

150 Watts

- Medical & IT Safety Approvals
- Home Healthcare approval
- 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:

ALM150:
7.323 x 2.843 x 1.496" (186.0 x 72.0 x 38.0 mm)

The ALM150 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.

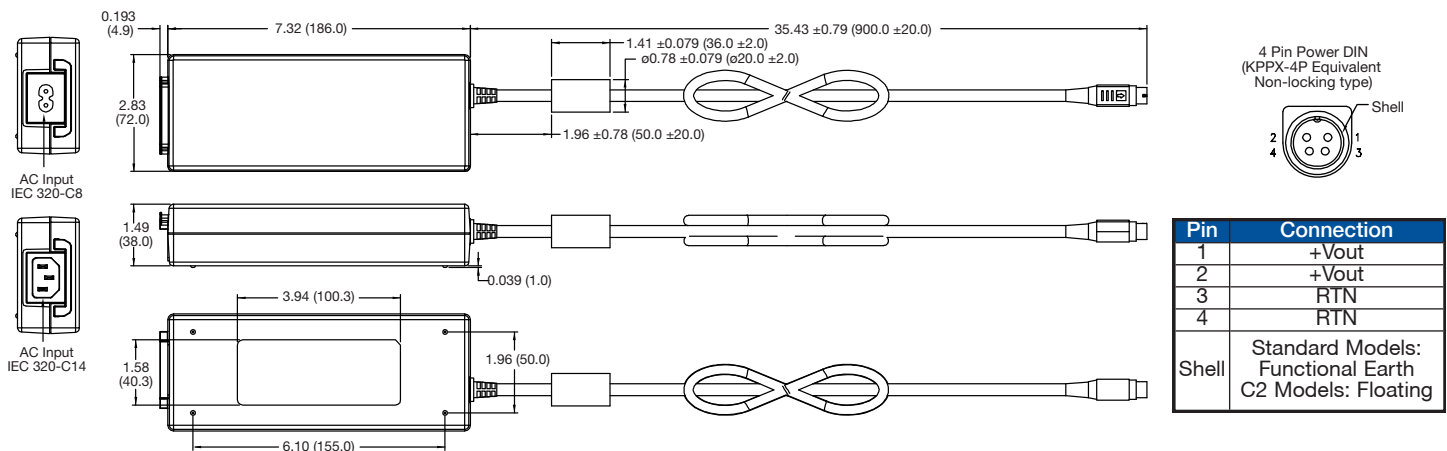
Models & Ratings

| Output Power | Output Voltage | Output Current | Total Regulation | Model Number ^(1,2,3) |
|--------------|----------------|----------------|------------------|---------------------------------|
| 150 W | 12.0 V | 12.5 A | ±5% | ALM150PS12 |
| | 15.0 V | 10.0 A | | ALM150PS15 |
| | 19.0 V | 7.9 A | | ALM150PS19 |
| | 24.0 V | 6.2 A | | ALM150PS24 |
| | 48.0 V | 3.1 A | | ALM150PS48 |

Notes

1. For class II versions, add suffix 'C2-8' to the end of the part number e.g. ALM150PS24C2-8.
2. For optional input connector retention clip add suffix '-A' to the model number, e.g. ALM150PS24-A (not available for C2 versions)
3. Power de-rated <100 VAC for 12 & 15 V models, refer to input specifications.

Mechanical Details



Notes

1. All dimensions shown in inches (mm). Tolerance is 0.02 (0.5) maximum, except output cable length.
2. Weight: 1.4 lbs (635 g) 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 power din with pin 1 & 2 - positive and pin 3 & 4 - return, equivalent to KPPX-4P (non-locking).

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/5s maximum. 12 & 15V models: Derate linearly from 100% load at 100 VAC to 80% load at 80 VAC, 300 VAC/5s maximum. |
| Input Frequency | 47 | | 63 | Hz | |
| Input Current | | 1.8/0.9 | | 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 | T3.15A/250 VAC internal fuse in both line & neutral | | | | |

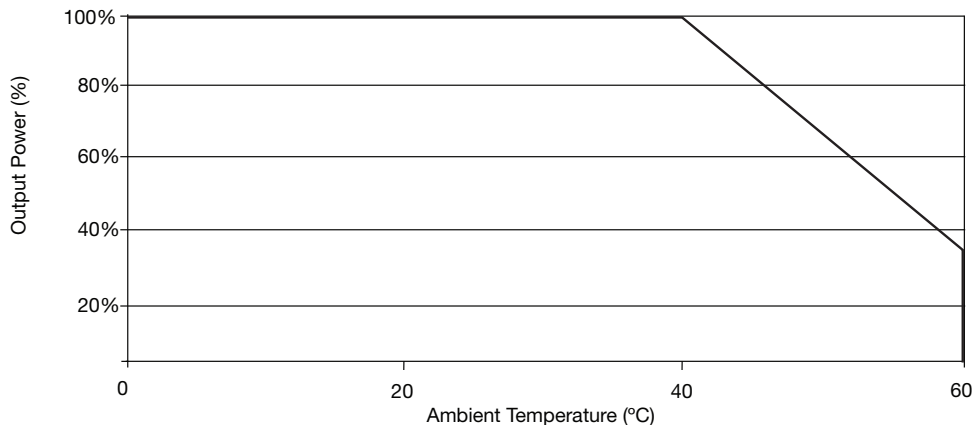
Output

| 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 | 2 | s | |
| Start Up Rise Time | | | 50 | ms | |
| Hold Up Time | 20 | 30 | | ms | Full load and 115/230 VAC |
| Line Regulation | | | ±0.5 | % | |
| Total Regulation | | | ±5 | % | |
| 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 | µA | 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 30% 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

