



FEATURES

- 165 - 264VAC or 180 - 373VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30°C to +70°C
- Low standby power consumption, high efficiency
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Safety according to IEC/UL62368, EN60335, GB4943
- Withstand 300VAC surge input for 5s
- OVC III (designed to meet EN61558)
- Operating altitude up to 5000m
- Low leakage current: <0.3mA

LM35-22B12-DX 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 leakage current, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. The converter offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, EN60335, GB4943 standards and It's widely used in areas of industrial, LED, street light control, 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 (uF) |
|---------------|---------------|------------------|--|-------------------------------------|-------------------------------|---------------------------|
| EN | LM35-22B12-DX | 36 | 12V/3A | 10.2-13.8 | 86 | 1500 |

Note: The product picture is for reference only. For details, please refer to the actual product.

Input Specifications





| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|-------------------------|---------------------------|------------|-------------|------|------|------|
| Input Voltage Range | AC input | | 165 | -- | 264 | VAC |
| | DC input | | 180 | -- | 373 | VDC |
| Input Voltage Frequency | | | 47 | -- | 63 | Hz |
| Input Current | 230VAC | | -- | -- | 0.6 | A |
| | 230VAC, output power 1.5W | | -- | 0.04 | 0.06 | |
| Inrush Current | 230VAC | Cold start | -- | 45 | -- | |
| Leakage Current | 240VAC | | <0.3mA | | | |
| Hot Plug | | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|----------------------------|--|--|-----------------------------------|-------|------|------|
| Output Voltage Accuracy | Full load range | | -- | ±1 | -- | % |
| Line Regulation | Rated load | | -- | ±0.5 | -- | |
| Load Regulation | 0% - 100% load | | -- | ±0.5 | -- | |
| Ripple & Noise* | 20MHz bandwidth (peak-to-peak value) | | -- | 120 | -- | mV |
| Temperature Coefficient | | | -- | ±0.03 | -- | %/°C |
| Minimum Load | | | 0 | -- | -- | % |
| Stand-by Power Consumption | | | -- | -- | 0.3 | W |
| Hold-up Time | 230VAC | | 30 | -- | -- | ms |
| Short Circuit Protection | Recovery time <5s after the short circuit disappear. | | Hiccup, continuous, self-recovery | | | |

| | | |
|---|--|--|
| Over-current Protection | | 110%-150% I _o , self-recovery |
| Over-voltage Protection | | ≤16.2VDC (clamping protection) |
| Note: *The "Twisted-pair method" is used for ripple and noise test, 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 | | 4000 | -- | -- | |
| | Output-  | | 1250 | -- | -- | |
| Insulation Resistance | Input-  | At 500VDC | 50 | -- | -- | MΩ |
| | Input-output | | 50 | -- | -- | |
| | Output-  | | 50 | -- | -- | |
| Operating Temperature | | | -30 | -- | +70 | °C |
| Storage Temperature | | | -40 | -- | +85 | |
| Storage Humidity | | Non-condensing | -- | -- | 95 | %RH |
| Switching Frequency | | | -- | 65 | -- | kHz |
| Power Derating | Operating temperature derating | +50°C to +70°C | 2 | -- | -- | %/°C |
| | Input voltage derating | 180VDC - 200VDC | 1 | -- | -- | %/VDC |
| Safety Standard | | BS EN/EN62368-1(Report) safety approved; Design refer to UL/IEC62368-1, EN60335-1, GB4943.1 | | | | |
| Safety Class | | CLASS I | | | | |
| MTBF | | MIL-HDBK-217F@25°C | >300,000 h | | | |

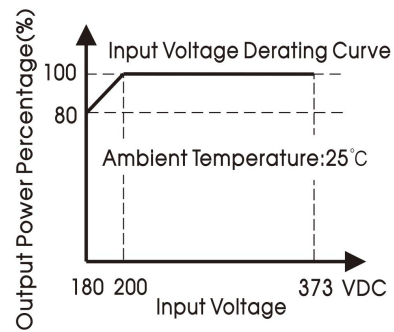
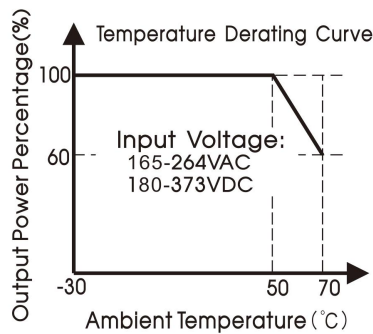
Mechanical Specifications

| | |
|----------------|--------------------------|
| Case Material | Metal (AL1100, SGCC) |
| Dimensions | 99.00 x 82.00 x 30.00 mm |
| Weight | 190g (Typ.) |
| Cooling Method | Free air convection |

Electromagnetic Compatibility (EMC)

