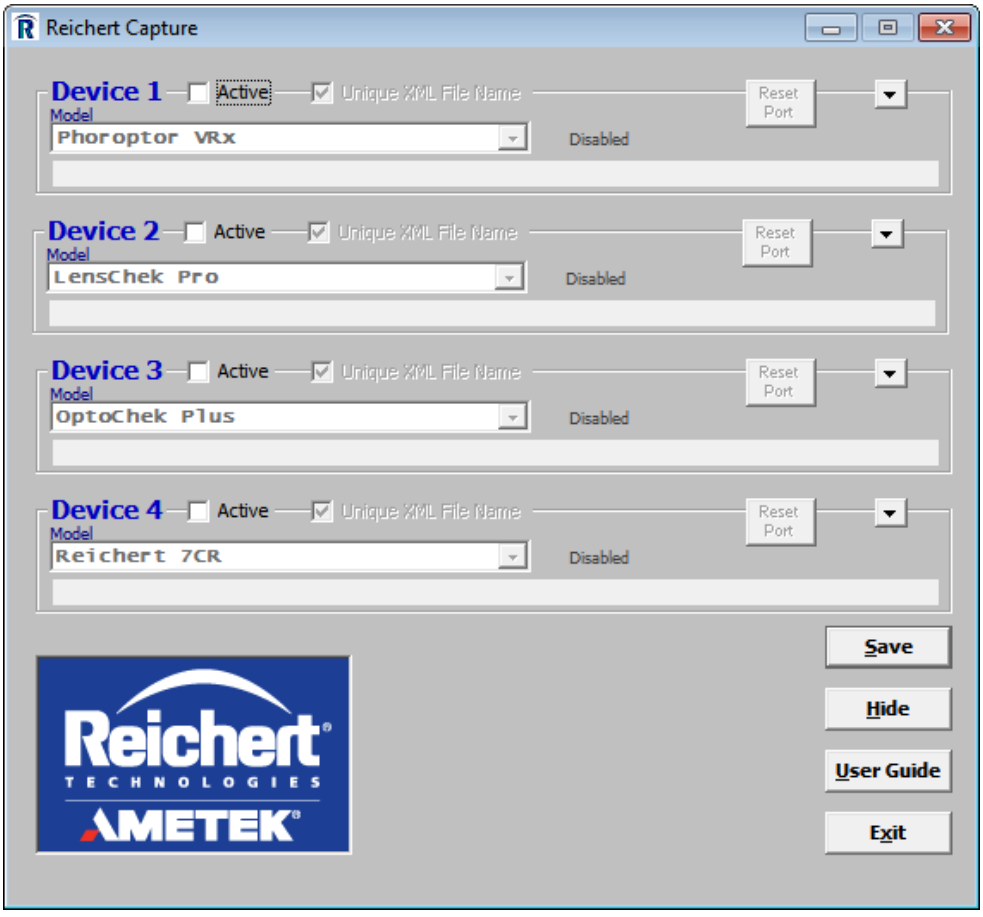
ReichertCapture®

EMR Interface Software

User's Guide



AMETEK®
ULTRA PRECISION TECHNOLOGIES

Reichert®
TECHNOLOGIES

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Introduction

ReichertCapture® is a software package designed to receive serial data from Reichert® instruments, organize the data, and send data to a system computer with Electronic Medical Records (hereafter indicated as EMR) software configured to accept XML file or HTTP Post transfer protocol.

The ReichertCapture software is configured by selecting an instrument model, a COM port and associated communications settings, a specified data output folder or webpage and, if supported for the instrument model, a specified data input folder for each unit. Up to four Reichert device channels can be interfaced at one time with the software.

Once the configuration is complete (e.g., the settings, the information of the specified COM ports, the file folders) the ReichertCapture software is active and ready to interface data between Reichert instruments and EMR software.

