

**FEATURES:**

- Efficiency up to 87%
- Ultra-Wide 4:1 input range
- Continuous Short Circuit Protection
- Operating temperature -40°C to + 85°C
- 110Vin models design to meet EN50155
- Input Under-voltage Protection
- Over Voltage, Over Current Protection
- I/O Isolation 2250 & 3000VDC
- On/Off remote control

### Models

#### Single output



| Model               | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | I/O Isolation (VDC) | Capacitive load max (μF) | Efficiency (%) |
|---------------------|-------------------|--------------------|-------------------------|---------------------|--------------------------|----------------|
| AM10EW-2403SH30-NZ* | 9-36              | 3.3                | 2400                    | 3000                | 5400                     | 78             |
| AM10EW-2405SH30-NZ* | 9-36              | 5                  | 2000                    | 3000                | 5400                     | 82             |
| AM10EW-2409SH30-NZ* | 9-36              | 9                  | 1111                    | 3000                | 680                      | 84             |
| AM10EW-2412SH30-NZ* | 9-36              | 12                 | 833                     | 3000                | 470                      | 84             |
| AM10EW-2415SH30-NZ* | 9-36              | 15                 | 667                     | 3000                | 330                      | 87             |
| AM10EW-2424SH30-NZ  | 9-36              | 24                 | 416                     | 3000                | 100                      | 86             |
| AM10EW-4803SH30-NZ  | 18-75             | 3.3                | 2400                    | 3000                | 5400                     | 79             |
| AM10EW-4805SH30-NZ  | 18-75             | 5                  | 2000                    | 3000                | 5400                     | 82             |
| AM10EW-4812SH30-NZ  | 18-75             | 12                 | 833                     | 3000                | 470                      | 86             |
| AM10EW-4815SH30-NZ  | 18-75             | 15                 | 667                     | 3000                | 330                      | 87             |
| AM10EW-4824SH30-NZ  | 18-75             | 24                 | 416                     | 3000                | 100                      | 87             |
| AM10EW-11003SH22-NZ | 40-160            | 3.3                | 2400                    | 2250                | 5400                     | 76             |
| AM10EW-11005SH22-NZ | 40-160            | 5                  | 2000                    | 2250                | 5400                     | 80             |
| AM10EW-11012SH22-NZ | 40-160            | 12                 | 833                     | 2250                | 470                      | 84             |
| AM10EW-11015SH22-NZ | 40-160            | 15                 | 667                     | 2250                | 330                      | 84             |
| AM10EW-11024SH22-NZ | 40-160            | 24                 | 417                     | 2250                | 100                      | 85             |

\* For 110Vin single output models, add suffix “- K” for optional heatsink or “- K-ST” for optional heatsink with screw terminal bottom plate or “-K-STD” for optional heatsink with DIN Rail screw terminal bottom plate.

\* Add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN Rail screw terminal bottom plate.

\* “-ST” and “-STD” options come with reverse polarity protection. 24Vin and 48Vin models with “-ST” or “-STD” option will increase the minimum input voltage and under voltage lockout threshold by 1V and reduce the efficiency by 2%. 110Vin models with “-ST” or “-STD” option will reduce the efficiency by 2%

### Models

#### Dual output

| Model               | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | I/O Isolation (VDC) | Capacitive load max (μF) | Efficiency (%) |
|---------------------|-------------------|--------------------|-------------------------|---------------------|--------------------------|----------------|
| AM10EW-2405DH30-NZ  | 9-36              | ±5                 | ±1000                   | 3000                | ±1000                    | 81             |
| AM10EW-2412DH30-NZ  | 9-36              | ±12                | ±416                    | 3000                | ±330                     | 85             |
| AM10EW-2415DH30-NZ  | 9-36              | ±15                | ±333                    | 3000                | ±220                     | 87             |
| AM10EW-4805DH30-NZ  | 18-75             | ±5                 | ±1000                   | 3000                | ±1000                    | 82             |
| AM10EW-4812DH30-NZ  | 18-75             | ±12                | ±416                    | 3000                | ±330                     | 86             |
| AM10EW-4815DH30-NZ  | 18-75             | ±15                | ±333                    | 3000                | ±220                     | 87             |
| AM10EW-11005DH22-NZ | 40-160            | ±5                 | ±1000                   | 2250                | ±1000                    | 80             |
| AM10EW-11012DH22-NZ | 40-160            | ±12                | ±417                    | 2250                | ±470                     | 84             |
| AM10EW-11015DH22-NZ | 40-160            | ±15                | ±334                    | 2250                | ±330                     | 84             |

\* For 110Vin dual output models, add suffix “- O” for no on/off control option. (ex. AM10EW-11005DH22-NZ-O Has no on/off control and no Ctrl pin.)

\* For 24Vin dual output, and 48Vin dual output models, add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN Rail screw terminal bottom plate.

\* “-ST” and “-STD” options come with reverse polarity protection. 24Vin and 48Vin models with “-ST” or “-STD” option will increase the minimum input voltage and under voltage lockout threshold by 1V and reduce the efficiency by 2%.

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.

**Input Specifications**

| Parameters                                                 | Nominal                                                                                                                                                             | Typical                                               | Maximum                                             | Units |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------|-------|
| Voltage range                                              | 24<br>48<br>110                                                                                                                                                     | 9-36<br>18-75<br>40~160                               | 40<br>80<br>170                                     | VDC   |
| Input Current (full load)                                  | 24Vin, 3.3Vout<br>24Vin, others<br>48Vin, 3.3Vout<br>48Vin, others<br>110Vin, 3.3Vout<br>110Vin, $\pm 5$ Vout<br>110Vin, $\pm 12$ , $\pm 15$ Vout<br>110Vin, others | 423<br>514<br>208<br>254<br>95<br>113<br>108<br>110   | 527<br>434<br>214<br>260<br>98<br>117<br>111<br>117 | mA    |
| Filter                                                     | $\pi$ (Pi) Network                                                                                                                                                  |                                                       |                                                     |       |
| Input surge Voltage (1sec max.)                            | 24<br>48<br>110                                                                                                                                                     |                                                       | 50<br>100<br>180                                    | VDC   |
| Start-up time                                              | Nominal Input, resistive load                                                                                                                                       |                                                       | 10                                                  | ms    |
| Reflected Input Ripple Current                             | 24<br>48<br>110                                                                                                                                                     | 40<br>30<br>25                                        |                                                     | mA    |
| Under-voltage lockout                                      | 24<br>48<br>110                                                                                                                                                     | 6.5<br>15.5<br>33                                     |                                                     | V     |
| Remote On/Off Control (Except 110Vin single output models) | On<br>Off                                                                                                                                                           | 3.5-12VDC or leave open<br>0-1.2VDC or connect to GND |                                                     |       |
| Idle current when off                                      |                                                                                                                                                                     |                                                       | 10                                                  | mA    |

