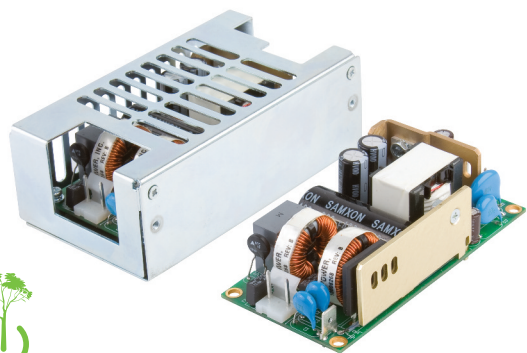


## ECS Series



GREEN XP POWER

## Specification

## Input

Input Voltage	<ul style="list-style-type: none"> <li>80-264 VAC (275 VAC ECS65) (120-370 VDC), derate output power &lt;90 VAC, see derating curves</li> </ul>
Input Frequency	<ul style="list-style-type: none"> <li>47-400 Hz<sup>(1)</sup></li> </ul>
Input Current	<ul style="list-style-type: none"> <li>65 W: 1.0/0.6 A typical at 115/230 VAC</li> <li>100 W: 1.5/0.9 A typical at 115/230 VAC,</li> <li>130 W: 1.9/1.1 A typical at 115/230 VAC full load</li> </ul>
Inrush Current	<ul style="list-style-type: none"> <li>40 A max at 230 VAC, cold start at 25 °C</li> </ul>
Power Factor	<ul style="list-style-type: none"> <li>EN61000-3-2, class A</li> </ul>
No Load Input Power	<ul style="list-style-type: none"> <li>&lt;0.5 W</li> </ul>
Earth Leakage Current	<ul style="list-style-type: none"> <li>65/130 W: 260 µA at 264 VAC/60 Hz max</li> <li>100 W: 230 µA at 264 VAC/60 Hz max</li> </ul>
Input Protection	<ul style="list-style-type: none"> <li>Internal T3.15/T5 A/250 V fuse in line and neutral</li> </ul>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>12-48 VDC (see tables)</li> </ul>
Output Voltage Trim	<ul style="list-style-type: none"> <li>±10%</li> </ul>
Initial Set Accuracy	<ul style="list-style-type: none"> <li>±1%</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>No minimum load required</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>1 s typical</li> </ul>
Start Up Rise Time	<ul style="list-style-type: none"> <li>50 ms</li> </ul>
Hold Up Time	<ul style="list-style-type: none"> <li>16 ms min at 115 VAC</li> </ul>
Drift	<ul style="list-style-type: none"> <li>±0.2% after 20 min warm up</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>±0.5% max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>±1%</li> </ul>
Over/Undershoot	<ul style="list-style-type: none"> <li>5% typical</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>4% max. deviation, recovery to within 1% in 500 µs for a 50-75-50% load change</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>1% pk-pk, 20 MHz bandwidth</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>115-140% Vnom, recycle input to reset</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>110-160%</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>Continuous trip and restart (hiccup mode)</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>0.05%/°C</li> </ul>

## Notes

1. Safety approvals cover frequency 47-63 Hz.

- IT & Medical Safety Approvals
- 65/80/100 W – Convection-cooled Ratings
- Class I & Class II Construction
- Industry Standard 2" x 4" Package
- <0.5 W No Load Input Power
- Low Leakage Current
- 3 Year Warranty

## General

Efficiency	<ul style="list-style-type: none"> <li>Up to 90% model dependent</li> </ul>
Isolation	<ul style="list-style-type: none"> <li>4000 VAC Input to Output, 2 x MOPP, 1500 VAC Input to Ground, 1 x MOPP, 500 VDC Output to Ground, 1 x MOPP</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>65 KHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>65 W: 7.7 W/in<sup>3</sup>, 100 W: 10 W/in<sup>3</sup>, 130 W: 13 W/in<sup>3</sup></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>65 W: 850 kHrs, 100 W: 834 kHrs, 130 W: 715 kHrs to MIL-HDBK-217F at 25 °C, GB</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>-20 °C (-40 °C, ECS130) to +70 °C derate linearly from +50 °C at 2.5%/°C to 50% load at +70 °C.</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>Convection &amp; fan cooled ratings (see tables)</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>95% RH, non-condensing</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>-40 °C to +85 °C</li> </ul>
Operating Altitude	<ul style="list-style-type: none"> <li>3000 m</li> </ul>
Shock	<ul style="list-style-type: none"> <li>30 g pk, half sine, 6 axes</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>2 g rms, 5 Hz to 500 Hz, 3 axes</li> </ul>

