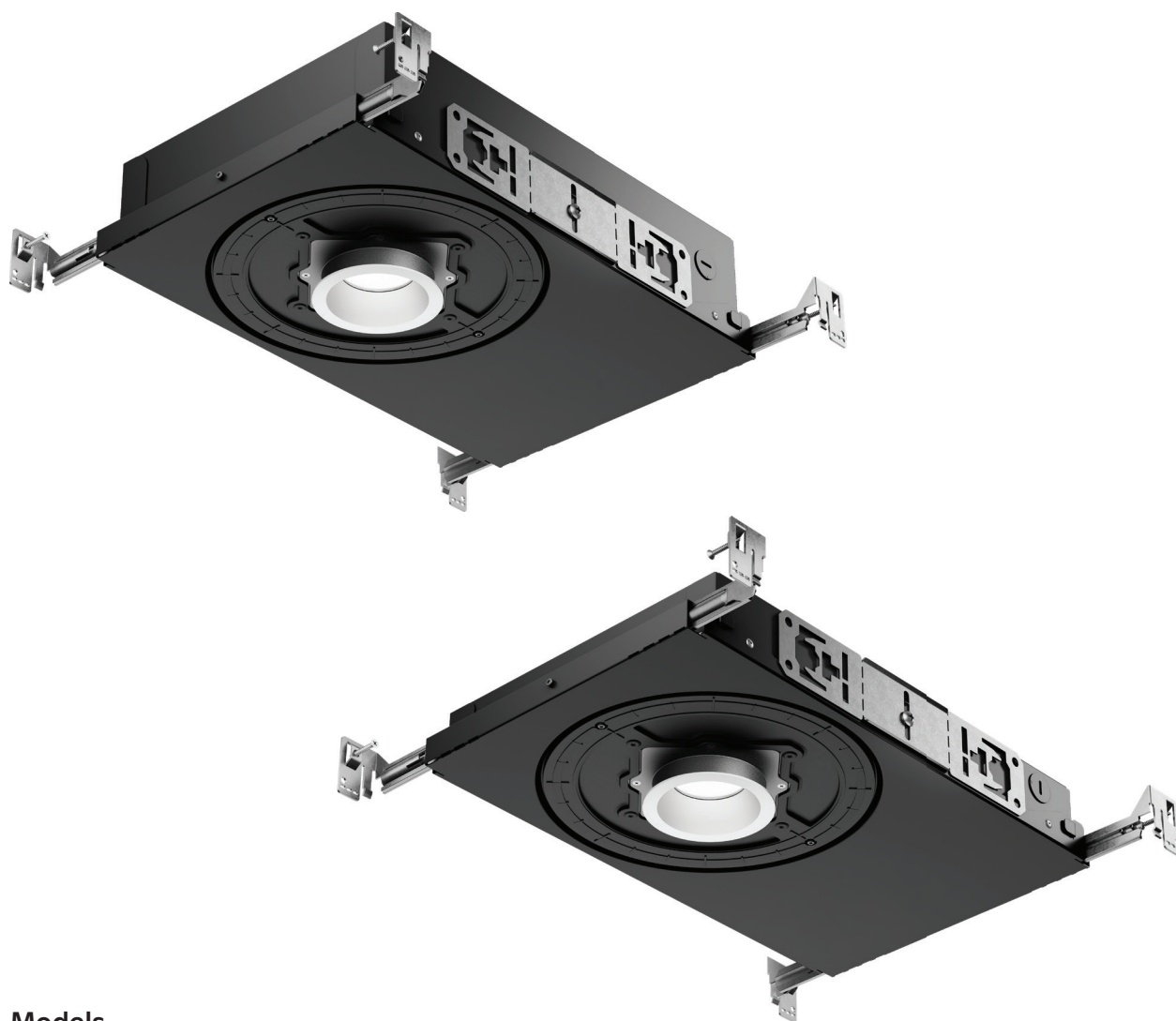




D2

Installation Guide



Models

HW-D2-HOUSING-X

CM-D2-HOUSING-X

HW-D2TW-HSING-X

CM-D2TW-HSING-X

HW-D2-HOUSING-XN

CM-D2-HOUSING-XN

HW-D2TW-HSING-XN

HW-D2TW-HSING-XN

WARNING

Risk of electric shock. Use in dry locations only.

Turn power OFF at circuit breaker or remove fuse. Damage to this product caused by wiring with power on voids the warranty.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment complies with FCC/ISED radiation exposure limits set for an uncontrolled environment. The user should avoid prolonged exposure within 7.9 in (20 cm) of the antenna, which may exceed the FCC/ISED radio frequency exposure limits.



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus complies with Canadian ICES-005.

