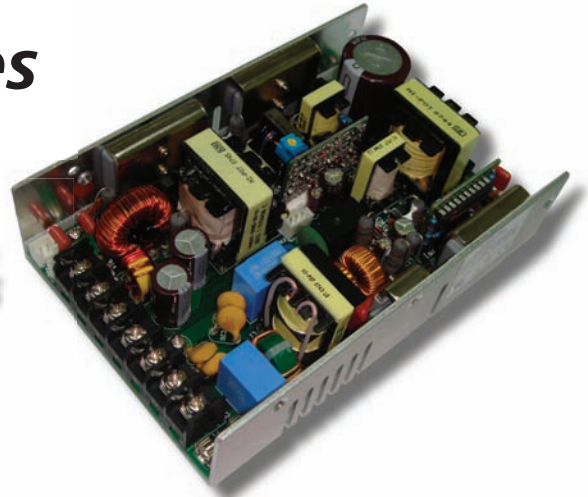


# MPA321 Series

## Smallest 1U Height, 320W, Active PFC Single Output AC/DC Power Supplies

Only  
6 x 4 x 1.5  
Inches!!



### Key Features:

- Smallest 1U 320W Supply
- PFC to EN61000-3-2 "D"
- UL, cUL, TUV Approvals
- CE Certified
- FCC Class B Emissions
- 2 - 60 V Output Voltages
- Universal 90-264 VAC Input
- 700W Peak Power
- Four Mechanical Options



### MicroPower Direct

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### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	Universal	90		264	VAC
Input Frequency		47		63	Hz
Input Current, Full Load	90 VAC		6		A
Inrush Current, Cold Start	110 VAC			30	A
	220 VAC			70	
Leakage Current	240 VAC		3.5		mA
Power Factor Correction	Meets EN61000-3-2 Class D				
Input Protection	T6A/250V Fuse				

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Adjustment	By Trim Pot		±5.0		%
Output Regulation (Note 1)			±1.0		%
Hold Time	110 VAC, 80% Load		20		mSec
Ripple & Noise (20 MHz) (Note 2)	See Model Selection Guide				
Overload Protection	Foldback (Autorecovery)	110		140	%
Over Voltage Protection	>130% of Rated Output Voltage. Recycle AC Input.				
Over Temperature Protection	Operating Ambient (Autorecovery)	90		100	°C
Temperature Coefficient			±0.04		%/°C
Transient Recovery Time (Note 3)	50% Load Change		2.5		mS
Transient Response Deviation			5		%
Overshoot/Undershoot	At Turn On/Off			5.0	%
Turn On Delay	120 VAC			1	S
Output Short Circuit	Continuous With Autorecovery				

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage (Note 4)	Input - Output	3,000			VAC
	Input - FG (Frame Ground)	1,500			
	Primary - Core	1,500			
Switching Frequency	Fixed		23		kHz

#### Interface Signals

Power Supply On	Green LED (LED1) on the PCB
Power Good Signal	PG on CN1. Goes TTL high 100 to 500 mS after regulation. Goes low at least 1 mS before the loss of regulation. Will sink 100 mA.
Fan Fail	FF on pin 3 of CN1. Open collector output rated for 15 VDC/5 mA sink current maximum. Goes high if a fan failure is detected

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	0	+25	+50	°C
Output Derating	2.5%/°C from +50 °C to +70 °C				
Storage Temperature Range		-20		+85	°C
Cooling	See Model Selection Guide				
Operating Humidity	RH, Non-condensing			90	%

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 30°C, Gnd Benign	100			kHours
Safety Standards	UL 60950; CSA C22.2 No. 60950; TUV EN60950; CB Report (IEC 60950)				
EEMI Compliance	Compliance to EN55022 (CISPR22) Class B; EN61000-3-2,3				
EMS Immunity Compliance	EN61000-4-2,3,4,5,6,8,11; EN55024;; CE Marked (LVD)				

