iPan User Guide

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Contents

Safety Issues

Equipment to be Operated and Serviced by Qualified Personnel Only

X-ray equipment produces ionizing radiation that may be harmful if not properly regulated. It is therefore recommended that the equipment be operated by trained and qualified personnel only, in accordance with all applicable local and federal regulations.

Only trained and qualified technicians are authorized to service this equipment. Power supply lines must comply with safety legislation and have ground terminals for protective earth connection. Always switch the equipment off and, if possible, disconnect it from main power supply before cleaning the system.

Avoid Operating Equipment in the Presence of Interfering RF Devices and Equipment

We recommend that you do not use the equipment in the presence of external electromagnetic fields, even if compliant with specifications for electromagnetic compatibility. Noise, generated by cellular phones, might interfere with the electronic circuits of the system.

Apply Recommended Procedures for Cleaning the Equipment

Safe and proper operation of the equipment requires that a regular schedule of preventive maintenance be followed. Refer to the Cleaning and Maintenance sections of this manual for details.

Do Not Connect Items that are Not Part of the System

Only items specified for use with the equipment are to be connected to the system. The equipment should not be used adjacent to other equipment that is not part of the system. If, however, use with adjacent equipment is necessary, normal operation should be observed and verified in that configuration.

Installers to Ensure that the iPan System Operates Optimally

Installers must ensure that the iPan system, when installed, provides the user with the optimal use of the equipment. To verify this requirement, installers shall confirm that the iPan system is installed as described in the Installation / Service Guide and shall perform the appropriate procedures therein.

Take Appropriate Precautions during iPan Operation

Appropriate accessories, such as lead aprons, must be used, where necessary, to protect the patient and the operator from radiation.

The iPan system has been determined to be in accordance with international safety standards and is deemed suitable for use within the patient area, which extends from the patient for a distance of 5 feet (1.5m). Outside the patient area, the presence of approved

non-medical grade equipment and Listed / Approved / Certified Information Technology Equipment (ITE) computer equipment is acceptable.

Protecting iPan Equipment from RF Interference

Although the iPan equipment is designed to provide a reasonable degree of protection from electromagnetic interference, according to IEC International regulations, it must be installed at an adequate distance from electricity transformer rooms, static continuity units, two-way amateur radios and cellular phones. To ensure proper operation, the latter can be used only at a minimum distance of 5 feet (1.5m) from any part of the equipment.

Any instrumentation or equipment for professional use located near iPan must conform to Electromagnetic Compatibility regulations. Non-conforming equipment, with known poor immunity to electromagnetic fields, may not operate properly unless they are installed at a distance of at least 10 feet (3m) and supplied by a dedicated electric line.

Preventive Maintenance

There are no customer-serviceable components in the iPan system. However, before operating the system, customers shall check it for any signs of physical damage or defect. If detected, contact your local distributor of Schick Technologies products for further instructions.

Symbols

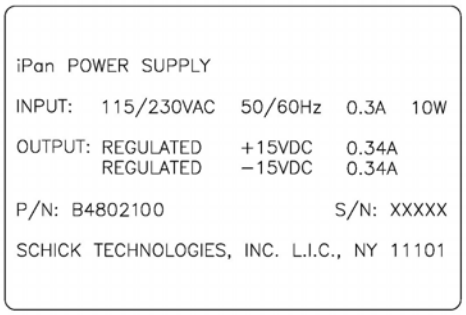
Refer to the following table for symbols found on the iPan itself, on packaging in which the equipment is shipped, or in text of this or other documents provided with the system.

Symbol	Description
	Indicates an attention to customers to consult accompanying documents for more information.
	Indicates that under certain ambient environmental conditions (especially low humidity), this device may be susceptible to electrostatic discharge (ESD). Appropriate care and handling must be observed to avoid damage.
	Green LED located on the iPan USB Interface. Displays status as Sensor transmits images from the Sensor to the iPan Interface.
	Orange LED located on the iPan USB Interface. Displays status as iPan Interface transmits images from the iPan Interface to the host computer.
	Indicates that the product complies with EC Directive 93/42/EEC concerning Medical devices (European Community)
	Indicates that the product conforms with UL Standard 60601-1 and is certified to CAN.CSA C22.2 No.601.1

Label Locations

iPan Power Supply Module Label

Refer to the following figure for labels and / markings found on the Power Supply Module

Label	Description
	Regulatory Markings and Manufacturer Label (located on bottom)

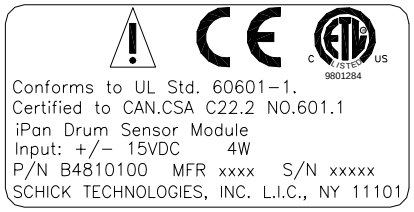
iPan USB Interface Module Label

Refer to the following figure for labels and / markings found on the iPan USB Interface Module.

Label	Description
	Regulatory Markings and Manufacturer Label (located on bottom)

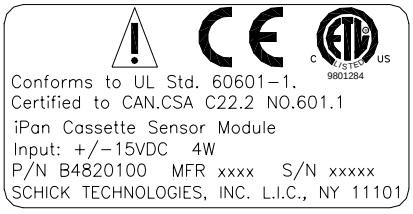
iPan Drum Label

Refer to the following figure for labels and / markings found on the iPan Drum Module.

Label	Description
	Regulatory Markings and Manufacturer Label

iPan Cassette Label

Refer to the following figure for labels and / markings found on the iPan Cassette Module.

