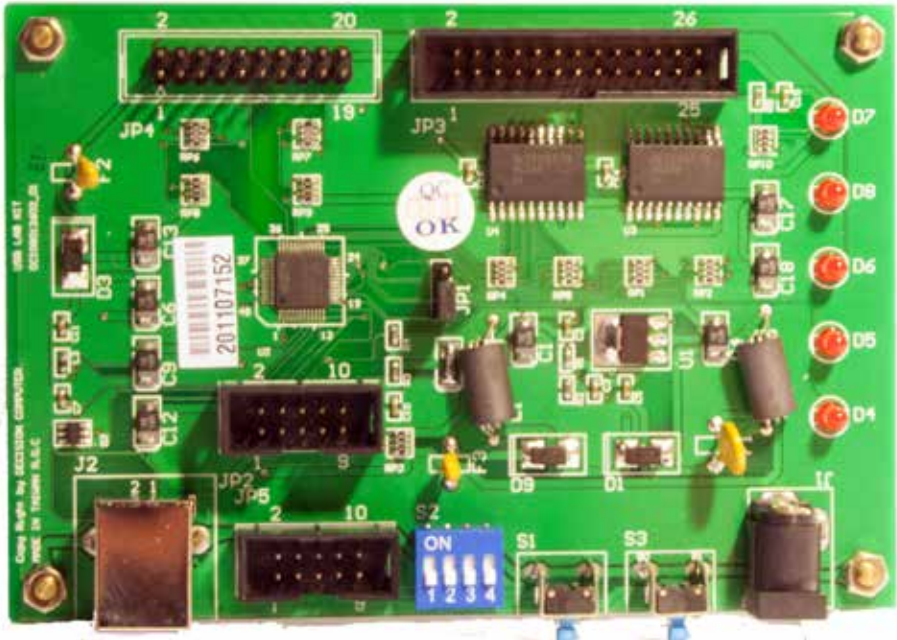


USB-I/O Handbuch



USB-LAB-Kit - Platine

8 Digitale Eingänge + 8 Digitale Ausgänge
8 Analog/Digital Eingänge

MERZ
DECISION-COMPUTER

DECISION-COMPUTER Jürgen Merz e.K.
Lengericher Str. 21
49536 Lienen
Telefon +49 (0)5483-77002
Telefax +49 (0)5483-77003
<http://www.decision-computer.de>



Daten

Product Code:

AUSBLABKIT USB Labkit

ULK-1 - Platinenversion

Bus: USB 2.0

Beschreibung:

8 digitale Eingänge
8 digitale Ausgänge

Spannungsbereich 0V bis 3.5V
OFF bei 0 V bis 0,4V
On bei 2,8V bis 3,4V

8 analog / digital Kanäle 10 Bit 0~10V DC Input

RS232 Erweiterungs-Platine mit DB-9

RS422/RS485 Erweiterungs-Platine mit DB-9

Features:

High Speed 8051 μ C Core
USB 2.0 Function Controller
Unterstützt USB ID Einstellungen 0~14

POWER DC+5V 0.5A vom USB-Bus

Abmessungen 115mm(L) x 80mm(B) x 12mm(H)

Betriebstemperatur-Bereich 0 bis 33C.

Relative Feuchtigkeit von 0 bis 90%.

Software/Treiber:

Englisches Handbuch mit Einstellplan, Anschlußplan und Programmierbeispielen auf CD. Für Windows-XP, Vista, Win-7 wird das HID Interface genutzt + Programmierbeispiele. Linux-Treiber + Programmierbeispiele

Pro Lieferung erhalten Sie eine frisch gebrannte „Decision-Computer Deutschland Service CD“ mit aktuellen Treibern, Handbüchern, Installationsanleitungen und deutschen Zusatzinformationen.

Der Umfang ist vom Produkt abhängig!

Packungsinhalt:

USB-Labkit
RS232 Extension Board
RS422/RS485 Extension Board
Flachbandkabel
USB-Kabel
Steckernetzteil
Software/Handbuch-CD

Sicherheitshinweis

Dieses Produkt ist nicht ausfallsicher und darf daher Anwendungen verwendet werden, wo Gefahren für Gesundheit, Leben, und Sachwerte auftreten können! Anschluß und Reparaturen sind nur vom Fachmann zulässig.

Beim Einbau in eine Maschine oder Anlage, ist sicherzustellen, dass nach dem Einbau weiterhin die maßgeblichen Bestimmungen, Vorschriften und Richtlinien eingehalten werden!

Diese Produkte kommen mit elektrischer Spannung in Berührung, daher müssen die gültigen VDE-Vorschriften beachtet werden, insbesondere VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 und VDE 0860.

