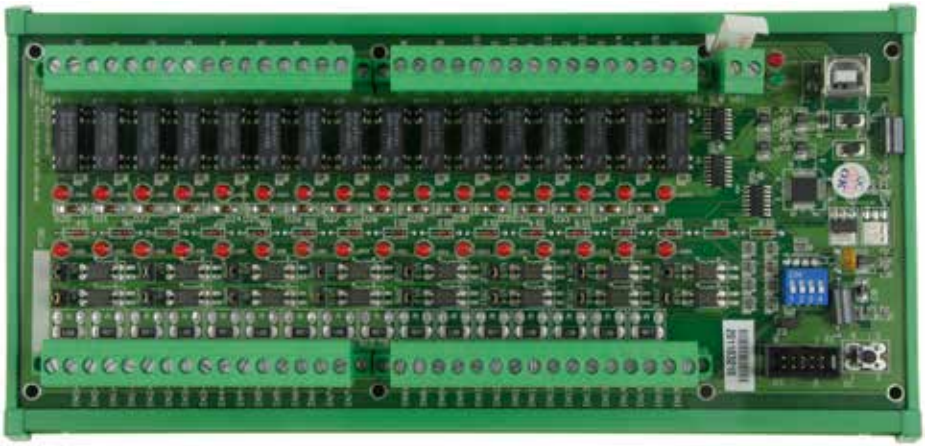
USB-I/O Handbuch



UHRO-16 - Hutschienenadapter

UPRO-16 - Platinenversion

16 optoisolierte digitale Eingänge + 16 Relais Ausgänge / PS 7-30V DC

Product Code: AUSB16P/R USB 16 PHOTO ISO./ RELAY BOARD

MERZ DECISION-COMPUTER
PC-Zubehör für Industrie - Labor - Automation seit 1986

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

DECISION

Daten

Bus: USB 2.0

Beschreibung:

16 Optokoppler-Eingänge/ 16 Relais-Ausgänge
Diese Relais sind alle stromlos beim Einschalten
Optisch isoliert voneinander und vom Computer

Optokoppler-Eingänge

PC817 Optokoppler
Spannungsbereich: 3 bis 31 V DC
Isolation: 500V Kanal-GND oder Kanal zu Kanal

Mit Jumpern können 2 Spannungsbereiche eingestellt werden
0 - 1.8V aus und 3V - 20V ein. (0 - 20V)
0 - 16.5V aus und 18 - 30V ein (0 - 30V)

Relais-Ausgänge

16 Relais - 1 x COM/NO

Maximum 30V/500mA Kontaktbelastung

32 Status LEDs an den Ein- und Ausgängen

Einfacher Austausch der Module durch Steckblock-Klemmen

Features:

UHRO-16 ist geeignet zur direkten Hutschienenmontage

High Speed 8051 µC Core
USB 2.0 Function Controller
Unterstützt USB ID Einstellunggen 0~14

Stromversorgung DC +7V bis 30V
1A DC extern (Optional)

Abmessungen 250mm(L) x 120mm(B) x 55mm(H)
Betriebstemperatur-Bereich 0 bis 55C.
Relative Feuchtigkeit von 0 bis 90%.

Software/Treiber:

Englisches Handbuch mit Einstellplan, Anschlußplan und Programmierbeispielen auf CD. Für Windows 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-I/O, USB-Kabel, Software/Handbuch-CD
Die Hutschienenversion wird mit einem EMI-Kit geliefert.
Dieses Kit ist bei der Platinenversion optional!

Sicherheitshinweis

Dieses Produkt ist nicht ausfallsicher und darf daher nicht in Anwendungen verwendet werden, wo Gefah-ren 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
Ein passendes Kabel ist im Lieferumfang

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

B

USB-Verkabelung ist sehr empfindlich gegen EMI-Störungen (hauptsächlich Funkenbildung bei öffnenden Kontakten). Das Kit U-EMI-1 ist im Lieferumfang der Hutschienenversion und beinhaltet zwei Würth-Klappkerne für das USB-Datenkabel und eine Ferrithülse für das Stromversorgungskabel. Bei Verwendung eines HUB sollte auch die die Verbindung HUB/Computer (U-EMI-2) geschützt werden! Das Kit beinhaltet zwei Würth-Klappkerne für das USB-Datenkabel.

Die Kerne müssen, wie auf den Abbildungen gezeigt, möglichst dicht an den Steckern montiert werden.

Sehr wichtig ist aber auch die Vermeidung von Störungen. Daher ist die sorgfältige Anordung und Verlegung der Verkabelung sehr wichtig! Diese Vorsichtsmaßnahmen gelten für alle USB-Kabel!

Klappkern auf dem USB-Kabel am Computer

Klappkern auf dem USB-Kabel am USB-IO
1 oder 2 x durch den Kern geführt

Stromversorgung - TB1

TB1 - Extern 7 bis 30V DC		
1	EXT+V	7-30V
2	SGND	7-30V

Ferrithülse auf dem Stromversorgungskabel

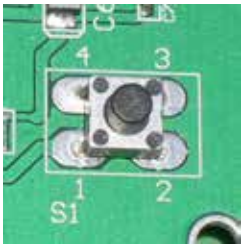
Die Stromversorgung hat sich im Mai 2018 geändert.
Der mögliche Spannungsbereich ist von 7 bis 30V DC. Dabei ist auf richtige Polarität zu achten.

Das Kit U-EMI-1 ist im Lieferumfang der Hutschienenversion und beinhaltet Ferrithülse, zur Abschirmung von EMI, für das Stromversorgungskabel. Montage erfolgt wie auf dem Bild oben.

Bei früheren Versionen der Decision-USB-IO bestand auch die Möglichkeit der Stromversorgung über den USB-Bus. Um eine höhere Stabilität zu erreichen, wurde hiervon wurde jedoch Abstand genommen. Die USB-Stromversorgung ist nicht immer in der Lage, bei eingeschalteten Relais, genügend Strom zu liefern! Die Folge ist ein Verbindungsabbruch oder „hängendes“ USB-Modul. Ein externes Schaltnetzteil bietet eine sichere Stromversorgung!

