

AutoLoader 2.x

User Guide

FOR RESEARCH USE ONLY

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Catalog # SY-922-100
Part # 15015394 Rev. A
May 2010

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Introduction

The AutoLoader 2.x is a device that automatically loads and unloads BeadChip carriers into an iScan Reader or HiScan Reader. This enables you to walk away during scanning or leave the readers to run unattended overnight.



NOTE

The AutoLoader 2.x is compatible for use in an iScan or HiScanSQ System with Illumina BeadChips only. AutoLoader 2.x cannot be used with a BeadArray Reader and cannot be used to load flow cells into the HiScan Reader.



NOTE

The AutoLoader 2.x and readers have been precisely aligned to enable automated scanning. Do not move or bump them. Positional changes will require a Field Service Engineer visit to realign the integrated system.

The AutoLoader 2.x:

- ▶ Supports up to 192 BeadChips (up to four BeadChips per carrier, up to 24 carriers per input stack, two input stacks)
- ▶ Can be used in a single-reader or dual-reader configuration with iScan Readers and/or HiScan Readers
- ▶ Is fully integrated with iScan Control Software and Illumina LIMS
- ▶ Can be configured to send email for alerts and summary information
- ▶ Is designed for unattended operation of at least 16 hours



NOTE

To prevent failures due to potential dye degradation in unimaged BeadChips, do not leave BeadChips in the AutoLoader 2.x stacks for more than 16 consecutive hours.

Related Documentation

This guide provides instructions for setting up and using the AutoLoader 2.x to load and scan BeadChips on the iScan Reader or HiScan Reader.

For information about loading BeadChips manually, refer to the User Guide that came with your reader system:

- ▶ *iScan System User Guide*
- ▶ *HiScanSQ System User Guide*

For detailed information about LIMS, refer to the appropriate LIMS documentation:

- ▶ *Illumina LIMS User Guide*
- ▶ *Illumina LIMS Project Manager Guide*

Supported Configurations

AutoLoader 2.x can be configured to work with one or two readers in the following configurations:

- ▶ Single Configuration with one HiScan Reader
- ▶ Single Configuration with one iScan Reader
- ▶ Dual Configuration with one iScan Reader and one HiScan Reader
- ▶ Dual Configuration with two HiScan Readers
- ▶ Dual Configuration with two iScan Readers



NOTE

Dual-reader systems use a host/remote configuration. The host reader is called the local reader; the other is referred to as the remote reader.

Single-Reader Configurations

In a single-reader configuration, the HiScan Reader or iScan Reader is turned sideways on the bench, so its tray is facing the AutoLoader 2.x on the left. If the SQ Module is installed, it must be facing forward on the right side of the HiScan Reader, as shown in Figure 49.

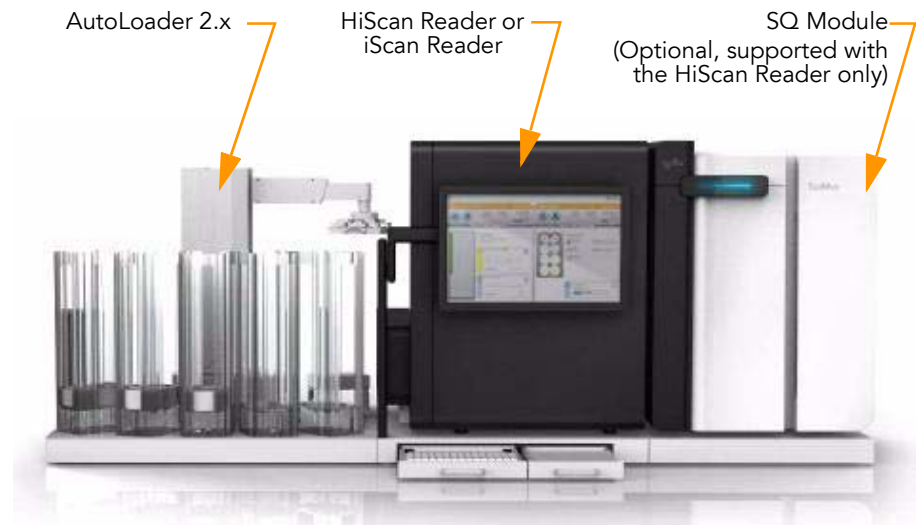


Figure 49 Single-Reader Configuration

Space Requirements

The following tables describe the space requirements for a single-reader configuration with and without the SQ Module for sequencing.

Table 9 *Single-Reader Configuration with an SQ Module*

Height	75.57 cm (29.75 in.)
Width	215.39 cm (84.8 in.)
Depth	97.95 cm (26.75 in.)

Table 10 *Single-Reader Configuration without an SQ Module*

Height	75.57 cm (29.75 in.)
Width	159.39 cm (62.75 in.)
Depth	97.95 cm (26.75 in.)

Dual-Reader Configurations

In a dual-reader configuration, both readers are turned sideways with their trays facing the AutoLoader 2.x between them. If your system includes one iScan Reader and one HiScan Reader, the HiScan Reader must be installed on the right side of the AutoLoader 2.x, with its tray facing left.



NOTE

A dual-reader configuration can only be used with one SQ Module installed. The SQ Module must be installed facing forward on the right side of the right HiScan Reader in the configuration, as shown in Figure 50.

