

# Isolated DC-DC Converter 1200VDC to 24V1A



Analog Technologies

AIDCW600V24V1A1



Figure 1. Top View of AIDCW600V24V1A1



Figure 3. Bottom View



Figure 2. 3D View



Figure 4. Side View

## FEATURES

- Wide Input Power Voltage Range: 210 to 1200VDC  
(See Figure 8b Output Power Derating Curve)
- Output Voltage: 24V  $\pm$  0.48V
- Max. Output Current: 1A
- High Efficiency: 83%  
@ $V_{IN} = 600V$  &  $V_{OUT} = 24V$  &  $I_{OUT} = 1A$
- Output Noise + Ripple: 150mV<sub>P-P</sub>  
@Bandwidth= 0.1Hz  $\sim$  20MHz &  $V_{OUT} = 24V$
- Isolation Voltage: 1500VDC
- Input Reverse Polarity Protection
- Full Aluminum Housing for Complete Shielding
- Operating Temperature Range:  $-40^{\circ}C \sim +85^{\circ}C$
- 100 % Lead (Pb)-free and RoHS Compliant

## APPLICATIONS

This power module, AIDCW600V24V1A1, is designed for achieving DC-DC conversion from high voltage to low voltage as a power supply source. It is widely used in scientific research and other fields including:

- Spectral Analysis
- Electrophoresis
- Particle Accelerator
- Capillary Electrophoresis
- Piezo Devices

