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No.196-19, Zhonghua Rd., Yongkang Dist., Tainan City 71069, Taiwan

300W isolated DC/DC converter

Model No. ATDD300-48S24

Revision	Description	Date(mm/dd/yyyy)	Created by	Approved by
V0	First released	09/10/2025	Nicole	Ocean Wang
V1	Modify the dimension on page 5	09/11/2025	Nicole	Ocean Wang

FEATURES

1. Input range: 28-60VDC
2. Output Power: 300W isolated
3. Efficiency: 86%
4. Fixed output: 24VDC
5. Protection Rating: IP66
6. Six sides shielding, outstanding EMC performance
7. Remote On/Off control
8. 1150VAC I/O isolation
9. Operating temperature range: -40°C to +70°C
10. Extensive self-protection, UVLO, Reverse Polarity, OVP, OTP, OCP and short protection
11. Battery Load Compatible
12. Designed for a 10-year service life

Specification

Input Voltage [VDC]	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [A]	Output Power [W]	Efficiency typ. [%]	Capacitive Load Max [μF]	Dimension [mm]
48	28-60	24	12.5	300	86	5000	164×140×39

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Absolute Maximum Ratings					
Parameters	Conditions	Min.	Typ.	Max.	Units
Input Voltage Continous		28		60	VDC
On/Off Remote Control	Referred to -Vin	0		60	VDC
Operating Environment Temperature		-40		70	℃
Storage Temperature Range		-40		85	℃
Storage Humidity				90	%Rh
Cooling Method	Chassis Conduction Cooling				
Protection Level	IP66				

Safety and EMC Compliance		
Radiated Emission	EN55032	CLASS A
ESD	IEC/EN61000-4-2	LEVEL 4
Radiated Susceptibility	EN12895，IEC/EN61000-4-3	X①
EFT	IEC/EN61000-4-4	LEVEL 1
Surge	IEC/EN61000-4-5	LEVEL 1

Note：

① X：27-1000MHz 20V/m 80%AM(1kHz)， 1.0-2.0GHz 3V/m 80%AM(1kHz)， 2.0-2.7GHz 3V/m 80%AM(1kHz）

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General Specifications					
Parameters	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage (Leakage current<10mA, Test for 1 minute)	Input to output		1150		VAC
	Input to case		1500		VDC
	Output to case		500		VDC
Isolation Resistance (Viso=500VDC)	Input to output		50		MΩ
Switching Frequency			150		KHz
Start-up Delay				500	ms
Rise Time				500	ms
On/Off Remote Control	On State: High Voltage or Connected to V_{IN}+ Off State: Low Voltage or Connected to V_{IN}-				
Designed Life			10		Year
Vibration	QC/T 413-2002 3.12				
Salt Spray	GB/T 2423.17-2008				
Shock	IEC 60068-2-27, Environmental Testing -Part2-27				

Input Specifications					
Parameters	Conditions	Min.	Typ.	Max.	Units
Operating Voltage Range		28	48	60	VDC
Under Voltage Shutdown		22		26	VDC
Start-up Threshold		24		28	VDC
Input Current	28VDC Input, Full Load	11		14	A
	48VDC Input, Full Load	5		8	A
Input Fuse				25	A
Input Reverse Polarity	Inside Input Reverse Polarity				

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Output Specifications						
Parameters		Conditions	Min.	Typ.	Max.	Units
Output Power					300	W
Vout Voltage Setpoint				24		VDC
Vout Accuracy			-2		+2	%
Line Regulation		Vin=28-60VDC, Half Load	-1		+1	%
Load Regulation		Vin=48VDC	-2		+2	%
Temperature Coefficient			-0.02		+0.02	% of Vout /°C
Total Regulation			-3		+3	%
Thermal Shutdown		Case Temperature		95		°C
Thermal Shutdown Recover		Case Temperature		80		°C
Over Voltage Protection				28		VDC
Over Current Protection			12.5		14	A
Short Circuit Protection		Sustained short-circuit with auto-recovery				
Minimum Load		No minimum load requirement				
Output Current				12.5		A
Ripple & Noise Max.①		20MHz Bandwidth			100	mV pk-pk
Dynamic Load	Peak Deviation	Load is set from 25%-50%-25% of full load, di/dt=1A/μs	-5		+5	VDC
	Response				10	ms
Capacitive Load			0		5000	μF

Note:
① Ripple & noise is tested with certain filter parameters, please see output ripple & noise in technical notes on page 11 for more details.

Unless otherwise specified, all parameters in this datasheet are measured under the following conditions: ambient temperature of 25° C, rated input, and full load output.

