

# CEE High-Performance T8 Specification

For Terms of Usage, see next page

Equipment	Specification
High Performance T8 Lighting Systems	Energy-efficiency specifications based on performance characteristics relating to 4' T8 lamp with a not-to-exceed nominal wattage of 32W. The lamps and ballast must be tested in accordance with the appropriate IESNA and ANSI reference standards, and must meet OSHA/NRTL and UL safety guidelines. These lamps should be applied in accordance with national best practices in lighting design such as (1) IESNA Recommended Practices and (2) Lighting power densities prescribed by local and state building codes.

Performance Characteristics for Lamps					
Mean System Efficacy	≥ 90 MLPW for Instant Start Ballasts ≥ 88 MLPW for Programmed Rapid Start Ballasts				
Color Rendering Index (CRI)	≥ 81				
Minimum Initial Lamp Lumens	≥ 3100 Lumens				
Lamp Life <sup>1</sup>	≥ 24,000 hrs at t                      hree hours per start.				
Lumen Maintenance -or- Minimum Mean Lumens	≥ 94% -or- ≥ 2900 Mean Lumens				
Performance Characteristics for Ballasts <sup>2</sup>					
<b>Ballast Efficacy Factor (BEF)</b>  BEF = [BF x 100] / Ballast Input Watts  <b>Based on:</b> (1) Type of ballast (2) No. of lamps driven by ballast (3) Ballast Factor	<b>Instant-Start Ballast (BEF)</b>				
	Lamps	Low BF ≤ 0.85	Norm 0.85 < BF ≤ 1.0	High BF ≥ 1.01	
	1	≥ 3.08	≥ 3.11	n/a	
	2	≥ 1.60	≥ 1.58	≥ 1.55	
	3	≥ 1.04	≥ 1.05	≥ 1.04	
	4	≥ 0.79	≥ 0.80	≥ 0.77	
	<b>Programmed Rapid-Start Ballast (BEF)</b>				
	1	≥ 2.84	≥ 2.84	n/a	
	2	≥ 1.48	≥ 1.47	n/a	
	3	≥ 0.97	≥ 1.00	n/a	
	4	≥ 0.76	≥ 0.75	n/a	
	<b>Ballast Frequency</b>	20 to 33 kHz or ≥ 40 kHz			
	<b>Power Factor</b>	≥ 0.90			

<sup>1</sup> Life rating is based on a Rapid Start or Programmed-Rapid Start Ballast tested in accordance to ANSI C82.11. When used on an Instant Start Ballast, life may be slightly reduced depending upon the operating hours per start.

<sup>2</sup> Multi-Voltage Ballasts must meet or exceed the listed Ballast Efficiency Factor when operated on at least one of the intended operating voltages.

**Color Rendering:** The effect that the spectral characteristic of the light emitted by the lamp has on the color appearance of the objects illuminated by the lamp.

**Initial Lumens:** Amount of luminous flux emitted by a lamp after 100 hours of operation at 25°C.

**Lamp Life:** Number of operating hours that a lamp lasts (based upon the lamp-ballast combination) at 3 hours duty cycle.

**Lumen Maintenance:** Ratio of mean lumens to initial lumens.

**Mean Lumens:** Amount of luminous flux emitted by a lamp at 40% of the rated lamp life.

**Ballast Efficacy Factor (BEF):** Measurement used to compare the efficiency of differing lighting systems. Ratio of ballast factor to the ballast supply power times 100.

**Ballast Factor (BF):** Measurement of the ability to produce light (lumens) from fluorescent lamps. Ratio of lamp lumens produced when the lamp or lamps are operated by a given ballast to the lamp lumens produced when the lamp or lamps are operated on a reference ballast.

**Ballast Frequency:** The frequency at which the ballast operates the lamp, measured in Hertz (Hz) or kilohertz (kHz).

**Mean System Efficacy:** Measure of "efficiency" of a lamp in terms of the ratio between mean visible output (mean lumen) to lamp/ballast electric power input (Watts), measured in Mean Lumens per Watt (MLPW).

