

Typical Features

- ◆ Wide input voltage range 200-1500VDC
- ◆ Input voltage up to 1700VDC (Transient duration 10S)
- ◆ No load power consumption $\leq 0.5W$
- ◆ Efficiency up to 85% (Typ.)
- ◆ Operating temperature from $-30^{\circ}C$ to $+70^{\circ}C$
- ◆ Switching frequency 65KHz
- ◆ Input anti-reverse, under-voltage protections
- ◆ Short circuit, over current, over voltage protections
- ◆ Isolation voltage 4000VDC
- ◆ Altitude during operation 5000m Max
- ◆ With UL certificate (UL1741)
- ◆ Application for Solar power generation, high-voltage frequency conversion



cULus
UL1741

Application Field

BK15-800SXXW2N6(-T)(-TS)(-TS1) Series --- Compact size & high-efficiency DC-DC modular converters with wide input voltage range, low ripple, low temperature rise, low standby power consumption, high reliability, safety isolated and good EMC performance. This series of products can be widely used in the fields of Solar electric power generation, Home energy storage and Industry control, etc. The multi-protection functions can keep the power supply and the load safety under abnormal conditions. Additional circuit diagram for EMC is recommended for the application with high EMC requirement.

Typical Product List

Certificate	Part No	Input Voltage Range		Output Specifications			Max Capacitive Load @800VDC (uF)	Ripple & Noise 20MHz (Max) mVp-p	Efficiency @full load, 800VDC (Typ.) %
		Nominal (VDC)	Range (VDC)	Power P(W)	Voltage Vo(VDC)	Current Io(mA)			
UL	BK15-800S12W2N6	800	200	15	12	1250	1000	250	82
UL	BK15-800S15W2N6		-		15	1000	680	250	83
UL	BK15-800S24W2N6		1500		24	625	470	250	85

Note 1: The typical value of efficiency is based on the product tested after half an hour burn-in at full load.

Note 2: The full load efficiency should be in $\pm 2\%$ of the typical value in this table. The efficiency is calculated by the way that the full output power is divided by the input power.

Note 3: Please contact Aipu sales for other output voltages requirements of this series but not listed in this table.

Note 4: The suffix-T indicates the chassis package, both -TS & -TS1 indicate the packages of DIN Rail which width is 35mm.

Input Specifications

Item	Test Condition	Min.	Typ.	Max.	Unit
Input voltage range	DC input	200	800	1500	VDC
	Transient duration 10 seconds	-	-	1700	
Input current	Input 200VDC	-	-	0.090	A
	Input 800VDC	-	-	0.025	
	Input 1500VDC	-	-	0.015	
Standby power consumption	Input 1500VDC	-	-	0.5	W
Under voltage protection	Start protection	80	-	130	VDC
	Recovery	90	-	150	
Short circuit current	-	-	-	3	A
Recommended external fuse	-	3A/1500VDC, required			
Input anti-reverse protection	-	Available			
Hot-plug	-	NA			

Output Specifications

Item		Test Condition	Min.	Typ.	Max.	Unit
Output voltage accuracy		Input full voltage range, any Load	-	±2.0	±3.0	%
Line regulation		Rated load	-	±1.0	-	
Load regulation		Nominal input voltage, 0%~100% load	-	±2.0	-	
Minimum load		Single output	0	-	-	
Temperature drift coefficient		-	-	-	±0.02	%/℃
Turn-on delay time		800VDC Input (full load)	-	-	2000	mS
Power off hold-up time		800VDC Input (full load)	-	100	-	
Dynamic response	Overshoot range	25%-50%-25%	-5.0	-	+5.0	%
	Recovery time	50%-75%-50%	-	-	5.0	mS
Output overshoot		Full input voltage range	≤10			%Vo
Short circuit protection			Continuous, self-recovery			Hiccup
Over current protection		Full input voltage range	110%Io	-	250%Io	mA
Over voltage protection		Output 12VDC	≤18			VDC
		Output 15VDC	≤20			
		Output 24VDC	≤32			
Ripple & Noise		5%-100% load, 20MHz bandwidth	-	-	250	mVp-p

