

EMC Filter

FC-LX1D & FC-LX1D2 Series

MORNSUN®

EMC Filter



FEATURES

- Universal 85-305VAC input voltage
- Ensure the power supply module to meet the requirement of CISPR32/EN55032 Class B
- Operating ambient temperature range: -40°C to +85°C
- Compact size, application of PCB mounting, Chassis mounting with Screw Terminals, DIN-Rail mounting

CE UK RoHS

This model applies to analog circuit which is noise-sensitive. Put FC-LX1D on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 $\pm 2KV$ (2Ω internal resistance)/ $\pm 4KV$ (12Ω internal resistance). Put FC-LX1D2 on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 $\pm 4KV$ (2Ω internal resistance)/ $\pm 6KV$ (12Ω internal resistance) and EMI requirement of CISPR32 /EN 55032 Class B.

EMC filter used with the MORNSUN AC/DC module, AC/DC module' s max. Input voltage must not more than EMC filter' s max. Voltage, AC/DC module' s max. Input current must less than EMC filter' s nominal current.

Selection Guide

Model	Input Voltage Range (VAC)	Nominal Current (A) (max)	Certification
FC-LX1D	85 - 305	1.5	CE/UKCA
FC-LX1D2	85 - 305	1.5	CE/UKCA

Note: Suffix of "A2S" means chassis mounting and suffix of "A4S" means DIN-Rail mounting, for example FC-LX1DA4S.

General Specifications

Item	Test Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	85	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	220VAC @0.5A	--	--	5	
	220VAC @1.0A	--	--	20	
	220VAC @1.5A	--	--	30	
Welding Temperature	Wave soldering welding,10 seconds MAX	+255	+260	+265	
Test Voltage (L/PE, N/PE)	Tested for 1 minute and leakage current: 5 mA	--	2000	--	VAC

MORNSUN®

MORNSUN Guangzhou Science & Technology Co., Ltd.

2025.1.24-A/6

Page 1 of 8

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final

General Specifications

Casing Material		Black plastic, flame-retardant and heat-resistant (UL94V-0)	
Package Dimensions	FC-LX1D	Horizontal package	33.70x22.20x18.00 mm
		A2S wiring package	76.00x31.50x26.80 mm
		A4S rail package	76.00x31.50x31.40 mm
	FC-LX1D2	Horizontal package	53.80x28.80x19.00 mm
		A2S wiring package	76.00x31.50x27.80 mm
		A4S rail package	76.00x31.50x32.40 mm
Weight	FC-LX1D	Horizontal package/A2S wiring package/ A4S rail package	20g/40g/60g (Typ)
	FC-LX1D2		50g/70g/90g (Typ)

Frequency Attenuation Specifications

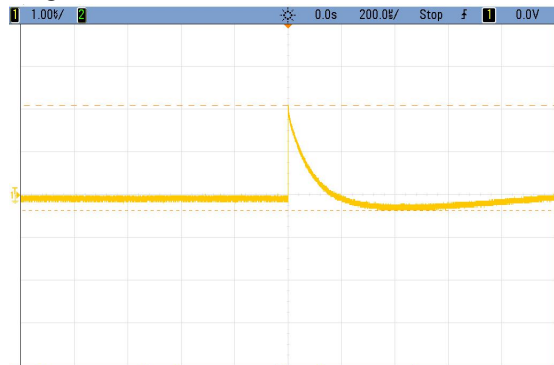
Item	Test Conditions		Min.	Typ.	Max.	Unit
The attenuation coefficient of frequency	150KHz—1GHz	FC-LX1D	--	20	--	dB
		FC-LX1D2	--	30	--	

Devise Standard

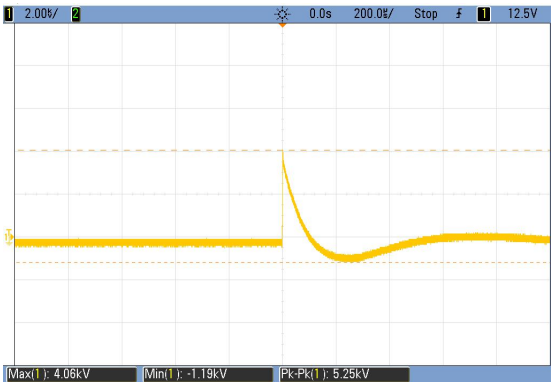
Put FC-LX1D on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 standard $\pm 2\text{KV}$ (2Ω internal resistance)/ $\pm 4\text{KV}$ (12Ω internal resistance). Put FC-LX1D2 on to the input of AC/DC module can ensure the module meet Surge level of IEC/EN61000-4-5 standard $\pm 4\text{KV}$ (2Ω internal resistance)/ $\pm 6\text{KV}$ (12Ω internal resistance) and EMI requirement of CISPR32 /EN 55032 Class B.