Label	Description
	Regulatory Markings and Manufacturer Label

Waste Electrical and Electronic Equipment (WEEE)

Background

The European Union's Waste Electrical and Electronic Equipment Directive (2002/96/EC) will be implemented in member states starting August 13, 2005. This directive, which seeks to reduce the waste of electrical and electronic equipment through re-use, recycling, and recovery, imposes several requirements on producers. Schick Technologies and its Dealers are committed to complying with the Directive.

WEEE Marking

All Schick products subject to the WEEE Directive and shipped starting August 13, 2005 will be compliant with the WEEE marking requirements. These products will be identified with the "crossed-out wheeled bin" WEEE symbol shown below, as defined in European Standard EN 50419, and in accordance with WEEE Directive 2002/96/EC.

This "crossed-out wheeled bin" symbol on the product or on its packaging indicates that this product must not be disposed of with other unsorted municipal waste. Instead, it is user's responsibility to dispose of EE waste equipment by handing it over to a designated collection point for the reuse or recycling of waste electrical and electronic equipment. The separate collection and reuse or recycling of Electrical & Electronic waste equipment will help to conserve natural resources and ensure that it is recycled in a manner that protects the environment and human health. For more information about where you can drop off your waste equipment for recycling, please contact your local officials.

Reporting

According to the WEEE Directive, Schick Technologies or its Dealers will ensure that information needed to calculate the financial obligations with respect to EEE products will be provided as required.

WEEE from Users other than Private Households

According to the WEEE Directive, Schick Technologies or its Dealers will fulfill its obligations for the management of WEEE from users other than private households.

Furthermore, as required by the WEEE Directive, in order to enable the date upon which the equipment was put on the market to be determined unequivocally, a mark on the equipment will be placed to specify that the equipment was put on the market after August 13, 2005.

Information for Reuse Centers, Treatment and Recycling Facilities

After August 13, 2005, and as required by the WEEE Directive, Schick Technologies or its Dealers will provide reuse, treatment, and recycling information for each type of new EEE put on the market within one year of the date in which the equipment is put on the market.

Information will include the different EEE components and materials as well as the location of substances in these items. The information will be provided as a printed document or in electronic media (on CD-ROM or by web download, for example).

1.Overview

1.1 Scope

The iPan panoramic X-ray system is an electronic imaging system that integrates with panoramic machines to acquire, display, store and print digital X-rays. Because of its digital format, the X-ray image can be enhanced for more detail using tools available with the software, archived for patient histories, and retrieved for tooth comparison.

1.2 Indications for Use

The iPan system, in conjunction with selected host panoramic machines, is indicated for individuals requiring extraoral dental radiographic exams.

1.3 System Description

The iPan system consists of the following hardware: iPan Sensor , Codestrip, iPan USB Interface (also referred to in text as the iPan Interface), iPan Power Supply, and associated cables. A simplified diagram of the iPan system is provided below.

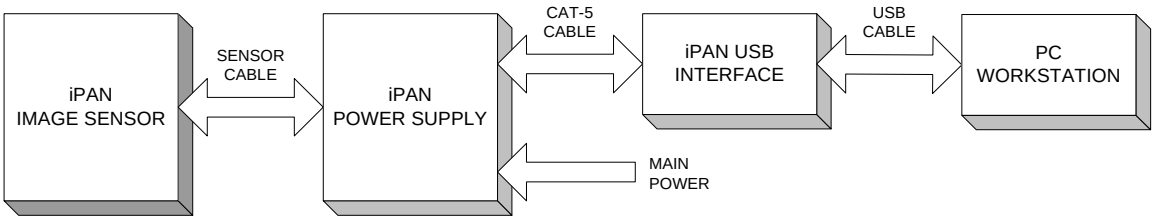


Figure 1. iPan Simplifiied Block Diagram

The iPan Sensor is made up of imaging and electronic assemblies, capable of detecting the start of panoramic motion and initiating the image acquisition process. As the panoramic X-ray source rotates in either scan direction, the Codestrip is read by the encoder to provide relative motion information to the Sensor during image acquisition. The iPan Power Supply, connected between the Sensor and the iPan USB Interface, provides the power necessary to operate the Sensor.

The iPan system requires the following software and compatible operating systems:

- CDR DICOM for Windows or EagleSoft 11 software
- Windows XP Professional or Windows 2000
- iPan Interface Driver (provided with the iPan system)

1.4 About this Manual

This User Guide is one of two documents needed to install the iPan system completely. Before performing the procedures in this document, you or a qualified service technician should complete the steps in the Installation Guide for your specific panoramic machine.

Table 1 provides a list of procedures and the documents where they are covered in detail. All of the procedures for installing iPan hardware may be found in your Installation Guide. This guide includes step-by-step instructions for installing the iPan hardware for your panoramic machine. Procedures for installing the iPan Interface driver can be found in this User Guide.

Table 2 provides a list of iPan-compatible panoramic machines and the iPan Installation document (Part Number B1051602) that describes the installation.

1.5 References

Table 1. List of Documents for Installing iPan

Procedure Can be Found In . . .	Document
Install iPan Sensor and Codestrip	iPan Installation Manual
Install iPan USB Interface	iPan Installation Manual
Install iPan Power Supply	iPan Installation Manual
Install iPan Interface Driver	This Manual

Table 2. List of Compatible Panoramic Machines

Description Can Be Found In . . .	Document
Panoramic Corporation PC-1000	iPan Installation Manual
Planmeca PM 2002 CC / EC	iPan Installation Manual
Sirona Orthophos 3 / Orthophos Plus	iPan Installation Manual
Villa Rotograph	iPan Installation Manual
Panoura SU-10	iPan Installation Manual
Siemens OP-5 / OP-10	iPan Installation Manual
Belmont X-Caliber	iPan Installation Manual
Gendex Orthoralix 9000	iPan Installation Manual
Instrumentarium OP-100	iPan Installation Manual
Soredex Cranex / BaseX	iPan Installation Manual

2.Hardware

2.1 Installation

After installing the hardware for the iPan system, perform the following procedures to install the software.

