

Biosirus

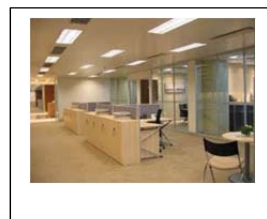
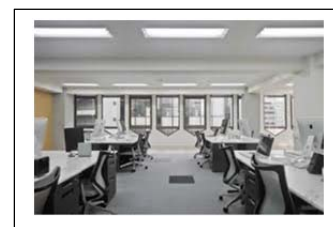
Intelligent Lighting

Advanced LED T8/T10 Replacement Tube

9 / 13 / 17.7 / 34 Watts

2 ft (603mm) / 3 ft (907mm) / 4ft (1212mm) / 8 ft (2380mm)

- Operates with existing electronic/magnetic ballasts - No removal, No bypass
- Can be connected direct to 120V or 240V ac supply
- Revolutionary integrated universal power supply (inside tube)
- Design-Lights Consortium (DLC) Qualified
- Replaces Fluorescent tubes (T8 / T12)
- Long Life: 80,000 + hours; Lumen maintenance $L_{70} = 97\%$
- Viewing angle of 120 degrees (with adjustable tilt)
- Colour Rendering Index ≥ 80 ; R9 ≥ 8.3
- Wide Range Colour Temperature: 3500k – 5000k
- High Power Factor ≥ 0.985 (lower Demand Charges)
- High Savings:
 - Energy Savings – Up to 70% compared to conventional fluorescents
 - Cooler Lamp Temperature – less than 50 deg. C (versus 300 deg. C for MH/MV)
- Manufactured with **Thermoplastic Polymers** (flexible, shatterproof and recyclable)
- Instant Start, No Flash, No Glare, No Risk of Eye Damage
- Wide Voltage and Temperatures Range (-40 to +40 Deg. C)
- Applications:
 - Indoor – Industrial, Commercial, Institutional, Utilities
 - Outdoor – Street lights, Perimeter, Wall mount (in appropriate fixtures)
 - Medium / Low Bay Applications
- CSA, UL, NSF, FCC, RoHS Compliant
- 5 year Warranty / Extended Warranty Options
- Financing Available



Comparison:

Parameters (Av. current market comparators)	Advanced LED T-10	FL. (T8)	FL. (T12)
Range/Sizes (Watts)	9, 13, 17.7, 34	various	various
Watts Consumed (equiv. 100W Incandescent)	13	20-23	30-50
Separate Ballast Required	No (integrated PS)	Yes	Yes
Design Lumens/(Watt)	102-110	80-90	60-80
Life (hours)	80,000	8,000 – 12,000	8,000 – 12,000
Lumen Maintenance	70% after 60,000 Hrs	50% after 8,000 Hrs	50% after 8,000 Hrs
Power Factor	≥ 0.98	< 0.9	< 0.9
Minimum Start-up Temp (Deg C)	- 40	+10	+10
Start Up	Instant	No	No
Pupil Lumen Correction Factor	1.7-2.0	1.4-2.0	0.98-1.2
Colour Rendering (Ra.)	≥ 80	70-80	40-62
R9 Rendering	8.3	-(5-20)	-(10-50)
Flicker	No	Yes	Yes

Typical values of T8/T12 for comparative purposes only

The Lumen Myth: Design Lumens vs. Pupil Lumens

What matters is how the eye sees the work surface. Design lumens (Photopic) as measured by the light meter, can be misleading. Pupil lumen (Scotopic) represents the sensitivity of the eye to interior lighting conditions and cannot be measured directly by light meters. **This factor can be significant for high CRI lamps.**

The combination of low bulb temperature and pupil lumen is key.

- Temperatures above 200 deg. C causes reflector oxidation & bulb darkening
- Pupil lumens for LED/Induction is significantly higher than MH/MV (see picture)
- High R9 value is a significant contributor (*many are negative or around zero*)

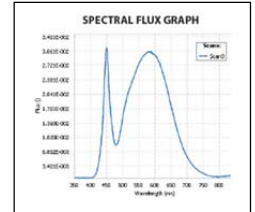
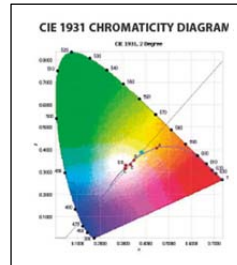


Same design lumen can have different "usable light output" and "apparent brightness".