**Isolation Specifications**

| Parameters             | Conditions                                                                         | Typical     | Rated        | Units |
|------------------------|------------------------------------------------------------------------------------|-------------|--------------|-------|
| Tested I/O voltage     | 1 min, <1mA                                                                        |             | 2250, 3000   | VDC   |
| Tested I/Case & O/Case | 1 min, <1mA, 110Vin single output models<br>1 min, <1mA, 110Vin dual output models |             | 1600<br>1500 | VDC   |
| Resistance             | At 500VDC Isolation                                                                | > 1000      |              | MOhm  |
| Capacitance            | 24 & 48 Vin, I/O, 100KHz/0.1V<br>110 Vin, I/O, 100KHz/0.1V                         | 500<br>2200 |              | pF    |

**Output Specifications**

| Parameters                   | Conditions                                                                                                                 | Typical                                  | Maximum                                  | Units   |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------|---------|
| Voltage accuracy             | AM10EW-11005DH22-NZ, 5-100% load<br>Others, 0-100% load                                                                    | $\pm 1$                                  | $\pm 3$                                  | %       |
| Line voltage regulation      | Positive output<br>Negative output                                                                                         | $\pm 0.2$<br>$\pm 0.5$                   | $\pm 0.5$<br>$\pm 1$                     | %       |
| Load voltage regulation      | 110Vin single output, 0-100% load<br>Others, 5-100%, positive output<br>Others, 5-100%, negative output                    | $\pm 0.5$<br>$\pm 0.5$<br>$\pm 0.5$      | $\pm 1$<br>$\pm 1$<br>$\pm 1.5$          | %       |
| Cross Regulation             | 110Vin, +Vout 50% load, -Vout 25-100% load<br>Others, +Vout 50% load, -Vout 10-100% load                                   |                                          | $\pm 5$                                  | %       |
| Short Circuit protection     | Continuous, Auto Recovery                                                                                                  |                                          |                                          |         |
| Over Voltage Protection      | 110Vin models<br>others                                                                                                    | > 110<br>130                             | 160<br>160                               | % of Vo |
| Over Current Protection      | 24 & 48 Vin models<br>110 Vin single output<br>110 Vin dual output                                                         | 140<br>> 120<br>> 110                    | 190<br>210<br>210                        | % of Io |
| Transient Recovery Time      | 110 Vin, 25% Load Step Change                                                                                              | 300                                      | 500                                      | $\mu$ s |
| Transient Recovery Deviation | AM10EW-4803SH30-NZ<br>110Vin dual output, $\pm 5$ Vout<br>110Vin single output, 3.3, 5Vout<br>Others, 25% Load Step Change | $\pm 5$<br>$\pm 4$<br>$\pm 3$<br>$\pm 3$ | $\pm 8$<br>$\pm 8$<br>$\pm 8$<br>$\pm 5$ | %       |
| Temperature coefficient      |                                                                                                                            |                                          | $\pm 0.03$                               | %/°C    |
| Ripple & Noise               | 110Vin, 5-100% load, 20Mhz bandwidth<br>Others, 5-100% load, 20Mhz bandwidth                                               | 50<br>60                                 | 100<br>120                               | mV p-p  |

## General Specifications

| Parameters             | Conditions                                              | Typical                                           | Maximum | Units |
|------------------------|---------------------------------------------------------|---------------------------------------------------|---------|-------|
| Switching frequency    | 110 Vin, 100% load<br>Others, 100% load                 | 300<br>350                                        |         | KHz   |
| Operating temperature  | Derating above 71°C                                     | -40 to +85                                        |         | °C    |
| Storage temperature    |                                                         | -55 to +125                                       |         | °C    |
| Max case temperature   |                                                         |                                                   | 105     | °C    |
| Cooling                | Free air convection                                     |                                                   |         |       |
| Humidity               | Non-condensing                                          |                                                   | 95      | %     |
| Solder Temp Leads      | 1.5 mm from case 10 sec.                                |                                                   | 300     | °C    |
| Case material          | Plastic (24, 48Vin models)<br>Aluminum Alloy (Others)   |                                                   |         |       |
| Weight                 | Pin mountable, 24, 48Vin models                         | 21.2                                              |         | g     |
|                        | Pin mountable, 110Vin single output models              | 26                                                |         |       |
|                        | Pin mountable, 110Vin dual output models                | 27                                                |         |       |
|                        | -ST option, 24, 48Vin models                            | 46                                                |         |       |
|                        | -ST option, 110Vin models                               | 48                                                |         |       |
|                        | -STD option, 24, 48Vin models                           | 66                                                |         |       |
|                        | -STD option, 110Vin models                              | 68                                                |         |       |
|                        | -K option, 110Vin single output models                  | 34                                                |         |       |
| Dimensions (L x W x H) | -K-ST option, 110Vin single output models               | 56                                                |         |       |
|                        | -K-STD option, 110Vin single output models              | 76                                                |         |       |
|                        | 24, 48Vin models                                        | 2.03 x 1.04 x 0.47inches, 51.50 x 26.50 x 12.00mm |         |       |
| MTBF                   | 110Vin models                                           | 2.00 x 1.00 x 0.46inches, 50.80 x 25.40 x 11.80mm |         |       |
|                        | Optional packages                                       | See dimensions drawing                            |         |       |
|                        | >1 000 000 hrs (MIL-HDBK -217F, Ground Benign. t=+25°C) |                                                   |         |       |

