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AME20-CVZ



Encapsulated

The AME20-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 up to 50°C. 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.

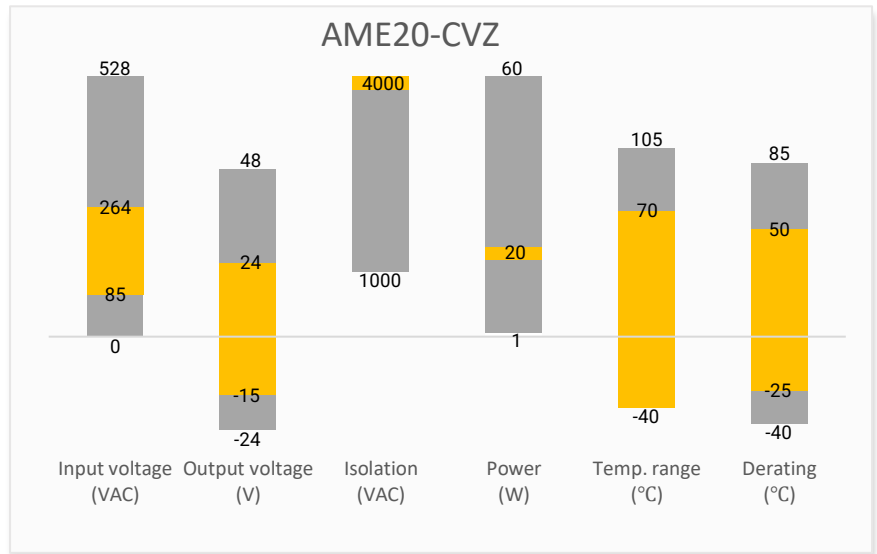
The AME20-CVZ is great for grid power, instrumentation, industrial controls, communication and civil applications.

Features

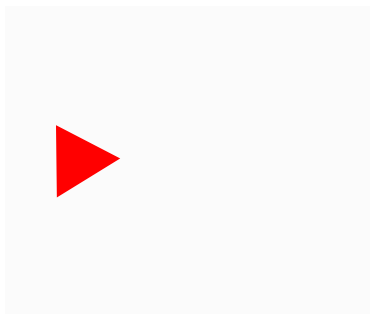


- Universal Input: 85 - 264VAC/100 - 370VDC
- Operating Temp: -40 °C to +70 °C
- High isolation voltage: 4000VAC
- Low ripple & noise, 200mV(p-p), Max.
- Output short circuit, over-current, over-voltage protection
- Regulated Output

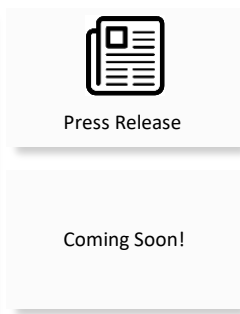
Summary



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	
AME20-12DCVZ	85-264/47-63	100-370	20	12	-12	0.83	-0.83	1200	1200	82
AME20-15DCVZ	85-264/47-63	100-370	20	15	-15	0.65	-0.65	1000	1000	83

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME20-12DCVZ-ST is chassis mounting and AME20-12DCVZ-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	
AME20-512TCVZ	85-264/47-63	100-370	20	5	±12	2	±0.4	16000	±1000	78
AME20-515TCVZ	85-264/47-63	100-370	20	5	±15	2	±0.3	16000	±680	79

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME20-512TCVZ-ST is chassis mounting and AME20-512TCVZ-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	
AME20-512DCVZ	85-264/47-63	100-370	20	5	12	2.5	0.6	20000	2000	78
AME20-515DCVZ	85-264/47-63	100-370	20	5	15	2.5	0.5	20000	1200	78
AME20-524DCVZ	85-264/47-63	100-370	20	5	24	2.5	0.3	20000	500	78

Note: Use suffix "ST" for chassis and suffix "STD" for DIN-Rail mounting (ex. AME20-512DCVZ-ST is chassis mounting and AME20-512DCVZ-STD is DIN-Rail mounting version).