## EMC &amp; Safety

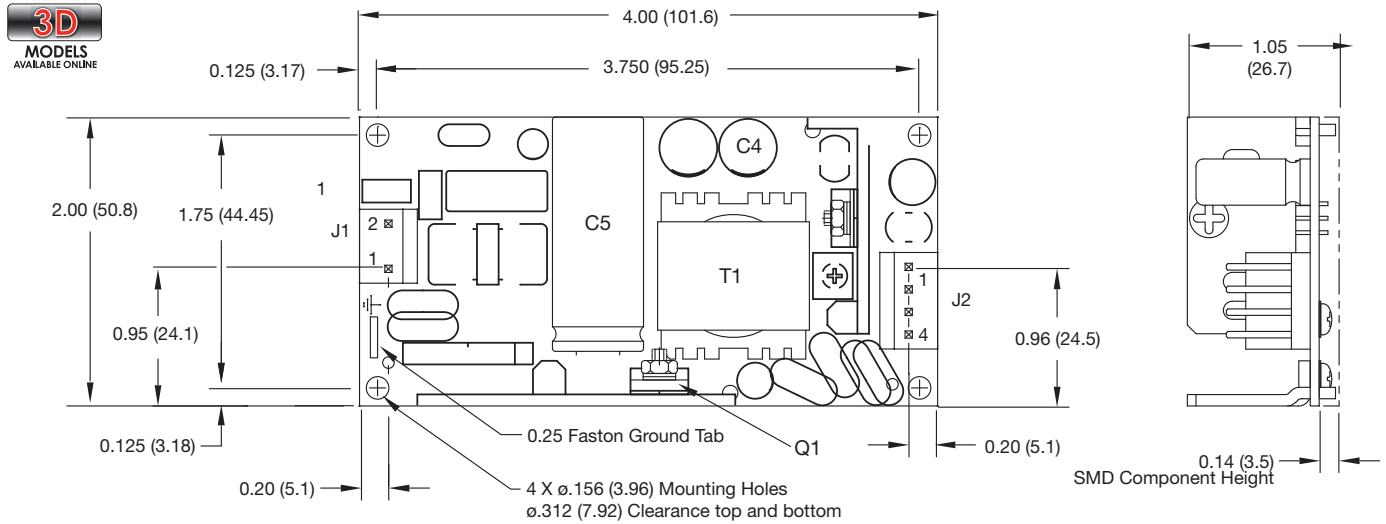
Low Voltage PSU EMC Emissions	<ul style="list-style-type: none"> <li>EN61204-3, high severity level</li> <li>EN55011/22 level B conducted</li> <li>EN55011/22 level A radiated, level B Suffix '-B' models</li> </ul>
Harmonic Currents	<ul style="list-style-type: none"> <li>EN61000-3-2, class A</li> </ul>
Voltage Flicker	<ul style="list-style-type: none"> <li>EN61000-3-3</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>EN61000-4-3, level 3 Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>EN61000-4-4, level 3 Perf Criteria A</li> </ul>
Surge	<ul style="list-style-type: none"> <li>EN61000-4-5, installation class 3 Perf Criteria A</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>EN61000-4-6, level 3 Perf Criteria A</li> </ul>
Dips & Interruptions	<ul style="list-style-type: none"> <li>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.</li> </ul>
Safety Approvals	<ul style="list-style-type: none"> <li>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, ANSI/AMMI ES60601-1, TUV 60601-1, including risk management</li> </ul>
Equipment Protection Class	<ul style="list-style-type: none"> <li>Class I &amp; II (ECS65 Non '-B' models, Class I only)</li> </ul>

Output Power	Output Voltage	Output Current	Model Number <sup>(1)</sup>
65 W	12.0 VDC	5.4 A	ECS65US12
65 W	15.0 VDC	4.3 A	ECS65US15
65 W	18.5 VDC	3.4 A	ECS65US18
65 W	24.0 VDC	2.7 A	ECS65US24
65 W	28.0 VDC	2.3 A	ECS65US28
65 W	48.0 VDC	1.4 A	ECS65US48

Notes

1. For Class B radiated emissions models, add suffix -B to model number. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER KIT for standalone cover. Derate output power by 20% with cover. The cover is not suitable for Class II installations.