EMC Specifications

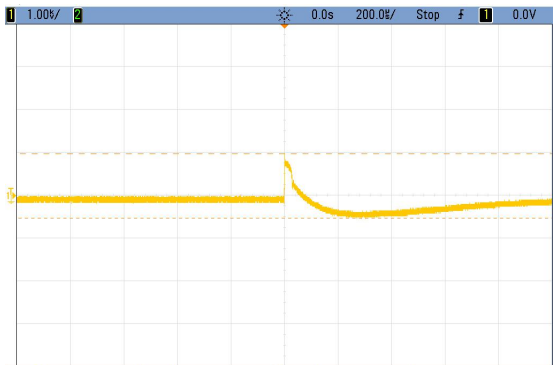
①FC-LX1D Surge Test Result



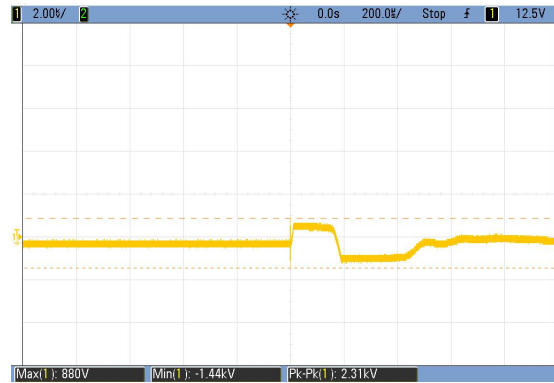
Input voltage waveform (Differential mode 2.11KV)



Input voltage waveform (Common mode 4.06KV)



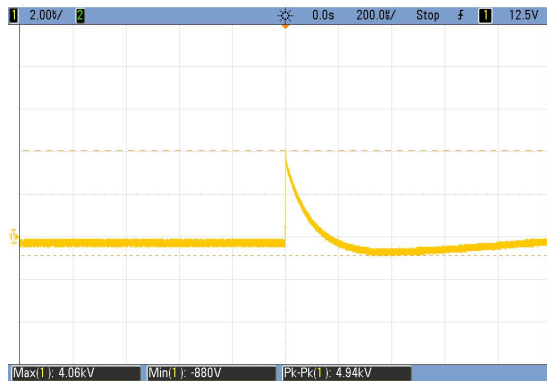
Output voltage waveform (Differential mode 0.98KV)



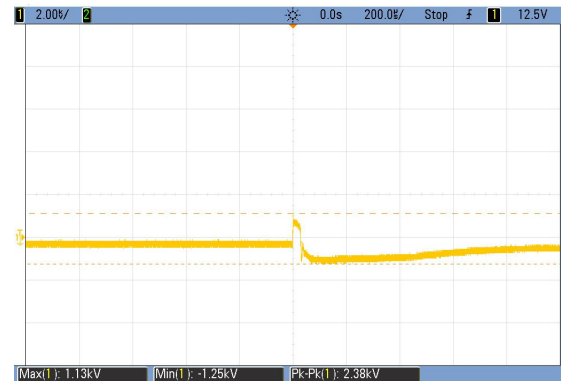
Output voltage waveform(Common mode 0.88 KV)

Note: Above result was tested on FC-LX1D open.

