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AME10-CVZ



Encapsulated

The AME10-CVZ is a compact AC/DC converter that offers a commercial input voltage range of 85-264VAC and multiple outputs ranging from 5 / 24 to ±15V.

This series offers great operating temperatures of -40°C to 70°C with full power throughout the entire range. It also features an isolation of 4000VAC for improved reliability and system safety, 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.

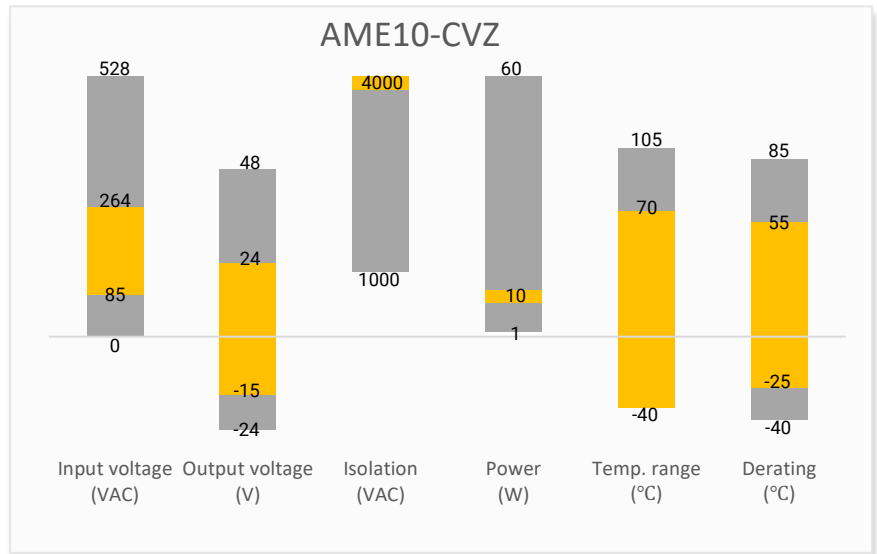
The AME10-CVZ is great for grid power, instrumentation, industrial controls, communication and civil applications.

Features

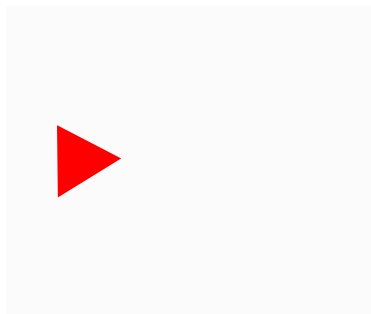


- Universal Input: 85 - 264VAC/100 - 370VDC
- Operating Temp: -40 °C to +70 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 130mV(p-p), Max.
- Output short circuit, over-current, over-voltage protection
- Regulated Output

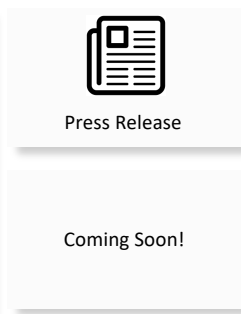
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



Power Grid



Industrial



Telecom



Instrumentation

Models & Specifications

Dual 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 (%) |
|--------------|------------------------|---------------------|------------------------|--------------------|--------|------------------------|--------|------------------------------|--------|-------------------------|
| | | | | Vout 1 | Vout 2 | Iout 1 | Iout 2 | Vout 1 | Vout 2 | |
| AME10-5DCVZ | 85-264/47-63 | 100-370 | 10 | 5 | -5 | 1 | -1 | 8800 | 8800 | 76 |
| AME10-12DCVZ | 85-264/47-63 | 100-370 | 10 | 12 | -12 | 0.45 | -0.45 | 1970 | 1970 | 80 |
| AME10-15DCVZ | 85-264/47-63 | 100-370 | 10 | 15 | -15 | 0.35 | -0.35 | 1970 | 1970 | 81 |

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME10-5DCVZ-ST is chassis mounting and AME10-5DCVZ-STD is DIN-Rail mounting version).

Triple 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 (%) |
|---------------|------------------------|---------------------|------------------------|--------------------|--------|------------------------|--------|------------------------------|--------|-------------------------|
| | | | | Vout 1 | Vout 2 | Iout 1 | Iout 2 | Vout 1 | Vout 2 | |
| AME10-512TCVZ | 85-264/47-63 | 100-370 | 9.8 | 5 | ±12 | 1 | ±0.2 | 3200 | ±260 | 75 |
| AME10-515TCVZ | 85-264/47-63 | 100-370 | 10.5 | 5 | ±15 | 0.9 | ±0.2 | 2100 | ±80 | 75 |

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME10-512TCVZ-ST is chassis mounting and AME10-512TCVZ-STD is DIN-Rail mounting version).

