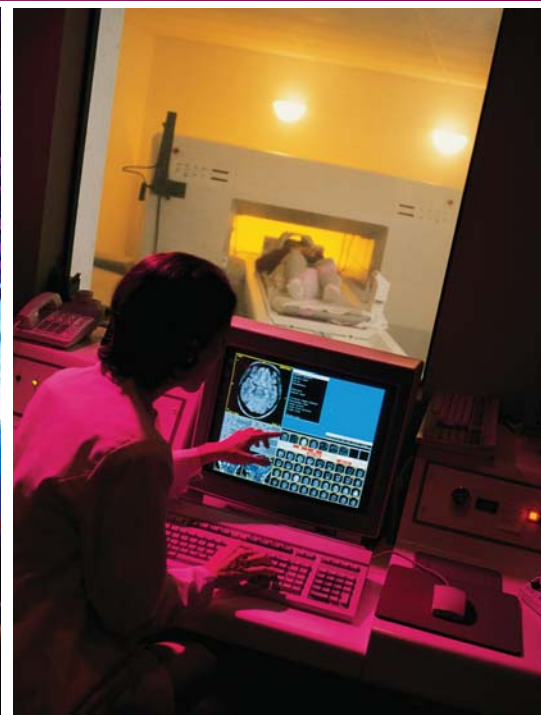
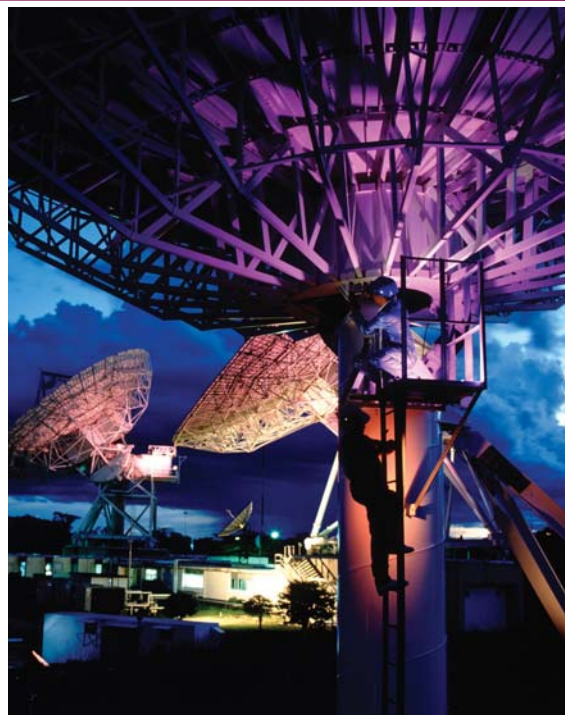


■ Embedded Power For
Business-Critical Continuity

Emerson Network Power AC-DC and DC-DC Products




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Network Power



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Astec and Artesyn are now part of the Embedded Power business of Emerson Network Power – so you now have a single source for all the power conversion products that you need.

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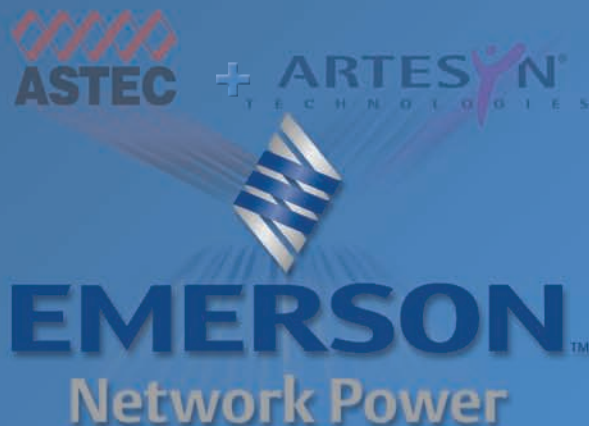
After selecting the product that you need from this catalog, we recommend that you visit our website to obtain more detailed information. You will find that you can quickly download product datasheets and safety certificates, check stock levels at your favorite distributor, and request evaluation samples. You can even ask one of our experts for technical advice, or register for access to the 'My Power' portal, to actively participate in the development of future power conversion technology and products for your markets.

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About Emerson Network Power

Emerson Network Power is part of the global technology company, Emerson (NYSE:EMR). Its embedded power business is one of the world's largest and most successful power supply companies. It embraces the Astec and Artesyn brand names, employs some 27,000 people - including 1,300 professional engineers - and is active in every major country. The company operates strategically located design, support and sales facilities on every continent, and has five large-scale manufacturing sites - three in China, and two in the Philippines.

Emerson Network Power produces world-class products, based on leading-edge technology, which deliver unmatched performance and long term value. These products are used extensively by OEMs and system integrators for diverse applications in the communications, computing, storage, business systems, test, instrumentation, medical and industrial equipment industries.



Contents

AC-DC Power Supplies

Low Power 3 W-500 W	
Open frame/enclosed 1-4 outputs	4
External power adapters	11
Medical Power Up to 4860 W	
1-21 outputs	13
Medium Power (MP) Up to 1200 W	
1-10 outputs standard (up to 21 available)	16
Intelligent Medium Power (iMP) Up to 1500 W	
Up to 21 outputs	19
Intelligent High Power (iVS) Up to 4860 W	
1-18 outputs	23
Bulk Power (HPS) 350 W-3000 W	
Available 1U and 3U	27
Compatible racks hold up to 4 modules	
Distributed Power (DS) 450 W-1500 W	
Available 1U and 2U	29
Compatible racks hold up to 5 modules	
DIN Rail (ADN) 24 V 60 W-960 W	
Standard DIN format with PFC	33
SEMI F47 compatible	
MicroTCA 600 W	
MTC600 Series	34
DC-DC Converters	
ATCA Module	
Bus Converters - ATCA Advanced TCA®	37
Industry Standard Isolated	
Sixteenth-Brick	38
Eighth-Brick	39
Quarter-Brick	41
Half-Brick	43
RF Power Brick	45
Bus Converters	46
Industry Standard Non Isolated DC - DC Converters	
C-Class	47
E-Class	49
F-Class	50
POLA Products POLA	51
Memory Power	53
VRM Processor Power	53
High Power 300 V Input Products	
Power Factor Correction (PFC)	54
300 V Full-Brick	54
300 V Half-Brick	54
Low Power/Industrial Products	
Industrial DIP Packages	56
Industrial Standard Products	57
Ultra Low Profile	
Isolated and non-isolated modules for low profile applications	59
Terms and Conditions	60
Index	62

Low Power

25-500 Watts

Special Features

All models feature:

- Industry standard footprints
- Wide-range AC input
- 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 (5 V/12 V)
- Wide-adjust floating 4th output
- Single wire current share
- Medical approvals
- Remote sense
- Adjustable outputs
- Power fail
- Wide-adjust on single output models

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[25 W]	25 W	NLP25 Series					
		5 V @ 5 A*				2.07" x 4" x 0.91"	NLP25-7605J
		12 V @ 2.1 A				(52.57 x 101.6 x 23.2)	NLP25-7612J
		24 V @ 1.0 A*					NLP25-7624J
		48 V @ 0.5 A*					NLP25-7617J
[20 W]	20 W	5 V @ 2 A	12 V @ 0.8 A				NLP25-7629J
		5 V @ 2 A	12 V @ 0.8 A	-5 V @ 0.1 A			NLP25-7607J
		5 V @ 2 A	12 V @ 0.8 A	-12 V @ 0.1 A			NLP25-7608J
[40 W]	25 W	LP20 Series					
		5 V @ 5 A[8 A]*				3" x 5" x 1.2"	LPS22
		12 V @ 2.1 A[3.3 A]*				(76.2 x 127 x 30.5)	LPS23
		15 V @ 1.7 A[2.7]*					LPS24
		24 V @ 1.1 A[1.8 A]*					LPS25
		5 V @ 3 A[4 A]	12 V @ 1.5 A[2 A]	-12 V @ 0.5 A[0.7 A]			LPT22
		5 V @ 4 A[5 A]	12 V @ 0.5 A[0.7 A]	-12 V @ 0.5 A[0.7 A]			LPT23
		5 V @ 3 A[4 A]	12 V @ 1.5 A[2 A]	-5 V @ 0.5 A[0.7 A]			LPT24
		5 V @ 3 A[4 A]	15 V @ 1.5 A[2 A]	-15 V @ 0.5 A[0.7 A]			LPT25
		[47 W] Enclosed	LCT43-E	5 V @ 4 A [7 A]	12 V @ 1 A [1.2 A]	-12 V @ 0.5 A [0.5 A]	
						(81.3 x 157.5 x 38.1)	
[50 W]	40 W	NLP40 Series					
		3.3 V @ 9 A*				2.5" x 4.25" x 1.15"	NLP40-76S3J
		5 V @ 9 A*				(63.5 x 108 x 29.2)	NLP40-7605J
		12 V @ 4 A*					NLP40-7612J
		15 V @ 3.3 A*					NLP40-7615J
		24 V @ 2 A*					NLP40-7624J
		48 V @ 1 A*					NLP40-7617J
		5 V @ 4.5 A	12 V @ 3 A				NLP40-7629J
		12 V @ 2.1 A	-12 V @ 2.1 A				NLP40-7627J
		3.3 V @ 4.5 A	12 V @ 3 A	-12 V @ 0.5 A			NLP40-76T366J
		5 V @ 4.5 A	12 V @ 3 A	-12 V @ 0.5 A			NLP40-7608J
		5 V @ 4.5 A	15 V @ 2 A	-15 V @ 0.5 A			NLP40-7610J

Options:

[] Rating with 30 CFM of air




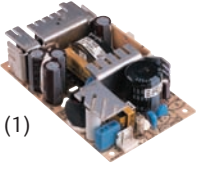
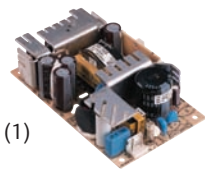
(1) Optional cover/enclosure

* Floating output

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[50 W]  (1)	40 W	NFS40 Series					
		3.3 V @ 8 A*				3" x 5" x 1.2"	NFS40-76S3J
		5.1 V @ 8 A*				(76.2 x 127 x 30.5)	NFS40-7605J
		12 V @ 4 A*					NFS40-7612J
		15 V @ 3.3 A*					NFS40-7615J
		24 V @ 2 A*					NFS40-7624J
		5.1 V @ 5 A	12 V @ 0.5 A	-12 V @ 0.5 A			NFS40-7628J
		5.1 V @ 5 A	12 V @ 2 A	-5 V @ 0.5 A			NFS40-7607J
		5.1 V @ 5 A	12 V @ 2 A	-12 V @ 0.5 A			NFS40-7608J
		5.1 V @ 5 A	12 V @ 2 A	-15 V @ 0.5 A			NFS40-7610J
[50 W]  (1)	40 W	NFS40 Series - Medical					
		12 V @ 4 A*				3" x 5" x 1.2"	NFS40-7912J
		15 V @ 3.3 A*				(76.2 x 127 x 30.5)	NFS40-7915J
		24 V @ 2 A*					NFS40-7924J
		5.1 V @ 7 A	12 V @ 1 A	-12 V @ 1 A			NFS40-7928J
		5.1 V @ 5 A	12 V @ 2 A	-12 V @ 0.5 A			NFS40-7908J
		5.1 V @ 5 A	15 V @ 2 A	-15 V @ 0.5 A			NFS40-7910J
		[55 W]  (1)	40 W	LP40 Series			
3.3 V @ 8 A[11 A]*						3" x 5" x 1.2"	LPS41
5 V @ 8 A[11 A]*						(76.2 x 127 x 30.5)	LPS42
12 V @ 3.3 A[4.5]*							LPS43
15 V @ 2.6 A[3.6 A]*							LPS44
24 V @ 1.6 A[2.3 A]*							LPS45
48 V @ 0.9 A[1.2 A]*							LPS48
3.3 V @ 4 A[7 A]	5 V @ 1.5 A[2 A]			+12 V @ 0.5 A[0.7 A]			LPT41
5 V @ 4 A[5 A]	12 V @ 2 A[2.5 A]			-12 V @ 0.5 A[0.7 A]			LPT42
5 V @ 6 A[8 A]	12 V @ 0.5 A[0.7 A]			-12 V @ 0.5 A[0.7 A]			LPT43
5 V @ 4 A[5 A]	12 V @ 2 A[2.5 A]			-5 V @ 0.5 A[0.7 A]			LPT44
5 V @ 4 A[5 A]	15 V @ 2 A[2.5 A]			-15 V @ 0.5 A[0.7 A]			LPT45
5 V @ 4 A[5 A]	24 V @ 1 A[1.5 A]			+12 V @ 0.5 A[0.7 A]			LPT46
[55 W]  (1)	40 W			LP40-M Series - Medical			
		5 V @ 8 A[11 A]*				3" x 5" x 1.2"	LPS42-M
		12 V @ 3.3 A[4.5]*				(76.2 x 127 x 30.5)	LPS43-M
		15 V @ 2.6 A[3.6 A]*					LPS44-M
		24 V @ 1.6 A[2.3 A]*					LPS45-M
		5 V @ 4 A[5 A]	12 V @ 2 A[2.5 A]	-12 V @ 0.5 A[0.7 A]			LPT42-M
		5 V @ 4 A[5 A]	15 V @ 2 A[2.5 A]	-15 V @ 0.5 A[0.7 A]			LPT45-M
		[50 W]  (1)	50 W	LP50 Series			
3.3 V @ 8 A	5 V @ 3 A			12 V @ 0.5 A		2" x 4" x 1.3"	LPT51
5 V @ 8 A	12 V @ 3 A			-12 V @ 0.5 A		(50.8 x 101.6 x 33)	LPT52
5 V @ 8 A	15 V @ 2.4 A			-15 V @ 0.5 A			LPT53
5 V @ 8 A	24 V @ 1.5 A			12 V @ 0.5 A			LPT54
[60 W]  (1)	60 W						
		5 V @ 11 A					LPS52 (I)
		12 V @ 5 A*					LPS53
		15 V @ 4 A*					LPS54
		24 V @ 2.5 A*					LPS55
	48 V @ 1.25 A*					LPS58	

Options:
 [] Rating with 30 CFM of air
 (1) Optional cover/enclosure
 * Floating output
 (I) Optional industrial version - wide temp range

Low Power

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[50 W]	50 W	LP50-M Series Medical					
 (1)		3.3 V @ 8 A	5 V @ 3 A	12 V @ 0.5 A		2" x 4" x 1.3"	LPT51-M
		5 V @ 8 A	12 V @ 3 A	-12 V @ 0.5 A		(50.8 x 101.6 x 33)	LPT52-M
		5 V @ 8 A	15 V @ 2.4 A	-15 V @ 0.5 A			LPT53-M
		5 V @ 8 A	24 V @ 1.5 A	12 V @ 0.5 A			LPT54-M
[60 W]	60 W						
 (1)		5 V @ 11 A*					LPS52-M
		12 V @ 5 A*					LPS53-M
		15 V @ 4 A*					LPS54-M
		24 V @ 2.5 A*					LPS55-M
		48 V @ 1.25 A*					LPS58-M
[70 W]	53 W	NLP70 Series					
 (1)		5 V @ 13 A	3.3 V @ 13 A	12 V @ 0.8 A		3 x 5.5 x 1.26 (76.2 x 139.7 x 32)	NLP70-9693J ⁽⁵⁾
[75 W]	65 W	NLP65 Series					
 (1)		5 V @ 12 A*				3 x 5 x 1.26 (76.2 x 127 x 32)	NLP65-7605J
		5 V @ 12 A*					NLP65-9605J ^{(5)G}
		12 V @ 6.5 A*					NLP65-7612J G
		12 V @ 6.5 A*					NLP65-9612J ^{(5) G}
		24 V @ 3.5 A*					NLP65-7624J G
		24 V @ 3.5 A*					NLP65-9624J ^{(5) G}
		5 V @ 8 A	12 V @ 3 A				NLP65-7629J
		5 V @ 8 A	12 V @ 3 A				NLP65-9629J ^{(5)G}
		5 V @ 8 A	24 V @ 2 A	+12 V @ 1.0 A			NLP65-3322J
		5 V @ 8 A	12 V @ 3 A	-12 V @ 0.8 A			NLP65-7608J G
		5 V @ 8 A	12 V @ 3 A	-12 V @ 0.8 A			NLP65-9608J ^{(5) E, G}
		5 V @ 8 A	15 V @ 2.5 A	-15 V @ 0.8 A			NLP65-7610GJ
		5 V @ 8 A	15 V @ 2.5 A	-15 V @ 0.8 A			NLP65-9610J ^{(5) G}
		5 V @ 8 A	24 V @ 2 A				NLP65-7620J
		5 V @ 8 A	24 V @ 2 A				NLP65-9620J ^{(5) G}
[75 W]	65 W	NLP65 Series - Medical					
 (1)		12 V @ 6.5 A*				3 x 5 x 1.26 (76.2 x 127 x 32)	NLP65-9912J ⁽⁵⁾
		15 V @ 5.3 A*					NLP65-9915J ⁽⁵⁾
		24 V @ 3.5 A*					NLP65-9924J ⁽⁵⁾
		5 V @ 8 A	12 V @ 3 A				NLP65-9929J ⁽⁵⁾
		5 V @ 8 A	24 V @ 2 A				NLP65-9920J ⁽⁵⁾
	5 V @ 8 A	12 V @ 3 A	-12 V @ 1 A			NLP65-9908J ⁽⁵⁾	

Options:

E To order an enclosed version of the NLP65-9608J, add suffix 'EJ' to the end of the model number, e.g. NLP65-9608EJ. The enclosed version includes: IEC connector, on/off switch, wire harness output connector and fitted cover.

G A safety earth ground pin and ground choke are available as an option. To order, please add the suffix 'GJ' to the end of the model number e.g. NLP65-9612GJ.

[] Rating with 30 CFM of air

(1) Optional cover/enclosure

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

6 For complete product specifications, technical reference notes and available product options, go to www.powerconversion.com.

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[80 W]	60 W	LP60 Series					
		3.3 V @ 12 A [16 A]*				3" x 5" x 1.65"	LPS61
		5 V @ 12 A [16 A]*				(76.2 x 127 x 41.9)	LPS62
		12 V @ 5 A [6.7 A]*					LPS63
		15 V @ 4 A [5.3 A]*					LPS64
		24 V @ 2.5 A [3.3 A]*					LPS65
		48 V @ 1.3 A [1.7 A]*					LPS68
		3.3 V @ 5 A [8.5 A]	5 V @ 2.5 A [3 A]	+12 V @ 0.5 A [1 A]			LPT61
		5 V @ 7 A [8 A]	12 V @ 3 A [3.5 A]	-12 V @ 0.7 A [1 A]			LPT62
		5 V @ 7 A [8 A]	15 V @ 2.8 A [3.3 A]	-15 V @ 0.7 A [1 A]			LPT63
		5 V @ 7 A [8 A]	12 V @ 3 A [3.5 A]	-5 V @ 0.7 A [1 A]			LPT64
		5 V @ 7 A [8 A]	24 V @ 1.5 A [2 A]	+12 V @ 0.7 A [1 A]			LPT65



(1)

[80 W]	60 W	LP60-M Series - Medical					
		12 V @ 5 A [6.7 A]*				3" x 5" x 1.65"	LPS63-M
		15 V @ 4 A [5.3 A]*				(76.20 x 127 x 41.9)	LPS64-M
		24 V @ 2.5 A [3.3 A]*					LPS65-M
		5 V @ 7 A [8 A]	12 V @ 3 A [3.5 A]	-12V @ 0.7 A [1 A]			LPT62-M
		5 V @ 7 A [8 A]	15 V @ 2.8 A [3.3 A]	-15 V @ 0.7 A [1 A]			LPT63-M



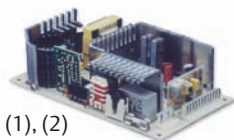
(1)

[85 W]	60 W	LP80 Series					
		3.3 V @ 8 A [13 A] (1.8 V - 3.5 V)	5 V @ 4 A [13 A] (3.3 V - 5.5 V)	+12 V @ 0.7 A [1 A]		3" x 5" x 1.29" (76.2 x 127 x 82.8)	LPT81
		5 V @ 8 A [13 A] (3.3 V - 5 V)	12 V @ 3 A [4 A]	-12 V @ 0.7 A [1 A]			LPT82
		5 V @ 8 A [13 A] (3.3 V - 5 V)	15 V @ 2.4 A [3.2 A]	-15 V @ 0.7 A [1 A]			LPT83



(1)

[110 W]	80 W	LP110 Series					
		12 V @ 6.7 A [9.2 A]*				4" x 7" x 1.8"	LPS113
		15 V @ 5.3 A [7.3 A]*				(101.6 x 177.8 x 45.7)	LPS114
		24 V @ 3.3 A [4.6 A]*					LPS115
		48 V @ 1.7 A [2.3 A]*					LPS118
		5 V @ 9 A [11 A]	12 V @ 4.5 A [5 A]	-12 V @ 0.7 A [1 A]	±5-25 V @ 2.5 A [3 A]*		LPQ112
		5 V @ 9 A [11 A]	15 V @ 4.5 A [5 A]	-15 V @ 0.7 A [1 A]	±5-25 V @ 2.5 A [3 A]*		LPQ113
		5 V @ 9 A [11 A]	12 V @ 4.5 A [5 A]	-12 V @ 0.7 A [1 A]	24 V @ 3.5 A [4.5 A]		LPQ114



(1), (2)

[110 W]	80 W	NFS80 Series					
		5 V @ 15 A	24 V @ 2.5 A	12 V @ 3 A	12 V @ 3 A*	4.25" x 7" x 1.8"	NFS80-7602J
		5 V @ 15 A	24 V @ 2.5 A	15 V @ 3 A	15 V @ 3 A*	(107.95 x 177.8 x 45.72)	NFS80-7606J



[110 W]	80 W	NLP110 Series					
		5 V @ 22 A*				3" x 6.5" x 1.26"	NLP110-9605J ⁽⁵⁾
		12 V @ 9.2 A*				(76.2 x 165.1 x 32)	NLP110-9612J ⁽⁵⁾
		24 V @ 4.6 A*					NLP110-9624J ⁽⁵⁾
		48 V @ 2.3 A*					NLP110-9617J ⁽⁵⁾
		5 V @ 18 A	3.3 V @ 20 A	12 V @ 1 A			NLP110-9693J ⁽⁵⁾
		12 V @ 8.5 A	5 V @ 18 A	-12 V @ 1 A			NLP110-9608J ⁽⁵⁾



Options:



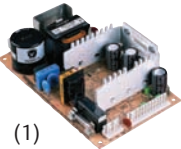
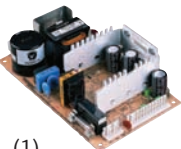




