

90W AC to DC Converter PCB Mount

multicomp PRO

**RoHS
Compliant**



Features

- Wide input voltage range: 80V AC to 305V AC / 110V DC to 430V DC
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4200V AC
- Up to 93% efficiency
- No-load power consumption < 0.21W
- Compact size, high power density
- Output short circuit, over-current, over-voltage protection
- 4000m altitude application
- Plastic case meets UL94V-0 flammability
- OVC III (meet EN62368-1, EN61558-1, 2000m altitude)

These series AC-DC converters is one of new generation compact size power converter. It features ultra-wide AC input and at the same time accepts DC input voltage, low power consumption, low ripple & noise, high efficiency, high reliability, reinforced insulation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets UL/IEC/EN/BS EN62368, IEC/EN60335, EN61558 standards. The converters are widely used in industrial, power, home appliances, instrumentation, communication and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part Number	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230V AC (%) Typ.	Capacitive Load (µF) Max.
IEC/UL/EN	MP-LD90-23B12R2	80.4	12V/6700mA	92	6800
	MP-LD90-23B15R2	85.05	15V/5670mA	92.5	4500
	MP-LD90-23B24R2	90	24V/3750mA	93	3000
	MP-LD90-23B48R2		48V/1875mA	93	470

Newark.com/multicomp-pro
Farnell.com/multicomp-pro
sg.element14.com/b/multicomp-pro

multicomp PRO

90W AC to DC Converter PCB Mount

multicomp PRO

Input Specifications					
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	80	--	305	V AC
	DC input	110	--	430	V DC
Input Frequency		47	--	63	Hz
Input Current	115V AC	--	--	2	A
	230V AC	--	--	1.1	
Inrush Current	115V AC	--	35	--	
	230V AC	--	65	--	
Power Factor	115V AC	0.98	--	--	--
	230V AC	0.95	--	--	
Leakage Current	277V AC / 50Hz	0.25mA RMS Max.			
Fuse		3.15A/300V, slow-blow			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy		--	±2	--	%	
Line Regulation	Full load	--	±0.5	--		
Load Regulation	0% - 100% load	--	±1	--		
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V	--	--	120	mV
		24V	--	--	200	
		48V	--	--	240	
Temperature Coefficient		--	±0.02	--	%/°C	
Stand-by Power Consumption		--	--	0.21	W	
Short Circuit Protection		Hiccup, continuous, self-recovery				
Over-current Protection		≥110% I _o , self-recovery				
Over-voltage Protection	12V DC output	≤16V DC (Hiccup or clamp)				
	15V DC output	≤25V DC (Hiccup or clamp)				
	24V DC output	≤35V DC (Hiccup or clamp)				
	48V DC output	≤60V DC (Hiccup or clamp)				
Minimum Load		0	--	--	%	
Hold-up Time	115V AC input	--	10	--	ms	
	230V AC input	--	30			
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information.						

90W AC to DC Converter PCB Mount

multicomp PRO

General Specifications						
Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric strength test for 1min., leakage current <5mA	4200	--	--	V AC
Insulation Resistance	Input - output	At 500V DC	100		--	MΩ
Operating Temperature			-40		+85	°C
Storage Temperature			-40		+85	
Storage Humidity			--		95	%RH
Soldering Temperature		Wave-soldering	260 ± 5°C; time: 5 - 10s			
		Manual-welding	360 ± 10°C; time: 3 - 5s			
Switching Frequency			--	75	--	KHz
Power Derating		-40°C to -30°C	5	--	--	% / °C
		+50°C to +70°C	2.5			
		+70°C to +85°C	1.66			
		80V AC to 100V AC	1			% / V AC
		2000m to 4000m	10			% / Km
Safety Standard		IEC/UL62368-1, EN60335-1, EN61558-1 safety approved & EN/BS EN62368-1(Report)				
Safety Class		CLASS II				
Vibration		10 - 500Hz, 2G 10min./1cycle, period for 60min. Each along X, Y, Z axes				
MTBF		MIL-HDBK-217F@25°C ≥500,000 h				