### Input Specifications

Parameters	Conditions	Minimum	Typical	Maximum	Units
Current	115VAC			0.60	A
	230VAC			0.34	A
Inrush current	115VAC		25		A
	230VAC		45		A
External fuse	slow blow type,250V		3.15		A

Output Specifications				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Balanced load, dual output models	±3		%
	Balanced load, other models, Vout 1	±2		%
	Balanced load, other models, Vout 2	±10		%
Line regulation	Full load, Vout 1	±0.5		%
	Full load, Vout 2	±1.5		%
Load regulation	10-100% balanced load, dual output models	±2		%
	10-100% balanced load, other models, Vout 1	±2		%
	10-100% balanced load, other models, Vout 2	±5		%
Ripple & Noise*	20MHz bandwidth, Vout 1		100	mV p-p
	20MHz bandwidth, Vout 2		200	mV p-p
Hold up time	115VAC	10		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	60 sec, leakage current < 5mA, triple output models		2000	VAC
	60 sec, leakage current < 5mA, other models		2500	VAC
Tested Vout 1 to Vout 2 voltage	Dual separated and triple output models		500	VDC

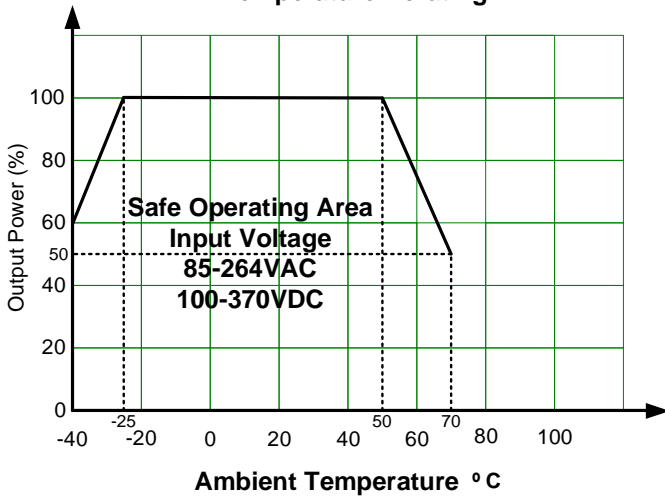
General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Safety class	Class I			
Switching Frequency		65		KHz
Over current protection	Auto recovery	≥ 150	300	% of Iout
Over voltage protection	Vout 1, 5V Vout		7.5	VDC
	Vout 1, 12V/15V Vout		20	VDC
Short circuit protection	Hiccup, Continuous, 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	2.67		% / °C
	50 °C ~ 70 °C	2.5		% / °C
	85VAC ~ 100VAC	1		% / VAC
	240VAC ~ 264VAC	0.83		% / 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	120		g
	With optional -ST mounting plate:	170		
	With optional -STD mounting plate:	210		

Dimensions (L x W x H)	PCB mountable models With optional -ST mounting plate: With optional -STD mounting plate:	2.76 x 1.89 x 0.93 inches (70.0 x 48.0 x 23.5mm) 3.78 x 2.13 x 1.26 inches (96.1 x 54.0 x 32.0mm) 3.78 x 2.13 x 1.44 inches (96.1 x 54.0 x 36.6mm)
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.		