J1 USB Anschluss USB-B

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

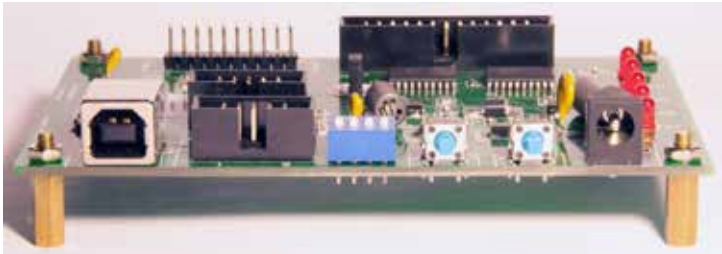


B

S1 Reset Taster

Systemreset bei "hängendem" USB-Modul

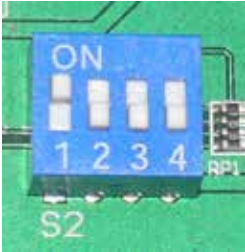
S3 hat keine Funktion (schaltet D8)



S2 USB ID

Einstellung der USB-Modul-Identifikation

1	2	3	4	Card ID
ON	ON	ON	ON	--
OFF	ON	ON	ON	14
ON	OFF	ON	ON	13
OFF	OFF	ON	ON	12
ON	ON	OFF	ON	11
OFF	ON	OFF	ON	10
ON	OFF	OFF	ON	9
OFF	OFF	OFF	ON	8
ON	ON	ON	OFF	7
OFF	ON	ON	OFF	6
ON	OFF	ON	OFF	5
OFF	OFF	ON	OFF	4
ON	ON	OFF	OFF	3
OFF	ON	OFF	OFF	2
ON	OFF	OFF	OFF	1
OFF	OFF	OFF	OFF	0



Jumper-Einstellung

1. Power Selection (JP1)

JP1 is used to select power input, when short pin 1 and pin 2, means select power supplied from DC +5V 3A DC adapter. When short pin 2 and pin 3, power is supplied from USB.

2. RS422/RS485 Selection (JP8)

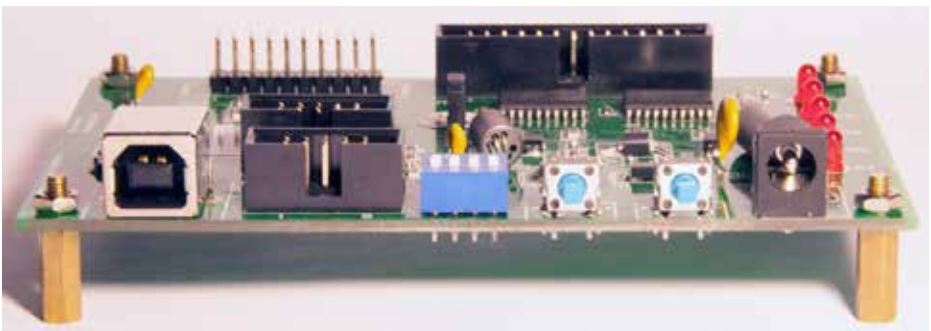
The JP8 is located at RS422/RS485 extension board. JP8 is used to set RS422/RS485 communication, when short pin 1 and pin 2, means set RS422. When short pin 2 and pin 3, means set RS485.

3. Long Distance Communication (JP9)

The JP9 is located at RS422/RS485 extension board. JP9 is used to set long distance communication, when short the JP9, means long distance communication. Otherwise, open the JP9, means normal distance communication.

4. RS422/RS485/RS232 Connector (JP5, JP6, JP7)

To use RS232, please connect JP5 to JP6, where JP6 is located at RS232 extension board. To use RS422/RS485, please connect JP5 to JP7, where JP7 is located at RS422/RS485 extension board.



1. Power Jack(J1)

J1 is the power jack. The DC +5V 3A DC adapter is connected to the power jack.

Digitale Eingänge /Ausgänge (JP3)

To use 16 digital input/output functions:

Connect digital I/O signal to JP3, or connect 26 pins flat cable to JP3 and 8 channel relay output/ isolator input board, 8 channel SSR/logical output board, 16 channel relay output board, 16 channel isolator input board and industrial DIN rail mountable terminal block adapter.

