

# PEAK-SYSTEM

Product Overview 2018

# You have a vision ...

You are working on the future of your company and planning successful products for tomorrow's markets?

You want to translate your projects into reality, so you look for a responsive and reliable partner?

You set great importance to the functionality of your development tools and the quality of the hardware you use?

Whether you need a plug-in card for the PC, a microcontroller module for temperature recording, a program to monitor your system, or just the right kind

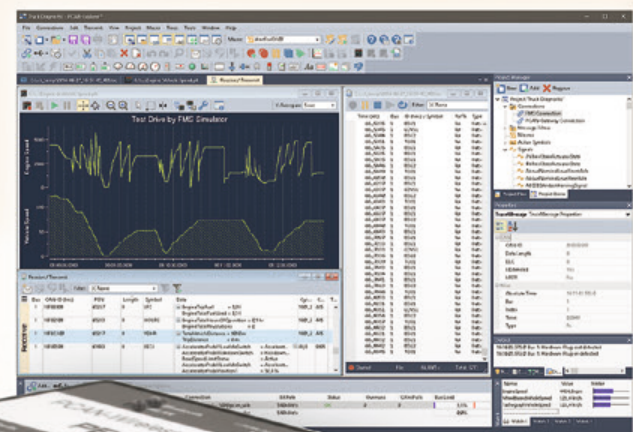
of cable – with our product range we can help you concentrate on what is important to you: developing successful products.

PEAK-System puts creative teams of experienced and highly-motivated specialists at your disposal, open to new ways, open to new solutions. Talk over your aims and objectives with us.

## Engineering on your behalf

We support you at every phase in a product's development: from consultation to design to production.

- Based on your requirements we develop the solution that is right for you – with a cost-conscious and efficient attitude
- Customer specific hard- & software for CAN/LIN communication
- We create your documentation ...
- carry out the training and familiarization ...
- and organize the manufacture



# ... we do the rest.

## Hardware

- \_\_\_ CAN FD connections for High-speed USB 2.0, PCI Express, PCI Express Mini, and M.2
- \_\_\_ CAN/LIN interfaces for conventional PC interfaces and embedded applications
- \_\_\_ I/O modules with CAN connection for control, measured data recording, and processing
- \_\_\_ Converters for different physical transmission types (bus converter modules)
- \_\_\_ Routers and gateways for the forwarding of messages between CAN busses and other networks
- \_\_\_ Data loggers and diagnostic hardware
- \_\_\_ Products for education, demonstrations, and test setups
- \_\_\_ Chip solutions for the CAN and CAN FD connection to USB and PCI Express

## Software

- \_\_\_ CAN development systems for Windows 10, 8.1, 7, CE 6.x and for Linux
- \_\_\_ Programming interfaces for various protocols and standards
- \_\_\_ Software to monitor and diagnose CAN and LIN busses
- \_\_\_ Programs for recording, playback, and simulation of message traffic
- \_\_\_ Configuration software for CAN hardware from PEAK-System

## Accessories

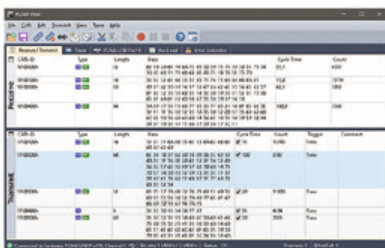
- \_\_\_ Helpful CAN accessories
- \_\_\_ PC adapter cards for PC/104 Small Form Factor Boards
- \_\_\_ CAN cables and adapters for various applications

## OEM development

One of our products fits your portfolio?  
 Your development department is under pressure?

We have the ideal solution for you:

- \_\_\_ Adaptation of our products to your specific needs
- \_\_\_ Available as customer OEM product (your logo, your case)
- \_\_\_ Translation of your ideas into ready-to-manufacture products
- \_\_\_ Advice and consultation on hardware and software development
- \_\_\_ Fixed-price development on your behalf





# Review & Preview ...

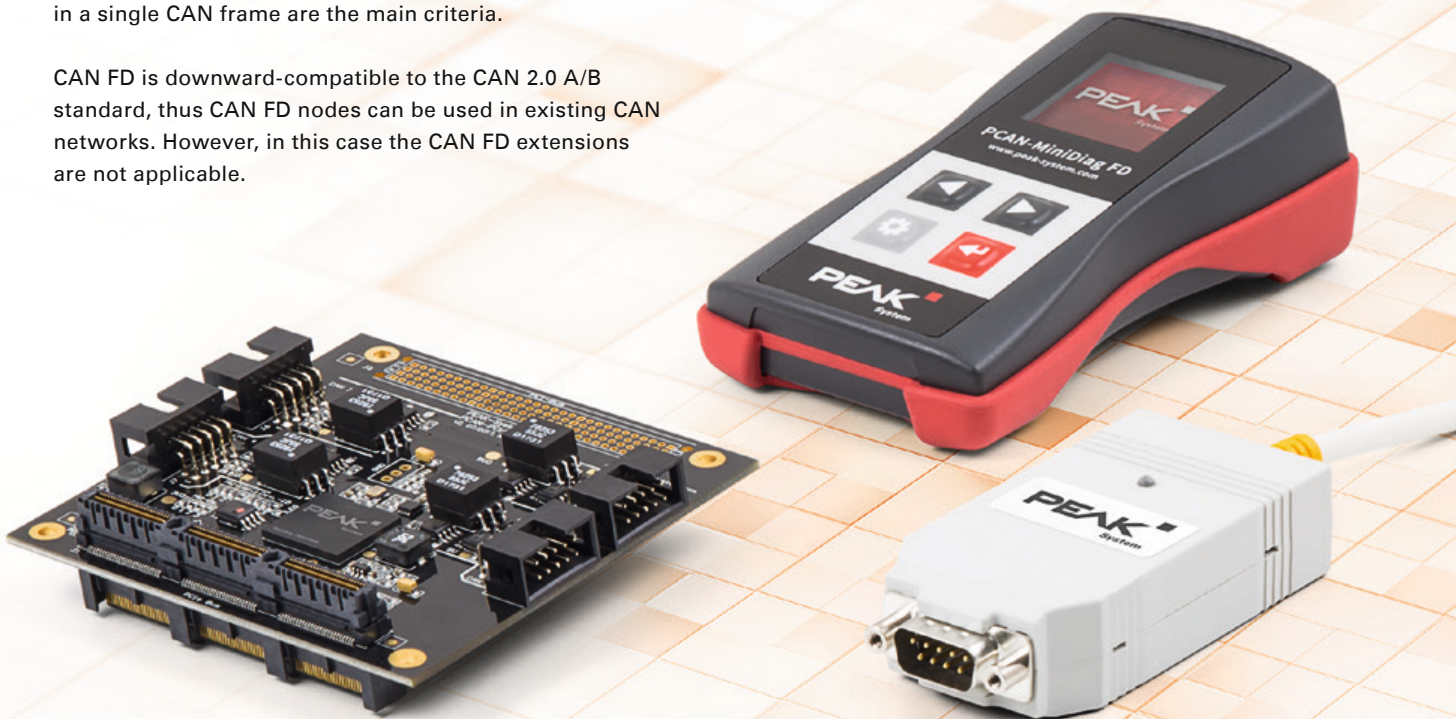
## The new standard CAN FD ...

With the release of various hardware and software products, PEAK-System is a pioneer in the introduction of the new CAN FD standard.

With CAN FD (Flexible Data rate) the robust and long-lasting CAN specification has been extended with properties which are primarily designed for larger amounts of data. Higher bit rates up to 12 Mbit/s for the data of the CAN frames and the use of up to 64 data bytes in a single CAN frame are the main criteria.

CAN FD is downward-compatible to the CAN 2.0 A/B standard, thus CAN FD nodes can be used in existing CAN networks. However, in this case the CAN FD extensions are not applicable.

Since the first implementations of CAN FD, the protocol has been improved and is now included in the standard ISO 11898-1. The revised CAN FD standard is not compatible with the original protocol. PEAK-System takes this into account by supporting both protocol versions with their CAN FD interfaces. If required, the user can switch to the CAN FD protocol used in the environment by software („Non-ISO“ and „ISO“).



## Review 2017

2017 was a great success again! The first step was the PCAN-USB X6 with M12 circular connectors. The USB interface with six CAN and CAN FD channels can withstand harsh environments. In April, the mobile diagnostic device for CAN and CAN FD busses called PCAN-Diag FD with features like the oscilloscope function attracted attention.

In the course of the year, three plug-in cards for CAN and CAN FD busses in the form factors PCI Express, PCI Express Mini, and M.2 followed. In mid-June, the PCAN-PCI Express FD was extended by a four-channel version. At the end of September, the PCAN-miniPCIe FD with up to four channels came on the market, closely followed by the PCAN-M.2, which appeared as a one and two-channel version towards the end of the year.

In addition to the hardware releases, there were also great news in terms of software: Codesys applications are increasingly supporting more PEAK-System products. Furthermore, at the end of May, the new version of the PCAN-API was released with the development package PCAN-Developer 4, supporting the new standard CAN FD too.

Apart from the products of the brand PCAN, our management system for quality and environment was recertified in September according to the latest revisions of the standards ISO 9001 and ISO 14001.





## Preview 2018

The product range continues to grow! The PLIN-USB, the PCAN-PCI/104-Express FD, and the PCAN-MiniDiag FD are in the starting blocks. As an easy-to-use USB adapter, the PLIN-USB provides access to LIN networks. The interface supports the LIN protocol according to ISO 17987 and complies with all LIN specifications up to version 2.2. PCI/104 Express systems can access up to four CAN FD busses with a single PCAN-PCI/104 Express FD card.

The PCAN-MiniDiag FD supplements the product range of PEAK-System for the inspection of CAN and CAN FD networks. The small format diagnostic device focuses on essential analysis functions, such as nominal and data bit rate detection, measurement of the bus load or CAN termination.

The PCAN-MicroMod, our successful I/O module with CAN interface, is going to have a successor in 2018 with CAN FD support. Based on the new plug-in module PCAN-MicroMod FD, users can develop a hardware that is connected to a CAN or CAN FD network and provide analog as well as digital inputs and outputs. The PCAN-MicroMod FD will be available with various application-specific motherboards and an evaluation board.

Last but not least, the PCAN-Router Pro FD should be mentioned here, which operates with six channels as a universal converter for CAN FD and CAN busses. The module can be individually programmed or configured with a Windows software. In addition to forwarding and processing CAN messages, the device can record data traffic on a memory card. The PCAN-Router Pro FD comes in a black aluminium profile housing and uses the regular D-Sub connector for connection to the CAN bus.

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# Quality and Environment

## Scope of certification:

Development, manufacturing and sales of hardware and software for applications in the mobile and industrial communication sector

We are certified according to the international standards ISO 9001:2015 and ISO 14001:2015. Our management system combines the requirements of the standard ISO 9001 for quality management systems and the ones of the standard ISO 14001 for environmental management systems.

With the certification, we provide a documented proof for our quality-conscious and customer-oriented business as well as our responsible management of resources and environment. The certification was carried out by DEKRA Certification GmbH.

The certificates are available on our website in the languages German, English, and French for download.



## Quality and safety:

We have our own products and customer-specific OEM products produced by reputable manufacturing companies in Germany and throughout Europe.

Qualitätsmanagement  
Umweltmanagement  
ISO 9001  
ISO 14001

[www.dekra-siegel.de](http://www.dekra-siegel.de)





# Hardware

PC Interfaces

I/O Modules

Couplers & Converters

Routers & Gateways

Diagnostics & Education

- CAN FD connections for High-speed USB 2.0, PCI Express, PCI Express Mini, and M.2
- CAN/LIN interfaces for conventional PC interfaces and embedded applications
- I/O modules with CAN connection for control, measured data recording, and processing
- Converters for different physical transmission types (bus converter modules)
- Routers and gateways for the forwarding of messages between CAN busses and other networks
- Data loggers and diagnostic hardware
- Products for education, demonstrations, and test setups
- Chip solutions for the CAN and CAN FD connection to USB and PCI Express
- All products are conform to CE standards

## The right interface for your operating system

The following table lists the supported operating systems for each device and transmission protocol.  
The table was released on March 14, 2018. For recent information, please see our website.

Interface		Windows				Linux	
		10, 8.1, 7		CE 6.x			
		32	64	ARM	x86	32	64
PCAN-USB	CAN	■	■	■	■	■	■
PLIN-USB	LIN	■	■	-	-	-	-
PCAN-USB Hub	CAN	■	■	■	■	■	■
PCAN-USB FD	CAN + CAN FD	■	■	-	-	■	■
PCAN-USB Pro FD	CAN + CAN FD	■	■	-	-	■	■
	LIN	■	■	-	-	-	-
PCAN-USB X6	CAN + CAN FD	■	■	-	-	■	■
PCAN-Chip USB & Eval	CAN + CAN FD	■	■	-	-	■	■
PCAN-ExpressCard 34	CAN	■	■	-	-	■	■
PCAN-PCI	CAN	■	■	■	■	■	■
PCAN-PCI Express	CAN	■	■	-	-	■	■
PCAN-PCI Express FD	CAN + CAN FD	■	■	-	-	■	■
PCAN-cPCI	CAN	■	■	■	■	■	■
PCAN-miniPCI	CAN	■	■	■	■	■	■
PCAN-miniPCle	CAN	■	■	-	-	■	■
PCAN-miniPCle FD	CAN + CAN FD	■	■	-	-	■	■
PCAN-M.2	CAN + CAN FD	■	■	-	-	■	■
PCAN-PC/104	CAN	■	■	■	■	■	■
PCAN-PC/104-Plus	CAN	■	■	■	■	■	■
PCAN-PC/104-Plus Quad	CAN	■	■	-	-	■	■
PCAN-PCI/104-Express	CAN	■	■	-	-	■	■
PCAN-PCI/104-Express FD	CAN + CAN FD	■	■	-	-	■	■

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- \_\_\_ Our device drivers are available on our Downloads web page.
- \_\_\_ The Support section contains an overview of our drivers along with change histories.
- \_\_\_ Visit our Linux website for the latest Linux device drivers, documentation, change history, and additional information.



# PCAN-USB

## CAN Interface for USB

The PCAN-USB adapter enables simple connection to CAN networks. Its compact plastic casing makes it suitable for mobile applications.

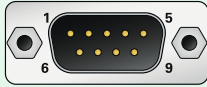
The opto-decoupled version guarantees galvanic isolation of up to 500 Volts between the PC and the CAN side.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- \_\_\_ Adapter for the USB connection (Full-Speed mode, compatible with USB 1.1, USB 2.0, and USB 3.0)
- \_\_\_ High-speed CAN connection (ISO 11898-2)
- \_\_\_ Bit rates from 5 kbit/s up to 1 Mbit/s
- \_\_\_ Time stamp resolution approx. 42 µs
- \_\_\_ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ NXP SJA1000 CAN controller, 16 MHz clock frequency
- \_\_\_ NXP PCA82C251 CAN transceiver
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Galvanic isolation on the CAN connection up to 500 V (only for IPEH-002022)
- \_\_\_ Voltage supply via USB
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-USB	IPEH-002021
PCAN-USB opto-decoupled	IPEH-002022

### Scope of supply

- \_\_\_ PCAN-USB in plastic casing
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

# PCAN-USB Hub


All-in-one USB Adapter for Communication through USB, CAN, and RS-232

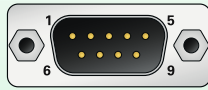
The PCAN-USB Hub provides multiple hardware interfaces through a USB connection. It offers the user one CAN, two RS-232, and two further USB interfaces.

Its robust aluminum casing makes the PCAN-USB Hub suitable for mobile applications.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



D-Sub	Pin	Pin assignment RS-232
	1	DCD
	2	RxD
	3	TxD
	4	DTR
	5	GND
	6	DSR
	7	RTS
	8	CTS
	9	RI

D-Sub	Pin	Pin assignment CAN
	1	Not connected / optional +5V
	2	CAN-L
	3	CAN-GND
	4	Not connected
	5	Not connected
	6	PWR-GND
	7	CAN-H
	8	Not connected
	9	PWR-OUT

## Specifications

- \_\_\_ High-speed USB 2.0 hub with
  - CAN interface, D-Sub 9-pin connector (in accordance with CiA® 303-1)
  - Two RS-232 ports, D-Sub 9-pin connectors
  - Two High-speed USB 2.0 downstream ports
- \_\_\_ Passive (bus-powered) hub operation through the USB port of a PC enables power consumption of up to 100 mA per USB channel
- \_\_\_ Active (self-powered) hub operation through the optional external hub power supply (9 – 36 V) enables power consumption of up to 500 mA per USB channel
- \_\_\_ Guaranteed high bit rates on all channels if a Full-speed device is connected, thanks to a hub controller with 4 transaction translators
- \_\_\_ CAN bit rates from 5 kbit/s up to 1 Mbit/s
- \_\_\_ Time stamp resolution approx. 42 µs
- \_\_\_ Compliant with CAN specifications 2.0A and 2.0B
- \_\_\_ NXP PCA82C251 CAN transceiver
- \_\_\_ 5-Volt and external power supply at the CAN connector connectible by solder bridges, e.g. for external bus converter
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

## Ordering information

Designation	Part No.
PCAN-USB Hub	IPEH-002004

## Scope of supply

- \_\_\_ PCAN-USB Hub in aluminum casing
- \_\_\_ Mating connector for voltage supply
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format



# PCAN-USB FD

## CAN FD Interface for High-Speed USB 2.0

The CAN FD adapter PCAN-USB FD allows the connection of CAN FD and CAN networks to a computer via USB. A galvanic isolation of up to 500 Volts decouples the PC from the CAN bus. The simple handling and its compact plastic casing make the adapter suitable for mobile applications.

The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- \_\_\_ Adapter for High-speed USB 2.0 (compatible to USB 1.1 and USB 3.0)
- \_\_\_ High-speed CAN connection (ISO 11898-2)
- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
- \_\_\_ CAN bit rates from 25 kbit/s up to 1 Mbit/s
- \_\_\_ Time stamp resolution 1  $\mu$ s
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ FPGA implementation of the CAN FD controller
- \_\_\_ NXP TJA1044GT CAN transceiver
- \_\_\_ Galvanic isolation up to 500 V
- \_\_\_ CAN termination can be activated through a solder jumper
- \_\_\_ Measurement of bus load including error frames and overload frames on the physical bus
- \_\_\_ Induced error generation for incoming and outgoing CAN messages
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Voltage supply via USB
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-USB FD	IPEH-004022

### Scope of supply

- \_\_\_ PCAN-USB FD in plastic casing
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

# PCAN-USB Pro FD

CAN FD and LIN Interface for High-Speed USB 2.0



The PCAN-USB Pro FD adapter enables the connection of CAN FD and LIN networks to a computer via USB. Two field busses can be connected at the same time, up to four with appropriate adapter cables (2 x CAN FD, 2 x LIN). Each CAN FD channel is separately isolated against USB and LIN with a maximum of 500 Volts. Its robust aluminum casing makes the PCAN-USB Pro FD adapter suitable for mobile applications.

The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD. The monitor application PLIN-View Pro as well as the PLIN programming interface are also included in the scope of supply.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.

## Specifications

- \_\_\_ Adapter for High-speed USB 2.0 (compatible to USB 1.1 and USB 3.0)
- \_\_\_ Transmitting and receiving of CAN FD and LIN messages using 2 D-Sub connections (both with pin assignment for the CAN FD and LIN bus)
- \_\_\_ Time stamp resolution 1  $\mu$ s
- \_\_\_ 5-Volt supply at the D-Sub connector can be activated through a solder jumper, e.g. for external bus converter
- \_\_\_ Voltage supply via USB
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

## CAN operation properties:

- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
- \_\_\_ CAN bit rates from 25 kbit/s up to 1 Mbit/s
- \_\_\_ FPGA implementation of the CAN FD controller
- \_\_\_ NXP TJA1044GT CAN transceiver
- \_\_\_ Each CAN FD channel is separately opto-decoupled against USB and LIN up to 500 V



- \_\_\_ CAN termination can be activated through a solder jumper, separately for each CAN channel
- \_\_\_ Measurement of bus load including error frames and overload frames on the physical bus
- \_\_\_ Induced error generation for incoming and outgoing CAN messages

#### LIN operation properties:

- \_\_\_ Bit rates from 1 kbit/s up to 20 kbit/s
- \_\_\_ TJA1021/20 LIN transceiver
- \_\_\_ Both LIN channels (common ground) are opto-decoupled against USB and CAN FD
- \_\_\_ Can be used as a LIN master or slave (1 ms master task resolution)
- \_\_\_ Automatic bit rate, frame length, and checksum type recognition
- \_\_\_ Autonomous scheduler with support for unconditional, event, and sporadic frames
- \_\_\_ Hardware can work through a schedule table (up to 8 schedule tables can be configured with a total of 256 slots)

**Please note:** The PCAN-USB Pro FD can be used alternatively for the PCAN-USB Pro, because this CAN interface is no longer manufactured! The PCAN-USB Pro FD behaves identically concerning the CAN and LIN functionality.

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	CAN-GND
	4	LIN
	5	LIN-GND
	6	LIN-GND
	7	CAN-H
	8	Not connected
	9	V <sub>BAT</sub>

#### Ordering information

Designation	Part No.
PCAN-USB Pro FD	IEPH-004061

#### Scope of supply

- \_\_\_ PCAN-USB Pro FD in aluminum casing
- \_\_\_ CAN FD interface drivers for Windows 10, 8.1, 7 and Linux (32/64 bit)
- \_\_\_ LIN interface drivers for Windows 10, 8.1, 7 (32/64 bit)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ LIN monitor PLIN-View Pro for Windows (details on page 92)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interface PLIN-API for developing applications with LIN connection (details on page 90)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

**Accessories:** LIN Connection Cable for PC LIN Interfaces optionally available (details on page 120).

# PCAN-USB X6

6-Channel CAN FD Interface for High-Speed USB 2.0



The PCAN-USB X6 is a CAN FD adapter for the USB port which allows the connection of up to 6 CAN FD or CAN busses. The device is therefore best suited for working with multiple CAN networks like the use in test benches with hardware-in-the-loop (HIL) simulations for motor vehicles or in the product line testing of CAN-based products.

The PCAN-USB X6 is installed in an aluminum profile casing and is shipped in versions with D-Sub connectors or M12 circular connectors. Especially the M12 version is suitable for use in harsh environments. In addition, a galvanic isolation of up to 300 Volts between the PC and the CAN side is guaranteed for the decoupled versions.

The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.

## Specifications

- \_\_\_ Adapter for High-speed USB 2.0 (compatible to USB 1.1 and USB 3.0)
- \_\_\_ 6 High-speed CAN channels (ISO 11898-2)
- \_\_\_ Galvanic isolation on the CAN connection up to 300 V (only for IPEH-004063 and IPEH-004064)
- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
- \_\_\_ CAN bit rates from 25 kbit/s up to 1 Mbit/s
- \_\_\_ Time stamp resolution 1  $\mu$ s
- \_\_\_ FPGA implementation of the CAN FD controller
- \_\_\_ NXP TJA1044GT CAN transceiver
- \_\_\_ Status LEDs for CAN channels, USB upstream, and power supply
- \_\_\_ CAN connection via D-Sub, 9-pin or M12 circular connectors, 5-pin (pin assignment of both connectors in accordance with CiA<sup>®</sup> 303-1)
- \_\_\_ Aluminum casing with increased Ingress Protection IP64 (only for IPEH-004063)
- \_\_\_ High-speed USB 2.0 downstream port (only for IPEH-004062 and IPEH-004064)





- ☐ CAN termination can be activated through a solder jumper, separately for each CAN channel
- ☐ Measurement of bus load including error frames and overload frames on the physical bus
- ☐ Induced error generation for incoming and outgoing CAN messages
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub (IPEH-004062 &amp; IPEH-004064)



Pin	Pin assignment
1	Not connected
2	CAN-L
3	GND
4	Not connected
5	Not connected
6	GND
7	CAN-H
8	Not connected
9	Not connected

M12 (IPEH-004063)



Pin	Pin assignment
1	Shield
2	Not connected
3	GND
4	CAN-H
5	CAN-L

### Ordering information

Designation	Part No.
PCAN-USB X6 with D-Sub connectors	IPEH-004062
PCAN-USB X6 with D-Sub connectors galv. isolated	IPEH-004064
PCAN-USB X6 with M12 circular connectors galv. isolated	IPEH-004063

### Scope of supply

- ☐ PCAN-USB X6 in aluminum casing
- ☐ IPEH-004062 and IPEH-004064: Mating connector for power supply
- ☐ IPEH-004063: Cables for power supply and USB connection
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

**Please note:** The scope of supply does not contain a power supply unit for the device. There is no supply via the USB connection to the PC.

# PLIN-USB

## LIN Interface for USB


The PLIN-USB enables the connection of a Windows computer to a LIN network via USB. The adapter supports the LIN protocol according to the standard ISO 17987 and complies with all LIN specifications up to version 2.2. The interface can be operated as a master or a slave.

The monitor software PLIN-View Pro and the PLIN programming interface for the development of applications with LIN connection are included in the scope of supply.



### Specifications

- \_\_\_ Adapter for the USB connection (Full-Speed mode, compatible with USB 1.1, USB 2.0, and USB 3.0)
- \_\_\_ LIN connection (ISO 17987)
- \_\_\_ Compliant with all LIN specifications (up to version 2.2)
- \_\_\_ Bit rates from 1 kbit/s up to 20 kbit/s
- \_\_\_ Can be used as a LIN master or slave (1 ms master task resolution)
- \_\_\_ Automatic bit rate, frame length, and checksum type recognition
- \_\_\_ Autonomous scheduler with support for unconditional, event, and sporadic frames
- \_\_\_ LIN bus connection via D-Sub, 9-pin
- \_\_\_ LIN connection short-circuit-proof against transceiver supply and ground
- \_\_\_ NXP TJA1028T LIN transceiver
- \_\_\_ Galvanic isolation on the LIN connection up to 500 V
- \_\_\_ Indicator LED for interface status
- \_\_\_ Adapter supply 5 V DC via USB port
- \_\_\_ Transceiver supply 6 - 28 V DC via D-Sub, pin 9
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	Not connected
	3	Not connected
	4	LIN
	5	GND
	6	GND
	7	Not connected
	8	Not connected
	9	V <sub>BAT</sub>

### Ordering information

Designation	Part No.
PLIN-USB	IPEH-004052

### Scope of supply

- \_\_\_ PLIN-USB in plastic casing
- \_\_\_ LIN interface drivers for Windows 10, 8.1, 7 (32/64 bit)
- \_\_\_ LIN monitor PLIN-View Pro for Windows (details on page 92)
- \_\_\_ Programming interface PLIN-API for developing applications with LIN connection (details on page 90)
- \_\_\_ Manual in PDF format

**Accessories:** LIN Connection Cable for PC LIN Interfaces optionally available (details on page 120).

# PCAN-ExpressCard 34

## CAN Interface for the ExpressCard/34 Slot

The CAN adapter PCAN-ExpressCard 34 allows the connection of a CAN bus to embedded PCs and laptops with ExpressCard slots. A galvanic isolation of up to 300 Volts decouples the PC from the CAN bus.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ Card for the ExpressCard slot
- ☐ Type ExpressCard/34 (compatible with ExpressCard/54 slots)
- ☐ High-speed CAN connection (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ FPGA implementation of the CAN controller (SJA1000 compatible)
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation on the CAN connection up to 300 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-ExpressCard 34	IPEH-003004

### Scope of supply

- ☐ PCAN-ExpressCard 34 CAN interface
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

# PCAN-cPCI

## CAN Interface for CompactPCI


The PCAN-cPCI card enables the connection of an industrial computer system with CompactPCI to CAN networks. There is galvanic isolation of up to 500 Volts between the computer and CAN sides. The card is available as a dual or four-channel version.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- \_\_\_ Extension card with euroboard form factor (3U) for a CompactPCI system
- \_\_\_ 2 or 4 High-speed CAN channels (ISO 11898-2)
- \_\_\_ Bit rates from 5 kbit/s up to 1 Mbit/s
- \_\_\_ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ NXP SJA1000 CAN controller, 16 MHz clock frequency
- \_\_\_ NXP PCA82C251 CAN transceiver
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-cPCI Dual Channel opto-decoupled	IPEH-003021
PCAN-cPCI Four Channel opto-decoupled	IPEH-003022

### Scope of supply

- \_\_\_ Plug-in card PCAN-cPCI
- \_\_\_ Slot bracket with D-Sub connectors for the CAN bus (only four-channel version)
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format



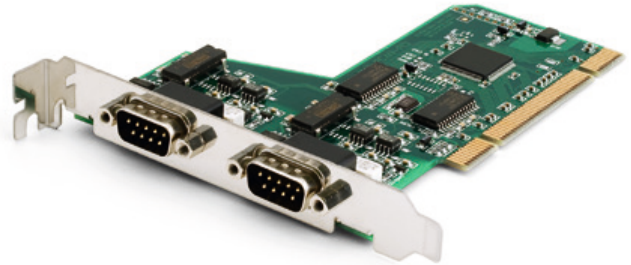
# PCAN-PCI


## CAN Interface for PCI

The PCAN-PCI card enables the connection of a PC with PCI slots to CAN networks.

The card is available as a single or dual-channel version. The opto-decoupled versions also guarantee galvanic isolation of up to 500 Volts between the PC and the CAN sides.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Specifications

- ☐ PC plug-in card for PCI slots
- ☐ 1 or 2 High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ NXP SJA1000 CAN controller, 16 MHz clock frequency
- ☐ NXP PCA82C251 CAN transceiver
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel (only for IPEH-002066 and IPEH-002067)
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### Ordering information

Designation	Part No.
PCAN-PCI Single Channel	IPEH-002064
PCAN-PCI Dual Channel	IPEH-002065
PCAN-PCI Single Channel opto-decoupled	IPEH-002066
PCAN-PCI Dual Channel opto-decoupled	IPEH-002067

### Scope of supply

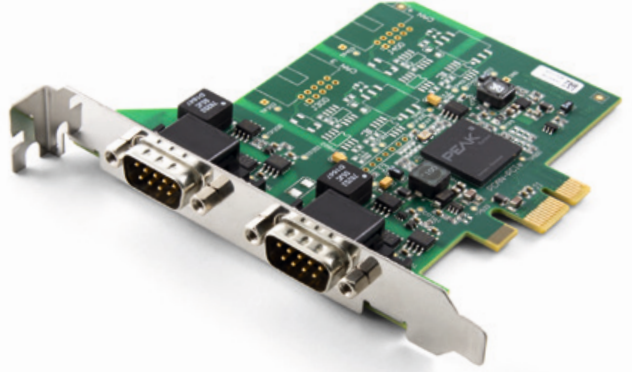
- ☐ Plug-in card PCAN-PCI
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

# PCAN-PCI Express

## CAN Interface for PCI Express


The PCAN-PCI Express card enables the connection of a PC with PCI Express slots to CAN networks. There is galvanic isolation of up to 500 Volts between the computer and CAN sides. There are versions with one, two and four channels.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- \_\_\_ PC plug-in card (PCIe x1) for PCI Express slots
- \_\_\_ 1, 2, or 4 High-speed CAN channels (ISO 11898-2)
- \_\_\_ Bit rates from 5 kbit/s up to 1 Mbit/s
- \_\_\_ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ FPGA implementation of the CAN controller (SJA1000 compatible)
- \_\_\_ NXP PCA82C251 CAN transceiver
- \_\_\_ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-PCI Express Single Channel galv. isolated	IPEH-003026
PCAN-PCI Express Dual Channel galv. isolated	IPEH-003027

### Scope of supply

- \_\_\_ Plug-in card PCAN-PCI Express
- \_\_\_ Slot bracket with D-Sub connectors for the CAN bus (only four-channel version)
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

# PCAN-PCI Express FD

## CAN FD Interface for PCI Express

The plug-in card PCAN-PCI Express FD allows the connection of a PC with PCI Express slots to CAN FD and CAN networks. There is galvanic isolation of up to 500 Volts between the computer and CAN sides. The card is available as a single, dual, or four-channel version.

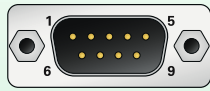
The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- \_\_\_ PC plug-in card (PCIe x1) for PCI Express slots
- \_\_\_ 1, 2, or 4 High-speed CAN channels (ISO 11898-2)
- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
- \_\_\_ CAN bit rates from 25 kbit/s up to 1 Mbit/s
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ FPGA implementation of the CAN FD controller
- \_\_\_ NXP TJA1044GT CAN transceiver
- \_\_\_ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- \_\_\_ CAN termination can be activated through a solder jumper, separately for each CAN channel
- \_\_\_ PCIe data transfer via bus master DMA
- \_\_\_ DMA memory access operations with 32- and 64-bit addresses
- \_\_\_ Measurement of bus load including error frames and overload frames on the physical bus
- \_\_\_ Induced error generation for incoming and outgoing CAN messages
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-PCI Express FD Single Channel	IPEH-004026
PCAN-PCI Express FD Dual Channel	IPEH-004027
PCAN-PCI Express FD Four Channel	IPEH-004040

### Scope of supply

- \_\_\_ Plug-in card PCAN-PCI Express FD
- \_\_\_ Slot bracket with D-Sub connectors for the CAN bus (only four-channel version)
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

# PCAN-miniPCI


## CAN Interface for Mini PCI

The PCAN-miniPCI card enables the connection of embedded PCs and laptops with Mini PCI slots to CAN networks.

The card is available as a single or dual-channel version. The opto-decoupled versions also guarantee galvanic isolation of up to 300 Volts between the PC and the CAN sides.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Specifications

- \_\_\_ CAN interface for the Mini PCI slot
- \_\_\_ 1 or 2 High-speed CAN channels (ISO 11898-2)
- \_\_\_ CAN bus connection via connection cable and D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ Bit rates from 40 kbit/s up to 1 Mbit/s
- \_\_\_ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ NXP SJA1000 CAN controller, 16 MHz clock frequency
- \_\_\_ NXP TJA1040 CAN transceiver
- \_\_\_ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- \_\_\_ Galvanic isolation on the CAN connection up to 300 V, separate for each CAN channel (only for IPEH-003046 and IPEH-003047)
- \_\_\_ Operating temperature range from 0 to 70 °C (32 to 158 °F)

### Ordering information

Designation	Part No.
PCAN-miniPCI Dual Ch.	IPEH-003045
PCAN-miniPCI Single Ch. opto-decoupled	IPEH-003046
PCAN-miniPCI Dual Ch. opto-decoupled	IPEH-003047

### Scope of supply

- \_\_\_ PCAN-miniPCI card
- \_\_\_ Connection cable including D-Sub plug for each channel
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format



# PCAN-miniPCle

## CAN Interface for PCI Express Mini (PCle)

The PCAN-miniPCle card enables the connection of embedded PCs and laptops with PCI Express Mini slots to CAN networks. There is galvanic isolation of up to 300 Volts between the computer and CAN sides. The card is available as a single or dual-channel version.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ CAN interface for the PCI Express Mini slot (uses PCIe lane)
- ☐ 1 or 2 High-speed CAN channels (ISO 11898-2)
- ☐ CAN bus connection via connection cable and D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ FPGA implementation of the CAN controller (SJA1000 compatible)
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation on the CAN connection up to 300 V, separate for each CAN channel
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-miniPCle Single Ch.	IPEH-003048
PCAN-miniPCle Dual Ch.	IPEH-003049

### Scope of supply

- ☐ PCAN-miniPCle card
- ☐ Connection cable including D-Sub plug for each channel
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

# PCAN-miniPCle FD

## CAN FD Interface for PCI Express Mini (PCle)

The PCAN-miniPCle FD is a CAN interface for the PCI Express Mini slot. With its space-saving format, the plug-in card is a suitable solution for connecting embedded systems to up to four CAN FD and CAN networks. There is galvanic isolation of up to 300 Volts between the computer and CAN sides. The card is available as a single, dual, or four-channel version.


The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- \_\_\_ CAN interface for the PCI Express Mini slot (uses PCIe lane)
- \_\_\_ 1, 2, or 4 High-speed CAN channels (ISO 11898-2)
- \_\_\_ Form factor PCI Express Mini (only for single and dual channel versions due to the height of the four-channel version)
- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
- \_\_\_ CAN bit rates from 25 kbit/s up to 1 Mbit/s
- \_\_\_ CAN bus connection via connection cable and D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ FPGA implementation of the CAN FD controller
- \_\_\_ NXP TJA1044GT CAN transceiver
- \_\_\_ Galvanic isolation on the CAN connection up to 300 V, separate for each CAN channel
- \_\_\_ CAN termination can be activated through a solder jumper, separately for each CAN channel
- \_\_\_ PCIe data transfer via bus master DMA
- \_\_\_ DMA memory access operations with 32- and 64-bit addresses
- \_\_\_ Measurement of bus load including error frames and overload frames on the physical bus
- \_\_\_ Induced error generation for incoming and outgoing CAN messages
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-miniPCle FD Single Channel	IPEH-004045
PCAN-miniPCle FD Dual Channel	IPEH-004046
PCAN-miniPCle FD Four Channel	IPEH-004047

### Scope of supply

- \_\_\_ PCAN-miniPCle FD card
- \_\_\_ Connection cable including D-Sub plug for each channel
- \_\_\_ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- \_\_\_ CAN monitor PCAN-View for Windows (details on page 91)
- \_\_\_ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- \_\_\_ Programming interfaces for standardized protocols from the automotive sector
- \_\_\_ Manual in PDF format

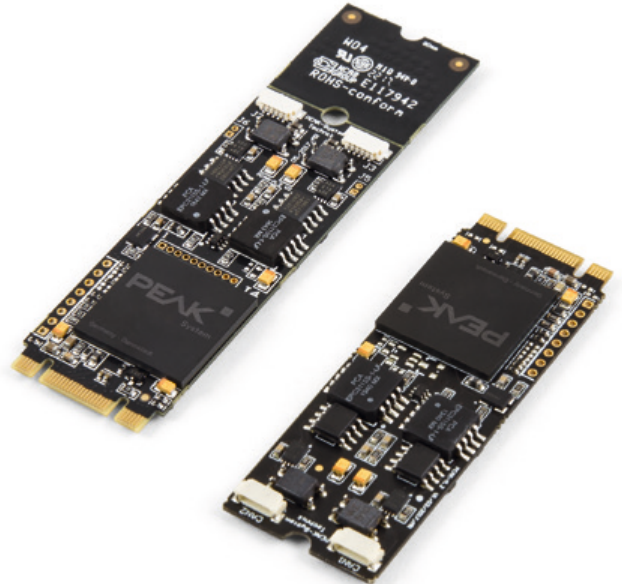
# PCAN-M.2

## CAN FD Interface for M.2 (PCIe)

The PCAN-M.2 allows the connection of CAN and CAN FD networks via the M.2 interface (PCIe) of modern computer boards. With its small format, the plug-in card is ideal for embedded PCs, single-board computers (SBC), and compact embedded applications. There is a galvanic isolation between the computer and the CAN side up to 300 Volts. The card is available as single and dual-channel version.


