

FEATURES

90W, AC/DC converter

- ◆ Wide input voltage range: 85-305V_{AC}/110-430V_{DC}
- ◆ Operating ambient temperature range: -30°C to +55°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
- ◆ Three year warranty



Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230V _{AC} (%) Typ.	Capacitive Load (uF) Max.
	CFAE90S12	90W	12V/7500mA	92	6800
	CFAE90S15		15V/6000mA	92	4500
	CFAE90S24		24V/3750mA	93	3000
	CFAE90S48		48V/1875mA	93	470

Note: 1. * Use suffix "Z1" for chassis mounting and suffix "Z" for Din-Rail mounting.

2. The product picture is for reference only. For details, please refer to the actual product.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	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	--	
Leakage Current	277V _{AC} /50Hz	0.25m ARMS Max.			
BuiltIn 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-recover			
Over-current Protection		$\geq 110\%I_o$,self-recover			
Over-voltage protection	12V _{DC} output	$\leq 16V_{DC}$ (Hiccup or clamp)			
	15V _{DC} output	$\leq 25V_{DC}$ (Hiccup or clamp)			
	24V _{DC} output	$\leq 35V_{DC}$ (Hiccup or clamp)			
	48V _{DC} output	$\leq 60V_{DC}$ (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

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output	Electric Strength Testfor 1min., leakage current<5mA	4200	--	--	V _{AC}
Insulation Resistance	Input-output	At 500V _{DC}	100	--	--	MΩ
Operating Temperature			-30	--	+55	°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		5.0	--	--	% / °C
	+50°C to +70°C		2.5	--	--	
	+70°C to +85°C		1.66	--	--	
	85V _{AC} -100V _{AC}		1.0	--	--	%/V _{AC}
	2000m-4000m		10.0	--	--	%/Km
Safety Standard		IEC/EN/BSEN62368-1,EN60335-1,EN61558-1 safety approved; Design refer to UL62368-1				
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>500,000h				

Mechanical Specifications

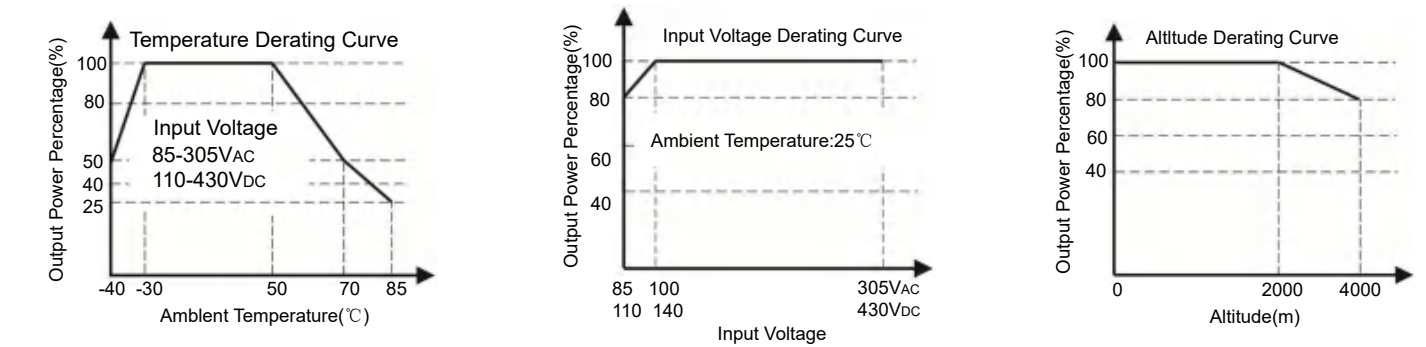
Case Material		Black plastic, flame-retardant and heat-resistant (UL94V-0)
Dimension	Horizontal package	87.0x52.0x29.5mm
	Z1 chassis mounting	135.0x70.0x37.9mm
	Z Din-Rail mounting	137.0x70.0x42.4mm
Weight	Horizontal package	200g(Typ.)
	Z1chassis mounting	280g(Typ.)
	Z Din-Railmounting	350g(Typ.)
Cooling Method		Free air convection

Electromagnetic Compatibility(EMC)

