

# Installation Notes

**MVP Series**

**400 to 600 Watts**

**Multiple Output**




## Input Specifications

Input voltage	85 - 264 VAC 120 - 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"
Leakage current standard	2.0 mA max @ 264 VAC
Radiated EMI	CISPR 22 EN55022 Level "B"
Holdover storage	20 ms minimum (independent of input VAC)
AC OK	>5 ms early warning min. before outputs 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)	MP4 10A; MP6 15A

## Environmental

Operating temperature: -20°C to 50°C ambient;  
derate each output linearly to 50% at 70°C  
Storage temperature: -40°C to 85°C  
Thermal regulation:  $\pm 0.02\%$  / °C  
MTBF: > 100,000 hours at full load and 25°C  
ambient conditions

## Safety

<b>VDE</b>	0805/EN60950 (IEC950)
<b>UL</b>	UL1950
<b>CSA</b>	CSA 22-2-234 Level 5
<b>BABT</b>	Compliance to EN60950, BS7002
<b>CB</b>	Certificate and report
	This product is CE marked following the provisions of the Low Voltage Directive 73/23/EEC

## Notes

1. Maximum output power: MP4 - 400W; MP6 - 600W.  
Do not exceed maximum output power.
2. Input: Barrier type. Three No. 6-32 B.H. screws (0.375" centers).
3. Control connectors: (J1) 10 position housing, gold plated contacts.  
Mates with Molex 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.
4. Chassis material: aluminum with chemical film coating. (Conductive)
5. All dimensions are in millimeters and inches and are typical.
6. Customer mounting -3 sides M4, bottom also includes 8-32 mounting  
holes. Maximum penetration is 0.150" (3.8mm). (Max torque 0.55Nm /  
5in-lbs)
7. Output module connections: All single O/P modules are M4 x 8mm  
screws (Max torque 1.11Nm / 10in-lbs).  
Dual O/P module is M3 x 8mm screws (Max torque 0.55Nm / 5 in-lbs).  
Triple O/P module is .045" square pins on .156 centers. (Mates with  
Molex 09-91-0600 or equivalent.)

## Output Specifications

Adjustment range	$\pm 10\%$ minimum
Margining	$\pm 4-6\%$ 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 < 300 $\mu$ sec
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 OVP circuit
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 modules. 10% required on main of dual output modules
Bias voltage	5VDC @250 mA 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

\*Single output modules only

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

**Fusing:** Internal input fuse 10A (MP4), 15A (MP6), Quick Acting HBC mains fuse - only replace with same type and rating to maintain safety standards.



**Warning:** Hazardous mains voltages present within this unit. Please see enclosed 'Astec Installation and Operating Instructions'.

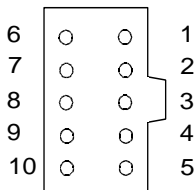
# MVP Case Control Signal Information

## 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 housing with select gold plated contacts.

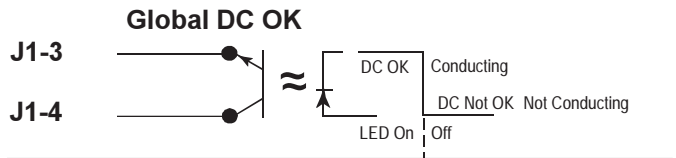
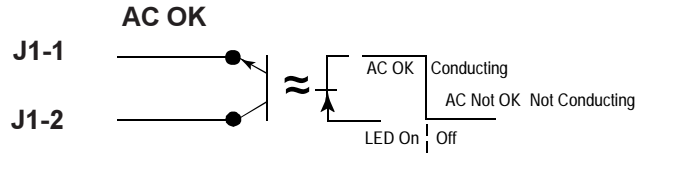


### CONTROL CONNECTOR

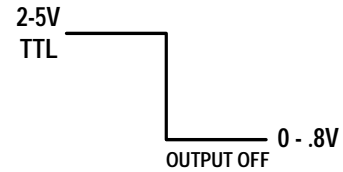
**MATING HOUSING**  
90142-0010 (Molex)  
87977-3 (Amp)

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

**CRIMP TOOL**  
69008-0005 (Molex)

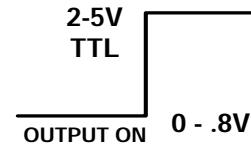


### J1-6 Global Inhibit Logic "0"



All outputs "ON" with high or open

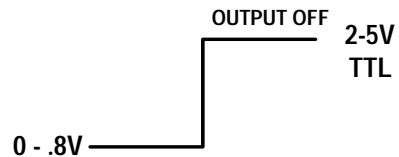
### J1-6 Global Enable Logic "0" (Option 3)



