



A decorative graphic consisting of several colored squares (blue, orange, green) arranged in a scattered pattern.

Model 1450



Model 1450

DC/DC Converter



The Curtis Model 1450 is a high-efficiency DC/DC converter designed to provide a reliable, regulated voltage output for battery-powered vehicles. With an extensive input voltage range, it accommodates a variety of applications, ensuring versatility and adaptability. The 1450 DC/DC with its integrated connectors, its compact design, and advanced safety protections make it an ideal solution for seamless integration by vehicle manufacturers.

FEATURES

- ▶ The wide input operating voltage range of 24-120VDC allows a single model to address most battery-powered vehicle applications, simplifying acquisition and reducing inventory, change management, and service costs.
- ▶ Output isolation/regulation, over-voltage protection, reverse polarity protection and ESD protection ensure safe operation.
- ▶ IP67 and IP69k protection and a wide operating temperature range allow use in harsh environments.
- ▶ The dedicated input and output connectors are recognized as industry-leading, high-reliability components. They ensure safe installation and dependable wiring for seamless integration.
- ▶ Optional Enable Pin allows the converter to be used in power-down mode to limit current draw in energy critical applications (See the [Specifications](#)).
- ▶ 12V and 24V Nominal output voltage models are designed for parallel installation. Formally tested up to 6 units, providing a combined power output of up to 3kW.
- ▶ Compliance with multiple industry norms ensures safe operation: EN12895, EN1175:2020, UL583, EN61000-4-3, EN61000-4-2, IEC 60068-2-27, and IEC 60068-2-6.



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SPECIFICATIONS

12V Absolute

12V Nominal

24V Absolute

24V Nominal

Input

Voltage Range (continuous operation)	24-120VDC			
Nominal Battery Voltage	36-96VDC			
Under Voltage Lockout, Turn-On Voltage Threshold	24.4V			
Under Voltage Lockout, Turn-Off Voltage Threshold	22.8V			
Over Voltage Lockout, Turn-Off Voltage Threshold	122.25V			
Over Voltage Lockout, Turn-On Voltage Threshold	119.0V			
Maximum Current (Vin = 24.5 VDC, 100% load)	23.95A	23.95A	23.7A	23.7A
Maximum No-Load Current (Vin = 24.5 VDC)	84mA	82mA	58mA	66mA
Maximum No-Load Current (Vin = 48 VDC)	38mA	48mA	26mA	34mA
Maximum No-Load Current (Vin = 72 VDC)	27mA	31mA	19mA	22mA
Maximum Reverse Polarity Voltage	-150V			

Output

Operating Current Range (Vin = 24-120 VDC)	0-41.7A	0-37.0A	0-20.8A	0-18.5A
Voltage Set Point (No load)	12V $\pm$ 0.1V	14V $\pm$ 0.1V	24V $\pm$ 0.2v	28V $\pm$ 0.2V
Voltage Set Point (Full load)	12V $\pm$ 0.1V	13.5V $\pm$ 0.1V	24v $\pm$ 0.2V	27V $\pm$ 0.2V
Voltage Ripple and Noise (Full Load, Vpp, 20 Mhz bandwidth)	<120mV			
Current Limit (Maximum Continuous)	41.7A	37.0A	20.8A	18.5A
Output Capacitance (ESR > 10 m Ω)	2mF	2mF	1.36mF	1.36mF
Minimum Efficiency @ 50% Load (Vin = 48 VDC)	>89%	>90%	>90%	>91%
Minimum Efficiency @ 100% Load (Vin = 24 VDC)	>84%	>85%	>86%	>87%
Minimum Efficiency @ 100% Load (Vin = 48 VDC)	>87%	>88%	>88%	>89%
Minimum Efficiency @ 100% Load (Vin = 72 VDC)	>87%	>88%	>88%	>89%
Start-Up Time	1.5s			
Parallel Operation	No	Yes	No	Yes

