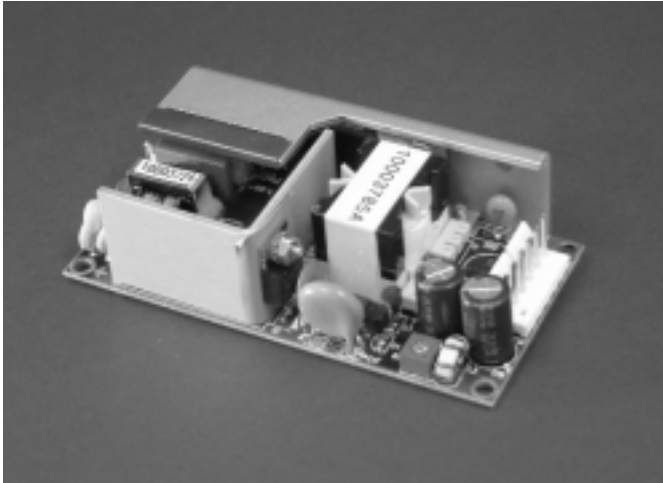


# AC-DC Medical & Industrial

## 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
- Multi Output Models Available Q2

### 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  $\mu$ A at 115 VAC, <200  $\mu$ A at 230 VAC
- *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* • 0 A
- *Start Up Delay* • 2 s max
- *Start Up Rise Time* • 50 ms
- *Hold Up Time* • 16 ms min at 115 VAC, 75 ms min at 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
- *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 BW
- *Overvoltage Protection* • 115-135% Vnom, recycle input to reset
- *Overload Protection* • 110-150% typical, auto recovery
- *Short Circuit Protection* • Trip and restart
- *Temperature Coefficient* • 0.05%/°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 /In<sup>3</sup>
- *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 °C to +80 °C refer to derating curves for specific operating limitations
- *Storage Temperature* • -20 °C to +85 °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, UL2601-1, 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/3.0 A | -12.0 V | 0.0 A/0.5 A | ECM40UT34    |

| 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/3.0 A | -12.0 V | 0.0 A/0.5 A | ECM60UT34    |

**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**

| 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   |

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

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**