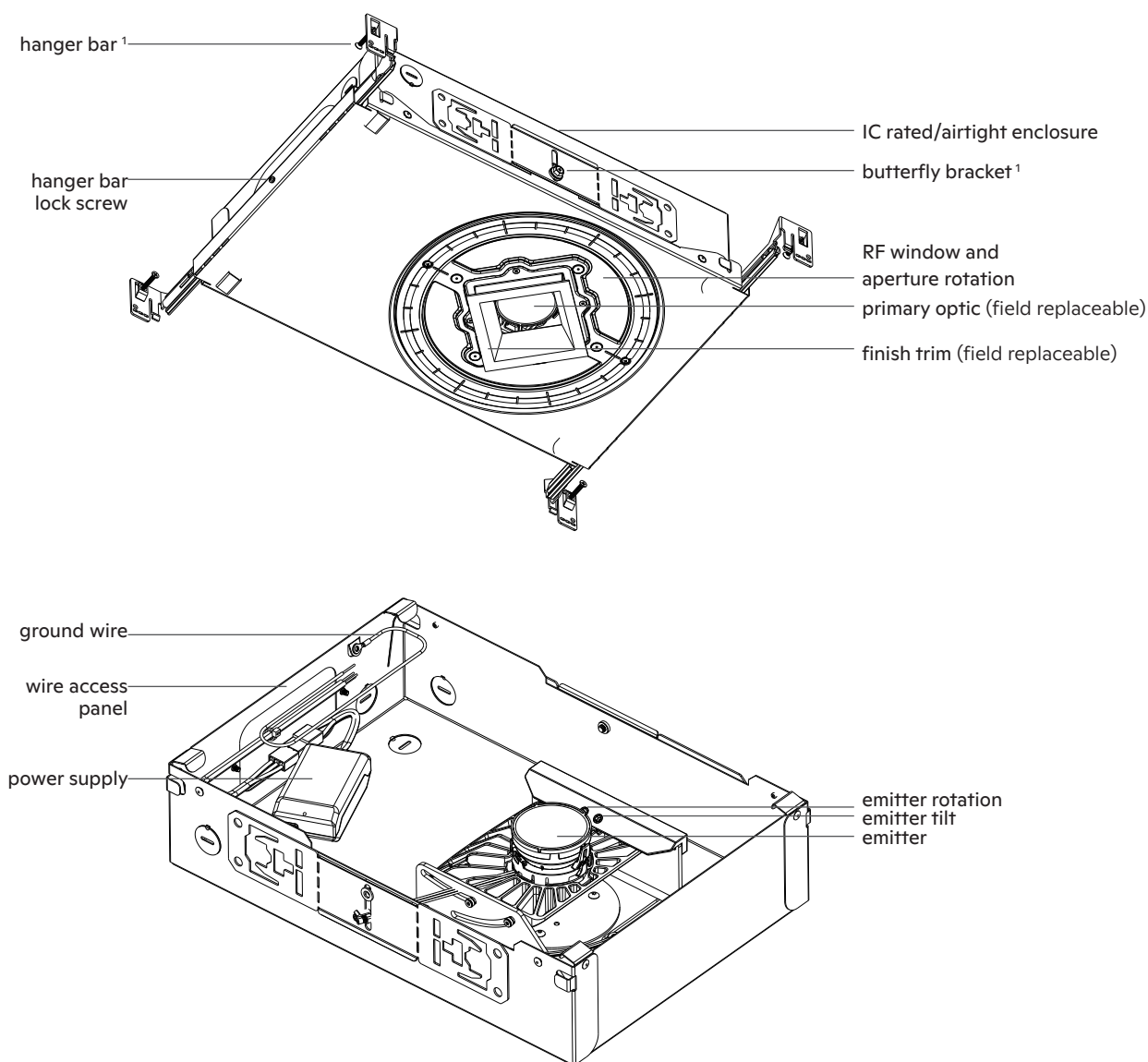
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Product Overview

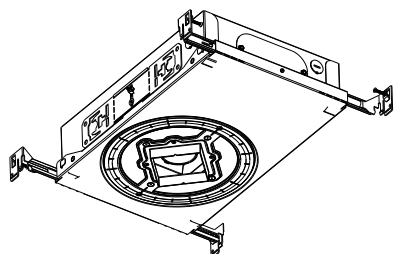
Lutron's D2 family includes fixed, adjustable, and wall-wash downlights. The adjustable model features a 3.5 in (88.9 mm) low-profile housing, while the fixed and wall-wash are in a 2 in (50.8 mm) slim-profile housing. All models include wireless communication, field changeable optics, and field replaceable electronics. With an abundance of trim and optic accessories, the D2 is ideal for a large variety of applications. The D2 family includes two different light sources:

1. Ketra, which features a fully-tunable spectrum capable of delivering high quality white, saturated, and pastel light.
2. Rania, which features a wide range of tunable white light.



¹ The mounting method to be used is dependent on the application. Customer can use either a hanger bar or butterfly bracket for the installation. Please refer to "Part 1: Mount the D2" on page 6.

Included Components



Housing with Power Supply,
Emitter & Optic
(Models as specified)

(2) Butterfly Brackets
(2) Hanger Bars
(2) Pre-installed Hanger Bar Lock Screws
Trim (Model as specified)

Recommended Tools

Mounting:

- Hammer
- Pliers
- Plunge Router (Millwork only)

Wiring:

- 1/4 in Socket Driver

Adjustments:

- 4 mm Ball-Ended Hex Tool
- T10 Torx Driver

Electrical Specifications

Wattage	Specifications
18 W	120 V~ 50/60 Hz 18 W 150 mA

Title 24 Requirements

All products in the D2 family are Title 24 JA8 compliant with air leakage less than 2.0 cfm at 75 Pascals when installed with a Trim Accessory lens on the trim.

For instructions on how to accomplish an airtight rating / Title 24 compliance without a trim accessory lens or with a hex louver accessory, please contact Lighting Technical Support at lightingsupport@lutron.com or 1.844.LUTRON1 (1.844.588.7661).

Installation

All customer-accessible screws are Phillips.

Part 1: Mount the D2

The D2 downlight (a Clear Connect-Type X device) must be mounted within 75 ft (22.9 m) of its assigned gateway. The D2 must have at least two Type X devices within 25 ft (7.5 m). Within a subnet, groups or clusters of Type X devices must not be separated by greater than 25 ft (7.5 m). The gateway and the Type X devices assigned to it must be on the same floor.

System requirements: All assigned Type X devices must be within 75 ft (22.9 m) of the gateway with at least two non-battery operated Type X devices placed within 25 ft (7.5 m) of the gateway. As a result, a centralized placement of the gateway in the subnet is ideal.

Mount a minimum of 3 ft (1.0 m) away from interference sources in the 2.4 GHz band, including but not limited to microwaves, wireless access points, hotspots, baby monitors, thermostats, and voice recognizing control devices. For further guidance, refer to App Note #745 (P/N 048745) at www.lutron.com.

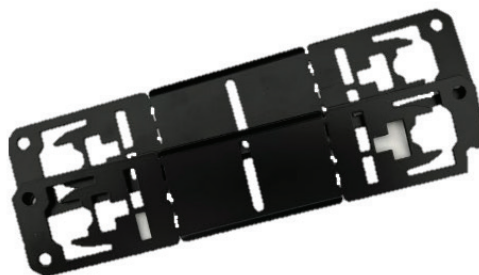
Mounting can be done with either hanger bars or butterfly brackets.

