# PCAN-LIN

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

# User Manual

**PEAK System**

**.PEAK**
System

## Relevant products

| Product Name | Model | Part number |
|---|---|---|
| PCAN-LIN | High-speed CAN (HS-CAN) | IPEH-002025 |
| PCAN-LIN | Low-speed CAN (LS-CAN) | IPEH-002028 |
| PCAN-LIN | High-speed CAN, opto-decoupled (opto) | IPEH-002029 |

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# Contents

# 1 Introduction

> 💡 **Tip:** At the end of this manual (Appendix D) you can find a **Quick Reference** with brief information about the installation and operation of the PCAN-LIN module.

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.

This user manual covers the use of the PCAN-LIN hardware. The software supplied on DVD is described in the corresponding help. Information about the protocol for the communication via the RS-232 interface can be found in the separate document "PCAN-LIN – Protocol Definitions Documentation".

## 1.1 Properties at a Glance

� Transmission/reception LIN 1.x and 2.x frames

▸ LIN bit rates of 1 - 20 kbit/s

▸ CAN bit rates up to 1 Mbit/s

▸ Available for use as LIN master or slave

- General-purpose gateway (or router when using Acceptance Code / Acceptance Mask feature) from:
  - RS-232 to LIN (and back)
  - RS-232 to CAN (limited bandwidth)
  - CAN to LIN (and back)

- Simulation of LIN slaves. Data can be changed via CAN frames

- Processing a user-definable LIN ID list (scheduler with limited number of entries, cyclic handling if required)

- Individual LIN frames can be initiated via CAN or RS-232

- 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)

- Voltage supply from 9 to 30 V

- Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

## 1.2   Operation Requirements

- Voltage supply:

  - Modules up to ser. no. 999:  8 - 18 V DC

  - Modules from ser. no. 1000: 9 - 30 V DC

- For the connection to the computer: RS-232 extension cable D-Sub 9-pin, RS-232 connector on the computer

- For the supplied configuration software: Windows 10, 8.1, 7 (32/64-bit)

## 1.3   Scope of Supply

⌐ PCAN-LIN in plastic casing

⌐ Configuration and monitoring tool PCAN-LIN Config for Windows

⌐ Manual in PDF format

# 2 Connectors

The PCAN-LIN module has two 9-pin D-Sub connectors:

- Male: LIN, CAN, and voltage supply

- Female: RS-232

## 2.1 D-Sub Male Connector for LIN, CAN, and Voltage Supply

The field busses and the voltage supply (e.g. a car battery) are connected together via the D-Sub male connector on the PCAN-LIN module.
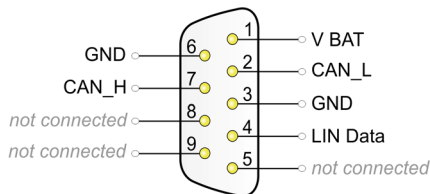


|                           |                  |
|---------------------------|------------------|
| V BAT (up to ser. no. 999):    | 8 - 18 V DC |
| V BAT (from ser. no. 1000):    | 9 - 30 V DC |

## 2.1.1  CAN Termination

| PCAN-LIN model | Termination | Comment |
|---|---|---|
| High-speed CAN (opto) | none | |
| Low-speed CAN | 5.66 kΩ (default) / 560 Ω | Change between resistance values with switch on the circuit board; low resistance setting only necessary if few CAN nodes are connected to the Low-speed CAN bus. |

▶ Do the following to change the resistance value of the **Low-speed CAN** termination:

1. Open the plastic casing of the PCAN-LIN module by cautiously pushing in the two latches on both sides, e.g. with a flat tip screwdriver.

2. On the PCAN-LIN circuit board there is a switch for the Low-speed CAN termination.
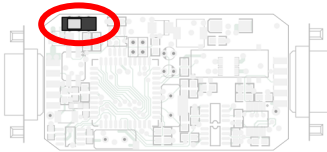
PCAN-LIN modules up to ser. no. 999     PCAN-LIN modules from ser. no. 1000
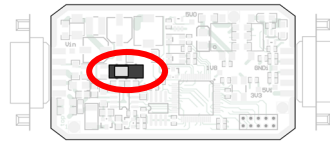
Set the switch according to the desired resistance value. Setting possibilities:

| 5.66 kΩ (default) | 560 Ω |
|---|---|
| (left) | (right) |

![PEAK System]

## 2.2   D-Sub Female Connector for RS-232

Via the RS-232 interface the PCAN-LIN module is linked to a compu-
ter or another monitoring or control unit. A computer can be con-
nected to the PCAN-LIN module via a normal RS-232 extension
cable with 9-pin D-Sub connectors (<u>no</u> null modem cable).

