



USB Interfaces

*For USB-Capable Adaptus Imaging Technology Imagers:
IMAGETEAM™ 4X00, 4X10, 4X80, 4600, 4800,
5X00, 5X10, 5X80, 5600, 2020, and 5800*



Application Note

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USB Interfaces for the Adaptus Imaging Family

Overview

This Application Note describes various aspects of the USB interface for the Adaptus Imaging Technology family of bar code readers. Before using this document, you should understand the basic concepts of USB and other interfaces.

Devices

This document applies to the following USB-capable Adaptus Imaging Technology family of devices:

IMAGETEAM™ 2020	IMAGETEAM™ 5000
IMAGETEAM™ 4000	IMAGETEAM™ 5010
IMAGETEAM™ 4010	IMAGETEAM™ 5080
IMAGETEAM™ 4080	IMAGETEAM™ 5100
IMAGETEAM™ 4100	IMAGETEAM™ 5110
IMAGETEAM™ 4110	IMAGETEAM™ 5180
IMAGETEAM™ 4180	IMAGETEAM™ 5300
IMAGETEAM™ 4300	IMAGETEAM™ 5310
IMAGETEAM™ 4310	IMAGETEAM™ 5380
IMAGETEAM™ 4380	IMAGETEAM™ 5600
IMAGETEAM™ 4600	IMAGETEAM™ 5800
IMAGETEAM™ 4800	

Supported USB Interfaces

Keyboard Emulation

Keyboard emulation is for PC and Mac layouts. The keyboard emulation (keyboard wedge) is the simplest interface to use. Your application program does not need to know anything about reading bar codes. You can configure the reader to send certain keystrokes before and after the bar code to move the cursor to the right place. The actual bar code is sent by simulating a human typist.

The price for this simplicity is speed (typical 10-15 mSec per character), and potential non-US keyboard layouts and character problems (it supports more than 70 countries and various code pages).

See [Keyboard Emulation](#) beginning on page 1-2 for complete keyboard emulation information.

COM Port Emulation

COM port emulation is based on CDC class. If your application used regular COM ports in the past, COM port emulation is a good choice. In most cases, no code change is required in your application, although existing applications may not support hot plugging the COM ports.

Note: The COM port emulation does not require any baud rate, parity, and number of data and stop bit parameters. The transfer speed is independent of these settings and is typically much faster than the original serial ports.

See [COM Port Emulation](#) beginning on page 1-3 for complete COM port emulation information.

HID POS Interface

The HID POS interface conforms to the USB standard document "HID Point of Sales Usage Tables" V1.02 (http://www.usb.org/developers/devclass_docs/pos1_02.pdf). HID POS is the official USB method for connecting a bar code reader. See [HID POS Interface](#) beginning on page 1-11 for complete HID POS interface information.

IBM SurePOS Interface

This selection connects to an IBM SurePOS cash register. See [IBM SurePos Interface](#) beginning on page 1-12 for complete IBM SurePOS interface information.

Keyboard Emulation

Scan one of the bar codes below to program the imager for your keyboard interface. Keyboard Emulation does not require a custom driver installation. However, a HID interface on Windows 98 does. See page 1-2 for further information.



Note: You must select the correct country code (default is U.S.A.). See the Country Codes section in your imager's User's Guide for further information.

Once the appropriate keyboard interface bar code is scanned, no further interface programming is required. However, if you wish to program other parameters for your imager, please refer to your User's Guide.

PC Keyboard Layout

This is the same layout used by the legacy ENHANCED PC keyboard (sometimes called AT keyboard). Some keyboard style settings of our ENHANCED PC keyboard wedge interface (Terminal ID = 03) are not required by the USB keyboard because we know the state of the Caps Lock all the time. The device therefore ignores these styles.

International support is the same as those found with the ENHANCED PC keyboard interface (more than 70 countries).

Apple MacIntosh Keyboard Layout

This is the same layout as used by the Apple ADB keyboards. International support is the same as those found with the Apple ADB keyboard (13 countries).

Composite Device

Keyboard emulation is implemented as part of a composite device. The other part is the HID POS interface (see [HID POS Interface](#) beginning on page 1-11). The device complies with the "Composite Device" model of USB, so the operating system generates two logical devices:

- HID keyboard
- HID bar code reader (HID POS)

Two different interfaces for one device offers more features than a single keyboard emulation. If you don't need the additional features of HID POS, just ignore that interface. All output leaves the device via the keyboard interface by default. HID POS allows application programs to control the trigger and disable bar code reading. HID POS is the only way to implement such a communication under Windows 2000 and Windows XP. These operating systems open all keyboards for exclusive access.

See [Trigger the Device](#) on page 1-12 for further information.

HID Driver for Windows 98

Windows 98 asks for a driver when the device is first plugged in. All HID interfaces use the standard driver that comes with the operating system. Accept all default values to install the driver.

Sometimes Windows will start the installation again after you have clicked **Finish**. Some Hand Held Products interfaces are for composite devices. Windows installs a separate HID driver for both parts of a composite device, as well as a virtual hub driver. Because of this, Windows may run through the installation several times.

