



HBAWASP™ Fluorescent High Bay Occupancy Sensor

Installation Instructions

Hubbell Building Automation

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PRODUCT CONFIGURATIONS

| Model No. | Outputs | Power Input | Max Output Ratings (Each Output) | Photosensor |
|-------------|---------|----------------------|--|-------------|
| FHB140NP24V | 1 | 24VDC | 24VDC (Requires Power Pack) | No |
| FHB141NPUNV | 1 SPST | 120/277/347VAC, 60Hz | 800W @ 120V, 1200W @ 277V, 1500W @ 347V, Motor Load: 1/4 HP @ 120V, 1/6 HP @ 347V | No |
| FHB142NPUNV | 2 SPST | 120/277/347VAC, 60Hz | 800W @ 120V, 1200W @ 277V, 1500W @ 347V, Motor Load: 1/4 HP @ 120V, 1/6 HP @ 347V | No |
| FHB141NP208 | 1 DPST | 208/240VAC, 60Hz | 5 Amp Ballast, Motor Load: 1/4 HP | No |
| FHB141NP480 | 1 DPST | 480VAC, 60Hz | 5 Amp Ballast, Motor Load: 1/4 HP | No |
| FHB140PS24V | 2 | 24VDC | 24VDC (Requires Power Pack) | Yes |
| FHB141PSUNV | 1 SPST | 120/277/347VAC, 60Hz | 800W @ 120V, 1200W @ 277V, 1500W @ 347V, Motor Load: 1/4 HP @ 120V, 1/6 HP @ 347V | Yes |
| FHB142PSUNV | 2 SPST | 120/277/347VAC, 60Hz | 800W @ 120V, 1200W @ 277V, 1500W @ 347V, Motor Load: 1/4 HP @ 120V, 1/6 HP @ 347V | Yes |
| FHB141PS208 | 1 DPST | 208/240VAC, 60Hz | 5 Amp Ballast, Motor Load: 1/4 HP | Yes |
| FHB141PS480 | 1 DPST | 480VAC, 60Hz | 5 Amp Ballast, Motor Load: 1/4 HP | Yes |

SPECIFICATIONS

- Timer Timeouts
 - Primary (8 second test mode, 4, 8 16, 30 minutes)
 - Secondary (Disabled, 30, 60, 90 minutes) – Available on dual output versions only
- Coverage
 - 360 Degree (masking kit available)
 - Lens: 1.4:1 – Example: 30ft mounting x 1.4 = 42ft radius
- Photosensor range: 50FC – 3000FC – Available on photosensor versions only
- Operating Environment: Indoor Use Only; 32° - 149° F (0 - 65 ° C); Relative Humidity: 0 – 80% non-condensing.

PRECAUTIONS

- Read and understand all instructions before beginning installation.
- **NOTICE:** For installation by a licensed electrician in accordance with National and/or local Electrical Codes and the following instructions.
- **NOTICE:** For use in Pollution Degree 2 Environment - Indoor Use Only.
- Disconnect switch or a circuit breaker must be provided and marked as the disconnecting device.
- Disconnect switch / circuit breaker must be within reach of operator.
- **CAUTION: RISK OF ELECTRICAL SHOCK.** Turn power off at service panel before beginning installation. Never wire energized electrical components.
- **CAUTION: USE COPPER CONDUCTOR ONLY.**
- Confirm that device ratings are suitable for application prior to installation.
- Use only approved materials and components (i.e. wire nuts, electrical box, etc.) as appropriate for installation.
- **NOTICE:** Do not install if any damage to product is noticed.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

SENSOR INSTALLATION

The installation instructions contained in this document are provided as a guide for proper and reliable installation. The mounting location should be selected and prepared based on the lighting system application and facility layout requirements. All electrical wiring and mounting hardware (i.e. extension adaptor (p/n FHBADAPTOR), electrical mounting box, conduit, etc.) should be prepared with consideration of the requirements outlined in the wiring and mounting diagrams below.