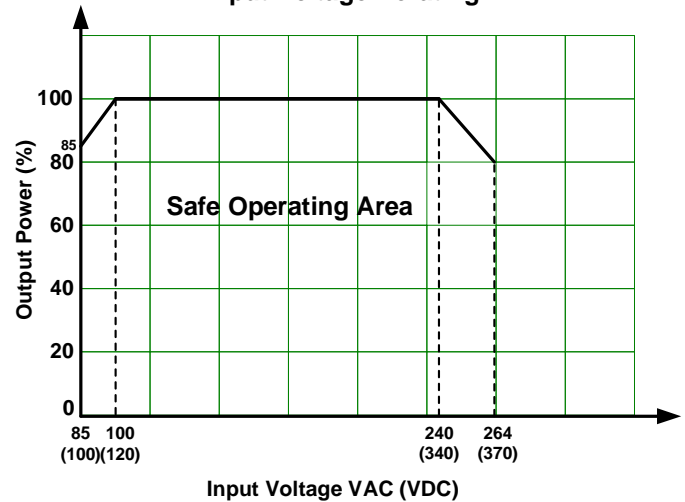
Safety Specifications		
Parameters		
Standards	Information technology Equipment	Design to meet IEC/EN/UL 62368-1
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B
	Electrostatic Discharge Immunity	IEC 61000-4-2 Contact ±6KV / Air ±8KV, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3 10V/m, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4 ±2KV, Criteria B
		IEC 61000-4-4 ±4KV, with EMC recommended circuit, Criteria B
	Surge Immunity	IEC 61000-4-5 L-L ±1KV/L-G ±2KV, Criteria B
		IEC 61000-4-5 L-L ±2KV/L-G ±4KV, 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

