The top half of the page features an abstract background composed of numerous overlapping, semi-transparent blue triangles and polygons of various sizes and shades, creating a complex, crystalline pattern. This pattern transitions into a solid white background at the bottom.

Installation and Setup Guide
020-103456-05

Christie CounterAct

CHRISTIE®

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Introduction

This manual is intended for professional UV installers. Read, follow, and save these instructions.

Model names

Christie CounterAct consists of the following models:

- Christie CounterAct CA20-AC
- Christie CounterAct CA20-AU

Product documentation

For installation, setup, and user information, see the product documentation available on the Christie website. Read all instructions before using this product.

1. Access the documentation from the Christie website:
 - Go to this URL: <https://bit.ly/3nuRiMG> or <https://www.christiedigital.com/products/uvc-disinfection/counteract/>.
 - Scan the QR code using a QR code reader app on a smartphone or tablet.



2. On the product page, select the model and switch to the **Downloads** tab.

Related documentation

Additional information on this product is available in the following documents.



With the exception of lamp replacements, this product is not serviceable in the field and must be sent back to Christie if servicing is required.

- *CounterAct Product Safety Guide (P/N: 020-103455-XX)*
- *CounterAct User Guide (P/N: 020-103457-XX)*

Important safeguards

To prevent personal injury and to protect the device from damage, read and follow these safety precautions.

Disclaimer

Product effectiveness and safety of UV radiation (even within the range specified by the American Conference of Governmental Industrial Hygienists (ACGIH) or any other standard) are not guaranteed.

Christie will have no liability for the following:

- Discomfort on the skin, eyes, hair, and any other part of the human body arising from or relating to the product
- Degradation, fading, damage, or any other changes to, or impact on, personal property including, without limitation, surfaces, finishes, and fabrics, arising from or relating to the product.

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Safety and warning guidelines

Read all safety and warning guidelines before installing or operating the device.

This product must be operated in an environment that meets the operating range specification. Use only the attachments and/or accessories recommended by Christie. Use of others may result in the risk of fire, shock, excessive UV exposure, or personal injury.

CounterAct is a regulated pesticide device. The United States Environmental Protection Agency (EPA) regulates pesticide devices under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). EPA Establishment Numbers are noted on the label.

Any references to disinfection and disinfecting are referring generally to the reduction of pathogenic bioburden and are not intended to refer to any specific definition of the term as may be used for other purposes by the U.S. Food and Drug Administration or the U.S. Environmental Protection Agency.

The CounterAct device can produce small amounts of ozone during regular operation. When designing the system, local regulations must be reviewed to ensure system compliance given the volume of the space, characteristics of ventilation, access, and other factors.

The device may be used when humans are present but it is not intended to be used on humans, to treat human disease, or otherwise be used as a medical device. Do not use the device for other than the intended use.



Warning! If not avoided, the following could result in death or serious injury.

- The pathogen-reducing efficacy of Christie CounterAct products with patented Care222 technology and their use in occupied spaces is dependent on proper installation and operational specifications, in accordance with American Conference of Governmental Industrial Hygienists (ACGIH) guidelines.
- UV-C HAZARD! UV-C emitted from this product. Avoid eye and skin exposure to the unshielded product. Follow all installation and operation instructions.
- Christie CounterAct products with patented Care222 technology are not for use as or for medical devices.
- UV EXPOSURE! Use care to avoid exposure when using a fixture for demonstration, fault investigation, configuration, or other types of activities where the fixture is not installed in a ceiling meeting the minimum height requirements of 6.7 m (22 feet) in single lamp mode and 8.5 m (28 feet) in dual lamp mode.



Caution! If not avoided, the following could result in minor or moderate injury.

- **UV RADIATION HAZARD!** This equipment is designed for use with germicidal lamps or UV sources and must be installed in compliance with competent technical directions and manufacturer's site planning recommendations to prevent the user's eyes and bare skin from exposure to harmful UV or optical radiation. Recommendations include the relative location of each UV-generating device, the minimum distances between the devices and other objects or surfaces, and protection from line-of-sight exposure to UV radiation in occupied spaces located above the equipment mounting area (for example, upper floor balconies, open staircases, and so on).
- **UV-C OR OPTICAL RADIATION HAZARD!** The installer must conduct an assessment of irradiance or illuminance levels in the surrounding occupied space prior to occupancy to ensure people will not be exposed to excessive UV or optical radiation during operation of the device.
- **UV-C OR OPTICAL RADIATION HAZARD!** Follow the manufacturer's recommendations for selecting appropriate ceiling and wall finishes as UV and optical radiation can be reflected by surrounding surfaces such as ceilings and walls and reflective properties of surfaces can vary widely.
- Mount the product in locations and at heights not readily subjected to tampering by unauthorized personnel.
- Do not install this product in a dwelling.



Notice. If not avoided, the following could result in property damage.

- This telecommunication equipment complies with international standards or technical requirements—NBTC.

เครื่องโทรคมนาคมและอุปกรณ์นี้มีความสอดคล้อง
ตามมาตรฐานหรือข้อกำหนดทางเทคนิคของ -
กสทช.

- This equipment is not entitled to protection against harmful interference and may not cause interference in properly authorized systems. For more information, see ANATEL's website www.anatel.gov.br.

Patented Care222 UV lamp safety precautions

Read all safety and warning guidelines before handling the patented Care222 UV lamp.



Warning! If not avoided, the following could result in death or serious injury.

- **PERSONAL INJURY HAZARD!** Eye damage may result from directly viewing the light produced by the lamp in this product. Always turn off the lamp before performing maintenance or service.



Caution! If not avoided, the following could result in minor or moderate injury.

- HOT SURFACE HAZARD! Do not touch the lamp module during operation.
- HOT SURFACE HAZARD! Allow lamp sufficient time to cool before handling.
- SHOCK HAZARD! Always turn off power before performing lamp module maintenance.
- FIRE HAZARD! Keep all flammable items, such as paper or cloth, away from the lamp module.
- Use protective eye wear and gloves when handling the lamp module.
- Do not drop, hit, use force, or scratch the lamp module.
- Do not disassemble or modify the lamp module.
- Use only mercury-free, excimer lamps (UXFL70-222B4-UIA) sold by Christie (P/N: 003-121997-XX).

Service and maintenance guidelines

Read all safety and warning guidelines before maintaining or servicing the device.



Warning! If not avoided, the following could result in death or serious injury.

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- PERSONAL INJURY HAZARD! Eye damage may result from directly viewing the light produced by the lamp in this product. Always turn off the lamp before performing maintenance or service.
- ELECTRICAL and BURN HAZARD! Use caution when accessing internal components.
- PERSONAL INJURY HAZARD! Use caution when servicing the lamp to avoid the risk of personal injury.



Caution! If not avoided, the following could result in minor or moderate injury.

- Always connect the ground or earth first to reduce shock hazard.
- This Christie product must be serviced by Christie qualified technicians.

Low-power radio frequency warnings

The following warnings refers to radio communication operated according to the provisions of the Telecommunications Administration law for Taiwan only. Low power radio frequency devices must endure the interference of legal communications or industrial, scientific, and medical wave radiation electrical devices.

Technical characteristics of Bluetooth radio access equipment (fixed luminaire (UV-C Fixture (BLE)):

- Frequency range: 2400-2483.5 MHz
- Maximum output power of the transmitter: dBm: 10.0



Caution! If not avoided, the following could result in minor or moderate injury.

- For certified low-power radio frequency devices, do not change the frequency, increase the power, or change the characteristics and functions of the original design without approval.
- Using low-power radio frequency devices must not affect flight safety or interfere with legal communications. If interference is found, stop using the device immediately and before continuing use, modify so no interference occurs.

Product labels

Learn about the labels that may be used on the product. Labels on your product may be yellow or black and white.

General hazards

Hazard warnings also apply to accessories once they are installed in a Christie product that is connected to power.

Fire and Shock Hazard



To prevent fire or shock hazards, do not expose this product to rain or moisture.
Do not alter the power plug, overload the power outlet, or use it with extension cords.
Do not remove the product enclosure.
Only Christie qualified technicians are authorized to service the product.

Electrical Hazard



Risk of electric shock.
Do not remove the product enclosure.
Only Christie qualified technicians are authorized to service the product.



Warning! If not avoided, the following could result in death or serious injury.



Electric shock hazard. To avoid personal injury, disconnect all power sources before performing maintenance or service.



Electrocution hazard. To avoid personal injury, always disconnect all power sources before performing maintenance or service procedures.



Harmful ozone hazard. To avoid personal injury, follow installation and operating instructions.



UV-C hazard. To avoid eye or skin exposure to unshielded product, follow installation and operating instructions.

- (a) 眼の痛み又は視力障害の原因となるため、点灯中のランプや反射光を直接肉眼で見ない
- (b) 皮膚の炎症又は日焼けをおこす原因となるため、点灯中のランプからの紫外放射（殺菌線）を皮膚に直接又は間接に当てない



Caution! If not avoided, the following could result in minor or moderate injury.



Hot surface hazard. To avoid personal injury, allow the product to cool for the recommended cool down time before touching or handling for maintenance or service.



Notice. If not avoided, the following could result in property damage.



General hazard.

Mandatory action



Caution! If not avoided, the following could result in minor or moderate injury.



SHOCK HAZARD! Disconnect all power sources before performing maintenance or service procedures.



Consult the service manual.

Electrical labels



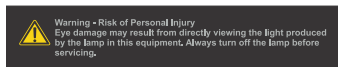
Indicates the presence of an earth ground.

Additional safety hazards



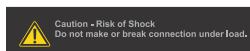
Caution - Risk of Personal Injury

Personal injury may result if the equipment is installed in a dwelling. Do not install the equipment in a dwelling.



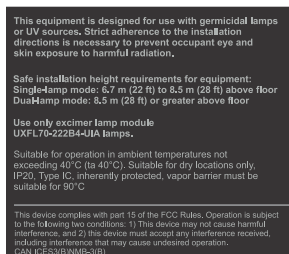
Warning - Risk of Personal Injury

Eye damage may result from directly viewing the light produced by the lamp in this equipment. Always turn off the lamp before performing service.



Warning - Risk of Shock

Shock hazard may result if a connection is made or broken while under load.

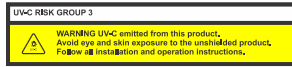


This equipment is designed for use with germicidal lamps or UV sources and must be installed in compliance with competent technical directions to prevent the user's eyes and bare skin from exposure to harmful UV or optical radiation.

Requirements for safe installation and operation of the product are the following:

- Single-lamp mode: 6.7 m (22 feet) to 8.5 m (28 feet) above the floor
- Dual-lamp mode: 8.5 m (28 feet) or greater above the floor
- Suitable for operation in ambient temperatures not exceeding 40°C (104°F)

- Suitable for dry locations IP20
- Use only mercury-free, excimer lamps (UXFL70-222B4-UIA) sold by Christie (P/N: 003-121997-XX).



LAMP (RISK GROUP 3) UV-C HAZARD! To avoid eye or skin exposure to the unshielded lamp, follow installation and operating instructions. Once the lamp is integrated into Christie CounterAct and installed according to this guide, Christie CounterAct performs according to Risk Group Exempt levels.

Christie CounterAct overview

Christie CounterAct is a commercial UV disinfection fixture containing Ushio Inc.'s patented Care222® lamps that emit far-UVC 222nm light, shown to significantly reduce surface pathogens in occupied and unoccupied indoor spaces. Care222® is based on far-UVC germicidal technology that may also be used around people and it is the only product with a proprietary filter that prevents longer UVC wavelengths from being emitted.

The Christie CounterAct fixtures are installed in the ceiling throughout a space. The light spreads out in a fixed cone size. Therefore as the ceiling height increases or decreases the output power must be adjusted up or down respectively. The lamps cannot be dimmed and are only capable of being in the fully on or off state. Operating modes for Christie CounterAct comply with the UV Threshold Limit Values (TLV) outlined by the American Conference of Governmental Industrial Hygienists (ACGIH). The TLV is measured as a time-weighted average for a conventional eight-hour workday.

Key features

Understand the important features of Christie CounterAct.

