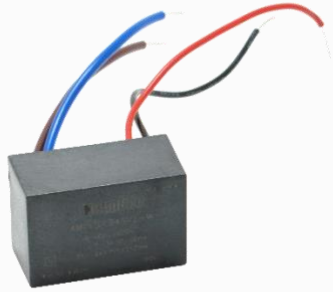


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AMEL5-VZ



Encapsulated

The new AMEL5-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. Offering a commercial input voltage range of 85-264VAC and an output voltage range from 3.3-24V, this series will offer many benefits to your new system design.

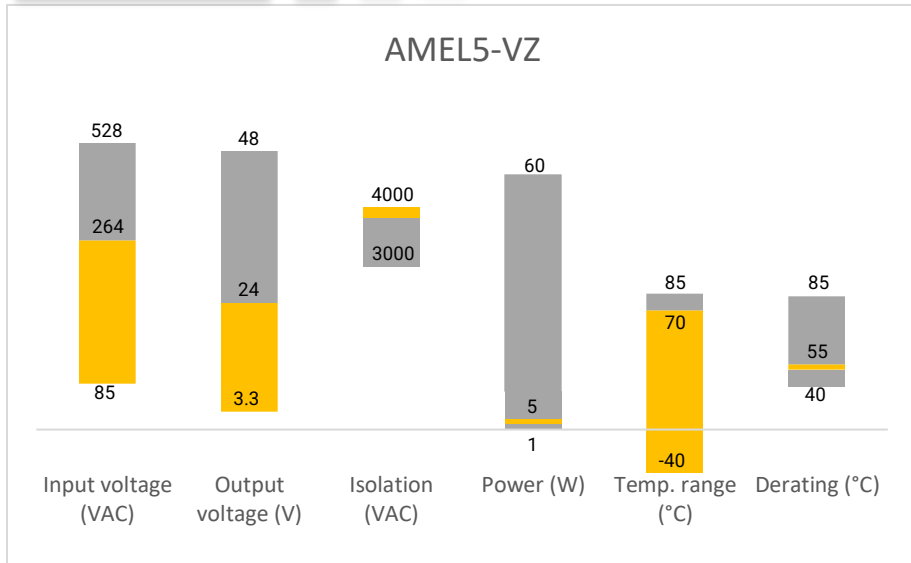
This new series offers great operating temperatures, from -40°C to 70°C with full power up to 55°C. It also features an isolation of 4000VAC for improved reliability and system safety. Furthermore, a higher MTBF of 300,000h, output short circuit protection (OSCP), output over-current protection (OCP) and an output over-voltage protection (OVP) come standard with the series.

The AMEL5-VZ is perfect for street lighting controls, grid power, LED, instrumentation, industrial controls, communication and civil applications.

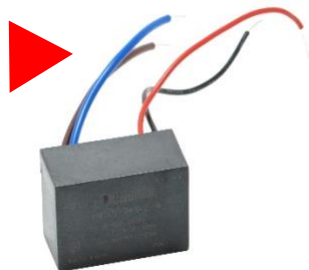
Features

- Universal Input: 85 - 264VAC/100 - 370VDC
- Operating Temp: -40 °C to +70 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 50mV(p-p), typ.
- Wire output terminal
- Output short circuit, over-current, over-voltage protection
- Regulated Output

Summary



Training



Product Training Video  
(click to open)



Press Release

Coming Soon!

Application Notes

Applications



Power Grid



Industrial



Telecom



Instrumentation

## Models & Specifications

| Single Output |                        |                     |                    |                        |                                    |                       |
|---------------|------------------------|---------------------|--------------------|------------------------|------------------------------------|-----------------------|
| Model         | Input Voltage (VAC/Hz) | Input Voltage (VDC) | Output Voltage (V) | Output Current max (A) | Maximum capacitive Load ( $\mu$ F) | Efficiency (%) 230VAC |
| AMEL5-3.3SVZ  | 85-264/47-63           | 100-370             | 3.3                | 1                      | 5000                               | 68                    |
| AMEL5-5SVZ    | 85-264/47-63           | 100-370             | 5                  | 1                      | 5000                               | 75                    |
| AMEL5-9SVZ    | 85-264/47-63           | 100-370             | 9                  | 0.56                   | 1200                               | 77                    |
| AMEL5-12SVZ   | 85-264/47-63           | 100-370             | 12                 | 0.42                   | 1200                               | 79                    |
| AMEL5-15SVZ   | 85-264/47-63           | 100-370             | 15                 | 0.33                   | 1000                               | 79                    |
| AMEL5-24SVZ   | 85-264/47-63           | 100-370             | 24                 | 0.21                   | 330                                | 81                    |

