

EMC Filter



FEATURES

- | Global wide input voltage:85~305VAC
- | Ensure the power supply module to meet the requirement of CISPR22/EN55022 Class B
- | Operating Temperature range: -40℃ ~ +85℃
- | Compact size, application of PCB mounting, Chassis mounting with Screw Terminals, DIN-Rail mounting

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 ±2KV (2Ω internal resistance)/±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 ±4KV (2Ω internal resistance)/±6KV (12Ω internal resistance) and EMI requirement of CISPR22 /EN 55022 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)
FC-LX1D	85~305	1.5
FC-LX1D2	85~305	1.5

Note: series with suffix "A2S" are chassis mounting, with suffix "A4S" are DIN-Rail mounting, for example FC-LX1DA4S.

General Specifications

Item	Test Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	85	℃
Storage Temperature		-55	--	125	
Casing Temperature Rise	220VAC @0.5A	--	--	5	
	220VAC @1.0A	--	--	20	
	220VAC @1.5A	--	--	30	
Test Voltage (L/PE, N/PE)	Tested for 1 minute and leakage current: 5 mA	--	2000	--	VAC

General Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin (UL94-V0)		
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
		A2 Swiring 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

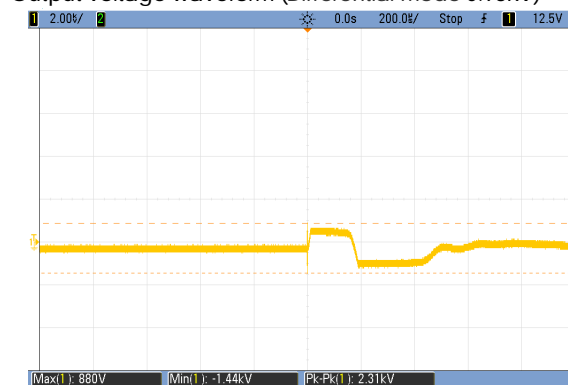
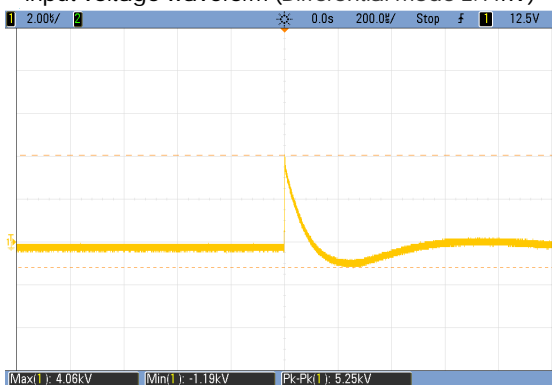
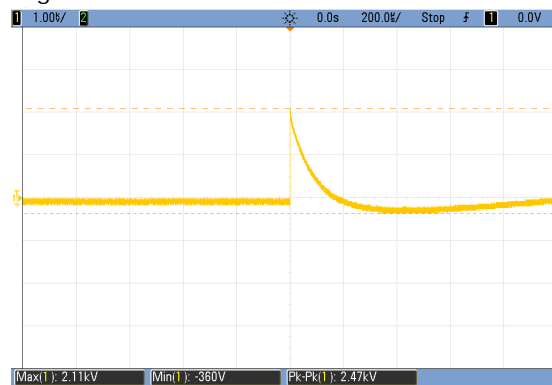
Item	Test Conditions	Min.	Typ.	Max.	Unit	
The attenuation coefficient of frequency	150KHz—1GHz	FC-LX1D	--	20	--	dB
		FC-LX1D2	--	30	--	

### 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  $\pm 2KV$  ( $2\Omega$  internal resistance)/ $\pm 4KV$  ( $12\Omega$  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  $\pm 4KV$  ( $2\Omega$  internal resistance)/ $\pm 6KV$  ( $12\Omega$  internal resistance) and EMI requirement of CISPR22 /EN 55022 Class B.