- Ushio Care222® B1 lamp module
- BLE Mesh communication technology
- Android control application
- Central power coupler for easy servicing
- Three-finger hold design for single-handed service
- Flexible power input options
- LED status indicator

Technical support

Technical support for Christie Cinema products is available at:

- Support.cinema@christiedigital.com
- +1-877-334-4267
- Christie Professional Services: +1-800-550-3061 or NOC@christiedigital.com

Technical support for Christie Enterprise products is available at:

- North and South America: +1-800-221-8025 or *Support.Americas@christiedigital.com*
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Installation and setup

Learn how to plan, install, and setup Christie CounterAct.

Site requirements

To safely install and operate Christie CounterAct, the installation location must meet these minimum requirements.

Physical operating environment

Item	Requirement
Operating environment	
Ambient temperature	0°C to 40°C (32°F to 104°F)
Ambient humidity	10 to 85% relative humidity (non-condensing)
Altitude	0 to 2000 meters (6550 feet)
Non-operating environment	
Ambient temperature	-10 to 60°C (14 to 140°F)
Ambient humidity	10 to 90% relative humidity

Power requirements

Learn the power requirements for Christie CounterAct.

Parameter	Requirement
AC input—UL version	
Rated voltage	Input 1: 120 VAC, single-phase Input 2: 100-120 VAC, single-phase
Frequency	Input 1: 60Hz Input 2: 50/60 Hz
Rated current	Input 1: 0.5 A maximum Input 2: 0.5 A maximum
Maximum power draw	Input 1: 45 W Input 2: 45 W
AC input—UL Japan version	
Rated voltage	100-120 VAC, single-phase
Frequency	50/60 Hz

Parameter	Requirement
Rated current	0.3 A typical
Typical power draw	30 W
AC input—CE version	
Rated voltage	220-240 VAC, single-phase
Frequency	50/60 Hz
Rated current	0.23 A maximum
Maximum power draw	45 W

Tools and components required

The following tools are required to install Christie CounterAct.

Tools required

- Phillips screwdriver
- Magnetic screwdriver (provided with the product)
- 2.5 hex key
- T20 Torx tamper-proof screwdriver
- Drill
- Hammer
- Level
- Tape measure
- Ceiling and ceiling tile cutter
- Pencil
- UIT240 light meter for 222NM

Components required

- Load wires
- Self-drilling screws ST4.2X25 (ISO 15481-1999)
- 12.7 mm (1/2 inch) flexible metal conduit and fitting or cable gland



Safe access to the ceiling is required.

Optional accessories

The following accessories are available for Christie CounterAct:

- IEC cable (P/N: XXX-XXXXXX-XX)

The IEC cable allows you to connect power to the device using a regular IEC power cable like what you find on your desktop computer. The IEC cable must be installed according to local building regulations and codes. A certified electrician may be required.



Warning! If not avoided, the following could result in death or serious injury.

- **UV EXPOSURE!** Use care to avoid exposure when using a fixture for demonstration, fault investigation, configuration, or other types of activities where the fixture is not installed in a ceiling meeting the minimum height requirements of 6.7 m (22 feet) in single lamp mode and 8.5 m (28 feet) in dual lamp mode.

Use only the attachments and/or accessories recommended by Christie. Use of others may result in the risk of fire, shock, excessive UV exposure, or personal injury.

Tablet recommendations for CounterAct Configure

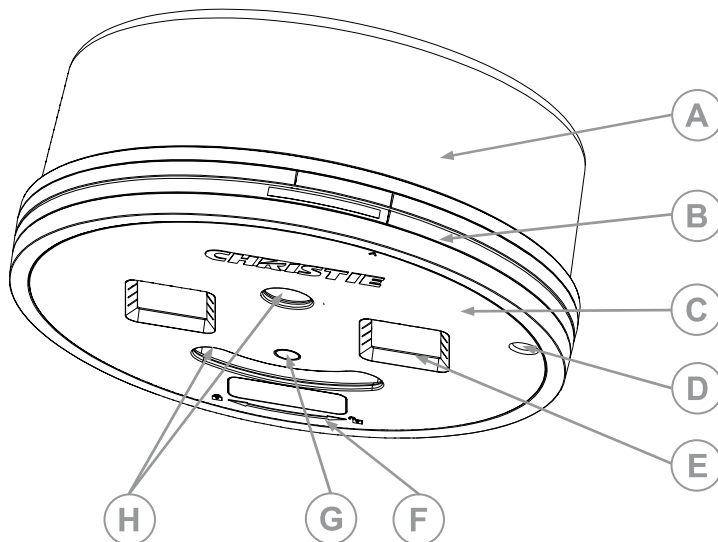
The Christie CounterAct application must be configured using at least one of the following tablets: Samsung Galaxy™ Tab A 8" or Galaxy™ Tab A 10.1".

Getting to know your device

Understand the main components of Christie CounterAct and how to insert and remove the disinfecting module. before you begin your installation

Product components

Identify the main components of Christie CounterAct.



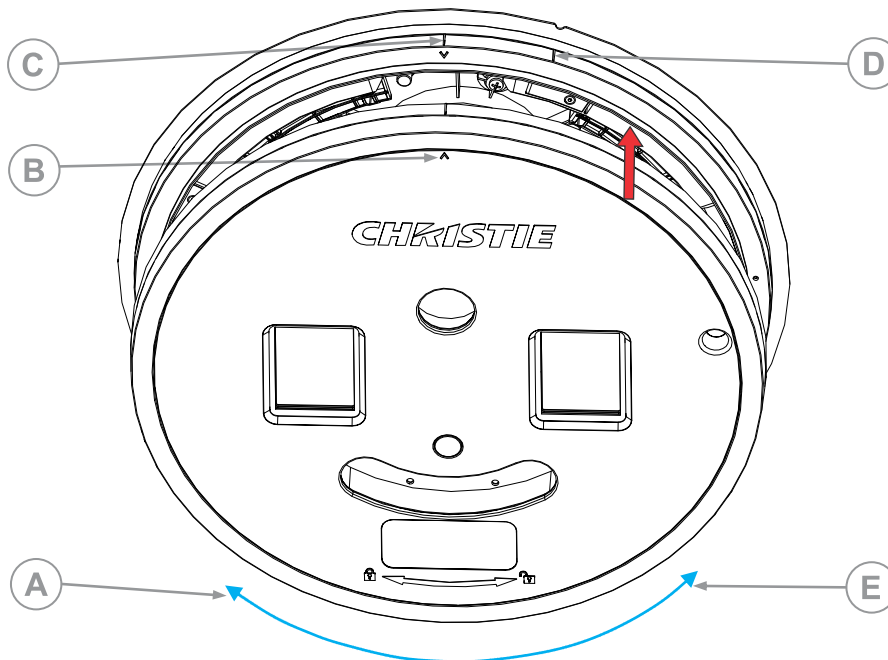
ID	Component	Description
A	Receiver box	Provides electrical power and a quick mounting interface to the disinfecting module.

ID	Component	Description
B	LED status indicator	<i>Indicates the status of the fixture (on page 40).</i>
C	Disinfecting module	Contains the ultraviolet lamps modules.
D	Locking pin access	Secures the disinfecting module to the receiver box.
E	Ultraviolet lamp module	Emits far-UVC 222nm light to reduce pathogens.
F	Locking/unlocking indicator	Indicates the locking and unlocking rotation direction for the disinfecting module.
G	Multi-function button	Provides three functions: <ul style="list-style-type: none"> • Switches to Standby mode from current operational mode if pressed less than 5 seconds. • Turns on the LED status indicator (blinking green three times) if pressed for more than 5 seconds and less than 10 seconds. This functionality is the same as the Identify device function, even though the fixture is in Stealth mode. • Performs a factory reset and pairing if pressed for longer than 10 seconds within five minutes after start up.
H	Three-finger hold holes	Provides hand holds to mount the disinfecting module to the receiver box.

Inserting the disinfecting module in the receiver box

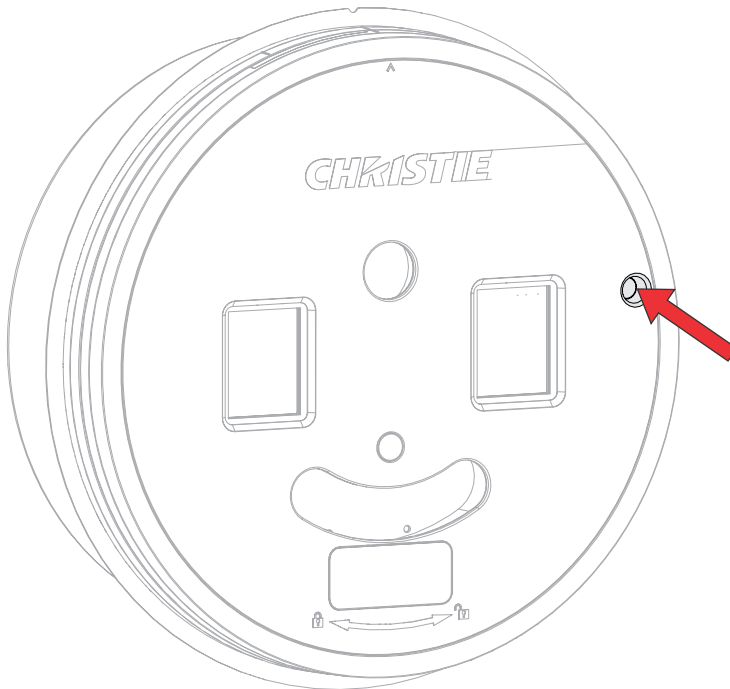
Insert the disinfecting module in the receiver box and lock the fixture in position.

1. Place the disinfecting module in the receiver box by aligning the slots on the side of the receiver box and the disinfecting module.
2. Hold the disinfecting module and turn the disinfecting module clockwise to engage.



- A Lock
- B Align line
- C Start line
- D Lock line
- E Unlock

3. Insert the magnetic driver in the locking hole and rotate the locking pin clockwise to set in the locked position.

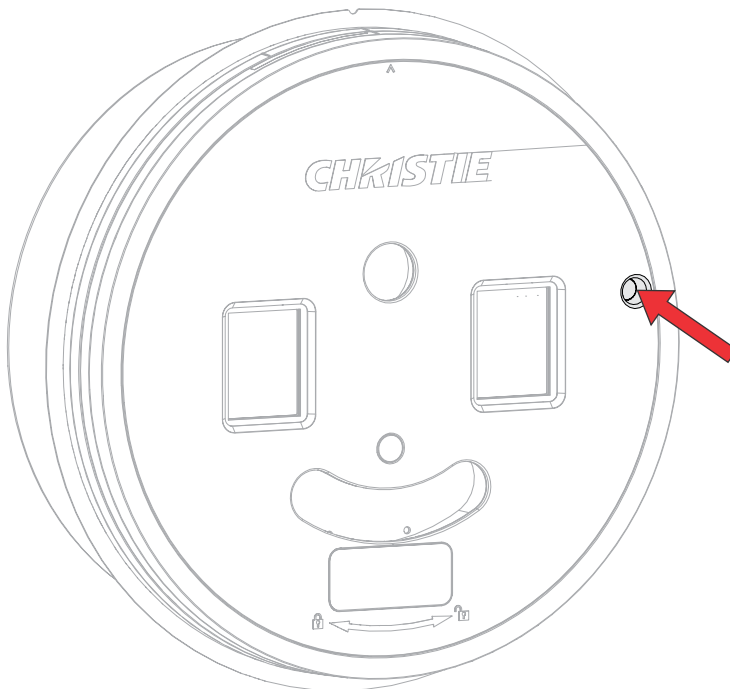


4. Once the locking pin is engaged, check to ensure you cannot rotate the disinfecting module counterclockwise and remove it.