S1 Reset Taster

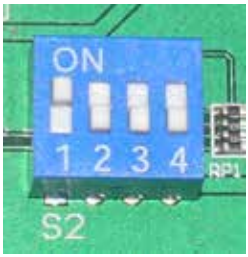
Systemreset bei "hängendem" USB-Modul



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



Mehrere USB-Module mit einem PC verbinden

Wenn Sie mehrere USB-Module mit einem PC verbinden müssen, sind fogende Punkte zu beachten:

1. Auf jedem Modul muß eine andere ID eingestellt werden.

2. Anschluß einer ausreichenden, externen 5V Stromversorgung für jedes USB-Modul.

3. Verbindung mit dem PC über einen aktiven USB-HUB.

Bitte stellen Sie sicher, daß Ihre externe 5V Stromversorgung für alle USB I/O-Module auch dann ausreichend Strom liefert, wenn alle Relais angezogen sind. Bei einer Versorgungsspannung unter 4.8V, kann es zu Fehlfunktionen kommen, wie Aktualisierung des Geräte-Managers, oder das Gerät wird nicht erkannt!

TB2/3 Opto-Isolierte Eingänge

Pin	Signal	Description
1	IN0+	Opto-isolator Ch. 00 + Input
2	IN0-	Opto-isolator Ch. 00 - Input
3	IN1+	Opto-isolator Ch. 01 + Input
4	IN1-	Opto-isolator Ch. 01 - Input
5	IN2+	Opto-isolator Ch. 02 + Input
6	IN2-	Opto-isolator Ch. 02 - Input
7	IN3+	Opto-isolator Ch. 03 + Input
8	IN3-	Opto-isolator Ch. 03 - Input
9	IN4+	Opto-isolator Ch. 04 + Input
10	IN4-	Opto-isolator Ch. 04 - Input
11	IN5+	Opto-isolator Ch. 05 + Input
12	IN5-	Opto-isolator Ch. 05 - Input
13	IN6+	Opto-isolator Ch. 06 + Input
14	IN6-	Opto-isolator Ch. 06 - Input
15	IN7+	Opto-isolator Ch. 07 + Input
16	IN7-	Opto-isolator Ch. 07 - Input

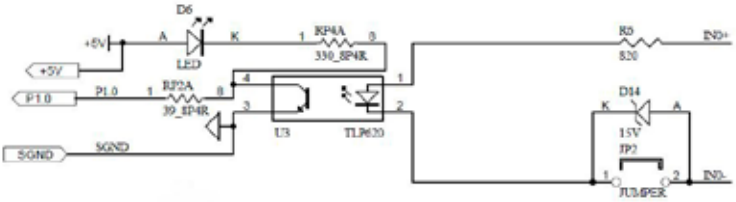
Pin	Signal	Description
1	IN8+	Opto-isolator Ch. 08 + Input
2	IN8-	Opto-isolator Ch. 08 - Input
3	IN9+	Opto-isolator Ch. 09 + Input
4	IN9-	Opto-isolator Ch. 09 - Input
5	IN10+	Opto-isolator Ch. 10 + Input
6	IN10-	Opto-isolator Ch. 10 - Input
7	IN11+	Opto-isolator Ch. 11 + Input
8	IN11-	Opto-isolator Ch. 11 - Input
9	IN12+	Opto-isolator Ch. 12 + Input
10	IN12-	Opto-isolator Ch. 12 - Input
11	IN13+	Opto-isolator Ch. 13 + Input
12	IN13-	Opto-isolator Ch. 13 - Input
13	IN14+	Opto-isolator Ch. 14 + Input
14	IN14-	Opto-isolator Ch. 14 - Input
15	IN15+	Opto-isolator Ch. 15 + Input
16	IN15-	Opto-isolator Ch. 15 - Input

Opto-Isolierte Eingänge - Einstellung JP2 bis JP17

Mit JP2 bis JP17 ist der Spannungsbereich für Logisch “1” der Eingänge einstellbar. Bei aufgestecktem Jumper ist die Zenerdiode vor den Optokopplern überbrückt. Logisch “1” ist daher von ca. 3 bis 30 V. Wenn der Jumper abgezogen ist sperrt die Zenerdiode bis 16,5V. Logisch “1” ist daher von ca. 18 bis 30 V.

Jumper	Bereich	Logisch “0”	Logisch “1”
gesteckt	0 bis 30V	0 bis 1.5V	3 bis 30V
offen	0 bis 30V	0 bis 16.5V	18 bis 30V

Schaltplan Eingänge



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.

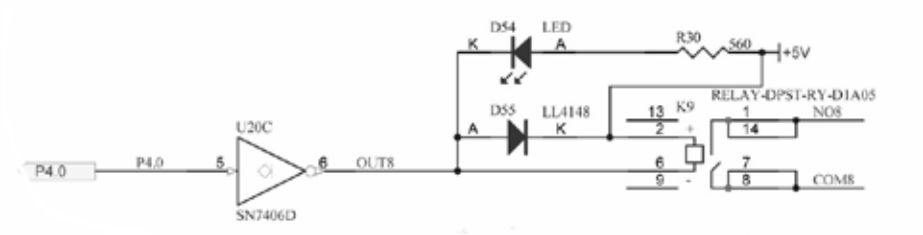
Vermeiden Sie es Ihre Signalkabel parallel zu einer Hochspannungsleitung platzieren! Legen Sie das Signalkabel in rechten Winkel zur Stromleitung um unerwünschte Auswirkungen zu minimieren.

