DELUS

PRODUCT CATALOGUE ▶2022

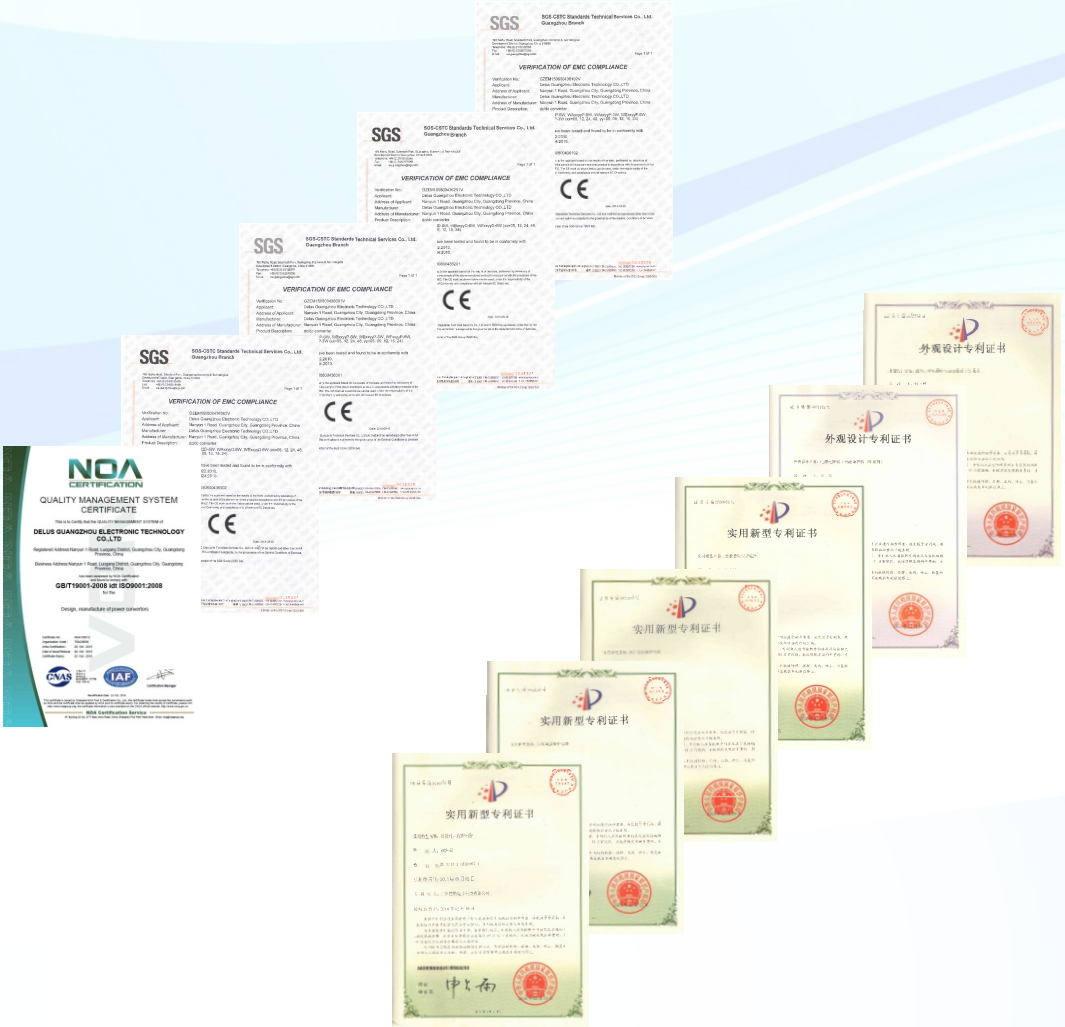
Delus Guangzhou Electronic Technology CO., LTD

COMPANY PROFILE >>

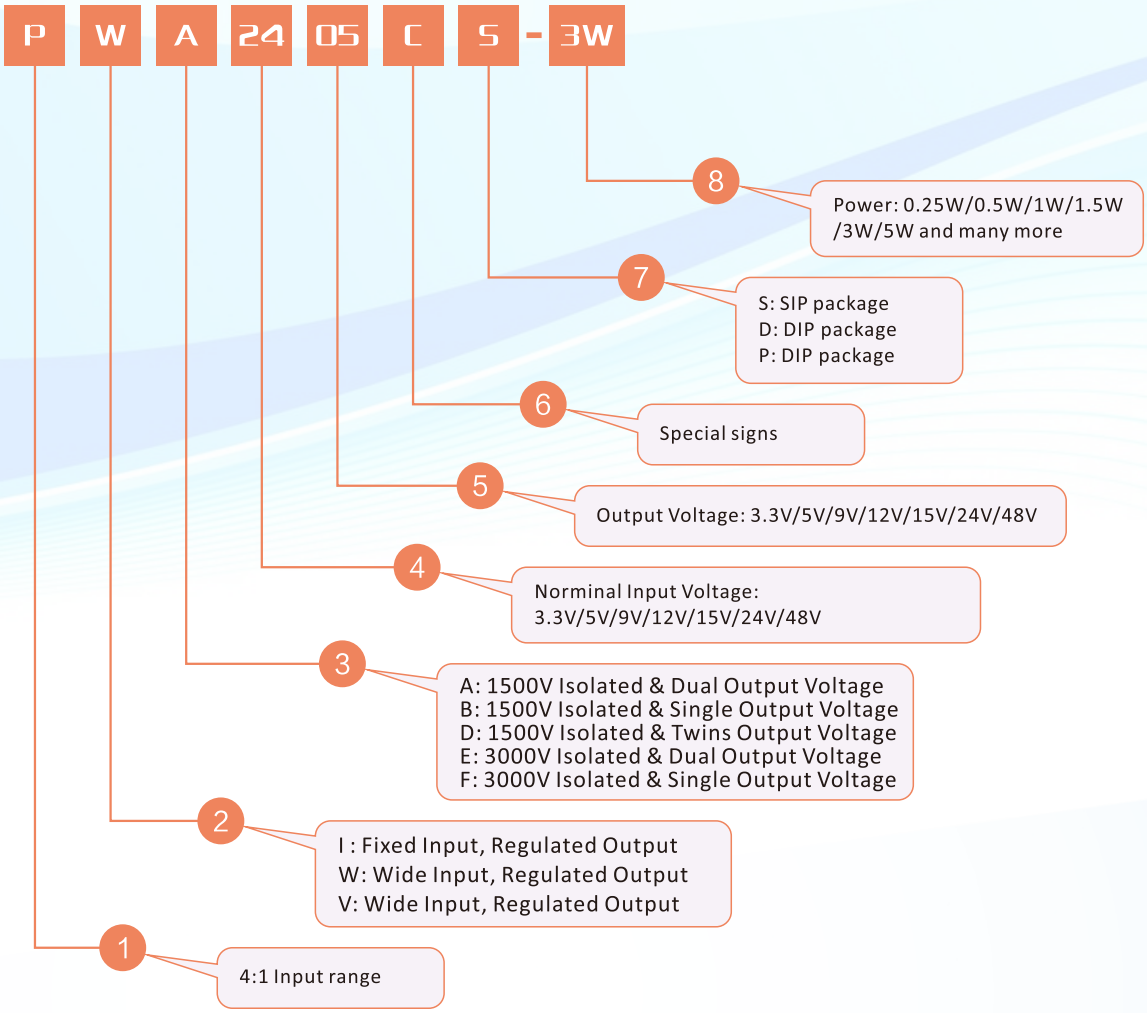
Delus Power is a leading provider of DC/DC Converters in domestic China, applied in the industry power fields of Telecom, Automation, Medical etc. Founded in 2007, we are devoted to R&D-produce-promote all in one stop service for you.

Delus specialize in high-frequency power technology and application of products, release high-quality products, including AC/DC, DC/DC etc, lots of series are full with safety UL/CE approval.

QUALIFICATION >>



MODEL NAMING RULES >>



DIRECTORY >>

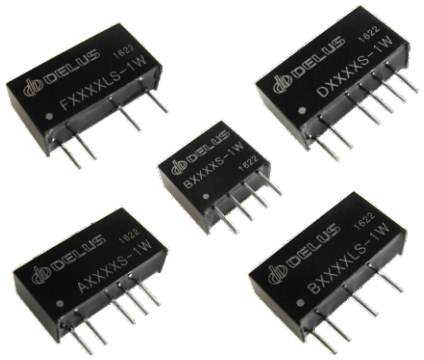
DIRECTORY >>

A/B/D/E/F-1W Series

Features

- Operating temperature: -40 to +85℃
- Efficiency up to 84%
- 1.5/3.0kVdc isolation
- Multiple package options
- International standard pin-out
- 100% burn-in
- No external component required
- UL94V-0 package
- RoHS/CE compliance
- With 3 year warranty

CE RoHS



EMI | 1500 Vdc | 3000 Vdc | High Power Density

General Description

The 1W series products are specially designed for the application of the power supply which is isolated from the input source in the distributed power supply system on the circuit board. Small size, high power density, can save valuable board space.

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

Suitable for occasions where the input power supply is relatively stable, input and output isolated is necessary and the output voltage regulation is not strictly required.

EMC Solution-Recommended Circuit

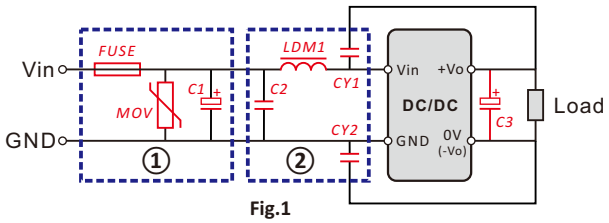


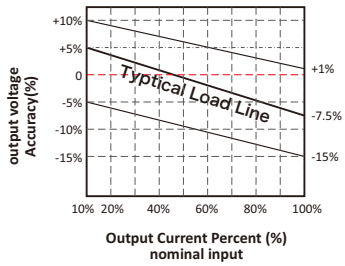
Fig.1

Note: Part ① is the recommended external circuit for EMS test and Part ② for EMI filtering. Choose according to requirements.

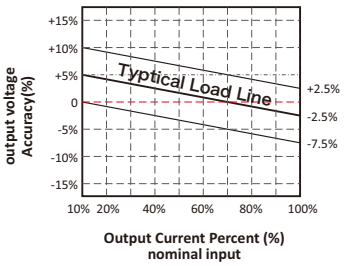
Parameter Description			
Vin	3.3V/5V/9V	12V/15V/24V	48V
C2	4.7uF/50V		2.2uF/100V
LDM1	6.8uH		
CY1	–		
CY2	1nF/2kV or 4.5kV		
C3	Choose according fig.3		
If there is no recommended parameters, no external component is required.			

Typical Characteristic Curve

Tolerance Envelope Graph (3.3V)



Tolerance Envelope Graph (other)



Temperature Derating Curve

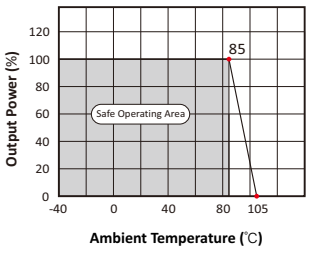


Fig.2

・All specifications are subject to change without notice

A/B/D/E/F-1W Series

1w, fixed input, isolated & unregulated dual/single output dc-dc converter

Input Specifications

Item	Test Conditions	Min	Typ	Max	Units
Input Surge Voltage (1 sec max)	3.3V input	-0.7		5	Vdc
	5V input	-0.7		7	
	9V input	-0.7		15	
	12V input	-0.7		15	
	15V input	-0.7		20	
	24V input	-0.7		30	
	48V input	-0.7		60	
Input Filter		"C" filter			
Reverse Polarity Input Current		no support			
Hot Plug		no support			

Output Specifications

Item	Test Conditions		Min	Typ	Max	Units
Output Power	Ta=-40~+85℃		0.1		1	W
Output Voltage Accuracy			See Tolerance Envelope Graph			
Line Regulation	For vin change of ±1%				1.2	%
Load Regulation	Nominal, 10%-100% load	3.3V output		12	20	
		5V output		10	15	
		9V output		8	15	
		12V output		7	15	
		15V output		6	15	
		24V output		5	15	
Ripple & Noise	DC-20MHz bandwidth			100	300	mVp-p
Temperature Drift	Nominal, 100% load				±0.03	%/℃
Short Circuit Protection					1	s

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	A/B/D	Tested for 60S and 1mA max	1500			Vdc
	E/F		3000			
Insulation Resistance		Test at 500Vdc	1000			MΩ
Isolation Capacitance		IN-OUT, 100kHz @ 0.1Vdc		20		pF

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high		100		kHz
Operating Temperature		-40		+85	℃
Case Temp Rise	Ta=25℃		35		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Case Material		Black Plastic (UL94V-0)			

EMC Specification

EMI	CE	EN55022:2010	Class B (See Fig.1)
	RE	EN55022:2010	Class B (See Fig.1)
EMS	ESD	EN55024:2010/EN61000-4-2	perf. Criterion B
	RS	EN55024:2010/EN61000-4-3	perf. Criterion A

Application Note

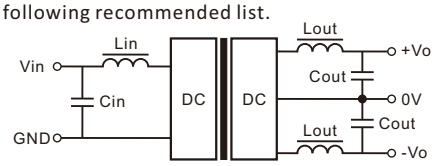
1. Requirement on Output Load

To ensure this DC/DC can operate efficiently and reliably, during operation, the minimum output load is not less than 10% of the full load, and that **this product should never be operated under no load!**

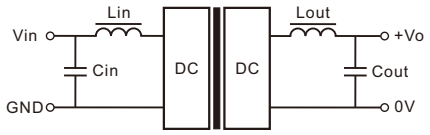
When the actual output power is very small, if in the selection phase, it is recommended to select a lower power level model, else please connect a resistor with proper resistance at the output end in parallel to increase the load.

2. Typical Application Circuit

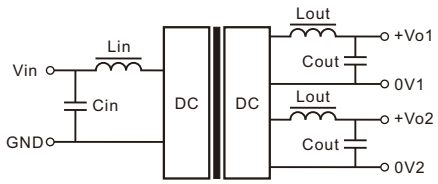
General applications, the circuit according to Fig.3 Typical recommended. The value of each component will be selected according to the following recommended list.



a). Dual model



b). Single model



c). Twins model

Fig.3

Capacitor and Inductor values Recommended

Cin	Cout		Lin, Lout
10-100uF	3.3V	10uF	*not required, recommended values 4.7-22uH*
	5V	10uF	
	9V	4.7uF	
	12V	2.2uF	
	15V	1uF	
	24V	1uF	
Dual & Twin models Cout capacitance value halved			

If using a filter inductor,It should be noted "LC" filtering network natural frequency should be staggered with the DC/DC operating frequency to avoid mutual interference.

3. Output regulation, over-current protection

This series of products does not have the voltage regulator function in itself. The easiest way to achieve output voltage regulation, input over-voltage and over-current protection is to connect a linear regulator with these functions to input or output end in series.

・All specifications are subject to change without notice

A_S-1W Series

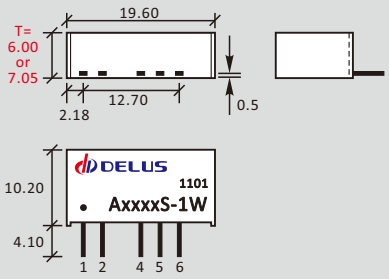
1w, fixed input, 1500Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**A0305S-1W**	78	3.3	3.0-3.6	±5	±100	100
	A0315S-1W	80			±15	±33	
CE/RoHS	**A0505S-1W**	73	5	4.5-5.5	±5	±100	100
	A0507S-1W	79			±7.2	±70	
	A0509S-1W	80			±9	±56	
	A0512S-1W	81			±12	±42	
	A0515S-1W	81			±15	±33	
	A0524S-1W	79			±24	±21	
CE/RoHS	**A0905S-1W**	71	9	8.1-9.9	±5	±100	100
	A0912S-1W	81			±12	±42	
CE/RoHS	**A1205S-1W**	75	12	10.8-13.2	±5	±100	100
	A1209S-1W	81			±9	±56	
	A1212S-1W	84			±12	±42	
	A1215S-1W	84			±15	±33	
	A1224S-1W	80			±24	±21	
CE/RoHS	**A1505S-1W**	80	15	13.5-16.5	±5	±100	100
	A1512S-1W	80			±12	±42	
	A1515S-1W	80			±15	±33	
CE/RoHS	**A2405S-1W**	74	24	21.6-26.4	±5	±100	100
	A2409S-1W	80			±9	±56	
	A2412S-1W	82			±12	±42	
	A2415S-1W	84			±15	±33	
	A2424S-1W	83			±24	±21	
CE/RoHS	**A4812S-1W**	71	48	43.2-52.8	±12	±42	100

Dimensions

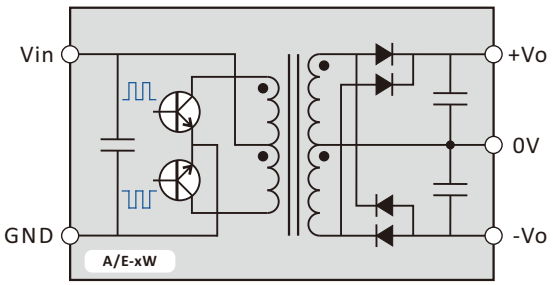
First Angle Proj



Pin	A_S
1	**Vin**
2	**GND**
4	**-Vo**
5	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 1500Vdc
Weight: 2.2g

Fuctional Diagram



・All specifications are subject to change without notice

B_LS-1W Series

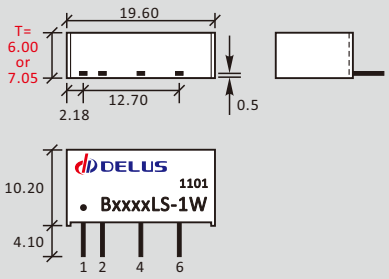
1w, fixed input, 1500Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**B0503LS-1W**	78	5	4.5-5.5	3.3	300	220
	B0505LS-1W	72			5	200	
	B0509LS-1W	79			9	111	
	B0512LS-1W	78			12	83	
	B0515LS-1W	80			15	67	
	B0524LS-1W	81			24	42	
CE/RoHS	**B0905LS-1W**	73	9	8.1-9.9	5	200	220
	B0909LS-1W	81			9	111	
CE/RoHS	**B1203LS-1W**	74	12	10.8-13.2	3.3	300	220
	B1205LS-1W	73			5	200	
	B1209LS-1W	75			9	111	
	B1212LS-1W	82			12	83	
	B1215LS-1W	82			15	67	
	B1224LS-1W	80			24	42	
CE/RoHS	**B1505LS-1W**	80	15	13.5-16.5	5	200	220
	B1515LS-1W	82			15	67	
CE/RoHS	**B2403LS-1W**	74	24	21.6-26.4	3.3	300	220
	B2405LS-1W	73			5	200	
	B2409LS-1W	75			9	111	
	B2412LS-1W	82			12	83	
	B2415LS-1W	82			15	67	
	B2418LS-1W	82			18	56	
	B2424LS-1W	80			24	42	
CE/RoHS	**B4805LS-1W**	77	48	43.2-52.8	5	200	220

Dimensions

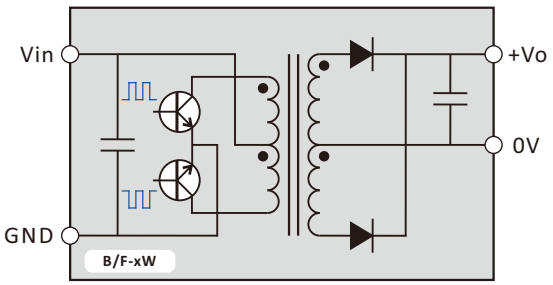
First Angle Proj



Pin	B_LS
1	**Vin**
2	**GND**
4	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 1500Vdc
Weight: 2.2g

Fuctional Diagram



・All specifications are subject to change without notice

B_S-1W Series

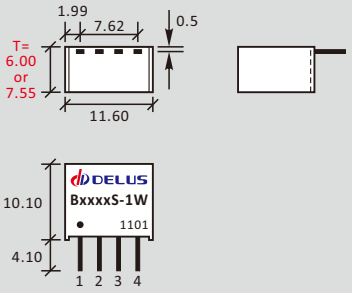
1w, fixed input, 1500Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**B0303S-1W**	78	3.3	3.0-3.6	3.3	300	220
	B0305S-1W	83			5	200	
	B0312S-1W	83			12	83	
CE/RoHS	**B0405S-1W**	73	4	3.6-4.4	5	200	220
CE/RoHS	**B0503S-1W**	78	5	4.5-5.5	3.3	300	220
	B0505S-1W	72			5	200	
	B0509S-1W	79			9	111	
	B0512S-1W	80			12	83	
	B0515S-1W	80			15	67	
	B0524S-1W	81			24	42	
CE/RoHS	**B0905S-1W**	73	9	8.1-9.9	5	200	220
	B0909S-1W	81			9	111	
CE/RoHS	**B1203S-1W**	74	12	10.8-13.2	3.3	300	220
	B1205S-1W	73			5	200	
	B1209S-1W	78			9	111	
	B1212S-1W	81			12	83	
	B1215S-1W	84			15	67	
	B1224S-1W	82			24	42	
CE/RoHS	**B1505S-1W**	74	15	13.5-16.5	5	200	220
	B1515S-1W	78			15	67	
CE/RoHS	**B2403S-1W**	75	24	21.6-26.4	3.3	300	220
	B2405S-1W	72			5	200	
	B2409S-1W	79			9	111	
	B2412S-1W	82			12	83	
	B2415S-1W	82			15	67	
	B2418S-1W	82			18	56	
	B2424S-1W	82			24	42	

Dimensions

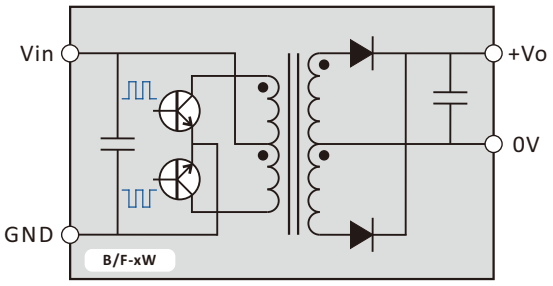
First Angle Proj



Pin	B_S
1	**GND**
2	**Vin**
3	**0V**
4	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.55mm
Isolation: 1500Vdc
Weight: 1.3g

Fuctional Diagram



・All specifications are subject to change without notice

D_S-1W Series

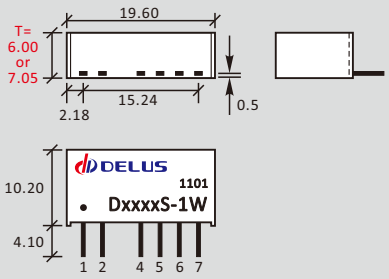
1w, fixed input, 1500Vdc isolated & unregulated twin output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**D0305S-1W**	78	3.3	3.0-3.6	5/5	100/100	100
CE/RoHS	**D0505S-1W**	72	5	4.5-5.5	5/5	100/100	100
	D0509S-1W	75			9/9	56/56	
	D0512S-1W	78			12/12	42/42	
	D0515S-1W	81			15/15	33/33	
CE/RoHS	**D1205S-1W**	75	12	10.8-13.2	5/5	100/100	100
	D1209S-1W	78			9/9	56/56	
	D1212S-1W	82			12/12	42/42	
	D1215S-1W	82			15/15	33/33	
CE/RoHS	**D1809S-1W**	78	18	16.2-19.8	9/9	56/56	100
CE/RoHS	**D2405S-1W**	72	24	21.6-26.4	5/5	100/100	100
	D2409S-1W	80			9/9	56/56	
	D2412S-1W	82			12/12	42/42	
	D2415S-1W	78			15/15	33/33	
	D2418S-1W	80			18/18	28/28	

Dimensions

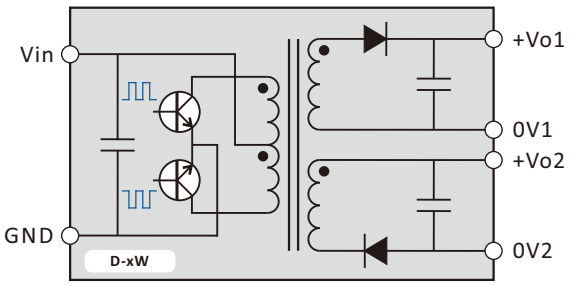
First Angle Proj



Pin	D_S
1	**Vin**
2	**GND**
4	**0V2**
5	**+Vo2**
6	**0V1**
7	**+Vo1**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 1500Vdc
Weight: 2.3g

Fuctional Diagram



・All specifications are subject to change without notice

E_S-1W Series

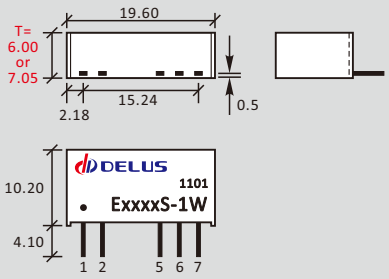
1w, fixed input, 3000Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**E0505S-1W**	73	5	4.5-5.5	±5	±100	100
	E0509S-1W	80			±9	±56	
	E0512S-1W	81			±12	±42	
	E0515S-1W	81			±15	±33	
	E0524S-1W	79			±24	±21	
CE/RoHS	**E0905S-1W**	71	9	8.1-9.9	±5	±100	100
CE/RoHS	**E1205S-1W**	75	12	10.8-13.2	±5	±100	100
	E1207S-1W	81			±7.2	±70	
	E1209S-1W	81			±9	±56	
	E1212S-1W	84			±12	±42	
	E1215S-1W	84			±15	±33	
	E1224S-1W	80			±24	±21	
CE/RoHS	**E2405S-1W**	74	24	21.6-26.4	±5	±100	100
	E2409S-1W	80			±9	±56	
	E2412S-1W	82			±12	±42	
	E2415S-1W	84			±15	±33	
	E2418S-1W	83			±18	±28	
	E2424S-1W	71			±24	±21	