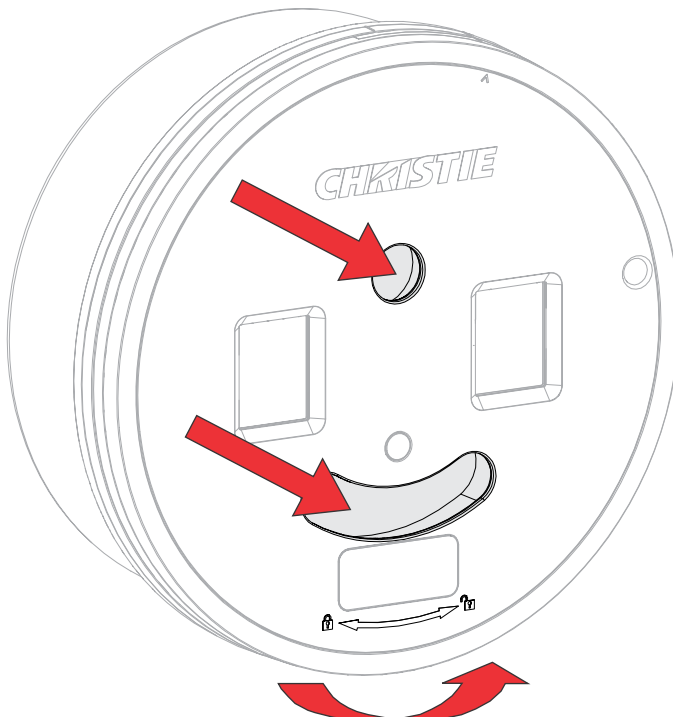
Removing the disinfecting module from the receiver box

Remove the disinfecting module from the receiver box to replace lamps.

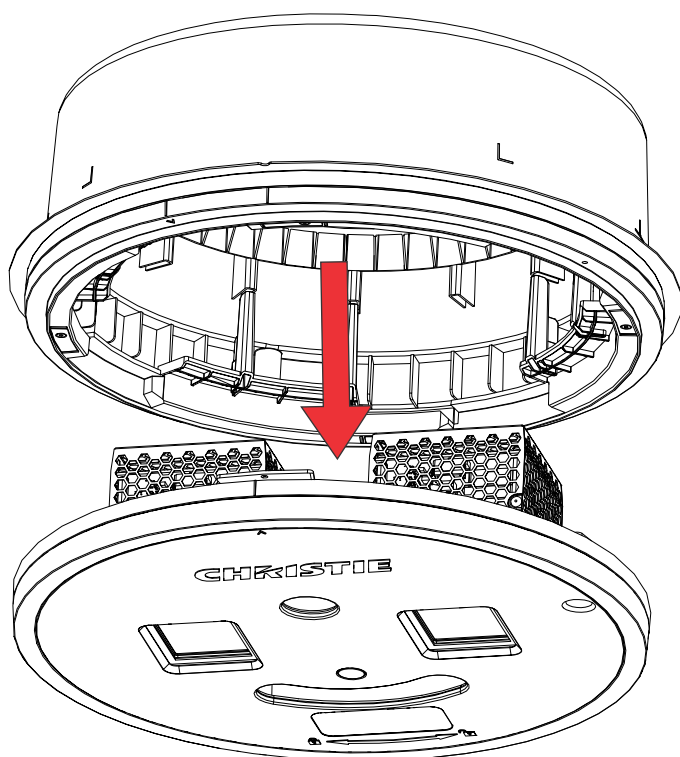
1. Disable power to the system.
2. Insert the magnetic driver in the locking hole and turn the locking pin counterclockwise to release it.



3. Hold the disinfected module and turn the disinfected module counterclockwise (20° rotation) to disengage it from the receiver box.



4. Remove the disinfected module from the receiver box by pulling the module straight down (assuming the receiver box is mounted flush with the ceiling).



Workflow: Installing and setting up Christie CounterAct

Identify the recommended order for installing and setting up the components of the Christie CounterAct system.

1. *Plan the layout and power for the site* (on page 21).
2. *Download and install the CounterAct application* (on page 23) on a tablet.
3. *Log into the CounterAct application* (on page 23).
When the application is first installed, it prompts you to create three accounts (installer, administrator, and user).
4. Determine if you want to add the fixtures to the room before or after installation.
 - **Before mounting in ceiling**—*Configure each fixture at ground level* (on page 41) prior to physically mounting the fixture in the ceiling. Adding one fixture at a time avoids confusion between fixtures.
 - **After mounting in the ceiling**—Configure each fixture after physically mounting the receiver boxes and modules in the ceiling. (later in step 8c).
5. Ensure the power is turned off at the source breaker.
6. Install the CounterAct receiver boxes.
 - a) *Connect to power* (on page 24).
 - b) For pendant and ceiling surface mounting, *remove the metal casing* (on page 26).

- c) *Mount the receiver boxes in the ceiling and install the disinfecting modules in the receiver boxes (on page 27).*
7. Turn on power at the source breaker.
When the disinfecting modules are inserted in the receiver box and power is on at the source, the modules are automatically powered on and start flashing red indicating the modules are not connected to a network.
8. In the CounterAct application:
 - a) *Log into the CounterAct application (on page 23).*
 - b) *Create a room (on page 41).*
 - c) *Add the fixtures to the room (on page 41).*
 - d) *Register the fixtures (on page 43).*
 - e) *Configure the scheduler (on page 44) to determine when you want disinfection to occur.*
9. When all the fixtures are installed, configured, and turned on, run the fixtures in Disinfection mode and using a meter, *verify the optical power output (on page 44) are below the ACGIH Risk Group Exempt levels for the space.*
When Disinfection mode is not on, the fixture is in Standby mode (LED indicator ring is solid green unless configured for Stealth mode).

Planning the layout and power of the site

Planning the site can help determine the installation position and power to help facilitate pairing and configuration work.

Christie strongly recommends planning out the site before arriving at the site for installation.

1. Select the appropriate ceiling and wall finishes.
UV and optical radiation can be reflected by surrounding surfaces such as ceilings and walls. As the reflective properties of surfaces can vary widely, follow the manufacturer's recommendations for selecting appropriate ceiling and wall finishes.
2. Make a plan of the installation position for each fixture.
For example, the site plan should show the planned location of all the fixtures.
3. Make a plan for the power to be used at the site.

Planning the installation height

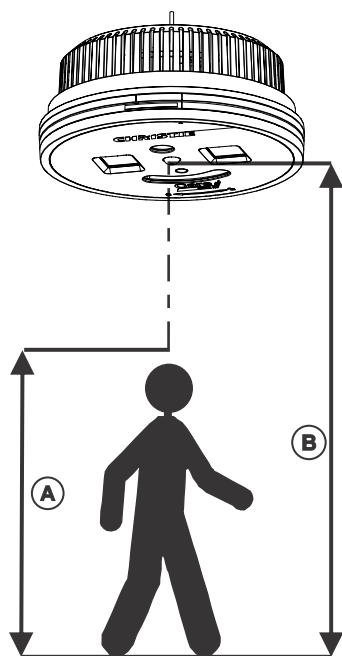
Plan the installation height for Christie CounterAct.

The mode lamp mode the fixture will be run in depends on the installation height:

- Installed in a ceiling with a minimum height of 6.7 m (22 feet) to 8.5 m (28 feet)—Single-lamp mode
- Installed in a ceiling with a minimum height of 8.5 m (28 feet)—Dual-lamp mode



Below 6.7 m (22 feet) this model of the fixture should not be used. Contact Christie Sales for options suitable for installation in ceilings below 6.7 m (22 feet).



#	Description	Single-lamp mode	Dual-lamp mode
A	Distance above the floor which the power measurements must be below 0.76uW/cm ²	2.1 m (7 feet)	2.1 m (7 feet)
B	Installation height of the Christie CounterAct fixture	6.7 m (22 feet) to 8.5 m (28 feet)	8.5 m (28 feet) or greater

Setting the lamp mode

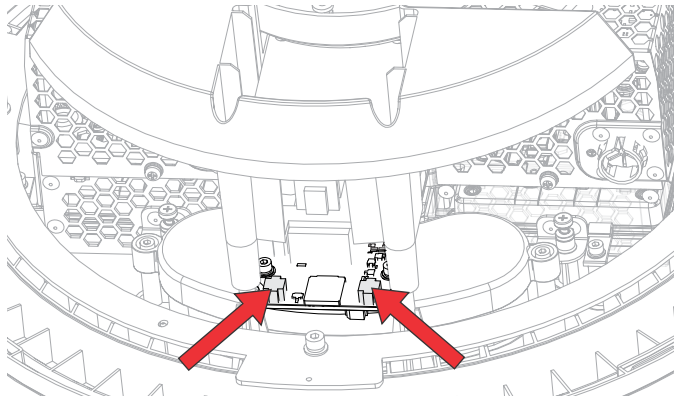
Christie CounterAct is equipped with two Care222 B1 lamp modules and can operate in single-lamp or dual-lamp mode.



Caution! If not avoided, the following could result in minor or moderate injury.

- This procedure must be performed by a qualified installer.
- Single-lamp mode—Runs one lamp at a time when disinfecting and intelligently equalizes the operating hours for the two lamp modules. Christie CounterAct must be installed in a ceiling with a minimum height of 6.7 m (22 feet) to 8.5 m (28 feet).
The estimated time between lamp change activities is double when operating in single lamp mode in comparison to dual lamp mode.
- Dual-lamp mode—Runs both lamps when disinfecting. Christie CounterAct must be installed in a ceiling with a minimum height of 8.5 m (28 feet).

To ensure safety redundant circuitry exists, Christie CounterAct has two lamp mode switches. The following image shows the position of the switches (on the reverse side of the Care222 label).



1. To operate Christie CounterAct in single-lamp mode, move both lamp mode switches to the 1L position.
2. To operate Christie CounterAct in dual-lamp mode, move both lamp mode switches to the 2L position.

CounterAct Configure automatically adapts with the setting of the Disinfection mode.

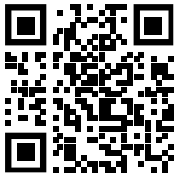


You cannot position one lamp mode switch in the 1L position and the other in the 2L position. The software displays a **Lamp Setting error**.

Installing CounterAct Configure™

Use the CounterAct Configure application to pair and configure fixtures, track operating hours and status, set a disinfection schedule, and manually turn fixtures on and off.

1. On the tablet, navigate to <https://www.christiedigital.com/uv-app> or



2. Download the CounterAct Configure application to the tablet.
The download file is a zip file containing the apk file (Android install file), .bin file (MCU firmware), and .gbl file (Bluetooth module).
3. Unzip the download file onto the tablet.
4. Navigate to the location on the tablet where extracted files are stored.
5. Run the **.apk** file to install the application.

If you have not already authorized Android to install apps from this file location, you must do so before the installation can proceed.

Logging into CounterAct Configure

Log into the CounterAct Configure application to manage the room and fixtures.

1. Open the CounterAct Configure application.
2. Select **Register**.
3. Enter the account: installer, user, administrator.
4. Enter the password.
5. Select **Login**.

Logging off the CounterAct Configure application

Log off CounterAct Configure when work in the application is complete.

1. From the homepage, select **Setting > Account**.
2. Select **Log out**.

Connecting to power

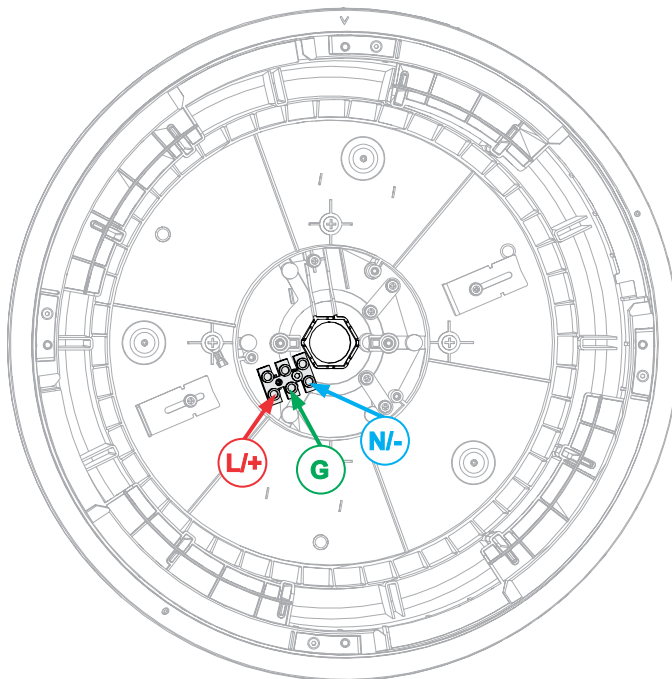
The receiver box must be connected to power using a hard-wired connection. As per local codes and regulations, install either a cable gland or metal conduit fitting.

The fixture comes with a pre-installed cable gland and cable. If connecting the device to a conduit, remove the cable gland and pre-installed power cable and directly wire the AC power to the terminal block.



Christie CounterAct requires a permanent AC connection to operate.

