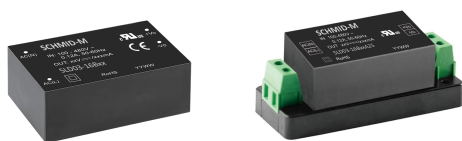


### 3W, AC/DC converter



### FEATURES

- Ultra-wide 90 - 528V AC or 100 - 745V DC input voltage range
- Accepts AC and/or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40°C to +70°C
- Compact size, high power density
- I/O isolation test voltage 3000 VAC
- Used in electricity, instrumentation area
- Output short circuit, over-current protection
- UL/IEC/EN62368 safety approved

SLD03-16Bxx Series is one of SCHMID-M's compact size power converters. It features ultra-wide input voltages, taking both DC and AC input, low power consumption, high efficiency, high reliability, reinforced insulation. The converters meet IEC/ UL/EN62368 and FCC part 15 standards. The converters are widely used in industrial control, instrumentation and electric power applications, requiring extremely wide input voltage range and meeting UL and CE and EMC certification. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

### Selection Guide

Certification	Part No.	Output Power	Output Voltage and Current (Vo/Io) Nominal	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/CE/CB	SLD03-16B03	1.65W	3.3V/500mA	63	6000
	SLD03-16B05	2.5W	5V/500mA	70	5000
	SLD03-16B09	3W	9V/333mA	73	5000
	SLD03-16B12		12V/250mA	76	3000
	SLD03-16B15		15V/200mA	76	1500
	SLD03-16B24		24V/125mA	76	1000

Note: \* Part No. with suffix of "A2S" means chassis mounting and suffix of "A4S" means DIN-Rail mounting.

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Voltage Range	AC Input	90	--	528	VAC	
	DC Input	100	--	745	VDC	
Input Frequency		47	--	63	Hz	
Input Current	115VAC	--	--	0.12	A	
	230VAC	--	--	0.06		
	480 VAC	--	--	0.04		
Inrush Current	115VAC	--	9	--		
	230VAC	--	15	--		
	480 VAC	--	27	--		
Leakage Current	230VAC/50Hz	0.25mA RMS typ.				
Recommended External Input Fuse		2.0A slow-blow required				
Hot Plug		Unavailable				

# AC/DC Converter

## SLD03-16Bxx Series

### Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	SLD03-16B03		--	±6	--	%
	Others		--	±5	--	
Line Regulation	Full load	SLD03-16B03	--	±2.5	--	
		Others	--	±1.5	--	
Load Regulation	10% - 100% load		--	±2.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	180	mV
Temperature Coefficient			--	±0.15	--	%/°C
Stand-by Power Consumption	230VAC Input		--	--	0.3	W
	528VAC Input		--	--	0.5	
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			150 - 300%Io, self-recovery			
Minimum Load			10			%
Hold-up Time	230VAC input		--	40	--	ms
Note: *The "parallel cable" method is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information. See also output capacitor connection in Fig.1.						

### General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Test	Input-output	Electric Strength Test for 1min.	3000	--	--	VAC
Operating Temperature		See temperature derating curve	-40	--	+70	℃
Storage Temperature			-40	--	+105	
Storage Humidity			--	--	85	%RH
Soldering Temperature		Wave-soldering	260 ± 5℃; time: 5 - 10s			
		Manual-welding	360 ±10℃; time: 3 - 5s			
Power Derating		+55℃ ~ +70℃	2.0	--	--	% /℃
		-40℃ ~ -20℃ (90-165VAC)	3.0	--	--	
Safety Standard		IEC62368/UL62368/EN62368				
Safety Certification		IEC62368/UL62368/EN62368				
Safety Class		CLASS II				
MTBF		MIL-HDBK-217F@25℃ ≥ 300,000 h				

### Mechanical Specifications

Case Material		Black plastic, flame-retardant and heat-resistant (UL94 V-0)
Dimension	DIP package	50.80 x 25.40 x 15.16 mm
	A2S chassis mounting	76.00 x 31.50 x 23.96 mm
	A4S Din-Rail mounting	76.00 x 31.50 x 28.56 mm
Weight	DIP package	30g (Typ.)
	A2S chassis mounting	50g (Typ.)
	A4S Din-Rail mounting	70g (Typ.)
Cooling Method		Free air convection