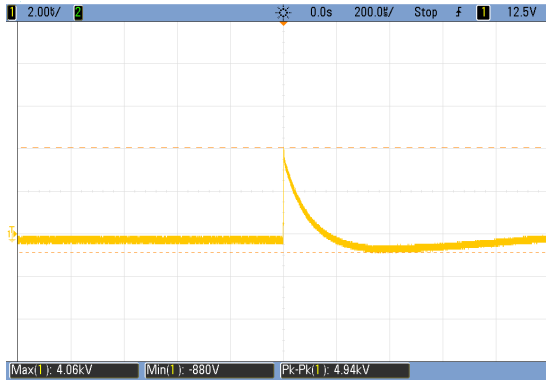
### EMC Specifications

#### ①FC-LX1D Surge Test Result

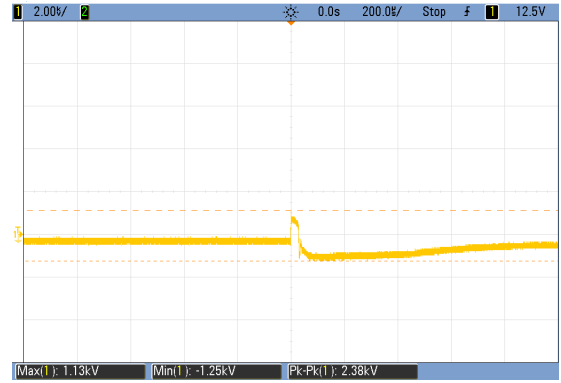


Note: Above result was tested on FC-LX1D open.

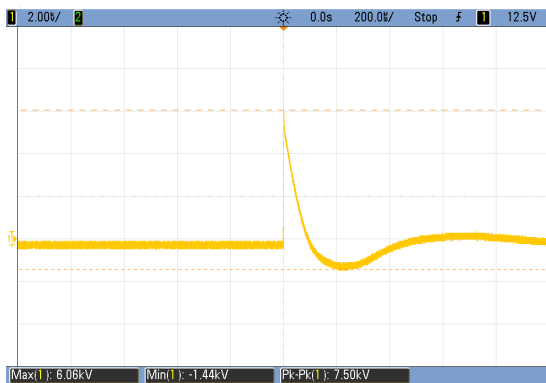
②FC-LX1D2 Surge Test Result



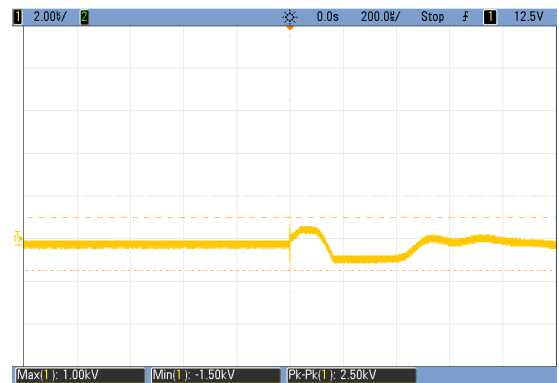
Input voltage waveform (Differential mode 4.06KV)



Output voltage waveform (Differential mode 0.90KV)



Input voltage waveform (Common mode 6.06KV)

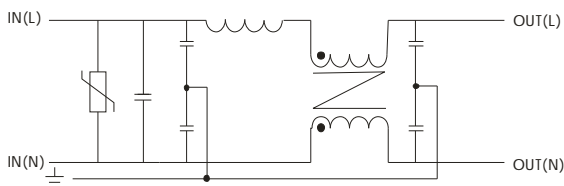


Output voltage waveform(Common mode 1.00KV)

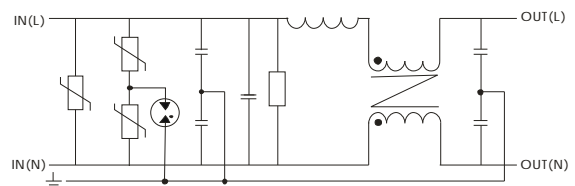
Note: Above result was tested on FC-LX1D2 open.

