

Medical Power Supply

From The World's No. 1 Power Supply Company

March 2017



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Company Profile Delta Electronics Group

World's No.1* Power Supply Company

Delta Electronics Group is the world's largest provider of switching power supplies and a major source for power management and renewable energy solutions, Established in 1971, Delta has sales offices and R&D facilities worldwide with manufacturing plants located in Taiwan, Thailand, China, Mexico, India and Europe.

As a global leader in power electronics, Delta has been adopting Green manufacturing processes, recycling initiatives, waste management programs and environmentally-friendly green building. In 2015, Delta Electronics was selected for the prestigious Dow Jones Sustainability Index (DJSI) World for the fifth consecutive year. Amongst many other national and international awards, since 2010, Delta has also received more than 49 internationally recognized technology and design awards.

Standard Power Supplies



Since 2008, Delta's Medical Power Supply team has been launching many new products in Delta's global distribution channels nearly on a monthly basis. These products which include DIN Rail, Panel Mount, Open Frame and LED Driver types, offer customers the same industrial leading technology and quality that Delta's ODM partners are familiar with. Delta standard power supplies are able to cater to nearly all industrial applications including cash management and automation solutions and many more. With wide range of reliable products and world class customer support, the IPS team had seen more than 90% CAGR between 2008 to 2014. Please visit our standard product homepage at **www.DeltaPSU.com** for more product information.

2 Modified Standard Power Supplies



Many top tier electronics companies on the Fortune® 500 list have long regarded Delta as a trusted ODM partner. These companies expect nothing less than the best technology and quality. With decades of industrial leading manufacturing and design experiences in ODM power management products, the Medical Power Supply team can also offer our customers modified standard products by leveraging from the wide range of standard products in our catalog. Modified standard products enable our customers to optimize their costs and product development time. For further query, please contact your local Delta distributor or simply send your query to info@deltapsu.com

^{*}Based on global sales revenue from the Micro-Tech Consultants March 2016 report

Latest Products

Delta Standard Medical Power Supplies

MDS-200ADB



200W

12/24V

- 2.5" × 4.5" × 1.8" Package with enclosure
- Power Good Signal
- Up to 800K Hours MTBF
- Suited for type BF medical products
- IT & Medical Safety Approvals

MDS-250ADB



250W

12/24V PAGE 19

- 3.5" × 5.5" × 1.75" Package with enclosure
- Power Good Signal
- Remote on/off control
- Up to 500K Hours MTBF
- Suited for type BF medical products

MDS-300ADB



300W

12/18/24/48V PAGE 20

- 3.5" × 5.5" × 1.75" Package with enclosure
- Power Good Signal
- Remote on/off control
- Up to 800K Hours MTBF
- Suited for type BF medical products

MDS-400ADB



400W

12/24V PAGE 21

- 3.5" × 5.5" × 1.75" Package with enclosure
- Power Good Signal
- Remote on/off control
- Up to 500K Hours MTBF
- Suited for type BF medical products

MDS-350AD701



350W

12V 1U PAGE 23

- ATX 12V standard function & form factor
- IEC60601-1 3.1 ed.(Medical) & IEC 60950-1(ITE) approvals
- Suitable for type BF patient access applications
- Built-in active PFC
- Compliant with IEC 60601-1-2 4th Ed. requirements

COMING SOON

Typical Applications

Delta Standard Medical Power Supplies











- Blood pressure meter
- CPAP/Sleep therapy
- Healthcare information system
- Medical monitors/IT
- Nursing cart
- ECG/EKG
- Infusion pump
- Life Science

- Ophthalmology equipment
- Patient monitor
- Dental equipment
- In-Vitro diagnostic equipment
- Medical ventilator
- Oxygen condenser
- Ultrasound equipment

Selection Guide

Delta Standard Medical Power Supplies

New products are frequently introduced. Please visit www.DeltaPSU.com for latest product updates.

Product Type	Model Name	CC Code	Input Terminal	Output Voltage	Output Current	Output Power	Dimensions	Safety Standards
Open Frame	MDS-040APS12 B	А	JST 2-pin		3.33A	40W	2.0" × 3.0" × 0.9"	(€ № ⊙
Power Supply	MDS-065APS12 B	А	JST 2-pin		5.42A	65W	2.0" × 4.0" × 1.2"	(€ :№: ⊕
,	MDS-100APS12 B	А	JST 2-pin		8.33A	100W	3.0" × 5.0" × 1.2"	(€ ः‱ ः
	MDS-100BPS12 B	А	JST 2-pin	401/	8.33A	100W	2.0" × 4.0" × 1.25"	(€ :№: ⊙
	MDS-200APB12*	AA	Molex 2-pin	12V	16.67A	200W	2.0" × 4.0" × 1.4"	(€ :34. (€)
	MDS-250APB12*	AA	Molex 2-pin		20.84A	250W	3.0" × 5.0" × 1.4"	(€ 391 (€ 3)
	MDS-300APB12*	AA	Molex 2-pin		25.00A	300W	3.0" × 5.0" × 1.4"	(€ 🗫 🛣 🖹
	MDS-400APB12*	AA	Molex 2-pin		33.33A	400W	3.0" × 5.0" × 1.4"	△ ∞ ∞ ∞
	MDS-040APS15 B	А	JST 2-pin		2.67A	40W	2.0" × 3.0" × 0.9"	(€ :3/4: €:
	MDS-065APS15 B	А	JST 2-pin	15V	4.20A	65W	2.0" × 4.0" × 1.2"	(€ ₁₩₂ ; ;
	MDS-100APS15 B	А	JST 2-pin	15V	6.67A	100W	3.0" × 5.0" × 1.2"	(€ ,₩, ⊚
	MDS-100BPS15 B	А	JST 2-pin		6.70A	100W	2.0" × 4.0" × 1.25"	(€ ,₩, ∞
	MDS-040APS18 B	А	JST 2-pin		2.22A	40W	2.0" × 3.0" × 0.9"	(€ ඎ
	MDS-065APS18 B	А	JST 2-pin		3.61A	65W	2.0" × 4.0" × 1.2"	(€ :₹1):
	MDS-100APS18 B	А	JST 2-pin	18V	5.55A	100W	3.0" × 5.0" × 1.2"	(€ :№: ◎
	MDS-100BPS18 B	А	JST 2-pin		5.50A	100W	2.0" × 4.0" × 1.25"	(€ ඎ
	MDS-300APB18*	AA	Molex 2-pin		16.66A	300W	3.0" × 5.0" × 1.4"	(€ ﷺ €
	MDS-400AUS19 B	А	DECA 3-pin	19V	21.10A	400W	3.8" × 7.8" × 1.6"	(2) ∞
	MDS-040APS24 B	А	JST 2-pin		1.67A	40W	2.0" × 3.0" × 0.9"	(€ ඎ
	MDS-065APS24 B	А	JST 2-pin		2.71A	65W	2.0" × 4.0" × 1.2"	(€ № ∞
	MDS-100APS24 B	А	JST 2-pin		4.17A	100W	3.0" × 5.0" × 1.2"	(€ ₁ % ⊚
	MDS-100BPS24 B	А	JST 2-pin		4.20A	100W	2.0" × 4.0" × 1.25"	(€ № ∞
	MDS-200APB24*	AA	Molex 2-pin	24V	8.33A	200W	2.0" × 4.0" × 1.4"	(€ ∰ @ ≜
	MDS-250APB24*	AA	Molex 2-pin		10.41A	250W	3.0" × 5.0" × 1.4"	(€ 🕮 🕮
	MDS-300APB24*	AA	Molex 2- pin		12.50A	300W	3.0" × 5.0" × 1.4"	(€ ﷺ €
	MDS-400APB24*	AA	Molex 2-pin		16.66A	400W	3.0" × 5.0" × 1.4"	(€ ﷺ €
	MDS-400AUS24 B	А	DECA 3-pin		16.67A	400W	3.8" × 7.8" × 1.6"	(€ ,24,2
	MDS-100AP401 B	А	Molex 2-pin	5.1V/12V/-15V/15V	8A/3A/0.8A/0.8A	100W	3.0" × 5.0" × 1.2"	(€ ,₩, ∞
	MDS-300APB48*	AA	Molex 2-pin	48V	6.25A	300W	3.0" × 5.0" × 1.4"	(€ ∰ @ ≜
Enclosed	MDS-200ADB12	AA	Molex 2-pin		16.67A	200W	2.5" × 4.5" × 1.8"	(€ 💯 🕍
Power Supply	MDS-250ADB12	AA	Molex 2-pin	12V	20.84A	250W	3.5" × 5.5" × 1.75"	(€ 🕬 🕍
	MDS-300ADB12	AA	Molex 2-pin	12V	25.00A	300W	3.5" × 5.5" × 1.75"	(€ 💯 🕍
	MDS-400ADB12	AA	Molex 2-pin		33.33A	400W	3.5" × 5.5" × 1.75"	(€ ۥ‱
	MDS-300ADB18	AA	Molex 2-pin	18V	16.66A	300W	3.5" × 5.5" × 1.75"	(€ № @ 🖺
	MDS-200ADB24	А	Molex 2-pin		8.33A	200W	2.5" × 4.5" × 1.8"	(€ № @ 🔝
	MDS-250ADB24	AA	Molex 2-pin	24V	10.41A	250W	3.5" × 5.5" × 1.75"	(€ ∰ @ ≜
	MDS-300ADB24	AA	Molex 2-pin	∠4V	12.50A	300W	3.5" × 5.5" × 1.75"	(€ № @ 🖺
	MDS-400ADB24	AA	Molex 2- pin		16.67A	400W	3.5" × 5.5" × 1.75"	(€ № @ 🖺
	MDS-300ADB48	AA	Molex 2-pin	48V	6.25A	300W	3.5" × 5.5" × 1.75"	(€ № @ 🔝

^{*} Product with options for enclosure or U-channel

Medical Power Supply Model Numbering

MDS	-	XXX						
Delta Medical Power Supply 040APS series 065APS series 100APS series 100BPS series 400AUS series		Max power wattage in the product series. May be lower at some voltages 060: 60W 100: 100W	Family Code A-Z	Product Type P: Open Frame U: U Frame	Input Type Code S: Single Output 4: 4 Outputs ¹⁾	Output Voltage 12: 12V 24: 24V	Input Configuration B: Class 3-pin connector A: Class 2-pin	CC Code Control code for DC connector, label, etc. A: DC connector ²

