USB-I/O Manual

USB-Starter - Board

8 Digital Input + 8 Digital Output
16 Analog/Digital Input

Data

Product Code:
AUSBSTARTER   USB STARTER

USTART - Board-version

Bus: USB 2.0

Description:

8 digital input

8 digital output

Each digital I/O provides voltage range from
0V to 3.5V, where 0 to 0.4V is OFF and
2.8V to 3.4V is ON.

Support 8 analog to digital channels

Each analog to digital channels supports
10 bit 0~10V ADC input

Features:

High Speed 8051 µC Core
USB 2.0 Function Controller
Support USB ID 0~14 SET

USB-Bus Power DC+5V 0,5A

Software/Driver:

Windows-XP Vista will use HID-interface and sample for
programming, Linux driver and sample for programming.

Package includes the following items:

USB Starter Board
USB cable
Software and Manual CD
n!

Operating temperature range: 0 ~ 55C.
Relative humidity rage: 0 ~ 90%.
Size: 115 mm x 80 mm x 25 mm

Security Note

This device should not be used in applications where failure may result in death or injury without
proper consideration and design of associated system architecture and redundant safety features.
Connection and repairs are allowed only by a specialist.

When used in a machine or plant, is to ensure that after installation continues to the relevant
provisions, rules and guidelines are complied with!

These products come into contact voltage, therefore to consider the applicable VDE regulations
VDE 0550 / 0551, VDE 0700, VDE 0711, especially VDE 0100 and VDE 0860.

J1 USB Connection USB-B

VCC	+5 VDC (USB VBUS POWER)
D-	Data -
D+	Data +
SGND	Signal Ground

S1 Reset Button
**The S1 switch is used to reset 8051, the signal assignments are shown in the following.**

Pin	Signals
1	Reset SW+
2	Reset SW-

JP3 - Digital Input/Output Ports

| Pin	Signal	Description
1		
2	SGND	Signal Ground
3		
4	SGND	Signal Ground
5	P0D00	IN Port 0/Line 0
6	P0D01	IN Port 0/Line 1
7	P0D02	IN Port 0/Line 2
8	P0D03	IN Port 0/Line 3
9	P0D04	IN Port 0/Line 4
10	P0D05	IN Port 0/Line 5
11	P0D06	IN Port 0/Line 6
12	P0D07	IN Port 0/Line 7
13	P0D08	OUT Port 1/Line 0
14	P0D09	OUT Port 1/Line 1
15	P0D10	OUT Port 1/Line 2
16	P0D11	OUT Port 1/Line 3
17	P0D12	OUT Port 1/Line 4
18	P0D13	OUT Port 1/Line 5
19	P0D14	OUT Port 1/Line 6
20	P0D15	OUT Port 1/Line 7
21	SGND	Signal Ground
22	SGND	Signal Ground
23	+5V	+5V von der Platine (USB)
24	SGND	Signal Ground
25		
26	SGND	Signal Ground

The digital I/O voltage range from 0V to 3.5V, where 0 to 0.4V is OFF and 2.8V to 3.4V is ON and the signal assignments of digital input/output are shown in the following.
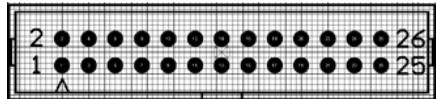
JP4   Analog/Digital-Input

| Pin	Signal	Description
1		
2	SGND	Signal Ground
3	ADIN0	Analog unipolar input channel 0
4	SGND	Signal Ground
5	ADIN1	Analog unipolar input channel 1
6	SGND	Signal Ground
7	ADIN2	Analog unipolar input channel 2
8	SGND	Signal Ground
9	ADIN3	Analog unipolar input channel 3
10	SGND	Signal Ground
11	ADIN4	Analog unipolar input channel 4
12	SGND	Signal Ground
13	ADIN5	Analog unipolar input channel 5
14	SGND	Signal Ground
15	ADIN6	Analog unipolar input channel 6
16	SGND	Signal Ground
17	ADIN7	Analog unipolar input channel 7
18	SGND	Signal Ground
19	+5V	+5V Power
20	SGND	Signal Ground

Each analog to digital channels supports 10 bits 0~10V ADC input.
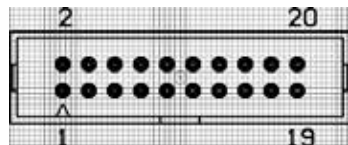
Sample Schematic Output
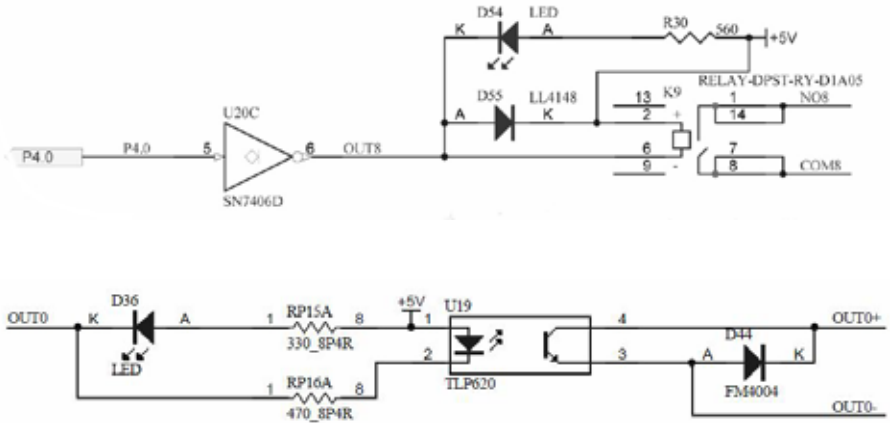
Sample Schematic Input
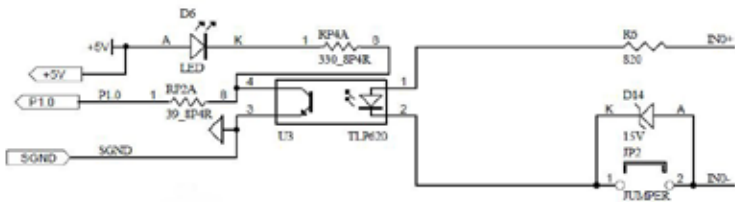
Strong electromagnetic sources, such as power lines, large electric motors, switches, or welders can cause strong electromagnetic interference. Video monitors and cables are strong sources of interference.

