

EMC Filter



RoHS



FEATURES

- Ultra wide input voltage range : 0-305VAC / 0-430VDC
- Single-side conformal coating, salt-spray proof, anti-corrosion
- Operating ambient temperature range : -40℃ to +85℃
- High surge suppression capability: ±4kV/6kV
- Insertion loss: CM&DM>40dB @ 150K-1MkHz
- EMC standards compliance : IEC/EN61000-4 、CISPR32/EN55032
- Meet classification society certification standards : GD22
- Operating altitude up to 5000m
- 5 years warranty





This product is suitable for analog circuits and other noisy sensitive occasions, EMC auxiliary module installed in the input end of the power module can significantly improve the EMC performance. The maximum input voltage of the power supply should not be greater than the maximum operating voltage of the filter, and the maximum input current should be less than the maximum operating current of the filter.

Selection Guide

| Model | Operating Voltage(VAC) | | Operating Current(A) | | Surge Performance | Certification |
|-------------|------------------------|-------|----------------------|------|------------------------------------|---------------|
| | Typ. (Range) | Max * | Typ. | Max | | |
| FC-L06I-CCS | 115/230 (0-305) | 310 | - | 6.0 | Line - Line ±4kV Line - PE ±6kV | CE/UKCA |
| FC-L12I-CCS | 115/230 (0-305) | 310 | - | 12.0 | Line - Line ±4kV Line - PE ±6kV | CE/UKCA |

Note: * The input voltage must not exceed this value, otherwise permanent and unrecoverable damage may be caused;

General Specifications

| Item | | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|---|---|-------------|------|------|------|
| Operating Temperature | | | -40 | -- | +85 | ℃ |
| Storage Temperature | | | -40 | -- | +105 | |
| Operating Humidity | | Non-condensing | 10 | -- | 95 | %RH |
| Storage Humidity | | | 20 | -- | 90 | |
| Isolation Voltage | IN(L) -  | Electric strength test for 1min., leakage current <5mA (Isolation Test for  need to remove the screw at the mark shall  *) | 2500 | -- | -- | VAC |
| | IN(N) -  | | | | | |
| MTBF | | MIL-HDBK-217F@25℃ | ≥1000,000 h | | | |

| | | | | | |
|---------------------------|-------------|-------|----|---|----|
| Altitude | 80-110kPa | 5000m | | | |
| Insertion loss (CM/DM) | 150kHz~1MHz | 40 | 45 | - | dB |
| | 1MHz~10MHz | 20 | 25 | - | dB |
| | 10MHz~30MHz | 18 | 20 | - | dB |

Note: *The gas discharge tube built into the device effectively protects the power supply against damage by asymmetric disturbance variables (eg EN 61000-4-5). Each power supply continuous withstand voltage test will cause extremely high load to the power supply. Therefore, unnecessary loading or damage to the power supply due to excessive test voltage should be avoided. If necessary, disconnect the gas discharge tube built into the device to use a higher test voltage. After successful completion of the test, reconnect the gas discharge tube. Please refer to the "FC-L06I-CCS/FC-L12I-CCS Installation and Application Manual" for specific operation methods;

