ME20 Series

20 W Single Output External Power Adapter
Medical Grade



Medical

Advanced Energy's ME20 series of desktop and wall-plug AC-DC external power adapter comprises nine output models. All models feature medical safety approvals and accept a universal input of 90 to 264 VAC. ME20 series power adapters provide up to 20 W of output power with IP22 rated enclosure and are ideal for applications that are used in environments where AC mains power may be noisy or unstable and equipment shutdown is not an option.

AT A GLANCE

Total Power

20 W

Input Voltage

90 to 264 VAC

# of Outputs

Single

SPECIAL FEATURES

- Up to 20 W of AC-DC Power
- Desktop and wall-plug versions
- IP22 rated enclosure*
- Meets EN55011/CISPR11, FCC Part 15.109 Class B conducted & radiated emissions, with 6dB margin
- Meets UL/EN/IEC60601-1-2, 4th edition for EMC
- >10 years E-cap lfe
- >1,000,000 Hours MTBF
- 3 years warranty
- Meets DoE efficiency level VI requirements
- RoHS compliant

SAFETY

- IEC/EN/UL60601-1, 3.2 edition
- CE Mark
- UKCA Mark

Note: *IP22 does not include interchangeable blade versions.

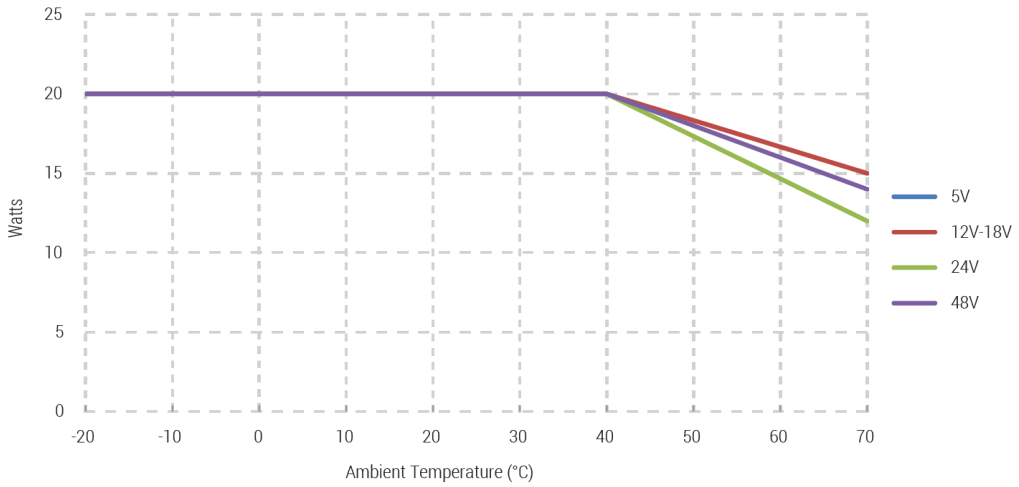
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ELECTRICAL SPECIFICATIONS