Design Reference

1. Inside schematic

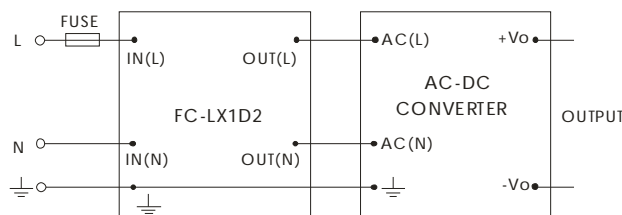


(Figure 1)FC-LX1D



(Figure 2)FC-LX1D2

2. Typical application



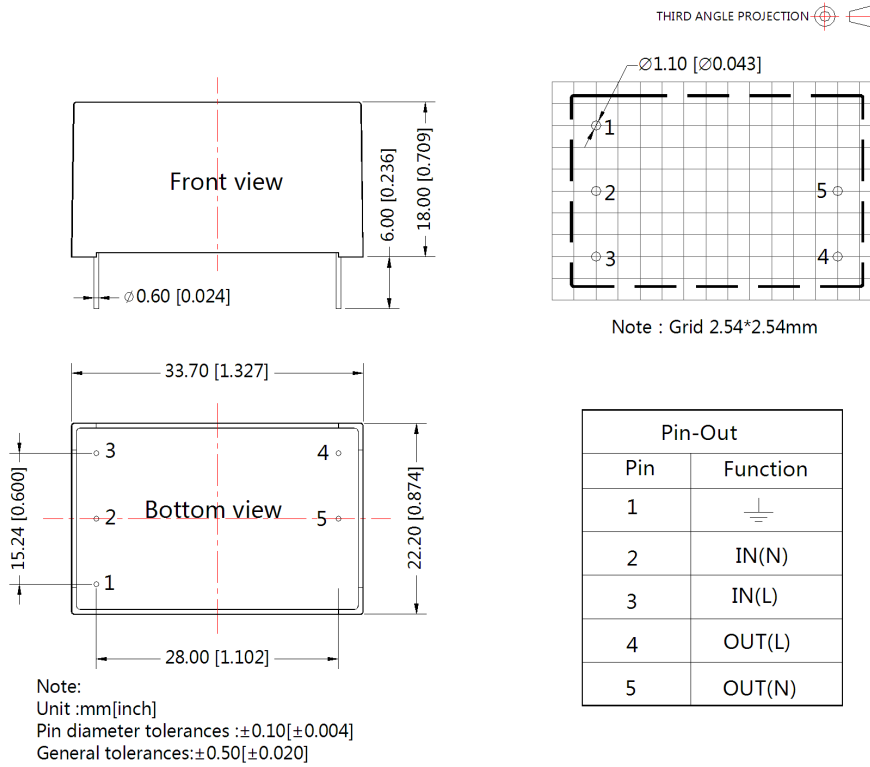
FUSE: Due to the difference of the power module input current, the fuse of the recommended values, please refer to the Technical Manual for the power module.