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**AIDCW600V24V1A1**

## NAMING PRINCIPLE

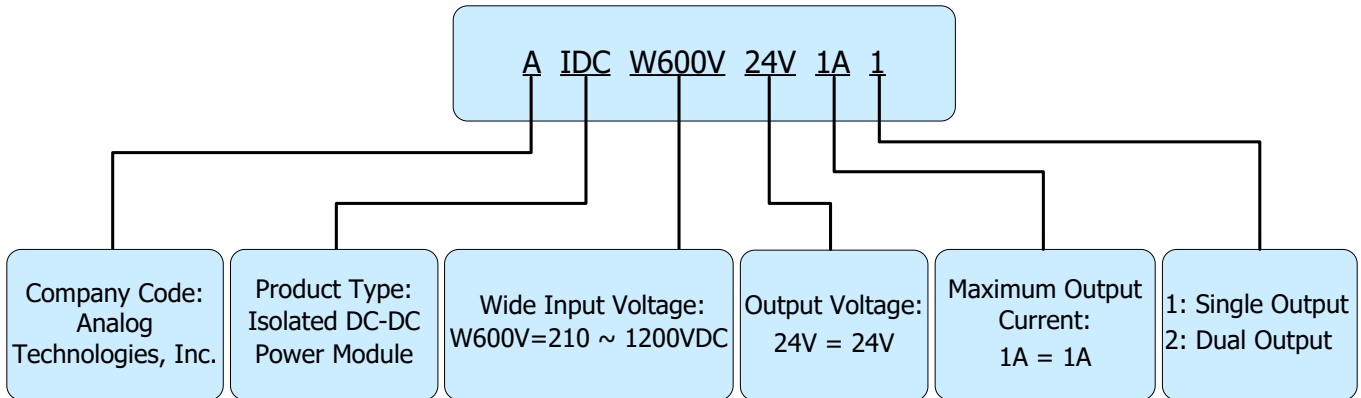


Figure 5. Naming Principle of AIDCW600V24V1A1



Figure 6. Top View

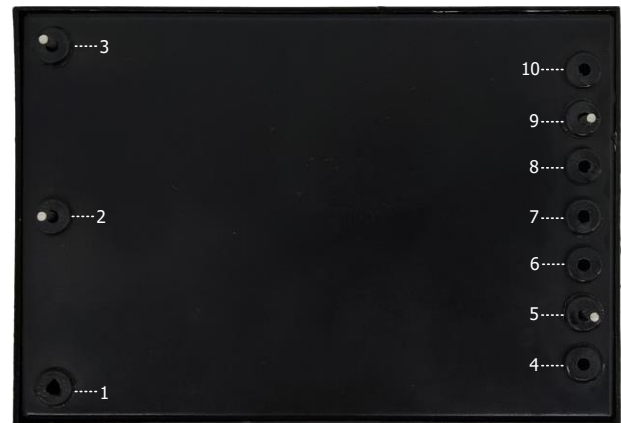


Figure 7. Bottom View

**Table 1. Pin Names, Functions and Specifications.**

No.	Name	Type	Description	Min.	Typ.	Max.
1,4,6,7,8,10	(N/A)	Not Occupied	No pins	-	-	-
2	V <sub>IN-</sub>	Input	Negative Input Terminal	V <sub>IN+</sub> - V <sub>IN-</sub> = 210V~1200V		
3	V <sub>IN+</sub>	Input	Positive Input Terminal			
5	V <sub>OUT-</sub>	Output	Negative Output Terminal		0V	
9	V <sub>OUT+</sub>	Output	Positive Output Terminal		24V	

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## SPECIFICATIONS

Table 2.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit/Note
Input Differential Voltage	$V_{INDF}$	$V_{IN+} - V_{IN-}$	210	600	1200	V
Input Current	$I_{IN}$				200	mA
Under Voltage Lock Out	UVLO		190		200	VDC
Input Reverse Polarity Protection		Input reverse polarity, the module will not be damaged.	Yes			
Output Voltage	$V_{OUT}$	$V_{IN} = 210 \sim 1200VDC$ $I_{OUT} = 0 \sim 1A$		24		V
Output Voltage Accuracy		$V_{IN} = 210 \sim 1200VDC$		$\pm 2$		%
Line Regulation	$\Delta V_{OUT}/\Delta V_{VPS}$	$V_{IN} = 210 \sim 1200VDC$ $I_{OUT} = 1A$		$\pm 1$		%
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN} = 210 \sim 1200VDC$ Load change from 10% to 100%		$\pm 60$		mV/A
Output Current Range	$I_{OUTMAX}$	$V_{IN} = 210 \sim 1200VDC$	0		1	A
Output Noise + Ripple	$V_{OUT\_RP}$	Bandwidth = 0.1Hz ~ 20MHz $V_{OUT} = 24V$		150		mV <sub>P-P</sub>
Output Short-Circuit Protection			It can be short-circuited for extended periods, self-recovery.			
Output Over Current Protection			$\geq 110\%I_o$ , self-recovery			
Startup Delay Time	$t_s$				6	s
Switching Frequency	$f_{SW}$	$V_{IN} = 210 \sim 1200VDC$ $I_{OUT} = 1A$		65		kHz
Operating Temperature Range	$T_{opr}$		-40		85	°C
Storage Temperature Range	$T_{stg}$		-40		105	°C
Storage Relative Humidity Range	RH				95	%
Isolation Voltage	$V_{IS}$			1500		VDC
Isolation Resistance		Input to Output, 500VDC, $T_A = 25^\circ C, 70\%RH$	100			MΩ
Cooling Method			Air Cooling			
Mean Time Between Failure	MTBF	MIL-HDBK-217F@25°C		215		kh
Case Material			Aluminum			
External Dimensions (Exclude Connection Pins)			2.83×1.97×0.94			inch
			72×50×24			mm
Weight				5.29		Oz
				0.33		lbs
				150		g



