invitrogen

iBright™ Imaging Systems

USER GUIDE

For use with the iBright™ CL1500 Imaging System and the iBright™ FL1500 Imaging System

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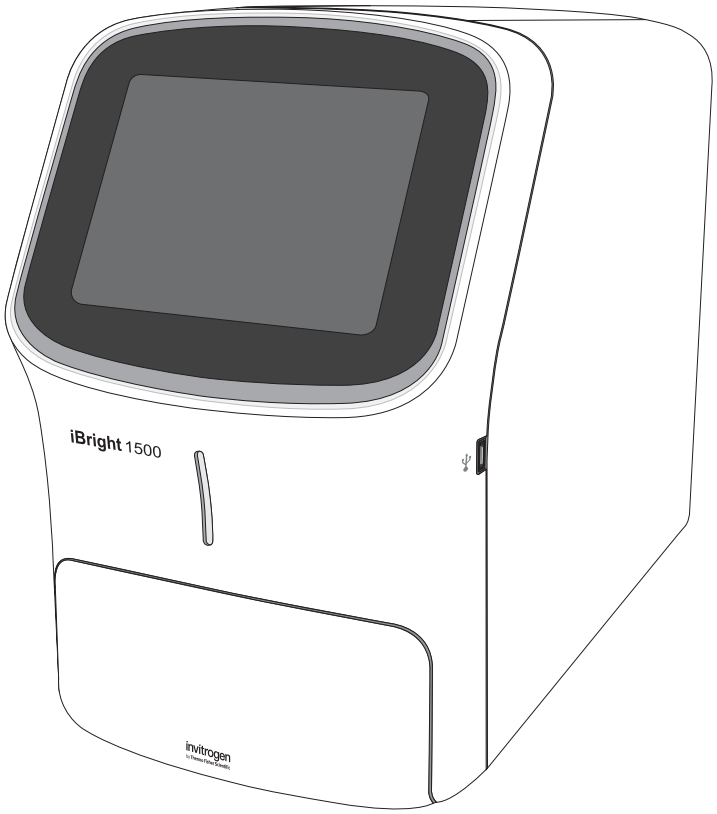

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Revision	Date	Description
A.0	June 7 2019	New document. Describes installation, operation, and maintenance of the iBright™ Imaging Systems.

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Product information

IMPORTANT! Before using this product, read and understand the information in the "Safety" appendix in this document.

Product description

The iBright™ CL1500 Imaging System allows users to image chemiluminescent Western blots, DNA and RNA gels stained with fluorescent nucleic acid stains, and visible protein gels. The iBright™ FL1500 Imaging System adds the capability of imaging fluorescent Western blots using multiple dyes.

The iBright™ imagers use a simple design and intuitive workflows to deliver high-resolution images. They can be run directly from the touchscreen to start and create images, while also providing on-board software for image analysis. To further analyze data, the instrument can be integrated with the iBright™ Image Analysis Software available for desktop and Connect.

Contents

Table 1 Included imager system parts

Component	Quantity
Power cord (region specific)	1
Quick reference card	1
White transilluminator screen	1
iBright™ Imaging System Sample Blot	1
Sample stage/turntable	1

Table 2 Available accessories

Component	Part number
White transilluminator screen	A33828
Sample stage	A33829
High-Power USB Wi-Fi Module	A26774

Start, sign on, and configure the instrument

Create an instrument profile

1. Touch ⊛ to sign in to your instrument user account.
2. Touch **Get started**.
3. Touch **Create a Profile**.
4. Enter a **Screen name**.
5. Enter and confirm a four-digit pin.
6. Touch **Create profile**.
7. (Optional) If you want to link your instrument to your Connect account, see "Use instrument to link to Connect account" on page 8 or "Link to Connect using an existing instrument account" on page 9.

Create an instrument account and link to Connect using a cloud account

1. Touch ⊛ to sign in to your instrument user account.
2. Touch **Get Started**.
3. Click on **Connect**.
4. Link your account using one of these methods:
   - **Mobile device** — Connect using a QR generated by the instrument and scanned by the instrument Connect mobile app.
   - **PC** — Connect using a link code that is entered into the instrument Connect app or your online Connect account.
   - **Instrument** — Enter your Connect account information directly on the instrument.

Mobile device

1. Touch **Mobile Device**.
2. Launch instrument Connect mobile app.
3. Sign into your Connect account on the mobile app.
4. Click on +.
5. Click on **QR code**.
6. Scan QR code on the instrument.
   Your Connect account should now be linked to your instrument account.

PC using Connect account

1. Touch **PC**.
2. Login to your Connect account online.
3. Click on .
4. Click on .
5. Select **iBright** from the drop-down menu.
6. Enter the linking code and click on **Send**.
   Your Connect account should now be linked to your instrument account.

PC using instrument Connect app

1. Touch **PC**.
2. Launch the instrument Connect mobile app.
3. Sign into your Connect account on the mobile app.
4. Click on +.
5. Click on **Linking code**.
6. Enter the linking code and click **Send**.
   Your Connect account should now be linked to your instrument account.

Use instrument to link to Connect account

1. Click on **Instrument**.
2. Enter your Connect username and password.
3. Click **Link account**.
   Your Connect account should now be linked to your instrument account.

Link to Connect using an existing instrument account

Linking to Connect after account creation can only be done during the export process.

1. Click on .
2. Select an image.
3. Click on **Actions**.
4. Click on **Export**.
5. Click on **Choose destination**.
6. Click on **Cloud**.
7. Click on **Sign in**.
8. Connect using one of the methods outlined in "Create an instrument account and link to Connect using a cloud account" on page 7.

If the unit is off

1. Ensure the unit is plugged in and turn on using the switch on the back of instrument.
   The instrument will go directly to the sign-in page.
2. Enter a **Screen name**.
3. Enter and confirm a 4-digit pin.

   Note: For those not logged on as a user (guest), acquired images are saved to a guest gallery. The guest gallery is not private. Any logged in user can view and modify images residing in the guest gallery.
4. From the **Welcome** screen, choose the appropriate Mode from the drop-down menu, touch ⏏ and place sample in the center of the transilluminator glass.
5. Touch ⏏ to close drawer (do not physically push on the drawer). Instrument adjusts and displays a live-view sample image in the viewport.

If the unit is on and in sleep mode

1. Touch the screen to wake.
2. Touch 👤 to sign in to use or set up a user profile. See "Create an instrument profile" on page 7 for instructions on how to create a user profile.

   Note: For those not logged on as a user (guest), acquired images are saved to a guest gallery. The guest gallery is not private. Any logged-in user or other guest user can view and modify images residing in the guest gallery.

3. Enter a **Screen name**.
4. Enter and confirm a 4-digit pin.
5. From the Welcome screen, choose the appropriate Mode from the drop-down menu, touch Open Drawer, and place sample in the center of the transilluminator glass.
6. Touch ⏏ to close drawer (do not physically push the drawer). Instrument adjusts and displays a live-view sample image in the viewport.

If the unit is on and in active mode

1. If not already signed in, touch 👤 to sign in or set up a new user profile. See "Create an instrument profile" on page 7 for instructions on how to create a user profile.

   Note: For those not logged on as a user (guest), acquired images are saved to a guest gallery. The guest gallery is not private. Any logged-in user can view and modify images residing in the guest gallery.

