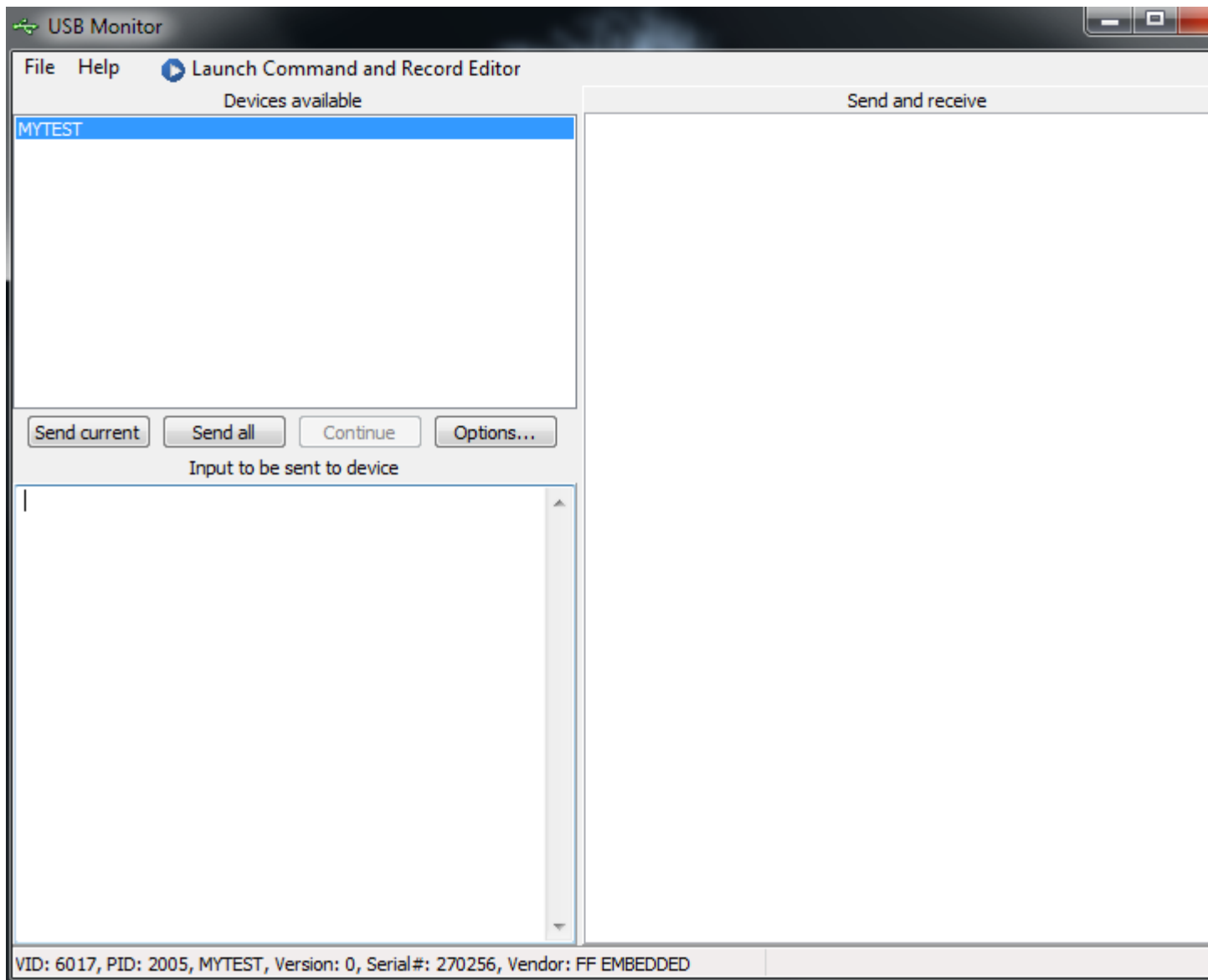


## USB HID Monitor

This tool enables you to monitor the communication between the PC and a USB HID device.

