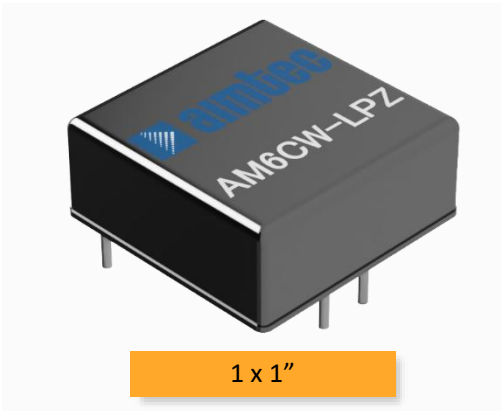




AM6CW-LPZ



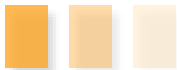
1 x 1"

The AM6CW-LPZ is a 6W DC/DC converter that offers a regulated output which contributes to a more stable and reliable output performance. It features a wide 4:1 input voltage range of 9-160VDC, which will benefit your new system design.

This series offers great operating temperatures, from -40°C to 85°C. Furthermore, an isolation of 1500/2250VDC, a high MTBF of 1,000,000h, continuous output short circuit protection (OSCP), over-current protection (OCP), over-voltage protection (OVP), and under voltage lock-out (UVLO) come standard with the series.

The AM6CW-LPZ is suitable for grid power, instrumentation, industrial controls, communication, and civil applications.

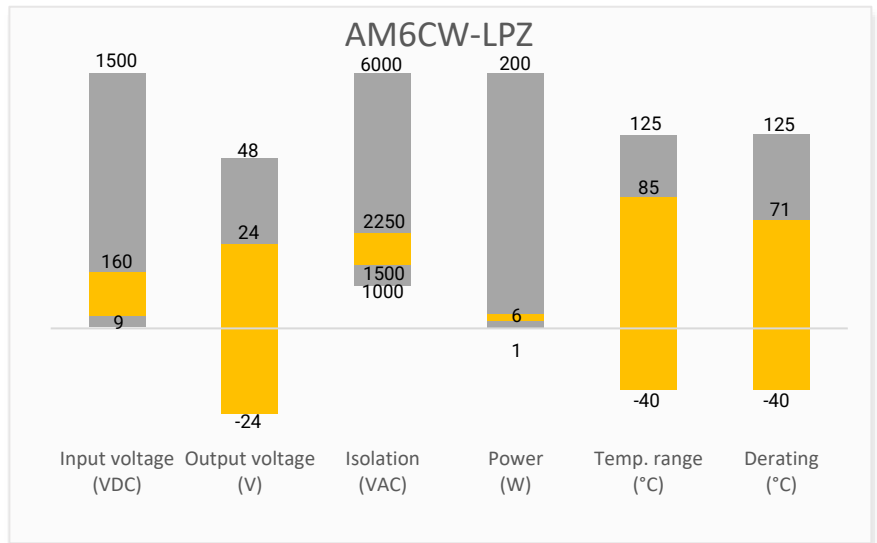
Features



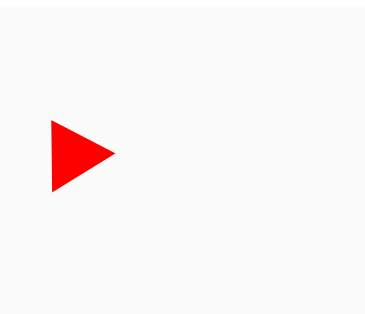
- Operating Temp: -40 °C to +85 °C
- Isolation voltage: 1500/2250VDC
- High efficiency: Up to 88% typ.
- Regulated single output
- Output short circuit, over-current, over-voltage, input under voltage protection
- Standard 1 x1 package



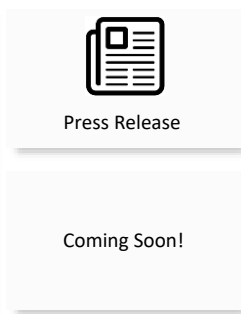
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



