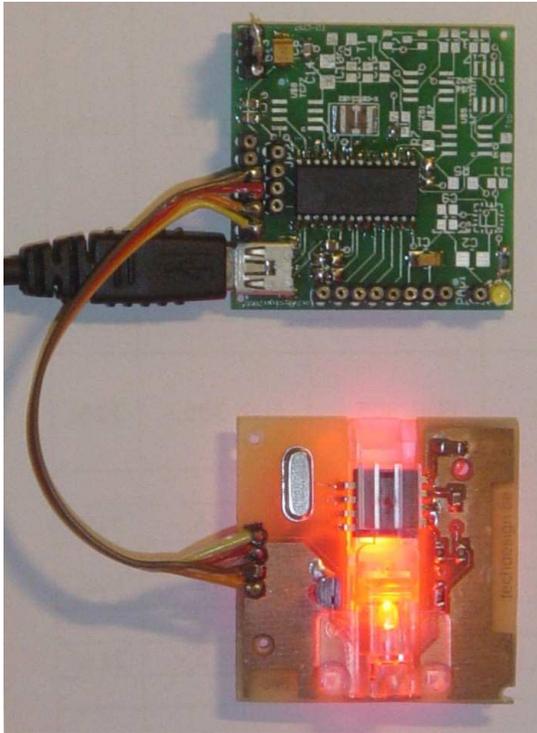


## TD-USB-01: ADNS-2620 mouse interface

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TD-USB-01 (green pcb on top)

Mouse sensor board (046) (bottom pcb, top view)

### TD-USB-01 interface with mouse sensor board.

This is an example USB project showing how to interface an optical mouse sensor (the ADNS-2620) with a standard XP/Vista computer.

The TD-USB-01 board with a PIC18F2550 communicates with:

- the PC: USB 2.0 through a mini-B connector.
- the mouse sensor board: SPI over 4-wire flatcable.

Here are the **technical specifications**:

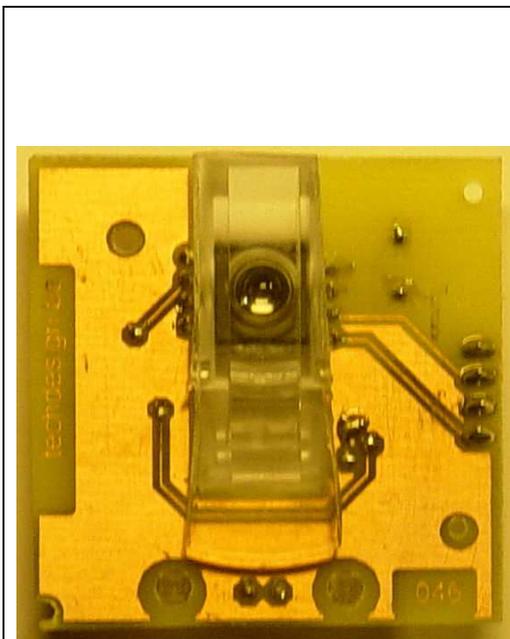
- **PC Win XP/Vista interface** application with Visual C# 2008 Express: free download.
- TD-USB-01 (green pcb on top) with PIC18F2550 USB HID setup.
- Mouse sensor board (046) with ADNS-2620.
- USB Bus powered, no external power supply needed.
- ADNS-2620 registers selection stored in the windows registry.
- Refresh rate from 1mS up.
- Data bits & bytes details.
- Real mouse functionality.
- Sensor CCD 324 pixels: image displayed: 18x18, 6-bit greyscale.
- TD-USB-01 software is **100% upgradable** with a simple RS232 bootloader.
- RS232 interface for raw data readings.
- PCB Dimensions: 40 x 41 mm or 1"57 x 1"61

These assembled boards are available from our [online shop](#).