- Install iPan Interface Driver (**Section 3.1)**
- Start using your iPan System (**Section 4**)

2.2 Requirements

The recommended system requirements for CDR DICOM workstations are:

- Compatible operating system (Windows 2000 or XP Professional)
- 512 MB RAM or higher
- Pentium IV: 1 GHz or better
- 40 GB free disk space [1]

EagleSoft customers should refer to their user documentation for details.

[1] Storage requirements will vary depending on the patient volume for each practice.

3.Software

3.1 Installing iPan Interface Driver

Start driver installation

Perform the following steps to start installing the iPan Interface driver from CD.

Step	Action
1	Exit CDR DICOM or EagleSoft if either program is running and verify that the iPan USB Interface is NOT connected to the computer.
2	Insert the iPan Interface Driver CD.
3	The setup wizard starts automatically to prepare the setup process and displays the Welcome screen.
4	Click Next.

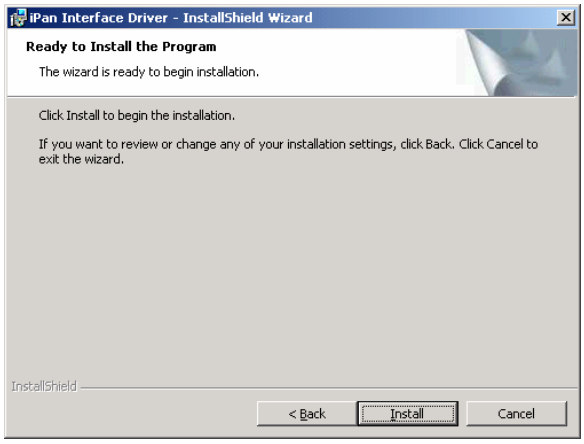
An example of the Welcome screen is shown below.

Complete driver installation

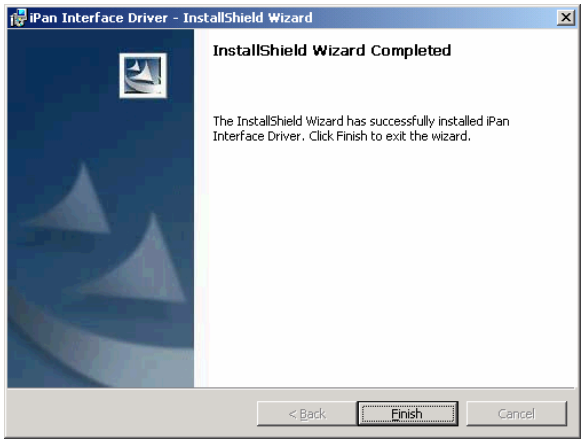
Perform the following steps to install the iPan Interface driver on your system.

Step	Action
1	Click Install.
2	Click Finish.

An example of the Ready to Install the Program (iPan Interface Driver) screen is shown below.



An example of the InstallShield Wizard completed screen (for installing the iPan Interface Driver) is shown below.



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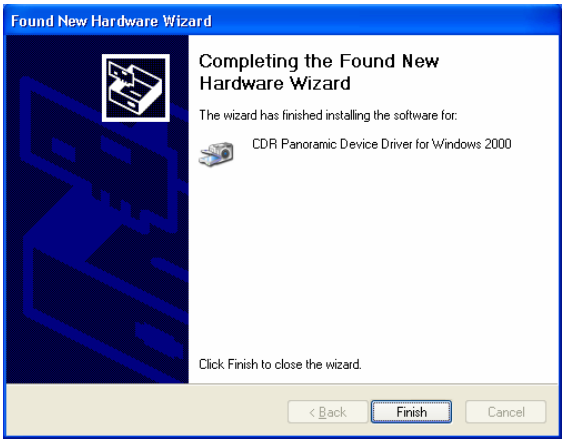
Connect iPan USB Interface to computer

Perform the following steps to connect the iPan USB Interface to the computer.

Step	Action
1	Connect the iPan USB Interface to the computer using a USB cable.
2	Click Next when the Add New Hardware wizard starts. Click Finish when the Add New Hardware wizard ends. (On Windows 2000 systems, this occurs automatically.)
3	The iPan Interface driver is copied to your system.

An example of the Found New Hardware wizard is shown below.

An example of the Completing the Found New Hardware Wizard screen is shown below.



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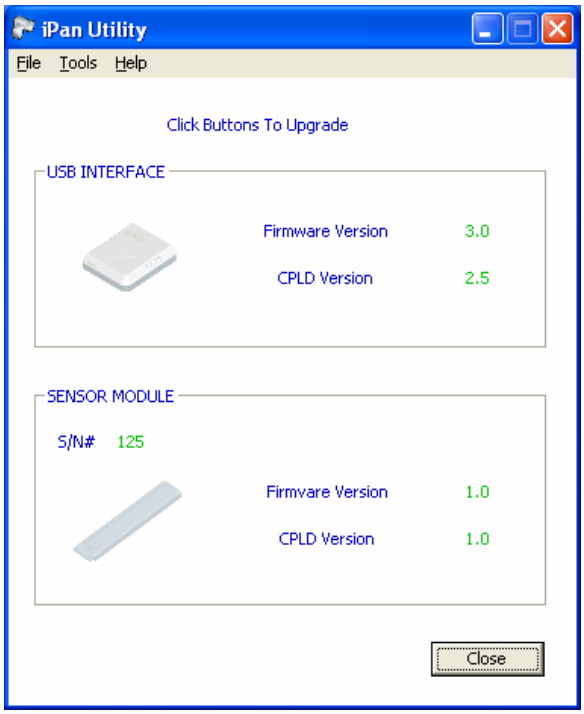
Start iPan Utility

Perform the following steps to start the iPan Utility.

