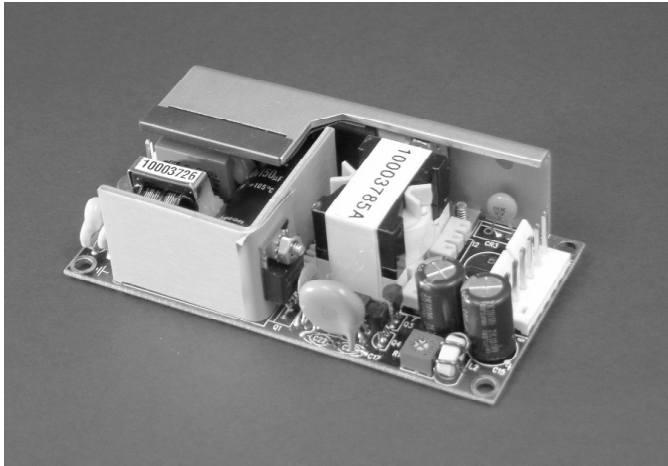


AC-DC Medical & Industrial

40/60 Watts ECM40/60 Series



THE XPERTS IN POWER

- Small Size 2.0" x 4.0" x 1.2"
- Low Leakage Current
- Industrial & Medical Approvals
- Level B Conducted Emissions
- EN61000-3-2,-3 Compliant
- UL Class I and Class II Approved

Specification

Input

- **Input Voltage** 90-264 VAC (170-370 VDC)
- **Input Frequency** 47-63 Hz, 440 Hz
- **Input Current** 0.6 A max at 230 VAC,
- **Inrush Current** 40 A max at 230 VAC
- **Earth Leakage Current** <100 μ A at 115 VAC, <200 μ A at 230 VAC
- **Earthing** Approved for both Class I and Class II operation
- **Input Protection** 3.15 A internal fuse in line & neutral

Output

- **Output Voltage** See Tables
- **Output Voltage Adjustment** \pm 10% on single output models & V1 of multi output models - See Note 4
- **Minimum Load** See Tables
- **Start Up Delay** 2 s max
- **Start Up Rise Time** 50 ms
- **Hold Up Time** 16/75 ms min at 115/230 VAC
- **Initial Set Accuracy** \pm 1.0% V1, \pm 5% V2 & V3
- **Drift** \pm 0.2%
- **Line Regulation** \pm 0.5%
- **Load Regulation** \pm 1.0% single output models, \pm 3% V1, \pm 5% V2 & V3 multi output models
- **Cross Regulation** \pm 2%
- **Over/Undershoot** None at turn on/off
- **Transient Response** 4% max. deviation, recovery to within 1% in 500 μ s for a 25% load change
- **Ripple & Noise** 1% pk-pk, 20 MHz BW
- **Overvoltage Protection** 115-135% Vnom, recycle input to reset
- **Overload Protection** 110-150% typical, auto recovery
- **Short Circuit Protection** Trip and restart
- **Temperature Coeff** 0.05%/ $^{\circ}$ C

General

- **Efficiency** 80-85% dependant on model
- **Isolation** 4000 VAC Input to Output
1500 VAC Input to Ground
500 VAC Output to Ground
- **Switching Frequency** Typically 70 kHz
- **Power Density** 6.25 W /In³ for 60 W
- **MTBF** 250,000 hours per MIL-HDBK-217F
- **Size** 101.6 x 50.8 x 30.48 mm
- **Weight** 150g
- **Connection** See Notes 1 & 2

Environmental

- **Operating Temperature** 0 $^{\circ}$ C to +80 $^{\circ}$ C refer to derating curves for specific operating limitations
- **Storage Temperature** -20 $^{\circ}$ C to +85 $^{\circ}$ C
- **Cooling** Convection cooled
- **Humidity** 95% RH, non condensing
- **Operating Altitude** 3000 m
- **Shock** 30 G pk, half sine, 6 axis
- **Vibration** 2 G rms, 5 Hz to 500 Hz, 3 axis

