

Features

- ◆ Operating temperature: -40 to +85°C
- ◆ 4.5-9/9-18/18-36/36-75/9-36/18-75Vdc input
- ◆ 5V/9V/12V/15V/24V/±5V/±9V/±12V/±15V output
- ◆ Efficiency up to 89%
- ◆ Ultra-low noise & ripple
- ◆ Bare module meet CISPR22/EN55022 Class B
- ◆ 100% burn-In
- ◆ No external heat sink
- ◆ Continuous short circuit protection
- ◆ RoHS/CE multiple compliance
- ◆ With 3 years warranty
- ◆ Case size 31.8×20.3×11.5mm

General Description

W(M)-3W series power converter compact, high power density, can save valuable board space to reduce product volume. It has the characteristics of wide input voltage range, low starting current, good load characteristics and minimum noise characteristics.

The chip ceramic capacitors and SMT are used in all series. These converters have characteristics of long life, excellent performance, stability and reliability.

CE RoHS



EMI

1500 Vdc

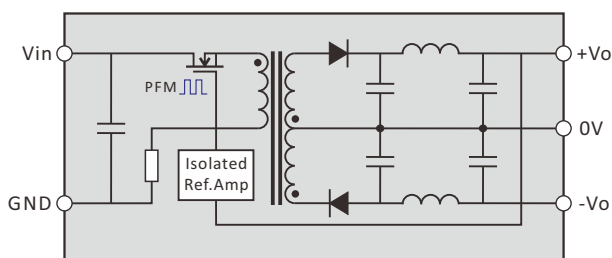
3000 Vdc

High Power Density

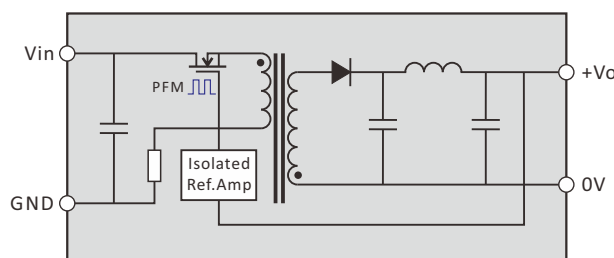
SCP

4:1
2:1

Functional Diagram



Dual Series



Single Series

EMC Solution-Recommended Circuit

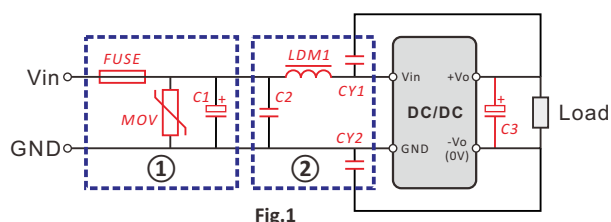


Fig.1

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:5V	Vin:12V	Vin:24V	Vin:48V
FUSE	Choose according to actual input current			
MOV	S14K11	S14K17	S14K35	S14K60
C1	1000uF/16V	680uF/25V	330uF/50V	330uF/100V
C2	1uF/25V	1uF/25V	1uF/50V	1uF/100V
CY1/CY2	1nF/2kV or 4.5kV			
LDM1	4.7uH			
C3	Refer to the Cout in Fig.3			

W_P-3W & M_D-3W & W_KP-3W Series

3w, wide input, isolated & regulated dual/twin/single output dc-dc converter



Input Specifications

Item		Min	Typ	Max	Units
Input Impulse Voltage (1 sec max)	5V input models	-0.7		10	Vdc
	12V input models	-0.7		20	
	24V input models	-0.7		40	
	48V input models	-0.7		80	
Startup Voltage	5V input models			4.5	
	12V input models			9	
	24V input models			18	
	48V input models			36	
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		“LC” filter			
Input Polarity Protection		KP series available/others no			