For the serial communication only the two data lines and the
ground connection are required; handshake lines are not used.
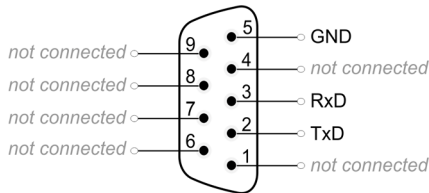


The RS-232 connection of the **opto-decoupled PCAN-LIN model** is
galvanically separated from the other electronic circuits in the
module. The maximum separation voltage is 1 kV.

# 3 Software Installation

The scope of supply contains the PCAN-LIN Configuration Tool for Windows and the program Flash Magic that is needed for transfer of a new firmware to the PCAN-LIN module. The setup program installs both programs consecutively.

▶ To start the setup procedure of the software, do the following:

1. Insert the supplied DVD into a drive and start the navigation program `Intro.exe`.

2. In the category **Tools** of the navigation program, you'll find the entry **PCAN-LIN Configuration Tool**. Click on **Install** in order to start the setup program. If requested, grant administrator privileges.

3. Follow the instructions of the setup program.

After the software setup you can access the PCAN-LIN Configuration Tool via Windows' Start menu. You can find further information about the use of the PCAN-LIN Configuration Tool in the help which you can invoke in the program.

# 4 Operation

As soon as a supply voltage is applied via the D-Sub male connector (see section 2.1 on page 8), the PCAN-LIN module is ready for use. This is indicated by a short blink of both LEDs (Status LED: green, Transmission/Error LED: green and red).

## 4.1 Module Configuration

The PCAN-LIN module does not have any hardware switches. It is solely configured via the RS-232 interface. To do so, either the supplied Windows software PCAN-LIN Configuration Tool or self-developed software can be used.

Configurations for **basic use cases** are presented and explained in chapter 5 starting on page 14.

In a separate document, information about the **protocol definitions** related to the RS-232 interface can be found.

## 4.2 LEDs

The top of the PCAN-LIN module has two LEDs in the middle. These status indicators are mainly related to the LIN interface during operation and have following meanings:

### Status (green)

If a LIN frame timeout occurs, e.g. because of an "slave not responding error", the LED is toggled (on/off).

## Transmission/Error (two-color)

For the duration of the transmission of a LIN frame the LED is lit green.

If an error occurs during the transmission (checksum error / transmitted data byte does not correlate to the received one at LIN Request Frames) the LED flashes red.

Further possibilities for a red LED flash are:

- CAN bus error (PCAN-LIN modules with Low-speed CAN transceiver only)
- The receive and transmit error counter has exceeded a limit

# 5 Configuration Examples

The chapter covers configuration examples for basic use cases.

| LIN mode | Use case | See |
|----------|----------|-----|
| Master | Gateway LIN - CAN | 5.1 on page 16 |
| | Master with Schedule Table | 5.2 on page 18 |
| | Gateway LIN - RS-232 | 5.3 on page 20 |
| Slave | Gateway LIN - CAN (LIN Monitor) | 5.4 on page 21 |
| | LIN Slave | 5.5 on page 23 |
| No LIN | Gateway CAN - RS-232 | 5.6 on page 25 |

A configuration is created with the supplied Windows program PCAN-LIN Configuration Tool (version 3) and afterwards sent to the PCAN-LIN module via the RS-232 interface.

◼ Do the following to create a new profile:

1. In the Configuration Tool, select the **Profiles Management** tab.
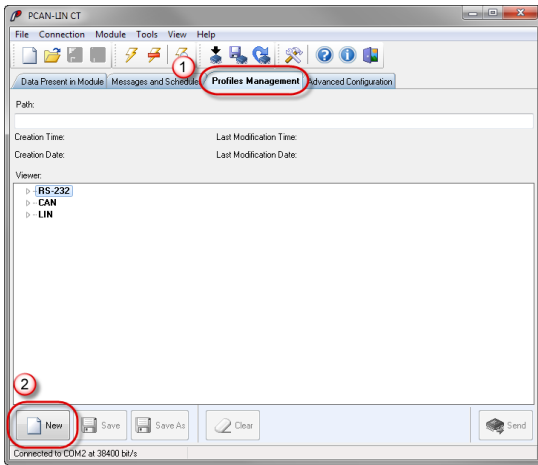
2.  Click the **New** button in the lower window area.

