# ME10

10W-12W Single Output External Power
Medical Series

## Features

- Meets UL/EN/IEC60601-1-2, 4th edition for EMC*
- Approved to EN/IEC/UL60601-1, 3rd edition applications with and isolation levels which satisfy the 2 MOPP requirements
- Meets DoE Efficiency Level VI Requirements
  - No load input power
  - Average Efficiency
- Up to 12W of AC-DC Power
- Universal Input 90-264Vac Input Range
  - Desktop and Wall-Plug versions
- Meets EN55011/CISPR11, FCC Part 15.109 Class B Conducted & Radiated Emissions, with 6db margin
- E-cap life of >7 years
- <1,000,000 Hours MTBF
- 3 Year Warranty
- IP22 Rated Enclosure

## Description

**A high performance AC to DC external power supply family designed for medical applications. The ME10 Medical Series external AC-DC power supplies are approved to safety EN/IEC/UL60601-1, 3rd edition, with isolation levels which satisfy the 2 MOPP requirements; and designed to UL/EN/IEC60601-1-2, 4th edition for EMC*. The ME10 Series models will operate at universal input range of 90 to 264Vac over the wide temperature range of -20°C to +50°C, delivering full rated output power up to +40°C and applicable output power derating at 50°C. These models are available in desktop and wall-plug versions, include an IP22 rating per IEC60529 for the enclosure, and output cable terminated at a variety of output connectors.**

*Consult Factory for Table 9 compliance information.

## Model Selection

| Model Number | Volts | Output Current | Output Power | Ripple & Noise[1] | Line Regulation | Load Regulation | Output Connector | Input Configuration |
|---|---|---|---|---|---|---|---|---|
| ME10A0503F01 | 5.0V | 2.0A | 10W | 75mV pk-pk | ±1% | ±5% | 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive | Class I Desktop, IEC60320 C14 Receptacle |
| ME10A0603F01 | 5.9V | 1.6A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0703F01 | 7.5V | 1.3A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0903F01 | 9.0V | 1.1A | 10W | 90mV pk-pk | ±1% | ±5% | | |
| ME10A1203F01 | 12.0V | 1.0A | 12W | 120mV pk-pk | ±1% | ±5% | | |
| ME10A1503F01 | 15.0V | 0.8A | 12W | 150mV pk-pk | ±1% | ±5% | | |
| ME10A2403F01 | 24.0V | 0.5A | 12W | 240mV pk-pk | ±1% | ±5% | | |
| ME10A0503N01 | 5.0V | 2.0A | 10W | 75mV pk-pk | ±1% | ±5% | 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive | Class II Desktop, IEC60320 C8 Receptacle |
| ME10A0603N01 | 5.9V | 1.6A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0703N01 | 7.5V | 1.3A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0903N01 | 9.0V | 1.1A | 10W | 90mV pk-pk | ±1% | ±5% | | |
| ME10A1203N01 | 12.0V | 1.0A | 12W | 120mV pk-pk | ±1% | ±5% | | |
| ME10A1503N01 | 15.0V | 0.8A | 12W | 150mV pk-pk | ±1% | ±5% | | |
| ME10A2403N01 | 24.0V | 0.5A | 12W | 240mV pk-pk | ±1% | ±5% | | |
| ME10A0503Q01 | 5.0V | 2.0A | 10W | 75mV pk-pk | ±1% | ±5% | 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive | Class II Desktop, IEC60320 C18 Receptacle |
| ME10A0603Q01 | 5.9V | 1.6A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0703Q01 | 7.5V | 1.3A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0903Q01 | 9.0V | 1.1A | 10W | 90mV pk-pk | ±1% | ±5% | | |
| ME10A1203Q01 | 12.0V | 1.0A | 12W | 120mV pk-pk | ±1% | ±5% | | |
| ME10A1503Q01 | 15.0V | 0.8A | 12W | 150mV pk-pk | ±1% | ±5% | | |
| ME10A2403Q01 | 24.0V | 0.5A | 12W | 240mV pk-pk | ±1% | ±5% | | |