Power Grid



Industrial



Telecom



Instrumentation

Models & Specifications

| Single Output | | | | | | | |
|--------------------|---------------------|----------------------|------------------------------------|-----------|-------------------------|------------------------------|------------------------------|
| Model | Input Voltage (VDC) | Output Voltage (VDC) | Nominal Vin Input Current Typ (mA) | | Output Current Max (mA) | Maximum Capacitive Load (μF) | Efficiency Full Load Typ (%) |
| | | | No Load | Full Load | | | |
| AM6CW-2403SLPZ | 24 (9-36) | 3.3 | 5 | 261 | 1500 | 1800 | 79 |
| AM6CW-2405SLPZ | 24 (9-36) | 5 | 5 | 292 | 1200 | 1000 | 83 |
| AM6CW-2409SLPZ | 24 (9-36) | 9 | 5 | 292 | 667 | 680 | 85 |
| AM6CW-2412SLPZ | 24 (9-36) | 12 | 5 | 292 | 500 | 470 | 87 |
| AM6CW-2415SLPZ | 24 (9-36) | 15 | 5 | 292 | 400 | 220 | 87 |
| AM6CW-2424SLPZ | 24 (9-36) | 24 | 5 | 292 | 250 | 100 | 88 |
| AM6CW-4803SLPZ | 48 (18-75) | 3.3 | 5 | 130 | 1500 | 1800 | 79 |
| AM6CW-4805SLPZ | 48 (18-75) | 5 | 5 | 146 | 1200 | 1000 | 83 |
| AM6CW-4812SLPZ | 48 (18-75) | 12 | 5 | 146 | 500 | 470 | 87 |
| AM6CW-4815SLPZ | 48 (18-75) | 15 | 5 | 146 | 400 | 220 | 88 |
| AM6CW-4824SLPZ | 48 (18-75) | 24 | 5 | 146 | 250 | 100 | 88 |
| AM6CW-11005SH22LPZ | 110 (40-160) | 5 | 3 | 68 | 1200 | 1000 | 80 |
| AM6CW-11012SH22LPZ | 110 (40-160) | 12 | 3 | 68 | 500 | 470 | 84 |
| AM6CW-11015SH22LPZ | 110 (40-160) | 15 | 3 | 68 | 400 | 220 | 85 |
| AM6CW-11024SH22LPZ | 110 (40-160) | 24 | 3 | 68 | 250 | 100 | 86 |

| Dual Output | | | | | | | |
|--------------------|---------------------|----------------------|------------------------------------|-----------|-------------------------|------------------------------|------------------------------|
| Model | Input Voltage (VDC) | Output Voltage (VDC) | Nominal Vin Input Current Typ (mA) | | Output Current Max (mA) | Maximum Capacitive Load (μF) | Efficiency Full Load Typ (%) |
| | | | No Load | Full Load | | | |
| AM6CW-2405DLPZ | 24 (9-36) | ±5 | 5 | 292 | ±600 | 470 | 83 |
| AM6CW-2412DLPZ | 24 (9-36) | ±12 | 5 | 292 | ±250 | 100 | 87 |
| AM6CW-2415DLPZ | 24 (9-36) | ±15 | 5 | 292 | ±200 | 100 | 87 |
| AM6CW-2424DLPZ | 24 (9-36) | ±24 | 5 | 292 | ±125 | 100 | 87 |
| AM6CW-4805DLPZ | 48 (18-75) | ±5 | 5 | 146 | ±600 | 470 | 83 |
| AM6CW-4812DLPZ | 48 (18-75) | ±12 | 5 | 146 | ±250 | 100 | 87 |
| AM6CW-4815DLPZ | 48 (18-75) | ±15 | 5 | 146 | ±200 | 100 | 88 |
| AM6CW-11005DH22LPZ | 110 (40-160) | ±5 | 3 | 68 | ±600 | 470 | 80 |
| AM6CW-11012DH22LPZ | 110 (40-160) | ±12 | 3 | 68 | ±250 | 100 | 84 |
| AM6CW-11015DH22LPZ | 110 (40-160) | ±15 | 3 | 68 | ±200 | 100 | 85 |

| Input Specification | | | | | |
|--------------------------------|--------------------------|---------|---------|---------|-------|
| Parameters | Conditions | Minimum | Typical | Maximum | Units |
| Voltage Types | | | | 4:1 | |
| | 24V input (1 sec. max.) | -0.7 | | 50 | V |
| | 48V input (1 sec. max.) | -0.7 | | 100 | V |
| Surge Voltage | 110V input (1 sec. max.) | -0.7 | | 180 | V |
| | 24V & 48V input | | 20 | | mA |
| Input reflected ripple current | 110V input | | 25 | | mA |
| | 24V input | | | 9 | V |
| Start-up voltage | 48V input | | | 18 | V |
| | 110V input | | | 40 | V |

