Leitor Honeywell 3820i

O 3820i é o primeiro leitor de sua classe, desenvolvido com a inovadora tecnologia Linear Imager, focado para o uso industrial. Esta tecnologia permite que você leia código de barras em escalas de até 208 cm.

HandHeld PRODUCTS

USB Interfaces

For USB-Capable Adaptus Imaging Technology Imagers: 2020-5B, 3800i, 3800r, 4600g, 4800i, 5X00, and 5X80

Adaptus imaging technology 5.0

Application Note

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Web Address: www.handheld.com

Table of Contents

1 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:

2020-5B	5080
3800i	5100
3800r	5180
4600g	5300
4800i	5380
5000	

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 1-2 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.

PAP124.

USB Keyboard (PC)

PAP125.

USB Keyboard (Mac)

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.

TERMID130.

USB ComPort Emulation

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.

USBCTS1.

CTS/RTS Emulation ON

USBCTS0.

CTS/RTS Emulation OFF *

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.

USBACK1.

ACK/NAK Mode ON

USBACK0.

ACK/NAK Mode OFF *

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 1millisecond 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.handheld.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.

USBSER1.

Serial Number ON *

USBSER0.

Serial Number OFF

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

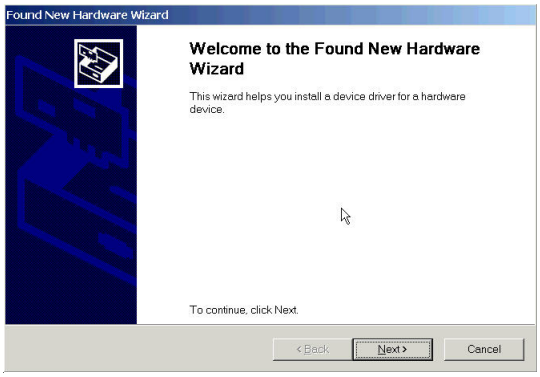
Hand Held Products provides a specific CDC driver for Adaptus Imaging Technology devices. When Windows asks for a driver, locate the file

cdc.inf. The rest of the process is automated. The operating system uses the next available COM port number.

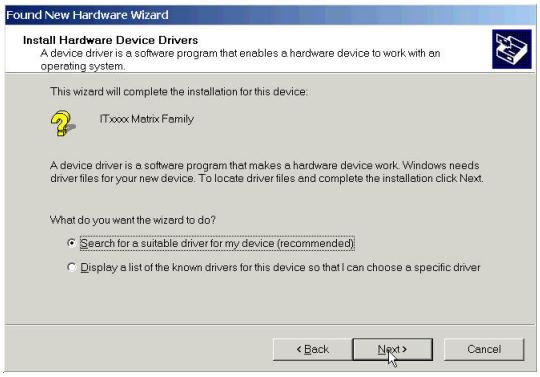
Note: The COM port number is bound to the serial number of the device. Therefore, you can plug the device into any USB port without changing the COM port number.

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.

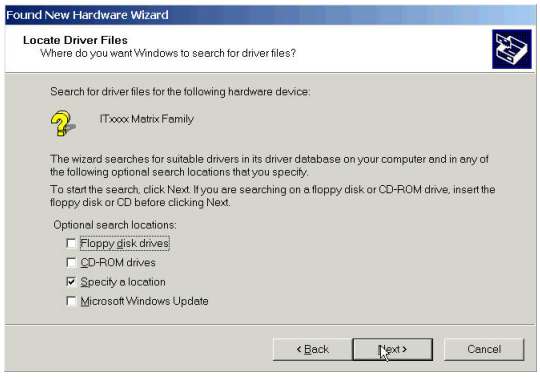
When you plug in the device, the following screens appear:



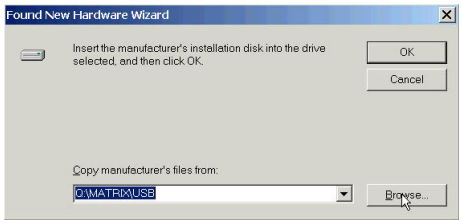
Click on **Next**.



