

Page 1 of 7

SPECIFICATIONS

All specifications are based on 25°C, Humidity <75%RH, Nominal Input Voltage, and Rated Output Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION			TEST CONDITIONS		Min	Typ	Max	Unit
OUTPUT SPECIFICATIONS								
Output Voltage					See Table			
Voltage Accuracy ⁽⁵⁾			5%-100% Load			±1	±3	%
Linear Regulation			Input voltage variation from low to high line at full load			±0.2	±0.5	%
Load Regulation ⁽⁶⁾			5%-100% Load			±0.5	±1	%
Output Power					See Table			
Output Current					See Table			
Maximum Capacitive Load					See Table			
Ripple & Noise ⁽⁷⁾			20MHz bandwidth, Nominal Input Voltage, 5%-100% Load			100	150	mVp-p
Trim			Input Voltage Range		90		110	%Vo
Transient Response Deviation			25% Load Step Change, Input Voltage Range			±5	±8	%
Transient Recovery Time			25% Load Step Change, Input Voltage Range			260	500	µs
Temperature Coefficient			Full Load				±0.03	%/°C
Start-Up Time			Nominal input voltage & constant resistance load			30	100	ms
PROTECTION								
Short Circuit Protection			Input Voltage Range		Hiccup, Continuous, Self-Recovery			
Over Current Protection			Input Voltage Range		110	140	200	%Io
Over Voltage Protection			Input Voltage Range		110	140	160	%Vo
Over Temperature Protection			Max. Case Temperature			125		°C
ENVIRONMENTAL SPECIFICATIONS								
Operating Temperature			See Derating Curve		-40		105	°C
Max. Case Temperature			Rated output load			110		°C
Storage Temperature					-55		125	°C
Storage Humidity			Non-Condensing		5		95	%RH
Pin Soldering Resistance Temperature			Soldering spot is 1.5mm away from case for 10 seconds				300	°C
Vibration					10-150Hz, 5G, 0.75mm, along X, Y, and Z			
MTBF			MIL-HDBK-217F@25°C		1000			K hours
GENERAL SPECIFICATIONS								
Efficiency			Full Load		See Table			
Switching Frequency ⁽⁸⁾			PWM Mode					
Isolation			Input-Output, Electric Strength Test for 1 minute with leakage current of 1mA max.		1500			VDC
Insulation Resistance			Input-Output, Resistance at 500VDC		1000			MΩ
Isolation Capacitance			Input-Output capacitance at 100KHz/0.1V			10		nF
						2.2		
PHYSICAL SPECIFICATIONS								
Weight			Horizontal Package		0.71oz (20g)			
Dimensions (L x W x H)			Horizontal Package		1in x 1in x 0.46in (25.40mm x 25.40mm x 11.70mm)			
Case Material					Aluminum Alloy			
Cooling Method					Free Air Convection			
SAFETY CHARACTERISTICS								
Approvals					EN62368			
EMI			CE		CISPR32/EN55032		Class B ⁽¹⁰⁾	
			RE		CISPR32/EN55032		Class B ⁽¹⁰⁾	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6kV		Perf. Criteria B			
	RS	IEC/EN61000-4-3	10V/m		Perf. Criteria A			
	EFT	IEC/EN61000-4-4	±2kV ⁽⁹⁾		Perf. Criteria A			
	Surge	IEC/EN61000-4-5	Line to Line ±2kV ⁽⁹⁾		Perf. Criteria A			
	CS	IEC/EN61000-4-6	3 Vr.m.s		Perf. Criteria A			

