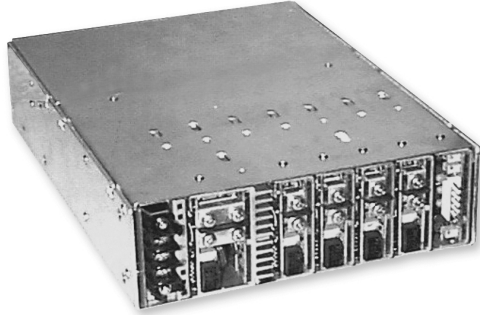




## Installation & Application Notes

### MVP Series 1200 Watts

69-825-361 Rev C 10.8.01



Input	1000 W	1200W
Input voltage	85 to 264 VAC 120 to 350 VDC	100 to 264 VAC 140 to 350 VDC
Frequency	47 to 440 Hz	
Inrush current	40 A peak max	
Efficiency	70% - 80% @ full case load 115VAC	
Power factor	0.99 typical meets EN61000-3-2	
Turn-on time	AC on 1.5 sec typical, Inhibit / Enable 150 ms typical	
EMI-filter standard	CISPR 22, EN55022 Level "B"	
EMI filter (low leakage option)	CISPR 22, EN55022 Level "A"	
Leakage current std.	2.0 mA max @ 240 VAC	
Leakage current (low leakage option)	300mA max @ 240 VAC	
Radiated EMI	CISPR 22, EN55022 Level "B"	
Holdover storage	20 ms minimum	
AC OK	>5 ms early warning min. before out- puts lose regulation Full cycle ride thru (50 Hz)	
Harmonic distortion	Meets EN61000-3-2	
Isolation	Meets EN60950	
Global Inhibit/Enable	TTL, Logic "1" and Logic "0"	
Input fuse (internal)	20A	

## Output

Adjustment range	± 10% minimum
Margining	± 4-6% nominal*
Overall reg.	0.4% or 20 mV max (36W modules 4% max)
Ripple	RMS: 0.1% or 10 mV whichever is greater Pk-Pk: 1.0% or 50 mV whichever is greater Bandwidth limited to 20 MHz
Dynamic response	<2% or 100 mV with 25% load step.
Recovery time	To within 1% in < 300µsec
Overcurrent protection	Single, main of dual output module 105-120% of rated output current Aux output of dual output module 105-140% of rated output current Triple output module Internally protected
Short circuit protection	Protected for continuous short circuit. Recovery is automatic upon removal of short

Overvoltage protection	Single output modules 2-5.5V 122-134% 6-60V 110-120% Dual output module 2-6V 122-134% 8-28V 110-120% Triple output module No overvoltage protection provided.
---------------------------	--

### Recycle the AC input voltage to reset

Reverse voltage protection	100% of rated output current
Thermal protection	All outputs disabled when internal temp exceeds safe operating range. >5mSec warning (AC OK signal) before shutdown
Remote sense	Up to 0.5 V-total drop
Single wire parallel	Current share to within 2% of total rated current**
DC OK	Single and main of dual outputs -2% to -8% of nominal of any monitored output
Minimum load	Not required on single or triple output mod- ules. <b>10% required on main of dual output modules</b>
Bias voltage	5VDC @1A max present whenever AC input is applied
Module inhibit	TTL, isolated, singles and dual (both outputs) only
Switching frequency	250k Hz
Output/Output isolation	>1 meg ohm

VME timing and system DC OK, (last slot only) - Consult factory

\*Single output modules only

\*\* Single and main of dual output modules only

## CAUTION

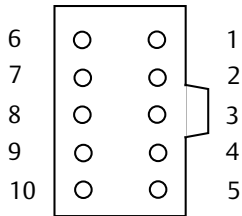
- 1) Connect the power supply correctly. 115/230 VAC 60 Hz line voltages can be lethal. To avoid shock, always use correct size and style lugs.
- 2) Install power supply correctly. Use correct screw sizes for mounting. Screws must not penetrate the interior of the supply excessively to avoid shorting of internal components. Always use the ground connection provided to protect against shock hazard due to power line capacitive leakage.
- 3) Operate the power supply safely. Power supplies generate heat; keep them away from combustible materials or atmosphere. Make sure liquid or metal shavings do not enter the supply to cause internal arcing, which can be a fire hazard.
- 4) Maintain power supply safely. Only qualified personnel should service or repair. Beware of possible internal lethal voltages due to charged capacitors, even after AC power is disconnected.

