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**AME40-277VZ**



Encapsulated

The AME40-277VZ is an AC/DC converter that offers much greater cost effectiveness due to material normalization and production automation also leading to improved reliability and performance. Offering a commercial input voltage range of 85-305VAC and an output voltage range from 3.3-48V, this series will offer many benefits to your new system design.

This new series offers great operating temperatures, from -40°C to 70°C and features isolation of 4000VAC for improved reliability and system safety. Furthermore, a high 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.

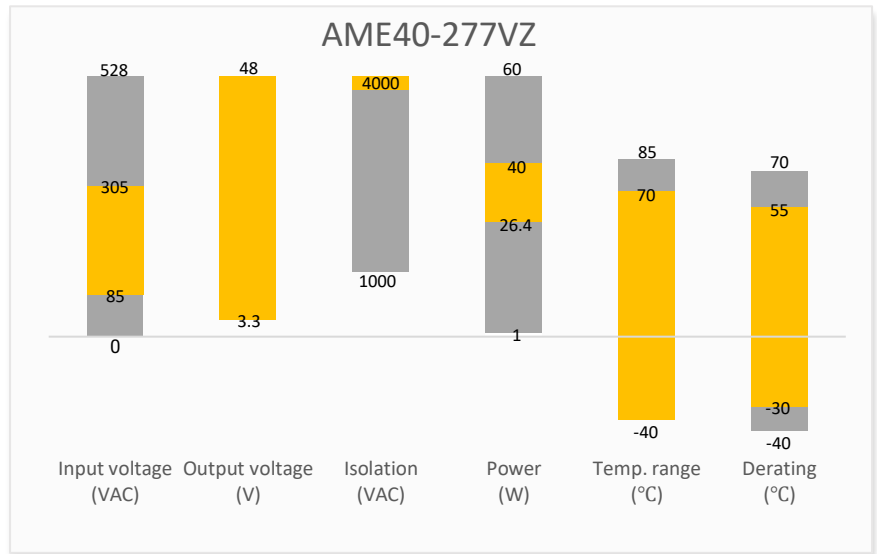
The AME40-277VZ is suitable for street lighting controls, grid power, LED, instrumentation, industrial controls, communication and civil applications.

**Features**

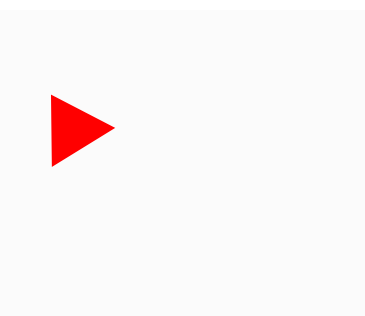


- Universal Input: 85 - 305VAC/100 - 430VDC
- Operating Temp: -40 °C to +70 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 150mV(p-p), Max.
- Output short circuit, over-current, over-voltage protection
- Regulated Output

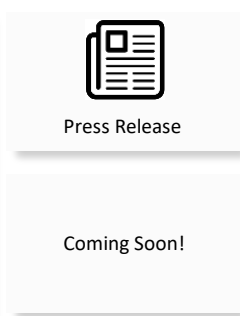
**Summary**



**Training**



Product Training Video  
(click to open)



Application Notes

**Applications**



Power Grid



Industrial



Telecom



Instrumentation

## 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 (%) |
| AME40-3S277VZ  | 85-305/47-63           | 100-430             | 26.4                   | 3.3                | 8                      | 60000                        | 77                      |
| AME40-5S277VZ  | 85-305/47-63           | 100-430             | 40                     | 5                  | 8                      | 40000                        | 80                      |
| AME40-12S277VZ | 85-305/47-63           | 100-430             | 40                     | 12                 | 3.33                   | 9000                         | 84                      |
| AME40-15S277VZ | 85-305/47-63           | 100-430             | 40                     | 15                 | 2.66                   | 7000                         | 84                      |
| AME40-24S277VZ | 85-305/47-63           | 100-430             | 40                     | 24                 | 1.67                   | 2000                         | 84                      |
| AME40-48S277VZ | 85-305/47-63           | 100-430             | 40                     | 48                 | 0.83                   | 1000                         | 84                      |

