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ACT-IR100UD-v2

USB to IrDA[®] SIR Adapter

User Manual



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TABLE OF CONTENTS

REVISION HISTORY	4
PRECAUTIONS	5
1. OVERVIEW	6
2. FEATURES	6
3. PACKAGE CONTENT	7
4. SYSTEM REQUIREMENT	7
5. UTILITY & DRIVER INSTALLATION.....	8
5.1 Configuration Utility Installation – Only for Windows.....	9
5.2 Driver Installation for All Windows Other Than Windows 8	9
5.3 Driver Installation for Windows 8 (32 & 64 bit)	10
5.4 Driver Installation for Mac OS, Linux (Included Android), and Win CE.....	10
6. INSTALLATION CHECK	11
6.1 Add or Remove Programs Check.....	11
6.2 Device Manager Check – COM Port	11
7. UNINSTALLATION PROCEDURE FOR WINDOWS	12
7.1 Utility Uninstallation.....	12
7.2 Driver Uninstallation.....	14
8. HOW TO MAKE ACT-IR100UD-v2 WORK?.....	15
8.1 When ACT-IR100UD-v2 Is In Primary / Secondary Mode	15
8.2 When ACT-IR100UD-v2 Is In Secondary Mode	15
9. OBEX PUT CLIENT AND PUT SERVER DESCRIPTION.....	16
9.1 OBEX PUT Client:	16
9.2 OBEX PUT Server:.....	16
10. COMMUNICATION PARAMETER SETTINGS	18
10.1 The First Tab: Host Settings	19
10.2 Flow Control Note	19
10.3 The Second Tab: Discovery Timing Settings	21

10.4 The Third Tab: Primary Protocol Settings	22
10.5 Factory Default Settings.....	22
11. LED BEHAVIOR -----	23
12. CHARACTERISTICS AND SPECIFICATION-----	23
13. ACT-IR100UD-v2 DONGLE DIMENSIONS-----	23
14. WARRANTY INFORMATION -----	24
15. CONTACT INFORMATION -----	25

REVISION HISTORY

Revision History		
Revision	Date	Comment
1.0.0	08/29/2011	Initial release
1.0.1	10/20/2011	Updated for buffer size and added description for flow control signal.
1.0.1.1	11/12/2011	Added OBEX Chapter & changed Chapter of operation
1.1.0	4/15/2013	Updated to include Win 8 ; updated driver installer to cover Win 8 solution under PL2303-HXA chip

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PRECAUTIONS

To ensure trouble-free operation, please observe the following precautions:

Optical communications are easily affected by external light sources, weak batteries, transfer distance, transfer angle, etc.

Any of these conditions may cause a data transfer failure, incomplete or missing data. Make sure that the wireless interface is away from direct sunlight and other strong light source.

- Do not terminate arbitrarily during file transfer process between ACT-IR100UD-v2 and computers until finished. Otherwise ACT-IR100UD-v2 internal data integrity may be damaged, which is due to the violation of ACT-IR100UD-v2.
- Do not expose the unit to moisture, as this will damage the internal circuitry.
- Do not expose the unit to extreme temperatures. It should not be placed in direct sunlight or in a closed vehicle, neither should it be placed near heaters nor other heat sources.
- Do not store the unit in a humid or dusty place.
- Use a soft, dry cloth to clean the unit. Do not use a wet cloth or any solvent.
- Do not drop the unit or handle the unit carelessly.

CAUTION:

- Never touch the pins of computer connection terminal. The internal circuits can be damaged by an Electro Static Discharge. If this device requires any servicing, use only an ACTiSYS service dealer, an ACTiSYS approved service facility, or an ACTiSYS repair service.
- When exchanging data with host computer, be sure the appropriate serial communication port is available and is not in conflict with other peripheral device or software.

1. OVERVIEW

ACT-IR100UD-v2 is a highly integrated IrDA[®] Intelligent dongle with USB interface, which is for Infrared communication. It handles all the details regarding IrDA protocols. It exchanges user data with the host device via USB interface. USB driver creates Virtual COM port which host application software can directly access much like serial RS232 COM port.

2. FEATURES

- Supports mandatory IrDA layer: IrPHY[™], IrLAP[™], IrLMP[™], TinyTP[™] and IAS[™].
- Supports upper layers IrCOMM[™], IrLPT[™], and OBEX[™].
- Supports host baud rate from 1.2 kbps to 115.2 kbps, which is changeable by COMSET Configuration utility. IrDA baud rate from 9.6 kbps to 115.2 kbps, which is flexible setting by IrDA devices.
- Supports both IrDA Primary and Secondary mode, changeable via COMSET Configuration utility.
- USB to RS232 Serial conversion device and its driver creates Virtual COM port, which has Less Latency time compared with any other virtual COM port, average 1.5 ms. while the latency of a real COM port is about 0.5 ms.
- Fully compliant with USB 2.0 (Full speed, 12 Mbps).
- Two chips in this dongle: USB chip and IrDA chip.
USB chip has 256 bytes outbound buffer and 256 bytes inbound buffer.

- **IrDA chip buffer size**

IrDA Chip	Buffer (Bytes)				Total
	Host Inbound	Host Outbound	IrDA In Frames	IrDA Out Frames	
ACT-IR8260D	1K	1K	0.5K	0.5K	3K

- Nothing or minimum changes in user software, which are already working with ACT-IR100SD RS232 serial adapter and/or previous version ACT-IR100UD USB adapter.
- It is USB bus powered device. No need any external power supply.
- Supports Windows 98/ME/2000, [Win XP SP2/Vista/Win 7/8 \(32 & 64 bit\)](#), [Win Server 2003/Win Server 2008 \(32 & 64 bits\)](#), Mac OS (both Intel & Power PC), Linux, [Android](#), Windows-CE (ARM & x86)

3. PACKAGE CONTENT

ACT-IR100UD-v2 package contains the following items:

- ACT-IR100UD-v2 USB to IrDA SIR Adapter
- Installation CD, which includes:
 - Quick Start Guide
 - Setup file for installing configuration utility, manual and driver
 - Device driver for Windows
 - User Manual

4. SYSTEM REQUIREMENT

- Windows 98/ME/2000 SP4; Win XP SP2/Vista/Win 7/8 (32 & 64 bit); Windows Server 2003/2008 (32 & 64 bit); Linux; Android; Mac OS x 10.6.
- At least 256MB RAM (512MB is recommended).
- CPU Speed 1.8 GHz or above.
- USB 1.1 port (or USB 2.0).