    The parameters of the PCAN-LIN function units shown in the list are now provided with default values.
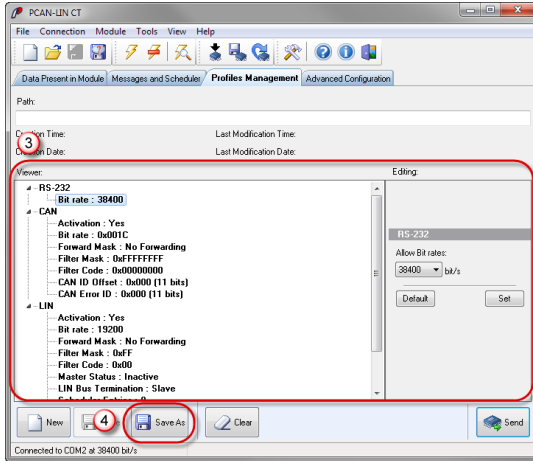


3.  The configuration examples in the following manual sections contain tables with parameters for the corresponding profile. In the Configuration Tool, select a parameter in the tree view on the left and change its value on the right, according to the declaration in the table. Use the **Set** button during this procedure.

4.  When finished the modifications, you can save the profile (**Save as** button).

⬛ Do the following to send the configuration to the PCAN-LIN module:

1.  Establish the communication to the connected PCAN-LIN module (menu command **Connection** > **Connect**).

2.  On the Profiles Management tab, click on the **Send** button on the lower right.

3. Confirm the questions. In this context, the configuration is permanently saved in the module and the module is reset in order to activate the new configuration.

## 5.1  Gateway LIN – CAN

### Properties

- LIN master

- Monitoring of the LIN bus via CAN

- CAN frames initiate the transmission of LIN frames

- Transmission of a data frame on the LIN bus by transmitting a CAN data frame

- Request of a data frame on the LIN bus by transmitting a CAN remote frame

### Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | Bit rate | | |
| CAN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | **Forward Mask** | LIN | |
| | | LIN & RS-232 | RS-232 for diagnostic purposes |
| | Filter Mask | 0xFFFFFFFF | All CAN frames are received |
| | Filter Code | 0x00000000 | |
| | CAN ID Offset | 0x000 (11 bits) | CAN ID = CAN ID Offset + LIN ID<br>LIN ID = CAN ID - CAN ID Offset |
| | CAN Error ID | *CAN ID* | For transmission of error and status messages. Is activated via LIN > Forward Mask > CAN Error. |

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| LIN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | **Forward Mask** | CAN / CAN & RS-232 | RS-232 for diagnostic purposes |
| | Filter Mask | 0xFF | All LIN frames are received |
| | Filter Code | 0x00 | |
| | Master Status | Inactive | Schedule table not processed |
| | **LIN Bus Termination** | Master | |
| | Scheduler Entries | | Not relevant (see Master Status) |
| | Slave ID + Data Configuration | Disabled | |
| | Frame Configuration | *Application-specific* | |
| | CAN ID for Slave Activation | Disabled | |

**Bold** = required modification compared to the default setting

## 5.2   Master with Schedule Table

### Properties

- ⌐ LIN master

- ⌐ Schedule table is processed autonomously

- ⌐ Optional: forwarding of LIN data to CAN/RS-232

- ⌐ Optional: module itself transmits additional data, dynamical update of the data via CAN/RS-232

### Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | Bit rate | | |
| CAN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | Forward Mask | No Forwarding | |
| | Filter Mask | 0xFFFFFFFF | All CAN frames are received |
| | Filter Code | 0x00000000 | |
| | CAN ID Offset | 0x000 (11 bits) | CAN ID = CAN ID Offset + LIN ID<br>LIN ID = CAN ID - CAN ID Offset |
| | CAN Error ID | *CAN ID* | For transmission of error and status messages. Is activated via LIN > Forward Mask > CAN Error. |

