

P R B X

POWERBOX Industrial Line T31TW Series 30W 4:1 Triple Output High Performance DC/DC Converter

Features

1600VDC input to output isolation
Standard 2.00 x 1.00 x 0.40 inch
Six-sided continuous shield
UL60950-1, EN60950-1 and IEC60950-1 safety approvals
CE marked
Compliant to RoHS II & REACH

Input

Voltage range	24Vin(nom)	9-36VDC
	48Vin(nom)	18-75VDC
Reflected ripple current	20mA p-p.	
Start-up voltage	24Vin(nom)	9VDC
	48Vin(nom)	18VDC
Shutdown voltage	24Vin(nom)	8VDC
	48Vin(nom)	16VDC
Start up time	Power up	30mS typ
	Remote on/off	30mS typ
	Constant resistive load.	
Input surge voltage	24Vin(nom)	50VDC
	48Vin(nom)	100VDC
Input filter	Pi type.	
Remote ON/OFF	Referred to -Vin pin. Positive logic (standard): DC/DC ON: Open or $3V < V_r < 12V$ DC/DC OFF: Short or $0V < V_r < 1.2V$ Negative logic (option): DC/DC ON: Short or $0V < V_r < 1.2V$ DC/DC OFF: Open or $3V < V_r < 12V$ Input current of Ctr pin $\pm 0.5mA$ Remote off input current 3mA	

Output

Voltage accuracy	3.3Vout, 5Vout	$\pm 1\%$
	12Vout, 15Vout	$\pm 5\%$
Line regulation	3.3Vout, 5Vout	$\pm 1\%$
	12Vout, 15Vout	$\pm 5\%$
	LL to HL at full load.	
Load regulation	3.3Vout, 5Vout	$\pm 1\%$
	12Vout, 15Vout	$\pm 5\%$
	Min load to full load.	
Ripple and noise	3.3Vout, 5Vout	50mVp-p
	12Vout, 15Vout	75mVp-p
	20 MHz BW (measured with a 0.1 μ F/50V MLCC).	
Temperature coefficient	$\pm 0.02\%/^{\circ}C$ max.	
Transient response	250 μ S, recovery time 25% load step change.	
Overvoltage protection (zener diode clamp)	3.3Vout	3.9V
	5Vout	6.2V
	12Vout	15V
	15Vout	18V



Overload protection	150% max, % of FL at nominal input.
Short circuit protection	Continuous, automatic recovery.

Environmental

Operating temperature	-40°C to +50°C (without derating).
	-50°C to +85°C (with derating).
Max case temperature	+105°C.
Overtmp. protection	115°C typ.
Storage temperature	-55°C to +125°C.
Thermal impedance	Nature convection 12°C/Watt.
	Nature convection with heatsink 10°C/Watt.
Thermal shock	MIL-STD-810F.
Vibration	MIL-STD-810F.
Relative humidity	5-95% RH.

General

Isolation voltage	1600VDC min, input to output.
	1600VDC min, input (output) to case.
Isolation resistance	1G Ω min, 500VDC.
Isolation capacitance	1500pF, max.
Switching frequency	400KHz typ.
Case material.	Nickel-coated copper.
Base material	FR4 PCB.
Potting material	Epoxy (UL94-V0).
Dimensions	50.8 x 25.4 x 10.2 mm.
Weight	30.5g.
MTBF ¹	MIL-STD-217F, 1.177 x 10 ⁶ hrs.

Standards

Safety standards	IEC60950-1, UL60950-1, EN60950-1.
EMC	
EMI ³	EN55022 Class A, Class B.
ESD	EN61000-4-2 Criteria A, air $\pm 8kV$, contact $\pm 6kV$.
Radiated immunity	EN61000-4-3 Criteria A, 10V/m.
Fast transient ⁴	EN61000-4-4 Criteria A, $\pm 2kV$.
Surge ⁴	EN61000-4-5 Criteria A, $\pm 1kV$.
Conducted immunity	EN61000-4-6 Criteria A, 10 Vr.m.s.
Power freq. magn. field	EN61000-4-8 Criteria A, 100A/m continuous; 1000A/m 1 second.

