



LEADING THE ADVANCEMENT OF POWER CONVERSION

DC-DC PRODUCT SELECTION GUIDE 2022-2023



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- Extensive Experience in High-Reliability Designs
- Leading Efficiencies - up to 97%
- High Power Density - up to 800W in a Quarter Brick Package
- Millions of Hours of MTBF
- Millions of Products Used Worldwide
- In-Depth Application Support and Flexible Order Fulfillment
- ISO9001, ISO14001, IATF 16949 Certified Facilities

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Isolated DC-DC Converters

Features

- High efficiency
- 8:1, 4:1 and 2:1 input ranges
- Output power from 3W to multi-kilowatts
- Over-voltage, over-current, short-circuit, and over temperature protections
- Adjustable output voltage
- Fixed frequency operation
- Current sharing on selected products
- Wide operating temperature range

Packaging

- Industry standard footprint
 - Full brick: 4.46" x 2.28"
 - Half brick: 2.41" x 2.28"
 - Quarter brick: 2.28" x 1.46"
 - Eighth brick: 2.30" x 0.91"
 - Sixteenth brick: 1.31" x 0.91"
 - Thirty-second brick: 0.93" x 0.76"
- Open frame, baseplate, encapsulated, conformal coating, SMD, DIP

Safety

- UL 62368 recognized
- Basic or reinforced insulation

Industrial and Telecom DC-DC Converters

9-75VDC Input

Brick Converters (26W~120W)



Series	Power	Efficiency	Output Voltage				Isolation	Package
			3.3V	5V	12V	15V		
S(Y)RS5 ^①	26W 36W	Up to 93%	8A	6A	3A		1500VDC	Sixteenth brick
Q(Y)PS5 ^①	84W 120W	Up to 93%			7A 10A	8A	2250VDC	Quarter brick

9-36VDC Input

Lower Power Converters (3W~20W)

Series	Power	Efficiency	Output Voltage										Isolation	Package		
			3.3V	5V	9V	12V	15V	24V	±5V	±9V	±12V	±15V			±24V	
LMS1-STC	3W	Up to 83%		600mA		250mA	200mA	125mA							1500VDC	SMD
LMS1-ZPC LMB1-ZPC ^③	5W 6W	Up to 88%	1.5A	1.2A	667mA	500mA	400mA	250mA	±600mA	±333mA	±250mA	±200mA	±125mA	1500VDC	DIP	
LMS1-YMC LMB1-YMC ^③	5W 6W 8W 10W	Up to 88%	1.5A 2.4A	1.2A 2A	667mA 1.111A	500mA 833mA	400mA 667mA	250mA 416mA	±600mA ±1A		±250mA ±416mA	±200mA ±333mA	±125mA ±208mA	1500VDC	DIP	
LMS1-PPC LMB1-PPC ^③	5W 6W	Up to 88%	1.5A	1.2A	667mA	500mA	400mA	250mA	±600mA		±250mA	±200mA		3000VDC	DIP	
LMS1-LPC LMB1-LPC ^③	8W 10W 17W 20W	Up to 89%	2.4A 5A	2A 4A	1.111A 2.222A	833mA 1.667A	667mA 1.334A	416mA 833mA	±1A		±416mA	±333mA		3000VDC	DIP	
LMS1-LDC LMB1-LDC ^③	17W 20W	Up to 90%	5A	4A	2.222A	1.667A	1.333A	834mA	±2A	±1.111A	±834mA	±667mA		1500VDC	DIP	

- ①: Y stands for encapsulated converters
- ③: S stands for single output
B stands for dual outputs



9-36VDC Input

Brick Converters (15W~300W)

Series	Power	Efficiency	Output Voltage									Isolation	Package
			3.3V	5V	6V	8V	12V	15V	28V	48V	56V		
M(Y)RS1 ^①	15W ↓ 28W	Up to 88%	7A	3A 5A		3A	2A			1A		1500VDC	Thirty-second brick
LRS1	25W	Up to 86.5%	7A				1.5A					1500VDC	1x1
S(Y)RS1 ^①	30W ↓ 60W	Up to 92%	10A 15A	8A 12A	5A	4A 7A	3A 5A	2A 4A				1500VDC	Sixteenth brick
E(Y)RS1 ^①	75W ↓ 140W	Up to 92%		20A 25A			10A	5A 8A	3A 5A			2250VDC	Eighth brick
Q(Y)PS1 ^①	100W ↓ 200W	Up to 93%	30A	40A			12A		5A	3A	2A	2250VDC	Quarter brick
H(Y)PS1 ^①	240W ↓ 300W	Up to 91%		50A			20A	20A	10A	6A ^②		2250VDC	Half brick

