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ScanArray Express 2.0
Microarray Analysis System
Installation Manual

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Introduction $\quad$ *C h a p t e r* 1

1.1　Overview

The ScanArray Express® Microarray Analysis System is designed to be installed by the user. Installation of the system consists of two parts, installation of the ScanArray Express instrument and installation of the ScanArray Express Application Software on a Windows® 2000 or Windows® XP workstation.

This chapter describes:

- site requirements
- workstation requirements
- where to get help

1.2　Site Requirements

Site requirements consist of environmental, space and power requirements.

1.2.1　Environmental Requirements

The ScanArray Express Microarray instrument should be installed in a facility that meets the following environmental requirements:

Environmental Requirements	
Temperature Range	15-30°C (59-86°F)
Humidity Range	20 to 80% Relative Humidity

Environmental Requirements

Allowable Temperature Change	3°C/hr (5.6°F/hr)

Install the instrument away from windows, ventilation ducts or any other devices that may cause significant changes in temperature.

The instrument should be installed in an area that is free of dust, strong magnetic fields or ionizing radiation.

The heat dissipated by the external laser (optional) is approximately 1kW (3414 BTU) during operation. Sufficient room ventilation or air conditioning should be provided so that ambient temperature does not increase.

1.2.2   Space Requirements

The ScanArray Express instrument should be placed on a bench where there is adequate room to insert samples into the front of the instrument. Instrument dimensions are:

	Length	Width	Height	Weight
ScanArray Lite	76 cm (30 inches)	38 cm (15 inches)	46 cm (18 inches)	37 kg (82 lbs)
ScanArray Express	76 cm (30 inches)	41 cm (16 inches)	41 cm (16 inches)	37 kg (82 lbs)
ScanArray Express HT	97 cm (38 inches)	38 cm (15 inches)	41 cm (16 inches)	50 kg (108 lbs)

- There should be a minimum of 10 cm (4 in.) between the ScanArray Express instrument and the workstation.
- The distance between the instrument and/or external laser and the walls should be a minimum of 5 cm (2 in.); a distance of 15 cm (6 in.) is preferable. This will provide suitable ventilation and allow easy access when connecting cables. An island type laboratory table is best if one is available, as it provides ready access to all sides of the instrument.

1.2.3 Power Requirements

	Volts AC	Amperes	Hertz
ScanArray Express Instrument	100-240 VAC (auto-ranging), +6%/-10%	3.5 A	50/60 Hz
External Laser (additional requirements)	100/120/240 VAC ±10% each range	15 A	50/60 Hz
External Laser, XL (additional requirements)	100-240 VAC (auto-ranging)	15 A	50-60 Hz

1.3 Workstation Requirements

To install the ScanArray Express application on your workstation, your workstaton must meet the following minimum requirements:

Minimum Workstation Requirements (See Note 1 below)

Processor	800 MHz Pentium III
RAM	512 MB or higher
Virtual Memory	300 MB
Hard Disk	4 GB (See Note 2 below)
CD-ROM Drive	24X (See Note 3 below)
Network Connectivity	10 MB Ethernet network interface card (NIC) and TCP/IP protocol installed
Monitor	17" Color Display 1024 x 768 x 32 bit - True Color
Operating System	Windows 2000 and Service Pack 2 or 3, Windows XP, or Windows XP and Service Pack 1
Internet Explorer	Version 5.0 or higher

Notes: The following are notes about the minimum workstation requirements.

1. These values represent the minimum system configuration except where specific versions are noted.

2. Hard Disk Space Requirements:
   A 4 scan acquisition at a resolution of 5um requires approximately 500mb of disk space.

3. Backup devices:
PerkinElmer recommends the use of a CD-RW or Zip 250 drive for backup and archive.

1.4   Where To Get Help

If you need help installing or operating your ScanArray Express, you can contact PerkinElmer Life Sciences in the following ways:

- Web Site - http://www.perkinelmer.com/microarray
- Customer Service by telephone
  Tel: + 617-350-9263 or (800) 551-2121
  Fax + 617-482-1380
  E-mail: PBTsupport@perkinelmer.com

Please be prepared with the following when calling:

- serial number of your instrument
- version number of the application software
- nature of the problem
- steps you have taken
- access to your instrument
- your phone number, fax number and e-mail address

Additional information about the instrument can be found in the following:

- ScanArray Express User Manual
- documentation provided with the workstation and its operating software
- documentation provided by manufacturers of the fluorophores used

Receiving the System

Chapter Summary

2.1   Overview

When the instrument arrives at your laboratory, carefully unpack the shipment and verify receipt of all components. The number of cartons is indicated on the packing list and is dependent on the components that have been ordered with the system.

