

COVELUM™

LED OUTDOOR

Wet listed fixture for outdoor cove and pocket illumination in standard lengths with flexible water-tight connection for straight runs and mild curves.

| | | | |
|-------|--|----------|--|
| CAT: | | FEET: | |
| TYPE: | | PROJECT: | |

FEATURES

- Standard fixtures complete with lens, LEDs and outdoor plug and play connections set back from fixture end for smooth illumination without dark spots
- Low maintenance, energy efficient lighting for exterior wet applications
- High Efficacy: 78 Lumens/Watt
- Full range dimming available

SPECIFICATIONS

| COVELUM LED OUTDOOR | EFFICACY LM/WT | CRI | LM/FT | LM/MODULE | WT/FT | WT/MODULE |
|-------------------------------|----------------|------|--------|-----------|-------|-----------|
| Warm White 2800° at 2.5" O.C. | 64.2 | 54.5 | 231.12 | 48.15 | 3.6 | 0.75 |
| White 5500° at 2.5" O.C. | 77.3 | 78.2 | 278.4 | 58 | 3.6 | 0.75 |

Items in bold denote Title 24 High efficacy rating. Measurements are based on 12V DC power and 0.75W design calculations will vary based on power supply and run lengths.

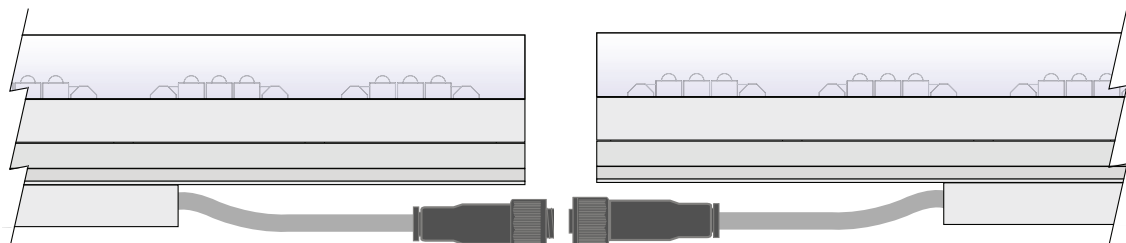
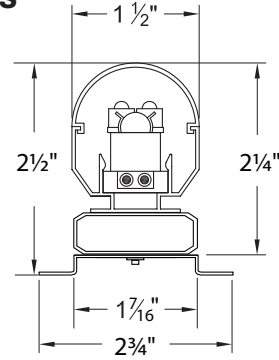
| LED DATA RATED TO LM80 STANDARDS | WATTAGE | LED LIFE* / COLOR TEMP | VIEWING ANGLE |
|--|---------------|---|---------------|
| LED Superflux module with 6 Triple Chip LEDs | 0.75W per PCB | 30,000 hrs. White (5500°k +/-500°k) Warm White (2800°k +/-300°k) | 150° |

* Ultra Bright Triple Chip LEDs are manufactured on fuse style PCB modules in 2 each 3 LED series orientation and operate at 52% of LED manufacturers maximum current spec rating.

1. **Spacing** - Lamp spacing: 2.5" O.C.
2. **LED PCB** - Uses 0.75W, 12VDC LED modules in a fuse style envelope
3. **Color Temperatures**
Warm White (2800° +/-300°K)
White (5500° +/-500°K)
4. **Mounting** - Swivel-foot mounting feet mounted at fixture base every 12"
5. **Lens** - Linear lens mounts in channel to protect LEDs from direct contact
6. **Max run length** - Continuous: 50' (215 PCB's per 15A circuit)
7. **Power Supply** - Listed Class I or II 12V DC power supply required
8. **Listing** - ETL wet listed for outdoor use above 3ft from surface for Class I or II applications
8. **Warranty** - 3 Year Warranty



PROFILES



COVELUM LED ORDER SPECIFICATION GUIDE

Example: CLL-LB-F-WH-MD-8

| PRODUCT CODE | LED TYPE | LENS | COLOR TYPE | CONNECTOR | LENGTH | REQUIRED POWER SUPPLY |
|--------------|----------|--------------------------|-------------------------------|------------------------------------|--|--|
| CLL | LB | - | - | - | - | + PSU |
| COVELUM™ LED | Litebar | C = Clear F = Frosted | WW = Warm White WH = White | MD=Male/Dead End MF=Male/Female | 1 = 1' 2 = 2' 4 = 4' 6 = 6' 8 = 8' | See power supply specifications for more information |