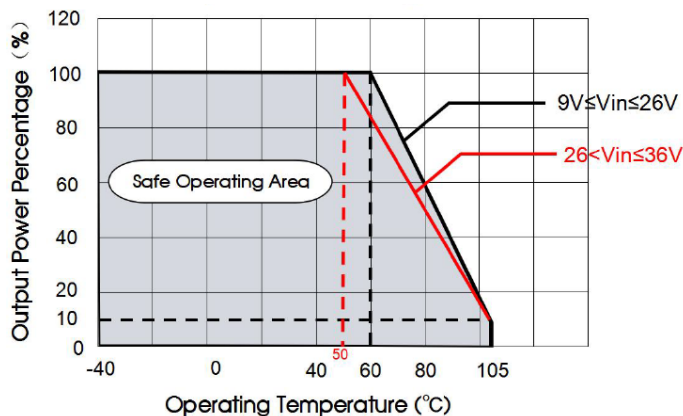
NOTES

1. Exceeding maximum input voltage may cause permanent damage.
2. Efficiency measured at nominal input and rated output load.
3. Rated output load is derated to 75% at minimum input voltage.
4. Ctrl pin voltage is referenced to input GND.
5. Output voltage accuracy for 0%-5% load is $\pm 5\%$ max.
6. Load regulation for 0%-100% load increases to $\pm 3\%$
7. Under 0%-5% load conditions, ripple & noise does not exceed $5\%V_o$. The "parallel cable" method is used for ripple and noise test, please contact factory for more information.
8. Switching frequency is measured at full load. Module reduces switching frequency for light load (below 50%) efficiency improvement.
9. See Fig. 2-① for recommended circuit
10. See Fig. 2-② for recommended circuit
11. Maximum capacitive load offered were tested at input voltage range and full load
12. Customization is available
13. Products shall be classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.

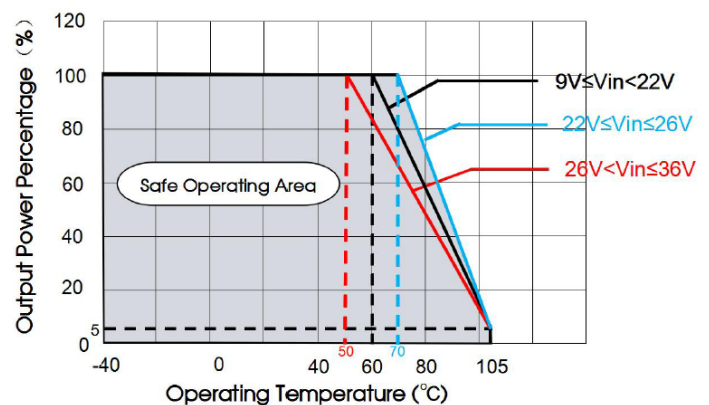
*Due to advances in technology, specifications subject to change without notice.

CHARACTERISTIC CURVES

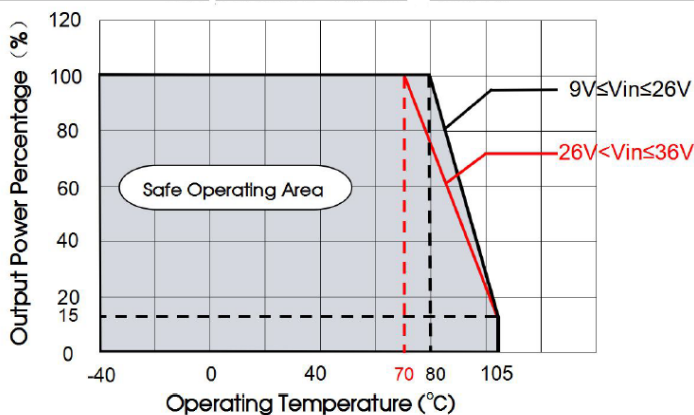
Temperature Derating Curve DCURB2403-40W



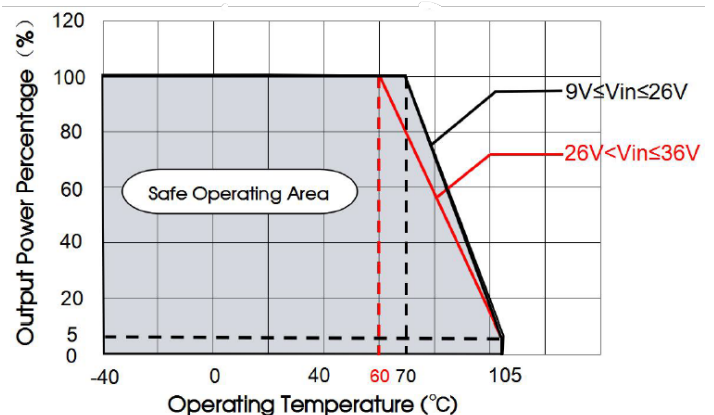
Temperature Derating Curve DCURB2405-40W



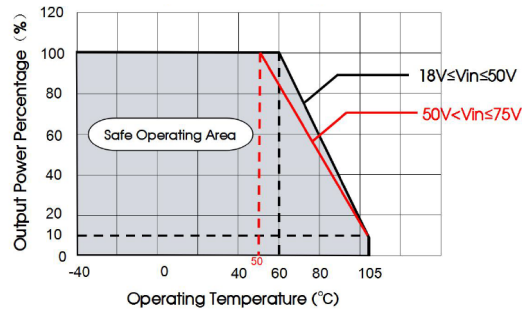
Temperature Derating Curve DCURB2412/15-40W