This chapter describes:

- •   Initial Inspection
- •   Unpacking the Instrument
- •   Return Materials Procedure

2.2   Initial Inspection

Visually inspect the cartons upon receipt. If external damage is noted, indicate the damage on the shipping receipt when you sign for the product. If internal or concealed damage is noted once the carton is opened, contact both the shipping agent and PerkinElmer Life Sciences immediately. A written claim should be filed against the shipping agency as soon as the damage is noted.

⚠️ **Warning:** If there is any apparent damage to the instrument, do not plug the unit into the power line. Contact PerkinElmer Life Sciences for assistance. See ***Where To Get Help*** on page 1-4.

2.3   Unpacking the Instrument

> ⚠ **Caution:** Care should be taken when unpacking the instrument or placing it on the laboratory bench. Severe shock may damage or misalign optical components within the instrument. It is recommended that two people lift the instrument out of the shipping carton.

The ScanArray Express Microarray Analysis System includes the following items:

- ScanArray Express Instrument
- Instrument Power Cord
- ScanArray Express Software (CD-ROM)
- ScanArray Express Installation Guide
- ScanArray Quick Reference Guide
- ScanArray Express User Manual
- Test Sample Slides (16-Dye Standard Sensitivity Sample and Geometric Test Sample)
- Workstation/Instrument Private-Network Interface Cable (10BaseT crossover cable)
- Software Registration Card
- Warranty Registration Card
- Extended Warranty Brochure
- Return Materials Authorization Form (RMA Form)

If you have ordered an external laser, the instrument also includes:

- External Laser Module (with attached cable bundle)
- External Laser Fiber Connection Interlock Block
- External Laser Power Cord

If an external laser is supplied with the ScanArray Express instrument, unpack the laser carefully. The Fiber Optic Output cable is mounted into the laser housing and must be free of all packaging material before the laser is removed from the shipping carton. In addition, when you are removing the laser from the shipping carton, do not lift the unit by the cable bundle.

Retain all packaging materials. Additional shipping charges will be assessed if packaging is not available for instrument warranty service.

2.4   Return Materials Procedure

Carefully examine the shipment as soon as possible. If any problems are noted, they must be reported to PerkinElmer Life Sciences and the shipping agent within 10 days of receipt of the instrument.

In the unlikely event that it is necessary to return the instrument, obtain the packing list or invoice and contact PerkinElmer. See *Where To Get Help* on page 1-4. to obtain a Return Materials Authorization (RMA) number.

Write the RMA number on the Return Materials Authorization Form (which is shipped with the instrument), and attach the form to the outside of the box containing the returned items. This number will be used to track the returned instrument and will enable us to expedite its processing at our facility.

Installing the Hardware Chapter **3**

3.1   Overview

The ScanArray Express instrument and external laser (where applicable) should be installed in an area prepared according to Site Requirements on page 1-1.

This chapter contains:

- LED, Connector and Switch Descriptions
- Setting up the Hardware

3.2   LED, Connector and Switch Descriptions

3.2.1   ScanArray Express Front Panel LEDs

ScanArray Express instruments wiithout the HT option have the following LEDs:

LED Location	Without HT	Status	Description
Upper	POWER LED	**OFF**	No Power
		Green	Power (System ON)
Lower	READY LED	OFF	Initializing Controller (or abnormal state)
		Steady **Green**	
		Uniform blink (1-1) **Green**	Ready
			Acquiring (Scan, Focus, Range)
		Steady **Yellow**	Not ready (Initializing Instrument)
		Uniform blink (1-1) **Yellow**	Error
		Bobbing blink (1-1-3) **Yellow**	Broken Interlock

ScanArray Express instruments with the HT option have the following LEDs:

LED Location	With HT	Status	Description
Upper	POWER LED	**OFF**	No Power
		Green	Power (System ON)
Middle	READY LED	**OFF**	Initializing Controller (or abnormal state)
		Steady **Green**	Ready
		Uniform blink (1-1) **Green**	Acquiring (Scan, Focus, Range)
		Steady **Yellow**	Not ready (Initializing Instrument)
		Uniform blink (1-1) **Yellow**	Error
		Bobbing blink (1-1-3) **Yellow**	Broken Interlock
Lower	BUSY LED	**OFF**	OK to open HT door
		Uniform blink (1-1) **Yellow**	Slide loaded
		Bobbing blink (1-1-3) **Yellow**	Manual slide purge needed

