

CAT:	FEET:
TYPE:	PROJECT:

ILLUMILINE LED™

LIGHT TUBING

LED accent light tubing creates glow effect for direct or indirect lighting interior or exterior applications.

FEATURES

- For architectural elements such as walkways, bridge structures, outdoor coves, niches, stairwell and step applications
- TT1010 rectangular (1/2" x 9/16") or TT1011 rectangular with rounded top profile (1/2" x 3/4") tubing available in clear or frosted polycarbonate
 - Max length: 8' (1" & 2" O.C. Spacing)
 - Max length: 12' (3", 4" & 6" O.C. Spacing)
- Low maintenance, energy efficient lighting for high or low ambient light interior applications
- Full range dimming available

SPECIFICATIONS

ILLUMILINE LED	EFFICACY LM/WT	CRI	LM/FT	LM/LED	WT/FT	WT/LED
Warm White at 1" O.C. - Triple Chip	15.00	50.40	88.31	7.36	5.89	0.5
White at 1" O.C. - Triple Chip	16.70	49.90	97.69	8.14	5.85	0.5

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

LED DATA RATED TO LM79 STANDARDS	WATTAGE	LED LIFE* / COLOR TEMP	VIEWING ANGLE
Piranha Superflux LED	0.29W per LED	35,000 hrs. White (5500°k +/-300°k) 40,000 hrs. Neutral White (3200°k +/-300°k) Warm White (2800°k +/-100°k)	90°
Ultra Bright Triple Chip	0.35W per LED	25,000 hrs. White (5500°k +/-300°k) Neutral White (3200°k +/-200°k) Warm White (2800°k +/-100°k)	180°

** Ultra Bright Triple Chip LEDs are manufactured on linear PC boards and operate at 52% of LED manufacturers maximum current spec rating. LED data for all available colors available on Page 3.*

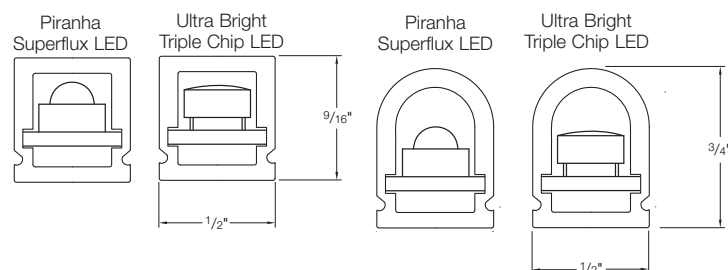
1. **Spacing** - Lamp spacing: 1", 2", 3", 4" & 6" O.C.
2. **LED** - Uses 0.29W Piranha or 0.35W Triple Chip 12VDC LEDs mounted on a linear PCB
3. **Adjustability** - +/-45° Directional mounting bracket (90° total adjustability) offers the ability to manually set the angular throw of light
4. **Mounting** - Mounting channel for linear mounting or mounting clips (1 per foot) for radius curved applications
5. **Installation** - 36" Min. radius (Lateral Bend), 24 Min. radius (concave or convex bend)
6. **Max LEDs** - 150 LED's per 5A circuit
7. **Power Supply** - Listed Class II 12V DC power supply required
8. **Listing** - ETL wet listed for indoor or outdoor Class II applications
9. **Warranty** - 3 Year Warranty



PROFILE Without Mounting Channel

TT1010 Profile

TT1011 Profile



ILLUMILINE LED ORDER SPECIFICATION GUIDE

Example: ILT-1010-C-U-NW-04-12

PRODUCT CODE	PROFILE	TUBE	LED TYPE	LED COLOR	LED SPACING	VOLTAGE	REQUIRED POWER SUPPLY
ILT	-	-	-	-	-	12	+ PSU
ILLUMILINE™	1010 = 1/2" x 9/16" Rectangular 1011 = 1/2" x 3/4" Rounded	C = Clear F = Frosted	P = Piranha U = Ultra Bright Triple Chip	YL = Yellow BL = Blue WH = White NW = Neutral White WW = Warm White	01 = 1" 02 = 2" 03 = 3" 04 = 4" 06 = 6"	12 = 12VDC	See power supply specsheets

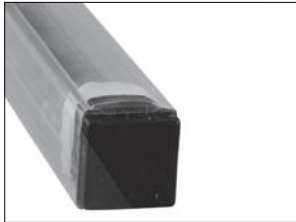
REQUIRED POWER SUPPLY OPTIONS

- OPTIONAL DIMMERS**
- ADUL-300-5-5-12-D
 - ADUL-200-3-5-12-D
 - ADUL-75-1-5-12-D
 - ADN-300-5-5-12-D
 - ADN-200-3-5-12-D
 - ADN-75-1-5-12-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
- See power supply specifications for more information
- N-600
 - N-1000
 - NH-600
 - NH-1000
 - DIM-12V-8A
 - DIM-OT-1-5-D



