

PPM40-H-xxELF



PPM-SERIES

Rev.03-2013

- ✓ **40 Watt**
- ✓ Univ. **85-264VAC** (120-370VDC)
- ✓ **Single Output**
- ✓ **Over Voltage Protection** (out)
- ✓ **3 kV AC I/O Isolation**
- ✓ Low Ripple and Noise
- ✓ **High Efficiency**

The PPM-Series are high efficiency green power moduls with various packaging provided by Peak. The features of this series are: wide input voltage, DC and AC all in one, high efficiency, high reliability, low loss, safety isolation etc. They are widely used in industrial, office and civil equipments.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

Input Specifications

Input Voltage Range	85 – 264 VAC or 120 – 370 VDC universal
Input Frequency	47 – 440 Hz
Input Current	115 VAC at 0.86A, max ; 230 VAC at 0.46A, max
Inrush Current	115 VAC at 30A, max ; 230 VAC at 50A, max

Output Specifications

Voltage Accuracy	±2%
Line Regulation (full load)	±0.5%
Load Regulation (10-100%)	±1%
Ripple and Noise (20Mhz bandwidth)	3.3, 5 Vout - 50mV pk-pk, typ 12, 24 Vout - 100mV pk-pk, typ
Short Circuit Protection	Continuous, auto resume
Over Current Protection	110-150% , auto resume
Over Voltage Protection	Zener Diode Clamp
Min Load	1%
Trim	10%

Common Specifications

Temperature range	-40 °C to +70 °C
Storage	-40 °C to +85 °C
Hold up Time	15mS, typ. at 115VAC 80mS, typ at 230VAC
Humidity	95%, max.
Altitude	2000m, max
Switching Frequency	65kHz, typ
I/O Isolation Voltage	3000VAC / 1min.
Safety Standards	IEC60950, EN60950, UL60950
Safety Approvals	pending
Safety Class	CLASS II
Hot swap	Forbid
Case Material	UL94V-0 rated
Install	PCB
Cooling	Free air convection
Reliability Calculated MTBF (MIL-HDBK-217F)	> 200,000 hrs
Weight	~ 250g

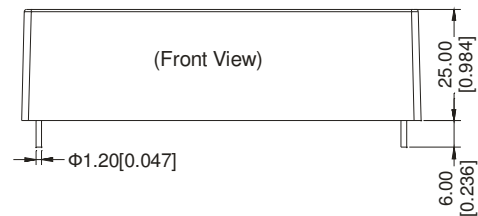
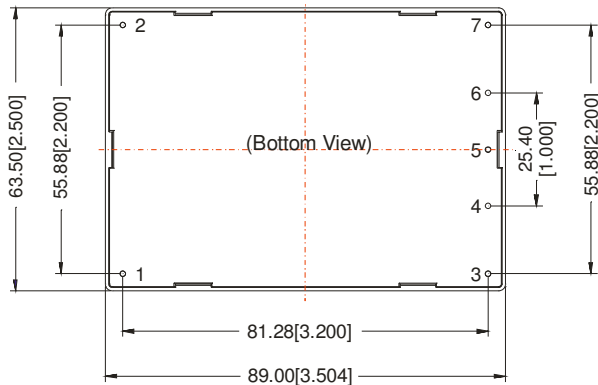
Selection Guide

Single Output

Order #	Power (W)	Output Voltage (Vdc)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)	Standby Power, max
SINGLE OUTPUT						
PPM26-H-3R3ELF	26.4	3.3	8000	78	60000	0.5W
PPM40-H-05ELF	40	05	8000	82	40000	0.5W
PPM40-H-12ELF	40	12	3333	84	9000	0.5W
PPM40-H-24ELF	40	24	1667	84	2000	0.5W

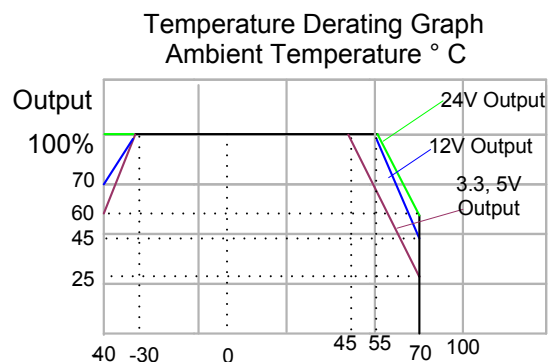
If you need other specifications, please enquire.

