An essential tool for RS232 analysis/optimizing
As an autonomous device the MSB-RS232 analyzer gathers exact information about every line change with micro second precision, independent from the PC and its operating system.

Equipped with a multitude of visualization tools it allows a detailed view into every RS232 communication and detects conditions which can be recorded by a true 'hardware solution' only!

Features & Benefits
Simultaneous sampling of all lines by external hardware
Exact measurement of all RS232 signals with a precision of 1μs and a maximum sampling rate of 16 MHz, independent from the PC operating system. No wrong time stamps or event sequences due to delayed or not answered system interrupts (software solutions).

Any baudrate with FLEXUART
High-precise set and measurement of standard and non standard baudrates in the range from 1 Baud up to 1 Mbaud with a resolution of 0.1% of value. Recording, analysis and own data injection with any, even unusual baudrate. Detection of asynchronous or drifting baudrates between sender and receiver.

Detection of invalid line levels
Recognition of open lines, stand-by conditions of the data drivers or short circuits.

Automatic protocol detection
Simple check and analysis of any communication with unknown connection parameters.

Protocol templates
Define own rules how your data shall be displayed or visualize any application specific protocols.

Data analysis in real time
Examination of the connection already while recording the data.

Framing, Parity, Break Detection
Direct analysis of error conditions and the reactions of end devices thereon.

Simplest application
Just insert the analyzer into any RS232 connection and link it via USB with your computer.

Start the software and dive into your connection.

Scope-like display of the data lines
Simultaneous display of the logical signals as well as the transferred data. That makes the error analysis and search easy for transmission errors, i.e. improper bit rates (jitter) or wrong data formats. Measuring of the real signals with the integrated bit ruler.

Integrated schematic switch editor (option)
Extends the analyzer by the capability to interactively alter the signals. Lines can be switched or rerouted and data can be injected in any line (inclusive simulation of framing and parity errors). Also break conditions can be sent.

Pattern search with regular expressions
Makes the search for any data sequences possible with wild card characters and time distances or pauses between data strings.

Integrated LevelFinder
Finds any static level, level change or error condition. Combined with the search for defined data bytes it is a precious tool to analyze hardware protocols.

Future-proof by modern FPGA technology
Integrated state of the art gate array technology allows permanent advancements and adoption to different applications. The updating is done simply at start of the software.

Compact housing with USB connector
No additional power supply necessary. Mobile operation even with laptop.
Analyzer Software
The MSB-RS232 analyzer software uses a multi-process architecture to guarantee a high maximum in stability and scalability. Already while recording the data can be displayed at different points in time, in different formats, and with different time resolutions (scope view). We call this concept MultiView, the actors Views.

Whether you like to compare two different points of time in your recording, or simply show the physical data signal according to the data byte sequences, just open the kind and quantity of views for your need.

Easy to use
Views are autonomous programs which link into a current running recording and visualize data in a certain format.

The MSB-RS232 analyzer software follows the concept to offer a specially optimized display tool for each kind of examination.

Each view provides functions which represents its kind of data interpretation. Thereby the handling stays easy and clear, multiline toolbars and overload menus are avoided.

Data export
Simple copy and paste of recorded protocol or data sequences into other applications for further evaluation or documentation purposes.
Or export the data as CSV for further evaluation of the logged data in Microsoft Excel or other spread sheet programs. That makes the full toolset of these programs available for statistic examination, sorting and other calculations.

Supports several OS
Run it on your favorite OS - it's your choice!
The MSB-RS232 software is delivered as 'native binary' for Microsoft Windows and Linux. No emulation, no additional libraries, no installation of .NET® or Java®.

Language
German and English language support.
What a pure software solution cannot provide

A virtual breakout box

By breaking the interface lines and feeding them through a gate array some optional features are available. The signal do not have to be connected directly 1:1, but can be rerouted, changed and manipulated. Loop back functionality, switching, breaking and changing protocol lines are possible.

How it works

Imagine the switch option as a kind of patch panel between the inputs and outputs of port A and B. On this you can place switches, inverters and further elements and wire them to the connectors of both ports. But with the difference, that you do not use real wires and switches. You only place and connect them virtually on a drawing area.

Advanced Features

Line inverting

Inverter elements allow the purposeful negation of each data/signal line.

Data injection

Input any desired data sequences, also binaries.

Simulate transmission errors

Send data together with a framing or parity error, send break.

Data probe of any line

Free selection of lines, which are interpreted as data transmission signal.