## Environmental Specifications

| Parameters              |                                |                              |
|-------------------------|--------------------------------|------------------------------|
| Vibration (24 & 48 Vin) | Test mode                      | 10-55Hz                      |
|                         | Acceleration                   | 2G, 30min, every axis tested |
| Vibration (110 Vin)     | IEC61373 - Category 1, Grade B |                              |

## Safety Specifications

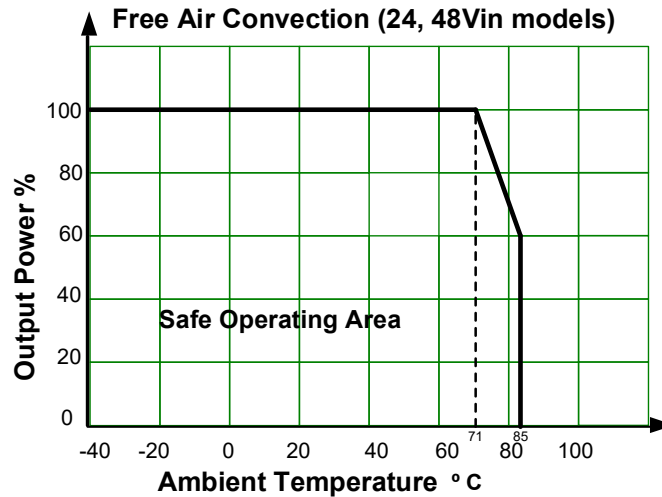
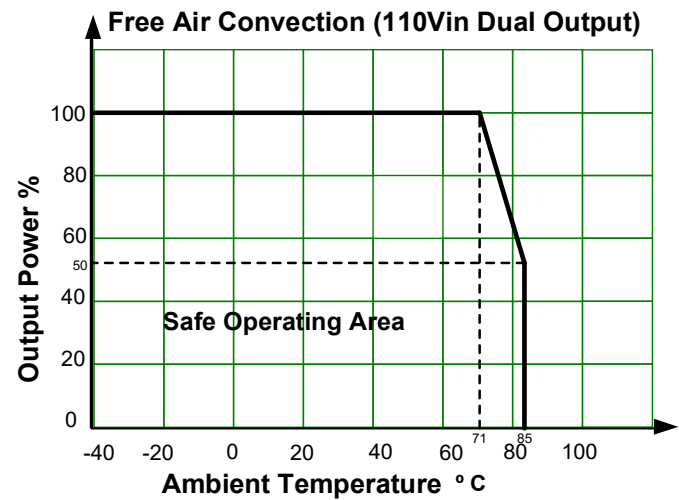
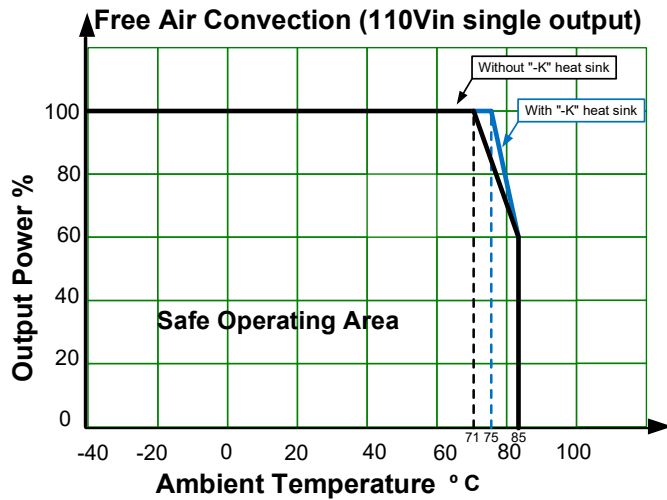
| Parameters |                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Approvals  | CE<br>EN/IEC60950-1, Designed to meet UL60950-1 (24 & 48 Vin models only except models marked with *)<br>Design to meet EN62368, EN50155 (2250 VDC Isolated models) |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Standards  | EMI - Conducted and radiated emission                                                                                                                               | EN55032, class A (all models)<br>Class B (110Vin models)<br>(110Vin dual output models with recommended EMC circuit 1 or 2)<br>(110Vin single output models with recommended EMC circuit 3 or 4)<br>EN50121-3-2 150kHz-500kHz 99dBuV (110Vin models)<br>EN55016-2-1 500kHz-30MHz 93dBuV (110Vin models)<br>EN50121-3-2 30MHz-230MHz 40dBuV/m at 10m (110Vin models)<br>EN55016-2-1 230MHz-1GHz 47dBuV/m at 10m (110Vin models) |
|            | Electrostatic Discharge Immunity                                                                                                                                    | IEC61000-4-2, Contact ±6KV, Air ±8KV (110Vin models),<br>Contact ±4KV, Criteria B (24 & 48 Vin models)<br>EN50121-3-2 Contact ±6KV, Air ±8KV, Criteria B (110Vin models)                                                                                                                                                                                                                                                       |
|            | RF, Electromagnetic Field Immunity                                                                                                                                  | IEC61000-4-3, 10V/m, Criteria A<br>EN50121-3-2 20V/m, Criteria A (110Vin models)                                                                                                                                                                                                                                                                                                                                               |
|            | Electrical Fast Transient/Burst Immunity                                                                                                                            | IEC61000-4-4, ±4KV, Criteria B<br>(110Vin dual output models with recommended EMC circuit 1 or 2)<br>(110Vin single output models with recommended EMC circuit 3 or 4)<br>±2KV, Criteria B (24 & 48 Vin with the recommended EMC circuit 5)<br>EN50121-3-2 ±2kV, 5/50ns, 5KHz, Criteria A (110Vin models)                                                                                                                      |
|            | Surge Immunity                                                                                                                                                      | IEC61000-4-5, L-L ±2KV, Criteria B, (24 & 48 Vin with the recommended EMC circuit 5)<br>L-L ±2KV, L-G ±4KV, Criteria B<br>(110Vin dual output models with recommended EMC circuit 1)<br>(110Vin single output models with recommended EMC circuit 3)                                                                                                                                                                           |

|                                                                   |                                                                                                                                                                |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   | EN50121-3-2 L-L $\pm 1\text{KV}$ ( $42\Omega$ $0.5\mu\text{F}$ ), L-G $\pm 2\text{KV}$ ( $42\Omega$ $0.5\mu\text{F}$ ), Criteria B (110Vin models)             |
| RF, Conducted Disturbance Immunity                                | IEC61000-4-6, 3 Vrms, Criteria A (24 & 48 Vin models)<br>10 Vrms, Criteria A (110Vin models)<br>EN50121-3-2 0.15MHz-80MHz 10Vr.m.s, Criteria A (110Vin models) |
| Voltage dips, short interruptions and voltage variations immunity | IEC61000-4-29, 0-70%, Criteria B (24 & 48 Vin models)                                                                                                          |

