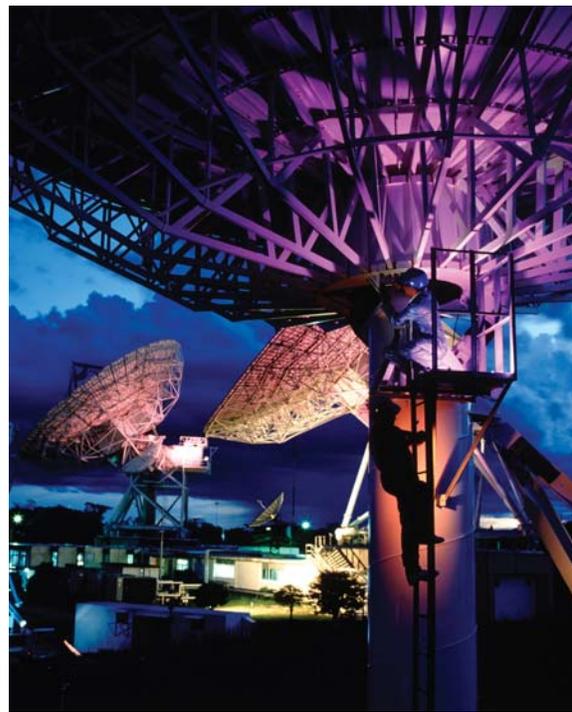


■ Embedded Power for
Business-Critical Continuity

AC-DC and DC-DC Products From Astec Power



Local Support

Our regional sales offices are ready to provide expert local applications and sales support. In addition, Astec Power utilizes an extensive network of manufacturers' representatives and distributors to bring our products to you. Please call for locations of sales offices near you or visit our website at www.astecpower.com.

Astec Power (USA)

Telephone: +1 760 930 4600
Facsimile: +1 760 930 0698
Technical Support: +1 888 41 ASTEC
or +1 407 241 2752

Europe (UK)

Telephone: +44 (0) 1384 842 211
Facsimile: +44 (0) 1384 843 355

Asia (HK)

Telephone: +852 2437 9662
Facsimile: +852 2402 4426

For order placement and status
Ask for **Inside Sales**

For technical assistance
Ask for **Applications Support**

For returns and repairs
Ask for **Product Support Group**

Astec Power RoHS Position Statement



Astec Power is currently shipping products that are in compliance with EU Directive 2002/95/EC on Reduction of Hazardous Substances (RoHS). Further information regarding the Astec RoHS Compliance Schedule can be found at www.astecpower.com.

The Directive requires that, beginning July 1, 2006, new electrical and electronic equipment put on the market does not contain lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr6+), polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). The maximum concentration levels, by weight per homogeneous material, have been set by the Technical Adaptation Committee (TAC) at 0.01% for cadmium and 0.1% for the remaining substances.

An exemption has been granted, currently until 2010, for lead (Pb) in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling and transmission, and network management for telecommunication.

Astec Power's standard catalog products will comply with concentration levels set for the six substances (RoHS -6). Astec Power's custom products will comply with the Directive according to customer-defined specifications. This will either be RoHS-6 where all six substances are limited or RoHS-5 where an exemption for lead (Pb) has been specified. The Astec Power RoHS Compliance Schedule can be found at www.astecpower.com.

Component Survey

Our environmental compliance team surveys suppliers via a comprehensive RoHS questionnaire. The survey responses for each part number (declaration of RoHS conformity, terminal plating information, peak soldering temperature compatibility and tin whisker data) are transferred to our engineering database for easy access by Astec Power design engineers. Attributes in the database clearly show which parts are RoHS-compliant.

Each bill of material is reviewed and parts that are non-RoHS compliant are highlighted. Our vendor base can provide drop-in parts that are RoHS-compliant. If the current vendor has no suitable alternative, our purchasing department will propose parts from other preferred vendors

for review and evaluation by Engineering. The conversion process is not complete until the bill of material is fully RoHS-compliant.

An additional requirement is that for board-mounted DC-DC converters must comply with the soldering compatibility requirements of J-STD-020D.

Printed Circuit Boards

The printed circuit boards used in our products are already RoHS-compliant and, where multiple reflow is required, high-Tg laminating materials are incorporated as standard. These PCBs are qualified using IPC-TM-650 test methods and must survive moisture preconditioning and four times 260°C reflow. Our preferred finishes for all PCBs are high-temperature OSP (organic solderability preservative) and ENIG (immersion gold over electro-less nickel).

Pb-free Assembly

Our Pb-free products are assembled using the most commonly adopted solder alloy (Sn96.5 Ag3.0 Cu0.5). Astec Power has been manufacturing Pb-free products using this alloy since 2003 and the integrity of the resulting Pb-free solder joints has been extensively evaluated.

Special consideration is given to board-mounted product that will be subject to an additional reflow.

IPC 9701 Testing (Board-mount Products)

The reliability of the solder joints between our surface-mount products and the customer motherboard will be evaluated using the accelerated methods defined in IPC 9701. Representative test vehicles have already been developed to connect the solder joints in a daisy chain pattern.

Changes in the resistance of the chain are monitored during repetitive temperature cycles between 0°C and +100°C. The mean number of temperature cycles to failure of solder joints must exceed 6,000 to be deemed acceptable.

Qualification

After preconditioning to soldering heat, the functional performance of all RoHS-compliant models will be qualified by parametric testing across line, load and temperature. Environmental stress testing, limited to combined power and temperature cycling, will also be performed on representative models.

Astec Power RoHS Position Statement



Moisture Sensitivity (Board-mount Products)

The moisture sensitivity level (MSL) of surface-mount RoHS-compliant models will also be evaluated. The MSL level of some products will change as a result of Pb-free solder processing. In such cases, an MSL warning label will be added, as described in J-STD-033, to the lowest-level packaging.

Tin Whiskers

Astec Power acknowledges industry concerns about tin whiskers and is taking reasonable steps to minimize the risk of whisker growth in its products. Suppliers of components having tin-based terminal plating are asked to disclose their respective whisker mitigation strategies and whisker test data before their components can be used.

Whisker testing methods vary between suppliers, but we encourage adoption of the NEMI guideline.

Our preferred mitigation methods are the use of nickel underplate for surface mount components and either hot dipped tin or hot dipped tin-copper for magnet wire terminations.

Part Numbers

For AC-DC products, the part number for standard catalog RoHS-compliant products will remain the same. For DC-DC products, the part numbers for RoHS-5 will remain the same, whereas part numbers for RoHS6 will have the suffix "L" for lead-free. Refer to Astec Power's RoHS compliance date and model number management document at www.astecpower.com for details. The product revision level will be updated, under ECO control, when the RoHS-compliant bill of materials is enabled. The model number of custom DC-DC products will have an L or RS5 appended as appropriate.

RoHS Marking

While there is no generally accepted compliance mark for the RoHS Directive, Astec Power will use the following symbol on the lowest-level packaging.



AC – DC Power Supplies

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Low Power (LP, NT) 25W - 350W	
 Open frame / enclosed 1 - 4 outputs	2
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 1 - 10 outputs standard (up to 21 available)	7
Intelligent Medium Power (iMP) 600W - 1500W	
 Up to 21 outputs	10
High Power (VS) 1200W - 2500W	
1 - 18 outputs	14
Bulk Power (HPS) 350W to 3000W	
 Available 1U and 3U	16
 Compatible racks hold up to 4 modules	
Distributed Power (DS) 450W to 1500W	
 Available 1U and 2U	18
 Compatible racks hold up to 5 modules	
DIN Rail (ADN) 24V 60W - 960W	
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*Consult www.astecpower.com for update.

Low Power

25 - 350 Watts



Special Features

All models feature:

- Industry standard footprints
- Wide-range AC input
- Remote sense
- Adjustable outputs
- Power fail
- Full power to 50°C
- High demonstrated MTBF
- Overvoltage protection
- Overload protection
- Built-in EMI Filtering
- Extensive safety approvals
- Derated operation to 70°C

Many models feature:

- EN61000-3-2 Compliance
- Supervisory outputs (5V/12V)
- Wide-adjust floating 4th output
- Single wire current share
- Medical approvals
- Wide-adjust on single output models

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

		Output				Size (mm)	Model	
		V1	V2	V3	V4			
[40W]	25W LP20 Series							
 <p>(1)</p>	5V@5A[8A]*					3" x 5" x 1.2"	LPS22	
	12V@2.1A[3.3A]*					(76.2 x 127 x 30.5)	LPS23	
	15V@1.7A[2.7]*						LPS24	
	24V@1.1A[1.8A]*						LPS25	
	5V@3A[4A]	12V@1.5A[2A]		-12V@0.5A[0.7A]				LPT22
	5V@4A[5A]	12V@0.5A[0.7A]		-12V@0.5A[0.7A]				LPT23
	5V@3A[4A]	12V@1.5A[2A]		-5V@0.5A[0.7A]				LPT24
	5V@3A[4A]	15V@1.5A[2A]		-15V@0.5A[0.7A]				LPT25
	[47W] Enclosed LCT43-E							
		5V@4A [7A]	12V@1A [1.2A]		-12V@0.5A [0.5A]		3.2" x 6.2" x 1.5" (81.3 x 157.5 x 38.1)	LCT43-E
[55W]	40W LP40 Series							
 <p>(1)</p>	3.3V @ 8A[11A]*					3" x 5" x 1.2"	LPS41	
	5V@8A[11A]*					(76.2 x 127 x 30.5)	LPS42	
	12V@3.3A[4.5]*						LPS43	
	15V@2.6A[3.6A]*						LPS44	
	24V@1.6A[2.3A]*						LPS45	
	48V@0.9A[1.2A]*						LPS48	
	3.3V@4A[7A]	5V@1.5A[2A]		+12V@0.5A[0.7A]				LPT41
	5V@4A[5A]	12V@2A[2.5A]		-12V@0.5A[0.7A]				LPT42
	5V@6A[8A]	12V@0.5A[0.7A]		-12V@0.5A[0.7A]				LPT43
	5V@4A[5A]	12V@2A[2.5A]		-5V@0.5A[0.7A]				LPT44
	5V@4A[5A]	15V@2A[2.5A]		-15V@0.5A[0.7A]				LPT45
	5V@4A[5A]	24V@1A[1.5A]		+12V@0.5A[0.7A]				LPT46

[] = Rating with 30 CFM of air

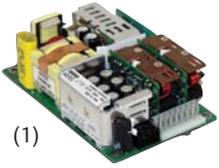
(1) Optional cover/enclosure

(2) Optional bracket

(3) Optional fan cover (see data sheet for increased dimensions)

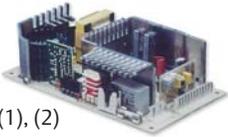
(4) Optional end fan cover (see data sheet for increased dimensions)

* = Floating output

		Output				Size (mm)	Model
		V1	V2	V3	V4		
[55W]	40W LP40-M Series-Medical						
 <p>(1)</p>	5V@8A[11A]*					3" x 5" x 1.2"	LPS42-M
	12V@3.3A[4.5]*					(76.2 x 127 x 30.5)	LPS43-M
	15V@2.6A[3.6A]*						LPS44-M
	24V@1.6A[2.3A]*						LPS45-M
	5V@4A[5A]	12V@2A[2.5A]	-12V@0.5A[0.7A]				LPT42-M
	5V@4A[5A]	15V@2A[2.5A]	-15V@0.5A[0.7A]				LPT45-M
[60W]	60W LP50 Series						
 <p>(1)</p>	5V@11A					2" x 4" x 1.30"	LPS52
	12V@5A					(50.8 x 101.6 x 33.0)	LPS53
	15V@4A						LPS54
	24V@2.5A						LPS55
	48V@1.25A						LPS58
[60W]	60W LP50-M Series Medical						
 <p>(1)</p>	5V@11A					2" x 4" x 1.3"	LPS52-M
	12V@5A					(50.8 x 101.6 x 33.0)	LPS53-M
	15V@4A						LPS54-M
	24V@2.5A						LPS55-M
	48V@1.25A						LPS58-M
[80W]	60W LP60 Series						
 <p>(1)</p>	3.3V@12A[16A]*					3" x 5" x 1.65"	LPS61
	5V @12A[16A]*					(76.2 x 127 x 41.9)	LPS62
	12V@5A[6.7A]*						LPS63
	15V@4A[5.3A]*						LPS64
	24V@2.5A[3.3A]*						LPS65
	48V@1.3A[1.7A]*						LPS68
	3.3V@5A[8.5A]	5V@2.5A[3A]	+12V@0.5A[1A]				LPT61
	5V@7A [8A]	12V@3A[3.5A]	-12V@0.7A[1A]				LPT62
	5V@7A [8A]	15V@2.8A[3.3A]	-15V@0.7A[1A]				LPT63
	5V@7A [8A]	12V@3A[3.5A]	-5V@0.7A[1A]				LPT64
	5V@7A [8A]	24V@1.5A[2A]	+12V@0.7A[1A]				LPT65
[80W]	60W LP60-M Series-Medical						
 <p>(1)</p>	12V@5A[6.7A]*					3" x 5" x 1.65"	LPS63-M
	15V@4A[5.3A]*					(76.2 x 127 x 41.9)	LPS64-M
	24V@2.5A[3.3A]*						LPS65-M
	5V@7A [8A]	12V@3A [3.5A]	-12V@0.7A [1A]				LPT62-M
	5V@7A [8A]	15V@2.8A [3.3A]	-15V@0.7A [1A]				LPT63-M
[85W]	60W LP80 Series						
 <p>(1)</p>	3.3V@8A[13A] (1.8V - 3.5V)	5V@4A [13A] (3.3V - 5.5V)	+12V@0.7A [1A]			3" x 5" x 1.29"	LPT81
	5V@8A[13A] (3.3V - 5V)	12V@3A[4A]	-12V@0.7A[1A]			(76.2 x 127 x 82.8)	LPT82
	5V@8A[13A] (3.3V - 5V)	15V@2.4A[3.2A]	-15V@0.7A [1A]				LPT83

[] = Rating with 30 CFM of air
 (1) Optional cover/enclosure
 (2) Optional bracket

(3) Optional fan cover (see data sheet for increased dimensions)
 (4) Optional end fan cover (see data sheet for increased dimensions)
 * = Floating output

