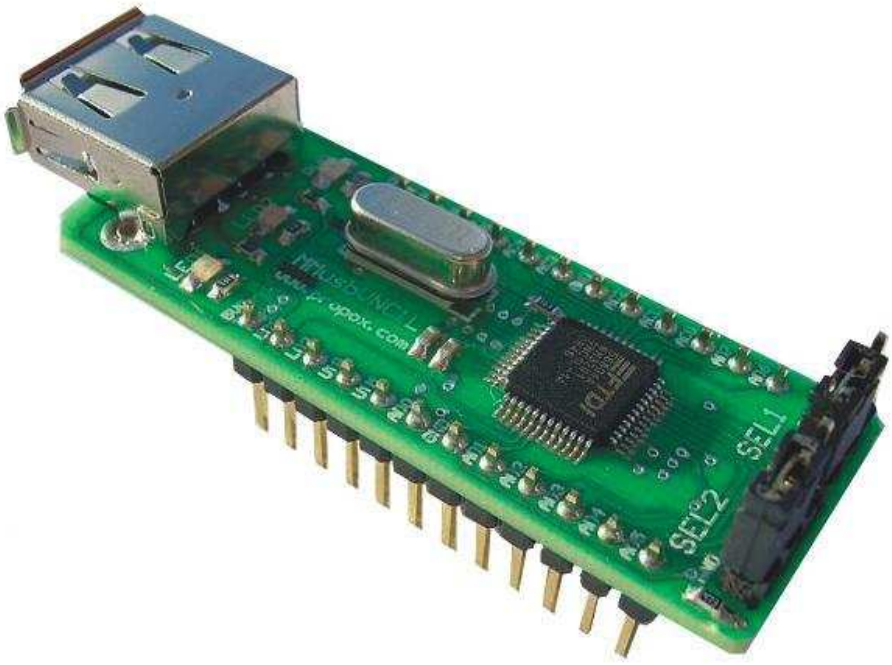


MMusbVNC1L

User's Manual

REV 1.0

Many ideas one solution

Introduction

Thank You for buying our minimodule MMusbVNC1L.

MMusbVNC1L is low-cost integrated Host USB module. It is based on FTDI's VNC1L-1A device. Module allow communicate to MCU, PLD or FPGA via one of the three interfaces: UART, SPI and parallel FIFO. Interface selecting is possible by two shorts: SEL1 and SEL2. VNC1L-1A chip, chich is a hart of our module, transparently handles the FAT File structure and is fully compliant with USB 2.0 specification. Our module is delivered with VDAP firmware installed, which allow to communication with so popularly USB Flash drives.

MMusbVNC1L is made in two-layer printed circuit bard technology. It Has 64k byte program Flash ROM memory and 4k byte SRAM data memory. All signals are driver via 24 pin, 1.1inch wide footprint. Integral power control allow to power external devices.

Choosing our minimodule is the first step for projects, which should be done in the short time. **MMusbVNC1L** could be used as part of prototype eliminating necessity of designing circuit board and final circuit in which module is fitted like "sandwich shape".

We wish you were successful at designing and using new devices

Features MMusbVNC1L

- Low dimension, USB type A socjet and second USB port available by module pins.
- Fully compliant with USB 2.0 specifi cation – USB full speed (12 Mbps) and low speed (1.5 Mbps) USB host and slave device compatible.
- Single 5V Power Supply
- Integral power control allow to power external devices by 3.3V power supply form LP2951ACM-3.3
- Power indicator (PWR) and USB traffic indicatros LED’s (LED1, LED2).

Power On	LED1 and LED2 flash alternately for 2 seconds. Repeated until monitor connects.
USB Disk Initialisation	LED1 on, LED2 off
USB Disk Ready	LED1 off, LED2 on
USB Disk Removed	LED1 off, LED2 off
Commands from monitor to USB Disk	LED1 off, LED2 flashes
Commands from monitor Port with USB Disk removed	LED1 off, LED2 off

- Firmware programming control pins PG# and RS# brought out onto jumper pin connectors.
- Program or update firmware via USB Flash dis kor via SPI / UART / Paralel FIFO

Interface	SEL1	SEL2
UART	Pull-up	Pull-up
SPI	Pull-down	Pull-up
Parallel FIFO	Pull-up	Pull-down
UART	Pull-down	Pull-down