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME40-3S277VZ-ST is chassis mounting and AME40-3S277VZ-STD is DIN-Rail mounting version).

| Input Specifications |                     |         |         |       |
|----------------------|---------------------|---------|---------|-------|
| Parameters           | Conditions          | Typical | Maximum | Units |
| Current              | 115VAC              |         | 1       | A     |
|                      | 277VAC              |         | 0.6     | A     |
| Inrush current       | 115VAC              | 60      |         | A     |
|                      | 230VAC              | 80      |         | A     |
| External fuse        | slow blow type,300V | 3.15    |         | A     |

| Output Specifications    |                               |         |         |        |
|--------------------------|-------------------------------|---------|---------|--------|
| Parameters               | Conditions                    | Typical | Maximum | Units  |
| Voltage accuracy         | 3.3V / 5V output              | ±2      | ±3      | %      |
|                          | Others                        | ±2      |         | %      |
| Line regulation          | Full load                     | ±0.5    |         | %      |
| Load regulation          | 0-100% load, 3.3V / 5V output | ±1      | ±3      | %      |
|                          | 0-100% load, Others           | ±1      |         | %      |
| Ripple & Noise*          | 20MHz bandwidth               | 80      | 150     | mV p-p |
| Hold up time             | 115VAC                        | 10      |         | ms     |
|                          | 277VAC                        | 50      |         | ms     |
| Voltage adjustable 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 < 10mA |         | 4000  | VAC   |