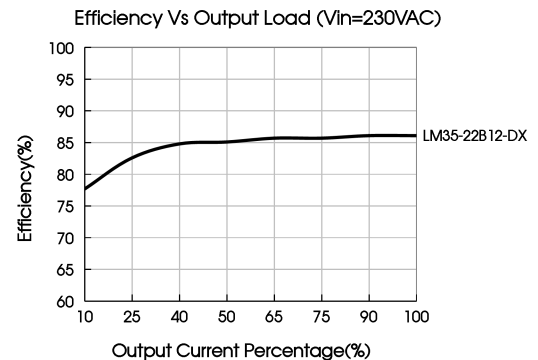
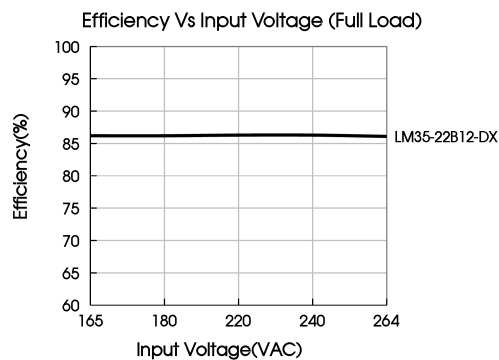
| | | | | | |
|-----------|---|-------------------------|-----------------------------------|------------------|--|
| Emissions | CE | CISPR32/EN55032 CLASS A | | | |
| | RE | CISPR32/EN55032 CLASS A | | | |
| Immunity | ESD | IEC/EN 61000-4-2 | Contact ±6KV/Air ±8KV | perf. Criteria A | |
| | RS | IEC/EN 61000-4-3 | 10V/m | perf. Criteria A | |
| | EFT | IEC/EN 61000-4-4 | ±2KV | perf. Criteria A | |
| | Surge | IEC/EN 61000-4-5 | line to line ±2KV/line to PE ±4KV | perf. Criteria A | |
| | CS | IEC/EN61000-4-6 | 10 Vr.m.s | perf. Criteria A | |
| | Voltage dip, short interruption and voltage variation | IEC/EN61000-4-11 | 0%, 70% | perf. Criteria B | |

Product Characteristic Curve

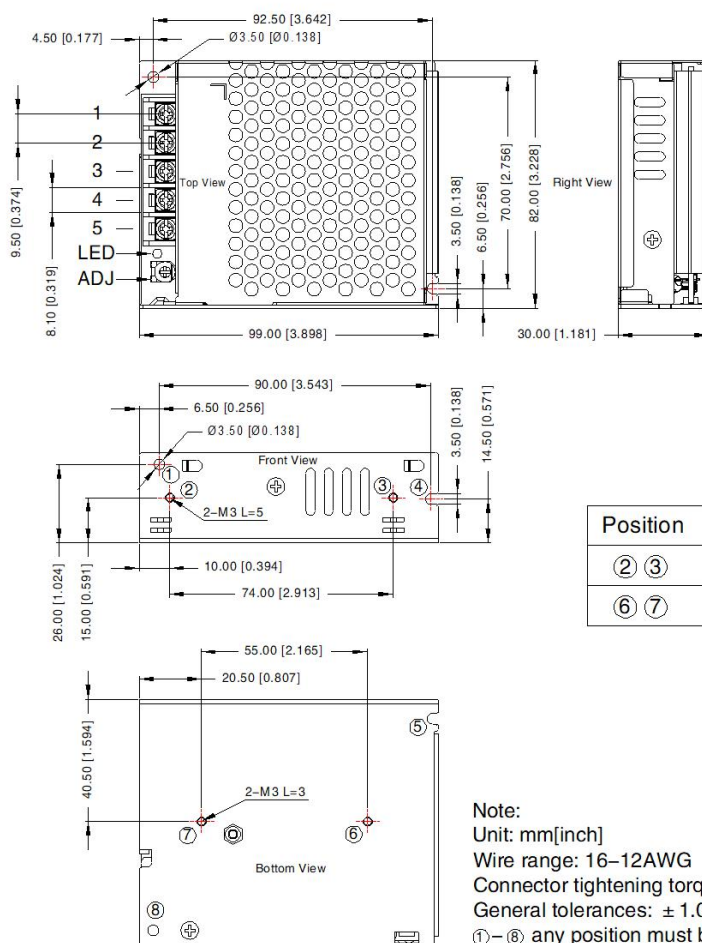


Note: ①For input voltage of 180 - 200VDC, input voltage derating is required based on temperature derating;

②This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



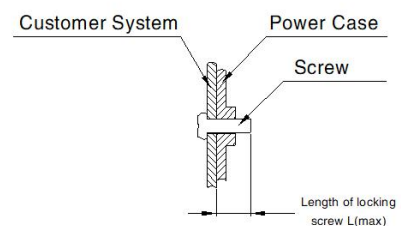
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

| Pin-Out | |
|---------|-------|
| Pin | Mark |
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | |
| 4 | -Vo |
| 5 | +Vo |

| Position | Screw Spec. | Length of locking screw L(max) | Recommended Torque |
|----------|-------------|--------------------------------|--------------------|
| ② ③ | M3 | 5mm | 0.4N · m ± 10% |
| ⑥ ⑦ | M3 | 3mm | 0.4N · m ± 10% |



Note:
Unit: mm[inch]
Wire range: 16-12AWG
Connector tightening torque: M3.5, 0.8N·m ± 10%
General tolerances: ± 1.00[± 0.039]
①-⑧ any position must be connected to PE

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220360;
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 room 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.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No.8 Nanyun 4th Road, Huangpu District, Guangzhou, China

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: info@mornsun.cn

www.mornsun-power.com