High Density DC-DC Modules

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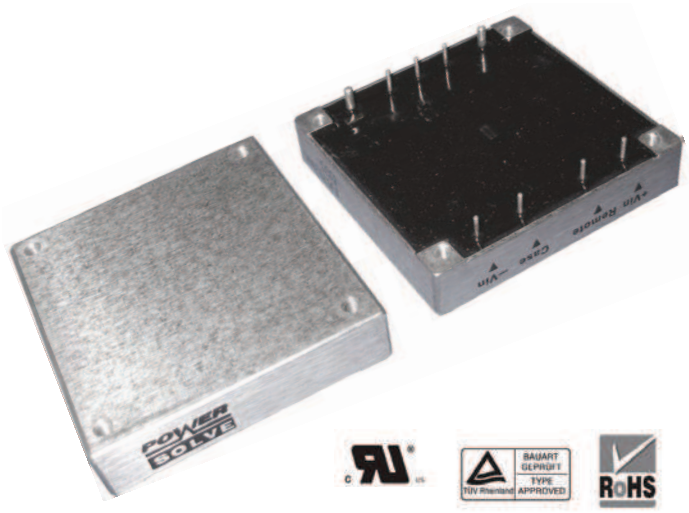
PS75 Series
37.5 - 75 Watt Wide Input DC-DC Converters
Single Output



Features

- 37.5W - 75W Isolated Output
- Efficiency to 86%
- 300KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five Sided Metal Case
- Industry Standard Half-Brick Package

Electrical Specification

INPUT	
Input Voltage Range	9 - 18V (PS75-12Sxx models) 18 - 36V (PS75-24Sxx models) 36 - 75V (PS75-48Sxx models)
Undervoltage Lockout	8.8V (PS75-12Sxx power up) 8.0V (PS75-12Sxx power down) 17V (PS75-24Sxx power up) 16V (PS75-24Sxx power down) 34V (PS75-48Sxx power up) 32.5V (PS75-48Sxx power down)
Positive Logic Remote ON/OFF	Open collector ref. to -Input. Module ON: open circuit, Module OFF: <0.8VDC Add suffix N to model number for Negative Logic Remote ON/OFF control
Input Filter	PI Type
OUTPUT	
Voltage Accuracy	±1.0% max.
Transient Response: 25% Step Load Change	<500µSec
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW [3]	20mV RMS max, 75mV pk-pk max (2.5V, 3.3V & 5V outputs) 30mV RMS max, 100mV pk-pk max (12V & 15V outputs) 100mV RMS max, 240mV pk-pk max (24V output)
ENVIRONMENTAL	
Temperature coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation [1]	±0.2% max
Load Regulation [2]	±0.2% max
Over Voltage Protection trip range, % Vo nom.	115% - 140%
Current Limit	110% - 150% Nominal Output
GENERAL	
Efficiency	See table
Isolation Voltage	I/P-O/P, I/P-FG, O/p-FG: 1500VDC min
Isolation Resistance	10^7ohms min.
Switching Frequency	400KHz typ. (12V & 24V input models) 300KHz typ. (48V input models)
Operating case Temperature	-40°C to +100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	+100°C Typ.
Dimensions	57.9 x 61.0 x 12.7 mm (2.28 x 2.40 x 0.50 inches)
Case Material	Aluminium

NOTE:
1. Measured from High Line to Low Line.
2. Measured from Full Load to No Load.
3. Output noise and ripple measured with 10µF tantalum & 1.0µF ceramic capacitors across output.

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Output Voltage and Current Ratings

MODEL	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.
PS75-12S25	9-18VDC	2.5 VDC	15A	50mA	4110mA	76
PS75-12S33	9-18VDC	3.3 VDC	15A	50mA	5290mA	78
PS75-12S05	9-18VDC	5 VDC	15A	50mA	7715mA	81
PS75-12S12	9-18VDC	12 VDC	6.25A	50mA	7440mA	84
PS75-12S15	9-18VDC	15 VDC	5A	50mA	7440mA	84
PS75-12S24	9-18VDC	24 VDC	3.13A	50mA	7440mA	86
PS75-24S25	18-36VDC	2.5 VDC	15A	50mA	2029mA	77
PS75-24S33	18-36VDC	3.3 VDC	15A	50mA	2610mA	79
PS75-24S05	18-36VDC	5 VDC	15A	50mA	3810mA	82
PS75-24S12	18-36VDC	12 VDC	6.25A	50mA	3675mA	85
PS75-24S15	18-36VDC	15 VDC	5A	50mA	3675mA	85
PS75-24S24	18-36VDC	24 VDC	3.13A	50mA	3640mA	86
PS75-48S25	36-75VDC	2.5 VDC	15A	50mA	1015mA	77
PS75-48S33	36-75VDC	3.3VDC	15A	50mA	1305mA	79
PS75-48S05	36-75VDC	5VDC	15A	50mA	1883mA	83
PS75-48S12	36-75VDC	12VDC	6.25A	50mA	1838mA	85
PS75-48S15	36-75VDC	15VDC	5A	50mA	1838mA	85
PS75-48S24	36-75VDC	24VDC	3.13A	50mA	1820mA	86