Note: Add suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AMEL5-5S277NZ-ST is chassis mounting and AMEL5-5S277NZ-STD is DIN-Rail mounting version).  
Add suffix "-W" for optional wire terminal.

| Input Specifications             |                            |         |         |         |         |
|----------------------------------|----------------------------|---------|---------|---------|---------|
| Parameters                       | Conditions                 | Minimum | Typical | Maximum | Units   |
| Current (full load)              | 115 VAC                    |         |         | 130     | mA      |
|                                  | 230 VAC                    |         |         | 70      | mA      |
| Inrush current <2ms (cold start) | 115 VAC                    |         | 10      |         | A       |
|                                  | 230 VAC                    |         | 20      |         | A       |
| External fuse                    | Recommended slow blow type |         | 1       |         | A       |
| Leakage Current                  | 230VAC/50Hz                |         |         | 0.1     | mA(rms) |
| Input Voltage                    | VAC                        | 85      |         | 264     | V       |
|                                  | VDC                        | 100     |         | 370     | V       |

| Output Specifications  |                         |           |         |        |
|------------------------|-------------------------|-----------|---------|--------|
| Parameters             | Conditions              | Typical   | Maximum | Units  |
| Voltage accuracy       | 3.3V output             | $\pm 3$   |         | %      |
|                        | Others                  | $\pm 2$   |         | %      |
| Line regulation        | Full Load               | $\pm 0.5$ |         | %      |
| Load regulation        | 0%-100% load            | $\pm 1$   |         | %      |
| Ripple & Noise*        | 20MHz Bandwidth, others | 50        | 100     | mV p-p |
| Hold-up time (minimum) | 115VAC                  | 23        |         | ms     |
|                        | 230VAC                  | 100       |         | ms     |

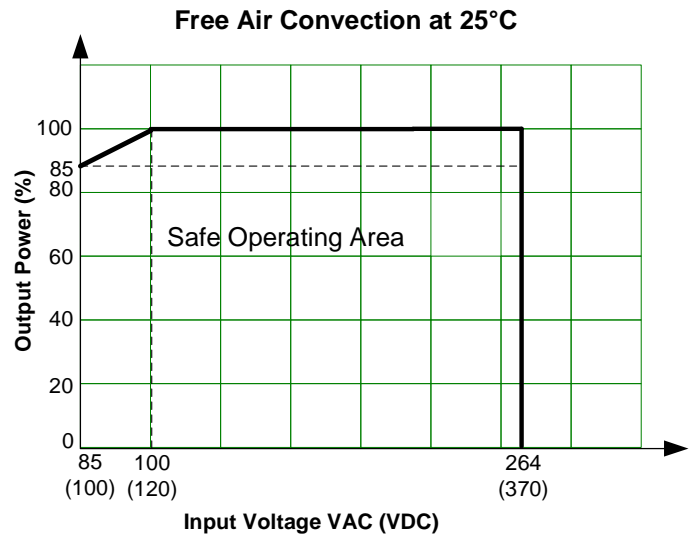
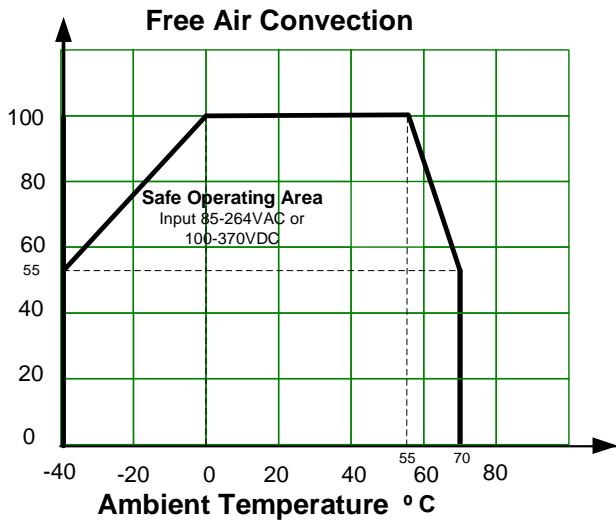
\* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific details.

