



## USB-2045

USB I/O Module  
with 16-ch DO with  
Overload Protection



## USB-2045-32

USB I/O Module  
with 32-ch DO with  
Overload Protection

### Features

- 16/32-ch sink type digital output
- Short Circuit, Overload and Overvoltage Protection
- Configurable Power-on Value Settings
- Safety functionality when communication failed
- Wide operating temperature range:-25°C~+75°C
- 3000 VDC Intra-Module isolation
- USB 1.1/2.0 Full-Speed (12Mbps)
- No external power supply (USB Bus Powered)
- Plug-and-Play without driver
- Lockable USB cable
- Support firmware update via USB
- Utility tool for module configuration and I/O testing easily and quickly
- Built-in dual watchdog (hardware/software)
- Provide API library (VB/VB/BCB/.NET)
- Module supported for Win2000/XP and Win7 (32/64 bit)



### Introduction

The USB-2045 and USB-2045-32 are full-speed USB device with 16 or 32 digital output channels module, and offers features for industrial control and manufacturing test applications, such as factory automation or embedded machine control. The USB-2045/USB-2045-32 supports source type output and equips with short circuit protection. There are options to enable both power-on and safety value, and 16/32 LED indicators that can be used to monitor the status of the digital output channels. The 4 kV ESD protection, 4 kV EFT protection, 3 kV surge protection for power input and 3750 VDC Intra-module isolation are standard. 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 the USB-2045/USB-2045-32.

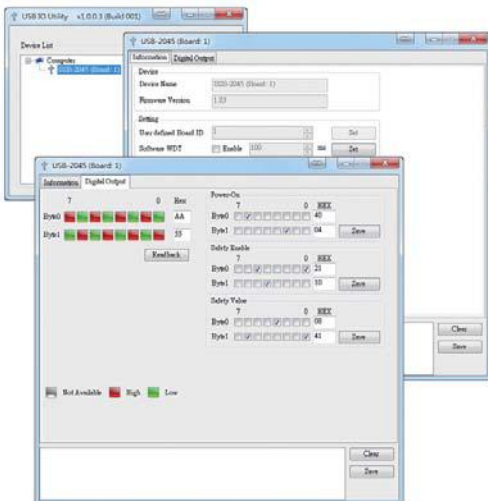
The USB I/O utility can help users to configure and test USB-2045/USB-2045-32 quickly and easily without programming; In addition, we also provide the friendly API library and demos for users to develop own USB application with various application development tools (VB/C++/C#.NET/VB.NET). Therefore, the USB-2045/USB-2045-32 is the perfect way to add control capability to any USB capable computer.

### Software

#### USB I/O Utility

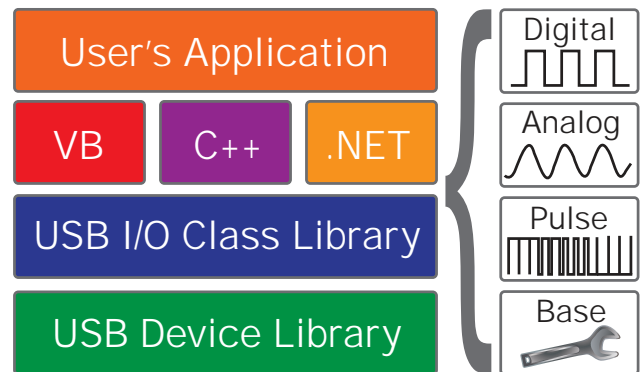
USB I/O Utility provides a simple way to easily test and instant acquire data for all ICP DAS USB I/O series modules without programming.

- 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

- Automation
- Laboratory research
- Measurement and testing
- Testing equipment

## System Specifications

| Model                          | USB-2045  | USB-2045-32    |
|--------------------------------|---|----------------|
| <b>USB</b>                     |   |                |
| Specification                  | USB 2.0 Full-Speed (12Mbps)   |                |
| <b>CPU Module</b>              |   |                |
| Watchdog Timer                 | 1 Hardware watchdog (1.6 second)<br>1 Software watchdog (Programmable)      |                |
| <b>EMS Protection</b>          |   |                |
| ESD (IEC 61000-4-2)            | 4 kV contact for each terminal<br>8 kV air for random point                 |                |
| <b>LED Indicators</b>          |   |                |
| Status                         | 3 x Power and Communication<br>16 x Digital Output      32 x Digital Output |                |
| <b>Power</b>                   |   |                |
| Consumption                    | 1.2 W   | 2.2 W          |
| <b>Mechanical</b>              |   |                |
| Dimensions (mm)<br>(W x L x H) | 33 x 110 x 96   | 31 x 147 x 126 |
| <b>Environmental</b>           |   |                |
| Operating Temperature          | -25 ~ +75 °C  |                |
| Storage Temperature            | -40 ~ +85 °C  |                |
| Humidity                       | 10 ~ 95% RH, Non-condensing   |                |

