

Figure 1. Side View Actual Photo of T8 LED Tube



Figure 2. End View Actual Photo of T8 LED Tube

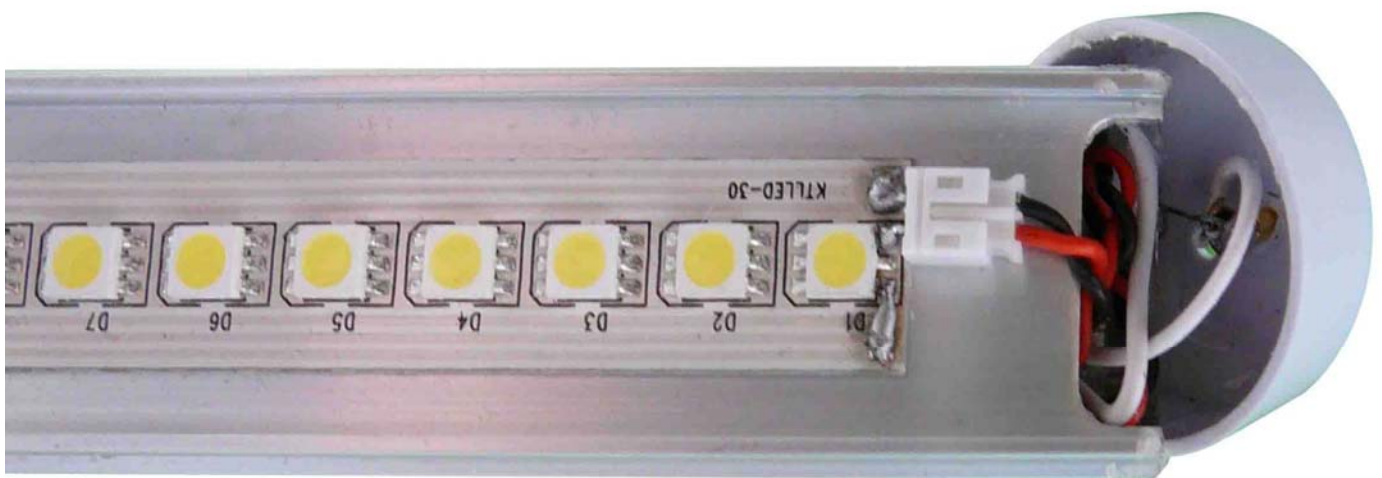


Figure 3. Internal View Actual Photo of T8 LED Tube

FEATURES

- High Reliability and Stability
- Operating Voltage: 110 ± 5V
- LED Luminous Efficiency: 90 ~ 100LM/W
- Luminaires Flux: ≥ 1170LM
- Color Temperature: 4500K ~ 5000K
- Single LED SMD Power: 0.5W
- Power Factor: >0.85
- Viewing Angle: 60° or 80°
- LED Thermostat: ≤ 65°C
- Operating Temperature: -30°C ~ 55°C
- Target Temperature: 4°C
- Condenser Temperature: 40°C
- Operating Humidity: 10% ~ 90%
- Light Source: SMD LED 5050 13PCs
- Life Time: 80,000 hours

DESCRIPTIONS

The High Efficiency T8 LED Tube is our company's news, designed to replace the conventional T8 fluorescent tubes directly. Our product utilizes the aluminum base, and the high thermal conductivity SI as the thermal conduct material, which provides better heat dissipation, the aluminum based light source board clings to the aluminum casing, protecting the module from over thermal loss. Moreover, the special design promises high stability and long life.

This T8 Tube comes with an operation temp of $\leq 65^{\circ}\text{C}$, the temp of $> 65^{\circ}\text{C}$ will lead harms to the tube, for example, shorten the life span. To test the quality and stability of the tube, we put our tube under 50°C for 3000 hours, and found that no luminous decay occurs within 1000 hours, and only 3% luminous decay occurs during the test. In addition, even when our product completes its task, and gets to the end of its life (80,000 hours), its luminous decay is just 30%.

APPLICATIONS

For learning the T8 LED Tube luminance from different degrees, we have made a test, and the result will be shown by the following table.

Table 1. Luminance vs. Degree of Angle Table

Test from 1000mm		Test from 500mm	
Degree of Angle (°)	Luminance (Lux)	Degree of Angle (°)	Luminance (Lux)
90°	359	90°	681
60°	189	60°	325
53°	201	53°	372
45°	241	45°	407
37°	269	37°	425
30°	280	30°	498
0°	120	0°	202

- Good heat sink
- Easy Installation
- Constant Current, Reduce Light Decay, Quick Start, No Flicking, Eyes Protection.
- Lead Free
- Mercury Free
- No Buzzing
- High Shock & Vibration Resistance
- Dustproof and waterproof level: IP67
- CE, ROHS and FCC Certified

APPLICATIONS

Widely used in almost everywhere energy saving and high color rendering index lighting are needed, including hotels, conference, meeting rooms, factories, offices, commercial complexes, residential institution, underground parking area, showcases, schools, colleges and universities, hospitals, etc.