Definitions

Auto Comm	AL500 and AL700 option that sends repetitive data to the RS232C serial port. *(Note: When this option is ON the data stream will continue to send data every second with no termination character possibly causing serial errors.)*
AutoPhoroptor	An automated phoroptor which allows for efficient and convenient control of all lens settings via a computer terminal.
COM	Communications port.
Download	Sending of data to a local system from a remote system.
EMR	Electronic Medical Records software.
Host Computer	In this application, it is a computer located within a networked environment that manages electronic medical data to and from medical instruments.
HTTP	Hypertext Transfer Protocol is a request - response protocol to enable communications between clients and servers.
ID Number	Identification number displayed on LCD to identify individual patient's data.
IOP	Intra-Ocular Pressure. Measurement of fluid pressure inside the eye.
Keratometry	Measurement of the radii of curvature of the anterior surface of the cornea.
Lensometer	Instrument used to measure the optical properties (e.g., power, cylinder, prism) of an ophthalmic lens.
NCT	Non-Contact Tonometer. Instrument that measures IOP without contacting the cornea.
Ocular Response Analyzer G3	An advanced tonometer that measures corneal hysteresis (CH), a superior predictor of glaucoma progression.
Pachymetry	Instrument that measures corneal thickness using contact methods.
Phoroptor	Instrument used by eye care professionals to perform a refraction of the eye to measure an individual's refractive error and determine an eyeglass prescription to correct for the error.
Refractometry	Measurement of the refractive power and refractive error of the eye.
ReichertCapture	Reichert software designed to interface between Reichert instruments and industry standard EMR software.
RS232C	Serial port for transferring data.
Tonometer	Instrument used to measure the tension or pressure within the eye (intra-ocular pressure).
XML	Extensible Markup Language - a standard, simple method of encoding both text and data so content can be processed with relatively little human intervention and exchanged across hardware, operating systems, and other applications.

Installation & Setup

The ReichertCapture software is designed to provide a standardized data format interface for Reichert instruments. The instrument data is formatted and exported to an EMR system and on some instruments the interface data can be sent to Reichert Instruments.

The ReichertCapture program can be manually started by the user, or the program can be automatically started each time the host computer system is initiated. The software is designed to run as a background program; no user intervention is required once the initial configuration procedure is completed. Perform the following steps to install the software.

Software Installation

1. Download and execute the program (*.exe file). When the program starts up, select Next to start Setup. Refer to Figure IS-1.
2. Enter the Location of the folder for the ReichertCapture software installation. Refer to Figure IS-2.
3. Enter the Location of the folder for the ReichertCapture program shortcuts. Refer to Figure IS-3.
4. Select the additional tasks that are preferred for installation. Left-click on the check-box to select or deselect the preferred task. Refer to Figure IS-4.

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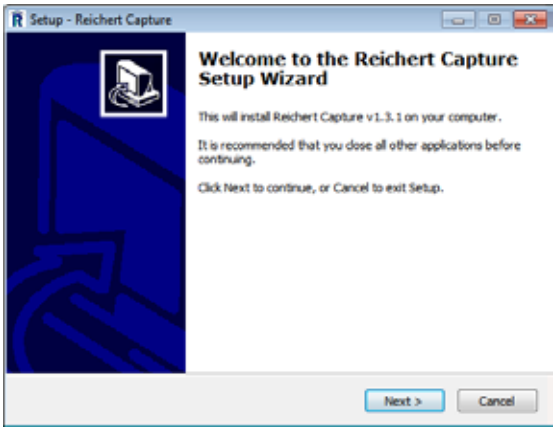

Figure IS-1, Initiate Setup



Figure IS-2, Folder Location

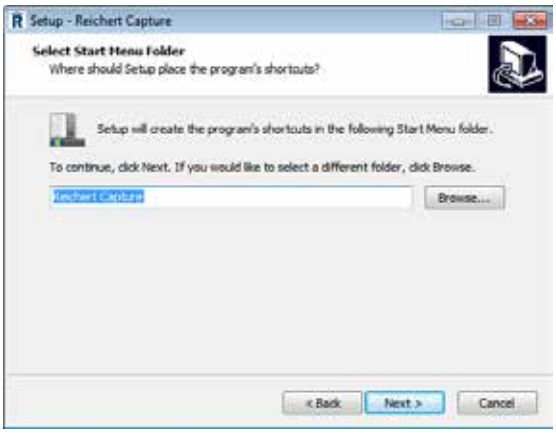

Figure IS-3, File Name

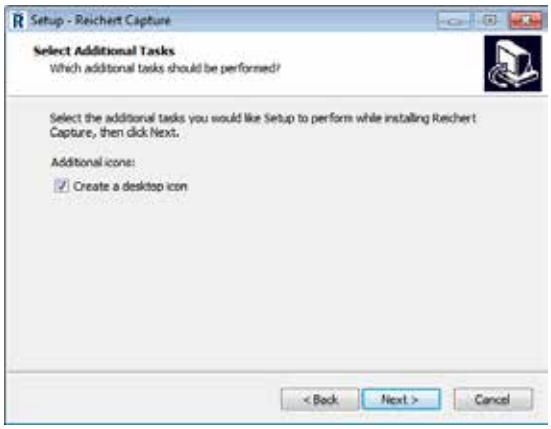

Figure IS-4, Desktop Icon

Installation & Setup (continued)

Software Installation (continued)

5. Review the options selected and then select Install to install the software, or select Back to go back to change any of the previous selections. Refer to Figure IS-5.
6. The program will complete the setup and then request Click Finish to exit Setup. Select Finish to complete the setup process. Refer to Figure IS-6.
7. The ReichertCapture directory is installed onto the C:\ directory (if the default is selected) or to the directory specified by the installer. Refer to Figure IS-7.
8. A sample of the directory files for the ReichertCapture is displayed in Figure IS-8.
9. After installation is complete, the ReichertCapture icon will be displayed on the computer desktop (if the option was selected in step 4).