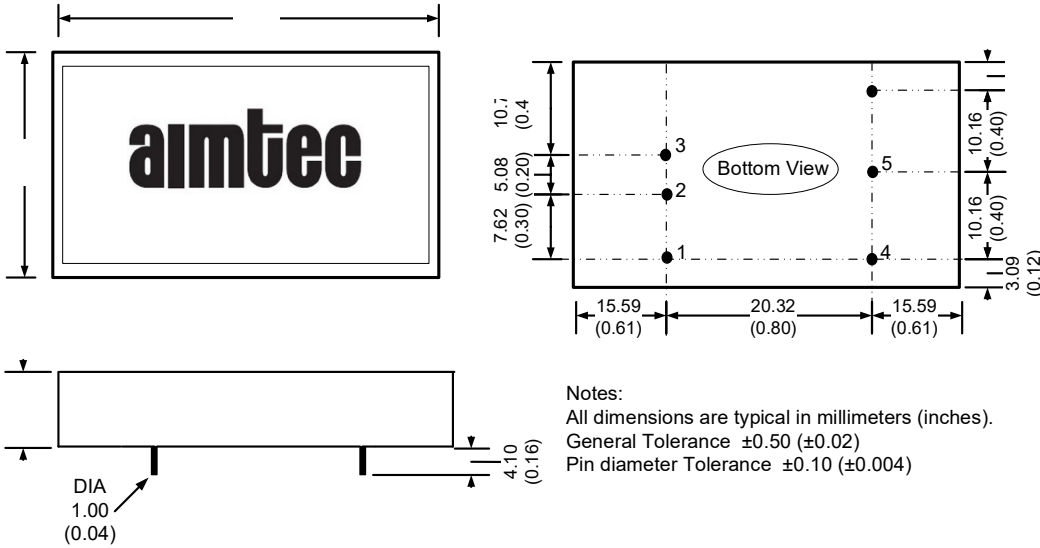
\*For 110Vin dual output models, EN50155, EN50121-3-2 and EN55016-2-1 are measured with an input capacitor 100 $\mu\text{F}$ /200V or AMFW72-13NZ.

\*For 110Vin single output models, EN50155, EN50121-3-2 and EN55016-2-1 are measured with an input capacitor 100 $\mu\text{F}$ /200V or AMFW72-0.41NZ.

### Derating



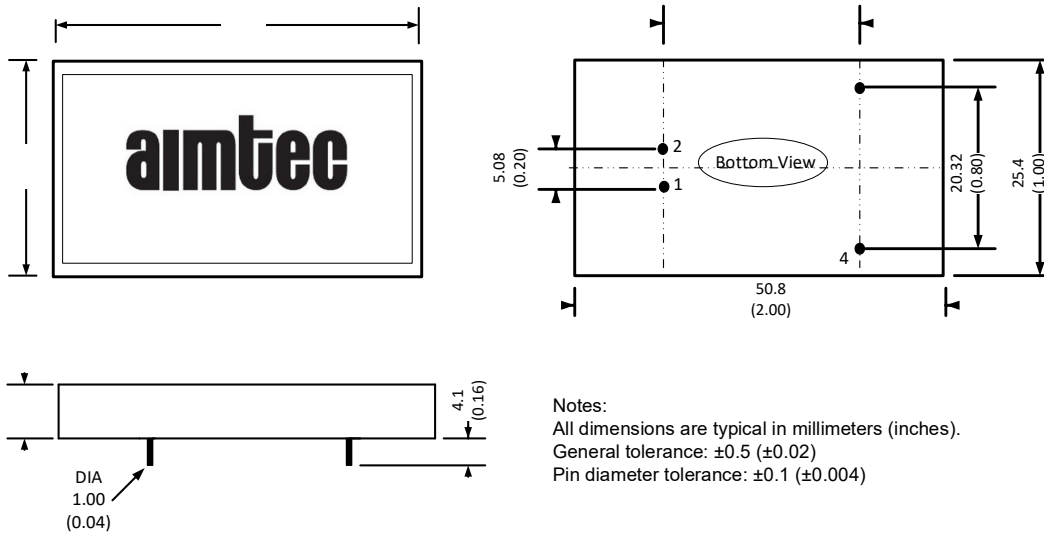
## Pin Out Specifications 24 & 48 Vin models



| Pin | Single         |
|-----|----------------|
| 1   | On/Off Control |
| 2   | -Vin           |
| 3   | +Vin           |
| 4   | - Vout         |
| 5   | No pin         |
| 6   | + Vout         |

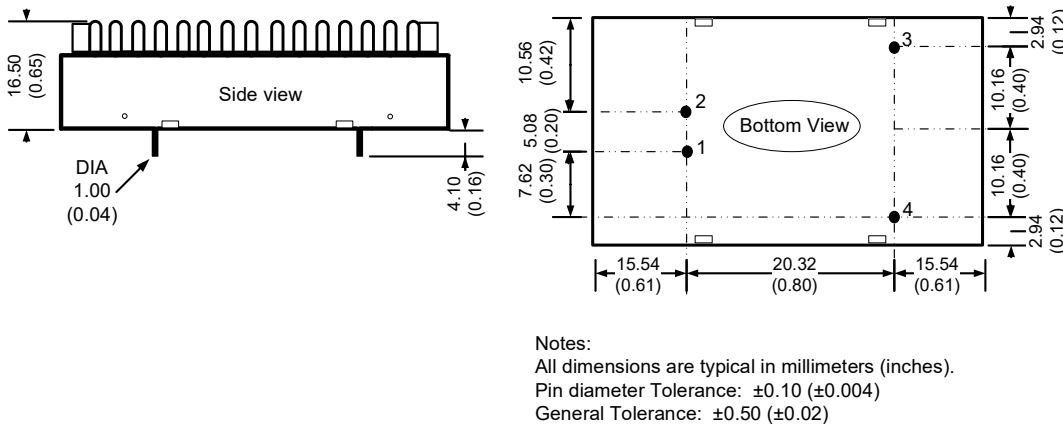
| Pin | Dual           |
|-----|----------------|
| 1   | On/Off Control |
| 2   | -Vin           |
| 3   | +Vin           |
| 4   | - Vout         |
| 5   | Common         |
| 6   | + Vout         |