Input	
Input Range	100 to 240 VAC, ±10%, 47 to 63 Hz, 1Ø
Input Current	0.5 A @ 100 VAC, 0.2 A @ 240 VAC
Inrush Current	40 A max., cold start @ 264 VAC input
Input Fuses	F1, F2: 3.15 A, 250 VAC fuses (line & neutral lines) provided on all models
Leakage Current Input to GND	<500 µA @ 264 VAC, 60 Hz, NC
Efficiency	87%, Typical
Common Mode Noise	High frequency (100 kHz to 20 MHz); <40 mA pk-pk
No Load Input Power	<0.1 W per DoE Efficiency Level VI requirements
Output	
Output Voltage	See models chart on page 5 and page 6
Output Power	15 W to 20 W continuous - See models chart for specific voltage model ratings
Turn On Time	Less than 700 ms @ 115 VAC, full load
Hold Up Time	20 ms min., at full load, 100 VAC input
Ripple and Noise	See models chart on page 5 and page 6
Transient Response	500 µs response time for return to within 0.5% of final value for any 50% load step over the range of 5% to 100% of rated load, $\Delta i/\Delta t$ < 0.2 A/µs. Max. voltage deviation is ±3.5%
Regulation	See models chart on page 5 and page 6
Reliability	
MTBF	>1,000,000 hours, full load, 110 VAC & 220 VAC input, 25°C amb., per Telcordia 332 Issue 6, Stress Method
E-cap Life	>10 years life based on calculations at 115 VAC/60 Hz & 230 VAC/50 Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day
Protection	
Overtemperature Protection	Shutdown upon an overtemperature condition, auto-recovery
Overload Protection	130% to 150% of rating, hiccup mode
Overvoltage Protection	130% to 150% of output voltage, hiccup mode
Short Circuit Protection	Hiccup mode, auto-recovery
Safety	
Safety Standards	ANSI/AAMI ES60601-1:2005/(R)2012 CSA CAN/CSA-C22.2 NO, 60601-1:14 IEC60601-1:2005+CORR.2:2007+AM:2012 EN 60601-1:2006/A11:2011, EN60601-1: 2006/A12:2014, EN60601-1:2006/A1:2013
Drop Test	1.4 m from table top to wooden platform, 4 faces
Isolation	
Isolation	Input to Output: 4000 VAC Input to Ground: 1500 VAC Output to Ground: 1500 VAC

Note:
All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

DERATING CHART



EMI/EMC COMPLIANCE

Conducted Emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, Class B, 6dB margin typ., at 115 VAC and 230 VAC
Radiated Emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, Class B, 3dB margin typ., at 115 VAC and 230 VAC
Electro-Static Discharge (ESD) Immunity on Power Ports	EN55024/IEC61000-4-2, Level 4: ±8 kV contact, ±15 kV air, Criteria A
Radiated RF EM Fields Susceptibility	EN55022/EN61000-4-3, 10 V/m, 80 MHz to 2.7 GHz, 80% AM at 1 kHz
Electrical Fast Transients (EFT)/Burst Immunity	EN55024/IEC61000-4-4, Level 4, ±4.4 kV, 100 kHz rep rate, 40 A, Criteria A
Surges, Line to Line (Diff mode) and Line to Ground (CMN mode)	EN55024/IEC61000-4-5, Level 4, ±2 kV DM, ±4 kV CM, Criteria A
Conducted Disturbances Induced by RF Fields	EN55022/IEC61000-4-6, 3.6 V/m - Level 4, 0.15 MHz to 80 MHz; and 12 V/m in ISM and amateur radio bands between 0.15 MHz and 80 MHz, 80% AM at 1 kHz
Rated Power Frequency Magnetic Fields Immunity	EN55024/IEC1000-4-8, Level 4: 30 A/m, 50 Hz / 60 Hz
Voltage Interruptions, Dips, Sags & Surges	EN55024/IEC/EN61000-4-11: --100% dip for 20 ms, Criteria A --100% dip for 5000 ms (250/300 cycles), Criteria B --60% dip for 100 ms, Criteria B --30% dip for 500 ms, Criteria A
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker test	EN61000-3-3

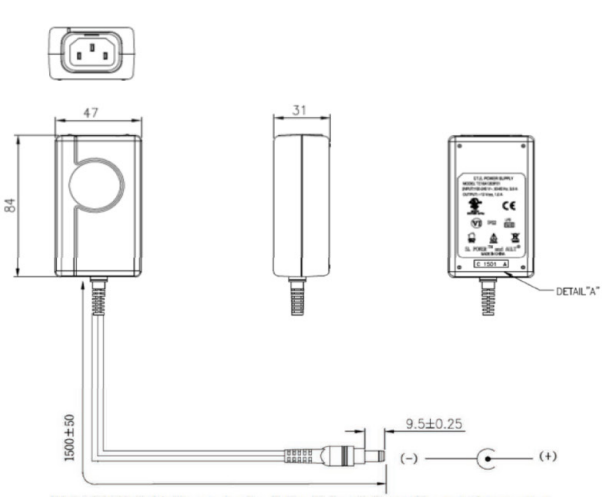
Note:
All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