Automatic protocol scanner for baudrate, databits, parity

The MSB-RS232 analyzer contains a so called FLEXUARD core, an specially developed decoder hardware, for the serial data transmission which allows not only the measuring of any baud-rate in the range of 1...1Mbaud but also the detection of the used protocol.

How can it help?

Sometimes the real data format is not known if you have older devices for which the interface descriptions got lost.

Or you are not sure if the sender really adds the correct parity bit. You always should verify the data structure before starting the examination of the communication.

Simply insert the analyzer into the active connection, press 'scan' and after having decoded some characters you will get information about the probable data format.

Working with any baudrate

By the feature to log data at any baudrate you can also check connections at uncommon transmission rates which sometimes are used inside systems, where the available system clock is directly divided to the baud clock.

The resulting baud rate is not a multiple of 9600, but any other, which can not be correctly decoded by PC communication ports.

When using the switch option you are also able to send data at varying baud rates to the devices. Simply to check their ability to deal with not perfect data transmissions.
Optional extensions

SwitchOption
A virtual breakout box with the ability to influence (switch, break) lines, inject data, simulate protocols/errors and reroute signal pins. This function can be enabled by option key at any time.

W232-Cable
Extension of the MSB-RS232 analyzer capabilities by uninterruptible analysis, siehe separate data sheet.

Technical data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baudrates</td>
<td>High-precision setting and measuring of standard and non-standard baudrates in the range from 1 Baud to 1MBaud with a resolution of 0.1% of the set resp. measured value (FLEXUART).</td>
</tr>
<tr>
<td>Data formats</td>
<td>Parameter for TxD, RxD: 5 to 9 data bits, parity off, even, odd, constant 0 or constant 1.</td>
</tr>
<tr>
<td>Logical line state</td>
<td>Logical level 1 (V-), 0 (V+), invalid (-1.3V &lt;ln &lt;+1.3V)</td>
</tr>
<tr>
<td>Time resolution</td>
<td>All lines are exactly sampled and marked with 1μs time stamps, independent of the OS of the PC.</td>
</tr>
<tr>
<td>Signal levels</td>
<td>Standard RS232 level ±3V to ±25 V, ESD protected inputs 5kOhm</td>
</tr>
<tr>
<td>Jacks</td>
<td>Standard D-Sub 9pin male / female connectors.</td>
</tr>
<tr>
<td>Intern connections</td>
<td>All connections from A and B are connected via high speed drivers and can be separately switched.</td>
</tr>
<tr>
<td>Logic mode</td>
<td>Every RS232 input can be seen as a logic input with a trigger level of 1.3V, 5kOhm impedance.</td>
</tr>
<tr>
<td>Recording capacity</td>
<td>Depending on free hard disk space, maximum 4 GByte.</td>
</tr>
<tr>
<td>Cache</td>
<td>512 kB internal cache memory for buffering of measuring data when recording data with high transfer rates.</td>
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<tr>
<td>Status LEDs</td>
<td>Leds for displaying: red: recording status and buffer load, green: RxD and TxD data flow.</td>
</tr>
<tr>
<td>Power supply</td>
<td>The analyzer is directly supplied from the USB cable. The consumption is about 200mA. USB Ground is the same as RS232 Ground. No external power supply necessary.</td>
</tr>
<tr>
<td>Operating Systems</td>
<td>Windows 2000, XP, Vista, Windows 7. All Linux with kernel from 2.4.18 and GLIBC_2.4 or higher.</td>
</tr>
<tr>
<td>Dimension</td>
<td>100mm x 50mm x 25mm (Length, width, height). Weight ca. 100g.</td>
</tr>
<tr>
<td>Requirements</td>
<td>Graphic boards and monitor with at least 1024x768 pixel resolution and 16 bit color depth or more.</td>
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<tr>
<td>Disk space</td>
<td>50 MByte empty space for the software installation plus additional space for the recording files.</td>
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<tr>
<td>Memory</td>
<td>128 MByte or more.</td>
</tr>
<tr>
<td>USB connector</td>
<td>One empty USB 1.1 or 2.0 connector (full speed).</td>
</tr>
<tr>
<td>Scope of delivery</td>
<td>MSB-RS232 analyzer device.</td>
</tr>
<tr>
<td>Analyzer</td>
<td>RS232 cable, 2m, 1:1, 9Pol DSub-Connectors male/female. USB cable 2m.</td>
</tr>
<tr>
<td>Software</td>
<td>CD for Windows and Linux, Manual as PDF document in German and English.</td>
</tr>
</tbody>
</table>

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