TB4/5 Relais-Ausgänge

Pin	Signal	Description
1	NO 0	Relay Ch. 00 - Output
2	COM 0	Relay Ch. 00 - Output
3	NO 1	Relay Ch. 01 - Output
4	COM 1	Relay Ch. 01 - Output
5	NO 2	Relay Ch. 02 - Output
6	COM 2	Relay Ch. 02 - Output
7	NO 3	Relay Ch. 03 - Output
8	COM 3	Relay Ch. 03 - Output
9	NO 4	Relay Ch. 04 - Output
10	COM 4	Relay Ch. 04 - Output
11	NO 5	Relay Ch. 05 - Output
12	COM 5	Relay Ch. 05 - Output
13	NO 6	Relay Ch. 06 - Output
14	COM 6	Relay Ch. 06 - Output
15	NO 7	Relay Ch. 07 - Output
16	COM 7	Relay Ch. 07 - Output

Pin	Signal	Description
1	NO 8	Relay Ch. 08 - Output
2	COM 8	Relay Ch. 08 - Output
3	NO 9	Relay Ch. 09 - Output
4	COM 9	Relay Ch. 09 - Output
5	NO 10	Relay Ch. 10 - Output
6	COM 10	Relay Ch. 10 - Output
7	NO 11	Relay Ch. 11 - Output
8	COM 11	Relay Ch. 11 - Output
9	NO 12	Relay Ch. 12 - Output
10	COM 12	Relay Ch. 12 - Output
11	NO 13	Relay Ch. 13 - Output
12	COM 13	Relay Ch. 13 - Output
13	NO 14	Relay Ch. 14 - Output
14	COM 14	Relay Ch. 14 - Output
15	NO 15	Relay Ch. 15 - Output
16	COM 15	Relay Ch. 15 - Output

Schaltplan Ausgänge



Kontaktschutzbeschaltungen

Beim Abschalten von Lastkreisen mit Induktivitäten, wie Magnetventilen oder Relaisspulen, entsteht eine Überspannung (Selbstinduktionsspannung), welche einen mehr oder weniger großen Schaltlichtbogen über dem Relaiskontakt erzeugt. Derartige Überspannungen können durch verschiedene Parallelbeschaltungen zur Last begrenzt werden.

- Bei Gleichspannung: Lichtbogenunterdrückung mit einer Diode
- Bei Gleich- und Wechselspannung: Lichtbogenunterdrückung mit Varistor oder RC-Glied

Die Schutzbeschaltung muss an der Last erfolgen.

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.

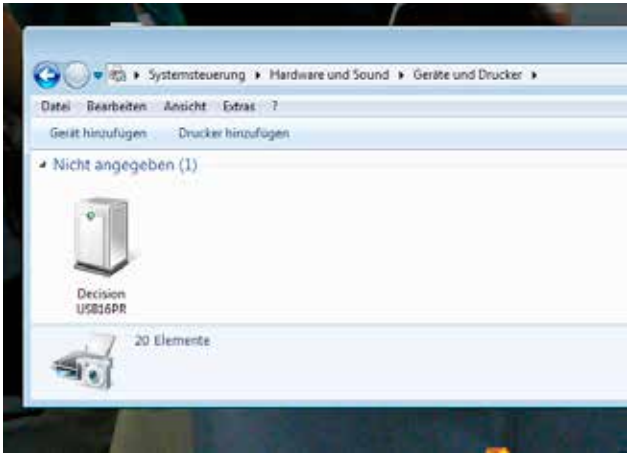
Installationsbeispiel Windows-7

1. Stromversorgung 5V anschließen

2. USB-Verbindung herstellen

3. USB-Eingabegerät - Gerätetreiber-software erfolgreich installiert

4. USB-Eingabegerät - Verwendung jetzt möglich



5. In der Systemsteuerung erscheint jetzt das Decision-USB-Modul

6. Fertig

SOFTWARE-PROGRAMMIERUNG UNTER WINDOWS UND LINUX

Unter Windows bieten wir als Programmierhilfe eine Funktions-Bibliothek und Dll-Datei. Das Handbuch „USBDll_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

USB Test Program.exe ist ein Diagnoseprogramm zum Testen USB-Geräten unter Windows
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“.

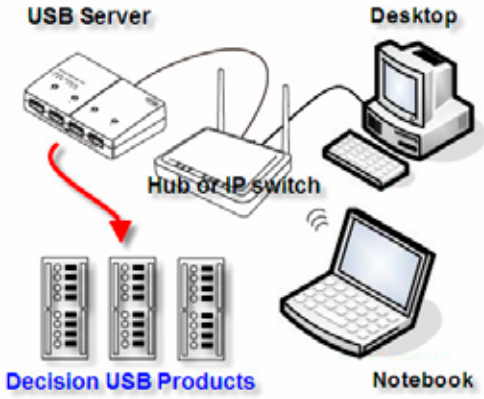
Eine wichtige Informationsmationsquelle ist immer das Internet **http://www.usb-industrial.com**

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

USB-Industrial.com Übersicht:

Windows Support	2010/04 USBDll.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

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.

Das Modul wird nicht erkannt - Problembehandlung

Sollte das USB-Modul nicht (mehr) vom Betriebssystem des Computers gefunden werden, hilft meistens das USB-Kabel neu einzustecken oder den USB-Port zu wechseln.

Ursache kann aber auch eine unstabile Stromversorgung sein. Es sollte ein Schaltnetzteil mit ausreichend Reserve für einschl-altende Relais verwendet werden. Da große Verbraucher zu Spannungseinbrüchen in der Stromversorgung führen können, sollte für die USB-Module eine eigenständige Stromversorgung verwendet werden! Bei der Verkabelung sind Masseschleifen zu vermeiden.

Sollten die vorhergehenden Hinweise keine Abhilfe schaffen, hilft meistens das Ersetzten der Firmware!

