LUXADD
More Light, Less Energy!

LUXADD Distributor:

More information at www.luxadd.com

Express T5 Retrofit Kit for linear fluorescent T12s & T8s - commercial

Easy. Affordable. Safe. Unique.

Save energy now! Use the only true "SNAP-IN" T5 Retrofit Solution that instantly saves up to 80% energy and provides superb light quality.

UL LISTED

PATENTED

Department of Energy - 2009 Lighting Legislation

Fluorescent Lamps

Effective Date: **July 14, 2012**

Regulated: **Linear T12, T8 and T5, and U-bend lamps must meet minimum INITIAL LPW (Lumens per Watt) requirements**

Solution: **T5 HE and HO tubes are the only lamps that meet all the DOE requirements**

Fluorescent Lamp Affected	LUXADD solution	
4 foot fluorescent ≥ 25W T12 & T8 Medium Bipin	All Standard 4 foot T12 lamps are eliminated Some 4 foot T8 lamps are eliminated	Express T5 Retrofit Kit for T12 - 4' Express T5 Retrofit Kit for T8 - 4'
8 foot fluorescent ≥ 52W T12 & T8	Most T12 8 foot lamps are eliminated	Express T5 Retrofit Kit for T12 - 8" (available late 2012)
2 foot U-lamps ≥ 25W T12 & T8	All T12 2 foot U-lamps are eliminated Most T8 U-Bend are eliminated	Express Retrofit Kit for T12 – 2' Express Retrofit Kit for T8 – 2' (both available 2013)

What does this mean? Will I still be able to purchase T12 ballast and T12 and/or T8 tubes?

Magnetic T12 Ballasts are prohibited to be manufactured, sold and installed in new buildings since 2010. The Phase-out of all T12 tubes and some T8 tubes started July 14, 2012. Manufacturing of eliminated T12 & T8 tubes is being gradually reduced.

Think about it: The annual energy use of one T12 tube drawing 44 Watt in a 2 or 4 lamp fixture (ANSI Standard) @ 12 cent per Kw/h (average) @ 12 hours per day = 44W x $0.12 = 5.28 / 1000 = $0.00528 x 12 hours = 0.0624 x 365 = $ 23.13 per year

LUXADD's savings average @ 65% electrical energy – this includes the delamping, but not the savings on air-conditioning. So only 100,000 delamping kits per year retrofitting 200,000 T12 tubes into 100,000 T5 tubes could reduce the energy consumption from $ 4,625,280 by 65% to $ 1,681,920 per year.

The Leading Solution: Linear Fluorescent T5

	T12 (40 Watt)	T8 (32 Watt)	T5 (28 Watt)
Age of Technology	80 years	30 years	10 years
Mercury Content	20-30 mg	15 mg	1-3 mg
Rated Life **Average Life** **Long Life Tubes**	20,000 hrs 9,000 hrs	20,000 hrs 12-15,000 hrs 30,000 hrs	24,000 hours 18,000 hrs 42,000 hrs
CRI (Color Rendering Index)	52	78	85
Wattage use of 2-lamp System **- With LUXADD T5 Retrofit Kit Double (2-for-2)** **- With LUXADD T5 Retrofit Kit (1-for-2)**	92	60	56 **44** **32**
Lamp Efficacy (Lumens per Watt)	61	89	105
Lumen Maintenance	75%	89%	97%

The LUXADD Retrofitting Advantage

Instant Energy Savings – Rapid, 1 Year ROI

Between 40% and 73%; Additional air-conditioning savings of 15% and up; Average payback is less than 1 year.

Better light Quality through high Frequency Operation

No more stroboscopic effect (flickering) from the T12; No twilight-zone from linear LED; Increased workplace productivity.

True "plug-and-play" Installation within seconds – Patented LUXADD "Snap-in" Technology

As easy as changing a light bulb: No new fixture; No ballast by-passing; No labor; No downtime; No surprises in old ceilings, No old ballast waste.