# Model Selection Guide

Model Number	Output Voltage		Max. Output Current (Notes 6, 7, 8)			Ripple & Noise	Efficiency
	Factory PreSet	Range	"U, E, F" Units 28.5 CFM	"U" Units Convection	"C" Units Convection		
MPA321x-05z	5 VDC	2.0 - 6.0 VDC	45.00A	26.00A	23.70A	50 mV p-p	75%
MPA321x-09z	9 VDC	7.0 - 9.0 VDC	35.50A	20.00A	18.75A	1% p-p	80%
MPA321x-12z	12 VDC	10.0 - 13.8 VDC	26.66A	15.00A	14.16A	1% p-p	83%
MPA321x-15z	15 VDC	14.0 - 15.5 VDC	21.33A	12.00A	11.33A	1% p-p	83%
MPA321x-18z	18 VDC	16.0 - 20.0 VDC	17.77A	10.00A	9.44A	1% p-p	83%
MPA321x-24z	24 VDC	21.0 - 26.0 VDC	13.33A	7.50A	7.08A	1% p-p	83%
MPA321x-28z	28 VDC	27.0 - 34.0 VDC	11.42A	6.42A	6.07A	1% p-p	83%
MPA321x-36z	36 VDC	35.0 - 42.0 VDC	8.88A	5.00A	4.72A	1% p-p	83%
MPA321x-48z	48 VDC	43.0 - 50.0 VDC	6.66A	3.75A	3.54A	1% p-p	83%
MPA321x-54z	54 VDC	51.0 - 60.0 VDC	5.92A	3.33A	3.14A	1% p-p	83%

- Notes:**
- Output regulation includes line & load.
  - Ripple & noise is measured from 10 Hz to 20 MHz. Measurement connection to the unit is made with a 0.1  $\mu$ F ceramic capacitor & a 22  $\mu$ F electrolytic capacitor connected in parallel.
  - Transient recovery is measured to within a 1% error band for a load step change of 50% to 100%.
  - Isolation specifications are production HI-Pot tested for 3 seconds.
  - The full output range (see table above) is covered in the safety agency

- certification. Models are factory set to the "Preset" voltage. This may be adjusted within the range without affecting the agency certification. Contact the factory for details.
- Output current is given for the factory preset voltage. With the exception of the "05" output model, the maximum continuous output power level is 320W (with 28.5 CFM), 180W (U-Chassis convection cooled) or 170W ("C" units convection cooled). For more information, contact the factory.
- Units will provide peak power of 700W for 500  $\mu$ s. For units capable of longer durations, contact the factory.
- A 1% minimum load is required to maintain regulation and ripple specifications.

**Input & Output Connector CN2:**  
Howder Terminal Block No. HB-95-7P or Mating Molex Part No. 09-91-1600 (16 pin)

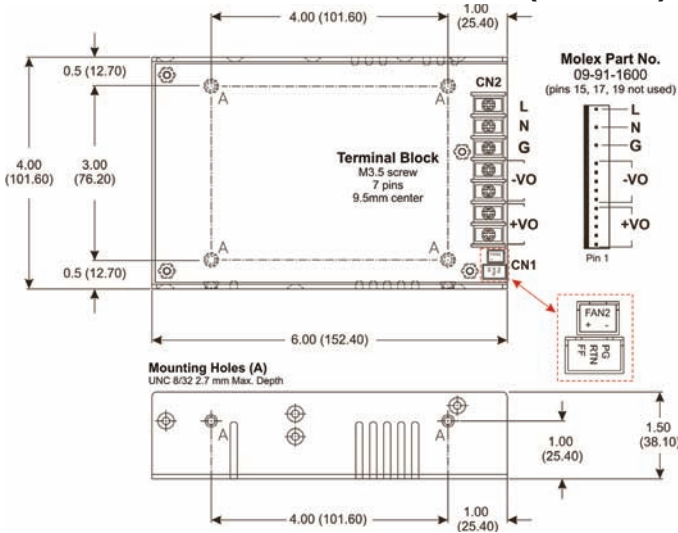
**Output Pin Assignment:**

Howder	Molex
Pins 1 ~ 2: V+	Pins 1 ~ 5: V+
Pins 3 ~ 4: V-	Pins 6 ~ 10: V-
Pin 5: Grnd	Pin 12: Grnd
Pin 6: Neutral	Pin 14: Neutral
Pin 7: Line	Pin 16: Line

