

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 85%
- ◆ Lowest noise & ripple
- ◆ 100% burn-In
- ◆ No external heat sink
- ◆ Continuous short circuit protection
- ◆ RoHS compliance
- ◆ Case size 31.8×20.3×10.2mm

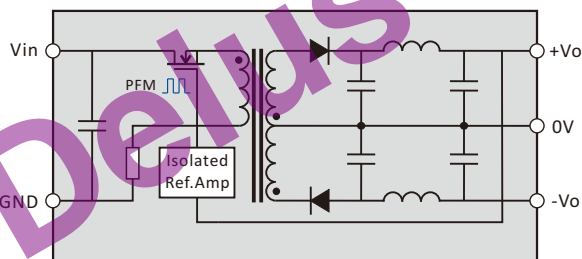
General Description

WA/B/D/E/F_P-3W series high power density, can help you save valuable board space. Wide input voltage range, low starting current, good load characteristics, and minimum noise characteristics.

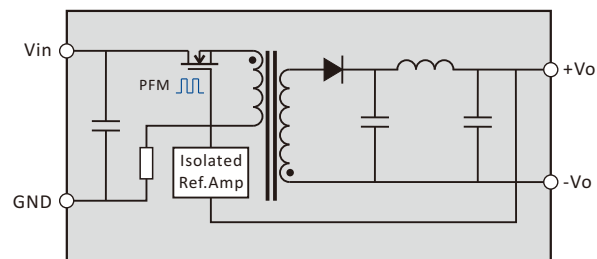
The products used in all ceramic capacitors, all SMT processing technology, excellent performance, stable and reliable.



Functional Diagram



MA/WA/WE Series



WB/WF Series

Selection Guide

WB1205P-3W

Product Series	Input Voltage	Output Voltage	Package Style	Rated Power
WA, MA: wide input isolated 1.5kVdc dual WE: wide input isolated 3.0kVdc dual WB: wide input isolated 1.5kVdc single WF: wide input isolated 3.0kVdc single	05 = 4.5-9 Vdc Range 12 = 9-18 Vdc Range 24 = 18-36 Vdc Range 48 = 36-75 Vdc Range	05 = 5Vdc ±5Vdc 09 = 9Vdc ±9Vdc 12 = 12Vdc ±12Vdc 15 = 15Vdc ±15Vdc 24 = 24Vdc ±24Vdc ↑ ↑ WB WA WF MA WE	P(Matel): 31.8×20.3×11.5mm P(Plastic): 31.8×20.3×10.2mm D(Matel): 25.4×25.4×10.2mm	3W = 3Watts

WA/B/D/E/F_P-3W & MA_D-3W Series

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



Input Specifications

CTRL (Reference point: GND)	Models on	open circuit or 5-10Vdc
	Models off	-0.3-2Vdc

Output Specifications

Item	Test Conditions	Min	Typ	Max	Units
Output Power	Ta=-40-+71°C			3	W
Line Regulation	100% load, input low to high		±0.1	±0.3	%
Load Regulation	Nominal, 10%-100% load		±0.3	±0.5	
Output Voltage Accuracy	Nominal, 100% load		±1	±3	
		Mast		±2.5	
Temperature Drift	Nominal, 100% load			0.03	%/°C
Ripple & Noise	DC-20MHz bandwidth		20	40	mVp-p
Switching Frequency	Nominal, 100% load	180		550	KHz
Short Circuit Protection		Continuous, Automatic Recovery			

Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Resistance	Test at 500Vdc	1000			MΩ
Isolation Voltage	Tested for 1S and 1mA max	MA/WA/WB	1500		Vdc
		WE/WF	3000		
Isolation Capacitance	100kHz/0.1Vdc		1000		pF

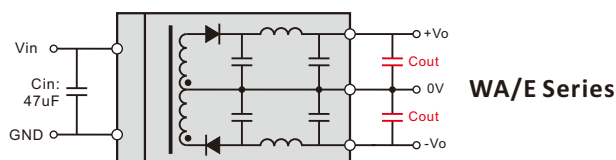
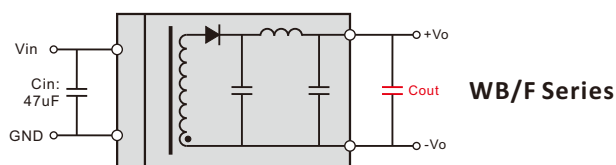
Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	Ta>71°C Derating	-45		+85	°C
Maximum Case Temp.			50		
Storage Temperature		-50		+130	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Humidity				95	%
Case Material		Black Plastic (UL94V-0)			