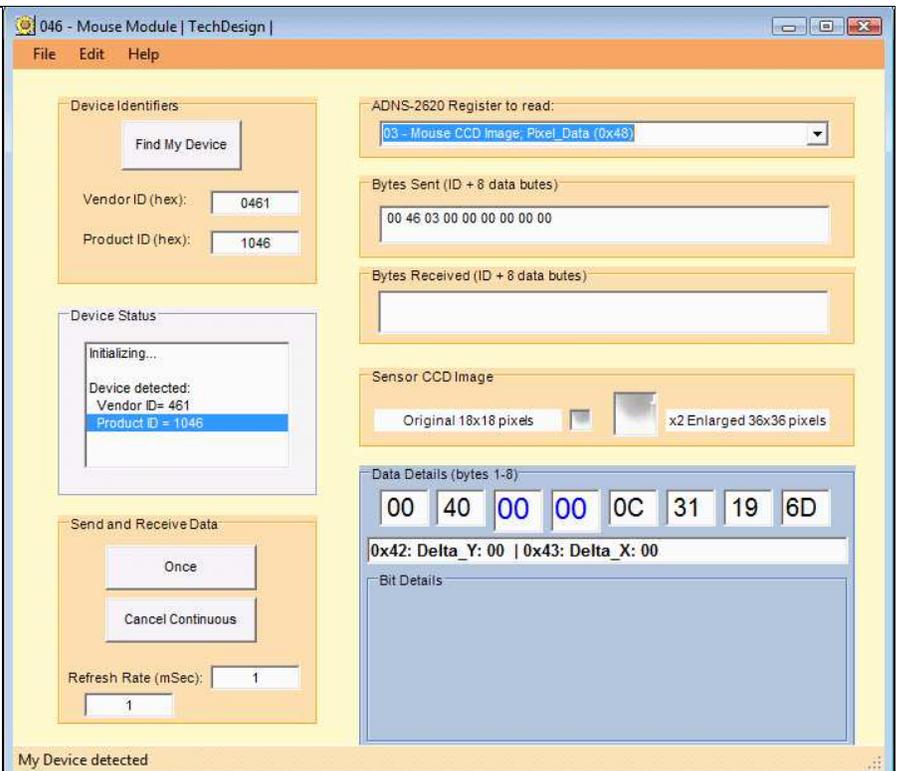
**Source code** (CCS C and Visual C#) can be [purchased](#) separately.

**Sensor example Source code (CCS C)**, **sensor board pcb layout** and **schematics (Eagle)** available.

Last update: March 28, 2009.

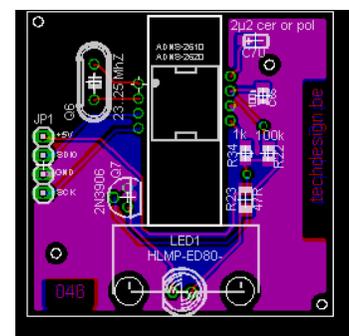
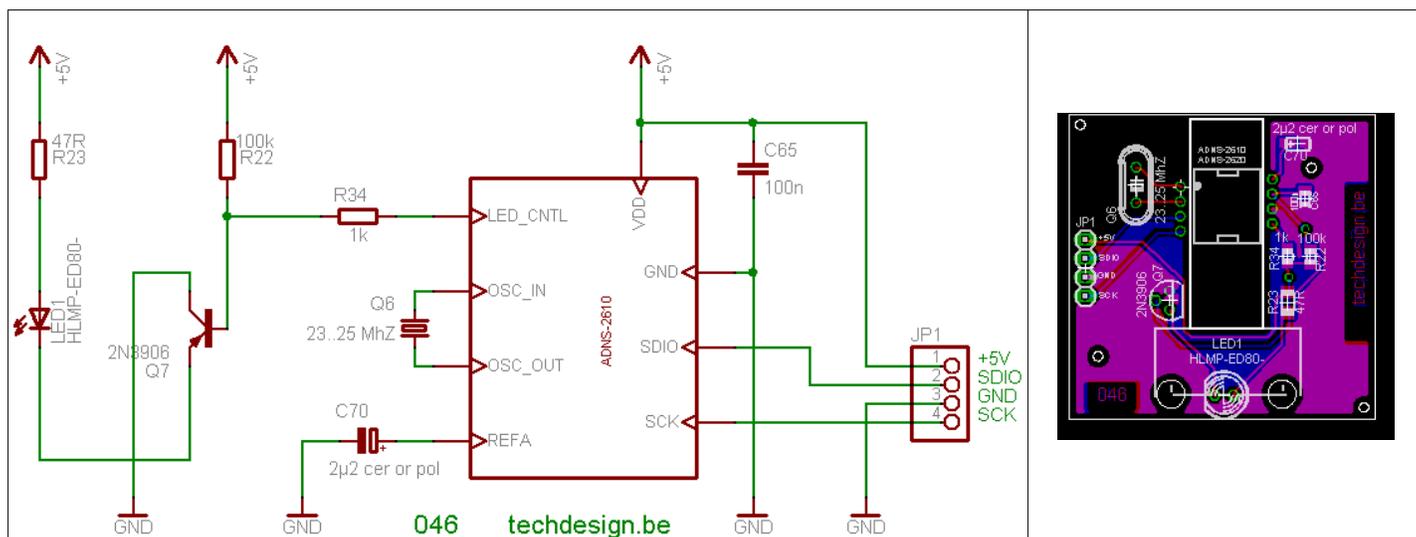


