Baby-LIN-II
LIN-Bus simulation device with USB interface

Simulation modes

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

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

Product description

The Baby-LIN-II allows controlling LIN-Bus equipped devices by using a standard PC. After installation of the supplied **LINWorks** software, you can connect the Baby-LIN-II to a free USB port and access the LIN-Bus devices via LINWorks or your own applications by using the Baby-LIN-DLL.

The power for the Baby-LIN-II can be supplied either from the USB or the LIN-Bus side. If the device is powered by the LIN-Bus it can be operated without the need for a PC.

The Baby-LIN-II can handle LIN-Bus voltages in the range of 8-26VDC.

All communication interfaces (LIN-Bus, USB) are galvanically isolated, eliminating interferences between the PC and the board electronics.

The Baby-LIN-II unit includes its own 32-bit microcontroller, whichtakes care of all **time critical** tasks of the LIN-Bus protocol.

The device firmware is field updateable, so the changes of bus specification or upcoming new system features can be adapted easy.

The Baby-LIN-II supports **SDF-V3**. This new generation of SDF allows new features like multiple bus sections, conditional macro commands, new system variables, new CRC functions and sub macro calls.

LIN-Bus properties

The used LIN driver supports bus voltages of 8-26 VDC and can be used up to 115200 Baud. That way even nodes that operate outside the standard limits of the LIN specifications can be controlled with the Baby-LIN-II. Supported LIN-versions are V.1.2, V.1.3,...V.2.2. The pull-up resistor of the LIN-Bus driver is switched to 1 kOhm, if the master node is emulated and to 30 kOhm, if only slave nodes are emulated.

The maximum supported signal cable length of the LIN-Bus is 30m but can be less, depending on the bus assembly.

LINWorks suite

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

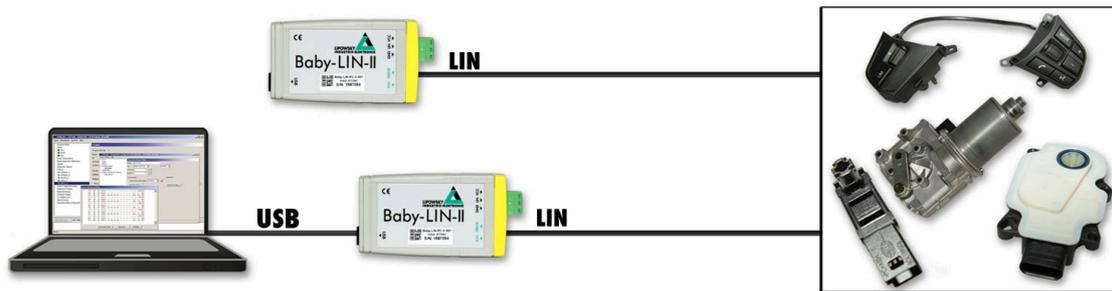The **LDFEdit** allows the inspection, creation and edit of a LDFile (LIN Description File).

The **SessionConf** allows the inspection, creation and edit of a SDFile (Session Description File) and features a file import for LDFiles (for LIN-Bus simulation). 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-II. 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-II and upload SDFiles, change the device target configuration, control the bus and monitor the frames and signals on the bus. Even without a LDFile or SDFile 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-II like controlling and monitoring the LIN- and CAN-Bus interfaces. The **Baby-LIN-DLL** is a native **C/C++** DLL. It is available for **Windows**, **Linux** and **RaspberryPi**. Wrapper for **NET**, **Python**, **VB6** and **LabView** are available. Of course we provide examples for all supported languages.

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

The **LINWorks** software runs on 32 and 64 bit Windows versions.

Operation mode

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

The Baby-LIN-II allows 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-II to run it as a **stand-alone** 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.

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Technical Specifications

Device

- CPU: ARM Cortex-M4, 168 MHz (A01) or Cortex-M7, 300 MHz (B01)
- Memory: 196 kB RAM (A01) or 384kB RAM (B01)
- 2 LEDs: Signal bus and error states
- Power supply: via USB or LIN-Bus power
- Maximum current consumption: 70 mA @ 12 VDC
- Galvanic isolation of all communication interfaces (LIN-Bus, USB)

Interface: LIN

- 1 LIN-Bus interface available
- LIN-Bus connection via 3 pin connector (MC 1,5/ 3-ST-3,81)

- LIN-Bus supply voltage: 8-26 VDC
- LIN-Bus baud rate: up to 115200 Baud (Support of protocols outside of the LIN specification)
- Supported LIN versions: V1.2, V1.3,...V2.2
- Supported LIN related protocols: Cooling and SAE J2602
- Maximum signal cable length for LIN-Bus: 30 m

Interface: USB Device

- USB 2.0 interface
- Connection via USB type B-Mini

Case

- Degree of protection: IP20
- Operating temperature: -20° - +60° Celsius
- Weight: 37 g
- Case dimensions [mm]: 78 x 45 x 18 (L x W x H) Elements like connectors are not included.

Advice
The complete technical specifications can be found in our user manual. It contains amongst other details the following information:

- Connector pin assignment
- Firmware description
- Protocol information

- Electrical characteristics
- SDFile description
- Migration information

- Electrical characteristics
- Software description
- FAQ

The user manual can be found in our LINWorks download package.