# Technical Description & Application Notes DC/DC Converter Output Modules

## Control Signal Information

### J1 Control Connector

Pin No.	Function
1	+Remote Sense single or dual o/p main
2	Remote Margin / V. Program single o/p
3	Margin High single o/p
4	-Remote Sense / Margin Low single or dual o/p main
5	Spare
6	Module, Isolated Inhibit single or dual o/p
7	Module Inhibit return single or dual o/p
8	Current Share (SWP) single or dual o/p main
9	+ Remote Sense V2 dual o/p, single is spare
10	- Remote Sense V2 dual o/p, single is spare



### UNIT CONNECTOR

#### MATING HOUSING

90142-0010 (Molex)  
87977-3 (Amp)

#### PINS

90119-2110 gold plated (Molex)  
87309-8 (Amp)

#### CRIMP TOOL

69008-0005 (Molex)

### ACCESSORIES

#### CONNECTOR KIT

Astec P/N 70-841-004

#### \*FIELD REPLACEABLE FAN ASSEMBLY

Astec P/N 73-688-0001

#### I SHARE HARNESS

2 slot Astec P/N 73-524-012  
3 slot Astec P/N 73-524-013

#### INPUT TERMINAL

BARRIER TYPE THREE NO. 6-32 B.H.  
SCREWS (0.375" centers)

\* Fan replacement by authorized repair technician



### Remote Sense V1

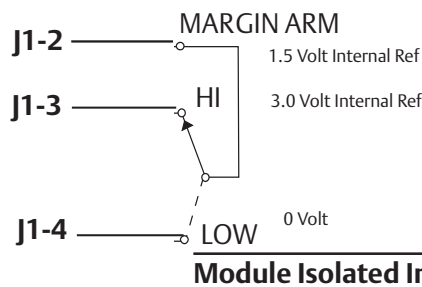
J1-1	+Remote Sense
J1-4	-Remote Sense

Compensates for up to 0.5V drop. Recommend shielded twisted pair wire.

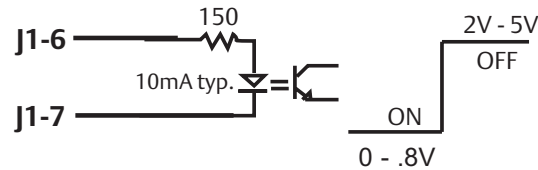
J1-10	+Remote Sense V2
J1-10	-Remote Sense V2

### Remote Margining, Single Output Modules

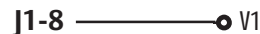
±4-6% of nominal output voltage. Margin will track the output voltage when V out is adjusted via accessible panel pot or pots.



### Module Isolated Inhibit



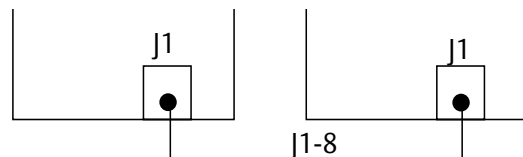
Output is "ON" with low or open  
Can be used for external output sequencing in multi-output units.



### Single Wire Parallel

Singles or main of dual output. Can also be used as a relative current monitor using proportional voltage: 2-6V, high impedance, do not load this pin, use buffer. When individual unit outputs are in parallel the SWP's lines are tied together. This provides forced current sharing of the outputs.

### I SHARE HARNESS



### Special Application Notes For Dual Output Modules

An OVP condition on V2 will "latch" off the entire module. Recycle the AC input to reset. V1 is main output forward converter V2 is Sub regulated current mode magamp output.

# Technical Description & Application Notes

## MVP Case Signal Control Information

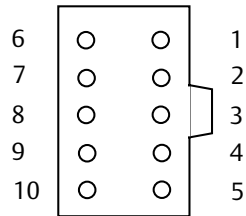
### Control Connector Pin Out

#### J1 Control Connector

#### Pin # Function

J1-1	Input AC OK - "Emitter"
J1-2	Input AC OK - "Collector"
J1-3	Global DC OK - "Emitter"
J1-4	Global DC OK - "Collector"
J1-5	Spare
J1-6	Global Inhibit/Optional Enable Logic "0"
J1-7	Global Inhibit/Optional Enable Logic "1"
J1-8	Global Inhibit/Optional Enable Return
J1-9	SELV 5V Housekeeping
J1-10	SELV 5V Housekeeping Return

Ten (10) position Molex 90130-3210 housing with select gold plated contacts.