[] Rating with 30 CFM of air

(1) Optional cover/enclosure

(2) Optional bracket

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

Output Power [Forced Air]	Free Air	Output				Size W x L x H (mm)	Model		
		V1	V2	V3	V4				
[110 W] 80 W 	NLP110 Series - Medical								
	5 V @ 22 A*				3" x 6.5" x 1.26"		NLP110-9905J ⁽⁵⁾		
	12 V @ 9.2 A*				(76.2 x 165.1 x 32)		NLP110-9912J ⁽⁵⁾		
	24 V @ 4.6 A*						NLP110-9924J ⁽⁵⁾		
	48 V @ 2.3 A*						NLP110-9917J ⁽⁵⁾		
	3.3 V @ 20 A		2.5 V @ 20 A		12 V @ 1 A		NLP110-9994J ⁽⁵⁾		
	5 V @ 18 A		3.3 V @ 20 A		12 V @ 1 A		NLP110-9993J ⁽⁵⁾		
	12 V @ 8.5 A		3.3 V @ 20 A		-12 V @ 1 A		NLP110-9995J ⁽⁵⁾		
12 V @ 8.5 A		5 V @ 18 A		-12 V @ 1 A		NLP110-9908J ⁽⁵⁾			
[110 W] 80 W 	NLS110 Series								
	5.1 V @ 10 A		24 V @ 4.5 A		12 V @ 5 A		-12 V @ 1 A	4.25" x 7" x 1.26" (107.95 x 177.8 x 32)	NLS110-9602 ⁽⁵⁾
[110 W] 80 W  (1)	NFS110 Series								
	12 V @ 9 A*				4.25" x 7" x 1.8"		NFS110-7612J		
	24 V @ 4.5 A*				(107.95 x 177.8 x 45.72)		NFS110-7624J		
	5.1 V @ 10 A		12 V @ 5 A		-12 V @ 1 A		-5 V @ 1 A	NFS110-7601JP	
	5.1 V @ 10 A		15 V @ 5 A		-15 V @ 1 A		-5 V @ 1 A	NFS110-7604PJ	
	5.1 V @ 10 A		24 V @ 4.5 A		12 V @ 5 A		-12 V @ 1 A	NFS110-7602JP	
[110 W] 80 W  (1)	NFS110 Series - Medical								
	12 V @ 9 A*				4.25" x 7" x 1.8"		NFS110-7912J		
	15 V @ 7.3 A*				(107.95 x 177.8 x 45.72)		NFS110-7915J		
	24 V @ 4.5 A*						NFS110-7924J		
	5.1 V @ 10 A		12 V @ 5 A		-12 V @ 1 A		-5 V @ 1 A	NFS110-7901PJ	
	5.1 V @ 10 A		24 V @ 4.5 A		12 V @ 5 A		-12 V @ 1 A	NFS110-7902PJ	
[120 W] 70 W 	NTQ120 Series								
	3.3 V @ 14 A [25 A]		5 V @ 12.5 A [24 A]		+12 V @ 1 A [2 A]		-12 V @ 0.5 A [1 A]	4" x 7" x 1.5"	NTQ123
	3.3 V @ 14 A [25 A]		5 V @ 12.5 A [24 A]		+12 V @ 1 A [2 A]		-12 V @ 0.5 A [1 A]	(101.6 x 177.8 x 38.1)	NTQ123-DC
[130 W] 80 W  (1)	LP120 Series								
	3.3 V @ 16 A [26 A]*				3" x 5" x 1.29"		LPS121		
	5 V @ 16 A [26 A]*				(101.6 x 177.8 x 38.1)		LPS122		
	12 V @ 6.6 A [10.8 A]*						LPS123		
	15 V @ 5.3 A [8.6 A]*						LPS124		
	24 V @ 3.4 A [5.4 A]*						LPS125		
	48 V @ 1.7 A [2.7 A]*						LPS128		
[145 W] 80 W 	LP140 Series								
	5 V @ 12 A [25 A] (3.3 V - 5 V)		12 V @ 5 A [6 A]		-12 V @ 1 A [1.5 A] (-12 V - 15 V)		±3.3-25V@ 1.5A[4.5A]*	4" x 7" x 1.5" (101.6 x 177.8 x 38.1)	LPQ142
[150 W] 100 W  (1)	TLP150 Series								
	12 V @ 12.5 A*				3 x 5 x 1.25		TLP150R-96S12J ⁽⁵⁾ F		
	24 V @ 6.3 A*				(76.2 x 127 x 31.75)		TLP150R-96S24J ⁽⁵⁾ F		
	36 V @ 4.2 A*						TLP150R-96S36J ⁽⁵⁾		
	48 V @ 3.2 A*						TLP150R-96S48J ⁽⁵⁾ F		

Options:



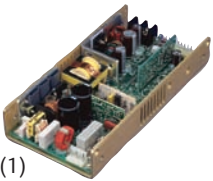


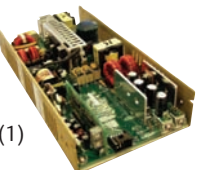
P Power fail detect option available, please add the suffix "P" to the model; e.g. NFS110-7601PJ

[] Rating with 30 CFM of air

(1) Optional cover/enclosure

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

Output Power [Forced Air] Free Air	Output				Size W x L x H (mm)	Model
	V1	V2	V3	V4		
[150 W] 100 W  (1)	TLP150 Series - Medical					
	12 V @ 12.5 A*				3 x 5 x 1.25	TLP150N-99S12J ⁽⁵⁾ F
	24 V @ 6.3 A*				(76.2 x 127 x 31.75)	TLP150N-99S24J ⁽⁵⁾ F
[150 W] 110 W  (1)	NLP150 Series					
	3.3 V @ 30 A*					NLP150L-96S93J ⁽⁵⁾
	12 V @ 12.5 A*				3.8 x 6.8 x 1.26	NLP150L-96S6J ⁽⁵⁾
	24 V @ 6.5 A*				(96.52 x 172.72 x 32)	NLP150L-96S8J ⁽⁵⁾
	48 V @ 3.2 A*					NLP150L-96S9J ⁽⁵⁾
	5.1 V @ 30 A*					NLP150L-96S5J ⁽⁵⁾
	5.1 V @ 30 A	3.3 V @ 15 A	12 V @ 3 A			NLP150L-96T536J ⁽⁵⁾
	12 V @ 12.5 A	5.1 V @ 8 A	24 V @ 3 A			NLP150L-96T658J ⁽⁵⁾
	5.1@30A	3.3 V @ 15 A	12 V @ 3 A	12 V, iso@1 A	3.80 x 7.80x 1.26	NLP150L-96Q5366J ⁽⁵⁾
				(96.52x 198.12x32)		
[150 W] 110 W  (1)	LP150 Series					
	5 V @ 22 A [30 A]*				4.25" x 8.5" x 1.5"	LPS152
	12 V @ 9.1 A [12.5 A]* (12 V - 15 V)				(108 x 215.9 x 38.1)	LPS153
	24 V @ 4.5 A [6.2 A]* (24 V - 28 V)					LPS155
	5 V @ 15 A [22 A]	12 V @ 2.6 A [8 A]	-12 V @ 2 A [2.5 A]	±5-25 V @ 2.5 A [3 A]*		LPQ152
	5 V @ 15 A [22 A]	15 V @ 4.8 A [6.4 A]	-15 V @ 1.6 A [2 A]	±5-25 V @ 2.5 A [3 A]*		LPQ153
	5 V @ 15 A [22 A]	12 V @ 6 A [8 A]	-12 V @ 2 A [2.5 A]	24 V @ 3.5 A [4.5 A]		LPQ154
[165 W] 50 W  (1)	NTQ160 Series					
	3.3 V @ 15 A [30 A] (1.8 V - 3.5 V)	5 V @ 10 A [20 A] (3 V - 5.5 V)	12V@2 A [4.5 A]*	12 V @ 2 A [4.5 A]*	4.25" x 8.5" x 1.5" (108 x 215.9 x 38.1)	NTQ162
	5 V @ 15 A [30 A] (3.3 V - 5 V)	3.3 V @ 10 A [20 A]	12 V @ 2 A [4.5 A]*	12 V @ 2 A [4.5 A]*		NTQ163
	3.3 V @ 15 A [30 A] (3.3 V - 5 V)	2.5 V @ 10 A [20 A] (1.8 V - 3.5 V)	5 V @ 2 A [4 A]*	12 V @ 2 A [4 A]*		NTQ165
[175 W] 110 W  (1)	LP170 Series					
	5 V @ 22 A [35 A]* (2.5 V - 6 V)				4.25 x 8.5 x 1.5 (108 x 215.9 x 38.1)	LPS172
	12 V @ 9.1 A [15 A]* (6 V - 12 V)					LPS173
	15 V @ 7.3 A [12 A]* (12 V - 24 V)					LPS174
	24 V @ 4.5 A [7.5]* (24 V - 54 V)					LPS175
	5 V @ 15 A [30 A] (3.3 V - 5.5 V)	12 V @ 6 A [8 A]	-12 V @ 0.2 A [3 A] (-12 V - 15 V)	±3.3-25 V @ 2 A [5 A]*		LPQ172
	5 V @ 10 A [24 A] (3.3 V - 5.5 V)	12 V @ 6 A [8 A]	-12 V @ 1.2 A [3 A] (-12 V - 15 V)	5 V @ 10 A [24 A]* (3.3 - 5 V)		LPQ173
[175 W] 110 W  (1)	LP170-M Series - Medical					
	5 V @ 22 A [35 A]* (2.5 V - 6 V)				4.25" x 8.5" x 1.5" (108 x 215.9 x 38.1)	LPS172-M
	12 V @ 9.1 A [15 A]* (6 V - 12 V)					LPS173-M
	15 V @ 7.3 A [12 A]* (12 V - 24 V)					LPS174-M
	24 V @ 4.5 A [7.5]* (24 V - 54 V)					LPS175-M

Options:

- F Replace the 'J' at the end of the model number with 'FJ' when the optional standby output and / or remote ON / OFF control is required e.g. TLP150N-99S12FJ
- [] Rating with 30 CFM of air
- (1) Optional cover/enclosure

- (3) Optional fan cover (see data sheet for increased dimensions)
- (5) These models feature harmonic current correction to EN61000-3-2
- * Floating output

Low Power

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[250 W]	175 W	NLP250 Series					
		12 V @ 21 A*				4 x 7 x 1.5	NLP250R-96S12J ⁽⁵⁾
		24 V @ 10.5 A*				(101.6 x 177.8 x 38.1)	NLP250R-96S24J ⁽⁵⁾
		48 V @ 5.3 A*					NLP250R-96S48J ⁽⁵⁾
(1)							
[250 W]	175 W	NLP250 Series - Medical					
		12 V @ 21 A*				4 x 7 x 1.5	NLP250N-99S12J ⁽⁵⁾
		24 V @ 10.5 A*				(101.6 x 177.8 x 38.1)	NLP250N-99S24J ⁽⁵⁾
(1)							
[250 W]		LP250 Series					
		5 V (3-6 V)@[50 A]*				5" x 9" x 2"	LPS252-C
		12 V (6-12 V)@[21 A]*				(127 x 228.6 x 50.8)	LPS253-C
		15 V (12-24 V)@[16.7 A]*					LPS254-C
		24 V (24-48 V)@[10.4 A]*					LPS255-C
(1), (3), (4)		5 V @ [35 A]	12 V @ [10 A]	-12 V @ [6 A]	±5-25 V @ [6 A]*		LPQ252-C
		5 V @ [35 A]	15 V @ [10 A]	-15 V @ [6 A]	±5-25 V @ [6 A]*		LPQ253-C
[350 W]		LP350 Series					
		5 V (3-6 V)@[70 A]*				5" x 9" x 2.5"	LPS352-C
		12 V (6-12 V)@[29.2 A]*				(127 x 228.6 x 63.5)	LPS353-C
		15 V (12-24 V)@[23.3 A]*					LPS354-C
		24 V (24-48 V)@[14.6 A]*					LPS355-C
(1), (3), (4)		5 V @ [50 A]	12 V @ [12 A]	-12 V @ [6 A]	±3.3-24 V @ [6 A]*		LPQ352-C
		5 V @ [50 A]	15 V @ [12 A]	-15 V @ [6 A]	±3.3-24 V @ [6 A]*		LPQ353-C
[350 W]	200 W	NTS350 Series					
		12 V @ 16.6 A [29.2 A]*				4" x 7" x 1.5"	NTS353
		24 V @ 8.3 A [14.6 A]*				(101.6 x 177.8 x 38)	NTS355
		48 V @ 4.2 A [7.3 A]*					NTS358
(3)		54 V @ 3.7 A [6.5 A]*					NTS359
[500 W]	200 W	NTS500 Series					
		12 V @ 16.6 A [41.7 A]				4" x 7" x 1.5"	NTS503
		24 V @ 8.3 A [20.8 A]				(101.6 x 177.8 x 38)	NTS505
(3)		48 V @ 4.2 A [10.4 A]					NTS508
[500 W]	200 W	NTS500-M Series					
		12 V @ 16.6 A [41.7 A]				4" x 7" x 1.5"	NTS503-M
		24 V @ 8.3 A [20.8 A]				(101.6 x 177.8 x 38)	NTS505-M
(3)		48 V @ 4.2 A [10.4 A]					NTS508-M

Options:

[] Rating with 30 CFM of air

(1) Optional cover/enclosure (see data sheet for increased dimensions)

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

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

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

10 For complete product specifications, technical reference notes and available product options, go to www.powerconversion.com.

External Power Adapters

3 - 100 Watts

Special Features

All models feature:

- Wide-range AC input
- High demonstrated MTBF
- Overload protection
- Extensive safety approvals

Many models feature:

- EN61000-3-2 compliance
- Medical approvals
- Thermal protection
- Energy Star

AC Input *Wallmount*

- U.S. - 2-prong
- China - 2-prong
- Europe - 2-prong
- United Kingdom - 3-prong
- Australia - 2-prong

Freestanding





- IEC320 2-pin (C14) & (C6)
- IEC320 2-pin (C8)

Single output

- 2.5mm barrel plug
- 2.1 mm right angle plug
- AD7216N2L

Triple output

- 5-pin DIN

Output Power	V1	V2	V3	Size W x L x H (mm)	Model
3 W 	DCH3 Series				
	5 V @ .55 A			1.03" x 2.28" x 2.44"	DCH3-050US-0001
	5 V @ .55 A			(26.1 x 58.0 x 62.0)	DCH3-050US-0002
	5 V @ .55 A			1.03" x 2.28" x 2.56"	DCH3-050EU-0001
	5 V @ .55 A			(26.1 x 58.0 x 62.0)	DCH3-050EU-0002
	5 V @ .55 A			2.02" x 2.28" x 1.79"	DCH3-050CH-0001
	5 V @ .55 A			(51.2 x 57.8 x 45.5)	DCH3-050CH-0002
4 W 	DA4 Series				
	5.5 V @ 0.75 A			1.8" x 2.4" x 1"	DA4-050US
				(45.8 x 60 x 26)	
	5.5@0.75 A			2.23" x 2.4" x 1"	DA4-050EU
				(58.3 x 60 x 26)	
	5.5 V @ 0.75 A			1.8" x 2.4" x 1.0"	DA4-050CH
				(45.8 x 60 x 76)	
16 W 	DA16 Series				
	+12 V @ 1.33 A			2.08" x 3.03" x 1.17"	DA16-120US
	+12 V @ 1.33 A			(53.0 x 77.0 x 29.8)	DA16-120EU
	+12 V @ 1.33 A				DA16-120UK
	+12 V @ 1.33 A				DA16-120 AU
20 W 	SSL20C Series				
	5 V @ 4 A			2.40" x 4.65" x 1.08"	SSL20C-7605J
	12 V @ 1.67 A			(60.96 x 118.11 x 27.43)	SSL20C-7612J
	15 V @ 1.34 A				SSL20C-7615J
	18 V @ 1.11 A				SSL20C-7618J
	24 V @ 0.83 A				SSL20C-7624J
	48 V @ 0.42 A				SSL20C-7617J
40 W 	SSL40C Series				
	12 V @ 3.00 A			2.40" x 4.65" x 1.08"	SSL40C-7612J
	15 V @ 2.66 A			(60.96 x 118.11 x 27.43)	SSL40C-7615J
	18 V @ 2.22 A				SSL40C-7618J
	24 V @ 1.66 A				SSL40C-7624J
	48 V @ 0.83 A				SSL40C-7617J
50 W 	AD50 Series				
	12 V @ 4.16 A			2.56" x 4.72" x 1.61"	AD5012N2L
	12 V @ 4.16 A			(65 x 120 x 41)	AD5012N3L

External Power Adapters

Output Power	V1	V2	V3	Size W x L x H (mm)	Model
50 W 	AD50-M Series - Medical				
	12 V @ 4.16 A			2.56" x 4.72" x 1.61"	AD5012N2LM
	12 V @ 4.16 A			(65 x 120 x 41)	AD5012N3LM
50 W 	DPT50 Series				
	3.3 V @ 9 A	5 V @ 3 A	-12 V @ 0.5 A	2.39" x 5.24" x 1.62"	DPT51
	5 V @ 8 A	12 V @ 3 A	-12 V @ 0.5 A	(60.7 x 133 x 41.15)	DPT52
	5 V @ 8 A	15 V @ 2.4 A	-15 V @ 0.5 A		DPT53
	5 V @ 8 A	24 V @ 1.5 A	12 V @ 0.5 A		DPT54
50 W 	DPT50-M Series - Medical				
	3.3 V @ 9 A	5 V @ 3 A	-12 V @ 0.5 A	2.39" x 5.24" x 1.62"	DPT51-M
	5 V @ 8 A	12 V @ 3 A	-12 V @ 0.5 A	(60.7 x 133 x 41.15)	DPT52-M
	5 V @ 8 A	15 V @ 2.4 A	-15 V @ 0.5 A		DPT53-M
	5 V @ 8 A	24 V @ 1.5 A	12 V @ 0.5 A		DPT54-M
60 W 	DPS50 Series				
	5 V @ 6 A			2.39" x 5.24" x 1.62"	DPS52
	12 V @ 5 A			(60.7 x 133 x 41.15)	DPS53
	15 V @ 4 A				DPS54
	24 V @ 2.5 A				DPS55
	48 V @ 1.25 A				DPS58
60 W 	DPS50-M Series - Medical				
	5 V @ 6 A			2.39" x 5.24" x 1.62"	DPS52-M
	12 V @ 5 A			(60.7 x 133 x 41.15)	DPS53-M
	15 V @ 4 A				DPS54-M
	24 V @ 2.5 A				DPS55-M
	48 V @ 1.25 A				DPS58-M
72 W 	AD72 Series				
	+16 V @ 4.5 A			2.0" x 4.54" x 1.10" (51 x 115.4 x 28)	AD7216N2L
78 W 	AD80 Series				
	+24 V @ 3.25 A			3.13" x 5.87" x 1.76" (79.6 x 149 x 44)	AD8024N3L-001
100 W 	AD100 Series				
	48 V @ 2.08 A			2.56" x 3.03" x 1.44" (65 x 156 x 37.2)	AD10048P3L-001

Medical AC-DC Power Supplies

Up to 4860 Watts

Emerson Network Power produces a wide range of AC-DC power supplies certified for use in medical equipment requiring lower safety ground leakage and higher isolation. The power supplies listed below are designed for use in non-patient critical applications: medical, dental and laboratory applications such as dialysis machines, monitoring equipment, instrumentation and infusion pump controls. All these power supplies are high efficiency switch-mode designs, and feature full medical safety approval to EN60601-1.



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
- Medical approvals
- Extensive safety approvals
- Derated operation to 70 °C

Many models feature:

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

Output Power		Output				Size W x L x H (mm)	Model
[Forced Air]	Free Air	V1	V2	V3	V4		
[50 W]	40 W	NFS40 Series - Medical					
		12 V @ 4 A*				3" x 5" x 1.2"	NFS40-7912J
		15 V @ 3.3 A*				(127 x 76.2 x 30.5)	NFS40-7915J
		24 V @ 2 A*					NFS40-7924J
		5 V @ 7 A	12 V @ 1 A	-12 V @ 1 A			NFS40-7928J
		5.1 V @ 5 A	12 V @ 2 A	-12 V @ 0.5 A			NFS40-7908J
		5.1 V @ 5 A	15 V @ 2 A	-15 V @ 0.5 A			NFS40-7910J
[55 W]	40 W	LP40-M Series - Medical					
		5 V @ 8 A[11 A]*				3" x 5" x 1.2"	LPS42-M
		12 V @ 3.3 A[4.5]*				(76.2 x 127 x 30.5)	LPS43-M
		15 V @ 2.6 A[3.6 A]*					LPS44-M
		24 V @ 1.6 A[2.3 A]*					LPS45-M
		5 V @ 4 A[5 A]	12 V @ 2 A[2.5 A]	-12 V @ 0.5 A[0.7 A]			LPT42-M
		5 V @ 4 A[5 A]	15 V @ 2 A[2.5 A]	-15 V @ 0.5 A[0.7 A]			LPT45-M
[50 W]	50 W	LP50-M Series - Medical					
		3.3 V @ 8 A	5 V @ 3 A	12 V @ 0.5 A		2" x 4" x 1.3"	LPT51-M
		5 V @ 8 A	12 V @ 3 A	-12 V @ 0.5 A		(50.8 x 101.6 x 33)	LPT52-M
		5 V @ 8 A	15 V @ 2.4 A	-15 V @ 0.5 A			LPT53-M
		5 V @ 8 A	24 V @ 1.5 A	12 V @ 0.5 A			LPT54-M
[60 W]	60 W	5 V @ 11 A*					LPS52-M
		12 V @ 5 A*					LPS53-M
		15 V @ 4 A*					LPS54-M
		24 V @ 2.5 A*					LPS55-M
		48 V @ 1.25 A*					LPS58-M




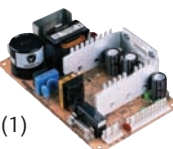

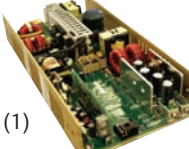

Options:

[] Rating with 30 CFM of air

(1) Optional cover/enclosure

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

Output Power		Output				Size W x L x H (mm)	Model		
[Forced Air]	Free Air	V1	V2	V3	V4				
[75 W] 	65 W	NLP65 Series - Medical							
		12 V @ 6.5 A*					3 x 5 x 1.26	NLP65-9912J ⁽⁵⁾	
		15 V @ 5.3 A*					(127 x 76.2 x 32)	NLP65-9915J ⁽⁵⁾	
		24 V @ 3.5 A*						NLP65-9924J ⁽⁵⁾	
		5 V @ 8 A		12 V @ 3 A				NLP65-9929J ⁽⁵⁾	
		5 V @ 8 A		24 V @ 2 A				NLP65-9920J ⁽⁵⁾	
		5 V @ 8 A		12 V @ 3 A		-12 V @ 1 A		NLP65-9908J ⁽⁵⁾	
[80 W] 	60 W	LP60-M Series - Medical							
		12 V @ 5 A [6.7 A]*					3" x 5" x 1.65"	LPS63-M	
		15 V @ 4 A [5.3 A]*					(76.2 x 127 x 41.9)	LPS64-M	
		24 V @ 2.5 A [3.3 A]*						LPS65-M	
		5 V @ 7 A [8 A]		12 V @ 3 A [3.5 A]		-12V @ 0.7 A [1 A]		LPT62-M	
		5 V @ 7 A [8 A]		15 V @ 2.8 A [3.3 A]		-15 V @ 0.7 A [1 A]		LPT63-M	
		(1)							
[110 W] 	80 W	NLP110 Series - Medical							
		5 V @ 22 A*					3" x 6.5" x 1.26"	NLP110-9905J ⁽⁵⁾	
		12 V @ 9.2 A*					(76.2 x 165.1 x 45.72)	NLP110-9912J ⁽⁵⁾	
		24 V @ 4.6 A*						NLP110-9924J ⁽⁵⁾	
		48 V @ 2.3 A*						NLP110-9917J ⁽⁵⁾	
		3.3 V @ 20 A		2.5 V @ 20 A		12 V @ 1 A		NLP110-9994J ⁽⁵⁾	
		5 V @ 18 A		3.3 V @ 20 A		12 V @ 1 A		NLP110-9993J ⁽⁵⁾	
		12 V @ 8.5 A		3.3 V @ 20 A		-12 V @ 1 A		NLP110-9995J ⁽⁵⁾	
		12 V @ 8.5 A		5 V @ 18 A		-12 V @ 1 A		NLP110-9908J ⁽⁵⁾	
[110 W] 	80 W	NFS110 Series - Medical							
		12 V @ 9 A*					4.25" x 7" x 1.8"	NFS110-7912J	
		15 V @ 7.3 A*					(107.95 x 177.8 x 32)	NFS110-7915J	
		24 V @ 4.5 A*						NFS110-7924J	
		5.1 V @ 10 A		24 V @ 5 A		-12 V @ 1 A		-5 V @ 1 A	NFS110-7901PJ
		5.1 V @ 10 A		24 V @ 4.5 A		12 V @ 5 A		-12 V @ 1 A	NFS110-7902PJ
[150 W] 	100 W	TLP150 Series - Medical							
		12 V @ 12.5 A*					3 x 5 x 1.25	TLP150N-99S12J ⁽⁵⁾ F	
		24 V @ 6.3 A*					(177.8 x 101.6 x 31.75)	TLP150N-99S24J ⁽⁵⁾ F	
[175 W] 	110 W	LP170-M Series - Medical							
		5 V @ 22 A [35 A]* (2.5 V - 6 V)					4.25" x 8.5" x 1.5" (108 x 215.9 x 38.1)	LPS172-M	
		12 V @ 9.1 A [15 A]* (6 V - 12 V)						LPS173-M	
		15 V @ 7.3 A [12 A]* (12 V - 24 V)						LPS174-M	
		24 V @ 4.5 A [7.5]* (24 V - 54 V)						LPS175-M	
[250 W] 	175 W	NLP250 Series - Medical							
		12 V @ 21 A*					4 x 7 x 1.5	NLP250N-99S12J ⁽⁵⁾	
		24 V @ 10.5 A*					(101.6 x 177.8 x 38.1)	NLP250N-99S24J ⁽⁵⁾	

Options:

F Replace the 'J' at the end of the model number with 'FJ' when the optional standby output and / or remote ON / OFF control is required e.g. TLP150N-99S12FJ


[] Rating with 30 CFM of air

(1) Optional cover/enclosure (see data sheet for increased dimensions)

(5) These models feature harmonic current correction to EN61000-3-2

* Floating output

Output Power
[Forced Air] Free Air
[500 W] 200 W



Output				Size W x L x H (mm)	Model
V1	V2	V3	V4		
NTS500-M Series - Medical					
12 V @ 16.6 A [41.7 A]*				4" x 7" x 1.5"	NTS503-M
24 V @ 8.3 A [20.8 A]*				(101.6 x 177.8 x 38)	NTS505-M
48 V @ 4.2 A [10.4 A]*					NTS508-M

