

### 200 Watts

- Medical & IT Safety Approvals
- Energy Efficiency Level VI & EU CoC Tier 2 Compliant
- 4th Edition Medical EMC
- IP32 Environmental Rating
- Class I and Class II Versions
- <0.15 W Standby Power
- 0 °C to 60 °C Operation
- Low Earth Leakage Current
- 3 Year Warranty



#### Dimensions:

**ALM200:**  
8.23 x 3.23 x 1.69" (209.0 x 82.0 x 43.0 mm)

The ALM200 series of medical external power supplies is fully approved to international medical & IT safety standards. It has been designed with very high efficiency and low standby power, enabling it to meet the latest environmental legislation. The unit has a fully sealed enclosure complying with IP32 and a smooth surface finish making it easier to wipe down in a clinical setting.

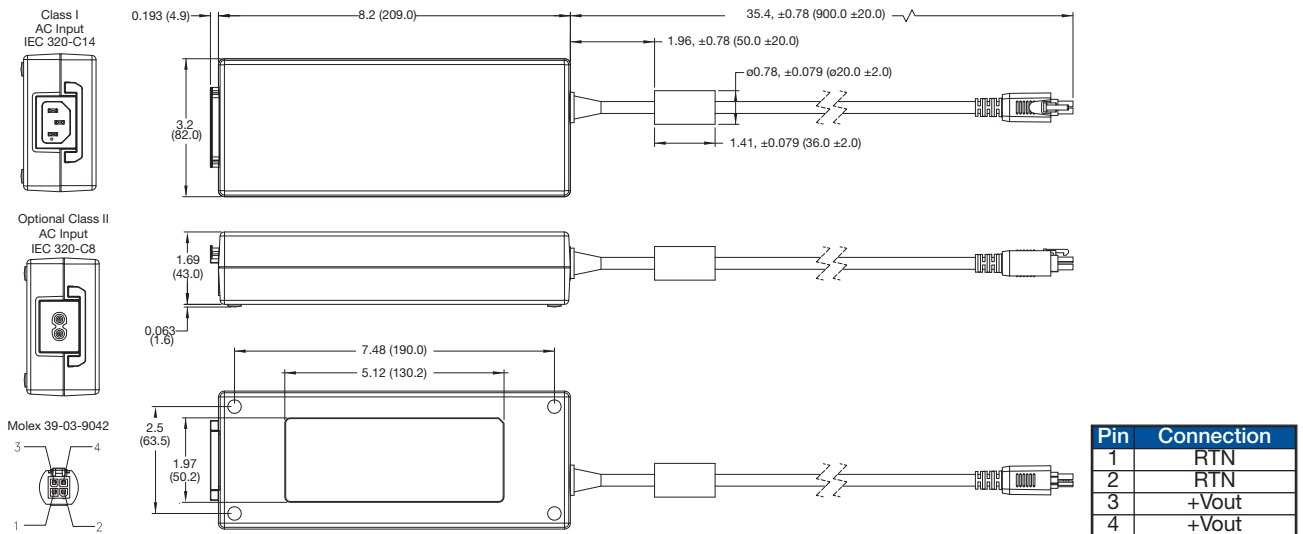
### Models & Ratings

| Output Power | Output Voltage | Output Current | Load Regulation | Efficiency <sup>(4)</sup> | Model Number <sup>(1,2,3)</sup> |
|--------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
| 200 W        | 12.0 V         | 16.7 A         | 3.5%            | 91.7%                     | ALM200PS12                      |
|              | 15.0 V         | 13.4 A         |                 | 92.4%                     | ALM200PS15                      |
|              | 19.0 V         | 10.6 A         |                 | 92.8%                     | ALM200PS19                      |
|              | 24.0 V         | 8.4 A          | 3.0%            | 92.2%                     | ALM200PS24                      |
|              | 48.0 V         | 4.2 A          |                 | 92.4%                     | ALM200PS48                      |

