



## USB-2084

USB I/O Module with 4-ch/8-ch Counter/Frequency/  
Encoder Input

### Features

- 8-ch for Frequency and Up Counters Types
- 4-ch for Up/Down, Dir/Pulse and A/B Phase Counters Types
- Support digital filter (1~32767 us)
- 4kV ESD protection
- Wide operating temperature range:-25°C~+75°C
- No external power supply (USB Bus Powered)
- Plug-and-Play without driver installation
- Lockable USB cable
- Built-in dual watchdog (hardware/software)
- Module supported for Win2000/XP and Win7 (32/64 bit)



### Introduction

The USB-2084 is a full-speed USB device with 8-ch for Frequency and Up Counters, or 4-ch for Up/Down, Dir/Pulse and A/B Phase Counters, and offers features for industrial control and manufacturing test applications, such as factory automation or embedded machine control. With the true Plug & Play capability, it needs not opening up your computer chassis to install boards-just plug in the module, then get or set the data. Owing to another USB feature known as "hot-swapping", users do not even need to shut down and restart the system to attach or remove a peripheral.

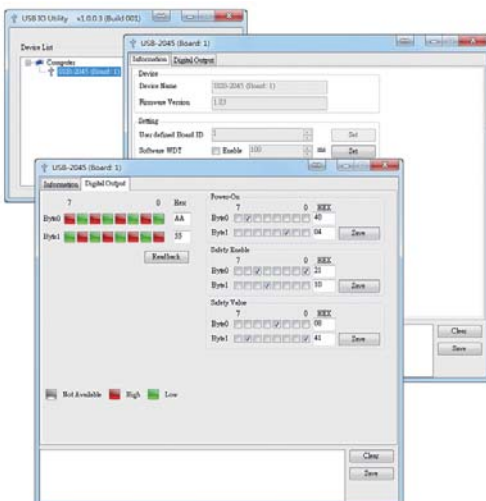
The USB I/O utility can help users to configure and test USB-2084 quickly and easily without programming; In addition, we also provide the friendly API library and demos for users to develop own USB application with various application development tools (VB/C++/C#.NET/VB.NET). Therefore, the USB-2084 is the perfect way to add measurement and control capability to any USB capable computer.

### Software

#### USB I/O Utility

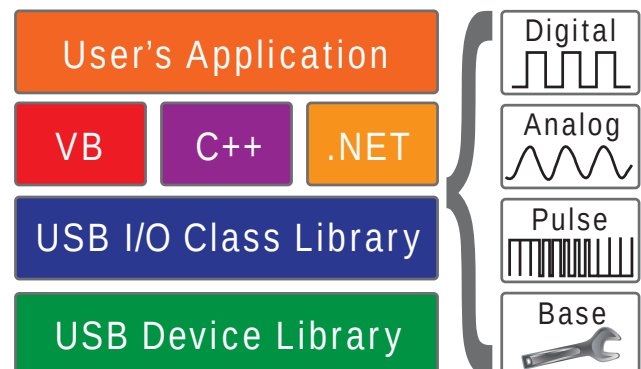
USB I/O Utility provides a simple way to easily test and instant acquire data for all ICP DAS USB I/O series modules without programming.

- Automatically scan all ICP DAS USB I/O modules
- Easily and quickly configure and test USB I/O modules
- Completely and precisely log I/O data for analysis



#### VB/C++/C#.NET/VB.NET SDK

ICP DAS provides a SDK for USB I/O modules to help user to develop own project easily and quickly. The SDK can be supported in VB/C++/C#.NET/VB.NET to fulfill project development.



### Applications

- Counter measurement
- Frequency measurement
- Motion control

## System Specifications

| USB                    |                                                                        |
|------------------------|------------------------------------------------------------------------|
| Specification          | USB 2.0 Full-Speed (12Mbps)                                            |
| CPU Module             |                                                                        |
| Watchdog Timer         | 1 Hardware watchdog (1.6 second)<br>1 Software watchdog (Programmable) |
| Isolation              |                                                                        |
| Intra-module Isolation | 3000 VDC                                                               |
| EMS Protection         |                                                                        |
| ESD (IEC 61000-4-2)    | 4 kV contact for each terminal<br>8 kV air for random point            |
| LED Indicators         |                                                                        |
| Status                 | 3 x Power and Communication<br>8 x Counter Input                       |
| Power                  |                                                                        |
| Consumption            | 1.3 W (Max.)                                                           |
| Mechanical             |                                                                        |
| Dimensions (mm)        | 33 x 107 x 102 (W x L x H)                                             |
| Environmental          |                                                                        |
| Operating Temperature  | -25 ~ +75 °C                                                           |
| Storage Temperature    | -40 ~ +85 °C                                                           |
| Humidity               | 10 ~ 95% RH, Non-condensing                                            |