# AC/DC Converter

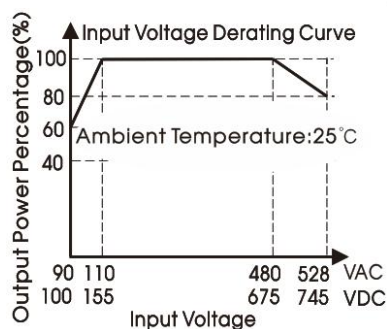
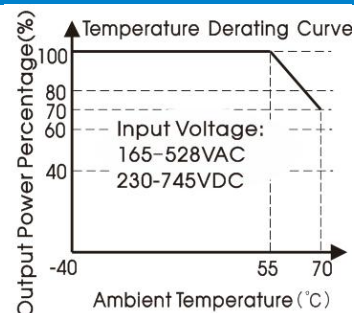
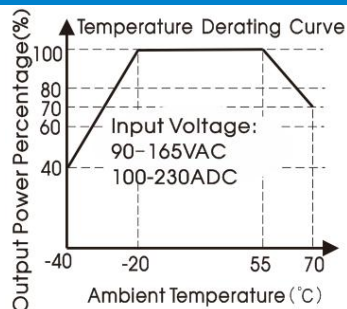
## SLD03-16Bxx Series

### Electromagnetic Compatibility (EMC)

Emissions*	CE	CISPR32/EN55032/FCC part 15 CLASS A	
		CISPR32/EN55032/FCC part 15 CLASS B (See Fig. 2 for recommended circuit)	
	RE	CISPR32/EN55032/FCC part 15 CLASS A	
		CISPR32/EN55032/FCC part 15 CLASS B (See Fig. 2 for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2 Contact $\pm 6\text{kV}$ /Air $\pm 8\text{kV}$	Perf. Criteria B
	RS	IEC/EN 61000-4-3 10V/m (See Fig. 2 for recommended circuit)	perf. Criteria A
	EFT	IEC/EN 61000-4-4 $\pm 2\text{kV}$	perf. Criteria B
		IEC/EN 61000-4-4 $\pm 4\text{kV}$ (See Fig. 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN 61000-4-5 line to line $\pm 1\text{kV}$	perf. Criteria B
		IEC/EN 61000-4-5 line to line $\pm 2\text{kV}$ / line to ground $\pm 4\text{kV}$ (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 3Vr.m.s (See Fig. 2 for recommended circuit)	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%, 70% (See Fig. 2 for recommended circuit)	perf. Criteria B

\*This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

### Product Characteristic Curve



Note:

- ① With an AC input between 90 - 110V/480 - 528VAC and a DC input between 100 - 155V/675 - 745VDC, the output power has to be derated as per the temperature derating curves;
- ② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

# AC/DC Converter

## SLD03-16Bxx Series

### Design Reference

#### 1. Typical application

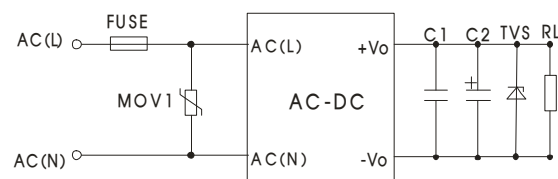


Fig. 1

Element model	MOV1	C1	C2 (required)	FUSE (required)	TVS
SLD03-16B03	S14K550	0.1μF/50V	100μF/16V	2.0A	SMBJ7.0A
SLD03-16B05			47μF/16V		
SLD03-16B09			47μF/35V		SMBJ12A
SLD03-16B12					SMBJ20A
SLD03-16B15					SMBJ20A
SLD03-16B24					SMBJ30A

#### Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

#### 2. EMC compliance recommended circuit

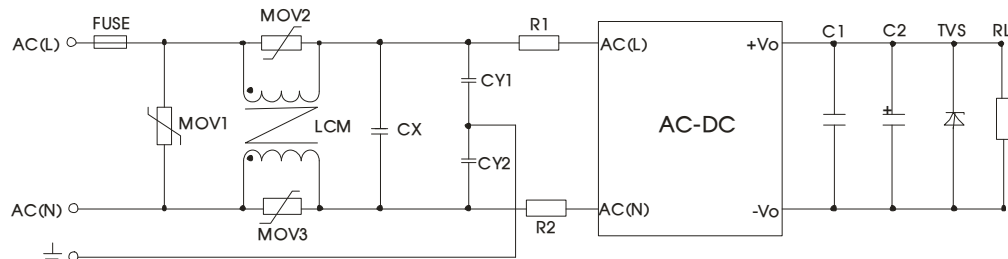


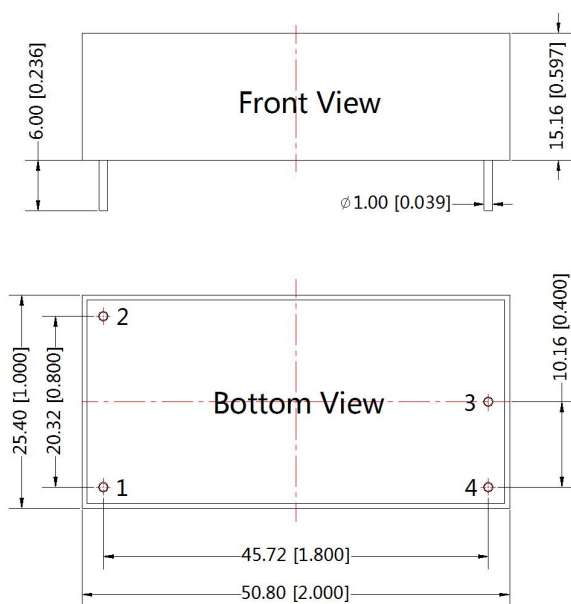
Fig. 2

Element model	Component values
MOV1	S14K550
MOV2, MOV3	S07K300
LCM	10mH
CX	0.22 $\mu$ F/530VAC
CY1, CY2	470pF/500VAC
R1, R2	12 $\Omega$ /2W
FUSE	2.0A slow-blow required