	Output				Size (mm)	Model
	V1	V2	V3	V4		
[110W]	80W LP110 Series					
 (1), (2)	12V@6.7A [9.2A]*				4 x 7 x 1.8	LPS113
	15V@5.3A [7.3A]*				(101.6 x 177.8 x 45.7)	LPS114
	24V@3.3A [4.6A]*					LPS115
	48V@1.7A [2.3A]*					LPS118
	5V@9A [11A]	12V@4.5A [5A]	-12V@0.7A [1A]	±5-25V@2.5A[3A]*		LPQ112
	5V@9A [11A]	15V @4.5A[5A]	-15V@0.7A[1A]	±5-25V@2.5A[3A]*		LPQ113
	5V@9A [11A]	12V@4.5A[5A]	-12V@0.7A[1A]	24V@3.5A[4.5A]		LPQ114
[120W]	70W NT120 Series					
	3.3V@8A[16A]	5V@10A [20A]	+12V@1A[2A]	-12V@0.5A[0.5A]	4.25" x 7" x 1.6" (108 x 177.8 x 40.6)	AA20140
	3.3V@14A [25A]	5V@12.5A [24A]	+12V@1A[2A]	-12V@0.5A[1A]	4" x 7" x 1.5"	NTQ123
	3.3V@14A [25A]	5V@12.5A [24A]	+12V@1A[2A]	-12V@0.5A[1A]	(101.6 x 177.8 x 38.1)	NTQ123-DC
[130W]	80W LP120 Series					
	3.3V@16A [26A]*				3" x 5" x 1.29"	LPS121
	5V@16A [26A]*				(101.6 x 177.8 x 38.1)	LPS122
	12V@6.6A [10.8A]*					LPS123
	15V5.3A [8.6A]*					LPS124
	24V@3.4A [5.4A]*					LPS125
	48V@1.7A [2.7A]*					LPS128
[145W]	80W LP140 Series					
 (1), (3)	5V@12A [25A] (3.3V - 5V)	12V@5A [6A]	-12V@1A [1.5A] (-12V - 15V)	±3.3-25V@1.5A[4.5A]*	4" x 7" x 1.5" (101.6 x 177.8 x 38.1)	LPQ142
[150W]	110W LP150 Series					
 (1)	5V@22A [30A]*				4.25" x 8.5" x 1.5"	LPS152
	12V@9.1A[12.5A]* (12V - 15V)				(108 x 215.9 x 38.1)	LPS153
	24V@4.5A [6.2A]* (24V - 28V)					LPS155
	5V@15A[22A]	12V@2.6A [8A]	-12V@2A [2.5A]	±5-25V@2.5A[3A]*		LPQ152
	5V@15A[22A]	15V@4.8A[6.4A]	-15V@1.6A[2A]	±5-25V@2.5A[3A]*		LPQ153
	5V@15A[22A]	12V@6A[8A]	-12V@2A[2.5A]	24V@3.5A[4.5A]		LPQ154
[165W]	50W NT160 Series					
	3.3V@15A[30A] (1.8V - 3.5V)	5V@10A [20A] (3V - 5.5V)	12V@2A [4.5A]*	12V@2A [4.5A]*	4.25" x 8.5" x 1.5" (108 x 215.9 x 38.1)	NTQ162
	5V@15A[30A] (3.3V - 5V)	3.3V@10A[20A]	12V@2A[4.5A]*	12V@2A [4.5]*		NTQ163
	3.3V@15A [30A] (3.3V - 5V)	2.5V@10A [20A] (1.8V - 3.5V)	5V@2A [4A]*	12V@2A [4A]*		NTQ165

[] = Rating with 30 CFM of air
 (1) Optional cover/enclosure
 (2) Optional bracket

(3) Optional fan cover (see data sheet for increased dimensions)
 (4) Optional end fan cover (see data sheet for increased dimensions)
 * = Floating output

		Output				Size (mm)	Model	
		V1	V2	V3	V4			
[175W] 110W  (1)	LP170 Series					4.25 x 8.5 x 1.5 (108 x 215.9 x 38.1)	LPS172	
	5V@22A[35A]* (2.5V - 6V)							LPS173
	12V@9.1A[15A]* (6V - 12V)							LPS174
	15V@7.3A [12A]* (12V - 24V)							LPS175
	24V@4.5A [7.5]* (24V - 54V)							LPS175
	5V@15A [30A] (3.3V - 5.5V)	12V@6A [8A]	-12V@0.2A [3A] (-12V - 15V)	±3.3-25V@2A[5A]*				LPQ172
	5V@10A [24A] (3.3V - 5.5V)	12V@6A [8A]	-12V@1.2A [3A] (-12V - 15V)	5V@10A[24A]* (3.3 - 5V)				LPQ173
[175W] 110W  (1)	LP170-M Series-Medical					4.25" x 8.5" x 1.5" (108 x 215.9 x 38.1)	LPS172-M	
	5V@22A[35A]* (2.5V - 6V)							LPS173-M
	12V@9.1A[15A]* (6V - 12V)							LPS174-M
	15V@7.3A [12A]* (12V - 24V)							LPS175-M
	24V@4.5A [7.5]* (24V - 54V)							LPS175-M
[250W]  (1), (3), (4)	LP250 Series					5" x 9" x 2" (127 x 228.6 x 50.8)	LPS252-C	
	5V (3-6V)@[50A]*							LPS253-C
	12V(6-12V)@[21A]*							LPS254-C
	15V(12-24V)@[16.7A]*							LPS255-C
	24V(24-48V)@[10.4A]*							LPS255-C
	5V@[35A]	12V@[10A]	-12V@[6A]	±5-25V@[6A]*				LPQ252-C
5V@[35A]	15V@[10A]	-15V@[6A]	±5-25V@[6A]*				LPQ253-C	
[350W]  (1), (3), (4)	LP350 Series					5" x 9" x 2.5" (127 x 228.6 x 50.8)	LPS352-C	
	5V(3-6V)@[70A]*							LPS353-C
	12V(6-12V)@[29.2A]*							LPS354-C
	15V(12-24V)@[23.3A]*							LPS355-C
	24V(24-48V)@[14.6A]*							LPS355-C
	5V@[50A]	12V@[12A]	-12V@[6A]	±3.3 - 24V@[6A]*				LPQ352-C
	5V@[50A]	12V@[12A]	-12V@[6A]	±3.3 - 24V@[6A]*				LPQ353-C
[350W] 200W  (3)	NTS350 Series					4" x 7" x 1.5" (101.6 x 177.8 x 38.1)	NTS353	
	12V@16.6A[29.2A]*						NTS358	
	48V@4.2A[7.3A]*							

[] = Rating with 30 CFM of air
 (1) Optional cover/enclosure
 (2) Optional bracket

(3) Optional fan cover (see data sheet for increased dimensions)
 (4) Optional end fan cover (see data sheet for increased dimensions)
 * = Floating output

6 External Power Adapters



Special Features

All models feature:

- Wide-range AC input
- High demonstrated MTBF
- Overvoltage protection
- Overload protection
- Built-in EMI Filtering
- Extensive safety approvals

Many models feature:

- EN61000-3-2 Compliance
- Medical approvals

AC Input Wallmount U.S. - 2-prong
Europe - 2-prong
United Kingdom - 3-prong
Desktop IEC320 3-pin (DAS60)

Output 2.5mm barrel plug

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

	Size (mm)	Model
4W		
		
DA4 Series		
5.5V@0.75A	1.8" x 2.4" x 1.0" (45.8 x 60.0 x 26.0)	DA4-050US
5.5@0.75A	2.23" x 2.4" x 1.0" (58.3 x 60.0 x 26.0)	DA4-050EU
5.5V@0.75A	1.8" x 2.4" x 1.0" (45.8 x 60.0 x 76.0)	DA4-050CH

16W		
		
DA16 Series		
+12V@1.33A	2.1" x 3.0" x 1.2" (53.3 x 76.2 30.5)	DA16-120US
+12V@1.33A		DA16-120EU
+12 V@1.33A		DA16-120UK

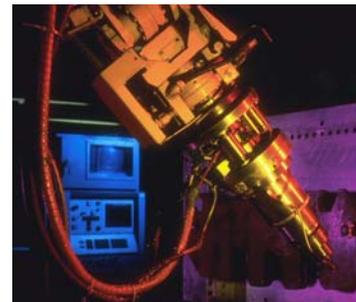
60W		
		
DAS60 Series		
+48V@1.25A	3.3" x 6.2" x 2.0" (83.8 x 157.5 x 50.8)	DAS60-480

60W		
		
DPS50 Series		
5V@6A	2.4" x 5.24" x 1.62" (60.7 x 133.0 x 41.0)	DPS52
12V@5A		DPS53
15 V@4A		DPS54
24V@2.5A		DPS55
48V@1.25A		DPS58

60W		
		
DPS50-M Series Medical		
5V@6A	2.4" x 5.24" x 1.62" (60.7 x 133.0 x 41.0)	DPS52-M
12V@5A		DPS53-M
15 V@4A		DPS54-M
24V@2.5A		DPS55-M
48V@1.25A		DPS58-M

MP Series

400 - 1200 Watts



Special Features

- Current share on all outputs with ratings of 10A or greater
- Remote sense on all outputs with ratings greater than 2A
- Overload protection on all outputs
- Voltage adjustment on all outputs
- Margining on all single output modules
- Input OK signal and status indicator LED
- Global DC OK signal and status indicator LED
- Global and individual module inhibits/enable
- 2 year warranty
- Forced air cooling, field replaceable fan
- Isolated 5V bias voltage
- Power factor correction
- EN61000-3-2 harmonic distortion compliance
- CISPR 22, EN55022 Curve B conducted / radiated EMI
- European CE Mark requirements
- Optional VME timing and system DC OK module
- Low leakage option
- EN61000 immunity standards
- Standard modification flexibility (see data sheet)

New Options Now Available

- Optional battery charger
- Optional 2A standby
- Optional extended hold-up module

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

Electrical Specifications

MP4



MP6



MP8



MP1



Input

Input voltage	85-264 VAC 120-350 VDC
Frequency	47-440 Hz
Inrush current	40 A peak max. (soft start)
Efficiency	70-80% typ. @ full case load
Power factor	0.99 typ. meets EN61000-3-2
Turn-on time	AC on 1.5 sec typ., Inhibit / Enable 150 ms typ.
EMI filter standard	CISPR 22 EN55022 Level "B"
EMI filter (low leakage option)	CISPR 22 EN55022 Level "A"
Leakage current standard	2.0 mA max. @ 240 VAC
Leakage current (low leakage option).	300 μ A max. @ 240 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; MP8: 20A ; MP1: 20A
Warranty	2 years

Output

Adjustment range	±10% min. all outputs
Margining	±4-6% nom. ¹
Overall reg	0.4% or 20 mV max. (36 W 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 μsec.
Overcurrent protection	Single, main of dual output module 105-120% of rated output current.
Short circuit protection	Protected for continuous short circuit Recovery is automatic upon removal of short.
Overvoltage protection (measured at sense connection)	Single output modules
Reverse voltage protection	100% of rated output current
Thermal protection	All outputs disabled when internal temp exceeds safe operating range. >5 ms warning (AC OK signal) before shutdown
Remote sense	Up to 0.5 V total drop (not available on triple output module)
Single wire parallel	Current share to within 2% of total rated current ²
DC OK	-2% to -8% of nominal for any monitored output ²
Minimum load	Not required on single or triple output modules. 10% required on main of dual output modules ³
Housekeeping bias voltage	5 VDC @1.0A mA max. present whenever AC input is applied
Module inhibit	TTL, isolated, singles and dual (both outputs) only
Switching frequency	250 kHz
Output/Output isolation	>1 Megohm
VME signal option board	POR signal & quad external DC OK

Environmental Specifications

Operating temperature	-20°C to 50°C (start @ 0°C) (derate each output linearly to 50% at 70°C) (-20°C to 40°C max. with rear air option)
Storage/Vibration	Mil-Hdbk 810E
Humidity	95% non-condensing
Storage temperature	-40°C to +85°C
Temperature coefficient	0.02% per °C
Cooling:	Internal DC fan or customer provided air (option)

Safety

UL	UL1950
CSA	CSA22.2 No. 234 Level 5
IEC	IEC950, Class 1
VDE	EN60950
BABT	Compliance to EN 60950, BS 7002
CB	Certificate and report
CE	Mark

Ordering Information

Case Size	Module/Voltage(s) First - Module Code Second - Voltage Code	Add-on Modules Requires 1 slot each	Case Option Codes	Hardware Code
MP1	- 3L - 2E - 1Q - 4LL	- HUP	- 00	- ###
Case Size (mm) 4 = 2.5" x 5" x 10"; 400W - 600W, 5 Slots (63.5 x 127 x 254) 6 = 2.5" x 5" x 11"; 600W - 800W, 5 Slots (63.5 x 127 x 279.4) 8 = 2.5" x 7" x 10"; 800W - 1000W, 6 Slots (63.5 x 177.8 x 254) 1 = 2.5" x 8" x 11"; 1000W - 1200W, 7 Slots (63.5 x 203.2 x 279.4)	Module Codes Module/Voltage/Option Codes Module Codes: (None) = 36W Triple O/P (1 slot) 1 = 210W Single O/P (1 slot) 2 = 360W Single O/P (2 slot) 3 = 750W Single O/P (3 slot) 4 = 144W Dual O/P (1 slot) 5 - 9 = Future Voltage Codes: See <i>Output Module Voltage/Current</i> table above	Add-on Modules HUP = Hold up module VME = VME POR Signal and isolated DC	Case Option Codes First Digit 0 - 9 = Parallel Code (See MP Parallel CodesTable at right) Second Digit Standard Options 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	Factory Assigned for Modifications.

Intelligent MP *i*MP™ Series



Up to 1500 Watts

Total Power: Up to 1500 Watts
 Input Voltage: 85 - 264VDC
 120-300 VDC
 # of Outputs: Up to 21

Special Features

- Full Medical EN60601 Approval
- Intelligent I²C Control
- Configurable Current Share on all outputs >10A
- Voltage adjustment on all outputs (Manual or I²C)
- Configurable Input and Output OK signals and indicators
- Configurable Inhibit/Enable
- Configurable Output UP/DOWN sequencing
- High power density (8.8W/cu-in)
- Intelligent fan (speed control/fault status)
- Customer Provided Air Option
- μ P Controlled PFC input with active Inrush protection
- I²C monitor of Voltage, Current, and Temp
- Programmable Voltage, Current Limit, Inhibit/Enable through I²C
- Optional Extended Hold-up Module (SEMI F47 compliance)
- Increased power density to 50%
- Backward compatibility with standard MP
- External switching frequency sync input
- Optional Conformal Coating
- Industrial Temp Range (-40°C to 70°C)
- No preload required

Electrical Specifications

Input

Input range	85-264 VAC: 120-350 VDC (Limited to 300VDC in medical applications)
Frequency	47-440 Hz
Inrush current	40A peak max. (soft start)
Efficiency	up to 85% @ full case load
Power Factor	0.99 typ. meets EN61000-3-2
Turn-on time	AC on 1.5 sec typ., Inhibit / Enable 150 ms typ. Programmable
EMI Filter	CISPR 22 / EN55022 Level "B"
Leakage current	300 μ A max. @ 240 VAC; 47 - 63Hz
Radiated EMI	CISPR 22 / EN55022 Level "B"
Holdover storage	20 ms minimum (independent of input VAC) additional 34mSEC holdover storage with optional HUP module (SEMI F47 compatible)
AC OK	>5 ms early warning min. before outputs lose regulation. Programmable. Full cycle ride thru (50 Hz)
Harmonic distortion	Meets EN61000-3-2
Isolation	Meets EN60950 and EN60601
Global Inhibit/Enable	TTL, Logic "1" and Logic "0". Configurable
Input fuse (internal)	iMP4: 10A; iMP8: 20A; iMP1: 20A (both lines fused)
Warranty	2 years



Environmental Specifications

Operating temperature	-40° to 70°C ambient. Derate each output 2.5% per degree from 50° to 70°C. (-20°C start up)
Storage temperature	-40°C to +85°C
Electromagnetic susceptibility	Designed to meet EN61000-4; -2, -3, -4, -5, -6, -8, -11 Level 3
Humidity	Operating; non-condensing 10% to 95% RH
Vibration	IEC68-2-6 to the levels of IEC721-3-2
MTBF demonstrated	>550,000 hours at full load, 220VAC and 25°C ambient conditions

Safety

UL	UL60950/UL2601
CSA	CSA22.2 No. 234 Level 5
VDE	EN60950/EN60601
BABT	Compliance to EN 60950/EN60601 BS 7002
CB	Certificate and report
CE	Mark to LVD

Output

Adjustment range*	±10% minimum all outputs (manual) (full module adjustment range using PC)
Margining	±4-6% nominal analog (single output module only)
Overall regulation	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 µsec.
Overcurrent protection*	Configurable through PC . Single output module and main output of the 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*	Configurable through PC
Single output module	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
Reverse voltage protection	100% of rated output current
Thermal protection*	Configurable through PC All outputs disabled when internal temp exceeds safe operating range. >5 ms warning (AC OK signal) before shutdown
Remote sense	Up to 0.5 V total drop (not available on triple output module)
Singlewire parallel	Configurable through firmware Current share to within 2% of total rated current
DC OK*	+/-5% of nominal. Configurable through PC
Minimum load	Not required
Housekeeping bias voltage	5 VDC @1.0Amp max. present whenever AC input is applied
Module inhibit*	Configured and controlled through PC
Switching frequency	250 kHz accepts external sync signal
Output/Output isolation	>1 Megohm, 500V
VME signal*	DC OK signal programmable through PC to function as POR signal