The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- ☐ CAN interface for the M.2 slot (uses PCIe lane)
- ☐ 1 or 2 High-speed CAN channels (ISO 11898-2)
- ☐ Form factor M.2 type: 2280/2260-B-M; height 4.6 mm
- ☐ Complies with CAN specifications 2.0 A/B and FD
- ☐ CAN FD support for ISO and Non-ISO standards switchable
- ☐ CAN FD bit rates for the data field (64 bytes max.) from 20 kbit/s up to 12 Mbit/s
- ☐ CAN bit rates from 20 kbit/s up to 1 Mbit/s
- ☐ CAN bus connection via connection cable and D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ FPGA implementation of the CAN FD controller
- ☐ Microchip CAN transceiver MCP2558FD
- ☐ Galvanic isolation on the CAN connection up to 300 V, separate for each CAN channel
- ☐ CAN termination can be activated through a solder jumper, separately for each CAN channel
- ☐ PCIe data transfer via bus master DMA
- ☐ DMA memory access operations with 32- and 64-bit addresses
- ☐ Measurement of bus load including error frames and overload frames on the physical bus
- ☐ Induced error generation for incoming and outgoing CAN messages
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-M.2 Single Channel	IPEH-004083
PCAN-M.2 Dual Channel	IPEH-004084

### Scope of supply

- ☐ PCAN-M.2 card
- ☐ Connection cable including D-Sub plug for each channel
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

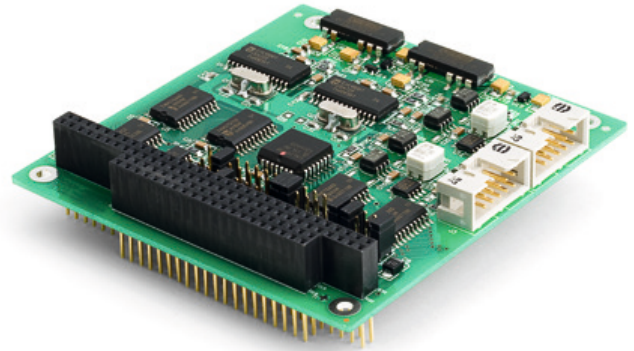
# PCAN-PC/104

## CAN Interface for PC/104

The PCAN-PC/104 card enables the connection of one or two CAN networks to a PC/104 system. Multiple PCAN-PC/104 cards can easily be operated using interrupt sharing.


The card is available as a single or dual-channel version. The opto-decoupled versions also guarantee galvanic isolation of up to 500 Volts between the PC and the CAN sides.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ Form factor PC/104
- ☐ Multiple PC/104 cards can be operated in parallel (interrupt sharing)
- ☐ 14 port and 8 interrupt addresses are available for configuration using jumpers
- ☐ 1 or 2 High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ Connection to CAN bus through D-Sub slot bracket, 9-pin (in accordance with CiA® 303-1)
- ☐ NXP SJA1000 CAN controller, 16 MHz clock frequency
- ☐ NXP PCA82C251 CAN transceiver
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel (only for IPEH-002056 and IPEH-002057)
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-PC/104 Single Ch.	IPEH-002054
PCAN-PC/104 Dual Ch.	IPEH-002055
PCAN-PC/104 Single Channel opto-decoupled	IPEH-002056
PCAN-PC/104 Dual Channel opto-decoupled	IPEH-002057

### Scope of supply

- ☐ PCAN-PC/104 card
- ☐ Slot bracket with D-Sub connectors for the CAN bus
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ CAN monitor PCAN-View for DOS
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format



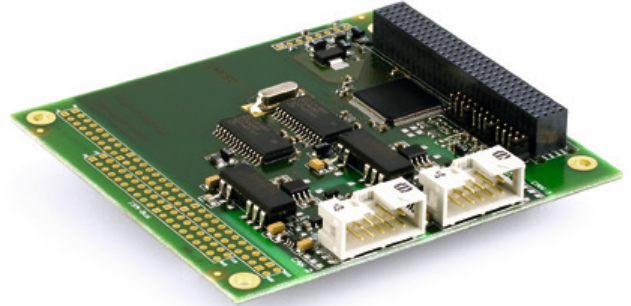
# PCAN-PC/104-Plus

## CAN Interface for PC/104-Plus

The PCAN-PC/104-Plus card enables the connection of one or two CAN networks to a PC/104-Plus system. Up to four cards can be operated, with each piggy-backing off the next. The CAN bus is connected using a 9-pin D-Sub plug on the slot bracket supplied.

The card is available as a single or dual-channel version. The opto-decoupled versions also guarantee galvanic isolation of up to 500 Volts between the PC and the CAN sides.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ Form factor PC/104
- ☐ Use of the 120-pin connection for the PCI bus
- ☐ Up to four cards can be used in one system
- ☐ 1 or 2 High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ Connection to CAN bus through D-Sub slot bracket, 9-pin (in accordance with CiA® 303-1)
- ☐ NXP SJA1000 CAN controller, 16 MHz clock frequency
- ☐ NXP PCA82C251 CAN transceiver
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel (only for IPEH-002096 and IPEH-002097)
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ Optionally available: PC/104-ISA stack-through connector

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-PC/104-Plus Single Ch.	IPEH-002094
PCAN-PC/104-Plus Dual Ch.	IPEH-002095
PCAN-PC/104-Plus Single Channel opto-decoupled	IPEH-002096
PCAN-PC/104-Plus Dual Channel opto-decoupled	IPEH-002097

### Scope of supply

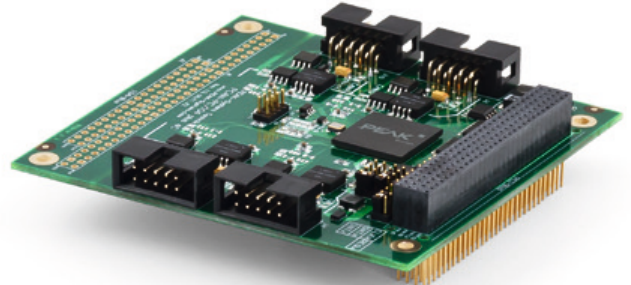
- ☐ PCAN-PC/104-Plus card
- ☐ Slot bracket with D-Sub connectors for the CAN bus
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ Device driver for Windows CE 6.x (x86 and ARMv4 processor support)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

# PCAN-PC/104-Plus Quad

## Four-Channel CAN Interface for PC/104-Plus

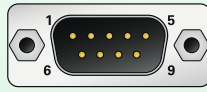
The PCAN-PC/104-Plus Quad card enables the connection of four CAN networks to a PC/104-Plus system. Up to four cards can be operated, with each piggy-backing off the next. The CAN bus is connected using a 9-pin D-Sub plug on the slot brackets supplied. There is galvanic isolation of up to 500 Volts between the computer and CAN sides.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ Form factor PC/104
- ☐ Use of the 120-pin connection for the PCI bus
- ☐ Up to four cards can be used in one system
- ☐ 4 High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ Connection to CAN bus through D-Sub slot brackets, 9-pin (in accordance with CiA® 303-1)
- ☐ FPGA implementation of the CAN controller (SJA1000 compatible)
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ Optionally available: PC/104-ISA stack-through connector

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-PC/104-Plus Quad	IPEH-002099

### Scope of supply

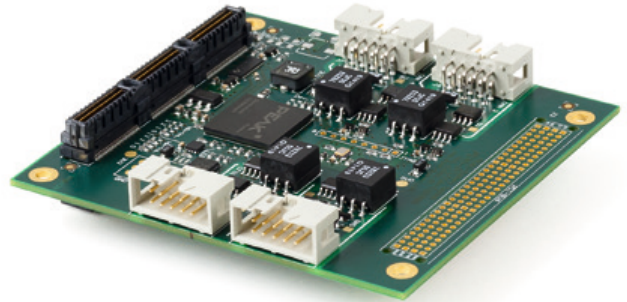
- ☐ PCAN-PC/104-Plus Quad card
- ☐ Two slot brackets with D-Sub connectors for the CAN bus
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

# PCAN-PCI/104-Express

## CAN Interface for PCI/104-Express


The PCAN-PCI/104-Express card enables the connection of one, two, or four CAN busses to a PCI/104-Express system. Up to four cards can be stacked together. The CAN bus is connected using a 9-pin D-Sub plug on the slot brackets supplied. There is galvanic isolation of up to 500 Volts between the computer and CAN sides. The card is available as a single, dual, or four-channel version.

The package is also supplied with the CAN monitor PCAN-View for Windows and the programming interface PCAN-Basic.



### Specifications

- ☐ PCI/104-Express card, 1 lane (x1)
- ☐ Form factor PC/104
- ☐ Up to four cards can be used in one system
- ☐ 1, 2, or 4 High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ Connection to CAN bus through D-Sub slot bracket, 9-pin (in accordance with CiA® 303-1)
- ☐ FPGA implementation of the CAN controller (SJA1000 compatible)
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- ☐ Supplied only via the 5 V line
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ Optionally available: PCI-104 stack-through connector

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

### Ordering information

Designation	Part No.
PCAN-PCI/104-Express Single Ch. opto-decoupled	IPEH-003056
PCAN-PCI/104-Express Dual Ch. opto-decoupled	IPEH-003057
PCAN-PCI/104-Express Quad	IPEH-003058

### Scope of supply

- ☐ PCAN-PCI/104-Express card
- ☐ Slot bracket with D-Sub connector(s) for the CAN bus (two for the four-channel version)
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format

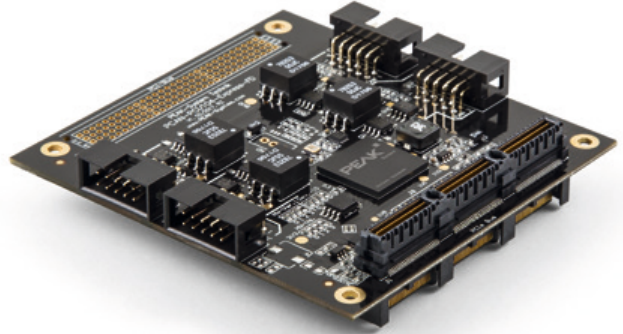
# PCAN-PCI/104-Express FD

## CAN FD Interface for PCI/104-Express

The PCAN-PCI/104-Express FD allows the connection of PCI/104-Express systems to CAN and CAN FD busses. The PCI/104-Express specification establishes PCI Express for the PC/104 form factor wherewith up to four cards can be stacked. Based on this, standardized modular embedded systems such as industrial PCs can be realized. The CAN bus is connected via 9-pin D-Sub connectors to the supplied slot brackets. There is a galvanic isolation between the computer and the CAN side up to 500 Volts. The card is available as a single, dual, or four-channel version.


The monitor software PCAN-View and the programming interface PCAN-Basic for the development of applications with CAN connection are included in the scope of supply and support the new standard CAN FD.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- ☐ PCI/104-Express card, 1 lane (x1)
- ☐ Form factor PC/104
- ☐ Up to four cards can be used in one system
- ☐ 1, 2, or 4 High-speed CAN channels (ISO 11898-2)
- ☐ Complies with CAN specifications 2.0 A/B and FD
- ☐ CAN FD support for ISO and Non-ISO standards switchable
- ☐ CAN FD bit rates for the data field (64 bytes max.) from 20 kbit/s up to 12 Mbit/s
- ☐ CAN bit rates from 20 kbit/s up to 1 Mbit/s
- ☐ Connection to CAN bus through D-Sub slot bracket, 9-pin (in accordance with CiA® 303-1)
- ☐ FPGA implementation of the CAN FD controller
- ☐ Microchip CAN transceiver MCP2558FD
- ☐ Galvanic isolation on the CAN connection up to 500 V, separate for each CAN channel
- ☐ CAN termination can be activated through a solder jumper, separately for each CAN channel
- ☐ 5-Volt supply to the CAN connection can be connected through a solder jumper, e.g. for external bus converter
- ☐ PCIe data transfer via bus master DMA
- ☐ DMA memory access operations with 32- and 64-bit addresses
- ☐ Measurement of bus load including error frames and overload frames on the physical bus
- ☐ Induced error generation for incoming and outgoing CAN messages
- ☐ Optionally available: PCI-104 stack-through connector
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected / optional +5V
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-PCI/104-Express FD Single Channel	IPEH-004080
PCAN-PCI/104-Express FD Dual Channel	IPEH-004081
PCAN-PCI/104-Express FD Four Channel	IPEH-004082

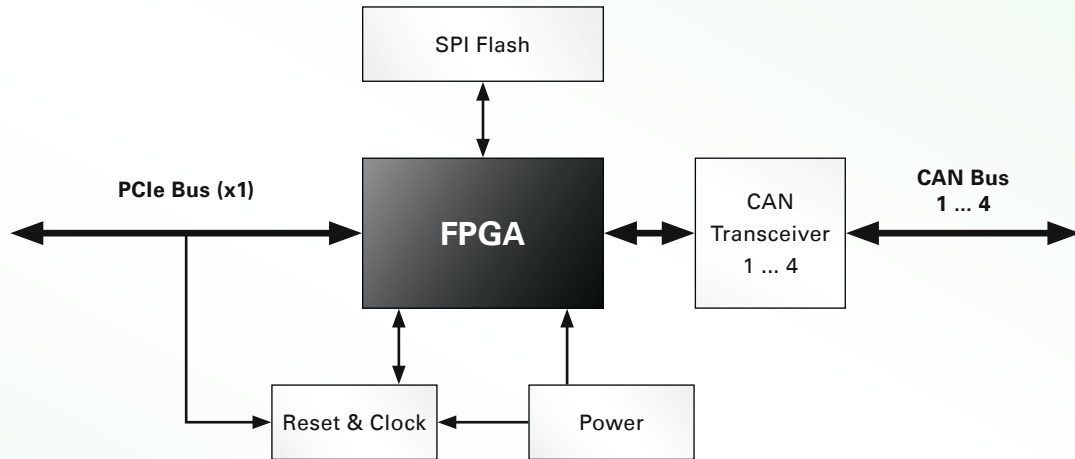
### Scope of supply

- ☐ PCAN-PCI/104-Express FD card
- ☐ Slot bracket with D-Sub connector(s) for the CAN bus (two for the four-channel version)
- ☐ Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
- ☐ CAN monitor PCAN-View for Windows (details on page 91)
- ☐ Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
- ☐ Programming interfaces for standardized protocols from the automotive sector
- ☐ Manual in PDF format



# PCAN-Chip PCIe FD

Chip Solutions for the CAN FD Connection to PCI Express



For the CAN and CAN FD connection of your hardware design we provide several solutions.

Based on an FPGA, up to 4 CAN channels can be implemented via the PCI Express bus using the chip solution PCAN-Chip PCIe FD. With the license from PEAK-System, the FPGA can be programmed via an image with the corresponding functionality.

In addition to the related documentation, the scope of supply includes licenses for the Windows and Linux device drivers, the CAN monitor PCAN-View, and the PCAN-Basic API.

## Specifications

- ☐ FPGA implementation of the CAN FD controller
- ☐ Complies with CAN specifications 2.0 A/B and FD
- ☐ CAN FD support for ISO and Non-ISO standards switchable
- ☐ CAN bus connection for PCI Express x1 with bit rates up to 2.5 Gbit/s
- ☐ PCIe data transfer via bus master DMA
- ☐ DMA memory access operations with 32- and 64-bit addresses
- ☐ 100-percent compatible with the PCI Express device drivers and the software from PEAK-System
- ☐ Measurement of bus load including error frames and overload frames on the physical bus
- ☐ Induced error generation for incoming and outgoing CAN messages

## Ordering information

Designation	Part No.
PCAN-Chip PCIe FD 2 Channel	IPES-004092
PCAN-Chip PCIe FD 4 Channel	IPES-004093

## Scope of supply

- ☐ One license for:
  - Configuration image for FPGA programming depending on the version:
    - PCI Express 2 Channel
    - PCI Express 4 Channel (Quad)
  - Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
  - CAN monitor PCAN-View for Windows (details on page 91)
  - Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
  - Programming interfaces for standardized protocols from the automotive sector
- ☐ Documentation for wiring and integration including a sample circuit diagram

The license fees for CAN FD to Robert Bosch GmbH are included. If you are interested and for more information, please contact [info@peak-system.com](mailto:info@peak-system.com).

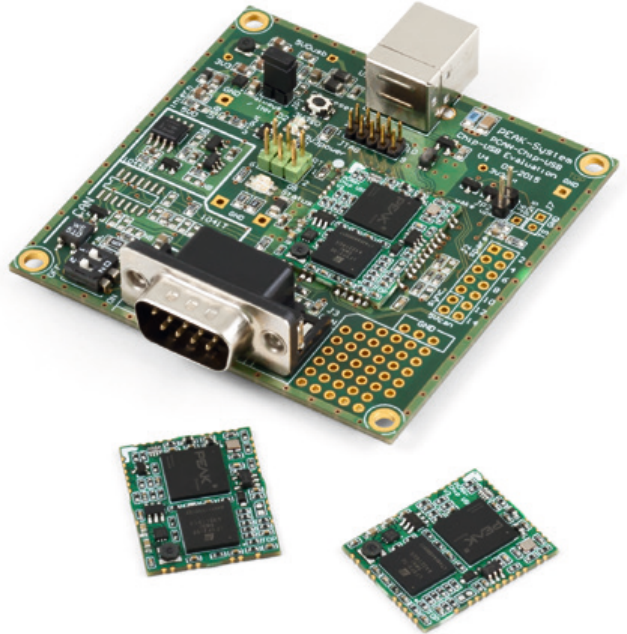
# PCAN-Chip USB

## Stamp Module for the Implementation of CAN FD to USB Connections

For custom hardware designs a CAN connection can be implemented with the Stamp module, which communicates via USB 2.0 with the hardware. The integrated CAN controller supports the protocols CAN 2.0 A/B as well as CAN FD. The physical CAN connection is determined by external wiring. The Stamp module with its single-sided mounting and plated half-holes is suitable for automatic assembly.

The optional PCAN-Chip USB Eval board simplifies the development of a custom board based on the Stamp module.

In addition to the documentation for the integration of the Stamp module, the scope of supply of the PCAN-Chip USB includes licenses for the Windows and Linux device drivers, for the CAN monitor PCAN-View, and for the PCAN-Basic API.



### PCAN-Chip USB

#### Specifications

- ☐ High-speed USB 2.0 (compatible to USB 1.1 & 3.0)
- ☐ FPGA implementation of the CAN FD controller
- ☐ Complies with CAN specifications 2.0 A/B and FD
- ☐ CAN FD support for ISO and Non-ISO standard switchable
- ☐ Measurement of bus load including error frames and overload frames on the physical bus
- ☐ Induced error generation for incoming and outgoing CAN messages
- ☐ 100-percent compatible with the USB device drivers and the software from PEAK-System
- ☐ 2 connections for status LEDs
- ☐ Voltage supply 3.3 V DC
- ☐ New firmware can be loaded via USB
- ☐ Dimensions: 25 x 20 mm
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### PCAN-Chip USB Eval

#### Specifications

- ☐ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ CAN transceiver NXP TJA1044GT
- ☐ USB connector type B, standard ESD protection circuit
- ☐ 2-color LED for CAN status and power supply
- ☐ Voltage supply via USB
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### Ordering information

Designation	Part No.
PCAN-Chip USB	IPEH-004025
PCAN-Chip USB Eval	IPEH-004025-EVAL

### Scope of supply PCAN-Chip USB

- ☐ PCAN-Chip USB
- ☐ Documentation for wiring and integration including a sample circuit diagram
- ☐ One license per chip for:
  - Device drivers for Windows 10, 8.1, 7 and Linux (32/64-bit)
  - CAN monitor PCAN-View for Windows (details on page 91)
  - Programming interface PCAN-Basic for developing applications with CAN connection (details on page 78)
  - Programming interfaces for standardized protocols from the automotive sector

### Scope of supply PCAN-Chip USB Eval

- ☐ PCAN-Chip USB Eval
- ☐ PCAN-Chip USB incl. scope of supply
- ☐ USB connector cable


The license fees for CAN FD to Robert Bosch GmbH are included. If you are interested and for more information, please contact [info@peak-system.com](mailto:info@peak-system.com).


# PCAN-AU5790

## Bus Converter High-Speed CAN to Single-Wire CAN

The PCAN-AU5790 bus converter establishes a connection between a High-speed CAN bus (ISO 11898-2) and a Single-wire CAN bus (SAE J2411). One of the most important potential applications of the bus converter is a simple connection between a PEAK CAN interface (e.g. PCAN-USB) and a Single-wire CAN bus.



Female D-Sub Connector	Pin	Pin assignment High-speed CAN (82C251)
	1	5V Power supply
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected / optional +5V

Male D-Sub Connector	Pin	Pin assignment Single-wire CAN (AU5790)
	1	Not connected
	2	Not connected
	3	GND
	4	Not connected
	5	CAN
	6	GND
	7	Not connected
	8	Not connected
	9	V <sub>BAT</sub>

### Specifications

- \_\_\_ There are three different operating modes for the SW-CAN side which can be set using a sliding switch. Normal (33.3 kbit/s), High-speed (83.3 kbit/s) and Wake-up
- \_\_\_ Indicator LEDs for power supply (red) and wake-up signals (yellow)
- \_\_\_ 5-Volt power supply (150 mA) through HS-CAN connection (a current list of PEAK CAN interfaces with suitable supply voltage is available on request)
- \_\_\_ If the power supply has a current output lower than 150 mA, an additional 12-Volt supply is needed via the SW-CAN connector
- \_\_\_ Operating temperature range from 0 to 70 °C (32 to 158 °F)

### Ordering information

Designation	Part No.
PCAN-AU5790	IPEH-002040

### Scope of supply

- \_\_\_ Adapter in plastic casing
- \_\_\_ Manual in PDF format

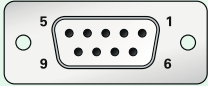
Other transceiver types on request.


# PCAN-B10011S

## Bus Converter High-Speed CAN to Truck Trailer CAN

The PCAN-B10011S bus converter establishes a connection between a High-speed CAN bus (ISO 11898-2) and a Truck Trailer CAN bus (ISO 11992-1). One of the most important potential applications of the bus converter is a simple connection between a PEAK CAN interface (e.g. PCAN-USB) and a Truck Trailer CAN bus.



Female D-Sub Connector	Pin	Pin assignment High-speed CAN (82C251)
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

Male D-Sub Connector	Pin	Pin assignment Truck Trailer CAN (B10011S)
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	V <sub>BAT</sub>

### Specifications

- ☐ Direct connection to a High-speed CAN bus through a D-Sub connector, 9-pin with switchable termination
- ☐ Direct connection of the Truck Trailer CAN bus through a D-Sub connector, 9-pin with switchable termination (master/slave mode)
- ☐ Connection of the Truck Trailer CAN via 9-pin D-Sub connector
- ☐ Normal or listen-only operating mode
- ☐ Data transfer rates up to 125 kbit/s
- ☐ Power supply via Truck Trailer CAN bus or self-sufficient with power supply unit
- ☐ Adjustable Truck Trailer system voltage (11 - 26 V) for power through mains power pack
- ☐ Status display for power supply and error states via LEDs
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### Ordering information

Designation	Part No.
PCAN-B10011S	IPEH-002041

### Scope of supply

- ☐ Adapter in plastic casing
- ☐ Power supply unit
- ☐ Manual in PDF format

Other transceiver types on request.



# PCAN-TJA1054


## Bus Converter High-Speed CAN to Low-Speed CAN

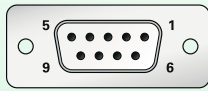
The PCAN-TJA1054 bus converter establishes a connection between a High-speed CAN bus (ISO 11898-2) and a Low-speed CAN bus (ISO 11898-3). One of the most important potential applications of the bus converter is a simple connection between a PEAK CAN interface (e.g. PCAN-USB) and a Low-speed CAN bus.



### Specifications

- \_\_\_ Adapter from High-speed CAN to Low-speed CAN
- \_\_\_ Bit rates up to 125 kbit/s
- \_\_\_ CAN transceiver NXP PCA82C251 and TJA1055
- \_\_\_ Termination resistors for Low-speed CAN can be switched (560 Ohm / 5.66 kOhm)
- \_\_\_ Power LED
- \_\_\_ Error LED (Low-speed CAN)
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ 5-Volt power supply 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)

Male D-Sub Connector	Pin	Pin assignment Low-speed CAN (TJA1055)
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

Female D-Sub Connector	Pin	Pin assignment High-speed CAN (82C251)
	1	5V Power supply
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-TJA1054	IPEH-002039

### Scope of supply

- \_\_\_ Adapter in plastic casing
- \_\_\_ Manual in PDF format

Other transceiver types on request.

# PCAN-Optoadapter

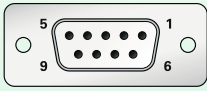
## Plug-on Adapter for Decoupling CAN Networks

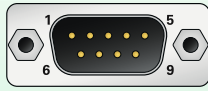
The PCAN-Optoadapter is a universal plug-on adapter to allow galvanic isolation of High-speed CAN bus systems.

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

The PCAN-Optoadapter can be used in CAN FD busses with data bit rates up to 2 Mbit/s and nominal bit rates up to 1 Mbit/s.



Female D-Sub Connector	Pin	Pin assignment
	1	5V Power supply
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

Male D-Sub Connector	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Specifications

- ☐ Plug-on adapter for decoupling a CAN bus for PEAK CAN interfaces
- ☐ Galvanic isolation by DC/DC converters up to 500 V
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ High-speed CAN transceiver NXP PCA82C251
- ☐ Suitable for the use in CAN FD busses with data bit rates up to 2 Mbit/s and nominal bit rates up to 1 Mbit/s
- ☐ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ LED for status indication of the supply voltage
- ☐ 120-Ohm bus termination at the female D-Sub connector
- ☐ 5-Volt power supply 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)

### Ordering information

Designation	Part No.
PCAN-Optoadapter	IPEH-002038

### Scope of supply

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

# PCAN-Repeater DR

## CAN Repeater for the Decoupling of Bus Segments

The PCAN-Repeater DR establishes a connection between two High-speed CAN busses with galvanic isolation of up to 5 kV. Both CAN channels are decoupled from each other and from the power supply. All message traffic including error frames is forwarded 1:1 between both channels, if necessary, in one direction only. The PCAN-Repeater DR behaves passively and is transparent from the perspective of the CAN bus. LEDs display the current bus status. With its DIN rail casing and extended temperature range support, this module is suitable for use in an industrial environment.

The PCAN-Repeater DR can be used in CAN FD busses with data bit rates up to 4 Mbit/s and nominal bit rates up to 1 Mbit/s.

**Please note:** Due to the CAN protocol, the maximum length of a CAN bus depends on the bit rate. Therefore, a bus cannot be extended with the PCAN-Repeater DR. The physical total length of the CAN bus is reduced with each built-in PCAN-Repeater DR according to its signal delay.



### Specifications

- ☐ Two High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Suitable for the use in CAN FD busses with data bit rates up to 4 Mbit/s and nominal bit rates up to 1 Mbit/s
- ☐ Connections for CAN and power supply via 4-pin screw terminal block (Phoenix)
- ☐ LEDs display CAN bus load and CAN errors
- ☐ Each CAN channel can be selectively terminated
- ☐ Galvanic isolation rated up to 5 kV according to IEC60601-1, between both CAN channels and between CAN and power supply
- ☐ Listen-only mode for CAN channel 1 or CAN channel 2 can be switched selectively
- ☐ Plastic casing (width: 22.5 mm) for mounting on a DIN rail (DIN EN 60715 TH35)
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### Ordering information

Designation	Part No.
PCAN-Repeater DR	IPEH-004038

### Scope of supply

- ☐ PCAN-Repeater DR in DIN rail plastic casing
- ☐ 3 mating connectors for power supply and CAN connections
- ☐ Manual in PDF format

**Accessories:** PCAN-D-Sub Connection Adapter optionally available (details on page 113).

# PCAN-LWL

## Optical Coupler for CAN Data Transmission

For use in explosion-proof areas or for EMC measurements, the PCAN-LWL can be used to replace a stretch of CAN network with a fiber-optic line at any point. There are the options of conversion to High-speed CAN or Low-speed CAN. The modules are supplied with power externally.

The PCAN-LWL can be used in CAN FD busses with data bit rates up to 5 Mbit/s and nominal bit rates up to 500 kbit/s.



### Specifications

- ☐ LED display for transceiver status
- ☐ High-speed CAN: AMIS 30660 transceiver, max. 500 kbit/s, switchable 120-Ohm bus termination
- ☐ Low-speed CAN: TJA1055 transceiver, max. 125 kbit/s, switchable 510-Ohm / 5.6-kOhm bus termination, bus error display
- ☐ Complies with CAN specifications 2.0 A/B
- ☐ Suitable for the use in CAN FD busses with data bit rates up to 5 Mbit/s and nominal bit rates up to 500 kbit/s
- ☐ The fiber-optic line consists of a 62.5/125 µm fibre-optic duplex line with ST connectors
- ☐ Aluminum casing
- ☐ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- ☐ Supply voltage: 6.5 – 30 V
- ☐ Supply via D-Sub 9-pin or DC connector (jumper)
- ☐ Operating temperature range from 0 to 70 °C (32 to 158 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	CAN-L
	3	GND
	4	Not connected
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	V <sub>IN</sub> (optional)

### Ordering information

Designation	Part No.
PCAN-LWL	IPEH-002026

### Scope of supply

- ☐ 2 CAN to optical waveguide converters including power supply units. Delivered in shockproof plastic box
- ☐ A choice of 5 or 10 m FO cable, 62.5 / 125 µm duplex line ST connector. Other lengths available on request
- ☐ Manual in PDF format

Also available with Single-wire CAN transceiver on request.



# PLIN-LWL

## Optical Coupler for LIN Data Transmission

For use in explosion-proof areas or for EMC measurements, the PLIN-LWL can be used to replace a stretch of LIN network with a fiber-optic line at any point. The modules are supplied with power externally.



### Specifications

- ☐ Bit rates from 2.4 kbit/s up to 20 kbit/s
- ☐ TJA1028 LIN transceiver
- ☐ LED display for power supply and transceiver status
- ☐ Switchable master termination
- ☐ LIN bus connection via D-Sub, 9-pin
- ☐ The fiber-optic line consists of a 62.5/125 µm fibre-optic duplex line with ST connectors
- ☐ Supply voltage: 8 – 30 V
- ☐ Supply via D-Sub 9-pin or DC connector (jumper)
- ☐ Aluminum casing
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

D-Sub	Pin	Pin assignment
	1	Not connected
	2	Not connected
	3	GND
	4	LIN
	5	Not connected
	6	GND
	7	Not connected
	8	Not connected
	9	V+

### Ordering information

Designation	Part No.
PLIN-LWL	IPEH-004049

### Scope of supply

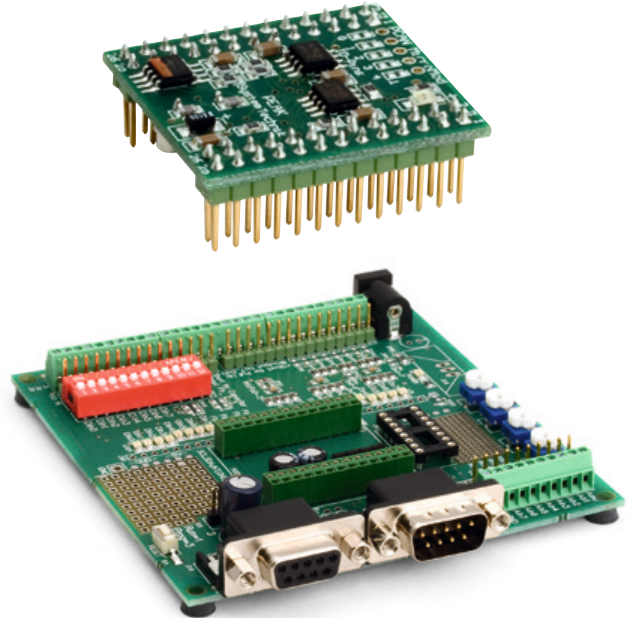
- ☐ 2 LIN to optical waveguide converters including power supply units. Delivered in shockproof plastic box
- ☐ A choice of 5 or 10 m FO cable, 62.5 / 125 µm duplex line ST connector. Other lengths available on request
- ☐ Manual in PDF format

# PCAN-MicroMod

## Universal I/O Module with CAN Interface

The plug-in module PCAN-MicroMod represents a straightforward possibility to provide electronic circuits with I/O functionality and a CAN connection. Configuring is done with a Windows program which sends the configuration data to the module via CAN. Several modules can be configured independently on a CAN bus.

With various PCAN-MicroMod motherboards, it can be used in device and plant engineering and in the motor vehicle industry. An optional evaluation board simplifies the enhancement and development of custom boards.



### PCAN-MicroMod Specifications

- ☐ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- ☐ 8 analog inputs, measuring range unipolar 0 to 5 V, (resolution 10 bit, sample rate 1 kHz)
- ☐ 8 digital inputs and 8 digital outputs
- ☐ PWM/frequency outputs (1 Hz to 10 kHz)
- ☐ Maximum of 32 MicroMods in one CAN network
- ☐ Dimensions: 32 x 35 mm
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### PCAN-MicroMod Evaluation Board Specifications

- ☐ Open-collector output driver for digital outputs and CMOS PWM outputs
- ☐ Pickoffs and screw terminals for inputs and outputs
- ☐ Switches for status modification of the digital inputs
- ☐ Protected digital inputs + LED
- ☐ 4 potentiometers for analog inputs
- ☐ Low-pass and resistive divider for voltages > 5 V
- ☐ Serial interface for firmware updates
- ☐ Optional Low-speed CAN transceiver
- ☐ Operating temperature range from 0 to 85 °C (32 to 185 °F)
- ☐ Dimensions: 100 x 100 mm

### Ordering information

Designation	Part No.
PCAN-MicroMod	IPEH-002080
PCAN-MicroMod Evaluation Board	IPEH-002082
PCAN-MicroMod Evaluation Kit 1	IPEH-002081
PCAN-MicroMod Evaluation Kit 2	IPEH-002079

### Scope of supply PCAN-MicroMod

- ☐ PCAN-MicroMod
- ☐ PCAN-MicroMod Configuration for Windows (details on page 107)
- ☐ Manual in PDF format

### Scope of supply PCAN-MicroMod Evaluation Kit

- ☐ PCAN-MicroMod
- ☐ PCAN-MicroMod Evaluation Board
- ☐ Power supply unit
- ☐ PCAN-Dongle PS/2 (Kit 1) / PCAN-USB (Kit 2)
- ☐ 2 m CAN cable with termination (Kit 1 & 2)
- ☐ PCAN-MicroMod Configuration for Windows (details on page 107)
- ☐ Manual and schematic in PDF format

### Requirements

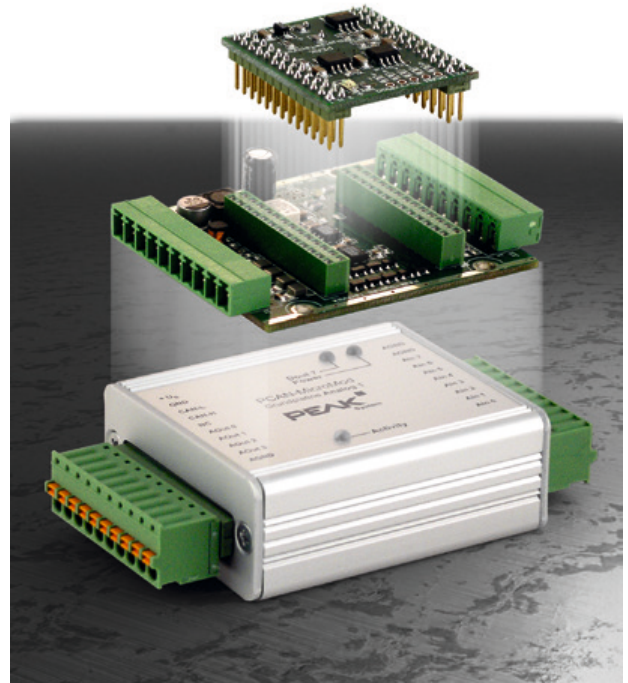
- ☐ The configuration requires a PEAK CAN interface

# PCAN-MicroMod Analog 1 & 2

## Application-specific PCAN-MicroMod Motherboards

The motherboards for the PCAN-MicroMod provide an application-oriented environment. Typical characteristics of this product group include a wide supply voltage range and the protective circuits for the inputs and outputs. CANopen® firmware is available for all PCAN-MicroMod motherboards.

The Analog 1 & 2 motherboards serve general analog requirements.



### Specifications Analog 1

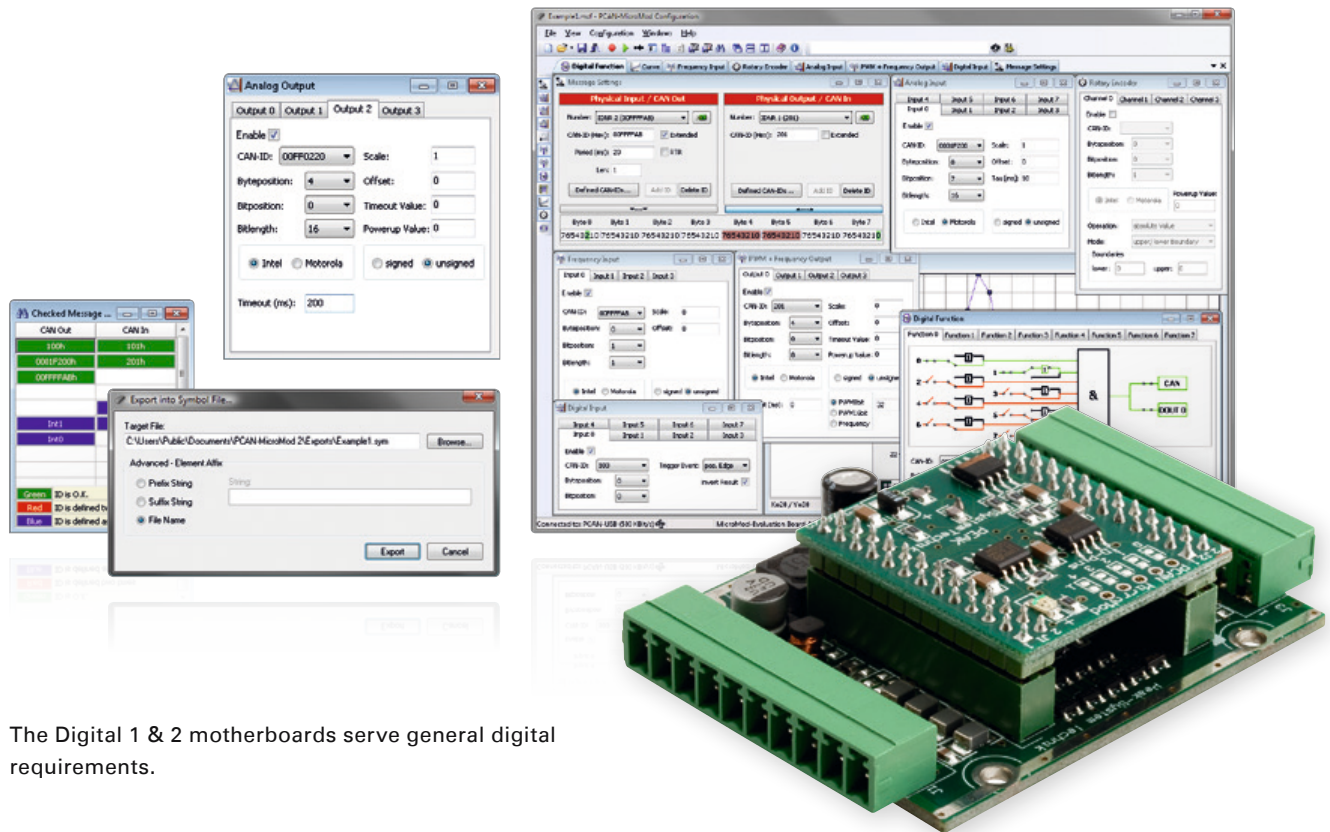
- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 11 to 26 V
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Aluminum casing with spring terminal connectors. Optional DIN rail fixing available
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- \_\_\_ 8 analog inputs
  - Measuring range unipolar 0 to 5 V
  - Resolution 10 bit, sample rate 1 kHz
  - Measuring range extension optional
  - Pull-down circuit
  - Protection against under- and overvoltages
  - Parallel connection of a digital input each for alternative use (e.g. push buttons)
- \_\_\_ 4 analog outputs
  - Voltage range 0 to 10 V (based on 8-bit PWM)
  - Output current 15 mA per channel
  - Short-circuit protection

### Specifications Analog 2

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 11 to 30 V
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Aluminum casing with spring terminal connectors. Optional DIN rail fixing available
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- \_\_\_ 8 analog inputs
  - Measuring range bipolar -10 to 10 V
  - Resolution 16 bit
  - Sample rate depends on the number of used channels (2 kHz/n)
  - Low-pass behavior
  - Protection against under- and overvoltages
- \_\_\_ 4 analog outputs
  - Voltage range 0 to 10 V (based on 12-bit DAC)
  - Output current 20 mA per channel
  - Short-circuit protection

# PCAN-MicroMod Digital 1 & 2

Application-specific PCAN-MicroMod Motherboards



The Digital 1 & 2 motherboards serve general digital requirements.