2. From the **Welcome** screen, choose the appropriate Mode from the drop-down menu, touch ⏏ and place sample in the center of the turntable glass.
3. Touch ⏏ to close drawer (do not physically push the drawer). Instrument adjusts and displays a live-view sample image in the viewport.

Operate the iBright™ imager

Choose imaging mode and start image capture

On the **Welcome** screen:

1. Use the drop-down menu to select the desired mode.
   - **Chemi Blots** to image chemiluminescent substrates.
   - **Fluorescent Blots** to image fluorescent substrates.
   - **Nucleic Acid Gels** to image DNA and RNA gels.
   - **Protein Gels** to image visible, stained protein gels.
   - **Universal** to image samples containing multiple readouts, such as chemiluminescence, fluorescence and/or colorimetric stains. Image display is similar to Fluorescent Blots and allows you to assign false color to any sample.
2. Touch ⏏ to open drawer.
3. Place sample in the center of the viewing area.
4. Touch ⏏ to close drawer.

Instrument automatically aligns, zooms, focuses, and acquires a live-view sample image.

Note: If any manual adjustments are required for zoom or focus, touch **More options** ▸ **Camera** and choose the appropriate menu item.

- To image in Chemi Blots mode, proceed to “Image using Chemi Blots“ on page 12.
- To image in Fluorescent Blots mode, proceed to “Fluorescent Blots (FL1500 model only)“ on page 13.
- To image in Nucleic Acid Gels mode, proceed to “Image using Nucleic Acid Gel“ on page 14.
- To image in Protein Gels mode, proceed to “Image using Protein Gels“ on page 15.
- To image in Universal Mode, proceed to “Universal Mode“ on page 16.

Chemi Blots

Mode to image chemiluminescent Western blots.

Image using Chemi Blots

1. Touch **Smart Exposure**.
   The imager acquires a series of short exposures, then renders a preview image and recommends an exposure time. This is not a real image.
2. Touch **More options** ▸ **Region of Interest**. **Region of Interest** is for directing **Smart Exposure** to a specific region of the sample.
3. *(Optional)* Adjust the exposure time using the following methods:
   - Touch + or −.
   - Finger swipe in the segmented dial.
   - Touch the dial center box to select a preset exposure time or touch **Custom** to manually input a time.

   The image preview updates in real-time.
4. Touch **Enter** (for a custom manual input).
5. Touch **Capture** to acquire an image.
   The captured image is displayed and automatically saves to the gallery.
6. If an acceptable image, touch **Export**, **Gallery**, or **Analyze**. If an unacceptable image, touch **More options** to optimize the image or touch **Trash** to remove the image, then return to step 2 to adjust exposure conditions.

Fluorescent Blots (FL1500 model only)

Mode to image fluorescent Western blots using a single channel or up to 4 channels using excitation wavelengths (FWHM) of approximately 455-485 nm, 515-545 nm, 610-635 nm, 610-660 nm, and 750-768 nm; approximate emission wavelengths (FWHM) 510-555 nm, 565-615 nm, 675-720 nm, 710-730 nm and 800-850 nm.

Image using Fluorescent Blot

1. Touch **Choose a dye** to select from one to four dyes from the pre-populated list.
   a. To edit an existing dye, touch the dye name button. Touch **Dye** and change the assigned dye to any other pre-populated dye in the fluorescent dye list. Dyes in the pre-populated dye list are categorized by most recently used, name, and emission color.

   b. Touch **False Color** and change the false color assigned to that dye.

      Note: Each dye is assigned a false color to be used in the composite overlay.

   c. To remove this assigned dye from the channel, touch **Remove Dye** at the bottom left hand corner of the screen. Touch **Confirm**.

2. Touch **Done**.

3. Touch **Smart Exposure**. Alternatively, for manual exposure, touch **More options ▸ Manual Exposure**. For manual exposures, click on the dye to add a time for each dye selected.
   The imager will acquire a series of short exposures for each dye type selected. It will then render preview images and a recommended exposure time for each channel. These are not real images.

4. Touch **More options ▸ Region of Interest**. **Region of Interest** is for directing **Smart Exposure** to a specific region of the sample. You can select different, same, or no region of interest for each channel.

5. To adjust or set a manual exposure time for any of the channels you are acquiring, select the channel (dye) that you want to change:
   - Touch + or —.
   - Finger swipe in the segmented dial.
   - Touch the dial center box to select a preset exposure time or touch **Custom** to manually input a time.

   The image preview updates in real-time.

6. Touch **Capture** to acquire an image.
   The captured image is displayed and automatically saves to the gallery.

7. If an acceptable image, touch **Export**, **Gallery**, or **Analyze**. If an unacceptable image, touch **More options** to optimize the image or touch **Trash** to remove the image, then return to step 2 to adjust exposure conditions.

Nucleic Acid Gels

Mode to image DNA and RNA gels stained with fluorescent nucleic acid stains such as Ethidium Bromide, SYBR™ Safe, SYBR™ Green (I or II), SYBR™ Gold and similar products.

Image using Nucleic Acid Gel

1. Touch **Smart exposure**. Alternatively, to set a manual exposure time, touch the center of the dial.

   The imager acquires a series of short exposures and then renders a preview image and a recommended exposure time. This is not a real image.

2. Touch **More options** ▸ **Region of Interest**. **Region of Interest** is for directing **Smart Exposure** to a specific region of the sample.

3. To adjust or set a manual exposure time, select a method:

   - Touch + or − within dial.
   - Finger swipe in the segmented dial.
   - Touch the dial center box to select a preset exposure time or touch **Custom** to manually input a time.

   The image preview will update in real-time.

4. Touch **Capture** to acquire image with the indicated exposure time.

   Captured image appears on screen and automatically saves to the gallery.

5. If an acceptable image, touch **Export**, **Gallery** or **Analyze**. If an unacceptable image, touch **More options** ▸ **Image adjust** to optimize image or touch **Trash** to remove image, then return to step 2 to adjust exposure conditions.

Protein Gels

- **Protein Gels Visible:** USE WHITE SCREEN BETWEEN SAMPLE AND TRANSILLUMINATOR GLASS for samples including Coomassie-stained protein gels and silver-stained protein gels.
- **Protein Gels Fluorescent:** PLACE SAMPLE DIRECTLY ON TRANSILLUMINATOR GLASS for samples including No-Stain™-labeled protein gels and SYPRO™ dye-stained protein gels.

Image using Protein Gels

1. Select whether you are imaging a visible sample (**Protein Gel Visible**) or fluorescent sample (**Protein Gel Fluorescent**).
2. An auto-zoomed and focused **Live View** of the image is now displayed in the viewport.

   IMPORTANT! For visual stained protein on nitrocellulose and PVDF membrane, use **Universal Mode ▸ Visible channel** without the white screen.
3. Touch **Smart Exposure**. Alternatively, to set a manual exposure time, touch the center of the dial.
   The imager acquires a series of short exposures and then renders a preview image and a recommended exposure time. This is not a real image.
4. Touch **More options ▸ Region of Interest**. **Region of Interest** is for directing **Smart Exposure** to a specific region of the sample. You can select different, same, or no region of interest for each channel.
5. To adjust or set a manual exposure time, select a method:
   - Touch + or — within dial.
   - Finger swipe in the segmented dial.
   - Touch the dial center box to select a preset exposure time or touch **Custom** to manually input a time.