| Isolation Specifications |            |         |       |       |
|--------------------------|------------|---------|-------|-------|
| Parameters               | Conditions | Typical | Rated | Units |
| Tested I/O voltage       | 60 sec     | 4000    |       | VAC   |

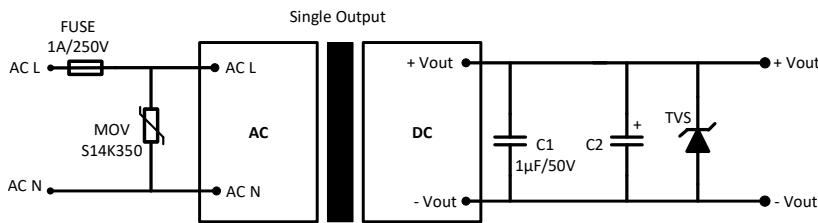
| General Specifications  |   |   |         |           |
|---|---|---|---------|-----------|
| Parameters  | Conditions  | Typical                                   | Maximum | Units     |
| Switching frequency   |   | 100                                       |         | KHz       |
| Protection class  | Class II  |   |         |           |
| Over Current protection   | Auto recovery                                     | ≥120                                      |         | % of Iout |
| Over voltage protection   | 3.3V / 5V Output, Zener diode clamp               |   | ≤ 7.5   | VDC       |
|   | 9V Output, Zener diode clamp                      |   | ≤ 15    | VDC       |
|   | 12V / 15V Output, Zener diode clamp               |   | ≤ 20    | VDC       |
|   | 24V Output, Zener diode clamp                     |   | ≤ 30    | VDC       |
| Short circuit protection  | Continuous, hiccup, Auto recovery                 |   |         |           |
| Operating temperature   | See derating curve                                | -40 to +70                                |         | °C        |
| Storage temperature   |   | -40 to +105                               |         | °C        |
| Temperature coefficient   |   | ±0.02                                     |         | % /°C     |
| Cooling   | Free air convection                               |   |         |           |
| Case material   | Plastic (flammability to UL 94V-0)                |   |         |           |
| Weight  | PCB mountable models                              | 25  |         | g         |
|   | With optional -ST mounting plate                  | 47  |         | g         |
|   | With optional -STD mounting plate                 | 69  |         | g         |
| Dimensions (L x W x H)  | PCB mountable models                              | 1.46 x 0.96 x 0.71inch (37 x 24.5 x 18mm) |         |           |
|   | With optional -ST mounting plate                  | 2.99 x 1.24 x 1.06inch (76 x 31 x 26.8mm) |         |           |
|   | With optional -STD mounting plate                 | 2.99 x 1.24 x 1.24inch (76 x 31 x 31.4mm) |         |           |
| 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            |   |  |
| Agency approvals      | cULus<br>IEC/EN/UL 62368-1, IEC/EN/UL 60950-1 |  |
| Standards             | EMI - Conducted and radiated emission         | EN55032, class A<br>EN55032, class B with EMC recommended circuit  |
|                       | 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, ±2KV, Criteria B with typical application circuit<br>IEC 61000-4-4, ±4KV, Criteria B with EMC recommended circuit                 |
|                       | Surge Immunity                                | IEC 61000-4-5, L-L ±1KV Criteria B with typical application circuit<br>IEC 61000-4-5, L-L ±2KV/L-G ±4KV, Criteria B with EMC recommended circuit |
|                       | RF, Conducted Disturbance Immunity            | IEC 61000-4-6, 10Vrms, Criteria A  |
|                       | Voltage dips, Short Interruptions Immunity    | IEC 61000-4-11, 0-70%, Criteria B  |