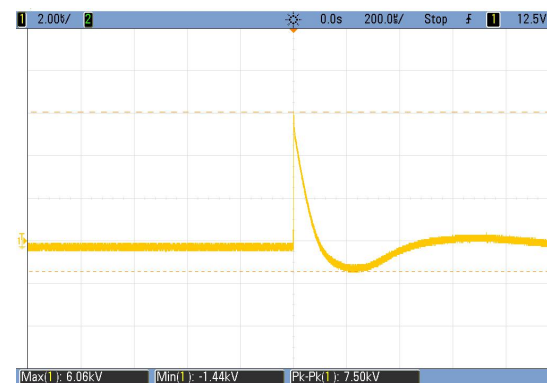
②FC-LX1D2 Surge Test Result



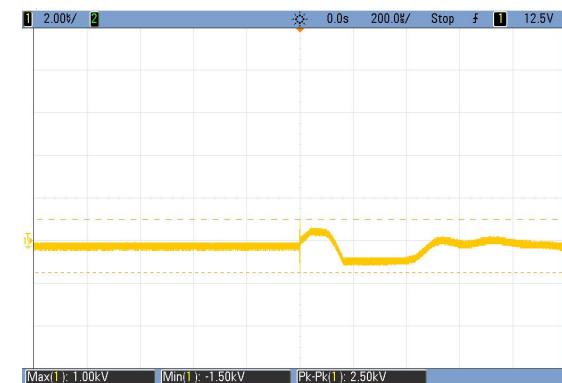
Input voltage waveform (Differential mode 4.06KV)



Output voltage waveform (Differential mode 0.90KV)



Input voltage waveform (Common mode 6.06KV)

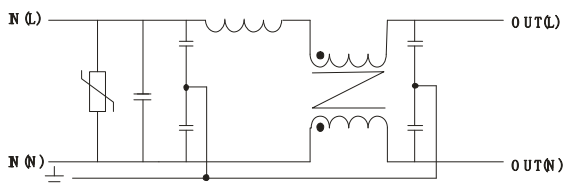


Output voltage waveform (Common mode 1.00KV)

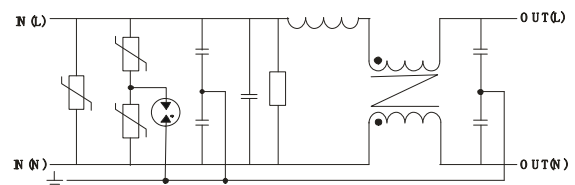
Note: Above result was tested on FC-LX1D2 open.

Design Reference

1. Inside schematic

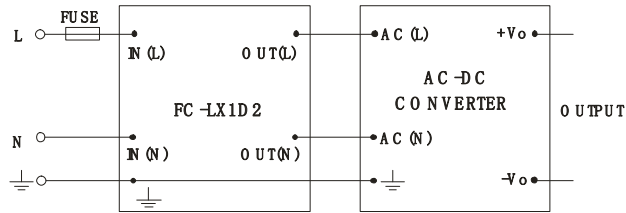


(Figure 1)FC-LX1D



(Figure 2)FC-LX1D2

2. Typical application



FUSE: Due to the difference of the power module input current, the fuse of the recommended values, please refer to the Technical Manual for the power module.

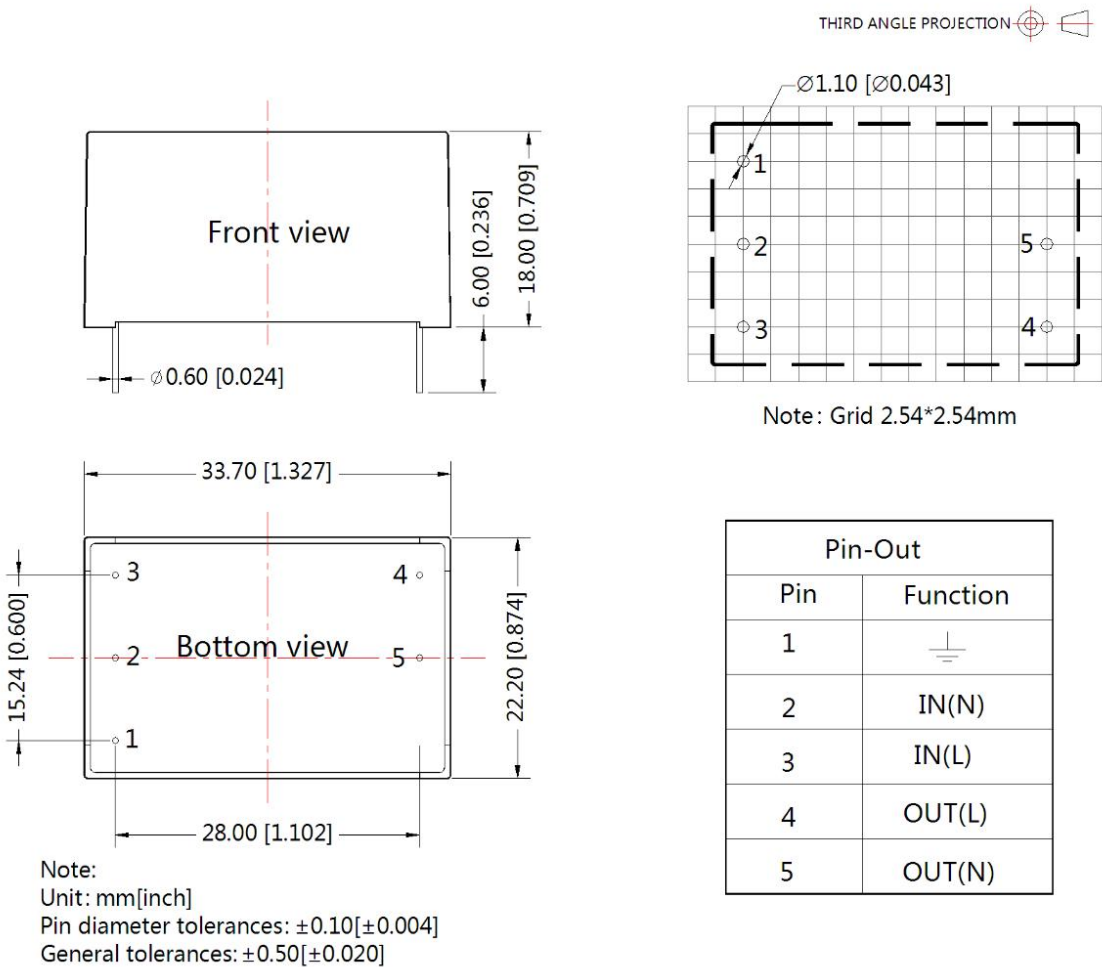
3. Supporting the power module product model