3. Supporting the power module product model

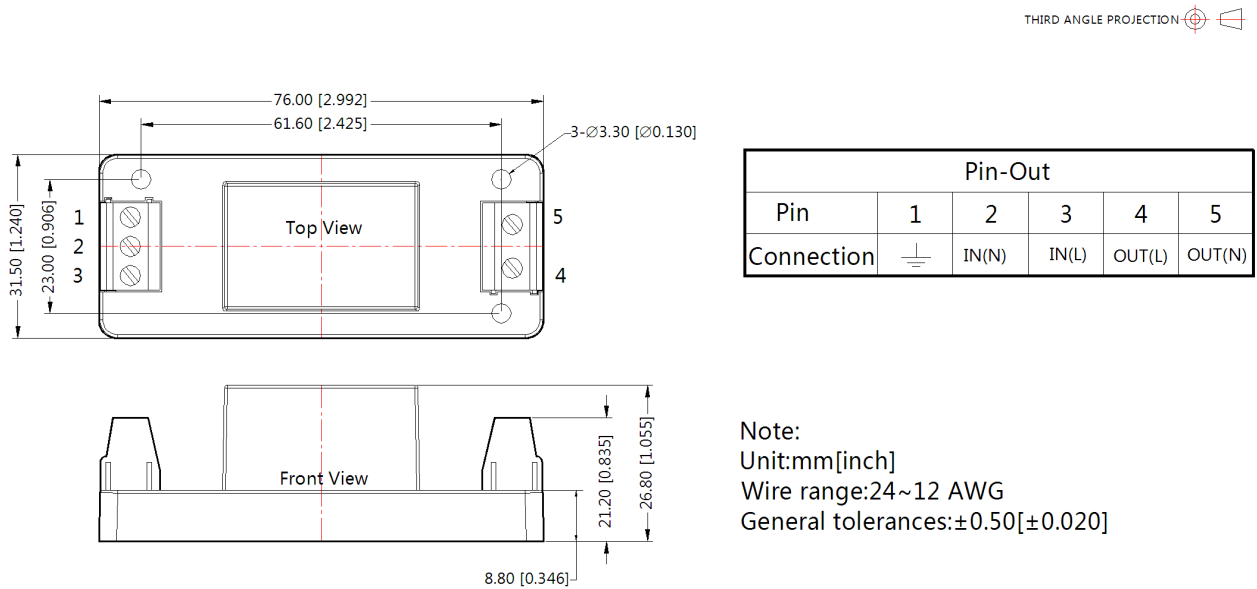
Model	EMI (Without External Circuit)	EMI (With EMC filter)	EFT (Without External Circuit)	EFT (With EMC filter)	Surge (Without External Circuit)	Surge (With FC- LX1D)	Surge (With FC- LX1D2)
LB(03-25)- 10BXX(LT) Series	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±2KV	IEC/EN61000-4-4 ±4KV	IEC/EN61000-4-5 ±1KV/±2KV	IEC/EN61000-4-5 ±2KV/±4KV	--
LD(01-02)- 10BXX Series	CISPR22/ EN55022 CLASS B	--	--	IEC/EN61000-4-4 ±2KV	--	IEC/EN61000-4-5 ±1KV/±2KV	--
LD03-10BXX Series	CISPR22/ EN55022 CLASS A	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±2KV	--	IEC/EN61000-4-5 ±1KV/±2KV	--
LD05-20BXX Series	CISPR22/ EN55022 CLASS A	CISPR22/ EN55022 CLASS B	IEC/EN61000-4-4 ±2KV	IEC/EN61000-4-4 ±4KV	IEC/EN61000-4-5 ±1KV/±2KV	IEC/EN61000-4-5 ±2KV/±4KV	--
LD05-23BXX Series	CISPR22/ EN55022 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 Series	CISPR22/ EN55022 CLASS A	CISPR22/ EN55022 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	CISPR22/ EN55022 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 Series	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±4KV	--	IEC/EN61000-4-5 ±2KV	--	IEC/EN61000- 4-5 ±4KV/±6KV
LD20-10BXX Series	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±4KV	--	IEC/EN61000-4-5 ±2KV	--	IEC/EN61000- 4-5 ±4KV/±6KV
LH Series	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±2KV	IEC/EN61000-4-4 ±4KV	IEC/EN61000-4-5 ±1KV/±2KV	IEC/EN61000-4-5 ±2KV/±4KV	--
Dedicated Power Converter For Power System LH(ER2) Series	CISPR22/ EN55022 CLASS A	CISPR22/ EN55022 CLASS B	IEC/EN61000-4-4 ±4KV	--	IEC/EN61000-4-5 ±2KV/±4KV	--	IEC/EN61000- 4-5 ±4KV/±6KV
LM30- 00J0512-03E	CISPR22/ EN55022 CLASS B	--	IEC/EN61000-4-4 ±4KV	--	IEC/EN61000-4-5 ±2KV/±4KV	--	IEC/EN61000- 4-5 ±4KV/±6KV

