GALVANIC CAN-ISO-2500 CAN Bus Isolation Device User Manual

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GALVANIC CAN-ISO-2500 CAN Bus Isolation Device

Overview

The CAN-ISO-2500 is a galvanic isolation device for use on CANBus networks in mobile or stationary applications. The device features 2500 V isolation between the HV and LV sides and supports CAN Baudrates of up to 1 Mbit/s.

The CAN-ISO-2500 is available with M12 5-pin connector pigtails or M12 connectors directly on the case and features flange-style holes for mounting to a surface. The case is rated IP54 (protection against dust and splashing water) for mounting in harsh mobile equipment environments.

Features

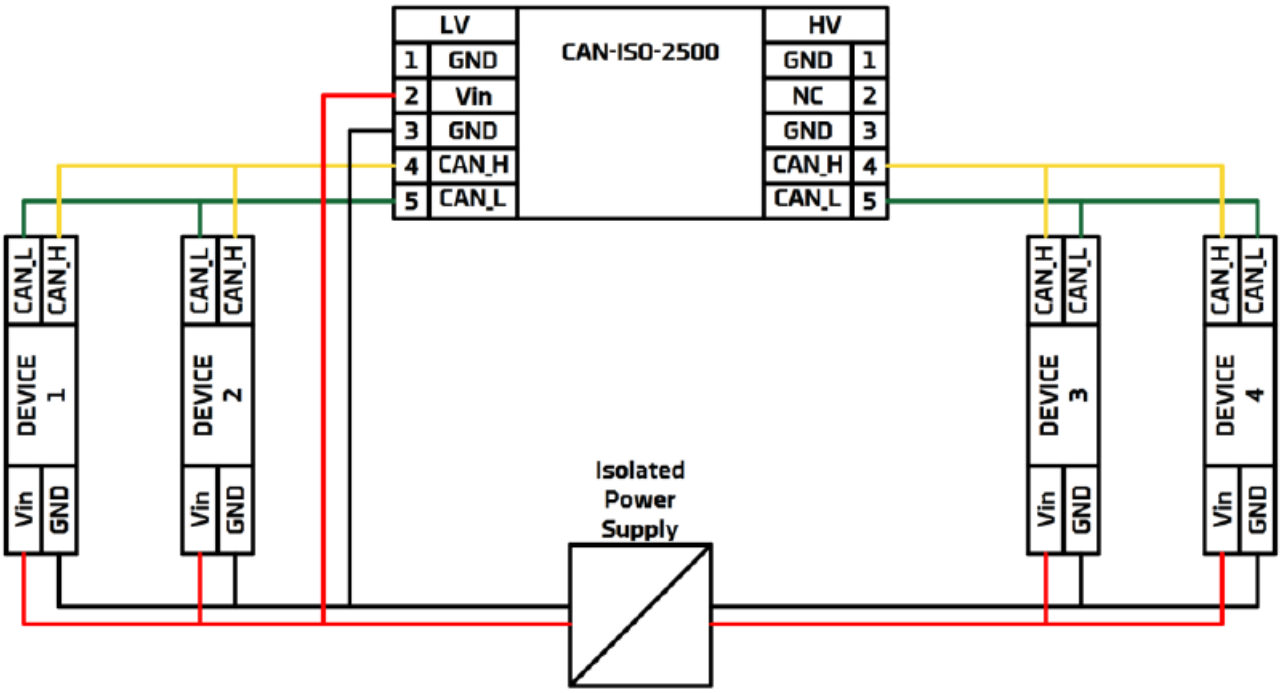
- Up to 2500 V Galvanic Isolation
- Up to 1 Mbit/s data rate
- Automatically adjusts to CAN baud rates, no need to set the data rate
- Wide input voltage range of 6-28v DC
- IP54 standard rating (IP65 or IP67 available on request)

Applications

CAN Bus data transmission is ubiquitous on vehicles and mobile equipment and is a popular protocol for industrial communications applications. Many CAN data busses are powered by a single power supply; however, on buses with different power supplies voltage transients can travel across the data bus causing signal integrity problems and possibly destroying CAN-connected devices. Alternately, high-precision data acquisition systems may require isolation from the main power supply to ensure measurement accuracy. Either of these scenarios will require high-quality galvanic isolation for proper operation.

