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**AME60-VZ**



The new **AME60-VZ** is a brand-new AC/DC converter that offers much greater cost effectiveness due to material normalization and production automation also leading to improved reliability and performance. Due to these improvements, we are proud to offer you this converter at a price never yet seen for a 60W Aimtec AC/DC converter. Offering a commercial input voltage range of 85-264VAC and output voltages of 5, 12, 15, 24 & 48VDC, this series will greatly benefit your new system design.

This new series offers operating temperatures from -40°C to 70°C with full power up to 55°C depending on models. It also features a 4000VAC isolation for improved reliability and system safety.

Furthermore, a higher MTBF of 300,000h, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection (OVP) come standard with the series.

The **AME60-VZ** is suitable for street lighting controls, grid power, instrumentation, industrial controls and communication applications.

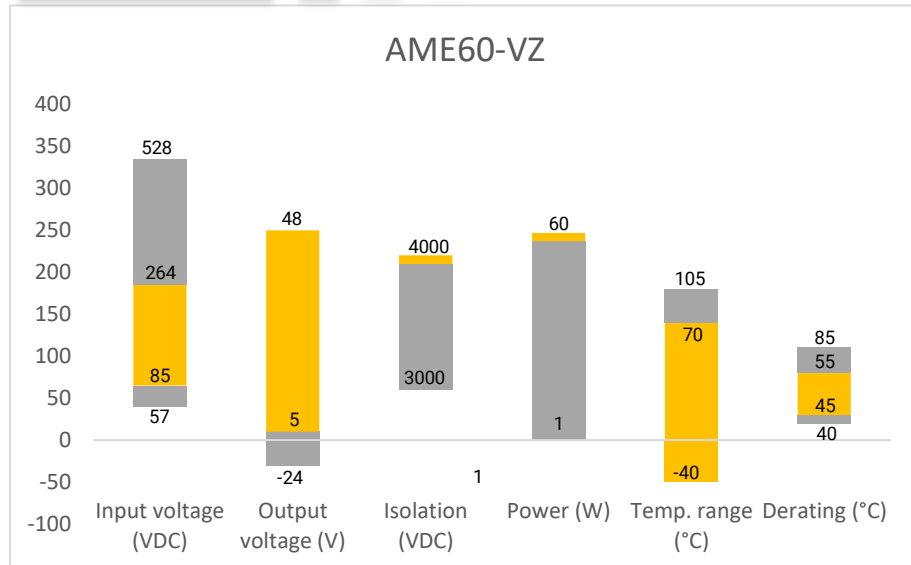
**Features**



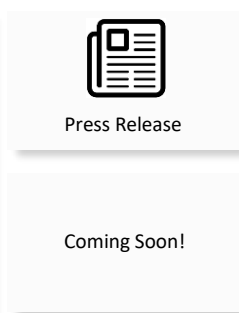
- Universal Input: 85 - 264VAC/100 - 370VDC
- Operating temperature range: -40°C to +70°C
- High isolation voltage: 4000VAC
- Regulated output, Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- EMI performance meets CISPR32/EN55032 CLASS B
- Certified to IEC62368, UL62368, EN62368 standards (pending)



**Summary**



**Training**



**Applications**



## Models & Specifications

| Single Output |                        |                     |                        |                    |                        |                              |                         |
|---------------|------------------------|---------------------|------------------------|--------------------|------------------------|------------------------------|-------------------------|
| Model         | Input Voltage (VAC/Hz) | Input Voltage (VDC) | Max Output wattage (W) | Output Voltage (V) | Output Current max (A) | Maximum capacitive load (μF) | Efficiency @ 230VAC (%) |
| AME60-5SVZ    | 85-264/47-63           | 100-370             | 50                     | 5                  | 10                     | 50,000                       | 82                      |
| AME60-12SVZ   | 85-264/47-63           | 100-370             | 60                     | 12                 | 5                      | 10,000                       | 86                      |
| AME60-15SVZ   | 85-264/47-63           | 100-370             | 60                     | 15                 | 4                      | 8,000                        | 86                      |
| AME60-24SVZ   | 85-264/47-63           | 100-370             | 60                     | 24                 | 2.5                    | 2,700                        | 86                      |
| AME60-48SVZ   | 85-264/47-63           | 100-370             | 60                     | 48                 | 1.25                   | 680                          | 86                      |