ENVIRONMENTAL SPECIFICATIONS

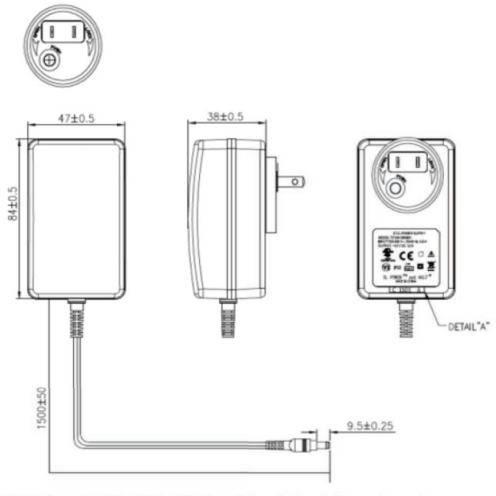
Operating Temperature	-20°C to +70°C Start up at -40°C, full load (warmup period before all parameters are within published specifications)
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing
Weight	150 grams
Temperature Derating	See derating chart
Altitude	Operating: to 5000 m Non-operating: -500 ft to 40000 ft
Vibration	Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis, 1 Hz to 500 Hz Non-Operating: random waveform, 3 minutes/axis, 3 axes and sine waveform, Vib. frequency/acceleration: 10Hz to 500 Hz/1g, sweep rate of 1 oct/minutes, Vibration time of 10 sweeps/axes, 3 axes
Shock	Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total Non-operating: Half-sine waveform Impact acceleration of 100G, Pulse duration of 6ms Number of shocks: 3 for each of the three axis

Note:
All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

MECHANICAL DRAWING



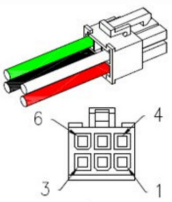
IEC60320 C14 Receptacle, 2.5 x 5.5 x 9.5 mm Barrel Connector



Interchangeable N.A. Blade, 2.5 x 5.5 x 9.5 mm Barrel Connector

Notes:
1. Weight: 150 grams.
2. All dimensions in mm.
3. Interchangeable blade models come with North American blade fitted. For other blades (EU, UK, AU) order blade kit KT1027K.
4. The unit should not be covered or enclosed to protect against excessive case temperature rise.
5. Pins 4,5,6 are located closest to the locking tab.