Model	EMI (Without External Circuit)	EMI (With EMC filter)	EFT (Without External Circuit)	EFT (With EMC filter)	Surge (Without External Circuit)	Surge(With FC-LX1D)	Surge (With FC-LX1D2)
LD03-10BXX(A2S/A 4S) Series, LD03-10B12R2-LM, LD03-10B12-FY	CISPR32/ EN55032 CLASS A	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±2KV	--	IEC/EN61000 -4-5 ±1KV/±2KV	--
LD05-20B05(A2S/A 4S) Series, LD05-20B12(A2S/A 4S) Series, LD05-20B12R3-M, LD05-20B12R2-M, LD05-20B09MU, LD05-20B24	CISPR32/ EN55032 CLASS A	CISPR32/ EN55032 CLASS B	IEC/EN61000-4 -4 ±2KV	IEC/EN61000-4 -4 ±4KV	IEC/EN61000-4 -5 ±1KV/±2KV	IEC/EN61000 -4-5 ±2KV/±4KV	--
LD05-23BXXR2 Series	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±2KV	IEC/EN61000-4 -4 ±4KV	IEC/EN61000-4 -5 ±1KV	IEC/EN61000 -4-5 ±2KV/±4KV	--
LD10-20BXX(A2S) Series	CISPR32/ EN55032 CLASS A	CISPR32/ EN55032 CLASS B	IEC/EN61000-4 -4 ±2KV	IEC/EN61000-4 -4 ±4KV	IEC/EN61000-4 -5 ±1KV	IEC/EN61000 -4-5 ±2KV/±4KV	--
LD10-23BXX Series	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±2KV	IEC/EN61000-4 -4 ±4KV	IEC/EN61000-4 -5 ±1KV	IEC/EN61000 -4-5 ±2KV/±4KV	--
LD12-20BXX(A2S/A 4S) Series	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±4KV	--	IEC/EN61000-4 -5 ±2KV	--	IEC/EN6100 0-4-5 ±4KV/±6KV
LD20-10BXX((A2S/ A4S) Series, LD20-10BX5	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±4KV	--	IEC/EN61000-4 -5 ±2KV	--	IEC/EN6100 0-4-5 ±4KV/±6KV
LH Series	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±2KV	IEC/EN61000-4 -4 ±4KV	IEC/EN61000-4 -5 ±1KV/±2KV	IEC/EN61000 -4-5 ±2KV/±4KV	--

Power Converter For Power System LH(ER2) Series	CISPR32/ EN55032 CLASS A	CISPR32/ EN55032 CLASS B	IEC/EN61000-4 -4 ±4KV	--	IEC/EN61000-4 -5 ±2KV/±4KV	--	EC/EN6100 0-4-5 ±4KV/±6KV
LM30-00J0512-03E	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±4KV	--	IEC/EN61000-4 -5 ±2KV/±4KV	--	EC/EN6100 0-4-5 ±4KV/±6KV
LD-R2 Series	CISPR32/ EN55032 CLASS B	--	IEC/EN61000-4 -4 ±4KV	--	IEC/EN61000-4 -5 ±2KV/±4KV	IEC/EN61000 -4-5 ±2KV/±4KV	--

