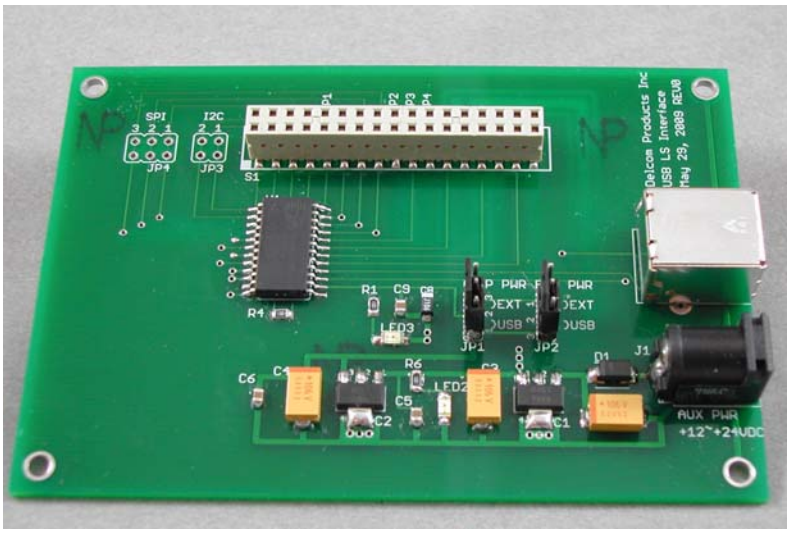
MODLSUSB Datasheet

USB Low Speed Interface Module



902110 – USB LS Interface w/External Power

902112 – USB LS Interface

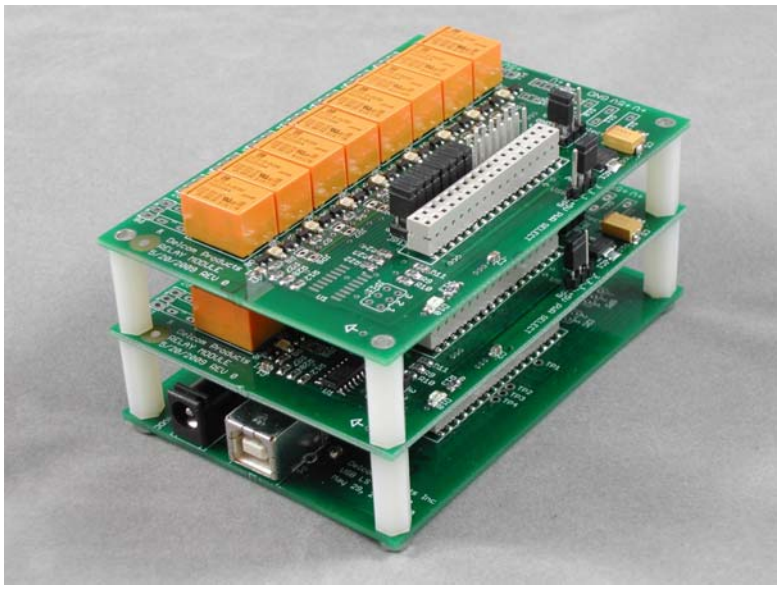
Delcom Products Inc. 200 William St STE302 – Port Chester NY 10573 USA (914)934-5170 www.delcomproducts.com

