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POWERBOX Industrial Line
PFB400W Series
400W 4:1 Single Output
DC/DC Converter

Features

- 400W isolated output
- Efficiency up to 90%
- Fixed switching frequency
- Input under/over-voltage protection
- Over temperature protection
- Over voltage/current protection
- Remote ON/OFF
- Industry full-brick package
- Fully isolated 1500VAC
- UL60950-1 approved

Input

Voltage range	24V: 9-36V	48V: 18-75V
Under voltage lockout	24Vin power up: 8.5V. 24Vin power down: 7.5V	
	48Vin power up: 17V. 48Vin power down: 15V	
Over voltage protection	24Vin turn off: 42V. 24V turn on: 40V	
	48Vin turn off: 83V. 48V turn on: 80V	
Opto isolated remote ON/OFF		
Input filter	PI type	

Output

Voltage accuracy	±1.5% max.	
Transient response	<500μs	
External trim adj. range	80-110%	
Load share accuracy[5]	±10% at 50% to 100% full load	
Auxiliary voltage/current	10±3VDC/20mA max.	
Ripple and noise	5V	40mV rms max, 100mV pk-pk max.
20MHz BW	12V	60mV rms max, 120mV pk-pk max.
	24V	100mV rms max, 240mV pk-pk max.
	28V	100mV rms max, 280mV pk-pk max.
	48V	120mV rms max, 480mV pk-pk max.
Temperature coefficient	±0.03%/°C max.	
Short circuit protection	Continuous	
Line regulation[1]	±0.2% max.	
Load regulation[2]	±0.5% max.	
Over voltage protection	115-140%	
Current limit	110-150% nominal output	
Start up time	120ms typ.	

Environmental

Operating case temp.	–40°C to +100°C
Storage temperature	–55°C to +110°C
Thermal shutdown	Case temperature 110°C typ.
Humidity	95% RH max. Non-condensing

General

Efficiency	See table
Isolation voltage	1500VDC min input/output, input/case, output/case
Isolation resistance	10^7 ohms, min.
Isolation capacitance	4000pF typ.
Switching frequency	230kHz typ
MTBF	MIL-STD-217F, 340 khrs. GB, 25°C full load
Dimensions	116.8 x 61.0 x 12.7 mm
Case material	Aluminum baseplate with plastic case
Weight	220g

Standards

Safety standards	UL60950-1 approval

Note:
1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10uF tantalum and 1uF ceramic capacitor across output.
4. The output adjustment circuit and trim equations show as figure 1 and figure 2.
5. An external input capacitor 1000uF for 24Vin or 330uF for 48Vin models are recommended to reduce input ripple voltage.

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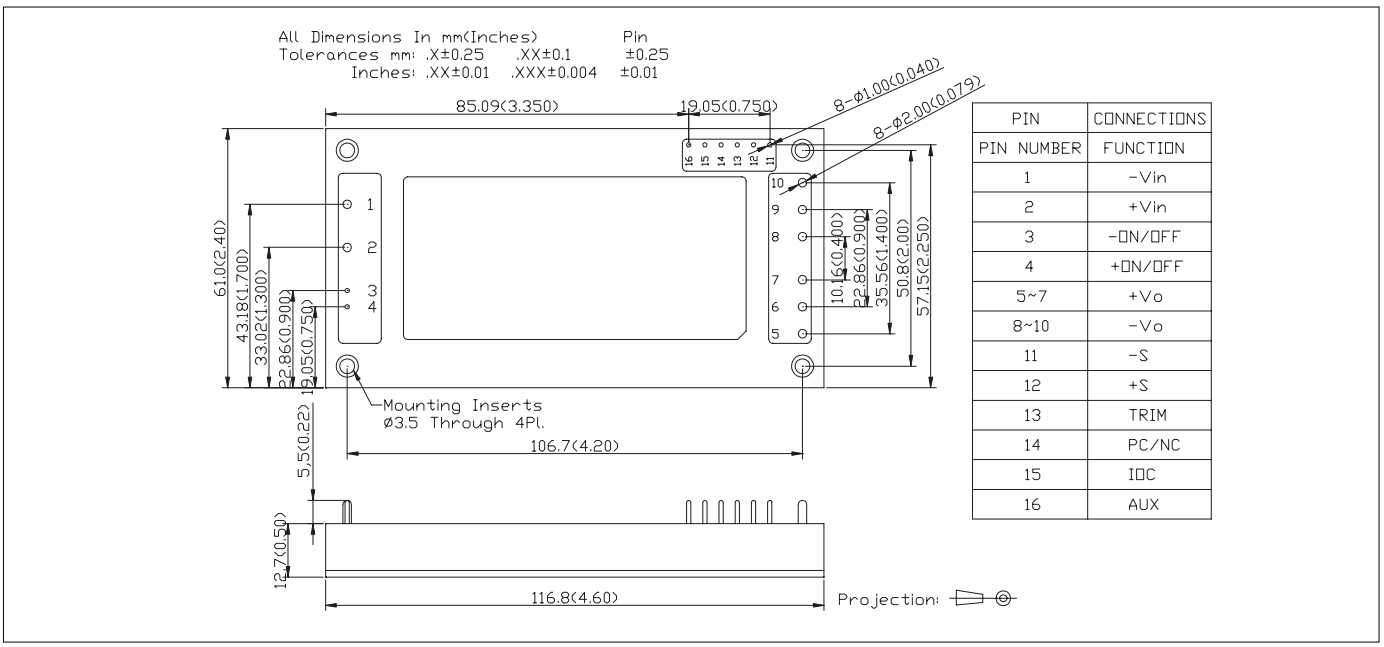
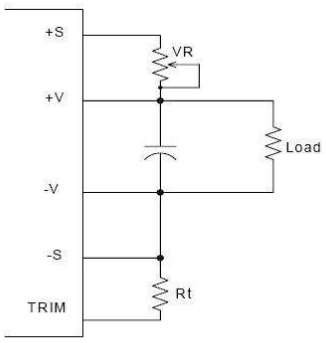
Model Number	Input Voltage	Output Voltage	Output Current Min	Output Current Max	Input Current No Load	Input Current Full Load	Efficiency	Capacitive Load Max
PFB400W-24S05	9-36VDC	5VDC	0mA	80 A	600mA	19.05A	87.5%	10000μF
PFB400W-24S12	9-36VDC	12VDC	0mA	33.3A	120mA	19.36A	86%	10000μF
PFB400W-24S24	9-36VDC	24VDC	0mA	16.7A	120mA	19.19A	87%	4700μF
PFB400W-24S28	9-36VDC	28VDC	0mA	14.3A	120mA	19.18A	87%	4700μF
PFB400W-24S48	9-36VDC	48VDC	0mA	8.3A	120mA	19.19A	86.5%	2200μF
PFB400W-48S05	18-75VDC	5VDC	0mA	80 A	300mA	9.36A	89%	10000μF
PFB400W-48S12	18-75VDC	12VDC	0mA	33.3A	60mA	9.41A	88.5%	10000μF
PFB400W-48S24	18-75VDC	24VDC	0mA	16.7A	60mA	9.28A	90%	4700μF
PFB400W-48S28	18-75VDC	28VDC	0mA	14.3A	60mA	9.27A	90%	4700μF
PFB400W-48S48	18-75VDC	48VDC	0mA	8.3A	60mA	9.27A	89.5%	2200μF

Notes:
1. Nominal Input Voltage 24,48 VDC
2. The output terminal of 12V,24V,28V&48Vout models required a minimum capacitor 330uF to maintain specified regulation.The output terminal of 05Vout models required a minimum capacitor 680uF to maintain specified regulation.

Mechanical



PIN	CONNECTIONS
PIN NUMBER	FUNCTION
1	-Vin
2	+Vin
3	-ON/OFF
4	+ON/OFF
5~7	+Vo
8~10	-Vo
11	-S
12	+S
13	TRIM
14	PC/NC
15	IOC
16	AUX



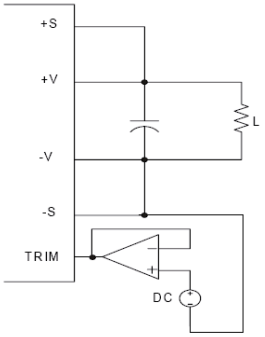
The output voltage can be determined by below equations:

$$Vf = \frac{1.24 \times (\frac{Rt \times 33}{Rt + 33})}{7.68 + \frac{Rt \times 33}{Rt + 33}}$$

$$Vout = (Vo + VR) \times Vf$$

Unit: KΩ
Vo: Nominal Output Voltage

Fig.1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.



Output Voltage = TRIM Terminal Voltage * Nominal Output Voltage

Fig.2 The schematic of output voltage adjusted by using external DC voltage.

Specifications are subject to change without notice.