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POWERBOX Industrial Line PHB50 Series 33-50W 2:1 Single Output DC/DC Converter

Features

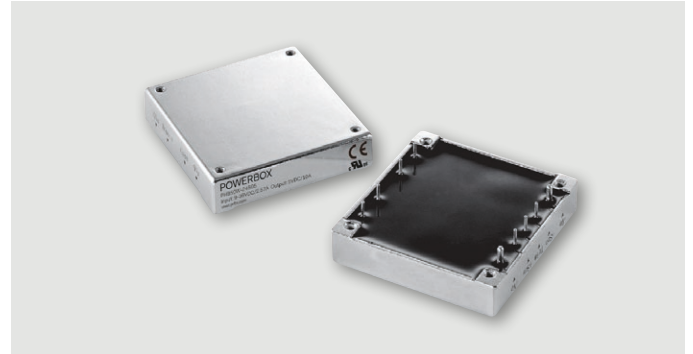
33W-50W isolated output
Efficiency to 89%
300/400kHz switching frequency
2 : 1 input range
Regulated outputs
Continuous short circuit protection
Five-sided metal case
Half-brick size meet industrial standard
UL60950-1 approval

Input

Voltage range	12V	9-18VDC
	24V	18-36VDC
	48V	36-75VDC
Input surge voltage (100ms max)	12V	25VDC max.
	24V	50VDC max.
	48V	100VDC max.
Under voltage lockout	12V _{in} power up	8.8V
	12V _{in} power down	8V
	24V _{in} power up	17V
	24V _{in} power down	16V
	48V _{in} power up	34V
	48V _{in} power down	32.5V
Postive logic remote ON/OFF ^{3,4}		
Input filter	PI type	

Output

Voltage accuracy	±1% max.
Transient response	<500µs
External trim adj. range	±10%
Ripple and noise ⁵ 20MHz BW	3.3V & 5V: 20mV rms max, 75mV pk-pk max.
	12V & 15V: 30mV rms max, 100mV pk-pk max.
	24V: 100mV rms max, 240mV pk-pk max.
Temperature coefficient	±0.03%/°C max.
Short circuit protection	Continuous
Line regulation ¹	±0.2% max.
Load regulation ²	±0.2% max.
Overvoltage protection	115-140%, trip range, % V _o nom.
Current limit	110-150% nominal output
Start up time	5ms typ.



Environmental

Operating temperature	-40°C to +100°C
Storage temperature	-55°C to +105°C
Thermal shutdown	Case temperature 100°C typical
Humidity	95% RH max, non condensing

General

Efficiency	See table
Isolation voltage	1500VDC min input/output
	1500VDC min input/case
	1500VDC min, output/case
Isolation capacitance	1000pF typ.
Isolation resistance	10 ⁷ ohm, min.
Switching frequency	400KHz typ (12/24V _{in})
	300KHz typ (48V _{in})
MTBF	MIL-STD-217F, GB, 25°C, full load 1000khrs typ.
Dimensions	57.9 x 61.0 x 12.7 mm
Case material	Aluminum
Weight	88g

Standards

Safety standards	UL60950-1 approval
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Note:

1. Measured from high line to low line
2. Measured from full load to zero load.
3. Logic compatibility: Open collector ref to -Input. Module ON, open circuit. Module OFF, < 0.8Vdc.
4. Suffix "N" to the model number with negative logic remote ON/OFF.
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
7. ON/OFF Pin is not directly applied voltage, please refer to remote on/off control circuit.