If the cable must be led by an area with significant electromagnetic interference, shielded cables with grounding on the source should be used.

Avoid placing your cable parallel to a high-voltage line! to minimize adverse effects, insert the cable at right angle to the power line.

Installation

The decision-computer USB devices use the HID (human interface device). The HID belongs to the generic device class is integrated in the operating system. If a new HID device is connected, no driver installation is required. The functions for access and control of HID hid.dll you can find in the Windows System32 folder.

Windows 7 installation example
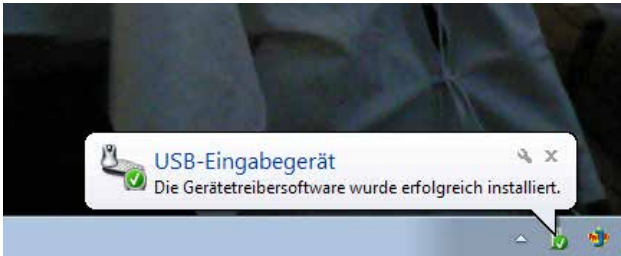
2. Connect USB cable. Use USB port with 500mA power or hub with power adapter.

3. USB input device - device driver software is successfully installed
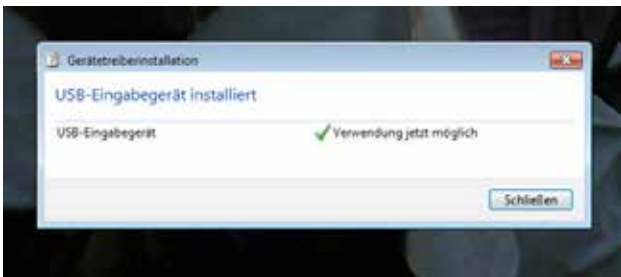
4. USB input device - use now possible

5. In the Control Panel, you can find the Decision-USB module now

6. The Device Manager still shows a „!". Cause is a missing driver for the serial port that is available at the fully equipped version USB lab. The USB Starter Board is a part-equipped USB LAB Board. Therefore, the driver without existing port must be installed!
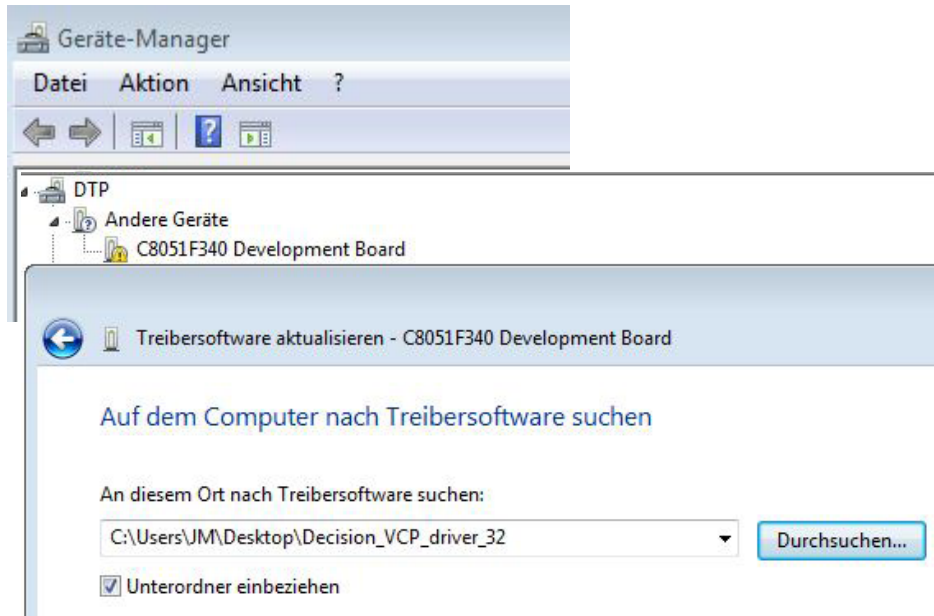
VCP driver (For LABKIT only)

Virtual COM port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port. This function is only implemented in USBLABKIT.

32-bit Windows   64-bit Windows

Decision_VCP_driver_32
Vertual_COM

Geräte-Manager

Datei   Aktion   Ansicht   ?