LEADWIRE HOOK-UP		
PIN #	FUNCTION	COLOR
1	+V	RED
2	NC	-
3	COMMON	BLACK
4	+V	WHITE
5	NC	-
6	COMMON	GREEN
	BRAID	FG4



ORDERING INFORMATION

Model Number	Volts	Output Current	Output Power	Ripple & Noise[1]	Line Regulation	Load Regulation	Output Connector	Input Configuration
ME20A0503F01	5.0 V	3.0 A	15 W	75 mV pk-pk	± 1%	± 5%	2.5 x 5.5 x 9.5 mm Straight Barrel Type, Center Positive	Class I Desktop, IEC60320 C14 Receptacle[2]
ME20A0603F01	5.9 V	2.5 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0703F01	7.5 V	2.0 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0903F01	9.0 V	2.0 A	18 W	90 mV pk-pk	± 1%	± 5%		
ME20A1203F01	12.0 V	1.5 A	18 W	120 mV pk-pk	± 1%	± 5%		
ME20A1503F01	15.0 V	1.2 A	18 W	150 mV pk-pk	± 1%	± 5%		
ME20A1803F01	18.0 V	1.0 A	18 W	180 mV pk-pk	± 1%	± 5%		
ME20A2403F01	24.0 V	0.83 A	20 W	240 mV pk-pk	± 1%	± 5%		
ME20A4803F01	48.0 V	0.42 A	20 W	480 mV pk-pk	± 1%	± 5%		
ME20A0503N01	5.0 V	3.0 A	15 W	75 mV pk-pk	± 1%	± 5%	2.5 x 5.5 x 9.5 mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C8 Receptacle
ME20A0603N01	5.9 V	2.5 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0703N01	7.5 V	2.0 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0903N01	9.0 V	2.0 A	18 W	90 mV pk-pk	± 1%	± 5%		
ME20A1203N01	12.0 V	1.5 A	18 W	120 mV pk-pk	± 1%	± 5%		
ME20A1503N01	15.0 V	1.2 A	18 W	150 mV pk-pk	± 1%	± 5%		
ME20A1803N01	18.0 V	1.0 A	18 W	180 mV pk-pk	± 1%	± 5%		
ME20A2403N01	24.0 V	0.83 A	20 W	240 mV pk-pk	± 1%	± 5%		
ME20A4803N01	48.0 V	0.42 A	20 W	480 mV pk-pk	± 1%	± 5%		
ME20A0503Q01	5.0 V	3.0 A	15 W	75 mV pk-pk	± 1%	± 5%	2.5 x 5.5 x 9.5 mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C18 Receptacle
ME20A0603Q01	5.9 V	2.5 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0703Q01	7.5 V	2.0 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0903Q01	9.0 V	2.0 A	18 W	90 mV pk-pk	± 1%	± 5%		
ME20A1203Q01	12.0 V	1.5 A	18 W	120 mV pk-pk	± 1%	± 5%		
ME20A1503Q01	15.0 V	1.2 A	18 W	150 mV pk-pk	± 1%	± 5%		
ME20A1803Q01	18.0 V	1.0 A	18 W	180 mV pk-pk	± 1%	± 5%		
ME20A2403Q01	24.0 V	0.83 A	20 W	240 mV pk-pk	± 1%	± 5%		
ME20A4803Q01	48.0 V	0.42 A	20 W	480 mV pk-pk	± 1%	± 5%		
ME20A0503B01	5.0 V	3.0 A	15 W	75 mV pk-pk	± 1%	± 5%	2.5 x 5.5 x 9.5 mm Straight Barrel Type, Center Positive	Class II Wall-Plug, Interchangeable Blades (North American Blade included)[3]
ME20A0603B01	5.9 V	2.5 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0703B01	7.5 V	2.0 A	15 W	75 mV pk-pk	± 1%	± 5%		
ME20A0903B01	9.0 V	2.0 A	18 W	90 mV pk-pk	± 1%	± 5%		
ME20A1203B01	12.0 V	1.5 A	18 W	120 mV pk-pk	± 1%	± 5%		
ME20A1503B01	15.0 V	1.2 A	18 W	150 mV pk-pk	± 1%	± 5%		
ME20A1803B01	18.0 V	1.0 A	18 W	180 mV pk-pk	± 1%	± 5%		
ME20A2403B01	24.0 V	0.83 A	20 W	240 mV pk-pk	± 1%	± 5%		
ME20A4803B01	48.0 V	0.42 A	20 W	480 mV pk-pk	± 1%	± 5%		

ORDERING INFORMATION

Model Number	Volts	Output Current	Output Power	Ripple & Noise[1]	Line Regulation	Load Regulation	Output Connector	Input Configuration
ME20A0503C01	5.0 V	3.0 A	15 W	75mV pk-pk	± 1%	± 5%	2.5 x 5.5 x 9.5 mm Straight Barrel Type, Center Positive	Class II Wall-Plug, Fixed North American Blades[4]
ME20A0603C01	5.9 V	2.5 A	15 W	75mV pk-pk	± 1%	± 5%		
ME20A0703C01	7.5 V	2.0 A	15 W	75mV pk-pk	± 1%	± 5%		
ME20A0903C01	9.0 V	2.0 A	18 W	90mV pk-pk	± 1%	± 5%		
ME20A1203C01	12.0 V	1.5 A	18 W	120mV pk-pk	± 1%	± 5%		
ME20A1503C01	15.0 V	1.2 A	18 W	150mV pk-pk	± 1%	± 5%		
ME20A1803C01	18.0 V	1.0 A	18 W	180mV pk-pk	± 1%	± 5%		
ME20A2403C01	24.0 V	0.83 A	20 W	240mV pk-pk	± 1%	± 5%		
ME20A4803C01	48.0 V	0.42 A	20 W	480mV pk-pk	± 1%	± 5%		