1. Turn power off at the service panel before installing sensor.
2. Insert the sensor's wires and threaded nipple into a 1/2" knockout on the fixture body or an electrical junction box.
3. Thread the sensor's wires through the lock-nut.
4. Verify that the sensor is positioned correctly (i.e. lens facing downward).
5. Screw lock-nut onto the sensor's threaded nipple and tighten.
6. Electrically connect the sensor to the lighting system per the applicable wiring diagram below.
7. Adjust sensor operation by setting Bank A, Bank B and Bank C (optional) switches as described below.
8. Turn power on and allow sensor 2 minutes minimum to stabilize.
9. Verify sensor is functioning by waving hand under lens and observing that the sensor's red light (located under the lens) flashes.

SENSOR WITH EXTENSION ADAPTOR INSTALLATION

For deep body fluorescent fixtures, where the height of the ballast cavity knockout is greater than or equal to 1.5", the extension adaptor should be used to position the sensor below the bottom of the reflector for full field of view coverage.

1. Turn power off at the service panel before installing sensor.
2. Remove the first adaptor cover by slightly pressing down on the top seam, in the middle, while pulling apart (See Figure 1).
3. Using the enclosed threaded nipple connector, insert the threaded end through the adaptor knockout and into a 1/2" knockout on the fixture body or an electrical junction box.
4. Secure the adaptor by screwing the enclosed lock-nut onto the connector.
5. Remove the second adaptor cover by slightly pressing down on the bottom seam, in the middle, while pulling apart
6. From the outside of the adaptor, insert the sensor's wires and threaded nipple into the second adaptor knockout (See Figure 2).
7. Thread the sensor's wires through the lock-nut provided with the sensor.
8. Screw the lock-nut onto the sensor's threaded nipple.
9. Feed the sensor wires up through the adaptor and into the threaded nipple connector attached to the fixture (or electrical junction box).
10. Verify sensor is correctly positioned (lens facing down), and then tighten both lock-nuts.
11. Re-attach both adaptor covers.
12. Electrically connect the sensor to the lighting system per the applicable wiring diagram below.
13. Adjust sensor operation by setting Bank A, Bank B and Bank C (optional) switches as described below.
14. Turn power on and allow sensor 2 minutes minimum to stabilize.
15. Verify sensor is functioning by waving hand under lens and observing that the sensor's red light (located under the lens) flashes.