Dimensions

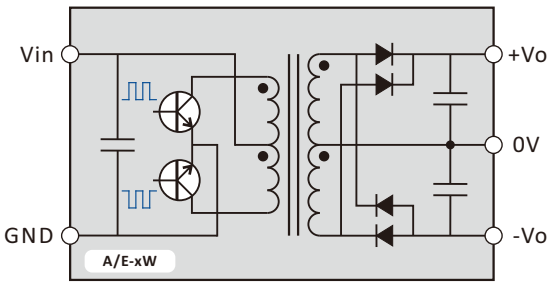
First Angle Proj



Pin	E_S
1	**Vin**
2	**GND**
5	**-Vo**
6	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 3000Vdc
Weight: 2.2g

Fuctional Diagram



・All specifications are subject to change without notice

F_LS-1W Series

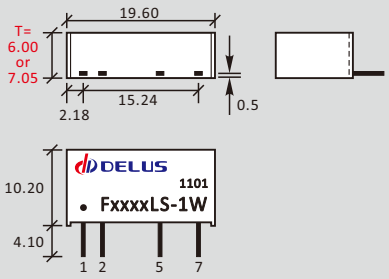
1w, fixed input, 3000Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**F0503LS-1W**	78	5	4.5-5.5	3.3	300	220
	F0505LS-1W	72			5	200	
	F0507LS-1W	76			7.2	139	
	F0509LS-1W	79			9	111	
	F0512LS-1W	78			12	83	
	F0515LS-1W	80			15	67	
	F0524LS-1W	81			24	42	
CE/RoHS	**F1203LS-1W**	74	12	10.8-13.2	3.3	300	220
	F1205LS-1W	73			5	200	
	F1209LS-1W	75			9	111	
	F1212LS-1W	82			12	83	
	F1215LS-1W	82			15	67	
	F1224LS-1W	80			24	42	
CE/RoHS	**F1512LS-1W**	82	15	13.5-16.5	12	83	220
CE/RoHS	**F2403LS-1W**	74	24	21.6-26.4	3.3	300	220
	F2405LS-1W	73			5	200	
	F2409LS-1W	75			9	111	
	F2412LS-1W	82			12	83	
	F2415LS-1W	82			15	67	
	F2424LS-1W	80			24	42	

Dimensions

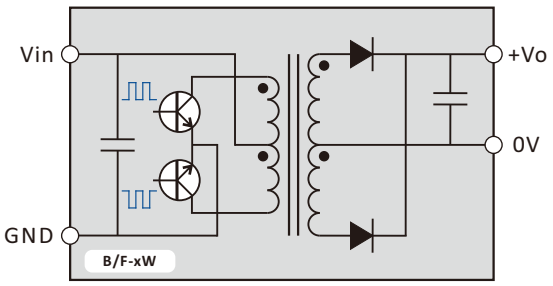
First Angle Proj



Pin	F_LS
1	**Vin**
2	**GND**
5	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 3000Vdc
Weight: 2.2g

Fuctional Diagram



・All specifications are subject to change without notice

F_M-1W Series

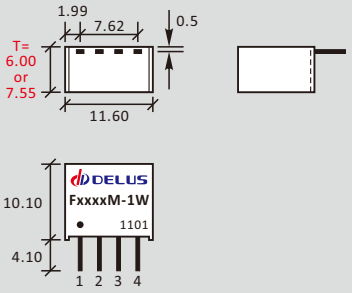
1w, fixed input, 3000Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**F0303M-1W**	78	3.3	3.0-3.6	3.3	300	220
	F0305M-1W	83			5	200	
	F0312M-1W	83			12	83	
CE/RoHS	**F0503M-1W**	78	5	4.5-5.5	3.3	300	220
	F0505M-1W	72			5	200	
	F0509M-1W	79			9	111	
	F0512M-1W	78			12	83	
	F0515M-1W	80			15	67	
	F0524M-1W	81			24	42	
CE/RoHS	**F1203M-1W**	74	12	10.8-13.2	3.3	300	220
	F1205M-1W	73			5	200	
	F1209M-1W	78			9	111	
	F1212M-1W	81			12	83	
	F1215M-1W	84			15	67	
	F1224M-1W	82			24	42	
CE/RoHS	**F2403M-1W**	75	24	21.6-26.4	3.3	300	220
	F2405M-1W	72			5	200	
	F2409M-1W	79			9	111	
	F2412M-1W	82			12	83	
	F2415M-1W	82			15	67	
	F2418M-1W	82			18	56	
	F2424M-1W	82			24	42	

Dimensions

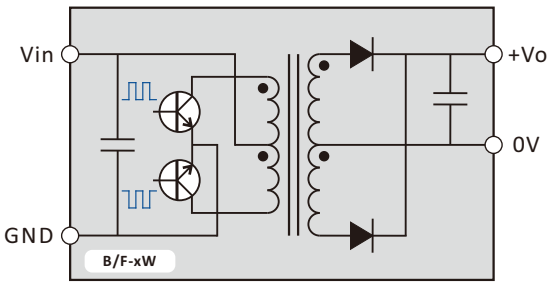
First Angle Proj



Pin	F_M
1	**GND**
2	**Vin**
3	**0V**
4	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.55mm
Isolation: 3000Vdc
Weight: 1.3g

Fuctional Diagram



・All specifications are subject to change without notice

File Release Notes

DBN-101 Technical Data Sheet Version

No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Change document version definition
3			
4			
5			

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

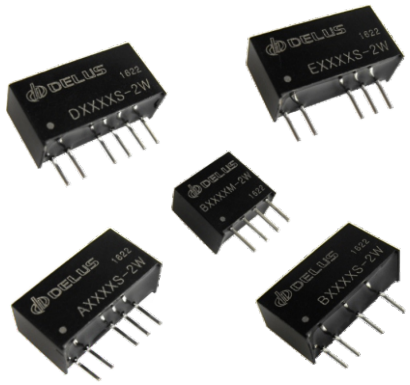
・All specifications are subject to change without notice

A/B/D/E/F-2W Series

Features

- Operating temperature: -40 to +85℃
- Efficiency up to 84%
- 1.5/3.0kVdc isolation
- Multiple package options
- International standard pin-out
- 100% burn-in
- No external component required
- UL94V-0 package
- RoHS/CE compliance
- With 3 year warranty

CE RoHS



EMI | 1500 Vdc | 3000 Vdc | High Power Density

General Description

The 2W series dc/dc converters are specially designed for the application of the power supply which is isolated from the input source in the distributed power supply system on the circuit board. Small size, high power density, can save valuable board space.

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

Suitable for occasions where the input power supply is relatively stable, input and output isolated is necessary and the output voltage regulation is not strictly required.

EMC Solution-Recommended Circuit

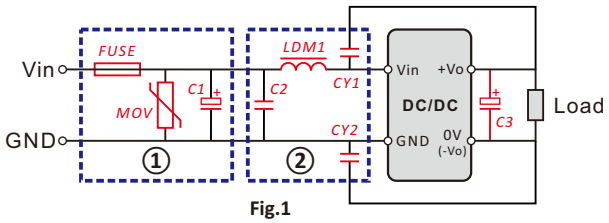


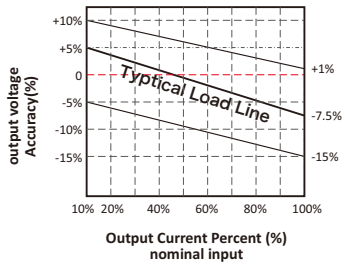
Fig.1

Note: Part ① is the recommended external circuit for EMS test and Part ② for EMI filtering. Choose according to requirements.

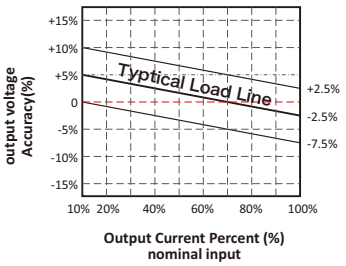
Parameter Description			
Vin	3.3V/5V/9V	12V/15V/24V	48V
C2	4.7uF/50V		2.2uF/100V
LDM1	6.8uH		
CY1	–		
CY2	1nF/2kV or 4.5kV		
C3	Choose according fig.3		
If there is no recommended parameters, no external component is required.			

Typical Characteristic Curve

Tolerance Envelope Graph (3.3V)



Tolerance Envelope Graph (other)



Temperature Derating Curve

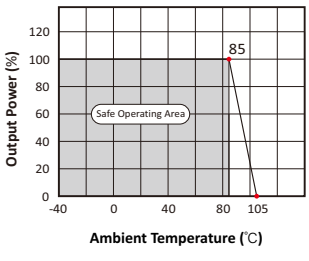


Fig.2

・All specifications are subject to change without notice

A/B/D/E/F-2W Series

2w, fixed input, isolated & unregulated dual/single output dc-dc converter

Input Specifications

Item	Test Conditions	Min	Typ	Max	Units
Input Surge Voltage (1 sec max)	3.3V input	-0.7		5	Vdc
	5V input	-0.7		7	
	9V input	-0.7		15	
	12V input	-0.7		15	
	15V input	-0.7		20	
	24V input	-0.7		30	
	48V input	-0.7		60	
Input Filter		"C" filter			
Reverse Polarity Input Current		no support			
Hot Plug		no support			

Output Specifications

Item	Test Conditions		Min	Typ	Max	Units
Output Power	Ta=-40~+85℃		0.2		2	W
Output Voltage Accuracy			See Tolerance Envelope Graph			
Line Regulation	For vin change of ±1%				1.2	%
Load Regulation	Nominal, 10%-100% load	3.3V output		15	20	
		5V output		12.2	15	
		9V output		8.3	15	
		12V output		7	15	
		15V output		7	15	
		24V output		5	15	
Ripple & Noise	DC-20MHz bandwidth			130	300	mVp-p
Temperature Drift	Nominal, 100% load				±0.03	%/℃
Short Circuit Protection					1	s

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	A/B/D	Tested for 60S and 1mA max	1500			Vdc
	E/F		3000			
Insulation Resistance		Test at 500Vdc	1000			MΩ
Isolation Capacitance		IN-OUT, 100kHz @ 0.1Vdc		20		pF

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high		100		kHz
Operating Temperature		-40		+85	℃
Case Temp Rise	Ta=25℃		45		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Case Material		Black Plastic (UL94V-0)			

EMC Specification

EMI	CE	EN55022:2010	Class B (See Fig.1)
	RE	EN55022:2010	Class B (See Fig.1)
EMS	ESD	EN55024:2010/EN61000-4-2	perf. Criterion B
	RS	EN55024:2010/EN61000-4-3	perf. Criterion A

Application Note

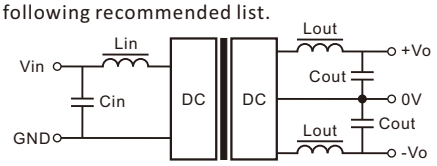
1. Requirement on Output Load

To ensure this DC/DC can operate efficiently and reliably, during operation, the minimum output load is not less than 10% of the full load, and that **this product should never be operated under no load!**

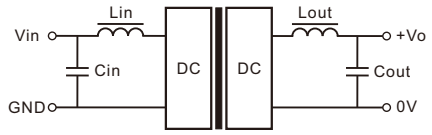
When the actual output power is very small, if in the selection phase, it is recommended to select a lower power level model, else please connect a resistor with proper resistance at the output end in parallel to increase the load.

2. Typical Application Circuit

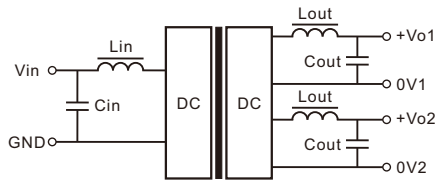
General applications, the circuit according to Fig.3 Typical recommended. The value of each component will be selected according to the following recommended list.



a). Dual model



b). Single model



c). Twins model

Fig.3

Capacitor and Inductor values Recommended

Cin	Cout		Lin, Lout
10-100uF	3.3V	10uF	*not required, recommended values 4.7-22uH*
	5V	10uF	
	9V	4.7uF	
	12V	2.2uF	
	15V	1uF	
	24V	1uF	
Dual & Twin models Cout capacitance value halved			

If using a filter inductor,It should be noted "LC" filtering network natural frequency should be staggered with the DC/DC operating frequency to avoid mutual interference.

3. Output regulation, over-current protection

This series of products does not have the voltage regulator function in itself. The easiest way to achieve output voltage regulation, input over-voltage and over-current protection is to connect a linear regulator with these functions to input or output end in series.

・All specifications are subject to change without notice

A_S-2W Series

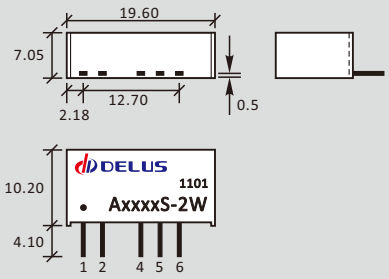
2w, fixed input, 1500Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**A0505S-2W**	75	5	4.5-5.5	±5	±200	100
	A0507S-2W	82			±7.2	±139	
	A0509S-2W	82			±9	±111	
	A0512S-2W	83			±12	±83	
	A0515S-2W	85			±15	±67	
	A0524S-2W	85			±24	±42	
CE/RoHS	**A0912S-2W**	85	9	8.1-9.9	±12	±83	100
	A0915S-2W	86			±15	±67	
CE/RoHS	**A1205S-2W**	76	12	10.8-13.2	±5	±200	100
	A1209S-2W	83			±9	±111	
	A1212S-2W	85			±12	±83	
	A1215S-2W	87			±15	±67	
	A1224S-2W	85			±24	±42	
CE/RoHS	**A1515S-2W**	75	15	13.5-16.5	±15	±67	100
CE/RoHS	**A2405S-2W**	73	24	21.6-26.4	±5	±200	100
	A2409S-2W	82			±9	±111	
	A2412S-2W	85			±12	±83	
	A2415S-2W	85			±15	±67	
	A2424S-2W	85			±24	±42	
CE/RoHS	**A4815S-2W**	82	48	43.2-52.8	±12	±83	100

Dimensions

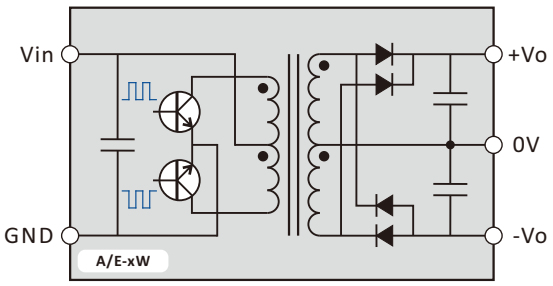
First Angle Proj



Pin	A_S-2W
1	**Vin**
2	**GND**
4	**-Vo**
5	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

B_S-2W Series

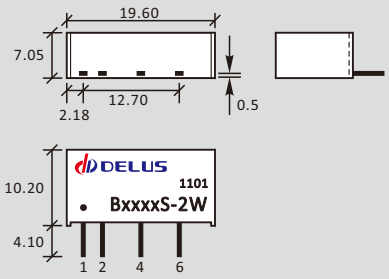
2w, fixed input, 1500Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**B0503S-2W**	81	5	4.5-5.5	3.3	600	220
	B0505S-2W	83			5	400	
	B0507S-2W	83			7.2	278	
	B0509S-2W	86			9	222	
	B0512S-2W	84			12	167	
	B0515S-2W	85			15	133	
	B0524S-2W	86			24	83	
CE/RoHS	**B0905S-2W**	86	9	8.1-9.9	5	200	220
	B0924S-2W	86			9	111	
CE/RoHS	**B1203S-2W**	82	12	10.8-13.2	3.3	600	220
	B1205S-2W	83			5	400	
	B1209S-2W	84			9	222	
	B1212S-2W	84			12	167	
	B1215S-2W	83			15	133	
	B1224S-2W	87			24	83	
CE/RoHS	**B1515S-2W**	87	15	13.5-16.5	15	133	220
CE/RoHS	**B2403S-2W**	82	24	21.6-26.4	3.3	600	220
	B2405S-2W	83			5	400	
	B2409S-2W	83			9	222	
	B2412S-2W	84			12	167	
	B2415S-2W	83			15	133	
	B2424S-2W	86			24	83	
CE/RoHS	**B4812S-2W**	83	48	43.2-52.8	12	167	220

Dimensions

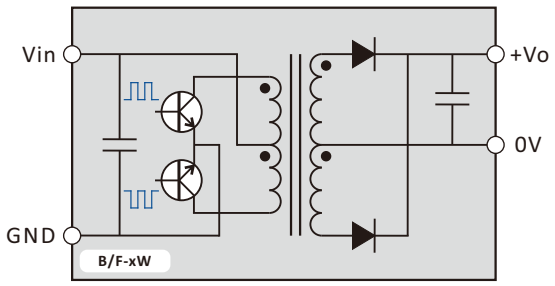
First Angle Proj



Pin	B_S-2W
1	**Vin**
2	**GND**
4	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

B_M-2W Series

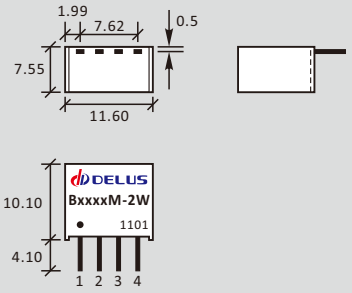
2w, fixed input, 1500Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**B0505M-2W**	83	5	4.5-5.5	5	400	220
	B0509M-2W	86			9	222	
	B0512M-2W	84			12	167	
	B0515M-2W	85			15	133	
	B0524M-2W	86			24	83	
CE/RoHS	**B1205M-2W**	83	12	10.8-13.2	5	400	220
	B1209M-2W	84			9	222	
	B1212M-2W	84			12	167	
	B1215M-2W	83			15	133	
	B1224M-2W	87			24	83	
CE/RoHS	**B2405M-2W**	83	24	21.6-26.4	5	400	220
	B2409M-2W	83			9	222	
	B2412M-2W	84			12	167	
	B2415M-2W	83			15	133	
	B2424M-2W	86			24	83	

Dimensions

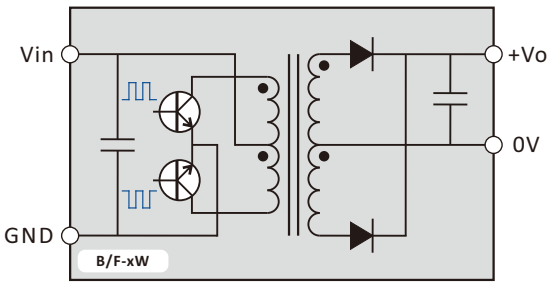
First Angle Proj



Pin	B_M-2W
1	**GND**
2	**Vin**
3	**0V**
4	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 1.6g

Fuctional Diagram



・All specifications are subject to change without notice

D_S-2W Series

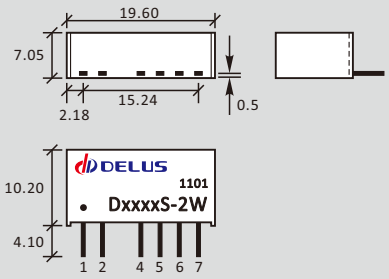
2w, fixed input, 1500Vdc isolated & unregulated twins output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**D0505S-2W**	75	5	4.5-5.5	5/5	200/200	100
	D0509S-2W	82			9/9	111/111	
	D0512S-2W	83			12/12	83/83	
	D0515S-2W	85			15/15	67/67	
CE/RoHS	**D1205S-2W**	76	12	10.8-13.2	5/5	200/200	100
	D1209S-2W	83			9/9	111/111	
	D1212S-2W	85			12/12	83/83	
	D1215S-2W	87			15/15	67/67	
CE/RoHS	**D2405S-2W**	74	24	21.6-26.4	5/5	200/200	100
	D2409S-2W	82			9/9	111/111	
	D2412S-2W	85			12/12	83/83	
	D2415S-2W	85			15/15	67/67	
	D2418S-2W	82			18/18	56/56	

Dimensions

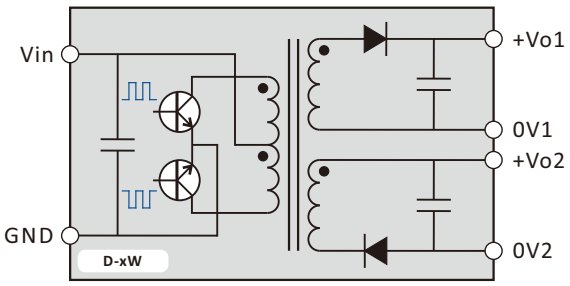
First Angle Proj



Pin	D_S-2W
1	**Vin**
2	**GND**
4	**0V2**
5	**+Vo2**
6	**0V1**
7	**+Vo1**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 2.7g

Fuctional Diagram



・All specifications are subject to change without notice

E_S-2W Series

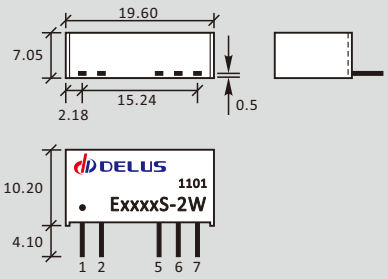
2w, fixed input, 3000Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**E0505S-2W**	75	5	4.5-5.5	±5	±200	100
	E0509S-2W	82			±9	±111	
	E0512S-2W	83			±12	±83	
	E0515S-2W	85			±15	±67	
	E0524S-2W	85			±24	±42	
CE/RoHS	**E1205S-2W**	76	12	10.8-13.2	±5	±200	100
	E1209S-2W	83			±9	±111	
	E1212S-2W	85			±12	±83	
	E1215S-2W	87			±15	±67	
	E1224S-2W	85			±24	±42	
CE/RoHS	**E2405S-2W**	73	24	21.6-26.4	±5	±200	100
	E2409S-2W	82			±9	±111	
	E2412S-2W	85			±12	±83	
	E2415S-2W	85			±15	±67	
	E2424S-2W	85			±24	±42	

Dimensions

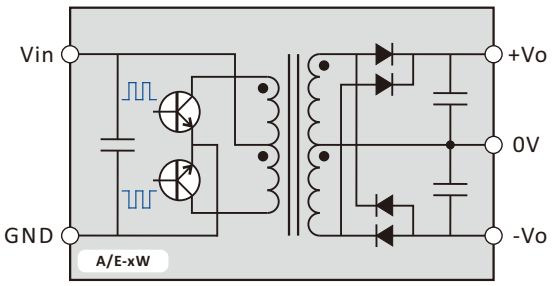
First Angle Proj



Pin	E_S-2W
1	**Vin**
2	**GND**
5	**-Vo**
6	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 3000Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

F_S-2W Series

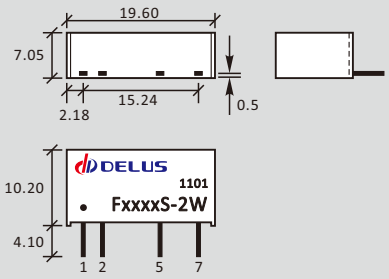
2w, fixed input, 3000Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**F0503S-2W**	81	5	4.5-5.5	3.3	600	220
	F0505S-2W	83			5	400	
	F0507S-2W	83			7.2	278	
	F0509S-2W	86			9	222	
	F0512S-2W	84			12	167	
	F0515S-2W	85			15	133	
	F0524S-2W	86			24	83	
CE/RoHS	**F1203S-2W**	82	12	10.8-13.2	3.3	600	220
	F1205S-2W	83			5	400	
	F1209S-2W	84			9	222	
	F1212S-2W	84			12	167	
	F1215S-2W	83			15	133	
	F1224S-2W	87			24	83	
CE/RoHS	**F2403S-2W**	82	24	21.6-26.4	3.3	600	220
	F2405S-2W	83			5	400	
	F2409S-2W	83			9	222	
	F2412S-2W	84			12	167	
	F2415S-2W	83			15	133	
	F2424S-2W	86			24	83	

Dimensions

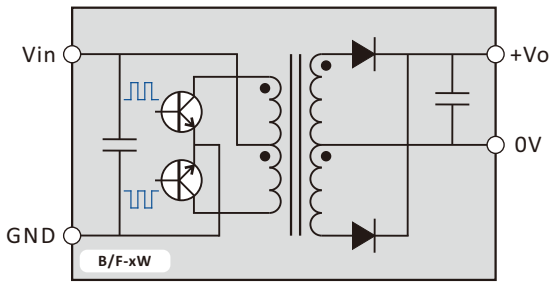
First Angle Proj



Pin	F_S-2W
1	**Vin**
2	**GND**
5	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 3000Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

F_M-2W Series

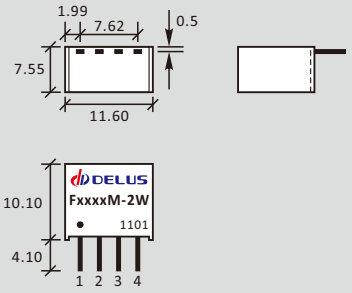
2w, fixed input, 3000Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**F0505M-2W**	83	5	4.5-5.5	5	400	220
	F0509M-2W	86			9	222	
	F0512M-2W	84			12	167	
	F0515M-2W	85			15	133	
	F0524M-2W	86			24	83	
CE/RoHS	**F1205M-2W**	83	12	10.8-13.2	5	400	220
	F1209M-2W	84			9	222	
	F1212M-2W	84			12	167	
	F1215M-2W	83			15	133	
	F1224M-2W	87			24	83	
CE/RoHS	**F2405M-2W**	83	24	21.6-26.4	5	400	220
	F2409M-2W	83			9	222	
	F2412M-2W	84			12	167	
	F2415M-2W	83			15	133	
	F2424M-2W	86			24	83	

Dimensions

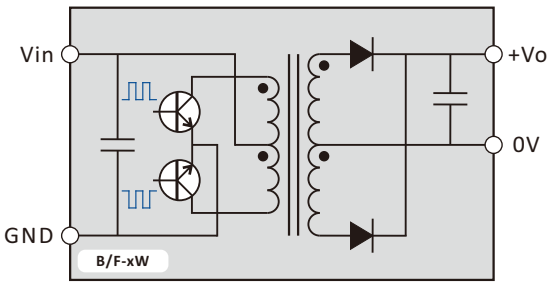
First Angle Proj



Pin	F_M-2W
1	**GND**
2	**Vin**
3	**0V**
4	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 3000Vdc
Weight: 1.6g

Fuctional Diagram



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File Release Notes

DBN-102 Technical Data Sheet Version

No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Change document version definition
3	A/1	2020/05/07	Add model A0507S-2W B0507S-2W F0507S-2W
4			
5			

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

A/B/D/E/F-3W Series

Features

- Operating temperature: -40 to +85℃
- Efficiency up to 84%
- 1.5/3.0kVdc isolation
- Multiple package options
- International standard pin-out
- 100% burn-in
- No external component required
- UL94V-0 package
- RoHS/CE compliance
- With 3 year warranty

CE RoHS

EMI | 1500 Vdc | 3000 Vdc | High Power Density

General Description

The 3W series dc/dc converters are specially designed for the application of the power supply which is isolated from the input source in the distributed power supply system on the circuit board. Small size, high power density, can save valuable board space.