⬅ ➡ | 🔢 | ❓ | 🔢

▲ 🖳 DTP
  ▲ 📦 Andere Geräte
      📇 C8051F340 Development Board

🔵 📄 Treibersoftware aktualisieren - C8051F340 Development Board

Auf dem Computer nach Treibersoftware suchen

An diesem Ort nach Treibersoftware suchen:

C:\Users\JM\Desktop\Decision_VCP_driver_32   ▼   Durchsuchen...

☑ Unterordner einbeziehen

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6. Ready to use

🔵 📄 Treibersoftware aktualisieren - USB Vertual COM (COM5)

Die Treibersoftware wurde erfolgreich aktualisiert.

Die Installation der Treibersoftware für dieses Gerät ist abgeschlossen:

USB Vertual COM

SOFTWARE PROGRAMMING UNDER WINDOWS AND LINUX

On Windows, we offer a function library and dll file as programming help. See the manual „USBDII_Manual.pdf" and demo code in VB/VC / Delphi on the decision-Studio CD.

We offer a C-source Linux users for direct access to the USB devices. See „Dcihid 0.5.1.tgz" manual and example.

DIAGNOSTICS UNDER WINDOWS/XP

USB test Program.exe is a diagnostic tool to test USB devices on Windows/XP.
The USB test software can be found on the decision-Studio CD.

The examples and drivers be developed continuously. See the latest on the decision-computer-Merz „Service CD".

An important way to get more informations you find at http://www.usb-industrial.com

Software support on the short way: http://www.usb-industrial.com/support.html

USB Industrial.com Overview:

Windows Support	2010/04 USBDII.dll 2.0.0.4	This package includes Dynamic-link library which is developed by De-cision Computer to communicate with the USB Series Device. It can be included in multiple computer language (VB6, VC6, VB.NET, C# Delphi) under Windows.
Watchdog Timer		This watchdog timer is a kind of software timer that triggers a system reset or other corrective action if the main program, due to some fault condition. The intention is to bring the system back from the unresponsi-ve state into normal operation. This function is new released and please contact us to get further information.
VCP driver	(For LABKIT Only)	Virtual COM port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port. This function is only implemented in USBLABKIT
Linux Support	dcihid - 0.5.1 Basic function library and demo program 2009.05.01	This package includes a c library and a demo program which is develo-ped by Decision Computer to communicate with the USB Series Device under Linux. It also includes a ReadMe file to demonstrate how to use it and package's format is .tgz.
Firmware Update	Firmware Hex file Download	This Package includes a driver and a software which is developed by Decision Computer to update the newest firmware into the USB Series Device. When new version of firmware is released, user can follow the instructions to update the firmware.
LabVIEW Support	LabVIEW 8 LabVIEW 2009	This package includes manual and examples which demonstrate how to connect and develop USB Series Device under LabVIEW,which is a well-known platform and development environment for a visual program-ming language from NI.
ProfiLAB Support		This package includes manual and examples which demonstrate how to connect and develop USB Series Device under ProfiLAB, which is a well-known platform and development environment for a visual program-ming language from Abacom.
Init Value Setting Tool	(For Output Channel)	The Init Value Setting Tool is a software tool to set init value for output channel. User can use this tool to plan output channel as default high or default low when power on.
Data Acquisition and Remote Monitoring Tool		The Data Acquisition and Remote Monitoring Tool (DARMT) is a soft-ware tool to record high/low state reports at local computer, and transmit them to FTP site to achieve data acquisition and remote monitoring

USB by LAN or Wireless

The remote control of Decision USB products by LAN or wireless with a remote-PC is very simple with a multi port USB Server

Because no driver should be installed to the installation and programming is very easy.

Under Windows, are the external USB I/O directly in the Device Manager and can be connect or control such as in the original host PC.
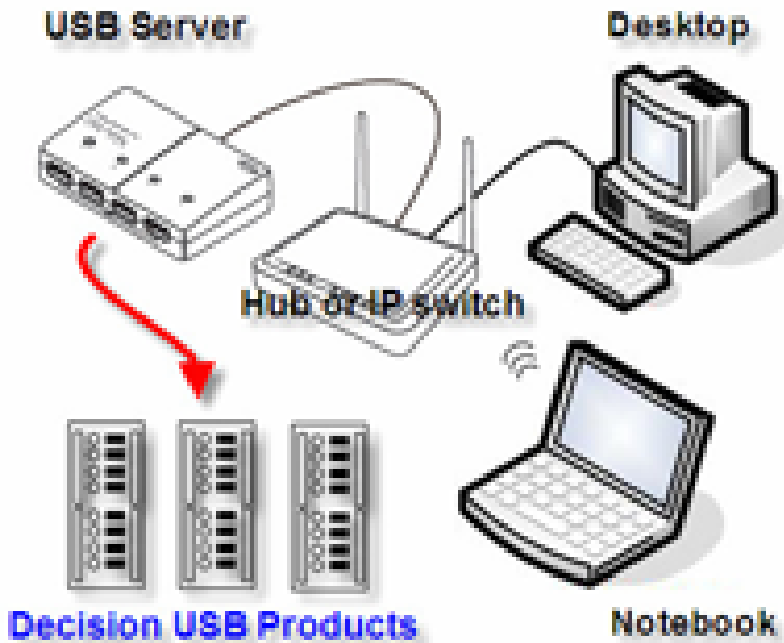
How to update the firmware for USB-STARTER?

