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Getting Started with

Typhoon™ FLA 9500

Original instructions



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1 Introduction

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Purpose of Getting Started

This manual provides you with the instructions needed to handle the Typhoon FLA 9500 system in a safe way.

Prerequisites

In order to operate the Typhoon FLA 9500 in the way it is intended, the following prerequisites must be fulfilled:

- You have read and understood the safety instructions outlined in this manual.
- The instrument is installed according to the instructions in this manual.

In this chapter

This chapter contains important user information, and a general description of the Typhoon FLA 9500 and its intended use.

1.1 Important user information

Read this before using Typhoon FLA 9500

All users must read this entire manual to fully understand the safe use of Typhoon FLA 9500.

Intended use

Typhoon FLA 9500 is a versatile laser scanner for biomolecular imaging applications, including the following:

- sensitive and quantitative measurement of radioisotopic labels
- 2D DIGE
- visible single channel and multiplex fluorescence (ECL Plex™ Western blotting systems)
- near infrared fluorescence (optional)
- colorimetric stains (e.g., Coomassie™ blue and silver-stained gels)

Safety notices

This user documentation contains safety notices (WARNING, CAUTION, and NOTICE) concerning the safe use of the product. See definitions below.



WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.



CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.



NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

Notes and tips

Note: *A note is used to indicate information that is important for trouble-free and optimal use of the product.*

Tip: *A tip contains useful information that can improve or optimize your procedures.*

Typographical conventions

Software items are identified in the text by ***bold italic*** text. A colon separates menu levels, thus ***File:Open*** refers to the ***Open*** command in the ***File*** menu.

Hardware items are identified in the text by **bold** text (for example, **Power**).

1.2 Regulatory information

This section lists the directives and standards that are fulfilled by the Typhoon FLA 9500 system.

Manufacturing information

The table below summarizes the required manufacturing information. For further information, see the EU Declaration of Conformity document.

Requirements	Content
Name and address of manufacturer	GE Healthcare Bio-Sciences AB, Björkgatan 30, SE 751 84 Uppsala, Sweden
Name and ID of notified body	INTERTEK SEMKO AB, NB 0413

Conformity with EU Directives

This product complies with the European directives listed in the table, by fulfilling the corresponding harmonized standards.

Directive	Title
2006/42/EC	Machinery Directive (MD)
2004/108/EC	Electromagnetic Compatibility (EMC) Directive
2006/95/EC	Low Voltage Directive (LVD)

International standards

This product fulfills the requirements of the following standards:

Standard	Description	Notes
EN/IEC 61010-1, UL 61010-1, IEC 61010-2-081, CAN/CSA-C22.2 No. 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use	EN 61010-1 harmonized with EU directive 2006/95/EC
EN 61326-1 VCCI Class A FCC Part 15 B Class A ICES-003 Class A	EMC emissions and immunity requirements for electrical equipment for measurement, control and laboratory use	EN 61326-1 harmonized with EU directive 2004/108/EC

Standard	Description	Notes
EN ISO 12100	Safety of machinery, general principles for design, risk assessment and risk reduction	EN ISO standard is harmonized with EU directive 2006/42/EC
EN/IEC 60825-1	Safety of laser products	EN standard harmonized with 2006/95/EC
USA 21 CFR, Chapter I, Subchapter J, Part 1040.10 Laser Products	Safety of laser products	

CE marking



The CE marking and the corresponding EU Declaration of Conformity is valid for the instrument when it is:

- used as a stand-alone unit, or
- connected to other products recommended or described in the user documentation, and
- used in the same state as it was delivered from GE, except for alterations described in the user documentation.

FCC compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: *The user is cautioned that any changes or modifications not expressly approved by GE could void the user's authority to operate the equipment*.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

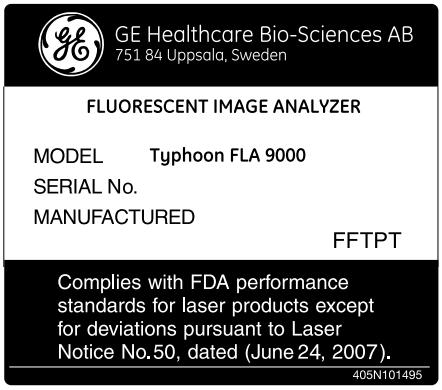
Environmental requirement

Requirement	Title
2011/65/EU	Restriction of Hazardous Substances (RoHS) Directive
2012/19/EU	Waste Electrical and Electronic Equipment (WEEE) Directive
ACPEIP	Administration on the Control of Pollution Caused by Electronic Information Products, China Restriction of Hazardous Substances (RoHS)
Regulation (EC) No 1907/2006	Registration, Evaluation, Authorization and restriction of CHemicals (REACH)

Laser standards

This instrument meets the laser radiation safety requirements specified in the Code of the Federal Regulations (21 CFR, Chapter 1, Subchapter J).

This equipment is a class 1 Laser Product (IEC60825-1:2007/EN60825-1:2007).



Any four out of the five lasers in the following table can be installed in Typhoon FLA 9500:

Laser and class	Wavelength	Maximum power
LD laser, class 3B	473 nm	25 mW (CW)
LD laser, class 3B	532 nm	10 mW (CW)
LD laser, class 3B	635 nm	110 mW (CW)
LD laser, class 3B	685 nm	55 mW (CW)
LD laser, class 3B	785 nm	130 mW (CW)

Note: *The beam divergence of all laser modules is collimated.*

Regulatory compliance of connected equipment

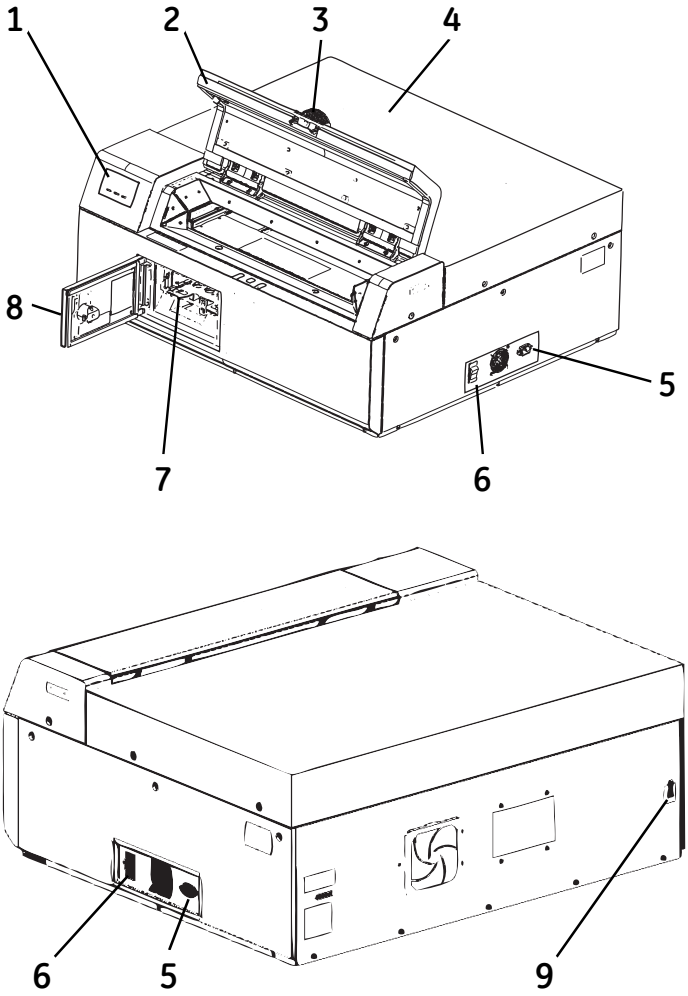
Any equipment connected to Typhoon FLA 9500 should meet the safety requirements of EN/IEC 61010-1, or relevant harmonized standards. Within EU, connected equipment must be CE marked.

1.3 The Typhoon FLA 9500 laser scanner

Major features

- Imaging of gel, membrane, etc. dyed or labelled with various fluorescent dyes at high sensitivity and high resolution.
- Features very high sensitivity, wide dynamic range, high linearity, and high resolution.
- Reusable storage phosphor screens.

Parts and functions

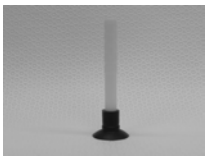
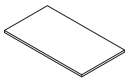
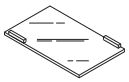


Part	Function
1	Indicator lamps
2	Lid
3	Handle
4	Instrument cover
5	Power cord connector
6	Power switch

Part	Function
7	Filter holder
8	Filter door
9	USB connector

Accessories included

Fluor stage	
Multi stage	
Phosphor stage	
LF glass plate stage	
Titer plate plugin	
Glass slide holder (optional)	

Suction rod (optional)	
Digitization plate	
Membrane weight	

1.4 Typhoon FLA 9500 control software

System requirements

Parameter	Minimum requirement
Operating system	Microsoft® Windows® XP Professional SP3 (32-bit) *or* Microsoft Windows Vista® Business SP2 (32-bit) *or* Microsoft Windows 7 Professional (32-bit) *or* Microsoft Windows 7 Professional (64-bit)
Internal memory	1 GB
Processor	Intel® Core 2 Duo processor
Hard drive	80 GB
Monitor resolution	1280 × 1024 pixels
Other requirements	One USB 2.0 port DVD-ROM drive

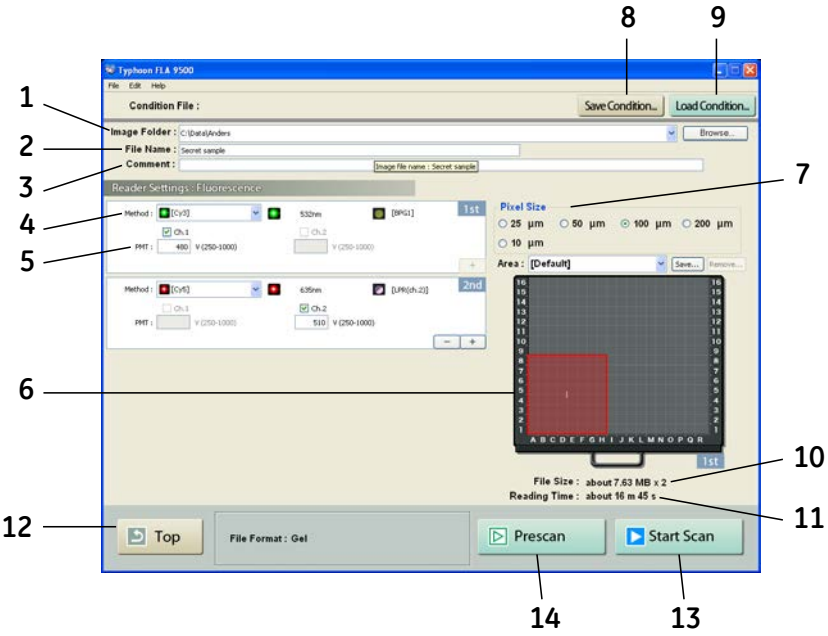
Overview of the main window

The Typhoon FLA 9500 is used to control, use and supervise the Typhoon FLA 9500.



Part	Function
1	***2D DIGE*** button: click to read a 2D DIGE sample.
2	***Phosphorimaging*** button: click to read a storage phosphor screen.
3	***Fluorescence*** button: click to read a fluorescent sample.
4	***Digitization*** button: click to perform digitization.
5	***Chemiluminescence*** button: click to read a chemiluminescent sample.
6	***Method*** button: click to register or erase a combination of laser and filter.
7	***Filter Module***: click to change or register a filter.
8	***Preferences***: click to select file format and correction mode.
9	***Filter***: displays the loaded filters.
10	***Laser***: displays the status of the loaded laser units.
11	***PMT***: displays the status of the loaded photo-multiplier tube.

Overview of the reader settings window



Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	***Method:*** set the method to use in the scan. Up to four scans can be performed in a row, all with individual methods. The following buttons are available only in fluorescence mode. + Click to increase the number of scans − Click to decrease the number of scans

Part	Description
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to *Save condition* in the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to *Load condition* in the User Manual.
10	***File Size***: the estimated size of the result data file is presented.
11	***Reading Time***: the estimated time required for the scan is presented.
12	***Top***: return to the main window.
13	***Start Scan***: start the scan. The sample must be loaded before starting a scan.
14	***Prescan***: perform a quick scan at a resolution of 1000 µm.

2 Safety instructions

In this chapter

This chapter contains the following sections:

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2.5 Declaration of Hazardous Substances (DoHS)	33

2.1 Safety precautions

Introduction

The Typhoon FLA 9500 is powered by mains voltage and is used to image samples that may be hazardous. Before installing, operating or maintaining the equipment, you must be aware of the hazards described in the user documentation. Follow the instructions provided to avoid personal injury or damage to the equipment.

General precautions



WARNING

Do not use the equipment if smoke, strange noises or strange odors can be perceived, or if the equipment becomes unusually hot. This may result in fire or electric shock.

Stop using the equipment immediately, turn off the power switch and unplug the equipment from the power outlet. Contact your local GE representative to request repair.



WARNING

Do not damage the power supply cord by bending, twisting, heating or allowing them to become pinned under the equipment. Using damaged power cords could result in fire or electric shock.

If the power supply cords are damaged, contact your local GE representative for replacements.



WARNING

Do not place the equipment on unstable tables or on inclined surfaces, as the equipment could be dropped or fall, resulting in injury.



WARNING

Do not allow liquids, flammable materials or metallic objects to get into the Typhoon FLA 9500. This may result in fire or electric shock.

Turn off the power switch, unplug the equipment from the power outlet, then contact you local GE representative.



CAUTION

Do not scratch or drop parts containing glass such as lenses, filters or lights.

Laser safety



WARNING

Never detach the inner cover screwed to this instrument. If it is detached, laser beam may leak with a risk of loss of vision.



CAUTION

Never cancel the interlocks in this instrument, laser beam may leak with a risk of loss of vision.



CAUTION

Using procedures or adjustments other than those specified in this manual may result in hazardous exposure to laser radiation.

Radiation safety

This instrument is not equipped with any radioisotope or radiation generating unit, and is therefore not regulated by radiation hazard prevention laws. However, the instrument is capable of reading Storage phosphor screens which may be polluted by radioisotopes.



CAUTION

If radioisotope (RI) pollution occurs, stop use of the instrument immediately and follow the instructions of your radiation administrator.

Personal protection



CAUTION

Always wear gloves, protective glasses and a lab coat or similar when handling samples.



CAUTION

Always wear cotton gloves when handling Storage phosphor screens.



CAUTION

Wear gloves, protective glasses and a lab coat or similar when disposing of the Typhoon FLA 9500.

Installing and moving the instrument



WARNING

The Typhoon FLA 9500 instrument must always be connected to a grounded power outlet.



WARNING

Do not block the ventilation inlets or outlets on the system.



WARNING

Power cord. Only use power cords with approved plugs delivered or approved by GE.



WARNING

Heavy object. Because of the significant weight of Typhoon FLA 9500, great care must be taken not to cause squeeze or crushing injuries during movement. Use suitable lifting equipment when moving the unit.



CAUTION

- Do not connect any USB devices other than the Typhoon FLA 9500 to the computer in which the Typhoon FLA 9500 Control Software is installed.
- Use only the Typhoon FLA 9500 Control Software during reading.
- Only use IEC/UL 60950 approved computers.

System operation



WARNING

Do not use the equipment with a power supply other than that recommended. Fire and electric shock could result.



WARNING

Do not use the equipment within or near a sink, or in humid or dusty environments. Fire and electric shock could result.



WARNING

Connect the power supply directly to a grounded wall power outlet. The use of extension cords or multiple loads on one electrical outlet could result in fire and electric shock.



CAUTION

Do not use the same power supply as that of large equipment such as an air conditioner or centrifuge. Malfunction could result.



CAUTION

Do not open the lid or filter door while the device is in operation. Injury could result.



NOTICE

Avoid exposing storage phosphor screens in places where the environmental radiation may be increased, for example rooms with concrete walls or in basements.

