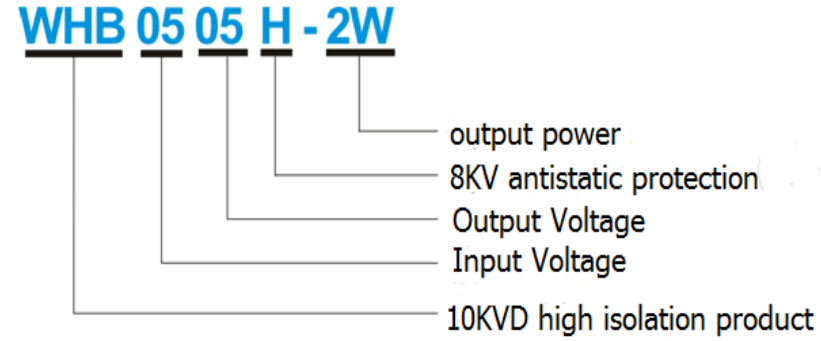
10KV High isolation Antistatic DC-DC Converter

The newest WHB series DC/DC Converter developed by SunYuan, It uses wide isulation distance and new isolation material design and comply with the relevant safety regulations of the external RS232/RS485 bus control communication interface in the national electric industry DL/T 614-2007 multi-function energy meter protocol standard, It is a high-isolation & anti-pulse electrostatic dc-dc converter for the intelligent control of the instrumentation equipment bus Ethernet interface commonly used in the electric power medical industry such as power load management terminal, multi-function electric energy meter, blood analyzer, life monitor etc. The SIP12Pin high integration and small size package technology enables the module to have self-recovery overload short-circuit protection and regulated output function.

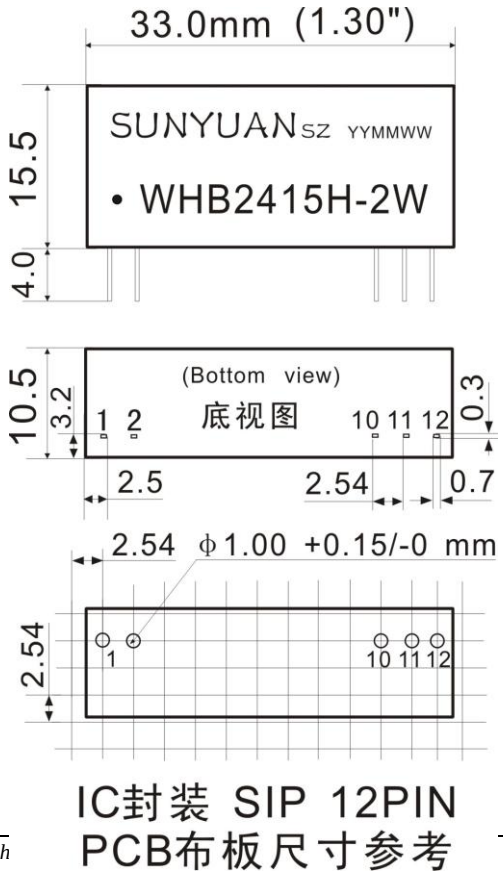
After the electric medical equipment is added to the WHB series dc dc converter, the safety barrier isolation voltage value of the external bus Ethernet (RJ45/RS232/RS485) interface terminal of the instrumentation equipment reaches 10KVDC high isolation and 8KVAC anti pulse group electrostatic protection due to the high isolation between the input and output terminals of the module power supply. Therefore, the WHB series of high isolation dc dc converter can make the equipment and equipment resistant to EMC upgrade and can pass the safety inspection of the electric medical industry.

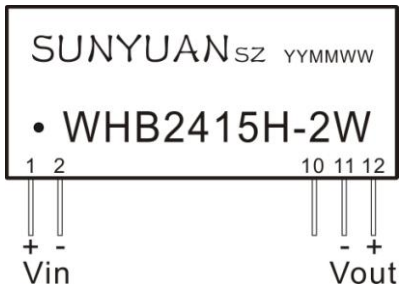
Model&Definision



Dimensions and pin function description:

(Remarks：The 10 feet of the product are the non-functional feet that are suspended inside, which can be used to strengthen the mechanical strength of the module and PCB board.)





Pin	Pin function description	
1	Vin+	Input positive
2	Vin-	Input negative
3~9	NC	Empty foot
10	NC	Empty foot
11	Vout-	output Negative
12	Vout+	output Positive

Input Voltage
3.3, 5, 9, 12, 15, 24 VDC
Output Voltage
3.3, 5, 9, 12, 15 VDC

Remarks：

For other non-standard output voltage value specifications, please contact Sunyuan Technology Co., Ltd.

