



# Redefining the rules

Philips Advance Optanium<sup>®</sup> high efficiency programmed start T8 ballasts have redefined the rules for T8 lighting fixtures

Philips Advance's Optanium high-efficiency electronic ballasts are engineered to optimize lighting performance and maximize energy savings. These ballasts provide an unparalleled package of features and benefits to support the wide variety of T8 fluorescent lamps out in the market place.

Optanium ballasts for T8 lamps are part of our effort to promote environmental responsibility through Smart Solutions<sup>™</sup> — energy efficient products, lighting systems, services, and expertise through Philips Advance branded products. They are also one of the charter products of the NEMA Premium<sup>®</sup> Ballast Program. All of this makes these ballasts part of an overall high-efficiency lighting system that may help you achieve LEED certification, meet ASHRAE standards, become Title 24 compliant, or any other local energy code that you or your customers need to be in compliance.

Optanium ballasts will help you and your customers meet a variety of application challenges including design, installation, maintenance, and evolving lamp technology. Optanium ballasts are available in both a standard light output design (0.87 ballast factor) and a low-watt design (0.77 ballast factor). Also these ballasts have a cold-starting capability down to -0°F (with standard lamps) These two features combined make it ideal for just about any T8 fixture design and application. The ballast's

programmed start ignition also provides extended lamp life in frequent switching applications such as those where occupancy sensors or motion detectors are being used.

Available in a broad range of options, Optanium ballasts enable T8 lighting systems to reach their full potential and represent the industry's most flexible and comprehensive family of high-efficiency lighting solutions.

#### Hi-efficiency

- Promotes sustainability by consuming less input watts than standard efficiency electronic ballasts

#### IntelliVolt<sup>®</sup> Technology (108-305V, 50/60Hz)

- Enhances accuracy and ease of ordering while reducing stocking/SKU requirements

#### Striation Reduction circuitry

- Reduces the potential for lamp striation typically seen when using energy saving lamps

\* For more information about our Smart Solutions program go to [www.philips.com/advancesustainability](http://www.philips.com/advancesustainability).



No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.
<b>F17T8 (17W) Normal Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-SC	17	0.97	15	0.14	0/-18	B	20
	230				17	0.97		0.08			
	277				17	0.97		0.07			
2	120	PS	Optanium	IOP-2S32-SC	29	0.90	10	0.24	0/-18	B	21
	230				29	0.90		0.13			
	277				29	0.90	15	0.11			
3	120	PS	Optanium	IOP-3S32-SC	43	0.89	10	0.36	0/-18	B	30
	230				43	0.89		0.19			
	277				43	0.89	15	0.15			
4	120	PS	Optanium	IOP-4S32-SC	57	0.89	10	0.47	0/-18	B	138
	230				56	0.89		0.25			
	277				56	0.89	15	0.21			
<b>F17T8 (17W) Low Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-LW-SC	15	0.78	15	0.12	0/-18	B	20
	230				15	0.78		0.07			
	277				15	0.78		0.06			
2	120	PS	Optanium	IOP-2S32-LW-SC	25	0.73	10	0.21	0/-18	B	21
	230				25	0.73		0.11			
	277				25	0.73		0.09			
3	120	PS	Optanium	IOP-3S32-LW-SC	37	0.72	10	0.31	0/-18	B	30
	230				37	0.72		0.16			
	277				37	0.72		0.14			
4	120	PS	Optanium	IOP-4S32-LW-SC	48	0.72	10	0.40	0/-18	B	138
	230				47	0.72		0.21			
	277				47	0.72		0.18			