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

Suitable for occasions where the input power supply is relatively stable, input and output isolated is necessary and the output voltage regulation is not strictly required.

EMC Solution-Recommended Circuit

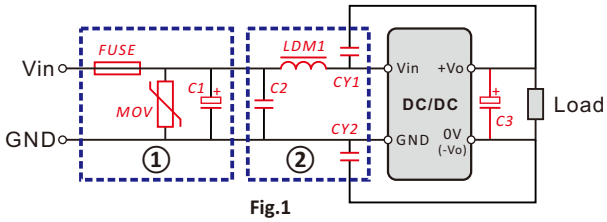


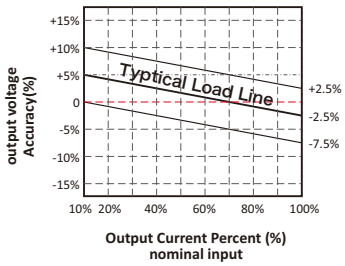
Fig.1

Note: Part ① is the recommended external circuit for EMS test and Part ② for EMI filtering. Choose according to requirements.

Parameter Description			
Vin	3.3V/5V/9V	12V/15V/24V	48V
C2	4.7uF/50V		2.2uF/100V
LDM1	6.8uH		
CY1	–		
CY2	1nF/2kV or 4.5kV		
C3	Choose according fig.3		
If there is no recommended parameters, no external component is required.			

Typical Characteristic Curve

Tolerance Envelope Graph



Temperature Derating Curve

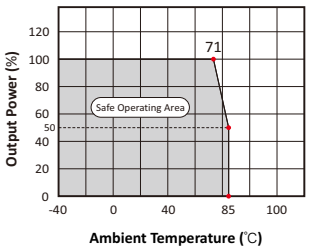


Fig.2

・All specifications are subject to change without notice

A/B/D/E/F-3W Series

3w, fixed input, isolated & unregulated dual/single output dc-dc converter

Input Specifications

Item	Test Conditions	Min	Typ	Max	Units
Input Surge Voltage (1 sec max)	5V input	-0.7		7	Vdc
	9V input	-0.7		15	
	12V input	-0.7		15	
	15V input	-0.7		20	
Input Filter		"C" filter			
Reverse Polarity Input Current		no support			
Hot Plug		no support			

Output Specifications

Item	Test Conditions		Min	Typ	Max	Units
Output Power	Ta=-40~+85℃		0.3		3	W
Output Voltage Accuracy			See Tolerance Envelope Graph			
Line Regulation	For vin change of ±1%				1.2	%
Load Regulation	Nominal, 10%-100% load	5V output		12.2	15	
		9V output		8.3	15	
		12V output		7	15	
		15V output		7	15	
Ripple & Noise	DC-20MHz bandwidth			130	300	mVp-p
Temperature Drift	Nominal, 100% load				±0.03	%/℃
Short Circuit Protection					1	s

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	A/B/D	Tested for 60S and 1mA max	1500			Vdc
	E/F		3000			
Insulation Resistance		Test at 500Vdc	1000			MΩ
Isolation Capacitance		IN-OUT, 100kHz @ 0.1Vdc		20		pF

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high		80		kHz
Operating Temperature		-40		+85	℃
Case Temp Rise	Ta=25℃		65		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Case Material		Black Plastic (UL94V-0)			

EMC Specification

EMI	CE	EN55022:2010	Class B (See Fig.1)
	RE	EN55022:2010	Class B (See Fig.1)
EMS	ESD	EN55024:2010/EN61000-4-2	perf. Criterion B
	RS	EN55024:2010/EN61000-4-3	perf. Criterion A

Application Note

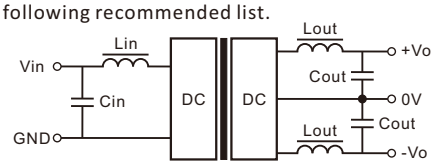
1. Requirement on Output Load

To ensure this DC/DC can operate efficiently and reliably, during operation, the minimum output load is not less than 10% of the full load, and that **this product should never be operated under no load!**

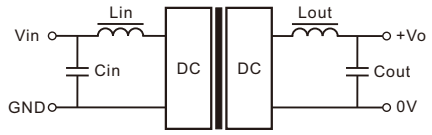
When the actual output power is very small, if in the selection phase, it is recommended to select a lower power level model, else please connect a resistor with proper resistance at the output end in parallel to increase the load.

2. Typical Application Circuit

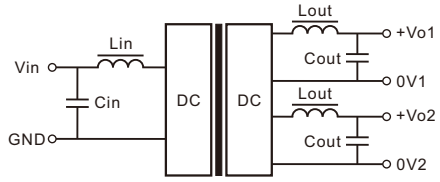
General applications, the circuit according to Fig.3 Typical recommended. The value of each component will be selected according to the following recommended list.



a). Dual model



b). Single model



c). Twins model

Fig.3

Capacitor and Inductor values Recommended

Cin	Cout		Lin, Lout
10-100uF	3.3V	10uF	*not required, recommended values 4.7-22uH*
	5V	10uF	
	9V	4.7uF	
	12V	2.2uF	
	15V	1uF	
	24V	1uF	
Dual & Twin models Cout capacitance value halved			

If using a filter inductor,It should be noted "LC" filtering network natural frequency should be staggered with the DC/DC operating frequency to avoid mutual interference.

3. Output regulation, over-current protection

This series of products does not have the voltage regulator function in itself. The easiest way to achieve output voltage regulation, input over-voltage and over-current protection is to connect a linear regulator with these functions to input or output end in series.

・All specifications are subject to change without notice

A_S-3W Series

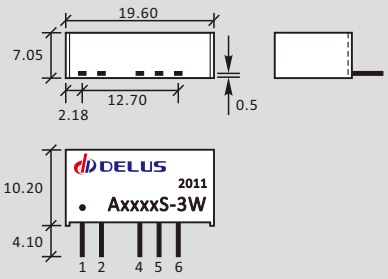
3w, fixed input, 1500Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**A0509S-3W**	82	5	4.5-5.5	±9	±167	100
	A0512S-3W	83			±12	±125	
	A0515S-3W	85			±15	±100	
CE/RoHS	**A1209S-3W**	84	12	10.8-13.2	±9	±167	100
	A1212S-3W	85			±12	±125	
	A1215S-3W	87			±15	±100	

Dimensions

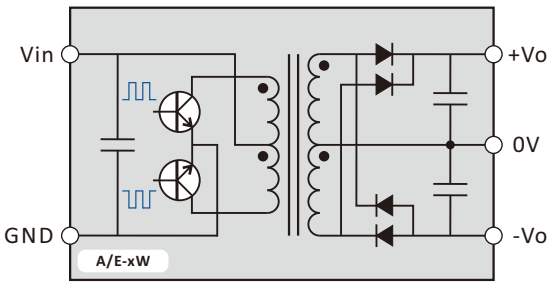
First Angle Proj



Pin	A_S-3W
1	**Vin**
2	**GND**
4	**-Vo**
5	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

B_S-3W Series

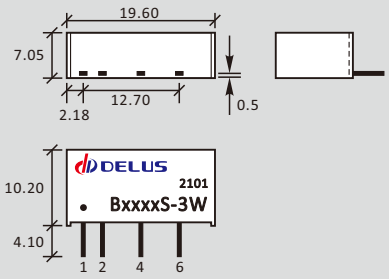
3w, fixed input, 1500Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**B0505S-3W**	82	5	4.5-5.5	5	600	220
	B0509S-3W	83			9	333	
	B0512S-3W	84			12	250	
	B0515S-3W	85			15	200	
CE/RoHS	**B1212S-3W**	84	12	10.8-13.2	12	250	220
	B1215S-3W	83			15	200	

Dimensions

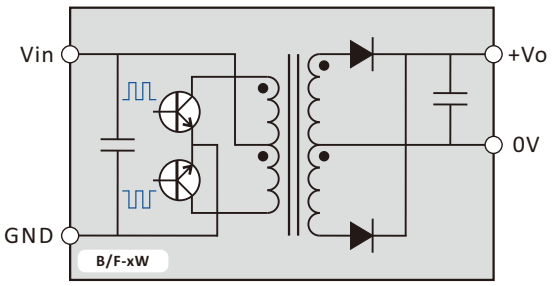
First Angle Proj



Pin	B_S-3W
1	**Vin**
2	**GND**
4	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 1500Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

E_S-3W Series

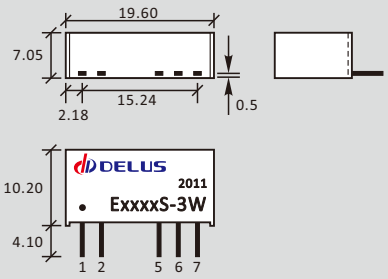
3w, fixed input, 3000Vdc isolated & unregulated dual output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**E0509S-3W**	82	5	4.5-5.5	±9	±167	100
	E0512S-3W	83			±12	±125	
	E0515S-3W	85			±15	±100	
CE/RoHS	**E1209S-3W**	84	12	10.8-13.2	±9	±167	100
	E1212S-3W	85			±12	±125	
	E1215S-3W	87			±15	±100	

Dimensions

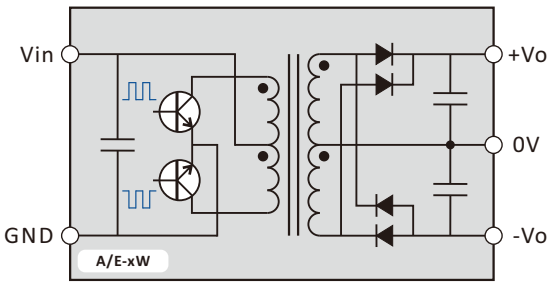
First Angle Proj



Pin	E_S-3W
1	**Vin**
2	**GND**
5	**-Vo**
6	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 3000Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

F_S-3W Series

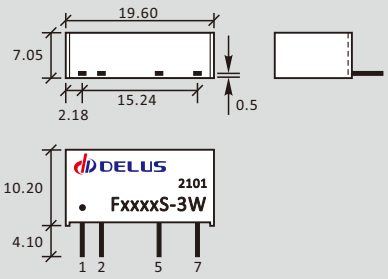
3w, fixed input, 3000Vdc isolated & unregulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**F0505S-3W**	82	5	4.5-5.5	5	600	220
	F0509S-3W	83			9	333	
	F0512S-3W	84			12	250	
	F0515S-3W	85			15	200	
CE/RoHS	**F1212S-3W**	84	12	10.8-13.2	12	250	220
	F1215S-3W	83			15	200	

Dimensions

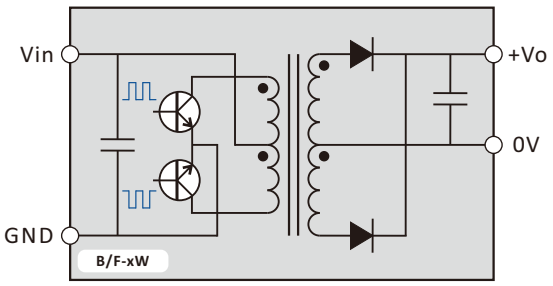
First Angle Proj



Pin	F_S-3W
1	**Vin**
2	**GND**
5	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm,
Distance between all adjacent terminal 2.54mm
Isolation: 3000Vdc
Weight: 2.4g

Fuctional Diagram



・All specifications are subject to change without notice

File Release Notes

DBN-103 Technical Data Sheet Version

No.	Version	Date	Description
1	A/0	2021/01/17	First release
2	A/1	2022/06/15	Add new product model
3			
4			
5			

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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

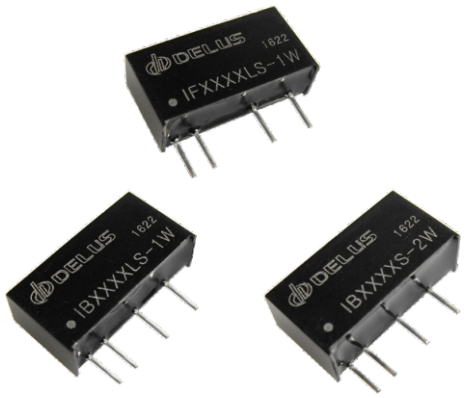
・All specifications are subject to change without notice

IB/IF-1W~2W Series

Features

- Operating temperature: -40 to +85℃
- Efficiency up to 84%
- 3.3/5/9/12/15Vdc multiple voltage output
- Multiple package options
- International standard pin-out
- 100% burn-in
- No external component required
- UL94V-0 package
- RoHS/CE compliance
- With 3 year warranty

CE RoHS



EMI | 1500 Vdc | 3000 Vdc | High Power Density

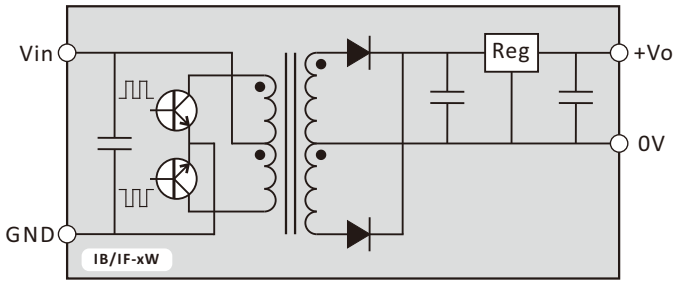
General Description

IB-1W/2W series dc/dc converters are specially designed for the application of the power supply which is isolated from the input source in the distributed power supply system on the circuit board. Small size, high power density, can save valuable board space.

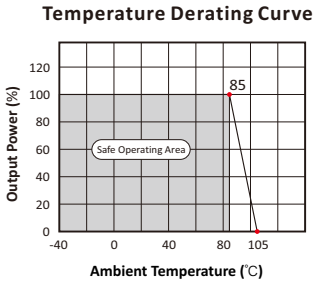
The chip ceramic capacitors and SMT are used in all series. These converters have characteristics of long life, excellent performance, stability and reliability.

Applied to the input power supply voltage is relatively stable, input and output requirements for isolation, voltage stability requirements are relatively high, the ripple noise sensitive applications.

Fuctional Diagram



Typical Characteristic Curve



EMC Solution-Recommended Circuit

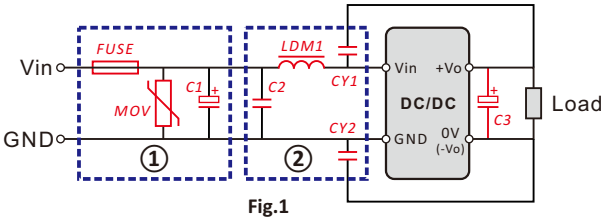


Fig.1

Note: Part ① is the recommended external circuit for EMS test and Part ② for EMI filtering. Choose according to requirements.

Parameter Description			
Vin	3.3V/5V/9V	12V/15V/24V	48V
C2	4.7uF/50V		2.2uF/100V
LDM1	6.8uH		
CY1	–		
CY2	1nF/2kV or 4.5kV		
C3	Choose according fig.3		
If there is no recommended parameters, no external component is required.			

・All specifications are subject to change without notice

IB/IF-1W～2W Series

1w/2w, fixed input, isolated & regulated single output dc-dc converter

Input Specifications

Item	Test Conditions	Min	Typ	Max	Units
Input Surge Voltage (1 sec max)	3.3V input	-0.7		5	Vdc
	5V input	-0.7		7	
	9V input	-0.7		15	
	12V input	-0.7		15	
	15V input	-0.7		20	
	24V input	-0.7		30	
	48V input	-0.7		60	
Input Filter		"C" filter			
Reverse Polarity Input Current		no support			
Hot Plug		no support			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power	1W model	Ta=-40～+85℃	0.1		1	W
	2W model		0.2		2	
Output Voltage Accuracy		Nominal, 100% load			±3	%
Line Regulation		For vin change of ±5%			±0.5	
Load Regulation		Nominal, 10%-100% load		±1	±2	
Ripple		DC-20MHz bandwidth		20	30	mVp-p
Noise				50	100	
Temperature Drift		Nominal, 100% load			±0.03	%/℃
Short Circuit Protection					1	s

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	IB	Tested for 60S and 1mA max	1500			Vdc
	IF		3000			
Insulation Resistance		Test at 500Vdc	1000			MΩ
Isolation Capacitance		IN-OUT, 100kHz @ 0.1Vdc		20		pF

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high		100		kHz
Operating Temperature		-40		+85	℃
Case Temp Rise	Ta=25℃		45		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Case Material		Black Plastic (UL94V-0)			

EMC Specification

EMI	CE	EN55022:2010	Class B (See Fig.1)
	RE	EN55022:2010	Class B (See Fig.1)
EMS	ESD	EN55024:2010/EN61000-4-2	perf. Criterion B
	RS	EN55024:2010/EN61000-4-3	perf. Criterion A

Application Note

1. Requirement on Output Load

To ensure this DC/DC can operate efficiently and reliably, during operation, the minimum output load is not less than 10% of the full load, and that **this product should never be operated under no load!**

When the actual output power is very small, if in the selection phase, it is recommended to select a lower power level model, else please connect a resistor with proper resistance at the output end in parallel to increase the load.

2. Typical Application Circuit

General applications, the circuit according to Fig.2 Typical recommended. The value of each component will be selected according to the following recommended list.

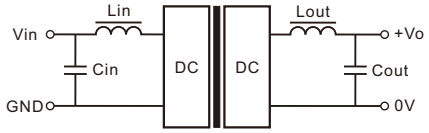


Fig.2

Capacitor and Inductor values Recommended

Cin	Cout		Lin, Lout
10-100uF	3.3V	4.7uF	*not required, recommended values 4.7-22uH*
	5V	4.7uF	
	9V	2.2uF	
	12V	2.2uF	
	15V	1uF	
	24V	–	

If using a filter inductor,It should be noted "LC" filtering network natural frequency should be staggered with the DC/DC operating frequency to avoid mutual interference.

3. Output overload protection

In general, the series product has no function of output overload protection. The simplest method is for connecting a self-recovery fuse in series or a external circuit breaker.

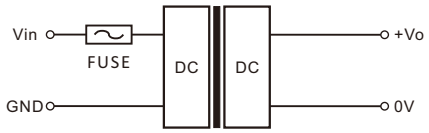


Fig.3

4. Input over-voltage protection circuit

The simplest device for Input over-voltage protection is connecting a linear regulator with over heat protection at the input(Fig.4).

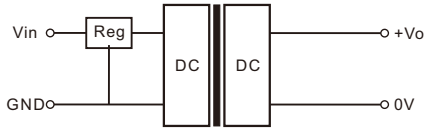


Fig.4

・All specifications are subject to change without notice

IB_LS-1W Series

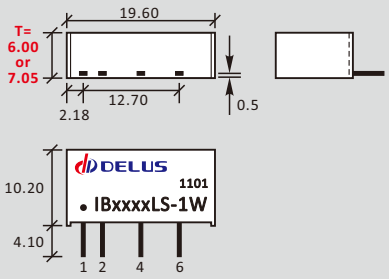
1w, fixed input, 1500Vdc isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**IB0303LS-1W**	72	3.3	3.14-3.47	3.3	300	220
	IB0305LS-1W	74			5	200	
CE/RoHS	**IB0505LS-1W**	76	5	4.75-5.25	5	200	220
	IB0509LS-1W	77			9	100	
	IB0512LS-1W	79			12	83	
	IB0515LS-1W	80			15	67	
CE/RoHS	**IB0905LS-1W**	77	9	8.55-9.45	5	200	220
	IB0909LS-1W	79			9	100	
CE/RoHS	**IB1203LS-1W**	77	12	11.4-12.6	3.3	300	220
	IB1205LS-1W	77			5	200	
	IB1209LS-1W	79			9	100	
	IB1212LS-1W	81			12	83	
	IB1215LS-1W	78			15	67	
CE/RoHS	**IB1505LS-1W**	77	15	14.2-15.7	5	200	220
	IB1509LS-1W	76			9	100	
	IB1512LS-1W	72			12	83	
	IB1515LS-1W	76			15	67	
CE/RoHS	**IB2403LS-1W**	72	24	22.8-25.2	3.3	300	220
	IB2405LS-1W	73			5	200	
	IB2409LS-1W	71			9	100	
	IB2412LS-1W	83			12	83	
	IB2415LS-1W	73			15	67	
CE/RoHS	**IB4805LS-1W**	71	48	45.6-50.4	5	200	220
	IB4812LS-1W	73			12	83	
	IB4815LS-1W	75			15	67	

Dimensions

First Angle Proj



Pin	IB_LS-1W
1	**Vin**
2	**GND**
4	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 1500Vdc
Weight: 2.3g

・All specifications are subject to change without notice

IB_S-2W Series

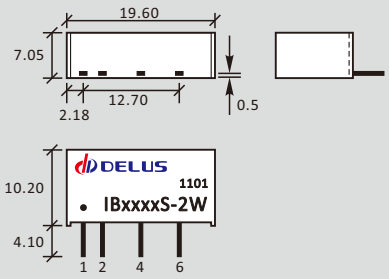
2w, fixed input, 1500Vdc isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**IB0505S-2W**	79	5	4.75-5.25	5	400	220
	IB0512S-2W	79			12	167	
CE/RoHS	**IB1205S-2W**	80	12	11.4-12.6	5	400	220
	IB1212S-2W	83			12	167	
CE/RoHS	**IB2405S-2W**	81	24	22.8-25.2	5	400	220
	IB2412S-2W	79			12	167	
CE/RoHS	**IB4805S-2W**	71	48	45.6-50.4	5	400	220
	IB4812S-2W	75			12	167	

Dimensions

First Angle Proj



Pin	IB_S-2W
1	**Vin**
2	**GND**
4	**0V**
6	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 2.4g

・All specifications are subject to change without notice

IF_S-1W Series

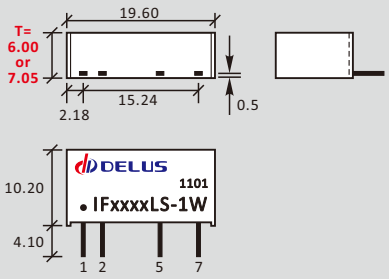
1w, fixed input, 3000Vdc isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	IF0505LS-W25	62	5	4.75-5.25	5	50	220
	IF0505LS-W5	68			5	100	
	IF0505LS-1W	76			5	200	
	IF0509LS-W25	67			9	28	
	IF0509LS-1W	77			9	100	
	IF0512LS-1W	79			12	83	
	IF0515LS-1W	80			15	67	
CE/RoHS	IF1205LS-W25	67	12	11.4-12.6	5	50	220
	IF1205LS-1W	77			5	200	
	IF1209LS-1W	79			9	100	
	IF1212LS-1W	81			12	83	
	IF1215LS-1W	78			15	67	
CE/RoHS	IF2405LS-1W	73	24	22.8-25.2	5	200	220
	IF2409LS-1W	71			9	100	
	IF2412LS-1W	83			12	83	
	IF2415LS-1W	73			15	67	

Dimensions

First Angle Proj



Pin	IF_LS-1W
1	Vin
2	GND
5	0V
7	+Vo

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
if input or output voltage >= 24V, T=7.05mm
Isolation: 3000Vdc
Weight: 2.3g

・All specifications are subject to change without notice

IF_S-2W Series

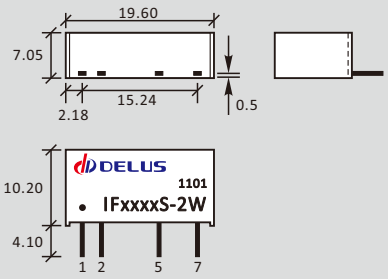
2w, fixed input, 3000Vdc isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**IF0505S-2W**	79	5	4.75-5.25	5	400	220
	IF0512S-2W	79			12	167	
CE/RoHS	**IF1205S-2W**	80	12	11.4-12.6	5	400	220
	IF1212S-2W	83			12	167	
CE/RoHS	**IF2405S-2W**	81	24	22.8-25.2	5	400	220
	IF2412S-2W	79			12	167	
CE/RoHS	**IF4805S-2W**	71	48	45.6-50.4	5	400	220
	IF4812S-2W	75			12	167	

Dimensions

First Angle Proj



Pin	IF_S-2W
1	**Vin**
2	**GND**
5	**0V**
7	**+Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 3000Vdc
Weight: 2.4g

・All specifications are subject to change without notice

File Release Notes

DBN-201 Technical Data Sheet Version

No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Change document version definition
3			
4			
5			

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

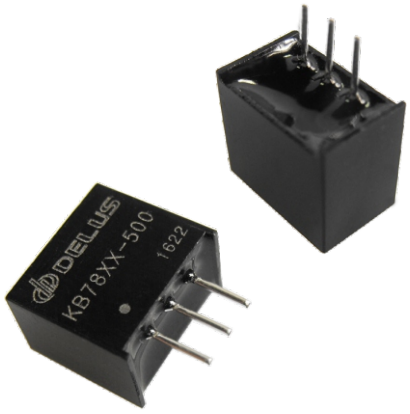
Delus Guangzhou Electronic Technology CO.,LTD
Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn

KB78xx-500 Series

Features

- Operating temperature: -40 to +85℃
- 4.75-32Vdc ultra wide input voltage range
- 3.3/5/9/12/15Vdc multiple output
- Output current up to 500mA
- Efficiency up to 96%
- Support negative voltage output
- Pin-compatible LM78xx three-terminal linear regulators
- Utra-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

CE RoHS

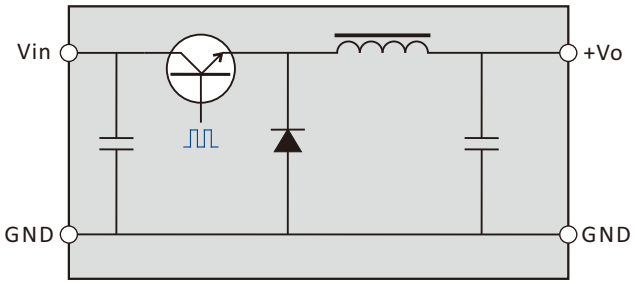


EMI | High Power Density | SCP | OTP

General Description

KB78xx-500 series is a new generation of high efficiency switching regulator, which is a ideal substitute for the traditional LM78xx series linear three terminal voltage regulator. The efficiency is up to 96%, it means that very little energy is wasted and the heat is low, so there is no need for any heat sinks with their additional space and costs. The series support negative output. They are widely used in industrial control, instrumentation, and electric power applications.

