



CFB400W Series Application Note V18 March 2026

ISOLATED DC-DC CONVERTER CFB400W SERIES APPLICATION NOTE



Approved By:

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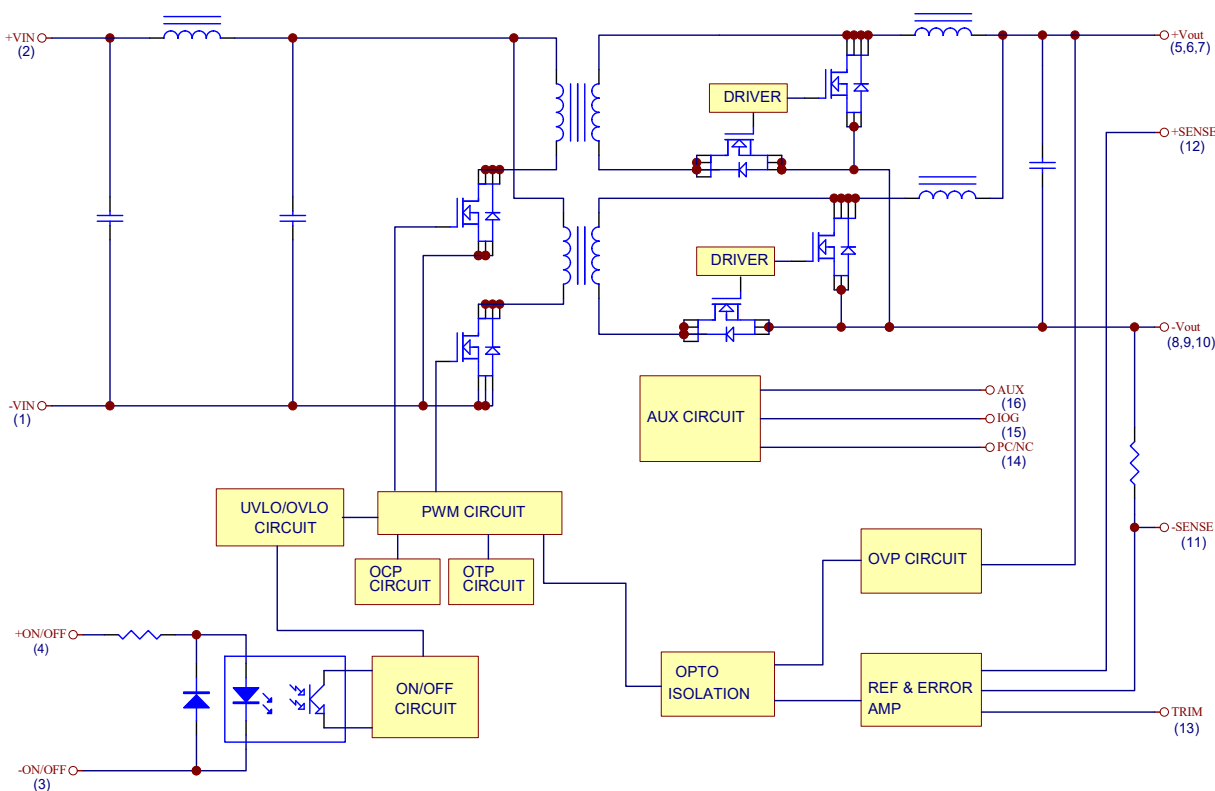
1. Introduction

This specification describes the features and functions of Cincon's CFB400W series of isolated DC-DC Converters. These are highly efficient, reliable and compact, high power density, single output DC/DC converters. The modules can be used in the field of telecommunications, data communications, wireless communications, servers, base station, etc. The CFB400W series can deliver up to 80A output current and provide a precisely regulated output voltage over a wide range of 9-36 and 18-75VDC. The modules can achieve high efficiency up to 90%. The module offers direct cooling of dissipative components for excellent thermal performance. Standard features include isolated remote **on/off** (positive or negative), remote sense, output voltage adjustment, over voltage, over current and over temperature protection. Parallel operation is also optional.

2. DC-DC Converter Features

- 400W Isolated Output
- Efficiency (at full load) up to 90%
- Regulated Output
- Fixed Switching Frequency
- Input Under/Over Voltage Lockout Protection
- Over Current Protection
- Isolated remote On/Off
- Continuous Short Circuit Protection
- Industry Standard Full-Brick Package
- Fully Isolated to 1500VDC

3. Electrical Block Diagram

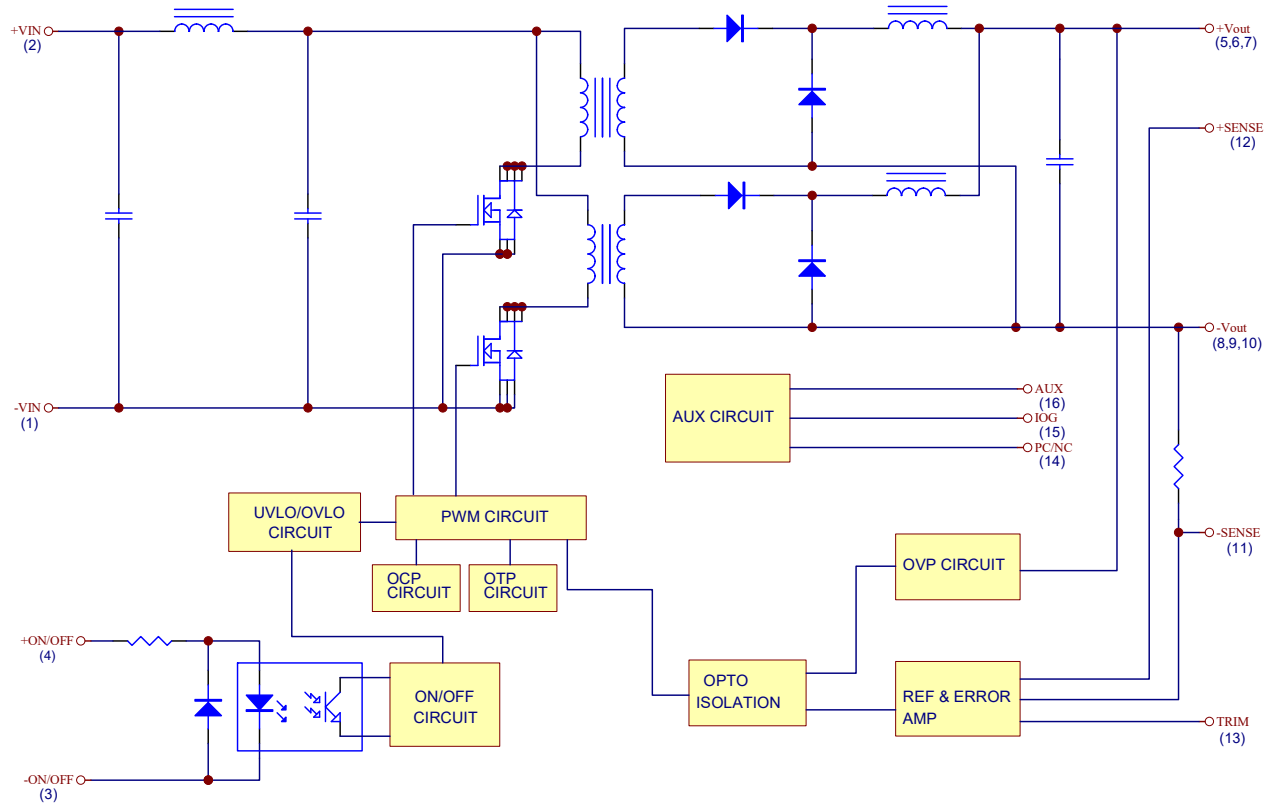


Electrical Block Diagram for 5V Modules



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Electrical Block Diagram for other Modules