Temperature Derating



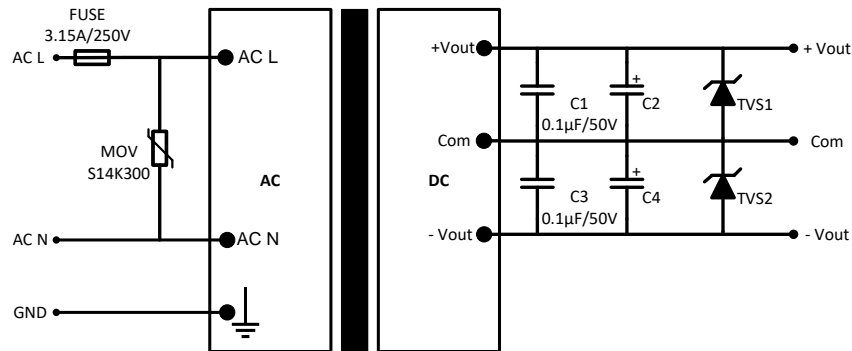
Input Voltage Derating



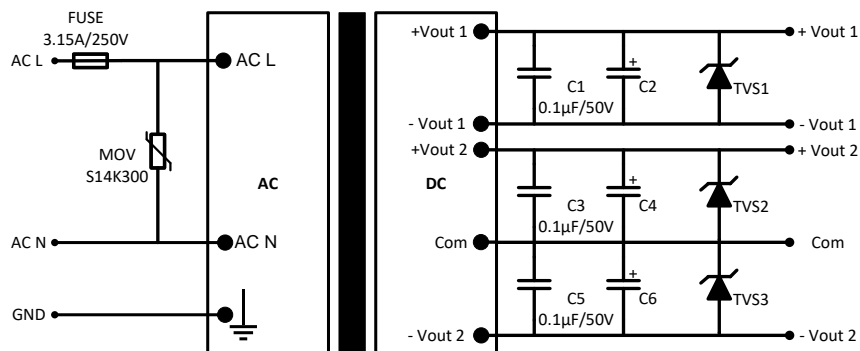
## Typical Application Circuit



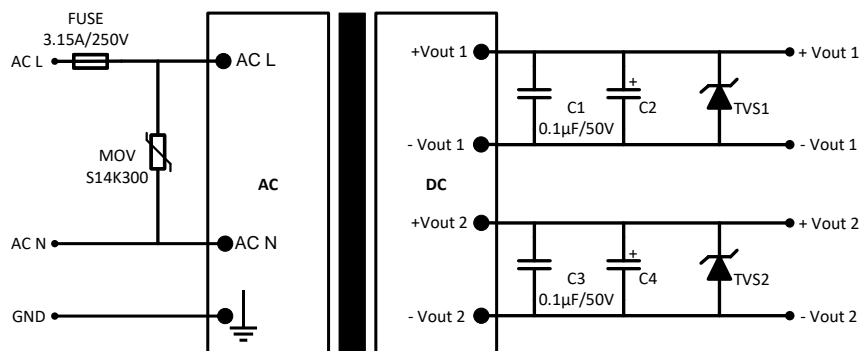
### Dual Output Models



### Triple Output Models



### Dual Separated Output Models



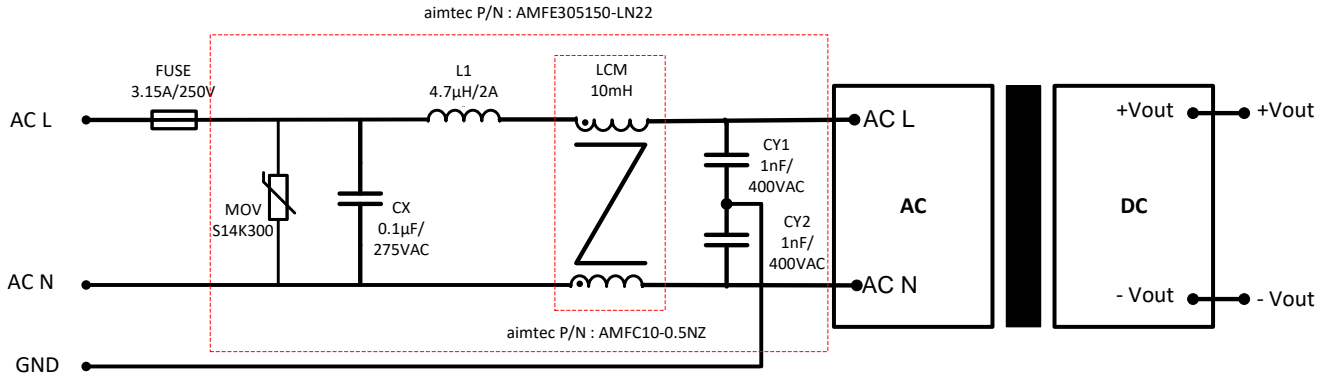
Model	C2 (µF)	C4 (µF)	C6 (µF)	TVS1	TVS2	TVS3
AME20-12DCVZ	120	120	N/A	SMBJ20A	SMBJ20A	N/A
AME20-15DCVZ	68	68	N/A	SMBJ20A	SMBJ20A	N/A
AME20-512TCVZ	330	120	120	SMBJ7.0A	SMBJ20A	SMBJ20A
AME20-515TCVZ	330	120	120	SMBJ7.0A	SMBJ20A	SMBJ20A
AME20-512DCVZ	470	470	N/A	SMBJ7.0A	SMBJ20A	N/A
AME20-515DCVZ	470	220	N/A	SMBJ7.0A	SMBJ20A	N/A
AME20-524DCVZ	470	47	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 capacitors used for filtering high-frequency noise and TVS is a recommended suppressor diode.

