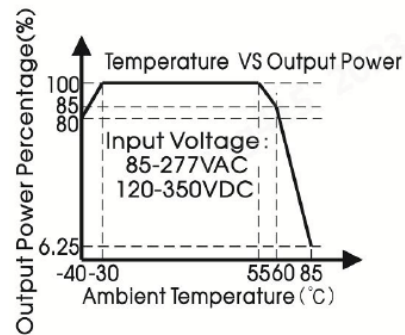
Rotate the installation position
(270° Z-Axis)



Rotate the installation position
(270° X-Axis)




Rotate the installation position
(90° X-Axis)



WARNINGS

WARNING: Risk of electrical shock, fire, personal injury or death:

1. Do not use the power supply without proper grounding (Protective Earth). Use the terminal on the input block for earth connection and not one of the screws on the housing.
2. Turn power off before working on the device, protect against inadvertent re-powering.
3. Make sure that the wiring is correct by following all local and national codes
4. Do not modify or repair the unit.
5. Do not open the unit as high voltages are present inside.
6. Use caution to prevent any foreign objects from entering the housing.
7. Do not use in wet locations or in areas where moisture or condensation can be expected
8. Do not touch during power-on or immediately after power-off, hot surfaces may cause burns 
9. For ambient temperature $\leq 60^{\circ}\text{C}$, use $\geq 90^{\circ}\text{C}$ – copper wire only; for ambient temperature $> 60^{\circ}\text{C}$ to 85°C , use $\geq 105^{\circ}\text{C}$ – copper wire only; use only wires with a minimum dielectric strength of 300V (input) and 60V (output)

**Due to advances in technology, specifications subject to change without notice.*

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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