3.2.2 ScanArray Express Rear Panel Connections

Figure 3–1   Rear Panel of the ScanArray Express Instrument

Connector	Description
Power Cord Connection	This connection is for the AC power input required to operate the ScanArray Express instrument.
10 BaseT Cable	This is the network communication and control connection for the ScanArray Express instrument. In normal operation, all commands and data pass through this port.
External Laser Control	This is the operational communications port through which the ScanArray Express instrument controls the optional external laser.
External Laser Interlock	This connection extends the instrument's safety interlock loop to the optional external laser module to facilitate laser safety.
External Laser Interlock Fuse	This fuse is used in the safety interlock loop's extension to the optional external laser module to protect the instrument's power supply in case of a fault in the interlock circuitry.
Fiber Input	This is the fiber-optic cable connector (type FC). It receives laser light from the optional external laser module.
Service Com Port	This is a diagnostic, setup and service communications port for ScanArray Express configuration and service.
Service VGA Port	This is a VGA output that displays instrument controller and debug messages on an external monitor for ScanArray Express configuration and service.

3.2.3 ScanArray Express Side Panel

The instrument side panel contains the following:

Switch	Description
Power Switch	This switch allows the user to turn the AC power to the instrument ON and OFF.

3.2.4 Optional External Laser Front Panel

The external laser front panel consists of the following:

Switch	Description
External Laser Power Switch	This switch allows the user to turn the AC power to the instrument ON and OFF.

3.2.5   Optional External Laser Rear Panel Connections

Figure 3–2   External Laser Rear Panel

Connector	Description
External Laser Control	This is the communications port through which the ScanArray Express instrument controls the external laser.
External Interlock	This connection extends the instrument's safety interlock loop to the external laser module to facilitate laser safety.
Fiber Output	Fiber-optic cable exit. The fiber-optic cable delivers laser light to the instrument.
Power Cord Connection	This connection is for input of AC power required to operate the external laser.
Circuit Breaker	This circuit breaker protects the external laser module from damage caused by excessive AC power current.

3.3   Setting up the Hardware

Once the ScanArray Express instrument is unpacked, it can be connected to the workstation and/or facility network.

3.3.1   Remove Shipping Restraint

To remove the shipping restraint

1.   Remove the Microarray Sample Holder shipping restraint by pulling out the white card.

2.   Retain the restraint. It must be replaced before the instrument is moved or shipped.

3.3.2 Connecting the Network Communications Cables

ScanArray Express uses TCP/IP networking to connect workstations to instruments. There are two approaches to connecting the system:

- If your facility has an existing network that your workstation is already connected to, and you prefer to, you can connect the ScanArray Express instrument directly to the workstation.

  See *Connecting ScanArray Express to the Workstation with a Separate Connection Between the Workstation and the Facility Network* on page 3-5.

  Most systems are shipped this way because it is easiest to install, can be installed without a network administrator, and can be changed to a networked approach later. If you use this approach, your workstation must have two network interface cards (NICs).

- If your facility does not have an existing network, or your workstation is not connected to an existing network, you will need to connect the ScanArray Express instrument directly to the workstation.

  See *Connecting the Workstation to ScanArray Express* on page 3-6.

These approaches are discussed in detail in the appropriate sections. Select the approach best suited to your site.

3.3.2.1 Connecting ScanArray Express to the Workstation with a Separate Connection Between the Workstation and the Facility Network

To connect ScanArray Express with a separate connection

1. Make sure two network interface cards (NIC) are installed in the workstation.

2. Connect a 10BaseT crossover cable from the one of the workstation's NICs to the instrument.

3. Connect a 10BaseT straight-through cable from the workstation's other NIC to the facility's network connector.

Note: The two NICs will have different IP Addresses. You will need to know the IP Address of the NIC that is connected to the ScanArray Express instrument.
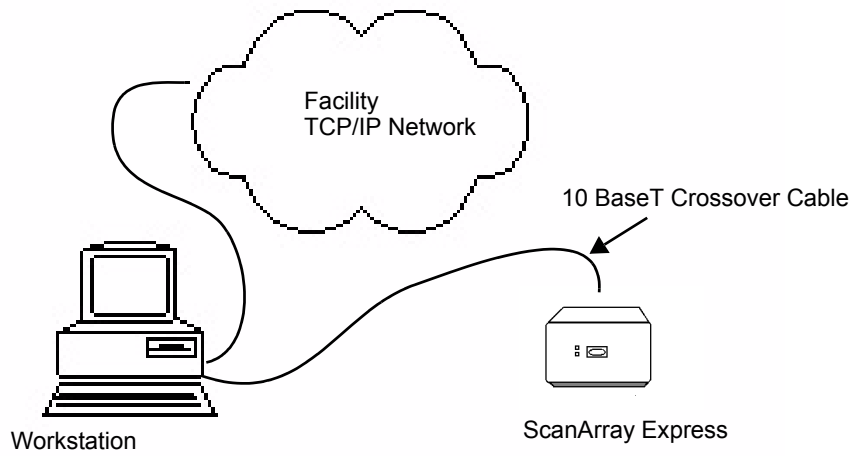
Figure 3–3   Private Network Between the Workstation and ScanArray Express