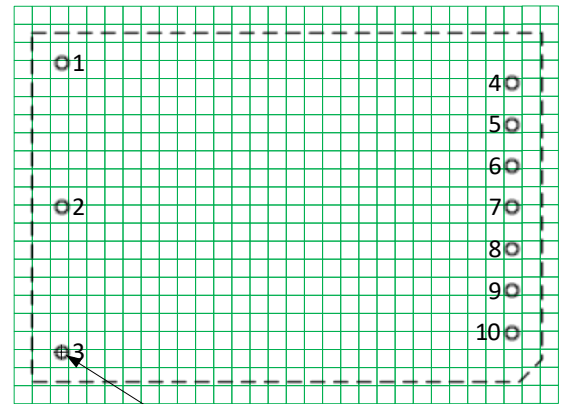
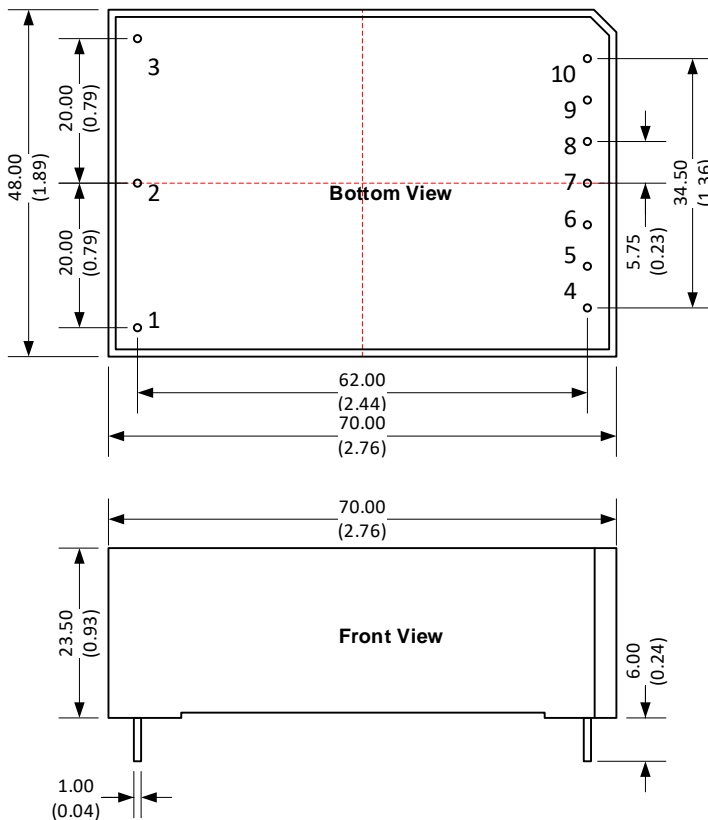
**EMC Recommended Circuit**



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:**

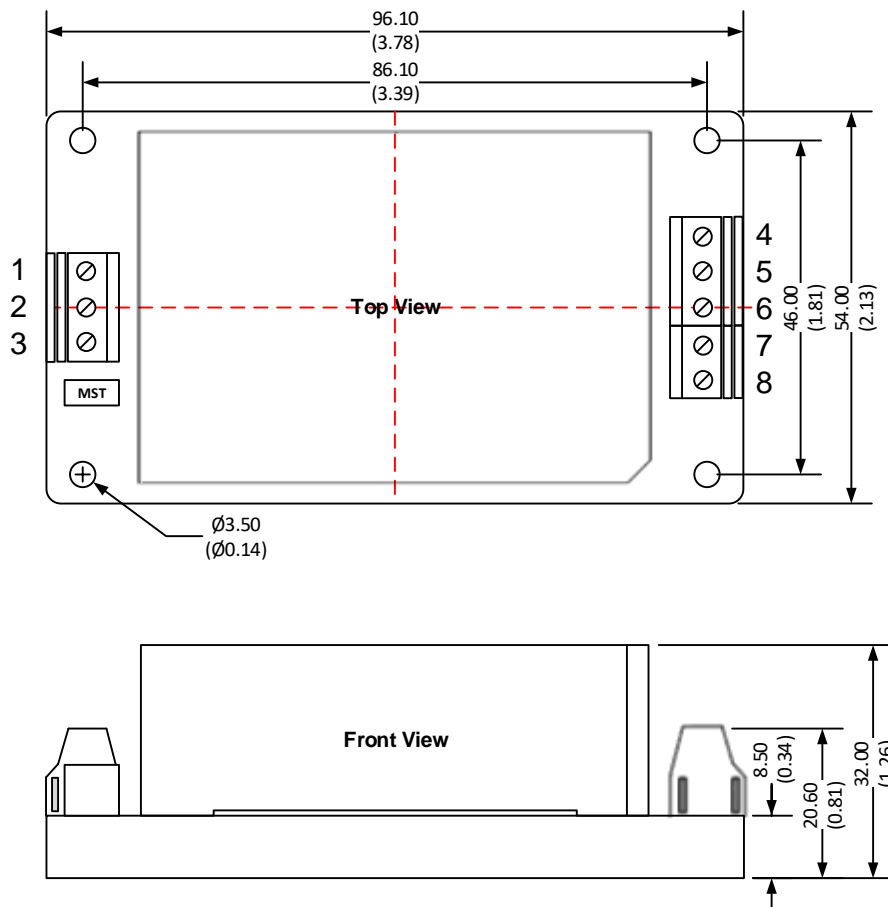
All dimensions are typical in millimeters (inches).

