



FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating temperature range: -30°C to +70°C
- Built-in active PFC function, PFC>0.95
- High I/O isolation test voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943 (CE/CCC pending)
- Compact size with a low 1U profile
- LED indicator for power on
- Built-in DC fan
- Withstand 300VAC surge input for 5s
- Emissions meets CISPR32/EN55032 CLASS B
- Start-up delay time less than 5 seconds at -30°C

LMF320-20Bxx series are one of Mornsun's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, built-in active PFC function, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC62368, UL62368, EN62368, 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) |
|------------------|--------------|-----------------|--|------------------------------------|-------------------------------|---------------------------|
| CE/CCC (Pending) | LMF320-20B05 | 300 | 5V/60A | 4.5 - 5.5 | 81 | 5000 |
| | LMF320-20B12 | 320.4 | 12V/26.7A | 10 - 13.2 | 84 | 5000 |
| | LMF320-20B15 | 321 | 15V/21.4A | 13.5 - 18 | 85 | 5000 |
| | LMF320-20B24 | 321.6 | 24V/13.4A | 20 - 26.4 | 86 | 5000 |
| | LMF320-20B48 | 321.6 | 48V/6.7A | 41 - 56 | 86.5 | 5000 |

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

Input Specifications





| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|-------------------------|----------------------|--|--------------|------|------|------|
| Input Voltage Range | AC input | | 85 | -- | 264 | VAC |
| | DC input | | 120 | -- | 373 | VDC |
| Input Voltage Frequency | | | 47 | -- | 63 | Hz |
| Input Current | 115VAC | | -- | 4 | 4.2 | A |
| | 230VAC | | -- | 2 | 2.1 | |
| Inrush Current | 115VAC | | Cold Start | -- | 35 | |
| | 230VAC | | | -- | 65 | |
| Power Factor | 115VAC | | At full Load | -- | 0.98 | -- |
| | 230VAC | | | -- | 0.95 | |
| Hot Plug | | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|------------------------------|--|-----------------|--|-------|------|------|
| Output Voltage Accuracy | Full Load Range | 5V | -- | ±2 | -- | % |
| | | 12V/15V/24V/48V | -- | ±1 | -- | |
| Line Regulation | Rated Load | 5V | -- | ±0.5 | -- | |
| | | 12V/15V | -- | ±0.3 | -- | |
| | | 24V/48V | -- | ±0.2 | -- | |
| Load Regulation | 0% - 100% load | 5V | -- | ±1 | -- | |
| | | 12V/15V/24V/48V | -- | ±0.5 | -- | |
| Output Ripple & Noise* | 20MHz bandwidth (peak-to-peak value) | 5V/12V/15V/24V | -- | 150 | -- | mV |
| | | 48V | -- | 200 | -- | |
| Temperature Coefficient | | | -- | ±0.03 | -- | %/°C |
| Minimum Load* | 5V/12V/15V/24V/48V output | | 0 | -- | -- | % |
| Hold-up Time | 115VAC | | -- | 12 | -- | ms |
| | 230VAC | | -- | 12 | -- | |
| Short Circuit Protection | Recovery time <5s after the short circuit disappear. | | Hiccup, continuous, self-recovery | | | |
| Over-current Protection* | | | 105% - 150% I _o , self-recovery | | | |
| Over-voltage Protection | 5V | | ≤6.75V (Output voltage turn off, re-power on for recovery) | | | |
| | 12V | | ≤16.2V (Output voltage turn off, re-power on for recovery) | | | |
| | 15V | | ≤21.8V (Output voltage turn off, re-power on for recovery) | | | |
| | 24V | | ≤32.4V (Output voltage turn off, re-power on for recovery) | | | |
| | 48V | | ≤60.0V (Output voltage turn off, re-power on for recovery) | | | |
| Over-temperature Protection* | Over-temperature Protection Activation | | -- | -- | 85 | °C |
| | Over-temperature Protection Deactivation | | 50 | -- | -- | |

Note: 1. *The "Tip and barrel method" is used for ripple and noise test (47uF electrolytic capacitor and 0.1uF ceramic capacitor), please refer to AC-DC Converter Application Notes for specific information.
 2. *Minimum load: When the product is working at a temperature above 50°C, the minimum load is 5% of the rated load, so that the fan could work at high temperature to reduce the temperature rise of the product.
 3. *Over-current Protection: Test at rated output voltage, I_o is rated output current load.
 4. *Over-temperature Protection needs to be tested under rated full load conditions.

General Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|-----------------------|--|---|------|------|------|---------|
| Isolation Test | Input -  | Electric Strength Test for 1min., leakage current <10mA | 2000 | -- | -- | VAC |
| | Input - output | | 4000 | -- | -- | |
| | output -  | | 500 | -- | -- | |
| Insulation Resistance | Input -  | 500VDC, 25±5°C, Humidity < 95%RH, non-condensing | 100 | -- | -- | MΩ |
| | Input - output | | 100 | -- | -- | |
| | output -  | | 100 | -- | -- | |
| Operating Temperature | | | -30 | -- | +70 | °C |
| Storage Temperature | | | -40 | -- | +85 | |
| Storage Humidity | Non-condensing | | 10 | -- | 95 | %RH |
| Switching Frequency | | | -- | -- | -- | kHz |
| Power Derating | Operating temperature derating | -30°C to 0°C | 0 | -- | -- | % / °C |
| | | +50°C to +70°C | 2.5 | -- | -- | |
| | Input voltage derating | 85VAC - 100VAC@50Hz | 2.0 | -- | -- | % / VAC |
| | | 85VAC - 100VAC@60Hz | 1.33 | -- | -- | |

| | | | | | | |
|-----------------|--------------------|-----------------|------------------------------------|----|----|-------|
| | | 120VDC - 140VDC | 1.25 | -- | -- | %/VDC |
| Safety Standard | | | Meet IEC/EN/UL62368/EN60335/GB4943 | | | |
| Safety Class | | | CLASS I | | | |
| MTBF | MIL-HDBK-217F@25°C | | >250,000 h | | | |

Mechanical Specifications

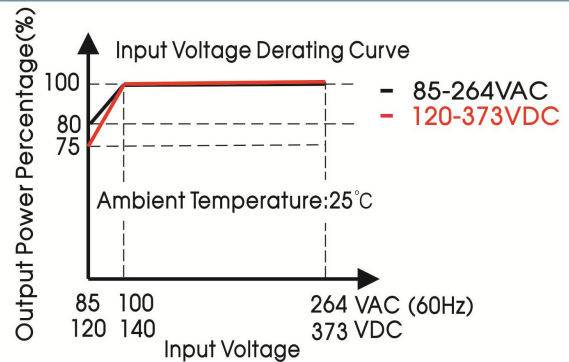
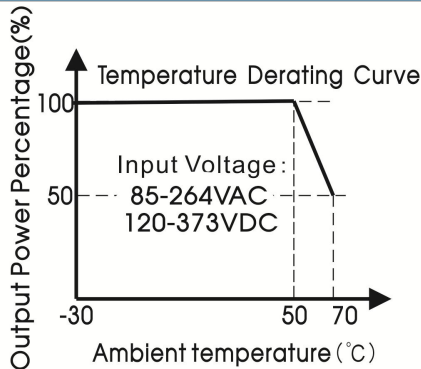
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|--|----------------------------|
| Case Material | Metal (AL1100, SGCC) |
| Dimensions | 215.00 x 115.00 x 30.00 mm |
| Weight | 750g (Typ.) |
| Cooling Method | Forced air cooling |
| Notice: there is built-in fan inside product, so it can't be shipped by air. | |

Electromagnetic Compatibility (EMC)