## Model Selection (continued)

| Model Number | Volts | Output Current | Output Power | Ripple & Noise[1] | Line Regulation | Load Regulation | Output Connector | Input Configuration |
|---|---|---|---|---|---|---|---|---|
| ME10A0503B01 | 5.0V | 2.0A | 10W | 75mV pk-pk | ±1% | ±5% | 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive | Class II Wall-Plug, Interchangeable Blades (North American Blade included)[2] |
| ME10A0603B01 | 5.9V | 1.6A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0703B01 | 7.5V | 1.3A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0903B01 | 9.0V | 1.1A | 10W | 90mV pk-pk | ±1% | ±5% | | |
| ME10A1203B01 | 12.0V | 1.0A | 12W | 120mV pk-pk | ±1% | ±5% | | |
| ME10A1503B01 | 15.0V | 0.8A | 12W | 150mV pk-pk | ±1% | ±5% | | |
| ME10A2403B01 | 24.0V | 0.5A | 12W | 240mV pk-pk | ±1% | ±5% | | |
| ME10A0503C01 | 5.0V | 2.0A | 10W | 75mV pk-pk | ±1% | ±5% | 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive | Class II Wall-Plug, Fixed North American Blades[3] |
| ME10A0603C01 | 5.9V | 1.6A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0703C01 | 7.5V | 1.3A | 10W | 75mV pk-pk | ±1% | ±5% | | |
| ME10A0903C01 | 9.0V | 1.1A | 10W | 90mV pk-pk | ±1% | ±5% | | |
| ME10A1203C01 | 12.0V | 1.0A | 12W | 120mV pk-pk | ±1% | ±5% | | |
| ME10A1503C01 | 15.0V | 0.8A | 12W | 150mV pk-pk | ±1% | ±5% | | |
| ME10A2403C01 | 24.0V | 0.5A | 12W | 240mV pk-pk | ±1% | ±5% | | |

Notes:
1. Measured at the output connector, with noise probe directly across output and load terminated with 0.1µF ceramic and 10µF low ESR capacitors. For 5V and 6V models, values listed are typical, 100mV pk-pk maximum with 0.1µF ceramic and 47µF low ESR capacitors used at measurement point.
2. Order blade kit KT-1027K for other blades (EU. UK, Australia)
3. 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".
4. For Input Class I models: For AC GND connected to output common (-), insert a "B" in the part number where the "A" is located (ME10B0503F01).
5. All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

