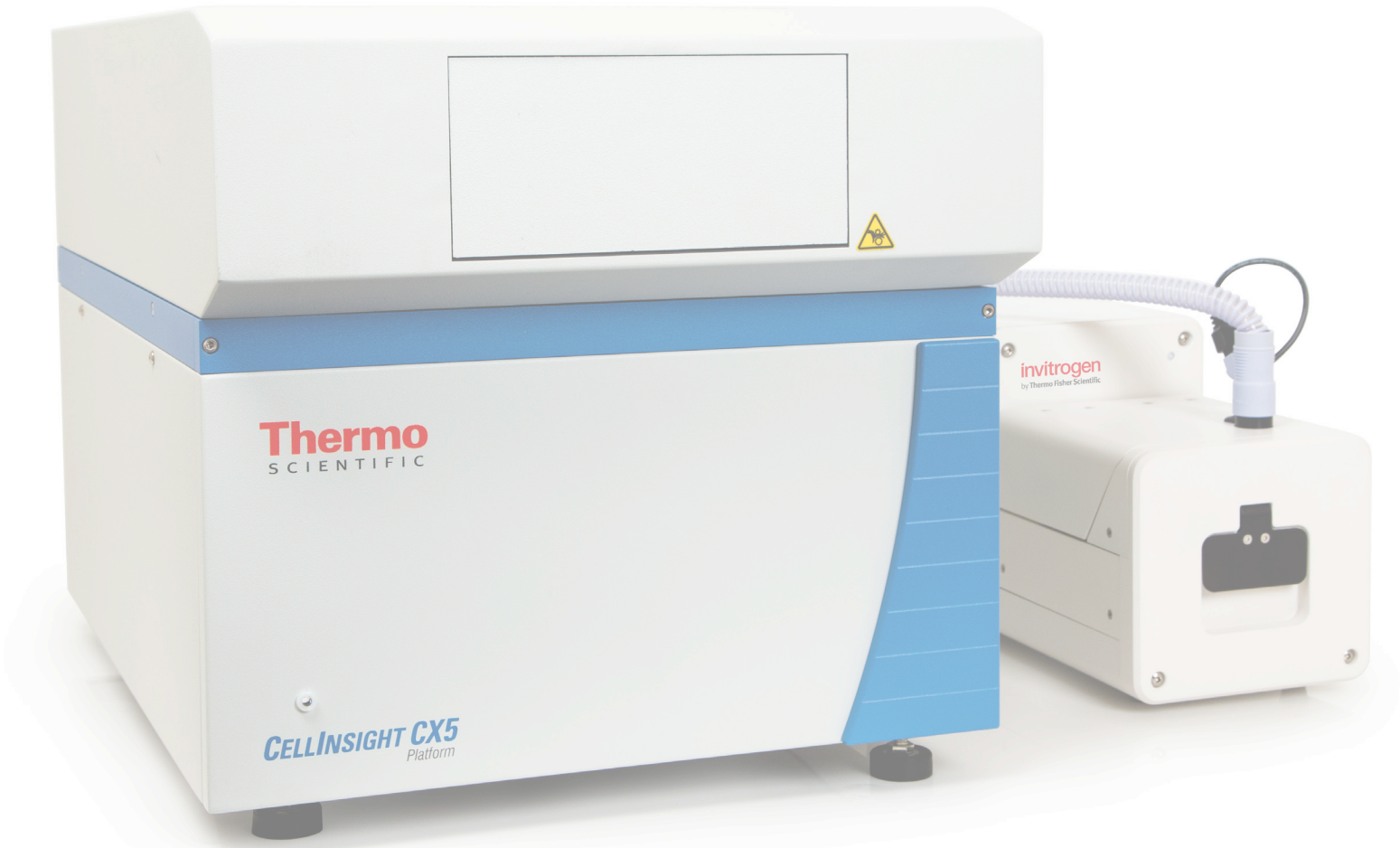

Invitrogen™ Onstage Incubator for Thermo Scientific™ High Content Analysis Systems

Version 1.0

NX5LIVE002, NX7LIVE001 • October 2017

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⚠ WARNING

The CellInsight Onstage Incubator is intended to be operated with the CellInsight NXT, CX5 and CX7 High Content Screening Platforms. This incubator is to be operated by trained laboratory personnel only. Use this product only in the manner described in this guide. When used other than as specified, the safety protections may be impaired. Please refer to your CellInsight High Content Screening Platform User's Guide for safety precautions ensuring safe operation and maintenance of the system. Read these precautions carefully before performing the procedures outlined in this document. In addition, please read the instructions, warnings, and precautionary measures supplied in this guide and with accessories. Failure to adhere to safety precautions and/or procedures outlined in this document may result in system failure, personal injury, or death. Thermo Fisher Scientific Inc. shall not be held liable under any circumstances. Thermo Fisher Scientific Inc. does not assume any liability for damages or malfunctions caused by faulty operation, negligence, unauthorized modifications or repairs, or use of unauthorized accessories. The manufacturer cannot assume any liability for any other applications, possibly also involving individual modules or single parts. This also applies to all service or repair work which is not carried out by authorized service personnel. All claims against warranty will be forfeited in these cases.

⚠ WARNING

RISK OF ELECTRIC SHOCK!

The CellInsight™ Onstage Incubator and Thermo Scientific™ CellInsight™ NXT, CX5 and CX7 High Content Screening Platforms contain voltages that are potentially hazardous. To reduce the risk of electric shock or burn, DO NOT ATTEMPT TO REPAIR. NO USER SERVICEABLE PARTS ARE INSIDE. Periodically inspect power cords and plugs for proper condition and replace as necessary only with Thermo Fisher Scientific provided cords. ONLY THERMO FISHER SCIENTIFIC SERVICE PERSONNEL may perform testing or repairs.

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Table of Contents

Introduction

This guide is a useful reference tool and contains important safety instructions. The chapters that follow this introduction are described below.

Chapter 1 provides an overview of the CellInsight™ Onstage Incubator.

Chapter 2 describes safety precautions relating to the operation and maintenance of the Onstage Incubator.

Chapter 3 provides instructions for Onstage Incubator operation.

Chapter 4 provides instructions for Onstage Incubator maintenance.

Terminology, Conventions, and Symbols

This guide assumes that you have a basic knowledge of computers using the Microsoft® Windows® operating system and that you have experience working with windows, menus, commands, buttons, tabs, dialog boxes, and other Microsoft Windows elements. If you are unfamiliar with these terms, please refer to Microsoft Windows documentation.

Throughout this guide certain terminology, conventions, and symbols are used consistently. These conventions are described below.

Terminology

Term	Definition
Click	This term means to place the mouse pointer over the item, then depress and release the primary mouse button (usually the left button) in one quick motion
Right-click	This term means to place the mouse pointer over the item, then depress and release the secondary mouse button (usually the right button) in one quick motion
Double-click	This term means to place the mouse pointer over the item, then depress and release the primary mouse button twice in quick succession.
Drag	This term means to place the mouse pointer over the item, depress and hold down the left mouse button, move the pointer (and the object) to some target location, then release the mouse button.
Press	This term means to push and release a key on the keyboard. For example, press the Tab key.
Shift Ctrl Alt	When any of these terms appear before any of the above terms, it means to hold down the specified keyboard key while taking the hyphenated action. Thus, Shift-click means to hold down the Shift key while clicking an item.
Shortcut menu	This is a menu that appears when you right-click an item.

Conventions

- Menu names, menu items, buttons, and options appear in bold type. For example: From the **File** menu, select **Save As**.
- Window titles and dialog box names begin with uppercase letters. For example: “The Save As dialog box displays.”

Symbols

Several symbols appear throughout the documentation in order to draw your attention to important information such as operating tips and suggestions, as well as the presence of hazards. Please refer to the *Safety Precautions* chapter of this guide for a description of each symbol. When these symbols appear on the equipment, consult product documentation to identify the nature of any potential hazard and to determine the actions to perform.

Contacting Technical Support

If you have a technical question that you are unable to answer after consulting the documentation, please contact Technical Support.

Service Location: U.S., Pittsburgh, PA (Eastern Time)

Phone: 800-955-6288 Choose option #3, then choose option #1

E-mail: instrumentservices@lifetech.com

Before contacting Technical Support for service or support, it is helpful if you are prepared to answer the following questions:

- What were you doing when the problem occurred?
- Can you reproduce the problem?
- Did you try to solve the problem? If so, what steps did you take and what did you observe?
- Which error messages, if any, appeared?
- What is the serial number of your instrument?

Having these answers will help us provide you with a solution as quickly as possible.

1

Overview

This chapter provides an overview of the Thermo Scientific™ CellInsight™ Onstage Incubator for use with the Thermo Scientific™ CellInsight™ NXT, CX5 and CX7 High Content Screening (HCS) Platforms. Operating instructions and specifications can be found in subsequent chapters.

⚠ WARNING

The CellInsight Onstage Incubator is intended to be operated with the CellInsight NXT, CX5 and CX7 High Content Screening Platforms. This incubator is to be operated by trained laboratory personnel only. Use this product only in the manner described in this guide. When used other than as specified, the safety protections may be impaired. Please refer to your CellInsight High Content Screening Platform User's Guide for safety precautions ensuring safe operation and maintenance of the system. Read these precautions carefully before performing the procedures outlined in this document. In addition, please read the instructions, warnings, and precautionary measures supplied in this guide and with accessories. Failure to adhere to safety precautions and/or procedures outlined in this document may result in system failure, personal injury, or death. Thermo Fisher Scientific Inc. shall not be held liable under any circumstances. Thermo Fisher Scientific Inc. does not assume any liability for damages or malfunctions caused by faulty operation, negligence, unauthorized modifications or repairs, or use of unauthorized accessories. The manufacturer cannot assume any liability for any other applications, possibly also involving individual modules or single parts. This also applies to all service or repair work which is not carried out by authorized service personnel. All claims against warranty will be forfeited in these cases.

Overview of the CellInsight Onstage Incubator

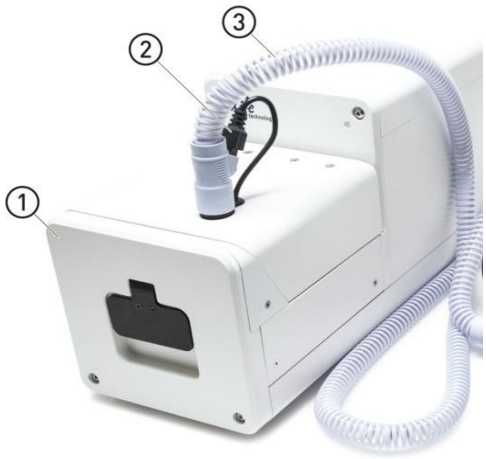
With the optional CellInsight Onstage Incubator, you have the ability to incubate live cells on the CellInsight automated stage, allowing for the capture of images from live cells over long periods of time in a controlled environment.