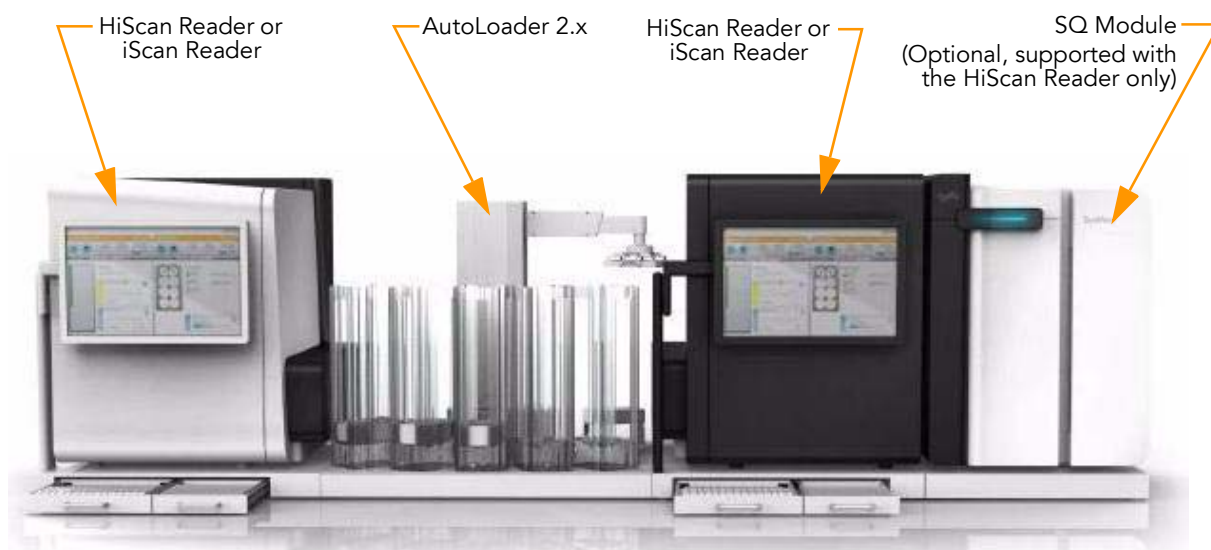


Figure 50 *Dual-Reader Configuration*

Space Requirements

The following tables describe the space requirements for a dual-reader configuration with and without the SQ Module for sequencing

Table 11 *Dual-Reader Configuration with an SQ Module*

Height	75.57 cm (29.75 in.)
Width	292.1 cm (115 in.)
Depth	97.95 cm (26.75 in.)

Table 12 *Dual-Reader Configuration without an SQ Module*

Height	75.57 cm (29.75 in.)
Width	234.95 cm (92.5 in.)
Depth	97.95 cm (26.75 in.)

AutoLoader 2.x Components

The AutoLoader 2.x consists of the components described below.



NOTE

For information about the components of an iScan Reader or HiScan Reader, refer to the documentation that came with the reader system.

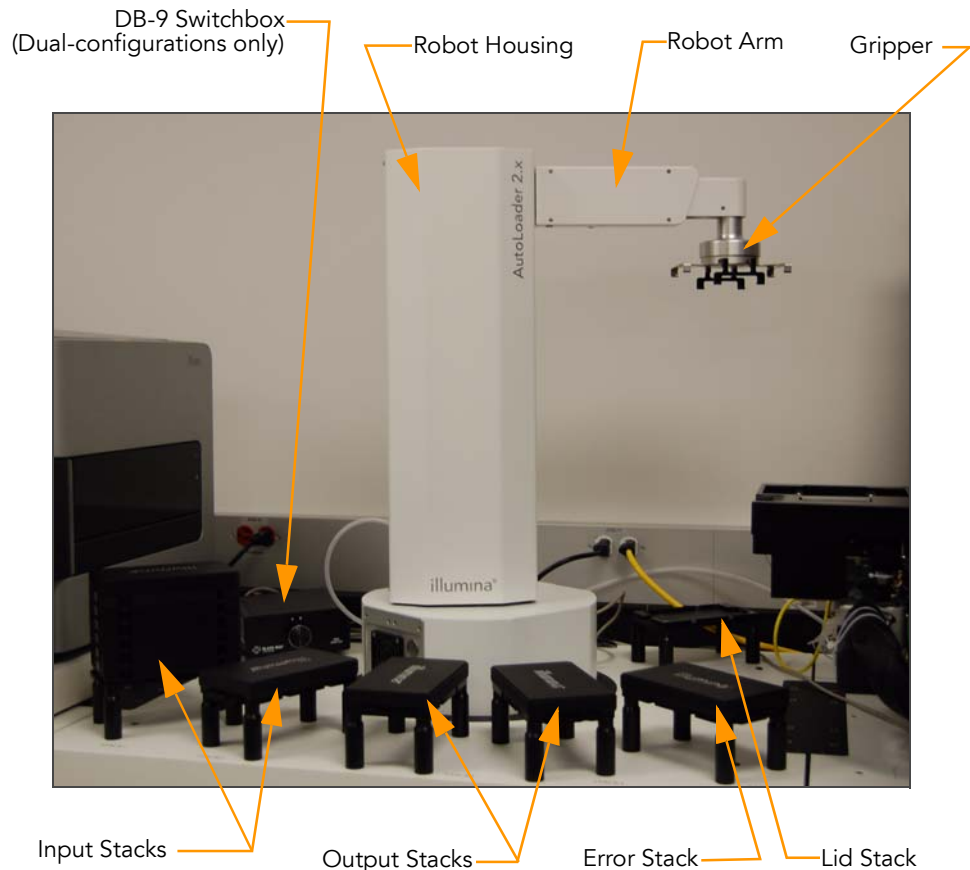


Figure 51 AutoLoader 2.x Components

Table 13 AutoLoader 2.x Components

Part	Purpose
Base Plate	Holds all of the AutoLoader 2.x components in precise positions, so that the robot can move the BeadChip carriers successfully. Never move the base plate.
Robot Housing	Provides a stable base for the robot arm.
Robot Arm	Moves the BeadChip carriers between locations.
Gripper	Grasps the sides of the BeadChip carrier to lift and move it between the stacks and the reader tray (or trays).

Table 13 *AutoLoader 2.x Components (Continued)*

Part	Purpose
Input Stack	Holds carriers with BeadChips that are ready to be scanned. By default, the two left stacks are input stacks.
Output Stack	Holds carriers containing BeadChips that have scanned without errors (or with fewer errors than the error threshold.) By default, the third and fourth stacks are the output stacks.
Error Stack	Holds carriers that resulted in system errors or contain BeadChips that crossed the error threshold. This is a specialized output stack that allows for easy identification of BeadChips with scan errors.
BeadChip Carrier	Holds up to four BeadChips. Each carrier acts as a lid for the carrier beneath it (shown inside stack extrusions).
Lid	Protects the BeadChips in the top carrier in a stack from exposure to excessive light, heat, and humidity.
Lid Stack	Holds lids while they are not on an input, output, or error stack.
DB-9 Switchbox	Enables you to change which reader is the local reader and which is the remote reader by flipping a switch.
Stack Extrusion (not shown)	Keeps the stacked carriers in place so that the robot arm can lift and replace them successfully.

Process Overview

This section provides an overview of the steps involved in scanning BeadChips using the AutoLoader 2.x. See the referenced sections for detailed instructions.

