

AC/DC 200W Enclosed Switching Power Supply

LM200-12Bxx, LM200-12Bxx-Q, LM200-12Bxx-C Series

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FEATURES

- AC input range: 176 - 264VAC
- DC input range: 240 - 373VDC
- Ultra low standby power consumption: < 0.75W @230VAC
- Operating ambient temperature range: - 30°C to +70°C
- High efficiency, high reliability
- LED indicator for power on
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to UL/EN/IEC62368, EN60335, EN61558, GB4943
- Withstand 300VAC surge input for 5s
- Operating altitude up to 5000m

LM200-12Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency and high reliability. These power supply offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, UL/EN/IEC62368, EN60335, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

Selection Guide

| Certification | Part No.* | Output Power(W) | | Nominal Output Voltage and Current (Vo/Io) | Output Voltage Adjustable Range(V) | Efficiency at 230VAC (%) Typ. | Max. Capacitive Load (μF) |
|-------------------|-------------|-----------------|-------------|--|------------------------------------|-------------------------------|---------------------------|
| | | Steady state | transient** | | | | |
| CE, CQC (Pending) | LM200-12B05 | 150 | 200 | 5V/30A | 4.5-5.5 | 87 | 10000 |
| | LM200-12B12 | 204 | -- | 12V/17A | 10.2-13.8 | 87.5 | 4000 |
| | LM200-12B15 | 210 | -- | 15V/14A | 13.5-18 | 88 | 3300 |
| | LM200-12B24 | 211.2 | -- | 24V/8.8A | 21.6-28.8 | 88.5 | 1500 |
| | LM200-12B36 | 212.4 | -- | 36V/5.9A | 32.4-39.6 | 89 | 1500 |
| | LM200-12B48 | 211.2 | -- | 48V/4.4A | 43.2-52.8 | 89.5 | 470 |

Note: *Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.

**Hold-up time 1min (Typ.).

Input Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|------------------------------------|----------------------|------------|-------------|------|------|------|
| Input Voltage Range (by switch) | AC input | | 176 | -- | 264 | VAC |
| | DC input | | 240 | -- | 373 | VDC |
| Input Voltage Frequency | | | 47 | -- | 53 | Hz |
| Input Current | 230VAC | | -- | 2.2 | 3 | A |
| Inrush Current | 230VAC | Cold start | -- | 60 | 80 | |
| Hot Plug | | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|-------------------------|----------------------|-----------------|------|------|------|------|
| Output Voltage Accuracy | Full load range | 5V | -- | ±3 | -- | % |
| | | 12V | -- | ±1.5 | -- | |
| | | 15V/24V/36V/48V | -- | ±1 | -- | |
| Line Regulation | Rated load | | -- | ±0.5 | -- | |

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



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| | | | | | | |
|--|--|--|----|------|-------|------|
| Load Regulation | 0% - 100% load | 5V | -- | ±2 | -- | |
| | | 12V | -- | ±1 | -- | |
| | | 15V/24V/36V/48V | -- | ±0.5 | -- | |
| Output Ripple & Noise* | 20MHz bandwidth (peak-to-peak value) | 5V/12V/15V/24V | -- | 150 | -- | mV |
| | | 36V/48V | -- | 200 | -- | |
| Temperature Coefficient | | | -- | -- | ±0.03 | %/°C |
| Minimum Load | | | 0 | -- | -- | % |
| Stand-by Power Consumption | 230VAC, 25°C | | -- | -- | 0.75 | W |
| Hold-up Time | 230VAC | | 16 | -- | -- | ms |
| Short Circuit Protection | Recovery time <5s after the short circuit disappear. | Hiccup, continuous, self-recovery | | | | |
| Over-current Protection | | 110% - 185% Io, self-recovery | | | | |
| Over-voltage Protection | 5V | ≤8VDC (Output voltage turn off, re-power on for recovery) | | | | |
| | 12V | ≤18VDC (Output voltage turn off, re-power on for recovery) | | | | |
| | 15V | ≤22VDC (Output voltage turn off, re-power on for recovery) | | | | |
| | 24V | ≤33.6VDC (Output voltage turn off, re-power on for recovery) | | | | |
| | 36V | ≤46.8VDC (Output voltage turn off, re-power on for recovery) | | | | |
| | 48V | ≤60VDC (Output voltage turn off, re-power on for recovery) | | | | |
| Over-temperature Protection | | Output voltage turn off, re-power on for recovery | | | | |
| Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information. | | | | | | |