¹⁾ For MDS-100AP401B, 2) Refer to technical datasheet or product catalog

MDS	-	XXX					
Delta Medical Power Supply MDS-200A series MDS-250A series MDS-300A series MDS-400A series		Max power wattage in the product series. May be lower at some voltages 060: 60W 100: 100W	Family Code A-Z	Product Type P: Open Frame B: U-frame D: Enclosure	Input Type Class II 2-pin connector: A, C, E, G Class I 3-pin connector: B, D, F, H	Output Voltage 12: 12V 24: 24V	Control Code For DC connector, label, etc. A: DC connector type ¹⁾

¹⁾ Refer to technical datasheet or product catalog

Product Type	Model Name	CC Code	AC Inlet	Output Voltage	Output Current	Output Power	Dimensions	Safety Standards
ATX Power Supply	MDS-350AD701	AA	C14	+3.3V, +5V, +5Vsb, +12V1, +12V2, -12V, -5V	8A, 9A, 1.25A, 8A, 8A, 0.25A, 0.1A	350W	3.9" × 7.6" × 1.6"	(e : Mus ()
Adapter Power	MDS-005AAS05 A	R Wall mount-China type			1.00A	5W	1.6" × 2.2" × 1.1"	(€ .₩. ⊕)
Supply	MDS-005AAS05 B	R	Wall mount-Japan, USA type	5V	1.00A	5W	1.6" × 2.2" × 1.1"	(€ .₹., €.)
	MDS-005AAS05 C	R	Wall mount-EU type	οv	1.00A	5W	1.6" × 2.2" × 1.1"	(€ '₹'' (€)
	MDS-030AAC05*		Duck Head		3.00A	15W	2.1" × 3.5" × 1.1"	(€ .₹%. €)
	MDS-005AAS06 A	R	Wall mount-China type		0.83A	5W	1.6" × 2.2" × 1.1"	(E : M: (C)
	MDS-005AAS06 B	R	Wall mount-Japan, USA type	6V	0.83A	5W	1.6" × 2.2" × 1.1"	(€ :31/2: €)
	MDS-005AAS06 C	R	Wall mount-EU type		0.83A	5W	1.6" × 2.2" × 1.1"	(€ .₩. ⊛
	MDS-030AAC07*		Duck Head	7V	3.00A	21W	2.1" × 3.5" × 1.1"	(€ : % : (C)
	MDS-030AAC12*		Duck Head		2.00A	24W	2.1" × 3.5" × 1.1"	(€ .₩. ⊕
	MDS-060AAS12 B	А	C14	12V	5.00A	60W	2.4" × 5.3" × 1.3"	(€ .₩. ⊕)
	MDS-060BAS12 A	В	C8		5.00A	60W	2.4" × 5.3" × 1.3"	(€ ඎ @
	MDS-080AAS12 A		C8		6.66A	80W	3.0" × 5.9" × 1.6"	(€ . %
	MDS-150AAS12 B	А	C14		10.00A	120W	3.4" × 6.7" × 1.6"	(€ :%! (€)
	MDS-030AAC15*		Duck Head		2.00A	30W	2.1" × 3.5" × 1.1"	(€ ۥ‱ @
	MDS-060AAS15 B	А	C14	15V	4.00A	60W	2.4" × 5.3" × 1.3"	(€ ,₩, (€)
	MDS-090AAS15 B	А	C14		6.00A	90W	2.6" × 5.9" × 1.4"	(€ ೀ∰ ®
	MDS-060AAS19 B	А	C14		3.20A	60W	2.4" × 5.3" × 1.3"	(€ ඎ @
	MDS-060BAS19 A	А	C8		3.15A	60W	2.4" × 5.3" × 1.3"	(€ c % (®)
	MDS-090AAS19 B	А	C14	19V	4.74A	90W	2.6" × 5.9" × 1.4"	(€ 1247 €)
	MDS-150AAS19 B	А	C14		7.89A	150W	3.4" × 6.7" × 1.6"	② ³ ³ ³ (€)
	MDS-150CAB19	AA	C6		7.90A	150W	2.6" × 5.9" × 1.3"	(€ ඎ @
	MDS-030AAC24*		Duck Head		1.25A	30W	2.1" × 3.5" × 1.1"	(€ ඎ @
	MDS-060AAS24 B	А	C14		2.50A	60W	2.4" × 5.3" × 1.3"	(€ ඎ @
	MDS-060BAS24 A	А	C8	24V	2.50A	60W	2.4" × 5.3" × 1.3"	(€ ° % ''s @C
	MDS-090AAS24 B	А	C14	24 V	3.75A	90W	2.6" × 5.9" × 1.4"	(€ № @
	MDS-090BAS24 A	В	C8		3.75A	90W	3.0" × 5.9" × 1.6"	(€ ,∰, ⊕)
	MDS-150AAS24 B	А	C14		6.25A	150W	3.4" × 6.7" × 1.6"	((· ¾L · · · · · · · · · · · · · · · · ·

Medical Power Supply Model Numbering

MDS	-	XXX						
Delta Medical Power Supply MDS-350AD701		Max power wattage in the product series. May be lower at some voltages 060 → 60W 150 → 150W 1K2 → 1,200W	Family Code A-Z	Product Type D: Enclosure	Output Volta 701: +3.3V, + +12V1, +12V	5V, +5Vsb,	Revision Code	Revision Code
MDS	-	XXX						
Delta Medical Power Supply 005AAS series 060AAS series 060BAS series 080AAS series 090AAS series 090BAS series 150AAS series		Max power wattage in the product series. May be lower at some voltages 060: 60W 100: 100W	Family Code A-Z	Product Type A: Adapter	# of Output S: Single Output	Output Voltage 12: 12V 24: 24V	Input Configuration A: C8 B: C14 C: NA A: CN B: US C: EU for 005AAS	CC Code For DC plug, cable length, label, etc.
MDS	-	XXX						
Delta Medical Power Supply MDS-150CAB19A		Max power wattage in the product series. May be lower at some voltages 150: 150W	Family Code A-Z	Product Type A: Adapter		18: A, C, E, G 4: B, D, F, H	Output Voltage 12: 12V 24: 24V	Control Code AA-ZX Power cord length, plug, label, etc.
MDS	-	030		AAC				AA
Delta Medical Power Supply MDS-030 Series		Max wattage in the produc (may be lower at some volt		Family Code	Output Voltage (Single Output) 05 for 5V 12 for 12V 07 for 7V 15 for 15V 08 for 7.5V 24 for 24V		Revision Code ^{1), 2)}	

^{1) 1}st digit: DC plug type and output cable length. A for 2.1 × 5.5 × 10 mm DC plug, and 1200 mm cable length.
2) 2nd digit: Country duck-head type (A_China, B_United States, C_European, D_United Kingdom, E_Australia, G_Korea, H_India, J_Argentina, K_Brazil, M_South Africa)

Standard Products

Open Frame Power Supply



The MDS Open Frame series provides high performance and reliable solutions for internal power supplies in medical equipment or systems.

Typical Applications









Notes:



All Delta Medical Power products conform to the European directive 2011/65/EU. RoHS is the abbreviation for "Restriction of the use of certain hazardous substances".



Delta has been certified for meeting the requirements of ISO 13485: 2003 and EN ISO 13485: 2012 for the design and production of switching power supplies and adaptors for medical devices.



In addition to the UL Total Certification Program (TCP) approved client laboratory for IEC60950 and IEC60065, Delta has also participated in the UL Client Test Data Program (CTDP) for IEC 60601.

MDS 040APS Open Frame Power Supply

12/15/18/24V 40 WATTS

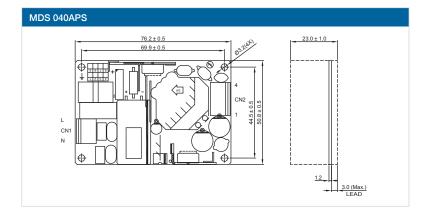


HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Risk management report available
- 2" × 3" × 0.9" package
- 3 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	040APS12	040APS15	040APS18	040APS24	
Output Voltage	12V	15V	18V	24V	
Output Current (Max)	3.33A	2.67A	2.22A	1.67A	
Output Power	40W	40W	40W	40W	
Efficiency	86%	87%	87%	87%	
INPUT					
Input Voltage Range		90-26	64Vac		
Ripple & Noise		<1% (25°C at 10uF/0.47u	ıF with 20MHz bandwidth)		
Load Regulation		±1	1%		
Leakage Current		<0.1mA normal condition, <	:0.3mA SFC at 264Vac/63Hz		
Input Frequency		47-6	63Hz		
MECHANICAL					
Dimension (W x L x H)		50.80 × 76.20 × 23.00	mm (2.0 \times 3.0 \times 0.9 in)		
EMC & Emissions		EN55011 & EN55022 & FCC	conducted & radiated class B		
Connector Type		Input: JST 2P B	2P3-VH (LF) (SN)		
		Output: JST 4P	B4P-VH (LF) (SN)		
Unit Weight		80 grams (2	2.88 ounces)		
MTBF		3 millio	n hours		
ENVIRONMENT					
Operating Temperature		-10°C t	o +70°C		
Storage Temperature		-40°C t	o +85°C		
Operating Humidity	10-95% RH (Non-condensing)				
Operating Altitude	3,000 meters				
MEDICAL RATING					
Float Rating	В				
MOPP	2 × MOPP				



MDS 065APS Open Frame Power Supply

12/15/18/24V 65 WATTS

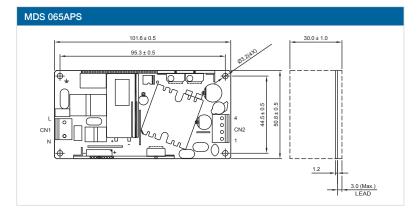


HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Risk management report available
- 2.5 million hours MTBF
- 2" × 4" × 1.2" package
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	065APS12	065APS15	065APS18	065APS24		
Output Voltage	12V	15V	18V	24V		
Output Current (Max)	5.42A	4.20A	3.61A	2.71A		
Output Power	65W	63W	65W	65W		
Efficiency	87%	88%	88%	88%		
INPUT						
Input Voltage Range		90-2	64Vac			
Ripple & Noise		<1% (25°C at 10uF/0.47)	uF with 20MHz bandwidth)			
Load Regulation		±	1%			
Leakage Current		<0.1mA normal condition, <	<0.3mA SFC at 264Vac/63Hz			
Input Frequency		47-	63Hz			
MECHANICAL						
Dimension (W × L × H)		50.80 × 101.60 × 30.00	0 mm (2.0 × 4.0 × 1.2 in)			
EMC & Emissions		EN55011 & EN55022 & FCC	conducted & radiated class B			
Connector Type			32P3-VH (LF) (SN)			
		· ·	B4P-VH (LF) (SN)			
Unit Weight			(4.6 ounces)			
MTBF		2.5 milli	ion hours			
ENVIRONMENT						
Operating Temperature			to +70°C			
Storage Temperature			to +85°C			
Operating Humidity	10-95% RH (Non-condensing)					
Operating Altitude		3,000	meters			
MEDICAL RATING						
Float Rating	В					
MOPP	2 × MOPP					