Table of Contents

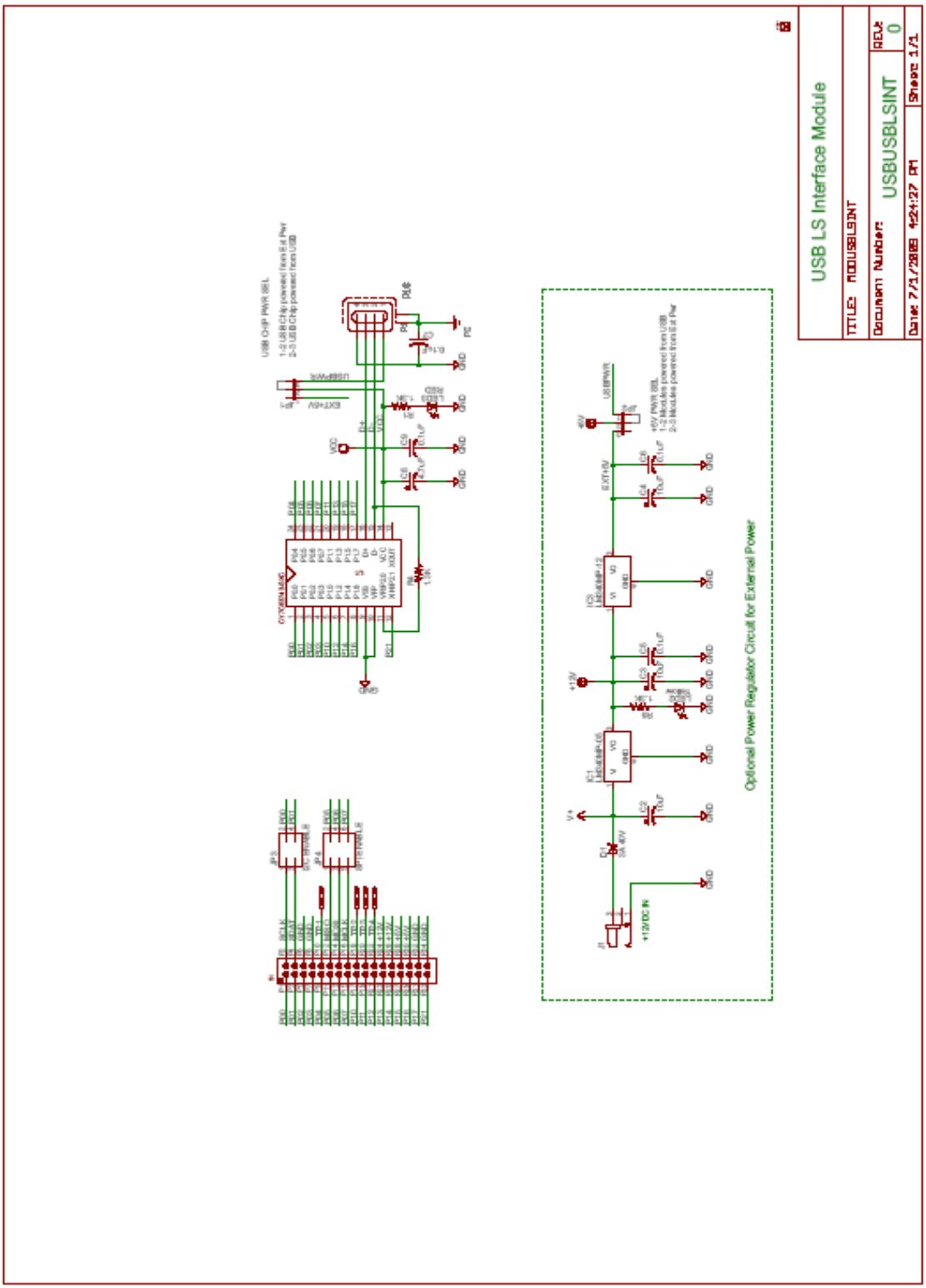
1 Functional Overview

The Delcom USB low speed interface module provides the communication and power for the Delcom IO modules. The microprocessor is based on the Cypress CY7C63xxx USB low speed processor. The interface accepts USB HID set and get commands. The commands include simple set/reset pin functions as well as more complex commands such as I2C and SPI. Power is provider from either the USB port or an external power supply.

