

Features

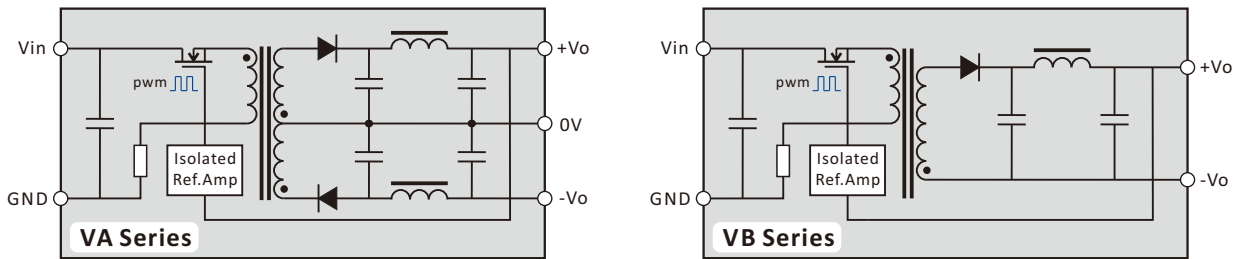
- ◆ Operating temperature: -40 to +85°C
- ◆ 9-18/18-36/36-75Vdc wide input
- ◆ 5/9/12/15/24/±5/±9/±12/±15Vdc output
- ◆ Efficiency up to 89%
- ◆ Ultra low noise & ripple
- ◆ EMC meet EN55022 Class B
- ◆ Remote voltage compensation design
- ◆ Six-sided continuous shield
- ◆ Over-heat protection, output short circuit protection, over-voltage protection, over-current protection
- ◆ RoHS/CE/ISO multiple compliance
- ◆ With 3 years warranty

General Description

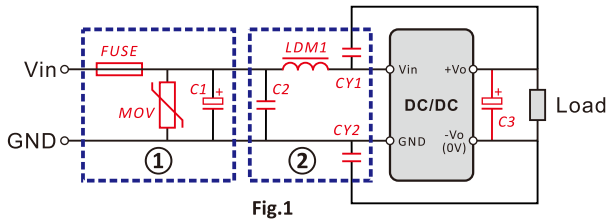
V\_D-20W series has advantages of wide input voltage range, small start current, good load characteristic, and low ripple. Ceramic chip capacitors and SMT used in the series. The product has characteristics of long lifetime, good performance and high reliability. The series product makes an ideal solution in industrial control system, data transmission device, communication device, battery driver, industrial robots, remote control system, Analog / digital hybrid system, etc.



Functional Diagram



EMC Solution-Recommended Circuit



**Notes:**  
 Part ① in the Fig.1 is used for EMS test and part ② for EMI filtering; selected based on needs.

Parameter Description			
Model	Vin:12V	Vin:24V	Vin:48V
FUSE	Choose according to actual input current		
MOV	S14K17	S14K35	S14K60
C1	680uF/25V	470uF/50V	330uF/100V
C2	1uF/25V	1uF/50V	1uF/100V
LDM1	4.7uH		
CY1/CY2	1nF/2kV or 4.5kV		
C3	Refer to the Cout in Fig.3		

# V\_D-20W Series

20w, wide input, isolated & regulated dual & single output dc-dc converter



## Input Specifications

Item		Min	Typ	Max	Units
Input Impulse Voltage (1 sec max)	12V input models	-0.7		20	Vdc
	24V input models	-0.7		40	
	48V input models	-0.7		80	
Startup Voltage	12V input models			9	
	24V input models			18	
	48V input models			36	
REM Pin	module switch ON	3.5~12Vdc or Open			mA
	module switch OFF	0~1.2Vdc or Gnd			
	input current @ off			1	
Startup Current @ 100% load, nominal input		<1.6 Iin-max.			
Input Filter		“LC” filter			
Input Polarity Protection		Unavailable			