   The image preview will update in real-time.
6. Touch **Capture** to acquire image with the indicated exposure time.
   Captured image appears on screen and automatically saves to the gallery.
7. If an acceptable image, touch **Export**, **Gallery** or **Analyze**. If an unacceptable image, touch **More options ▸ Image adjust** to optimize image or touch **Trash** to remove image, then return to step 2 to adjust exposure conditions.

Universal Mode

Mode to image samples containing one or more signal types (chemi, fluor, and/or visible).

Table 3 Illumination sources, excitation filters, and emission filters for the iBright™ CL1500 Instrument.

Illumination	Excitation Filters	Emission Filters
White Epi-LED	455-485 nm	400-700 nm 568-617 nm
ND filter [1]	400-700 nm	
Green trans	490-520 nm	

[1] Neutral density filter decreases the intensity of the white Epi-LED for visible imaging.

Table 4 Illumination sources, excitation filters, and emission filters for the iBright™ FL1500 Instrument.

Illumination	Excitation Filters	Emission Filters
White Epi-LED	455-485 nm	400-700 nm 520-555 nm 565-615 nm 675-720 nm 710-730 nm 800-850 nm
	515-545 nm	
	608-632 nm	
	610-660 nm	
nIR Epi-LED	745-765 nm	
ND filter	400-700 nm	
Green trans	490-520 nm	

1. Touch **Choose Channel** to select from one to four different dyes or stains from the pre-populated list.
   a. To edit an existing dye, touch the dye name button. Touch **Dye** and change the assigned dye to any other pre-populated dye in the fluorescent dye list. Dyes in the pre-populated dye list are categorized by most recently used, name, and emission color.

   b. Touch **False Color** and change the false color assigned to that dye.

      Note: Each dye is assigned a false color to be used in the composite overlay.

   c. To remove this assigned dye from the channel, touch **Remove Dye** at the bottom left hand corner of the screen. Touch **Confirm**.

Channel refers to the type of signal you want to capture and the imaging conditions you want to use.

- **Chemi**: Channel for measuring chemiluminescent signals.
- **Fluor [Epi-LED]**: Channel for measuring fluorescent signals that are excited using the appropriate Epi-LED/excitation filter combination and the appropriate emission filter.
- **Fluor [Trans]**: Channel for measuring fluorescent signals that are excited by the green transilluminator and appropriate emission filter.
- **Nucleic acid**: Channel for measuring fluorescent signals in gel that are excited by the green transilluminator and the 565-615 emission filter (stained DNA and RNA).
- **Protein**: Channel for measuring fluorescent and visible signals in gel that are excited or illuminated by the green transilluminator and the 565-615 emission filter — stained or labeled protein.
- **Visible**: Channel for measuring visible signals on an opaque media (nitrocellulose membrane, PVDF membrane, etc.) using the Epi-white LED with neutral density filter and appropriate emission filter.
- **TPN**: Total protein normalization channel is for normalizing Western blot results to total protein load by lane.

2. Touch **Smart Exposure**. Alternatively, for manual exposure, touch **More options ▸ Manual Exposure**. The imager will acquire a series of short exposures for each dye type selected. It will then render preview images and a recommended exposure time for each channel. These are not real images.

3. Touch **More options ▸ Region of Interest**. **Region of Interest** is for directing **Smart Exposure** to a specific region of the sample.

4. To adjust or set a manual exposure time for any of the channels that you are acquiring, select the channel (dye) that you want to change:

   - Touch + or — within dial.
   - Finger swipe in the segmented dial.
   - Touch the dial center box to select a preset exposure time or touch **Custom** to manually input a time.

   Note: When recommended exposure time is adjusted, the image preview will update in real time.

5. Touch **Capture** to acquire all of the selected channels with the indicated exposure times. Captured image(s) appears in viewport and automatically saves to the gallery.

6. If an acceptable image, touch **Export**, **Gallery**, or **Analyze**. If an unacceptable image, touch **More options ▸ Image adjust** to optimize image or touch **Trash** to remove image, then return to steps 3-5 to adjust exposure conditions.

Options available in modes

Each mode offers **More Options** on certain workflow screens to provide detailed camera and image adjustment.

Table 5 Camera

Suboption	Detail
Resolution/Sensitivity	Changes binning setting to increase resolution/decrease sensitivity or decrease resolution/increase sensitivity.
Zoom/Focus	Changes zoom level to increase or decrease image area. Optimizes focus for sharpness. **Note:** Optical zoom 1X to 2X and digital zoom 2X to 8X.
Sample rotation	Imager mechanically rotates sample ±10° depending on orientation. Rotation is automatic, but also allows ability to adjust in **More Options ▸ Camera Settings**.

Table 6 Routines

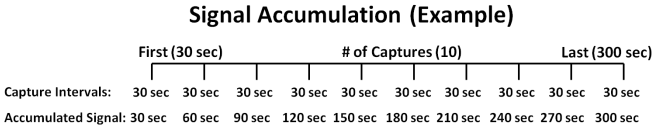
Suboption	Detail
Multi-exposure	Series of 5 preset exposure times producing one image for each time period.
Signal accumulation	Series of exposures where user defines the first capture (time interval), the last capture (cumulative capture time) and the total number of captures.  **Note:** Images acquired using **Signal Accumulation** are not recommended for publication or analysis. This feature is recommended for determining an optimal exposure time.

Table 7 Image adjust

Suboption	Detail
Contrast	Grayscale differentiation between image features. Can use **Auto contrast (high, medium, low)** or view raw image with no contrast. User can manually adjust **Gamma**, **White**, **Black** using slider bars.
Channels and Layers	Allow user to navigate between individual channels associated with a common image file; pertains only to Chemi Blot, Fluorescent Blot, and Universal modes (e.g., Channels: membrane, Alexa Fluor™ 488, Alexa Fluor™ 555, Composite). Layers allow toggling on and off analysis tools.

Suboption	Detail
Zoom	Increases or decreases digital zoom to select an area of the image.
Invert	Produces a negative or positive (white to black or black to white) of the displayed image.
Saturation	False-colors saturated white pixels (65,536) as red to differentiate from non-saturated pixels.

Table 8 Other options

Suboption	Detail
Region of Interest	Specify an area on the image to determine the optimal exposure time for that region using the **Smart Exposure** tool.
Manual exposure	Manually select an exposure time for sample.
Smart exposure	Predicts optimal exposure for minimizing pixel saturation and maximizing dynamic range for a specific sample. Renders a preview of how the image will appear at the recommended exposure time.
Band excision (Nucleic Acid Gels mode)	Opens drawer and turns on green transilluminator to allow for safe band excision on nucleic acid gels.
Membrane overlay (Chemi and Fluorescent Blot modes)	Allows visible membrane overlay to see any visible prestained markers, which aid in identifying molecular weights for unknown samples.
2UP view (Fluorescent Blot mode)	After a **Smart Exposure** or **Capture**, images are displayed by default in a **2UP view**. • Top image displays individual channels in grayscale. Switch between individual channels by touching the channel you want to display and edit. After a dye is selected, that channel image is displayed in the top view and becomes editable so the user can increase or decrease the exposure time dial and see in real time the effect on the image preview. • Bottom image displays the color composite with channels displayed as different false colors overlaid on a black background. Individual channels can be toggled on and off in the composite image by touching at the left of the appropriate channel name.