USB Firmware Update Anleitung

USBBootloader.exe ist das Softwaretool für die Aktualisierung der Firmware des von Decision-Computer entwickelten USB Serial Device Board. Wenn Sie eine neue Version der Firmware (.hex) erhalten, befolgen Sie die folgenden Schritte, um die Firmware des Board zu aktualisieren:

1. Entfernen Sie die externe Eingangssignalspannung und unterstützen Sie nur die Gerätestromversorgung.

2. Stellen Sie Board ID 15 (Alle ein) für den Update Modus ein und drücken Sie die Taste Reset.

3. Verbinden Sie den PC über USB mit dem Board.

4. Wenn diese Funktion erstmalig verwendet wird, geben Sie bitte den Ordner Treiber als Installationspfad für den Treiber an, um diesen zu installieren.

5. Öffnen Sie die Software USBBootloader.exe, klicken Sie auf die Schaltfläche öffnen und wählen Sie die hex Datei aus; klicken Sie anschließend auf die Schaltfläche Download, um die Firmware zu aktualisieren.

6. Stellen Sie die Board Id zwischen 0 ~ 14 ein und drücken Sie die Taste Reset; schließen Sie dann den PC wieder an.

Kommunikation JP1 - nur optional!

Auf der Platine befindet sich ein Pfostenstecker (2 x 5) für JP1. Hier kann bei einer Sonderversion, mit einer optionalen Erweite-rungsplatine, eine serielle Schnittstelle RS-232 oder RS-422 / RS-485 hinzugefügt werden. Die Ansteuerung erfolgt dann über den USB. Bei Bedarf bitte anfragen

PC817 Series

High Density Mounting Type Photocoupler

● Lead forming type (I type) and taping reel type (P type) are also available. (PC817I/PC817P)
●● TUV (VDE0884) approved type is also available as an option.

■ Features

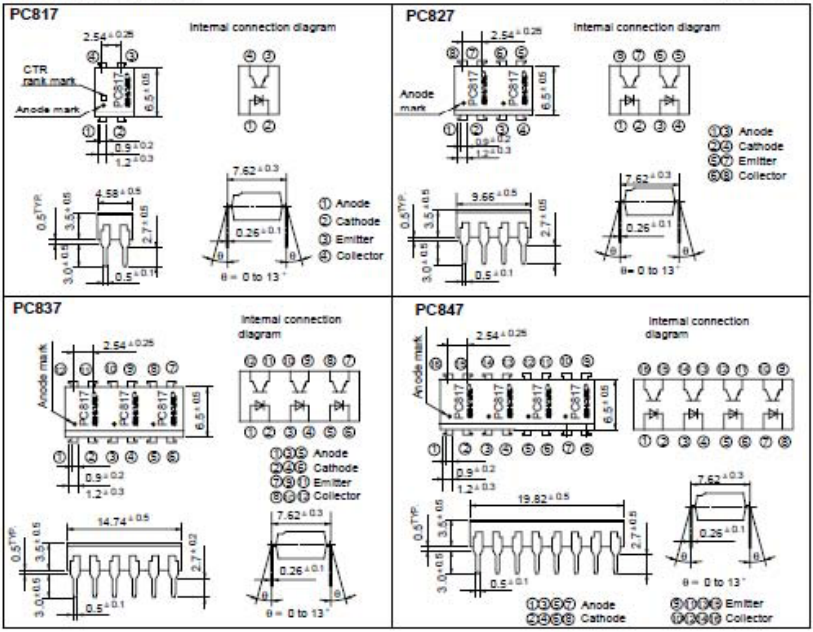
1. Current transfer ratio
   (CTR: MIN. 50% at I_F = 5mA, V_{CE}=5V)
2. High isolation voltage between input and output (V_{iso}: 5 000V$_{rms}$)
3. Compact dual-in-line package
   PC817 : 1-channel type
   PC827 : 2-channel type
   PC837 : 3-channel type
   PC847 : 4-channel type
4. Recognized by UL, file No. E64380

■ Applications

1. Computer terminals
2. System appliances, measuring instruments
3. Registers, copiers, automatic vending machines
4. Electric home appliances, such as fan heaters, etc.
5. Signal transmission between circuits of different potentials and impedances

■ Outline Dimensions

(Unit : mm)



FEATURES

- 1 Form A Contact
- DIP Terminal
- Application for Fax Modem, Telecommunication, Security Alarm System
- UL File No. E147052

COIL RATING (at 20 °C)

Nominal Voltage (VDC)	Coil Resistance (Ω±10%)	Nominal Current (mA)	Pick-Up Voltage (VDC)	Drop-Out Voltage (VDC)	Maximum Allowable Voltage (VDC)	Power Consumption (mW)
5	500	10.0	3.75	0.6	15	50
12	1000	12.0	9.0	1.44	30	144
24	2150	11.2	18.0	2.88	44	268

SPECIFICATIONS

Contact Arrangement		1 Form A
Contact Material		Ru / Rh
Contact Resistance		Max. 150mΩ (initial)
Contact Rating (at Resistive Load)	**Max. Switching Voltage**	100VDC
	Max. Switching Current	0.5A
	Max. Switching Power	10W (DC) / 10VA (AC)
	Max. Carrying Current	1A
Dielectric Strength		
Between Coil & Contact		1400 VDC (1 minute)
Between Contacts		250VDC (1 minute)
Operate Time		Max. 1.0m Sec.
Release Time		Max. 0.5m Sec.
Ambient Temperature		-40 °C~+85 °C
Insulation Resistance		Min. 100MΩ at 500VDC
Vibration Resistance		1.5mm D.A. 10-55HZ
Shock	**Functional**	20G
	Destruction	100G
Mechanical Life		1 x 10^8 operations (at no load)
Electrical Life		1 x 10^6 operations (at rated load)
Weight		Approx. 2g

CERTIFICATE Certificate

CE

VERIFICATION OF COMPLIANCE

APPLICANT	DESICION GROUP INC.
ADDRESS	4th Floor, No. 31, Alley 4, Lane 36, Sec. 5, Ming-Shen East Road, Taipei Postal code: 10576, Taiwan, R.O.C.
EQUIPMENT	USB Automation I/O board
MODEL NAME	AUSB series
TRADE NAME	
REPORT NO.	WSCE1608014
STANDARD(S)	EMI --- EN 55032 CLASS B: 2012 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EMS --- EN 55024: 2010 IEC 61000-4-2 : 2008 IEC 61000-4-3 : 2006+A1: 2007+A2:2010 IEC 61000-4-4 : 2012 IEC 61000-4-5 : 2014 IEC 61000-4-6 : 2013 IEC 61000-4-8 : 2010 IEC 61000-4-11 : 2004

The above equipment was tested by WEISHANG Certification Co., Ltd. for compliance with the requirements set forth in the EUROPEAN COUNCIL Directive 2014/30/EU and the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance.