4. By default, the instrument is configured with the private IP address 10.0.0.1. The workstation must use a compatible address (for example, 10.0.0.2) to communicate with the instrument.

3.3.2.2   Connecting the Workstation to ScanArray Express

To connect the workstation to ScanArray Express

1. Connect a 10BaseT crossover cable from the workstation to ScanArray Express.

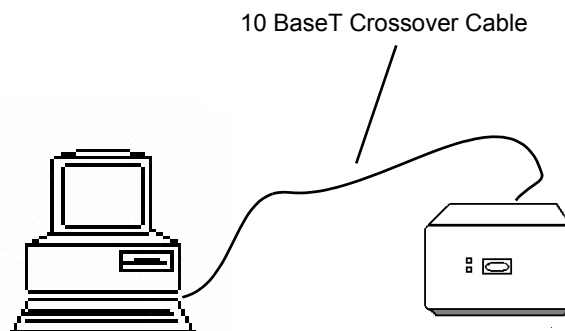*Figure 3–4   Private Network Between the Workstation and the Instrument*

2. In this configuration, there is no connection to the facility's network. By default, ScanArray Express is configured with the private network IP address 10.0.0.1. The workstation must use a compatible address (for example, 10.0.0.2) to communicate with the instrument.

3.3.3 Connecting the External Laser

If an external laser is included in the system, an External Laser Cable Bundle is attached to the external laser. It connects the external laser to ScanArray Express.

Cable	Connection Procedure
External Laser Control (9 pin D-Connector)	Plug the cable ends into the marked panel connectors and tighten the retention screws finger tight.
External Interlock (3 pin Connector)	Insert the round cable connector into the marked panel sockets. Push the release button on the instrument panel to release the connector.
Fiber Input (Fiber-Optic Cable)	*Note: Take care that you do not touch the fiber end with your fingers during this operation.* 1. Remove the dust caps from both the fiber end and instrument connection on the rear panel. 2. Insert the fiber-optic cable into the panel connector with the key on the cable connector oriented to mate with the slot in the panel connector. *Note: The fiber-optic cable must be rotated to the correct orientation to seat properly in the slot on the instrument panel.* 3. Push the fiber-optic cable all the way in and tighten the threaded retention collar finger tight. 4. Place the metal interlock bracket (shipped in a plastic bag with the instrument) over the fiber-optic cable connection at the instrument's rear panel. Use the two interlock block screws provided and a #2 Phillips screwdriver. If the interlock is removed during operation, the system will stop.

Be sure to install the interlock bracket after the fiber-optic cable has been connected to ScanArray Express.

Make certain that all cables are securely connected. Improper connections can have a negative impact on your system's performance and reliability.

Always replace both dust caps when the fiber-optic cable is removed.

Warning: Do not attempt to override the interlock. Do not attach the interlock block unless the fiber cable is installed

3.3.4   Connecting the Power Cord

Connect the power cords to the ScanArray Express instrument, the external laser (if applicable) and to the power source. The instrument and the XL external laser will automatically configure themselves to the line voltage/frequency.

⚠ **Note:** The external laser may draw up to 15A and may require a dedicated circuit (i.e. a circuit not shared with the instrument, workstation, etc.).

Installing the Software   *Chapter* 4

4.1   Overview

The ScanArray Express application software must be installed on each workstation from which you wish to control your instrument. The versions of the application and internal instrument software must be the same. This chapter explains how to initially install the application, and/or upgrade the instrument's internal software.

The ScanArray Express application software is designed to be installed by the user. However, we recommend that someone familiar with Windows 2000/XP administration install the ScanArray Express application software onto the workstation.