5. UTILITY & DRIVER INSTALLATION

- **Note1:** [Be Sure] ACT-IR100UD-v2 USB dongle is **NOT** plugged into PC **until** you have installed the driver.
- **Note2:** From “**Add or Remove Program**” in Control Panel of Win 98/ME/2K/XP, or from “**Programs and Features**” in **Control Panel** of Windows **Vista /Win 7**, check if “**PL-2303 USB-to-Serial**” or “**PL-2303 Vista Driver Installer**” exists. If exists, please remove it first.
- Insert ACT-IR100UD-v2 Installation CD in your PC.
It will install driver for Windows ME/2K/XP/Vista/Win 7/8 automatically.
Else, browse the CD and double click “**ACT-IR100UD-DriverInstaller-v#.##-YYYYMMDD.exe**” to start the installation for Windows, where # is the version number and YYYYMMDD is the Year, Month and Date.
- **Note3: Manual driver Installation under WinCE, Mac, Android, Linux and Windows 8 OS:**
 - Setup file is only for Windows system. You should manually install the driver yourself under WinCE, Mac, Android or Linux since it will not auto run for you. Please direct browse the installation CD to find the path: D:\Driver (assume D:\ is your CD driver). Then select the right folder or file under it , say “RedHat_v0728.rar” for example and extract the packaged file for use.
 - Note: Google Android OS is also based on Linux kernel actually.
 - Linux driver is for RedHat 7.3/8.0/9.0 Only. No need to install drivers for the followings:
[Linux Kernel 2.4.10](#) and above already includes built-in drivers for PL-2303H;
[Linux Kernel 2.4.31](#) and above already includes built-in drivers for PL-2303H, PL-2303HXD and PL-2303XA/HXA.
 - Windows 8 has a security feature, **UAC (User Account Control)**, to protect/block PC from any software installation. You have to disable this feature before you can start installation. So you can not directly auto run installation CD in such case. Instead, you have to run steps by steps manually. For details, please refer to the chapter of Windows 8.

5.1 Configuration Utility Installation – Only for Windows

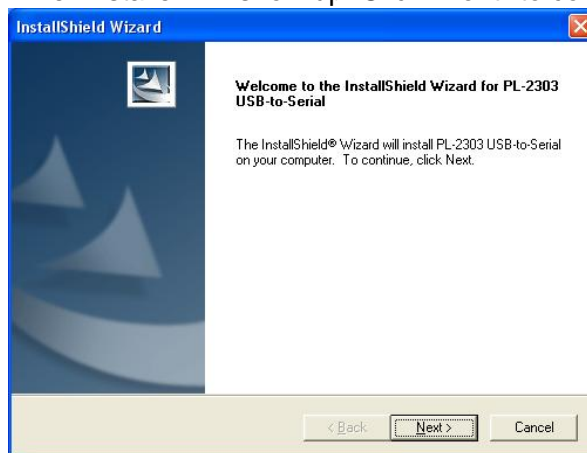
- ACT-IR100UD-v2-ConfigUtility.exe will be directly copied into your PC under C:\Program Files\ACTiSYS\IR224UN\Driver, along with Driver installer.

5.2 Driver Installation for All Windows Other Than Windows 8

- After installing the Configuration Utility, setup will continue to install driver if you have not installed it beforehand (User can also select “**ACT-IR100UD-DriverInstaller_v#.#.#-YYYYMMDD.exe**“ in CD to run manually), where #.#.# is the version number and YYYYMMDD is the Year, Month and Date.
- **Note:** If you have already installed the old driver for any other application previously and have not followed [Note2](#) above to remove it in advance, the setup program will auto detect the driver “**PL-2303 USB-to-Serial**” and will ask you to **Modify, Repair or Remove** the program via a pop up window:



- Please select **Remove** and go back to reinstall it after complete this removal and restart PC.
- A welcome screen for Driver installer will show up. Click “**Next**” to continue.



- Click “**Finish**” to close the Wizard window. If you are asked to restart your PC, click “Yes, I want to

restart my computer now.” And click “Finish” to reboot.



- Now plug ACT-IR100UD-v2 into USB port. System will pop up a “**Found New Hardware**” bubble window at the right corner of Tool Bar and display the message: “**Prolific USB-to-Serial Comm Port**” the first time you plug in.



5.3 Driver Installation for Windows 8 (32 & 64 bit)

Since the special feature of **UAC** in Windows 8 will block user to install any software into system unless you temporarily disable it. Please login thru the account of “Administrator” first, right click the file “**OKey.bat**” in the CD and select “[Run as administrator](#)”. This file will then disable this feature for you. But please restart PC for taking it effective. Double click “**S.bat**” file in the CD could do this simpler for you. Then after restart, browse this CD to **double click Auto.bat**. Regular warning message will pop up again, please press any key to continue anyway. The last step will resume back **UAC enable** for you. Please restart your PC to take it effective.

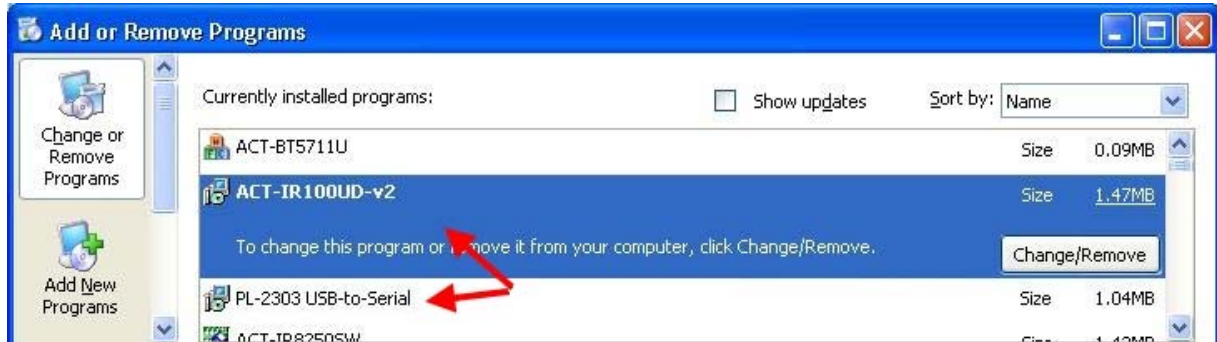
5.4 Driver Installation for Mac OS, Linux (Included Android), and Win CE

- Please refer to separate files for driver and driver installation guide under folder of “Driver”.