## 110Vin single output models



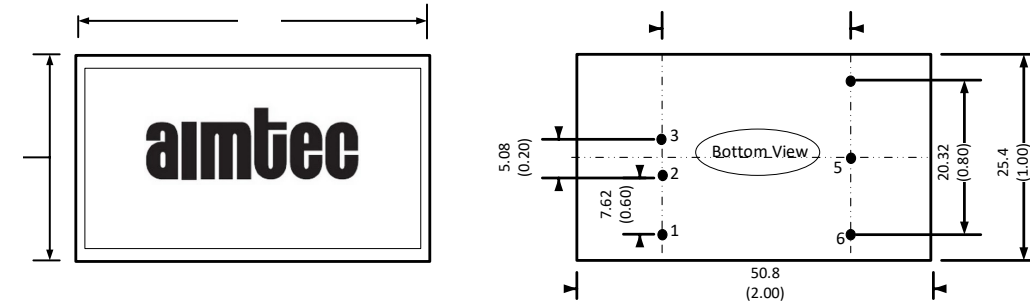
| Pin | Single |
|-----|--------|
| 1   | Vin -  |
| 2   | Vin +  |
| 3   | +Vout  |
| 4   | -Vout  |

## 110Vin single output models with -K option



| Pin | Single |
|-----|--------|
| 1   | Vin -  |
| 2   | Vin +  |
| 3   | +Vout  |
| 4   | -Vout  |

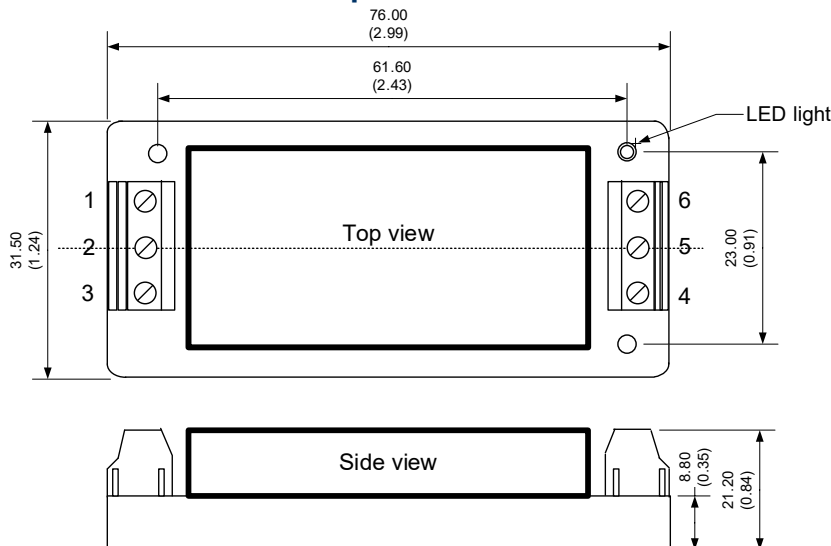
## 110Vin dual output models



| Pin | Single    |
|-----|-----------|
| 1   | Ctrl      |
| 2   | -V Input  |
| 3   | +V Input  |
| 4   | +V Output |
| 5   | Common    |
| 6   | -V Output |

Notes:  
All dimensions are typical in millimeters (inches).  
General tolerance  $\pm 0.5$  ( $\pm 0.02$ )  
Pin diameter tolerance  $\pm 0.1$  ( $\pm 0.004$ )

## Dimensions with -ST options



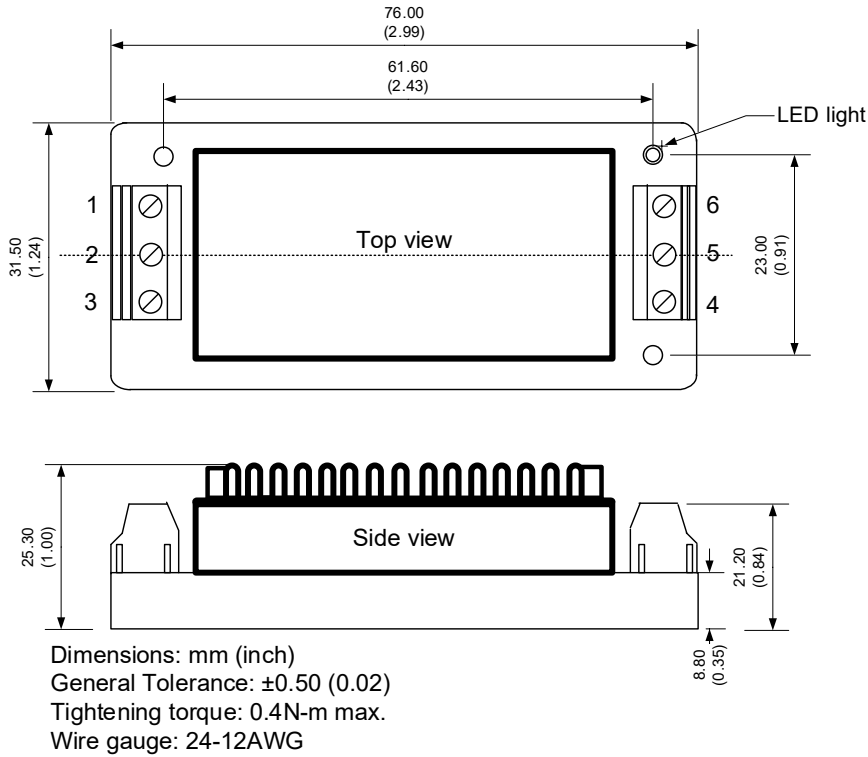
Dimensions: mm (inch)  
General Tolerance:  $\pm 0.50$  (0.02)  
Tightening torque: 0.4N-m max.  
Wire gauge: 24-12AWG