HID Driver for Windows 2000 and Windows XP

In Windows 2000 and Windows XP, the installation occurs in the background.

COM Port Emulation

The COM Port interface emulates a regular serial RS-232 COM port. The device is implemented according to the USB CDC ACM (Communication Device Class Abstract Control Model) specification. (See *Universal Serial Bus Class Definitions for Communication Devices* at www.usb.org/developers/devclass_docs/usbcdc11.pdf for further information.) This specification is written for modems, but also supports regular serial ports.

For some operating systems you need to install a driver; others automatically use a common class driver. See [COM Port Emulation Driver](#) on page 1-4 for further information.

Scan the following bar code to program the imager for a COM port interface.



Hardware and Software Flow Control

USB has built in flow control, so there is no need to simulate any flow control. The (Windows) driver ignores any flow control setting.

Hardware Flow Control

If you turn on RTS/CTS mode in the device, it raises its RTS output before sending any data. The device also monitors its CTS input before sending a block of data (a scanned bar code). There is no check for this “line” on a character-by-character basis.

Note: An asterisk () denotes the default setting.*



Software Flow Control

The device supports two modes of software flow control:

Xon/Xoff: Not supported by this interface

ACK/NAK: Works as expected (including a resend if you respond with NAK)

Note: An asterisk () denotes the default setting.*



Baud Rate, Data Bits, Stop Bits, and Parity

Baud rate, number of data and stop bits, and parity are important settings for any RS-232 connection, however they are unnecessary with this interface. USB has its own transfer parameters and is much safer than a regular RS-232 connection. There is no need for error detection on the application level. If your application sets these parameters, they are ignored.

Response Timing

USB transfers data in blocks, using 1 millisecond frames. This has some influence on turnaround time and minimum character transfer time. If just a single character is sent it might take up to a few milliseconds to arrive - the same amount of time it takes to send several kilobytes.

Transfer Speed

COM port emulation is much faster than a regular COM port. The speed varies depending on operating system, drivers, and other devices connected to the same bus. On a Macintosh you can expect about 640 Kbit/sec. Windows systems can reach more than 7 Mbit/sec with custom serial COM port emulation drivers. This type of driver is available at www.HHP.com.

COM Port Naming

Windows operating systems use COMxxx names to access the serial interfaces, with xxx representing a range of 1 to 255. Once the driver is installed (see [COM Port Emulation Driver](#) on page 1-4), the OS uses the next available COMxxx name and binds it to the new device. There are two different methods that can be used to assign a COMxxx name to a device. Scanning one of the bar codes below has the following effect:

Serial Number ON	Serial Number OFF
This device always has the same name.	Name changes if USB port is changed.
Replacing a broken device requires a manual change of the COM Port name.	Name changes if any USB hub is changed.
Every new device uses a new COM port name.	Name changes if USB host controller gets replaced.

Using the serial number to bind a COMxxx name to a device is best for most users. If this method is *not* used, the OS uses the USB port tree to choose the COMxxx name, which is affected by the order in which each device is plugged in.

If you are a distributor and connect a different device to your PC every hour, you probably want to use the USB Port Number Tree method (Serial Number OFF). To achieve this, the PC must either ignore the serial number, or the device must not publish it. On Windows 2000 and XP you have both options. The firmware has a menu setting that hides the serial number, so your PC uses the USB Port Number Tree method.

See [USB Serial Number](#) beginning on page 1-13 for more details about ignoring the serial number.

Note: An asterisk () denotes the default setting.*



COM Port Emulation Driver

Hand Held Products provides a custom serial COM port emulation USB driver for use with its Adaptus Imaging Technology products. This driver allows data transfer speeds of up to 7 meg-bits per second. The COM port emulation driver is required for Windows 2000 (see below), Windows XP (see [page 1-7](#)), and Windows 98 (see [page 1-9](#)).

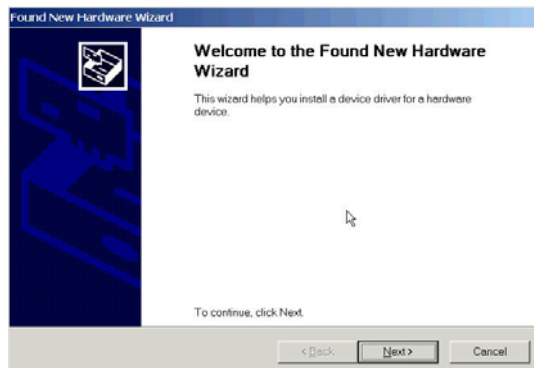
Windows 2000

Hand Held Products provides a specific CDC driver for Adaptus Imaging Technology devices. When Windows asks for a driver, locate the file hhpcdc.inf. The rest of the process is automated. The operating system uses the next available COM port number.