Mechanical Details



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

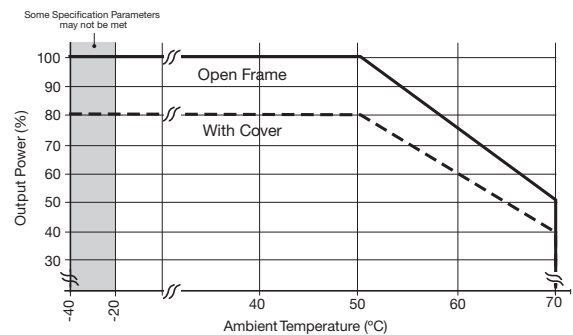
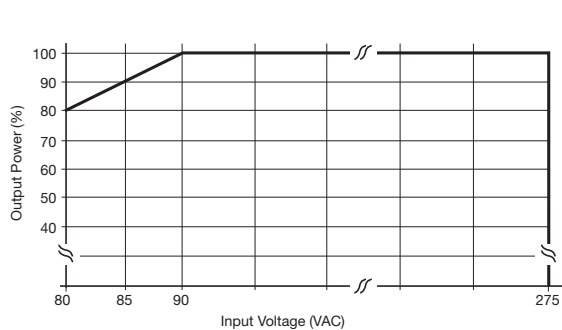
Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J1 mates with Molex Housing PN 09-50-1031, J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

Notes

- 1. All dimensions in inches (mm). Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- 2. Weight: 0.386 lbs (175 g)

Derating Curve - ECS65 Models



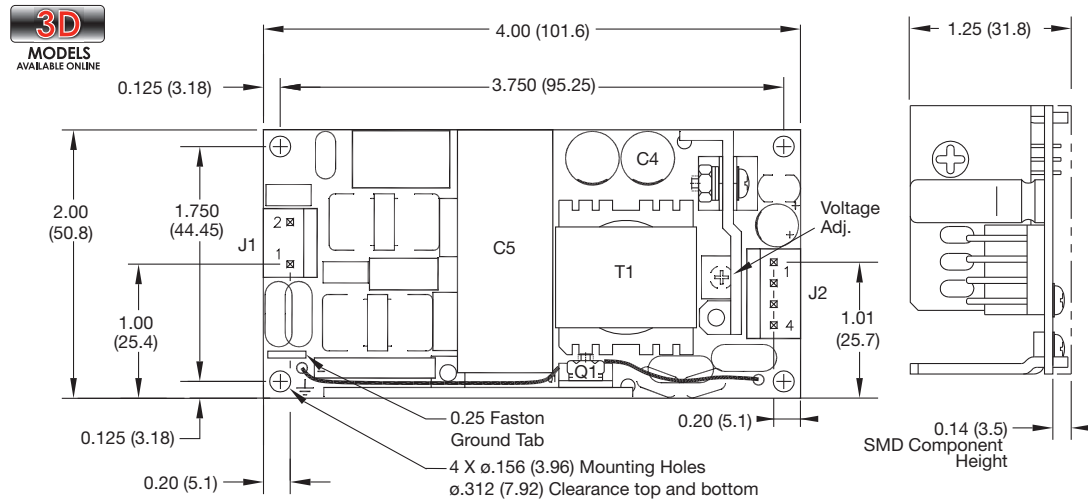
Models and Ratings

Output Power		Output Voltage	Output Current	Model Number <sup>(1)</sup>
Forced Cooled (10 CFM)	Convection-cooled			
100 W	80 W	12.0 VDC	8.3 A	ECS100US12
100 W	80 W	15.0 VDC	6.7 A	ECS100US15
100 W	80 W	18.0 VDC	5.5 A	ECS100US18
100 W	80 W	24.0 VDC	4.2 A	ECS100US24
100 W	80 W	28.0 VDC	3.6 A	ECS100US28
100 W	80 W	48.0 VDC	2.1 A	ECS100US48

Notes

1. For Class B radiated emissions models, add suffix -B to model number. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER KIT for standalone cover. Derate output power by 20% with cover. The cover is not suitable for Class II installations. '-C' not available for '-B' models.