- 1.** Power up the iScan Reader or HiScan Reader.
See the documentation that came with your system.
- 2.** Power up the AutoLoader 2.x.
See *Powering Up the AutoLoader 2.x* on page 10.
- 3.** Start the AutoLoader 2.x software.
See *Starting the AutoLoader 2.x software* on page 11.
- 4.** Configure the AutoLoader 2.x software, if necessary.
See *Configuring the AutoLoader 2.x* on page 15.
- 5.** Load up to four BeadChips on each carrier, load up to 24 carriers in each input stack, and then cover the top carrier with a lid.
See *Loading and Removing BeadChips* on page 13.
- 6.** Scan BeadChips.
See *Scanning BeadChips Using the AutoLoader 2.x* on page 20.
- 7.** Monitor the scan.
See *Monitoring the Scan* on page 22.
- 8.** Remove BeadChips.
See *Loading and Removing BeadChips* on page 13.

Powering Up the AutoLoader 2.x

Turn on the AutoLoader 2.x only after the iScan Reader(s) and/or HiScan Reader(s) have been turned on.

1. With the power off, move the robot arm to rest on top of the lid stack. This will prevent the robot arm from making contact with the reader tray when the AutoLoader 2.x is powered on and initialized.
2. Ensure that the AutoLoader 2.x has been off for at least 2 minutes.
3. Press the **Power** switch on the back panel (Figure 52).

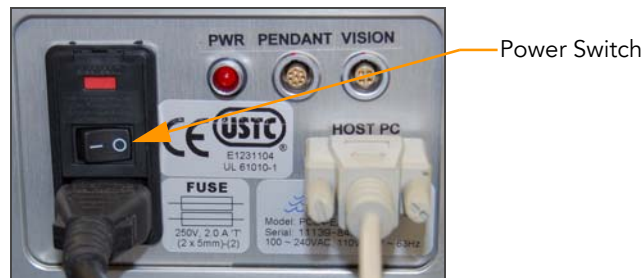


Figure 52 AutoLoader 2.x Power Switch



CAUTION

The AutoLoader 2.x has been designed for safe operation. However, any system with moving parts can potentially cause damage. Do not touch the AutoLoader 2.x robot arm while it is moving, or put your face, body, or any lab equipment in its path.

Starting the AutoLoader 2.x software

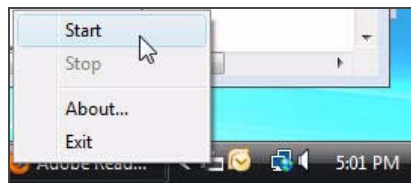
1. If you have a dual-reader configuration, start the the AutoLoader 2.x Service software on the **remote** reader as follows.

Check the remote computer to see if the AutoLoader 2.x Service software icon appears in the Windows taskbar on the lower right side of the screen (near the time).



If the icon appears in the taskbar:

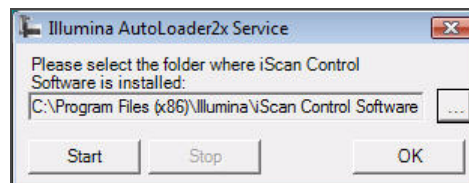
- Right-click the icon, select **Start**, and then proceed to step 2.



If the icon does not appear in the taskbar, do the following:

- a. Locate and double-click the *AutoLoaderService.exe* file in the *C:\Program Files\Illumina\AutoLoader Service* folder.

The Illumina AutoLoader Service dialog box opens.



- b. Click the button and browse to the folder where the iScan Control Software is installed.
 - c. Click **Start** and then proceed to step 2.
2. Start the iScan Control Software (ICS) on the **local** reader by double-clicking the iScan Control Software icon on the computer desktop.



NOTE

In a dual-reader configuration, do **not** start the ICS software on the remote reader.

The iScan Control Software automatically detects the AutoLoader 2.x, then prompts you to see if you want to run the software in AutoLoader mode or Manual mode (without the AutoLoader 2.x).

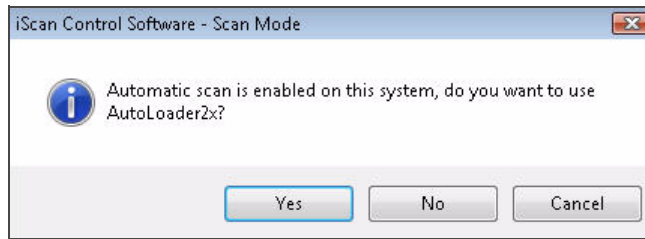


Figure 53 Starting an AutoLoader 2.x Scan

3. Click **Yes** to run iScan Control Software in AutoLoader mode. The iScan Control Software verifies the login information for one or both readers and the Welcome screen opens.

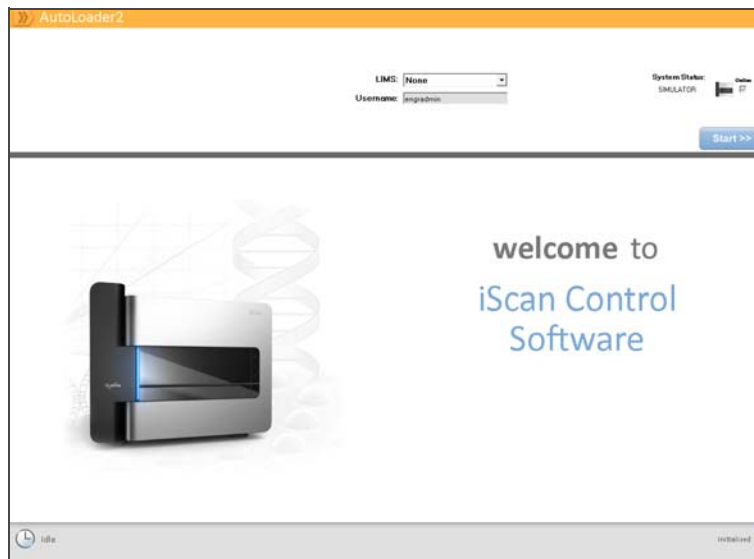


Figure 54 iScan Control Software Welcome Screen, AutoLoader Mode

Loading and Removing BeadChips

This section explains how to physically prepare BeadChips for scanning by an iScan or HiScanSQ System that uses an AutoLoader 2.x.

Loading BeadChips onto a Carrier

The process for loading BeadChips onto a carrier is the same for all iScan or HiScanSQ Systems, including those that use an AutoLoader 2.x. For more information, see the documentation that came with your system.

Loading BeadChip Carriers onto AutoLoader 2.x Stacks

Place BeadChip-loaded carriers onto the two leftmost stacks as you face the instrument (stacks 1 and 2). These are the input stacks. You can place up to 24 carriers plus a lid on each stack, for a total of 48 carriers.

1. Match the angled corner on the carrier to the angled corner on the back right corner of the stack. There is also a polarized pin on each stack to ensure that the carrier is stacked correctly.