No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.
<b>F25T8 (25W) Normal Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-SC	23	0.90	15	0.19	0/-18	B	20
	230				23	0.90		0.10			
	277				23	0.90		0.09			
2	120	PS	Optanium	IOP-2S32-SC	43	0.89	10	0.36	0/-18	B	21
	230				43	0.89		0.19			
	277				43	0.89		0.16			
3	120	PS	Optanium	IOP-3S32-SC	64	0.88	10	0.53	0/-18	B	30
	230				63	0.88		0.28			
	277				63	0.88	15	0.23			
4	120	PS	Optanium	IOP-4S32-SC	84	0.88	10	0.71	0/-18	B	138
	230				83	0.88		0.37			
	277				83	0.88		0.31			
<b>F25T8 (25W) Low Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-LW-SC	20	0.73	10	0.17	0/-18	B	20
	230				20	0.73	15	0.09			
	277				20	0.73		0.08			
2	120	PS	Optanium	IOP-2S32-LW-SC	36	0.71	10	0.30	0/-18	B	21
	230				36	0.71		0.16			
	277				36	0.71		0.13			
3	120	PS	Optanium	IOP-3S32-LW-SC	54	0.71	10	0.45	0/-18	B	30
	230				53	0.71		0.23			
	277				53	0.71		0.20			
4	120	PS	Optanium	IOP-4S32-LW-SC	69	0.72	10	0.58	0/-18	B	138
	230				68	0.72		0.30			
	277				68	0.72		0.25			



No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.
<b>F32T8, FB032T8, F32T8/U6 (32W) Normal Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-SC	29	0.90	10	0.24	0/-18	B	20
	230				29	0.90	15	0.13			
	277				29	0.90		0.11			
2	120	PS	Optanium	IOP-2S32-SC	56	0.88	10	0.47	0/-18	B	21
	230				55	0.88		0.24			
	277				55	0.88		0.20			
3	120	PS	Optanium	IOP-3S32-SC	83	0.88	10	0.70	0/-18	B	30
	230				82	0.88		0.36			
	277				81	0.88		0.30			
4	120	PS	Optanium	IOP-4S32-SC	110	0.88	10	0.92	0/-18	B	138
	230				108	0.88		0.47			
	277				108	0.88		0.40			
<b>F32T8, FB032T8, F32T8/U6 (32W) Low Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-LW-SC	25	0.73	10	0.20	0/-18	B	20
	230				25	0.73		0.11			
	277				25	0.73		0.09			
2	120	PS	Optanium	IOP-2S32-LW-SC	47	0.71	10	0.38	0/-18	B	21
	230				46	0.71		0.20			
	277				46	0.71		0.17			
3	120	PS	Optanium	IOP-3S32-LW-SC	71	0.71	10	0.59	0/-18	B	30
	230				70	0.71		0.31			
	277				70	0.71		0.26			
4	120	PS	Optanium	IOP-4S32-LW-SC	93	0.71	10	0.77	0/-18	B	138
	230				91	0.71		0.40			
	277				91	0.71		0.33			



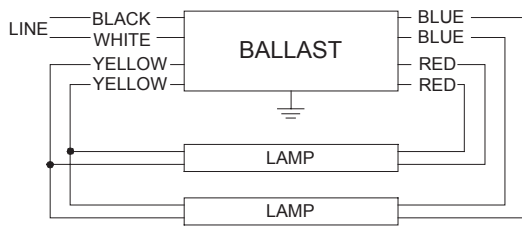
No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.
<b>F32T8/ES (25W) Normal Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-SC	24	0.89	10	0.21	60/15	B	20
	230				24	0.89		0.11			
	277				24	0.89	15	0.90			
2	120	PS	Optanium	IOP-2S32-SC	45	0.88	10	0.38	60/15	B	21
	230				45	0.88		0.19			
	277				45	0.88		0.16			
3	120	PS	Optanium	IOP-3S32-SC	67	0.89	10	0.56	60/15	B	30
	230				66	0.89		0.29			
	277				66	0.89		0.25			
4	120	PS	Optanium	IOP-4S32-SC	87	0.89	10	0.73	60/15	B	138
	230				87	0.89		0.39			
	277				87	0.89		0.33			
<b>F32T8/ES (25W) Low Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-LW-SC	21	0.73	10	0.17	60/15	B	20
	230				21	0.73		0.09			
	277				21	0.73		0.08			
2	120	PS	Optanium	IOP-2S32-LW-SC	39	0.71	10	0.32	60/15	B	21
	230				38	0.71		0.17			
	277				38	0.71		0.14			
3	120	PS	Optanium	IOP-3S32-LW-SC	57	0.71	10	0.48	60/15	B	30
	230				56	0.71		0.25			
	277				56	0.71		0.21			
4	120	PS	Optanium	IOP-4S32-LW-SC	74	0.71	10	0.62	60/15	B	138
	230				73	0.71		0.32			
	277				73	0.71		0.27			



