

400W/250W non-isolated DC-DC converter
Ultra-wide input voltage and regulated single output



Patent Protection RoHS



EN62368-1 BS EN62368-1

KUB4824CCS_A is a non-isolated 400W/250W DC-DC converter with ultra-wide input range of 33-72VDC. Its efficiency is up to 95% and features operating temperature from -40°C to 70°C, input under-voltage protection (<29VDC), input reverse polarity protection, output over-voltage protection, over current and short circuit protection (current clamping protection).

FEATURES

- Ultra-wide range input voltage: 33-72VDC
- High efficiency up to 95%
- Operating ambient temperature range: -40°C to +70°C
- Input under-voltage protection, Input reverse polarity protection, output short circuit, over-current, over-voltage protection
- Protection class: IP65

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency ^② (%) Min./Typ.	Max. Capacitive Load (μF)
		Nominal (Range)	Max. ^①	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	KUB4824CCS-10A	48	75	24	10417/0	93/95	--
	KUB4824CCS-16A	(33-72)			16667/0		

Notes:

- ① Exceeding the maximum input voltage may cause permanent damage;
② Efficiency is measured at nominal input voltage and rated output load.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	KUB4824CCS-10A	48VDC nominal input voltage	--	--	6000/60	mA
	KUB4824CCS-16A				10000/60	
Surge Voltage (1sec. max.)	48VDC nominal input voltage		-0.7	--	80	VDC
Start-up Voltage			--	--	33	
Under-voltage turn-off	0%-100% load		27	--	29	
Inrush Current	Nominal input voltage,100% load		Current		Hold time	
			> 150A		< 25us	
			> 50A		< 500us	
			> 20A		< 1ms	
Input Filter			Pi filter			
Input reverse protection	Input voltage range		Continuous			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy	0%-100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load at 25°C	--	--	±0.5	
Load Regulation	0%-100% load at 25°C	--	--	±1.5	
Start-up Time	Nominal input & constant resistance load	--	--	300	ms
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple&Noise ^①	20MHz bandwidth, 5%-100% load	--	--	200	mV p-p
Over-voltage Protection	Input voltage range	--	--	120	%Vo

Over-current Protection ^②	Input voltage range	105	130	170	%Io
Short-circuit Protection ^③		Continuous, self-recovery			
30V transient feedback voltage Protection ^④		Without damage			
Transient	10%→50%→10% load step change at 25℃	Response Deviation		Recovery Time	
		>+15%Vo		— ^⑤	
		>+10%Vo		≤5s	
		>+5%Vo		≤10s	
		<-5%Vo		≤10s	
		<-10%Vo		≤5ms	
		<-15%Vo		≤1ms	
		<-20%Vo		≤0.1ms	
		<-25%Vo		— ^⑤	

Note:
^①Ripple & Noise at ≤ 5% load is 5%Vo. Max. The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information;
^②Over-current protection mode is current clamp, when the load continues to increase, the output voltage will decrease;
^③Short-circuit protection mode is current clamp;
^④Time of duration at 30V ≤10ms;
^⑤"—" means that the product will not show the deviation of ">+15%Vo" or "<-25%Vo".

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Electric Strength Test for 1 minute with a leakage current of 1mA max. for input/output-case	1260	--	--	VDC
Insulation Resistance	Resistance at 500VDC for input/output-case	10	--	--	MΩ
Operating Temperature	see Fig. 1	-40	--	+70	℃
Storage Humidity	Non-condensing	5	--	95	%RH
Storage Temperature		-40	--	+85	℃
Switching Frequency	PWM mode	--	190	--	kHz
MTBF	MIL-HDBK-217F@25℃	200	--	--	k hours
Vibration		EN60068-2-6			
Shock		EN60068-2-27			
Broad-band Random Vibration		EN60068-2-64			
Salt Spray Test		EN ISO 9227			
Fluid Contamination Test		EN60068-2-74			

Mechanical Specifications

Case Material	Aluminum alloy		
Dimensions	140.00 x 90.00 x 47.00 mm		
Weight	KUB4824CCS-10A	650.0g (Typ.)	
	KUB4824CCS-16A	690.0g (Typ.)	
Cooling Method	Free air convection		

Electromagnetic Compatibility (EMC)

Emissions	RE	30-75MHz	31db μV/m	
		75-400MHz	31-42db μV/m	
		400-1000MHz	42db μV/m	
		At 10m		
Immunity	ESD	Contact ±8kV, Air ±15kV (case)		perf. Criteria B
		Contact ±6kV, Air ±8kV (terminal)		
	RS	27-1000MHz	30V/m 80% AM (1kHz)	perf. Criteria B
		1.0-2.0GHz	6V/m 80% AM (1kHz)	
		2.0-2.7GHz	2V/m 80% AM (1kHz)	
	EFT	EN61000-4-4	±1kV	perf. Criteria A

	Magnetic Immunity	1000A/m (0Hz) 3 seconds 30A/m (50Hz) 3 seconds	perf. Criteria B
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Product Characteristic Curve