## TYPICAL PERFORMANCE CHARACTERISTICS

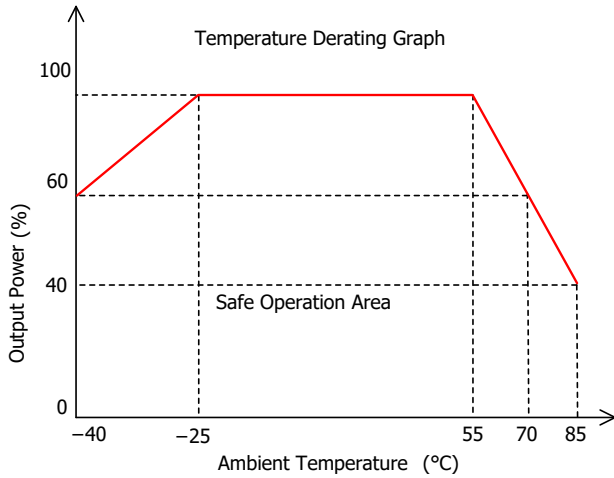


Figure 8a. Derating Curve

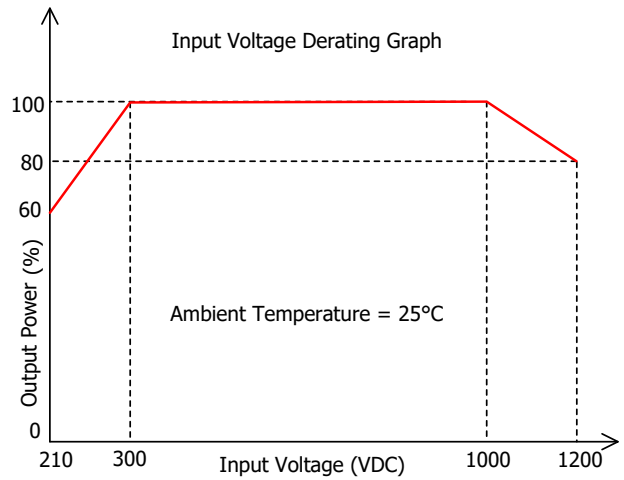


Figure 8b. Derating Curve

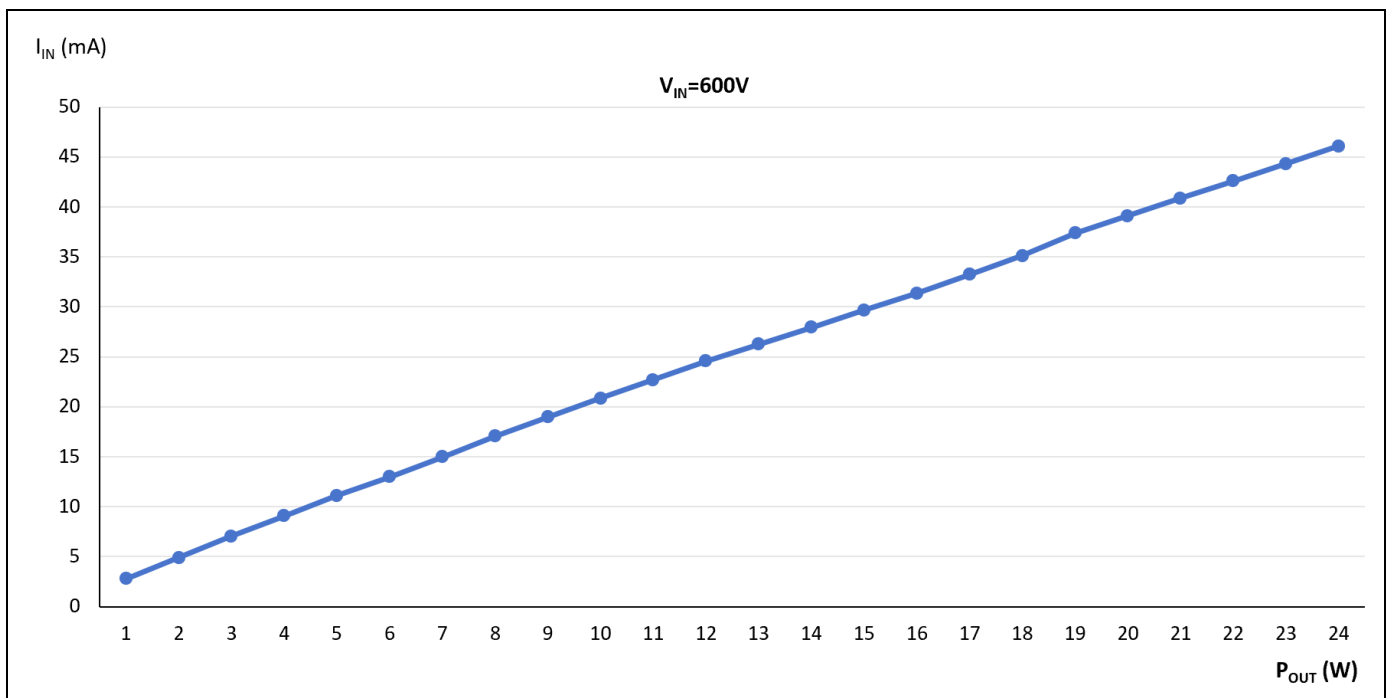


Figure 9. P<sub>OUT</sub> vs. I<sub>IN</sub> @ V<sub>IN</sub>=600V & V<sub>OUT</sub>=24V