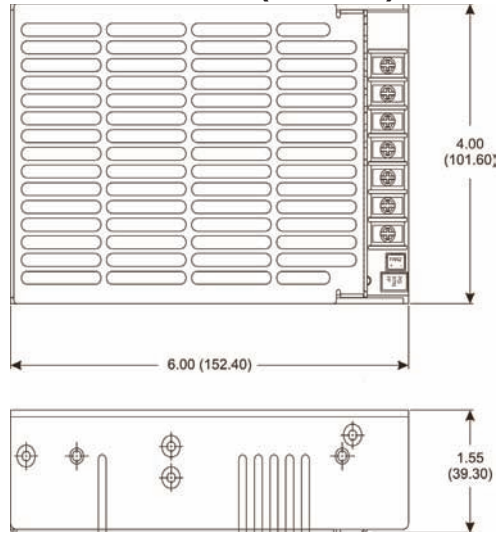
**Logic Signal Connector CN1:**  
Mating JST XHP or equivalent (CHYAO SHIUNN JS-21001-3) Mating Pins: JST SXH-002T-P0.6 for AWG 30 to 26.

**Fan driver connector (FAN2):**  
12 VDC / 400 mA is available to drive an external fan. Mating connector is a JST XHP-2 or Molex P/N 48-151-0210 (2 pins 0.98 pitch). Mating Pins: JST SXH-001T-P0.62T or Molex 48150 .

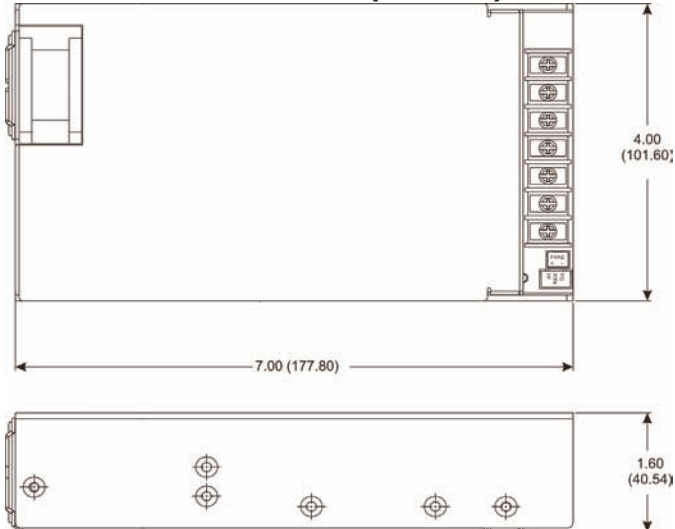
## Mechanical Dimensions: U-Chassis (U Suffix)



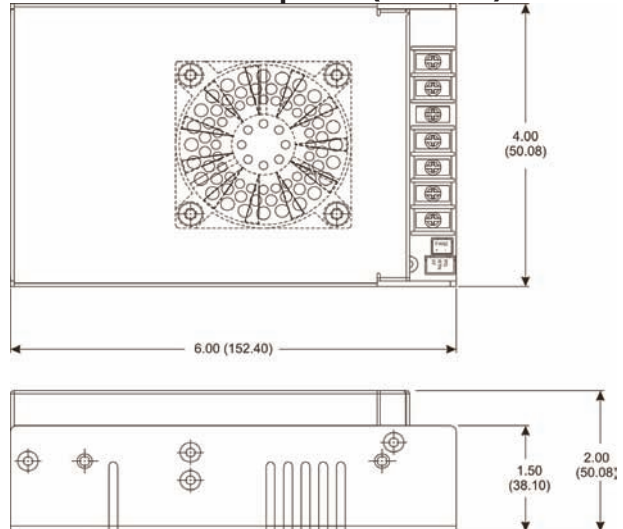
## U-Chassis Cover (C Suffix)



## Enclosure With End Fan (E Suffix)



## Enclosure With Top Fan (F Suffix)



## MPA321X-YYZ

**Mechanical Configuration**  
U = U-Chassis  
C = U-Chassis with Cover  
E = Enclosure With End Fan  
F = Enclosure With Top Fan

**Output Voltage Selection**  
(i.e. 05 = 5 VDC, 24 = 24 VDC, etc)

**Input/Output Connector Type**  
T = Terminal Block  
M = Molex



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