THIS SERIES IS NOT recommended for new design-ins and this series is discontinued

5ACMEA_4 series

5W - Single Output AC-DC Converter - Universal Input - Isolated & Regulated

AC-DC Converter 5 Watt

- **Universal input: 85-264VAC / 100-370VDC**
- **AC and DC dual-use (input from the same terminal)**
- **High efficiency, high power density**
- **Output short circuit, over-current, over–voltage protection**
- **EN60601-1, ANSI/AAMI**
- **ES60601-1 approval (2xMOPP)**

The 5ACMEA_4 series offers a compact size power converter. It features universal input voltage, taking both DC and AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. It offers good EMC performance, and widely used in medical, industrial, instruments, telecommunication and civil applications. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.

UL-60601-1 (E486991)

Common specifications

Short Circuit Protection	Continuous, self-recovery
I/O-isolation voltage	4000VAC (Test time: 1min)
Operating temperature range	-25°C ~ +70°C
Storage temperature range	-40°C ~ +85°C
Max. Casing Temperature	+95°C Max.
Storage Humidity	95% Max.
Welding Temperature	Wave-soldering: 260±5°C, time:5-10s Manual-welding: 360±10°C, time:3-5s
Power Derating	1%/°C Min. (-25°C~0°C) 2%/°C Min. (-55°C~70°C)
Safety standards	EN60601/UL60601
Safety certification	EN60601/UL60601
Safety Class	Class II
Insulation level	2xMOPP, First side-Second side
MTBF (MIL-HDBK-217F@25°C)	>300,000h
Case material	Black flame-retardant and heat-resistant plastic (UL94-V0
Cooling	Free air convection
Package	53.80 x 28.80 x19.00 mm
Weight	43g Typ.

Input specifications

Item	Test conditions	Min	Typ	Max	Units
Input voltage range	•AC input •DC input	85 100		264 370	VAC VDC
Input frequency		47		63	Hz
Input current	•115VAC •230VAC			0.12 0.07	A A
Inrush current	•115VAC •230VAC		10 20		A A
Leakage Current	•264VAC			80	uA
Hot Plug	Unavailable				

Example:
5ACMEA_05S4
5 = 5Watt; AC = AC-DC; MEA = series; 5Vout; S = Single Output;
4 = 4kVAC isolation

Output specifications

Item	Test conditions	Min	Typ	Max	Units
Output voltage accuracy			±2		%
Line regulation	Full load		±0.5		%
Load regulation	10% to 100% load		±1		%
Ripple & noise	20MHz bandwidth (peak-peak value)		50	100	mVp-p
Standby power consumption				0.03	W
Temperature coefficient			±0.02		%/°C
Switching frequency				140	KHz
Min. Load		0			%
Hold-up time (full load)	•115VAC input •230VAC input		10 80		ms ms

* Ripple & Noise are measured by "parallel cable" method.

Protection specifications

Over-current protection	110%Io~280%Io self-recovery
Over-voltage protection	• 5ACMEA_05S4: 7.5V • 5ACMEA_12S4: 16V • 5ACMEA_15S4: 20V • 5ACMEA_24S4: 30V

Note:

1. **This product is not designed for use in:** critical life support systems, equipment used in hazardous environment, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet.
2. Safety approvals cover frequency 47-63 Hz.
3. That "natural convection" is about 20LFM but is not equal to still air (0 LFM).
4. It's recommended to add Varistor 14S471K at L / N input side in parallel.
5. All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated.

GAPTEC-Electronic GmbH & Co. KG
sales@gaptec-electronic.com – www.gaptec-electronic.com

Product Selection Guide

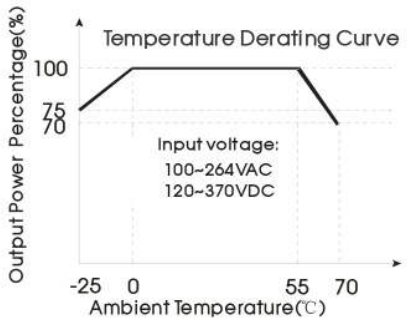
Approval	Model	Power [W]	Output voltage [V]	Output current [mA, max]	Capacitive Load* [µF, max]	Efficiency [@230VAC, %, typ]
UL	5ACMEA_05S4	5	5	1000	4000	76
UL	5ACMEA_12S4	5	12	420	820	80
UL	5ACMEA_15S4	5	15	333	820	81
UL	5ACMEA_24S4	5.5	24	230	330	81