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| LIN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | Forward Mask | none | |
| | Filter Mask | 0xFF | All LIN frames are received |
| | Filter Code | 0x00 | |
| | **Master Status** | Active | Schedule table is processed automatically after module start |
| | | Inactive | Processing of schedule table must be started manually |
| | **LIN Bus Termination** | Master | |
| | **Scheduler Entries** | *Application-specific* | |
| | Slave ID + Data Configuration | Disabled | |
| | **Frame Configuration** | *Application-specific* | |
| | CAN ID for Slave Activation | Disabled | |

**Bold =** required modification compared to the default setting

## 5.3  Gateway LIN - RS-232

### Properties

⌐ LIN master

⌐ Controlling of LIN bus via RS-232

⌐ Data is transmitted to LIN slaves or requested from them via RS-232 command

### Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | **Bit rate** | *Application-specific* | |
| CAN | **Activation** | No | |
| LIN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | **Forward Mask** | RS-232 | |
| | Filter Mask | 0xFF | All LIN frames are received |
| | Filter Code | 0x00 | |
| | Master Status | Inactive | Schedule table not processed |
| | **LIN Bus Termination** | Master | |
| | Scheduler Entries | | Not relevant (see Master Status) |
| | Slave ID + Data Configuration | Disabled | |
| | **Frame Configuration** | *Application-specific* | |
| | CAN ID for Slave Activation | Disabled | |

**Bold =** required modification compared to the default setting

## 5.4   Gateway LIN – CAN (LIN Monitor)

### Properties

- Only listener on the LIN bus

- No sending of LIN data

- Forwarding of LIN data to CAN/RS-232

### Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | **Bit rate** | *Application-specific* | |
| CAN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | Forward Mask | No Forwarding | |
| | | RS-232 | For diagnostic purposes |
| | Filter Mask | | Not relevant |
| | Filter Code | | |
| | CAN ID Offset | 0x000 (11 bits) | CAN ID = CAN ID Offset + LIN ID<br>LIN ID = CAN ID - CAN ID Offset |
| | CAN Error ID | *CAN ID* | For transmission of error and status messages. Is activated via LIN > Forward Mask > CAN Error. |

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| LIN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | **Forward Mask** | CAN | RS-232 also possible |
| | Filter Mask | 0xFF | All LIN frames are received |
| | Filter Code | 0x00 | |
| | Master Status | Inactive | Schedule table not processed |
| | LIN Bus Termination | Slave | |
| | Scheduler Entries | | Not relevant (see Master Status) |
| | Slave ID + Data Configuration | Disabled | |
| | **Frame Configuration** | *Application-specific* | |
| | CAN ID for Slave Activation | Disabled | |

**Bold** = required modification compared to the default setting

# 5.5   LIN Slave

## Properties

- Response to LIN header from an outside master

- Reception of LIN frames, forwarding of the frames to CAN/RS-232 possible

- Update of LIN data via CAN:
  CAN ID = CAN ID Offset + LIN ID + 0x40
  (0x40: fixed offset to update LIN data)

- Update of LIN data via RS-232

## Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | Bit rate | *Application-specific* | |
| CAN | **Activation** | No | |
| | | Yes | If LIN data shall be updated via CAN |
| | **Bit rate** | *Application-specific* | |
| | Forward Mask | No Forwarding | |
| | | RS-232 | For diagnostic purposes |
| | Filter Mask | 0xFFFFFFFF | All CAN frames are received |
| | Filter Code | 0x00000000 | |
| | CAN ID Offset | 0x000 (11 bits) | CAN ID = CAN ID Offset + LIN ID + 0x40<br>LIN ID = CAN ID - CAN ID Offset - 0x40<br>(0x40: fixed offset to update LIN data) |
| | CAN Error ID | *CAN ID* | For transmission of error and status messages. Is activated via LIN > Forward Mask > CAN Error. |

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| LIN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | Forward Mask | No Forwarding | |
| | | CAN / CAN & RS-232 / RS-232 | Alternative settings for monitoring purposes |
| | Filter Mask | 0xFF | All LIN frames are received |
| | Filter Code | 0x00 | |
| | Master Status | Inactive | Schedule table not processed |
| | LIN Bus Termination | Slave | |
| | Scheduler Entries | | Not relevant (see Master Status) |
| | Slave ID + Data Configuration | Disabled | |
| | **Frame Configuration** | *Application-specific* | |
| | CAN ID for Slave Activation | Disabled | |
| | | *CAN ID (not related to CAN ID Offset)* | Modifies the LIN slave mask dynamically during runtime (on/off, reaction to LIN requests) |