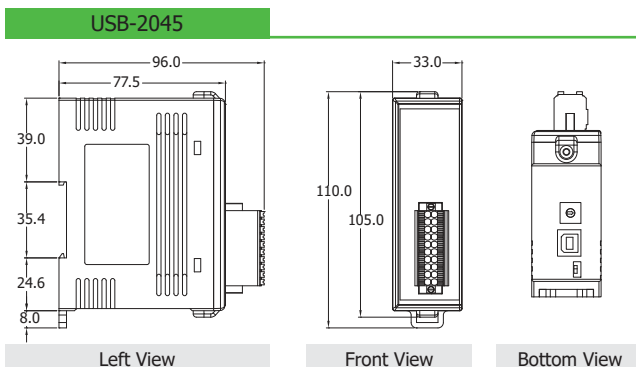
## I/O Specifications

| Model                  | USB-2045                              | USB-2045-32    |
|------------------------|---------------------------------------|----------------|
| <b>Digital Output</b>  |                                       |                |
| Channels               | 16                                    | 32             |
| Type                   | Open Collector, Sink (NPN)            |                |
| Load Voltage           | +3.5 ~ +50 VDC                        |                |
| Max. Load Current      | 650 mA/Channel                        | 500 mA/Channel |
| Overvoltage Protection | 60 VDC                                |                |
| Overload Protection    | 1.4 A (with short-circuit protection) |                |
| Power on Value         | Yes, Programmable                     |                |
| Safe Value             | Yes, Programmable                     |                |

## Wire Connections

| Output          | ON                        | OFF                       |
|-----------------|---------------------------|---------------------------|
| Drive Relay     | Ext.PWR<br>DOx<br>Ext.GND | Ext.PWR<br>DOx<br>Ext.GND |
| Resistance Load | Ext.PWR<br>DOx<br>Ext.GND | Ext.PWR<br>DOx<br>Ext.GND |

## Dimensions (Units: mm)



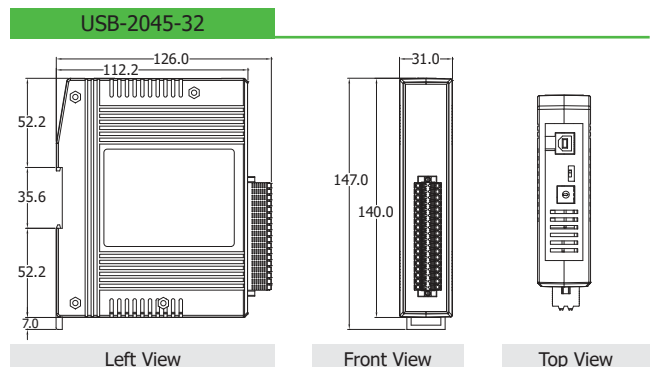
## Pin Assignments

**USB-2045**

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| Ext.GND        | 01           | 11 Ext.GND     |
| DO0            | 02           | 12 DO8         |
| DO1            | 03           | 13 DO9         |
| DO2            | 04           | 14 DO10        |
| DO3            | 05           | 15 DO11        |
| DO4            | 06           | 16 DO12        |
| DO5            | 07           | 17 DO13        |
| DO6            | 08           | 18 DO14        |
| DO7            | 09           | 19 DO15        |
| Ext.PWR        | 10           | 20 Ext.PWR     |

**USB-2045-32**

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| E.GND          | 01           | 19 E.GND       |
| DO0            | 02           | 20 DO16        |
| DO1            | 03           | 21 DO17        |
| DO2            | 04           | 22 DO18        |
| DO3            | 05           | 23 DO19        |
| DO4            | 06           | 24 DO20        |
| DO5            | 07           | 25 DO21        |
| DO6            | 08           | 26 DO22        |
| DO7            | 09           | 27 DO23        |
| DO8            | 10           | 28 DO24        |
| DO9            | 11           | 29 DO25        |
| DO10           | 12           | 30 DO26        |
| DO11           | 13           | 31 DO27        |
| DO12           | 14           | 32 DO28        |
| DO13           | 15           | 33 DO29        |
| DO14           | 16           | 34 DO30        |
| DO15           | 17           | 35 DO31        |
| E.PWR          | 18           | 36 E.PWR       |



## Ordering Information

|                       |   |
|-----------------------|---|
| <b>USB-2045 CR</b>    | USB I/O Module with 16-ch DO (Sink, NPN) with Overload Protection (RoHS)<br>Includes CA-USB15 Cable (USB 2.0 A-Male to B-Male Cable, w/Ferrite Core, 1.5 M) |
| <b>USB-2045-32 CR</b> | USB I/O Module with 32-ch DO (Sink, NPN) with Overload Protection (RoHS)<br>Includes CA-USB15 Cable (USB 2.0 A-Male to B-Male Cable, w/Ferrite Core, 1.5 M) |