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME60-5SVZ-ST is chassis mounting and AME60-5SVZ-STD is DIN-Rail mounting version).

| Input Specifications             |                |         |         |         |       |
|----------------------------------|----------------|---------|---------|---------|-------|
| Parameters                       | Conditions     | Minimum | Typical | Maximum | Units |
| Current                          | 115VAC         |         |         | 1.4     | A     |
|                                  | 230VAC         |         |         | 0.8     | A     |
| Inrush current <2ms (cold start) | 115VAC         |         | 45      |         | A     |
|                                  | 230VAC         |         | 90      |         | A     |
| Leakage current                  |                |         |         | 0.25    | mA    |
| External fuse                    | slow blow type | 3.15    |         |         | A     |

| Output Specifications    |                 |         |         |        |
|--------------------------|-----------------|---------|---------|--------|
| Parameters               | Conditions      | Typical | Maximum | Units  |
| Voltage accuracy         |                 | ±2      |         | %      |
| Line regulation          | Full load       | ±0.5    |         | %      |
| Load regulation          | 0-100% load     | ±1      |         | %      |
| Ripple & Noise*          | 20MHz bandwidth |         | 150     | mV p-p |
| Hold up time             | 115VAC          | 8       |         | ms     |
|                          | 230VAC          | 65      |         | ms     |
| Voltage adjustment range |                 |         | ±10     | %      |

\* Ripple and Noise are measured at 20MHz bandwidth by using the referenced Application circuit.

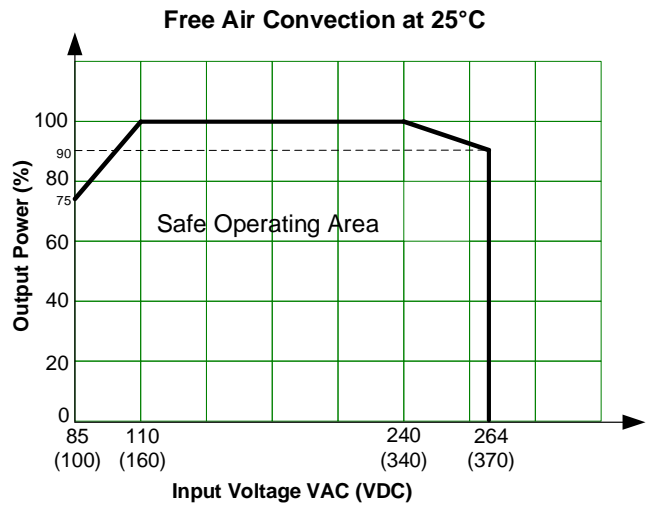
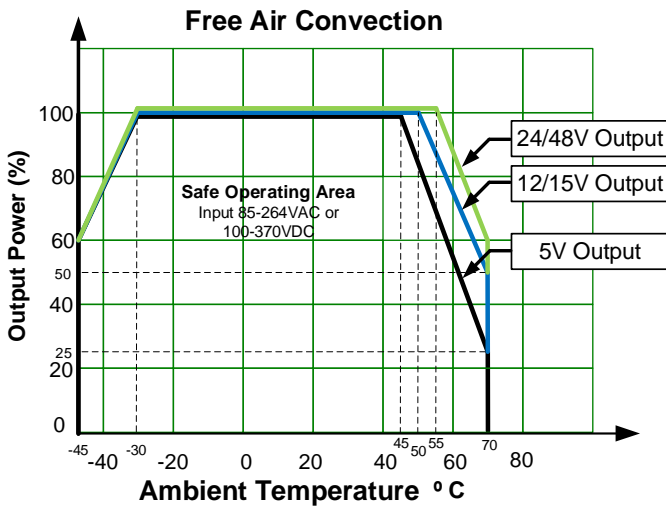
| Isolation Specifications |                               |         |       |       |
|--------------------------|-------------------------------|---------|-------|-------|
| Parameters               | Conditions                    | Typical | Rated | Units |
| Tested I/O voltage       | 60 sec, leakage current < 5mA |         | 4000  | VAC   |