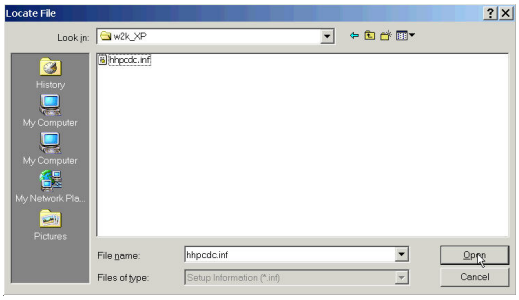
Click on **Search for a suitable driver ...** and click **Next**.



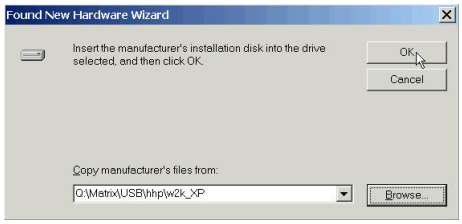
Click on **Specify a location** and click **Next**.



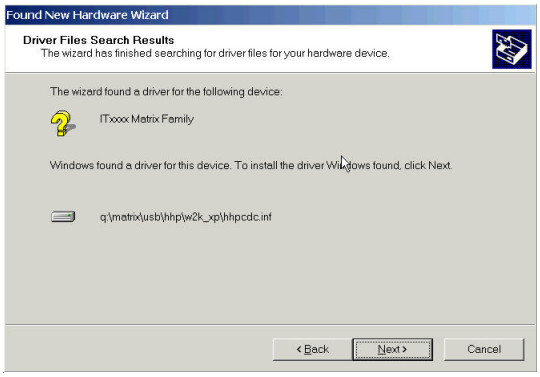
Click on **Browse** and navigate to the directory where the hhpcdc.inf is stored.



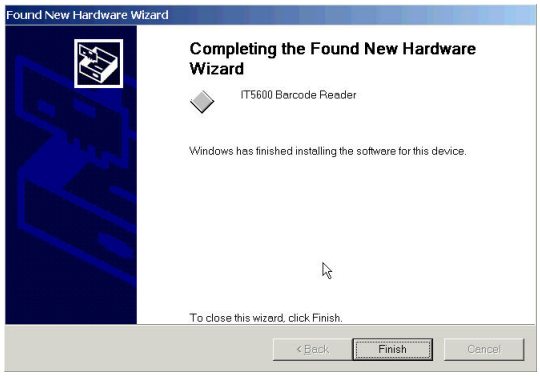
Click on **Open**.



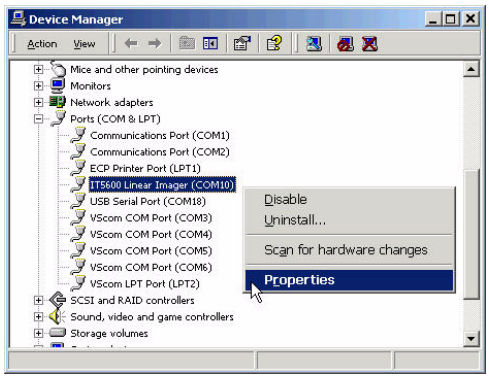
Click on **OK**.



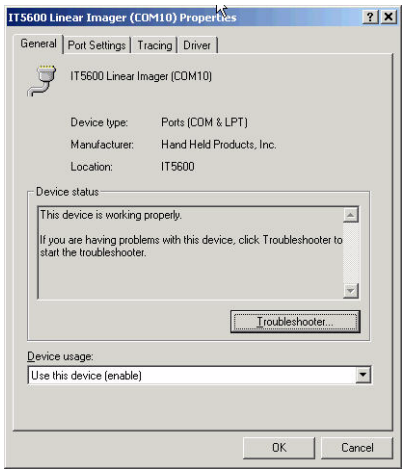
Click on **Next**.