Maintenance



WARNING

Do not attempt to modify the equipment, or fire and electric shock could result.



WARNING

Do not use excessive amounts of liquids for cleaning the Typhoon FLA 9500, this may result in product malfunction or electric shock.



CAUTION

Wear gloves to prevent direct contact with chemical substances.



CAUTION

Take care when connecting the power supply cable. Do not tug on the cable, and do not handle the connection plugs with wet hands.



CAUTION

Connect the computer hardware on the same power circuit, otherwise the equipment may be influenced by electrical nosie.



CAUTION

Turn off the power switch and remove connecting cables before moving the equipment.



CAUTION

Turn the power switch off before cleaning the inside of the equipment.



CAUTION

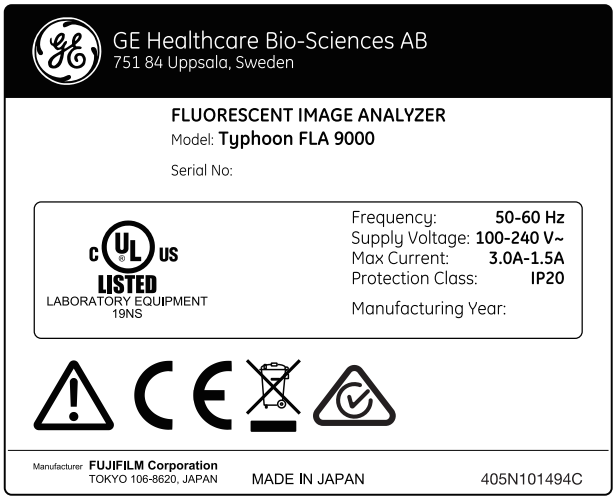
Unplug the equipment if it will not be used for an extended period.

2.2 Labels

Typhoon FLA 9500 serial number

The Typhoon FLA 9500 serial number is located on a label on the back of the instrument.

The label design for the Typhoon FLA 9000 series is shown below.



Symbols used in safety labels

Label	Meaning
	**Warning!** Read the user documentation before using the system. Do not open any covers or replace parts unless specifically stated in the user documentation.
	The system complies with the requirements for electromagnetic compliance (EMC) in Australia and New Zealand.
	The system complies with applicable European directives.

Label	Meaning
c UL us LISTED LABORATORY EQUIPMENT 19NS	The system is certified by a Nationally Recognized Testing Laboratory (NTRL). A NRTL is an organization that the Occupational Safety and Health Administration (OSHA) has recognized as meeting the legal requirements in USA title 29 of the Code of Federal Regulations (29 CFR) Part 1910.7.

Labels concerning use of hazardous substances

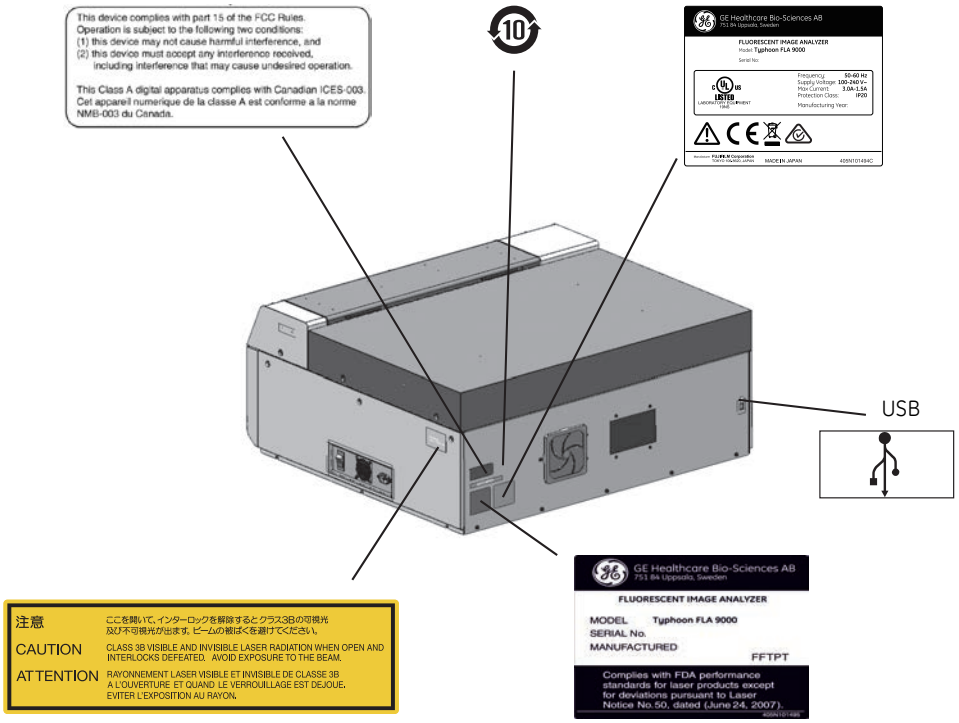
Label	Meaning
	This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.
	This symbol indicates that the product contains hazardous materials in excess of the limits established by the Chinese standard SJ/T11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronics.

Labels concerning laser light

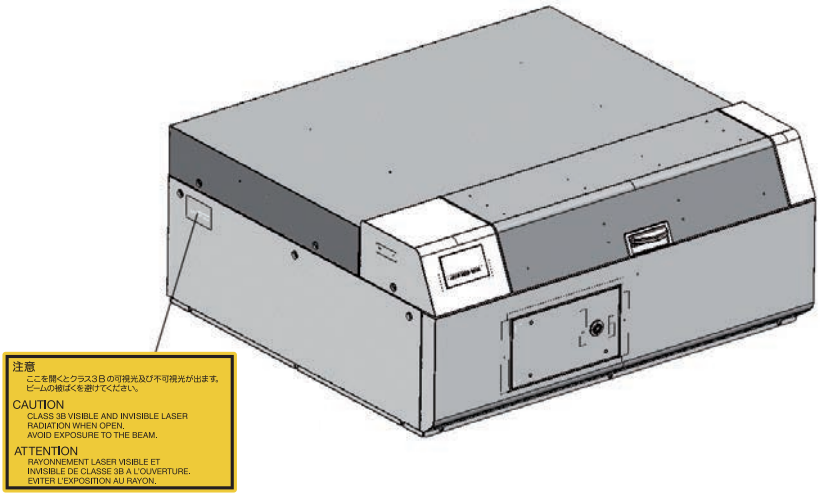
Label	Meaning
	**CAUTION!** Avoid exposure to the laser beam when the lid is open.

Label	Meaning
注意 ここを開いて、インターロックを解除するとクラス3Bの可視光及び不可視光が出ます。ビームの被ばくを避けてください。 CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO THE BEAM. ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE DE CLASSE 3B A L'OUVERTURE ET QUAND LE VERROUILLAGE EST DEJOUE. EVITER L'EXPOSITION AU RAYON.	**CAUTION!** Class 3B Laser product when open and interlock defeated. Avoid exposure to the beam. Do not attempt to defeat the safety interlocks under the sample lid or behind the filter door, or otherwise try to gain access to the interior of the instrument through any other opening. Exposure to laser light can cause injury. Viewing the laser light directly can cause blindness.

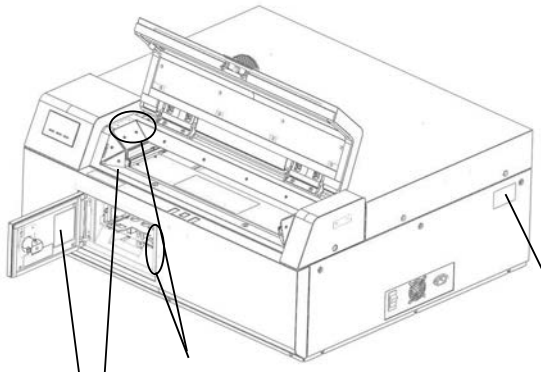
Labels on rear and right side of Typhoon FLA 9500



Labels on left side of Typhoon FLA 9500



Labels inside the Typhoon FLA 9500



Interlock parts

* Never insert any foreign object into the interlock parts to avoid potential laser exposure and injury.





2.3 Emergency procedure

This section describes how to do an emergency shutdown of the Typhoon FLA 9500 instrument. The section also describes the results of a power failure.

Emergency shutdown

Step	Action
1	Click the ***Stop*** button in the Typhoon FLA 9500.
2	Turn off the Typhoon FLA 9500 by pressing the power switch on the right side of the instrument body.
3	Disconnect the power cord from the power outlet.

Power failure

The results of a power failure depends on the unit or units affected.

Unit affected by power failure	Results
Typhoon FLA 9500 instrument	• The reading is interrupted immediately. The instrument is in an undefined state. • The data collected up to the time of the power failure is available in the file created when starting the scan.
Computer running the control software	• The computer shuts down immediately. • The run continues, but no data is saved.

2.4 Recycling information

General instructions for disposal

When taking the Typhoon FLA 9500 out of service, the different materials must be separated and recycled according to national and local environmental regulations.

Specific instructions for disposal

Measure the superficial radio isotope pollution of the instrument body and storage phosphor screen as mentioned in the radiation hazard prevention section of the *User Manual*.

If the pollution level exceeds the limit, dispose of the instrument body as radioactive waste. Otherwise, dispose of the materials according to applicable laws and regulations for disposal of industrial waste.

Disposal of electrical components

Waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of the equipment.



2.5 Declaration of Hazardous Substances (DoHS)

根据SJ/T11364-2006《电子信息产品污染控制标识要求》特提供如下有关污染 控制方面的信息。

The following product pollution control information is provided according to SJ/T11364-2006 Marking for Control of Pollution caused by Electronic Information Products.

电子信息产品污染控制标志说明
Explanation of Pollution Control Label



该标志表明本产品含有超过SJ/T11363-2006《电子信息产品中有毒有害物质的限量要求》中限量的有毒有害物质。标志中的数字为本产品的环保使用期，表明本产品在正常使用的条件下，有毒有害物质不会发生外泄或突变，用户使用本产品不会对环境造成严重污染或对其人身、财产造成严重损害的期限。单位为年。

为保证所申明的环保使用期限，应按产品手册中所规定的环境条件和方法进行正常使用，并严格遵守产品维修手册中规定的期维修和保养要求。

产品中的消耗件和某些零部件可能有其单独的环保使用期限标志，并且其环保使用期限有可能比整个产品本身的环保使用期限短。应到期按产品维修程序更换那些消耗件和零部件，以保证所申明的整个产品的环保使用期限。

本产品在使用寿命结束时不可作为普通生活垃圾处理，应被单独收集妥善处理。

This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese standard SJ/T11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products. The number in the symbol is the Environment-friendly Use Period (EFUP), which indicates the period during which the toxic or hazardous substances or elements contained in electronic information products will not leak or mutate under normal operating conditions so that the use of such electronic information products will not result in any severe environmental pollution, any bodily injury or damage to any assets. The unit of the period is “Year”.

In order to maintain the declared EFUP, the product shall be operated normally according to the instructions and environmental conditions as defined in the product manual, and periodic maintenance schedules specified in Product Maintenance Procedures shall be followed strictly.

Consumables or certain parts may have their own label with an EFUP value less than the product. Periodic replacement of those consumables or parts to maintain the declared EFUP shall be done in accordance with the Product Maintenance Procedures.

This product must not be disposed of as unsorted municipal waste, and must be collected separately and handled properly after decommissioning.

有毒有害物质或元素的名称及含量
Name and Concentration of Hazardous Substances

产品中有毒有害物质或元素的名称及含量
Table of Hazardous Substances' Name and Concentration

部件名称 Component name	有毒有害物质或元素 Hazardous substance					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr6+	多溴联苯 PBB	多溴二苯醚 PBDE
28-9969-43	X	0	0	0	0	0

0: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要 求以下

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求

- 此表所列数据为发布时所能获得的最佳信息

0: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.

- Data listed in the table represents best information available at the time of publication.

3 Installation

In this chapter

This chapter contains the following sections:

Section	See page
3.1 Site requirements	36
3.2 Transporting Typhoon FLA 9500	37
3.3 Delivery inspection	38
3.4 Connections	39
3.5 Software installation	40
3.6 Preparations before starting Typhoon FLA 9500	71

3.1 Site requirements

Note: *The Typhoon FLA 9500 is intended for indoor use only.*

Parameter	Requirement
Power supply	100 to 240 V AC ±10%, 3.0 to 1.5 A
Line frequency	50 to 60 Hz
Placement	Stable, horizontal surface. Do not place in direct sunlight or in brightly lit places.
Ambient temperature	+10°C to +30°C
Humidity	30% to 70%, non-condensing
Maximum altitude	2000 m above sea level

3.2 Transporting Typhoon FLA 9500



WARNING

Heavy object. Because of the significant weight of Typhoon FLA 9500, great care must be taken not to cause squeeze or crushing injuries during movement. Use suitable lifting equipment when moving the unit.



CAUTION

Typhoon FLA 9500 must be secured before long distance transports. Contact GE for help and advice before transporting Typhoon FLA 9500 long distances.

The Typhoon FLA 9500 weighs approximately 97 kg, use suitable lifting device to move the instrument.

Precautions before moving the instrument

Step	Action
1	Turn off the Typhoon FLA 9500.
2	Turn off the computer and any peripheral devices.
3	Disconnect the power cords and the USB connection.

3.3 Delivery inspection

What to check

Upon receiving Typhoon FLA 9500, inspect the package for external damages.

Should you find any external damages, notify the delivery company and contact GE for further advice.

3.4 Connections



CAUTION

Only authorized service personnel is allowed to install Typhoon FLA 9500. Contact your local GE representative for help and advice.

Communication

Step	Action
1	Connect a USB cable to the USB port on the rear side of the Typhoon FLA 9500.
2	Connect the other end of the USB cable to a USB port on the computer.



CAUTION

- Do not connect any USB devices other than the Typhoon FLA 9500 to the computer in which the Typhoon FLA 9500 Control Software is installed.
- Use only the Typhoon FLA 9500 Control Software during reading.
- Only use IEC/UL 60950 approved computers.

Electrical power

Connect the power cord of the Typhoon FLA 9500 to a grounded power outlet.



WARNING

Use only power cords delivered or approved by GE.

3.5 Software installation

Installation sequence

Software installation is performed in the following sequence:

1 Install the USB control driver.

2 Install the USB function driver (Windows XP only).

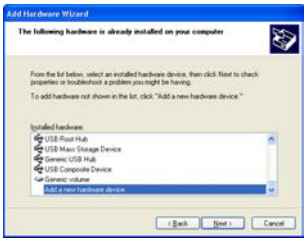
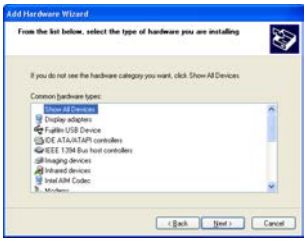
3 Install theTyphoon FLA 9500 control software.

3.5.1 Installing Typhoon FLA 9500 Control Software for Windows XP

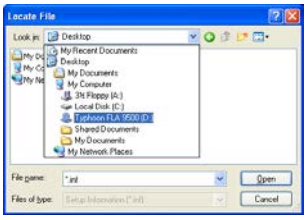
Before you begin

Log in using a Windows account with administrator privileges.

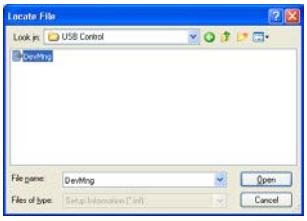
Install the USB Control Driver for Windows XP

Step	Action
1	Disconnect Typhoon FLA 9500 from the computer.
2	Open the control panel and select ***Printers and Other Hardware***.
3	Click ***Add Hardware*** to open ***Add hardware wizard***.
4	Click the ***Next*** button in ***Add hardware wizard***.
5	Select ***Yes, I have already connected the hardware*** and click ***Next***.
6	Select ***Add a new hardware device*** and click the ***Next*** button. 
7	Select ***Install the hardware that I manually select from a list [Advanced]*** and click the ***Next*** button.
8	Select ***Show All Devices*** and click the ***Next*** button. 
9	Click the ***Have Disk*** button in the ***Add hardware wizard***.