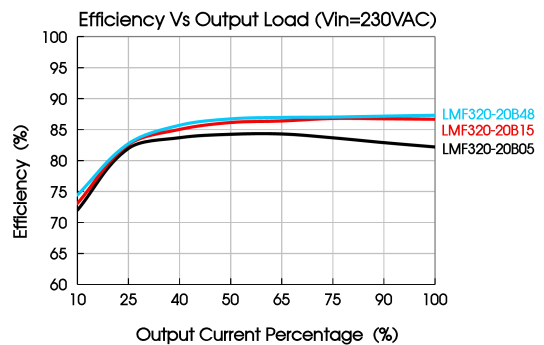
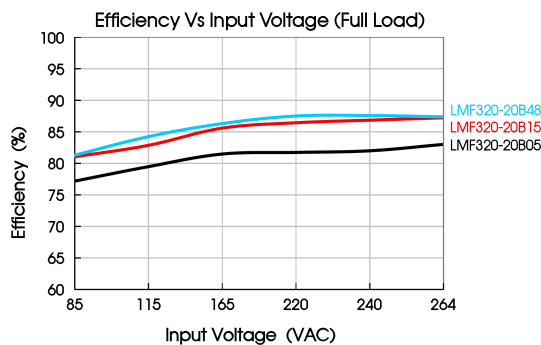
| | | | | |
|-----------|------------------|-------------------|------------------------|------------------|
| Emissions | CE | CISPR32/EN55032 | CLASS B | |
| | RE | CISPR32/EN55032 | CLASS B | |
| | Harmonic current | IEC/EN61000-3-2 | CLASS A | |
| | Voltage Flicker | IEC/EN61000-3-3 | | |
| Immunity | ESD | IEC/EN 61000-4-2 | Contact ±6KV /Air ±8KV | Perf. Criteria A |
| | RS | IEC/EN 61000-4-3 | 10V/m | perf. Criteria A |
| | EFT | IEC/EN 61000-4-4 | ±2KV | perf. Criteria A |
| | Surge | IEC/EN 61000-4-5 | ±1KV/±2KV | perf. Criteria A |
| | CS | IEC/EN 61000-4-6 | 10 Vr.m.s | perf. Criteria A |
| | DIP | IEC/EN 61000-4-11 | 0%, 70% | perf. Criteria B |

Note: 1. One magnetic bead(nickel-zinc ferrite)should be coupled with the output load line during CE/RE testing.
2. The power supply is considered a component as part of system, all EMC items are tested on a metal plate (LxWxH, 450mmx450mmx3mm). Power supply should be combined with final equipment for EMC confirmation.