This chapter contains:

- Installing the ScanArray Express Application Software
- Installing a Software Upgrade

4.2   Installing the ScanArray Express Software

4.2.1   Installation Requirements

The following is a list of items required to install the ScanArray Express application software onto your workstation:

Requirements	Description
Workstation Hardware	See **Workstation Requirements** on page 1-3.

Requirements	Description
Microsoft Windows Windows® 2000 and Service Pack 1 or Windows® XP	Pre-loaded on the workstation To check the version installed: 1. Log in as a user with administrator privileges. 2. Click **Start/Programs/Administrative Tools (Common)/2000 Diagnostics/Version.** 3. If the correct version is not installed, it can be purchased from Microsoft. If Service Pack 1 is not installed, it can be downloaded at no charge from the Microsoft website (http://www.microsoft.com/ntworkstation/default.asp).
Microsoft Internet Explorer 5.0 or higher	Pre-loaded on the workstation To check the version installed: 1. Click **Start/Programs/Internet Explorer**. 2. In Internet Explorer, click **Help/About Internet Explorer**. The version number should be 5.0 or higher. 3. If Version 5.0 or higher is not installed, it can be downloaded at no charge from the Microsoft website (http://www.microsoft.com/windows/ie/default.htm).
Ethernet Network Adapter (NIC)	Installed on the workstation with the TCP/IP protocol installed. To check that the TCP/IP protocol is installed: 1. Click **Start/Settings/Control Panel/Network**. 2. Click on the **Protocols** tab and verify that the TCP/IP protocol is installed. 3. If it is not, click **Add** and install it.
ScanArray Express Microarray Analysis Software	This software is available on the CD-ROM delivered with your instrument.
The IP address of your ScanArray Express Instrument	The IP address is found on the label inside the instrument's front cover.

4.2.2   Installing the Application Software on Your Workstation

Follow this procedure for initial installation of ScanArray Express application software on your workstation.

To install the ScanArray Express software

1.   Close all programs running on your workstation.

2.   Restart the computer and log on as a user with **Administrator Privileges**.

3.   Insert the ScanArray Express Microarray Analysis Software Version 2.0 CD-ROM into the CD-ROM drive of your computer.

4. If the installation does not start automatically, use Explorer or the **My Computer** icon to find the **CD-ROM** drive. Click on the **CD-ROM** drive and find the program **Setup.exe**. Double-click on the program name or icon.

5. You will be prompted to accept the license agreement.

6. Select the installation location. We recommend installing the ScanArray Express application software in the largest hardware partition on your workstation.

7. Enter a name for your ScanArray Express instrument when prompted and the IP address. The instrument name will appear on the Instrument List when you open the ScanArray Express *Instrument List* dialog box.

Installation of the ScanArray Express application software is complete.

4.2.2.1 Setting the IP Address of the Instrument

If you have provided PerkinElmer with the desired IP address via the installation checklist form that was faxed to PerkinElmer before the system was shipped, that address has been used in the instrument. The address can be found on a label under the front panel of the instrument.

If you have not provided an address, the address is 10.0.0.1. If you want to change the IP address, contact PerkinElmer.

4.2.2.2 Setting up Batch E-mail Notification

If you wish to use the e-mail notification feature of batch set processing on a ScanArray Express HT, perform the procedure in Appendix A.

4.3 Upgrading the ScanArray Express Software

Follow the instructions in this section if you are upgrading from ScanArray Express version 1.x to version 2.0.

To upgrade to Version 2.0

1. Verify that the current application is running and communicating with the instrument.

2. Stop the ScanArray Express application.

3. Insert the ScanArray Express V2.0 software CD into the CD-ROM drive. If the Setup program starts automatically, go to step 5.

4. Start Windows Explorer and find the Setup.exe file in the main folder on the CD drive. Start Setup by double clicking on **Setup.exe**.

5. Select the **Repair** option on first screen.

6.   After completing the client installation, start Windows Explorer and find the Instrument folder under the main CD folder. There will be a Setup.exe in this folder also. Start this Setup by double clicking **Setup.exe**.

7.   The setup for the instrument only requires the instrument name or IP address. If the setup program finds this information on the client, you will only have to verify the name or IP address. If this information is not found or is incorrect, you will need to enter the instrument name or IP address.

8.   The setup will display DOS windows as it communicates with the instrument.

9.   Start the ScanArray Express application.

Testing the System

5.1   Overview

These tests should be performed when the ScanArray Express Microarray Analysis System is installed for the first time, whenever you move the ScanArray Express instrument, and whenever you upgrade the software. These test procedures verify that all components are functioning properly and ensure that the system collects, displays and stores data accurately.