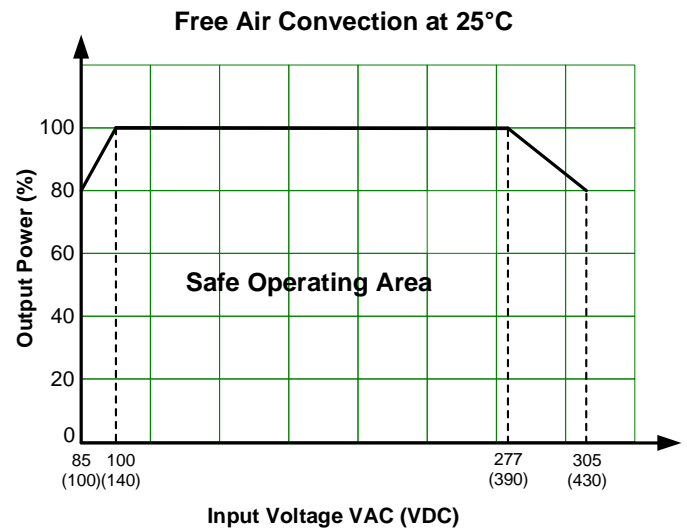
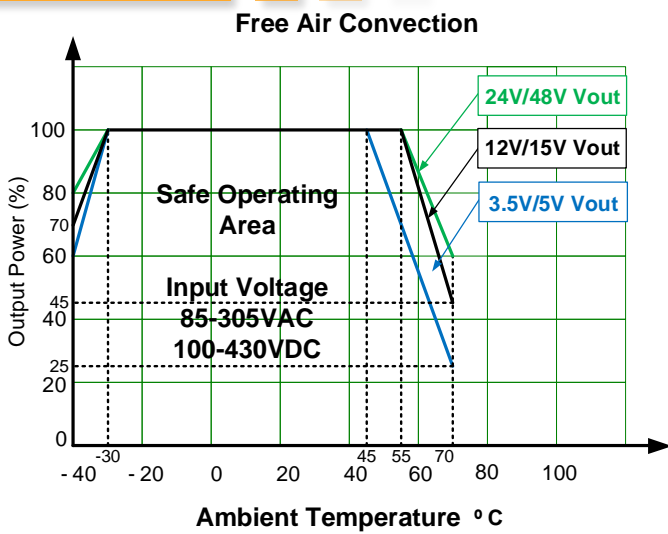
| General Specifications  |   |   |         |           |
|---|---|---|---------|-----------|
| Parameters  | Conditions  | Typical   | Maximum | Units     |
| Safety class  | Class II  |   |         |           |
| Switching frequency   |   | 65  |         | KHz       |
| Over Current protection   | Auto recovery   | ≥ 110   |         | % of Iout |
| Over voltage protection   | 3.3V Vout, Voltage clamp or shut off                    |   | 5.5     | VDC       |
|   | 5V Vout, Voltage clamp or shut off                      |   | 9       | VDC       |
|   | 12V Vout, Voltage clamp or shut off                     |   | 16      | VDC       |
|   | 15V Vout, Voltage clamp or shut off                     |   | 24      | VDC       |
|   | 24V Vout, Voltage clamp or shut off                     |   | 35      | VDC       |
|   | 48V Vout, Voltage clamp or shut off                     |   | 56      | VDC       |
| Short circuit protection  | Hiccup, Continuous, Auto recovery                       |   |         |           |
| Operating temperature   | See derating graph                                      | -40 to +70  |         | °C        |
| Storage temperature   |   | -40 to +85  |         | °C        |
| Lead temperature  | Wave soldering  | 260 ± 5 °C; Maximum duration 5 - 10s              |         |           |
|   | Hand soldering  | 360 ± 10 °C; Maximum duration 3 - 5s              |         |           |
| No-load power consumption   |   |   | 0.5     | W         |
| Power derating  | -40 °C ~ -30 °C, 3.3V / 5V Vout                         | 4   |         | % / °C    |
|   | -40 °C ~ -30 °C, 12V / 15V Vout                         | 3   |         | % / °C    |
|   | -40 °C ~ -30 °C, 24V / 48V Vout                         | 2   |         | % / °C    |
|   | 45 °C ~ 70 °C, 3.3V / 5V Vout                           | 3   |         | % / °C    |
|   | 55 °C ~ 70 °C, 12V / 15V Vout                           | 3.7   |         | % / °C    |
|   | 55 °C ~ 70 °C, 24V / 48V Vout                           | 2.7   |         | % / °C    |
|   | 85VAC ~ 100VAC  | 1.33  |         | % / VAC   |
|   | 277VAC ~ 305VAC   | 0.72  |         | % / VAC   |
| 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                                    | 215   |         | g         |
|   | With optional -ST mounting plate:                       | 300   |         |           |
|   | With optional -STD mounting plate:                      | 360   |         |           |
| Dimensions (L x W x H)  | PCB mountable models                                    | 3.50 x 2.50 x 0.98 inches (89.0 x 63.5 x 25.0mm)  |         |           |
|   | With optional -ST mounting plate:                       | 5.31 x 2.76 x 1.32 inches (135.0 x 70.0 x 33.5mm) |         |           |
|   | With optional -STD mounting plate:                      | 5.39 x 2.76 x 1.54 inches (137.0 x 70.0 x 39.0mm) |         |           |
| MTBF  | > 300 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load       |   |         |           |
| 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