Mouse sensor board (046) (bottom view)



PC Win XP/Vista interface application with Visual C# 2008 Express

**Mouse sensor board: Schematic & PCB:** (right click & "save as" to get full resolution)



**TD-USB-01: Main Connections:**

TD-USB-01 diagram	Header pinouts		
	<b>Mouse sensor board (046)</b>	<b>SPI interface</b>	<b>TD-USB-01</b>
	<b>JP1 pins</b>		<b>JP3 pins</b>
	1	+5V	1
	4	SCK, RB1	2
	2	SDIO, RB0	3
	3	GND	4
		no connect	5
		no connect	6
	<b>TD-USB-01: JP2</b>	<b>RS232</b>	
	1	+5V	
2	RX		
3	GND		
4	TX		

**Downloads:** right-click & save as

**WARNING:** may not be duplicated for any commercial use whatsoever without explicit consent from the author (c) Michel Bavin, TechDesign Electronics.

**Sensor Board (046): Eagle PCB layout:** [046\\_v002.brd](#) - Jan. 31, 2009.

**Sensor Board (046): Eagle Schematics:** [046\\_v002.sch](#) - Jan. 31, 2009.

**ADNS-2620: CCS c source code:** [optical\\_mouse\\_v03.c](#) - March 27, 2009.

**TD-USB-01: Hex file:** [046\\_v003.hex](#) bootloading for the PIC18f2550 - March 27, 2009.

**Windows interface application setup:** [046\\_app\\_setup.zip](#) - March 27, 2009. Written in Visual C# 2008 Express, compatible with Windows XP and Vista.

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**Info & datasheet:**[ADNS-2620](#)[Generic\\_hid\\_cs](#)[Microsoft Visual C# 2008 Express Edition](#)**Screenshots:**

The screenshot shows the '046 - Mouse Module | TechDesign' software interface. The window title is '046 - Mouse Module | TechDesign |'. The interface includes several sections:

- Device Identifiers:** A 'Find My Device' button, and fields for Vendor ID (hex): 461 and Product ID (hex): 1046.
- ADNS-2620 Register to read:** A dropdown menu set to '05 - Status (0x41)'. Below it are fields for Bytes Sent (ID + 8 data bytes) containing '00 46 05 00 00 00 00 00' and Bytes Received (ID + 8 data bytes) containing '00 00 40 00 00 03 34 1F 6E'.
- Device Status:** A status window showing 'Initializing...' and 'Device detected: Vendor ID= 461, Product ID = 1046'.
- Sensor CCD Image:** A section with 'Original 16x18 pixels' and 'x2 Enlarged 36x36 pixels' options.
- Data Details (bytes 1-8):** A row of eight boxes containing the hex values: 00, 40, 00, 00, 01, 33, 1F, 6D.
- Bit Details:** A section showing bit-level data: Bit7: Product ID2: 0, Bit6: Product ID1: 1, Bit5: Product ID0: 0, and Bit0: Mouse State: 0.
- Send and Receive Data:** Buttons for 'Once' and 'Cancel Continuous', and a 'Refresh Rate (mSec):' field set to 1.

At the bottom left of the software window, it says 'My Device detected'. To the right of the software window is a photograph of the mouse module hardware, showing a clear plastic lens and a yellow PCB with various components.

**Tools:**

Check out our development [tools page](#).

The PIC code was made with the PCWH [CCS compiler](#) (\$500,-); you can install Microchip's [MPLAB IDE](#) (click on the link and you can get it for free) with it to get things running smoothly.

Bootloading of the PIC18F2550 can be done with the excellent [Tiny PIC bootloader](#), through RS232.

[Eagle 4.11e](#) was used for the schematic & PCB layout.

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