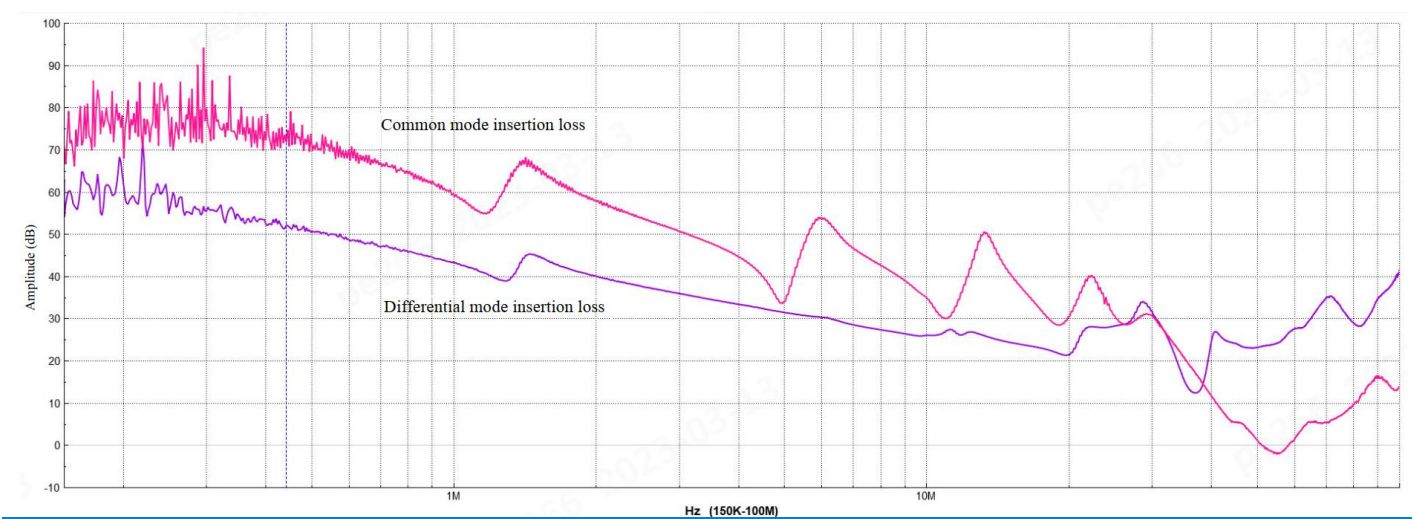
Physical Characteristics

| | | |
|----------------|-------------|----------------------------|
| Case Material | | Metal (AL5052, SUS304) |
| Dimension | | 128.50 x 128.00 x 34.00 mm |
| Weight | FC-L06I-CCS | 475g(Typ.) |
| | FC-L12I-CCS | 582g(Typ.) |
| Cooling Method | | Free air convection |

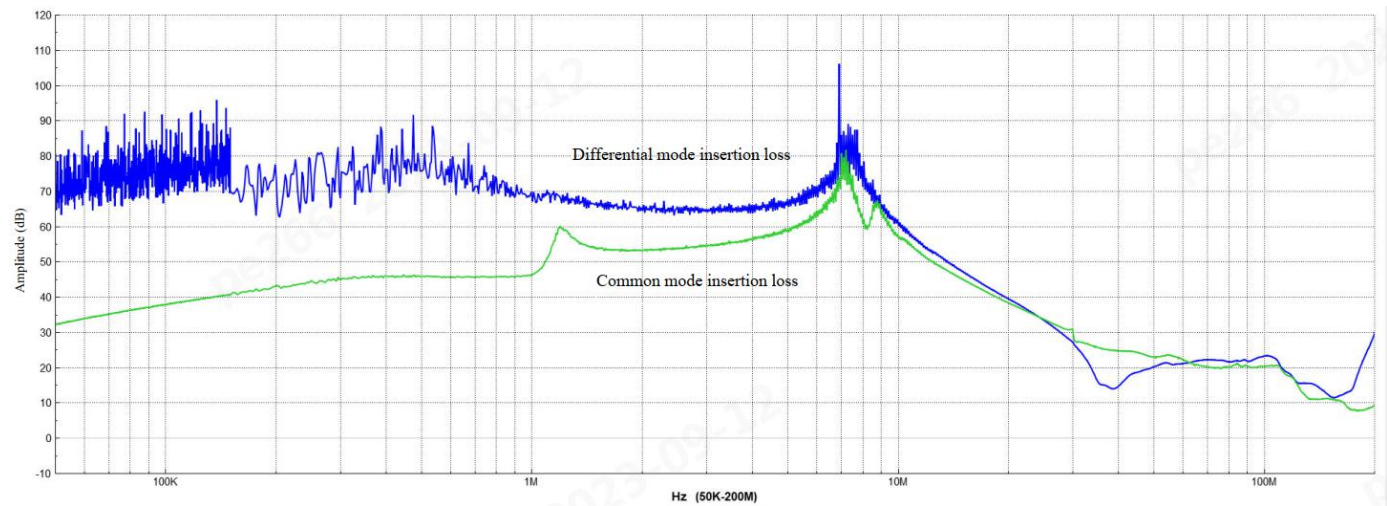
Environmental Characteristics

| | | |
|----------------------------------|---|-------------------------|
| Item | Operating Conditions | Standard |
| High and Low Temperature Working | +85°C, -40°C | GB2423.1、IEC60068-2-1 |
| Low Temperature Storage | -40°C | GB2423.1、IEC60068-2-1 |
| High Temperature Storage | +105°C | GB2423.2、IEC60068-2-2 |
| High Temperature Aging | +85°C | GB2423.2、IEC60068-2-2 |
| Sinusoidal Vibration | 10 - 500Hz, 2g, x, y, z axis three directions | GB2423.10、IEC60068-2-6 |
| Salt Mist | +35°C, 5%NACL, 48 hours | GB2423.17、IEC60068-2-11 |
| Temperature Shock | -40°C to +105°C | GB2423.22、IEC60068-2-14 |
| Low Temperature Elevation | -40°C, 54KPa | GB2423.25、IEC60068-2-40 |
| High Temperature Elevation | +55°C, 54KPa | GB2423.26、IEC60068-2-41 |