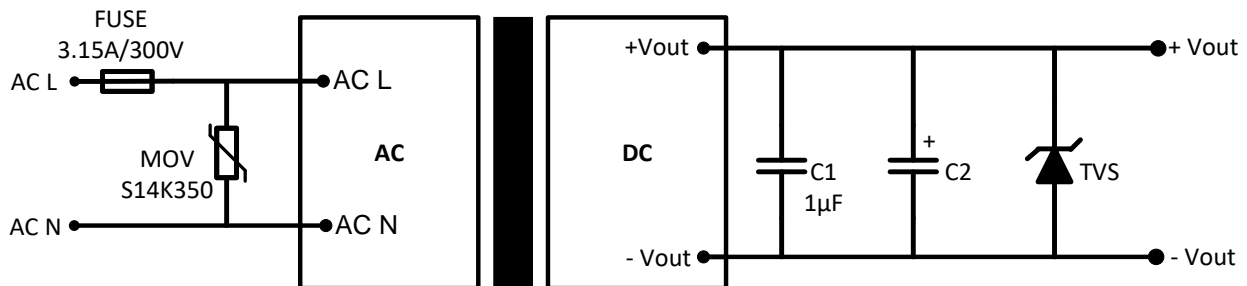
### Parameters

|           |  |  |
|-----------|--|--|
| Standards | Design to meet IEC/EN/UL 62368           |  |
|           | EMC - Conducted and radiated emission    | CISPR32 / EN55032, class B   |
|           | Electrostatic Discharge Immunity         | IEC 61000-4-2 Contact $\pm 6\text{KV}$ / Air $\pm 8\text{KV}$ , Criteria B   |
|           | RF, Electromagnetic Field Immunity       | IEC 61000-4-3 10V/m, Criteria A  |
|           | Electrical Fast Transient/Burst Immunity | IEC 61000-4-4 $\pm 2\text{KV}$ , Criteria B<br>IEC 61000-4-4 $\pm 4\text{KV}$ , with EMC recommended circuit, Criteria B                               |
|           | Surge Immunity                           | IEC 61000-4-5 L-L $\pm 1\text{KV}$ , Criteria B<br>IEC 61000-4-5 L-L $\pm 2\text{KV}$ /L-G $\pm 4\text{KV}$ , with EMC recommended circuit, Criteria B |
|           | RF, Conducted Disturbance Immunity       | IEC 61000-4-6 10Vr.m.s, Criteria A   |