18-36VDC Input

Brick Converters (15W~600W)

Series	Power	Efficiency	Output Voltage								Isolation	Package
			3.3V	5V	6V	8V	12V	15V	28V	48V		
M(Y)RS2 ^②	15W ↓ 45W	Up to 88%	10A	8A	5A	5A	3A	1A 3A	1.5A		1500VDC	Thirty-second brick
S(Y)RS2 ^①	18W ↓ 72W	Up to 92%			3A 6A 10A 12A				2.5A		1500VDC	Sixteenth brick
E(Y)RS2 ^①	96W ↓ 140W	Up to 92.5%							4A 5A	2A	2250VDC	Eighth brick
Q(Y)PS2 ^①	120W ↓ 240W	Up to 92%		25A		25A	10A 17A 20A		5A 7A	4A	2250VDC	Quarter brick
Q(Y)BC2 ^①	250W ↓ 420W	Up to 92.5%		50A			25A 35A		11A		2250VDC	Quarter brick
H(Y)PS2 ^①	280W ↓ 600W	Up to 93%		80A		50A 65A	38A 50A		10A 17A	10.5A	2250VDC	Half brick

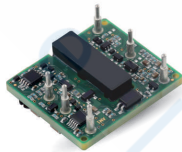
①: Y stands for encapsulated converters

②: To be released

18-75VDC Input

Lower Power Converters (5W~20W)

Series	Power	Efficiency	Output Voltage										Isolation	Package		
			3.3V	5V	9V	12V	15V	24V	±5V	±12V	±15V	±24V				
LMS3-ZPC LMB3-ZPC ^③	5W 6W	Up to 88%	1.5A												1500VDC	DIP
				1.2A	667mA	500mA	400mA	250mA	±600mA	±250mA	±200mA					
LMS3-YMC LMB3-YMC ^③	5W 6W 8W	Up to 88%	1.5A												1500VDC	DIP
				1.2A		500mA	400mA	250mA	±600mA	±250mA	±200mA					
	10W		2.4A	2A		833mA	667mA	416mA	±1A	±416mA	±333mA	±208mA				
LMS3-PPC	5W 6W	Up to 88%	1.5A												3000VDC	DIP
				1.2A		500mA	400mA	250mA								
LMS3-LPC LMB3-LPC ^③	8W 10W 17W 20W	Up to 89%	2.4A												3000VDC	DIP
				2A		833mA	667mA	416mA	±1A	±416mA	±333mA					
			5A	4A		1.667A	1.334A	833mA								
LMS3-LDC LMB3-LDC ^③	17W 20W	Up to 90%	5A												1500VDC	DIP
				4A	2.222A	1.667A	1.333A	834mA	±2A	±834mA	±667mA					



18-75VDC Input

Brick Converters (15W~360W)

Series	Power	Efficiency	Output Voltage								Isolation	Package
			3.3V	5V	8V	12V	15V	28V	48V			
LRS3-W	15W 23W	Up to 87%	7A	4A		1.5A	1A				2250VDC	1x1
S(Y)RS3-W ^②	32W 72W	Up to 92%	10A 15A 20A	8A 10A 12A	4A 7A	3A 5A 6A	3A 4A				1500VDC	Sixteenth brick
E(Y)RS3-W ^②	72W 144W	Up to 92%	30A	20A	15A	6A 10A		4A 5A	3A		2250VDC	Eighth brick
Q(Y)PS3-W ^②	96W 228W	Up to 93.5%		25A 40A	25A	17A 19A	13A	5A	2A		2250VDC	Quarter brick
H(Y)PS3-W ^②	250W 360W	Up to 91%		50A		30A			6A ^①		2250VDC	Half brick

①: Y stands for encapsulated converters

②: To be released

③: S stands for single output
B stands for dual outputs

36-75VDC Input

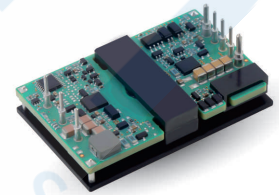
Brick Converters (15W~800W)