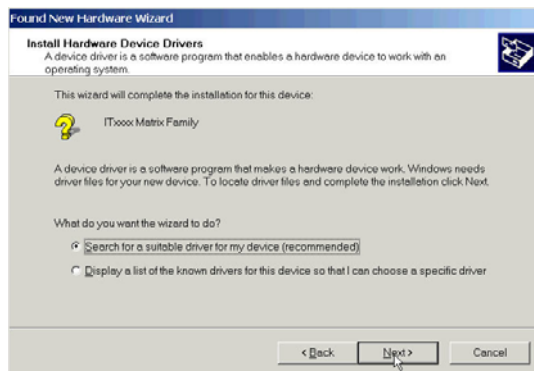
Note: The COM port number is bound to the serial number of the device. Therefore, you can plug the device into any USB port without changing the COM port number.

Note: COMxxx has a maximum of 256. Each time you try a device, your port number increases. Some programs cannot access higher numbered ports. See [FAQs](#) beginning on page 2-1 for further information.

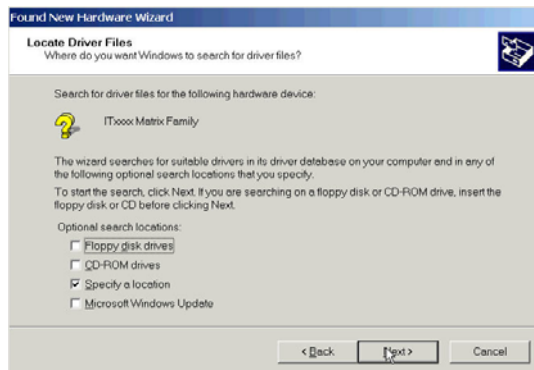
When you plug in the device, the following screens appear:



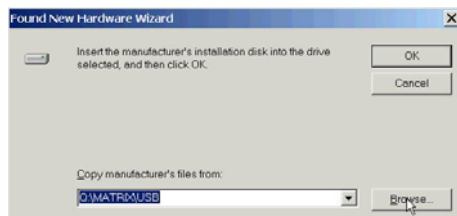
Click on **Next**.



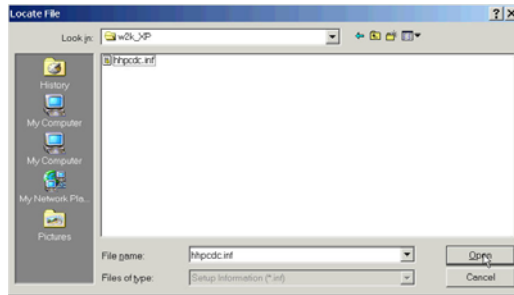
Click on **Search for a suitable driver ...** and click **Next**.



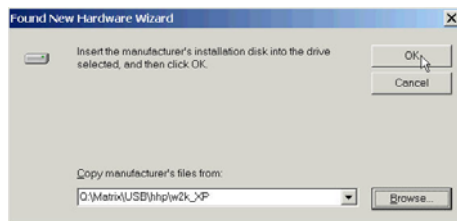
Click on **Specify a location** and click **Next**.



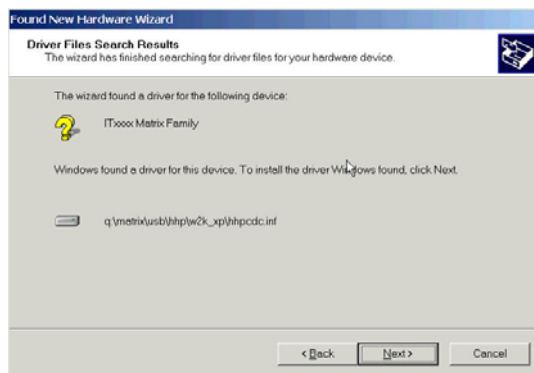
Click on **Browse** and navigate to the directory where the hhpdc.inf is stored.



Click on **Open**.



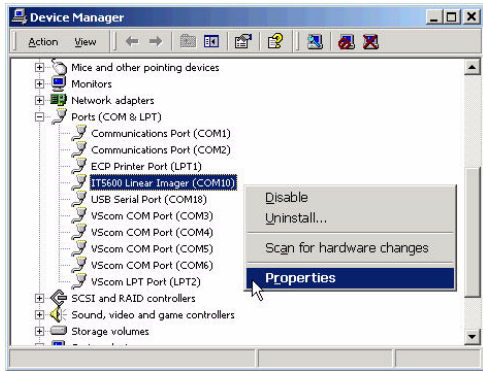
Click on **OK**.



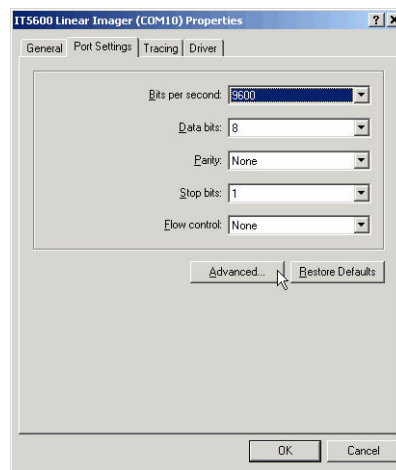
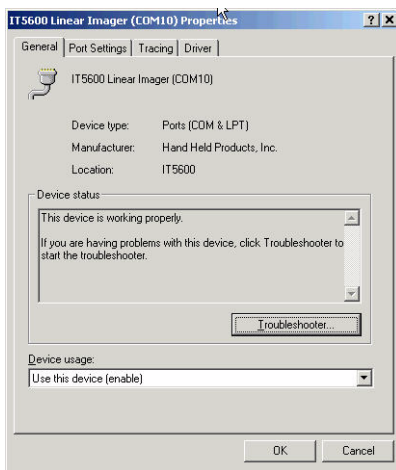
Click on **Next**.