Figure 1.1 CellInsight CX5 HCS Platform with CellInsight Onstage Incubator

CellInsight Onstage Incubator Components

Control Unit and Environmental Chamber

The CellInsight Onstage Incubator consists of an environmental chamber located inside the CellInsight instrument and a separate exterior control unit that supplies the power and gas (air or air-CO_2 premix, CO_2, and N_2 for O_2 displacement in hypoxia experiments), and controls the humidity and temperature.



① Control unit

② Hose heater connector

③ Heated hose connected to CellInsight HCS Platform instrument

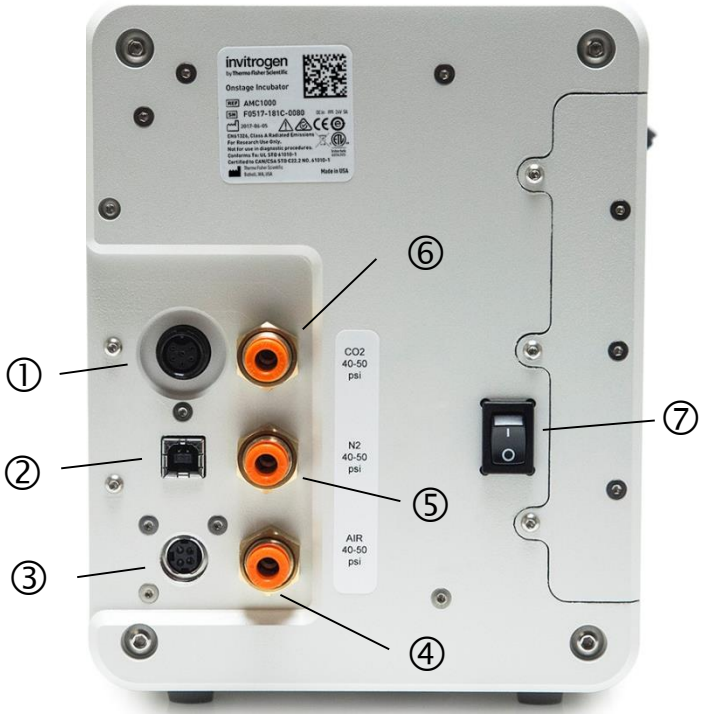
The following standard items are included:

- Instrument Interior Environmental Chamber
- Control Unit
- Magnetic Chamber Lid
- Cable with 6-pin connector
- Cable, USB A-to-B, 180 cm / 6 ft.
- Heated hose with temperature control
- Gas line, 1/8” ID, ¼” OD,
- Push-to –connect gas line adaptor (3 each)
- Standard-head open-end wrench
- Hex screw driver
- Power Cord, Type A (North America)

NOTE

A country-specific power cord must be ordered separately in regions not using the Type A power plug.

Control Unit Rear View



① Sensor data cable jack

② USB control cable jack

③ Power input jack

④ Port 1: Air

⑤ Port 2: N_2

⑥ Port 3: CO_2

⑦ Power switch

Environmental Chamber

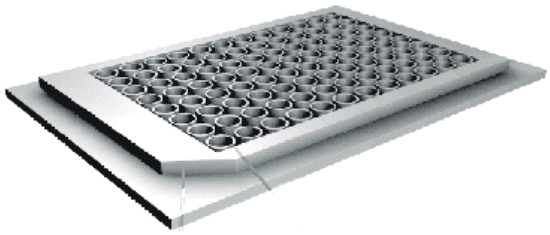
The environmental chamber is located inside the CellInsight HCS Platform instrument. The chamber consists of the incubator chamber, the vessel holder, and the magnetic chamber lid. The environmental chamber is attached to the automated stage of the CellInsight NXT, CX5 and CX7 HCS Platform.

Compatible Microplates

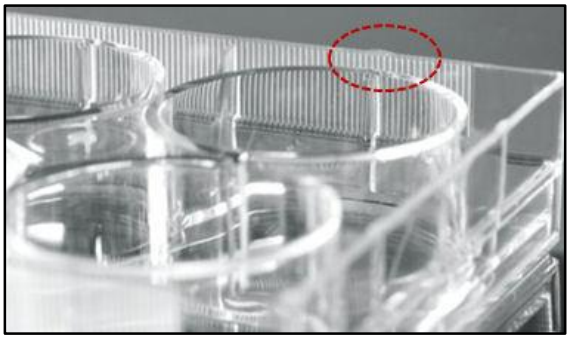
The CellInsight Onstage Incubator is compatible with many clear bottom 96-, 384- and 1536-well microplates. Be sure that the microplate is optical grade with a thin plastic bottom with fairly uniform thickness, or glass bottom with a cover slip thickness.

It is very important to create a tight seal when you place the supplied magnetic chamber lid on top of the microplate. While the CellInsight Onstage Incubator is compatible with many microplates, it is important to avoid the following general plate characteristics that would interfere with the plate seal. These plate types are not supported.

- Avoid gas permeable, membrane bottom plates
- Avoid microplates with one or more cut corners such as the plate shown in the following illustration.



- Avoid plates with raised areas such as that shown in the following photograph.



2

Safety Precautions

This chapter presents a series of safety precautions related to the operation and maintenance of the CellInsight Onstage Incubator for use with the CellInsight NXT, CX5 and CX7 HCS Platforms.

To help ensure the safe operation of the equipment, the instructions and warnings contained in this guide must be observed.

Please read these instructions carefully before operating or servicing the CellInsight Onstage Incubator. In addition, please read the instructions, warnings, and precautionary measures supplied with the CellInsight NXT, CX5 or CX7 HCS Platform and accessories before commencing use of these items.

Equipment Safety Labels

The product's safety labels use ISO standard icons to indicate hazards.

HAZARD SYMBOL

Safety Symbols

The following symbols may appear adjacent to safety precaution statements in this guide.

Symbol	Signal Word/ Description
	DANGER An imminently hazardous situation which, if not avoided, will result in death or serious injury. When this symbol appears on equipment, consult product documentation to identify the nature of any potential hazard and determine the actions to perform.

Symbol	Signal Word/ Description
	**⚠ WARNING** A potentially hazardous situation which, if not avoided, could result in death or serious injury. When this symbol appears on equipment, consult product documentation to identify the nature of any potential hazard and determine the actions to perform.
	**⚠ CAUTION** A potentially hazardous situation which, if not avoided, could result in minor or moderate injury. When this symbol appears on equipment, consult product documentation to identify the nature of any potential hazard and determine the actions to perform.
	**NOTICE** A cautionary statement which, if not followed, may result in instrument damage or corruption of data. When this symbol appears on equipment, consult product documentation to identify the nature of any potential hazard and determine the actions to perform.
	Risk of Fire
	Biohazard
	Moving Parts, Pinch Hazard – Risk of body parts, clothing, hair, jewelry, etc. encountering or catching in moving parts. Keep fingers away from moving parts.
	Hazardous Voltage – Risk of shock injury
	Ultraviolet Light Radiation – Risk of Eye Injury. Wear safety glasses designed to filter dangerous ultraviolet wavelengths and high intensity light.
	Invisible Laser Radiation – Avoid direct eye exposure. Wear laser protective glasses as specified.
	Risk of Eye Injury – Wear safety glasses designed for laser protection and to filter high intensity light and dangerous ultraviolet wavelengths.
	Hot Surface
	Protective Conductor Terminal
NOTE 	A tip, suggestion, or additional information
	The CE Mark symbolizes that this product complies with the essential requirements of the relevant European health, safety and environmental protection legislation

Symbol	Signal Word/ Description
	The ETL Mark is proof that this product complies with North American safety standards. Authorities Having Jurisdiction (AHJs) and code officials across the US and Canada accept the ETL Listed Mark as proof of product compliance to published industry standards.
	The **C-Tick Mark** indicates conformity with Australian and New Zealand standards for electromagnetic compatibility.

Environmental Symbols

The following symbol applies to all Thermo Fisher Scientific electrical and electronic products placed on the European market after August 13, 2015.

Symbol	Signal Word/ Description
	**Do not dispose of this product as unsorted municipal waste**. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE). **European Union Customers:** Call your Customer Service representative for equipment pick-up and recycling. See www.thermofisher.com for a list of customer service offices in the European Union.

CellInsight Onstage Incubator Operation and Maintenance Precautions

⚠ WARNING

Thermo Fisher Scientific recommends the use of nitrogen, oxygen, and carbon dioxide gas with the CellInsight Onstage Incubator. The use of alternative gases is currently not supported and may adversely affect system performance.

Gas Cylinders

You must supply the required nitrogen, oxygen, and carbon dioxide gas cylinders and accessories for the installation. This instrument requires pressurized house lines, or one size 1-A gas cylinder that holds approximately 7.2 m^3 (257 ft^3) of gas when full for each gas. Use only pre-purified gasses of 99.9% or greater purity.

⚠ CAUTION

Damage to the instrument and its products can result from using impure gas, gases other than specified, or an inadequate amount of gas.

⚠ WARNING

EXPLOSION HAZARD!

Pressurized gas cylinders are potentially explosive. Always cap the gas cylinder when it is not in use, and attach it firmly to the wall or gas cylinder cart with approved brackets or chains.

⚠ WARNING

Gas cylinders are heavy and may topple over, potentially causing personal injury and tank damage. Cylinders should be firmly secured to a wall or work surface. Please contact your environmental health and safety coordinator for guidance on the proper installation of a gas cylinder.

Pressure Regulator

You must supply a two-gauge regulator with a Compressed Gas Association (CGA) 580-cylinder adaptor on the inlet side and a Swagelok™-type end-fitting that accepts 6.35-mm (0.25-in.) o.d. tubing. The primary gauge (0 to 3000 psi; 0 to 25,000 kPa recommended) measures tank pressure, and the secondary gauge (0 to 200 psi; 0 to 2000 kPa recommended) measures regulated pressure. The secondary gauge must allow regulation to 50 psi. Compressed Gas Association (CGA) 580-cylinder adaptor with a needle-type shutoff valve on the exit side. The needle valves should have Swagelok™-type end-fittings ready for connection to 6.35-mm (0.25-in.) o.d. tubing.

Attaching the Cylinder

Attach the pressurized gas cylinder firmly to a wall or gas cylinder cart by means of approved straps or chains.

Ventilation Requirements

⚠ WARNING

The CellInsight Onstage Incubator generates heat during operation. The CellInsight Onstage Incubator should be installed and operated in a well-ventilated environment as defined as having a minimum airflow of 6-10 air changes per hour. Please contact your environmental health and safety coordinator to confirm that the Ion instruments will be installed and operated in an environment with sufficient ventilation. Do not cover the ventilation openings of the device. Do not place anything on the equipment that prevents adequate dissipation of heat.