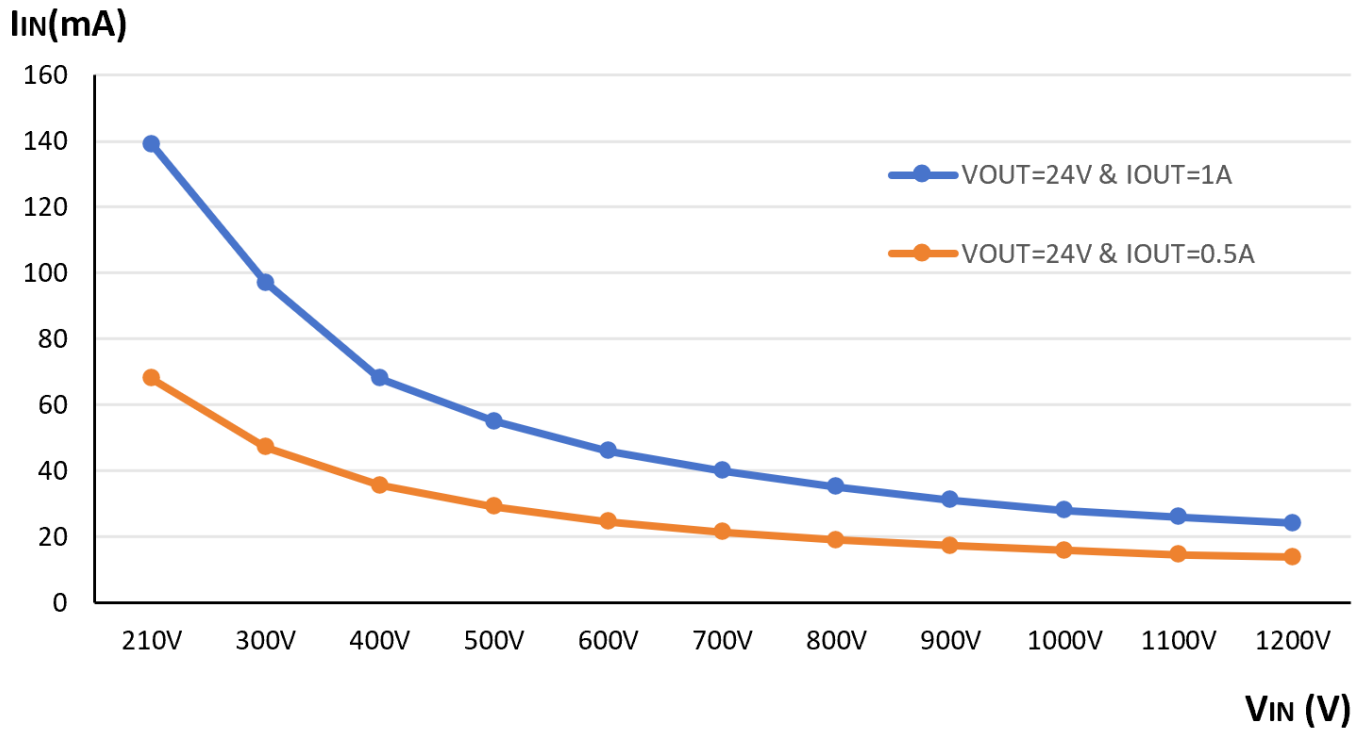


Figure 10. V<sub>IN</sub> vs. I<sub>IN</sub> @V<sub>OUT</sub> = 12V & I<sub>OUT</sub> = 1A/2A

