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AMES100-NZ



The AMES100-NZ 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 85-264VAC and an output voltage range from 5-48V, this series will offer many benefits to your new system design.

This new series offers great operating temperatures, from -30°C to 70°C also features an 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.

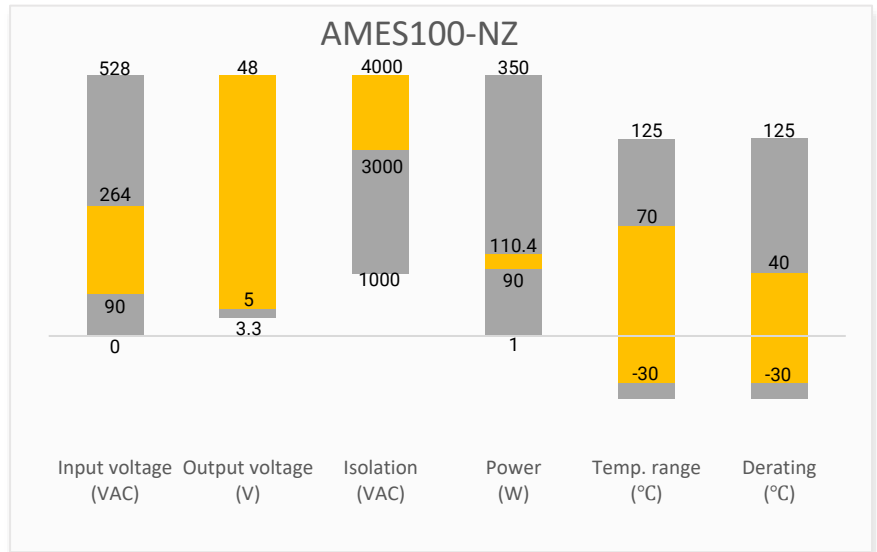
The AMES100-NZ is perfect for street lighting controls, grid power, instrumentation, industrial controls, communication, and civil applications.

Features



- Universal Input: 85 - 264VAC/120 - 373VDC
- Operating Temp: -30 °C to +70 °C
- High isolation voltage: Up to 4000VAC
- Low ripple & noise, 180mV(p-p) typ.
- Output short circuit, over-current, over-voltage protection
- Regulated Output
- Surge immunity: 300VAC for 5s

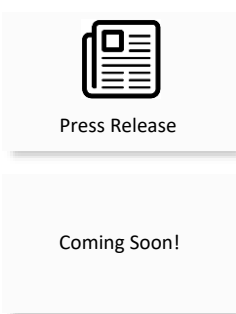
Summary



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 Voltage Adjustable Range (V)	Output Current max (A)	Maximum capacitive load (μ F)	Efficiency @230VAC Typ. (%)
AMES100-5SNZ	85-264/47-63	120-373	90	5	4.5-5.5	18	10000	86
AMES100-12SNZ	85-264/47-63	120-373	102	12	10.2-13.8	8.5	6800	87.5
AMES100-15SNZ	85-264/47-63	120-373	105	15	13.5-18	7	3300	87.5
AMES100-24SNZ	85-264/47-63	120-373	108	24	21.6-28.8	4.5	2200	90
AMES100-36SNZ	85-264/47-63	120-373	100.8	36	32.4-39.6	2.8	1000	90
AMES100-48SNZ	85-264/47-63	120-373	110.4	48	43.2-52.8	2.3	470	91

Note: Add suffix “-P” for optional terminal protective cover (ex. AMES75-5SNZ-P is terminal with protective cover version) or suffix “-Q” for conformal coating (ex. AMES100-5SNZ-Q is conformal coating version).

Dual Output

Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Max Output Wattage (W)	Output Voltage (Vo1/Vo2) (V)	Working Current Range (Io1/Io2) (A)*	Output Current (Io1/Io2) (A)	Maximum capacitive load (Vo1/Vo2) (μ F)	Efficiency @230VAC (%)
AMES100-0524DNZ	90-264/47-63	120-373	97	5/24	0.5-7/0.3-3.5	5/3	5000/3000	85
AMES100-1224DNZ	90-264/47-63	120-373	96	12/24	0.4-6/0.2-3	4/2	4000/2000	87

Note: Use suffix “-Q” for conformal coating (ex. AMES100-0524DNZ -Q is conformal coating version).