4. For additional information please refer to application notes on www.mornsun-power.com

FC-LX1D Dimensions and Recommended Layout



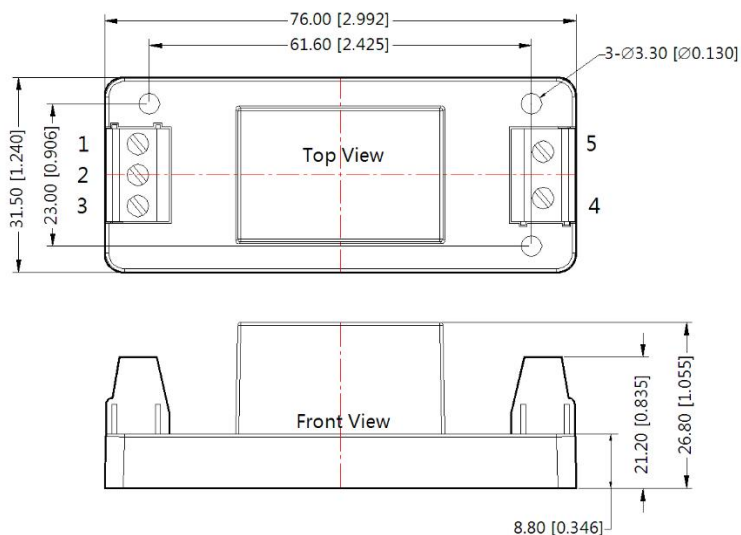
EMC Filter

FC-LX1D & FC-LX1D2 Series

MORNSUN®

FC-LX1DA2S Dimensions

THIRD ANGLE PROJECTION

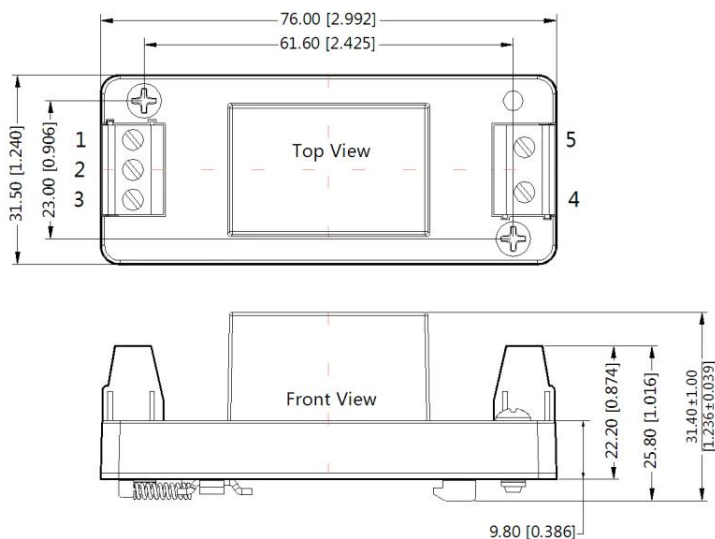


Pin-Out					
Pin	1	2	3	4	5
Connection		IN(N)	IN(L)	OUT(L)	OUT(N)

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
General tolerances: ± 0.50 [± 0.020]

FC-LX1DA4S Dimensions

THIRD ANGLE PROJECTION



Pin-Out					
Pin	1	2	3	4	5
Function		IN(N)	IN(L)	OUT(L)	OUT(N)

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
General tolerances: ± 0.50 [± 0.020]

MORNSUN®

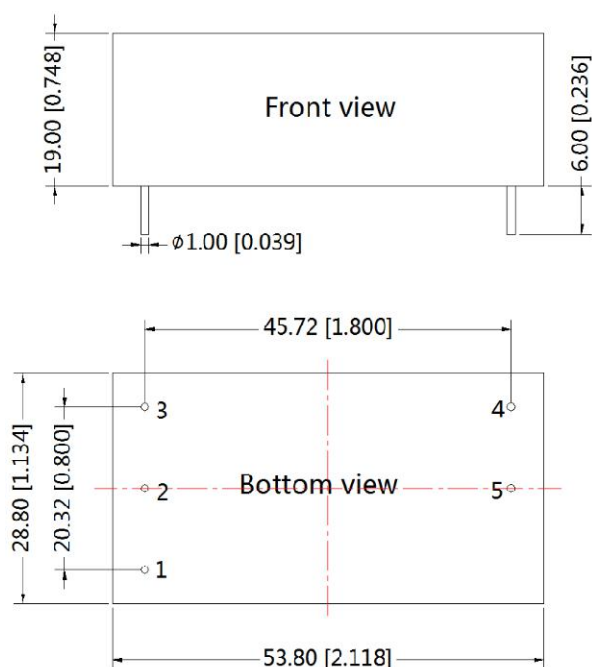
MORNSUN Guangzhou Science & Technology Co., Ltd.

