

APC-E1 Series

5 W AC/DC Power Module

CoolPower
Solutions

- Switching Power Module for PCB Mountable
- Fully Encapsulated Plastic Case
- Universal Input Range 90-264VAC, 47-440 Hz
- Regulated Output
- Low Ripple and Noise
- High Efficiency
- CE, UL, TÜV Approval
- 2-Years Product Warranty



Electrical specifications

| Model No. (Single Output) | | APC-3.3S-E1 | APC-5S-E1 | APC-12S-E1 | APC-15S-E1 | APC-24S-E1 |
|-----------------------------|-----------------------------------|---|-----------|------------|------------|------------|
| Max Output Wattage (W) | | 5W | 5W | 5W | 5W | 5W |
| Input | Voltage | 90-264 VAC or 120-370 VDC | | | | |
| | Frequency (Hz) | 47-440 Hz | | | | |
| | Current (Full load) | 110 mA max. (115 VAC) / 70 mA max. (230 VAC) | | | | |
| | Inrush Current (<2ms) | 23 A max. (115 VAC) / 46 A max. (230 VAC) | | | | |
| | Leakage Current | 0.75 mA max. | | | | |
| | External Fuse (recommend) | 1.5 A slow blow type | | | | |
| Output | Voltage (V.DC.) | 3.3V | 5V | 12V | 15V | 24V |
| | Voltage Accuracy | ±2% | | | | |
| | Current (mA) max | 1500 | 1000 | 416 | 333 | 200 |
| | Line Regulation (LL-HL) (typ.) | ±0.3% | | | | |
| | Load Regulation (5-100%) (typ.) | ±0.5% | | | | |
| | Minimum Load | 4% | 1% | 1% | 0% | 0% |
| | Maximum Capacitive Load | 470-23,000µF depending on model | | | | |
| | Ripple | <0.2% Vout +40mV max (Vp-p) | | | | |
| | Noise | <0.5% Vout +50mV max (Vp-p) | | | | |
| | Efficiency | 62% | 65% | 70% | 70% | 71% |
| | Hold-up Time | 15 ms min. | | | | |
| Protection | Over Power Protection | Hiccup technique, auto-recovery | | | | |
| | Over Voltage Protection | Zener diode clamp | | | | |
| | Short Circuit Protection | Hiccup mode, indefinite (automatic recovery) | | | | |
| Isolation | Input-Output (V.AC) | 3000V | | | | |
| | Input-FG (V.AC) | 1500V | | | | |
| | Output-FG (V.AC) | 500V | | | | |
| Environment | Operating Temperature | -40°C...+70°C (with derating) | | | | |
| | Storage Temperature | -40°C...+85°C | | | | |
| | Temperature Coefficient | ±0.02%/°C | | | | |
| | Humidity | 95% RH | | | | |
| | MTBF | >300,000 h @ 25°C (MIL-HDBK-217F) | | | | |
| Physical | Dimension (L x W x H) | 2.17 x 1.77 x 0.81 Inches (55.0 x 45.0 x 20.5 mm) Tolerance ±0.5 mm | | | | |
| | Case Material | Plastic resin with Fiberglass (flammability to UL 94V-0) | | | | |
| | Weight | 80 g | | | | |
| | Cooling Method | Free air convection | | | | |
| Safety | Agency Approvals | UL/cUL, CE, TUV | | | | |
| EMC | EMI (Conducted & Radiated Emiss.) | EN 55022 class B | | | | |
| | EMS (Noise Immunity) | EN 50082-1 | | | | |

