

2011 DOE Fluorescent Ballast Rulemaking

Susan Isenhour Anderson
Manager of Energy Relations
OSRAM SYLVANIA
July 2012



SYLVANIA



New U.S. DOE Fluorescent Ballast Standards



2011 DOE Fluorescent Ballast Rulemaking



Finalized November 14, 2011

Effective November 14, 2014

- Sets standards that replace those originally established by the 2000 DOE Rulemaking that were updated by the EPC Act 2005 Legislation
- Covers fluorescent ballasts that
 - Operate at a nominal input voltages at or between 120V or 277V
 - Operate at input current frequency of 60 Hz (to the ballast)
 - Operate the designated miniature bi-pin, medium bi-pin, single pin and RDC based fluorescent lamp types (see next slide)
- Requirements
 - Non-residential ballasts: Power factor ≥ 0.90
 - Residential ballasts: Power factor ≥ 0.50
 - Residential ballasts: meet FCC 47 CFR part 18 & designed, labeled & marketed only for use in residential applications
 - Sign ballasts: meet UL Type 2 rating and designed, labeled & marketed for use in outdoor signs
 - Meet the Ballast Luminous Efficiency (BLE) standards

2011 DOE Fluorescent Ballast Rulemaking



- Covers ballasts that operate miniature bi-pin lamps (T5) and medium bi-pin lamps (T8 and T12) as follows:
 - IS and RS Ballasts (not residential) that operate 4ft MBP, 2ft U MBP, 8ft Slimline SP
 - PS Ballasts (not residential) that operate 4ft MBP, 2ft U, 4 ft Mini BP Standard and HO
 - IS and RS Ballasts (not sign) that operate 8 ft High Output
 - PS Ballasts (not sign) that operate 8ft High Output
 - Sign Ballasts that operate 8ft High Output
 - IS and RS residential that operate 4ft MBP, 2ft U MBP, 8ft Slimline SP
 - PS residential that operate 4ft MBP, 2ft U MBP
- Each category has a different formula based on lamp arc power
- Based on high frequency operation
- Adjustment factors are provided for low frequency ballasts (60Hz to the lamps)

2011 DOE Fluorescent Ballast Rulemaking: BLE Minimum Values



Ballast Luminous Efficiency Minimum Standards Effective 11/14/2014				
BLE = A/(1+B*average total lamp arc power ~ - C) Where A, B and C are as follows				
Description		A	B	C
IS & RS ballasts (not residential) designed to operate		0.993	0.27	0.25
	4-ft. medium bi-pin			
	2-ft U medium bi-pin			
	8-ft Slimline single pin			
PS ballasts (not residential) designed to operate		0.993	0.51	0.37
	4-ft medium bi-pin			
	2-ft U medium bi-pin			
	4-ft miniature bi-pin standard output			
	4-ft miniature bi-pin high output (HO)			
IS & RS ballasts (not sign) designed to operate		0.993	0.38	0.25
	8-ft high output (HO)			
PS ballasts (not sign) designed to operate		0.973	0.70	0.37
	8-ft high output (HO)			
Sign ballasts designed to operate		0.993	0.47	0.25
	8-ft. high output (HO)			
IS & RS ballasts designated residential & designed to operate		0.993	0.41	0.25
	4-ft medium bi-pin			
	2-ft U medium bi-pin			
	8-ft Slimline single pin			
PS ballasts designated residential & designed to operate		0.973	0.71	0.37
	4-ft medium bi-pin			
	2-ft U medium bi-pin			