Suboption	Detail
1UP view (Fluorescent Blot mode)	After a **Smart Exposure** or **Capture**, images can also be displayed in a **1UP view**. Image displays the grayscale and false-color composite images by toggling **Gray** or **Color**. User can switch between Individual channels by touching the dye name you want to display. Individual channels can be toggled on and off in the composite image by touching on the left of tehe appropriate dye name. **Note:** Functionality for toggling between individual channels in grayscale view or toggling on and off individual channels in the false-color composite view is identical to the **2UP view**.
Auto Enhance	Auto Enhance applies rolling-ball correction to the composite image of a multichannel image. It can be toggled on and off and only affects the visible image, not the raw data.

Image Gallery

The Image Gallery is an on-board storage location where your image files are kept for future viewing. In the gallery you can easily retrieve, analyze and manage your image files. Any image acquired on the imager is automatically saved into a user's individual image gallery. For those not logged on as a user (guest), acquired images are saved to a common gallery that houses all guest image files.

View images

On the **Welcome** screen or mode drop-down menu:

1. Touch **Gallery** or .
2. Toggle between **Thumbnail view** and **List view** to see stored images as thumbnails or a table.

   Click the column headers to sort the images.
3. Touch an image to select it. Touch again to deselect images. To choose all stored images, touch **Select all**. Unselect using **Deselect all**.
4. To filter images, touch **Filter options**.

Export and analyze images

Export images

Export new images

From the "Welcome" screen:

1. Capture an image. See “Choose imaging mode and start image capture“ on page 11.
2. Touch **Export**.
3. *(Optional)* Touch **Edit** to enter a new file name or comments. Touch **Save**.
4. Choose a **Destination**.
   - Connect
   - USB
   - Network Drive
   - Print

   Note: The instrument requires a path for connection to a network drive or printer. Consult your IT department for questions regarding your network. The following information may be required to map a network drive:
   - Drive location: Enter the IP address, server name and file pathway (use forward slashes). Example: 192.168.1.100/shared/R&D Data/John_Smith/2016
   - Additional information: Enter the domain name, user name, and password.
5. Choose a file type for export. See “Select an Export file type“ on page 23.

Export gallery images

1. In the Gallery, select the desired image/images. See “View images“ on page 21 .
2. Touch **Actions**.
3. Touch **Export**.
4. *(Optional)* Touch **Edit** to enter a new file name or comments. Touch **Save**.
5. Choose a **Destination**.
   - Connect
   - USB
   - Network Drive
   - Print

Note: The instrument requires a path for connection to a network drive or printer. Consult your IT department for questions regarding your network. The following information may be required to map a network drive:

- Drive location: Enter the IP address, server name and file pathway (use forward slashes). Example: 192.168.1.100/shared/R&D Data/John_Smith/2016
- Additional information: Enter the domain name, user name, and password.

6. Choose a file type for export. See "Select an Export file type" on page 23.

Select an Export file type

When exporting images, select an appropriate file type for your application. From the Export images screen:

1. Touch **Choose File Type**.
2. Touch a file type.

File type	Description
Publication - Exports 24-bit color-adjusted images for data sharing and presentation	
TIFF	Best quality
JPEG	Medium quality
PNG	Medium quality
Analysis - Exports 16-bit black and white, non-adjusted images for external image analysis and processing	
TIFF	Best quality
G2i (iBright™ proprietary file type for iBright™ Analysis Software - available on desktop and Connect	Best quality

Note: **Publication** file types allow you to export composite and all channels as separate image files. Touch the checkbox at the bottom of the screen to choose this option. If unchecked, then only the false-color composite image will be exported.

3. Touch **Next**.

Analyze images

Analyze new images

1. Capture an image. See "Choose imaging mode and start image capture" on page 11.

2. Touch **Analyze**.
   The system automatically finds and displays analysis frames, lanes and bands for the selected image file. Multi-channel images are displayed as individual channels that can be toggled or swiped between using the touchscreen. The system can identify 1-4 different analysis frames.

3. *(Optional)* Touch the **Sensitivity** dial to raise or lower the band-find threshold to increase or decrease the number of identified bands and lanes in each analysis frame.

4. *(Optional)* Touch **Edit analysis frame** to remove, add or edit existing analysis frames.

5. *(Optional for fluorescent images)* Touch the dye drop-down menu to select a particular dye or the membrane view.

6. *(Optional)* Touch **More options** to access image adjustments or to generate a report.

Image adjustments	Functions
Adjust lanes	Add, remove, or edit lanes.
Adjust bands	Add, remove, or edit bands.
Add markers	Identify a molecular weight lane for each analysis frame. A known standard can be used to approximate the molecular weight of unknown bands.
Adjust image	Images are by default displayed auto-contrasted (medium). User can change the auto-contrast to high or low setting or manually set black, white and gamma using the appropriate slider bar.
Normalization	Total Protein Normalization (TPN) uses a total protein label or stain to detect and quantify the total lane protein in a gel or on a membrane. Western blot targets are normalized to total protein to correct for loading and transfer anomalies. Alternatively, a housekeeping protein can be immuno-detected and quantified to approximate protein load for the same purpose.
Generate report	Prepare a pdf report displaying the images and analysis table associated with the image file. This file can be exported and/or printed.

After each image adjustment:

   a. Touch **Apply** to accept the changes.

b. *(Optional)* Touch **Next** to display the analysis table. At the top of the table, touch ⌄ to change the table output by:

Output	Units	Description (Lane and Band Table)
Volume	Intensity	Sum of pixel intensities contained in an identified band.
Weight	kDa	Molecular weight estimated for an unknown sample based on the sample's relative mobility in the gel versus the molecular weight and relative mobility of known standards.
Density	Intensity/Area	Average intensity for all pixels contained in an identified band (Volume divided by Area).
Local Background Corrected Volume	Intensity	Volume minus the local background intensity (2-pixel area surrounding the identified band region).
Local Background Corrected Density	Intensity/Area	Local Background Corrected Volume divided by the Area.
Migration Distance	R_f	Distance migrated divided by the gel length.

c. For TPN normalized data, the lane and band table has the following outputs:

Output	Units	Description (Lane and Band Table)
Total Lane Volume	Intensity	Sum of pixel intensities contained in an identified lane.
Background Volume (RB)	Intensity	Background determined using Rolling Ball Background Correction.
Adjusted Total Lane Volume	Intensity	Total Lane Volume minus background volume.
Normalization Factor	—	Normalization factors are proportional to the total lane protein signal with a reference lane nominally set to 1.000.

Analyze gallery images

On the "Welcome" screen or capture screen Mode drop-down menu:

1. Touch **Gallery** or ⊞. Select one or multiple images.
2. Touch **Actions**.
3. If more than one image was initially selected, then choose one of the images within the scrollbar. If needed, edit, remove, or delete the selected image.

4. Touch **Analyze**.
   The system automatically finds and displays analysis frames, lanes and bands for the selected image file. Multi-channel images are displayed as individual channels that can be toggled or swiped between using the touchscreen. The system can identify 1-4 different analysis frames.