Output Specifications

Item	Test Conditions	Min	Typ	Max	Units
Output Power	Ta=-40-+85°C			3	W
Line Regulation	100% load, input low to high		±0.05	±0.15	%
Load Regulation	10-100% load, nominal input		±0.1	±0.3	
Output Voltage Accuracy	100% load, nominal input		±1	±3	
			±3	±5	
Balance of Vout	Dual output, balance load		±0.8	±2	mVp-p
Ripple & Noise	DC-20MHz bandwidth		20	60	
Temperature Drift	100% load, nominal input			±0.03	%/°C
Short Circuit Protection	Continuous, Self-Recovery				
Output Filter	"Π" filter				

Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Voltage	W(M)A/B/D	1500			Vdc
	WE/F	3000			
Insulation Resistance	Test at 500Vdc	1000			MΩ
Isolation Capacitance	IN-OUT, 100kHz @ 0.1Vdc		1000		pF

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high	180		550	kHz
Operating Temperature	Ta>70°C derating	-45		+85	°C
Case Temp Rise	100% load, nominal input		35		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25°C	1000			k hours
Hot Plug	Unavailable				
Case Material	Black Plastic (UL94V-0)				

EMC Specification

EMI	CE	EN55022:2010	Class B (Bare component)
	RE	EN55022:2010	Class B (Bare component)
EMS	ESD	EN55024:2010/EN61000-4-2	perf. Criterion B
	RS	EN55024:2010/EN61000-4-3	perf. Criterion A

Application Note

1. The power requirements

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (see Fig.2).
General: $I_p < 1.6 I_{in-max}$.

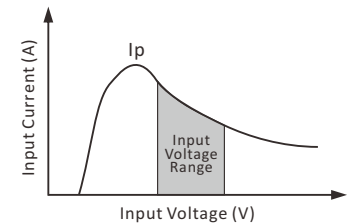


Fig.2

2. Typical application

All DC/DC converters of this series are tested according to the recommended circuit before delivery (see Fig.3, but without external capacitor Cin & Cout).

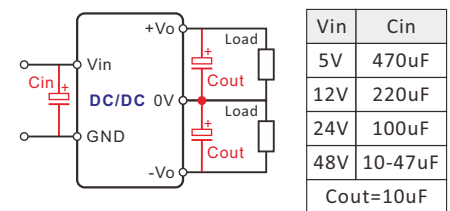


Fig.3

General applications, the **output** does not require any external filter components.

If the required to further reduce input and output ripple, properly increase the input and output of additional capacitors Cin and Cout or select capacitors of low equivalent impedance. Provided that the capacitance is no larger than the max capacitive load of the product, **avoid affect the product startup performance**.

3. EMC solution-recommended circuit

The WA/B/D/MA/B series products have a very good ripple and noise performance that bare module meet the EN55022 Class B. The WE and EMC series products, recommend Fig.1 for the EMC solution that meet the EN55022 Class B (see Fig.1).

4. On derating

When the environmental temperature exceeds 70°C the module must be derating used, please refer to derating curve (see Fig.4).

Temperature Derating Curve

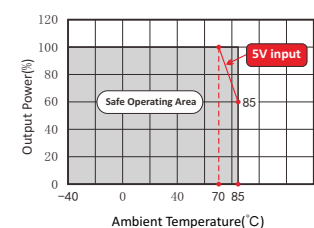


Fig.4

WA_P-3W & WB_P-3W Series

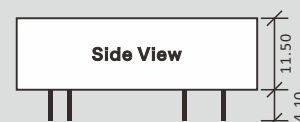
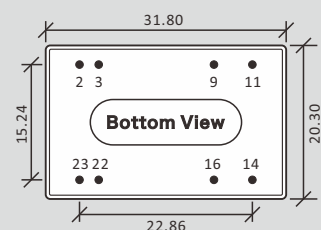
3w, wide input, 1500Vdc isolated & regulated dual/single output dc-dc converter