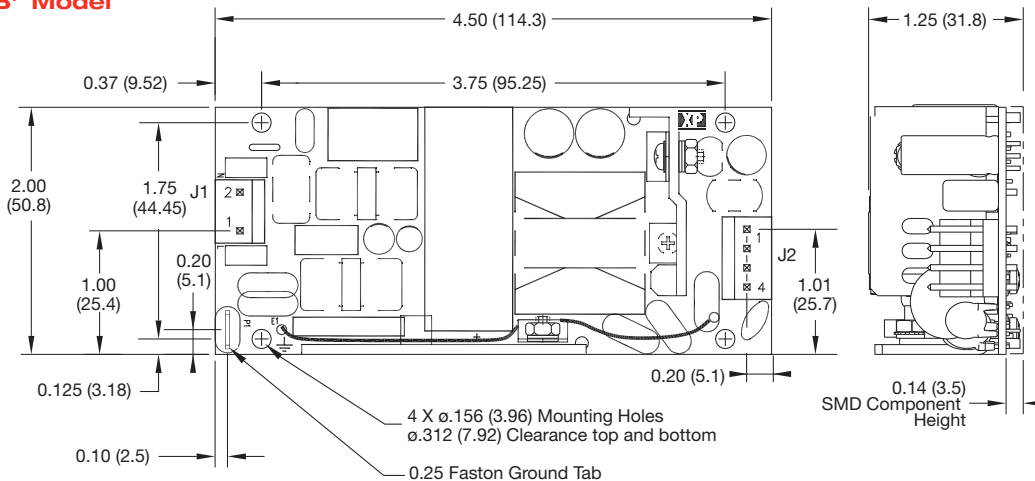
Mechanical Details



Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

'-B' Model

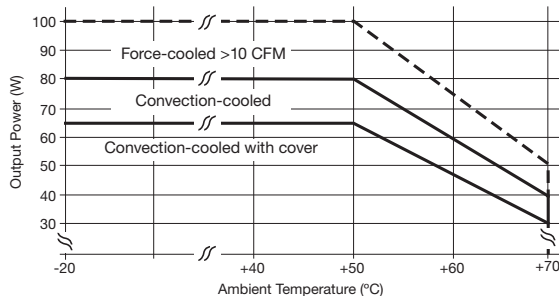
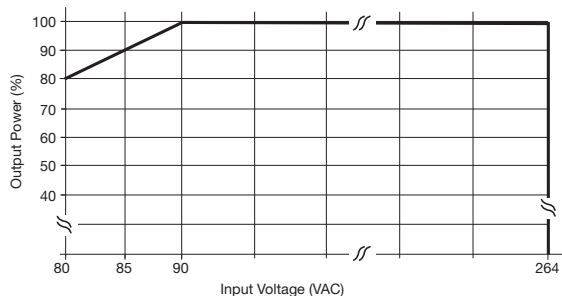


J1 mates with Molex Housing PN 09-50-1031, J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

Notes

- All dimensions in inches (mm). Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- Weight: 0.386 lbs (175 g)