4. For more information Please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

FC-LX1D Dimensions and Recommended Layout

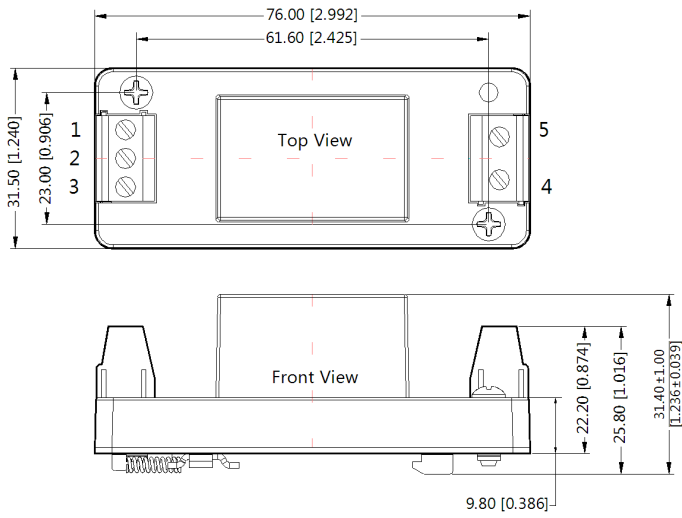


FC-LX1DA2S Dimensions



FC-LX1DA4S Dimensions

THIRD ANGLE PROJECTION

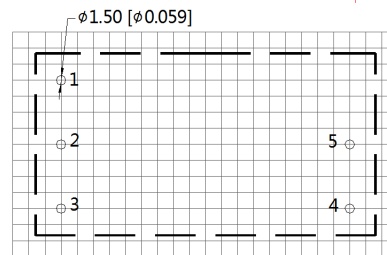
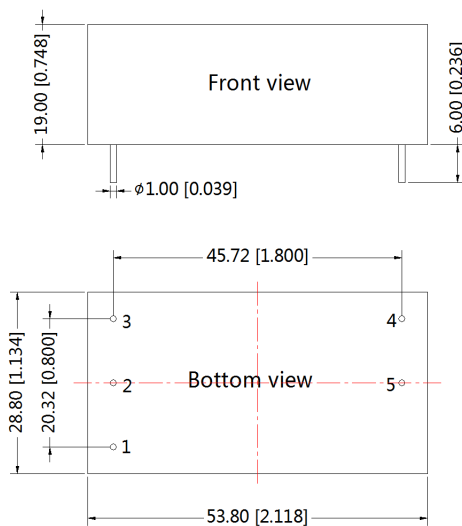


Pin-Out					
Pin	1	2	3	4	5
Function		IN(N)	IN(L)	OUT(L)	OUT(N)

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

FC-LX1D2 Dimensions and Recommended Layout

THIRD ANGLE PROJECTION




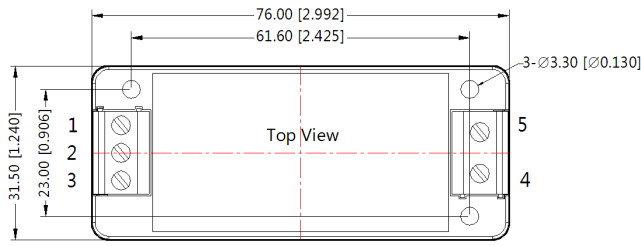
Note : Grid 2.54\*2.54mm


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

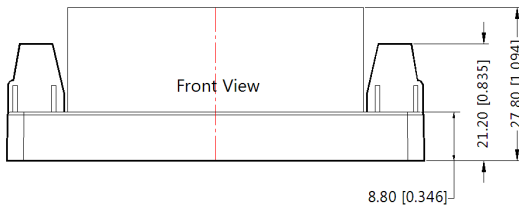
Note:  
Unit :mm[inch]  
Pin diameter tolerances :±0.10[±0.004]  
General tolerances:±0.50[±0.020]

FC-LX1D2A2S Dimensions

THIRD ANGLE PROJECTION 




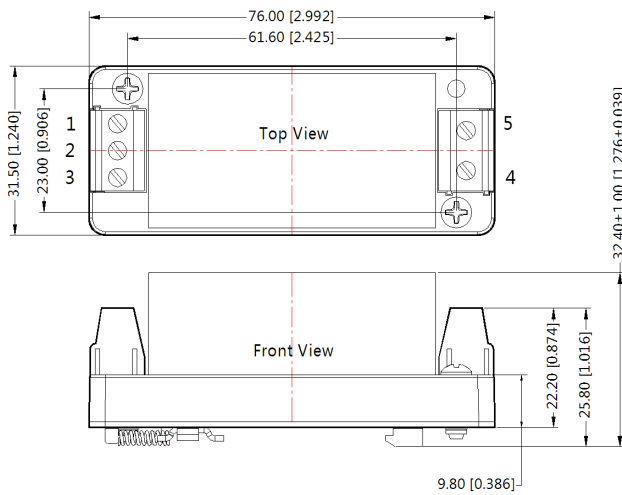
Pin-Out					
Pin	1	2	3	4	5
Function		IN(N)	IN(L)	OUT(L)	OUT(N)




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

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 : 58220014 (FC-LX1D)/58220005(FC-LX1D2), the Packing bag number of A2S/ A4S package:58220022;
2. Unless otherwise specified, data in this data sheet should be tested under the conditions of Ta=25°C, humidity<75%;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

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