#### UNIT CONNECTOR

#### MATING HOUSING

90142-0010 (Molex)  
87977-3 (Amp)

#### PINS

90119-2110 gold plated (Molex)  
87309-8 (Amp)

#### CRIMP TOOL

69008-0005 (Molex)

#### ACCESSORIES

#### CONNECTOR KIT

Astec P/N 70-841-004

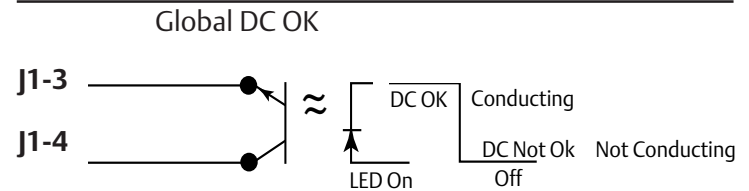
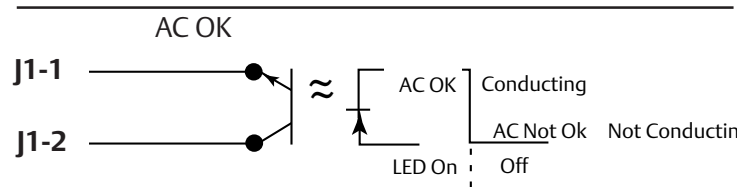
#### \* FIELD REPLACEABLE FAN ASSEMBLY

Astec P/N 73-688-0001

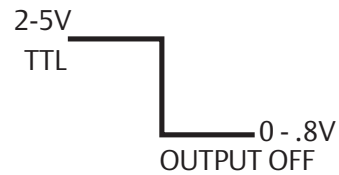
#### INPUT TERMINAL

**BARRIER TYPE THREE NO. 6-32 B.H.  
SCREWS (0.375" centers)**

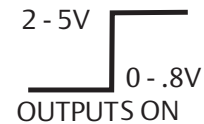
\* Fan replacement by authorized repair technician



#### J1-6 Global Inhibit Logic "0"

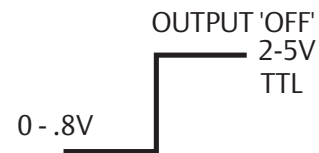


All outputs "ON" with high or open  
J1-6 Global Enable Logic "0" (Option 3)

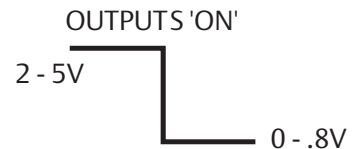


All outputs "OFF" with high or open  
**Note:** If an external source is not available, short pin 6 to pin 8 to enable outputs "ON"

#### J1-7 Global Inhibit Logic "1"



All outputs "ON" with low or open  
J1-7 Global Enable Logic "1" (Option 3)



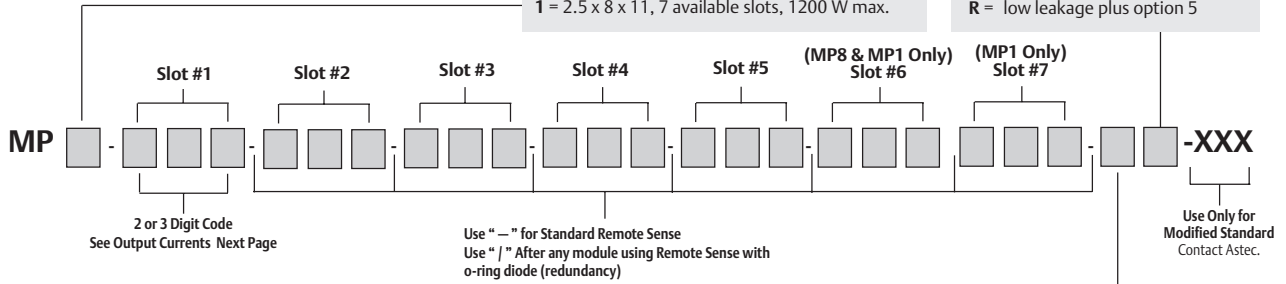
All outputs "OFF" with low or open  
J1-8 Global Inhibit/Enable Return