Derating

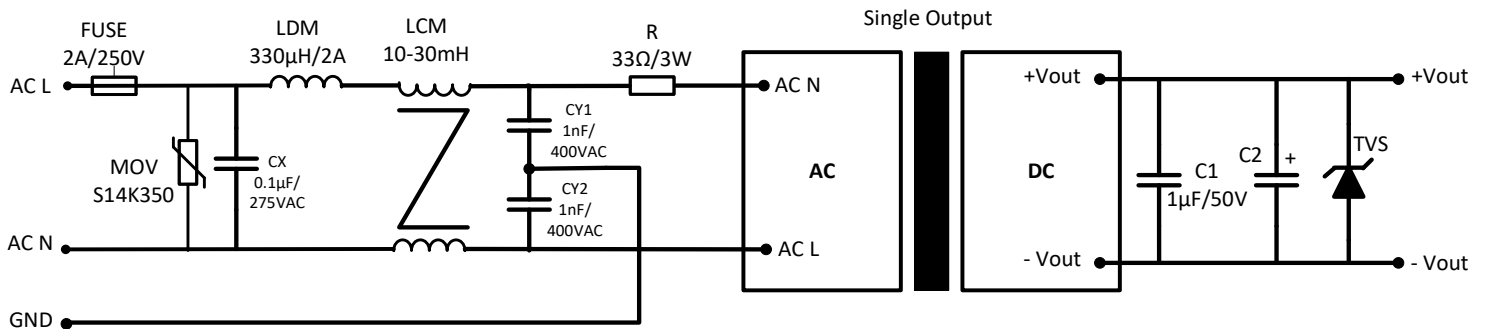


Typical Application Circuit



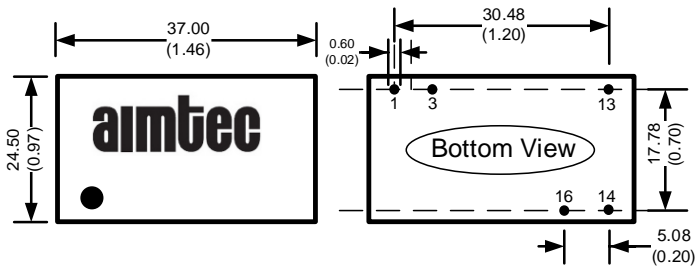
| Pin Output Specifications |              |     |
|---------------------------|--------------|-----|
| Model                     | C2           | TVS |
| 3.3 & 5 Vout              | 150 µF / 35V | 7V  |
| 9Vout                     | 120 µF / 35V | 12V |
| 12 & 15 Vout              | 120 µF / 35V | 20V |
| 24 Vout                   | 68 µF / 35V  | 30V |

EMC recommended circuit

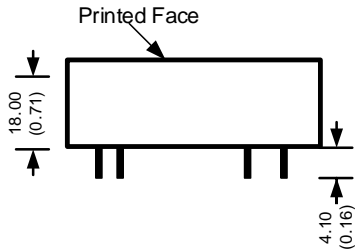


| Model        | C2           | TVS |
|--------------|--------------|-----|
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| 9Vout        | 120 µF / 35V | 12V |
| 12 & 15 Vout | 120 µF / 35V | 20V |
| 24 Vout      | 68 µF / 35V  | 30V |

## Dimensions

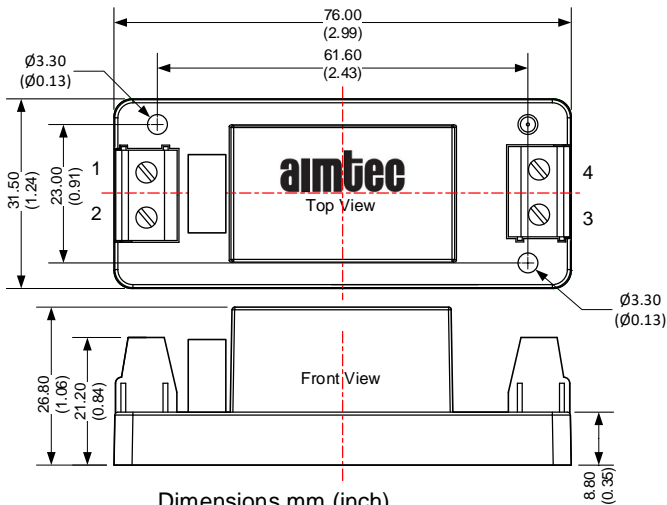


| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Single       |
| 1                         | AC Input (L) |
| 3                         | AC Input (N) |
| 13                        | NC           |
| 14                        | -V Output    |
| 16                        | +V Output    |



All dimensions are typical: millimeters (inches)  
Pin Diameter:  $0.60 \pm 0.10$  ( $0.02 \pm 0.004$ )  
Pin Pitch Tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
Case Tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