Series	Power	Efficiency	Output Voltage								Isolation	Package
			3.3V	5V	8V	9.6V	12V	15V	28V	48V		
MRS4	15W 40W	Up to 89.2%	10A	3A 5A 8A			3A				1500VDC	Thirty-second brick
SRS4	36W 96W	Up to 92%			11A		3A 5A 8A		2.5A		1500VDC	Sixteenth brick
ERS4	50W 144W	Up to 92.5%	15A 30A	10A 15A			5A 7A	5A	5A	3A	2250VDC	Eighth brick
EBC4	175W 280W	Up to 95%	60A	35A 42A		26A			10A		2250VDC	Eighth brick
EBE4	204W 400W	Up to 95%					17A 22A 30A 33A				2250VDC	Eighth brick
QPS4	120W 240W	Up to 93.5%			30A		19A	13A		2.5A	2250VDC	Quarter brick
QBC4	300W 400W	Up to 95.5%		60A 70A		41.5A	28A 33A				2250VDC	Quarter brick
QBE4	420W 720W	Up to 95.5%			53A	53A	42A 50A 60A		14.5A 20A [Ⓢ]	12A	2250VDC	Quarter brick
HPS4	400W 500W	Up to 94%		80A			40A		18A		2250VDC	Half brick
FPS4	700W 800W	Up to 93.5%							25A 28A		2250VDC	Full brick

40-60VDC Input

Brick Converters (500W~800W)

Series	Power	Efficiency	Output Voltage	Isolation	Package
			12V		
EBE4	500W	Up to 95.2%	40A	2250VDC	Eighth brick
QBE4	800W	Up to 96.8%	67A	2250VDC	Quarter brick



Ⓢ: To be released

Railway DC-DC Converters (Compliant to EN50155)

Highlights

- ⊙ High efficiency up to 92%
- ⊙ Output power up to 800W
- ⊙ 3000VAC input to output isolation
- ⊙ Wide input ranges: 4:1, 8:1, 12:1
- ⊙ Encapsulated for harsh environments



16-160VDC Input

Series	Power	Efficiency	Output Voltage			Isolation	Package
			5V	12V	24V		
QYR9S	50W	Up to 87%	10A	4.2A	2.1A	3000VAC	Quarter brick

34-160VDC Input

Series	Power	Efficiency	Output Voltage				Isolation	Package
			5V	12V	24V	48V		
QYR6A	60W 150W	Up to 91%	24A	5A 10A	3A 5A	2.5A 3.2A	3000VAC	Quarter brick
HYR6A	250W	Up to 91%	50A	20A	10A		3000VAC	Half brick

66-160VDC Input

Series	Power	Efficiency	Output Voltage						Isolation	Package
			5V	12V	13.8V	24V	48V	56V		
QYR7A	150W	Up to 90%	25A	12A	7A ^①	6A	3A	3.3A	3000VAC	Quarter brick
HYR7A	240W 300W	Up to 91%	50A 60A	20A 25A	22A ^①	10A 12.5A	5A 6.3A		3000VAC	Half brick
FYR7A	300W 400W	Up to 92%		25A 33A		16.7A	6.3A 8.3A		3000VAC	Full brick
FYV7A	800W	Up to 92%		66A		33A	17A		3000VAC	Full brick

①: Input Voltage 43-160V

②: To be released

Battery Charging DC-DC Converters

Highlights

- ⦿ Programmable battery charging current
- ⦿ High efficiency up to 92.5%
- ⦿ Output power up to 800W
- ⦿ Current share available
- ⦿ 4250VDC input to output isolation
- ⦿ Industry standard footprint
- ⦿ Encapsulated for harsh environments



30-120VDC Input

Series	Power	Efficiency	Output Voltage		Isolation	Size (in)
			14V	40A		
BM	560W	Up to 90%			4250VDC	3.92 x 1.46 x 0.50

200-420VDC Input

Series	Power	Efficiency	Output Voltage			Isolation	Package
			14V	28V	56V		
HYUEB	300W	Up to 92.5%	22A [Ⓢ]			4250VDC	Half brick
FYUEB	800W	Up to 92.5%	54A	28A	14A	4250VDC	Full brick

300-520VDC Input

Series	Power	Efficiency	Output Voltage		Isolation	Package
			14V	25A		
HYVEB	350W	Up to 90%			4242VDC	Half brick