General

Maximum Isolation Voltage, Input to Output	1.5kV
Maximum Isolation Voltage, Output to Case	1.5kV
Minumum Isolation Resistance, conductors to case	>2M Ω
Typical Switching Frequency	100kHz
Weight	960g
Dimensions W x L x H	92 mm x 170 mm x 56 mm

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SPECIFICATIONS continued

Environmental

Operating Temperature:

–40° to +85°C

Storage Temperature:

–40° to +105°C

Over Temperature Protection (de-rating)

>75°C

Humidity (non-condensing):

100% RH

Protection Level:

IP67 and IP69k compliant

Vibration (IEC 60068-2-6):

5G, 5-500Hz, 3 planes

Shock (IEC 60068-2-27):

30G, 3 planes

Safety

EN 1175:2020

UL 583

EMC

Radiated Emission

EN12895: 30-1000MHz 34-45dB μ V/m

UN/ECE Reg 10/ ISO 13766-1:

Broadband Limits

30-75MHz 62-52dB μ V/m

75-400MHz 52-63dB μ V/m

400-1000MHz 63dB μ V/m

Narrowband

30-75MHz 52-42dB μ V/m

75-400MHz 42-53dB μ V/m

400-1000MHz 53dB μ V/m

Immunity:

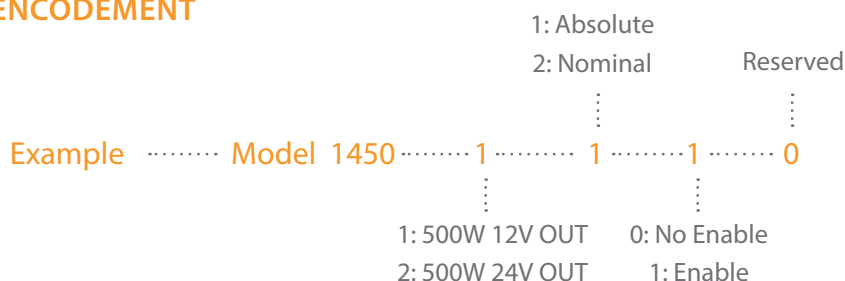
ESD: Compliant with EN12895, EN61000-4-2, ISO 13766-2, ISO 10605. Test level $\pm$ 8kV Direct, $\pm$ 15kV Air.

Radiated: Compliant with EN12895, EN61000-4-3, UN/ECE Reg 10, ISO 13766-1, ISO 11452-2.

BCI: Compliant with ISO 13766-1:2018, ESA Test ISO 11452-4

Fast Transient Burst: Compliant with UN/ECE Reg 10, ES TRIN, EN 61000-4-4.

MODEL ENCODEMENT



DESIGN CONSIDERATIONS

Remote On / OFF

The Model 1450 features an Enable control function. The Enable Pin is located on the primary side of the converter, allowing it to turn on when connected to IN+ and turn off when connected to IN– or left floating.