5. *(Optional)* Touch the **Sensitivity** dial to raise or lower the band-find threshold to increase or decrease the number of identified bands and lanes in each analysis frame.

6. *(Optional)* Touch **Edit analysis frame** to remove, add or edit existing analysis frames.

7. Touch **Apply** to accept any changes.

8. *(Optional)* Touch **More options** to adjust lanes or bands, add markers, access image adjustments, perform total protein normalization, or generate a report. For details, see “Analyze new images“ on page 24.
   For details on TPN normalized data outputs and TPN normalization channel lane outputs, see “Analyze new images“ on page 24.

Maintain the instrument

Settings

Access Settings ⚙ from the "Home" screen.

Instrument Settings		
About Instrument	Provides all instrument details including serial number and firmware version.	
Date and Time	Select a Time Zone, Date Format, and Time Format for your region.	
Sleep Mode	Enable or disable a sleep mode by toggling the button.	
Manage Users	**Security mode**	Off = Guest users allowed. On = Login required for all users.
	Manage accounts	See the "Manage accounts" section.
Instrument Name	Customize the instrument name.	
Language	Select a display language (subject to availability).	
Reset User Tips	Reset user tips for the logged-in guest.	
Reset Factory Defaults	Resets instrument to factory settings and clears out existing user information. **Note: Selecting this reset erases all user data and gallery files.**	
Backup and Restore	Back up files and restore settings.	

File Naming Convention
User sets preference for file naming by selecting up to 3 of the following aspects: **Mode**, **Binning**, **Custom Field User**, **Exposure Time**, and **Sequential Number**. **Date and Time** are mandatory aspects. The aspects can be ordered by choice.

Error Log
Displays instrument error history with sortable columns for **Date**, **User**, and **Error Description**. The Error Log is exportable.

Event Log
Displays instrument error history with sortable columns for **Date**, **User**, **Event Type**, and **Cloud Status**.

Software Update
Updates the instrument software package by downloading via USB dongle or connection to the cloud. **Note:** Cloud option requires a connection to your Connect account.

Network Configuration	
Wired	Searches for an ethernet connection.
Wireless	Searches for a wireless connection. Requires a USB wireless adapter (High-Power USB Wi-Fi Module, Product #A26774).
Network Drive	Enter a **Drive location** for connection. If needed, enter a **Domain name**, **User name**, and **Password**.
Printer Configuration	Enter an **IP address** and choose between **US Letter** or **A4** paper size.
Cloud Region	Select the cloud region associated with your location: **China** if you are located in China and **Other** if you are located anywhere other than China.

Capture History
Displays image capture history with sortable columns for **Date**, **User**, **Capture Mode**, **Image Name**, and **Capture Status**.

Service Tools	
Instrument Diagnostic	Runs diagnostic testing on the instrument hardware. Provides an end report showing the functional status of hardware items. **Note:** Running diagnostics is not required. Contact a service technician for any issues.
Ship Prep Mode	Allows removal of the turntable for shipping. **Note:** Instrument can only be powered off once turntable is removed. Once powered off, then powered on, you must go through the complete new instrument set up again.
Pixel Mapping	Pixel mapping is used to identify camera-specific pixel intensity differences that occur in long exposures and applies a correction for any pixel that deviates from the normal dark value.

Manage accounts

Manage accounts allows for editing of user types and PINs and deleting profiles.

1. Touch and log in to your user account. Once you log in, you are automatically taken to the Welcome screen.

   Note: You must be an Admin logged into your profile to manage accounts.

2. Touch , then click **All Accounts**.
   - All current user profiles will display.
   - Columns for **Users**, **Created (date)**, **User Type**, and **Account Type** are sortable.

3. Select the user whose account you want to manage.

4. Select **Manage** on the bottom left side of the screen. Change a standard user to an Admin user by sliding the button to **Admin**.

   Note: You cannot change an Admin user to a standard user.

5. **Delete PIN** — If a standard user forgets there PIN number, then you can delete there PIN so they are prompted to create a new PIN the next time they log on.

6. **Delete Account** — If you delete a user's account, you will also delete all of the image files in their gallery.

Run instrument diagnostics

Instrument functions can be checked by a user to confirm proper hardware operating conditions.

1. Touch .

2. Touch **Service Tools**.

3. Touch **Instrument diagnostic**.

4. Touch **Start test**.
   The instrument will check the instrument hardware for correct operation and settings. The test will take ~10 minutes to complete. The results of the test will display once complete. Detailed results can be exported for further review.

   Note: Ensure the drawer is not blocked. The drawer will open as part of the testing. (Not applicable to iBright™ CL750 model.)

Clean the instrument

Repeated instrument use can cause spots and smudges on the sample stage, which can then decrease image quality. Clean the sample stage as needed.

Materials required

- Safety glasses
- Powder-free gloves
- Tissue, lint-free
- Deionized water
- Ethanol, 70% solution

Note: Avoid the use of detergents.

1. Open the drawer to expose the sample stage.
2. Lightly spray the glass surface with deionized water or a 70% ethanol solution.
3. Wipe the surface with a lint-free tissue until sufficiently clean.
4. Close the drawer and operate the instrument as normal.

Replace the instrument fuses

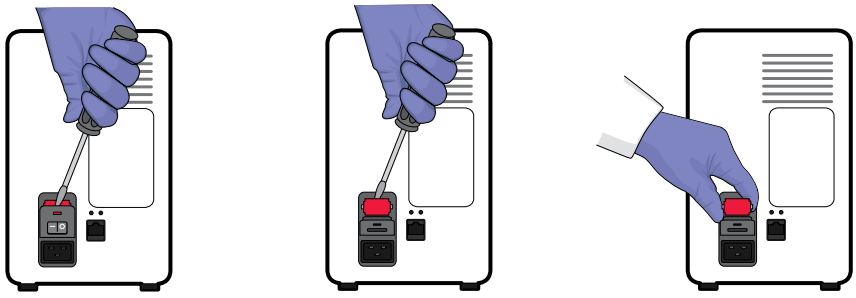
Materials required

- Fuses, 1.6A, Time-Lag T, 250VAC, 5 × 20-mm (2)
- Safety glasses
- Powder-free gloves
- Screwdriver, flathead

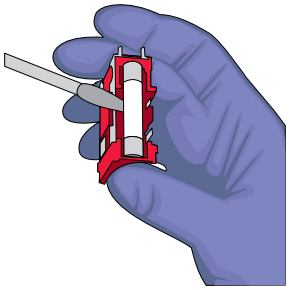
Replace the fuses

CAUTION! FIRE HAZARD. For continued protection against the risk of fire, replace fuses only with listed and certified fuses of the same type and rating as those currently in the iBright™ imager.

1. Power off, then unplug the iBright™ imager.
2. Using a flat-head screwdriver, pry open the fuse door, and remove the fuse holder.



3. Remove each fuse from its fuse holder and inspect it for damage. Carbon typically coats the inside of failed fuses.



4. Replace each failed fuse with a 1.6A, Time-Lag T, 250VAC, 5 × 20-mm Fuse.

   Note: The voltage and amperage ratings are on the fuse holder.