Multiple Power Supplies on a single CAN Network

For scenarios where CAN devices are connected to different power supplies (see Figure 1) voltage differences on the CAN network can cause data transmission issues and even damage components. The CAN-ISO-2500 can be used to isolate different components on the bus and eliminate the possibility of damage caused by voltage differences.



CAN Circuit with Galvanic Isolation Requirement

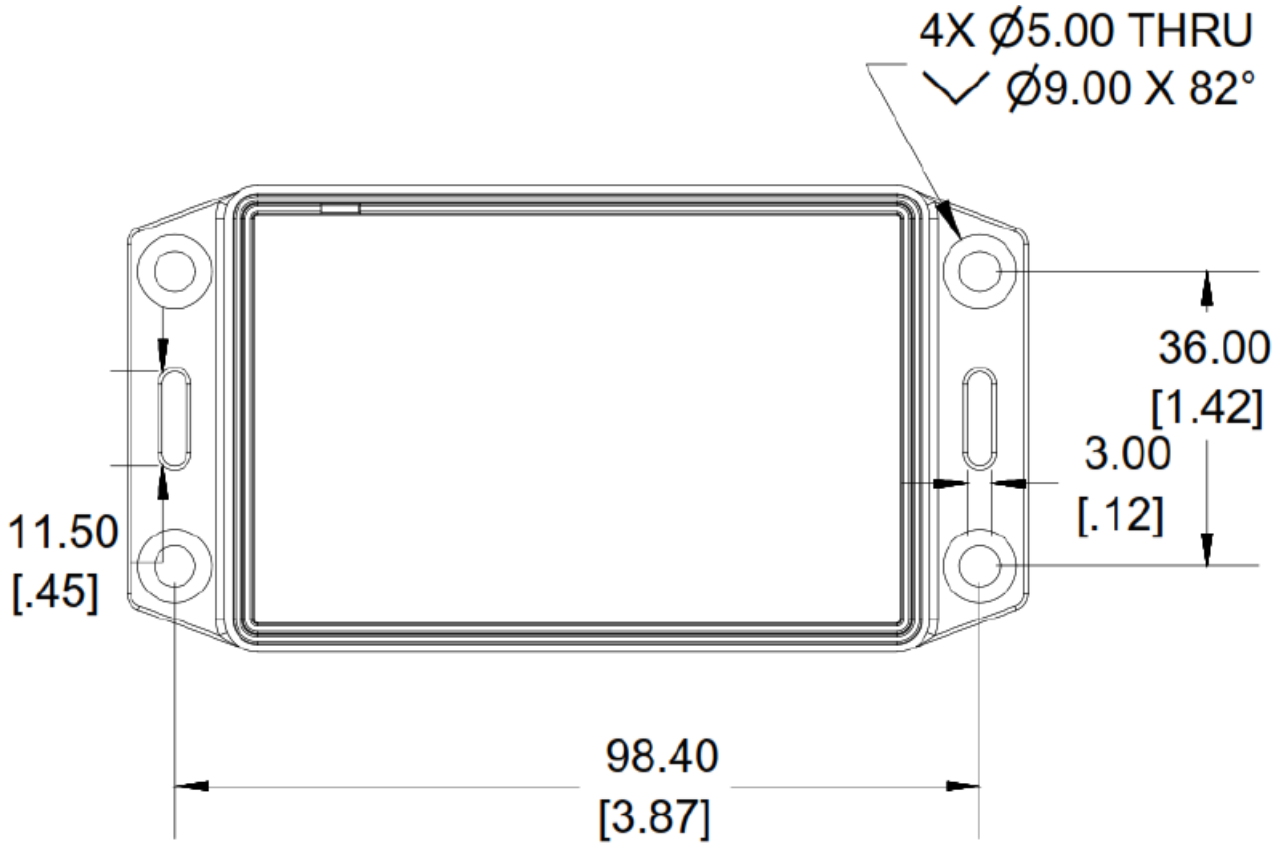
Specifications

Physical

Dimension	Measure (pigtails) (Figure 2)	Measure (Bulkhead) (Figure 3)
Width	5.8 cm	5.8 cm
Length	13 cm (measured from strain reliefs) 8.6 cm (case)	8.6 cm
Height	3 cm	4.2 cm (no connector)
Weight	110 g	87 g
Cable Length	15 cm	On Case
IP Rating	IP54 (IP67 available on request)	IP54 (IP67 available on request)
Flange Mounting Holes	Rectangular pattern 4x 5mm through holes, countersunk (see Figure 4)	Rectangular pattern 4x 5mm through holes, countersunk (see Figure 4)

Pigtail Option

Bulkhead Option



Flange Mounting Pattern – mm [in]

Electrical

Spec	Min	Max	Note
Input Voltage	7 V	28 V	
CAN Baudrate	100 Kbit/s	1 Mbit/s	
Isolation Between HV and LV		2.5 kV	Tested 1s
Propagation Delay		150 ns	

Protections

- Reverse Polarity protected

Installation Considerations

The CAN-ISO-2500 adds 150 ns of propagation delay to the CAN data signals, see table below for CAN data bus lengths with CAN Isolator installed. For proper operation ensure maximum CAN bus length does not exceed the following values with one CAN-ISO-2500 installed.

Bit Rate	Typical Max Bus Length	Recommended Max Bus length with CAN-ISO-2500
1 Mbit/s	40 m	10 m
500 kbit/s	110 m	80 m
250 kbit/s	240 m	210 m
125 kbit/s	500 m	470 m
50 kbit/s	1300 m	1270 m