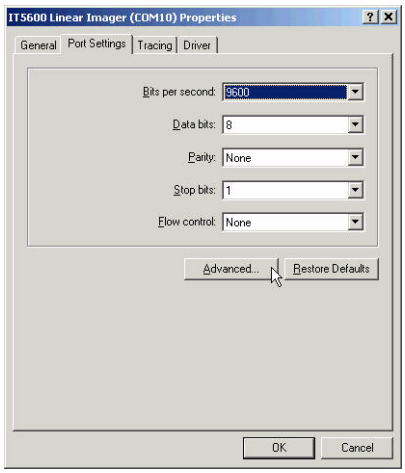


Click on **Finish**.

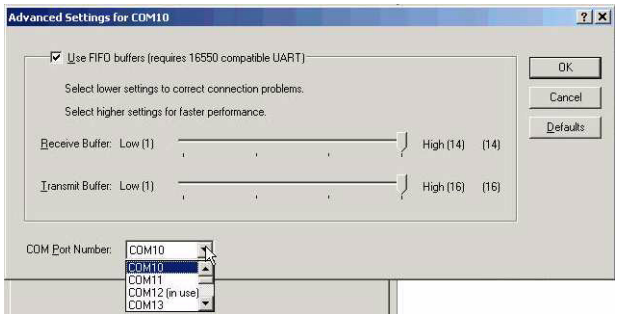


Open the Device Manager to make sure the device is under the **Ports** section. Select the device and right click to view the properties of the device.





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



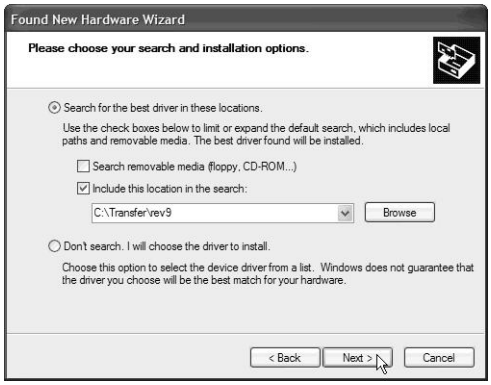
Select the port number you wish to use.

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 hhpcdc.inf is stored. You may also use the **Browse** button to navigate to the file location. Click on **Next**.

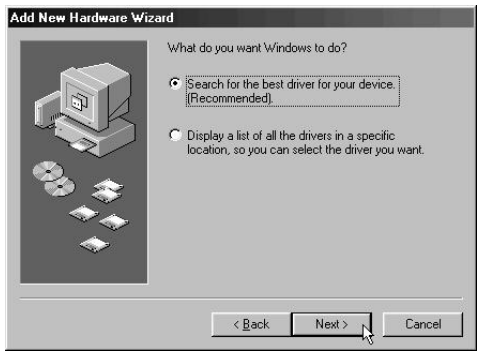
If this message appears, click on **Continue Anyway**.

Click on **Finish**.

Windows 98, 98SE, ME

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

Click on **Next**.

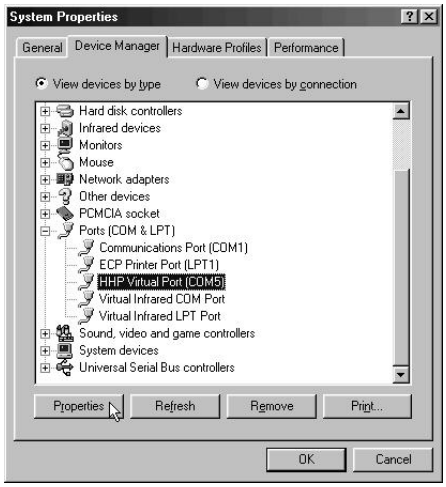


Click on **Search for the best driver ...** and click **Next**.