Package / Pinning / Derating



All dimensions are typical in millimeters (inches).
 - Pin diameter: 1.0 +/-0.10 (0.04 +/-0.004)
 - Pin pitch tolerance: +/-0.35 (+/-0.014)
 - Case tolerance +/-0.5 (+/-0.02)
 - Specification may change without notice

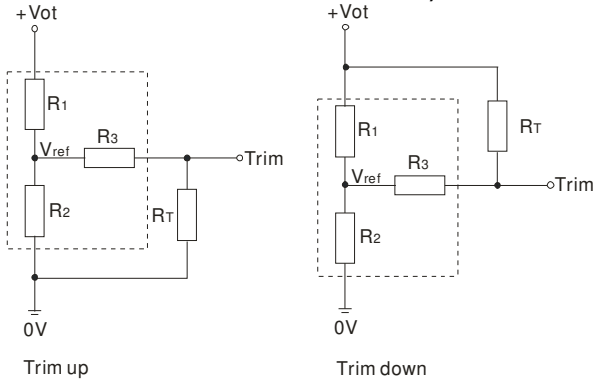
PIN CONNECTIONS	
#	SINGLE
1	AC (L)
2	AC (N)
3	+ Vo
4	No Pin
5	- Vo
6	No Pin
7	Trim



App Notes:

Trim Application & Trim Calculation

Application circuit for TRIM
(Part in broken line is the interior of models)



Formula for resistance of Trim :

$$\text{up: } R_T = \frac{aR_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V_{ot} - V_{ref}} \cdot R_1$$

$$\text{down: } R_T = \frac{aR_1}{R_1 - a} - R_3 \quad a = \frac{V_{ot} - V_{ref}}{V_{ref}} \cdot R_2$$

Note: Value for R1, R2, R3, and Vref refer to the following table.

R_T: Resistance of Trim

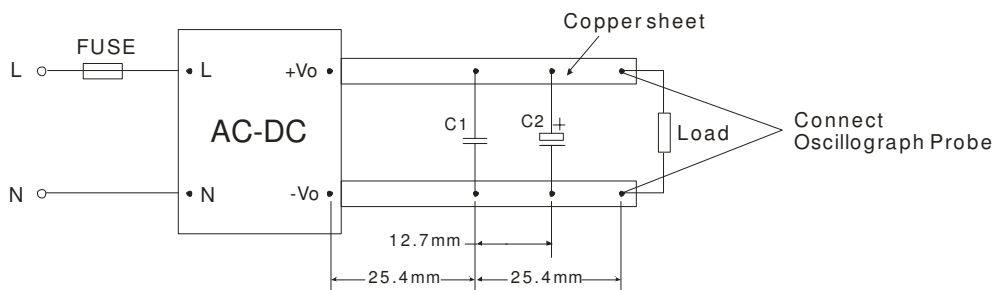
a: User-defined parameter, no actual meanings.