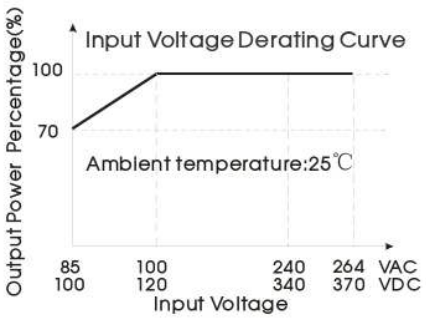
* Test without external circuit

Common specifications			
EMC / EMI / Conducted and radiated EMI	CISPR11/EN55011 CLASS B		
EMC / EMS / ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV	perf. Criteria B
EMC / EMS / Radiated Immunity	IEC/EN 61000-4-3	10V/m	perf. Criteria A
EMC / EMS / Fast Transient	IEC/EN 61000-4-4	±2kV / ±4kV (see EMC rec. circuit)	perf. Criteria B
EMC / EMS / Surge	IEC/EN 61000-4-5	±1KV / ±2kV / ±4kV (see EMC rec. circuit)	perf. Criteria B
EMC / EMS / Conducted immunity	IEC/EN 61000-4-6	10Vr.m.s	perf. Criteria A
EMC / EMS / PFM	IEC/EN 61000-4-8	10A/m	perf. Criteria A
EMC / EMS / Voltage dips, short interruptions and voltage variations immunity	IEC/EN 61000-4-11	0%-70%	perf. Criteria B