## Derating



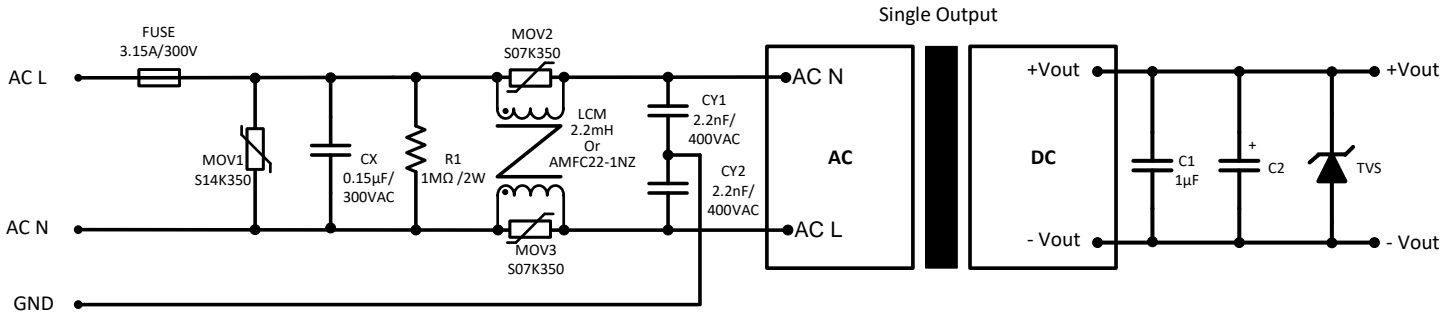
## Typical Application Circuit



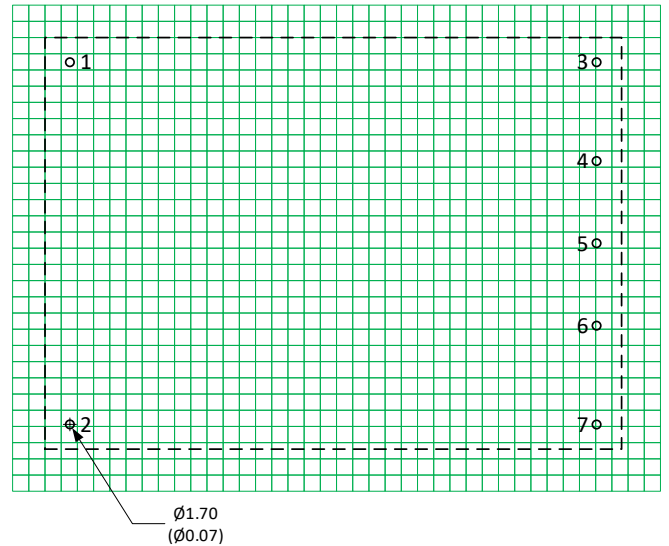
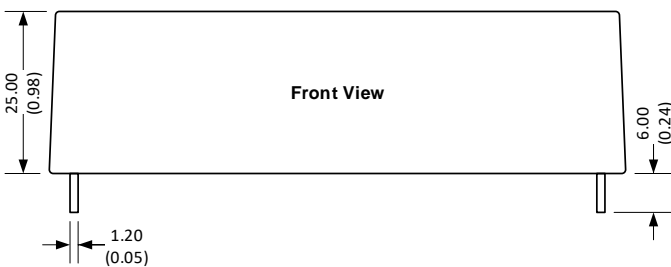
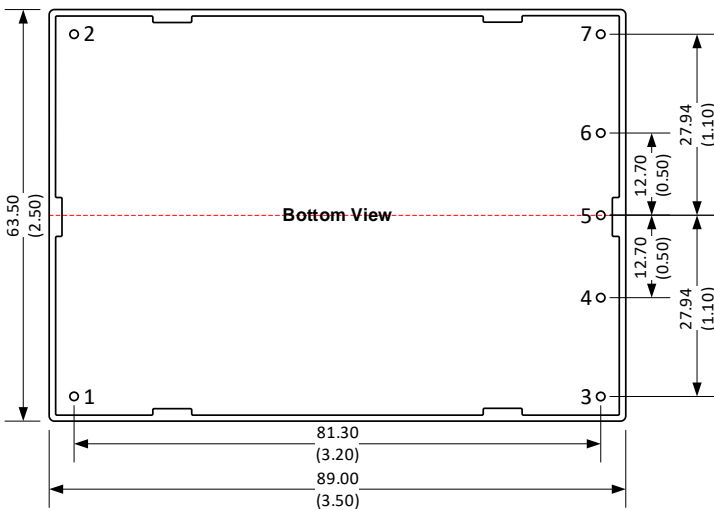
| Model        | C2                | TVS      |
|--------------|-------------------|----------|
| 3.3 / 5 Vout | 680 $\mu\text{F}$ | SMBJ7.0A |
| 12 / 15 Vout | 220 $\mu\text{F}$ | SMBJ20A  |
| 24 Vout      | 120 $\mu\text{F}$ | SMBJ30A  |
| 48 Vout      | 100 $\mu\text{F}$ | SMBJ64A  |

Note: Choose capacitors with at least 20% voltage margin.