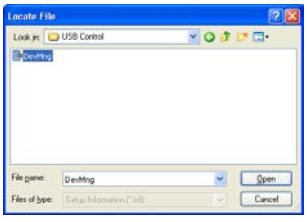
Step	Action
10	Insert the Typhoon FLA 9500 DVD and click the ***Browse*** button.
11	Select to install the driver from the Typhoon FLA 9500 DVD.



12	Open the ***USB Control*** folder.



13	Select the ***DevMng.inf*** file and click the ***Open*** button.



14	Click the ***OK*** button in the ***Install from disk*** dialog.
15	Click the ***Next*** button in the ***Add hardware wizard***.
16	Click the ***Next*** button again.
17	Click the ***Continue Anyway*** button in the ***Hardware Installation*** dialog.



Step	Action
18	Click the ***Finish*** button to complete the driver installation.

Install the USB function driver for Windows XP

Step	Action
1	Connect the computer and the Typhoon FLA 9500 with a USB cable and turn the power switch of the Typhoon FLA 9500 to **ON**. The scanner is automatically detected by the computer.
2	In the ***Found New Hardware Wizard*** dialog, choose ***No, not this time***. 
3	Click the ***Next*** button in the ***Found New Hardware Wizard*** dialog.
4	Insert the installation DVD.
5	Select ***Install the software automatically (Recommended)***.
6	Click the ***Next*** button in the ***Found New Hardware Wizard*** dialog.
7	Click the ***Finish*** button to complete the installation.

Install Typhoon FLA 9500 for Windows XP

Step	Action
1	Insert the Typhoon FLA 9500 DVD.
2	Locate and double-click the file ***Typhoon FLA 9500.exe***.
3	In the ***Typhoon FLA 9500 - InstallShield Wizard***, click the ***Next*** button.

Step	Action
4	Read the license text. If the license agreement is not acceptable please contact a GE representative, see back cover of this manual for contact information. Select ***I accept the terms in the license agreement*** and click the ***Next*** button.
5	Select destination folder in the dialog:  • Click the ***Next*** button to install the software at the default folder ***C:\Program Files\GE Healthcare\Typhoon FLA 9500***. • Click the ***Change*** button to install to a different folder.
6	Click the ***Install*** button in the installation dialog.
7	Click the ***Finish*** button to finish the installation of Typhoon FLA 9500.

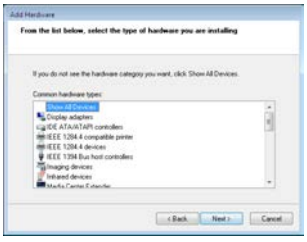
3.5.2 Installing Typhoon FLA 9500 Control Software for Windows Vista

Before you begin

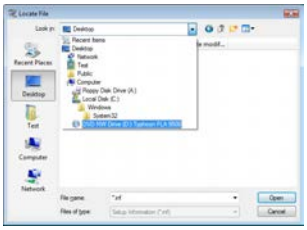
Log in using a Windows account with administrator privileges.

Install the USB control driver

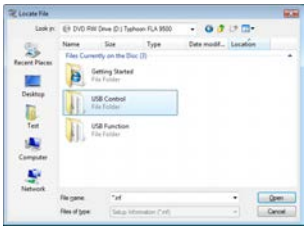
Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Disconnect Typhoon FLA 9500 from the computer.
2	Open the control panel and click ***Classic View*** in the upper left corner.
3	Open ***Add Hardware***.
4	In the ***Add Hardware*** dialog, click the ***Next*** button.
5	Select ***Install the hardware that I manually select from a list (Advanced)*** and click the ***Next*** button.
6	Select ***Show All Devices*** and click the ***Next*** button. 
7	Click the ***Have Disk*** button.
8	Insert the Typhoon FLA 9500 DVD and click the ***Browse*** button.

Step	Action
9	Select to install the driver from the Typhoon FLA 9500 DVD.



10	Select the ***USB Control*** folder and click ***Open***.



11	Select the file ***DEVMNG.INF*** and click the ***Open*** button.



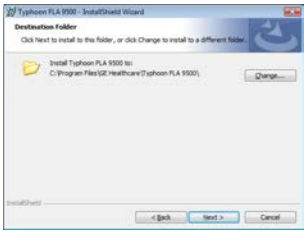
12	Click the ***OK*** button in the dialog ***Install from disk***.
13	Click the ***Next*** button in the wizard ***Add hardware***.
14	Click the ***Next*** button once again.
15	The following warning is displayed. Proceed by clicking ***Install this driver software anyway***.



Step	Action
16	Click the ***Finish*** button in the ***Add Hardware*** wizard to complete the installation.

Install the control software and USB function driver

Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Insert the Typhoon FLA 9500 DVD.
2	Locate and double-click the file ***Typhoon FLA 9500.exe***.
3	In the ***Typhoon FLA 9500 - InstallShield Wizard*** dialog, click the ***Next*** button.
4	Read the license text. If the license agreement is not acceptable, please contact a GE representative. See the back cover of this manual for contact information. Select ***I accept the terms in the license agreement*** and click the ***Next*** button.
5	Select destination folder in the dialog:  • Click the ***Next*** button to install the software at the default folder ***C:\Program Files\GE Healthcare\Typhoon FLA 9500***. • Click the ***Change*** button to install to a different folder.
6	Click the ***Install*** button.
7	If User Account Control (UAC) is enabled in Windows Vista, a dialog displays the message ***An unidentified program wants access to your computer***. Click ***Allow***.

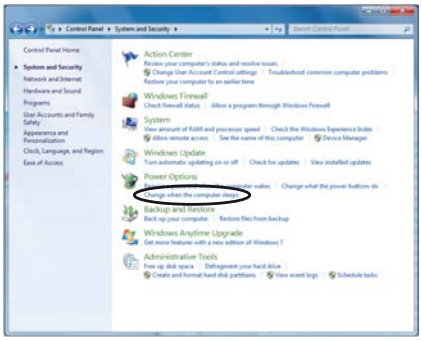
Step	Action
8	Click ***Install this driver software anyway*** in the ***Windows Security*** dialog. 
9	Click the ***Finish*** button. The installation of Typhoon FLA 9500 is now completed.
10	Connect the computer and the Typhoon FLA 9500 with the USB cable.

3.5.3 Installing 32-bit Typhoon FLA 9500 Control Software for Windows 7

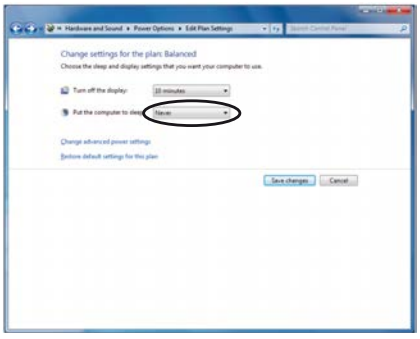
Disable the computer sleep function

Log in using a Windows administrator account. Disable the computer sleep function as described below.

Step	Action
1	Click ***Start*** at the bottom left corner on the screen.
2	Click ***Control Panel:System and Security***, then click ***Change when the computer sleeps*** under ***Power Options***.



3	In the ***Put the computer to sleep*** list, click ***Never***.

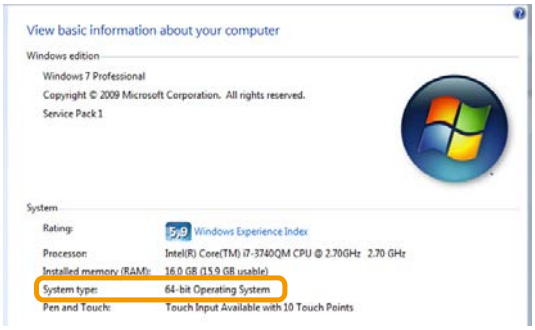


4	Click ***Save changes***.

Identify the operating system

Two software installers are included in this software. To choose the appropriate installer find out which operating system the computer is using by following the instructions below.

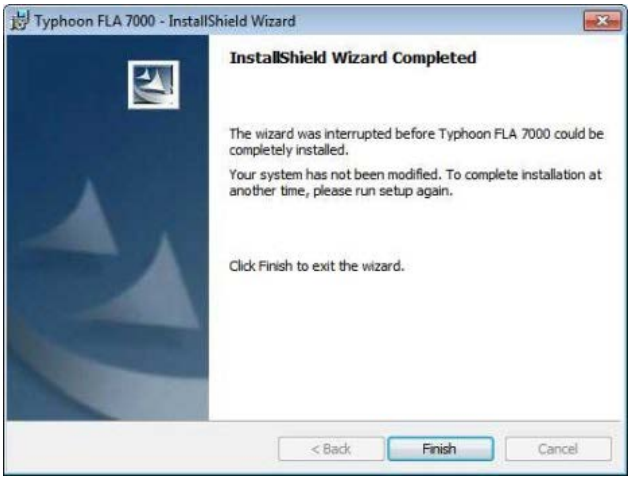
Step	Action
1	Click ***Start*** at the bottom left corner on the screen.
2	Click ***Control Panel:System and Security:System*** to bring up ***View basic information about your computer*** window.
3	Note the system type displayed in the window. Use the information to choose the appropriate installer.



Choose the appropriate installer to prevent failure

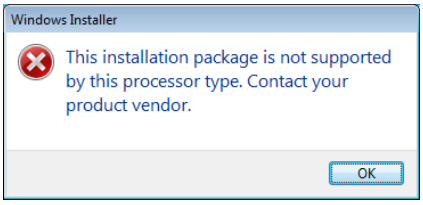
If the installer does not match with the type of the computer operating system, the Typhoon FLA 9500 is not installed successfully. If one of the following messages is displayed during the installation process, follow the instructions below.

- If the following message is displayed:



Cause	Correction
The computer is running on Windows 7 with 64-bit operating system. You have chosen the installer for Windows 7 with 32-bit operating system.	Restart the installation using the installer for Windows 7 with 64-bit operating system.

- If the following message is displayed:

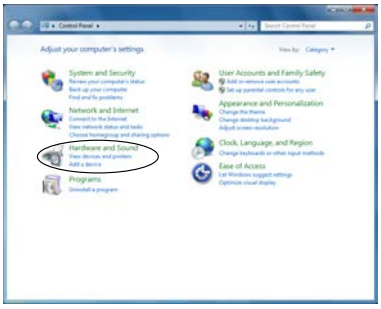


Cause	Correction
The computer is running on Windows 7 with 32-bit operating system. You have chosen the installer for Windows 7 with 64-bit operating system.	Restart the installation using the installer for Windows 7 with 32-bit operating system.

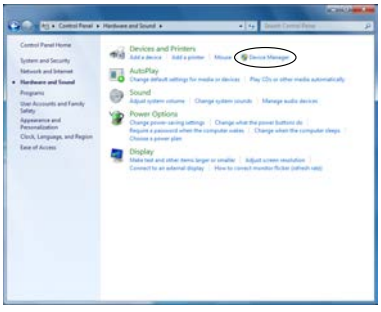
Install the USB control driver

Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

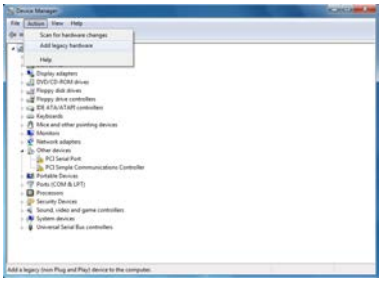
Step	Action
1	Disconnect Typhoon FLA 9500 from the computer.
2	Open the control panel and click ***Hardware and Sound***.



3	Click ***Device Manager*** under ***Devices and Printers***.



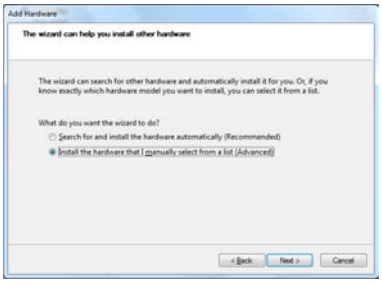
Step	Action
4	In the details pane, select ***Action:Add legacy hardware***.



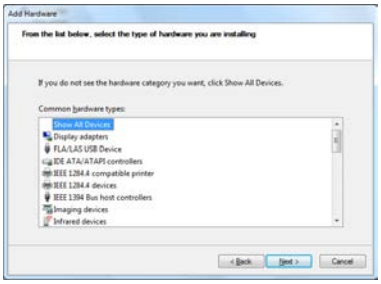
5	In the ***Add Hardware*** dialog, click ***Next***.



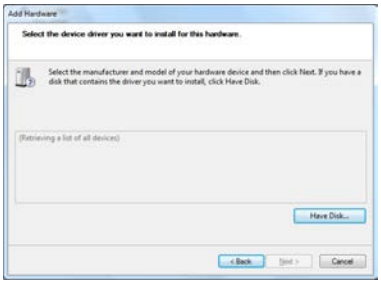
6	Select ***Install the hardware that I manually select from a list (Advanced)*** and click ***Next***.



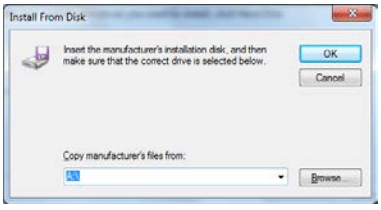
Step	Action
7	Select ***Show All Devices*** and click ***Next***.



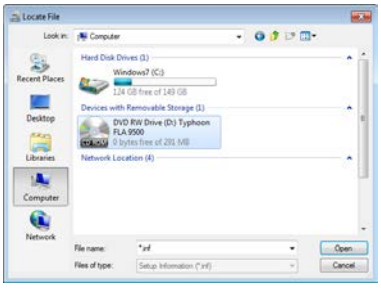
8	Click ***Have Disk***.



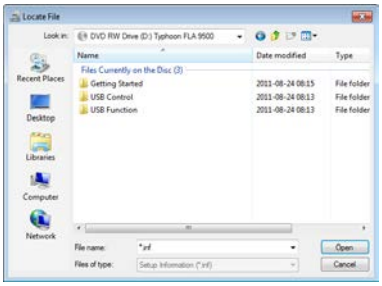
9	Insert the Typhoon FLA 9500 DVD and click ***Browse***.



10	Select to install the driver from the Typhoon FLA 9500 DVD.



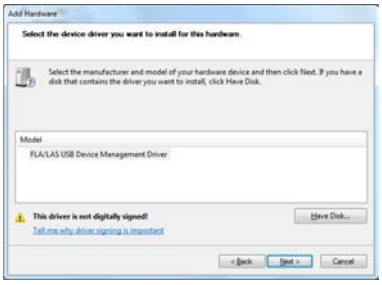
Step	Action
11	Select the ***USB Control*** folder and click ***Open***.

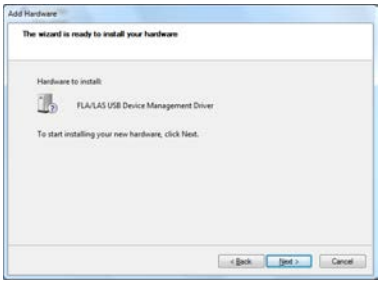
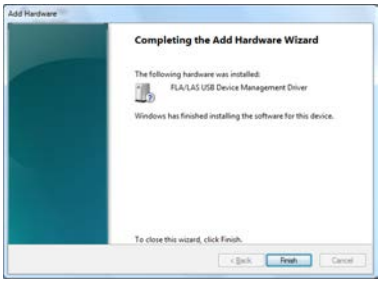


12	Select the file ***DEVMNG.INF*** and click ***Open***.



13	Click ***OK*** in the ***Install from disk*** dialog.
14	Click ***Next*** in the ***Add Hardware*** wizard.



Step	Action
15	Click the ***Next*** button once again. 
16	The following warning is displayed. Proceed by clicking ***Install this driver software anyway***. 
17	In the ***Add Hardware*** wizard, click ***Finish*** to complete the installation. 

