



ASiKS-Engineering

User Manual

SmartLIN-USB Module

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This document provides detailed information about ASiKS-Engineering's SmartLIN-USB Module.

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1 Introduction

The SmartLIN-USB Module shown in Figure 1 is used for easily connecting a LIN Bus to the USB Port of e.g. a PC.

As it is an active interface, LIN Bus specific signals like synchronisation break and synchronisation delimiter are generated by the interface and hence no special algorithm is required by the host application.



Figure 1: SmartLIN-USB Module

This interface provides the following features:

- 9-pin D-SUB plug (male) to connect to the LIN Bus
- USB plug (USB-B mini) to connect to the serial port of e.g. a PC
- Dimensions: 71mm x 43mm x 24mm
- Optimised to be used with LIN-EASYSTARTER (LinMon software version **v2.10beta**, downloadable at https://www.asiks-engineering.com/downloads_eng.html)
- Virtual Communications Port (VCP) driver downloadable at https://www.asiks-engineering.com/downloads_eng.html)

2 Connectors and pinning description

2.1 LIN connector D-SUB 09 plug (male)

Table 1 shows the pinning, functional description and electrical characteristics of the LIN connector of ASiK-Engineering's SmartLIN-USB Module.

Pin	Symbol	Description	Min	Typ	Max	Unit
3	GND	Ground	0	0	0	V
7	LIN*	LIN bus line input/output	-27		+40	V
9	VBat	battery supply	5	12	18	V

Table 1: Quick reference data – LIN D-SUB 09 male

Note *: Master configuration (1k PullUp), slave configuration on

2.2 USB Connector (UBS-B mini)

Standard USB connector to connect the SmartLIN-USB Module to the USB port of a e.g. a PC.

Note: Do not use cable extensions enlarging the complete USB cable above the maximum of 5m defined by the USB Specification!

3 Interface Detection

The SmartLIN-USB Interface simply can be checked for availability as follows:

- RTS and DTR of the RS232 communication port are **set** and **cleared** again

- CTS is monitored
- If CTS is “ON”, the interface is detected correctly and ready for use

Listing 1 illustrates a programming example of an interface detection routine.

```
[...]
EscapeCommFunction(serial_struct_info->pComPortFile, SETDTR);
EscapeCommFunction(serial_struct_info->pComPortFile, SETRTS);

EscapeCommFunction(serial_struct_info->pComPortFile, CLRDTR);
EscapeCommFunction(serial_struct_info->pComPortFile, CLRRTS);

GetCommModemStatus(serial_struct_info->pComPortFile, &dwModemState);
```

Listing 1: Interface detection source code example

4 Communication

4.1 USB VCP Initialization (UART protocol)

The host’s virtual communication port needs to be configured as follows:

- Baud rate: user defined
- Data Bits: 8
- Parity: None
- Stop Bits: 1

4.2 LIN Bus Data Sending

The SmartLIN-USB Module handles the LIN synchronisation break and delimiter generation whereby no special baud rate conversion mechanism is required by the host application. The LIN message header simply is expanded by some trailing bytes replacing the LIN synchronisation break and delimiter as illustrated in Figure 2.

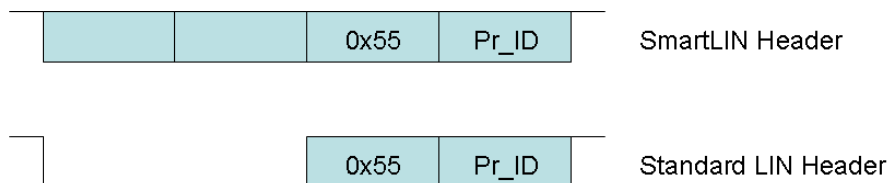


Figure 2: SmartLIN-RS232 LIN header structure

The values for synch break and delimiter easily can be calculated using the SmartLIN Bit Time Tool, available for download at our homepage.

NOTE: Depending on the delimiter value, RTS wire needs to be set or cleared accordingly!

NOTE: The communications port's DTR wire **needs to be toggled** any time a message (Header and as the case may be response) is sent by the host application!

4.3 LIN Bus Data Receiving

For receiving of LIN Bus data using the SmartLIN-USB Module, the host application needs to monitor the "CE_BREAK" (communication break) flag through what the start of new LIN Bus Header is indicated.

5 Disclaimer

For damage of any kind, arising by the employment of the SmartLIN-USB Module, no requirements can be made valid opposite the supplier!

6 Contact Information

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Appendix A – Revision History

Revision History

- 1.0 Initial Release 26th February, 2010
- 2.0 User manual rework 15th January 2019