## EMC Recommended Circuit



## Dimensions

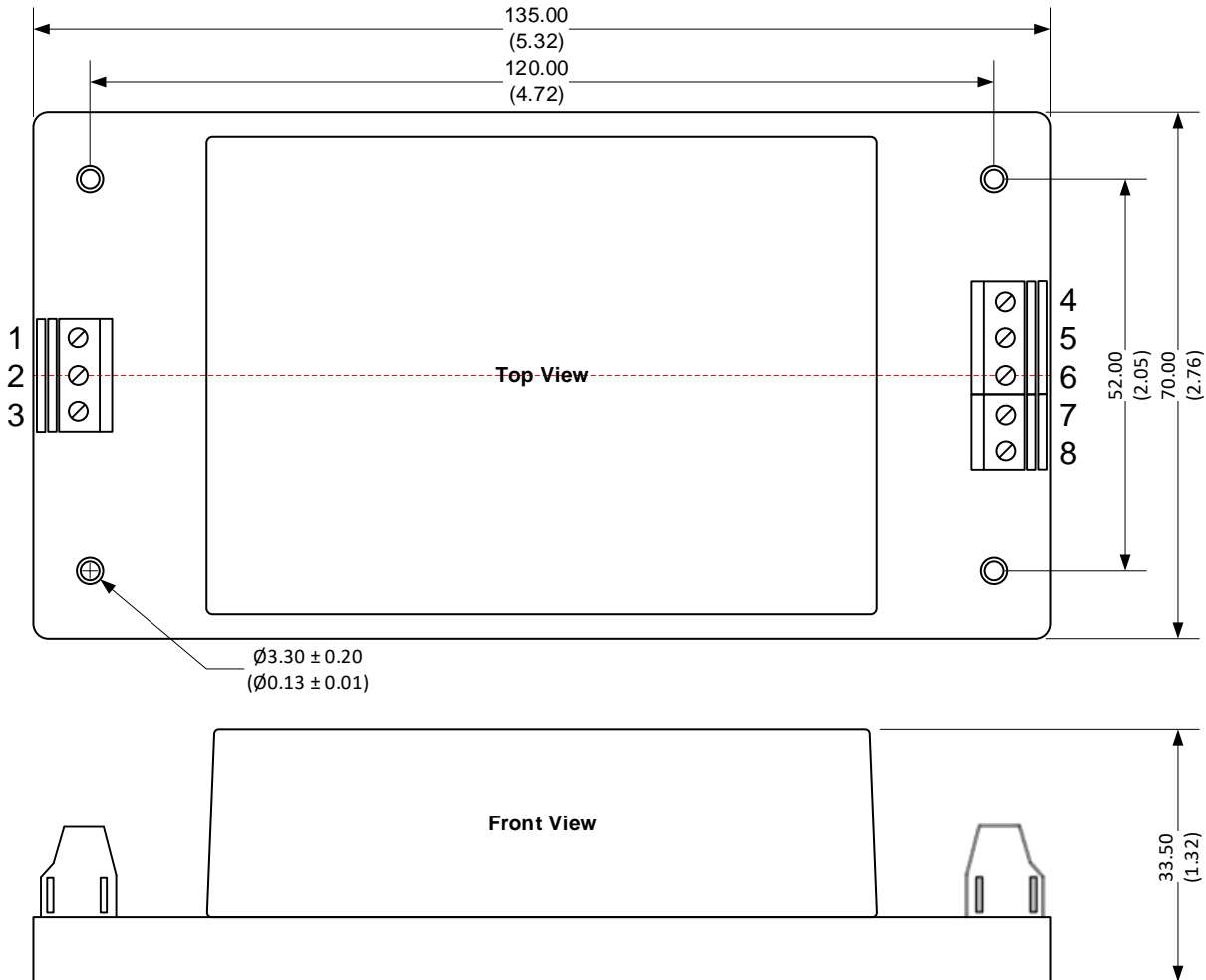


Note : Grid 2.54\*2.54 mm

**Notes:**  
All dimensions are typical in millimeters (inches).  
Pin diameter tolerances :  $\pm 0.10$  ( $\pm 0.004$ )  
General tolerance :  $\pm 0.50$  ( $\pm 0.02$ )