Note: Setup is now complete and the ReichertCapture software is ready for use.

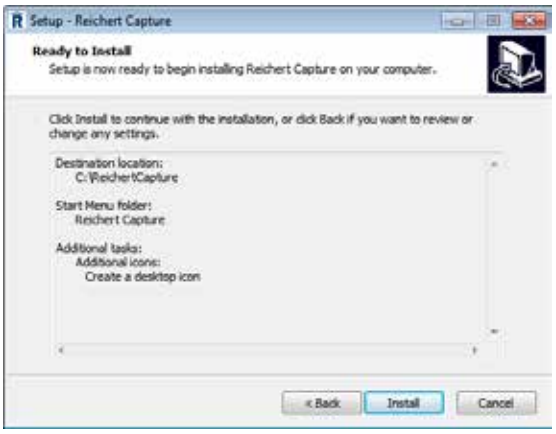

Figure IS-5, Install Program

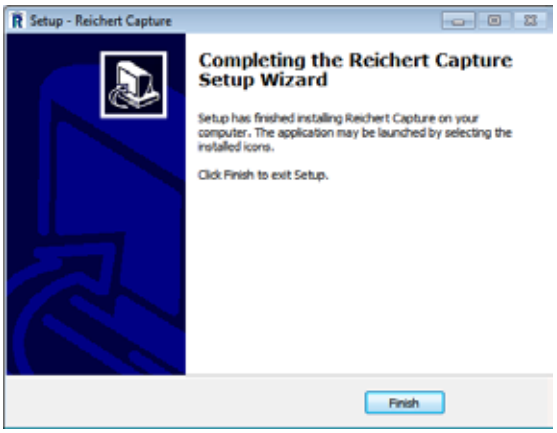

Figure IS-6, Complete Setup

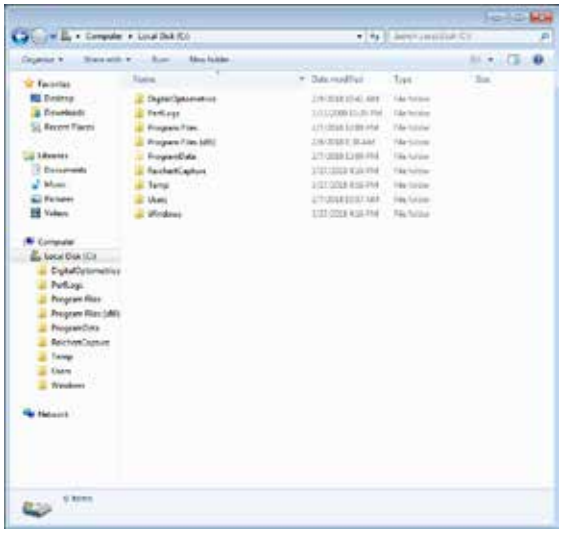

Figure IS-7, Program Directory

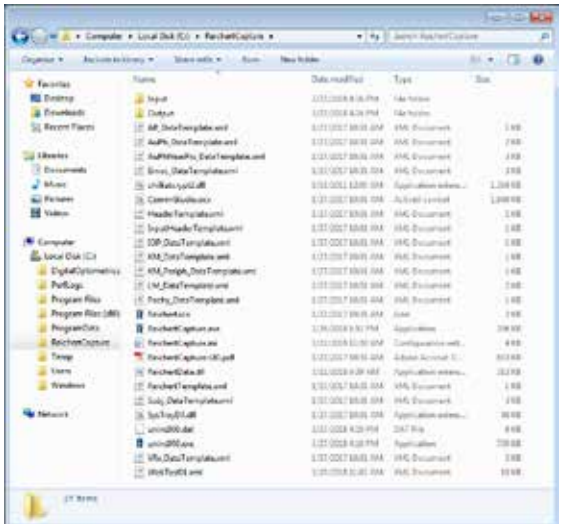

Figure IS-8, Program Files

Installation & Setup (continued)

Instrument Connectivity

The list of instruments that will connect to a computer for electronic medical record (EMR) data transfer is provided in Appendix A.