Typical characteristics

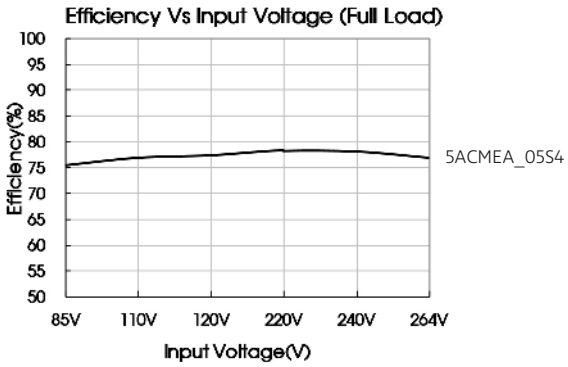
Derating graphs

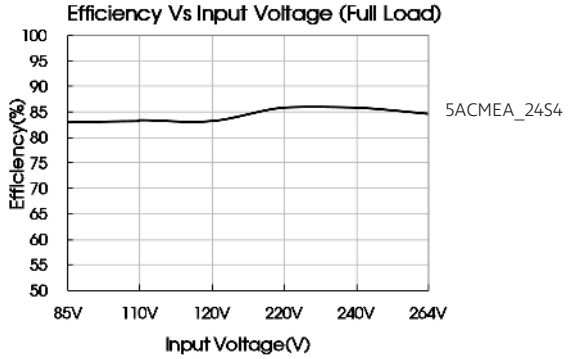


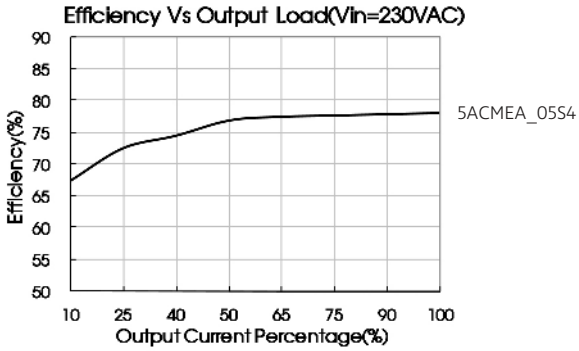


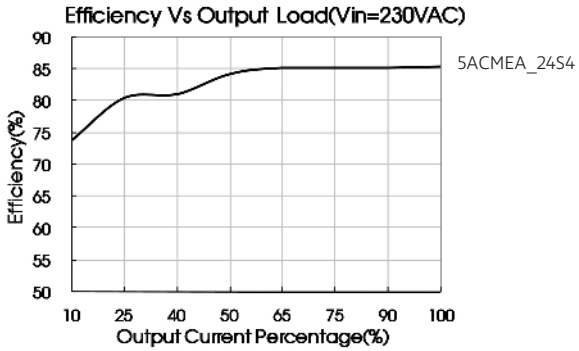
Note:
① Input voltage should be derated based on temperature derating when it is 85~100VAC/100~120VDC;
② This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

Efficiency

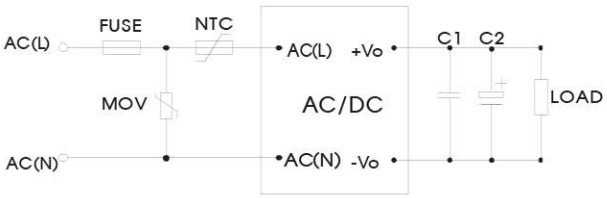








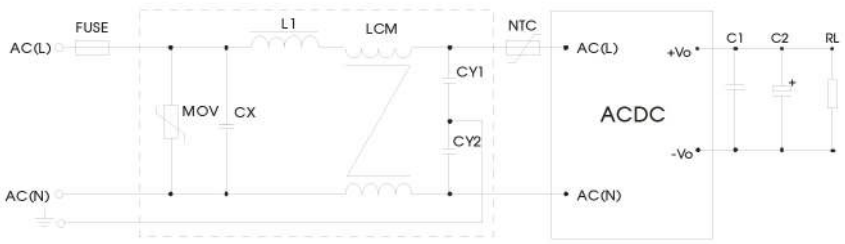
Typical application circuit



Model	C1 (µF)	C2 (µF)
5ACMEA_05S4	1	220
5ACMEA_12S4	1	100
5ACMEA_15S4	1	100
5ACMEA_24S4	1	47

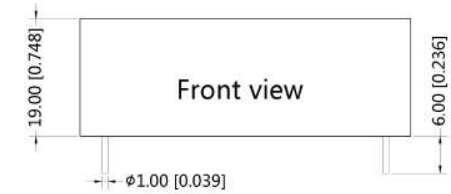
Note:
Output filtering capacitor C2 is an electrolytic capacitor, it is recommended to apply an electrolytic capacitor with high frequency and low resistance. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitance withstand voltage derating should be 80% or above. C1 is ceramic capacitor, which is used to filter high-frequency noise. External input NTC is recommended to use 5D-9. External input MOV is recommended to use S14K300. External input FUSE is recommended to use 2A/250V, slow fusing.

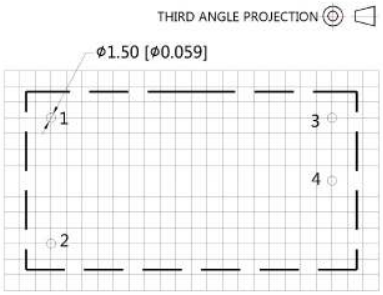
EMC recommended circuit



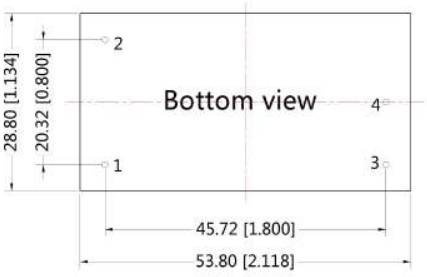
Components	Recommended value
MOV	S14K300
CX	0.1μF/275VAC
L1	4.7uH/2A
CY1, CY2	1nF/400VAC
NTC	5D-9
LCM	2.2mH
FUSE	2A/250V slow fusing, necessary
FC-LX1D	EMC filter

Mechanical dimensions





Note : Grid 2.54*2.54mm



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

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