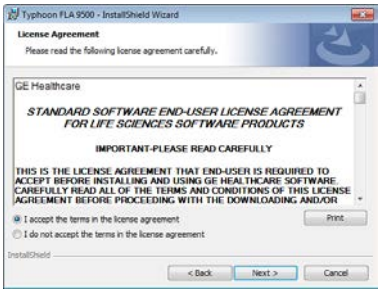
Install the 32-bit control software and USB function driver

Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Insert the Typhoon FLA 9500 DVD.
2	Locate and double-click the file ***Typhoon FLA 9500.exe***.
3	In the ***Typhoon FLA 9500 - InstallShield Wizard*** dialog, click the ***Next*** button.

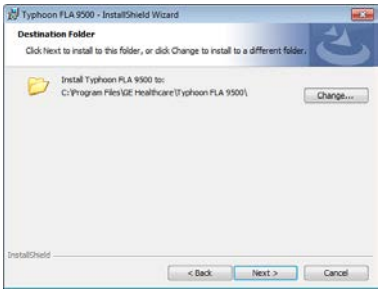


4	Read the license text. If the license agreement is not acceptable, please contact a GE representative. See the back cover of this manual for contact information.

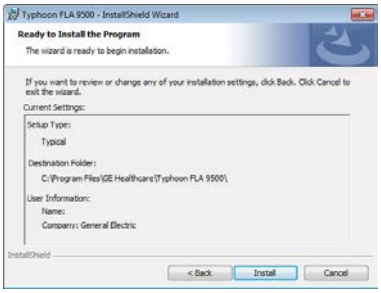
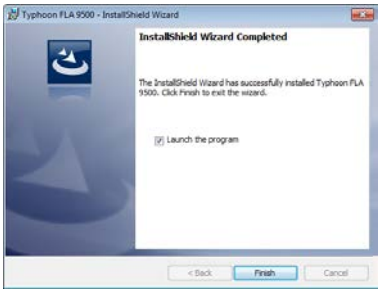


Select ***I accept the terms in the license agreement*** and click the ***Next*** button.

5	Select the destination folder in the dialog:



- Click the ***Next*** button to install the software at the default folder ***C:\Program Files\GE Healthcare\Typhoon FLA 9500***.
- Click the ***Change*** button to install to a different folder.

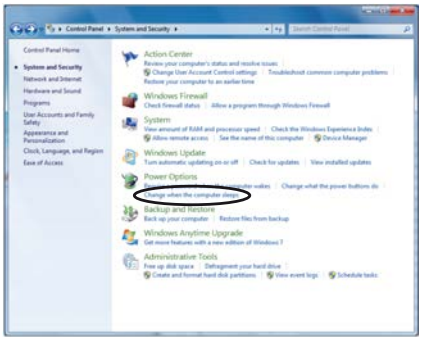
Step	Action
6	Click the ***Install*** button. 
7	If User Account Control (UAC) is enabled in Windows 7, a dialog displays the message ***An unidentified program wants access to your computer***. Click ***Allow***.
8	Click ***Install this driver software anyway*** in the ***Windows Security*** dialog. 
9	Click the ***Finish*** button to complete the installation. 
10	Connect the computer and the Typhoon FLA 9500 with the USB cable.

3.5.4 Installing 64-bit Typhoon FLA 9500 control software for Windows 7

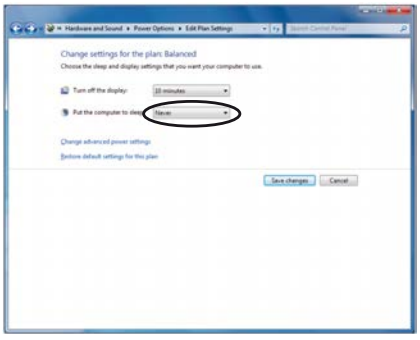
Disable the computer sleep function

Log in using a Windows administrator account. Disable the computer sleep function as described below.

Step	Action
1	Click ***Control Panel:System and Security***, then click ***Change when the computer sleeps*** under ***Power Options***.



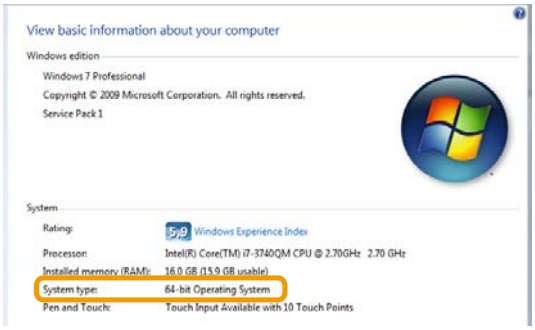
2	Select ***Never*** in the drop-down menu by ***Put the computer to sleep***, then click ***Save changes***.



Identify the operating system

Two software installers are included in this software. To choose the appropriate installer find out which operating system the computer is using by following the instructions below.

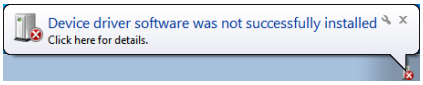
Step	Action
1	Click ***Start*** at the bottom left corner on the screen.
2	Click ***Control Panel:System and Security:System*** to bring up ***View basic information about your computer*** window.
3	Note the system type displayed in the window. Use the information to choose the appropriate installer.



Choose the appropriate installer to prevent failure

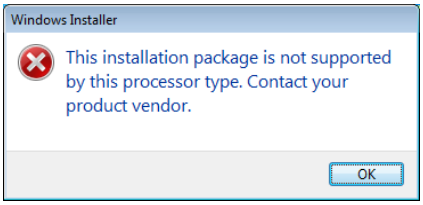
If the installer does not match with the type of the computer operating system, the Typhoon FLA 9500 is not installed successfully. If one of the following messages is displayed during the installation process, follow the instructions below.

- If the following message is displayed:



Cause	Correction
The computer is running on Windows 7 with 64-bit operating system. You have chosen the installer for Windows 7 with 32-bit operating system.	- Uninstall Typhoon FLA 9500 for Windows 7 with 32-bit operating system. - Restart the installation using the installer for Windows 7 with 64-bit operating system.

- If the following message is displayed:



Cause	Correction
The computer is running on Windows 7 with 32-bit operating system. You have chosen the installer for Windows 7 with 64-bit operating system.	Restart the installation using the installer for Windows 7 with 32-bit operating system.

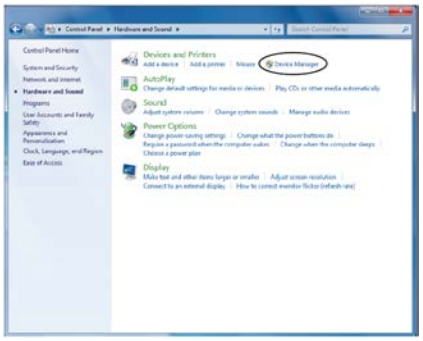
Install USB control driver

Note: *During software installation you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Type an administrator password, when prompted, then click* ***Continue****.*

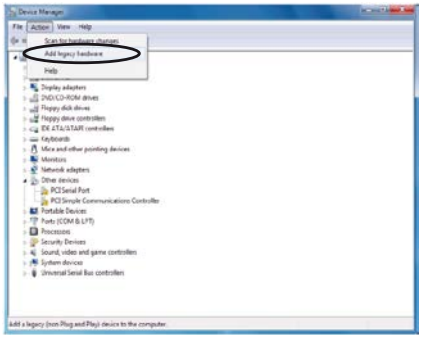
Follow the instructions below to install the USB control driver.

Step	Action
1	Disconnect the Typhoon FLA 9500 from the computer.
2	Click ***Start*** at the bottom left corner on the screen.

Step	Action
3	Click ***Control Panel:Hardware and Sound***, then click ***Device Manager*** under ***Devices and Printers***.



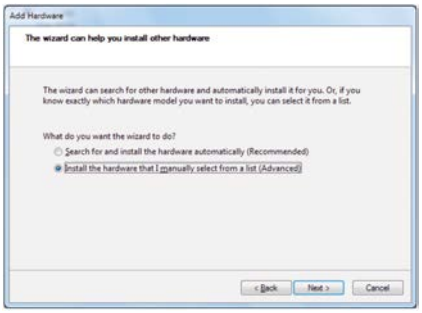
4	On the ***Action*** menu, click ***Add legacy hardware***.



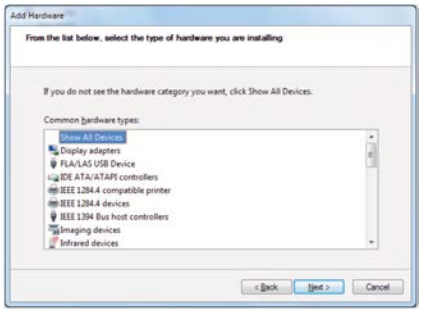
5	In the ***Add Hardware*** dialog, click ***Next***.



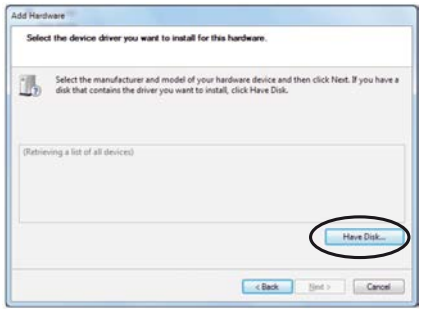
Step	Action
6	Select ***Install the hardware that I manually select from a list (Advanced)*** and click ***Next***.



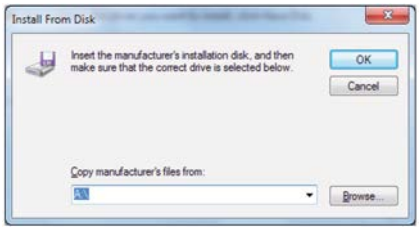
7	Select ***Show All Devices*** and click ***Next***.



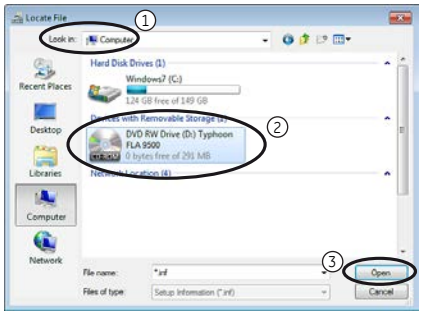
8	Click ***Have Disk***.



Step	Action
9	Insert the Typhoon FLA 9500 DVD and click ***Browse***.



10	In the ***Look in*** list, click ***Computer*** (1), then click ***Typhoon FLA 9500*** control software DVD (2). Click ***Open*** (3).

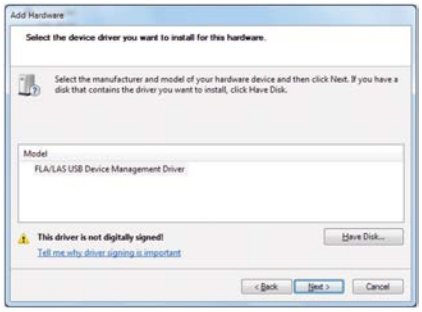


11	In the ***Installer for 64bit:USB Control 64*** folder, click ***Open***.
12	Select ***DevMng64.inf*** and click ***Open***.

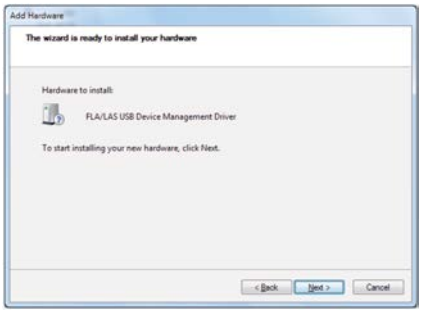


13	In ***Install from disk*** dialog, click ***OK***.

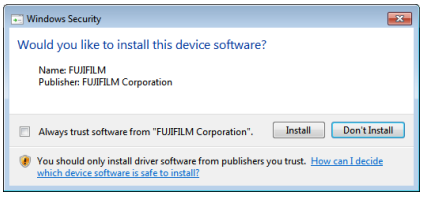
Step	Action
14	In ***Add Hardware*** wizard, click ***Next***.



15	When the message ***The wizard is ready to install your hardware*** is displayed, click ***Next***.



16	When the message ***Would you like to install this device software?*** is displayed, click ***Install***.



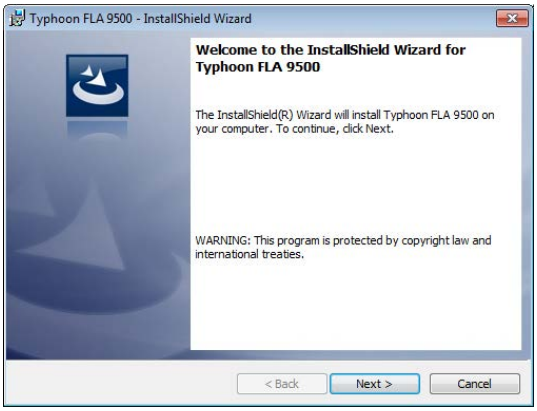
Step	Action
17	In ***Add Hardware*** wizard, click ***Finish***.



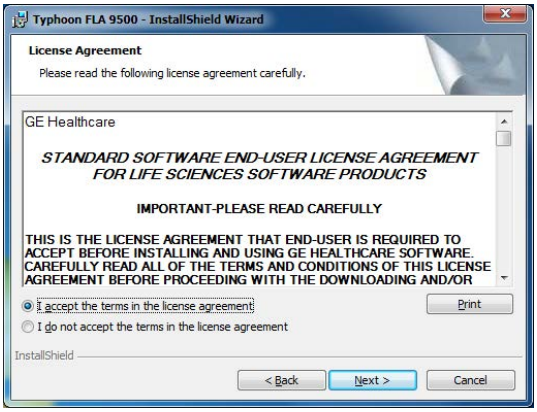
Install Typhoon FLA 9500 and USB function driver

Note: *During software installation you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Type an administrator password, when prompted, then click* ***Continue****.*

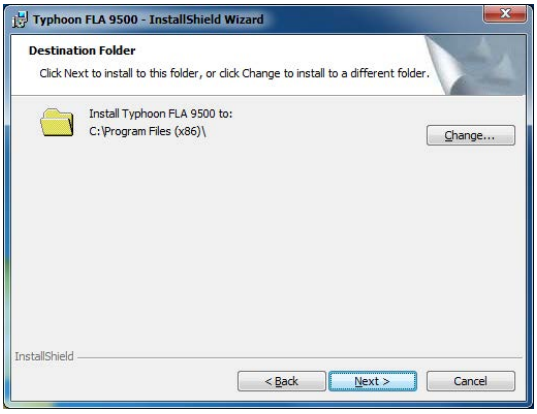
Step	Action
1	Insert the Typhoon FLA 9500 DVD.
2	In the ***Installer for 64 bit*** folder, locate and double-click the file ***Typhoon FLA 7000 for 64bit.msi***.
3	In the ***Typhoon FLA 7000 - InstallShield Wizard*** dialog, click ***Next***.



Step	Action
4	Read the license agreement text. If the license agreement is not acceptable, please contact your GE representative. Contact information can be found on the back page of this document.

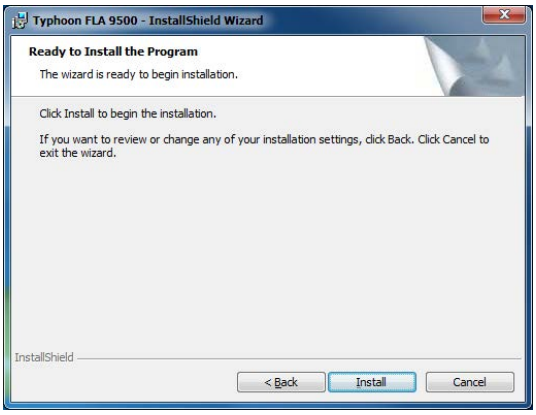


5	If the licence agreement is acceptable, select ***I accept the terms in the licence agreement*** and click ***Next***.
6	Define the software destination folder in the ***Destination Folder*** dialog as described below.