Vo(V)	3.3	5V	12V	24V
Resistance				
R1(KΩ)	2	3.3	3.83	8.66
R2(KΩ)	1.2	3.3	1	1
R3(KΩ)	1	1	1	1
Vref(V)	1.24	2.5	2.5	2.5
Vot(V)	Output voltage of Trim, variation ≤ ±10%			

EMC

EMI	EN55022, Class B
EMS	ESD IEC/EN 61000-4-2 ±6kV/8kV perf. Criteria B
	RS IEC/EN 61000-4-3 10V/m perf. Criteria A
	EFT IEC/EN 61000-4-4 ±2kV (without external circuit) perf. Criteria B IEC/EN 61000-4-4 ±4kV (with typical application, fig 3)
	Surge IEC/EN 61000-4-5 ±1kV/±2kV (without external circuit) perf. Criteria B IEC/EN 61000-4-5 ±2kV/±4kV (with typical application, fig 3)
	CS IEC/EN 61000-4-6 10 Vr.m.s. perf. Criteria A
	PFM IEC/EN 61000-4-8 10A/m perf. Criteria A
Voltage dips, short and interruption immunity	IEC/EN 61000-4-11 95% 5000ms perf. Criteria B

Parallel Lines Measure



Note: C1: 1μF (Ceramic capacitor) C2: 10μF (Electrolytic capacitor)

App Notes:

Typical Applications PPM-Series

Fig 1

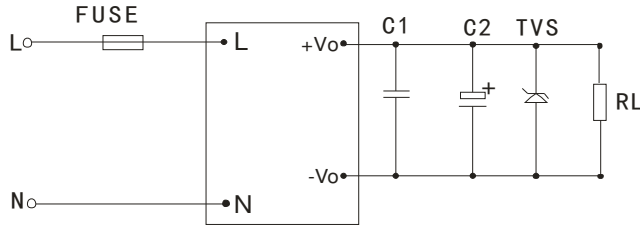
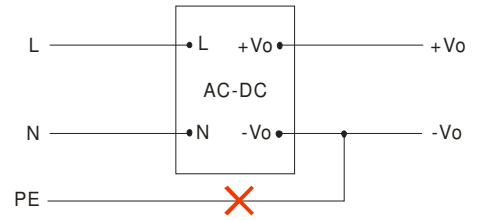
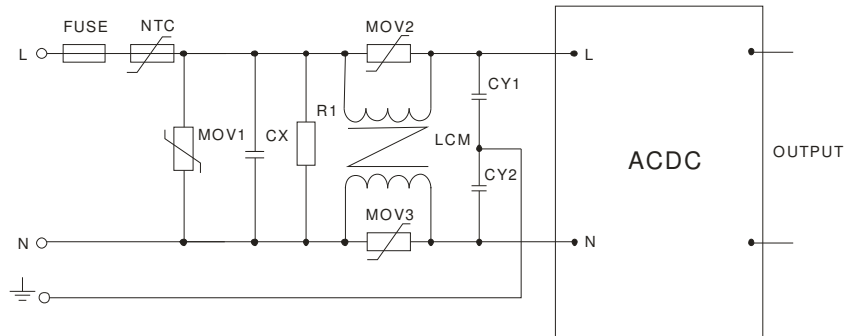


Fig 2



Note: This application is not supported for this series.



External Typical Value

Model	C1(μF)	C2(μF)	TVS
PPM26-H-3R3ELF	1	680	SMBJ7.0A
PPM40-H-05ELF		680	SMBJ7.0A
PPM40-H-12ELF		220	SMBJ20A
PPM40-H-24ELF		120	SMBJ30A

Note:

- C1 is a ceramic capacitor, it is used to filter high frequency noise. Output filtering capacitors C2 is a electrolytic capacitor, It is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitors please refer to manufacture's datasheet. Voltage derating of capacitor should be 80% or above. TVS is a recommended component to protect post-circuits (if converter fails).
- For standard EMC requirement, please refer to figure 1 or figure 2 if higher EMC requirement, please refer to figure 3
 Figure 3: MOV1: 561KD14; MOV2, MOV3: 561KD07; CX: 0.15μF/300VAC;
 CY1, CY2: 222M/400VAC; R1: 1MΩ/2W; LCM: 2mH-10mH;
 NTC: 5D-9;
 FUSE: Recommended to use 3.15A/250V