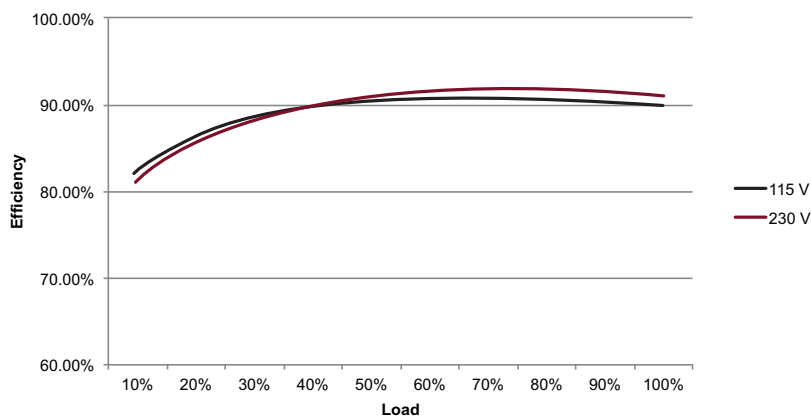


General

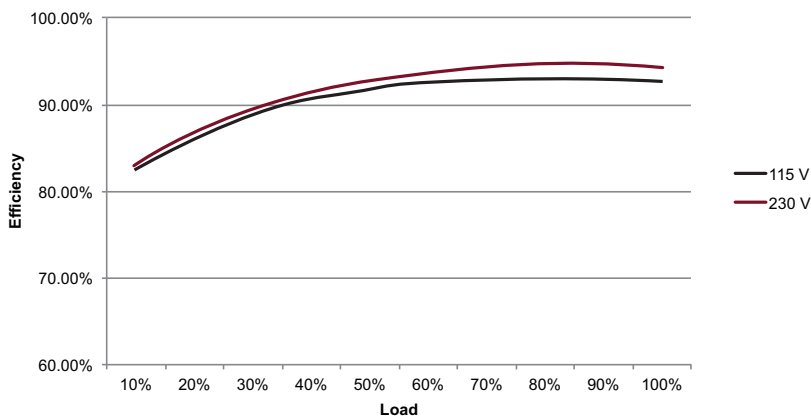
| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---------|-----------|---------|-------------------|----------------------------------|
| Efficiency | | 93 | | % | See curves. |
| Isolation: Input to Output Input to Ground Output to Ground | | | 4000 | VAC | 2 x MOPP |
| | | | 1500 | 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 | | 4.83 | | W/in ³ | |
| Mean Time Between Failure | | >300 | | kHrs | MIL-HDBK-217F at 25 °C GB |
| Weight | | 1.4 (635) | | lb (g) | |

Efficiency Curves

ALM150PS12



ALM150PS24



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 | | |

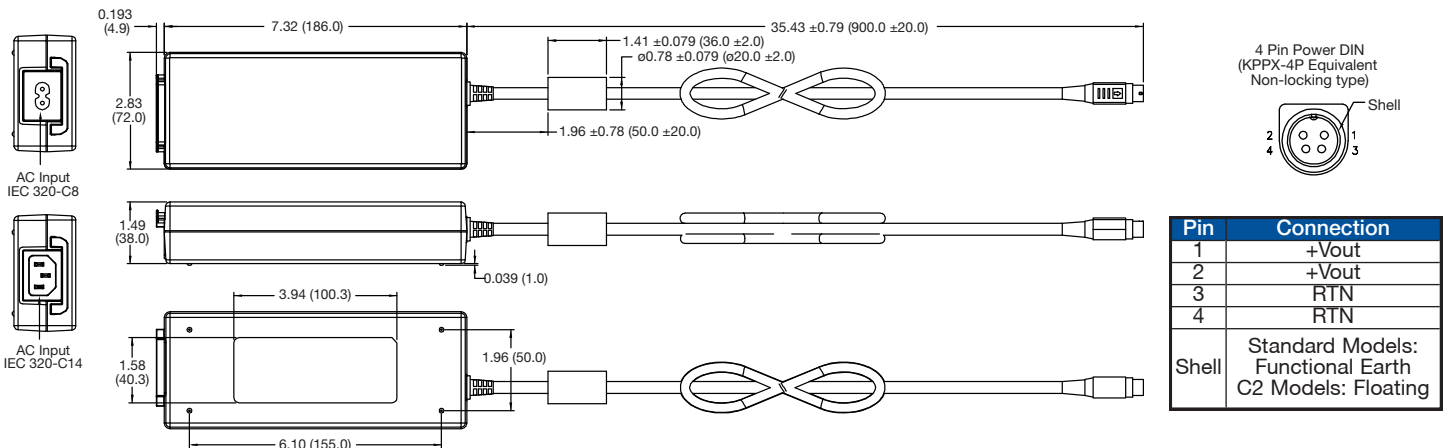
EMC: Immunity

| 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 | |
| UL | ANSI/AAMI ES 60601-1/ANSI/AAMI HA60601-1-11 | Medical (60601-1-11 is for class II versions only) |
| 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 |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

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