Functional Diagram



EMC Solution-Recommended Circuit

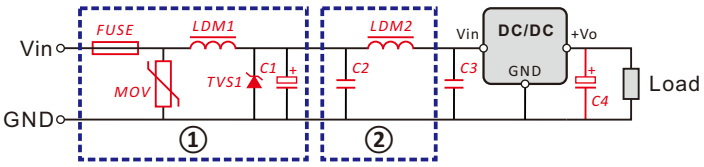


Fig.1

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

Parameter Description	
Component	Specification
FUSE	according to actual current
MOV	10D560
LDM1	82uH
TVS1	SMCJ36A
C1	120uF/50V
C2	4.7uF/50V
LDM2	33uH

・All specifications are subject to change without notice

KB78xx-500 Series

500mA, wide input, non-isolated & regulated single output dc-dc converter

Parameter Specification

Item	Test Conditions	Min	Typ	Max	Units
Output Current	Operating temp curve range			500	mA
Load Regulation	10-100% load, nominal input			±0.4	%
Line Regulation	100% load, input low to high			±0.2	
Output Voltage Accuracy			±1	±3	
Switching Frequency		280	330	450	KHz
Ripple & Noise	DC-20MHz bandwidth		10	50	mVp-p
Temperature Drift	100% load, nominal input			0.03	%/℃
Short Circuit Protection		Continuous, Self-Recovery			
Overheat Protection	IC built-in		150		℃
Quiescent Current	no load			3	mA
MTBF	MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug		Unavailable			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	More see on derating cruve	-40		+85	℃
Lead Temperature	1.5mm from case for 10 seconds			+260	
Storage Temperature		-50		+130	
Storage Humidity				95	%
Weight			2.0		g
Case Material		Black Plastic (UL94V-0)			

Product Program

Certificate	Model	Input Voltage [Vdc] Nominal	Input Voltage [Vdc] Range	Output Voltage [Vdc]	Output Current [mA]	Eff [%] Vin (min)	Eff [%] Vin (max)	Max Capacitive Load [uF]
CE/RoHS	KB7803-500	24	4.75～28	3.3	500	90	80	680
		12	4.75～25	-3.3	-400	74	78	470
	KB7805-500	24	6.5～32	5	500	93	84	680
		12	6.5～27	-5	-400	78	83	470
	KB7809-500	24	11～32	9	500	95	91	680
		12	7～23	-9	-200	85	86	470
	KB7812-500	24	15～32	12	500	95	92	680
		12	7～20	-12	-200	83	87	330
	KB7815-500	24	18～32	15	500	96	93	470
		12	7～17	-15	-200	81	87	330

Dimensions

First Angle Proj

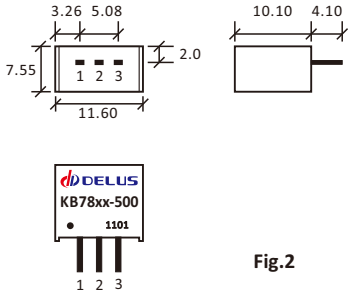


Fig.2

Pin	Positive	Negative
1	Vin	Vin
2	GND	-Vo
3	+Vo	GND

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

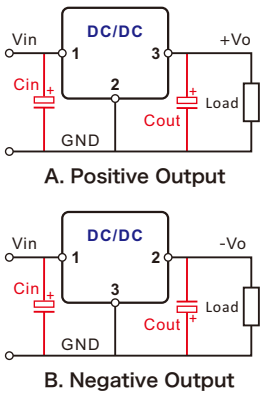
Application Note

1. Typical Application Circuit

All products of this series have tested according to Fig.3(A) before delivery (but no external Cin and Cout capacitors).

In general applications, KB78xx-500 series products can operate steadily and reliably without any external filter. Under condition of full load, full range of products, the maximum input ripple does not exceed 300mVp-p, and the maximum output ripple is not more than 50mVp-p (typical values 10mVp-p). There is no need for external filter capacitors in normal usage. If you want to further reduce the ripple, please connect a external filter circuit at the inputs and outputs(as the figure below). Recommended values of external capacitors please see the following table.

If the input voltage exceeds 30V, external capacitors must be connect to inputs to protect the module from voltage spike.



Capacitor Values Recommended

Vout	Cout
3.3V	22uF
5V	22uF
9V	10uF
12V	10uF
15V	10uF
Cin:10-100uF	

Fig.3

2. Input polarity protection

The series product has no positive & negative reverse polarity protection, and the solution is that a diode connects to input in series.

3. On derating

When the environmental temperature exceeds 70℃, the module should be derating used according to the following figure.

Temperature Derating Curve

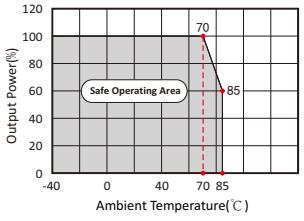


Fig.4

4. The series product cannot be used in parallel and hot-swappable.

・All specifications are subject to change without notice

File Release Notes

DBN-301 Technical Data Sheet Version

No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Fixed bug and change document version definition
3			
4			
5			

1. All data in addition to particular things, are Ta = 25℃, 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>>;
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Delus Guangzhou Electronic Technology CO.,LTD
Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn

KB78xx-1000 Series

Features

- Operating temperature: -40 to +85℃
- 4.75-32Vdc ultra wide input voltage range
- 3.3/5/9/12/15Vdc multiple output
- Output current up to 1000mA
- Efficiency up to 97%
- Support negative voltage output
- Pin-compatible LM78xx three-terminal linear regulators
- 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

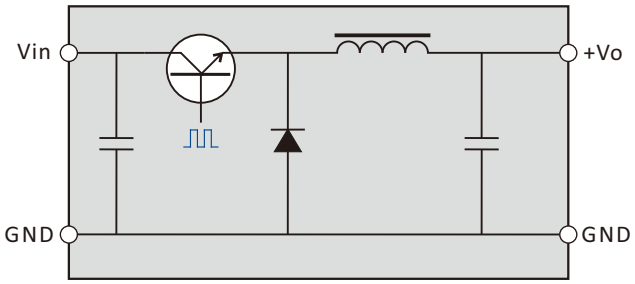
CE RoHS

EMI | High Power Density | SCP | OTP

General Description

KB78xx-1000 series is a new generation of high efficiency switching regulator, which is a ideal substitute for the traditional LM78xx series linear three terminal voltage regulator. The efficiency is up to 97%, it means that very little energy is wasted and the heat is low, so there is no need for any heat sinks with their additional space and costs. The series support negative output. They are widely used in industrial control, instrumentation, and electric power applications.

Functional Diagram



EMC Solution-Recommended Circuit

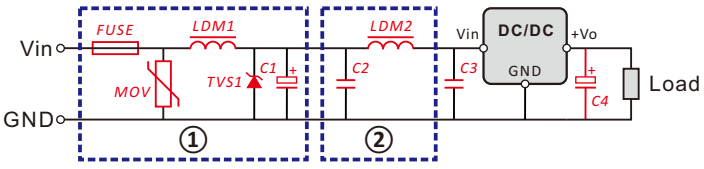


Fig.1

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

Parameter Description	
Component	Specification
FUSE	according to actual current
MOV	10D560
LDM1	82uH
TVS1	SMCJ36A
C1	120uF/50V
C2	4.7uF/50V
LDM2	12uH

・All specifications are subject to change without notice

KB78xx-1000 Series

1000mA, wide input, non-isolated & regulated single output dc-dc converter

Parameter Specification

Item	Test Conditions	Min	Typ	Max	Units
Output Current	Operating temp curve range			1000	mA
Load Regulation	10-100% load, nominal input			±0.4	%
Line Regulation	100% load, input low to high			±0.2	
Output Voltage Accuracy			±1	±3	
Switching Frequency		280	330	450	KHz
Ripple & Noise	DC-20MHz bandwidth		10	50	mVp-p
Temperature Drift	100% load, nominal input			0.03	%/℃
Short Circuit Protection		Continuous, Self-Recovery			
Overheat Protection	IC built-in		150		℃
Quiescent Current	no load			3	mA
MTBF	MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug		Unavailable			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	More see on derating cruve	-40		+85	℃
Lead Temperature	1.5mm from case for 10 seconds			+260	
Storage Temperature		-50		+130	
Storage Humidity				95	%
Weight			3.8		g
Case Material		Black Plastic (UL94V-0)			

Product Program

Certificate	Model	Input Voltage [Vdc] Nominal	Input Voltage [Vdc] Range	Output Voltage [Vdc]	Output Current [mA]	Eff [%] Vin (min)	Eff [%] Vin (max)	Max Capacitive Load [uF]
CE/RoHS	KB7803-1000	24	4.75～28	3.3	1000	90	83	680
		12	4.75～25	-3.3	-500	74	78	470
	KB7805-1000	24	6.5～32	5	1000	93	88	680
		12	6.5～27	-5	-500	86	82	470
	KB7809-1000	24	12～32	9	1000	95	93	680
		12	7～23	-9	-500	85	86	470
	KB7812-1000	24	16～32	12	1000	95	94	680
		12	7～20	-12	-300	83	87	330
	KB7815-1000	24	20～32	15	1000	97	94	470
		12	7～17	-15	-300	81	87	330

Dimensions

First Angle Proj

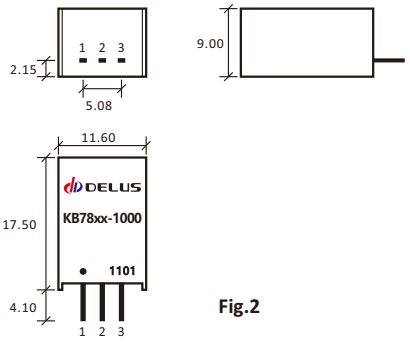


Fig.2

Pin	Positive	Negative
1	Vin	Vin
2	GND	-Vo
3	+Vo	GND

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

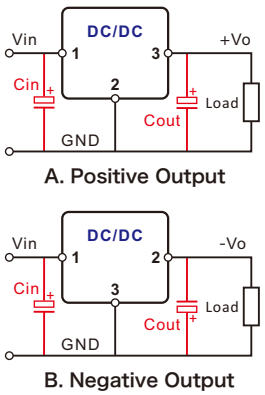
Application Note

1. Typical Application Circuit

All products of this series have tested according to Fig.3(A) before delivery (but no external Cin and Cout capacitors).

In general applications, KB78xx-1000 series products can operate steadily and reliably without any external filter. Under condition of full load, full range of products, the maximum input ripple does not exceed 300mVp-p, and the maximum output ripple is not more than 50mVp-p (typical values 10mVp-p). There is no need for external filter capacitors in normal usage. If you want to further reduce the ripple, please connect a external filter circuit at the inputs and outputs(as the figure below). Recommended values of external capacitors please see the following table.

If the input voltage exceeds 30V, external capacitors must be connect to inputs to protect the module from voltage spike.



Capacitor Values Recommended

Vout	Cout
3.3V	22uF
5V	22uF
9V	10uF
12V	10uF
15V	10uF
Cin:10-100uF	

Fig.3

2. Input polarity protection

The series product has no positive & negative reverse polarity protection, and the solution is that a diode connects to input in series.

3. On derating

When the environmental temperature exceeds 70℃, the module should be derating used according to the following figure.

Temperature Derating Curve

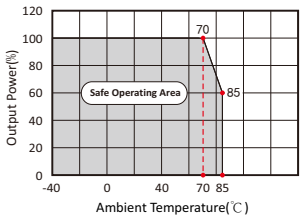


Fig.4

4. The series product cannot be used in parallel and hot-swappable.

・All specifications are subject to change without notice

File Release Notes

DBN-302 Technical Data Sheet Version

No.	Version	Date	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Fixed bug and change document version definition
3			
4			
5			

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

・All specifications are subject to change without notice

W_CS-1W5/3W Series

Features

- Operating temperature: -40 to +85℃
- 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 86%
- 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

CE RoHS

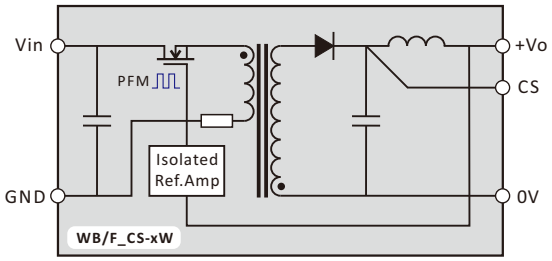
EMI | 1500 Vdc | 3000 Vdc | High Power Density | OCP | 4:1 2:1

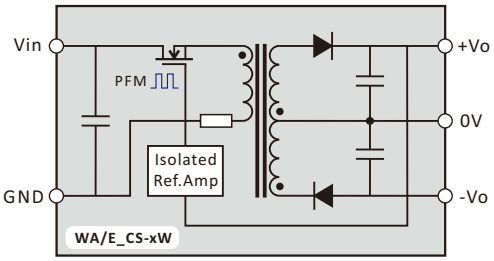
General Description

W_CS series dc/dc converter is wide voltage range. It has a relatively compact SIP package and high power density can help user to save board space. The 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, communication system power supply, etc. It is especially suitable for the application where input range is wide and isolation between input and output is necessary.

Functional Diagram





EMC Solution-Recommended Circuit

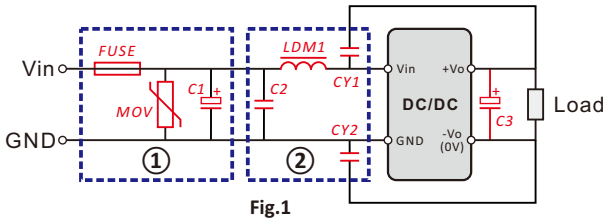


Fig.1

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.2			

・All specifications are subject to change without notice

W_CS-1W5 & W_CS-3W Series

1.5w/3w, wide input, isolated & regulated dual/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	
Input Filter		"C" filter			
Input Polarity Protection		unavailable			
Input control (CTRL)	ON	open or high impedance			
	OFF	high level (sink<10mA)			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power	CS-1W5	Ta=-40-+85℃	0.15		1.5	W
	CS-3W		0.3		3	
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	
Balance of Vout		Dual output, balance load		±0.8	±2	
Ripple & Noise		DC-20MHz bandwidth		40	100	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	WA/B	Tested for 60S and 1mA max	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℃ derating	-45		+85	℃
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℃	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

As the power module start, a impulse current will formed, so please ensure that the power supply is sufficient to cope with the current. In general, the impulse current will be 1.6 times typical input current in consideration.

2. Typical application

All DC/DC converters of this series are tested according to the recommended circuit before delivery (see Fig.2, but without external capacitor Cin & Cout).

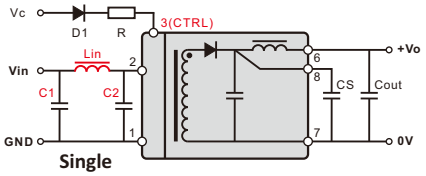
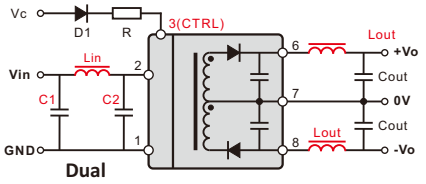


Fig.2



C1, C2	Vout	CS	Cout	Lin, Lout
C1: 10-100uF C2: 2.2-47uF	3.3V	47uF	47uF	Lin: 4.7-12uF Lout: 2.2-10uH
	5V	22uF	22uF	
	9V	22uF	22uF	
	12V	10uF	10uF	
	15V	10uF	10uF	
	24V	4.7uF	4.7uF	
If dual output, Cout value reduce half				

3. CS Pin

CS pin is a terminal of the connective point of main filter capacitor in DC/DC converter (connect to capacitor cathode). Connecting a low ESR capacitor between the terminal and pin7 can improve the output ripple.

4. CTRL Pin

CTRL pin provides an external control. The module is normal operation when this pin is not connected. If the pin is connected to high level the module will be close. Please refer to Recommended Circuit. Sink current on resistor R is no more than 10mA, value of R can be calculated from (sink-current: 5~10mA):

$$R \geq \frac{VC-VD1-0.7}{10} (k\Omega)$$

4. On derating

Environmental temperature exceeds 70℃ the module must be derating used (see Fig.3).

Temperature Derating Curve

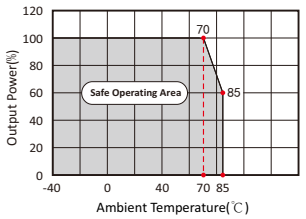


Fig.3

・All specifications are subject to change without notice

WA_CS-1W5 & WB_CS-1W5 Series

1.5w, wide input, 1500Vdc isolated & regulated output dc-dc converter

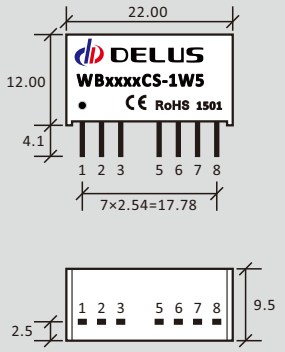
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**WA1205CS-1W5**	79	12	9-18	±5	±150	470
	WA1209CS-1W5	83			±9	±83	220
	WA1212CS-1W5	82			±12	±63	100
	WA1215CS-1W5	82			±15	±50	100
CE/RoHS	**WA2405CS-1W5**	79	24	18-36	±5	±150	470
	WA2409CS-1W5	80			±9	±83	220
	WA2412CS-1W5	81			±12	±63	100
	WA2415CS-1W5	82			±15	±50	100
CE/RoHS	**WA4805CS-1W5**	76	48	36-72	±5	±150	470
	WA4809CS-1W5	79			±9	±83	220
	WA4812CS-1W5	82			±12	±63	100
	WA4815CS-1W5	82			±15	±50	100
CE/RoHS	**WB0515CS-1W5**	77	5	4.5-9	15	100	220
CE/RoHS	**WB1203CS-1W5**	75	12	9-18	3.3	455	1800
	WB1205CS-1W5	75			5	300	1000
	WB1209CS-1W5	79			9	167	680
	WB1212CS-1W5	83			12	125	470
	WB1215CS-1W5	79			15	100	220
	WB1224CS-1W5	77			24	63	100
CE/RoHS	**WB2403CS-1W5**	76	24	18-36 (9-36)	3.3	455	1800
	PWB2405CS-1W5	79			5	300	1000
	WB2409CS-1W5	81			9	167	680
	WB2412CS-1W5	82			12	125	470
	WB2415CS-1W5	82			15	100	220
	WB2424CS-1W5	80			24	63	100
CE/RoHS	**WB4803CS-1W5**	76	48	36-72 (18-72)	3.3	455	1800
	WB4805CS-1W5	79			5	300	1000
	WB4809CS-1W5	80			9	167	680
	WB4812CS-1W5	85			12	125	470
	WB4815CS-1W5	86			15	100	220
	WB4824CS-1W5	84			24	63	100

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

Dimensions

First Angle Proj



Pin	Single	Dual
1	**GND**	**GND**
2	**Vin**	**Vin**
3	**CTRL**	**CTRL**
5	**NC**	**NC**
6	**+Vo**	**+Vo**
7	**0V**	**0V**
8	**CS**	**-Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 4.6g

・All specifications are subject to change without notice

WA_CS-3W & WB_CS-3W Series

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

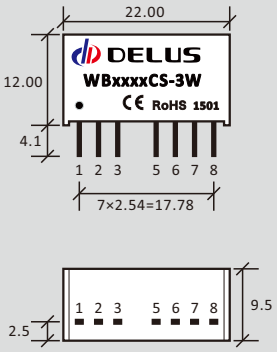
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	WA1205CS-3W	77	12	9-18	±5	±300	470
	WA1209CS-3W	79			±9	±167	220
	WA1212CS-3W	80			±12	±125	100
	WA1215CS-3W	80			±15	±100	100
CE/RoHS	WA2405CS-3W	79	24	18-36 (9-36)	±5	±300	470
	PWA2409CS-3W	83			±9	±167	220
	PWA2412CS-3W	84			±12	±125	100
	WA2415CS-3W	85			±15	±100	100
CE/RoHS	WA4805CS-3W	79	48	36-72	±5	±300	470
	WA4809CS-3W	80			±9	±167	220
	WA4812CS-3W	83			±12	±125	100
	WA4815CS-3W	85			±15	±100	100
CE/RoHS	WB1205CS-3W	76	12	9-18	5	600	1000
	WB1209CS-3W	79			9	333	680
	WB1212CS-3W	80			12	250	470
	WB1215CS-3W	83			15	200	220
	WB1224CS-3W	81			24	125	100
CE/RoHS	PWB2405CS-3W	80	24	18-36 (9-36)	5	600	1000
	WB2409CS-3W	80			9	333	680
	WB2412CS-3W	84			12	250	470
	WB2415CS-3W	85			15	200	220
	WB2424CS-3W	83			24	125	100
CE/RoHS	PWB4803CS-3W	77	48	36-75 (18-75)	3.3	700	1000
	WB4805CS-3W	77			5	600	1000
	WB4809CS-3W	79			9	333	680
	WB4812CS-3W	84			12	250	470
	WB4815CS-3W	84			15	200	220
	WB4824CS-3W	82			24	125	100

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

Dimensions

First Angle Proj



Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	0V	0V
8	CS	-Vo

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 4.6g

· All specifications are subject to change without notice

WE_CS-1W5 & WF_CS-1W5 Series

1.5w, wide input, 3000Vdc isolated & regulated output dc-dc converter

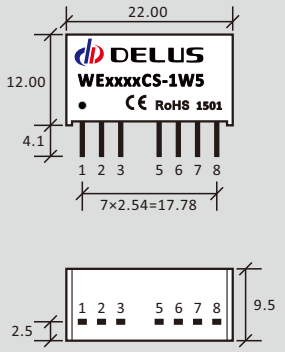
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**WE1205CS-1W5**	79	12	9-18	±5	±150	470
	WE1209CS-1W5	83			±9	±83	220
	WE1212CS-1W5	82			±12	±63	100
	WE1215CS-1W5	82			±15	±50	100
CE/RoHS	**WE2405CS-1W5**	79	24	18-36	±5	±150	470
	WE2409CS-1W5	80			±9	±83	220
	WE2412CS-1W5	81			±12	±63	100
	WE2415CS-1W5	82			±15	±50	100
CE/RoHS	**WE4805CS-1W5**	76	48	36-72	±5	±150	470
	WE4809CS-1W5	79			±9	±83	220
	WE4812CS-1W5	82			±12	±63	100
	WE4815CS-1W5	82			±15	±50	100
CE/RoHS	**WF0515CS-1W5**	77	5	4.5-9	15	100	220
CE/RoHS	**WF1203CS-1W5**	75	12	9-18	3.3	455	1800
	WF1205CS-1W5	75			5	300	1000
	WF1209CS-1W5	79			9	167	680
	WF1212CS-1W5	83			12	125	470
	WF1215CS-1W5	79			15	100	220
	WF1224CS-1W5	77			24	63	100
CE/RoHS	**WF2403CS-1W5**	76	24	18-36 (9-36)	3.3	455	1800
	PWF2405CS-1W5	79			5	300	1000
	WF2409CS-1W5	81			9	167	680
	WF2412CS-1W5	82			12	125	470
	WF2415CS-1W5	82			15	100	220
	WF2424CS-1W5	80			24	63	100
CE/RoHS	**WF4803CS-1W5**	76	48	36-72 (18-72)	3.3	455	1800
	WF4805CS-1W5	79			5	300	1000
	WF4809CS-1W5	80			9	167	680
	WF4812CS-1W5	85			12	125	470
	WF4815CS-1W5	86			15	100	220
	WF4824CS-1W5	84			24	63	100