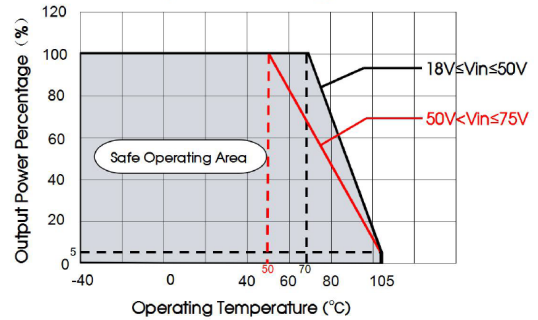
Temperature Derating Curve DCURB2424/28-40W



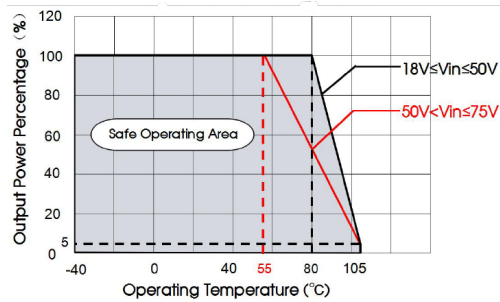
Temperature Derating Curve DCURB4803-40W



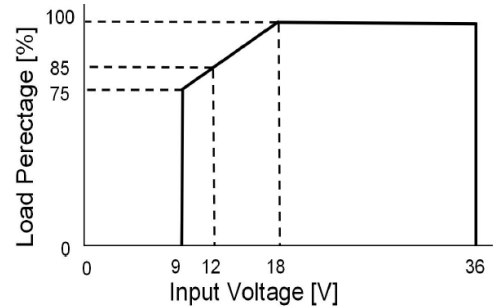
Temperature Derating Curve DCURB4805-40W



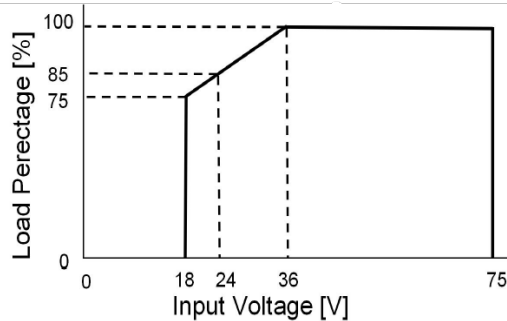
Temperature Derating Curve DCURB4812/15-40W



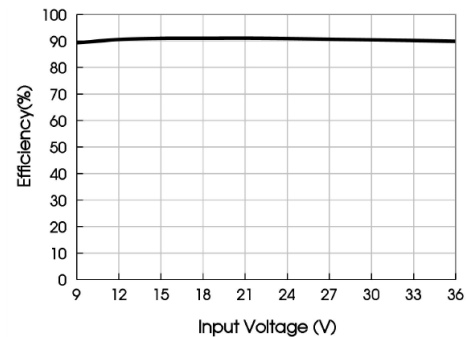
24VDC Nominal Input Series Input vs. Load



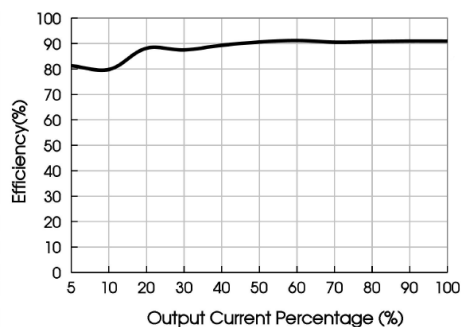
48VDC Nominal Input Series Input vs. Load



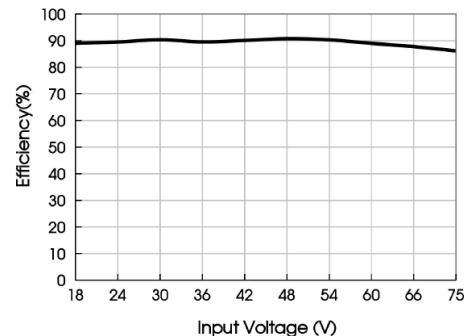
Efficiency vs Input Voltage (Full Load) DCURB2415-40W