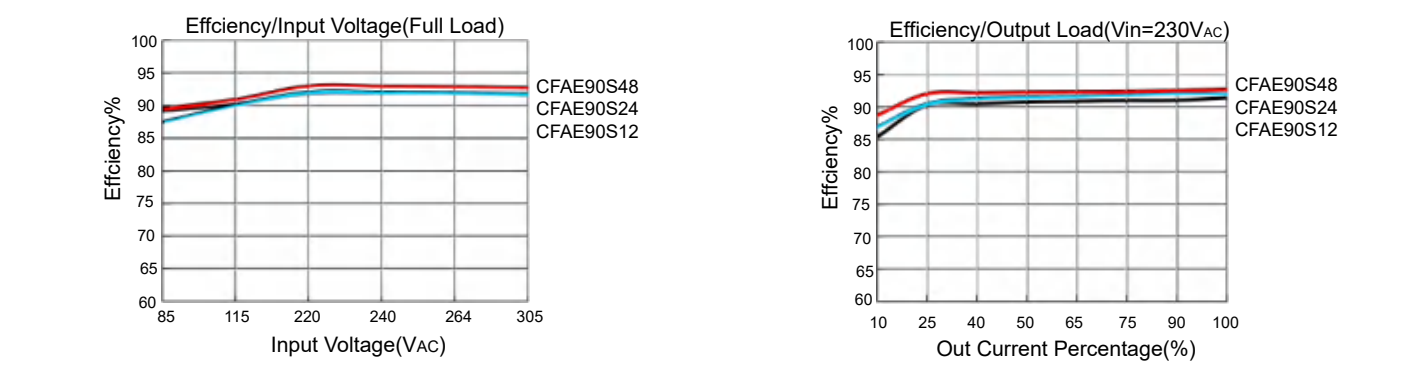
Emissions	CE	CISPR32/EN55032 CLASS B			
	RE	CISPR32/EN55032 CLASS B			
	Harmonic current	IEC/EN61000-3-2 CLASS A			
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	perf.Criteria A	
	RS	IEC/EN61000-4-3	10V/m	perf.Criteria A	

	EFT	IEC/EN61000-4-4 ±2KV	perf.Criteria A
	Surge	IEC/EN61000-4-5 line to line ±2KV	perf.Criteria A
		IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV (See Fig.2 for recommended circuit)	perf.Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf.Criteria A
	PFM	IEC/EN61000-4-8 30A/m	perf.Criteria A
	Voltage dip, short interruption 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 110-140VDC, 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 CHAWENS FAE.



Design Reference

1. Typical application

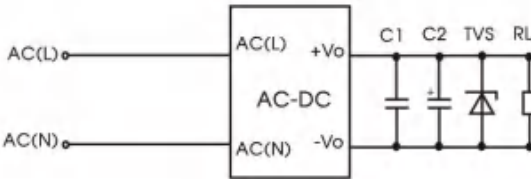


Fig.1: Typical circuit diagram

PartNo.	C1	C2	TVS
CFAE90S12	1uF/100V	330uF/35V	SMBJ20A
CFAE90S15		330uF/35V	SMBJ20A
CFAE90S24		200uF/35V	SMBJ30A
CFAE90S48		100/63V	SMBJ60A

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 arecommended suppressor diode to protect the application in case of a converter failure.

2. EMC compliance recommended circuit

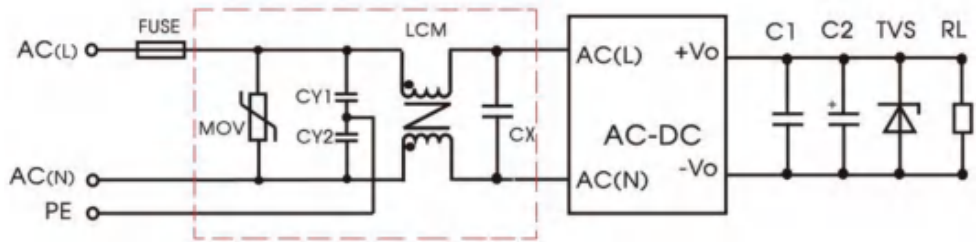
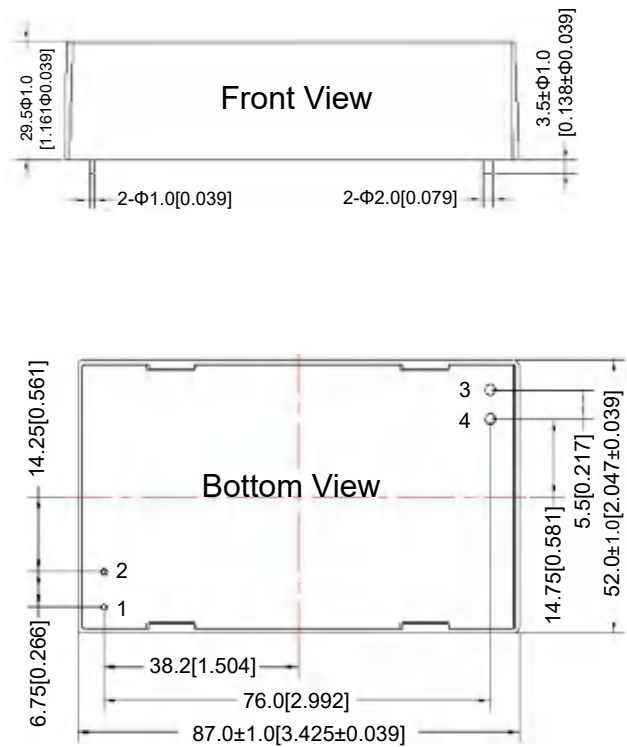