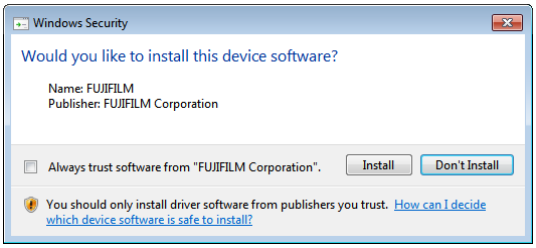


- If the default folder ***C:\Program Files (x86)*** is acceptable, click ***Next***.
- If you want to use a different folder, click ***Change*** and define a suitable destination folder. Click ***Next***.

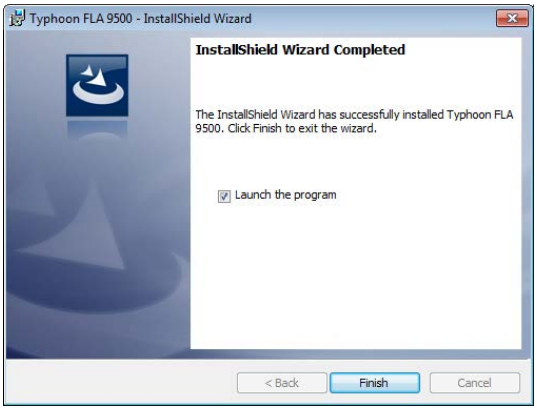
Step	Action
7	Click ***Install***.



8	If User Account Control (UAS) is enabled, a dialog displays the message ***An unidentified programs wants access to your computer***. Click ***Allow***.
9	When the message ***Would you like to install this device software?*** is displayed, click ***Install***.



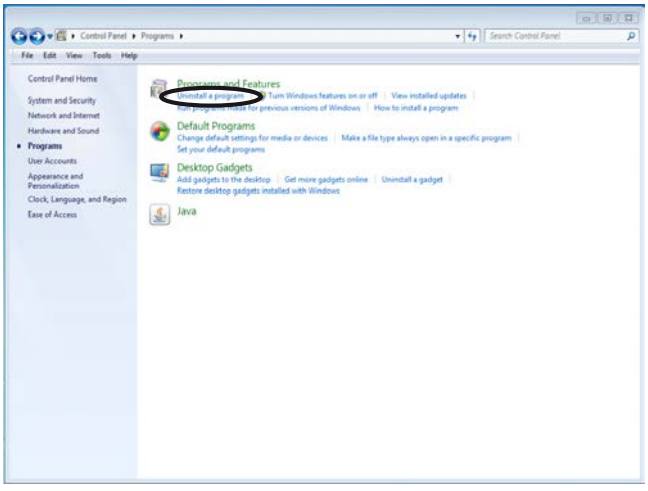
Step	Action
10	In ***Typhoon FLA 7000 - InstallShield Wizard***, click ***Finish***.



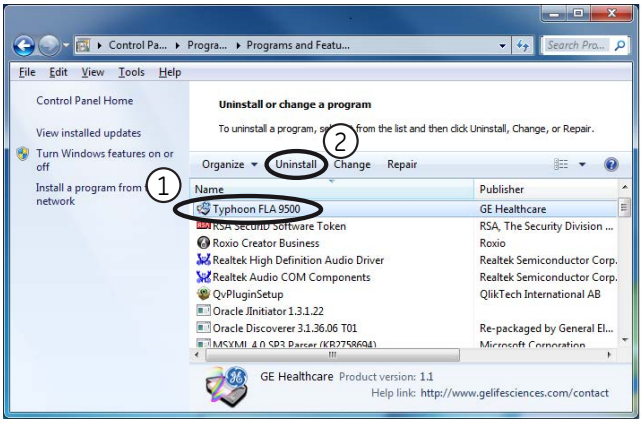
Uninstall the software

Follow the instructions below to uninstall the Typhoon FLA 9500.

Step	Action
1	Click ***Start*** at the bottom left corner on the screen.
2	Click ***Control Panel:Programs***, then click ***Uninstall a program*** under ***Programs and Features***.



Step	Action
3	Select ***Typhoon FLA 7000*** (1), then click ***Uninstall*** (2).



4	In the confirmation dialog, click ***Yes***.
5	If User Account Control is enabled, a message ***An unidentified program wants to access your computer*** is displayed. Click ***Allow***.

Upgrade the software

Follow the instructions below to upgrade the Typhoon FLA 9500.

Step	Action
1	Uninstall the current version of the Typhoon FLA 9500 as described in the section *Uninstall the software, on page 69* above.
2	Install the new version of the Typhoon FLA 9500 as described above.

3.6 Preparations before starting Typhoon FLA 9500

Checklist before starting Typhoon FLA 9500

- Typhoon FLA 9500 is placed on a sturdy, horizontal surface.
- Typhoon FLA 9500 is connected to a grounded wall outlet.
- Typhoon FLA 9500 is connected to the computer with a USB cable.
- The air intake fan on the rear side of Typhoon FLA 9500 is unobstructed.
- The air exhaust fan on the left side of Typhoon FLA 9500 is unobstructed.
- Typhoon FLA 9500 is not placed in direct sunlight or in a brightly lit place.
- There are no objects on top of Typhoon FLA 9500.
- There is no stage in the stage rack.

4 Operation

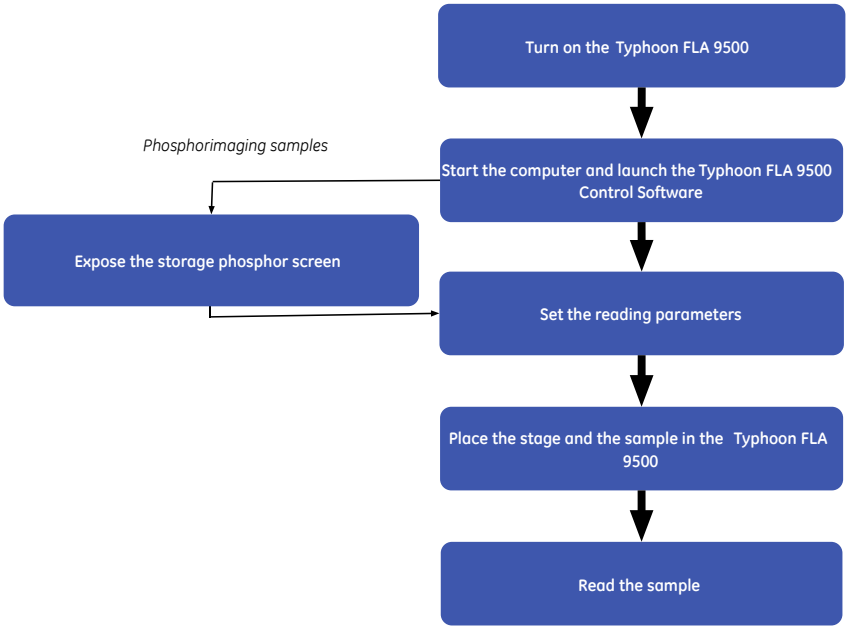
In this chapter

This chapter contains the following sections:

Section	See page
4.1 Operation overview	73
4.2 Starting the instrument and the Typhoon FLA 9500 control software	74

4.1 Operation overview

Using Typhoon FLA 9500 comprises a series of steps outlined below. Detailed explanations are provided in subsequent chapters.

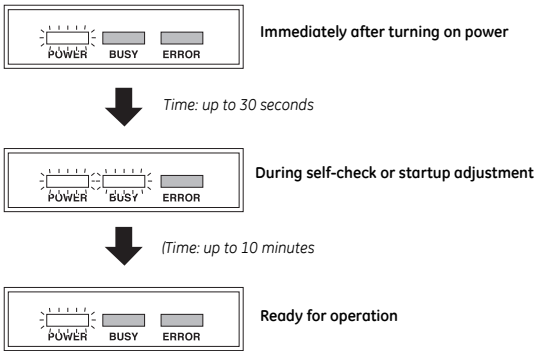


4.2 Starting the instrument and the Typhoon FLA 9500 control software

Note: *Before turning on the instrument, open the lid and make sure that the stage rack is empty. Then, close the lid securely.*

Starting the Typhoon FLA 9500

Step	Action
1	Push the power switch on the right side of the instrument to the "**I**" position.
2	When the instrument is turned on, the On/Off conditions of the indicator lamps change as shown below.



Starting the Typhoon FLA 9500 control software

CAUTION

Do not insert a Storage phosphor screen in Typhoon FLA 9500 before turning on the machine. If an imaging plate is detected during the self-diagnosis of the Typhoon FLA 9500, the sensitivity of the Storage phosphor screen may deteriorate. The scanned data can then not be guaranteed.

Step	Action
1	Turn on the computer.

Step	Action
2	Make sure that Typhoon FLA 9500 has completed the warm-up, after which only the power lamp on the upper left panel on the front of the Typhoon FLA 9500 is lit.
3	Start Typhoon FLA 9500 control software from the ***Start*** menu, or use the desktop shortcut.
4	The main window of the Typhoon FLA 9500 control software is displayed.



The condition is displayed in the Status area of the main window. Status messages are as follows:

Message	Explanation
Disconnected	Cannot recognize Typhoon FLA 9500. Please check connection and power.
Warm-up	Typhoon FLA 9500 is in self-diagnosis. Please wait.
Ready	The unit is ready to use.

5 Reading fluorescent samples

In this chapter

This chapter contains the following sections:

Section	See page
5.1 Set the reading mode and reading conditions	77
5.2 Place the sample on the stage	79
5.3 Place the stage in Typhoon FLA 9500	84
5.4 Read the sample	85

5.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9500 and the computer.

2 Start the Typhoon FLA 9500 control software.

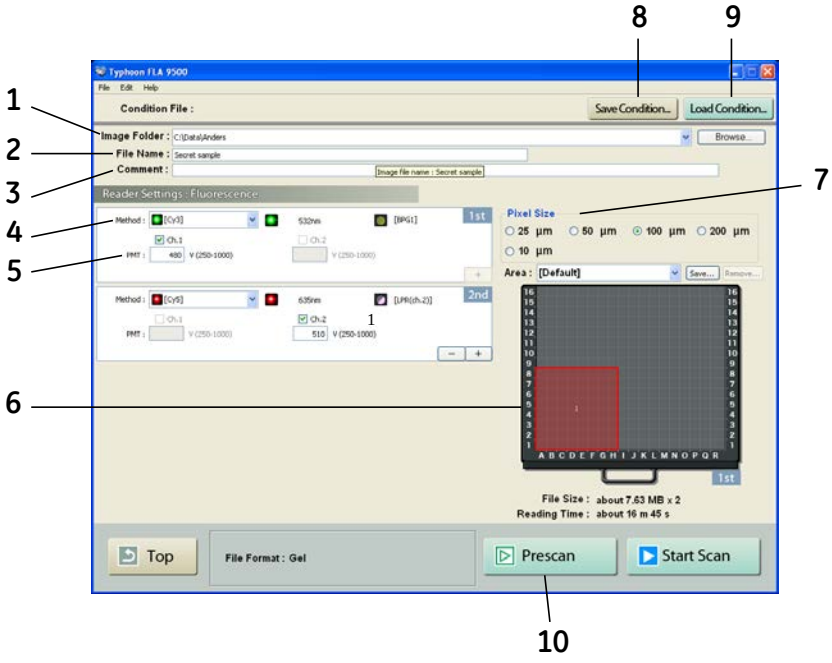
Set the reading conditions

Click the ***Fluorescence*** button in the main window to reach the ***Reader Settings*** window for the fluorescence mode .



Set the reading conditions by following the steps in the table below.

Note: *All parts in the window are described in Overview of the main window, on page 16.*

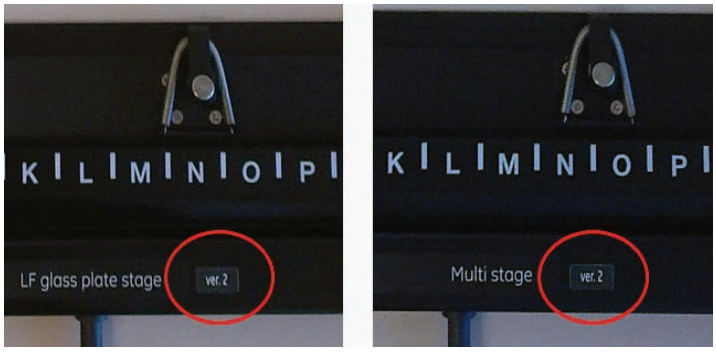


Step	Action
1	Select where to save the image data file after the reading, in the ***Image folder:*** field.
2	Enter the name of the file to save the image data in, in the ***File Name:*** field.
3	If desired, enter a comment, in the ***Comment:*** field. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	Set the method to use in the scan, in the ***Method:*** field. Up to 4 scans can be performed in a row, all with individual methods. Click  to increase the number of scans. Click  to decrease the number of scans.
5	Set the voltage of the photo-multiplier tube, in the ***PMT:*** field. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	Set the pixel size, in the ***Pixel Size:*** field. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	If desired, click the ***Save Condition...*** button to save the current reading conditions in a file. For details, refer to the *User Manual*.
9	If desired, click the ***Load Condition...*** button to load previously saved reading conditions. For details, refer to the *User Manual*.
10	If desired, click the ***Prescan*** button to quickly prescan the sample at a resolution of 1000 µm.

5.2 Place the sample on the stage

Note: *Usage of stage*

Do not use old LF glass stages and/or Multi stages with a serial number of 2642266 and higher on the Typhoon FLA 9500. The new versions of LF glass stage and Multi stage are labelled as "ver. 2"and can be used on any Typhoon FLA 9500 and FLA 9000.



CAUTION

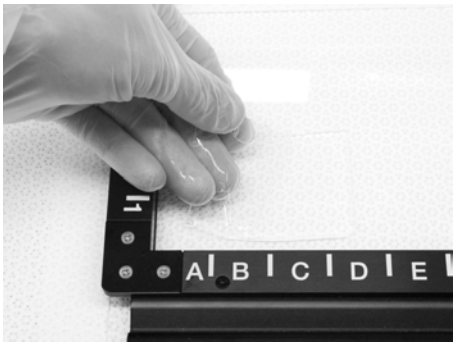
Always wear gloves, protective glasses and a lab coat or similar when handling samples.

Placing a gel sample on the Fluor stage

Note:

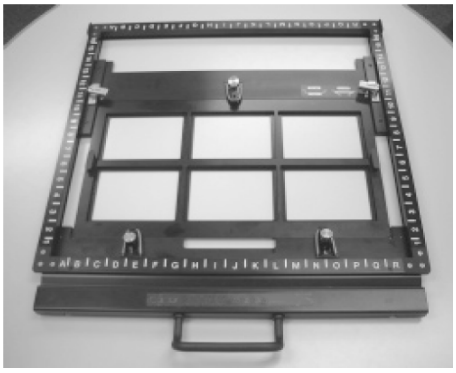
- *The sample must not be thicker than 30 mm. For solutions, the maximum height is 4 mm.*
- *Make sure there are no bubbles or gaps on the contact surface.*

Step	Action
1	Place the sample on the Fluor stage.



Placing a titer plate on the Multi stage

Step	Action
1	Place the titer plate frame on the Multi stage.



Step	Action
2	Place the titer plate in the desired position in the titer plate frame.



Placing a DIGE gel on the LF glass plate stage

Step	Action
1	Place one or two DIGE gels on the LF glass plate stage.

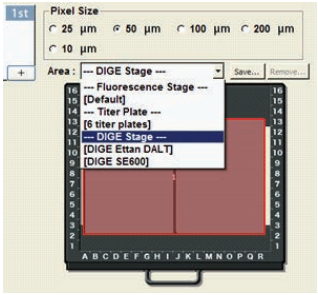


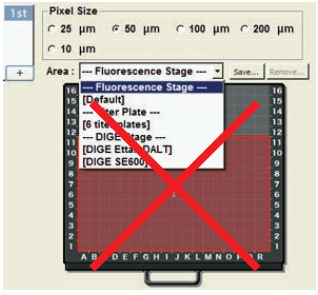
2	Fasten each glass with the front and rear glass holders.
3	Press down each glass holder and tighten the screw.