Delamping Options Available = Reduction of Lighting Tubes

In 80% of the applications, only half of the T5 tubes are needed compared to the old T12 tubes and 2/3 of the T5 tubes compared to the T8 tubes.

How does the LUXADD T12 to T5 Retrofit Technology work?

The LUXADD technology changes the system frequency from 60 Hz low frequency, to as high as 29,000 Hz frequency and allows the system to run completely cool. At the same time the LUXADD technology reduces the system's input wattage. So instead of the T12 fixture drawing 48 Watt (ANSI Standard) the retrofitted fixture now draws about 27 Watt. The lamp power reduction metric is going down from 40 Watt to 28 Watt.

What happens to the old T12 magnetic Ballast?

The new LUXADD T5 ballast is entirely taking over the operations of the old T12 magnetic ballast. The old T12 magnetic ballast is not able to detect the LUXADD self ballasted lamp adapter/ T5 tube combination as a lamp and therefore remains dormant. The old T12 ballast only acts as a cable drawing 1-3 Watt depending on the ballast. The old magnetic T12 ballast is not affecting the new T5 tube in any way. Additionally, all the operational stress is off the old T12 magnetic ballast, and it acts only as a cable.

The Express T5 Retrofit Kit for T12s

The LUXADD Express T5 Retrofit Kit for T12 is designed to retrofit old T12 fluorescent light tube fixtures (magnetic ballast), to the newest technology of T5 fluorescent light tube fixtures (electronic ballast).

KT12101 – T12 Single Lamp Kit: Instant Energy Savings of 48%.

KT12102 – T12 Double Lamp Kit: Instant Energy Saving of 65%.

KT12103 – T12 1-for-2 Lamp Kit: Instant Energy Savings of 73%

Number of Lamps	1 or 2
Ballast Factor	0.89
Rated Lamp Watt	28W
Line Voltage Range (50/60 Hz)	110V-277V
ANSI Input Watt	26~29W
Input Current Amps @ 120 V	0.29
Crest Factor (better than ANSI standard)	<1.30
Total Harmonic Distortion (better than ANSI standard)	< 20%
Power Factor	Depending on Existing Ballast
Ballast Efficacy Factor	2.93
Lamp Efficacy (Lumens per Watt)	105
Average Life (ANSI standard)	50,000 hours
End of Life	Safety Shutdown
Broken Lamp	Automatic Reset after replacement of defective tube
Circuit Breaker Interruption (ANSI standard)	50 A @ 125 VAC
Operation Frequency	38,000 Hz
Length	4' (48 inch)
Width	1 inch
Height	1 7/8 inch
Weight (single)	9.9 oz
Certification	Underwriters Laboratories UL E344628

REMARKS:

For very tight fixtures LUXADD designed a special Kit with rotated pins in a 45 degree angle – ITEM Number: KT12401, KT12402, KT12403.

We also offer T5 tubes to pair with the Retrofit Kits with different Kelvin and lamp life ratings - reduced OEM volume pricing applies. Please call for consultation.

ITEM Number: KT12101

ITEM Number: KT12102

ITEM Number: KT12103

Why is Retrofitting from T12 to T8 only a“HALF-WAY” Solution?

T8s are obviously better than T12 since they already work with electronic ballasts and no longer use energy wasting magnetic ballasts. Still: Why would you spend 2012 time, labor and money on a 30 year old technology? Using T5 rather than T8 saves about 30% energy, the CRI of a T5 is 85 vs. 78 of T8. The T5 mercury content is only 1-3 mg vs.15 mg in a T8, the T5 lumen maintenance is 97% vs. 89% and you get up to 42,000 hours of lamp life vs 32,000 hours of a T8. Also, there is obviously labor and downtime involved in a T12 to T8 retrofit. So why would you only go “half-way”? But no worries, if you retrofitted to T8 a couple of years ago and are ready for the next step, LUXADD already offers the T8 to T5 Retrofit Kit for existing T8 instant start ballasts. Here, **LUXADD simply converts and upgrades the existing T8 ballast to the newest and most efficient linear commercial lighting technology: T5.**

The Express T5 Retrofit Kit for T8s

The LUXADD Express Retrofit Kit for T8 is designed to retrofit T8 fluorescent light tubes (electronic ballast) to the newest technology of T5 fluorescent light fixtures (electronic ballast).