EMC & Safety

- **EMC Standards** EN61000-3-2, -3, EN60601-1-2, FCC 20780 & EN55022 Level B
- **ESD Susceptibility** EN61000-4-2 Level 2 Perf Criteria A
- **Radiated Susceptibility** EN61000-4-3 10 V/m Perf Criteria A
- **EFT/Burst** EN61000-4-4 Level 2 Perf Criteria A
- **Surge** EN61000-4-5 Level 3 Perf Criteria A
- **Conducted Susceptibility** EN61000-4-6 10 V Perf Criteria A
- **Safety Approvals** EN60601-1, UL60601-1, CSA 22.2 601.1, EN60950, UL60950

OUTPUT VOLTAGE & CURRENT RATINGS - 40 WATT MODELS

ECM40/60

Max Power	Outputs						Model Number
	V1	Imin/Imax	V2	Imin/Imax	V3	Imin/Imax	
40 W	+5.0 V	0.0 A/8.0 A					ECM40US05*
	+7.0 V	0.0 A/5.7 A					ECM40US07
	+9.0 V	0.0 A/4.4 A					ECM40US09
	+12.0 V	0.0 A/3.5 A					ECM40US12*
	+15.0 V	0.0 A/2.7 A					ECM40US15*
	+18.0 V	0.0 A/2.2 A					ECM40US18
	+24.0 V	0.0 A/1.7 A					ECM40US24*
	+33.0 V	0.0 A/1.2 A					ECM40US33
	+48.0 V	0.0 A/0.9 A					ECM40US48*
	+5.0 V	0.5 A/6.0 A	+12.0 V	0.1 A/2.0 A			ECM40UD21
	+5.0 V	0.5 A/6.0 A	+15.0 V	0.1 A/1.5 A			ECM40UD22
	+5.0 V	0.5 A/6.0 A	+12.0 V	0.1 A/2.0 A	-12.0 V	0.0 A/0.5 A	ECM40UT31
	+5.0 V	0.5 A/6.0 A	+24.0 V	0.1 A/1.0 A	-12.0 V	0.0 A/0.5 A	ECM40UT32
	+5.0 V	0.5 A/6.0 A	+15.0 V	0.1 A/1.5 A	-15.0 V	0.0 A/0.5 A	ECM40UT33
	+3.3 V	0.5 A/6.0 A	+5.0 V	0.1 A/1.5 A	+12.0 V	0.0 A/0.5 A	ECM40UT34
	+5.0 V	0.5 A/6.0 A	+3.3 V	0.1 A/1.5 A	+12.0 V	0.0 A/0.5 A	ECM40UT35

OUTPUT VOLTAGE & CURRENT RATINGS - 60 WATT MODELS

ECM40/60

Max Power	Outputs						Model Number
	V1	Imin/Imax	V2	Imin/Imax	V3	Imin/Imax	
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
	+24.0 V	0.0 A/2.50 A					ECM60US24*
	+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

1. Loom kits with 300 mm wire available, order part number ECM40/60 LOOM*.
 2. Mating connector kit available order part number ECM40/60 CON KIT*.
 3. Covers available order part number ECM40/60 COVER*. To receive unit with cover fitted, add suffix -C to model number.
 4. V2 will track a change in V1 by the same % change in voltage.
- * Also available from Farnell InOne, see pages 350 & 351.

Mechanical Details

Dimensions in inches (mm)
Tolerance:
.xx = ±0.02 (0.50)
.xxx = ±0.01 (0.25)

Input Connector J1		
Pin 1	Line	
Pin 2	Neutral	

Output Connector J2		
Pin No.	Single	Multi
1	+V1	+V1
2	+V1	+V1
3	RTN	RTN
4	RTN	RTN
5	NC	-V3
6	NC	+V2

J1 mates with Molex housing 09-50-3031 & Molex series 2878 crimp terminals.
J2 mates with Molex housing 09-50-3061 & Molex series 2878 crimp terminals.
Cover dimensions are 114 x 64 x 38.5 mm.

Derating Curves