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4. Technical Specifications

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage						
Continuous		24SXX	-0.3		36	V_{dc}
		48SXX	-0.3		75	
Operating Case Temperature		All	-40		100	°C
Storage Temperature		All	-55		125	°C
Input/Output Isolation Voltage	1 minute	All	1500			V_{dc}

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		24SXX	9	24	36	V _{dc}
		48SXX	18	48	75	
Input Under Voltage Lockout						
Turn-On Voltage Threshold		24SXX	8	8.5	9	V _{dc}
		48SXX	16	17	18	
Turn-Off Voltage Threshold		24SXX	6.5	7.5	8.5	V _{dc}
		48SXX	14.5	15.5	16.5	
Lockout Hysteresis Voltage		24SXX	1.0			V _{dc}
		48SXX	1.5			
Input Over Voltage Lockout						
Turn-On Voltage Threshold		24SXX	37	40	43	V _{dc}
		48SXX	76	80	84	
Turn-Off Voltage Threshold		24SXX	39	42	45	V _{dc}
		48SXX	79	83	87	
Lockout Hysteresis Voltage		24SXX	2.0			V _{dc}
		48SXX	3.0			
Maximum Input Current	100% Load, V _{in} =9V	24SXX	52			A
	100% Load, V _{in} =18V	48SXX	26			
Input Current at Full Load	100% Load V _{in} =24V	24S05	19.05			A
		24S12	19.36			
		24S24	19.19			
		24S28	19.19			
		24S48	19.19			
	100% Load V _{in} =48V	48S05	9.36			
		48S12	9.41			
		48S24	9.28			
		48S28	9.27			
		48S48	9.27			



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
No-Load Input Current		24S05		600	1500	mA
		24S12		120	250	
		24S24		120	250	
		24S28		120	250	
		24S48		120	250	
		48S05		300	800	
		48S12		60	150	
		48S24		60	150	
		48S28		60	150	
		48S48		60	150	
Inrush Current (I^2t)		All			1.0	A ² s
Input Capacitance (External)	Added capacitance, <0.7Ω ESR	24SXX	1000	3300		uF
		48SXX	330	1000		

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V_{in} =Nominal V_{in} , $I_o = I_{o_max}$, T_c =25°C	V_o =5V	4.95	5.00	5.05	V_{dc}
		V_o =12V	11.88	12.00	12.12	
		V_o =24V	23.76	24.00	24.24	
		V_o =28V	27.72	28.00	28.28	
		V_o =48V	47.52	48.00	48.48	
Output Voltage Regulation						
Load Regulation	I_o = $I_{o_min.}$ to $I_{o_max.}$	All			±0.5	%
Line Regulation	V_{in} =Low line to high line	All			±0.2	%
Temperature Coefficient	T_c =-40°C to 100°C	All			±0.03	%/°C
Output Voltage Ripple and Noise						
Peak-to-Peak	20MHz Bandwidth, full load, 10uF tantalum and 1.0uF ceramic capacitors (48V: 10uF aluminum and 1.0uF ceramic capacitors)	V_o =5V			100	mV
		V_o =12V			120	
		V_o =24V			240	
		V_o =28V			280	
		V_o =48V			480	
RMS	20MHz Bandwidth, full load, 10uF solid tantalum and 1.0uF ceramic capacitors (48V: 10uF aluminum and 1.0uF ceramic capacitors)	V_o =5V			40	mV
		V_o =12V			60	
		V_o =24V			100	
		V_o =28V			100	
		V_o =48V			120	
Operating Output Current Range		V_o =5V	0		80	A
		V_o =12V	0		33.3	
		V_o =24V	0		16.7	
		V_o =28V	0		14.3	
		V_o =48V	0		8.3	
Output DC Current Limit Inception	Output Voltage=90% nominal output voltage	All	110		150	%



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Capacitance	Full load (resistive)	Vo=5V Vo=12V Vo=24V Vo=28V Vo=48V	680 330 330 330 100		10000 10000 4700 2200	uF
Power Good Signal (IOG)	V _{out} ready: low level, sink current	All			20	mA
	V _{out} not ready: open drain output, applied voltage	All			50	V

DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Step Change in Output Current	d _i /d _t =0.1A/us, Load change from 75% to 100% to 75% of I _o , max.	5V Others		±5 ±3	±8 ±5	%
Setting Time (within 1% V _{out} nominal)	d _i /d _t =0.1A/us	All			500	us
Turn-On Delay and Rise Time						
Turn-On Delay Time, From On/Off Control	V _{on/off} to 10%V _{o_set}	All			75	ms
Turn-On Delay Time, From Input	V _{in_min.} to 10%V _{o_set}	All			250	ms
Output Voltage Rise Time	10%V _{o_set} to 90%V _{o_set}	All			50	ms

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load		24S05		87.5		%
		24S12		86		
		24S24		87		
		24S28		87		
		24S48		86.5		
		48S05		89		
		48S12		88.5		
		48S24		89		
		48S28		90		
		48S48		89		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage	1 Minute; input/output, input/case, output/case, input/remote, output/remote	All			1500	V _{dc}
Isolation Resistance		All	10			MΩ
Isolation Capacitance		All		4000		pF

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency		All		230		KHz
On/Off Control, Negative Remote On/Off						
Module Off	Floating	All	0		0.01	mA
Module On		All	1.0		10	mA



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
On/Off Control, Positive Remote On/Off (Models with Part Number Suffix "P")						
Module Off		All	1.0		10	mA
Module On	Floating	All	0		0.01	mA
Auxiliary Output Voltage		AUX	7	10	13	V
Auxiliary Output Current		AUX			20	mA
Load Share Accuracy (50%-100% load)	Only for the module (12/24/28/48V) with parallel control function	5V	-	-	-	-
		Others	-10		10	%
Off Converter Input Current	Shutdown input idle current	24S05			90	mA
		24S24 24S28			70	
		48S05			60	
		Others			50	
Output Voltage Trim Range	V_{in} =high line-low line, P_{out} =max. rated power, I_{out} =max. rated current	Others	-20		+10	%
	V_{in} =9-13V for 24S24, 24S28, 24S48 V_{in} =18-22V for 48S24, 48S28, 48S48 I_{out} =max. rated current	V_o =24V V_o =28V V_o =48V	-20		0	
	V_{in} =13-36V, P_{out} =max. rated power, I_{out} =max. rated current	24S24 24S28 24S48	-20		+10	
	V_{in} =22-75V, P_{out} =max. rated power, I_{out} =max. rated current	48S24 48S28 48S48	-20		+10	
Output Over Voltage Protection		All	115	125	140	%
Over-Temperature Shutdown		All		110		°C

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o =100% of $I_{o,max}$; T_a =25°C per MIL-HDBK-217F	All		340		k hours
Weight		All		220		grams

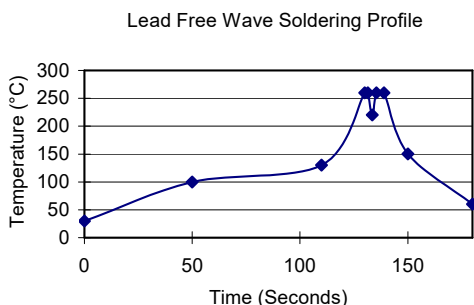


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6.3 Thermal Considerations

The power module operates in a variety of thermal environments; however, sufficient cooling should be provided to help ensure reliable operation of the unit. Heat is removed by conduction, convection, and radiation to the surrounding environment. The test data is presented in **section 6.4**. The power output of the module should not be allowed to exceed rated power ($V_{o_set} \times I_{o_max.}$).