⚠ WARNING

CELLINSIGHT ONSTAGE INCUBATOR CONTROL UNIT WARNINGS

- No user repairable parts in unit.
- The CellInsight Onstage Incubator is intended for installation in a temperature controlled, low humidity, indoor area free of conductive contaminants.
- Avoid exposing the system to direct sunlight or another heat source.
- Connecting unit to main power supply must be done by qualified personnel.
- Do NOT turn the Incubator Control Unit ON immediately after it has been taken from a cold environment to a warm environment or warm to cold environment. The resulting condensation could destroy the Control Unit. Allow the Control Unit to reach room temperature before switching ON.
- The CellInsight Onstage Incubator generates heat during operation. The Incubator should be installed and operated in a well-ventilated environment as defined as having a minimum airflow of 6-10 air changes per hour. Please contact your environmental health and safety coordinator to confirm that the instruments will be installed and operated in an environment with sufficient ventilation. Do not cover the ventilation openings of the device. Do not place anything on the equipment that prevents adequate dissipation of heat.
- If you suspect that the CellInsight Onstage Incubator is not capable of safe operation, immediately switch OFF the device, disconnect the device from mains power, and prevent others from using the device. Be sure to do this if the device shows signs of visible damage, the device no longer functions, the device has been stored for long periods under unfavorable conditions, or the device has been subjected to considerable stress in transit.
- If any water is spilled on the Incubator Control Unit, turn OFF the Incubator Control Unit, disconnect the AC power cords from the unit, and then clean the spill immediately by following the Sterilization Procedure on page 49. Ensure the control unit and all power cords are completely dried before restoring power to the unit.
- Follow all local and national regulations for the handling and dispensing of gas into and out of the unit.
- Position the equipment to provide easy access to the disconnecting device and be careful to avoid a trip hazard created by any of the cords, such as the AC cord.
- Make sure that the area around the equipment is clean and free of moisture. Protect equipment from dust and dirt to avoid impairing system performance. Keep the CellInsight stage door and all covers closed as much as possible. Use a dust cover if the system will not be used for more than a five day period.
- You should also refer to additional safety precautions throughout this manual and all operation and maintenance manuals relating to the entire CellInsight HCS Platform.
- **FIRE HAZARD!** Only use fuses of the same type and rating.

Laser Safety Notice for the CellInsight CX7 LZR Laser Light Source

Please note that the CellInsight CX7 LZR HCS Platform is classified and conformant to IEC\EN 60825-1:2014, 21 CFR 1040.0, and CFR 1040.11 as an applicable Class 1 laser product.

⚠ WARNING

This unit is supplied with an interlock device which protects the end-user from laser radiation in excess of Class 1 limits for Maximum Permissible Exposure under normal operating conditions. However, if the user overrides the interlock device in any manner, the user can be exposed to a Class 3B laser from the Light Engine and a Class 3R from the Laser Autofocus Device.

⚠ WARNING

Use of controls of adjustments of performance of procedures other than those specified herein may result in hazardous radiation exposure.

In the event that the user overrides the interlock device (or removes the instrumentation chassis panels or instrument lid), please note the following safety precautions regarding the Light Engine and the Laser Autofocus Device.

Laser Light Engine

The system is equipped with a 7-color laser light source for fluorescence excitation. Please note the following safety information. The Light Engine houses seven class 3B lasers (405nm/100mW; 450nm/75mW; 488nm/120mW; 561nm/100mW; 594nm/100mW; 647nm/120mW; 785nm/100mW).

⚠ DANGER

CLASS 3B and 3R LASERS – VISIBLE & INVISIBLE LASER RADIATION WHEN OPEN – AVOID EXPOSURE TO BEAM! WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 LZR HCS Reader contains a Class 3B laser device, conformant to IEC\EN 60825-1:2014. The wavelength and output power of the lasers are as follows: 405nm/100mW; 450nm/75mW; 488nm/120mW; 561nm/100mW; 594nm/100mW; 637-647nm/120mW; 747-785nm/100mW

Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

Laser Autofocus Device

The system is equipped with a laser autofocus device. Please note the following safety information. The Laser Autofocus Device is Class 3R Laser Product, 720 – 740nm, 2.0mW Max.

⚠ DANGER

CLASS 3R LASER – INVISIBLE LASER RADIATION – AVOID EXPOSURE TO BEAM! WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 LZR HCS Reader contains a Class 3R laser device, conformant to IEC\EN 60825-1:2014. The wavelength of the laser is 720-740 nm. The output power is 2.0mW Max. Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

General Precautions

⚠ DANGER

RISK OF EYE INJURY!

Wear safety glasses designed to filter infrared wavelengths and high intensity visible light. **Wearing laser protective glasses with an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm** is required for instrument use**.** These glasses will filter infrared wavelengths.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity visible light and level of IR energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.
- Post a laser warning sign at the entrance to the laboratory if the laser protection is defeated for servicing.

Safety Notice for the CellInsight CX7 Light Source (LED with a Near IR Laser)

Please note that the CellInsight CX7 HCS Platform is classified and conformant to IEC\EN 60825-1:2007, 21 CFR 1040.0, and CFR 1040.11 as an applicable Class 1 laser product.

⚠ WARNING

This unit is supplied with an interlock device which protects the end-user from laser radiation in excess of Class 1 limits for Maximum Permissible Exposure under normal operating conditions. However, if the user overrides the interlock device in any manner, the user can be exposed to a Class 3B laser from the Light Engine and a Class 3R from the Laser Autofocus Device.

⚠ CAUTION

Use of controls of adjustments of performance of procedures other than those specified herein may result in hazardous radiation exposure.

In the event that the user overrides the interlock device (or removes the instrumentation chassis panels or instrument lid), please note the following safety precautions regarding the Light Engine and the Laser Autofocus Device.

Light Engine

The system is equipped with a 7 color LED, solid-state light engine for fluorescence excitation. Please note the following safety information. The Light Engine is a Class 3B Laser Product, 741 - 753nm, 490mW CW Max.

⚠ WARNING

CLASS 3B LASER – INVISIBLE LASER RADIATION –
AVOID EXPOSURE TO BEAM! WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 HCS Reader contains a Class 3B laser device, conformant to IEC\EN 60825-1:2007. The wavelength of the laser is 741-753 nm CW and the output power is 490mW Max. Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 6 (OD > 6) for wavelengths less than 400 nm, and an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

Laser Autofocus Device

The system is equipped with a laser autofocus device. Please note the following safety information. The Laser Autofocus Device is Class 3R Laser Product, 720 – 740nm, 2.0mW Max.

⚠ WARNING

CLASS 3R LASER – INVISIBLE LASER RADIATION – AVOID EXPOSURE TO BEAM! WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 HCS Reader contains a Class 3R laser device, conformant to IEC\EN 60825-1:2007. The wavelength of the laser is 720-740 nm. The output power is 2.0mW Max. Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 6 (OD > 6) for wavelengths less than 400 nm, and an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

General Precautions

⚠ WARNING

RISK OF EYE INJURY!

Wear safety glasses designed to filter ultraviolet wavelengths and high intensity light. **Wearing laser protective glasses with an optical density greater than 6 (OD > 6) for wavelengths less than 400 nm, and an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm** is required for instrument use**.** These glasses will filter ultraviolet wavelengths and high intensity light.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity light and level of UV energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.
- Post a laser warning sign at the entrance to the laboratory if the laser protection is defeated for servicing.

Safety Notice for the CellInsight NXT and CX5 Light Source

⚠ WARNING

RISK OF EYE INJURY!

Wear safety glasses designed to filter ultraviolet wavelengths and high intensity light.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity light and level of UV energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.

Dimensions and Clearances

Please refer to the recommended bench size for your CellInsight HCS Platform. When using the CellInsight Onstage Incubator with the CellInsight HCS Platform, add 40 cm (15.8 in) to the width of the bench.

CellInsight Onstage Incubator Safety Labels

The following drawings and photographs show the locations of the exterior safety labels on the CellInsight Onstage Incubator control unit. Please refer to your CellInsight NXT, CX5 or CX7 HCS Platform user guide for the location of platform safety labels.

Onstage Incubator General Precautions

⚠ WARNING

The CellInsight Onstage Incubator is intended to be operated with the CellInsight NXT, CX5 and CX7 High Content Screening Platforms. This incubator is to be operated by trained laboratory personnel only. Use this product only in the manner described in this guide. When used other than as specified, the safety protections may be impaired. Please refer to your CellInsight High Content Screening Platform User's Guide for safety precautions ensuring safe operation and maintenance of the system. Read these precautions carefully before performing the procedures outlined in this document. In addition, please read the instructions, warnings, and precautionary measures supplied in this guide and with accessories. Failure to adhere to safety precautions and/or procedures outlined in this document may result in system failure, personal injury, or death. Thermo Fisher Scientific Inc. shall not be held liable under any circumstances. Thermo Fisher Scientific Inc. does not assume any liability for damages or malfunctions caused by faulty operation, negligence, unauthorized modifications or repairs, or use of unauthorized accessories. The manufacturer cannot assume any liability for any other applications, possibly also involving individual modules or single parts. This also applies to all service or repair work which is not carried out by authorized service personnel. All claims against warranty will be forfeited in these cases.

⚠ WARNING

RISK OF ELECTRIC SHOCK!

The CellInsight HCS Platform contains voltages that are potentially hazardous. To reduce the risk of electric shock or burn, DO NOT ATTEMPT TO REPAIR. NO USER SERVICEABLE PARTS ARE INSIDE. Periodically inspect power cords and plugs for proper condition and replace as necessary only with Thermo Fisher Scientific provided cords. ONLY THERMO FISHER SCIENTIFIC SERVICE PERSONNEL may perform testing or repairs.

Do not replace detachable MAINS supply cords by inadequately RATED cords. Only use Thermo Fisher Scientific supplied cords.

The CellInsight HCS Platform contains voltages that are potentially hazardous. The CellInsight HCS Platform may only be connected to power outlets that are properly grounded and free from electrical or mechanical defects. The grounding effect must not be nullified by an extension cable which does not have a protective ground wire. Make sure that the power voltage in use complies with specification. Using the equipment at any other voltage may cause a fire, electrical shock, and other problems.

If it is established that the protection measures are no longer being met, the instrument must be switched OFF and safeguarded against inadvertent operation.

Disconnect the mains power cord before changing the fuses. To reduce the risk of fire or shock, replace fuses only with fuses of the same type and rating. The use of makeshift fuses and the short-circuiting of fuse holders are not permitted.

⚠ WARNING

OVERCURRENT PROTECTIVE DEVICES

The CellInsight HCS Platform and components must be connected to an installation providing an overcurrent protection equal to the fault current at the point of installation (250 VAC, 20 Amps Certified Circuit Breaker or fuse). Installation must be performed according to local codes.

NOTICE

Check whether the local line voltage and the operating voltage of the CellInsight HCS Platform and all the other electrical components are identical. Incorrect voltage settings which do not meet the specifications may damage the instrument or impair its functions.

NOTICE

The instrument is not intended for outdoor use and may therefore only be used in closed rooms. It may only be used in a laboratory environment which meets the relevant safety standards. The direct ambient temperature and humidity of the system must not exceed the specifications given in the Specifications appendix of this guide.