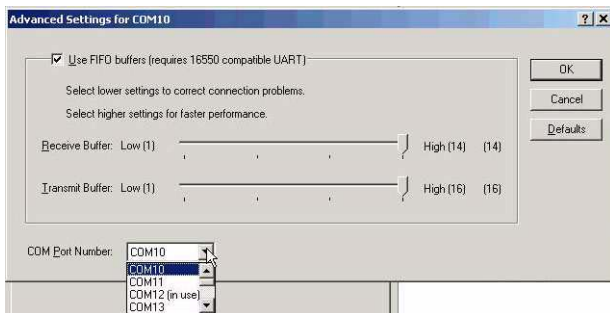
Click on **Finish**.



Open the Device Manager to make sure the device is under the **Ports** section. Select the device and right click to view the properties of the device.



To change the port number, go to **Port Settings** and click on **Advanced**.



Select the port number you wish to use.

Note: The FIFO settings are not needed and are therefore ignored.

Windows XP

This driver installation is similar to Windows 2000. When you plug in the device, the following screens appear:



Select **Install from a list ...** and click on **Next**.



Click on **Include this location in the search** and enter the path where hhpdc.inf is stored. You may also use the **Browse** button to navigate to the file location. Click on **Next**.



If this message appears, click on **Continue Anyway**.



Click on **Finish**.

Windows 98, 98SE, ME

When you plug in the device, the following screens appear:



Click on **Next**.



Click on **Search for the best driver ...** and click **Next**.



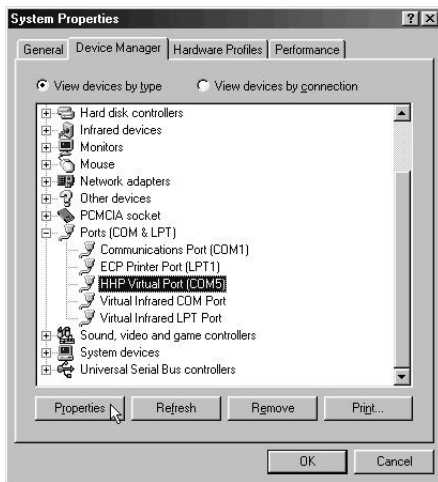
Click on **Specify a location** and enter the path where hhpdc.inf is stored. You may also use the **Browse** button to navigate to the file location. Click on **Next**.



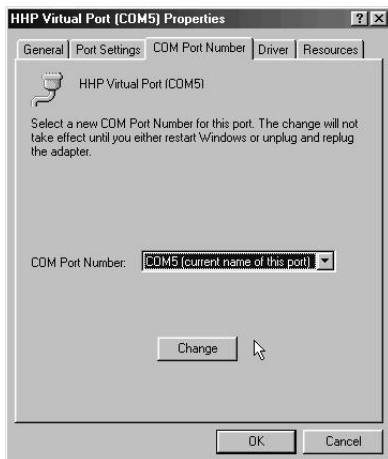
Click on **Next**.



Click on **Finish**.



To change the port number, open the device manager, select the device, and click on **Properties**.



Select the port number you wish to use.

Windows 95, Windows NT, and Older

These operating systems do not support USB or the support is not reliable. Upgrade to Windows 2000 or Windows XP.

Apple Mac OS9 and OS X

Mac OS9 and OS X do not need a driver installation. These operating systems recognize the device automatically as a USB CDC ACM device.

HID POS Interface

Note: HID POS does not require a custom driver installation. However, a HID interface on Windows 98 does. See page 1-2 for further information.

The HID POS interface is recommended for new applications. It can send up to 56 characters in a single USB report and is much faster than keyboard emulation. It conforms to the USB standard documents "Device Class Definition for Human Interface Devices (HID)" V1.11 (http://www.usb.org/developers/devclass_docs/HID1_11.pdf), and "HID Point of Sales Usage Tables" V1.02 (http://www.usb.org/developers/devclass_docs/pos1_02.pdf).

Features:

- HID based, no custom driver required
- Much faster than keyboard emulation and traditional RS-232
- Symbology identifiers (AIM and HHP) are always contained in the input report, which uses USB direction names: input (to the PC) and output (to the device)

Scan the following bar code to program the imager for a HID POS interface.



Access the Device in Your Program

CreateFile opens the device as a HID, then ReadFile delivers the scanned data to the application. Use WriteFile to send data to the device.

For complete information on USB and HID interfaces, please see www.USB.com or refer to one of the following manuals:

USB Complete, by Jan Axelson, ISBN: 096508919-3-1(www.lvr.com)

USB Design By Example, by John Hyde, ISBN: 0-471-37048-7(www.wiley.com/compbooks).