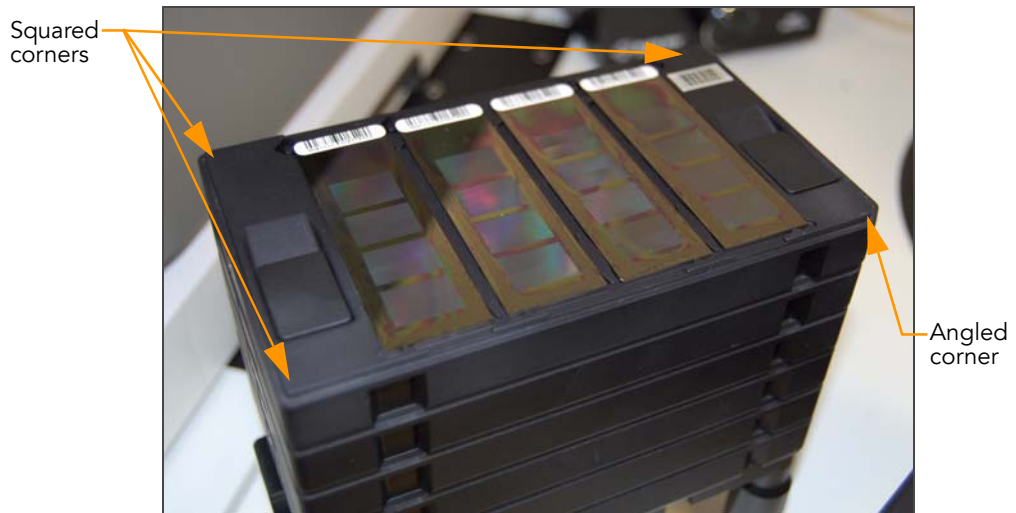


Figure 55 Placing Carriers on Stacks

The barcoded ends of the BeadChips are on the left side.

2. Place the lid onto the topmost carrier in the input stack, lining up the angled corner of the lid with the angled corner of the carrier. The lid should fit securely on top of the carrier.



NOTE

Lids protect the BeadChips from light, temperature, and humidity.

3. Place a lid on each of the two empty output stacks and the error stack (stacks 3, 4, and 5 as you face the instrument).

**NOTE**

You must place a lid on every stack except the lid stack.

4. After all BeadChip carriers are loaded, place a stack extrusion down and over each stack.

The stack extrusions are designed with rigid plastic wear guards on the inside to protect the metal carriers from rubbing on the metal stack extrusions, extending the life of both components.

**NOTE**

You must place a stack extrusion on every stack, even if there are no carriers on it.

Adding and Removing BeadChip Carriers from a Stack Extrusion

The stack extrusions fit so snugly around the carriers that it may be difficult to remove or add a single lid or carrier. The best way to add or remove carriers while a stack extrusion is in place is to move at least 3 carriers at a time. Moving at least 3 carriers in the stack extrusion prevents the carriers from being tilted.

Use the following procedure to add a carrier. Follow the same steps in reverse to remove a carrier.

**NOTE**


Do not add so many carriers that the lowest carriers in the stack do not get scanned for 16 hours or more. If this happens, the quality of the signal on the BeadChip may degrade.

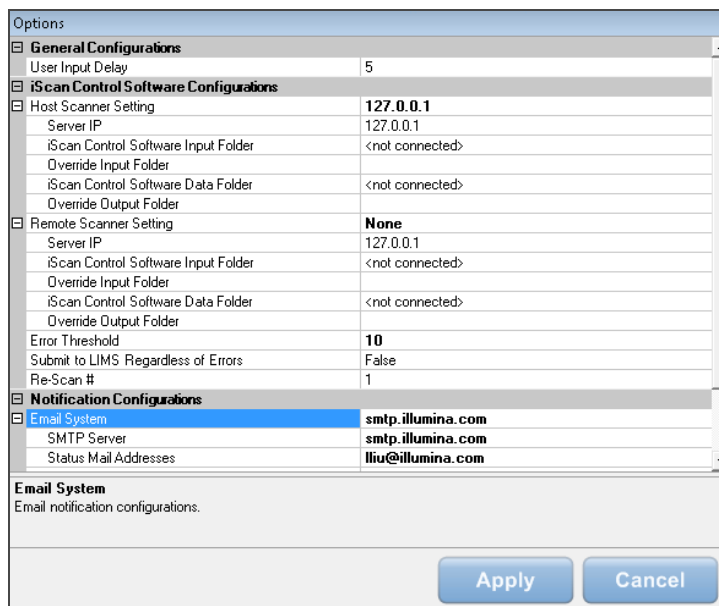
1. Grasp a minimum of 3 carriers from both sides.
2. Lift carriers and lid to top of stack extrusion.
3. Remove the lid.
4. Add additional carriers.
5. Lower carriers slightly and replace lid.
6. Lower carriers and lid to rest on top of stack within the stack extrusion.

Configuring the AutoLoader 2.x

Before using the AutoLoader 2.x for the first time, you need to perform some configuration steps. These are typically done just once, but you can also follow these instructions to make modifications later.

Setting AutoLoader 2.x Options and Email Alerts

1. In the AutoLoader 2.x software, click the **Menu** button  and select **Options**. The Options dialog box opens.



Options	
General Configurations	
User Input Delay	5
iScan Control Software Configurations	
Host Scanner Setting 127.0.0.1	
Server IP	127.0.0.1
iScan Control Software Input Folder	<not connected>
Override Input Folder	
iScan Control Software Data Folder	<not connected>
Override Output Folder	
Remote Scanner Setting None	
Server IP	127.0.0.1
iScan Control Software Input Folder	<not connected>
Override Input Folder	
iScan Control Software Data Folder	<not connected>
Override Output Folder	
Error Threshold	10
Submit to LIMS Regardless of Errors	False
Re-Scan #	1
Notification Configurations	
Email System smtp.illumina.com	
SMTP Server	smtp.illumina.com
Status Mail Addresses	liu@illumina.com
Email System Email notification configurations.	
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

2. Click a setting option. A description of that setting appears at the bottom of the dialog box.
3. To modify the setting option, select the setting in the right-hand column and enter the desired value.

Table 14 AutoLoader2 Options Settings

Option	Function
User Input Delay (Integer)	Number of seconds that the AutoLoader 2.x will wait to allow a user to enter a barcode number on the AutoLoader 2.x setup screen or to allow a user to select sections on a BeadChip. Default value is 5 seconds.
Re-Scan #	Number of times the scanner will attempt to rescan a BeadChip's failed stripes before placing it onto the error stack. Default is set to 1, but the number can be set to any number 0 or higher.
Host Scanner Setting	Detailed configuration information for the local reader.

