



5ACA_4 Series

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

AC-DC Converter

5 Watt

- ⊕ Universal input: 85~264VAC/110~370VDC
- ⊕ AC and DC dual-use (input from the same terminal)
- ⊕ High efficiency
- ⊕ High power density

- ⊕ Output over voltage protection
- ⊕ Short circuit protection (SCP)
- ⊕ Over current protection
- ⊕ Meet EN60950, UL60950
- ⊕ Mounting: PCB Mounting & Chassis Mounting with Screw Terminal

The 5ACA Series is a compact size power converter series offered by Gaptec. 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 is UL & CE certified, and widely used in industrial, electricity, instruments, telecommunication and civil applications.



Approval	Model*	Power [W]	Output [Vo]	Output [Io]	Efficiency [% , typ]	Capacitive load [μF, max]
UL/CE	5ACA_03S4	4.2	3.3V	1250mA	74	0.3
UL/CE	5ACA_05S4	5	5V	1000mA	78	0.3
UL/CE	5ACA_09S4	5	9V	550mA	78	0.35
UL/CE	5ACA_12S4	5	12V	420mA	80	0.35
UL/CE	5ACA_15S4	5	15V	333mA	82	0.35
UL/CE	5ACA_24S4	5.5	24V	230mA	83	0.4

* Add suffix CM for Chassis mounting with screw terminals (f.ex. 5ACA_03S4CM), see different package measurements at common specifications

Input specifications

Input voltage range	85~264VAC, 110~370VDC	
Input frequency	47~63Hz	
Input current	110VAC • 150mA (typ)	230VAC • 70mA (typ)
Inrush current	110VAC • 10A (typ)	230VAC • 20A (typ)
Hot plug	Unavailable	
Recommended External Input Fuse (5ACA_S special package series include fuse)	• 1A/250V	• slow fusing, necessary

Output specifications

Voltage accuracy	±2% ±3% at 3.3V output
Input variation	±0.5% (typ)
Load variation (10% to 100%)	±1% (typ)
Ripple & Noise (20MHz Bandwidth)	3.3V: 50mV (typ), 100mV (max) Others: 60mV (typ), 120mV (max)
Short circuit protection	Hiccup, continuous, self-recovery
Over current protection	≥110%Io self-recovery
Over voltage protection	Over-voltage shutdown
Hold-up time	110VAC input: 12ms 230VAC input: 80ms

Model selection:

WTC_yyN##

W= Watt; T= Type; C= Case; yy= Vout; N= Numbers of Output; ##= Isolation (kVAC)

Example:

5ACA_05S4

5= 5Watt; AC= AC-DC; A= case style; 5Vout; S= Single Output; 4= 4kVAC

Note:

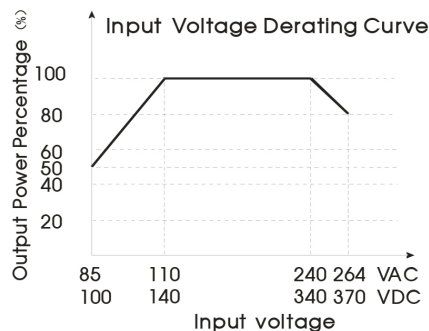
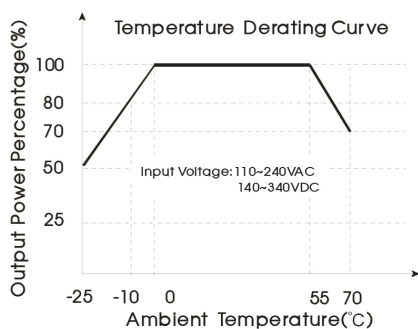
- Ripple and Noise were measured by the method of anear measure (for details see anear measure).
- All specifications measured at Ta=25°C, humidity<75%, 220VAC input voltage and rated output load unless otherwise specified.
- All characteristics are for listed model only, non-standard models may perform differently, please contact our technical person for more detail.