* Can be controlled via **PC**

Output Module Line-up

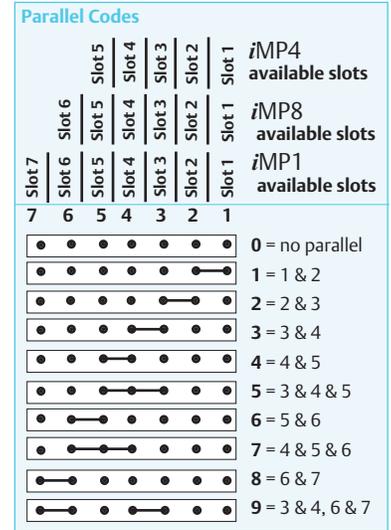
Module Code	1	2	3	4	None
Module Type	Single	Single	Single	Dual	Triple
Max output power	210W	360W	750W	144W	36W
Max output current	35A	60A	150A	10A	2A
Output voltages available*	2-60V	2-60V	2-60V	5, 12-15, 28-30V 2-6, 12-15, 28-30V	8-15V 8-28V 2-28V
Standard voltage increments	25	25	25	19	18
Remote sense	Yes	Yes	Yes	Yes	No
Remote margin	Yes	Yes	Yes	No	No
V-Program - PC Control	Yes	Yes	Yes	Yes	Yes
Active Current Share	Yes	Yes	Yes	Yes	No
Module Inhibit - PC Control	Yes	Yes	Yes	Yes	Yes
Module Inhibit - Analog	Yes	Yes	Yes	No	No
Over voltage / Over current protection	Yes	Yes	Yes	Yes	Yes
Minimum load required	No	No	No	No	No
Slots occupied in any iMP case	1	2	3	1	1

*Programmable

Output Module Voltage/Current

Voltage	Voltage Code	Single Output Module Code			Dual Output		Triple Output			PC Adjustment Ranges
		1	2	3	V1	V2	V1	V2	V3	
2V	A	35A	60A	150A	—	10A	—	—	2A	1.8 - 6.1
2.2V	B	35A	60A	150A	—	10A	—	—	2A	
3V	C	35A	60A	150A	—	10A	—	—	2A	
3.3V	D	35A	60A	150A	—	10A	—	—	2A	
5V	E	35A	60A	150A	10A	10A	—	—	2A	
5.2V	F	35A	60A	150A	—	10A	—	—	2A	
5.5V	G	34A	58A	137A	—	10A	—	—	2A	
6.0V	H	23A	42A	80A	—	10A	—	—	2A	5.4 - 13.2
8.0V	I	20A	36A	80A	—	—	1A	1A	1A	
10V	J	18A	32A	75A	—	—	1A	1A	1A	
11V	K	17A	31A	68A	—	—	1A	1A	1A	
12V	L	17A	30A	62.5A	10A	4A	1A	1A	1A	
14V	M	14A	21A	53.5A	9A	4A	1A	1A	1A	12.6 - 22.0
15V	N	14A	20A	50A	8A	4A	1A	1A	1A	
18V	O	11A	19A	41.6A	—	—	—	0.5A	0.5A	
20V	P	10.5A	18A	37.5A	—	—	—	0.5A	0.5A	
24V	Q	8.5A	15A	31.3A	4A	2A	—	0.5A	0.5A	21.6 - 39.6
28V	R	6.7A	12.8A	26.8A	3A	2A	—	0.5A	0.5A	
30V	S	6.5A	12A	25A	—	—	—	—	—	
33V	T	6.2A	11A	22.7A	—	—	—	—	—	
36V	U	5.8A	10A	20.8A	—	—	—	—	—	
42V	V	4.2A	7.5A	17.9A	—	—	—	—	—	37.8 - 60.0
48V	W	4.0A	7.5A	15.6A	—	—	—	—	—	
54V	X	3.7A	6.0A	13.9A	—	—	—	—	—	
60V	Y	3.5A	6.0A	12.5A	—	—	—	—	—	
Non-std*	Z	Special Voltage - Consult Factory for specifications								

* Note: Increments of current not shown can be achieved by paralleling modules (add currents of each module selected).



Ordering Information

Case Size	Module/Voltage/Option Codes First - Module Code Second - Voltage Code Third - Option Code	Case Option Codes	Software Code	Hardware Code
iMP1*	3L0 - 2E2 - 1Q1 - 4LLO	00	A	###
<p>Case Size (mm) 4 = 2.5" x 5" x 10"; 750W - 1100W, 5 Slots (63.5 x 127 x 254) 8 = 2.5" x 7" x 10"; 1000W - 1200W, 6 Slots (63.5 x 177.8 x 254) 1 = 2.5" x 8" x 11"; 1200W - 1500W, 7 Slots (63.5 x 203.2 x 279.4)</p> <p>*Note: Add "-E" after iMP4 to denote IEC input option. eg. iMP4-E-</p>	<p>Module Codes Module/Voltage/Option Codes Module Codes: (None) = 36W Triple O/P (1 slot) 1 = 210W Single O/P (1 slot) 2 = 360W Single O/P (2 slot) 3 = 750W Single O/P (3 slot) 4 = 144W Dual O/P (1 slot) 5 - 9 = Future</p> <p>Voltage Codes: See Output Module Voltage/Current table above</p> <p>Option Codes: 0 = Standard 1 = Module Enable 2 = Constant Current 3 - 9 = Future</p>	<p>Case Option Codes First Digit 0 - 9 = Parallel Code (See Parallel Codes table above)</p> <p>Second Digit 0 = No Options 1 = Reverse Air 2 = Extended Hold Up (1 slot)* 3 = Global Enable 4 = Fan Off w/Inhibit 5 = Opt 1 + Opt 3 6 = Opt 1 + Opt 4 7 = Opt 3 + Opt 4 8 = Opt 1 +3 +4 9 = Future *Meets SEMI F47</p>	<p>Factory Assigned for Modified Standards Standard is "A" - Software Code "Blank" - Hardware Code</p>	

iMP Case Specifications

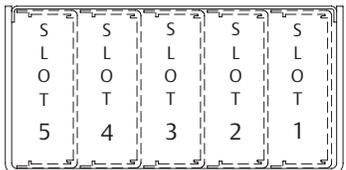


Single



Dual

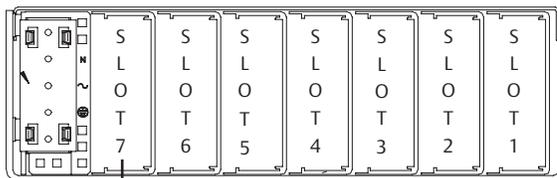
iMP4



iMP4 = 2.5" x 5" x 10" 5 available slots
(63.5 x 127 x 254)

Input	
90-264VAC	180-264VAC
750W max.	1100W max.

iMP8 and iMP1



iMP1 only

iMP8 = 2.5" x 7" x 10" 6 available slots
(63.5 x 177.8 x 254)

iMP1 = 2.5" x 8" x 11" 7 available slots
(63.5 x 203.2 x 279.4)

Input	
85-264VAC	180-264VAC
1000W max.	1200W max.

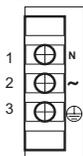
1200W max.	1500W max.
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Triple

Pin Connectors

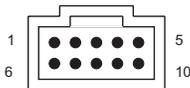
Figure 1. AC Input



AC Input

Pin No.	Function
1	AC Neutral
2	AC Line (Hot)
3	Chassis (Earth) Ground

Figure 2. Connector J1

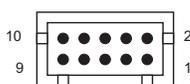


Mates with
Molex 90142-0010
Amp 87977-3

PFC Input Connector (control and signals)

Pin No.	Function
1	Input AC OK - "Emitter"
2	Input AC OK - "Collector"
3	Global DC OK - "Emitter"
4	Global DC OK - "Collector"
5	External Sync
6	Gobal Inhibit / Optional Enable Logic "0"
7	Gobal Inhibit / Optional Enable Logic "1"
8	Gobal Inhibit / Optional Enable Return
9	+5VSB Housekeeping
10	+5VSB Housekeeping Return

Figure 3. Connector J2



Mates with
Landwin 2050S/000 Housing
2053T011P Pin

I²C Bus Output Connector

Pin No.	Function
1	5VCC External Bus
2	Serial Data Signal
3	Secondary Return
4	Serial Clock Signal
5	Address Bit 2
6	Address Bit 1
7	Address Bit 0
8	No connection

14 ■

High Power

1000 - 2500 Watts/1-18 Outputs



Special Features

- Power factor correction
- EN61000-3-2 harmonic distortion compliance
- CISPR 22, EN55022 Level B conducted / radiated EMI
- EN61000 immunity standards
- European CE Mark
- Current share on all outputs
- Remote sense on all outputs
- Overload protection on all outputs
- Voltage adjustment on all outputs
- Margining on all outputs
- AC OK signal (logics "1" or "0")
- Global DC OK (logics "1" or "0")
- DC OK signal and status indicator LED-on all outputs
- Global and individual module inhibits/enable
- 2500W with 3-phase input
- 3 year warranty



Electrical Specifications

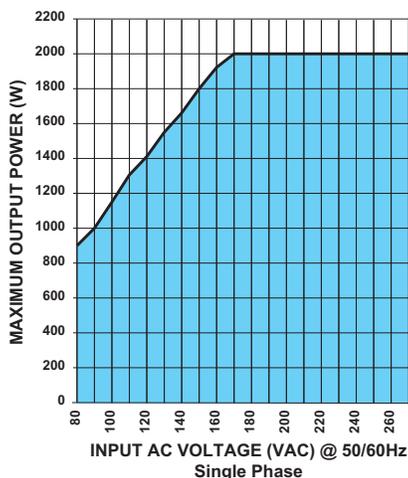
Input

Fuse rating	600V / 25A (internal)1Ø; 250V / 20A (internal)3Ø
Input voltage	85-264 VAC 1Ø; VS1, VS3 & VS4 (See operating curve) 180-264 VAC 3Ø; VS6, VS8 & VS9
Frequency	47 to 440 Hz
Inrush current	40A peak max.
Efficiency	75%-82%
Power factor	0.99 typical: (0.9 on VS6, VS8 & VS9)
Turn-on time	AC / 1 sec; Inhibit / 100 ms max.
EMI filter	CISPR 22, EN55022 Level B conducted/radiated
Leakage current	2 mA max. at 240 VAC
Holdover storage	20 ms minimum / 40ms typical independent of VAC
AC OK warning time	>5 ms (power fail)
Loss of phase	On VS6, VS8 & VS9, unit will continue to operate with loss of phase

Output

Adjustment range	±10% minimum
Margining	±4-6% nominal
Line/load reg	0.2% or 5 mV max. RMS: 0.1% or 10mV; P-P: 1.0% or 50mV;
Ripple	Bandwidth limited to 20MHz
Dynamic response	2% or 100 mV with 25% load step (any output)
Recovery time	To within 1% in <300 µsec
Overvoltage protection	2-5 V 122% to 134% of output voltage; 12-48 V 110% to 120%; recycle AC
Overload protection	Main: 105% to 120% of rated current ; Auxiliaries: 105% to 140%
Short circuit protection	Protected for continuous short circuit, recovery automatic
Reverse voltage protection	100% of rated output current
Thermal protection	Each module thermally protected. Input module: auto recovery. Output modules: recycle AC
Remote sense	Up to 0.5V - total drop
Single wire parallel	Current share to 2% of total rated current
Switching frequency	200KHz (900 - 1500W module, 400KHz)
DC OK	-2% to -6% of nominal
Output/Output isolation	>1Megohm

Input Operating Curve



Need Help?

Visit the Astec Power Wizard at www.astecpower.com to configure the model number for the power supply that meets your specific requirements.

Environmental Specifications

Operating temperature	-10°C to 50°C (derate each output linearly to 60% at 70°C) 40°C max. for reverse air (option #1)
Shock/Vibration	Mil-Hdbk 810E
Humidity	95% non-condensing
Storage temperature	-55°C to +85°C
Temperature coefficient	0.02% per °C
Cooling	Internal DC fan 24V

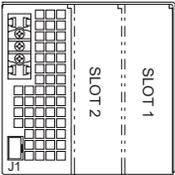
Safety

UL	UL1950	E133211
CSA	CSA22.2-950	LR42001B
IEC	IEC950, Class 1	
VDE	EN60950	79579 & 79580
TUV	EN60950	R9272192 & R9272191
CB	Certificate and report	
CE	Mark	

VS Case Specifications

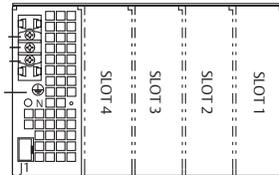
Available Slots

VS1 and VS6



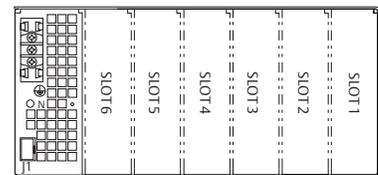
VS1 = 5" x 5" x 11" 2 slot, 1500W max 1Ø
VS6 = 5" x 5" x 11" 2 slot, 1500W max 3Ø
 (127 x 127 x 279.4mm)

VS3 and VS8



VS3 = 5" x 8" x 11" 4 slot, 2000W max 1Ø
VS8 = 5" x 8" x 11" 4 slot, 2500W max 3Ø
 (127 x 203.2 x 279.4mm)

VS4 and VS9



VS4 = 5" x 11" x 11" 6 slot, 2000W max 1Ø
VS9 = 5" x 11" x 11" 6 slot, 2500W max 3Ø
 (127 x 279.4 x 279.4mm)

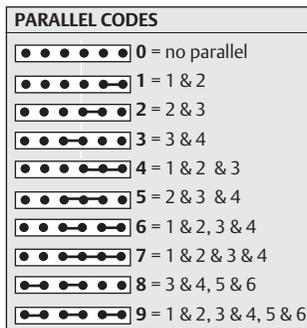
VS Module Specifications

Output Voltage Identification		Module Identification							
Output Voltage Code	Output Voltage	A (1 slot) 300W Single	B (1 slot) 600W Single	C (2 slots) 900W Single	D (2 slots) 1200W Single	E, F (1 slot) 250W Multi Main Output	G, H (1 slot) 500W Multi Main Output	K (1 slot) 750W Single	L (2 slots) 1500W Single
0	2V	60A	120A	180A	240A	25A	50A	150A	300A
1	3.3V	60A	120A	180A	240A	25A	50A	150A	300A
2	5V	60A	120A	180A	240A	25A	50A	150A	300A
3	12V	25A	50A	75A	100A	10.5A	21A	62.5A	125A
4	15V	20A	40A	60A	80A	8.3A	16.6A	50A	100A
5	24V	12.5A	25A	37.5A	50A	5.3A	10.5A	31.2A	62.4A
6	28V	10.7A	21.4A	32.1A	42.8A	4.5A	9A	26.7A	53.4A
7	36V	8.3A	16.6A	24.9A	33.2A	N/A	N/A	20.8A	41.6A
9	48V	6.3A	12.5A	18.75A	25A	N/A	N/A	15.6A	31.2A
8	<i>Special Voltage - Consult Factory for specifications</i>								

Auxiliary Output Table:
Output(s) 2 and/or 3 of Module

Voltage Identification		Module Identification			
Output Voltage Code	Output Voltage	E 250W Dual Aux. Output	F 250W Triple Aux. Output	G 500W Dual Aux. Output	H 500W Triple Aux. Output
0	2V	10A	5A	20A	10A
1	3.3V	10A	5A	20A	10A
2	5V	10A	5A	20A	10A
3	12V	10A	5A	20A	10A
4	15V	10A	5A	20A	10A
5	24V	5A	2.5A	10A	5A
6	28V	5A	2.5A	10A	5A
8	<i>Special Voltage - Consult Factory for specifications</i>				