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Electrical specifications

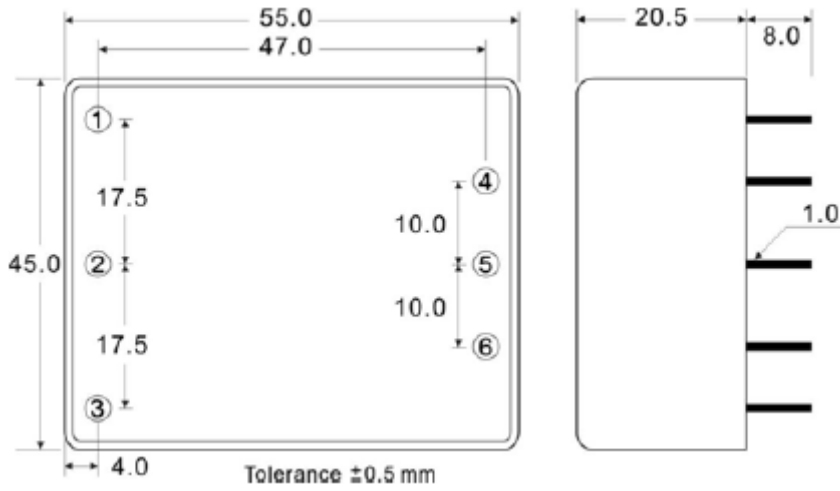
| Model No. (Dual Output) | | APC-5D-E1 | APC-12D-E1 | APC-15D-E1 |
|---------------------------|-------------------------------------|---|------------|------------|
| Max Output Wattage (W) | | 5W | 5W | 5W |
| Input | Voltage | 90-264 VAC or 120-370 VDC | | |
| | Frequency (Hz) | 47-440 Hz | | |
| | Current (Full load) | 110 mA max. (115 VAC) / 70 mA max. (230 VAC) | | |
| | Inrush Current (<2ms) | 23 A max. (115 VAC) / 46 A max. (230 VAC) | | |
| | Leakage Current | 0.75 mA max. | | |
| | External Fuse (recommend) | 1.5 A slow blow type | | |
| Output | Voltage (V.DC.) | ±5V | ±12V | ±15V |
| | Voltage Accuracy | ±2% | | |
| | Current (mA) max | ±500 | ±200 | ±160 |
| | Line Regulation (LL-HL) (typ.) | ±0.3% | | |
| | Load Regulation (5-100%) (typ.) | ±0.5% | | |
| | Minimum Load | 0% | 0% | 3% |
| | Maximum Capacitive Load | 470-23,000µF depending on model | | |
| | Ripple | <0.2% Vout +40mV max (Vp-p) | | |
| | Noise | <0.5% Vout +50mV max (Vp-p) | | |
| | Efficiency | 70% | 67% | 67% |
| | Hold-up Time | 15 ms min. | | |
| | Switching Frequency | 100 kHz | | |
| Protection | Over Power Protection | Hiccup technique, auto-recovery | | |
| | Over Voltage Protection | Zener diode clamp | | |
| | Short Circuit Protection | Hiccup mode, indefinite (automatic recovery) | | |
| Isolation | Input-Output (V.AC) | 3000V | | |
| | Input-FG (V.AC) | 1500V | | |
| | Output-FG (V.AC) | 500V | | |
| Environment | Operating Temperature | -40°C...+70°C (with derating) | | |
| | Storage Temperature | -40°C...+85°C | | |
| | Temperature Coefficient | ±0.02%/°C | | |
| | Humidity | 95% RH | | |
| | MTBF | >300,000 h @ 25°C (MIL-HDBK-217F) | | |
| Physical | Dimension (L x W x H) | 2.17 x 1.77 x 0.81 Inches (55.0 x 45.0 x 20.5 mm) Tolerance ±0.5 mm | | |
| | Case Material | Plastic resin with Fiberglass (flammability to UL 94V-0) | | |
| | Weight | 80 g | | |
| | Cooling Method | Free air convection | | |
| Safety | Agency Approvals | UL/cUL, CE, TUV | | |
| EMC | EMI (Conducted & Radiated Emission) | EN 55022 class B | | |
| | EMS (Noise Immunity) | EN 50082-1 | | |

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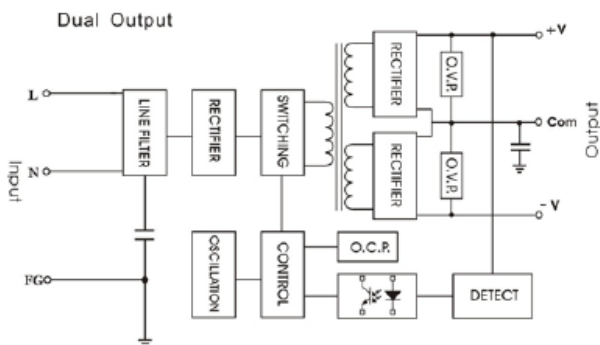
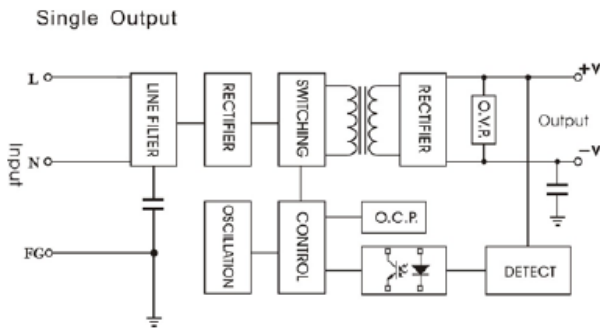
5 W AC/DC Power Module

Mechanical Specifications (top view)