Absolute Maximum

Input Voltage Maximum	05V input models	0~12Vdc
	12V input models	0~20Vdc
	24V input models	0~40Vdc
	48V input models	0~80Vdc

Standard Recommended Circuit

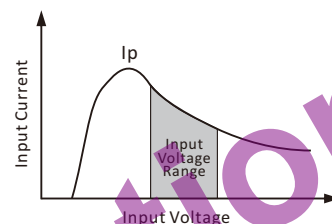


Application Note

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.

General: $I_p < 1.6 I_{in-max}$.



2. Input polarity protection

The series product no positive & negative reverse polarity protection, solution is the input series in a diode.

3. Recommended Circuit

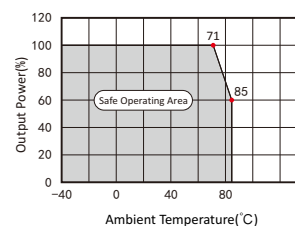
This series of products have a very good ripple and noise performance, general applications, the output does not require any external filter components (such as capacitors, inductors). If necessary, the proportion by 100uF/1A external capacitor, not too large, avoid affect the module's startup performance.

4. This product cannot be used in parallel, can not hot-swappable.

5. On derating

When the environmental temperature exceeds 71°C the module must be derating use, please refer to derating curve.

Temperature Derating Curve



WA_P-3W & WE_P-3W Series

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



Product Program												
Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection			
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)						
	Nominal	Range	Nominal	Max	Min							
WA0505P-3W	5	4.5-9.0	±5	±300	±30		75	<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>				
WA0509P-3W			±9	±167	±17		77					
WA0512P-3W			±12	±125	±13		78					
WA0515P-3W			±15	±100	±10		78					
WA0524P-3W			±24	±63	±7		78					
WA1205P-3W	12	9-18	±5	±300	±30		77		<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>			
WA1209P-3W			±9	±167	±17		77					
WA1212P-3W			±12	±125	±13		79					
WA1215P-3W			±15	±100	±10		80					
WA1224P-3W			±24	±63	±7		80					
PWA2405P-3W	24	18-36 (9-36)	±5	±300	±30		77			<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>		
PWA2409P-3W			±9	±167	±17		78					
PWA2412P-3W			±12	±125	±13		82					
PWA2415P-3W			±15	±100	±10		85					
PWA2424P-3W			±24	±63	±7		85					
PWA4805P-3W	48	36-75 (18-75)	±5	±300	±30		77	<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>				
PWA4809P-3W			±9	±167	±17		78					
PWA4812P-3W			±12	±125	±13		82					
PWA4815P-3W			±15	±100	±10		85					
PWA4824P-3W			±24	±63	±7		85					
Pin	2,3	22,23	14	9,16	11							
Function	GND	Vin	+Vo	0V	-Vo							

WE0505P-3W	5	4.5-9.0	±5	±300	±30		75	<p>Weight: 16g</p> <p>Isolation: 3000Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>				
WE0509P-3W			±9	±167	±17		77					
WE0512P-3W			±12	±125	±13		78					
WE0515P-3W			±15	±100	±10		78					
WE0524P-3W			±24	±63	±7		78					
WE1205P-3W	12	9-18	±5	±300	±30		77		<p>Weight: 16g</p> <p>Isolation: 3000Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>			
WE1209P-3W			±9	±167	±17		77					
WE1212P-3W			±12	±125	±13		79					
WE1215P-3W			±15	±100	±10		80					
WE1224P-3W			±24	±63	±7		80					
PWE2405P-3W	24	18-36 (9-36)	±5	±300	±30		77			<p>Weight: 16g</p> <p>Isolation: 3000Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>		
PWE2409P-3W			±9	±167	±17		78					
PWE2412P-3W			±12	±125	±13		82					
PWE2415P-3W			±15	±100	±10		85					
PWE2424P-3W			±24	±63	±7		85					
PWE4805P-3W	48	36-75 (18-75)	±5	±300	±30		77	<p>Weight: 16g</p> <p>Isolation: 3000Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>				
PWE4809P-3W			±9	±167	±17		78					
PWE4812P-3W			±12	±125	±13		82					
PWE4815P-3W			±15	±100	±10		85					
PWE4824P-3W			±24	±63	±7		85					
Pin	2,3	22,23	14	9,16	11							
Function	GND	Vin	+Vo	0V	-Vo							