Dual Separated 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 (%) |
|---------------|------------------------|---------------------|------------------------|--------------------|--------|------------------------|--------|------------------------------|--------|-------------------------|
| | | | | Vout 1 | Vout 2 | Iout 1 | Iout 2 | Vout 1 | Vout 2 | |
| AME10-505DCVZ | 85-264/47-63 | 100-370 | 10 | 5 | 5 | 1.8 | 0.2 | 8000 | 540 | 75 |
| AME10-512DCVZ | 85-264/47-63 | 100-370 | 10 | 5 | 12 | 1.5 | 0.2 | 4400 | 260 | 78 |
| AME10-515DCVZ | 85-264/47-63 | 100-370 | 10 | 5 | 15 | 1.4 | 0.2 | 4400 | 170 | 79 |
| AME10-524DCVZ | 85-264/47-63 | 100-370 | 10 | 5 | 24 | 1 | 0.2 | 4000 | 170 | 80 |

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME10-505DCVZ-ST is chassis mounting and AME10-505DCVZ-STD is DIN-Rail mounting version).

Input Specifications

| Parameters | Conditions | Minimum | Typical | Maximum | Units |
|----------------|---------------------|---------|---------|---------|-------|
| Current | 115VAC | | | 0.26 | A |
| | 230VAC | | | 0.16 | A |
| Inrush current | 115VAC | | 13 | | A |
| | 230VAC | | 23 | | A |
| External fuse | slow blow type,250V | | 1 | | A |

| Output Specifications | | | | | |
|-----------------------|-----------------|------------------------------|---------|---------|--------|
| Parameters | Conditions | | Typical | Maximum | Units |
| Voltage accuracy | Vout 1 | | ±2 | | % |
| | Vout 2 | | ±10 | | % |
| Line regulation | Full load | Vout 1 | ±0.5 | | % |
| | | Vout 2 | ±1.5 | | % |
| Load regulation | 10-100% load | Dual separated output models | Vout 1 | ±3 | % |
| | | | Vout 2 | ±5 | % |
| | | Dual output models | | ±2 | |
| Ripple & Noise* | 20MHz bandwidth | Dual 12,15V output | | 130 | mV p-p |
| | | Others | | 100 | mV p-p |
| Hold up time | 115VAC | | 8 | | ms |
| | 230VAC | | 60 | | ms |

* 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 | All models | | 4000 | VAC |
| Tested Input to GND voltage | | | | | 2500 |
| Tested Vout 1 to Vout 2 voltage | | Dual separated output models | | | 500 |

| General Specifications | | | | | |
|--------------------------|---|----------------------|--|---------|-----------|
| Parameters | Conditions | | Typical | Maximum | Units |
| Safety class | Class I | | | | |
| Switching Frequency | | | 100 | | KHz |
| Over current protection | Auto recovery | Triple output models | ≥ 130 | | % of Iout |
| | | Others | ≥ 150 | | % of Iout |
| Over voltage protection | Vout 1 | 5V Vout | | 7.5 | VDC |
| | | 12V,15V Vout | | 20 | 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; time : 5 - 10s | | |
| | Hand soldering | | 360 ± 10 °C; time : 3 - 5s | | |
| Power derating | -40 °C ~ -25 °C | | 2.5 | | % / °C |
| | 55 °C ~ 70 °C | | 3.3 | | % / °C |
| | 85VAC ~ 100VAC | | 1 | | % / VAC |
| Temperature coefficient | Vout 1 | | ±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 | | 75 | | g |
| | With optional -ST mounting plate: | | 130 | | |
| | With optional -STD mounting plate: | | 170 | | |
| Dimensions (L x W x H) | PCB mountable models | | 2.17 x 1.77 x 0.83 inches (55.0 x 45.0 x 21.0mm) | | |
| | With optional -ST mounting plate: | | 3.78 x 2.13 x 1.16 inches (96.1 x 54.0 x 29.5mm) | | |
| | With optional -STD mounting plate: | | 3.78 x 2.13 x 1.34 inches (96.1 x 54.0 x 34.1mm) | | |
| MTBF | > 300 000 hrs (MIL-HDBK -217F, t=+25°C)/Full Load | | | | |