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Common specifications		
Operating temperature range	-25°C ~ +70°C	
Power derating temperature range	<ul style="list-style-type: none"> • 55°C ~ 70°C: 2%/°C • -25°C ~ 0°C: 2%/°C 	
Storage temperature range	-25°C ~ +105°C	
Case temperature range	+95°C MAX	
Humidity	95% MAX	
Temperature coefficient	0.02%/°C	
Switching frequency	140kHz MAX	
I/O-isolation voltage	4000VAC/1Min	
EMC / EMI / CE	CISPR11/EN55011, CLASS A (without external circuit) CLASS B (with typical applications Figure 5)	
EMC / EMI / RE	CISPR11/EN55011, CLASS A (without external circuit) CLASS B (with typical applications Figure 5)	
EMC / EMI / ESD	IEC/EN 61000-4-2 Contact ±6KV / Air ±8KV	perf. Criteria B
EMC / EMI / RS	IEC/EN 61000-4-3 10V/m	perf. Criteria A
EMC / EMI / EFT	<ul style="list-style-type: none"> • IEC/EN 61000-4-4 ± 2kV (without external circuit) • IEC/EN 61000-4-4 ± 4kV (with typical applications Figure 5) 	perf. Criteria B perf. Criteria B
EMC / EMI / Surge	<ul style="list-style-type: none"> • IEC/EN 61000-4-5 ±1KV/±2KV (without external circuit) • IEC/EN 61000-4-5 ±2KV/±4KV (with typical applications Figure 5) 	perf. Criteria B perf. Criteria B
EMC / EMI / CS	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A
EMC / EMI / PFM	IEC/EN61000-4-8 10A/m	perf. Criteria A
EMC / EMI / Voltage dips, short and interruptions immunity	IEC/EN61000-4-11 0%-70%	perf. Criteria B
Safety standards	IEC60950/EN60950/UL60950	
Safety certification	EN60950/UL60950 (Pending)	
Safety class	CLASS II	
Case material	UL94V-0	
Install	PCB mounting, Chassis mounting with Screw Terminals	
MTBF	>300,000h @25°C	
Weight	<ul style="list-style-type: none"> • 35g (PCB mounting) • 85g (Chassis mounting with Screw Terminals) 	

Typical characteristics



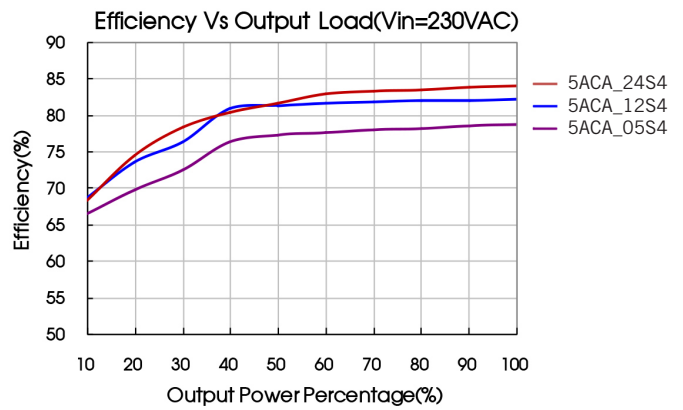
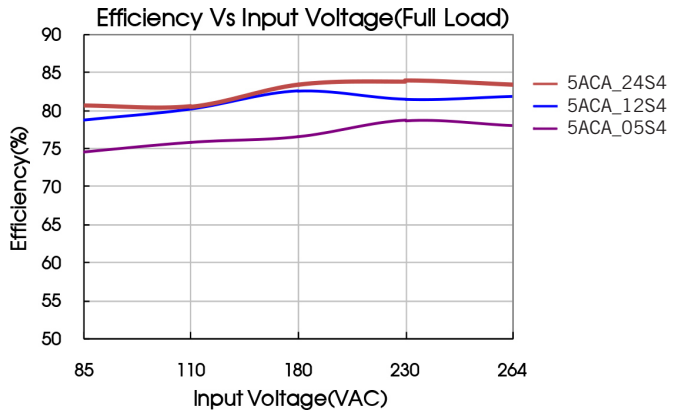
Note:

1. When input 85~110VAC/240~264VAC/100~140VDC/340~370VDC, it need to be voltage derated on basis of temperature derating;
2. This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

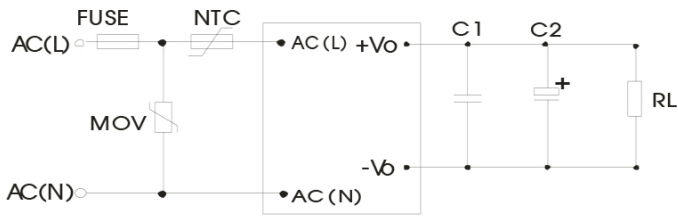
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Efficiency



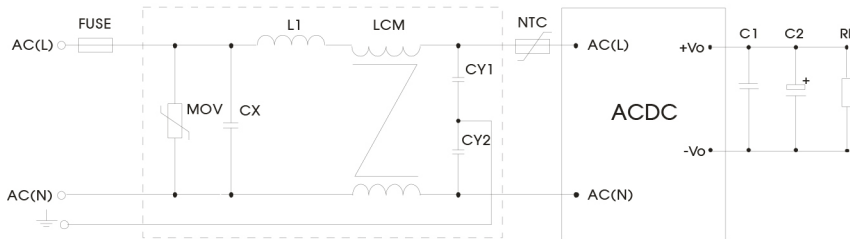
Typical application circuit



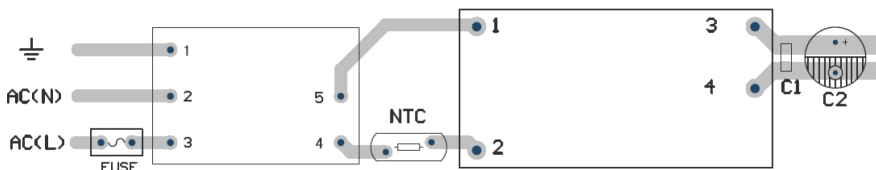
Model	C1 (μF)	C2 (μF)
5ACA_03S4	1	220
5ACA_05S4	1	220
5ACA_09S4	1	100
5ACA_12S4	1	100
5ACA_15S4	1	100
5ACA_24S4	1	47

Note:
Output filtering capacitor C2 is a electrolytic capacitor, it is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Output capacitor 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 12D-5; External input MOV is recommended to use S14K350.

EMC solution recommended circuit



EMC solution recommended circuit PCB layout



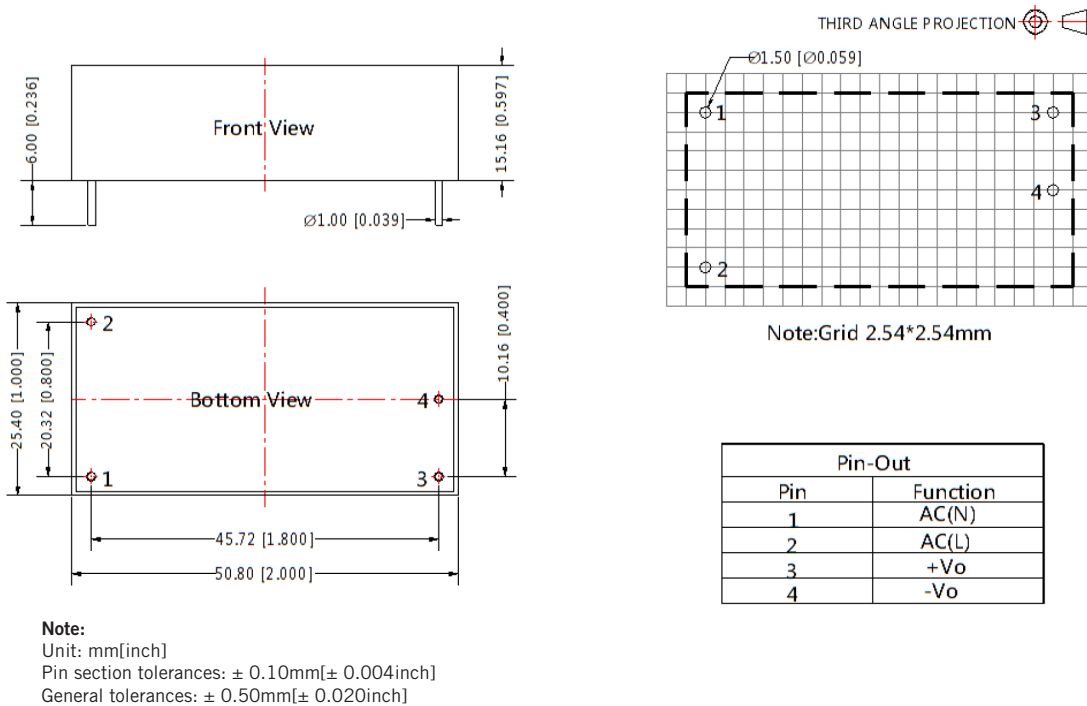
Note:
Suggestions for safety regulation and wiring width: wire width $\geq 3\text{mm}$, distance between wires $\geq 6\text{mm}$, and distance between wire and ground $\geq 6\text{mm}$.

Element model	Recommended value
MOV	S14K350
CX	0.1μF/275VAC
L1	4.7uH/2.0A
CY1	1nF/400VAC
CY2	1nF /400VAC
LCM	2.2mH
FUSE	1A/250V, slow fusing, necessary

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Mechanical dimensions



Chassis mounting with screw terminals