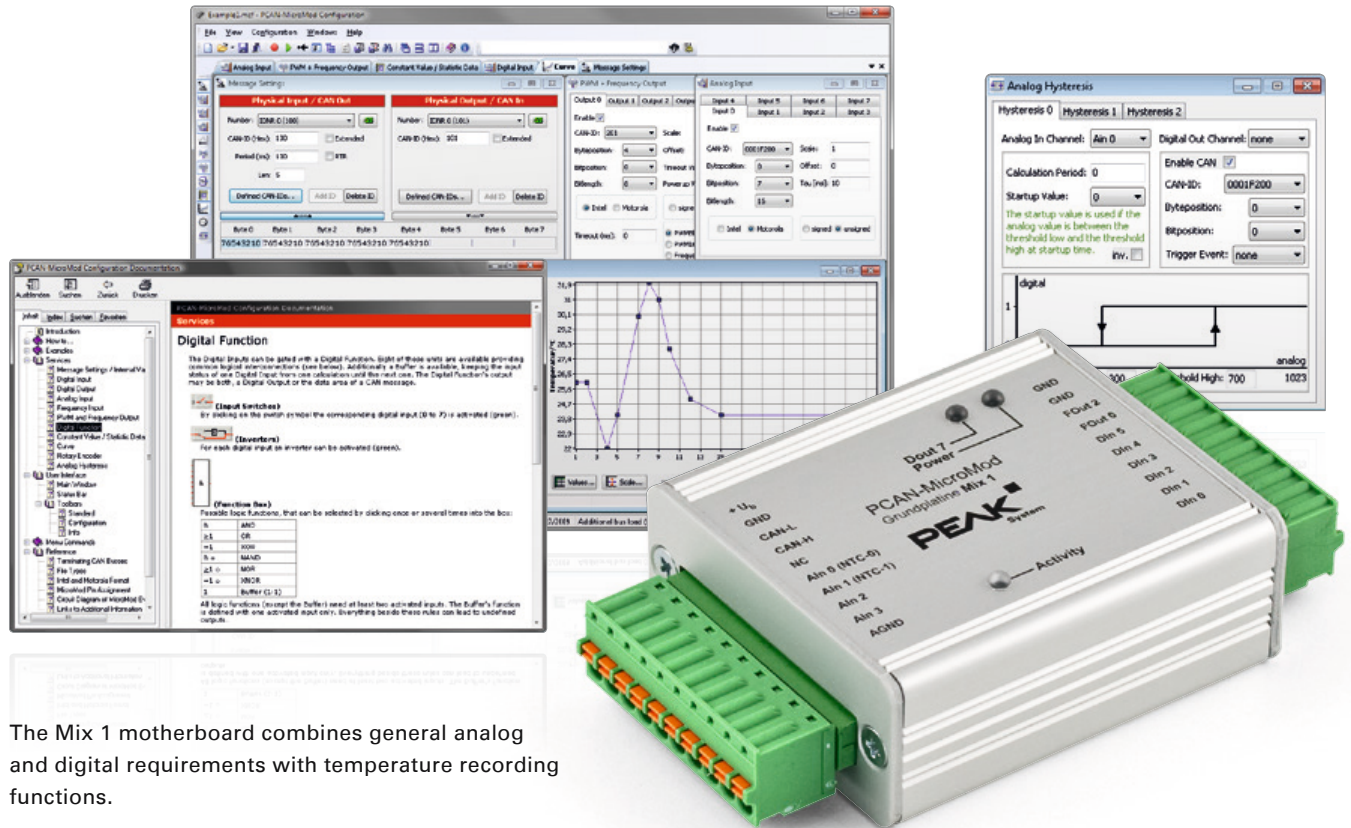
## Specifications Digital 1 & 2

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 8 to 26 V
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Aluminum casing with spring terminal connectors. Optional DIN rail fixing available
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- \_\_\_ 8 digital inputs
  - Pull-up or Pull-down circuit selectable in groups (3 groups)
  - Schmitt trigger behavior, inverting
  - Threshold High = 4.8 V, Low = 1.2 V
  - Low-pass behavior
  - Parallel connection of frequency inputs at 4 digital inputs for alternative use (e.g. on rapid state changes, counting)
- \_\_\_ 5 digital outputs
  - PCAN-MicroMod Digital 1: 4 Low-side switch, max. 45 V, 0.35 A
  - PCAN-MicroMod Digital 2: 4 High-side switch, max. 26 V, 1.1 A
  - 1 fast Low-side switch, max. 55 V, 0.75 A, max. 10 kHz („frequency output“)
  - Short-circuit protection



# PCAN-MicroMod Mix 1

Application-specific PCAN-MicroMod Motherboards



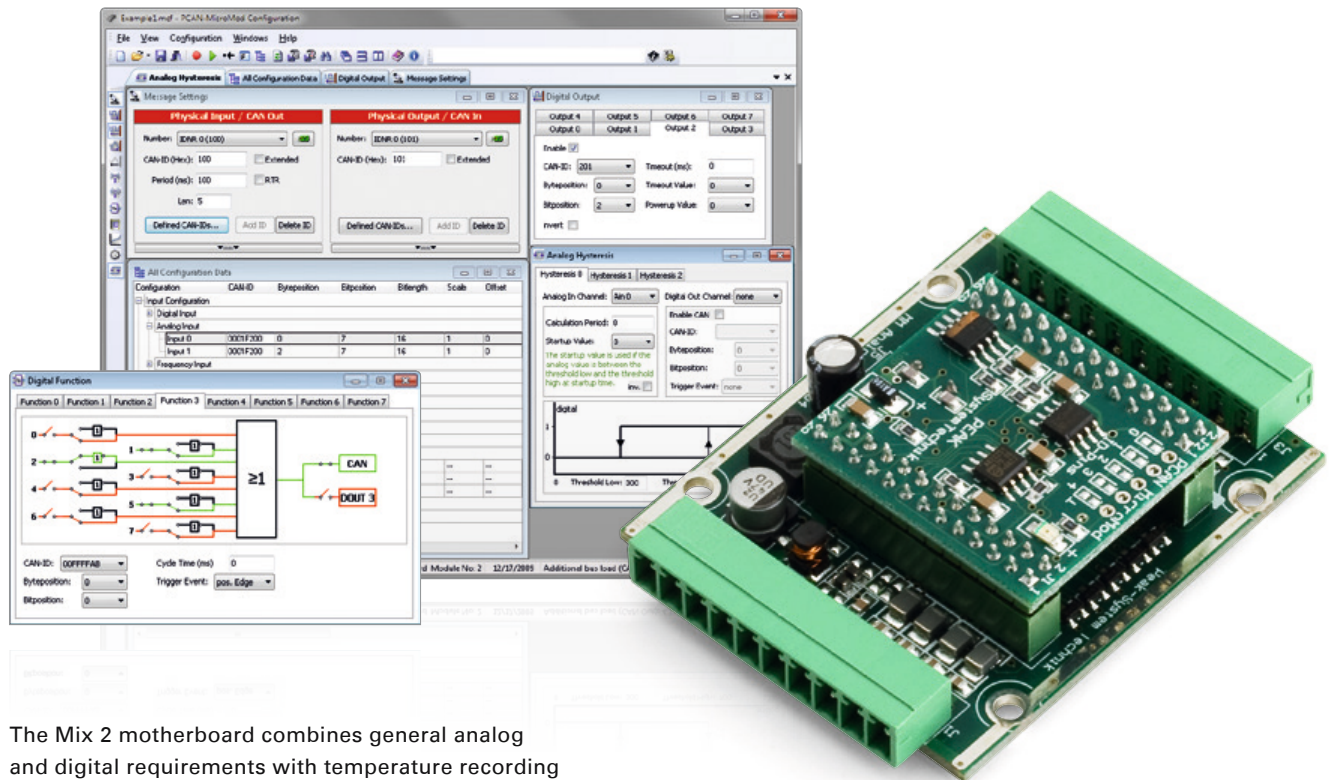
The Mix 1 motherboard combines general analog and digital requirements with temperature recording functions.

## Specifications

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 8 to 26 V
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Aluminum casing with spring terminal connectors. Optional DIN rail fixing available
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- \_\_\_ 2 analog inputs
  - Measuring range unipolar 0 to 5 V
  - Resolution 10 bit, sample rate 1 kHz
  - Measuring range extension optional
  - Pull-down circuit
  - Protection against under- and overvoltages
- \_\_\_ 2 temperature inputs
  - 2 connections for NTC resistors (type EC95F103W)
  - Measuring range 0 to 70 °C (32 to 158 °F)
- \_\_\_ 6 digital inputs
  - Pull-up or pull-down circuit selectable in groups (3 groups)
  - Schmitt trigger behavior, inverting
  - Threshold High = 4.8 V, Low = 1.2 V
  - Low-pass behavior
  - Parallel connection of frequency inputs at 4 digital inputs for alternative use (e.g. on rapid state changes, counting)
- \_\_\_ 2 digital outputs/frequency outputs
  - Fast Low-side switch, max. 55 V, 0.75 A
  - Short-circuit protection

# PCAN-MicroMod Mix 2

Application-specific PCAN-MicroMod Motherboards



The Mix 2 motherboard combines general analog and digital requirements with temperature recording functions.

## Specifications

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 11 to 26 V
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Aluminum casing with spring terminal connectors. Optional DIN rail fixing available
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- \_\_\_ 3 analog inputs
  - Measuring range unipolar 0 to 4.1 V
  - Resolution 10 bit, sample rate 1 kHz
  - Measuring range extension optional
  - Pull-down circuit
  - Low-pass behavior
  - Protection against under- and overvoltages
- \_\_\_ 1 analog voltage output
  - Voltage 0 to 10 V (based on 16-bit PWM)
  - Load ability 15 mA, short-circuit proof
- \_\_\_ 1 analog current output
  - Current intensity 0 to 20 mA (based on 16-bit PWM)
- \_\_\_ 2 digital inputs
  - Pull-up or pull-down circuit selectable for both together (1 group)
  - Schmitt trigger behavior, inverting
  - Threshold High = 4.8 V, Low = 1.2 V
  - Low-pass behavior
  - Parallel connection of a frequency input each for alternative use (e.g. on rapid state changes, counting)
- \_\_\_ 1 digital output
  - Fast Low-side switch, max. 55 V, 0.75 A
  - Short-circuit protection
- \_\_\_ 2 temperature inputs
  - 1 connection for a NTC resistor (type EC95F103W)
  - 1 connection for a platinum sensor PT1000
  - Measuring range 0 to 70 °C (32 to 158 °F)

# PCAN-MicroMod Mix 3

## Application-specific PCAN-MicroMod Motherboards

The Mix 3 motherboard allows the use of all inputs and outputs available on the PCAN-MicroMod, which opens up a wide range of potential applications in the automotive and industrial sectors.

### Specifications

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Bit rates from 10 kbit/s up to 1 Mbit/s
  - Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- \_\_\_ Completely configurable using the Windows software PCAN-MicroMod Configuration (details on page 107)
- \_\_\_ Operating voltage 12 V DC nominal, 8 to 26 V possible
- \_\_\_ Status LEDs for power supply and digital output
- \_\_\_ Plastic casing with Tyco automotive connectors
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
  
- \_\_\_ 8 analog inputs
  - Measuring range unipolar 0 to 4.1 V (can be expanded using by a voltage divider)
  - Resolution 10 bit, sample rate 1 kHz
  - Protection against under- and overvoltage
  - Low-pass behavior
- \_\_\_ 8 digital inputs
  - Schmitt trigger behavior, inverting
  - Threshold High = 4.8 V, Low = 1.2 V
  - Pull-up or pull-down circuit selectable for each input
  - Low-pass behavior
- \_\_\_ 4 frequency inputs (differences to the digital inputs):
  - Scannable frequency range 0 to 10 kHz
- \_\_\_ 8 digital outputs
  - High-side switches, 350 mA continuous current, 500 mA short-circuit current
  - 4 outputs also usable as low-side switches, 700 mA continuous current, 1 A short-circuit current
  - Short-circuit protection
- \_\_\_ 4 PWM/frequency outputs
  - Low-side switches, 350 mA continuous current, 1 A short-circuit current
  - 2 outputs also usable as high-side switches, 1.5 A continuous current, 5 A short-circuit current
  - Short-circuit protection



### Ordering information

Designation	Part No.
PCAN-MicroMod Analog 1	IPEH-002204
PCAN-MicroMod Analog 2	IPEH-002207
PCAN-MicroMod Digital 1	IPEH-002200
PCAN-MicroMod Digital 2	IPEH-002201
PCAN-MicroMod Mix 1	IPEH-002202
PCAN-MicroMod Mix 2	IPEH-002203
PCAN-MicroMod Mix 3	IPEH-002206

### Scope of supply

- \_\_\_ PCAN-MicroMod
- \_\_\_ PCAN-MicroMod motherboard in casing including mating connectors and crimp contacts
- \_\_\_ PCAN-MicroMod Configuration for Windows (details on page 107)
- \_\_\_ Manual in PDF format

CANopen® firmware is available for all PCAN-MicroMod motherboards.

### Requirements

- \_\_\_ The configuration requires a PEAK CAN interface



# PCAN-MIO

## Universal Controller for CAN Applications

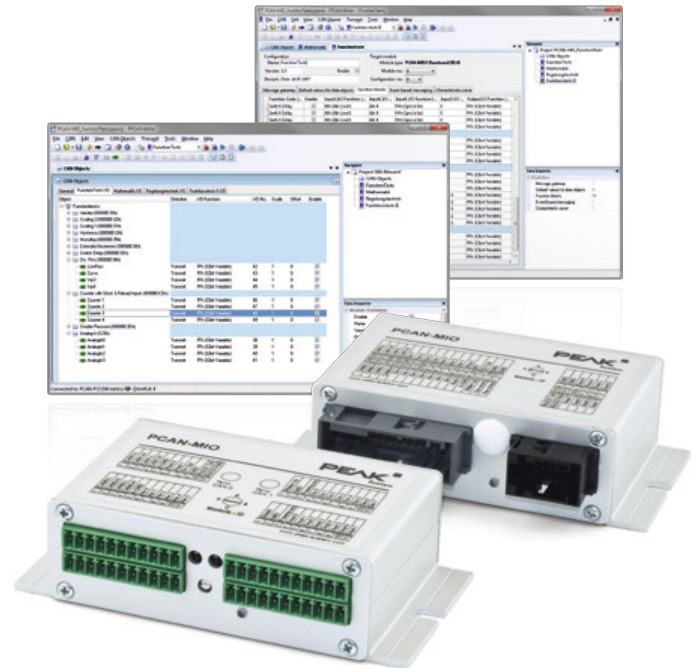
The Multiple Input Output module (MIO) is a universal, modular controller for use both in the industrial and automotive fields.

The module has two CAN interfaces as well as multiple analog and digital inputs and outputs. Incoming signals can be processed by the microcontroller and then forwarded to the CAN interfaces or output channels. For this purpose, the behavior of the PCAN-MIO module can be freely configured using a comprehensive Windows software. A large number of function blocks and other settings are available to help the user in creating such a configuration.

A bus structure also enables expansion of the number of inputs and outputs with additional modules. Customer-specific requirements can be implemented in doing so.

### Specifications

- 2 High-speed CAN channels via pluggable transceiver modules. Alternatively, Low-speed, Single-wire, and opto-decoupled High-speed modules, as well as High-speed modules without wake-up function available
- Compliant with CAN specifications 2.0A (11-bit ID) and 2.0B (29-bit ID)
- Wake-up function using separate input or CAN bus
- CAN termination switchable
- 8 digital inputs with low-pass performance
- 8 digital outputs, 2 of these with PWM capability
- 6 analog inputs, measuring range unipolar 0 - 10 V, (resolution 10 bit, sample rate 1 kHz)
- 2 analog outputs (10 bit, 0 - 10 V)
- Suitable for use in the automotive field
- Detailed configuration with the software PPCAN-Editor 2 for Windows
- Module can store up to 15 configurations
- CAN gateway between busses
- Individual function blocks for data linkage and data modification
- Available with industrial connectors (Phoenix spring terminal connectors) or automotive connectors (Tyco connectors)
- Aluminum casing with flange. DIN rail fixing option available on request
- 9 - 27 V voltage supply, overvoltage and reverse polarity protection
- Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)



### Ordering information

Designation	Part No.
PCAN-MIO (Industrial)	IPEH-002187
PCAN-MIO Set (Industrial)	IPEH-002187-Set
PCAN-MIO (Automotive)	IPEH-002187-A
PCAN-MIO Set (Automotive)	IPEH-002187-ASet

### Scope of supply PCAN-MIO

- PCAN-MIO in aluminum casing including mating connectors
- Configuration software PPCAN-Editor 2 for Windows (details on page 108)
- Manual in PDF format

### Scope of supply PCAN-MIO Set

- PCAN-MIO in aluminum casing including mating connectors
- CAN interface PCAN-USB
- Configuration software PPCAN-Editor 2 for Windows (details on page 108)
- Manual in PDF format

### Requirements

- The configuration requires a PEAK CAN interface

Customization on request.



# MU-Thermocouple1 CAN

## Configurable System for Data Acquisition and Data Processing

The Thermocouple measuring unit offers connections for 8 thermocouples for different temperature ranges (J, K, T).

Measurement data can be preprocessed and transmitted via CAN bus using a central microcontroller. Configuration work involves using Windows software on a computer connected to the same CAN bus.



### Specifications

- \_\_\_ 8 Mini sockets for thermocouple types J, K, and T (depending on the assembly of measuring modules at delivery)
- \_\_\_ 4 galvanically isolated measuring modules, each with 2 thermocouple sockets of the same type
- \_\_\_ Measuring ranges:
  - J: -210 to +1121 °C
  - K: -200 to +1370 °C
  - T: -200 to +400 °C
- \_\_\_ Measurement accuracy: 0.2 %
- \_\_\_ Accuracy of the reference sensors: typically ±0.5 K, max. ±1.0 K at +25 °C ambient temperature
- \_\_\_ Resolution for temperature data at CAN communication: 1/16 °C
- \_\_\_ High-speed CAN connection (ISO 11898-2) for data transfer and configuring
  - Bit rates from 40 kbit/s up to 1 Mbit/s
  - Galvanic isolation up to 500 V
  - NXP TJA1040 CAN transceiver
  - Complies with CAN specifications 2.0 A/B
- \_\_\_ Basic configuration with the Windows software Thermocouple Configuration
- \_\_\_ Advanced configuration with the Windows software PPCAN-Editor 2
- \_\_\_ Preprocessing of readings possible with integrated microcontroller
- \_\_\_ Aluminum casing with flange. DIN rail fixing option available on request
- \_\_\_ Voltage supply from 6 to 34 V
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

### Ordering information

Designation	Part No.
MU-Thermocouple1 CAN (Measuring Range J)	IPEH-002205-J
MU-Thermocouple1 CAN (Measuring Range K)	IPEH-002205-K
MU-Thermocouple1 CAN (Measuring Range T)	IPEH-002205-T

### Scope of supply

- \_\_\_ MU-Thermocouple1 CAN in aluminum casing
- \_\_\_ Mating connector for voltage supply
- \_\_\_ Configuration software Thermocouple Configuration for Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Configuration software PPCAN-Editor 2 for Windows (details on page 108)
- \_\_\_ Manual in PDF format

### Requirements

- \_\_\_ The configuration requires a PEAK CAN interface

# PCAN-GPS

## Programmable Sensor Module with CAN Connection

The PCAN-GPS is a programmable sensor module for position and orientation determination. It has a satellite receiver, a magnetic field sensor, an accelerometer, and a gyroscope. The sampled data can be transmitted on a CAN bus and logged on the internal memory card. The data processing is performed by a microcontroller of the NXP LPC4000 series.

Using the supplied library and the Yagarto GNU ARM toolchain (contains the GNU Compiler Collection GCC for C and C++), custom firmware can be created and then transferred to the module via CAN. This gives a whole range of options for manipulation, evaluation, filtering, and routing of the data traffic.

On delivery, the PCAN-GPS is provided with a demo firmware that transmits the raw data of the sensors periodically on the CAN bus. The source code of the demo firmware as well as further programming examples are included in the scope of supply.



### Specifications

- \_\_\_ NXP LPC4000 series microcontroller (ARM Cortex-M4)
- \_\_\_ Receiver for navigation satellites u-blox MAX-7W (GPS, Galileo, GLONASS, QZSS, and SBAS)
- \_\_\_ Bosch BMC050 electronic three-axis magnetic field sensor and three-axis accelerometer
- \_\_\_ Gyroscope STMicroelectronics L3GD20
- \_\_\_ High-speed CAN channel (ISO 11898-2) with bit rates from 40 kbit/s up to 1 Mbit/s
- \_\_\_ Complies with CAN specifications 2.0 A/B
- \_\_\_ On-chip 4 kByte EEPROM
- \_\_\_ microSD™ memory card slot
- \_\_\_ Wake-up by CAN bus or by separate input
- \_\_\_ 2 digital inputs (high-active)
- \_\_\_ 1 digital output (low-side driver)
- \_\_\_ LEDs for status signaling
- \_\_\_ Connection via a 10-pole terminal strip (Phoenix)
- \_\_\_ Voltage supply from 8 to 30 V
- \_\_\_ Extended operating temperature range from -40 to 85 °C (with exception of the button cell)
- \_\_\_ New firmware can be loaded via CAN interface

### Ordering information

Designation	Part No.
PCAN-GPS	IPEH-002110

### Scope of supply

- \_\_\_ PCAN-GPS in plastic casing including mating connector
- \_\_\_ External antenna for satellite reception
- \_\_\_ Windows development software (Yagarto GNU ARM toolchain, flash program)
- \_\_\_ Library with programming examples
- \_\_\_ Manual in PDF format

### Requirements

- \_\_\_ The transfer of the firmware via CAN requires a PEAK CAN interface

# PCAN-Diag 2

## Handheld CAN Bus Diagnostics Unit



PCAN-Diag 2 is a handheld diagnostics unit with a wide range of functions to allow investigation of a CAN bus, such as detection of the CAN bit rate, bus load measurement, and termination measurement. As well as receiving CAN messages, it can transmit either individual messages or entire sequences of them. In addition, the internal memory card allows tracing and playback of the CAN traffic.

The integrated two-channel oscilloscope enables visualization of CAN signals. Single CAN IDs and various events can be used as triggers. The CAN frames are decoded from the analog signal, for example, to detect errors in the frame.

Incoming CAN messages can be displayed as symbols for clear and easy allocation. The PCAN-Symbol Editor software supplied with this product enables convenient creation of the Symbol files needed for this feature.

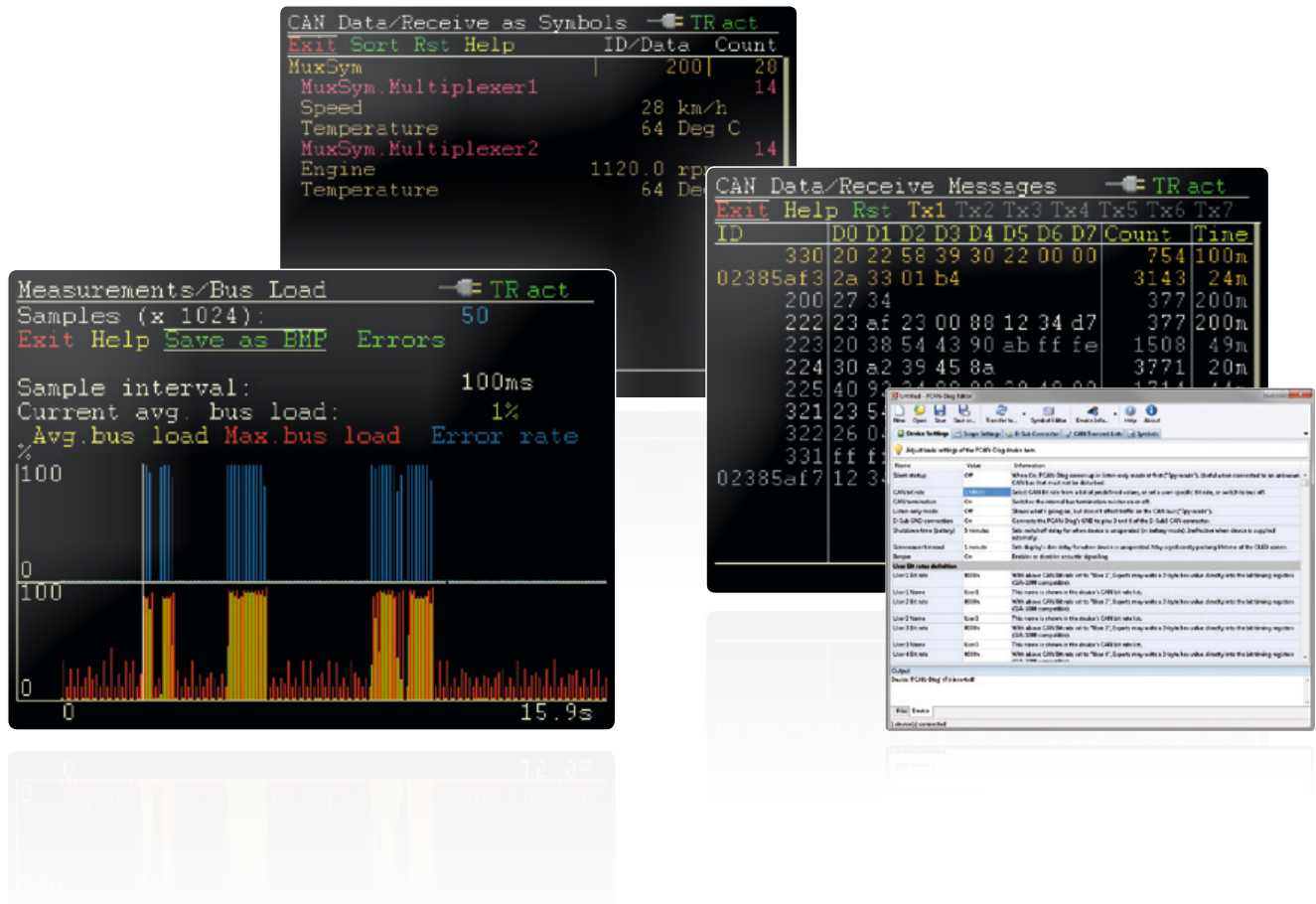
The user selects and operates the individual diagnostic functions using a push dial. As an alternative to High-speed CAN, CAN transceiver modules are also available on request for connecting to Low-speed or Single-wire CAN.

### Specifications

- \_\_\_ High-speed CAN (ISO 11898-2), CAN transceiver module available on request for Low-speed CAN (ISO 11898-3) or Single-wire CAN (SAE J2411)
- \_\_\_ Complies with CAN specifications 2.0 A/B
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ Display with 320 x 240 pixel resolution
- \_\_\_ Power supply via batteries (4 x 1.5 V AA) or using supply unit provided (low-voltage socket on unit)
- \_\_\_ Internal memory card (2 GB) for saving projects. Can also be used as a USB mass storage device when connected to a PC
- \_\_\_ Operating temperature range from 0 to 50 °C (32 to 122 °F)

### Overview of functions

- \_\_\_ Analysis of CAN networks at the physical and the protocol level
- \_\_\_ Selection of the bit rate from a preset list or from 8 user-defined values
- \_\_\_ Automatic bit rate detection based on a fixed value list
- \_\_\_ Switchable listen-only mode
- \_\_\_ Switchable silent startup function (listen-only mode at wrong bit rate)



- \_\_\_ Symbolic display of incoming CAN messages using Symbol files, taking into account enums (lists of values), multiplexers, and ID ranges
- \_\_\_ Symbol files can be set up using the Windows software PCAN-Symbol Editor supplied with this product
- \_\_\_ Recording of incoming CAN messages to the internal memory card, if required, with CAN ID filtering
- \_\_\_ Playback of trace files
- \_\_\_ Conversion of trace data to various output formats using the Windows software PEAK-Converter supplied with this product
- \_\_\_ Transmitting individual CAN frames or CAN frame lists
- \_\_\_ Decimal, hexadecimal, or binary entering of CAN data. Data change of a single transmission message during runtime
- \_\_\_ Measurement of CAN bus load, displayed by means of a time diagram, switchable display of error frames
- \_\_\_ Bus load time diagrams can be saved as Bitmap screenshots
- \_\_\_ Measurement of the termination of the High-speed CAN bus, even while the system is running
- \_\_\_ Switchable CAN termination for the connected bus, depending on the transceiver module used
- \_\_\_ Voltage measurement for all pins of the CAN connector (D-Sub)

- \_\_\_ Management of device configuration, transmit lists, Symbol files, and all recorded data (screenshots, trace, and CSV files) in projects
- \_\_\_ Optional auto-reset on Bus Off

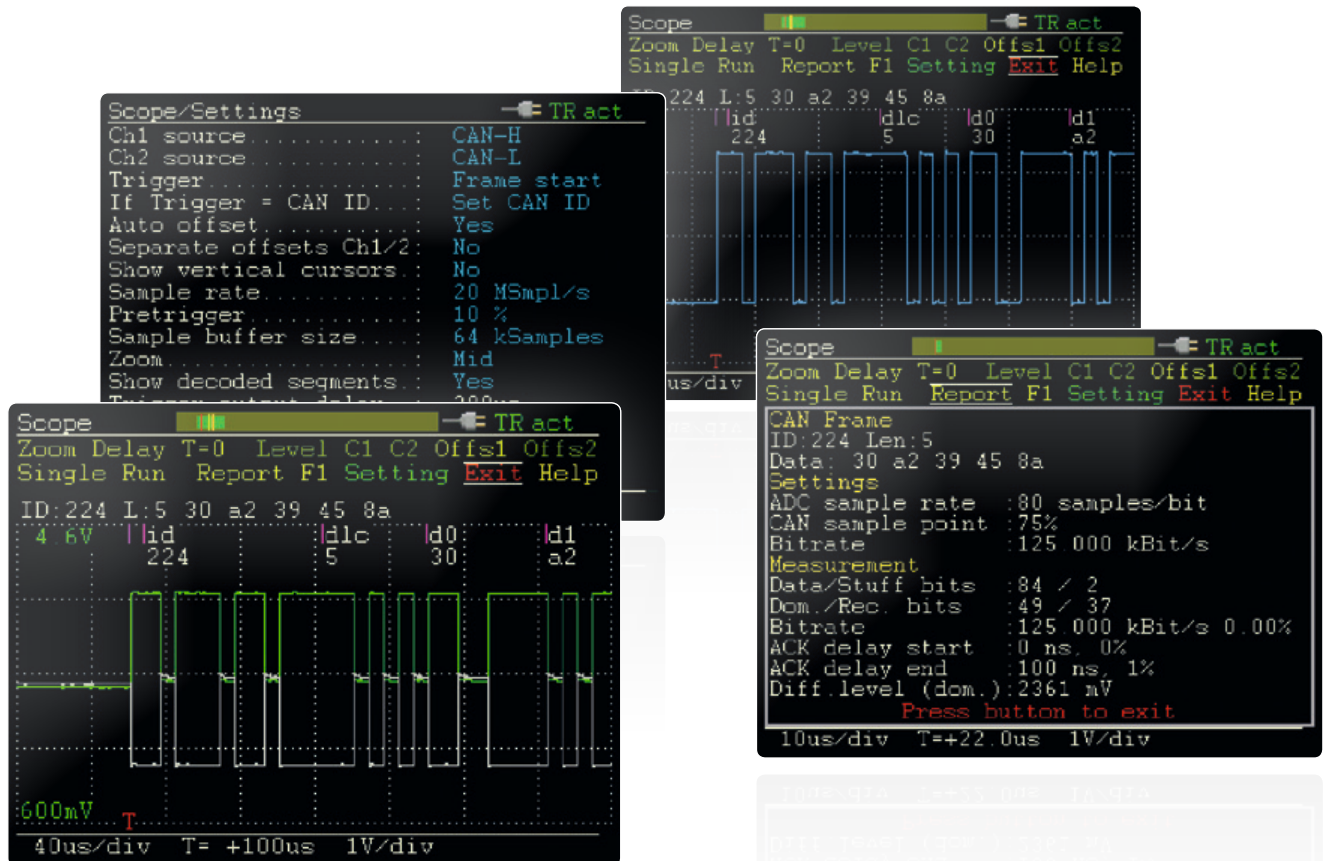
Features of the software PCAN-Diag Editor for Windows, supplied with this product:

- \_\_\_ Convenient configuration of all available device settings
- \_\_\_ Compilation of transmit lists
- \_\_\_ Configuration of up to 8 bit rates per project
- \_\_\_ Device configuration, transmit lists, and associated Symbol files can be saved in projects
- \_\_\_ Projects can be transferred to the memory card of the PCAN-Diag 2 using an USB connection

#### Note about the trace function

With the firmware 1.5.0 tracing of CAN messages is now possible. In order to record also at a high bit rate together with high CAN bus load, a hardware upgrade is available for devices that had been delivered before February 2012. If you are interested and for further information, please contact [info@peak-system.com](mailto:info@peak-system.com).





### Oscilloscope functions

- Oscilloscope with two independent measurement channels, each with a maximum sample rate of 20 MHz
- Display of the CAN-High and the CAN-Low signals as well as the difference of both signals
- Inspection of external signals (with frequencies up to 1 MHz) with a probe via the BNC connection
- Trigger configuration to frame start, frame end, CAN errors, or individual CAN frames based on their CAN ID
- External measurement devices can be triggered using the BNC connector
- Depiction of raw CAN frames
- Decoding of CAN frames from the recorded signal trace
- Display of various properties and of measuring data of the decoded CAN frame using the Report function
- Current view can be saved as a Bitmap screenshot
- Memory depth can be set to up to 64 kSamples
- Recorded sample data can be saved as a CSV file
- Extensive zoom functions
- Time measurement with a resolution of up to 50 ns

### Ordering information

Designation	Part No.
PCAN-Diag 2	IPEH-002069

### Scope of supply

- PCAN-Diag 2 in plastic casing. Delivered in shockproof plastic box
- Configuration software PCAN-Diag Editor for Windows 10, 8.1, 7 (32/64-bit)
- PCAN-Symbol Editor for Windows (details on page 102)
- Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- Batteries (4 x 1.5 V AA)
- Micro USB connector cable
- Power supply unit with changeable plugs for Euro, U.S., and UK
- Manual in PDF format
- Printed quick start guide

**Note:** In addition to the PCAN-Diag for the diagnosis of CAN busses, there are also models for CANopen and DeviceNet. If you are interested and for more information, please contact [info@peak-system.com](mailto:info@peak-system.com).

# PCAN-Diag FD

Mobile Diagnostic Device for CAN and CAN FD Busses



The PCAN-Diag FD is a handheld device for diagnosis of the communication on a CAN bus. Possibilities for diagnosis are available on the protocol layer by handling CAN 2.0 and CAN FD messages as well as on the physical layer by using the oscilloscope function and further measuring functions for voltage and resistance.

The oscilloscope function is used for a qualitative assessment of the signal course on the CAN bus. Two independent measuring channels sample both lines CAN-High and CAN- Low with up to 100 MHz. Based on the signal course, the PCAN-Diag FD decodes CAN frames and shows their elements in the scope graphics.

On the protocol layer, the incoming CAN traffic is shown in a list, optionally with symbolic representation for better interpretability. For future analysis, a tracer is implemented that records the CAN traffic. On the outgoing direction, single CAN messages or even full sequences of CAN messages can be transmitted on the connected CAN bus, e.g. in order to request diagnostic data. Recorded CAN traces can also be played back. All functions on the protocol layer are available for CAN 2.0 as well as CAN FD.

The new CAN FD standard (CAN with Flexible Data rate) is primarily characterized by higher bandwidth for data transfer. The maximum of 64 data bytes per CAN FD frame (instead of 8 so far) can be transmitted with bit rates up to 12 Mbit/s. CAN FD is downward-compatible to the CAN 2.0 A/B standard, thus CAN FD nodes can be used in existing CAN networks. However, in this case the CAN FD extensions are not applicable.

The PCAN-Diag FD is operated in a simple manner with a push dial and four function keys. The device is supplied either externally or by the internal batteries that are automatically charged during external supply. With the optional charging station, the charging process can be accelerated.



