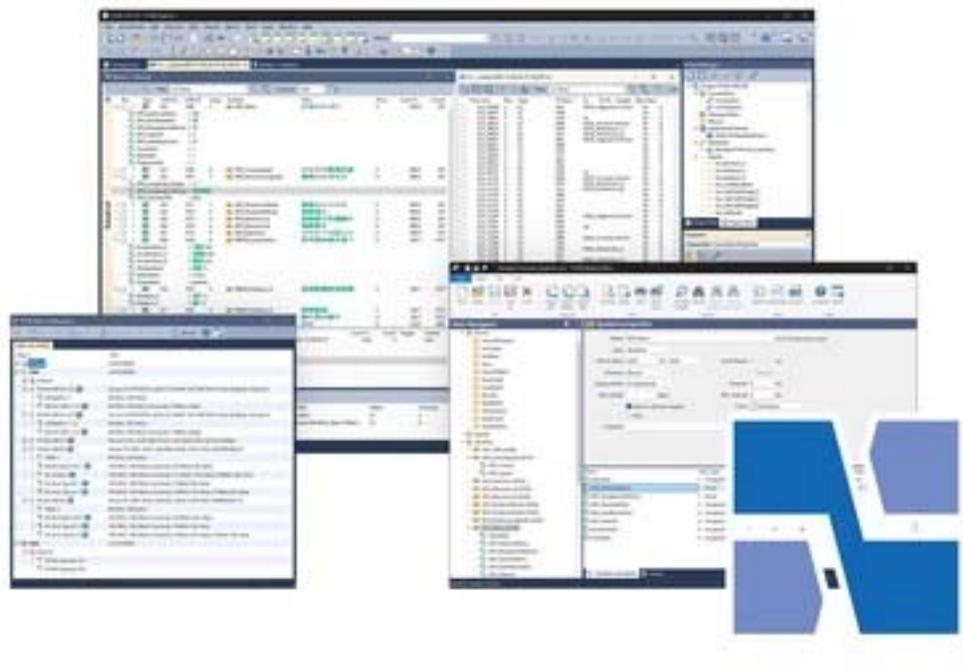


# PCAN-Explorer 7 (IPES-007000)



## Description

PCAN-Explorer 7 is a comprehensive, professional software for working with CAN CC (Classic), CAN FD, and CAN XL buses. By connecting to one or more CAN buses, users gain access to a wide range of options for monitoring the CAN traffic, individual messages, or specific data signals. Through manual or periodic message transmission, the bus can be directly influenced, for example, for control purposes or simulations.

A central feature of the program is the symbolic representation of CAN messages. With the help of PEAK-System's Symbol files or compatible third-party databases, the program instantly translates the hexadecimal CAN IDs and payload data into a readable and easily understandable format.

The trace function allows recording and playback of data traffic from or to

several buses simultaneously. For in-depth analysis, playback can be done step by step or with breakpoints. Incoming CAN messages as well as recordings can be filtered using various criteria.

Special requirements as well as the automation of complex processes can be implemented using simple macros, advanced scripts in Python or VBScript, and callback functions. For this, the entire PCAN-Explorer 7 object model is accessible via Python and VBScript.

Furthermore, the functionality of PCAN-Explorer can be extended. PEAK-System offers add-ins that improve data presentation and manipulation capabilities, add compatibility to third-party data definitions like CANdb or ARXML, and even add support for standards such as J1939.

## CAN XL

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CAN XL (Extended Data-Field Length) was designed to improve cooperation with Automotive Ethernet and to enable transmitting larger data streams for use cases such as ECU flashing. For this, the new standard provides transmission of up to **2048 bytes** payload data per message and data bit rates of up to **20 Mbit/s**.

## Features

- Management of all settings, information, and files in projects
- Exporting entire projects including linked files to handy packets for archiving or sharing
- Integrated text editor with syntax highlighting for creating and editing of Symbol files, macros, and scripts
- Quick search for elements and commands of the PCAN-Explorer
- Definition of keyboard shortcuts per project for commands, macros, and for setting signal values
- User interface language can be switched (German/English)
- Functionality upgrades with optional add-ins

- Improved performance due to 64-bit foundation and separate processing of communication and user interface