The following illustrates the wiring connections required for AC inputs.

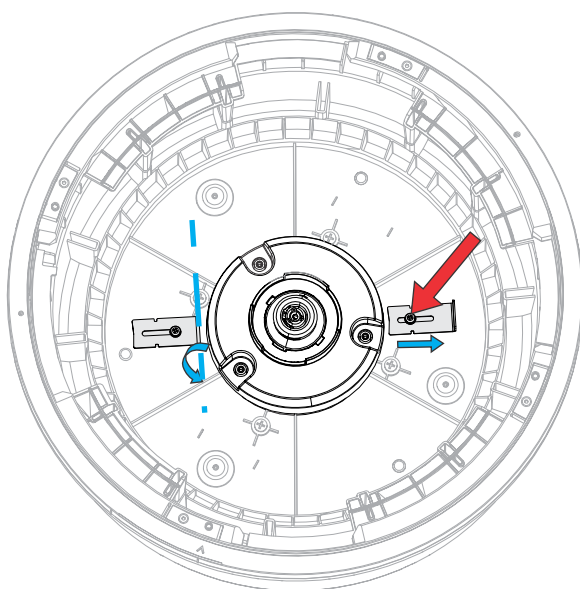


#	AC input
L/+	Live/Line
G	Ground/Earth
N/-	Neutral

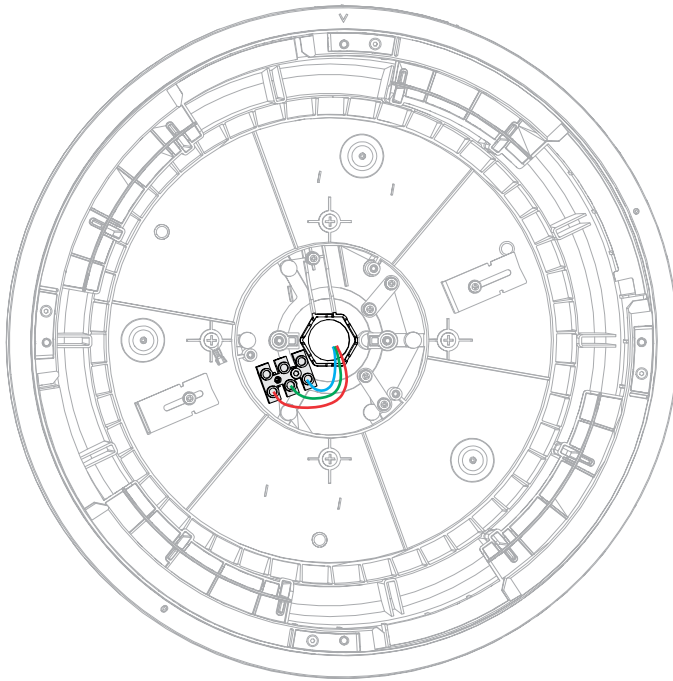
For the UL version, if the pre-installed power cable must be removed, perform the following steps.

For the CE version, no pre-installed power cable is supplied and perform the following steps to connect the power.

1. *Remove the disinfecting module from the receiver box* (on page 18) to access the power coupler on the receiver box.
2. Loosen the screw and move the metal clip toward the outer ring.



3. Open the connector housing to access the power terminal block.
4. For the UL version, remove the pre-installed power cable, if necessary.
For the CE version, no pre-installed power cable is supplied.
5. Install either the cable gland or the metal conduit fitting as per the appropriate country's regulations.
 - Cable gland—Cable outer diameter must be greater than 6 mm (0.23 inches) and less than 12 mm (0.47 inches)
 - Metal conduit fitting—12.7 mm (1/2 inch), flexible
6. Put the bare ends of the wires into the terminals of the socket.
7. Tighten the three terminal screws.

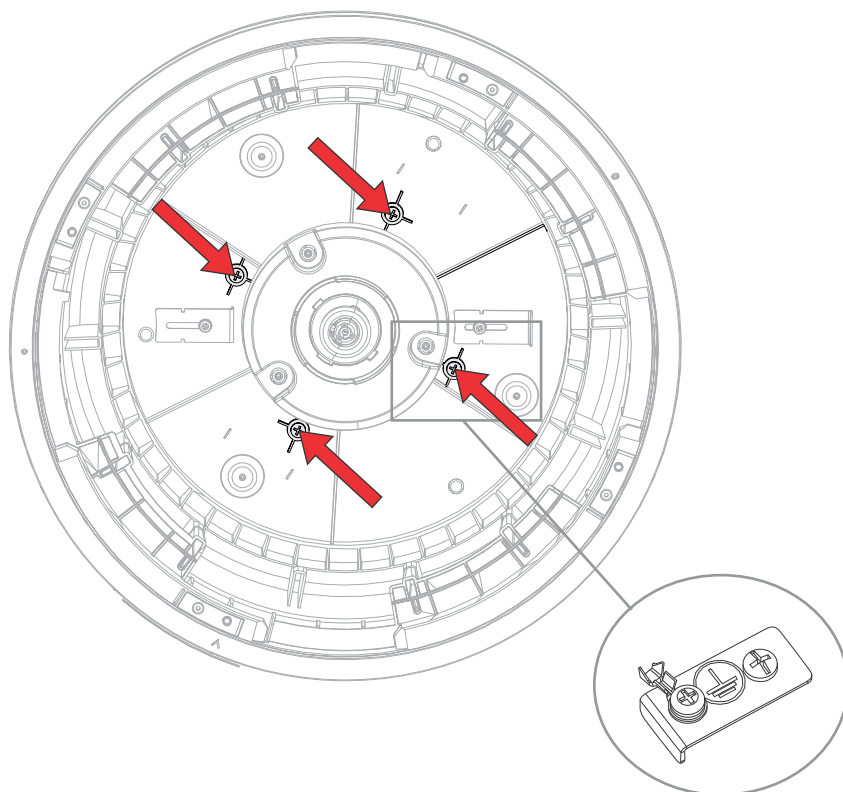


8. Place the socket housing back on the receiver box and tighten the screw loosened in step 2.

Removing the metal casing

The metal casing must be taken off for ceiling surface mounting.

1. Remove the disinfecting module from the receiver box.
2. Loosen the four screws.



For the Japan-version, a metal plate with a ground wire connected is fixed on one of the four screws. It can be secured again when installing the screw back to mounting plate.

3. Remove the metal casing from the receiver box.

Mounting options

Select one of the following options to mount Christie CounterAct:

Mounting option	Part number	Description and adjustable properties
Surface with plate crossbar	174-106108-XX	<ul style="list-style-type: none"> • Mounting plate included with the product to mount to a 101.5 mm (4") electrical junction box • Rotation: 180°around vertical axis • Static load: 6 kg (13.2 lbs)
Recessed with block	174-107109-XX	<ul style="list-style-type: none"> • Mounting plate included with the product to mount to third-party provided (Erico™ hangers or equivalent mounting rails) • Rotation: 180°around vertical axis • Static load: 6 kg (13.2 lbs)
Pendant with a swing bracket	174-105107-XX	<ul style="list-style-type: none"> • Optional mounting option available for purchase from a Christie equipment provider

Mounting option	Part number	Description and adjustable properties
		<ul style="list-style-type: none"> • Inclination: $\pm 30^\circ$ • Rotation: 180° around the vertical axis • Static load: 6 kg (13.2 lbs)

Mounting requirements

The following are requirements when mounting Christie CounterAct.

- All mounting structures must be installed onto the main beam. The load capacity of the main beam must be at least 12 lbs./linear foot (175N/m), over the 4 foot (1200 mm) span where the Christie CounterAct fixture will be installed.
- The minimum load bearing of the safety wire is 45.4 kg (100 lbs).
- For UL-rated installations, select the appropriate mounting hardware or an equivalent option.
- For earthquake zone considerations as per IBC requirements, select the appropriate grade for seismic requirements.



Caution! If not avoided, the following could result in minor or moderate injury.

- Make sure load wires and anchoring comply to local building regulations and codes.
- Make sure load wires are connected between the receiver box, mounting structure, and the load bearing surface (higher than the tile) according to local building regulations and codes.

Recommended torque for screws

Christie recommends the following torque for screws when mounting Christie CounterAct.

Size	Torque Nm	Torque in-lbs.
M3	0.51	4.4
#6-32	0.80	7.0
M4	1.18	10
#8-32	1.50	13
M5	2.38	21
#10-24	2.14	19
1/4-20	5.08	45

Mounting receiver boxes on the ceiling surface

Surface mounting works with mounting bracket (P/N: 174-106108-XX) or an equivalent mounting fixture.

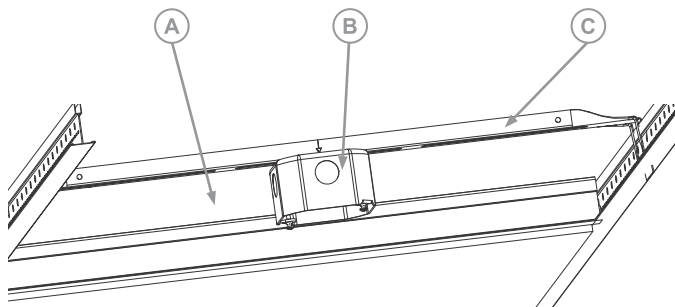
Surface mounting can be completed with existing 101.6 mm (4 inches) junction box and hanger. The hanger and junction box must have minimum load capability 22.7 kg (50 lbs).



Warning! If not avoided, the following could result in death or serious injury.

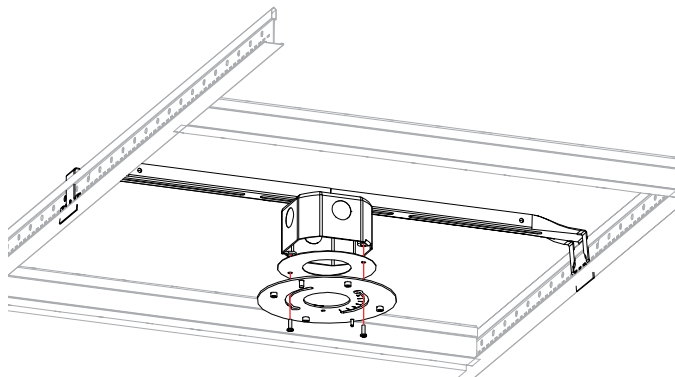
- Make sure load wires and anchoring comply to local building regulations and codes.
- Make sure load wires are connected between the receiver box, mounting structure, and the load bearing surface (higher than the tile) according to local building regulations and codes.
- Make sure load wires are connected between the receiver box and junction box or according to local building regulations and codes.

1. Make sure the power is turned off at the source.
2. Remove the two adjacent ceiling panels where the junction box will be installed, leaving the T-bar between them accessible.
3. Remove the tile where you plan to install the receiver box and cut a round hole for the junction box.
4. Install the ceiling tile you cut the hole in from step 3.
5. Install the junction box flush with ceiling panel.

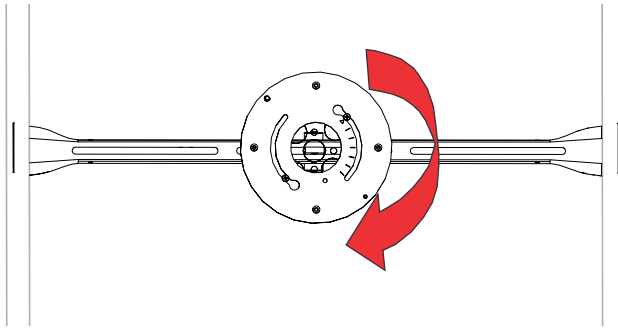


- A Ceiling panel
B Junction box
C Hanger

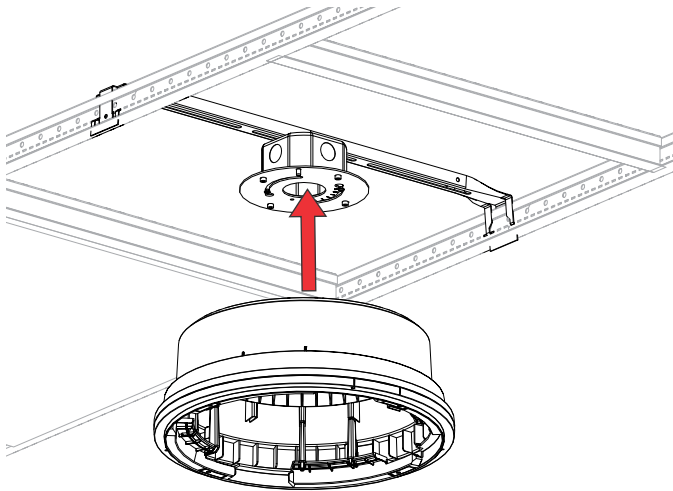
6. Using two screws, mount the crossbar and cover plate on the junction box.