*Maximum working current can only be achieved when the other output is at 50% load, and the maximum duration is 3sec. Total output power cannot exceed the rated power. Under maximum working current, the voltage accuracy for Vo2 is \pm 8%.

Tri Output

Model	Input Voltage (VAC/Hz)	Input Voltage (VDC)	Max Output Wattage (W)	Output Voltage (Vo1/Vo2/Vo3) (V)	Working Current Range (Io1/Io2/Io3) (A)*	Output Current (Io1/Io2/Io3) (A)	Maximum capacitive load (Vo1/Vo2/Vo3) (μ F)	Efficiency @230VAC (%)
AMES100-051212TNZ	90-264/47-63	120-373	94	+5/+12/-12	0.8-10/0.35-4/0.1-1.5	8/3.5/1	8000/3500/1000	84
AMES100-051515TNZ	90-264/47-63	120-373	95	+5/+15/-15	0.7-10/0.3-4/0.1-1.5	7/3/1	7000/3000/1000	85
AMES100-052412TNZ	90-264/47-63	120-373	96	+5/+24/+12	0.6-8/0.2-2.5/0.15-2	6/2/1.5	6000/2000/1500	85

Note: Use suffix “-Q” for conformal coating (ex. AMES100-051212TNZ -Q is conformal coating version).

*Maximum working current can only be achieved when the other two outputs are at 50% load, and the maximum duration is 3sec. Total output power cannot exceed the rated power. Under maximum working current, the voltage accuracy for Vo2 and Vo3 is \pm 10%.

Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Input current	Single output, 115VAC		3	A
	Single output, 230VAC		1.5	A
	Others, 115VAC		2.5	A
	Others, 230VAC		1.5	A
Inrush current	Single output, cold start, 115VAC	35		A
	Single output, cold start, 230VAC	65		A
	Others, cold start, 115VAC	30		A
	Others, cold start, 230VAC	50		A

Leakage current	Single output, 240VAC		0.75	mA
	others, 240VAC		2.0	mA

Output Specifications				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	Single output, Full load, 5V output	±2		%
	Single output, Full load, Others	±1		%
	Dual output, Full load, Output 1	±2		%
	Dual output, Full load, Output 2	±5		%
	Tri output, Full load, Output 1	±2		%
	Tri output, Full load, AMES50-051515TNZ, Output 2	≥ -7	+3	%
	Tri output, Full load, Others, Output 2	±5		%
	Tri output, Full load, Output 3	±6		%
Line regulation	Single output, Full load	±0.5		%
	Dual output, Full load, Output 1	±0.5		%
	Dual output, Full load, Output 2	±1		%
	Tri output, Full load, Output 1	±0.5		%
	Tri output, Full load, Output 2	±1		%
	Tri output, Full load, Output 3	±1		%
Load regulation**	Single output, 0-100% load, 5V output	±1		%
	Single output, 0-100% load, Others	±0.5		%
	Dual output, 10-100% load, Output 1	±2		%
	Dual output, 10-100% load, Output 2	±5		%
	Tri output, 10-100% load, Output 1	±1		%
	Tri output, 10-100% load, Output 2	±3	±5	%
	Tri output, 10-100%, Output 3	±6		%
Ripple & Noise*	Single output, 5V output	100		mV p-p
	Single output, 12V,15V output	120		mV p-p
	Single output, 24V output	150		mV p-p
	Single output, 36V,48V output	200		mV p-p
	Dual output, Output 1	80		mV p-p
	Dual output, AMES100-0524DNZ, Output 2	200		mV p-p
	Dual output, AMES100-1224DNZ, Output 2	150		mV p-p
	Tri output, Output 1	80		mV p-p
	Tri output, AMES100-052412TNZ, Output 2	150		mV p-p
	Tri output, others, Output 2	120		mV p-p
	Tri output, Output 3	120		mV p-p
Hold up time	Single output, 115VAC	10		ms
	Single output, 230VAC	55		ms
	Others, 115VAC	5		ms
	Others, 230VAC	30		ms
Voltage adjustable range	Output 1 of tri output models	4.75 - 5.5		V
	Output 1 of AMES100-0524DNZ	4.75 - 5.5		V
	Output 1 of AMES100-1224DNZ	11.4 - 13.2		V
Start-up delay time	Dual, tri output		2	S

* Ripple and Noise are measured at 20MHz bandwidth with a 47μF electrolytic capacitor and a 0.1μF ceramic capacitor. Please refer to the application note for specific details.
** Equal-scale load for dual and tri output models.