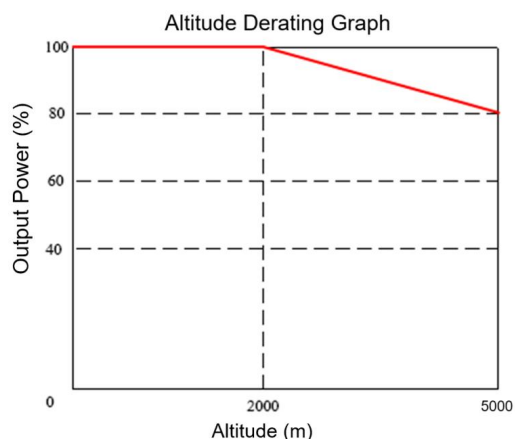
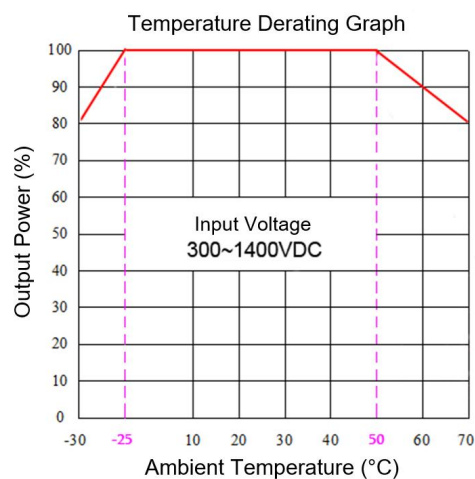
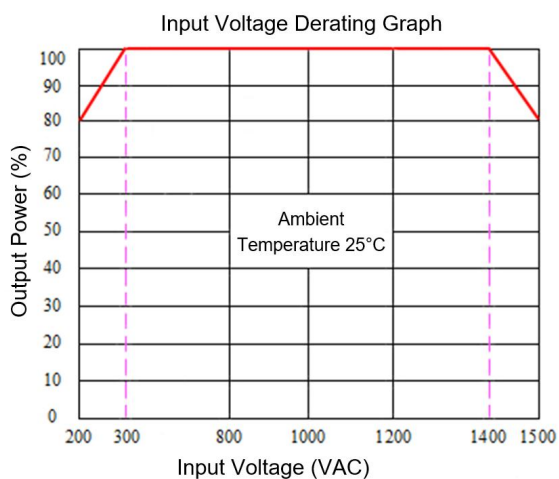
Note: The Ripple & Noise is tested by the Parallel-line method, please refer to the following test instruction.

General Specifications

Item	Test Condition	Min.	Typ.	Max.	Unit
Switching frequency	-	-	65	-	KHz
Operating temperature	Refer to the Temperature Derating Graph	-30	-	+70	°C
Storage temperature	-	-40	-	+85	

Case temperature rise	Ta=30℃@ Output 100% load		-	55°	-	°
Soldering temperature	Wave-soldering		260±4℃, time 5-10S			
	Manual-soldering		360±8℃, time 4-7S			
Storage humidity	-		-	-	95	%RH
Isolation voltage	I/P-O/P	Test 1min, leakage current <5mA	4000	-	-	VDC
Insulation resistance	I/P-O/P	@500VDC	100	-	-	MΩ
MTBF	MIL-HDBK-217F @ 25℃		300	-	-	K Hours
Vibration	-		10-55Hz, 10G, 30 Min, along X, Y, Z			
Safety class	-		CLASS II			
Weights & Dimensions	Part No.	Weight (Typ.)	Dimensions L x W x H			
	BK15-800SXXW2N6	230g	89.00x63.50x25.00 mm		3.504x2.500x0.984 inch	
	BK15-800SXXW2N6-T	310g	134.00x69.00x33.30 mm		5.276x2.717x1.311 inch	
	BK15-800SXXW2N6-TS	380g	134.00x69.00x38.90 mm		5.276x2.717x1.531 inch	
	BK15-800SXXW2N6-TS1	380g	135.00x69.00x38.90 mm		5.315x2.717x1.531 inch	

