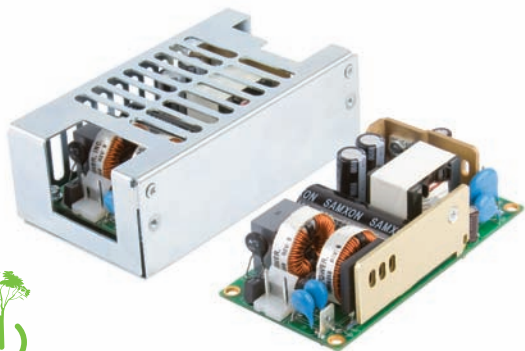


ECS Series



GREEN XP POWER

Specification

Input

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

Output

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

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"> Up to 90% model dependent
Isolation	<ul style="list-style-type: none"> 4000 VAC Input to Output, 2 x MOPP, 1500 VAC Input to Ground, 1 x MOPP, 500 VDC Output to Ground, 1 x MOPP
Switching Frequency	<ul style="list-style-type: none"> 65 KHz typical
Power Density	<ul style="list-style-type: none"> 65 W: 7.7 W/in³, 100 W: 10 W/in³, 130 W: 13 W/in³
MTBF	<ul style="list-style-type: none"> 65 W: 850 kHrs, 100 W: 834 kHrs, 130 W: 715 kHrs to MIL-HDBK-217F at 25 °C, GB

Environmental

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

EMC & Safety

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

Output Power	Output Voltage	Output Current	Model Number ⁽¹⁾
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†^

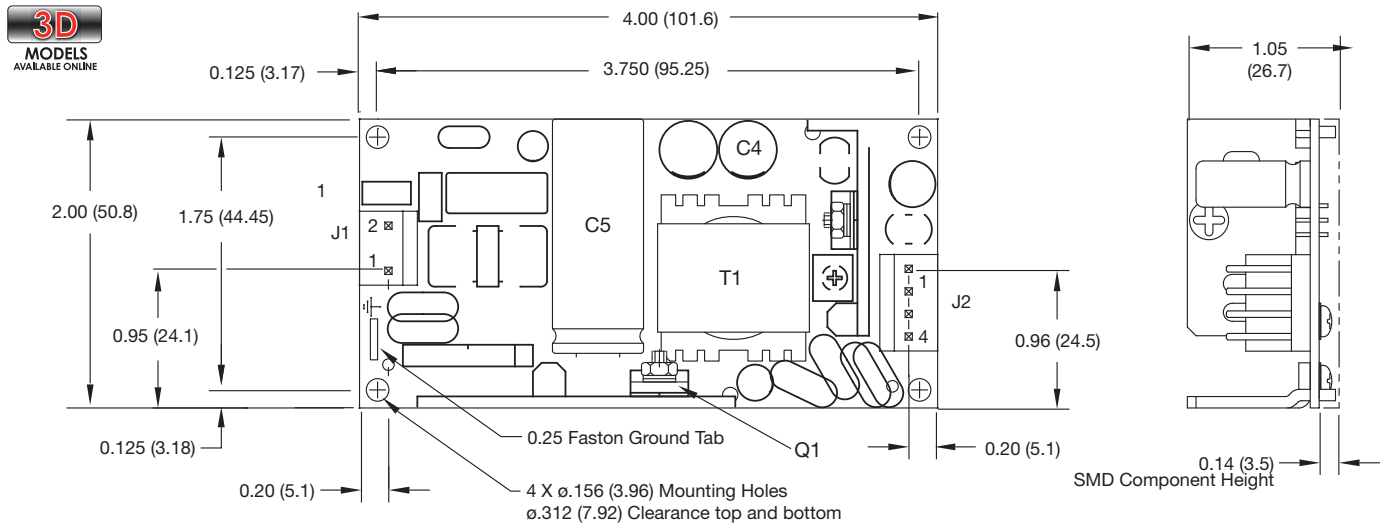
Notes

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.

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

^ Available from Newark. See pages 291-296.

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

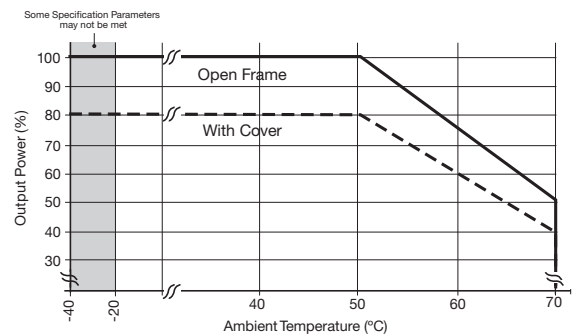
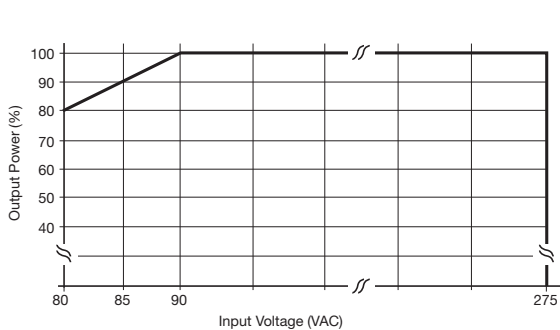
Notes

