



15ACB Series

15W - Single/Dual Output AC-DC Converter - Universal Input - Isolated & Regulated

AC-DC Converter

15 Watt

- ⊕ Universal input: 85~264VAC, 50/60Hz
- ⊕ Regulated output, low ripple and noise
- ⊕ High efficiency up to 85%
- ⊕ Plastic case, meets UL94V-0

- ⊕ Output current protection
- ⊕ Short circuit protection (SCP)
- ⊕ Over temperature protection
- ⊕ Meet EN60950, UL 60950
- ⊕ Mounting: PCB Mounting & Chassis Mounting with Screw Terminal

The 15ACB series is a compact size power converter 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, meets IEC/EN61000-4, CISPR22/EN55022, UL60950 and EN60950 standards, and is widely used in industrial, office and civil applications.



RoHS

CE

Approval	Model*	Power [W]	Output [Vo]	Output [Io1]	Ripple and Noise [mV, typ]	Efficiency [%, typ]
UL/CE	15ACB_03S3	15	3.3V	3000mA	50	73
UL/CE	15ACB_05S3	15	5V	2800mA	50	76
UL/CE	15ACB_09S3	15	9V	1600mA	50	78
UL/CE	15ACB_12S3	15	12V	1250mA	50	80
UL/CE	15ACB_15S3	15	15V	1000mA	50	80
UL/CE	15ACB_24S3	15	24V	625mA	50	84
UL/CE	15ACB_48S3	15	48V	320mA	50	85
	15ACB_05D3	15	±5V	1500mA	50	76
	15ACB_12D3	15	±12V	650mA	50	81
	15ACB_15D3	15	±15V	500mA	50	83

* Add suffix CM for Chassis mounting with screw terminals (f.ex. 15ACB_03S3CM), see different package measurements at common specifications

Input specifications		
Input voltage range	85~264VAC, 120~370VDC	
Input frequency	47~63Hz	
Input current	110VAC • 250mA (typ)	230VAC • 140mA (typ)
Inrush current	110VAC • 10A (typ)	230VAC • 20A (typ)
Leakage current	0.3mA RMS typ./230VAC/50Hz	
Recommended External Input Fuse (special package series include fuse)	• 2A/250V	• Slow-Blow

Note:

- Ripple and Noise are measured by the method of parallel lines.
- Unless otherwise specified, all specifications are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%.

Output specifications	
Voltage set accuracy	±2%
Input variation	±0.5% (main output) ±1.5% (supplement output)
Load variation (10% to 100%)	• ±1% • ±2%
Minimum load	• 0% • 10%
Ripple & Noise (p-p)	20MHz Bandwidth: 50mV (typ), 100mV (max)
Short circuit protection	Continuous, and auto resume
Over current protection	≥110% I _o
Output over-voltage protection	• 3.3/5VDC models • ≤7.5VDC • 9VDC models • ≤12VDC • 12/15VDC models • ≤20VDC • 24VDC models • ≤30VDC

Model selection:

WTC_yyN##

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

Example:

15ACB_05S3

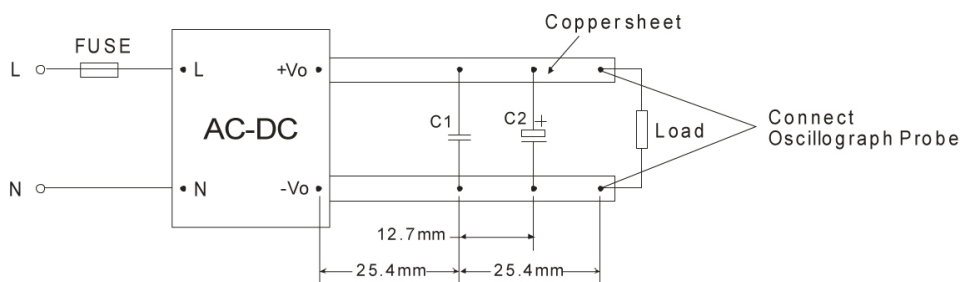
15= 15Watt; AC= AC-DC; B= series; 5Vout; S= Single Output; 3= 3kVAC