POWERBOX Industrial Line

T31TW Series

30W 4:1 Triple Output

High Performance

DC/DC Converter

Model Number	Input Range	Output Voltage	Output Current Min Load ¹	Input Current Full Load	Input Current No Load ³	Efficiency	Capacitor ²
							Load Max
PMC30-24T3312W	9 ~ 36 VDC	3.3 / ±12 VDC	500 / ±42 mA	5000 / ±416 mA	105 mA	87 %	15000 / ±340µF
PMC30-24T3315W	9 ~ 36 VDC	3.3 / ±15 VDC	500 / ±33 mA	5000 / ±333 mA	105 mA	87 %	15000 / ±220µF
PMC30-24T0512W	9 ~ 36 VDC	5 / ±12 VDC	400 / ±42 mA	4000 / ±416 mA	105 mA	88 %	8000 / ±340µF
PMC30-24T0515W	9 ~ 36 VDC	5 / ±15 VDC	400 / ±33 mA	4000 / ±333 mA	105 mA	88 %	8000 / ±220µF
PMC30-48T3312W	18 ~ 75 VDC	3.3 / ±12 VDC	500 / ±42 mA	5000 / ±416 mA	55 mA	87 %	15000 / ±340µF
PMC30-48T3315W	18 ~ 75 VDC	3.3 / ±15 VDC	500 / ±33 mA	5000 / ±333 mA	55 mA	87 %	15000 / ±220µF
PMC30-48T0512W	18 ~ 75 VDC	5 / ±12 VDC	400 / ±42 mA	4000 / ±416 mA	55 mA	88 %	8000 / ±340µF
PMC30-48T0515W	18 ~ 75 VDC	5 / ±15 VDC	400 / ±33 mA	4000 / ±333 mA	55 mA	88 %	8000 / ±220µF

Notes:

1. The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. Test by minimum input and constant resistive load
3. The standard modules meet EN55022 Class A and Class B with external components. For more detail information, please contact with Powerbox.

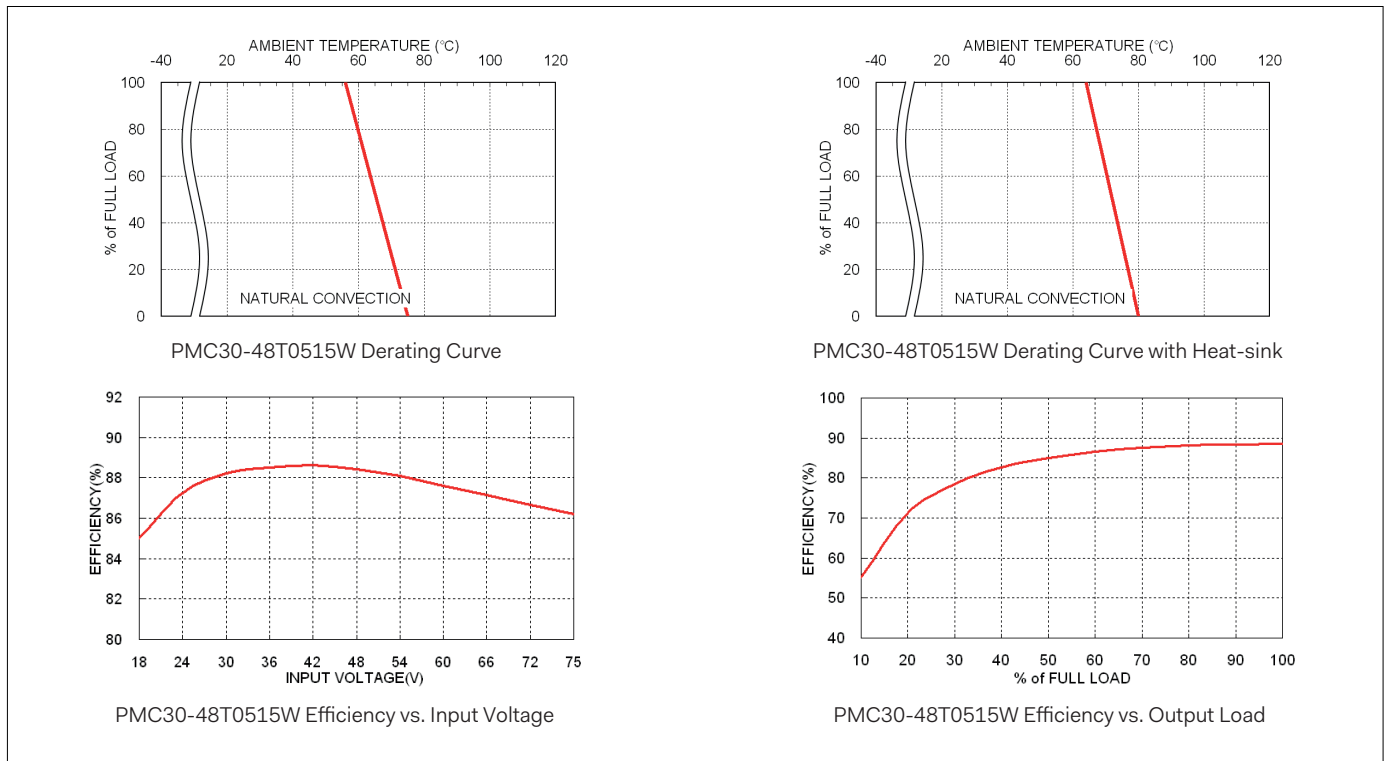
4. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Powerbox suggest: 24VDC input Nippon chemi-con KY series, 330µF/50V
The filter capacitor Powerbox suggest::48VDC input Nippon chemi-con KY series, 220µF/100V

