20W AC-DC Power-Supply PAC20C

- PCB-mountable plastic case
- 85 ... 264 V_AC or 120 ... 370 V_DC universal input range
- Continuously short circuit protected
- Over voltage protected
- Isolation class II
- MTBF > 300000 hours
- 3 years product warranty

Model selection guide

<table>
<thead>
<tr>
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<td>0.1</td>
<td>1800</td>
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Specification

- **Input**
  - Voltage range: 85...264 V_AC or 120...370 V_DC
  - Power derating see diagram
  - Line frequency range: 47...63 Hz
  - Full load input current: 600 mA @ 115 V_AC typ., 340 mA @ 230 V_AC typ.
  - Inrush current: 16 A typ. @ 115 V_AC, 30 A typ. @ 230 V_AC
  - Recommended fuse: 2 A / 250V slow blow

- **Isolation**
  - Isolation voltage (input to output): 3000 V_AC for 1 min. tested
  - Leakage current: 0.3 mA typ. @ Vin 230 V_AC
  - Isolation resistance: 10^8 Ω

- **Output**
  - Voltage accuracy: ± 2 %
  - Line regulation: ± 0.5 %
  - Temperature coefficient: ± 0.02 % / °C
  - Ripple & noise up to 20 MHz: 150 mV max.
  - Output load regulation @ load change 10 to 100%: ± 1 %, typ.
  - Minimum load: not required
  - Hold up time: 15 ms typ. @ 115 V_AC, 80 ms typ. @ 230 V_AC

- **Protection**
  - Short circuit: Continuous, auto recovery
  - Over current: 110 %, min. of full load

- **Over voltage protection**
  - PAC20C03S, PAC20C05S: 7.5 V_OC max.
  - PAC20C09S: 12 V_OC max.
  - PAC20C12S, PAC20C15S: 20 V_OC max.
  - PAC20C24S: 30 V_OC max.

- **General**
  - Switching frequency: 65 kHz typ.
  - Reliability MTBF@25°C: > 300000 h

- **EMC compliance**
  - EMI: Conducted & Radiation (without external circuit)
    - CE: EN55011 (CISPR22), class B
    - RE: EN55011 (CISPR22), class B
  - EMS: Electrostatic discharge
    - IEC-, EN61000-4-2, air ± 8 kV, contact ± 6 kV, perf. Criteria B
  - EMS: Radiation immunity field susceptibility
    - IEC-, EN61000-4-3, 10 V / m perf. Criteria A
  - EMS: Fast transients on mainline (without external circuit)
    - IEC-, EN61000-4-4, ± 2 kV, perf. Criteria B
  - EMS: Fast transients on mainline (with external circuit Fig. 2)
    - IEC-, EN61000-4-4, ± 4 kV, perf. Criteria B
  - EMS: Surge immunity (without external circuit)
    - IEC-, EN61000-4-5, ± 1 kV / ± 2 kV, perf. Criteria B
  - EMS: Surge immunity (with external circuit Fig. 2)
    - IEC-, EN61000-4-5, ± 2 kV / ± 4 kV, perf. Criteria B
  - EMS: Immunity for Power frequency magnetic field
    - IEC-, EN61000-4-8, 10 A/m perf. Criteria A
  - EMS: Immunities of voltage dip, drop and short interruption
    - IEC-, EN61000-4-11, ±30 % perf. Criteria B

- **Safety**
  - Approvals: EN60950, UL60950

- **Environmental**
  - Class I
  - Operating temperature (ambient): -40 °C to 70 °C (with derating)
  - Storage temperature: -25 °C to +105 °C
  - Case temperature: 90 °C, max.
  - Storage humidity: 95 %, non condensing
  - Cooling: Free air convection

- **Physical**
  - Dimensions, PCB version: 70 x 48 x 23.5 mm
  - Weight: 120 g
  - Case material: UL94V-0 rated
  - Wave soldering temperature: 260 ± 5 °C, 10 s max., 1.5 mm distance min. from case
  - Manual soldering temperature: 360 ± 10 °C, 5 s max., 1.5 mm distance min. from case

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Output ripple & noise measure circuit

Typical application

Table for discrete external components

Note:
Output filtering capacitor C2 is an electrolytic capacitor. It is recommended to apply an electrolytic capacitor for high frequency and low resistance. For capacitance and current please refer the capacitor data sheet. Capacitance withstand voltage derating should be 80% or above. C1 is a ceramic capacitor, which is used to filter high frequency noise. TVS diode D1 is a recommended component to protect post circuits if the converter module fails.

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PCB layout with the front end filter module PIF001B

Suggestions for safety regulation and wiring width: wire width ≥ 3mm, distance between wires ≥ 6 mm, and distance between wire and ground ≥ 6 mm

Application note for trim option

<table>
<thead>
<tr>
<th>Model series</th>
<th>R1 [kΩ]</th>
<th>R2 [kΩ]</th>
<th>R3 [kΩ]</th>
<th>V Ref [V]</th>
<th>Rtd min. [kΩ]</th>
<th>Rtu min. [kΩ]</th>
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<td>15.5</td>
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<td>2.5</td>
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<td>1</td>
<td>2.5</td>
<td>63.9</td>
<td>8.62</td>
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PAC20C05S
Efficiency vs load at 230V~

PAC20C24S
Efficiency vs load at 230V~

Power derating vs ambient temperature at Vin 100 ~ 240V~

Power derating vs input voltage at Ta 25°C

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Dimensions

Pin connection

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pin configuration</th>
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<tbody>
<tr>
<td>1</td>
<td>PE</td>
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<tr>
<td>2</td>
<td>Input AC (N)</td>
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<tr>
<td>3</td>
<td>Input AC (L)</td>
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<tr>
<td>4</td>
<td>- V output</td>
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<tr>
<td>5</td>
<td>No pin</td>
</tr>
<tr>
<td>6</td>
<td>No pin</td>
</tr>
<tr>
<td>7</td>
<td>No pin</td>
</tr>
<tr>
<td>8</td>
<td>+ V output</td>
</tr>
<tr>
<td>9</td>
<td>Trim input</td>
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</table>

Note:
1. Unless otherwise specified, data in this datasheet should be tested under the conditions of T_a 25 °C, humidity < 75 % at nominal input voltage and rated output load current.
2. Module are not hot swappable!

Unit: mm
Pin diameter tolerance: ± 0.1 mm
Pin length: >6 mm
General tolerances: ± 0.5 mm

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