⚠ WARNING

If smoke, abnormal noise, or strange odor is present, immediately shutdown the system and notify Technical Support. It is dangerous to continue using the system.

NOTICE

All maintenance procedures described in this guide can be safely performed by QUALIFIED SERVICE PERSONNEL. Maintenance not covered in this guide must be performed only by Thermo Fisher Scientific service personnel.

⚠ CAUTION

MOVING MECHANICAL PARTS!

The CellInsight HCS Platform incorporates moving parts. Please note the pinch hazard signs applied to potentially dangerous parts. DO NOT MANUALLY OPEN STAGE DOOR WHEN READER IS POWERED!

⚠ WARNING

BIOHAZARD!

Use proper laboratory practices when handling hazardous materials. Please refer to Biological Hazard Safety on page 277.

Make sure that biohazards do not contaminate CellInsight HCS Platform components.

In the event that system contamination occurs, contact Technical Support for applicable cleanup procedures.

The CellInsight HCS Platform is not equipped with any special devices for protection from substances which are corrosive, toxic, radioactive, or otherwise hazardous to health. All legal regulations for accident prevention, particularly those in the respective countries, must be observed when handling such substances.

⚠ CAUTION

Electrostatic Discharge

CellInsight HCS Platform electronics are sensitive to electrostatic discharge (ESD) and transient voltage spikes.

To avoid permanently damaging the system, please observe the following precautions:

- Use caution when triggering high-current devices near the system. Electrically noisy devices should be powered from an isolated, conditioned power line or dedicated isolation transformer.
- Never connect or disconnect any power cord or data cable while the system is powered on.

⚠ WARNING

The instrument is equipped with a dual LED barcode scanner. The barcode label is read from a barcode reader mounted to the Robotic Plate Handler. This scanner incorporates an LED device of laser safety class 2. The output power is 1 mW maximum (continuous wave). During operation, laser radiation outside the instrument will occur. Intentional deflection of the beam by means of tools or mirrors may be possible but constitutes an improper use of the instrument.

NOTICE

Clean exterior of the unit with a water dampened cloth and simple detergent only.

Physical Injury Hazards

⚠ WARNING

PHYSICAL INJURY HAZARD!

Use this product only as specified in this document. Using this instrument in a manner not specified by Thermo Fisher Scientific may result in personal injury or damage to the instrument

Moving and Lifting the Instrument

⚠ CAUTION

PHYSICAL INJURY HAZARD!

The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. If you decide to lift or move the instrument after it has been installed, do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques. Improper lifting can cause painful and permanent back injury. Depending on weight, moving or lifting an instrument may require two or more persons.

⚠ WARNING

Always handle the equipment with care when moving. The CellInsight CX7 Laser HCS Reader weighs approximately 150 lbs. At least two people are required for transport. Take the proper lifting precautions to avoid injury and always lift the CellInsight CX7 Laser HCS Reader by grasping the underside of the instrument frame. Do not attempt to lift the CellInsight HCS Platform by grasping the enclosure panels.

Moving and Lifting Stand-Alone Computers and Monitors

⚠ WARNING

PHYSICAL INJURY HAZARD!

Do not attempt to lift or move the computer or the monitor without the assistance of others. Depending on the weight of the computer and/or the monitor, moving them may require two or more people.

Things to consider before lifting the computer and/or the monitor:

- Make sure that you have a secure, comfortable grip on the computer or the monitor when lifting.
- Make sure that the path from where the object is to where it is being moved is clear of obstructions.
- Do not lift an object and twist your torso at the same time.
- Keep your spine in a good neutral position while lifting with your legs.

- Participants should coordinate lift and move intentions with each other before lifting and carrying.
- Instead of lifting the object from the packing box, carefully tilt the box on its side and hold it stationary while someone slides the contents out of the box.

Operating the Instrument

Ensure that anyone who operates the instrument has:

- Received instructions in both general safety practices for laboratories and specific safety practices for the instrument.
- Read and understood all applicable Safety Data Sheets (SDSs). See “Safety Data Sheets (SDS)”.

Cleaning and Decontaminating the Instrument

⚠CAUTION

Using cleaning or decontamination methods other than those recommended by the manufacturer may compromise the safety or quality of the instrument.

⚠CAUTION

CLEANING AND DECONTAMINATION

Use only the cleaning and decontamination methods specified in the manufacturer’s user documentation. It is the responsibility of the operator (or other responsible person) to ensure the following requirements are met:

- No decontamination or cleaning agents are used that could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in the equipment.
- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan (decontamination forms may be requested from customer service).
- Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.

Please refer to **Sterilization Procedure** on page 49 for more information.

Removing Covers or Parts of the Instrument

⚠CAUTION

PHYSICAL INJURY HAZARD!

The instrument is to be serviced only by trained personnel or vendor specified in the user guide. Do not remove any covers or parts that require the use of a tool to obtain access to moving parts. Operators must be trained before being allowed to perform the hazardous operation.

CellInsight Computer

NOTICE

Loading unrelated software on the CellInsight computer may cause system damage including but not limited to data corruption and/or software incompatibility. Do not load any software application that has not been provided or approved by Thermo Fisher Scientific. If problems occur as a result of such activity, Thermo Fisher Scientific has no liability and will not be held responsible for damages and repair fees.

NOTICE

If magnetic field disturbance of the computer components is suspected, move the equipment away from the field source or provide a suitable shielded enclosure. For additional information, contact Technical Support.

Robotic Plate Handler

Please refer to your robotic plate handler user documentation for additional warnings ensuring safe operation, maintenance, and service of the robotic plate handler.

Confocal Imaging Unit

⚠ WARNING

CONFOCAL IMAGING
There are no user repairable parts inside the unit. Please contact Technical Support if you suspect the module is not operating properly.

System Components

Additional safety precaution statements can be found in the supplied documentation for the following system components:

- Computer
- Monitor

Chemical Safety

Chemical Hazard Warning

⚠ WARNING

CHEMICAL HAZARD!

Before handling any chemicals, refer to the Safety Data Sheet (SDS) provided by the manufacturer, and observe all relevant precautions.

⚠ WARNING

CHEMICAL HAZARD!

All chemicals in the instrument, including liquid in the lines, are potentially hazardous. Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.

⚠ WARNING

CHEMICAL STORAGE HAZARD!

Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

General Safety Guidelines

To minimize the hazards of chemicals:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical Waste Safety

Chemical Waste Hazard

⚠ CAUTION

HAZARDOUS WASTE!

Refer to Safety Data Sheets (SDSs) and local regulations for handling and disposal.

Chemical Waste Safety Guidelines

To minimize the hazards of chemical waste:

- Read and understand the Safety Data Sheets (SDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the SDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the SDS.
- Handle chemical wastes in a fume hood.
- After emptying the waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Waste Disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis, if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

IMPORTANT!

Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Electrical Safety

⚠ DANGER

ELECTRICAL SHOCK HAZARD!

Severe electrical shock can result from operating the CellInsight HCS Platform and CellInsight Onstage Incubator without its instrument panels in place. Do not remove instrument panels. High-voltage contacts are exposed when instrument panels are removed from the instrument.

Fuses

⚠ WARNING

FIRE HAZARD!

For continued protection against the risk of fire, replace fuses only with fuses of the type and rating specified for the instrument.

Power

⚠ DANGER

ELECTRICAL HAZARD!

Grounding circuit continuity is vital for the safe operation of equipment. Never operate equipment with the grounding conductor disconnected.

⚠ DANGER

ELECTRICAL HAZARD!

Use properly configured and approved line cords for the voltage supply in your facility.

⚠ DANGER

ELECTRICAL HAZARD!

Plug the system into a properly grounded receptacle with adequate current capacity.

Physical Hazard Safety

Moving Parts

⚠ WARNING

PHYSICAL INJURY HAZARD!

Moving parts can crush and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing the instrument.

Biological Hazard Safety

⚠ WARNING

WARNING! BIOHAZARD!

Biological samples such as tissues, body fluids, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state / provincial, and / or national regulations. Wear appropriate protective eyewear, clothing, and gloves. Read and follow the guidelines in these publications.

In the U.S.:

- U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* (stock no. 017-040-00547-4; **www.cdc.gov/OD/ohs/biosfty/bmbl4/bmbl4toc.htm**)
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030; **www.access.gpo.gov/nara/cfr/waisidx_01/29cfr1910a_01.html**)
- Your company's / institution's Biosafety Program protocols for working with**/**handling potentially infectious materials.
- Additional information about biohazard guidelines is available at: **www.cdc.gov**

In the EU:

- Check your local guidelines and legislation on biohazard and biosafety precaution, and the best practices published in the World Health Organization (WHO) Laboratory Biosafety Manual, third edition **www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/**

3

CellInsight Onstage Incubator Operation

⚠ WARNING

The CellInsight Onstage Incubator is intended to be operated with the CellInsight NXT, CX5 and CX7 High Content Screening Platforms. This incubator is to be operated by trained laboratory personnel only. Use this product only in the manner described in this guide. When used other than as specified, the safety protections may be impaired. **Please refer to your CellInsight High Content Screening Platform User's Guide for safety precautions ensuring safe operation and maintenance of the system. Read these precautions carefully before performing the procedures outlined in this document. In addition, please read the instructions, warnings, and precautionary measures supplied in this guide and with accessories.** Failure to adhere to safety precautions and/or procedures outlined in this document may result in system failure, personal injury, or death. Thermo Fisher Scientific Inc. shall not be held liable under any circumstances. Thermo Fisher Scientific Inc. does not assume any liability for damages or malfunctions caused by faulty operation, negligence, unauthorized modifications or repairs, or use of unauthorized accessories. The manufacturer cannot assume any liability for any other applications, possibly also involving individual modules or single parts. This also applies to all service or repair work which is not carried out by authorized service personnel. All claims against warranty will be forfeited in these cases.

Please be sure to read and understand all safety precautions appearing in this chapter AND the Safety Precautions chapter of this guide before performing these procedures.

Setup for Operation

Follow the procedure below to set up the CellInsight Onstage Incubator for operation. For the locations of the various input jacks and gas ports, refer to Control Unit Rear View on page 3.