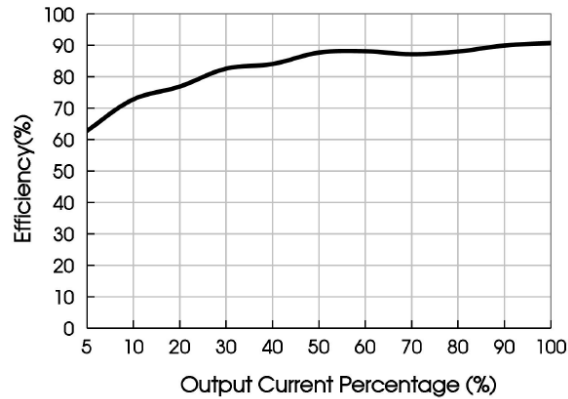
Efficiency vs Output Load (Vin=24Vin) DCURB2415-40W



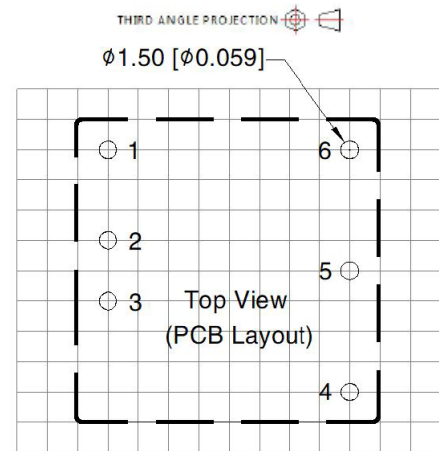
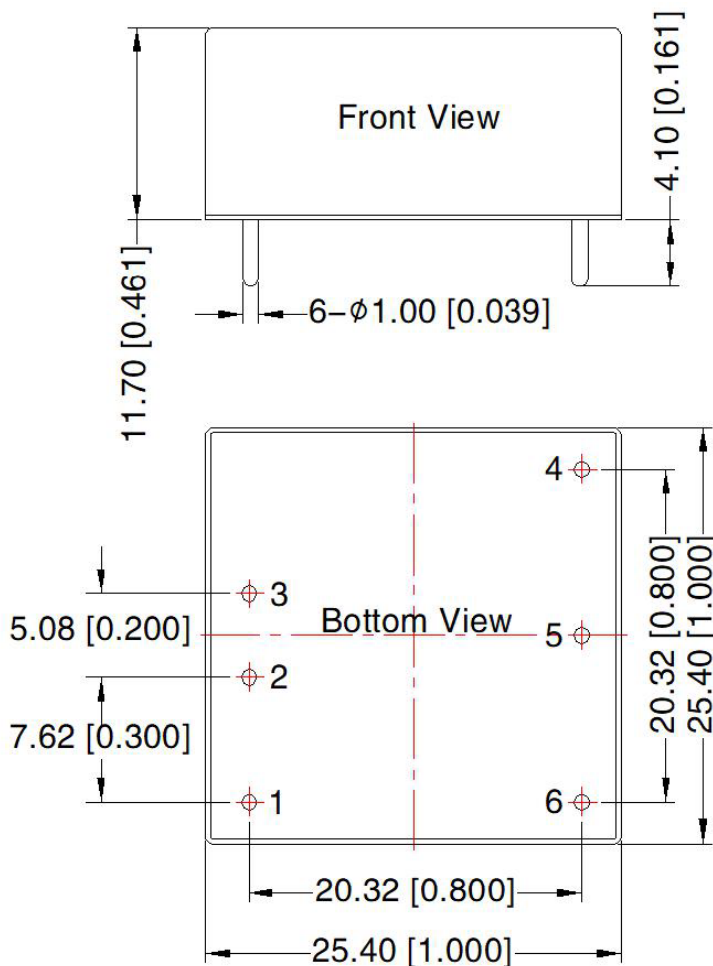
Efficiency vs Input Voltage (Full Load) DCURB4815-40W



Efficiency vs Output Load (Vin=48V) DCURB4815-40W



MECHANICAL DRAWINGS



Note: Grid 2.54*2.54mm

Pin-Out	
PIN	FUNCTION
1	Ctrl
2	GND
3	Vin
4	+Vo
5	Trim
6	0V

Notes:

Unit: mm [inch]

Pin diameter tolerances: ± 0.10 [± 0.004]

General Tolerances: ± 0.80 [± 0.031]

DESIGN REFERENCES

1. Typical Application

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown below in Fig. 1. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance does not exceed the specified max. capacitive load value of the product.