Ordering Information



Example

VS1 - K2 - G33 - 00 - XXX - CE

5 inch (127mm) case
(2 slots available)

Slot 1
1: 5V @ 150A

Slot 2
2: 12V @ 21A
3: 12V @ 20A

Factory assigned code for modification

No options

No paralleling

Bulk Power

350 - 3000 Watts



Special Features

- EN61000-3-2 harmonic compliance
- Built-in EMI filter
- Low output ripple
- +5V standby output
- Built-in cooling fans
- Over current protection
- Over voltage protection
- Over temperature protection
- Hot swap / N + 1 redundant
- Built-in OR'ing diodes
- Active power factor correction

New Features Coming Soon

- 24V output on HPS35
- I²C option on HPS35
- HPR1 split Rack (dual output voltage)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

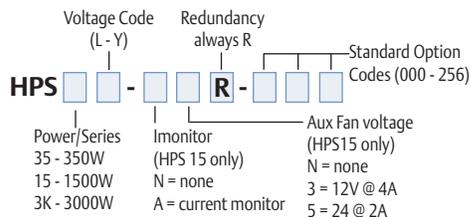


HPS35

Voltage Availability

Model	HPS35	HPS15	HPS3KW
Wattage	350W	1500W	3000W
Input Voltage	90-264VAC	180-264VAC	180-264VAC
Available Standard Output Voltages (Order Code) ¹			
12 (L)	•		
24 (Q)		•	
28 (R)		•	
30 (S)		•	
48 (W)	•	•	•
54 (X)		•	
60 (Y)		•	
Available Options	See Note 1	See Note 1	See Note 2
Corresponding Rack	HPR1-00	HPR3-00	HPR3KW-00

Notes: 1 = Consult factory for other output voltages and options
2 = Comes with I²C interface



Environmental Specifications

HPS15 and HPS35

Operating temperature: -10°C to 50°C ambient (derate output @ 2.5% per degree from 50°C to 70°C)

HPS3KW

Operating temperature: +5°C to 40°C (50% power derating at 70°C)
Cooling: Internal DC fans

Safety

UL	UL60950 (UL Recognized)
NEMKO	EN60950
TUV	EN60950
CE	Mark
CB	Report

Electrical Specifications

Input HPS35

Input voltage	90 - 264 VAC typical
Frequency	47-440 Hz
Inrush current	40 A peak max. @ 25°C
Efficiency	80% typ. @ full load, 230 VAC
Power factor	0.99 typ. @ 115 VAC, full load
Turn-on time	AC on 2 sec ; Inhibit / Enable 160 ms typ.
EMI filter standard	CISPR 22; EN55022 Level "B"
Leakage current standard	<0.5 mA max @ 230 VAC @ 60 Hz per module
Radiated EMI	CISPR 22; EN55022 Level "B"
Holdover time	20 ms minimum (independent of input VAC)
AC OK	5 ms early warning min. before outputs lose regulation
Harmonic distortion	Meets EN61000-3-2
Isolation	Meets EN60950

Output HPS35

Adjustability	±5% of nominal output voltage
Overall req	±2%
Ripple	1% of Vout Pk - Pk (20 MHz bandwidth)
Dynamic response	4% with 25% load step
Recovery time	To within 1% in <300 μsec
Over current protection	115%-130% of rated output current
Short circuit protection	Protected for continuous short circuit. Auto recovery.
Over voltage protection	120 - 140% . AC Reset.
Reverse voltage protection	100% of rated output current
Thermal protection	Main and Aux disabled when internal temp exceeds safe operating range.
Remote sense	Up to 0.5 V total drop
Single wire parallel	Current share to within 10% of total rated current on main output
DC OK	±5% of nominal
Minimum load*	Not required (when used as standalone module)
Standby voltage	5 VDC @2A max. present whenever AC input is applied
Global inhibit	Logic "0"

*3A minimum for current share operation



HPS15

Electrical Specifications

Input HPS15

Input voltage	85 - 264 VAC
Frequency	47-440 Hz
Inrush current	40 A peak max. @ 25°C
Efficiency	85% typ. @ full load, 230 VAC
Power factor	0.99 typ. meets EN61000-3-2
Turn-on time	AC on 1.5 sec typical; Inhibit/Enable 100 ms typical
EMI filter standard	CISPR 22; EN55022 Level "B"
Leakage current standard	2 mA max @ 264 VAC
Radiated EMI	@ 60 Hz per module CISPR 22; EN55022 Level "B"
Holdup time	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

Output

Margining	±5% of nominal
Overall req	±1%
Ripple	1% of Vout Pk - Pk limited to 20 MHz
Dynamic response	2% with 25% load step
Recovery time	To within 1% in <300 μsec
Over current protection	105%-120% of rated output current
Short circuit protection	Protected for continuous short circuit. Recovery is automatic upon removal of short.
Over voltage protection	105 - 120% . Recycle AC input voltage to reset OVP circuit
Reverse voltage protection	100% of rated output current
Thermal protection	Main and Aux disabled when internal temp exceeds safe operating range.
Remote sense	Up to 0.5 V total drop
Single wire parallel	Current share to within 10% of total rated current
DC OK	±5% of nominal
Minimum load*	Not required
Standby voltage	5 VDC @5A max. present whenever AC input is applied (3.3V @ 5A optional)
Global inhibit	Logic "0" standard logic "1" optional

*3A minimum for current share operation



HPS3KW

Electrical Specifications

Input HPS3KW

Input voltage	180 - 264 VAC
Frequency	47-63 Hz
Inrush current	100 A peak
Efficiency	85% typical at full load
Power factor	0.98 typical
EMI filter standard	CISPR 22 Class A
Leakage current	1.16 mA max @ 264 VAC

Output

DC voltage	48V @ 57A; 5Vsb @ 5A
Maximum power	3000W
Adjustment range	±5%
Supervisory output	5V @ 5A
Hold up time	20ms
Over current	48V: 110% - 150%; 5Vsb: 101% - 125%
Over voltage	125% above nominal output

Logic

Enable	Requires contact closure from 'PSON' to 5V sb return
AC OK	TTL signal LOW
Power fail	TTL signal LOW; goes HIGH in the event of failure
Power good	TTL logic signal goes high 100 - 1000 msec after 48V DC output. It goes LOW at least 1ms before loss of regulation

Ordering Information

Module	HPS35	HPS15	HPS3KW
Rack #	HPR1-00*	HPR3-00*	HPR3K-00*
# of Slots	4	4	6
Total Power	1400W	600W	18,000W

*See web site for option codes on HPR racks.

Distributed Power Systems

450-1500 Watts



Special Features

- Active Power Factor Correction
- EN61000-3-2 Harmonic Compliance
- Active AC inrush control
- High Density
- Outputs +12VDC with some +48VDC models available
- 3.3VDC Standby
- No minimum load required
- Hot Plug Operation
- N+1 Redundant
- Internal ORing FETs
- Active Current Sharing
- Built-in Cooling Fans
- I²C Interface with EEPROM for FRU Data
- Internal Fan Speed Control with Fan Fail Signal

New Features Coming Soon

- DSR1 rack for DS650/850. Standard 19" 1U fits up to 5 modules (4,250 Watts)
- DSR2 rack for DS1300/1500. Standard 19" 2U fits up to 3 modules (4,500 Watts)
- DS1500-3 (1500 Watts in the DS1300 package size)
- Options for 5V standby Voltage (DS650/850 only)
- Options for low leakage

Safety

UL	UL60950 (UL Recognized)
NEMKO	EN60950
TUV	EN60950
CE	Mark
CB	Report



DS650 and DS850



DS450/DS550



DS657-9-3

Voltage Availability

Model	12V	24V	48V
	(-3)	(-5)	(-9)
DS450	•		
DS550	•		
DS650	•		•
DS850	•	*	•
DS1300	•		
DS1500	•		

Notes: • = Available
* = Coming in 2006



DS1300/DS1500

DIN Rail

60 - 960 Watts



* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

Special Features

- Power factor correction
- Auto select 115/230 VAC, 50/60 Hz Input
- 380-480 VAC 3-Phase
- All single phase models meet SEMI F47 Sag Immunity
- Class 1, Div 2 Hazardous Locations
- DC OK Signal
- Adjustable voltage
- Industrial grade design (no derating to 60°C)
- User-friendly front panel
- Single and three-phase inputs available
- Highly efficient >90% switching technology
- High MTBF and reliability
- Available plastic case (PP) or metal
- 3 year warranty

Ordering Information

Model	Weight	Power	Voltage	Current
*ADN2.5-24-1PM	1.6 lbs. (725g)	60W	85-264VAC	2.5A
*ADN3.8-24-1PP	2.4 lbs. (1055g)	100W	85-132 / 176-264VAC	3.8A
ADN4-24-1PM	2.4 lbs. (1055g)	100W	85-132/176-269VAC	4.0A
ADN4.2-24-1PP	2.4 lbs. (1055g)	100W	85-132 / 176-264VAC	4.2A
ADN5-24-1PM	2.4 lbs. (1055g)	120W	85-132 / 176-264VAC	5A
ADN5-24-3PM	1.7lbs. (730g)	120W	380-480 VAC	5A
ADN10-24-1PM	3.3 lbs. (1480g)	240W	85-132 / 176-264VAC	10A
ADN10-24-3PM	2.16lbs. (980g)	240W	380-480 VAC	10A
ADN20-24-1PM	3.4 lbs. (1520g)	480W	85-132 / 176-264VAC	20A
ADN20-24-3PM	3.97 lbs. (1800g)	480W	380-480 VAC	20A
ADN30-24-3PM	4.0lbs. (2000g)	720W	380-480 VAC	30A
ADN40-24-3PM	6.6 lbs. (3300g)	960W	380-480 VAC	40A

*NEC Class 2

	Height	DIMENSIONS (mm)	
		Width	Depth
ADN2.5-24-1PM	4.88 (124)	1.97 (50)	4.55 (116)
ADN3.8-24-1PP	2.95 (75)	2.85 (72.4)	3.80 (96.5)
ADN4-24-1PM	4.88 (124)	2.56 (65)	4.55 (116)
ADN4.2-24-1PP	2.95 (75)	2.85 (72.4)	3.80 (96.5)
ADN5-24-1PM	4.88 (124)	2.56 (65)	4.55 (116)
ADN5-24-3PM	4.88 (124)	2.91 (73)	4.55 (116)
ADN10-24-1PM	4.88 (124)	3.26 (82.8)	4.55 (116)
ADN20-24-1PM	4.88 (124)	6.88 (174.8)	4.66 (118.4)

Electrical Specifications

Input - Single Phase

Nominal voltage	115/230 VAC auto select
Power factor (PFC)	EN6100-3-2
AC Input range	85 - 123 / 176 - 264 VAC
DC Input range	210 - 375 VDC
Frequency	47 - 63 Hz, 500 Hz

Input - 3 - phase

Nominal voltage	380 - 480 VAC
Power factor (PFC)	EN6100-3-2
AC Input range	340 - 576 VAC
DC Input range	450 - 820 VDC
Frequency	47 - 63 Hz, 500 Hz
Phase	10 or 30 on 5, 10 & 20A* models. 30A & 40A models are 30 only.

Output

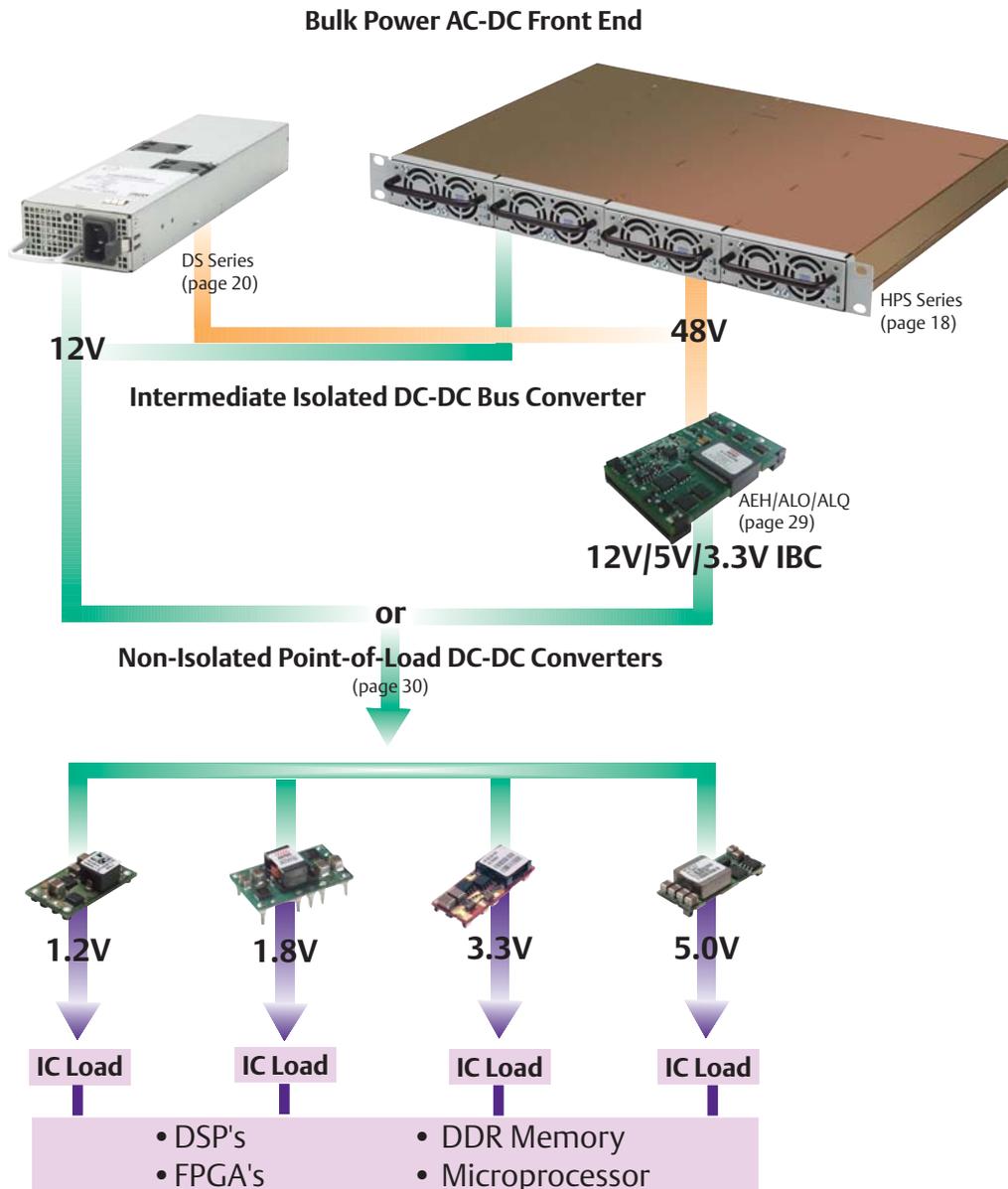
Nominal voltage	24V (22.5-28.5VDC Adj.)
Hold Up Time	> 20ms at full load (25°C)
Tolerance	< ±2 % overall (combination line/load/time/temp)
Line regulation	<0.5%
Load regulation	<0.5%
Time & temp. drift	<1%
Initial voltage setting	24.5V ± 1%
Ripple	< 50mVpp
Power back immunity	> 35V
Parallel operation	Switch selectable
ADN20-24-1PM	Active single wire parallel
ADN40-24-3PM	Jumper selectable via front panel
All others	Jumper selectable via front panel
Over voltage protection	> 30.5 < 33VDC

DC-DC Converters

Distributed Power Architecture

Astec Power understands the needs and nuances of developing power systems using Distributed Power Architecture. We know it is your job to create the most efficient, cost-effective, quality system, and deliver it in

a timely fashion. From full-system power to board-level components, high-power isolated front ends to a full line of isolated and non-isolated DC-DC modules, **Astec Power is *the* source for today's power systems.**





ALD25

Special Features

- Industry leading: 16th Brick Standard package and feature-sets
- Small form factor delivering up to 25A / 60W
- Mechanical options for optimum mounting flexibility: Through-hole (default) or surface mount (suffix "-S") termination; 5mm (default) or 3.7mm through-hole pin length option
- Meets Basic insulation
- Power densities as high as 146.5W per cubic inch

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
1.2V	Sixteenth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	84%	ALD25K48-L
1.5V	Sixteenth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	85%	ALD25M48-L
1.8V	Sixteenth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	88%	ALD25Y48-L
2.5V	Sixteenth Brick Industry Standard - Isolated				
	20A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	89%	ALD20G48-L
3.3V	Sixteenth Brick Industry Standard - Isolated				
	18A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	90%	ALD18F48-L
5.0V	Sixteenth Brick Industry Standard - Isolated				
	12A	48V (36-75V)	1.3" x 0.9" x 0.35" (33.0 x 22.9 x 8.8) Openframe	91%	ALD12A48-L

Note: Available options are: • 3.7mm pin length (5.0mm default)
 • Negative Enable (Pos default) • Surface Mount Termination
 For correct part number coding, please refer to page 34.