### Specifications

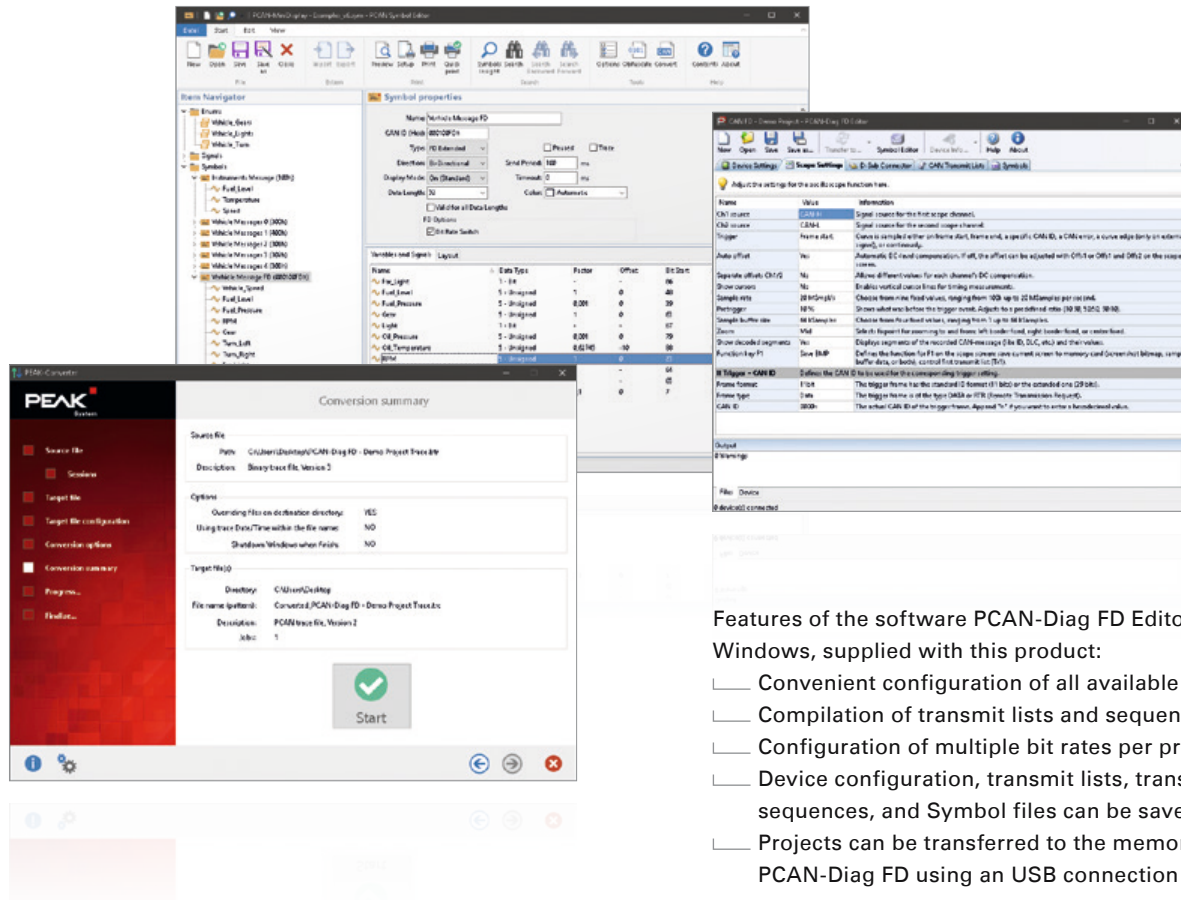
- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Complies with CAN specifications 2.0 A/B and FD
  - CAN FD support for ISO and Non-ISO standards
  - CAN FD bit rates for the data field (64 bytes max.) from 20 kbit/s up to 12 Mbit/s
  - CAN bit rates from 20 kbit/s up to 1 Mbit/s
  - Microchip CAN transceiver MCP2558FD
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ Display with 800 x 480 pixel resolution
- \_\_\_ Portrait or landscape presentation depending on the function and device orientation
- \_\_\_ Presentation on an external display via a micro HDMI interface
- \_\_\_ Power supply via the internal rechargeable batteries or the provided supply unit (low-voltage socket on unit)
- \_\_\_ Charging of the batteries is carried out with external supply, even during operation
- \_\_\_ Charging station with quick-charging function available as an option (IPEH-003068)
- \_\_\_ Internal memory card for saving projects. Can also be used as a USB mass storage device when connected to a PC
- \_\_\_ Device operation via a push dial and 4 buttons
- \_\_\_ Operating temperature range from 0 to 50 °C (32 to 122 °F)

### Overview of functions

- \_\_\_ Analysis of CAN and CAN FD networks at the physical and the protocol level
- \_\_\_ Selection of the bit rate from a preset list or from multiple user-defined values
- \_\_\_ Automatic bit rate detection based on a fixed value list

- \_\_\_ Switchable listen-only mode
- \_\_\_ Switchable silent startup function (listen-only mode at wrong bit rate)
- \_\_\_ Symbolic display of incoming CAN messages using Symbol files, taking into account enums (lists of values), multiplexers, and ID ranges
- \_\_\_ Symbol files can be set up using the Windows software PCAN-Symbol Editor supplied with this product
- \_\_\_ Recording of incoming CAN messages to the internal memory card, if required, with CAN ID filtering
- \_\_\_ Playback of trace files
- \_\_\_ Conversion of trace data to various output formats using the Windows software PEAK-Converter supplied with this product
- \_\_\_ Transmitting individual CAN frames or CAN frame sequences
- \_\_\_ Decimal, hexadecimal, or binary entering of CAN data. Data change of a single transmission message during runtime
- \_\_\_ Measurement of CAN bus load, displayed by means of a time diagram, switchable display of error frames
- \_\_\_ Bus load time diagrams can be saved as Bitmap screenshots
- \_\_\_ Measurement of the termination of the High-speed CAN bus, even while the system is running
- \_\_\_ Switchable CAN termination for the connected bus
- \_\_\_ Voltage measurement at the CAN connector (D-Sub) for pin 6 and 9
- \_\_\_ Management of device configuration, transmit lists, Symbol files, and all recorded data (screenshots, trace, and CSV files) in projects
- \_\_\_ Optional auto-reset on Bus Off





Features of the software PCAN-Diag FD Editor for Windows, supplied with this product:

- \_\_\_ Convenient configuration of all available settings
- \_\_\_ Compilation of transmit lists and sequences
- \_\_\_ Configuration of multiple bit rates per project
- \_\_\_ Device configuration, transmit lists, transmit sequences, and Symbol files can be saved in projects
- \_\_\_ Projects can be transferred to the memory card of the PCAN-Diag FD using an USB connection

### Oscilloscope functions

- \_\_\_ Oscilloscope with two independent measurement channels, each with a maximum sample rate of 100 MHz
- \_\_\_ Display of the CAN-High and the CAN-Low signals as well as the difference of both signals
- \_\_\_ Trigger configuration to various properties of CAN messages
  - Start and end of frames
  - CAN errors
  - CAN ID of individual frames
  - Bit rate switch of CAN FD frames
- \_\_\_ External measurement devices can be triggered using the banana jack, 4 mm
- \_\_\_ Depiction of raw CAN and CAN FD frames
- \_\_\_ Decoding of CAN and CAN FD frames from the recorded signal trace
- \_\_\_ Display of various properties and of measuring data of the decoded CAN frame using the Report function
- \_\_\_ Current view can be saved as a Bitmap screenshot
- \_\_\_ Memory depth can be set to up to 1 megasample
- \_\_\_ Recorded sample data can be saved as a CSV file
- \_\_\_ Extensive zoom functions
- \_\_\_ Time measurement with a resolution of up to 10 ns

### Ordering information

Designation	Part No.
PCAN-Diag FD	IPEH-003069
PCAN-Diag FD with charging station	IPEH-003069 + IPEH-003068

### Scope of supply

- \_\_\_ PCAN-Diag FD with or without charging station. Delivered in shockproof plastic box
- \_\_\_ Configuration software PCAN-Diag FD Editor for Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ PCAN-Symbol Editor for Windows (details on page 102)
- \_\_\_ Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ USB connector cable
- \_\_\_ Power supply unit with changeable plugs for Euro, U.S., and UK
- \_\_\_ HDMI/micro HDMI connection cable
- \_\_\_ Manual in PDF format
- \_\_\_ Printed quick start guide

**Note:** The charging station is supplied with the PCAN-Diag FD power supply unit.



# PCAN-MiniDiag FD

## Compact Diagnostic Device for CAN and CAN FD Busses

The PCAN-MiniDiag FD is a compact, low-cost handheld device for basic fault diagnosis and checking of CAN and CAN FD busses. Service technicians and developers can easily access networks of vehicles, machines, or industrial equipment whose configuration is unknown. For this, the nominal bit rate for CAN and additionally the data bit rate for CAN FD are determined using bit timing measurement. Furthermore, the device has measuring functions for the termination, bus load, and voltage levels at the CAN connector.

The PCAN-MiniDiag FD has an increased protection due to its membrane keypad and casing. The power is supplied by three replaceable batteries.

CAN FD is primarily characterized by higher bandwidth for data transfer. Further information on the new standard can be found on page 4.



### Specifications

- \_\_\_ High-speed CAN connection (ISO 11898-2)
  - Complies with CAN specifications 2.0 A/B and FD
  - CAN FD support for ISO and Non-ISO standards
  - CAN FD bit rates for the data field (64 bytes max.) from 20 kbit/s up to 10 Mbit/s
  - CAN bit rates from 20 kbit/s up to 1 Mbit/s
  - Microchip CAN transceiver MCP2558FD
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1)
- \_\_\_ No influence on the CAN bus due to operation in listen-only mode
- \_\_\_ Power supply via exchangeable batteries (3 x Micro AAA with 1,2 V or 1,5 V)
- \_\_\_ Display with 128 x 128 pixel resolution
- \_\_\_ Device operation via 4 buttons
- \_\_\_ Plastic casing with increased Ingress Protection IP42
- \_\_\_ Dimensions: 122 x 69 x 44 mm
- \_\_\_ Operating temperature range from 0 to 50 °C (32 to 122 °F)

### Measuring functions

- \_\_\_ Detection of bit rates via exact bit timing measurements
- \_\_\_ Measurement of the CAN termination
- \_\_\_ Measurement of the CAN bus load
- \_\_\_ Counting of CAN error frames
- \_\_\_ Voltage measurement at the CAN connector (D-Sub) for pin 6 and 9 as well as 2 and 7

### Ordering information

Designation	Part No.
PCAN-MiniDiag FD	IPEH-003070

### Scope of supply

- \_\_\_ PCAN-MiniDiag FD in plastic casing
- \_\_\_ Batteries (4 x 1.5 V Micro AAA)
- \_\_\_ Manual in PDF format

# PCAN-MiniDisplay

Visualization, Recording, and Playback of CAN Data



The PCAN-MiniDisplay is used as a human-machine interface for the visualization of CAN data. For the connection to the CAN bus, it has two High-speed CAN connectors. The graphic representation of incoming CAN data is configured before using the unit and then is performed on a TFT display.

The PCAN-MiniDisplay can alternatively be used for data logging. The data traffic is recorded to a memory card and can be replayed or analyzed on a PC later on.

In addition to the built-in PCAN-MiniDisplay there is a version in plastic casing with push buttons available. This can be used to create and evaluate application-specific configurations. Furthermore, the user can directly switch between different configurations during operation.

## Specifications

- \_\_\_ CAN connections via two High-speed CAN channels (ISO 11898-2)
- \_\_\_ Bit rates from 40 kbit/s up to 1 Mbit/s
- \_\_\_ Complies with CAN specifications 2.0 A/B
- \_\_\_ TFT display with 320 x 240 pixel resolution
- \_\_\_ Slot for microSD memory card (max. 32 GByte)
- \_\_\_ High-speed USB 2.0 port for access to the memory card using a PC
- \_\_\_ Freely configurable visualization of CAN data via text files
- \_\_\_ Running configurations from the memory card
- \_\_\_ Optional auto-start of a single configuration using a default name
- \_\_\_ Recording of incoming CAN messages to the internal memory card
- \_\_\_ Conversion of recordings to various output formats using Windows software
- \_\_\_ Playback of a recording
- \_\_\_ Transmitting CAN frame sequences at the start, operation, and end of a configuration
- \_\_\_ Filtering of CAN messages by a single ID or ID ranges, separately configurable for each CAN channel



- ☐ PCAN-MiniDisplay with push buttons
- ☐ Use of optionally equipped push buttons for menu navigation and to switch between multiple display configurations
- ☐ Wake-up function via CAN
- ☐ Dimensions: 80 x 55 mm
- ☐ Voltage supply from 7 to 30 V
- ☐ Operating temperature range from -20 to 70 °C (-4 to 158 °F)

**Optionally available PCAN-MiniDisplay Case:**

- ☐ Device in plastic casing with 3 push buttons
- ☐ Connections via terminal blocks (Phoenix)

**Note:** Running a display configuration as well as recording and playback of CAN messages is not possible at the same time. The PCAN-MiniDisplay can only be used with one of the three functions.

**Ordering information**

Designation	Part No.
PCAN-MiniDisplay	IPEH-002262
PCAN-MiniDisplay Case	IPEH-002262-KSM01

**Scope of supply PCAN-MiniDisplay**

- ☐ PCAN-MiniDisplay with mounting frame
- ☐ Cables for power supply, CAN, and digital inputs
- ☐ 512 MB memory card installed
- ☐ Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- ☐ Manual in PDF format

**Scope of supply PCAN-MiniDisplay Case**

- ☐ PCAN-MiniDisplay in plastic casing including mating connectors
- ☐ 512 MB memory card installed
- ☐ Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- ☐ Manual in PDF format

# PCAN-Gateways

Transmission of CAN Messages via IP Networks



With the PCAN-Gateways, CAN busses can be connected via LAN or WLAN. CAN frames are wrapped into TCP or UDP message packets and then forwarded from one device to another. Based on this technology, it is possible to connect CAN networks over a great distance.

The configuration of the gateways is done via a web interface. Therefore, the module must be connected to the PC via LAN or WLAN according to the model. Afterwards, a common web browser is suitable to access the device. The device's web interface opens and displays public information about the device status and the message forwarding. In order to configure the device, a login on the website is required. Depending on the hardware, different settings are available.

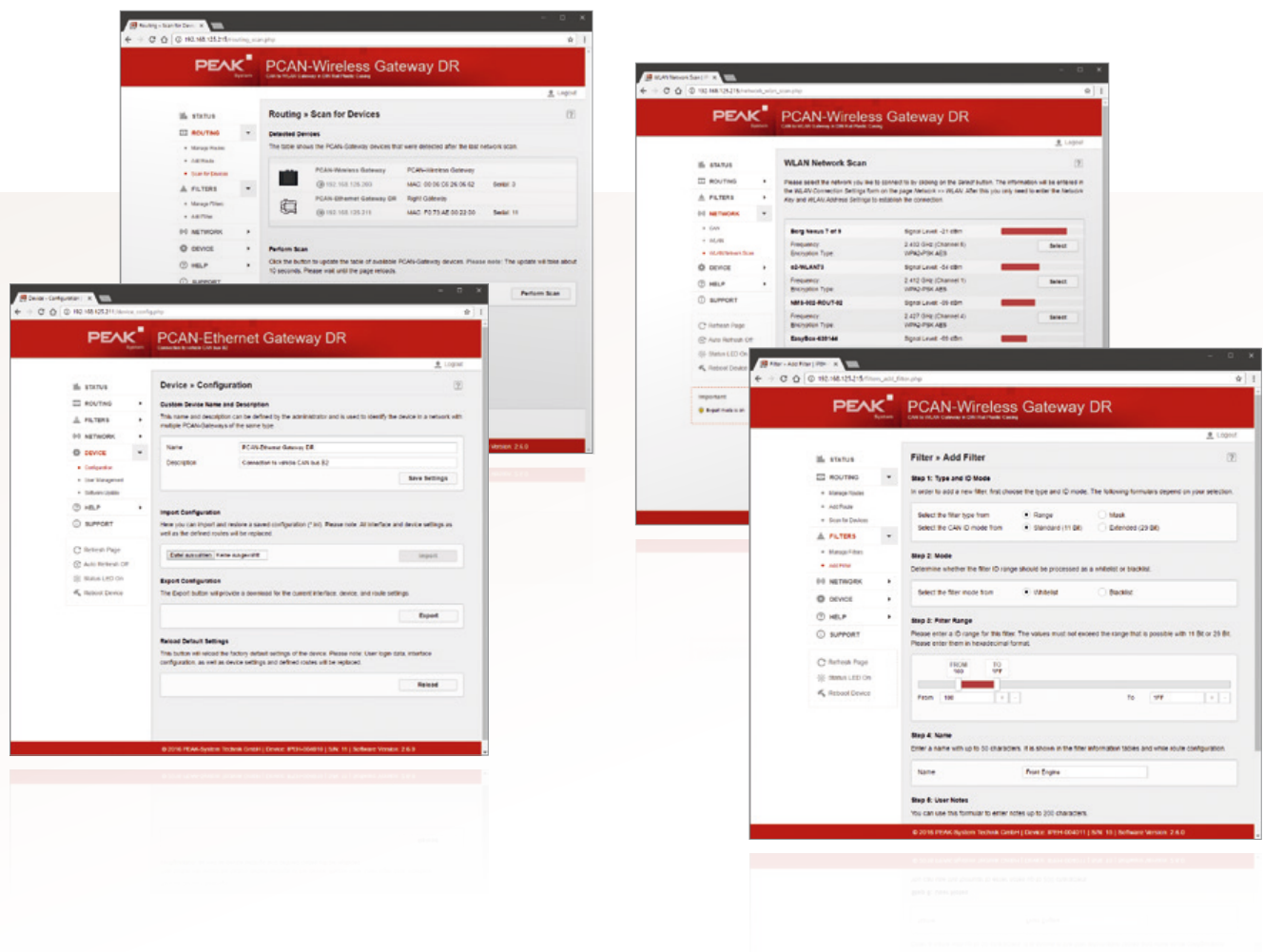
## Functions and Settings

- \_\_\_ Display of status information about the communication interfaces and the message forwarding
- \_\_\_ Definition of the public visibility of status information
- \_\_\_ Import and export of device configurations
- \_\_\_ Reset of the device configuration to factory defaults
- \_\_\_ Comfortable software updates
- \_\_\_ Scan of the IP network for further available PCAN-Gateways for an easier establishment of routes
- \_\_\_ Layout automatically adjusts for mobile devices
- \_\_\_ Rebooting the device via the website
- \_\_\_ Integrated help pages

### CAN channels settings:

- \_\_\_ Selection of bit rates up to 1 Mbit/s from a preset list
- \_\_\_ Setup of user defined bit rates via register values
- \_\_\_ Status switching of the listen-only mode





LAN interface settings (if available):

- ☐ Automatic or manual setup of the device's IP address (IPv4) and the subnet mask

WLAN interface settings (if available):

- ☐ Set the WLAN operating mode to Infrastructure (Client), Ad-Hoc, or Access Point
- ☐ Automatic or manual setup of the device's IP address (IPv4) and the subnet mask
- ☐ Connection to the wireless network
- ☐ Configuration of the network encryption

Setup and management of the message forwarding:

- ☐ Setup of the message forwarding between a CAN channel and LAN/WLAN (or vice versa)
- ☐ Selection of the participating CAN channel
- ☐ Definition of the LAN/WLAN station according to the IP address and the port
- ☐ Selection of the transfer protocol TCP or UDP
- ☐ Enabling, disabling, and editing of existing routes
- ☐ Disabling the PCAN-Gateway Handshake to allow the connection to other devices (Details on page 63)

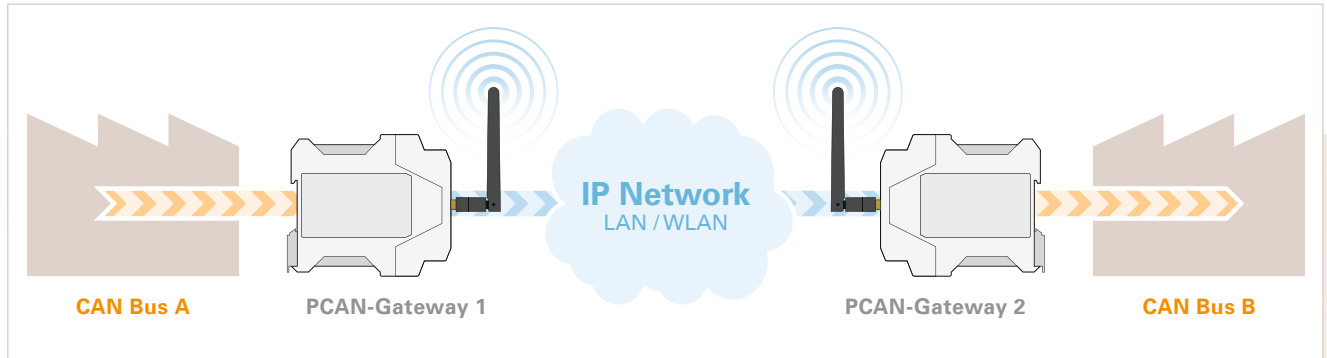
Properties of the message filtering:

- ☐ Creating and managing filters via a new section of the web interface
- ☐ Creating Filters with different options:
  - Filtering messages with 11-bit or 29-bit IDs
  - Support of range and mask filters
  - Optional inversion of the filter range
- ☐ Assigning a filter to multiple routes

Devices with WLAN interface can be operated in Ad-Hoc mode and in Access Point mode from software version 2.5.0. Therefore, no additional access point is required for the connection of two PCAN-Wireless Gateway (DR) over WLAN.

# PCAN-Gateway Applications

## Connecting two PCAN-Gateways



Example 1: One-Way Connection



Example 2: Bidirectional Communication

### Example 1: Message Forwarding via WLAN

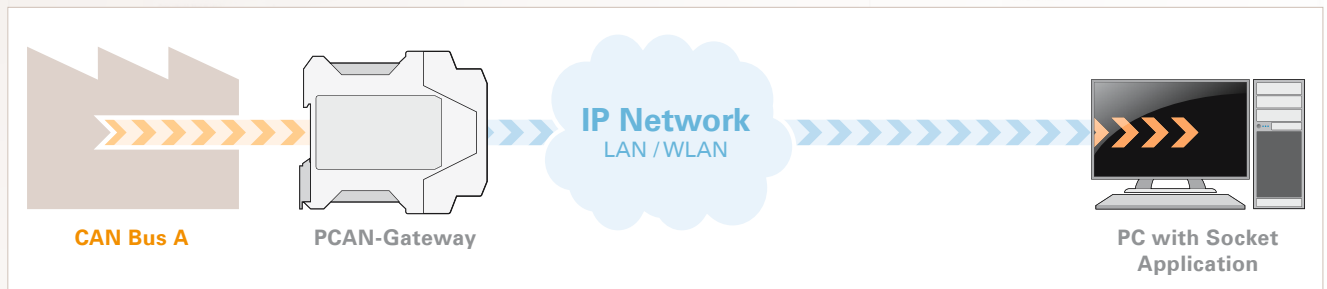
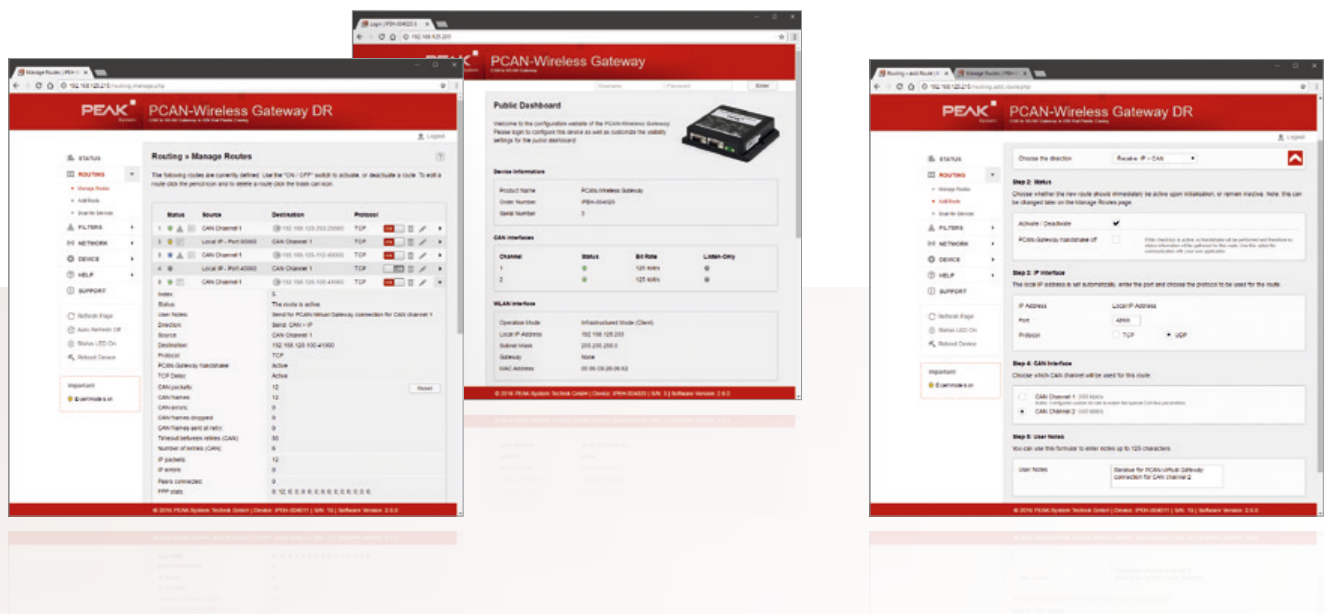
In this example, the CAN messages from CAN bus A are transmitted over an IP network to bus B.

- \_\_\_ For implementation, two CAN to WLAN gateways are required. Either the PCAN-Wireless Gateway or the PCAN-Wireless Gateway DR can be used.
- \_\_\_ Via the configuration website the connection to the WLAN network is established.
- \_\_\_ Afterwards the modules are connected to the CAN busses and are then configured.
- \_\_\_ In order to forward the message traffic in one direction, a route is implemented at Gateway 1 for transmitting the CAN data to the WLAN.
- \_\_\_ At Gateway 2, a route is implemented for receiving this data.

### Example 2: Bidirectional Forwarding via LAN

In this example, the CAN messages from CAN bus A are transmitted over an IP network to bus B. In addition, the messages from bus B are sent to CAN bus A.

- \_\_\_ For implementation, two CAN to LAN gateways are required. The PCAN-Ethernet Gateway DR can be used.
- \_\_\_ The devices can be integrated into the IP net with conventional LAN cables.
- \_\_\_ Afterwards the modules are connected to the CAN busses and are then configured.
- \_\_\_ In order to forward the message traffic, routes must be implemented at both gateways for transmission and reception.



Example 3: Connection via a Socket Application

### Example 3: Connection via a Socket Application

To establish a reliable transmission of CAN data over IP networks, two PCAN-Gateways are performing a so called handshake while setting up a route. This is the reason why such a message forwarding can only be made between devices of the PCAN-Gateway product family.

Alternatively, it is possible to disable the handshake protocol for individual transmission routes. The data packets are then sent without any control mechanisms directly to the specified IP address.

As a counterpart, for example, a PC can receive the data with a simple software via a socket interface.

- \_\_\_ At first a single PCAN-Gateway is required for the implementation.
- \_\_\_ Via the configuration website the connection to the LAN or WLAN network is established.
- \_\_\_ Afterwards the module is connected to the CAN busses and is then configured.
- \_\_\_ In order to forward the message traffic, a transmission route must be implemented.
- \_\_\_ With enabled Expert user mode the handshake protocol for this route is switched off.
- \_\_\_ A device with a socket interface is established as a counterpart.
- \_\_\_ With a simple application based on standard sockets (Windows, Linux, or Android), the data is received and processed or displayed.

# Virtual PCAN-Gateway

Windows Software for Direct Access to PCAN-Gateways



Example 4: Connection via the Software Virtual PCAN-Gateway

The Virtual PCAN-Gateway software package provides access for Windows computers to devices of the PCAN-Gateway product line over IP-based networks. Various LAN and WLAN network adapters can be used.

Analog to the bidirectional connection of two PCAN-Gateways, message forwarding with so-called routes must be set up between the hardware and the software.

At first, two routes have to be created on the configuration website of the hardware, one for sending and another for receiving. Then, the appropriate counterparts of these routes must be established within the configuration software.

Due to this connection, the PCAN-Gateways are being integrated in the established PCAN environment and can be used like a conventional PEAK CAN interface. For example, the traffic on the CAN channels can be displayed and traced by the PCAN-View CAN monitor.

**Note:** The software requires a PCAN-Gateway as a counterpart. It is not possible to establish a connection between two computers with the Virtual PCAN-Gateway.

## Specifications

- ☐ Supports the operating systems Windows 10, 8.1, 7 (32/64-bit)
- ☐ Connection of several PCAN-Gateways with a computer via IP-based networks
- ☐ Optional use of different LAN and WLAN network adapters
- ☐ Configuration software to set up and manage message forwarding

## System requirements

- ☐ Windows 10, 8.1, 7 (32/64-bit)
- ☐ At least 2 GB RAM and 1.5 GHz CPU
- ☐ LAN- or WLAN network interface

## Scope of supply

- ☐ Virtual PCAN-Gateway software package consisting of configuration software, Windows service, and driver
- ☐ Documentation in PDF format

## The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)



# PCAN-Wireless Gateway

## CAN to WLAN Gateway

The PCAN-Wireless Gateway allows the connection of different CAN busses over IP networks. CAN frames are wrapped in TCP or UDP message packets and then forwarded via the IP network from one device to another.

The PCAN-Wireless Gateway provides one WLAN connection and two High-speed CAN interfaces. The module is supplied in a plastic case with two D-Sub connectors or a Tyco automotive connector.

The configuration of the device is done via a comfortable web interface. Besides providing a variety of status information, the website can directly manage settings for the device itself, communication interfaces, and message routing. Please refer to page 60 for more information about the configuration and the operating principles.



### Specifications

- \_\_\_ ARM9 Freescale iMX257 with 16 kByte Level 1 Cache and 128 kByte internal SRAM
- \_\_\_ 256 MByte NAND Flash and 64 MByte DDR2 RAM
- \_\_\_ Linux operating system (version 2.6.31)
- \_\_\_ CAN bus connection via D-Sub, 9-pin (in accordance with CiA® 303-1) or via automotive connector, 12-pin (Tyco)
- \_\_\_ Reboot and reset of the device to factory defaults with a reset button
- \_\_\_ Wake-up function using CAN bus or separate input
- \_\_\_ Configuration of the network interfaces and the message forwarding through a web interface
- \_\_\_ Plastic casing with flange, dimensions: 130 x 110 mm
- \_\_\_ LEDs for device status, WLAN, and power supply
- \_\_\_ Voltage supply from 8 to 30 V
- \_\_\_ 5-Volt supply to the CAN connection through a solder jumper, e.g. for external bus converter (only for IPEH-004020)
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

#### Wireless properties:

- \_\_\_ WLAN IEEE 802.11 b/g
- \_\_\_ Internal chip antenna
- \_\_\_ Data transmission using TCP or UDP

#### CAN properties:

- \_\_\_ Two High-speed CAN channels (ISO 11898-2)
- \_\_\_ Bit rates from 40 kbit/s up to 1 Mbit/s
- \_\_\_ TJA1041 CAN transceiver
- \_\_\_ Compliant with CAN specifications 2.0A and 2.0B

### Ordering information

Designation	Part No.
PCAN-Wireless Gateway with D-Sub connectors	IPEH-004020
PCAN-Wireless Gateway with automotive connector	IPEH-004020-A

#### Scope of supply

- \_\_\_ PCAN-Wireless Gateway in plastic casing
- \_\_\_ IPEH-004020: Mating connector for voltage supply
- \_\_\_ IPEH-004020-A: Tyco mating connector including crimp contacts
- \_\_\_ Manual in PDF format
- \_\_\_ Printed quick start guide

Also available with external antenna on request.

# PCAN-Wireless Gateway DR

## CAN to WLAN Gateway in DIN Rail Plastic Casing

The PCAN-Wireless Gateway DR allows the connection of different CAN busses over IP networks. CAN frames are wrapped in TCP or UDP message packets and then forwarded via the IP network from one device to another.

The PCAN-Wireless Gateway DR provides one WLAN connection and two High-speed CAN interfaces. With its DIN rail casing and the support of the extended temperature range, the module is suitable for use in an industrial environment.

The configuration of the device is done via a comfortable web interface. Besides providing a variety of status information, the website can directly manage settings for the device itself, communication interfaces, and message routing. Please refer to page 60 for more information about the configuration and the operating principles.



### Specifications

- ☐ ARM9 Freescale iMX257 with 16 kByte Level 1 Cache and 128 kByte internal SRAM
- ☐ 256 MByte NAND Flash and 64 MByte DDR2 RAM
- ☐ Linux operating system (version 2.6.31)
- ☐ RS-232 connector for serial data transfer (reserved for future use)
- ☐ Connections for CAN, RS-232, and power supply via 4-pole screw-terminal strips (Phoenix)
- ☐ Reboot and reset of the device to factory defaults with a reset button
- ☐ Configuration of the network interfaces and the message forwarding through a web interface
- ☐ Plastic casing (width: 22.5 mm) for mounting on a DIN rail (DIN EN 60715 TH35)
- ☐ LEDs for device status, WLAN, and power supply
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

#### Wireless properties:

- ☐ WLAN IEEE 802.11 b/g
- ☐ 2.4 GHz dipole antenna, connection via RP-SMA aerial socket
- ☐ Data transmission using TCP or UDP

#### CAN properties:

- ☐ Two High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation of the CAN channels up to 500 V against each other, against RS-232 and the power supply
- ☐ Compliant with CAN specifications 2.0A and 2.0B

### Ordering information

Designation	Part No.
PCAN-Wireless Gateway DR	IPEH-004011

#### Scope of supply

- ☐ PCAN-Wireless Gateway DR in DIN rail plastic casing
- ☐ 2.4 GHz dipole antenna
- ☐ Mating connectors for both CAN channels, RS-232, and power supply
- ☐ Manual in PDF format
- ☐ Printed quick start guide

**Accessories:** PCAN-D-Sub Connection Adapter optionally available (details on page 113).

# PCAN-Ethernet Gateway DR

## CAN to LAN Gateway in DIN Rail Plastic Casing

The PCAN-Ethernet Gateway DR allows the connection of different CAN busses over IP networks. CAN frames are wrapped in TCP or UDP message packets and then forwarded via the IP network from one device to another.

The PCAN-Ethernet Gateway DR provides one LAN connection and two High-speed CAN interfaces. With its DIN rail casing and the support of the extended temperature range, the module is suitable for use in an industrial environment.

The configuration of the device is done via a comfortable web interface. Besides providing a variety of status information, the website can directly manage settings for the device itself, communication interfaces, and message routing. Please refer to page 60 for more information about the configuration and the operating principles.



### Specifications

- ☐ ARM9 Freescale iMX257 with 16 kByte Level 1 Cache and 128 kByte internal SRAM
- ☐ 256 MByte NAND Flash and 64 MByte DDR2 RAM
- ☐ Linux operating system (version 2.6.31)
- ☐ RS-232 connector for serial data transfer (reserved for future use)
- ☐ Connections for CAN, RS-232, and power supply via 4-pole screw-terminal strips (Phoenix)
- ☐ Reboot and reset of the device to factory defaults with a reset button
- ☐ Configuration of the network interfaces and the message forwarding through a web interface
- ☐ Plastic casing (width: 22.5 mm) for mounting on a DIN rail (DIN EN 60715 TH35)
- ☐ LEDs for device status and power supply
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

#### LAN properties:

- ☐ Data transmission using TCP or UDP
- ☐ 10/100 Mbit/s bit rate
- ☐ RJ-45 connector with status LEDs

#### CAN properties:

- ☐ Two High-speed CAN channels (ISO 11898-2)
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Galvanic isolation of the CAN channels up to 500 V against each other, against RS-232 and the power supply
- ☐ Compliant with CAN specifications 2.0A and 2.0B

### Ordering information

Designation	Part No.
PCAN-Ethernet Gateway DR	IPEH-004010

#### Scope of supply

- ☐ PCAN-Ethernet Gateway DR in DIN rail plastic casing
- ☐ Mating connectors for both CAN channels, RS-232, and power supply
- ☐ RJ-45 network patch cord (2 m)
- ☐ Manual in PDF format
- ☐ Printed quick start guide

**Accessories:** PCAN-D-Sub Connection Adapter optionally available (details on page 113).

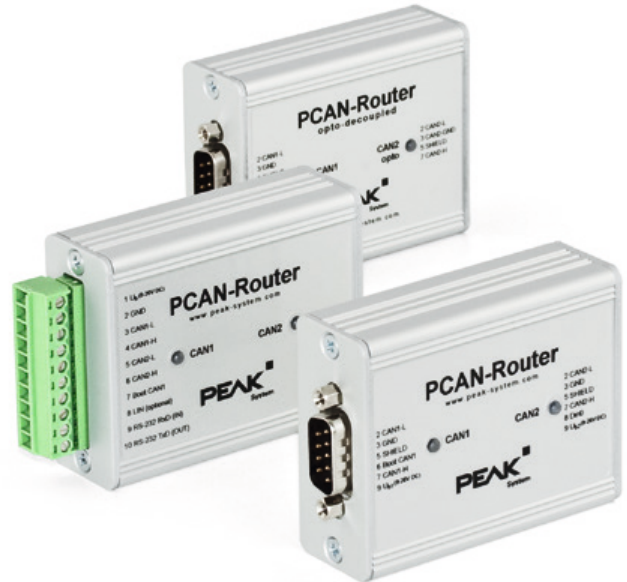
# PCAN-Router

## Universal Programmable CAN Converter

The PCAN-Router is a dual-channel CAN module whose NXP LPC21 series programmable microcontroller provides the option of using the CAN messages on both channels on a flexible basis. This gives a whole range of options for manipulation, evaluation, filtering, and routing of CAN messages.

Using the supplied library and the Yagarto GNU ARM toolchain (contains the GNU Compiler Collection GCC for C and C++), custom firmware can be created and then transferred to the module via CAN. At delivery, the PCAN-Router is equipped with a demo firmware that forwards CAN messages 1:1 between both channels at 500 kbit/s. The corresponding source code is included as example in the scope of supply.

The module is installed in an aluminum profile casing, and is shipped in versions with two D-Sub connectors or a screw-terminal strip.



### Specifications

- ☐ NXP LPC21 series microcontroller (16/32-bit ARM CPU)
- ☐ 32 kbyte EEPROM
- ☐ Two High-speed CAN channels (ISO 11898-2) with bit rates from 40 kbit/s up to 1 Mbit/s
- ☐ Complies with CAN specifications 2.0 A/B
- ☐ Galvanic isolation of the D-Sub connector CAN 2 (only applies to the opto-decoupled version)
- ☐ Status signaling with two 2-color LEDs
- ☐ Connections via two 9-pin D-Sub connectors or one 10-pole screw-terminal strip (Phoenix)
- ☐ Additional digital input (only applies to models with D-Sub connectors)
- ☐ Aluminum casing, optional with DIN rail fixing option available
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ New firmware can be loaded via CAN interface

### Ordering information

Designation	Part No.
PCAN-Router with D-Sub connectors	IPEH-002210
PCAN-Router with Phoenix connector	IPEH-002210-P
PCAN-Router with D-Sub connectors opto-decoupled	IPEH-002211

### Scope of supply

- ☐ PCAN-Router in aluminum casing
- ☐ IPEH-002210-P: mating connector (Phoenix)
- ☐ Windows development software (Yagarto GNU ARM toolchain, flash program)
- ☐ Library with programming examples
- ☐ Manual in PDF format

### Requirements

- ☐ The transfer of the firmware via CAN requires a PEAK CAN interface



# PCAN-Router FD

## Universal Programmable Converter for CAN FD and CAN

The PCAN-Router FD allows the connection to two CAN FD or CAN busses. Based on a ARM Cortex M4F microcontroller, the module's behavior and the data routing between both CAN FD channels is freely programmable. In particular, the module allows the conversion from CAN to CAN FD or vice versa. This makes it easy to accomplish the integration of CAN FD applications into existing CAN 2.0 networks.

Using the programming library and the GNU compiler for C and C++, a firmware is created and then transferred to the module via CAN. On delivery, the PCAN-Router FD is provided with a demo firmware. The corresponding source code is included as example in the scope of supply.

The module is installed in an aluminum profile casing, and is shipped in versions with two D-Sub connectors or a screw-terminal strip.