Notes:

1. Measured at the output connector, with noise probe directly across output and load terminated with 0.1 µF ceramic and 10 µF low ESR capacitors. For 5 V and 6 V models, values listed are typical 100 mV pk-pk maximum with 0.1 µF ceramic and 47 µF low ESR capacitors used at measurement point.
2. For input Class I models: For AC GND connected to output common (-), insert a “B” in the part number where the “A” is located (ME20B0503F01).
3. Order blade kit KT1027K for other blades (EU, UK, Australia).
4. For EU fixed blades, replace “C” in the model number with “M”, for UK blades, replace “C” with “G”, for Australia blades, replace “C” with “H”.
5. All specifications are typical at nominal input, full load, at 25°C ambient unless noted.
6. Output connector can be modified. Selection of connectors on page 7. Not all connectors can be used for the product. Contact AE support for availability.

CONNECTOR INFORMATION

Standard models include a 2.5 x 5.5 x 9.5 mm straight barrel type connector (Ault #3), center positive. The “03” in the standard model number is replaced by the applicable digits below. Not all connectors can be used for the product. Contact AE support for availability.

Connector No.	Description	Connector No.	Description
02	2.1 x 5.5 x 9.5 mm straight barrel plug - Center positive Max current rating: 8 A 	45	2.5 x 5.5 x 9.5 mm straight barrel plug, locking - Center positive Max current rating: 5 A 
03	2.5 x 5.5 x 9.5 mm straight barrel plug - Center positive (Standard models) Max current rating: 8 A 	48	3-pin Snap n Lock, Kycon Kpp - 3P or equivalent (Pin 1 = (+); pin 2 = (-)) Max current rating: 7.5 A (pins 1,2), 1 A (pin 3) 
12	5-pin DIN - 180 male connector (Pins 3,5 = (+); pins 1,2,4 = (-)) Max current rating: 5 A 	49	4-pin Snap n Lock, Kycon Kpp - 4P or equivalent (Pins 1,3 = (+); pins 2,4 = (-)) Max current rating: 0.5 A 
22	6-pin DIN male connector (Pins 1,2 = (+); pins 4,5 = (-)) 	51	6-pin Minifit - Molex 39-01-2060 or equivalent (Pins 1,4 = (+); pins 3,6 = (-)) Max current rating: 13 A 
23	8-pin DIN male connector (Pins 3,7 = (+); pins 1,4,6,8 = (-); shell = FG) Max current rating: 3.5 A 	65	Stripped and tinned leads 
32	9-pin “D” type, female (Pin 8 = (+); pin 5 = (-); all others = NC) Max current rating: 5 A 	70	2.1 x 5.5 x 11 mm right angle barrel plug (High retention) - Center positive Max current rating: 8 A 
33	2.5 x 5.5 x 12.5 mm straight barrel plug - Center positive Max current rating: 8 A 	71	2.5 x 5.5 x 11 mm right angle barrel plug (High retention) - Center positive Max current rating: 8 A 
40	2.1 x 5.5 x 9.5 mm right angle barrel plug - (High retention) - Center positive Max current rating: 8 A 	72	2.1 x 5.5 x 9.5 mm straight barrel plug (High retention, no spark) - Center positive Max current rating: 5 A 
41	2.5 x 5.5 x 9.5 mm right angle barrel plug - (High retention) - Center positive Max current rating: 8 A 	73	2.5 x 5.5 x 9.5 mm straight barrel plug (High retention, no spark) - Center positive Max current rating: 5 A 
42	2.1 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive Max current rating: 5 A 	74	EIAJ#5 style connector - Central positive Max current rating: 5 A 
43	2.5 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive Max current rating: 3 A 	99	Micro USB Max current rating: 2 A 
44	2.1 x 5.5 x 9.5 mm straight barrel plug, locking - Center positive Max current rating: 5 A 		

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. AE designs and manufactures 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.

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