1. Remove the external input signal Voltage and only support device power.

2. Use 4 little wires to connect each of two points on S2, just like the demonstration below.

3. Connect PC to the Board by USB
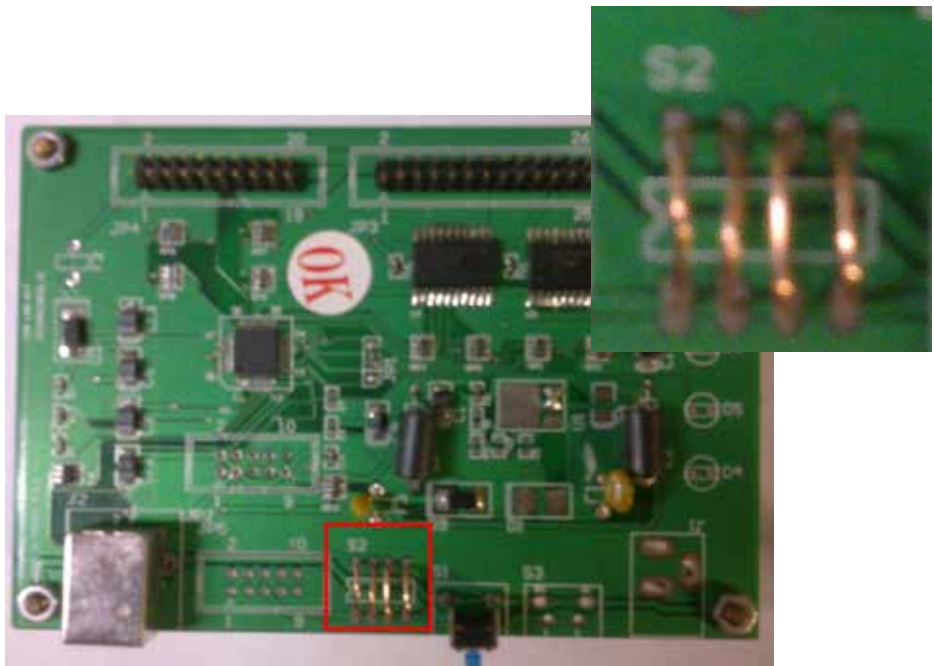
4. When connecting the wires, computer will treat the board as a different device, it needs to install driver. If this is the first to use this function, please indicate the driver install path to the Driver Folder to install the driver.

5. Open the Software USBBootloader.exe and press the Open button and indicate the hex file and then press the Download button to update firmware.