## Pin Out Specifications

| 110Vin models |        |
|---------------|--------|
| Pin           | Single |
| 1             | N.C.   |
| 2             | -Vin   |
| 3             | +Vin   |
| 4             | + Vout |
| 5             | N.C.   |
| 6             | - Vout |

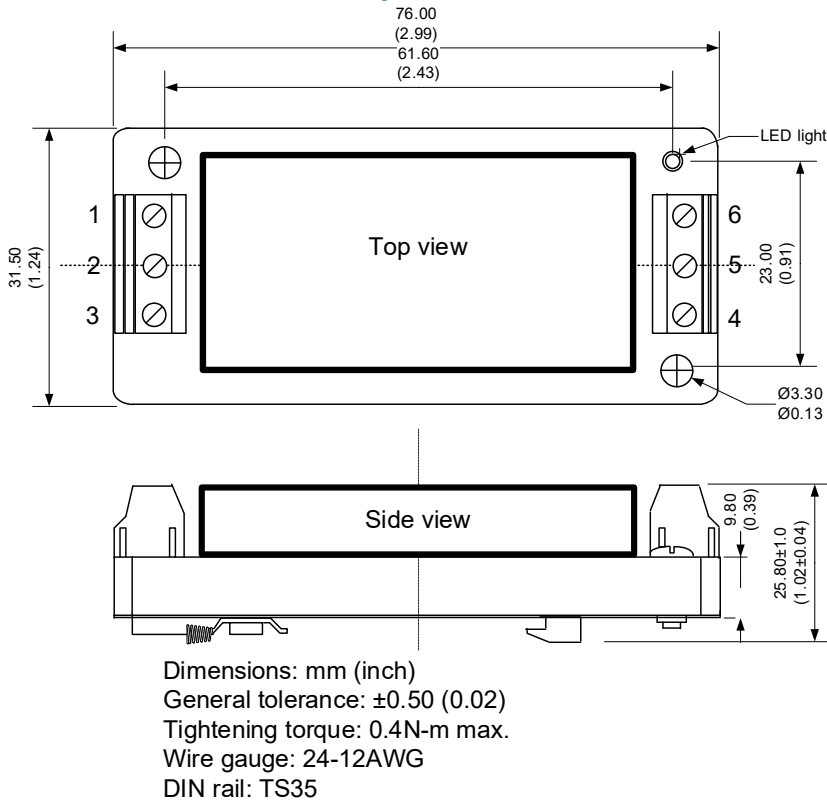
| 24 & 48 Vin models |                |                |
|--------------------|----------------|----------------|
| Pin                | Single         | Dual           |
| 1                  | On/Off Control | On/Off Control |
| 2                  | -Vin           | -Vin           |
| 3                  | +Vin           | +Vin           |
| 4                  | + Vout         | + Vout         |
| 5                  | NC             | Common         |
| 6                  | - Vout         | - Vout         |

### 110Vin single output models with -K-ST option



| 110Vin models |        |
|---------------|--------|
| Pin           | Single |
| 1             | N.C.   |
| 2             | -Vin   |
| 3             | +Vin   |
| 4             | + Vout |
| 5             | N.C.   |
| 6             | - Vout |

### Dimensions with -STD options

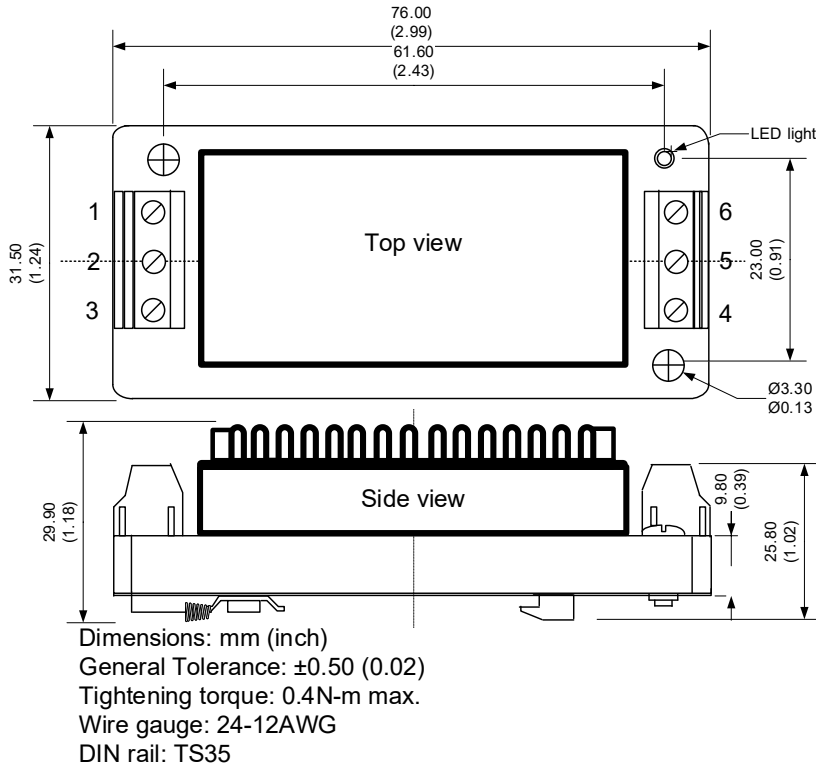


### Pin Out Specifications

| 110Vin models |        |
|---------------|--------|
| Pin           | Single |
| 1             | N.C.   |
| 2             | -Vin   |
| 3             | +Vin   |
| 4             | + Vout |
| 5             | N.C.   |
| 6             | - Vout |