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

Part Number Structure

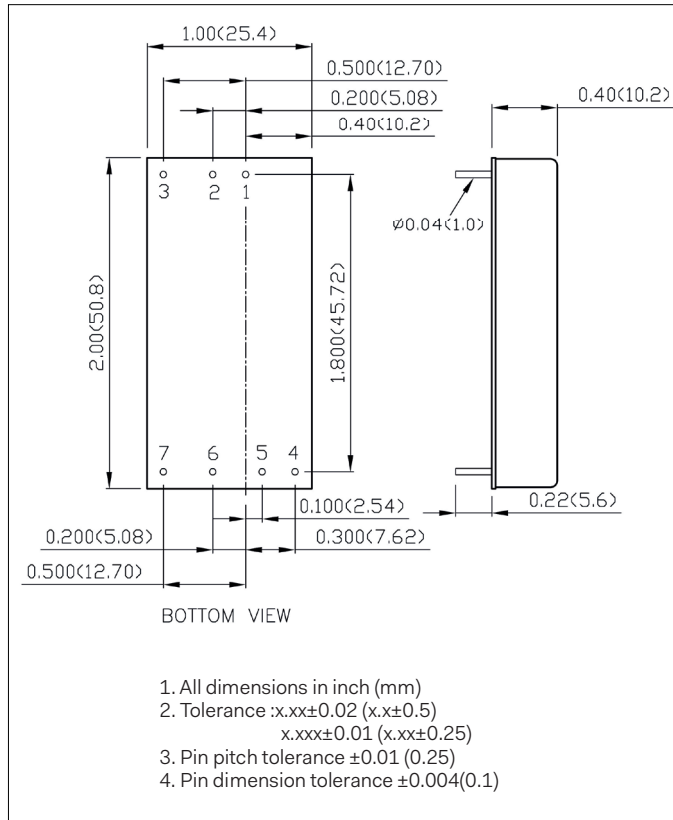
Series Name	Input Voltage	Output Quantity	Output Voltage Primary / Auxiliary	Input Range	Remote Control Option	Assembly Option
PMC30	24: 9-36VDC 48: 18-75VDC	T: Triple	3312: 3.3 / ±12VDC 3315: 3.3 / ±15VDC 0512: 5 / ±12VDC 0515: 5 / ±12VDC	4:1	<input type="checkbox"/> : Positive logic N: Negative logic	<input type="checkbox"/> : None HS: Heat-sink HC: Heat-sink with clamp

Derating Curve



POWERBOX Industrial Line
T31TW Series
30W 4:1 Triple Output
High Performance
DC/DC Converter

Mechanical



Pin Connection

Pin	Triple
1	+Vin
2	-Vin
3	Ctrl
4	+Aux
5	-Aux
6	Common
7	+Vout

Specifications are subject to change without notice.