

## PXE Series (dual output) DC-DC Converters

The PXE is a DC-DC converter which provides a regulated output at power levels up to 30 watts. It accepts a wide range DC input. The converter may be operated with or without the input and output pins grounded.

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### General Safety Instructions

These products are designed to be PCB mounted and for use within other equipment or enclosures. For safe installation and operation, carefully follow the instructions below:

1. Do not install, test, or operate the products near water or spill liquid on them.
2. Do not operate these products unless they are securely fastened.
3. These products must be installed in a restricted access location accessible to authorized personnel only.
4. These products must be professionally installed in accordance with the prevailing electrical wiring regulations and safety standards.
5. The output power taken from the unit must not exceed the ratings stated in the catalog datasheet.
6. Ensure adequate ventilation is provided to allow air to circulate.
7. This product has functional insulation between input and output and therefore the DC source to this product must be reinforced or double insulated to the AC input in accordance with IEC/EN 60950-1 to achieve SELV output.

### Fusing

An external ceramic sand-filled fuse is needed for protection.

- 12V input ~ 250V, F8A, HBC
- 24V input ~ 250V, F5A, HBC
- 48V input ~ 250V, F5A, HBC

### Installation Method

The unit can be mounted in any direction. Position single or multiple units with proper spacing to allow for adequate air ventilation. The case temperature of each unit should not exceed the temperature range as noted in the data sheet.

Avoid placing PCB traces for the DC input and DC output directly under the unit to limit the possibility of unwanted conducted noise.

### Soldering and Cleaning

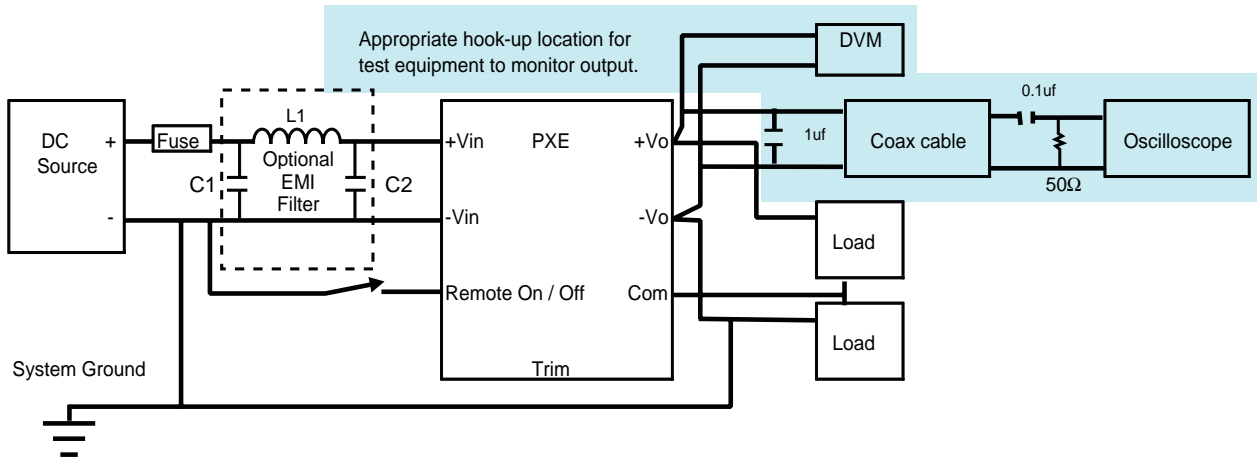
- Flow soldering : 260±10°C less than 15 seconds
- Soldering iron : 370±10°C less than 5 seconds

Note: The pins of this module are coated with Tin. To assure the solder-ability, modules should be kept in their original shipping containers to provide adequate protection. Also, the storage environment should be controlled to prevent oxidation of the pins.

Following wave solder, the converters should be given an opportunity to cool to within 10°C of the cleaning solution temperature. Cleaning while at a higher temperature may increase the risk of vacuum absorption of the solution into the converter between the pins and potting material during cooling.