5.2   Testing the System

Before running any tests, make sure that all cables are connected properly. If there is an external laser, make sure the interlock is plugged in on the laser's rear panel.

5.2.1   High Throughput (HT Autoloader) Test

To test the HT Autoloader

1.   Load the High Throughput (HT) cassette with 20 slides supplied from the customer that conform to the HT slide specification.

2.   Align the slides in the cassette with the alignment tool positioned on the trailing side (backside of the arrow) of the cassette.

3.   Lift the instrument cassette door and insert the cassette into the elevator assembly. The arrow on the cassette should be pointing to the back of the instrument. Close the cassette door. Listen for the elevator to reset and wait for the *Busy* LED on the front panel to stop blinking.

4.   On the ScanArray Express *Main Window,* click **Configure** in the *Configure & File* group. In the *Configure* menu that opens, click **Service Features**, then **Calibrate**. Enter the service password.

5.   In the HT section, select **Burn In** and set the number of cycles to "1." Click **Burn In** to start the slides loading.

6.   The instrument must load and unload the 20 slides without any failures to pass this test.

5.2.2   Sample Tests

Two test samples are provided with the system:

Test Samples	Use
16DyesStd Sample	Used for verifying sensitivity and spectral performance
Geometric Sample	Used to verify scan geometry

To start the ScanArray Express

1.   Turn the ScanArray Express instrument on. The *Power* LED (top LED on the front panel) should be green. The *Ready* LED (next lower LED on the front panel) will be off, then turn yellow during initialization. When the initialization is successful, the *Ready* LED will be a steady green. This process takes approximately two (2) minutes.

   •   If the *Ready* LED is yellow, not illuminated or steadily flashes on and off, turn the power off and back on again.

   •   If the *Ready* LED flashes yellow in a cycle of two (2) short signals followed by a long signal, the front cover or the fiber cable interlock block on the rear panel are not seated properly. Remove and replace the front cover or the block.

   If the instrument includes the HT option, the third LED, called the *Busy* LED, flashes during the initialization period. See ***ScanArray Express Front Panel LEDs*** on page 1-1.

2.   On the workstation, click the ScanArray Express icon to open the application.

3.   When the connection is made to the instrument, the *Instrument Status* button on the *Main Window* displays bright green and says connected.

5.2.3   16DyesStd Sample Test

Use this test to verify sensitivity and spectral performance.

To run the 16DyesStd test

1.   Place the **16DyesStd slide** sample into the slide holder.

2.   Click **Scan** on the *Main Window.*

3.   Select **Run a scan protocol**.

4. Click the button under scan protocol to open the *List of Protocols* window.

5. Select **16DyesStd**, the protocol to be used in this test and click **OK**.

6. Click **Start** to start scanning the image. One image window is displayed for each laser in the system. Use the rainbow palette when viewing the images. White denotes saturation in the palette used in Figure 5-1.
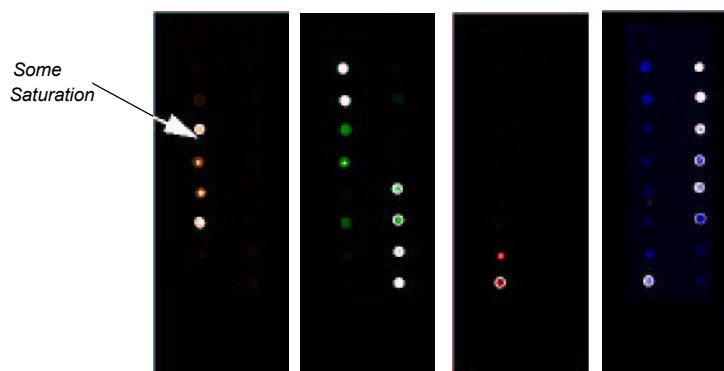

Figure 5–1   16DyesStd Sample - Four Color Test Images

Note: If your ScanArray Express system includes an external laser, some portion of the blue-laser excited spots (FITC, Fluor-X, Alexa 488, or FAM) on the sample slide should appear saturated (white).

7. The following are problems that may occur during the test and the actions to take should they occur:

Problem	Action
No data present in the image	Contact PerkinElmer Life Sciences Customer Service See *Where To Get Help* on page 1-4.
An image is present, but the signals are not sufficiently strong.	Focus the instrument on one spot. Change the focus settings for all fluorophores to match that one.

5.2.4   Geometric Sample Test

This sample includes resolution bar targets, four fields of 2500 spots with 100 μm diameter on 200 μm spacing, and geometry targets to verify image size and spatial linearity. It is also used to create full field images using each of the installed lasers in the instrument.