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 ⁽¹⁾
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†^

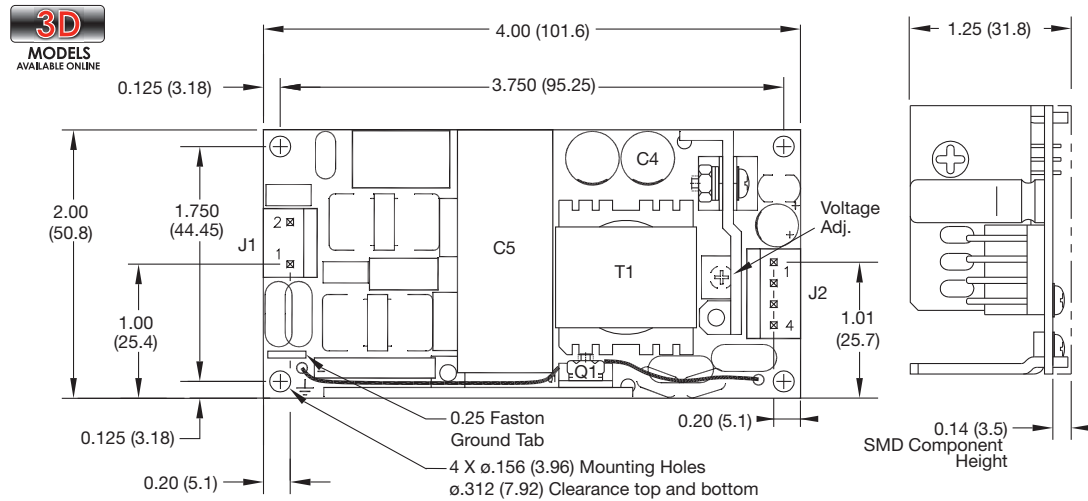
Notes

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.

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

^ Available from Newark. See pages 291-296.

Mechanical Details

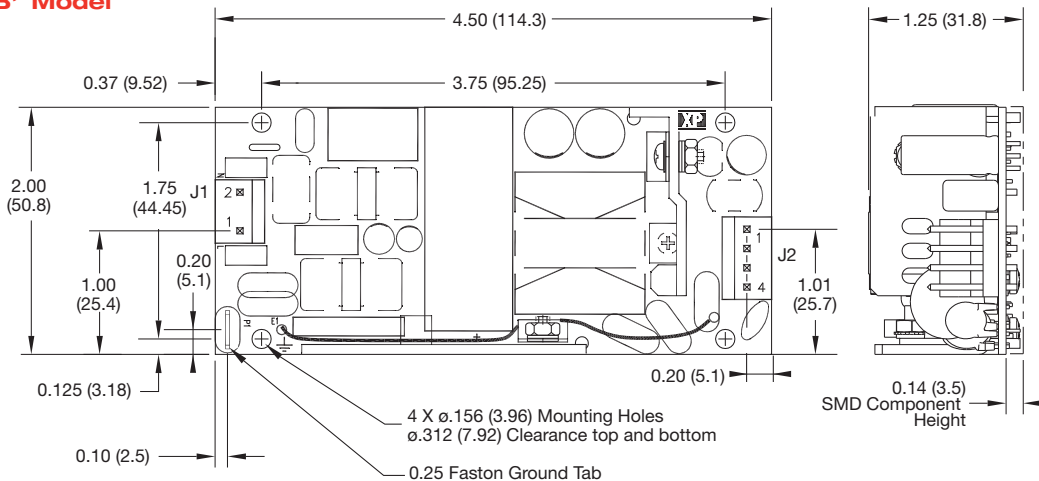


Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

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

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

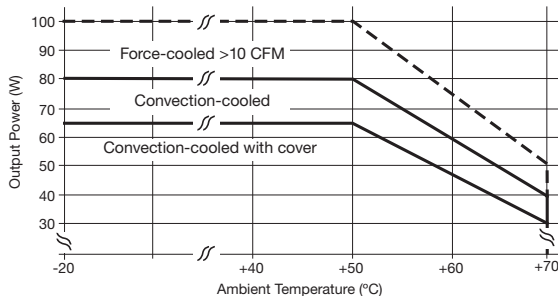
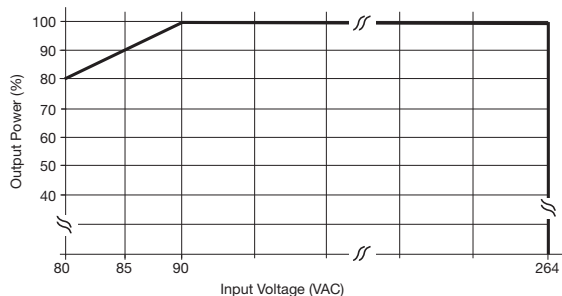
'-B' Model