It is recommended that during the wash process, the date code screening is protected to avoid erasure.

## Block Diagram



## EMI Filter (Optional)

Input filter components (C1, C2, L1) are used to help meet special conducted emissions requirements for the PXE product. These components should be mounted as close as possible to the DC-DC converter; and all leads should be minimized to decrease radiated noise.

	C1	L1	C2
PXE20, PXE30	1 $\mu$ F, MLC	5.5 $\mu$ H	220 $\mu$ F 100V Electrolytic

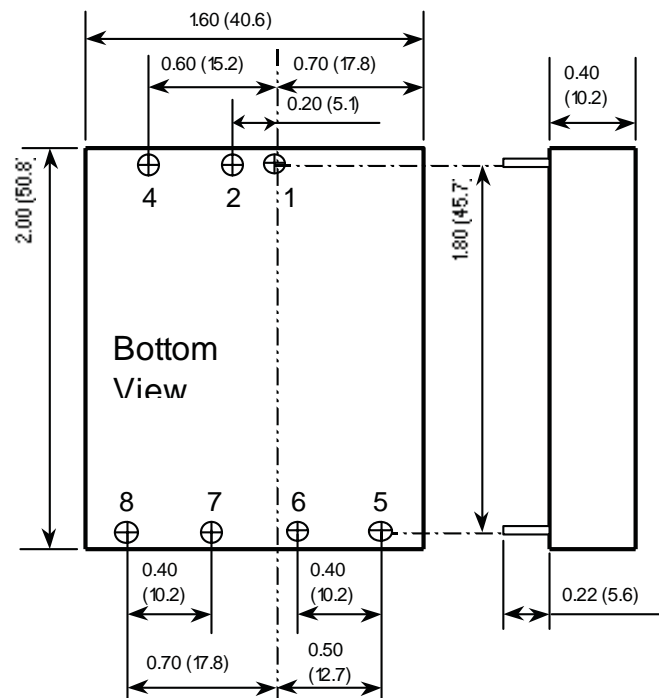
## Minimum Load

A 10% (of full load) minimum load is required on each output to meet the performance specifications. The unit does not maintain regulation and operate properly under a no-load condition.

## Pin Assignments

Pin	Connection
1	+ Input
2	- Input
3	No Pin
4	Remote On / Off
5	+ Output
6	Common
7	- Output
8	Trim

## Outline Drawing



1. All dimensions in Inches (mm)
2. Pin pitch tolerance  $\pm 0.014$  (0.35)

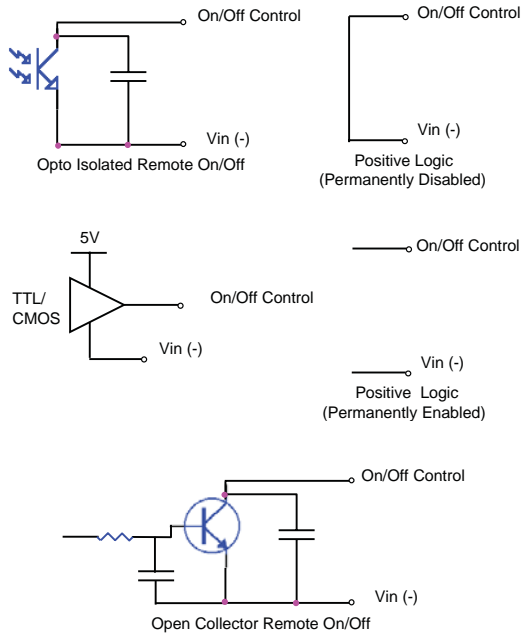
Pin Diameter: 1mm (0.04")

## Positive Logic

To turn the module on and off, the user must supply a switch (or equivalent circuit below) to control the voltage between the on/off terminal  $V_{on/off}$  and the  $V_{i(-)}$  input terminal.