| General Specifications  |               |         |         |           |
|-------------------------|---------------|---------|---------|-----------|
| Parameters              | Conditions    | Typical | Maximum | Units     |
| Protection class        |               | Class I |         |           |
| Over Current protection | Auto recovery | ≥ 110   |         | % of Iout |
| Over voltage protection | 5V Vout       |         | ≤ 9     | VDC       |
|                         | 12V Vout      |         | ≤ 16    |           |

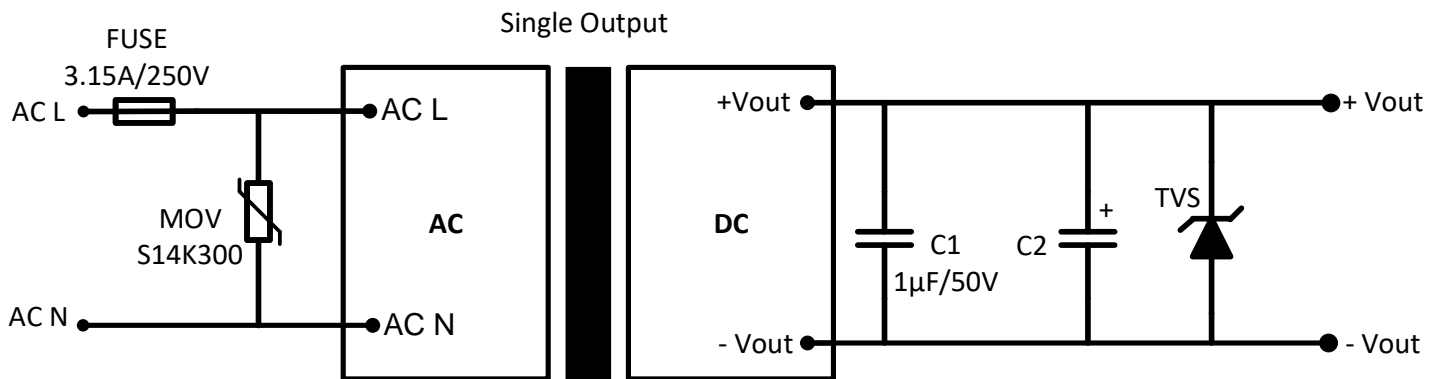
|   |   |   |      |        |
|---|---|---|------|--------|
|   | 15V Vout  |   | ≤ 24 |        |
|   | 24V Vout  |   | ≤ 35 |        |
|   | 48V Vout  |   | ≤ 60 |        |
| Short circuit protection  | Hiccup, Continuous                                      |   |      |        |
| Short circuit restart   | Auto recovery   |   |      |        |
| Operating temperature   | See derating graph                                      | -40 to +70  |      | °C     |
| Maximum case temperature  |   | 100   |      | °C     |
| Storage temperature   |   | -40 to +85  |      | °C     |
| Lead temperature  | Wave soldering  | 260 ± 5 °C; time : 5 - 10s                        |      |        |
|   | Hand soldering  | 360 ± 10 °C; time : 3 - 5s                        |      |        |
| Power consumption   | 5V/12V/15V/24V models                                   |   | 0.5  | W      |
|   | 48V model   |   | 0.65 |        |
| Temperature coefficient   |   | ±0.02   |      | % / °C |
| Cooling   | Free air convection                                     |   |      |        |
| Humidity  | Non-condensing  |   | 95   | % RH   |
| Case material   | Heat resistant black Plastic (flammability to UL 94V-0) |   |      |        |
| Weight  | PCB mountable models                                    |   | 310  | g      |
|   | With optional -ST mounting plate:                       |   | 400  |        |
|   | With optional -STD mounting plate:                      |   | 470  |        |
| Dimensions (L x W x H)  | PCB mountable models                                    | 4.29 x 2,30 x 1.18 inches (109.0 x 58.5 x 30.0mm) |      |        |
|   | With optional -ST mounting plate:                       | 5.32 x 2,76 x 1.52 inches (135.0 x 70.0 x 38.5mm) |      |        |
|   | With optional -STD mounting plate:                      | 5.39 x 2,76 x 1.73 inches (137.0 x 70.0 x 44.0mm) |      |        |
| MTBF  | > 300 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load       |   |      |        |
| <b>NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity&lt;75%, nominal input voltage and at rated output load unless otherwise specified.</b> |   |   |      |        |