MDS 100APS Open Frame Power Supply

12/15/18/24V 100 WATTS

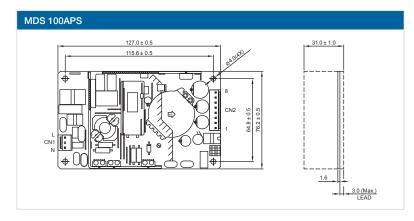


HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- 1.528 (for 12V), 2.313 (for 15V), 2.442 (for 18V), 3.174 (for 24V) million hours MTBF
- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Risk management report available
- $3'' \times 5'' \times 1.2''$ package
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	100APS12	100APS15	100APS18	100APS24	
Output Voltage	12V	15V	18V	24V	
Output Current (Max)	8.33A	6.67A	5.55A	4.17A	
Output Power	100W	100W	100W	100W	
Efficiency	89%	91%	91%	91%	
INPUT					
Input Voltage Range		90-26	64Vac		
Ripple & Noise		<1% (25°C at 10uF/0.47u	F with 20MHz bandwidth)		
Load Regulation		±1	%		
Leakage Current		<0.1mA normal condition, <	0.3mA SFC at 264Vac/63Hz		
Input Frequency		47-6	63Hz		
MECHANICAL					
Dimension (W × L × H)		76.20 × 127.00 × 31.00	mm (3.0 × 5.0 × 1.2 in)		
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B				
Connector Type		Input: JST 2P B2	2P3-VH (LF) (SN)		
		Earth terminal: K	ang Yang PC250		
		Output: JST 8P I	B8P-VH (LF) (SN)		
Unit Weight		120 grams (16.2 ounces)		
MTBF		3 millio	n hours		
ENVIRONMENT					
Operating Temperature		-10°C to	o +70°C		
Storage Temperature	-40°C to +85°C				
Operating Humidity	10-95% RH (Non-condensing)				
Operating Altitude	3,000 meters				
MEDICAL RATING					
Float Rating	В				
MOPP	2 × MOPP				



MDS 100BPS Open Frame Power Supply

12/15/18/24V 100 WATTS

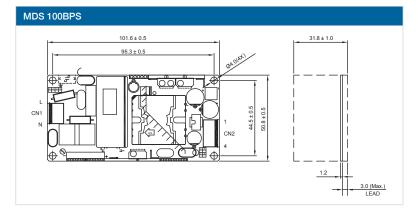


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low Leakage Current (<0.1mA Normal & 0.3mA single fault)
- 80W with convection cooling; 100W with forced air cooling
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety management report available
- 2" × 4" × 1.25" package
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	100BPS12	100BPS15	100BPS18	100BPS24		
Output Voltage	12V	15V	18V	24V		
Output Current (Max)	8.33A	6.70A	5.50A	4.20A		
Output Power (Convection)	80W	80W	80W	80W		
Output Power (Forced Air)	100W	100W	100W	100W		
Efficiency	87%	88%	88%	89%		
INPUT						
Input Voltage Range		90-26	64Vac			
Ripple & Noise		<1% (25°C at 10uF/0.47u	uF with 20MHz bandwidth)			
Load Regulation		±1	1%			
Leakage Current		<0.1mA normal condition, <	:0.3mA SFC at 264Vac/63Hz			
Input Frequency		47-6	63Hz			
MECHANICAL						
Dimension (W x L x H)		50.80 × 101.60 × 31.80	mm (2.0 × 4.0 × 1.25 in)			
EMC & Emissions		EN55011 & EN55022 & FCC	conducted & radiated class B			
Connector Type		Input: JST 2P B	2P3-VH (LF) (SN)			
		Earth terminal: Ka	ang Yang PCH250			
		Output: JST 4P	B4P-VH (LF) (SN)			
Unit Weight		150 grams ((5.3 Ounces)			
MTBF		1 millio	n hours			
ENVIRONMENT						
Operating Temperature		-10°C t	to +70°C			
Storage Temperature		-40°C t	to +85°C			
Operating Humidity	10-95% RH (Non-condensing)					
Operating Altitude	5,000 meters					
MEDICAL RATING						
Float Rating	В					
MOPP	2 × MOPP					



MDS 100AP401 Open Frame Power Supply

5.1/12/-15/15V 100 WATTS

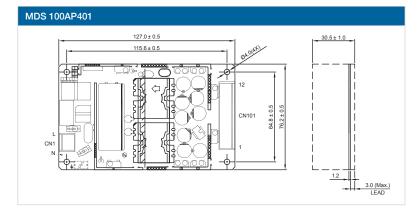


HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Risk management report available
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	100AP401					
Output Voltage	5.1V	12V	-15V	15V		
Output Current (Max)	8A	3A	0.8A	0.8A		
Output Power (Convection)			65W			
Output Power (Forced Air)			100W			
Efficiency			75%			
INPUT						
Input Voltage Range			90-264Vac			
Ripple & Noise		<1% (25°C	at 10uF/0.47uF with 20MHz ban	dwidth)		
Load Regulation	±2%	±1%	±3%	±3%		
Leakage Current		<0.1mA norm	al condition, <0.3mA SFC at 264	Vac/63Hz		
Input Frequency			47-63Hz			
MECHANICAL						
Dimension (W × L × H)		76.20 × 1	27.00 × 30.50 mm (3.0 × 5.0 × 1	.2 in)		
EMC & Emissions		EN55011 & EN	55022 & FCC conducted & radia	ted class B		
Connector Type			Input: Molex 2P 09-65-2029			
	Earth terminal: Kang Yang PCH250					
	Output: Molex 12P 09-65-2128					
Unit Weight			0.25 kg			
MTBF			1 million hours			
ENVIRONMENT						
Operating Temperature			-10°C to +70°C			
Storage Temperature			-40°C to +85°C			
Operating Humidity	5-95% RH (Non-condensing)					
Operating Altitude	5,000 meters					
MEDICAL RATING						
Float Rating	В					
MOPP	2 × MOPP					



MDS 200A Open Frame Power Supply

12/24V 200 WATTS

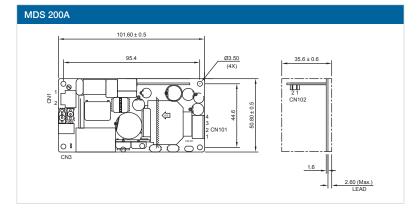


HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- Class B EMI (all models); 4th Edition Immunity Compliance
- Up to 140W with convection cooling; 200W with forced air cooling
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Enclosed cover design option available
- Suitable for type BF medical product
- Up to 800K hours MTBF
- 2" × 4" × 1.4" package
- Power Good signal

GENERAL SPECIFICATIONS

OUTPUT	200APB12	200APB24			
Output Voltage	12V	24V			
Output Current (Max)	16.67A	8.33A			
Output Power (Convection)	130W	140W			
Output Power (Forced Air)	200W	200W			
Efficiency	91% @115V, 93% @230V	94%			
INPUT					
Input Voltage Range	90-2	264Vac			
Ripple & Noise	<1% (25°C at 10uF/0.47	uF with 20MHz bandwidth)			
Load Regulation	±	1%			
Leakage Current	<0.1mA normal condition,	<0.3mA SFC at 264Vac/63Hz			
Input Frequency	47-	63Hz			
MECHANICAL					
Dimension (W x L x H)	50.80 × 101.60 × 35.6	0 mm (2.0 × 4.0 × 1.4 in)			
EMC & Emissions	Class I model: EN5501	1, EN55022, FCC: class B			
Connector Type	Input: Molex 17181	3-9998 or Equivalent			
	Earth terminal: PINGOOD JP-13T				
	Output: JST B4P-VH(LF)(SN)				
Unit Weight	200 grams (0.441 pounds)			
MTBF	8008	(hours			
ENVIRONMENT					
Operating Temperature	-10°C	to +70°C			
Storage Temperature	-40°C	to +85°C			
Operating Humidity	5-95% RH (Non-Condensing)				
Operating Altitude	5,000	meters			
MEDICAL RATING					
Float Rating	BF				
MOPP	2 × MOPP				



MDS 250A Open Frame Power Supply

12/24V 250 WATTS

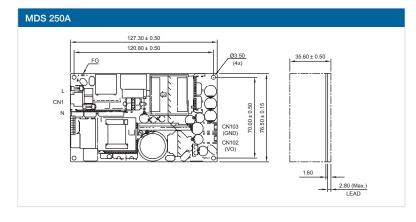


HIGHLIGHTS & FEATURES

- Power Good signal, Remote Sense, Remote Inhibit
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Up to 150W with convection cooling; 250W with forced air cooling
- Class B EMI; 4th Edition Immunity Compliance
- Safety rated for medical and IT applications
- Enclosed cover design option available
- Suitable for type BF medical product
- Up to 500K hours MTBF
- $3'' \times 5'' \times 1.4''$ package