Placing a gel sample with glass on the Multi stage

CAUTION

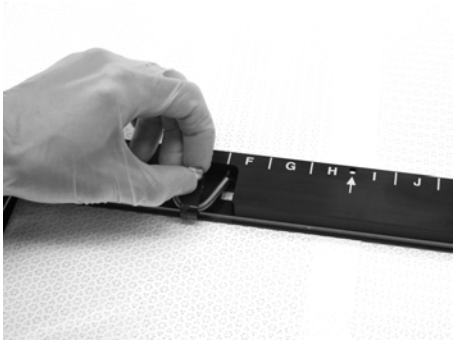
When you use the Multi stage to scan variable size of sample(s), please chose DIGE stage to create scan area(s). You should not use Fluorescence stage. If you use the Fluorescence stage, a serious damage to the instrument may be caused.





Step	Action
1	Place a gel sample with glass on the Multi stage.
2	Carefully fold down the spring-loaded glass holders on the glass.



Step	Action
3	Tighten the screws on the glass holders as necessary. 

5.3 Place the stage in Typhoon FLA 9500

Placing the Fluor or Multi stage in the Typhoon FLA 9500

Step	Action
1	Open the lid of the Typhoon FLA 9500.
2	Place the stage on the Typhoon FLA 9500 with the printed side of the frame facing up.



3	Press the stage all the way in.

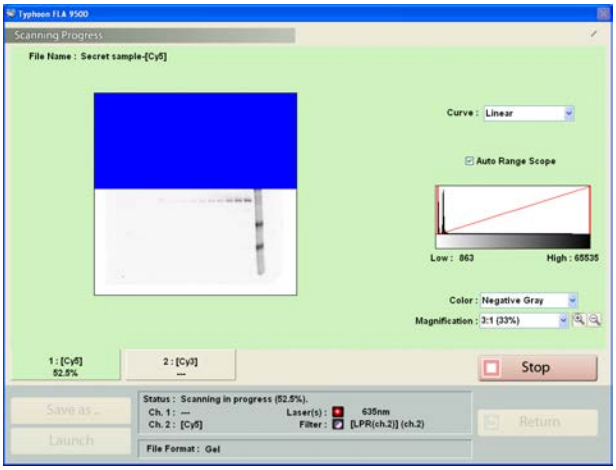


4	Close the lid.

5.4 Read the sample

> **CAUTION**
> Do not open the lid or filter door while the device is in operation. Injury could result.

Click the ***Start Scan*** button to start reading.



Note: *If **Stop** is clicked during scanning, the unscanned area will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *After clicking **Stop**, the reading is aborted and cannot be resurmed from the location where the reading was stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.
Auto range scope	Check this option to optimize the tones automatically.

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Color</td><td>Select the colors used to display the data.

<table>
<tr><th>Value</th><th>Color of low values</th><th>Color of high values</th></tr>
<tr><td>Negative Gray</td><td>White</td><td>Black</td></tr>
<tr><td>Positive Gray</td><td>Black</td><td>White</td></tr>
<tr><td>Red</td><td>Black</td><td>Red</td></tr>
<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

6 Reading 2D DIGE samples

In this chapter

This chapter contains the following sections:

Section	See page
6.1 Set the reading mode and reading conditions	88
6.2 Placing the sample on the stage	91
6.3 Place the stage in Typhoon FLA 9500	92
6.4 Read the sample	93

6.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9500 and the computer.

2 Start the Typhoon FLA 9500 control software.

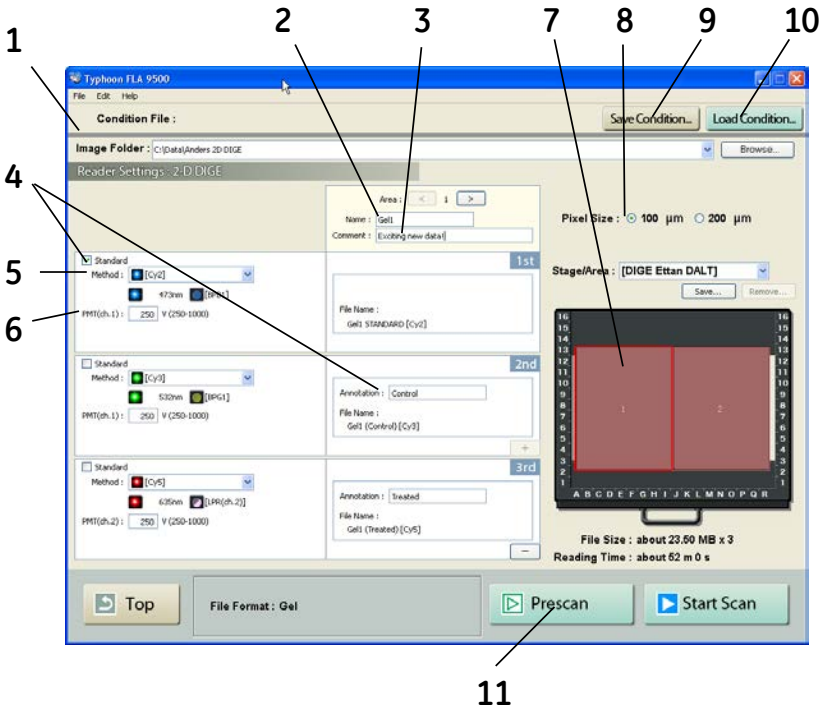
Set the reading conditions

Click the ***2D DIGE*** button in the main window to reach the Reader Settings window for the 2D DIGE mode.



Set the reading conditions by following the steps in the table below.

Note: *All parts in the window are described in Overview of the main window, on page 16.*



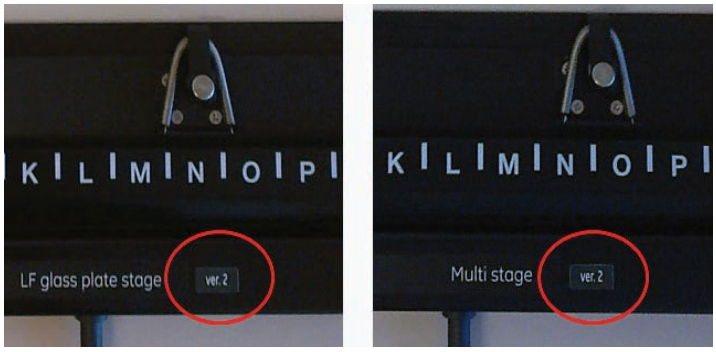
Step	Action
1	Select where to save the image data file after the reading, in the ***Image folder:*** field.
2	Enter the name of the file to save the image data in, in the ***File Name:*** field. Use the **<** and **>** buttons to change between file area 1 and 2.
3	If desired, enter a comment, in the ***Comment:*** field. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software. A separate comment can be entered for file area 1 and 2.
4	Enter a description of the function of the image, in the ***Annotation:*** field. The annotation is added to the file name of the image. If the ***Standard*** checkbox is checked STANDARD will be used as the annotation of the file name. Only one scan can be checkmarked as standard.
5	Set the method to use in the scan, in the ***Method:*** field. Up to 3 scans can be performed in a row, all with individual methods.  Click to increase the number of scans  Click to decrease the number of scans
6	Set the voltage of the photo-multiplier tube, in the ***PMT:*** field. The higher the value, the higher the sensitivity.
7	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
8	Set the pixel size, in the ***Pixel Size:*** field. Choose a small pixel size for high quality images. Note that a small pixel size setting increases the reading time and the size of the image file.
9	If desired, click the ***Save Condition...*** button to save the current reading conditions in a file. For details, refer to the User Manual.

Step	Action
10	If desired, click the ***Load Condition...*** button to load previously saved reading conditions. For details, refer to the *User Manual*.
11	If desired, click the ***Prescan:*** button to quickly prescan the sample at a resolution of 1000 µm.

6.2 Placing the sample on the stage

Note: *Usage of stage*

Do not use old LF glass stages and/or Multi stages with a serial number of 2642266 and higher on the Typhoon FLA 9500. The new versions of LF glass stage and Multi stage are labelled as "ver. 2"and can be used on any Typhoon FLA 9500 and FLA 9000.



Placing a DIGE gel on the LF glass plate stage

Step	Action
1	Place one or two DIGE gels on the LF glass plate stage.
2	Carefully fold down the spring-loaded glass holders on the glass.
3	Tighten the screws on the glass holders as necessary.



6.3 Place the stage in Typhoon FLA 9500

Placing the LF glass plate stage in the Typhoon FLA 9500

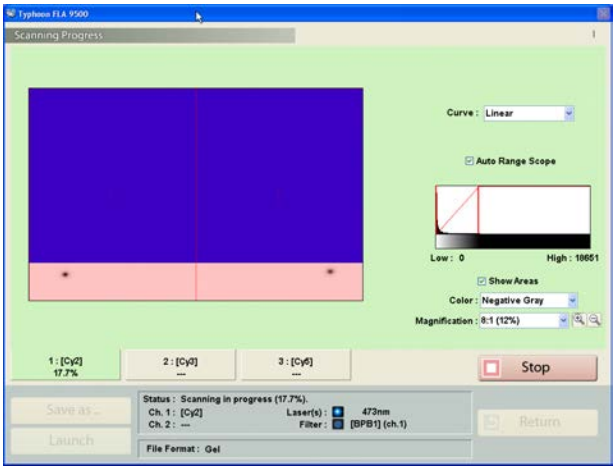
Step	Action
1	Open the lid of the Typhoon FLA 9500.
2	Place the LF glass plate stage in the scanner. 
3	Push the LF glass plate stage in until it stops.
4	Close the lid.

6.4 Read the sample

CAUTION

Do not open the lid or filter door while the device is in operation. Injury could result.

Click the ***Start Scan*** button to start reading.



Note: *If **Stop** is clicked during scanning, the unscanned area will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *After clicking **Stop**, the reading is aborted and cannot be resurmed from the location where the reading was stopped.*

Tip: *Use **Prescan** to identify interesting areas to use for optimizing the scan parameters.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Magnification</td><td>Zoom in or out.</td></tr>
<tr><td>Auto range scope</td><td>Check this option to optimize the tones automatically.</td></tr>
<tr><td>Color</td><td>Select the colors used to display the data.

<table>
<tr><th>Value</th><th>Color of low values</th><th>Color of high values</th></tr>
<tr><td>Negative Gray</td><td>White</td><td>Black</td></tr>
<tr><td>Positive Gray</td><td>Black</td><td>White</td></tr>
<tr><td>Red</td><td>Black</td><td>Red</td></tr>
<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

7 Reading chemiluminescent samples

In this chapter

This chapter contains the following sections:

Section	See page
7.1 Set the reading mode and reading conditions	96
7.2 Place the sample on the stage	99
7.3 Place the stage in the Typhoon FLA 9500	100
7.4 Read the sample	101

7.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9500 and the computer.

2 Start the Typhoon FLA 9500 control software.

Prerequisites

To use the chemiluminescence mode, one filter position must be empty, and the position must be registered in the filter module in the Typhoon FLA 9500 Control Software as ***Through***. If these conditions are not fulfilled, the ***Reader Settings*** window for the chemiluminescence mode cannot be accessed.

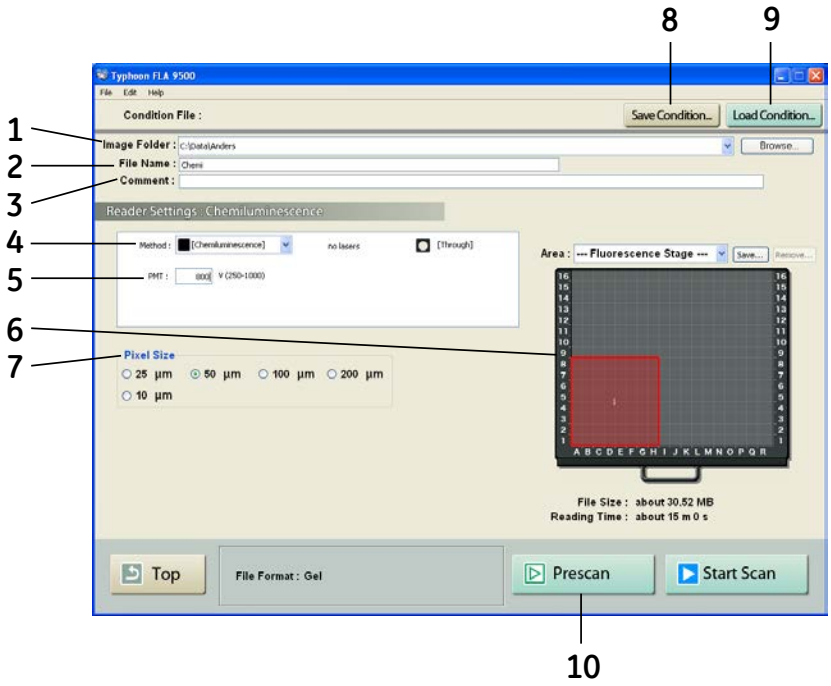
Set the reading conditions

Click the ***Chemiluminescence*** button to reach the ***Reader settings*** window for the chemiluminescence mode.



Set the reading conditions by following the steps in the table below.

Note: *All parts in the window are described in Overview of the main window, on page 16.*



Step	Action
1	Select where to save the image data file after the reading, in the ***Image folder:*** field.
2	Enter the name of the file to save the image data in, in the ***File Name:*** field.
3	If desired, enter a comment, in the ***Comment:*** field. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	In the ***Method:*** field, in chemiluminescence mode, the laser is automatically set to ***no lasers***, and the filter is automatically set to ***Through***.
5	Set the voltage of the photo-multiplier tube, in the ***PMT:*** field. The higher the value, the higher the sensitivity.

Step	Action
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	Set the pixel size, in the ***Pixel Size:*** field. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	If desired, click the ***Save Condition...*** button to save the current reading conditions in a file. For details, refer to the *User Manual*.
9	If desired, click the ***Load Condition...*** button to load previously saved reading conditions. For details, refer to the *User Manual*.
10	If desired, click the ***Prescan:*** button to quickly prescan the sample at a resolution of 1000 µm.

7.2 Place the sample on the stage

Place the sample on the Fluor stage with the chemiluminescent side face down.



Note: *To reduce the effect of vibrations, place a membrane weight on top of the samples.*

7.3 Place the stage in the Typhoon FLA 9500

Step	Action
1	Open the lid of the Typhoon FLA 9500.
2	Place the stage on the Typhoon FLA 9500 with the printed side of the frame facing up.



3	Press the stage all the way in.



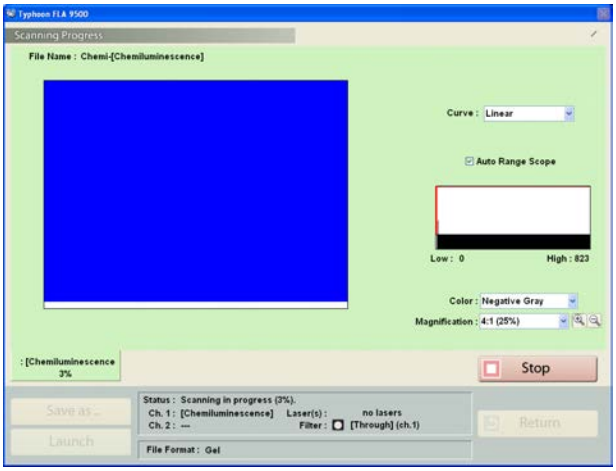
4	Close the lid.

7.4 Read the sample

CAUTION

Do not open the lid or filter door while the device is in operation. Injury could result.

Click the ***Start Scan*** button to start reading the sample. The scanning progress window opens.



