



## Baby-LIN Product Guide

*Product Guide V1.6*

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# 1 Imprint

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All other brand names and trademarks used within this manual are unlimited subject to the applicable trademark laws and the ownership rights of their registered owners.

The hardware, firmware, software and documents of the Baby-LIN-Device are subject to change without prior notice. Lipowsky Industrie-Elektronik GmbH thereby has no obligations.

## 2 Support information

In case of any questions you can get technical support by e-mail or phone. We can use TeamViewer to give you direct support and help on your own PC. This way we are able to sort out problems fast and direct. We have sample code and application notes available, which will help you to make your job.

Lipowsky Industrie-Elektronik GmbH realized many successful LIN and CAN related projects and therefor we can draw upon many years of experience in these fields. We also provide turn key solutions for specific applications like EOL (End of Line) testers or programming stations.

Lipowsky Industrie-Elektronik GmbH designs, produces and applies the Baby-LIN products, so you can always expect qualified and fast support.

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## 3 Introduction

Any situation that requires communication with a LIN or CAN device is a potential field of application for a Baby- LIN product. It is a versatile tool that can be used in research laboratories, test departments and production (EOL applications).

All Baby-LIN products allow for different operation modes to support typical use cases like:

- **Monitor** and log all frames on the bus without the need for a SDF. If a SDF is available signal values can also be monitored.
- **Control** the bus via the **LINWorks** software or customer specific applications by using the **Baby-LIN-DLL**.
- **Program** and store free programmable command sequences in the Baby-LIN product to run it as a **standalone** device without the need for a PC. Thus you can run a bus driven ECU in a **durability test** or **EOL applications** without any PC connected.

All Baby-LIN products are able to simulate different configurations of LIN- and CAN-Bus nodes. It is possible to **simulate any number of nodes** ranging from none to all. These are some typical configurations:

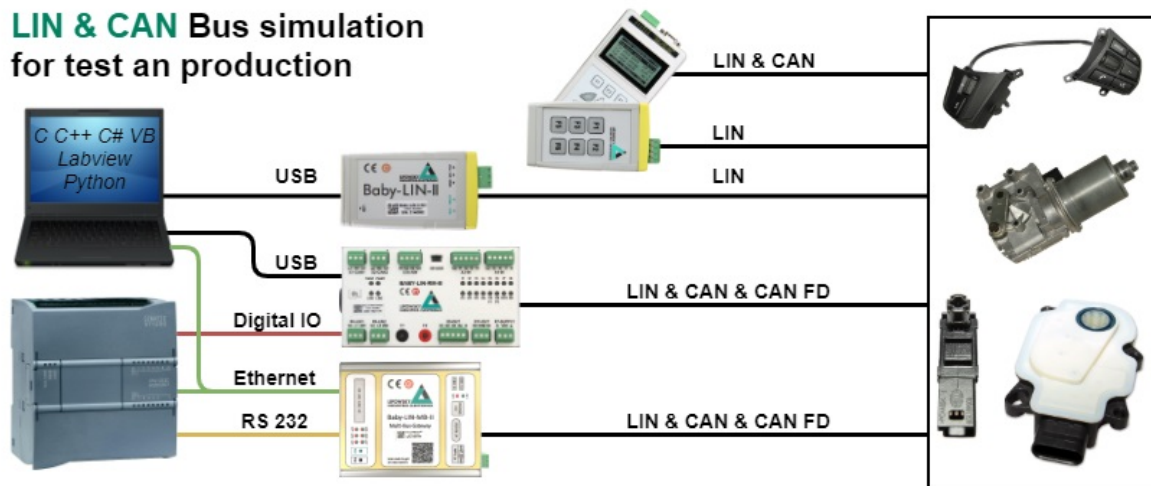
- LIN-Bus: Simulate the **LIN-Bus** master to operate slave nodes.
- LIN-Bus: Simulate any number of **LIN-Bus slave** nodes.
- LIN- and CAN-Bus: Simulate all but one node and realize a **residual bus simulation**.
- LIN- and CAN-Bus: Simulate **all nodes** and therefor the complete communication on the bus.
- LIN- and CAN-Bus: Simulate no node to **monitor** the bus communication only.

Simulations for the LIN- and CAN-Bus can be done simultaneously.

The different Baby-LIN products mainly vary in the type and amount of interfaces and the possibilities to interact without a PC. The following guide is designed to help you find the ideal Baby-LIN product for your use cases.

## 4 Use cases

Each Baby-LIN product is designed to comply with certain requirements of typical use cases:



No matter if you want a PC coupled device, a handheld device, a stand alone device without a PC or a PLC coupled device, there is always a Baby-LIN product for you.

## 5 LINWorks and workflow

All the different software components of the **LINWorks** suite are designed to support the customer during specific steps of the workflow. The workflow starts with a **LDF** (for LIN-Bus) or **DBC** (for CAN-Bus) which will be embedded in a **SDF** using the **Session Configurator**. This SDF contains all the informations the Baby-LIN product needs. Depending on your device and use case you can transfer the SDF via Web-Interface, USB mass storage device, SDHC card or the **Simple Menu**. It is also the base for your custom application using the **Baby-LIN-DLL**.

