FEATURES:
- LAMINAR FLOW DIFFUSER WITH INTEGRATED HIGH PERFORMANCE LED LIGHTS
- OPTIONAL HGMF - HOSPITAL GRADE MOUNTING FRAME FOR SURFACE MOUNT INSTALLATION
- UL 1598 CERTIFIED, AIR-HANDLING LUMINAIRE

ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
EXAMPLE DIFFUSER
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
3D INTERACTIVE MODELS

ULFD 2 x 2
ULFD 2 x 3
ULFD 2 x 4
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING

STANDARD CONSTRUCTION
- EXTRUDED ALUMINUM FILTER FRAME WITH URETHANE GEL
- ROOM SIDE ADJUSTABLE APERTURE PLATE DAMPER
- TWO STAINLESS STEEL RETAINER CABLES PER UNIT
- DIFFUSER FACE SECURED WITH QUARTER TURN FASTENERS
- 14 GA (.064 THICK) ALUMINUM PLENUM
- EXTRUDED ALUMINUM OUTER FRAME AND DIFFUSER FRAME
- TIG WELDED PLENUM, DIFFUSER AND OUTER FRAME
- ZINC PLATED EYE BOLTS FOR HANGING

FINISH
- B12 STANDARD WHITE

LED LIGHTING SPECIFICATIONS
- LED LIGHTING INTEGRATED INTO EACH DIFFUSER MODULE
- IP67 RATED LED STRIP WITH QUICK CONNECTORS
- COLOR RENDERING INDEX (CRI) 90+
- L80 > 60,000 HRS.
- FOR IES PHOTOMETRIC FILES VISIT: www.priceindustries.com/criticalenvironments/products/ulfd

LED COLOR TEMPERATURE
- 5000K (5000 KELVIN)

LISTINGS
- UL 1598 AIR-HANDLING LUMINAIRES
- UL 2043 FIRE TEST FOR HEAT AND VISIBLE SMOKE RELEASE FOR DISCRETE PRODUCTS AND THEIR ACCESSORIES INSTALLED IN AIR-HANDLING SPACES
- UL2108 LOW VOLTAGE LIGHTING SYSTEM
- UL775 LIGHT EMITTING DIODE (LED) EQUIPMENT FOR USE IN LIGHTING PRODUCTS
- UL1310 CLASS 2 POWER UNITS
- UL94 FLAMMABILITY OF PLASTIC MATERIALS FOR PARTS IN DEVICES AND APPLIANCES
- IP67 RATED INGRESS PROTECTION AGAINST DUST AND LIQUIDS
- MIL-STD-461 FOR ELECTROMAGNETIC COMPATIBILITY

AVAILABLE INLET SIZES:
- 6" ROUND
- 8" ROUND
- 10" ROUND
- 12" ROUND (NOT AVAILABLE FOR 2x2)

NOMINAL SIZE
<table>
<thead>
<tr>
<th>UNIT SIZE</th>
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<th>LENGTH (L)</th>
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PROJECT:

ENGINEER:
CUSTOMER:
SUBMITTAL DATE: JULY 2020
REVISION: 0

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ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
APERTURE PLATE DAMPER DETAILS

NOTES:
- SLIDE DAMPER APERTURE PLATE FOR AIRFLOW ADJUSTMENT BY LOOSENING AND SLIDING THE SCREW WITH A 3/16" ALLEN KEY
- CENTER SCREW WITHIN SLOT FOR FULLY OPEN DAMPER
- SLIDE SCREW EITHER FULLY LEFT OR FULLY RIGHT FOR A CLOSED DAMPER

ADJUSTABLE APERTURE PLATE DAMPER
DIFFUSER FACE SECURED WITH STAINLESS STEEL 1/4 TURN FASTENERS
TRANSLUCENT PERFORATED POLYCARBONATE DIFFUSER FACE 13% FREE AREA

PROJECT: ULFD
ENGINEER: 271971
CUSTOMER: JULY 2020
SUBMITTAL DATE: REVISION: 0

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ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
OPTIONAL HEPA FILTRATION - SEE FTR-1-X LINestring

