



Instruction Manual  
*ExTox* Serial Data Logger  
ET-SL

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## 1 Overview

This Instruction Manual describes the ExTox-Product *Serial Data Logger ET-SL* (Art.-No. 825006).

The data logger *ET-SL* can be used for storing serial data streams from a RS232-interface on MMC or SD storage cards. The logged data will be stored in a LOG-file, which can be read out from a PC by a standard card reader.

The tool "ET-SL.exe" on CD-ROM which forms part of the delivery serves for evaluation of the data. The tool is designed for use on Microsoft Windows™ systems.

## 2 Technical data

### Power Supply:

Voltage: 9-24V DC  
Current approximately 30mA at 12V power supply

### RS232 interface:

Connector: 9-pin male SUB-D  
Baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200  
Data bits: 8  
Stop bits 1  
Parity: none

### Storage card:

Cards: MMC(tested up to 512 MByte) and SD storage cards

### User interface:

2 LEDs (red/green) for signalling device state  
2 buttons  
1 BCD encoder for selection of baud rate

### Dimensions:

L x Wx H: 130mm x 70mm x 40mm  
Weight: app. 150g

## 3 Function

After applying voltage the *ET-SL* starts its initialisation procedure. In a first step it initialises the storage card in SPI mode. After that the *ET-SL* searches for the log file named "log.txt". If the log file is found the *ET-SL* determines first, last and first free sector of the log file. The initialisation is finished. This status of the *ET-SL* will be indicated by the activated green LED.

If the initialisation of the storage card fails or the log file can not be found or is full the *ET-SL* signals the problem according to chapter 5.

The *ET-SL* stores incoming data 1:1 on the storage card. The LEDs will signalize if 90 % of the storage capacity is reached. In case of log file is full logging will be stopped.

*Note:* Storage cards can handle only complete 512-Bytes sectors. In case of voltage failure the last received bytes (1 ... 511) may get lost.

## 4 Preparing the storage card

The storage card has to fulfil the following prerequisites:

- log file "log.txt" in the root directory must be present
- empty log file is filled with byte 00h
- log file must not be fragmented

The *ET-SL* does not use the FAT of the storage card, to allow high baud rates. Resulting from that fact the log file must not be fragmented as the logger firmware assumes that the sectors of the log file are aligned sequentially. Therefore it is recommended not to store any other data on the storage card.

For the first use of a storage card the following procedure is recommended:

- Formatting of the storage card
- Creating an empty log file on the storage card

Use the tool "ET-SL.exe" for this operations.

## 5 Indications

The *ET-SL* signals its current state using a red and a green LED.

| green LED                              | red LED                  | logger state                                  | remark  |
|--|--------------------------|---|---|
| OFF                                    | OFF                      | not defined                                   | no power supply present   |
| ON                                     | OFF                      | <b>Normal operation</b><br>("logging active") | green LED is switched off for 500ms when a sector has been written                  |
| ON                                     | flashes onces per second | 90% of log file capacity are reached          |   |
| both LED are blinking at the same time |                          | log file is full                              | change storage card   |
| OFF                                    | ON                       | storage card not found                        | no storage card or storage card not correctly inserted or incompatible storage card |
| OFF                                    | blinks                   | log file not found                            | no log file "log.txt" in the root directory   |
| both LEDs blink alternately            |                          | storage card change by "Stop"-key activated   | change storage card and confirm by "Start"-key                                      |

## 6 Operation

### 6.1 "Start"-key

The "Start"-key is used to quit an error state or to restart logging after changing storage card. Pressing the "Start"-key results in a firmware restart followed by a storage card initialisation. During normal operation ("logging active") the "Start"-key deactivated.

## 6.2 "Stop"-key

The "Stop"-key stops the operational state "logging active" and changes to the operational state "change storage card". The key has to be pressed at least two seconds. The operational state "change storage card" will be displayed by the LEDs blinking alternately. After changing the storage card the logger has to be restarted by pressing the "Start"-key.

## 6.3 BCD-Encoder

The BCD-Encoder is used to select the desired baud rate according to the following table.

| Position | Baudrate | Remark |
|----------|----------|--------|
| 0        | 1200     |        |
| 1        | 2400     |        |
| 2        | 4800     |        |
| 3        | 9600     |        |
| 4        | 19200    |        |
| 5        | 38400    |        |
| 6        | 57600    |        |
| 7        | 115200   |        |
| 8        |          | unused |
| 9        |          | unused |
| A        |          | unused |
| B        |          | unused |
| C        |          | unused |
| D        |          | unused |
| E        |          | unused |
| F        |          | unused |

*Note:* The position of the BCD encoder will be read out only when power supply is connected to the *ET-SL*. After changing the encoder position the logger has to be restarted by interrupting and reconnection of the power supply.