

# MEDICAL POWER SUPPLIES

PROVEN AND HIGHLY RELIABLE DC-DC AND AC-DC  
MEDICAL POWER SOLUTIONS



PRECISION | POWER | PERFORMANCE



# Medical Power Supplies

Advanced Energy (AE) brings over 40 years of experience of leading edge power supply development and applications support to market with our revolutionary Artesyn, Excelsys, and UltraVolt medical power supplies. Our products deliver unrivaled levels of efficiency, flexibility, performance and reliability. Together with our network of qualified and experienced manufacturer representatives and distributors, we have established Advanced Energy as the brand of choice for customers seeking the highest performing, most reliable, and most cost-efficient power solutions.

# Your Global Partner for Medical Power Supplies

Expertise

## Easily Increase Functionality and Reduce Medical System Sizes

Advanced Energy’s intelligent power supplies include the Artesyn, Excelsys, and UltraVolt product lines. Benefit from high power densities, unmatched flexibility, and extensive features sets, which include 24 W-standby power, up to 24 outputs, 5000-m-altitude operation, analog, and digital management.

## Unrivaled Reliability

Advanced Energy’s medical power supplies can deliver 25% longer lifetimes than competitor products. Our fanless and fan-cooled products provide efficiencies of up to 94%.

## Meet Current and Future Safety Regulations

Many of our medical products carry full international safety certifications that meet IEC60601-1 (third edition) and IEC60601-1-2 (fourth edition EMC) requirements.

## Deep Portfolio and Engineering Expertise

With Advanced Energy’s broad portfolio of medical solutions, we are well equipped to meet all your high and low voltage application requirements. Our medical power supplies are built using decades of engineering expertise.

Bio Life Sciences

- Immunoassay Systems
- In-Vitro Diagnostics
- Microbiology
- Centrifuges
- Clinical Chemistry

- Osmometers
- PCRs
- Electrophoresis
- Mass Spectrometry
- Scanning Electron Microscopes

Dental

- Gamma Imaging Systems
- CAD/CAM Systems
- Oral Care Equipment

- Digital Radiography
- X-Ray Machines

Imaging

- Ultrasound Scanners
- Computed Tomography (CT) Scan
- Positron Emission Tomography (PET)

- Magnetic Resonance Imaging (MRI)
- Nuclear Medicine
- X-Ray Machines

Laboratory

- Chemical Analysis Equipment
- Mass Analyzers
- Lab Automation

- Sterilization
- Electron Microscopes

Medical

- Ophthalmic Equipment
- Surgical Lasers
- Aesthetic Equipment
- Electroporation



- Dialysis
- Surgical Robotics
- Patient Monitoring
- Patient Therapy

# Medical Power Supplies Selector Guide



Advanced Energy offers a broad portfolio of medical power supplies from its Artesyn, Excelsys, and UltraVolt product lines.



## DC-DC


### Low Voltage DC-DC Converters

<p><b>ASA</b></p> <p>Output voltage -15 to 15 V</p> <p>Max output power 6 W</p> 	<p><b>AEE</b></p> <p>Output voltage -15 to 24 V (max 15 V at 10 W)</p> <p>Output power 10, 15, and 20 W</p> 
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### High Voltage DC-DC Modules

<p><b>High Power C</b></p> <p>Output voltage 125 V to 60 kV</p> <p>Output power 60, 125, or 250 W</p> 	<p><b>A</b></p> <p>Output voltage 62 V to 40 kV</p> <p>Output power 4, 15, 20, and 30 W</p> 
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<p><b>LE</b></p> <p>Output voltage 1 to 30 kV</p> <p>Output power 4, 20, and 30 W</p> 	<p><b>AA</b></p> <p>Output voltage 62 V to 6 kV</p> <p>Output power 4, 20, and 30 W</p> 
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<p><b>HVA</b></p> <p>Output voltage 1 to 20 kV</p> <p>Max output power 2 W</p> 	<p><b>US</b></p> <p>Output voltage 200 to 500 V</p> <p>Max output power 0.1 W</p> 
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## AC-DC