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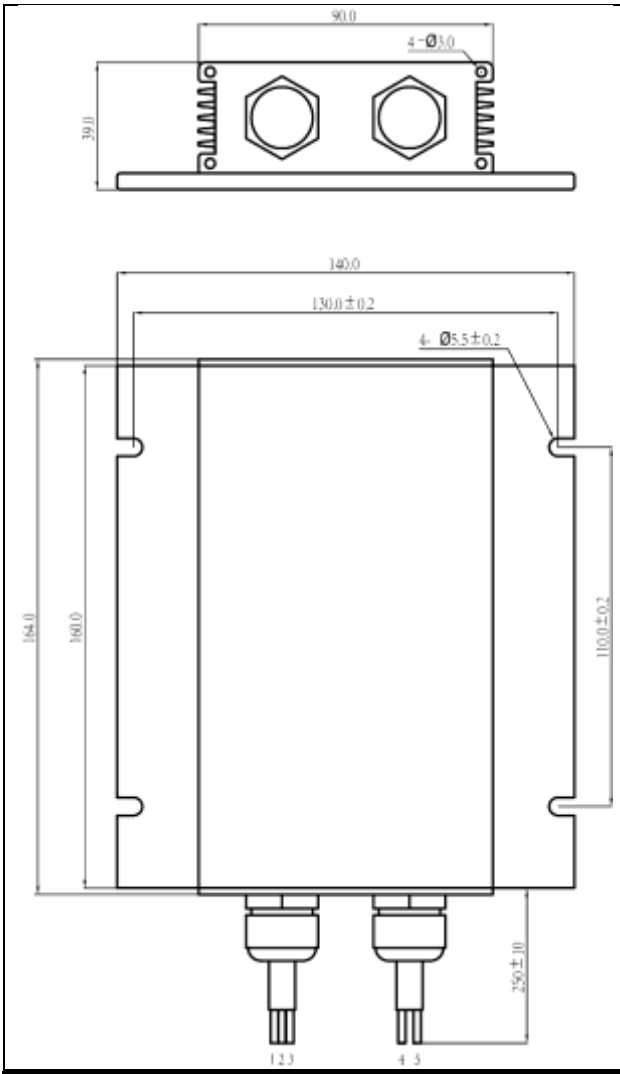
Mechanical Specifications



1. Dimensions are in[mm]
164x140x39
2. Tolerance:
X.X±0.5
X.XX±0.25
3. Mounting Dimensions:
130.0×110.0mm
4. Weight: 1.4kg

PIN CONNECTIONS

Pin	Function	Connector P/N	Wire Size
1(RED)	+Vin	DJ70318A-6.3-11 or equivalent	10AWG
2(BLACK)	-Vin		10AWG
3(YELLOW)	Enable		14AWG
4(BLUE)	+Vo	DJ70219Y-7.8-21 or equivalent	10AWG
5(GREEN)	-Vo		10AWG

1. REMOTE CONTROL FUCTION
The power module features remote enable control. The unit turns on when the enable control line is connected to a high-level signal or to VIN+; it turns off when the line is left open or connected to VIN-.

2. OUTPUT RIPPLE & NOISE
The module's output ripple and noise is measured at the rated input voltage and output current, along with 10uF MLCC capacitor and 0.1uF MLCC used in parallel with appropriate voltage ratings and placed no more than 3 to 5 cm from the output terminals, as C1&C2 shown in the figure above. The scope's bandwidth is set to 20MHz. Ceramic capacitors with appropriate voltage ratings must be selected based on the actual output voltage level.

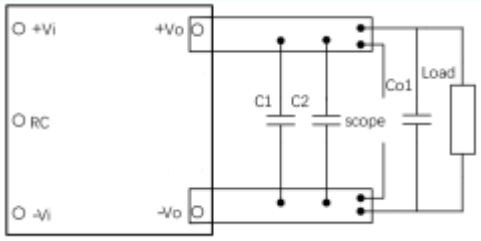


Figure 1 · Output Ripple

3. INPUT UNDERVOLTAGE SHUTDOWN AND START-UP THRESHOLD

The power module is equipped with an input undervoltage shutdown function. It automatically shuts down when the input voltage falls below the UVLO and resumes operation when the input voltage rises above the recovery point.

4. CURRENT LIMITING

When the output current exceeds the OCP point, the power supply automatically enters OCP mode to prevent damage caused by abnormal external load conditions. The specific OCP characteristic curve is shown in Figure 2. As the current continues to increase, the power module will enter hiccup mode. Once the external over-current condition is eliminated, the unit automatically resumes normal operation.