### Notes

1. For class II versions, add suffix 'C2-8' to the end of the part number e.g. ALM200PS24C2-8.
2. For optional input connector retention clip add suffix '-A' to the model number, e.g. ALM200PS24-A (not available for C2 versions)
3. Power de-rated <100 VAC for 12 & 15 V models, refer to input specifications.
4. Typical average value measured at 25%, 50%, 75% and 100% load at 230VAC

### Mechanical Details



### Notes

1. All dimensions shown in inches (mm). Tolerance is 0.02 (0.5) maximum, except output cable length.
2. Weight: 2.01 lbs (910 kg) approx.
3. For European mains lead order part EU-MAINS-IEC for C14 versions, or EU-MAINS-8 for C8 versions.
4. For UK mains lead order part UK-MAINS-IEC for C14 versions, or UK-MAINS-8 for C8 versions.
5. For US mains lead order part US-MAINS-IEC for C14 versions, or US-MAINS-8 for C8 versions.
6. Output connector: 4 pin molex Mini-Fit part number 39-03-9042 housing with 45750 crimp terminals and mates with molex header 46999-0516 or equivalent.

### Input

| Characteristic        | Minimum  | Typical | Maximum | Units | Notes & Conditions   |
|-----------------------|--|---------|---------|-------|--|
| Input Voltage         | 80   |         | 264     | VAC   | 19, 24 & 48V models: Derate linearly from 100% load at 90 VAC to 80% load at 80 VAC. 300 VAC/5 s maximum.<br>12 & 15 V models: Derate linearly from 100% load at 100 VAC to 95% load at 90 VAC and then derate linearly 80% load at 80 VAC, 300 VAC/5 s maximum. |
| Input Frequency       | 47   |         | 63      | Hz    |  |
| Input Current         |  | 2.0/1.0 |         | A     | Measured at 115/230 VAC  |
| Inrush Current        |  |         | 160     | A     | 230 VAC, cold start at 25 °C   |
| Power Factor          |  | >0.9    |         |       | EN61000-3-2 Class A  |
| Earth Leakage Current |  |         | 250     | µA    | 264 VAC, 60 Hz   |
| No Load Input Power   |  |         | 0.15    | W     |  |
| Input Protection      | T5A/250 VAC internal fuse in both line & neutral |         |         |       |  |