Step	Action
1	For CDR DICOM and EagleSoft customers, click Start > Programs > CDR DICOM for Windows > iPan Utility.
2	When the iPan Utility is displayed, verify that all version numbers are in green. If all version numbers are green, the latest firmware has been installed successfully.
3	If there are any items in the iPan Utility with version information in red, these must be upgraded, by clicking on the button next to the item.

An example of the iPan Utility is shown below. *(Please note that the version numbers shown in the picture below are examples only and may differ from those reported for your system.)*



4.Controls and LED Indicators

4.1 iPan Power Supply

The iPan Power Supply is connected by Sensor cable to the iPan Sensor and by CAT-5 cable to the iPan USB Interface. The iPan Power Supply provides the necessary power to the iPan Sensor Module and accommodates the mains input voltage of 115 to 230V.

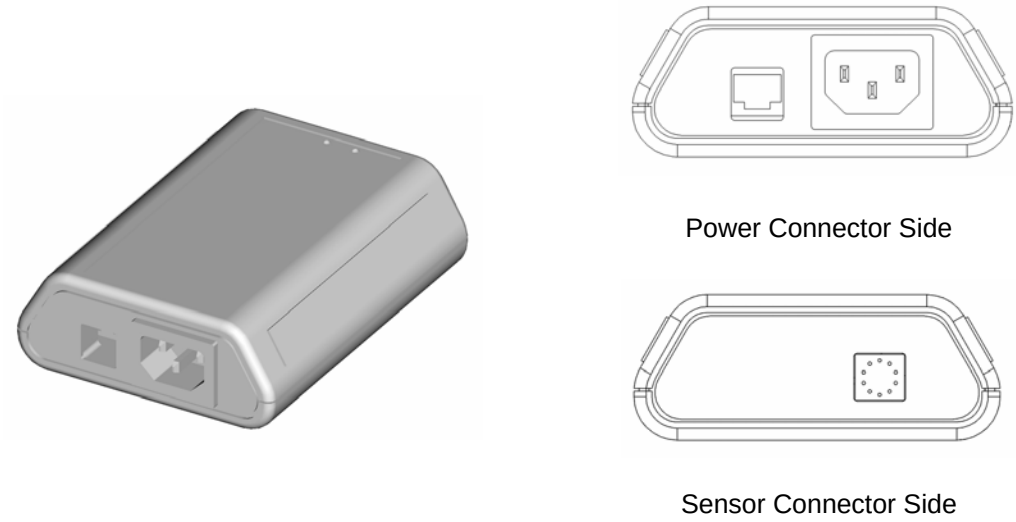


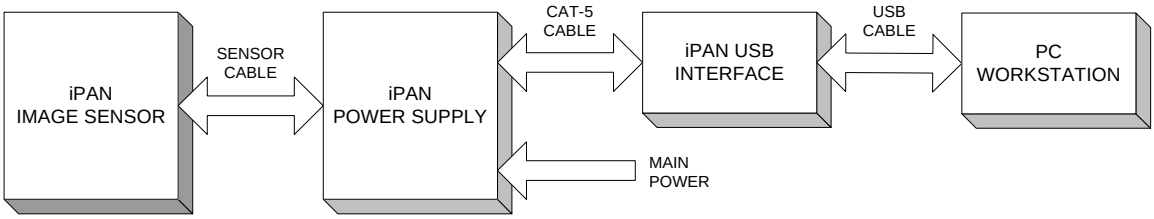
Figure 2. iPan Power Supply

Table 3. iPan Power Supply LED Indications

Green LED	Green LED	Status
ON	ON	Normal operation (± 15V available)
OFF	OFF	Power, cable not connected to Power Supply or error condition

4.2 iPan USB Interface

The iPan USB Interface is connected by CAT-5 cable to the iPan Power Supply and by USB cable to a dedicated PC workstation. The iPan USB Interface provides several important functions, including Sensor diagnostics and field upgrades of firmware for the Sensor and the iPan USB Interface itself.



LEDs are located on the exterior of the iPan USB Interface and provide power and status information. The illustration and table that follow provide additional details about this device.

