



CURTIS

Power Conversion



# DC/DC Converter

## Model 1416



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Curtis Model 1416 is designed to be used on 24 and 36VDC battery-powered vehicles to provide reliable and regulated power to 24VDC accessories. Model 1416 utilizes a compact and sleek design to easily be integrated into a vehicle design, thereby eliminating the costly and inefficient practice of battery tapping.

### FEATURES

- ▶ Operating from nominal 24 or 36 VDC battery input, Model 1416 supplies a regulated 24 VDC, 2 Amp output to power auxiliary vehicle circuits.
- ▶ Integrated 4-pin Molex connector allows reliable and simple connection to the converter, thereby minimizing installation and wiring costs.
- ▶ Safety features such as input reverse polarity protection, output over load protection, output short circuit protection and over temperature shutdown protect both the converter itself and vehicle components.
- ▶ High efficiency (93% minimum) minimizes energy costs.
- ▶ Environment protection of IP65 (with connector installed) ensures operation in harsh environments.
- ▶ Small size and low weight allows flexibility in choice of mounting location as well as minimizing weight of vehicle and therefore energy cost.
- ▶ Converters outputs can be paralleled to increase current capability.

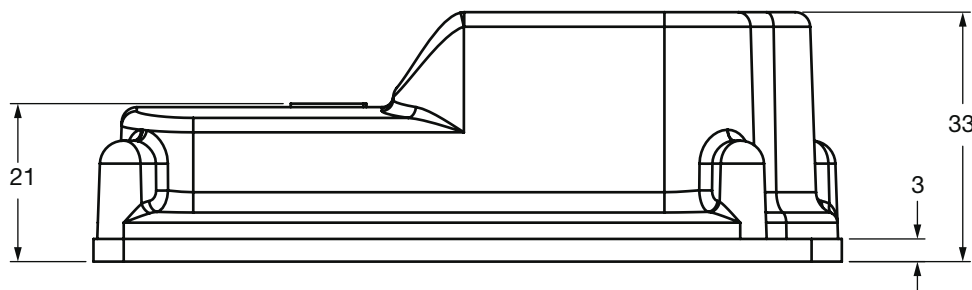
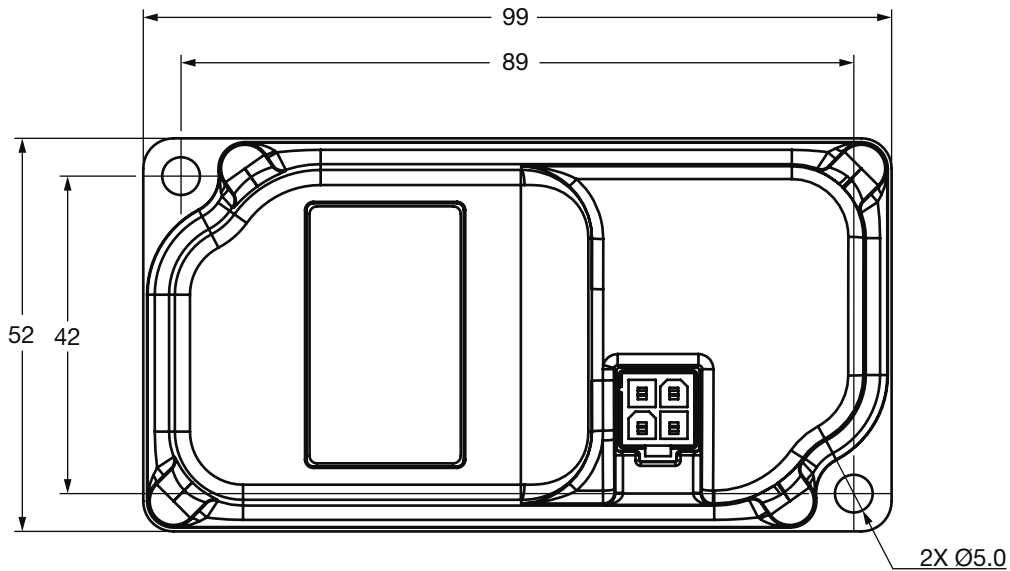