To run the Geometric slide test

1. Place the **Geometric slide** sample into the slide holder.

2. Click **Scan** on the *Main Window.*

3. Select **Run a scan protocol**.

4. Click the button under scan protocol to open the *List of Protocols* window.

5. Select **geometric**, the protocol to be used in this test, and click **OK**.

6. Click **Start** to start scanning the image.

7. Verify that you see a single line on both the left and right borders of the slide as well as a single line across the top border of the slide. Verify the acquired image is square to the acquisition window.

8. Look closely at the four sections of dot arrays. Examine the dots for the absence of stretching or the compressing of dot image spacing.

9. Ensure you are still viewing the composite image and zoom fully.

10. Look closely at the array of dots sections and verify that channel to channel registration (dot overlay) is less than one pixel at 10 µm.
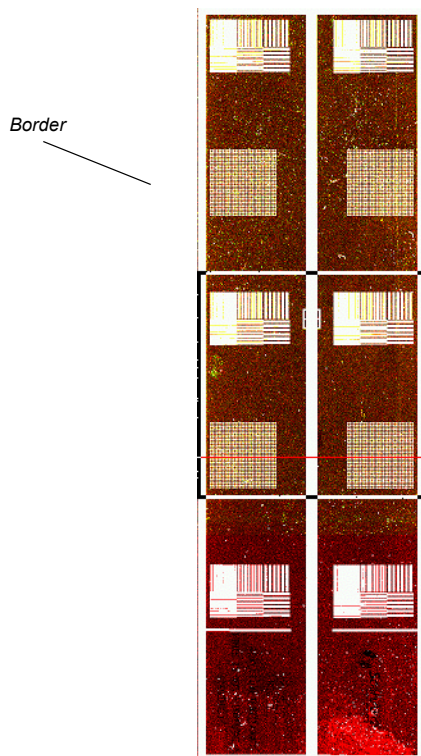
Figure 5–2   Geometric Sample Test Pattern

Problem	Action
A border is not present around the perimeter of the sample.	The image is not centered on the screen. Refer to the ScanArray Express User Manual or contact PerkinElmer Life Sciences. See ***Where To Get Help*** on page 1-4.
Bi-directional jitter of greater than ±1 pixel is present.	Contact PerkinElmer Life Sciences. See ***Where To Get Help*** on page 1-4.
Channel to channel registration < +/-1 pixel	Contact PerkinElmer Life Sciences. See ***Where To Get Help*** on page 1-4.

HT E-mail Setup

A.1   Overview

E-mail setup is available only on ScanArray Express HT systems. If you have an HT, but do not have a facility network connection (see section 3.3.2 on page 3-5) you do not need this appendix.

You must have an outgoing mail server defined in order for ScanArray Express to send e-mail notifications when a batch set completes.

To define a server

1.   Start *Outlook Express* either from its desktop icon or by clicking **Start/Programs/ Outlook Express**.

2.   Click **Tools/Accounts** to set up the new account.

3.   Select the **Mail** tab.

4.   Click on **Add/Mail** and follow the directions in the wizard that opens.

5.   On the first page, enter your **Name** and click **Next**.

6.   On the next page, select **I already have an email address that I'd like to use**. Enter an email address for this PC and click **Next**.

      Note: You must enter something here, even if this PC does not get incoming mail.

7.   On the next page, select **IMAP** where it says **My incoming mail server is an IMAP Server**. Set **Incoming mail (Pop3, IMAP, or HTTP) server** to your server name. Set **Outgoing Mail (SMTP) server** to your server name.

      Note: you must enter something for incoming server even though ScanArray Express does not require it.

      Click **Next**.