6. INSTALLATION CHECK

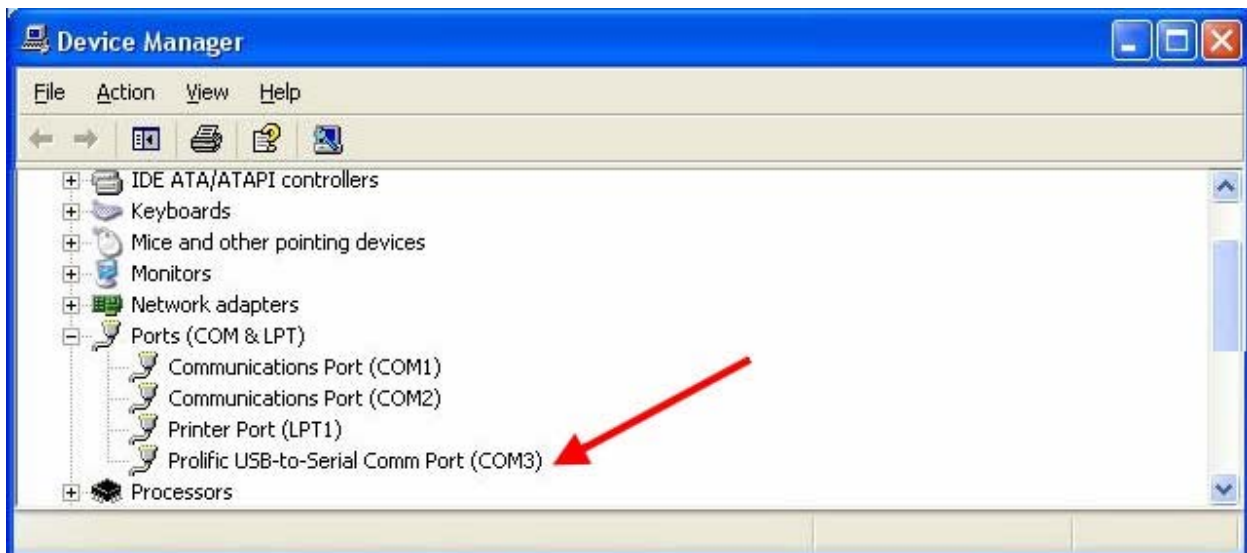
6.1 Add or Remove Programs Check

- Open the “**Add or Remove Programs**” window from **Control Panel**. Check if two programs exist: “**ACT-IR100UD-v2**” and “**PL-2303 USB-to-Serial**”. See below:



6.2 Device Manager Check – COM Port

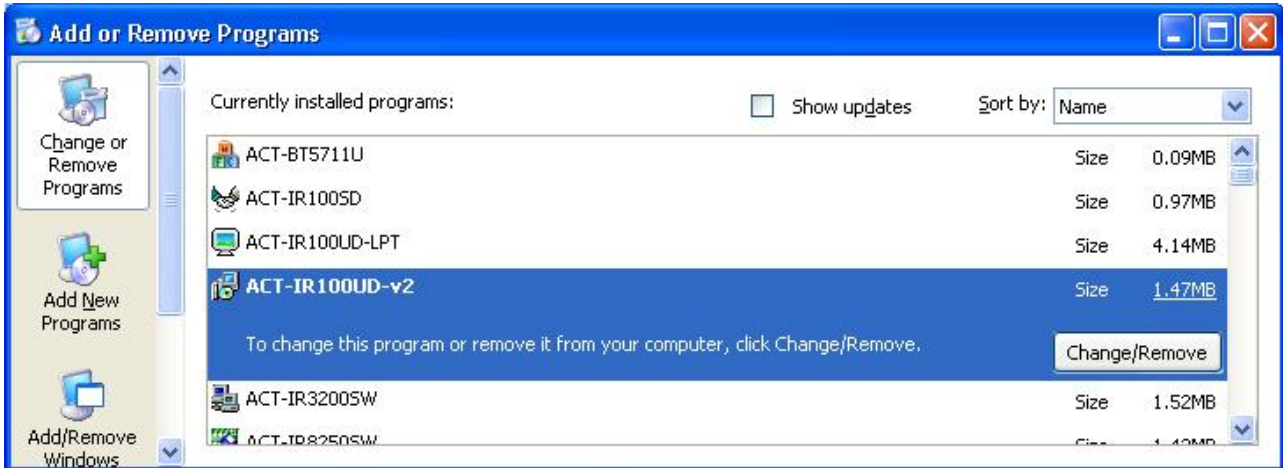
- To confirm if the installation is successful, look at the window from **Device Manager**.
- You will see the device described as “**Prolific USB-to-Serial Comm Port (COMx)**” installed under “**Ports (COM & LPT)**”, where COMx (e.g.,COM3) is the COM port number. This is the place you can check which virtual COM port this device is connected. See below.