Getting Scanned Data

After scanning and decoding a bar code, the device sends the following input report:

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 2							
1	Length of the bar code (field "Decoded Data")							
2	AIM Symbology Identifier 0 (always 'J')							
3	AIM Symbology Identifier 1							
4	AIM Symbology Identifier 2							
5-60	Decoded Data (1-56)							
61	Hand Held Products Symbology Identifier							
62	Reserved							
63	-	-	-	-	-	-	-	Decode Data Continued

Trigger the Device

You can trigger and untrigger the device with a HID command (out report). The report has the following format:

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 4							
1	-	Sound Good Read Beep	Sound Error Beep	-	-	Initiate bar code read (Trigger)	Prevent read of bar code (Untrigger)	-

Examples:

Two bytes **04h,04h** triggers the device, **04h,02h** untriggers it.

04h, 20h initiates an error beep (3 beeps).

Send Serial Data to the Device

This output report is used to send raw serial data to the device, like an RS-232 interface. All menu commands can be used.

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 253							
1	Length of the data							
2	Output data (1-62)							

Redirect Output

This feature report is used only when the HID POS interface is part of a composite device, such as with keyboard emulation.

A pure HID POS interface does not need this command, but it is a good idea to add it into the initialization sequence and ignore a possible error. That way your software can work automatically with both the pure HID POS, and the composite keyboard/HID POS.

The HID POS is interface 1 in the composite model, so use 1 as the interface number.

	Bit							
Byte	7	6	5	4	3	2	1	0
0	Report ID = 254							
1	-	-	-	-	USB interface number			

IBM SurePos Interface

Note: IBM SurePos does not require a custom driver installation.

IBM SurePos communicates via USB with an interface similar to that used in the 4680 cash register. It can run the 4690 OS, Windows 98, Windows 2000, or Windows XP.

To program this interface, just plug in the device and scan one of the bar codes below. In some cases, you must reboot the cash register.

Scan one of the following bar codes to program the imager for a SurePos interface.



Make sure the cash register is set up with the appropriate configuration. By default, the scanner ignores any settings commands from the cash register. Once the cash register is up and running, you can enable the settings commands. Scan one of the following bar codes to program the imager to ignore or use the cash register's configuration commands.



Hand Held Device is the recommended setting for Adaptus Imaging Technology devices. However, if two Adaptus Imaging Technology devices are connected, set one of them as the **Hand Held Device**, and the other as a **Tabletop Device Emulation**. Some older versions of 4690OS require UPC/EAN data to be sent in BCD rather than ASCII. (Newer versions accept both formats.) Scan one of the following bar codes to program the imager to send UPC/EAN data as either BCD or ASCII.



USB Serial Number

Note: If you scanned the Serial Number OFF bar code (page 1-4), none of the following USB Serial Number programming is required.

Hand Held Products writes a unique serial number string to all of its USB devices. No matter which USB port the device is plugged into, the operating system uses the serial number to identify the device. See [COM Port Naming](#), page 1-4, for further information.

When the Serial Number Should be Ignored

Whenever a USB device is connected, an entry is made in the computer's registry. If there is *no* serial number associated with the device, the entry is built with the USB tree in the name. All similar devices share that entry if they are plugged into the same USB port.

When the device has a serial number, the entry is built with the serial number in the name. This can result in many entries; one for each individual device. Usually this is not a problem, but if you plug many devices into your PC, the registry can fill quickly. In this case, you may wish to ignore the serial numbers of the devices. You can instead assign a COM port number to each USB port. Then any device plugged into that USB port assumes the assigned COM port number.

Ignoring the Serial Number in Windows 2000/XP

If you want to turn off and on serial number reporting for all Adaptus Imaging Technology products, scan one of the following bar codes.



However, you may want to turn off and on serial number reporting just for particular product IDs. If you wish to do this, use the following directions for changing your computer registry.



Only change your computer registry if you know exactly what you are doing. If you delete or change important entries, your computer may stop working properly, resulting in loss of data.

In Windows 2000 and XP¹, you can ignore the serial number for a certain device. The registry key is:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\UsbFlags]
```

To ignore the serial number of a device, create an entry under the above ...\\UsbFlags key. The name must start with "IgnoreHWSerNum" followed by the vendor and product ID of the device. The value for the entry is 1 for disable. For example:

```
IgnoreHWSerNum0536016A= 1
```

The Hand Held Products vendor ID (VID) is 0536 (hex). The product ID (PID) depends on the interface you choose. See [VID and PID Table](#) below for the PID of a given device. You can also use the MS tool, UsbView.exe, to find this information.

The entry below appears after a fresh installation, and enables the serial numbers globally. We recommend leaving this setting unchanged.

```
GlobalDisableSerNumGen = 1
```

Details for COM Port Emulation

If you have Administrator rights, you can create a text file that ignores serial numbers for the COM port emulation interface of Adaptus Imaging Technology device(s). Below is text that can be copied and saved as a file with a .reg extension (for example, IgnoreSerialNumbersForComPortEmulation.reg). This *must* be saved as a plain text (ASCII) file. Double click on the .reg file to add this information to the registry.