1. Connect the Reichert instrument to a computer using the cable indicated in Appendix B.
2. Double-click the ReichertCapture icon on the desktop to run the program. The initial screen will be displayed. Refer to IS-9.
3. Activate Device 1 (or the next sequential number) by selecting the Active box next to the Device.
4. After the Active box is selected, left-click on the down arrow in the Model pull down list. Choose the instrument connected to the computer.
5. After the instrument is selected left-click on the down arrow to the right of the Reset Port button and the settings of the serial port will be displayed.
6. Select the COM port for the instrument. Ensure that the settings on the instrument match the settings on the ReichertCapture software. Refer to Figure IS-10.
7. For XML file transfers, ensure that the Local File option is selected and the Output XML File Path is correct. If it is not correct, left-click the Browse button and select the location of the directory for the XML file. Refer to Figure IS-10
8. For those EMR systems that only support HTTP transfers to a web page, ensure that the ECP option is selected. Click the Config button to verify that the EMR system's web page connection parameters shown in the dialog box are correct. Refer to Figure IS-11. If they are not correct, enter the correct values and then left-click the OK button in the dialog.

Note: For HTTP transfers to a web page, the box next to the Unique XML File Name must be selected.

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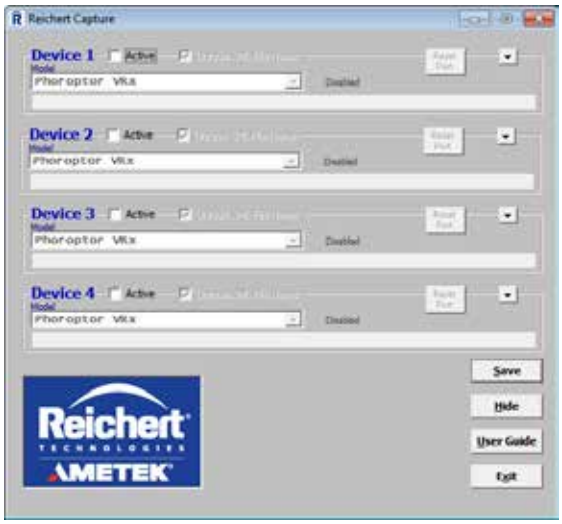

Figure IS-9, Initial Screen

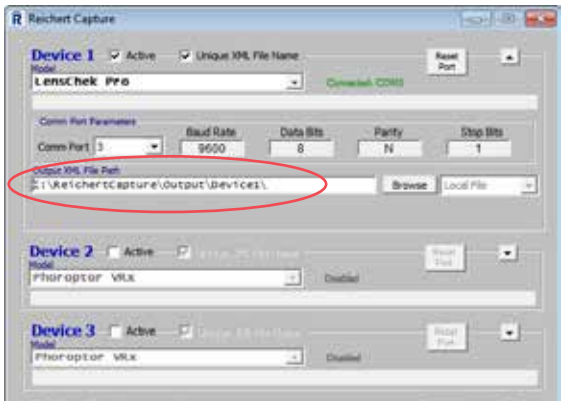

Figure IS-10, Output File Path

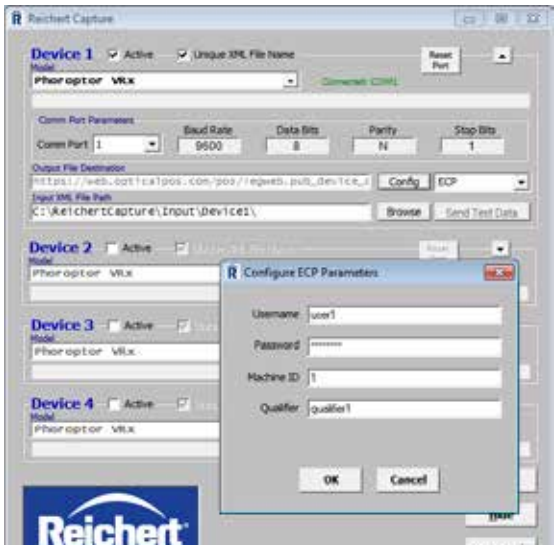

Figure IS-11, Web Page Settings

Installation & Setup (continued)

Instrument Connectivity (continued)

9. Save the setup data by selecting Save. Refer to Figure IS-12.
10. Test the data transfer (e.g., LensChek Pro: pressing the transfer data icon). When the data transfers correctly, a bar graph will show data transfer as shown in IS-12.

Note: Refer to the Instrument Settings section of this manual for any special settings required when transferring data.

11. For XML file transfers, review the new file that was just sent in the Output directory location specified in the setup procedure and ensure that a file transferred the data correctly (refer to the *Output File* section in this user guide).

Note: If a unique file name is desired, the box next to the Unique XML File Name must be selected.

12. For HTTP transfers to a web page, review the new data received by the EMR system and ensure that the XML message transferred the data correctly (refer to the Web Page Output section). Use the Send Test Data button to verify that the connection to the EMR's web page is properly configured and that a valid Internet connection is available. The button will briefly turn green if the test succeeded. Refer to Figure IS-13.