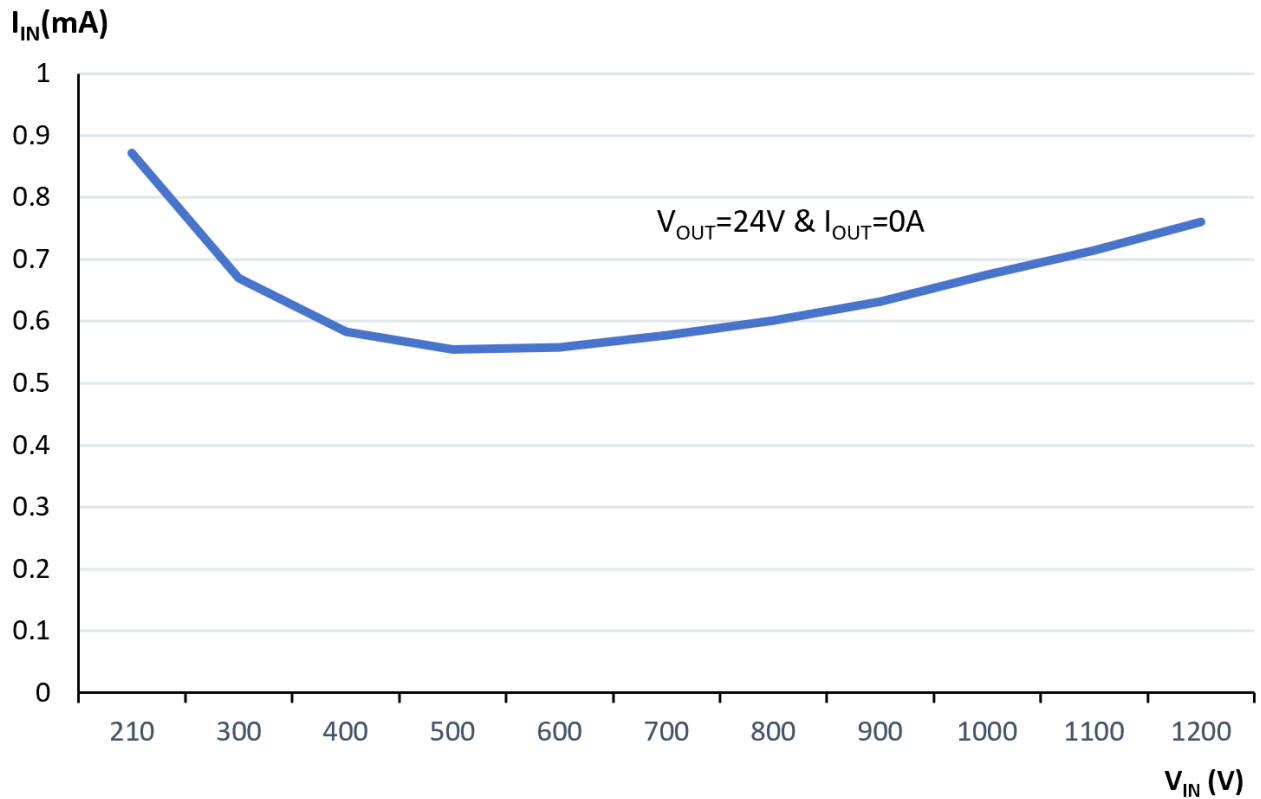


Figure 11. V<sub>IN</sub> vs. I<sub>IN</sub> @V<sub>OUT</sub> = 24V & I<sub>OUT</sub> = 0A

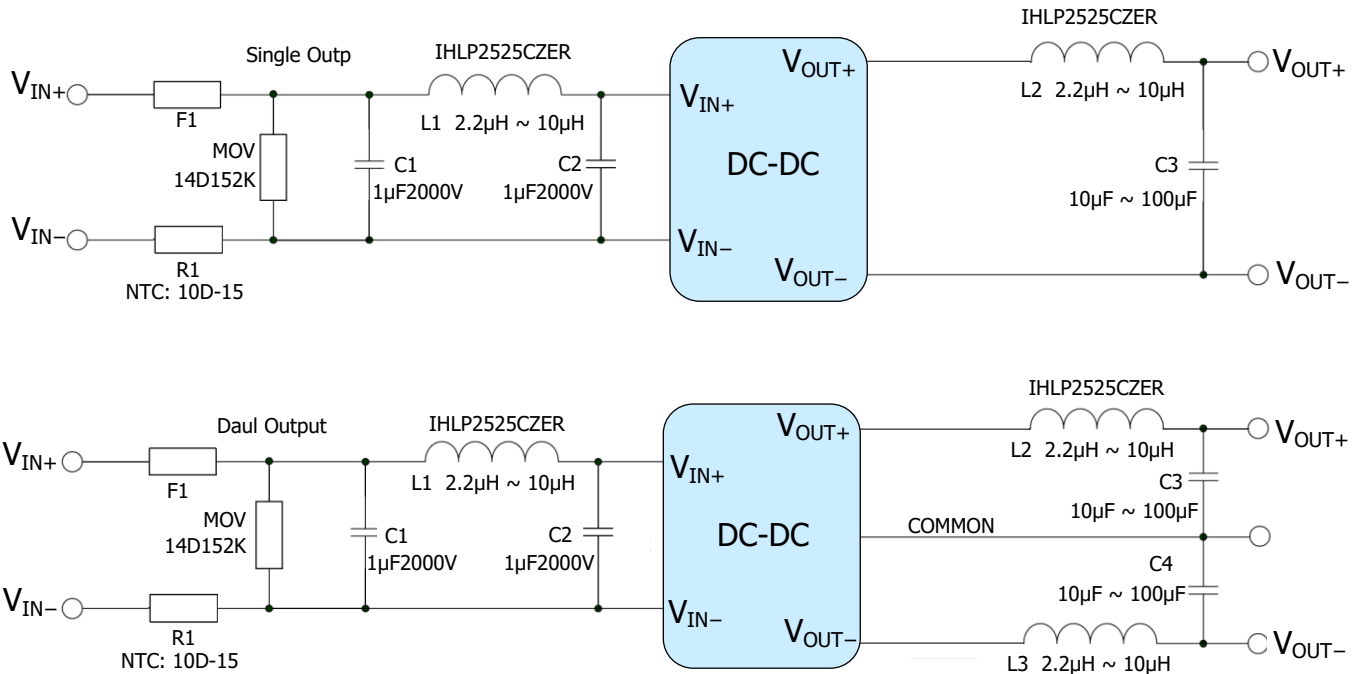
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## TYPICAL APPLICATIONS