Ⓢ: To be released

High Input Voltage DC-DC Converters

Highlights

- ⦿ High efficiency up to 94%
- ⦿ Output power up to 1008W
- ⦿ Current share available
- ⦿ 4250VDC or 2250VDC input to output isolation
- ⦿ Industry standard footprint
- ⦿ Encapsulated for harsh environments



180-400VDC Input

Series	Power	Efficiency	Output Voltage						Isolation	Package
			5V	12V	15V	28V	48V	56V		
HYUEA	300W 400W	Up to 92%	60A	25A		11A	7A	6A	4250VDC	Half brick
FYUEA	500W 800W	Up to 94%	100A	67A	54A	28A	17A	14A	4250VDC	Full brick

300-500VDC Input

Series	Power	Efficiency	Output Voltage					Isolation	Package
			5V	8.5V	12V	28V	48V		
HYVEC	300W 400W	Up to 91.5%	60A			14.5A		2250VDC	Half brick
FYVEC	663W 1000W	Up to 93%		78A	80A	28A 36A	21A	2250VDC	Full brick

400-650VDC Input

Series	Power	Efficiency	Output Voltage				Isolation	Package
			12V	28V	36V	48V		
HYVGA	360W	Up to 90%	30A	12.5A			2250VDC	Half brick
FYVGA	540W 1008W	Up to 92%	57A	28A 36A	17A 22A	17A	2250VDC	Full brick



Non-isolated DC-DC Converters

Features

- High efficiency up to 96%
- Multiple input voltage ranges
- Over-voltage, over-current, short-circuit, and over temperature protections
- Output voltage tracking on selected codes
- High current up to 60A
- Load sharing on selected codes

Packaging

- Standard footprints
- SMT, SIP and BMP packages
- Open frame, baseplate and encapsulated

Safety

- UL 60950-1 2nd recognized

2.5-18VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size (in)
2.5-5.5	NAS0 NBS0	0.75-3.63 0.75-3.63	12-20 8	Up to 96%	SMT SMT	1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
4.5-14	NKS1	0.59-5.5	6-12	Up to 93.3%	SMT	0.48 x 0.48 x 0.35
8.0-16	NCT1	0.8-5.5	45-60	Up to 93%	SMT, SIP, Horizontal TH	2.00 x 0.68 x 0.39
8.5-16	NBS1	0.75-5.5	8	Up to 91%	SMT	1.10 x 0.45 x 0.25
8.5-18	NAT1 NAS1 NES1	0.75-5.5 0.75-5.5 0.75-5.5	12-20 12-20 16-30	Up to 96%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.30 x 0.53 x 0.38

9-36VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size (in)
9-36	NAT2 NAS2 NBS2	3-6 3-6 3-6	10 10 3.5	Up to 88%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
18-36	NAT3 NAS3 NBS3	5-15.5 5-15.5 5-15.5	9 9 3.5	Up to 94%	SIP SMT SMT	2.00 x 0.50 x 0.25 1.30 x 0.53 x 0.25 1.10 x 0.45 x 0.25
18-36	NPS3	0.9-3.3	15	Up to 80%	SMT	1.10 x 0.72 x 0.37

9-60VDC Input

Input Voltage (V)	Series	Output Voltage (V)	Output Current (A)	Efficiency	Package	Size
9-53	N(Y)XS	3.3-36	12, 20, 26	Up to 97%	BMP	Sixteenth brick
9-60	NYWQ5	0-60	25	Up to 97%	BMP	Quarter brick
9-60	NYWH5	0-60	40	Up to 97%	BMP	Half brick



VPX Power Supplies

The VPX power supplies are compliant with VITA 62, MIL-STD-704, MIL-STD-461 and MIL-STD-810G. These VPX power supplies have up to 6 outputs and deliver up to 1000W total power with a typical efficiency of 90%. Available in 3U and 6U packages, these VPX power supplies are designed for conduction cooling and are equipped with high speed backplane connectors.