Approved By: Brian

Brian Yu / Manager

Issued Date: SEP. 06, 2016

WEISHANG Certification Corp.
12F.-3, No.27-1, Ln. 169, Kangning St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

DECLARATION OF CONFORMITY

For the following equipment :

Equipment : USB Automation I/O board

Model Name: AUSB series

Applicant: DESICION GROUP INC.

Address: 4th Floor, No. 31, Alley 4, Lane 36, Sec. 5, Ming-Shen East Road, Taipei Postal code: 10576, Taiwan, R.O.C.

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (2014/30/EU). For the evaluation regarding the electromagnetic compatibility, the following standards were applied :

EN 55032 CLASS B: 2012
EN 61000-3-2: 2014
EN 61000-3-3: 2013

EN55024: 2010
IEC 61000-4-2: 2008
IEC 61000-4-3: 2006+A1: 2007+A2:2010
IEC 61000-4-4: 2012
IEC 61000-4-5: 2014
IEC 61000-4-6: 2013
IEC 61000-4-8: 2010
IEC 61000-4-11: 2004

The following manufacturer/importer is responsible for this declaration :

Person responsible for marking this declaration :

Cagen Kan Chang 201609 6

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DECISION GROUP INC. TAIPEI TAIWAN

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USB
Dynamic Industrial Interface
V 2.0.1.9

A Universal
Application Programming Interface
To Data Acquisition Products

Users Manual

Design & Implementation by
Decision Computer International Company

2010/04/20

Contents

1. Introduction

This document provides the USB Dynamic Industrial Interface Specifications, including all function calls, and operating procedures.

Disclaimer:

Decision Computer International Company (DECISION) cannot take responsibility for consequential damages caused by using this software. In no event shall DECISION be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use this product, even if we have been advised of the possibility of such damages.

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2. Features

The USB Dynamic Industrial Interface (USBDII) was created to provide a standard way to access the functionality provided by all USB data acquisition products. Specifically, the USBDII provides the following features:

Platform-independent

The library is compatible under Windows 98, Windows ME, Windows 2000, windows XP, Vista, and Win7. The compatibility under these operation systems guarantees that programs written for either operating system will work unchanged on the other, even without recompilation.

Abstracts Card Functionality from Card Design

The interface concentrates on a card's functionality and hides the user from having to know specifics about the card design, for example, which port needs to be accessed in order to access specific functionality. All details of the card implementation are hidden from the user.

Multiple Device Support

You could access device by its name or by its information (device type, id index).

Programming Language Independent

The library provides a language independent way to access the USB industrial I/O cards, by using a Dynamic-Link-Library architecture.

3. Device Type Definition

Below are names for device types and its' corresponding defined value:

USB_16PIO	0x01	// USB 16 Channel Photo Input / 16 Channel Photo Output Board
USB_LABKIT	0x02	// USB LABKIT
USB_16PR	0x03	// USB 16 Channel Photo Input / 16 Channel Relay Output Board
USB_STARTER	0x04	// USB STARTER
USB_8PR	0x06	// USB 8 Channel Photo Input / 8 Channel Relay Output Board
USB_4PR	0x07	// USB 4 Channel Photo Input / 4 Channel Relay Output Board
USB_8PI	0x08	// USB 8 Channel Photo Input Board
USB_8RO	0x09	// USB 8 Channel Relay Output Board
USB_16PI	0x0A	// USB 16 Channel Photo Input Board
USB_16RO	0x0B	// USB 16 Channel Relay Output Board
USB_32PI	0x0C	// USB 32 Channel Photo Input Board
USB_32RO	0x0D	// USB 32 Channel Relay Output Board
USB_IND	0x0E	// USB Industry Board
USB_M_4IO	0x10	// USB Mini 4 I/O

Notice : Please use this function to open USB_14ADDA or USB_16ADDA.

4. Data Types of Function calls

Since the USBDII was developed in the C++ language, some data types used may not be present in the programming language you want to use. Please find the following data type conversion table for your convenience:

HANDLE	An opaque 32-bit integer
BYTE	A 8-bit unsigned integer
BOOL	A 32-bit integer, either 0 (FALSE) or 1 (TRUE)
DWORD	A 32-bit unsigned integer
HWND	A 32-bit integer representing a valid handle to a Window
LPTSTR	A 32-bit flat pointer to a zero terminated string
LPBOOL	A 32-bit flat pointer to a variable of type BOOL
LPBYTE	A 32-bit flat pointer to a variable of type BYTE
LPDWORD	A 32-bit flat pointer to a variable of type DWORD

Also note that the DLL employs the Standard Call (Pascal) calling mechanism, which is used for all system. USBDII as well and is compatible with VB, VC, Delphi, .NET, and notice the variable with same type name may have different define in different program language. For example, in Visual Basic 6, the width of Integer is 16 bits and the width of Long is 32 bits, but in Visual Basic. Net, the width of Integer becomes 32 bits and the width of Long becomes 64 bits. If you declare variable with different width from our define, it may cause some run-time error.

5. Functions to open and close Devices

hid_OpenDevice

This function opens a device for further access by USB. Please do not use this function to open USB_14ADDA or USB_16ADDA.

Declaration
HANDLE hid_OpenDevice (DWORD device_type,
DWORD device_id);

Parameters
device_type The type of the device to open.
device_id Device's id on the Board.
For more information, please see “Device Type Table & ID Table” following below.