5. Install the fuse holder.

6. Plug in, then power on the iBright™ imager. The installation is successful if the instrument powers on.

Note: Fuse failure can result from fluctuations in the supplied power to the iBright™ imager. To prevent further failures, consider installing an electrical protective device, such as a UPS or surge protector.

Move the instrument

CAUTION! PHYSICAL INJURY HAZARD. Do not attempt to lift the instrument or any other heavy objects unless you have received related training. Incorrect lifting can cause painful and sometimes permanent back injury. Use proper lifting techniques when lifting or moving the instrument. At least two people are required to lift it.

IMPORTANT! Moving your instrument can create subtle changes in the alignment of the instrument optics. Recalibrate the instrument if necessary.

- Ensure that the surface on which you place the instrument can support at least 50 kg (110 lbs).
- Ensure that the path to transport the instrument is clear of obstructions.
- At least two people are needed to lift and carry the instrument.
- Keep your spine in a good neutral position.
- Bend at the knees and lift with your legs.
- Do not lift an object and twist your torso at the same time.
- Coordinate your intentions with your assistant before lifting and carrying.

Prepare for shipping

1. Touch ⚙.

2. Touch **Service Tools**.

3. Touch **Ship prep mode**.
   Drawer opens.
4. Remove turntable.
5. Touch **Next**.
6. Power off the instrument.

Instrument specifications

Instrument dimensions and specifications

Specification	iBright™ Imager
Dimensions (L × W × H)	68.0 × 38.2 × 59.8 cm
Weight	52 kg (115 lbs)
Instrument clearance (Back)	15.25 cm (6 in.)

Electrical requirements

WARNING! For safety, the power outlet used for powering the instrument must be accessible at all times. In case of emergency, you must be able to immediately disconnect the main power supply to the instrument. Allow adequate space between the wall and the equipment so the power cord can be disconnected in case of emergency.

- Electric receptacle with grounding capability
- Maximum power dissipation: ~960 W (not including computer and monitor)
- Mains AC line voltage tolerances must be up to ±10 percent of nominal voltage

Device	Rated voltage	Circuit required	Rated frequency	Rated power
iBright™ Imager	100–240 ±10% VAC[1]	10 A	50/60 Hz	410 W

[1] If the supplied power fluctuates beyond the rated voltage, a power line regulator may be required. High or low voltages can adversely affect the electronic components of the instrument.

Environmental requirements

Condition	Acceptable range
Installation site	Indoor use only
Electromagnetic interference	Do not use this device in close proximity to sources of strong electromagnetic radiation (for example, unshielded intentional RF sources). Strong electromagnetic radiation may interfere with the proper operation of the device.
Altitude	Between sea level and 2000 m (6500 ft.) above sea level

Condition	Acceptable range
Operating conditions	• Humidity: 15–80% relative humidity (noncondensing) • Temperature: 15 to 30°C (59 to 86°F) **Note:** For optimal performance, avoid rapid or extreme fluctuations in room temperature.
Storage and transport conditions	• Humidity: 20–80% relative humidity (noncondensing) • Temperature: –30 to 60°C (–22 to 140°F)
Thermal output	During operation, the net thermal output, based on the actual current draw of the instrument, is expected to be approximately 960 W (3275 Btu/h).
Vibration	Ensure that the instrument is not adjacent to strong vibration sources, such as a centrifuge, pump, or compressor. Excessive vibration will affect instrument performance.
Pollution degree	The instrument has a Pollution Degree rating of II. The instrument may only be installed in an environment that has nonconductive pollutants such as dust particles or wood chips. Typical environments with a Pollution Degree II rating are laboratories and sales and commercial areas. The noise output of the instrument is ≤ 55 dB(A) when running.
Other conditions	Ensure the instrument is located away from any vents that could expel particulate material onto the instrument components. Avoid placing the instrument and computer adjacent to heaters, cooling ducts, or in direct sunlight.

Network requirements

The instrument:

- Is factory-configured for IPv4 TCP/IP communication and includes an Ethernet adapter (100/1,000 Mbps) with an RJ45-type connector for integrating the device into a local area network (LAN).
- Can alternatively be configured for wireless networking (High Power USB WiFi Module required, sold separately as an optional accessory).

The instrument can be configured for *either* wired or wireless networking, not both.

If a Thermo Fisher Scientific service representative is to install the instrument:

- If the instrument will be connected to a LAN, an active, tested network jack must be in place before the scheduled installation date.
- A representative from your information technologies department must be available during the installation to help connect the instrument to your network.

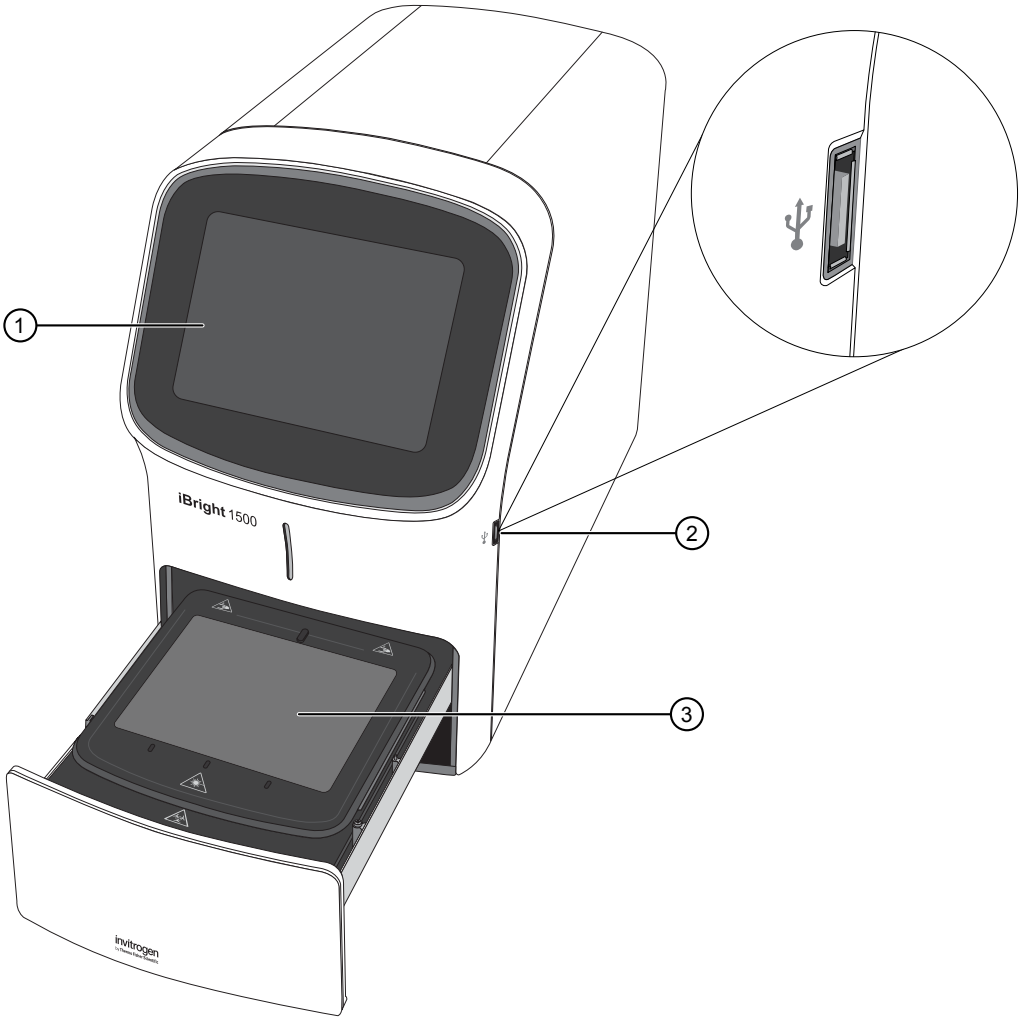
Required materials to network the instrument:

