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 - 36Vin, 18-75Vin and 40-160Vin 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

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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

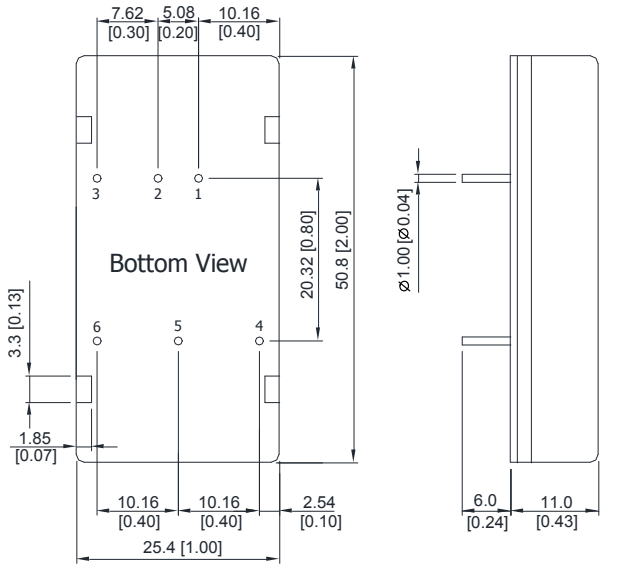
Operating ambient temperature range	-40 °C to +85 °C (with derating)
Storage temperature	-50 °C to +125 °C
Humidity	5% to 95% (non-condensing)

ORDERING INFORMATION

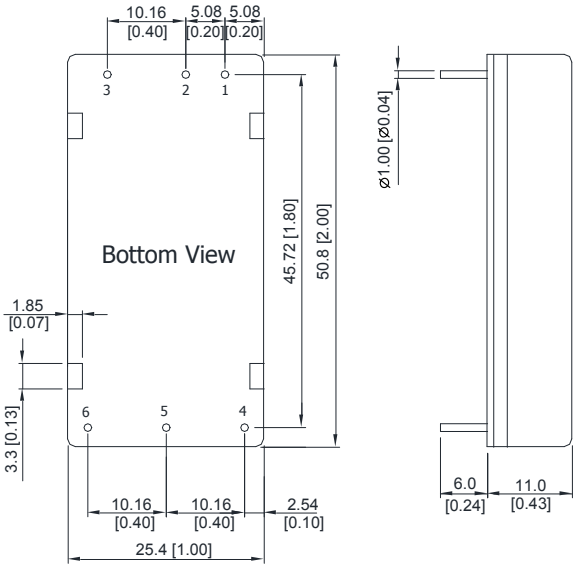
Model Number	Input Voltage	Output	Efficiency @ Max Load	Max Power
ERM04A18	9 - 36 Vin	5 V @ 4 A	87%	20 W
ERM01B18	9 - 36 Vin	12 V @ 1.67 A	87%	20 W
ERM01C18	9 - 36 Vin	15 V @ 1.33 A	87%	20 W
ERM01H18	9 - 36 Vin	24 V @ 0.833 A	87%	20 W
ERM01BB18	9 - 36 Vin	±12 V @ 0.833 A	86%	20 W
ERM01CC18	9 -36 Vin	±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 Ø 1.0 ±0.05 (0.04±0.002)

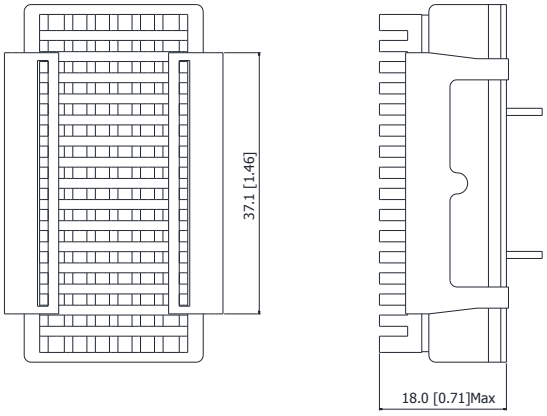
PHYSICAL CHARACTERISTICS

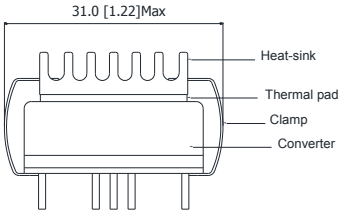
Case Size	50.8 x 25.4 x 11 mm (2.0 x 1.0 x 0.43 inches)
Case Material	Red copper, powder coating
Base Material	FR4 PCB (flammability to UL 94V-0 rated)
Insulated Frame Material	Non-conductive black plastic (flammability to UL 94V-0 rated)
Pin Material	Tinned copper
Potting Material	Epoxy (flammability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

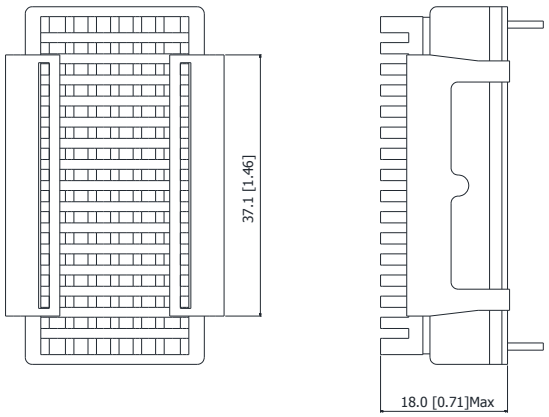
MECHANICAL DRAWINGS

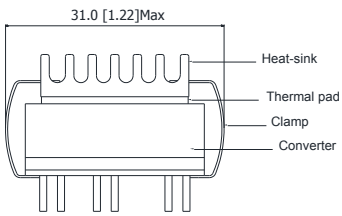
Heatsink for ERMxxxxx Models (Option - HS)





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.

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

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.

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