**Bold =** required modification compared to the default setting

## 5.6   Gateway CAN – RS-232

### Properties

⌐  Simple gateway in order to forward CAN data to RS-232 and vice versa

⌐  No LIN functionality

### Profile in the Configuration Tool

| Inter-face | Parameter | Setting | Comment |
|---|---|---|---|
| RS-232 | Bit rate | *Application-specific* | |
| CAN | Activation | Yes | |
| | **Bit rate** | *Application-specific* | |
| | **Forward Mask** | RS-232 | |
| | Filter Mask | 0xFFFFFFFF | All CAN frames are received |
| | Filter Code | 0x00000000 | |
| | CAN ID Offset | 0x000 (11 bits) | CAN ID = CAN ID Offset + LIN ID<br>LIN ID = CAN ID - CAN ID Offset |
| | CAN Error ID | 0x000 (11 bits) | |
| LIN | **Activation** | No | |

**Bold** = required modification compared to the default setting

# 6  Firmware Update

For a firmware update, you need a hex file with the current firmware which you get from us upon request (contact data: see on page 2).

➡ Do the following to update the firmware:

1.  Start the PCAN-LIN Configuration Tool.

2.  If not already done, establish the communication to the connected PCAN-LIN module (menu command **Connection** > **Connect**).

3.  Select the menu command **Module** > **Programming mode** and confirm the question.

    Both LEDs on the PCAN-LIN module are lit green.

4.  Start Flash Magic via the menu item **Tools** > **Flash Magic**.

5.  Depending on the serial number of the used PCAN-LIN module, in Flash Magic, matching presets must be selected for the programming process. In Flash Magic, select the menu command **File** > **Open Settings** and then one of the two settings files that are residing in the program directory[1] of the PCAN-LIN Configuration Tool:

| Ser. no. PCAN-LIN | Microcontroller | Settings file |
|---|---|---|
| up to 999 | XA-G49 | `PCAN-LIN_XA.fms` |
| from 1000 | LPC2194 | `PCAN-LIN_LPC.fms` |

[1] Examples for the program directory:
  Windows 32-bit: `C:\Program Files\PCAN-LIN CT`
  Windows 64-bit: `C:\Program Files (x86)\PCAN-LIN CT`

6. If the RS-232 connection to the PCAN-LIN module isn't established via COM1, select another COM port in area **Step 1**.
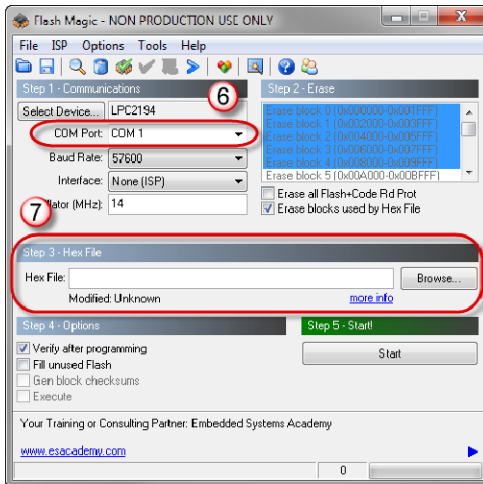


7. In area **Step 3**, choose the hex file with the new firmware by clicking the **Browse** button.

8. Click the **Start** button.

   The process status of the programming sequence is shown in the status bar. The steps Erasing, Programming, and Verifying are performed.
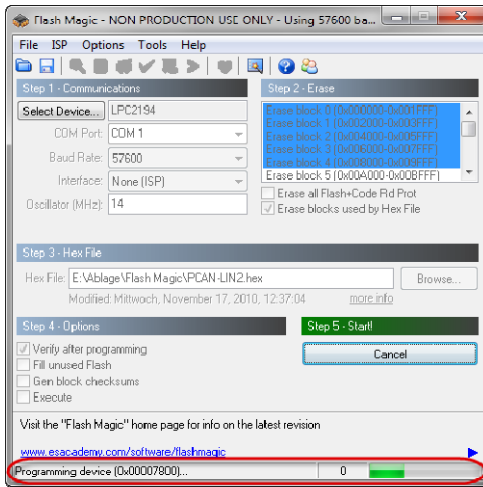
9.  When the update procedure has ended successfully
    (message "Finished"), quit the Flash Magic program and
    restart the PCAN-LIN module by interrupting the supply
    voltage for a moment.

