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.

**Specifications**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UL/CE</td>
<td>15ACB_03S3</td>
<td>15</td>
<td>3.3V</td>
<td>3000mA</td>
<td>50</td>
<td>73</td>
</tr>
<tr>
<td>UL/CE</td>
<td>15ACB_05S3</td>
<td>15</td>
<td>5V</td>
<td>2800mA</td>
<td>50</td>
<td>76</td>
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<tr>
<td>UL/CE</td>
<td>15ACB_09S3</td>
<td>15</td>
<td>9V</td>
<td>1600mA</td>
<td>50</td>
<td>78</td>
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<tr>
<td>UL/CE</td>
<td>15ACB_12S3</td>
<td>15</td>
<td>12V</td>
<td>1250mA</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>UL/CE</td>
<td>15ACB_15S3</td>
<td>15</td>
<td>15V</td>
<td>1000mA</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>UL/CE</td>
<td>15ACB_24S3</td>
<td>15</td>
<td>24V</td>
<td>625mA</td>
<td>50</td>
<td>84</td>
</tr>
<tr>
<td>UL/CE</td>
<td>15ACB_48S3</td>
<td>15</td>
<td>±5V</td>
<td>1500mA</td>
<td>50</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>15ACB_12D3</td>
<td>15</td>
<td>±12V</td>
<td>650mA</td>
<td>50</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>15ACB_15D3</td>
<td>15</td>
<td>±15V</td>
<td>500mA</td>
<td>50</td>
<td>83</td>
</tr>
</tbody>
</table>

* 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

**Output specifications**

- Voltage set accuracy: ±2%
- Input variation: ±0.5% (main output), ±1.5% (supplement output)
- Load variation (10% to 100%):
  - Single output models: ±1%
  - Dual output models (balanced load): ±2%
- Minimum load:
  - Single output models: 0%
  - Dual output models (balanced load): 10%
- Ripple & Noise (p-p): 20MHz Bandwidth: 50mV (typ), 100mV (max)
- Short circuit protection: Continuous, and auto resume
- Over current protection: ±110% Io
- Output over-voltage protection:
  - 3.3VDC 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_03S3
15= 15Watt; AC= AC-DC; B= series; 5Vout; S= Single Output;
3= 3kVAC

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

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Specifications subject to change without notice.
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
  - 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

- **Note**: When input DC, Vdc=1.414*Vac-20.
Trim application & trim calculation

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

![Application Circuit](image)

**Formula for resistance of Trim**

**Up:** \[ R_T = \frac{aR_2}{R_2} - R_3 \]

**Down:** \[ R_T = \frac{aR_1}{R_1} - R_3 \]

\[ a = \frac{V_{ref}}{V_{out}} - V_{ref} \]

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

**R:** Resistance of Trim

<table>
<thead>
<tr>
<th>Resistance (V)</th>
<th>3.3</th>
<th>5</th>
<th>9</th>
<th>12</th>
<th>15</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1(KΩ)</td>
<td>2</td>
<td>3.3</td>
<td>7.5</td>
<td>3.8</td>
<td>7.5</td>
<td>8.6</td>
</tr>
<tr>
<td>R2(KΩ)</td>
<td>1.2</td>
<td>3.3</td>
<td>2.8</td>
<td>1.5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>R3(KΩ)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Vref(V)</td>
<td>1.2</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Vout(V)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General tolerances:** ±0.50mm (±0.020inch)

**PCB mounting with solder pins**

![PCB Mounting](image)

**FOOTPRINT DETAILS**

<table>
<thead>
<tr>
<th>Pin</th>
<th>15ACB_XXS3</th>
<th>15ACB_XXD3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No Pin</td>
<td>No Pin</td>
</tr>
<tr>
<td>2</td>
<td>AC(N)</td>
<td>AC(N)</td>
</tr>
<tr>
<td>3</td>
<td>AC(L)</td>
<td>AC(L)</td>
</tr>
<tr>
<td>4</td>
<td>-Vo</td>
<td>-Vo</td>
</tr>
<tr>
<td>5</td>
<td>No Pin</td>
<td>No Pin</td>
</tr>
<tr>
<td>6</td>
<td>No Pin</td>
<td>COM</td>
</tr>
<tr>
<td>7</td>
<td>No Pin</td>
<td>No Pin</td>
</tr>
<tr>
<td>8</td>
<td>+Vo</td>
<td>+Vo</td>
</tr>
</tbody>
</table>

**Trim:** Trim

(without Trim Pin optional)

**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
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Chassis mounting with screw terminals

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<th>Pin</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>AC(N)</td>
<td>AC(N)</td>
</tr>
<tr>
<td>3</td>
<td>AC(L)</td>
<td>AC(L)</td>
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<tr>
<td>4</td>
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<td>5</td>
<td>NC</td>
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<tr>
<td>6</td>
<td>NC/Trim</td>
<td>COM</td>
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<tr>
<td>7</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>8</td>
<td>+Vo</td>
<td>+Vo</td>
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</table>

There is no pin “1” on 15ACB_XXS3