REQUIRED POWER SUPPLY OPTIONS

- ADUL-300-5-5-12-D
 - ADUL-200-3-5-12-D
 - ADUL-200-1-15-12-D
 - ADUL-75-1-5-12-D
 - ADN-300-5-5-12-D
 - ADN-200-1-15-12-D
 - ADN-75-1-5-12-D
 - QT-200-1-15-12-D
 - QTH-200-1-15-12-D
 - QT-400-2-15-12-D
 - QTH-400-2-15-12-D
 - QT-600-3-15-12-D
 - QTH-600-3-15-12-D
- JT-240-4-5-12-D
 - JTH-240-4-5-12-D
 - JT-60-1-5-12-D
 - JTH-60-1-5-12-D
 - MT-60-1-5-12-D

OPTIONAL DIMMERS

- N-600
- N-1000
- NH-600
- NH-1000
- DIM-12V-8A
- DIM-OT-1-5-D

See power supply specifications for more information

See dimming specification sheet for more information



COVELUM™ LED OUTDOOR

WIRING ACCESSORIES

FEMALE LEAD WIRE

- CLL-LB-F-LW-1 - 1' Lead Wire
- CLL-LB-F-LW-8 - 8' Lead Wire
- CLL-LB-F-LW-16 - 16' Lead Wire

SERVICE

CLL-LB-SERV

In-house service charge; Covelum LED Outdoor is a sealed unit and must be factory serviced only.

FIXTURE SELECTION

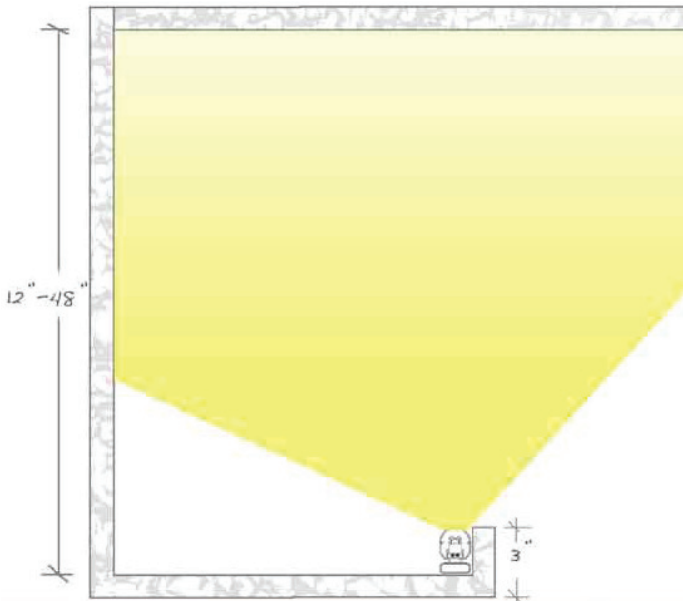
Lamp Type

SF: Super Flux modules offer a high intensity wide area of light for use in bright ambient light conditions. SF modules are 0.75W, 12V DC, with 6 LEDs manufactured in warm white and white with a 150° viewing angle.

Lamp Spacing

To select the lamp spacing necessary for desired effect, choose a close spacing for an even unbroken glow when you have a close distance or a wider spacing for a softer light with a greater distance to the wall area to be lit. (see lamp spacing chart for details)

LAMP SPACING GUIDE



Wet listed fixture for outdoor coves and pocket illumination in standard fixture lengths include lens, channel and outdoor connectors (not field cuttable) for straight run applications. Requires 4" cove depth for fixture recess. For distances between 6" - 12" from light source.

MTBF

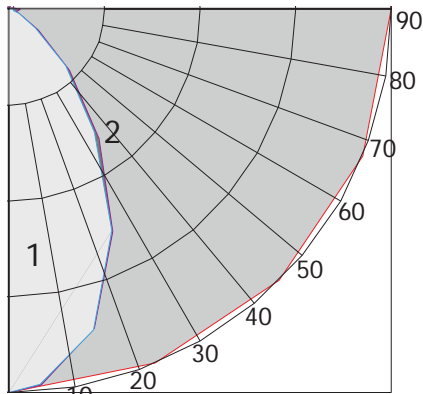
Mean Time Between Failures (MTBF) for LEDs: While Tivoli utilizes LEDs provided by industry leading vendors, these are electrical components with calculated manufacturers mean time between failures (MTBF). MTBF is rated as the average point at which 1/2 of color LEDs will lose 50% of their original brightness. MTBF for White LEDs is based on when 1/2 are reduced to 70% of their original brightness.