| | | | | |
|--|--|-----|------|---|
| Input Under-voltage protection | 24V input | 5.5 | 6.5 | V |
| | 48V input | 12 | 15.5 | V |
| | 110V input | 28 | 33 | V |
| Input filter | Pi filter | | | |
| On/Off control (110Vin dual output models) | ON – open or 3.5-12VDC; OFF – short to –Vin or 0-1.2VDC, Idle current: 3 - 8mA | | | |

| Isolation Specification | | | | |
|--------------------------|--|---------|---------|-------|
| Parameters | Conditions | Typical | Maximum | Units |
| Tested isolation voltage | Input / output, 60 sec, ≤ 1mA, 24/48Vin models | ≥1500 | | VDC |
| | Input / output, 60 sec, ≤ 1mA, 110Vin models | ≥2250 | | VDC |
| | Input to case / output to case, 60 sec, ≤ 1mA, 110Vin models | ≥1600 | | VDC |
| Resistance | Input / output, 500VDC | ≥1000 | | MΩ |
| Capacitance | Input / output, 100KHz / 0.1V | 1000 | | pF |

| Output Specification | | | | |
|------------------------------|---|---------|---------|----------|
| Parameters | Conditions | Typical | Maximum | Units |
| Voltage Tolerance | 100% load @ Vin (nom.) | ±1 | ±3 | % |
| Line Regulation | LL to HL at Full Load, 24/48Vin models, output 1 | ±0.2 | ±0.5 | % |
| | LL to HL at Full Load, 24/48Vin models, output 2 | ±0.5 | ±1 | % |
| | LL to HL at Full Load, 110Vin models | ±0.5 | ±1 | % |
| Load Regulation | 5% to 100% load, output 1 | ±0.5 | ±1 | % |
| | 5% to 100% load, output 2 | ±0.5 | ±1.5 | % |
| Cross Regulation | Dual, positive output 50% load, negative output 10% to 100% Load, 24/48Vin models | | ±5 | % |
| | Dual, positive output 50% load, negative output 25% to 100% Load, 110Vin models | | ±10 | % |
| Transient Recovery Time | 25% load step change | 300 | 500 | μs |
| Transient recovery deviation | 25% load step change, 24/48Vin @ 3.3/5/±5Vout models | ±5 | ±8 | % |
| | 25% load step change, 110Vin @ 5/±5Vout models | ±3 | ±8 | % |
| | 25% load step change, others | ±3 | ±5 | % |
| Ripple & Noise | 20MHz Bandwidth, 100% load | 50 | 100 | mV pk-pk |

| General Specifications | | | | | |
|-------------------------------|----------------------------|---------|---------|---------|-------|
| Parameters | Conditions | Minimum | Typical | Maximum | Units |
| Switching frequency | 100% load, PWM mode | | 300 | | KHz |
| Over Current protection | 24/48Vin models | 110 | 140 | | %Io |
| | 110Vin models | 120 | | 210 | %Io |
| Over voltage protection | Input voltage range | 110 | | 160 | %Vo |
| Short Circuit Protection | Continuous, Auto recovery | | | | |
| Operating temperature | With derating | -40 | | 85 | °C |
| Storage temperature | | -55 | | 125 | °C |
| Cooling | Free air convection | | | | |
| Humidity | Non-condensing | 5 | | 95 | % RH |
| Temperature Coefficient | 100% Load | | | ±0.03 | %/°C |
| Maximum soldering temperature | 1.5mm from case for 10 sec | | | +300 | °C |
| Case material | Aluminum alloy | | | | |
| Weight | 24/48Vin models | | 12 | | g |
| | 110Vin models | | 21 | | g |