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

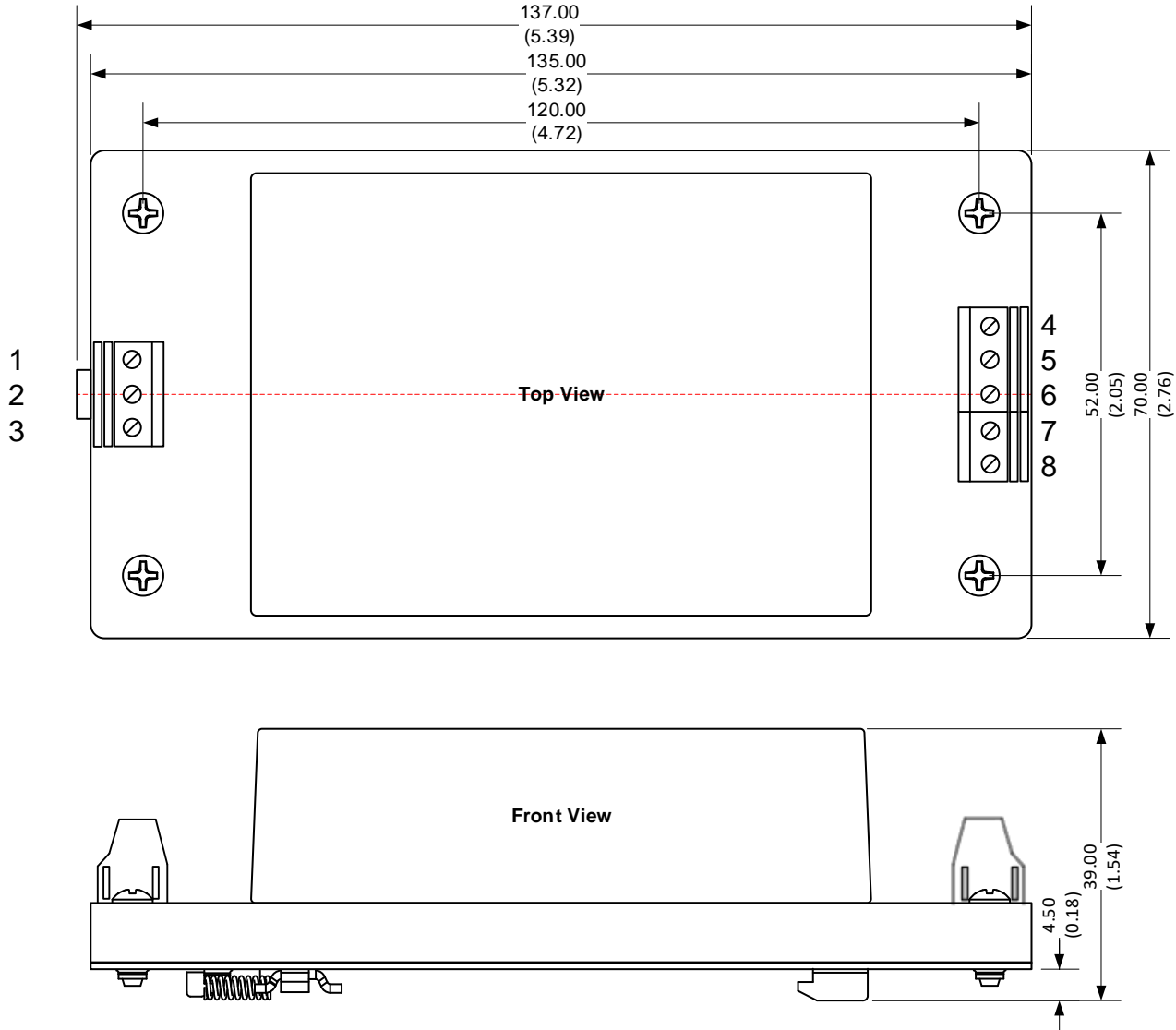
## Dimensions with ST Optional



**Notes:**  
 All dimensions are typical in millimeters (inches).  
 Wire range : 24-12 AWG  
 Tightening torque : Max 0.4 N.m  
 General tolerance  $\pm 1.00$  : ( $\pm 0.04$ )

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

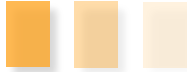
**Dimensions with STD Optional**



**Notes:**  
 All dimensions are typical in millimeters (inches).  
 Mounting rail : TS35, rail need to connect safety ground  
 Wire range : 24-12 AWG  
 Tightening torque : Max 0.4 N.m  
 General tolerance  $\pm 1.00$  : ( $\pm 0.04$ )

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

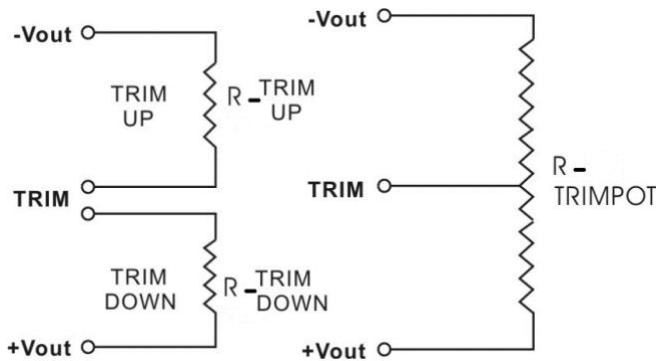
## Trimming



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

### Fixed Resistor

### Variable Potentiometer



Leave open if not used.