ILLUMILINE LED™ LIGHT TUBING

MOUNTING ACCESSORIES



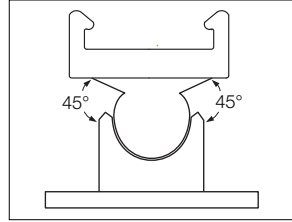
ILT-10-ENDCAP Replacement endcap for TT-1010 Rectangular profile

ILT-11-ENDCAP Replacement endcap for TT-1011 Rounded profile

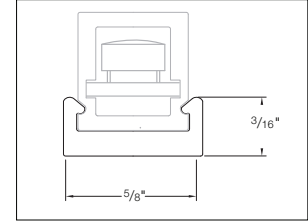


ILT-MCL-LP Rectangular mounting clip
3" clear Polycarbonate mounting clip

ILT-R-MCL-LP Radius mounting clip
1" clear Polycarbonate mounting clip



ILT-ADJ-MOUNT-LP Adjustable mount
Adjustable mounting bracket with 45° angle adjustment



ILT-MCH-10-LP Mounting Channel
Mounting channel - 10' length (Clear Polycarbonate)

ILT-DBL-TP Tubing double sided tape

WIRING ACCESSORIES



ILT-10-EP-1-LED End Prep for 1010
3" Black and White 18ga wire connector lead with Male and Female spade connectors on one end and a dead end cap on the other end. Polarity is "+" on White and "-" on Black.

ILT-10-EP-2-LED End Prep for 1010
3" Black and White 18ga wire connector lead with Male and Female spade connectors on both ends. Polarity is "+" on White and "-" on Black.

ILT-10-EP-3-LED End Prep for 1010
24" Black and White 18ga lead wires on one end and 3" Black and White 18ga wire connector lead with Male and Female spade connectors on both ends. Polarity is "+" on White and "-" on Black.



ILT-11-EP-1-LED End Prep for 1011
3" Black and White 18ga wire connector lead with Male and Female spade connectors on one end and a dead end cap on the other end. Polarity is "+" on White and "-" on Black.

ILT-11-EP-2-LED End Prep for 1011
3" Black and White 18ga wire connector lead with Male and Female spade connectors on both ends. Polarity is "+" on White and "-" on Black.

ILT-11-EP-3-LED End Prep for 1010
24" Black and White 18ga lead wires on one end and 3" Black and White 18ga wire connector lead with Male and Female spade connectors on both ends. Polarity is "+" on White and "-" on Black.



ILT-10-EP-C-LED End Prep for 1010
24" 18ga clear speaker wire lead on one end and a dead end connection on the other end.

ILT-11-EP-C-LED End Prep for 1011
24" 18ga clear speaker wire lead on one end and a dead end connection on the other end.

ILT-10-EP-D-LED End Prep for 1010
24" 18ga clear speaker wire lead on both ends.

ILT-11-EP-D-LED End Prep for 1011
24" 18ga clear speaker wire lead on both ends.

ILT-XEP Extra length lead wire (per foot)

LED BINNING

LED's are made in lots and sorted into bins based on wavelength ranges that achieve colors. Tivoli uses a range of 2700°k to 2900°k for warm white, 3000°k to 3400°k for neutral white and 5200° to 5800°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. **WB3**
Bin No. **WD3**

B3 should be installed close to each other.
D3 should be installed close to each other
B3 and D3 should **NOT** be installed close to each other.

Lighting Effects Accessories.

Mounting clips are recommended as a standard mounting accessory. This method is effective for curved or straight applications. Mounting clips should be placed every 6".

Mounting channel is recommended for uneven mounting surfaces or when applications require a cover. Clear lens covers are used to protect the Covelum LED modules from the environment without diminishing light output.

Frosted lens Illumiline is used to soften light for an even glow.



ILLUMILINE LED™ LIGHT TUBING

LED SPACING

Different LED spacings can create dramatically varied effects. Tighter spacing is most appropriate for high illumination indirect applications with wider spacings used for long range and direct delineation.

- LED spacing: 1", 2", 3", 4" and 6" O.C. standard.
- The first and last light on each tube is placed one half of the specified lamp spacing distance from the end of the tube so when tubes are linked, spacing remains uniform throughout. Minimum endcap spacing is 1" O.C. to first LED from tube end.
- Each spacing is individually rated for energy consumption by linear foot.