# 7  Technical Specifications

| Power supply | |
|---|---|
| Supply voltage | R2[2]: 8 - 18 V DC<br>R3[2]: 9 - 30 V DC |
| Current consumption | PCAN-LIN HS-CAN:      max. 130 mA<br>PCAN-LIN LS-CAN:      max. 130 mA<br>PCAN-LIN HS-CAN opto:   max. 140 mA |

| RS-232 | |
|---|---|
| Bit rates | R2[2]: max. 38,400 bit/s<br>R3[2]: max. 115,200 bit/s |
| Galvanic isolation | between RS-232 and LIN/CAN, max. 1 kV<br>  (only PCAN-LIN HS-CAN opto) |

| LIN | |
|---|---|
| Standard | ISO 15765-2, LIN 1.x and LIN 2.0 |
| Transceiver | R2[2]: TLE6259<br>R3[2]: MAX13020 |
| Bit rates | max. 20,000 bit/s |
| Termination | 1 k$\Omega$, switchable via configuration |

| CAN | PCAN-LIN HS-CAN (opto) | PCAN-LIN LS-CAN |
|---|---|---|
| Standard | ISO 11898-2 | ISO 11898-3 |
| | CAN 2.0A/B (standard/extended format) | |
| Controller | R2[2]: SJA1000<br>R3[2]: integrated in the microcontroller | |
| Transceiver | R2[2]: PCA82C251<br>R3[2]: MAX3057 | R2[2]: TJA1054<br>R3[2]: TJA1055 |
| Bit rates | max. 1 Mbit/s | max. 125 kbit/s |
| Termination | none | 5.66 k$\Omega$ (default) / 560 $\Omega$ |

[2] R2 = modules with ser. no. up to 999, R3 = modules with ser. no. from 1000

| Measures | |
|---|---|
| Size | 91 x 42 x 20 mm (L x W x H) <br> See also dimension drawing in Appendix B on page 32 |
| Weight | PCAN-LIN HS-CAN:     47 g <br> PCAN-LIN LS-CAN:     48 g <br> PCAN-LIN HS-CAN opto:    50 g |

| Environment | |
|---|---|
| Operating temperature | -40 - +85 °C (-40 - +185 °F) |
| Temperature for storage and transport | -40 - +100 °C (-40 - +212 °F) |
| Relative humidity | 15 - 90 %, not condensing |
| Ingress protection (IEC 60529) | IP20 |

| Conformity | |
|---|---|
| EMV | Directive 2014/30/EU <br> DIN EN 55024:2016-05 <br> DIN EN 55032:2016-02 |
| RoHS 2 | Directive 2011/65/EU <br> DIN EN 50581 VDE 0042-12:2013-02 |

# Appendix A    CE Certificates

## EU Declaration of Conformity

This declaration applies to the following product:

Product name:     PCAN-LIN

Item number(s):   IPEH-002025/28/29

Manufacturer:     *PEAK-System Technik GmbH*
                  Otto-Roehm-Strasse 69
                  64293 Darmstadt
                  Germany

We declare under our sole responsibility that the mentioned product is in conformity with the following directives and the affiliated harmonized standards:

**EU Directive 2011/65/EU (RoHS 2)**

**DIN EN 50581 VDE 0042-12:2013-02**
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances;
German version EN 50581:2012