```
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\UsbFlags]
"IgnoreHWSerNum0536016a"=hex:01
"IgnoreHWSerNum0536018a"=hex:01
"IgnoreHWSerNum053601ca"=hex:01
"IgnoreHWSerNum053601ea"=hex:01
"IgnoreHWSerNum0536022a"=hex:01
"IgnoreHWSerNum0536020a"=hex:01
"IgnoreHWSerNum0536026a"=hex:01-
```

1. These registry settings do not work in Windows 9X. See [Registry Entries](#) on page 1-16 for further information.

VID and PID Table

USB uses two numbers to identify a device and find the correct drivers. The first is the VID (Vendor ID), assigned by the USB Implementers Forum. The Hand Held Products vendor ID (VID) is 0536 (hex). The second is the PID (Product ID). A range of PIDs is used for each Hand Held Products product sub family, so each PID contains a base number and an interface type (keyboard, COM port, etc.).

For example, the IT5600 has the base number 0160; the COM port emulation with the CDC ACM class has the number 0A. The resulting PID is 016A (VID and PID are hex).

Device	Interface Type	PID (hex)	PID (dec)
IT5600	Base	160	352
	HID Keyboard (PC)	161	353
	HID Keyboard (Mac)	162	354
	SurePos (HH)	163	355
	SurePos (TT)	164	356
	HIDPOS	167	359
	CDC ACM (COM port emulation)	16A	362
IT5800	Base	180	384
	HID Keyboard (PC)	181	385
	HID Keyboard (Mac)	182	386
	SurePos (HH)	183	387
	SurePos (TT)	184	388
	HIDPOS	187	391
	CDC ACM (COM port emulation)	18A	394
IT4800	Base	1C0	448
	HID Keyboard (PC)	1C1	449
	HID Keyboard (Mac)	1C2	450
	SurePos (HH)	1C3	451
	SurePos (TT)	1C4	452
	HIDPOS	1C7	455
	CDC ACM (COM port emulation)	1CA	458
IT4X10	Base	1E0	480
	HID Keyboard (PC)	1E1	481
	HID Keyboard (Mac)	1E2	482
	SurePos (HH)	1E3	483
	SurePos (TT)	1E4	484
	HIDPOS	1E7	487
	CDC ACM (COM port emulation)	1EA	490
IT4X80	Base	220	544
	HID Keyboard (PC)	221	545

Device	Interface Type	PID (hex)	PID (dec)
	HID Keyboard (Mac)	222	546
	SurePos (HH)	223	547
	SurePos (TT)	224	548
	HIDPOS	227	551
	CDC ACM (COM port emulation)	22A	554
IT4600	Base	200	512
	HID Keyboard (PC)	201	513
	HID Keyboard (Mac)	202	514
	SurePos (HH)	203	515
	SurePos (TT)	204	515
	HIDPOS	207	519
	CDC ACM (COM port emulation)	20A	522
IT2020	Base	260	608
	HID Keyboard (PC)	261	609
	HID Keyboard (Mac)	262	610
	SurePos (HH)	263	611
	SurePos (TT)	264	612
	HIDPOS	267	615
	CDC ACM (COM port emulation)	26A	618

Registry Entries



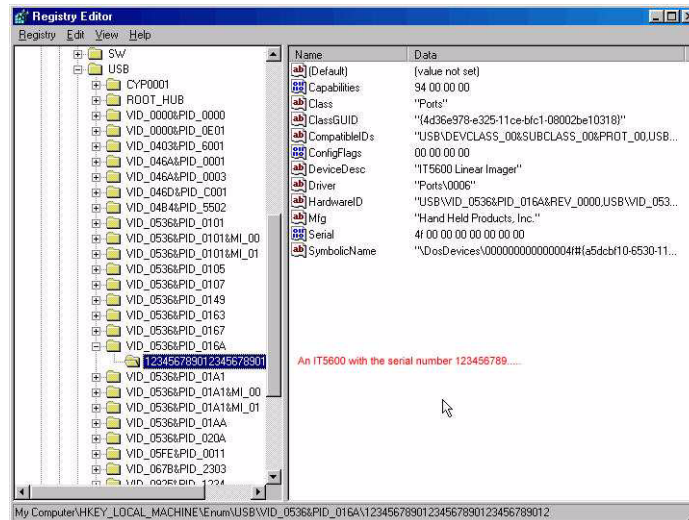
This section contains information about modifying your computer's registry. Before you modify the registry, be sure to back it up first, and make sure you understand how to restore the registry if a problem occurs.

Windows 9x

Entries for all USB devices are under **HKEY_LOCAL_MACHINE**. Inside this key, look for **Enum/USB**.

Every time you plug in a USB device, the OS updates the Enum/USB entries in order to keep track of all the devices it already knows. If a device is not yet listed, the OS asks you for a driver. Some devices are known by the device class (HID) and the OS installs the correct class driver automatically. You can delete entries for a given device under Enum/USB, but it is not recommended because it is possible for COMxx names to become locked. It is better to use the Device Manager to remove a device from the registry.

For example, below is the registry entry for an IT5600 that has a PID 016A. The device type entry is Vid_0536&Pid_016A, which contains all real devices. Inside this key you can see an entry for the device with the serial number 123456789...



Windows 2000/XP

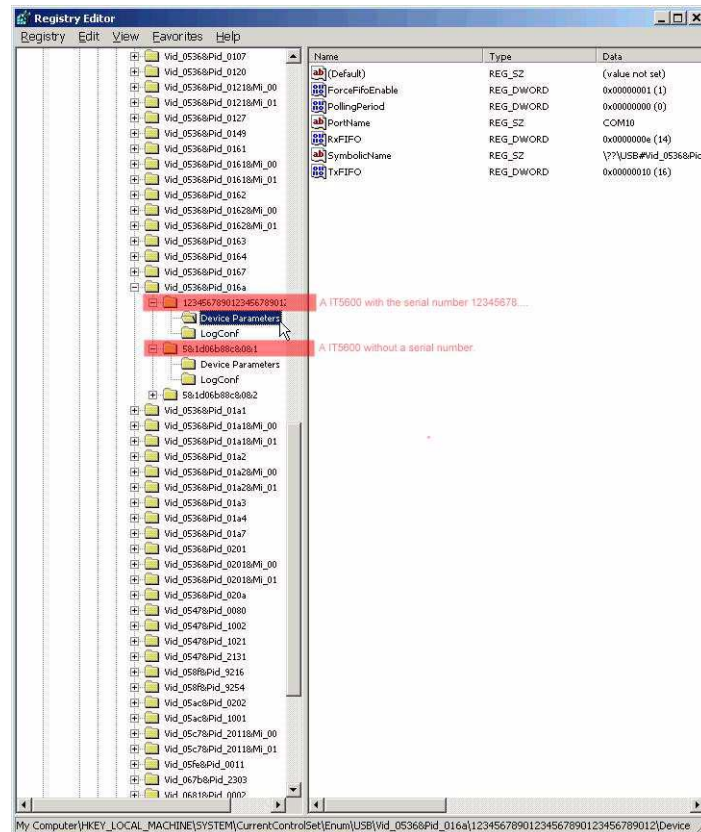


This section contains information about modifying your computer's registry. Before you modify the registry, be sure to back it up first, and make sure you understand how to restore the registry if a problem occurs.