Bitrates below 50 kbit/s the propagation delay is negligible		

Tests and Certifications

- **RF Emissions:** Tested per CISPR22 Edition 5.2 2006-03 Class A EMC: Tested per IEC 61000-4-2 Edition 3.2 2010-04 Level 2
- **ESD Immunity:** Tested per IEC 61000-4-2 Edition 2.0 2008-12 Class 2
- **Galvanic Isolation:** tested 2.5kV between HV and LV connector pins.

Wiring and Connections

The CAN-ISO-2500 comes standard with two waterproof M12 barrel-type connectors. The CAN-ISO-2500 contains a 120 Ohm termination resistor on both the input and output and can be placed anywhere in the middle of an existing CAN data bus. Pinouts are consistent across all M12 connector types.

Pin	LV Side	HV Side
1	GND (Optional)	GND (Optional)
2	Vin	NC
3	GND	GND
4	CAN High	CAN High
5	CAN Low	CAN Low

Pigtail Option
The pigtail option has a Male M12 connector on the LV side and a Female M12 connector on the HV side. The wires are each 15 cm long. The LV side has a female M12 connector and the HV side has a male M12 connector. See Figure 2.

Bulkhead Option
The bulkhead option features two Male M12 connectors directly on the case. See Figure 3.

M12 connector part numbers

Use the following parts or equivalents to connect to the CAN-ISO-2500. Any M12 A keyed connector will connect properly.

Part Number	Style	Supplier
7000-12961-0000000	M12 Female, straight	AutomationDirect
7000-12761-0000000	M12 Male, Straight	AutomationDirect

Troubleshooting

No CAN data

- Check Input Voltage (7-30v DC)
- Confirm CAN HV/LV wiring pinout
- Check the power status LED inside the cover.

Documents / Resources

	GALVANIC CAN-ISO-2500 CAN Bus Isolation Device [pdf] User Manual CAN-ISO-2500, CAN Bus Isolation Device, CAN-ISO-2500 CAN Bus Isolation Device, Bus Isolation Device, Isolation Device