Option 1 Hanger Bars



- Allows horizontal movement post-mounting
- Ideal with wooden studs or t-grid ceilings

Option 2 Butterfly Brackets



- Allows horizontal or vertical movement post-mounting
- Ideal for commercial applications

INSTALLATION

Option 1

MOUNTING WITH HANGER BARS

1. Attach hanger bars
 - a. If ceiling thickness is 0.75 in (19.05 mm) or greater: Use pliers to break off the tabs at the end of both hanger bars (see fig. 1).
 - b. Unscrew the hanger bar lock screw until you can insert the hanger bar. The screw does not need to be completely removed, slight unscrewing should work.
 - c. Insert the inner hanger bar into the hanger bar slot on the end of the D2 housing. Make sure the screw is on top (see fig. 2).
 - d. Insert the outer hanger bar into the same housing slot, locking the inner and outer halves together. Tighten the hanger bar lock screw. Make sure the screw is on top (see fig. 3).
 - e. Repeat steps a-e for the clasps on the other end of the housing.

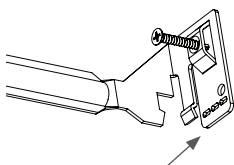


fig. 1 (optional)

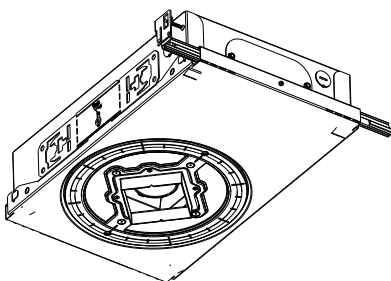


fig. 2

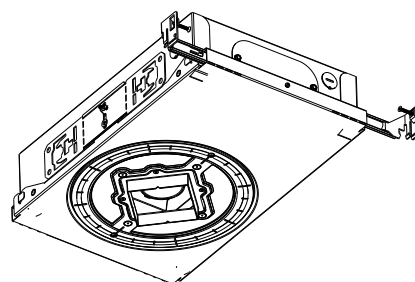


fig. 3

2. Mount downlight in the ceiling

Note: For radio communication, the D2 cannot be installed in metal ceilings. For ceilings with a metal liner the liner must be cut and removed around the RF window. There must not be any metal between the RF window and the occupied space.

- a. Use a level to ensure the hanger bars are parallel to the ground.

Note: After mounting, ensure that the D2's collar is flush or sub-flush to the ceiling plane and does not protrude.

- b. Nail or screw the ends of both bars into the wooden joists, fixing the housing in place* (see fig. 3).
- c. T-Grid ceiling only: Bend the tabs on the hanger bars to lock them to the t-grid (see fig. 4).

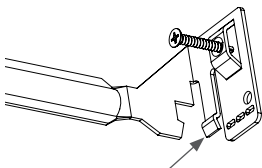


fig. 4

3. *Optional:* If using a square aperture with a flange, realign the collar parallel to the wall (see fig. 5).

- a. Loosen the RF window's two outer screws, freeing the collar for rotation.
- b. Realign the collar using its v-shaped notches and an alignment string or laser.
- c. Re-tighten the screws to lock the collar's new position.

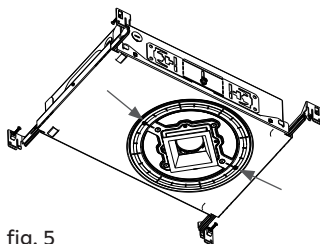


fig. 5

* Screws are not provided.

INSTALLATION

Option 2

MOUNTING WITH BUTTERFLY BRACKETS

1. Attach butterfly brackets
 - a. Outside the housing, line up the butterfly bracket with its mounting hole.
 - b. Use the provided bolt to fasten the butterfly bracket (see fig. 6).
 - c. Bend both sides out to the required distance for your method of mounting (see fig. 7).
 - d. Repeat steps a-c for the second butterfly bracket.

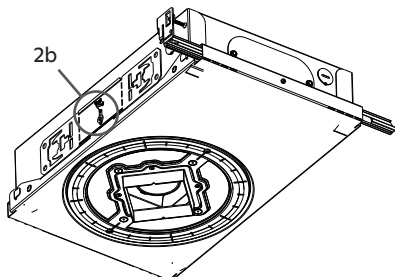


fig. 6

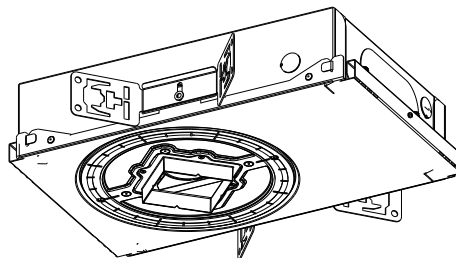


fig. 7

2. Mount downlight in the ceiling

Note: For radio communication, the D2 cannot be installed in metal ceilings. For ceilings with a metal liner the liner must be cut and removed around the RF window. There must not be any metal between the RF window and the occupied space.

- a. Use bar stock or C-channel (not provided) to mount the D2 in the ceiling. The supports should go through the holes in the butterfly brackets and can be used to suspend the D2 without screws (see fig. 8).

Note: After mounting, ensure that the D2's collar is flush or sub-flush to the ceiling plane and does not protrude.

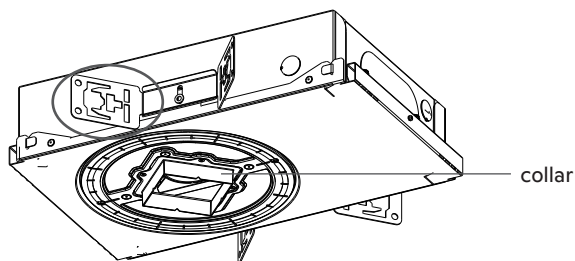


fig. 8

- b. Wire-tie at least one bracket to the deck using at least one tie.
3. *Optional:* If using a square aperture with a flange, realign the collar parallel to the wall.
 - a. Loosen the RF window's two outer screws, freeing the collar for rotation (see fig. 9).
 - b. Realign the collar using its v-shaped notches and an alignment string or laser.
 - c. Re-tighten the screws to lock the collar's new position.

