



**ASiKS-Engineering**

**User Manual**

# **SmartLIN-RS232 Module**

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**This document provides detailed information about ASiKS-Engineering's SmartLIN-RS232 Module.**

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## TABLE OF CONTENTS

<b>1 Introduction</b> .....	<b>3</b>
<b>2 Connectors and pinning description</b> .....	<b>3</b>
2.1 LIN connector D-SUB 09 plug (male) .....	3
2.2 RS232 Connector D-SUB 09 plug (female) .....	4
<b>3 Interface Detection</b> .....	<b>3</b>
<b>4 Communication</b> .....	<b>4</b>
4.1 RS232 Port Initialization (UART protocol) .....	4
4.2 LIN Bus Data Sending .....	4
4.3 LIN Bus Data Receiving .....	5
<b>5 Disclaimer</b> .....	<b>5</b>
<b>6 Contact Information</b> .....	<b>5</b>
<b>Appendix A – Revision History</b> .....	<b>5</b>

## 1 Introduction

The SmartLIN-RS232 Module shown in Figure 1 is used for easily connecting a LIN Bus to the serial Port (RS232) 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-RS232 Module

This interface provides the following features:

- 9-pin D-SUB plug (male) to connect to the LIN Bus
- 9-pin D-SUB plug (female) 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](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-RS232 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 RS232 Connector D-SUB 09 plug (female)

Standard 9-pin D-SUB connector to connect the SmartLIN-RS232 Module to the serial communication port of e.g. a PC using a standard 1:1 straight cable.

The electrical characteristics of the RS232 Standard apply.

## 3 Interface Detection

The SmartLIN-RS232 Module 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

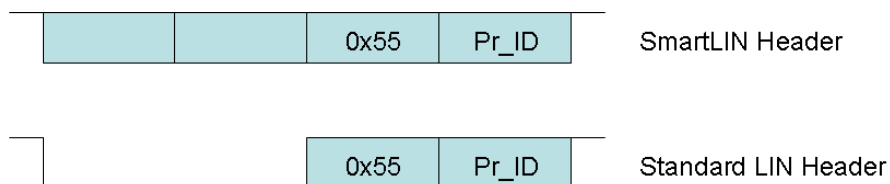
### 4.1 RS232 Port Initialization (UART protocol)

The host's 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-RS232 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-RS232 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-RS232 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 26<sup>th</sup> February, 2010
- 2.0 User manual rework 15<sup>th</sup> January 2019