### Baby-LIN Workflow

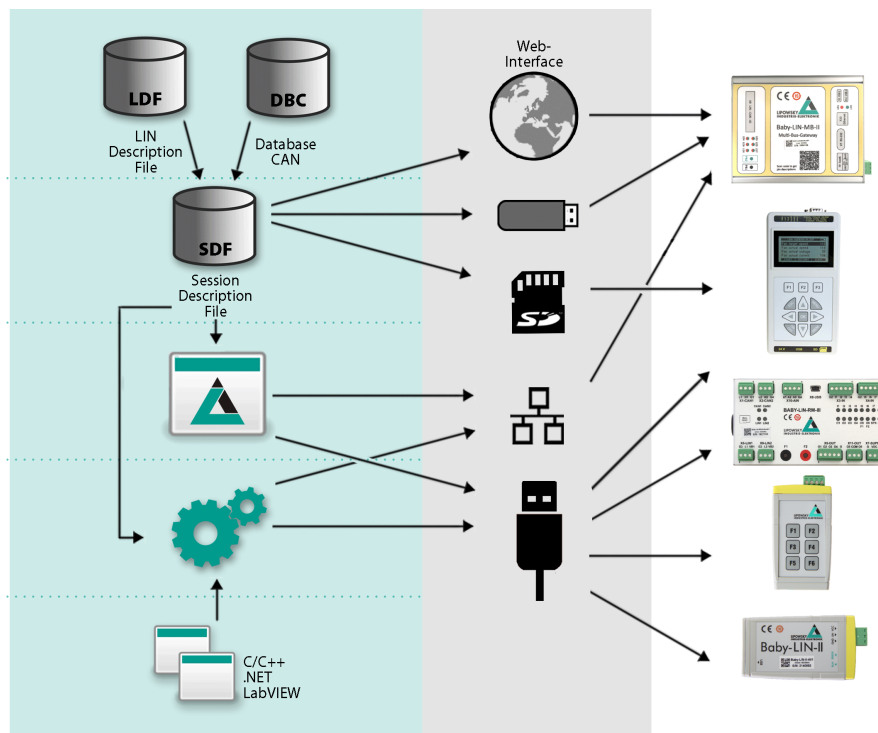
LDF-Editor

Session  
Configurator

Simple Menu

Baby-LIN-DLL

Custom  
Application



The purchase of a Baby-LIN product includes the license to download the **LINWorks** suite. This suite is a collection of PC software that supports you during the whole workflow.

The **LDFEdit** allows the inspection, creation and edit of a LDFFile (LIN Description File).

The **SessionConf** allows the inspection, creation and edit of a SDFFile (Session Description File) and features a file import for LDFFiles (for LIN-Bus simulation) and DBC files. It defines everything needed for a complete simulation of each available bus, e.g. which nodes on each bus are available and which nodes should be simulated by the Baby-LIN product. Moreover it allows defining an application logic. This programming ability is available for each device out of the box.






The **SimpleMenu** is used to establish a connection to the Baby-LIN product and upload SDFFiles, change the device target configuration, control the bus and monitor the frames and signals on the bus. Even without a LDFFile/DBC file/SDFFile the bus can be monitored and the frames can be logged.

The **Baby-LIN-DLL** allows customers to create their own application and use all features of the Baby-LIN product like controlling and monitoring the LIN- and CAN-Bus interfaces. The **Baby-LIN-DLL** is a native **C/C++** DLL. A wrapper for **\*\*.NET\*\*** applications is also provided as LabView files. Examples are available for all supported languages.

The **LogViewer** can show and convert the log files of the Baby-LIN products as well as the SimpleMenu.

The **LINWorks** software runs on 32 and 64 bit Windows versions. The Baby-LIN-DLL is also available as Linux version upon request.

## 6 Products

					
<b>Features</b>	<b>Baby-LIN-II</b>	<b>Baby-LIN-RC-II</b>	<b>Baby-LIN-RM-III</b>	<b>HARP-5</b>	<b>Baby-LIN-MB-II</b>
<b>License for LINWorks Suite</b>	✓	✓	✓	✓	✓
<b>Host interfaces</b>	• USB 2.0	• USB 2.0	• USB 2.0	• USB 2.0 • SDHC card	• Ethernet • RS-232 • web interface
<b>LIN-Bus interfaces</b>	1	1	1	1	1
<b>optional LIN-Bus interfaces</b>	✗	✗	1	1	5
<b>CAN-Bus interfaces</b>	✗	✗	• 1 CAN-HS • 1 CAN-LS	• 1 CAN-HS • 1 CAN-LS	• 1 CAN-HS
<b>Optional MIF-CAN interfaces</b>	✗	✗	1	✗	2
<b>Digital Inputs/ digital outputs</b>	✗	0/1	8 / 4	1/1	6 / 6
<b>SDF format V3</b>	✓	✓	✓	✓	✓
<b>Multiple SDF capable</b>	✗	✗	✓	✓	✓
<b>Additional features</b>	<ul style="list-style-type: none"> <li>stand alone capable</li> <li>Galvanic isolation of USB &amp; LIN</li> <li>Time-critical tasks run on Baby-LIN-Device</li> </ul>	<ul style="list-style-type: none"> <li>Micro SD card slot for log functions and storage of single Autostart SDF</li> <li>Integrated real time clock with battery buffering</li> </ul>	<ul style="list-style-type: none"> <li>Both CAN ports with CAN-FD support</li> <li>One CAN port with CAN-HS, -LS, -FD switching option</li> <li>Status LEDs on all digital inputs and outputs</li> </ul>	<ul style="list-style-type: none"> <li>12 volt generator for test item supply</li> <li>Network-independent battery operation</li> <li>Log functions on SD card</li> </ul>	<ul style="list-style-type: none"> <li>Log functions on internal micro SD card</li> <li>Remote maintenance via integrated website</li> </ul>
<b>Mounting</b>	✗	✗	Top hat rail (TS 35)	✗	Top hat rail (TS 35)