8.   On the next page, enter your **Account Name** and **Password**. Click **Next**.

9.   Click **Finish**.

Glossary

Term (Page)	Definition
Administrator	The person in your organization that manages the facility network and/or sets up your Windows 2000 or Windows XP workstation.
Application Software	Software designed to perform a specific function directly for the user. The ScanArray Express application software communicates with the embedded instrument software.
Bi-directional Jitter	Jitter is the deviation in or displacement of some aspect of the pulses in a high-frequency digital signal. The deviation can be expressed in terms of amplitude, phase timing or the width of the signal pulse. When the lines and dots in a scanned image appear jagged there is bi-directional jitter. The amount of allowable jitter is less than ±1pixel. To adjust jitter, contact PerkinElmer Support.
Crossover Cable	Cable used for the direct connection of two workstation Network Interface Cards (NICs). NICs have dedicated send and receive lines. A crossover cable connects from the send line of one NIC to the receive line of the other NIC.
Daisy-chain	Daisy-chain is a serial connection of several devices.
Ethernet	Ethernet is the most widely installed Local Area Network (LAN). A LAN is a network of interconnected workstations sharing the resources of a single processor or server within a relatively small geographic area (i.e. an office building). Ethernet is a set of hardware and signaling standards for used for LANs. The most commonly installed systems are 10/100 BaseT.
Facility Network	A facility network is the network at the facility or institution where you work that links all of the workstations and hubs together.
Fiberoptic Cable	Cable made of strands of thin fibers (glass or plastic wire) that transmits pulses of light. Optical fiber carries much more information than conventional copper wire and is in general not subject to electromagnetic interference. In ScanArray Express, fiberoptic cable is used to deliver excitation light from the blue laser to the instrument.
Gateway Address	A gateway is a network point that acts as an entrance to another network. It is used to control traffic on your facilty's network. A gateway address is the address of a particular gateway on a network.
Geometric Sample Slide	A test sample made of photoresist printed on glass, it is supplied with a new system. When scanned, it displays geometric images on your workstation monitor. It is used to test image geometry, jitter, and basic function.
Instrument Software	This is the internal instrument software necessary to operate the instrument.

Term (Page)	Definition
IP Address	Network address of a workstation or network. IP Addresses are always in the form of 4 number fields separated by dots. Each number field represents 1 byte Values can be in the range of 0-255. The numbers on the left of the string define the network, the numbers on the right define the individual workstation or Network Interface Card (NIC).
NIC - Network Interface Card	A network interface card (NIC) is a computer/workstation circuit board or card that is installed in a computer so that it can be connected to a network. Workstations on local area networks (LANs) typically contain a network interface card specifically designed for the LAN transmission technology, such as Ethernet.
Photo Bleaching	See saturation.
Pixel	Images are made up of a 2-dimensional array of numbers called picture elements, or pixels. The resolution of an image is determined by the size of pixels. For example, 5µm pixels is higher resolution than 10µm.
PMT (Photomultiplier Tube) Board	The PMT absorbs low level fluorescence light and converts it to an electrical signal. The signal is amplified, filtered, and converted to a digital value for each pixel.
Regedit	In Microsoft Windows 95, Windows 98, Windows 2000, and Windows XP operating systems, the Registry is a single place for keeping information such as, what hardware is attached, what system options have been selected, how computer memory is set up, and what application programs are to be present when the operating system is started. Regedit is an editing program used to update installed and uninstalled application programs. It is also used to update the Registry file.
Saturation	A fluorescence signal that is strong enough to drive the PMT detector to its full-scale maximum voltage and output signal is said to cause saturation. Lowering the PMT Gain or Laser Power setting will avoid this.
Subnet Mask	Also called sub-networks, they are used to partition network addresses for efficiency and security. Subnet masks work by "masking" some number of the less significant address bits on all of the workstations in the subnetwork.
TCP/IP	Transmission Control Protocol/Internet Protocol is the basic communication language or protocol of the internet. It is also used in private networks called intranets and extranets. TCP manages the disassembling of a message or file into smaller packets that are transmitted over the internet and received by a TCP layer that reassembles the packets to the original message. The IP layer handles the address part of each packet so that it gets to the right destination.

Term (Page)	Definition
Virtual Memory	The concept of using hard disk space to extend the amount of RAM available to a program. Windows 2000 and Windows XP support virtual memory and allows you to specify the amount of hard disk space to use as virtual memory. Windows 2000/XP also manages the swapping of data from RAM and the hard disk space so that it appears to your application program(s) as though the virtual memory is RAM. This reduces the amount of physical RAM required.

ScanArray Express uses RAM to save image data. The following chart provides a guide for the amount of additional virtual memory to allocate on your workstation when running other applications concurrently with ScanArray Express.

#Scans/ Acquisition	Scan Resolution	Additional Virtual Memory Required
1	5 microns	185 MB
1	10 microns	45 MB
2	5 microns	245 MB
2	10 microns	60 MB
3	5 microns	305 MB
3	10 microns	75MB
4	5 microns	365 MB
4	10 microns	90 MB
5	5 microns	425 MB
5	10 microns	105 MB

To change Virtual Memory:

1. Login as Administrator.
2. Select Start/Settings/System.
3. Select the Performance tab.
4. Click the Virtual Memory **Change** button.

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