General Specifications

| Item | | Operating Conditions | | Min. | Typ. | Max. | Unit |
|--|--|---|----------------|--|------|------|--------|
| Isolation | Input -  | Electric strength test for 1min., leakage current <10mA | | 2000 | -- | -- | VAC |
| | Input - Output | | | 3000 | -- | -- | |
| | Output -  | Electric strength test for 1min., leakage current <5mA | | 500 | -- | -- | |
| Insulation Resistance | Input -  | At 500VDC | | 100 | -- | -- | MΩ |
| | Input - Output | | | 100 | -- | -- | |
| | Output -  | | | 100 | -- | -- | |
| Operating Temperature | | | | -30 | -- | +70 | °C |
| Storage Temperature | | | | -40 | -- | +85 | |
| Storage Humidity | | Non-condensing | | 10 | -- | 95 | %RH |
| Operating Humidity | | Non-condensing | | 20 | -- | 90 | |
| Switching Frequency | | | | -- | 65 | -- | kHz |
| Power Derating | Operating temperature derating | 5V output | +40°C to +70°C | 1.66 | -- | -- | % / °C |
| | | Other output | +50°C to +70°C | 2.5 | -- | -- | |
| | Input voltage derating | 176VAC - 264VAC | | 0 | -- | -- | %/VAC |
| Safety Standard | | | | Meet UL/EN/IEC62368/EN60335/GB4943 EN61558 | | | |
| Safety Certification | | | | EN62368/GB4943 (pending) | | | |
| Safety Class | | | | CLASS I | | | |
| MTBF | | MIL-HDBK-217F@25°C | | >300,000 h | | | |
| Note: It is recommended to use part number with "Q" for applications in harsh environments such as salt spray, chemical, humidity. | | | | | | | |

Mechanical Specifications

| | |
|----------------|---------------------------|
| Case Material | Metal (AL1100, SGCC) |
| Dimensions | 179.00 x 99.00 x 30.00 mm |
| Weight | 520g (Typ.) |
| Cooling Method | Free air convection |

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Electromagnetic Compatibility (EMC)

| | | | | |
|-----------|--|------------------|--|------------------|
| Emissions | CE | CISPR32/EN55032 | CLASS A | |
| | RE | CISPR32/EN55032 | CLASS A | |
| Immunity | ESD | IEC/EN 61000-4-2 | Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$ | Perf. Criteria A |
| | RS | IEC/EN 61000-4-3 | 10V/m | perf. Criteria A |
| | EFT | IEC/EN 61000-4-4 | $\pm 2\text{KV}$ | perf. Criteria A |
| | Surge | IEC/EN 61000-4-5 | line to line $\pm 2\text{KV}$ /line to ground $\pm 4\text{KV}$ | perf. Criteria A |
| | CS | IEC/EN61000-4-6 | 10 Vr.m.s | perf. Criteria A |
| | Voltage dips, short interruptions and voltage variations | IEC/EN61000-4-11 | 0%, 70% | perf. Criteria B |

Remark:

1. One magnetic bead(nickel-zinc ferrite)should be coupled with the output load line during CE/RE testing;

2. This power supply does not meet the harmonic current requirements specified in EN61000-3-2.

Please do not use this power supply under the following conditions:

1) The terminal equipment is used in the European Union.

2) Supporting terminals are connected to a public power grid with 220VAC or a higher voltage that comply with the requirements of EN61000-3-2.

3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W.

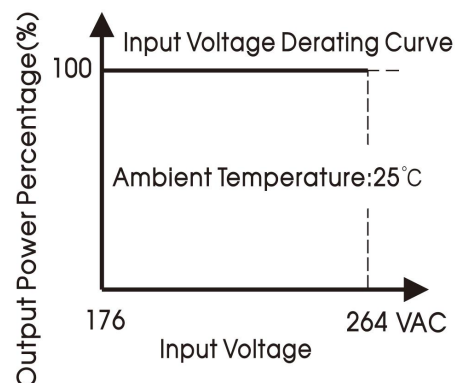
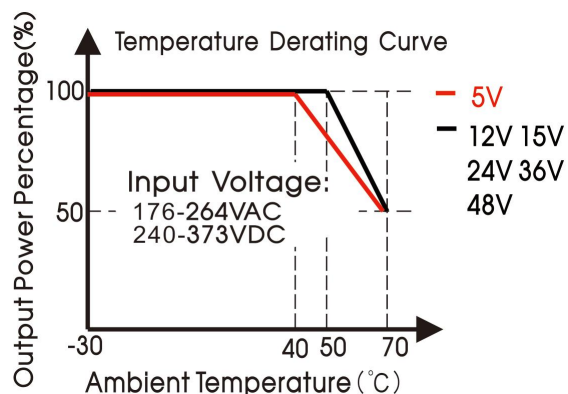
4) The power supply be long stoapar to fighting system.

Exception:The powe supply used in the following terminal equipment does not need to meet EN61000-3-2.