# AC/DC Converter

## SLD03-16Bxx Series

### Dimensions and Recommended Layout



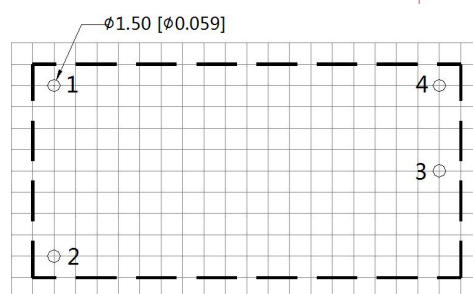
Note:

Unit :mm[inch]

Pin diameter tolerances : $\pm 0.10[\pm 0.004]$

General tolerances: $\pm 0.50[\pm 0.020]$

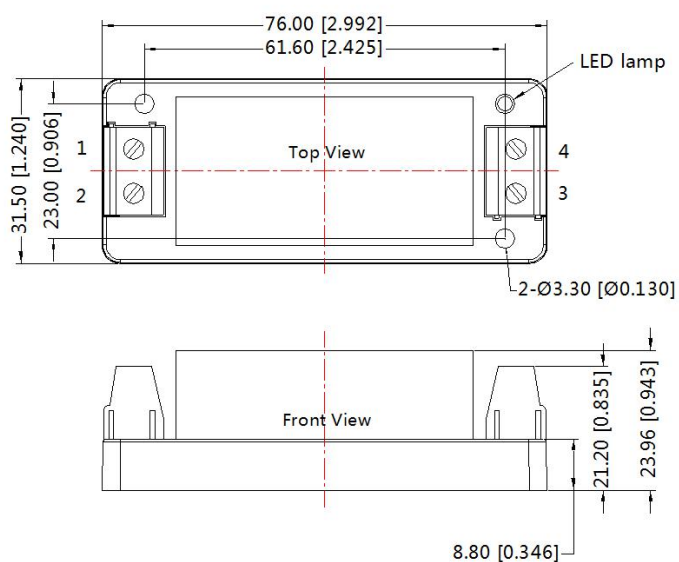
THIRD ANGLE PROJECTION



Note:Grid 2.54\*2.54mm

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

### A2S Dimensions



THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

Note:

Unit: mm[inch]

Wire range: 24-12 AWG

Tightening torque: Max 0.4 N·m

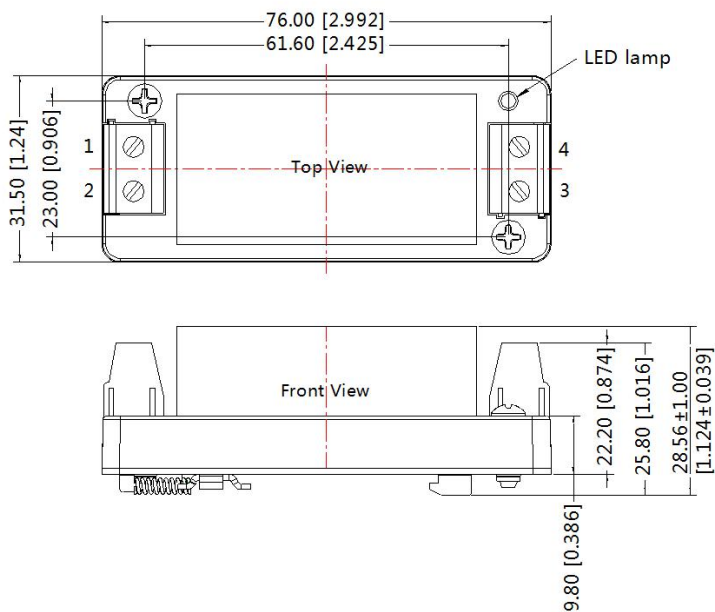
General tolerances:  $\pm 1.00[\pm 0.039]$

# AC/DC Converter

## SLD03-16Bxx Series

### A4S Dimensions

THIRD ANGLE PROJECTION 



Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

Note:

Unit: mm[inch]

Wire range: 24-12 AWG

Tightening torque: Max 0.4 N·m

Installed on DIN RAIL TS35

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

#### Notes:

1. 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;
2. 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;
3. In order to improve the efficiency at light load, there will be audible noise generated, but it does not affect product performance and reliability;
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.