FC-L06I-CCS Insertion Loss Specifications



FC-L12I-CCS Insertion Loss Specifications

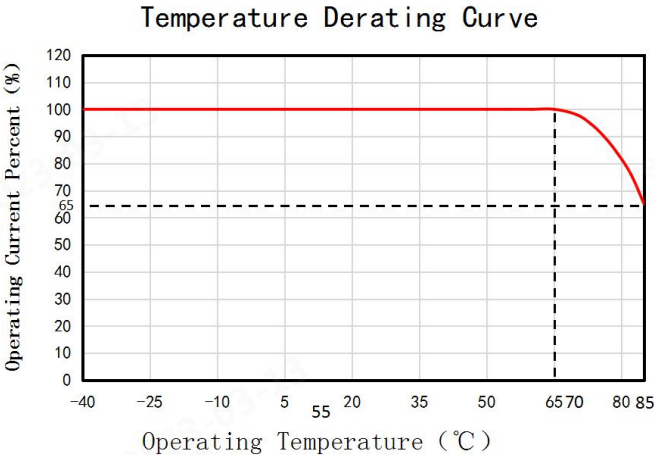
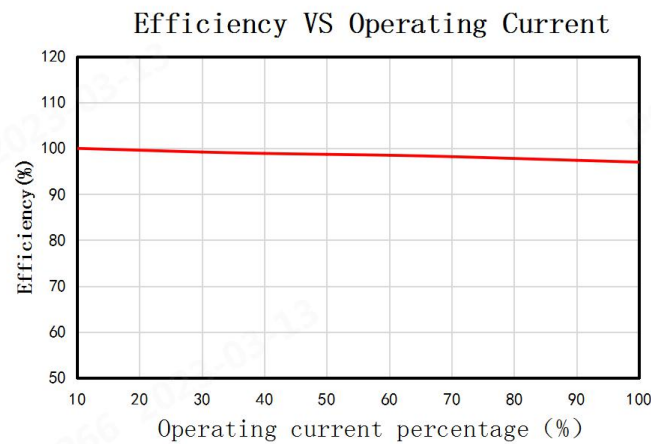


EMC Characteristics

| | | | | |
|-----|------------------|-----------------|--|------------------|
| EMI | CE | CISPR32/EN55032 | CLASS B | |
| | | GD22 | EMC1 | |
| | RE | CISPR32/EN55032 | CLASS B | |
| | Harmonic current | IEC/EN61000-3-2 | CLASS A | |
| EMS | ESD | IEC/EN61000-4-2 | Contact $\pm 8\text{kV}$, Air $\pm 15\text{kV}$ | perf. Criteria A |
| | RS | IEC/EN61000-4-3 | 10V/m | perf. Criteria A |
| | EFT | IEC/EN61000-4-4 | 5KHz 5/50ns $\pm 4\text{kV}$ | perf. Criteria A |
| | Surge | IEC/EN61000-4-5 | Line - Line $\pm 4\text{kV}$ Line - PE $\pm 6\text{kV}$ | perf. Criteria A |
| | CS | IEC/EN61000-4-6 | 0.15MHz-80MHz 10V r.m.s | perf. Criteria A |
| | PFMF | IEC/EN61000-4-8 | 50/60Hz 30A/m | perf. Criteria A |