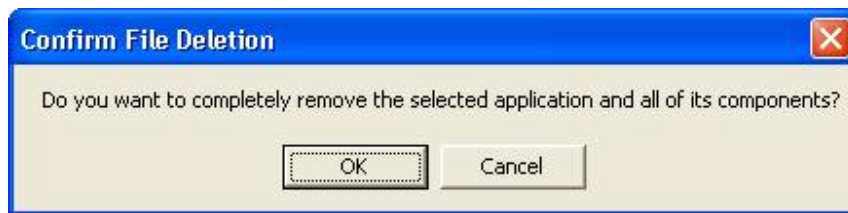
7. UNINSTALLATION PROCEDURE FOR WINDOWS

7.1 Utility Uninstallation

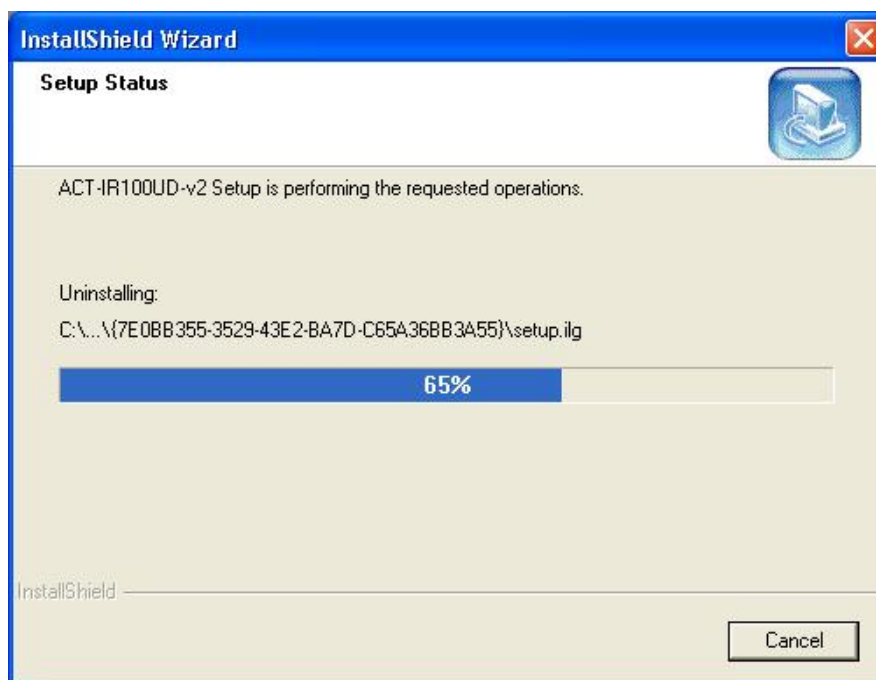
- Double click “Add or Remove Program” under “Control Panel”.



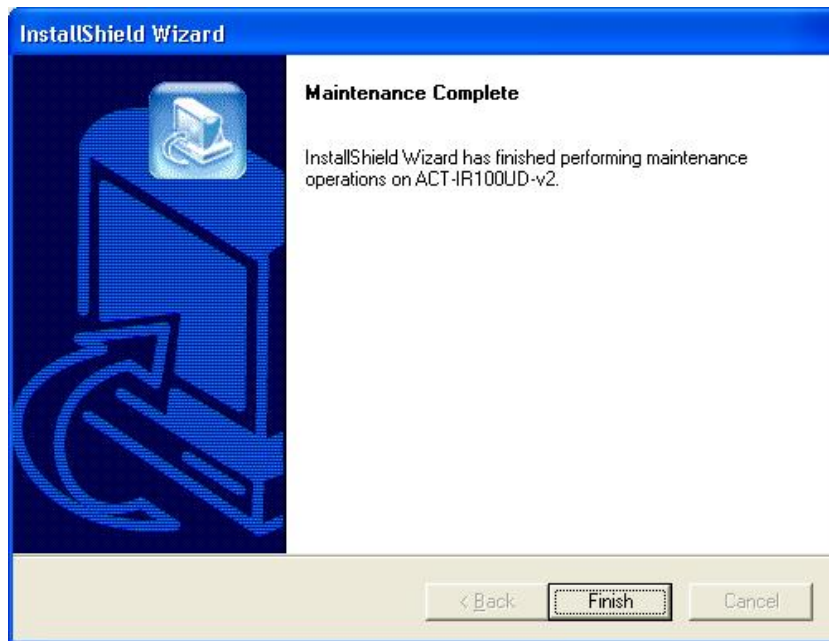
- Select “ACT-IR100UD-v2” and click “Change/Remove” to remove the Utility.
- A “Confirm File Deletion” window will pop up. Click “OK” to continue.



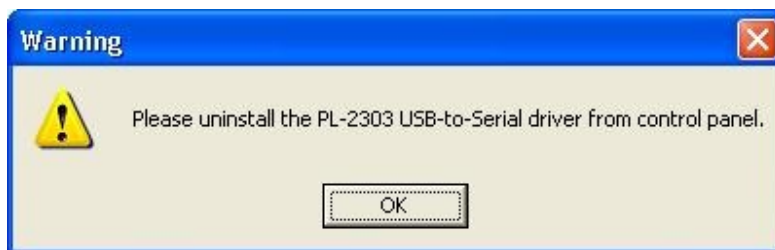
- Then you will see a “Setup Status” window as below.



- When you see below “**Maintenance Complete**” window, click “**Finish**” to complete the Uninstallation.

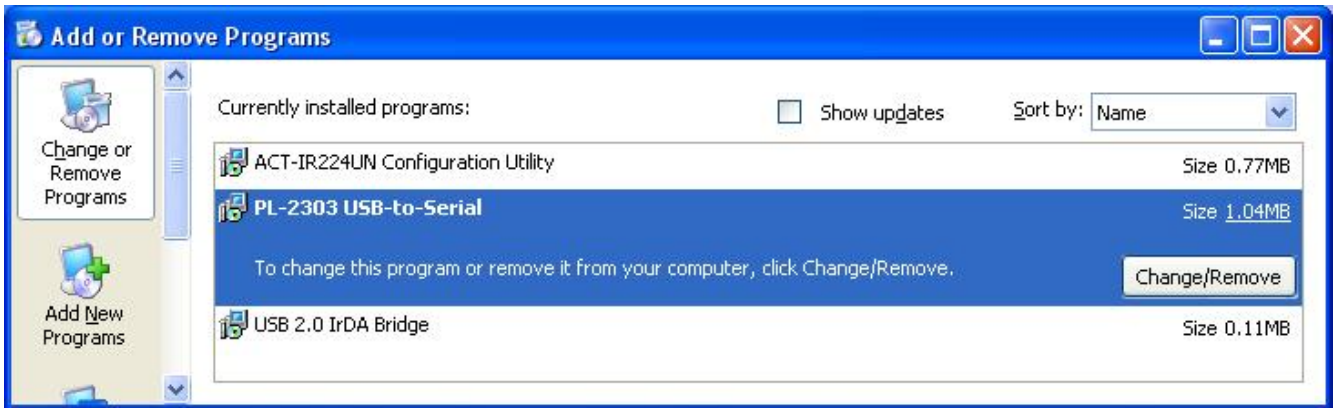


- Then you will see below “**Warning**” message reminding you to continue to “remove Driver manually”. Please refer to next section on “**Driver Uninstallation**”.