Output Power
50 W



Output			Size W x L x H (mm)	Model
V1	V2	V3		
AD50 Series - Medical				
12 V @ 4.16 A			2.56" x 4.72" x 1.61"	AD5012N2LM
12 V @ 4.16 A			(65 x 120 x 41)	AD5012N3LM

Output Power
50 W




Output				
V1	V2	V3	Size W x L x H (mm)	Model
DPT50-M Series - Medical				
3.3 V @ 9 A	5 V @ 3 A	-12 V @ 0.5 A	2.39" x 5.24" x 1.62"	DPT51-M
5 V @ 8 A	12 V @ 3 A	-12 V @ 0.5 A	(60.7 x 133 x 41.15)	DPT52-M
5 V @ 8 A	15 V @ 2.4 A	-15 V @ 0.5 A		DPT53-M
5 V @ 8 A	24 V @ 1.5 A	12 V @ 0.5 A		DPT54-M

Output Power
60 W



Output				Size H x W x L (mm)	Model
V1	V2	V3	V4		
DPS50-M Series - Medical					
5 V @ 6 A				2.39" x 5.24" x 1.62"	DPS52-M
12 V @ 5 A				(60.7 x 133 x 41.15)	DPS53-M
15 V @ 4 A					DPS54-M
24 V @ 2.5 A					DPS55-M
48 V @ 1.25 A					DPS58-M

Output Power
Up to 1500 W



Output				Size H x W x L (mm)	Model
V1	V2	V3	V4		
iMP Medium Power Series					
2-60 V	1-21 outputs	Fully configurable and Intelligent		2.5" x 5" x 10" (63.5 x 127 x 254)	iMP4, iMP8 See iMP section

Output Power
1500-4920 W



Output				Size H x W x L (mm)	Model
V1	V2	V3	V4		
iVS High Power Series					
2-60 V	1-21 outputs	Fully configurable and Intelligent		5" x 5" x 11" (63.5 x 127 x 279.4)	iVS1, iVS6
				5" x 8" x 11" (63.5 x 203.2 x 279.4)	iVS3, iVS8 See iVS section

MP Series

Up to 1200 Watts

Total Power: Up to 1200 W
 Input Voltage: 85-264 Vac
 120-350 Vdc
 Number Outputs: Up to 21

New Options Now Available

- Optional battery charger module
- Optional 2 A 5 V bias voltage
- Optional extended hold-up module
- Optional high voltage module (non-isolated)
- Optional OR'ing diode module

Special Features

- Current share on all outputs with ratings of 10 A or greater
- Remote sense on all outputs with ratings greater than 2 A
- 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 or customer provided air option
- Isolated 1 A 5 V 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 datasheet on www.powerconversion.com)



MP4



MP6



MP8



MP1

Electrical Specifications

Input	
Input voltage	85-264 Vac 120-350 Vdc
Frequency	47-440 Hz
Inrush current	40 A peak maximum (soft start)
Efficiency	70-80% typ. @ full case load
Power factor	0.99 typ. meets EN61000-3-2 (N/A @ 440 Hz)
Turn-on time	AC on 1.5 second typical Inhibit/enable 150 ms typical
EMI filter standard	CISPR 22 EN55022 Level "B"
EMI filter (low leakage option)	CISPR 22 EN55022 Level "A"
Leakage current standard	2.0 mA maximum @ 240 Vac
Leakage current (low leakage option)	300 µA maximum @ 240 Vac
Radiated EMI	CISPR 22 EN55022 Level "B"
Holdover storage	20ms minimum (independent of input Vac)
AC OK	>5ms early warning minimum 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"; configurable
Input fuse (internal)	MP4: 10 A ; MP6: 15 A ; MP8: 20 A ; MP1: 20 A
Warranty	2 years

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	EN60950-1
BABT	Compliance to EN 60950, BS 7002
CB	Certificate and report
CE	Mark

Notes:

1. Single output modules only
2. Single and main of dual output modules only
3. Contact factory for optional preload if required

Output

Adjustment range	±10% minimum all outputs
Margining	±4-6% nominal
Overall reg	0.4% or 20 mV maximum (36 W modules 4% maximum)
Ripple	RMS: 0.1% or 10 mV, whichever is greater; Pk-Pk: 1.0% or 50 mV, whichever is greater; bandwidth limited to 20 M Hz
Dynamic response	<2% or 100 mV, with 25% load step
Recovery time	To within 1% in <300 μ second
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 >5ms 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 standby	5 Vdc @1.0 A mA maximum present whenever AC input is applied (optional 2.0 A available)
Module inhibit	TTL, isolated, singles and dual (both outputs) only
Switching frequency	250k Hz
Output/output isolation	>1 Megohm
VME signal option board	POR signal & quad external DC OK

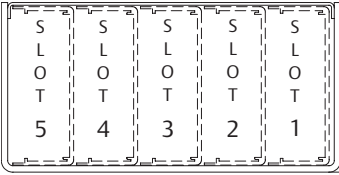
Ordering Information

Sample below is 1200 W case with 12 V @ 50 A; 5 V @ 60 A; 24 V @ 8.5 A; 12 V @ 10 A; 12 V @ 4 A; extended hold-up with no options.

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"; 400 W-600 W, 5 Slots (63.5 x 127 x 254) 6 = 2.5" x 5" x 11"; 600 W-800 W, 5 Slots (63.5 x 127 x 279.4) 8 = 2.5" x 7" x 10"; 800 W-1000 W, 6 Slots (63.5 x 177.8 x 254) 1 = 2.5" x 8" x 11"; 1000 W-1200 W, 7 Slots (63.5 x 203.2 x 279.4)	Module Codes Module/Voltage/Option Codes Module Codes: (None) = 36 W Triple O/P (1 slot) 1 = 210 W Single O/P (1 slot) 2 = 360 W Single O/P (2 slot) 3 = 750 W Single O/P (3 slot) 4 = 144 W Dual O/P (1 slot) 5 - 9 = Future Voltage Codes: See <i>Output Module Voltage/Current</i> table	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 codes table on following page) 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

MP Case Specifications

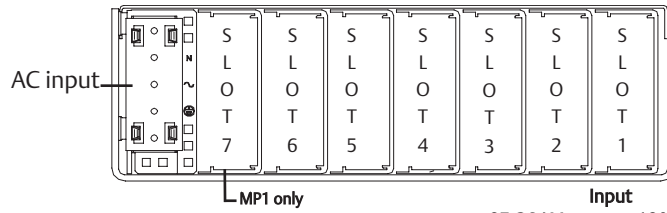
MP4 and MP6 (AC input on opposite side)



MP4 = 2.5" x 5" x 10" 5 available slots (63.5 x 127 x 254mm)
MP6 = 2.5" x 5" x 11" 5 available slots (63.5 x 127 x 279.4mm)

Input	
85-264 Vac 400 W max.	180-264 Vac 600 W max.
600 W max.	800 W max.

MP8 and MP1



Input	
85-264 Vac 800 W max.	180-264 Vac 1000 W max.
1000 W max.	1200 W max.

MP8 = 2.5" x 7" x 10" 6 available slots (63.5 x 177.8 x 254mm)
MP1 = 2.5" x 8" x 11" 7 available slots (63.5 x 203.2 x 279.4mm)

MP Module Specifications



Module code	Output				
	Single 1	Single 2	Single 3	Dual 4	Triple
Max output power	210 W	360 W	600 W	144 W	36 W
Max output current	35 A	60 A	120 A	10 A	2 A
Output voltages available	2-60 V	2-60 V	2-60 V	2-28 V	2-28 V
Standard voltage increments	25	25	25	19	18
Remote sense on outputs	Yes	Yes	Yes	Yes, both	No
Remote margin/V-Program	Yes	Yes	Yes	No	No
Module inhibit (isolated)	Yes	Yes	Yes	No	No
Single wire active current share	Yes	Yes	Yes	Yes, main only	No
Overvoltage/overcurrent protection	Yes	Yes	Yes	Yes	OCP only
Minimum load required	No	No	No	10% main only	No
Slots occupied in any MP case	1	2	3	1	1

Voltage	Voltage Code	Single Output Module Code			Dual Output **		Triple Output		
		1	2	3	V1	V2	V1	V2	V3
2 V	A	35 A	60 A	120 A	—	10 A	—	—	2 A
2.2 V	B	35 A	60 A	120 A	—	10 A	—	—	2 A
3 V	C	35 A	60 A	120 A	—	10 A	—	—	2 A
3.3 V	D	35 A	60 A	120 A	—	10 A	—	—	2 A
5 V	E	35 A	60 A	120 A	10 A	10 A	—	—	2 A
5.2 V	F	35 A	60 A	115 A	—	10 A	—	—	2 A
5.5 V	G	34 A	58 A	109 A	—	10 A	—	—	2 A
6.0 V	H	23 A	42 A	78 A	—	10 A	—	—	2 A
8.0 V	I	20 A	36 A	68 A	—	—	1 A	1 A	1 A
10 V	J	18 A	32 A	60 A	—	—	1 A	1 A	1 A
11 V	K	17 A	31 A	54.5 A	—	—	1 A	1 A	1 A
12 V	L	17 A	30 A	50 A	10 A	4 A	1 A	1 A	1 A
14 V	M	14 A	21 A	40.5 A	9 A	4 A	1 A	1 A	1 A
15 V	N	14 A	20 A	39 A	8 A	4 A	1 A	1 A	1 A
18 V	O	11 A	19 A	33.3 A	—	—	—	0.5 A	0.5 A
20 V	P	10.5 A	18 A	30 A	—	—	—	0.5 A	0.5 A
24 V	Q	8.5 A	15 A	23.5 A	4 A	2 A	—	0.5 A	0.5 A
28 V	R	6.7 A	12.8 A	21.4 A	3 A	2 A	—	0.5 A	0.5 A
30 V	S	6.5 A	12 A	20 A	—	—	—	—	—
33 V	T	6.2 A	10.9 A	18.2 A	—	—	—	—	—
36 V	U	5.8 A	10 A	16.6 A	—	—	—	—	—
42 V	V	4.2 A	7.5 A	12.5 A	—	—	—	—	—
48 V	W	4.0 A	7.5 A	12.5 A	—	—	—	—	—
54 V	X	3.7 A	6.0 A	11 A	—	—	—	—	—
60 V	Y	3.5 A	6.0 A	10 A	—	—	—	—	—

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)

** Total loading of outputs on the dual module not to exceed 144 W.

Designers' tip:

For assistance in configuring your specific requirement, contact Technical Support.
 +1 888 412 7832 (North America)
 or +1 407 241 2752
 0 800 0321546 (in the UK)
 +44 800 0321546 (outside the UK)
 Email: techsupport.embeddedpower@emerson.com

Parallel Codes

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

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

Intelligent MP Series *iMP*[™]

Up to 1500 Watts

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

Special Features

- Full Medical EN60601 approval
- Intelligent I²C control
- Voltage adjustment on all outputs (Manual or I²C)
- Configurable input and output (case and module) OK signals and indicators
- Configurable inhibit/enable
- Configurable output UP/DOWN sequencing
- Configurable current limit (foldback or constant current)
- High power density (8.8 W/cu-in)
- Intelligent fan (speed control/fault status)
- Downloadable GUI from website
- Customer provided air option

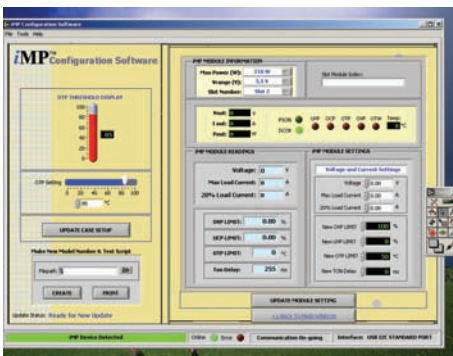


- uP controlled PFC input with active inrush protection
- I²C monitor of voltage, current, and temp
- Programmable voltage, current limit, inhibit/enable through I²C
- Optional extended hold-up module (SEMI F47 compliance)
- Increased power density to 50% over standard MP
- Backward compatibility with standard MP
- External switching frequency sync input
- Optional conformal coating
- Industrial temp range (-40°C to 70°C)
- No preload required
- Industrial shock/vibration (>50G's)

Electrical Specifications

Input

Input range	85-264 Vac 120-350 Vdc (limited to 300 Vdc in medical applications)
Frequency	47-440 Hz
Inrush current	40 A peak max. (soft start)
Efficiency	Up to 85% @ full case load
Power Factor	0.99 typ. meets EN61000-3-2 (n/a @ 440 Hz)
Turn-on time	AC on 1.5 sec typ., inhibit/enable 150ms typical Programmable delay
EMI filter	CISPR 22/EN55022 Level "B"
Leakage current	300µA max. @ 240 Vac; 47 - 63 Hz
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 Full cycle ride thru (50 Hz) (N/A on iMP> 750 W @ 90 Vac)
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: 16 A; iMP8: 20 A; iMP1: 25 A (both lines fused)
Warranty	2 years



The *iMP* software is designed to make the *iMP* Power Supply Unit (PSU) accessible to the user. It is intended to provide information gathered from the PSU and interactive controls to the basic capabilities of *iMP* power supply. To download go to: www.powerconversion.com/imp

Output

Adjustment range*	±10% minimum all outputs (manual) (full module adjustment range using I ² C)
Margining	±4-6% nominal analog (single output module only)
Overall regulation	0.4% or 20mV max. (36 W modules 4% maximum)
Ripple	RMS: 0.1% or 10mV, whichever is greater Pk-Pk: 1.0% or 50mV, whichever is greater Bandwidth limited to 20M Hz
Dynamic response	<2% or 100mV, with 25% load step
Recovery time	To within 1% in <300 µsec
Overcurrent protection**	Configurable through I ² C (calibration required). 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
Short-circuit protection	Protected for continuous short-circuit Recovery is automatic upon removal of short
Overvoltage protection*	Configurable through I ² C
Single output module	2-5.5 V 122-134% ; 6-60 V 110-120%
Dual output module	2-6 V 122-134% ; 8-28 V 110-120%
Triple output module	No overvoltage protection provided
Reverse voltage protection	100% of rated output current
Thermal protection* (OTP and OTW)	Configurable through I ² C All outputs disabled when internal temp exceeds safe operating range. >5ms warning (AC OK signal) before shutdown
Remote sense	Up to 0.5 V total drop (not available on triple output module)
Single wire parallel	Configurable through firmware Current share to within 2% of total rated current
DC OK*	±5% of nominal. Configurable through I ² C
Minimum load	Not required
Housekeeping standby	5 Vdc @ 1.0 A max. present whenever AC input is applied (Optional 2.0 A available)
Module inhibit*	Configured and controlled through I ² C
Switching frequency	250k Hz accepts external sync signal
Output/Output isolation	>1 Megohm, 500 V

* Can be controlled via I²C

** Controlled via I²C but requires load calibration

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, 220 Vac and 25 °C ambient conditions

Safety

UL	UL60950/UL2601 (through CSA)
CSA	CSA22.2 No. 234 Level 5
VDE	EN60950/EN60601-1
BABT	Compliance to EN60950/EN60601 BS7002
CB	Certificate and report
CE	Mark to LVD

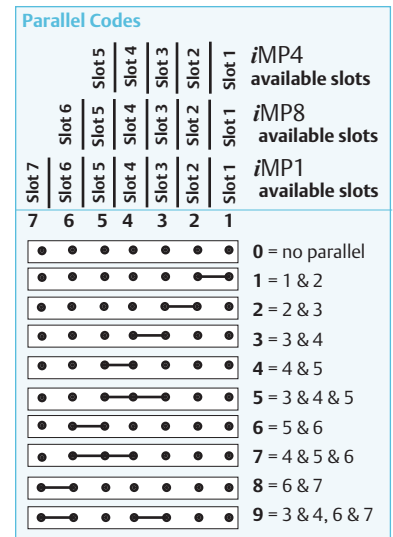
Output Module Line-up

Module Code	1	2	3	4	
Module Type	Single	Single	Single	Dual	
Max output power	210 W	360 W	750 W	144 W	
Max output current	35 A	60 A	150 A	10 A	
Output voltages available*	2-60 V	2-60 V	2-60 V	6 - 15, 24 - 28; 6 - 15, 6 - 15; 6 - 15, 2 - 6; 2 - 6, 2 - 6; 24 - 28, 24 - 28; 24 - 28; 2 - 6	
Standard voltage increments	25	25	25	19	
Remote sense	Yes	Yes	Yes	Yes	Yes
Remote margin	Yes	Yes	Yes	No	No
V-Program - I ² C control	Yes	Yes	Yes	Yes	Yes
Active current share	Yes	Yes	Yes	Yes	No
Module Inhibit - I ² C control	Yes	Yes	Yes	Yes	Yes
Module Inhibit - analog	Yes	Yes	Yes	No	No
Overvoltage / overcurrent protection	Yes	Yes	Yes	Yes	Yes
Minimum load required	No	No	No	No	No
Slots occupied in any iMP case	1	2	3	1	

Output Module Voltage/Current

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

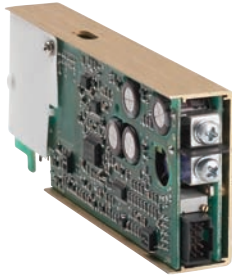
* Note: Increments of current not shown can be achieved by paralleling modules (add currents of each module selected).
 ** Total loading of outputs on dual module not to exceed 144 W.



Ordering Information

Sample below is 1500 W case with 12 V @ 62.5 A; 5 V @ 60 A; 24 V @ 8.5 A; 12 V @ 10 A; 12 V @ 4 A; with no options.

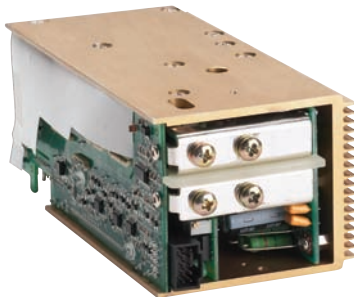
Case Size	Module/Voltage/Option Codes	Case Option Codes	Software Code	Hardware Code
iMP1*	3L0 - 2E2 - 1Q1 - 4LL0	00	A	###
<p>Case Size (mm) 4 = 2.5" x 5" x 10"; 750 W-1100 W, 5 Slots (63.5 x 127 x 254) 8 = 2.5" x 7" x 10"; 1000 W-1200 W, 6 Slots (63.5 x 177.8 x 254) 1 = 2.5" x 8" x 11"; 1200 W-1500 W, 7 Slots (63.5 x 203.2 x 279.4)</p> <p>*Note: Add "E" after iMP4 to denote IEC input option. e.g. iMP4E (Not available on iMP8 or iMP1)</p>	<p>Module Codes Module/voltage/option codes Module codes: (None) = 36 W triple O/P (1 slot) 1 = 210 W single O/P (1 slot) 2 = 360 W single O/P (2 slot) 3 = 750 W single O/P (3 slot) 4 = 144 W dual O/P (1 slot) 5 - 9 = future</p> <p>Voltage Codes: See <i>Output Module Voltage/Current</i> table above</p> <p>Option Codes: 0 = Standard 1 = Module enable 2 = Constant current 3 = 1 & 2 combined 4 = Set for use in standard (non-intelligent case) 5 - 4 = Future</p>	<p>Case Option Codes</p> <p>First digit 0 - 9 = parallel code (See Parallel Codes table above)</p> <p>Second digit 0 = No options 1 = Reverse air 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</p>	<p>Software code used for configuration change. "A" is standard</p>	<p>Factory assembled for hardware of firmware mods.</p>
<p>Ordering Note:</p> <ol style="list-style-type: none"> The cases and modules of both MP and iMP series can be interchanged to allow more flexibility. If intelligent modules are used with non-intelligent cases, a numeric code "4" is placed at the end of the module code (ex. 4LL0 becomes 4LL4). USB to I2C module order code 73-769-001 				



210 W

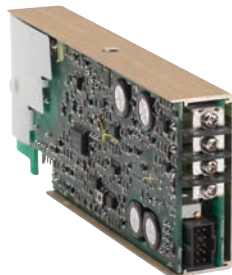


360 W



750 W

Single

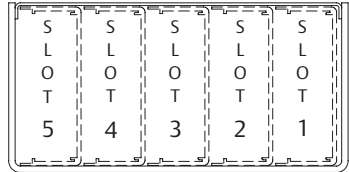


144 W

Dual

iMP Case Specifications

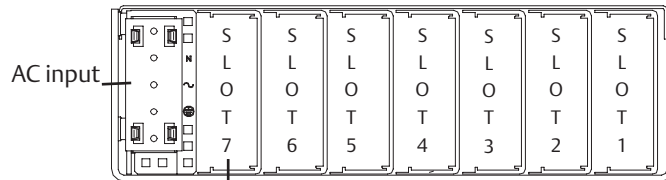
iMP4 (AC input on opposite side)



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

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

iMP8 and iMP1

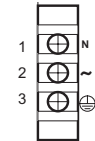


iMP8 = 2.5" x 7" x 10" 6 available slots
(63.5 x 177.8 x 254mm)
iMP1 = 2.5" x 8" x 11" 7 available slots
(63.5 x 203.2 x 279.4mm)

Input	
85-264 Vac 1000 W max.	180-264 Vac 1200 W max.
1200 W max.	1500 W max.