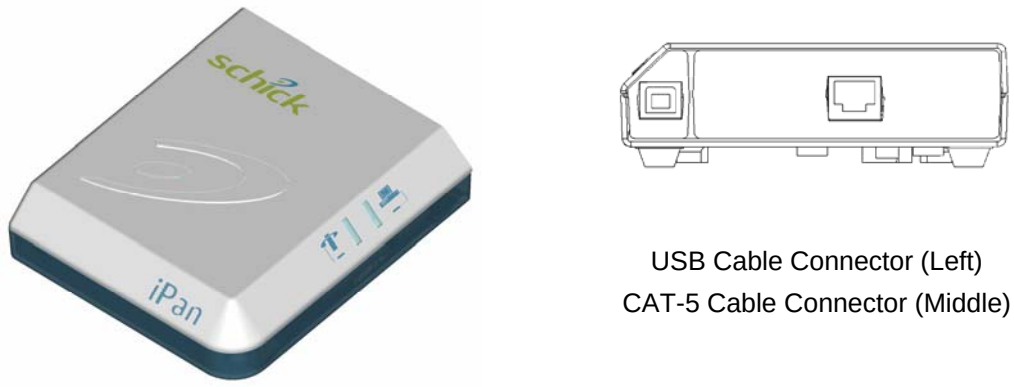


Figure 3. iPan USB Interface

Table 4. iPan USB Interface LED Indications

Green LED (Sensor)	**Orange LED (iPan USB Interface)**	**Status**
OFF	ON	USB cable connected, Sensor not detected
ON	OFF	Error condition
ON	ON	USB cable connected, Sensor detected
Blinking	—	Sensor is transmitting image to iPan USB Interface
—	Blinking	iPan USB Interface is transmitting image to host computer
OFF	OFF	USB cable not connected if CDR is running, or USB driver is not installed

5.Operation

5.1 Introduction

The iPan System is designed to fit seamlessly into the normal operation of panoramic equipment. iPan's hardware components are simple to install and the software interface is easy to learn and use with all X-ray procedures. For operators this means quick setups with no significant changes to their routines for taking panoramic X-rays.

5.2 General Operating Instructions

Follow the steps listed below as a general guide when using iPan to acquire X-ray images. For setup and patient positioning information on specific panoramic machines, refer to that product documentation.

1. iPan Setup
    - Ensure that iPan system hardware, the iPan USB Interface device driver, and CDR DICOM or EagleSoft software are installed.
    - Ensure that the computer is on and the iPan USB Interface is receiving power (Orange LED on the iPan USB Interface is illuminated, as described in **Section 4.2**).
    - Refer to **Section 5.3** and perform Steps 1 through 3 to ensure CDR DICOM software is running normally and is ready to acquire X-ray images. EagleSoft customers should refer to their user documentation for patient and exam setup information and proceed to the next step.
2. Panoramic Equipment Setup
    - Turn on the panoramic equipment normally.
    - Select the appropriate X-ray exposure value.
    - Refer to **Section 5.3** and perform Steps 4 through 7 to take the X-ray and review the X-ray image on the computer. (When image data is being transferred from the iPan USB Interface to the PC, the Orange LED on the iPan USB Interface will blink, as described in **Section 4.2**.)

5.3 Acquiring Panoramic Images

Perform the following steps to acquire panoramic X-ray images.

1. Turn on the computer and wait for the Windows desktop to display. Launch the CDR DICOM program from the **Start** button at the Windows desktop.
2. When the exam window appears, click File > New Exam or just click the New Exam button on the toolbar.
3. If there are already exams for the patient, click the List button to retrieve that information, or enter patient data in the spaces provided. Click on Panoramic Series and select a panoramic viewset.
4. Take a panoramic X-ray image by clicking once on the selected target frame or by pressing either the Insert or Enter keys. Activate the panoramic X-ray source when the message, "Ready to acquire image . . . Activate panoramic motion now" appears.
5. The panoramic image is displayed for review, editing, and printing. For a complete discussion of features available in CDR software, refer to the CDR DICOM User Guide, available on our website (www.schicktech.com). EagleSoft customers should refer to their user documentation for related tools and functions.

5.4 Using the Resend Option

The Resend option retrieves the last acquired image from the buffer inside the Sensor and displays it in an empty viewbox that you select. This feature is appropriate when a corrupted image is displayed on a system that, otherwise, appears to be operating properly. In this instance, it may be possible to retrieve an uncorrupted version of the image directly from the Sensor, without having to expose the patient to additional X-rays.

An example of how the Resend feature is used is provided below:

1. After taking a panoramic X-ray, a corrupted image is displayed.
2. Do not close CDR DICOM (or EagleSoft) as this will clear the image in the Sensor.
3. Locate the Resend option on the Panoramic property page (System > Panoramic Settings, for example).
4. Mark the Resend checkbox and click OK.
5. Click on an empty viewbox.
6. Click Yes to the message, "Do you want to resend the last acquired image?"
7. The image appears in the selected viewbox.

The Resend checkbox is cleared automatically after this function is used.

5.5 Panoramic Acquisition Control Properties

Please Note: Casual changes to the Acquisition Modules section can adversely affect system performance. We do not recommend making changes in this section unless directed to do so by authorized support personnel.

- *Panoramic Device Driver Name* (Displays the name of the device driver, iPan USB Interface, for the panoramic system)
- *Scan Direction* (Drop-down menu displays list of travel options for the panoramic machine. Left to Right describes the movement of the imaging Sensor from the left side of the patient to the right side. Right to Left refers to the Sensor traveling from the right to the left side of the patient)
- *Image Width* (Numeric value for the number of rows in the panoramic image. Also called LX)
- *Image Height* (Numeric value indicates the number of columns in the panoramic image. Also called LY)
- *Initial Timeout* (Numeric value indicates the amount of time CDR will wait for the panoramic machine to start motion when CDR is in acquisition mode.)
- *Early Stop Timeout* (Numeric value indicates the maximum number of seconds CDR can take to read a column of pixels before it times out.)
- *Retrieve Last Image from Sensor Memory* (When checked, the last acquired image can be retrieved from the Sensor's memory buffer into a new or empty viewbox.)
- *Calibrate Image* (When checked, indicates that CDR loads the calibration file for the connected panoramic Sensor.)
- *Equalize Image* (When checked, indicates that Equalize is applied automatically each time a panoramic image is acquired.)
- *Apply Spot Remover* (When checked, indicates that Spot Remover is applied automatically each time a panoramic image is acquired.)
- *Subtract Dark Image* (When checked, indicates that CDR applies subtraction to eliminate the noise caused by dark signal in the Sensor)
- *Acquire 12 bit image* (When checked, indicates that the image is acquired at a higher 12-bit depth)
- *Perform non-linear map* (When checked, specifies the type of mapping used during calibration)

5.6 Panoramic Calibration Properties

Please Note: Casual changes to the Acquisition Modules section can adversely affect system performance. We do not recommend making changes in this section unless directed to do so by authorized support personnel.