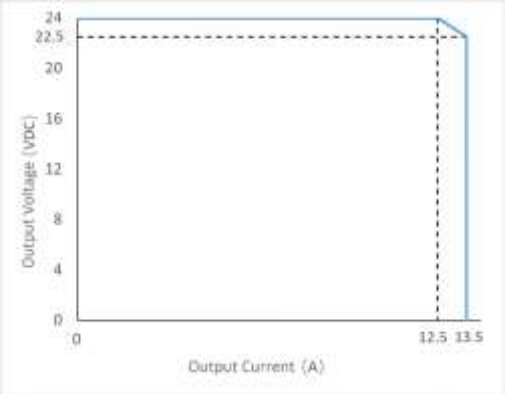


Figure 2 · OCP Curve

Note: When powering a battery load, the power supply will charge the battery at its maximum rated current. Please note the magnitude of the charging current to prevent potential damage to the battery.

5. OUTPUT SHORT CIRCUIT PROTECTION

When a short-circuit occurs at the output, the power module automatically enters short-circuit protection mode to prevent damage from external load circuit faults. The protection method employs hiccup mode operation. Once the external short-circuit condition is eliminated, the power module autonomously resumes normal operation.

6. OUTPUT OVER VOLTAGE PROTECTION

When the output voltage exceeds the set over voltage protection (OVP) threshold, the power module automatically enters OVP mode to prevent further damage to the unit and external circuits. The protection method employs output shutdown (latching shutdown). When the over voltage condition is eliminated, the power supply automatically resumes normal operation.

7. THERMAL SHUTDOWN

The power module is equipped with an internal overtemperature protection (OTP) sensor to prevent damage caused by excessive operating temperatures. When the temperature exceeds the set OTP threshold, the unit shuts down its output. Operation automatically resumes when the temperature drops below the specified hysteresis recovery point.

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8. THERMAL PERFORMANCE REFERENCE

During thermal curve testing, the power module is placed on a 250mm x 300mm x 5mm aluminum substrate, as shown in Figure 3.

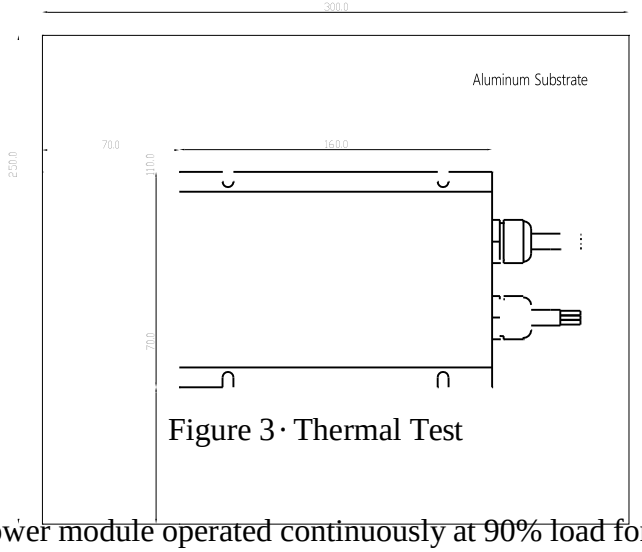

Figure 3 · Thermal Test

As shown in Figure 4, the power module operated continuously at 90% load for 2 hours in an ambient temperature of 60° C. The module's temperature remained nearly constant without triggering overtemperature protection (OTP).

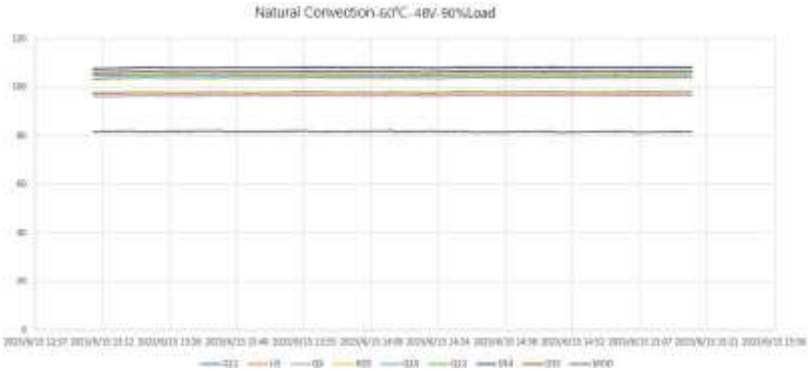

Figure 4 · Thermal Test Result (Natural Convection -60℃ -48Vin-90% Load)

9. MOUNTING INSTRUCTIONS

The product chassis base plate contains four φ5.5 through-holes. Secure the unit using four M5 screws. With a base plate thickness of 5mm, ensure the screw length is appropriate for the mounting panel thickness.