NOTICE

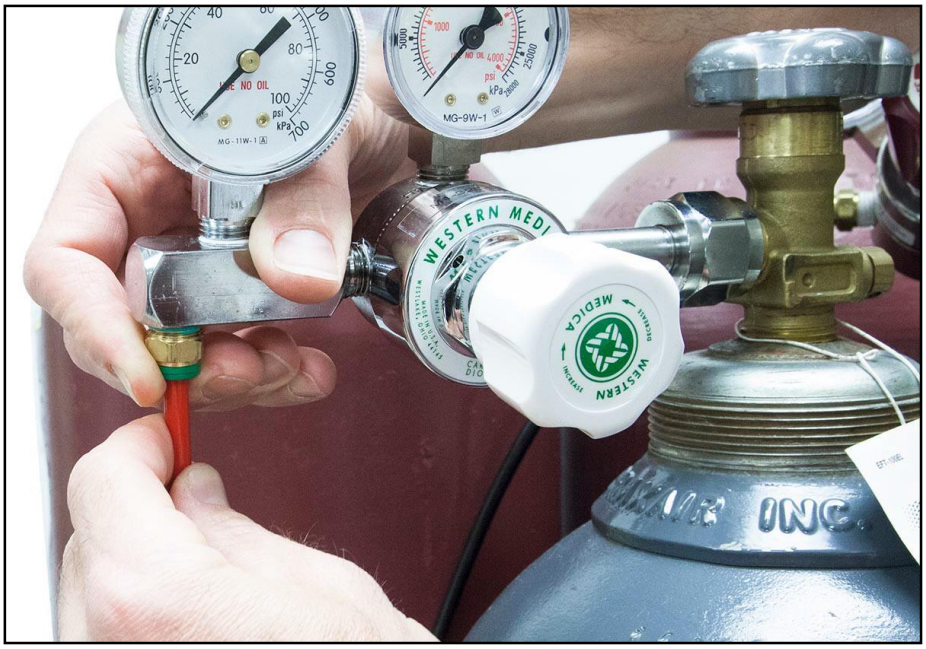
IMPORTANT! Do not position the control unit so that it is difficult to turn off the main power switch. In case of an instrument malfunction, turn the main power switch to the OFF position, and disconnect the power cord from the wall outlet.

1) Plug power cord into the power input jack on the control unit and the wall outlet.

2) Plug USB cable into the USB control cable jack on the control unit and the USB port on the computer.

3) Plug six pin sensor cable from CellInsight HCS Platform instrument (rear connection) to the control unit.

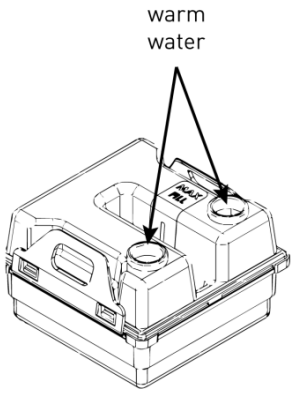
4) Connect each gas line to the appropriate gas tank via the PTC (push-to-click) connectors threaded into the regulator. To do this, push the tubing into the PTC connector until it clicks into place. Pull on tubing slightly to ensure a tight connection; the tubing should not come out.



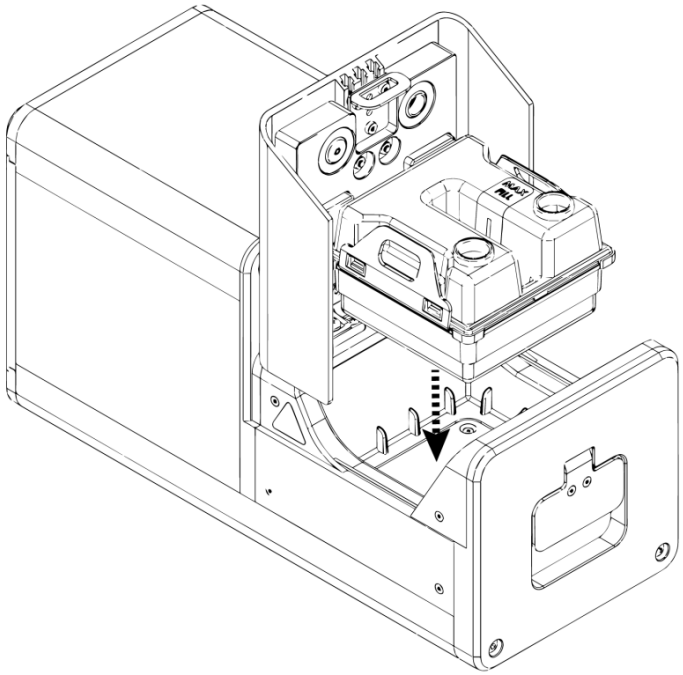
5) Attach the gas lines to the control unit via the PTC connectors for the appropriate gas intake port.

- If using pre-mixed air, attach to **Port 1: Air In**
- If using compressed air and CO_2, attach to **Port 1: Air In** and **Port 3: CO_2 In**
- For oxygen displacement, attach to **Port 1: Air In** and **Port 2: Nitrogen In**

6) Assemble the water reservoir by seating the reservoir chamber into the locking frame. Add warm water (approximately 30°C) to the max fill line through the fill hole (see image below). Use of distilled water is recommended. Note the max fill line – **do not overfill** the water reservoir. To prevent humidity loss from the chamber, close the chamber using the locking side flaps.



7) Place the water reservoir into the control unit **with the fill holes to the front** and close the lid.



8) Verify that the heated hose is connected to the CellInsight HCS Platform instrument (rear connection). Verify that the hose heater cable is plugged in to the connector on the heated hose.

9) Verify that the six pin sensor data cable is connected to the HCS Platform instrument (rear connection)

Using the CellInsight Onstage Incubator

Please be sure to read and understand all safety precautions appearing in this guide AND the CellInsight HCS Platform User's Guide before performing these procedures.

If you are using a robotic plate handler with the CellInsight HCS Reader, please refer to your Robotic Plate Handler user documentation for system startup instructions. **Please note that live cell experiments requiring the use of the CellInsight Onstage Incubator are not supported when using the optional Robotic Plate Handler.**

The oxygen sensor should be calibrated whenever a new OSI controller is installed and/or when new gas tanks are installed. Please refer to the Calibrating the Oxygen Sensor section below before performing any of the initial setup steps.

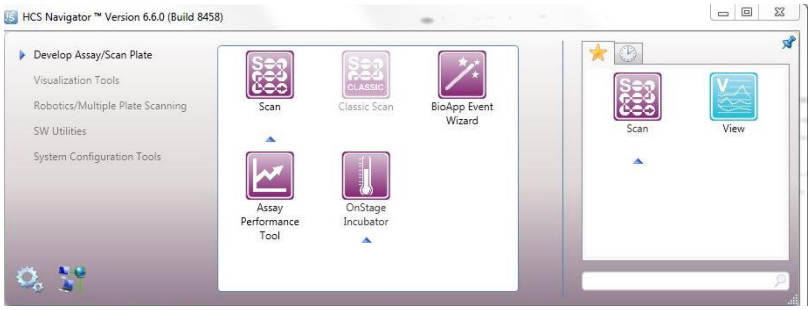
Turning ON the CellInsight Onstage Incubator

To turn on the incubator,

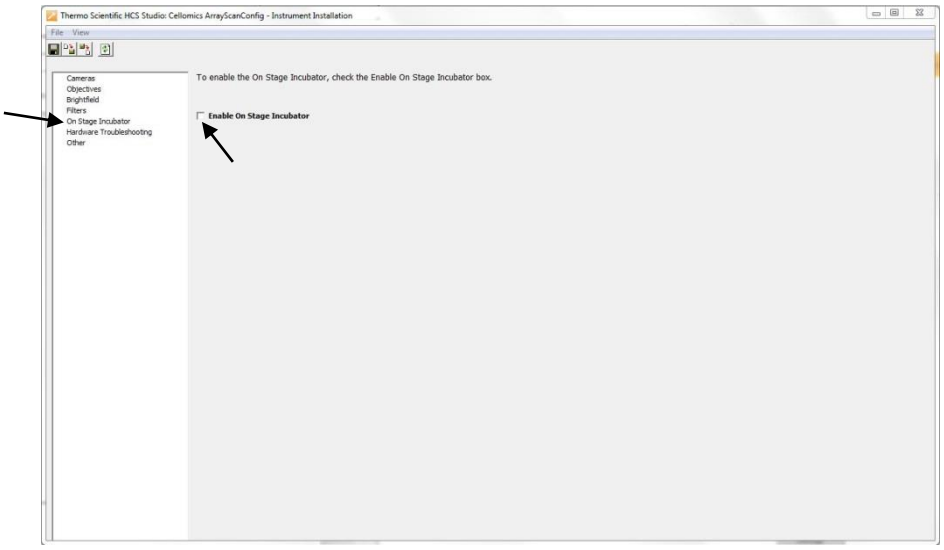
1) Be sure to read and understand all safety precautions appearing in your CellInsight HCS Platform User's Guide. Turn ON the CellInsight NXT, CX5 or CX7 HCS Platform power switch as described in your CellInsight HCS Platform User's Guide.

2) Turn ON the power switch to the incubator control unit (see page 3 for location). Allow unit to warm-up for a minimum of 15 minutes.

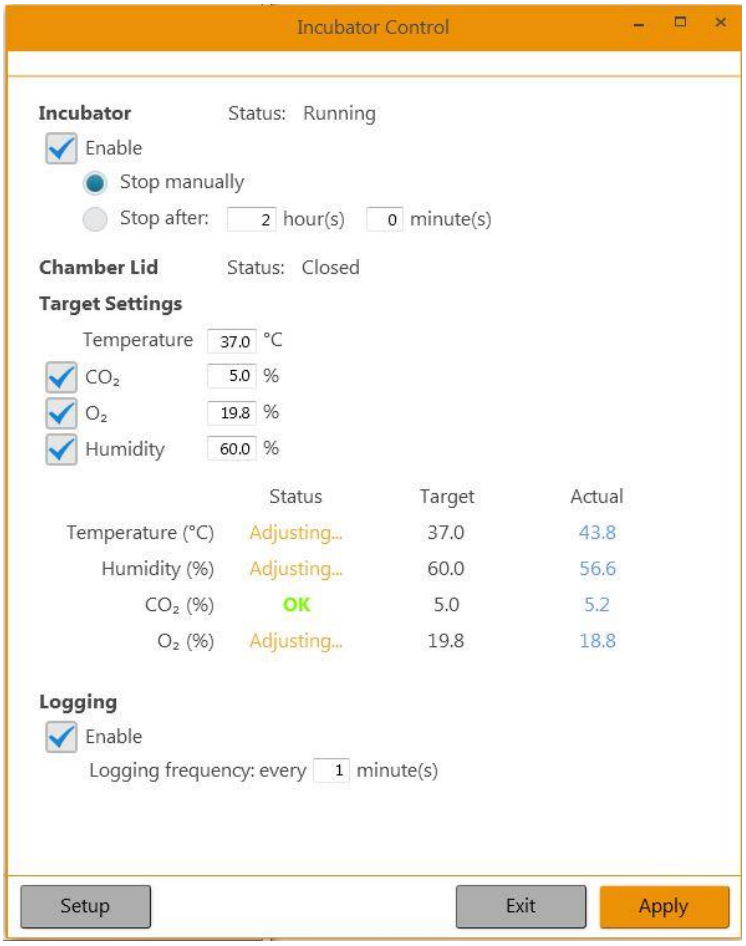
Double-click the **HCS Studio** icon on the desktop. The HCS Studio Navigator opens as shown below.