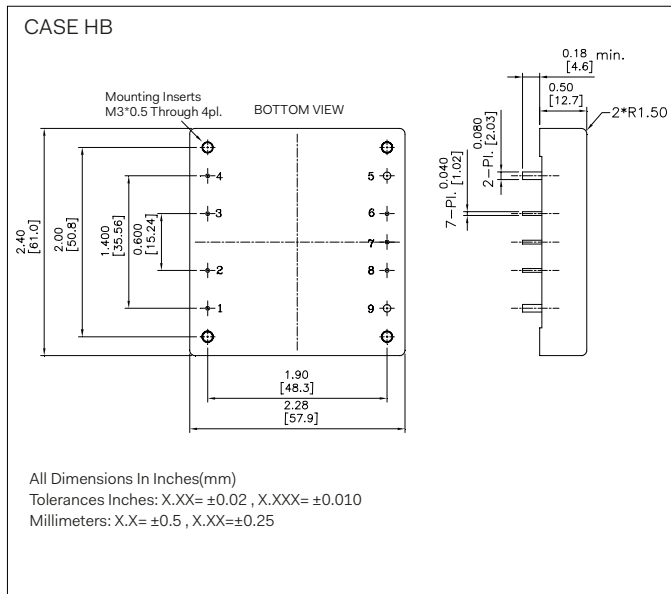
POWERBOX Industrial Line
PHB50 Series
33-50W 2:1 Single Output
DC/DC Converter

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Efficiency	Capacitor Load Max
			Min	Max	No Load	Full Load		
PHB50-12S33	9 -18 VDC	3.3 VDC	0 mA	10 A	50 mA	3481 mA	79 %	10000uF
PHB50-12S05	9 -18 VDC	5 VDC	0 mA	10 A	50 mA	5020 mA	83 %	10000uF
PHB50-12S12	9 -18 VDC	12 VDC	0 mA	4.16 A	50 mA	4781 mA	87 %	4000uF
PHB50-12S15	9 -18 VDC	15 VDC	0 mA	3.33 A	50 mA	4781 mA	87 %	2000uF
PHB50-12S24	9 -18 VDC	24 VDC	0 mA	2.08 A	50 mA	4781 mA	87 %	1500uF
PHB50-24S33	18-36 VDC	3.3 VDC	0 mA	10 A	50 mA	1698 mA	81 %	10000uF
PHB50-24S05	18-36 VDC	5 VDC	0 mA	10 A	50 mA	2450 mA	85 %	10000uF
PHB50-24S12	18-36 VDC	12 VDC	0 mA	4.16 A	50 mA	2363 mA	88 %	10000uF
PHB50-24S15	18-36 VDC	15 VDC	0 mA	3.33 A	50 mA	2363 mA	88 %	4000uF
PHB50-24S24	18-36 VDC	24 VDC	0 mA	2.08 A	50 mA	2363 mA	88 %	2000uF
PHB50-48S33	36-75 VDC	3.3 VDC	0 mA	10 A	50 mA	848 mA	81 %	10000uF
PHB50-48S05	36-75 VDC	5 VDC	0 mA	10 A	50 mA	1240 mA	84 %	10000uF
PHB50-48S12	36-75 VDC	12 VDC	0 mA	4.16 A	50 mA	1181 mA	88 %	10000uF
PHB50-48S15	36-75 VDC	15 VDC	0 mA	3.33 A	50 mA	1181 mA	88 %	4000uF
PHB50-48S24	36-75 VDC	24 VDC	0 mA	2.08 A	50 mA	1168 mA	89 %	2000uF

Note:

Nominal input voltages 12, 24 or 48 VDC.

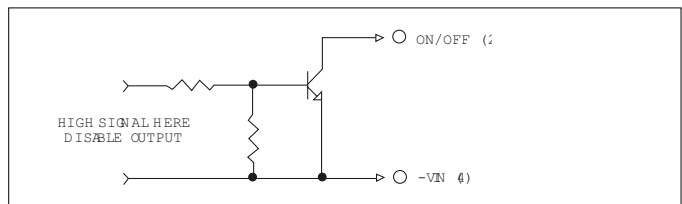
Mechanical



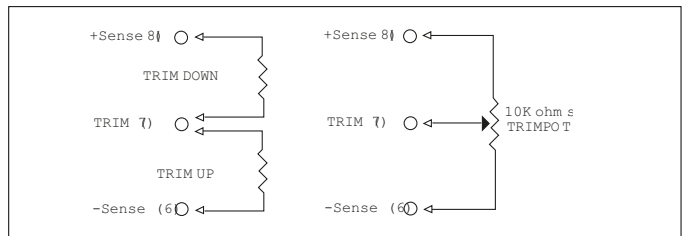
Pin Connection

Pin	Function
1	+Vin
2	ON/OFF
3	CASE
4	-Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout

Remote On/Off Control



External Output Trimming



Specifications are subject to change without notice.