Preliminary

Isolation Specifications				
Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec, leakage current < 10mA, Single output		4000	VAC
	60 sec, leakage current < 10mA, Dual, tri output		3000	VAC
Tested Input to GND voltage	60 sec, leakage current < 10mA, Single, Dual, tri output		2000	VAC
Tested Output to GND voltage	60 sec, leakage current < 10mA, Single output		1250	VAC
	60 sec, leakage current < 10mA, Dual, tri output		500	VAC
Tested Vo1 to Vo2 voltage	Dual output models only		500	VDC
Resistance (I/O, I/O to GND)	500VDC		100	MΩ

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Safety class	Class I			
Switching Frequency	Single output	65		KHz
Over Current protection	Single output, Auto recovery	≥ 110	160	% of Iout
	Dual output, equal-scale load, Auto recovery	≥ 110		% of Iout
	Tri output, equal-scale load, Auto recovery	≥ 110		% of Iout
Over voltage protection*	Single output, 5V output, shut down, Manual recovery		7.5	VDC
	Single output, 12V output, Voltage clamp		19.2	VDC
	Single output, 15V output, Voltage clamp		24	VDC
	Single output, 24V output, Voltage clamp		38.4	VDC
	Single output, 36V output, Voltage clamp		57.6	VDC
	Single output, 48V output, shut down, Manual recovery		60	VDC
	AMES100-0524DNZ, shut down	5.75 ≤ Output 1 ≤ 6.75		VDC
	AMES100-1224DNZ, shut down	13.8 ≤ Output 1 ≤ 15.8		VDC
	Tri output models, shut down	5.75 ≤ Output 1 ≤ 6.75		VDC
Short circuit protection	Hiccup, Continuous, Auto recovery, Recovery time < 5 sec			
Operating temperature	See derating graph	-30 to +70		°C
Storage temperature		-40 to +85		°C
No-load power consumption	Single output, 36V, 48V output		0.5	W
	Single output, others		0.3	W
Power derating	Single output, 45 °C to 70 °C, 5V output	1.6		% / °C
	Single output, 50 °C to 70 °C, others	2		% / °C
	Single output, 85VAC - 115VAC	0.67		% / VAC
	Dual, tri output, 40 °C to 70 °C	2		% / °C
	Dual, tri output, 90VAC - 115VAC	0.8		% / VAC
	Dual, tri output, 120VDC - 160VDC	0.5		% / VDC
Ambient temperature derating	Operating altitude > 2000m	5		°C / 1000m
Temperature coefficient		±0.03		% / °C
Cooling	Free air convection			
Humidity	Non-condensing	≥ 10	95	% RH
	Non-condensing, Operating	≥ 20	90	% RH
Case material	Metal (1100 Aluminum, SGCC)			
Weight	Single output, 5V output	350		g
	Single output, others	305		g
	Dual output	415		g
	Tri output	435		g
Dimensions (L x W x H)	Single output	5.08 x 3.82 x 1.18inch (129.0 x 97.0 x 30.0mm)		
	Dual, tri output	6.26 x 3.82 x 1.18inch (159.0 x 97.0 x 30.0mm)		
MTBF	> 300 000 hrs (MIL-HDBK -217F, t=+25°C)			
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 UL 62368-1 (Single output models only)

Standards Design to meet EN61558, over-voltage class III (Single output models only)

Information technology Equipment Design to meet IEC/EN/UL 62368, EN60335, GB4943

EMC - Conducted and radiated emission CISPR32 / EN55032, class B

Harmonic current IEC 61000-3-2 Class A

Electrostatic Discharge Immunity IEC 61000-4-2 Contact $\pm 6\text{KV}$ / Air $\pm 8\text{KV}$, Criteria A

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 A

Surge Immunity IEC 61000-4-5 L-L $\pm 2\text{KV}$ /L-G $\pm 4\text{KV}$, Criteria A