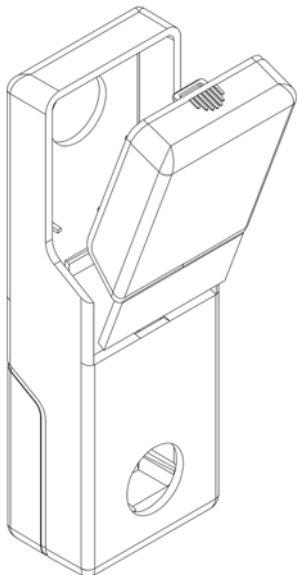


Figure 1

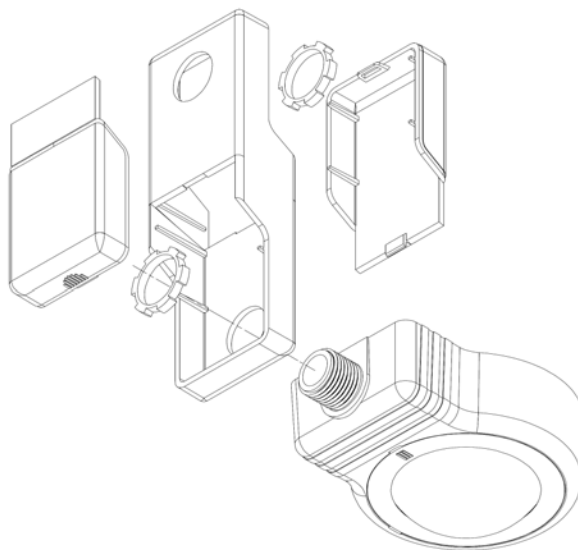


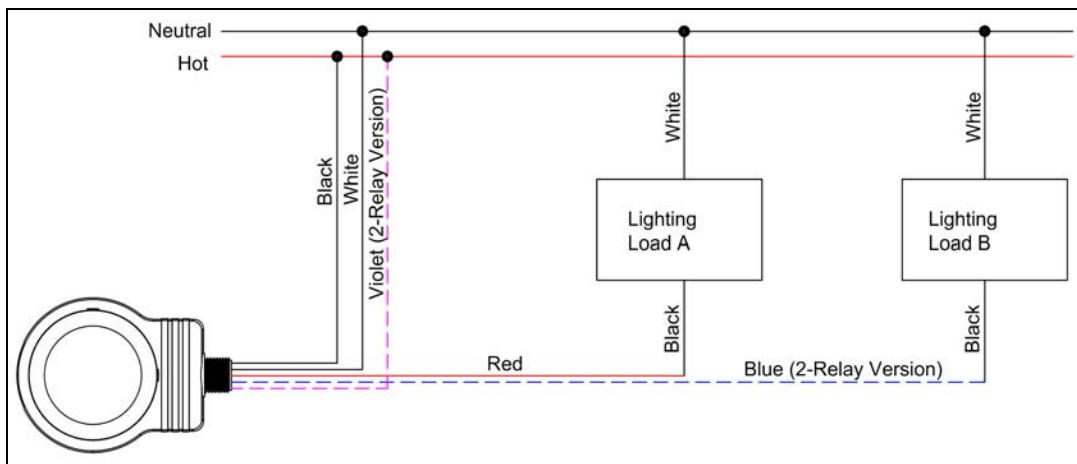
Figure 2

RANGE TEST

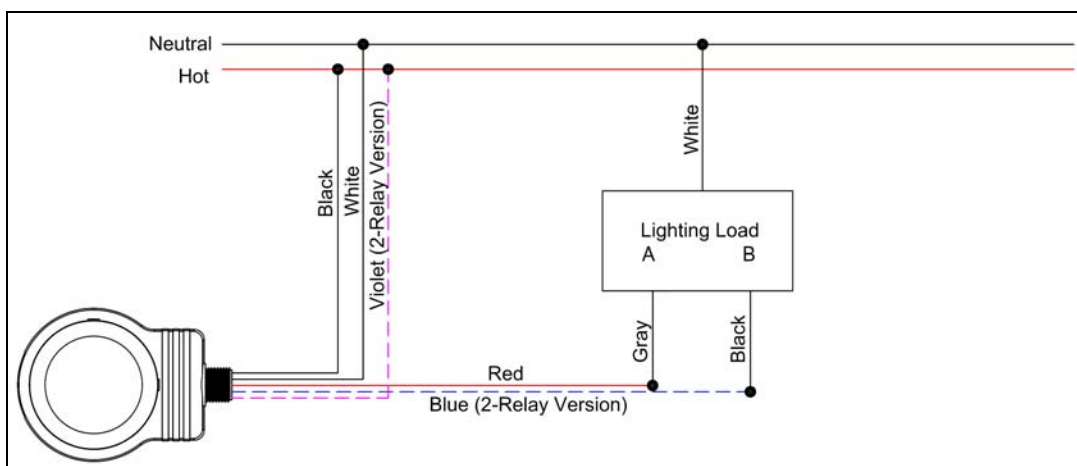
Range testing provides a means to confirm that the sensor's coverage pattern (see Figures 5 & 6) is aligned properly in the lighted space as well as verifying basic functionality of the sensor.

1. Remove PIR lens assembly from sensor (see Adjustments section below).
2. Place sensor in Test Mode (8 seconds) by putting Bank A – Switch 1 into the ON (Test) position.
3. Re-install PIR lens assembly.
4. Vacate the sensor detection pattern area. Remove obstructions (i.e. ladder or lift) from the sensor detection pattern area as necessary. Light(s) will turn off approximately 8 seconds after vacating detection pattern area.
5. Wait for at least 4 seconds, then re-enter sensor detection pattern area and observe that lights turn on.
6. Step out of sensor detection pattern area and observe that lights turn off approximately 8 seconds after vacating detection area.
7. Repeat steps 5 and 6 from different entry points on the detection pattern area as necessary to verify proper detection pattern area coverage.
8. If necessary, modify sensor detection pattern area by adjusting sensor sensitivity (see Switch Settings below), adding or modifying PIR lens masking, and/or adjusting sensor orientation/mounting.
9. After completing testing, repeat steps 1 through 3 to take sensor out of Test Mode by readjusting Bank A – Switch 1 to the OFF (Normal) position. NOTE: Sensor will automatically exit Test Mode after 1 hour.

