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140 Watts

ECM Series



- 120/148 W – Convection/Forced–cooled Ratings
- Class I & Class II Construction
- Remote Sense
- 5 V Standby Option
- Remote On/Off & Power OK Signals Option
- IT, Industrial & Medical Safety Approvals
- 3 Year Warranty

Specification

Input

Input Voltage	• 80-264 VAC (120-370 VDC), derate output power <90 VAC (See derating curve)
Input Frequency	• 47-400 Hz[1]
Input Current	• 2.5 A typical at 115 VAC, full load 1.3 A typical at 230 VAC, full load
Inrush Current	• 40 A max at 230 VAC, cold start at 25 °C
Power Factor	• EN61000-3-2, class A
Earth Leakage Current	• 265 µA max at 264 VAC/60 Hz 0.5/1.1 mA 115/230 VAC at 400 Hz typ.
Input Protection	• Internal T5.0 A/250 V fuse in line and neutral

Output

Output Voltage	• 12-48 VDC (see tables)
Output Voltage Trim	• ±5%, fan output will track by same percentage
Initial Set Accuracy	• ±1% V1, ±5% V2, ±3% V3
Minimum Load	• 0.1 A required on V1 to maintain regulation of V2
Start Up Delay	• 1.5 s max
Start Up Rise Time	• 10 ms max
Hold Up Time	• 16 ms min at 115 VAC
Drift	• ±0.2% after 20 min warm up
Line Regulation	• ±0.5% max
Load Regulation	• ±1% V1, ±5% V2 & V3 max
Over/Undershoot	• 5% typical
Transient Response	• 4% max. deviation, recovery to within 1% in 500 µs for a 50-75-50% load change
Ripple & Noise	• 1% pk-pk V1, others 2%, 20 MHz bandwidth
Overvoltage Protection	• 115-140% Vnom, recycle input to reset
Overload Protection	• 110-150% V1 only
Short Circuit Protection	• Continuous trip and restart (hiccup mode)
Temperature Coefficient	• 0.05%/°C
Remote Sense	• Compensates for 0.5 V total voltage drop
Remote On/Off (Inhibit/Enable Option -A)	• Uncommitted isolated optocoupler diode, powered diode inhibits V1 & V2

General

Efficiency	• 88% typical
Isolation	• 4000 VAC Input to Output 2 x MOPP, 1500 VAC Input to Ground 1 x MOPP, 500 VAC Output to Ground
Switching Frequency	• 70 kHz typical
Signals (Option -A)	• Power OK - open collector, Remote On/Off, 5 V Standby
MTBF	• 220 kHrs to MIL-HDBK-217F at 25 °C, GB
Power Density	• 7.2 W/in³

Environmental

Operating Temperature	• 0 °C to +70 °C derate linearly from +50 °C at 2.5%/°C to 50% load at +70 °C when convection-cooled and from +60 °C at 2.5%/°C to 75% load at +70 °C when forced-cooled. See derating curve.
Cooling	• Convection & fan cooled ratings (see tables)
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 °C to +85 °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 & Safety

Low Voltage PSU EMC	• EN61204-3, high severity level
Emissions	• EN55011/32 level B conducted EN55011/32 level A radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
Radiated Immunity	• EN61000-4-3, level 3 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, installation class 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, level 3 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, IEC60950-1:2005 Ed 2 / IEC62368-1:2014, UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14, EN62368-1:2014/A11:2017 (UL1604 Class 1 Div 2 ECM140US12), CE & UKCA meets all applicable directives & legislation.

Notes

[1] Safety approvals cover frequency range 47-63 Hz.

Models and Ratings – Convection-cooled

ECM140 XP

Output Power[1]	Output Voltage V1	Output Current V1	Fan Output V2	Standby Supply V3[2]	Model Number[2,3]
120 W	12.0 VDC	10.0 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US12†^
120 W	15.0 VDC	8.0 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US15†^
120 W	18.0 VDC	6.6 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US18†^
120 W	24.0 VDC	5.0 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US24†^
120 W	28.0 VDC	4.2 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US28
120 W	48.0 VDC	2.5 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US48†^