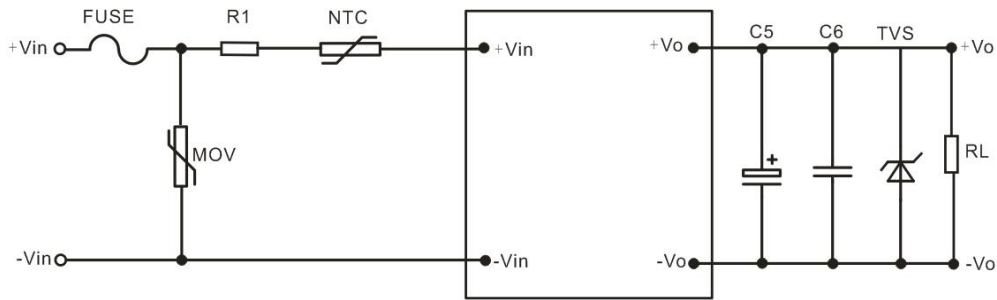
Product Characteristics Graphs



Note 1: The output power should be derated based on the input voltage derating graph at 200~300VDC/1400~1500VDC.

Note 2: This product should operate under the condition of natural air, please contact us if it could be used at a closed space.

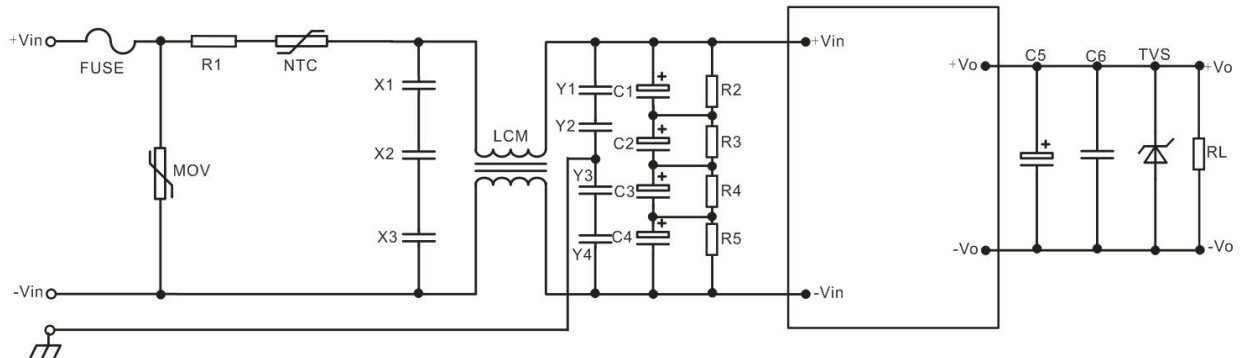
Typical Circuit for Application



Part No.	FUSE	MOV	R1	NTC	C5	C6	TVS
BK15-800S12W2N6	3A/1500DC (Required)	20D182K	4.7 Ω /10W	5 Ω /6A/ 15D	100uF/25V	1uF/50V 1206	SMBJ18A
BK15-800S15W2N6		6500A	Wire-wound		100uF/25V		SMBJ20A
BK15-800S24W2N6		(Required)	Resistor		100uF/50V		SMBJ30A

Note: A UL approved surge protection device (VPR/MLV=4000V Max) should be used at the input for the application.