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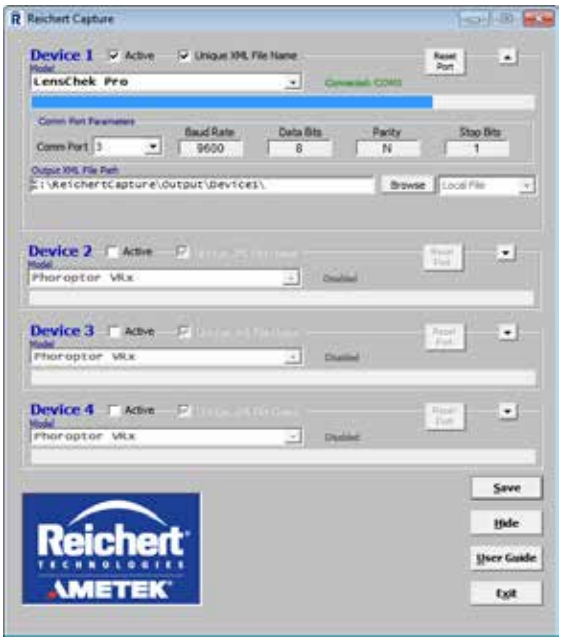

Figure IS-12, Data Transfer

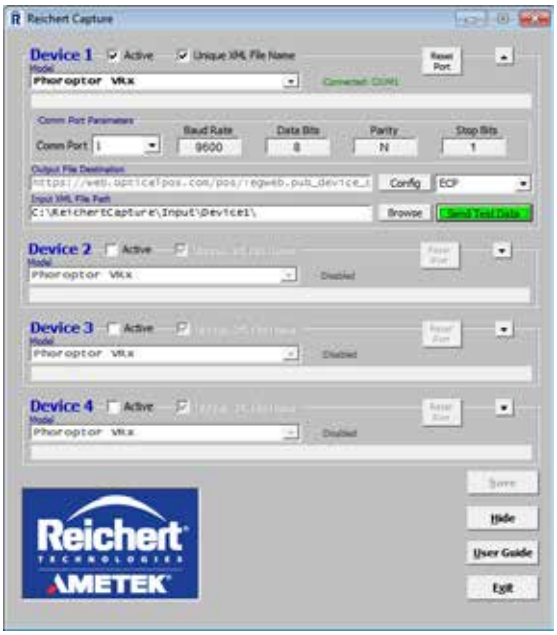

Figure IS-13, Web Data Test

Installation & Setup (continued)

Instrument Connectivity (continued)

13. Repeat the above steps for each Reichert instrument connected to the EMR system.

Note: If the instrument suddenly stops transferring data and was properly transmitting data before, left-click the "Reset Port" icon in the upper right corner of the affected device's configuration area in the ReichertCapture window to initiate a communication handshake between the instrument and ReichertCapture.

Note: The "Reset Port" icon may need to be initiated when a USB connection is used and the instrument is powered off or the USB connection is removed and re-installed.

Note: If setting up two-way communication for a digital refraction system, such as the Phoroptor VRx, Visutron Touch, SightChek, Auto Phoroptor RS, or Visutron, you will need to set both an input file path AND an output file path. Refer to Figure IS-14.

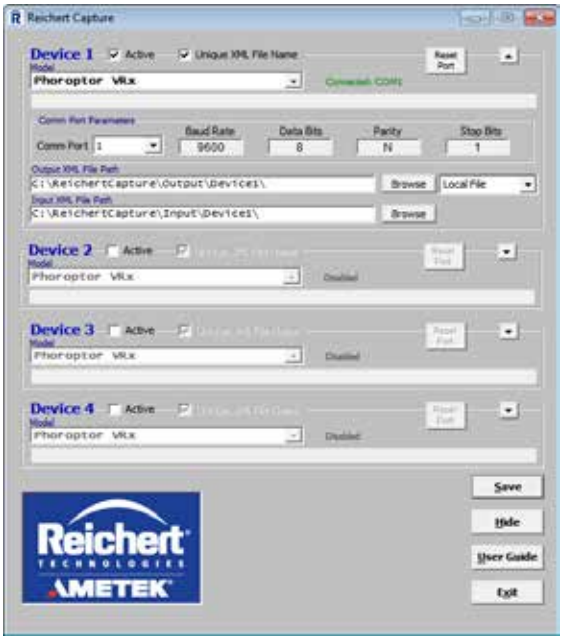

Figure IS-14, Two Way Settings

Reichert Digital Phoroptor Input and Output

Before setting up a digital Phoroptor, it is important to determine what kind of EMR is being used with the system. EMR is designed to operate one of two ways, either one-way communication or two-way communication. How the EMR is designed to function will determine how the pre-test equipment is set up, and how the data is sent and received. EMR systems cannot be changed from one-way to two-way, and vice versa. Therefore, it is important to figure out what kind of EMR system you have before setting up your equipment.