Return value
A valid handle representing the device, or INVALID_HANDLE_VALUE (-1) if an error occurred. For USB_STARTER, there is no ID selection and device_id = 0

Example
HANDLE hDevice = hid_OpenDevice(Device Type, Device Index); if (hDevice == INVALID_ HANDLE_VALUE)
{
MessageBox (NULL,“Open Failed!“,“Error“,MB_OK);
}

---

hid_CloseDevice

This function closes a device by USB.

Declaration
BOOL hid_CloseDevice (HANDLE hDevice)

Parameters
hDevice A valid device handle.

Return value
TRUE if successful, FALSE otherwise.

Example
hid_CloseDevice(hDevice);

com_OpenDevice

This function opens a device for further access by Serial Port. Please use this function to open USB_14ADDA or USB_16ADDA.

Declaration

```
HANDLE  com_OpenDevice ( DWORD device_type,
                         DWORD device_id,
                         DWORD port_num   );
```

Parameters

device_type	The type of the device to open.
device_id	Device's id on the board. For more information, please see “Device Type Table & ID Table” following below.
port_num	Com Port Num to open.

Return value

A valid handle representing the device, or INVALID_HANDLE_VALUE (-1) if an error occurred.

Example

```
HANDLE hDevice = com_OpenDevice(Device Type, Device Index, 1); if (hDevice == INVALID_
HANDLE_VALUE)
        MessageBox (NULL,“Open Failed!“,“Error“,MB_OK);
```

com_CloseDevice

This function closes a device by Serial Port.

Declaration

BOOL com_CloseDevice(HANDLE hDevice)

Parameters

hDevice A valid device handle.

Return value

TRUE if successful, FALSE otherwise.

Example

com_CloseDevice(hDevice);

Remarks

Please see “Serial_Communication.pdf” to set hardware for serial communication, and USB_LAB-KIT, USB_STARTER, USB_8PR are not supported by serial communication.

Device Type Table

Product	device_type
USB_16PIO	0x01
USB_LABKIT	0x02
USB_16PR	0x03
USB_STARTER	0x04
USB_8PR	0x06
USB_4PR	0x07
USB_8PI	0x08
USB_8RO	0x09
USB_16PI	0x0A
USB_16RO	0x0B
USB_32PI	0x0C
USB_32RO	0x0D
USB_IND	0x0E
USB_M_4IO	0x10

Device ID Table

(Switch Setting on the Device Board)

Switch Setting	device_id
1, 2, 3, 4 OFF	0
2, 3, 4 OFF, 1 ON	1
1, 3, 4 OFF, 2 ON	2
3, 4 OFF, 1, 2 ON	3
1, 2, 4 OFF, 3 ON	4
2, 4 OFF, 1, 3 ON	5
1, 4 OFF, 2, 3 ON	6
4 OFF, 2, 3, 4 ON	7
1, 2, 3 OFF, 4 ON	8
2, 3 OFF, 1, 4 ON	9
1, 3 OFF, 2, 4 ON	10
3 OFF, 1, 2, 4 ON	11
1, 2 OFF, 3, 4 ON	12
2 OFF, 1, 3, 4 ON	13
1 OFF, 2, 3, 4 ON	14
1, 2, 3, 4 ON	Firmware update

6. Functions for digital input/output

hid_SetDigitalByte

This function sets or clears a byte on a digital output line by USB.

Declaration

```
BOOL    hid_SetDigitalByte ( HANDLE hDevice,
                             DWORD dwPort,
                             BYTE byPortState
                             );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0. For more information, please see “Write Address Table” following below.
byPortState	The new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = hid_OpenDevice(0x01,0);
if (hDevice != INVALID_HANDLE_VALUE)
{
hid_SetDigitalByte( hDevice, 0, 0xFF); // set’s all bits on the first port
hid_CloseDevice(hDevice);
}
```

com_SetDigitalByte

This function sets or clears a byte on a digital output line by Serial Port.

Declaration

```
BOOL    com_SetDigitalByte ( HANDLE hDevice,
                             DWORD dwPort,
                             BYTE byPortState
                             );
```

Parameters

hDevice	A valid device handle, previously obtained from com_OpenDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0. For more information, please see “Write Address Table” following below.
byPortState	The new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(0x01,0);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_SetDigitalByte( hDevice, 0, 0xFF); // set’s all bits on the first port
com_CloseDevice(hDevice);
}
```

Remarks

Please see “Serial_Communication.pdf” to set hardware for serial communication, and USB_LAB-KIT, USB_STARTER, USB_8PR are not supported by serial communication.

Write Address Table

Product	dwPort	Content
USB_16PIO	0x02	OUT07 to OUT00
	0x03	OUT15 to OUT08
USB_LABKIT	0x03	P1D07 to P1D00
USB_STARTER	0x03	P1D07 to P1D00
USB_16PR	0x02	OUT07 to OUT00
	0x03	OUT15 to OUT08
USB_8PR	0x01	OUT07 to OUT00
	0x02	DIO7 to DIO0
	0x03	DIO15 to DIO8
USB_4PR	0x02	OUT03 to OUT00
USB_8RO	0x02	OUT07 to OUT00
USB_16RO	0x02	OUT07 to OUT00
	0x03	OUT15 to OUT08
USB_32RO	0x00	OUT07 to OUT00
	0x01	OUT15 to OUT08
	0x02	OUT23 to OUT16
	0x03	OUT31 to OUT24
USB_IND	0x00	Port 0
	0x01	Port 1
	0x02	Port 2
	0x03	Port 3
	0x04	Port 4
	0x05	Port 5
	0x06	Port 6
	0x07	Port 7
	0x08	DIO
	0x0D	IOCONFIG
USB_M_4IO	0x02	OUT03 to OUT00

hid_GetDigitalByte

This function reads a complete byte from a digital input port of a device by USB.

Declaration