### Specifications

- ☐ NXP LPC4078 microcontroller (ARM Cortex M4 with FPU, 120 MHz)
- ☐ On-chip 4 kByte EEPROM
- ☐ 4 MByte SPI flash
- ☐ Two High-speed CAN channels (ISO 11898-2)
  - Comply with CAN specifications 2.0 A/B and FD
  - CAN FD support for ISO and Non-ISO standards
  - CAN FD bit rates for the data field (64 bytes max.) from 25 kbit/s up to 12 Mbit/s
  - CAN bit rates from 25 kbit/s up to 1 Mbit/s
  - NXP TJA1044GT CAN transceiver
- ☐ Status signaling with two 2-color LEDs
- ☐ Connections via two 9-pin D-Sub connectors or one 10-pole screw-terminal strip (Phoenix)
- ☐ RS-232 connector for serial data transfer
- ☐ I/O-connection:
  - One digital input (low-active)
  - One digital output (Low-side switch, max. 600 mA)
- ☐ 2 additional digital inputs alternatively to RS-232 (low-active)
- ☐ Aluminum casing, optional with DIN rail fixing option available
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ New firmware can be loaded via CAN interface

### Ordering information

Designation	Part No.
PCAN-Router FD with D-Sub connectors	IPEH-002214
PCAN-Router FD with Phoenix connector	IPEH-002215

### Scope of supply

- ☐ PCAN-Router FD in aluminum casing
- ☐ IPEH-002215: mating connector (Phoenix)
- ☐ Windows development software (toolchain with GCC ARM Embedded, flash program)
- ☐ Library with programming examples
- ☐ Manual in PDF format

### Requirements

- ☐ The transfer of the firmware via CAN requires a PEAK CAN interface

# PCAN-Router Pro

4-Channel CAN Router with Data Logger



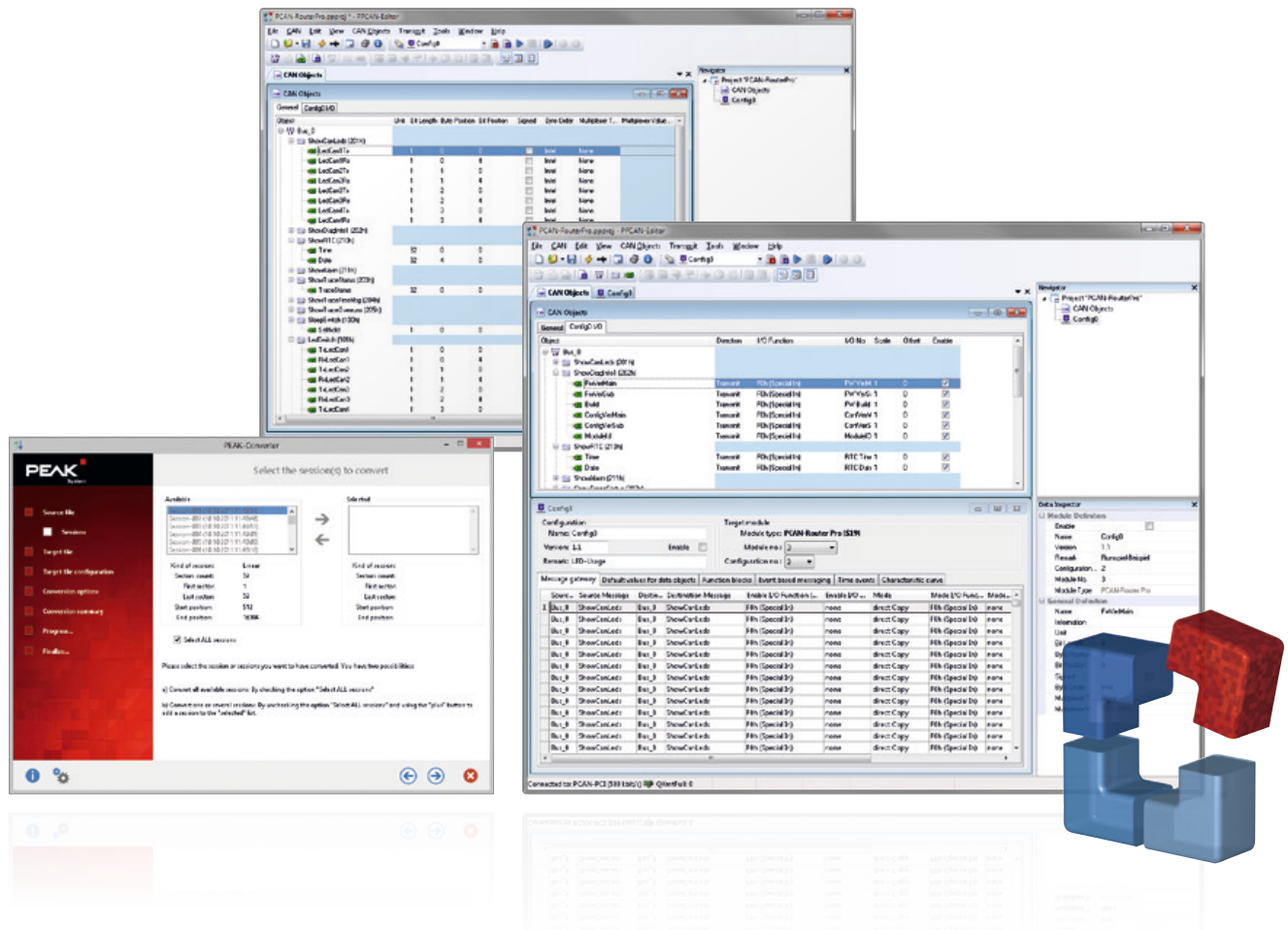
The PCAN-Router Pro allows to join the data traffic from four High-speed CAN busses. The behavior of the router is configured via the CAN bus with the provided Windows program PPCAN-Editor. As well as pure forwarding, the CAN data can be processed, manipulated, and for example, filtered in a number of different ways. There are a variety of function blocks and other settings available to the user for configuration setup. Furthermore, there is a virtual fifth CAN channel which is used for recording all data traffic to a CompactFlash card.

As an alternative to the standard firmware which the PCAN-Router Pro is equipped with at delivery, custom firmware based on the ARM microcontroller NXP LPC2294 can be created and implemented. The scope of supply includes a library and the Yagarto GNU ARM toolchain (contains the GNU Compiler Collection GCC for C and C++).

CAN transceiver modules in the PCAN-Router Pro allow a flexible adaptation of each CAN channel to the requirements. For example, Low-speed and Single-wire CAN transceivers are also available on request.

## Specifications

- ☐ 4 High-speed CAN channels via pluggable transceiver modules. Alternatively, Low-speed, Single-wire, and opto-decoupled High-speed modules, as well as High-speed modules without wake-up function available
- ☐ Wake-up function using separate input or CAN bus
- ☐ Complies with CAN specifications 2.0 A/B
- ☐ CAN connections are D-Sub, 9-pin
- ☐ CAN termination switchable, separately for each CAN channel
- ☐ CompactFlash card slot
- ☐ Battery-buffered real-time clock (RTC), can also be used for wake-up
- ☐ Beeper
- ☐ Status LEDs for CAN channels, CompactFlash card, microcontroller, and power supply
- ☐ NXP microcontroller LPC2294
- ☐ Aluminum casing with flange. DIN rail fixing option available on request
- ☐ 8 - 27 V power supply, protection against overvoltage and reverse polarity
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)



Properties of the standard firmware:

- \_\_\_ Detailed configuration with the software  
PCAN-Editor 2 for Windows
- \_\_\_ Various function blocks for data processing and manipulation
- \_\_\_ Configurable beeper
- \_\_\_ Configurable CAN channel status LEDs
- \_\_\_ Recording of CAN data and error frames to a CompactFlash card
- \_\_\_ Conversion of logging data to various output formats using Windows software

**Note about the programmability:**

Since March 2013, a toolchain and a library are available for programming custom firmware for the PCAN-Router Pro. Please note that due to various hardware extensions only devices with a serial number from 100 can be equipped with custom firmware.

## Ordering information

Designation	Part No.
PCAN-Router Pro	IPEH-002212

## Scope of supply

- \_\_\_ PCAN-Router Pro in aluminum casing including mating connector for power supply
- \_\_\_ Configuration software PPCAN-Editor 2 for Windows (details on page 108)
- \_\_\_ Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Industrial CompactFlash card (min. 1 GB)
- \_\_\_ Windows development software (Yagarto GNU ARM toolchain, flash program)
- \_\_\_ Library with programming examples
- \_\_\_ Manual in PDF format

## Requirements

- \_\_\_ The configuration or the transfer of the firmware via CAN requires a PEAK CAN interface

Customization and customer-specific firmware available on request.

# PCAN-Router DR

## Universal CAN Converter in DIN Rail Plastic Casing

The PCAN-Router DR has two High-speed CAN channels. Their bit rate is adjusted with a rotary switch on the device front. The module forwards the message traffic bi-directionally 1:1 between both connected CAN busses.

The ports of the device are isolated against each other and against the power supply with at least 500 V. Furthermore, CAN 1 has a separation voltage of up to 5 kV conforming with IEC 60601-1. With its DIN rail casing and the support of the extended temperature range, the module is suitable for use in an industrial environment.

Just like the PCAN-Router in the aluminum casing, the PCAN-Router DR can be freely programmed. A corresponding development package is included in the scope of supply.



### Specifications

- ☐ NXP LPC21 series microcontroller (16/32-bit ARM CPU)
- ☐ 32 kbyte EEPROM
- ☐ Two High-speed CAN channels (ISO 11898-2)
- ☐ Complies with CAN specifications 2.0 A/B
- ☐ NXP PCA82C251 CAN transceiver
- ☐ Bit rates from 5 kbit/s up to 1 Mbit/s, adjustable with a rotary switch
- ☐ Reset of the device with a push button
- ☐ Switchable termination for each CAN channel
- ☐ Status indication via LEDs for the module status, both CAN channels, and the power supply
- ☐ Connections for CAN, RS-232, and power supply via 4-pole screw-terminal strips (Phoenix)
- ☐ CAN 1 is isolated up to 5 kV against CAN 2, RS-232, and the power supply (compliant with IEC 60601-1)
- ☐ CAN 2 and RS-232 are isolated with 500 V against each other and against the power supply
- ☐ Plastic casing (width: 22.5 mm) for mounting on a DIN rail (DIN EN 60715 TH35)
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ RS-232 connector for serial data transfer (reserved for future use)
- ☐ New firmware can be loaded via CAN interface

### Ordering information

Designation	Part No.
PCAN-Router DR	IPEH-002213

### Scope of supply

- ☐ PCAN-Router DR in DIN rail plastic casing
- ☐ Mating connectors for both CAN channels, RS-232, and power supply
- ☐ Windows development software (Yagarto GNU ARM toolchain, flash program)
- ☐ Library with programming examples
- ☐ Manual in PDF format

### Requirements

- ☐ The transfer of the firmware via CAN requires a PEAK CAN interface

**Accessories:** PCAN-D-Sub Connection Adapter optionally available (details on page 113).



# PCAN-RS-232

## Programmable Converter for RS-232 to CAN

PCAN-RS-232 is a programmable module for the communication between RS-232 and CAN. The conversion of data traffic is done via a NXP LPC21 series microcontroller.

Using the supplied library and the Yagarto GNU ARM toolchain (contains the GNU Compiler Collection GCC for C and C++), custom firmware can be created and then transferred to the module via CAN. This gives a whole range of options for manipulation, evaluation, filtering, and routing of the data traffic.

On delivery the PCAN-RS-232 is provided with a demo firmware that routes from CAN to RS-232 and vice versa. It allows to configure the data transfer as well as the hardware with serial control commands. The corresponding source code is included as an example in the scope of supply.



### Specifications

- ☐ NXP LPC21 series microcontroller (16/32-bit ARM CPU)
- ☐ 32 kbyte EEPROM
- ☐ High-speed CAN channel (ISO 11898-2) with bit rates from 40 kbit/s up to 1 Mbit/s
- ☐ Complies with CAN specifications 2.0 A/B
- ☐ Data transfer between CAN and RS-232 with a maximum bit rate of 115,200 bit/s
- ☐ One digital input and one digital output (low-active)
- ☐ 2-color LED for status signaling
- ☐ Connection via a 10-pole terminal strip (Phoenix)
- ☐ Voltage supply from 8 to 30 V
- ☐ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)
- ☐ New firmware can be loaded via CAN interface

### Ordering information

Designation	Part No.
PCAN-RS-232	IPEH-002100

### Scope of supply

- ☐ PCAN-RS-232 in plastic casing including mating connector
- ☐ Windows development software (Yagarto GNU ARM toolchain, flash program)
- ☐ Library with programming examples
- ☐ Manual in PDF format

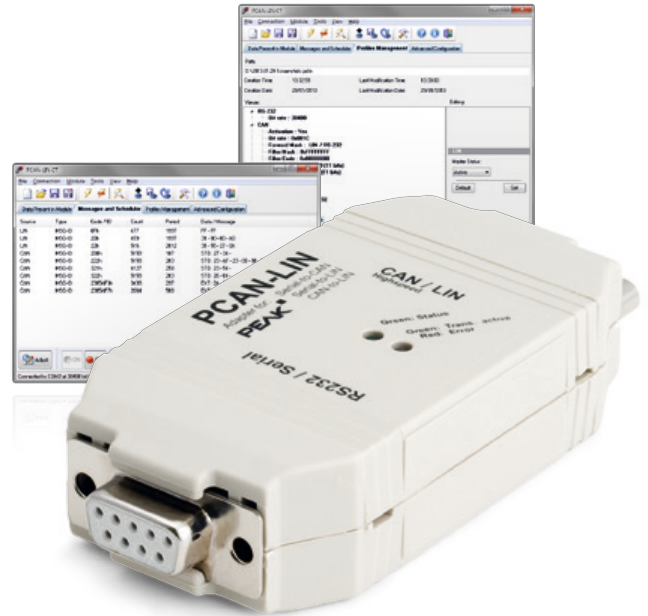
### Requirements

- ☐ The transfer of the firmware via CAN requires a PEAK CAN interface

# PCAN-LIN

## Interface for LIN, CAN, and RS-232

The PCAN-LIN module enables CAN, LIN, and serial participants to communicate. The module is supplied in a plastic casing and includes firmware which enables data to be exchanged between the different bus systems. Various modes can be set up with the aid of configuration software. Then for instance the module acting as the LIN master can request data and route the incoming LIN data to the CAN bus and/or the serial interface. Data can be routed between CAN and LIN with an ID offset.





### Specifications

- \_\_\_ General-purpose gateway (or router when using Acceptance Code/Acceptance Mask feature) from:
  - RS-232 to LIN (and back)
  - CAN to LIN (and back)
  - RS-232 to CAN (limited bandwidth)
- \_\_\_ CAN bit rates up to 1 Mbit/s
- \_\_\_ Complies with CAN specifications 2.0 A/B
- \_\_\_ LIN bit rates of 1 – 20 kbit/s
- \_\_\_ Transmitting/receiving LIN 1.x and 2.x frames
- \_\_\_ Available for use as LIN master or slave
- \_\_\_ Simulation of LIN slaves. Data can be changed via CAN frames
- \_\_\_ Processing a user-definable LIN ID list (scheduler with limited number of entries)
- \_\_\_ Individual LIN frames can be initiated via CAN or RS-232
- \_\_\_ Voltage supply from 9 to 30 V
- \_\_\_ Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

Optionally available:

- \_\_\_ High-speed (ISO 11898-2) or Low-speed (ISO 11898-3) CAN transceiver module
- \_\_\_ Galvanic isolation between RS-232 and CAN/LIN up to 1 kV (only for High-speed CAN)

Female D-Sub Connector	Pin	Pin assignment RS-232
	1	Not connected
	2	TxD (RS-232-level)
	3	RxD (RS-232-level)
	4	Not connected
	5	GND
	6	Not connected
	7	Not connected
	8	Not connected
	9	Not connected

Male D-Sub Connector	Pin	Pin assignment CAN/LIN
	1	V <sub>BAT</sub> 9-30V (I <sub>max</sub> ~130mA)
	2	CAN-L
	3	GND
	4	LIN data
	5	Not connected
	6	GND
	7	CAN-H
	8	Not connected
	9	Not connected

### Ordering information

Designation	Part No.
PCAN-LIN High-speed CAN	IPEH-002025
PCAN-LIN Low-speed CAN	IPEH-002028
PCAN-LIN High-speed CAN opto-decoupled	IPEH-002029

### Scope of supply

- \_\_\_ PCAN-LIN in plastic casing
- \_\_\_ Configuration and monitoring tool PCAN-LIN Config for Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Manual in PDF format

**Accessories:** LIN Connection Cable for PCAN-LIN optionally available (details on page 121).

# Software

## Development Packages

### PC Software

- CAN development systems for Windows 10, 8.1, 7, CE 6.x and for Linux
- Programming interfaces for various protocols and standards
- Software to monitor and diagnose CAN and LIN busses
- Programs for recording, playback, and simulation of message traffic
- Configuration software for CAN hardware from PEAK-System

PEAK-System Technik GmbH designs customer-specific software for PCs and embedded systems. We support you from the idea to the finished product.

## The right programming interface for your CAN bus application

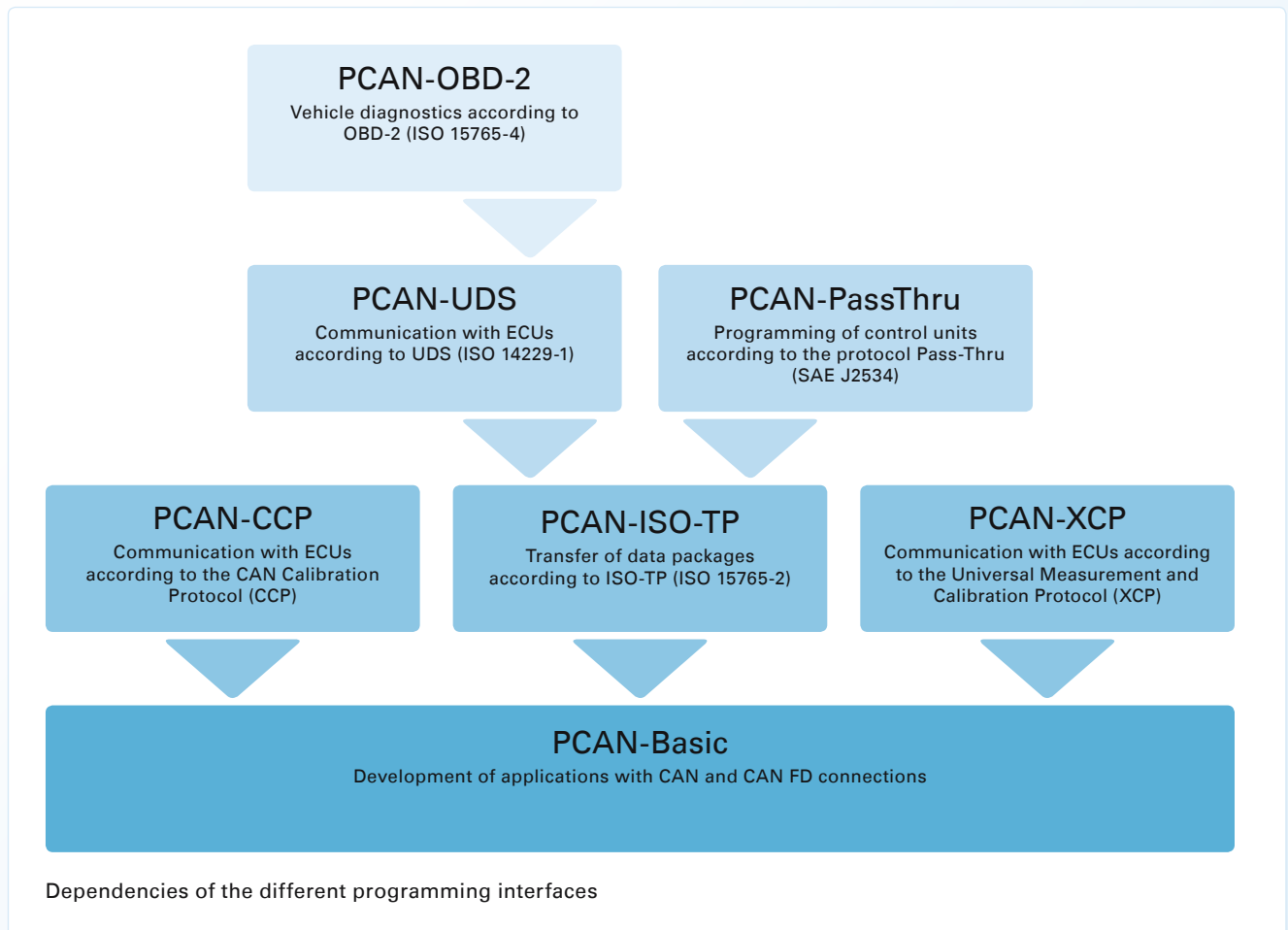
For the development of CAN applications, we provide different APIs (Application Programming Interfaces): the PCAN-API from the PCAN-Developer package and the cost-free PCAN-Basic API. This section includes a direct side-by-side comparison of our development packages.

Features	PCAN-Basic	PCAN-Developer
Based on the API	PCAN-Basic API	PCAN-API
Supports the operating systems	Windows 10, 8.1, 7 (32/64-Bit), Windows CE 6.x and Linux (32/64-Bit)	Windows 10, 8.1, 7 (32/64-Bit)
Enables the connection to CAN busses	■	■
Enables the connection to CAN FD busses	■	■
Supports all PEAK CAN interfaces (Parallel port CAN interfaces are only supported on 32-bit systems.)	■	■
Maximum number of CAN channels supported per hardware type	A maximum of 16 (depending on the PEAK CAN interface used)	64
Maximum number of applications per physical CAN channel	A single application of your own and multiple by PEAK-System	64
Access to hardware parameters	Access to specific parameters	Full access to all parameters
Precision of time stamps of received messages (depending on the PEAK CAN interface used)	1 µs	1 µs
Control of transmission time by time-stamping outgoing messages	-	■
Configuration of single-shot and self-receive-request transmissions	-	■
Notification of the application through Windows events when a message is received	■	■
Support of CAN error frames	■	■
Driver-internal CAN message buffer	up to 32,768 per CAN channel	up to 32,768 per Client*
Simulated CAN communication between the applications	-	■
Use of a single Windows DLL (32-bit or 64-bit) as a interface for all PEAK CAN interfaces	■	■
Hotline support for developers	-	■
Hardware configuration	Via application	Via control panel or application
Hardware reset during an active connection	-	■
Freely definable message filter	One filter for each CAN channel	One filter per Client*
Licensing	License for PCAN-Basic included in the scope of supply of the hardware	Unlimited licenses for the PCAN-API
Software supplied	PCAN-View	PCAN-View PCAN-Nets Configuration PCAN-Status Display

\* Information on PCAN-API and the Clients can be found on page 86.



The automotive sector has standardized protocols for communication with control units as well as the exchange of diagnostic data and big data packages via CAN. We have implemented programming interfaces for several standards. They are based on the CAN connection of PCAN-Basic.



The APIs are available free of charge and can be downloaded from our website. They each contain DLLs for 32-bit and 64-bit Windows applications, header files for various programming languages, programming examples in C++, and detailed documentation.

**Note:** The programming interfaces can only be used with PC CAN interfaces from PEAK-System.

# PCAN-Basic

## API for Connecting to CAN and CAN FD Busses

The PCAN-Basic API (application programming interface) allows easy development of powerful software with CAN and CAN FD support. It includes all of the functions that an application needs in order to communicate with PCAN PC hardware. The cross-operating-system design makes it possible to easily port software projects between platforms.

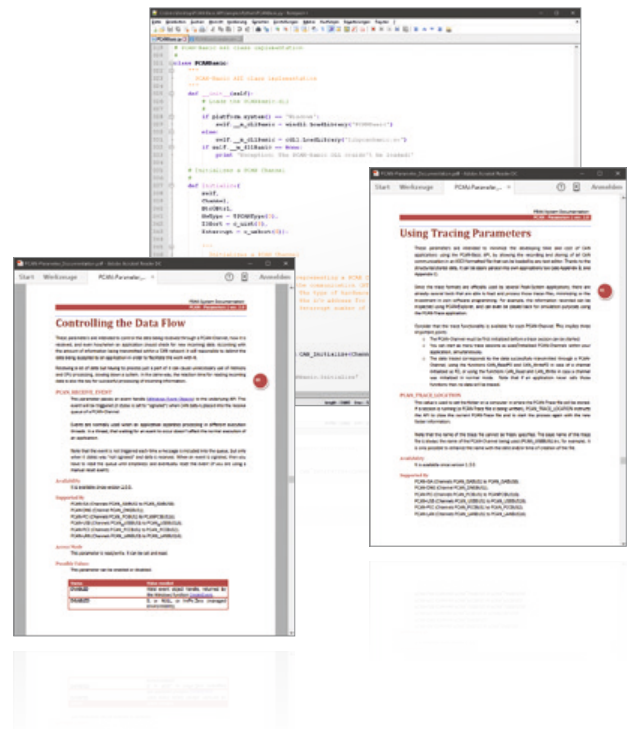
PCAN-Basic consists of the actual device driver and an interface DLL, which provides the API functions.

As the successor to PCAN-Light, PCAN-Basic offers increased functionality and extended language support. It provides various functions for developers under C++, C#, C++/CLR, Delphi, VB.NET, Java, and Python 2.x.

Beginning with version 4, PCAN-Basic for Windows supports the new CAN FD standard (CAN with Flexible Data rate) which is primarily characterized by a higher bandwidth for data transfer.

### Features

- \_\_\_ API for developing applications with CAN and CAN FD connections
- \_\_\_ Support for CAN specifications 2.0 A/B and FD
- \_\_\_ Supports the operating systems Windows 10, 8.1, 7, (32/64-bit), Windows CE 6.x, and Linux (32/64-bit)
- \_\_\_ Multiple PEAK-System applications and your own can be operated on a physical channel at the same time
- \_\_\_ Use of a single DLL for all supported hardware types
- \_\_\_ Use of up to 16 channels for each hardware type (depending on the PEAK CAN interface used)
- \_\_\_ Simple switching between channels of a PCAN PC hardware
- \_\_\_ Access to the CAN channels of a PCAN-Gateway via the new PCAN-LAN hardware type
- \_\_\_ Driver-internal buffering of up to 32,768 CAN messages per CAN channel
- \_\_\_ Precision of time stamps on received messages up to 1 µs (depending on the PEAK CAN interface used)
- \_\_\_ Supports PEAK-System's trace formats version 1.1 and 2.0 (for CAN FD applications)
- \_\_\_ Access to specific hardware parameters, such as listen-only mode
- \_\_\_ Notification of the application through Windows events when a message is received
- \_\_\_ Support of CAN error frames
- \_\_\_ Extended system for debugging operations



- \_\_\_ Multilingual debugging output
- \_\_\_ Output language depends on operating system
- \_\_\_ Debugging information can be defined individually
- \_\_\_ Thread-safe API

**Note:** Parallel port CAN interfaces are only supported on 32-bit systems.

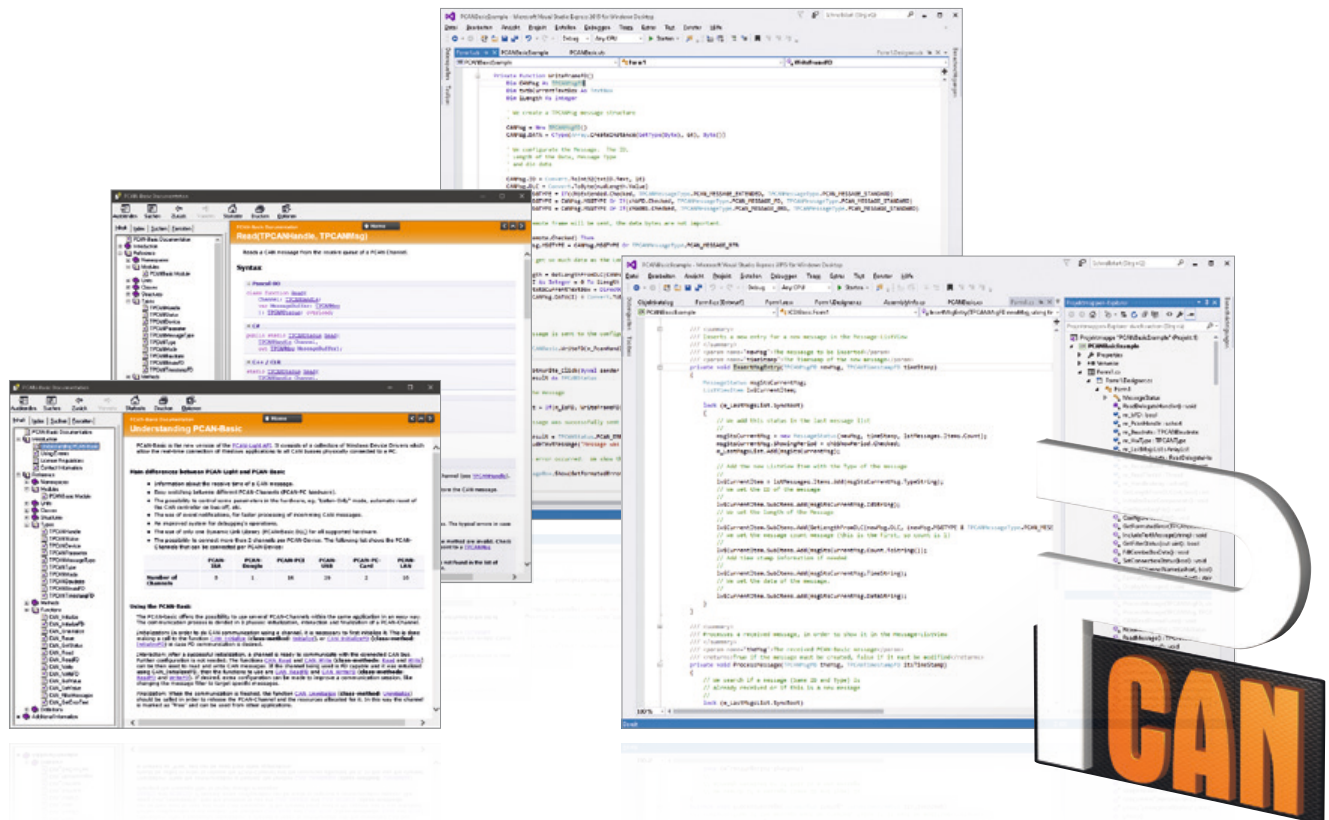
### PCAN-Basic for Linux

PEAK-System provides the PCAN-Basic API to allow the development of your own CAN applications for Linux. Programmers can use the languages C++, Java, and Python 2.x.

### PCAN-Basic for Windows CE

PEAK-System provides the PCAN-Basic API to allow the development of your own CAN applications for Windows CE 6.x. Programmers can use the languages C++, C#, and VB.NET.

**Note:** PCAN-Basic for Windows CE does not support the new CAN FD standard.



## Functions

### Connection ...

- ☐ Initialize: Initialize CAN hardware, set the bit rate, log on at the driver
- ☐ InitializeFD: Initialize CAN FD hardware
- ☐ Uninitialize: Log off from the driver

### Configuration ...

- ☐ SetValue: Setup of hardware parameters such as debug log, listen-only, and auto-reset
- ☐ FilterMessages: Register messages to be received

### Information ...

- ☐ GetValue: Read out DLL and API information
- ☐ GetStatus: Read out CAN bus status information
- ☐ GetErrorText: Get an error code description

### CAN communication ...

- ☐ Read: Read a CAN message or status incl. time stamp
- ☐ ReadFD: Read a CAN FD message
- ☐ Write: Transmit a CAN message (11/29-bit ID and RTR possible)
- ☐ WriteFD: Transmit a CAN FD message
- ☐ Reset: Clear the transmit and receive buffer

## Ordering information

### Designation

PCAN-Basic

### Scope of supply

- ☐ PCAN-Basic Interface DLLs (32/64-bit)
- ☐ Examples and header files for all common programming languages
- ☐ Documentation in PDF and HTML Help format

### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

### System requirements

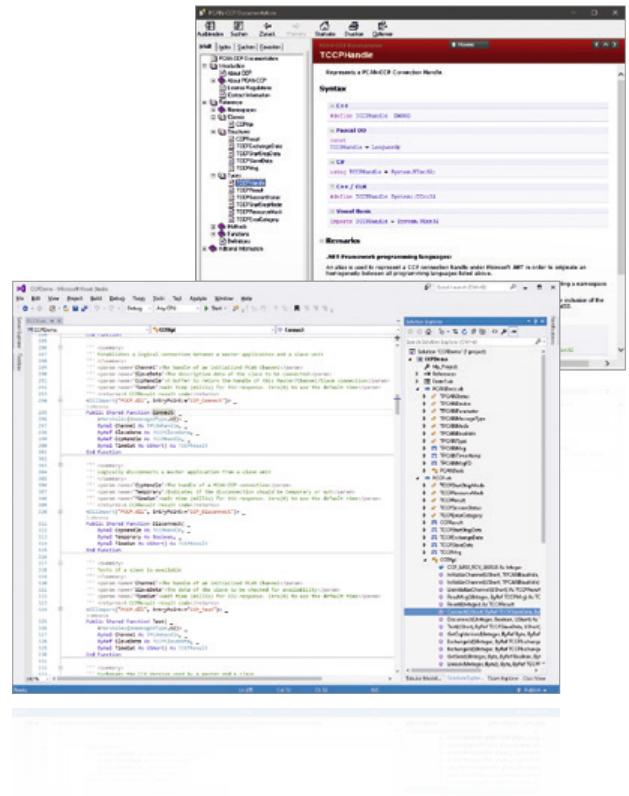
- ☐ Windows 10, 8.1, 7 (32/64-bit), Windows CE 6.x or Linux (32/64-bit)
- ☐ At least 2 GB RAM and 1.5 GHz CPU
- ☐ For the CAN bus connection: PC CAN interface from PEAK-System

# PCAN-CCP API

## API Implementation of the CAN Calibration Protocol

The PCAN-CCP API is a programming interface for the communication between Windows applications (Masters) and electronic control units (Slave ECUs). The API is based on the CAN Calibration Protocol (CCP) by ASAM and is mainly deployed for development in the automotive area. The PCAN-CCP API uses the CAN bus as transmission medium.

For accessing the CAN hardware in the computer, PCAN-CCP utilizes the programming interface PCAN-Basic, which is part of the scope of supply of every CAN interface from PEAK-System. The PCAN-CCP API package is available free of charge.



### Features

- \_\_\_ Implementation of the CAN Calibration Protocol (CCP) by ASAM for the communication with control units
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Physical communication via CAN using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- \_\_\_ Thread-safe API
- \_\_\_ One API function for each command of the CCP standard
- \_\_\_ Additional commands for communication management

### Ordering information

#### Designation

PCAN-CCP API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in HTML Help format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System
- \_\_\_ PCAN-Basic API

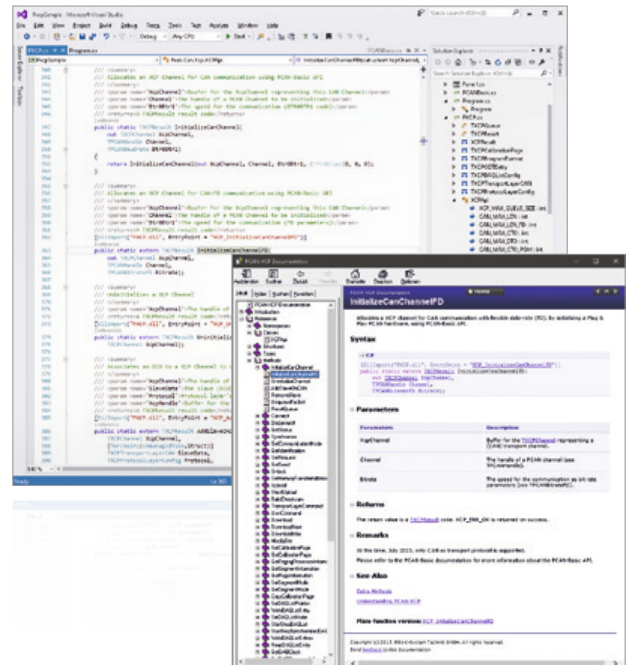


# PCAN-XCP API

## API Implementation of the Universal Measurement and Calibration Protocol

The PCAN-XCP API is a programming interface for the communication between Windows applications (Masters) and electronic control units (Slave ECUs). The Universal Measurement and Calibration Protocol (XCP) is a further development of the CAN Calibration Protocol (CCP) by ASAM. XCP supports multiple transmission mediums, but is not compatible to CCP.

For accessing the CAN hardware in the computer, PCAN-XCP utilizes the programming interface PCAN-Basic, which is part of the scope of supply of every CAN interface from PEAK-System. The PCAN-XCP API package is available free of charge.



### Features

- \_\_\_ Implementation of the Universal Measurement and Calibration Protocol (XCP) by ASAM for the communication with control units
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Physical communication via CAN or CAN FD using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- \_\_\_ Thread-safe API
- \_\_\_ One API function for each command of the XCP standard
- \_\_\_ Additional commands for communication management

### Ordering information

#### Designation

PCAN-XCP API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in HTML Help format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System
- \_\_\_ PCAN-Basic API

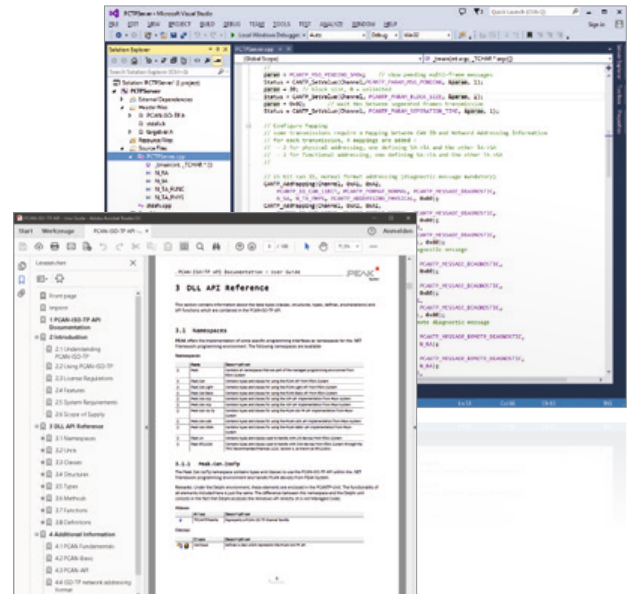
# PCAN-ISO-TP API

## API Implementation of the ISO-TP Standard (ISO 15765-2)

ISO-TP (ISO 15765-2) is an international standard for the transfer of data packages via CAN. Above CAN (OSI layers 1 and 2), the protocol covers the OSI layers 3 (Network Layer) and 4 (Transport Layer). It can transmit data packages of up to 4095 bytes per CAN message. The data bytes are transmitted segmented with multiple CAN frames.

The PCAN-ISO-TP API implements the functionality of the standard on the basis of 10 functions. They are categorized in Allocation, Configuration, Address Mapping Configuration, Information, and Communication.

PCAN-ISO-TP uses the PCAN-Basic programming interface to access the CAN hardware in the computer. PCAN-Basic is supplied with each CAN interface of PEAK-System.



