

## ECM Series



- Compact Size
- IT & Medical Approvals
- Convection-cooled
- Class I and II Construction
- DC Input Version Available (DCM Series)
- PoE Isolation Version Available (POE Series)
- 3 Year Warranty

## Specification

## Input

Input Voltage	• 90-264 VAC (120-370 VDC)
Input Frequency	• 47-63 Hz; 440 Hz*
Input Current	• 40 W: 0.4 A max at 230 VAC 60 W: 0.6 A max at 230 VAC 100 W: 0.9 A max at 230 VAC
Inrush Current	• 40 A max at 230 VAC
Earth Leakage Current	• <125 $\mu$ A at 115 VAC/60 Hz <210 $\mu$ A at 230 VAC/50 Hz
Power Factor	• EN61000-3-2
Input Protection	• Internal T3.15 A, 250 V fuse in line and neutral

## Output

Output Voltage	• See tables
Output Voltage Trim	• $\pm$ 5% on 3.3 V & 5 V versions, $\pm$ 10% on other single output models and V1 of multi-output models. (See note 1 for ECM40/60 models)
Initial Set Accuracy	• $\pm$ 1.0% V1, $\pm$ 5% V2, V3 & V4
Minimum Load	• See tables
Start Up Delay	• 1.5 s max
Start Up Rise Time	• 10 ms max
Hold Up Time	• 16/75 ms min at 115/230 VAC
Line Regulation	• $\pm$ 0.5%
Load Regulation	• $\pm$ 1% single output models; $\pm$ 3% V1, $\pm$ 5% V2 & V3 ECM40/60 multi-output models. $\pm$ 1% V1 & V2, $\pm$ 5% V3 & V4 ECM100
Cross Regulation	• 2% on ECM40/60 only
Over/Undershoot	• None at turn on/off
Transient Response	• 4% max. deviation, recovery to within 1% in 500 $\mu$ s for a 25% load change
Ripple & Noise	• 1% pk-pk, 20 MHz bandwidth
Overvoltage Protection	• 115-135% Vnom, recycle input to reset
Overload Protection	• 110-150% on primary power limit, auto recovery
Short Circuit Protection	• Trip and restart (hiccup mode)
Temperature Coefficient	• 0.05%/ $^{\circ}$ C
Peak Load	• 120% for 100 ms ECM40/60 (see note 3)

## General

Efficiency	• 80-85% depending on model
Isolation	• 4000 VAC Input to Output 2 x MOPP ECM100 single output models, 1 x MOPP ECM100 multi output and all ECM40/60 models (contact sales for 2 x MOPP), 1500 VAC Input to Ground 1 x MOPP, 500 VAC Output to Ground
Switching Frequency	• 70 kHz typical
Power Density	• 40 W: 4.2 W/In <sup>3</sup> 60 W: 6.3 W/In <sup>3</sup> 100 W: 7.4 W/In <sup>3</sup>
MTBF	• 600 kHrs to MIL-HDBK-217F at 25 $^{\circ}$ C, GB

## Environmental

Operating Temperature	• 0 $^{\circ}$ C to +70 $^{\circ}$ C. Refer to derating curves for specific operating limitations.
Cooling	• Convection & fan-cooled ratings (see derating curves)
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 $^{\circ}$ C to +85 $^{\circ}$ C
Operating Altitude	• 3000 m
Shock	• 30 g pk, half sine, 6 axes
Vibration	• 2 g rms, 5 Hz to 500 Hz, 3 axes

## EMC &amp; Safety

Emissions	• EN60601-1-2, EN61204-3, FCC 20780, EN55022 & EN55011, level B conducted EN55022 Level A radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A, SEMI F47
Conducted Immunity	• EN61000-4-6, 10 V Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B EN60601-1, 30% 500 ms, 60% 100 ms, 100% 10 ms, 100% 5000 ms, Perf Criteria A, A (with 50% load), A, B
Safety Approvals	• EN60601-1, ANSI/AAMI ES60601-1, CSA22.2 No.60601-1 per cUL, Including Risk Management, EN60950-1, UL60950-1