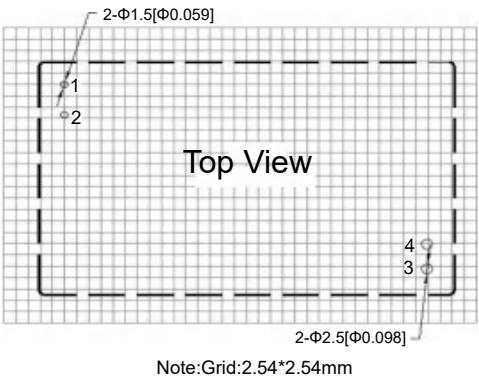
Fig.2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	6.3A/300V,slow-blow,required
MOV	S14K350
CY1/CY2	1nF/400VAc
CX	684K/ 310V
LCM	10mH

Package Size & Terminal Definition:



Third angle projection 

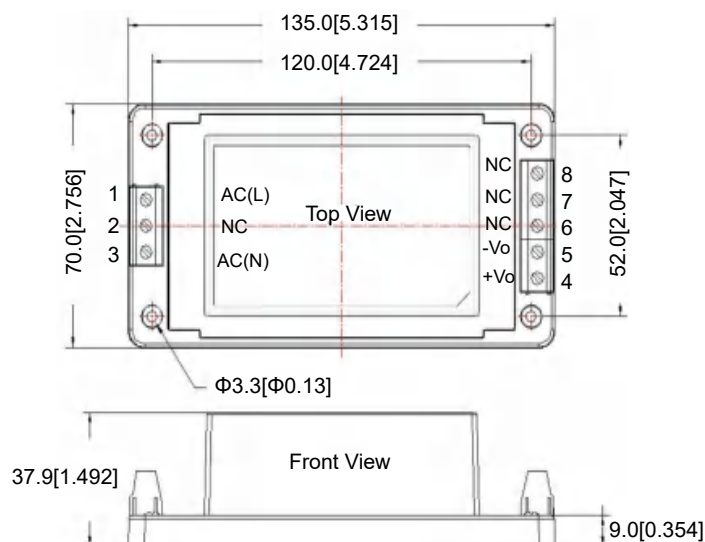


Note:Grid:2.54*2.54mm

管脚	定义
1	AC(N)
2	AC(L)
3	+Vo
4	-Vo

Note:
Unit:mmlinch]
Pin diameter tolerances:+0.1[+0.004]
General tolerances:+0.5[+0.02]

Z1 Dimensions

Third angle projection 

Note:

Unit:mm[inch]

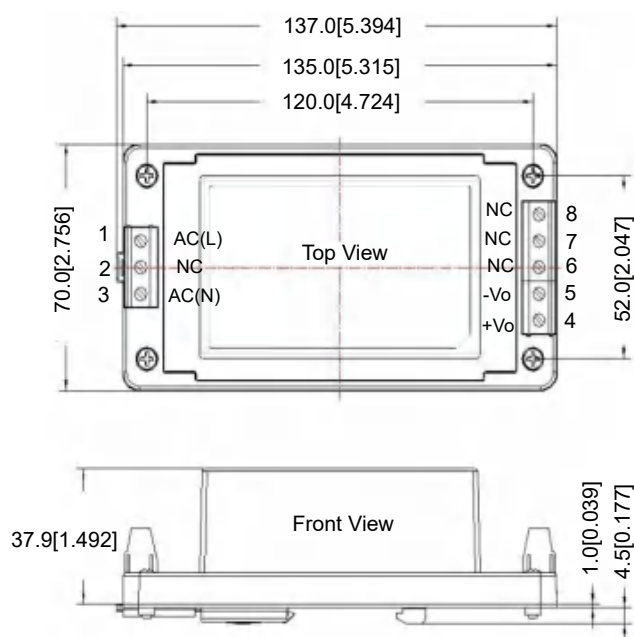
Wire range:24-12 AWG

Tightening torque:Max 0.4 N·m

Mounting rail:T\$35, rail needs to connect safety ground

General tolerances:+0.5[+0.02]

Z Dimensions:

Third angle projection 

Note:

Unit:mm[inch]

Wire range:24-12 AWG

Tightening torque:Max 0.4 N·m

Mounting rail:T\$35, rail needs to connect safety ground

General tolerances:+0.5[+0.02]



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