### Low Voltage AC-DC Power Supplies



#### MODULAR

<p><b>UltiMod</b></p> <p>Up to 12 outputs, ranging from 1 to 58 V</p> <p>Max output power 1200 W</p> 	<p><b>iMP</b></p> <p>Up to 21 outputs, ranging from 2 to 60 V</p> <p>Max output power 1500 W</p> 	<p><b>uMP</b></p> <p>Up to 12 outputs, ranging from 0.9 to 60 V</p> <p>Max output power 1800 W</p> 
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<p><b>CoolX1800</b></p> <p>Up to 12 outputs, ranging from 1 to 58 V</p> <p>Max output power 1800 W</p> 	<p><b>CoolX3000</b></p> <p>Up to 24 outputs, ranging from 1 to 58 V</p> <p>Max output power 3000 W</p> 	<p><b>iVS</b></p> <p>Up to 24 outputs, ranging from 2 to 60 V</p> <p>Max output power 4920 W</p> 
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<p><b>iHP</b></p> <p>Up to 8 outputs, ranging from 0.6 to 1000 V</p> <p>Max output power 24,000 W</p> 	
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#### DISTRIBUTED/ENCLOSED

<p><b>LCM</b></p> <p>Output voltage 12 to 72 V</p> <p>Max output power 3000 W</p> 	<p><b>Xsolo</b></p> <p>Output voltage 14 to 58 V</p> <p>Max output power 1000 W</p> 
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Our power solutions are designed for optimum performance and reliability, and to meet the latest regulatory and safety standards such as IEC60601-1 3rd Edition, IEC60601-1-2 4th Edition EMC, 2XMOPP,

and low leakage current. Some products are dual-fused, some are suitable for B or BF rated applications. Please consult individual data sheets for specific details.

