Typical Features

- ◆ Ultra-wide input voltage range 200-1200VDC（6:1）
- ◆ Against reverse protection, output over-voltage protection, short circuit protection
- ◆ No load input current as low as 2.5mA
- ◆ Input output isolation: 4000VDC
- ◆ Efficiency up to 84%(TYP.)
- ◆ Widely used in photovoltaic power generation, high-voltage inverter
- ◆ Operating Temperature: -30℃- +70℃
- ◆ Industrial design, international pin out

Application Field

BK20-600DXXH1N4 series -- are regulated output DC/DC converters offered by Aipu.
It features ultra-high voltage input of 200-1200VDC, high efficiency and high reliability. It can be widely used in photovoltaic power generation, high-voltage inverter and so on, which provide stable operating voltage to the equipment and improve the power and the load's safety performance with multiple protection when working under abnormal conditions.

Typical Product List

Model	Power（W）	Input Current（Input Nominal）		Output Voltage/Current		Output Efficiency	Max. Capacitive Load
		Output no load	Output full load	Voltage	Current	（Input Nominal）%/TYP	（u F）
		（mA）		（V）	（mA）		
*BK20-600D05H1N4	20	1.0	42	±5.0	±2000	79	1000
BK20-600D12H1N4		1.5	40.6	±12	±833	82	680
BK20-600D15H1N4		2.5	40	±15	±667	83	470
BK20-600D24H1N4		2.5	39.7	±24	±417	84	330

Note 1: Due to space limitations, above is only a part of our product list, please contact our sales team for more items.
Note 2:."*" is model under developing.
Note 3: The typical output efficiency is based on that product is full loaded and burned-in after half an hour.
Note 4: The fluctuation range of full load efficiency(%,TYP) is ±2%, full load output efficiency= total output power/module's input power.
Note 5: Input 300-1200 VDC testing, it should add a current limiting resistance (370Ω/10W/metal oxide film) at the input end of the module in series to suppress the surge current. The specific connection method is detailed in EMC External Recommended Circuit.

Input Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Input Voltage Range	--	200	600	1200	VDC
		Please refer to the Input Voltage Derating Curve			
Item	**Operating Condition**	**Min.**	**Typ.**	**Max.**	**Unit**
Input Current	200VDC@100% load	--	118	--	mA

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	600VDC@100% load	--	40	--	
	1200VDC@100% load	--	22	--	
Stand-by Consumption	Output no load, nominal input	--	--	0.8	W
Input Filter	ll type Filter				

Output Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0%~100% load	--	±2.0	±3.0	%
Minimum Load	--	10	--	--	
Line Regulation	Input full load range	--	±0.5	±1.2	
Load Regulation	20%~100% nominal load, balance load	--	±1.0	±2.0	
Ripple & Noise	20MHz bandwidth（peak peak value）	--	120	200	mV
Temperature Coefficient	--	--	--	±0.03	%
Turn-on delay time	200VDC	--	4000	--	mS
	600VDC	--	1000	--	
	1200VDC	--	600	--	
Power off Holding time	1200VDC	--	5	--	
Turn on overshoot	0%~100% load	--	-	10	%
Output Over- current protection	Input full voltage range	110	130	--	
Dynamic Response Overshoot Range	25%-50%-25% 50%-75%-50%	--	±5.0	±6.0	
Dynamic Response recovery time		--	300	500	mS
Short circuit protection	Input 300-1000VDC	Output continuous short circuit protection, after removing the short circuit fault, could be self-recovery			

General Specification

Item	Operating Condition	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output, Test time: 1min, leak current≤5mA	4000	--	--	VDC
Operating Temperature	--	-30	--	+70	℃
	Refer to Temperature Derating Curve, details see the Product Character Curve at back				
Storage Temperature	--	-25	--	+85	
Soldering Temperature	Wave-soldering	260±5℃，time: 5-10S			
	Manual-welding	380±10℃，time: 4-10S			
Switching Frequency	--	--	65	70	KHz
Max. Case Temperature	Within operating Curve	--	--	+100	℃

