

P R B X

POWERBOX Industrial Line PHE100/PHE100W Series 100W 2:1/4:1 Single Output DC/DC Converter

Features

100W isolated output
Half-brick size, six-sided shield metal case
High efficiency to 93%
2:1/4:1 input range
Regulated outputs
250KHz switching frequency
Continuous short circuit protection
Input under-voltage protection
Over temperature/voltage/current protection
Remote ON/OFF
Full load operation up to 60°C with heat-sink M-C091 natural convection
No tantalum capacitor inside
CE Mark Meets 2004/108/EC
Safety meets UL60950-1, EN60950-1, and IEC60950-1

Input

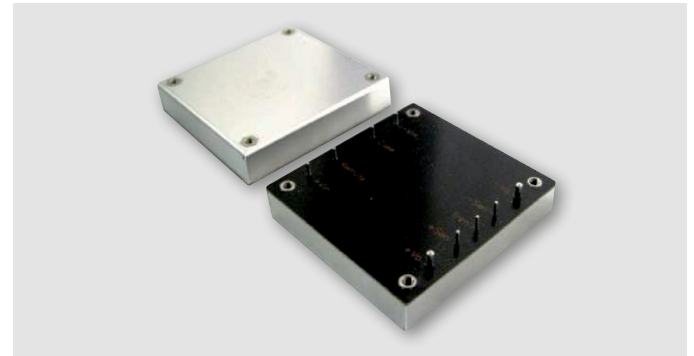
Voltage range	24V	9-36V
	48V	18-75V
PHE100-24SXX	18-36V	
Input surge voltage (100ms max)	24V	50VDC max
	48V	100VDC max
Under voltage lockout	24Vin power up	8.8V
	24Vin power down	8.0V
PHE100-24S24	48Vin power up	17.8V
PHE100-24S24	48Vin power down	16V
Positive logic remote ON/OFF ^{4,5}		
Input filter	PI type.	

Output

Voltage accuracy	±1.5% max.	
Transient response	<500u sec.	
External trim adj. range	±10%.	
Ripple and noise	3.3V & 5V	40mV rms, 100mV pk-pk max
	20MHz BW	60mV rms, 120mV pk-pk max
	24V	100mV rms, 240mV pk-pk max
	48V	120mV rms, 480mV 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, % Vo nom.	
Current limit	110-140% nominal output.	
Start up time	10ms typ.	

Environmental

Operating case temp.	-40°C to +105°C.
Storage temperature	-55°C to +105°C.

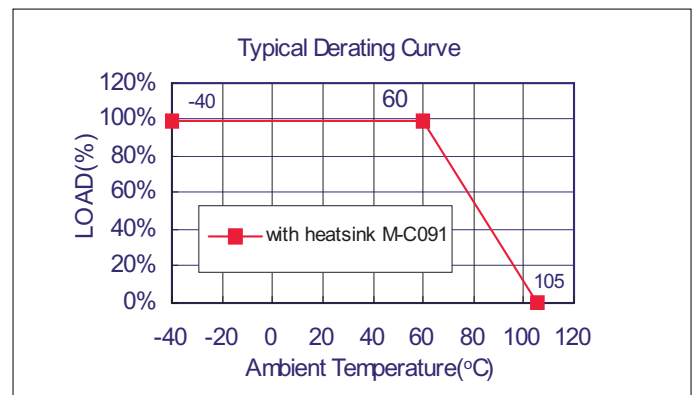


Thermal shutdown	Case temperature 110°C typ.
Humidity	95% RH max. Non-condensing.

General

Efficiency	See table.
Isolation voltage	1500VDC min input/output, input/case, output/case.
Isolation resistance	10 ⁷ ohms, min.
Isolation capacitance	1000pF typ.
Switching frequency	250KHz typ
MTBF	MIL-STD-217F, GB 25°C, full load. XXS05: 750k hrs typ. Others: 880khrs typ.
Dimensions	57.9 x 61.0 x 12.7 mm.
Case material	Aluminum with non-conducted base.
Weight	95 g.