NOTES
- FILTER PLEATS RUN PARALLEL TO THE WIDTH (W) DIMENSION
- DIMENSIONS A & B TOLERANCES +/- 1/16"
- FILTERS COME WITH GEL SEAL FILLED CHANNEL
- FRAME DETAILS:
  - MATERIAL: ANODIZED EXTRUDED ALUMINUM
  - THICKNESS: 1/16" (MINIMUM)
  - FILTERS ARE UL 900 CLASS 1 CERTIFIED
  - EFFICIENCY AND LEAK SCAN TESTED
  - HEPA EFFICIENCY: 99.99% (.3 MICRON)
  - MINIMUM MODULE WIDTH FOR ROOMSIDE HEPA FILTRATION IS 12"
- FILTER PACKAGED SEPERATELY FROM DIFFUSER FOR JOB SITE INSTALLATION BY OTHERS

VISIT PRICE INDUSTRIES WEBSITE FOR FILTER QUICK START GUIDE

NOTE:
UL 1598 DOES NOT HAVE PROVISIONS FOR HEPA FILTERS MOUNTED WITHIN FIXTURE. ULFD COMPLIES WITH UL 1598 WITH HEPA FILTERS ORDERED SEPERATELY ON FTR-1-X LINestring.

ACTUAL FILTER SIZE
<table>
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<th>WIDTH (W)</th>
<th>LENGTH (L)</th>
<th>HEIGHT (H)</th>
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</thead>
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<td>2.88</td>
</tr>
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<td>20.69</td>
<td>44.69</td>
<td>2.88</td>
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PROJECT:

ENGINEER: 271971
CUSTOMER: JULY 2020
SUBMITTAL DATE: REVISION: 0
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
DETAIL VIEWS - STANDARD CONSTRUCTION

DAMPER INSTALLATION DETAIL

APERTURE PLATE DAMPER WITH UL2043 RATED GASKET SEALS AGAINST THE KNIFE EDGE

STATIC PRESSURE PORT DETAIL

APERTURE PLATE DAMPER WITH UL2043 RATED GASKET SEALS AGAINST THE KNIFE EDGE

DAMPER SECURED IN PLACE WITH SCREWS INSTALL BY USING 3/16" ALLEN KEY

KNIFE EDGE

STATIC PRESSURE PORT

KNIFE EDGE

APERTURE PLATE

DAMPER SECURED IN PLACE WITH SCREWS INSTALL BY USING 3/16" ALLEN KEY

STATIC PRESSURE PORT

KNIFE EDGE

APERTURE PLATE

DAMPER SECURED IN PLACE WITH SCREWS INSTALL BY USING 3/16" ALLEN KEY

STATIC PRESSURE PORT

KNIFE EDGE

APERTURE PLATE

DAMPER SECURED IN PLACE WITH SCREWS INSTALL BY USING 3/16" ALLEN KEY

STATIC PRESSURE PORT

KNIFE EDGE

APERTURE PLATE
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
DETAIL VIEWS - OPTIONAL HEPA FILTRATION - SEE FTR-1-X LINestring
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
MOUNTING DETAILS

T-BAR MOUNTING

FOR 15/16" (23), 1-1/2" (38) CLEANROOM TEE INSTALLED BY OTHERS

SURFACE MOUNTING

SURFACE MOUNTING USING HGMF OR MOUNTING FRAME BY OTHERS

NOTES:
- LAY IN CEILING INSTALLATION ONLY. UNIT SIZE DESIGNED FOR 1" WIDE T-BAR OR 1.5" WIDE T-BAR.
- FOR SURFACE MOUNT INSTALLATION ORDER SEPARATE HOSPITAL GRADE MOUNTING FRAME. SEE HGMF SUBMITTAL HERE.
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING

TOP ACCESS - TYPICAL WIRING DETAILS

- 0-10V DIMMER SHIPS LOOSE. THE TOTAL 0-10V CONTROL SIGNAL WIRING FOR THIS CONTROL SHOULD NOT EXCEED 500 ft. DO NOT USE WIRE SMALLER THAN 20 AWG.
- SEE UCA (ULTRA COMPONENTS AND ACCESSORIES) SUBMITTAL HERE

LOW VOLTAGE 0-10V FIELD CONNECTIONS

HIGH VOLTAGE FIELD CONNECTIONS

INSTALLATION WORK AND ELECTRICAL WIRING MUST BE COMPLETED BY A CERTIFIED ELECTRICIAN AND/OR QUALIFIED PERSON(S) IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES AND STANDARDS.
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
□ TOP AND ROOMSIDE ACCESS - TYPICAL WIRING DETAILS

LOW VOLTAGE 0-10V FIELD CONNECTIONS

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PROJECT: UNFINISHED
ENGINEER: UNFINISHED
CUSTOMER: UNFINISHED
SUBMITTAL DATE: JULY 2020
REVISION: 0
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
□ TOP AND ROOMSIDE ACCESS - TYPICAL WIRING DETAILS

WARNING
- SHOCK HAZARD, DISCONNECT POWER BEFORE SERVICING UNIT

1) REMOVE FACE, FILTER AND GASKETED CONTROLS LID TO ACCESS CONTROL BOX ASSEMBLY
2) REMOVE THE FOUR BOLTS TO UNMOUNT THE DRIVER ACCESS PLATE

3) ACCESS PLATE SWINGS OUT TO ENABLE ACCESS TO THE ELECTRICAL COMPONENTS
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING

- URDC’s require single point high voltage (120-277V~) connection (277V~ recommended).
- 0-10V dimmer ships loose. The total 0-10V control signal wiring for this control should not exceed 500 ft. Do not use wire smaller than 20 AWG.
- 0-10V dimmer controls up to 6 drivers at 120V~ and up to 16 drivers at 277V~.
- LED drivers ship factory wired and installed in URDC.
- LED drivers offer continuous, flicker-free dimming from 100% to 10% with relay shut-off.
- Optional 0.1% dimming available.
- ULFD modules come with factory wired and installed top mounted low voltage terminal block enclosure.
- Incoming high voltage power and low voltage connection between ULFD modules and remote driver cabinet are the responsibility of the installer.
- Max distance between ULFD modules and URDC is dependent on wire gauge to minimize voltage drop. See table below.

URDC accept one single point high voltage (120-277V~) connection per cabinet.

WIRING SCHEMATIC IS NOT TO SCALE AND IS SHOWN FOR REFERENCE ONLY.
INSTALLATION WORK AND ELECTRICAL WIRING MUST BE COMPLETED BY A CERTIFIED ELECTRICIAN AND/OR QUALIFIED PERSON(S) IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES AND STANDARDS.

LOW VOLTAGE WIRE LENGTHS

<table>
<thead>
<tr>
<th>WIRE GAUGE (awg)</th>
<th>LENGTH OF WIRE (feet)</th>
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<tbody>
<tr>
<td>18</td>
<td>15</td>
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<tr>
<td>16</td>
<td>25</td>
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<td>45</td>
</tr>
<tr>
<td>12</td>
<td>70</td>
</tr>
<tr>
<td>10</td>
<td>115</td>
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</tbody>
</table>

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URDC (ULTRA REMOTE DRIVER CABINET) - TYPICAL WIRING DETAILS

Connections between URDC and ULFD terminal block enclosure to be done in field by others.

Pre-wired factory connection: G (ground), N (neutral), L (line connection).

Low voltage 0-10V field connections: (+), (-).

Field connection (from URDC).

Factory connection (from LED strip).

Installation work and electrical wiring must be completed by a certified electrician and/or qualified person(s) in accordance with applicable electrical codes and standards.

All internal URDC wiring is done in factory.

Low voltage field connections: (FROM URDC).

BARRIER TO SEPARATE HIGH VOLTAGE AND LOW VOLTAGE SIDE.