Table 14 AutoLoader2 Options Settings (Continued)

Option	Function
Server IP	Scanner IP address for the local reader. Cannot be modified by user.
iScan Control Software Input Folder	Reports the input path specified in the iScan Control Software for the local reader the last time it was run. Cannot be modified by user.
Override Input Folder	Permanently overrides the input folder location for the local reader for all automated scans until deleted.
iScan Control Software Data Folder	Reports the output path (where scan data is saved) specified in the iScan Control Software for the local reader the last time it was run. Cannot be modified by user.
Override Output Folder	Permanently overrides the output folder location for the local reader for all automated scans until deleted.
Remote Scanner Setting	Detailed configuration information for the remote reader.
Server IP	Server IP address for the remote reader.
iScan Control Software Input Folder	Reports the input path specified in the iScan Control Software for the remote reader the last time it was run. Cannot be modified by user.
Override Input Folder	Permanently overrides the input folder location for the remote reader for all automated scans until deleted.
iScan Control Software Data Folder	Reports the output path (where scan data is saved) specified in the iScan Control Software for the remote reader the last time it was run. Cannot be modified by user.
Override Output Folder	Permanently overrides the output folder location for the remote reader for all automated scans until deleted.
Error Threshold (Percentage)	Determines the acceptable number of failed stripes on a BeadChip carrier. (Failed stripes are shown as red in the iScan Control Software.) An Error Threshold of 10, for example, means that up to 10% of the total stripes of all BeadChips on a carrier may fail and the carrier will still qualify for the output stack instead of the error stack. Accepted values are 0 to 100. The default error threshold is 10%.

Table 14 AutoLoader2 Options Settings (Continued)

Option	Function
Submit to LIMS Regardless of Errors (True/False)	A condition indicator that, when set to True, will submit BeadChip data to LIMS, even if the BeadChip has more than the minimal percentage of failed stripes. If set to false, on error, no information about the BeadChip is submitted to LIMS and as such the status of the BeadChip in LIMS is not updated.
Email System	The name of the email server from which the AutoLoader 2.x will send emails.
SMTP Server	The name of the customer email server from which the AutoLoader 2.x will send emails.
Status Mail Addresses	Addresses entered on this line receive a message when an AutoLoader 2.x batch run begins and again when it ends. Separate multiple email addresses with semicolons.
Warning Mail Addresses	Addresses entered on this line receive a message when a warning condition exists such as low available disk space. Separate multiple email addresses with semicolons.
Error Mail Addresses	Addresses entered on this line receive a message when a scanning event stops or does not proceed as expected. Separate multiple email addresses with semicolons.
Robot Communication Port (Integer)	The COM port to which the AutoLoader 2.x must be connected to ensure communication between the scanner and the robot.

4. Click **Apply** to save changes.

Configuring Output and Error Stacks

The default AutoLoader 2.x configuration consists of two input stacks holding a total of 48 BeadChip carriers, two output stacks holding a total of 48 BeadChip carriers, and one error stack holding a total of 24 BeadChip carriers. The default system will stop if a run generates 24 error carriers.

This section describes how to add extra error stack capacity to an AutoLoader 2.x, allowing errors to overflow onto the output stacks and eliminating run stoppages.

Configuring AutoLoader 2.x Stacks

The stacks are defined in a configuration file named *PlateCraneConfig1.xml*. This file is saved in the AutoLoader folder, typically located at *C:\Program Files\Illumina\Autoloader* or *C:\Program Files(x86)\Illumina\Autoloader*.

You can edit this file with a simple text editor such as Notepad or Wordpad to specify which stacks the AutoLoader 2.x software uses for the input, output, and errors.

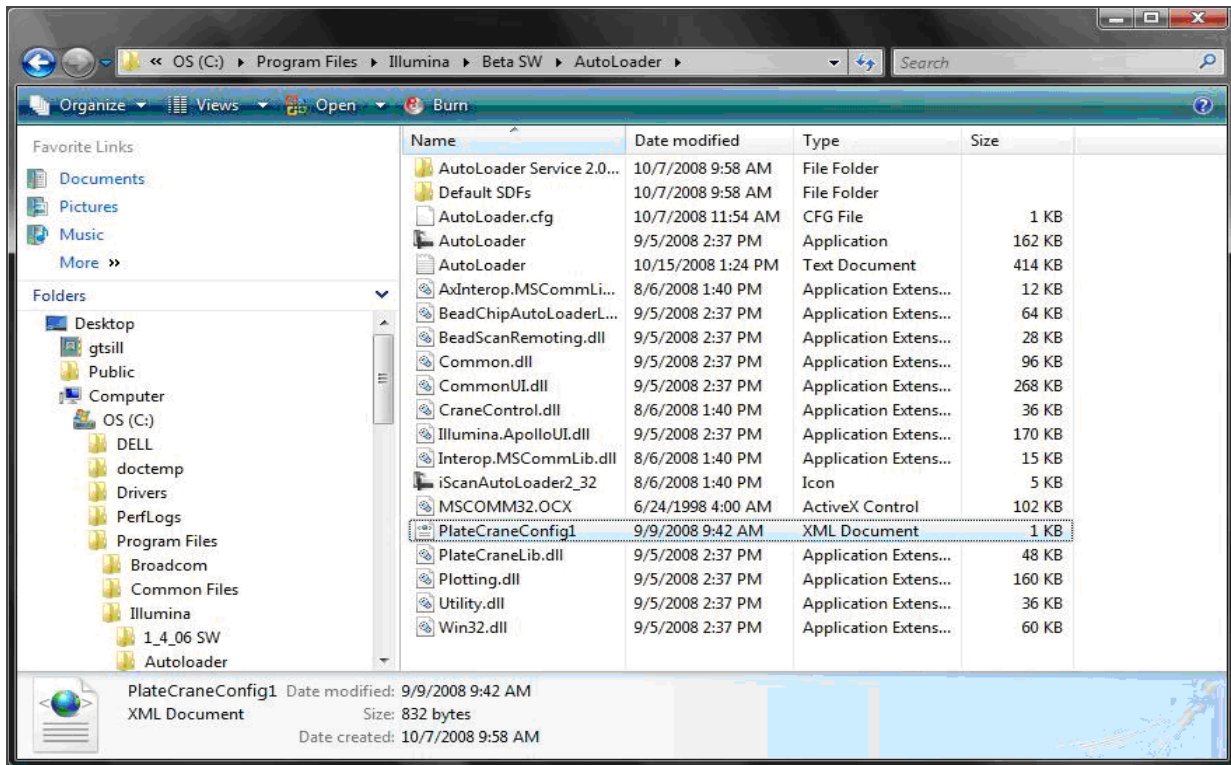


Figure 56 PlateCraneConfig1.xml File

Alternate Configuration 1 (Recommended)

In this configuration, the first error stack is stack 5 and the second error stack is stack 4. Stack 4 is also the second output stack.