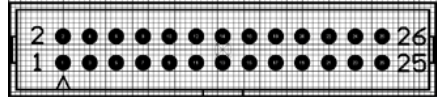
Pin	Signal	Description
1		
2	SGND	Signal Ground
3		
4	SGND	Signal Ground
5	P0D00	IN Port 0/Line 0
6	P0D01	IN Port 0/Line 1
7	P0D02	IN Port 0/Line 2
8	P0D03	IN Port 0/Line 3
9	P0D04	IN Port 0/Line 4
10	P0D05	IN Port 0/Line 5
11	P0D06	IN Port 0/Line 6
12	P0D07	IN Port 0/Line 7
13	P0D08	OUT Port 1/Line 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

Digital I/O Spannungsbereich von 0V -3.5V

0 bis 0.4V OFF

2,8 bis 3.4V ON

Die Signal-Zuordnungen für die digitale Ein-/Ausgabe werden in der Tabelle gezeigt.

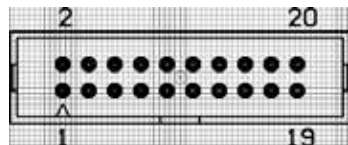


Analog/Digital-Eingänge JP4

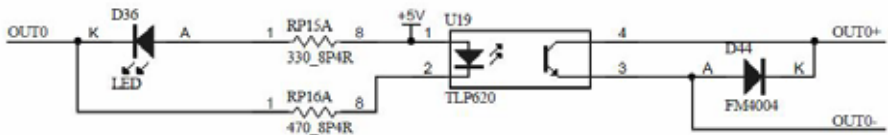
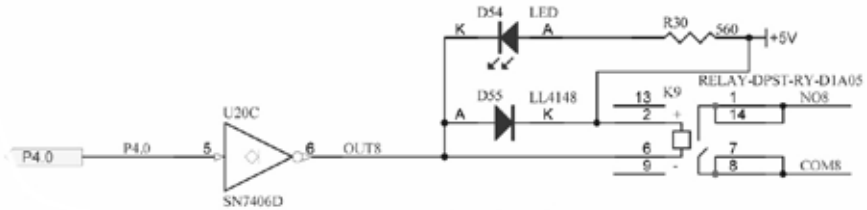
To use 8 analog to digital functions:
Connect analog signal to JP4.

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

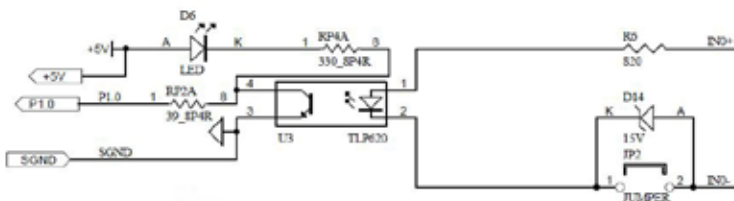
Jeder Analog/Digitale Kanal unterstützt 10 Bits Auflösung und einen Spannungsbe-
reich von 0 ~ 10V



Schaltplan Ausgänge - Beispiel



Schaltplan Eingänge - Beispiel



Starke elektromagnetischen Quellen wie Stromleitungen, großen Elektromotoren, Schaltern oder Schweißmaschinen können starke elektromagnetische Interferenzen verursachen. Auch bei Video-Monitore und -Kabel sind starke Störquellen.

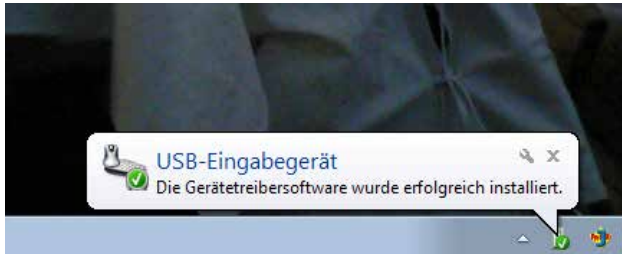
Wenn das Kabel durch einen Bereich mit beträchtlicher elektromagnetischer Störung geführt werden muss, sollten abgeschirmte Leitungen mit Erdung an der Signalquelle verlegt werden.

Vermeiden Sie es Ihre Signalkabel parallel zu einer Hochspannungsleitung platzieren! Legen Sie das Signalkabel in rechten Winkel zur Stromleitung um unerwünschte Auswirkungen zu minimieren.