Parallel Connection of Multiple Units

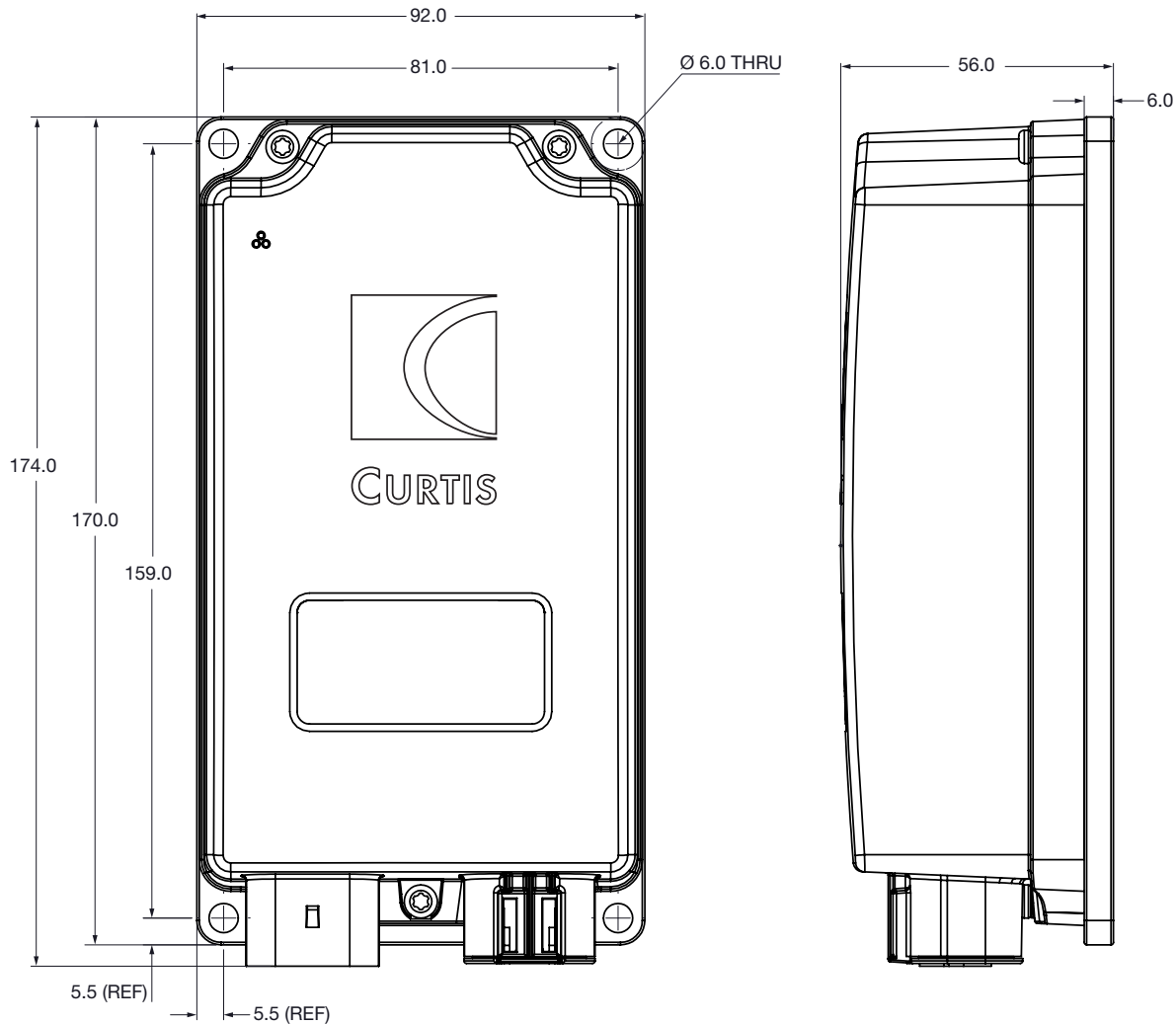
The parallel operation of up to six nominal output voltage models has been successfully verified, delivering a combined output power of up to 3kW. When connecting multiple units in parallel, the impedance of the cables from each unit to the junction point must be maintained within $\pm$ 5% of one another.

Model 1450

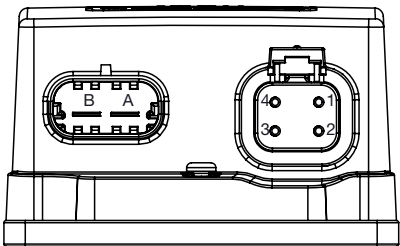
DC/DC Converter



DIMENSIONS mm



CONNECTOR



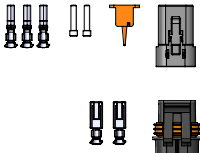
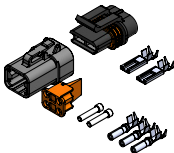
Connector	Pin #	Function
Input	1	Unused
	2	IN-
	3	IN+
	4	Enable
Output	A	OUT+
	B	OUT-



Input Connector:
Deutsch DTP



Output Connector:
APTIV METRI-PACK 630



Mating Connector Kit available on demand:
Curtis PN 1867104

WARRANTY Two year limited warranty from time of delivery.