GENERAL SPECIFICATIONS

OUTPUT	250APB12	250APB24			
Output Voltage	12V	24V			
Output Current (Max)	20.84A	10.41A			
Output Power (Convection)	150W	150W			
Output Power (Forced Air)	250W	250W			
Efficiency	91	%			
INPUT					
Input Voltage Range	90-26	64Vac			
Ripple & Noise	<1% (25°C at 10uF/0.47u	ıF with 20MHz bandwidth)			
Load Regulation	±1	%			
Leakage Current	<0.1mA normal condition, <	:0.3mA SFC at 264Vac/60Hz			
Input Frequency	47-6	53Hz			
MECHANICAL					
Dimension (W × L × H)	76.50 × 127.30 × 36.10	0 mm (3.0 × 5.0 × 1.4 in)			
EMC & Emissions	Class I model: EN55011,	, EN55022, FCC: class B			
	Class II model: EN55011, EN55022, FCC:	class B for conducted, class A for radiated			
Connector Type	·	3-9998 or Equivalent			
	Earth terminal: PINGOOD JP-13T				
	Output: Kang Yang PCB-12				
	Signal Connector: I	Molex 104141-1010			
Unit Weight	405 g	grams			
MTBF	500K	hours			
ENVIRONMENT					
Operating Temperature	-10°C t	0 +70°C			
Storage Temperature	-40°C to +85°C				
Operating Humidity	5-95% RH (Non-condensing)				
Operating Altitude	5,000 meters				
MEDICAL RATING					
Float Rating	BF				
MOPP	2 × MOPP				



MDS 300A Open Frame Power Supply

12/18/24/48V 300 WATTS

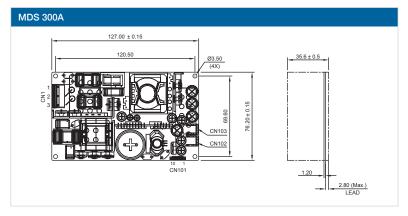


HIGHLIGHTS & FEATURES

- Power Good signal, Remote Sense, Remote Inhibit
- Class B EMI (all models); 4th Edition Immunity Compliance (12 & 24V models only)
- Up to 240W with convection cooling; 300W with forced air cooling
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety rated for medical and IT applications
- Suitable for type BF medical products
- Enclosed cover kit design available
- Up to 800K hours MTBF
- 3" × 5" × 1.4" package

GENERAL SPECIFICATIONS

OUTPUT	300APB12	300APB18	300APB24	300APB48	
Output Voltage	12V	18V	24V	48V	
Output Current (Max)	25.00A	16.66A	12.50A	6.25A	
Output Power (Convection)	220W	220W	240W	240W	
Output Power (Forced Air)	300W	300W	300W	300W	
Efficiency			94%		
INPUT					
Input Voltage Range		90-	-264Vac		
Ripple & Noise		<1% (25°C at 10uF/0.4	7uF with 20MHz bandwidth)		
Load Regulation			±1%		
Touch Current		<0.1mA normal condition,	, <0.3mA SFC at 264Vac/63Hz		
Input Frequency		47	7-63Hz		
MECHANICAL					
Dimension (W x L x H)		$76.20 \times 127.00 \times 35.$	60 mm (3.0 × 5.0 × 1.4 in)		
EMC & Emissions		Class I model: EN550	11, EN55022, FCC: class B		
Connector Type		Input: Molex 1718	313-9998 or Equivalent		
		Earth terminal:	PINGOOD JP-13T		
		Output: Kar	ng Yang PCB-12		
		Signal connector	: Molex 104141-1010		
Unit Weight		405	5 grams		
MTBF		800	K hours		
ENVIRONMENT					
Operating Temperature		-10°C	C to +70°C		
Storage Temperature		-40°C	C to +85°C		
Operating Humidity	5-95% RH (Non-condensing)				
Operating Altitude		5,00	0 meters		
MEDICAL RATING					
Float Rating	BF				
MOPP	2 × MOPP				



MDS 400A Open Frame Power Supply

12/24V 400 WATTS

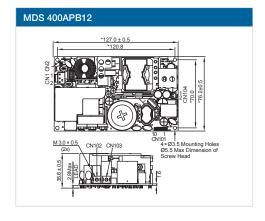


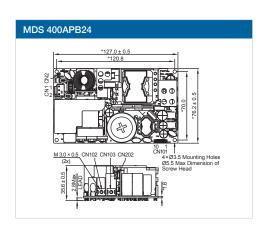
HIGHLIGHTS & FEATURES

- Power Good signal, Remote Sense, Remote Inhibit
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Up to 200W with convection cooling; 400W with forced air cooling
- Class B EMI (all models); 4th Edition Immunity
- Safety rated for medical and IT applications
- Enclosed cover design option available
- Suitable for type BF medical product
- 5V standby and 12V fan outputs
- Up to 800K hours MTBF
- 3" × 5" × 1.4" package

GENERAL SPECIFICATIONS

OUTPUT	400APB12	400APB24		
Output Voltage	12V	24V		
Output Current (Max)	33.33A	16.66A		
Output Power (Convection)	200W	200W		
Output Power (Forced Air)	400W	400W		
Efficiency	89.5% @115V, 91.5% @230V	92% @115V, 93% @230V		
INPUT				
Input Voltage Range		90-264Vac		
Ripple & Noise	<1% (25°C at	10uF/0.47uF with 20MHz bandwidth)		
Load Regulation		±1%		
Leakage Current	<0.1mA normal	condition, <0.3mA SFC at 264Vac/60Hz		
Input Frequency		47-63Hz		
MECHANICAL				
Dimension (W × L × H)	76.20 × 127	7.00 × 35.60 mm (3.0 × 5.0 × 1.4 in)		
EMC & Emissions	Class I mode	el: EN55011, EN55022, FCC: class B		
Connector Type	Input: M	olex 171813-9998 or Equivalent		
	Earth	terminal: PINGOOD JP-13T		
	Oi	utput: Kang Yang PCB-12		
	Signal (Connector: Molex 104141-1010		
	Fan output connector: JST B2B-PH-K-S(LF)(SN)	Fan output connector: JST S2B-PH-SM4-TB(LF)(SN)		
Unit Weight		405 grams		
MTBF		800K hours		
ENVIRONMENT				
Operating Temperature		-10°C to +70°C		
Storage Temperature	-40°C to +85°C			
Operating Humidity	5-95% RH (Non-condensing)			
Operating Altitude		5,000 meters		
MEDICAL RATING				
Float Rating		BF		
MOPP		2 × MOPP		





MDS 400AUS Open Frame Power Supply

19/24V 400 WATTS

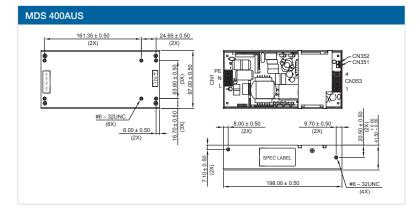


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Up to 300W with convection cooling, 400W with forced air
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety approvals for medical and IT applications
- Risk management report available
- 2 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty
- Remote sense

GENERAL SPECIFICATIONS

OUTPUT	400AUS19	400AUS24			
Output Voltage	19V	24V			
Output Current (Max)	21.10A	16.67A			
, ,					
Output Power (Convection)	300W	300W			
Output Power (Forced Air)	400W	400W			
Efficiency	91%	92%			
INPUT					
Input Voltage Range		64Vac			
Ripple & Noise	·	ıF with 20MHz bandwidth)			
Load Regulation		2%			
Leakage Current	<0.1mA normal condition, <	:0.3mA SFC at 264Vac/63Hz			
Input Frequency	47-6	63Hz			
MECHANICAL					
Dimension (W x L x H)	97.00 × 198.00 × 41.50 mm (3.8 × 7.8 × 1.6 in)				
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B				
Connector Type	Input: DECA 3P T33-BM1103A301				
	Output: DECA 4P	T33-BM1104A301			
	Output: JWT 2F	P A2508WV0-2P			
Unit Weight	910 grams (32.1 ounces)			
MTBF	2 millio	on hours			
ENVIRONMENT					
Operating Temperature	-10°C t	to +70°C			
Storage Temperature	-40°C to +85°C				
Operating Humidity	10-95% RH (Non-condensing)				
Operating Altitude	3,000 meters				
MEDICAL RATING					
Float Rating	В				
MOPP	2 × MOPP				



Standard Products

Enclosed Power Supply



Most of the MDS series of enclosed power supplies are certified with both medical and ITE safety approvals. Encased in strong metal casing, the series of versatile products can be used in a wide variety of equipment for medical and ITE applications.

Typical Applications









Notes:



All Delta Medical Power products conform to the European directive 2011/65/EU. RoHS is the abbreviation for "Restriction of the use of certain hazardous substances".



Delta has been certified for meeting the requirements of ISO 13485: 2003 and EN ISO 13485: 2012 for the design and production of switching power supplies and adaptors for medical devices.



In addition to the UL Total Certification Program (TCP) approved client laboratory for IEC60950 and IEC60065, Delta has also participated in the UL Client Test Data Program (CTDP) for IEC 60601.

MDS 200ADB Enclosed Power Supply

12/24V 200 WATTS

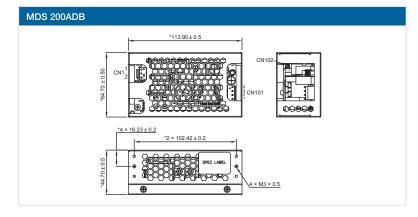


HIGHLIGHTS & FEATURES

- Up to 120W with convection cooling; 200W with forced air cooling
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- IEC60601-1-2 4th edition EMC compliance
- 2.5" × 4.5" × 1.8" Package with enclosure
- Suitable for type BF medical product
- IT & Medical Safety Approvals
- Up to 800K Hours MTBF
- Power Good signal

GENERAL SPECIFICATIONS

OUTPUT	200ADB12	200ADB24			
Output Voltage	12V	24V			
Output Current (Max)	16.67A with 8.5 CFM forced air	8.33A with 5.5 CFM forced air			
Output Power (Convection)	110W	120W			
Output Power (Forced Air)	200W	200W			
Efficiency	91% @ 115V/60Hz, 93% @ 230V/50Hz	92% @ 115V/60Hz, 93% @ 230V/50Hz			
INPUT					
Input Voltage Range	90-2	264Vac			
Ripple & Noise	1%pk-pkVra	ated @ Full load			
Load Regulation	#	1%			
Leakage Current	0.1mA @ NC	C, 0.3mA @ SFC			
Input Frequency	47	-63Hz			
MECHANICAL					
Dimension (W x L x H)	64.70 × 113.90 × 44.7	70 mm (2.5 × 4.5 × 1.8 in)			
EMC & Emissions	Class I model: EN55011/EN55022, FCC Title 47: Class B				
Connector Type	Input: Molex 171813-9998 or Equivalent				
	Earth terminal:	PINGOOD JP-13T			
	Output: JST	B4P-VH(LF)(SN)			
Unit Weight	345 gram	is (0.762 lbs)			
MTBF	800	K hours			
ENVIRONMENT					
Operating Temperature	-10°C	to +70°C			
Storage Temperature	-40°C to +85°C				
Operating Humidity	5-95% RH (Non-condensing)				
Operating Altitude	5,000 meters				
MEDICAL RATING	TING				
Float Rating	BF				
MOPP	2 × MOPP				