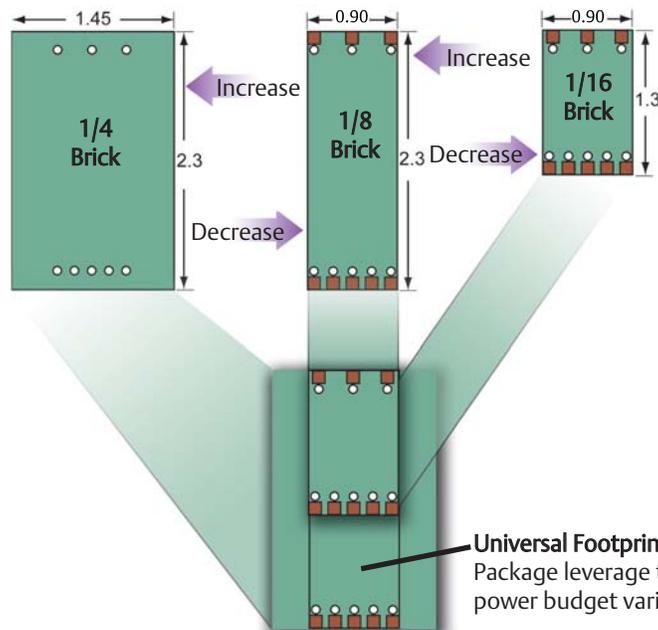
* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Footprint/Package Leverage

Common Features

- Open Frame or Baseplate
- Thru Hole or SMT
- 3.7mm or 5mm pin length
- Negative or Positive enable

Designing multiple footprints maximizes product availability (supply) and creates greatest cost/price leverage



Universal Footprint
 Package leverage to support power budget variances.

Eighth Brick



AEO/ALO40Y48

Special Features

- Industry leading: 8th Brick Standard package and feature-sets
- Low power (60W) and high power (120W) platform offering
- Mechanical options for optimum mounting flexibility: Openframe (ALO) or Baseplate (AEO) construction; Through-hole (default) or surface mount (suffix "-S") termination; 5mm (default) or 3.7mm through-hole pin length option
- Meets basic insulation
- Power densities as high as 181W per cubic inch

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
1.2V	Eighth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	87%	AEO25K48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	87%	ALO25K48-L
	40A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	86%	AEO40K48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	86%	ALO40K48-L	
1.5V	Eighth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	88%	AEO25M48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	88%	ALO25M48-L
	40A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	88%	AEO40M48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	88%	ALO40M48-L	
1.8V	Eighth Brick Industry Standard - Isolated				
	25A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	90%	AEO25Y48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	90%	ALO25Y48-L
	40A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	89%	AEO40Y48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	89%	ALO40Y48-L	
2.5V	Eighth Brick Industry Standard - Isolated				
	20A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	90%	AEO20G48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	90%	ALO20G48-L
	35A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	90%	AEO35G48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	90%	ALO35G48-L	
3.3V	Eighth Brick Industry Standard - Isolated				
	20A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	91%	AEO20F48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	91%	ALO20F48-L
	25A	24V (18-36V)	2.3" x 0.80" x 0.32" (58.40 x 20.30 x 8.1) Openframe	88%	ALO25F24-L
	30A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	91%	AEO30F48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	91%	ALO30F48-L
5.0V	Eighth Brick Industry Standard - Isolated				
	12A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	93%	AEO12A48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	93%	ALO12A48-L
	20A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	93%	AEO20A48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	93%	ALO20A48-L	
12.0V	Eighth Brick Industry Standard - Isolated				
	4A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	93%	AEO04B48-L
		48V (36-75V)	2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	93%	ALO04B48-L
	10A	48V (36-75V)	2.3" x 0.90" x 0.4" (58.40 x 22.90 x 10.16) Baseplate	92%	AEO10B48-L
48V (36-75V)		2.3" x 0.90" x 0.32" (58.40 x 22.90 x 8.1) Openframe	92%	ALO10B48-L	

Note: Available options are:

For correct part number coding, please refer to page 34.

• Negative Logic Enable (Positive Logic-default)

• 3.7mm pin length (5.0mm default)

• Surface Mount Termination

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Quarter Brick



ALQ50

Special Features

- Single output 1/4 brick, 6A to 75A
- Wide operating temperature range
- Rich feature sets: UVLO, Enable, On/Off, OCP, OVP, OTP, Differential Remote Sense, Output Trim
- Meets basic insulation
- Exceptional dynamic response and reactive loading capability
- Monotonic start-up characteristic
- Open and baseplated version

	Input Voltage	Package (mm)	Efficiency	Model Number
1.2V	Quarter Brick Single			
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58.0 x 36.8 x 8.9) Openframe	82%	ALQ12K48-L
	40A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58.0 x 36.8 x 8.9) Openframe	85%	ALQ40K48
	50A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58.0 x 36.8 x 8.9) Openframe	86%	ALQ50K48-L
1.5V	Quarter Brick Single			
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58 x 36.8 x 8.9) Openframe	82%	ALQ12M48
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (57.9 x 36.8 x 8.9) Baseplate	82%	AEQ12M48
	40A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58 x 36.8 x 8.9) Openframe	86%	ALQ40M48
1.8V	Quarter Brick Single			
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (57.9 x 36.8 x 8.9) Openframe	84%	ALQ12Y48
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.45" (57.9 x 36.8 x 11.43) Baseplate	84%	AEQ12Y48
	40A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (57.9 x 36.8 x 8.9) Openframe	87%	ALQ40Y48
	50A	48V (36 - 75V) 2.30" x 1.48" x 0.36" (58.4 x 37.6 x 9.1) Openframe	89%	ALQ50Y48-L
	60A	48V (36 - 75V) 2.30" x 1.48" x 0.37" (58.4 x 37.8 x 9.4) Openframe	89%	ALQ60Y48-L
	60A	48V (36 - 75V) 2.30" x 1.48" x 0.44" (58.4 x 37.6 x 11.2) Baseplate	89%	AEQ60Y48-L
	75A	48V (36 - 75V) 2.30" x 1.48" x 0.37" (58.4 x 37.6 x 9.4) Openframe	89%	ALQ75Y48-L
75A	48V (36 - 75V) 2.30" x 1.48" x 0.44" (58.4 x 37.6 x 11.2) Baseplate	89%	AEQ75Y48-L	
2.5V	Quarter Brick Single			
	25A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 10.2) Openframe	88%	ALQ50G48-L
	25A	48V (36 - 75V) 2.28" x 1.45" x 0.50" (58.0 x 36.8 x 12.7) Baseplate	88%	AEQ25G48
	40A	48V (36 - 75V) 2.28" x 1.45" x 0.38" (58.0 x 36.8 x 9.7) Open frame	88%	ALQ40G48
	50A	48V (36 - 75V) 2.30" x 1.48" x 0.36" (58.4 x 37.6 x 9.1) Openframe	89%	ALQ50G48-L
50A	48V (36 - 75V) 2.30" x 1.48" x 0.46" (58.4 x 37.6 x 11.7) Baseplate	89%	AEQ50G48-L	
3.3V	Quarter Brick Single			
	12A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58.0 x 36.8 x 8.9) Openframe	88%	ALQ12F48
	25A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 10.2) Openframe	89%	ALQ25F48
	25A	48V (36 - 75V) 2.28" x 1.45" x 0.50" (58.0 x 36.8 x 12.7) Baseplate	89%	AEQ25F48
	35A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 10.2) Openframe	90%	ALQ35F48
	40A	48V (36 - 75V) 2.30" x 1.48" x 0.36" (58.4 x 37.6 x 9.1) Openframe	90%	ALQ40F48-L
	50A	48V (36 - 75V) 2.30" x 1.48" x 0.46" (58.4 x 37.6 x 11.7) Baseplate	90%	AEQ50F48-L
5.0V	Quarter Brick Single			
	20A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 10.2) Openframe	90%	ALQ20A48
	20A	48V (36 - 75V) 2.28" x 1.45" x 0.50" (58.0 x 36.8 x 12.7) Baseplate	91%	AEQ20A48
	25A	48V (36 - 75V) 2.28" x 1.45" x 0.35" (58.0 x 36.8 x 8.9) Openframe	91%	ALQ25A48-L
8.0V	Quarter Brick Single			
	6A	48V (36 - 75V) 2.28" x 1.45" x 0.50" (58.0 x 36.8 x 12.7) Baseplate	89%	AEQ06L48
12.0V	Quarter Brick Single			
	8A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 12.7) Openframe	90%	ALQ08B48
	8A	48V (36 - 75V) 2.28" x 1.45" x 0.40" (58.0 x 36.8 x 12.7) Baseplate	90%	AEQ08B48
	20A	48V (36 - 75V) 2.28" x 1.45" x 0.36" (58.0 x 36.8 x 9.1) Openframe	93%	ALQ20B48-L
	20A	48V (36 - 75V) 2.28" x 1.45" x 0.42" (58.0 x 36.8 x 10.9) Baseplate	93%	AEQ20B48-L

Note: Add appropriate suffix for available option(s)

For correct part number coding, please refer to page 34.

• Single pair of +Vo & -Vo pins (default is 2 pairs) for 60A & 75A codes.

• Negative Logic Enable (Positive Logic)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.

Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Quarter Brick Dual



ALQ15Y48N



AEQ15

Special Features

- Drop-in replacement for several widely used dual output 1/4 bricks
- Independent control loop eliminates cross regulation
- Tightly regulated individual output channels
- Clean, fast transient load response
- Open frame construction
- 6 - 15 amps per channel - 60 watts total output power

	Input Voltage	Package (mm)	Efficiency	Model Number	
2.5V / 1.5V	Quarter Brick Dual				
	15/15A 48V (36-75V)	2.30" x 1.48" x 0.50" (37.6 x 58.4 x 12.7)	Openframe	84%	ALQ15GM48-L
3.3V / 1.2V	Quarter Brick Dual				
	6/7A 48V (36-75V)	2.28" x 1.45" x 0.43" (36.8 x 57.9 x 10.9)	Openframe	82%	ALQ07FK48
	15/15A 48V (36-75V)	2.30" x 1.48" x 0.50" (37.6 x 58.4 x 12.7)	Openframe	90%	ALQ15FK48-L
3.3V / 1.5V	Quarter Brick Dual				
	6/7A 48V (36-75V)	2.28" x 1.45" x 0.43" (36.8 x 57.9 x 10.9)	Openframe	82%	ALQ07FM48
3.3V / 1.8V	Quarter Brick Dual				
	6/7A 48V (36-75V)	2.28" x 1.45" x 0.43" (36.8 x 57.9 x 10.9)	Openframe	82%	ALQ07FY48
	15/15A 48V (36-75V)	2.30" x 1.48" x 0.50" (37.6 x 58.4 x 12.7)	Openframe	87%	ALQ15FY48-L
3.3V / 2.5V	Quarter Brick Dual				
	15/15A 48V (36-75V)	2.30" x 1.48" x 0.50" (37.6 x 58.4 x 12.7)	Openframe	88%	ALQ15FG48-L
5.0V / 3.3V	Quarter Brick Dual				
	12/15A 48V (36-75V)	2.30" x 1.50" x 0.50" (38.1 x 58.4 x 12.7)	Baseplate	90%	AEQ15AF48-L
	12/15A 48V (36-75V)	2.30" x 1.48" x 0.50" (37.6 x 58.4 x 12.7)	Openframe	90%	ALQ15AF48-L

Note: Add appropriate suffix for available option(s)
For correct part number coding, please refer to page 34.

- Negative Enable (Pos default)
- 3.7mm pin length (5mm default)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.
Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Half Brick



AEH80

Special Features

- Available from 9A to 80A. Consult factory for 100 amp version
- Open frame and baseplate construction
- Open frame has heat sink adapter for conductive cooling applications
- Highest efficiencies available
- Optimum transient load performance and reactive loading capacity
- "Industry standard" trim

	Input Voltage	Package (mm)	Efficiency	Model Number
1.2V	Half Brick Single Industry Standard, Isolated			
40A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Baseplate	81%	AEH40K48
60A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	86%	ALH60K48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	86%	AEH60K48-L
80A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	86%	ALH80K48-L
80A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	83%	AEH80K48-L
1.5V	Half Brick Single Industry Standard, Isolated			
30A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	78%	AEH30M48
80A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	86%	AEH80M48-L
80A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	86%	ALH80M48-L
1.8V	Half Brick Single Industry Standard, Isolated			
20A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	81%	AEH20Y48
60A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	89%	AEH60Y48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	89%	ALH60Y48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	87%	AEH80Y48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	87%	ALH80Y48-L
2.5V	Half Brick Single Industry Standard, Isolated			
10A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	85%	AEH10G24
10A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	87%	AEH10G48
15A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	87%	AEH15G48
20A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	85%	AEH20G24
20A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	86%	AEH20G48
30A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	85%	AEH30G48
60A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	90%	AEH60G48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	90%	ALH60G48-L
3.3V	Half Brick Single Industry Standard, Isolated			
10A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	87%	AEH10F24
10A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	87%	AEH10F48
15A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	88%	AEH15F48
20A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	87%	AEH20F24
20A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	88%	AEH20F48
30A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	85%	AEH30F48
40A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	89%	AEH40F48
60A	48V (36-75V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	91%	AEH60F48-L
60A	48V (36-75V)	2.30" x 2.40" x 0.40" (58.4 x 61.0 x 10.16) Openframe	91%	ALH60F48-L
5.0V	Half Brick Single Industry Standard, Isolated			
10A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	88%	AEH10A24
10A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	89%	AEH10A48
15A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	89%	AEH15A48
20A	24V (18-36V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	88%	AEH20A24
20A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	89%	AEH20A48
30A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	88%	AEH30A48
12.0V	Half Brick, Industry Standard, Isolated			
25A	48V (36-75V)	2.3" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	94%	AEH25B48-L
29A	48V (36-75V)	2.3" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	94%	AEH30B48-L
28.0V	Half Brick, Industry Standard, Isolated			
9A	48V (36-75V)	2.28" x 2.40" x 0.50" (57.9 x 61.0 x 12.7) Baseplate	91%	AEH09R48

Note: Add appropriate suffix for available option(s) • Negative Enable (Pos default) • single pair of +Vo & -Vo pins (default is 2 pairs) for 80A codes.
For correct part number coding, please refer to page 34. • 3.7mm pin length (5mm default)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.
Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Full Brick



AIF25R48

Special Features

- 700W continuous power @ 100°C baseplate temperature
- High efficiency 89% @ 28V
- Low output ripple and noise
- RF Amplifier applications
- Pos and Neg enable option
- Excellent transient response
- OVP, LVP, OCP, OTP, short circuit protection
- Basic insulation

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
28.0V	Full Brick, Industry Standard, Isolated				
	25A	48V (36-75V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	89%	AIF25R48

Note: Add appropriate suffix for available option(s)
 N = Negative Enable (Pos default)
 -6 = 3.8mm pin length (4.8mm default)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Available in RoHS 5 only.

