

960W AC to DC Power Supply DIN Rail Mount

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**RoHS
Compliant**



Features

- Universal 3x320-600VAC or 450-800VDC Input voltage
- Active PFC, PF up to 0.94
- Operating ambient temperature range: -30°C to +70°C, 60°C @ 100% load without
- Standard DIN-Rail mounting
- High efficiency, high reliability
- LED indicator for output status
- 150% peak power lasts for 4s
- Output short circuit, over-current, over-voltage, over-temperature protection
- Supporting parallel (2+1 current sharing) and series
- Fault alarm function, DC OK, constant current
- Double-sided conformal coating, salt-spray proof
- 485 Communication, remote shutdown (PS ON)
- Operating altitude up to 5000m
- OVC III (Safety according to EN61010)
- 3 years warranty
- Safety according to ANSI/ISA 71.04-2013 G3
- Safety according to IEC/UL/EN62368, IEC/EN61000, UL/EN61010, CISPR32/EN55032, UL508

MPITF960-26Bxx is AC-DC three-phase Din-Rail switching power supply. It features cost-effective, low-power consumption, high efficiency, high reliability and security isolation. With 150% power reserve, enough to support starting DC motor or capacitive load and other heavy load. These converters offer excellent EMC performance and meet IEC/UL/EN62368, IEC/EN61000, UL/EN61010, CISPR32/EN55032, UL508 standards and they are widely used in areas of industrial control equipment, factory automation and mechanical and electrical equipment and other industrial control fields.

Selection Guide

Part Number	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range (V)	Efficiency at 400V AC (%) Typ.	Max. Capacitive Load (µF)
MPITF960-26B24	960	24V/40A	24-28	95.3	40000
MPITF960-26B36		36V/26.6A	36-42	95.4	20000
MPITF960-26B48		48V/20A	48-56	95.4	20000

Note: 1. *When the output voltage rises, the total power of the product should not exceed the rated power;
 2. *Please refer to the derating curve, when the 48V output voltage is adjusted to 53V - 56V;
 3. *This product is suitable for indoor use, if it is used in outdoor environment.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	320	--	600	V AC
	DC input	450	--	800	V DC
Input Voltage Frequency		47		63	Hz

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Item	Operating Conditions		Min.	Typ.	Max.	Unit	
Input Current	400V AC		--	--	2	A	
	480V AC				1.6		
Inrush Current	400V AC	Cold start		3.5	--		--
	480V AC			5			
Power Factor	400VAC	Normal temperature, rated load	0.86	0.94	--	--	
	480VAC		0.88	0.93			
Leakage Current	480V AC		<2mA				
Hot Plug			Unavailable				

Output Specifications								
Item	Operating Conditions		Min.	Typ.	Max.	Unit		
Output Voltage Accuracy	Full load range		--	±1	-	%		
Line Regulation	Rated load			±0.5				
Load Regulation	0%-100% load			±0.5				
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	24V	--	--	150	mV		
		36V			200			
		48V			220			
Temperature Coefficient				±0.03		%/°C		
Minimum Load			0	--		%		
Standby Power	400VAC		--	10	--	W		
	480VAC			12				
Hold-up Time	400VAC			25		25		ms
	480VAC							
Short Circuit Protection			Constant current mode, continuous, self-recover					
Over-current Protection			120% - 150% I _o , enter constant current mode after 4-4.5s of normal output, automatic recover after fault condition is removed					
			≥150% I _o , enter constant current mode immediately, automatic recover after fault condition is removed					
Over-voltage Protection	24V		≤35V DC (Hiccup, self-recover)					
	36V		≤48V DC (Hiccup, self-recover)					
	48V		≤60V DC (Hiccup, self-recover)					
Over-temperature Protection	Over-temperature protection start		--	--	85	°C		
	Over-temperature protection release		65	--	--			
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.								

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General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Test	Input - ⊕	Electric strength test for 1min, leakage current<10mA	2500	--	--	V AC
	Input - output	Electric strength test for 1min, leakage current<5mA	4000			
	Output - ⊕	Electric strength test for 1min, leakage current<10mA	500			
	Output - DC OK	Electric strength test for 1min, leakage current<1mA	500			
Insulation Resistance	Input - ⊕	Environment temperature: 25±5°C	50	--	--	MΩ
	Input - output	Relative humidity: <95%, non-condensing				
	Output - ⊕	Test voltage: 500V DC				
Operating Temperature			-30		70	°C
Storage Temperature			-40		85	
Storage Humidity		Non-condensing	20		90	%RH
Operating Humidity			10		95	
Switching Frequency	PFC		40	--	300	kHz
	DC-DC			--	150	
Power Derating	Operating temperature derating	+60°C to +70°C	2.5	--		%/°C
	Input voltage derating	320V AC - 350V AC	0.667			%/V AC
Safety Standard			Design refer to IEC/EN/UL62368-1, UL/EN61010-1, UL508, UL/EN61010-2-201			
Safety Class			CLASS I, ANSI/ISA71.04-2013			
MTBF		MIL-HDBK-217F@25°C	≥250,000 h			
Pollution degree		2				
Note:1.*The power supply has two converters with two different switching frequencies. 2.* Indoor use meets UL 61010 certification standards.						