- Wired—Ethernet cable of sufficient length with RJ45 connectors
  - CAT5 cable for a 100 Mbps network connection

  –or–
- Wireless—High Power USB WiFi Module (Cat. No. A26774, sold separately)

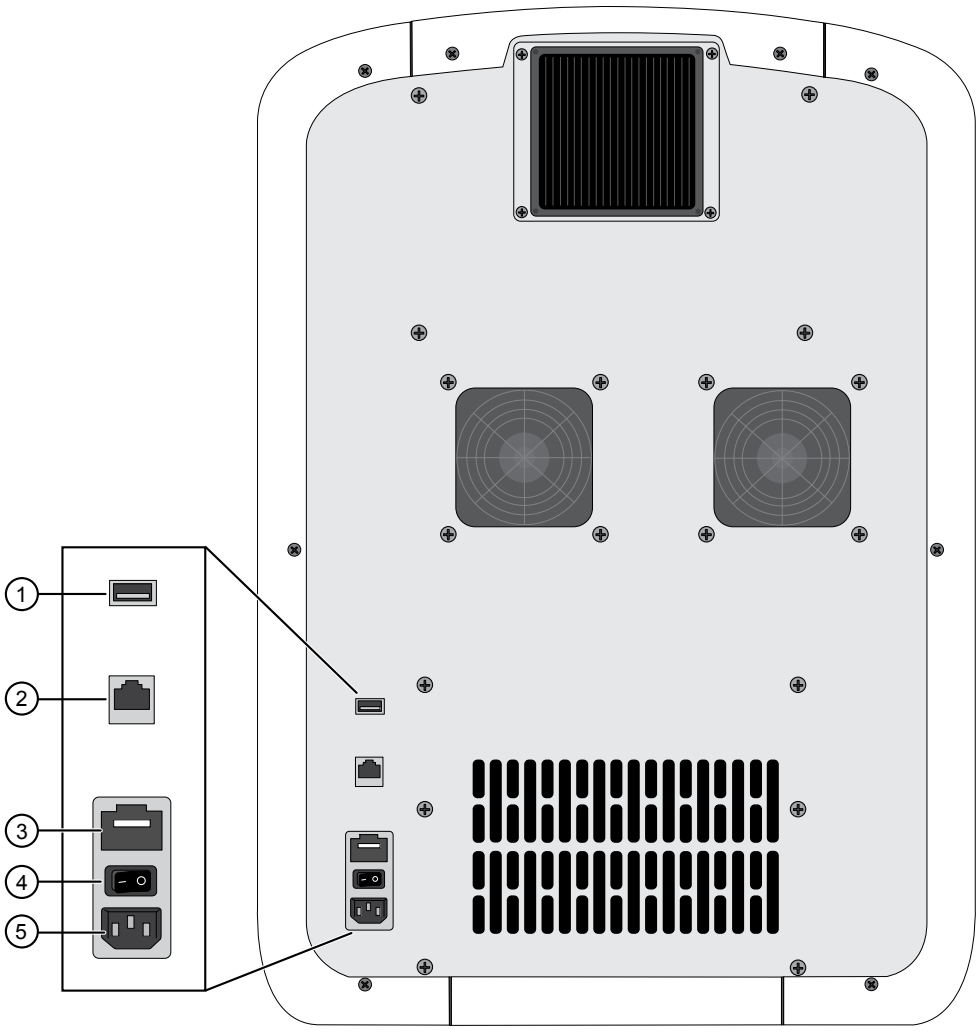
Instrument and computer connections

iBright™ Imager front view



① Touchscreen
② USB port
③ Sample stage/turntable

iBright™ Imager rear view



① USB port
② Ethernet port — RJ45 port for 10/100 Mbps ethernet communication with the instrument
③ Fuse cover
④ Power switch
⑤ Power port — 100-240 VAC

Safety

WARNING! GENERAL SAFETY. Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDSs, see the "Documentation and Support" section in this document.

Symbols on this instrument

Symbols may be found on the instrument to warn against potential hazards or convey important safety information. In this document, the hazard symbol is used along with one of the following user attention words:

- **CAUTION!** – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- **WARNING!** – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **DANGER!** – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

Symbol	English	Français
	Caution, risk of danger Consult the manual for further safety information.	Attention, risque de danger Consulter le manuel pour d'autres renseignements de sécurité.

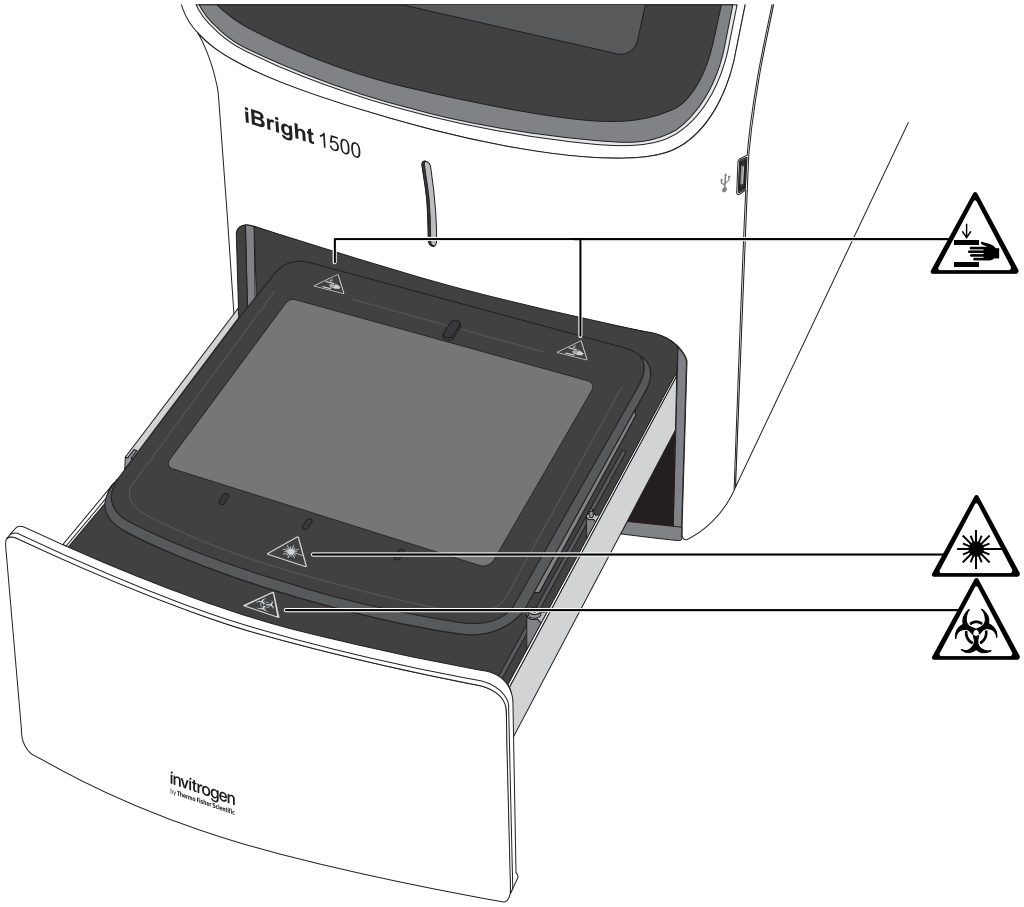
Symbol	English	Français
	Protective conductor terminal (main ground)	Borne de conducteur de protection (mise à la terre principale)
	Do not dispose of this product in unsorted municipal waste  **CAUTION!** To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.	Ne pas éliminer ce produit avec les déchets usuels non soumis au tri sélectif.  **MISE EN GARDE !** Pour minimiser les conséquences négatives sur l'environnement à la suite de l'élimination de déchets électroniques, ne pas éliminer ce déchet électronique avec les déchets usuels non soumis au tri sélectif. Se conformer aux ordonnances locales sur les déchets municipaux pour les dispositions d'élimination et communiquer avec le service à la clientèle pour des renseignements sur les options d'élimination responsable.

