

PCAN-Optoadapter

Plug-on Adapter for Decoupling CAN Networks

User Manual



Document version 3.0.2 (2017-02-10)

PEAK
System

Relevant products

Product Name	Model	Part number
PCAN-Optoadapter		IPEH-002038

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1 Introduction

The PCAN-Optoadapter is a universal plug-on adapter to allow galvanic isolation of High-speed CAN bus systems.

Its integrated logic means that decoupling can be installed at any point in the CAN network.

1.1 Properties at a Glance

- └ Plug-on adapter for decoupling a CAN bus for PEAK CAN interfaces
- └ Galvanic isolation by DC/DC converters up to 500 V
- └ Bit rates up to 1 Mbit/s
- └ High-speed CAN transceiver NXP PCA82C251
- └ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- └ 120 Ohm bus termination
- └ Power supply (5 V) through pin 1 of the High-speed CAN connection. Nearly all CAN interfaces by PEAK-System can provide the required supply
- └ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

1.2 System Requirements

- └ The power supply is done via pin 1 of the 9-pin female D-Sub connector (primary side). Therefore the attached CAN interface must provide 5 Volts.

- └ Since the PCAN-Optoadapter already contains a CAN bus termination on the primary side, the connected CAN adapter doesn't need to be terminated separately on this side.

1.3 Scope of supply

- └ Adapter in plastic casing
- └ Manual in PDF format

2 Connectors

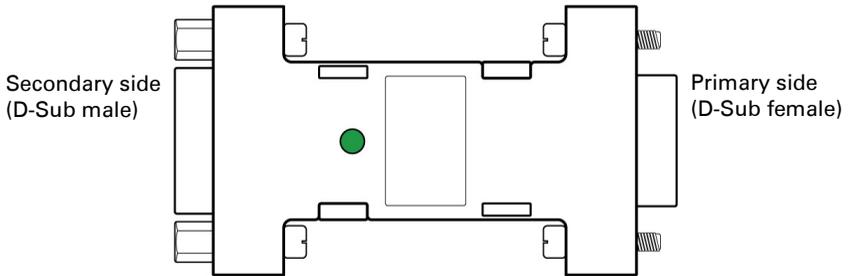


Figure 1: Top view PCAN-Optoadapter

2.1 Connection Primary Side

The PCAN-Optoadapter is directly connected to a CAN interface with its so called primary side (D-Sub female).

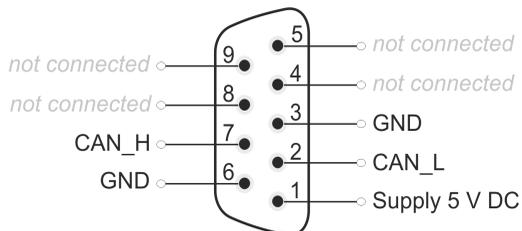


Figure 2: Pin assignment at the primary side (D-Sub female)

The lines for the differential CAN signal CAN_H and CAN_L are terminated on the adapter with a 120-Ω resistor (fixed). An additional termination at the CAN interface is not needed.

2.2 Connection Secondary Side

A High-speed CAN bus (ISO 11898-2) is connected to the 9-pin D-Sub connector. The pin assignment for CAN corresponds to the specification CiA® 303-1.

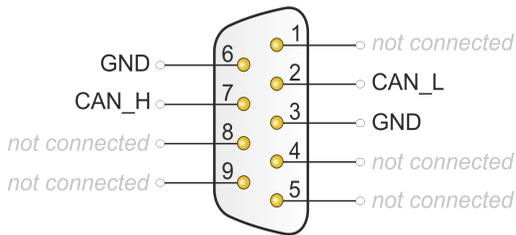


Figure 3: Pin assignment at the secondary side (D-Sub male)

3 operation

3.1 operation

A configuration of the PCAN-Optoadapter is not needed. You can use it instantly.

For general supply the adapter uses a direct voltage of +5 V. This must be applied to pin 1 of the CAN connector. The CAN interfaces of the PCAN series are able to provide 5 Volts on Pin 1.

When the 5 V supply is active, the LED on the PCAN-Optoadapter is **green**.



Attention! Risk of short circuit! When you connect the PCAN-Optoadapter to or remove it from a CAN interface, latter must be turned off (without power supply). Otherwise the PCAN-Optoadapter or other electronic components may be damaged.