Mechanical Specifications

Case Material	Metal (AL5052, SPCC)
Dimensions	110mm x 124mm x 127mm
Weight	1790 g (Typ.)
Cooling Method	Free air convection

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Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B	perf. Criteria A
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	CLASS A	
ESD	IEC/EN 61000-4-2	Contact $\pm 8\text{KV}$ /Air $\pm 15\text{KV}$		
RS	IEC/EN 61000-4-3	10V/m		
EFT (input)	IEC/EN 61000-4-4	$\pm 4\text{KV}$		
EFT (output)	IEC/EN 61000-4-4	$\pm 2\text{KV}$		
EFT (DC OK)	IEC/EN 61000-4-4	$\pm 2\text{KV}$		
Surge (input)	IEC/EN 61000-4-5	line to line $\pm 2\text{KV}$ /line to PE $\pm 4\text{KV}$		
Surge (output)	IEC/EN 61000-4-5	Vo+ to Vo- $\pm 500\text{V}$ /Vo+/Vo- to PE $\pm 1\text{KV}$		
Surge (DC OK)	IEC/EN 61000-4-5	DC OK to PE $\pm 1\text{KV}$		
CS	IEC/EN61000-4-6	20 Vr.m.s		
Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0% 70%		
Intercom interference test	MS-SOP-DQC-007			

Functional Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Remote Control Switch	0 - 0.8V DC power turn-on		0	--	0.8	V DC
	4 - 20V DC power turn-off		4	--	20	
DC OK Signal	Full input voltage range, full load range	DC OK power on	0.95Vo - Vo			
		DC OK power off	<0.90Vo			
Current Sharing Accuracy*	When multiple units are connected in parallel, the sub-modules shunt more than 50% of the rated load		--	± 5	--	%
LED Signal	Main output status indication	Normal output >95%	Green On			
		Over-current or Over-temperature protection	Red On			
		Power Off (No AC input) or PS ON Off	Turn-off			
RS485-A, RS485-B			RS485 communication			

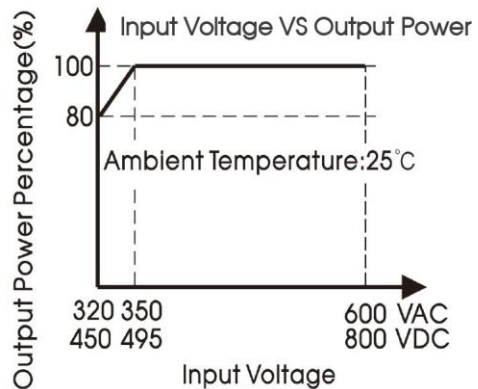
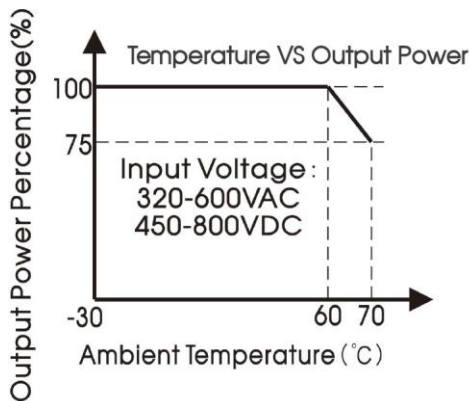
Note: *When multiple units work with current sharing, the output voltage deviation of each prototype working alone shall not exceed 100mV.

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Environmental Characteristics		
Item	Operating Conditions	Standard
High and Low Temperature Working	+75°C, -30°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, 16h	GB2423.17, IEC60068-2-11
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	-30°C to +60°C	GB2423.22, IEC60068-2-14
Hot and Humid	+85°C, 85%RH	GB2423.50, IEC60068-2-67
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		
Packaging Drop	1m, one corner, three edges and six sides	GB2423.8, IEC68-2-32