## Wire Connections

| Input Mode           | Isolated                                                                                     | Non-isolated                                                                         |
|----------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dir/Pulse            | Vin+ (Pulse) -  CxA+<br>Vin- (Pulse) -  CxA-<br>Vin+ (Dir) -  CxB+<br>Vin- (Dir) -  CxB-     | Vin+ (Pulse) -  CxA+<br>Vin+ (Dir) -  CxB+<br>Vin- (Pulse) and Vin- (Dir) -  GND     |
| Up/Down              | Vin+ (Up) -  CxA+<br>Vin- (Up) -  CxA-<br>Vin+ (Down) -  CxB+<br>Vin- (Down) -  CxB-         | Vin+ (Up) -  CxA+<br>Vin+ (Down) -  CxB+<br>Vin- (Up) and Vin- (Down) -  GND         |
| Up                   | Vin+ (Up0) -  CxA+<br>Vin- (Up0) -  CxA-<br>Vin+ (Up1) -  CxB+<br>Vin- (Up1) -  CxB-         | Vin+ (Up0) -  CxA+<br>Vin+ (Up1) -  CxB+<br>Vin- (Up0) and Vin- (Up1) -  GND         |
| A/B Phase (Quadrant) | Vin+ (A0) -  CxA+<br>Vin- (A0) -  CxA-<br>Vin+ (B0) -  CxB+<br>Vin- (B0) -  CxB-             | Vin+ (A0) -  CxA+<br>Vin+ (B0) -  CxB+<br>Vin- (A0) and Vin- (B0) -  GND             |
| Frequency            | Vin+ (Freq0) -  CxA+<br>Vin- (Freq0) -  CxA-<br>Vin+ (Freq1) -  CxB+<br>Vin- (Freq1) -  CxB- | Vin- (Freq0) -  CxA+<br>Vin- (Freq1) -  CxB+<br>Vin- (Freq0) and Vin- (Freq1) -  GND |

## Ordering Information

|                    |                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>USB-2084 CR</b> | USB I/O Module with 4-ch/8-ch Counter/Frequency/Encoder Input (RoHS)<br>Includes CA-USB15 Cable (USB 2.0 A-Male to B-Male Cable, w/Ferrite Core, 1.5 M) |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

## I/O Specifications

| Counter/Frequency/Encoder Input  |                                                                                                |
|----------------------------------|------------------------------------------------------------------------------------------------|
| Channels                         | 4 channels for Up/Down, Dir/Pulse and A/B Phase types<br>8 channels for Up and Frequency types |
| Type                             | Up, Frequency, Up/Down, Dir/Pulse, A/B Phase                                                   |
| TTL, ON Voltage Level            | +2 VDC ~ +5 VDC                                                                                |
| TTL, OFF Voltage Level           | 0 VDC ~ +0.8 VDC                                                                               |
| Frequency Accuracy               | ±0.4%                                                                                          |
| Digital Filter                   | 1 ~ 32767 uS (Software programmable)                                                           |
| Individual Channel Configuration | Yes                                                                                            |
| Intra-module Isolation           | 2500 VDC                                                                                       |
| Isolated, Frequency              | 250 KHz Max.                                                                                   |
| Non-isolated, Frequency          | 500 KHz Max.                                                                                   |
| Isolated, Input Level            | ON Voltage Level: +4.5 VDC ~ +30 VDC<br>OFF Voltage Level: +1 VDC Max.                         |
| Contact Rating                   | 0.25 A @ 250 VAC<br>0.24 A @ 220 VAC                                                           |

## Pin Assignments

| Terminal No. | Pin Assignment |
|--------------|----------------|
| 01           | C0A+           |
| 02           | C0A-           |
| 03           | C0B+           |
| 04           | C0B-           |
| 05           | C1A+           |
| 06           | C1A-           |
| 07           | C1B+           |
| 08           | C1B-           |
| 09           | C2A+           |
| 10           | C2A-           |
| 11           | C2B+           |
| 12           | C2B-           |
| 13           | C3A+           |
| 14           | C3A-           |
| 15           | C3B+           |
| 16           | C3B-           |
| 17           | GND            |
| 18           | GND            |
| 19           | N/A            |
| 20           | N/A            |

## Dimensions (Units: mm)