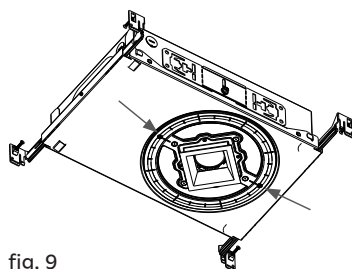


fig. 9

Part 2a: Wire the Fixture (Non-Emergency Operation)

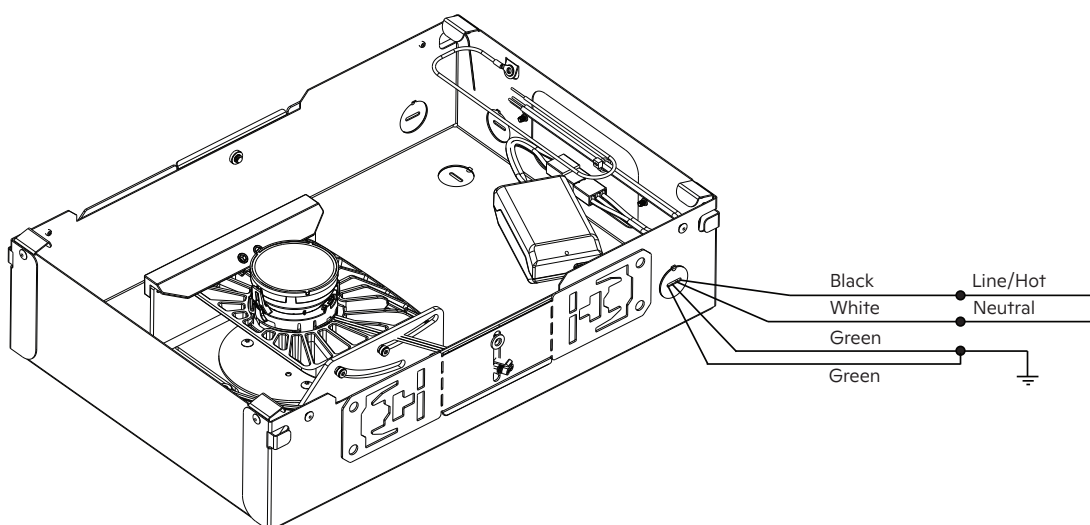
1. Run power to the junction box
 - a. Remove the wiring access panel cover by loosening the two (2) bolts holding it in then push the panel towards the front of the fixture.

Note: A licensed electrician should perform all the wiring tasks. All electrical connections must be made within the fixture. There is not a separate junction box for the D2 fixture, the internals of the fixture is utilized as the junction box.

 - b. Run the conduit into the D2 (and out, if this is one downlight in a sequence). Make sure to leave 9 in (229 mm) of conduit internal to the fixture to allow for future servicing of connections.

Note: Maximum of (8) 12 AWG (4.0 mm²) through branch circuit conductors suitable for 165 °F (75 °C) are permitted in the box.

 - c. Run the building's power line wires* into the junction box.
2. Splice the wires
 - a. Using the provided connectors, splice the D2's flying leads into the building's power. Make sure the housing is grounded in accordance with local codes.



lid is removed for illustrative purposes only

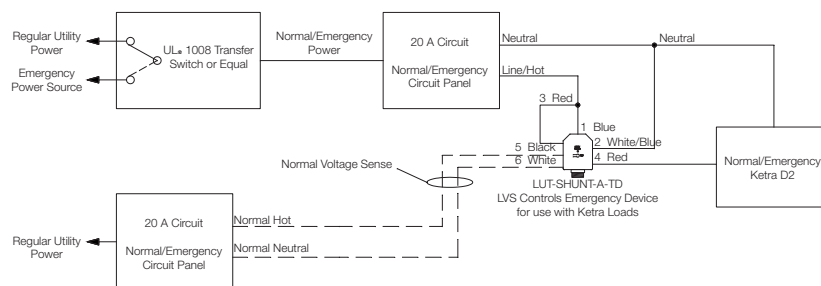
- b. Replace the box's wiring access panel cover.
3. Test the wiring
 - a. Apply power to the D2. The emitter should immediately come on to 3000 K (warm white).
 - b. After verifying a successful installation, remove power and continue to Part 3.

* Lutron lighting products should not be connected to, or directly controlled by, AC mains line voltage dimmers. These types of dimmers may also be referred to as phase cut, triac, forward-phase, reverse-phase, ELV, or MLV dimmers. Lutron's lighting products should only be controlled via our digital control architecture. Lutron does not recommend switching power on/off to Lutron lighting products via relays, contactors, or manual toggle switches. When the lighting products are disconnected from power they cannot respond to digital commands from control devices. This could confuse end users as the lighting may be in a state that is inconsistent with the control devices. Please refer to the product installation guides for more information.

Part 2b: Wire the Fixture (Emergency Operation)

The commercial Clear Connect - Type X Ketra D2 and LVS LUT-SHUNT-A-TD, when installed together, form an approved emergency lighting system in accordance with NEC® Article 700 and NFPA101. Monthly and annual testing, in accordance with NFPA101, is required to maintain this compliance.

1. Run power to junction box
 - a. Remove the junction box's outer cover by pressing down on the outer latch and pulling the cover toward you. **Note:** A licensed electrician should perform all the wiring tasks. All electrical connections must be made within the junction box.
 - b. Run the conduit into the D2 (and out, if this is one downlight in a sequence).
Note: Maximum of (8) 12 AWG (4.0 mm²) through branch circuit conductors suitable for 165 °F (75 °C) are permitted in the box.
 - c. Run the building's power line wires* into the junction box.
2. Install the LUT-SHUNT-A-TD in accordance to LVS installation instructions wired to the circuit feeding the Ketra D2
3. Splice the wires
 - a. Using the provided connectors, wire the D2's flying leads according to the diagram below.
Note: The Ketra D2's hot (black) will connect to the RED #4 on the LUT-SHUNT-A-TD according to the diagram below.
Note: The Ketra D2's neutral (white) will connect to the emergency neutral and White/Blue #2 on the LUT-SHUNT-A-TD according to the diagram below.



- b. Make sure the housing is installed and grounded in accordance with all national and local codes.
 - c. Replace the junction box's outer cover.
4. Test the wiring
 - a. Apply power to the D2. The emitter should immediately come on to 3000 K (warm white).
 - b. After verifying a successful installation, remove power and continue to Part 3.