Notes

1. *Convection-cooled, output power must not exceed 120 W for combined V1, V2, & V3*
2. *For 5 V standby (V3), Power OK & Inhibit, add suffix '-A' to model number.*
3. *For covered versions, add suffix '-C' to model number or order part no. ECM140 COVER KIT†^ for standalone cover (see derating curves). Not suitable for use in class II installations.*

Models and Ratings – Forced-cooled

Output Power[1]	Output Voltage V1	Output Current V1	Fan Output V2	Standby Supply V3[2]	Model Number[2]
148 W	12.0 VDC	11.7 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US12†^
148 W	15.0 VDC	9.3 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US15†^
148 W	18.0 VDC	7.7 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US18†^
148 W	24.0 VDC	5.8 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US24†^
148 W	28.0 VDC	5.0 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US28
148 W	48.0 VDC	2.9 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US48†^

Notes

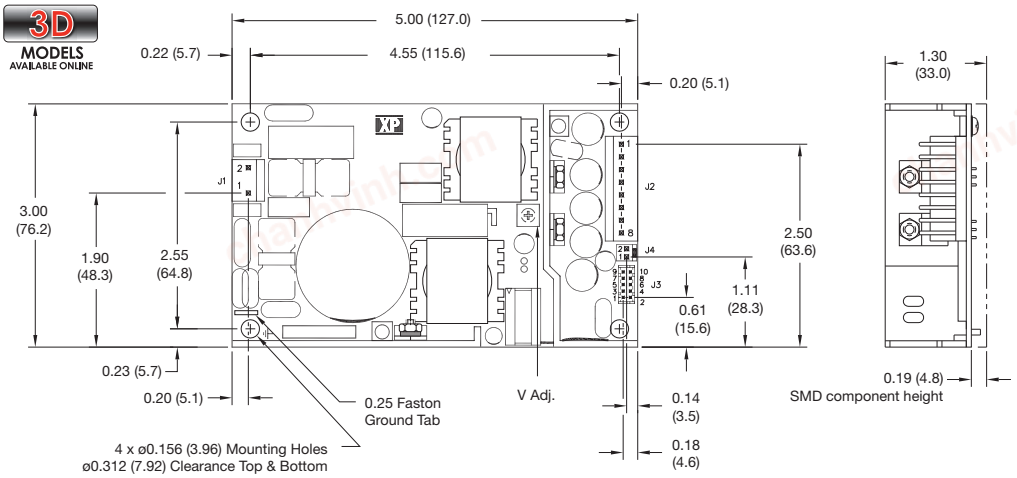
1. *10 CFM airflow achieved with system cooling or with Top Fan assembly.*
2. *For 5 V standby (V3), Power OK & Inhibit, add suffix '-A' to model number e.g. ECM140US12-A.*
3. *For cover with Top Fan assembly please refer to longform datasheet for mechanical details.*

† Available from Farnell & element14. See pages 284-290.

^ Available from Newark. See pages 291-296.

Mechanical Details

3D MODELS AVAILABLE ONLINE



Input Connector J1	
Pin 1	Line
Pin 2	Neutral
.25" Faston	Earth

J1 mates with Molex housing 09-50-1031 and Molex series 5194 crimp terminals.

Output Connector J2	
Pin 1	+V1
Pin 2	+V1
Pin 3	+V1
Pin 4	+V1
Pin 5	RTN
Pin 6	RTN
Pin 7	RTN
Pin 8	RTN

J2 mates with Molex housing 09-50-1081 and Molex series 5194 crimp terminals.

Signal Connector J3			
Pin 1	+5V Standby*	Pin 6	Inhibit LO*
Pin 2	Logic GND*	Pin 7	+Sense
Pin 3	Logic GND*	Pin 8	-Sense
Pin 4	Power OK*	Pin 9	+Vout
Pin 5	Inhibit HI*	Pin 10	-Vout

*Optional
J3 mates with JST housing PHDR-10VS and JST series SPHD-001T-P0.5 crimp terminals.

Fan Connector J4	
Pin 1	Fan +(12 V)
Pin 2	Fan -

J4 mates with Molex housing 22-01-1024 and Molex series 5103 crimp terminals.

Notes

1. All dimensions in inches (mm). Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
2. Weight 0.65 lbs (294 g) approx.
3. Vented cover (see derating curves) dimensions are 5.50 x 3.50 x 1.54 (140 x 89 x 39). See longform datasheet for drawing.

Derating Curves

See longform datasheet for further information.