Bus Converters



ALO15B50



AED17Q50



ALD17Q50



ALQ25B50

Special Features

- Specialized Industry standard bricks for Intermediate Bus Architectures
- Optimized for driving non-isolated Point-of-Load (POL)
- Wide and narrow input voltage offering for telecom and enterprise applications
- Wide operating temperature range
 -40°C to 100°C Case (Baseplate)
 -40°C to 85°C Ambient (Openframe)
- Rich Feature Sets: Overvoltage, Over temperature protection, On/Off Enable
- Meets Basic Insulation

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
9.6V	Bus Converter Industry Standard - Isolated				
	17A	48V (38-55V)	1.30" x 0.90" x 0.36" (33.0 x 22.9 x 8.9) Openframe	95%	ALD17Q50-L
	17A	48V (38-55V)	1.40" x 0.90" x 0.42" (35.6 x 22.8 x 10.7) Baseplate	95%	AED17Q50-L

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
12.0V	Bus Converter Industry Standard - Isolated				
	10A	48V (36-75V)	2.30" x 0.90" x 0.38" (58.4 x 22.9 x 9.7) Openframe	92%	ALO10B48-L
	15A	48V (38-55V)	2.30" x 0.90" x 0.35" (58.4 x 22.9 x 8.8) Openframe	95%	ALO15B50-L
	25A	48V (42-53V)	2.30" x 1.48" x 0.38" (58.4 x 37.6 x 9.7) Openframe	96%	ALQ25B50-L
	25A	48V (36-75V)	2.4" x 2.3" x 0.5" (61.0 x 58.4 x 12.7) Baseplate	94%	AEH25B48-L
	30A	48V (36-75V)	2.4" x 2.3" x 0.5" (61.0 x 58.4 x 12.7) Baseplate	94%	AEH30B48-L

Note: Add appropriate suffix for available option(s)
 N = Negative Enable (Pos default)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".



Special Features

- ATH Series modules with Auto-Track Sequencing are Point-of-Load Alliance (POLA) products
- POLA offers customers advanced non-isolated modules that provide the same functionality form factor and electrical interoperability
- Products range from 6A to 30A in the families
- High efficiency
- Standardized electronically interoperable technology
- Same PWM for consistent performance under all conditions
- EN60950 (TÜV Product Service), UL/cUL60950
- POLA partners have common lead-free manufacturing roadmap
- Consult factory or www.astecpower.com for new POLA releases

Featuring “Auto-Track™ Sequencing”

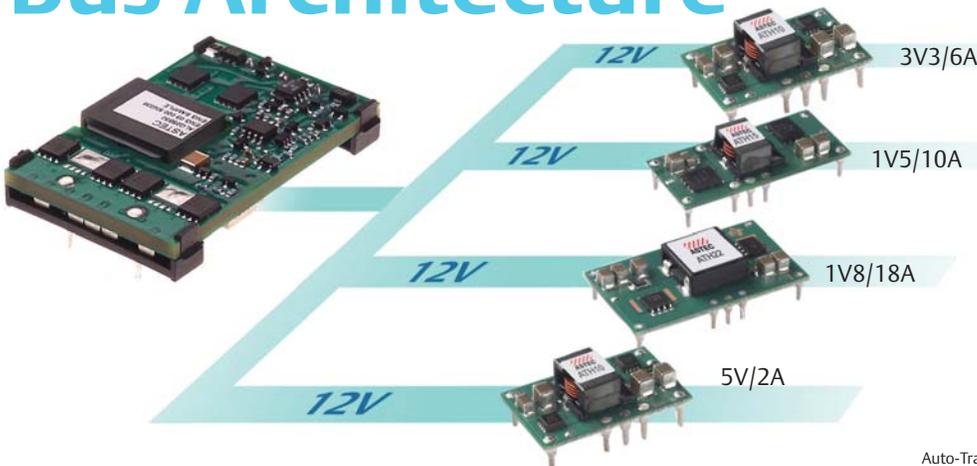
	Input Voltage	Package (mm)	Efficiency	Model Number	
0.8 - 2.5V	POLA Industry Standard, Non-Isolated				
	6A	3.3V (3.0-3.6V)	0.87" x 0.50" x 0.34" (22.1 x 12.70 x 8.64)	95%	ATH06T033-9JL
	8A	3.3V (3.0-3.6V)	0.90" x 0.33" x 0.50" (22.9 x 8.4 x 12.70) SIP	94%	PTV03010WAH
	10A	3.3V (3.0-3.6V)	1.00" x 0.62" x 0.35" (25.4 x 15.7 x 8.9)	92%	ATH10T033-9JL
	15A	3.3V (3.0-3.6V)	1.37" x 0.62" x 0.35" (34.8 x 15.7 x 8.9)	95%	ATH15T033-9JL
	22A	3.3V (3.0-3.6V)	1.50" x 0.87" x 0.35" (38.1 x 22.1 x 8.9)	93%	ATH22T033-9JL
	30A	3.3V (3.0-3.6V)	1.37" x 1.12" x 0.35" (34.8 x 28.4 x 8.9)	93%	ATH30T033-9JL
0.8-3.6V	POLA Industry Standard, Non-Isolated				
	6A	5.0V (4.5-5.5V)	0.87" x 0.50" x 0.34" (22.1 x 12.70 x 8.64)	95%	ATH06T05-9JL
	8A	5.0V (4.5-5.5V)	0.90" x 0.33" x 0.50" (22.9 x 8.4 x 12.70) SIP	95%	PTV05010WAH
	10A	5.0V (4.5-5.5V)	1.00" x 0.62" x 0.35" (25.4 x 15.7 x 8.9)	92%	ATH10T05-9JL
	15A	5.0V (4.5-5.5V)	1.37" x 0.62" x 0.35" (34.8 x 15.7 x 8.9)	96%	ATH15T05-9JL
	22A	5.0V (4.5-5.5V)	1.50" x 0.87" x 0.35" (38.1 x 22.1 x 8.9)	93%	ATH22T05-9JL
	30A	5.0V (4.5-5.5V)	1.37" x 1.12" x 0.35" (34.8 x 28.4 x 8.9)	94%	ATH30T05-9JL
1.2-5.5V	POLA Industry Standard, Non-Isolated				
	6A	12.0V (10.8-13.2V)	0.87" x 0.50" x 0.34" (22.1 x 12.70 x 8.64)	95%	ATH06K12-9JL
	8A	12.0V (10.8-13.2V)	0.90" x 0.33" x 0.50" (22.9 x 8.4 x 12.70) SIP	95%	PTV12010WAH
	10A	12.0V (10.8-13.2V)	1.00" x 0.62" x 0.35" (25.4 x 15.7 x 8.9)	92%	ATH10K12-9JL
	12A	12.0V (10.8-13.2V)	1.37" x 0.62" x 0.35" (34.8 x 15.7 x 8.9)	94%	ATH12K12-9JL
	18A	12.0V (10.8-13.2V)	1.50" x 0.87" x 0.35" (38.1 x 22.1 x 8.9)	95%	ATH18K12-9JL
	26A	12.0V (10.8-13.2V)	1.37" x 1.12" x 0.35" (34.8 x 28.4 x 8.9)	94%	ATH26K12-9JL

Note: Available options for ATH are:
 For correct part number coding, please refer to page 34.

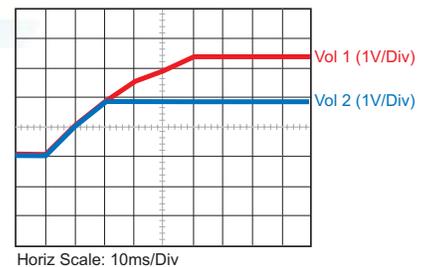
- Surface Mount Termination (default is TH)
- Tray Packaging
- Surface Mount/Tray Package
- Tape and Reel Packaging

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Bus Architecture



Auto-Track™ Sequencing



Auto-Track™ is a registered trademark of Texas Instruments Incorporated. POLA is a trademark of Texas Instruments Incorporated.

Point-of-Load



Special Features

- Non-Isolated Point of Load (POL) converters from 4A to 18A
- Various input voltage ranges to choose from that suits different Distributed Power Architecture (DPA) bus voltages
- Output current rating higher than commercially available POLs
- Adjustable output voltage through external resistor programming
- Low Profile SMT modules - APC's
- SIP Through-Hole modules - APA's
- Wide operating temperature range from -40° up to 85°C Ambient
- Remote Sense, Power Good signal, Active Ishare are extra options that exist for some codes

	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
0.75-5.5V	Industry Standard - Non-Isolated				
	18A	3.0-5.5V	2.00" x 0.39" x 0.50" (50.8 x 9.91 x 12.7) SIP	92%	APA18T04-9L
	18A	3.0-5.5V	1.30" x 0.53" x 0.34" (33.0 x 13.46 x 8.64) SMT	92%	APC18T04-9L
	18A	10.0-14.0V	2.00" x 0.39" x 0.50" (50.8 x 9.91 x 12.7) SIP	92%	APA18T12-9L
	18A	10.0-14.0V	1.30" x 0.53" x 0.34" (33.0 x 13.46 x 8.64) SMT	92%	APC18T12-9L
0.9V	Industry Standard - Non-Isolated				
	8A	1.8-6.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	76%	APC08J03-L
	8A	5.0-13.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	75%	APC08J08-L
	12A	1.8-6.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	76%	APC12J03-L
	12A	5.0-13.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	75%	APC12J08-L
1.2V	Industry Standard - Non-Isolated				
	8A	1.8-6.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	81%	APC08K03-L
	8A	5.0-13.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	81%	APC08K08-L
	12A	1.8-6.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	81%	APC12K03-L
	12A	5.0-13.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	81%	APC12K08-L
1.8V	Industry Standard - Non-Isolated				
	8A	2.2-6.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	88%	APC08Y03-L
	8A	5.0-13.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	86%	APC08Y08-L
	12A	2.2-6.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	88%	APC12Y03-L
	12A	5.0-13.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	86%	APC12Y08-L
2.5V	Industry Standard - Non-Isolated				
	8A	3.0-6.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	91%	APC08G03-L
	8A	5.0-13.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	90%	APC08G08-L
	12A	3.0-6.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	91%	APC12G03-L
	12A	5.0-13.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	90%	APC12G08-L
3.3V	Industry Standard - Non-Isolated				
	8A	4.0-6.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	93%	APC08F03-L
	8A	5.0-13.0V	1.30" x 0.53" x 0.29" (33.0 x 13.46 x 8.26) SMT	92%	APC08F08-L
	12A	4.0-6.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	93%	APC12F03-L
	12A	5.0-13.0V	1.30" x 0.63" x 0.37" (33.0 x 16.0 x 9.4) SMT	92%	APC12F08-L

Note: Add appropriate suffix for available option(s)
For correct part number coding, please refer to page 34.
+ = Right angle pins for horizontal mounting for APA18 only

All APC08 and APC12 have the following options.
Consult website for the correct optional combinations.

- Output Trim, Power Good Signal, Active Current Share
- Tray or T & R packaging

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.
Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

30 PFC Products



PFC module 1600 watt

Special Features

- 1600 Watt
- Unity power factor
- Universal input and frequency range
- Pos and Neg enable
- Paralleling with current share
- IEC 1000-3.2 compliance
- 100°C baseplate
- Clock Synch (in/out)
- Current monitoring
- Vout adjust
- On/off enable
- Remote sensing
- 95% Efficiency
- Fast Transient Response

	Iout	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
AIF04ZPFC	PFC Module					
	380V	4.2A	85-264Vac	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	95%	AIF04ZPFC-01L
	380V	4.2A	85-264Vac	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	95%	AIF04ZPFC-02L

For stand-alone application - AIF04ZPFC-01
 For parallel application - AIF04ZPFC-02
Note: Add appropriate suffix for available option
 For correct part number coding, please refer to page 34.
 N = Negative Enable (Pos default)
 NT = Non-thread hole

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.
 Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

High Power 300Vin



300V input 250 - 600W output



Features/Description

- 300V Input (250V to 420V PFC Ready)
- 2nd Generation Product
- Standard thru-hole full and half bricks
- 250 watts (50Amps); 600 watts (120Amps)
- Power Density > 100W/in³
- Baseplate construction – 100 °C max
- Embedded Controls on secondary side:
- Temp monitor
- Current sharing
- Power-good signal
- Current limit & OVP adjust

	Iout	Iout	Input Voltage	Package (mm)	Efficiency	Model Number
AIF 300Vin	Full Brick					
	1.80V	120A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	80%	AIF120Y300-L
	3.3V	120A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	87%	AIF120F300-L
	5.0V	80A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	90%	AIF80A300-L
	12.0V	50A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	90%	AIF50B300-L
	15.0V	40A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	90%	AIF40C300-L
	24.0V	25A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	90%	AIF25H300-L
	48V	12A	300V (250-420V)	4.60" x 2.40" x 0.50" (116.8 x 61.0 x 12.7) Baseplate	91%	AIF12W300-L
AIH 300Vin	Half Brick					
	1.8V	50A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	80%	AIH50Y300-L
	3.3V	50A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	85%	AIH50F300-L
	5.0V	40A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	88%	AIH40A300-L
	12.0V	20A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	90%	AIH20B300-L
	15.0V	16A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	90%	AIH16C300-L
	24.0V	10A	300V (250-420V)	2.30" x 2.40" x 0.50" (58.4 x 61.0 x 12.7) Baseplate	90%	AIH10H300-L

Note: Add appropriate suffix for available option
 For correct part number coding, please refer to page 34.
 N = Negative Enable (Pos default) NT = Non Thread hole

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications.
 Models listed above with "-L" are available RoHS 6 version. For RoHS 5 version, use part number without "-L".

Industry Standard Packages



Special Features

- Input Voltage: 9-36V, 18-36V, 18 - 75V, 36 - 75V
- Power: 6W - 15W
- Regulated outputs
- Operating Temperature: -40 to 71°C (Ambient)
- Protection: OCP
- 1500Vdc isolation

	Input Voltage	Output	Package	I/O Isolation	Efficiency	Model Number
6W	Low Power Industrial DIP Packages					
	9-36V	3.3V @ 1.2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	78%	ASA01F18-L
	9-36V	5V@1A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	81%	ASA01A18-L
	9-36V	12V@0.5A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA00B18-L
	9-36V	15V@0.4A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00C18-L
	9-36V	±5V@±0.5A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	81%	ASA00AA18-L
	9-36V	±12V@±0.25A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA00BB18-L
	9-36V	±15V@±0.2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00CC18-L
	18 - 75V	3.3V@1.2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	78%	ASA01F36-L
	18 - 75V	5V@1A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	81%	ASA01A36-L
	18 - 75V	12V@0.5A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA00B36-L
	18 - 75V	15V@0.4A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00C36-L
	18 - 75V	±5V@±0.5A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	81%	ASA00AA36-L
	18 - 75V	±12V@±0.25A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA00BB36-L
	18 - 75V	±15V@±0.2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00CC36-L
10W	Low Power Industrial DIP Packages					
	18 - 36V	2.5V@3A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	77%	ASA03G24-L
	18 - 36V	3.3V@3A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	79%	ASA03F24-L
	18 - 36V	5V@2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA02A24-L
	18 - 36V	12V@0.835A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00B24-L
	36 - 75V	2.5V@3A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	77%	ASA03G48-L
	36 - 75V	3.3V@3A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	79%	ASA03F48-L
	36 - 75V	5V@2A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	82%	ASA02A48-L
	36 - 75V	12V@0.835A	1.28" x .28" x 0.4" (31.8x20.3x10.2)	1500V	83%	ASA00B48-L
15W	Low Power Industrial 1" x 2" Packages					
	9-36V	3.3V @ 4A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	80%	AEE04F18-L
	9-36V	5V@3A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE03A18-L
	9-36V	12V@1.25A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE01B18-L
	9-36V	15V@1A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE01C18-L
	18 - 75V	3.3V@4A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	80%	AEE04F36-L
	18 - 75V	5V@3A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE03A36-L
	18 - 75V	12V@1.25A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE01B36-L
	18 - 75V	15V@1A	1" x 2" x 0.45" (25.4x50.8x11.3)	1500V	84%	AEE01C36-L

* Please go to www.asteccpower.com for RoHS update and individual data sheets with complete product specifications. Available in RoHS 6 version only.