Installation

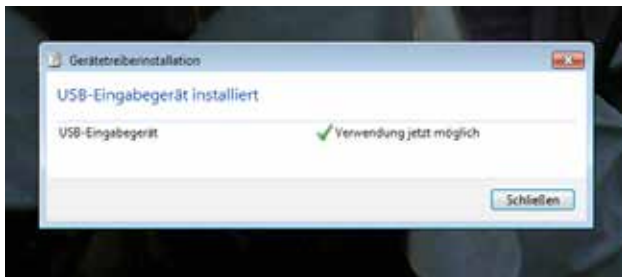
Die Decision-Computer USB Geräte nutzen das HID (Human Interface Device). Da das HID zur Generic Device Class gehört ist der Treiber im Betriebssystem integriert. Wenn ein neues HID-Gerät angeschlossen wird ist keine Treiberinstallation erforderlich. Die Funktionen für Zugriff und Kontrolle des HID befinden sich in der Windows hid.dll im System32 Ordner.

Installationsbeispiel Windows-7



1. USB-Verbindung herstellen. USB-Port mit 500 mA Leistung oder Hub mit Netzteil nutzen.

2. USB-Eingabegerät - Gerätetreibersoftware erfolgreich installiert



3. USB-Eingabegerät - Verwendung jetzt möglich



4. In der Systemsteuerung/Hardware erscheint jetzt das Decision-USB-Modul

6. Der Geräte-Manager zeigt noch ein „!“. Ursache ist ein fehlender Treiber für die serielle Schnittstelle, die bei der voll bestückten Version USB-Lab vorhanden ist. Die USB-Starter-Platine ist eine teilbestückte USB-LAB-Platine. Daher muss der Treiber ohne vorhandenen Port installiert werden! Dieser Teil der Firmware könnte geändert werden, aber dann entfällt die Möglichkeit der Nachbestückung auf der Platine!

VCP Treiber (Nur für das LABKIT)

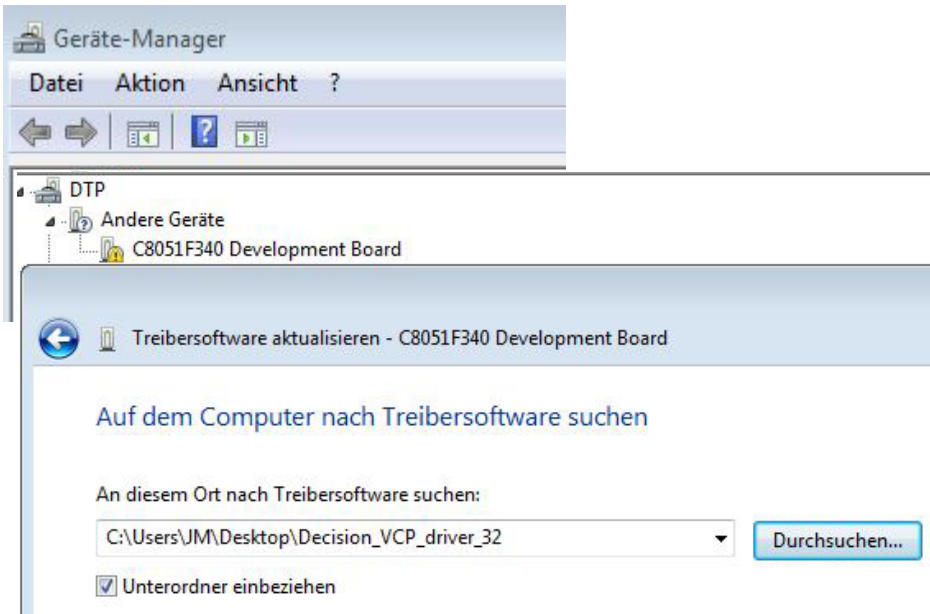
Der Virtuelle COM-Anschlussstreiber (VCP) bewirkt, daß das USB-Gerät als zusätzlicher COM-Port auf dem PC verfügbar wird. Anwendungs-Software kann auf die gleiche Weise auf das USB-Gerät zugreifen, als ob es auf einen Standard-COM-Port zugreifen würde. Diese Funktion ist nur im USBLABKIT implementiert.

32-bit Windows



64-bit Windows

Decision_VCP_driver_32
Virtual_COM



6. Die USB-Starter-Platine ist jetzt fertig installiert!



SOFTWARE-PROGRAMMIERUNG UNTER WINDOWS UND LINUX

Unter Windows bieten wir als Programmierhilfe eine Funktions-Bibliothek und DLL-Datei. Das Handbuch „USBID_Manual.pdf“ und Demo-Code in VB/VC/Delphi finden Sie auf der Decision-Studio-CD.

Linux-Anwendern bieten wir eine C-Source für den direkten Zugriff auf die USB-Geräte. Handbuch und Beispiel finden Sie unter „Dcihid-0.5.1.tgz“.

DIAGNOSE UNTER WINDOWS/XP

USB Test Program.exe ist ein Diagnoseprogramm zum Testen USB-Geräten unter Windows/XP. Die USB-Test Software ist auf der Decision-Studio-CD zu finden.

