

## 10ACB Series

10W - Single/Dual Output AC-DC Converter - Universal Input - Isolated & Regulated

### AC-DC Converter 10 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 Terminals

The 10ACB 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	10ACB_03S3	6.6	3.3V	2000mA	50	70
UL/CE	10ACB_05S3	10	5V	2000mA	50	76
UL/CE	10ACB_09S3	10	9V	1100mA	50	78
UL/CE	10ACB_12S3	10	12V	900mA	50	80
UL/CE	10ACB_15S3	10	15V	700mA	50	81
UL/CE	10ACB_24S3	10	24V	450mA	50	82
UL/CE	10ACB_05D3	10	±5V	1000mA	50	76
UL/CE	10ACB_12D3	10	±12V	450mA	50	80
UL/CE	10ACB_15D3	10	±15V	350mA	50	81
UL/CE	10ACB_24D3	10	±24V	200mA	50	84

\* Add suffix CM for Chassis mounting with screw terminals (f.ex. 10ACB\_03S3CM), see different package measurements at common specifications

Input specifications	
Input voltage range	85~264VAC, 120~370VDC
Input frequency	47~63Hz
Input current	110VAC      230VAC • 230mA (typ)      • 120mA (typ)
Inrush current	110VAC      230VAC • 10A (typ)      • 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 <sub>o</sub>
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:

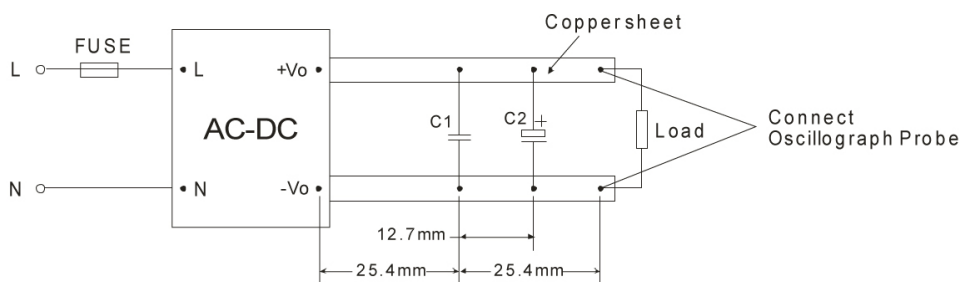
10ACB\_05S3  
10= 10Watt; AC= AC-DC; B= series; 5Vout; S= Single Output;  
3= 3kVAC

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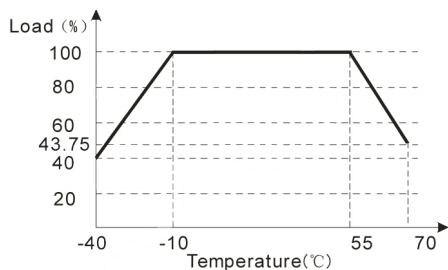
Common specifications			
Operating temperature range	-40°C ~ +70°C		
Power derating temperature range	55°C ~ 70°C:	3.75%/°C	
	-40°C ~ -10°C:	2%/°C	
Storage temperature range	-40°C ~ +105°C		
Case temperature range	+90°C MAX		
Hold-up time (Vin=230VAC)	80ms TYP		
Humidity (non-condensing)	95% MAX		
Temperature 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 I		
Case material	UL94V-0		
Install	PCB mounting, Chassis mounting with Screw Terminals		
MTBF	>300,000h @25°C		
Package	• 55x45x21mm (PCB mounting)		
	• 96.1x54x29.5mm (Chassis mounting with Screw Terminals)		
Weight	• 70g (PCB mounting)		
	• 120g (Chassis mounting with Screw Terminals)		