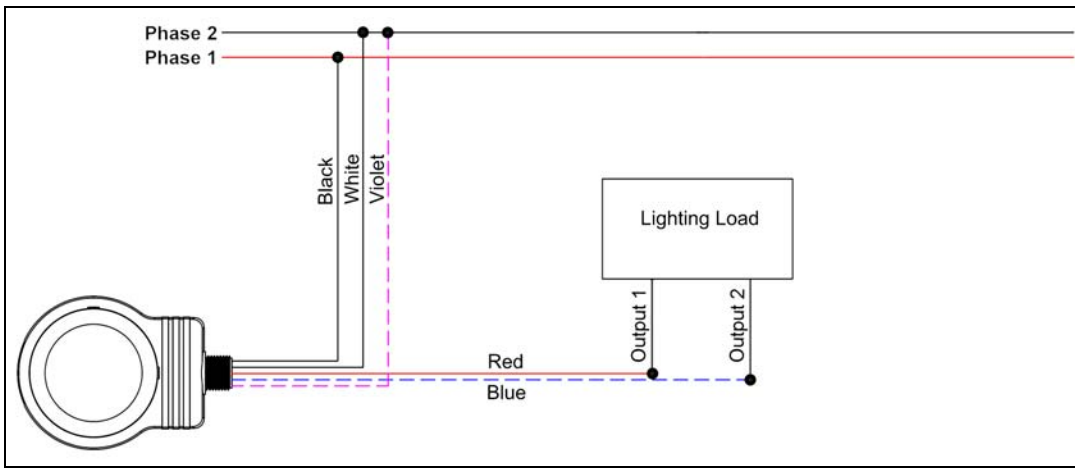
WIRING DIAGRAMS



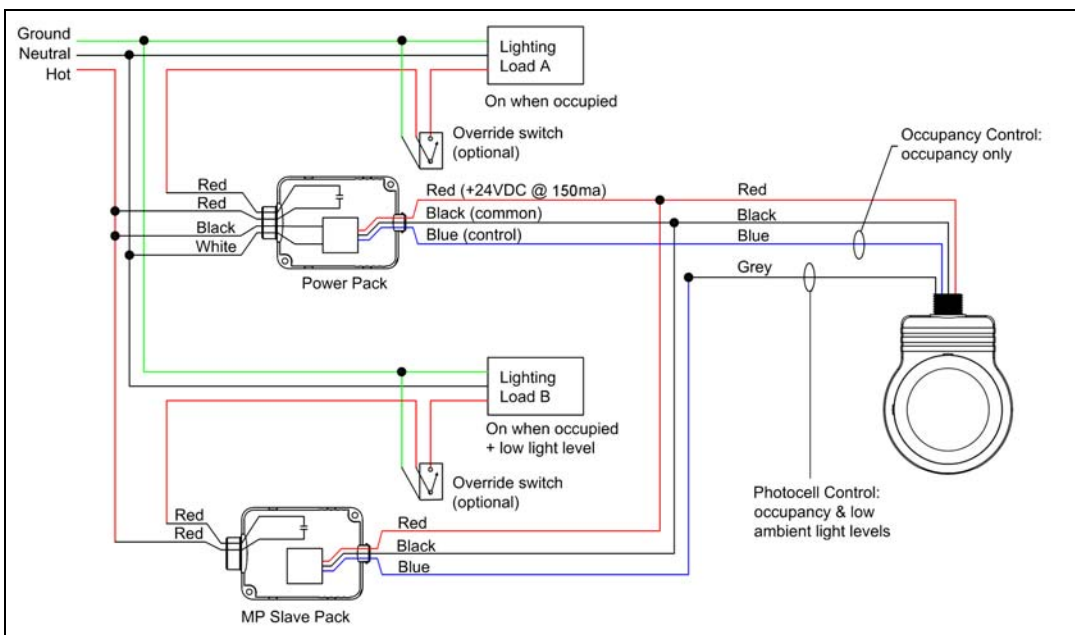
Wiring Diagram A – 120/277/347VAC Line voltage wiring diagram for single and dual relay sensors (Single Phase Only)



Wiring Diagram B – 120/277/347VAC Line voltage wiring diagram for connecting a dual relay sensor to a switching ballast.
Note: Disable Smart Cycling for this configuration.



Wiring Diagram C – 208VAC & 480VAC Line voltage wiring diagram.