Mechanical Specifications		
Case Material		Black plastic, flame-retardant and heat-resistant (UL94V-0)
Dimensions	Horizontal package	87mm × 52mm × 29.5mm
	A2 chassis mounting	135mm × 70mm × 37.9mm
	A4 Din-Rail mounting	137mm × 70mm × 42.4mm
Weight	Horizontal package	200g (Typ.)
	A2S chassis mounting	280g (Typ.)
	A4S Din-Rail mounting	350g (Typ.)
Cooling Method		Free air convection

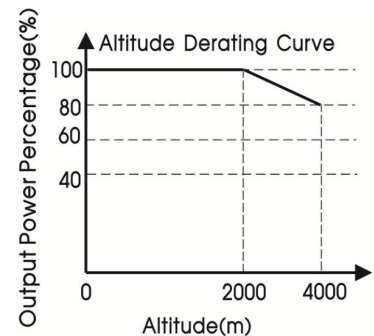
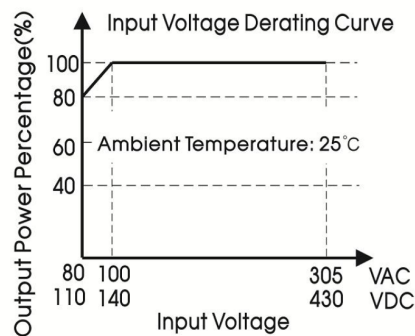
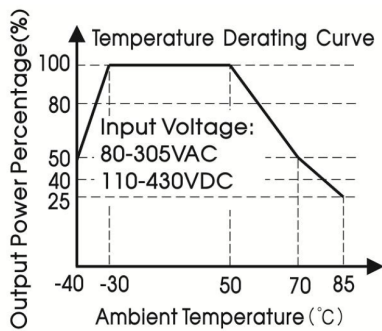
90W AC to DC Converter PCB Mount

multicomp PRO

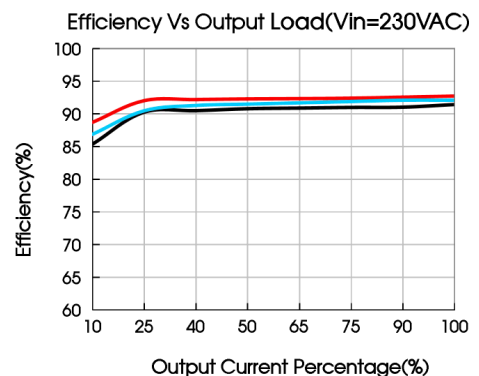
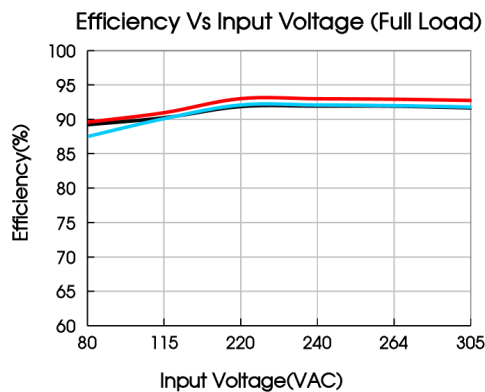
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B		
	RE	CISPR32/EN55032 CLASS B		
	Harmonic current	IEC/EN61000-3-2 CLASS A		
Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4	$\pm 2\text{KV}$	Perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line $\pm 2\text{KV}$	Perf. Criteria A
		IEC/EN61000-4-5	line to line $\pm 2\text{KV}$ /line to PE $\pm 4\text{KV}$ (See Fig. 2 for recommended circuit)	Perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.m.s	Perf. Criteria A
	PFM	IEC/EN61000-4-8	30A/m	Perf. Criteria A
Voltage dips, short interruptions and voltage variation	IEC/EN61000-4-11	0%, 70%	Perf. Criteria B	

Product Characteristic Curve



- Note: 1 With an AC input between 80-100VAC and a DC input between 110-140DC, the output power must be derated as per temperature derating curves;
2 This product is suitable for applications using natural air cooling; for applications in closed environment please consult FAE.