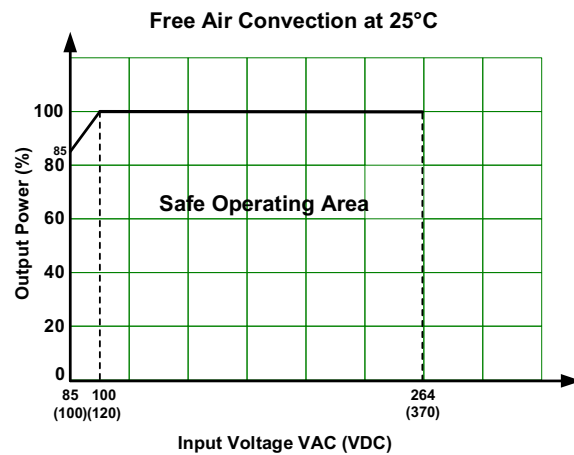
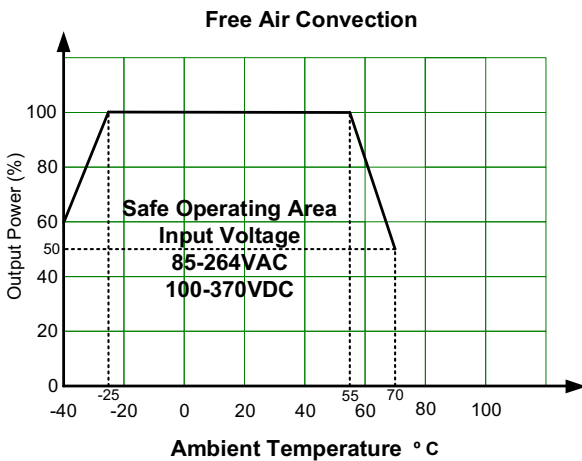
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications

Parameters

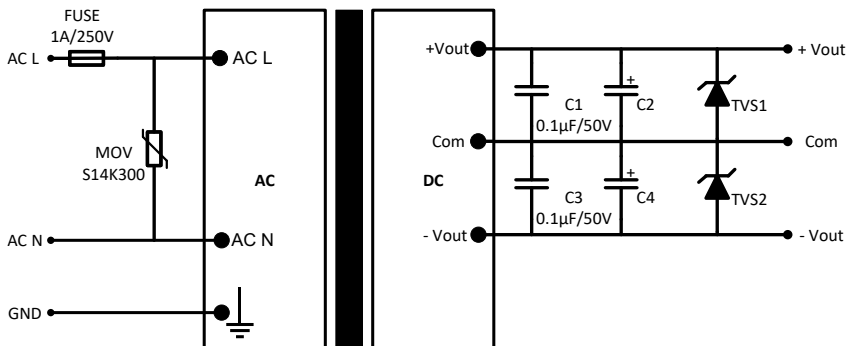
| | | |
|--|--|---|
| Standards | Information technology Equipment | Design to meet IEC/EN/UL 62368 |
| | EMC - Conducted and radiated emission | CISPR32 / EN55032, class B |
| | Electrostatic Discharge Immunity | IEC 61000-4-2 Contact $\pm 6\text{KV}$ / Air $\pm 8\text{KV}$, Criteria B |
| | RF, Electromagnetic 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 |
| | | IEC 61000-4-4 $\pm 4\text{KV}$, with EMC recommended circuit, Criteria B |
| | Surge Immunity | IEC 61000-4-5 L-L $\pm 1\text{KV}$ /L-G $\pm 2\text{KV}$, Criteria B |
| | | 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 |
| Voltage dips, Short Interruptions Immunity | IEC 61000-4-11 0%, 70%, Criteria B | |