This configuration fills the error stack and the first output stack with 24 BeadChip carriers each before overflowing onto output stack 4. The error stack contains error BeadChip carriers only, stack 3 contains only good BeadChip carriers, and stack 4 can contain either good or error carriers.

If either stack 3 or stack 5 is full (contains 24 carriers), but the other one is not, then stack 4 contains only the overflow from the full stack. For example, if output stack 3 is full, but error stack 5 is not, then any carriers in stack 4 must be good output carriers.

To set up this configuration:

1. Open the *PlateCraneConfig1.xml* file in a text editor.
2. Find the section labeled **<ErrorStacks>**.
The section should contain one line that says **<Nest>Stack5</Nest>**.
3. Add a second line to this section that says **<Nest>Stack4</Nest>**.

This causes the AutoLoader 2.x to use stack 5 as the first error stack. If stack 5 becomes full, then the system will use stack 4.

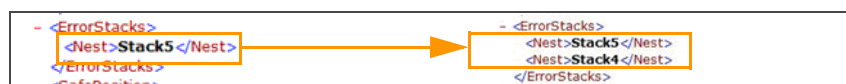


Figure 57 Editing the PlateCraneConfig1.xml File

Alternate Configuration 2

In this configuration, the error stack is eliminated, and all BeadChip carriers are placed in stacks 3 and 4.

This configuration disables the AutoLoader 2.x's ability to separate BeadChip carriers with errors from "good" carriers without errors. It will place both error carriers and good carriers onto output stack 3 before overflowing onto output stack 4. No carriers will be placed in stack 5, as stacks 3 and 4 can already hold the full 48-carrier input capacity of the AutoLoader 2.x. You will need to sort through all of the carriers to determine their status.

To set up this configuration:

1. Open the *PlateCraneConfig1.xml* file in a text editor.
2. Find the section labeled **<OutputStacks>**.
The section should contain one line that says **<Nest>Stack3</Nest>** and another line that says **<Nest>Stack4</Nest>**.
3. Copy both **<Nest>** lines from this section and paste them into the section labeled **<ErrorStacks>** before the line **<Nest>Stack5</Nest>**.
You can delete the Stack5 line, if desired.

Scanning BeadChips Using the AutoLoader 2.x

These steps assume that you have already initialized the AutoLoader 2.x, started the software, and selected the mode. For more information, see *Starting the AutoLoader 2.x software* on page 11.

Starting the Scan

1. On the Welcome screen, click **Start**.

The AutoLoader 2.x initializes as follows:

- Moves between the stacks, reader trays, and lid stack
- Determines the number of BeadChip carriers in each stack
- Makes sure there are no BeadChip carriers in the reader trays
- Makes sure there is no lid in the lid stack



NOTE

iScan Control Software is greyed out at the bottom portion of the screen. You do not need to log on to the iScan Control Software.

2. At the Setup screen, select the appropriate scan setting.

If you have more than one type of BeadChip loaded in the stacks, select the **Default** option. This instructs AutoLoader 2.x to read the *.sdf description file for each BeadChip to determine its type.



NOTE

If you want to create a custom scan setting that can be selected on this screen:

- a. Open the iScan Control Software in Manual mode and create the custom scan setting, as described in the *iScan System User Guide* or *HiScanSQ System User Guide*.
- b. In a dual-reader configuration, copy the custom scan setting file from the local computer to the remote computer. The scan setting file must be saved in the following folder:

`C:\Program Files\Illumina\iScan Control Software\Scan Settings\<instrument type>`

where **<instrument type>** is either HiScan or iScanPlus, depending on your configuration.

- c. Reinitialize the software to use AutoLoader mode.

For more information, see *Switching Between AutoLoader and Manual Modes* on page 25.

3. Click **Next**. The AutoLoader 2.x grips the first BeadChip carrier and places it in the reader tray. The tray closes and the scanning begins.

Performing the Scan

The AutoLoader 2.x and the HiScan Reader cycle through the following actions until all BeadChips have been scanned.

AutoLoader 2.x:

1. Removes the BeadChip carrier lid from the input stack and places the lid in the lid stack.
2. Lifts the top BeadChip carrier from the input stack and places the top BeadChip carrier into the HiScan Reader tray.
3. Retrieves the lid from the lid stack and places it onto the top BeadChip carrier in the input stack.

iScan Reader or HiScan Reader:

4. Scans the carrier and BeadChip barcodes, scans the BeadChip, and then extends the tray.

AutoLoader 2.x:

5. Removes the BeadChip carrier lid from the output stack or error stack, depending on the success of the scan, and places it in the lid stack.



NOTE

Several events during the scan process can cause the BeadChip carrier to end up in the error stack instead of the output stack, including:

- One of the BeadChips in the carrier does not have enough information to scan (for example, missing decode data [*.dmap file] or a missing scan setting)
- The BeadChip carrier does not meet the error threshold for percentage of successful sections scanned
- One of the BeadChips failed alignment
- An instrument error occurred

The Options dialog box in the AutoLoader 2.x software contains a setting that controls the number of times to attempt to rescan a BeadChip before moving the carrier to the error stack.

6. Lifts the BeadChip carrier from the extended tray.
7. Places the BeadChip carrier into the output stack or error stack.
8. Retrieves the lid from the lid stack and places it onto the top BeadChip carrier in the output stack or error stack.



NOTE

If the AutoLoader 2.x fails to release a BeadChip carrier at any step in this process, click **Stop** in the AutoLoader 2.x software. The reader and AutoLoader 2.x will stop and the software will move to the Done screen. Support the carrier with your hand and click **Open Gripper** to release the carrier. If you do not place your hand underneath the carrier, the BeadChips will fall onto the AutoLoader 2.x deck.

Monitoring the Scan

During the scan process, the Scan Status screen is displayed. The upper-left window shows a log of all events during the scanning process. The log also records a variety of errors, such as a missing decode map file and a failure to load scan settings.