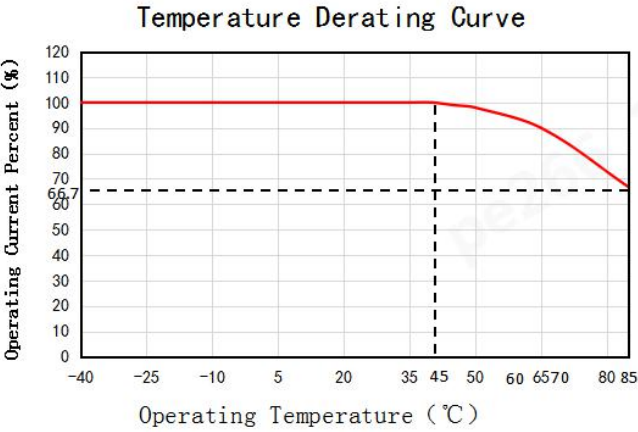
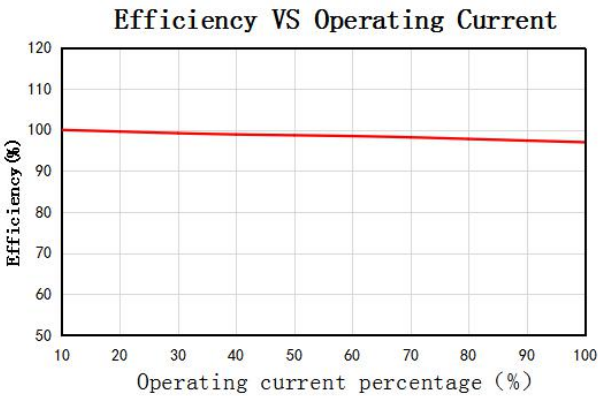
Note: Matching FC-L06I-CCS to the front end of the LIHF240/480-23Bxx Din-rail power supply/FC-L12I-CCS to the front end of the LIHF960-23Bxx Din-rail power supply can make the power module meet above EMC characteristics.

FC-L06I-CCS Product Typical Curve

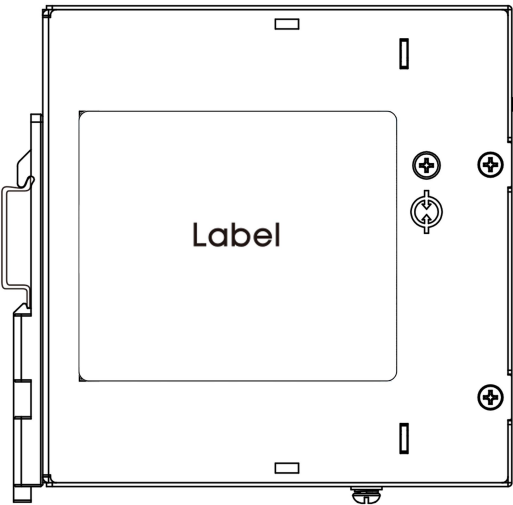
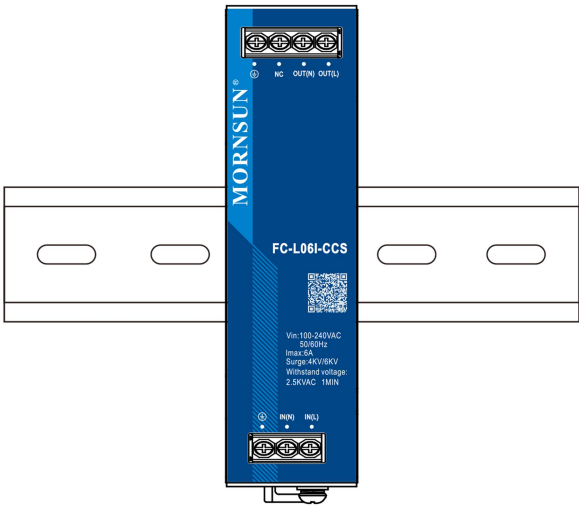


Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

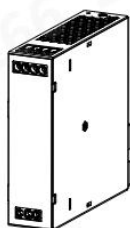
FC-L12I-CCS Product Typical Curve



Installation Diagram



| Materials required in the installation | | |
|--|---|-------|
| 1 | Product | 1PCS |
| 2 | Phillips screwdriver Slotted screwdriver | 1PCS |
| 3 | TS35/7.5 or TS35/15 | 1PCS |
| 4 | 14-10AWG Wire | / PCS |
| 5 | The content is for reference only. Regarding the actual wire diameter and tightening torque, refer to the dimensional drawing. | |