Derating

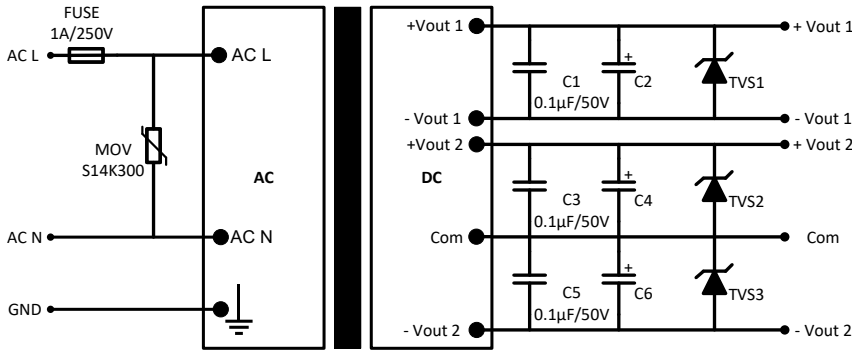


Typical Application Circuit

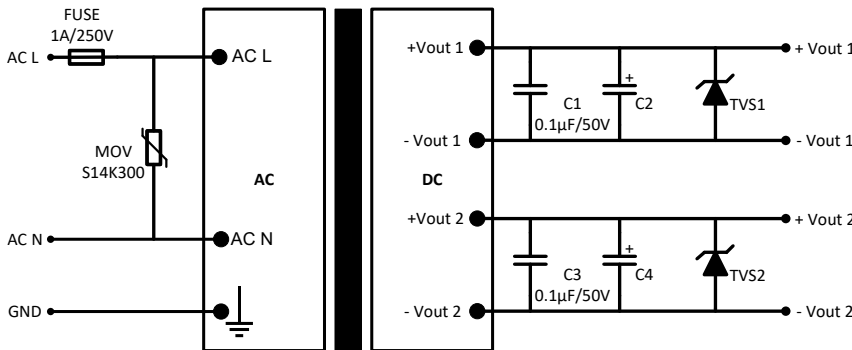
Dual Output Models



Triple Output Models



Dual Separated Output Models

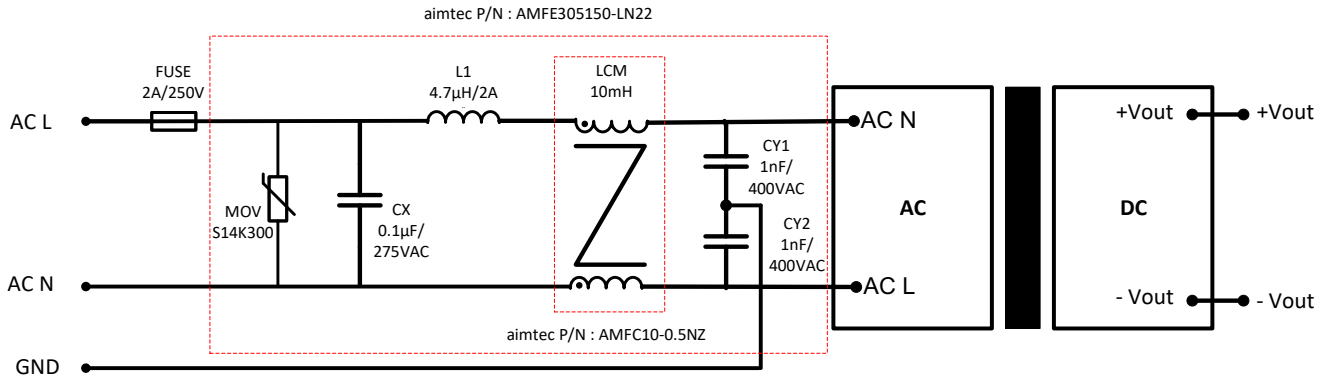


| Model | C2 (µF) | C4 (µF) | C6 (µF) | TVS1 | TVS2 | TVS3 |
|---------------|---------|---------|---------|----------|----------|---------|
| AME10-5DCVZ | 220 | 220 | N/A | SMBJ7.0A | SMBJ7.0A | N/A |
| AME10-12DCVZ | 120 | 120 | N/A | SMBJ20A | SMBJ20A | N/A |
| AME10-15DCVZ | 47 | 47 | N/A | SMBJ20A | SMBJ20A | N/A |
| AME10-512TCVZ | 47 | 47 | 47 | SMBJ7.0A | SMBJ20A | SMBJ20A |
| AME10-515TCVZ | 47 | 47 | 47 | SMBJ7.0A | SMBJ20A | SMBJ20A |
| AME10-505DCVZ | 100 | 100 | N/A | SMBJ7.0A | SMBJ7.0A | N/A |
| AME10-512DCVZ | 100 | 100 | N/A | SMBJ7.0A | SMBJ20A | N/A |
| AME10-515DCVZ | 100 | 100 | N/A | SMBJ7.0A | SMBJ20A | N/A |
| AME10-524DCVZ | 100 | 100 | N/A | SMBJ7.0A | SMBJ30A | N/A |