Pin diameter tolerances :  $\pm 0.10$  ( $\pm 0.004$ )

General tolerance :  $\pm 0.50$  ( $\pm 0.02$ )

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	NC	NC	NC
5	-V Output	-V Output 1	-V Output 1
6	NC	+V Output 1	+V Output 1
7	Com	-V Output 2	NC
8	NC	Com	-V Output 2
9	+V Output	+V Output 2	+V Output 2
10	NC	NC	NC

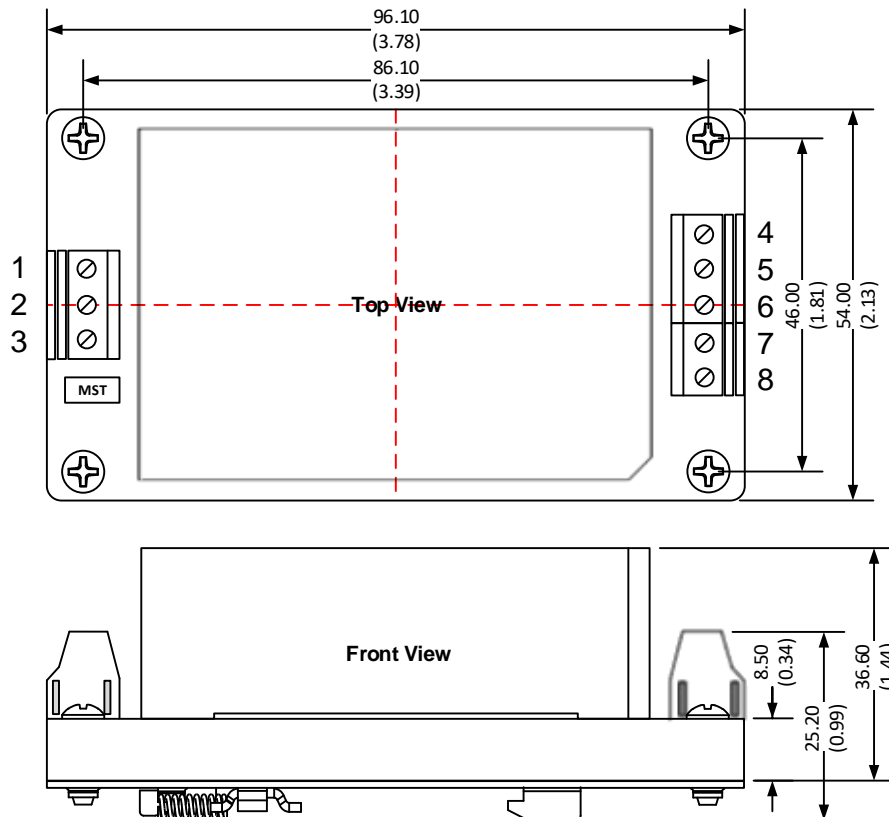
## Dimensions with ST Optional



**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	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  $\pm 1.00$  : ( $\pm 0.04$ )



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

**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).