# Technical Description & Application Notes

## Model Configuration Supplement

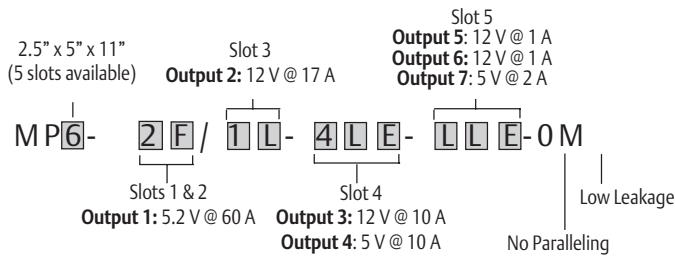
**Option Code:**  
 0 = no options  
 1 = rear air exhaust  
 3 = global enable  
 5 = option package (options 1 & 3)  
 M = low leakage  
 N = low leakage plus option 1  
 P = low leakage plus option 3  
 R = low leakage plus option 5

**Case Size (inches):**  
 4 = 2.5 x 5 x 10, 5 available slots, 400 W max.  
 6 = 2.5 x 5 x 11, 5 available slots, 600 W max.  
 8 = 2.5 x 7 x 10, 6 available slots, 800 W max.  
 1 = 2.5 x 8 x 11, 7 available slots, 1200 W max.



- Notes:
- Omit digits that do not apply.
  - Specify modules from lowest number of outputs to highest. (Single/Dual/Triple)
  - If number of outputs are equal, specify modules from highest to lowest power increments. If power increments are equal, specify in descending alphabetical order (1A, B, C...).
  - Always start with Slot 1.
  - All MVP model configurations created using this selection guide are standard MVP products with standard availability and lead times.

### Ordering Example:



**Parallel Code:**

MP4 & MP6 available slots	Slot 5	Slot 4	Slot 3	Slot 2	Slot 1		
MP8 available slots	Slot 6	Slot 5	Slot 4	Slot 3	Slot 2	Slot 1	
MP1 available slots	Slot 7	Slot 6	Slot 5	Slot 4	Slot 3	Slot 2	Slot 1

**Standard Parallel Codes\***

Code	7	6	5	4	3	2	1
0 = no parallel							
1 = 1 & 2							●
2 = 2 & 3						●	●
3 = 3 & 4					●	●	●
4 = 4 & 5				●	●	●	●
5 = 3 & 4 & 5				●	●	●	●
6 = 5 & 6			●	●	●	●	●
7 = 4 & 5 & 6			●	●	●	●	●
8 = 6 & 7	●	●	●	●	●	●	●
9 = 3 & 4, 6 & 7	●	●	●	●	●	●	●

\*For custom parallel configurations, contact Astec.

## COMMON EXAMPLES OF MODEL NUMBERS

### SINGLE OUTPUTS

Total Power	Output (Volts/Amps)	Size (inches)	Model Number
360 W	2 / 180	2.5 x 5 x 10	MP4-3A-2A-30
400 W	5 / 80	2.5 x 5 x 10	MP4-3E-00
600 W	2 / 275	2.5 x 8 x 11	MP6-3A-3A-1A-90
600 W	5 / 120	2.5 x 5 x 11	MP6-3E-00
600 W	48 / 12.5	2.5 x 5 x 11	MP6-3W-00
800 W	5 / 160	2.5 x 7 x 10	MP8-3E-2E-30
800 W	48 / 16.6	2.5 x 7 x 10	MP8-3W-1W-30
1000 W	5 / 200	2.5 x 8 x 11	MP1-3E-3E-30