### AME40-3S277VZ

| Trim down %  | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10    |
|--------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Vout (VDC)   | 3.267   | 3.234  | 3.201  | 3.168  | 3.135  | 3.102  | 3.069  | 3.036  | 3.003  | 2.970 |
| Rt down (KΩ) | 101.202 | 53.881 | 36.117 | 26.808 | 21.078 | 17.195 | 14.391 | 12.271 | 10.611 | 9.277 |
| Trim up %    | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10    |
| Vout (VDC)   | 3.333   | 3.366  | 3.399  | 3.432  | 3.465  | 3.498  | 3.531  | 3.564  | 3.597  | 3.630 |
| Rt up (KΩ)   | 93.177  | 40.798 | 25.859 | 18.787 | 14.663 | 11.962 | 10.055 | 8.637  | 7.542  | 6.670 |

### AME40-5S277VZ

| Trim down %  | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|--------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (VDC)   | 4.950   | 4.900  | 4.850  | 4.800  | 4.750  | 4.700  | 4.650  | 4.600  | 4.550  | 4.500  |
| Rt down (KΩ) | 160.700 | 78.200 | 50.700 | 36.950 | 28.700 | 23.200 | 19.271 | 16.325 | 14.033 | 12.200 |
| Trim up %    | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 5.050   | 5.100  | 5.150  | 5.200  | 5.250  | 5.300  | 5.350  | 5.400  | 5.450  | 5.500  |
| Rt up (KΩ)   | 164.000 | 81.500 | 54.000 | 40.250 | 32.000 | 26.500 | 22.571 | 19.625 | 17.333 | 15.500 |



### AME40-12S277VZ

| Trim down %  | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|--------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (VDC)   | 11.880  | 11.760  | 11.640 | 11.520 | 11.400 | 11.280 | 11.160 | 11.040 | 10.920 | 10.800 |
| Rt down (KΩ) | 183.233 | 111.590 | 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)   | 12.120  | 12.240  | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.960 | 13.080 | 13.200 |
| Rt up (KΩ)   | 211.778 | 57.030  | 32.596 | 22.642 | 17.238 | 13.845 | 11.516 | 9.819  | 8.527  | 7.511  |

### AME40-15S277VZ

| Trim down %  | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
|--------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (VDC)   | 14.850  | 14.700  | 14.550  | 14.400  | 14.250  | 14.100 | 13.950 | 13.800 | 13.650 | 13.500 |
| Rt down (KΩ) | 616.500 | 304.000 | 199.833 | 147.750 | 116.500 | 95.667 | 80.786 | 69.625 | 60.944 | 54.000 |
| Trim up %    | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 15.150  | 15.300  | 15.450  | 15.600  | 15.750  | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| Rt up (KΩ)   | 124.000 | 61.500  | 40.667  | 30.250  | 24.000  | 19.833 | 16.857 | 14.625 | 12.889 | 11.500 |

### AME40-24S277VZ

| Trim down %  | 1       | 2       | 3       | 4       | 5       | 6       | 7      | 8      | 9      | 10     |
|--------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Vout (VDC)   | 23.760  | 23.520  | 23.280  | 23.040  | 22.800  | 22.560  | 22.320 | 22.080 | 21.840 | 21.600 |
| Rt down (KΩ) | 471.081 | 287.942 | 205.845 | 159.249 | 129.221 | 108.258 | 92.793 | 80.914 | 71.504 | 63.865 |
| Trim up %    | 1       | 2       | 3       | 4       | 5       | 6       | 7      | 8      | 9      | 10     |
| Vout (VDC)   | 24.240  | 24.480  | 24.720  | 24.960  | 25.200  | 25.440  | 25.680 | 25.920 | 26.160 | 26.400 |
| Rt up (KΩ)   | 239.556 | 64.606  | 36.982  | 25.728  | 19.619  | 15.783  | 13.150 | 11.232 | 9.771  | 8.622  |

### AME40-48S277VZ

| Trim down %  | 1        | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|--------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Vout (VDC)   | 47.520   | 47.040  | 46.560  | 46.080  | 45.600  | 45.120  | 44.640  | 44.160  | 43.680  | 43.200  |
| Rt down (KΩ) | 1216.754 | 756.639 | 545.609 | 424.485 | 345.902 | 290.797 | 250.014 | 218.613 | 193.691 | 173.429 |
| Trim up %    | 1        | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (VDC)   | 48.480   | 48.960  | 49.440  | 49.920  | 50.400  | 50.880  | 51.360  | 51.840  | 52.320  | 52.800  |
| Rt up (KΩ)   | 374.000  | 86.766  | 48.699  | 33.664  | 25.613  | 20.597  | 17.172  | 14.684  | 12.796  | 11.313  |

**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).