- *Calibration File Path* (Displays the path where calibration files for panoramic sensors are stored.)
- *Gap Width* (Displays the number of blank rows between the panoramic sub-sensors.)
- *Calibration Threshold* (Displays the percentage above which raw pixels are not calibrated.)
- *Dark Threshold* (Displays the threshold percentage above which dark subtraction is not applied to raw pixels.)
- *Extra Bad Rows* (When checked, indicates that two additional blank rows are marked bad and are added between the panoramic sub-sensors.)
- *Clip Saturated Pixels* (When checked, dark subtraction is modified for pixels with values between 99 and 100%.)
- *Sirona Orthophos System* (When checked, accomodates the particular design of this system in which the Sensor is inverted when installed.)

6.Using the iPan Utility

6.1 Introduction

The iPan Utility is installed during the iPan Interface Driver setup program. This tool can be used to accomplish the following:

- Perform iPan USB diagnostic test
- Perform iPan USB Interface upgrades
- Perform iPan Sensor Module upgrades

A sample screen of the iPan Utility is shown below. *(Please note that the version numbers shown in the picture below are examples only and may differ from those reported for your system.)*

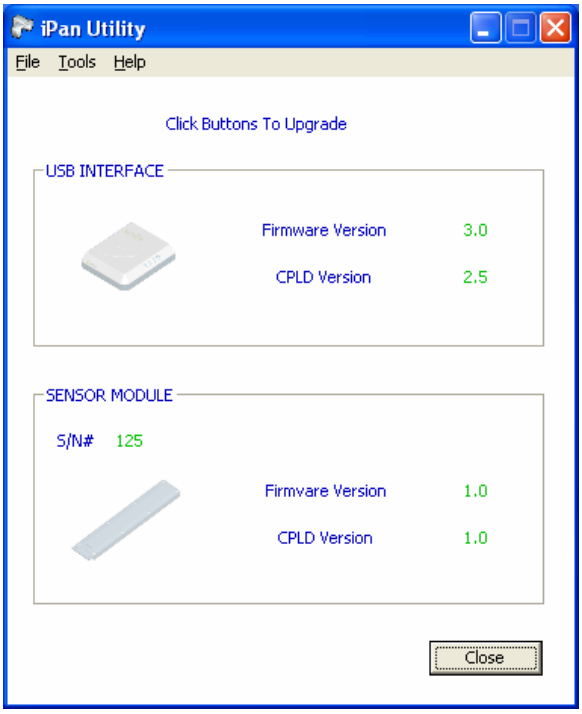


Figure 4. iPan Utility

6.2 USB Interface Test

The iPan USB Interface Test checks the connection between the iPan USB Interface and the host computer. During this check, a gray test pattern is displayed, which should be reviewed for clarity and contrast.

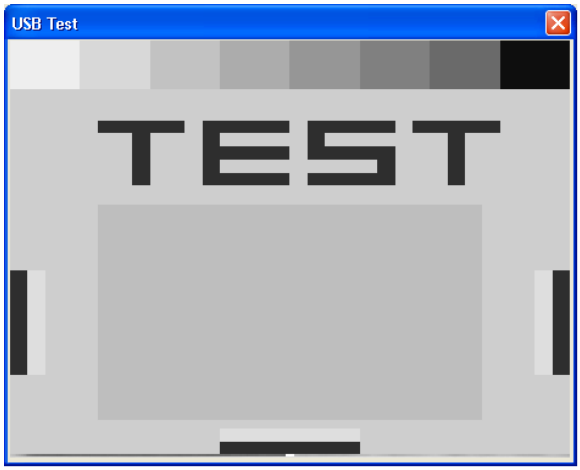
A good test pattern will have distinct shades of gray that are easy to distinguish. A poor test pattern will have random and unrelated lines or other image artifacts. A poor test pattern suggests a problem with the USB cable, USB port, or possibly the iPan USB Interface itself.

USB Interface Diagnostic Test

Perform the following steps to start the USB Interface diagnostic test procedure.

Step	Action
1	Close the CDR DICOM or EagleSoft program (if running)
2	Verify that iPan USB Interface is connected to the host computer
3	Start the iPan Utility.
4	Click Tools > USB Interface Test.

Note: After a momentary pause, a test pattern is displayed. The orange LED indicator on the iPan USB Interface blinks as the test patters scrolls.



6.3 iPan USB Interface Upgrade

Field updates to the iPan USB Interface can be accomplished by installing new firmware. When new firmware is available, it is typically provided with software releases and becomes part of the update to your existing system. In the event you are prompted to upgrade firmware, perform the steps provided below.