**- V M E -**  
 \*VME/DC OK timing and system  
 DC OK module  
 (Always in last slot)  
**Consult Factory**

### MULTIPLE OUTPUTS

Total Power	Output 1 (Volts/Amps)	Output 2 (Volts/Amps)	Output 3 (Volts/Amps)	Output 4 (Volts/Amps)	Output 5 (Volts/Amps)	Output 6 (Volts/Amps)	Size (inches)	Model Number
400 W	5 / 60	3.3 / 35	12 / 1	12 / 1	12 / 1	—	2.5 x 5 x 10	MP4-2E-1D-LLL-00
400 W	24 / 15	12 / 17	5 / 35	—	—	—	2.5 x 5 x 10	MP4-2Q-1L-1E-00
400 W	5 / 60	12 / 17	12 / 10	5 / 10	—	—	2.5 x 5 x 10	MP4-2E-1L-4LE-00
400 W	5 / 35	12 / 10	3.3 / 10	12 / 1	12 / 1	5 / 2	2.5 x 5 x 10	MP4-1E-4LD-LLE-00
600 W	3 / 60	5 / 60	12 / 10	12 / 4	—	—	2.5 x 5 x 11	MP6-2C-2E-4LL-00
600 W	5 / 120	12 / 17	12 / 10	5 / 10	—	—	2.5 x 5 x 11	MP6-3E-1L-4LE-00
600 W	12 / 30	5 / 35	—	—	—	—	2.5 x 5 x 11	MP6-2L-1E-00
800 W	36 / 16.6	24 / 4	5 / 10	12 / 10	12 / 4	—	2.5 x 7 x 10	MP8-3U-4QE-4LL-00
800 W	5 / 120	3.3 / 35	12 / 17	12 / 10	12 / 4	—	2.5 x 7 x 10	MP8-3E-1D-1L-4LL-00
800 W	15 / 20	5 / 35	15 / 14	24 / 8.5	15 / 8	5 / 10	2.5 x 7 x 10	MP8-2N-1E-1N-1Q-4NE-00
800 W	2 / 180	5 / 60	—	—	—	—	2.5 x 7 x 10	MP8-3A-2A-2E-30
1000 W	3.3 / 120	5 / 120	—	—	—	—	2.5 x 8 x 11	MP1-3D-3E-00



# Installation and Operating Instructions

## MVP Series 1200 Watts



### BEDIENUNGSANLEITUNG

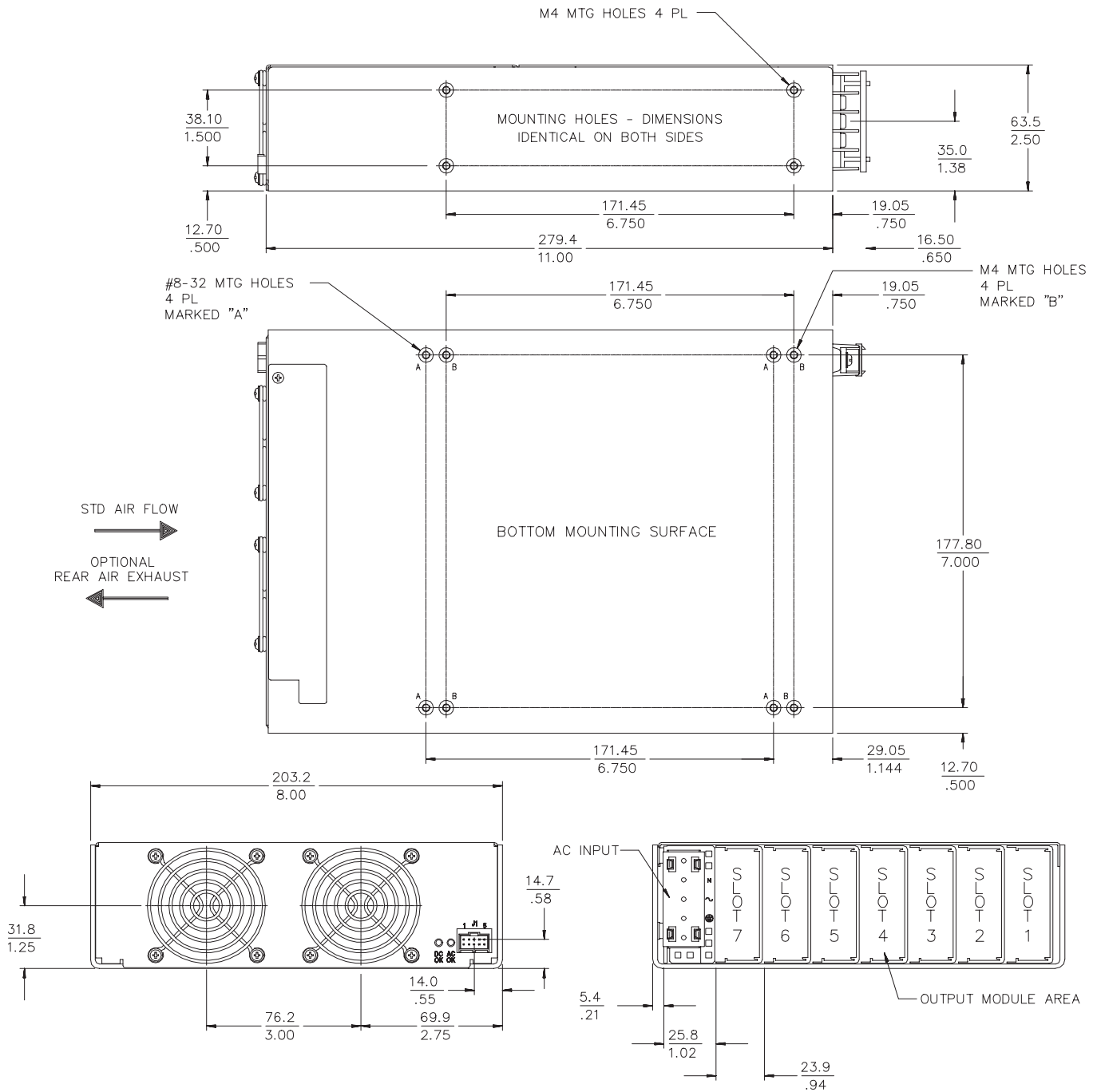
To comply with the published safety standards, the following must be observed when using this power supply.