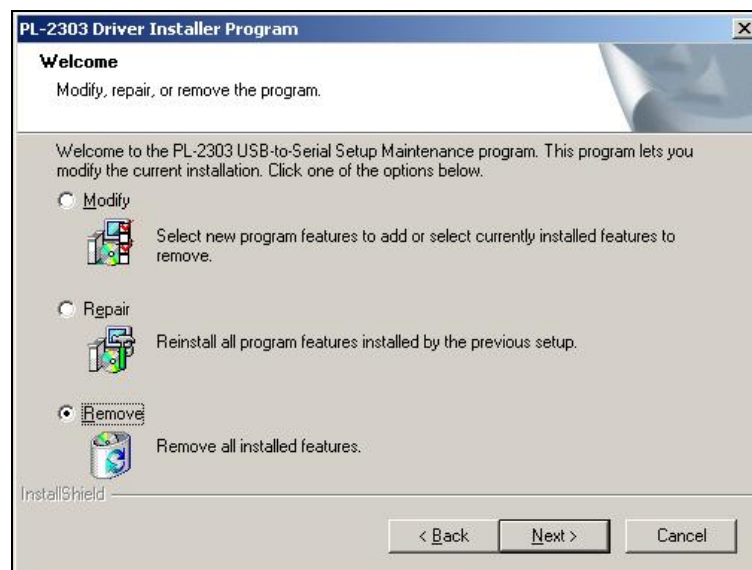


7.2 Driver Uninstallation

- Double click “**Add or Remove Program**” under “**Control Panel**”.



- Select “**PL-2303 USB-to-Serial**” and click “**Remove**”. It will pop up a **Welcome** window as below. Select “**Remove**”, then click “**Next>**”.



- It will ask you to confirm as below window. Click “**Yes**” to continue.



- After seeing “**Uninstall Complete**” window, click “**Finish**” to close the wizard.

8. HOW TO MAKE ACT-IR100UD-v2 WORK?

The behavior of ACT-IR100UD-v2 is according to the activities of several host signals before it works. The following description shows how to make it work.

8.1 When ACT-IR100UD-v2 Is In Primary / Secondary Mode

In this mode, when host pulls its **DTR output signal (connected to ACT-IR100UD-v2 DSR input signal) to LOW**, it triggers ACT-IR100UD-v2 to start send discover frame to search opposite IrDA[®] devices. Until ACT-IR100UD-v2 find opposite IrDA device, it will continue to send discovery command. Once ACT-IR100UD-v2 find opposite IrDA device, it try to establish IR link based on configured IrDA Primary protocol (ex. IrCOMM[™], IrLPT[™] or OBEX[™]). If the connection is established successfully then ACT-IR100UD-v2 pulls its **DTR output signal (connected to Host DSR input signal) to LOW as a notification of IrDA link establishment.** Then host device can send and receive data based on status of RTS/CTS hardware flow control signal. Since only one Primary and one Secondary device in IrDA protocols, even we configure ACT-IR100UD-v2 to “Primary / Secondary” option, it may enter Secondary mode when it accepts the discovery command from another opposite Primary device. Suppose two Primary devices have discovered each other, it will always be one playing as Primary and the other as Secondary after negotiation.

8.2 When ACT-IR100UD-v2 Is In Secondary Mode

In this mode, when host pulls its **DTR output signal (connected to ACT-IR100UD-v2 DSR input signal) to LOW**, it indicates to ACT-IR100UD-v2 that Host is ready to accept any inquiry from opposite Primary device. Once ACT-IR100UD-v2 finds IrDA link established, ACT-IR100UD-v2 pulls its **DTR output signal (connected to Host DSR input signal) to LOW as a notification of IrDA link establishment.** Then the host device can send and receive data based on status of RTS/CTS hardware flow control signal.

In both modes, if your host device can only provide 3 wires (TXD, RXD and Ground), then you can connect DSR and CTS signal of ACT-IR100UD-v2 to ground and keep DTR and RTS of ACT-IR100UD-v2 opened. Under this case, you should refer data and IrDA link control note for more information as specified in previous chapter.

9. OBEX PUT CLIENT AND PUT SERVER DESCRIPTION

9.1 OBEX PUT Client:

When ACT-IR100UD-v2 is configured as **Primary** and protocol selection as an **OBEX** then it will act as **OBEX PUT Client**. While working as OBEX PUT Client, ACT-IR100UD-v2 is supposed to send OBJECT (i.e. any Object file like .txt, .jpg, .pdf file) to opposite IrDA device which acts as OBEX PUT server. Hence, once IrDA connection is established (i.e. ACT-IR100UD-v2 pull its DTR (output) low and notify to Host that IrDA connection is established), Host device is required to send File name, File size and File Object data in the following **“Strict”** format to ACT-IR100UD-v2 to successfully send object to opposite OBEX PUT server.

a) File Name: Firstly, host sends NULL terminated file name of length less than **64 bytes**. ACT-IR100UD-v2 treats all incoming bytes as File name until it encounters NULL character. E.g., **ABC.txt** with Null Character (0x00) at the end of file name should be send as **0x41 0x42 0x43 0x2E 0x74 0x78 0x74 0x00**

b) File Size: Secondly, host continues to send fixed 4 bytes as file size. It is fixed 4 bytes length with MSB first and LSB last. E.g., total file size (i.e. **only payload excluding file name and file size bytes**) of **102,004 bytes = 0x18E74 hex** should be sent as **0x00 0x01 0x8E 0x74**

c) Payload: Thirdly, host continues to send real payload data until last byte of payload based on RTS/CTS flow control. RTS/CTS flow control is highly recommended for this application to avoid any data loss. In case of any data loss, Host is required to resend Object again.