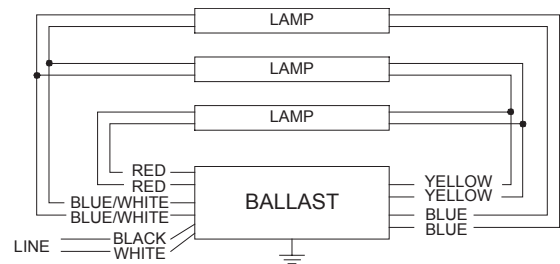
No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.
<b>F32T8/ES (28W) Normal Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-SC	26	0.88	10	0.21	60/15	B	20
	230				26	0.88		0.11			
	277				26	0.88	15	0.97			
2	120	PS	Optanium	IOP-2S32-SC	49	0.88	10	0.41	60/15	B	21
	230				48	0.88		0.21			
	277				48	0.88	0.18				
3	120	PS	Optanium	IOP-3S32-SC	72	0.89	10	0.60	60/15	B	30
	230				71	0.89		0.31			
	277				71	0.89		0.26			
4	120	PS	Optanium	IOP-4S32-SC	97	0.88	10	0.82	60/15	B	138
	230				96	0.88		0.42			
	277				96	0.88		0.35			

<b>F32T8/ES (28W) Low Ballast Factor</b>											
1	120	PS	Optanium	IOP-2S32-LW-SC	22	0.73	10	0.18	60/15	B	20
	230				22	0.73		0.10			
	277				22	0.73		0.08			
2	120	PS	Optanium	IOP-2S32-LW-SC	41	0.71	10	0.34	60/15	B	21
	230				40	0.71		0.18			
	277				40	0.71		0.15			
3	120	PS	Optanium	IOP-3S32-LW-SC	62	0.71	10	0.51	60/15	B	30
	230				61	0.71		0.27			
	277				61	0.71		0.22			
4	120	PS	Optanium	IOP-4S32-LW-SC	80	0.71	10	0.67	60/15	B	138
	230				79	0.71		0.35			
	277				79	0.71		0.29			

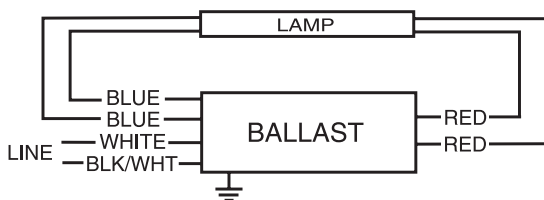
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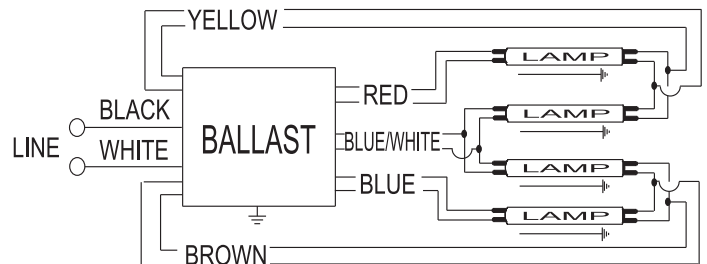
Diag. 21