Highlights

- ⦿ 18-400VDC and 85-264VAC input voltage ranges
- ⦿ Output power up to 1000W
- ⦿ Built-in input EMI filtering
- ⦿ Input reverse polarity protection
- ⦿ Current share available
- ⦿ Industry standard packages
- ⦿ Operating temperature range: -40°C to +85°C

Series	Package	Power	Efficiency	Input Voltage	Output Voltage					
					+12V	+5V	+3.3V	+3.3V AUX	+12V AUX	-12V AUX
VPX	3U	500W	88%	18-36VDC	0 - 40A	0 - 25A	0 - 25A	0 - 6A	0 - 1A	0 - 1A
VPX	6U	1000W	90%	18-36VDC	0 - 80A	0 - 30A	/	0 - 15A	0 - 1A	0 - 1A
VPX	6U	900W	90%	180-400VDC	0 - 64A	0 - 30A	/	0 - 40A	0 - 1A	0 - 1A
VPX	6U	432W	90%	85-264VAC	0 - 25A	0 - 30A	/	0 - 40A	0 - 1A	0 - 1A



EMI Filters

The PFT series EMI filters are designed to attenuate both differential-mode and common-mode conducted noises generated by DC-DC converters. These filters are optimized to provide high insertion loss over the entire frequency range regulated by FCC and CISPR for conducted emissions. These EMI filter modules support up to 80V operating voltages.

Highlights

- ⊙ 80V maximum input voltage
- ⊙ Compatible to most industry standard DC-DC converters
- ⊙ Industry standard package
- ⊙ Wide operating temperature range: -40°C to +100°C

Part Number	Description	Input	Output	Size (in)
PFT0H005J8	Filter	80V/5A	80V/5A	1.04 x 1.04 x 0.50
PFT0H007J8	Filter	80V/7A	80V/7A	1.04 x 1.04 x 0.50
PFT0H010J8	Filter	80V/10A	80V/10A	2.04 x 1.04 x 0.50
PFT0H020J8	Filter	80V/20A	80V/20A	2.04 x 1.69 x 0.50
PFT0H030J8	Filter	80V/30A	80V/30A	2.42 x 1.02 x 0.50

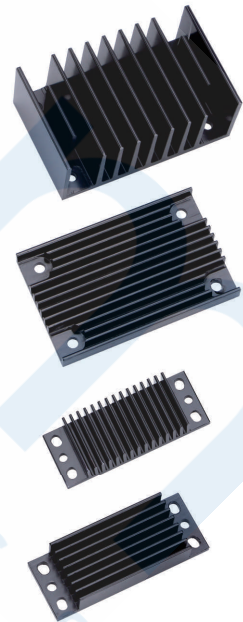


Heatsinks

Standard Brick Size Heatsinks

NetPower heatsinks are suitable for industry standard DC-DC power modules and are available in various sizes and fin orientations. These heatsinks improve thermal performance of power modules in convection cooling.

Part Number	Size	Height Options (in)	Orientation
HSxxxLSA	1/16 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCSA	1/16 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLEx	1/8 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCEx	1/8 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLQA	1/4 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCQA	1/4 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLHA [Ⓢ]	1/2 Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCHA	1/2 Brick	0.24 / 0.45 / 0.90	Crosswise
HSxxxLFA	Full Brick	0.24 / 0.45 / 0.90	Lengthwise
HSxxxCFA [Ⓢ]	Full Brick	0.24 / 0.45 / 0.90	Crosswise



Ⓢ: To be released

Custom Power Supplies

Based on its mature platforms or standard modular products, NetPower can quickly design and develop semi and full custom products. The customization may range from minor changes to the standard products to full custom designs to satisfy specific electrical, mechanical, thermal, and environmental requirements.

Highlights

- ⦿ Mature technology and proven high reliability
- ⦿ High efficiency and power density
- ⦿ Wide input range and power ratings
- ⦿ Protection against abnormal conditions
- ⦿ Excellent thermal performance
- ⦿ Fast development cycle
- ⦿ Low noise

Examples:

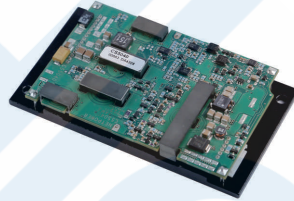


Input: 120-240VAC/90-380VDC

Output: 52VDC/150W

Efficiency: 88%

Size: 8.42" x 2.60" x 1.63"



Input: 26-72VDC

Output: 3.3VDC, +/-5.1VDC,
10.4/8.6VDC (switchable)
13VDC

Efficiency: 80%

Size: 4.17" x 2.28" x 0.61"



Input: 36-75VDC

Output: 12V/450W

Efficiency: 95.5%

Size: 2.29" x 1.46" x 0.60"