Typically, LED product failures occur within fixture construction, interdependent component failure, or operation under adverse conditions. Tivoli operates LEDs at a derated current to insure that LED MTBF values are based on product fixture construction and real application standards.

Still, conditions such as excessive voltage, vibration, heat, and other adverse conditions may negatively effect the life of LEDs.

Lamp Color

Lamp color selections can accent the hidden color within a surface, bringing out details or patterns not seen in a broad spectrum of light. Tivoli™ uses a range of 2600K to 3200K for warm white and 5000K to 6000K for white. Color temperatures are created by manufacturer LED modules that blend different color bins together to achieve rich color temperatures. Individual orders will be bin-sorted to within plus or minus 100K and it is recommended to purchase 10% replacement stock within that bin lot to insure matched color for needed replacements. Individual modules will vary in color and application design needs to incorporate cross blending to create color uniformity. Tivoli's Covelum LED product is intended for use as an indirect cove lighting product. Use in direct view or backlit applications may not yield acceptable results.



Maximum Candela = 138 Located At Horizontal Angle = 0, Vertical Angle = 0
 # 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.) : BLUE
 # 2 - Vertical Plane Through Horizontal Angles (90 - 270) : MAGENTA
 # 3 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.) : RED
 For more details on the IES Photo Metrics Graph, visit <http://www.tivolilighting.com/prodsearch.htm> under COVE LIGHTING.

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

| RC | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| 0 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 103 | 103 | 103 | 98 | 98 | 98 | 95 |
| 1 | 109 | 104 | 101 | 97 | 106 | 102 | 98 | 95 | 97 | 94 | 91 | 92 | 90 | 88 | 88 | 86 | 84 | 82 |
| 2 | 100 | 93 | 87 | 82 | 97 | 91 | 85 | 81 | 87 | 82 | 78 | 83 | 79 | 76 | 79 | 76 | 73 | 71 |
| 3 | 93 | 83 | 76 | 70 | 90 | 82 | 75 | 70 | 78 | 72 | 68 | 75 | 70 | 66 | 72 | 68 | 64 | 62 |
| 4 | 86 | 75 | 67 | 61 | 83 | 73 | 66 | 60 | 70 | 64 | 59 | 68 | 62 | 58 | 65 | 60 | 57 | 54 |
| 5 | 79 | 68 | 60 | 54 | 77 | 66 | 59 | 53 | 64 | 57 | 52 | 61 | 56 | 51 | 59 | 54 | 50 | 48 |
| 6 | 74 | 61 | 53 | 47 | 71 | 60 | 53 | 47 | 58 | 51 | 46 | 56 | 50 | 45 | 54 | 49 | 45 | 43 |
| 7 | 68 | 56 | 48 | 42 | 66 | 55 | 47 | 42 | 53 | 46 | 41 | 51 | 45 | 41 | 49 | 44 | 40 | 38 |
| 8 | 64 | 51 | 43 | 38 | 62 | 50 | 43 | 37 | 49 | 42 | 37 | 47 | 41 | 36 | 46 | 40 | 36 | 34 |
| 9 | 60 | 47 | 39 | 34 | 58 | 46 | 39 | 34 | 45 | 38 | 33 | 43 | 37 | 33 | 42 | 37 | 33 | 31 |
| 10 | 56 | 43 | 36 | 31 | 54 | 43 | 35 | 31 | 41 | 35 | 30 | 40 | 34 | 30 | 39 | 34 | 30 | 28 |

LED BINNING

LED's are made in lots and sorted into bins based on wavelength ranges that achieve colors. Tivoli uses a range of 2600°k to 3200°k for warm white and 5000° to 6000°K for white. Individual orders are bin-sorted to within plus or minus 100°k and it is recommended to purchase 10% replacement stock within that bin lot to ensure matched color for needed replacements. White LEDs vary slightly in color temperature from bin to bin. Tivoli references each bin location number on the packing list and labels it on each LED product accordingly. During installation, it is very important that like bins are located in close proximity for color consistency. The overall color will visually appear consistent even with multiple bins located in surrounding areas. However, if different bins are located in close proximity there may be slight color variations visible.

For example:

- Bin No. B-1C
- Bin No. B-1B

1C should be installed close to each other.

1B should be installed close to each other

1C and 1B should NOT be installed close to each other.