One Way Communication

This type of EMR is designed only to have data sent ***to*** it, and cannot send information out. This kind of system will require pre-test equipment (such as lensmeters and auto refractors) to be directly connected to the digital Phoroptor. All the pre-test quipment will send their data directly into the digital Phoroptor. Once the final subjective refraction is complete, ***all*** of the information, including the pre-test information, will be sent out to the EMR system.

- Continued -

Installation & Setup (continued)

Two Way Communication

This type of EMR is designed to be able to send data ***out to*** and ***receive data from*** the digital Phoroptor. This kind of system will require pre-test equipment (such as lensmeters and auto refractors) to be connected to the EMR system. All the pre-test information will be sent to the digital Phoroptor. Once the final subjective refraction is complete, ***only*** the final refraction data will be sent out to the EMR system, since the pre-test data is already stored in there.

Phoroptor VRx and Visutron Touch Screen Setup

Under the EMR tab in the PORTS section of the setup screen, select AutoPhor or Phoroptor VRX to send out ***only*** Phoroptor VRx final refraction data (for two-way communication EMR systems). Select AutoPhor Exp or Phoroptor VRX Exp under Device to send ***all*** Phoroptor VRx data out to the EMR system (for one-way communication EMR). Select Vis900 under Device to send out ***only*** Visutron Touch final refraction data (for two-way communication EMR systems). Refer to Figure IS-15.

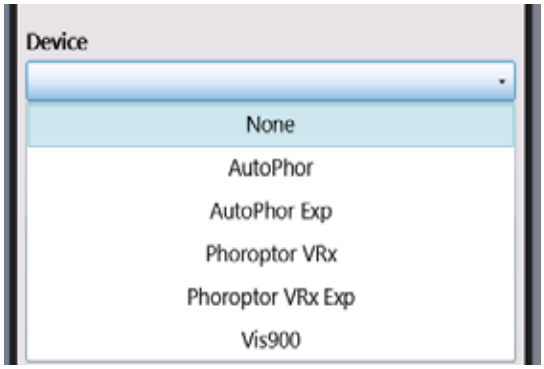

Figure IS-15, Device Selection Screen

- **AutoPhor:** Sends Phoroptor RS final refraction data only (two-way communcation EMR)
- **AutoPhor Exp:** Sends Phoroptor RS refraction, AutoRefractor, and Lensmeter data (one-way communcation EMR)
- **Phoroptor VRx:** Sends Phoroptor VRx final refraction data only (two-way communcation EMR)
- **Phoroptor VRx Exp:** Sends Phoroptor VRx refraction, AutoRefractor, and Lensmeter data (one-way communcation EMR)
- **Vis900:** Sends Visutron Touch final refraction data only (two-way communcation EMR)

Setting Screens for SightChek

Under the EMR tab in the Communication section of the setup screen, select SightChek to send out ***only*** final refraction data (for two-way communication EMR systems). Select SightChek Exp under Device to send ***all*** data out to the EMR system (for one-way communication EMR). Refer to Figure IS-16.

- **SightChek:** Sends SightChek final refraction data only (two-way communcation EMR)
- **SightChek Exp:** Sends SightChek refraction, AutoRefractor, and Lensmeter data (one-way communcation EMR)

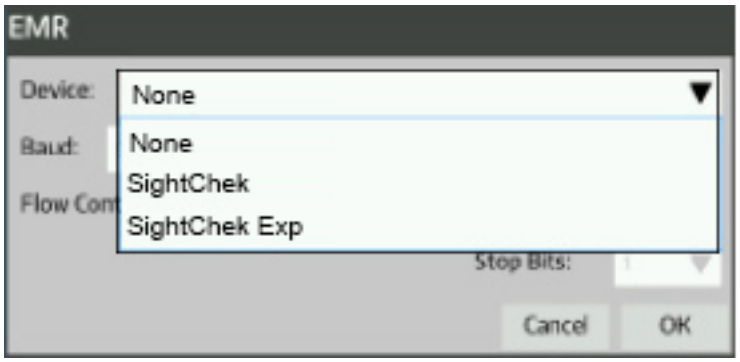

Figure IS-16, SightChek EMR Device Selection Screen

Operation

Introduction

Once the ReichertCapture program is installed, the program retains its configuration each time the computer system is powered on and the program runs in the background without any other input. The program is accessible through the Notification Area (in the lower right corner of the desktop). If the program is not available in the Notification Area, the ReichertCapture software can be manually started by selecting the program in the Windows Start menu (in the lower left corner of the desktop).