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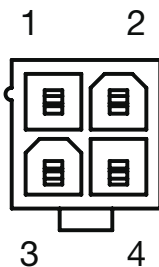
## DC/DC Converter



### DIMENSIONS mm



### CONNECTOR



Pin	Connection
1	Output +
2	Input -
3	Output -
4	Input +

#### Notes:

1. Connector: Molex #39-28-8040
2. Mating Connector:
  - Housing: Molex #39-01-204
  - Contact Pin: Molex #39-00-0038 or #39-00-0039

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### SPECIFICATIONS

#### ELECTRICAL

##### Input

Items	Value	Remarks
Nominal Input Voltage (VDC)	24/36	-
Input Voltage Range (VDC)	12~54	-
Absolute Max. Input Voltage (VDC)	60	-
Input Turn-On Voltage Threshold (VDC)	10.0 +/- 0.5	-
Input Under-Voltage Lock Out Threshold	3.5 +/- 1.0 VDC	-
Max. Input Current (A)	5.2	12V in, Max. load but not under the output current limit mode.
Max. Input Current @ No Load	0.02A @ 24Vin	-
	0.01A @ 36Vin	
Max. Input Current @ Output short circuit	0.12Arms @ 24Vin	
	0.09Arms @ 36Vin	
Reflected Input Ripple Current	0.20Arms @ 24Vin	Ripple current of the input port, full load.
	0.15Arms @ 36Vin	

##### Output

Items	Value	Remarks
Output Voltage (VDC)	23.8~24.4	Nominal 24V
Nominal Output Current (A)	2	-
Output Voltage Ripple and Noise (mV)	350 (max)	Full load, nominal input voltage; PK to PK, 20MHz bandwidth
Output Voltage Ripple (mV) for Parallel Connection of Multiple Units	300 (max)	3 units, 0 ~ 6A load current
Output Current Limit Threshold (A)	2.20 +/- 0.15	Constant current mode, self-recoverable
Maximum Capacitive Load (uF)	15000	Full load
Efficiency (%)	93% (min)	Full load, nominal input voltage

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### SPECIFICATIONS continued

#### ELECTRICAL continued

##### Protection

Items	Description
Input Current	A built-in Fuse: REOMAX RTP2100 Time-Lag PICO Fuse, 350V/10A, Ø4.0*12
Input Reverse Polarity	A MOSFET is on the input trace for the protection (not more than 60VDC).
Output Over Load	The Output Over Current Limit function can prevent too high output current.
Output Short Circuit	The output current is limited to be less than 2.5Arms when the output port is shorted, and it is self-recoverable.
Input Over-Voltage	Shut off mode, as the input voltage is higher than 56.0±1.0VDC; Self-recovery as it decreases to 55.2±0.5VDC.
Over Temperature	Shut off mode, as the temperature of main MOSFET pins rises to 95±5°C; Self-recovery as it decreases to 83±5°C.

#### MECHANICAL

Weight	Installation	
145g +/- 10g	Screws	2*M4 through opposing corners
	Dimension of Holes	2*Ø5 (±0.5) mm
	Dimension between Holes	89 (±0.25) mm × 42 (±0.25) mm

#### ENVIRONMENTAL

Operating Temperature	-20°C to 50° C.
Storage Temperature	-40°C to 85° C.
Humidity	98% RH at 38° C.
Vibration	Meet IEC 60068-2-6, following 3 axes, during 3 X 1 hours, 5g acceleration with a frequency range from 5 to 500 Hz.
Shock	Meet IEC 60068-2-27, following 3 axes, half sinusoid, 30g, 6 ms, 3 x 5000pulses, 1-3 Hz.
Dust / Water Protection	Electronics sealed to IP65.
Packaging	Meet ISTA 2A.

**WARRANTY** Two year limited warranty from time of delivery.



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Specifications subject to change without notice

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