Safety alerts on this instrument

Additional text may be used with one of the symbols described above when more specific information is needed to avoid exposure to a hazard. See the following table for safety alerts found on the instrument.

English	Français
 **CAUTION! Hazardous chemicals.** Read the Safety Data Sheets (SDSs) before handling.	 **MISE EN GARDE ! Produits chimiques dangereux.** Lire les fiches signalétiques (FS) avant de manipuler les produits.
 **CAUTION! Hazardous waste.** Refer to SDS(s) and local regulations for handling and disposal.	 **MISE EN GARDE ! Déchets dangereux.** Lire les fiches signalétiques (FS) et la réglementation locale associées à la manipulation et à l'élimination des déchets.

Location of safety labels on the instrument



Safety information for instruments not manufactured by Thermo Fisher Scientific

Some of the accessories provided as part of the instrument system are not designed or built by Thermo Fisher Scientific. Consult the manufacturer's documentation for the information needed for the safe use of these products.

Instrument safety

General

CAUTION! Do not remove instrument protective covers. If you remove the protective instrument panels or disable interlock devices, you may be exposed to serious hazards including, but not limited to, severe electrical shock, laser exposure, crushing, or chemical exposure.

Physical injury

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

LED (Light-Emitting Diode)

CAUTION! LED (light-emitting diode) HAZARD. Removing the protective covers and (when applicable) defeating the interlock(s) may result in exposure to the internal LED. LEDs can burn the retina, causing permanent blind spots. To ensure safe LED operation:

- Never look directly into the light beam.
- Wear proper eye protection and post a warning sign at the entrance to the laboratory if the LED protection is defeated for servicing
- Remove jewelry and other items that can reflect a light beam into your eyes or those of others
- 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.

Electrical safety

WARNING! Ensure appropriate electrical supply. For safe operation of the instrument:

- Plug the system into a properly grounded receptacle with adequate current capacity.
- Ensure the electrical supply is of suitable voltage.
- Never operate the instrument with the ground disconnected. Grounding continuity is required for safe operation of the instrument.

WARNING! Power Supply Line Cords. Use properly configured and approved line cords for the power supply in your facility.

WARNING! Disconnecting Power. To fully disconnect power either detach or unplug the power cord, positioning the instrument such that the power cord is accessible.

Cleaning and decontamination

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.

Instrument component and accessory disposal

To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety and electromagnetic compatibility (EMC) standards

The instrument design and manufacture complies with the following standards and requirements for safety and electromagnetic compatibility.

Safety compliance

Reference	Description
EU Directive 2014/35/EU	European Union "Low Voltage Directive"
IEC 61010-1 EN 61010-1 UL 61010-1 CAN/CSA C22.2 No. 61010-1	*Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
IEC 61010-2-081 EN 61010-2-081	*Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes*
IEC 62471-1:2007	Photobiological safety of lamps and lamp systems
EN 62471-1:2007	

EMC

Reference	Description
Directive 2014/30/EU	European Union "EMC Directive"
IEC 61326-1	*Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 1: General Requirements*
EN 61326-1	
AS/NZS 2064	*Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radiofrequency Equipment*
ICES-001, Issue 4	*Industrial, Scientific and Medical (ISM) Radio Frequency Generators*
FCC Part 15 Subpart B (47 CFR)	*U.S. Standard Radio Frequency Devices*

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 design

Reference	Description
EU Directive 2012/19/EU	European Union "WEEE Directive"—Waste electrical and electronic equipment
EU Directive 2011/65/EU	European Union "RoHS Directive"—Restriction of hazardous substances in electrical and electronic equipment
EU Directive 2006/66/EC	European Union "Battery Directive"
GB/T 26572-2011	Requirements of concentration limits for certain restricted substances in electrical and electronic products
SJ/T 11364-2014	Marking for the restricted use of hazardous substances in electronic and electrical products

产品中有害物质的名称及含量
China EEP Hazardous Substances Information

部件名称 Component Name	iBright™ CL1000 Instrument iBright™ FL1000 Instrument					
	有害物质 Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电路板 PCBA's	X	O	O	O	O	O
电源供应器 Power Supply	X	O	O	O	O	O
电机组件 Electromechanical Assemblies	X	O	O	O	O	O

本表格依据 SJ/T11364 的规定编制 This table is compiled according to SJ/T 11364 standard.

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T26572 规定的限量要求以下.

Indicates that the concentration of the hazardous substance in all homogeneous materials for the part is below the relevant threshold of the GB/T 26572 standard.

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 规定的限量要.

Indicates that the concentration of the hazardous substance in at least one homogenous material of the part is above the relevant threshold of the GB/T 26572 standard.

Chemical safety

WARNING! GENERAL CHEMICAL HANDLING. To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- 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. To obtain SDSs, see the "Documentation and Support" section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of 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.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the 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.

Biological hazard safety

WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, 5th Edition, HHS Publication No. (CDC) 21-1112, Revised December 2009; found at:
  https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf
- World Health Organization, *Laboratory Biosafety Manual*, 3rd Edition, WHO/CDS/CSR/LYO/2004.11; found at:
  www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf

Documentation and support

Related documentation

Document	Publication number	Description
iBright™ Imaging Systems Documentation	100085109	Provides instructions for obtaining service and technical support for the iBright™ Imaging Systems.
iBright™ Imaging Systems Quick Reference	100085108	Provides basic instructions for performing imaging with the iBright™ Imaging Systems.

Customer and technical support

Visit **thermofisher.com/support** for the latest service and support information.

- Worldwide contact telephone numbers
- Product support information
  - Product FAQs
  - Software, patches, and updates
  - Training for many applications and instruments
- Order and web support
- Product documentation
  - User guides, manuals, and protocols
  - Certificates of Analysis
  - Safety Data Sheets (SDSs; also known as MSDSs)

    Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.