6. Disconnect from PC and remove the wires.

Schematic - USB-LAB - Board
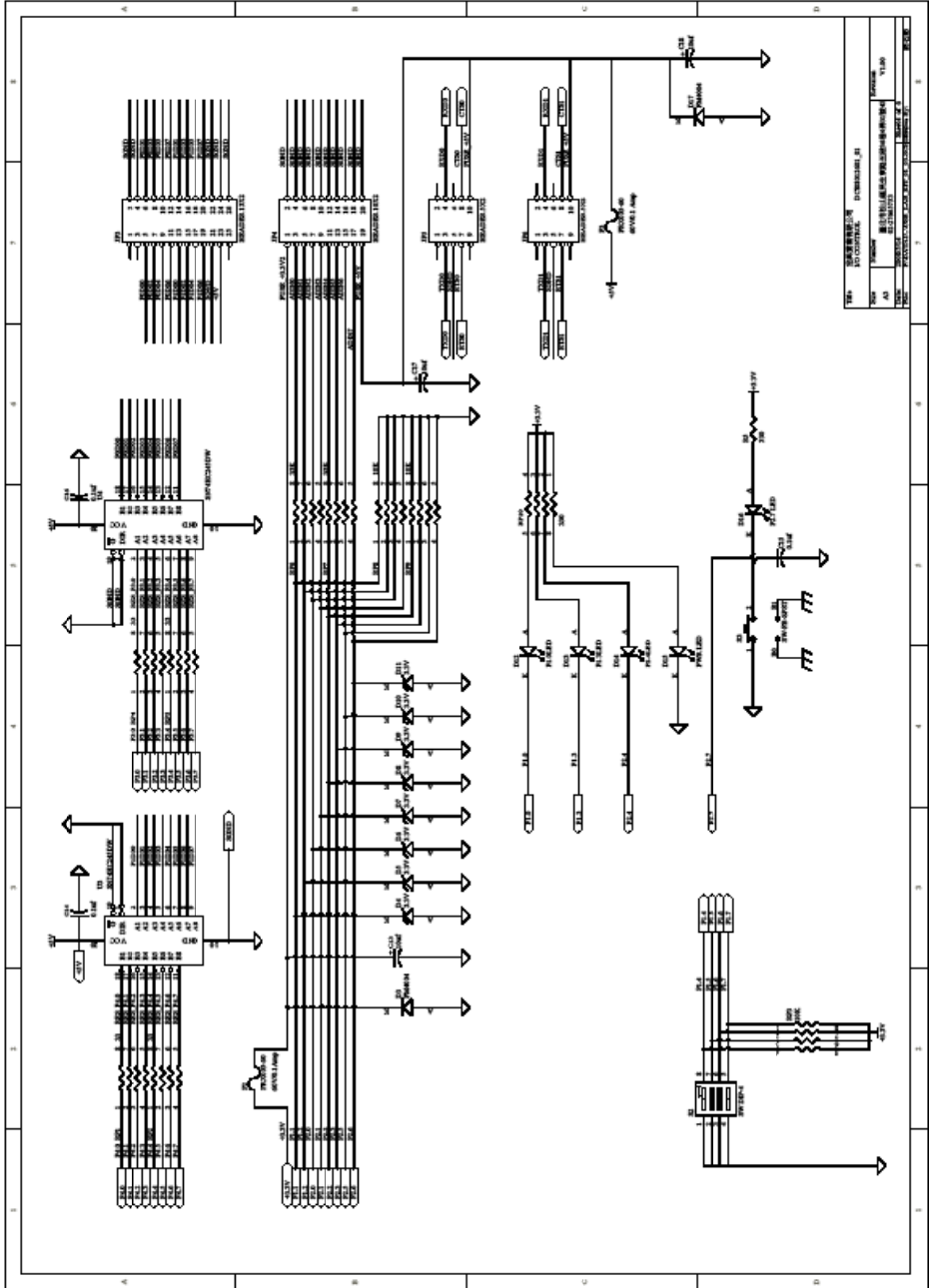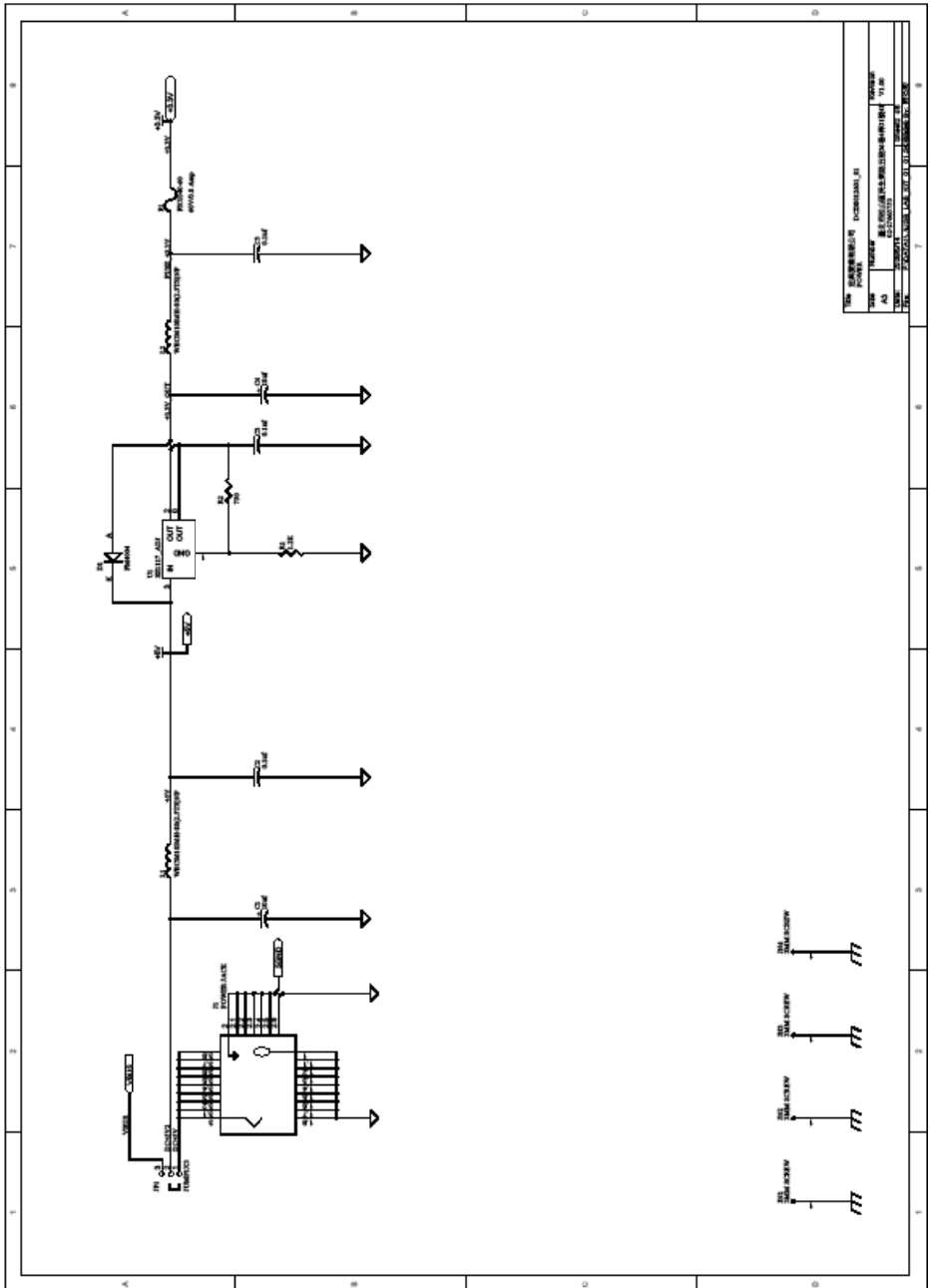
You can download the schematics in A4-PDF at:

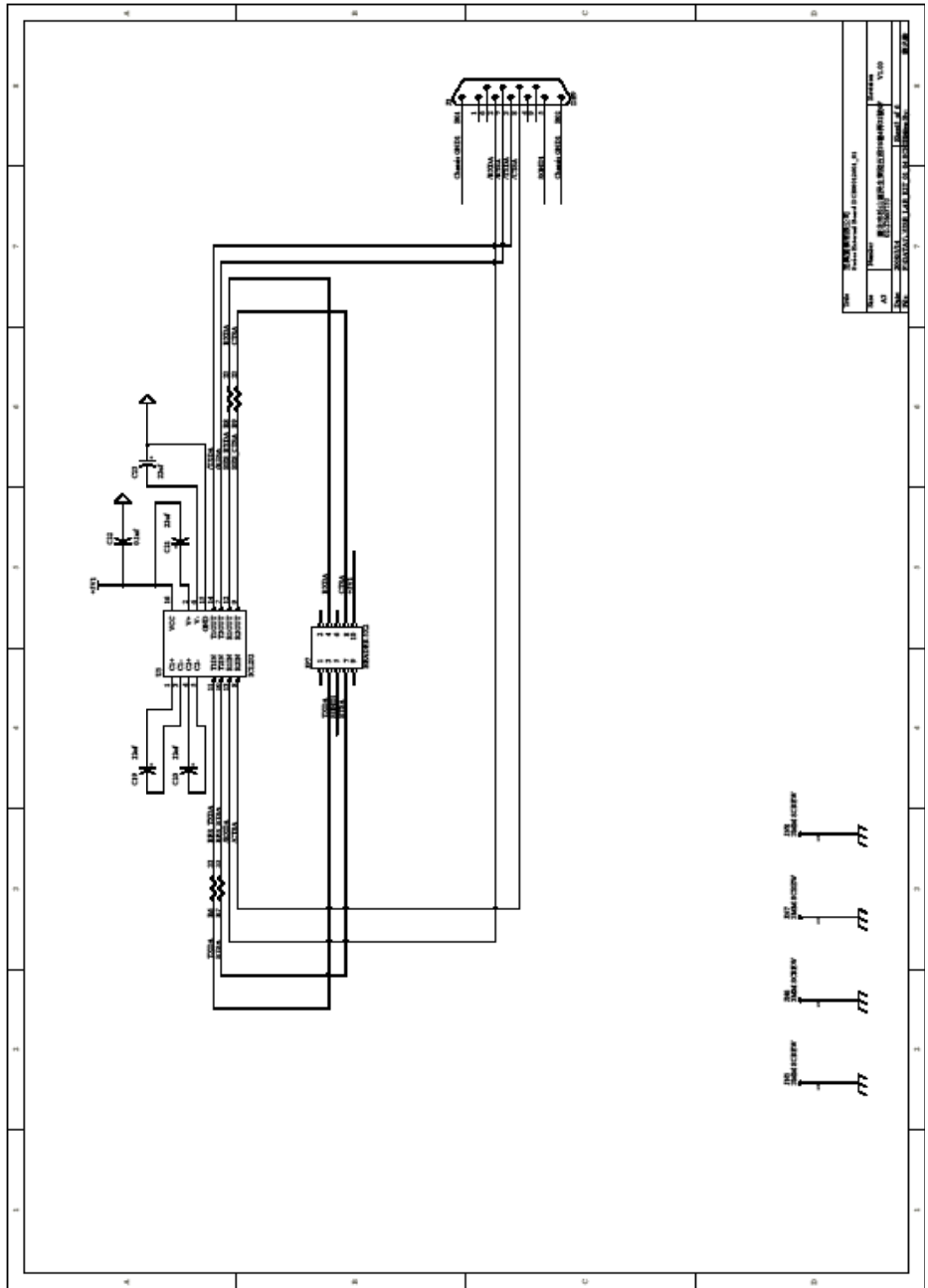**http://www.decision-computer.de/Download/USB/download-lab.html**
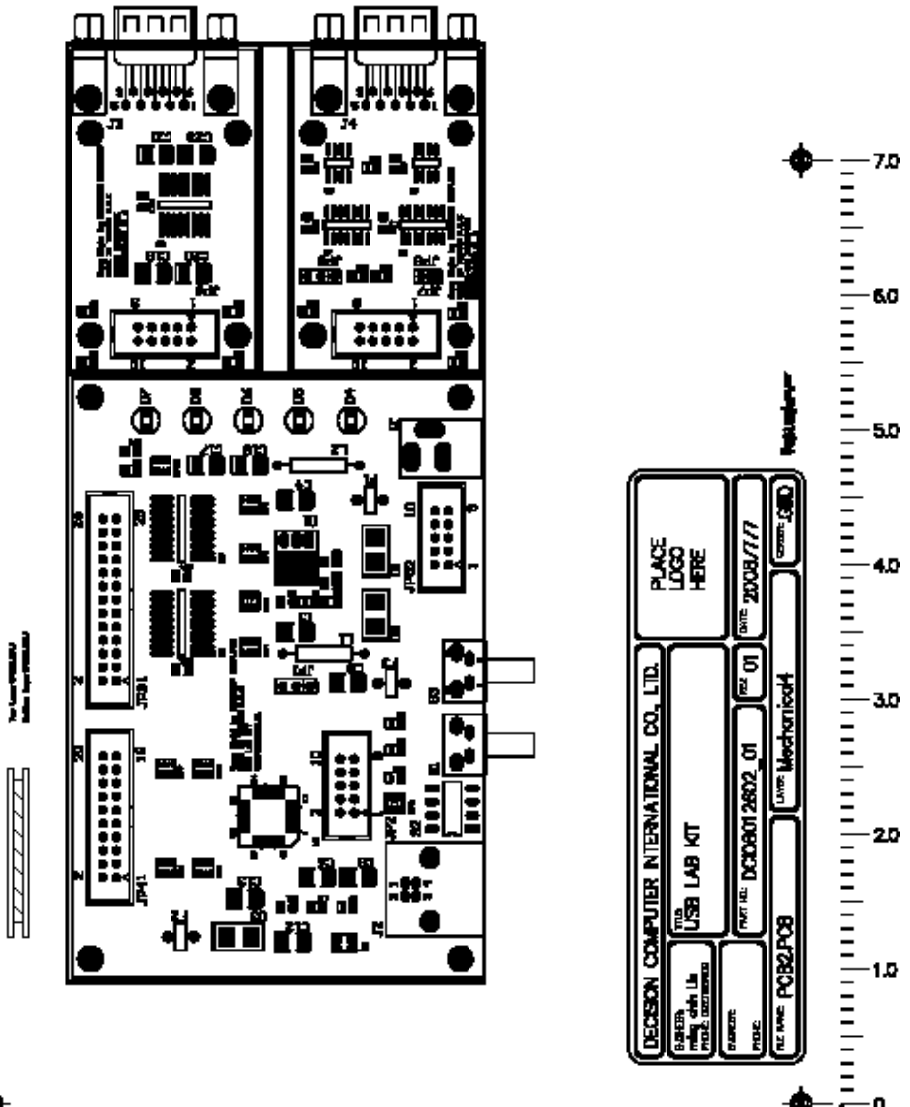