| Safety Specifications |  |   |   |
|-----------------------|--|---|---|
| Parameters            |  |   |   |
| Standards             | Information technology Equipment           | Design to meet IEC/EN/UL 62368                    |   |
|                       | EMC - Conducted and radiated emission      | CISPR32 / EN55032, class B                        |   |
|                       | Electrostatic Discharge Immunity           | IEC 61000-4-2 Contact ±6KV / Air ±8KV, Criteria B |   |
|                       | RF, Electromagnetic Field Immunity         | IEC 61000-4-3 10V/m, Criteria A                   |   |
|                       | Electrical Fast Transient/Burst Immunity   | IEC 61000-4-4 ±4KV, Criteria B                    |   |
|                       | Surge Immunity                             |   | IEC 61000-4-5 L-L ±2KV/L-G ±4KV, with typical application circuit, Criteria B |
|                       |  |   | IEC 61000-4-5 L-L ±4KV/L-G ±6KV, with EMC recommended circuit, Criteria B     |
|                       | RF, Conducted Disturbance Immunity         | IEC 61000-4-6 10Vr.m.s, Criteria A                |   |
|                       | Voltage dips, Short Interruptions Immunity | IEC 61000-4-11 0%, 70%, Criteria B                |   |

## Derating



## Typical Application Circuit

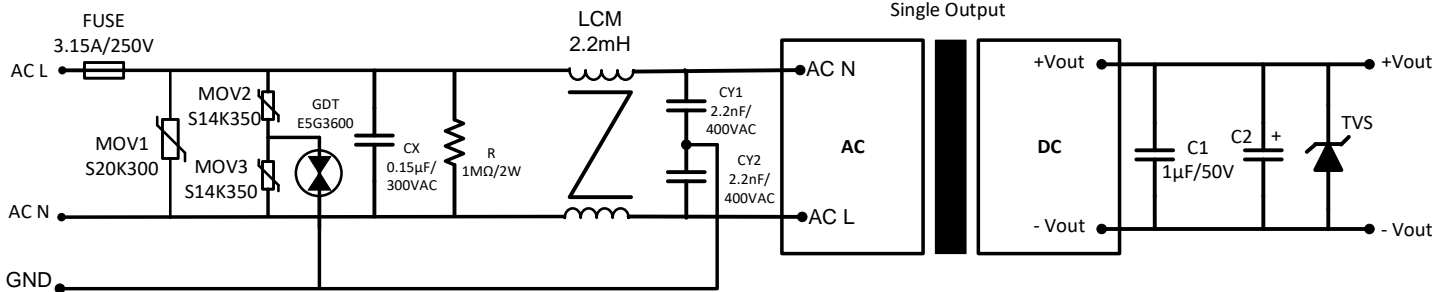


| Model        | C2           | TVS |
|--------------|--------------|-----|
| 5 Vout       | 680 µF / 10V | 7V  |
| 12 / 15 Vout | 330 µF / 25V | 20V |
| 24 Vout      | 200 µF / 35V | 30V |
| 48 Vout      | 100 µF / 63V | 64V |