2011 DOE Fluorescent Ballast Rulemaking: Frequency Adjustment Factors



Table A - Lamp-and-Ballast Pairings and Frequency Adjustment Factors				
Ballast Type	Nominal Lamp Wattage	Lamp Diameter & Base	Frequency Adjustment Factor	
			Low Frequency (60 Hz)	High Frequency
Ballasts that operate straight-shaped lamps (commonly referred to as 4-ft medium bi-pin lamps) with medium bi-pin bases and a nominal overall length of 48 inches	32	T8 MBP	0.94	1.0
	34	T12 MBP	0.93	1.0
Ballasts that operate U-shaped lamps (commonly referred to as 2-ft U-shaped lamps) with medium bi-pin bases and a nominal overall length between 22 and 25 inches	32	T8 MBP	0.94	1.0
	34	T12 MBP	0.93	1.0
Ballasts that operate RS lamps (commonly referred to as 8-ft HO lamps) with RDC bases and a nominal overall length of 96 inches	86	T8 HO RDC	0.92	1.0
	95	T12 HO RDC	0.94	1.0
Ballasts that operate IS lamps (commonly referred to as 8-ft Slimline lamps) with single-pin bases and a nominal overall length of 96 inches	59	T8 Slimline SP	0.95	1.0
	60	T12 Slimline SP	0.94	1.0
Ballasts that operate straight-shaped lamps (commonly referred to as 4-ft miniature bi-pin standard output lamps) with miniature bi-pin bases and a nominal length between 45 and 48 inches	28	T5 SO Mini-BP	0.95	1.0
Ballasts that operate straight-shaped lamps (commonly referred to as 4-ft miniature HO bi-pin lamps) with miniature bipin bases and a nominal length between 45 and 48 inches	54	T5 HO Mini-BP	0.95	1.0
Ballasts that operate RS lamps (commonly referred to as 8-ft HO lamps) with RDC bases, a nominal overall length of 96 inches, and that operate at ambient temperatures of 20°F or less and are used in outdoor signs	86	T12 HO RDC	0.92	1.0
	110	T8 HO RDC	0.94	1.0

MBP = medium bi-pin, RDC = recessed double contact, SP = single-pin, Mini-BP = miniature bi-pin

2011 DOE Fluorescent Ballast Rulemaking



Exempted Ballast Types

- Ballasts designed for dimming to 50% or less of maximum output
 - Provides separate BLE standards for T12 dimming ballasts operating energy saving I amps
- Low frequency (60 Hz) T8 ballasts that is
 - Labeled and marketed for use in EMI-sensitive environments and
 - Is shipped in packages of 10 or fewer ballasts
- Programmed Start ballast that operates 4-ft. medium bi-pin lamps that delivers < 140 mA to each lamp

2011 DOE Fluorescent Ballast Rulemaking



T12 Dimming Ballasts

- Ballasts designed for dimming to 50% or less of maximum output
- Operate at nominal input voltages of 120 or 277V
- Operate at input current frequency of 60 Hz (to the ballast)
- Operate the designated lamp types (see table below)
- Has a PF \geq .90 for non-residential
- Has a PF \geq .50 for residential, meets FCC Part B Consumer limits and is designed and labeled for residential use only
- Has a BLE of not less than the following:

Designed for the operation of	Ballast Input Voltage	Total Nominal Lamp Watts	Ballast Luminous Efficiency (BLE)	
			Low Frequency Ballasts	High Frequency Ballasts
One F34T12 lamp	120 / 277	34	0.777	0.778
Two F34T12 lamps	120 / 277	68	0.804	0.805
Two F96T12/ES lamps	120 / 277	120	0.876	0.884
Two F96T12HO/ES lamps	120 / 277	190	0.711	0.713

•Note: Lamp manufacturers do not recommend dimming reduced wattage, energy saving T12 lamps.

2011 DOE Fluorescent Ballast Rulemaking

OSRAM SYLVANIA is evaluating our ballast offering to determine which ballasts meet the new standards. (*We're lookin' good!*)

Product Marketing can provide specific information.

For the time being, use the highest efficiency T8 and T5 fluorescent ballasts.

NEMA Premium for T8



Pair them with OCTRON® or the PENTRON® T5 families lamps and the appropriate controls.

Speaking of Lamps, don't forget that new fluorescent lamp standards go into effect July 14, 2012...