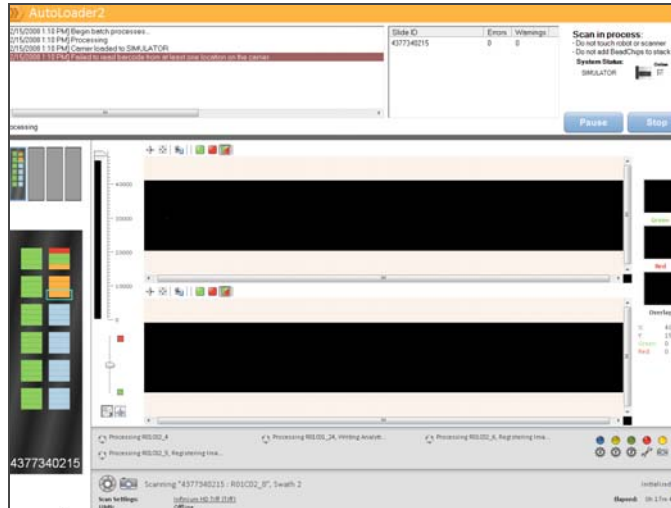


Figure 58 Scan Screen

Scan Errors

The Scan Status window on the Scan screen lists all of the BeadChip IDs that have been scanned, along with any warnings or errors that occurred while scanning. Carriers containing BeadChips that had errors during scanning will automatically be placed in the error stack.

You can also find out about scan errors by reviewing the Batch Summary Report that appears at the end of a scan and the email notification sent at the end of each run (if configured).



NOTE

Illumina recommends configuring email notifications for your system, as described in *Setting AutoLoader 2.x Options and Email Alerts* on page 15. Email notifications are the best way to get a report of the scans you complete using the AutoLoader 2.x.



NOTE

The Batch Summary Report is not permanently saved to the computer. If you did not configure your system for email notifications but want to save a copy of the report, highlight the text in the dialog box, copy it, and paste the content into a new text file before closing the window.



NOTE

If a BeadChip was not scanned, it will not be listed in the Scan Status window, Batch Summary Report, or email notification.

Interrupting the Scan Process

The System Status section on the right side of the Scan Status window contains Pause and Stop buttons that enable you to interrupt a scan.

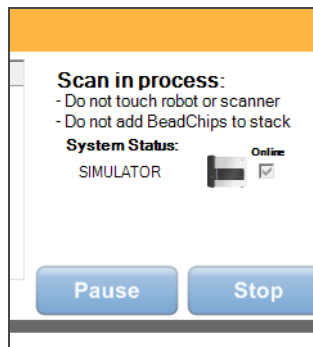


Figure 59 System Status Section of Scan Status Window

- ▶ If you select **Pause** while scanning in automated mode, the AutoLoader 2.x and scanner immediately stop all actions. (Any computer activity, such as image processing, will continue until that task is completed.) The carrier remains inside of the reader until the AutoLoader 2.x is resumed. When you are ready to continue, click **Resume**.
- ▶ Click **Stop** on the local reader to stop both readers. After the scan stops, the **Done** screen appears.

System Status

The System Status section on the right side of the Scan Status window shows the readers that are available, their systems IDs, and their status.

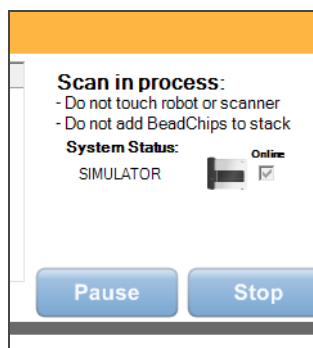


Figure 60 System Status Section of Scan Status Window

To take a reader offline

- ▶ Click the check box next to the reader icon to clear it.

To manually initialize a reader if there is a problem

- ▶ Right-click the reader icon on this screen and select **Initialize**.

To view a reader's software and firmware information

- ▶ Right-click the reader icon on this screen and select **About**.

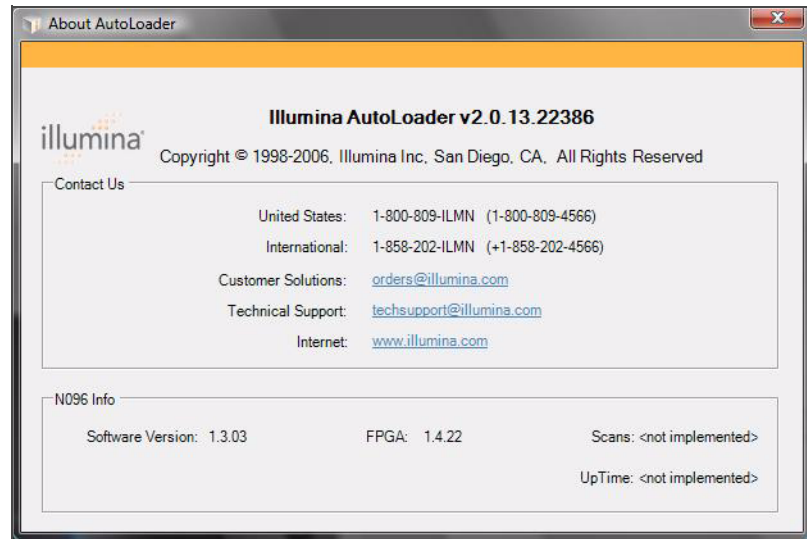


Figure 61 About AutoLoader Dialog Box

Ending the Session


When all the BeadChips have been scanned, the **Scan Completed** screen appears. This screen alerts you that the scan has been completed and indicates how many errors were detected during the run, if any. The Batch Summary Report, containing statistics about each BeadChip scanned, also appears. Click **OK** to close the Batch Summary Report, then click **Done** to complete the AutoLoader 2.x session.

Switching Between AutoLoader and Manual Modes

If you want to run the iScan or HiScanSQ System without the AutoLoader 2.x, switch the reader into Manual mode. To return to using AutoLoader 2.x, simply switch the readers back into AutoLoader mode.

Switching from AutoLoader Mode to Manual Mode

To switch the reader from AutoLoader 2.x mode to Manual mode:

1. Complete all automated scans.
2. Remove all carriers from the AutoLoader 2.x input stacks.
3. Click the **Menu** button  and select **Exit**.

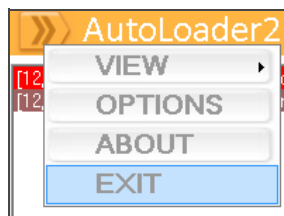


Figure 62 Exiting the AutoLoader 2.x software

4. Restart the iScan Control Software.

The iScan Control Software will prompt you to see if you want to run the iScan or HiScanSQ System in AutoLoader mode or Manual mode.