Newark.com/multicomp-pro
Farnell.com/multicomp-pro
sg.element14.com/b/multicomp-pro

multicomp PRO

90W AC to DC Converter PCB Mount



Design Reference

Typical application

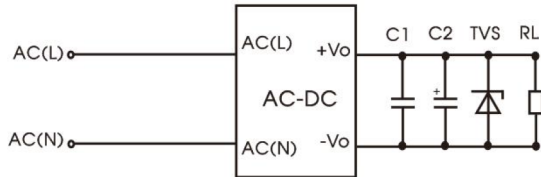


Fig. 1: Typical circuit diagram

Part Number.	C1	C2	TVS
MP-LD90-23B12R2	1uF/100V	330uF/35V	SMBJ20A
MP-LD90-23B15R2		330uF/35V	SMBJ20A
MP-LD90-23B24R2		200uF/35V	SMBJ30A
MP-LD90-23B48R2		100/63V	SMBJ60A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. 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.

EMC compliance recommended circuit

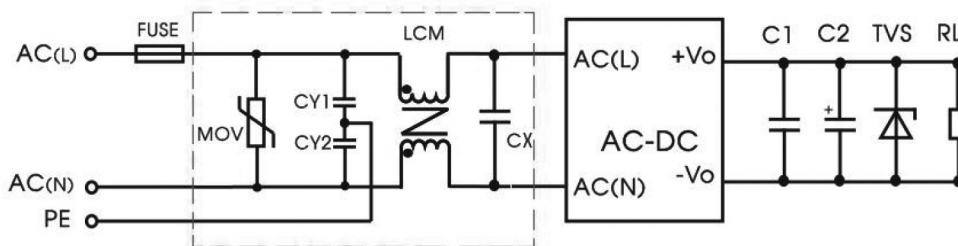


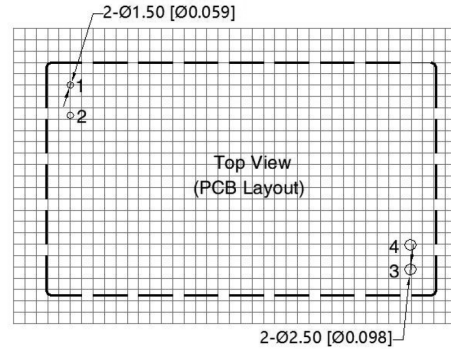
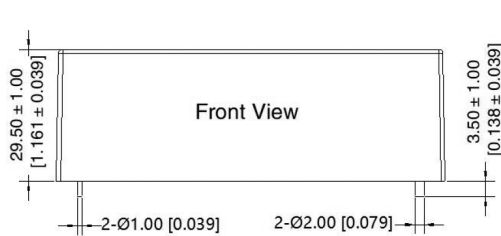
Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	6.3A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF/400V AC
CX	684K/310V
LCM	10mH, P/N: FL2D-30-103 is recommended

