

ARTESYN ERM SERIES

20 Watts



Advanced Energy's Artesyn ERM20W series of high performance 20 watt isolated DC-DC converter modules are designed specifically for railway applications. There are 3 input versions available; 9 - 36V_{in}, 18-75V_{in} and 40-160V_{in} input that complies with the EN61368-1 and EN 50155 safety standards and EMI standard EN50121-302 for electronic equipment used on railway rolling stock. There is a choice of four single output models, offering single output voltages of 5 V, 12 V, 15 V or 24 V, and dual +/-12 and +/-15 versions.

DATA SHEET

Total Power:

20 Watts

Input Voltage:

12 V, 24 V, 48 V, 72 V or 110 V

of Outputs:

Single, Dual

SPECIAL FEATURES

- Encapsulated
- Wide 4:1 input range
- 1" x 2" DIP package
- 3000 Vac rms I/O isolation
- Single and dual output
- OCP, OVP, OTP Protection
- Remote On/Off
- High efficiency - 88%
- Fire protection meets EN45545-2
- Railway EMC standard EN50121-3-2

SAFETY

- UL/cUL/IEC/EN 62368-1 (60950-1) Safety Approval & CE Marking

ELECTRICAL SPECIFICATIONS

Input	
Input range	9 to 36 Vdc; 18 to 75 Vdc; 40 to 160 Vdc
Efficiency ²	88% @ 24 Vo
Output	
Voltage tolerance	±1.0%
Line regulation	±0.2%
Load regulation	Single output: ±0.5%; Dual output 1±.0%
Noise/ripple	150 mV
OCP and S/C protection	Hiccup
Overvoltage protection	Latched
Switching frequency	320 KHz
Temperature co-efficient	±0.02 /°C
Isolation	
I/O isolation	3000 Vac rms min.
Insulation resistance	1000 Mohm
Insulation capacitance	1500 pF

ENVIRONMENTAL SPECIFICATIONS

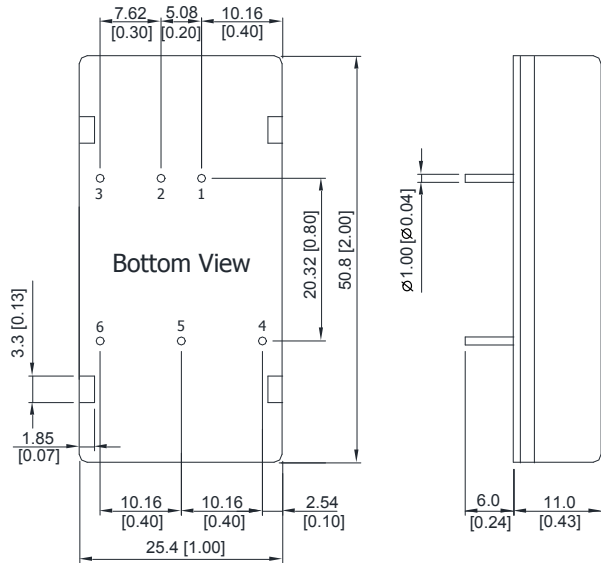
Operating ambient temperature range	-40 °C to +85 °C (with derating)
Storage temperature	-50 °C to +125 °C
Humidity	5% to 95% (non-condensing)