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

WD_P-3W & MA_D-3W Series

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



Product Program																						
Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection													
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)																
	Nominal	Range	Nominal	Max	Min																	
WD0505P-3W	5	4.5-9.0	5/5	300/300	30/30		75	<p>Weight: 17g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.8mm, distance between all adjacent terminal 2.54mm</p> <table border="1"> <tr> <td>Pin</td> <td>2,3</td> <td>22,23</td> <td>9</td> <td>11</td> <td>14</td> <td>16</td> </tr> <tr> <td>Function</td> <td>GND</td> <td>Vin</td> <td>-Vo2</td> <td>+Vo2</td> <td>+Vo1</td> <td>-Vo1</td> </tr> </table>	Pin	2,3	22,23	9	11	14	16	Function	GND	Vin	-Vo2	+Vo2	+Vo1	-Vo1
Pin			2,3	22,23	9	11	14		16													
Function			GND	Vin	-Vo2	+Vo2	+Vo1		-Vo1													
WD0509P-3W			9/9	167/167	17/17		77															
WD0512P-3W	12/12	125/125	13/13		78																	
WD0515P-3W	15/15	100/100	10/10		78																	
WD1205P-3W	12	9-18	5/5	300/300	30/30		77															
WD1209P-3W			9/9	167/167	17/17		77															
WD1212P-3W			12/12	125/125	13/13		79															
WD1215P-3W			15/15	100/100	10/10		80															
WD2405P-3W	24	18-36	5/5	300/300	30/30		77															
WD2409P-3W			9/9	167/167	17/17		78															
WD2412P-3W			12/12	125/125	13/13		82															
WD2415P-3W			15/15	100/100	10/10		85															
WD4805P-3W	48	36-75	5/5	300/300	30/30		77															
WD4809P-3W			9/9	167/167	17/17		78															
WD4812P-3W			12/12	125/125	13/13		82															
WD4815P-3W			15/15	100/100	10/10		85															

MA0505D-3W	5	4.5-9.0	±5	±300	±30		75	<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p> <table border="1"> <tr> <td>Pin</td> <td>12,13</td> <td>1,24</td> <td>11,14</td> <td>3,10 15,23</td> <td>2,23</td> </tr> <tr> <td>Function</td> <td>GND</td> <td>Vin</td> <td>+Vo</td> <td>0V</td> <td>-Vo</td> </tr> </table>	Pin	12,13	1,24	11,14	3,10 15,23	2,23	Function	GND	Vin	+Vo	0V	-Vo
Pin			12,13	1,24	11,14	3,10 15,23	2,23													
Function			GND	Vin	+Vo	0V	-Vo													
MA0509D-3W			±9	±167	±17		77													
MA0512D-3W	±12	±125	±13		78															
MA0515D-3W	±15	±100	±10		78															
MA0524D-3W	±24	±63	±7		78															
MA1205D-3W	12	9-18	±5	±300	±30		77													
MA1209D-3W			±9	±167	±17		77													
MA1212D-3W			±12	±125	±13		79													
MA1215D-3W			±15	±100	±10		80													
MA1224D-3W	±24	±63	±7		80															
MA2405D-3W	24	18-36	±5	±300	±30		77													
MA2409D-3W			±9	±167	±17		78													
MA2412D-3W			±12	±125	±13		82													
MA2415D-3W			±15	±100	±10		85													
MA2424D-3W	±24	±63	±7		85															
MA4805D-3W	48	36-75	±5	±300	±30		77													
MA4809D-3W			±9	±167	±17		78													
MA4812D-3W			±12	±125	±13		82													
MA4815D-3W			±15	±100	±10		85													
MA4824D-3W	±24	±63	±7		85															