Diag. 30



Diag. 20



Diag. 138

No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Line Current (Amps)	Min. Starting Temp. (°F /°C)	Dim.	Wiring Diag.	
<b>F32T8/ES (30W) Normal Ballast Factor</b>												
1	120	PS	Optanium	IOP-2S32-SC	27	0.90	10	0.23	60/15	B	20	
	230				27	0.90	15	0.12				
	277				27	0.90	15	0.10				
2	120	PS	Optanium	IOP-2S32-SC	52	0.88	10	0.44	60/15	B	65	
	230				52	0.88		10				0.23
	277				52	0.88		10				0.19
3	120	PS	Optanium	IOP-3S32-SC	77	0.89	10	0.64	60/15	B	30	
	230				76	0.89		10				0.33
	277				76	0.89		10				0.28
4	120	PS	Optanium	IOP-4S32-SC	102	0.88	10	0.86	60/15	B	138	
	230				100	0.88		10				0.44
	277				100	0.88		10				0.37
<b>F32T8/ES (30W) Low Ballast Factor</b>												
1	120	PS	Optanium	IOP-2S32-LW-SC	24	0.73	10	0.20	60/15	B	20	
	230				23	0.73		10				0.10
	277				23	0.73		10				0.09
2	120	PS	Optanium	IOP-2S32-LW-SC	44	0.71	10	0.36	60/15	B	65	
	230				43	0.71		10				0.19
	277				43	0.71		10				0.16
3	120	PS	Optanium	IOP-3S32-LW-SC	66	0.71	10	0.55	60/15	B	30	
	230				65	0.71		10				0.28
	277				65	0.71		10				0.24
4	120	PS	Optanium	IOP-4S32-LW-SC	86	0.71	10	0.71	60/15	B	138	
	230				84	0.71		10				0.37
	277				84	0.71		10				0.31
<b>F40T8 (40W) Normal Ballast Factor</b>												
1	120	PS	Optanium	IOP-2S32-SC	36	0.90	10	0.30	0/-18	B	20	
	230				36	0.90		10				0.16
	277				36	0.90		10				0.13
<b>F40T8 (40W) Low Ballast Factor</b>												
1	120	PS	Optanium	IOP-2S32-LW-SC	31	0.73	10	0.26	0/-18	B	20	
	230				30	0.73		10				0.13
	277				30	0.73		10				0.11

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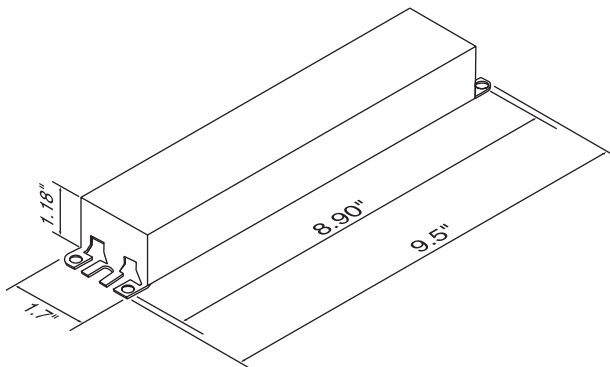


Fig. B

# Ballast Specification

## Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

## Section II - Performance Requirements

- 2.1 Ballast shall be Instant Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail.
- 2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.4 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz and 52kHz to avoid interference with infrared devices, eliminate visible flicker and avoid Article Surveillance Systems, such as anti-theft devices.
- 2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.75 for Low Watt, 0.85 for Normal Light Output, and 1.20 for High Light.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at normal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating.
- 2.11 Ballast shall have a minimum starting temperature of -18° C (0° F) for standard T8 lamps and 16° C (60° F) energy saving T8 lamps.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.
- 2.13 Ballast shall contain an anti-striation circuit to reduce striation on energy-saving T8 lamps.

## Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type I Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

## Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a \_\_\_\_\_ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of \_\_\_\_\_ (Go to our web site for up-to-date warranty information: [www.advancetransformer.com/warranty](http://www.advancetransformer.com/warranty)).
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be Philips Advance part # \_\_\_\_\_ or approved equal.



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