## Output Specifications

Item	Test Conditions	Min	Typ	Max	Units
Output Power	Operating temp curve range	2		20	W
Line Regulation	100% load, input low to high		±0.1	±0.3	%
Load Regulation	10-100% load, nominal input		±0.1	±0.3	
Output Voltage Accuracy	100% load, nominal input		±1	±3	
Balance of Vout	Dual output, balance load		±0.8	±2	uS
Transient Recovery Time	25% load step change		200	500	
Overshoot Rate			±3	±5	
Ripple & Noise	DC-20MHz bandwidth		60	120	mVp-p
Temperature Drift	100% load, nominal input		±0.02		%/°C
Output Adjustment Range	input low to high	-10%Vo		+10%Vo	Vdc
Over-current Protection		120-190%Po			
Over-voltage Protection		110-160%Vo			
Short Circuit Protection		Continuous, Self-Recovery			
Output Filter		"Π" filter			

## Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency			330		kHz
Operating Temperature	More see on derating cruve	-45		+85	°C
Case Temperature	100% load, nominal input			+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Overheat Protection			150		
Storage Temperature		-50		+130	%
Storage Humidity				95	
MTBF	Using MIL-HDBK 217 @ 25°C	1000			k hours
Hot Plug		Unavailable			
Case Material		Aluminium Alloy			

## Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Voltage	Tested for 60S and 1mA max	1500			Vdc
Insulation Resistance	Test at 500Vdc	1000			MΩ
Isolation Capacitance	IN-OUT, 100kHz @ 0.1Vdc		1000		pF

## Application Note

### 1. Application for TRIM

The output voltage can be adjusted by TRIM pin worked as following Fig.2. There is internal structure of the product in the red block. The external resistor RT connected to 0V or +Vo terminal can achieve higher or lower output voltage. The maximum amplitude of adjustment is ±10%Vo.

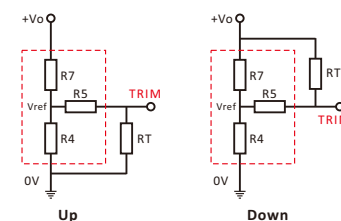


Fig.2

### 2. Typical Application Circuit

This series of products has tested according to Fig.3 before delivery (but no external Cin and Cout capacitors ).

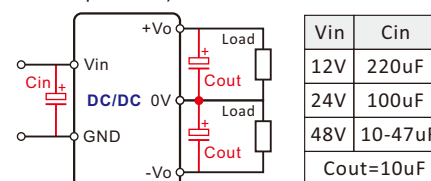


Fig.3

In general, the module satisfies performance requirement in this datasheet without the Cout.

Increased Cin and Cout appropriately or used lower ESR capacitors, if you want to further reduce the input and output ripple.

NOTE: The Cout can not be exceed the maximum capacitive load on Model List to prevent startup failed.

### 3. EMC solution

The series products have a very good ripple and noise performance that bare module meet the EN55022 Class A. Used the EMC solution shown in Fig.1 can meet the EN55022 Class B ( see Fig.1 ).

### 4. On derating

When the environmental temperature exceeds a certain value, the module should be derating used according to the Fig.4