* Ketra lighting products should not be connected to, or directly controlled by, AC mains line voltage dimmers. These types of dimmers may also be referred to as phase cut, triac, forward-phase, reverse-phase, ELV, or MLV dimmers. Ketra's lighting products should only be controlled via our digital control architecture. Ketra does not recommend switching power on/off to Ketra lighting products via relays, contactors, or manual toggle switches. When the lighting products are disconnected from power they cannot respond to digital commands from control devices. This could confuse end users as the lighting may be in a state that is inconsistent with the control devices. Please refer to the product installation guides for more information.

Part 3: Installing into the Ceiling

1. Ensure that the aperture is plugged with the provided foam insert to protect the optic and downlight from dust ingress.
2. Cut properly-sized hole in the ceiling before installing. Reference the table for sizes.

Type	Hole shape and size
Flangeless mud-in square aperture	Square with 4 in (101.6 mm) length/width or circle with 5.25 in (133.4 mm) diameter
Flangeless mud-in round aperture	Circle with 4.25 in (108 mm) diameter
Flanged with square aperture	Square with 3 in (76.2 mm) length/width min. 3.25 in (82.55 mm) with 1/8 in (3.2 mm) rotozip bit
Flanged with round aperture	Circle with 3 in (76.2 mm) diameter min, 3.25 in (82.55 mm) with 1/8 in (3.2 mm) rotozip bit
Flangeless millwork with square aperture	<p><u>Material above wooden ceiling (if applicable):</u> Square with 5 in (127 mm) length/width</p> <p><u>Wood dimensions:</u> Counterbore: Square with 5 in (127 mm) length/width, rounded corners with a radius of 0.5 in (12.7 mm). Plunge router is set to leave 0.375 in (9.5 mm) of material</p> <p><u>Thru hole:</u> Square with 2.830 in (71.9 mm) length/width</p>
Flangeless millwork with round aperture	<p><u>Material above wooden ceiling (if applicable):</u> Circle with 5 in (127 mm) diameter</p> <p><u>Wood dimensions:</u> Counterbore: Circle with 5 in (127 mm) diameter. Plunge router is set to leave 0.375 in (9.5 mm) of material.</p> <p><u>Thru hole:</u> Circle with 2.830 in (71.9 mm) diameter</p>

3. Align the hole with the D2's aperture and install the drywall.

Part 4a: Apply Flangeless Mud-In Trim Retainer

Note: Skip this section if you have a flanged downlight. Proceed to Part 4b for flangeless millwork trim retainer installation.

1. Align the retainer assembly such that the holes in the retainer line up with the screw posts in the collar (see fig. 10).
2. Secure the retainer assembly using the provided fasteners. For ceiling thickness range 0.625 in (15.9 mm) to 1.6875 in (42.9 mm) use the provided 0.71 in (18 mm) screw and for ceiling thicknesses above 1.75 in (44.5 mm) use the provided 1.2 in (30 mm) screw.

Note: The retainer assembly should be flush with the drywall.