Fig. 1

Vin (VDC)	Vout (VDC)	Cin	Cout	C5	C6	C7
24	3.3-5	100uF /50V	470uF /50V	10uF/16V	/	/
	12/15			10uF/25V	/	/
	24/28			10uF/50V	/	/
48	3.3/5	100uF /100V	470uF /50V	22uF/16V	1uF/16V	10uF/16V
	12/15			22uF/25V	1uF/5V	10uF/25V

2. EMC Compliance Circuit

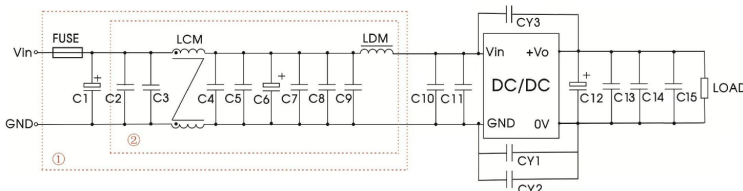


Fig. 2

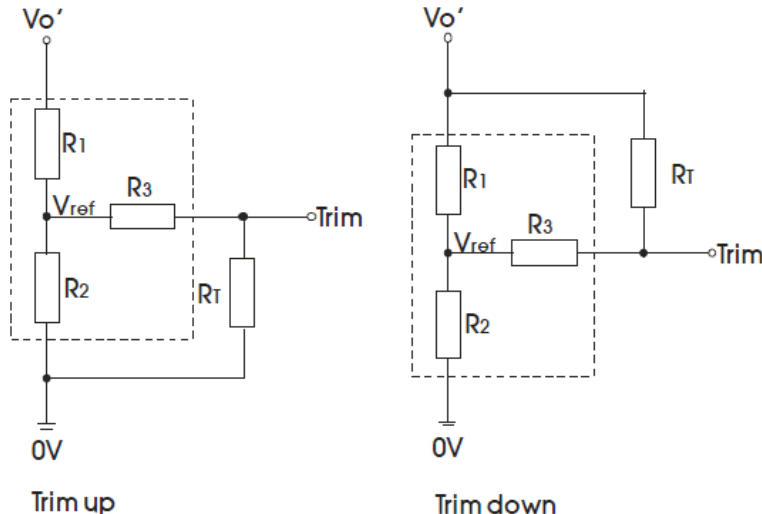
Note: We use part ① in Fig. 2 for immunity tests and part ② for emissions test. Select based on needs.

Parameter Description

Model	Vin:24VDC	Vin:48VDC
Fuse	Choose according to actual input current	
C1	1000uF/50V	680uF/100V
C2/C3/C4/C5 /C7/C8/C9	4.7uF/50V	4.7uF/100V
LCM	350uH*2, contact factory for recommendation	10mH*2, contact factory for recommendation
C6	220uF/50V	100uF/100V
LDM	2.2uH	6.8uH
C12	Refer to Cout in Fig. 1	
C13/C14	Refer to the C5,C6 in Fig. 1	
C15	Refer to C7 in Fig. 1	
C10/C11	/	4.7uF/100V
CY1	Y2/222K/250VAC	2200PF/3000VDC
CY2/CY3	/	2200PF/3000VDC

*Note: The part ② of the circuit can be simplified, and ClassA can be satisfied by removing the LCM

3. Trim Function for Output Voltage Adjustment (Open if Unused)



TRIM Resistor Connection (dashed line shows internal resistor network)

Calculating Trim resistance Values

$$\begin{aligned} \text{up: } R_T &= \frac{aR_2}{R_2 - a} - R_3 & a &= \frac{V_{ref}}{V_{O'} - V_{ref}} \cdot R_1 \\ \text{down: } R_T &= \frac{aR_1}{R_1 - a} - R_3 & a &= \frac{V_{O'} - V_{ref}}{V_{ref}} \cdot R_2 \end{aligned}$$

R_T = Trim Resistor Value
 a = self-defined parameter with no real meaning

Vout(V)	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref(V)
3.3	4.83	2.87	4.7	1.25
5	2.87	2.87	5.6	2.5
12	10.91	2.87	15	2.5
15	14.35	2.87	15	2.5
24	24.77	2.87	17.4	2.5
28	29.41	2.87	17.4	2.5

4. Products do not support parallel connection of their output.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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