Die Beispiele und Treiber werden fortlaufend weiterentwickelt. Die aktuelle Version finden Sie auch auf der Decision-Computer-Merz „Service-CD“.

Eine wichtige Informationsquelle ist immer das Internet <http://www.usb-industrial.com>

Software-Support auf dem kurzen Weg: <http://www.usb-industrial.com/support.html>

USB-Industrial.com Übersicht:

Windows Support	2010/04 USBID.dll 2.0.0.4	This package includes Dynamic-link library which is developed by Decision 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 unresponsive 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 developed 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 programming 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 programming 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 software tool to record high/low state reports at local computer, and transmit them to FTP site to achieve data acquisition and remote monitoring

Firmware-Update

1. Remove the external input signal Voltage and only support device power.
2. Set S2 to ON ON ON ON..
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.

1	2	3	4	Card ID
ON	ON	ON	ON	--

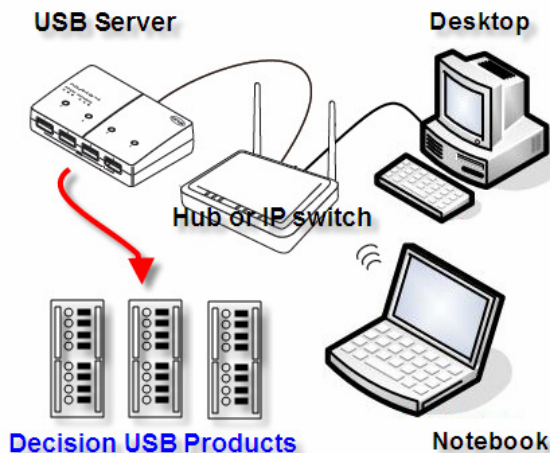


USB per LAN oder Wireless

Die Fernbedienung von Decision-USB-Produkten per LAN oder Wireless mit einem Steuer-PC ist sehr einfach mit einem Multi-Port-USB-Server oder auch einer Fritzbox möglich.

Da kein Treiber installiert werden muss, ist die Installation und Programmierung sehr einfach.

Unter Windows sind die externen USB-I/O direkt im Geräte-Manager zu sehen und lassen sich verbinden oder steuern wie im ursprünglichen Host-PC.



RS232 Cabling Information for DB9

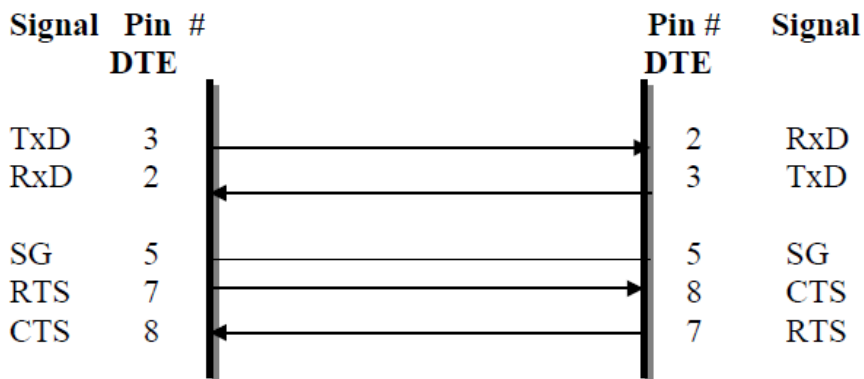
To use RS232 functions:

Connect 10 pin flat cable to JP5 and JP6.

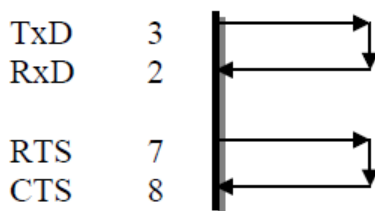
Connect RS232 port(J3) to I/O device.

Pin #	Signal Name	RS-232C Name	Signal Direction
2	Receive Data(RxD)	BB	Input
3	Transmit Data(TxD)	BA	Output
5	Signal Ground(SG)	AB	Common
7	Request to Send(RTS)	CA	Output
8	Clear to Send(CTS)	CB	Input

To connect the RS232 port to other DATA TERMINAL EQUIPMENT (DTE) devices, we recommend using a DTE to DTE connection as shown below



For loop back test, you can connect TxD(pin 3) to RxD(pin 2) and RTS(7) to CTS(8).