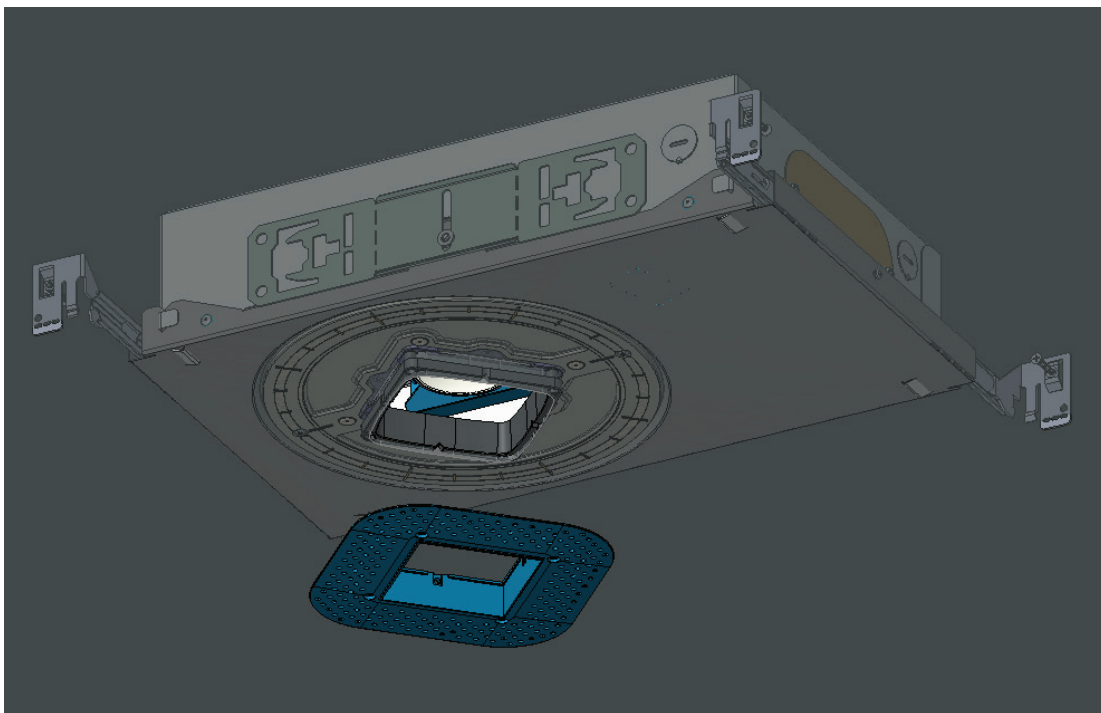


fig. 10

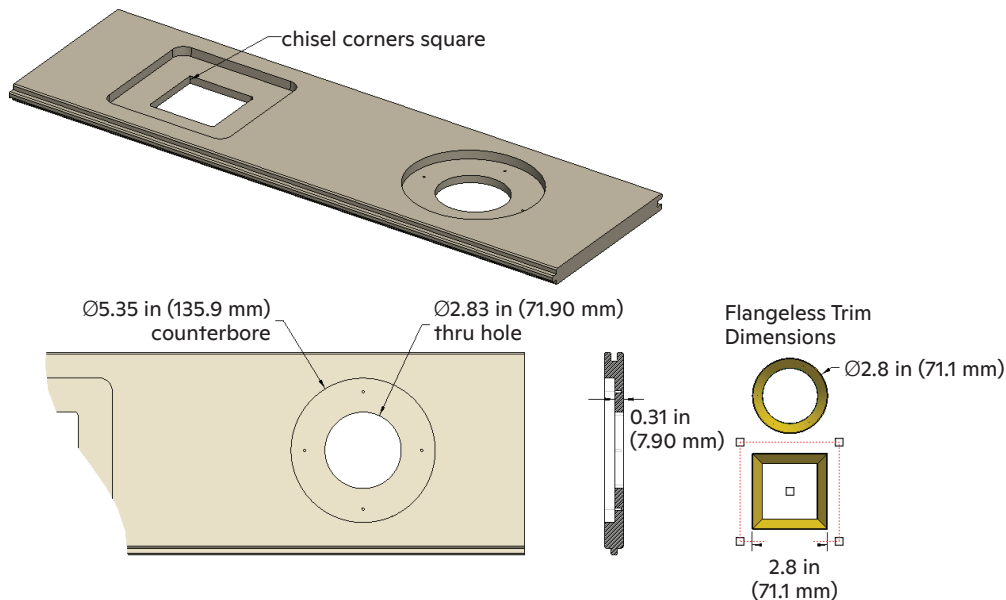
Part 4b: Flangeless Millwork Trim Retainer Installation (Wood Ceilings)

TOOLS

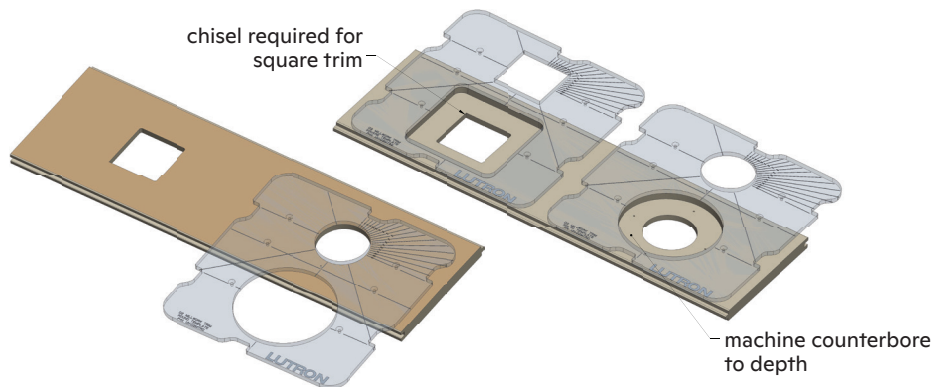
1. Plunge router with bearing guided trim bit
2. Routing template (available from Lutron)
3. Chisel (for square trim)
4. Drill bit (7/64 in [2.78 mm] for softwood, 1/8 in [3.175 mm] for hardwood)
5. Drill bit stop (suggested due to shallow blind hole)
6. Laser level

LOCATING TRIM LOCATION ON MILLWORK

1. Precision is required for milling the hole and counter bore for flangeless millwork installations.
2. Review drawing for important final dimensions. Flush trim requires a final wood thickness of 5/16 in (7.94 mm).

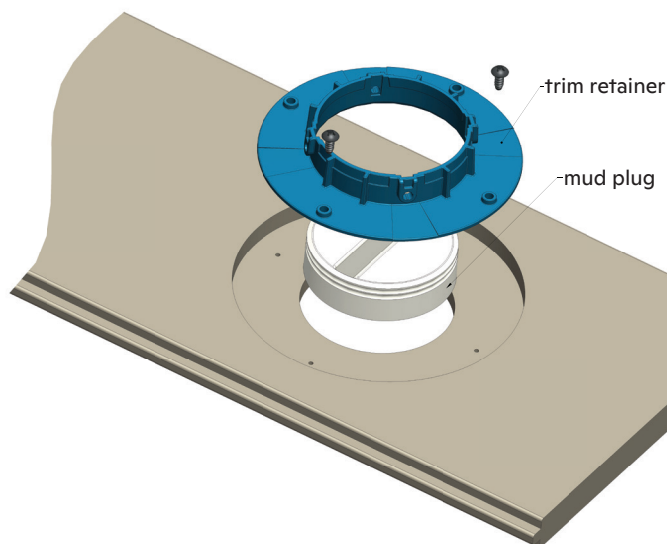
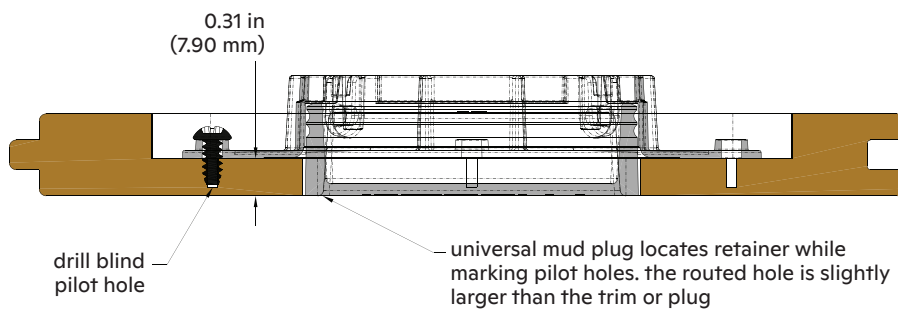


3. Trim location on millwork is based on the location of the recessed luminaire. Plan millwork butt joints to allow room for mounting template and avoiding partial holes on end cuts. Fasten adjacent planks or narrow planks together to create a complete hole during routing. Luminaire mounting should allow small adjustments to align with millwork trim.
4. Fasten template to millwork with screws, double-sided tape or clamps. It is possible to use the template from the front face or back of the millwork depending on preference. Template includes reference edges and lines to help with location purposes. Drilling a small pilot hole at the center of the trim location can help transfer marks from the front to the back.