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

Dimensions

First Angle Proj



Pin	Single	Dual
1	**GND**	**GND**
2	**Vin**	**Vin**
3	**CTRL**	**CTRL**
5	**NC**	**NC**
6	**+Vo**	**+Vo**
7	**0V**	**0V**
8	**CS**	**-Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 3000Vdc
Weight: 4.6g

・All specifications are subject to change without notice

WE_CS-3W & WF_CS-3W Series

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

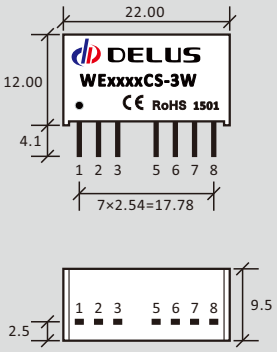
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	WE1205CS-3W	77	12	9-18	±5	±300	470
	WE1209CS-3W	79			±9	±167	220
	WE1212CS-3W	80			±12	±125	100
	WE1215CS-3W	80			±15	±100	100
CE/RoHS	WE2405CS-3W	79	24	18-36 (9-36)	±5	±300	470
	PWE2409CS-3W	83			±9	±167	220
	PWE2412CS-3W	84			±12	±125	100
	WE2415CS-3W	85			±15	±100	100
CE/RoHS	WE4805CS-3W	79	48	36-72	±5	±300	470
	WE4809CS-3W	80			±9	±167	220
	WE4812CS-3W	83			±12	±125	100
	WE4815CS-3W	85			±15	±100	100
CE/RoHS	WF1205CS-3W	76	12	9-18	5	600	1000
	WF1209CS-3W	79			9	333	680
	WF1212CS-3W	80			12	250	470
	WF1215CS-3W	83			15	200	220
	WF1224CS-3W	81			24	125	100
CE/RoHS	PWF2405CS-3W	80	24	18-36 (9-36)	5	600	1000
	WF2409CS-3W	80			9	333	680
	WF2412CS-3W	84			12	250	470
	WF2415CS-3W	85			15	200	220
	WF2424CS-3W	83			24	125	100
CE/RoHS	WF4805CS-3W	77	48	36-72	5	600	1000
	WF4809CS-3W	79			9	333	680
	WF4812CS-3W	84			12	250	470
	WF4815CS-3W	84			15	200	220
	WF4824CS-3W	82			24	125	100

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

Dimensions

First Angle Proj



Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	0V	0V
8	CS	-Vo

Note:
All size units **mm**,
Diameter of all terminal 0.5mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 3000Vdc
Weight: 4.6g

・All specifications are subject to change without notice

File Release Notes

DBN-401 Technical Data Sheet Version

No.	Version	Data	Description
1	V0	2011/11/01	First release
2	A/0	2016/07/01	Change datasheet document version
3	A/1	2022/06/17	Add new product model
4			
5			

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

・All specifications are subject to change without notice

W(V)-8W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc input
- 5V/9V/12V/15V/24V/±5V/±9V/±12V/±15V output
- Efficiency up to 86%
- 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

CE RoHS

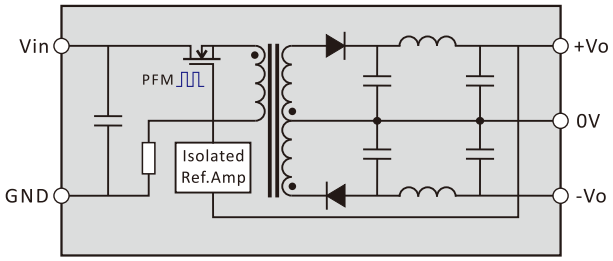
EMI | 1500 Vdc | 3000 Vdc | High Power Density | SCP | 4:1 2:1

General Description

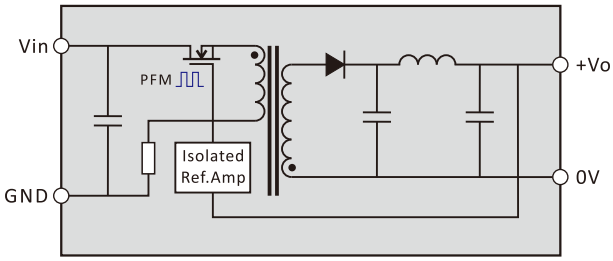
W(V)-8W series power converter compact, high power density, can save valuable board space to reduce product volume. It has the characteristics of wide input voltage range, low starting current, good load characteristics and minimum noise characteristics.

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

Functional Diagram



Dual Series



Single Series

EMC Solution-Recommended Circuit

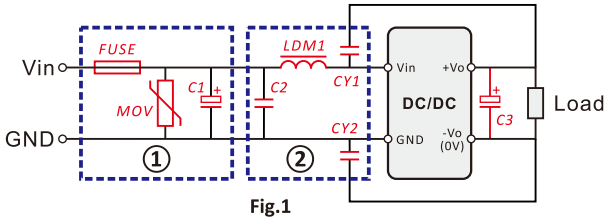


Fig.1

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:12V	Vin:24V	Vin:48V
FUSE	Choose according to actual input current		
MOV	S14K17	S14K35	S14K60
C1	680uF/25V	330uF/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		

・All specifications are subject to change without notice

W-8W & V-8W Series

8w, 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	
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Ta=-40-+65℃			8	W
Line Regulation		100% load, input low to high		±0.1	±0.3	%
Load Regulation		10-100% load, nominal input		±0.3	±0.5	
Output Voltage Accuracy	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±1	±3	
Ripple & Noise		DC-20MHz bandwidth		30	80	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Hiccup, Continuous, Self-Recovery			
Output Filter			"∏" filter			

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

Common Specification

Item		Test Conditions	Min	Typ	Max	Units
Switching Frequency	PFM	100% load, input low to high	180		550	kHz
	PWM			330		
Operating Temperature		Ta>65℃ derating	-45		+85	℃
Case Temp Rise		100% load, nominal input		50		
Lead Temperature		1.5mm from case for 10 seconds			+300	
Storage Temperature			-50		+130	
Storage Humidity					95	%
MTBF		Using MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug			Unavailable			
Case Material			Aluminium Alloy			
Weight			12g			

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: Ip < 1.6 lin-max.

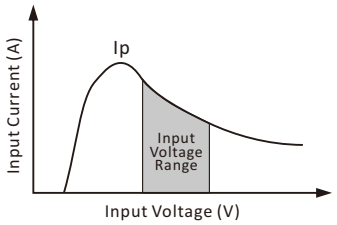
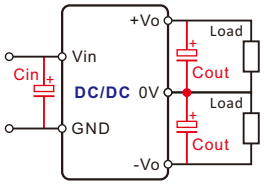


Fig.2

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).



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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 not larger than the max capacitive load of the product, avoid affect the product startup performance.

3. EMC solution-recommended circuit

The WA, WB and VB series products have a very good ripple and noise performance so that bare module meet the EN55022 Class B.

4. On derating

When the environmental temperature exceeds 65℃ the module must be derating used, please refer to derating curve (see Fig.4).

Temperature Derating Curve

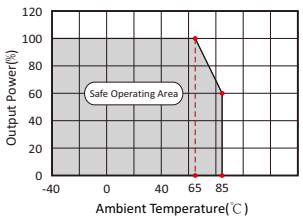


Fig.4

・All specifications are subject to change without notice

WA_P-8W & WB_P-8W & VB_P-8W Series

8w, wide input, isolated & regulated dual & single output dc-dc converter

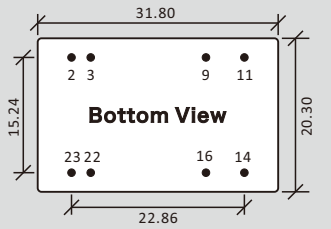
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
	WA1205P-8W*		12	9-18	±5	±800	
	WA1209P-8W*				±9	±444	
	WA1212P-8W*				±12	±333	
	WA1215P-8W*				±15	±267	
	WA1224P-8W*				±24	±167	
CE/RoHS	WA2405P-8W	80	24	18-36	±5	±800	470
	WA2409P-8W	81			±9	±444	220
	WA2412P-8W*				±12	±333	
	WA2415P-8W	83			±15	±267	100
	WA2424P-8W*				±24	±167	
	WA4805P-8W*		48	36-75	±5	±800	
	WA4809P-8W*				±9	±444	
	WA4812P-8W*				±12	±333	
	WA4815P-8W*				±15	±267	
	WA4824P-8W*				±24	±167	
CE/RoHS	WB1205P-8W	80	12	9-18	5	1600	1000
	WB1209P-8W*				9	889	
	WB1212P-8W*				12	667	
	WB1215P-8W*				15	533	
	WB1224P-8W	81			24	333	100
RoHS	VB1205P-8W	80			5	1600	1000
CE/RoHS	WB2405P-8W	81	24	18-36	5	1600	1000
	WB2409P-8W	85			9	889	680
	WB2412P-8W	86			12	667	470
	WB2415P-8W*				15	533	
	WB2424P-8W*				24	333	
RoHS	VB2405P-8W	83			5	1600	1000
	VB2409P-8W	86			9	889	680
CE/RoHS	WB4805P-8W	81	48	36-75	5	1600	1000
	WB4809P-8W*				9	889	
	WB4812P-8W	86			12	667	470
	WB4815P-8W	86			15	533	220
	WB4824P-8W*				24	333	

Note: * mean no producting

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: 12g

・All specifications are subject to change without notice

File Release Notes

DBN-402 Technical Data Sheet Version

No.	Version	Data	Description
1	V0	2011/11/01	First release
2	V1	2013/08/24	The third page error correction "-Vo(11) to-Vo(16)"
3	A/0	2016/07/01	Fixed an issue
4			
5			

1. All data in addition to particular things, are Ta = 25℃, 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.
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Delus Guangzhou Electronic Technology CO.,LTD
Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn

W(M)-3W Series

Features

- Operating temperature: -40 to +85℃
- 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

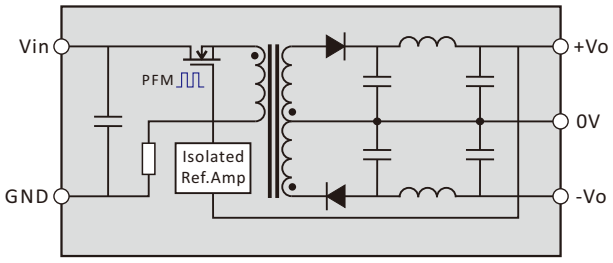
CE RoHS

EMI | 1500 Vdc | 3000 Vdc | High Power Density | SCP | 4:1 2:1

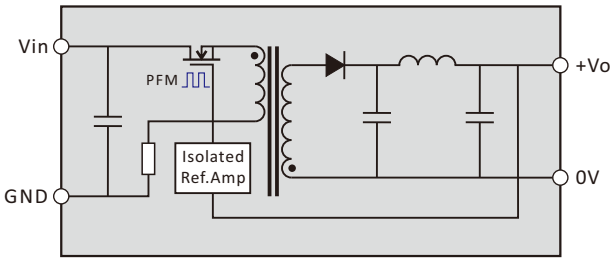
General Description

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.

Functional Diagram



Dual Series



Single Series

EMC Solution-Recommended Circuit

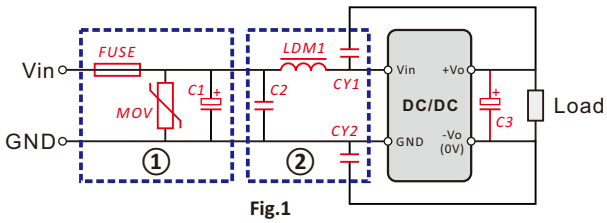


Fig.1

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			

・All specifications are subject to change without notice

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℃			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	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Ripple & Noise		DC-20MHz bandwidth		20	60	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	W(M)A/B/D	Tested for 60S and 1mA max	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℃ derating	-45		+85	℃
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℃	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: Ip < 1.6 lin-max.

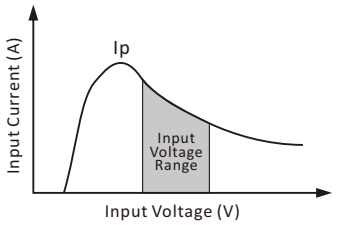
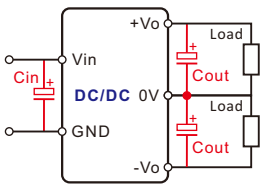


Fig.2

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).



Vin	Cin
5V	470uF
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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 WF 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℃ the module must be derating used, please refer to derating curve (see Fig.4).

Temperature Derating Curve

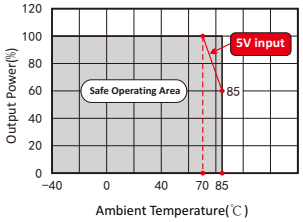


Fig.4

・All specifications are subject to change without notice

WA_P-3W & WB_P-3W Series

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

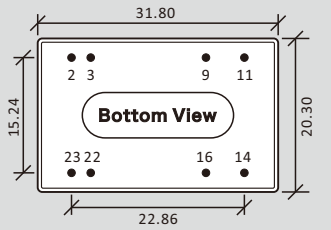
Product Program

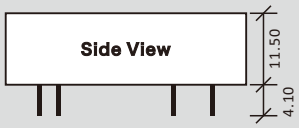
Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	WA0505P-3W	75	5	4.5-9	±5	±300	2200
	WA0509P-3W	77			±9	±167	1800
	WA0512P-3W	78			±12	±125	1800
	WA0515P-3W	79			±15	±100	1000
	WA0524P-3W	75			±24	±63	220
CE/RoHS	WA1205P-3W	82	12	9-18	±5	±300	2200
	WA1209P-3W	84			±9	±167	1800
	WA1212P-3W	86			±12	±125	1800
	WA1215P-3W	87			±15	±100	1000
	WA1224P-3W	82			±24	±63	220
CE/RoHS	PWA2405P-3W	85	24	18-36 (9-36)	±5	±300	2200
	PWA2409P-3W	85			±9	±167	1800
	PWA2412P-3W	85			±12	±125	1800
	PWA2415P-3W	89			±15	±100	1000
	PWA2424P-3W	84			±24	±63	220
CE/RoHS	PWA4805P-3W	82	48	36-75 (18-75)	±5	±300	2200
	PWA4809P-3W	84			±9	±167	1800
	PWA4812P-3W	89			±12	±125	1800
	PWA4815P-3W	86			±15	±100	1000
	PWA4824P-3W	84			±24	±63	220
CE/RoHS	WB0505P-3W	74	5	4.5-9	5	600	4700
	WB0509P-3W	78			9	333	2700
	WB0512P-3W	79			12	250	2200
	WB0515P-3W	79			15	200	1500
	WB0524P-3W	77			24	125	680
CE/RoHS	WB1205P-3W	82	12	9-18	5	600	4700
	WB1209P-3W	82			9	333	2700
	WB1212P-3W	85			12	250	2200
	WB1215P-3W	87			15	200	1500
	WB1224P-3W	85			24	125	680
CE/RoHS	PWB2405P-3W	83	24	18-36 (9-36)	5	600	4700
	PWB2409P-3W	86			9	333	2700
	PWB2412P-3W	88			12	250	2200
	PWB2415P-3W	89			15	200	1500
	PWB2424P-3W	86			24	125	680
CE/RoHS	PWB4803P-3W	78	48	36-75 (18-75)	3.3	700	4700
	PWB4805P-3W	82			5	600	4700
	PWB4809P-3W	85			9	333	2700
	PWB4812P-3W	89			12	250	2200
	PWB4815P-3W	86			15	200	1500
	PWB4824P-3W	84			24	125	680

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

・All specifications are subject to change without notice

WB_KP-3W Series

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

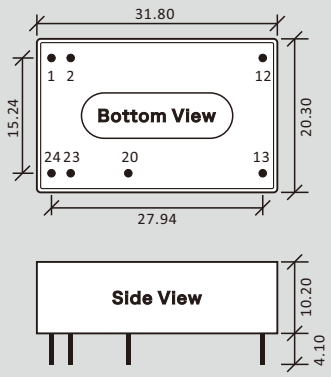
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			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	4700
	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

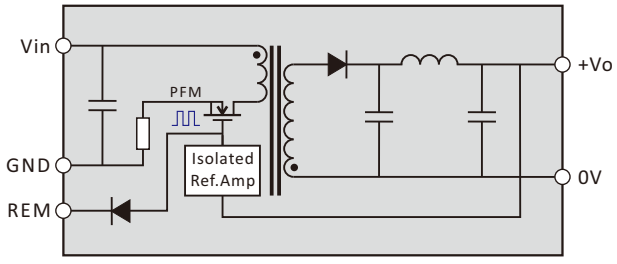
First Angle Proj



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



W_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.

· All specifications are subject to change without notice

WD_P-3W Series

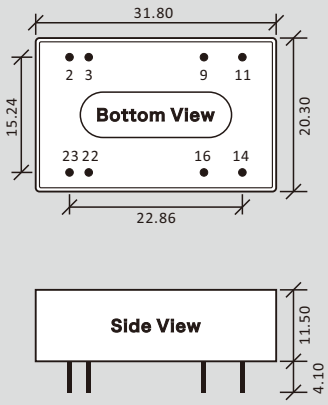
3w, wide input, 1500Vdc isolated & regulated twins output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
RoHS	**WD0505P-3W**	75	5	4.5-9	5/5	300/300	2200
	WD0512P-3W	78			12/12	125/125	1800
	WD0515P-3W	79			15/15	100/100	1000
	WD0524P-3W	75			24/24	63/63	220
RoHS	**WD1205P-3W**	82	12	9-18	5/5	300/300	2200
	WD126v5P-3W	82			6.5/6.5	230/230	2200
	WD1212P-3W	86			12/12	125/125	1800
	WD1215P-3W	87			15/15	100/100	1000
	WD1224P-3W	82			24/24	63/63	220
RoHS	**WD2405P-3W**	85	24	18-36	5/5	300/300	2200
	WD2412P-3W	85			12/12	125/125	1800
	WD2415P-3W	89			15/15	100/100	1000
	WD2424P-3W	84			24/24	63/63	220
RoHS	**WD4805P-3W**	82	48	36-75	5/5	300/300	2200
	WD4812P-3W	89			12/12	125/125	1800
	WD4815P-3W	86			15/15	100/100	1000
	WD4824P-3W	84			24/24	63/63	220

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

・All specifications are subject to change without notice

WE_P-3W & WF_P-3W Series

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

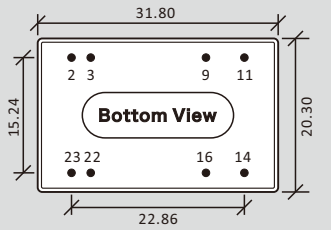
Product Program

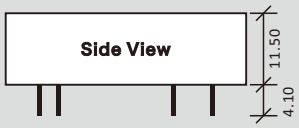
Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	WE0505P-3W	75	5	4.5-9	±5	±300	2200
	WE0509P-3W	77			±9	±167	1800
	WE0512P-3W	78			±12	±125	1800
	WE0515P-3W	79			±15	±100	1000
	WE0524P-3W	75			±24	±63	220
CE/RoHS	WE1205P-3W	82	12	9-18	±5	±300	2200
	WE1209P-3W	84			±9	±167	1800
	WE1212P-3W	86			±12	±125	1800
	WE1215P-3W	87			±15	±100	1000
	WE1224P-3W	82			±24	±63	220
CE/RoHS	PWE2405P-3W	85	24	18-36 (9-36)	±5	±300	2200
	PWE2409P-3W	85			±9	±167	1800
	PWE2412P-3W	85			±12	±125	1800
	PWE2415P-3W	89			±15	±100	1000
	PWE2424P-3W	84			±24	±63	220
CE/RoHS	PWE4805P-3W	82	48	36-75 (18-75)	±5	±300	2200
	PWE4809P-3W	84			±9	±167	1800
	PWE4812P-3W	89			±12	±125	1800
	PWE4815P-3W	86			±15	±100	1000
	PWE4824P-3W	84			±24	±63	220
CE/RoHS	WF0505P-3W	74	5	4.5-9	5	600	4700
	WF0509P-3W	78			9	333	2700
	WF0512P-3W	79			12	250	2200
	WF0515P-3W	79			15	200	1500
	WF0524P-3W	77			24	125	680
CE/RoHS	WF1205P-3W	82	12	9-18	5	600	4700
	WF1209P-3W	82			9	333	2700
	WF1212P-3W	85			12	250	2200
	WF1215P-3W	87			15	200	1500
	WF1224P-3W	85			24	125	680
CE/RoHS	PWF2405P-3W	83	24	18-36 (9-36)	5	600	4700
	PWF2409P-3W	86			9	333	2700
	PWF2412P-3W	88			12	250	2200
	PWF2415P-3W	89			15	200	1500
	PWF2424P-3W	86			24	125	680
CE/RoHS	PWF4805P-3W	85	48	36-75 (18-75)	5	600	4700
	PWF4809P-3W	85			9	333	2700
	PWF4812P-3W	89			12	250	2200
	PWF4815P-3W	86			15	200	1500
	PWF4824P-3W	84			24	125	680

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

· All specifications are subject to change without notice

MA_D-3W & MB_D-3W Series

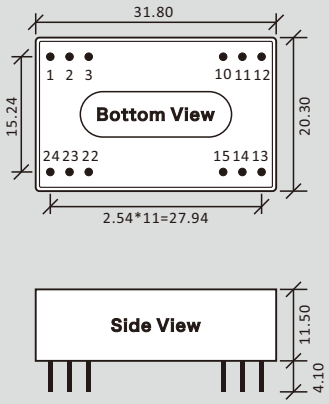
3w, wide input, 1500Vdc isolated & regulated dual/single output dc-dc converter

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

・All specifications are subject to change without notice

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℃, 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

・All specifications are subject to change without notice

WA/B/E/F-6W Series

Features

- Operating temperature: -40 to +85℃
- 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 25.4×25.4×11.5mm

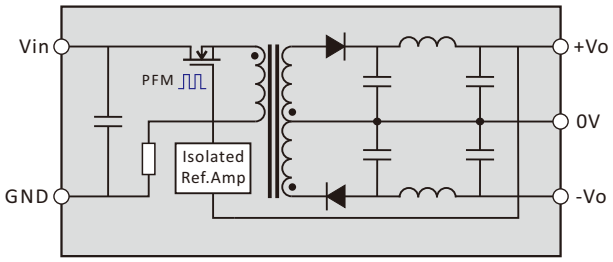
CE RoHS

EMI | 1500 Vdc | 3000 Vdc | High Power Density | SCP | 4:1 2:1

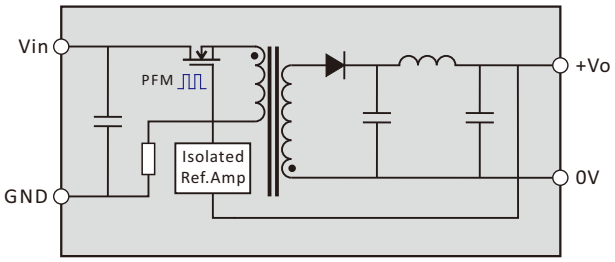
General Description

WA/B/E/F_P(D)-6W 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.

Functional Diagram



Dual Series



Single Series

EMC Solution-Recommended Circuit

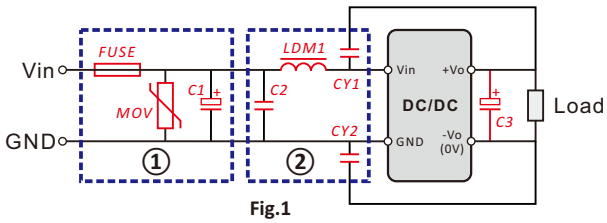


Fig.1

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

・All specifications are subject to change without notice

WA/B/E/F_P/D-6W Series

6w, 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	
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Ta=-40-+70℃			6	W
Line Regulation		100% load, input low to high		±0.1	±0.3	%
Load Regulation		10-100% load, nominal input		±0.3	±0.5	
Output Voltage Accuracy	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.5	±1.5	
Ripple & Noise		DC-20MHz bandwidth		30	60	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

Isolation Specifications

Item		Test Conditions	Min	Typ	Max	Units
Isolation Voltage	WA/WB	Tested for 60S and 1mA max	1500			Vdc
	WE/WF		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℃ derating	-45		+85	℃
Case Temp Rise	100% load, nominal input		40		
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug		Unavailable			
Case Material		Aluminium Alloy			

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: Ip < 1.6 lin-max.

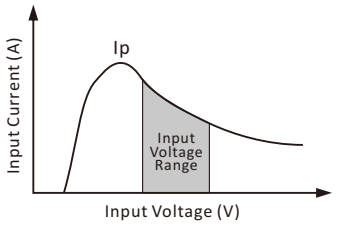
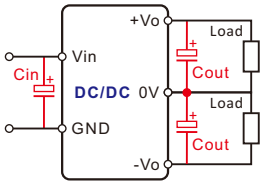


Fig.2

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).



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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 not larger than the max capacitive load of the product, avoid affect the product startup performance.

3. EMC solution-recommended circuit

The WA and WB series products have a very good ripple and noise performance so that bare module meet the EN55022 Class B.

The WE and WF 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℃ the module must be derating used, please refer to derating curve (see Fig.4).