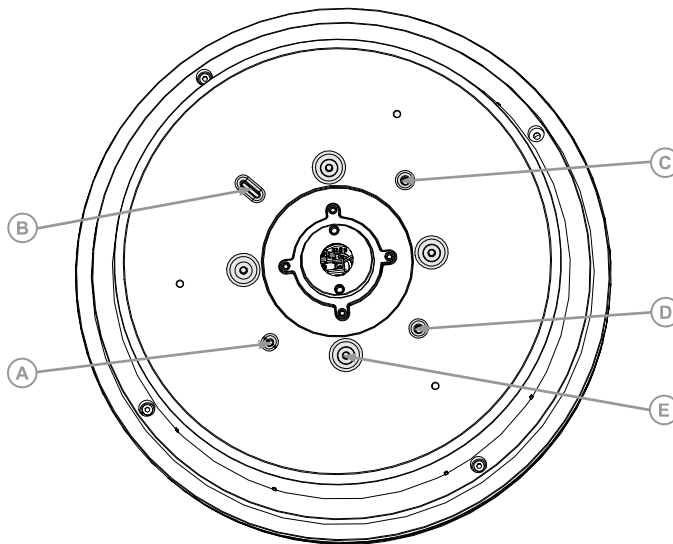
7. Adjust the orientation in range of 90° as required.



8. Remove the metal casing from the receiver box before installing it (on page 26).
9. Lift up the receiver box close to the crossbar and position it with the center hole.

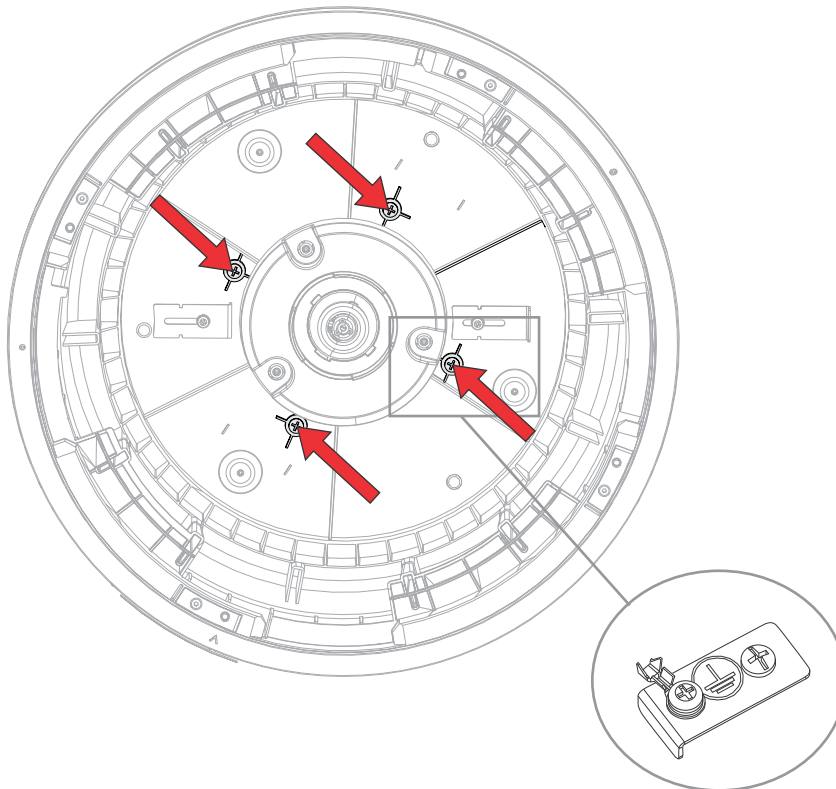


10. Align the dowel pins with the first slot and first dowel hole.
The second dowel hole and slot provide additional 90° orientation adjust range.



ID	Description	Quantity
A	Second dowel slot	—
B	First dowel slot	—
C	Second dowel hole	—
D	First dowel hole	—
E	M4 captive screws	4

11. Holding the receiver box, tighten the four screws in the receiver box.



For the Japan-version, a metal plate with a ground wire connected is fixed on one of the four screws. It can be secured again when installing the screw back to mounting plate.

12. *Connect to power* (on page 24).

- For the UL version, trim the length of the power cable as necessary.
- For the CE version, no pre-installed power cable is supplied.

13. *Install the disinfecting module in the receiver box* (on page 17).

14. Install the ceiling tiles removed in step 2.

15. Repeat steps 1 to 14 for each receiver box.

Mounting receiver boxes recessed in the ceiling with a block and hanger

Recessed mounting in the ceiling works with a mounting block adapter (P/N: 174-107109-XX) and third-party Erico™ hanger or an equivalent mounting fixture.



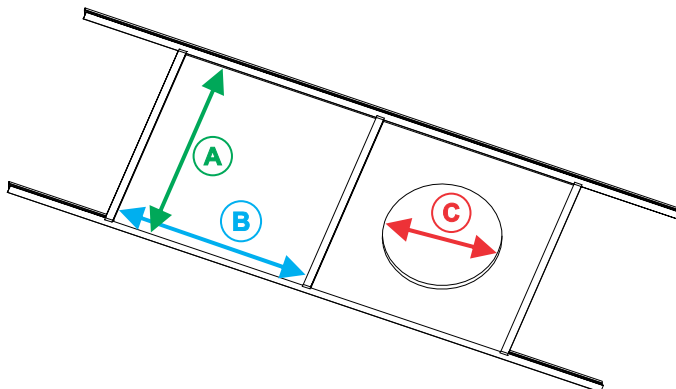
Warning! If not avoided, the following could result in death or serious injury.

- Make sure load wires and anchoring comply to local building regulations and codes.
- Make sure load wires are connected between the receiver box, mounting structure, and the load bearing surface (higher than the tile) according to local building regulations and codes.

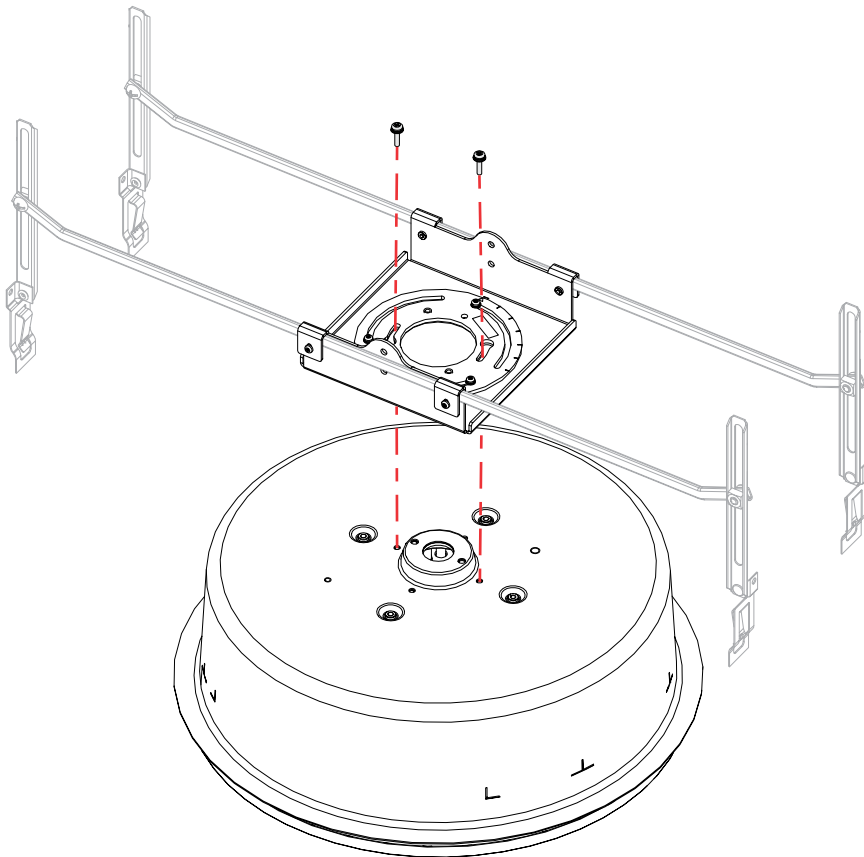
The following Erico commercial hangers are compatible with Christie CounterAct and must be provided by the site owner:

Erico type	Description
51220A	20' T-grid span vertical adjustable
512A(512ATC)	24' T-grid span vertical adjustable

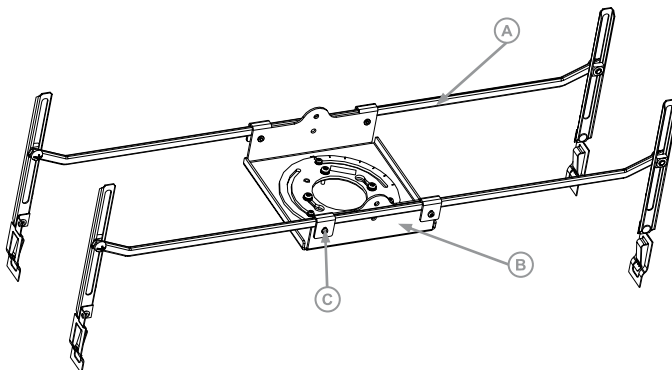
1. Ensure the power is turned off at the source.
2. Remove the two adjacent ceiling panels where the block and hanger will be installed, leaving the T-bar between them accessible.
3. Remove the tile unit where you plan to mount the receiver box and cut a round hole 350 to 360 mm/13.8 to 14.2 inches (C in image below) in diameter.



4. Install the ceiling tile you cut the hole in from step 3.
5. Using two M4 screws, attach the rotation plate to the top of the receiver box.



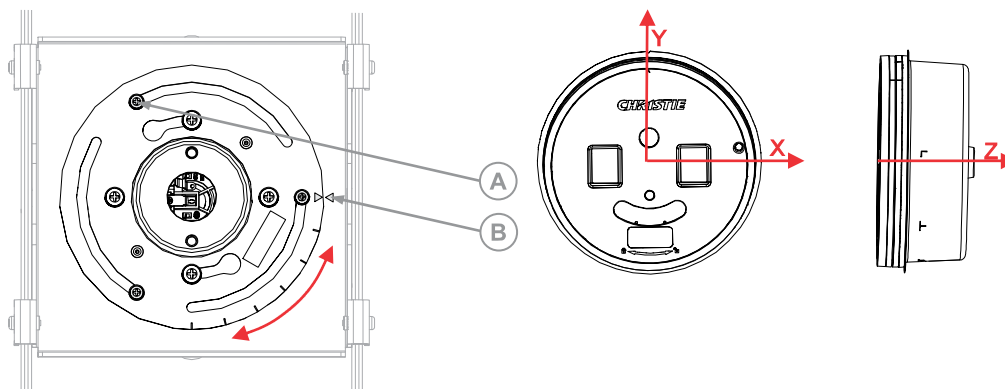
6. Loosen the two screws by several turns (approximately five turns) to allow the plate to be rotated smoothly.
7. Remove the receiver box from the rotation plate without removing the screws by rotating the plate and sliding the heads of the screws through the larger holes at the end of the track.
8. Install the mounting block adapter (B in the image below) using four M3 screws and two Erico commercial hangers (A in the image below) with primary height and position based on your field measurement.