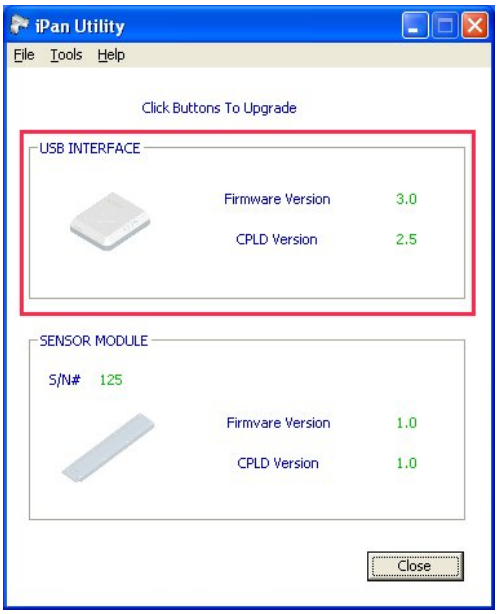
USB Interface Firmware Upgrade

Perform the following steps to start the USB Interface firmware upgrade procedure.

Step	Action
1	IMPORTANT! Close the CDR DICOM or EagleSoft program (if running) before continuing with the next step.
2	Verify that the iPan USB Interface is connected to the host computer.
3	Start the iPan Utility.
4	If the firmware version number is listed in red, click the Firmware Version button to upgrade.
5	If the CPLD version number is listed in red, click the CPLD Version button to upgrade.

Example

Pictured below is an example of the iPan Utility, with the firmware upgrade buttons for the USB Interface highlighted.



6.4 iPan Sensor Module Upgrade

Field updates to the iPan USB Interface can be accomplished by installing new firmware. When new firmware is available, it is typically provided with software releases and becomes part of the update to your existing system. In the event you are prompted to upgrade firmware, perform the steps provided below.

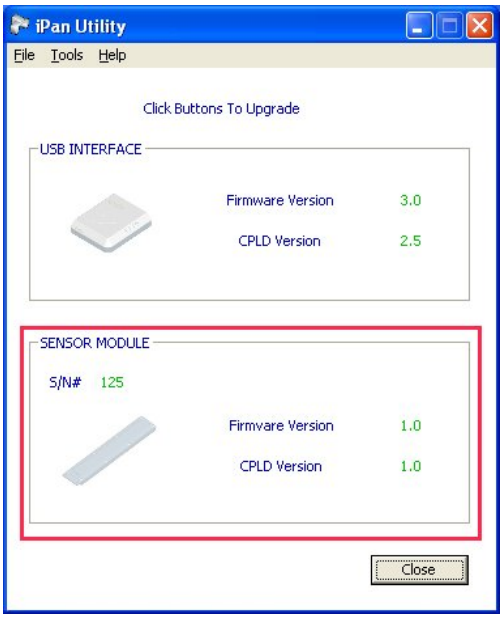
Sensor Module Upgrade

Perform the following steps to start the Sensor Module firmware upgrade procedure.

Step	Action
1	IMPORTANT! Close the CDR DICOM or EagleSoft program (if running) before continuing with the next step.
2	Verify that the iPan USB Interface is connected by USB cable to the host computer.
3	Verify that the iPan USB Interface is connected by CAT-5 cable to the iPan Power Supply.
4	Verify that the Sensor is connected to the iPan Power Supply.
5	Start the iPan Utility.
6	If the firmware version number is listed in red, click the Firmware Version button to upgrade.
7	If the CPLD version number is listed in red, click the CPLD Version button to upgrade.

Example

Pictured below is an example of the iPan Utility, with the firmware upgrade buttons for the Sensor Module highlighted.



7.Cleaning

7.1 General

Observe the following precautions to perform cleaning procedures and to provide proper hygiene within the patient area.

- Before cleaning any part of the iPan system, refer to the manufacturer's service guide for proper turn off / power disconnection at the host panoramic machine. Also ensure that the CAT-5 cable from the iPan Power supply is disconnected, and that the PC workstation is turned off.
- Use a soft, lint-free cloth when wiping exterior surfaces of the iPan equipment. For stronger action, use a neutral soap to clean coated surfaces.
- Make sure that water or other liquids do not seep into the iPan equipment, causing potential damage to internal, electrical, and mechanical components.
- Never use solvents (such as alcohol and Trichloroethylene), corrosive, or abrasive substances when cleaning.

When the surfaces that were cleaned have dried sufficiently, connect and restore power to the system, following the turn-on procedures provided in this document (**Section 5.2**) or in the appropriate service guide.

7.2 USB Interface

To clean the iPan USB Interface, apply a small amount of water or isopropyl alcohol (70%) to a non-abrasive, lint-free cloth. Wipe down the device, exercising care when cleaning around the connectors and contacts. After cleaning, inspect the iPan USB Interface to ensure that all surfaces are clean and free of unwanted particles.

7.3 Power Supply

To clean and disinfect the Power Supply, use a clean lint-free cloth and a small amount of alcohol. Although the iPan USB Interface is enclosed to protect its components, it is not watertight, so be sure to use only enough solution to clean the unit safely.

8. Maintenance

8.1 Visual Inspection

Like all electrical equipment, the iPan system requires not only correct use, but also visual inspection prior to operation, and routine checks at regular intervals. These precautions will help ensure that the iPan equipment operates accurately, safely, and efficiently.

There are no user-serviceable components in the iPan system. However, before operating the system, users shall check it for any signs of physical damage or defect. If detected, contact your local distributor of Schick Technologies products for further instructions.

8.2 Periodic Maintenance

Periodic maintenance is performed as needed, but at least once a month. It consists of various checks performed by the operator or by a qualified service technician.