Temperature Derating Curve

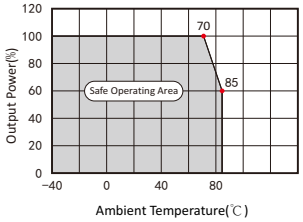


Fig.4

・All specifications are subject to change without notice

WA_D-6W & WB_D-6W Series

6w, wide input, isolated & regulated dual/single output dc-dc converter

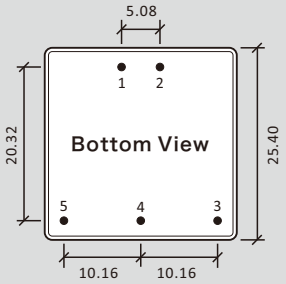
Product Program

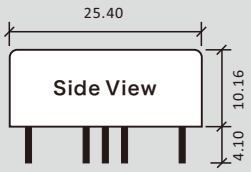
Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**WA1205D-6W**	80	12	9-18	±5	±600	470
	WA1209D-6W	83			±9	±333	220
	WA1212D-6W	85			±12	±250	100
	WA1215D-6W	86			±15	±200	100
CE/RoHS	**PWA2405D-6W**	82	24	18-36 (9-36)	±5	±600	470
	PWA2409D-6W	88			±9	±333	220
	PWA2412D-6W	86			±12	±250	100
	PWA2415D-6W	88			±15	±200	100
CE/RoHS	**PWA4805D-6W**	83	48	36-75 (18-75)	±5	±600	470
	PWA4809D-6W	89			±9	±333	220
	PWA4812D-6W	87			±12	±250	100
	PWA4815D-6W	88			±15	±200	100
CE/RoHS	**WB1205D-6W**	80	12	9-18	5	1200	1000
	WB1209D-6W	82			9	667	680
	WB1212D-6W	84			12	500	470
	WB1215D-6W	86			15	400	220
	WB1224D-6W	84			24	250	100
CE/RoHS	**PWB244v2D-6W**	80	24	18-36 (9-36)	4.2	1430	1000
	PWB2405D-6W	82			5	1200	1000
	PWB2409D-6W	86			9	667	680
	PWB2412D-6W	86			12	500	470
	PWB2415D-6W	88			15	400	220
	PWB2424D-6W	87			24	250	100
CE/RoHS	**PWB4805D-6W**	83	48	36-75 (18-75)	5	1200	1000
	PWB4809D-6W	85			9	667	680
	PWB4812D-6W	87			12	500	470
	PWB4815D-6W	88			15	400	220
	PWB4824D-6W	87			24	250	100

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

Dimensions

First Angle Proj





Pin	Single	Dual
1	**GND**	**GND**
2	**Vin**	**Vin**
3	**+Vo**	**+Vo**
4	**no Pin**	**0V**
5	**0V**	**-Vo**

Note:
All size units **mm**,
Diameter of all terminal 0.8mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 11g

· All specifications are subject to change without notice

WA_P-6W & WB_P-6W Series

6w, wide input, isolated & regulated dual/single output dc-dc converter

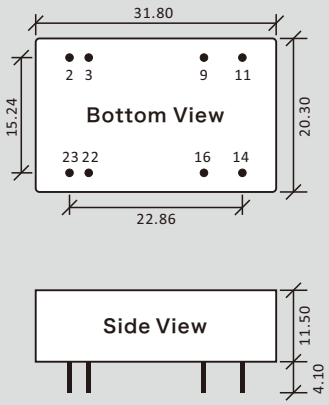
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	WA1205P-6W	80	12	9-18	±5	±600	470
	WA1209P-6W	83			±9	±333	220
	WA1212P-6W	85			±12	±250	100
	WA1215P-6W	86			±15	±200	100
	WA1224P-6W	85			±24	±125	100
CE/RoHS	PWA2405P-6W	82	24	18-36 (9-36)	±5	±600	470
	PWA2409P-6W	88			±9	±333	220
	PWA2412P-6W	86			±12	±250	100
	PWA2415P-6W	88			±15	±200	100
	PWA2424P-6W	86			±24	±125	100
CE/RoHS	PWA4805P-6W	83	48	36-75 (18-75)	±5	±600	470
	PWA4809P-6W	89			±9	±333	220
	PWA4812P-6W	87			±12	±250	100
	PWA4815P-6W	88			±15	±200	100
	PWA4824P-6W	87			±24	±125	100
CE/RoHS	WB1205P-6W	80	12	9-18	5	1200	1000
	WB1209P-6W	82			9	667	680
	WB1212P-6W	84			12	500	470
	WB1215P-6W	86			15	400	220
	WB1224P-6W	84			24	250	100
CE/RoHS	PWB244v2P-6W	80	24	18-36 (9-36)	4.2	1430	1000
	PWB2405P-6W	82			5	1200	1000
	PWB2409P-6W	86			9	667	680
	PWB2412P-6W	86			12	500	470
	PWB2415P-6W	88			15	400	220
	PWB2424P-6W	87			24	250	100
CE/RoHS	PWB4805P-6W	83	48	36-75 (18-75)	5	1200	1000
	PWB4809P-6W	85			9	667	680
	PWB4812P-6W	87			12	500	470
	PWB4815P-6W	88			15	400	220
	PWB4824P-6W	87			24	250	100

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 0.8mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 1500Vdc
Weight: 11g

・All specifications are subject to change without notice

WE_P-6W & WF_P-6W Series

6w, wide input, isolated & regulated dual/single output dc-dc converter

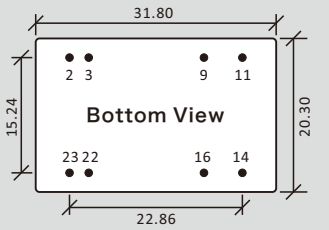
Product Program

Certificate	Model	Eff (%)	Input		Output		
			Voltage(Vdc)		Vdc	mA	Max Capacitive Load (uF)
			Nominal	Range	Nominal	Max	
CE/RoHS	**WE1205P-6W**	80	12	9-18	±5	±600	470
	WE1209P-6W	83			±9	±333	220
	WE1212P-6W	85			±12	±250	100
	WE1215P-6W	86			±15	±200	100
	WE1224P-6W	85			±24	±125	100
CE/RoHS	**PWE2405P-6W**	82	24	18-36 (9-36)	±5	±600	470
	PWE2409P-6W	88			±9	±333	220
	PWE2412P-6W	86			±12	±250	100
	PWE2415P-6W	88			±15	±200	100
	PWE2424P-6W	86			±24	±125	100
CE/RoHS	**PWE4805P-6W**	83	48	36-75 (18-75)	±5	±600	470
	PWE4809P-6W	89			±9	±333	220
	PWE4812P-6W	87			±12	±250	100
	PWE4815P-6W	88			±15	±200	100
	PWE4824P-6W	87			±24	±125	100
CE/RoHS	**WF1205P-6W**	80	12	9-18	5	1200	1000
	WF1209P-6W	82			9	667	680
	WF1212P-6W	84			12	500	470
	WF1215P-6W	86			15	400	220
	WF1224P-6W	84			24	250	100
CE/RoHS	**PWF2405P-6W**	82	24	18-36 (9-36)	5	1200	1000
	PWF2409P-6W	86			9	667	680
	PWF2412P-6W	86			12	500	470
	PWF2415P-6W	88			15	400	220
	PWF2424P-6W	87			24	250	100
CE/RoHS	**PWF4805P-6W**	83	48	36-75 (18-75)	5	1200	1000
	PWF4809P-6W	85			9	667	680
	PWF4812P-6W	87			12	500	470
	PWF4815P-6W	88			15	400	220
	PWF4824P-6W	87			24	250	100

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 0.8mm;
Distance between all adjacent terminal 2.54mm;
Isolation: 3000Vdc
Weight: 11g

· All specifications are subject to change without notice

File Release Notes

DBN-404 Technical Data Sheet Version

No.	Version	Data	Description
1	V0	2011/11/01	First release
2	V1	2013/08/24	The fifth page error correction "-Vo(11) to-Vo(16)"
3	A/0	2016/07/01	Fixed bug
4	A/1	2017/10/19	Increase product model “PWB244v2P-6W” “PWB244v2D-6W”
5			

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

V_D-10W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc input
- 5/9/12/15/24/±5/±9/±12/±15Vdc output
- Efficiency up to 89%
- Ultra low noise & ripple
- EMC meet EN55022 Class B
- 100% burn-in
- Six-sided continuous shield
- Continuous short circuit protection
- RoHS/CE/ISO multiple compliance
- With 3 years warranty

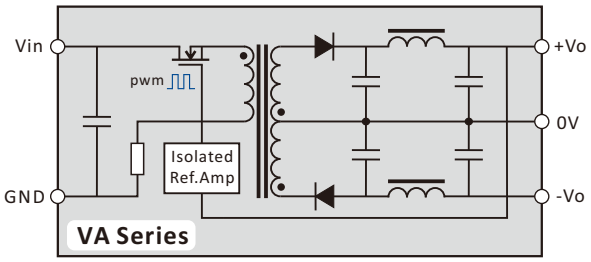
RoHS

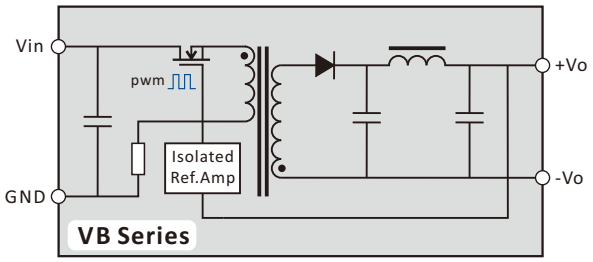
EMI | 1500 Vdc | High Power Density | OCP | 4:1 2:1

General Description

V_D-10W series has high power density can help user to save board space. The product has advantages of wide input voltage range, small start current, good load characteristic, and low ripple. Ceramic chip capacitors and SMT are 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

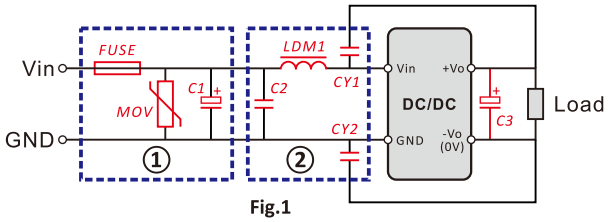


Fig.1

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: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		

・All specifications are subject to change without notice

V_D-10W Series

10w, 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	
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Operating temp curve range	1		10	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	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Ripple & Noise		DC-20MHz bandwidth		40	80	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

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

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	100% load, input low to high		330		kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
Case Temperature	100% load, nominal input			+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Temperature		-50		+130	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Weight			21		g
Hot Plug		Unavailable			
Case Material		Aluminium Alloy			

EMC Specification

EMI	CE	EN55022:2010	Class A (Bare component) / Class B (see Fig.1)
	RE	EN55022:2010	Class A (Bare component) / Class B (see Fig.1)
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

As the power module start, a impulse current will formed, so please ensure that the power supply is sufficient to cope with the current. In general, the impulse current will be 1.6 times typical input current in consideration.

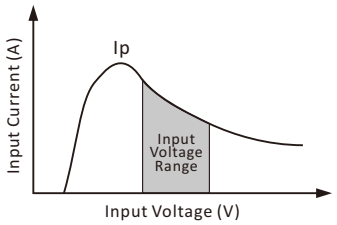
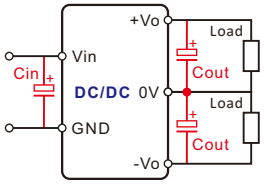


Fig.2

2. Typical Application Circuit

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



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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 so 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

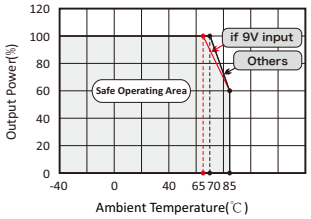


Fig.4

5. The series product cannot be used in parallel.

・All specifications are subject to change without notice

VA_D-10W & VB_D-10W Series

10w, 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-10W	82	12	9-18	±5	±1000	±100	680	Fig.5	ok
	VA1209D-10W	84			±9	±556	±56	470		ok
	VA1212D-10W	86			±12	±417	±42	220		ok
	VA1215D-10W	86			±15	±333	±33	100		ok
RoHS	PVA2405D-10W	82	24	18-36 (9-36)	±5	±1000	±100	680	Fig.5	ok
	PVA2409D-10W	84			±9	±556	±56	470		ok
	PVA2412D-10W	87			±12	±417	±42	220		ok
	PVA2415D-10W	88			±15	±333	±33	100		ok
RoHS	PVA4805D-10W	83	48	36-75 (18-75)	±5	±1000	±100	680	Fig.5	ok
	PVA4809D-10W	86			±9	±556	±56	470		ok
	PVA4812D-10W	89			±12	±417	±42	220		ok
	PVA4815D-10W	88			±15	±333	±33	100		ok
RoHS	VB1205D-10W	80	12	9-18	5	2000	200	2200	Fig.5	ok
	VB1209D-10W	83			9	1111	111	470		ok
	VB1212D-10W	86			12	833	84	470		ok
	VB1215D-10W	86			15	667	67	220		ok
	VB1224D-10W	85			24	417	42	100		ok
RoHS	PVB2405D-10W	81	24	18-36 (9-36)	5	2000	200	2200	Fig.5	ok
	PVB2409D-10W	83			9	1111	111	470		ok
	PVB2412D-10W	86			12	833	84	470		ok
	PVB2415D-10W	87			15	667	67	220		ok
	PVB2424D-10W	85			24	417	42	100		ok
RoHS	PVB4805D-10W	82	48	36-75 (18-75)	5	2000	200	2200	Fig.5	ok
	PVB4809D-10W	85			9	1111	111	470		ok
	PVB4812D-10W	89			12	833	84	470		ok
	PVB4815D-10W	88			15	667	67	220		ok
	PVB4824D-10W	86			24	417	42	100		ok

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

Dimensions

First Angle Proj

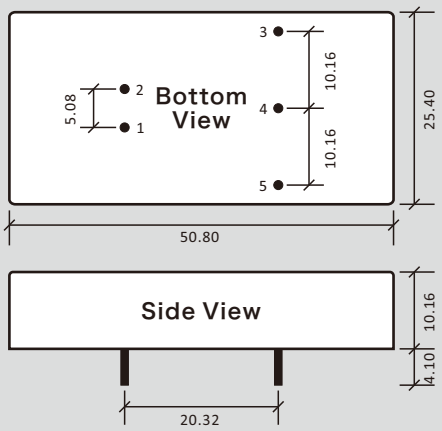


Fig.5

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

Note:
All size units **mm**,
Diameter of all terminal 0.8mm;
Isolation: 1500Vdc
Weight: 25g

・All specifications are subject to change without notice

File Release Notes

DBN-405 Technical Data Sheet Version

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

1. All data in addition to particular things, are Ta = 25℃, 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>>;
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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

・All specifications are subject to change without notice

V_D-15W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc input
- 5/9/12/15/24/±5/±9/±12/±15Vdc output
- Efficiency up to 89%
- Ultra low noise & ripple
- EMC meet EN55022 Class B
- 100% burn-in
- Six-sided continuous shield
- Continuous short circuit protection
- RoHS/CE/ISO multiple compliance
- With 3 years warranty

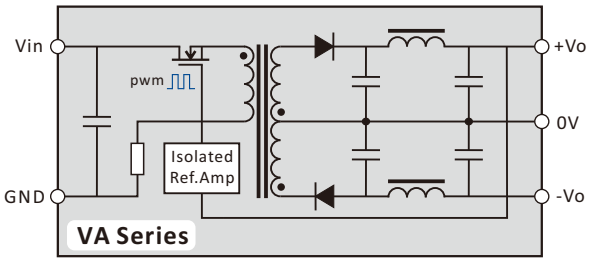
CE RoHS

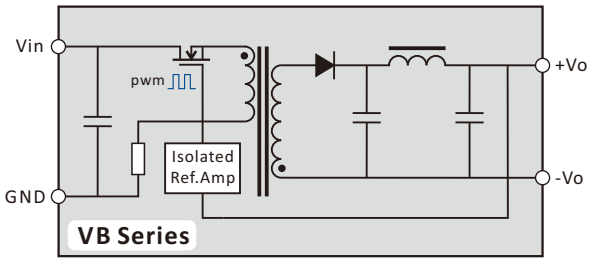
EMI | 1500 Vdc | High Power Density | OCP | 4:1 2:1

General Description

V_D-15W series has high power density can help user to save board space. The product has advantages of wide input voltage range, small start current, good load characteristic, and low ripple. Ceramic chip capacitors and SMT are 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

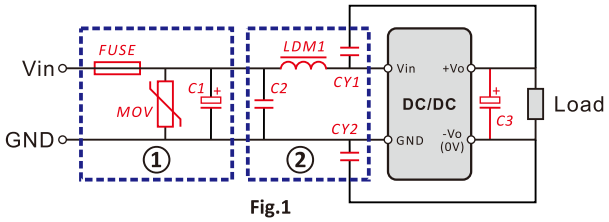


Fig.1

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: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		

・All specifications are subject to change without notice

V_D-15W Series

15w, 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	
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Operating temp curve range	1.5		15	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	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Ripple & Noise		DC-20MHz bandwidth		40	80	mVp-p
Temperature Drift		100% load, nominal input			±0.03	%/℃
Short Circuit Protection			Continuous, Self-Recovery			
Output Filter			"∏" filter			

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

Common Specification

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

EMC Specification

EMI	CE	EN55022:2010	Class A (Bare component) / Class B (see Fig.1)
	RE	EN55022:2010	Class A (Bare component) / Class B (see Fig.1)
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

As the power module start, a impulse current will formed, so please ensure that the power supply is sufficient to cope with the current. In general, the impulse current will be 1.6 times typical input current in consideration.

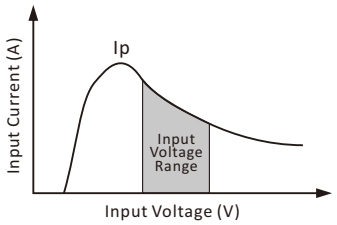
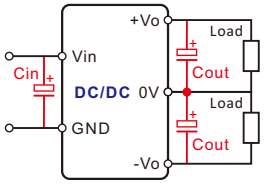


Fig.2

2. Typical Application Circuit

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



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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

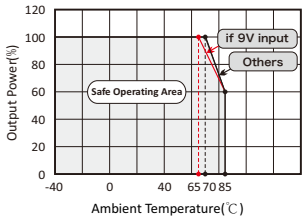


Fig.4

5. The series product cannot be used in parallel.

・All specifications are subject to change without notice

VA_D-15W & VB_D-15W Series

15w, wide input, isolated & regulated dual & single output dc-dc converter

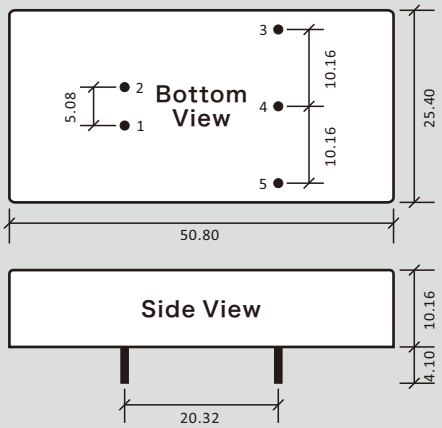
Product Program

Certificate	Model	Eff (%)	Input		Output			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			Nominal	Range	Nominal	Max	Min			
RoHS	VA1205D-15W	82	12	9-18	±5	±1500	±150	1000	Fig.5	ok
	VA1209D-15W	84			±9	±833	±83	470		ok
	VA1212D-15W	86			±12	±625	±62	220		ok
	VA1215D-15W	86			±15	±500	±50	100		ok
RoHS	PVA2405D-15W	82	24	18-36 (9-36)	±5	±1500	±150	1000	Fig.5	ok
	PVA2409D-15W	84			±9	±833	±83	470		ok
	PVA2412D-15W	87			±12	±625	±62	220		ok
	PVA2415D-15W	88			±15	±500	±50	100		ok
RoHS	PVA4805D-15W	83	48	36-75 (18-75)	±5	±1500	±150	1000	Fig.5	ok
	PVA4809D-15W	86			±9	±833	±83	470		ok
	PVA4812D-15W	89			±12	±625	±62	220		ok
	PVA4815D-15W	88			±15	±500	±50	100		ok
RoHS	VB1205D-15W	80	12	9-18	5	3000	300	2200	Fig.5	ok
	VB1209D-15W	83			9	1667	167	470		ok
	VB1212D-15W	86			12	1250	12	470		ok
	VB1215D-15W	86			15	1000	10	220		ok
	VB1224D-15W	85			24	625	62	100		ok
RoHS	PVB2405D-15W	81	24	18-36 (9-36)	5	3000	300	2200	Fig.5	ok
	PVB2409D-15W	83			9	1667	166	470		ok
	PVB2412D-15W	86			12	1250	12	470		ok
	PVB2415D-15W	87			15	1000	10	220		ok
	PVB2424D-15W	85			24	625	62	100		ok
RoHS	PVB4805D-15W	82	48	36-75 (18-75)	5	3000	300	2200	Fig.5	ok
	PVB4809D-15W	85			9	1667	167	470		ok
	PVB4812D-15W	89			12	1250	13	470		ok
	PVB4815D-15W	88			15	1000	10	220		ok
	PVB4824D-15W	86			24	625	62	100		ok

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

Dimensions

First Angle Proj



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

Note:
All size units **mm**,
Diameter of all terminal 0.8mm;
Isolation: 1500Vdc
Weight: 25g

Fig.5

・All specifications are subject to change without notice

File Release Notes

DBN-406 Technical Data Sheet Version

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

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

V_D-20W Series

Features

- Operating temperature: -40 to +85℃
- 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

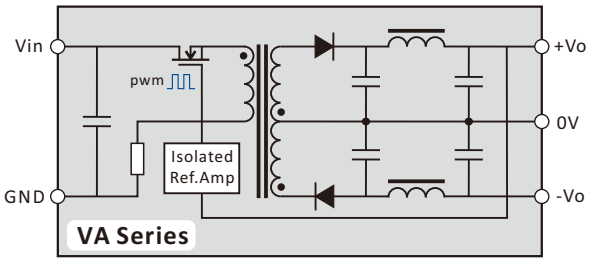
CE RoHS

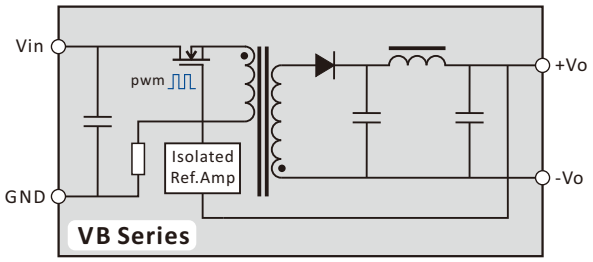
EMI | 1500 Vdc | High Power Density | SCP OCP OVP | 4:1 2:1

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

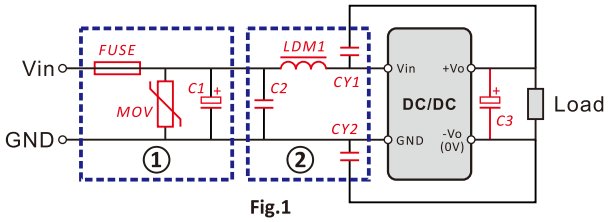


Fig.1

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: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		

・All specifications are subject to change without notice

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			
	module switch OFF	0～1.2Vdc or Gnd			
	input current @ off			1	mA
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	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Transient Recovery Time		25% load step change		200	500	uS
Overshoot Rate				±3	±5	%
Ripple & Noise		DC-20MHz bandwidth		60	120	mVp-p
Temperature Drift		100% load, nominal input		±0.02		%/℃
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			"∏" filter			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency			330		kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
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℃	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.