Note: *If **Stop** is clicked during scanning, the unscanned area will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *After clicking **Stop**, the reading is aborted and cannot be resumed from the location where the reading was stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Auto range scope</td><td>Check this option to optimize the tones automatically.</td></tr>
<tr><td>Color</td><td>Select the colors used to display the data.
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<tr><td>Negative Gray</td><td>White</td><td>Black</td></tr>
<tr><td>Positive Gray</td><td>Black</td><td>White</td></tr>
<tr><td>Red</td><td>Black</td><td>Red</td></tr>
<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table></td></tr>
</table>

8 Exposing Storage phosphor screens

In this chapter

This chapter contains the following sections:

Section	See page
8.1 Handling precautions	104
8.2 Preparing the Storage phosphor screen	106
8.3 Exposing the Storage phosphor screen	108

8.1 Handling precautions

Exposure environment



NOTICE

Avoid environmental radiation. Avoid exposing Storage phosphor screens in places where the environmental radiation may be increased, for example rooms with concrete walls or in basements.



NOTICE

Do not stack cassettes during exposure.

Handling the Storage phosphor screen



CAUTION

Always wear cotton gloves when handling Storage phosphor screens.



NOTICE

Use a suction rod when taking the Storage phosphor screen out of the cassette. Prying the Storage phosphor out may result in the edge peeling off, making the Storage phosphor screen unusable.



NOTICE

- Do not scratch or bend the Storage phosphor screen.
- Keep the Storage phosphor screen free from dust.



NOTICE

Protect the Storage phosphor screen from water and volatile solvents.

- Dry the sample thoroughly before exposing it.
- Wrap wet samples in plastic film and make sure that no liquid exits. Use double layers if the sample contains volatile solvents.
- If water enters the Storage phosphor screen, the sensitivity of the Storage phosphor screen is reduced.
- Volatile solvents may deform the protective film on the Storage phosphor screen.



NOTICE

Protect exposed Storage phosphor screens from light until the reading is finished.

Storage



NOTICE

Remove the Storage phosphor screen from the Typhoon FLA 9500 main unit when not in use. Store the Storage phosphor screens in a horizontal position, protected from moisture.

8.2 Preparing the Storage phosphor screen

Procure necessary tools and items

Prepare by acquiring the following items:

- Storage phosphor screen cassette
- Radio isotope labeled samples
- Gloves
- Plastic film
- Soft, lint-free tissues
- Ethanol

Clean the Storage phosphor screen and the cassette

Clean the surface of the Storage phosphor screen and the inside of cassette with a soft tissue to remove dust and stains.

Erase the Storage phosphor screen

The FLA Image Eraser can erase the Storage phosphor screen in around 15 minutes, if it is not overly exposed. For details, refer to the *FLA Image Eraser User Manual*.

Dim the lighting

- Dim the ambient light to 20 lux or less before opening or moving the Storage phosphor screen without a cover.

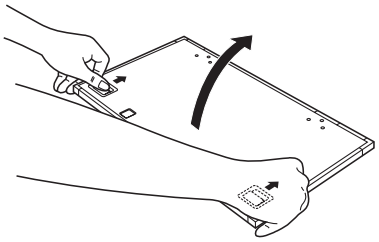
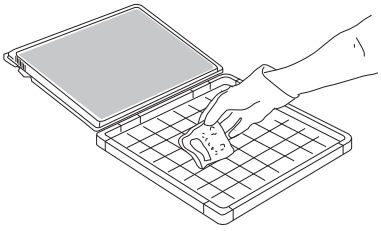
Set the exposure time

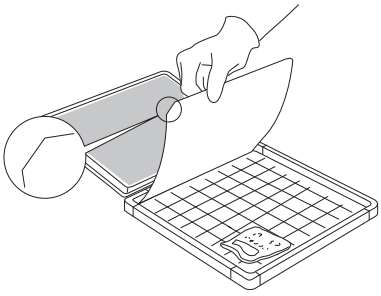
Set the exposure time so that the exposure finishes right before the reading starts.

Note: *The exposure time of the Storage phosphor screen is approximately one twentieth of the time required for X-ray film. Take this into consideration when setting the initial exposure time.*

Tip: *For increased image quality, minimize the time between exposing the Storage phosphor screen and reading it with the Typhoon FLA 9500.*

8.3 Exposing the Storage phosphor screen

Step	Action
1	Erase the Storage phosphor screen completely.
2	Wrap the radio isotope sample with plastic film. Make sure not to wrinkle the wrapping film. ***Note:*** *When using a tritium storage phosphor screen to detect tritium, place the sample directly on the storage phosphor screen. A tritium storage phosphor screen can be used only once.*
3	Open the top cover of the cassette. Unlock the cassette by sliding the buttons on both sides up. 
4	Place the sample on the cassette. Make sure that the sample surface faces up.  ***Note:*** *Keep the radio imaging sample away from the edge of the Storage phosphor screen. Otherwise, the recorded data may become corrupted.*

Step	Action
5	Place the Storage phosphor screen in the cassette, with the exposure surface of the Storage phosphor screen facing the sample. Make sure that the notch of the Storage phosphor screen is in the front left corner of the cassette as shown below. 
6	Close the cover of the cassette. Press on the cover until it clicks into place.

9 Reading phosphorimaging samples

In this chapter

This chapter contains the following sections:

Section	See page
9.1 Set the reading conditions	111
9.2 Place the storage phosphor screen on the phosphor stage	114
9.3 Place the phosphor stage in the Typhoon FLA 9500	115
9.4 Read the sample	116

9.1 Set the reading conditions

Start the system

1 Turn on Typhoon FLA 9500 and the computer.

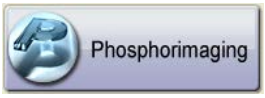
2 Start the Typhoon FLA 9500 control software.

Prerequisites

To use the phosphorimaging mode, the 635 nm laser must be loaded, and the IP filter must be set. If these conditions are not fulfilled, the ***Reader Settings*** window for the phosphorimaging mode cannot be accessed.

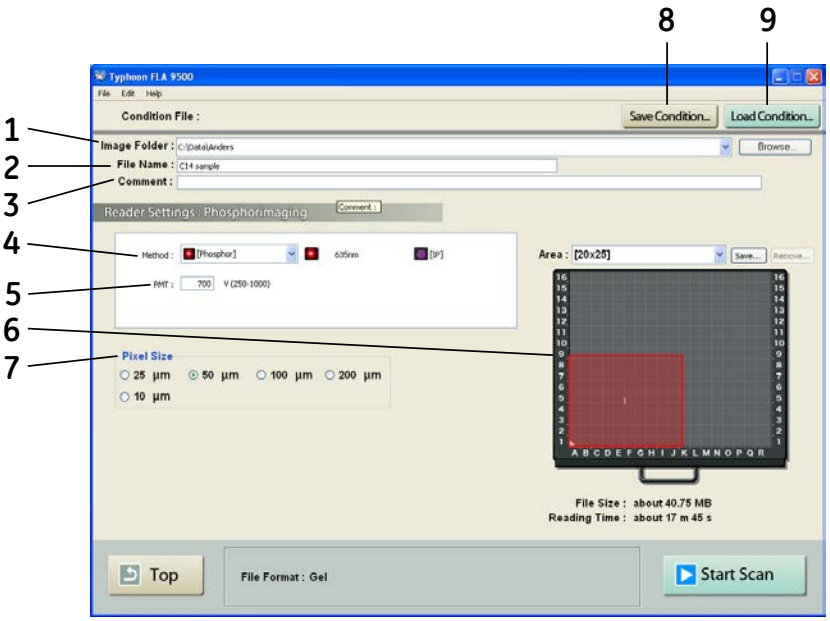
Set the reading conditions

Click the ***Phosphorimaging*** button to reach the ***Reader Settings*** window for the phosphorimaging mode.



Set the reading conditions by following the steps in the table below.

Note: *All parts in the window are described in Overview of the main window, on page 16.*



Step	Action
1	Select where to save the image data file after the reading, in the ***Image folder:*** field.
2	Enter the name of the file to save the image data in, in the ***File Name:*** field.
3	If desired, enter a comment, in the ***Comment:*** field. The comment will be embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	In the ***Method:*** field, in phosphorimaging mode, the laser is automatically set to ***635 nm***, and the filter is automatically set to ***IP***.
5	Set the voltage of the photo-multiplier tube, in the ***PMT:*** field. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.

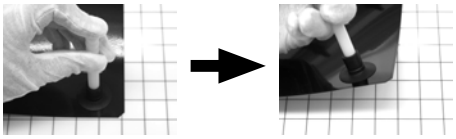
Step	Action
7	Set the pixel size, in the ***Pixel Size:*** field. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	If desired, click the ***Save Condition...*** button to save the current reading conditions in a file. For details, refer to the *User Manual*.
9	If desired, click the ***Load Condition...*** button to load previously saved reading conditions. For details, refer to the *User Manual*.

9.2 Place the storage phosphor screen on the phosphor stage

CAUTION

Always wear cotton gloves when handling storage phosphor screens.

Step	Action
1	Turn down the lighting in the room.
2	Place the cassette with the exposed storage phosphor screen next to the phosphor stage.
3	Pick up the storage phosphor screen and move it to the phosphor stage.



a Press one end of the suction rod against the storage phosphor screen.

b Cover the other end of the suction rod with a finger.

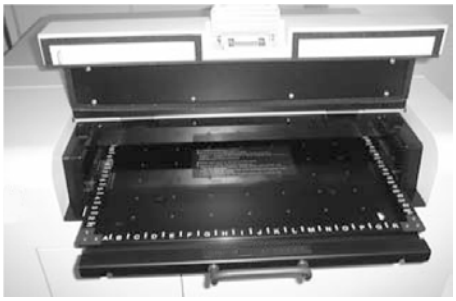
c Lift up the storage phosphor screen by the suction rod, and place the storage phosphor screen on the phosphor stage.

d Release the storage phosphor screen by releasing your finger from the suction rod.

4 Place the storage phosphor screen on the back of the phosphor stage, with the white or blue reading surface of the storage phosphor screen facing up.



9.3 Place the phosphor stage in the Typhoon FLA 9500

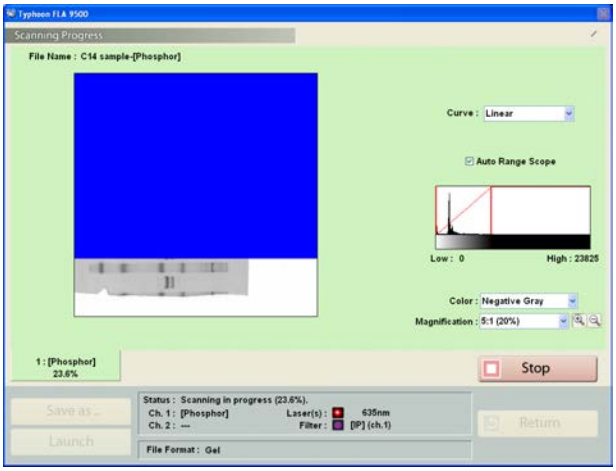
Step	Action
1	Open the lid of the Typhoon FLA 9500.
2	Position the phosphor stage with the storage phosphor screen face down. 
3	Push the phosphor stage inwards until it stops.
4	Close the lid of the Typhoon FLA 9500.

9.4 Read the sample

CAUTION

Do not open the lid or filter door while the device is in operation. Injury could result.

Click the ***Start Scan*** button to start reading the sample. The scanning progress window opens.



Note: *If **Stop** is clicked during scanning, the unscanned area will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *After clicking **Stop**, the reading is aborted and cannot be resurmed from the location where the reading was stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Auto range scope</td><td>Check this option to optimize the tones automatically.</td></tr>
<tr><td>Color</td><td>Select the colors used to display the data.
<table>
<tr><th>Value</th><th>Color of low values</th><th>Color of high values</th></tr>
<tr><td>Negative Gray</td><td>White</td><td>Black</td></tr>
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<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table></td></tr>
</table>

10 Reading digitization samples

In this chapter

This chapter contains the following sections:

Section	See page
10.1 Set the reading mode and reading conditions	119
10.2 Place the sample on the stage	122
10.3 Place the stage in the Typhoon FLA 9500	123
10.4 Read the sample	124

10.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9500 and the computer.

2 Start the Typhoon FLA 9500 control software.

Prerequisites

To use the digitization mode, the 478 or 532 nm laser must be loaded, and the LPB or LPG filter must be set. If these conditions are not fulfilled, the ***Reader Settings*** window for the digitization mode cannot be accessed.

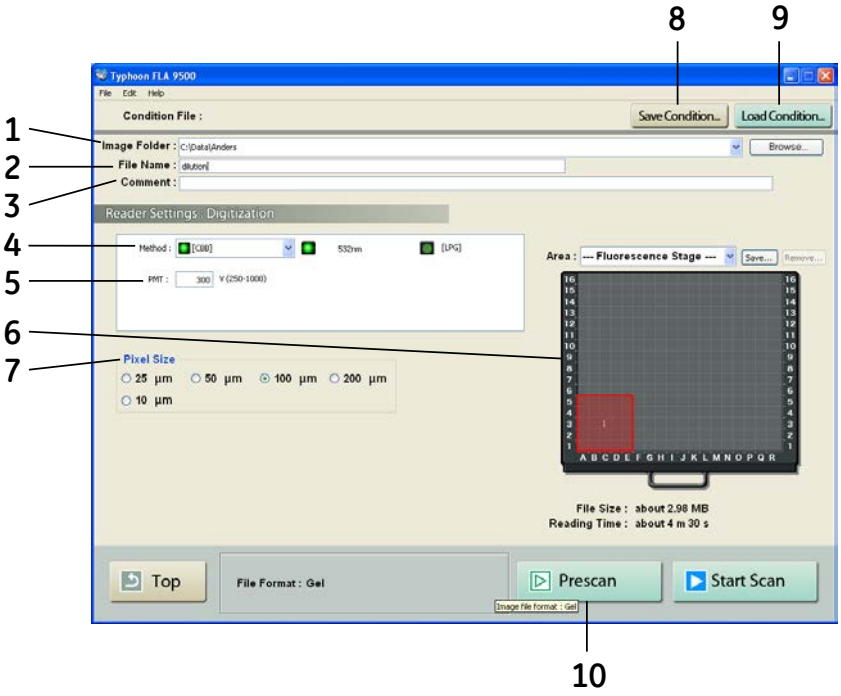
Set the reading conditions

Click the ***Digitization*** button of the main window to reach the Reader Settings window for the digitization mode.



Set the reading conditions by following the steps in the table below.

Note: *All parts in the window are described in Overview of the main window, on page 16.*



Step	Action
1	Select where to save the image data file after the reading, in the ***Image folder:*** field.
2	Enter the name of the file to save the image data in, in the ***File Name:*** field.
3	If desired, enter a comment, in the ***Comment:*** field. The comment will be embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	Set the method to use in the scan, in the ***Method:*** field.
5	Set the voltage of the photo-multiplier tube, in the ***PMT:*** field. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.

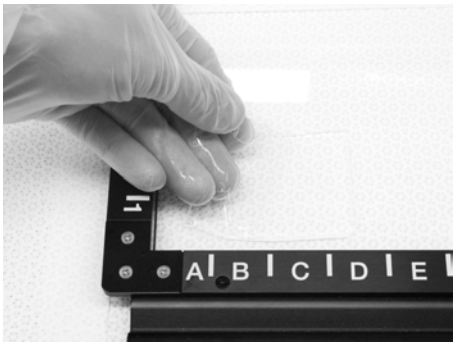
Step	Action
7	Set the pixel size, in the ***Pixel Size:*** field. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	If desired, click the ***Save Condition...*** button to save the current reading conditions in a file. For details, refer to the User Manual.
9	If desired, click the ***Load Condition...*** button to load previously saved reading conditions. For details, refer to the User Manual.
10	If desired, click the ***Prescan:*** button to quickly prescan the sample at a resolution of 1000 µm.

10.2 Place the sample on the stage

Placing a gel sample on the Fluor stage

Note:

- *The sample must not be thicker than 30 mm. For solutions, the maximum height is 4 mm.*
- *Make sure there are no bubbles or gaps on the contact surface.*

Step	Action
1	Place the sample on the Fluor stage. 
2	Place the fluorescent plate for digitization on top of the sample.