Output File (Local File Option)

When serial data is sent from a Reichert instrument via the selected COM port, the ReichertCapture software will generate an XML file for each valid file transfer and write the file to the user-specified output folder.

1. Ensure that the Reichert instrument has input power applied, is connected with the correct interface cable, and is ON.
2. Activate the ReichertCapture program and ensure that it indicates the COM port is connected to the Reichert instrument and the settings are the same between the ReichertCapture software and the instrument.
3. Take measurements on the Reichert instrument.
4. If the instrument is not setup to automatically export the measurement data, press the appropriate button to export the data manually (e.g., print).
5. Check to ensure that the data successfully transferred to the EMR software program.
6. A copy of the exported data is sent to an XML file for each valid data transfer to the user-specified output folder.

Note: If a unique file name is desired for each export, the box next to the Unique XML File Name must be selected. (Refer to Instrument Connectivity)

Web Page Output (ECP Option)

When serial data is sent from a Reichert instrument via the selected COM port, the ReichertCapture software will generate an XML formatted message and post it to the web page shown in Output File Destination.

1. Ensure that the Reichert instrument has input power applied, is connected with the correct interface cable, and is ON.
2. Activate the ReichertCapture program and ensure that it indicates the COM port is connected to the Reichert instrument and the settings are the same between the ReichertCapture software and the instrument.
3. Ensure that the EMR web page access credentials and other parameters match those provided by the EMR system vendor.
4. Take measurements on the Reichert instrument.
5. If the instrument is not set up to automatically export the measurement data, press the appropriate button to export the data manually (e.g., print).
6. A copy of the exported data is sent as an XML message to the web page shown in Output File Destination.
7. Check to ensure that the data successfully transferred to the EMR program (refer to the EMR system user guide for the specific instructions).

Note: A unique file name must be used to identify each XML message posted to the EMR's web page. The box next to the Unique XML File Name must be selected. (Refer to Instrument Connectivity)

Operation (Continued)

Input File

When a XML data file is written to a ReichertCapture input folder, the software will format and transfer the appropriate serial data to the corresponding instrument and the XML file will be deleted from the input folder after the message is sent.

Note: These input data files can only be imported into the Phoroptor VRx, AutoPhoroptor RS, Visutron Touch and SightChek instruments.

1. Ensure that the Reichert instrument has input power applied and is set ON.
2. Activate the ReichertCapture program and ensure that it indicates that the Reichert instrument is connected to the COM port.
3. Take measurements on the instrument that transfers data into the Phoroptor VRx, AutoPhoroptor RS, Visutron Touch or the SightChek instrument.
4. Export the data from the EMR program to an XML file in the ReichertCapture input folder.
5. Check to ensure that the data successfully transferred to the Phoroptor VRx, AutoPhoroptor RS, Visutron Touch or the SightChek instrument (refer to the instrument user guide for the specific instructions).

User Guide

An option has been added to the ReichertCapture program to open the User Guide. Click on the User Guide icon to open the manual. The file is a *.pdf format.

Instrument Settings

Some of the Reichert instruments require the data port set to specific settings to enable data transfer. The following settings are needed to transfer the data:

Note: Ensure that the settings in the unit's SETUP menu is set the same as the software.

Note: A typical port for the RS232C is COM1, a typical port for USB is COM4.

AL200 No special settings are required with this instrument.

AL500 RS232 - SETUP Mode \ Output Device - Requires RS232 or Both.

Note: Auto COM should be set to OFF or continuous data will be sent to the selected port.

AL700 USB - When connecting a USB cable to the unit, the USB option is automatically set. SETUP Mode (RS232C) \ Data Output \ Output Device - Requires RS232 or Both.

Note: Auto COM should be set to OFF or continuous data will be sent to the selected port.

AT550/AT555 Ensure that the settings in the SETUP menu in the unit are set the same as in the software.

Auto Phoroptor RS® Pressing the COM button on the console, initiates the exporting of the data. Ensure that the instrument settings in the Port Configuration dialog box (e.g., Settings/EDP Port) are the same as the settings in the ReichertCapture software. Select the EDP-AutoPhor Device /Protocol.

iPac® Refer to the User Guide for directions regarding Bluetooth connectivity.

LensChek Pro Ensure that the settings in the SETUP menu in the unit are set the same as in the software.