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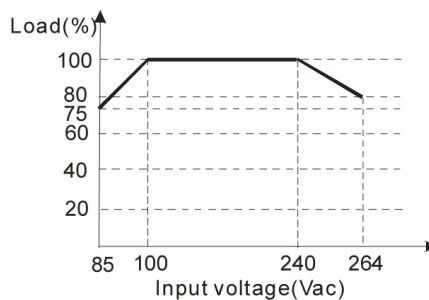
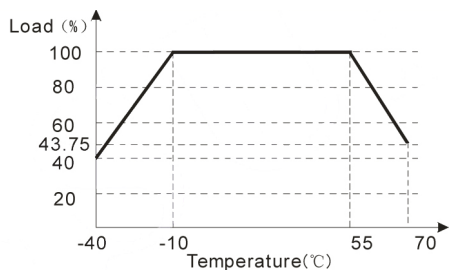
Common specifications			
Operating temperature range	-40°C ~ +70°C		
Power derating temperature range	55°C ~ 70°C:	3.75%/°C	
	-40°C ~ -10°C:	2%/°C	
Storage temperature range	-40°C ~ +105°C		
Case temperature range	+90°C MAX		
Hold-up time (Vin=230VAC)	80ms TYP		
Humidity (non-condensing)	95% MAX		
Temperature coefficient	0.02%/°C		
Switching frequency	65kHz TYP		
I/O-isolation voltage	3000VAC/1Min		
EMC / EMI / CE	CISPR22/EN55022, CLASS B (without external circuit)		
EMC / EMI / RE	CISPR22/EN55022, CLASS B (without external circuit)		
EMC / EMS / ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV	perf. Criteria B
EMC / EMS / RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
EMC / EMS / EFT	• IEC/EN 61000-4-4	± 2kV (without external circuit)	perf. Criteria B
	• IEC/EN 61000-4-4	± 4kV	perf. Criteria B
EMC / EMS / Surge	• IEC/EN 61000-4-5	±1KV±2KV (without external circuit)	perf. Criteria B
	• IEC/EN 61000-4-5	±2KV±4KV	perf. Criteria B
Safety standards	IEC60950, EN60950, UL60950		
Safety approvals	EN60950, UL60950		
Safety class	CLASS II		
Case material	UL94V-0		
Install	PCB mounting, Chassis mounting with Screw Terminals		
MTBF	>300,000h @25°C		
Package	• 62x45x22.5mm (PCB mounting)		
	• 96.1x54x31mm (Chassis mounting with Screw Terminals)		
Weight	• 80g (PCB mounting)		
	• 130g (Chassis mounting with Screw Terminals)		

Parallel lines measure



Note:
C1: 1μF (Ceramic capacitor) C2: 10μF (Electrolytic capacitor)

Temperature vs. load Input voltage vs. load



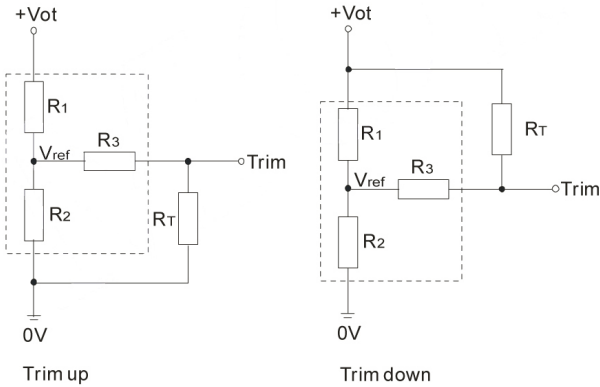
Note:
When input DC, Vdc=1.414*Vac-20.

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Trim application & trim calculation

Application circuit for TRIM
(Part in broken line is the interior of models)



Formula for resistance of Trim

$$\text{up: } R_T = \frac{aR_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V_{ot} - V_{ref}} \cdot R_1$$

$$\text{down: } R_T = \frac{aR_1}{R_1 - a} - R_3 \quad a = \frac{V_{ot} - V_{ref}}{V_{ref}} \cdot R_2$$