## **Connection to CAN CC / CAN FD / CAN XL**

- Connection with up to 64 buses, independent of their CAN specification
- Simultaneous connections with multiple CAN interfaces independent of their hardware type
- Support for the CAN specifications CAN CC (classic CAN 2.0), CAN FD, and CAN XL (ISO 11898-1:2024)
- Support for CAN XL operation modes:
  - CAN XL with error signaling
  - CAN XL without error signaling
  - CAN XL with transceiver mode switch
- Bit rate configuration:
  - CAN bit rates (nominal) up to 1 Mbit/s
  - CAN FD data bit rates up to 8 Mbit/s
  - CAN XL data bit rates up to 8 Mbit/s, CAN FD compatible transmission mode
  - CAN XL data bit rates up to 20 Mbit/s by using the transceiver mode switch
  - Optional use of custom bit rates with automatic calculation of register values
- Listen-only mode can be activated for each connection
- Clear overview of connections with their bit rate, status, error counter, and bus load
- Function to execute a hardware reset of the CAN interface

## **Reception and Transmission**

- Display of CAN traffic in sortable receive and transmit lists with various information like ID, length, data, time-outs, message count, and cycle time

- Separate column configuration for CAN, CAN XL, and J1939 in Receive/Transmit and Trace windows
- Highlighting of data changes on incoming CAN messages in Receive and Watch windows, applies to raw values and symbolic representation
- Error frame indication can be activated for each connection
- Display of connection's receive, transmit, and error states
- Message reception with a maximum resolution of 1  $\mu$ s
- Manual and periodic transmission of messages with a maximum resolution of 1 ms
- Creating CAN XL send messages with selection of an SDT (service data unit type) according to CiA® 611-1, such as tunneling of CAN FD frames
- Transmission of CAN messages in response to remote frames (only with CAN CC)
- Messages can be grouped as transmit lists, stored and loaded as desired, e.g., in order to emulate CAN nodes

## Recording

- Trace function for logging of CAN data traffic, optionally along with errors
- Operation of multiple tracers for different CAN channels at the same time
- Recording directly to files or to RAM (in linear, dynamic, or circular buffer mode)
- Saving of the logged data as readable TRC text files or CSV files
- Conversion of saved recordings to third-party file formats like MDF4 and ASC with the free PEAK-Converter
- 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
- Subsequent examination of the logged data with the help of Symbol files

## Playback

- Playback of CAN data traffic directly from files or from the buffer
- Operation of multiple playbacks to different CAN channels at the same time
- Optional playback with breakpoints or in single-step mode for in-depth analysis
- Playback of trace files with optional loop function
- Playback of a specified section of a recording
- Playback of third-party file formats like BLF and MDF4 by using the free file conversion tool PEAK-Converter

## Filtering

- Multiple flexible filters can be assigned to the Receive window or different traces
- Filters can be applied to running traces or subsequently to existing trace files
- Filters are composed of one or more items that are processed in sequence for each incoming message
- Filter types:
  - CAN channel
  - CAN ID range
  - SJA 1000 Code/Mask
  - CAN messages interpreted with Symbol files
  - Options like: errors, protocol exceptions, and overload frames, RTR frames, events
  - J1939-specific filter types: PGN, priority, source address, and destination address
  - CAN XL-specific filter types: PID, VCID, SDT, RRS, SEC, AF, and AF mask

## 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 to CAN IDs
  - Bit-exact division of the data into signals for assigning names, data type, etc.
- Signals are used for data presentation and processing by add-ins such as Plotter and Instruments Panel
- User-friendly real-time monitoring of several signals via the Watch window
- Bus load available as a signal for each connection
- Comfortable Symbol file creation with the supplied Windows software PCAN-Symbol Editor or with the integrated text editor
- Application of multiple Symbol files or third-party data description files on a single CAN connection
- Direct application of third-party data description files (.dbc, .arxml) with the Bus Descriptions Add-in

## Automation

- Automation of small tasks or complex processes with macros, VBScript, or Python, like:
  - 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 signal values 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 or Python to almost all program elements via the PCAN-Explorer object model
- Processing of Python scripts with the included Embedded Python installation

- Automation with callback libraries
  - Integration of self-implemented callback functions as native libraries (.dll, 64-bit)
  - Freely programmable processing and modification of CAN message data and execution of message-related processes
  - Calling of callback functions on events such as receipt, before transmission, and after transmission of a CAN message

## System requirements

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- Windows® 11 (x64/ARM64), 10 (x64)
- For portable license: USB port for license dongle (available for USB-A and USB-C)
- For the CAN bus connection: PC CAN interface from PEAK-System, if required, with support for CAN FD or CAN XL
- Internet connection recommended for activation