Operation (Continued)

LensChek Plus	Ensure that the settings in the SETUP menu in the unit are set the same as in the software.
Ocular Response Analyzer® G3	Ensure that the settings in the SETUP menu in the unit are set the same as in the software.
OptoChek Plus	Ensure that the settings in the SETUP menu in the unit are set the same as in the software.
Phoroptor® VRx	Pressing the OUT button on the console initiates the exporting of the data. Ensure that the instrument settings in the EMR section of the Ports page are the same as the settings in the ReichertCapture software. Select the AutoPhor, AutoPhor Exp, Phoroptor VRx, or Phoroptor VRx Exp Device.
PT100	SETUP \ Communications - Requires set to IR COMM and a serial to ACT IR220L+ interface device (or equivalent).
Reichert 7	Ensure that the settings in the SETUP menu in the unit are set the same as in the software.
Reichert 7CR	Ensure that the settings in the SETUP menu in the unit are set the same as in the software.
RK600	Ensure that the settings in the SETUP menu in the unit are set the same as in the software. **Note:** The printer must be set to ON and have paper installed for the serial data to be sent to the ReichertCapture software. (RK600)
RK700	Ensure that the settings in the SETUP menu in the unit are set the same as in the software. **Note:** If the RK700 is set to output using the RS232C, it will automatically switch to USB when the USB cable is plugged into the unit.
SightChek	Pressing the PRINT/EXPORT button on the console initiates the exporting of the data. Ensure that the instrument settings in the EMR section of the Ports page are the same as the settings in the ReichertCapture software. Select the AutoPhor or AutoPhorExp Device.
Visutron 900+	Pressing the COM button on the console, initiates the exporting of the data. Ensure that the instrument settings in the Port Configuration dialog box (e.g., Settings/EDP Port) are the same as the settings in the ReichertCapture software. Select the EDP-V900+ Device /Protocol.
Visutron Touch	Pressing the OUT button on the console initiates the exporting of the data. Ensure that the instrument settings in the EMR section of the Ports page are the same as the settings in the ReichertCapture software. Select the Vis900 Device.

Appendix A

Computer Interface of Reichert Instruments

	Baud Rate	Data Bits	Parity	Stop Bits
Auto Keratometer/Auto Refractor				
OptoChek Plus	9600	8	None	1
RK600	9600	8	None	1
RK700 (RS232)	115200	8	None	1
RK700 (USB)	921600	8	None	1
Lens Meters				
AL200	9600	8	None	1
AL500	38400	8	None	1
AL700 (RS232)	38400	8	None	1
AL700 (USB)	921600	8	None	1
LensChek Plus	9600	8	None	1
LensChek Pro	9600	8	None	1
Tonometers				
AT550/555	19200	8	None	1
PT100	9600	8	None	1
Reichert 7	19200	8	None	1
Reichert 7CR	19200	8	None	1
Ocular Response Analyzer G3	19200	8	None	1
Pachymeter				
iPac	19200	8	None	1
Refractors				
Auto Phoroptor RS	9600	8	None	1
Phoroptor VRx	9600	8	None	1
SightChek	9600	8	None	1
Visutron 900+	9600	8	None	1
Visutron Touch	9600	8	None	1

Appendix B

Instrument to Computer Cables

Auto Keratometer/Auto Refractor		
	Cable Part Number	**Baud Rate**
OptoChek Plus	Reichert P/N 13912-409 (RS232C)	9600
RK600	Reichert P/N 15030-401 (6 FT)	User Select
RK700	Reichert P/N 15205-431 (3 FT)	User Select
Lens Meters		
AL200	Reichert P/N 13604-931 (6 FT)	9600
AL500	DB9 (F-F) Standard Null modem Cable Required	38400
AL700	Reichert P/N 13912-409 (RS232C)	38400
LensChek Plus	Reichert P/N 13912-409 (RS232C)	9600
LensChek Pro	Reichert P/N 13912-409 (RS232C)	9600
Tonometers		
AT550/555	Reichert P/N 13912-409 (10 FT) or Reichert P/N 13880-409 (3 FT)	38400
PT100	ACT-IR220Lplus, Infrared to Serial Adapter (or equiv.)	
Reichert 7	Reichert P/N 15205-431 (USB - Needs Driver)	User Select
Reichert 7CR	Reichert P/N 15205-431 (USB - Needs Driver)	User Select
Ocular Response Analyzer G3	Reichert P/N 13912-409 (10 FT) or Reichert P/N 13880-409 (3 FT)	38400
Pachymeter		
iPac	Computer Bluetooth Hardware or USB Bluetooth Adapter	19200
Refractors		
Auto Phoroptor RS	Reichert P/N 559-261 (15 FT)	9600
Phoroptor VRx	Reichert P/N 559-261 (15 FT)	9600
SightChek	Reichert P/N 559-261 (15 FT)	9600
Visutron 900+	Reichert P/N 559-261 (15 FT)	9600
Visutron Touch	Reichert P/N 559-261 (15 FT)	9600

Note: A Serial to USB adapter (Reichert P/N 13207112) can be used with the RS232 cables for computers that only have USB inputs.

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