ID	Description	Quantity
A	Erico hanger	2

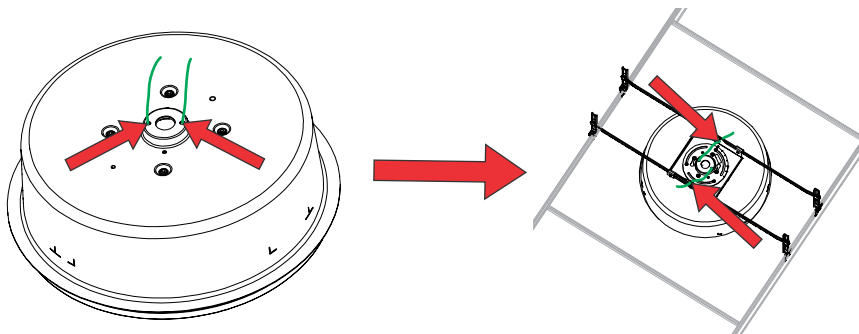
ID	Description	Quantity
B	Mounting block adapter	1
C	M3 screws	4

9. Connect the load wires from the assembly adapter and the two Erico hangers to the rigid roof construction ensuring the load wires are not taut.
10. Insert the four clips of the hanger onto the beam.
11. Loosen the three M3 screws (A) and adjust the rotational orientation, if necessary.
The default Y axis of product orients along the main beam of grid when the two Δ marks are aligned. Ensure you tighten the three screws when done.

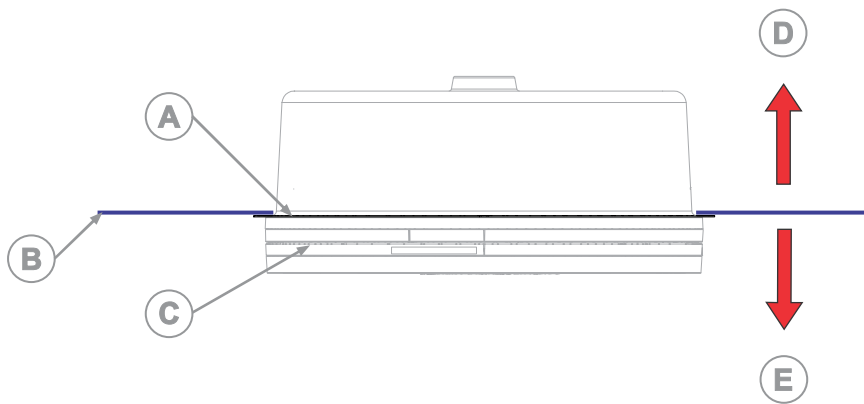


ID	Description	Quantity
A	M3 screws	3
B	Default align mark	1

12. Connect the safety cables between the receiver box and the bracket as required.

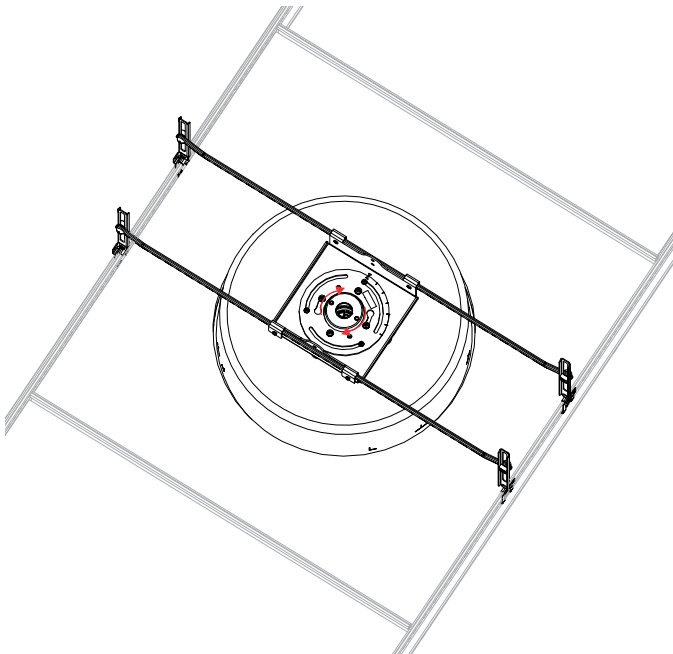


13. Insert the receiver box through the cut tile and hang it on the bracket with the installed screws from step 8.
14. Ensure the flange of the metal housing is under the ceiling grid (not above it).

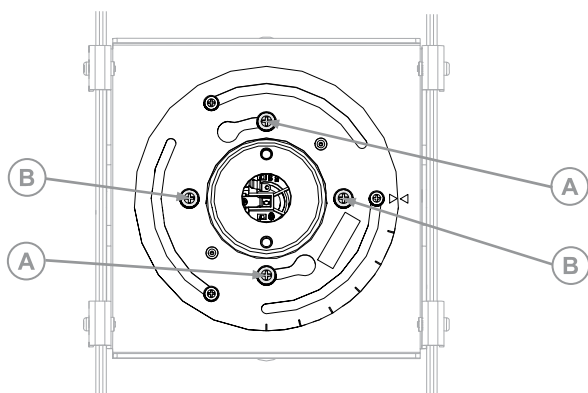


ID	Description
A	Flange of metal housing
B	Ceiling
C	Plastic
D	Ceiling side
E	Room side

15. Rotate the receiver box in a clockwise directions until it reaches the end of the two short slots.



16. Tighten the two screws (A in the image below) installed in step 6.



17. Install two additional screws (B in the image in step 16) to secure the receiver box.
18. *Connect to power* (on page 24).
 - For the UL version if a conduit is being installed, remove the pre-installed power cable and directly wire the AC to the terminal block in the fixture.
 - For the CE version, no pre-installed power cable is supplied.
19. *Install the disinfecting module in the receiver box* (on page 17).
20. Install the ceiling tiles removed in step 2.
21. Repeat steps 1 to 20 for each receiver box.

Mounting receiver boxes with the pendant option

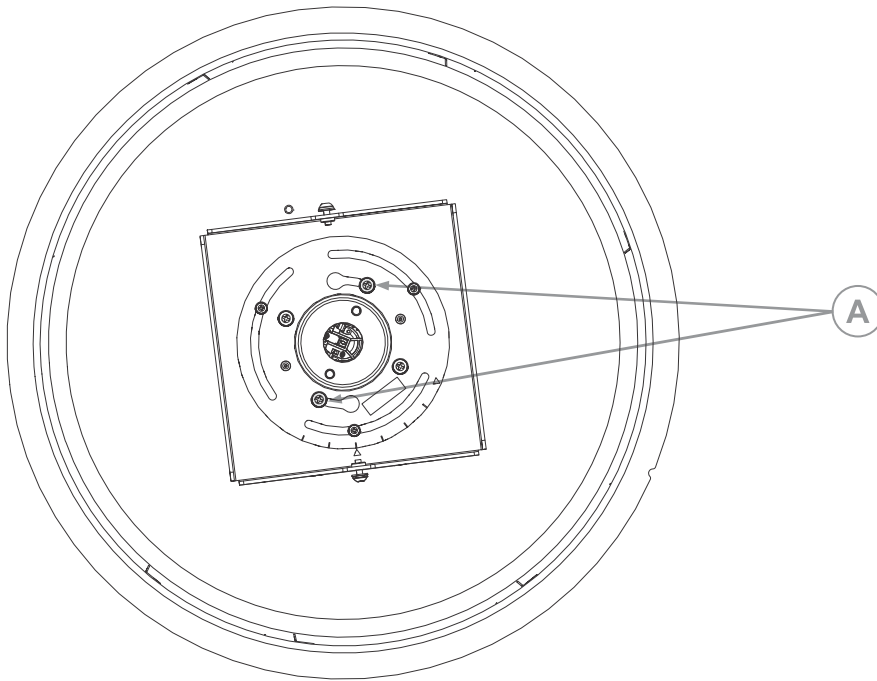
Pendant mounting works with swing bracket (P/N: 174-105107-XX) or an equivalent mounting fixture.

This is an optional mounting option available for purchase from a Christie equipment provider.

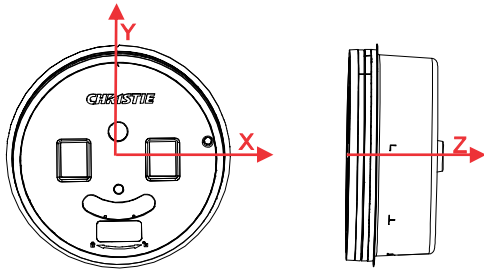


Warning! If not avoided, the following could result in death or serious injury.

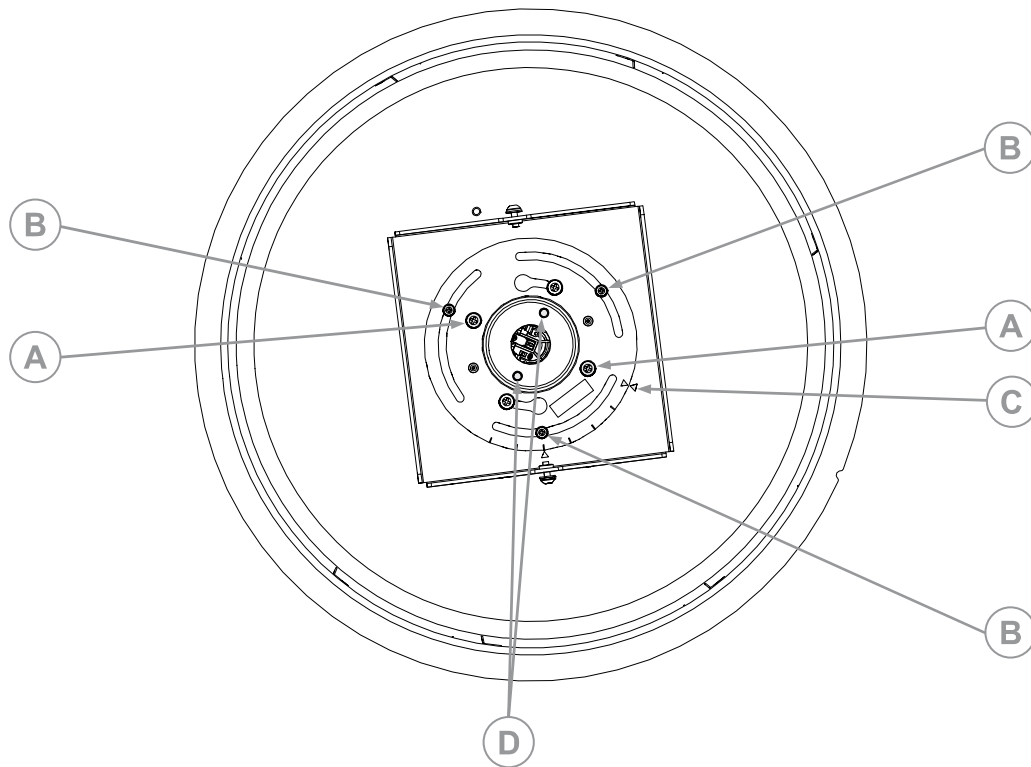
- Safety wires are connected between the receiver box and support clip or according to local building regulations and codes.
1. Make sure the power is turned off at the source.
 2. Remove the two adjacent ceiling panels where the pendant bracket will be installed, leaving the T-bar between them accessible.
 3. Install two M4 screws (A in the image below) on the top of the receiver box before hanging the receiver box on the mounting bracket.
- Do not fully tighten the two screws.



Changing the position of the two screws and insert nuts to another location can provide an additional 90° orientation adjustment range around Z axis.

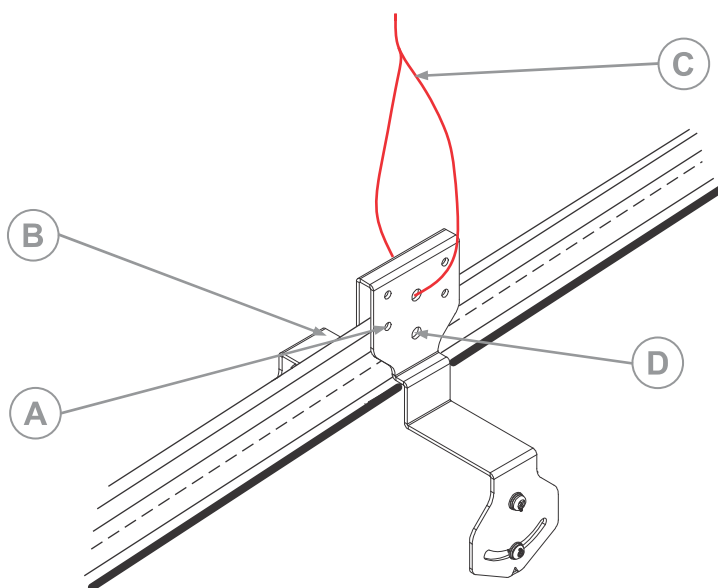


4. Place the receiver box onto the bottom bracket.
5. Tighten the two screws installed in step 4 and install two more M4 screws (A in image below).