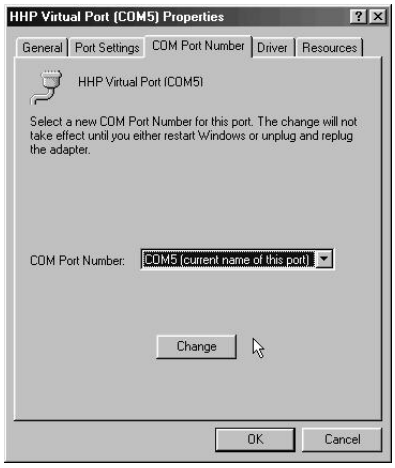
Click on **Specify a location** and enter the path where hhpcdc.inf is stored. You may also use the **Browse** button to navigate to the file location. Click on **Next**.

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 Hand Held Products) 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.

PAP131.

USB HID Barcode Scanner

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 ']')							
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.

PAPSPH.

USB SurePos (HH)

PAPSPT.

USB SurePos (TT)

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.

RTLIGN1.

Ignore Config Commands *

RTLIGN0.

Use Config 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.

RTLBCD1.

Send as BCD

RTLBCD0.

Send as 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.

USBSER0.

Serial Number OFF

USBSER1.

Serial Number ON *

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 XP[1], 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 1-19 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 3800r has the base number 400; the COM port emulation with the CDC ACM class has the number 0A. The resulting PID is 040A (VID and PID are hex).

Device (PNAME)	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
3800r (formerly the IT5600)	Base	400	1024
	HID Keyboard (PC)	401	1025
	HID Keyboard (Mac)	402	1026
	SurePos (HH)	403	1027
	SurePos (TT)	404	1028
	HIDPOS	407	1031
	CDC ACM (COM port emulation)	40A	1034
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
3800i (formerly the IT5800)	Base	420	1056
	HID Keyboard (PC)	421	1057
	HID Keyboard (Mac)	422	1058
	SurePos (HH)	423	1059
	SurePos (TT)	424	1060
	HIDPOS	427	1063
	CDC ACM (COM port emulation)	42A	1066

Device (PNAME)	Interface Type	PID (Hex)	PID (Dec)
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
4800i (formerly the IT4800	Base	460	1120
	HID Keyboard (PC)	461	1121
	HID Keyboard (Mac)	462	1122
	SurePos (HH)	463	1123
	SurePos (TT)	464	1124
	HIDPOS	467	1127
	CDC ACM (COM port emulation)	46A	1130
IT4600	Base	200	512
	HID Keyboard (PC)	201	513
	HID Keyboard (Mac)	202	514
	SurePos (HH)	203	515
	SurePos (TT)	204	516
	HIDPOS	207	519
	CDC ACM (COM port emulation)	20A	522
4600g (formerly the IT4600)	Base	440	1088
	HID Keyboard (PC)	441	1089
	HID Keyboard (Mac)	442	1090
	SurePos (HH)	443	1091
	SurePos (TT)	444	1092
	HIDPOS	447	1095
	CDC ACM (COM port emulation)	44A	1098
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

Device (PNAME)	Interface Type	PID (Hex)	PID (Dec)
2020 (formerly the IT2020)	Base	480	1152
	HID Keyboard (PC)	481	1153
	HID Keyboard (Mac)	482	1154
	SurePos (HH)	483	1155
	SurePos (TT)	484	1156
	HIDPOS	487	1159
	CDC ACM (COM port emulation)	48A	1162
IT4010	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
IT4080	Base	220	544
	HID Keyboard (PC)	221	545
	HID Keyboard (Mac)	222	546
	SurePos (HH)	223	547
	SurePos (TT)	224	548
	HIDPOS	227	551
	CDC ACM (COM port emulation)	22A	554
IT4200	Base	280	640
	HID Keyboard (PC)	281	641
	HID Keyboard (Mac)	282	642
	SurePos (HH)	283	643
	SurePos (TT)	284	644
	HIDPOS	287	647
	CDC ACM (COM port emulation)	28A	650
4206 (formerly the IT4200)	Base	4A0	1184
	HID Keyboard (PC)	4A1	1185
	HID Keyboard (Mac)	4A2	1186
	SurePos (HH)	4A3	1187
	SurePos (TT)	4A4	1188
	HIDPOS	4A7	1191
	CDC ACM (COM port emulation)	4AA	1194