Applications Areas

- Interface USB Flash drive to MCU / PLD / FPGA
- USB Flash drive to USB Flash drive file transfer interface
- Digital camera to USB Flash drive or other USB slave device interface
- MP3 Player to USB Flash drive or other USB slave device interface
- USB MP3 Player to USB MP3 Player
- Mobile phone to USB Flash drive or other USB slave device interface
- GPS to mobile phone interface
- Interface USB Flash drive to Printer

General Description

MMusbVNC1L is a host / slave USB interface, which include new functionality. All signals are driver via 24 pin, 1.1inch wide footprint. Single USB port type A is avaiable on module and second USB port type A is avaiable by pins.

MMusbVNC1L allow to work with three interfaces, selectable by two gold-pin junction placed directly on minimodule:

- UART
- SPI
- Parallel FIFO

FTDI company is delivering with VNC1L-1A chip, 6 different types of firmware, chich are available on www.vinculum.com website. Upgrade or installation a new firmware is easy. It can by done by using software which is also available on product websiste and our else module, **MMusb232**. Connection schematic is available in secondo part of this manual.

Module Pin-Out

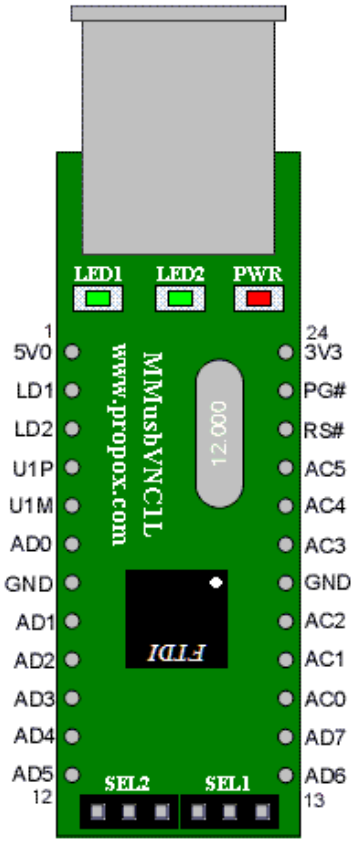


***Figure 2. MusbVNC1L** Top view (component side)*

Pin Definitions determined by type of interface

Pin	Name	PCB	Type	UART	Parallel FIFO	SPI
6	ADBUS0	AD0	I/O	TxD	D0	SCLK
8	ADBUS1	AD1	I/O	RxD	D1	SDI
9	ADBUS2	AD2	I/O	RTS#	D2	SDO
10	ADBUS3	AD3	I/O	CTS#	D3	CS
11	ADBUS4	AD4	I/O	DTR#	D4	
12	ADBUS5	AD5	I/O	DSR#	D5	
13	ADBUS6	AD6	I/O	DCD#	D6	
14	ADBUS7	AD7	I/O	RI#	D7	
15	ACBUS0	AC0	I/O	TXDEN#	RXF#	
16	ACBUS1	AC1	I/O		TXE#	
17	ACBUS2	AC2	I/O		RD#	
19	ACBUS3	AC3	I/O		WR	
20	ACBUS4	AC4	I/O			