Our High Efficiency T8 LED Tube comes in the up to date constant driving circuit, as well as the EMI shield measures, resulting in the zero EMI to the environment.

Our product comes with no hazardous substances to the environment, for example, mercury, and UV. The PC cover is made by the environmental friendly polymeric material, which is UL certified, it also comes with a high light transmittance of $> 93\%$, which can make our tube as bright as the conventional fluorescent tube. In addition, the LED based light source is environmental friendly, no doubtable the real green light source.

The T8 LED tube comes with a 120mm long enclosure, and 13 PCs of 0.5W LED internally. The words "T8" indicates its 1/8 inch end side diameter, which equals to 30mm. It can be used with the conventional fluorescent fixtures.

From Table 1, we can deduce the curve below.

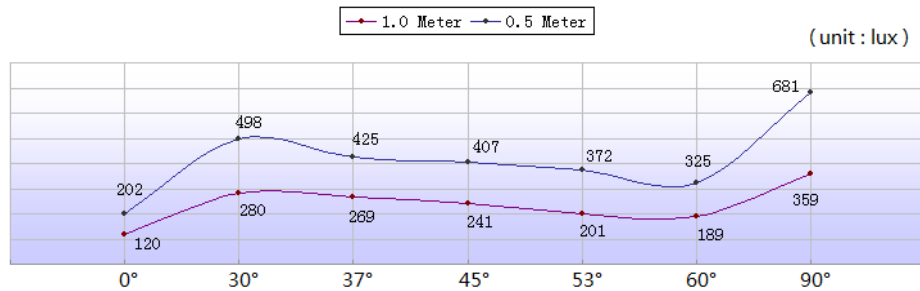


Figure 4. Luminance vs. Degree of Angle

ADVANTAGES OVER T-8 FLUORESCENT TUBE

T-8 LED Tubes are ideal for fluorescent tubes replacement and have many advantages over fluorescent tubes, the most absorbing one is its long life span, which is 6 to 8 years longer life than fluorescent tubes, this is based on an 4000 hours average usage per year or about 11 hours a day @ $\leq 77^{\circ}\text{F}$.

T-8 LED Tube produces a wonderful pure white light, printed materials appear sharpened and colors brighter, the viewing is easier on the eyes than with conventional fluorescent tubes. The T-8 Fluorescent lamp is the most widely used light source in North America, for commercial use. Nearly every large building that you enter has arrays of T-8 fixtures, their ceiling spaces are largely occupied with them.

The average standard T-8 fluorescent tube lasts about 20,000 hours if the temperature is less than 77 °F. When the temp goes higher the life span of the fluorescent tube goes down. The T8 fluorescent is not only short on periods (less than three hours), but also shortens on the life span, and being mounted so high in the air makes it a large expense to replace them when they fail.

When the groups of fluorescents need to be mended, location work and workers will be disrupted during the replacement

of the fluorescent tubes and ballasts, lost production is the highest cost for replacing fluorescent tubes and ballasts. This equates to the highest cost saving for using LED T-8 Tubes. LED T-8 Tubes pay for themselves several times in actual bulb replacement (no more ballast replacement) and are labor savings during their lifetimes, the energy savings is substantial, the improved light quality and workplace are bonuses.

An LED will operate 100,000 hours before dropping below 75% of their initial lumens output, but fluorescent tubes will loose 10% to 20% of their initial lumens output after the initial burn-in period of about 7000 hours. The internal LED now can provide a 120 degree angle of light dispersion, a recent breakthrough to the LED area, it means they are less focused and can spread the light similarly to an incandescent bulb. But unlike conventional 360 degree fluorescent tube lighting, well dispersed light is directional which can add 46% more useable Lumens.

The 2 figure below will describe the fluorescent tubes and our T8 LED Tubes being used in the icebox respectively, and we can deduce that the light utilization of the T8 Tube is 100%, but for the fluorescent tubes, it is about 33%.