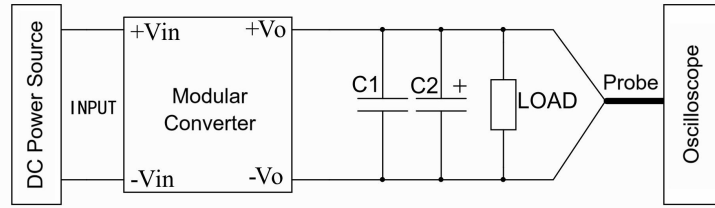
Recommended Circuit for EMC



Component	Description	Recommended Value	Remarks
FUSE	Cut off the input in case the converter operating under abnormal condition	TBD by the customer based on the actual input current	Required
R1(current-limiting resistor)	Suppress the start-up transient surge current	4.7 Ω /10W Wire-wound resistor	
NTC	Suppress the surge current	5 Ω /6A/15D	
MOV (Metal Oxide Varistor)	Absorb the surges	20D182K/6500A	Optional according to the actual application
X1/X2/X3(CBB Capacitor)	Suppress the differential mode interference	105J/630VDC	
LCM (Common Mode Choke)	Suppress the Common mode interference	10mH/0.8A	
Y1/Y2/Y3/Y4 (Y Capacitor)		Y1/222M/1500VDC	
C1/C2/C3/C4(E-Cap)	Low-frequency filtering	47uF/450V	
R2/R3/R4/R5 (SMD Resistor)	Voltages balance	1M Ω /1W	

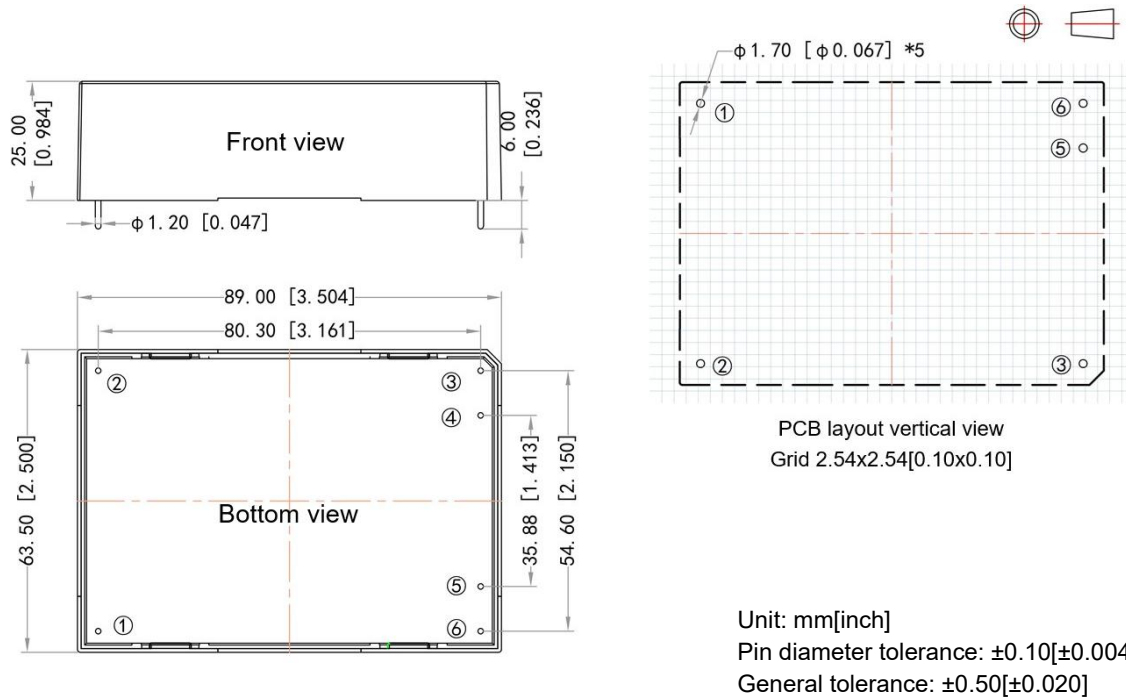
Note: A UL approved surge protection device (VPR/MLV=4000V Max) should be used at the input for the application.