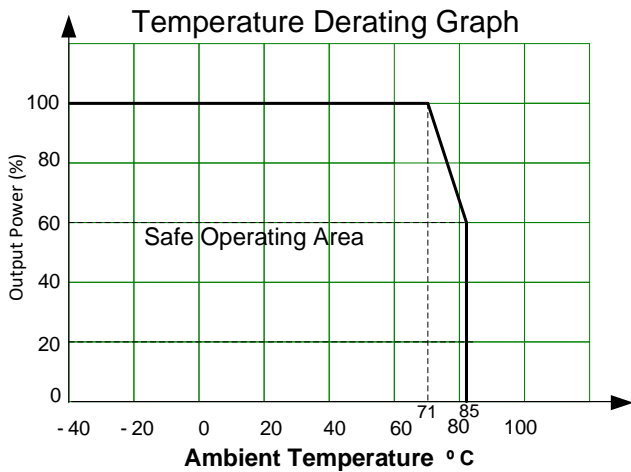
| | | |
|---|---|--|
| Dimensions (L x W x H) | 1.00x 1.00 x 0.47 inches (25.40 x 25.40 x 12.00 mm) | |
| Vibration | IEC/EN61373, category 1/grade B | |
| MTBF | ≥ 1 000 000 hrs (MIL-HDBK -217F, t=+25°C) | |
| NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. | | |

Safety Specifications

Parameters

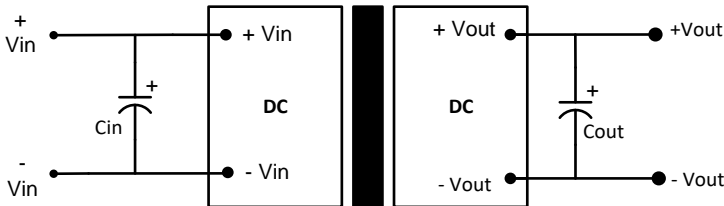
| | | |
|-----------|--|---|
| Standards | Designed to meet EN55016-2-1 (110Vin models) | |
| | Information technology Equipment | Designed to meet UL/EN/IEC 62368-1 (24/48Vin models) Designed to meet EN/IEC 62368-1 (110Vin models) |
| | Electronic equipment in railway application | Designed to meet EN50155 (110Vin models) |
| | EMI - Conducted and radiated emission | CISPR32/EN 55032, Class B, with the recommended EMC circuit |
| | Electrostatic Discharge Immunity | EN61000-4-2 |
| | RF, Electromagnetic Field Immunity | EN61000-4-3 |
| | Electrical Fast Transient/Burst Immunity | EN61000-4-4 |
| | Surge Immunity | EN61000-4-5 |
| | RF, Electromagnetic Field Immunity | EN61000-4-6 |

Derating



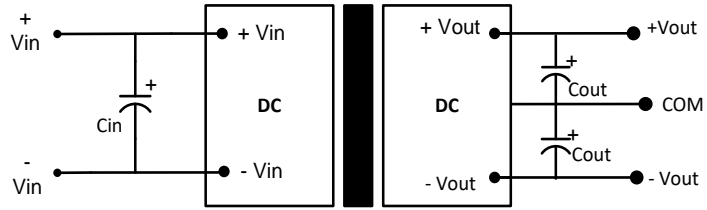
Typical application circuit

Single Output 24/48Vin models

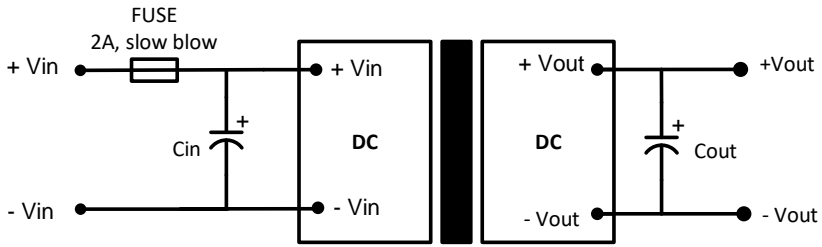


Dual Output 24/48Vin models

| 24/48Vin models | | | | | |
|-----------------|------------|-------------|-----------|-----------|-----------|
| Vin | Cin | Single Vout | Cout | Dual Vout | Cout |
| 24VDC | 100µF /50V | 3.3VDC | 10µF /50V | ±5VDC | 10µF /50V |
| 48VDC | 47µF /100V | 5VDC | | ±12VDC | |
| | | 9VDC | | ±15VDC | |
| | | 12VDC | | ±24VDC | |
| | | 15VDC | | -- | |
| | | 24VDC | -- | | |