RS422 Cabling Information for DB9

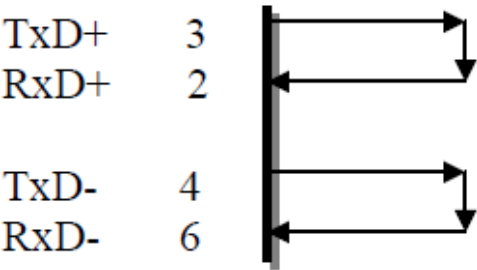
To use RS422 functions:
Connect 10 pin flat cable to JP5 and JP7.
Short pin 1 and pin 2 of JP8.
Connect RS422 port(J4) to I/O device.

Pin	Description
2	Receive Data+(RxD+)
3	Transmit Data+(TxD+)
4	Transmit Data-(TxD-)
5	Signal Ground(SG)
6	Receive Data-(RxD-)

To connect the RS422 to other DATA TERMINAL EQUIPMENT (DTE) devices, the developers recommend using a DTE to DTE connection as shown below.

HOST	REMOTE
Signal Ground	Signal Ground
Transmit Data(+)	Receive Data(+)
Receive Data(+)	Transmit Data(+)
Transmit Data(-)	Receive Data(-)
Receive Data(-)	Transmit Data(-)

For loop back test, you can connect TxD+(pin 3) to RxD+(pin 2) and TxD-(pin4) to RxD-(pin 6).



RS485 Cabling Information for DB9

To use RS485 functions:

Connect 10 pin flat cable to JP5 and JP7.

Short pin 2 and pin 3 of JP8.

Connect RS485 port(J4) to I/O device.

Pin	Description
2,3	Transmit Data+/ Receive Data+(TRD+)
4,6	Transmit Data-/Receive Data-(TRD-)
5	Signal Ground

TRD+ signal means short pin 2 and pin 3, and TRD- signal means short pin 4 and pin 6. You need short these pins by yourself. The RS485 communication is based on cable sharing method, which is connected as following:

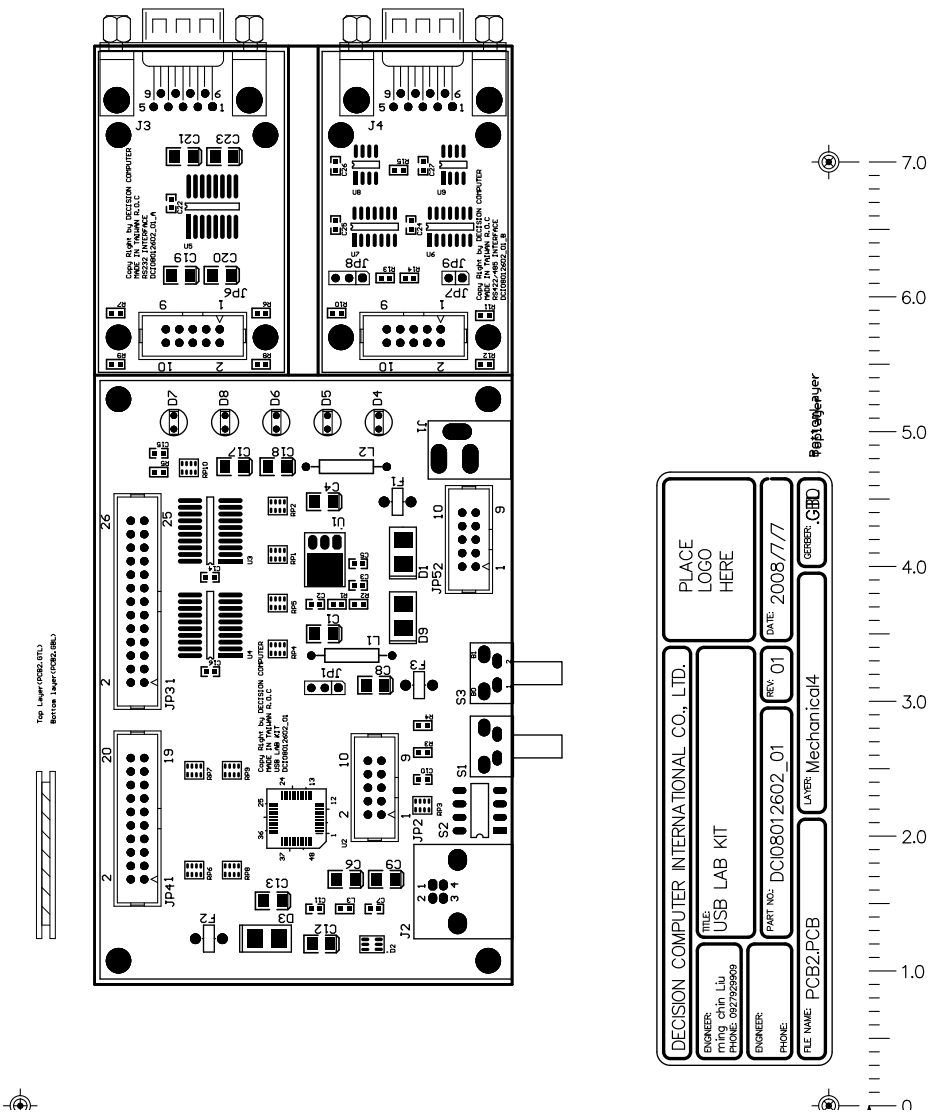
Computer at site 1	Computer at site 2
TRD+	TRD+
TRD-	TRD-
Ground	Ground