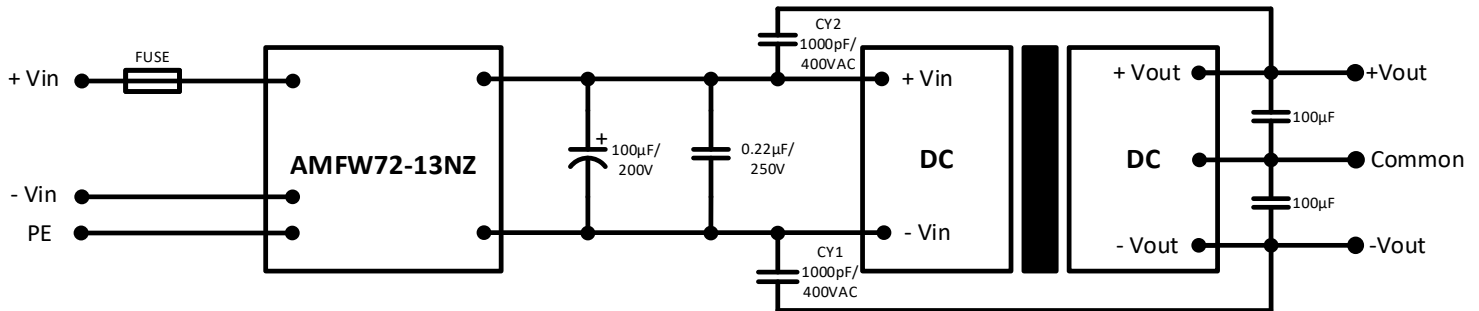
| 24 & 48 Vin models |                |                |
|--------------------|----------------|----------------|
| Pin                | Single         | Dual           |
| 1                  | On/Off Control | On/Off Control |
| 2                  | -Vin           | -Vin           |
| 3                  | +Vin           | +Vin           |
| 4                  | + Vout         | + Vout         |
| 5                  | NC             | Common         |
| 6                  | - Vout         | - Vout         |

**110Vin single output models with -K-STD option**

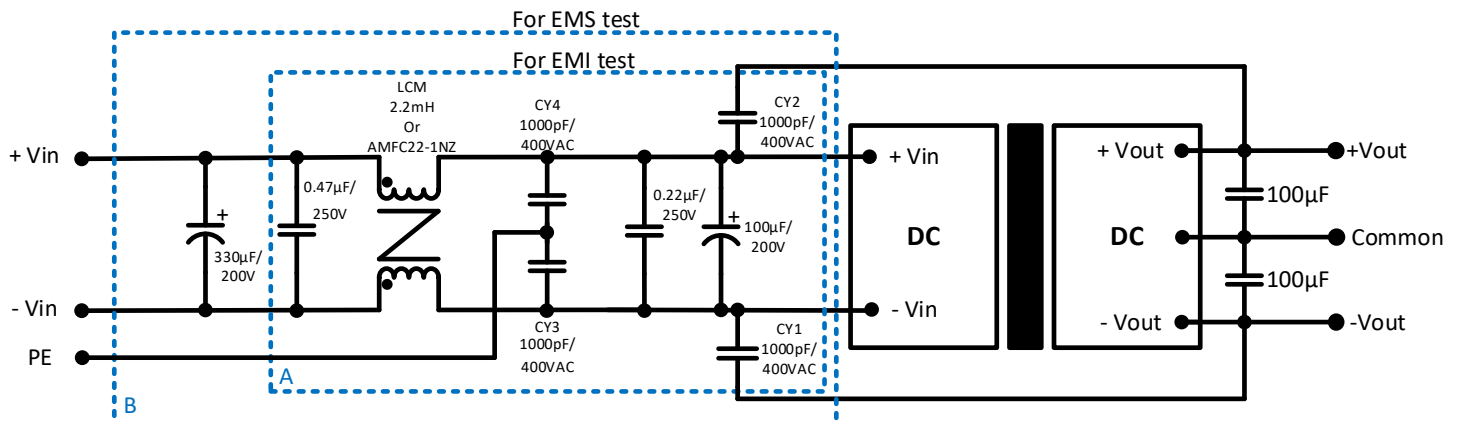


| 110Vin models |        |
|---------------|--------|
| Pin           | Single |
| 1             | N.C.   |
| 2             | -Vin   |
| 3             | +Vin   |
| 4             | +Vout  |
| 5             | N.C.   |
| 6             | -Vout  |

**Recommended EMC circuit 1 (110Vin dual output models)**



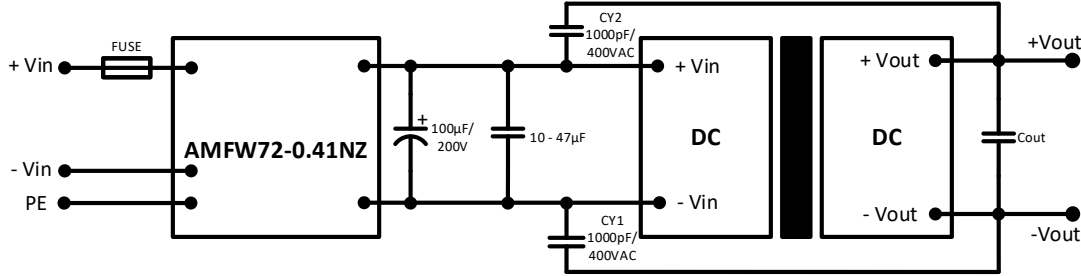
**Recommended EMC circuit 2 (110Vin dual output models)**



Notes: Part A for EMI filtering and Part B is used for EMS filtering.