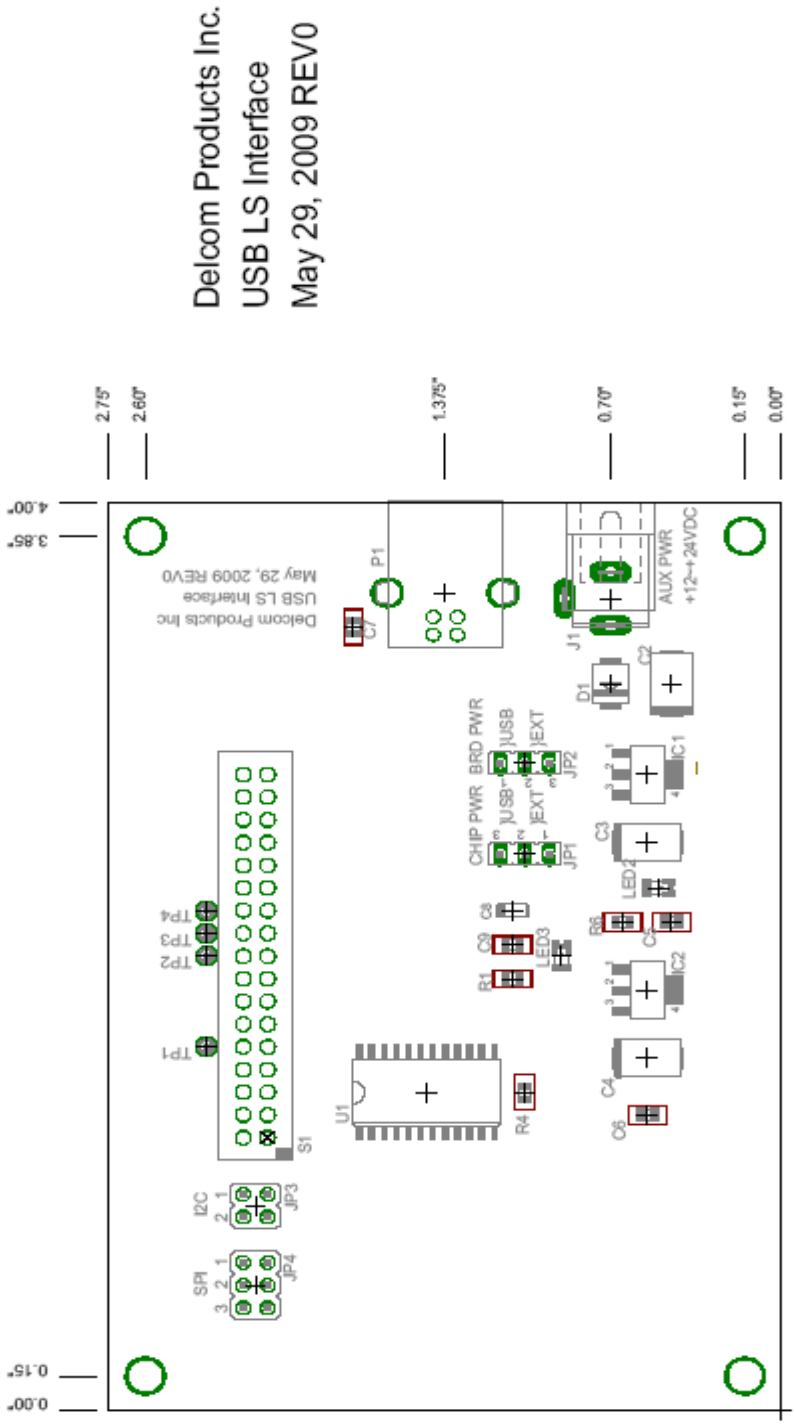
Modules can be added to the interface to provide for custom solutions. Modules are added by stacking them. This allows for a complete custom solution.



2 Schematic



3 Layout



Delcom Products Inc. 200 William St STE302 – Port Chester NY 10573 USA (914)934-5170 www.delcomproducts.com

4 Connections

P1 - USB Connector
The USB connector connects to a USB host computer. The connection provides for the USB communications and power.

J1 – Auxiliary External Power Connector
This connection provides for an optional power supply. External power can be used when higher current (>500ma) is required or the circuit needs to be powered from an isolated power source. See power connection section for power options.

S1 – Extension Connector
This connector proves all the power and data signals to be used by the connecting modules. Modules are added by stacking them on this connection.

JP3 - I2C Jumper
This jumper is used to connector the I2C port to the extension connector.

JP4 - SPI Jumper
This jumper is used to connector the SPI port to the extension connector.

5 LEDs

There are two LEDs on this board. The red LED will lights up when the USB micro processor is powered up. The yellow LED will light up when external power is present.

6 Power Configuration

The USB port can only supply a maximum of 500ma (note, some portable computer limit the USB power to 100ma). For more power the interface board includes an optional external auxiliary power plug and power regulators on the board. The power will accept 12VDC to 18VDC. The two regulators supply +12VDC and +5VDC to the modules.

The interface has three possible power configurations. The power selection is configured with jumper on JP1 And JP2. The following table describes the power modes. Note when using the external power supply the ground from the external power supply and USB will be connected.