Pin Connectors

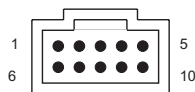
Figure 1. AC Input



AC Input

Pin No.	Function
1	AC neutral
2	AC line (hot)
3	Chassis (earth) ground

Figure 2. Connector J1

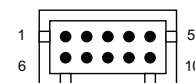


Mates with
Molex 90142-0010

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	Global inhibit/optional enable logic "0"
7	Global inhibit/optional enable logic "1"
8	Global inhibit/optional enable return
9	+5 VSB housekeeping
10	+5 VSB housekeeping return

Figure 3. Connector J2



Mates with
Landwin 2050S1000 Housing
2053T011P Pin

Connector Kit
order # 73-841-023

I²C Bus Output Connector

Pin No.	Function
1	No connection
2	No connection
3	No connection
4	Serial clock signal (SCL)
5	Serial data signal (SDA)
6	Address bit 0 (AO)
7	Address bit 1 (A1)
8	Address bit 2 (A2)
9	Secondary return (GND)
10	5 Vcc external bus (5 VCC. Bus)

Intelligent VS Series *iVS*TM

Up to 4920 Watts

Total Power: Up to 4920 Watts
 Input Voltage: 85-264 Vdc
 120-300 Vdc
 # of Outputs: Up to 24



iVS1-3E0-210-2Q0-1WD-00-A

Special Features

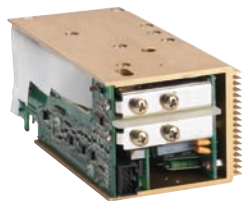
- Full medical EN60601 approval
- Intelligent I²C control
- Voltage adjustment on all outputs (manual or I²C)
- Configurable input and output OK signals and indicators
- Configurable inhibit/enable
- Configurable output UP/DOWN sequencing
- High power density (12 W/cu-in)
- Intelligent fan (speed control/fault status)
- 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 150%
- Optional conformal coating
- Industrial temp range (-40 °C to 70 °C)
- Uses standard iMP modules
- Field upgradeable firmware
- RoHS compliant



210 W



750 W



360 W



1500 W

Single



144 W

Dual

Electrical Specifications

Input

Input range

iVS1 & iVS3 90-264 Vac 1 \emptyset : 120 - 300 Vdc

iVS6 & iVS8 170-264 Vac 3 \emptyset

iVS8H 480 Vac nominal 3 \emptyset

380 Vac nominal 3 \emptyset derate to 3800 W max.

47-440 Hz

Frequency

Inrush current

40 A peak maximum (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 typical, inhibit/enable 150ms typical
 Programmable

EMI Filter

CISPR 22/EN55022 Level "B"

Leakage current

300 μ A max. @ 240 Vac; 47-63 Hz

Radiated EMI

CISPR 22/EN55022 Level "B"

Holdover storage

10 ms minimum (independent of input Vac) additional
 20mSEC holdover storage with optional HUP module
 (SEMI F47 compatible)

AC OK

>5ms early warning minutes before outputs lose regulation
 Full cycle ride thru (50 Hz). Programmable

Harmonic distortion

Meets EN61000-3-2

Isolation

Meets EN60950 and EN60601

Global inhibit / enable

TTL, Logic "1" and Logic "0"/configurable

Warranty

3 years

Output

Adjustment range*	±10% minimum all outputs (manual) (full module adjustment range using I ² C)
Margining	±4-6% nominal analog (single output module only)
Overall regulation	0.4% or 20 mV 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 M Hz
Dynamic response	<2% or 100 mV, with 25% load step
Recovery time	To within 1% in <300 μ second
Overcurrent protection**	Configurable through I ² C. 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 Special programmable OCP delay on 1500 W module from 100 mSec to 25.5 seconds with shutdown features
Short-circuit protection	Protected for continuous short-circuit Recovery is automatic upon removal of short (Shutdown mode on 1500 W module)
Overvoltage protection*	Configurable through I ² C
Single output module	2-5.5 V 122-134% ; 6-60 V 110-120%
Dual output module	2-6 V 122-134% ; 8-28 V 110-120%
Triple output module	No overvoltage protection provided
Reverse voltage protection	100% of rated output current
Thermal protection*	Configurable through I ² C All outputs disabled when internal temp exceeds safe operating range. >5ms warning (AC OK signal) before shutdown
Remote sense	Up to 0.5 V total drop (not available on triple output module)
Single wire parallel	Configurable through firmware Current share to within 2% of total rated current
DC OK*	+/-5% of nominal. Configurable through I ² C
Minimum load	Not required
Housekeeping bias voltage	5 Vdc @1.0 A max. present whenever AC input is applied
Module inhibit*	Configured and controlled through I ² C
Switching frequency	250 kHz accepts external sync signal
Output/Output isolation	>1 Megohm, 500 V
	* Can be controlled via I²C
	** Controlled via I²C but requires load calibration

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, 220 Vac and 25 °C ambient conditions

Safety

UL	UL60950/UL2601 (cCSAus)
CSA	CSA22.2 No. 234 Level 5
VDE	EN60950/EN60601-1
BABT	Compliance to EN 60950/EN60601 BS 7002
CB	Certificate and report
CE	Mark to LVD

Output Module Line-up

Module Code	1	2	3	5	4
Module Type	Single	Single	Single	Single	Dual
Max output power	210 W	360 W	750 W	1500 W	144 W
Max output current	35 A	60 A	150 A	140 A	10 A
Output voltages available*	2-60 V	2-60 V	2-60 V	6-60 V	6 - 15, 24 - 28; 6 - 15; 6 - 15; 6 - 15; 2 - 6; 2 - 6, 2 - 6; 24 - 28, 24 - 28; 24 - 28; 2 - 6
Standard voltage increments	25	25	25	18	19
Remote sense	Yes	Yes	Yes	Yes	Yes
Remote margin*	Yes	Yes	Yes	Yes	No
V-Program - I ² C Control*	Yes	Yes	Yes	Yes	Yes
Active Current Share	Yes	Yes	Yes	Yes	No
Module Inhibit - I ² C Control*	Yes	Yes	Yes	Yes	Yes
Module Inhibit - Analog	Yes	Yes	Yes	Yes	No
Overvoltage/Overcurrent protection*	Yes	Yes	Yes	Yes	Yes
Minimum load required	No	No	No	No	No
Slots occupied in any iMP case	1	2	3	4	1

* Programmable

Output Module Voltage/Current*

Voltage	Voltage Code	Single Output Module Code				Dual Output**		PC Adjusted Ranges
		1	2	3	5	V1	V2	
2 V	A	35 A	60 A	150 A	—	10 A	10 A	1.8 - 2.2
2.2 V	B	35 A	60 A	150 A	—	10 A	10 A	2.0 - 2.4
3 V	C	35 A	60 A	150 A	—	10 A	10 A	2.7 - 3.3
3.3 V	D	35 A	60 A	150 A	—	10 A	10 A	3.0 - 3.6
5 V	E	35 A	60 A	150 A	—	10 A	10 A	4.5 - 5.5
5.2 V	F	35 A	60 A	150 A	—	10 A	10 A	4.7 - 5.7
5.5 V	G	34 A	58 A	137 A	—	10 A	10 A	5.0 - 6.1
6.0 V	H	23 A	42 A	80 A	140 A	10 A	10 A	5.4 - 6.6
8.0 V	I	20 A	36 A	80 A	140 A	10 A	4 A	7.2 - 8.8
10 V	J	18 A	32 A	75 A	140 A	10 A	4 A	9.0 - 11.0
11 V	K	17 A	31 A	68 A	136 A	10 A	4 A	9.9 - 12.1
12 V	L	17 A	30 A	62.5 A	125 A	10 A	4 A	10.8 - 13.2
14 V	M	14 A	21 A	53.5 A	107 A	9 A	4 A	12.6 - 15.4
15 V	N	14 A	20 A	50 A	100 A	8 A	4 A	13.5 - 16.5
18 V	O	11 A	19 A	41.6 A	83.3 A	—	—	16.2 - 19.8
20 V	P	10.5 A	18 A	37.5 A	75 A	—	—	18.0 - 22.0
24 V	Q	8.5 A	15 A	31.3 A	62.5 A	4 A	2 A	21.6 - 26.4
28 V	R	6.7 A	12.8 A	26.8 A	53.5 A	3 A	2 A	25.2 - 30.8
30 V	S	6.5 A	12 A	25 A	50 A	—	—	27.0 - 33.0
33 V	T	6.2 A	11 A	22.7 A	35.8	—	—	29.7 - 36.3
36 V	U	5.8 A	10 A	20.8 A	35.8	—	—	32.4 - 39.6
42 V	V	4.2 A	7.5 A	17.9 A	35.7	—	—	37.8 - 46.2
48 V	W	4.0 A	7.5 A	15.6 A	31.2	—	—	43.2 - 52.8
54 V	X	3.7 A	6.0 A	13.9 A	27.7	—	—	48.6 - 59.4
60 V	Y	3.5 A	6.0 A	12.5 A	25	—	—	54.0 - 66.0
Contact Factory								
Special	Z	35 A	60 A	150 A	—	—	10 A	2.3 - 2.6
Special	Z	35 A	60 A	150 A	—	—	10 A	3.7 - 4.4
Special	Z	20 A	36 A	80 A	140 A	—	8 A	6.7 - 7.1

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

** Total leading of outputs on dual module not to exceed 144 W.

Ordering Information

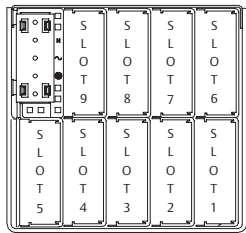
Sample below is 3210 W case with 12 V @ 125 A; 24 V @ 8.5 A; 5 V @ 60 A; 12 V @ 10 A and 12 V @ 4 A; with no options.

Case Size	Module/Voltage/Option Codes	Case Option Codes	Software Code	Hardware Code
iVS1	5L1 - 1Q1 - 2EO - 4LLO	00	A	###
<p>Case Size (mm) 1-Phase Input 1 = 5" x 5" x 11"; 1500 W - 3210 W, 9 Slots (127 x 127 x 279.4) 3 = 5" x 8" x 11"; 1800 W - 4170 W, 15 Slots (127 x 203.2 x 279.4) 3-Phase Input 6 = 5" x 5" x 11"; 3120 W, 9 Slots (127 x 127 x 279.4) 8 = 5" x 8" x 11"; 4170 W, 15 Slots (127 x 203.2 x 279.4) 8H= 5" x 8" x 11"; 4860 W, 14 Slots (127 x 203.2 x 279.4)</p>	<p>Module Codes Module/voltage/option codes Module Codes: (None) = 36 W triple O/P (1 slot) 1 = 210 W single O/P (1 slot) 2 = 360 W single O/P (2 slot) 3 = 750 W single O/P (3 slot) 5 = 1500 W single O/P (slot 4) 4 = 144 W dual O/P (1 slot) HUP = Extra 30mS hold-up (1 slot) Voltage Codes: See <i>Output Module Voltage/Current</i> table above Option Codes: 0 = Standard 1 = Module enable 2 = Constant current 3 = 1 & 2 combined 4 = Set for use in standard (non-intelligent case) 5 = Shutdown mode for 1500 W 6 = 1 & 5 combined 7-9 Future</p>	<p>Case Option Codes First Digit 0 - 9 = Parallel code (See parallel codes table above) Second Digit 0 = No options 1 = Reverse air 2 = Not used 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</p>	<p>Software code used for configuration change. "A" is standard</p>	<p>Factory assembled for hardware of firmware mods.</p>
<p>Ordering Note: 1. USB to I2C module order code 73-769-001</p>				

Parallel Code	iVS1, 6	iVS3, 8, 8H	Possible Configurations
1			210 210; 210 144; 144 144
2			360 360; 360 210; 360 144; +above
3			750 750; 750 360; 750 210; 750 144; + above
4			1500 1500; 1500 750; 1500 360; 1500 210; 1500 144; + above
5			750 210 210; 750 210 144; 750 144 144
6			1500 1500
7			1500 210 210; 1500 210 144; 1500 144 144
8			1500 1500 1500; 1500 1500 750; 1500 1500 360; 1500 1500 210; 1500 1500 144
9			1500 1500 1500 750; 1500 1500 1500 360 1500 1500 1500 210; 1500 1500 1500 144

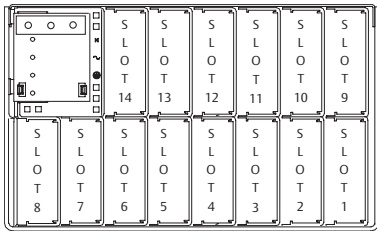
iVS Case Specifications

iVS1 and iVS6



	Input	100-264 Vac	180-264 Vac
iVS1 = 5" x 5" x 11" (127 x 127 x 254) 9 available slots		1500 W max.	3210 W max.
iVS6 = 5" x 5" x 11" (127 x 127 x 254) 9 available slots 3-phase only	N/A		3210 W max.

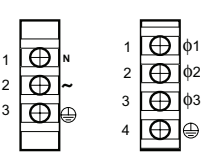
iVS3 and iVS8



	Input	100-264 Vac	180-264 Vac
iVS3 & 8 = 5" x 8" x 11" (127 x 177 x 254) 14 available slots		1800 W max.	4920 W max.
iVS8H = 5" x 8" x 11" (127 x 177 x 254) 14 available slots	480 Vac		4920 W max.

Pin Connectors

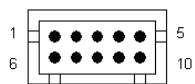
Figure 1. AC Input



AC Input Single Phase 3 Phase

Pin No.	Function	3 Phase
1	AC neutral	φ1
2	AC line (hot)	φ2
3	Chassis (earth) ground	φ3
4	Chassis (earth) ground	⊕

Figure 3. Connector J2

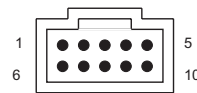


Mates with
Landwin 2050S1000 housing
2053T011P pin

I²C Bus Output Connector

Pin No.	Function
1	No connection
2	No connection
3	No connection
4	Serial clock signal (SCL)
5	Serial data signal (SDA)
6	Address bit 0 (A0)
7	Address bit 1 (A1)
8	Address bit 2 (A2)
9	Secondary return (GND)
10	5 VCC external bus (5 VCC bus)

Figure 2. Connector J1



Mates with
Molex 90142-0010

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	No connection
6	Global inhibit/optional enable logic "0"
7	Global inhibit/optional enable logic "1"
8	Global inhibit/optional enable return
9	+5 VSB housekeeping
10	+5 VSB housekeeping return

Bulk Power (HPS)

350-3000 Watts

Special Features

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

New Features Coming Soon

- HPR1 split Rack (dual output voltage)
- 500 W HPS50

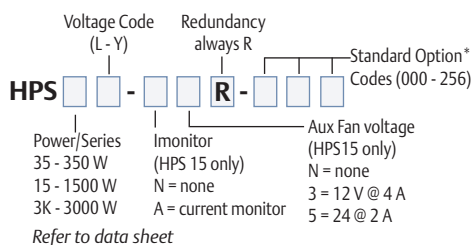


HPR1

Voltage Availability

Model	HPS35	HPS15	HPS3KW
Wattage	350 W	1500 W ³	3000 W
Input Voltage	90-264 Vac	90-264 Vac	180-264 Vac
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 FC interface
 3 = 1200 W@ 90-264 Vac; 1500 W@100-264 Vac



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

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% typical @ full load, 230 Vac
Power factor	0.99 typical @ 115 Vac, full load
Turn-on time	AC on 2 sec; inhibit/enable 160ms typical
EMI filter standard	CISPR 22; EN55022 Level "B"
Leakage current standard	<0.5mA max @ 230 Vac @ 60 Hz per module
Radiated EMI	CISPR 22; EN55022 Level "B"
Holdover time	20ms minimum (independent of input Vac)
AC OK	5ms early warning minutes 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 (20M Hz 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
Overvoltage protection	120-140%. AC Reset
Reverse voltage protection	100% of rated output current
Thermal protection	Main and Aux disabled when internal temperature 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 stand-alone module)
Standby voltage	5 Vdc @2 A maximum present whenever AC input is applied
Global inhibit	Logic "0"

*3 A minimum for current share operation



HPS15 Modules in HPR3 Rack



HPS3KW

Electrical Specifications

Input HPS15	
Input voltage	1200 W @90-264 Vac 1500 W @180-264 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 100ms typical
EMI filter standard	CISPR 22; EN55022 Level "B"
Leakage current standard	2 mA max @ 264 Vac @ 60 Hz per module
Radiated EMI	CISPR 22; EN55022 Level "B"
Holdup time	20 ms minimum (independent of input Vac)
AC OK	>5ms 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 20M Hz
Dynamic response	2% with 25% load step
Recovery time	To within 1% in <300µsec
Over current protection	105%-120% of rated output current
Short-circuit protection	Protected for continuous short-circuit Recovery is automatic upon removal of short
Oversvoltage 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 @5 A max. present whenever AC input is applied (3.3 V @ 5 A optional)
Global inhibit	Logic "0" standard logic "1" optional

*3 A minimum for current share operation

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	52 V @ 57 A; 5 Vsb @ 5 A
Maximum power	3000 W
Adjustment range	Contact factory
Supervisory output	5 V @ 5 A
Hold up time	20ms
Overcurrent	48 V: 110% - 150%; 5 Vsb: 101% - 125%
Oversvoltage	125% above nominal output
Logic	
Enable	Requires contact closure from 'PSON' to 5 V 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 48 Vdc output. It goes LOW at least 1 ms before loss of regulation

Ordering Information

Module	HPS35	HPS15	HPS3KW
Rack #	HPR1-00*	HPR3-00*	HPR3K-00*
# of Slots	4	4	6
Total Power	1400 W	6000 W	18,000 W

*See web site for option codes on HPR racks.

Distributed Power Systems (DS)

AC and DC inputs available

450-2900 Watts

Special Features

- Active power factor correction
- EN61000-3-2 harmonic compliance
- Active AC inrush control
- High density
- Outputs +12 Vdc with some +48 Vdc models available
- 3.3 Vdc standby
- Options for 5 V standby voltage (DS650/850 only)
- No minimum load required
- Hot plug operation
- N+1 redundant
- Internal OR'ing FETs
- Active current sharing
- Built-in cooling fans
- I2C Interface with EEPROM for FRU data
- Internal fan speed control with fan fail signal
- DC Input
- DSR1 rack for DS650/850. Standard 19" 1U fits up to 5 modules (4250 Watts)
- DSR2 rack for DS1300/1500. Standard 19" 2U fits up to 3 modules (4500 Watts)
- UFR6000 rack for UFE2000 standard 19" 1U fits up to 3 modules (6000 watts)

Safety

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

Voltage Availability

Model	12 V (-3)	24 V (-5)	48 V (-9)
DS450	•		
DS450DC	•		
DS550	•		
DS550DC	•		
DS650	•		•
DS650DC	•		
DS850	•	*	•
DS850DC	•		
DS1200	•		
DS1300	•		
DS1500	•		
DS1800	•		
DS2000	•		
DS2900	•		
UFE2000		•	•

Notes: • = Available
* = Coming in late 2008

New Products and Features Coming Soon

- Options for low leakage
- Options for reverse airflow
- 2000 W 1u x 3u model
- 24 V output on DS850



Electrical Specifications

Data	DS450-3	DS550-3	DS450DC-3	DS550DC-3	DS650-3	DS650-9
Input						
Input Range	90-264 Vac	90-264 Vac	40-72 Vdc	40-72 Vdc	90-264 Vac	90-264 Vac
Frequency	47-63 Hz	47-63 Hz	DC	DC	47-63 Hz	47-63 Hz
Efficiency	80% Typ	80% Typ	80% Typ	80% Typ	80% Typ	82% Typ
EMI/RFI	Class B	Class B	N/A	N/A	Class B	Class B
Leakage Current	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V
Outputs						
Output Main	12v / 37 A	12v / 45 A	12v / 37 A	12v / 45 A	12v / 52.5 A	48v / 13.1 A
Output Stand-By	3.3vsb/3 A	3.3vsb/3 A	3.3vsb/3 A	3.3vsb/3 A	3.3vsb / 6 A	3.3vsb / 6 A
OCP/OVP/OTP	YES	YES	YES	YES	YES	YES
I2C Control	YES	YES	YES	YES	YES	YES
Environmental						
Operating Temp	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C
Derating	50% at 70°C	50% at 70°C	50% at 70°C	50% at 70°C	50% at 70°C	50% at 70°C
Storage	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
RoHS Compliant	YES	YES	YES	YES	YES	YES
MTBF	500K Hours	500K Hours	500K Hours	500K Hours	500K Hours	500K Hours
Other:						
Size (inch)	1.57 x 3.07 x 11.05	1.57 x 3.07 x 11.05	1.57 x 3.07 x 11.05	1.57 x 3.07 x 11.05	1.57 x 3.20 x 11.00	1.57 x 3.20 x 11.00
Size (mm)	40 x 78 x 280	40 x 78 x 280	40 x 78 x 280	40 x 78 x 280	40 x 81.3 x 279.4	40 x 81.3 x 279.4
Power Density	8.42	10.30	8.42	10.30	11.76	11.76
Cubic Inches	53.42	53.42	53.42	53.42	55.44	55.44
Pro-E Files	NO	NO	YES	YES	YES	YES
Thermal Data	YES	YES	YES	YES	YES	YES
PQ Airflow Curves	YES	YES	YES	YES	YES	YES
Mating Connector FCI	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA
Unit Connector FCI	51741-10002406CC	51741-10002406CC	51741-10002406CC	51741-10002406CC	51741-10002406CC	51741-10002406CC
Fan	40mm 1 per	40mm 1 per	40mm 1 per	40mm 1 per	40mm 2 per	40mm 2 per
Warranty	1 Year	1 Year	1 Year	1 Year	1 Year	1 Year
Ordering Codes						
Standard	DS450-3	DS550-3	DS450DC-3	DS550DC-3	DS650-3	DS650-9
5 V Standby					DS650-3-002	DS650-9-002
Reverse Air	DS450-3-002		DS450DC-3-002			
Fan Off with inhibit						
Disable External Fan Drive	DS450-3-003					
Positronic Input Connector			DS450DC-3-001	DS550DC-3-001		

Data	DS650DC-3	DS850-3	DS850DC-3	DS850-9	DS1200-3
Input					
Input Range	40-72 Vdc	90-264 Vac	40-72 Vdc	90-264 Vac	90-264 Vac
Frequency	DC	47-63 Hz	DC	47-63 Hz	47-63 Hz
Efficiency	80% Typ	82% Typ	80% Typ	83% Typ	90% Typ
EMI/RFI	N/A	Class B	N/A	Class B	Class B
Leakage Current	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V
Outputs					
Output Main	12v / 52.5 A	12v / 70.0 A	12v / 70.0 A	48v / 17.5 A	12v / 98 A
Output Stand-By	3.3vsb / 6 A	3.3vsb / 6 A	3.3vsb / 6 A	3.3vsb / 6 A	3.3vsb / 6 A
OCP/OVP/OTP	YES	YES	YES	YES	YES
I2C Control	YES	YES	YES	YES	YES
Environmental					
Operating Temp	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C	-10°C to 50°C
Derating	50% at 70°C	50% at 70°C	50% at 70°C	50% at 70°C	50% at 70°C
Storage	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
RoHS Compliant	YES	YES	YES	YES	YES
MTBF	500K Hours	500K Hours	500K Hours	500K Hours	500K Hours
Other:					
Size (inch)	1.57 x 3.20 x 11.00	1.57 x 3.20 x 11.00	1.57 x 3.20 x 11.00	1.57 x 3.20 x 11.00	1.57 x 3.20 x 11.00
Size (mm)	40 x 81.3 x 279.4	40 x 81.3 x 279.4	40 x 81.3 x 279.4	40 x 81.3 x 279.4	40 x 81.3 x 279.4
Power Density	11.76	15.38	15.38	15.38	21.71
Cubic Inches	55.44	55.44	55.44	55.44	55.44
Pro-E Files	YES	YES	YES	YES	YES
Thermal Data	YES	YES	YES	YES	YES
PQ Airflow Curves	YES	YES	YES	YES	YES
Mating Connector FCI	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA	51721-10002406 AA
Unit Connector FCI	51741-10002406CC	51741-10002406CC	51741-10002406CC	51741-10002406CC	51741-10002406CC
Fan	40mm 2 per	40mm 2 per	40mm 2 per	40mm 2 per	36mm 1 per
Warranty	1 Year	1 Year	1 Year	1 Year	1 Year
Ordering Codes					
Standard	DS650DC-3	DS850-3	DS850DC-3	DS850-9	DS1200-3
5 V Standby		DS850-3-002		DS850-9-002	
Reverse Air		DS850-3-006			
Fan Off with inhibit		DS850-3-004			
Disable External Fan Drive					
Positronic Input Connector	DS650DC-3-001		DS850DC-3-001		

Data	DS1300-3	DS1500-3	DS1800-3	DS2000-3	UFE2000	DS2900
Input:						
Input Range	90-264 Vac	90-264 Vac	90-264 Vac	90-264 Vac	90-264 Vac	180-264 Vac
Frequency	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz
Efficiency	80% Typ	80% Typ	87% Typ	87% Typ	91% Typ	90% Typ
EMI/RFI	Class B	Class B	Class B	Class B	Class B (in rack)	Class B
Leakage Current	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	1.4mA @ 240 V	2.0 mA max	1.4mA @ 240 V
Outputs:						
Output Main	12 V / 106 A	12 V / 123 A	12 V / 147.5 A	12 V / 165 A	48 V / 52 A (33 A wide input range)	12 V / 240 A
Output Stand-By	3.3 Vsb / 7 A	3.3 Vsb / 7 A	3.3 Vsb / 9 A	3.3 Vsb / 6 A	11 V / 26 A	3.3 Vsb / 3 A
OCP/OVP/OTP	YES	YES	YES	YES	YES	YES
I2C Control	NO	NO	YES	YES	YES	YES
Environmental						
Operating Temp	-10 °C to 50 °C	-10 °C to 50 °C	-10 °C to 40 °C	-10 °C to 50 °C	-33 °C to 70 °C	0 °C to 50 °C
Derating	50% at 70 °C	50% at 70 °C	N/A	N/A	1600 W @ 70 °C	N/A
Storage	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +100 °C	-40 °C to +85 °C
RoHS Compliant	YES	YES	YES	YES	YES	YES
MTBF	500K Hours	500K Hours	500K Hours	500K Hours	279K Hours	500K Hours
Other:						
Size (inch)	2.8 x 4.9 x 7.5	2.8 x 4.9 x 7.5	1.57x 4.2 x 11.6	1.57x 4.2 x 11.6	1.6 x 5.56 x 10.74	3.07 x 4.17 x 8.5
Size (mm)	71.1 x 124.5 x 190.5	71.1 x 124.5 x 190.5	40 x 106.7 x 295.7	40 x 106.7 x 295.7	40 x 141.2 x 272.8	78 x 106 x 217
Power Density	12.63	12.63	23.5	26.2	22.0	26.7
Cubic Inches	102.9	102.9	76.5	76.5	95.5	108.8
Pro-E Files	YES	YES	YES	YES	YES	YES
Thermal Data	YES	YES	YES	YES	YES	YES
PQ Airflow Curves	YES	YES	YES	YES	YES	YES
Mating Connector FCI	51939-055	51939-055	Molex SD-45984-1462	Molex SD-45984-1462	FCI 51915-070	FCI SK10065864-003LF
Unit Connector FCI	Molex 87806-8000	Molex 87806-8000	Molex 45985-xxx	Molex 45985-xxx	FCI 51939-180	FCI SK10065866-003LF
Fan	2 x 60mm	2 x 60mm	2 x 60mm	2 x 60mm	2 x 40mm	TBA
Warranty	1 Year	1 Year	1 Year	1 Year	1 Year	1 Year
Ordering Codes						
Standard	DS1300-3	DS1500-3	DS1800-3	DS2000-3	UFE200096548PJ	DS2900-3
5 V Standby						
Reverse Air						DS2900-3-001
Fan Off with inhibit						
Disable External Fan Drive						
Positronic Input Connector						