**Power Factor:** The ballast Power Factor is the measurement of how effectively it converts the voltage and current supplied by the power source into watts of usable power delivered to the ballast.

**Total Harmonic Distortion:** Total harmonic distortion (THD) measures the degree to which the current wave shape is distorted from a sinusoidal wave, expressed as a percentage. Detrimental harmonic components may interfere with electronic equipment.

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## DESCRIPTION OF COLUMN HEADINGS FOR CEE HIGH PERFORMANCE 4' T8 LAMP AND BALLAST QUALIFYING LISTS

**Note:** Because of a communications error, CEE had been erroneously including MaxLite ballasts in its qualifying products list. The revised list, which was updated Oct. 20, 2005, does not include MaxLite ballasts but these products are expected to qualify for CEE's commercial lighting initiative in early 2006.

Column Heading	Description	
<b>Manufacturer</b>	By clicking on this field, the user will be directed to the manufacturer Web site and on-line catalogue.	
<b>Product Name, Order Code, Model Number</b>	Information provided from manufacturers on product including ordering codes.	
<b>LAMP</b>	<b>Color Temperature</b>	The perceived "whiteness" of the light source in Kelvin.
	<b>Rated Life</b>	Operating hours that a lamp lasts at 3 hours duty cycle depending upon the type of Ballast.
	<b>IS</b>	Instant Start Ballast
	<b>RS/PRS</b>	Rapid Start or Programmed-Rapid Start
	<b>Initial Lumens</b>	Amount of luminous flux emitted by a lamp after 100 hours of operation at 25°C.
	<b>Mean Lumens</b>	Amount of luminous flux emitted by a lamp at 40% of the rated lamp life.
	<b>CRI</b>	Color Rendering Index. The effect that the spectral characteristic of the light emitted by the lamp has on the color appearance of the objects illuminated by the lamp.
	<b>Lumen Maintenance</b>	Ratio of mean lumens to initial lumens.
<b>BALLAST</b>	<b>Voltage</b>	Operating voltage for ballasts. Multiple voltage ballasts (also referred to as Universal Voltage) designated with two voltage values.
	<b>Input Watts</b>	Reported ANSI rated watts for ballast.
	<b>BEF</b>	Ballast Efficacy Factor. This is a calculated value with the exception of Howard Industries, who provides this value in their catalogue.
	<b>Ballast Start Type</b>	Ballast starting circuitry identified as Instant (I), Rapid (R) or Programmed-Rapid (P).
	<b>Ballast Factor</b>	Ratio of lamp lumens produced when lamp(s) operated by a given ballast to the lamp lumens produced when the lamp(s) operated on a reference ballast.
	<b>Ballast Factor Range</b>	Ballast factor range of low, normal or high based upon <a href="#">CEE Specification</a> .