3.2 Signal Delay

The PCAN-Optoadapter has a transit time delay of approx. 80 ns. This corresponds to a cable length of 16 m. Therefore, you should consider the dependence of the maximum length of a CAN bus on the bit rate at the installation of the PCAN-Optoadapter. The following table shows the maximum possible CAN bus length at different bit rates:

Bit rate	Bus length	Bus length with PCAN-Optoadapter
1 Mbit/s	40 m	24 m
500 kbit/s	110 m	94 m
250 kbit/s	240 m	224 m
125 kbit/s	500 m	484 m
50 kbit/s	1.3 km	For small bit rates, the delay of the adapter can be neglected
20 kbit/s	3.3 km	
10 kbit/s	6.6 km	
5 kbit/s	13.0 km	

The listed values have been calculated on the basis of an idealized system and can differ from reality.

3.3 Status LED

The status LED on the top of the adapter indicates, whether it is correct supplied. In this case, the LED is continuously **green**.

4 Technical specification

Connectors

CAN	D-Sub (m), 9 pins Pin assignment according to specification CiA® 303-1
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CAN

Specification	ISO 11898-2, High-speed CAN 2.0A (standard format) and 2.0B (extended format)
Bit rates	0 kbit/s - 1 Mbit/s
Transceiver	NXP PCA82C251
Galvanic isolation	Up to 500 V
Termination	120 Ω on the primary side none on the secondary side
Signal delay	approx. 80 ns

Power supply

Supply voltage	+5 V = via pin 1 of D-Sub female (GND pin 3; pin 6)
Power consumption	max 100 mA

Measures

Size	63 x 34 x 17 mm
Weight	25 g

Environment

Operating temperature	-40 - +85 °C (-40 to 185 °F)
Temperature for storage and transport	-40 - +100 °C (-40 to 212 °F)
Relative humidity	15 - 90 %, not condensing
EMC	Directive 2014/30/EU DIN EN 55024:2016-05 DIN EN 55022:2011-12

Appendix A CE-Certificate

PCAN-Optoadapter IPEH-002038 – EC Declaration of Conformity
PEAK-System Technik GmbH



Notes on the CE Symbol

The following applies to the "PCAN-Optoadapter" product with the item number(s) IPEH-002038.

EU Directive This product fulfills the requirements of EU EMC Directive 2014/30/EU (Electromagnetic Compatibility) and is designed for the following fields of application as for the CE marking:

Electromagnetic Immunity

DIN EN 55024, publication date 2016-05
Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:2010 + Cor.:2011 + A1:2015);
German version EN 55024:2010 + A1:2015

Electromagnetic Emission

DIN EN 55022, publication date 2011-12
Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 22:2008, modified);
German version EN 55022:2010

Declarations of Conformity In accordance with the above mentioned EU Directive, the EU declarations of conformity and the associated documentation are held at the disposal of the competent authorities at the address below:

PEAK-System Technik GmbH

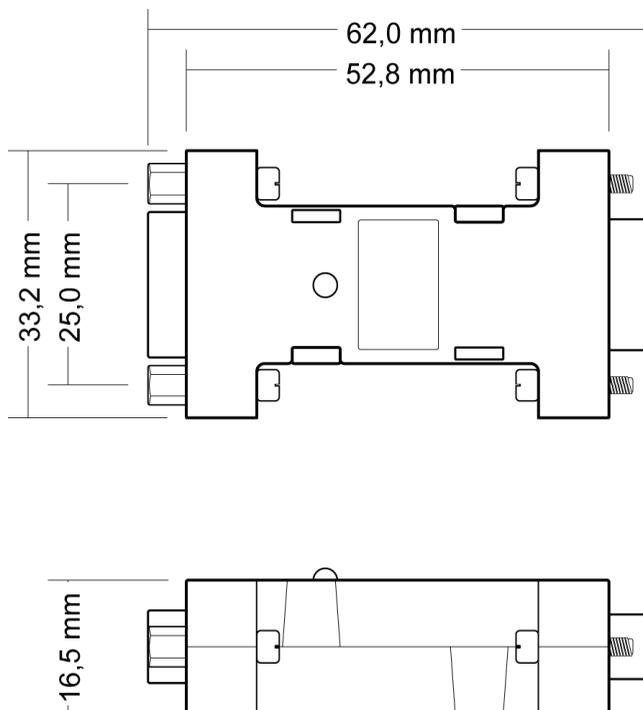
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A handwritten signature in black ink, appearing to read "Uwe W. Sch...".

Signed this 23th day of January 2017

Appendix B Dimension Drawing



The figure doesn't show the actual size of the product.