DIN Rail (ADN)

60-960 Watts

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 (PM)
- 3 year warranty



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	1Ø or 3Ø on 5, 10 & 20 A models 30 A and 40 A models are 3Ø only

Output

Nominal voltage	24 V (22.5-28.5 Vdc 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	24.5 V ± 1%
Ripple	< 50mVpp
Power back immunity	> 35 V
Parallel operation	
ADN20-24-1PM	Switch selectable
ADN40-24-3PM	Active single wire parallel
All others	Jumper selectable via front panel
Overvoltage protection	> 30.5 < 33 Vdc

Power	Voltage	Current	Size L x W x H (mm)	Weight	Model Number
60 W	85-264 Vac	2.5 A*	4.88" x 1.97" x 4.55" (124 x 50 x 116)	1.6 lbs. (725g)	ADN2.5-24-1PM
100 W	85-132/176-264 Vac	3.8 A*	2.95" x 2.85" x 3.80" (75 x 72.4 x 96.5)	2.4 lbs. (1055g)	ADN4-24-1PP
	85-132/176-264 Vac	4.0 A	4.88" x 2.56" x 4.55" (124 x 65 x 116)	2.4 lbs. (1055g)	ADN4-24-1PM
120 W	85-132/176-264 Vac	5 A	4.88" x 2.56" x 4.55" (124 x 65 x 116)	2.4 lbs. (1055g)	ADN5-24-1PM
	380 - 480 Vac	5 A	4.88" x 2.91" x 4.55" (124 x 73 x 116)	2.4 lbs. (1055g)	ADN5-24-3PM
240 W	85-132/176-264 Vac	10 A	4.88" x 3.26" x 4.55" (124 x 82.8 x 116)	3.3 lbs. (1480g)	ADN10-24-1PM
	380-480 Vac	10 A	4.88" x 6.88" x 4.66" (124 x 174.8 x 118.4)	2.16 lbs. (980g)	ADN10-24-3PM
480 W	85-132/176-264 Vac	20 A	4.88" x 3.50" x 4.55" (124 x 89 x 116)	3.4 lbs. (1520g)	ADN20-24-1PM
	380-480 Vac	20 A	4.88" x 6.88" x 4.55" (124 x 174.8 x 116)	3.97 lbs. (1800g)	ADN20-24-3PM
720 W	380-480 Vac	30 A	4.88" x 9.72" x 4.55" (124 x 247 x 116)	4.0 lbs. (2000g)	ADN30-24-3PM
960 W	380-480 Vac	40 A	4.88" x 11.10" x 4.55" (124 x 282 x 116)	6.6 lbs. (3300g)	ADN40-24-3PM

*NFC Class 2 approval

MicroTCA

MTC600 Series

600 Watts

Special Features

- 600 W output power
- 16 Channels of
 - 12 V @ 7.6 A max
 - 3.3 V @ 150 mA max
- Supports:
 - 12x AMC's
 - 2x MCH's
 - 2x CU's
- Supports N+1 output redundancy, N≤3
- Supports 1+1 input redundancy



μTCA™

Compliance

- PICMG MicroTCA.0 (Revision 1.0)
- PICMG HPM.1 Firmware Upgrade (Revision 1.0)

Electrical Specifications

Input Single Phase

-48 Vdc Models

Input range (operating)	-39.5 to -72 Vdc	Supports -48 V and -60 V battery plants
Input range (non-operating)	0 to -39.5 Vdc -72 to -75 Vdc	Power Module may or may not operate in part of this range, but will not be damaged
Reverse polarity protection	Included	Protected against reverse polarity over magnitude of specified input range

AC Models

Input range (operating)	90 to 264 Vac	Supports typical worldwide single-phase inputs
Input range (non-operating)	0 to 90 Vac 264 to 282 Vac	Power Module may or may not be operating in part of this range, but will not be damaged
Power factor	0.99 typical	Meets EN61000-3-2

Output - All Models

12 V Outputs (Payload Power)

Setpoint	12.6 Vdc typical	Configured as Primary PM Configured as Redundant PM
Total regulation range	12.25 to 12.95 Vdc 11.60 to 12.00 Vdc	Configured as Primary PM Configured as Redundant PM
Rated load	600 W maximum 80 W / 7.6 A maximum	Per power module, input voltage Per load channel
Minimum load	No load	No loss of regulation ≥ 110 Vrms
Output rise time (per channel)	25 ms maximum	With 1600 μF on output under test
Output noise (PARD)	75 mV maximum 100 mV maximum	0 to 30 MHz 0 to 100 MHz Measured with a 0.1 μF ceramic and 10 μF tantalum capacitor on any output and oscilloscope bandwidth set for 200 MHz

Electrical Specifications

Output - All Models (continued)

3.3 V Outputs (Management Power)

Setpoint	3.3 Vdc typical	
Total regulation range	3.16 to 3.63 Vdc	
Rated load	8 W maximum	Per power module
	0.5 W / 150 mA maximum	Per load channel
Minimum load	No load	No loss of regulation ≥ 110 Vrms
Output rise time (per channel)	25 ms maximum	With 150 μ F on output under test
Output noise (PARD)	50 mV maximum	0 to 30 MHz
	75 mV maximum	0 to 100 MHz
		Measured with a 0.1 μ F ceramic and 10 μ F tantalum capacitor on any output
Transient response	3% maximum deviation 2 ms recovery time	37.5 mA loadstep @ 1 A / μ s referenced to load current and setpoint at onset of transient. Recovery time to within 1% of setpoint at onset of transient

Temperature and Altitude Derating

Condition	Temperature
Storage non-operating	-45 °C to -70 °C
Cold start	-20 °C to -5 °C
Normal operating	-5 °C to 45 °C
Short term operating	45 °C to -70 °C
Category	Specifications
Conducted emissions	EN 55022 Class A GR-1089-CORE
Radiated emissions	EN 55022 Class A
Electrostatic discharge (ESD)	EN 61000-4-2
Immunity to radiated fields	EN 61000-4-3
Electrical fast transients (burst)	EN 61000-4-4
Surge immunity	EN 61000-4-5
Immunity to conducted noise	EN 61000-4-6

Safety

UL, cUL	UL60950-1
CSA	60950-1
VDE	60950-1

Ordering Information

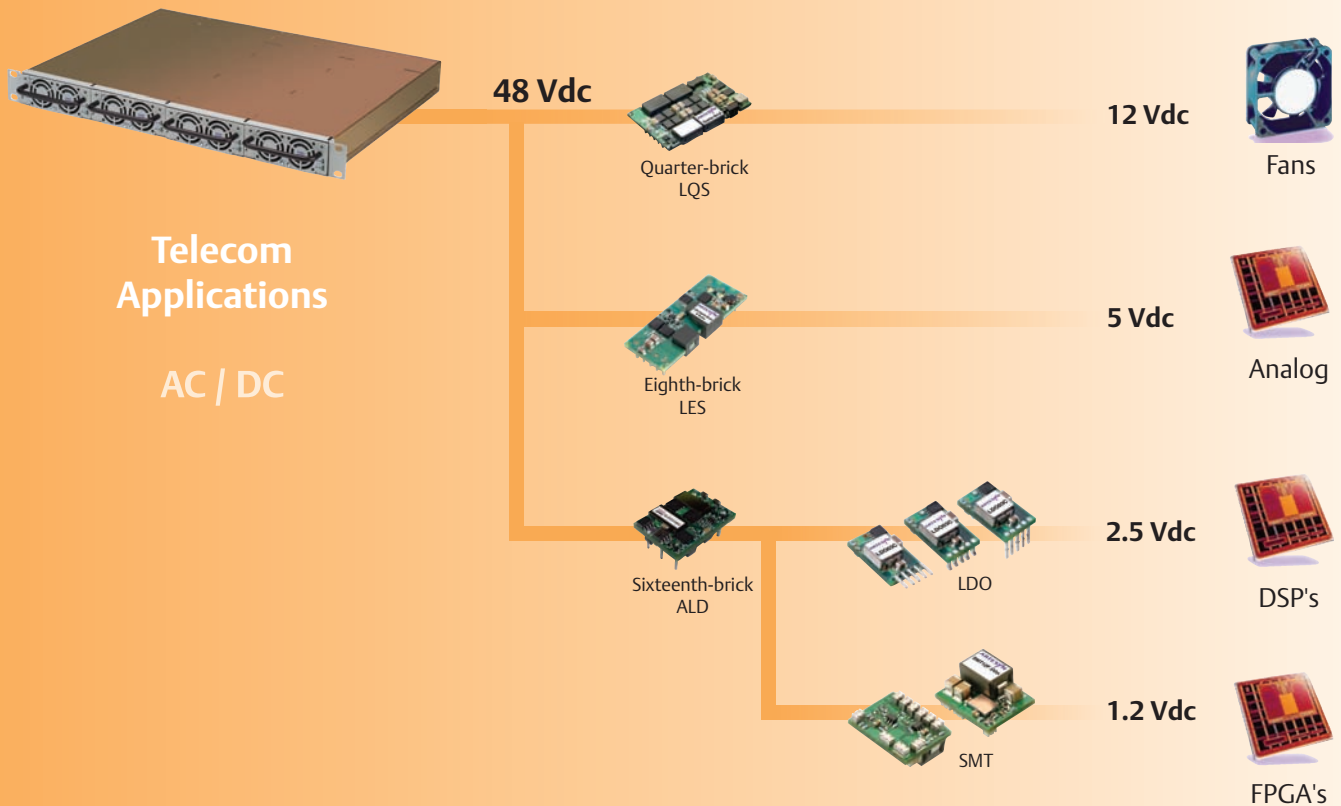
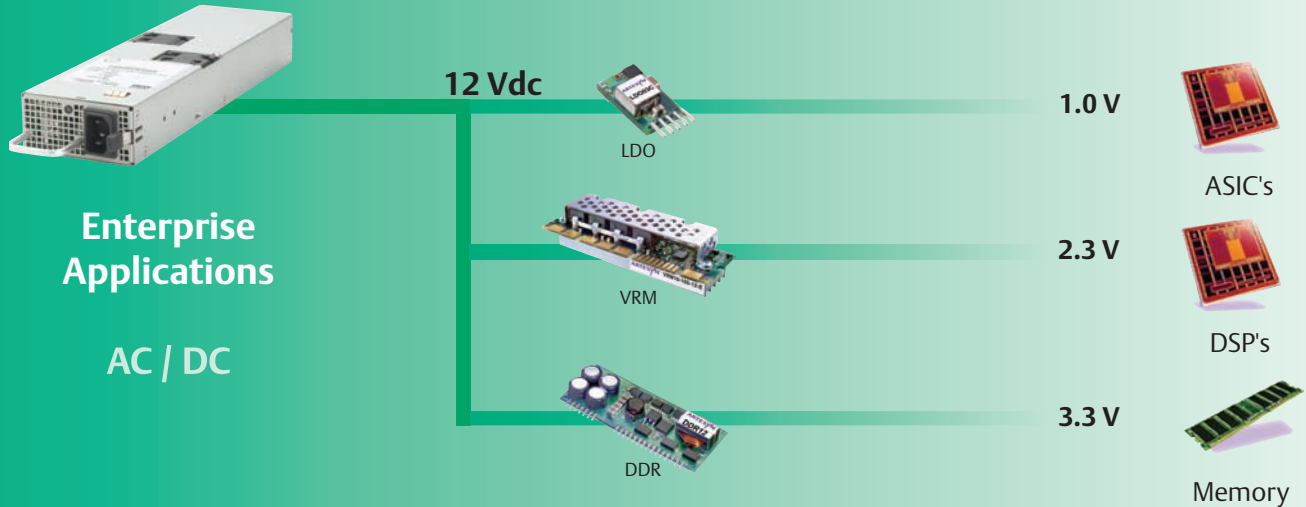
	Power Level	Input Voltage	Redundant	Channel Count	Width	Height	Reserved	
MTC	ppp	vv	rr	nn	w	h	xx	J
	600 = 600 W	48 = -48 Vdc AC = 90 - 264 Vac	RR = Redundant input and redundant output NR = Non-redundant input and redundant output	16 = 16 ch	S = Single width	9 = 9 HP 1 = 12 HP	For modified standards	

DC-DC Converters

Distributed Power Architecture

Emerson Network Power understands the needs and nuances of developing power systems using a 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, **Emerson Network Power is the source for today's power systems.**



Advanced Telecommunication Computing Architecture (ATCA)

AdvancedTCA®


ATC210

Special Features

- Fully integrated input power module and intermediate bus converter solution for high density ATCA applications
- OR'ing for A/B Dual 48 Vdc power feeds
- Hot swap capability with inrush protection
- EMI filtering
- Independent 50 V clamp output for charging external hold up capacitors
- 6 W of 3.3 Vdc management supply
- 210 W of 12 Vdc output
- Hardware alarms via opto-isolators for loss of A or B feeds
- I²C serial bus interface for monitoring and reporting
- Programmable alarm thresholds via I²C
- International safety standards approvals-UL, CSA, TÜV and CB report

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
12.0/3.3V	ATCA Open-frame				
	17.5/1.8	-48 V (-36 to -72 V)	2.32" x 1.81" x 0.83" (58.93 x 45.97 x 21.08)	89%	ATC210-48D12-03J

Note:

ATCA and the ATCA logo are trademarks of the PCI Industrial Computers Manufacturers Group.

ATCA Blades with Real Estate Constraints

A composite image showing a large, detailed 3D CAD model of an ATCA blade on the left, labeled 'Single Board Computer'. On the right is a 3D CAD model of an 'AMC Carrier Blade'. In the foreground, there are two photographs of the ATC210 power module: one showing the top side with the 'ARTESYN ATCA Bus Converter' and another showing the bottom side with various components and connectors.

Single Board Computer

AMC Carrier Blade

The ATC210 provides board designers with an easy to use fully-integrated power module for space constrained blades and AMCs.

The ATC210 is a fully-integrated module that is more than just a power converter. It also provides power interface and power management functionality. The power interface functions include OR'ing, filtering, inrush control and auxiliary 6 W 3.3 Vdc output, while power

management functionality is facilitated by both I²C serial bus and direct hardware alarms for loss of A or B -48 Vdc input feeds or open fuses. The ATC210 provides ATCA board designers with a compact and optimized solution for space constrained blades and AMCs.

Sixteenth-Brick



Special Features

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

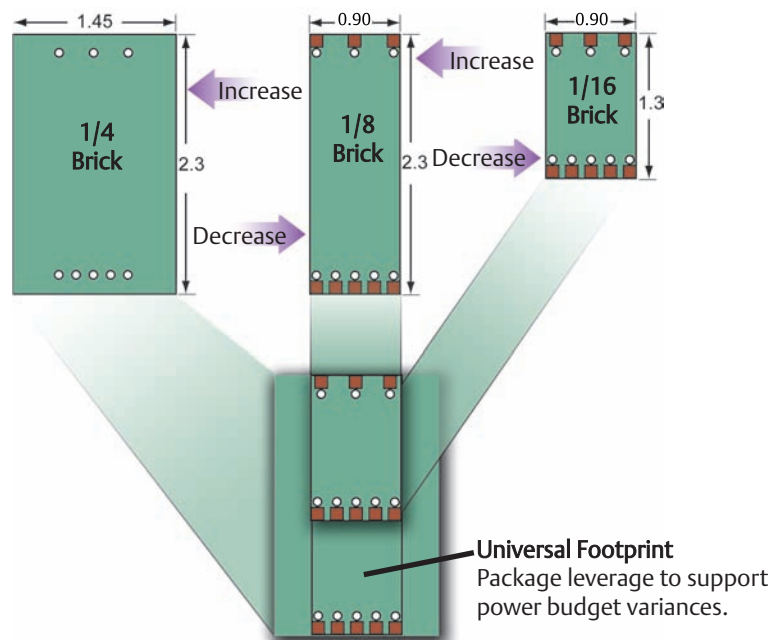
Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
1.2 V	Open-frame				
	25 A	48 V (36-75 V)	1.3 x 0.9" x 0.35" (33 x 22.86 x 8.89)	84%	ALD25K48N-L
1.5 V	Open-frame				
	25 A	48 V (36-75 V)	1.3" x 0.9" x 0.35" (33 x 22.86 x 8.89)	85%	ALD25M48N-L
1.8 V	Open-frame				
	25 A	48 V (36-75 V)	1.3" x 0.9" x 0.35" (33 x 22.86 x 8.89)	88%	ALD25Y48N-L
2.5 V	Open-frame				
	20 A	48 V (36-75 V)	1.3" x 0.9" x 0.35" (33 x 22.86 x 8.89)	89%	ALD20G48N-L
3.3 V	Open-frame				
	18 A	48 V (36-75 V)	1.3" x 0.9" x 0.35" (33 x 22.86 x 8.89)	90%	ALD18F48N-L
5 V	Open-frame				
	12 A	48 V (36-75 V)	1.3" x 0.9" x 0.35" (33 x 22.86 x 8.89)	91%	ALD12 A48N-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



Eighth-Brick



AEO40Y48



LES A-Series



LES B-Series

Special Features

- Industry leading: eighth-brick standard package and feature-sets
- Scalable output power offering: Low power 80 W series or up to 120 W high power series
- Mechanical options for optimum mounting flexibility: Open-frame (ALO or LES) or baseplate (AEO) construction; Through-hole (default) or surface mount (suffix "-S") termination; 5 mm (default) or 3.7mm through-hole pin length option
- Meets basic insulation
- Power densities as high as 181 W per cubic inch
- Wide-operating temperature range

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
1.0 V	Open-frame				
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	85%	LES25B48-1V0REJ
1.2 V	Open-frame				
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	86%	LES25B48-1V2REJ
	50 A	48 V (36-75 V)	2.3" x 0.9" x 0.34" (58.42 x 22.86 x 8.64)	86%	LES50A48-1V2REJ
	Baseplate				
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	85%	AEO25K48N-L
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	86%	AEO40K48N-L
1.5 V	Open-frame				
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	88%	LES25B48-1V5REJ
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	88%	ALO40M48N-L
	Baseplate				
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	86%	AEO25M48N-L
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	88%	AEO40M48N-L
1.8 V	Open-frame				
	20 A	24 V (18-36 V)	2.3" x 0.9" x 0.34" (58.42 x 22.86 x 8.64)	91%	LES20A24-1V8REJ
	25 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	89%	LES25B48-1V8REJ
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	90%	ALO40Y48N-L
	Baseplate				
		25 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	87%
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	90%	AEO40Y48N-L
2.5 V	Open-frame				
	22 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42" x 22.86 x 9.14)	91%	LES22B48-2V5REJ
	40 A	48 V (36-75 V)	2.3" x 0.9" x 0.34" (58.42" x 22.86 x 8.64)	91%	LES40 A48-2V5REJ
	Baseplate				
	20 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	90%	AEO20G48N-L
	35 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	90%	AEO35G48N-L
3.3 V	Open-frame				
	20 A	24 V (18-36 V)	2.3" x 0.9" x 0.34" (58.42 x 22.86 x 8.64)	90%	LES20A24-3V3REJ
	20 A	24V/48V(19-60V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	91%	ALO20F36N-L
	20 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	91%	LES20B48-3V3REJ
	30 A	48 V (36-75 V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	91%	ALO30F48N-L
	Baseplate				
		20 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	91%
	30 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	91%	AEO30F48N-L

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
5 V	Open-frame				
	13 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	92%	LES13B48-5V0REJ
	20 A	48 V (36-75 V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	93%	ALO20A48N-L
	Baseplate				
	12 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	93%	AEO12A48N-L
	20 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	92%	AEO20A48N-L
12 V	Open-frame				
	6.7 A	48 V (36-75 V)	2.3" x 0.9" x 0.36" (58.42 x 22.86 x 9.14)	93%	LES06B48-12V0REJ
	10 A	48 V (36-75 V)	2.3" x 0.9" x 0.32" (58.42 x 22.86 x 8.13)	92%	ALO10B48N-L
	Baseplate				
	4 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	93%	AEO04B48N-L
	10 A	48 V (36-75 V)	2.3" x 0.9" x 0.4" (58.42 x 22.86 x 10.16)	92%	AEO10B48N-L

Quarter-Brick



Special Features

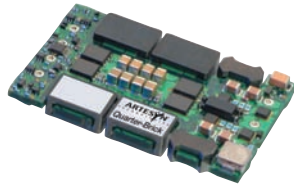
- Single output quarter-brick, up to 100 A
- Wide operating temperature range
- Rich feature sets: UVLO, enable, on/off, OCP, OVP, OTP, differential remote sense, output trim
- Meets basic insulation
- Exceptional dynamic response and reactive loading capability
- Monotonic start-up characteristic
- Open and baseplated versions

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
1.2 V	Open-frame				
	50 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	89%	LQS50A48-1V2REJ
	100 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	86%	LQS100A48-1V2REJ
1.5 V	Open-frame				
	50 A	24 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	89%	LQS50A48-1V5REJ
	80 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	89%	LQS80A48-1V5REJ
	100 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	89%	LQS100A48-1V5REJ
1.8 V	Open-frame				
	30 A	24 V (18-36 V)	2.3" x 1.45" x 0.34" (57.42 x 36.83 x 8.64)	91%	LQS30A24-1V8REJ
	50 A	48 V (36 - 75 V)	2.3" x 1.45" x 0.34" (57.42 x 36.83 x 8.64)	90%	LQS50A48-1V8REJ
	80 A	48 V (36 - 75 V)	2.3" x 1.45" x 0.34" (57.42 x 36.83 x 8.64)	90%	LQS80A48-1V8REJ
	100 A	48 V (36 - 75 V)	2.3" x 1.45" x 0.34" (57.42 x 36.83 x 8.64)	90%	LQS100A48-1V8REJ
	Baseplate				
	75 A	48 V (36-75 V)	2.3" x 1.48" x 0.44" (58.42 x 37.59 x 11.18)	89%	AEQ75Y48N-3L
	2.5 V	Open-frame			
50 A		48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	90%	LQS50A48-2V5REJ
80 A		48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	91%	LQS80A48-2V5REJ
3.3 V	Open-frame				
	30 A	24 V (18-36 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	90%	LQS30A24-3V3REJ
	50 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	91%	LQS50A48-3V3REJ
	60 A	48 V (36-75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	91%	LQS60A48-3V3REJ
5 V	Open-frame				
40 A	48 V (36 - 75 V)	2.3" x 1.45" x 0.34" (58.42 x 36.83 x 8.64)	92%	LQS40A48-5V0REJ	
12 V	Open-frame				
	20 A	48 V (36 - 75 V)	2.3" x 1.45" x 0.36" (58.42 x 36.83 x 9.14)	93%	ALQ20B48N-L
	Baseplate				
20 A	48 V (36-75 V)	2.3" x 1.45" x 0.42" (58.42 x 36.83 x 10.67)	93%	AEQ20B48N-L	

Quarter Brick Dual



ALQ15GM48N



LQD25

Special Features

- Drop-in replacement for several widely used dual output quarter-bricks
- Independent control loop eliminates cross regulation
- Tightly regulated individual output channels
- Clean, fast transient load response
- Open-frame construction

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
2.5 V / 1.5 V	Open-frame				
	15/15 A	48 V (36-75 V)	2.3 x 1.48" x 0.5" (58.42 x 37.59 x 12.7)	84%	ALQ15GM48N-L
3.3 V / 1.8 V	Open-frame				
	15/15 A	48 V (36-75 V)	2.3 x 1.48" x 0.5" (58.42 x 37.59 x 12.7)	87%	ALQ15FY48N-L
3.3 V / 2.5 V	Open-frame				
	15/15 A	48 V (36-75 V)	2.3 x 1.48" x 0.5" (58.42 x 37.59 x 12.7)	88%	ALQ15FG48N-L
	Baseplate				
	12/16 A	48 V (36-75 V)	2.3" x 1.50" x 0.5" (58.42 x 38.10 x 12.7)	91%	EXQ60-48D3V3-2V5-RJ
5.0 V / 3.3 V	Open-frame				
	10/15 A	48 V (36-75 V)	2.3" x 1.45" x 0.3" (58.42 x 36.83 x 7.62)	91%	LQD25 A48-5V03V3REJ
	Baseplate				
	12/15 A	48 V (36-75 V)	2.3" x 1.5" x 0.5" (58.42 x 38.10 x 12.7)	92%	EXQ60-48D05-3V3-RJ

Half Brick



EXB250



AEH80

Special Features

- Industry standard half-brick available up to 80 A
- 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
- Wide operating temperature range