Input: 26-72VDC

Output: 3.3VDC, +/-5.1VDC,
10.4/8.6VDC (switchable)
13VDC

Efficiency: 87%

Size: 4.53" x 2.36" x 0.67"



Input: 18-36VDC

Output: 56VDC/250W

Efficiency: 90%

Size: 8.13" x 5.09" x 0.85"



Input: 19-36VDC

Output: 56VDC/400W

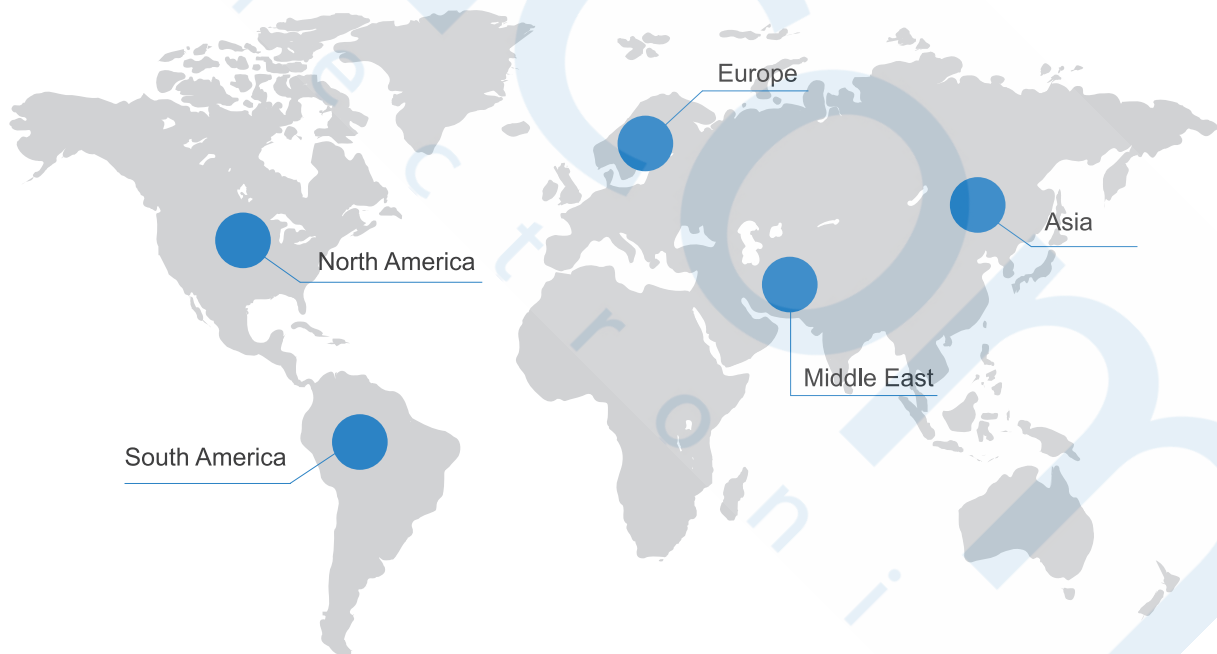
Efficiency: 91%

Size: 9.10" x 5.71" x 1.77"

Standard Brick Size

Unit: inch (LxWxH)

Package	Open Frame	Baseplate	Encapsulated Baseplate	Encapsulated Flange
1/32 Brick	0.93 x 0.76 x 0.42	1.02 x 0.76 x 0.50	1.13 x 0.87 x 0.50	1.71 x 0.87 x 0.50
1/16 Brick	1.31 x 0.91 x 0.39	1.31 x 0.91 x 0.50	1.43 x 1.03 x 0.50	1.43 x 1.50 x 0.50
1/8 Brick	2.30 x 0.90 x 0.41	2.30 x 0.90 x 0.50	2.42 x 1.02 x 0.50	2.42 x 1.45 x 0.50
1/4 Brick	2.29 x 1.46 x 0.40	2.29 x 1.46 x 0.50	2.40 x 1.55 x 0.50	2.40 x 2.20 x 0.50
1/2 Brick	2.29 x 2.41 x 0.39	2.29 x 2.41 x 0.51	2.40 x 2.50 x 0.51	/
Full Brick	4.46 x 2.28 x 0.40	4.60 x 2.40 x 0.51	4.58 x 2.40 x 0.51	/





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