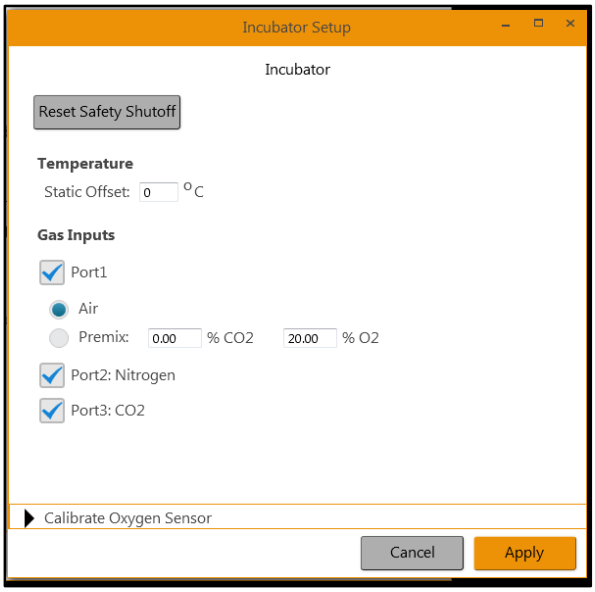
If the Onstage Incubator button does not appear, Click **System Configuration Tools**, double click the **ArrayScan Config** button, Click **On Stage Incubator**, Click the box next to **Enable On Stage Incubator**, Save the configuration and close the window. See the figure below.


Thermo Scientific HCS Studio: Cellomics ArrayScanConfig - Instrument Installation
File View
Cameras
Objectives
Brightfield
Filters
On Stage Incubator
Hardware Troubleshooting
Other
To enable the On Stage Incubator, check the Enable On Stage Incubator box.
Enable On Stage Incubator

1) After double clicking the **Onstage Incubator** button the Incubator Control GUI appears.



3) After clicking the **Setup** button on the Incubator Control screen, the Incubator Setup screen appears as shown below.



4) Select the appropriate options for the **Gas Inputs** that reflects your set-up for the CellInsight Onstage Incubator. Select the recommended value for Static Temperature Offset.

Room Temp.	Static Offset
<72°F	7°C - 8°C
72°F >x< 78°F	7°C
>78°F	0°C - 5°C

- For **Port 1**, you may select **Air** or **Premix.** If you select **Premix,** manually enter the percentage of the **CO_2** and **O_2** to reflect the specifics of your set-up.
- **Port 2** is reserved for Nitrogen only.
- **Port 3** is reserved for CO_2 only.
- Calibrate the **Oxygen Sensor** per the procedure described below.

5) Click **Apply** once you have configured the gas connections for each port.

6) Turn on the regulators on the gas tanks. The meters on the regulators show the tank fill on the right and gas flow on the left.

7) Set the flow on the regulators as follows. Do not exceed 50 psi of pressure.

- **Air:** 40–50 psi (275.8- 344.7 kPa)
- **CO_2:** 40–50 psi (275.8- 344.7 kPa)
- **Nitrogen**: 40–50 psi (275.8- 344.7 kPa)

8) Enter the target values for **Temperature** (37°±5˚C), **CO_2** (0% to 20%) and/or **Oxygen** (0% to ambient). If desired, select **Humidity** (60%±10%)**.**

9) Select the desired **Shutdown** option:

- **Turn off manually:** The incubator will remain on until the **Use Incubator** option is manually deselected and the **Apply** button is clicked.
- **Turn off after:** Enter the time period in **hours** and **minutes** that must elapse before the incubator is shut down automatically. **IMPORTANT:** When choosing this option, it is important to allow for sufficient time to complete your live cell image acquisition.

10) If desired, enable logging of OSI target settings by selecting the **Logging** checkbox

- A .txt file is created in C:\Users\Public\PublicDocuments\Thermo\Cellomics\Logs\OnStageIncubator
- A new log file is created each time **Apply** is clicked while the logging is enabled.
- The log file contains: date, time, temperature, CO_2, O_2 and humidity measurements.

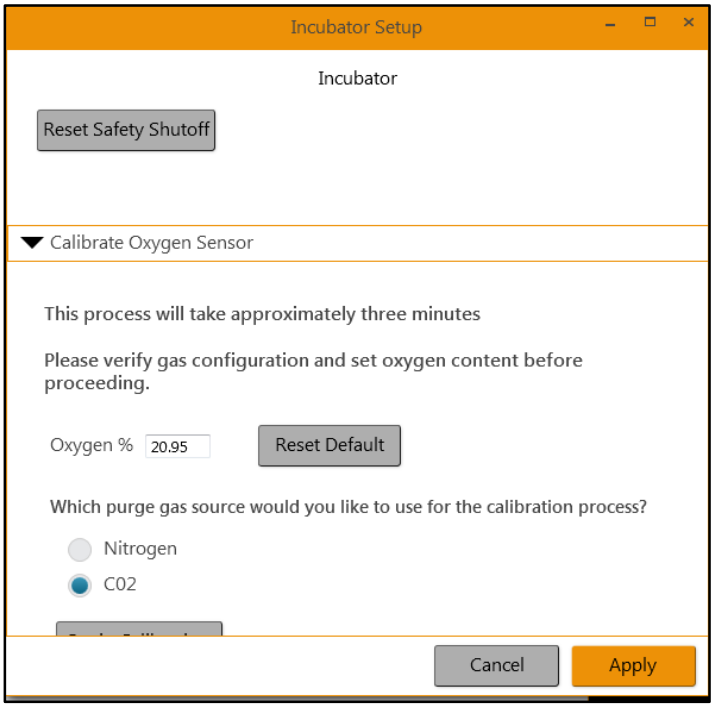
11) Click **Apply**. Incubator status will change to “Running” and the control panel will display the Current, Target, and Actual values for Temperature, Humidity, CO_2, and Oxygen.

Calibrating the Oxygen Sensor

Calibrating the oxygen sensor ensures that the atmosphere in the environmental chamber is replenished with the appropriate gasses in the correct proportion. The oxygen sensor should be calibrated, per the following procedure, whenever a new OSI controller is installed and/or when new gas tanks are installed.

To calibrate the oxygen sensor,

1) From the Incubator Setup screen, click **Calibrate Oxygen Sensor**.



2) Verify that your gas connections have been correctly configured.

3) Verify that the **Oxygen %** has been set correctly. If not, enter the correct value for oxygen content.

4) Select the **purge gas source** for your calibration (**Nitrogen** or **CO_2**).

5) Click **Begin Calibration** to automatically calibrate the oxygen sensor for the proper functioning of the CellInsight Onstage Incubator. The entire calibration process takes approximately three minutes.

6) Click the **Apply** button.

Platform Setup Procedures

Before scanning a microplate on the CellInsight HCS Platform, you must first perform a series of setup procedures to ensure that the CellInsight HCS Platform is properly configured to scan the microplates. Please refer to your *CellInsight HCS Platform User's Guide* for details.

Determining the Correct Plate Holder Configuration

Although the robotic plate handler is not supported when running live cell experiments with the CellInsight Onstage Incubator, it is possible to use the robot when the CellInsight Onstage Incubator is installed. Before doing so, you must first remove the chamber lid as described below and install the plate pusher arm. Note that barcode labels can be read when using the Robotic Plate Handler. Details regarding the barcode reader follow this section.

Please be sure to read and understand all safety precautions appearing in this guide AND the CellInsight HCS Platform User's Guide before performing these procedures.

If you are using a robotic plate handler with the CellInsight HCS Reader, please refer to your Robotic Plate Handler user documentation for system startup instructions. Please note that live cell experiments requiring the use of the CellInsight Onstage Incubator are not supported when using the optional Robotic Plate Handler.

⚠ CAUTION

MOVING MECHANICAL PARTS!

The CellInsight HCS Reader incorporates moving parts. Please note the pinch hazard signs applied to potentially dangerous parts. DO NOT MANUALLY OPEN STAGE DOOR WHEN READER IS POWERED!

CellInsight CX7 LZR Safety Precautions

DANGER

CLASS 3B and 3R LASERS – VISIBLE & INVISIBLE LASER RADIATION WHEN OPEN – AVOID EXPOSURE TO BEAM!

WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 LZR HCS Reader contains a Class 3B laser device, conformant to IEC\EN 60825-1:2014. The wavelength and output power of the lasers are as follows:

405nm/100mW; 450nm/75mW; 488nm/120mW; 561nm/100mW; 594nm/100mW; 647nm/120mW; 785nm/100mW

Avoid direct eye exposure!

The CellInsight CX7 LZR HCS Reader also contains a Class 3R laser device, conformant to IEC\EN 60825-1:2014. The wavelength of the laser is 720-740 nm. The output power is 2.0mW Max. Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

DANGER

RISK OF EYE INJURY!

Wear safety glasses designed to filter infrared wavelengths and high intensity visible light. **Wearing laser protective glasses with an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm** is required for instrument use**.** These glasses will filter infrared wavelengths.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity visible light and level of IR energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.
- Post a laser warning sign at the entrance to the laboratory if the laser protection is defeated for servicing.

CellInsight CX7 Safety Precautions

⚠ WARNING

CLASS 3B and 3R LASERS – INVISIBLE LASER RADIATION – AVOID EXPOSURE TO BEAM! WEAR THE REQUIRED LASER PROTECTIVE EYEWEAR!

The CellInsight CX7 HCS Reader contains a Class 3B laser device, conformant to IEC\EN 60825-1:2007. The wavelength of the laser is 741-753 nm CW and the output power is 490mW Max. Avoid direct eye exposure!

The CellInsight CX7 HCS Reader also contains a Class 3R laser device, conformant to IEC\EN 60825-1:2007. The wavelength of the laser is 720-740 nm. The output power is 2.0mW Max. Avoid direct eye exposure!

Wear laser protective glasses with an optical density greater than 6 (OD > 6) for wavelengths less than 400 nm, and an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm.

⚠ WARNING

RISK OF EYE INJURY!

Wear safety glasses designed to filter ultraviolet wavelengths and high intensity light. **Wearing laser protective glasses with an optical density greater than 6 (OD > 6) for wavelengths less than 400 nm, and an optical density greater than 7 (OD > 7) for wavelengths at 720 – 810 nm** is required for instrument use**.** These glasses will filter ultraviolet wavelengths and high intensity light.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity light and level of UV energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.
- Post a laser warning sign at the entrance to the laboratory if the laser protection is defeated for servicing.

CellInsight NXT/CX5 Safety Precautions

⚠ WARNING

RISK OF EYE INJURY!

Wear safety glasses designed to filter ultraviolet wavelengths and high intensity light.

- Eye damage may result from directly viewing the light produced by the light source. The high intensity light and level of UV energy supplied by the light source used in this product may be sufficient to cause damage.
- Never look directly into an illuminated objective, microplate well, or laser beam. The light could damage the cornea and retina of the eye if the light is observed directly.
- Do not remove safety labels, instrument protective panels, or defeat safety interlocks.
- The system must be installed and maintained by a Thermo Fisher Scientific Technical Representative.
- Remove jewelry and other items that can reflect a laser beam into your eyes or those of others.