Also, when combined with my Command and Record editor, it enables you to actually test the responses from the device.

### *Here's what it looks like*



To select a device connected to your computer doubleclick an entry in the list on the left.

Details about this device are shown in the bottom of the window.

When you have selected a device, you can type in the input area on the left hand lower corner.

Right click the area to show your options.

To enter hexadecimal, binary or decimal values to be transmitted, you will have to insert them

between separators ('[' and ']').

A hexadecimal value can be inserted between these separators like this [\$1234].

An odd number of hexadecimal characters will be padded with a zero on the left.

Same for binary values: [B100100]. These are padded to the left with zeroes to make sure the

string is 8 (or multiple) long.

Decimal values are more complex.

For values that occupy more than 1 byte you'll have to choose the order of transmission.

Default storage for PDS is LSB, MSB (little endian). You may of course decide otherwise.

There's sign to deal with.

You can enter a '-' in front of the value, note that it's converted in 2's complement.

This will work for all decimal values.

Then there's bytes, words and double words.

Byte: use '#' as prefix to indicate a byte. 1 byte is transmitted.

Word: use 'W' as prefix. 2 bytes are transmitted.

Double word: use 'D' as prefix. 4 bytes are transmitted.

Values will be truncated if the value is too big to fit the size.

After pressing the 'enter' key the string is converted (if necessary) and sent to the device.

This will be visible in the left hand side of the right hand panel.

The values returned by the device become visible in the right hand side of that panel.

### ***Loading files***

You can also load a file with lines to be handled.

There are a number of file load options:

- Load record file: this will load a .rcd created by my Command and Record application.

- Load Tx file: any file containing strings to be sent

Load record file:

This will show a list of available records. Clicking a line will transmit the underlying string to the device.

Load Tx file: the lines to be sent are visible in the bottom left hand panel.

### ***Sending to the device:***

When you loaded a record file each line is clickable. Double click any line and the corresponding string is sent to the device.

When you loaded a Tx file the lines are not clickable, but the line the cursor is in is the 'current' line.

You have the following options:

Pressing 'Send current' will send the current string, i.e. the string the cursor is in.

After pressing 'Send current' the cursor will progress to the next line.

Pressing 'Send all' will send all lines. It starts with the first line or the current line depending on the setting in the options.

Pressing 'Send all' will send the next line after receiving a response from the device. But devices don't have to respond, they can also 'just process' and wait for the next line.

In the Options window you can enter the amount of milliseconds the program has to wait for a response before it goes on.

It's the No-response delay.

Note that this works very similar to TimeOut, only the typical value is much smaller. Further, TimeOut can be deselected, this delay is always active.

### ***Transmission modes.***

The basic mode is 'just send and see what happens'.

If your device has a specific response for failure you can use the Stop on Nack mode.

Type in the value for Nack. Ascii, hex, binary and decimal as described earlier.

Note that this value must exactly match a message received from the device.

Timing out is also an option. Just click the checkbox and enter the number of milliseconds.

Note that the monitor will check only every 10 milliseconds. 5 seconds is the max.

If you're using Nack or TimeOut the Continue button will be enabled after every Nack/TimeOut.

Click this one if you want to continue from this point. If you want to start from the top, select the

top line and click 'Send all'.

If you want to use the record responses generated by my Command and Record application you

can select this option.

Using record responses overrides values 'Stop on Nack' but does check for Time outs.

### ***Output window.***

The output window on the right contains a number of columns.