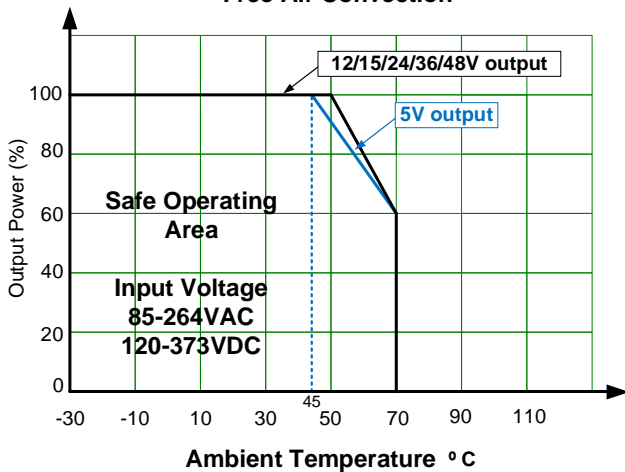
RF, Conducted Disturbance Immunity IEC 61000-4-6 10Vr.m.s, Criteria A

Voltage dips, Short Interruptions Immunity IEC 61000-4-11 0%, 70%, Criteria B

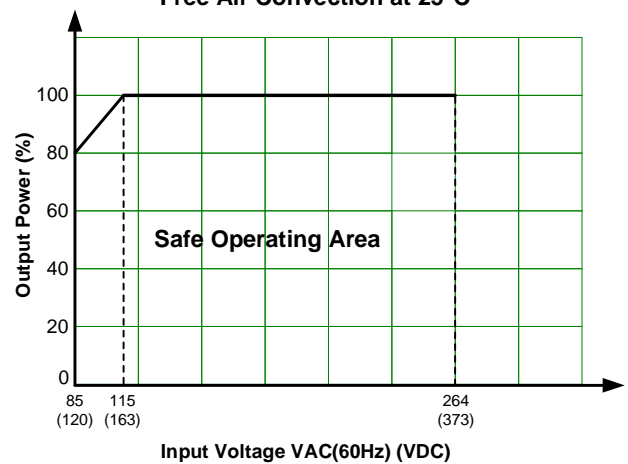
Single Output Models Derating