9.2 OBEX PUT Server:

When ACT-IR100UD-v2 is configured as **Secondary** and protocol selection as **OBEX** then it will act as **OBEX PUT Server**. While working as OBEX PUT server, ACT-IR100UD-v2 is supposed to receive Object (i.e. any Object file like .txt, .jpg, .pdf file) from opposite IrDA device, which act as OBEX PUT client. Hence, once IrDA connection is established (i.e. ACT-IR100UD-v2 pull its DTR (output) low and notify Host that IrDA link is established) and ACT-IR100UD-v2 starts to deliver the Object to Host device with File name, File size and File Object data in the following **“Strict”** format as it just starts receiving the object from opposite OBEX PUT client.

a) File Name: Firstly, ACT-IR100UD-v2 sends NULL terminated file name. Maximum possible length of file name is less than **64 bytes**. Host should treat all incoming bytes as File name until it encounters NULL character. E.g., **ABC.txt** with Null Character (0x00) at the end of file name should be sent by ACT-IR100UD-v2 to Host as **0x41 0x42 0x43 0x2E 0x74 0x78 0x74 0x00**

b) File Size: Secondly, ACT-IR100UD-v2 continues to send fixed 4 bytes as file size. It is fixed 4 bytes length with MSB first and LSB last. E.g., total file size (i.e. **only payload excluding file name and file**

size bytes) of **102,004 bytes = 0x18E74 hex** should be sent by ACT-IR100UD-v2 to Host as **0x00 0x01 0x8E 0x74**

- c) **Payload:** Thirdly, ACT-IR100UD-v2 continues to send real payload data to host until last byte of payload based on RTS/CTS flow control. RTS/CTS flow control is highly recommended for this application to avoid any data loss. **Host can reduce file size on each byte or a bunch of bytes received from ACT-IR100UD-v2 to keep track of receiving payload.** At the end, Host should have received complete file payload before host starts to process object.

Please contact ACTiSYS [Tech Support \(tech-support@actisys.com\)](mailto:tech-support@actisys.com) for more detail of OBEX PUT Client/Server Host interface implementation support (if any).

10. COMMUNICATION PARAMETER SETTINGS



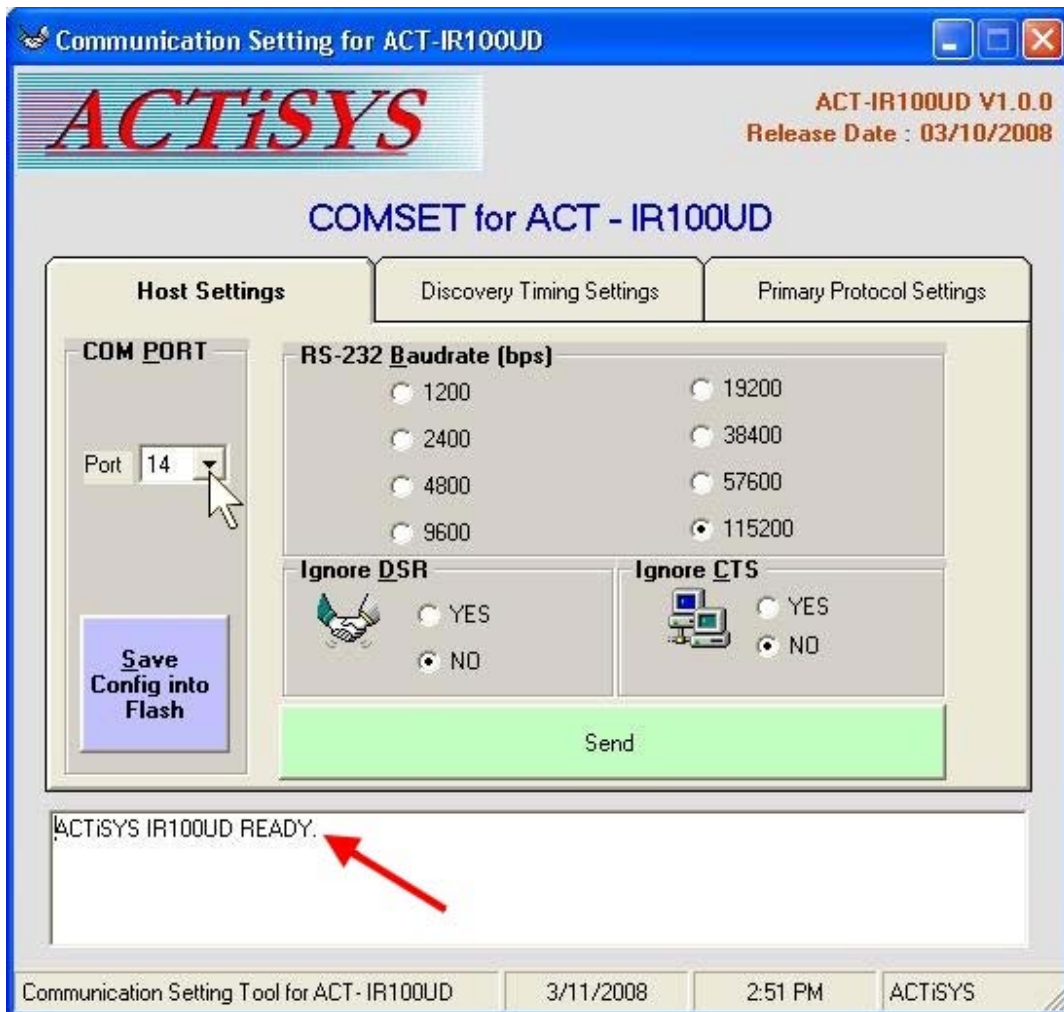
Above is a configuration utility to set parameters. You can open this utility from:

C:\Program Files\ACTiSYS\ACT-IR100UD\Driver\ ACT-IR100UD-v2-ConfigUtility.exe.

1. Plug in ACT-IR100UD-v2 dongle to USB port. **Make sure it is not actively link with any other IrDA device even no real data exchange between them. Else, this utility will show “IR100UD NOT DETECT” as it is already in normal operation mode.**
2. Check the correct COM port which it is connected (Refer to [section 6.2](#) “COM Port Check”).
3. Then select the COM port number at “Port” of “COM PORT” field as below figure. E.g., If your COM Port is 14, then you will see “ACTiSYS IR100UD READY” message as shown in below figure in the next section.