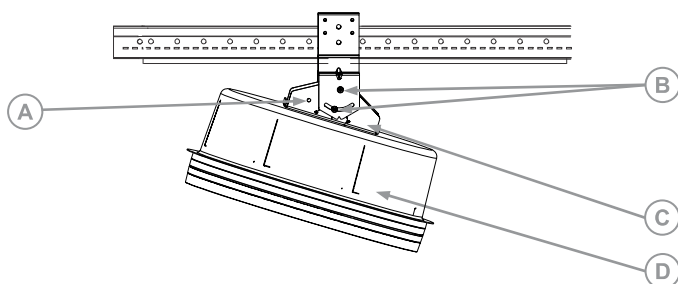
ID	Description	Quantity
A	M4 screws	4
B	M3 screws	3
C	Default align mark	1
D	Insert M5 nut	2

6. To adjust the orientation within 90°, loosen the three M3 screws (B in the image in step 6). When the two Δ marks (C in the image in step 6) are aligned, the X axis of the receiver box orients along the main beam of the grid.
7. Hang the support clip on the main beam.
8. Confirm the location.
9. Install two self-drilling screws (A in the image below) from the side through the 4.5 mm (0.18 inches) diameter hole.



ID	Description	Quantity
A	Self-drilling screw (ST4.2 X 1')	2
B	Support clip	1
C	Load wire	1
D	Load wire holes	2

10. Add the load wire (C and D in the image step 10) to connect the support clip to the load bearing surface (higher than the tile) according to local building regulations.
11. Connect safety cables between the M5 nuts on the top of the receiver box and the holes on the bottom bracket (A in the image in step 13).
12. Align the holes on the bottom bracket with the holes on the support clip and insert the four M4 tamper-proof screws (B in the image below) leaving them loosely fastened.



ID	Description	Quantity
A	Hole for safety cable	2
B	M4 Tamper-proof torx screw	4
C	Bottom bracket	1
D	Receiver box	1

13. Adjust the pitch (range of $\pm 30^\circ$) as required.
14. Fasten the four M4 tamper-proof screws (B in the image in step 13).
15. Connect the power cable as per local building regulations and codes.
 - For the UL version, trim the length of the power cable as necessary. If the junction box is further away than the provided cable reaches, make sure an electrician replaces the cable to the proper length.
 - For the CE version, an electrician must provide the cable to the proper length.
16. *Install the disinfecting module in the receiver box* (on page 17).
17. Re-install the ceiling tiles removed in step 2.
18. Repeat steps 1 to 18 for each receiver box.

Powering on the Christie CounterAct fixture

When the circuit breaker is powered on, the Christie CounterAct fixture is powered on.

1. Once the disinfecting module is installed in the receiver box, the fixture powers on if power is provided to the receiver box.
If the LED of the installed fixture is flashing red, it is not paired with a controller or configured.
2. To power off Christie CounterAct, make sure the lamps are turned off and then disconnect power at the circuit breaker.
Make sure to power off Christie CounterAct by turning off the breaker before performing any maintenance or moving within 1 m (3.3 feet) of the device.



Not turning off the lamp before disconnecting power to the fixture may result in lamp failure.

LED status indicators

Identify the LED state colors and meaning.

LED	State	Description
Blue	Solid	Disinfection is in progress.
	Flashing	Disinfection process is starting.
Green	Solid	The fixture is in Standby mode.
Red	Solid	Lost connection to the control system (wireless/bluetooth or other connection).
	Flashing	Configuration during installation is not complete.
Off		The fixture is in Stealth mode or power is disconnected.

Switching fixture modes

Christie CounterAct can be run in either Schedule or Manual on mode.

Note the following when the fixture is in Schedule mode:

- It follows any enabled schedules.

- Manually turning on the fixture, it turns off after five seconds.
- If no schedules are enabled, no schedules are run.



If the fixture is in Manual on mode and you have not re-enabled Schedule mode, none of the enabled schedules apply.

1. From the homepage, select the room where you want to enable the schedule.
2. From the top-right corner of the Room page, select **Activate Schedule**.
A timer icon shows on each fixture within the room once Schedule mode is active.
3. To enable Manual mode, from the homepage select the room.
4. From the top-right corner of the Room page, select **Manual on**.
The timer icon disappears from all the fixtures in the room.
5. To change the multiple maximum on time for Manual mode:
 - a) From the homepage, select **Edit**
 - b) Select the required room.
 - c) Select **Max UV on time for manual control**.
 - d) Enter the new maximum duration for manual on time.

Setting up fixtures in CounterAct Configure

Use the CounterAct Configure application to add the installed fixtures, create a room, and add the fixtures to the room.

Each time CounterAct Configure connects to a room it confirms all the fixtures are registered. As data stored on the fixture indicates if it is registered, no internet connection is required.

If not all the fixtures are registered, CounterAct Configure tries to register the unregistered fixtures. If no internet connection exists, it prompts you to register the fixture: either connect to the internet or following the QR code prompts.



An IEC version of the receiver box (on page 15) is available to assist with setup prior to installing the fixture in the ceiling.

Creating a room

A room manages the fixtures installed in a space.

1. From the homepage, select **Edit**
2. From the Room management page, select **Add (+)**.
3. In the Add room dialog, enter the name of the room.
4. Select **OK**.

Adding fixtures to a room

Fixtures must be added to a room in CounterAct Configure.

Access level: Admin and Installer

The LEDs on the Christie CounterAct of any fixtures not added slowly flash red.

Christie recommends only powering on the fixtures in the room being configured to avoid confusion if the controller detects unpaired fixtures in adjacent rooms.

Adding fixtures to a room before installation

To add fixtures prior to installation, use the receiver box and the optional IEC cable accessory to connect fixtures to power.



Warning! If not avoided, the following could result in death or serious injury.

- **UV EXPOSURE!** Use care to avoid exposure when using a fixture for demonstration, fault investigation, configuration, or other types of activities where the fixture is not installed in a ceiling meeting the minimum height requirements of 6.7 m (22 feet) in single lamp mode and 8.5 m (28 feet) in dual lamp mode.

1. On the tablet, enable the Location Services functionality.
2. In CounterAct Configure, create a room.
3. Return to the homepage.
4. Before installing the fixture into the ceiling, connect it to power with the IEC cable.
5. Select the room you want to add the fixture to.
6. Select **Add fixture (+)**.
On the Add fixtures page, the fixture is listed.
7. If the fixture is not listed, select **Search**.
8. To add the fixture, tap the name of the fixture.
The fixture is moved to the Added fixtures pane and you are taken to the fixture page where the fixture is initialized.
Once a fixture is added, *you can rename it* (on page 43). Christie recommends selecting a new name to indicate the position information of the fixture in the room for ease of identification.




If the adding fixture process is interrupted, such as closing CounterAct Configure or a crash, Christie CounterAct resets the Bluetooth module after 180 seconds if the pairing process is not completed within the 180 seconds. Wait and do the pairing again.

9. To return to the Add fixture screen, select the back arrow.
10. Repeat steps 4 and 9 until all fixtures are added to the room before installing them in their target position.

Adding fixtures to a room after installation

To add fixtures after installation, the fixtures must be connected to power.

1. Connect the fixtures to power you want to add to a room.
2. On the tablet, enable the Location Services functionality.
3. In CounterAct Configure, create a room.
4. Return to the homepage.
5. Select the room you want to add the fixture to.
6. Select **Add fixture (+)**.
On the Add fixtures page, all the available fixtures are listed.

7. If the fixture is not listed, select **Search**.
 8. To add the fixture, tap the name of the fixture.
The fixture is moved to the Added fixtures pane as you are taken to the fixture page and the fixture is initialized.
Once a fixture is added, *you can rename it* (on page 43). Christie recommends selecting a new name to indicate the position information of the fixture in the room for ease of identification.
- 

If the adding fixture process is interrupted, such as closing CounterAct Configure or a crash, Christie CounterAct resets the Bluetooth module after 180 seconds if the pairing process is not completed within the 180 seconds. Wait and do the pairing again.
9. To add an additional fixture, select the back arrow.
 10. Repeat steps 7 to 9 until all fixtures are added to the room.

Renaming a fixture

Rename a Christie CounterAct fixture to better reflect its position or function to help with identification.

Access level: Admin and Installer

1. From the homepage, select **Fixture**.
2. From the Fixture main page, select the fixture you want to rename.
3. Select **Rename**.
4. In the Edit name dialog, enter the new name of the fixture.
5. Select **OK**.

Registering CounterAct

Each time the CounterAct Configure connects to a room, it checks if all the fixtures are registered. When in a room with unregistered fixtures, CounterAct Configure prompts you to register a fixture.

Access level: Admin and Installer

1. In the room with unregistered fixtures, at the Unregistered Fixtures Detected dialog, select **OK**.
If this is the first time registering fixtures in CounterAct Configure, you must provide contact information.
2. At the prompt, select **OK**.
3. In the Register screen, enter the contact information for the site.
Select each field and enter the data. To move between fields, select the **Next** key on the virtual keyboard where the Return key would normally be.
4. When finished entering the data, select **Send**.
 - If the tablet is connected to the internet, it contacts the Christie servers and submits the contact details. Proceed to step 6.
 - If the tablet is not connected to the internet, a QR code is presented. Proceed to step 5.
5. Scan the QR code with your smartphone and enter the site ID provided in the *Enter a unique site ID* field.
The Unregistered fixtures detected dialog appears again.
6. To proceed with fixture registration, select **OK**.

7. At the prompt, determine how you want to proceed with registering the fixtures:
 - Automatically—CounterAct Configure automatically registers the fixtures using the internet connection. Proceed to step 8.
 - Manually—Register the fixtures without an internet connection. Proceed to step 9.
8. If you proceeded automatically and the tablet is connected to the internet, CounterAct Configure contacts Christie and registers the fixtures with the site from step 5.
The fixtures are registered and no further action is required.
If you get an error message, try again.
9. If you proceeded manually, CounterAct Configure presents a Register screen with a list of fixtures in the right-side pane to be registered.
 - a) Click the first fixture.
A QR code is displayed in the left-side pane.
 - b) Scan the QR code with your smartphone.
The displayed website provides a registration code.
 - c) Enter the 11 digit registration code in the field beside the selected fixture.
 - d) Select **Register**.
 - e) For the remaining fixtures, repeat steps a to d.

Creating a schedule

Create a schedule to determine when during the day you want disinfection to occur.

1. From the homepage, select **Schedule**.
2. Select the plus sign (+)
3. To define a start time, from the Schedule page, select the arrow (>) to the right of the **Start time**.
4. In the Select time dialog, scroll through the times to select the new start time.
5. Select **OK**.
6. To define an end time, repeat steps 4 to 6.
7. Enable or disable Stealth mode when disinfecting.
8. Select the room to apply the schedule to.
9. Select **Save**.

Verifying the optical power output

Before operating Christie CounterAct with people other than trained operators in the room, ensure you validate the installation height by measuring the optical power output.

1. Run all the fixtures in Disinfection mode.
2. Use a meter to measure the optical power output to validate acceptable power levels.
This step must be done to ensure the American Conference of Governmental Industrial Hygienists (ACGIH) limit of 0.76uW/cm² (*callout A in the Planning the installation height diagram* (on page 21)) is not exceeded.

- Single-lamp mode—the fixture must be installed in a ceiling with a minimum height of 6.7 m (22 feet) to 8.5 m (28 feet).
 - Dual-lamp mode—the fixture must be installed in a ceiling with a minimum height of 8.5 m (28 feet).
3. Record the measurements in the *System and Design Installation Verification Checklist (P/N:020-103558-XX)*.
If additional space is required to record the fixture measurements, add additional forms.
 4. Provide a copy of the *System and Design Installation Verification Checklist (P/N:020-103558-XX)* to the client and retain a copy for your records.

Disposing of the product packaging

Once the product has been installed and set up, Christie recommends reusing or recycling the product packaging according to your local regulations.

Maintenance and service

Learn the information about Christie CounterAct maintenance and service.



Warning! If not avoided, the following could result in death or serious injury.