Hand Soldering Information:

Hand soldering is the least preferred method because the amount of solder applied, the time the soldering iron is held on the joint, the temperature of the iron, and the temperature of the solder joint are variable. The recommended hand soldering guideline is listed in following table. The suggested soldering process must keep the power module's internal temperature below the critical temperature of 217°C continuously.

Hand-Soldering Guideline

Parameter	Single-side Circuit board	Double-side Circuit board	Multi-layers Circuit board
Soldering Iron Wattage	90W	90W	90W
Tip Temp.	385+/-10°C	420+/-10°C	420+/-10°C
Soldering Time	2~6 Seconds	4~10 Seconds	4~10 Seconds

The suggested soldering process must keep the power module's internal temperature below the critical temperature of 217°C continuously.

Clean the soldered side of the module with a brush, prevent liquid from getting into the module. Do not clean by soaking the module into liquid. Do not allow solvent to come in contact with product labels or resin case as this may changed the color of the resin case or cause deletion of the letters printed on the product label. After cleaning, dry the modules well.

6.2 Convection Requirements for Cooling

To predict the approximate cooling needed for the full brick module, refer to the power de-rating curves in **section 6.4**. These de-rating curves are approximations of the ambient temperatures and airflows required to keep the power module temperature below its maximum rating. Once the module is assembled in the actual system, the module's temperature should be monitored to ensure it does not exceed 100°C as being measured at the center of the top of the case (thus verifying proper cooling).



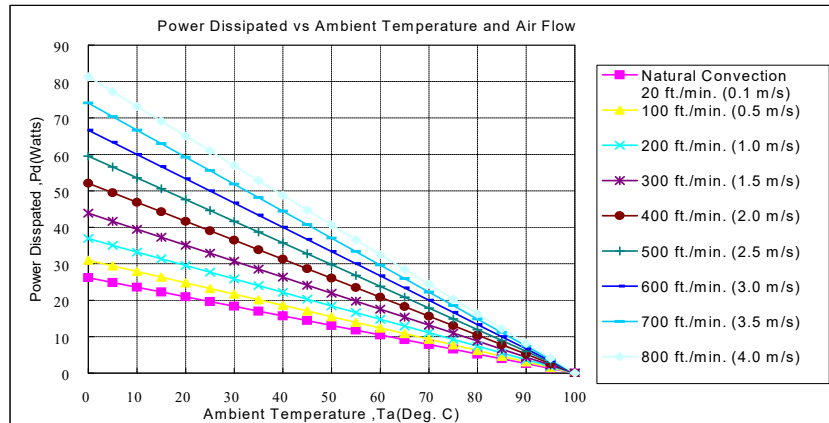
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6.4 Power De-rating

The operating case temperature range of CFB400W series is -40°C to +100°C. When operating the CFB400W series, proper de-rating or cooling is needed. The maximum case temperature under any operating condition should not be exceeded 100°C.

The following curve is the de-rating curve of CFB400W series without heat sink.



AIR FLOW RATE	TYPICAL R_{ca}
Natural Convection	
20ft./min. (0.1m/s)	3.82 °C/W
100 ft./min. (0.5m/s)	3.23 °C/W
200 ft./min. (1.0m/s)	2.71 °C/W
300 ft./min. (1.5m/s)	2.28 °C/W
400 ft./min. (2.0m/s)	1.92 °C/W
500 ft./min. (2.5m/s)	1.68 °C/W
600 ft./min. (3.0m/s)	1.50 °C/W
700 ft./min. (3.5m/s)	1.35 °C/W
800 ft./min. (4.0m/s)	1.23 °C/W

Example:

What is the minimum airflow necessary for a CFB400W-48S24 operating at nominal line, an output current of 16.7A, and a maximum ambient temperature of 40°C.

Solution:

Given: $V_{in}=48V_{dc}$, $V_o=24V_{dc}$, $I_o=16.7A$

Determine power dissipation (P_d):

$$P_d = P_i - P_o = P_o(1 - \eta) / \eta$$

$$P_d = 24 \times 16.7 \times (1 - 0.9) / 0.9 = 44.5 \text{ Watts}$$

Determine airflow:

Given: $P_d=44.5W$ and $T_a=40^\circ C$

Check above power de-rating curve:

minimum airflow=700 ft./min.

Verifying:

$$\text{The maximum temperature rise } \Delta T = P_d \times R_{ca} = 44.5 \times 1.23 = 54.7^\circ C$$

$$\text{The maximum case temperature } T_c = T_a + \Delta T = 94.7^\circ C < 100^\circ C$$

Where:

The R_{ca} is thermal resistance from case to ambience

The T_a is ambient temperature and the T_c is case temperature

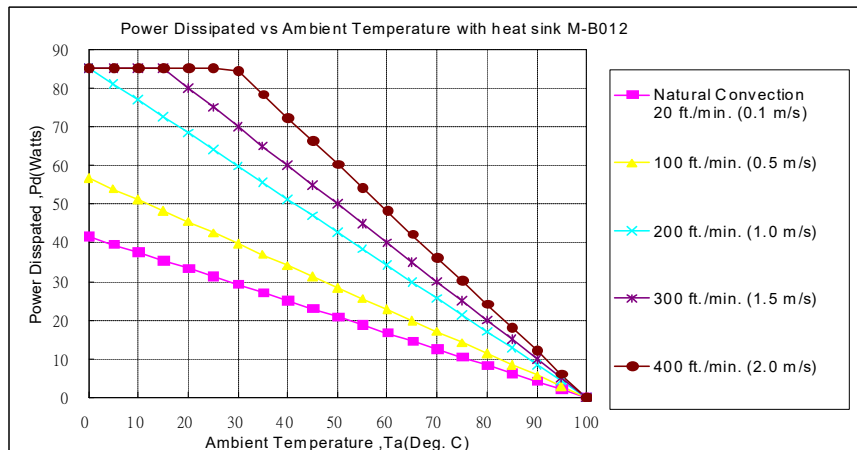
Chart of Thermal Resistance vs Air Flow



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The following curve is the de-rating curve of CFB400W series with heat sink FBL254 (M-B012).



AIR FLOW RATE	TYPICAL R_{ca}
Natural Convection 20ft./min. (0.1m/s)	2.4 °C/W
100 ft./min. (0.5m/s)	1.76 °C/W
200 ft./min. (1.0m/s)	1.17 °C/W
300 ft./min. (1.5m/s)	1.00 °C/W
400 ft./min. (2.0m/s)	0.83 °C/W

Forced Convection Power De-rating with Heat Sink FBL254 (M-B012)

Example:

What is the minimum airflow necessary for a CFB400W-48S24 operating at nominal line, an output current of 16.7A, and a maximum ambient temperature of 40°C.

Solution:

Given: $V_{in}=48V_{dc}$, $V_o=24V_{dc}$, $I_o=16.7A$

Determine power dissipation (P_d):

$$P_d = P_i - P_o = P_o(1-\eta)/\eta$$

$$P_d = 24 \times 16.7 \times (1-0.9)/0.9 = 44.5 \text{ Watts (Chart of Thermal Resistance vs Air Flow)}$$

Determine airflow:

Given: $P_d=44.5W$ and $T_a=40^\circ C$

Check above power de-rating curve:

minimum airflow=200 ft./min.