Product Program						
Certificate	Model	Eff (%)	Input		Output	
			Voltage(Vdc)		Vdc	mA
			Nominal	Range	Nominal	Max
CE/RoHS	WA0505P-3W	75	5	4.5-9	±5	±300
	WA0509P-3W	77			±9	±167
	WA0512P-3W	78			±12	±125
	WA0515P-3W	79			±15	±100
	WA0524P-3W	75			±24	±63
CE/RoHS	WA1205P-3W	82	12	9-18	±5	±300
	WA1209P-3W	84			±9	±167
	WA1212P-3W	86			±12	±125
	WA1215P-3W	87			±15	±100
	WA1224P-3W	82			±24	±63
CE/RoHS	PWA2405P-3W	85	24	18-36 (9-36)	±5	±300
	PWA2409P-3W	85			±9	±167
	PWA2412P-3W	85			±12	±125
	PWA2415P-3W	89			±15	±100
	PWA2424P-3W	84			±24	±63
CE/RoHS	PWA4805P-3W	82	48	36-75 (18-75)	±5	±300
	PWA4809P-3W	84			±9	±167
	PWA4812P-3W	89			±12	±125
	PWA4815P-3W	86			±15	±100
	PWA4824P-3W	84			±24	±63
CE/RoHS	WB0505P-3W	74	5	4.5-9	5	600
	WB0509P-3W	78			9	333
	WB0512P-3W	79			12	250
	WB0515P-3W	79			15	200
	WB0524P-3W	77			24	125
CE/RoHS	WB1205P-3W	82	12	9-18	5	600
	WB1209P-3W	82			9	333
	WB1212P-3W	85			12	250
	WB1215P-3W	87			15	200
	WB1224P-3W	85			24	125
CE/RoHS	PWB2405P-3W	83	24	18-36 (9-36)	5	600
	PWB2409P-3W	86			9	333
	PWB2412P-3W	88			12	250
	PWB2415P-3W	89			15	200
	PWB2424P-3W	86			24	125
CE/RoHS	PWB4803P-3W	78	48	36-75 (18-75)	3.3	700
	PWB4805P-3W	82			5	600
	PWB4809P-3W	85			9	333
	PWB4812P-3W	89			12	250
	PWB4815P-3W	86			15	200
	PWB4824P-3W	84			24	125

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

Dimensions First Angle Proj



Pin	Single	Dual
2,3	GND	GND
22,23	Vin	Vin
9	NC	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V

Note:

All size units mm,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 11g

WB_KP-3W Series

3w, wide input, 1500Vdc isolated & regulated single output dc-dc converter



Product Program						
Certificate	Model	Eff (%)	Input		Output	
			Voltage(Vdc)		Vdc	mA
			Nominal	Range	Nominal	Max
RoHS	WB0505KP-3W*		5	4.5-9	5	600
	WB0512KP-3W*				12	250
	WB0515KP-3W*				15	200
	WB0524KP-3W*				24	125
RoHS	WB1205KP-3W*		12	9-18	5	600
	WB1212KP-3W*				12	250
	WB1215KP-3W*				15	200
	WB1224KP-3W*				24	125
RoHS	WB2405KP-3W*		24	18-36	5	600
	WB2412KP-3W*				12	250
	WB2415KP-3W*				15	200
	WB2424KP-3W*				24	125
RoHS	PWB4805KP-3W	83	48	36-75	5	600
	WB4812KP-3W*				12	250
	WB4815KP-3W*				15	200
	WB4824KP-3W*				24	125

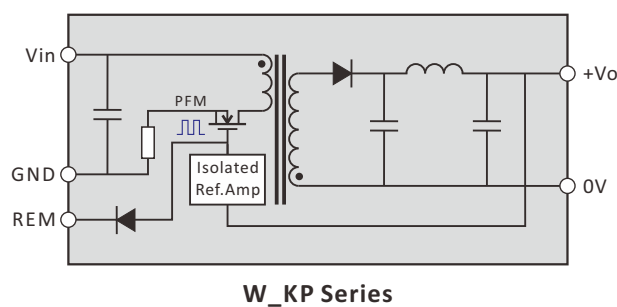
Note: The prefix "P" for 4:1 input range, * for no product

Dimensions
First Angle Proj

24,23	1,2	13	12	20
GND	Vin	+Vo	0V	REM

Note:
All size units mm,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 11g

Functional Diagram for KP Series



Application Note for KP

1. Input Polarity Protection

KP series dc/dc converter built-in reverse polarity protection diodes, with anti-reverse protection.