10.3 Place the stage in the Typhoon FLA 9500

Step	Action
1	Open the lid of the Typhoon FLA 9500.
2	Place the stage on the Typhoon FLA 9500 with the printed side of the frame facing up.



3	Press the stage all the way in.



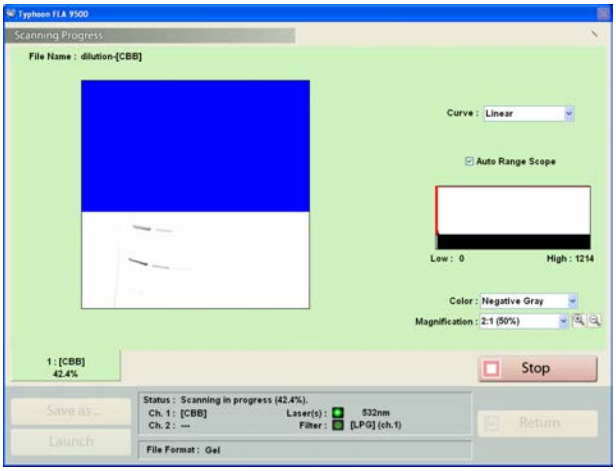
4	Close the lid.

10.4 Read the sample

CAUTION

Do not open the lid or filter door while the device is in operation. Injury could result.

Click the ***Start Scan*** button to start reading the sample. The scanning progress window opens.



Note: *If **Stop** is clicked during scanning, the unscanned area will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *After clicking **Stop**, the reading is aborted and cannot be resurmed from the location where the reading was stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
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<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table></td></tr>
</table>

Appendix A
Daily maintenance

Cleaning the stage



CAUTION

Wear gloves to prevent direct contact with chemical substances.

Step	Action
1	Remove the stage from the main body of the instrument.
2	Wipe the stage with a sponge moistened with a fluorescence-free neutral detergent.
3	Thoroughly rinse the stage with water and dry with a lint-free cloth.
4	Place the stage in the main body of the instrument.

Appendix B
Periodic maintenance

Cleaning the outside of Typhoon FLA 9500



WARNING

Do not use excessive amounts of liquids while cleaning the Typhoon FLA 9500, this may result in product malfunction or electric shock.

Clean the outside with a moist soft cloth and a mild detergent. Wipe afterwards with a dry soft cloth.

Maintenance of the SHG laser

If you use the SHG laser in the Typhoon FLA 9500, it will require periodical calibration. When the Typhoon FLA 9500 is switched on, it automatically executes calibration. You do not need to do a manual calibration if the Typhoon FLA 9500 is used at least once a month.



CAUTION

Activate the Typhoon FLA 9500 at least once every 30 days to execute calibration. This calibration makes sure that the SHG laser operates properly. Failure to calibrate the Typhoon FLA 9500 every 30 days reduces the lifespan of the SHG laser.

Operation procedures:

1 Turn on the Typhoon FLA 9500 and the computer.

2 Wait until warm-up and self-diagnosis is completed, and the scanner is ready. Only the power lamp on the upper left panel is lit. The automatic calibration has now been performed.

3 Turn off the Typhoon FLA 9500 and the computer.

Replacing the filters in the Typhoon FLA 9500

See the instruction in *Appendix C Installing and replacing filters, on page 129*.

Appendix C
Installing and replacing filters

Replacement and installation sequence

Replacement or installation of a filter is performed in the following sequence:

1 Remove the filter module from the scanner.

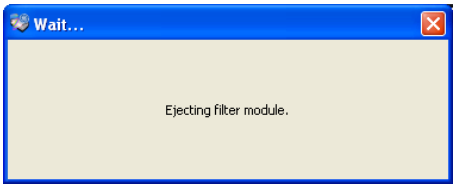
2 If replacing a filter, remove the filter to be replaced from the filter module.

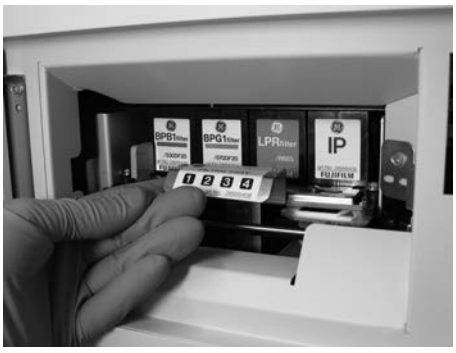
3 Install the new filter in the filter module.

4 Place the filter module in the scanner.

5 Register the filter change in the Typhoon FLA 9500.

Remove the filter module from the scanner

Step	Action
1	Click the ***Filter Module*** button in the main window.  The following status message appears.  Wait until the message is closed before proceeding to the next step.

Step	Action
2	Press the button on the filter change door. 
3	Open the filter change door by pulling the knob. 
4	Grip the metal tab and pull the filter module straight out. 

Remove and install filters in the filter module

Step	Action
1	Pull the green locking lever to the left.



2	Tilt the filter backwards and pull it out from under the metal lip.



3	Place the new filter under the rear metal lip, and lower the front edge of the filter.
4	Push the green locking lever to the right. Make sure all filters are locked.



Place the filter module in the scanner

Step	Action
1	Open the filter change door.



Step	Action
2	Insert the filter module in the filter module holder.



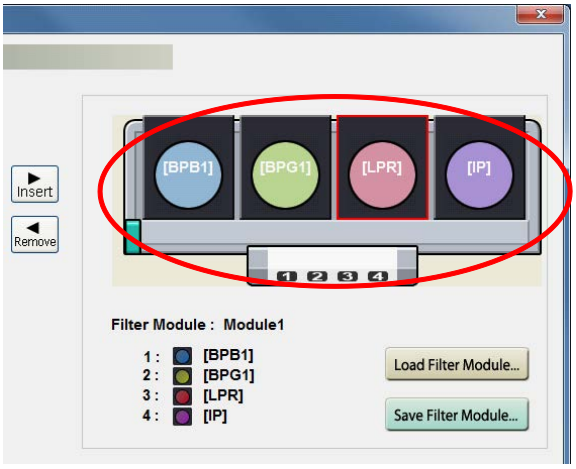
Step	Action
3	Close the filter change door.

Register the filter change in Typhoon FLA 9500

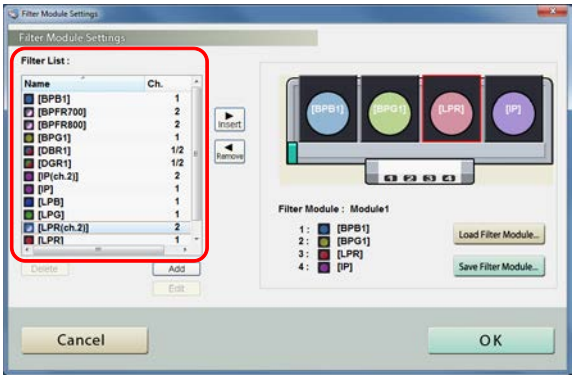
Step	Action
1	Click the ***Filter Module*** button in the main window.



Step	Action
2	Click the desired filter position on the filter tray.



3	Select the filter to be registered from ***Filter List***.



4	Click the ***Insert*** button to register the filter.



Tip:

*You can also click and drag the filter from **Filter List** to the desired filter position.*

5	Click the ***OK*** button.

Appendix D
Troubleshooting

About this chapter

This chapter describes various problems that can foreseeably occur with the Typhoon FLA 9500 Control Software. Suggestions of possible countermeasures are given.

Do the following if an error occurs.

Step	Action
1	Take note of the error code and error message on the monitor.
2	Turn off the power to Typhoon FLA 9500 and the computer, then turn them on again after about ten seconds.
3	Try to perform the action again. If the error persists, contact your GE representative.

General errors and warnings

Error message	Meaning and countermeasure
Failed to open User Manual. Please note that a PDF reader (e.g. Adobe Reader) is needed.	The software required to read the online PDF documentation is missing. **Countermeasure:** Install software for viewing PDF documents.
Failed to open End-User License Agreement. Please note that a PDF reader (e.g. Adobe Reader) is needed.	
Failed to open Getting Started. Please note that a PDF reader (e.g. Adobe Reader) is needed.	
The disk capacity is insufficient.	The available disk space is insufficient. **Countermeasure:** Free up disk space on the computer. **Countermeasure:** Store the data on a different disk.
No disk space.	See above.

Errors and warnings in the main window

Error message	Meaning and countermeasure
Cannot detect Typhoon FLA 9500. Please check connection and power.	The scanner is not detected. **Countermeasure:** Check that the scanner is turned on and connected to the computer.
Error: Please restart Typhoon FLA 9500.	The scanner needs to be restarted. **Countermeasure:** Switch of the power button of Typhoon FLA 9500, wait 15 seconds and switch it on again.
The system is not for phosphorimaging. Recommended method for phosphorimaging [Phosphor]: 635 nm - [IP]	The current scanner settings are inappropriate for the current scanning mode. The laser and/or filter settings do not match the selected scanning mode. **Countermeasure:** Make sure that the correct laser and filter combination is installed in the scanner. If necessary, change the filter. If the required laser is not installed, contact your GE representative.
The system is not for digitization. Recommended methods for digitization [CCB] : 532 nm - [LPG], [Silver Stain] : 473 nm - [LPB]	
The system is not for chemiluminescence. Method for chemiluminescence [Chemiluminescence] no lasers - [Through]	
No methods are available.	No method is defined. **Countermeasure:** Click the ***Method*** button and create a method to use for scanning.

Errors and warnings in the *Filter Module Settings* window

Error message	Meaning and countermeasure
Please enter a filter name.	The filter has no name. **Countermeasure:** Type a name in the ***Name*** field.

Error message	Meaning and countermeasure
The filter name has already been used. Please change the name.	The name of the filter is being used for another filter. **Countermeasure:** Choose another name for this filter, or change the name for the filter already having this name.
The maximum number of the filters you can register is 50. Please delete an unnecessary filter before registeringa a new filter.	No more filters can be stored in the software. **Countermeasure:** Delete a filter before storing a new one.
The filter is in use and cannot be deleted.	The filter is being used and can therefore not be deleted. **Countermeasure:** Select a different filter to use before deleting the current one.
No methods are available.	No methods are available for scanning. **Countermeasure:** Register new methods in the Typhoon FLA 9500 Control Software.
The filter module is currently in use and cannot be deleted.	The filter module is being used and can therefore not be deleted. **Countermeasure:** Select a different filter module to use before deleting the current one.

Errors and warnings in the *Method Settings* window

Error message	Meaning and countermeasure
Please input a method name.	No name has been assigned to the method. **Countermeasure:** Type a method name in the ***Name*** field.
The maximum number of available methods is 100.	The maximum number of methods are stored. No more methods can be registered. **Countermeasure:** Use an existing method, or delete a method before registering a new one.

Error message	Meaning and countermeasure
This method name has been already used. Please change the name.	The assigned name is being used by a different method. **Countermeasure:** Type a different name in the ***Name*** field.

Errors and warnings in the *Reader Settings* window

Error message	Meaning and countermeasure
Typhoon FLA 9500 imager is running self-diagnosis mode. Please wait.	The self-diagnosis of Typhoon FLA 9500 is running. **Countermeasure:** Wait until the self-diagnosis is finished, the proceed with the scan.
Typhoon FLA 9500 is not ready to scan. Please wait a moment and try again.	The scanner is not ready to scan. **Countermeasure:** Wait for one minute, then try to scan again.
A laser error was detected. Use other lasers.	There was an error with the laser. **Countermeasure:** Try to scan again. **Countermeasure:** Restart the instrument and Typhoon FLA 9500 Control Software, then try to run the scan again. **Countermeasure:** Scan using a different laser.
Please select image folder.	No image folder is selected. **Countermeasure:** Select an image folder by clicking the ***Browse...*** button and navigating to a suitable folder.
Please input a file name.	No name has been assigned to the image file. **Countermeasure:** Type a name in the ***File Name*** field.
Please set PMT Voltage value to 250-1000.	The PMT voltage setting is outside the permitted range. **Countermeasure:** Type a PMT voltage value between 250 and 1000 in the ***PMT*** field.

Error message	Meaning and countermeasure
Please give a name to the condition.	No name was given to a condition before saving. **Countermeasure:** Type a name in the ***Condition Name*** field.
The stage is not properly inserted. Please insert the stage in its correct position.	The stage is not properly inserted. **Countermeasure:** Insert the stage properly.

Errors and warnings in the scan progress window

Symptom	Meaning and countermeasure
No image data was scanned.	The sets of registered and installed filters do not match. **Countermeasure:** Change installed filters or register other filters in Typhoon FLA 9500 Control Software as necessary.
The bands in the image are very weak.	

Error message	Meaning and countermeasure
The scan was stopped because of overexposure. Set a lower PMT voltage.	The scanned image was overexposed due to a high PMT voltage setting. **Countermeasure:** Decrease the PMT voltage in the ***Reader Settings*** window.
The scan stopped because the door was opened.	The door was opened during the scan. **Countermeasure:** Close the door and scan the image again. Do not open the door until the scanning is finished.
The combination of the laser and filter might be inappropriate. Check the laser and filter.	The selected method may be inappropriate. **Countermeasure:** Select another method, or edit the method to suit the current application.

Error message	Meaning and countermeasure
A scanner error was detected. Please restart Typhoon FLA 9500 imager and Scanner Control Software. ***Sense Key : xxxx*** ***Error Code : yyyy***	An error occurred during scanning. **Countermeasure:** Try to run the scan again. Contact your GE representative if the problem persists.
A warning occurred during the scanning process.	See above.

Appendix E Specifications

Scanning specifications

Parameter	Data
Scanned image size	40 × 46 cm
Pixel size	10, 25, 50, 100 or 200 µm and a 1000 µm prescan
Gradation bit depth	16-bit
Dynamic range	Five orders of magnitude
Image capacity	• 3510 MB (10 µm) • 561.52 MB (25 µm) • 140.35 MB (50 µm) • 35.09 MB (100 µm) • 8.77 MB (200 µm)
Detection sensitivity	• Storage phosphor screen ^{14}C: Detectable to 0.9 dpm/mm^2. • Fluorescent: DNA/SYBR-Green 7 pg/band • Enzyme-multiplied fluorescence sensitivity: pBR328/AttoPhos 100 fg/spot

Dimensions & weight

Unit	Dimension (mm, w×d×h)	Weight (kg)
Reading block	900 × 800 × 400 (projections not included)	97
Storage phosphor screen cassette	460 × 430 × 20	Approx. 2.5

Unit	Dimension (mm, w×d×h)	Weight (kg)
Phosphor stage	502 × 538 × 45	Approx. 2.5
Multi stage	502 × 538 × 45	Approx. 2.8
Fluor stage	502 × 538 × 45	Approx. 2.3
FLA Image Eraser	603 × 512 × 164	14.5

Power supply

Parameter	Data
Input voltage	100 to 240 V~ (AC), single phase
Allowable variations in voltage	±10%
Frequency	50 to 60 Hz
Rated current	1.5 to 3.0 A

Environmental conditions

Parameter	Data
Operating conditions	Temperature: +15°C to +30°C Humidity: 20% to 75% RH (no dew condensation)
Non-operating conditions	Temperature: -10°C to +40°C Humidity: 20% to 70% RH (no dew condensation)
Transportation & storage temperature	Temperature: -25°C to +70°C Humidity: 10% to 80% (no dew condensation)
Heat radiation	151 W/h (reader block + FLA Image eraser)
Lighting	It is recommended to lower the lighting level to about 20 lux when moving a sample from the cassette into Typhoon FLA 9500 after exposure.
Where to use	Indoor use only, out of direct sunlight or brightly lit surroundings.

Parameter	Data
Maximum altitude for use	2000 m above sea level
Overvoltage category	Transient overvoltage category II
Applicable rated pollution degree	Pollution Degree 2

Noise levels

Parameter	Data
Noise	70 dB (A) or lower
Degrees of protection provided by enclosure	IP20

For local office contact information, visit
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