Product Characteristic Curve

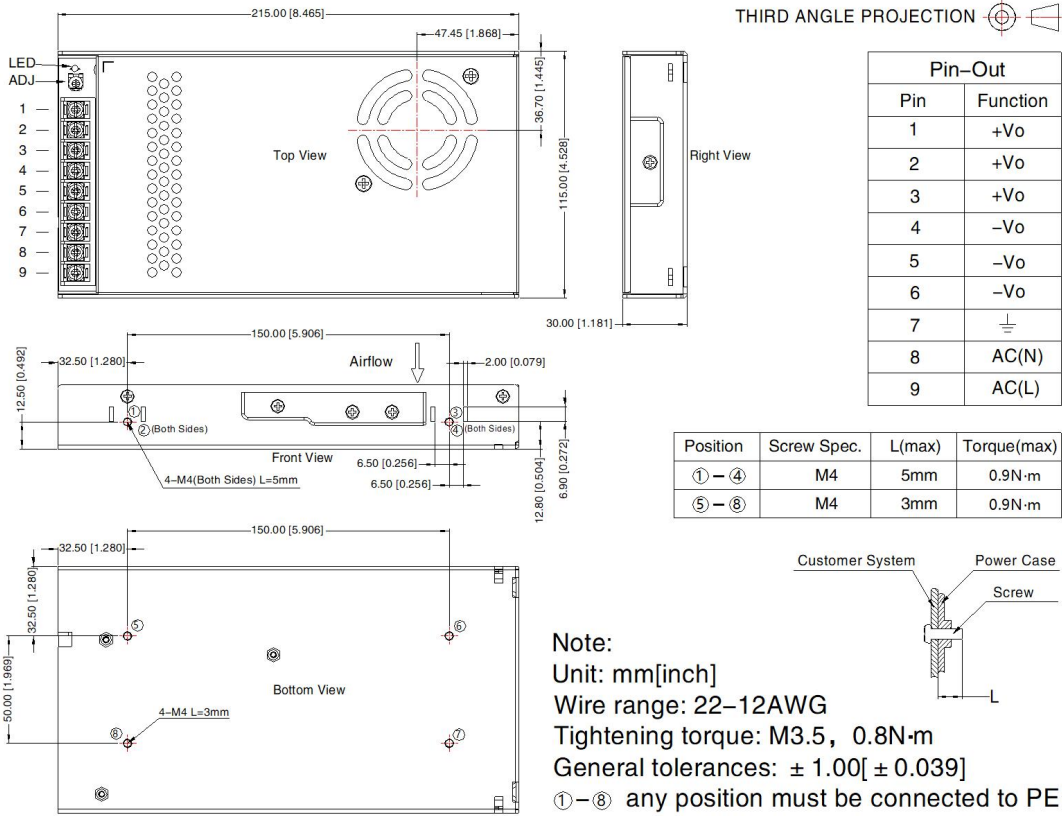


Note: ① With an input voltage between 85-100VAC and a DC input between 120-140VDC the output power must be derated as per the temperature derating curves;
② This product is suitable for applications using forced air cooling; for applications in closed environment please consult Mornsun FAE.

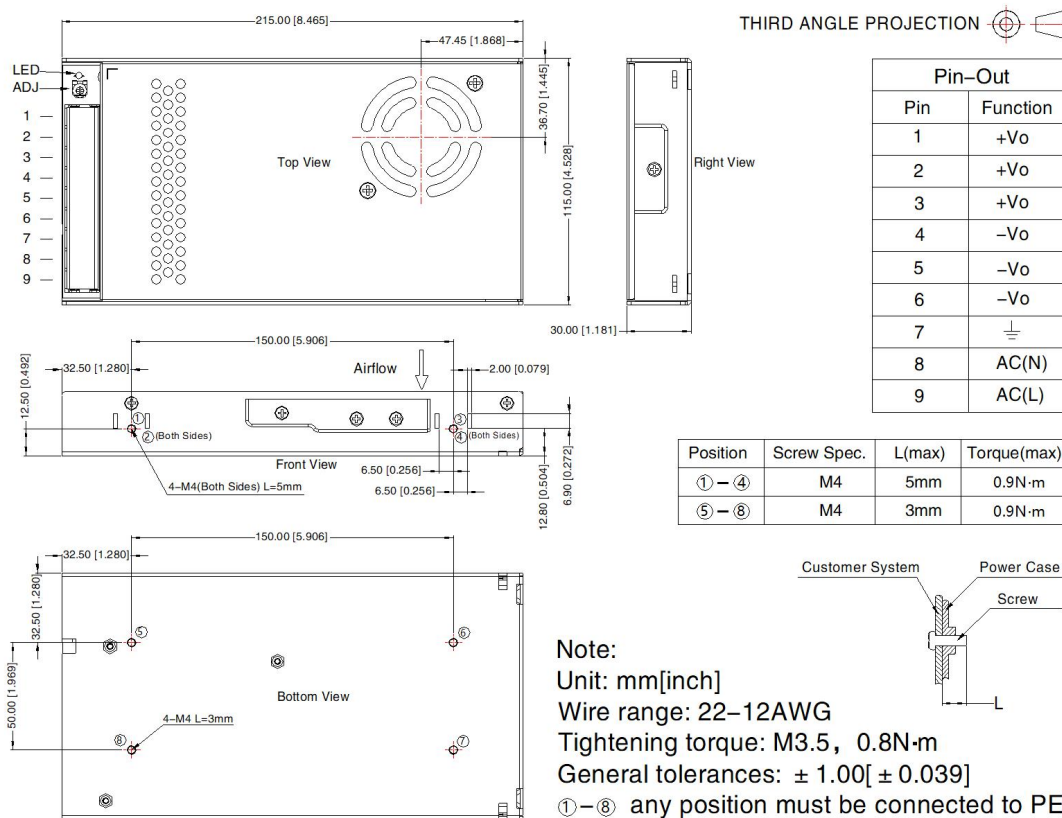


Dimensions and Recommended Layout

LMF320-20Bxx, LMF320-20Bxx-Q Series



LMF320-20Bxx-C Series



Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220115;
2. 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;
3. The ambient temperature derating of $5^{\circ}\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. 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;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to PE (\perp) of system when the terminal equipment in operating;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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