## FANLESS SINGLE OUTPUT

### LCC250

Output voltage  
10.8 to 55.2 V

Max power output  
250 W



### LCC600

Output voltage  
12 to 54 V

Max power output  
600 W



### CS1000

Output voltage  
1 to 58 V

Max power output  
1000 W



## FANLESS MODULAR

### CoolX600

Up to 8 outputs,  
ranging from 1 to 58 V

Max output power  
600 W



### CoolX1000

Up to 12 outputs

Max output power  
1000 W



## ADAPTERS

### DA

5 V / 10 W



## OPEN FRAME

### 2x4

#### NPS20-M

4.5 to 57.6 V / 25 to 40 W

#### NPS40-M

4.5 to 57.6 V / 45 to 60 W

#### NPT40-M

-15 to 24 V / 45 to 55 W

#### NPS60-M

4 to 28.8 V / 60 W

#### LPT100-M

-16.5 to 28.8 V / 80 to 130 W

#### LPS100-M

4.5 to 59.4 V / 100 to 150 W

#### CPS250-M

12 to 52.8 V / 150 to 250 W



### 3x5

#### LPS40-M

5 to 24 V / 40 to 55 W

#### LPS60-M

11.4 to 26.4 V / 60 to 80 W

#### LPT60-M

-15 to 15 V / 60 to 80 W

#### TLP150

10.8 to 26.4 V / 100 to 150 W

#### LPQ200-M

13.2 to 26.4 V / 100 to 200 W

#### LPS200-M

4.5 to 52.8 V / 125 to 250 W

#### LPS360-M

12 to 52.8 V /  
200 to 360 W



### 4x6

#### CNS650-MU

12 to 52.8 V / 400 to 650 W



### 4x7

#### NLP250

11.4 to 25.2 V / 175 to 250 W



## High Voltage AC-DC Modules

### PFC

#### FULL BRICK

### AIF06

Output voltage 400 V

Max output power 2400 W



#### FULL BRICK

### AIF04

Output voltage 380 V

Max output power 1600 W



#### 3/4 BRICK

### AIT

Output voltage 393 V

Max output power 150 W



#### 1/4 BRICK

### AIQ

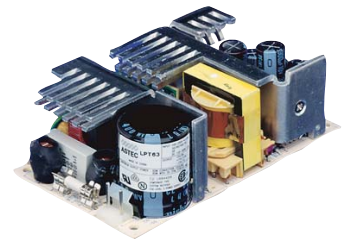
Output voltage 393 V



Max output power 75 W



# Artesyn AC-DC Power Supplies

IEC 60601-1 Safety Certified



Standard AC-DC <sup>1,2</sup>								
Product Series	Descriptions	Output Power Watts		Outputs	Available Output Voltages	Dimensions	Protection Class	EMI Class
		Free Air	Forced Air					
DA10-M <sup>3</sup> 	External Adapter (wall mount)	10	10	1	5 V	2.36 x 1.10 x 2.40 in	II	B
NPS20-M 	Open-frame	25	40	1	5 V, 12 V, 15 V, 24 V, 48 V	2.00 x 4.00 x 1.00 in	I, II	B, A
LPS40-M 	Open-frame (opt. enclosure)	40	55	1	5 V, 12 V, 15 V, 24 V	5.00 x 3.00 x 1.20 in	I	A
LPT40-M 	Open-frame (opt. enclosure)	40	55	3	5 V, 12 V, -12 V, 15 V, -15 V, 24 V	5.00 x 3.00 x 1.20 in	I	A
NPS40-M 	Open-frame (opt. enclosure)	45	60	1	5 V, 12 V, 15 V, 24 V, 48 V	4.00 x 2.00 x 1.00 in	I, II	B, A
NPT40-M 	Open-frame (opt. enclosure)	45	55	3	5 V, 12 V, -12 V	4.00 x 2.00 x 1.00 in	I, II	B
NPS60-M 	Open-frame	60	60	1	5 V, 12 V, 24 V	2.00 x 4.00 x 1.00 in	I, II	B, A
LPS60-M 	Open-frame (opt. enclosure)	60	80	1	12 V, 15 V, 24 V	5.00 x 3.00 x 1.65 in	I	A
LPT60-M 	Open-frame (opt. enclosure)	60	80	3	5 V, 12 V, -12 V, 15 V, -15 V	5.00 x 3.00 x 1.65 in	I	A

1. All products comply with the international standard IEC 60601-1 for medical devices, defined as Medical Electrical Equipment and Systems
2. Individual product approvals are stated in the publicly published product data sheets and technical reference notes at [www.advancedenergy.com](http://www.advancedenergy.com)
3. Models tested to comply according to the medical standard IEC 60601-1-2 4th Edition

# Artesyn AC-DC Power Supplies

IEC 60601-1 Safety Certified



Standard AC-DC <sup>1,2</sup>								
Product Series	Descriptions	Output Power Watts		Outputs	Available Output Voltages	Dimensions	Protection Class	EMI Class
		Free Air	Forced Air					
LPT100-M 	Open-frame (opt. enclosure)	80	130	3	3.3 V, 5 V, 12 V, -12 V, 15 V, -15 V, 24 V	4.00 x 2.00 x 1.28 in	I	B
LPS100-M 	Compact Open-frame (opt. enclosure)	100	150	1	5 V, 12 V, 15 V, 24 V, 48 V	4.00 x 2.00 x 1.29 in	I	B
LPQ200-M 	Open-frame	100	200	4	3.3 V, 5 V, 12 V, -12 V, 24 V	5.00 x 3.00 x 1.42 in	I	B
LPS170-M 	U-channel (optional cover)	110	175	1	3.3 V, 5 V, 12 V, 15 V, 24 V, 48 V	4.25 x 8.50 x 1.50 in	I	B
LPS200-M 	Compact Open-frame (opt. enclosure)	125	250	1	5 V, 12 V, 15 V, 24 V, 48 V	5.00 x 3.00 x 1.29 in	I	B
TLP150 Medical 	Open-frame (opt. enclosure)	150	150	1	12 V, 24 V	5.00 x 3.00 x 1.25 in	I	B
CPS250-M <sup>3</sup> 	Open-frame	155	250	1	12 V, 24 V, 48 V	2.00 x 4.00 x 1.30 in	I, II	B
NLP250 Medical 	U-channel (opt. cover)	175	250	1	12 V, 24 V	7.00 x 4.00 x 1.50 in	I	B
LPS360-M <sup>3</sup> 	Open-frame (opt. enclosure)	200	360	1	12 V, 15 V, 24 V, 48 V	3.00 x 5.00 x 1.57 in	I, II	B

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# Artesyn AC-DC Power Supplies