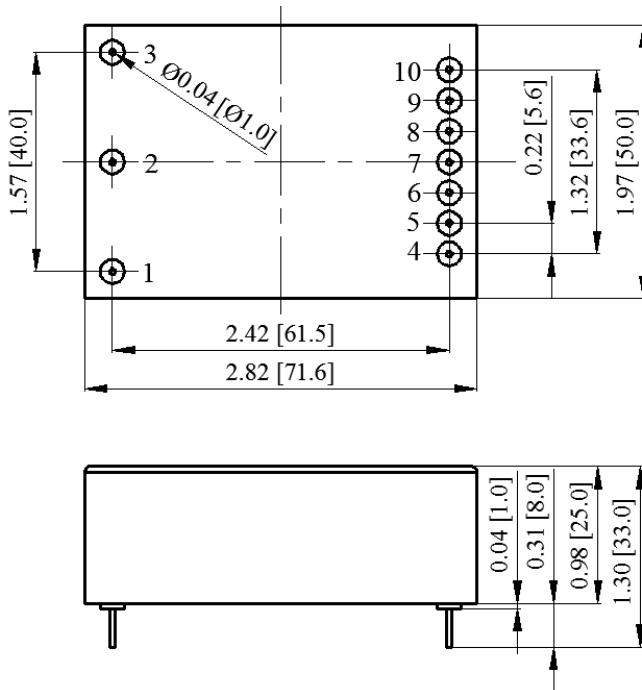
**Table 3. Recommended Values**

F1	Input Time-delay Fuse
MOV	14D152K
R1	NTC: 10D-15
C1 & C2	1 $\mu$ F/2000V
C3 & C4	10 $\mu$ F ~ 100 $\mu$ F (High Frequency Low ESR)
L1, L2 & L3	2.2 $\mu$ H ~ 10 $\mu$ H (IHLP2525CZER)

To further reduce the input and output ripple, the parameters of the LC filter can be appropriately increased, but it should be noted that the external capacitor at the output end should not be too large, and should be lower than the maximum capacitive load of the product.



### OUTLINE DIMENSIONS



Bottom view	Unit: inch [mm]
End view	

Definition PIN										
PIN	1	2	3	4	5	6	7	8	9	10
Single Output	NO PIN	-VIN	+VIN	NO PIN	-Vo	NO PIN	NO PIN	NO PIN	+Vo	NO PIN
Dual Output	NO PIN	-VIN	+VIN	NO PIN	-Vo	NO PIN	NO PIN	NO PIN	+Vo	NO PIN

Figure 9. Outline Dimensions

### ORDERING INFORMATION

Part Number	Buy Now
AIDCW600V24V1A1	* *

Note: both and are the icons for our own online stores. Our products can be ordered from either one of them with the same pricing and delivery time.

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