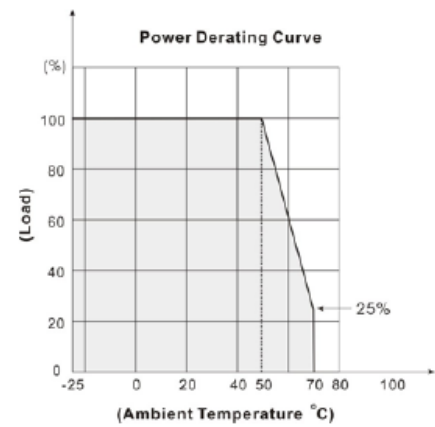


| Pin no: | Single | Dual |
|---------|-----------|-----------|
| 1 | FG | FG |
| 2 | AC IN (N) | AC IN (N) |
| 3 | AC IN (L) | AC IN (L) |
| 4 | -DC OUT | -DC OUT |
| 5 | NO PIN | COMMON |
| 6 | +DC OUT | +DC OUT |

BLOCK DIAGRAM



DERATING



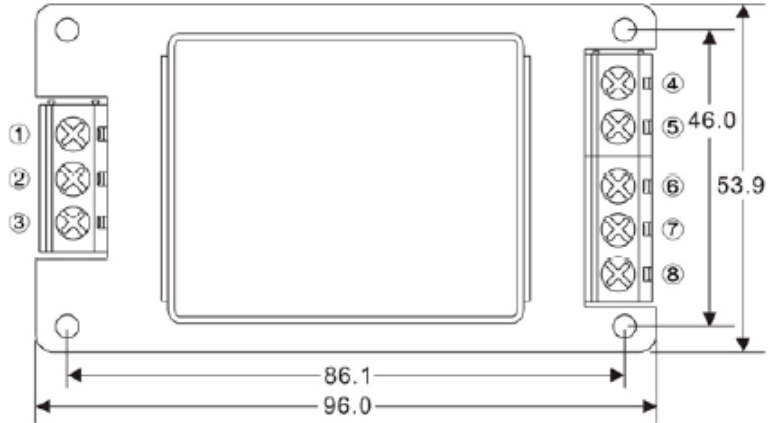
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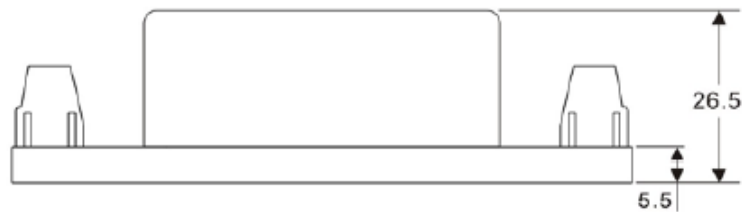
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SCREW TERMINALS

APC-E1-A2

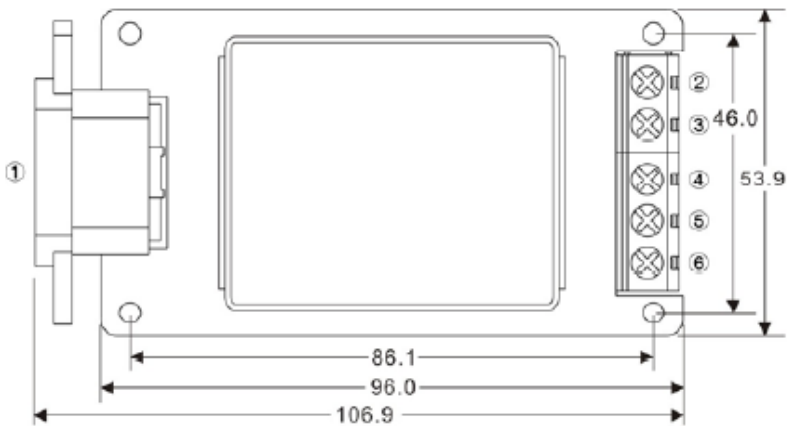


| Pin no: | Single | Dual |
|---------|-----------|-----------|
| 1 | FG | FG |
| 2 | AC IN (N) | AC IN (N) |
| 3 | AC IN (L) | AC IN (L) |
| 4 | NO CONN | NO CONN |
| 5 | -DC OUT | -DC OUT |
| 6 | NO CONN | COMMON |
| 7 | +DC OUT | +DC OUT |
| 8 | NO CONN | NO CONN |

