

P R B X

POWERBOX Industrial Line PHB50W Series 33-50W 4:1 Single Output DC/DC Converter



Features

| |
|--|
| 33W-50W isolated output |
| Efficiency to 87% |
| 300 kHz switching frequency |
| 4 : 1 input range |
| Regulated outputs |
| Continuous short circuit protection |
| Five-sided shield metal case |
| Half-brick size meet industrial standard |
| UL60950-1 approved |

Input

| | | |
|--|------------------|------------|
| Voltage range | 24V | 9-36VDC |
| | 48V | 18-75VDC |
| Input surge voltage (100ms max) | 24V | 50VDC max |
| | 48V | 100VDC max |
| Under voltage lockout | 24Vin power up | 8.8V typ. |
| | 24Vin power down | 8.0V typ. |
| | 48Vin power up | 17V typ. |
| | 48Vin power down | 16V typ. |
| Postive logic remote ON/OFF ^{3,4} | | |
| Input filter | PI type | |

Output

| | |
|---|---|
| Voltage accuracy ⁷ | ±1% max. |
| Transient response | <500µs |
| External trim adj. range | ±10% |
| Ripple and noise ⁵ 20MHz BW | 3.3V & 5V: 40mV rms max, 100mV pk-pk max. |
| | 12V & 15V: 60mV rms max, 150mV pk-pk max. |
| | 24V: 100mV rms max, 240mV pk-pk max. |
| | 48V: 200mV rms, max, 480mV pk-pk, max. |
| Temperature coefficient | ±0.03%/°C max. |
| Short circuit protection | Continuous |
| Line regulation ^{1,7} | ±0.2% max. |
| Load regulation ^{2,7} | ±0.2% max. |
| Overvoltage protection | 115-140%, trip range, % Vo nom. |
| Current limit | 110-160% 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

| | |
|----------------------|---|
| MTBF | MIL-STD-217F, GB, 25°C, full load 1000khrs typ. |
| Efficiency | See table |
| Isolation voltage | 1500VDC min input/output |
| | 1500VDC min input/case |
| | 1500VDC min, output/case. |
| Isolation resistance | 10 ⁷ ohms, min. |
| Switching frequency | 300kHz typ. |
| Case material | Aluminum |
| Dimensions | 57.9 x 61.0 x 12.7 mm |
| Weight | 94g |

Standards

| | |
|------------------|--------------------|
| Safety standards | UL60950-1 approval |
|------------------|--------------------|

Note:

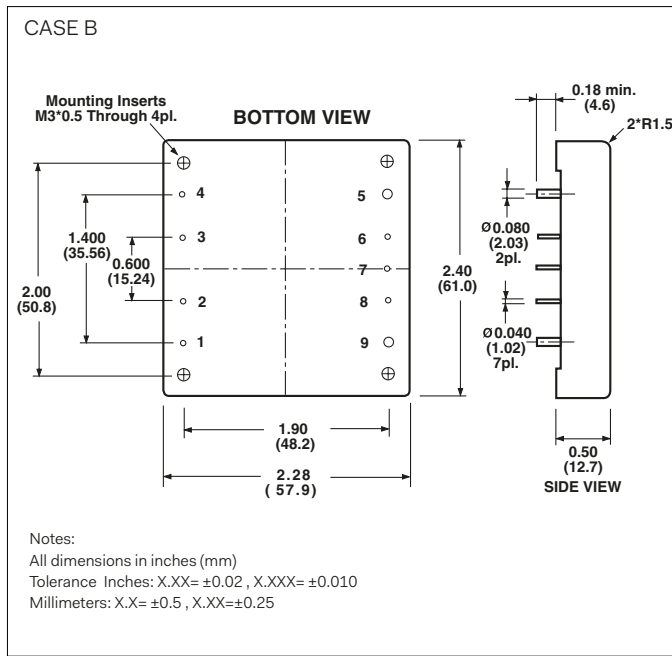
1. Measured From High Line to Low Line
2. Measured from full load to zero load.
3. Logic compatibility: Open collector ref to -Input. Module ON Open Circuit. Module OFF < 0.8Vdc.
4. Suffix "N" to the Model Number with Negative Logic Remote ON/OFF.
5. Output Ripple and Noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 1µF ceramic cap. Only)
6. Suffix "-C" to the Model Number with Clear Mounting Insert (3.2mm DIA.)
7. Require a 47µF Aluminum Capacitor Connected Between +Vout and -Vout for 48Vout Models.

POWERBOX Industrial Line
PHB50W Series
33-50W 4:1 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 | | |
| PHB50W-24S33 | 9-36 VDC | 3.3 VDC | 0 mA | 10 A | 50 mA | 1740 mA | 79% | 10000µF |
| PHB50W-24S05 | 9-36 VDC | 5 VDC | 0 mA | 10 A | 50 mA | 2570 mA | 81% | 10000µF |
| PHB50W-24S12 | 9-36 VDC | 12 VDC | 0 mA | 4.16 A | 50 mA | 2510 mA | 83% | 4160µF |
| PHB50W-24S15 | 9-36 VDC | 15 VDC | 0 mA | 3.33 A | 50 mA | 2448 mA | 85% | 3330µF |
| PHB50W-24S24 | 9-36 VDC | 24 VDC | 0 mA | 2.08 A | 50 mA | 2476 mA | 84% | 2080µF |
| PHB50W-24S48 | 9-36 VDC | 48 VDC | 0 mA | 1.04 A | 50 mA | 2506 mA | 83% | 1040µF |
| PHB50W-48S33 | 18-75 VDC | 3.3 VDC | 0 mA | 10 A | 50 mA | 848 mA | 81% | 10000µF |
| PHB50W-48S05 | 18-75 VDC | 5 VDC | 0 mA | 10 A | 50 mA | 1255 mA | 83% | 10000µF |
| PHB50W-48S12 | 18-75 VDC | 12 VDC | 0 mA | 4.16 A | 50 mA | 1223 mA | 85% | 4160µF |
| PHB50W-48S15 | 18-75 VDC | 15 VDC | 0 mA | 3.33 A | 50 mA | 1196 mA | 87% | 3330µF |
| PHB50W-48S24 | 18-75 VDC | 24 VDC | 0 mA | 2.08 A | 50 mA | 1209 mA | 86% | 2080µF |
| PHB50W-48S48 | 18-75VDC | 48 VDC | 0 mA | 1.04 A | 50 mA | 1238 mA | 84% | 1040µF |

Note:
 Nominal input voltages 24 or 48 VDC.

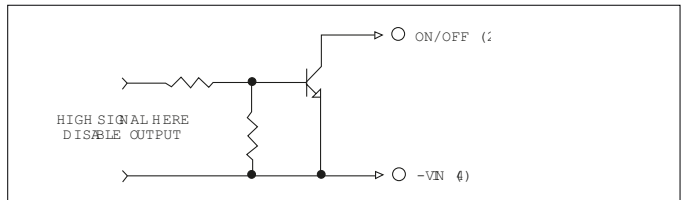
Mechanical



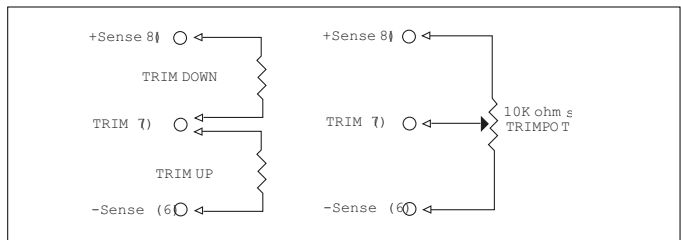
Pin Connection

| 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.