110Vin models

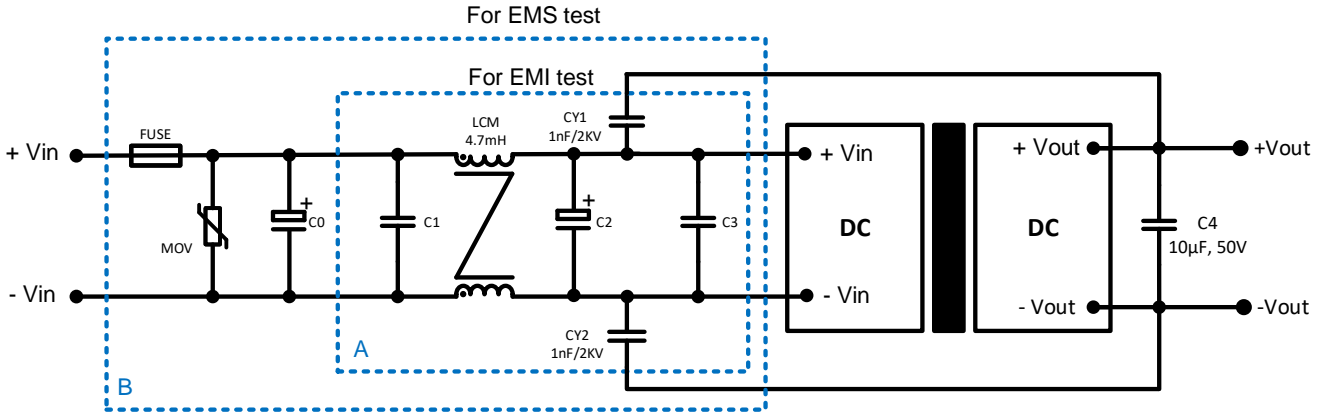


| 110Vin models | | | |
|---------------|---------|--------|------|
| Vin | Cin | Vout | Cout |
| 110VDC | 10~47μF | 5VDC | 10μF |
| | | 12VDC | |
| | | 15VDC | |
| | | 24VDC | |
| | | ±5VDC | |
| | | ±12VDC | |
| | | ±15VDC | |

Recommended EMC circuit

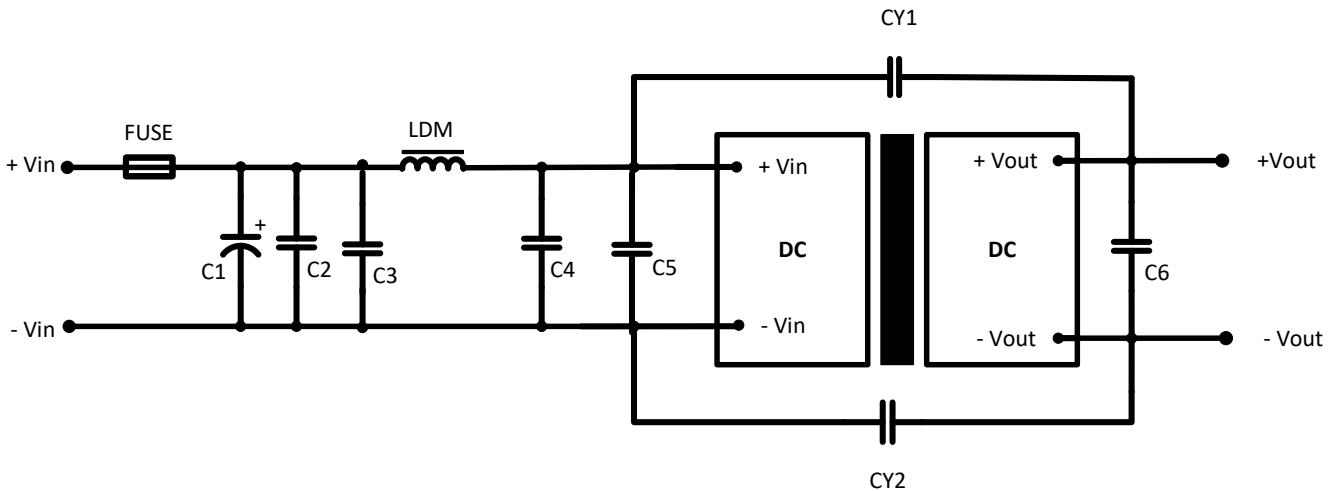


24/48Vin models



| Parameter Description | | |
|-----------------------|--|------------|
| Model | Vin:24VDC | Vin:48VDC |
| FUSE | Choose according to actual input current | |
| MOV | 20D470K | 14D101K |
| C0 | 680µF/50V | 680µF/100V |
| C1 | 1µF/50V | 1µF/100V |
| C2 | 330µF/50V | 330µF/100V |
| C3 | 4.7µF/50V | 4.7µF/100V |