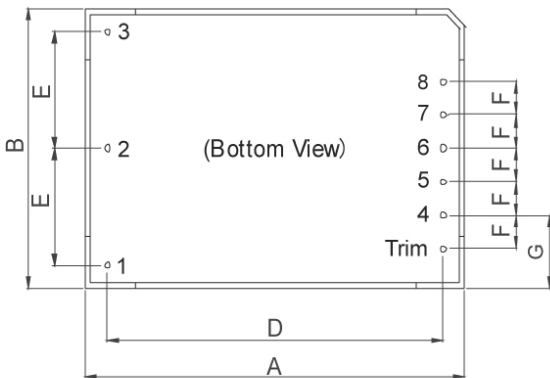
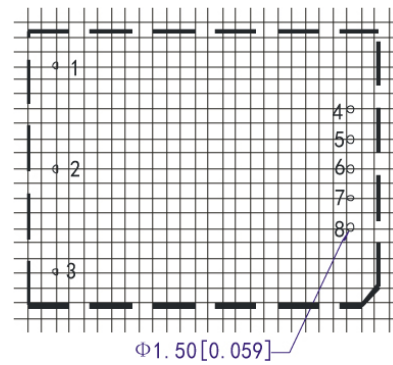
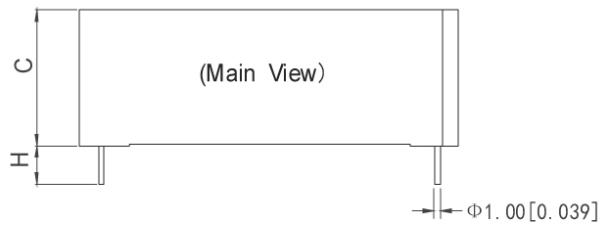
Note: Value for R1, R2, R3, and Vref refer to the following table.

R_T: Resistance of Trim

a: User-defined parameter, no actual meanings.

Vo(V)	3.3	5	9	12	15	24
Resistance						
R1(KΩ)	2	3.3	7.5	3.8	7.5	8.6
R2(KΩ)	1.2	3.3	2.8	1	1.5	1
R3(KΩ)	1	1	1	1	1	1
Vref(V)	1.2	2.5	2.5	2.5	2.5	2.5
Vot(V)	Output voltage of Trim, variation ≤ ±10%					

PCB mounting with solder pins



Note:

Unit: mm[inch]
Pin length (H): ≥6.00mm[0.236inch]
Pin diameter tolerances: ±0.10mm[±0.004inch]
General tolerances: ±0.50mm[±0.020inch]

- A: 62.00mm
- B: 45.00mm
- C: 22.50mm
- D: 54.00mm
- E: 17.50mm
- F: 5.00mm
- G: 12.50mm

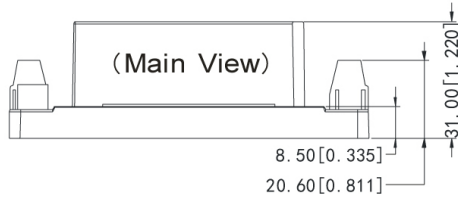
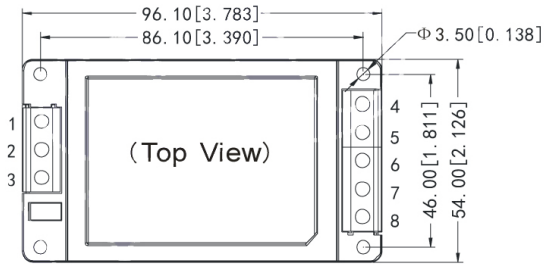
FOOTPRINT DETAILS		
Pin	15ACB_XXS3	15ACB_XXD3
1	No Pin	No Pin
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-Vo	-Vo
5	No Pin	No Pin
6	No Pin	COM
7	No Pin	No Pin
8	+Vo	+Vo
Trim	Trim	No Pin

(without Trim Pin optional)

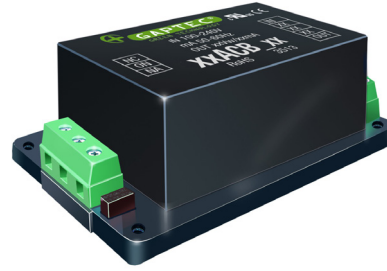
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Chassis mounting with screw terminals



Note:
Unit: mm[inch]
General tolerances: $\pm 0.50\text{mm}$ [$\pm 0.020\text{inch}$]



FOOTPRINT DETAILS		
Pin	15ACB_XXS3	15ACB_XXD3
1		
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-Vo	-Vo
5	NC	NC
6	NC/Trim	COM
7	NC	NC
8	+Vo	+Vo

There is no pin "1" on 15ACB_XXS3