COVELUM™ LED OUTDOOR

RECOMMENDED POWER SUPPLIES

| PART # | PRIMARY AND SECONDARY | TOTAL WATTAGE / AMPERAGE PER BREAKER | LISTING | DIMENSIONS | WEIGHT | ELECTRONIC OR AC MAGNETIC | DIMMABLE (Y OR N) |
|--------------------|-----------------------|--------------------------------------|---------|---------------------------|--------|---------------------------|-------------------|
| ADUL-75-1-5-12-D | 85-264V AC / 12V DC | 75 / 1X5A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| ADUL-200-1-15-12-D | 85-264V AC / 12V DC | 200 / 1X15A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| ADUL-300-5-5-12-D | 85-264V AC / 12V DC | 300 / 5X5A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| ADNM-75-1-5-12-D | 85-264V AC / 12V DC | 75 / 1X5A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| ADNM-200-1-15-12-D | 85-264V AC / 12V DC | 200 / 1X15A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| ADNM-300-5-5-12-D | 85-264V AC / 12V DC | 300 / 5X5A | UL/ETL | 10"W X 10"L X 4"D | | Electronic | Y: D & E |
| QT-200-1-15-12-D | 120V AC / 12V DC | 200 / 1X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: A |
| QTH-200-1-15-12-D | 277V AC / 12V DC | 200 / 1X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: F |
| QT-400-2-15-12-D | 120V AC / 12V DC | 400 / 2X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: A |
| QTH-400-2-15-12-D | 277V AC / 12V DC | 400 / 2X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: F |
| QT-600-3-15-12-D | 120V AC / 12V DC | 600 / 3X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: B, C, D & E |
| QTH-600-3-15-12-D | 277V AC / 12V DC | 600 / 3X15A | cCSAus | 14.50"W X 8.00"L X 4.00"D | | Magnetic | Y: G |
| JT-60-1-5-12-D | 120V AC / 12V DC | 60 / 1X5A | ETL | 4.25"W X 8.50"L X 3.25"D | | Magnetic | Y: A, D & E |
| JTH-60-1-5-12-D | 277V AC / 12V DC | 60 / 1X5A | ETL | 4.25"W X 8.50"L X 3.25"D | | Magnetic | Y: D, E & F |
| JT-240-4-5-12-D | 120V AC / 12V DC | 240 / 4X5A | ETL | 8.50"W X 16.00"L X 4.50"D | | Magnetic | Y: A, D & E |
| JTH-240-4-5-12-D | 277V AC / 12V DC | 240 / 4X5A | ETL | 8.50"W X 16.00"L X 4.50"D | | Magnetic | Y: D, E & F |
| MT-60-1-5-12-D | 100-240V AC / 12V DC | 60 / 1X5A | UL | 4.25"W X 12.32"L X 4.00"D | | Electronic | N |

DIMMERS

| SELECTOR | DIMMER | TYPE | CONTROL SIGNAL | INPUT VOLTAGE | OUTPUT VOLTAGE | MAX LOAD | BREAKER RATING | DIMENSIONS |
|----------|--------------|-------------------|----------------|---------------|----------------|------------|----------------|--------------------------|
| A | N-600 | AC Magnetic | N/A | 120V AC | 120V AC | 450W Max. | N/A | Recessed Single gang box |
| B | N-1000 | AC Magnetic | N/A | 120V AC | 120V AC | 800W Max. | N/A | Recessed Dual gang box |
| C | N-1500 | AC Magnetic | N/A | 120V AC | 120V AC | 1200W Max. | N/A | Recessed Dual gang box |
| D | DIM-12V-8A | DC Digital | N/A | 12V DC | 12V DC | 96W | 8A* | Single gang box |
| E | DIM-OT-1-5-D | Control Interface | 1-10VDC | 12V DC | 12/24V DC | 60W | 5A** | 7"L X 1½"W X ¾"H |
| F | NH-600 | AC Magnetic | N/A | 277V AC | 277V AC | 450W | N/A | Recessed Single gang box |
| G | NH-1000 | AC Magnetic | N/A | 277V AC | 277V AC | 800W | N/A | Recessed Dual gang box |

* AD & QT Series secondary outputs would be limited to 8 amps.

** OTDIM applications require 1 each OTDIM per 5 amp circuit

PRODUCT SPECIFICATION GUIDE

| SPACING | WATTS PER FOOT | PRODUCT MAX RUN LIMITATIONS (Ft/W/LED's) |
|-----------|----------------|--|
| 2.5" O.C. | 3.6W/ft | 15A or 45ft |

