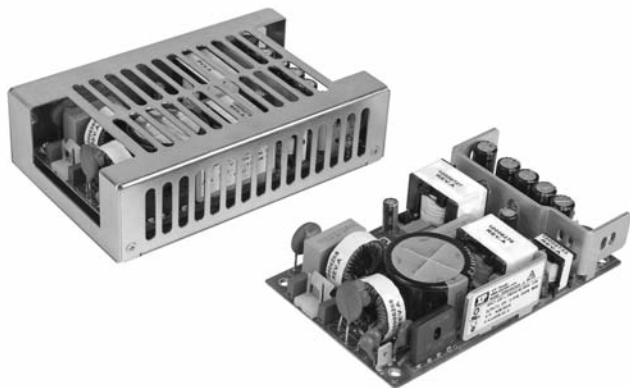


## ECM140 Series



- High Efficiency Resonant Topology
- 120/148 W - Convection/Forced-cooled Ratings
- Class I & Class II Installations
- 12 V Fan Output as Standard
- Remote Sense as Standard
- 5V Standby Option
- Remote On/Off & Power OK Signals Option
- IT, Industrial & Medical Safety Approvals

## Specification

## Input

Input Voltage	• 80-264 VAC (120-370 VDC), derate output power <90 VAC (See derating curve)
Input Frequency	• 47-400 Hz (See note 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 (25 °C)
Power Factor	• EN61000-3-2, class A
Earth Leakage Current	• 265 µA at 264 VAC/60 Hz max. • 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%
Initial Set Accuracy	• ±1% V1, ±5% V2, ±3% V3
Minimum Load	• 0.1A required for V2 regulation when used.
Start Up Delay	• 1 s typical
Start Up Rise Time	• 50 ms
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, 1500 VAC Input to Ground, 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 per MIL-HDBK-217F

## 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 and longform datasheet for thermal considerations.
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 axis
Vibration	• 2 g rms, 5 Hz to 500 kHz, 3 axis

## EMC &amp; Safety

Low Voltage PSU EMC Emissions	• EN61204-3, high severity level as below
Harmonic Currents	• EN55022 level B conducted • EN55022 level A radiated
Voltage Flicker	• EN61000-3-2, class A
Radiated Immunity	• EN61000-3-3
EFT/Burst	• EN61000-4-3, level 3 Perf Criteria A
Surge	• EN61000-4-4, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-5, installation class 3 Perf Criteria A
Dips & Interruptions	• EN61000-4-6, level 3 Perf Criteria A
Safety Approvals	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B, EN60601-1-2, 30% 500 ms, 60% 100 ms, 100% 10 ms, 100% 5000 ms, Perf Criteria A, A, A, B - 230 VAC. Consult longform datasheet for 115 V operation.
Equipment Protection Class	• See Safety Approvals (see next page)
	• Class I and Class II

## Notes

1. Safety approvals cover frequency 47-63 Hz.

## Models and Ratings - Convection-cooled



Output Power <sup>(1)</sup>	Output Voltage V1	Max Output Current V1	Fan Output V2	Standby Supply V3 (optional)	Model Number <sup>(2,3)</sup>
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	48.0 VDC	2.5 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US48

### Notes

1. Convection-cooled, max output power must not exceed 120 W for combined V1, V2, & V3
2. For V3 5 V standby, 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. Not suitable for use in class II installations.

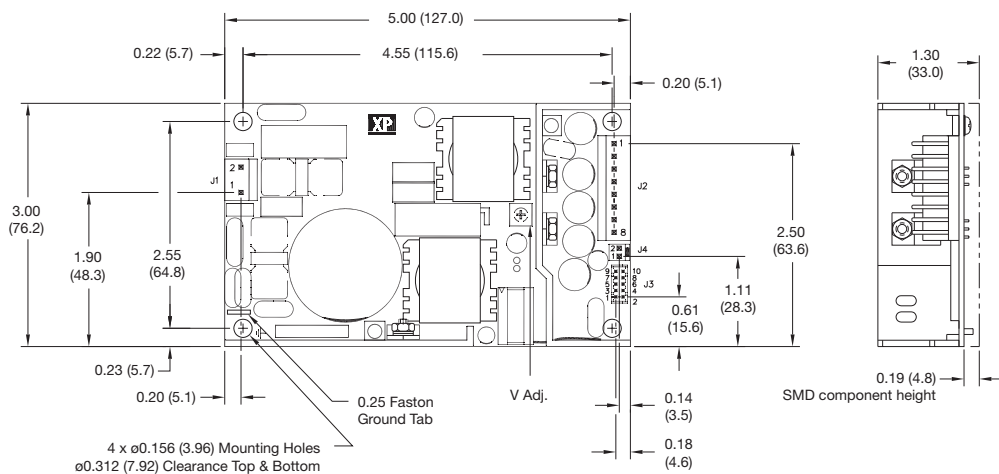
## Models and Ratings - Forced-cooled

Output Power <sup>(1)</sup>	Output Voltage V1	Max Output Current V1	Fan Output V2	Standby Supply V3 (optional)	Model Number <sup>(2)</sup>
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	48.0 VDC	2.9 A	12.0 V/0.5 A	5.0 V/0.5 A	ECM140US48

### Notes

1. 10 CFM airflow.
2. For V3 5 V standby, Power OK & Inhibit, add suffix '-A' to model number.

## Mechanical Details



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	Single
1	+V1
2	+V1
3	+V1
4	+V1
5	RTN
6	RTN
7	RTN
8	RTN

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

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

\*Optional

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

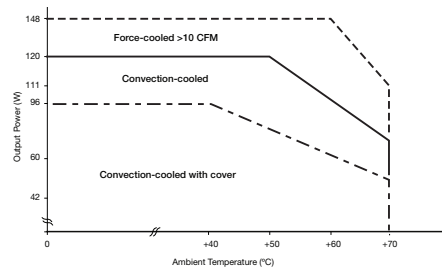
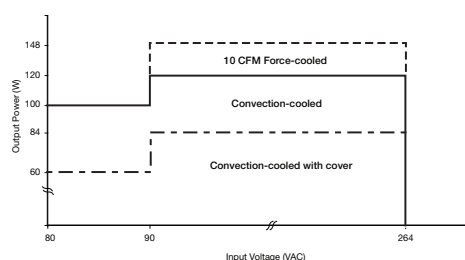
Fan Connector J4	
Pin 1	Fan +(12V)
Pin 2	Fan -

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. Cover dimensions are 5.50 x 3.50 x 1.54 (140 x 89 x 39). See longform datasheet for drawing.

## Derating Curves



## Safety Approvals

IEC60950-1 CB report, CSA 22.2 No. 60950-1, UL60950-1, TUV EN60950-1

IEC60601-1 CB report, CSA 22.2 No. 60601-1, UL60601-1, TUV 60601-1,

TUV IEC61010-1