Ripple & Noise Test Instruction (Parallel-line Method, 20MHz bandwidth)



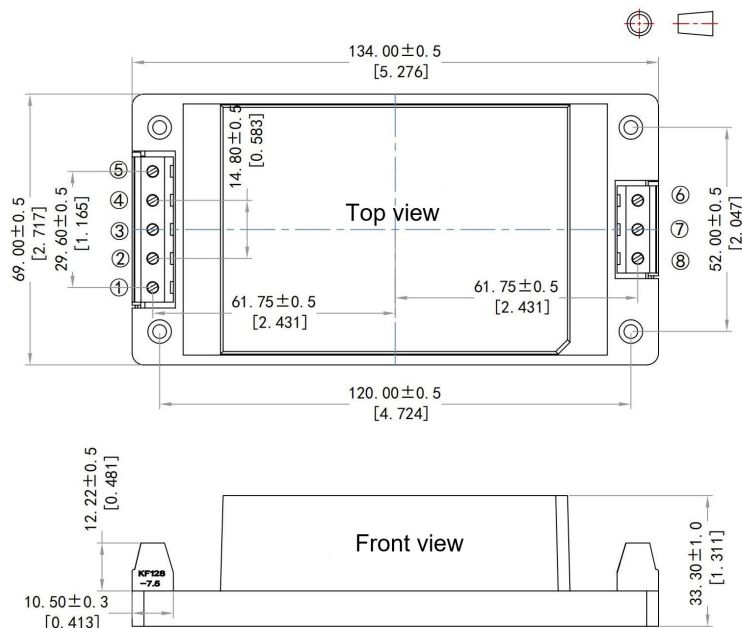
1. The Ripple & Noise test needs the cables in parallel, an oscilloscope that should be set at the Sample Mode, bandwidth 20MHz. 100M bandwidth probe with cap and ground removed. One polypropylene capacitor C1(0.1uF) and one high-frequency low-impedance electrolytic capacitor C2(10uF) are connected in parallel with the probe.
2. Refer to the test diagram, the converter output connects to the electronic load by the jig with cables which size should be defined according to the output current value. The test can start at the converter output terminals after the input power on.

Mechanical Dimensions



Pin-out Function Description

Pin No.	1	2	3	4	5	6
Function	-Vin	+Vin	No Connection	No Pin	-Vo	+Vo

-T Package Dimensions

Note:

Unit: mm[inch]

Lead wires gauge: 24-12AWG

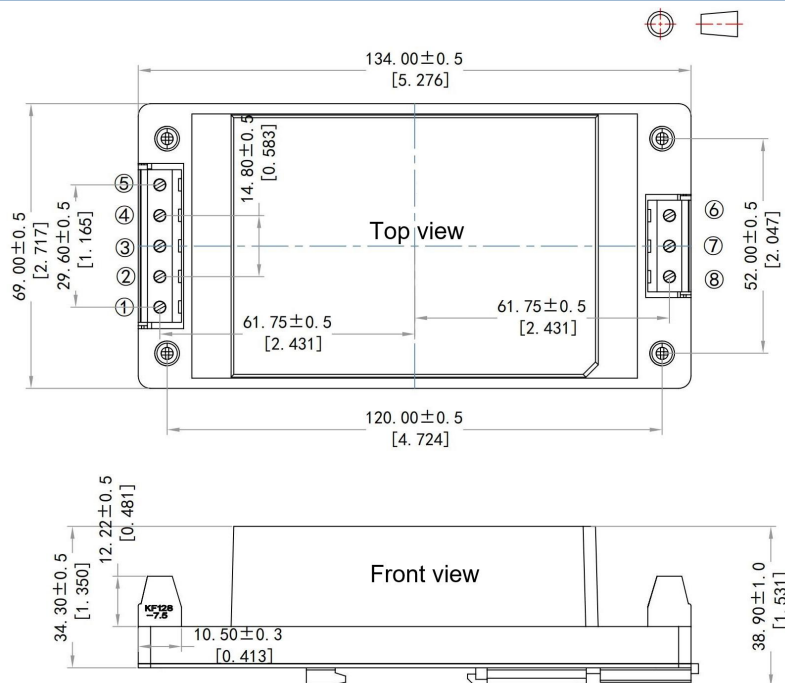
Screwing Torque: 0.4N.m Max

General tolerance: ±1.00[±0.039]