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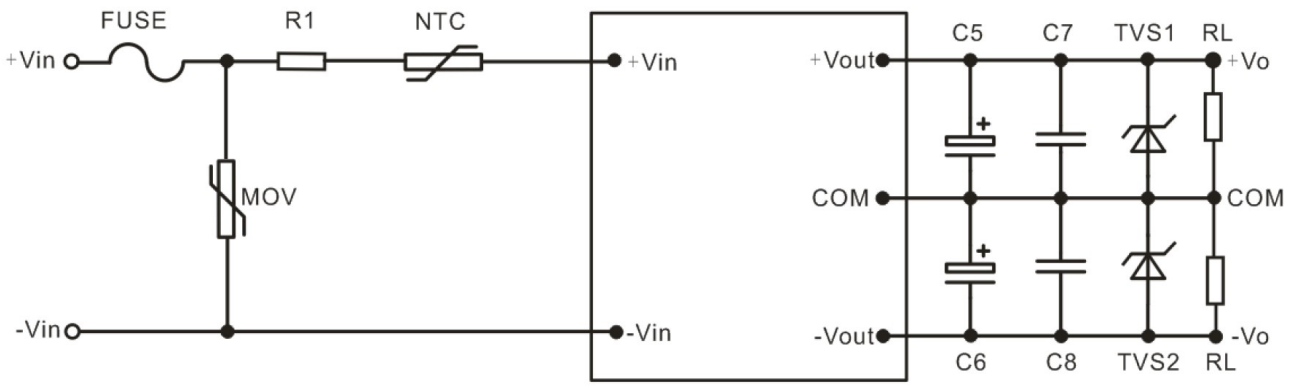
Shortage Humidity	No condensing	--	--	95	%RH
Insulation Resistance	Input-Output	--	--	500	VDC
		--	--	100	MΩ

Physical Specifications

Case Material		Black Aluminum Case
Package Dimensions	Horizontal package	70.0X48.0X23.5mm
Product Weight		152g（TYP）
Cooling Method		Free Air Convention

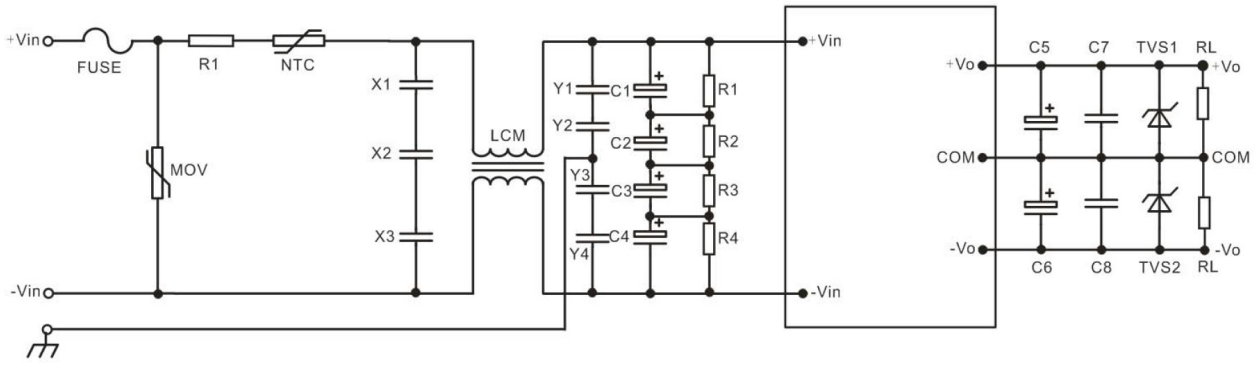
Typical Application Circuit



Output Voltage	C5/C6	C7/C8	TVS1/TVS2
±5V	680uF/16V	4.7uF/16V/1206	SMBJ10A
±12V	330uF/25V	1.0uF/25V/1206	SMBJ15A
±15V	220uF/50V	0.2uF/50V/1206	SMBJ18A

Note: The output filer capacitor C5/C6 is electrolytic capacitor, recommended high frequency and low resistance electrolytic capacitor. For capacitance and current of capacitor please refer to the manufacture's datasheet. The capacitance withstand voltage value should be higher 80%. C7/C8 is ceramic capacitor, to recommended high frequency noise. TVS is a recommended component to protect post-circuits(if converter fails).