Output Filter Components:

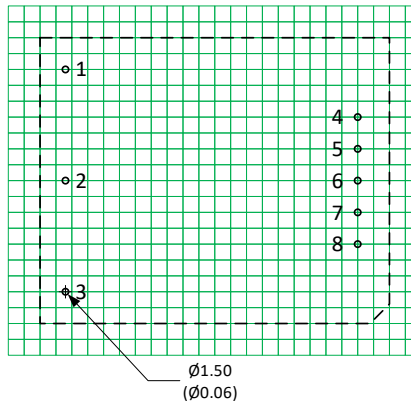
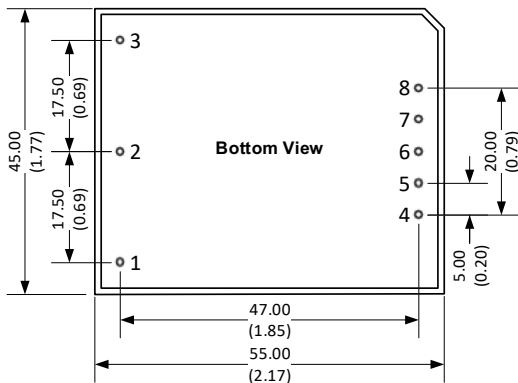
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2, C4 and C6. C1, C3 and C5 are ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode.

EMC Recommended Circuit

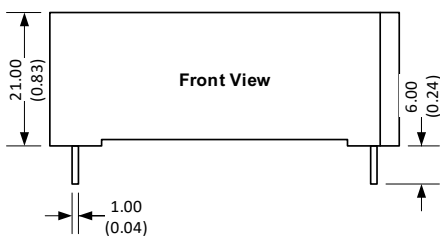


Note : AMFE305150-LN22 is aimtec 2KV/4KV EMC filter.
AMFC10-0.5NZ is aimtec Common mode choke.

Dimensions



Note : Grid 2.54*2.54 mm

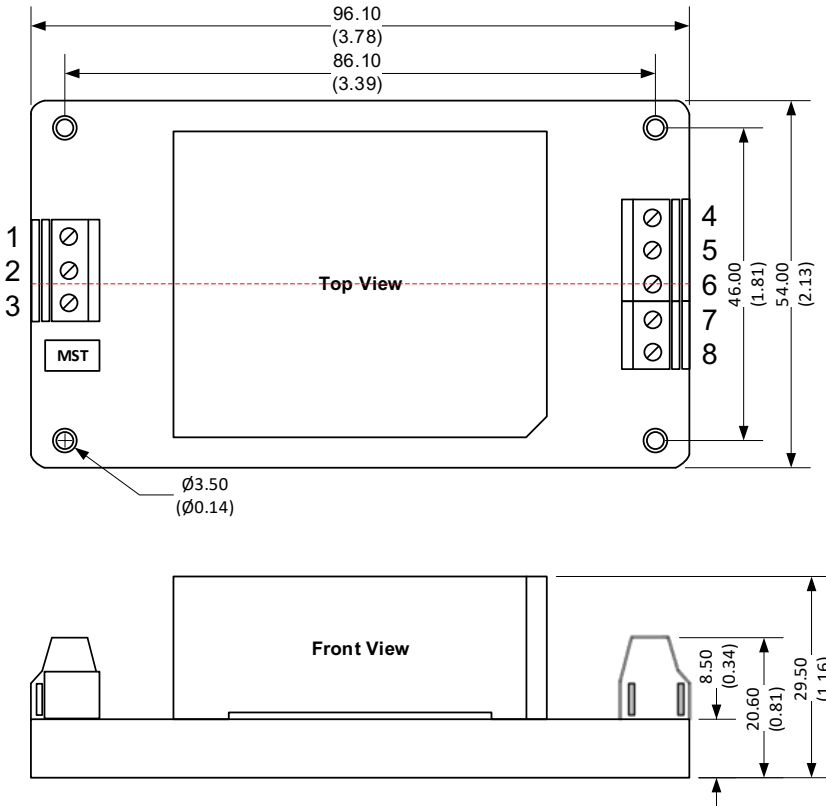


Notes:
All dimensions are typical in millimeters (inches).
Pin diameter tolerances : ± 0.10 (± 0.004)
General tolerance : ± 0.50 (± 0.02)