The resultant lux "magnification" for LED/Induction can be almost 1.7-2.0 times MH/MV even from a casting height of 10 metres. Higher lumen does not mean higher "human-eye" luminescence!

Let's Talk Colour:

The extent of color presence of illuminated objects is called color rendering. It directly equates to color fidelity. High color rendering performs a better color reproducibility, offering more nature-like color. The Advanced LED T-10 lighting's color rendering beats almost all lighting systems.



And Savings Too:

Parameters (Av. current market comparators)	Advanced LED T-10	FL. (T8)	FL. (T12)
Individual Fixture:			
• Wattage (Watts)	100	150	200
• Watts Consumed (Watts)	100	170	225
Relative Consumption	1.0	1.7	2.25
Annual Energy Used/Lamp:			
• Kwh/day (@ 10hrs/day)	1.0	1.70	2.25
• kWh/year (@ 360 days)	360.00	612.00	810.00
Energy Cost /Lamp			
• Annual Cost (@10 ¢/kwh) 1 Year Relativity	\$36.00	\$61.20 +\$25.20	\$81.00 +\$45.00
5 year Relativity Extra: Bulb Replacement + Labour	(No)	+\$126.00 (Yes)	+\$225.00 (Yes)
• Annual Cost (@15 ¢/kwh) 1 Year Relativity	\$54.00	\$91.80 +\$37.80	\$121.50 +\$67.50
5 year Relativity Extra: Bulb Replacement + Labour	(No)	+\$189.00 (Yes)	+\$337.50 (Yes)

Do the math for 100 lamps or 500 lamps in your facility – the savings are huge

Additional Savings with Advanced LED T-10 Lighting:

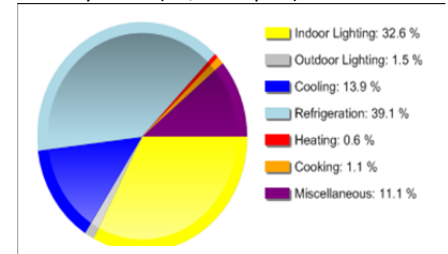
- Lower air-conditioning (or cooling)-Refrigeration, Air-conditioned areas
- Single 15 Amp breaker circuit at 120V can take 30 tubes (or more).
- Lower Demand Charges (≥ 0.98 pf for LED T-10 vs. lower pf for others)

Best of all, it is plug-and-play. No changing old magnetic/electronic ballasts from old fixtures. Just replace tubes with the new Advanced LED T-10....or connect directly to supply.

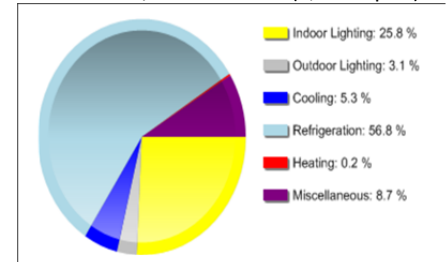
Typical Electricity Consumption

(Source: US DOE)

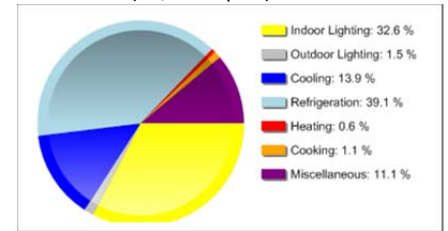
Grocery Store (60,000 sq. ft.):



Convenience/Pharma Store (5,000 sq. ft.):



Restaurant (10,000 sq. ft.):



Biosirus Inc.

21 Amber Street, Unit 3, Markham, Ontario, Canada L3R 4Z3; Tel./Fax: 416-410-4782
email: info@biosirus.com / Website: www.biosirus.com

**Call us for any details
or a trial project**