2025.1.24-A/6

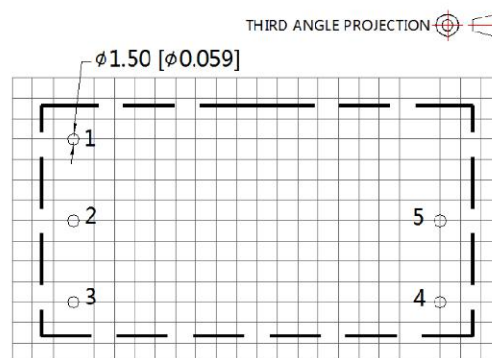
Page 6 of 8

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final

FC-LX1D2 Dimensions and Recommended Layout



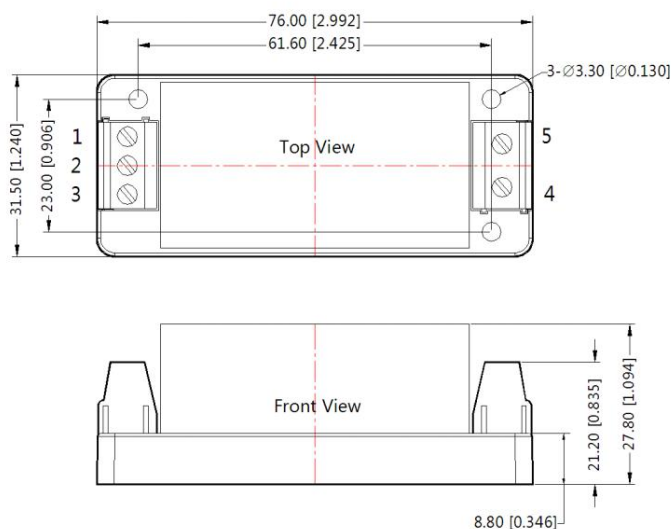
Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10 [\pm 0.004]$
General tolerances: $\pm 0.50 [\pm 0.020]$



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	
2	IN(N)
3	IN(L)
4	OUT(L)
5	OUT(N)

FC-LX1D2A2S Dimensions

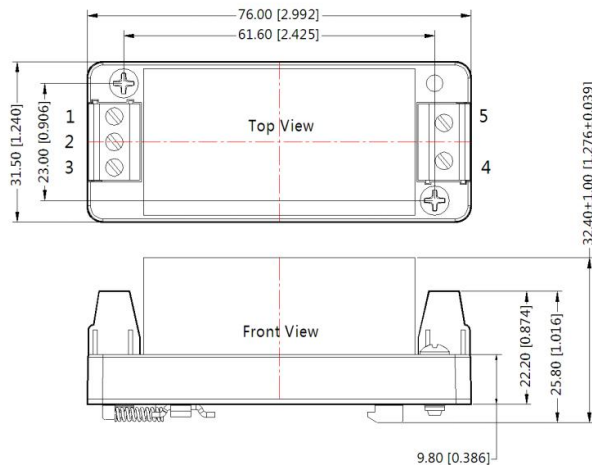


Pin-Out					
Pin	1	2	3	4	5
Function		IN(N)	IN(L)	OUT(L)	OUT(N)

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
General tolerances: $\pm 0.50 [\pm 0.020]$

FC-LX1D2A4S Dimensions

THIRD ANGLE PROJECTION



Pin-Out					
Pin	1	2	3	4	5
Function		IN(N)	IN(L)	OUT(L)	OUT(N)

Note:

Unit: mm[inch]

Wire range: 24~12 AWG

General tolerances: ± 0.50 [± 0.020]

Note:

1. Packing Information please refer to 'Product Packing Information'. The Packing bag number of Horizontal package : 58200055 (FC-LX1D)/58220005(FC-LX1D2), the Packing bag number of A2S/ A4S package:58220022;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75% with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. 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