- Check that the labels are intact, readable, and adhere well to the surfaces on which they are positioned
- Check that all of the cables that connect equipment in the iPan system are undamaged
- Check that there is no external damage to the iPan equipment which could compromise its ability to operate safely

Appendix A. Reference

A-1. Specification Table

Mechanical			
iPan USB Interface		Size	5.2 x 4.5 x 1.5 in (13.21 x 11.43 x 3.81 cm)
		Weight	0.35 lb (0.16 kg)
iPan Drum Type Sensor Package		Size	6.6 x 3.7 x 0.45 in (16.76 x 9.4 x 1.14 cm)
		Weight	0.8 lb (0.36 kg)
iPan Cassette Type Sensor Package		Size	(8 – 15)* x 6.6 x 0.45 in (20.32 – 38.1)* x 16.76 x 1.14 cm
		Weight	2.5 lb (1.13 kg)
iPan Power Supply		Size	3.8 x 5.0 x 1.5 in (9.65 x 12.7 x 3.81 cm)
		Weight	1.2 lb (0.54 kg)
Electrical			
Safety and EMC Standards Compliance	CAN/CSA C22.2 No.601.1-M90	Medical Electrical Equipment Part 1: General Requirements for Safety	
	IEC60601-1	Medical Electrical Equipment Part 1: General Requirements for Safety	
	IEC60601-1-2	Medical Electrical Equipment Part 1: General Requirements for Safety 2.Collateral Standard: Electromagnetic Compatibility – Requirements and Tests	
	UL60601-1	Medical Electrical Equipment: General Requirements for Safety	
Maximum Line Current and Voltage		125 VAC, at 300 mA 250 VAC, at 150 mA	
Environmental			
Operating Temperature		55° - 85° F (13°- 29° C)	
Storage Temperature		41° - 113° F (5° - 45° C)	
Humidity		20% to 80%	
Highest Permissible Temperature Limit		150° F (65.5° C)	
General			
Image Sensor Active Area		6.05 x 0.38 in (15.36 x 0.97 cm)	
Calibration		Automatic	
Scan Time		10 – 20 seconds (dependent on host machine)	

NOTE: These measurements will vary because they are installation-specific.

A-2. Electrical Summary Table

Input electrical ratings	115 VAC systems: 115 VAC, 300 mA, 50/60 Hz 230 VAC systems: 230 VAC, 150 mA, 50/60 Hz
Fuses	250 V, 2A 250 V, 2A (No User Replaceable Fuses)
Restricted service statement	Unless otherwise specified, only the manufacturer should service this unit. It contains no user-serviceable parts.

A-3. Image Characteristics

Images acquired by the iPan System meet the following criteria.

Color depth	12 bits per pixel (4096 gray levels)
Effective pixel size	96 microns
Static resolution	4 line pairs per millimeter (approximately)
Signal to noise ratio	80:1

A-4. Timing Characteristics

The CCDs in the iPan Sensor employ TDI (Time Delay Integration) to generate a single image of the subject as it travels past the Sensor. For the resulting exposure to be clear (not “smeared” or “blurred”), the image readout at the CCD level and the panoramic machine’s motion must be exactly synchronized by iPan. Other timing intervals supported by the software are listed below.

Timeout after loss of synchronization	7 seconds (or user-defined interval specified by the Early Stop Timeout setting in Panoramic Acquisition Control Properties)
Timeout when starting acquisition	15 seconds (or user-defined interval specified by the Initial Timeout setting in Panoramic Acquisition Control Properties)
Time to display image after acquisition	30 seconds
Time to display archived image	10 seconds

A-5. EMC Tables

Table 5. Guidance and Manufacturer's Declaration - Electromagnetic Emissions

PLEASE NOTE: The iPan system is intended for use in the electromagnetic environment specified below. The user of the iPan system must ensure that it is used in such an environment.

Emissions Test	Compliance	Guidance
RF emissions CISPR 11	Group 1 ClassB	The iPan system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.

Table 6. Guidance and Manufacturer's Declaration - Electromagnetic Immunity

PLEASE NOTE: The iPan system is intended for use in the electromagnetic environment specified below. The user of the iPan system must ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst (EFT) IEC 610004-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2kV common mode	± 1 kV differential mode ± 2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	(>95% dip) for 0.5 cycle (>60% dip) for 5 cycles (>30% dip) for 25 cycles (>95% dip) for 5 sec	(>95% dip) for 0.5 cycle (>60% dip) for 5 cycles (>30% dip) for 25 cycles (>95% dip) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the iPan system requires continued operation during mains interruptions, it is recommended that the iPan system be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency megnetic fields should be at levels characteristic of a typical location of a typical commercial or hospital environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communication equipment should be separated from the iPan system by no less than the distances calculated / listed below: Recommended separation distance: d= (3.5/3)(Sqrt P)
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	d= (3.5/3) (Sqrt P) 80 MHz to 800Mhz d= (7/3) (Sqrt P) 800 MHz to 2.5Ghz Where P is the maximum power in watts (W) and D is the recommended separation distance in meters (m). Field strengths from fixed transmitters, as determined by an electromagnetic site survey should be less than the compliance level (V1 and E1). Interference may occur in the vicinity of equipment containing a transmitter.

Table 7. Recommended Separation Distance between Portable and Mobile RF Communications Equipment and the iPan System

PLEASE NOTE: The iPan system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The user of the iPan system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the system as recommended below, according to the maximum output power of the communications equipment.

Max Output Power (Watts)	Separation (m) 150 kHz to 800 MHz d=(3.5/V1)(Sqrt P)	Separation (m) 150 kHz to 800 MHz d=(3.5/E1)(Sqrt P)	Separation (m) 800 MHz to 2.5 GHz d=(7/E1)(Sqrt P)
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.37
100	11.7	11.7	23.33

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