- SHOCK HAZARD! Disconnect the product from AC before installing, moving, servicing, cleaning, removing components, or opening any enclosure.
- ELECTRICAL and BURN HAZARD! Use caution when accessing internal components.
- PERSONAL INJURY HAZARD! Eye damage may result from directly viewing the light produced by the lamp in this product. Always turn off the lamp before performing maintenance or service.
- PERSONAL INJURY HAZARD! Use caution when servicing the lamp to avoid the risk of personal injury.



Caution! If not avoided, the following could result in minor or moderate injury.

- Always connect the ground or earth first to reduce shock hazard.
- This Christie product must be serviced by Christie qualified technicians.
- HOT SURFACE HAZARD! Do not touch the lamp module during operation.
- HOT SURFACE HAZARD! Allow lamp sufficient time to cool before handling.
- SHOCK HAZARD! Always turn off power before performing lamp module maintenance.
- FIRE HAZARD! Keep all flammable items, such as paper or cloth, away from the lamp module.
- Use protective eye wear and gloves when handling the lamp module.
- Do not drop, hit, use force, or scratch the lamp module.
- Do not disassemble or modify the lamp module.
- Use only mercury-free, excimer lamps (UXFL70-222B4-UIA) sold by Christie (P/N: 003-121997-XX).

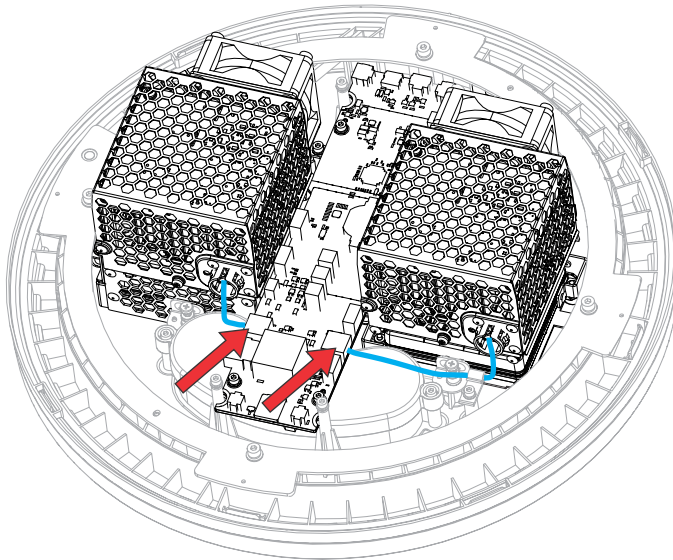


Outside of lamp replacements, this product is not serviceable in the field and must be sent back to Christie if servicing is required.

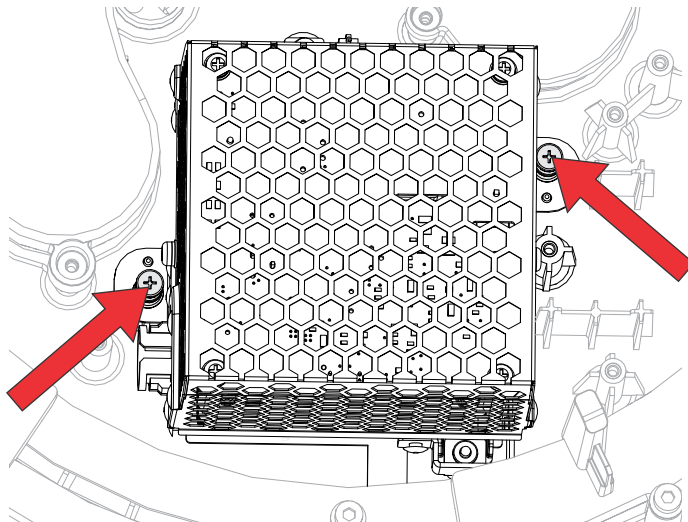
Replacing the lamps

Replace the lamps when instructed by the Christie CounterAct application.

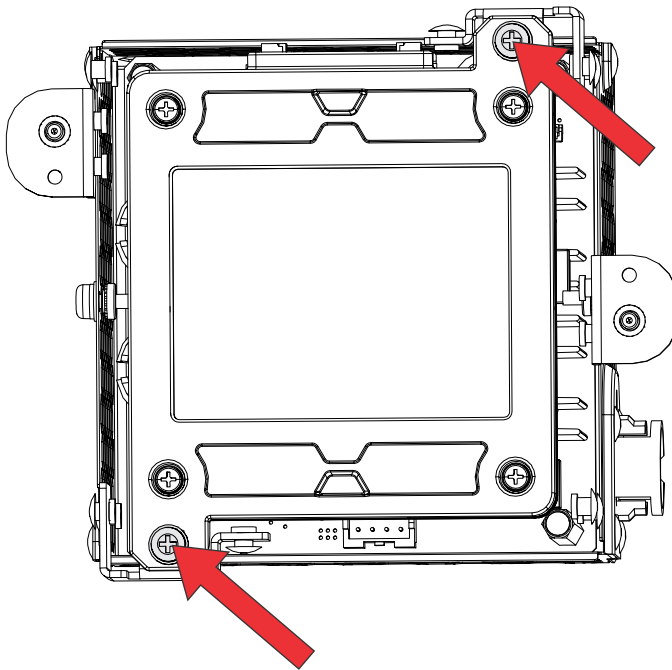
1. Disable power to the system.
2. *Remove the disinfecting module you want to replace the lamps in* (on page 18).
3. Unplug the connector between the lighting module and the integrator board.



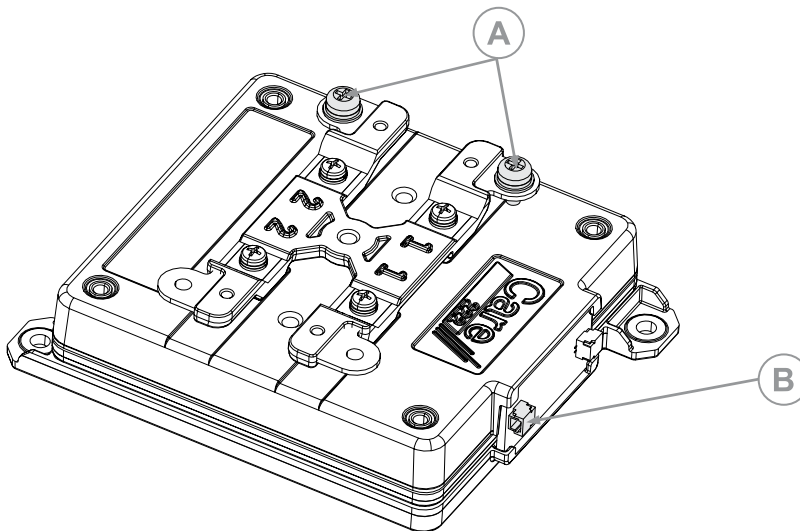
4. Loosen the two screws securing the lamp and inverter assembly.



5. Remove the assembly from the bottom cover.
6. Remove the two M3 screws holding the lamp assembly in place.



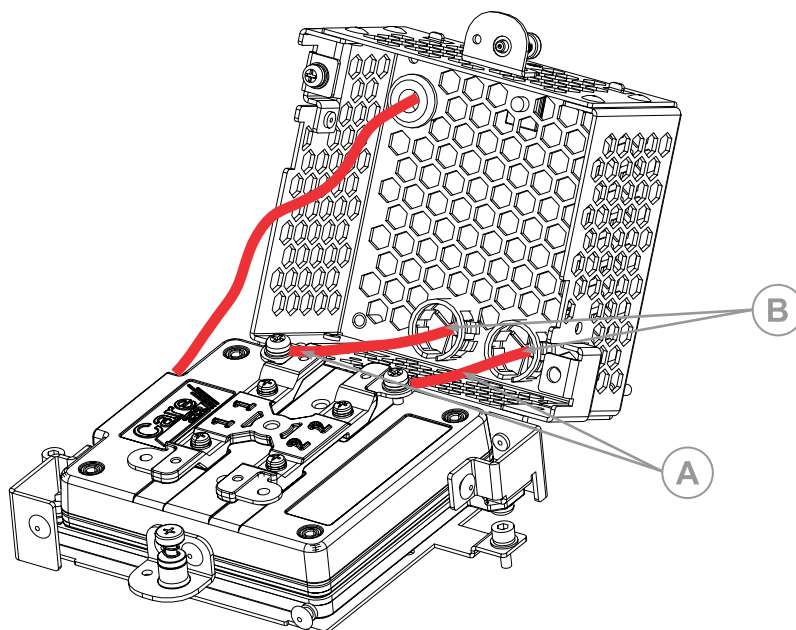
7. Remove the lamp assembly.
8. Disconnect the LED connector (B in the image below) from the side of the lamp.



9. Remove the two screws (A in the image in step 8) connecting the lamp harness to the inverter.
10. Remove the lamp.
11. Install the new lamp (P/N: 003-121997-XX).
 - a) Connect the LED harness.
 - b) Install the two screws removed in step 9 to connect the lamp harness to the inverter.
 - c) Position the new lamp in place on the disinfecting module.
 - d) Secure the lamp using the two screws removed in step 6.

12. Carefully route the wires and maintain the gap between the wires and the wires to the metal cover.

The wires (A in the image below) must sit in center of grommets (B in the image below) and maintain a minimum distance of 8 mm (0.3 inches) between the wires and the wires to the metal shield.



13. Connect the lamp connector to the integrator board.
14. *Re-install the disinfecting module* (on page 17).
15. Reset the lamp hours.
 - a) Ensure you are logged into CounterAct Configure with the installer account.
 - b) From the homepage, select **Fixture**.
 - c) From the Fixture page, select **Reset life**.
 - d) From the Reset life dialog, select the lamp you want to reset.
The fixture life is reset.
16. Ensure you dispose of lamps according to local regulations.

Replacing a fixture

Follow these steps to replace a fixture.

1. *Remove the malfunctioning fixture* (on page 18) from the receiver box.
2. *Install the replacement fixture* (on page 17) in the receiver box.
3. Open CounterAct Configure.
4. Select the room you want to add the fixture to.
Note the ID/name of the fixture not connected to the network as this is the fixture you removed. Only one fixture should be listed.
5. Select **Add fixture (+)**.

6. Find the name/ID of the fixture from step 4 in the Added fixtures pane and select it to remove it.
7. At the prompt, confirm you want to remove the fixture.
8. At the prompt confirm you want to remove the fixture even though the software cannot connect to it.
The replacement fixture is displayed in the Available fixtures list on the right-side pane.
9. To add the fixture to the room, tap the name of the fixture.
10. Select the back arrow to return to the room view.
11. If using schedules in the room, select **Activate Schedule**.
12. Verify you see a clock symbol on all the fixtures in the room.

Regulatory

This product conforms to the latest regulations and standards related to product safety, environmental, and electromagnetic compatibility (EMC) requirements.

Safety

- IEC/EN 60598-1 Luminaires – Part 1: General requirements and tests
- IEC/TR 62471-2: Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety

Electro-magnetic compatibility

Emissions

- CISPR 15-2015, Class A- Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
- EN 55015: Emission – Electrical lighting and similar equipment
- IEC 62493: Assessment of lighting equipment related to human exposure to electromagnetic fields
- IEC 61000-3-2/EN61000-3-2 - Limits for Harmonic Current Emissions
- IEC 61000-3-3/EN61000-3-3: Limitations of Voltage Changes, Voltage Fluctuations, and Flicker

Immunity

- EN 61547: Immunity – Equipment for general lighting purpose

Environmental

- EU Directive (2011/65/EU) on the restriction of the uses of certain hazardous substances (RoHS) in electrical and electronic equipment and the applicable official amendment(s).
- EU Directive (2012/19/EU) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s).
- Regulation (EC) No. 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH) and the applicable official amendment(s).
- China Ministry of Information Industry (along with 7 other Government Agencies) Order No.32 (01/2016) on the control of pollution caused by electronic information products, hazardous substances concentration limits (GB/T 26572 - 2011), and the applicable product marking requirement (SJ/T 11364 - 2014).

International packaging recycling mark requirements.

- EU Directive (2012/19/EU) on waste and electrical and electronic equipment (WEEE) and the applicable official amendment(s).
- China packaging recycling mark standard (GB18455-2001)

Radio frequency (RF) wireless communication

- EN 300 328 V2.2.2 (2019-07)
- EN 301 489-1 V2.2.3 (2019-11)
- EN 301 489-17 V3.2.4 (2020-09)