MDS 250ADB Enclosed Power Supply

12/24V 250 WATTS

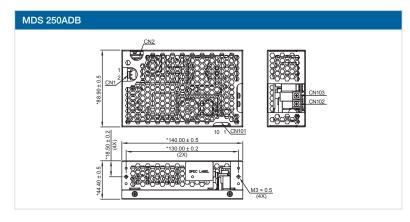


HIGHLIGHTS & FEATURES

- IEC60601-1-2 4th edition EMC compliance
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Up to 135W with convection cooling; 250W with forced air cooling
- $3.5^{"} \times 5.5^{"} \times 1.75^{"}$ Package with enclosure
- Suitable for type BF medical products
- IT & Medical Safety Approvals
- Up to 500K Hours MTBF
- Remote on/off control
- Power Good signal

GENERAL SPECIFICATIONS

OUTPUT	250ADB12		250ADB24	
Output Voltage	12V		24V	
Output Current (Max)	20.84A with 10 CFM forced air		10.41A with 10 CFM forced air	
Output Power (Convection)	135W		135W	
Output Power (Forced Air)	250W		250W	
Efficiency	89.45% @ 115V, 90.50% @ 230V		91.85% @ 115V, 92.98% @ 230V	
INPUT				
Input Voltage Range		90-26	4Vac	
Ripple & Noise		1% pk-pk Vrate	d @ 250W load	
Load Regulation		±1	%	
Leakage Current		0.1mA @ NC, 0.3mA @ SFC,	0.1mA @ NC, 0.5mA @ SFC	
Input Frequency		47-6	3Hz	
MECHANICAL				
Dimension (W \times L \times H)	88.90 × 140.00 × 44.40 mm (3.5 × 5.5 × 1.75 in)			
EMC & Emissions	EN55011, EN55022, FCC title 47: class B			
Connector Type	Input: Molex: 171813-9998 or Equivalent			
	Earth terminal: PINGOOD JP-13T			
	Output: Kang Yang PCB-12			
	Signal connector: Molex 104141-1010			
Unit Weight		610 grams	(1.35 lbs)	
MTBF		500K I	hours	
ENVIRONMENT				
Operating Temperature		-10°C to) +70°C	
Storage Temperature	-40°C to +85°C			
Operating Humidity	5-95% RH (Non-condensing)			
Operating Altitude	5,000 meters			
MEDICAL RATING				
Float Rating	BF			
MOPP	2 × MOPP			



MDS 300ADB Enclosed Power Supply

12/18/24/48V 300 WATTS

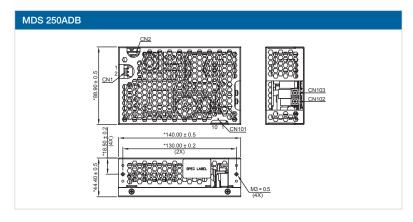


HIGHLIGHTS & FEATURES

- Up to 210W with convection cooling; 300W with forced air cooling
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- IEC60601-1-2 4th edition EMC compliance
- $3.5'' \times 5.5'' \times 1.75''$ Package with enclosure
- Suitable for type BF medical products
- IT & Medical Safety Approvals
- Up to 800K Hours MTBF
- Remote on/off control
- Power Good signal

GENERAL SPECIFICATIONS

OUTPUT	300ADB12	300ADB18	300ADB24	300ADB48	
Output Voltage	12V	18V	24V	48V	
Output Current (Max)	25.00A with 10 CFM forced air	16.66A with 10 CFM forced air	12.50A with 10 CFM forced air	6.25A with 10 CFM forced air	
Output Power (Convection)	190W	190W	210W	210W	
Output Power (Forced Air)	300W	300W	300W	300W	
Efficiency	91.3% @ 115V, 92.6% @230V	92.5% @ 115V, 93.5% @230V	93% @ 115V, 94% @230V	92.5% @ 115V, 93.5% @230V	
INPUT					
Input Voltage Range		90-2	264Vac		
Ripple & Noise		1% pk-pk Vra	ted @ 300W load		
Load Regulation		±	:1%		
Leakage Current		<0.1mA @ NC, 0.3mA @ SF0	C, <0.1mA @ NC, 0.5mA @ SFC		
Input Frequency		47-	-63Hz		
MECHANICAL					
Dimension (W x L x H)		88.90 × 140.00 × 45.00	0 mm (3.5 × 5.5 × 1.75 in)		
EMC & Emissions		EN55011, EN55022	, FCC Title 47: class B		
Connector Type		Input: Molex: 1718	13-9998 or Equivalent		
		Earth terminal:	PINGOOD JP-13T		
		Output: Kan	g Yang PCB-12		
		Signal connector:	Molex 104141-1010		
Unit Weight		610 gran	ns (1.35 lbs)		
MTBF		8001	K hours		
ENVIRONMENT					
Operating Temperature		-10°C	to +70°C		
Storage Temperature	-40°C to +85°C				
Operating Humidity	5-95% RH (Non-condensing)				
Operating Altitude	5,000 meters				
MEDICAL RATING					
Float Rating	BF				
MOPP	2 × MOPP				



MDS 400ADB Enclosed Power Supply

12/24V 400 WATTS

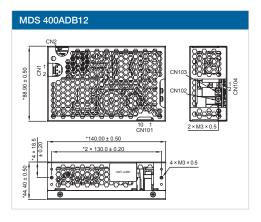


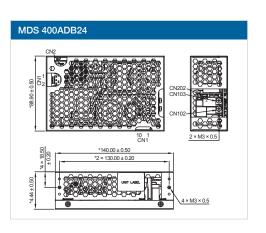
HIGHLIGHTS & FEATURES

- Compliant with IEC 60601-1-2 4th Ed. Requirements
- IEC60601-1-2 4th edition EMC compliance
- $3.5^{"} \times 5.5^{"} \times 1.75^{"}$ Package with enclosure
- Suitable for type BF medical products
- Up to 400W with forced air cooling
- IT & Medical Safety Approvals
- Up to 500K Hours MTBF
- Remote on/off control
- Power Good signal
- 12V Fan output

GENERAL SPECIFICATIONS

OUTPUT	400ADB12	400ADB24			
Output Voltage	12V	24V			
Output Current (Max)	33.33A with 20 CFM forced air 16.67A with 16 CFM forced air				
Output Power (Convection)	400W	400W			
Efficiency	89.5% @ 115V/60Hz, 91.5% @ 230V/50Hz	92% @ 115V/60Hz, 93% @ 230V/50Hz			
INPUT					
Input Voltage Range		90-264Vac			
Ripple & Noise	150mVpk-pkVrated @ Full load	1%pk-pkVrated @ Full load			
Load Regulation		±1%			
Leakage Current	0.1m	A @ NC, 0.3mA @ SFC			
Input Frequency		47-63Hz			
MECHANICAL					
Dimension (W \times L \times H)	88.90 × 140.00	× 44.40 mm (3.5 × 5.5 × 1.75 in)			
EMC & Emissions	Class I model: EN55	5011/EN55022, FCC Title 47: Class B			
Connector Type	Input: Mole	x 171813-9998 or Equivalent			
	Earth terminal: PINGOOD JP-13T				
	Outp	ut: Kang Yang PCB-12			
	Signal con	nector: Molex 104141-1010			
	Fan output connector: JST B2B-PH-K-S(LF)(SN)	Fan output connector: JST S2B-PH-SM4-TB(LF)(SN)			
Unit Weight	6	10 grams (1.35 lbs)			
MTBF		500K hours			
ENVIRONMENT					
Operating Temperature		-10°C to +70°C			
Storage Temperature	-40°C to +85°C				
Operating Humidity	5-95% RH (Non-condensing)				
Operating Altitude	5,000 meters				
MEDICAL RATING					
Float Rating		BF			
MOPP		2 × MOPP			





Standard Products

ATX Power Supply



Highly reliable design with ATX standard form factor and output cable pin-outs. Certified with medical standards and suitable for use in medical devices with Type BF classification.

Typical Applications









ivibulcai

Notes:



All Delta Medical Power products conform to the European directive 2011/65/EU. RoHS is the abbreviation for "Restriction of the use of certain hazardous substances".



Delta has been certified for meeting the requirements of ISO 13485: 2003 and EN ISO 13485: 2012 for the design and production of switching power supplies and adaptors for medical devices.



In addition to the UL Total Certification Program (TCP) approved client laboratory for IEC60950 and IEC60065, Delta has also participated in the UL Client Test Data Program (CTDP) for IEC 60601.

MDS 350AD701 ATX Power Supply

ATX 12V 1U

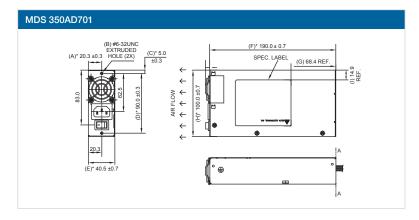


HIGHLIGHTS & FEATURES

- IEC60601-1 3.1 ed. (Medical) & IEC 60950-1 (ITE) approvals
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Suitable for type BF patient access applications
- ATX 12V standard function & form factor
- Maximum output power of 350 watts
- Built-in active PFC

GENERAL SPECIFICATIONS

OUTPUT	350AD701						
Output Voltage	+3.3V	+5V	+5Vsb	+12V1	+12V2	-12V	-5V
Output Current	8.00A	9.00A	1.25A	8.00A	8.00A	0.25A	0.10A
Output Power (Convection)				350W			
Efficiency			82% @ 115	Vac/60Hz, 85% @	230Vac/50Hz		
INPUT							
Input Voltage Range				90-264Vac			
Ripple & Noise	50n	nVpp	150mVpp		120mVpp		50mVpp
Load Regulation			±5%				±10%
Leakage Current			0.1	mA @ NC, 0.3mA @	9 SFC		
Input Frequency				47-63Hz			
MECHANICAL							
Dimension (W × L × H)			100.00 × 194	.00 × 40.50 mm (3	9 × 7.6 × 1.6 in)		
EMC & Emissions			EN55011/	EN55022, FCC Titl	e 47: Class B		
Connector Type	P1: Molex 39-01-2240 or Equivalent						
	P2: Molex 39-01-2080 or Equivalent						
	P3: Molex 39-01-2040 or Equivalent						
Unit Weight				1.2Kg (2.6 lbs)			
MTBF				500K hours			
ENVIRONMENT							
Operating Temperature				0°C to +50°C			
Storage Temperature				-40°C to +85°C			
Operating Humidity	5-95% RH (Non-condensing)						
Operating Altitude	5,000 meters						
MEDICAL RATING							
Float Rating	BF						
MOPP		2 × MOPP					



Standard Products

Adapter Power Supply



The MDS Adapters series rides on Delta's market leading adapter technology to provide the same high quality external power supplies for medical systems and equipments.