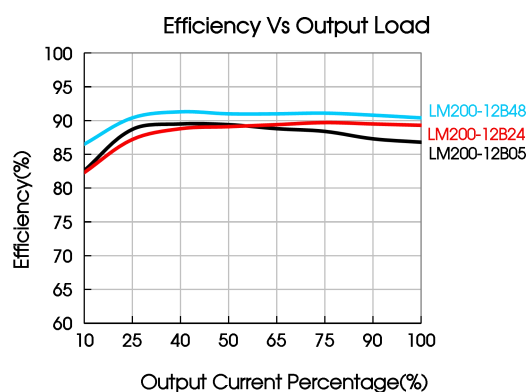
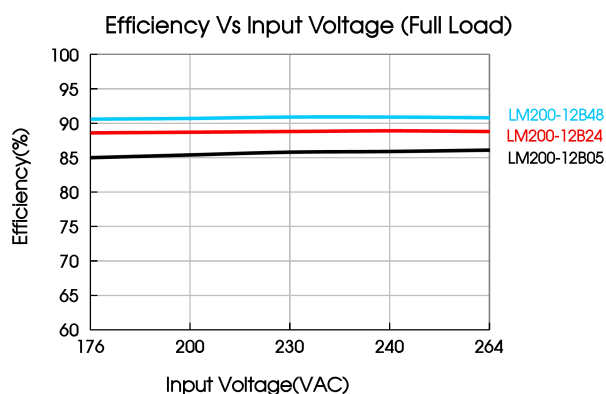
1) Professional equipment with a total rated input power greater than 1000W.

2) Symmetrically controlled heating element with a rated power less than or equal to 200W.

Product Characteristic Curve

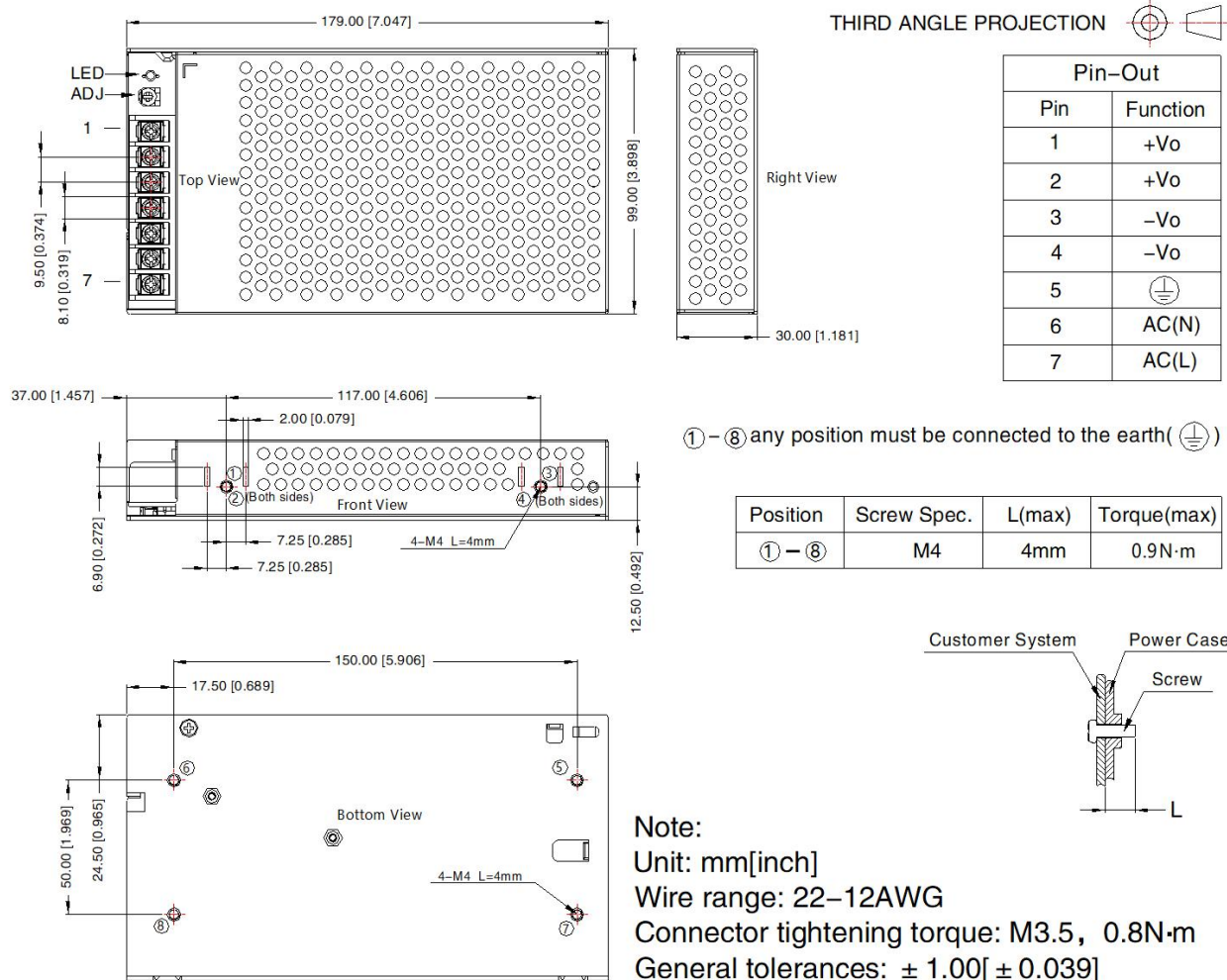


Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult our FAE.