**QUALIFYING PRODUCTS**  
**High-Performance 4' T8 Lamps**  
*(Last Updated 7/24/05)*

**CEE High-Performance Commercial Lighting Systems Initiative**

Mfr	Product Name	Order Code	Model Number or Description	Color Temp	Rated Life (hrs) <sup>1</sup>		Initial Lumens	Mean Lumens	CRI	Lumen Maintenance
					IS	RS/PRS				
GENERAL ELECTRIC COMPANY	Ecolux High Lumen	10327	F32T8/XL/SPX30/HL/ECO	3000K	24,000	24,000	3100	2915	85	0.94
		10326	F32T8/XL/SPX35/HL/ECO	3500K	24,000	24,000	3100	2915	85	0.94
		10322	F32T8/XL/SPX41/HL/ECO	4100K	24,000	24,000	3100	2915	82	0.94
MAXLITE	T8 XL Series	51058	F32T8/835XL	3500K	24,000	24,000	3100	2920	85	0.94
		51050	F32T8/841XL	4100K	24,000	24,000	3100	2920	82	0.94
		51049	F32T8/850XL	5000K	24,000	24,000	3100	2920	81	0.94
OSRAM - SYLVANIA	Octron XPS	21680	FO32/830/XPS/ECO	3000K	18,000	24,000 <sup>2</sup>	3100	2945	85	0.95
		21697	FO32/835/XPS/ECO	3500K	18,000	24,000 <sup>2</sup>	3100	2945	85	0.95
		21681	FO32/841/XPS/ECO	4100K	18,000	24,000 <sup>2</sup>	3150	2990	85	0.95
PHILIPS LIGHTING COMPANY	Alto Advantage	139873	F32T8/ADV830/ALTO	3000K	20,000	24,000	3100	2950	85	0.95
		139881	F32T8/ADV835/ALTO	3500K	20,000	24,000	3100	2950	85	0.95
		139899	F32T8/ADV841/ALTO	4100K	20,000	24,000	3100	2950	85	0.95
		139907	F32T8/ADV850/ALTO	5000K	20,000	24,000	3100	2950	85	0.95
RADIANT LAMP COMPANY (a division of Westinghouse Lighting Co.)	Triten 50 Ultra	60766	F32T8/Triten 0/ULTRA/ENV	5000K	24,000	24,000	3100	2950	86	0.95

<sup>1</sup> Life based on 3-hr. duty cycle

<sup>2</sup> 30,000hrs on an OSRAM-SYLVANIA dedicated PSX ballast

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# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance 4' T8 Ballasts

CEE High-Performance Commercial Lighting Systems Initiative  
Updated 10/20/05

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>1 - LAMP SYSTEM</b>								
<b>ADVANCE TRANSFORMER COMPANY</b>	Optanium	IOP-2S32-SC	120-277V	P	Normal	0.90	29	3.10
		IOP-1P32-SC	120-277V	I	Normal	0.87	28	3.11
		IOP-1P32-LW-SC	120-277V	I	Low	0.77	25	3.08
		IOP-2S32-LW-SC	120-277V	P	Low	0.73	25	2.92
<b>GENERAL ELECTRIC</b>	GE Ultramax	GE-132-MAX-N/Ultra	120-277V	I	Normal	0.87	28	3.11
		GE-132-MAX-L/Ultra	120-277V	I	Low	0.77	25	3.08
<b>HOWARD INDUSTRIES</b>	HEX Electronic	E1/32IS-120HEX	120V	I	Normal	0.87	28	3.11
		E1/32IS-277HEX	277V	I	Normal	0.87	28	3.11
		ELI/32IS-120HEX	120V	I	Low	0.77	25	3.08
		ELI/32IS-277HEX	277V	I	Low	0.77	25	3.08
<b>OSRAM - SYLVANIA</b>	Quicktronic	QTP 1X32T8/UNIV PSN-TC	120-277V	P	Normal	0.88	31/30	2.84/ 2.93
		QHE 1X32T8/UNIV ISN-SC	120-277V	I	Normal	0.88	28	3.14
		QHE 1X32T8/UNIV ISL-SC	120-277V	I	Low	0.78	25	3.12
		QTP 1X32T8/UNIV PSX-TC	120-277V	P	Low	0.71	25	2.84
<b>UNIVERSAL LIGHTING TECHNOLOGIES</b>	F32 T8	B232PUNVHP-A	120-277V	P	Normal	1.00	32	3.13
		B232IUNVEL-A	120-277V	I	Normal	0.95	30	3.17
		B132PUNVHP-A	120-277V	P	Normal	0.88	31/30	2.84/ 2.93
		B132IUNVHE-A	120-277V	I	Normal	0.87	28	3.11
		B132IUNVEL-A	120-277V	I	Low	0.77	25	3.08

<sup>1</sup> CEE's specification uses the BALLAST EFFICACY FACTOR (BEF) as the true measure of efficiency. The input watt figure calculations are based on a premium 4', 32W T8 reference lamp.