To install the plate pusher arm for use with the Robotic Plate Handler,

1) Read and understand all safety precautions appearing in this guide and in your CellInsight HCS Platform User's Guide.

2) Open the **HCS Studio Scan** application.

3) From the **Tools tab,** select **Move to Objective Change Position**. The stage will begin to move to the objective change position. A message will appear informing you when the stage is in the objective change position. Do NOT remove the objective.

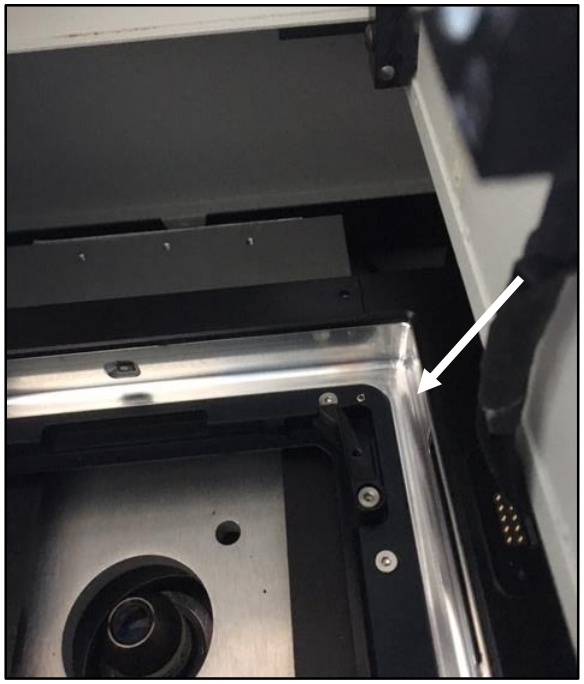
4) To access the microplate holder, wait for system motion to stop. Please note all safety precautions. Open the service door as shown in the following figure. Note that a key is required to open this door.

Figure 5.5 CellInsight CX7 HCS Reader service door

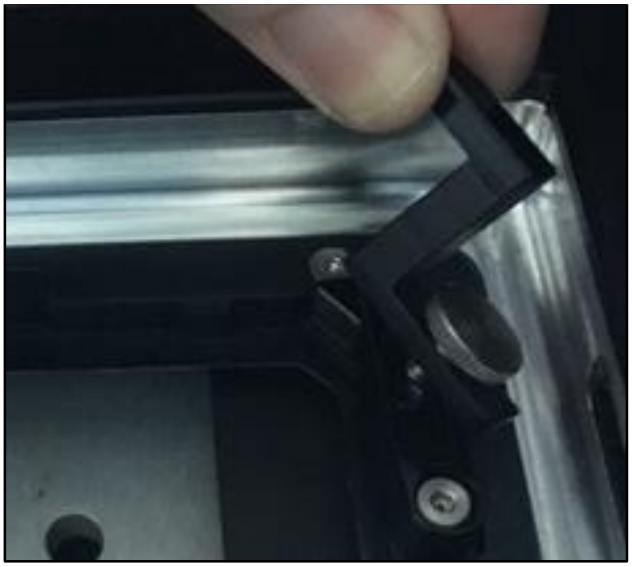
5) If the Onstage Incubator chamber lid is installed, remove the chamber lid.

6) If a plate is present in the microplate holder, remove the plate.

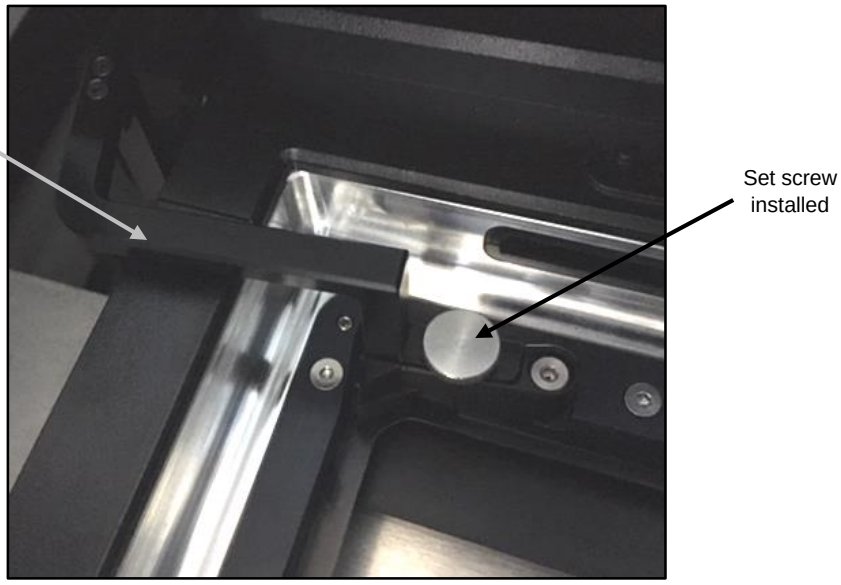
7) To insert the plate pusher arm, locate the opening as shown in the following photo.



8) Locate the optional plate pusher arm that was provided with the CellInsight Onstage Incubator. Grasp the end opposite the thumb screw. Thread the thumb screw into the opening as shown in the following photo.



9) Once installed, the end opposite the thumb screw will hang over the side of the plate holder as shown below.



10) Close and lock the service door.

Using the Barcode Reader

When using the Robotic Plate Handler without the use of the CellInsight Onstage Incubator, a barcode reader is available. The barcode reader is mounted to the Robotic Plate Handler.

If you are using a robotic plate handler with the CellInsight HCS Reader, please refer to your Robotic Plate Handler user documentation for system setup and startup instructions and safety precautions.

Before using the Robotic Plate Handler, be sure to remove the chamber lid and install the plate pusher arm as instructed above.

	⚠ WARNING The instrument is equipped with a dual LED barcode scanner. This scanner incorporates an LED device of laser safety class 2. The output power is 1 mW maximum (continuous wave). During operation, laser radiation outside the instrument will occur. Intentional deflection of the beam by means of tools or mirrors may be possible but constitutes an improper use of the instrument.

It is necessary to place a barcode label on the side of each microplate that you want to scan.

To label the microplate,

- Using a 96-well microplate as an example, place the barcode label as shown in the following schematic. Note the location of well A1.

Inserting a Microplate in the CellInsight Stage

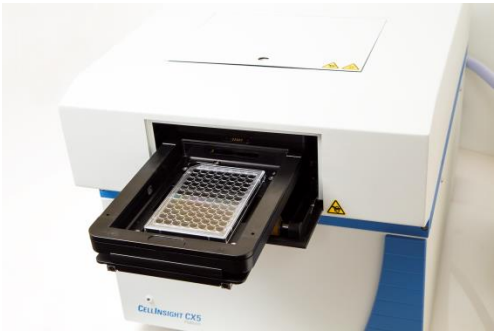
Please be sure to read and understand all safety precautions appearing in this guide AND the CellInsight HCS Platform User's Guide before performing these procedures.

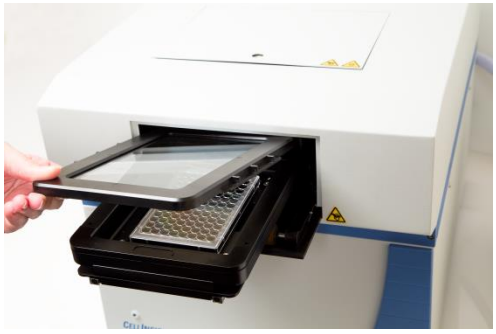
If you are using a robotic plate handler with the CellInsight HCS Reader, please refer to your Robotic Plate Handler user documentation for system startup instructions. Please note that live cell experiments requiring the use of the CellInsight Onstage Incubator are not supported when using the optional Robotic Plate Handler.

To insert a microplate in the CellInsight Stage,

1) Read and understand all safety precautions appearing in your CellInsight HCS Platform User's Guide. Locate the procedure for Inserting a Microplate in the CellInsight Stage.

2) After you insert the microplate into the stage, place the magnetic chamber lid on top.





3) The plate is now ready to load into the instrument. Follow loading instructions in your CellInsight HCS Platform User's Guide.

Monitoring Fluid Level in the Water Reservoir

During system use, monitor the fluid level in the water reservoir and refill as necessary. Discard all water in reservoir after a period of 48 hours. The use of distilled water is recommended.

4

CellInsight Onstage Incubator Maintenance

This chapter describes routine maintenance and cleaning procedures. **Please be sure to read and understand all safety precautions appearing in this guide AND the CellInsight HCS Platform User's Guide before performing these procedures.**

⚠ WARNING

The CellInsight Onstage Incubator is intended to be operated with the CellInsight NXT, CX5 and CX7 High Content Screening Platforms. This incubator is to be operated by trained laboratory personnel only. Use this product only in the manner described in this guide. When used other than as specified, the safety protections may be impaired. Please refer to your CellInsight High Content Screening Platform User's Guide for safety precautions ensuring safe operation and maintenance of the system. Read these precautions carefully before performing the procedures outlined in this document. In addition, please read the instructions, warnings, and precautionary measures supplied in this guide and with accessories. Failure to adhere to safety precautions and/or procedures outlined in this document may result in system failure, personal injury, or death. Thermo Fisher Scientific Inc. shall not be held liable under any circumstances. Thermo Fisher Scientific Inc. does not assume any liability for damages or malfunctions caused by faulty operation, negligence, unauthorized modifications or repairs, or use of unauthorized accessories. The manufacturer cannot assume any liability for any other applications, possibly also involving individual modules or single parts. This also applies to all service or repair work which is not carried out by authorized service personnel. All claims against warranty will be forfeited in these cases.

NOTICE

All maintenance procedures described in this guide can be safely performed by QUALIFIED SERVICE PERSONNEL. Maintenance not covered in this guide must be performed only by Thermo Fisher Scientific service personnel.

This chapter describes maintenance procedures for the CellInsight Onstage Incubator for use with the CellInsight NXT, CX5 and CX7 HCS Platforms. The following topics are described in detail in this chapter:

- Routine Care and Maintenance of the CellInsight Onstage Incubator
- Control Unit Cleaning

Routine Care and Maintenance of the CellInsight Onstage Incubator

To ensure proper operation of the CellInsight Onstage Incubator:

- Periodically check all power cords and cables for secure connection and proper condition.
- Keep the Control Unit dust free. Please refer to cleaning instructions found later in this chapter.
- Avoid exposure to extreme climatic influences such as temperature shocks or high humidity, as well as mechanical shocks.
- Avoid jarring the unit, especially while it is operating.
- Verify fluid level in the water reservoir. Refill as necessary and discard after a 24 hour period. The use of distilled water is recommended.
- Inspect Incubator hosing; inspect for cracks or signs of wear. If there are visible signs of wear, please contact Technical Support for assistance.

Incubator Control Unit Cleaning

Please be sure to read and understand all safety precautions appearing in this guide AND the CellInsight HCS Platform User's Guide before performing these procedures.