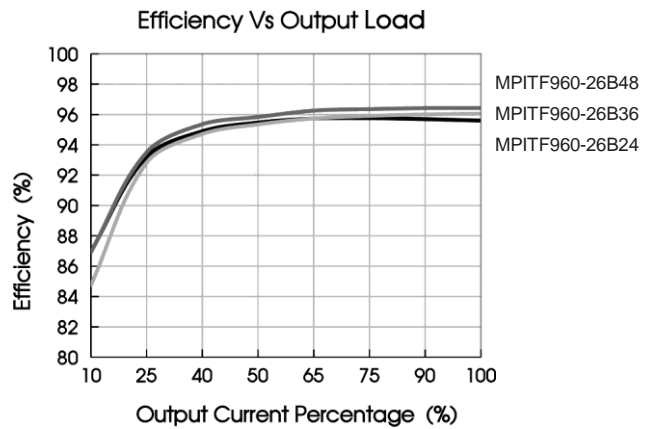
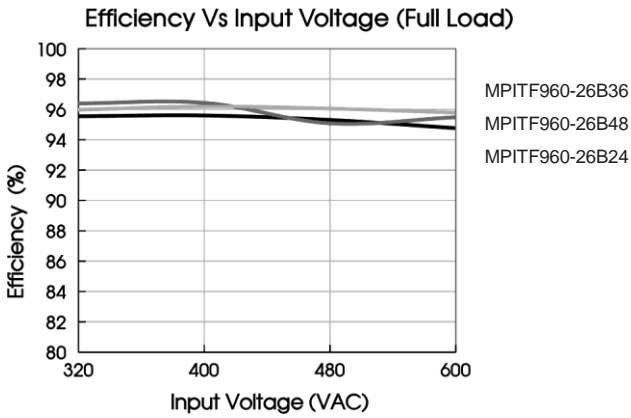
Product Characteristic Curve



- Note: 1. All curves are for 24V output, measured at input 3x400VAC, 50Hz, output I_o, ambient temperature 25°C, unless otherwise stated;
2. With an AC input voltage between 320V AC to 350V AC and a DC input between 450V DC to 495V DC the output power must be derated as per the temperature derating curves;
3. This product is suitable for applications using natural air cooling; for applications in closed environment.
4. The operating temperature and the ambient temperature are determined according to the air temperature at 2cm below the power supply.



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Dimensions and Recommended Layout

Front View

Right View

Pin-Out	
Pin	Mark
1	L1
2	L2
3	L3
4	⊥
5	+Vo
6	+Vo
7	-Vo
8	-Vo

Bottom View

9 must be connected to the earth (⊥)

Note:
 Unit: mm[inch]
 ADJ: Output adjustable resistor
 Wire range: Input: 20-6 AWG
 Output: 20-6 AWG
 Input Tightening torque: Max 1.2 N·m
 Output Tightening torque: Max 1.2 N·m
 Mounting rail: TS35, rail needs to connect safety ground
 General tolerances: ± 1.00 [± 0.039]



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

AVERTISSEMENT AVERTISSEMENT Risque de choc électrique, d'incendie, de blessures corporelles ou de décès :

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; N'utilisez pas l'alimentation électrique sans mise à la terre appropriée (Terre protectrice). Utilisez le terminal sur le bloc d'entrée pour la connexion terrestre et non pas une des vis sur le boîtier;
2. Turn power off before working on the device, protect against inadvertent re-powering; Éteignez l'alimentation avant de travailler sur l'appareil, protégez-vous contre la réénergisation accidentelle;
3. Make sure that the wiring is correct by following all local and national codes; Assurez-vous que le câblage est correct en suivant tous les codes locaux et nationaux;
4. Do not modify or repair the unit; Ne modifiez pas ou ne réparez pas l'appareil;
5. Do not open the unit as high voltages are present inside; Ne modifiez pas ou ne réparez pas l'appareil;
6. Use caution to prevent any foreign objects from entering the housing; Faire preuve de prudence pour empêcher les objets étrangers d'entrer dans le logement;
7. Do not use in wet locations or in areas where moisture or condensation can be expected; Faire preuve de prudence pour empêcher les objets étrangers d'entrer dans le logement;
8. Do not touch during power-on, and immediately after power-off, hot surfaces may cause burns; Ne touchez pas pendant l'alimentation et, immédiatement après l'alimentation, les surfaces chaudes peuvent causer des brûlures.
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); Température ambiante $\leq 60^{\circ}\text{C}$, utiliser $\geq 90^{\circ}\text{C}$ - seulement fils de cuivre; Température ambiante $> 60^{\circ}\text{C}$ et 85°C , utiliser $\geq 105^{\circ}\text{C}$ - seulement fils de cuivre; Uniquement pour l'utilisation de fils de cuivre d'une résistance d'isolation minimale de 300V (d'entrée) et 60V (de sortie).

Notes:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity $< 75\% \text{RH}$ with nominal input voltage and rated output load;
2. The room temperature derating of $5^{\circ}\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
3. The out case needs to be connected to PE (⊕) of system when the terminal equipment in operating;
4. The output voltage can be adjusted by the ADJ, clockwise to increase;
5. WARNING Risk of electrical shock, fire, personal injury or death

Part Number Table

Description	Part Number
AC-DC DIN Rail Mount Power Supply, 3 Phase, 24V, 40A	MPITF960-26B24
AC-DC DIN Rail Mount Power Supply, 3 Phase, 36V, 26.6A	MPITF960-26B36
AC-DC DIN Rail Mount Power Supply, 3 Phase, 48V, 20A	MPITF960-26B48

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