Device (PNAME)	Interface Type	PID (Hex)	PID (Dec)
QC-890	Base	2C0	704
	HID Keyboard (PC)	2C1	705
	HID Keyboard (Mac)	2C2	706
	SurePos (HH)	2C3	707
	SurePos (TT)	2C4	708
	HIDPOS	2C7	711
	CDC ACM (COM port emulation)	2CA	714
3800g	Base	2E0	736
	HID Keyboard (PC)	2E1	737
	HID Keyboard (Mac)	2E2	738
	SurePos (HH)	2E3	739
	SurePos (TT)	2E4	740
	HIDPOS	2E7	743
	CDC ACM (COM port emulation)	2EA	746
5110	Base	320	800
	HID Keyboard (PC)	321	801
	HID Keyboard (Mac)	322	802
	SurePos (HH)	323	803
	SurePos (TT)	324	804
	HIDPOS	327	807
	CDC ACM (COM port emulation)	32A	810
5180	Base	300	768
	HID Keyboard (PC)	301	769
	HID Keyboard (Mac)	302	770
	SurePos (HH)	303	771
	SurePos (TT)	304	772
	HIDPOS	307	775
	CDC ACM (COM port emulation)	30A	778
4600r	Base	4C0	1216
	HID Keyboard (PC)	4C1	1217
	HID Keyboard (Mac)	4C2	1218
	SurePos (HH)	4C3	1219
	SurePos (TT)	4C4	1220
	HIDPOS	4C7	1223
	CDC ACM (COM port emulation)	4CA	1226

If you are working with a product that has recently been renamed, use the PID addresses for this product as well as the PID addresses for the former name of the product. If the product you are working with appears in the Device column of the table below, not only must you reference its PIDs, but you must also reference the PIDs of the product identified in the respective Additional Settings column.

Device	Additional Settings
IT5600	3800r
3800r	IT5600
IT5800	3800i
3800i	IT5800
IT4800	4800i
4800i	IT4800
IT4200	4206
4206	IT4200
IT2020	2020
2020	IT2020

Registry Entries

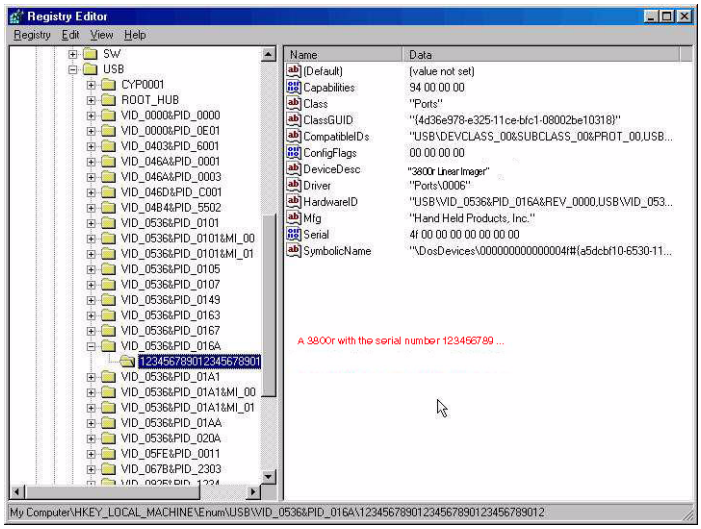
Windows 9x

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 **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 a 3800r 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…