IEC 60601-1 Safety Certified



Standard AC-DC <sup>1,2</sup>								
Product Series	Descriptions	Output Power Watts		Outputs	Available Output Voltages	Dimensions	Protection Class	EMI Class
		Free Air	Forced Air					
 LCC250	Convection/Conduction Mounting	250	250	1	12 V, 24 V, 48 V	4.00 x 7.00 x 1.10 in	I	B
 LCM300 <sup>3</sup>	Bulk Front End	300	300	1	12 V, 15 V, 24 V, 36 V, 48 V	1.61 x 4.00 x 7.00 in	I	B
 CNS650-MU <sup>3</sup>	Open-frame	400	650	1	12 V, 24 V, 48 V	4.00 x 6.00 x 1.50 in	I, II	B
 µMP04 <sup>3</sup>	Configurable	400	600	1 to 12	0.9 - 60 V/4-40 A	10.11 x 3.50 x 1.57 in	I	B
 LCC600 <sup>3</sup>	Conduction Cooled	600	600	1	12 V, 24 V, 28 V, 36 V, 48 V	4.00 x 9.00 x 1.57 in	I	B
 LCM600 <sup>3</sup>	Bulk Front End	600	600	1	12 V, 15 V, 24 V, 36 V, 48 V	4.50 x 7.50 x 2.40 in	I	B
 iMP4	Configurable & Intelligent	750	1100	1 to 21	2 - 60 V/2 - 150 A	10.00 x 5.00 x 2.50 in	I	B
 LCM1000 <sup>3</sup>	Bulk Front End	1000	1000	1	12 V, 15 V, 24 V, 36 V, 48 V	2.50 x 5.20 x 10.00 in	I	B
 iMP8	Configurable & Intelligent	1000	1200	1 to 21	2 - 60 V/2 - 150 A	10.00 x 7.00 x 2.50 in	I	B

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# Artesyn AC-DC Power Supplies

IEC 60601-1 Safety Certified



Standard AC-DC <sup>1,2</sup>								
Product Series	Descriptions	Output Power Watts		Outputs	Available Output Voltages	Dimensions	Protection Class	EMI Class
		Free Air	Forced Air					
 µMP10 <sup>3</sup>	Configurable	1000	1200	1 to 12	0.9 - 60 V/4 - 40 A	10.11 x 5.00 x 1.57 in	I	B
 µMP16 <sup>3</sup>	Configurable	1000	1800	1 to 12	0.9 - 60 V/4 - 40 A	10.11 x 5.00 x 1.57 in	I	B
 iMP1	Configurable & Intelligent	1200	1500	1 to 21	2 - 60 V/2 - 150 A	11.00 x 8.00 x 2.50 in	I	B
 LCM1500 <sup>3</sup>	Bulk Front End	1500	1500	1	12 V, 15 V, 24 V, 36 V, 48 V	2.50 x 5.20 x 10.00 in	I	B
 iVS1, iVS6	Configurable & Intelligent	1500	3210	1 to 24	2 - 60 V/2 - 150 A	11.00 x 5.00 x 5.00 in	I	B
 iVS3, iVS8	Configurable & Intelligent	1800	4920	1 to 24	2 - 60 V/2 - 150 A	11.00 x 8.00 x 5.00 in	I	B
 LCM3000 <sup>3</sup>	Bulk Front End	3000	3000	1	12 V, 18 V, 24 V, 36 V, 48 V, 72 V	2.50 x 7.00 x 10.9 in	I	B
 iHP <sup>3</sup>	Configurable & Intelligent	-	24000	8	12 V, 24 V, 48 V, 80 V, 125 V, 250 V	5.22 x 19.00 x 27.90 in	I	B

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3. Models tested to comply according to the medical standard IEC 60601-1-2 4th Edition

# Artesyn DC-DC Power Supplies

Medical Safety to UL / CSA / IEC / EN 60601-1 3rd Edition



Standard DC-DC							
	Input Voltage	Output 1 Voltage	Output 2 Voltage	Dimensions	I/O Isolation	Efficiency	Model Number
<b>5 W</b>	<b>Enclosed</b>						
	9 to 18 V	5 V @ 1 A		1.25 x 0.80 x 0.41 in	4200 VACrms	75%	ASA01A12-M
	18 to 36 V	5 V @ 1 A		1.25 x 0.80 x 0.41 in	4200 VACrms	77%	ASA01A24-M
	36 to 75 V	5 V @ 1 A		1.25 x 0.80 x 0.41 in	4200 VACrms	77%	ASA01A48-M
<b>6 W</b>	<b>Enclosed</b>						
	9 to 18 V	12 V @ 0.5 A		1.25 x 0.80 x 0.41 in	4200 VACrms	78%	ASA01B12-M
	9 to 18 V	12 V @ 0.25 A		1.25 x 0.80 x 0.41 in	4200 VACrms	78%	ASA01BB12-M
	9 to 18 V	15 V @ 0.2 A		1.25 x 0.80 x 0.41 in	4200 VACrms	78%	ASA01CC12-M
	18 to 36 V	12 V @ 0.5 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01B24-M
	18 to 36 V	12 V @ 0.25 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01BB24-M
	18 to 36 V	15 V @ 0.2 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01CC24-M
	36 to 75 V	12 V @ 0.5 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01B48-M
	36 to 75 V	12 V @ 0.25 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01BB48-M
36 to 75 V	15 V @ 0.2 A		1.25 x 0.80 x 0.41 in	4200 VACrms	80%	ASA01CC48-M	
<b>8 W</b>	9 to 18 V	5 V @ 1.6 A		2.00 x 1.00 x 0.40 in	4200 VACrms	76%	AEE01A12-M
<b>15 W</b>	9 to 18 V	5 V @ 3 A		2.00 x 1.00 x 0.47 in	4200 VACrms	85%	AEE03A12-M
	9 to 18 V	12 V @ 1.25 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE01B12-M
	9 to 18 V	15 V @ 1 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01C12-M
	9 to 18 V	24 V @ 0.625 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01H12-M
	9 to 18 V	12 V @ 0.625 A	-12 V @ 0.625 A	2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01BB12-M
	9 to 18 V	15 V @ 0.5 A	-15 V @ 0.5 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE01CC12-M
	18 to 36 V	5 V @ 3 A		2.00 x 1.00 x 0.47 in	4200 VACrms	87%	AEE03A24-M
	18 to 36 V	12 V @ 1.25 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE01B24-M
	18 to 36 V	15 V @ 1 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01C24-M
	18 to 36 V	24 V @ 0.625 A		2.00 x 1.00 x 0.47 in	4200 VACrms	90%	AEE01H24-M
	18 to 36 V	12 V @ 0.625 A	-12 V @ 0.625 A	2.00 x 1.00 x 0.47 in	4200 VACrms	90%	AEE01BB24-M
	18 to 36 V	15 V @ 0.5 A	-15 V @ 0.5 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE01CC24-M
	36 to 75 V	5 V @ 3 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE03A48-M
	36 to 75 V	12 V @ 1.25 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01B48-M
	36 to 75 V	15 V @ 1 A		2.00 x 1.00 x 0.47 in	4200 VACrms	87%	AEE01C48-M
	36 to 75 V	24 V @ 0.625 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01H48-M
	36 to 75 V	12 V @ 0.625 A	-12 V @ 0.625 A	2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01BB48-M
36 to 75 V	15 V @ 0.5 A	-15 V @ 0.5 A	2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE01CC48-M	

# Artesyn DC-DC Power Supplies







Medical Safety to UL / CSA / IEC / EN 60601-1 3rd Edition



Standard DC-DC							
	Input Voltage	Output 1 Voltage	Output 2 Voltage	Dimensions	I/O Isolation	Efficiency	Model Number
20 W	9 to 18 V	5 V @ 4 A		2.00 x 1.00 x 0.47 in	4200 VACrms	85%	AEE04A12-M
	9 to 18 V	12 V @ 1.67 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02B12-M
	9 to 18 V	15 V @ 1.33 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE02C12-M
	9 to 18 V	24 V @ 0.84 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02H12-M
	9 to 18 V	12 V @ 0.84 A	-12 V @ 0.84 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02BB12-M
	9 to 18 V	15 V @ 0.67 A	-15 V @ 0.67 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02CC12-M
	18 to 36 V	5 V @ 4 A		2.00 x 1.00 x 0.47 in	4200 VACrms	87%	AEE04A24-M
	18 to 36 V	12 V @ 1.67 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02B24-M
	18 to 36 V	15 V @ 1.33 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE02C24-M
	18 to 36 V	24 V @ 0.84 A		2.00 x 1.00 x 0.47 in	4200 VACrms	90%	AEE02H24-M
	18 to 36 V	12 V @ 0.84 A	-12 V @ 0.84 A	2.00 x 1.00 x 0.47 in	4200 VACrms	90%	AEE02BB24-M
	18 to 36 V	15 V @ 0.67 A	-15 V @ 0.67 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02CC24-M
	36 to 75 V	5 V @ 4 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE04A48-M
	36 to 75 V	12 V @ 1.67 A		2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02B48-M
	36 to 75 V	15 V @ 1.33 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE02C48-M
	36 to 75 V	24 V @ 0.84 A		2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE02H48-M
	36 to 75 V	12 V @ 0.84 A	-12 V @ 0.84 A	2.00 x 1.00 x 0.47 in	4200 VACrms	88%	AEE02BB48-M
	36 to 75 V	15 V @ 0.67 A	-15 V @ 0.67 A	2.00 x 1.00 x 0.47 in	4200 VACrms	89%	AEE02CC48-M

# Excelsys Medical Power Supplies





Standard AC-DC									
Product Series	Descriptions	Output Power Watts	Free Air	Forced Air	Outputs	Available Output Voltages	Dimensions	Protection Class	EMI Class
 CX600	Fanless 600 W, Intelligent, Modular Power Supply Platform	600	600 W	Higher Ambient Temperature	Up to 8	1 - 58 V	8.50 x 4.50 in x 1U	Class I	B <sup>1</sup>
 CX1000	Fanless 1000 W, Intelligent, Modular Power Supply Platform	1000	1000 W Natural Convection -Cooled	Higher Ambient Temperature	Up to 12	1 - 58 V	10.00 x 6.50 x 1U	Class I	B <sup>1</sup>
 CS1000	Innovative, Fanless, 1U, High Efficiency, 1000 W, Single Output Power Supplies	1000	1000 W	Higher Ambient Temperature	1	1 - 58 V	10.30 x 5.00 x 1.50 in	Class I	B <sup>1</sup>
 Xsolo	500 and 1000 W Ultra Compact, High-Reliability Single Output Power Supplies	1008	XS500 - 500 W	XS1000 - 1000 W	1	24 V, 48 V	500 W: 30.00 x 5.00 x 1.50 in 1000 W: 9.30 x 5.00 x 1.57 in	Class I	B <sup>1</sup>
 UltiMod	High Efficiency, High Reliability, Modular Configurable Power Supplies	1200	-	Up to 1200 W	Up to 12	1 - 58 V	UX4: 10.20 x 3.50 x 1U UX6: 10.30 x 5.00 x 1U	Class I	B <sup>1</sup>
 CX1800	1800 W Intelligent, Modular Power Supplies	1800	-	1800 W	Up to 12	1 - 58 V	10.50 x 5.00 x 1U	Class I	B <sup>1</sup>
 CX3000	High Efficiency, Intelligent and reliable 3000 W Modular Power Supplies	3000	-	3000 W Higher Ambient Temperature	Up to 24	1 - 58 V	11.80 x 5.20 x 4.70 in	Class I	B <sup>1</sup>

1. Consult AE applications for system level compliance

# UltraVolt Medical Power Supplies



Standard DC-DC								
Product Series	Descriptions	Power	Ouput	Input Voltage	Ouput Voltage	Dimensions	Ripple	Example Model Number
 <p>A Series</p>	Precision DC-DC Regulated Supplies	4, 15, 20, or 30	Single	12 V on 4 W 24 V on 20, or 30 W	62 V to 40 kV	1/16 to 6A Series: 3.70 x 1.50 x 0.81 in	To 100 ppm	1/16A12-P4 40A24-N30
						10A Series: 3.72 x 1.52 x 0.96 in		
						15A Series: 4.70 x 1.52 x 0.96 in		
						20A Series: 5.70 x 1.52 x 0.96 in		
						25A Series: 6.90 x 1.60 x 0.96 in		
						30A Series: 6.90 x 1.60 x 1.14 in		
						35A Series: 6.90 x 1.60 x 1.14 in		
40A Series: 7.96 x 1.60 x 1.40 in								
 <p>AA Series</p>	Miniature PCB-Mount, Regulated DC-DC Converters	4, 20, or 30	Single	12 V on 4 W 24 V on 20, or 30 W	62 V to 6 kV	2.97 x 1.50 x 0.81 in	To 100 ppm	1/16AA24-P20 6AA12-N4
 <p>High Power C Series</p>	Capacitive Charging, DC-DC Power Supplies	60, 125, 250	Single	24 V	125 V to 60 kV	1/8C to 6C 60&125W: 5.00 x 4.00 x 1.06 in	< 10,000 ppm	1/8C24-N125 6C24-P250 8C24-P60 30C24-N125 50C24-P250
						1/8C to 6C 250W: 8.00 x 5.00 x 1.06 in		
						8C to 30C 60&125W: 8.00 x 5.00 x 1.06 in		
						8C to 30C 250W: 9.25 x 5.00 x 2.03 in		
						40C to 60C: 4.00 x 5.00 x 63.50 in		
 <p>LE Series</p>	High Precision DC-DC Regulated Supplies	4, 15 (10 & 30 only), 20 (1 to 6 only), 30	Single	24 V	1 to 30 kV	1 - 15 kV: 6.00 x 3.81 x 1.50 in	10 ppm	1LE24-P4 30LE24-N30
						20 - 30 kV: 7.28 x 3.94 x 1.50 in		
 <p>HVA</p>	Precision DC-DC High Voltage Amplifiers	1, 1.5, or 2	Single	24 V	1 to 20 kV	Small: 6.00 x 3.81 x 1.25 in	500 ppm	1HVA24-P1 20HVA24-BP1
						Large: 9.75 x 6.50 x 1.50 in		
 <p>US Series</p>	Precise, Micro-Size High Voltage Power Supplies	100 mW	Single	5, 12	200 to 500 V	1.00 x 0.81 x 0.43 in	< 100 ppm	0.5US5-P0.1

## Medical-Grade Power Supplies: What's Different?



### Internal Power Supply Design

Medical-grade power supplies are built to meet IEC60601-1 medical equipment safety standard.



### Design Cycles

Medical equipment often requires extended design cycles and collaboration with power supply vendors.



### Longer Life Expectancies

Medical equipment is expected to last. Your power supply must be able to handle longer product life cycles.

Beyond the common volts, amps, and safety approval considerations used to select power supplies for OEM equipment, below is a checklist to simplify finding the right medical power supply for your device.

## The Decision Making Process

01

Define and specify the power requirements as early as possible in the design process




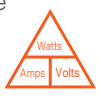


02

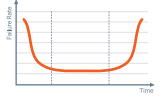
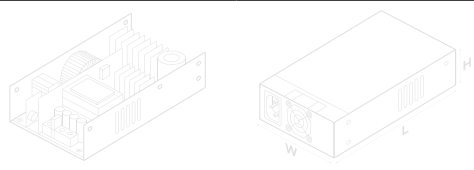
Use a standard off-the-shelf medical power supply if possible and consider configurable solutions before jumping to a custom design option





03

Evaluate your potential supplier's quality system



Electrical Requirements			
<p>01 Input/output requirements DC-DC or AC-DC</p> 	<p>02 Input line voltage</p>	<p>03 Class I (3 wire AC input) or Class II (2 wire AC input)</p> 	<p>04 Number of outputs</p> 
<p>05 Voltage and current of each output</p>	<p>06 Output wattage of each output <math>W = V \times A</math></p> 	<p>07 Calculate total power supply wattage by adding all the outputs' wattage</p>	<p>08 Dual fusing</p> 
<p>09 EMC/EMI (radiated and conducted)</p> 	<p>10 Efficiency</p>	<p>11 Leakage (ultra-low leakage of less than 150 <math>\mu</math>A is available)</p>	<p>12 Holdup time</p> <p>13 Control and monitoring functions</p>

Mechanical Requirements			
<p>01 Physical Size L x W x H, weight</p>	<p>02 Form factor or chassis type</p>	<p>03 Mounting requirements</p>	<p>04 Cooling, forced air, convection or conduction</p>
<p>05 Thermal considerations, airflow, temperature rise</p>	<p>06 Ruggedized for enhanced protection from shock and vibration</p>	<p>07 Acoustic noise, especially in noise sensitive applications</p>	<p>08 Electrical connections, input and output of power supplies <i>Type of mating connectors, wiring harness, etc.</i></p>
<p>09 Reliability: MTBF, Life and QAV</p> 	<p>10 Sensitivity to vibrations</p>		

Compliance/Environmental			
<p>01 Type B/BF</p> 	<p>02 Hospital/clinic/in-home/portable/fixed</p>	<p>03 RoHS2 (Removal of Hazardous Substances)</p> 	<p>04 Ambient temperature requirements</p> 
<p>05 Altitude (operation)</p>	<p>06 Medical safeties: · IEC60601-1 · Patient contact/vicinity (MOPP/MOPP)</p>	<p>07 Airborne/ship/ambulance</p>	<p>08 WEEE (recycling)</p> 



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. We design and manufacture highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE

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