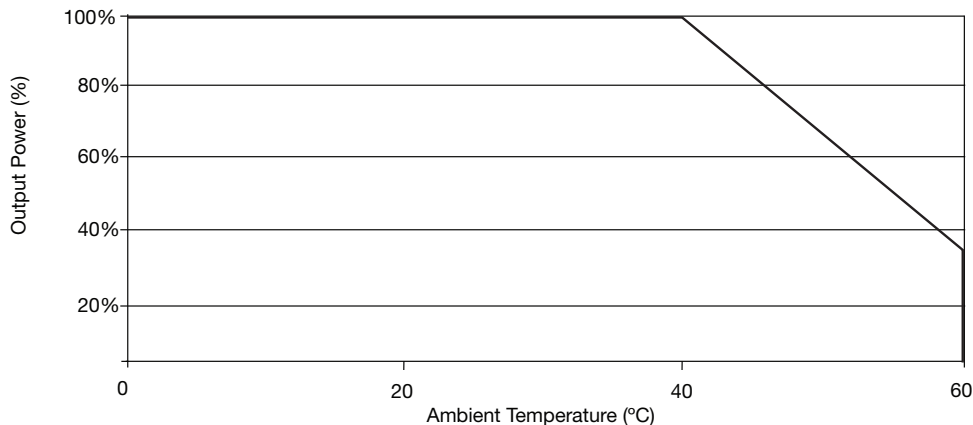
### Output

| Characteristic           | Minimum                                   | Typical | Maximum | Units   | Notes & Conditions   |
|--------------------------|---|---------|---------|---------|--|
| Output Voltage           | 12  |         | 48      | VDC     | See Models and Ratings table   |
| Initial Set Accuracy     |   |         | ±2      | %       | At 50% load  |
| Minimum Load             |   |         |         |         | No minimum load required   |
| Start Up Delay           |   | 1       | 1.5     | s       |  |
| Start Up Rise Time       |   |         | 40      | ms      |  |
| Hold Up Time             | 20  | 30      |         | ms      | Full load and 115/230 VAC  |
| Line Regulation          |   |         | ±0.5    | %       |  |
| Load Regulation          |   |         |         | %       | See Models and Ratings table   |
| Transient Response       |   |         | 4       | %       | Maximum deviation, recovering to less than 1% within 500 µs for 50-75-50% load change                              |
| Ripple and Noise         |   |         | 1.5     | % pk-pk | 20 MHz bandwidth, measured with 20 MHz Bandwidth and 10 µF electrolytic in parallel with 0.1 µF ceramic capacitor. |
| Overshoot                |   | 5       | 10      | %       | At turn on / turn off  |
| Overload Protection      | 115                                       |         | 175     | %       |  |
| Overvoltage Protection   |   |         | 150     | %       | Recycle mains to reset   |
| Short Circuit Protection | Trip and restart (hiccup), auto resetting |         |         |         |  |
| Thermal Protection       | Measured internally, auto resetting       |         |         |         |  |
| Temperature Coefficient  |   | 0.02    |         | %/°C    |  |
| Patent Leakage Current   |   |         | 95      | µ A     | 264 VAC, 60 Hz   |

### Environmental

| Characteristic        | Minimum   | Typical | Maximum | Units | Notes & Conditions                                  |
|-----------------------|---|---------|---------|-------|---|
| Operating Temperature | 0   |         | +60     | °C    | Derate from 100% load at 40 °C to 35% load at 60 °C |
| Cooling               | Natural convection  |         |         |       |   |
| Operating Humidity    | 5   |         | 95      | %RH   | Non-condensing                                      |
| Storage Temperature   | -25   |         | +80     | °C    |   |
| Operating Altitude    |   |         | 5000    | m     |   |
| Shock                 | IEC68-2-27, 30 g, 11 ms half sine, 3 times in each of 6 axes        |         |         |       |   |
| Vibration             | IEC68-2-6, 10-500 Hz, 2 g 10 mins/sweep, 60 mins for each of 3 axes |         |         |       |   |