### Features

- \_\_\_ Implementation of the ISO-TP protocol (ISO 15765-2) for the transfer of data packages up to 4095 bytes via the CAN bus
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Thread-safe API
- \_\_\_ Physical communication via CAN or CAN FD using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer

### Ordering information

#### Designation

PCAN-ISO-TP API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in PDF format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

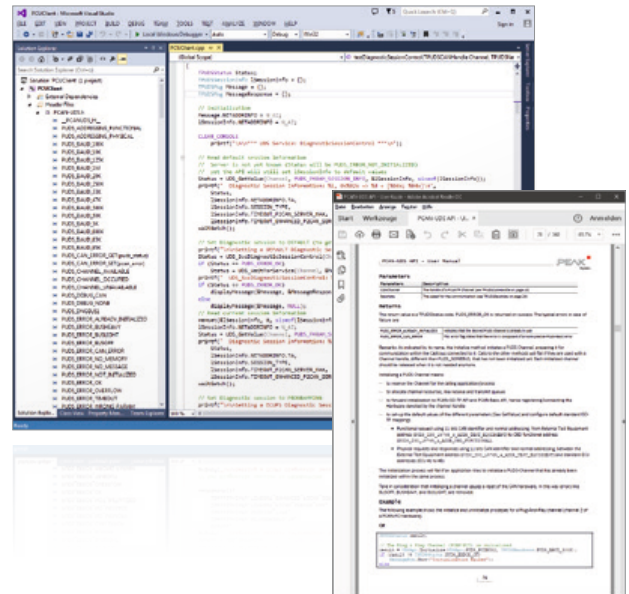
- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System
- \_\_\_ PCAN-Basic API

# PCAN-UDS API

## API Implementation of the UDS Standard (ISO 14229-1)

UDS (ISO 14229-1) stands for Unified Diagnostic Services and defines the communication with control units (ECUs). The Windows software tests the controller using various services. The process is done on the client-server principle where the program is in the position of the client (also called tester). UDS uses the ISO-TP standard as transport protocol, thus UDS can transmit data blocks of up to 4095 bytes size. Besides the exchange of maintenance information, for example, the transfer of firmware is possible.

The PCAN-UDS API implements the functionality of the standard on the basis of 8 functions. They are categorized in Tester Allocation, Configuration, Information, Utilities, Services, and Communication.



### Features

- \_\_\_ Implementation of the UDS protocol (ISO 14229-1) for the communication with control units
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Thread-safe API
- \_\_\_ Physical communication via CAN using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- \_\_\_ Uses the PCAN-ISO-TP programming interface (ISO 15765-2) for the transfer of data packages up to 4095 bytes via the CAN bus

### Ordering information

#### Designation

PCAN-UDS API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in PDF format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System
- \_\_\_ PCAN-Basic API
- \_\_\_ PCAN-ISO-TP API

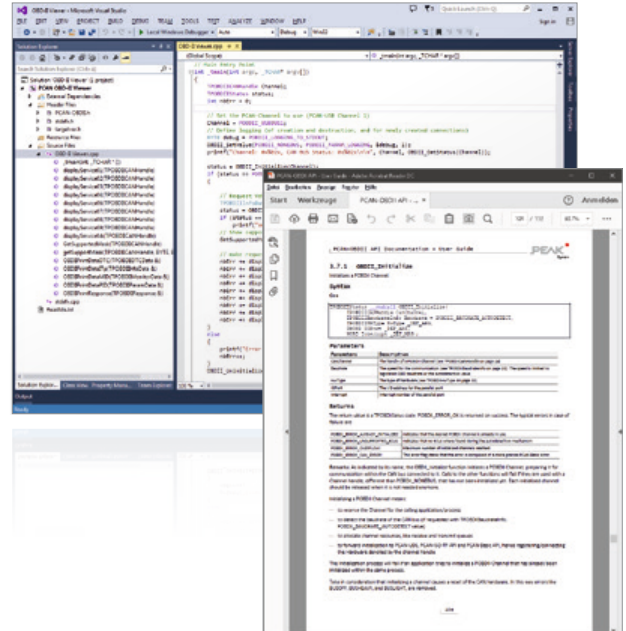
# PCAN-OB2 API

## API Implementation of the OBD-2 Standard (ISO 15765-4)

For on-board diagnostics, the OBD-2 standard defines the exchange of specific vehicle parameters. The client makes a request on the connected control units (ECUs) in the vehicle to which one or several ECUs are answering. As part of OBD-2, the ISO 15765-4 standard describes the CAN bus as a transmission option.

The PCAN-OB2 API implements the functionality of the standard on the basis of 15 functions. They are categorized in Tester Allocation, Configuration, Information, Services, and Communication.

According to ISO 15765-4, OBD-2 is based on UDS. Analog to this, PCAN-OB2 uses the PCAN-UDS programming interface for the exchange of diagnostic data.



### Features

- \_\_\_ Implementation of the OBD-2 protocol (ISO 15765-4) as on-board diagnostics standard
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Thread-safe API
- \_\_\_ Physical communication via CAN using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- \_\_\_ Uses the PCAN-ISO-TP programming interface (ISO 15765-2) for the transfer of data packages up to 4095 bytes via the CAN bus
- \_\_\_ Uses the PCAN-UDS programming interface (ISO 14229-1) for the communication with control units

### Ordering information

#### Designation

PCAN-OB2 API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in PDF format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System
- \_\_\_ PCAN-Basic API
- \_\_\_ PCAN-ISO-TP API
- \_\_\_ PCAN-UDS API



# PCAN-PassThru API

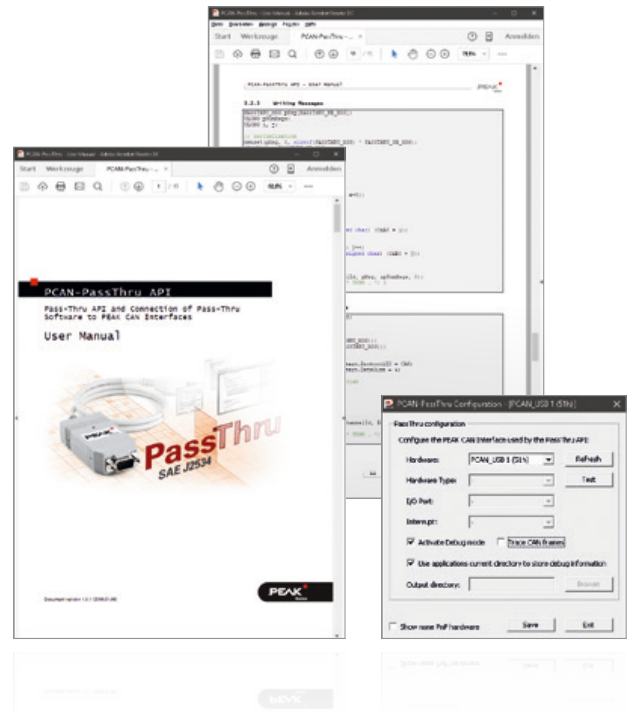
## Pass-Thru API and Connection of Pass-Thru Software to PEAK CAN Interfaces

For the programming of control units (ECU), there are countless applications from various manufacturers which are used in the development and diagnosis of vehicle electronics. The interface for the communication between these applications and the control units is defined by the international standard SAE J2534 (Pass-Thru). Thus, the hardware for the connection to the control unit can be selected regardless of its manufacturer.

PCAN-PassThru allows the use of SAE J2534-based applications with CAN adapters from PEAK-System.

The functions defined by the standard are provided by Windows DLLs for 32 and 64-bit systems. These can also be used to develop own Pass-Thru applications.

The communication via CAN and OBD-2 (ISO 15765-4) is based on the programming interfaces PCAN-Basic and PCAN-ISO-TP. PCAN-PassThru is supplied with each PC CAN interface from PEAK-System.



### Features

- \_\_\_ Implementation of the international standard SAE J2534 (Pass-Thru)
- \_\_\_ Use of SAE J2534 applications with PC CAN interfaces from PEAK-System
- \_\_\_ Windows DLLs for the development of your own SAE J2534 applications for 32 and 64 bit
- \_\_\_ Thread-safe API
- \_\_\_ Physical communication via CAN and OBD-2 (ISO 15765-4) using a CAN interface of the PCAN series
- \_\_\_ Uses the PCAN-Basic programming interface to access the CAN hardware in the computer
- \_\_\_ Uses the PCAN-ISO-TP programming interface (ISO 15765-2) for the transfer of data packages up to 4095 bytes via the CAN bus

### Ordering information

#### Designation

PCAN-PassThru API

#### Scope of supply

- \_\_\_ PCAN-PassThru API installation including
  - Interface DLLs for Windows (32/64-bit)
  - Configuration software for Windows 10, 8.1, 7 (32/64-bit)
  - PCAN-Basic API
  - PCAN-ISO-TP API
- \_\_\_ Documentation in PDF format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection: PC CAN interface from PEAK-System
  - \_\_\_ PCAN-Basic API
  - \_\_\_ PCAN-ISO-TP API

# PCAN-Developer

## Professional CAN and CAN FD Development Package for Windows

The professional programming interface PCAN-API of the PCAN-Developer package makes it possible to create complex Windows applications with CAN and CAN FD support. The API (Application Programming Interface) provides an extensive function library using interface DLLs for 32-bit and 64-bit systems.

Unlike PCAN-Basic, the CAN communication is handled by Clients and offers significant advantages. Thus, not only a single but multiple applications can access a physical CAN channel. Furthermore, it works even without hardware: Via virtual connections, Clients establish a simulated CAN communication among Windows applications.

Beginning with PCAN-Developer version 4, the PCAN-API and the included tools support the new CAN FD standard (CAN with Flexible Data rate) which is primarily characterized by a higher bandwidth for data transfer.

The API can be used with different programming languages. The scope of supply includes examples and header files for the languages C/C++ and Delphi.

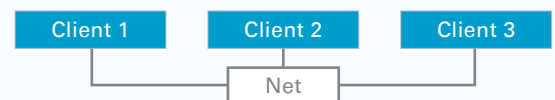
### CAN Connection via Clients

Applications that are based on the PCAN-API use so-called Clients in order to access Nets. A Net includes the connection to an external CAN bus via suitable hardware and the interconnection of several applications.

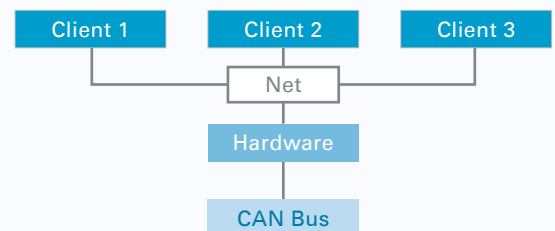
The following possibilities apply to CAN connections via Clients:

- ☐ One or multiple Clients can be connected with a Net
- ☐ A Client can be connected with multiple Nets
- ☐ A Net is connected to no or exactly one active hardware
- ☐ Multiple connections to different Nets can be defined for a hardware
- ☐ A maximum of one defined connection to a Net can be activated for a hardware
- ☐ When a Client transmits, the message is passed to all other Clients connected to the Net and via the hardware to the external CAN bus
- ☐ If a message is received by the hardware, it is received by all Clients connected to the Net

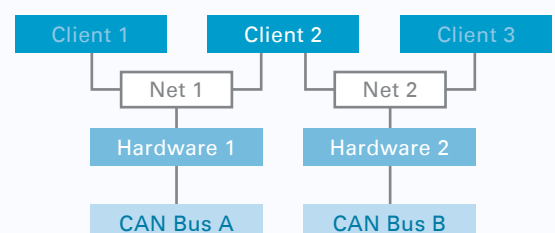
#### CAN Bus Simulation

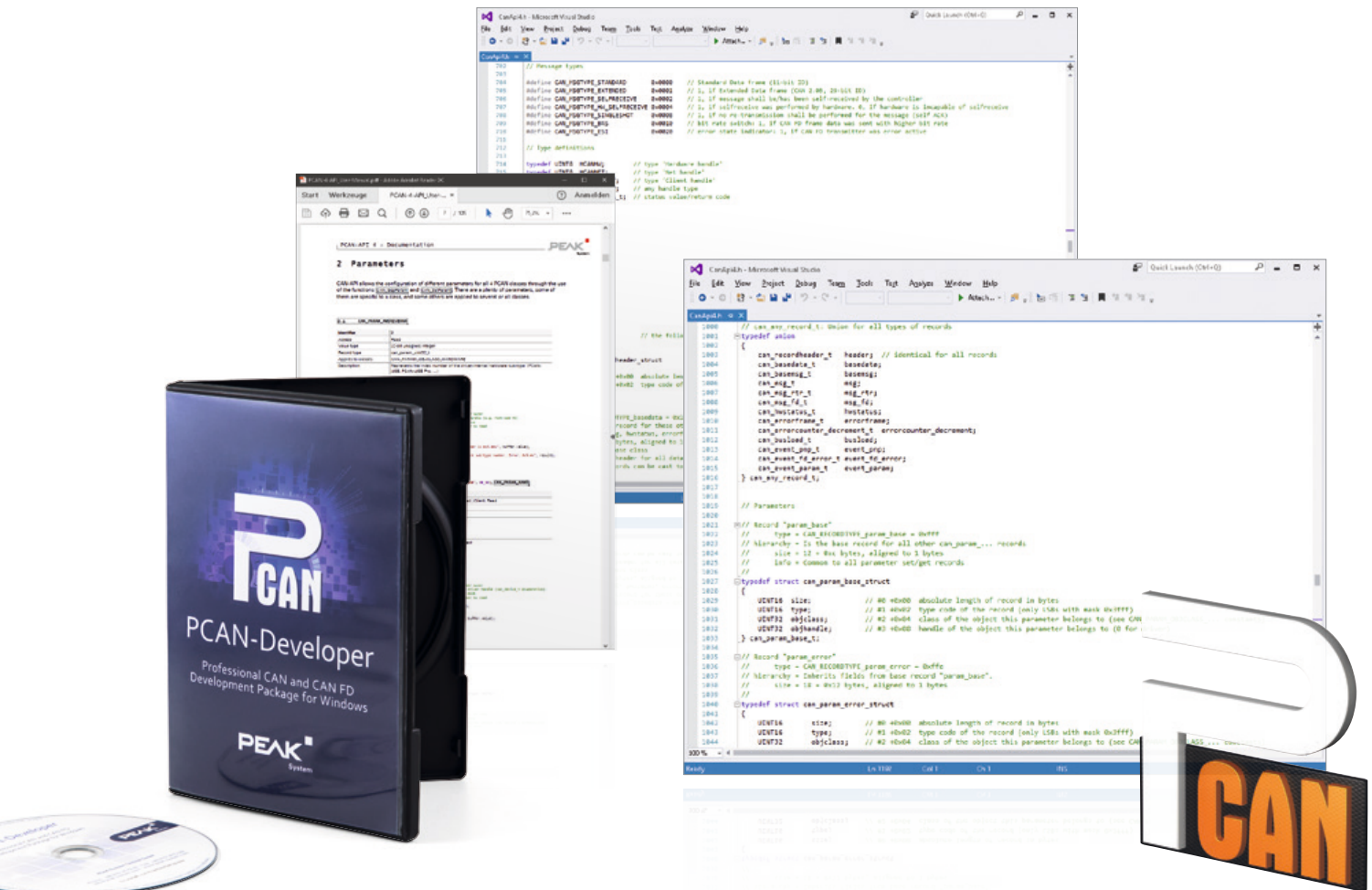


#### CAN Bus Connection



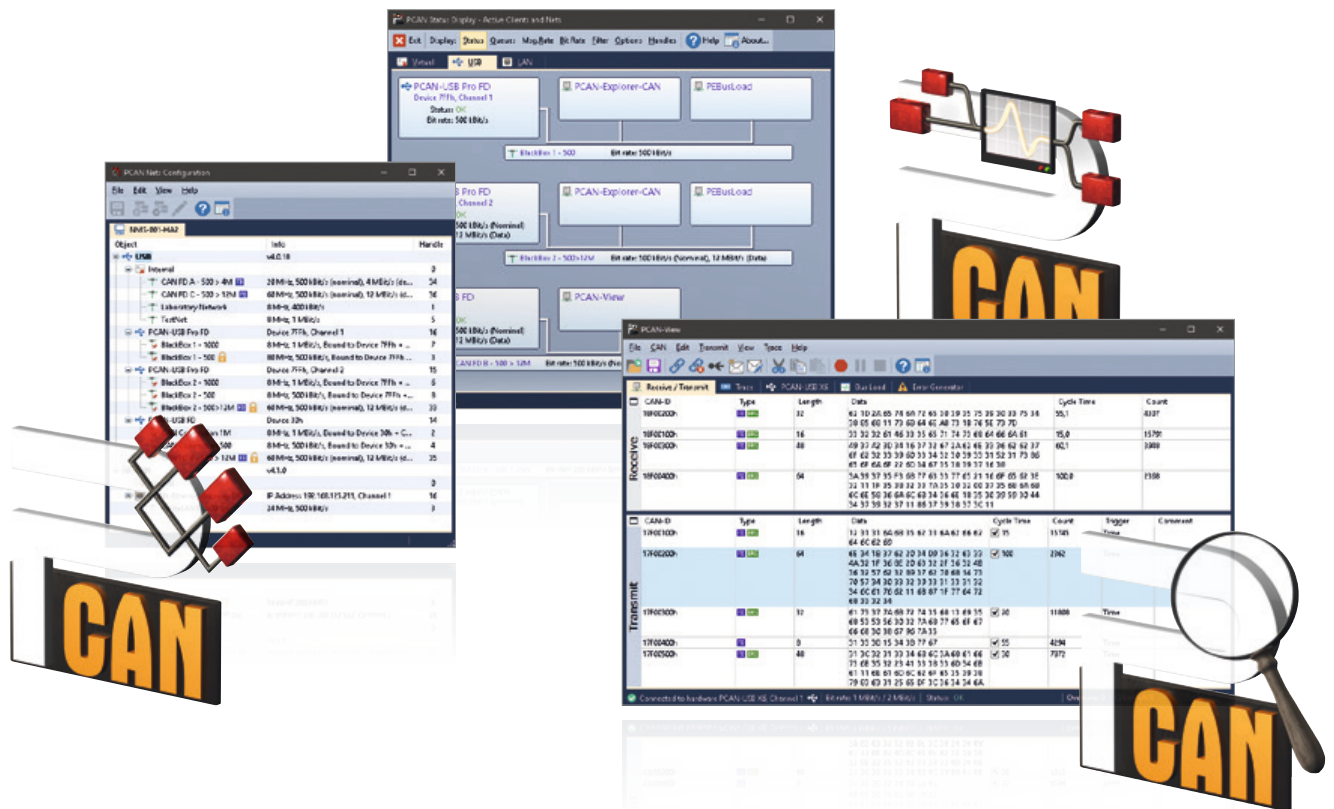
#### Gateway Application





## Features

- \_\_\_ Professional API for developing applications with CAN and CAN FD connections
- \_\_\_ Complies with CAN specifications 2.0 A/B and FD
- \_\_\_ CAN FD support for ISO and Non-ISO standards switchable
- \_\_\_ Supports the operating systems Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Up to 64 applications can be operated per physical CAN channel at the same time
- \_\_\_ Use of a Windows DLL for 32-bit or 64-bit as programming interface (API) for all supported hardware types
- \_\_\_ Use of up to 64 channels for each hardware type
- \_\_\_ Simple switching between channels of a PCAN PC hardware using Nets
- \_\_\_ Access to the CAN channels of a PCAN-Gateway via the new PCAN-LAN hardware type
- \_\_\_ Driver-internal buffering of up to 32,768 CAN messages per Client
- \_\_\_ Buffer size can be configured via the API
- \_\_\_ Precision of time stamps on received messages up to 1 µs (depending on the PEAK CAN interface used)
- \_\_\_ Access to all available hardware parameters such as listen-only mode
- \_\_\_ Notification of the application through Windows events when a message is received
- \_\_\_ Notification of the application through driver events, e.g. altered hardware parameters, plug-in/plug-out of PCAN PC hardware, or bus load information
- \_\_\_ Interrupt-triggered reception of CAN messages by the driver. Storage in a FIFO buffer with the time stamp
- \_\_\_ Control of the transmission timing by specifying time stamps when transmitting messages
- \_\_\_ Configuration of single-shot and self-receive-request transmissions
- \_\_\_ Support of CAN error frames
- \_\_\_ Simulated CAN communication between applications via Clients
- \_\_\_ Free definition of a message filter per Client
- \_\_\_ Hardware reset during an active connection
- \_\_\_ Hardware configuration using the control panel or application



- \_\_\_ Detailed documentation in PDF format as well as executable sample source code
- \_\_\_ Collection of tools for CAN system configuration, parameterization, and visualization
- \_\_\_ Thread-safe API

**Note:** Parallel port CAN interfaces are only supported on 32-bit systems.

#### PCAN-Developer 4 Licenses:

PCAN-Developer 4 includes a single user license for the development package and a distribution license for the PCAN-Developer redistributable. This package includes the API DLLs as well as the software products PCAN-View, PCAN-Nets Configuration, and PCAN-Status Display.

For the API and the software you will receive all updates and free support for the duration of two years.

#### Ordering information

##### Designation

PCAN-Developer

##### Part No.

IPES-004070

##### Scope of supply

- \_\_\_ PCAN-API Interface DLLs (32/64-bit)
- \_\_\_ PCAN-Developer license package
- \_\_\_ Software: PCAN-View, PCAN-Nets Configuration, and PCAN-Status Display
- \_\_\_ Examples and header files for various programming languages
- \_\_\_ Documentation in PDF format

##### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System



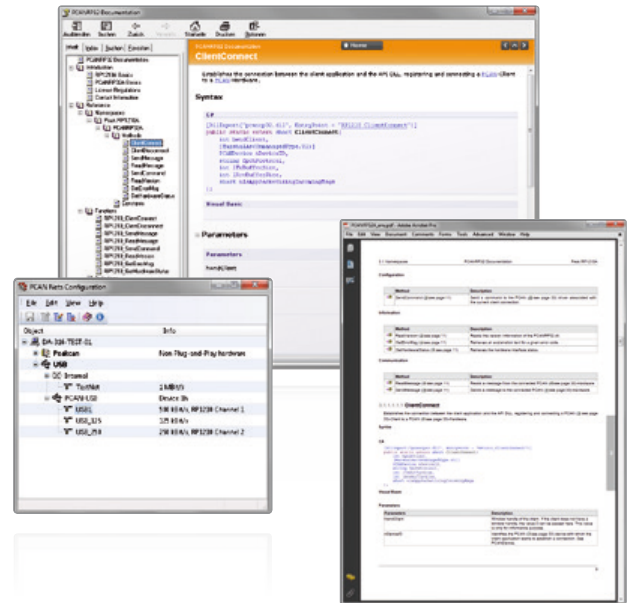
# PCAN-RP1210 API

## RP1210 Development Package and RP1210 Connectivity to PEAK CAN Interfaces

The Recommended Practice 1210 was defined by the Technology and Maintenance Council (TMC) as a standardized API for communication between Windows applications and communication networks in vehicles.

The PCAN-RP1210 API by PEAK-System is an implementation of the RP1210 versions A and C with support for CAN and SAE J1939 networks. Thus, the API makes it possible to develop own RP1210 applications and to use already existing ones with CAN interfaces by PEAK-System.

With the PCAN-RP1210 API you get a single user license for the development package and for the RP1210 connectivity to PEAK CAN interfaces. The PCAN-Developer RP1210 Extension contains a distribution license for the PCAN-RP1210 API DLLs. With this extension, your customers can install the DLLs via the PCAN-Developer redistributable package.



### Features

- \_\_\_ RP1210 (Version A and C) implementation according to the specification by TMC
- \_\_\_ Development of own RP1210 applications
- \_\_\_ Thread-safe API
- \_\_\_ Use of RP1210 applications with PEAK CAN interfaces
- \_\_\_ Support of CAN and SAE J1939 networks

**Note:** The PCAN-Developer RP1210 Extension is only available in conjunction with a valid PCAN-Developer license.

### Ordering information

Designation	Part No.
PCAN-RP1210 API	IPES-002099
PCAN-Developer RP1210-Extension	IPES-002099-FL

#### Scope of supply PCAN-RP1210 API

- \_\_\_ PCAN-RP1210 API
- \_\_\_ PCAN-Nets Configuration
- \_\_\_ PCAN-CPL
- \_\_\_ Documentation in PDF format
- \_\_\_ Documentation in HTML Help format

#### Scope of supply PCAN-Developer RP1210 Extension

- \_\_\_ PCAN-RP1210 API
- \_\_\_ Enhanced PCAN-Developer redistributable package
- \_\_\_ PCAN-Nets Configuration
- \_\_\_ Documentation in PDF format
- \_\_\_ Documentation in HTML Help format

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System

# PLIN-API

## API for Developing Applications with LIN Connection

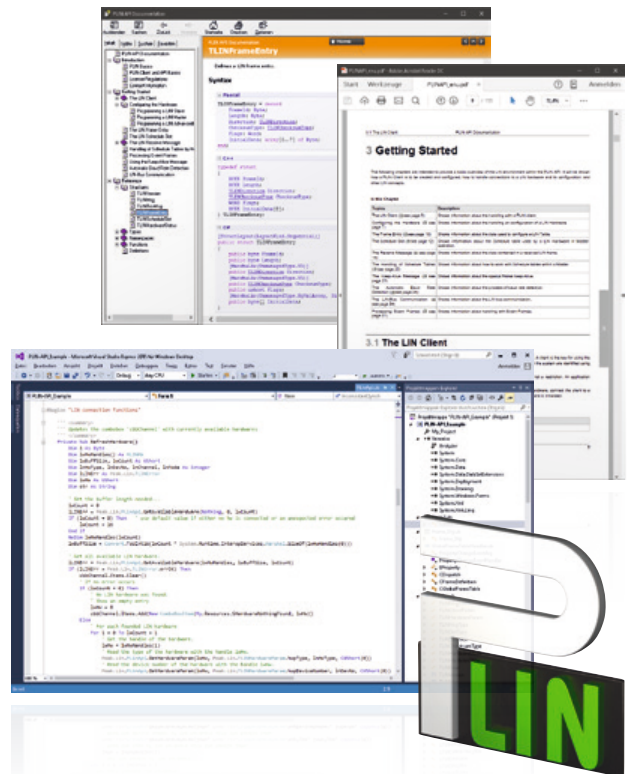
LIN (Local Interconnect Network) is a serial network protocol which is characterized by a master-slave architecture and transmission patterns. The master regulates the bus access and controls the communication of up to 16 participants. Only when the master prompts a slave, the latter is allowed to transmit its stored information. On each request of the master, answers defined within a schedule table follow in a fixed time sequence.

LIN was introduced by five automobile manufacturers in 1999 and further developed under the supervision of the LIN Consortium. Until today, the LIN bus has proven itself to be a cost-effective alternative to the CAN bus for networking sensors and actuators in vehicles, such as seat, door, mirror, and climate controls.

The programming interface PLIN-API (PEAK LIN Application Programming Interface) enables the connection of Windows applications to the LIN bus. The API provides various functions for developers in the programming languages C++, C#, C++/CLR, C++/MFC, Delphi, VB.net, and Python 2.x.

### Features

- \_\_\_ API for developing applications with LIN connection
- \_\_\_ Windows DLLs for the development of 32-bit and 64-bit applications
- \_\_\_ Multiple applications can be operated on a physical channel at the same time
- \_\_\_ Simple switching between the channels of a PLIN PC hardware
- \_\_\_ Internal buffering of messages on software level (system service)
- \_\_\_ Precision of time stamps on received messages up to 1 µs
- \_\_\_ Allows storing custom data (max. 24 bytes) on the hardware
- \_\_\_ Notification of the application through Windows events when a message is received and on plug-in or plug-out of a device
- \_\_\_ Function to get error code descriptions in 4 languages



### Ordering information

#### Designation

PLIN-API

#### Scope of supply

- \_\_\_ Interface DLLs for Windows (32/64-bit)
- \_\_\_ Examples and header files for all common programming languages
- \_\_\_ Documentation in HTML Help format
- \_\_\_ Documentation in PDF format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

**Note:** The PLIN-API is designed to be used exclusively with a PC LIN interface from PEAK-System.

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the LIN bus connection:  
PC LIN interface from PEAK-System

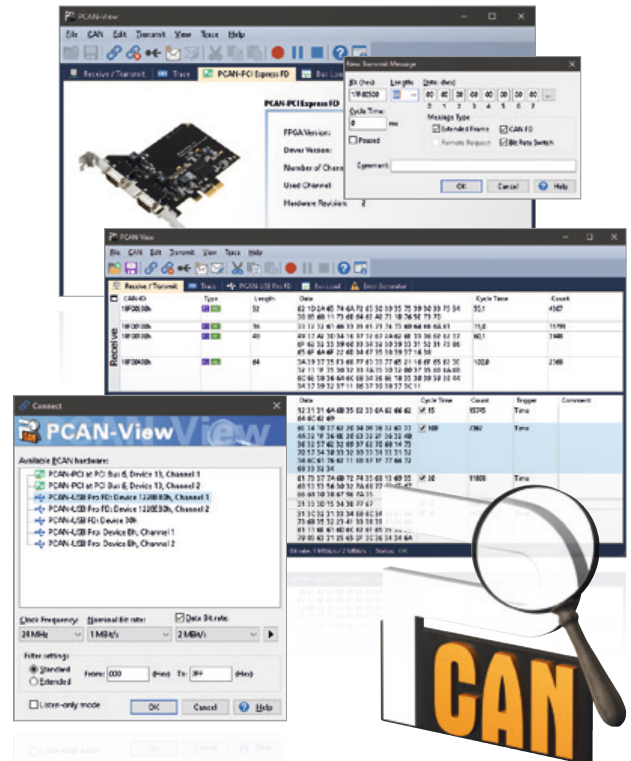
# PCAN-View

## Windows Software for Displaying CAN and CAN FD Messages

The software PCAN-View for Windows is a simple CAN monitor for viewing, transmitting, and recording CAN data traffic. Messages can be transmitted manually and periodically at a user-determined bit rate. Bus system errors and memory overflows in the CAN hardware are displayed during the process. The trace function can be used to record and save CAN data traffic.

PCAN-View is supplied with every PCAN PC hardware product and allows a quick and easy start. All available PEAK CAN interfaces are listed in the connection dialog. After selecting the hardware and the bit rate, the user can access all the software functions, hardware-specific settings, and information.

Beginning with version 4, PCAN-View supports the new CAN FD standard (CAN with Flexible Data rate) which is primarily characterized by higher bandwidth for data transfer.



### Features

- \_\_\_ Support for CAN specifications 2.0 A/B and FD
- \_\_\_ CAN bit rates (nominal) up to 1 Mbit/s
- \_\_\_ Data bit rates up to 12 Mbit/s (only when using a CAN FD interface)
- \_\_\_ Optional use of custom bit rates
- \_\_\_ Listen-only mode can be activated
- \_\_\_ Manual and periodic transmission of messages with a maximum resolution of 1 ms
- \_\_\_ Message reception with a maximum resolution of 100 µs
- \_\_\_ Recording messages in trace files
- \_\_\_ Saving and reloading of transmission messages
- \_\_\_ Sortable receive and transmit lists
- \_\_\_ Representation of CAN IDs in hexadecimal or decimal format
- \_\_\_ Representation of the data bytes in hexadecimal, decimal, or ASCII format
- \_\_\_ Display of receive, transmit, and error states
- \_\_\_ Hardware reset of the CAN controller
- \_\_\_ Access to hardware-specific settings and information

### Ordering information

#### Designation

PCAN-View

#### Scope of supply

- \_\_\_ PCAN-View software
- \_\_\_ Documentation in HTML Help format

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

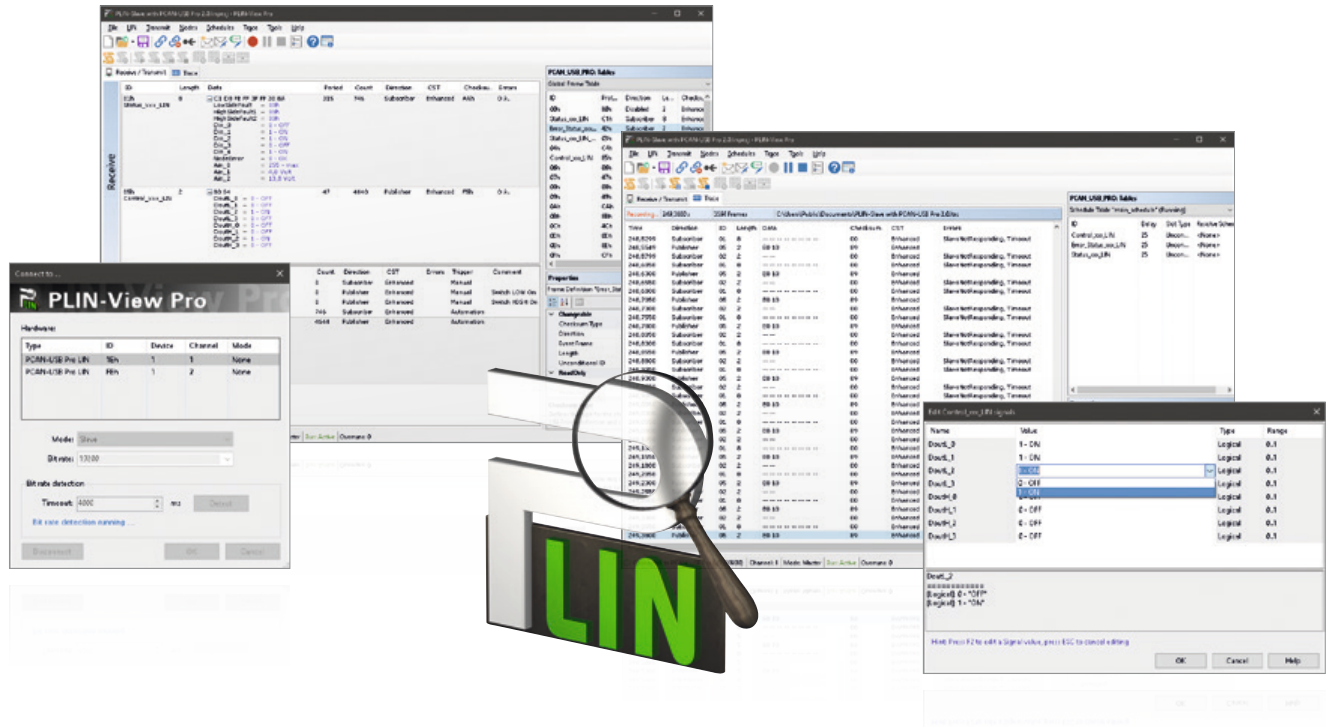
#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System

**Note:** Parallel port CAN interfaces are only supported on 32-bit systems.

# PLIN-View Pro

Windows Software for Displaying LIN Messages



The LIN monitor PLIN-View Pro for Windows is supplied with every PC LIN interface from PEAK-System. Incoming LIN messages can be viewed using this software, with the use of LDF files (LIN Description File) allowing the symbolic depiction of LIN messages. Outgoing LIN frames can be defined depending on the master or slave operation mode.

PLIN-View Pro also accesses the LIN functionality of the supported hardware, such as the on-board scheduler or automatic bit rate detection.

## Features

- \_\_\_ Display of incoming LIN frames
- \_\_\_ Symbolic display of LIN messages (LDF files)
- \_\_\_ Master or Slave mode
- \_\_\_ Administration and processing of schedule tables
- \_\_\_ Configurable recording of LIN frames (trace)
- \_\_\_ Implementation of scripts for automating various processes

## Ordering information

### Designation

PLIN-View Pro

### Scope of supply

- \_\_\_ PLIN-View Pro software
- \_\_\_ Documentation in HTML Help format

### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

**Note:** PLIN-View Pro is designed to be used exclusively with a PC LIN interface from PEAK-System.

### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Microsoft .NET Framework 4.0
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the LIN bus connection:  
PC LIN interface from PEAK-System



# PCAN-OBD-2 Viewer

## Windows Software for the Presentation and Processing of OBD-2 Data

The OBD-2 standard defines the exchange of specific vehicle parameters for on-board diagnostics. As part of OBD-2, the ISO 15765-4 standard describes the CAN bus as a transmission option.

With the Windows software PCAN-OBD-2 Viewer OBD-2 data can be read out from connected control units (ECUs) via the CAN bus for presentation and further processing.

The application was implemented based on the programming interface PCAN-OBD-2 API by PEAK-System and is available free of charge for users of PEAK CAN adapters.



### Features

- \_\_\_ On-board diagnostics according to the standard OBD-2 (ISO 15765-4)
- \_\_\_ Physical communication via CAN using a CAN interface of the PCAN series
- \_\_\_ Support of all OBD-2 services that can be transmitted with CAN
- \_\_\_ Configurable graphical data representation on analog and digital instruments in a virtual cockpit
- \_\_\_ Saving and loading of configurations
- \_\_\_ Display of Diagnostic Trouble Codes (DTCs) and available test results
- \_\_\_ Reading of data that is recorded if an error occurs (Freeze Frames)
- \_\_\_ Listing emission-related data. Optional display of individual parameters as a graph
- \_\_\_ Exporting graphs and records of the OBD-2 communication

### Ordering information

#### Designation

PCAN-OBD-2 Viewer

#### Scope of supply

- \_\_\_ PCAN-OBD-2 Viewer software
- \_\_\_ Documentation in HTML Help format

#### The current version ...

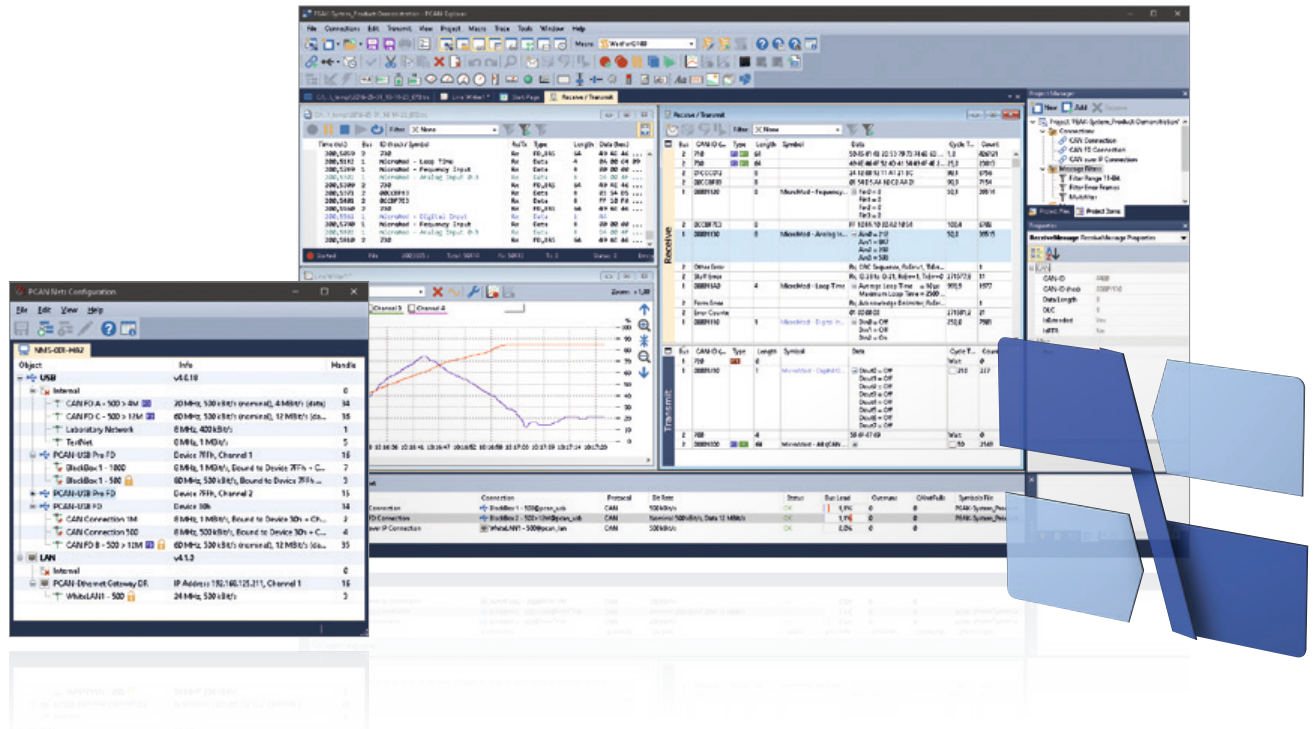
- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System

# PCAN-Explorer 6

Professional Windows Software to Communicate with CAN and CAN FD Busses



The PCAN-Explorer 6 is a versatile, professional program for working with CAN and CAN FD networks. The user is not just limited to the observation of the CAN traffic. Manual or periodic transmission of messages or entire transmission lists allows him a direct influence, for example, for control purposes or simulations.