Derating Curve - ECS100 Models



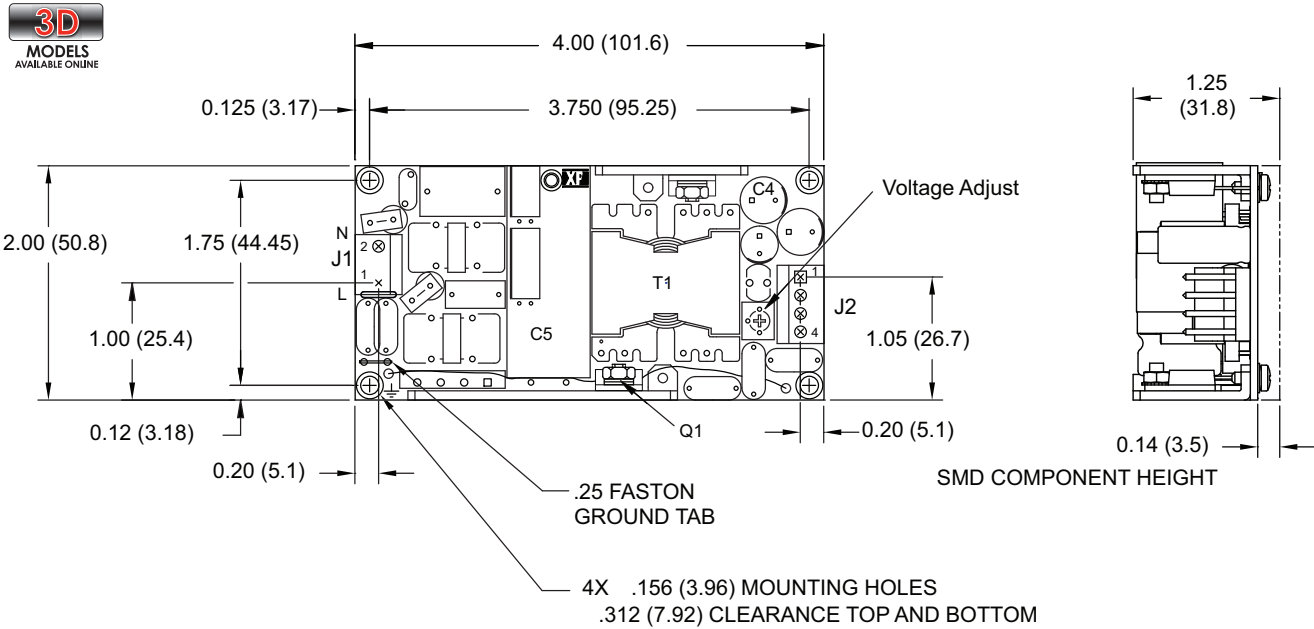
Models and Ratings

Output Power		Output Voltage	Output Current	Model Number <sup>(1)</sup>
Forced Cooled (10 CFM)	Convection-cooled			
130 W	100 W	12.0 VDC	10.9 A	ECS130US12
130 W	100 W	15.0 VDC	8.7 A	ECS130US15
130 W	100 W	18.0 VDC	7.3 A	ECS130US18
130 W	100 W	24.0 VDC	5.4 A	ECS130US24
130 W	100 W	28.0 VDC	4.7 A	ECS130US28
130 W	100 W	48.0 VDC	2.7 A	ECS130US48

Notes

1. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER KIT for standalone cover, see derating curve. The cover is not suitable for Class II installations. '-C'.

Mechanical Details



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

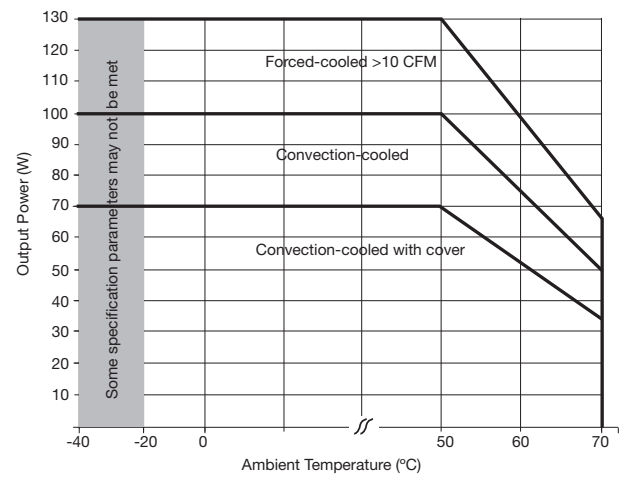
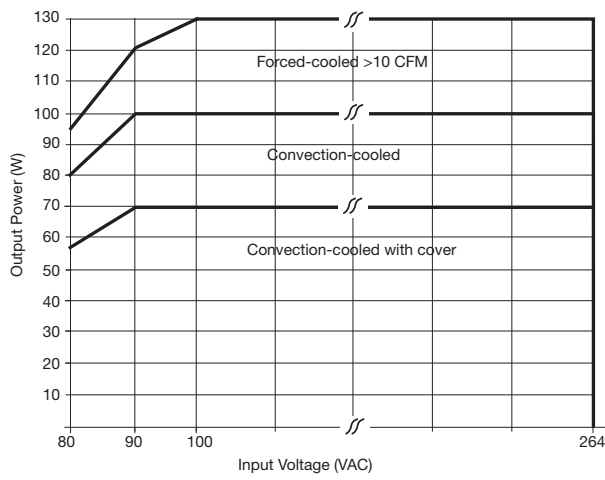
Notes