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



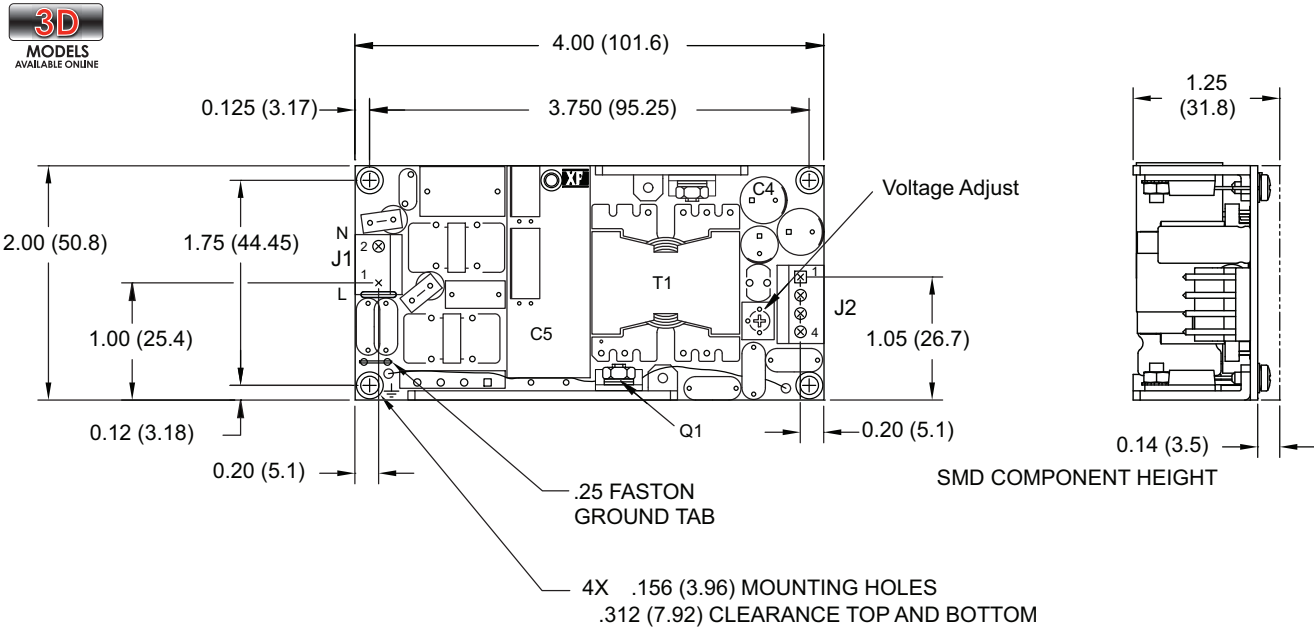
Models and Ratings

Output Power		Output Voltage	Output Current	Model Number ⁽¹⁾
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

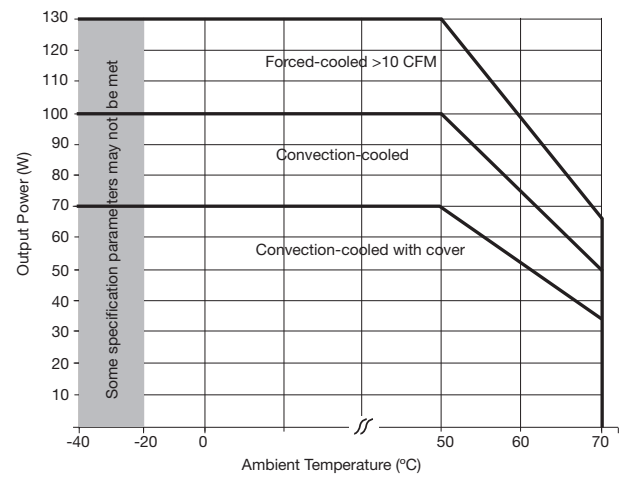
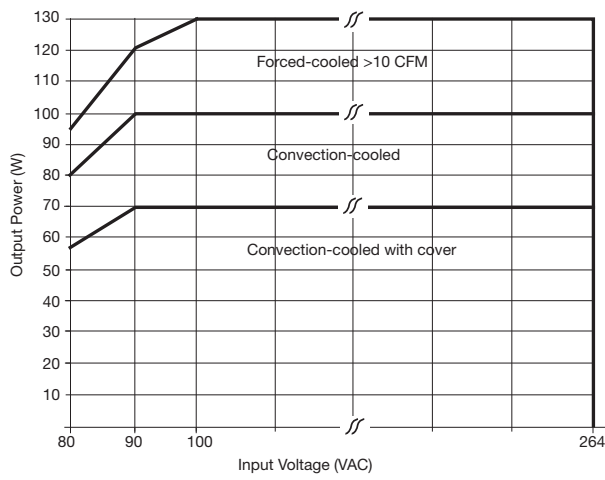
Notes