EMC External Recommended Circuit



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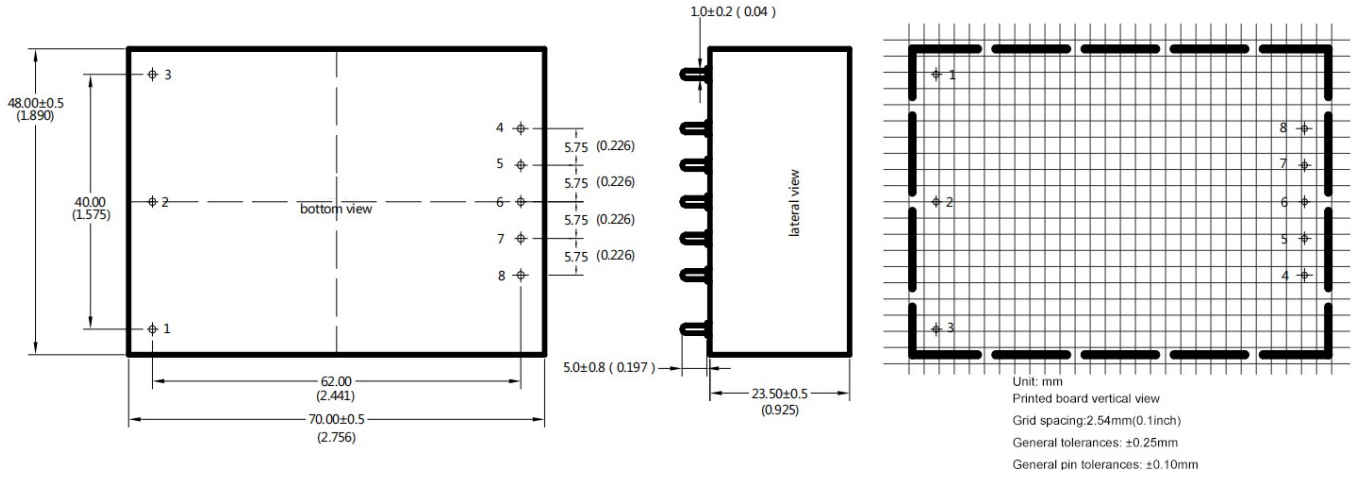
Component	Recommended Value	Remark
FUSE	According to customer's request	Necessary
R1	370Ω/10W Metal Oxide film	
NTC	5D-15	
MOV	20D152K	
X1/X2/X3 (X Capacitor)	Using 3pcs capacitance:0.22μF capacitor in series connection	
LCM (common mode inductor)	8mH/0.8A	
Y1/Y2/Y3/Y4 (Y capacitor)	Using 3pcs capacitance:2.2nF/400V in series connection	
C1/C2/C3/C4 (electrolytic capacitor)	220uF/450V	
R2/R3/R4/R5 (chip capacitor)	1MΩ/2W	

Dimension and Pin out Specifications



Pin out Specification:

Pin-out	1	2	3	4	5	6	7	8
Dual（D）	NC	-Vin	+Vin	+Vo	NC	COM	NC	-Vo

Dimension

Packing code	L x W x H	
H1N4	70.0X48.0X23.5 mm	2.756X1.890X0.925inch

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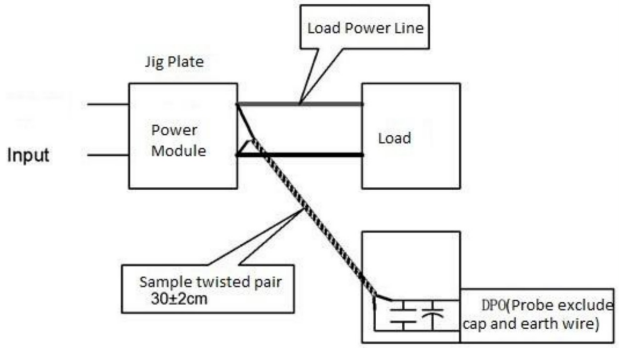
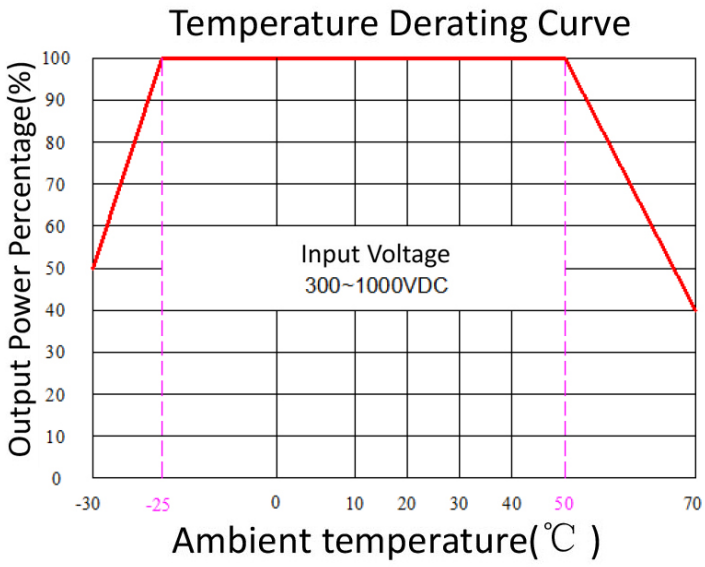
Ripple & Noise Test Instruction (Twisted Pair Method, 20MHZ bandwidth)

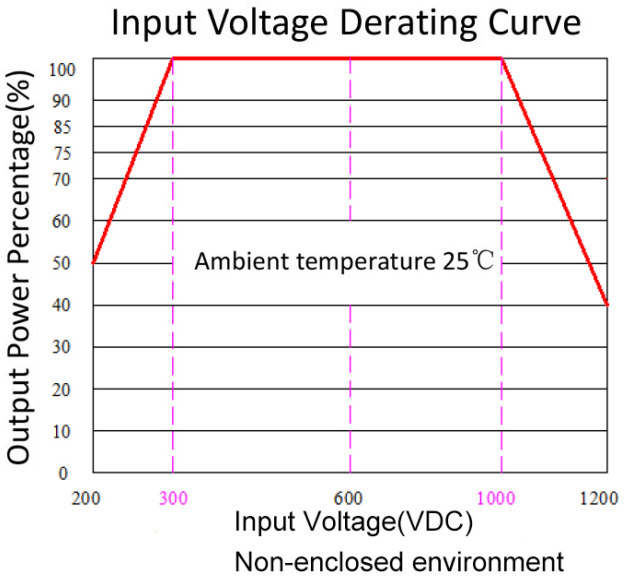
1) Ripple noise test need 12# twisted pair cables, an oscilloscope which bandwidth should be set to 20MHz, 0.1uF polypropylene capacitor and 10uF high-frequency low-resistance electrolytic capacitor are connected in parallel with the probes (100M bandwidth). The oscilloscope should be set on the Sample Mode.

2) The output ripple noise test diagram is shown on the right. 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 twisted pair (length 30cm±2 cm) should be connected in parallel with the load, the location is as close as possible to the output pins or terminals. The test can be started after input power on.



Product Performance Curve





Note:

1.The products should be used according to the specifications in this manual, otherwise it could be permanently damaged.

2. A fuse should be used at input.

3. The product performances in this manual cannot be guaranteed if it works at a lower load than the minimum load defined.

4. The product performances in this manual cannot be guaranteed if it works at over-load condition.

5. Unless otherwise specified, all values or indicators in this manual are tested at Ta=25℃, humidity<75%RH, rated input voltage and rated load (pure resistance load).

6. All values or indicators in this manual had been tested based on Aipupower test specifications.

7.The specifications are specially for the parts listed in this manual, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirement.

8. Aipupower can provide customization service.

9. The product specifications may be modified without a prior notice. Please refer to the published data sheet in Aipupower website.

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