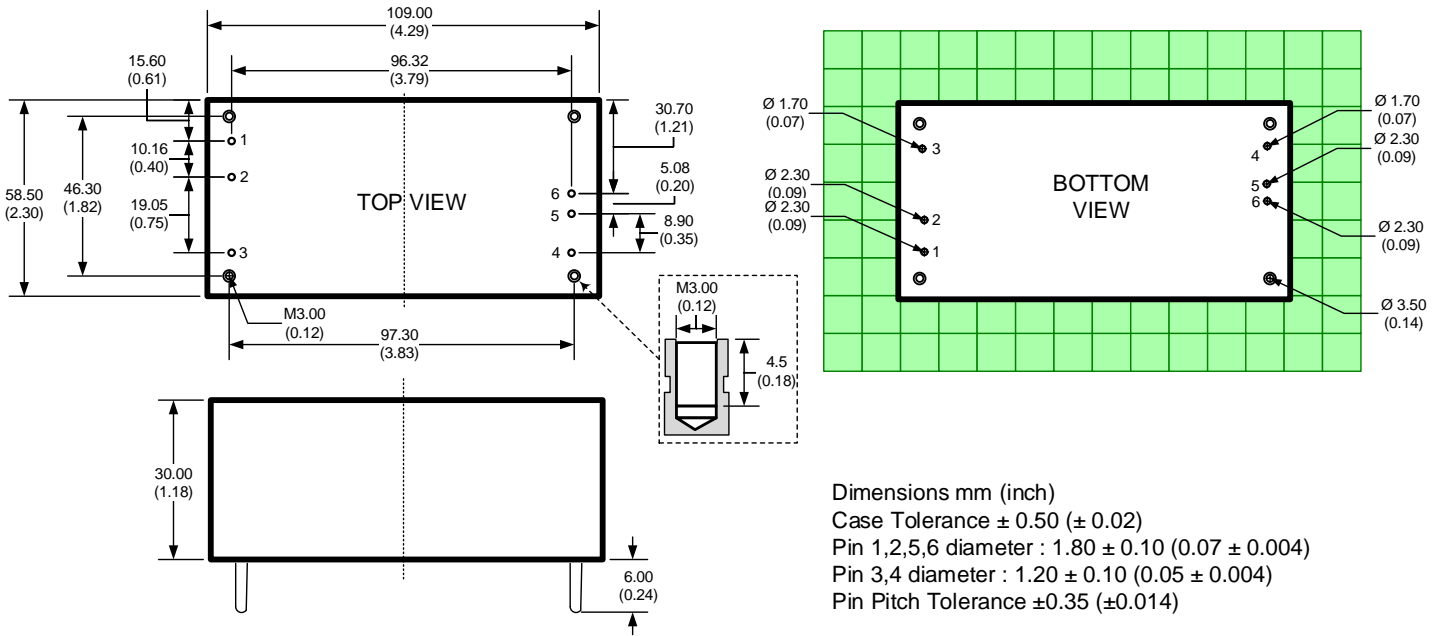
### Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode.