Pin Output Specifications

| Pin | Dual output | Triple output | Dual separated |
|-----|--------------|---------------|----------------|
| 1 | GND | GND | GND |
| 2 | AC Input (N) | AC Input (N) | AC Input (N) |
| 3 | AC Input (L) | AC Input (L) | AC Input (L) |
| 4 | -V Output | -V Output 1 | -V Output 1 |
| 5 | NC | +V Output 1 | +V Output 1 |
| 6 | Com | -V Output 2 | NC |
| 7 | NC | Com | -V Output 2 |
| 8 | +V Output | +V Output 2 | +V Output 2 |

Dimensions with ST Optional

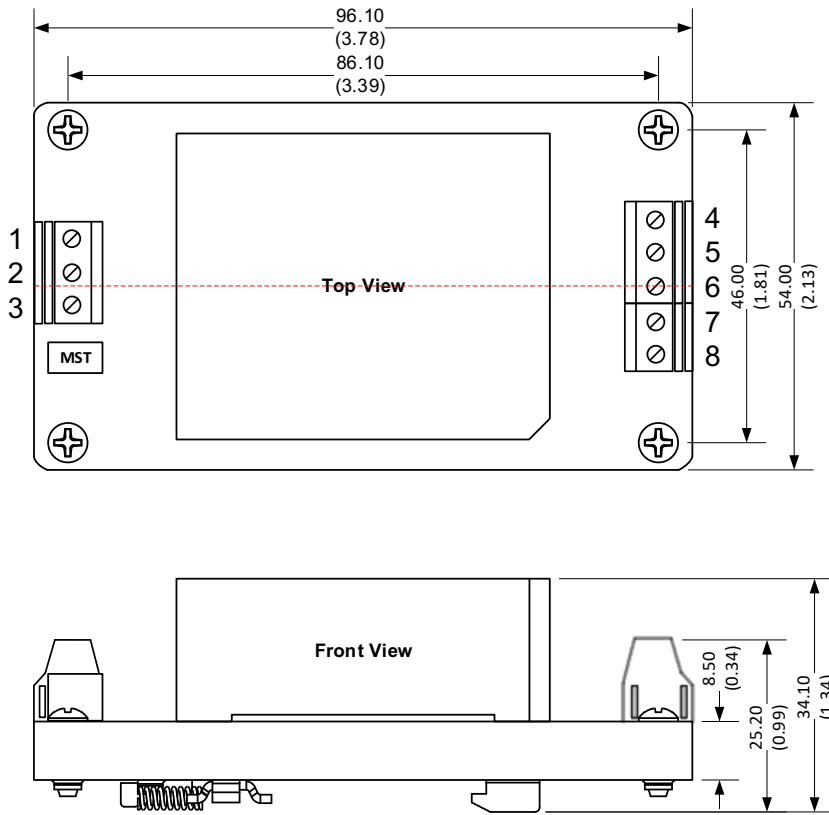


Notes:
 All dimensions are typical in millimeters (inches).
 Wire range : 24-12 AWG
 Tightening torque : Max 0.4 N.m
 General tolerance ± 1.00 : (± 0.04)

Pin Output Specifications

| Pin | Dual output | Triple output | Dual separated |
|-----|--------------|---------------|----------------|
| 1 | GND | GND | GND |
| 2 | AC Input (N) | AC Input (N) | AC Input (N) |
| 3 | AC Input (L) | AC Input (L) | AC Input (L) |
| 4 | -V Output | -V Output 1 | -V Output 1 |
| 5 | NC | +V Output 1 | +V Output 1 |
| 6 | Com | -V Output 2 | NC |
| 7 | NC | Com | -V Output 2 |
| 8 | +V Output | +V Output 2 | +V Output 2 |

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 ± 1.00 : (± 0.04)

| Pin Output Specifications | | | |
|---------------------------|--------------|---------------|----------------|
| Pin | Dual output | Triple output | Dual separated |
| 1 | GND | GND | GND |
| 2 | AC Input (N) | AC Input (N) | AC Input (N) |
| 3 | AC Input (L) | AC Input (L) | AC Input (L) |
| 4 | -V Output | -V Output 1 | -V Output 1 |
| 5 | NC | +V Output 1 | +V Output 1 |
| 6 | Com | -V Output 2 | NC |
| 7 | NC | Com | -V Output 2 |
| 8 | +V Output | +V Output 2 | +V Output 2 |

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