90W AC to DC Converter PCB Mount



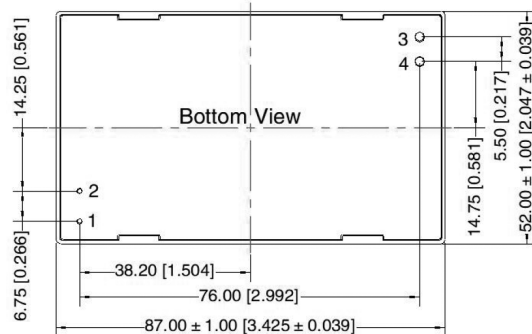
Dimensions and Recommended Layout



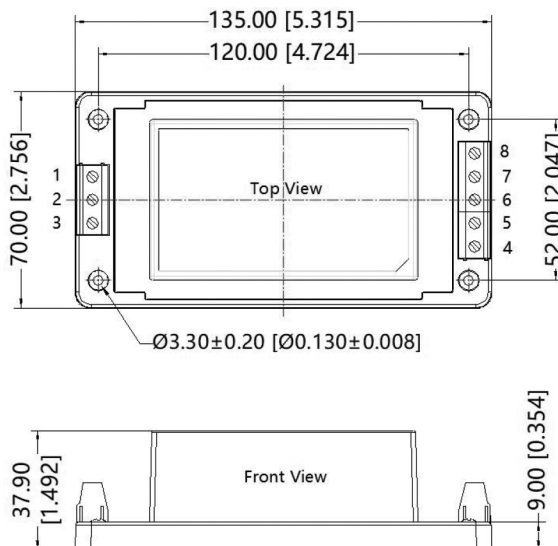
Note: Grid 2.54*2.54mm

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

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



A2S Dimensions



Pin-Out	
Pin	Mark
1	AC(L)
2	NC
3	AC(N)
4	+Vo
5	-Vo
6	NC
7	NC
8	NC

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: $\pm 1.00[\pm 0.040]$

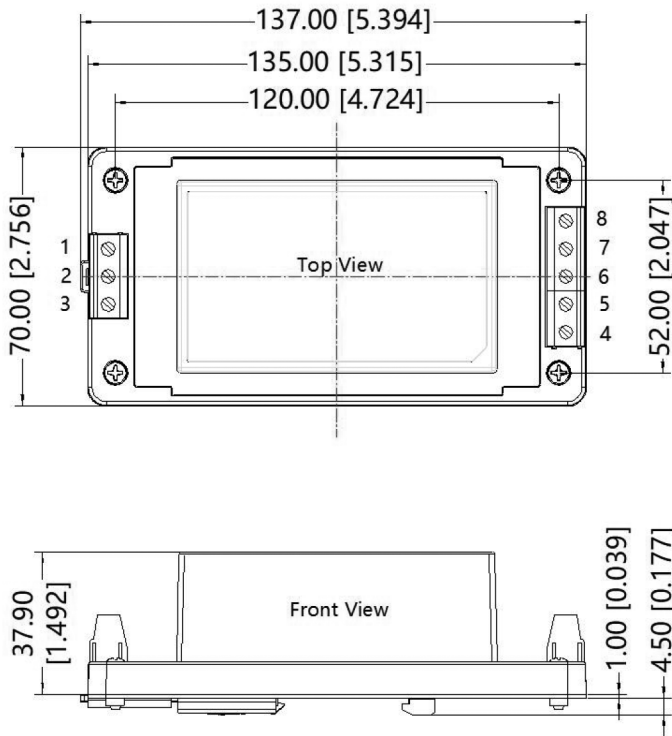
Newark.com/multicomp-pro
Farnell.com/multicomp-pro
sg.element14.com/b/multicomp-pro



90W AC to DC Converter PCB Mount

multicomp PRO

A4S Dimensions



Pin-Out	
Pin	Mark
1	AC(L)
2	NC
3	AC(N)
4	+Vo
5	-Vo
6	NC
7	NC
8	NC

Note:

Unit: mm[inch]

Wire range: 24~12 AWG

Tightening torque: Max 0.4 N·m

Installed on DIN RAIL TS35

General tolerances: $\pm 1.00[\pm 0.040]$

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. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Important Notice : This data sheet and its contents (the "Information") belong to the members of the AVNET group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp Pro is the registered trademark of Premier Farnell Limited 2019.

Newark.com/multicomp-pro
Farnell.com/multicomp-pro
sg.element14.com/b/multicomp-pro

multicomp PRO