Derating Curve



Note:

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10uF tantalum capacitor and 1uF ceramic capacitor across output (24V & 48V: 10uF aluminum and 1uF 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: <1.2VDC Module OFF: >3.5VDC to 75VDC or open circuit.

POWERBOX Industrial Line
PHE100/PHE100W Series
100W 2:1/4:1 Single Output
DC/DC Converter

PHE100 Series

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Efficiency	Capacitor Load Max
			Min	Max	No Load	Full Load		
PHE100-24S12	18-36VDC	12VDC	0mA	8.4A	200mA	4.57A	92%	8400µF
PHE100-24S24	18-36VDC	24VDC	0mA	4.2A	100mA	4.57A	92%	4200µF ⁽²⁾

PHE100W Series

Model Number	Input Voltage	Output Voltage	Output Current		Input Current		Efficiency		Capacitive Load Max
			Min	Max	No Load	Full Load	(4)	(3)	
PHE100W-24S3V3	9-36VDC	3.3VDC	0mA	25A	200mA	3.94A	85.5%	87%	25000µF
PHE100W-24S05	9-36VDC	5VDC	0mA	20A	150mA	4.66A	88.5%	89.5%	20000µF
PHE100W-24S12	9-36VDC	12VDC	0mA	8.4A	200mA	4.62A	90%	90.5%	8400µF
PHE100W-24S15	9-36VDC	15VDC	0mA	6.7A	200mA	4.62A	89.5%	90.5%	6700µF
PHE100W-24S24	9-36VDC	24VDC	0mA	4.2A	100mA	4.76A	88.5%	89%	4200µF ⁽²⁾
PHE100W-24S48	9-36VDC	48VDC	0mA	2.1A	100mA	4.76A	89.5%	88.5%	2100µF ⁽²⁾
PHE100W-48S3V3	18-75VDC	3.3VDC	0mA	25A	130mA	1.96A	87.5%	88%	25000µF
PHE100W-48S05	18-75VDC	5VDC	0mA	20A	130mA	2.28A	91.5%	92%	20000µF
PHE100W-48S12	18-75VDC	12VDC	0mA	8.4A	100mA	2.26A	92.5%	93%	8400µF
PHE100W-48S15	18-75VDC	15VDC	0mA	6.7A	100mA	2.26A	91.5%	92.5%	6700µF
PHE100W-48S24	18-75VDC	24VDC	0mA	4.2A	100mA	2.32A	91%	91%	4200µF ⁽²⁾
PHE100W-48S48	18-75VDC	48VDC	0mA	2.1A	100mA	2.32A	91.5%	90.5%	2100µF ⁽²⁾

Notes:

- Nominal input voltage 24, 48 VDC.
- Require a 10µF aluminum capacitor connected between +Vout and -Vout for 24 & 48Vout models.
- Measured at nominal input voltage.
- Measured at 12VDC for 24SXX, 24VDC for 48SXX.

Mechanical

CASE HB

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

Mounting Inserts M3*0.5 Through 4pl.

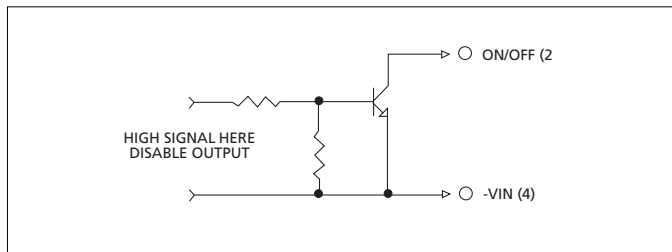
BOTTOM VIEW

Dimensions: 2.40 [61.0], 2.00 [50.8], 1.40 [35.4], 0.800 [20.3], 1.90 [48.2], 2.28 [57.9]

Dimensions: 0.10 min [2.5], 0.50 [12.7], 7-Pin Ø 0.040 [1.02], 2-Pin Ø 0.080 [2.03], 0.48 [12.3]

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