INSTALLATION

5. Follow the template to machine the millwork to the correct thickness and opening size. Wood is a natural material that shrinks and swells with changes in moisture. Wood should be kiln dried and acclimated to the environment before machining the final opening. Reference the installation guide for the millwork. Square trim will require a chisel to make a corner square.
6. Install the retainer into the counterbore. The retainer is centered on the routed opening. Confirm that the mud plug fits into the machined opening for the trim. The mud plug can be inserted into the retainer to help center the retainer on the opening. Note that there is some clearance between the opening and the mud plug to account for small changes in wood dimensions that can occur after the millwork is installed.
7. Pilot holes for the retainer fasteners are required. Use a depth stop on the drill to ensure the pilot hole is deep enough without drilling through the millwork. Test install a retainer and mud plug in a test piece of millwork before milling and installing on the ceiling. Install all four fasteners by hand or a light setting on a clutched driver. Most drill/drivers can over-torque screws. The retainer should not move when installed properly. Confirm the mud plug is centered in the trim opening before installing the millwork.



Part 5: Apply Joint Compound

Note: Skip this section if you have a flangeless millwork installation.

1. Make sure the mud-in plug is installed prior to applying the joint compound.
2. Apply skim coat up to the aperture rim using a joint compound. For best results, use a full ceiling float coat (see fig. 15).

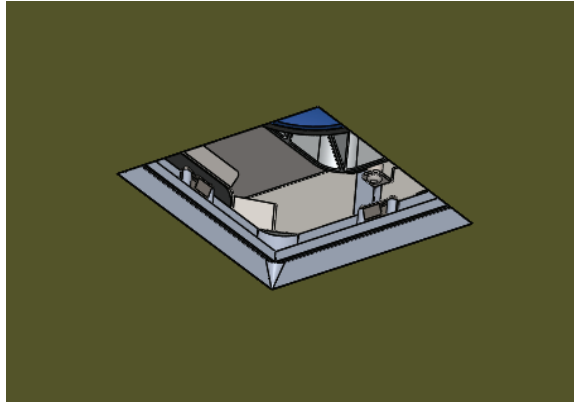


fig. 15

3. Sand and finish the final surface before removing the aperture plug. Clean the internal surfaces of the trim retainer with a clean rag and isopropyl alcohol.

Part 6: Apply Trim

Flangeless mud-in and flanged downlights have different processes for applying their trims. Please read only the appropriate section below.

1. Applying trim to **flangeless mud-in OR millwork downlight**
 - a. Press the flangeless trim into the trim retainer (see fig. 16).

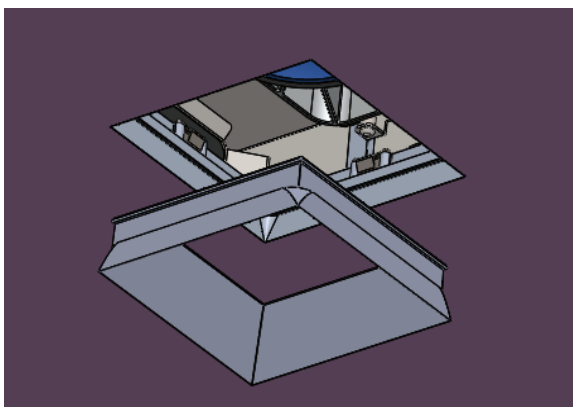


fig. 16

2. Applying trim to **flanged downlight**
 - a. Compress the springs and push into the downlight aperture until the trim is flush to the ceiling. Ensure that the springs are properly compressed and are going into the collar, not around the collar (see fig. 17).
 - b. Snap the trim into the collar.

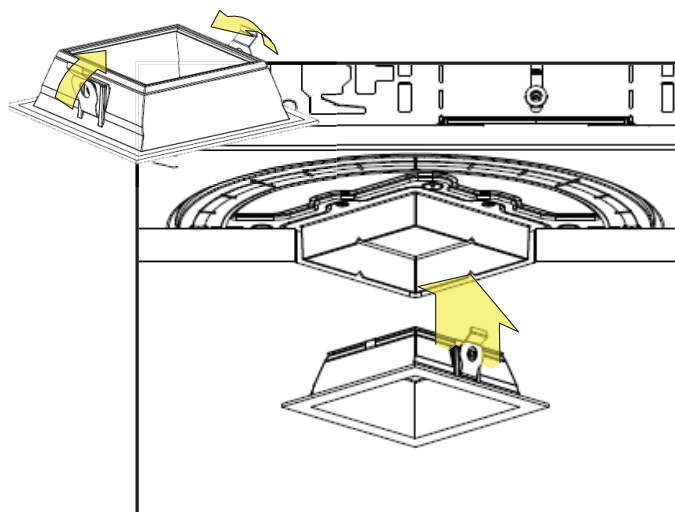


fig. 17

Additional Operations

1. Re-aiming the optic

- a. Unlock the emitter chassis by loosening the lock screw with a 4 mm hex tool (see fig 18).

Note: A ball-ended hex tool is recommended to ease the operation.

- b. Using the same 4 mm hex tool, use the rotate control point to rotate the optic (see fig 19).
- c. Re-lock the lock screw used in step 1a.
- d. Using the 4 mm hex tool use the tilt control to aim the emitter (see fig 20).
- e. Use the degree indicators to determine degree of tilt.

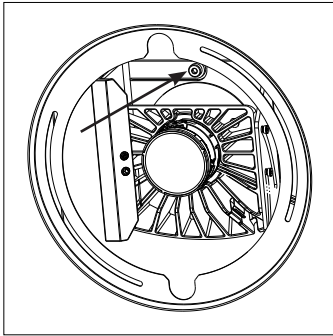


fig. 18 (lock)

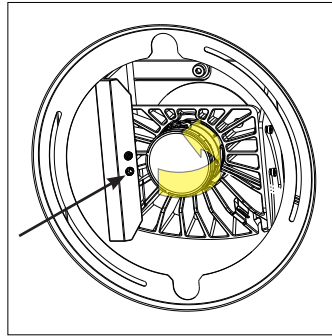


fig. 19 (rotate)

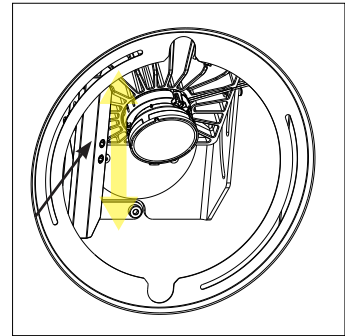


fig. 20 (tilt)

2. Replacing the optic

- a. Grab optic and twist counterclockwise to unlock. Pull toward you to remove (see fig. 21). If the optic cannot be removed by hand, a suction cup can be used.
- b. Install replacement optic, twisting clockwise to lock (see fig. 22).