ORDERING INFORMATION

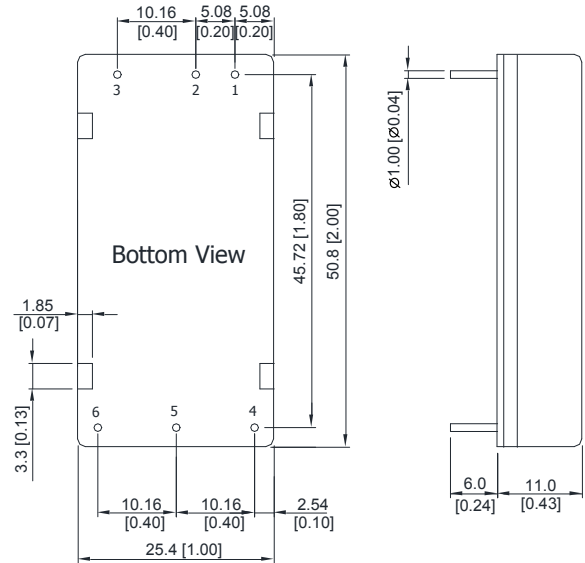
Model Number	Input Voltage	Output	Efficiency @ Max Load	Max Power
ERM04A18	9 - 36 Vin	5 V @ 4 A	87%	20 W
ERM01B18	9 - 36 Vin	12 V @ 1.67 A	87%	20 W
ERM01C18	9 - 36 Vin	15 V @ 1.33 A	87%	20 W
ERM01H18	9 - 36 Vin	24 V @ 0.833 A	87%	20 W
ERM01BB18	9 - 36 Vin	±12 V @ 0.833 A	86%	20 W
ERM01CC18	9 - 36 Vin	±15 V @ 0.667 A	86%	20 W
ERM04A36	18 - 75 Vin	5 V @ 4 A	87%	20 W
ERM01B36	18 - 75 Vin	12 V @ 1.67 A	88%	20 W
ERM01C36	18 - 75 Vin	15 V @ 1.33 A	88%	20 W
ERM01H36	18 - 75 Vin	24 V @ 0.833 A	88%	20 W
ERM01BB36	18 - 75 Vin	±12 V @ 0.833 A	87%	20 W
ERM01CC36	18 - 75 Vin	±15 V @ 0.667 A	87%	20 W
ERM04A110	40 - 160 Vin	5 V @ 4 A	84%	20 W
ERM01B110	40 - 160 Vin	12 V @ 1.67 A	86%	20 W
ERM01C110	40 - 160 Vin	15 V @ 1.33 A	86%	20 W
ERM01H110	40 - 160 Vin	24 V @ 0.833 A	86%	20 W
ERM01BB110	40 - 160 Vin	±12 V @ 0.833 A	86%	20 W
ERM01CC110	40 - 160 Vin	±15 V @ 0.667 A	86%	20 W
ERM04A18B	9 - 36 Vin	5 V @ 4 A	85%	20 W
ERM01B18B	9 - 36 Vin	12 V @ 1.67 A	87%	20 W
ERM01C18B	9 - 36 Vin	15 V @ 1.33 A	87%	20 W
ERM01H18B	9 - 36 Vin	24 V @ 0.833 A	87%	20 W
ERM01BB18B	9 - 36 Vin	±12 V @ 0.833 A	86%	20 W
ERM01CC18B	9 - 36 Vin	±15 V @ 0.667 A	86%	20 W
ERM04A36B	18 - 75 Vin	5 V @ 4 A	85%	20 W
ERM01B36B	18 - 75 Vin	12 V @ 1.67 A	88%	20 W
ERM01C36B	18 - 75 Vin	15 V @ 1.33 A	88%	20 W
ERM01H36B	18 - 75 Vin	24 V @ 0.833 A	88%	20 W
ERM01BB36B	18 - 75 Vin	±12 V @ 0.833 A	87%	20 W
ERM01CC36B	18 - 75 Vin	±15 V @ 0.667 A	87%	20 W
ERM04A110B	40 - 160 Vin	5 V @ 4 A	83%	20 W
ERM01B110B	40 - 160 Vin	12 V @ 1.67 A	86%	20 W
ERM01C110B	40 - 160 Vin	15 V @ 1.33 A	86%	20 W
ERM01H110B	40 - 160 Vin	24 V @ 0.833 A	85%	20 W
ERM01BB110B	40 - 160 Vin	±12 V @ 0.833 A	86%	20 W
ERM01CC110B	40 - 160 Vin	±15 V @ 0.667 A	86%	20 W

MECHANICAL DRAWINGS

ERMxxxxx Models



ERMxxxxxB Models



Pin Connectors - ERMxxxxx Models		
Pin No.	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