Industry Standard Packages



AEE01BB48-7



ALT05A48

Special Features

- Input Voltage: 9-18, 18-36, 36 - 75V
- Power: 10W - 25W
- Regulated outputs
- Operating Temperature: -40 to 85°C (Ambient)
- Protection: OVP, OCP, LVP
- Remote On/Off
- 1500Vdc isolation

10W

Input Voltage	Output	Package	I/O Isolation	Efficiency	Model Number
Low Power Industrial Products - Standard Packages					
18 - 36V	±5.0V@1A	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	79%	AEE01AA24
	5.0V@2A	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	78%	AEE02A24
	8.0V@1.25mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	82%	AEE01L24
	±12.0V@420mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	83%	AEE00BB24
	12.0V@840mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	82%	AEE00B24
	±15.0V@335mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	83%	AEE00CC24
	15.0V@670mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	82%	AEE00C24
36 - 72V	±5.0V@1A	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	79%	AEE01AA48
	5.0V@2A	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	80%	AEE02A48
	8.0V@1.25mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	82%	AEE01L48
	±12.0V@420mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	85%	AEE00BB48
	12.0V@840mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	85%	AEE00B48
	±15.0V@335mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	83%	AEE00CC48
	15.0V@670mA	1.00" x 2.00" x 0.35" (25.4 x 50.8 x 8.9)	500VDC	85%	AEE00C48

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above available in RoHS 5 version only.

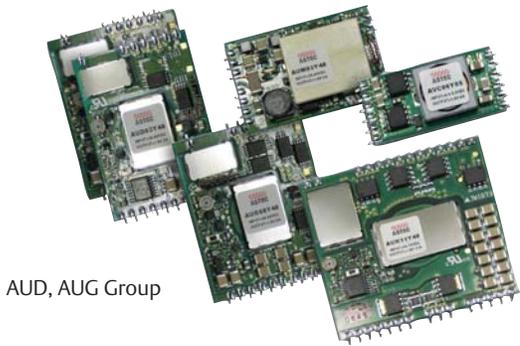
25W

Input Voltage	Output	Package	I/O Isolation	Efficiency	Model Number
Low Power Industrial Products - Standard Products					
18-36V	3.3V@6A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	83%	ALT06F24
	5.0V@5A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	85%	ALT05A24
	3.3V@6A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	85%	ALT06F48
	±5.0V@3A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	84%	ALT03AA48
	5.0V@5A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	87%	ALT05A48
36-72V	8.0V@3.13A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	85%	ALT03L48
	±12.0V@1.25A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	87%	ALT01BB48
	12.0V@2A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	87%	ALT02B48
	15.0V@1.67A	1.60" x 2.00" x 0.38" (40.6 x 50.8 x 9.7)	1500VDC	87%	ALT01C48

Available options listed separately
For correct part number coding, please refer to page 34.
N = Negative enable (Pos default)

* Please go to www.astecpower.com for RoHS update and individual data sheets with complete product specifications. Models listed above available in RoHS 5 version only.

Ultra Low Profile



AUD, AUG Group

Special Features

- Ultra Low Profile - 4.3mm - for low profile applications
- Input Voltage: 36 - 75V
- Power: 10W - 30W
- Output Voltage: 1.5, 1.8, 2.5 3.3 and 5 volts
- Output Current: 2A -10A
- High Efficiency: 89% at 5 volts output
- Regulation to zero load
- Operating Temperature: -40 to 85°C (Ambient)
- Protection: OVP, OCP, LVP
- Remote On/Off
- Current Sharing for parallel application
- Meet CISPR22, Class A on Conducted and Radiated EMI
- 1500Vdc isolation
- Platform reflow compatibility and available in RoHS 6 only.

	Input Voltage	Output	Package	I/O Isolated	Efficiency	Model Number	
10W	Ultra Low Profile Isolated						
	48V (36-60V)	1.5V@3A	1.39" x 0.92" x 0.30" (35.3 x 23.4 x 7.7)	1500VDC	78%	AUM03M48-L	
		1.8V@3A	1.39" x 0.92" x 0.30" (35.3 x 23.4 x 7.7)	1500VDC	80%	AUM03Y48-L	
		2.5V@3A	1.39" x 0.92" x 0.30" (35.3 x 23.4 x 7.7)	1500VDC	84%	AUM03G48-L	
		3.3V@3A	1.39" x 0.92" x 0.30" (35.3 x 23.4 x 7.7)	1500VDC	86%	AUM03F48-L	
	48V (36-75V)	5.0V@2A	1.39" x 0.92" x 0.30" (35.3 x 23.4 x 7.7)	1500VDC	88%	AUM02A48-L	
		1.8V@3A	1.47" x 1.07" x 0.17" (37.3 x 27.2 x 4.3)	1500VDC	84%	AUD03Y48-L	
		2.5V@3A	1.47" x 1.07" x 0.17" (37.3 x 27.2 x 4.3)	1500VDC	86%	AUD03G48-L	
		3.3V@3A	1.47" x 1.07" x 0.17" (37.3 x 27.2 x 4.3)	1500VDC	88%	AUD03F48-L	
	15W	Ultra Low Profile Isolated					
		48V (36-75V)	5.0V@2A	1.47" x 1.07" x 0.17" (37.3 x 27.2 x 4.3)	1500VDC	89%	AUD02A48-L
			1.8V@4.5A	1.47" x 1.23" x 0.17" (37.3 x 31.2 x 4.3)	1500VDC	84%	AUG04Y48-L
			2.5V@4.5A	1.47" x 1.23" x 0.17" (37.3 x 31.2 x 4.3)	1500VDC	86%	AUG04G48-L
	3.3V@4.5A		1.47" x 1.23" x 0.17" (37.3 x 31.2 x 4.3)	1500VDC	88%	AUG04F48-L	
20W	Ultra Low Profile Isolated						
	48V (36-75V)	5.0V@3A	1.47" x 1.23" x 0.17" (37.3 x 31.2 x 4.3)	1500VDC	89%	AUG03A48-L	
		1.8V@8A	1.47" x 1.23" x 0.19" (37.3 x 31.2 x 4.8)	1500VDC	84%	AUG08Y48-L	
		2.5V@7A	1.47" x 1.23" x 0.19" (37.3 x 31.2 x 4.8)	1500VDC	86%	AUG07G48-L	
3.3V@6A		1.47" x 1.23" x 0.19" (37.3 x 31.2 x 4.8)	1500VDC	88%	AUG06F48-L		
30W	Ultra Low Profile Isolated						
	48V (36-75V)	5.0V@4A	1.47" x 1.23" x 0.19" (37.3 x 31.2 x 4.8)	1500VDC	88%	AUG04A48-L	
		1.8V@11A	1.77" x 1.77" x 0.17" (45 x 45 x 4.4)	1500VDC	86%	AUK11Y48-L	
		2.5V@10A	1.77" x 1.77" x 0.17" (45 x 45 x 4.4)	1500VDC	89%	AUK10G48-L	
3.3V@9A		1.77" x 1.77" x 0.17" (45 x 45 x 4.4)	1500VDC	90%	AUK09F48-L		
20W	Ultra Low Profile Non-Isolated						
	3.3V (2.97-3.63V)	1.2V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	87%	AVC06K04-L	
		1.5V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	89%	AVC06M04-L	
		1.8V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	90%	AVC06Y04-L	
		2.0V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	92%	AVC06D04-L	
		2.5V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	93%	AVC06G04-L	
	5V (4.5-5.5V)	1.2V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	84%	AVC06K05-L	
		1.5V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	86%	AVC06M05-L	
		1.8V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	88%	AVC06Y05-L	
		2.0V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	89%	AVC06D05-L	
		2.5V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	91%	AVC06G05-L	
		3.3V@6A	1.33" x 0.61" x 0.24" (33.8 x 15.4 x 6)	Non-isolated	93%	AVC06F05-L	

Model Number Decoder

New Part Number Description

C= Construction

E = Enhanced Thermals (Baseplate or adapter plate)
 I = Integrated (Full Featured) Hong Kong models
 L = Low Profile (Open Frame, No case - Isolated)
 P = Open Frame (SIP or SMT) non-isolated
 U = Ultra Low Profile (Isolated)
 V = Ultra Low Profile (SIP or SMT) Non-isolated
 S = SIP or DIP, isolated

ii = Output Current Max
 ie 60 = 60 Amps

Vin = Input Voltage range

03 = 1.8V to 6.0V
 033 = 3.0V to 3.6V
 04 = 3.0V to 5.5V
 05 = 4.5V to 5.5V
 08 = 5.0V to 13.0V
 12 = 10.8 to 13.20V
 18 = 9.0V to 36.0V
 24 = 18V to 36V
 36 = 18V to 60V / 18V to 75V
 48 = 36V to 75V
 50 = 42V to 54V
 300 = 250V to 450V
 PFC-01: Power Factor Corrected, for standalone
 PFC-02: Power Factor Corrected, for parallel

Enable

N = Negative Logic
 Blank = Positive Logic

For AEE 10W Series

1 = Positive Logic
 4 = Negative logic
 Blank = No Enable function

L = RoHS / Pb-Free Designation

L = RoHS Compliant (RoHS 6)
 Blank = RoHS Compliant with Lead (Pb) in solder exemption (RoHS 5)

A C S ii V₁V₂V₃ V_{in} E - X L

S= Size

F= Full Brick
 H= Half Brick
 Q= Quarter Brick
 O= Eighth Brick
 X= Sixteenth Brick
 S= 1 x 2 18 Pin SMT
 E= 1 x 2 Thru Hole
 C= 0.53" X1.3" x.33" or
 34mm x 15mm x 6mm SMT
 V= Conventional Package (2x2.56")
 A= SIP
 W= Conventional pkg (Wide 2.5x3)
 R= 1 x 1 Thru Hole
 T= 1.6 x 2
 L= SIM / Edge Card
 D= 40mm c 27mm SMT
 G= 40mm x 31mm SMT
 K= 45mm x 45mm SMT
 M= 38mm x 23mm SMT

Output Voltage

A = 5.0V	E = 7.5V	T = 0.75V
F = 3.3V	B = 12V	P = 18V
G = 2.5V	H = 24V	Z = 380V
D = 2.0V / 2.1V	R = 28V	W = 48V
Y = 1.8V	Q = 9V	U = 52V
M = 1.5V	C = 15V	
K = 1.2V	* Omit V2 and V3 if Single Output	
J = 0.9V	** Omit V3 if Dual Output	
N = 6.0V	ie for Dual Output 5 and 3.3V	
S = 1.0V	V1 = A, V2 = F, V3 = Omit	
L = 8V	V1 = A, V2 = F, V3 = Omit	

X Options: Isolated Products

Pin Termination

6 = TH, 3.7mm pin length
 7 = TH, 5.9mm pin length
 8 = TH, 2.8mm pin length
 (Default is 5mm nominal pin length)

For AEH_ALH80, AEO_ALQ60/75 Series

3 = Single pair of output power pins
 63 = Single pair of output power pins, 3.7mm pin length

S = Surface Mount Termination

Mounting Hole Option

NT = Non Threaded mounting hole applicable to AIF, AIH series (Default is threaded mounting hole on baseplate)

Output Trim

9 = Output Trim pin applicable to 10W AEE series

X Options: Non-Isolated Products

For APC08 & APC12

9MA = Power Good and IShare, T & R Packaging
 9MAJ = Power Good and IShare, Tray Packaging
 J = Tray Packaging

For APC08 and APC18:

9 = Output Trim, T & R Packaging
 9J = Output Trim, Tray Packaging

For APA18:

9 = Output Trim
 9H = Output Trim, Horizontal Mount

For ATH:

9J = Output Trim, TH Termination, Tray Packaging
 9SJ = Output Trim, SMT Termination, Tray Packaging
 9S = Output Trim, SMT Termination, T & R Packaging

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Astec Power Terms and Conditions of Sale

The Astec Power company that accepts Buyer's order for products ("Products") and/or services ("Services") is herein referred to as "Seller" and the customer or person or entity that places the order for such Products and/or Services with Seller is herein referred to as "Buyer." Buyer's order will be effective only when accepted by Seller in writing in the form of Seller's Order Acknowledgement which includes these terms and conditions. Seller's acceptance of Buyer's order is expressly conditional on Buyer's assent to the additional or different terms and conditions contained or referenced herein. These terms and conditions, as well as any terms and conditions on the face of Seller's Order Acknowledgement, along with any price list or schedule, catalog, quotation, or invoice from Seller relevant to the sale of the Products and/or Services and all documents incorporated by specific reference herein or therein, constitute the complete and exclusive statement of the terms of sale of the Products and/or Services by Seller to Buyer. Buyer's acceptance of the Products and/or Services will manifest Buyer's assent to these terms and conditions. If Seller and Buyer have a written agreement in effect that covers the sale of the Products and/or Services, that agreement will govern the terms and conditions of sale exclusively.

1. PRICES: Seller's quotations are valid for a period of thirty (30) days from the date of the quotation. If Buyer places an order based on a quotation within such thirty (30) day period, Seller will invoice Buyer at the prices quoted. If Buyer does not place an order within such thirty (30) days period, Seller shall have the right to change the prices for such Products and/or Services and invoice accordingly. All prices are exclusive of taxes, customs duties or fees, transportation charges, and insurance. Buyer is responsible for payment of all such amounts in addition to the Product price, unless Seller's quotation specifies otherwise.

2. TERMS OF PAYMENT: With Seller's approval, payment terms are net thirty (30) days from date of Seller's invoice in the currency designated by Seller. Seller shall have the right, among other remedies, either to terminate this sale or to stop Products in transit or to suspend further performance under these terms and conditions and/or other agreements with Buyer in the event Buyer fails to make any payment when due, which other agreements Buyer and Seller hereby amend accordingly. Buyer shall be liable for all expenses, including attorneys' fees, relating to the collection of past due amounts. If any payment owed to Seller is not paid when due, it shall bear interest, at a rate to be determined by Seller, which shall not exceed the maximum rate permitted by law, from the date on which it is due until it is paid. Should Buyer's financial condition become unsatisfactory to Seller, cash payments or security satisfactory to Seller may be required by Seller prior to shipment or for future deliveries for Products theretofore delivered. If such cash payment or security is not provided, in addition to Seller's other rights and remedies, Seller may discontinue deliveries. Buyer hereby grants Seller a security interest in all Products sold to Buyer by Seller, which security interest shall continue until all such Products are fully paid for in cash, and Buyer, upon Seller's demand, will execute and deliver to Seller such instruments as Seller requests to protect and perfect such security interest.