Note: If you remove the optic, be careful not to touch the exposed silicone dome on the emitter.

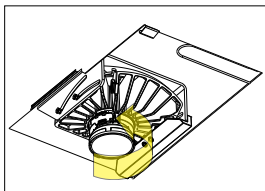


fig. 21

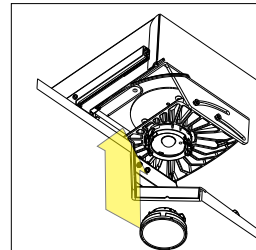
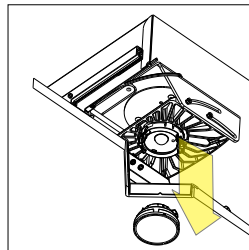
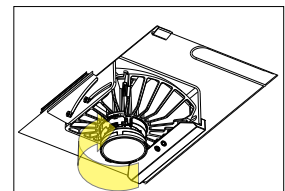


fig. 22



ADDITIONAL OPERATIONS

3. Replacing the power supply

- Remove the trim by pulling the trim directly down from the housing.
- For adjustable configurations, tilt the light engine to 40° and rotate to allow access to the power supply.
- Locate the cable between the emitter and the power supply.
- Pull the cable to release the power supply from the fixture through the aperture (see fig. 23).
- Disconnect power supply quick connect.

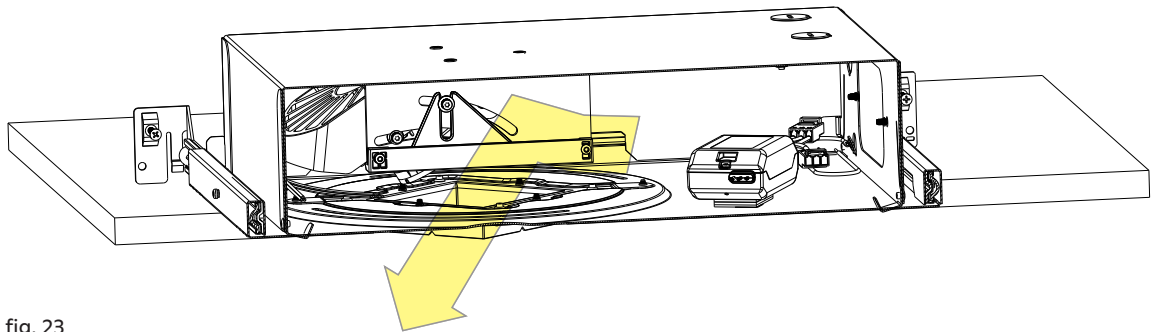


fig. 23

4. Installing or replacing the collar adapter (see fig. 24)

- Use a Phillips screwdriver to remove the four collar adapter screws.
- Remove collar adapter from the housing.
- Place new collar adapter on the housing and align all four screw holes with the threaded holes on the housing.
Note: Collar adapter will fit flush to the housing when properly aligned.
- Use a Phillips screwdriver to install the four collar adapter screws.
Note: Collar adapter must be installed before ceiling installation.

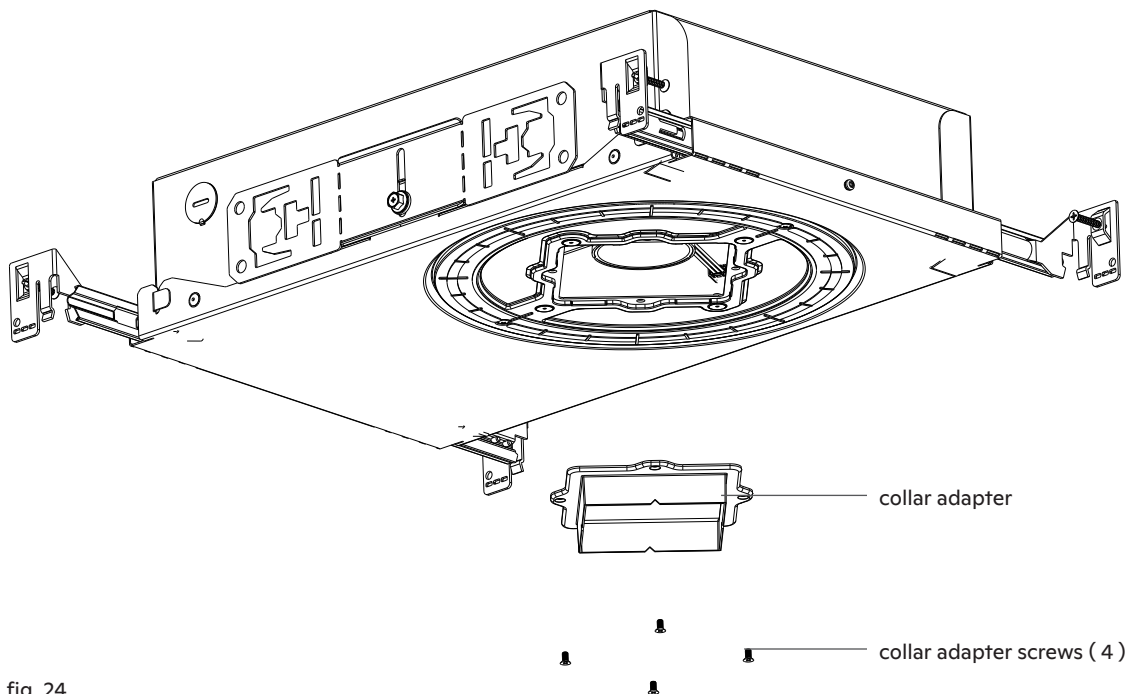


fig. 24

Warranty & Tech Support

Limited warranty terms can be found at:

www.lutron.com/warranty

For questions and technical support please contact:

lightingsupport@lutron.com

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