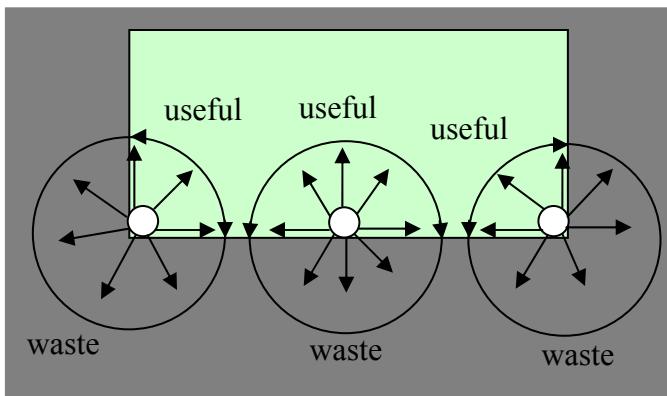


Figure 5. Utilization of the Fluorescent Tubes

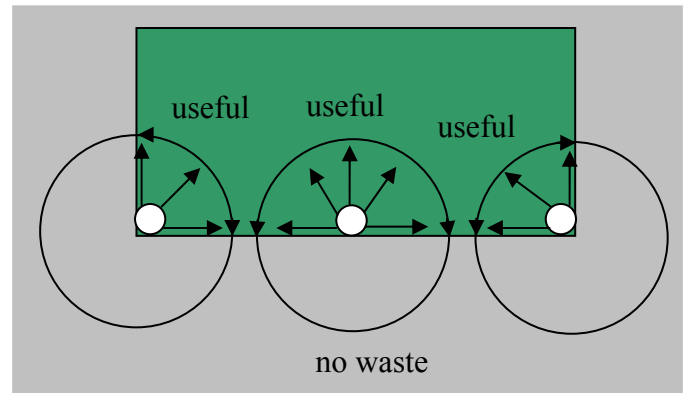


Figure 6. Utilization of the T8 LED Tubes



Table 2. T8 LED Tube vs. T8 Fluorescent Tube on Expenses

Cost savings expanded	LED Tube	Fluorescent Tubes
	11 wats	44 watts
Life span @ 12 hours per day.	> 10 years	> 2 years
Cost of tube.	\$40.00	\$6.00
Cost to replace tubes in 10 years.	\$0	\$30.00
Energy cost for ten years .10 per Kw @ 11hours per day.	\$92.00	\$182.00
Energy cost for ballast .10 per Kw @ 11hours per day.	0	\$178.00
Maintenance cost to replace in 10 years. 15.00 per hour.	\$7.50	\$37.50
Ballast replacement cost. @ 28.00 ea.	0	\$224.00
Maintenance cost ballast replacement. 15.00 per hour.	0	\$75.00
Worker stoppage cost for T-8 replacement @ 35.00 per hour.	\$17.50	\$87.50
Worker stoppage cost for balast replacement @ 35.00 per hour.	\$0	\$175.00
Production slowdown for T-8 replacement @ depends on factory.	\$0	\$1000.00
Production slowdown for ballast replacement @ depends on factory.	\$0	\$5000.00
Average total cost for 10 years for 1 fixture.	\$156.00	\$6995.00

Table 3. T8 LED Tube vs. T8 Fluorescent Tube on Features

Features	T8 LED Tube	T8 Fluorescent Tube
Power consumption	18W	40W
Life span	50,000 hours	9,000 ~ 15,000 hours
Radiation	RoHS compliant	UV, IR
Toxicant	RoHS compliant	Toxic phosphor powders Mercury (Hg), Lead (Pb)
CO2 emission	Low	High
Heat damage	No	High
Fragile	Durable Aluminum Housing and PC Cover	Fragile Glass
Burn out failure	No	Yes
Flicker	Never	Frequently
Light wasted on reflector	No	High
Buzzing	No	Yes
EMI emissions	No, friendly to electronic equipment	Yes, harmful to electronic equipment
Recyclable	Yes	No
Low temp working enviroment	Compatible	Incompatible
Ballast needed	No	Yes
Starter needed	No	Yes
Maintenance fee	Low	High

From the 2 table above, I think you have learnt a lot about our T8 LED Tubes’ advantages over T8 fluorescent tube, it can make your life and job more efficiency, reducing you lots of soft costs, which you care little in your life.

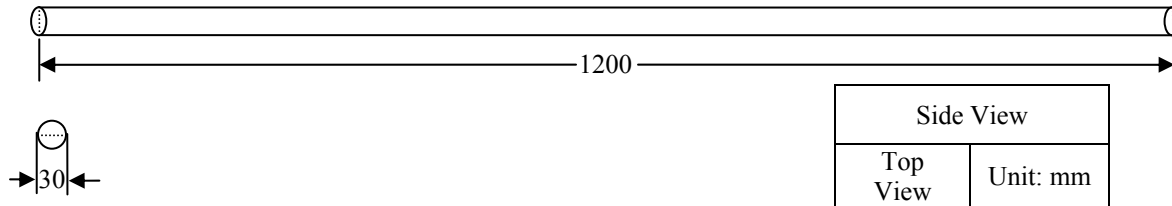
MECHANICAL DIMENSIONS


Figure 7. Mechanical Dimensions

We also have T10 LED Tube, comparing with the T8 LED Tube, its side diameter is smaller, 1/10 inch. When ordering, we will provide a corresponding power supply for you.

NOTICE

- ATI reserves the right to make changes to its products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete.
- All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgment, including those pertaining to warranty, patent infringement, and limitation of liability. Testing and other quality control techniques are utilized to the extent ATI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.
- Customers are responsible for their applications using ATI components. In order to minimize risks associated with the customers' applications, adequate design and operating safeguards must be provided by the customers to minimize inherent or procedural hazards. ATI assumes no liability for applications assistance or customer product design.
- ATI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of ATI covering or relating to any combination, machine, or process in which such products or services might be or are used. ATI's publication of information regarding any third party's products or services does not constitute ATI's approval, warranty or endorsement thereof.
- IP (Intellectual Property) Ownership: ATI retains the ownership of full rights for special technologies and/or techniques embedded in its products, the designs for mechanics, optics, plus all modifications, improvements, and inventions made by ATI for its products and/or projects.