NC means No Connection

Terminal Function Description

Terminal No.	1	2	3	4	5	6	7	8
Function	+Vin	NC	NC	NC	-Vin	+Vo	-Vo	NC

-TS Package Dimensions

Note:

Unit: mm[inch]

Lead wires gauge: 24-12AWG

Screwing Torque: 0.4N.m Max

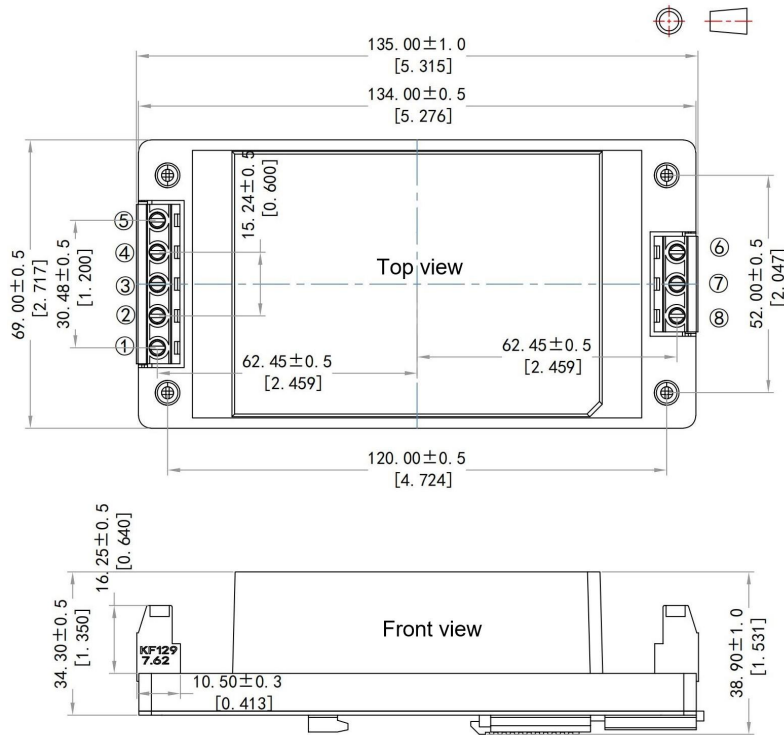
General tolerance: ±1.00[±0.039]

NC means No Connection

Terminal Function Description

Terminal No.	1	2	3	4	5	6	7	8
Function	+Vin	NC	NC	NC	-Vin	+Vo	-Vo	NC

-TS1 Package Dimensions



Note:

Unit: mm[inch]

Lead wires gauge: 24-12AWG

Screwing Torque: 0.4N.m Max

General tolerance: $\pm 1.00 [\pm 0.039]$

NC means No Connection

Terminal Function Description

Terminal No.	1	2	3	4	5	6	7	8
Function	+Vin	NC	NC	NC	-Vin	+Vo	-Vo	NC

Application Notice

- 1.The product should be used according to the specifications, otherwise it could be permanently damaged.
2. The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.
3. The product performance cannot be guaranteed if it works under over-load condition.
4. Unless otherwise specified, all values or indicators on this datasheet are tested at $T_a=25^{\circ}\text{C}$, humidity<75%RH, nominal input voltage and rated load (pure resistance load).
5. All values or indicators on this datasheet have been tested based on Aipupower test specifications.
- 6.The specifications are specially for the parts listed on this datasheet, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
7. Aipupower can provide customization service.

Guangzhou Aipu Electron Technology Co., Ltd

Address: Building 4, HEDY Park, No.63, Punan Road, Huangpu Dist, Guangzhou, China.

Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-889-8821

E-mail: sales@aipu-elec.com Website: <https://www.aipupower.com>