\* Safety approvals cover frequency range 47-63 Hz

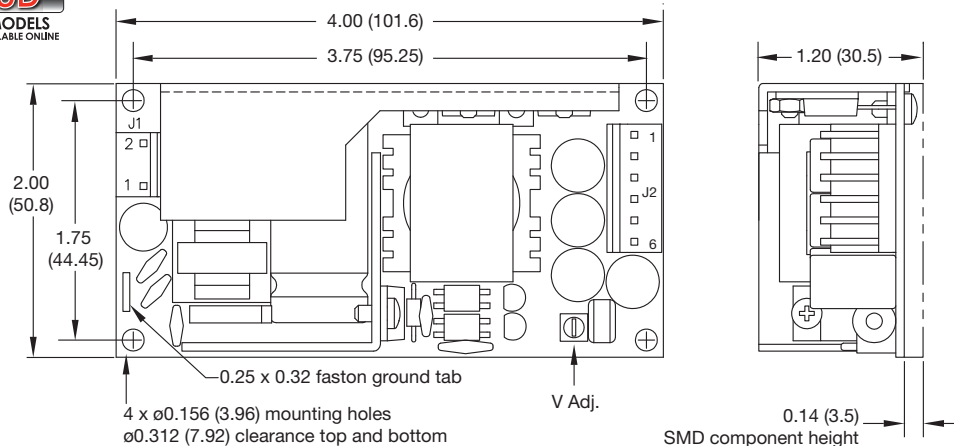
## Models and Ratings

Output Power	Output 1		Output 2		Output 3		Model Number <sup>2)</sup>
	Voltage	Current Min/Max <sup>3)</sup>	Voltage	Current Min/Max	Voltage	Current Min/Max	
60 W	5.0 V	0.0 A/12.00 A					ECM60US05
	7.0 V	0.0 A/8.60 A					ECM60US07
	9.0 V	0.0 A/6.70 A					ECM60US09
	12.0 V	0.0 A/5.00 A					ECM60US12
	15.0 V	0.0 A/4.00 A					ECM60US15
	18.0 V	0.0 A/3.30 A					ECM60US18
	20.0 V	0.0 A/3.00 A					ECM60US20
	<b>24.0 V</b>	<b>0.0 A/2.50 A</b>					<b>ECM60US24</b>
	28.0 V	0.0 A/2.14 A					ECM60US28
	33.0 V	0.0 A/1.80 A					ECM60US33
	48.0 V	0.0 A/1.25 A					ECM60US48
	+5.0 V	0.5 A/8.00 A	+12.0 V	0.1 A/3.0 A			ECM60UD21
	+5.0 V	0.5 A/8.00 A	+15.0 V	0.1 A/2.5 A			ECM60UD22
	+5.0 V	0.5 A/8.00 A	+12.0 V	0.1 A/3.0 A	-12.0 V	0.0 A/0.5 A	ECM60UT31
	+5.0 V	0.5 A/8.00 A	+24.0 V	0.1 A/1.5 A	-12.0 V	0.0 A/0.5 A	ECM60UT32
	+5.0 V	0.5 A/8.00 A	+15.0 V	0.1 A/2.5 A	-15.0 V	0.0 A/0.5 A	ECM60UT33
	+3.3 V	0.5 A/8.00 A	+5.0 V	0.1 A/1.5 A	+12.0 V	0.0 A/0.5 A	ECM60UT34
	+5.0 V	0.5 A/8.00 A	+3.3 V	0.1 A/1.5 A	+12.0 V	0.0 A/0.5 A	ECM60UT35

### Notes

- V2 will track a change in V1 by the same percentage change in voltage as V1 is trimmed.
- To receive unit with cover fitted, add suffix '-C' to model number. For Class I operation only.
- A 120% peak load can be taken for up to 100 ms with a 25% duty cycle. Average load not to exceed 60 W.

## Mechanical Details



Input Connector J1	
Pin 1	Line
Pin 2	Neutral

J1 mates with Molex housing 43061-0003 & Molex series 5194 crimp terminals. Ground (0.25 faston) tab standard.

Output Connector J2		
Pin	Single	Multi
1	V1	+V1
2	V1	+V1
3	V1	RTN
4	RTN	RTN
5	RTN	V3
6	RTN	+V2

J2 mates with Molex housing 43061-0006 & Molex series 5194 crimp terminals.

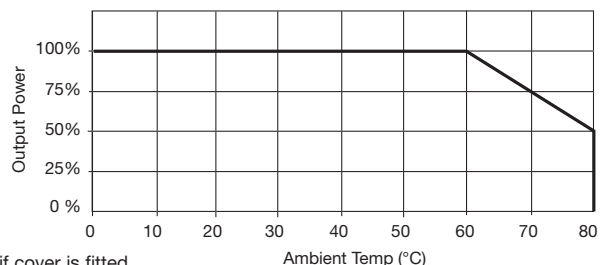
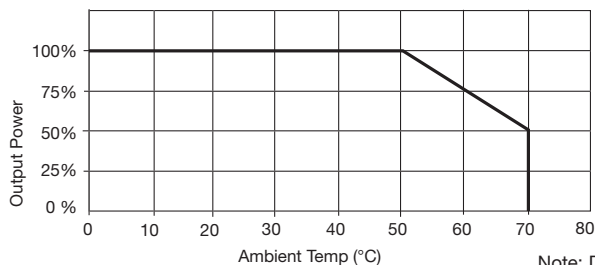
### Notes

- All dimensions in inches (mm). Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- Weight: 0.33 lbs (150 g) approx.
- Cable harnesses with 300 mm wire available.  
For single output models, order part number ECM40/60S LOOM†.  
For multi-output models, order part number ECM40/60DT LOOM†.
- Mating connector kit available. Order part number ECM40/60 CONKIT†.
- Covers available. Order part number ECM40/60 COVER^†. Cover dimensions are 4.49 x 2.52 x 1.52 (114 x 64 x 38.5).
- Selected single output models available in a 3" x 5" footprint for OEM quantities. Contact sales for details.
- 3D drawing files available from [www.xppower.com/cad.php](http://www.xppower.com/cad.php).

## Derating Curves

All ECM60 models convection-cooled

All ECM60 models with 5 CFM



Note: Derate by 10% if cover is fitted

Consult longform datasheet for installation information regarding optimum thermal ratings in convection-cooled applications.