Don't Forget...
2009
U.S. DOE GSFL & IRL Lamp
Rulemaking



SYLVANIA



General Information



2009 DOE Lamp Rule Making

Finalized September 14, 2009

Effective July 14, 2012

- Covers basically the same lamp families covered by EPA Act 1992
 - Incandescent (& Halogen) Reflector Lamps (IRL)
 - General Service Fluorescent Lamps (GSFL)
 - Declared that the R20, BR30, ER30, BR40 and ER40 lamps exempted by EISA 2007 continue to be exempt
 - Adds 4-ft. T5 standard and HO fluorescent lamps with miniature bi-pin bases
- Process started in 2007
- Published in the *Federal Register* on July 14, 2009
 - Industry allowed 3 years to be compliant

GSFL Standards



Lamp Type	Correlated Color Temperature	Energy Conservation Standard Im/W
4-Foot (T8-T12) Medium Bi-pin ≥25W	≤ 4,500K	89
	> 4,500K and ≤ 7,000K	88
2-Foot (T8-T12) U-Shaped ≥25W	≤ 4,500K	84
	> 4,500K and ≤ 7,000K	81
8-Foot (T8-T12) Single Pin Slimline ≥52W	≤ 4,500K	97
	> 4,500K and ≤ 7,000K	93
8-Foot (T8-T12) High Output	≤ 4,500K	92
	> 4,500K and ≤ 7,000K	88
4-Foot (T5) Miniature Bi-pin Standard Output ≥26W	≤ 4,500K	86
	> 4,500K and ≤ 7,000K	81
4-Foot (T5) Miniature Bi-pin High Output ≥49W	≤ 4,500K	76
	> 4,500K and ≤ 7,000K	72

Key Impacts on T12 GSFL



- T12 4-ft. & 2-ft U-lamps with medium bi-pin bases
 - Majority of today's F40 and F34T12 lamps and all FB40 and FB34T12 U-lamps fail
 - A very few very high lumen rare earth phosphor lamps will pass
 - Exemption for lamps with CRI ≥ 87 (CWX/DX/DSGN50/C50/C75)
- T12 8-ft. Slimline with single pin bases
 - All of today's 75W F96T12 lamps fail
 - All of today's 60W F96T12/ES fail except for a few 700/SP & 800/SPX lamps
 - Exemption for lamps with CRI ≥ 87 (CWX/DX/DSGN50/C50/C75)
- T12 8-ft. 800mA HO with RDC bases
 - All of today's 110W F96T12 HO lamps fail; requires 10,120 lumens to pass
 - All of today's 95W F96T12/ES/HO fail; requires 8740 lumens to pass
 - Exemption for lamps with CRI ≥ 87 (CWX/DX/DSGN50/C50/C75)
 - Exemption for F96T12/CW/HO/CT & D/HO/CT (Cold Temperature)

Key Impacts on T8 & T5 GSFL



- T8 4-ft. & 2-ft. U-lamps with medium bi-pin bases
 - **Update:** 4-ft. T8 basic 700 Series lamps @ 2800 lumens can continue to be made until July 14, 2014 ; no sales after that date
 - All other 4-ft. pass: 700XP, 800, 800XV, 800XP, 800XP/SS, 800XPS
 - **Update:** 700 Series 2 ft. U-lamps can continue to be made until July 14, 2014;
 - After that date, only some 700 Series will pass (Sylvania's); all 800 Series U-lamps pass
- T8 8-ft. Slimline with single pin bases
 - **Update:** 700 Series lamps can continue to be made until July 14, 2014; after that, only some 700 Series will pass; all 800 series pass
- T8 8-ft. HO with RDC bases
 - **Update:** 700 Series lamps can continue to be made until July 14, 2014; after that, only some 700 Series will pass; all 800 series pass
- T5 4-ft with miniature bi-pin bases
 - All pass
 - Intent of T5 standard is to keep lesser performing lamps out of the U.S. market

Be Pro-Active Today



- The fluorescent lamps that will meet the 2012 standards are available today
 - T8 OCTRON®: 700 (only until 8/14/2014), 700XP, 800, 800 XV, 800XP, 800XP/SS and 800XPS
 - T5 PENTRON®: T5 standard and T5 HO
- High efficiency ballasts are available today
 - QUICKTRONIC® QHE T8 Instant Start
 - QUICKTRONIC PROStart® T8 PSN & PSX Program Start
 - QUICKTRONIC PROStart T8 QUICKStep® Bi-level
 - QUICKTRONIC POWERSENSE® T8 Dimming
 - QUICKTRONIC PowerSHED™ T8 Demand Response Load Shed
 - QUICKTRONIC PROStart T5 Program Start
 - QUICKTRONIC POWERSENSE® T5 Dimming
- Pair them together with controls that help reduce energy usage and help end users save \$ today