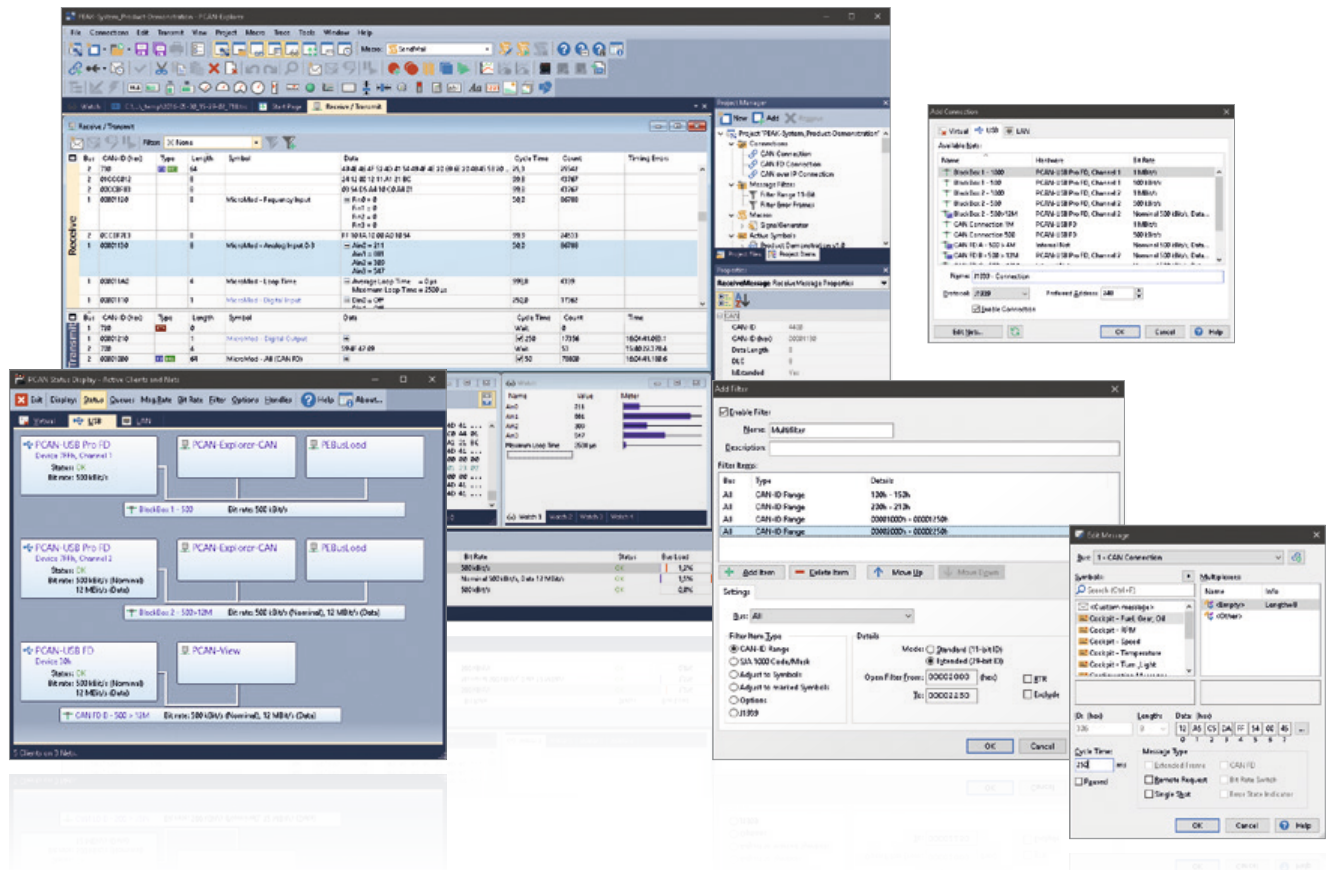
The PCAN-Explorer 6 can connect to several CAN and CAN FD busses at the same time. Unlike previous versions, the hardware type of used CAN adapters is no longer a limiting factor.

A central point in the use of the program is the symbolic representation of the CAN messages and their payload. With the help of Symbol files, the hexadecimal information is transformed into a readable and vivid format.

Since version 6, the trace function, in addition to recording the data traffic, allows also the playback of existing traces. The recordings and incoming CAN messages can be filtered using various criteria.

Special requirements, as well as the automation of complex processes can be implemented using macros. The sophisticated implementation of VBScript accesses the extensive object model of the PCAN-Explorer 6.

Furthermore, the functionality of the PCAN-Explorer can be extended by add-ins. PEAK-System offers add-ins that provide even better opportunities to analyze and influence data. The Plotter produces a graphical representation of the signals' time course by live recording or on the basis of traces. The Instruments Panel is used for an own arrangement of various displays, controls, and switches. Further add-ins enable the import of third-party configurations based on the CANdb format and add the support for the J1939 protocol.



## Features

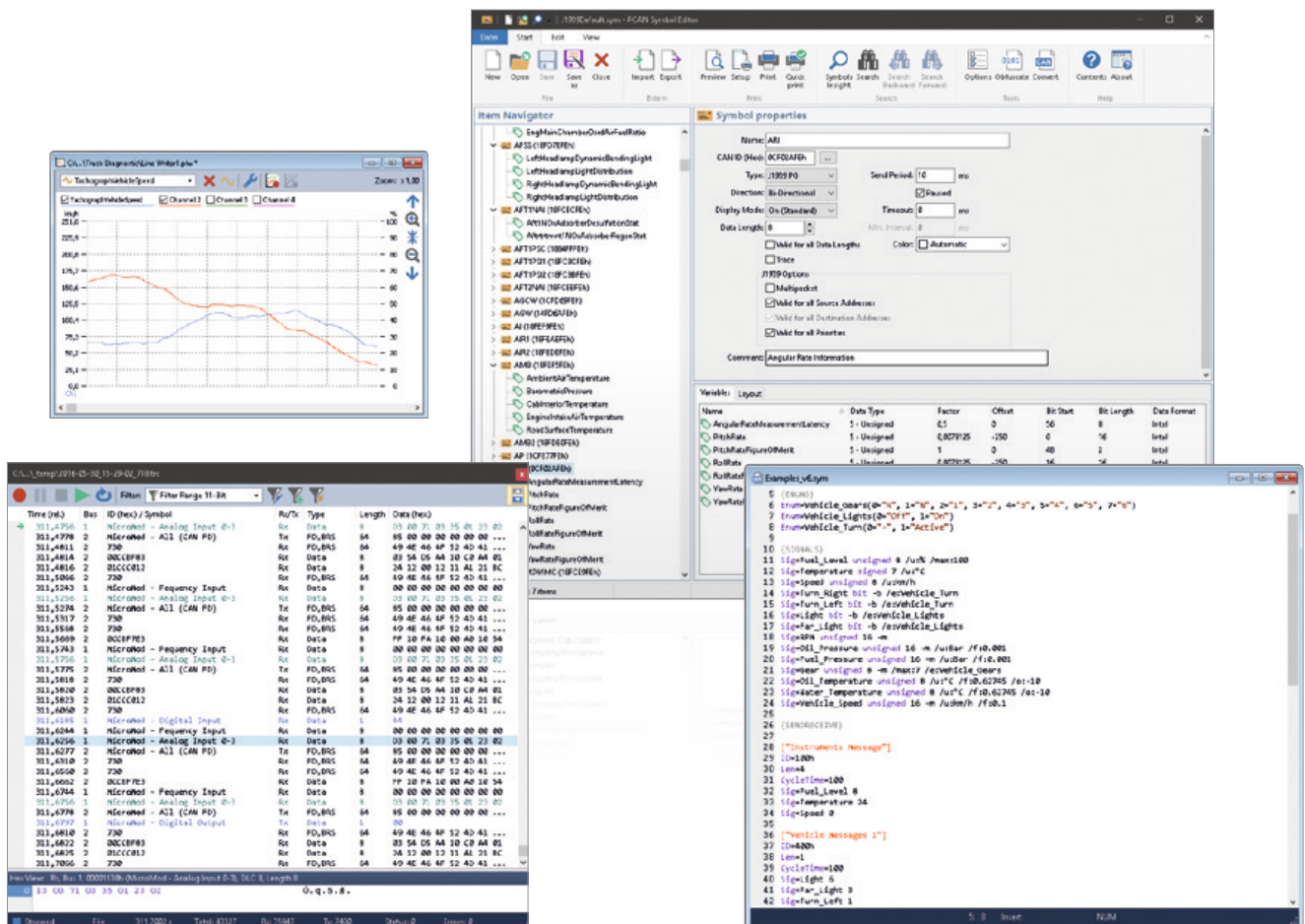
- \_\_\_ Management of all settings, information, and files in projects
- \_\_\_ Exporting entire projects including linked files to handy packets for archiving or sharing
- \_\_\_ Extensive revision of the user interface with improved dialogs for creating transmit messages and managing signals
- \_\_\_ Automatic notification about new software versions and support with the update process
- \_\_\_ Integrated text editor with syntax highlighting for creating and editing of Symbol files, macros and VBScript
- \_\_\_ User interface language can be switched (German/English)
- \_\_\_ Integration of add-ins to upgrade functionality

## Connection to CAN and CAN FD

- \_\_\_ Connection with up to 16 CAN channels
- \_\_\_ Simultaneous use of multiple CAN interfaces independent of the hardware type
- \_\_\_ Support for CAN specifications 2.0 A/B and FD
- \_\_\_ CAN bit rates (nominal) up to 1 Mbit/s
- \_\_\_ Data bit rates up to 12 Mbit/s (only when using a CAN FD interface)
- \_\_\_ Optional use of custom bit rates
- \_\_\_ Listen-only mode can be activated
- \_\_\_ Clear overview of connections with their bit rate, status, error counter, and bus load
- \_\_\_ Function to execute a hardware reset of the CAN controller

## Transmission and Reception

- \_\_\_ Representation of the CAN data traffic in sortable receive and transmit lists with configurable columns display
- \_\_\_ Display of messages showing the ID, length, data bytes, time-outs, number of messages received, and receiving interval
- \_\_\_ Display of error frames can be activated for each connection
- \_\_\_ Representation of CAN IDs in hexadecimal or decimal format
- \_\_\_ Display of receive, transmit, and error states
- \_\_\_ Message reception with a maximum resolution of 100 µs
- \_\_\_ Manual and periodic transmission of messages with a maximum resolution of 1 ms
- \_\_\_ Transmission of CAN messages in response to remote frames (only with CAN 2.0 A/B)
- \_\_\_ Messages can be grouped as transmit lists, stored and loaded as desired, e.g. in order to emulate CAN nodes
- \_\_\_ Multiple flexible filters can be configured and, for example, assigned to the transmit/receive window or to various different tracers



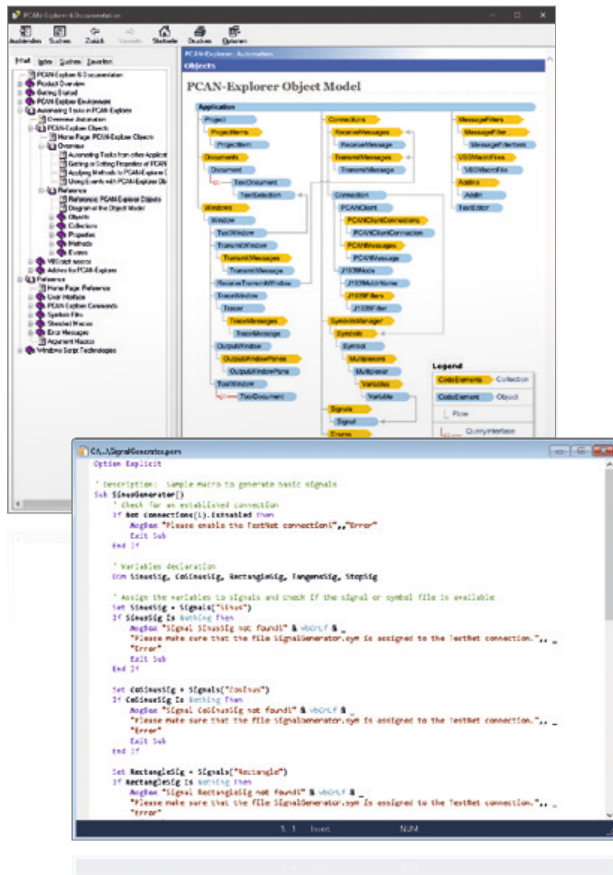
### Recording and Playback

- \_\_\_ Logging of the CAN data traffic along with the errors that have occurred as an option
- \_\_\_ Playback of trace files with optional loop function
- \_\_\_ Operation of multiple tracers at the same time
- \_\_\_ Representation of the logged messages with details such as time stamp, type, ID, length, and data bytes
- \_\_\_ Representation of the data bytes in hexadecimal, decimal, or ASCII format
- \_\_\_ Filtering of the messages for logging through message filters
- \_\_\_ Recording of CAN data traffic directly to files or to the RAM (in linear, dynamic, or circular buffer mode)
- \_\_\_ Playback of logged CAN messages directly from files or the buffer
- \_\_\_ Storing of the logged data to readable text files or CSV files for further processing in Excel or similar
- \_\_\_ Enhanced processing of huge trace files compared to PCAN-Explorer version 5
- \_\_\_ Subsequent examination of the logged data in the buffer via different Symbol files

### Symbolic Representation

- \_\_\_ Clear and readable representation of CAN messages based on the symbol format from PEAK-System:
  - Easy allocation of CAN messages by assigning alphanumeric names
  - Bit-exact division of the data into variables for assigning names, data type, etc.
- \_\_\_ Comfortable Symbol file creation with the supplied Windows software PCAN-Symbol Editor or with the integrated text editor
- \_\_\_ User-friendly real-time monitoring of several signals via the Watch window
- \_\_\_ Graphical display of up to 4 signals with a simple line writer (Line Writer Add-in)





### Automation with Macros and VBScript

- Automation of small tasks or complex processes with macros or VBScript like for example:
  - Test procedures for the implementation or development of CAN systems
  - Send an e-mail if a temperature is exceeded
  - Start an action when a particular message is received
  - Open an Excel sheet when an event occurs and save the data in individual cells
  - Calculate variables from the data of incoming CAN messages
- Creation of macros and scripts with the integrated text editor
- Assignment of function keys to individual macros
- Access with VBScript to almost all program elements via the PCAN-Explorer object model
- VBScript macros also run in the background even without the PCAN-Explorer interface

### PCAN Explorer 6 Training:

We offer a training session for the PCAN-Explorer, which includes an introduction to the main features of the software, the work with the PCAN-Symbol Editor, and a demonstration of the add-ins. If you are interested and for further information, please contact [training@peak-system.com](mailto:training@peak-system.com).

### PCAN-Explorer 6 Licenses:

**Single Computer License** - With this license you get an installation CD and a license file. With that you are allowed to install, activate, and use the software on a single computer exclusively. The activation of the software is done online, by phone, or e-mail.

**Portable License + USB Copy Protection Dongle** - With this type of license, you get an USB copy protection dongle for each purchased license in addition to the installation CD. You can install PCAN-Explorer 6 on several computers. In order to unlock and use the software, you must plug the copy protection dongle into a free USB port.

### Ordering information

Designation	Part No.
PCAN-Explorer 6 Single Computer License	IPES-006000
PCAN-Explorer 6 Portable License + Copy Protection Dongle	IPES-006000 + IPES-006090

### Scope of supply

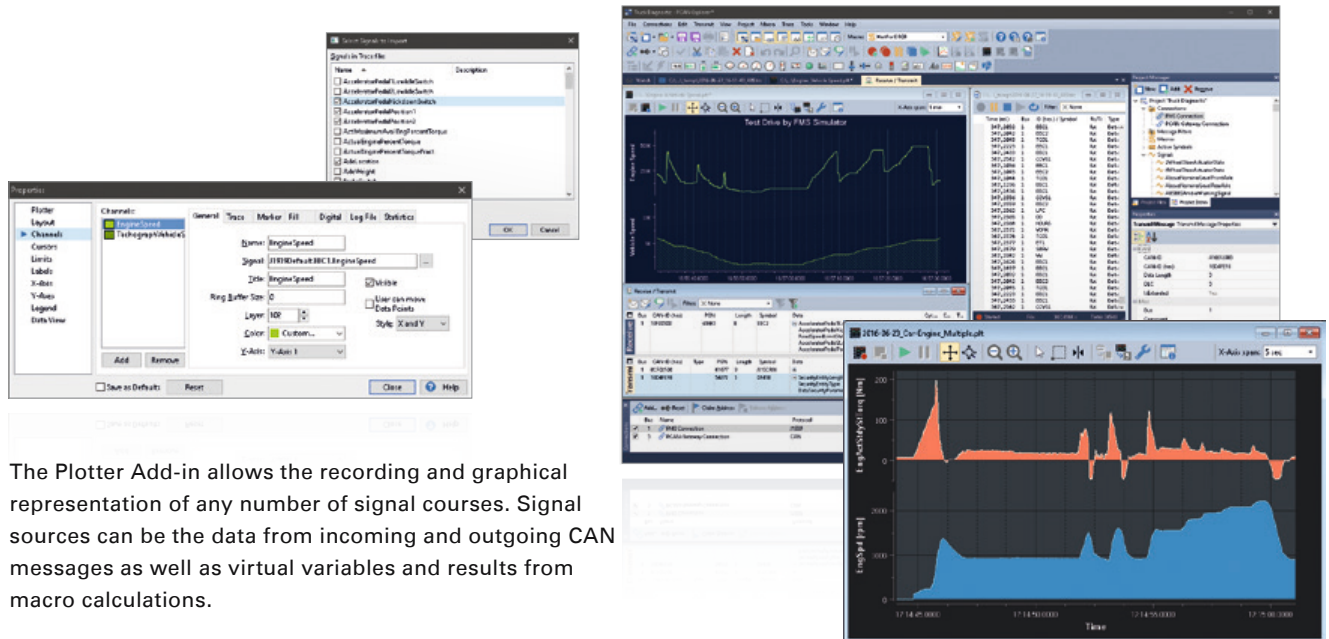
- PCAN-Explorer installation CD
- Single computer license or portable license with USB copy protection dongle
- PCAN-Symbol Editor for Windows (details on page 102)
- Documentation in HTML help format

### System requirements

- Windows 10, 8.1, 7 (32/64-bit)
- At least 2 GB RAM and 1.5 GHz CPU
- For the CAN bus connection:
  - PC CAN interface from PEAK-System
- Free USB port for copy protection dongle (only for portable license)
- Internet connection recommended for activation

# Plotter Add-in

Optional Function Upgrade for the PCAN-Explorer



The Plotter Add-in allows the recording and graphical representation of any number of signal courses. Signal sources can be the data from incoming and outgoing CAN messages as well as virtual variables and results from macro calculations.

**Plot Viewer:** The free Windows software Plot Viewer enables the display of the records without an installation of PCAN-Explorer.

## Features

- ☐ Real-time display of signal courses
- ☐ Unlimited number of recording channels
- ☐ Unlimited number of Y-axes
- ☐ Decoupling of the configuration of Y-axis and channels to improve presentation and handling
- ☐ X-axis and Y-axes can be zoomed and scrolled freely, even during recording
- ☐ Labelling of time axis with absolute or relative time stamps
- ☐ Facility for automatic adaptation of axes to plots
- ☐ Reversible Y-axes
- ☐ Logarithmic scales
- ☐ Cursor display for plot measurement
- ☐ Save the current view as an image in EMF, PNG, BMP, or JPEG format
- ☐ Export the recording to a CSV file
- ☐ Import of data recordings from the PCAN-Explorer's tracer, from PCAN-Trace, or PCAN-View
- ☐ Display of limiting values and value ranges
- ☐ Comprehensive formatting options for displaying curves, axes, and the plotter layout

## Ordering information

Designation	Part No.
Plotter Add-in 6	IPES-006087

## Scope of supply

- ☐ Plotter Add-in software
- ☐ Single user license

## System requirements

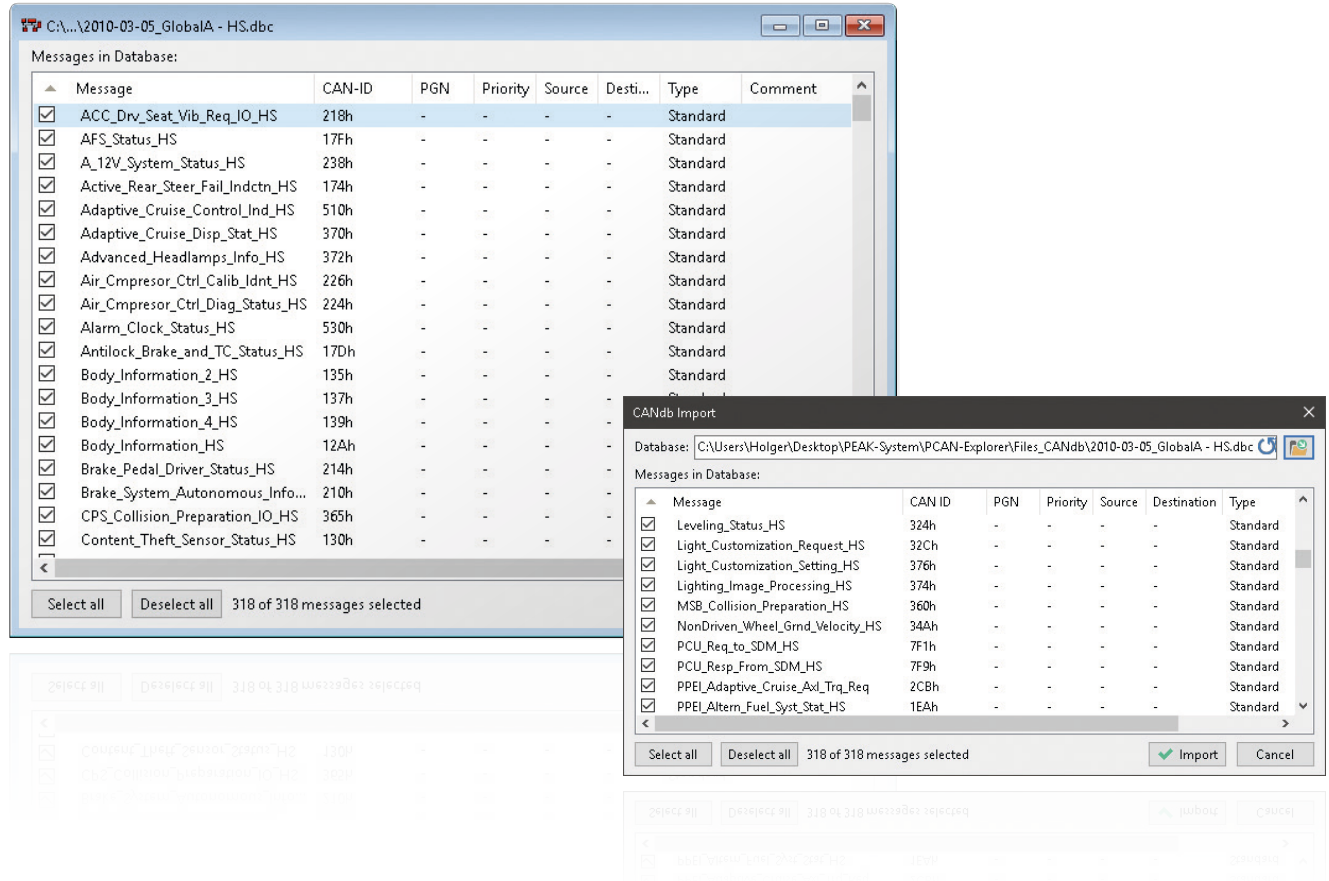
- ☐ PCAN-Explorer 6
- ☐ Windows 10, 8.1, 7 (32/64-bit)
- ☐ At least 2 GB RAM and 1.5 GHz CPU

## The current version of the Plot Viewer ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

# CANdb Import Add-in

Optional Function Upgrade for the PCAN-Explorer



The CANdb format is a common data description format for CAN bus information in the car industry.

CANdb Import allows the import of CANdb files. This is a useful function for all those who do not want to manually transcribe their database into the PCAN-Explorer symbol format.

## Features

- ☐ Open CANdb files (.dbc)
- ☐ Selection of the messages to be used of a CANdb file
- ☐ Saves data using the project administration function in PCAN-Explorer
- ☐ Save to the PCAN-Explorer symbol format

## Ordering information

Designation	Part No.
CANdb Import Add-in 6	IPES-006086

## Scope of supply

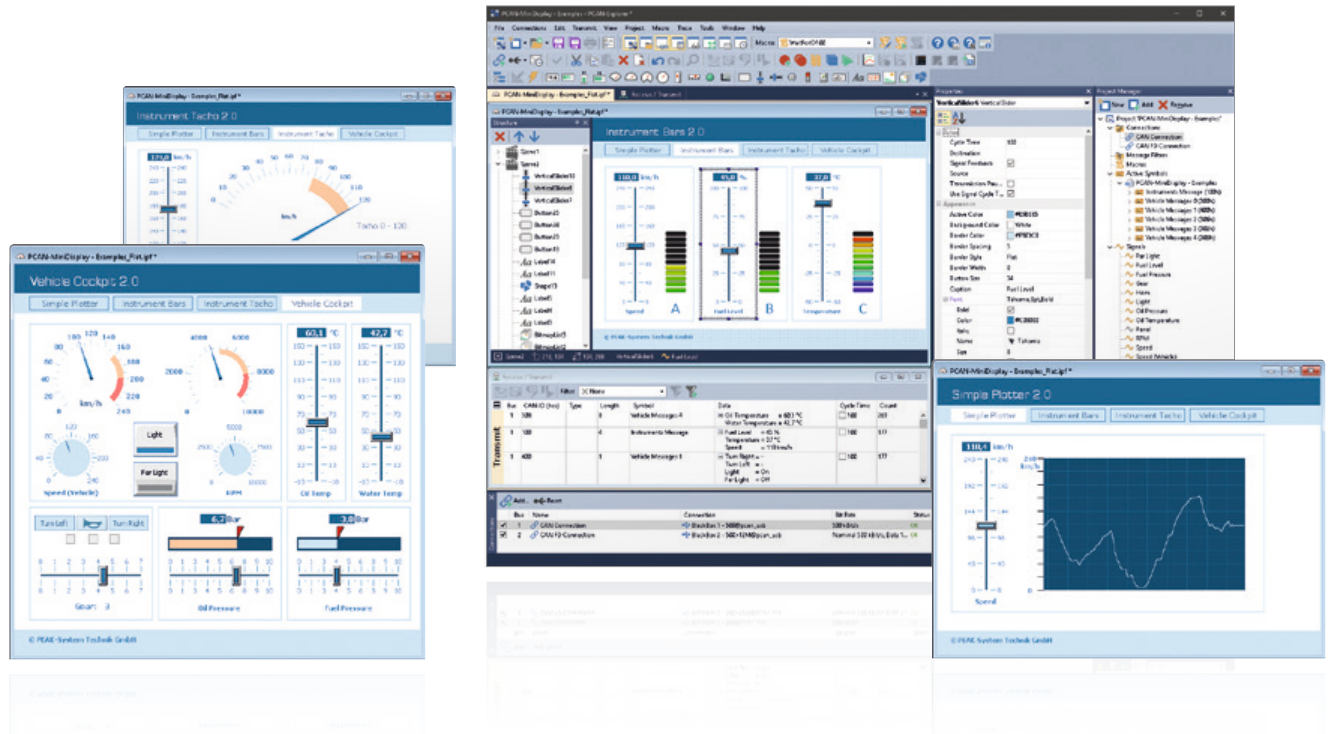
- ☐ CANdb Import Add-in software
- ☐ Single user license
- ☐ Documentation in HTML help format

## System requirements

- ☐ PCAN-Explorer 6
- ☐ Windows 10, 8.1, 7 (32/64-bit)
- ☐ At least 2 GB RAM and 1.5 GHz CPU

# Instruments Panel Add-in

Optional Function Upgrade for the PCAN-Explorer



The Instruments Panel Add-in allows the graphical representation of digital and analog signals using different display instruments. The integrated input options and controllers make it possible to also generate signals on the CAN bus, allowing easy simulation of complex CAN applications.

- \_\_\_ Signal-dependent display of image lists and scenes
- \_\_\_ Free positioning of the instruments using drag & drop, or numerical inputs for spot-on positioning
- \_\_\_ Loading and storing of complete panel configurations

## Features

- \_\_\_ Representation of analog and digital signals from received CAN messages using different display instruments
- \_\_\_ In addition to potentiometers, switches, and sliding controllers, input fields can be used to generate CAN messages
- \_\_\_ New instruments like an analog 360° gauge and a shape element for displaying squares, rectangles, circles, and ellipses
- \_\_\_ Selection and configuration of multiple elements at the same time
- \_\_\_ Extensive configuration of the properties of one or more elements using the property window
- \_\_\_ The Instruments Panel object model enables complete automation using COM and scripts
- \_\_\_ Representation of different scenes on the same panel during runtime

## Ordering information

### Designation

Instruments Panel Add-in 6

### Part No.

IPES-006088

### Scope of supply

- \_\_\_ Instruments Panel Add-in software
- \_\_\_ Single user license
- \_\_\_ Documentation in HTML help format

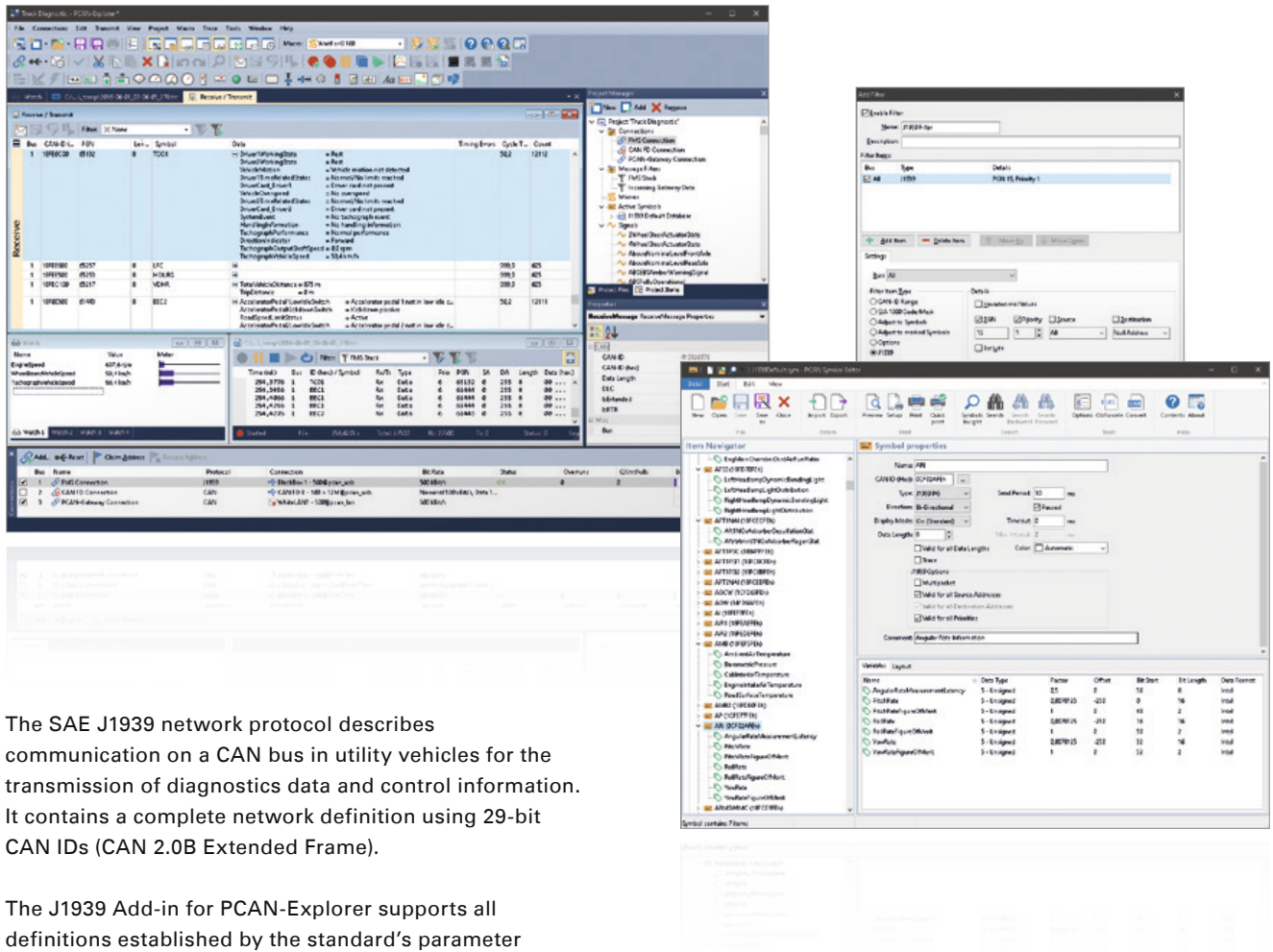
### System requirements

- \_\_\_ PCAN-Explorer 6
- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU



# J1939 Add-in

Optional Function Upgrade for the PCAN-Explorer



The SAE J1939 network protocol describes communication on a CAN bus in utility vehicles for the transmission of diagnostics data and control information. It contains a complete network definition using 29-bit CAN IDs (CAN 2.0B Extended Frame).

The J1939 Add-in for PCAN-Explorer supports all definitions established by the standard's parameter groups and provides a simple means of accessing the parameters. A database with all the definitions and parameters contained is also supplied.

## Features

- Support for all functions of the SAE J1939 network protocol
- SAE J1939 database with all the definitions and parameters (revision November 2016)
- CAN messages can be sent in broadcast form or targeted to individual control units (ECUs)
- Addressing of up to 254 ECUs
- Supports multi-packet messages

## Ordering information

### Designation

J1939 Add-in 6

### Part No.

IPES-006089

### Scope of supply

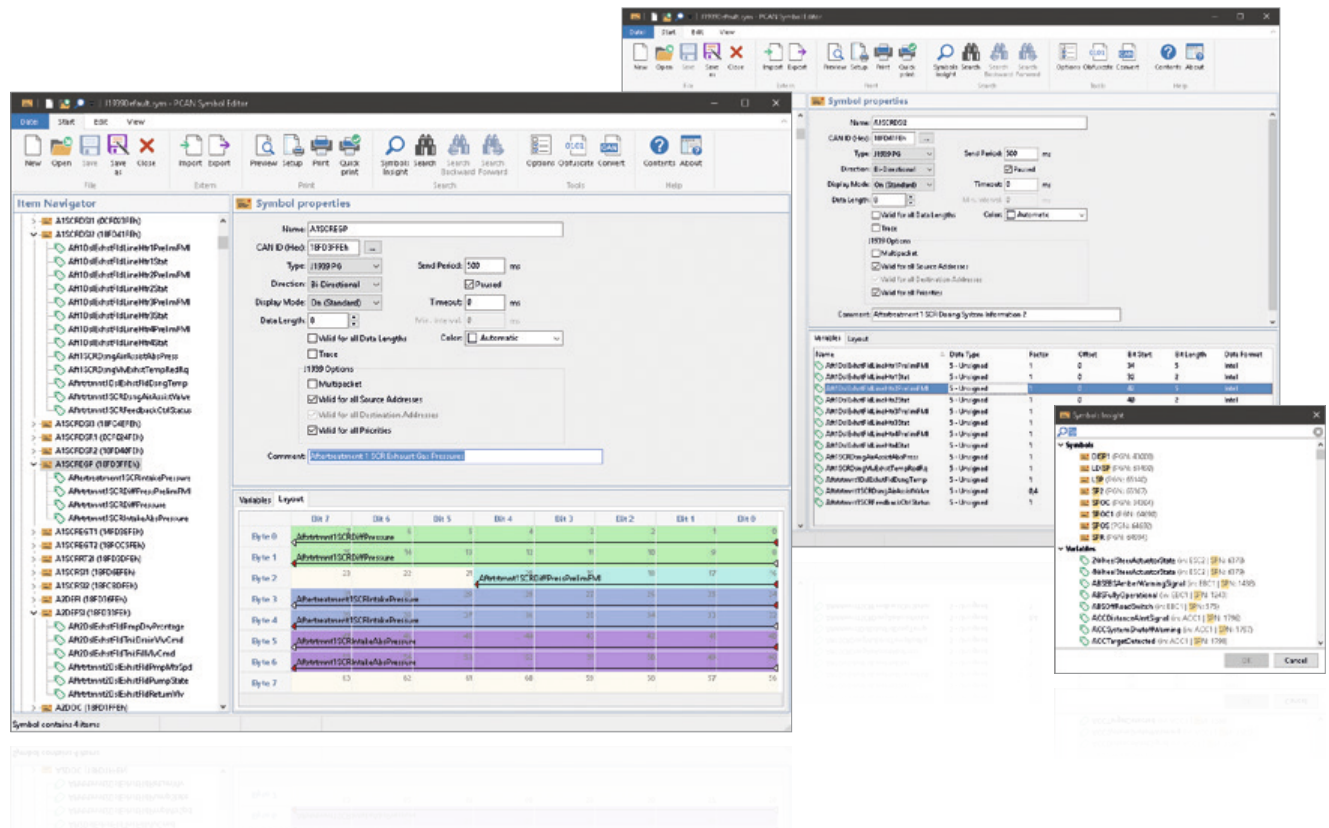
- J1939 Add-in software
- Single user license
- Documentation in HTML help format

### System requirements

- PCAN-Explorer 6
- Windows 10, 8.1, 7 (32/64-bit)
- At least 2 GB RAM and 1.5 GHz CPU

# PCAN-Symbol Editor

Windows Software for Creating and Editing Symbol Files



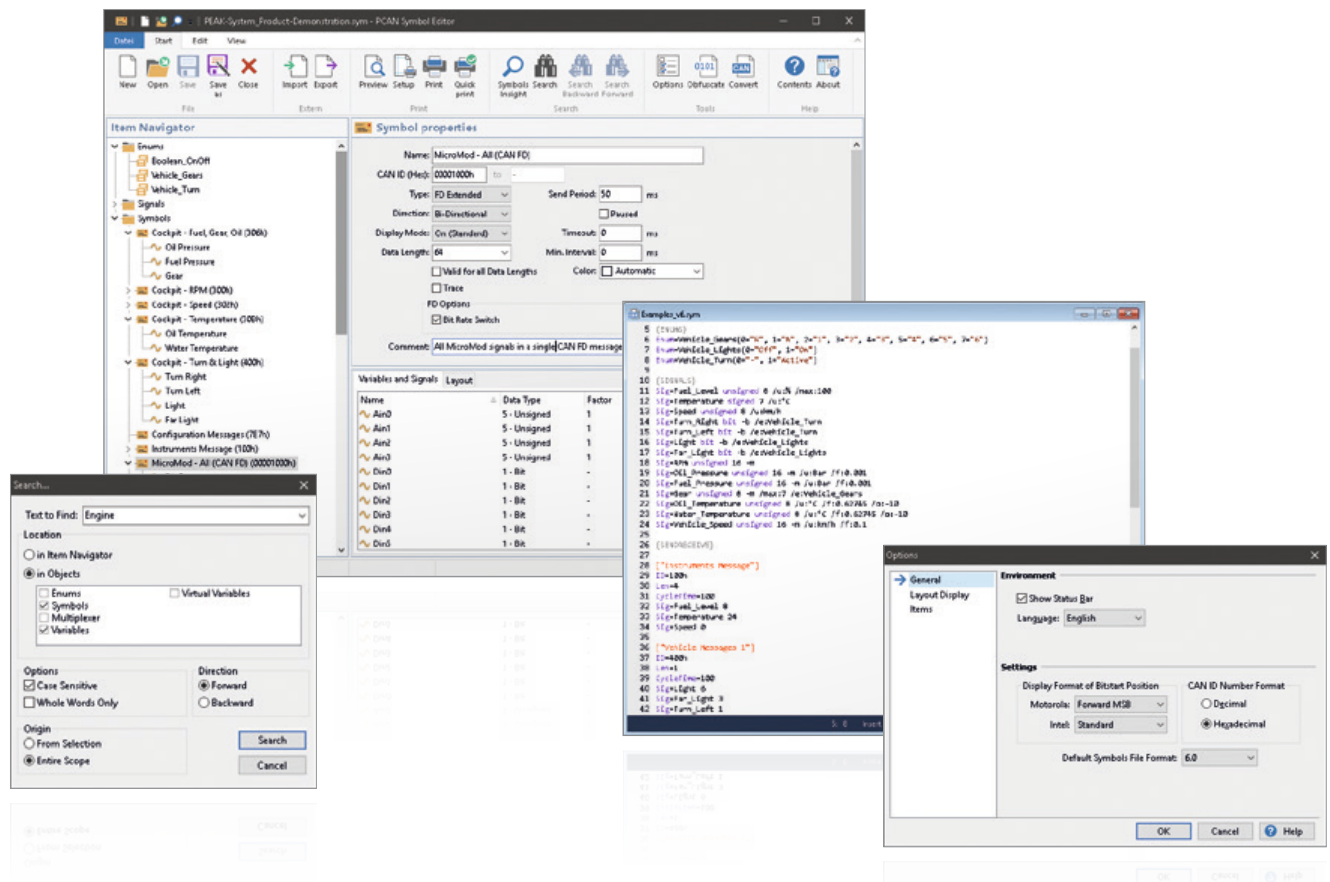
The symbol format developed by PEAK-System translates the hexadecimal display used for CAN data traffic into a format that the user can understand.