Under the RS485 mode, all the RS485 Ports are set to receive mode automatically, while one port uses to send data to the other port, it needs to set RTS signal to 1, to enter driver mode, then send message or data. After sending message, it needs to set signal to 0 to enter receive mode again.

Schaltplan - USB-LAB - Bestückung

Die Schaltpläne sind als A4-PDF im Download zu finden:

<http://www.decision-computer.de/Download/USB/download-lab.html>



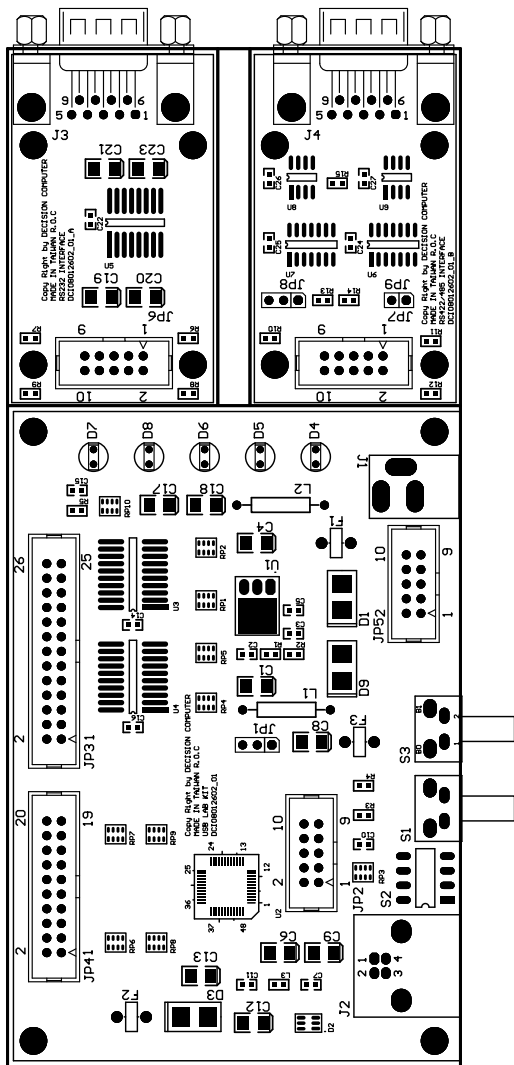
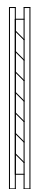
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Title	宏華實業有限公司	DC10801X001_01		
Author	AKC11-USB			
Size	Number	Revision		
A3	新北板橋山溪民生路第五段36號A11樓4F	V1.00		
Drawn	02-2768573			
Check	20080517	Sheet	of	
Free	P:\DATA\1\USB_LAB_KIT_01_02-2768573.DWG	圖名		