Wiring Diagram D – Low voltage sensor wiring diagram. Note: Low voltage sensors that have a photosensor contain a Grey lead for photosensor control.

ADJUSTMENTS

Remove PIR lens assembly from sensor by inserting a small blade screwdriver into the catch at the bottom of the lens retainer ring (closest to the chase nipple) and gently lift up. Pinch the sides of the lens retainer ring together to release the two retainer catches. Remove PIR lens and set the adjustment switches as desired (see DIP Switch Settings below). To re-install PIR lens assembly, place PIR lens back on sensor – making sure that ALL lens tabs are inserted and that the lens is flush against the sensor housing. Pinch the sides of lens retainer ring together and insert retainer catches into recesses in sensor housing. Press down on bottom catch to secure retainer ring to housing.

SWITCH SETTINGS

BANK A – SENSOR SETTINGS

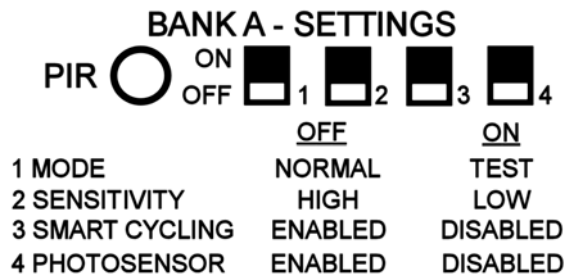


Figure 3 – Bank A: Sensor Settings. Note: Switches are located to the right of the PIR detector and are shown in the default OFF (down) position.

Switch 1 – Mode: Controls the operational mode of the sensor. When placed in Test Mode (ON Position), the sensor will timeout after 8 seconds of no occupancy. Sensor will automatically exit test mode after 1 hour. Default: Normal.

Switch 2 – Sensitivity: Controls PIR motion detection level. Use high sensitivity unless light(s) appear to turn on due to air currents, heat sources, etc. when area is unoccupied. Default: High.

Switch 3 – Smart Cycling: Controls Smart Cycling operation of dual relay sensors. This feature extends lamp life by balancing the cumulative operating times of the different output loads. Default: Enabled.

Switch 4 – Photosensor: Functional on photosensor models only. Enables or disables photosensor operation. When enabled, the sensor turns lights on in response to occupancy when light levels are below the photosensor set point (Bank C). The sensor turns lights off when ambient light levels increase above the photosensor set point. Default: Enabled.

Sensor operation when photosensor is enabled:

- Single Output Sensor – Occupancy controlled with daylighting override.
- Dual Output Sensor – Output 1: Occupancy controlled; Output 2: Occupancy controlled with daylighting override.

Sensor operation when photosensor is disabled:

- Single Output Sensor – Occupancy controlled.
- Dual Output Sensor – Output 1 & Output 2: Occupancy controlled. If Smart Cycling is enabled, it will function as normal.

BANK B – SENSOR TIMERS

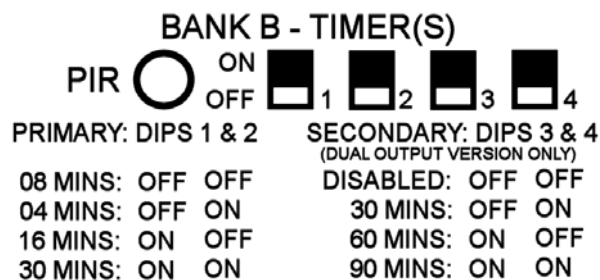


Figure 4 – Bank B: Timer Settings. Switches are located to the right of the PIR detector and are shown in the default OFF (down) position.

Primary Timer (DIP Switches 1 & 2): Controls time interval to turn off light(s) controlled by Primary Timer after the lighted space becomes unoccupied. Available settings are 8, 4, 16, and 30 minutes. Default: 8 minutes.

Secondary Timer (DIP Switches 3 & 4): Used on dual output sensors only. Controls time interval to turn off light(s) controlled by Secondary Timer after the lighted space becomes unoccupied. Available settings are DISABLED (Secondary lights switch off with Primary), 30, 60, and 90 minutes. Default: DISABLED.