```
BOOL    hid_GetDigitalByte ( HANDLE hDevice,
                             DWORD dwPort,
                             LPBYTE lpbyPortState
                             );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice
dwPort T	he index of the port on the card to manipulate. The first port has index 0. For more information, please see “Read Address Table” following below.
lpbyPortState	A pointer to a variable of type BYTE receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER – The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = hid_OpenDevice(0x01,0); if (hDevice != INVALID_HANDLE_VALUE)
{
hid_GetDigitalByte( hDevice, 0, &byState); // reads the state of the first input port hid_
CloseDevice(hDevice);

}
```

com_GetDigitalByte

This function reads a complete byte from a digital input port of a device by Serial Port.

Declaration

```
BOOL    com_GetDigitalByte ( HANDLE hDevice,
                             DWORD dwPort,
                             LPBYTE lpbyPortState
                             );
```

Parameters

hDevice	A valid device handle, previously obtained from com_OpenDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0. For more information, please see “Read Address Table” following below.
lpbyPortState	A pointer to a variable of type BYTE receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER – The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(0x01,0);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_GetDigitalByte( hDevice, 0, &byState); // reads the state of the first input port
com_CloseDevice(hDevice);
}
```

Remarks

Please see “Serial_Communication.pdf” to set hardware for serial communication, and USB_LAB-KIT, USB_STARTER, USB_8PR are not supported by serial communication.

Read Address Table

Product	dwPort	Content
USB_16PIO	0x00	IN07 to IN00
	0x01	IN15 to IN08
USB_LABKIT	0x02	P0D07 to P0D00
USB_STARTER	0x02	P0D07 to P0D00
USB_16PR	0x00	IN07 to IN00
	0x01	IN15 to IN08
USB_8PR	0x00	IN07 to IN00
	0x02	DIO7 to DIO0
	0x03	DIO15 to DIO8
	0x10	JP9/JP10 Settings
USB_4PR	0x00	IN03 to IN00
USB_8PI	0x00	IN07 to IN00
USB_16PI	0x00	IN07 to IN00
	0x01	IN15 to IN08
USB_32PI	0x00	IN07 to IN00
	0x01	IN15 to IN08
	0x02	IN23 to IN16
	0x03	IN31 to IN24
USB_IND	0x00	Port 0
	0x01	Port 1
	0x02	Port 2
	0x03	Port 3
	0x04	Port 4
	0x05	Port 5
	0x06	Port 6
	0x07	Port 7
	0x08	DIO
	0x0D	IOCONFIG

	0x10	Port 0 default value
	0x11	Port 1 default value
	0x12	Port 2 default value
	0x13	Port 3 default value
	0x14	Port 4 default value
	0x15	Port 5 default value
	0x16	Port 6 default value
	0x17	Port 7 default value
	0x18	Port DIO default value
	0x19	Input/output default setting
USB_M_4IO	0x00	IN03 to IN00

Remarks

In USB_8PR, we provide 2 digital ports for user to define either as input or output. It can be defined by Jumper 10 and Jumper 11 on the board. And we can use hid_GetDigitalByte / com_GetDigitalByte function to read Jumper State to determine witch port is either input or output.

hid_GetDigitalByte(hDevice, 0x10, &byState); // or use com_GetDigitalByte for serial communication

When JP9 is closed, DIO7 - DIO0 is for Input. The fifth bit of byState is 0
When JP9 is opened, DIO7 - DIO0 is for Output. The fifth bit of byState is 1
When JP10 is closed, DIO15 – DIO8 is for Input. The sixth bit of byState is 0
When JP10 is opened, DIO15 – DIO8 is for Output. The sixth bit of byState is 1

7. Functions for reset hardware device

hid_ResetHW

This function directly resets the hardware device by USB. And all channels on the board will load default value. If you need to control the device again, please use hid_open to get the handle again.

Declaration
BOOL hid_ResetHW(HANDLE hDevice)

Parameters
hDevice A valid device handle.

Return value
TRUE if successful, FALSE otherwise.

Example

```
hid_ResetHW (hDevice);
```

---

com_ResetHW

This function directly resets the hardware device by Serial Port. And all channels on the board will load default value.

Declaration
BOOL com_ResetHW(HANDLE hDevice)

Parameters
hDevice A valid device handle.

Return value
TRUE if successful, FALSE otherwise.

Example

```
com_ResetHW(hDevice);
```

8. Functions for analog input/output

hid_GetAnalogChannel

This function reads a complete word from an analog input port of a device by USB.

Declaration

```
BOOL    hid_GetAnalogChannel ( HANDLE hDevice,
                               DWORD dwPort,
                               LPDWORD lpdwPortState
                               );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice dw-
Port	The index of the port on the card to manipulate. The first port has index 0.
lpdwPortState	A pointer to a variable of type DWORD receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = hid_OpenDevice(0x02,0); // USB_LABKIT
if (hDevice != INVALID_HANDLE_VALUE)
{
hid_GetAnalogChannel ( hDevice, 0, &dwState); // reads the state of the first analog input port
hid_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_LABKIT and USB_STARTER device. The range of dwPort is from 0~7.

com_GetADHex

This function reads a complete word in hex from an analog input port of a device by USB.

Declaration

```
BOOL com_GetADHex(HANDLE hDevice,
                  UINT dwPort,
                  UINT *lpdwValue
                  );
```

Parameters

hDevice	A valid device handle, previously obtained from com_OpenDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0.
lpdwValue	A pointer to a variable of type UINT receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_GetAnalogChannel ( hDevice, 0, &dwState); // reads the state of the first analog input port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort

com_GetADMilli

This function reads the result in decimal millivolt from an analog input port of a device by USB.

Declaration