## EMC Recommended Circuit



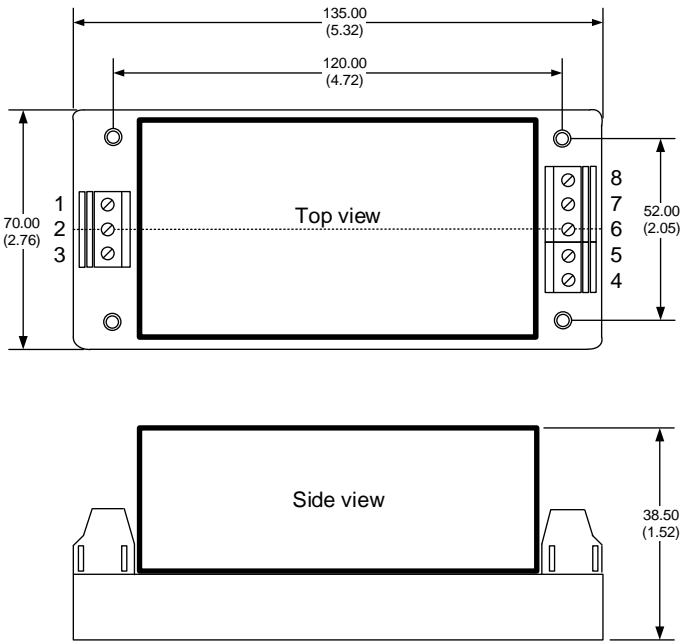
## Dimensions



### Pin Output Specifications

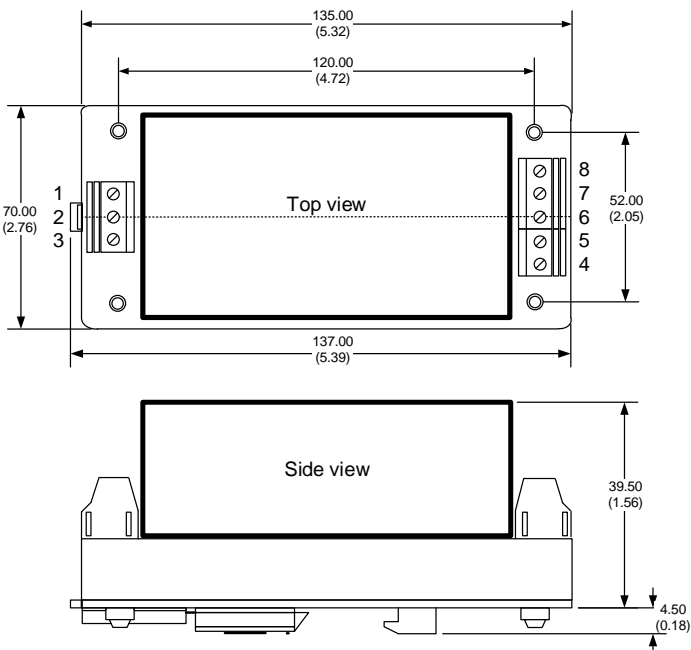
| Pin | Single       |
|-----|--------------|
| 1   | AC Input (N) |
| 2   | AC Input (L) |
| 3   | GND          |
| 4   | Trim         |
| 5   | +V Output    |
| 6   | -V Output    |

## Dimensions with ST Optional



| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Single       |
| 1                         | AC Input (N) |
| 2                         | AC Input (L) |
| 3                         | GND          |
| 4                         | Trim         |
| 5                         | +V Output    |
| 6                         | -V Output    |
| 7                         | NC           |
| 8                         | NC           |

## Dimensions with STD Optional



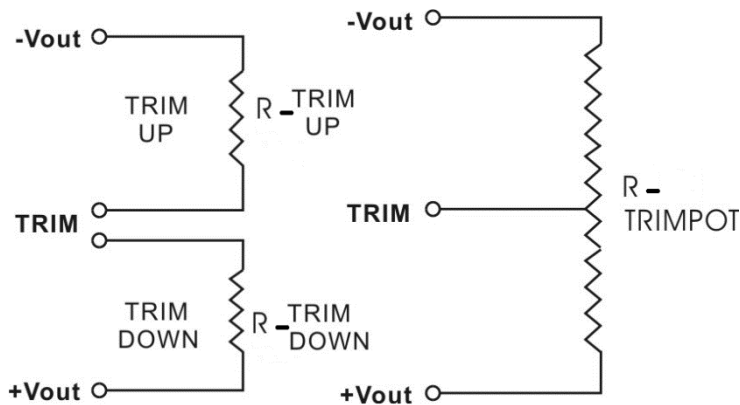
| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Single       |
| 1                         | AC Input (N) |
| 2                         | AC Input (L) |
| 3                         | GND          |
| 4                         | Trim         |
| 5                         | +V Output    |
| 6                         | -V Output    |
| 7                         | NC           |
| 8                         | NC           |

Trimming



Output voltage can be externally trimmed by utilizing the methods as shown below

**Fixed Resistor**      **Variable Potentiometer**



Leave open if not used.