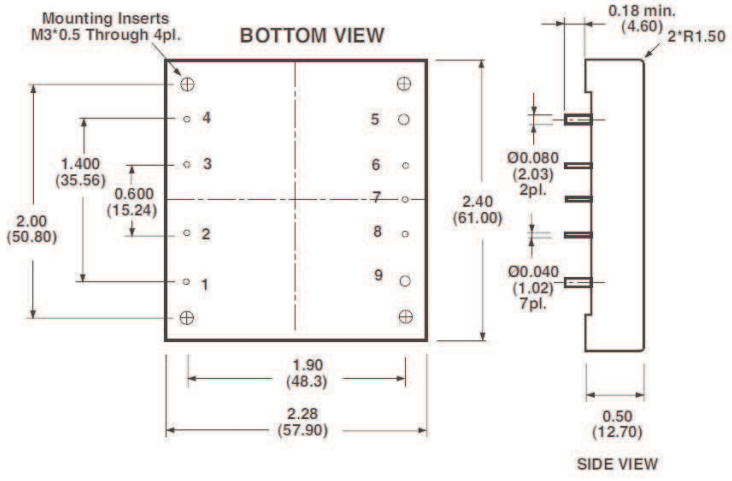
NOTE: Nominal Input Voltage 12, 24 or 48VDC

Mechanical and Connection Details

All dimensions in inches (mm)

Tolerances Inches x.xx ±0.02 x.xxx ±0.010

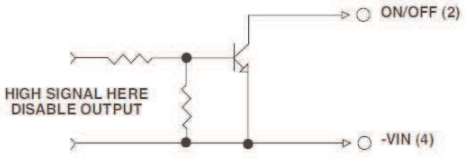
Millimeters x.x ±0.5 x.xx ±0.25



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

The PS75 Series allows the user to switch the module on and off electronically with the remote on/off feature.
The PS75 Series are available with “positive logic” or “negative logic” (option).



Logic Table

Logic State (Pin 2)	Negative Logic	Positive Logic
Logic low- Switch closed	Module on	Module off
Logic high- Switch open	Module off	Module on

All specifications typical at nominal line, full load and 25°C unless otherwise stated.

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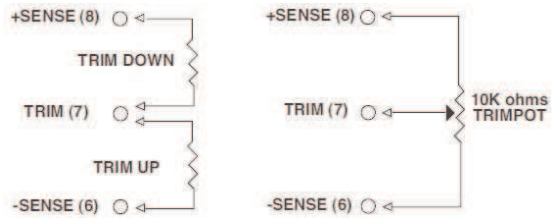
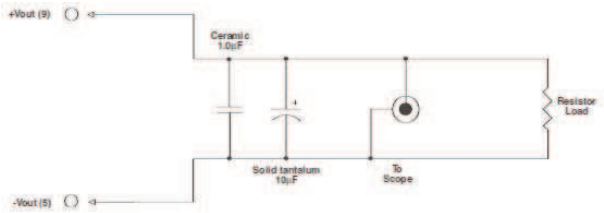
External Output Trim

The output can be trimmed externally (±10%) using a fixed resistor or a trimpot as shown.



Output Noise

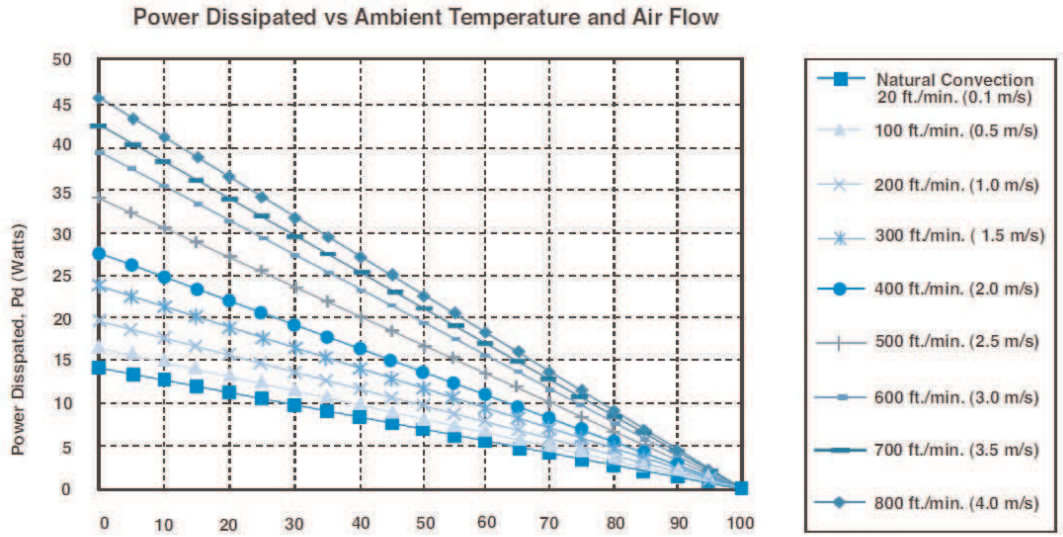
The output noise is measured with a 10µF tantalum and a 1.0µF ceramic capacitor across the output.



Application Note

Derating:
The case operating temperature range of the PS75 series is -40°C to +100°C. When operating the PS75 series, proper derating or cooling is required.

Following is the derating curve for the PS75 without a heatsink; airflow along width (transverse).



Forced Convection Power Derating without Heat Sink

Where:

The power dissipated (Pd):
Pd = Pi - Po = Po (1-n) / n

The thermal resistances are listed below:

Chart of Thermal Resistance vs Air Flow:

AIR FLOW RATE	TYPICAL Rca
Natural Convection 20ft/min. (0.1m/s)	7.12°C/W
100ft./min. (0.5m/s)	6.21°C/W
200ft./min. (1.0m/s)	5.17°C/W
300ft./min. (1.5m/s)	4.29°C/W
400ft./min. (2.0m/s)	3.64°C/W
500ft./min. (2.5m/s)	2.96°C/W
600ft./min. (3.0m/s)	2.53°C/W
700ft./min. (3.5m/s)	2.37°C/W
800ft./min. (4.0m/s)	2.19°C/W

The temperature rise (ΔT):

$\Delta T = Pd * Rca$

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