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Hardware requirements

The following hardware is required to operate the Baby-LIN:

Requirement	Purpose
A PC with about 200 MB free hard drive space	Required for the installation of the LINWorks software. Please check the software requirements and use cases.
A free USB port	Required to transfer SDFiles to the Baby-LIN-II and for firmware updates.

Software requirements

The LINWorks software requires one of the following operating systems:

- Windows XP
- Windows Vista (32 and 64 Bit)
- Windows 7 (32 and 64 Bit)
- Windows 8 (32 and 64 Bit)
- Windows 10 (32 and 64 Bit)

Version compatitbility

The Baby-LIN-DLL is available for Linux. The exact requirements are available upon request.

Some additional tools available in the LINWorks software suite require an installed .NET Framework v4.0. To install LINWorks components administration privileges are required.

LINWorks workflow

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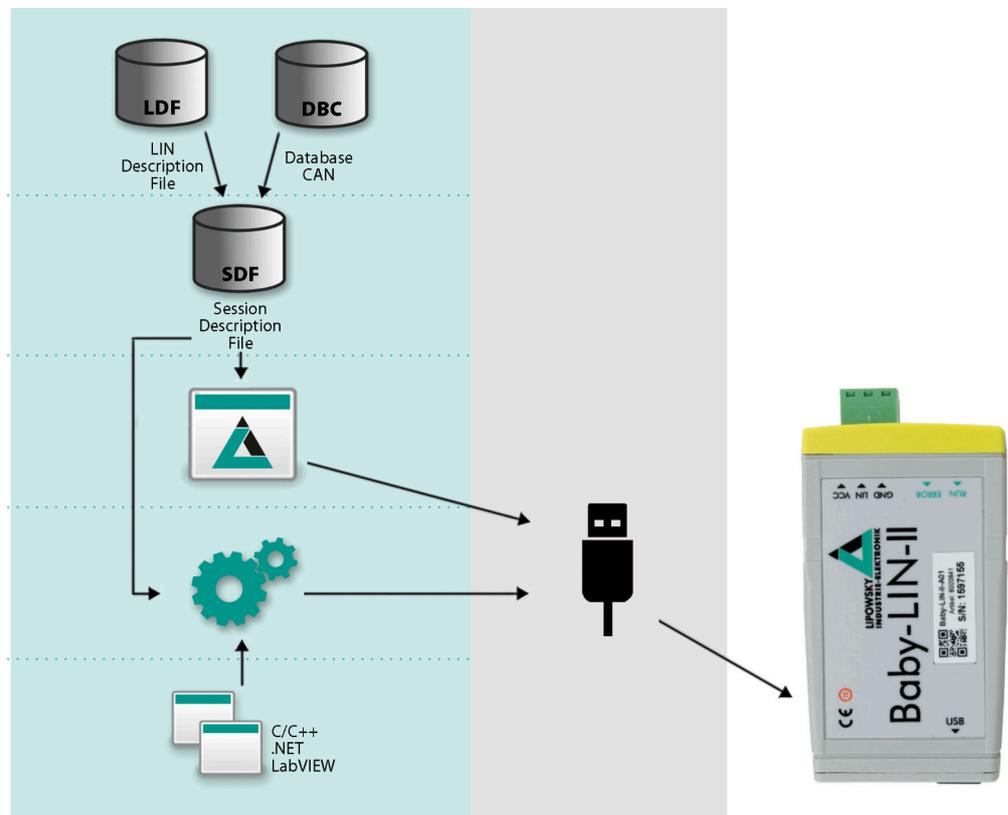Email: info@haehong.com
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Scope of delivery

The delivery of a Baby-LIN-II systems includes the following components:

- Baby-LIN-II device
- USB 2.0 cable, 1.5m, Type A to type B-Mini
- One 3-pin plug with screw connection (MC 1,5/ 3-ST-3,81)
- Download license for the LINWorks Suite (includes LINWorks PC software, USB-driver, example files and documentations)

Ordering information

Item number	Item	Description
8001031	Baby-LIN-II-B01	LIN-Bus simulation device with USB interface.

Advice
Each device includes a download license for the LINWorks application suite. This PC software can be downloaded using our client portal: portal.lipowsky.de

Tip
Country of origin: Germany
Customs tariff number: 90308900

Optional hardware components

Item number	Item	Description
3500701	USB 2.0 cable, 1.5m Type A to type B-Mini	This cable connects the Baby-LIN-II to a PC. Such a cable is already within the scope of delivery.
3021303	MC1,5/3-ST-3,81	3-pin plug component, screw connection with tension sleeve. Cable outlet parallel to plugin direction. Screw direction vertical to plugin direction.

Optional software components

Item number	Item	Description
9004210	Customer specific installation.	Installation of customer specific SDFile version and/or installation of license activation key.
9103010	LINWorks CD	The LINWorks archive with PC software for all Baby-LIN products on a physical medium (CD).

Tip
You can order the Baby-LIN-II as test device. Try it for one week and convince yourself.
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Product disposal

After the product is no longer used, it must be disposed of separately from household waste at a designated recycling site. All kind of batteries must be removed from the device and disposed separately. Furthermore, you can also return the device to us for proper disposal, you only have to bear for the shipping costs. Please use this address:

Lipowsky Industrie-Elektronik GmbH
Device disposal
Römerstr. 57
64291 Darmstadt
Germany

kakaotalk

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