## General Specifications

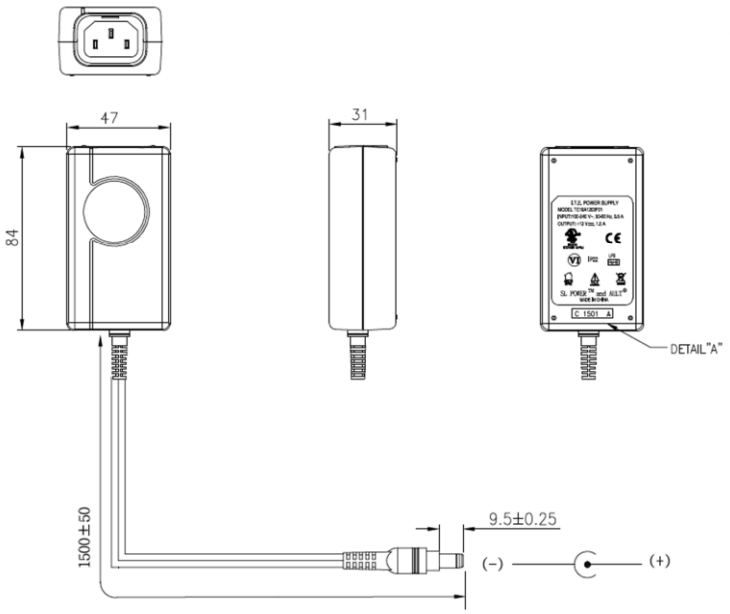
| | | | |
|---|---|---|---|
| **AC Input** | 100-240Vac, ±10%, 47-63Hz, 1∅ | **Turn On Time** | Less than 700mS @115Vac, full load |
| **Input Current** | 115Vac: 0.45A, 230Vac: 0.22A | **Hold-up Time** | 20mS min., at full Load, 100Vac input |
| **Inrush Current** | 264Vac, cold start: will not exceed 40A | **Overtemperature Protection** | Will shutdown upon an overtemperature condition, auto-recovery. |
| **Input Fuses** | F1, F2: 3.15A, 250Vac fuses (line & neutral lines) provided on all models | **Overload Protection** | 130 to 180% of rating, Hiccup Mode |
| **Earth Leakage Current** | Input-GND: <500µA@264Vac, 60Hz, NC<br>Output-GND: <4mA@264Vac, 60Hz, NC | **Short Circuit Protection** | Hiccup Mode, auto recovery. |
| **Efficiency** | >87%, typical | **Overvoltage Protection** | 130 to 150% of output voltage, hiccup mode |
| **Output Power** | 10 to 12W continuous – See models chart for specific voltage model ratings. | **Isolation** | Input-Output: 2 MOPP<br>Input-Ground: 1 MOPP<br>Output-Ground: 1500Vac |
| **No Load Input Power** | <0.1W per DoE Efficiency Level VI Requirements | **Safety Standards** | EN/IEC/UL60601-1, 3rd edition and EN/IEC/UL60601-1-11:2010 for Home Healthcare |
| **Ripple and Noise** | See models chart | **Operating Temperature** | -20°C to +70°C |
| **Output Voltage** | See models chart | **Temperature Derating** | See derating chart |
| **Transient Response** | 500µs 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, Δi/Δt< 0.2A/µs. Max. voltage deviation is +/-3.5%. | **Storage Temperature** | -40°C to +85°C |
| **Regulation** | See models chart | **Altitude** | Operating: to 5000m.<br>Non-operating: -500 to 40,000 ft. |
| **Drop Test** | 1.4m from table top to wooden platform, 6 faces. | **Relative Humidity** | 5% to 95%, non-condensing |
| **Vibration** | Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis, 1-500Hz.<br>Non-Oper.: random waveform, 3 minutes per axis, 3 axes and Sine waveform, Vib. frequency/acceleration: 10-500Hz/1g, sweep rate of 1 octave / minutes, Vibration time of 10 sweeps / axes, 3 axes | **Shock** | Operating: Half-sine, 20gpk, 10mS, 3 axes, 6 shocks total<br>Non-Operating: Half-sine waveform, impact acceleration of 100G, Pulse duration of 6 mS, Number of shocks: 3 for each of the three axis |
| **E-Cap Life** | >10 year life based on calculations at 115Vac/60Hz & 230Vac/50Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day. | **MTBF** | >1,000,000 hours, full load, 110 & 220Vac input, 25°C amb., per Telcordia 332 Issue 6, Stress Method. |