10.1 The First Tab: Host Settings

This is for baud rate selection and the hardware flow control.



10.2 Flow Control Note

Ignore CTS:

If the host has no RTS/CTS hardware flow control signals to connect to ACT-IR100UD-v2, only Tx, Rx and GND, then you have to configure this option as “Yes”. In this case, ACT-IR100UD-v2 will ignore CTS input signal (i.e. should be connected to host RTS output signal) and pass the incoming received data to the host no matter whether it is ready or not. That means, ACT-IR100UD-v2 ignores its CTS.

Similarly, ACT-IR100UD-v2 is buffer limited protocol processors. ACT-IR100UD-v2 **has 1KB Host side buffer and 0.5 KB IrDA side buffer**. If this option has been set to “YES”, then it may cause data loss due to no flow control! Because, in the absence of above RTS signal (i.e. should be connected to host CTS input signal), Host does not know when

to stop sending data to ACT-IR100UD-v2. Nevertheless, data loss can still be solved if user sends data segment by segment with each segment not exceeding its buffer size. Still, we normally recommend you to use hardware flow control and set “NO” on this option for better performance and throughput of data send/receive.

Ignore DSR: When user wanted to use ACT-IR100UD-v2 as Primary then Host DTR output signal acts as IrDA link control signal and it would trigger this dongle to start searching for opposite IrDA device. If the host has No DTR output signals and can not connect to DSR input signal, then this option should be set to “YES” (to Ignore DSR). Under this case, ACT-IR100UD-v2 ignores its DSR and as power up device, it starts sending discovery to search opposite IrDA device in case of primary role and Host cannot control ACT-IR100UD-v2 to stop searching opposite IrDA device and also Host can not disconnect IrDA link established by ACT-IR100UD-v2 unless disconnect power or opposite device disconnect the connection even host wanted to do so.

In other words, once you set option “Ignore DSR” to “Yes”, you will not be able to control it (i.e. Stop IrDA Link) at all until power off and reset to “NO”. So, normally we recommend you to use DTR/DSR link control signals and set “NO” on this option.

10.3 The Second Tab: Discovery Timing Settings

This is to set the Mode of ACT-IR100UD-v2, the discovery slot number and discovery time interval.



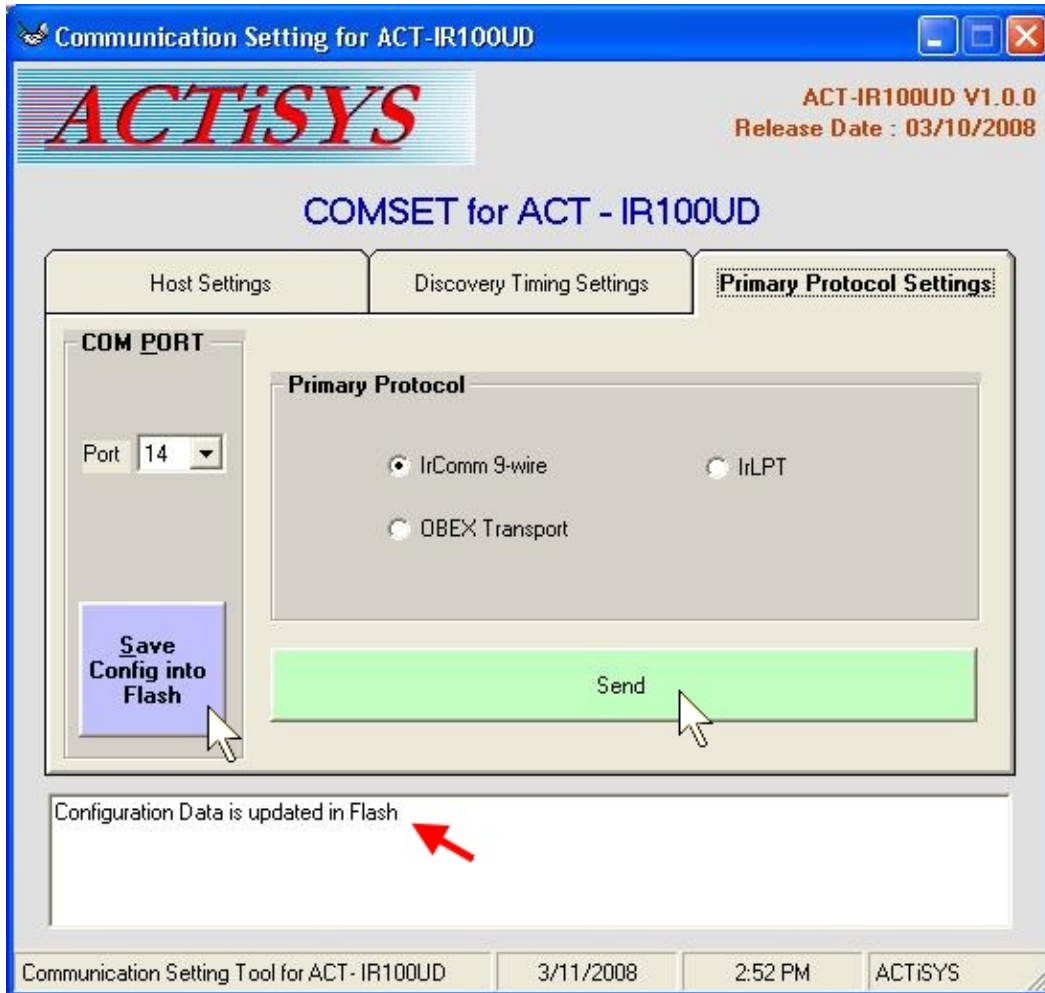
10.3.1 ACT-IR100UD-v2 supports both Primary and Secondary mode.

10.3.2 Discovery Slot can make discovery process faster or slower.

10.3.3 Discovery time should be 3 seconds in general. You can change it if you want the discovery process faster or slower.