Product

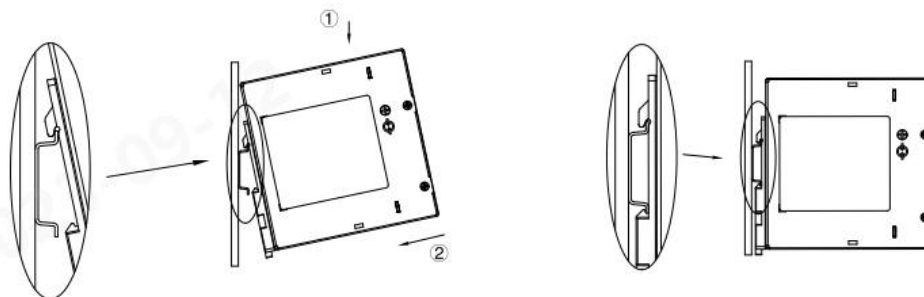
Phillips screwdriver
Slotted screwdriver
Diameter : 3mm

TS35/7.5 or TS35/15



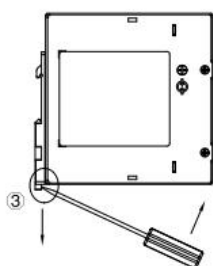
Installation steps ①-②

① Clamp the buckle of the product into the TS35 DIN rail.

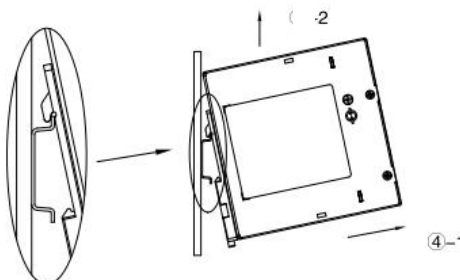


② Push the product vertically towards the TS35 DIN rail until hearing the sound of the buckle snapping into it.

Disassembly Steps ③-④



③ After inserting the slotted screwdriver into the square groove at the bottom of the buckle, push the slider of the buckle downward in the direction shown in the figure.

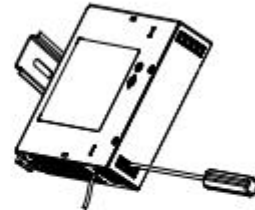


④ Hold the bottom of the product and push it outwards while pushing down the slider, then lift the product up to take the product out of the DIN rail.

Wiring / Unwiring Steps ⑤-⑥



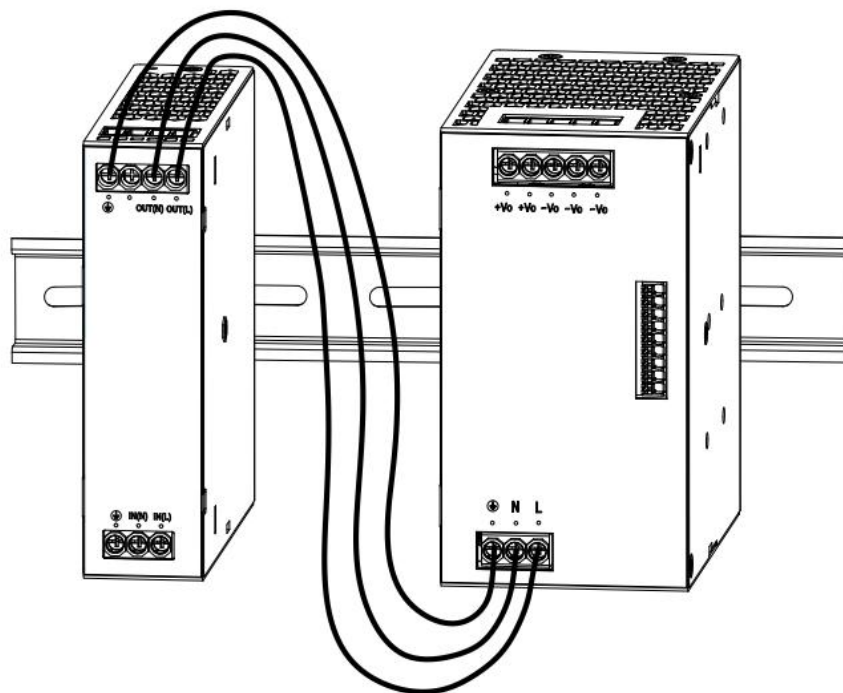
⑤ Turn the Phillips screwdriver to the left to loosen the terminal screws, insert the head of the wire into the bottom of the terminal, and then turn the screwdriver to the right to tighten the terminal screws



⑥ Turn the Phillips screwdriver to the left to loosen the terminal screw and pull the wire out of the bottom of the terminal