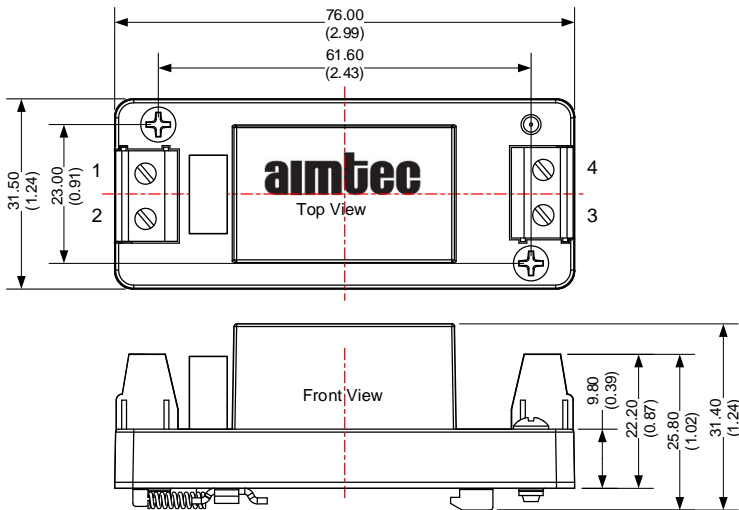
## Dimensions with -ST option



| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Function     |
| 1                         | -V Input (N) |
| 2                         | +V Input (L) |
| 3                         | -V Output    |
| 4                         | +V Output    |

Dimensions mm (inch)  
Wire range: 24-12 AWG  
Tightening torque: 0.4Nm max.  
General tolerances  $\pm 0.50$  ( $\pm 0.02$ )

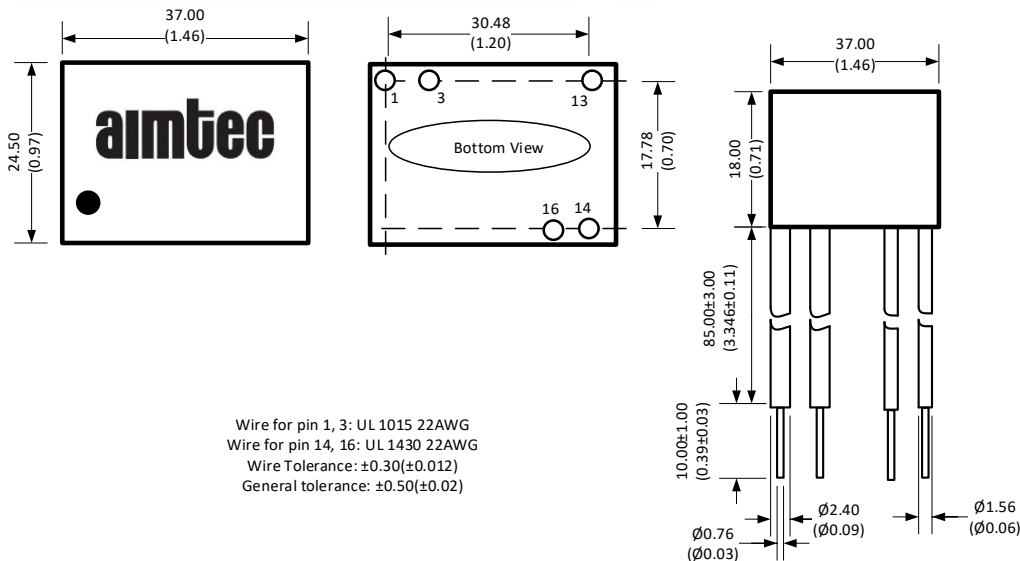
## Dimensions with -STD option



| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Function     |
| 1                         | -V Input (N) |
| 2                         | +V Input (L) |
| 3                         | -V Output    |
| 4                         | +V Output    |

Dimensions mm (inch)  
 Wire range: 24-12 AWG  
 Tightening torque: 0.4Nm max.  
 General tolerances:  $\pm 1.00$  ( $\pm 0.04$ )  
 Mounting rail: Rail needs to connect safety ground.

## Dimensions with -W option



Wire for pin 1, 3: UL 1015 22AWG  
 Wire for pin 14, 16: UL 1430 22AWG  
 Wire Tolerance:  $\pm 0.30$  ( $\pm 0.012$ )  
 General tolerance:  $\pm 0.50$  ( $\pm 0.02$ )

| Pin Output Specifications |              |
|---------------------------|--------------|
| Pin                       | Single       |
| 1 brown                   | AC Input (L) |
| 3 blue                    | AC Input (N) |
| 13                        | NC           |
| 14 black                  | -V Output    |
| 16 red                    | +V Output    |

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