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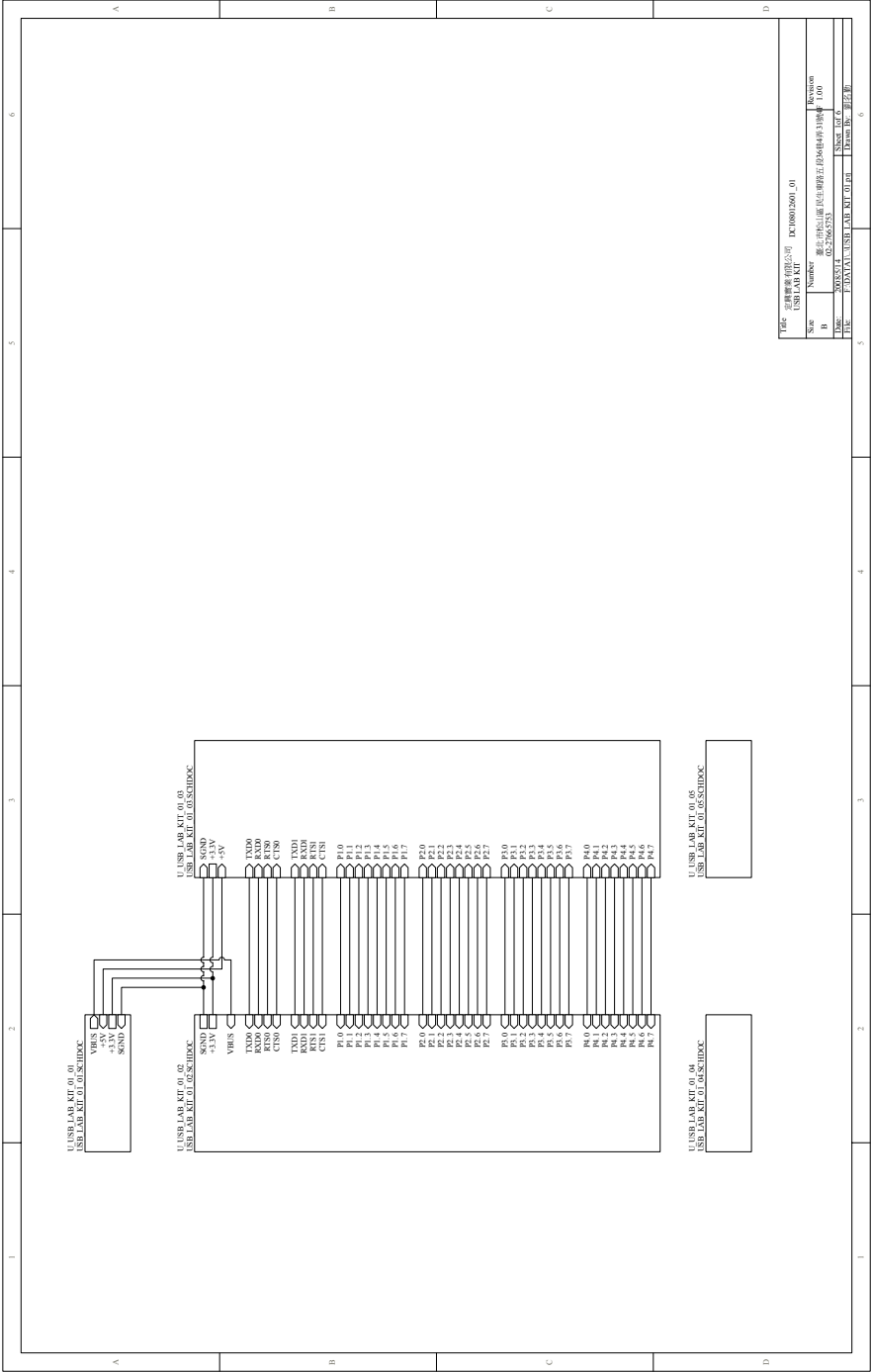
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കുറ്റം

DECISION COMPUTER INTERNATIONAL CO., LTD.		PLACE LOGO HERE	
ENGINEER: ming chin Liu PHONE: 0927929609	TITLE: USB LAB KIT		
ENGINEER: PHONE:	PART NO: DCI08012602_01	REV: 01	DATE: 2008/7/7
FILE NAME: PCB2.PCB	LAYER: Mechanical4	SERIES: 58D	





Title: 宏創電子有限公司 DC18007260_01			
USB LAB KIT			
Size	Number	Version	Revision
B	100	1.00	1.00
R	2008/11/02	2008/11/02	2008/11/02
Doc	2008/11/02	2008/11/02	2008/11/02

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In the event of the failure of a SmartLab product within the specified warranty period, SmartLab will, at its option, replace or repair the item at no additional charge. This limited warranty does not cover damage resulting from incorrect use, electrical interference, accident, or modification of the product.

All goods returned for warranty repair must have the serial number intact. Goods without serial numbers attached will not be covered by the warranty.

The purchaser must pay transportation costs for goods returned. Repaired goods will be dispatched at the expense of SmartLab.

To ensure that your SmartLab product is covered by the warranty provisions, it is necessary that you return the Warranty card.

Under this Limited Warranty, SmartLab's obligations will be limited to repair or replacement only, of goods found to be defective as specified above during the warranty period. SmartLab is not liable to the purchaser for any damages or losses of any kind, through the use of, or inability to use, the SmartLab product.

SmartLab reserves the right to determine what constitutes warranty repair or replacement.

Return Authorization: It is necessary that any returned goods are clearly marked with an RA number that has been issued by SmartLab. Goods returned without this authorization will not be attended to.