## EMI/EMC Compliance

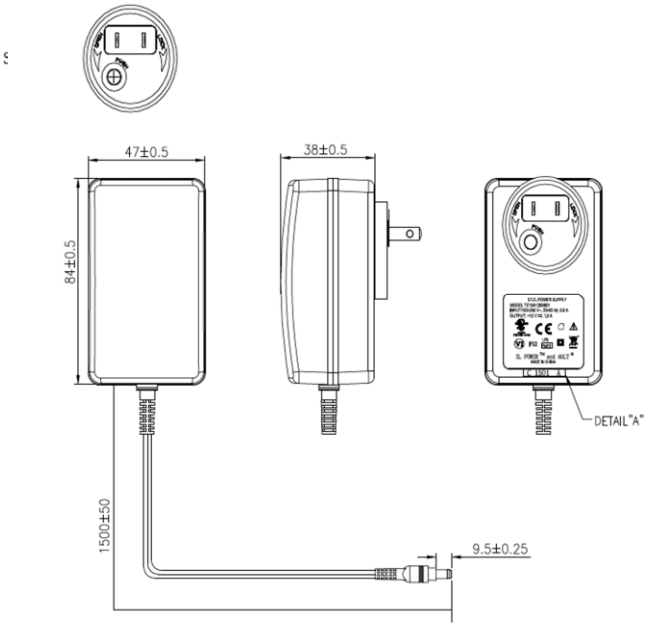
| | |
|---|---|
| **Conducted Emissions:** | EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin typ, at 115 and 230Vac |
| **Radiated Emissions:** | EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin typ, at 115 and 230Vac |
| **Common Mode Noise:** | High Frequency (100kHz-20MHz): <40mA pk-pk |
| **Electro-Static Discharge (ESD) Immunity on Power ports:** | EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A<br>IEC60601-1-2, 4th Edition, Table 4 |
| **Radiated RF EM Fields Susceptibility** | EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz<br>IEC60601-1-2, 4th Edition, Table 4 |
| **Electrical Fast Transients (EFT) /Bursts:** | EN55024/IEC61000-4-4, Level 4, +/- 4.4kV, 100Khz rep rate, 40A, Criteria A<br>IEC60601-1-2, 4th Edition, Table 5 |
| **Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode)** | EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A<br>Surpasses IEC60601-1-2, 4th Edition requirements. |
| **Conducted Disturbances induced by RF Fields** | EN55022/IEC61000-4-6, 3.6V/m – Level 4, 0.15 to 80Mhz; and 12V/m) in ISM and amateur radio bands between 0.15Mhz and 80Mhz, 80% AM at 1KHz<br>IEC60601-1-2, 4th Edition, Table 5 |
| **Rated Power frequency magnetic fields** | EN55024/IEC1000-4-8, Level 4: 30 A/m, 50/60 Hz<br>IEC60601-1-2, 4th Edition, Table 4 |
| **Voltage Interruptions, Dips, Sags & Surges** | EN55024/IECEN61000-4-11: --100% dip for 10 mS, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 100% dip for 20mS, 0 deg., Criteria A<br>--100% dip for 5000mS (250/300 cycles), Criteria B<br>--60% dip for 100mS, Criteria B<br>--30% dip for 500mS, Criteria A<br>IEC60601-1-2, 4th Edition, Table 5 |
| **Harmonic Current Emissions** | EN55011/EN61000-3-2, Class A |
| **Flicker Test** | EN61000-3-3 |

All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing for or usage under special environments.

