

48S121.750BCE 750 Watt

48/12V Bi-Directional DC/DC Converter



Product Overview

The 750-Watt 48S12.750BCE bi-directional non-isolated DC/DC converter provides a complete solution for in-vehicle power distribution with 12V/48V battery configurations for a variety of applications including micro and mild hybrid automotive systems. The bi-directional DC/DC converter charges a low side (12V) battery during normal operation (buck mode) and charges or assists the high voltage (48V) battery in emergency situations (boost mode).

The bi-directional DC/DC converter operates more as an ideal current source with variable direction, thus allowing energy transfer between two voltage domains. Voltage feedback maintains the output voltage within the acceptable operating range and eventually allows a custom charging profile for the battery pack.

Features

- Automotive 12V/48V battery system
- Buck and Boost modes of operation
- Low Side (LS): 12V Input Voltage Range: 6V to 16V
- High Side (HS): 48V Input Voltage Range: 32V to 63.2V
- Overcurrent, Overvoltage, and Over-temperature Protection. All protections are latching.
- Disconnect switch LS (12V) and HS (48V)
- Reverse polarity protection
- Constant Voltage and Constant Current Mode
- Average Current Mode Control
- Internal Temperature Monitoring
- High-power density
- Efficiency up to 96.7%
- Dimensions 4.84" x 6.97" x 1.75" (123 x 177 x 44.5 mm)
- Weight 3.04 lbs. (1.38 Kg)
- Excellent thermal performance
- Constant switching frequency
- CAN 2.0b Interface including remote ON/OFF
- Good shock and vibration damping
- IP67 with mating connectors installed

Operational Characteristics

| Parameter | Min. | Typ. | Max. | Units |
|-------------------------------|------|------|------|-------|
| Operating Ambient Temperature | | | 75 | °C |
| Storage Temperature | -55 | | 125 | °C |

BUCK MODE

| Parameter | Min. | Typ. | Max. | Units |
|------------------------------|------|------|------|-------|
| Input Voltage | | 48 | | V |
| Operating Voltage Range | 32 | | 63.2 | V |
| Turn-on Threshold | | 32 | | V |
| Turn-off Threshold | | 30 | | V |
| Over-Voltage Protection | | 66 | | V |
| Efficiency, full load – 750W | | 96.7 | | % |

BOOST MODE

| Parameter | Min. | Typ. | Max. | Units |
|------------------------------|------|------|------|-------|
| Input Voltage | | 13.8 | | V |
| Operating Voltage Range | 9 | | 16 | Vdc |
| Turn-on Threshold | | 9 | | Vdc |
| Turn-off Threshold | | 8 | | Vdc |
| Efficiency, full load – 750W | | 95.8 | | % |

NOTE:

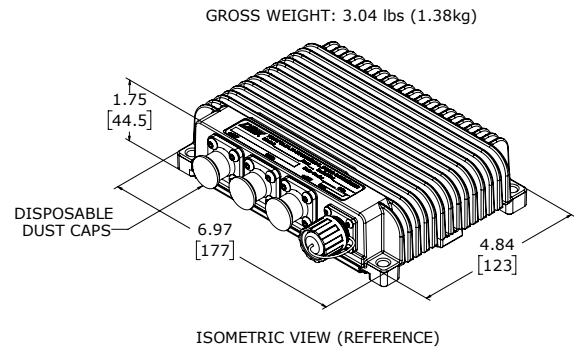
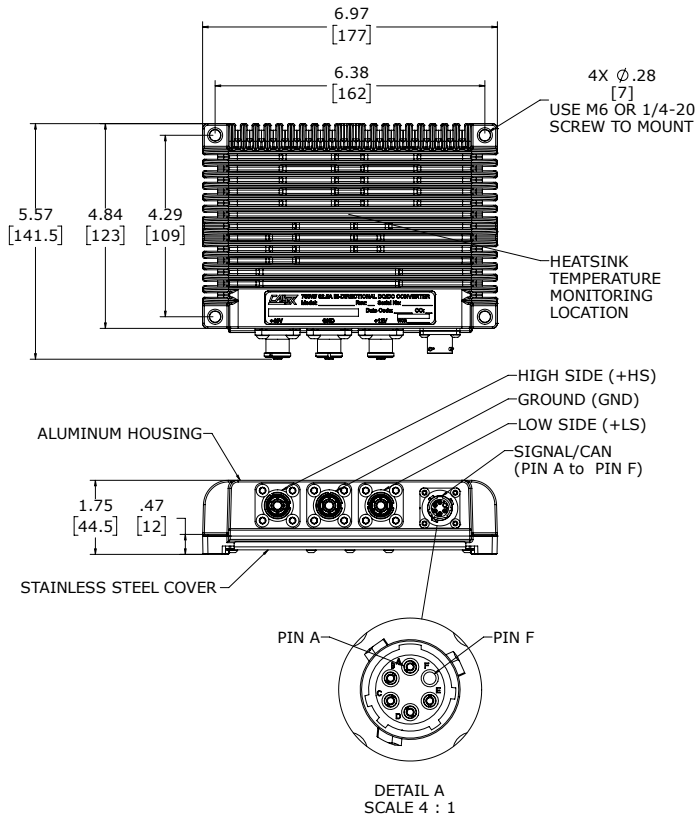
This product as designed is not intended for use in Power-train applications. This product was not designed in compliance to IOS-26262. Contact your local sales representative for application-specific design requests.



Mechanical Specifications

| | | | |
|-------------------|--------------------------|-------------------------|--------|
| Weight | | 3.04 | lbs. |
| | | 1.38 | kg |
| Case Dimension | Not including connectors | 4.84 x 6.97 x 1.75 | inches |
| | | 123 x 177 x 44.5 | mm |
| | Including connectors | 5.57 x 6.97 x 1.75 | inches |
| | | 141.5 x 177 x 44.5 | mm |
| Cover | Material | .031" [0.8mm] THK Steel | |
| | Finish | Brushed | |
| Mounting Hardware | Fastener | M6 or 1/4-20 screw | |
| | Torque | 15 | Nm |

OUTLINE DRAWING



| TABLE 1 - PINOUT DETAILS | | | |
|--------------------------|----------|--------------------------|-------------------------|
| Ref. | Function | Connector | Mates with |
| +HS | +48V | Amphenol C10-764863-2003 | Amphenol SLP(I)PA16BSR3 |
| GND | GND | Amphenol C10-764863-1000 | Amphenol SLP(I)PA16BSB0 |
| +LS | +12V | Amphenol C10-764863-2001 | Amphenol SLP(I)PA16BSR1 |
| PIN A | CAN-L | Amphenol RTS010N6S03 | Amphenol RTS6BS10N6P03 |
| PIN B | CAN-H | | |
| PIN C | ON/OFF | | |
| PIN D | GND | | |
| PIN E | POWER | | |
| PIN F | UNUSED | | |

NOTE: Unless otherwise specified, all dimensions are in inches. Tolerances: x.xx in. ±0.02 in.