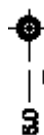
Schematic- USB-LAB - Reset-USB
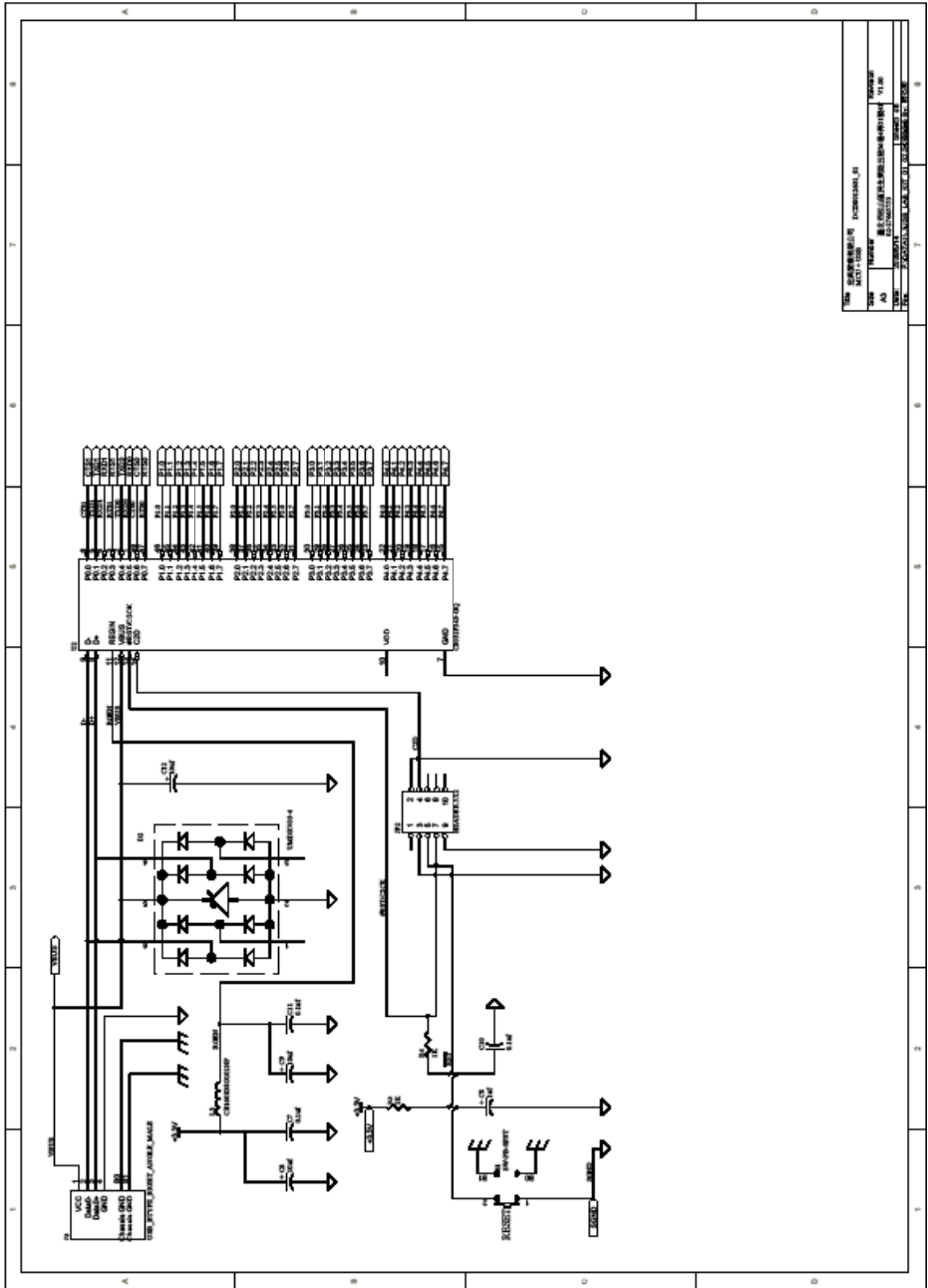
Schematic - USB-LAB - Powersupply

Schematic - USB-LAB - RS232

Schematic - USB-LAB - R422/485

U USB_LAB KIT 01_01
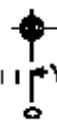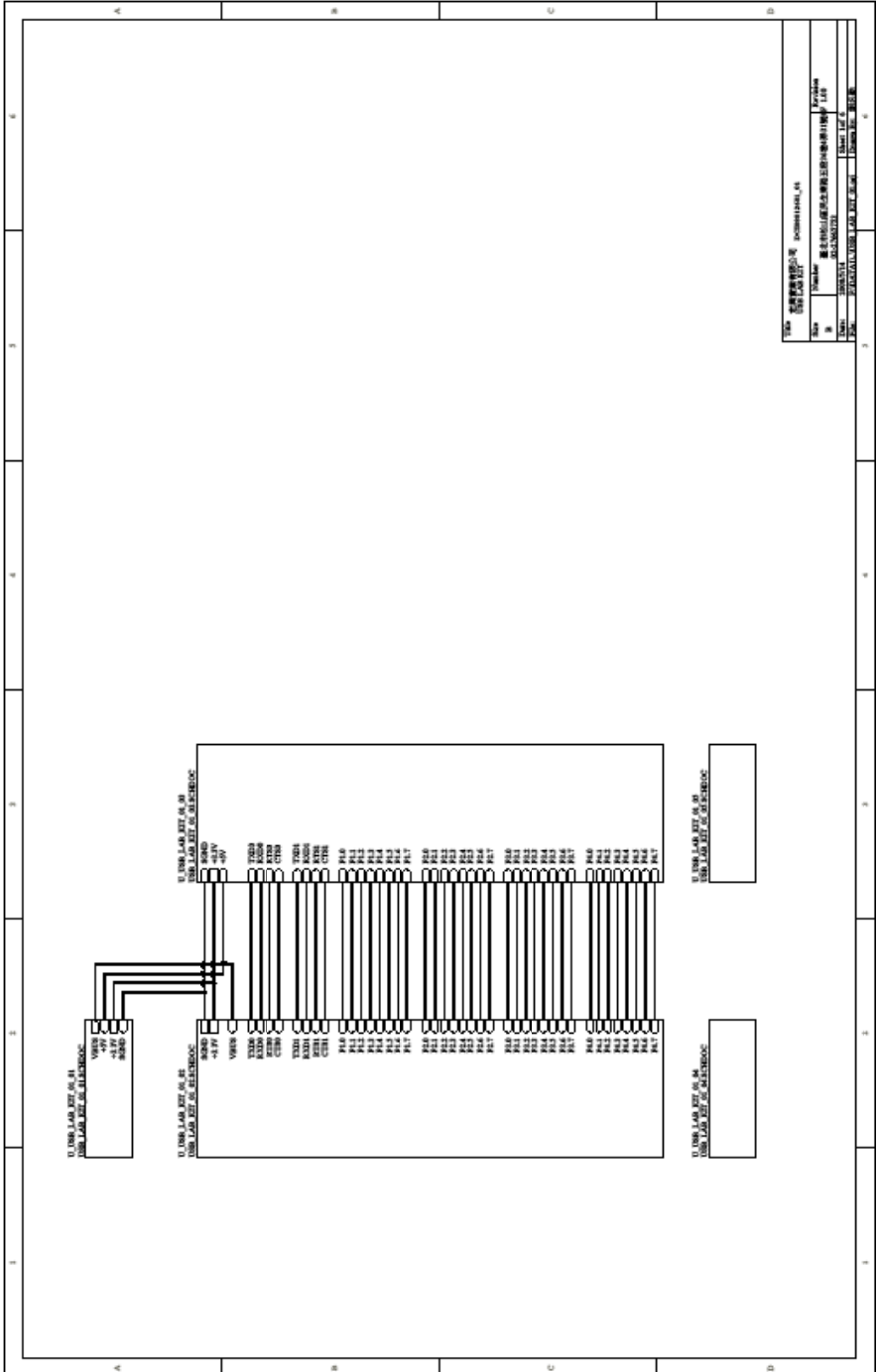USB_LAB KIT 01_01.SCHDOC

U USB_LAB KIT 01_02
USB_LAB KIT 01_02.SCHDOC

U USB_LAB KIT 01_03
USB_LAB KIT 01_03.SCHDOC

U USB_LAB KIT 01_04
USB_LAB KIT 01_04.SCHDOC

U USB_LAB KIT 01_05
USB_LAB KIT 01_05.SCHDOC

VBUS
+5V
+3.3V
RGND

RGND
+3.3V
VBUS
TXD0 RXD0 RTS0 CTS0
TXD1 RXD1 RTS1 CTS1
P10 P11 P12 P13 P14 P15 P16 P17
P20 P21 P22 P23 P24 P25 P26 P27
P40 P41 P42 P43 P44 P45 P46 P47

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