All outputs "OFF" with high or open

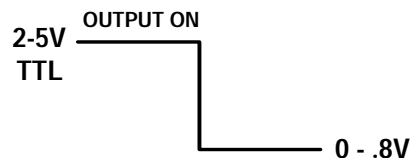
**Note:** If an external source is not available, short pin 6 to pin 8 to enable outputs "ON"

### 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

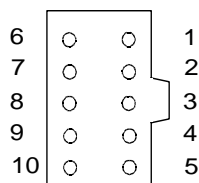
### J1-8 Global Inhibit/Enable Return

## MVP Outputs Control Signal Information

### J1 Control Connector

Pin	Function
J1-1	+Remote Sense single or dual o/p main
J1-2	Remote Margin / V. Program single o/p
J1-3	Margin High single o/p
J1-4	-Remote Sense / Margin Low single or dual o/p main
J1-5	No connection
J1-6	Module, Isolated Inhibit single or dual o/p
J1-7	Module Inhibit return single or dual o/p
J1-8	Current Share (SWP) single or dual o/p main
J1-9	+ Remote Sense V2 dual o/p, single is no connection
J1-10	- Remote Sense V2 dual o/p, single is no connection

Ten (10) position housing with select gold plated contacts.



**CONTROL CONNECTOR - same as input J1**

### Remote Sense

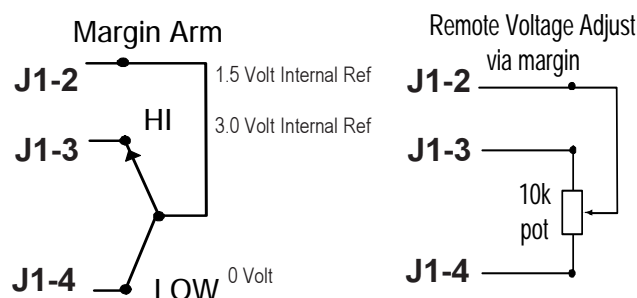
Each output has remote sense connections which can compensate for up to 0.5V drop. It is recommended that a shielded twisted pair wire is used. It is not necessary to use remote sense, the power supply will revert to its own internal sense, so no connection is necessary to use the supply. The best voltage regulation is obtained with remote sense connected.

**J1-1 +Remote Sense V1**  
**J1-4 -Remote Sense V1**

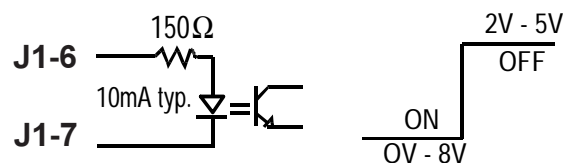
**J1-9 +Remote Sense V2**  
**J1-10 -Remote Sense V2**

### Remote Margining, Single Output Modules

On each output it is possible to switch the nominal output voltage up and down by 5% by connecting Remote Margin to Margin Hi or Margin Lo. This is useful for checking voltage tolerance limits on equipment powered by this supply. When the output voltage is adjusted via the front panel pot. the margining will track it to still give  $\pm 5\%$  around the nominal set voltage.