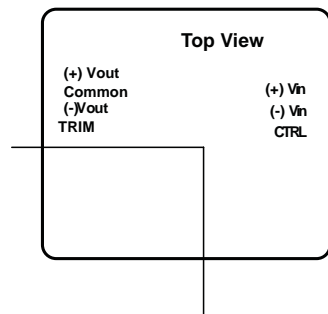
Power Supply On: Open circuit or logic high (3.5-12V)  
 Power Supply Off: Closed circuit or logic low (<1.2V)

Below are five possible circuits for driving the ON/OFF Pin:



## Thermal Consideration

The power module operates in a variety of thermal environments; however, sufficient cooling should be provided to help ensure reliable operation of the unit. Heat is removed by conduction, convection, and radiation to the surrounding environment. Proper cooling can be verified by measuring the case temperature. The case temperature ( $T_c$ ) should be measured at the position indicated in figure to the right.



When operating the module, adequate cooling must be provided to maintain the case temperature at or below 100°C. Maintaining a lower temperature will yield higher reliability of the device. Optimum cooling is obtained with forced convection.

## Thermal Resistance vs. Airflow

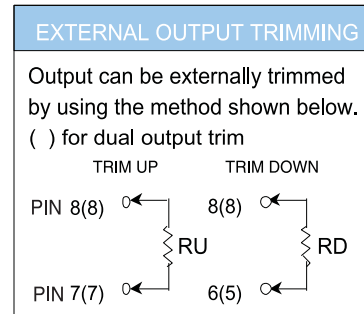
Flow Rate	$\Theta$
Convection*	12.9°C/W
100LFM	10.56
200LFM	8.22
300LFM	6.69
400LFM	5.09
500LFM	4.86
Heatsink**	8.24

\* Mounted vertically  
 \*\* Optional heatsink 7G0011A (includes adhesive pad)

## External Trim (output voltage adjustment)

Output voltage set point adjustment allows the user to increase or decrease the output voltage set point of a module. This is accomplished by connecting an external resistor between the TRIM pin and either the (+)Vout or (-)Vout pins. With an external resistor between the TRIM and (+)Vout pin, the output voltage set point decreases. With an external resistor between the TRIM and (-)Vout pin, the output voltage set point increases.

See the following pages for values.



## Trim Tables

<b>PXE20 Dual 5V</b>											
Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	9.900	9.800	9.700	9.600	9.500	9.400	9.300	9.200	9.100	9.000	Volts
RD=	109.297	48.998	28.899	18.849	12.819	8.799	5.928	3.775	2.100	0.760	KOhms
Trim up	1	2	3	4	5	6	7	8	9	10	%
Vout=	10.100	10.200	10.300	10.400	10.500	10.600	10.700	10.800	10.900	11.000	Volts
RU=	90.303	40.602	24.034	15.751	10.781	7.467	5.100	3.325	1.945	0.840	KOhms

<b>PXE20 Dual 12V</b>											
Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600	Volts
RD=	273.442	123.016	72.874	47.803	32.760	22.732	15.568	10.196	6.017	2.675	KOhms
Trim up	1	2	3	4	5	6	7	8	9	10	%
Vout=	24.240	24.480	24.720	24.960	25.200	25.440	25.680	25.920	26.160	26.400	Volts
RU=	218.210	98.105	58.070	38.052	26.042	18.035	12.316	8.026	4.690	2.021	KOhms

<b>PXE20 Dual 15V</b>											
Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	29.700	29.400	29.100	28.800	28.500	28.200	27.900	27.600	27.300	27.000	Volts
RD=	337.712	152.022	90.126	59.178	40.609	28.230	19.387	12.756	7.598	3.471	KOhms
Trim up	1	2	3	4	5	6	7	8	9	10	%
Vout=	30.300	30.600	30.900	31.200	31.500	31.800	32.100	32.400	32.700	33.000	Volts
RU=	268.288	120.644	71.429	46.822	32.058	22.215	15.184	9.911	5.810	2.529	KOhms

<b>PXE30 Dual 12V</b>											
Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600	Volts
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