Entries for all USB devices are under the key **HKEY_LOCAL_MACHINE**. Inside this key, look for **Enum/USB**. Entries for all USB devices are under: **SYSTEM/CurrentControlSet/Enum/USB**.

Note: In Windows 2000 you might see a USB2 entry. It is used for real USB2 devices only. In Windows XP, there is no longer a separate USB2 entry.

For example, below is the registry entry for an IT5600 that has a PID 016A. The device type entry is Vid_0536&Pid_016A, which contains all real devices. Inside this key you can see an entry for the device with the serial number 123456789...



There are also two more entries of the same device type, but they do not have serial numbers. The OS creates a serial number out of the USB tree in such cases. From this information you cannot tell if the same device is plugged into two different USB ports, or if there are two devices connected to this PC. These two other devices are anonymous.

Enabling Full Write Access in Windows 2000



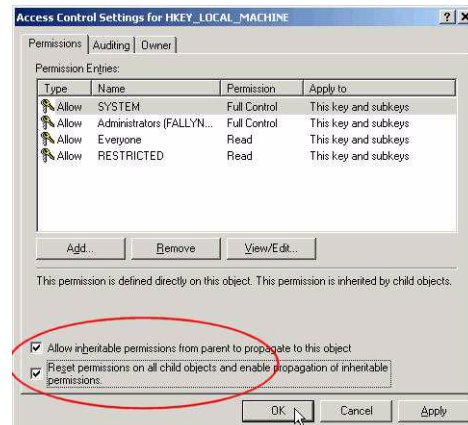
This section contains information about modifying your computer's registry. Before you modify the registry, be sure to back it up first, and make sure you understand how to restore the registry if a problem occurs.

In Windows 2000 and Windows XP there is limited access to some registry hives from inside the regedit.exe., even for administrator accounts. This is a safeguard to prevent you from destroying your operating system. The following steps allow you access to these registry hives.

1. Run the program **regedt32.exe** and select the view for **HKEY_LOCAL_MACHINE**.

2. Ensure the top most hive (**HKEY_LOCAL_MACHINE**) is selected, then open the **Security - Permissions** menu.
3. Click on **Advanced**.

4. Check both check boxes and click **OK**. (This may take some time.)



5. Write access is enabled.

Enabling Full Write Access in Windows XP

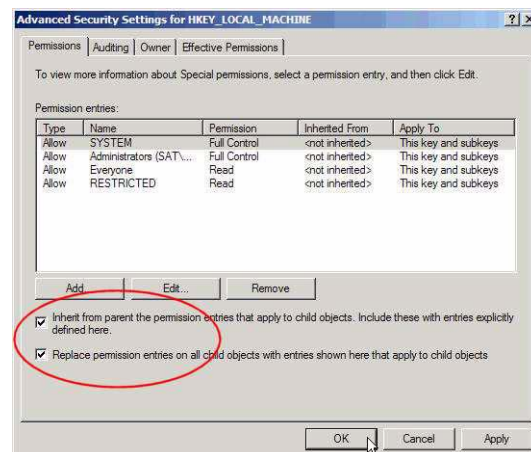


This section contains information about modifying your computer's registry. Before you modify the registry, be sure to back it up first, and make sure you understand how to restore the registry if a problem occurs.

In Windows 2000 and Windows XP there is limited access to some registry hives from inside the regedit.exe., even for administrator accounts. This is a safeguard to prevent you from destroying your operating system. The following steps allow you access to these registry hives. In Windows XP you can use the normal regedit.exe for this task.

1. Run the program **regedt32.exe** and select the view for **HKEY_LOCAL_MACHINE**.
2. Ensure the top most hive (**HKEY_LOCAL_MACHINE**) is selected, then open the **Edit - Permissions** menu.
3. Click on **Advanced**.

4. Check both check boxes and click **OK**. (This may take some time.)



5. Write access is enabled.



Q: Can I plug the Adaptus Imaging Technology device into any USB port?

A: Adaptus Imaging Technology devices are high powered, therefore you can't use the ports of bus-powered HUBs. All other ports are fine.

Note: Usually a hub comes with a power supply, and switches automatically to a self-powered hub when the power supply is connected.

Q: Can I extend the length of the USB cable?

A: No, USB is a high speed system and the cable length is critical. The maximum length cable is 16.5 feet (5 meters).

Q: Can I use more than one Adaptus Imaging Technology device in one system?

A: Yes, several scanners are no problem for PCs and Macs. Each has its own unique serial number, so you can distinguish the devices. IBM SurePOS cash registers only accept a single scanner per type. There are two types: hand held and tabletop.