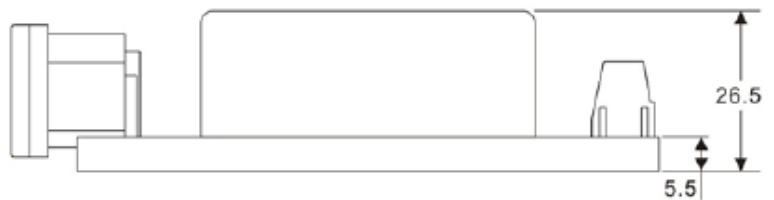


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APC-E1-A4



| Pin no: | Single | Dual |
|---------|---------|---------|
| 1 | AC IN | FG |
| 2 | NO CONN | NO CONN |
| 3 | -DC OUT | -DC OUT |
| 4 | NO CONN | COMMON |
| 5 | +DC OUT | +DC OUT |
| 6 | NO CONN | NO CONN |

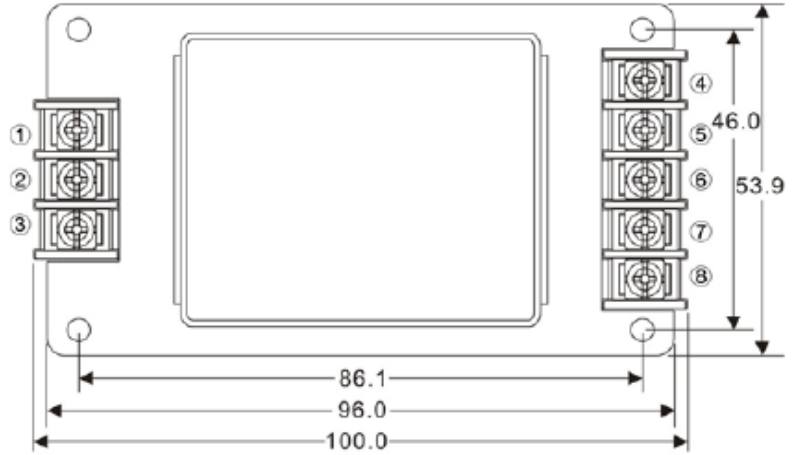


APC-E1 Series

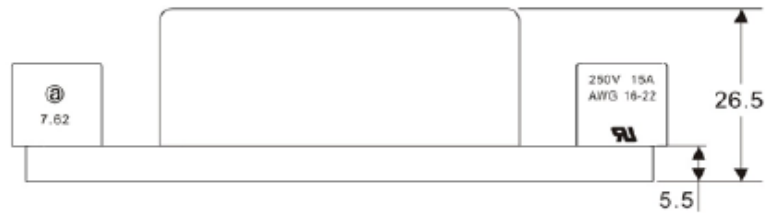
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APC-E1-A5

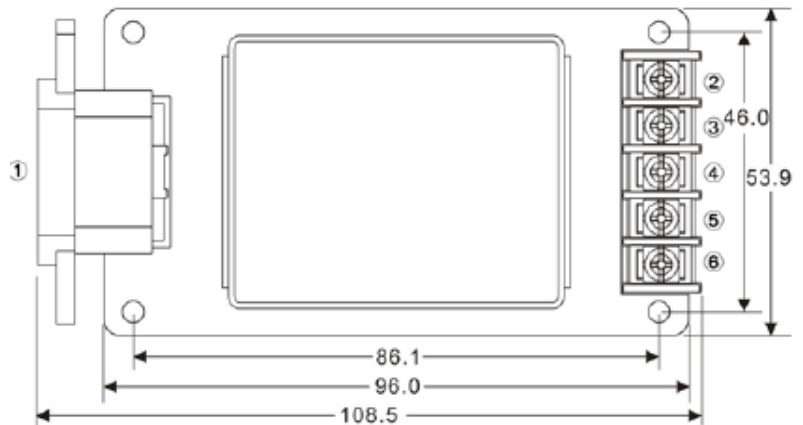


| Pin no: | Single | Dual |
|---------|-----------|-----------|
| 1 | FG | FG |
| 2 | AC IN (N) | AC IN (N) |
| 3 | AC IN (L) | AC IN (L) |
| 4 | NO CONN | NO CONN |
| 5 | -DC OUT | -DC OUT |
| 6 | NO CONN | COMMON |
| 7 | +DC OUT | +DC OUT |
| 8 | NO CONN | NO CONN |



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APC-E1-A7



| Pin no: | Single | Dual |
|---------|---------|---------|
| 1 | AC IN | FG |
| 2 | NO CONN | NO CONN |
| 3 | -DC OUT | -DC OUT |
| 4 | NO CONN | COMMON |
| 5 | +DC OUT | +DC OUT |
| 6 | NO CONN | NO CONN |