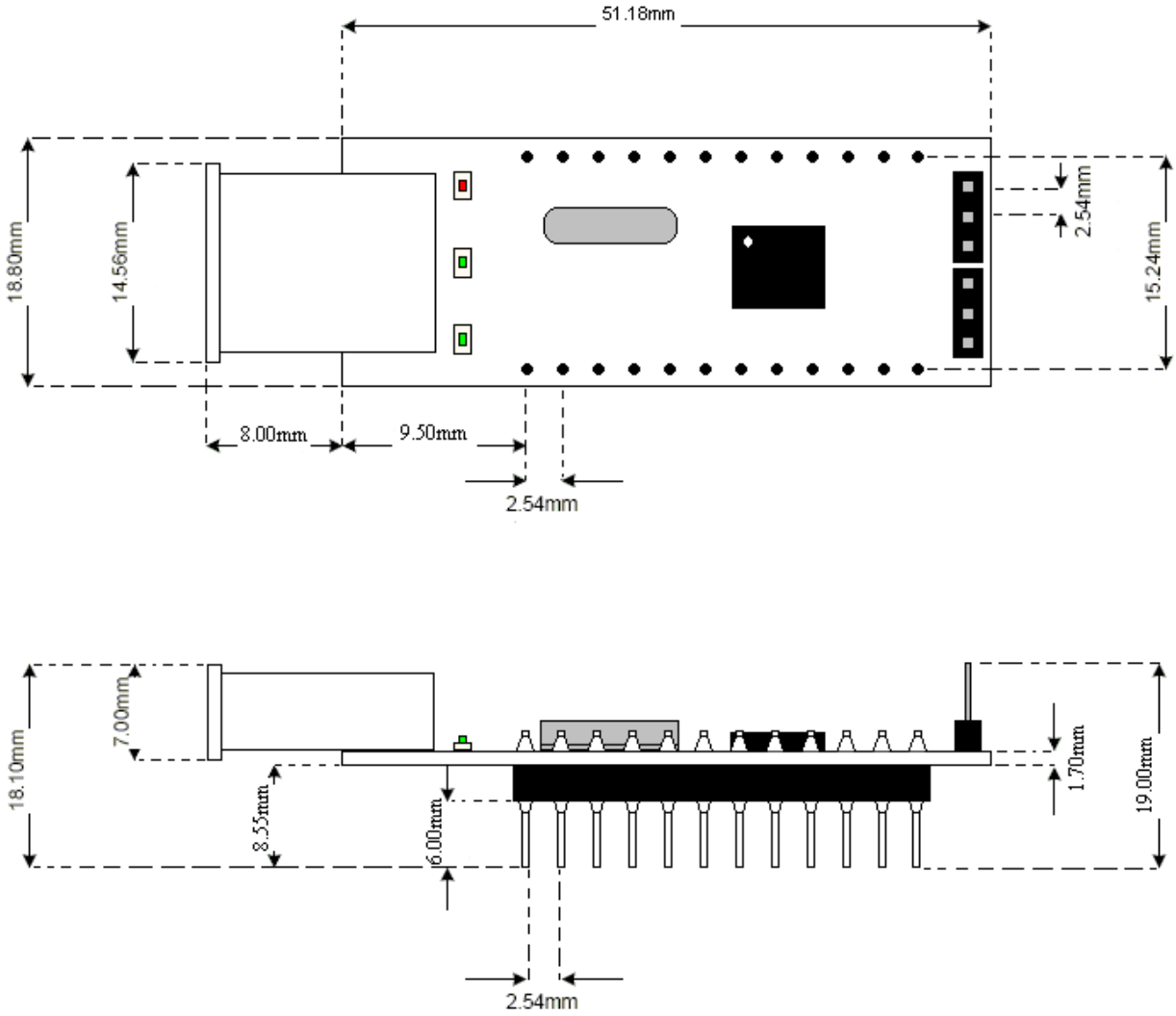
Pin Definitions

Pin No.	Name	Type	Description
1	*5V0*	*Input*	*5V module supply pin. Provides the 5V output on the USB type A socket, and the 3.3V supply, via an on-board LP2951PCM-3.3.*
2	*LD1*	*Output*	*USB Port 1 activity indicator LED. This pin is hard wired to a green LED1.*
3	*LD2*	*Output*	*USB Port 2 activity indicator LED. This pin is hard wired to a green LED2.*
4	*U1P*	*I/O*	*USB Data Signal Plus - USB host/slave port 1.*
5	*U1M*	*I/O*	*USB Data Signal Minus - USB host/slave port 1.*
6	*AD0*	*I/O*	*AD bit 0.*
7	*GND*	*GND*	*Ground supply pin.*
8	*AD1*	*I/O*	*AD bit 1.*
9	*AD2*	*I/O*	*AD bit 2.*
10	*AD3*	*I/O*	*AD bit 3.*
11	*AD4*	*I/O*	*AD bit 4.*
12	*AD5*	*I/O*	*AD bit 5.*
13	*AD6*	*I/O*	*AD bit 6.*
14	*AD7*	*I/O*	*AD bit 7.*
15	*AC0*	*I/O*	*AC bit 0.*
16	*AC1*	*I/O*	*AC bit 1.*
17	*AC2*	*I/O*	*AC bit 2.*
18	*GND*	*GND*	*Ground supply pin.*
19	*AC3*	*I/O*	*AC bit 3.*
20	*AC4*	*I/O*	*AC bit 4.*
21	*AC5*	*I/O*	*AC bit 5.*
22	*RS#*	*Input*	*Can be used by an external device to reset the module. It can be used with PROG# signal to program firmware.*
23	*PG#*	*Input*	*This pin is used with RESET# signal to program firmware.*
24	*3V3*	*Output*	*3.3V output from module's on board LP2951PCM-3.3.*