Mode	JP1	JP2	Available Current	Micro powered by	Modules powered by	Description
1	2-3	1-2	500ma	USB Host	USB Host	USB powers both the microprocessor and all the modules attached. Maximum current draw is limited to 500ma. Power is supplied to micro and modules when ever the USB host is powered. This configuration is usefully when the solution is to be completely powered from the USB host.
2	2-3	2-3	Limited by external power supply	USB Host	Ext Pwr	USB powers the microprocessor only. The external power supply powers the modules. Maximum available power is limited by the external power supply (typically 1Amp). This configuration is used when you need more than 500ma of current or you want to isolate the power used from the USB host power. When using this configuration it is recommended that one of the port pin is connected to the external 5 volt supply this way the host program can detect if the external power is present or not. USB micro is powered when USB host is on and modules are powered when external power supply is on.
3	1-2	2-3	Limited by external power supply	Ext Pwr	Ext Pwr	External power supplies both the USB chip and modules. Available power is limited by the external power supply. Interface and modules are powered up only when the external power is available.

7 Software Control

The USB LS Interface uses the Delcom USBHIDIO micro controller firmware and uses the preinstalled USB HID drivers. Commands can be sent via the OS API get and set functions or via the Delcom DLL.

Please see the USBHIDIO datasheet and the Delcom USB HID webpage for more information.
DataSheet -> http://www.delcomproducts.com/downloads/USBIOHID.pdf
Examples -> http://www.delcomproducts.com/productdetails.asp?PartNumber=900000
DelcomDLL -> http://www.delcomproducts.com/productdetails.asp?PartNumber=890510

Delcom DLL examples

Sets port0 to all low & sets port1 to all highs.

```
DelcomWritePorts(handle, 0, 255)
```

Reads port0 & port1 and returns the results in variables Port0 and Port1.

```
DelcomReadports(handle, Port0, Port1)
```

Sets the port pins P0.0 and P0.1 high.

```
DelcomWritePin(handle, 0,2,1)
```

Sends the one byte of data(50) on the I2C bus to command/address 110

```
DelcomWriteI2C(handle, 110, 1, 50)
```

OS API examples

Sets port0 to all low & sets port1 to all highs.

```
MyPacket.Tx.MajorCmd = 101;
MyPacket.Tx.MinorCmd = 10;
MyPacket.Tx.DataLSB = 0x00;
MyPacket.Tx.DataMSB = 0xFF;
HidD_SetFeature(handle, MyPacket, 8);
```

Reads port0 & port1 and returns the results in variables Port0 and Port1.

```
MyPacket.Rx.Cmd = 100;
HidD_GetFeature(handle, MyPacket, 8);
unsigned char Port0 = MyPacket.Data[0];
unsigned char Port1 = MyPacket.Data[1];
```


8 Specifications

Description	Values
Board Size	4” x 2.75” (101.6mm x 69.85mm)
Vertical Spacing	0.78125” (19.84mm) Using 0.750” Stand Offs
Maximum Current Available	500ma w/o external power supply 2A w/ external power supply
Available Voltages	+5VDC USB, +5VDC EXT PWR, +12VDC EXT PWR

9 Ordering Information

Part Number	Package Type
902110	USB LS Interface with aux power regulators
902112	USB LS Interface with out aux power regulators

10 Accessories

Part Number	Package Type
902190	Power Transformer 12VDC 500ma (Wall Mount)
803514	USB 2.0 A-B Cable 2M

11 References

Delcom Website
http://www.delcomproducts.com

MODLSINT Schematic & PCB Drawings
http://www.delcomproducts.com/downloads/MODUSBLSINT_SCH.pdf
http://www.delcomproducts.com/downloads/MODUSBLSINT_PCB.pdf

Delcom Modules
http://www.delcomproducts.com/productdetails.asp?productnum=902100
USBHIDIO Data Sheet
http://www.delcomproducts.com/downloads/USBIOHID.pdf

USBHIDIO Examples
http://www.delcomproducts.com/productdetails.asp?productnum=900000

Technical Support
techsupport@delcomproducts.com

Revision History

Rev	Date	Author	Description
0	06/20/2009	DL	Initial Release

Appendix A. Notices

DELCOM PRODUCTS INC. takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on DELCOM PRODUCTS INC procedures with respect to rights in DELCOM PRODUCTS INC. specifications can be found at the DELCOM PRODUCTS INC. website. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers' or users of this specification, can be obtained from the DELCOM PRODUCTS INC. Executive Director.

DELCOM PRODUCTS INC. invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to implement this specification. Please address the information to the DELCOM PRODUCTS INC. Executive Director.

LIFE SUPPORT POLICY - Delcom Products are not authorized for use in life support devices and/or systems without the express written approval of Delcom.