3. SHIPMENT AND DELIVERY: In order for Seller to have a reasonable opportunity to ship in accordance with Buyer's requested shipment dates, Buyer must provide Seller with forecasts in a manner mutually agreeable to the parties and Buyer's requested shipment dates must be consistent with Seller's quoted lead times. While Seller will use all reasonable commercial efforts to ship in accordance with the requested shipment date(s), all shipping dates are approximate and not guaranteed. Seller reserves the right to make partial shipments. If the shipment is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse Seller for any and all storage costs and any other related expenses. Title and risk of loss or damage shall pass from Seller to Buyer upon delivery to the first carrier FCA at the mutually agreed location in the city specified by Seller (Incoterms 2000). If Buyer's order contains shipping instructions, Seller will use reasonable commercial efforts to comply with such shipping instructions. If Buyer's order does not contain shipping instructions, Seller will deliver the Products to a carrier chosen by Seller on Buyer's behalf. In either case, such shipments will be made "FREIGHT COLLECT". Any claims for shortages or damages suffered in transit are the responsibility of Buyer and shall be submitted by Buyer directly to the carrier. Any claims for shortages or damages alleged by Buyer to have resulted from Seller's acts or omissions prior to delivery to the carrier must be evidenced by supportive documentation generally accepted in the transportation industry. Any course of dealing to the contrary notwithstanding, failure of Buyer to give Seller notice of any claim that Seller is responsible for shortages or damages within thirty (30) days after receipt of such Products shall be an unqualified acceptance of such Products.

4. LIMITED WARRANTY AND REMEDIES: Seller warrants that the Products manufactured by Seller will be free from defects in material and workmanship and meet the applicable Product specifications under normal use and service during the applicable Product warranty period starting on the date of manufacture of the Products by Seller. Products described in Seller's then current Product data sheets ("Standard Products") are warranted for the period specified therein, unless Seller's quotation specifies otherwise. Such Product data sheets may be obtained at Astec Power's website (www.astecpower.com). All other Products ("Custom Products") are warranted for the period specified in Seller's quotation.

These warranties do not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, unsuitable power sources, unsuitable environmental conditions, negligence (other than Seller's), unauthorized modification or alteration, improper installation, maintenance or application or any other cause not the fault of

Seller. To the extent that Buyer or its agents have supplied specifications, information, representation of operating conditions or other data to Seller in the selection or design of the Products and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

If Buyer notifies Seller in writing within thirty (30) days after Buyer's discovery of any warranty defects during the applicable warranty period, Seller shall, at its option, repair, replace, or refund the purchase price for the Products found by Seller to be defective. Failure by Buyer to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of Buyer's claim for such defects. Advance written permission to return Products that are claimed to be defective must be obtained from Seller in the form of Seller's Return Material Authorization ("RMA"). Such Products must be shipped, transportation prepaid, to Seller in accordance with Seller's then current RMA policy and procedures. Products returned without Seller's written permission will not be accepted by Seller. Products repaired or replaced during the applicable warranty period will be returned to Buyer at Seller's expense and will be covered by the foregoing warranties for the remainder of the original warranty period or ninety (90) days from the date of shipment, whichever is longer. Buyer assumes all other responsibility for any loss, damage, or injury to persons or property arising out of, connected with, or resulting from the use of Products, either alone or in combination with other products/components. This Section 4 applies to any entity or person who may buy, acquire or use the Products, including any entity or person who obtains the Products from Buyer, and shall be bound by the limitations therein, including Section 5. Buyer agrees to provide such subsequent transferee conspicuous, written notice of the provisions of Sections 4 and 5. **THESE ARE THE SOLE AND EXCLUSIVE WARRANTIES AND REMEDIES (OTHER THAN THE WARRANTY PROVIDED IN SECTION 6) GIVEN BY SELLER WITH RESPECT TO THE PRODUCTS AND ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES AND REMEDIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT SELLER'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY SELLER FOR BUYER'S USE OR PURPOSE.**

5. LIMITATION OF LIABILITY: BUYER AGREES THAT IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS: (I) EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC PRODUCTS PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION; OR (II) EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, BUSINESS INTERRUPTION, LOSS OF USE OR REVENUE, COST OF CAPITAL OR LOSS OR DAMAGE TO PROPERTY OR EQUIPMENT. SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE. IT IS EXPRESSLY UNDERSTOOD THAT ANY TECHNICAL ADVICE FURNISHED BY SELLER WITH RESPECT TO THE USE OF THE PRODUCTS IS GIVEN WITHOUT CHARGE, AND SELLER ASSUMES NO OBLIGATION OR LIABILITY FOR THE ADVICE GIVEN, OR RESULTS OBTAINED, ALL SUCH ADVICE BEING GIVEN AND ACCEPTED AT BUYER'S RISK.

6. PATENTS AND COPYRIGHTS: Subject to the limitations of Section 5, Seller warrants that the Products manufactured by Seller, except as are made specifically for Buyer according to Buyer's specifications, do not infringe any valid U.S. patent or copyright in existence as of the date of shipment. This warranty is given upon the following conditions: (i) that Buyer promptly notifies Seller of any claim or suit or threat thereof involving Buyer in which such infringement is alleged; (ii) that Buyer provides all reasonable assistance and cooperation requested by Seller in settling or defending against the claim or suit; and (iii) that Buyer permits Seller to control completely the defense, settlement or compromise of any such allegation of infringement. This warranty only applies to infringement arising out of operation of the Products according to Seller's specifications. Buyer agrees that Seller shall not be liable for infringement, and that Buyer shall fully indemnify Seller therefore: (i) if infringement is based upon use of the Products in connection with products not manufactured by Seller or in a manner for which the Products were not designed by Seller; (ii) if the Products were not designed by Seller; or (iii) if the Products were designed by Buyer or were modified by or for Buyer in a manner to cause them to become infringing. In the event any such Products are held to infringe any such U.S. patent or copyright in any such suit, and the use of such Products is enjoined, or in the event that Seller elects to compromise or settle the claim, Seller shall have the right, at its option and expense, to procure for Buyer the right to continue using such Products, to replace them with non-infringing Products, to modify the Products to become non-infringing, or to grant Buyer a credit for the depreciated value of such Products and accept return of them. In the event of the foregoing, Seller may also, at its option, cancel this sale as to future deliveries of such Products, without liability. **THIS SECTION 6 SETS FORTH SELLER'S EXCLUSIVE LIABILITY, AND BUYER'S EXCLUSIVE REMEDIES, FOR INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS BY SELLER.**

7. EXCUSE OF PERFORMANCE: Seller shall not be liable for delays in performance or for non-performance due to acts of God; war; fire; flood; weather; sabotage; strikes or labor disputes; civil disturbances or riots; governmental requests, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; inability to secure materials; default or delay of suppliers; acts of Buyer; or unforeseen circum-

stances or any events or causes beyond Seller's reasonable control. Deliveries or other performance may be suspended for an appropriate period of time or canceled by Seller upon notice to Buyer in the event of any of the foregoing, but the balance of the sale shall otherwise remain unaffected as a result of the foregoing. If Seller determines that its ability to supply the total demand for the Products, or to obtain materials used directly or indirectly in the manufacture of the Products, is hindered, limited or made impracticable due to causes set forth in the preceding paragraph, Seller may allocate its available supply of the Products (without obligation to acquire other supplies of any such Products or materials) among its purchasers as Seller determines in its sole discretion to be appropriate without liability for any failure of performance which may result therefrom.

8. CANCELLATION AND RESCHEDULING: Buyer may reschedule or cancel its order only in accordance with Seller's then current Cancellation and Rescheduling Policy. Buyer agrees to pay any applicable cancellation or rescheduling charges. Such charges may include, among other things, all costs and expenses incurred to cover commitments made, overhead, and a reasonable profit allocable to work in process. Seller's determination of all such charges shall be conclusive.

9. CHANGES: Buyer may request changes or additions to its order. In the event that such changes or additions are accepted by Seller, Seller may revise the price and dates of delivery. Seller reserves the right to change designs and specifications for the Products or to discontinue production of the Products without prior notice to Buyer, except with respect to Products being made in accordance with Buyer's specifications. Seller will give Buyer ninety (90) days notice in the event that Seller decides to discontinue manufacture of Products being made in accordance with Buyer's specifications. In the event of any of the foregoing changes, Seller agrees to use reasonable commercial efforts to assist Buyer in selecting a suitable alternative in accordance with Seller's then current End of Life Policy. Seller shall have no obligation to make such change for any Products manufactured prior to the date of such change.

10. NUCLEAR AND MEDICAL: PRODUCTS AND SERVICES SOLD HEREUNDER ARE NEITHER FOR USE IN ANY NUCLEAR AND RELATED APPLICATIONS NOR FOR USE AS COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS INTENDED FOR SURGICAL IMPLANT INTO THE BODY OR INTENDED TO SUPPORT OR SUSTAIN LIFE WITHOUT SELLER'S PRIOR WRITTEN CONSENT. Buyer accepts the Products with the foregoing understanding, agrees to communicate the same in writing to any subsequent purchasers or users and to defend, indemnify and hold harmless Seller from any claims, losses, suits, judgments and damages, including incidental and consequential damages, arising from such use, whether the cause of action is based in tort, contract or otherwise, including allegations that Seller's liability is based on negligence or strict liability.

11. INDEMNIFICATION: Buyer shall indemnify, defend and hold harmless Seller from and against any and all liabilities, losses, expenses, liens, claims, demands and causes of action arising out of any negligent act or omission, strict liability in tort, or breach of contract on the part of Buyer, its officers, agents, employees, contractors or assigns.

12. ASSIGNMENT: Buyer shall not assign its rights or delegate its duties hereunder or any interest herein without the prior written consent of Seller, and any such assignment, without such consent, shall be void.

13. U.S. EXPORT CONTROL REGULATIONS: All Products sold to Buyer are subject to the export control laws of the United States and Buyer agrees not to re-sell or divert any Products contrary to such laws.

14. DOCUMENTATION: Seller shall provide Buyer with any applicable documentation for Standard Products and the documentation which is specifically identified in Seller's quotation for Custom Products. If additional copies of documentation are to be provided by Seller, it shall be provided to Buyer at Seller's applicable prices then in effect. Seller's documentation (including without limitation, the underlying technology) furnished by Seller to Buyer in connection with this Agreement is the property of Seller, and Seller retains all rights thereto, including without limitation, exclusive rights of use, licensing and sale. Possession of such documentation does not convey to Buyer any rights or license, and Buyer shall return all copies (in whatever medium) of such documentation to Seller immediately upon request therefor.

15. CUSTOM PRODUCTS: The following terms and conditions apply only to Custom Products. In the event a fee to partially fund development of a Custom Product ("Commitment Fee") is required, payment of the Commitment Fee must be made by Buyer prior to the start of development. Each stage of development requires Buyer's written approval prior to commencement of the following stage. If Buyer notifies Seller of premature termination of the need for a Custom Product based on Buyer's projected needs, Seller reserves the right to recover the costs Seller incurred to develop the Custom Product. If any safety regulatory agency approval is required, any applicable charges must be paid by Buyer prior to submittal of the Custom Product to the safety regulatory agency for approval. If demonstrated mean time between failures (MTBF) is required by Buyer, an additional charge may apply. Tool, die, and pattern charges, if any, are in addition to the price of the Products. Payment of fifty percent (50%) of any such charges must be made by Buyer prior to the start of development. The balance is due upon completion of the final sample. All intellectual property rights associated with development of a custom product as well as all tools, dies and patterns shall be and remain the property of Seller. Charges for development of a Custom Product, tools, dies, and patterns do not convey to Buyer title to or rights to possession of any such intellectual property rights or tools, dies, or patterns or prevent their use by Seller for other purchasers, except as otherwise expressly provided by Seller and Buyer in writing with reference to this provision.

16. RELATIONSHIP OF THE PARTIES: Each party is an independent contractor and neither party has any right or authority to bind the other party or to assume or to create any obligation or responsibility, express or implied, on behalf of the other party. Each party agrees to indemnify and hold the other party harmless from and against any and all claims (including reasonable attorneys' fees and costs of litigation) arising out of any violation of this provision. Neither these terms and conditions nor any activities pursuant to these terms and conditions shall impair any right of either party to design, develop, manufacture, market, service, or otherwise deal in, directly or indirectly, other products or services including those which are competitive with those offered by the other party.

17. DEFAULT: A party shall be in default if (a) it materially breaches a term of these terms and conditions; or (b) it shall cease conducting business in the normal course, become insolvent, make a general assignment for the benefit of creditors, suffer or permit the appointment of a receiver for its business or assets, or shall avail itself of or become subject to any proceeding under the Federal Bankruptcy Act or other federal or state statute relating to insolvency or the protection of rights of creditors. Upon the occurrence of an event of default, the party not in default may immediately terminate these terms and conditions by giving written notice to the party in default. The rights and remedies provided to the parties in this provision shall not be exclusive and are in addition to other rights and remedies provided by these terms and conditions or by law or in equity.

18. GENERAL PROVISIONS: These terms and conditions supersede all other communications, negotiations and prior oral or written statements regarding the subject matter of these terms and conditions. No change, modification, rescission, discharge, abandonment or waiver of these terms and conditions shall be binding upon Seller, unless it is made in writing and it is signed on Seller's behalf by a duly authorized representative. No conditions, usage of trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless it is hereafter made in writing and signed by the party to be bound. No modification or additional terms shall be applicable to these terms and conditions by Seller's receipt, acknowledgment, response to or acceptance of Buyer's request for quotation, purchase orders, shipping instructions, or other documentation containing terms at variance with or in addition to those set forth herein. Any such modifications or additional terms are specifically rejected by Seller. No waiver by either party with respect to any breach or default or of any right or remedy, and no course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default or of any other right or remedy, unless such waiver is expressed in writing and signed by the party to be bound. All typographical or clerical errors made by Seller in any quotation, acknowledgment or publication are subject to correction. Any provisions hereof which are found to be prohibited by law shall be ineffective to the extent of such prohibition without invalidating the remaining provisions. The section headings are for convenience only and are in no way intended to affect the meaning or interpretation of any provision hereof. Any required or permitted notice will be deemed given when received in writing at the address of the party being given notice. The validity, performance, and all other matters relating to the interpretation and effect of these terms and conditions shall be governed by the laws of the State of Missouri for orders placed with Astec Power in North America, the laws of England for orders placed with Astec Power in Europe, and the laws of Hong Kong for orders placed with Astec Power in Asia, without regard to principles of conflicts of laws. Buyer and Seller agree that the proper venue for all actions arising in connection herewith shall be only in the State of Missouri, in the County of St. Louis, for orders placed with Astec Power in North America, in England for orders placed with Astec Power in Europe, and in Hong Kong for orders placed with Astec Power in Asia, and the parties agree to submit to the applicable jurisdiction. No action, regardless of form, arising out of transactions relating to these terms and conditions of sale may be brought by either party more than two (2) years after the cause of action has accrued. None of the provisions of the United Nations Convention on Contracts for the International Sale of Goods, 1980 (CISG) shall apply to any sales transactions governed by these terms and conditions.

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Local Support

Our regional sales offices are ready to provide expert local applications and sales support. In addition, Astec Power utilizes an extensive network of manufacturers representatives and distributors to bring our products to you. Please call for locations of sales offices near you or visit our website at www.astecpower.com.

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Asia (HK)

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 Facsimile: +852 2402 4426

For order placement and status
 Ask for **Inside Sales**

For technical assistance
 Ask for **Applications Support**

For returns and repairs
 Ask for **Product Support Group**

Modified Product Support

Recognizing the requirements for matching standard products to unique applications, Astec Power is dedicated to providing support for customers requiring additional features or modifications to catalog products. Our product designs offer a high degree of flexibility. CAM and ATE allow us to provide modified products with minimal impact on delivery and cost.

Obsolete Product Support

As our older products become obsolete due to component obsolescence, our staff will assist you in choosing suitable alternatives.

Find the power supply you need quickly with Astec Power Wizard



Utilizing robust database technology and Astec Power's extensive catalog of products, users can rapidly search, identify and configure Astec power products that best fit their design and application. Users simply enter their power requirements and the tool will quickly present them with the power product(s) that meet their design and power specifications. If the user does not know all of the technical parameters, the intuitive Power Wizard will guide the user to the most appropriate product family. The Astec Power Wizard saves time and effort, and provides the engineer with the right power solution for the design.

Astec Power e-Newsletter

Keep up with the new power trends and power products. Sign-up now for the free Astec Power e-Newsletter. The e-Newsletter contains important new product and industry information, and news from Astec Power and our distributors.

Keep informed by signing up today.

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