**AME60-5SVZ**

|              |       |      |      |       |      |      |        |        |        |      |
|--------------|-------|------|------|-------|------|------|--------|--------|--------|------|
| Trim down %  | 1     | 2    | 3    | 4     | 5    | 6    | 7      | 8      | 9      | 10   |
| Vout (VDC)   | 4.95  | 4.9  | 4.85 | 4.8   | 4.75 | 4.7  | 4.65   | 4.6    | 4.55   | 4.5  |
| Rt down (KΩ) | 160.7 | 78.2 | 50.7 | 36.95 | 28.7 | 23.2 | 19.271 | 16.325 | 14.033 | 12.2 |
| Trim up %    | 1     | 2    | 3    | 4     | 5    | 6    | 7      | 8      | 9      | 10   |
| Vout (VDC)   | 5.05  | 5.1  | 5.15 | 5.2   | 5.25 | 5.3  | 5.35   | 5.4    | 5.45   | 5.5  |
| Rt up (KΩ)   | 164   | 81.5 | 54   | 40.25 | 32   | 26.5 | 22.571 | 19.625 | 17.333 | 15.5 |

**AME60-12SVZ**

|              |         |        |        |        |        |        |        |        |        |        |
|--------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Trim down %  | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 11.88   | 11.76  | 11.64  | 11.52  | 11.4   | 11.28  | 11.16  | 11.04  | 10.92  | 10.8   |
| Rt down (KΩ) | 183.233 | 111.59 | 79.474 | 61.246 | 49.499 | 41.299 | 35.249 | 30.602 | 26.921 | 23.933 |
| Trim up %    | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 12.12   | 12.24  | 12.36  | 12.48  | 12.6   | 12.72  | 12.84  | 12.96  | 13.08  | 13.2   |
| Rt up (KΩ)   | 211.778 | 57.03  | 32.596 | 22.642 | 17.238 | 13.845 | 11.516 | 9.819  | 8.527  | 7.511  |

AME60-15SVZ

| Trim down %  | 1     | 2    | 3       | 4      | 5     | 6      | 7      | 8      | 9      | 10   |
|--------------|-------|------|---------|--------|-------|--------|--------|--------|--------|------|
| Vout (VDC)   | 14.85 | 14.7 | 14.55   | 14.4   | 14.25 | 14.1   | 13.95  | 13.8   | 13.65  | 13.5 |
| Rt down (KΩ) | 616.5 | 304  | 199.833 | 147.75 | 116.5 | 95.667 | 80.786 | 69.625 | 60.944 | 54   |
| Trim up %    | 1     | 2    | 3       | 4      | 5     | 6      | 7      | 8      | 9      | 10   |
| Vout (VDC)   | 15.15 | 15.3 | 15.45   | 15.6   | 15.75 | 15.9   | 16.05  | 16.2   | 16.35  | 16.5 |
| Rt up (KΩ)   | 124   | 61.5 | 40.667  | 30.25  | 24    | 19.833 | 16.857 | 14.625 | 12.889 | 11.5 |

AME60-24SVZ

| Trim down %  | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
|--------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (VDC)   | 23.76   | 23.52   | 23.28   | 23.04   | 22.8    | 22.56  | 22.32  | 22.08  | 21.84  | 21.6   |
| Rt down (KΩ) | 471.081 | 287.942 | 205.845 | 159.249 | 129.221 | 108.26 | 92.793 | 80.914 | 71.504 | 63.865 |
| Trim up %    | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 24.24   | 24.48   | 24.72   | 24.96   | 25.2    | 25.44  | 25.68  | 25.92  | 26.16  | 26.4   |
| Rt up (KΩ)   | 239.556 | 64.606  | 36.982  | 25.728  | 19.619  | 15.783 | 13.15  | 11.232 | 9.771  | 8.622  |

AME60-48SVZ

| Trim down %  | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
|--------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (VDC)   | 23.76   | 23.52   | 23.28   | 23.04   | 22.8    | 22.56  | 22.32  | 22.08  | 21.84  | 21.6   |
| Rt down (KΩ) | 471.081 | 287.942 | 205.845 | 159.249 | 129.221 | 108.26 | 92.793 | 80.914 | 71.504 | 63.865 |
| Trim up %    | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 24.24   | 24.48   | 24.72   | 24.96   | 25.2    | 25.44  | 25.68  | 25.92  | 26.16  | 26.4   |
| Rt up (KΩ)   | 239.556 | 64.606  | 36.982  | 25.728  | 19.619  | 15.783 | 13.15  | 11.232 | 9.771  | 8.622  |

**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).



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