### Module Isolated Inhibit



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

### Single Wire Parallel

**J1-8 ——— V1**

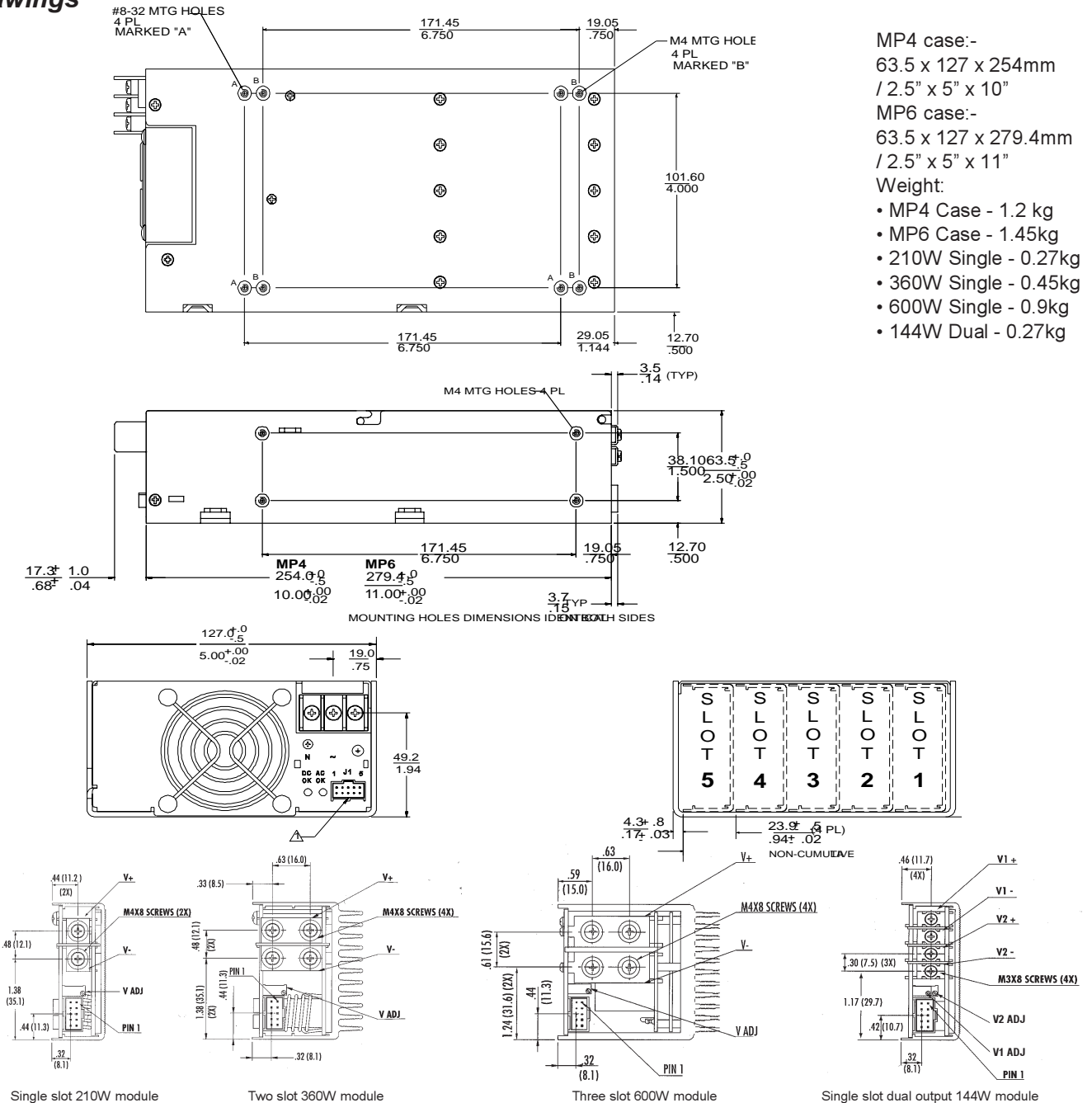
Singles or main of dual output. Can also be used as a relative current monitor using proportional voltage: 2-6V, high impedance, do not load this pin, use buffer. When individual unit outputs are in parallel the SWP's lines are tied together. This provides forced current sharing of the outputs.

### 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.

Model Number	Output Voltage / Maximum Current			
	1	2	3	4
MP4-3E-00	5V 80A			
MP4-3L-00	12V 33.3A			
MP4-3Q-00	24V 16.7A			
MP4-2E-4LL-00	5V 60A	12V 10A	12V 4A	
MP4-2E-1L-4LQ-00	5V 60A	12V 30A	12V 4A	24V 2A
MP4-2E-1L-4LE-00	5V 60A	12V 30A	12V 4A	5V 10A
MP6-3E-00	5V 120A			
MP6-3L-00	12V 50A			
MP6-3Q-00	24V 23.5A			
MP6-3E-4LL-00	5V 120A	12V 10A	12V 4A	
MP6-3E-1L-4LQ-00	5V 120A	12V 30A	12V 4A	24V 2A
MP6-3E-1L-4LE-00	5V 120A	12V 30A	12V 4A	5V 10A

## Drawings



MP4 case:-  
63.5 x 127 x 254mm  
/ 2.5" x 5" x 10"  
MP6 case:-  
63.5 x 127 x 279.4mm  
/ 2.5" x 5" x 11"  
Weight:  
• MP4 Case - 1.2 kg  
• MP6 Case - 1.45kg  
• 210W Single - 0.27kg  
• 360W Single - 0.45kg  
• 600W Single - 0.9kg  
• 144W Dual - 0.27kg

Single slot 210W module

Two slot 360W module

Three slot 600W module

Single slot dual output 144W module



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