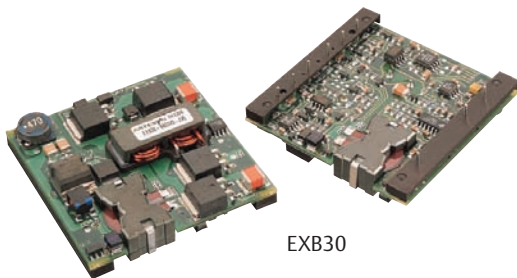
Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number	
1.2 V	Open-frame					
	60 A	48 V (36-75 V)	2.4" x 2.3" x 0.42" (60.96 x 58.42 x 10.67)	86%	ALH60K48N-L	
	80 A	48 V (36-75 V)	2.4" x 2.3" x 0.42" (60.96 x 58.42 x 10.67)	83%	ALH80K48N-3L	
	Baseplate					
	60 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	85%	EXB250-48S1V2-RJ	
	80 A	48 V (36-75 V)	2.4" x 2.3" x 0.5" (60.96 x 58.42 x 12.7)	83%	AEH80K48N-3L	
1.5 V	Open-frame					
	80 A	48 V (36-75 V)	2.3" x 2.4" x 0.4" (58.42 x 60.96 x 10.16)	86%	ALH80M48N-3L	
	Baseplate					
	60 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.89 x 57.91 x 12.7)	86%	EXB250-48S1V5-RJ	
1.8 V	Open-frame					
	80 A	48 V (36-75 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	86%	AEH80M48N-3L	
	Baseplate					
	60 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	87%	EXB250-48S1V8-RJ	
	80 A	48 V (36-75 V)	2.4" x 2.3" x 0.5" (60.96 x 58.42 x 12.7)	87%	AEH80Y48N-3L	
	2.0 V	Open-frame				
8 A		48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	86%	EXB30-48S2V0J	
Baseplate						
60 A		48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	88%	EXB250-48S2V5-RJ	
2.5 V		Open-frame				
		60 A	48 V (36-75 V)	2.4" x 2.3" x 0.42" (60.96 x 58.42 x 10.67)	90%	ALH60G48N-L
	Baseplate					
	60 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	88%	EXB250-48S2V5-RJ	
	3.3 V	Open-frame				
		8 A	48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	90%	EXB30-48S3V3J
10 A		48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	90%	EXB50-48S3V3J	
30 A		48 V (36-75 V)	2.4" x 2.28" x 0.39" (60.96 x 57.91 x 9.91)	91%	EXB100-48S3V3-RJ	
60 A		48 V (36-75 V)	2.4" x 2.3" x 0.42" (60.96 x 58.42 x 10.67)	91%	ALH60F48N-L	

Industry Standard Isolated - Half-Brick Single and Half-Brick Dual

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
3.3 V	Baseplate				
	30 A	24 V (18-36 V)	2.4" x 2.3" x 0.5" (60.96 x 57.91 x 12.7)	77%	BXB150-24S3V3FLTJ
	50 A	48 V (33-75 V)	2.4" x 2.3" x 0.5" (60.96 x 57.91 x 12.7)	90%	EXB250-48S3V3-RJ
	60 A	48 V (36-75 V)	2.4" x 2.3" x 0.5" (60.96 x 58.42 x 12.7)	91%	AEH60F48N-L
5 V	Open-frame				
	10 A	48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	91%	EXB50-48S05-RJ
	20 A	48 V (36-75 V)	2.4" x 2.28" x 0.39" (60.96 x 57.91 x 9.91)	92%	EXB100-48S05-RJ
	Baseplate				
	33 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	92%	EXB250-48S05-RJ
12 V	Open-frame				
	2.5 A	48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	90%	EXB30-48S12J
	4.2 A	48 V (36-75 V)	2.4" x 2.28" x 0.43" (60.96 x 57.91 x 10.92)	90%	EXB50-48S12J
	Baseplate				
	8.33 A	24 V (18-36 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	85%	BXB100-24S12FLTJ
	13.75 A	48 V (33-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	92%	EXB250-48S12-RJ
	25 A	48 V (36-75 V)	2.4" x 2.30" x 0.5" (60.96 x 58.42 x 12.7)	94%	AEH25B48N-L
	29.17 A	48 V (36-75 V)	2.4" x 2.30" x 0.5" (60.96 x 58.42 x 12.7)	94%	AEH30B48N-L
15 V	Baseplate				
	8.33 A	24 V (18-36 V)	2.40" x 2.28" x 0.50" (60.96 x 57.91 x 12.70)	83%	BXB50-24S15FLTJ
52 V	Baseplate				
	7.55 A	48 V (38-60 V)	2.40" x 2.28" x 0.50" (60.96 x 57.91 x 12.70)	93%	AEH08U48N-L

Industry Standard Isolated - Half-Brick Dual

Half Brick Dual



	Current	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
1.8 - 3.3 V	Open-frame				
	8.5/8.5 A	48 V (36-75 V)	2.4" x 2.28" x 0.39" (60.96 x 57.91 x 9.91)	86%	EXB50-48D3V3-1V8J
3.3/5 V	Open-frame				
	6/6 A	24 V (18-36 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.7)	87%	EXB30-24D05-3V3J
	6/6 A	48 V (36-75 V)	2.4" x 2.28" x 0.5" (60.96 x 57.91 x 12.)	88%	EXB30-48D05-3V3J
	7.5/7.5 A	48 V (36-75 V)	2.4" x 2.28" x 0.39" (60.96 x 57.91 x 9.91)	89%	EXB50-48D05-3V3-RJ

RF Power Bricks



RFF700



RFB300

Special Features

- Specialized high power bricks for RF applications such as base station power amplifiers
- Offered in 24 V and 48 V input voltages
- Wide output voltage adjustability
- -40°C to 100°C baseplate temperature with no derating at rated power

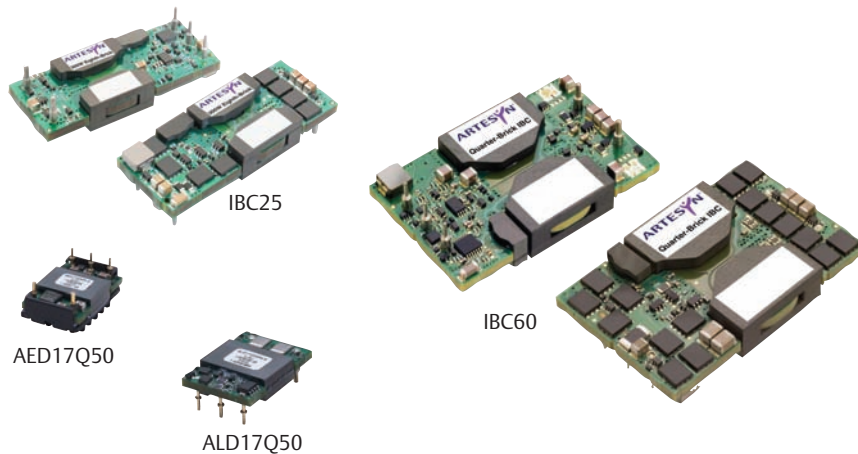
Half-Brick

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
7.2 - 13.2 V	Baseplate				
	25 A	24 V (18-36 V)	2.4" x 2.27" x 0.5" (60.96 x 57.66 x 12.7)	86%	RFB300-24S12-R5Y
	29.2 A	48 V (36-75 V)	2.4" x 2.27" x 0.5" (60.96 x 57.66 x 12.7)	86%	RFB350-48S12-R5Y
16.8 - 29.4 V	Baseplate				
	11 A	24 V (18-36 V)	2.4" x 2.27" x 0.5" (60.96 x 57.66 x 12.7)	90%	RFB300-24S28-R5Y
	11 A	48 V (36-75 V)	2.4" x 2.27" x 0.5" (60.96 x 57.66 x 12.7)	91%	RFB300-48S28-R5Y
	12.5 A	48 V (36-75 V)	2.4" x 2.27" x 0.5" (60.96 x 57.66 x 12.7)	91%	RFB350-48S28-R5Y

Full-Brick

Vout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
16.8 - 29.4 V	Baseplate				
	17.9 A	24 V (18-36 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	RFF500-24S28-5Y
	17.9 A	48 V (36-75 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	91%	RFF500-48S28-5Y
	21.4 A	24 V (18-36 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	RFF600-24S28-5Y
	21.4 A	48 V (36-75 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	91%	RFF600-48S28-5Y
	25 A	48 V (36-75 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	91%	RFF700-48S28-5Y

Bus Converters



Special Features

- Industry standard footprints
- Wide-operating temperature range
-40°C to 100°C case (baseplate)
-40°C to 85°C ambient (open-frame)
- Rich feature sets: overvoltage, over temperature protection, on/off enable
- Meets basic insulation
- Wide or narrow input voltage range, open loop or semi-regulated output for telecom and enterprise applications

Sixteenth-Brick

	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number	
9.6 V	Open-frame				
	17 A	48 V (38 - 55 V)	1.3" x 0.9" x 0.35" (33.02 x 22.86 x 8.89)	96%	ALD17Q50N-L
	Baseplate				
	17 A	48 V (38 - 55 V)	1.4" x 0.9" x 0.54" (35.56 x 22.86 x 13.72)	96%	AED17Q50N-L

Eighth-Brick

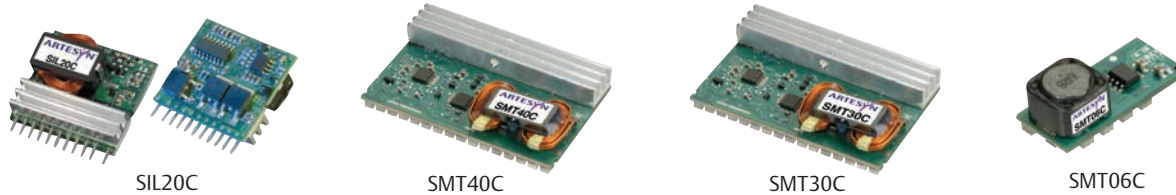
	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number	
9.6 V	Open-frame				
	32 A	48 V (38 - 55 V)	2.3" x 0.9" x 0.48" (58.42 x 22.86 x 12.19)	97%	IBC32AEN4896-REJ
12 V	Open-frame				
	17 A	48 V (36-75 V)	2.3" x 0.9" x 0.45" (58.42 x 22.86 x 11.43)	94%	IBC17AEW4812-REJ
	20 A	48 V (42-53 V)	2.3" x 0.9" x 0.45" (58.42 x 22.86 x 11.43)	95%	IBC20AES4812-REJ
	25 A	48 V (42-53 V)	2.3" x 0.9" x 0.45" (58.42 x 22.86 x 11.43)	96%	IBC25AET4812-REJ

Quarter-Brick

	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number	
9.6 V	Open-frame				
	60 A	48 V (38-55 V)	2.3" x 1.45" x 0.48" (58.42 x 36.83 x 12.19)	97%	IBC60AQN4896-REJ
12 V	Open-frame				
	28 A	48 V (36-75 V)	2.3" x 1.45" x 0.45" (58.42 x 36.83 x 11.43)	95%	IBC28AQW4812-REJ
	30 A	48 V (42-53 V)	2.3" x 1.45" x 0.45" (58.42 x 36.83 x 11.43)	95%	IBC30AQS4812-REJ
	37.5 A	48 V (42-53 V)	2.3" x 1.45" x 0.45" (58.42 x 36.83 x 11.43)	96%	IBC38AQT4812-REJ
	42 A	48 V (36-55 V)	2.3" x 1.48" x 0.45" (58.42 x 36.59 x 11.43)	97%	ALQ42B50N-L
	Baseplate				
	42 A	48 V (36-55 V)	2.3" x 1.48" x 0.52" (58.42 x 36.59 x 13.21)	97%	AEQ42B50N-L

C-Class - Economy

The 1st generation C-Class non-isolated dc - dc converters are designed to provide good efficiency and performance.



Special Features

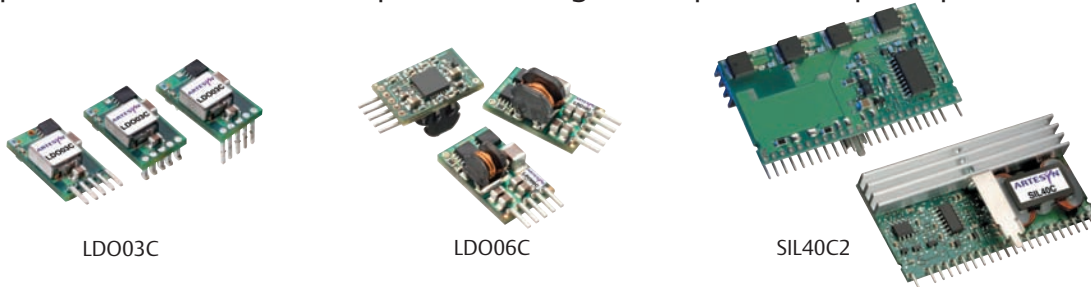
- Input voltage ranges: 4.5-5.5 V or 10.2-13.8 V
- Wide output voltage trim/adjustability: 0.9 to 5 Vdc
- Output current: 6 A to 40 A
- High efficiency up to 92%
- Remote on/off
- Power good
- Parallel operation/current share (SIL30C and SIL40C)
- Remote sense (SIL30C and SIL40C)
- Excellent transient response
- Operating temperature range for SIL20C2 and SIL40C2: 0°C to 70°C
- Protection: overcurrent/short-circuit
- Cost optimized design – industry leading value
- Compact footprint, vertical, horizontal and horizontal SMT options
- International safety standard approvals – UL, CSA, TÜV & CB Report

General-Purpose C-Class Non-isolated DC-DC Converters

Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
Single-In-Line, Through-hole Mounting					
6 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	89%	1.2" x 0.45" x 0.61" (30.48 x 11.43 x 15.49)	SIL06C-05SADJ-VJ
6 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 0.45" x 0.61" (30.48 x 11.43 x 15.49)	SIL06C-12SADJ-VJ
15 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	89%	1.2" x 0.4" x 1.1" (30.48 x 10.16 x 27.94)	SIL15C-05SADJ-VJ
15 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 0.4" x 1.1" (30.48 x 10.16 x 27.94)	SIL15C-12SADJ-VJ
20 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	87%	1.2" x 0.45" x 1.1" (30.48 x 10.16 x 27.94)	SIL20C-05SADJ-VJ
20 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 0.45" x 1.1" (30.48 x 10.16 x 27.94)	SIL20C-12SADJ-VJ
25 A	10.2 to 13.8 Vdc	-4.5 to -5.5 V	90%	2.4" x 0.52" x 1.25" (60.96 x 13.21" x 31.75)	SIL25C-12SNEG-VJ
30 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	2.4" x 0.52" x 1.25" (60.96 x 13.21" x 31.75)	SIL30C-12SADJ-VJ
40 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	92%	2.4" x 0.52" x 1.25" (60.96 x 13.21" x 31.75)	SIL40C-12SADJ-VJ
Surface-Mounting					
6 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	89%	1.2" x 0.53" x 0.47" (30.48 x 13.46 x 11.94)	SMT06C-05SADJJ
6 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 0.53" x 0.47" (30.48 x 13.46 x 11.94)	SMT06C-12SADJJ
15 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	89%	1.2" x 1.1" x 0.46" (30.48 x 27.94 x 11.68)	SMT15C-05SADJJ
15 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 1.1" x 0.46" (30.48 x 27.94 x 11.68)	SMT20C-12SADJJ
20 A	4.5 to 5.5 Vdc	0.9 to 3.3 V	87%	1.2" x 1.14" x 0.46" (30.48 x 28.96 x 11.68)	SMT15C-12SADJJ
20 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	1.2" x 1.14" x 0.46" (30.48 x 28.96 x 11.68)	SMT20C-05SADJJ
30 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	91%	2.28 x 1.45 x 0.43 (57.91" x 36.83 x 10.92)	SMT30C-12SADJJ
40 A	10.2 to 13.8 Vdc	0.9 to 5.0 V	92%	2.28 x 1.45 x 0.43 (57.91" x 36.83 x 10.92)	SMT40C-12SADJJ

C-Class - High Density

The 2nd generation C-Class non-isolated dc-dc converters are designed to provide good efficiency and performance, a smaller footprint, and integrated input and output capacitors.



LDO03C

LDO06C

SIL40C2

Special Features

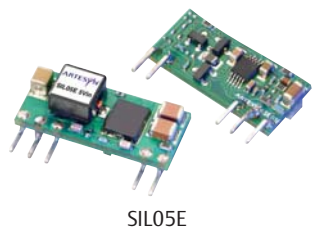
- Wide input voltage ranges: 3 to 13.8 V or 4.5–13.8 V
- Wide output voltage trim/adjustability: 0.59 to 5.1 V
- Output current: 3 A to 40 A
- High efficiency up to 94%
- Remote on/off
- Power good
- Remote sense (Sxx20C2 and Sxx40C2)
- Excellent transient response
- Current sink capability for termination applications
- Operating temperature range for LDO03, LDO06 and LDO10: -40 °C to 70 °C
- Operating temperature range: 0 °C to 70°C
- Protection: over current/short-circuit
- No added input or output capacitors needed for ripple current capability or stability
- Cost optimized design – industry leading value
- Compact footprint, vertical, horizontal and horizontal SMT options
- International safety standard approvals – UL, CSA, TUV & CB Report

General-Purpose C-Class Non-isolated DC-DC Converters

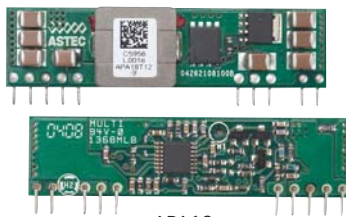
Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
Single-In-Line, Through-hole Mounting					
3 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	90%	0.37 x 0.21" x 0.61" (9.4 x 5.33 x 15.49)	LDO03C-005W05-VJ
6 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	92%	0.41" x 0.37" x 0.65" (10.41 x 9.4 x 16.51)	LDO06C-005W05-VJ
10 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	94%	0.41" x 0.45" x 0.65" (10.41 x 11.43 x 16.51)	LDO10C-005W05-VJ
20 A	4.5 to 13.8 Vdc	0.59 to 5.1 V	93%	1.2" x 0.46" x 0.61" (30.48 x 11.68 x 15.49)	SIL20C2-00SADJ-VJ
40 A	4.5 to 13.8 Vdc	0.6 to 5.0 V	94%	1.2" x 0.43" x 1.1" (30.48 x 10.92 x 27.94)	SIL40C2-00SADJ-VJ
Surface-Mounting					
3 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	90%	0.61" x 0.37" x 0.29" (15.49 x 9.4 x 7.37)	LDO03C-005W05-SJ
6 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	92%	0.65" x 0.41" x 0.44" (16.51 x 10.41 x 11.18)	LDO06C-005W05-SJ
10 A	3.0 to 13.8 Vdc	0.59 to 5.1 V	94%	0.65" x 0.41" x 0.52" (16.51 x 10.41 x 13.21)	LDO10C-005W05-SJ
20 A	4.5 to 13.8 Vdc	0.59 to 5.1 V	93%	1.2" x 0.61" x 0.48" (30.48 x 15.49 x 12.19)	SMT20C2-00SADJJ
40 A	4.5 to 13.8 Vdc	0.6 to 5.0 V	94%	1.2" x 1.1" x 0.44" (30.48 x 27.94 x 11.18)	SMT40C2-00SADJJ

E-Class - Performance

Efficiencies as high as 96% and current densities up to 140 A/in³.



SIL05E



APA18

Special Features

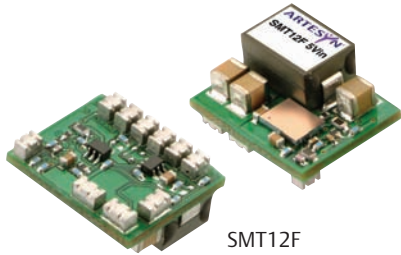
- Input voltage ranges: 3-5.5 V, 4.5-5.5 V, 8-14 V, 10-14 V
- Wide output voltage trim ranges: 0.8 to 3.63 V and 0.75 to 5.5 V
- Output current: 5 to 30 A and 0.8 to 3.63 V
- Remote on/off
- Remote sense
- Industry standard footprint—vertical and horizontal mounting (low profile SMT/SIP—through-hole)
- Operating temperature range: -40°C to 85°C
- Built-in I²C bus interface feature for precision setting of both output voltage and voltage margining product series (SIL15E-12M)
- Protection: overcurrent/short-circuit
- International safety standard approvals – UL, CSA, TÜV & CB Report

General-Purpose E-Class Non-isolated DC-DC Converters

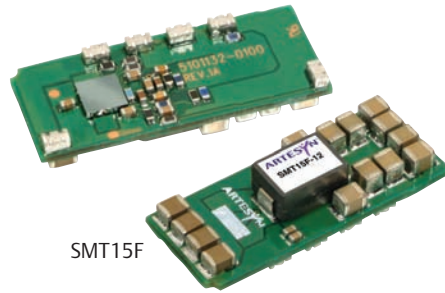
Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
Single-In-Line, Through-hole Mounting					
5 A	3.0 to 5.5 Vdc	0.75 to 3.63 V	94%	0.9" x 0.28" x 0.4" (22.86 x 7.11 x 10.16)	SIL05E-05W3 V3-VJ
10 A	4.5 to 5.5 Vdc	0.8 to 3.63 V	95%	2" x 0.31" x 0.5" (50.8 x 7.87 x 12.7)	SIL10E-05W3 V3-VJ
10 A	10 to 14 Vdc	0.8 to 3.63 V	94%	2" x 0.31" x 0.5" (50.8 x 7.87 x 12.7)	SIL10E-12W3 V3-VJ
15 A	3.0 to 5.5 Vdc	0.8 to 3.63 V	94%	2" x 0.31" x 0.5" (50.8 x 7.87 x 12.7)	SIL15E-05W3 V3-VJ
15 A	10 to 14 Vdc	0.8 to 3.63 V	94%	2" x 0.31" x 0.5" (50.8 x 7.87 x 12.7)	SIL15E-12W3 V3-VJ
18 A	3.0 to 5.5 Vdc	0.75 to 5.5 V	92%	2" x 0.39" x 0.5" (50.8 x 9.91 x 12.7)	APA18T04-9L
18 A	10 to 14 Vdc	0.75 to 5.5 V	92%	2" x 0.39" x 0.5" (50.8 x 9.91 x 12.7)	APA18T12-9L
30 A	8.0 to 14 Vdc	0.8 to 3.63 V	93%	2" x 0.31" x 0.5" (50.8 x 7.87 x 12.7)	SIL30E-12W3 V3-VJ
Surface Mounting					
5 A	3.0 to 5.5 Vdc	0.75 to 3.63 V	94%	0.8" x 0.45" x 0.26" (20.32 x 11.43 x 6.6)	SMT05E-05W3 V3J
5 A	10 to 14 Vdc	0.8 to 3.63 V	91%	0.8" x 0.45" x 0.24" (20.32 x 11.43 x 6.1)	SMT05E-12W3 V3J
10 A	3.0 to 5.5 Vdc	0.8 to 3.63 V	96%	1.3" x 0.53" x 0.32" (33.02 x 13.46 x 8.13)	SMT10E-05W3 V3J
10 A	10 to 14 Vdc	0.8 to 3.63 V	94%	1.3" x 0.53" x 0.32" (33.02 x 13.46 x 8.13)	SMT10E-12W3 V3J
15 A	3.0 to 5.5 Vdc	0.8 to 3.63 V	95%	1.3" x 0.53" x 0.32" (33.02 x 13.46 x 8.13)	SMT15E-05W3 V3J
15 A	10 to 14 Vdc	0.8 to 3.63 V	94%	1.3" x 0.53" x 0.32" (33.02 x 13.46 x 8.13)	SMT15E-12W3 V3J
18 A	3.0 to 5.5 Vdc	0.75 to 5.5 V	92%	1.3" x 0.53" x 0.34" (33.02 x 13.46 x 8.64)	APC18T04-9L
18 A	10 to 14 Vdc	0.75 to 5.5 V	92%	1.3" x 0.53" x 0.34" (33.02 x 13.46 x 8.64)	APC18T12-9L
30 A	8.0 to 14 Vdc	0.8 to 3.63 V	91%	1.3" x 0.53" x 0.32" (33.02 x 13.46 x 8.13)	SMT30E-12W3 V3J

F-Class - Fast Transient Response

Highly integrated non-isolated dc-dc modules, combining transient response up to 300 A/ μ s. Expressly designed to minimize the number of external capacitors needed.