Dimensions and Recommended Layout

LM200-12Bxx, LM200-12Bxx-Q Series

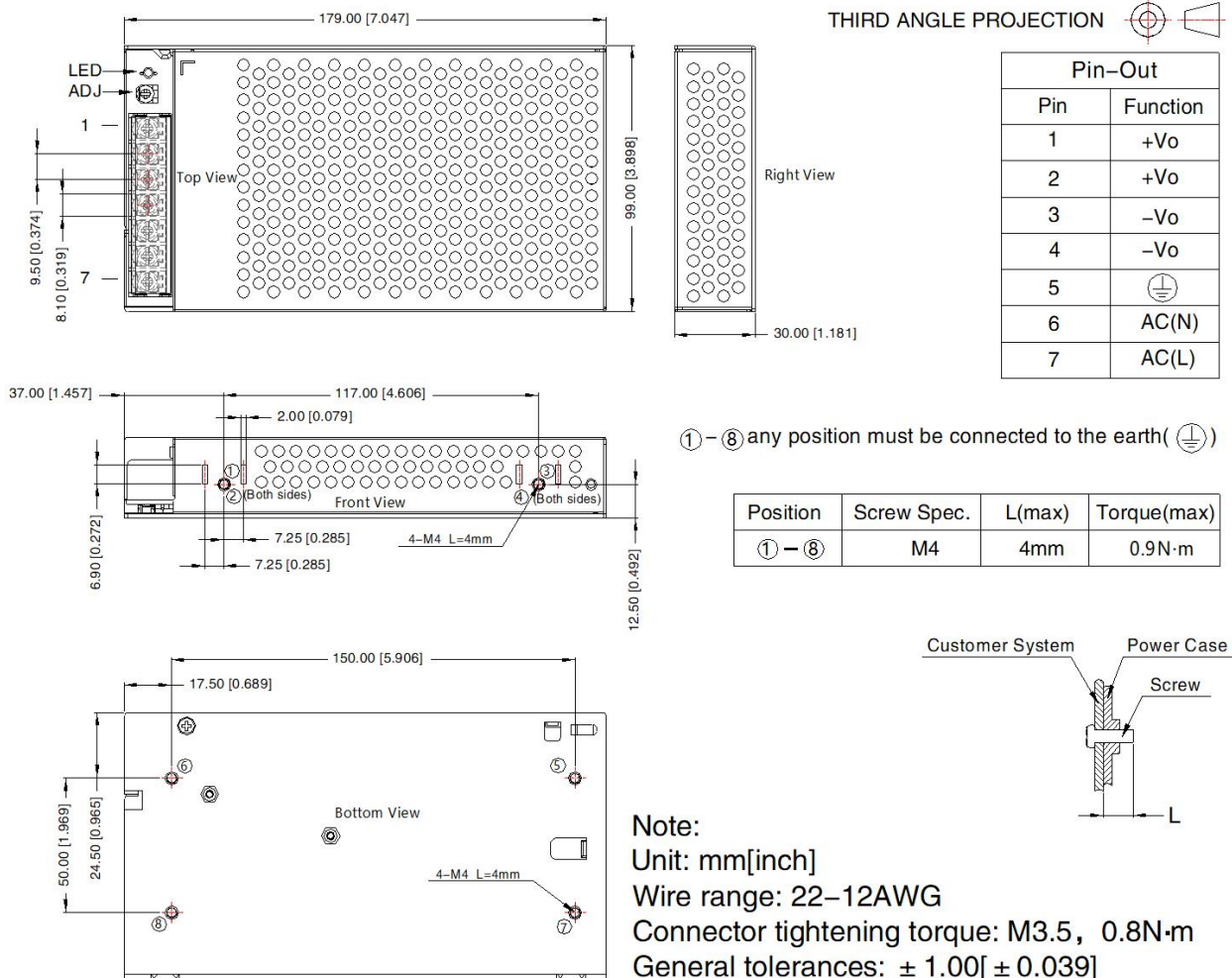


LM200-12Bxx-C Series

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Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220136;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- The ambient temperature derating of $5^{\circ}\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
- All index testing methods in this datasheet are based on our company corporate standards;
- In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- The out case needs to be connected to PE(⊥) of system when the terminal equipment in operating;
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
- The power supply is considered a component which will be installed into a final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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