All metric dimensions ( ) are soft converted. Imperial dimensions are converted to metric and rounded to the nearest millimeter.

LOW VOLTAGE 0-10V FIELD CONNECTIONS

HIGH VOLTAGE FIELD CONNECTIONS

0-10V DIMMER SWITCH

ULFD MODULE
**ULFD**

**ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING**

**PHOTOMETRIC ANALYSIS - EXAMPLE LAYOUT - 24x48 MODULES**

---

**ROOM DIMENSION PARAMETERS:**

- 800 SQ FT
- 10 FT CEILING HEIGHT
- 3 FT WORKPLANE

**ROOM REFLECTANCES:**

- CEILINGS: 80%
- WALLS: 50%
- FLOORS: 20%

---

**THE CALCULATED VALUES DO NOT INCLUDE OR ACCOUNT FOR ADDITIONAL LIGHTING.**

**LIGHTING ANALYSIS HAS BEEN PERFORMED USING LAB TESTED. IES FILES AND STANDARD ROOM REFLECTANCE VALUES.**

**LIGHTING CALCULATIONS ARE ESTIMATED USING BEST PRACTICE AND MAY DIFFER SLIGHTLY FROM ACTUAL FIELD CONDITIONS.**

---

<table>
<thead>
<tr>
<th>TARGET AVERAGE ILLUMINANCE (FC)</th>
<th>NUMBER OF ROWS OF LED LIGHTS PER MODULE</th>
<th>% CEILING COVERAGE REQUIREMENT</th>
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<tbody>
<tr>
<td></td>
<td>SINGLE ROW</td>
<td>DUAL ROW</td>
</tr>
<tr>
<td>50 FC</td>
<td>21%</td>
<td>12%</td>
</tr>
<tr>
<td>75 FC</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>100 FC</td>
<td>45%</td>
<td>20%</td>
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</tbody>
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- THE TABLE REFLECTS THE PERCENTAGE OF ULFD CEILING COVERAGE REQUIRED TO MEET AVERAGE ILLUMINANCE (FC) REQUIREMENTS.

- 50 FC AVERAGE ILLUMINATION WITH 2 ROWS OF LED LIGHTS PER MODULE SHOWN.

---

**PROJECT:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**REVISION:**

**SUBMITTAL SHEET:**

---

**DUAL ROW LED LIGHTS**

**SINGLE ROW LED LIGHTS**
ULFD
ULTRA LAMINAR FLOW DIFFUSER WITH INTEGRATED LED LIGHTING
PHOTOMETRIC ANALYSIS - EXAMPLE LAYOUT - 24x24 MODULES

ROOM DIMENSION PARAMETERS:
800 SQ FT
10 FT CEILING HEIGHT
3 FT WORKPLANE

ROOM REFLECTANCES:
CEILINGS: 85%
WALLS: 50%
FLOORS: 20%

- THE TABLE BELOW REFLECTS THE PERCENTAGE OF ULFD CEILING COVERAGE REQUIRED TO MEET AVERAGE ILLUMINANCE (FC) REQUIREMENTS
- 50 FC AVERAGE ILLUMINATION WITH 2 ROWS OF LEDS PER MODULE SHOWN

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<td>75 FC</td>
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<td>57%</td>
<td>32%</td>
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<tr>
<td>100 FC</td>
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<td>76%</td>
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THE CALCULATED VALUES DO NOT INCLUDE OR ACCOUNT FOR ADDITIONAL LIGHTING. LIGHTING CALCULATIONS ARE ESTIMATED USING BEST PRACTICE AND MAY DIFFER SLIGHTLY FROM ACTUAL FIELD CONDITIONS.

LIGHTING ANALYSIS HAS BEEN PERFORMED USING LAB TESTED IES FILES AND STANDARD ROOM REFLECTANCE VALUES.

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LIGHTING CALCULATIONS ARE ESTIMATED USING BEST PRACTICE AND MAY DIFFER SLIGHTLY FROM ACTUAL FIELD CONDITIONS.

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