Technical Data

Dimensions : 60 x 18,8 x 18,8 mm
Weight : około 8 g
Power supply : 5V

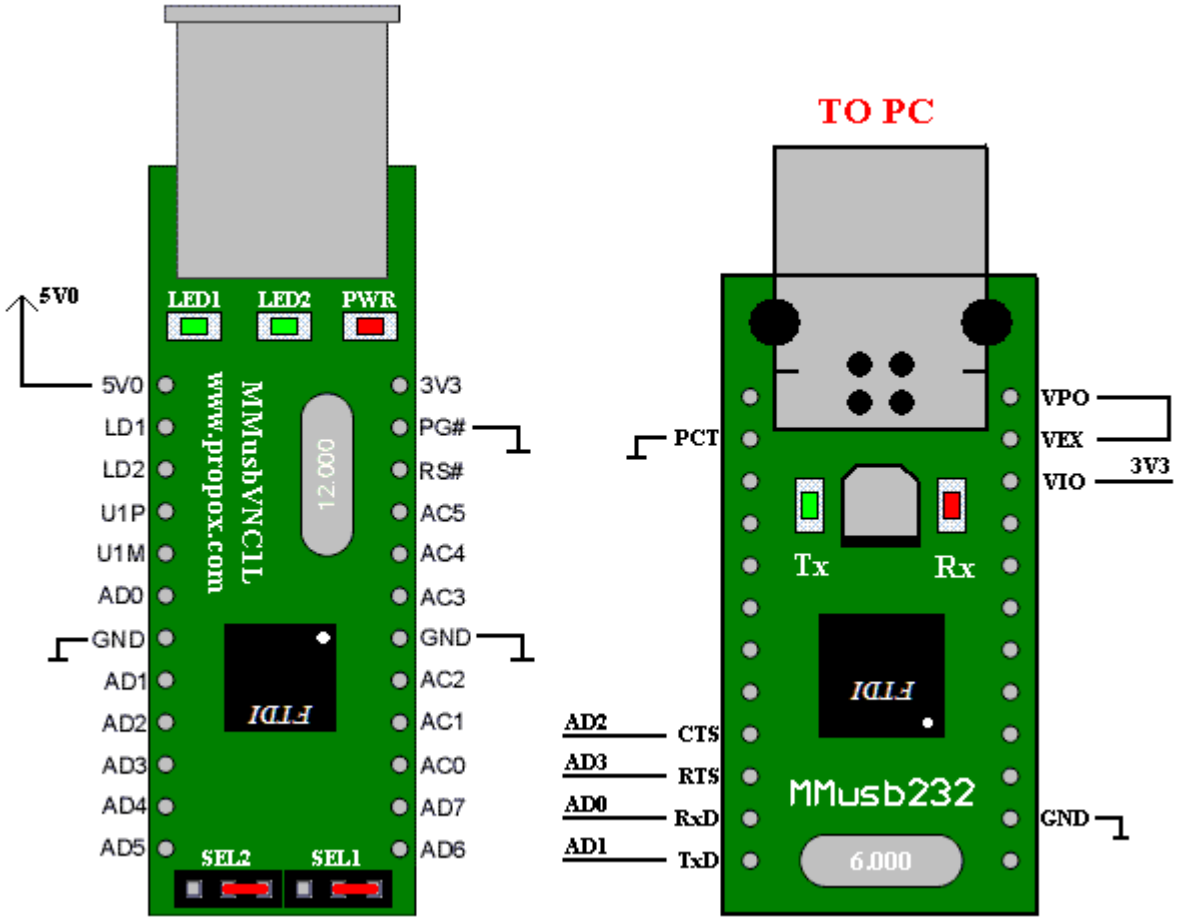
Mechanical Dimensions



Dimensions are in millimeters.
1mils – 1/1000 inch
100miles = 2,54mm

Firmware update example

MMusbVNC1L is delivered with VDAP firmware installed. Full firmware's documentation is able on product webside. Below is placed sample connection schematic to minimodule MMusb232, which allow to install firmware by PC USB:

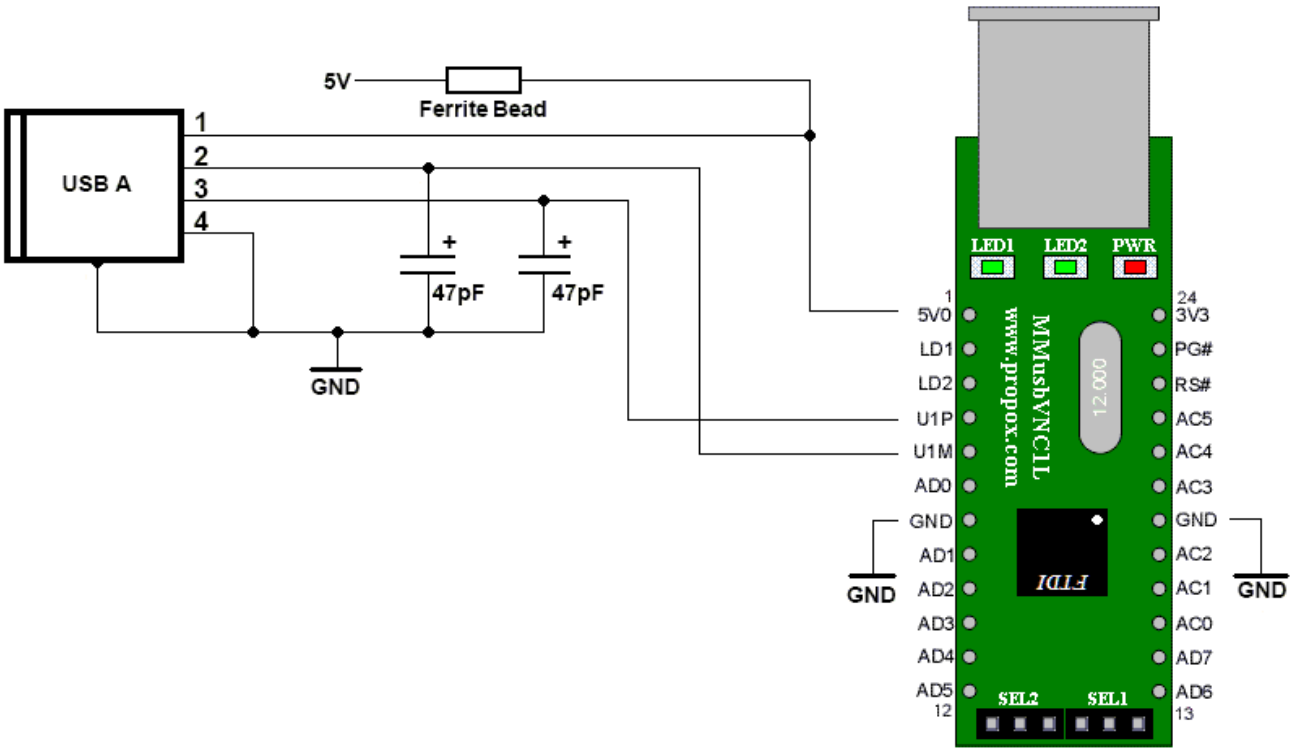


To enable the bootloader, the PG# pin must be driven low and the MMusbVNC1L must then be reset by driving the RS# pin low then high. Run mode can be enabled by driving the PROG# pin high and then resetting the VNC1L by driving the RESET# pin low then high.
Note that for the bootloader to be active PG# pin must be driven low before powering the VNC1L. If the PG# pin is not driven low, the VNC1L will power up in run mode with the bootloader inactive.