Electrical Characteristics

The following data are measured at TA=25° C, nominal input voltage, and rated output current except for special instructions.

Input Characteristics

Voltage range	+/-10% Nominal value
Internal filtering	Ceramic capacitors

Isolation Characteristics

Rated voltage	10,000 VDC (about 8000VAC)
Leakage current	1 mA
resistance	10^9 Ohm
capacitance	60 pF type.

Ouput Characteristics

Antistatic rating	≥8000VAC pulse goup
Voltage accuracy	Output voltage fluctuation range is +/-2% of nominal
value(load variation range 0-100%)	
(20 MHz BW) Ripple and noise	<50 mVp-p，max
Sustainable short circuit time	Output with self-recovery overload short circuit protection
Linear voltage calibration	+/- 0.5 % max，(3.3 VDC output +/- 1 % max)
Load voltage calibration	+/- 0.5 % typ， +/- 1 % max， (No load to full load)
Temperature Coefficient	+/- 0.02 % / °C
External filter capacitor	Suggest Co ≤4.7uF，otherwise it will broken easily

General Characteristics

effectiveness	60% to 80%
On-off level	60KHz，type.

Environmental Characteristics

Working temperature (environment)	- 40° C to + 85° C
storage temperature	- 55 °C to + 125 °C
Lower the fixed value	See temperature characteristic curve
temperature	≤ 90 %，Uncompressed
cooling method	Natural air cooling

Shape Characteristics

SIP (single row in line) package size	33.0 x 10.5 x 15.5 mm 1.3 x 0.413 x 0.61 inch
Weight	6g~10g
Shell Material	Non-conductive flame retardant black plastic

WHB Series product models selection (The following data is the measured value of the product after 8 hours of continuous full load aging.)

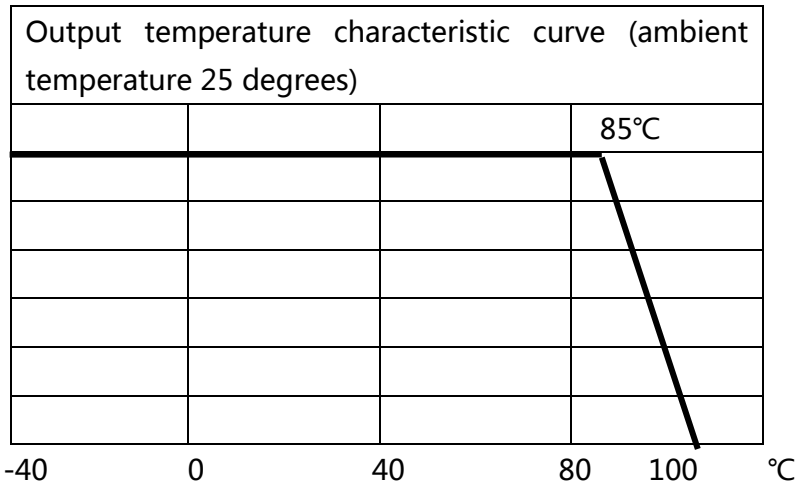
Model number	Input voltage Vin(VDC)	Input current No load (mA)	Input Current Full load (mA)	Output voltage Vout(VDC)	Output current (max.mA)	Full load efficiency (%TYPE)
WHB0503H-1W	5	20	317	3.3	303	63
WHB0505H-1W	5	30	300	5	200	66
WHB0512H-1W	5	30	260	12	83	76
WHB0515H-1W	5	32	255	15	67	78
WHB1205H-1W	12	14	126	5	200	66

WHB1209H-1W	12	15	120	9	111	69
WHB1212H-1W	12	15	110	12	83	75
WHB1215H-1W	12	16	115	15	67	72
WHB2405H-1W	24	8	61	5	200	68
WHB2409H-1W	24	9	58	9	111	72
WHB2412H-1W	24	12	70	12	83	60
WHB2415H-1W	24	9	60	15	67	69
WHB0505H-2W	5	55	580	5	400	68
WHB0512H-2W	5	35	445	12	167	89
WHB0515H-2W	5	40	495	12	167	80
WHB1205H-2W	12	30	250	5	400	66
WHB1209H-2W	12	28	216	9	222	77
WHB1212H-2W	12	25	198	12	167	84
WHB1215H-2W	12	27	215	15	133	77
WHB2405H-2W	24	8	119	5	400	69
WHB2409H-2W	24	8	103	9	222	80
WHB2412H-2W	24	10	100	12	167	83
WHB2415H-2W	24	9	105	15	134	79

Remark: The output efficiency of the output voltage value adjustable product is calculated according to the actual value.

Temperature characteristic curve

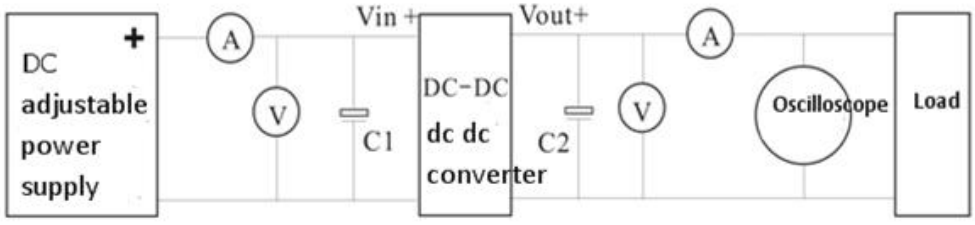
OutPut (1W/2W)



一. Product main specifiction detection ways of DC-DC Converter

Use standard Kelvin four-terminal input and rated load test (as picture show)

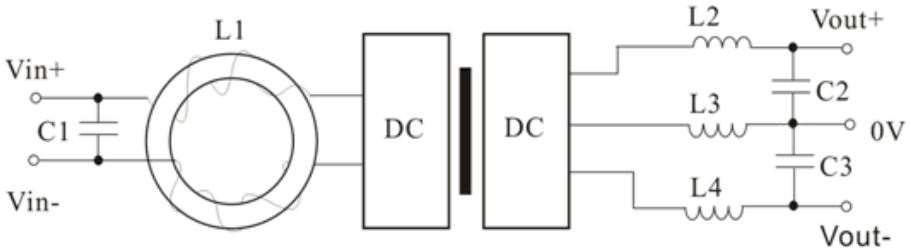
Test conditions: room temperature TA = 25 ° C, temperature: <75% nominal input and rated load



二. Reference method for reducing noise common-mode interference in DC-DC Converter use

The dc-dc converter supply generates common mode and differential mode noise when operating at the switching frequency. The method of reducing the ripple and noise is to add a passive LC or RC (large loss) filter network to the input and output terminals. The self-resonant frequency of L is much higher than the switching frequency of the module. The current value allowed to pass is also preferably chosen to be more than twice the maximum input current of the module, and the internal resistance is smaller to reduce the DC loss.

For fixed frequency modules, the filter network parameters can be calculated. Generally, the differential mode noise is very small. Only th e external L1 (common mode turbulence map) needs to be input, which can meet the requirements (as the picture show).



三. DC-DC Converter isolation withstand voltage detection method.

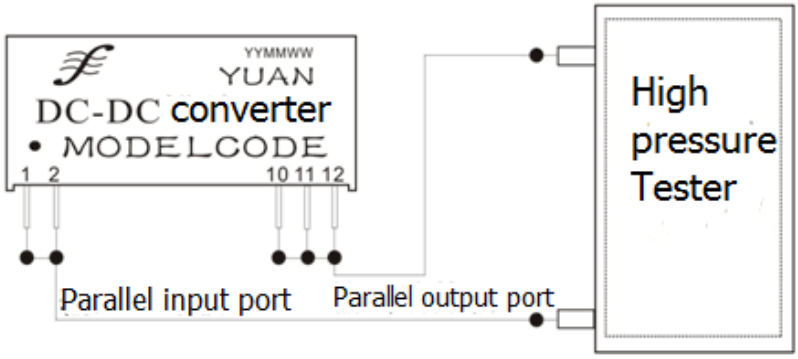


图1

Product pressure test notes and test methods:

1、As shown in Figure 1: According to the product isolation voltage specification and set the rated high voltage value, please pay attention to personal safety when testing, beware of electric shock!!!
Test conditions: room temperature TA = 25 ° C, humidity <75%

2、 The pressure test operator must wear rubber-insulated gloves and a rubber insulation pad under the seat to prevent high-voltage electric shock.

3、The pressure tester instrument must be grounded reliably and should not be tested in high temperature, humid and dusty environments.

4、The pressure tester must ensure that the high voltage output is “0” and “reset” when connecting the measured object.

5、Do not touch the test object, test line or high voltage output when the instrument is in the startup state or before the test high voltage is released.

6、The product pressure test test method as shown in Figure 1: shorting the input and output pins respectively, and adding isolation voltage between the input and output terminals (DC or AC peak, according to the isolation voltage given by the product), test 1 minute.

7、According to the standard of pressure test, the withstand voltage value is gradually increased from 0, and it is adjusted to the set maximum and maintained at the highest withstand voltage for one minute.

8、The Pressure test itself is a destructive test. The fewer times you should do the better, if the customer needs to test multiple times, the general requirements are: the first time according to the value of the specification, the next time should be correspondingly reduced test the voltage, otherwise the product will be damaged during multiple tests.