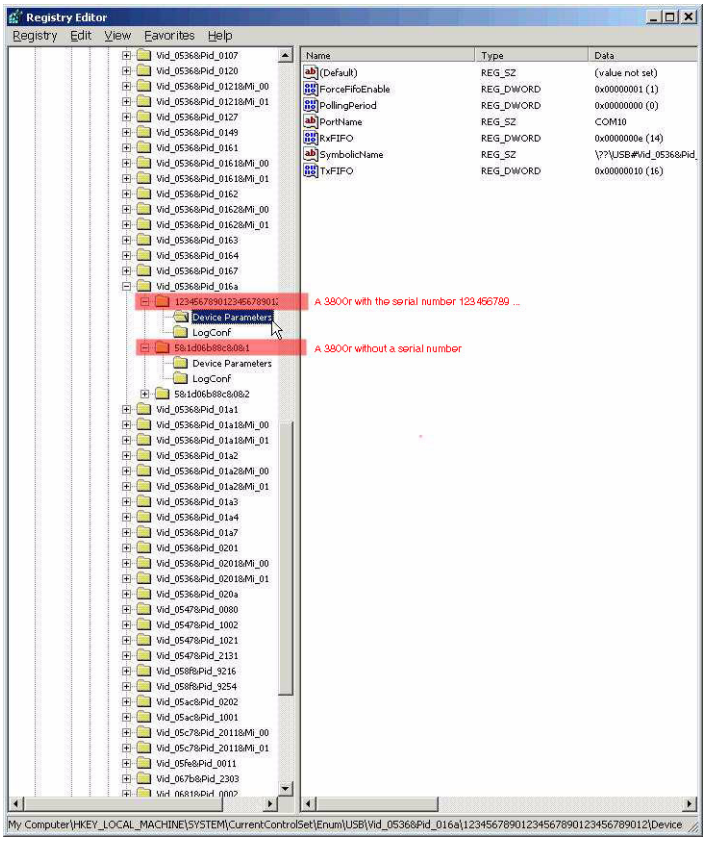
Windows 2000/XP

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 a 3800r 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.

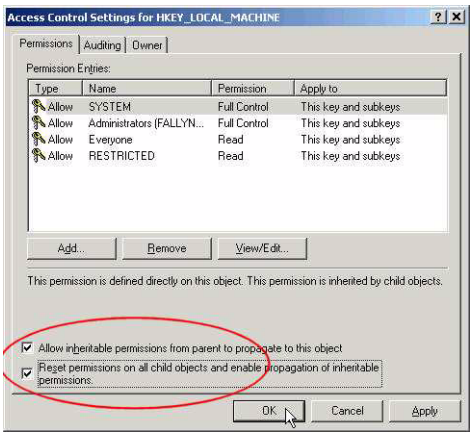
Enabling Full Write Access in Windows 2000

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**.



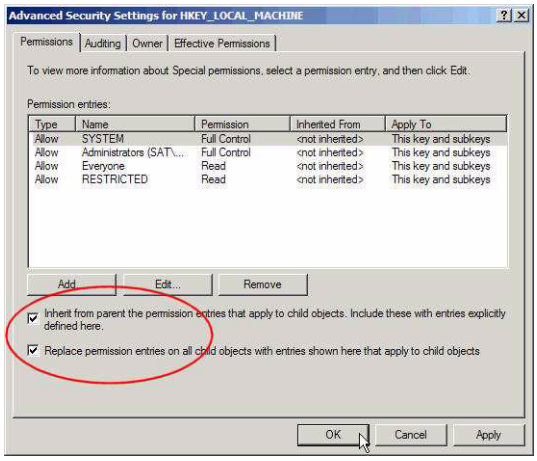
4. Check both check boxes and click **OK**. (This may take some time.)
5. Write access is enabled.

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.

2 FAQs

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 that 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.

3 Customer Support

Technical Assistance

If you need assistance installing or troubleshooting, 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

Latin America

Telephone: (704) 998-3998, option 8, option 3
Telephone: (800) 782-4263, option 8, option 3
E-mail: latechsupport@handheld.com

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E-mail: brsuporte@handheld.com

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Telephone - China: +86 21 6361 3818
E-mail: aptechsupport@handheld.com

Japan

Telephone: +813 5770-6312
E-mail: aptechsupport@handheld.com

Online Technical Assistance

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

For Further Information

To download the full User's Guide for these products, visit our website at www.handheld.com.

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