BANK C – PHOTOSENSOR LEVELS (Only available on photosensor versions)

| FC Level | Switch 1 | Switch 2 | Switch 3 | Switch 4 |
|----------|----------|----------|----------|----------|
| 3000 | OFF | OFF | OFF | OFF |
| 2500 | OFF | OFF | OFF | ON |
| 2000 | OFF | OFF | ON | OFF |
| 1800 | OFF | OFF | ON | ON |
| 1400 | OFF | ON | OFF | OFF |
| 1000 | OFF | ON | OFF | ON |
| 0800 | OFF | ON | ON | OFF |
| 0600 | OFF | ON | ON | ON |
| 0400 | ON | OFF | OFF | OFF |
| 0300 | ON | OFF | OFF | ON |
| 0250 | ON | OFF | ON | OFF |
| 0200 | ON | OFF | ON | ON |
| 0150 | ON | ON | OFF | OFF |
| 0100 | ON | ON | OFF | ON |
| 0050 | ON | ON | ON | OFF |
| REMOTE | ON | ON | ON | ON |

Photosensor Set Point Levels (DIP Switches 1, 2, 3 & 4): Sets the foot-candle set point level. When the ambient light level is above the set point, lights will be overridden off. Default: 3000FC (All switches in the OFF (down) position). The REMOTE setting is reserved for future use.

SENSOR RANGE DIAGRAM – 1.4 AREA LENS PATTERN

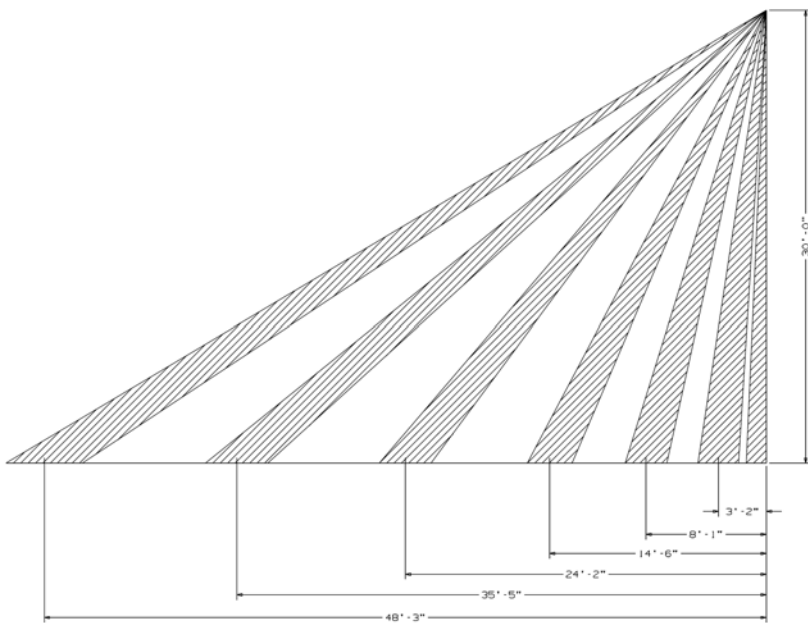


Figure 5 – Side View of 1.4 Area Lens

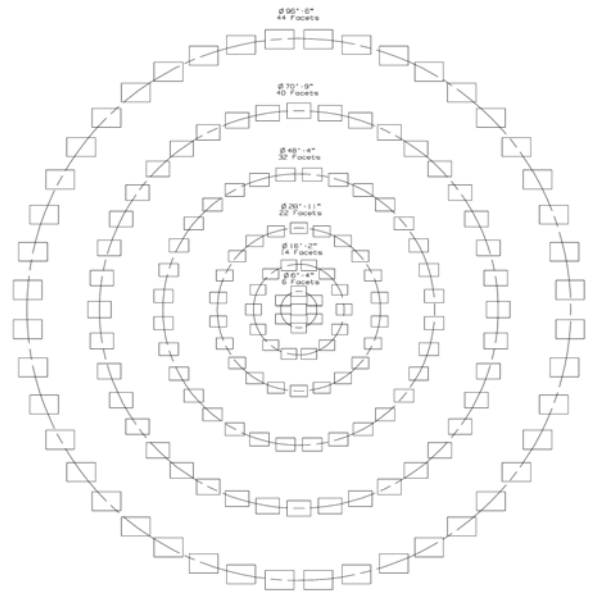


Figure 6 - Top View of 1.4 Area Lens