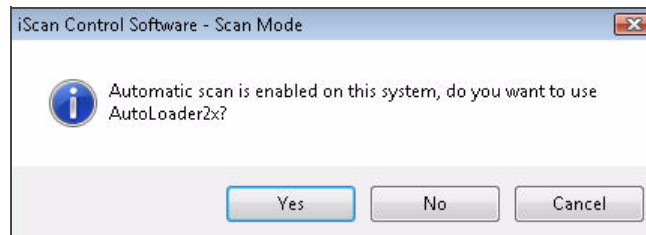


Figure 63 Starting Manual Mode

5. Click **No** to run the iScan or HiScanSQ System in manual mode.

For information on manual scanning, refer to the documentation that came with your iScan or HiScanSQ System.

Switching from Manual Mode to AutoLoader 2.x Mode

To switch the reader from Manual mode to AutoLoader 2.x mode:

1. Complete all manual scans.
2. Place the carriers you want to scan on the AutoLoader 2.x input stacks.
3. If you want to run the AutoLoader 2.x in dual-reader mode, make sure the iScan Control Software is closed on the remote reader.
4. Follow the instructions for scanning BeadChips using an AutoLoader 2.x. See *Scanning BeadChips Using the AutoLoader 2.x* on page 20.

Switching Remote Reader to Local Reader

If you have a dual-reader configuration and need to take the local reader offline, you can continue using the AutoLoader 2.x to load your samples on the other reader by switching the remote reader to be the new local reader.



NOTE

AutoLoader 2.x software and AutoLoader 2.x Service software must be installed on both readers to switch the local and remote readers.

In a dual-reader configuration, there is a DB-9 switchbox that typically sits on the back left side of the AutoLoader 2.x base plate, next to the left-side reader. The switchbox determines which reader is remote and which is local.



Figure 64 DB-9 Switchbox



NOTE

The DB-9 switchbox is only for flexibility. Illumina does not recommend switching local and remote readers on a regular basis. If you need to switch readers, make sure you follow the instructions in this section, or the readers might not work properly.

To switch which reader serves as the local reader and which serves as the remote reader for scanning in a dual-reader configuration:

1. Make sure that neither reader is in the process of scanning and that the iScan Control Software is closed on both computers.
2. Flip the direction of the switch on the DB-9 switchbox.
3. Verify that the new remote reader and computer are turned on.
4. Launch the AutoLoader 2.x Service software on the new remote computer.
5. Launch the iScan Control Software in AutoLoader mode on the new local reader.

To take the local reader offline and use the remote reader in a single-reader configuration:



Follow this procedure only if you are permanently removing a remote scanner and changing to a single-reader configuration.

1. Make sure that neither reader is in the process of scanning and that the iScan Control Software is closed on both computers.
2. Flip the direction of the switch on the DB-9 switchbox.
3. Launch the iScan Control Software in AutoLoader mode on the new local reader.
4. In the **Options** dialog box, set the Remote Scanner to **None**.

This reader is now the only reader in the configuration that can be used to scan BeadChips in AutoLoader mode. If you want to scan BeadChips on the other reader, you must follow the manual process described in the documentation that came with your iScan or HiScanSQ System.

Folder Structures

This section describes the iScan Control Software folder structures for various AutoLoader 2.x system configurations.

Single-Reader Configurations

In a single-reader configuration, there are two folders on the reader computer where AutoLoader 2.x related files are saved:

C:\Program Files\Illumina\AutoLoader

C:\Program Files\Illumina\iScan Control Software

Dual-Reader Configurations

In a dual-reader configuration, there are three folders on the reader computers where AutoLoader 2.x related files are saved. They have slightly different names on the local and remote reader computers:

Local Computer	Remote Computer
<i>C:\Program Files\Illumina\iScan Control Software</i>	<i>C:\Program Files\Illumina\iScan Control Software</i>
<i>C:\Program Files\Illumina\AutoLoader</i>	<i>C:\Program Files\Illumina\remote - AutoLoader</i>
<i>C:\Program Files\Illumina\AutoLoader Service</i>	<i>C:\Program Files\Illumina\AutoLoader Service</i>

Log Files

During each run, AutoLoader 2.x lists every step in the scanning process, as well as any errors, in a log file. Log files are saved in the AutoLoader application folder.

The current log file is named *AutoLoader.log*. When the log file reaches 5 MB in size, AutoLoader 2.x renames it to *AutoLoader.01.log*. AutoLoader 2.x then creates a new *AutoLoader.log* file and begins logging information in it.

When the new *AutoLoader.log* file reaches 5 MB, AutoLoader 2.x renames *AutoLoader.01.log* to *AutoLoader.02.log*, renames *AutoLoader.log* to *AutoLoader.01.log*, and then creates a new *AutoLoader.log* file and begins logging information in it.

As log files reach 5 MB, they continue to be renamed in this manner up to *AutoLoader.10.log*. When there is an *AutoLoader.10.log* file and a new log file is created, *AutoLoader.10.log* is deleted, and *AutoLoader.09.log* is renamed to *AutoLoader.10.log*.



NOTE

AutoLoader.log is always the current log, and *AutoLoader.10.log* is always the oldest.

Troubleshooting

Review these tips and suggestions if you are having trouble with the AutoLoader 2.x.

- ▶ Make sure that *.dmap files are saved in the appropriate folder. If *.dmap files are not present, scanning will not occur.
- ▶ The AutoLoader 2.x stops operation when the total number of scanned carriers in the output stacks and in the reader is 48. The total number of carriers allowed in the input stacks, output stacks, and inside the HiScan Reader is 48. However, carriers in the output stack can be removed once they are done.
- ▶ Adding and removing carriers (and the lids) should only be done when lids are on the input and output stacks, and when the AutoLoader 2.x robotic arm is not in motion.
- ▶ Obstructing the AutoLoader 2.x robot will result in an error.
- ▶ To enable dual-reader automated scanning, make sure the iScan Control Software on the remote computer is not running. Otherwise, the system will generate an error indicating the remote iScan Control Software is running in Manual mode.
- ▶ Make sure there are no carriers in the reader tray prior to using the AutoLoader 2.x. This is important for both single- and dual-reader configurations.
- ▶ If you are scanning in a dual-reader configuration but the **Remote Reader** check box is not automatically selected when you start the iScan Control Software on the local reader, make sure that:
 - The remote reader is on and ready (Power and Ready lights are solid blue and green, respectively).
 - You are logged in to the remote reader.
 - The iScan Control Software is not already running on the remote computer. If it is running, the local reader runs in single-reader mode.
 - The AutoLoader 2.x Service software is open and running on the remote computer.

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