### Derating Curve

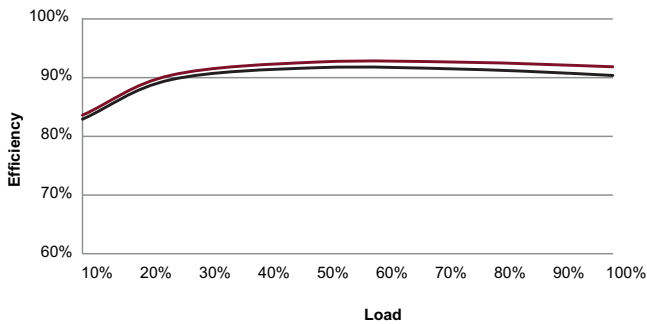


### General

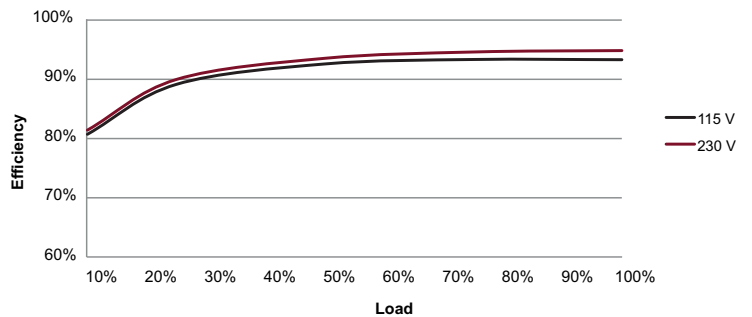
| Characteristic  | Minimum | Typical    | Maximum | Units             | Notes & Conditions               |
|---|---------|------------|---------|-------------------|----------------------------------|
| Efficiency  |         | 92         |         | %                 | See Models and Ratings table     |
| Isolation: Input to Output<br>Input to Ground<br>Output to Ground |         |            | 4000    | VAC               | 2 x MOPP                         |
|   |         |            | 1800    | VAC               | 1 x MOPP (Class I versions only) |
|   |         |            | 500     | VAC               | Class I versions only            |
| Switching Frequency   | 45      |            | 140     | kHz               | PFC                              |
|   | 85      |            | 190     |                   | Main Converter                   |
| Power Density   |         | 6.4        |         | W/in <sup>3</sup> |                                  |
| Mean Time Between Failure   |         | >300       |         | kHrs              | MIL-HDBK-217F at 25 °C GB        |
| Weight  |         | 2.01 (910) |         | lb (g)            |                                  |

### Efficiency Curves

ALM200PS12



ALM200PS24



### EMC: Emissions

| Phenomenon       | Standard    | Test Level | Notes & Conditions   |
|------------------|-------------|------------|----------------------|
| Emissions        | EN55032     | Level B    | Conducted & Radiated |
| Harmonic Current | EN61000-3-2 | Class A    |                      |
| Voltage Flicker  | EN61000-3-3 |            |                      |