Q: Can I configure Adaptus Imaging Technology devices via USB?

A: This depends on the interface you selected. COM port emulation can be used to send data to the Adaptus Imaging Technology device, then Visual Menu can be used to configure the scanner. The HID POS interface can also be used from your application.

Q: Can I upgrade the firmware via the USB?

A: Yes.

Q: I can't send any HID report to the device with WriteFile.

A: Output reports must be the maximum size for Windows' HID. Every output report must be padded up to that maximum size. The structure `HIDP_CAPS` contains the member `OutputReportByteLength`, which is used to pad your report buffer.

Note: Only the true size of a report goes through the wire.

Newer SDKs for Windows 2000/XP contain a function called `WriteReport`, but it is not supported by the Windows 9x family.

Q: I used a special filter driver with Windows 98 to get details about the keyboard (bar code reader). But it does not work with Windows 2000 (XP).

A: This is a feature of these operating systems. For security reasons, they open all keyboards and pointing devices for exclusive access.

Q: What is the difference between the HID POS with the keyboard interface and the pure HID POS?

A: The USB interface index is different (1 for the HID POS with the keyboard, 0 for pure HID POS). All output is sent to the keyboard by default, however, you can redirect the output to the HID POS. Pure HID POS can send 64 bytes every 4 mSec. The composite version only sends 64 bytes every 8 mSec. This is a compromise between speed and overhead on the USB. If this was changed to 64 bytes every mSec, it would result in more load on the USB.

Q: Why is there another HID POS interface with the keyboard?

A: The main purpose for this interface is to allow the device to be triggered, while still using keyboard emulation for outputting data. This interface can also be used for a firmware upgrade.

Q: My application program can't access COM ports above 4.

A: You can try to change the COM ports so you get the Adaptus Imaging Technology devices under this limit. You can change the COM port assignment with the device manager. Go to port, then right click on the port you want to change, select properties, and click on advanced.

Q: My application program does not show COM ports above 15.

A: It uses a Windows API function (`EnumPorts`) that has this limitation.

Q: My device is not recognized by the PC on a USB2 port, or I get blue screens, or Windows crashes when I unplug the device.

A: This is a PC driver issue. Some older drivers for the NEC chip have a bug, possibly rev 2.01 of `ousbehci.sys` and `ousb2hub.sys`. Upgrade to a newer revision, or use the Microsoft driver for USB2.



Technical Assistance

If you need assistance installing or troubleshooting your imager, please call your Distributor or the nearest Hand Held Products technical support office:

North America/Canada:

Telephone: (800) 782-4263, option 4 (8 a.m. to 6 p.m. EST)

Fax number: (315) 685-4960

E-mail: natechsupport@handheld.com

Europe, Middle East, and Africa:

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European Ofc: Int+31 (0) 40 29 01 600

U.K. Ofc: Int+44 1925 240055

E-mail: eutechsupport@handheld.com

Asia Pacific:

Telephone: Int+852-3188-3485 or 2511-3050

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E-mail: latechsupport@handheld.com

Online Technical Assistance

You can also access technical assistance online at www.handheld.com.





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