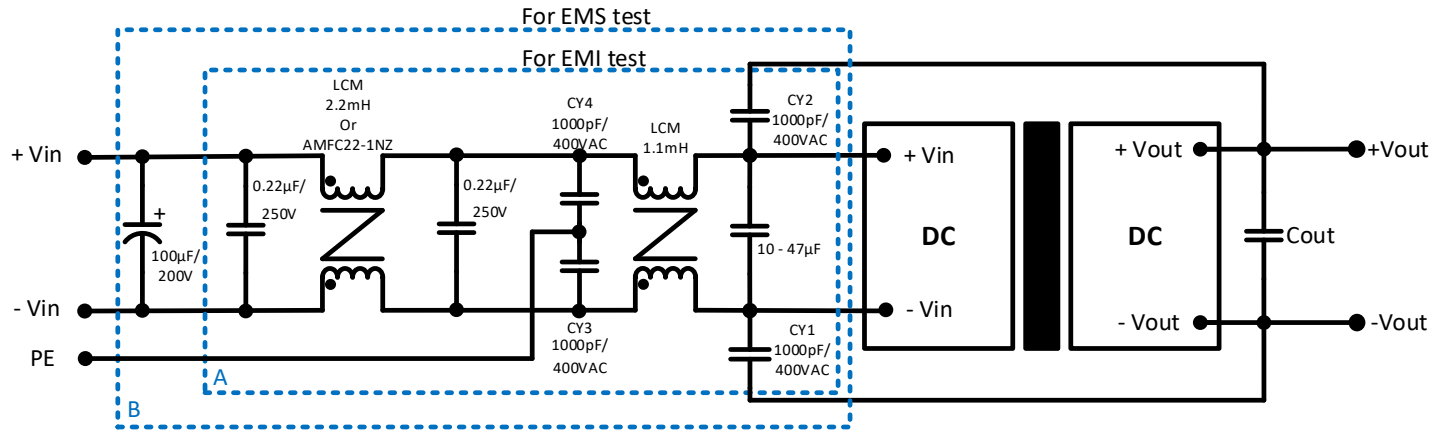


### Recommended EMC circuit 3 (110Vin single output models)



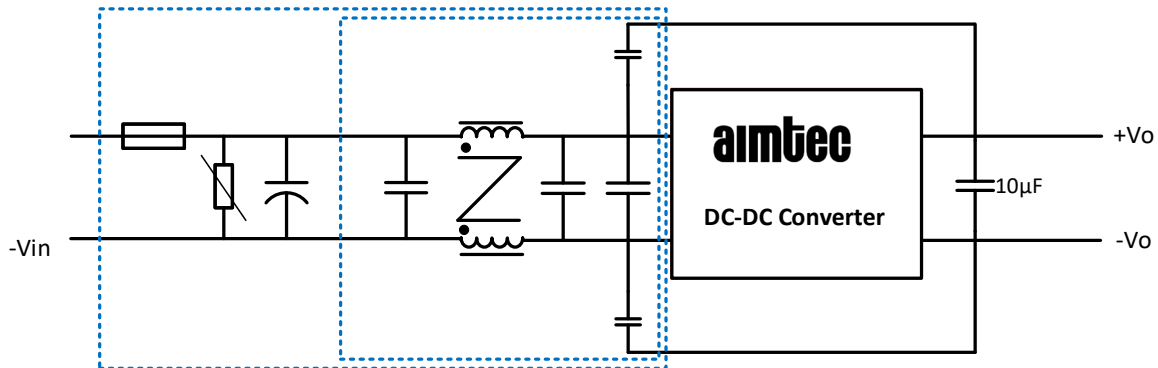
| Vout    | Cout  |
|---------|-------|
| 3.3 / 5 | 100µF |
| 12 / 15 | 47µF  |
| 24      | 22µF  |

### Recommended EMC circuit 4 (110Vin single output models)



Notes: Part A for EMI filtering and Part B is used for EMS filtering.

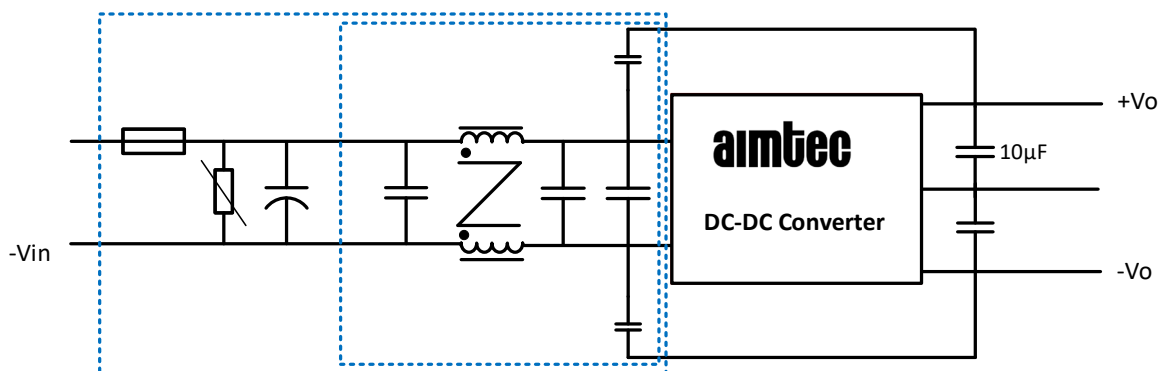
### Recommended EMC circuit 5 24 & 48 Vin single output models



Notes: Part A for EMI filtering and Part B is used for EMS filtering.

| Vin | MOV    | C1            | C2          | C3            | C4            | LCM                 |
|-----|--------|---------------|-------------|---------------|---------------|---------------------|
| 24V | S20K30 | 680 µF / 50V  | 1 µF / 50V  | 330 µF / 50V  | 4.7 µF / 50V  | 4.7mH or AMFC47-3NZ |
| 48V | S14K60 | 680 µF / 100V | 1 µF / 100V | 330 µF / 100V | 4.7 µF / 100V | 6.8mH               |

## 24 & 48 Vin dual output models



**Notes:** Part A for EMI filtering and Part B is used for EMS filtering.

| Vin | MOV    | C1                 | C2               | C3                 | C4                 | LCM                 |
|-----|--------|--------------------|------------------|--------------------|--------------------|---------------------|
| 24V | S20K30 | 680 $\mu$ F / 50V  | 1 $\mu$ F / 50V  | 330 $\mu$ F / 50V  | 4.7 $\mu$ F / 50V  | 4.7mH or AMFC47-3NZ |
| 48V | S14K60 | 680 $\mu$ F / 100V | 1 $\mu$ F / 100V | 330 $\mu$ F / 100V | 4.7 $\mu$ F / 100V | 4.7mH or AMFC47-3NZ |

**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](http://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](http://www.aimtec.com).