OCTRON® 800 XV™ ECOLOGIC® and OCTRON® 800 XV™ SUPERSAVER® ECOLOGIC®

Extended Value T8 Fluorescent Lamps

- Specification quality 4-foot T8 lamps with optimized phosphor blends
 - Realize up to 96% lumens of premium OCTRON T8 lamps
 - 94% lumen maintenance
 - Long lamp life platform reduces lighting maintenance costs
 - 40,000 hour life @ 12 hours/start (instant start)
 - 42,000 hour life @ 12 hours/start (PROStart®)
 - Meet new GSFL standards issued by DOE in effect 7/14/2012
- Up to 83 CRI
- QUICK 60+® System Warranty with QUICKTRONIC® electronic ballasts
- RoHS & TCLP-compliant, lead-free glass and made in USA
- New full wattage OCTRON XV and new OCTRON SUPERSAVER XV alternatives enhance total cost of ownership with energy savings:
 - Up to 22% with the 25W XV/SS
 - Up to 12.5% with the 28W XV/SS
 - Up to 6.5% with the 30W XV/SS



This light source meets restrictions on hazardous substances.

Product Offering			
Lamp Type	Wattage	CEE Qualified ¹	CCT
FO32/25W/800/XV/SS/ECO	25	Yes	3000K, 3500K, 4100K, 5000K
FO28/800/XV/SS/ECO	28	Yes	
FO30/800/XV/ECO	30	n/a	
FO32/800/XV/ECO	32	n/a	

¹: CEE Reduced-Wattage T8 Specification



OCTRON® 800 XV™ SUPERSAVER® ECOLOGIC® 8-Foot T8 Fluorescent Lamps

EXtended Value, Energy Saving T8 Fluorescent Lamps

- Energy saving, optimized phosphor replacements for 700 & 800 Series F96T8 lamps
 - 95% initial and mean lumens of 800XP/SS lamps
- XV SUPERSAVER® energy savings vs. 59W T8 lamps
 - Up to 15% with the 50W XP/SS
 - Up to 7% with the 54W XP/SS
- Long life
 - 24,000 hour life @ 3 hours/start
 - 36,000 hour life @ 12 hours/start
 - Reduce lighting maintenance costs
- 83 CRI
- QUICK 60+® System Warranty with QUICKTRONIC® electronic ballasts
- RoHS & TCLP-compliant, lead-free glass, and made in USA



Product Offering		
Lamp Type	Wattage	CCT
FO96/54W/800/XV/SS/ECO	54	3500K, 4100K
FO96/50W/800/XV/SS/ECO	50	3500K, 4100K



Disclaimer for external presentations in the United States:

This document constitutes neither an offer to sell nor a solicitation to buy or subscribe for securities. Any such offer will be made solely on the basis of the Securities Prospectus yet to be approved by the German Financial Supervisory Authority (BaFin) and published thereafter. The information legally required to be provided to investors will be contained only in the Securities Prospectus. The information contained herein is not for distribution, directly or indirectly, in or into the United States of America (including its territories and possessions of any State of the United States of America or the District of Columbia) and must not be distributed to U.S. persons (as defined in Regulation S under the U.S. Securities Act of 1933, as amended ("Securities Act")) or publications with a general circulation in the United States of America. This document is not an offer of securities for sale in the United States of America. The securities have not been and will not be registered under the Securities Act and may not be offered or sold in the United States of America absent registration or an exemption from registration under the Securities Act. The Issuer does not intend to register any portion of the offering in the United States of America or to conduct a public offering of the securities in the United States of America. This document is not an offer of securities for sale in the United Kingdom, Canada, Japan or Australia.

Thank you