2. REM Pin

This pin provides an external control function. Module operating normally when the pin is left open when the pin is tied low module is turned off.

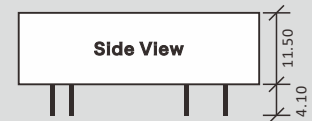
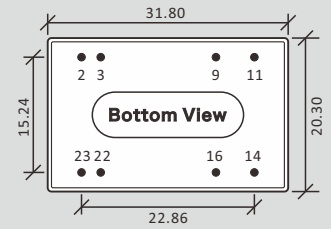
WD_P-3W Series

3w, wide input, 1500Vdc isolated & regulated twins output dc-dc converter



Product Program						
Certificate	Model	Eff (%)	Input		Output	
			Voltage(Vdc)		Vdc	mA
			Nominal	Range	Nominal	Max
RoHS	WD0505P-3W	75	5	4.5-9	5/5	300/300
	WD0512P-3W	78			12/12	125/125
	WD0515P-3W	79			15/15	100/100
	WD0524P-3W	75			24/24	63/63
RoHS	WD1205P-3W	82	12	9-18	5/5	300/300
	WD126v5P-3W	82			6.5/6.5	230/230
	WD1212P-3W	86			12/12	125/125
	WD1215P-3W	87			15/15	100/100
	WD1224P-3W	82			24/24	63/63
RoHS	WD2405P-3W	85	24	18-36	5/5	300/300
	WD2412P-3W	85			12/12	125/125
	WD2415P-3W	89			15/15	100/100
	WD2424P-3W	84			24/24	63/63
RoHS	WD4805P-3W	82	48	36-75	5/5	300/300
	WD4812P-3W	89			12/12	125/125
	WD4815P-3W	86			15/15	100/100
	WD4824P-3W	84			24/24	63/63

Dimensions First Angle Proj



22,23	2,3	16	14	9	11
Vin	GND	0V1	+Vo1	0V2	+Vo2

Note:

All size units mm,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;

Isolation: 1500Vdc

Weight: 11g

WE_P-3W & WF_P-3W Series

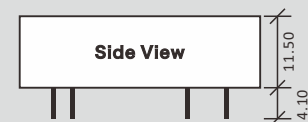
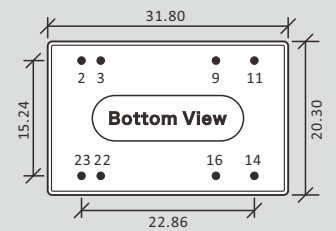
3w, wide input, 3000Vdc isolated & regulated dual/single output dc-dc converter



Product Program						
Certificate	Model	Eff (%)	Input		Output	
			Voltage(Vdc)		Vdc	mA
			Nominal	Range	Nominal	Max
CE/RoHS	WE0505P-3W	75	5	4.5-9	±5	±300
	WE0509P-3W	77			±9	±167
	WE0512P-3W	78			±12	±125
	WE0515P-3W	79			±15	±100
	WE0524P-3W	75			±24	±63
CE/RoHS	WE1205P-3W	82	12	9-18	±5	±300
	WE1209P-3W	84			±9	±167
	WE1212P-3W	86			±12	±125
	WE1215P-3W	87			±15	±100
	WE1224P-3W	82			±24	±63
CE/RoHS	PWE2405P-3W	85	24	18-36 (9-36)	±5	±300
	PWE2409P-3W	85			±9	±167
	PWE2412P-3W	85			±12	±125
	PWE2415P-3W	89			±15	±100
	PWE2424P-3W	84			±24	±63
CE/RoHS	PWE4805P-3W	82	48	36-75 (18-75)	±5	±300
	PWE4809P-3W	84			±9	±167
	PWE4812P-3W	89			±12	±125
	PWE4815P-3W	86			±15	±100
	PWE4824P-3W	84			±24	±63
CE/RoHS	WF0505P-3W	74	5	4.5-9	5	600
	WF0509P-3W	78			9	333
	WF0512P-3W	79			12	250
	WF0515P-3W	79			15	200
	WF0524P-3W	77			24	125
CE/RoHS	WF1205P-3W	82	12	9-18	5	600
	WF1209P-3W	82			9	333
	WF1212P-3W	85			12	250
	WF1215P-3W	87			15	200
	WF1224P-3W	85			24	125
CE/RoHS	PWF2405P-3W	83	24	18-36 (9-36)	5	600
	PWF2409P-3W	86			9	333
	PWF2412P-3W	88			12	250
	PWF2415P-3W	89			15	200
	PWF2424P-3W	86			24	125
CE/RoHS	PWF4805P-3W	85	48	36-75 (18-75)	5	600
	PWF4809P-3W	85			9	333
	PWF4812P-3W	89			12	250
	PWF4815P-3W	86			15	200
	PWF4824P-3W	84			24	125