Temperature Derating Curve

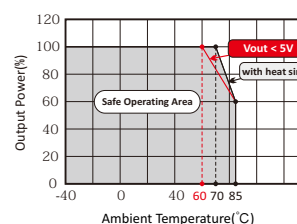


Fig.4

5. The series product cannot be used in parallel.

# VA\_D-20W & VB\_D-20W Series

20w, wide input, isolated & regulated dual & single output dc-dc converter



## Product Program

Certificate	Model	Eff (%)	Input		Output				Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Max Capacitive Load (uF)		
			Nominal	Range	Nominal	Max	Min			
RoHS	VA1205D-20W	82	12	9-18	±5	±2000	±200	2700	Fig.5	ok
	VA1209D-20W	84			±9	±1111	±111	2000		ok
	VA1212D-20W	86			±12	±833	±83	1200		ok
	VA1215D-20W	86			±15	±667	±66	860		ok
RoHS	PVA2405D-20W	82	24	18-36 (9-36)	±5	±2000	±200	2700	Fig.5	ok
	PVA2409D-20W	84			±9	±1111	±111	2000		ok
	PVA2412D-20W	87			±12	±833	±83	1200		ok
	PVA2415D-20W	88			±15	±667	±66	860		ok
RoHS	PVA4805D-20W	83	48	36-75 (18-75)	±5	±2000	±200	2700	Fig.5	ok
	PVA4809D-20W	86			±9	±1111	±111	2000		ok
	PVA4812D-20W	89			±12	±833	±83	1200		ok
	PVA4815D-20W	88			±15	±667	±66	860		ok

RoHS	VB1205D-20W	80	12	9-18	5	4000	400	3300	Fig.5	ok
	VB1209D-20W	83			9	2222	222	2700		ok
	VB1212D-20W	86			12	1667	166	2000		ok
	VB1215D-20W	86			15	1333	133	1200		ok
	VB1224D-20W	85			24	833	83	820		ok
RoHS	PVB2405D-20W	81	24	18-36 (9-36)	5	4000	400	3300	Fig.5	ok
	PVB2409D-20W	83			9	2222	222	2700		ok
	PVB2412D-20W	86			12	1667	166	2000		ok
	PVB2415D-20W	87			15	1333	133	1200		ok
	PVB2424D-20W	85			24	833	83	820		ok
RoHS	PVB4805D-20W	82	48	36-75 (18-75)	5	4000	400	3300	Fig.5	ok
	PVB4809D-20W	85			9	2222	222	2700		ok
	PVB4812D-20W	89			12	1667	166	2000		ok
	PVB4815D-20W	88			15	1333	133	1200		ok
	PVB4824D-20W	86			24	833	83	820		ok

Note: The prefix "P" for 4:1 input range

## Dimensions

First Angle Proj

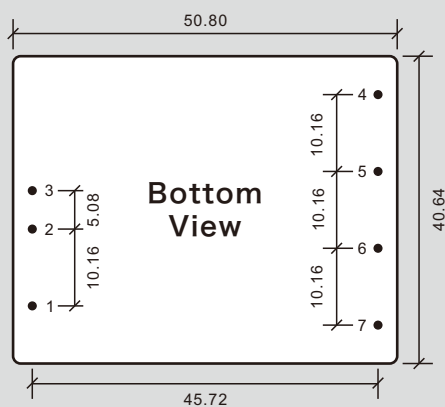


Fig.5



Pin	Single	Dual
1	REM	REM
2	GND	GND
3	Vin	Vin
4	no Pin	+Vo
5	+Vo	0V
6	0V	-Vo
7	TRIM	TRIM

**Note:**  
All size units mm,  
Diameter of all terminal 1.0mm;  
**Isolation: 1500Vdc**  
**Weight: 50g**

# File Release Notes

DBN-407 Technical Data Sheet Version



No.	Version	Data	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Fixed some wrong, and change datasheet document version
3			
4			
5			

1. All data in addition to particular things, are  $T_a = 25^{\circ}\text{C}$ , humidity $<75\%$ , nominal input voltage and output measured at rated load;
2. Non-standard models with some of the following indicators may be different from the specific circumstances of the Secretary to direct contact with me;
3. In the use of this manual, if some of them do not quite understand terms please refer to our <<DC/DC Converter Application Guide>>;
4. The Company focused on technological improvements, product specifications and parameter updates without notice, to pay attention to the latest information on website.

All Delus Corporation's products are manufactured, assembled and tested utilizing ISO9001 quality systems.  
For information regarding Delus Corporation and its products please see website: [www.delus-power.com](http://www.delus-power.com)

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