1. All dimensions in inches (mm). Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)  
2. Weight: 0.386 lbs (175 g)

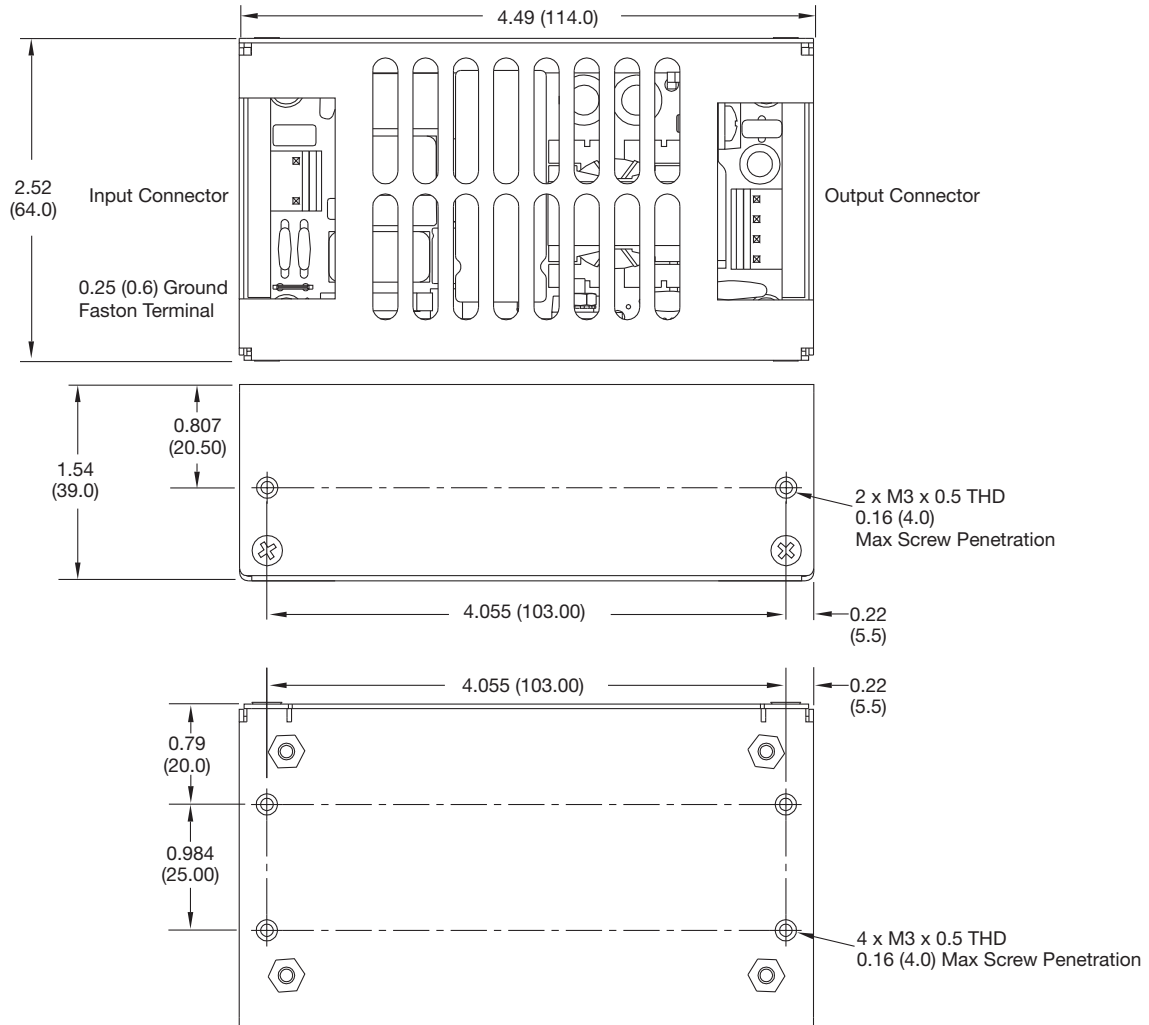
Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J1 mates with Molex Housing PN 09-50-1031, J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

Derating Curve - ECS130 Models



Covered Version (not available for ECS100-B Models)



Notes

- 1. All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- 2. Weight: 0.8 lbs (360 g)

Thermal Considerations - All Models

In order to ensure safe and reliable operation of the PSU in the most adverse conditions permitted in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. See mechanical drawing for component locations. Temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of any direct air flow).

Temperature Measurements (Ambient ≤ 50 °C)	
Component	Max Temperature °C
T1	110 °C
C5	100 °C
C4	100 °C
Q1	110 °C