10.4 The Third Tab: Primary Protocol Settings

This is to set the IrDA protocols when ACT-IR100UD-v2 is in Primary Mode as per application.



- **[Save Configuration Note]:** If you change any parameter, be sure to click “Send” button on the tab you have changed first. Then click “Save Config into Flash” so that all the changes can be saved successfully as above figure.

10.5 Factory Default Settings

ACT-IR100UD-v2 is configured for the following factory default settings.

Configuration Parameter	Default Setting Value	Customization Option
Host baud rate	115.2 Kbps	Can be changed through config setting
Data format	8N1	
Device role mode	Primary/Secondary	Can be changed through config setting
Primary protocol	IrCOMM 9 wire	Can be changed through config setting
Ignore DSR/CTS	No (Active)	Can be changed through config setting
Discovery time	3 seconds	Can be changed through config setting
Discovery slots	6	Can be changed through config setting

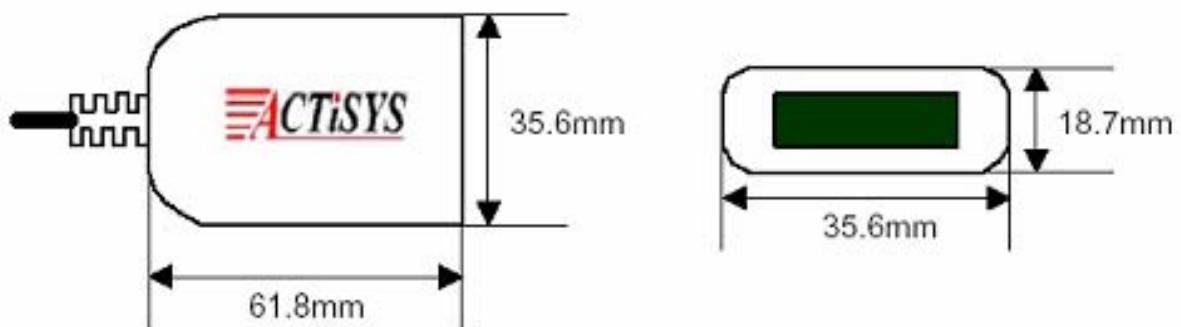
11. LED BEHAVIOR

Activities	LED Behavior	Remark
Power Turned On	LED stays ON	Device is plug into USB port
Set Dongle to Primary mode & DSR activated	LED blinks every 3 seconds	Discovering any other IrDA device.
Set Dongle to Secondary mode & DSR activated	LED stays ON	It is in stand by status.
Dongle is connected to another IrDA device	LED blinks rapidly.	The blinking speed is based on how fast both devices send and reply frames to each other.

12. CHARACTERISTICS AND SPECIFICATION

Parameter	MIN.	Typical	MAX.	Units
USB supply voltage		5.0	5.5	V
USB signal threshold level	4.8	5V	5.5	V
DC current (Ready mode)	17.00	17.30	19.50	mA
DC current (Active mode)	17.30	18.25	20.00	mA
Infrared Transmitting range	1	158	200	cm
Operating temperature range, TA	0		60	°C

13. ACT-IR100UD-v2 DONGLE DIMENSIONS



Cable Length: 120 cm.

14. WARRANTY INFORMATION

ACTISYS Corporation warrants the first end-user purchaser, for a period of 1 year from the date of purchase, that this wireless interface (The Product) will be free from defective workmanship and materials, and agrees that it will, at its option, either repair the defect or replace the defective Product or part thereof at no charge to the purchaser for parts or for labor.

This warranty does not apply to any appearance items of the Product, any consumable items such as paper, ink ribbon, or batteries supplied with the Product, or to any equipment or any hardware, software, firmware, or peripheral other than the Product. This warranty does not apply to any Product the exterior of which has been damaged or defected, which has been subjected to misuse, abnormal service or handling, or which has been altered or modified in design, construction or interfacing. Tampering with Label Voids Warranty.

In order to enforce the rights under this limited warranty, the purchaser should mail, ship or carry the Product, together with proof of purchase, to ACTISYS.

The limited warranty described above is in addition to whatever implied warranties may be granted to purchasers by law. To the extent permitted by applicable law, ALL IMPLIED WARRANTIES INCLUDE THE WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR USER ARE LIMITED TO A PERIOD OF 1 YEAR FROM THE DATE OF PURCHASE. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Neither the sales personnel of the seller nor any other person is authorized to make any warranties other than those described above, nor to extend the duration of any warranties beyond the time period described above on behalf of ACTISYS. Corporation.

The warranties described above shall be the sole and exclusive remedy available to the purchaser. Correction of defects, in the manner and for the period of time described above, shall constitute full satisfaction of all claims, whether based on contract, negligence, strict liability or otherwise. In no event shall ACTISYS Corporation be liable or in any way responsible, for any damages or defects in the Product which were caused by repair or attempted repairs performed by anyone other than ACTISYS technician. Nor shall ACTISYS Corporation be liable or in any way responsible for any incidental or consequential economic or property damage. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

FOR YOU RECORDS

For your assistance in reporting this product in case of loss or theft, please record below the model number and serial, which are located on the bottom of the case. Please retain this information.

Model Number:

Serial Number:

Date of Purchase:



15. CONTACT INFORMATION

GO WIRELESS WITH ACTiSYS IR



ACTiSYS
The Wireless Infra-red Expert

- ◆ IrDA Protocol Software For Portable Devices
- ◆ IrDA Test Software For Hardware Systems
- ◆ IrDA Printer And Computer Adapters

115.2K, 4M and 16M bps

IR100M/1000M

IR2000L

IR220L/L+

The advertisement graphic features a red background with the ACTiSYS logo at the top center. Below the logo, three bullet points list the company's offerings: IrDA Protocol Software For Portable Devices, IrDA Test Software For Hardware Systems, and IrDA Printer And Computer Adapters. The text '115.2K, 4M and 16M bps' is positioned above a central collage of images. This collage includes a computer monitor, a printer, a mobile phone, a laptop, and various IrDA adapters. Three specific adapter models are highlighted with labels: IR100M/1000M, IR2000L, and IR220L/L+. The overall design is dynamic, with red lines radiating from the central text area to the surrounding images.

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