⚠ WARNING

Turn OFF the CellInsight HCS Platform, CellInsight Onstage Incubator, and all optional components/modules and accessories and disconnect the AC power cords from the units before cleaning.

Never spray or pour any liquid directly onto the CellInsight HCS Platform or CellInsight Onstage Incubator.

Dust and dirt can impair the performance of optics and moving parts. When performing any maintenance procedure, do not leave CellInsight HCS Platform Reader doors open for an extended period.

⚠ WARNING

BIOHAZARD!

Use proper laboratory practices when handling hazardous materials. Please refer to Biological Hazard Safety on page 277.

Make sure that biohazards do not contaminate CellInsight HCS Platform components.

In the event that system contamination occurs, contact Technical Support for applicable cleanup procedures.

The CellInsight HCS Platform is not equipped with any special devices for protection from substances which are corrosive, toxic, radioactive, or otherwise hazardous to health. All legal regulations for accident prevention, particularly those in the respective countries, must be observed when handling such substances.

To ensure proper operation of the Incubator Control Unit, be sure to perform the following procedures:

- Turn OFF the CellInsight HCS Platform, CellInsight Onstage Incubator, and all optional components/modules and accessories and disconnect the AC power cords from the units before cleaning. Clean the outer surfaces of the Incubator Control Unit with a clean cloth dampened with a mixture of water and a mild detergent. Use another lint-free cloth to wipe the unit dry. Do not use any solvent.
- If any spills occur, turn OFF the CellInsight HCS Platform, CellInsight Onstage Incubator, and all optional components/modules and accessories and disconnect the AC power cords from the units. Clean up any spills immediately by following the Sterilization Procedure on page 49.

- Always protect the Incubator Control Unit from dust and moisture. Remove dust particles with a clean brush or rubber blower.
- Clean the sample compartment every six months or when it has become soiled with sample substance. Turn OFF the CellInsight HCS Platform, CellInsight Onstage Incubator, and all optional components/modules and accessories and disconnect the AC power cords from the units before cleaning.

Sterilization Procedure

In the event that a hazardous material is spilled onto or into the components of the CellInsight Onstage Incubator, follow the sterilization procedure as described below. **However, if the hazardous material is a biohazard, please refer to Biological Hazard Safety on page 277, and contact Technical Support for applicable cleanup procedures.**

⚠CAUTION

IMPORTANT!

The CellInsight Onstage Incubator should not be subjected to UV sterilization. UV degrades many materials, including plastic. Damage from UV exposure is not covered under the manufacturer's warranty.

⚠CAUTION

CLEANING AND DECONTAMINATION

Use only the cleaning and decontamination methods specified in the manufacturer's user documentation. It is the responsibility of the operator (or other responsible person) to ensure the following requirements are met:

- No decontamination or cleaning agents are used that could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in the equipment.
- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan (decontamination forms may be requested from customer service).
- Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.

⚠WARNING

BIOHAZARD!

Use proper laboratory practices when handling hazardous materials. Please refer to Biological Hazard Safety on page 277.

Make sure that biohazards do not contaminate CellInsight HCS Platform or CellInsight Onstage Incubator components.

In the event that system contamination occurs, contact Technical Support for applicable cleanup procedures.

The CellInsight HCS Platform is not equipped with any special devices for protection from substances which are corrosive, toxic, radioactive, or otherwise hazardous to health. All legal regulations for accident prevention, particularly those in the respective countries, must be observed when handling such substances.

To sterilize components in the event of a non-biohazard material spill,

1) Turn OFF the CellInsight HCS Platform, CellInsight Onstage Incubator, and all optional components/modules and accessories and disconnect the AC power cords from the units.

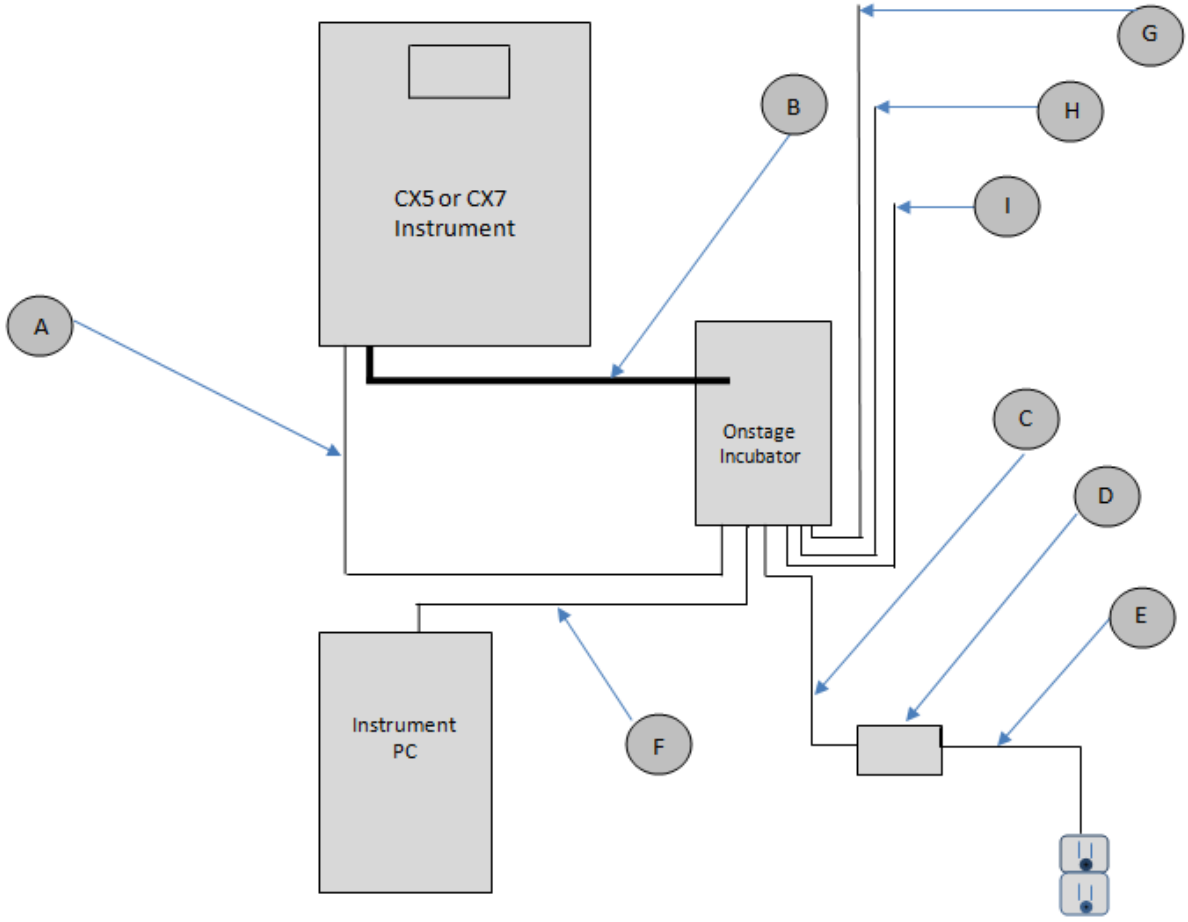
2) Lightly wipe working surfaces of the CellInsight Onstage Incubator with paper towels or Kimwipes® tissues dampened with 70% ethanol or 4,000 ppm hydrogen peroxide (H_2O_2).

⚠ CAUTION

IMPORTANT!

Do not soak any surface in sterilization solution. NEVER spray liquid anywhere on the CellInsight Onstage Incubator. Always wipe surfaces with dampened paper towels instead.

Connection Diagram – Optional Onstage Incubator



A: 6 Pin Sensor Data Cable
B: Chamber Gas Supply Hose
C: OSI Power Supply Cable
D: AC/DC Power Switching Adapter
E: 3 Pin Line Power Cable
F: USB 2.0 A to B Cable
G: CO2 Inlet Line
H: N2 Inlet Line
I: Compressed Air Inlet Line

Figure 4.1 CellInsight NXT, CX5 and CX7 HCS Reader System Connection Diagram – CellInsight Onstage Incubator

Dismantling and Recycling the CellInsight Onstage Incubator Equipment

Do not dispose of the CellInsight Onstage Incubator equipment with other unsorted municipal or household waste. Please contact Technical Support for more information.

The CellInsight Onstage Incubator contains hazardous substances. It is important that you follow all national and local regulations with regard to dismantling, recycling, and disposal. Please contact Technical Support for detailed information.

A

Technical Specifications

Technical specifications are subject to change without notice. Please refer to your CellInsight NXT/CX5/CX7 HCS Platform User's Guide for platform specifications.

Physical Characteristics

	Stage-top Environmental Chamber	Control Unit
Height:	25 cm (9.7 in)	37 cm (15 in)
Depth:	19 cm (7.6 in)	16 cm (6.3 in)
Width:	3.7 cm (1.5 in)	20 cm (7.9 in)
Weight:	1.5 kg (3.3 lb.)	10 kg (22 lb.)
Temperature Range	37°C ± 5°C	
Humidity	60% relative humidity (RH) at 37° C±5° C	
CO2 Range	0% to 20%	
O2 Range	0% to ambient	
Operating Power		100 – 240 VAC, 1.8 A
Frequency		50 – 60 Hz.
Electrical Input		24 VDC, 5 A

Room Temperature Range	68° F – 78° F

Hardware

Compatible Vessels	Multi-well plates, see Chapter 1 for more details
Gas Input Ports:	Air or air-CO_2 premix, CO_2-only, and N_2-only (max. 50 psi input)

* Note that the CellInsight Onstage Incubator temperature will vary with room temperature. For critical live cell experiments, it is recommended that you keep room temperature constant.

B

Replacement Parts

All consumable parts can be purchased through customer support. To order replacement parts, please contact your local sales representative or contact technical support directly.

Part Name	Part Number
Magnetic Chamber Lid	AMEP4726
Water Reservoir	ZP-CNR-0054
Water Reservoir Gasket	ZP-CNR-0051
Power Cord, Type A (North America)	AMEP-4644
Universal Power Supply (Control Box)	ZP-ECA-00797
Incubator Gas Supply Tubing	AMEP-4732
Cable, USB A-to-B, 180 cm / 6 ft.	ZP-CAA-00173

Index

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Ordering Information

Product	Cat. No.
Onstage Incubator for CellInsight™ CX5/NXT HCA Platform	NX5LIVE002
Onstage Incubator for CellInsight™ CX7 HCA Platform	NX7LIVE001
Accessories	
Back Panel Kit for CellInsight™ CX5 OSI (upgrade only)	NX5LIVEPNL
Back Panel Kit for CellInsight™ CX7 OSI (upgrade only)	NX7LIVEPNL

In the United States:
For customer service, call 1-800-766-7000
To fax an order, use 1-800-926-1166
To order online: thermofisher.com

In Canada:
For customer service, call 1-800-234-7437
To fax an order, use 1-800-463-2996
To order online: thermofisher.ca

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