SMT12F



SMT15F

Special Features

- Input voltage ranges: 3–5.5 Vdc, 10.8–13.2 Vdc
- Wide output voltage trim range: 0.9 to 3.3 V (SMT12F)
- Output current: 12 A to 15 A
- High efficiency: 95% @ 5 V in 3.3 Vdc output/full load
- Remote on/off
- Differential remote sense
- Power good
- Separate digital inputs for +5% and –5% output voltage margining
- Industry standard surface-mount footprint (SMT15F)
- Current densities in excess of 72 A/in³
- Operating temperature range: –40°C to 85°C
- Protection: overcurrent/short-circuit (non-latching) and over temperature
- International safety standard approvals – UL, CSA, TÜV & CB Report

General-Purpose F-Class Non-isolated DC-DC Converters

Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
Surface Mounting					
12 A	3 to 5.5 Vdc	0.9 to 3.3 V	95%	0.63" x 0.52" x 0.31" (16 x 13.21 x 7.87)	SMT12F-05W3 V3J
15 A	10.8 to 13.2 Vdc	1.0 V	85%	1.3" x 0.53" x 0.3" (33.02 x 13.46 x 7.62)	SMT15F-12S1 V0J
15 A	10.8 to 13.2 Vdc	1.2 V	86%	1.3" x 0.53" x 0.3" (33.02 x 13.46 x 7.62)	SMT15F-12S1 V2J
15 A	10.8 to 13.2 Vdc	1.5 V	87%	1.3" x 0.53" x 0.3" (33.02 x 13.46 x 7.62)	SMT15F-12S1 V5J
15 A	10.8 to 13.2 Vdc	1.8 V	88%	1.3" x 0.53" x 0.3" (33.02 x 13.46 x 7.62)	SMT15F-12S1 V8J

POLA-DDR/Memory

Choose POLA for memory bus termination modules.



PTH12060Y



PTH12010Y



PTH05050Y

Special Features

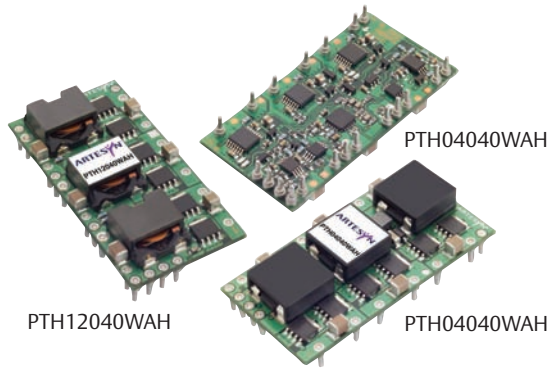
- Input voltage ranges: 2.95 - 3.65 V , 4.5 – 5.5 V , 10.8 – 13.2 V
- Wide VTT output voltage trim / adjustability: 0.55 to 1.8 V
- Output current: 6 A to 15 A
- High efficiency up to 88%
- VTT bus termination output (output the system VREF)
- Current sink capability for termination applications
- DDR and QDR compatible
- Pre-bias start-up capability
- Remote on/off
- Remote sense
- Under-voltage lockout
- POLA compatible
- True multi-sourcing flexibility (form, fit and function)
- Operating temperature range: -40°C to 85°C
- Protection: overcurrent/short-circuit
- International safety standard approvals – UL, CSA, TÜV & CB Report

POLA Non-isolated DDR/QDR Memory Bus Termination Modules

Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
6 A	2.95 to 3.65 Vdc	0.55 to 1.8 V	88%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH03050YAH
6 A	4.5 to 5.5 Vdc	0.55 to 1.8 V	87%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH05050YAH
6 A	10.8 to 13.2 Vdc	0.55 to 1.8 V	84%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH12050YAH
10 A	2.95 to 3.65 Vdc	0.55 to 1.8 V	86%	0.995" x 0.620" x 0.354" (25.27 x 15.75 x 8.99)	PTH03060YAH
10 A	4.5 to 5.5 Vdc	0.55 to 1.8 V	86%	0.995" x 0.620" x 0.354" (25.27 x 15.75 x 8.99)	PTH05060YAH
10 A	10.8 to 13.2 Vdc	0.55 to 1.8 V	83%	0.995" x 0.620" x 0.354" (25.27 x 15.75 x 8.99)	PTH12060YAH
15 A	2.95 to 3.65 Vdc	0.55 to 1.8 V	88%	1.37" x 0.620" x 0.354" (34.80 x 15.75 x 8.99)	PTH03010YAH
15 A	4.5 to 5.5 Vdc	0.55 to 1.8 V	88%	1.37" x 0.620" x 0.354" (34.80" x 15.75 x 8.99)	PTH05010YAH
15 A	10.8 to 13.2 Vdc	0.55 to 1.8 V	85%	1.37" x 0.620" x 0.354" (34.80 x 15.75 x 8.99)	PTH12010YAH

POLA - General Purpose

Choose POLA for multi-sourcing.



Special Features

- Input voltage ranges: 2.95-3.65 V, 4.5-5.5 V, 10.8-13.2 V
- Wide output voltage trim and adjustability: 0.8-5.5 V
- Output current: 6 A-60 A
- High efficiency up to 96%
- Auto-Track™ Sequencing
- Margin up/down controls
- Pre-bias start up capability
- Remote on/off
- Remote sense
- POLA compatible
- True multi-sourcing flexibility (form, fit and function)
- Operating temperature range: -40°C to 85°C
- Protection: overcurrent / short-circuit
- International safety standard approvals – UL, CSA, TÜV & CB Report

Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
6 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	94%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH03050WAH
6 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	95%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH05050WAH
6 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	88%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH12050LAH
6 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	93%	0.87" x 0.495" x 0.335" (22.01 x 12.57 x 8.51)	PTH12050WAH
8 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	93%	0.9" x 0.33" x 0.4" (22.86 x 8.38 x 10.16)	PTV03010WAH
8 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	95%	0.9" x 0.33" x 0.4" (22.86 x 8.38 x 10.16)	PTV05010WAH
8 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	87%	0.9" x 0.33" x 0.4" (22.86 x 8.38 x 10.16)	PTV12010LAH
8 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	92%	0.9" x 0.33" x 0.4" (22.86 x 8.38 x 10.16)	PTV12010WAH
10 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	93%	0.995" x 0.62" x 0.354" (25.27 x 15.75 x 8.99)	PTH03060WAH
10 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	94%	0.995" x 0.62" x 0.354" (25.27 x 15.75 x 8.99)	PTH05060WAH
10 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	88%	0.995" x 0.62" x 0.354" (25.27 x 15.75 x 8.99)	PTH12060LAH
10 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	94%	0.995" x 0.62" x 0.354" (25.27 x 15.75 x 8.99)	PTH12060WAH
12 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	89%	1.370" x 0.62" x 0.354" (34.80 x 15.75 x 8.99)	PTH12010LAH
12 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	94%	1.370" x 0.62" x 0.354" (34.80 x 15.75 x 8.99)	PTH12010WAH
15 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	93%	1.370" x 0.62" x 0.354" (34.80 x 15.75 x 8.99)	PTH03010WAH
15 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	95%	1.370" x 0.62" x 0.354" (34.80 x 15.75 x 8.99)	PTH05010WAH
16 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	87%	1.750" x 0.37" x 0.500" (44.45 x 9.4 x 12.7)	PTV12020LAH
16 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	93%	1.750" x 0.37" x 0.500" (44.45 x 9.4 x 12.7)	PTV12020WAH
18 A	2.95 to 3.6 Vdc	0.8 to 2.5 V	95%	1.750" x 0.37" x 0.500" (44.45 x 9.4 x 12.7)	PTV03020WAH
18 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	94%	1.750" x 0.37" x 0.500" (44.45 x 9.4 x 12.7)	PTV05020WAH
18 A	10.8 to 13.2 Vdc	0.8 to 1.8 V	89%	1.495" x 0.87" x 0.354" (37.97 x 22.01 x 8.99)	PTH12020LAH
18 A	10.8 to 13.2 Vdc	1.2 to 5.5 V	95%	1.495" x 0.87" x 0.354" (37.97 x 22.01 x 8.99)	PTH12020WAH
22 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	95%	1.495" x 0.87" x 0.354" (37.97 x 22.01 x 8.99)	PTH03020WAH
22 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	96%	1.495" x 0.87" x 0.354" (37.97 x 22.01 x 8.99)	PTH05020WAH
26 A	10.2 to 13.8 Vdc	0.8 to 1.8 V	89%	1.37" x 1.12" x 0.354" (34.80 x 28.45 x 8.99)	PTH12030LAH
26 A	10.2 to 13.8 Vdc	1.2 to 5.5 V	95%	1.37" x 1.12" x 0.354" (34.80 x 28.45 x 8.99)	PTH12030WAH
30 A	2.95 to 3.65 Vdc	0.8 to 2.5 V	93%	1.37" x 1.12" x 0.354" (34.80 x 28.45 x 8.99)	PTH03030WAH
30 A	4.5 to 5.5 Vdc	0.8 to 3.6 V	94%	1.37" x 1.12" x 0.354" (34.80 x 28.45 x 8.99)	PTH05030WAH
50 A	8.0 to 14 Vdc	0.8 to 5.5 V	96%	2.045" x 1.045" x 0.357" (51.94 x 26.54 x 9.07)	PTH12040WAH
60 A	2.95 to 5.5 Vdc	0.8 to 3.6 V	96%	2.045" x 1.045" x 0.357" (51.94 x 26.54 x 9.07)	PTH04040WAH

DDR Memory Power Module

Designers' tip:

Check out the POLA memory bus termination models on page 48.



DDR12

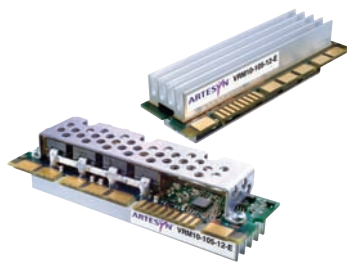
Special Features

- High current dual-output power module for DDR memory
- Input voltage range: 10.8-13.2 V
- Output voltage adjustability: 2.32-2.75 V_{ddq}
- Single Compact Module provides 25 A @ 2.5 V for V_{ddq} supply and 8 A @ 1.25 V for V_{tt} termination
- V_{tt} output has sink capability for logic terminations
- Remote sense (V_{ddq} output only)
- Tracking dual output voltages
- Remote on/off
- Power good (open collector)
- Under voltage lockout
- Protection: overcurrent/short-circuit/overvoltage
- Operating temperature range: 0°C to 80°C
- International safety standard approvals – UL, CSA, TÜV and CB Report

Memory Power Non-isolated DC-DC Converters

Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
25 A & 8 A	10.8 to 13.2 Vdc	2.5 V & 1.25 V	84%	30" x 0.5" x 1.2" (76.20 x 12.7 x 30.48)	DDR12-25D08-AJ

Voltage Regulator Modules (VRM)



VRM10



VRM64

Emerson Network Power closely tracks leading semiconductor manufacturers' (Intel and AMD) roadmaps and offer processor power converters designed specifically to match demands.

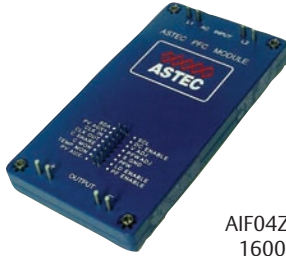
Special Features

- Voltage regulator modules (VRMs) for both Intel and AMD64 microprocessors
- Input voltage ranges: 10.8-13.2 V, 11-12.6 V and 11-13.2 V
- Output currents up to 105 A
- Output voltage adjustability
- 5 Bit and 6 Bit VID inputs
- Allows dynamic VID code changes
- High efficiency up to 87%
- Exceptionally fast transient response in excess of 900 A/ μ s
- Remote on/off
- Differential remote sense
- Low profile to meet 1U applications
- Current sharing - no need for master/slave configurations
- Protection: over current / short circuit/over voltage (with on board fuse)
- International safety standard approvals - VDE

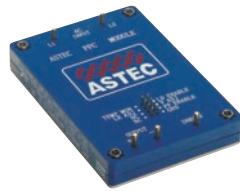
VRM Processor Power Non-isolated DC-DC Converters

VRM Specifications	Output Current	Input Voltage	Output Voltage	Efficiency	Package LxWxH (mm)	Model Number
AMD64	80 A	10.8 to 13.2 Vdc	0.8 to 1.55 V	84%	3.68" x 0.75" x 1.25" (93.47 x 19.05 x 31.75)	VRM64-80-12-UY
VRM10.0, VRM10.1	105 A	11 to 12.6 Vdc	0.8375 to 1.6000 V	84%	3.68" x 1.00" x 1.25" (93.35 x 25.4 x 31.75)	VRM10-105-12-EY
VRM10.0, VRM10.1	80 A	11 to 12.6 Vdc	0.8375 to 1.6000 V	85%	3.19" x 0.77" x 1.24" (81.03 x 19.78 x 31.75)	VRM10-80-12-PY
VRM10.0, VRM10.1	85 A	11 to 12.6 Vdc	0.8375 to 1.6000 V	85%	3.19" x 0.77" x 1.24" (81.03 x 19.78 x 31.75)	VRM10-85-12-UY
VRM9.0, VRM9.1	81 A	11 to 12.6 Vdc	1.1 to 1.85 V	87%	3.80" x 0.82" x 0.83" (96.52 x 20.83 x 21.08)	NXI100-12P1 V8CY
VRM9.1	81 A	11 to 12.6 Vdc	1.1 to 1.85 V	85%	3.80" x 0.57" x 2.30" (96.52 x 14.48 x 58.42)	NXI150-12P1 V8CY
VRM9.0	60 A	11 to 13.2 Vdc	1.1 to 1.85 V	84%	3.80" x 0.57" x 2.30" (96.52 x 14.48 x 58.42)	NXI110-12P1 V8CY

PFC Products



AIF04ZPFC
1600 W



AIT02PFC

Special Features

- 1600 W / 720 W
- Unity power factor
- Universal input and frequency range
- Positive and negative 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 sense
- 95% efficiency
- Fast transient response

Input Voltage	Iout	Iout	Package L x W x H (mm)	Efficiency	Model Number
PFC Module - Baseplate					
380 V	4.2 A	85-264 Vac	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	95%	AIF04ZPFC-01L
380 V	4.2 A	85-264 Vac	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	95%	AIF04ZPFC-02L
393 V	2.08 A	85-264 Vac	3.5" x 2.4" x 0.5" (88.9 x 60.96 x 12.7)	93%	AIT02ZPFC-01NL

High Power 300 Vin



300 V input 250-600 W output

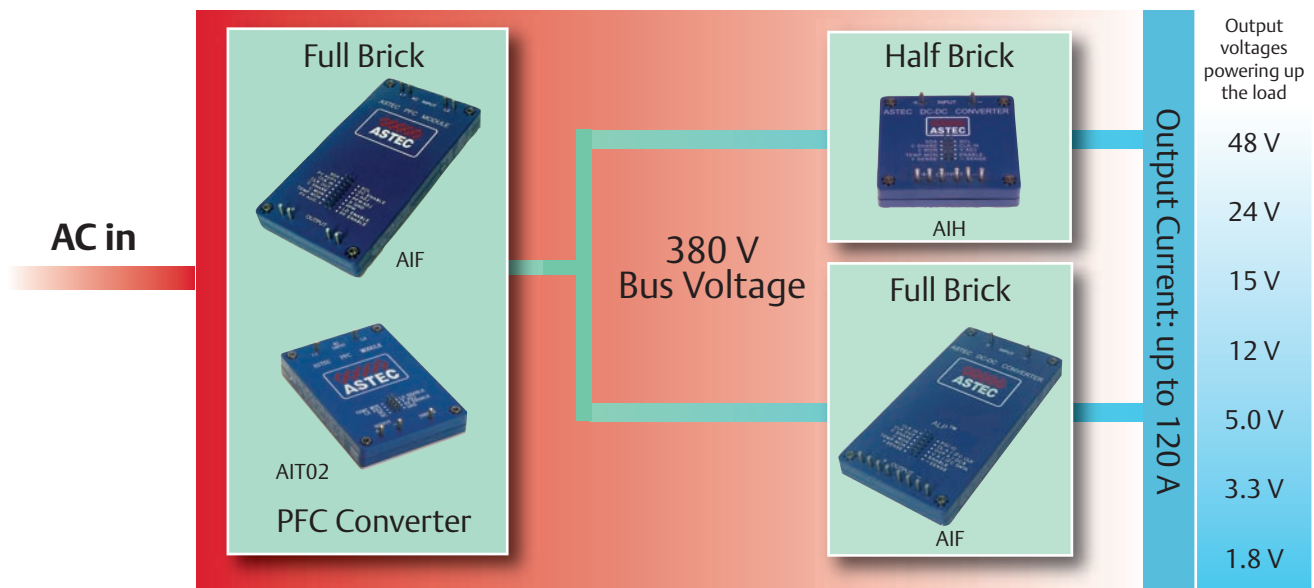
Special Features

- 300 V input (250 V to 420 V PFC-ready)
- 2nd generation product
- Standard thru-hole full and half-bricks
- 250 W (50 A); 600 W (120 A)
- Power density >100 W/in³
- Baseplate construction - 100 °C max
- Embedded controls on secondary side:
 - Temp monitor
 - Current sharing
 - Power good signal
 - Current limit & OVP adjust

Model	Package	Iout	Iout	Input Voltage	Package L x W x H (mm)	Efficiency	Model Number
AIF 300 Vin Full Brick - Baseplate							
		1.80 V	120 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	80%	AIF120Y300-L
		3.3 V	120 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	87%	AIF120F300-L
		5 V	80 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	AIF80 A300-L
		12 V	50 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	AIF50B300-L
		15 V	40 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	AIF40C300-L
		24 V	25 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	90%	AIF25H300-L
		48 V	12 A	300 V (250-420 V)	4.6" x 2.4" x 0.5" (116.84 x 60.96 x 12.7)	91%	AIF12W300-L
AIH 300 Vin Half Brick - Baseplate							
		1.8 V	50 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	80%	AIH50Y300-L
		3.3 V	50 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	85%	AIH50F300-L
		5 V	40 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	88%	AIH40 A300-L
		12 V	20 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	90%	AIH20B300-L
		15 V	16 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	90%	AIH16C300-L
		24 V	10 A	300 V (250-420 V)	2.3" x 2.4" x 0.5" (58.42 x 60.96 x 12.7)	90%	AIH10H300-L

On-board AC to DC Distributed Architecture

- High power and high density AC to DC building blocks for quick-turn and modular power solutions
- Alternative power solutions vs. custom development approach
- No fans and high reliability (1M hours MTBF)
- Suitable for harsh temperature conditions (-20 °C to 100 °C operating temperature)



ASA & AEE Low Power



AEE03 A36-L



ASA01 A36-L

Special Features

- Input voltages 9-36 V, 18-36 V, 18-75 V and 36-75 V
- Single and dual outputs
- Power 6-15 W
- Regulated outputs
- Operating temperature -40° to 71°C (ambient)
- Overcurrent protection
- 1500 Vdc isolation
- CE Mark Safety (not UL certified)

	Input Voltage	Output Voltage	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
6 W	Enclosed					
	9-36 V	12 V @ 0.5 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA00B18-L
	9-36 V	15 V @ 0.4 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00C18-L
	9-36 V	5 V @ 1 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	81%	ASA01 A18-L
	9-36 V	3.3 V @ 1.2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	78%	ASA01F18-L
	9-36 V	5 V @ ±0.5 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	81%	ASA00 AA18-L
	9-36 V	12 V @ ±0.25 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA00BB18-L
	9-36 V	15 V @ ±0.2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00CC18-L
	18-75 V	12 V @ 0.5 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA00B36-L
	18-75 V	15 V @ 0.4 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00C36-L
	18-75 V	5 V @ 1 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	81%	ASA01 A36-L
	18-75 V	3.3 V @ 1.2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	78%	ASA01F36-L
	18-75 V	5 V @ ±0.5 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	81%	ASA00 AA36-L
	18-75 V	12 V @ ±0.25 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA00BB36-L
18-75 V	15 V @ ±0.2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00CC36-L	
10 W	Enclosed					
	18-36 V	12 V @ 0.835 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00B24-L
	18-36 V	5 V @ 2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA02 A24-L
	18-36 V	3.3 V @ 3 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	79%	ASA03F24-L
	18-36 V	2.5 V @ 3 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	77%	ASA03G24-L
	36-75 V	12 V @ 0.835 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	83%	ASA00B48-L
	36-75 V	5 V @ 2 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	82%	ASA02 A48-L
	36-75 V	3.3 V @ 3 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	79%	ASA03F48-L
36-75 V	2.5 V @ 3 A	DIP 1.25" x 0.8" x 0.4" (31.75 x 20.32 x 10.16)	1500 Vdc	87%	ASA03G48-L	
15 W	Enclosed					
	9-36 V	12 V @ 1.25 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE01B18-L
	9-36 V	15 V @ 1 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE01C18-L
	9-36 V	3.3 V @ 4 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	80%	AEE04F18-L
	9-36 V	5 V @ 3 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE03 A18-L
	9-36 V	12 V @ ± 0.625 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	83%	AEE00BB18-L
	9-36 V	15 V @ ± 0.5 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	83%	AEE00CC18-L
	9-36 V	5 V @ ±1.5 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	79%	AEE01 AA18-L
	18-75 V	12 V @ 1.25 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE01B36-L
	18-75 V	15 V @ 1 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE01C36-L
	18-75 V	3.3 V @ 4 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	80%	AEE04F36-L
	18-75 V	5 V @ 3 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	84%	AEE03 A36-L
	18-75 V	12 V @ ±0.625 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	83%	AEE00BB36-L
	18-75 V	15 V @ ± 0.5 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	83%	AEE00CC36-L
	18-75 V	5 V @ ±1.5 A	1" x 2" x 0.44" (25.4 x 50.8 x 11.30)	1500 Vdc	79%	AEE01 AA36-L

BXA Low Power



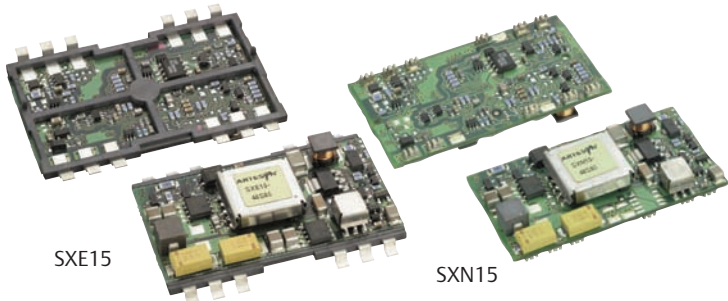
BXA30

Special Features

- Input voltages 9-18 V, 18-75 V, 36-75 V
- Single and dual outputs
- Power 3- 40 W
- Regulated outputs
- Operating temperature -40°C to 105°C (ambient with derating)
- Protection: overcurrent/ short-circuit
- 500 to 1500 Vdc isolation
- Enclosed and baseplate models
- UL, CSA and VDE safety approvals

	Input Voltage	Output Voltage	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
3 W	Enclosed					
	18-36 V	5 V @ 0.5 A	1.25" x 0.8" x 0.5" (31.75 x 20.32 x 12.70)	500 V	76%	BXA3-24S05J
	36-75 V	5 V @ 0.5 A	1.25" x 0.8" x 0.5" (31.75 x 20.32 x 12.70)	500 V	76%	BXA3-48S05J
	36-75 V	5 V @ 0.2 A	1.25" x 0.8" x 0.5" (31.75 x 20.32 x 12.70)	500 V	76%	BXA3-48S15J
25 W	Baseplate					
	36-75 V	5 V @ 5 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	80%	BXA30-48S05-FJ
	36-75 V	5 V @ 5 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	80%	BXA30-48S05J
30 W	Baseplate					
	36-75 V	15 V @ 2 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	87%	BXA30-48S15J
	36-75 V	5 V @ ±2.5 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	80%	BXA30-48D05-FJ
	36-75 V	12 V @ ±1.25 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	84%	BXA30-48D12J
	36-75 V	15 V @ ±1.0 A	3.02" x 2.41" x 0.52" (76.71 x 61.21 x 13.21)	1500 V	86%	BXA30-48D15J
40 W	Baseplate					
	18-36 V	3.3 V @ 7 A	2.20" x 2.2" x 0.5" (55.88 x 55.88 x 12.70)	1500 V	75%	BXA40-2453 V3-MJ
	36-75 V	12 V @ 3.3 A	2.20" x 2.2" x 0.5" (55.88 x 55.88 x 12.70)	1500 V	87%	BXA40-48S12-MJ

SXE & SXN Low Power



SXE15

SXN15

Special Features

- Input voltages 33-75 Vdc
- Single and dual outputs
- Power 10.8-15 W
- Regulated outputs
- High efficiency topology - 87% @ 5 Vdc
- Remote on/off
- ±10% output voltage trim
- Operating temperature -40°C to 70°C (ambient)
- Protection: overcurrent/short-circuit/overvoltage
- 1500 Vdc isolation
- UL, CSA & VDE safety approvals
- Surface-mount

