# AQM250 Series

AC-DC POWER SUPPLIES

## 250W CONVECTION COOLED

The extremely high power density AQM250 series of medical external power supplies is fully approved to international medical safety standards. It has been designed with very high efficiency and low standby power, enabling it to meet the latest environmental legislation. The use of technology allows the volume to be typically half that of a traditional design.

The unit has a fully sealed enclosure complying with IP22 and a smooth surface finish making it easier to keep clean in a clinical setting.

Class I and Class II versions ensure versatility for both hospital and non hospital applications.

### Applications

Healthcare

Home Healthcare

Medical Diagnostics

### Dimensions

173.0 x 67.0 x 32.1mm (6.8” x 2.64” x 1.26”)

### Features

- Medical safety approvals
- Home healthcare approval
- Energy efficiency level VI & EU CoC tier 2 compliant
- 4th edition medical EMC
- IP22 environmental rating
- Class I and class II versions
- <0.15W standby power
- 0°C to 60°C operation
- Low earth leakage current
- 3 year warranty

### Models & Ratings

| Model number(1) | Output Voltage | Output Current | Total Regulation | Efficiency(2) |
|---|---|---|---|---|
| AQM250PS12 | 12.0V | 19.0A | 5% | 92.7% |
| AQM250PS19 | 19.0V | 13.2A | | 94.3% |
| AQM250PS24 | 24.0V | 10.4A | | 93.5% |
| AQM250PS48 | 48.0V | 5.2A | | 94.5% |

**Notes:**

1. For class II versions, add suffix ‘C2’ to the end of the part number e.g. AQM250PS24C2.
2. Average efficiency measured at 25%, 50%, 75% and 100% loads at 230VAC.

# AQM250 Series

## Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Input Voltage | 85 | | 264 | VAC | Derate linearly from 100% load at 100VAC to 85% load at 85VAC |
| Input Frequency | 47 | | 63 | Hz | |
| Power Factor | | >0.9 | | | EN61000-3-2 class A |
| Input Current | | 2.9/1.3 | | A | 115/230VAC |
| Inrush Current | | | 150 | A | 230VAC cold start, 25°C |
| Earth Leakage Current | | 300 | 500 | µA | 264VAC, 60Hz, class I versions only |
| No load Input Power | | | 0.15 | W | |
| Input Protection | T5A/250V Internal fuse fitted in line and neutral. | | | | |

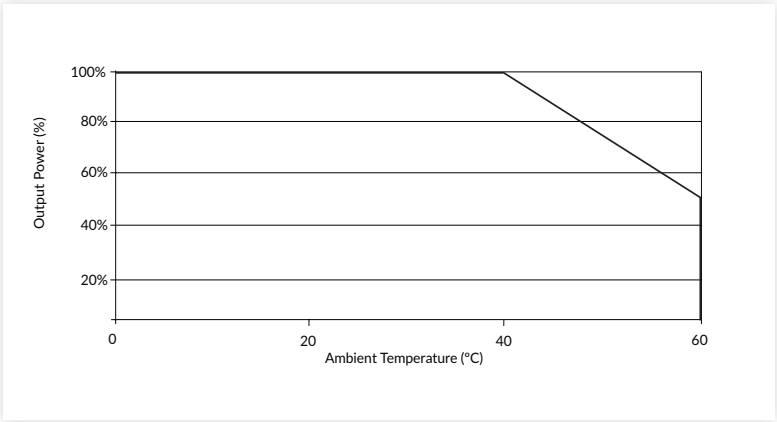
## Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Output Voltage | 12 | | 48 | VDC | See Models and Ratings table |
| Initial Set Accuracy | | | ±2 | % | 50% load |
| Minimum Load | No minimum load required | | | | |
| Start Up Delay | | 1 | 1.5 | s | |
| Start Up Rise Time | | 30 | 35 | ms | 115VAC |
| Hold Up Time | 10 | | | ms | Full load and 115/230VAC |
| Line Regulation | | | ±0.5 | % | 90-264 VAC |
| Total Regulation | See Model and Ratings table, includes initial set accuracy, line and load regulation | | | | |
| Transient Response | | | 4 | % | Recovery within 1% in less than 500µs for a 50-75% and 75-50% load step |
| Ripple and Noise | | | 1.0 | % pk-pk | 20MHz bandwidth and 10µF electrolytic capacitator in parallel with 0.1µF ceramic capacitator |
| Overshoot | | 5 | 10 | % | At turn on/turn off |
| Overload Protection | | 130 | 170 | % | |
| Overvoltage Protection | 110 | | 180 | % | Recycle mains to reset |
| Short Circuit Protection | Trip and restart (hiccup), auto resetting | | | | |
| Temperature Coefficient | | 0.2 | | %/°C | |
| Patient Leakage Current | | 50 | 100 | µA | 264VAC, 60Hz |

## Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Operating Temperature | 0 | | +60 | °C | Derate linearly from 100% load at 40°C to 50% load at 60°C, safety approved to 40°C |
| Cooling | Natural convection | | | | |
| Operating Humidity | 20 | | 80 | %RH | Non-condensing |
| Storage Humidity | 10 | | 90 | %RH | Non-condensing |
| Storage Temperature | -20 | | 80 | °C | |
| Operating Altitude | | | 5000 | m | |
| Shock | IEC68-2-27, 30 g, 11ms half sine, 3 times in each of 6 axes | | | | |
| Vibration | IEC68-2-6, 10-500 Hz, 2g 10 mins/sweep, 60 mins for each of 3 axes | | | | |

## Derating Curve




## General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Efficiency | 91 | 92 | | % | See Models and Ratings table |
| Isolation: Input to Output | | | 4000 | VAC | 2 x MOPP |
| Input to Ground | | | 1800 | VAC | 1 x MOPP (Class I versions only) |
| Output to Ground | | | 500 | VAC | Class I versions only |
| Switching Frequency | 65 | | | kHz | PFC |
| | 100 | | 300 | | Main converter |
| Power Density | | 27.94 | | W/cm$^3$ | |
| Mean Time Between Failure | | >300 | | khrs | TELCORDIA SR-322 @ 25°C |
| Weight | | 860 (1.9) | | g (lb) | |

## EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions |
|---|---|---|---|
| Conducted | EN55011 | Level B | |
| Radiated | | | |
| Harmonic Currents | EN61000-3-2 | Class A | |
| Voltage Flicker | EN61000-3-3 | | |

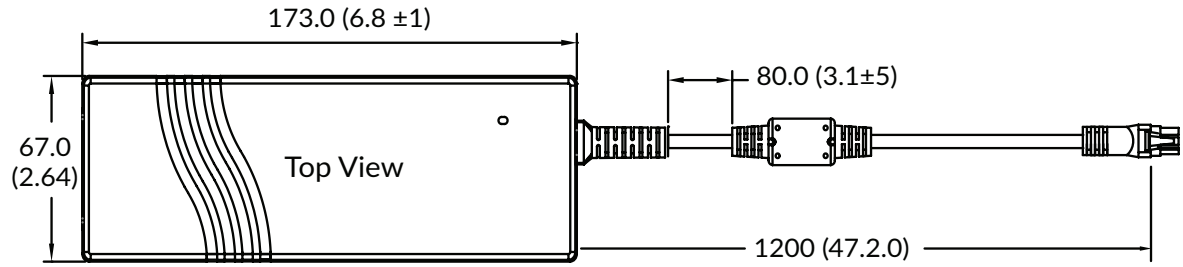
## EMC: Immunity

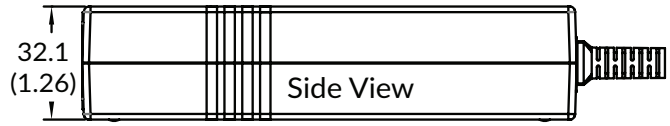
| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|---|---|---|---|---|
| ESD Immunity | EN61000-4-2 | 4 | A | ±8kV contact / ±15kV air discharge |
| Radiated Immunity | EN61000-4-3 | 10V/m | A | |
| EFT/Burst | EN61000-4-4 | 2 | A | |
| Surge | EN61000-4-5 | Installation class 3 | A | |
| Conducted | EN61000-4-6 | 6V | A | |
| Magnetic Field | EN61000-4-8 | 4 | A | |
| Dips and Interruptions | EN60601-1-2 | Dip: 30% 25 AC Cycles | A/B | 115VAC and above/100VAC |
| | | Int: 100% 0.5 AC Cycles | A | |
| | | Int: 100% 1.0 AC Cycles | B | |
| | | Int: 100% 250 AC Cycles | B | |

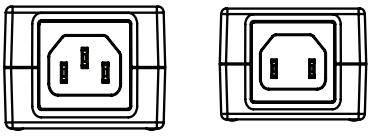
## Safety Approvals

| Safety Agency | Standard | Notes & Conditions |
|---|---|---|
| UL | ANSI/AAMI ES 60601-1 | |
| CSA | CSA C22.2 No. 60601-1 | |
| TUV | EN60601-1 / EN60601-1-11 | 60601-1-11 is only for Class II versions |
| CB | IEC60601-1 / IEC60601-1-11 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

## Mechanical Details

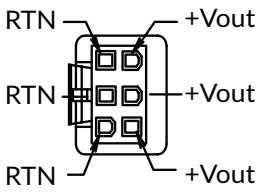


IEC320-C14

IEC320-C18
Optional Class II Input




Output Cable Plug Pin Assignment

**Notes:**

1. All dimensions shown in mm (inches). Tolerance is 0.5 (0.02) maximum, except output cable length.
2. Weight: 860g (1.9lbs) approx.
3. Output connector: 6 pin Molex Mini-Fit series with 39-01-2060 housing and 39-00-0077 terminals. Mates with Molex series 5566 headers or equivalent.