Typical Applications









Notes:



All Delta Medical Power products conform to the European directive 2011/65/EU. RoHS is the abbreviation for "Restriction of the use of certain hazardous substances".



Delta has been certified for meeting the requirements of ISO 13485: 2003 and EN ISO 13485: 2012 for the design and production of switching power supplies and adaptors for medical devices.



In addition to the UL Total Certification Program (TCP) approved client laboratory for IEC60950 and IEC60065, Delta has also participated in the UL Client Test Data Program (CTDP) for IEC 60601.

MDS 005AAS Adapter Power Supply

5/6V 5 WATTS

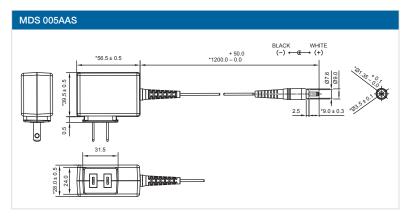


HIGHLIGHTS & FEATURES

- MDS-005AAS05 meet DOE Level VI & ErP 2017 Over-Voltage/Load/Temperature & Short Circuit
- Protections
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety approvals for medical and IT applications
- Risk management report available
- Small size and low weight
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	005AAS05	005AA\$06		
Output Voltage	5V	6V		
Output Current (Max)	1.00A	0.83A		
Output Power	5W	5W		
Average Efficiency	73.63%	72.40%		
INPUT				
Input Voltage Range		90-264Vac		
Ripple & Noise	<200n	nV (25°C at 10uF/0.47uF with 20MHz bandwidth)		
Load Regulation		±10%		
Touch Current	<0.1m	A normal condition, <0.3mA SFC at 264Vac/63Hz		
Input Frequency		47-63Hz		
MECHANICAL				
Dimension (W \times L \times H)	39.50 × 56.50 × 28.00 mm (1.6 × 2.2 × 1.1 in)			
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B			
Connector Type		Input: Wall mount – US & EU & CN type		
	Output: O	type/Barrel type/Tuning fork type/Micro USB-B type		
Unit Weight		100grams (3.6 ounces)		
MTBF		1 million hours		
ENVIRONMENT				
Operating Temperature		0°C to +40°C		
Storage Temperature		-40°C to +85°C		
Operating Humidity		5-95% RH (Non-condensing)		
Operating Altitude	3,000 meters			
Degree of Protection	IP22			
Protection Against Shock	Class II			
MEDICAL RATING				
Float Rating	BF			
MOPP	2 × MOPP			



MDS 030AAC Adapter Power Supply

5/7/12/15/24V 30 WATTS

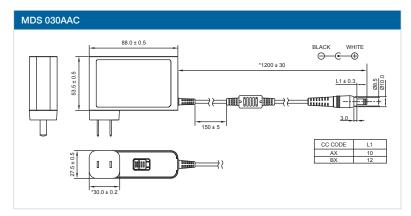


HIGHLIGHTS & FEATURES

- MDS-030AAC05, 12, 15, 24 Meet DOE Level VI & ErP 2017
- Low Leakage Current. Suitable for type BF applications
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Detachable AC plug with multiple country options
- Class B EMI; 4th Edition Immunity Compliance
- Safety rated for medical and IT applications
- 2 × MOPP isolation
- 500K hours MTBF
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	030AAC05	030AAC07	030AAC12	030AAC15	030AAC24
Output Voltage	5V	7V	12V	15V	24V
Output Current (Max)	3.00A	3.00A	2.00A	2.00A	1.25A
Output Power	15W	21W	24W	30W	30W
Average Efficiency	81.40%	81.40%	86.21%	87.00%	87.00%
INPUT					
Input Voltage Range			90-264Vac		
Ripple & Noise	100mVpk-pk		150mVpk-pk	200mVpk-pk	
Load Regulation			±5%		
Leakage Current		0.1mA	@ 264Vac NC, 0.3mA @ 264\	/ac SFC	
Input Frequency			47-63Hz		
MECHANICAL					
Dimension (W x L x H)		53.50 × 88	3.00 × 27.50 mm (2.11 × 3.46	6 × 1.08 in)	
EMC & Emissions		EN550	11/EN55022, FCC Title 47: 0	Class B	
Connector Type		Input: Wall m	ount-CN/US/EU/UK/AU/KR	IN/AR/BZ/SA	
		Out	put: Barrel type/Tuning fork	type	
Unit Weight	150 grams				
MTBF	500K hours				
ENVIRONMENT					
Operating Temperature			-0°C to +40°C		
Storage Temperature			-40°C to +85°C		
Operating Humidity		1	10-95% RH (Non-condensing	g)	
Operating Altitude			5,000 meters		
Degree of Protection	IP22				
Protection Against Shock	Class II				
MEDICAL RATING					
Float Rating	BF				
MOPP	2 × MOPP				



MDS 060AAS Adapter Power Supply

12/15/19/24V 60 WATTS

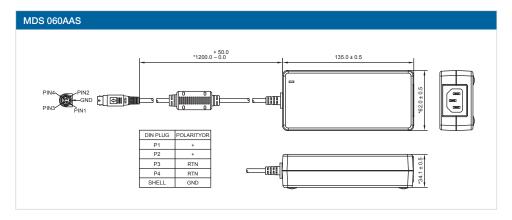


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- MDS-060AAS15, 19 meet DOE Level VI & ErP 2017
- Safety approvals for medical and IT applications
- MDS-060AAS24 meet DOE Level VI
- Class I protection against shock
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	060AAS12	060AAS15	060AAS19	060AAS24	
Output Voltage	12V	15V	19V	24V	
Output Current (Max)	5.00A	4.00A	3.20A	2.50A	
Output Power	60W	60W	60W	60W	
Average Efficiency	87%	88%	88%	88%	
INPUT					
Input Voltage Range		90-27	75Vac		
Ripple & Noise		<1% (25°C at 10uF/0.47u	ıF with 20MHz bandwidth)		
Load Regulation		±5	5%		
Touch Current		<0.1mA normal condition, <	:0.3mA SFC at 264Vac/63Hz		
Input Frequency		47-6	63Hz		
MECHANICAL					
Dimension (W x L x H)		62.00 × 135.00 × 34.10) mm (2.4 × 5.3 × 1.3 in)		
EMC & Emissions		EN55011 & EN55022 & FCC	conducted & radiated class B		
Connector Type		Input: C	14 socket		
		Output: 4-pin DIN/Barr	el type/Tuning fork type		
Unit Weight		360grams (12.7 ounces)		
MTBF		1 millio	n hours		
ENVIRONMENT					
Operating Temperature		0°C to	+40°C		
Storage Temperature			o +85°C		
Operating Humidity	10-95% RH (Non-condensing)				
Operating Altitude	3,000 meters				
Protection Against Shock	Class I				
MEDICAL RATING					
Float Rating	BF				
MOPP		2 × N	MOPP		



MDS 060BAS Adapter Power Supply

12/19/24V 60 WATTS

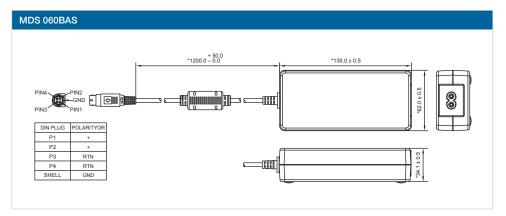


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety approvals for medical and IT applications
- MDS-060BAS12 meet DOE Level VI & ErP 2017
- MDS-060BAS19 meet DOE Level VI
- Class II protection against shock
- 1 million hours MTBF
- 3 years warranty
- $2 \times MOPP$

GENERAL SPECIFICATIONS

OUTPUT	060BAS12	060BAS19	060BAS24						
Output Voltage	12V	19V	24V						
Output Current (Max)	5.00A	3.15A	2.50A						
Output Power	60W	60W	60W						
Average Efficiency	88%	88%	87%						
INPUT									
Input Voltage Range	90-264Vac								
Ripple & Noise		<1% (25°C at 10uF/0.47uF with 2	20MHz bandwidth)						
Load Regulation		±5%							
Touch Current		<0.1mA normal condition, <0.3mA	SFC at 264Vac/63Hz						
Input Frequency		47-63Hz							
MECHANICAL									
Dimension (W x L x H)	62.00 × 135.00 × 34.10 mm (2.4 × 5.3 × 1.3 in)								
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B								
Connector Type	Input: C8 socket								
	Output: 4-pin DIN/Barrel type/Tuning fork type								
Unit Weight	340 grams (12.0 ounces)								
MTBF	1 million hours								
ENVIRONMENT									
Operating Temperature		-0°C to +40°C							
Storage Temperature		-40°C to +85°C							
Operating Humidity		10-95% RH (Non-cond	lensing)						
Operating Altitude	3,000 meters								
Degree of Protection	IP22								
Protection Against Shock	Class II								
MEDICAL RATING									
Float Rating	BF								
MOPP	2 × MOPP								



MDS 080AAS Adapter Power Supply

12V 80 WATTS



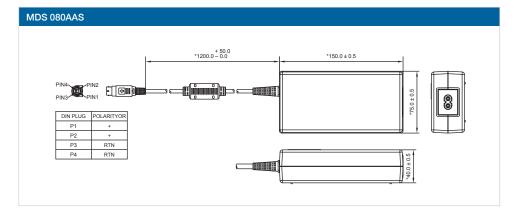
HIGHLIGHTS & FEATURES

- Safety approvals for medical and IT applications
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Class II input with C8 AC inlet
- Universal input 90-264Vac
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