## Mechanical Drawing



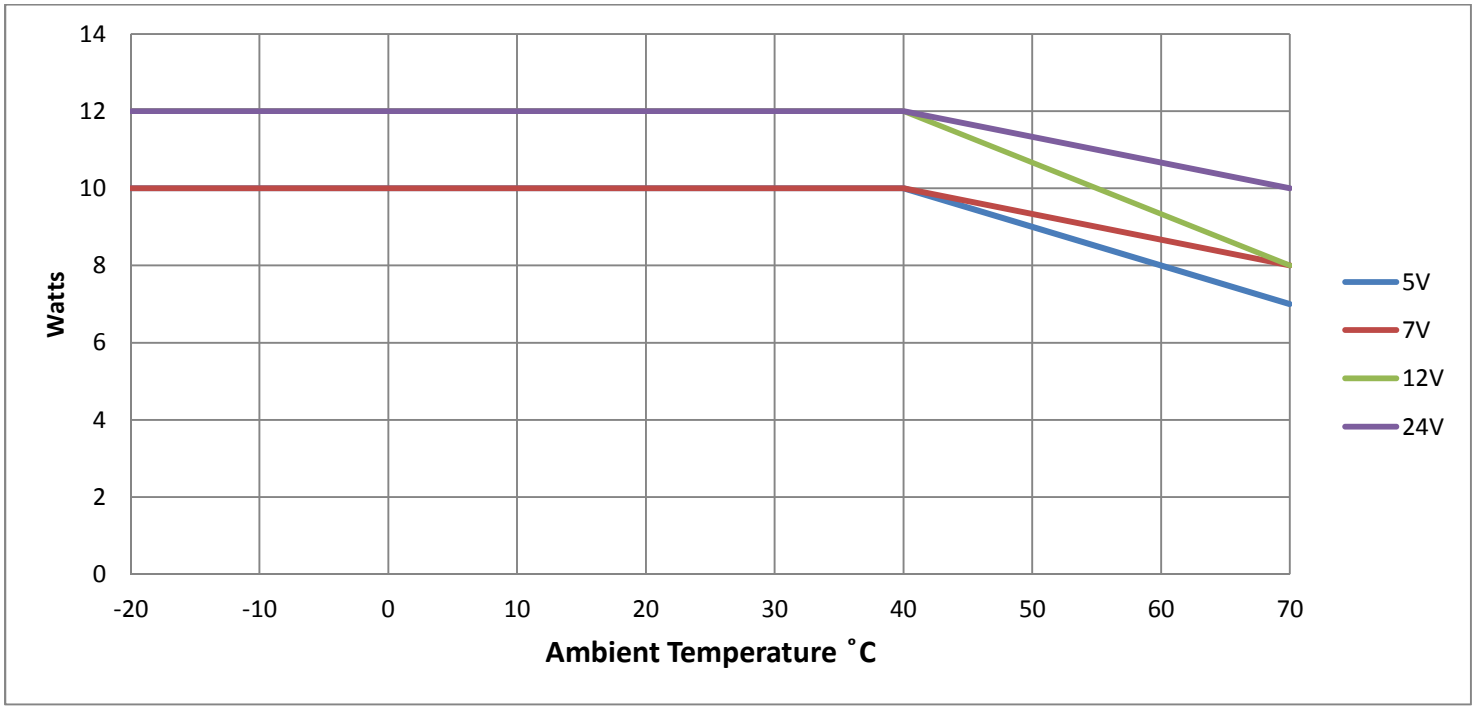

*IEC60320 C14 Receptacle, 2.5 x 5.5 x 9.5mm Barrel Connector*




*Interchangeable N.A. Blade, 2.5 x 5.5 x 9.5mm barrel connector*

**Notes:**
1. All dimensions in mm.
2. Weight = 110g
2. Interchangeable blade models come with North American blade fitted. For other blades (EU, UK, Aust.) order blade kit KT1027K.
3. The unit should not be covered or enclosed to protect against excessive case temperature rise.

## Derating Chart:




## Connector Information

**Standard models include a 2.5 x 5.5 x 9.5mm straight barrel type connector (Ault #3), center positive. Other standard options are listed below. The "03" in the standard model number is replaced by the applicable digits below:**

| Connector No. | Description | Connector No. | Description |
|---|---|---|---|
| 02 | 2.1 x 5.5 x 9.5mm straight barrel plug - Center Positive | 44 | 2.1 x 5.5 x 9.5mm straight barrel plug, locking - Center Positive |
| 03 | 2.5 x 5.5 x 9.5mm straight barrel plug - Center Positive (Standard Models) | 45 | 2.5 x 5.5 x 9.5mm straight barrel plug, locking - Center Positive |
| 12 | 5 pin DIN-180 male connector (Pins 3, 5 = (+), pins 1, 2, 4 = (-)) | 48 | 3 pin Snap n Lock, Kycon Kpp-3P or equivalent(Pin 1 = (+), pin 2 = (-)) |
| 22 | 6 pin DIN male connector(Pins 1, 2 = (+), pins 4, 5 = (-)) | 49 | 4 pin Snap n Lock, Kycon Kpp-4P or equivalent(Pins 1, 3 = (+), pins 2, 4 = (-)) |
| 23 | 8 pin DIN male connector(Pins 3, 7 = (+), pins 1, 4, 6, 8 = (-), shell = FG)) | 51 | 6 pin Minifit - Molex 39-01-2060 or equivalent (Pins 1, 4 = (+), pins 3, 6 = (-)) |
| 32 | 9 pin "D" type, female (Pin 8 = (+), pin 5 = (-), all others = NC) | 65 | Stripped and Tinned Leads |
| 33 | 2.5 x 5.5 x 12.5mm straight barrel plug - Center Positive | 70 | 2.1 x 5.5 x 11mm right angle barrel plug (high retention) - Center Positive |
| 40 | 2.1 x 5.5 x 9.5mm right angle barrel plug (high retention) - Center Positive | 71 | 2.5 x 5.5 x 11mm right angle barrel plug (high retention) - Center Positive |
| 41 | 2.5 x 5.5 x 9.5mm right angle barrel plug (high retention) - Center Positive | 72 | 2.1 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) - Center Positive |
| 42 | 2.1 x 5.5 x 11mm straight barrel plug (high retention) - Center Positive | 73 | 2.5 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) - Center Positive |
| 43 | 2.5 x 5.5 x 11mm straight barrel plug (high retention) - Center Positive | 74 | EIAJ#5 style connector - Center Positive |

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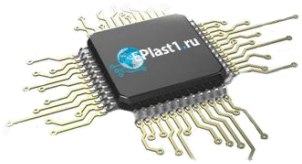


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