	Input Voltage	Output Voltage	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
15 W	Open-frame Surface-mounting					
	33-75 V	5 V @ 3 A	1.9" x 1.39" x 0.34" (48.26 x 35.31 x 8.64)	1500 V	87%	SXE15-48S05-RJ
	33-75 V	12 V @ 1.25 A	1.9" x 1.39" x 0.34" (48.26 x 35.31 x 8.64)	1500 V	85%	SXE15-48S12-RJ
	33-75 V	1.8 V @ 6 A	1.9" x 1.39" x 0.34" (48.26 x 35.31 x 8.64)	1500 V	83%	SXE15-48S1 V8-RJ
	33-75 V	2.5 V @ 6 A	1.9" x 1.39" x 0.34" (48.26 x 35.31 x 8.64)	1500 V	85%	SXE15-48S2 V5-RJ
	33-75 V	3.3 V @ 4.5 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	86%	SXE15-48S3 V3-RJ
	33-75 V	5 V @ 3 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	83%	SXN15-48S05-RJ
	33-75 V	1.8 V @ 6 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	85%	SXN15-48S1 V8-RJ
	33-75 V	2.5 V @ 6 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	85%	SXN15-48S2 V5-RJ
	33-75 V	3.3 V @ 4.5 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	86%	SXN15-48S3 V3-RJ
	33-75 V	5 V @ 3 A & 3.3 V @ 4.5 A	1.9" x 1.39" x 0.34" (48.26 x 35.31 x 8.64)	1500 V	86%	SXE15-48D05-3 V3-RJ
	33-75 V	3.3 V @ 3.5 A & 2.5 V @ 4.5 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	85%	SXN15-48D3 V3-2 V5RJ
	33-75 V	5 V @ 3 A & 3.3 V @ 4.5 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	86%	SXN15-48D05-3 V3-RJ
	33-75 V	3.3 V @ 3.5 A & 2.5 V @ 4.5 A	1.9" x 1.01" x 0.34" (48.26 x 25.65 x 8.64)	1500 V	85%	SXN15-48D3 V3-2 V5RJ

CXA Low Power



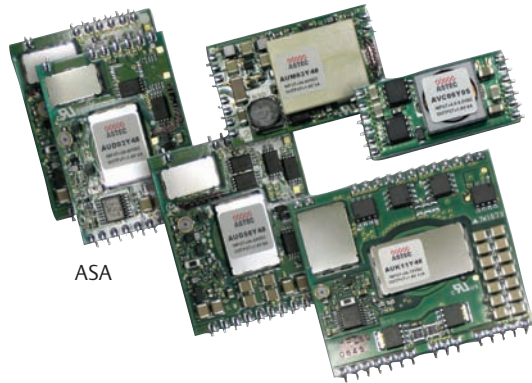
Special Features

- 4:1 input voltage range, 18-75 V
- Single and dual outputs
- Power 10-20 W
- Regulated outputs
- Remote on/off
- $\pm 10\%$ output voltage trim (CXA20)
- Operating temperature -40°C to 70°C (ambient)
- Protection: overcurrent/short-circuit/overvoltage
- Basic insulation, 1500 Vdc
- Enclosed and baseplate models
- UL, CSA & Vdc safety approvals

20 W

Input Voltage	Output Voltage	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
Open-frame					
18 - 75 V	5 V @ 4 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	83%	CXA20-48S05J
18 - 75 V	12 V @ 1.66 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	83%	CXA20-48S12J
18 - 75 V	3.3 A@6 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	80%	CXA20-48S3 V3J
18 - 75 V	5 V @ ± 2.0 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	84%	CXA20-48D05J
18 - 75 V	12 V @ ± 0.83 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	84%	CXA20-48D12J
18 - 75 V	12 V @ ± 0.83 A	2" x 1.6" x 0.41" (50.80 x 40.64 x 10.41)	1500 V	84%	CXA20-48D12-SJ

Ultra Low Profile



Special Features

- Ultra low profile - 4.3mm - for low profile applications
- Input voltage: 36-75 V and 36-60 V
- Power: 10 W-30 W
- Output voltage: 1.5, 1.8, 2.5, 3.3 and 5 volts
- Output current: 2 A-10 A
- High efficiency: 89% at 5 volts output
- Regulation to zero load
- Operating temperature: -40°C to 85°C (ambient)
- Protection: OVP, OCP, LVP
- Remote on/off
- Current sharing for parallel application
- Meets CISPR22, Class A on conducted and radiated EMI
- 1500 Vdc isolation
- Platform reflow compatibility and available in RoHS 6/6 only

	Input Voltage	Output	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
10 W	Isolated Open-frame					
	48 V (36-60 V)	1.5 V @ 3 A	1.39" x 0.92" x 0.3" (35.31 x 23.37 x 7.62)	1500 Vdc	78%	AUM03M48-L
	48 V (36-60 V)	1.8 V @ 3 A	1.39" x 0.92" x 0.3" (35.31 x 23.37 x 7.62)	1500 Vdc	80%	AUM03Y48-L
	48 V (36-60 V)	2.5 V @ 3 A	1.39" x 0.92" x 0.3" (35.31 x 23.37 x 7.62)	1500 Vdc	84%	AUM03G48-L
	48 V (36-60 V)	3.3 V @ 3 A	1.39" x 0.92" x 0.3" (35.31 x 23.37 x 7.62)	1500 Vdc	86%	AUM03F48-L
	48 V (36-60 V)	5.0 V @ 2 A	1.39" x 0.92" x 0.3" (35.31 x 23.37 x 7.62)	1500 Vdc	88%	AUM02 A48-L
	48 V (36-60 V)	1.8 V @ 3 A	1.47" x 1.07" x 0.17" (37.34 x 27.18 x 4.32)	1500 Vdc	84%	AUD03Y48-L
	48 V (36-60 V)	2.5 V @ 3 A	1.47" x 1.07" x 0.17" (37.34 x 27.18 x 4.32)	1500 Vdc	86%	AUD03G48-L
	48 V (36-60 V)	3.3 V @ 3 A	1.47" x 1.07" x 0.17" (37.34 x 27.18 x 4.32)	1500 Vdc	88%	AUD03F48-L
48 V (36-60 V)	5.0 V @ 3 A	1.47" x 1.07" x 0.17" (37.34 x 27.18 x 4.32)	1500 Vdc	89%	AUD02 A48-L	
15 W	Isolated Open-frame					
	48 V (36-75 V)	1.8 V @ 4.5 A	1.47" x 1.23" x 0.17" (37.34 x 31.24 x 4.32)	1500 Vdc	84%	AUG04Y48-L
	48 V (36-75 V)	2.5 V @ 4.5 A	1.47" x 1.23" x 0.17" (37.34 x 31.24 x 4.32)	1500 Vdc	86%	AUG04G48-L
	48 V (36-75 V)	3.3 V @ 4.5 A	1.47" x 1.23" x 0.17" (37.34 x 31.24 x 4.32)	1500 Vdc	88%	AUG04F48-L
48 V (36-75 V)	5.0 V @ 3 A	1.47" x 1.23" x 0.17" (37.34 x 31.24 x 4.32)	1500 Vdc	89%	AUG03 A48-L	
20 W	Isolated Open-frame					
	48 V (36-75 V)	1.8 V @ 8 A	1.47" x 1.23" x 0.19" (37.34 x 31.24 x 4.83)	1500 Vdc	84%	AUG08Y48-L
	48 V (36-75 V)	5.5 V @ 5 A	1.47" x 1.23" x 0.19" (37.34 x 31.24 x 4.83)	1500 Vdc	86%	AUG07G48-L
	48 V (36-75 V)	3.3 V @ 6 A	1.47" x 1.23" x 0.19" (37.34 x 31.24 x 4.83)	1500 Vdc	88%	AUG06F48-L
48 V (36-75 V)	5.0 V @ 3 A	1.47" x 1.23" x 0.19" (37.34 x 31.24 x 4.83)	1500 Vdc	88%	AUG04 A48-L	
30 W	Isolated Open-frame					
	48 V (36-75 V)	1.8 V @ 11 A	1.77" x 1.77" x 0.17" (44.96 x 44.96 x 4.32)	1500 Vdc	86%	AUK11Y48-L
	48 V (36-75 V)	2.5 V @ 10 A	1.77" x 1.77" x 0.17" (44.96 x 44.96 x 4.32)	1500 Vdc	89%	AUK10G48-L
	48 V (36-75 V)	3.3 V @ 9 A	1.77" x 1.77" x 0.17" (44.96 x 44.96 x 4.32)	1500 Vdc	90%	AUK09F48-L
48 V (36-75 V)	5.0 V @ 6 A	1.77" x 1.77" x 0.17" (44.96 x 44.96 x 4.32)	1500 Vdc	91%	AUK06 A48-L	

	Input Voltage	Output	Package L x W x H (mm)	I/O Isolation	Efficiency	Model Number
20 W	Non-Isolated Open-frame					
	3.3 V (2.97 V-3.63)	1.5 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	89%	AVC06M04-L
	3.3 V (2.97 V-3.63)	1.8 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	90%	AVC06Y04-L
	3.3 V (2.97 V-3.63)	2.0 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	92%	AVC06D04-L
	3.3 V (2.97 V-3.63)	2.5 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	93%	AVC06G04-L
	5 V (4.5-5.5 V)	1.2 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	84%	AVC06K04-L
	5 V (4.5-5.5 V)	1.5 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	86%	AVC06M05-L
	5 V (4.5-5.5 V)	1.8 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	88%	AVC06Y05-L
	5 V (4.5-5.5 V)	2.0 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	89%	AVC06D05-L
	5 V (4.5-5.5 V)	2.5 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	91%	AVC06G05-L
	5 V (4.5-5.5 V)	3.3 V @ 6 A	1.33" x 0.61" x 0.24" (33.78 x 15.49 x 6.10)	Non-isolated	93%	AVC06F05-L

Terms and Conditions of Sale

The Emerson Network Power company that accepts Buyer's order for Goods is herein referred to as the "Seller" and the person or entity purchasing goods or services ("Goods") and/or licensing software and/or firmware which are preloaded, or to be loaded into Goods ("Software") from Seller is referred to as the "Buyer." These Terms and Conditions, any price list or schedule, quotation, acknowledgment or invoice from Seller relevant to the sale of the Goods and licensing of Software and all documents incorporated by specific reference herein or therein constitute the complete and exclusive statement of the terms of the agreement governing the sale of Goods and license of Software by Seller to Buyer. Seller's acceptance of Buyer's purchase order is expressly conditional on Buyer's assent to all of Seller's terms and conditions of sale, including terms and conditions that are different from or additional to the terms and conditions of Buyer's purchase order. Buyer's acceptance of the Goods and/or Software will manifest Buyer's assent to these Terms and Conditions. Seller reserves the right in its sole discretion to refuse orders. Notwithstanding anything to the contrary, in the event that the provisions of these Terms and Conditions conflict with the provisions of an effective agreement signed by a duly authorized representative of both parties ("Effective Agreement") that applies to the transaction(s) contemplated herein, the Effective Agreement shall control.

1. **PRICES:** Unless otherwise specified in writing by Seller, the price quoted or specified by Seller for the Goods and/or Software shall remain in effect for thirty (30) days after the date of Seller's quotation or acknowledgment of Buyer's order for the Goods and/or Software, whichever occurs first, provided an unconditional authorization from Buyer for the shipment of the Goods and/or Software is received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods and/or Software to Seller's price for the Goods and/or Software at the time of shipment. All prices and licensee fees are exclusive of taxes, transportation and insurance, which are to be borne by Buyer.

2. **TAXES:** Any current or future tax or governmental charge (or increase in same) affecting Seller's costs of production, sale, or shipment, or which Seller is otherwise required to pay or collect in connection with the sale, purchase, delivery, storage, processing, use or consumption of Goods, shall be for Buyer's account and shall be added to the price or billed to Buyer separately, at Seller's election.

3. **TERMS OF PAYMENT:** Unless otherwise specified by Seller, terms are net thirty (30) days from date of Seller's invoice in U.S. currency. Seller shall have the right, among other remedies, either to terminate this agreement or to suspend further performance under this 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. Any payment due to either party under this agreement shall be made in full without any set-off, restriction, condition deduction or withholding for or on account of any counterclaim. Should Buyer's financial responsibility become unsatisfactory to Seller, cash payments or security satisfactory to Seller may be required by Seller for future deliveries of the Goods and/or Software. If such cash payment or security is not provided, in addition to Seller's other rights and remedies, Seller may discontinue deliveries.

4. **SHIPMENT AND DELIVERY:** While Seller will use all reasonable commercial efforts to maintain the delivery date(s) acknowledged or quoted by Seller, all shipping dates are approximate and not guaranteed. Seller reserves the right to make partial shipments. Seller, at its option, shall not be bound to tender delivery of any Goods and/or Software for which Buyer has not provided shipping instructions and other required information. If the shipment of the Goods and/or Software is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse Seller for any and all storage costs and other additional expenses resulting therefrom. Risk of loss and legal title to the Goods shall transfer from Seller to Buyer upon delivery to and receipt by carrier at Seller's shipping point. Unless otherwise specified by Seller, all shipments are F.C.A. Seller's shipping point (Incoterms 2000). Any claims for shortages or damages suffered in transit are the responsibility of Buyer and shall be submitted by Buyer directly to the carrier. Shortages or damages must be identified and signed for at the time of delivery.

Buyer shall inspect Goods delivered to it by Seller immediately upon receipt, and, any course of dealing to the contrary notwithstanding, failure of Buyer to give Seller notice of any claim within 10 days after receipt of such Goods shall be an unqualified acceptance of such Goods.

5. **LIMITED WARRANTY:** Subject to the limitations of Section 6 and unless otherwise specified by Seller in writing, Seller warrants that the Goods manufactured by Seller will be free from defects in material and workmanship and substantially meet Seller's published specifications at the time of shipment under normal use and regular service and maintenance for (a) the period specified in Seller's then current product data sheets from the date of manufacture by Seller for standard Embedded Power Goods, (b) two (2) years from initial shipment for standard Embedded Computing Goods, and (c) the period specified by Seller in writing for custom Embedded Power Goods and custom Embedded Computing Goods. Unless

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These warranties do not extend to any losses or damages due to misuse, accident, abuse, neglect, negligence (other than Seller's), unauthorized modification or alteration, use beyond rated capacity, unsuitable power sources or environmental conditions, improper installation, repair, handling, 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 Goods 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 that are affected by such conditions shall be null and void.

If within thirty (30) days after Buyer's discovery of any warranty defects within the warranty period, Buyer notifies Seller thereof in writing, Seller shall, at its option and as Buyer's exclusive remedy, repair, correct or replace per its return policy, or refund the purchase price for, that portion of the Goods 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 Goods must be obtained from Seller. Such Goods must be shipped transportation prepaid to Seller. Returns made without proper written permission will not be accepted by Seller. Seller reserves the right to inspect Goods prior to authorizing return. Goods repaired or replaced during the warranty period shall 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 Goods and/or Software, either alone or in combination with other products/components.

6. **LIMITATION OF REMEDY AND LIABILITY:** **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY HEREUNDER (OTHER THAN THE WARRANTY PROVIDED UNDER SECTION 7) SHALL BE LIMITED TO REPAIR, CORRECTION OR REPLACEMENT, OR REFUND OF THE PURCHASE PRICE UNDER SECTION 5.**

SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND THE REMEDIES OF BUYER SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. 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 EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC GOODS OR SOFTWARE PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS 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, revenue, reputation and data, costs incurred, including without limitation, for capital, fuel, power and loss or damage to property or equipment.

It is expressly understood that any technical advice furnished by Seller with respect to the use of the Goods and/or Software 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.

7. **PATENTS AND COPYRIGHTS:** Subject to the limitations of the second paragraph of Section 6, Seller warrants that the Goods sold, 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 condition that Buyer promptly notify Seller of any claim or suit involving Buyer in which such infringement is alleged and cooperate fully with Seller and permit Seller to control completely the defense, settlement or compromise of any such allegation of infringement. Seller's warranty as to utility patents only applies to infringement arising solely out of the inherent operation according to Seller's specifications and instructions of such Goods. In the event such Goods are held to infringe such a U.S. patent or copyright in such suit, and the use of such Goods is enjoined, or in the case of a compromise or settlement by Seller, Seller shall have the right, at its option and expense, to procure for Buyer the right to continue using such Goods, or replace them with non-infringing Goods, or modify same to become

non-infringing, or grant Buyer a credit for the depreciated value of such Goods and accept return of them. In the event of the foregoing, Seller may also, at its option, cancel the agreement as to future deliveries of such Goods, without liability.

8. EXCUSE OF PERFORMANCE: Seller shall not be liable for delays in performance or for non-performance due to acts of God; acts of Buyer; war; fire; flood; weather; sabotage; epidemics; strikes or labor disputes; civil disturbances or riots; governmental requests, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; default of suppliers; or unforeseen circumstances 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 agreement shall otherwise remain unaffected as a result of the foregoing.

If Seller determines that its ability to supply the total demand for the Goods, or to obtain material used directly or indirectly in the manufacture of the Goods, is hindered, limited or made impracticable due to causes set forth in the preceding paragraph, Seller may allocate its available supply of the Goods or such material (without obligation to acquire other supplies of any such Goods or material) among its purchasers on such basis as Seller determines to be equitable without liability for any failure of performance which may result therefrom.

9. CANCELLATION: Unless otherwise agreed in writing by Seller, orders under this agreement may not be canceled by Buyer for any reason.

10. CHANGES: Buyer may request changes or additions to the Goods and/or Software consistent with Seller's specifications and criteria. In the event such changes or additions are accepted by Seller, Seller may revise the price, license fees and dates of delivery.

Seller reserves the right to change designs and specifications for the Goods and/or Software without prior notice to Buyer, except with respect to Goods and/or Software being made-to-order for Buyer. Seller shall have no obligation to install or make such change in any Goods and/or Software manufactured prior to the date of such change.

11. NUCLEAR/MEDICAL: GOODS AND SOFTWARE SOLD HEREUNDER ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFE-SUPPORT AND OTHER HIGH RISK APPLICATIONS WHERE GOODS OR SOFTWARE FAILURE COULD LEAD TO LOSS OF LIFE OR CATASTROPHIC PROPERTY DAMAGE. Buyer accepts Goods and Software 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 be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability.

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. SOFTWARE: Notwithstanding any other provision herein to the contrary, Seller or applicable third party licensor to Seller shall retain all rights of ownership and title in its respective Software, including without limitation all rights of ownership and title in its respective copies of such Software. Except as otherwise provided herein, Buyer is hereby granted a nonexclusive, non-transferable royalty free license to use the Software incorporated into the Goods solely for purposes of Buyer properly utilizing such Goods purchased from Seller. All other Software shall be furnished to, and used by, Buyer only after execution of Seller's (or the licensor's) applicable standard license agreement, the terms of which are incorporated herein by reference. The Software is Seller's own or Seller's supplier's proprietary information, and Buyer and its employees and agents shall not disclose the Software to others without Seller's prior written consent.

14. TOOLING: Tool, die, and pattern charges, if any, are in addition to the price of the Goods and are due and payable upon completion of the tooling. All such tools, dies and patterns shall be and remain the property of Seller. Charges for tools, dies, and patterns do not convey to Buyer, title, ownership interest in, or rights to possession or removal, 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.

15. DRAWINGS: Seller's prints and drawings (including without limitation, the underlying technology) furnished by Seller to Buyer in connection with this agreement are the property of Seller and Seller retains all rights, including without limitation, exclusive rights of use, licensing and sale. Possession of such prints or drawings does not convey to Buyer any rights or license, and Buyer shall return all copies (in whatever medium) of such prints or drawings to Seller immediately upon request therefor.

16. BUYER'S COMPLIANCE WITH LAWS: In connection with the transactions con-

templated by this agreement, Buyer is familiar with and shall fully comply with all applicable laws, regulations, rules and other requirements of the United States and of any applicable state, foreign and local governmental body in connection with the purchase, license, receipt, use, transfer and disposal of the Goods and/or Software.

17. EXPORT/IMPORT: Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which Goods and/or Software may be supplied, will apply to their receipt and use. In no event shall Buyer use, transfer, release, import, export, Goods and/or Software in violation of such applicable laws, regulations, orders or requirements.

18. GOVERNMENT CONTRACT CONDITIONS: In the event Buyer supplies Goods or Software to the U.S. Government or to a prime contractor selling to the U.S. Government, the following Federal Acquisition Regulation (FAR) clauses are accepted by Seller and are made part of this agreement applicable to such supply: 52.222-21 Prohibition of Segregated Facilities; 52.222-26 Equal Opportunity; 52.222-35 Equal Opportunity For Special Disabled Veterans, Veterans of Vietnam Era, and Other Eligible Veterans; 52.222-36 Affirmative Action For Workers with Disabilities; and 52.219-8 Utilization of Small Business Concerns. No additional FAR or FAR Supplement clauses are accepted by Seller. In the event Buyer elects to sell Goods or Software to the U.S. Government or any national, state, provincial or local non-U.S. governmental entity or to a prime contractor selling to such entities, Buyer does so solely at its own option and risk, and agrees not to obligate Seller as a sub-contractor or otherwise to the U.S. Government or other governmental entity except as described in this Section 18. Buyer remains solely and exclusively responsible for compliance with all statutes and regulations governing sales to the U.S. Government or any national, state, provincial or local non-U.S. governmental entity. Seller makes no representations, certifications or warranties whatsoever with respect to the ability of its Goods, Software, or prices to satisfy any such statutes and regulations.

19. 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 the Seller unless made in writing and signed on its behalf by a duly authorized representative of Seller. 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 hereafter made in writing and signed by the party to be bound, and no modification or additional terms shall be applicable to this agreement by Seller's receipt, acknowledgment, or acceptance of purchase orders, shipping instruction forms, 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 and deemed a material alteration hereof. If this document shall be deemed an acceptance of a prior offer by Buyer, such acceptance is expressly conditional upon Buyer's assent to any additional or different terms set forth herein. 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 be 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. In the event that any provision or portion thereof contained in the Contract is held to be unenforceable, the Contract shall be construed without such provision or portion thereof.

(A) If Seller is a U.S. incorporated entity: This Agreement shall be governed by the laws of the State of Delaware, U.S.A., without reference to its choice or conflict of laws principles. The parties agree to submit to the exclusive jurisdiction of the courts of the State of Delaware for all actions arising in connection herewith.

(B) If Seller is a European incorporated entity: This Agreement shall be governed by the laws of England. Any dispute arising out of or in connection with this Agreement that cannot be resolved through friendly consultation shall be referred to and finally resolved by arbitration in London, England before the London Court of International Arbitration in accordance with its arbitration rules. The arbitral award shall be final and binding on the parties.

(C) If Seller is an entity incorporated in the Asia Pacific region: This Agreement shall be governed by the laws of the Hong Kong Special Administrative Region of the People's Republic of China. Any dispute arising out of or in connection with this Agreement that cannot be resolved through friendly consultation shall be referred to and finally resolved by arbitration in Hong Kong before the Hong Kong International Arbitration Centre in accordance with its arbitration rules. The arbitral award shall be final and binding on the parties.

(D) No action, regardless of form, arising out of transactions relating to this agreement, may be brought by either party more than two (2) years after the cause of action has accrued. The U.N. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

Revised November 2, 2007

section	page	section	page	section	page
Low Power		Intelligent High Power		Industry Standard Non-Isolated	
LCT	4	iVS	15, 23, 24, 25, 26	APA	49
LPS	4, 5, 6, 7, 8, 9, 10, 13, 14	Bulk Power		ATC	37
LPT	4, 5, 6, 7, 13, 14	HPS	27, 28	APC	49
LPQ	7, 9, 10	Distributed Power		DDR	53
NFS	5, 7, 8, 13, 14	DS	29, 30, 31	LDO	48
NLP	4, 6, 7, 8, 9, 10, 14	Din Rail		PTV	52
NTS	10, 15	ADN	33	PTH	51, 52
NTQ	8, 9	MicroTCA		SIL	47, 48, 49
External Power		MTC	34, 35	SMT	47, 48, 49, 50
AD	12, 15	Industry Standard		NXI	53
DA	11	AED	46	VRM	53
DCH	11	AEH	43, 44	High Power	
DPS	12, 15	AEO	39, 40	AIF	55
DPT	12, 15	AEQ	41	AIH	55
SSL	11	ALD	38, 46	AIT	55
Medical Power		ALH	43	AEE	56
AD	15	ALO	39, 40	ASA	56
DPT	15	ALQ	41, 42, 46	AUD	59
DPS	15	BXB	44	AUG	59
iMP	15	EXB	43, 44	AUK	59
iVS	15	EXQ	42	AUM	59
LPS	13, 14	IBC	46	AVC	59
LPT	13, 14	LES	39, 40	BXA	57
NLP	14	LQD	42	CXA	58
NFS	13, 14	LQS	41	SXE	57
NTS	15	RFB	45	SXN	57
TLP	14	RFF	45		
Medium Power					
MP	16, 17, 18				
Intelligent Medium Power					
iMP	15, 19, 20, 21, 22				

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