Verifying:

The maximum temperature rise $\Delta T = P_d \times R_{ca} = 44.5 \times 1.17 = 52.1^\circ C$

The maximum case temperature $T_c = T_a + \Delta T = 92.1^\circ C < 100^\circ C$

Where:

The R_{ca} is thermal resistance from case to ambience

The T_a is ambient temperature and the T_c is case temperature

6.5 Full Brick Heat Sinks

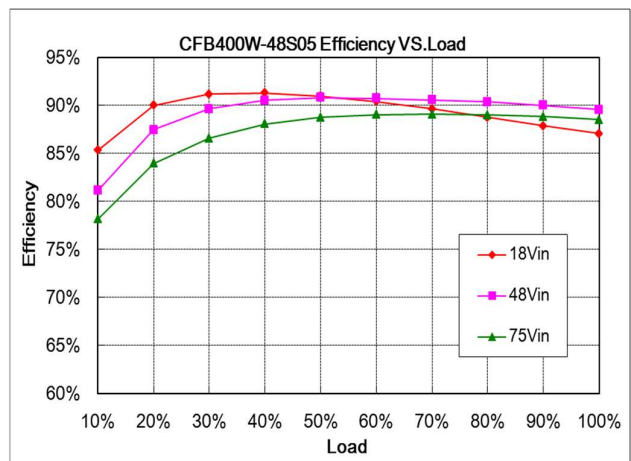
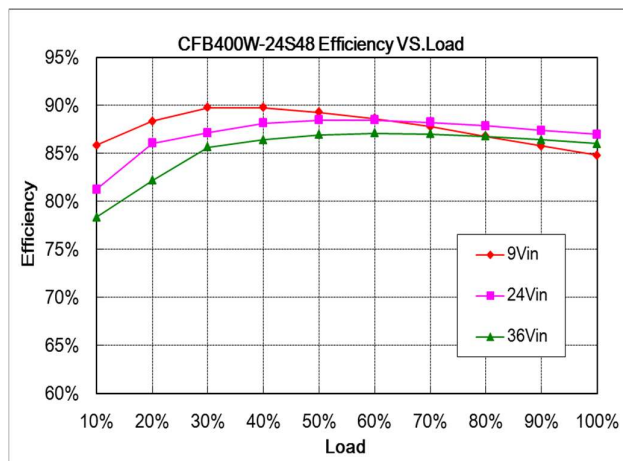
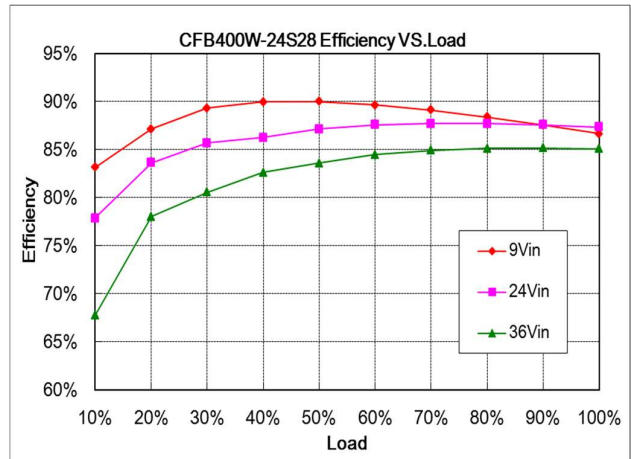
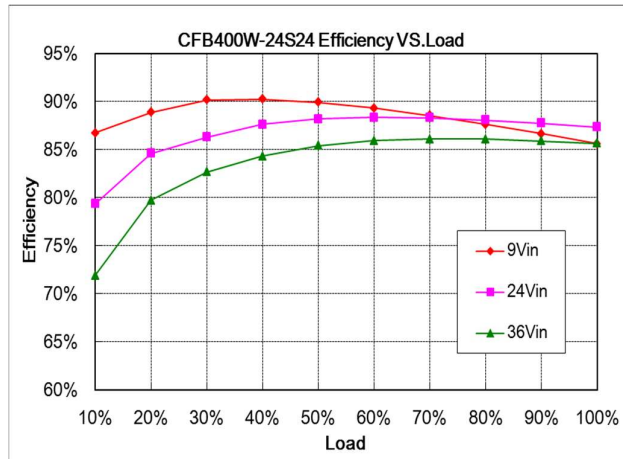
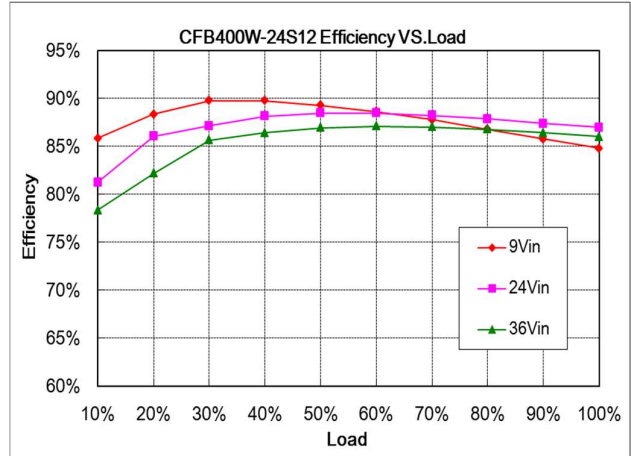
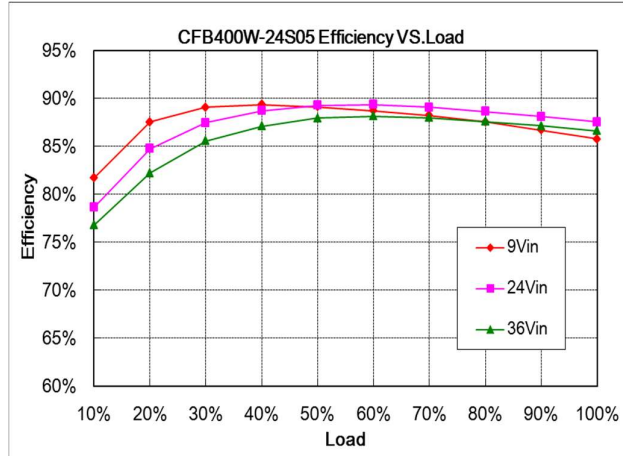
Heat sinks assembly [refer to Datasheet-Thermal](#)



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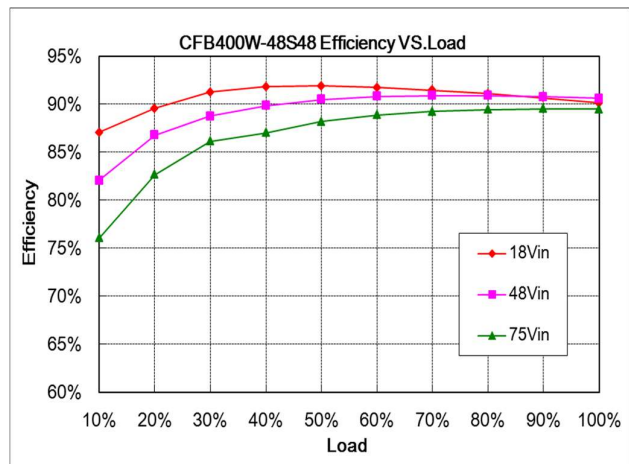
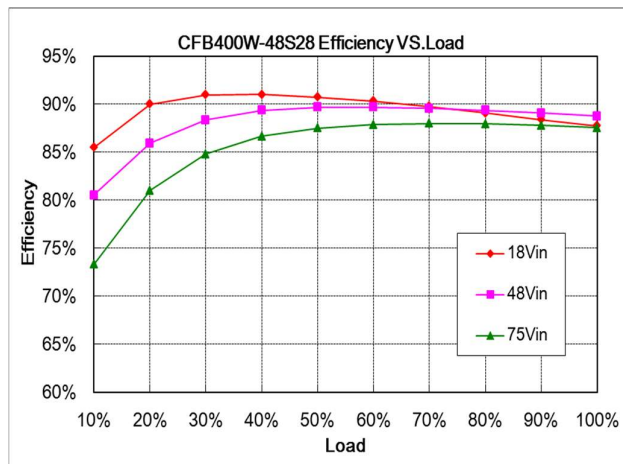
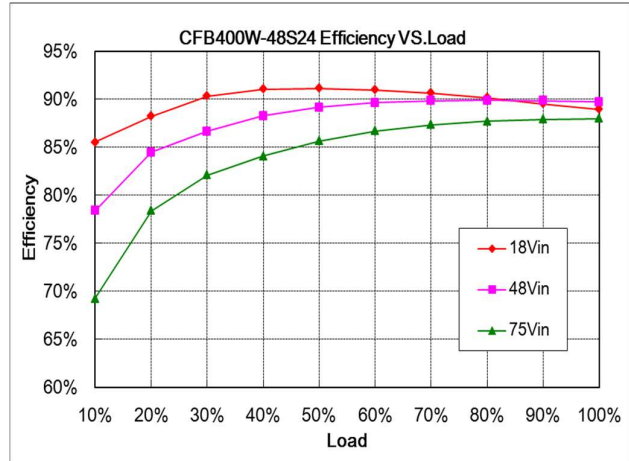
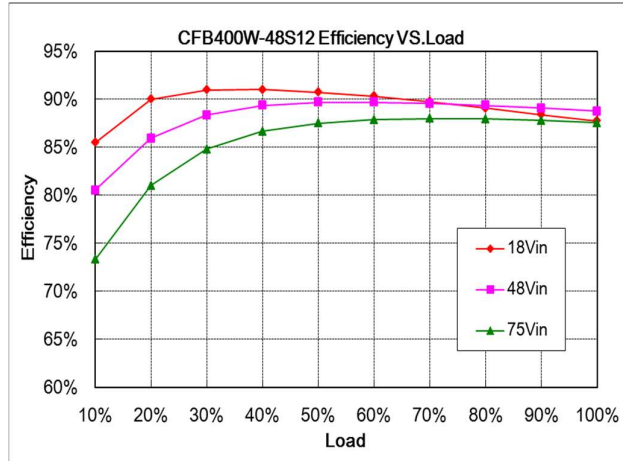
6.6 Efficiency VS. Load





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6.7 Test Set-Up

The basic test set-up to measure parameters such as efficiency and load regulation is shown below. When testing the modules under any transient conditions please ensure that the transient response of the source is sufficient to power the equipment under test. We can calculate:

- Efficiency
- Load regulation and line regulation

The value of efficiency is defined as:

$$\eta = \frac{V_o \times I_o}{V_{in} \times I_{in}} \times 100\%$$

Where:

V_o is output voltage,
 I_o is output current,
 V_{in} is input voltage,
 I_{in} is input current

The value of load regulation is defined as:

$$\text{Load.reg} = \frac{V_{FL} - V_{NL}}{V_{NL}} \times 100\%$$

Where:

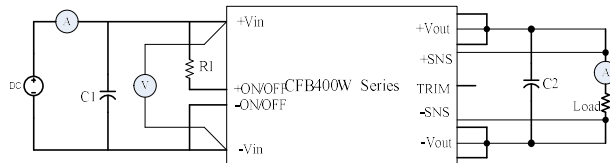
V_{FL} is the output voltage at full load
 V_{NL} is the output voltage at no load

The value of line regulation is defined as:

$$\text{Line.reg} = \frac{V_{HL} - V_{LL}}{V_{NLL}} \times 100\%$$

Where:

V_{HL} is the output voltage of maximum input voltage at full load
 V_{LL} is the output voltage of minimum input voltage at full load



CFB400W Series Test Setup

Recommend C1 and C2 Value

CFB400W-24SXX: C1:1000uF/50V

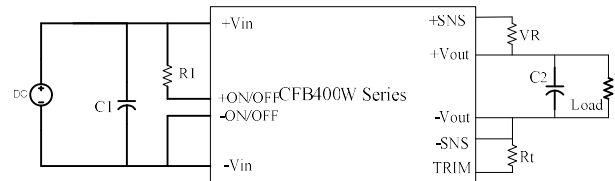
CFB400W-48SXX: C1:330uF/100V

For CFB400W series it's necessary to connect the input electrolytic capacitor C1 with low ESR to prevent the effective of input line inductance to the DC/DC converter.

For stable operation, connect a low impedance electrolytic capacitor C2 in the output terminals according to output capacitance items in **page 7**. When operated at lower temperature than -20°C, increasing the C2 capacitance with three or four times more than the recommended value.

6.8 Output Voltage Adjustment

The Trim input permits the user to adjust the output voltage up or down according to the trim range specification (80% to 110% of nominal output). This is accomplished by connecting an external resistor between the +Vout and +Sense pin for trim up and between the TRIM and -Sense pin for trim down, see Figure



Output Voltage Trim Circuit Configuration

The Trim pin should be left open if trimming is not being used. The output voltage can be determined by the following equations:

$$V_f = \frac{1.24 \times \left(\frac{R_t \times 33}{R_t + 33} \right)}{7.68 + \frac{R_t \times 33}{R_t + 33}}$$

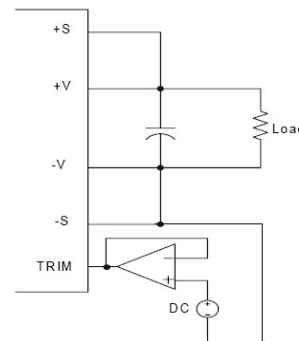
$$V_{out} = (V_o + V_R) \times V_f$$

Unit: KΩ

V_o : Nominal Output Voltage

Recommend R_t : 6.8KΩ

The output voltage can also be adjustment by using external DC voltage



$$\text{Output Voltage} = \text{TRIM Terminal Voltage} \times \text{Nominal Output Voltage}$$

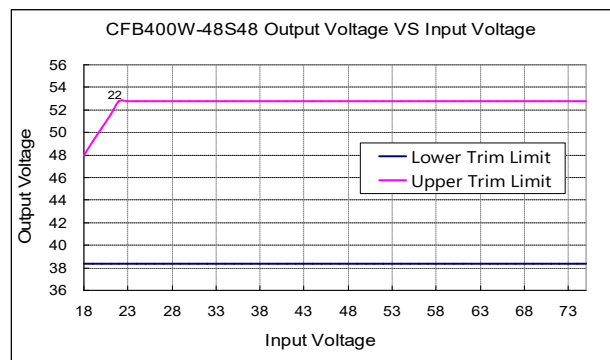
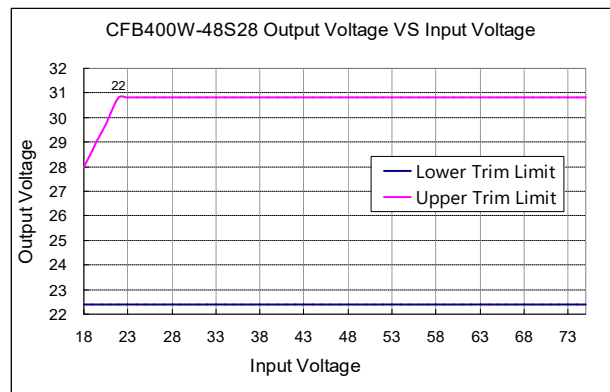
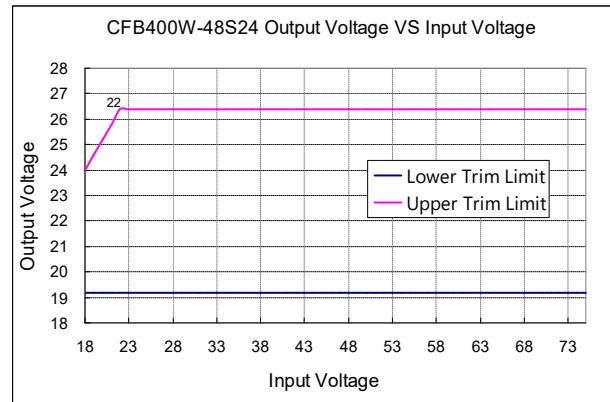
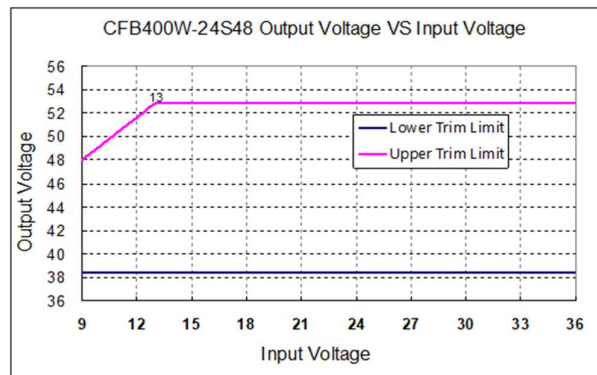
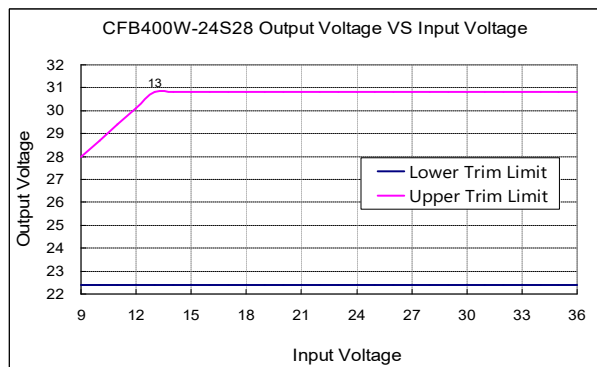
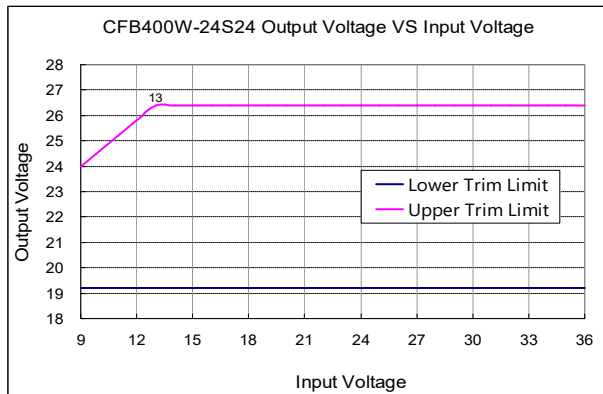


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Note: the output voltage can be increased by the remote sense and the trim. The amount of power delivered by the module is defined as the voltage at the output terminals multiplied by the output current. When using remote sense and trim, the output voltage of the module can be increased and consequently increase the power output of the module if output current remains unchanged. Care should be taken to ensure that the maximum output power of the module remains at or below the maximum rated power (Maximum rated power = $V_{o,set} \times I_{o,max.}$)

The output voltage on 5V&12V models is adjustable within the range of +10% to -20%. For 24V&28V&48V models, see input& output trim curves for trim up and trim down ranges.





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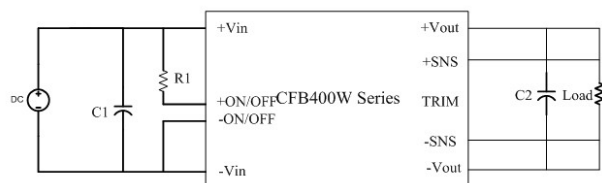
6.9 Output Remote Sensing

The CFB400W SERIES converter has the capability to remotely sense both lines of its output. This feature moves the effective output voltage regulation point from the output of the unit to the point of connection of the remote sense pins. This feature automatically adjusts the real output voltage of the CFB400W series in order to compensate for voltage drops in distribution and maintain a regulated voltage at the point of load. The remote-sense voltage range is:

$$[(+V_{out}) - (-V_{out})] - [(+Sense) - (-Sense)] \leq 10\% \text{ of } V_{o_nominal}$$

If the remote sense feature is not to be used, the sense pins should be connected locally. The +Sense pin should be connected to the +V_{out} pin at the module and the -Sense pin should be connected to the -V_{out} pin at the module.

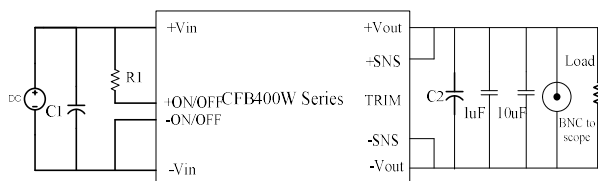
This is shown in the schematic below.



Note:

Although the output voltage can be increased by both the remote sense and by the trim, the maximum increase for the output voltage is not the sum of both. The maximum increase is the larger of either the remote sense or the trim. The amount of power delivered by the module is defined as the voltage at the output terminals multiplied by the output current. When using remote sense and trim, the output voltage of the module can be increased and consequently increase the power output of the module if output current remains unchanged. Care should be taken to ensure that the maximum output power of the module remains at or below the maximum rated power (Maximum rated power = V_{o,set} x I_{o,max}.)

6.10 Output Ripple and Noise



Output ripple and noise is measured with 1.0uF ceramic and 10uF solid tantalum capacitors across the output.

6.11 Output Capacitance

The CFB400W series converters provide unconditional stability with or without external capacitors. For good transient response, low ESR output capacitors should be located close to the point of load. PCB design emphasizes low resistance and inductance tracks in consideration of high current applications. Output capacitors with their associated ESR values have an impact on loop stability and bandwidth. The output capacitance is recommended in output capacitance items which need three or four times capacitance when operating below -20°C and the absolute maximum value of CFB400W series' output capacitance is 10000uF. For values larger than this, please contact your local CINCON's representative.



CFB400W Series

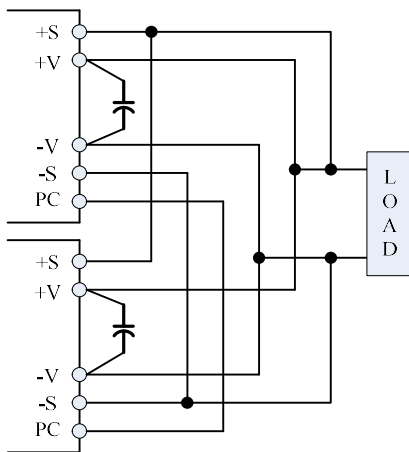
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6.12 Parallel Operation

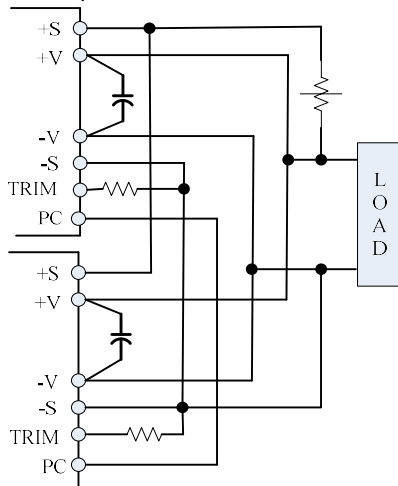
The CFB400W series (except 5V_{out}) are also designed for parallel operation. When paralleled, the load current can be equally shared between the modules by connecting the PC pins together.

There are two different parallel operations for CFB400W series, one is parallel operation when load can't be supplied by only one power unit; the other is the N+1 redundant operation which is high reliable for load of N units by using N+1 units.

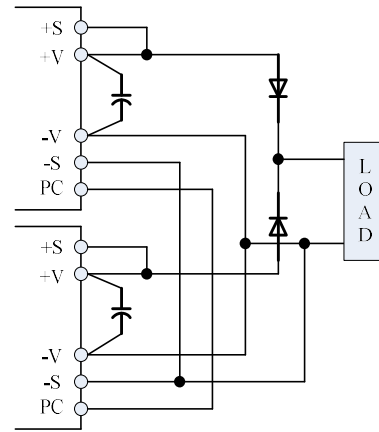
(a) parallel operation (except 5V_{out})



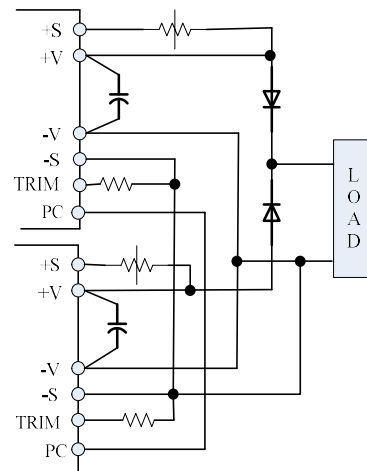
(b) Parallel operation with programmed and adjustable output (except 5V_{out})



(c) N+1 redundant connection

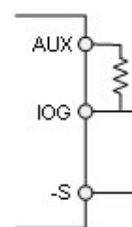


(d) N+1 redundant connection with programmed output and adjustable output voltage

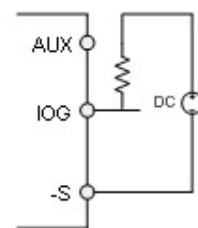


6.13 IOG Signal

Normal and abnormal operation of the converter can be monitored by using the I.O.G signal. Output of this signal monitor is located at the secondary side and is open collector output, you can use the signal by the internal aux power supply or the the external DC supply as the following figures. the ground reference is the -sense. For the sink current and voltage rating applied see output characteristic on **page 7**.



By Internal AUX



By External DC Supply



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This signal is low when the converter is normally operating and high when the converter is disabled or when the converter is abnormally operating.

6.14 Auxiliary Power for Output Signal

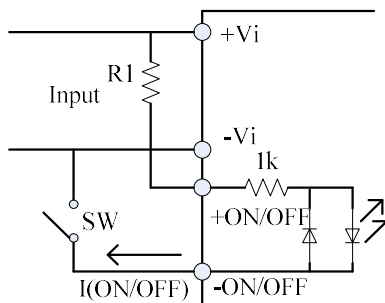
The auxiliary power supply output is within 7-13V with maximum current of 20mA. Ground reference is the -sense Pin.

6.15 On/Off Control

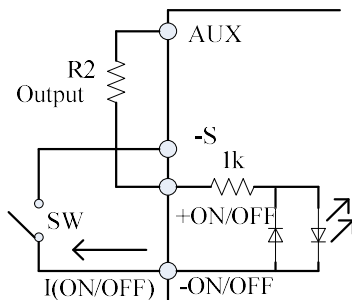
The converter's **on/off** can be controlled from the input side or the output side.

Output voltage turns on when current is made to through **on/off** terminals which can be reached by opening or closing the switches. The maximum current through the **on/off** pin is 10mA, setting the resistor value to avoid the maximum current through the **on/off** pins.

- (A) Controlling the **on/off** terminal from the input side, recommend R1 value is 12K (1.0W) for 48V_{in} and 6K (0.5W) for 24V_{in}.



- (B) Controlling the **on/off** terminal from the output side, recommend R2 value is 4.3K (0.1W).



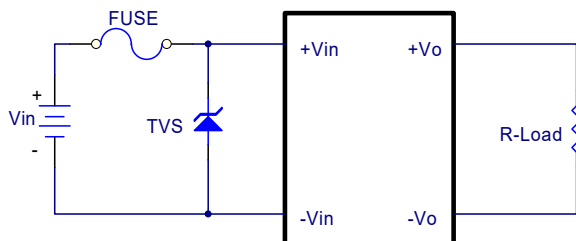


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7. Safety & EMC

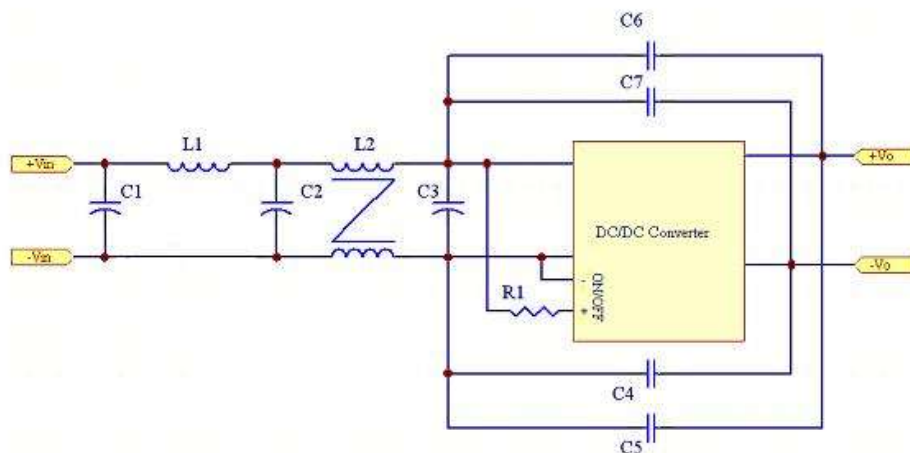
7.1 Input Fusing and Safety Considerations

The CFB400W series converters have no internal fuse. In order to achieve maximum safety and system protection, always use an input line fuse. We recommended a 80A fast blow type fuse for 24V_{in} models, and 40A for 48V_{in} models. It is recommended that the circuit have a transient voltage suppressor diode (TVS) across the input terminal to protect the unit against surge or spike voltage and input reverse voltage (as shown).



7.2 EMC Considerations

Suggested Circuits for Conducted EMI Class A



(1) EMI and Conducted Noise Meet EN 55032 Class A Specifications:

Model No.	C1	C2	C3	C4	C5	C6	C7	L1	L2	R1
CFB400W-24S12	NC	470uF/50V KY	1000uF/50V KY	2200pF/2kV	NC	NC	NC	Short	200uH RM8 SM100	6K (0.5W)
CFB400W-48S48	330uF/100V KMF	330uF/100V KMF	330uF/100V KMF	NC	NC	NC	NC	1uH SPI-13050-1R0	1.5mH CM20*12*10	12K (1.0W)

Note:

C1, C2, C3 is NIPPON CHEMI-CON KY or KMF series aluminum capacitor, C4 is ceramic capacitors

L1: Core TODA ISU SPI-13050-1R0

L2: Core SM RM8 SM100 0.51*3.25mm/4T*4 (for CFB400W-24S12)

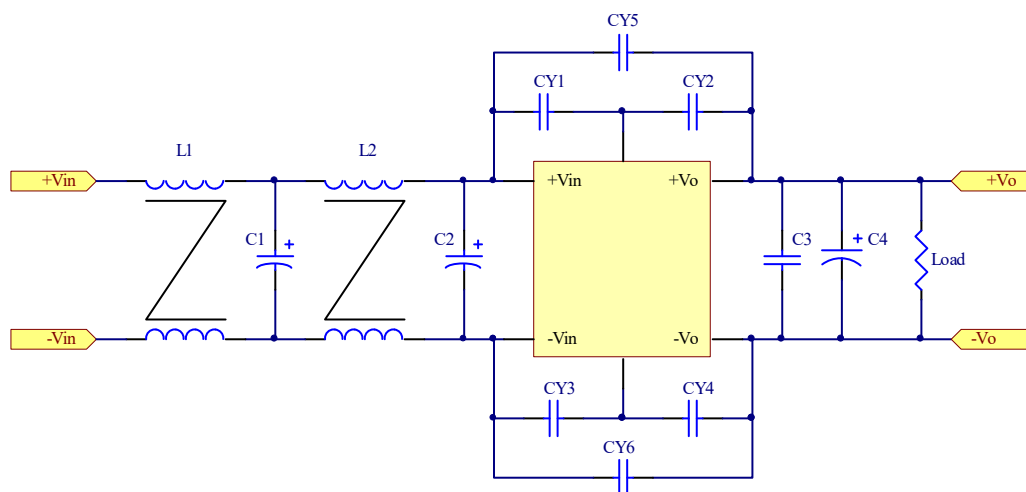
L2: Core SM CM20*12*10 turns double wire (for CFB400W-48S48)



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Suggested Circuits for Conducted EMI Class B



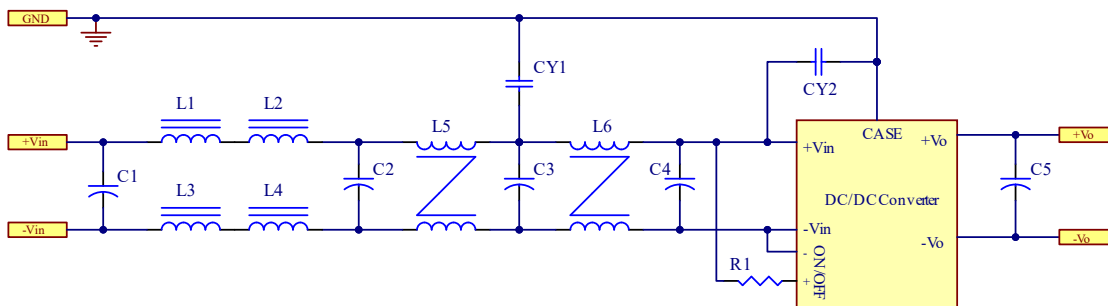
(1) EMI and CONDUCTED NOISE Meet EN55032 Class B Specifications:

Model No.	C1	C2	C3	CY1, CY2, CY3, CY4	CY5, CY6	L1	L2
CFB400W-24S12	47uF/50V KY	1000uF/50V KY	330uF/100V PW	6800pF/2kV*4	6800pF/2kV*2	0.2mH	1mH
CFB400W-48S12	120uF/100V KY	330uF/100V PW	330uF/100V PW	6800pF/2kV*4 //2200pF/2kV	6800pF/2kV*2	0.2mH	1mH

Note:

C1, C2, C3 is NIPPON CHEMI-CON KY series or NICHICON PW series aluminum capacitor, CY1, CY2, CY3, CY4, CY5, CY6 are ceramic capacitors

L1: Core SM CM20*12*105 turns double wire, L2: Core: SM150 T31*19*13, 7 turns double wire



(1) EMI and Conducted Noise Meet EN55032 Class B Specifications:

Model No.	C1	C2	C3	C4	C5	CY1	CY2
CFB400W-24S24	470uF/50V PS	470uF/50V PS	4.7uF/100V 1812	1000uF/50V KY	330uF/50V KY	0.01uF/250V*4 Y2 Cap.	2200pF/250V*2 Y2 Cap.
	L1, L2, L3, L4	L5, L6	R1				
	100nH	0.5mH	6K (0.5W)				

Note:

C1, C2, C4, C5 is NIPPON CHEMI-CON KY series or NICHICON PS series aluminum capacitor, CY1, CY2 are ceramic capacitors

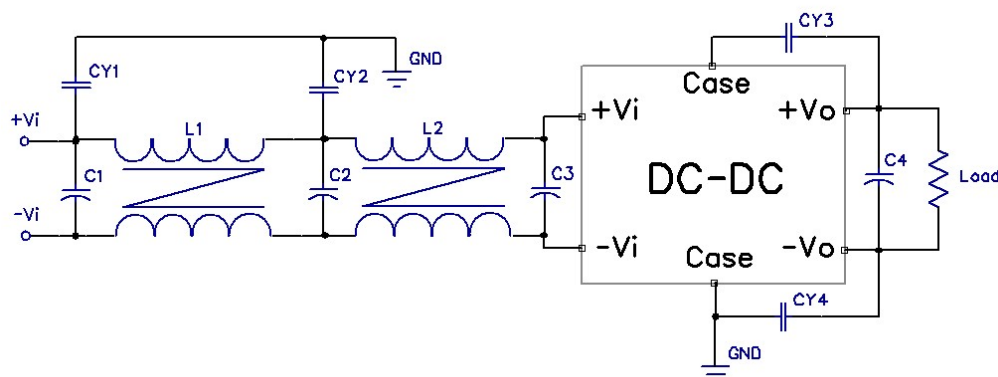
L1, L2, L3, L4: PA0511.900NLT Puls, L5, L6: 744 825 350 5 Wurth



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Suggested Circuits for Conducted EMI Class B



(1) EMI and Conducted Noise Meet EN55032 Class B Specifications:

Model No.	C1	C2	C3	C4	CY1	CY2	CY3	CY4	L1	L2
CFB400W-48S24	470uF/100V PS	470uF/100V PS	470uF/100V PS	330uF/50V KY	470pF 250V	4700pF 250V	0.047uF 1kV	0.047uF 1kV	2mH	2mH

Note:

C1, C2, C3, C4 is NIPPON CHEMI-CON KY series or NICHICON PS series aluminum capacitor, CY1, CY2, CY3, CY4 are ceramic capacitors.

L1: SC15-200 KEMET

8. Part Number

Format: CFB400W – II X OO L

Parameter	Series	Nominal Input Voltage	Number of Outputs	Output Voltage	Remote On/Off Logic
Symbol	CFB400W	II	X	OO	L
Value	CFB400W	24: 24 Volts 48: 48 Volts	S: Single	05: 05 Volts 12: 12 Volts 24: 24 Volts 28: 28 Volts 48: 48 Volts	None: Negative P: Positive

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