Send and receive					
Record: TestFixedOK, Test a fixed response					
[0001]	[001]	[084]	T		
[0002]	[002]	[070]	F		
[0003]	[003]	[048]	0		
[0004]	[000]			[000]	
[0005]	[001]		F	[070]	
					15
Record: TestMinOK, Test minimum value					
[0006]	[001]	[084]	T		
[0007]	[002]	[077]	M		
[0008]	[003]	[073]	I		
[0009]	[004]	[078]	N		
[0010]	[005]	[048]	0		
[0011]	[000]			[000]	
[0012]	[001]		D	[068]	
					31
Record: TestMaxOK, Test a maximum value					
[0013]	[001]	[084]	T		
[0014]	[002]	[077]	M		
[0015]	[003]	[065]	A		
[0016]	[004]	[088]	X		
[0017]	[005]	[048]	0		
[0018]	[000]			[000]	
[0019]	[001]		K	[075]	
					62
Record: TestMinMaxOK, test both min and max value					
[0020]	[001]	[084]	T		
[0021]	[002]	[066]	B		
[0022]	[003]	[079]	O		
[0023]	[004]	[084]	T		
[0024]	[005]	[072]	H		
[0025]	[006]	[048]	0		
[0026]	[000]			[000]	
[0027]	[001]		T	[084]	
					78

EMBEDDED Byte 1 greater than maximum value W. press Conti

The first one is a simple line counter, it is reset every time you clear the output window.

The second is the number of the byte in the message sent or received.

The third is the decimal value of the byte.

The fourth is the Ascii representation of either the byte sent or the byte received, non-printable

do not show up here.

The fifth is the decimal value of the byte received.

The sixth column contains the number of milliseconds elapsed so far.

This last column only contains values if the device sends back responses.

The clock is reset when you clear the output and when you send a line, or a series of lines.

If you loaded a record file, each time a message is sent the description of that record is inserted

in the output window.

The output can be saved to a file. Choose between RTF (this will contain the colors) and plain text.

**Options: click the Options button.**

The screenshot shows a dialog box titled "Options" with two main sections: "Transmission options" and "Preferences".

**Transmission options**

- Start with current line (instead of first line)
- Stop on Nack
  - Nack:
- Stop on time out (msec)
  - Value:
- Use record responses
  - Record responses
    - Stop on first error
    - Stop on error, user may continue
    - Ignore errors
  - No-response delay:
  - (D)Word byte order
    - LSB first
    - MSB first

**Preferences**

- Path to the Command and Record Editor:  ...
- Line colors for the output window
  - Output to device - odd bytes
  - Output to device - even bytes
  - Input from device - odd bytes
  - Input from device - even bytes
  - Error messages

Buttons: Ok, Cancel

### **Transmission options**

Start with current line

If you have more than 1 line in your transmission box and you press 'Send all' this selection determines where to start from

Stop on Nack

If you don't use Record Responses you may still have some checking of the validity of the responses.

Select the box and fill in any value to check. Note that this value must be the only value preceding trailing \$00.

Stop on time out

A device may become unresponsive because it either takes too long to process or just went out of control.

Instead of waiting, the time out option will automatically stop the communication.

If you use my Command and Record application you can choose if you want to use the record

responses. Check the box.

Select one of the three modes.

Note that the Command and Record application creates response patterns for each record.

These response patterns consist of:

- the minimum number of bytes to be received
- a fixed value for a specific byte
- a minimum value for a specific byte
- a maximum value for a specific byte
- an expected value for a specific byte

Stop on first error will do as it says. A soon as a response does not match one of the criteria it

will just halt.

Stop on error, user may continue. A soon as a response does not match one of the criteria it will

just halt. Pressing the 'Continu' button will send the next line(s).

Ignore errors. As it says, it just carries on.

No-response delay

Not all commands have to result in a response, it may very well be possible that a command is processed and the device just sits waiting for a next command.

This delay is aimed at just that. If no response is received during this time, a next command may be sent.

(D)Word byte order

When sending Word (2 bytes) or DoubleWord (4 bytes) values you can select if it should be LSB first or MSB first.

## **Preferences**

Path to the Command and Record Editor

Here you can select the executable so you can launch it from the USB HID Monitor

Line colors

You can select the colours you want to use for the various lines in the send and receive window.