<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts, except for Howard Industries, which provided the information in its catalog.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

### CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>2 - LAMP SYSTEM</b>								
<b>ADVANCE TRANSFORMER COMPANY</b>	Optanium	ROP-2P32-SC	120V	I	Normal	0.88	55	1.60
		VOP-2P32-SC	277V	I	Normal	0.88	55	1.60
		IOP-2S32-SC	120-277V	P	Normal	0.88	56	1.57
		IOP-2P32-SC @ 120V	120V	I	Normal	0.87	55	1.58
		IOP-2P32-SC @ 277V	277V	I	Normal	0.87	54	1.61
		ROP-2P32-LW-SC	120V	I	Low	0.78	48	1.63
		VOP-2P32-LW-SC	277V	I	Low	0.78	48	1.63
		IOP-2P32-LW-SC	120-277V	I	Low	0.77	48	1.60
		IOP-2S32-LW-SC	120-277V	P	Low	0.71	47	1.51
<b>GENERAL ELECTRIC COMPANY</b>	GE Ultramax	GE-232-MAX-H/Ultra	120-277V	I	High	1.15	74 / 73	0.95/ 0.97
		GE-232-MAX-N/Ultra	120-277V	I	Normal	0.87	54 / 53	1.61/ 1.64
		GE-232-MAX-L/Ultra	120-277V	I	Low	0.77	48	1.60
<b>HOWARD INDUSTRIES</b>	HEX Electronic	E2/32IS-120HEX	120V	I	Normal	0.87	55	1.58
		E2/32IS-277HEX	277V	I	Normal	0.87	55	1.58
		EL2/32IS-277HEX	277V	I	Low	0.77	48	1.60
<b>OSRAM - SYLVANIA</b>	Quicktronic	QHE 2X32T8/UNIV ISH-SC	120-277V	I	High	1.20	74	1.62
		QTP 2X32T8/UNIV PSN-TC	120-277V	P	Normal	0.88	60 / 58	1.47/ 1.52
		QHE 2X32T8/UNIV ISN-SC	120-277V	I	Normal	0.88	55	1.60
		QHE 2X32T8/UNIV ISL-SC	120-277V	I	Low	0.78	48	1.63
		QTP 2X32T8/UNIV PSX-TC	120-277V	P	Low	0.71	47 / 46	1.51/ 1.54

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<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts, except for Howard Industries, which provided the information in its catalog.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>2 - LAMP SYSTEM , CONTINUED</b>								
<b>UNIVERSAL LIGHTING TECHNOLOGIES</b>	F32 T8	B332I277HE	277V	I	High	1.01	61	1.66
		B332PUNVHP-A	120-277V	P	Normal	0.99	64 / 63	1.55/1.57
		B332I120HE	120V	I	Normal	0.96	60	1.60
		B332I120L-A	120V	I	Normal	0.92	58	1.59
		B332IUNVEL-A	277V	I	Normal	0.89	56	1.59
		B232PUNVHP-A	277V	P	Normal	0.88	60	1.47
		B232I2120HE	120V	I	Normal	0.87	54	1.61
		B232I277HE	277V	I	Normal	0.87	53	1.64
		B232IUNVHE-A	120-277V	I	Normal	0.87	55 / 54	1.58/1.61
		B332I277EL	277V	I	Normal	0.87	55	1.58
		B332I120EL	120V	I	Normal	0.86	53	1.62
		B232I120EL	120V	I	Low	0.77	47	1.64
		B232I2770EL	277V	I	Low	0.77	47	1.64
		B232IUNVEL-A	120-277V	I	Low	0.77	48	1.60

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<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts, except for Howard Industries, which provided the information in its catalog.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

### CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>3 - LAMP SYSTEM</b>								
<b>ADVANCE TRANSFORMER COMPANY</b>	Optanium	ROP-3P32-SC	120V	I	Normal	0.88	83	1.06
		VOP-3P32-SC	277V	I	Normal	0.88	82	1.07
		IOP-3S32-SC	120-277V	P	Normal	0.88	83	1.06
		IOP-3P32-SC @ 120V	120V	I	Normal	0.87	82	1.06
		IOP-3P32-SC @ 277V	277V	I	Normal	0.87	80	1.09
		ROP-3P32-LW-SC	120V	I	Low	0.78	72	1.08
		VOP-3P32-LW-SC	277V	I	Low	0.78	71	1.10
		IOP-3P32-LW-SC @ 120V	120V	I	Low	0.77	73	1.05
		IOP-3P32-LW-SC @ 277V	277V	I	Low	0.77	71	1.08
		IOP-3S32-LW-SC	120-277V	P	Low	0.71	72	0.99
<b>GENERAL ELECTRIC COMPANY</b>	GE Ultramax	GE-332-MAX-H/Ultra	120/277V	I	High	1.15	111 / 109	1.04/1.06
		GE-332-MAX-N/Ultra	120/277V	I	Normal	0.87	82 / 80	1.09/1.06
		GE-332-MAX-L/Ultra	120/277V	I	Low	0.77	73 / 72	1.05/1.08
<b>HOWARD INDUSTRIES</b>	HEX Electronic	E3/32IS-277 HEX	277V	I	Normal	0.87	83	1.05
		E3/32IS-277 HEX	277V	I	Normal	0.87	83	1.05
		EL3/32IS-120 HEX	120V	I	Low	0.77	73	1.05
		EL3/32IS-277 HEX	277V	I	Low	0.77	73	1.05
<b>OSRAM - SYLVANIA</b>	Quicktronic	QHE 3X32T8/UNIV ISH-SC	120-277V	I	High	1.18	111	1.06
		QTP 3X32T8/UNIV PSN-TC	120-277V	P	Normal	0.88	88 / 85	1/1.04
		QHE 3X32T8/UNIV ISN-SC	120-277V	I	Normal	0.88	83 / 82	1.06/1.07
		QHE 3X32T8/UNIV ISL-SC	120-277V	I	Low	0.78	73	1.07
		QTP 3X32T8/UNIV PSX-TC	120-277V	P	Low	0.71	73 / 71	0.97/1

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<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts, except for Howard Industries, which provided the information in its catalog.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

### CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>3 - LAMP SYSTEM, CONTINUED</b>								
<b>UNIVERSAL LIGHTING TECHNOLOGIES</b>	F32 T8	B332I120RHH	120V	I	High	1.18	113	1.04
		B332I277RHH	277V	I	High	1.18	113	1.04
		B332IUNVHP-A	277V	I	Normal	0.88	84	1.05
		B332I120HE	120V	I	Normal	0.87	80	1.09
		B332I277HE	277V	I	Normal	0.87	79	1.10
		B332IUNVHE-A	120-277V	I	Normal	0.87	83 / 81	1.05/1.07
		B332I120EL	120V	I	Low	0.77	70	1.10
		B332IUNVEL-A	120-277V	I	Low	0.77	74 / 73	1.04/1.05

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<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

### CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>4 - LAMP SYSTEM</b>								
<b>ADVANCE TRANSFORMER COMPANY</b>	Optanium	ROP-4P32-SC	120V	I	Normal	0.88	108	0.81
		VOP-4P32-SC	277V	I	Normal	0.88	107	0.82
		IOP-4S32-SC	120-277V	P	Normal	0.88	109	0.81
		IOP-4P32-SC @ 120V	120V	I	Normal	0.87	108	0.81
		IOP-4P32-SC @ 277V	277V	I	Normal	0.87	106	0.82
		ROP-4P32-LW-SC	120V	I	Low	0.78	95	0.82
		VOP-4P32-LW-SC	277V	I	Low	0.78	94	0.83
		IOP-4P32-LW-SC @ 120V	120V	I	Low	0.77	97	0.79
		IOP-4P32-LW-SC @ 277V	277V	I	Low	0.77	95	0.81
		IOP-4S32-LW-SC	120-277V	P	Low	0.71	92	0.77
<b>GENERAL ELECTRIC COMPANY</b>	GE Ultramax	GE-432-MAX-H/Ultra	120/277	I	High	1.15	147 / 151	0.78/0.76
		GE-432-MAX-N/Ultra	120/277	I	Normal	0.87	109 / 107	0.8/0.81
		GE-432-MAX-L/Ultra	120/277	I	Low	0.77	97 / 96	0.79/0.80
<b>HOWARD INDUSTRIES</b>	HEX Electronic	E4/32IS-277 HEX	277V	I	Normal	0.87	109	0.80
		EL4/32IS-120 HEX	120V	I	Low	0.77	98	0.79
		EL4/32IS-277 HEX	277V	I	Low	0.77	96	0.80
<b>OSRAM - SYLVANIA</b>	Quicktronic	QHE 4X32T8/UNIV ISH-SC	120-277V	I	High	1.15	148	0.78
		QTP 4X32T8/UNIV PSN-TC	120-277V	P	Normal	0.88	118 / 113	0.75/0.78
		QHE 4X32T8/UNIV ISN-SC	120-277V	I	Normal	0.88	108 / 107	0.81/0.82
		QHE 4X32T8/UNIV ISL-SC	120-277V	I	Low	0.78	95	0.82
		QTP 4X32T8/UNIV PSX-TC	120-277V	P	Low	0.71	93 / 91	0.76/0.78

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<sup>1</sup> CEE's specification uses the BALLAST EFFICACY FACTOR (BEF) as the true measure of efficiency. The input watt figure calculations are based on a premium 4', 32W T8 reference lamp.

<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts, except for Howard Industries, which provided the information in its catalog.

# QUALIFYING PRODUCTS<sup>1</sup>

## High-Performance T8 Ballasts

CEE High-Performance Commercial Lighting Systems Initiative

Manufacturer	Product Name	Model Number	Voltage (V)	Ballast Start Type <sup>2</sup>	Ballast Factor Range	Ballast Factor	Input Watts (W)	BEF <sup>3</sup>
<b>4 - LAMP SYSTEM, CONTINUED</b>								
<b>UNIVERSAL LIGHTING TECHNOLOGIES</b>	F32 T8	B432I277HEH	277V	I	High	1.18	145	0.81
		B432PUNVHP-A	277V	P	Normal	0.88	115	0.77
		B432UNV-D	277V	I	Normal	0.88	109	0.81
		B432I277RH-A	277V	I	Normal	0.88	110	0.80
		B432IUNVHP-A	277V	I	Normal	0.88	110	0.80
		B432I277HE	277V	I	Normal	0.87	105	0.83
		B432IUNVHE-A	120-277V	I	Normal	0.87	109/106	0.80/0.82
		B423I120HE	120V	I	Normal	0.87	106	0.82
		B432I277L-A	277V	I	Low	0.78	98	0.76
		B432I120EL	120V	I	Low	0.77	95	0.81
		B432I277EL	277V	I	Low	0.77	93	0.82
		B4321UNVEL-A	120-277V	I	Low	0.77	97/96	0.79/0.80

<sup>1</sup> CEE's specification uses the BALLAST EFFICACY FACTOR (BEF) as the true measure of efficiency. The input watt figure calculations are based on a premium 4', 32W T8 reference lamp.

<sup>2</sup> "P" signifies programmed start, "I" signifies instant start.

<sup>3</sup> BEF is calculated by multiplying the Ballast Factor by 100 and dividing by the input watts.