Back Lighting

PHOTOMETRIC INFORMATION

- Luminaire: 1/2" x 9/16" x 20" Illumiline TT1010 rectangular light tubing
- Light Input: 12 Cool White Triple Chip LEDs at 1" spacing

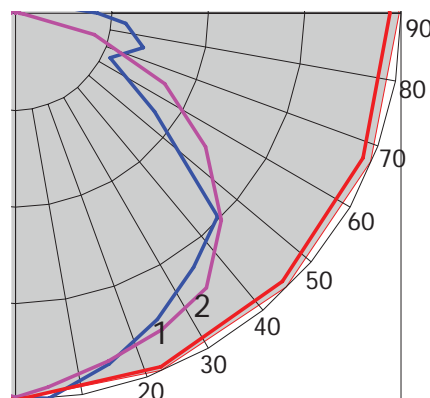
ZONAL LUMEN SUMMARY

Zone	Lumens	% Lamp	% Fixt
0-30	14.7	N.A.	15
0-40	27.52		28.2
0-60	57.37		58.7
0-90	84.75		86.8
90-120	6.94		7.1
90-130	8.9		9.1
90-150	12.06		12.3
90-180	12.94		13.2
0-180	97.69		100

LUMINANCE DATA (cd/sq.m)

Angle°	Average 0°	Average 45°	Average 90°
45°	7022	4384	4164
55	6763	3962	2850
65	6449	1946	1603
75	5229	1418	2203
85	1301	2705	2387

Total Luminaire Efficiency = N.A.%



Maximum Candela = 27.4 Located At Horizontal Angle = 90, Vertical Angle = 5
 # 1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.): BLUE
 # 2 - Vertical Plane Through Horizontal Angles (0 - 180) : MAGENTA
 # 3 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.) : RED

MAXIMUM CANDELA= 26.4 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

LED DATA RATED TO LM79 STANDARDS	WATTAGE	LED LIFE*	VIEWING ANGLE
Piranha Superflux LED	0.29W per LED	35,000 hrs. White (5500°k +/-300°k) 40,000 hrs. Neutral White (3200°k +/-300°k) Warm White (2800°k +/-100°k) 50,000 hrs. Blue (470nm +/-1nm) 100,000 hrs. Yellow (590nm +/-1nm)	90°
Ultra Bright Triple Chip	0.35W per LED	25,000 hrs. White (5500°k +/-300°k) Neutral White (3200°k +/-200°k) Warm White (2800°k +/-100°k) 40,000 hrs. Blue (470nm +/-1nm) 80,000 hrs. Yellow (590nm +/-1nm)	180°

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	0			
0	116	116	116	116	111	111	111	111	103	103	103	96	96	96	90	90	90	86
1	102	96	90	85	98	92	87	83	86	81	78	79	76	73	74	71	69	65
2	92	82	74	67	88	79	72	65	73	67	62	68	63	58	63	59	55	52
3	83	71	62	54	79	68	60	53	63	56	50	59	53	48	54	50	45	42
4	75	62	52	45	72	60	51	44	55	48	42	51	45	40	48	42	38	35
5	69	55	45	38	65	53	44	37	49	41	35	46	39	34	42	37	32	29
6	63	49	39	32	60	47	38	31	44	36	30	41	34	29	38	32	28	25
7	58	44	34	28	55	42	33	27	39	32	26	37	30	25	34	28	24	22
8	54	39	30	24	51	38	30	24	36	28	23	33	27	22	31	25	21	19
9	50	36	27	21	48	35	26	21	32	25	20	30	24	19	28	23	18	16
10	46	33	24	19	44	32	24	18	30	23	18	28	22	17	26	20	16	14



ILLUMILINE LED™ LIGHT TUBING

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: C & D
ADUL-200-3-5-12-D	85-264V AC / 12V DC	200 / 3X5A	UL/ETL	10"W X 10"L X 4"D		Electronic	Y: C & D
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: C & D
ADNM-75-1-5-12-D	85-264V AC / 12V DC	75 / 1X5A	UL/ETL	12"W X 12"L X 4.25"D		Electronic	Y: C & D
ADNM-200-3-5-12-D	85-264V AC / 12V DC	200 / 3X5A	UL/ETL	12"W X 12"L X 4.25"D		Electronic	Y: C & D
ADNM-300-5-5-12-D	85-264V AC / 12V DC	300 / 5X5A	UL/ETL	12"W X 12"L X 4.25"D		Electronic	Y: C & D
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, B, C & D
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: C, 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, B, C & D
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: C, 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	DIM-12V-8A	DC Digital	N/A	12V DC	12V DC	96W	8A*	Single gang box
D	DIM-OT-1-5-D	Control Interface	1-10VDC	12V DC	12/24V DC	60W	5A**	7"L X 1½"W X ¾"H
E	NH-600	AC Magnetic	N/A	277V AC	277V AC	450W	N/A	Recessed Single gang box
F	NH-1000	AC Magnetic	N/A	277V AC	277V AC	800W	N/A	Recessed Dual gang box

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

PRODUCT SPECIFICATION GUIDE

LED TYPE	VOLTAGE	MAX. LAMPS PER FEED
Super Flux Piranha	12V	150
Triple Chip		