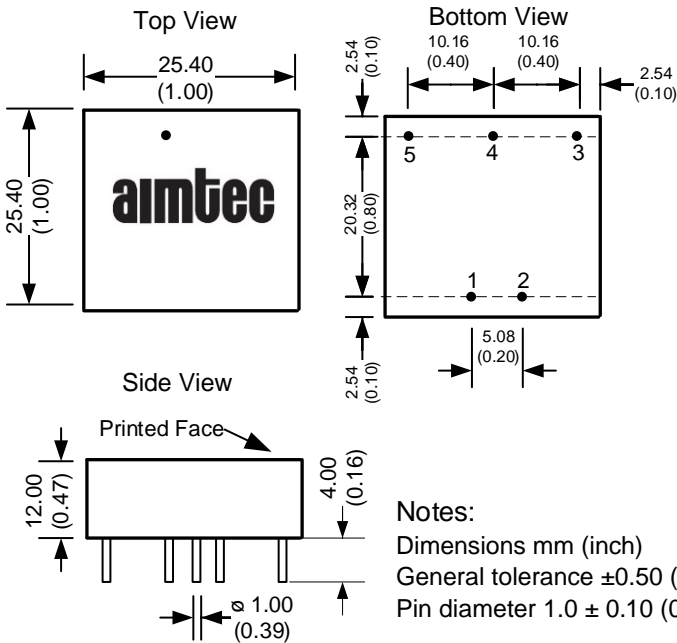
110Vin models



| Parameter Description | |
|-----------------------|--|
| Model | Vin:110VDC |
| FUSE | Choose according to actual input current |
| C1 | 100µF/200V |
| C2, C3, C4, C5 | 0.22µF/250V |
| LDM | 68µH |
| CY1, CY2 | 1nF/3KV |
| C6 | 10µF |

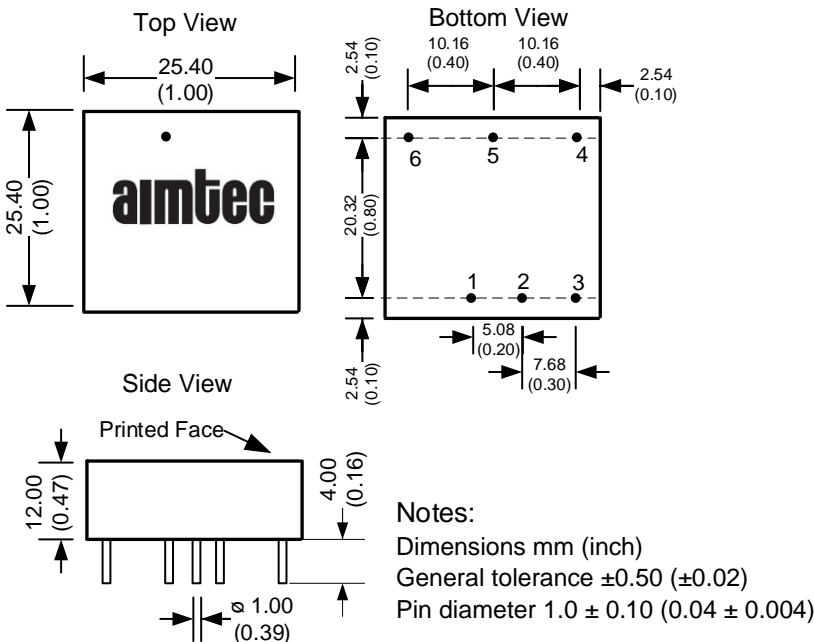
Dimension

24/48Vin models



| Pin Out Specifications | | |
|------------------------|--------|-------|
| Pin | Single | Dual |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 3 | -Vout | -Vout |
| 4 | No Pin | COM |
| 5 | +Vout | +Vout |

110Vin models



| Pin Out Specifications | | |
|------------------------|--------|----------------|
| Pin | Single | Dual |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 3 | No Pin | On/off control |
| 4 | -Vout | -Vout |
| 5 | No Pin | COM |
| 6 | +Vout | +Vout |

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.