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

Dimensions First Angle Proj



Pin	Single	Dual
2,3	GND	GND
22,23	Vin	Vin
9	NC	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V

Note:

All size units mm,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 3000Vdc
Weight: 11g

MA_D-3W & MB_D-3W Series

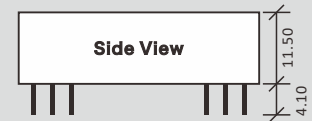
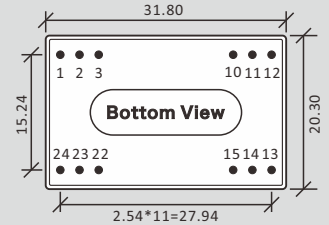
3w, wide input, 1500Vdc isolated & regulated dual/single output dc-dc converter



Product Program							
Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
RoHS	MA0505D-3W	75	5	4.5-9	±5	±300	2200
	MA0512D-3W	78			±12	±125	1800
	MA0515D-3W	79			±15	±100	1000
RoHS	MA1205D-3W	82	12	9-18	±5	±300	2200
	MA1212D-3W	86			±12	±125	1800
	MA1215D-3W	87			±15	±100	1000
RoHS	MA2405D-3W	85	24	18-36	±5	±300	2200
	MA2412D-3W	85			±12	±125	1800
	MA2415D-3W	89			±15	±100	1000
	MA2418D-3W	89			±18	±83	1000
RoHS	MA4805D-3W	83	48	36-75	±5	±300	2200
	MA4812D-3W	89			±12	±125	1800
	MA4815D-3W	86			±15	±100	1000

RoHS	MB0505D-3W	74	5	4.5-9	5	600	4700
	MB0512D-3W	79			12	250	2200
	MB0515D-3W	79			15	200	1500
	MB0524D-3W	77			24	125	680
RoHS	MB1205D-3W	82	12	9-18	5	600	4700
	MB1212D-3W	85			12	250	2200
	MB1215D-3W	87			15	200	1500
	MB1224D-3W	85			24	125	680
RoHS	MB2405D-3W	83	24	18-36	5	600	4700
	MB2412D-3W	87			12	250	2200
	MB2415D-3W	89			15	200	1500
	MB2424D-3W	86			24	125	680
RoHS	MB4805D-3W	85	48	36-75	5	600	4700
	MB4812D-3W	89			12	250	2200
	MB4815D-3W	86			15	200	1500
	MB4824D-3W	85			24	125	680

Dimensions First Angle Proj



Pin	Single	Dual
1,24	Vin	Vin
12,13	GND	GND
2,23	no Pin	-Vo
3,22	no Pin	0V
10,15	0V	0V
11,14	+Vo	+Vo

Note:

All size units mm,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 11g

File Release Notes

DBN-403 Technical Data Sheet Version



No.	Version	Data	Description
1	V0	2011/11/01	First release
2	V1	2014/01/08	Add "KP" series and "PWB4805KP-3W" model
3	A/0	2016/07/01	Fixed some wrong
4	A/1	2022/06/09	Add "MA2418D-3W, PWB4803P-3W" model
5			

1. All data in addition to particular things, are Ta = 25°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

Delus Guangzhou Electronic Technology CO.,LTD

Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn