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POWERBOX Industrial Line PMF30W Series 30W 4:1 Single and Dual Output DC/DC Converter

Features

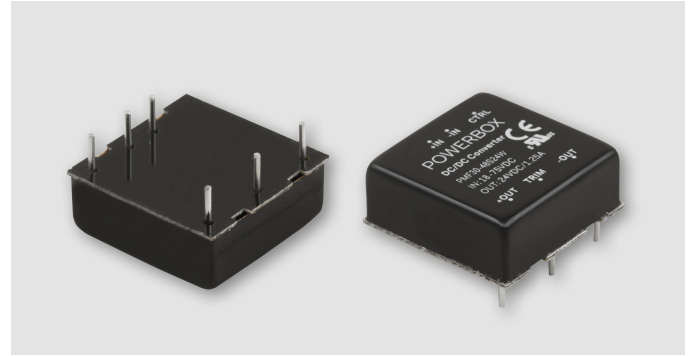
No minimum load required
1600VDC input to output isolation
Small size and low profile
Six-sided continuous shield
Remote control
Undervoltage protection
Over current protection
Short circuit protection
Over voltage protection
Over temperature protection
Low standby power
UL60950-1, EN60950-1, IEC60950-1 safety approvals
CE marked
Compliant to RoHS II and REACH

Input

Voltage range	24Vin(nom)	9-36VDC
	48Vin(nom)	18-75VDC
Reflected ripple current	Nominal input, full load	30mA p-p
Start-up voltage	24Vin(nom)	9VDC max
	48Vin(nom)	18VDC max
Shutdown voltage	24Vin(nom)	8VDC typ
	48Vin(nom)	16VDC typ
Start up time	Power up	30mS max
	Remote ON/OFF	30mS max
	Constant resistive load.	
Input surge voltage	24Vin(nom)	50VDC, 1sec max
	48Vin(nom)	100VDC, 1 sec max
Input filter	Pi type.	
Remote ON/OFF	Referred to -Vin pin	
	Positive logic (option)	
	DC-DC ON Open or 3~15VDC	
	DC-DC OFF Short or 0~1.2V	
	Negative logic (standard)	
	DC-DC ON Short or 0~1.2V	
	DC-DC OFF Open or 3~15VDC	
Input current of Ctrl pin	-0.5 to +1.0mA	
Remote off input current	2.0mA typ	

Output

Voltage accuracy	±1.0%.	
Line regulation	Low line to high line at full load	
	Single	±0.2%
	Dual	±0.5%
Load regulation	No load to full load.	
	Single	±0.2%
	Dual	±1.0%



	10% load to 90% load	
	Single	±0.1%
	Dual	±0.8%
Cross regulation	Dual	±5.0%
	Asymmetrical load 25%/100% FL.	
Voltage adjustability ²	Single 15Vout, 24Vout	-10 to +20%
	Others	±10%
Ripple and noise	Measured by 20MHz BW.	
	With a 22µF/25V X7R MLCC:	
	Single 3.3Vout, 5Vout	75mV p-p
	With 2 pcs of 22µF/25V X7R MLCC:	
	Single 12Vout, 15Vout	75mV p-p
	With 2 pcs of 6.8µF/50V X7R MLCC:	
	Single 24Vout	75mV p-p
	With a 10µF/25V X7R MLCC for each output:	
	Dual 12Vout 15Vout	60mV p-p
	With a 4.7µF/50V X7R MLCC for each output:	
	Dual 24Vout	75mV p-p
Temperature coefficient	±0.02%/°C.	
Transient response	250µS, recovery time 25% load step change,	
Over voltage protection	3.3Vout	3.7VDC min 5.4VDC max
	5Vout	5.6VDC min 7.0VDC max
	12Vout	13.5VDC min 19.6VDC max
	15Vout	18.3VDC min 22.0VDC max
	24Vout	29.1VDC min 32.5VDC max
Over load protection	170% of lout rated; hiccup mode.	
Short circuit protection	Continuous, automatics recovery.	

Environmental

Operating ambient temp.	-40°C to +50°C (without derating).	
	+50°C to +100°C (with derating).	
Max case temperature	105°C.	
Over temp. protection	115°C.	
Storage temperature	-55°C to +125°C.	
Thermal impedance	Natural convection (20LFM).	
	Without heat-sink	15.0°C/W
	With heat-sink	13.8°C/W
Thermal shock	MIL-STD-810F.	
Vibration	MIL-STD-810F.	
Relative humidity	5-95% RH.	

POWERBOX Industrial Line
PMF30W Series
30W 4:1 Single and Dual Output
DC/DC Converter

General

Isolation voltage	Input to output, 1 minute	1600VDC min
	Input(output) to case	1000VDC min
Isolation resistance	500VDC	1 GΩ min
Isolation capacitance	1500pF typ.	
Switching frequency	3.3Vout, 5Vout	275KHz typ
	Others	330KHz typ
Case material	Copper.	
Base material	FR4 PCB.	
Potting material	Silicon (UL94 V-0).	
Weight	16.5g.	
MTBF	MIL-HDBK-217F	1.259 x 10 ⁶ hrs.

Standards

Safety standards	UL60950-1, EN60950-1, IEC60950-1.
EMC specifications	
EMI ³	EN55022 Class A, Class B.
Radiated immunity	EN61000-4-3, 10V/m Criteria A.
Fast transient ⁴	EN61000-4-4, ±2KV Criteria A.
Surge ⁴	EN61000-4-5, ±2KV Criteria A.
Conducted immunity	EN61000-4-6, 10 Vr.m.s Criteria A.

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @No Load	Efficiency	Max Capacitor Load
PMF30-24S3P3W	9 ~ 36 VDC	3.3 VDC	7000 mA	10 mA	88%	10000 µF
PMF30-24S05W	9 ~ 36 VDC	5 VDC	6000 mA	10 mA	89%	7200 µF
PMF30-24S12W	9 ~ 36 VDC	12 VDC	2500 mA	10 mA	89%	1200 µF
PMF30-24S15W	9 ~ 36 VDC	15 VDC	2000 mA	10 mA	89%	1000 µF
PMF30-24S24W	9 ~ 36 VDC	24 VDC	1250 mA	10 mA	90%	375 µF
PMF30-24D12W	9 ~ 36 VDC	±12 VDC	±1250 mA	10 mA	89%	±750 µF
PMF30-24D15W	9 ~ 36 VDC	±15 VDC	±1000 mA	10 mA	91%	±500 µF
PMF30-24D24W	9 ~ 36 VDC	±24 VDC	±625 mA	12 mA	91%	±180 µF
PMF30-48S3P3W	18 ~ 75 VDC	3.3 VDC	7000 mA	10 mA	88%	10000 µF
PMF30-48S05W	18 ~ 75 VDC	5 VDC	6000 mA	10 mA	90%	7200 µF
PMF30-48S12W	18 ~ 75 VDC	12 VDC	2500 mA	8 mA	90%	1200 µF
PMF30-48S15W	18 ~ 75 VDC	15 VDC	2000 mA	8 mA	91%	1000 µF
PMF30-48S24W	18 ~ 75 VDC	24 VDC	1250 mA	8 mA	92%	375 µF
PMF30-48D12W	18 ~ 75 VDC	±12 VDC	±1250 mA	8 mA	91%	±750 µF
PMF30-48D15W	18 ~ 75 VDC	±15 VDC	±1000 mA	8 mA	92%	±500 µF
PMF30-48D24W	18 ~ 75 VDC	±24 VDC	±625 mA	10 mA	92%	±180 µF

Notes:

1. Test by minimum input and constant resistive load.
2. Trimming allows the user to increase or decrease the output voltage set point of the module. This is accomplished by connecting an external resistor between the Trim pin and either +Vout pin or -Vout pin.
3. The standard modules meet EN55022 Class A and Class B with external components. For further information, please contact with Powerbox.
4. The external input components are required if the module has to meet EN61000-4-4, EN61000-4-5.