Um den zur Zeit gültigen Sicherheitsbestimmungen zu genügen, müssen die nachstehenden Maßnahmen beim Einsatz dieser Netzgeräte berücksichtigt werden.

- Maximum ambient temperature around the power supply must not exceed  
Das Netzgerät darf bis zu einer Umgebungstemperatur von max
  - Output rating when the MP1 uses PAPST, type 612N / 2GN fan,
    - 1000 W at 50 degC ambient temp. with forced air cooling
    - 1000 W at 40 degC ambient temp. with rear air exhaust
    - 500 W at 70 degC ambient temp. with forced air cooling
  - Output rating when the MP1 uses Minebea, type 2410ML-04W-B60 or Nidec, type TA225DC fan
    - 1200 W at 50 degC ambient temp. with forced air cooling
    - 1000 W at 40 degC ambient temp. with rear air exhaust
    - 600 W at 70 degC ambient temp. with forced air cooling
    - 1200 W at 40 degC ambient temp. with rear air exhaust for voltage range 134-240 VAC 50/60/400Hz
  - Ausgangsleistung des MP1 mit PAPST Lüfter, Modell 612N-2GN
    - 1000 W bei 50 Grad Celsius Umgebungstemperatur mit zusätzlicher Luftkühlung und Luftstromrichtung zum Gerät hinweisend
    - 1000 W bei 40 Grad Celsius Umgebungstemperatur mit rückwärtigem Luftauslass
    - 500 W bei 70 Grad Celsius Umgebungstemperatur mit zusätzlicher Luftkühlung und Luftstromrichtung zum Gerät hinweisend
  - Ausgangsleistung des MP1 mit Minebea Lüfter, Modell 2410ML-04W-B60 oder Nidec Lüfter, Modell TA225DC
    - 1200 W bei 50 Grad Celsius Umgebungstemperatur mit zusätzlicher Luftkühlung und Luftstromrichtung zum Gerät hinweisend
    - 1000 W bei 40 Grad Celsius Umgebungstemperatur mit rückwärtigem Luftauslass
    - 600 W bei 70 Grad Celsius Umgebungstemperatur mit zusätzlicher Luftkühlung und Luftstromrichtung zum Gerät hinweisend
    - 1200 W bei 40 Grad Celsius Umgebungstemperatur mit rückwärtigem Luftauslass für den Spannungsbereich 134-240 VAC, 50/60/400 Hz
- The power supply is intended for use as a component part of other equipment. When installing the power supply and making input and output connections, the relevant safety standards e.g. IEC950/VDE 0805; EN 60950; CSA C22.2 No. 950; CSA Standard C22.2 No. 234; UL 1950 must be complied with, especially the requirements for creepage distances, clearances and distance through insulation between primary wiring and earth or secondary (SELV) wiring.  
Ein Netzgerät ist ein Einbauteil in ein entsprechendes Gerät und bei Herstellung der elektrischen Verbindungen im und am Gerät sind die einschlägigen Bestimmungen wie z.B. IEC950/VDE 0805; EN60950; CSA C22.2; No. 950; CSA Standard C22.2 No. 234; UL 1950 zu beachten und einzuhalten, insbesondere die Anforderungen für Kriech- und Luftstrecken und Dicke der Isolation zwischen Primär- und Schutzleiter- Kreis und Primär-zum Sekundärstromkreis (SELV-Kreis).
- The output power taken from the supply must not exceed the rating given on the "Power Supply"  
Die Ausgangsleistung darf die auf dem Netzgerät angegebenen Werte nicht übersteigen.
- The circuit wiring of the power supply is made in such a way that components like capacitors are positioned in front of the power supply fuse. Therefore the unit must be protected by a fuse in the installation system.  