**EU Directive 2014/30/EU (Electromagnetic Compatibility)**

**DIN EN 55024:2016-05**
Information technology equipment – Immunity characteristics – Limits and methods of measurement (CISPR 24:2010 + Cor.:2011 + A1:2015);
German version EN 55024:2010 + A1:2015
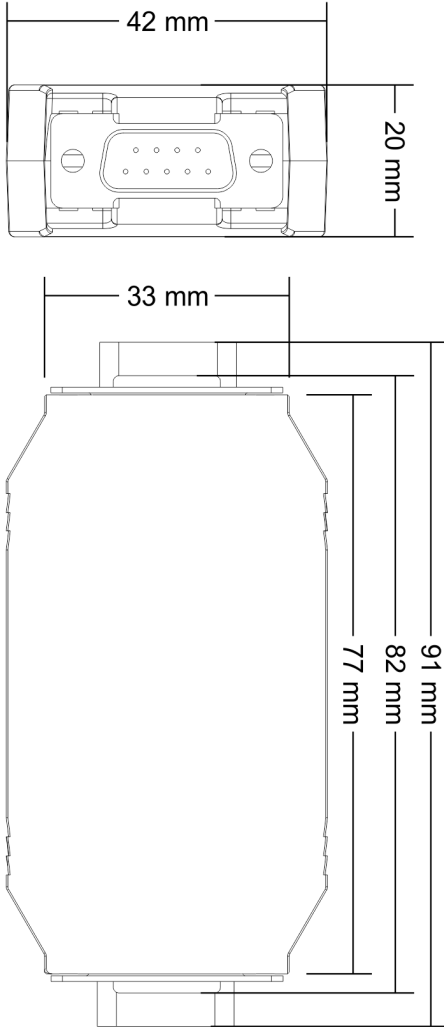
**DIN EN 55032:2016-02**
Electromagnetic compatibility of multimedia equipment - Emission Requirements (CISPR 32:2015);
German version EN 55032:2015

Darmstadt, 22 February 2019

Uwe Wilhelm, Managing Director

# Appendix B  Dimension Drawing



The figures do not show the actual size of the product.

# Appendix C  Changes of Hardware/Software

This section covers the most important changes of the hardware and the software related to former versions.

## C.1    PCAN-LIN Module

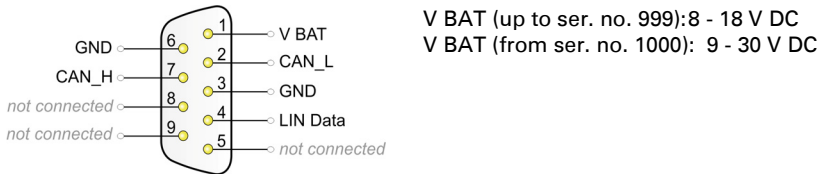| Property | Modules up to ser. no. 999 | Modules from ser. no. 1000 |
|---|---|---|
| Supply voltage | 8 - 18 V DC | 9 - 30 V DC |
| Max. bit rate RS-232 | 38,400 bit/s | 115,200 bit/s |
| Microcontroller (relevant for firmware update) | XA-G49 | LPC2194 |
| LIN slave/master mode (in Configuration Tool "LIN Bus Termination") | LIN termination is switched; during transmission of a LIN header the master mode is automatically used, independent from the setting | LIN termination is switched; master mode is explicitly switched on or off |

## C.2    PCAN-LIN Configuration Tool

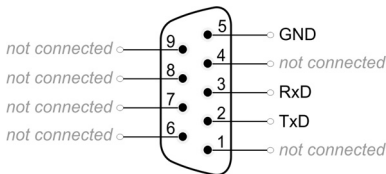| Property | Version 1 | Version 3 |
|---|---|---|
| Entries on the **Profiles Management** tab in the **LIN** branch | Number of Retries | Dropped |
| | Bit Recognition Status | No possibility for changing anymore; always active |
| | Slave Mask | Integrated into table under Frame Configuration |
| | Slave ID + Data Configuration: only a single ID | Entries possible for all IDs under Frame Configuration |

# Appendix D  Quick Reference

## Connectors

### D-Sub Male Connector for LIN, CAN, and Voltage Supply

GND — 6
CAN_H — 7
not connected — 8
not connected — 9

1 — V BAT
2 — CAN_L
3 — GND
4 — LIN Data
5 — not connected

V BAT (up to ser. no. 999):8 - 18 V DC
V BAT (from ser. no. 1000):  9 - 30 V DC

### D-Sub Female Connector for RS-232

not connected — 9
not connected — 8
not connected — 7
not connected — 6

5 — GND
4 — not connected
3 — RxD
2 — TxD
1 — not connected

## Operation

When applying the supply voltage, the operational readiness of the PCAN-LIN module is indicated by flashes of both LEDs (Status LED: green, Transmission/Error LED: green and red).

## Configuration Software (Windows)

For installation, from the navigation program of the supplied DVD (Intro.exe) and the sub menu **Tools**, start the setup program for the **PCAN-LIN Configuration Tool**.