KT12101 – T8 Single Lamp Kit: Instant Energy Savings of 20-35%.

ITEM Number: KT08101

Number of Lamps	1
Ballast Factor	1
Rated Lamp Watt	28W
Line Voltage Range	110 V – 277 V
ANSI Input Watt	26~29
Input Current Amps	0.225/0.101
Crest Factor (better than ANSI standard)	< 1.55
Total Harmonic Distortion (better than ANSI standard)	< 20%
Power Factor (depending on existing ballast)	> 0.98
Ballast Efficacy Factor	2.93
Lamp Efficacy (Lumens per Watt)	105
Average Life (ANSI Standard)	50,000 hours
End of Life	Safety Shut Down
Broken Lamp	Automatic Reset after Replacement of defective tube
Circuit Breaker Interruption (ANSI Standard)	50 A @ 125 VAC
Operation Frequency	29,000 Hz
Length	4 ‘ (48 inch)
Width	1 inch
Height	1 7/8 inch
Weight	7.6 oz
Certification	Underwriters Laboratories pending

REMARKS:
For very tight fixtures LUXADD designed a special Kit with rotated pins in a 45 degree angle – ITEM Number: KT08401.
We also offer T5 tubes to pair with the Retrofit Kits with different Kelvin and lamp life ratings - reduced OEM volume pricing applies. Please call for consultation.

LED vs. T5 Technology

While promising, current LED technologies may not be the best solution to improve your company's lighting efficiency. We summarized the results of studies by the Department of Energy, Institute of Electrical Engineers (IEEE) and the Lighting Research Center that are comparing LED vs T5 technology suggesting that while LED performance has improved significantly, the technology is not yet ready for commercial consumption.[1]

"4' SSL (Solid State Lighting = LED) linear replacement luminaires do not yet achieve performance levels of fluorescent linear replacement lamps – both when tested at bare lamps and when mounted in troffers and tested at the overall luminaire level"[2]

"Heat is the great enemy of lighting system performance, and LED systems are no exeption." Randal Smith, Lighting Design Lab News."

"By spending equivalent dollars on a T5 bulb and the nearest comparable LED bulb, you could buy enough T5 bulbs to last over 590,000 hours."[1]

	LED	T5
Efficacy	@14 Watt = 78.5 lm/W	@ 14 Watt = 96.7 lm/W @ 21 Watt = 100 lm/W @ 26 Watt = 111 lm/W
Heat Dissipation and Overheating "Oven Effect"	87-90% of input power dissipates as heat. Increased LED temperature can reduce the lamp's life hours by up to 70%.	73% of lamp power dissipates as heat.
Source and upfront costs ($/1000 lm)	$70 per 1,000 lumens LED fixture = $330[3]	$3 per 1,000 lumens LUXADD retrofit = $32.00
CRI - Color Rendering Index	70 – bluish light, twilight-zone	85 – higher quality light results in increased worker productivity
Color Temperature	3,500K only	3,000K-6,500K variety (warm to daylight)
Preferable applications	Exits signs, small punctual applications, task lights, refridgeration lighting, traffic lights	Commercial linear replacements for T12 and T8

[1] by Lumiversal (www.lumiversal.com)
[2] Pacific Northwest National Laboratory. "DOE Solid-State lighting CALiPER Program – Summary of Results: Round 9 of Product Testing." http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/caliper_round-9_summary.pdf
[3] IEEE transactions on Power Electronics 24.7 (2009): 1811-1818. Academic Search Premier. EBSCO. Web 21 Dec 2009