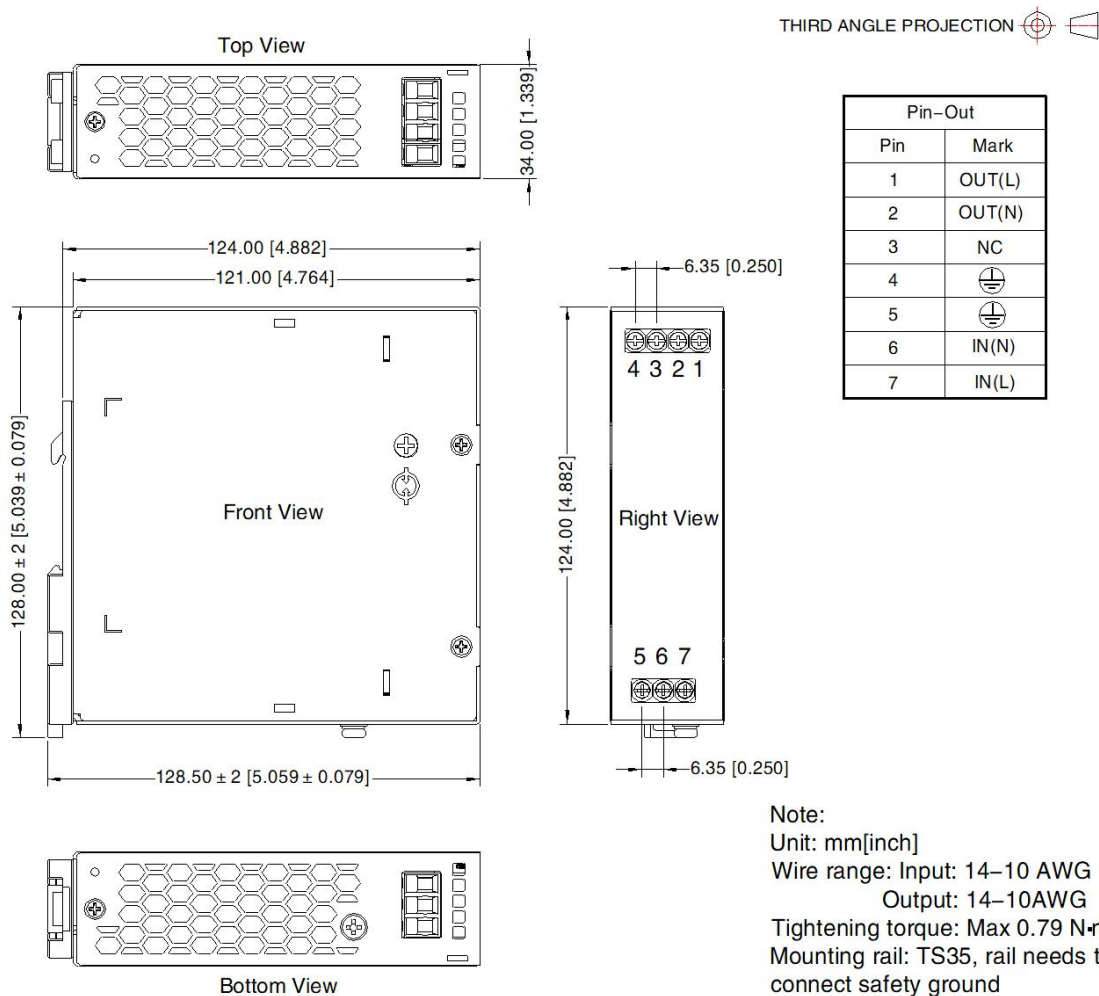
Note: Keep the following installation clearances: 20mm on top, 20mm on the bottom, 5mm on the left and right sides are recommended when the device to work long hours. Increase this clearance to 15mm in case the adjacent device is a heat source (e.g. another power supply), the same is true for FC-L121-CCS.

Wiring Diagram



Note: This figure is the connection diagram of the AC/DC Din-rail power supply LIHFxxx-23Bxx for FC-LxxI-CCS.

Dimensions and Recommended Layout



Note:

Unit: mm[inch]

Wire range: Input: 14-10 AWG

Output: 14-10AWG

Tightening torque: Max 0.79 N·m

Mounting rail: TS35, rail needs to connect safety ground

General tolerances: $\pm 1.00[\pm 0.039]$

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220593(FC-L06I-CCS), 58220681(FC-L12I-CCS);
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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