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

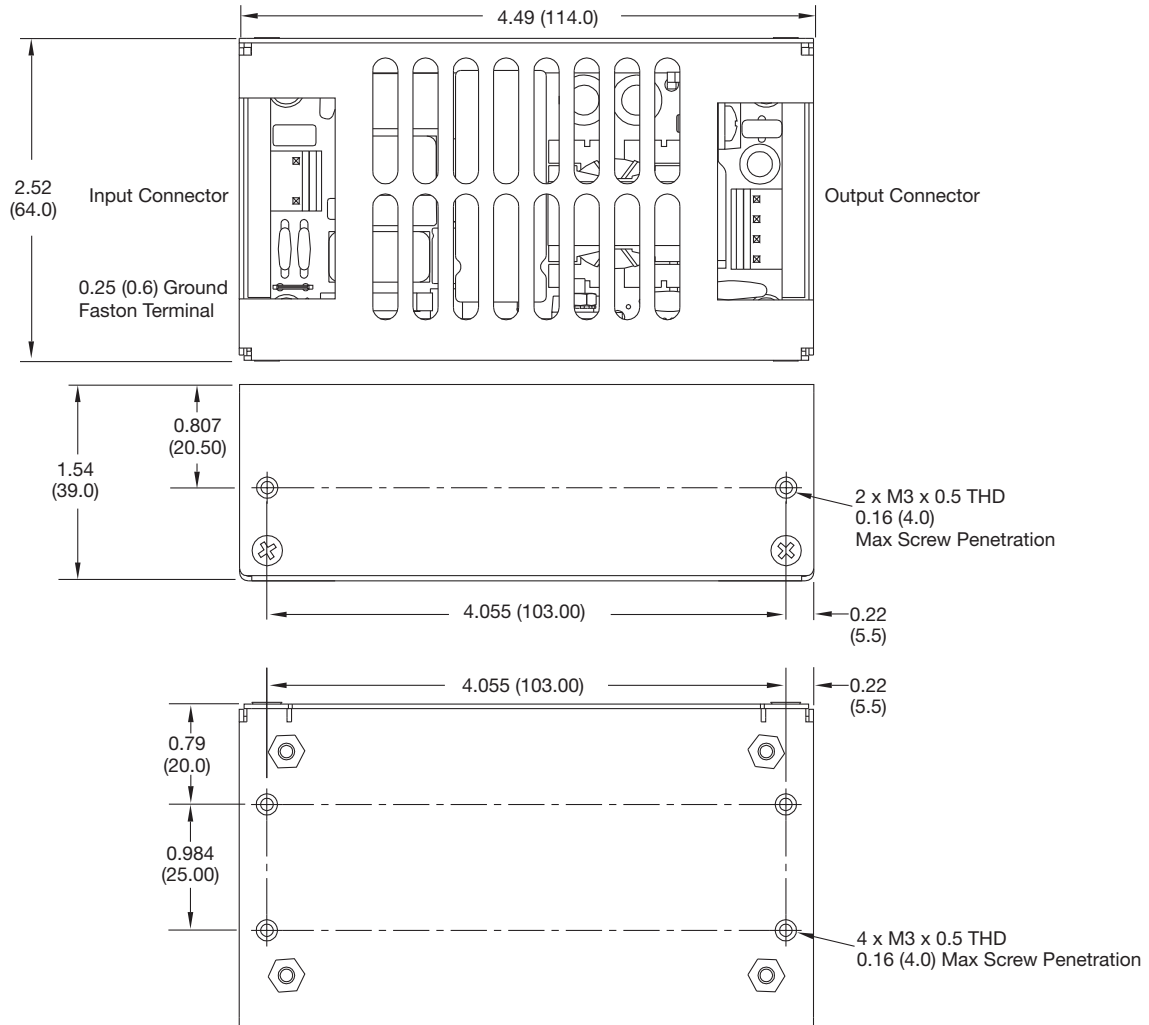
Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

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