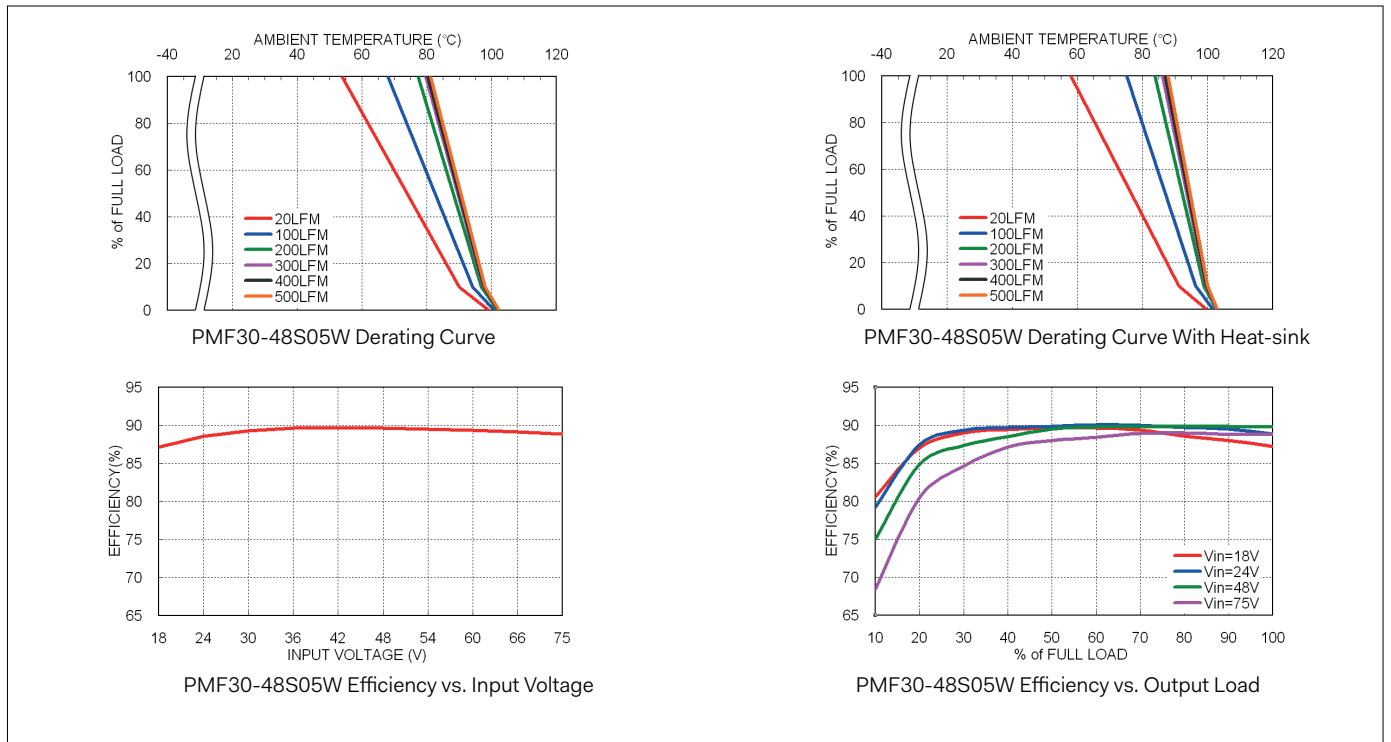
The PMF30-24XXXW recommended an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ58A, 58V, 3000Watt peak pulse power) to connect in parallel. The PMF30-48XXXW recommended an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V).

CAUTION: This power module is not internally fused. An input line fuse must always be used.

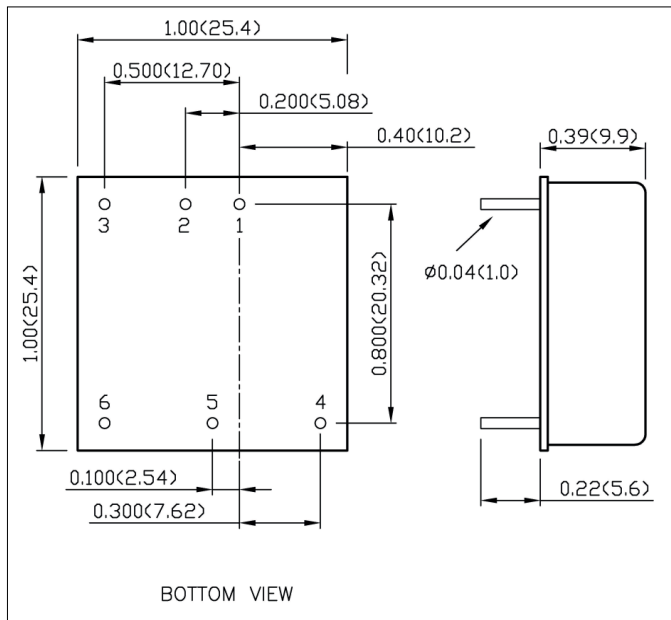
Part Number Structure

PMF30	-	48	S	05	W	-	A	HS
Series Name		Input Voltage	Output Quantity	Output Voltage	Input Range		Option	
		24: 9-36VDC	S: Single	3P3: 3.3VDC	4:1		□: Negative logic remote ON/OFF (Standard)	□: No assembly option
		48: 18-75VDC		05: 5VDC			A: Positive logic remote ON/OFF	HS: Heat-sink
				12: 12VDC			B: Without CTRL pin	HC: Heat-sink with Clamp
				15: 15VDC			C: Negative logic remote ON/OFF without Trim pin	
				24: 24VDC			D: Without CTRL pin & Trim pin	
			D: Dual	12: ±12VDC			E: Positive logic remote ON/OFF without Trim pin	
				15: ±15VDC				
				24: ±24VDC				

Derating Curve



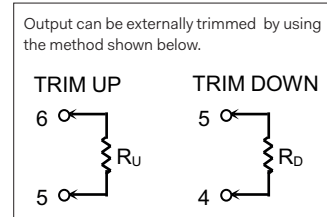
Mechanical



Pin Connection

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

External Output Trimming



1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)