To create a symbol, names are first assigned to the individual CAN IDs. The interpretation and presentation of CAN data is defined using variables with various parameters, such as name and output format. The symbol created in this manner enables easy allocation of incoming and outgoing CAN messages and ensures that the CAN data is readable.

The free PCAN-Symbol Editor uses clearly structured menus and a graphical representation of symbols to enable convenient creation and editing of Symbol files.

## Features

- \_\_\_ Symbolic representation of CAN messages through the assigning of alphanumeric names
- \_\_\_ Bit-exact division of the data into variables for assigning name, data type, list of values, scaling, offset, etc.
- \_\_\_ Support for CAN specifications 2.0 A/B and FD
- \_\_\_ Supports data processing in accordance with IEEE 754 as well as the Intel and Motorola format
- \_\_\_ Set up user-defined outputs using lists of values (Enums)
- \_\_\_ Use of multiplexers for outputting CAN data of a single CAN ID with different symbol definitions
- \_\_\_ Allows the creation of signals in Symbol files
- \_\_\_ With a signal, the representation of CAN data can be defined and used for multiple symbols
- \_\_\_ The graphic representation of symbols and the automatic error detection allow easy creation of Symbol files
- \_\_\_ Revised user interface with Quick Start function and dynamic text search for symbols, signals, menu commands, recently opened files, etc.
- \_\_\_ The Item Navigator and the search function allow targeted access to all elements of the Symbol files



- \_\_\_ Function to convert Symbol files between file formats
- \_\_\_ Create virtual variables for CAN-independent inputs and outputs and macro calculations (in conjunction with PCAN-Explorer only)
- \_\_\_ Import CANdb files into the symbol data format and vice versa (requires the PCAN-Explorer and the add-In CANdb Import)
- \_\_\_ Supports symbols for J1939 message formats (requires the PCAN-Explorer and the add-In J1939)

## Ordering information

### Designation

PCAN-Symbol Editor

### Scope of supply

- \_\_\_ PCAN-Symbol Editor software
- \_\_\_ Documentation in HTML Help format

### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU

# PCAN-FMS Simulator 2

Windows Software for Simulating CAN Data According to the FMS Standard

The protocols FMS (Fleet Management System) and Bus-FMS provide a manufacturer-independent interface for reading vehicle-specific CAN data on heavy commercial vehicles and busses. The extensive and continually growing support of leading commercial vehicle and bus manufacturers allows cross-market telematics applications to be implemented.

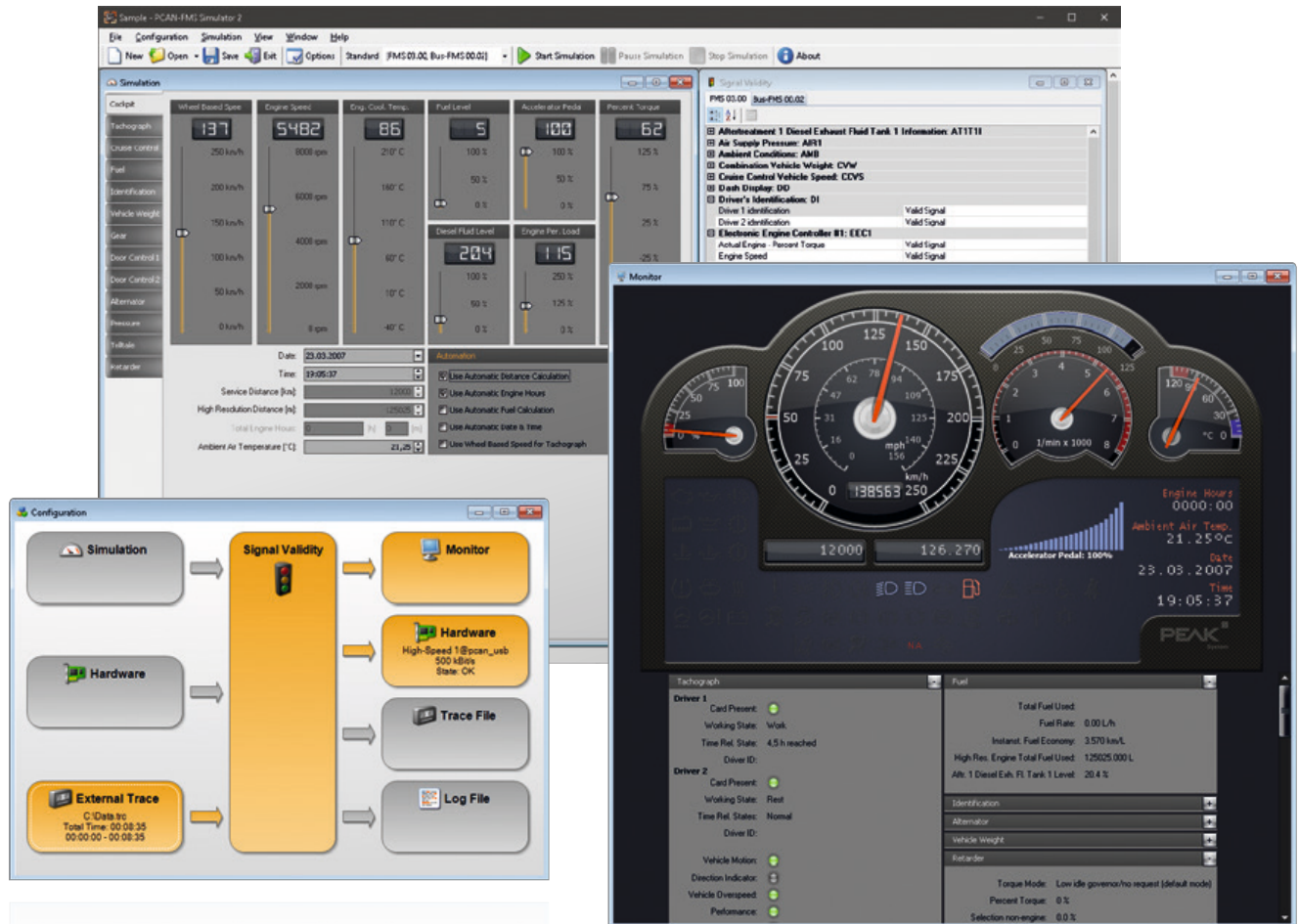
For these types of developments, the PCAN-FMS Simulator 2 application made by PEAK-System provides the simulation of both standards in a single software application with an easy-to-use graphical user interface.



## Features

- \_\_\_ Support of the standards:
  - ▀ FMS 01.00, 02.00, and 03.00 (Truck FMS)
  - ▀ Bus-FMS 00.01, 00.02, and 00.03
- \_\_\_ Activate and deactivate the different standards in the program
- \_\_\_ Manual simulation of CAN data at FMS input. Optional switchable automatic calculation for various signal values, such as fill level
- \_\_\_ Feed-in of CAN data using PCAN hardware at FMS input
- \_\_\_ Reproduction of trace files or a user-defined period of a trace file at the FMS input. A loop function can be used optionally
- \_\_\_ Possibility of simulating error statuses
- \_\_\_ Disconnection and connection of specific CAN messages
- \_\_\_ Graphic representation of FMS data with analog and digital instruments in a virtual cockpit with full-screen function
- \_\_\_ Configurable colored sections on the analog instruments
- \_\_\_ ISO-7000-compliant symbolic display of status signal values
- \_\_\_ FMS data output possible using a PEAK CAN interface
- \_\_\_ Recording of CAN messages in trace files
- \_\_\_ Recording of FMS data as CSV log files, for instance for further processing in Excel
- \_\_\_ Loading and saving of the entire simulation environment in project files (forward and backward compatibility with version 1 of the PCAN-FMS Simulator)





Beginning with version 2.5, specially pre-configured projects can be opened by the Tour Starter or directly with desktop icons. This mode doesn't require further settings. The display of the instruments is set to full-screen mode and the tour recording can be started. Besides the recording of trace and log data, additional information is collected for later analysis, like fuel consumption and average speed.

#### Features of the Tour mode:

- \_\_\_ Starting of specially pre-configured projects via the Tour Starter or desktop icons for recurring analysis and monitoring purposes
- \_\_\_ Recording of additional driving data, like fuel consumption and average speed
- \_\_\_ Archiving Tour-specific records and driving data

#### Ordering information

Designation	Part No.
PCAN-FMS Simulator 2	IPES-002050

#### Scope of supply

- \_\_\_ PCAN-FMS Simulator 2 installation CD
- \_\_\_ Portable license with USB copy protection dongle
- \_\_\_ Documentation in HTML Help format (English and German)

#### System requirements

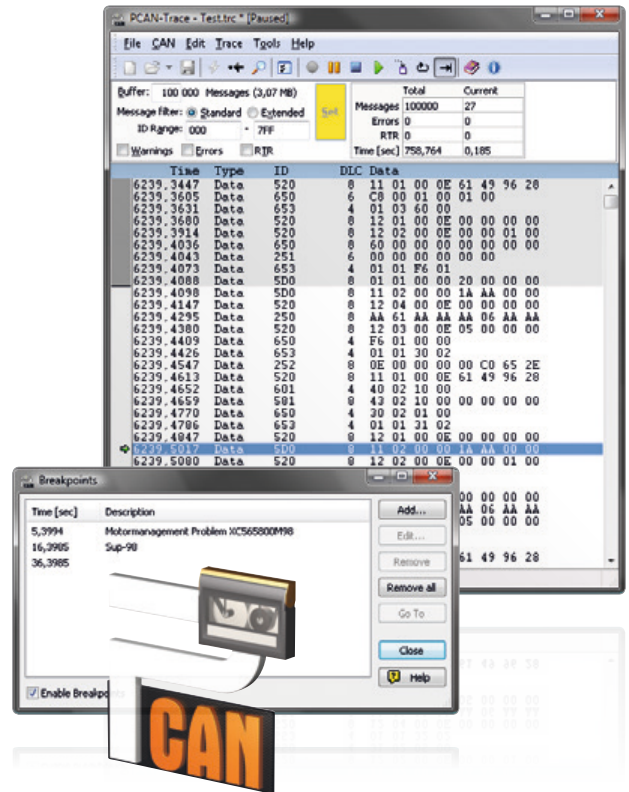
- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ Microsoft .NET Framework 2.0
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ Free USB port for copy protection dongle
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System

# PCAN-Trace

## Comprehensive Data Logger for CAN Messages

The PCAN-Trace program is a data logger for up to 9,999,000 CAN messages. It enables CAN messages to be quickly recorded, saved, and even played back on the CAN bus. The program displays the number of received messages and identifies the types of the messages (data frame, error frame, RTR frame).

CAN messages can be recorded or replayed in linear or ring buffer mode. PCAN-Trace also provides an option to play back CAN messages in single step mode. You can also simplify analysis and tracing by setting playback mode breakpoints.



### Features

- ☐ Log facility for up to 9,999,000 CAN messages
- ☐ Choice of linear buffer or ring buffer (in receive and playback mode)
- ☐ Displays number and type of received CAN messages
- ☐ Adjustable message filter
- ☐ Support for 11-bit and 29-bit IDs
- ☐ Facility to play back CAN messages that have been recorded using PCAN-Explorer or PCAN-View, even in single-step mode
- ☐ Playback of selected areas of a CAN message record
- ☐ Breakpoints can be used in playback mode
- ☐ Received data can also be viewed in a text editor
- ☐ Control of the software via the command line

### Ordering information

#### Designation

PCAN-Trace

#### Part No.

IPES-002027

#### Scope of supply

- ☐ PCAN-Trace installation CD
- ☐ Single user license
- ☐ Documentation in HTML help format

#### System requirements

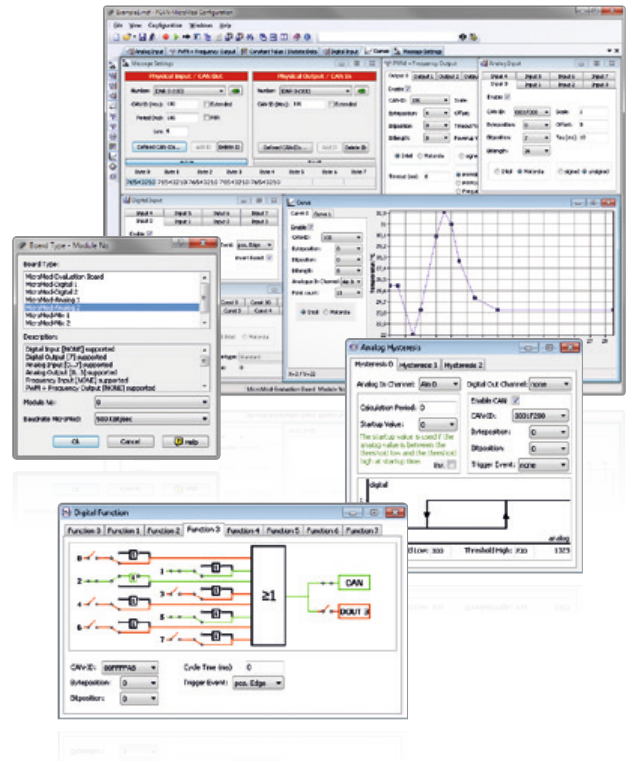
- ☐ Windows 10, 8.1, 7 (32/64-bit)
- ☐ At least 2 GB RAM and 1.5 GHz CPU
- ☐ For the CAN bus connection:  
PC CAN interface from PEAK-System

# PCAN-MicroMod Configuration

# Windows Configuration Software for PCAN-MicroMod Products

The PCAN-MicroMod Configuration software can be used to configure all products based on the PCAN-MicroMod. Specific configuration options are available for the PCAN-MicroMod itself, the motherboards, and the Evaluation board, depending on the hardware in use.

Configuration data is transmitted to the module via CAN. Use of unique module IDs allows independent configuration of multiple devices on a single CAN bus.



## Features

- └ Product-specific configuration options:
  - Periodic and edge-triggered transmission of CAN messages
  - Logical linking of digital inputs
  - Direct conversion from analog inputs to CAN IDs
  - Analog values can be processed using characteristic curves or hysteresis functions
  - Direct evaluation of rotary encoders
- └ Configuration data transmitted via CAN (PEAK CAN interface required)
- └ Existing configurations can be read out via CAN for further processing

## Ordering information

### Designation

## PCAN-MicroMod Configuration

### Scope of supply

- \_\_\_ PCAN-MicroMod Configuration software
- \_\_\_ Documentation in HTML Help format

**The current version ...**

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

## System requirements

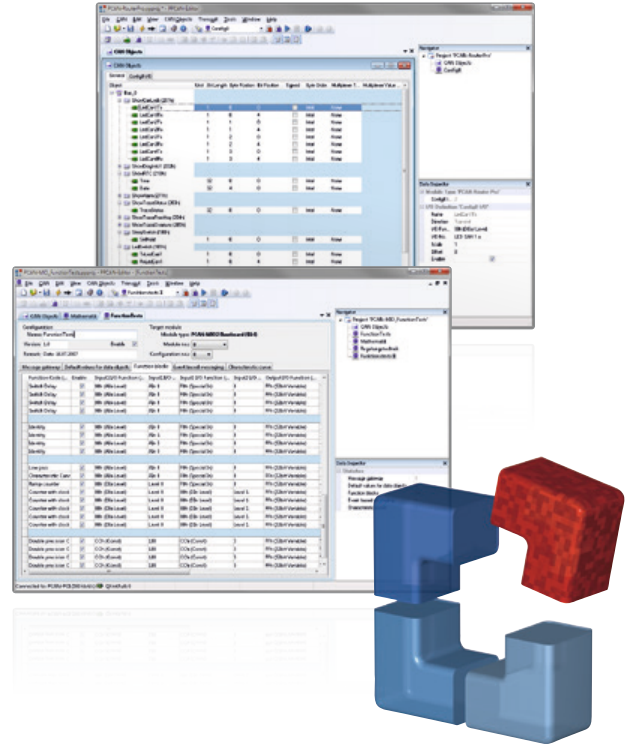
- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System

# PPCAN-Editor 2

## Comprehensive Configuration Software for I/O Modules

PPCAN-Editor 2 software enables detailed configuration of various I/O modules with CAN connections, such as PCAN-MIO, PCAN-Router Pro, and MU-Thermocouple1 CAN.

This type of configuration process begins with the definition of incoming and outgoing CAN messages. Then, depending on the hardware, the user has a number of different function blocks and other settings available for processing CAN data traffic. Finally, the configuration data is transmitted to the module using CAN. This step requires a PEAK CAN interface.



### Features

- \_\_\_ Definition of event-triggered or periodic CAN message transmission
- \_\_\_ Data manipulation via the basic scale and offset functions
- \_\_\_ Various function blocks for processing of measurement values such as hysteresis, characteristic curves, mathematical calculation operations, and logical links
- \_\_\_ Multiplexer function for conditional handling of CAN data (only for PCAN-MIO and PCAN-Router Pro)
- \_\_\_ Selective forwarding of CAN data via gateway functions
- \_\_\_ Conditional execution of function blocks via comparison functions
- \_\_\_ Module-specific parameter settings
- \_\_\_ Importing of PCAN-Symbol Editor Symbol files for convenient definition of incoming and outgoing CAN messages
- \_\_\_ Configuration data transmitted via CAN (PEAK CAN interface required)

### Ordering information

#### Designation

PPCAN-Editor 2

#### Scope of supply

- \_\_\_ PPCAN-Editor 2 software
- \_\_\_ Documentation in HTML Help format
- \_\_\_ PDF function block reference guide

#### The current version ...

- ... is available on the product DVD (supplied with our hardware)
- ... can be downloaded from the Internet free of charge at [www.peak-system.com](http://www.peak-system.com)

#### System requirements

- \_\_\_ Windows 10, 8.1, 7 (32/64-bit)
- \_\_\_ At least 2 GB RAM and 1.5 GHz CPU
- \_\_\_ For the CAN bus connection:  
PC CAN interface from PEAK-System



# Accessories

## Adapters

## Cables

- Helpful CAN accessories
- Ideal for test layouts and small batches
- PC adapter cards for PC/104 Small Form Factor Boards
- CAN cables and adapters for various applications
- Special manufacture possible at any time

# Adapters

## Test Interfaces for PC/104 and PC/104-Plus Cards

These adapters can be used to fit and operate PC/104 cards in PCs with ISA slots and PC/104-Plus cards in PCs with PCI slots. Multiple cards can be stacked together on a single adapter.



### ISA-PC/104 Adapter

There are screw terminal adapters which allow the different power supply voltages (+5 V, -5 V, +12 V, -12 V) to be accessed on the card. Four control LEDs show the relevant status. A stack-through connector is provided for the PC/104 bus.

### Specifications

- Two-layer board with gold plated ISA contacts
- PC voltages may be tapped into using screw terminals
- LED status display
- PC/104 contacts fed out on bottom side



### PCI-PC/104-Plus Adapter

### Specifications

- Two-layer board with gold-plated PCI contacts

### Ordering information

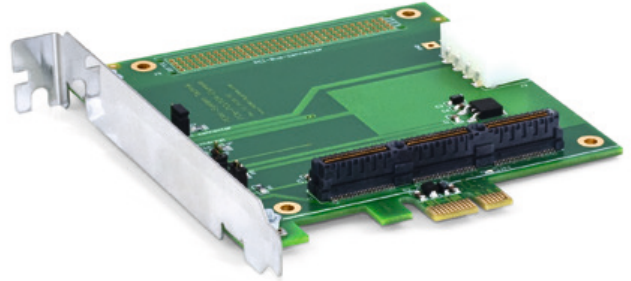
Designation	Part No.
ISA-PC/104 Adapter	IPEH-002078
PCI-PC/104-Plus Adapter	IPEH-003028-XL

# PCI-Express-PCIe/104 Adapter

## Test Interface for PCIe/104 Cards

This adapter can be used to fit and operate PCI/104-Express cards in PCs with PCI Express slots. Multiple cards can be stacked together on a single adapter.

The adapter has its own internal voltage controller which generates the 5-Volt supply for the PCI/104-Express card from the 12 Volts from the PC PCI Express slot. As an option, the 5-Volt supply can be connected directly via the HD connection. All supply voltages are visualized by LEDs and can be separated with jumpers in order to do current measurement.



### Specifications

- ☐ 4-layer board with gold-plated PCIe contacts
- ☐ Internal 5-Volt voltage regulator
- ☐ Molex PC HD connector for external 5-Volt supply
- ☐ LED power supply indication
- ☐ Jumpers to do current measurement for the supply voltages (3.3 V, 5 V, and 12 V)

### Ordering information

Designation	Part No.
PCI-Express-PCIe/104 Adapter	IPEH-003033

# PCle-miniPCle Adapter

## PCI Express Low-Profile Adapter for PCI Express Mini Cards

With the help of the PCIe-miniPCle adapter, you can operate PCI Express Mini and Half PCI Express Mini cards in a computer with low profile housing. Two spacers on the plug-in card can be appropriately positioned to attach the card in place. The adapter includes a Mini-USB socket, a Micro-SIM card holder, as well as a voltage supply of 1.5 V and 3.3 V for plugged PCI Express Mini cards.

In addition to the PCAN-miniPCle from PEAK-System, USB solutions as well as cards for wireless communications such as WLAN, WWAN, and WPAN can be operated via the adapter.



### Specifications

- ☐ Low Profile form factor
- ☐ 4-layer board with gold-plated connectors
- ☐ PC plug-in card (PCIe x1) for the PCI Express slot
- ☐ Suitable for operation of USB solutions and add-in cards for wireless communication:
  - WWAN (Wireless Wide Area Network, e.g. UMTS & GSM)
  - WLAN (Wireless Local Area Network)
  - WPAN (Wireless Personal Area Network, e.g. Bluetooth)
- ☐ Status LEDs for power supply and state of communication add-in cards
- ☐ Mini-USB socket for operation of USB solutions
- ☐ Micro-SIM card holder for operation of UMTS and GSM cards
- ☐ Supply voltage of the adapter of 3.3 V
- ☐ Supply voltage of 1.5 V and 3.3 V for plugged PCI Express Mini cards
- ☐ Screw fixings for PCI Express Mini and Half PCI Express Mini cards
- ☐ Extended operating temperature range from -40 to +85 °C (-40 to + 185°F)

### Ordering information

Designation	Part No.
PCle-miniPCle Low-Profile Adapter	IPEH-003029

### Scope of supply

- ☐ PCIe-miniPCle adapter with mounted D-Sub slot bracket incl. connection cable
- ☐ Manual in PDF format

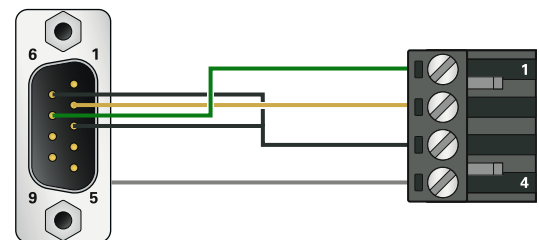


# PCAN-D-Sub Connection Adapter

## D-Sub Connection Adapter for Screw Terminal Blocks

PEAK-System CAN hardware has a 4-pin screw terminal block as CAN connector for models in the DIN rail housing. The PCAN-D-Sub Connection Adapter provides a 9-pin D-Sub socket for the screw terminal pins. Thus, it is possible to use our standard CAN cables with these devices in DIN rail housing and connect them to our PC CAN interfaces.

The PCAN-D-Sub connection adapter can also be used for CAN FD busses.



### Specifications

- \_\_\_ 4-pin screw terminal block (Phoenix) to 9-pin D-Sub socket (according to CiA® 303-1)
- \_\_\_ Suitable for CAN connection adaptation of the products:
  - PCAN-Repeater DR
  - PCAN-Router DR
  - PCAN-Ethernet Gateway DR
  - PCAN-Wireless Gateway DR
- \_\_\_ No termination
- \_\_\_ Suitable for the use in CAN FD busses

### Ordering information

Designation	Part No.
PCAN-D-Sub Connection Adapter	IPEK-003012

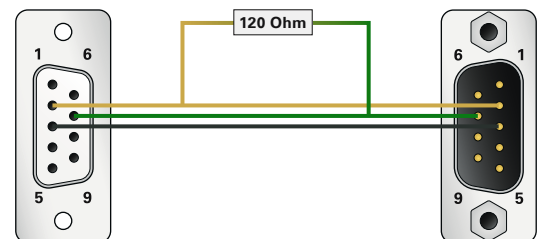
# PCAN-Term

## CAN Termination Adapter

High-speed CAN busses (ISO 11898-2) must be terminated at their ends by resistors.

The adapters PCAN-Term and PCAN-MiniTerm are used if no CAN node or a CAN node without internal termination is connected at these points.

The termination adapters can also be used for CAN FD busses.



### PCAN-Term Specifications

- ☐ CAN termination adapter in plastic casing
- ☐ 9-pin D-Sub socket to 9-pin D-Sub connector (in accordance with CiA® 303-1)
- ☐ With 120-Ohm termination resistor between CAN\_L and CAN\_H
- ☐ Suitable for the use in CAN FD busses

### PCAN-MiniTerm Specifications

- ☐ CAN termination adapter in molded body
- ☐ 9-pin D-Sub socket to 9-pin D-Sub connector (in accordance with CiA® 303-1)
- ☐ All pins are connected 1 to 1
- ☐ With 120-Ohm termination resistor between CAN\_L and CAN\_H
- ☐ Suitable for the use in CAN FD busses

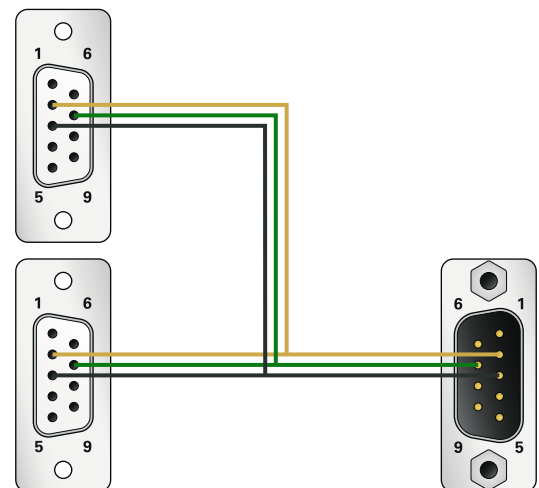
### Ordering information

Designation	Part No.
PCAN-Term	IPEK-003002
PCAN-MiniTerm	IPEK-003002-Mini

# PCAN-T-Adapter

## T-Adapter for CAN Tapping

The PCAN-T-Adapter creates a tap connection to the data cables and the ground within a CAN bus in order to be able to connect a CAN node. In this case, the CAN node is not terminated.



### Specifications

- \_\_\_ 9-pin D-Sub socket to 9-pin D-Sub connector and D-Sub socket (in accordance with CiA® 303-1)
- \_\_\_ CAN tap length about 20 cm
- \_\_\_ No termination

### Ordering information

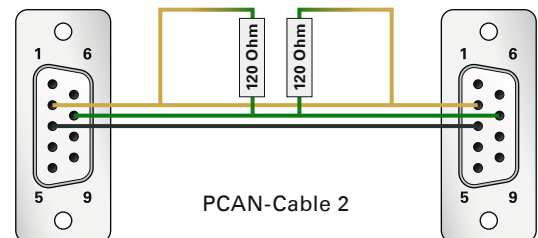
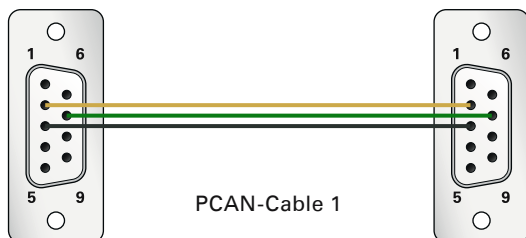
Designation	Part No.
PCAN-T-Adapter	IPEK-003003

# PCAN-Cable 1 & 2

## CAN Connection Cable

These cables are needed to set up a CAN bus and are specially designed to be used in a CAN environment. If two High-speed CAN hubs need a simple direct connection between them, the PCAN-Cable 2 with integrated termination can be used. The PCAN-Cable 1 is suitable for putting together a CAN bus which shall contain tap connections and separate termination (PCAN-T-Adapter and PCAN-Term products).

The cables can also be used for CAN FD busses.



### Specifications

- \_\_\_ 9-pin D-Sub sockets (in accordance with CiA® 303-1) at both ends
- \_\_\_ Length 2.0 m
- \_\_\_ Shield connected to GND
- \_\_\_ PCAN-Cable 1 without termination resistors
- \_\_\_ PCAN-Cable 2 with 120-Ohm termination resistors
- \_\_\_ Suitable for the use in CAN FD busses

### Ordering information

Designation	Part No.
PCAN-Cable 1	IPEK-003000
PCAN-Cable 2	IPEK-003001

Other lengths and special cable makeup on request.

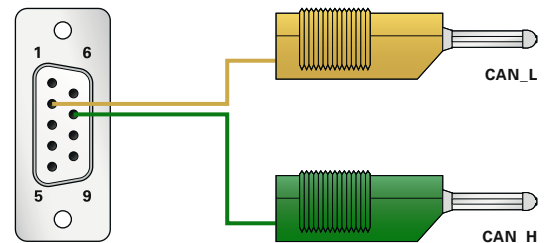


# PCAN-Cable 3

## CAN Cable for Test and Measurement Setups

With this cable the two components CAN-High and CAN-Low of the differential CAN signal can be picked up from a CAN bus or directly from a CAN interface. An easy connection to test and measurement setups is accomplished by the banana plugs.

The PCAN-Cable 3 can also be used for CAN FD busses.



### Specifications

- \_\_\_ 9-pin D-Sub socket (in accordance with CiA® 303-1) to banana plugs (4 mm) for picking up the signals CAN-High and CAN-Low
- \_\_\_ Without termination resistors
- \_\_\_ Length 2.0 m
- \_\_\_ Suitable for the use in CAN FD busses

### Ordering information

Designation	Part No.
PCAN-Cable 3	IPEK-003011

Other lengths and special cable makeup on request.

# PCAN-Cable OBD-2

## CAN-OBD-2 Diagnostics Cable

Many modern motor vehicles have an OBD-2 interface for connecting various diagnostics and testing tools. This adapter cable can be used to access the contained CAN lines.



### Specifications

- \_\_\_ 9-pin D-Sub socket (in accordance with CiA® 303-1)
- \_\_\_ OBD-2 connector – assigned for CAN only on:
  - Pin 6: CAN-High (J-2284)
  - Pin 14: CAN-Low (J-2284)
- \_\_\_ Length 1.0 m
- \_\_\_ Without termination resistors
- \_\_\_ All OBD-2 pins are mounted in the plug and can be assigned as desired

### Ordering information

Designation	Part No.
PCAN-Cable OBD-2	IPEK-003004

Other lengths and special cable makeup on request.

# PCAN-Cable J1939

## CAN-J1939 Adapter Cable

The SAE J1939 protocol establishes consistent CAN messages for the communication and diagnosis between components of heavy-duty vehicles such as construction machinery, tractors, and agricultural machines. In this area, robust DEUTSCH connectors are often used for on-board diagnostics connection.

The PCAN-Cable J1939 routes the CAN lines of those connections to a D-Sub socket, thus allowing access to PEAK CAN interfaces.



### Specifications

- ☐ 9-pin D-Sub socket (in accordance with CiA® 303-1) to 9-pole DEUTSCH connector of the HD series
- ☐ DEUTSCH connector assignment
  - C: CAN-High
  - D: CAN-Low
  - E: CAN-Shield
- ☐ Length 1.0 m
- ☐ Without termination resistor

### Ordering information

Designation	Part No.
PCAN-Cable J1939	IPEK-003009

Other lengths and special cable makeup on request.

# LIN Connection Cable for PC LIN Interfaces

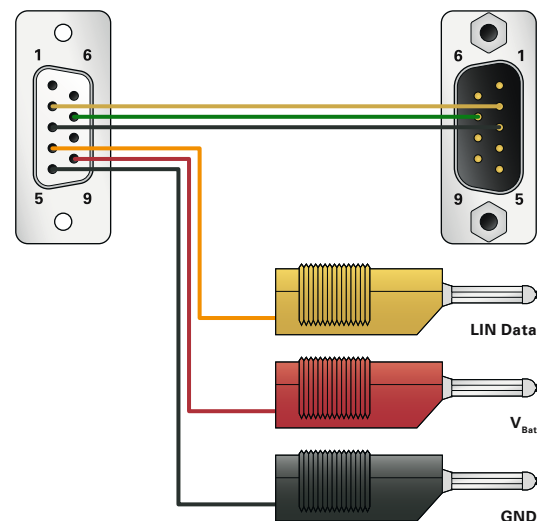
## Pre-configured Cable Set for PCAN-USB Pro FD and PLIN-USB

The PLIN-USB adapter is connected to the LIN bus via D-Sub. On the adapters PCAN-USB Pro FD and PCAN-USB Pro, the two field busses CAN and LIN are connected together via a D-Sub plug. However, a separate access to the LIN components is necessary.

The LIN Connection Cable for PC LIN Interfaces allows the tapping of individual lines. The LIN and the supply lines are lead directly out to separate plugs and the CAN lines are forwarded to a D-Sub plug.

The connection cable can be used without problems for CAN FD busses.

**Please note:** The LIN Connection Cable for PC LIN Interfaces is not suitable for use with the PCAN-LIN module.



### Specifications

- \_\_\_ Pre-configured cable set for PCAN-USB Pro FD, PCAN-USB Pro, and PLIN-USB
- \_\_\_ Split-up of the lines from the CAN/LIN connector to:
  - CAN (D-Sub plug, 9-pin)
  - LIN (banana plug, 4 mm)
  - Power supply for LIN (banana plugs, 4 mm)
- \_\_\_ Length about 0.75 m
- \_\_\_ Without terminating resistor
- \_\_\_ Suitable for the use in CAN FD busses

### Ordering information

Designation	Part No.
LIN Connection Cable for PC LIN Interfaces	IPEK-003013

Other lengths and special cable makeup on request.



# LIN Connection Cable for PCAN-LIN

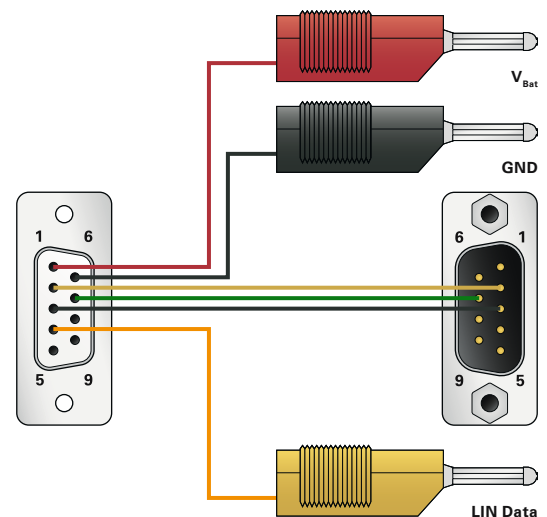
## Pre-configured Cable Set for the PCAN-LIN Module

On the PCAN-LIN module, the field busses and the power supply are connected together via a D-Sub plug. However, for some applications a separate access to the LIN components is necessary.

The LIN connection cable for PCAN-LIN allows the tapping of individual lines. The LIN and the supply lines are lead directly out to separate plugs and the CAN lines are forwarded to a D-Sub plug.

The connection cable can be used without problems for CAN FD busses.

**Please note:** The LIN connection cable for PCAN-LIN is not suitable for use with our PC LIN interfaces.



### Specifications

- \_\_\_ Pre-configured cable set for PCAN-LIN
- \_\_\_ Split-up of the lines from the CAN/LIN connector to:
  - CAN (D-Sub plug, 9-pin)
  - LIN (banana plug, 4 mm)
  - Power supply for LIN (banana plugs, 4 mm)
- \_\_\_ Length about 1.00 m
- \_\_\_ Without terminating resistor
- \_\_\_ Suitable for the use in CAN FD busses

### Ordering information

Designation	Part No.
LIN Connection Cable for PCAN-LIN	IPEK-003008

Other lengths and special cable makeup on request.

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