Free Air Convection



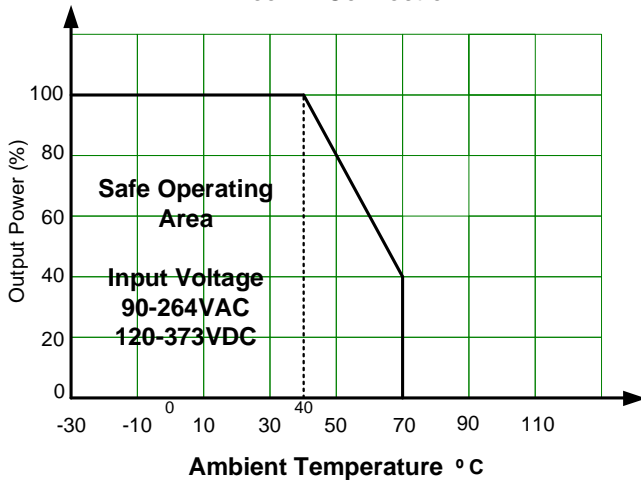
Free Air Convection at 25°C



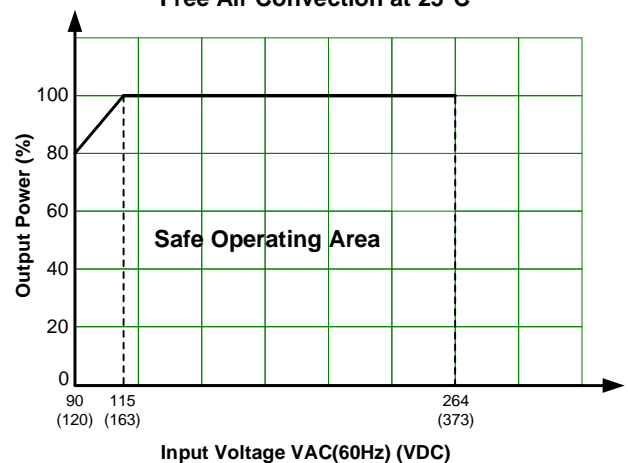
Dual, Tri Output Models Derating



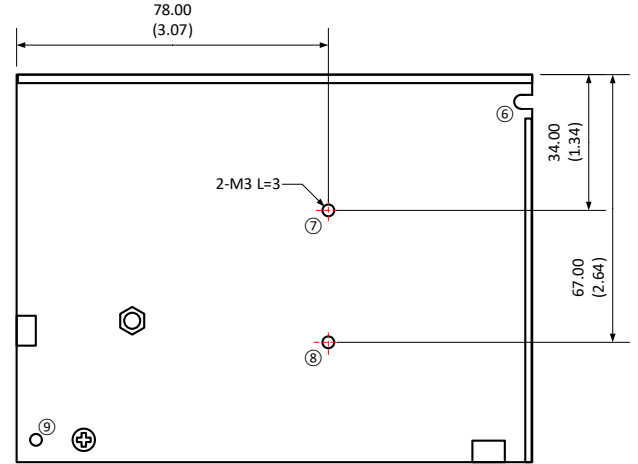
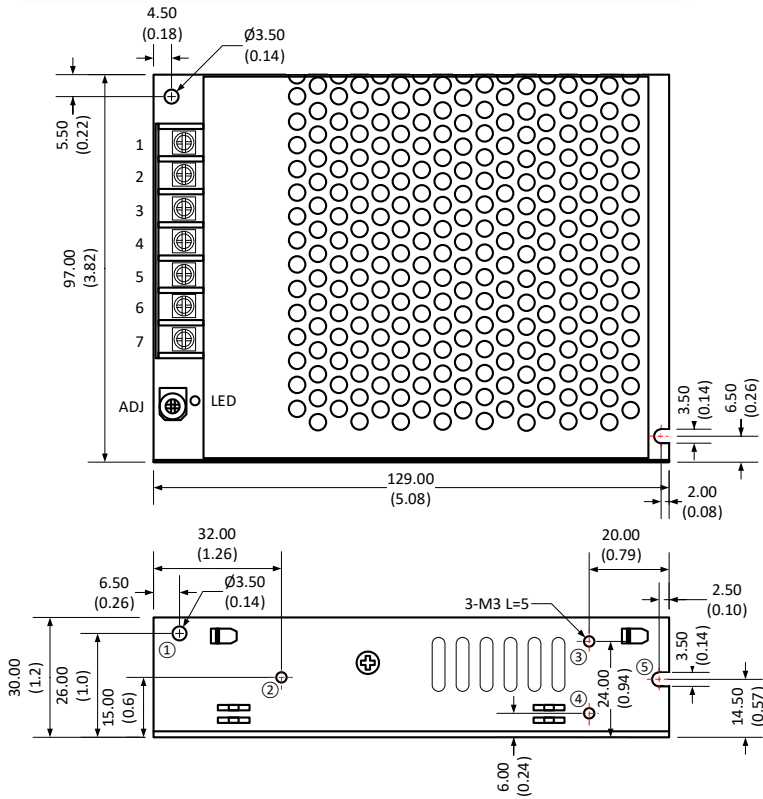
Free Air Convection