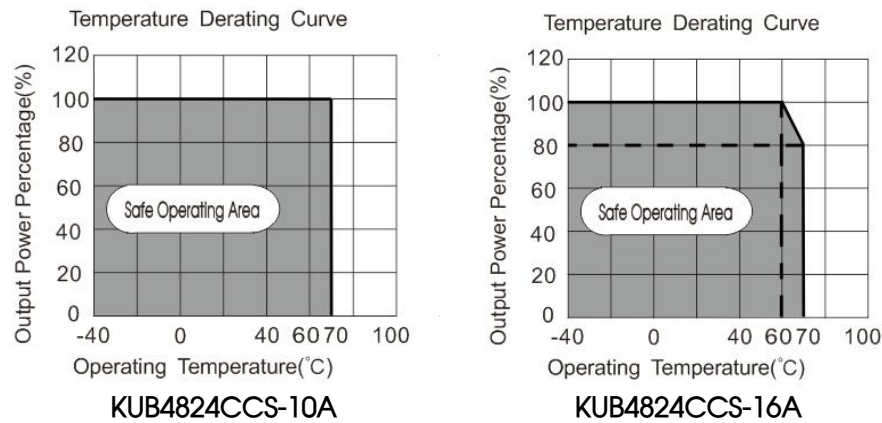
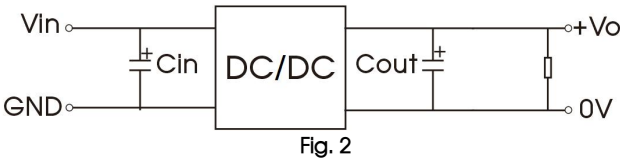


Fig. 1

Design Reference

1. Typical application

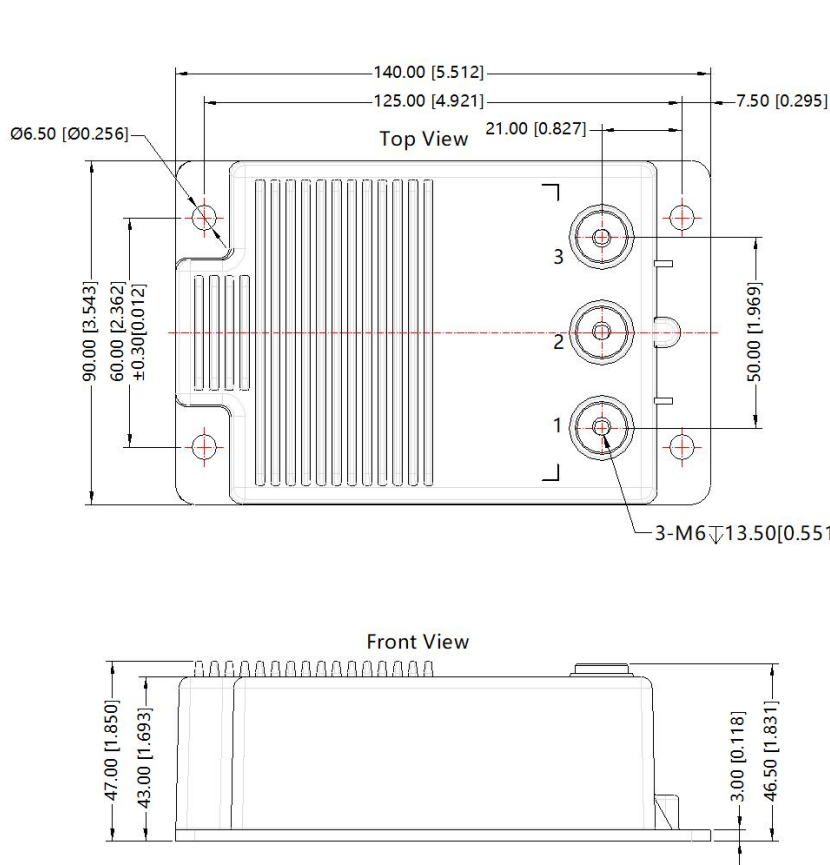
All the DC/DC converters of this series are tested according to the recommended circuit (see Fig. 2) before delivery.
*If there is a surge voltage spike at the input when the product is started, an external capacitor $C_{in}=100\mu F$ is required at input side.
If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors C_{in} and C_{out} or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



Vout (VDC)	Cout (μF)	Cin (μF)
24	10	*

2. The products do not support parallel connection of their output
3. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

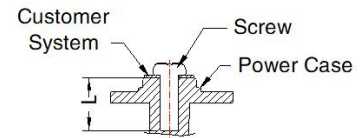
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

Pin-Out	
Pin	Mark
1	+Vo(24V)
2	GND
3	+Vin(48V)

Position	Screw Spec.	L(Max)	Torque(Max)
1 - 3	M6	13.5mm	6.5N·m



Note:
Unit: mm[inch]
Wire range: 16-12 AWG
Tightening torque: Max 6.5N·m
General tolerances: ±0.50 [±0.020]

Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number : 58210131 ;
- Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°C, humidity<75%RH when inputting nominal voltage and outputting rated load;
- All index testing methods in this datasheet are based on our company corporate standards;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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