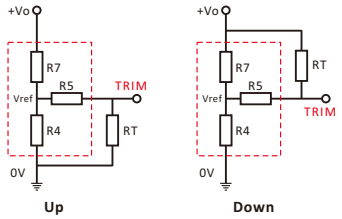
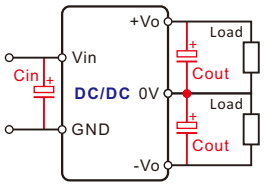


Fig.2

2. Typical Application Circuit

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



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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

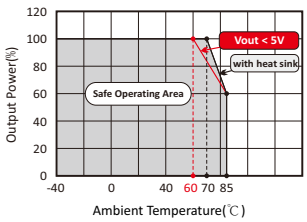


Fig.4

5. The series product cannot be used in parallel.

・All specifications are subject to change without notice

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			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			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

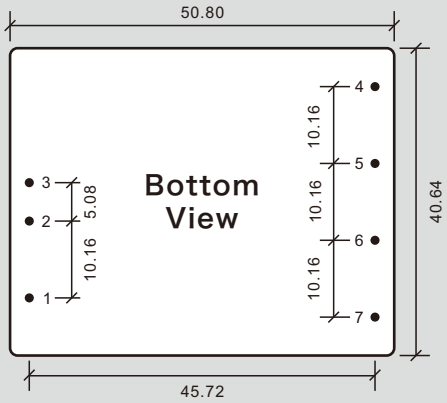


Fig.5

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

・All specifications are subject to change without notice

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 Ta = 25℃, 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

・All specifications are subject to change without notice

V_D-30W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc wide input
- 5/9/12/15/24/±5/±9/±12/±15Vdc output
- Efficiency up to 90%
- 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

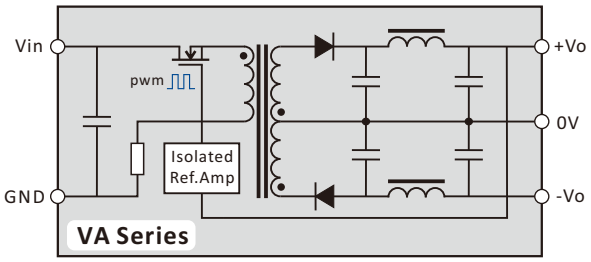
CE RoHS

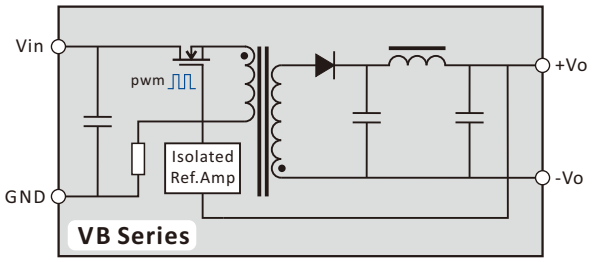
EMI | 1500 Vdc | High Power Density | SCP OCP OVP | 4:1 2:1

General Description

V_D-30W 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

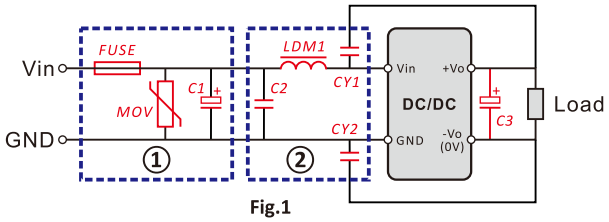


Fig.1

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: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		

・All specifications are subject to change without notice

V_D-30W Series

30w, 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			
	module switch OFF	0～1.2Vdc or Gnd			
	input current @ off			1	mA
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	3		30	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 Master	100% load, nominal input		±1	±3	
Output Voltage Accuracy Slave			±3	±5	
Balance of Vout	Dual output, balance load		±0.8	±2	
Transient Recovery Time	25% load step change		200	500	uS
Overshoot Rate			±3	±5	%
Ripple & Noise	DC-20MHz bandwidth		100	200	mVp-p
Temperature Drift	100% load, nominal input		±0.02		%/℃
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		"∏" filter			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency			330		kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
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℃	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.

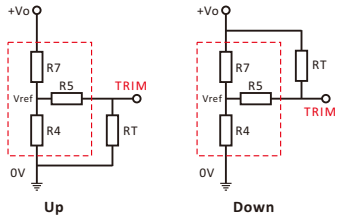
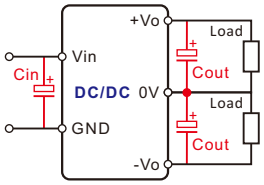


Fig.2

2. Typical Application Circuit

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



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

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 so 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

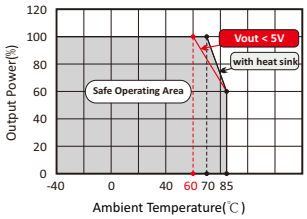


Fig.4

5. The series product cannot be used in parallel.

・All specifications are subject to change without notice

VA_D-30W & VB_D-30W Series

30w, wide input, isolated & regulated dual & single output dc-dc converter

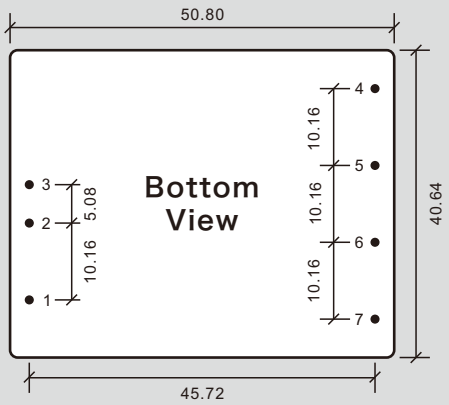
Product Program

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-30W	84	12	9-18	±5	±3000	±300	2000	Fig.5	ok
	VA1209D-30W	85			±9	±1667	±167	1200		ok
	VA1212D-30W	86			±12	±1250	±125	1000		ok
	VA1215D-30W	87			±15	±1000	±100	680		ok
RoHS	PVA2405D-30W	85	24	18-36 (9-36)	±5	±3000	±300	2000	Fig.5	ok
	PVA2409D-30W	86			±9	±1667	±167	1200		ok
	PVA2412D-30W	88			±12	±1250	±125	1000		ok
	PVA2415D-30W	89			±15	±1000	±100	680		ok
RoHS	PVA4805D-30W	85	48	36-75 (18-75)	±5	±3000	±300	2000	Fig.5	ok
	PVA4809D-30W	86			±9	±1667	±167	1200		ok
	PVA4812D-30W	89			±12	±1250	±125	1000		ok
	PVA4815D-30W	88			±15	±1000	±100	680		ok
RoHS	VB1205D-30W	84	12	9-18	5	6000	600	4000	Fig.5	ok
	VB1209D-30W	85			9	3333	333	3000		ok
	VB1212D-30W	86			12	2500	250	2000		ok
	VB1215D-30W	88			15	2000	200	1200		ok
	VB1224D-30W	88			24	1250	125	470		ok
RoHS	PVB2405D-30W	85	24	18-36 (9-36)	5	6000	600	4000	Fig.5	ok
	PVB2409D-30W	85			9	3333	333	3000		ok
	PVB2412D-30W	88			12	2500	250	2000		ok
	PVB2415D-30W	90			15	2000	200	1200		ok
	PVB2424D-30W	88			24	1250	125	470		ok
RoHS	PVB4805D-30W	84	48	36-75 (18-75)	5	6000	600	4000	Fig.5	ok
	PVB4809D-30W	85			9	3333	333	3000		ok
	PVB4812D-30W	88			12	2500	250	2000		ok
	PVB4815D-30W	88			15	2000	200	1200		ok
	PVB4824D-30W	86			24	1250	125	470		ok

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

Dimensions

First Angle Proj



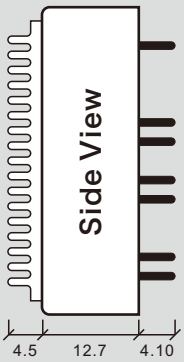


Fig.5

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/70g (with heat sink)
The heat sink is optional

・All specifications are subject to change without notice

File Release Notes

DBN-408 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 Ta = 25℃, 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.

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Delus Guangzhou Electronic Technology CO.,LTD
Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn

V_D-40W Series

Features

- Operating temperature: -40 to +85℃
- 9-18/18-36/36-75Vdc wide input
- 5/9/12/15/24/±5/±9/±12/±15Vdc output
- Efficiency up to 90%
- 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

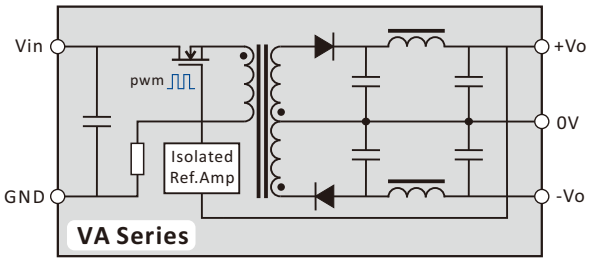
CE RoHS

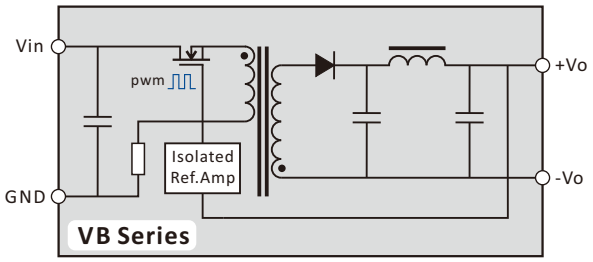
EMI | 1500 Vdc | High Power Density | SCP OCP OVP | 4:1 2:1

General Description

V_D-40W 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

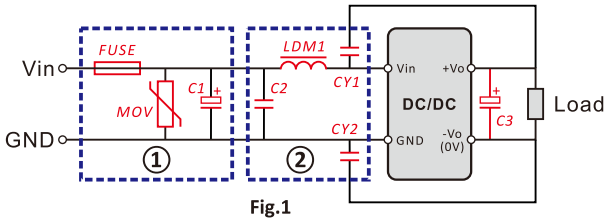


Fig.1

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: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		

・All specifications are subject to change without notice

V_D-40W Series

40w, 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			
	module switch OFF	0～1.2Vdc or Gnd			
	input current @ off			1	mA
Startup Current @ 100% load, nominal input		<1.6 lin-max.			
Input Filter		"LC" filter			
Input Polarity Protection		Unavailable			

Output Specifications

Item		Test Conditions	Min	Typ	Max	Units
Output Power		Operating temp curve range	4		40	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	Master	100% load, nominal input		±1	±3	
	Slave			±3	±5	
Balance of Vout		Dual output, balance load		±0.8	±2	
Transient Recovery Time		25% load step change		200	500	uS
Overshoot Rate				±3	±5	%
Ripple & Noise		DC-20MHz bandwidth		150	300	mVp-p
Temperature Drift		100% load, nominal input		±0.02		%/℃
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			"∏" filter			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency			330		kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
Case Temperature	100% load, nominal input			+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Overheat Protection			150		
Storage Temperature		-50		+125	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	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.

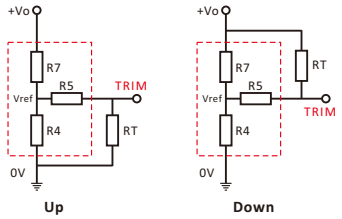
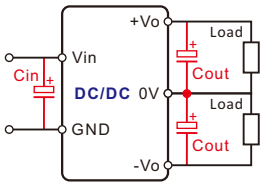


Fig.2

2. Typical Application Circuit

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



Vin	Cin
12V	220uF
24V	100uF
48V	10-47uF
Cout=10uF	

Fig.3

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

Increased Cin and Cout appropriately or used lower ESR capacitor, 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 so 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

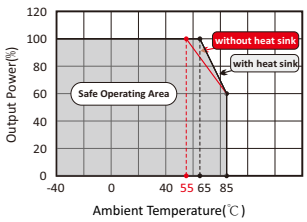


Fig.4

5. The series product cannot be used in parallel.

・All specifications are subject to change without notice

VA_D-40W & VB_D-40W Series

40w, wide input, isolated & regulated dual & single output dc-dc converter

Product Program

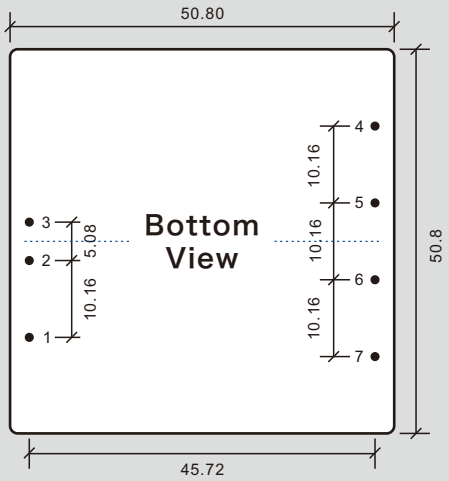
Certificate	Model	Eff (%)	Input		Output			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			Nominal	Range	Nominal	Max	Min			
RoHS	VA1205D-40W	84	12	9-18	±5	±4000	±400	2200	Fig.5	ok
	VA1209D-40W	85			±9	±2222	±222	1500		ok
	VA1212D-40W	86			±12	±1667	±166	1000		ok
	VA1215D-40W	86			±15	±1333	±133	1000		ok
RoHS	PVA2405D-40W	85	24	18-36 (9-36)	±5	±4000	±400	2200	Fig.5	ok
	PVA2409D-40W	86			±9	±2222	±222	1500		ok
	PVA2412D-40W	87			±12	±1667	±166	1000		ok
	PVA2415D-40W	88			±15	±1333	±133	1000		ok
RoHS	PVA4805D-40W	85	48	36-75 (18-75)	±5	±4000	±400	2200	Fig.5	ok
	PVA4809D-40W	86			±9	±2222	±222	1500		ok
	PVA4812D-40W	89			±12	±1667	±166	1000		ok
	PVA4815D-40W	89			±15	±1333	±133	1000		ok
RoHS	VB1205D-40W	85	12	9-18	5	8000	800	4700	Fig.5	ok
	VB1209D-40W	86			9	4444	444	3300		ok
	VB1212D-40W	86			12	3333	333	2200		ok
	VB1215D-40W	88			15	2667	266	1500		ok
	VB1224D-40W	86			24	1667	166	470		ok
RoHS	PVB2405D-40W	86	24	18-36 (9-36)	5	8000	800	4700	Fig.5	ok
	PVB2409D-40W	86			9	4444	444	3300		ok
	PVB2412D-40W	90			12	3333	333	2200		ok
	PVB2415D-40W	90			15	2667	266	1500		ok
	PVB2424D-40W	88			24	1667	166	470		ok
RoHS	PVB4805D-40W	88	48	36-75 (18-75)	5	8000	800	4700	Fig.5	ok
	PVB4809D-40W	89			9	4444	444	3300		ok
	PVB4812D-40W	89			12	3333	333	2200		ok
	PVB4815D-40W	89			15	2667	266	1500		ok
	PVB4824D-40W	88			24	1667	166	470		ok

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

· All specifications are subject to change without notice

Dimensions

First Angle Proj



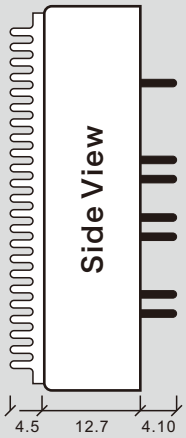


Fig.5

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: 60g/85g (with heat sink)
The heat sink is optional

· All specifications are subject to change without notice

File Release Notes

DBN-409 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 Ta = 25℃, 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

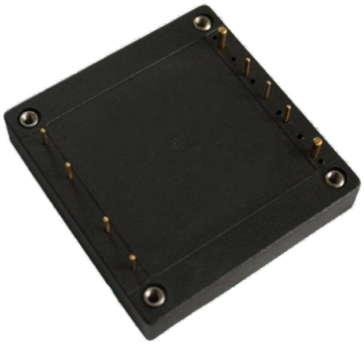
・All specifications are subject to change without notice

V_D-50～150W Series

Features

- Operating temperature: -40 to +85℃
- 18-36/36-75Vdc input
- 3.3/5/12/15/24/48Vdc output
- Efficiency up to 93%
- Ultra noise & ripple
- EMC meet EN55022 Class B
- Remote voltage compensation
- 100% burn-in
- International standard: 1/2 brick
- Over-heat protection, short-circuit, over-current and over-voltage protection
- RoHS/CE/ISO multiple compliance
- With 3 years warranty

CE RoHS



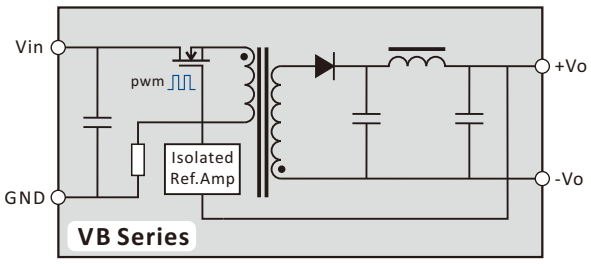
EMI | 1500 Vdc | High Power Density | SCP OCP OVP | 2:1

General Description

VB_D-50~150W series dc/dc converter has advantages of wide input voltage range, small start current, good load characteristic, and low ripple. Ceramic chip capacitors and SMT are 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

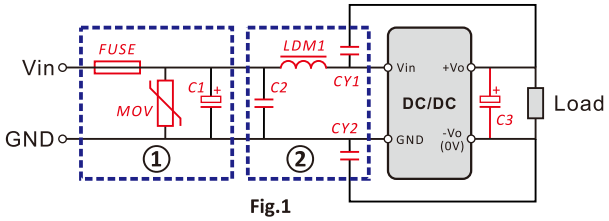


Fig.1

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:24V	Vin:48V	Vin:110V
FUSE	Choose according to actual input current		
MOV	S14K35	S14K60	
C1	470uF/50V	330uF/100V	
C2	1uF/50V	1uF/100V	
LDM1	4.7uH		
CY1/CY2	1nF/2kV or 4.5kV		
C3	Refer to the Cout in Fig.3		

・All specifications are subject to change without notice

VB_D-50～150W Series

50～150w, wide input, isolated & regulated single output dc-dc converter

Input Specifications

Item		Min	Typ	Max	Units
Input Impulse Voltage (1 sec max)	24V input models	-0.7		40	Vdc
	48V input models	-0.7		80	
	110V input models	-0.7		170	
Startup Voltage	24V input models			18	
	48V input models			36	
	110V input models			60	
REM Pin	module switch ON	3.5～12Vdc or Open			
	module switch OFF	0～1.2Vdc or Gnd			
	input current @ off			1	mA
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
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	
Transient Recovery Time	25% load step change		200	500	uS
Overshoot Rate			±3	±5	%
Ripple & Noise	DC-20MHz bandwidth		100	200	mVp-p
Temperature Drift	100% load, nominal input		±0.02		%/℃
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		"∏" filter			

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Switching Frequency	PWM model	200		1000	kHz
Operating Temperature	More see on derating cruve	-45		+85	℃
Case Temperature	100% load, nominal input			+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Overheat Protection			115		
Storage Temperature		-50		+125	
Storage Humidity				95	%
MTBF	Using MIL-HDBK 217 @ 25℃	1000			k hours
Hot Plug		Unavailable			
Case Material		Black Plastic (UL94V-0)			

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		2000		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

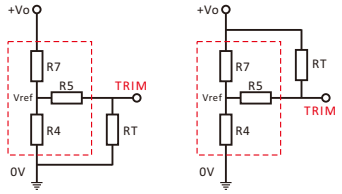


Fig.2

2. Description for "+S" & "-S"

+S & -S are terminals for remote voltage compensation. Please use twisted-pair or shielded wires and wires should be as short as possible. Please Use wide PCB trace or a thick wires between the power supply module and the load, the line voltage drop should be kept less than 0.3V. Make sure the power supply module's output voltage remains within the specified range. The impedance of wires may cause the output the voltage oscillation or have a greater ripple, please do adequate assessments before using.

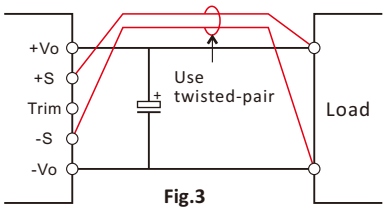


Fig.3

When remote sense is not used, make sure + Vo and +S are shorted, and that 0V and -S are shorted as well. Keep the short wires as short as possible to reduce a loop area. If noise enters the loop, the operation of the power module will become unstable.

3. Typical Application Circuit

This series of products has tested according to Fig.4 before delivery (but no external Cin and Cout capacitors).

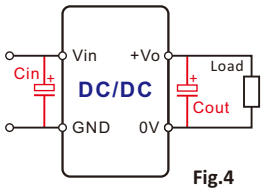


Fig.4

Vin	Cin
24V	100uF
48V	10-47uF
110V	10-47uF
Cout=10uF	

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.

4. EMC solution

The series products have a very good ripple and noise performance so 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).

・All specifications are subject to change without notice

VB_D-50W Series

50w, wide input, isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			Nominal	Range	Nominal	Max	Min			
RoHS	**VB2403D-50W**	91	24	18-36	3.3	10	1	10000	Fig.5	ok
	VB2405D-50W	93			5	10	1	7500		ok
	VB2412D-50W	93			12	4.2	0.4	6000		ok
	VB2415D-50W	93			15	3.3	0.3	4700		ok
	VB2424D-50W	92			24	2.1	0.2	3000		ok
	VB2448D-50W	92			48	1.1	0.1	2200		ok
RoHS	**VB4803D-50W**	91	48	36-75	3.3	10	1	10000	Fig.5	ok
	VB4805D-50W	93			5	10	1	7500		ok
	VB4812D-50W	93			12	4.2	0.4	6000		ok
	VB4815D-50W	93			15	3.3	0.3	4700		ok
	VB4824D-50W	93			24	2.1	0.2	3000		ok
	VB4848D-50W	93			48	1.1	0.1	2200		ok
RoHS	**VB1D03D-50W**	91	110	66-160	3.3	10	1	10000	Fig.5	ok
	VB1D05D-50W	93			5	10	1	7500		ok
	VB1D12D-50W	93			12	4.2	0.4	6000		ok
	VB1D15D-50W	93			15	3.3	0.3	4700		ok
	VB1D24D-50W	93			24	2.1	0.2	3000		ok
	VB1D48D-50W	93			48	1.1	0.1	2200		ok

· All specifications are subject to change without notice

VB_D-75W Series

75w, wide input, isolated & regulated single output dc-dc converter

Product Program

Certificate	Model	Eff (%)	Input		Output			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			Nominal	Range	Nominal	Max	Min			
RoHS	**VB2403D-75W**	91	24	18-36	3.3	15	1.5	10000	Fig.5	ok
	VB2405D-75W	93			5	15	1.5	7500		ok
	VB2412D-75W	93			12	6.3	0.6	6000		ok
	VB2415D-75W	93			15	5	0.5	4700		ok
	VB2424D-75W	92			24	3.1	0.3	3000		ok
	VB2448D-75W	92			48	1.6	0.2	2200		ok
RoHS	**VB4803D-75W**	91	48	36-75	3.3	15	1.5	10000	Fig.5	ok
	VB4805D-75W	93			5	15	1.5	7500		ok
	VB4812D-75W	93			12	6.3	0.6	6000		ok
	VB4815D-75W	93			15	5	0.5	4700		ok
	VB4824D-75W	93			24	3.1	0.3	3000		ok
	VB4848D-75W	93			48	1.6	0.2	2200		ok
RoHS	**VB1D03D-75W**	91	110	66-160	3.3	15	1.5	10000	Fig.5	ok
	VB1D05D-75W	93			5	15	1.5	7500		ok
	VB1D12D-75W	93			12	6.3	0.6	6000		ok
	VB1D15D-75W	93			15	5	0.5	4700		ok
	VB1D24D-75W	93			24	3.1	0.3	3000		ok
	VB1D48D-75W	93			48	1.6	0.2	2200		ok

· All specifications are subject to change without notice

VB_D-100W Series

100w, wide input, isolated & regulated 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	**VB2403D-100W**	91	24	18-36	3.3	20	2	10000	Fig.5	ok
	VB2405D-100W	93			5	20	2	7500		ok
	VB2412D-100W	93			12	8.3	0.8	6000		ok
	VB2415D-100W	93			15	6.7	0.6	4700		ok
	VB2424D-100W	92			24	4.2	0.4	3000		ok
	VB2448D-100W	92			48	2.1	0.2	2200		ok
RoHS	**VB4803D-100W**	91	48	36-75	3.3	20	2	10000	Fig.5	ok
	VB4805D-100W	93			5	20	2	7500		ok
	VB4812D-100W	93			12	8.3	0.8	6000		ok
	VB4815D-100W	93			15	6.7	0.6	4700		ok
	VB4824D-100W	93			24	4.2	0.4	3000		ok
	VB4848D-100W	93			48	2.1	0.2	2200		ok
RoHS	**VB1D03D-100W**	91	110	66-160	3.3	20	2	10000	Fig.5	ok
	VB1D05D-100W	93			5	20	2	7500		ok
	VB1D12D-100W	93			12	8.3	0.8	6000		ok
	VB1D15D-100W	93			15	6.7	0.6	4700		ok
	VB1D24D-100W	93			24	4.2	0.4	3000		ok
	VB1D48D-100W	93			48	2.1	0.2	2200		ok