```
BOOL com_GetADMilli (HANDLE hDevice,
                     UINT dwPort,
                     LONG *lpdwValue
                     );
```

Parameters

hDevice — A valid device handle, previously obtained from com_OpenDevice
dwPort — The index of the port on the card to manipulate. The first port has index 0.
lpdwValue — A pointer to a variable of type singed 32-bit integer receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_GetADMilli ( hDevice, 0, &dwState); // reads the state of the first analog input port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort is from 0~15.

com_GetADMicro

This function reads the result in decimal microvolt from an analog input port of a device by USB.

Declaration

```
BOOL com_GetADMicro (HANDLE hDevice,
                     UINT dwPort,
                     Long *lpValue
                     );
```

Parameters

hDevice A valid device handle, previously obtained from com_OpenDevice
dwPort The index of the port on the card to manipulate. The first port has index 0.
lpValue A pointer to a variable of type singed 32-bit integer receiving the new state of the port

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
 if (hDevice != INVALID_HANDLE_VALUE)
{
com_GetADMicro ( hDevice, 0, &dwState); // reads the state of the first analog input port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort is from 0~15

com_SetDAHex

This function writes a complete word in hex to an analog output port of a device by USB.

Declaration

```
BOOL com_SetDAHex(HANDLE hDevice,
                  UINT dwPort,
                  UINT dwValue
                  );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0.
dwValue	An unsigned hexical value to assign new value to DA channel

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_SetDAHEX ( hDevice, 0, dwState); // writes the state to the first analog output port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort is from 0~15.

com_SetDAMilli

This function writes a singed decimal value in millivolt to an analog output port of a device by USB.

Declaration

```
BOOL com_SetDAMilli(HANDLE hDevice,
                    UINT dwPort,
                    LONG lnValue
                    );
```

Parameters

hDevice	A valid device handle, previously obtained from com_OpenDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0.
lnValue	An signed decimal value to assign new value to DA channel

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_SetDAMilli ( hDevice, 0, dwState); // writes the state to the first analog output port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort is from 0~15.

com_SetDAMicro

This function writes a singed decimal value in microvolt to an analog output port of a device by USB.

Declaration

```
BOOL com_GetADHex(HANDLE hDevice,
                  UINT dwPort,
                  LONG lnValue
                  );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice
dwPort	The index of the port on the card to manipulate. The first port has index 0.
lnValue	An signed decimal value to assign new value to DA channel

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

Example

```
HANDLE hDevice = com_OpenDevice(card_id,card_number,10);
if (hDevice != INVALID_HANDLE_VALUE)
{
com_SetDAMicro ( hDevice, 0, dwState); // writes the state to the first analog output port
com_CloseDevice (hDevice);
}
```

Remarks

This function now only enable in USB_14ADDA and USB_16ADDA device. The range of dwPort is from 0~15.

9. Functions for Watch dog

hid_SetWD

This function sets time interval for Watch Dog.

Declaration

```
BOOL    hid_SetWD( HANDLE hDevice,
                   BYTE byMode      );
```

Parameters

hDevice A valid device handle, previously obtained from hid_OpenDeviceDevice
byMode Time interval for Watch Dog (Value 1~5 as 1/5/10/30/60 seconds, default as 10s)

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

---

hid_EnableWD

This function enables/disables Watch Dog.

Declaration

```
BOOL    hid_EnableWD( HANDLE hDevice,
                      BOOL bEnabled );
```

Parameters

hDevice	A valid device handle, previously obtained from hid_OpenDeviceDevice
bEnabled	Enable/disable watch dog.

Return value

TRUE if successful, FALSE otherwise.
If an error occurred, GetLastError() may return the following values:
ERROR_INVALID_PARAMETER - The handle passed was invalid, or the port number was out of range for the device selected.

10. Using the Dynamic Industrial Interface with different programming languages

This chapter provides an overview about how to best utilize the Dynamic Industrial Interface in various programming languages.

If you experience difficulties calling the Dynamic Industrial Interface functions from your programming language, or are using a programming language not covered in this documentation, please feel free to visit our web-site, to which we will post updated information regarding DII programming issues. You may also contact our technical support through our website: www.decision.com.tw

10.1. C++

Since the DII DLL was developed using C++, you may easily use it to access Industrial I/O devices. For this purpose, a C++ header file ("USBDII.h") as well as an import library ("USBDII.lib") are being shipped with the interface library. Make sure that you have installed the development release, not the retail release, which does not include support programming files. In your C/C++ source code files, just include the "USBDII.h" include file, then you can use any of the functions provided by the USBDII DLL. Be sure to include the import library "USBDII.lib" during the linking step of your application. So your applications successfully references the actual interface DLL.

10.2. Visual Basic

Since the Dynamic Industrial Interface is fully 32-bit compliant, only 32-bit versions of Visual Basic are supported. Specifically, Version 6.0 are tested and supported. If you are using Visual Basic to access any I/O Devices supported by the USB Dynamic Industrial Interface (USBDII), you can call the USBDII DLL directly. But before that, you should import them. You may also consult the Visual Basic sample application for more information about using Visual Basic to access the USB Dynamic Industrial Interface (USBDII).

11. Technical Support and Feedback

We believe that customer input is the most valuable source for creating successful products. We continuously update and extend the Dynamic Industrial Interface with new functionality, for specific devices, for specific applications, to meet your specific needs, and provide supportive products around the USBDII.

You may also contact our technical support through our website: www.decision.com.tw

12. Release notes

2015/02/17
Version 2.0.1.9
Fix multiple cards open for USB_M_4IO Version 2.0.1.8
Fix slow open speed for USB_M_4IO Version 2.0.1.7
Add support for USB_M_4IO

2012/11/09
Version 2.0.1.6
x64 version released

2011/11/17
Version 2.0.1.3
Release analog input/output functions for virtual com port.

2011/11/16
Version 2.0.1.2
Remove address checking
Fix the problem of hid_GetDigitalByte can not read some address of USBIND.
Provide default value read back function for USBIND.

2011/11/3
Version 2.0.1.1
Fix address limitations for USB Industry.

2010/04/20
Version 2.0.1.0
Update for supporting USB Industry.