WB_P-3W & WF_P-3W Series

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



Product Program															
Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection						
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)									
	Nominal	Range	Nominal	Max	Min										
WB0505P-3W	5	4.5-9.0	5	600	60		75	<p>Weight: 16g</p> <p>Isolation: 1500Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>	Pin	2,3	22,23	14	16	9,11	
WB0509P-3W			9	333	34		77			Function	GND	Vin	+Vo	-Vo	NC
WB0512P-3W			12	250	25		78								
WB0515P-3W			15	200	20		78								
WB0524P-3W			24	125	13		78								
WB1205P-3W	12	9-18	5	600	60		77								
WB1209P-3W			9	333	34		77								
WB1212P-3W			12	250	25		79								
WB1215P-3W			15	200	20		80								
WB1224P-3W			24	125	13		80								
PWB2405P-3W	24	18-36 (9-36)	5	600	60		77								
PWB2409P-3W			9	333	34		78								
PWB2412P-3W			12	250	25		82								
PWB2415P-3W			15	200	20		85								
PWB2424P-3W			24	125	13		85								
PWB4805P-3W	48	36-75 (18-75)	5	600	60		77								
PWB4809P-3W			9	333	34		78								
PWB4812P-3W			12	250	25		82								
PWB4815P-3W			15	200	20		85								
PWB4824P-3W			24	125	13		85								

WF0505P-3W	5	4.5-9.0	5	600	60		75	<p>Weight: 16g</p> <p>Isolation: 3000Vdc, black plastic case Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm</p>	Pin	2,3	22,23	14	16	9,11	
WF0509P-3W			9	333	34		77			Function	GND	Vin	+Vo	-Vo	NC
WF0512P-3W			12	250	25		78								
WF0515P-3W			15	200	20		78								
WF0524P-3W			24	125	13		78								
WF1205P-3W	12	9-18	5	600	60		77								
WF1209P-3W			9	333	34		77								
WF1212P-3W			12	250	25		79								
WF1215P-3W			15	200	20		80								
WF1224P-3W			24	125	13		80								
PWF2405P-3W	24	18-36 (9-36)	5	600	60		77								
PWF2409P-3W			9	333	34		78								
PWF2412P-3W			12	250	25		82								
PWF2415P-3W			15	200	20		85								
PWF2424P-3W			24	125	13		85								
PWF4805P-3W	48	36-75 (18-75)	5	600	60		77								
PWF4809P-3W			9	333	34		78								
PWF4812P-3W			12	250	25		82								
PWF4815P-3W			15	200	20		85								
PWF4824P-3W			24	125	13		85								

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

WB_KP-3W Series

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



Product Program

Model	Input		Output				Eff (%)	Certificate	Mechanical Dimensions First Angle Projection
	Voltage(Vdc)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)			
	Nominal	Range	Nominal	Max	Min				
WB0505KP-3W*	5	4.5-9.0	5	600	60			<p>Weight: 16g</p>	
WB0509KP-3W*			9	333	34				
WB0512KP-3W*			12	250	25				
WB0515KP-3W*			15	200	20				
WB0524KP-3W*			24	125	13				
WB1205KP-3W*	12	9-18	5	600	60				
WB1209KP-3W*			9	333	34				
WB1212KP-3W*			12	250	25				
WB1215KP-3W*			15	200	20				
WB1224KP-3W*			24	125	13				
PWB2405KP-3W*	24	18-36 (9-36)	5	600	60				
PWB2409KP-3W*			9	333	34				
PWB2412KP-3W*			12	250	25				
PWB2415KP-3W*			15	200	20				
PWB2424KP-3W*			24	125	13				
PWB4805KP-3W	48	36-75 (18-75)	5	600	60		77		
PWB4809KP-3W*			9	333	34				
PWB4812KP-3W*			12	250	25				
PWB4815KP-3W*			15	200	20				
PWB4824KP-3W*			24	125	13				

Isolation: 1500Vdc, black plastic case
 Note: all size units mm, diameter of all terminal 0.5mm, distance between all adjacent terminal 2.54mm

Pin	24,23	1,2	13	12	20
Function	GND	Vin	+Vo	-Vo	CTRL

Note: The prefix "P" for 4:1 input range, "*" for not developed

Delus Corporation

File Release Notes

DBN-403 Technical Data Sheet Version



No.	Version	Data	Description
1	V0	2011/11/01	First release
2	V1	2014/01/18	Increase series "KP" & model "PWB4805KP-3W"
3			
4			
5			

Delus Corporation

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:
www.delus-power.com

All Delus Corporation's products are manufactured, assembled and tested utilizing ISO9001 quality systems.
For information regarding Delus Corporation and its products please see www.delus.cn