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OUTPUT	080AAS12					
Output Voltage	12V					
Output Current (Max)	6.67A					
Output Power	80W					
Average Efficiency	80%					
INPUT						
Input Voltage Range	90-264Vac					
Ripple & Noise	118.4 mVpk-pk @ Rated Load					
Load Regulation	±5%					
Touch Current	81.6uA normal condition, 87.4uA single fault condition					
Input Frequency	47-63Hz					
MECHANICAL						
Dimension (W × L × H)	$75.00 \times 150.00 \times 40.00 \text{ mm} (3.0 \times 5.9 \times 1.6 \text{ in})$					
EMC & Emissions	EN55011/EN55022, FCC Title 47: Class B					
Connector Type	Output: 4-pin DIN/Barrel type/Tuning fork type					
Unit Weight	500 grams (17.64 ounces)					
MTBF	1 million hours					
ENVIRONMENT						
Operating Temperature	0°C to +40°C					
Storage Temperature	-40°C to +85°C					
Operating Humidity	10-95% RH (Non-condensing)					
Operating Altitude	5,000 meters					
Protection Against Shock	Class II					
MEDICAL RATING						
Float Rating	BF					
MOPP	2 × MOPP					



MDS 090AAS Adapter Power Supply

15/19/24V 90 WATTS

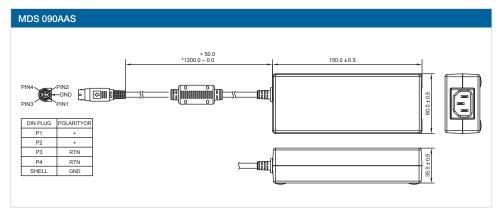


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety approvals for medical and IT applications
- MDS-090AAS15 meet DOE Level VI & ErP 2017
- MDS-090AAS19, 24 meet DOE Level VI
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	090AAS15	090AAS19	090AAS24					
Output Voltage	15V	19V	24V					
Output Current (Max)	6.00A	4.74A	3.75A					
Output Power	90W	90W	90W					
Average Efficiency	88%	88%	88%					
INPUT								
Input Voltage Range	90-264Vac							
Ripple & Noise		<1% (25°C at 10uF/0.47uF with 20MHz bandwid	th)					
Load Regulation		±5%						
Touch Current	<0	.1mA normal condition, <0.3mA SFC at 264Vac/6	63Hz					
Input Frequency		47-63Hz						
MECHANICAL								
Dimension (W x L x H)	65.00 × 150.00 × 35.00 mm (2.6 × 5.9 × 1.4 in)							
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B							
Connector Type	Input: C14 socket							
		Output: 4-pin DIN/Barrel type/Tuning fork type						
Unit Weight	450grams (16.2 ounces)							
MTBF		1 million hours						
ENVIRONMENT								
Operating Temperature		-0°C to +40°C						
Storage Temperature		-40°C to +85°C						
Operating Humidity	10-95% RH (Non-condensing)							
Operating Altitude	3,000 meters							
Protection Against Shock	Class I for F series, Class II with functional earth for B series							
MEDICAL RATING								
Float Rating	В							
MOPP	2 × MOPP							



MDS 090BAS24 Adapter Power Supply

24V 90 WATTS

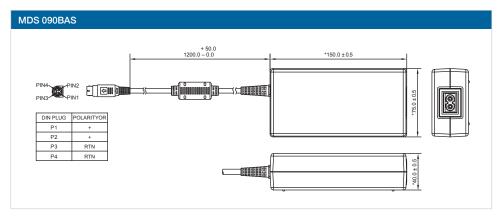


HIGHLIGHTS & FEATURES

- Low Leakage Current (<0.1mA Normal & 0.3mA single fault)
- Over-Voltage/Load/Temperature & Short Circuit Protections
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety rated for medical and IT applications
- Risk management report available
- High isolation: 2 x MOPP
- 1 million hours MTBF
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	090BAS24						
Output Voltage	24V						
Output Current (Max)	3.75A						
Output Power	90W						
Average Efficiency	88%						
INPUT							
Input Voltage Range	90-264Vac						
Ripple & Noise	<1% (25°C at 10uF/0.47uF with 20MHz bandwidth)						
Load Regulation	±5%						
Touch Current	<0.1mA normal condition, <0.3mA SFC at 264Vac/63Hz						
Input Frequency	47-63Hz						
MECHANICAL							
Dimension (W x L x H)	75.00 × 150.00 × 40.00 mm (3.0 × 5.9 × 1.6 in)						
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B						
Connector Type	Input: C8 socket						
	Output: 4-pin DIN/Barrel type/Tuning fork type						
Unit Weight	500 grams (17.64 ounces)						
MTBF	1 million hours						
ENVIRONMENT							
Operating Temperature	-0°C to +40°C						
Storage Temperature	-40°C to +85°C						
Operating Humidity	10-95% RH (Non-condensing)						
Operating Altitude	5,000 meters						
Degree of Protection	IP22						
Protection Against Shock	Class II						
MEDICAL RATING							
Float Rating	BF						
MOPP	2 × MOPP						



MDS 150AAS Adapter Power Supply

12/19/24V 150 WATTS

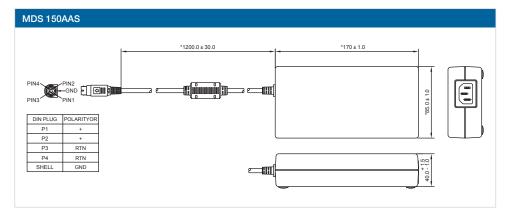


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Low leakage current (<0.1mA Normal & 0.3mA single fault)
- Compliant with IEC 60601-1-2 4th Ed. Requirements
- Safety approvals for medical and IT applications
- MDS-150AAS19 meet DOE Level VI & ErP 2017
- MDS-150AAS12, 24 meet DOE Level VI
- 1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	150AAS12	150AAS19	150AAS24					
Output Voltage	12V	19V	24V					
Output Current (Max)	10.00A	7.89A	6.25A					
Output Power	120W	150W	150W					
Average Efficiency	88%	88%	88%					
INPUT								
Input Voltage Range		90-264Vac						
Ripple & Noise	<	1% (25°C at 10uF/0.47uF with 20MHz bandwidt	h)					
Load Regulation		±5%						
Leakage Current	<0.	1mA normal condition, <0.3mA SFC at 264Vac/6	3Hz					
Input Frequency		47-63H						
MECHANICAL								
Dimension (W × L × H)	85.00 × 170.00 × 40.00 mm (3.4 × 6.7 × 1.6 in)							
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B							
Connector Type	Input: C14 socket							
	Output: 4-pin DIN/Barrel type/Tuning fork type (Select the appropriate DC plug according to the current)							
Unit Weight	1.1kg (39.6 ounces)							
MTBF		1 million hours						
ENVIRONMENT								
Operating Temperature		-0°C to +40°C						
Storage Temperature		-40°C to +85°C						
Operating Humidity	10-95% RH (Non-condensing)							
Operating Altitude	3,000 meters							
Protection Against Shock	Class I for F series, Class II with functional earth for B series							
MEDICAL RATING								
Float Rating	В							
MOPP	2 × MOPP							



MDS 150CAB19 Adapter Power Supply

19V 150 WATTS

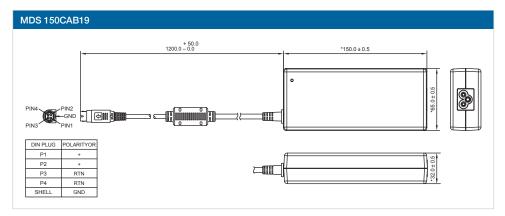


HIGHLIGHTS & FEATURES

- Over-Voltage/Load/Temperature & Short Circuit Protections
- Safety rated for medical and IT applications
- 90-264 Vac universal input
- 2.1 million hours MTBF
- 2 × MOPP isolation
- 3 years warranty

GENERAL SPECIFICATIONS

OUTPUT	150CAB19						
Output Voltage	19V						
Output Current (Max)	7.90A						
Output Power	150W						
Average Efficiency	88%						
INPUT							
Input Voltage Range	90-264Vac						
Ripple & Noise	<1% (25°C at 10uF/0.47uF with 20MHz bandwidth)						
Load Regulation	±5%						
Leakage Current	<0.1mA normal condition, <0.3mA SFC at 264Vac/63Hz						
Input Frequency	47-63Hz						
MECHANICAL							
Dimension (W × L × H)	65.00 × 150.00 × 32.00 mm (2.6 × 5.9 × 1.3 in)						
EMC & Emissions	EN55011 & EN55022 & FCC conducted & radiated class B						
Connector Type	Input: C6 socket						
	Output: 4-pin DIN/Tuning fork type						
Unit Weight	0.52kg (18.4 ounces)						
MTBF	2.1 million hours						
ENVIRONMENT							
Operating Temperature	0°C to +40°C						
Storage Temperature	-40°C to +85°C						
Operating Humidity	10-95% RH (Non-condensing)						
Operating Altitude	5,000 meters						
Degree of Protection	IP22						
Protection Against Shock	Class I						
MEDICAL RATING							
Float Rating	В						
MOPP	2 × MOPP						



Standards & Approvals

Delta Standard Medical Power Supplies

			0								
		CB Scheme to IEC 60601-1	CB Scheme to IEC 60950-1					TUV to EN 60601-1	TUV to EN 60950-1	EN 55011 Class B (Emissions)	EN 55022 Class B (Emissions)
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	CE	CB Schel 60601-1	CB Sche 60950-1	UL 60601-1	UL 60950-1	CQC (China)	CCC (China)	2	2	EN 55011 C (Emissions)	EMis
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Open Frame Power Supply											
MDS-040APS12 B	•	•	•	•	•	•	•			•	•
MDS-040APS15 B	•	•	•	•	•	•	•			•	•
MDS-040APS18 B	•	•	•	•	•	•	•			•	•
MDS-040APS24 B	•	•	•	•	•	•				•	•
MDS-065APS12 B	•	•	•	•	•	•				•	•
MDS-065APS15 B MDS-065APS18 B	•	•	•	•	•	•				•	•
MDS-065APS 16 B	•	•	•	•	•	•				•	•
MDS-100AP401 B	•	•	•	•	-	•				•	•
MDS-100AP401B	•	•	•	•	•	•			•	•	•
MDS-100APS15 B	•	•	•	•	•	•				•	•
MDS-100APS18 B	•	•	•	•	•	•				•	•
MDS-100APS24 B	•	•	•	•	•	•				•	•
MDS-100Al 324 B	•	•	•	•	•	•				•	•
MDS-100BPS15 B	•	•	•	•	•	•				•	•
MDS-100BPS18 B	•	•	•	•	•	•				•	•
MDS-100BPS24 B	•	•	•	•		•				•	•
MDS-200APB12*	•	•	•	•	•		•	•	•	•	•
MDS-200APB24*	•	•	•	•	_		•	•	•	•	•
MDS-250APB12*	•	•	•	•	•		•	•	•	•	•
MDS-250APB24*	•	•	•	•			•	•	•	•	•
MDS-300APB12*	•	•	•	•	•		•	•	•	•	•
MDS-300APB18*	•	•	•	•	•		•	•	•	•	•
MDS-300APB24*	•	•	•	•			•	•	•	•	•
MDS-300APB48*	•	•	•	•			•	•	•	•	•
MDS-400APB12*	•	•	•	•	•		•	•	•	•	•
MDS-400APB24*	•	•	•	•			•	•	•	•	•
MDS-400AUS19 B	•	•	•	•	•		•	•	•	•	•
MDS-400AUS24 B	•	•	•	•			•	•		•	•
Enclosed Power Supply											
MDS-200ADB12	•	•	•	•	•		•	•	•	•	•
MDS-200ADB24	•	•	•	•	•		•	•	•	•	•
MDS-250ADB12	•	•	•	•	•		•	•	•	•	•
MDS-250ADB24	•	•	•	•	•		•	•	•	•	•
MDS-300ADB12	•	•	•	•	•		•	•	•	•	•
MDS-300ADB18	•	•	•	•	•		•	•	•	•	•
MDS-300ADB24	•	•	•	•	•		•	•	•	•	•
MDS-400ADB12	•	•	•	•	•		•	•	•	•	•
MDS-400ADB24	•	•	•	•	•		•	•	•	•	•
MDS-300ADB48	•	•	•	•	•		•	•	•	•	•

	CE	CB Scheme to IEC 60601-1	CB Scheme to IEC 60950-1	UL 60601-1	UL 60950-1	CQC (China)	CCC (China)	TUV to EN 60601-1	TUV to EN 60950-1	EN 55011 Class B (Emissions)	EN 55022 Class B (Emissions)
ATX Power Supply											
MDS-350AD701	•	•	•	•	•		•				
Adapter Power Supply											
MDS-005AAS05 A	•	•		•			•			•	•
MDS-005AAS05 B	•	•		•						•	•
MDS-005AAS05 C	•	•								•	•
MDS-005AAS06 A	•	•					•				
MDS-005AAS06 B	•	•		•						•	•
MDS-005AAS06 C	•	•								•	•
MDS-030AAC05*	•	•		•			•			•	•
MDS-030AAC07*	•	•		•			•			•	•
MDS-030AAC12*	•	•		•			•			•	•
MDS-030AAC15*	•	•		•			•			•	•
MDS-030AAC24*	•	•		•			•			•	•
MDS-060AAS12 B	•	•		•			•			•	•
MDS-060AAS15 B	•	•		•			•			•	•
MDS-060AAS19 B	•	•		•			•			•	•
MDS-060AAS24 B	•	•		•			•			•	•
MDS-060BAS12 A	•	•		•			•			•	•
MDS-060BAS19 A	•	•		•			•			•	•
MDS-060BAS24 A	•	•		•			•			•	•
MDS-080AAS12 A	•	•		•			•			•	•
MDS-090AAS15 B	•	•		•			•			•	•
MDS-090AAS19 B	•	•		•			•			•	•
MDS-090AAS24 B	•	•		•			•			•	•
MDS-090BAS24 A	•	•		•			•			•	•
MDS-150AAS12 B	•	•		•			•			•	•
MDS-150AAS19 B	•	•		•			•			•	•
MDS-150AAS24 B	•	•		•			•			•	•
MDS-150CAB19	•	•		•			•			•	•

Notes

Warranty

Delta warrants that the products ("Products") sold in this catalog will be free of defects in material and workmanship within the warranty period. The warranty does not apply to Products which have been subjected to abuse, misuse, accident, neglect, unauthorized and/or improper installation, operation, use, maintenance, repair or alteration, or accident of unusual deterioration or degradation of the Products or parts thereof due to physical environment beyond the requirements of the Product specifications.

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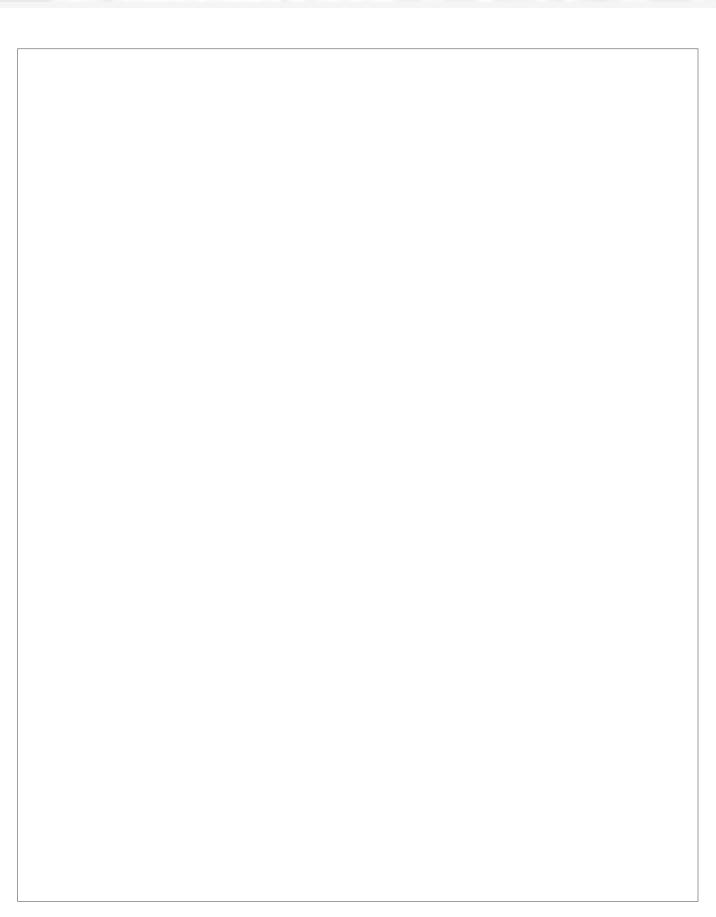
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At Delta, all of our products are designed to meet the highest quality standards. All national and international safety certifications including EMC directives are conducted by qualified and independent laboratories. For EMC directives' compliance, the power supplies are tested to ensure compliance as a stand-alone product. Power supplies like the open frame and adapter types are typically considered component power supplies. Therefore, Delta cannot guarantee the system which is installed with Delta's component power supply can meet the related EMC directives. Customers are advised to contact the system manufacturer for confirmation.

Availability

Products with "New" tab are slated for official release with immediate effect, while products with "Coming Soon" tab will be available within the next two months from this catalog's publication month (Refer to cover page). Kindly contact your local Delta distributor for availability, ordering and delivery details. You may also get in touch with us via the Feedback Form on www.deltapsu.com/feedback.



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ASIA

Delta Electronics, Inc.

3 Tungyuan Road, Chungli Industrial Zone, Taoyuan Country 32063, Taiwan, R.O.C.

Tel: +886 3 452 6107 Fax: +886 3 434 3617

Delta Greentech (China) Co.,Ltd.

10F, Jiangnan Shipyard Building, No. 600 Luban Road, New Huangpu District, Shanghai, P.R.C. 200023

Tel: +86 21 63012827 Fax: +86 21 63012307

Delta Electronics Power (Dong Guan) Ltd.

China North Head Quarter – Beijing
No. 7 Building, No. 6 Yard, East BeiChen Road,
Chao Yang District, Beijing, China Zip: 100105
Tel: +86 010 82253225 Ext. 6026

Fax: +86 010 82251360

Delta Electronics Power (Dong Guan) Ltd.

China East Head Quarter – Shanghai Room No. 1308, Feidiao International Mension No. 1065A. Zhaojiabang Road, Shanghai,

Tel: +86 0510 82603650 +86 0510 82604650 Fax: +86 0510 82603650

Delta Electronics Power (Dong Guan) Ltd.

China South Head Quarter – Shijie
He Tian Xia High-Tech Industrial Park,
Shijie Town, Dongguan, Guangdong Province,
P.R.C. Zip: 523300

Tel: +86 769 8632 9008 Fax: +86 755 8610 4534

Delta Electronics (Thailand) PCL. 909 Moo 4, E.P.Z., Bangpoo Industrail Estate, Tambon Prakasa, Amphur Muang Samutprakarn, Samutprakarn 10280, Thailand

Tel: +662 709 2800 Fax: +662 709 2827

Delta India Electronics Pvt. Ltd.

Plot No. 43 Sector – 35, HSIIDC, Gurgaon, Haryana 122001 Tel: +91 124 4874900 +91 124 4169040 Fax: +91 124 4874945

Delta Electronics (Japan) Inc. 2-1-14 Shibadaimon, Minato-Ku Tokyo, 105-0012, Japan

Tel: +81 3 5733 1155 Fax: +81 3 5733 1255

Delta Electronics (Korea) Inc.

1511, Byucksan Digital Valley 6-Cha, Gasan-dong, Geumcheon-gu, Seoul, 153-704, Korea

Tel: +82 2 515 5303 +82 2 515 5305 Fax: +82 2 515 5302

NORTH AMERICA

Technical Contact

Tel: 214 431 3525

Delta Products Corporation 46101 Fremont Blvd. Fremont, CA 94538

Tel: +1 510 668 5100

CENTRAL AND SOUTH AMERICA

Delta Greentech (Brasil) S.A.

Rua Itapeva, 26 - 3° andar Edificio Itapeva One - Bela Vista 01332-000 - São Paulo - SP – Brazil Tel: +55 11 3568 3850 Fax: +55 11 3568 3865

Delta Electronics Mexico

Uno Poniente # 19955, Col. CD. Industrial Nueva Tijuana, Tijuana, B.C., Mexico.

Tel: +52 664 103 9999 Fax: +52 664 661 3999

EUROPE

Amsterdam Office Deltronics (Netherlands) B.V. Zandsteen 15, 2132 MZ Hoofddorp,

The Netherlands

Tel: +31 20 655 0975 Fax: +31 20 655 0999

Authorized Distributor:

www.DeltaPSU.com | info@deltapsu.com

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