## Parallel lines measure

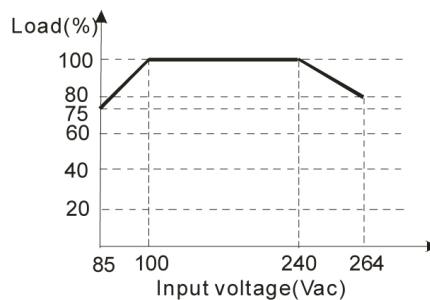


**Note:**  
C1: 1μF (Ceramic capacitor) C2: 10μF (Electrolytic capacitor)

## Temperature vs. load



## Input voltage vs. load



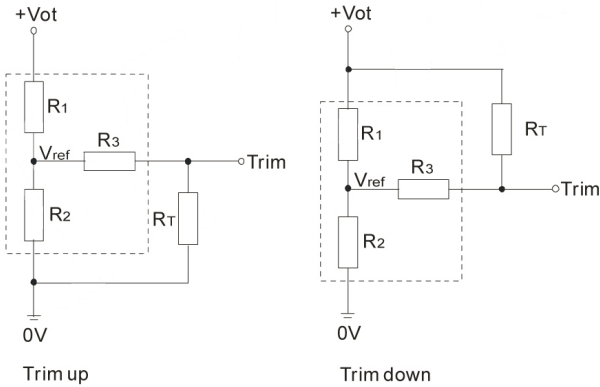
**Note:**  
When input DC, Vdc=1.414\*Vac-20.

# 10ACB Series

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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**

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

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

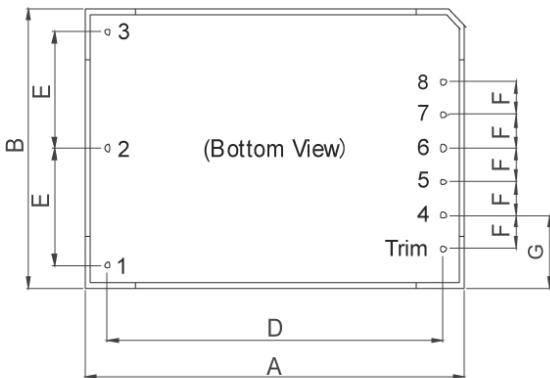
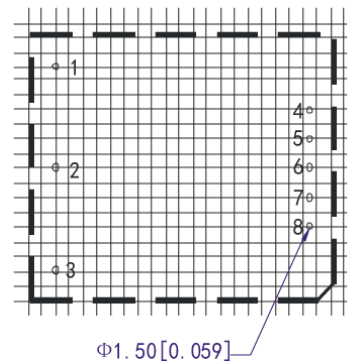
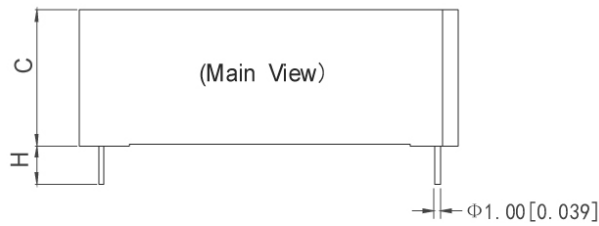
Note: Value for R1, R2, R3, and Vref refer to the following table.

R<sub>T</sub>: 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: 55.00mm
- B: 45.00mm
- C: 21.00mm
- D: 47.00mm
- E: 17.50mm
- F: 5.00mm
- G: 12.50mm

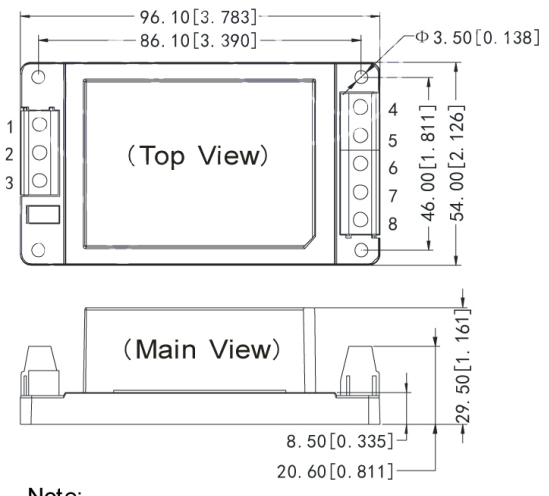
FOOTPRINT DETAILS		
Pin	10ACB_XXS3	10ACB_XXD3
1	No Pin	No Pin
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-Vo	-Vo
5	No Pin	No Pin
6	No Pin	COM
7	No Pin	No Pin
8	+Vo	+Vo
Trim	Trim	No Pin

(without Trim Pin optional)

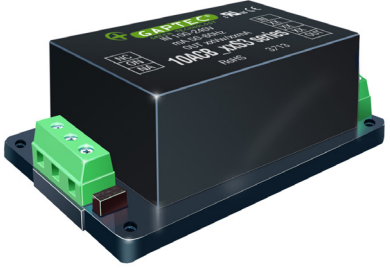
## 10ACB Series

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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	10ACB_XXS3	10ACB_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