Free Air Convection at 25°C



Single Output Models Dimensions

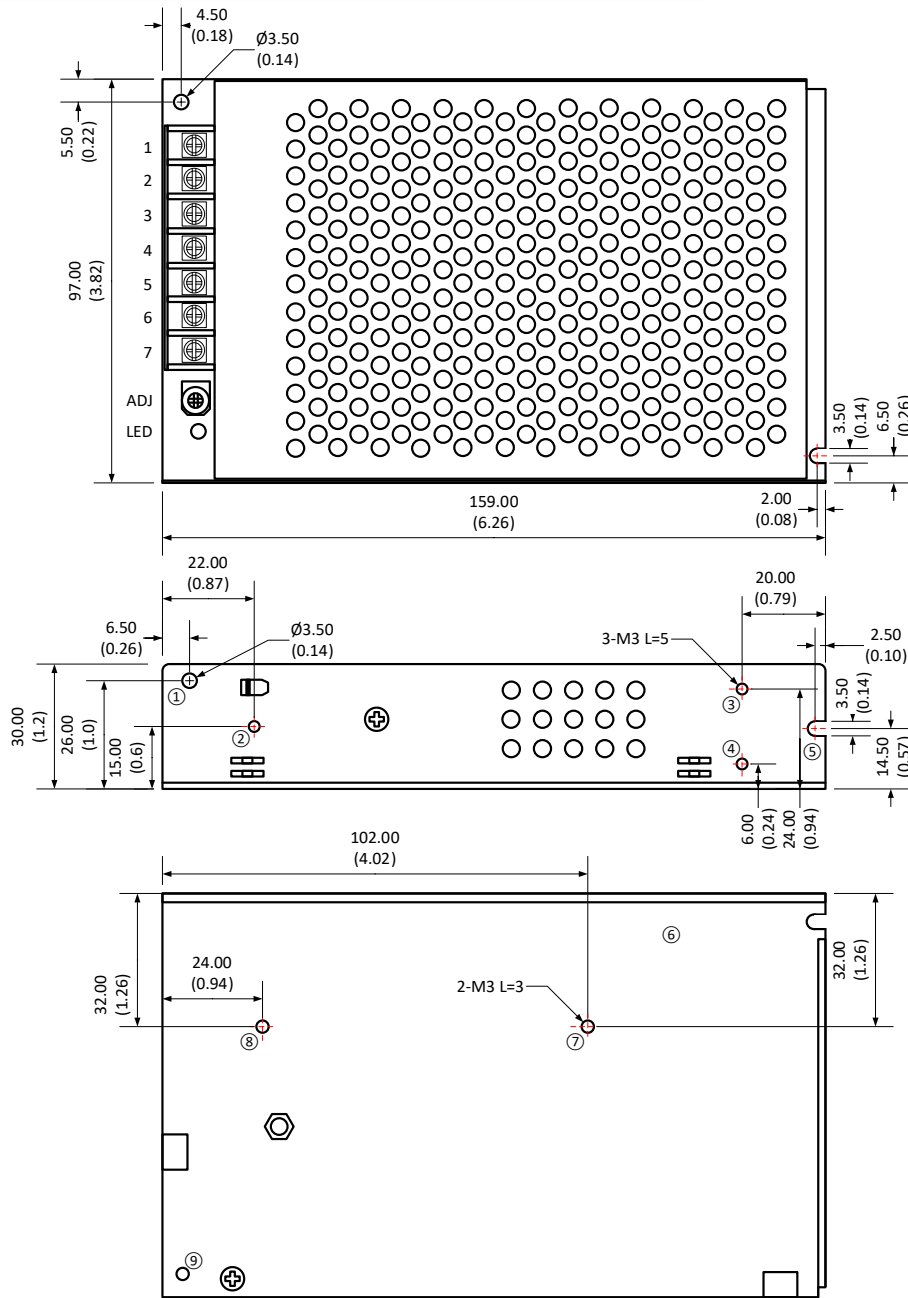


Note:
 Unit: mm(inch)
 Wire gauge: 22-14AWG
 Screw terminal tightening torque: M3, 0.5N-m
 Mounting screw tightening torque: M3, 0.4N-m
 General tolerance: $\pm 1.0(0.04)$
 At least one of the ① - ⑨ location must be connected to PE

Single Pin Output Specifications

Pin	Function
1	Input (L)
2	Input (N)
3	PE GND
4	-V Output
5	-V Output
6	+V Output
7	+V Output
ADJ	Vo1 voltage adj knob

Dual, Tri Output Models Dimensions



Note:
Unit: mm(inch)
Wire gauge: 22-14AWG
Screw terminal tightening torque: M3, 0.5N-m
Mounting screw tightening torque: M3, 0.4N-m
General tolerance: $\pm 1.0(0.04)$
At least one of the ① - ⑨ location must be connected to PE

Dual Pin Output Specifications	
Pin	Function
1	Input (L)
2	Input (N)
3	PE GND
4	-V Output 2
5	+V Output 2
6	-V Output 1
7	+V Output 1
ADJ	Vo1 voltage adj knob

Triple Pin Output Specifications	
Pin	Function
1	Input (L)
2	Input (N)
3	PE GND
4	+V Output 3
5	+V Output 2
6	Common
7	+V Output 1
ADJ	Vo1 voltage adj knob

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