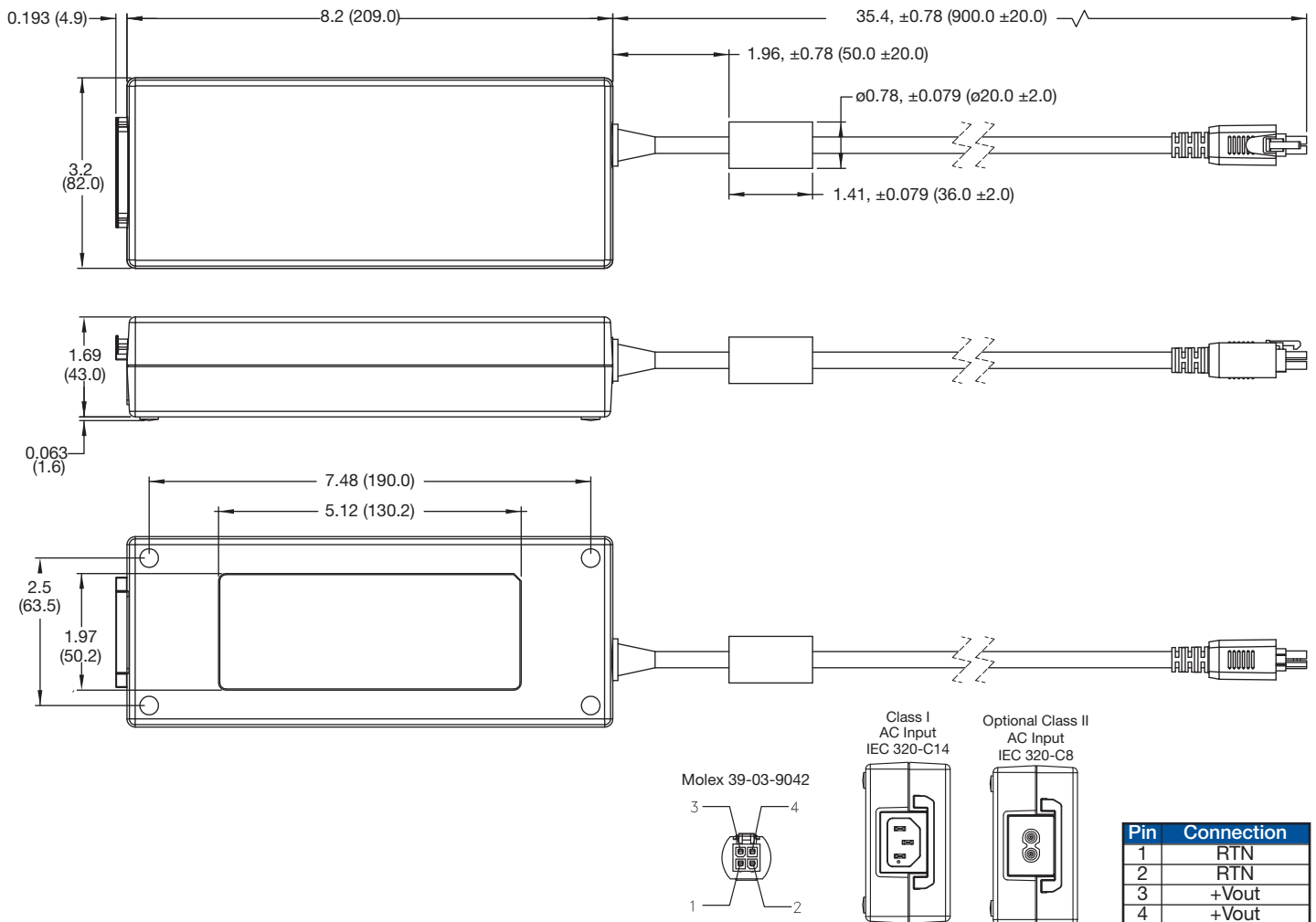
### EMC: Immunity

| Phenomenon              | Standard     | Test Level              | Criteria | Notes & Conditions                                  |
|-------------------------|--------------|-------------------------|----------|---|
| ESD                     | EN61000-4-2  | 3                       | A        | ±15 kV air/±8 kV contact                            |
| Radiated                | EN61000-4-3  | 10 V/m                  | A        | 80-2700 MHz. IEC60601-1-2 Ed.4 at other frequencies |
| EFT/Burst               | EN61000-4-4  | 3                       | A        |   |
| Surge                   | EN61000-4-5  | Installation Class 3    | A        |   |
| Conducted               | EN61000-4-6  | 10 V                    | A        |   |
| Magnetic Fields         | EN61000-4-8  | 4                       | A        |   |
| Dips and Interruptions  | EN61000-4-11 | Dip: 30% 500 ms         | A        | High Line/Low Line                                  |
|                         |              | Dip: 60% 200 ms         | A/B      |   |
|                         |              | Dip: 20% 5000 ms        | A        |   |
|                         |              | Int: 100% 10 ms         | A        |   |
|                         |              | Int: 100% 20 ms         | A        |   |
|                         | EN60601-1-2  | Int: 100% 5000 ms       | B        |   |
|                         |              | Dip: 30% 25 AC Cycles   | A        | 230 VAC 100% load, 100 VAC 25% load                 |
|                         |              | Dip: 60% 5 AC Cycles    | A        |   |
|                         |              | Int: 100% 0.5 AC Cycles | A        |   |
| Int: 100% 1.0 AC Cycles | A            |                         |          |   |
|                         |              | Int: 100% 250 AC Cycles | B        |   |

### Safety Approvals

| Safety Agency | Safety Standard                                    | Notes & Conditions                                  |
|---------------|--|---|
| UL            | UL62368-1  | Information Technology                              |
| TUV           | EN62368-1  |   |
| CB            | IEC60950-1 & IEC62368-1                            |   |
| CE            | LVD  |   |
| UL            | ANSI/AAMI ES 60601-1 / ANSI/AAMI HA60601-1-11      | Medical<br>60601-1-11 is only for Class II versions |
| CSA           | CSA C22.2 No. 60601 / CAN/CSA-C22.2 No. 60601-1-11 |   |
| TUV           | EN60601-1 / EN60601-1-11                           |   |
| CB            | IEC60601-1 / IEC60601-1-11                         |   |
| Others        | CCC, PSE, KC & RCM                                 | May require additional importer information         |

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