Die Schaltung des Netzgerätes ist so ausgelegt, daß Bauteile wie Kondensatoren vor der Sicherung des Netzgerätes liegen. Aus diesem Grunde muß unbedingt darauf geachtet werden, daß das Gerät durch eine Sicherung in der Installation abgesichert ist.
- This power supply is suitable for different rated voltages. The switch over to the corresponding rated voltage which belongs to the specific appliance is done automatically in the appliance.  
Dieses Netzgerät ist für verschiedene Nennspannung geeignet. Die Anpassung an die jeweilige Netzspannung, an die das Gerät angeschlossen ist, erfolgt automatisch im Gerät.
- For MP1, the fuse F201 should only be replaced by KTK-20, 20 A, 600V, Manufacturer Bussman or Type KLK-20, 20 A, 600V, Manufacturer Littelfuse.  
Für MP1, die Sicherung F201 darf nur durch den Typ KTK-20, 20 A, 600V, Hersteller Bussmann ersetzt werden, oder Typ KLK-20, 20 A, 600V Hersteller Littelfuse.
- The earth wire must be connected only to the earthing point which is marked with the earth symbol. If the earth wire is connected by a screw, the wire must have an annular eyelet and has to be adequately locked against accidental loosening.  
Der Schutzleiter muß an der mit dem Schutzleitersymbol bezeichneten Stelle angeschlossen werden. Bei Schraubanschluß ist der Schutzleiter mit einer Ringöse zu versehen und muß gegen Lockern gesichert sein.
- There is an Energy Hazard on this built-in Power Supply During operation the operator must not touch this voltage.  
In dem Einbau-Schaltenteil besteht Energiegefahr. Beim Einbau ist darauf zu achten, daß der Benutzer diese Spannung nicht berühren kann.
- In case of failure, this power supply must be returned to Astec Authorized Service Station for Servicing to ensure compliance with safety requirements.  
Im Fehlerfall muß dieses Gerät an eine von Astec Autorisierte Servicestation zurückgesendet werden, um sicher zu gehen das alle Sicherheitsbestimmungen eingehalten sind.
- The disconnection from the line must be in the end system.  
Die Trennung vom Netz muß im Endgerät durchgeführt werden.
- Total loading of each dual output modules not to exceed 144W and total loading of each triple output modules not to exceed 36W.  
Die Gesamtladung einer doppelten ertrag Modul darf nicht mehr wie 144W sein, einer dreifachen ertrag Modul nicht mehr wie 36W!

# Drawings • MVP Series MP1 (1200 Watts Max )

MP1 • 8-inch Case Size 63.5mm x 203.2mm x 279.4mm / 2.5" x 8" x 11"



## Notes

1. Input: Barrier type. Three No. 6-32 B.H. screws (0.375" centers). Maximum torque: 7 in-lbs (0.79N-m).
2. Control connectors: 10 position housing, gold plated contacts. Mates with Molex 90153-0210 (IDT) housing, or 90142-0010 housing with 90119-2110 crimp contacts (Molex C - Grid III Series) or AMP Model number 87977-3 with 87309-8 pins. Connector kit includes mating connector and 10 pins, Astec part #70-841-004.
3. Chassis material: aluminum with chemical film coating. (Conductive)
4. All dimensions are in millimeters and inches and are typical.
5. Customer mounting -3 sides M4, bottom also includes 8-32 mounting holes. Maximum penetration is 0.150" (3.8mm). (Max torque 5in-lbs)
6. Output module connections: All single O/P modules are M4 x 8mm screws (Max torque 10in-lbs). Dual O/P module is M3 x 8mm screws (Max torque 5 in-lbs). Triple O/P module is .045" square pins on .156 centers. (Mates with Molex 09-50-8063 or equivalent.)