・All specifications are subject to change without notice

VB_D-150W Series

150w, wide input, isolated & regulated single output dc-dc converter

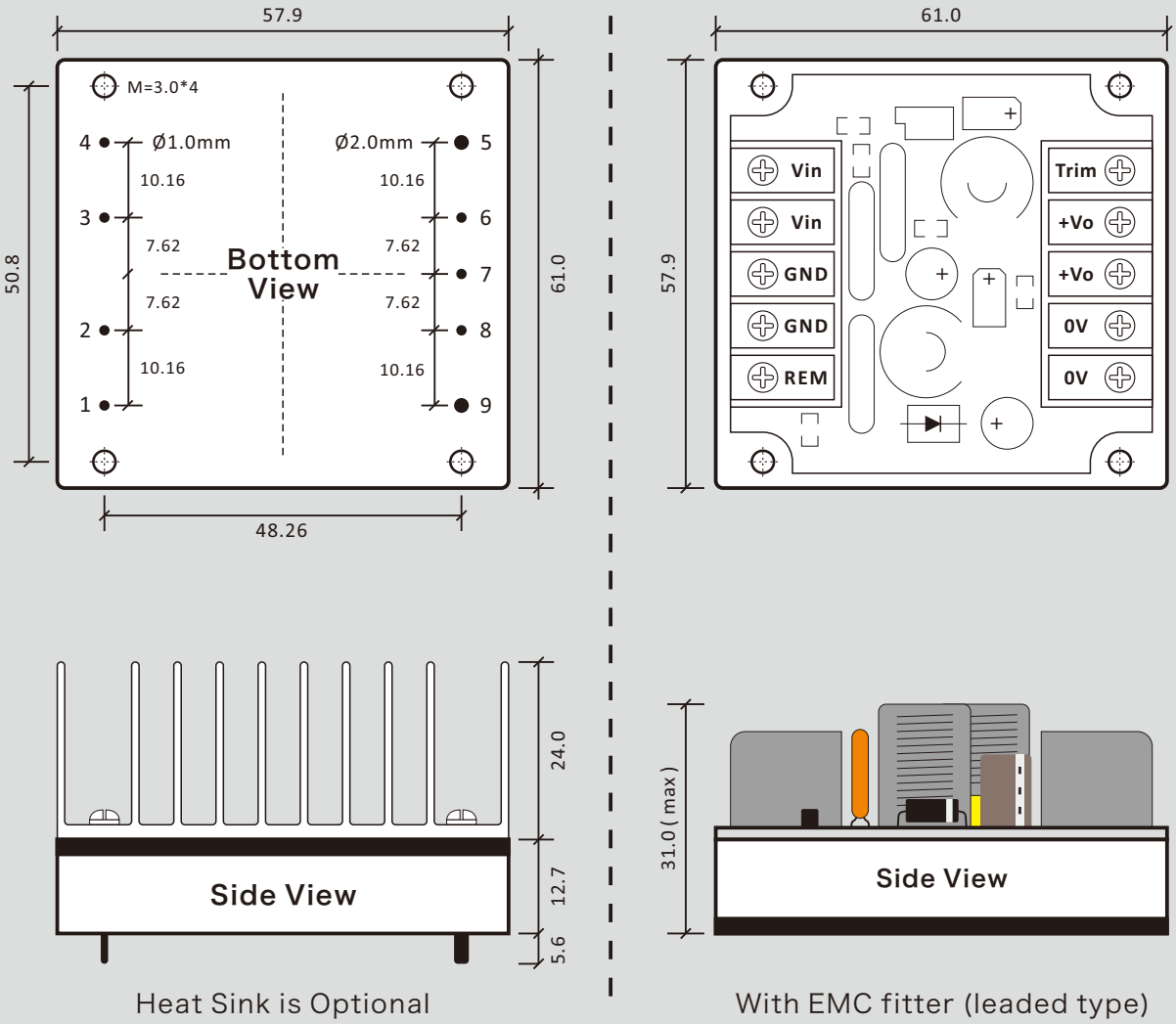
Product Program

Certificate	Model	Eff (%)	Input		Output			Max Capacitive Load (uF)	Drawing	Order Station
			Voltage(Vdc)		Voltage(Vdc)	Current(mA)				
			Nominal	Range	Nominal	Max	Min			
RoHS	**VB2403D-150W**	91	24	18-36	3.3	30	3	10000	Fig.5	ok
	VB2405D-150W	93			5	30	3	7500		ok
	VB2412D-150W	93			12	12.5	1.3	6000		ok
	VB2415D-150W	93			15	10	1	4700		ok
	VB2424D-150W	92			24	6.3	0.6	3000		ok
	VB2448D-150W	92			48	3.1	0.3	2200		ok
RoHS	**VB4803D-150W**	91	48	36-75	3.3	30	3	10000	Fig.5	ok
	VB4805D-150W	93			5	30	3	7500		ok
	VB4812D-150W	93			12	12.5	1.3	6000		ok
	VB4815D-150W	93			15	10	1	4700		ok
	VB4824D-150W	93			24	6.3	0.6	3000		ok
	VB4848D-150W	93			48	3.1	0.3	2200		ok
RoHS	**VB1D03D-150W**	91	110	66-160	3.3	30	3	10000	Fig.5	ok
	VB1D05D-150W	93			5	30	3	7500		ok
	VB1D12D-150W	93			12	12.5	1.3	6000		ok
	VB1D15D-150W	93			15	10	1	4700		ok
	VB1D24D-150W	93			24	6.3	0.6	3000		ok
	VB1D48D-150W	93			48	3.1	0.3	2200		ok

・All specifications are subject to change without notice

Dimensions

First Angle Proj



Heat Sink is Optional

With EMC fitter (leaded type)

Fig.5

Note: all size units mm

Pin	1	2	3	4	5	6	7	8	9
Function	**Vin**	**Rem**	**Case**	**GND**	**0V**	**-S**	**Trim**	**+S**	**+Vo**

・All specifications are subject to change without notice

File Release Notes

DBN-410 Technical Data Sheet Version

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

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

・All specifications are subject to change without notice

AC/DC LH05 Series

Features

- Operating temperature: -10 to +70℃
- 85-265Vac input
- 5V/12V/15V/24V/48V/±5V/±12V/±15V/±24V output
- Low ripple & noise
- Efficiency up to 86%
- 100% burn-in
- Continuous short circuit protection
- Technical design to meet the requirent of industrial products
- With 3 years warranty

General Description

LH05 series AC/DC converter with wide input voltage range, high efficiency, high reliability, security, isolation and other characteristics, widely used in industrial and civilian facilities.

EMI | 2000 Vac | High Power Density | OVP | 265 ~ 85

Input Specifications

Item	Test Conditions		Min	Typ	Max	Units
Input Frequency			47～63Hz			
Input Voltage Range			85～265Vac			

Output Specifications

Item	Test Conditions		Min	Typ	Max	Units
Output Power	Ta=-10-+55℃				5	W
Input Variation				±0.1	±0.5	%
Load Variation	10%-100% load			±1	±5	
Output Voltage Accuracy	100% load	Master		±1	±3	
		Slave		±3	±5	
Ripple & Noise	DC-20MHz bandwidth				1%Vout	mVp-p
Start Delay Time	100% load			1		S
Transient Recovery Time	25% load step change				200	uS
The Overshoot Rate			≤±5%(ΔVo1/Vo1)			
Short Circuit Protection			Continuous, Automatic Recovery			

Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Resistance	Test at 500Vac	100			MΩ
Isolation Voltage I/O	Tested for 1S and 1 mA max	2000			Vac
Isolation Voltage out1/out2	Tested for 1S and 1 mA max	500			Vac

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	Ta>55℃ derating	-10		+70	℃
Maximum Case Temp			50		
Storage Temperature		-40		+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Humidity				85	%
Case Material		Black plastic (UL94V-0)			
Install		PCB			

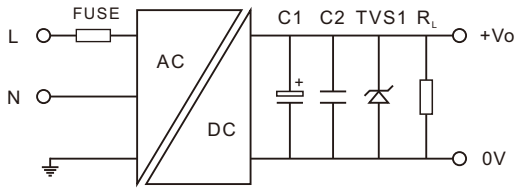
・All specifications are subject to change without notice

LH05-10Axx & LH05-10Bxx & LH05-10Dxx Series

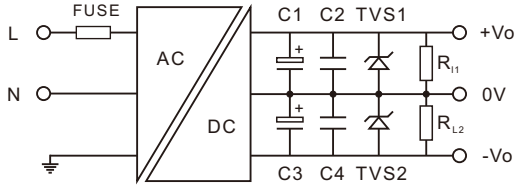
5w, 220Vac input, isolated & regulated single/dual/twin output ac-dc converter

Typical Applications

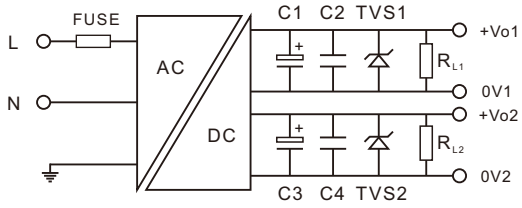
LHxx-xxBxx (single output)



LHxx-xxAxx (dual output)



LHxx-xxDxx (twin output)



External Components Typical Value

Single Models				
Model	C1	C2	FUSE	TVS1
LH05-10B05	330uF	0.1uF	1A/250V	P6KE6.8A
LH05-10B12	120uF			P6KE16A
LH05-10B15	68uF			P6KE20A
LH05-10B24	68uF			P6KE33A
LH05-10B48	47uF			P6KE62A

Dual Models				
Vout	C1, C3	C2, C4	FUSE	TVS1, TVS2
LH05-10A05	120uF	0.1uF	1A/250V	P6KE6.8A
LH05-10A12	68uF			P6KE16A
LH05-10A15	47uF			P6KE20A
LH05-10A24	10uF			P6KE33A

Twin Models				
Vout	C1, C3	C2, C4	FUSE	TVS1, TVS2
LH05-10D05	120uF	0.1uF	1A/250V	P6KE6.8A
LH05-10D12	68uF			P6KE16A
LH05-10D15	47uF			P6KE20A
LH05-10D24	10uF			P6KE33A

Remark:

Output filtering capacitors C1, C3 are electrolytic capacitors, it is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet, voltage derating of capacitor should be 80% or above. C2,C4 are use to filter high frequency noise, suggest choose 0.1μF.

TVS is recommended to protect post-circuits (when the circuit is abnormal).

Selection Guide

LH05-10B24

Product Series	Package Style	Output Power	Isolation Voltage	Input Voltage	Output Style	Output Voltage
L: AC/DC Series	H: Style 1	05 = 5Watts	1: 2000Vac	0 = 220Vac	A: Dual B: Single D: Twin	05 = 5Vdc ±5Vdc 09 = 9Vdc ±9Vdc 12 = 12Vdc ±12Vdc 15 = 15Vdc ±15Vdc 24 = 24Vdc ±24Vdc B A

・All specifications are subject to change without notice

LH05-10Axx & LH05-10Bxx & LH05-10Dxx Series

5w, 220Vac input, isolated & regulated single/dual/twin output ac-dc converter

Product Program

Model	Input		Output				Eff (%)	Certificate	Pin-Out Config.	Order Status
	Voltage(Vac)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)				
	Nominal	Range	Nominal	Max	Min					
LH05-10B05	220	85-265	5	1000			75		Fig.1	ok
LH05-10B12			12	417			79		Fig.1	ok
LH05-10B15			15	333			80		Fig.1	ok
LH05-10B24			24	208			84		Fig.1	ok
LH05-10B48			48	104			86		Fig.1	ok
LH05-10A05	220	85-265	±5	±500			75		Fig.1	ok
LH05-10A12			±12	±208			79		Fig.1	ok
LH05-10A15			±15	±167			80		Fig.1	ok
LH05-10A24			±24	±104			85		Fig.1	ok
LH05-10D05	220	85-265	5/5	500/500			75		Fig.1	ok
LH05-10D12			12/12	208/208			79		Fig.1	ok
LH05-10D15			15/15	167/167			80		Fig.1	ok
LH05-10D24			24/24	104/104			85		Fig.1	ok

Outline Dimensions

First Angle Proj

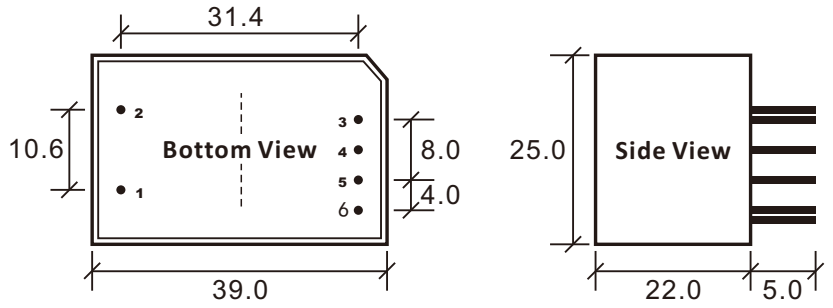
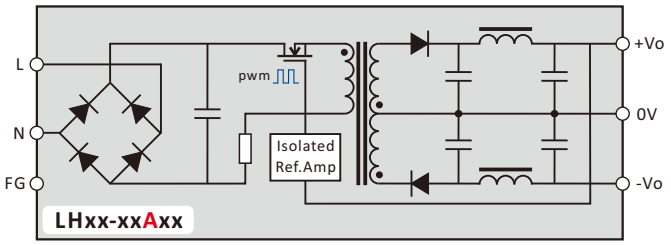


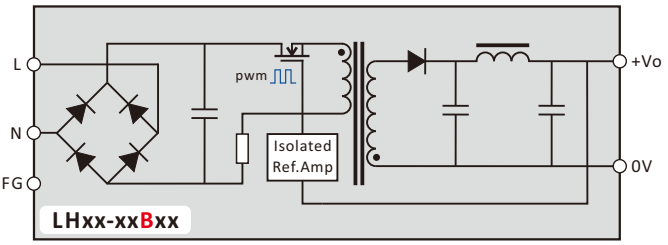
Fig.1

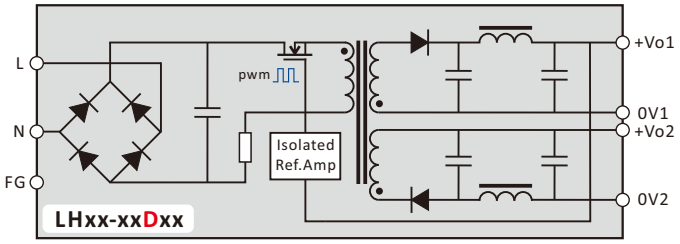
Pin	Single	Dual	Twin
1	N(AC)	N(AC)	N(AC)
2	L(AC)	L(AC)	L(AC)
3	+Vo	+Vo	+Vo1
4	no pin	0V	0V1
5	0V	-Vo	0V2
6	no pin	no pin	+Vo2

Note: all size units **mm**
diameter of all terminal **1** mm

Functional Diagram







・All specifications are subject to change without notice

File Release Notes

DBN-501 Technical Data Sheet Version

No.	Version	Data	Description
1	V0	2011/11/01	First release
2	V1	2012/07/13	Increase in the twin series model
3	A/0	2016/07/01	Fixed an wrong
4	A/1	2018/09/14	Fixed an wrong in P3
5			

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

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Delus Guangzhou Electronic Technology CO.,LTD
Tel: +86-20-32206616 Fax: +86-20-32206658 Mail: service@delus.cn

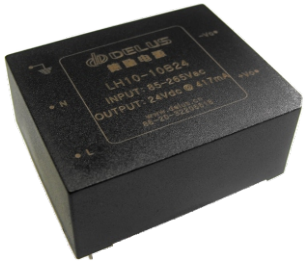
AC/DC LH10~30 Series

Features

- Operating temperature: -10 to +70℃
- 220Vac input
- 5V/9V/12V/15V/24V/48V
  ±5V/±12V/±15V output
- Efficiency up to 84%
- Ultra low noise & ripple
- Excellent EMC performance
- 100% burn-in
- No external heat sink
- Continuous short circuit protection
- RoHS/CE compliance
- With 3 years warranty

General Description

LH10~30 series AC/DC converter has wide input voltage range, high efficiency, high reliability, security, isolation and other characteristics, widely used in industrial and civilian facilities.



EMI | 2000 Vac | High Power Density | OVP | 85 ~ 265

Input Specifications

Item	Test Conditions		Min	Typ	Max	Units
Input Frequency			47~63Hz			
Input Voltage Range			85~265Vac			

Output Specifications

Item	Test Conditions		Min	Typ	Max	Units
Output Power	Ta=-10-+55℃				30	W
Input Variation				±0.1	±0.5	%
Load Variation	10%-100% load			±1	±5	
Output Voltage Accuracy	100% load	Master		±1	±3	
		Slave		±3	±5	
Ripple & Noise	DC-20MHz bandwidth				1%Vout	mVp-p
Start Delay Time	100% load			1		S
Transient Recovery Time	25% load step change				200	uS
The Overshoot Rate			≤±5%(ΔVo1/Vo1)			
Short Circuit Protection			Continuous, Automatic Recovery			

Isolation Specifications

Item	Test Conditions	Min	Typ	Max	Units
Isolation Resistance	Test at 500Vac	100			MΩ
Isolation Voltage I/O	Tested for 1S and 1 mA max	2000			Vac
Isolation Voltage out1/out2	Tested for 1S and 1 mA max	500			Vac

Common Specification

Item	Test Conditions	Min	Typ	Max	Units
Operating Temperature	Ta>55℃ derating	-10		+70	℃
Maximum Case Temp				90	
Storage Temperature		-40		+105	
Lead Temperature	1.5mm from case for 10 seconds			+300	
Storage Humidity				85	%
Case Material		Black plastic (UL94V-0)			
Install		PCB			

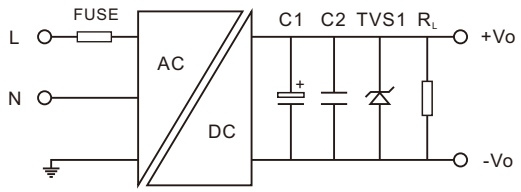
・All specifications are subject to change without notice

LH10～30 Series

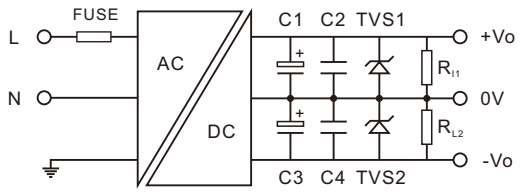
10～30w, 220Vac input, isolated & regulated output ac-dc converter

Typical Applications

LHxx-xxBxx (single output)



LHxx-xxAxx (dual output)



Parameter Description

Model	C1	C2	FUSE	TVS1	Vout	C1, C3	C2, C4	FUSE	TVS1, TVS2
LH10-10B05	330uF	0.1uF	1A/250V	P6KE6.8A	LH10-10A05	120uF	0.1uF	1A/250V	P6KE6.8A
LH10-10B12	120uF			P6KE16A	LH10-10A12	68uF			P6KE16A
LH10-10B15	68uF			P6KE20A	LH10-10A15	47uF			P6KE20A
LH10-10B24	68uF			P6KE33A	LH10-10A24	10uF			P6KE33A
LH10-10B48	47uF			P6KE62A					
LH15-10B05	680uF	0.1uF	1A/250V	P6KE6.8A	LH15-10A05	470uF	0.1uF	1A/250V	P6KE6.8A
LH15-10B12	220uF			P6KE16A	LH15-10A12	220uF			P6KE16A
LH15-10B15	220uF			P6KE20A	LH15-10A15	120uF			P6KE20A
LH15-10B24	68uF			P6KE33A	LH15-10A24	47uF			P6KE33A
LH15-10B48	47uF			P6KE62A					
LH20-10B05	330uF	0.1uF	1A/250V	P6KE6.8A	LH20-10A05	470uF	0.1uF	1A/250V	P6KE6.8A
LH20-10B12	220uF			P6KE16A	LH20-10A12	220uF			P6KE16A
LH20-10B15	220uF			P6KE20A	LH20-10A15	120uF			P6KE20A
LH20-10B24	220uF			P6KE33A	LH20-10A24	47uF			P6KE33A
LH20-10B48	47uF			P6KE62A					
LH20-10B05	330uF	0.1uF	1A/250V	P6KE6.8A	LH20-10A05	470uF	0.1uF	1A/250V	P6KE6.8A
LH20-10B12	220uF			P6KE16A	LH20-10A12	220uF			P6KE16A
LH20-10B15	220uF			P6KE20A	LH20-10A15	120uF			P6KE20A
LH20-10B24	220uF			P6KE33A	LH20-10A24	47uF			P6KE33A
LH20-10B48	47uF			P6KE62A					

Remark:

Output filtering capacitors C1, C3 are electrolytic capacitors, it is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet, voltage derating of capacitor should be 80% or above. C2,C4 are use to filter high frequency noise, suggest choose 0.1μF.

TVS is recommended to protect post-circuits (when the circuit is abnormal).

Selection Guide

LH10-10B24

Product Series	Package Style	Output Power	Isolation Voltage	Input Voltage	Output Style	Output Voltage
L: AC/DC Series	H: Style 1	05 = 5Watts	1: 2000Vac	0 = 220Vac	A: Dual B: Single D: Twin	05 = 5Vdc ±5Vdc 09 = 9Vdc ±9Vdc 12 = 12Vdc ±12Vdc 15 = 15Vdc ±15Vdc 24 = 24Vdc ±24Vdc ↑ B ↑ A

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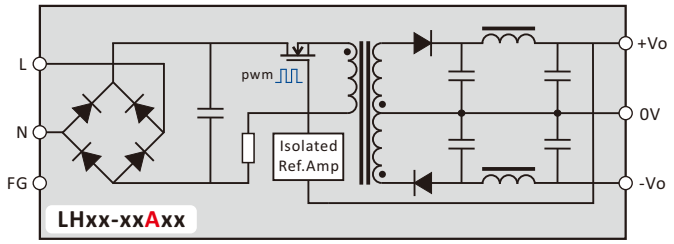
LH10～30 Series

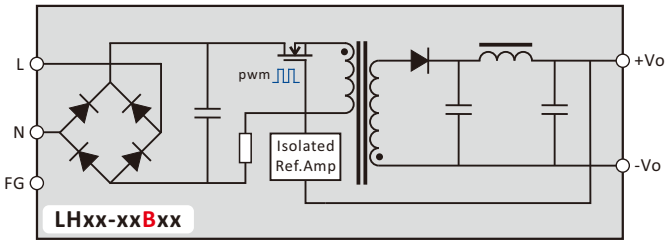
10～30w, 220Vac input, isolated & regulated output ac-dc converter

Product Program

Model	Input		Output				Eff (%)	Certificate	Pin-Out Config.	Order Status
	Voltage(Vac)		Voltage(Vdc)	Current(mA)		Ripple (mVp-p)				
	Nominal	Range	Nominal	Max	Min					
LH10-10B05	220	85-265	5	2000			76		LH10	ok
LH10-10B12			12	833			79		LH10	ok
LH10-10B15			15	667			80		LH10	ok
LH10-10B24			24	417			84		LH10	ok
LH10-10B48			48	208					LH10	no
LH10-10A05			±5	±1000			76		LH10	ok
LH10-10A12			±12	±417			79		LH10	ok
LH10-10A15			±15	±333			80		LH10	ok
LH10-10A24			±24	±208						no
LH15-10B05	220	85-265	5	3000			76		LH15	ok
LH15-10B12			12	1250			79		LH15	ok
LH15-10B15			15	1000			80		LH15	ok
LH15-10B24			24	625			84		LH15	ok
LH15-10B48			48	313						no
LH15-10A05			±5	±1500			76		LH15	ok
LH15-10A12			±12	±625			79		LH15	ok
LH15-10A15			±15	±500			80		LH15	ok
LH15-10A24			±24	±313						no
LH20-10B05	220	85-265	5	4000			76		LH20	ok
LH20-10B12			12	1667			79		LH20	ok
LH20-10B15			15	1333			80		LH20	ok
LH20-10B24			24	833			84		LH20	ok
LH20-10B48			48	417					LH20	no
LH20-10A05			±5	±2000			76		LH20	ok
LH20-10A12			±12	±833			79		LH20	ok
LH20-10A15			±15	±667			80		LH20	ok
LH20-10A24			±24	±417					LH20	no
LH30-10B05	220	85-265	5	6000			76		LH30	ok
LH30-10B12			12	2500			79		LH30	ok
LH30-10B15			15	2000			80		LH30	ok
LH30-10B24			24	1250			84		LH30	ok
LH30-10B48			48	625					LH30	no
LH30-10A05			±5	±3000			76		LH30	ok
LH30-10A12			±12	±1250			79		LH30	ok
LH30-10A15			±15	±1000			80		LH30	ok
LH30-10A24			±24	±625					LH30	no

Functional Diagram





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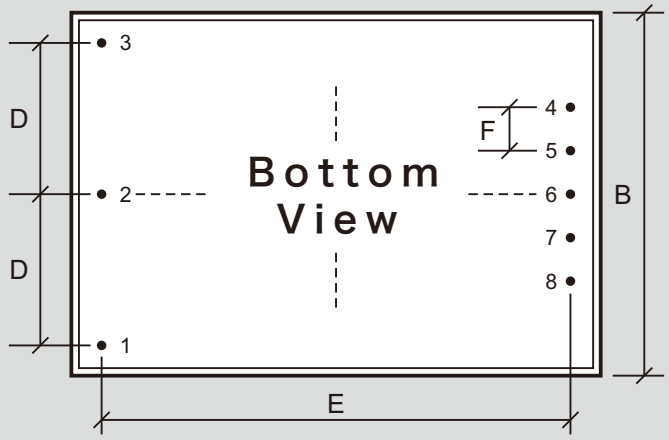
LH10～30 Series

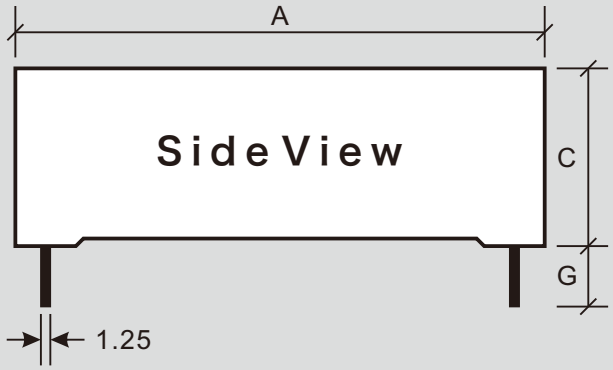
10～30w, 220Vac input, isolated & regulated output ac-dc converter

Outline Dimensions

First Angle Proj



Pin	Single	Dual		
1	⏚	⏚		
2	AC(N)-	AC(N)-		
3	AC(L)+	AC(L)+		
4	+Vo	+Vo		
5	no pin	no pin		
6	no pin	0V		
7	no pin	no pin		
8	0V	-Vo		



No.	LH10	LH15	LH20	LH30
A	55.0±0.5	62.0±0.5	72.0±0.5	72.0±0.5
B	45.0±0.5	45.0±0.5	50.0±0.5	50.0±0.5
C	22.0±0.5	22.0±0.5	23.5±0.5	23.5±0.5
D	17.5±0.2	17.5±0.2	20.5±0.2	20.5±0.2
E	47.0±0.2	54.0±0.2	62.0±0.2	62.0±0.2
F	5.0±0.2	5.0±0.2	5.75±0.2	5.75±0.2
G	5.0±0.2	5.0±0.2	5.0±0.2	5.0±0.2

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File Release Notes

DBN-502 Technical Data Sheet Version

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

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

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德励电子
DELUS

Delus Guangzhou Electronic Technology CO., LTD

Address: 69#, Xinzhuang 2 Road, Huangpu District,
Guangzhou City, Guangdong Province, PRC
Tel: +86-020-32206616、32206632
Fax: +86-020-32206658
Email: sales@delus.cn
Website: delus-power.com