Vinculum Firmware User Manual

ANVNC1L-01 Vinculum VNC1L Bootloader

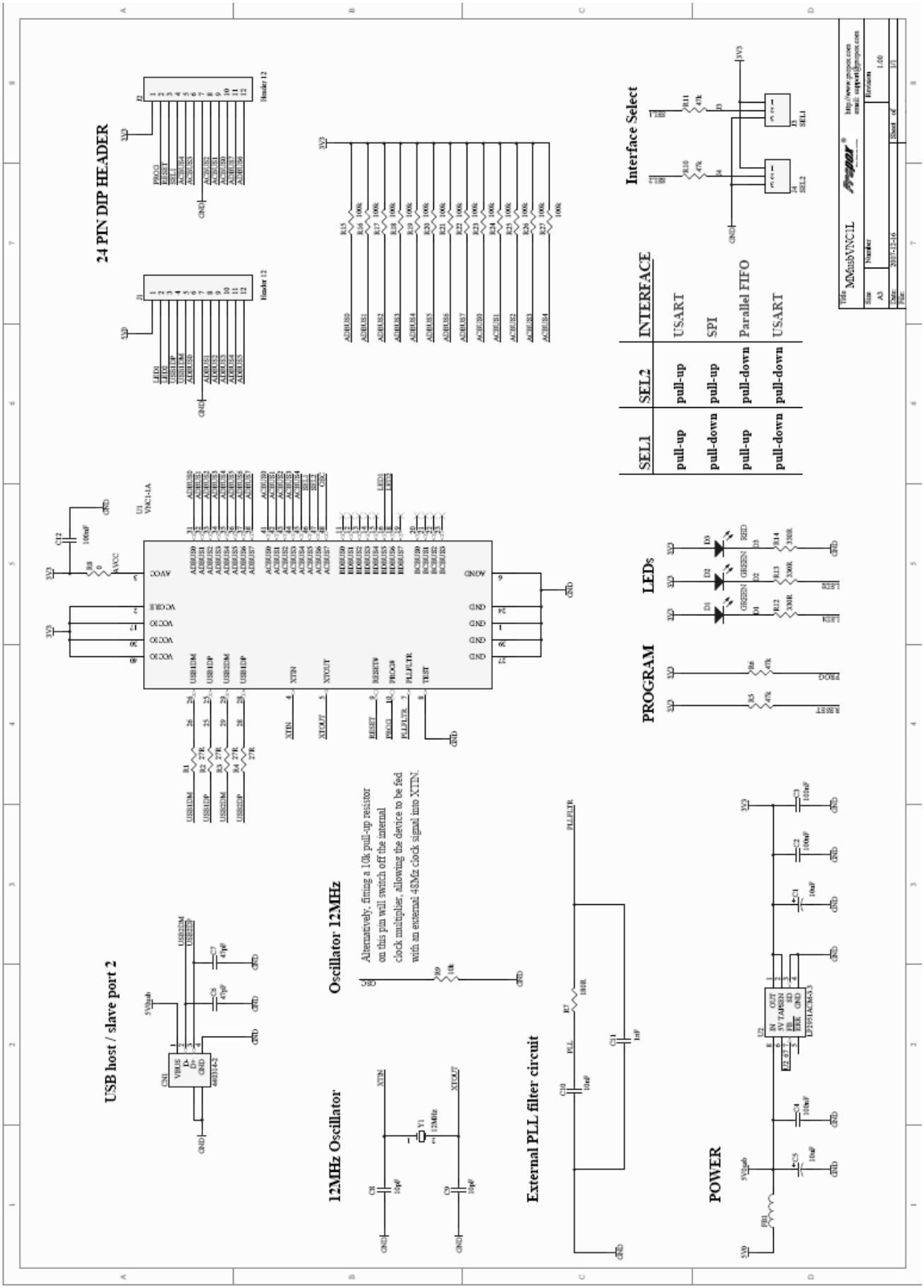
Second USB port connection example



Technical Support

If You hale a problem with MMusbVNC1L, please contact us at support@propox.com.

Schematic


24 PIN DIP HEADER
Interface Select
SEL1 SEL2 INTERFACE
pull-up pull-up USART
pull-down pull-up SPI
pull-up pull-down Parallel FIFO
pull-down pull-down USART
LEDs
PROGRAM
USB host / slave port 2
Oscillator 12MHz
12MHz Oscillator
External PLL filter circuit
POWER
MM6usbVNC1L