

# P R B X

## POWERBOX Industrial Line PHB150U Series 150W 8:1 Single Output DC/DC Converter

### Features

150W isolated output  
 Efficiency to 90%  
 Fixed switching frequency  
 Input under-voltage protection  
 Over temperature protection  
 Over voltage/current protection  
 Remote ON/OFF  
 Industry standard half-brick package  
 Fully isolated 1500VDC  
 CE mark meets 2014/30/EU  
 UL60950-1 2<sup>nd</sup> approval

### Input

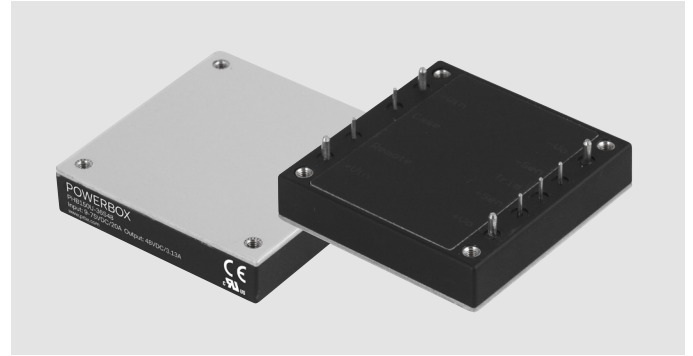
Operating voltage range	36V	9-75V
Input surge voltage	(100ms max)	100VDC max
Under voltage lockout	Power up	9.5V
	Power down	8.0V
Postive logic remote ON/OFF <sup>4&amp;5</sup>		
Input filter		LC type.

### Output

Voltage accuracy	±1.5% max.	
Transient response	<500µsec.	
External trim adj. range <sup>6</sup>	±10%.	
Ripple and noise	12V & 15V:	60mV rms, 120mV pk-pk max
20MHz BW	24V & 28V:	100mV rms, 280mV pk-pk max
	48V:	200mV rms, 480mV pk-pk max
Temperature coefficient	±0.03%/°C max.	
Short circuit protection	Continuous.	
Line regulation <sup>1</sup>	±0.2% max.	
Load regulation <sup>2</sup>	±0.2% max.	
Over voltage protection	115-140%.	
Current limit	105-200% nominal output.	
Start up time	110ms typ.	

### Environmental

Operating case temp.	-40°C to +100°C.
Storage temperature	-55°C to +105°C.
Thermal shutdown	Case temperature 110°C typ.
Humidity	95% RH max. Non-condensing.



### General

Efficiency	See table.	
Isolation voltage	Input/output	1500VDC min
	Input/case, output/case	1500VDC min
Isolation resistance	10 <sup>7</sup> ohms, min.	
Isolation capacitance	12V/15V	3500pF typ
	24V/28V/48V	2500pF typ
Switching frequency	200KHz typ.	
MTBF	665Khrs typ, MIL-STD-217F.	
Dimensions	57.9 x 61.0 x 12.7 mm.	
Case material	Aluminum baseplate with plastic case.	
Weight	109 g.	

### 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. Output ripple and noise measured with 10µF tantalum (for 48Vout with 10µF aluminum) and 1µF ceramic capacitor across output.
4. Logic compatibility: Open collector ref to -input.  
Module ON >3.5VDC to 75VDC or open circuit. Module OFF <1.2VDC.
5. Suffix "N" to the model number with negative logic remote ON/OFF.  
Module ON 0 to < 1.2VDC, Module OFF >3.5Vdc to 75Vdc or open circuit.
6. The input external capacitor recommend to parallel with 330µF ESR<0.7Ω to reduce the input ripple voltage.

**POWERBOX Industrial Line**  
**PHB150U Series**  
**150W 8:1 Single Output**  
**DC/DC Converter**

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Efficiency			Capacitive Load Max
			Min	Max	No Load	Full Load	(2)	(1)	(3)	
PHB150U-36S12	9-75VDC	12VDC	0mA	12.5A	150mA	4.53A	89.5%	89.5%	89.5%	5000 $\mu$ F
PHB150U-36S15	9-75VDC	15VDC	0mA	10A	150mA	4.50A	90%	90%	90%	5000 $\mu$ F
PHB150U-36S24	9-75VDC	24VDC	0mA	6.25A	60mA	4.66A	88.5%	89.5%	89%	2000 $\mu$ F <sup>(4)</sup>
PHB150U-36S28	9-75VDC	28VDC	0mA	5.35A	60mA	4.62A	90%	90%	89.5%	1500 $\mu$ F <sup>(4)</sup>
PHB150U-36S48	9-75VDC	48VDC	0mA	3.13A	60mA	4.64A	90.5%	90.5%	89.5%	1000 $\mu$ F <sup>(4)</sup>

**Notes:**

1. Nominal Input Voltage 36 VDC
2. Measured at 24Vin
3. Measured at 48Vin
4. The output terminal of 24, 28, 48Vout models required a minimum capacitor 100 $\mu$ F to maintain specified regulation.

**Mechanical**

CASE HB

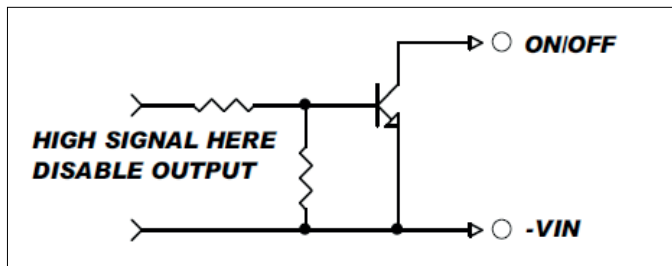
All Dimensions In Inches(mm)  
 Tolerances Inches: X.XX=  $\pm 0.02$ , X.XXX=  $\pm 0.010$   
 Millimeters: X.X=  $\pm 0.5$ , X.XX=  $\pm 0.25$

Mounting Inserts  
 M3\*0.5 Through 4pl.

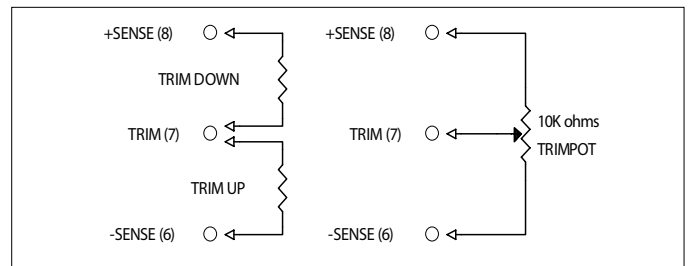
BOTTOM VIEW

Pin	Function
1	+V Input
2	ON/OFF
3	CASE
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

**Remote On/Off Control**



**External Output Trimming**



Specifications are subject to change without notice.