Pin Connectors - ERMxxxxxB Models		
Pin No.	Single Output	Dual Output
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout

T: 11.0 mm (0.43 inch) for 24 V Output Models
 T: 10.2 mm (0.40 inch) for Other Output Models

- All dimensions in mm (inches)
- Tolerance: X.X±0.75 (X.XX±0.03)
 X.XX±0.25 (X.XXX±0.01)
- Pin diameter $\varnothing 1.0 \pm 0.05$ (0.04±0.002)

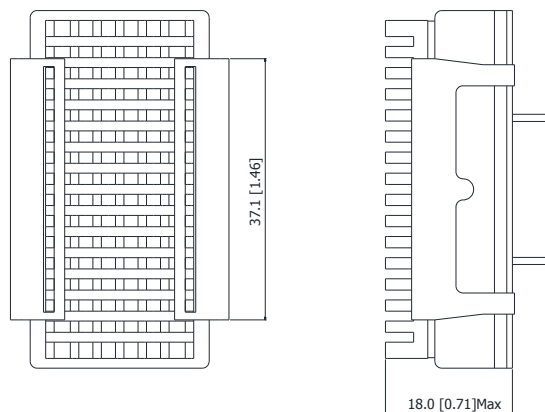
PHYSICAL CHARACTERISTICS

Case Size	50.8 x 25.4 x 11 mm (2.0 x 1.0 x 0.43 inches)
Case Material	Red copper, powder coating
Base Material	FR4 PCB (flammability to UL 94V-0 rated)
Insulated Frame Material	Non-conductive black plastic (flammability to UL 94V-0 rated)
Pin Material	Tinned copper
Potting Material	Epoxy (flammability to UL 94V-0 rated)
Weight	40.5 g

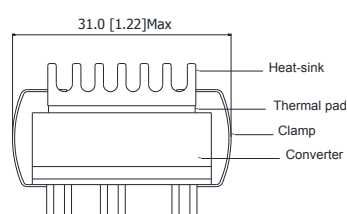
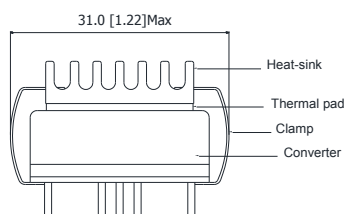
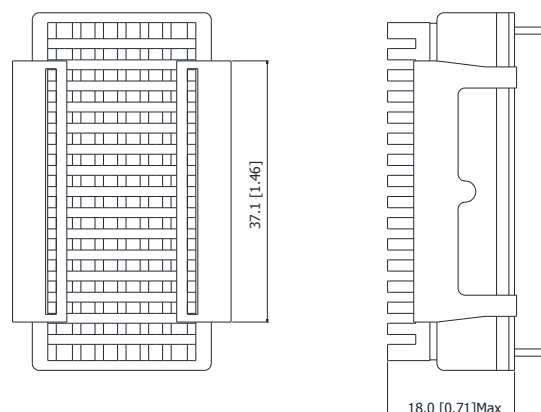
To order the converter with heatsink, please add a suffix -HS (ERM00B110-HS) to order code.

MECHANICAL DRAWINGS

Heatsink for ERMxxxxx Models (Option - HS)



Heatsink for ERMxxxxxB Models (Option - HS)



The advantages of adding a heatsink are:

1. To help heat dissipation and increase the stability and reliability of DC/DC converters at high operating temperature atmosphere.
2. To upgrade the operating temperature of DC/DC converters, please refer to Derating Curve.

PHYSICAL CHARACTERISTICS

Heatsink Material	Aluminum
Finish	Black Anodized Coating
Weight	9 g

Notes:

1. All specifications are subject to change without notice. Mechanical drawings are for reference only.
2. Warranty: 3 years
3. Label and logo appearance may vary from what is shown on mechanical drawings.



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ABOUT ADVANCED ENERGY

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Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE

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