



# Reduce Maintenance Costs<sup>\*</sup>

**Philips Advance programmed start parallel Optanium ballasts for T8 lamps** helps lower maintenance costs with independent lamp operation.

Philips Advance Optanium high-efficiency programmed start parallel ballasts are now available as parallel wired instead of series wired which provides independent lamp operation within the fixture. When one lamp reaches its end-of-life (EOL) the remaining lamps stay lit, as a result less lamps are replaced because the end user can tell which lamp has reached EOL. With more lamps remaining on, this reduces the urgency of re-lamping and produces less dark spots in fixtures during EOL providing more consistent light output throughout the life of the system.

These ballast join our premium line of Optanium high-efficiency electronic ballasts which are engineered to optimize lighting performance and maximize energy savings. They provide an exceptional package of features and benefits to support the wide variety of T8 fluorescent lamps out in the market place. They are also part of our offering of the NEMA Premium<sup>®</sup> ballast high efficiency program.

These ballasts are an optimal choice with occupancy sensors or in frequent switching applications for a range of new construction and retrofit applications within the commercial sector including general office

lighting, institutional, government, health care and school applications.

#### Independent Lamp Operation

- Helps reduce maintenance costs as more lamps remain on when lamps reach end-of-life minimizing wasteful re-lamping

#### Lamp Striation Reduction Technology

- Reduces the likelihood of striation in energy-saving lamps, allowing for additional energy-saving opportunities

#### Hot restrike in remote tandem wiring applications

- Allows users to replace lamps without cycling power (standard and energy saving lamps)

\* Based on the properties of independent lamp operation allowing you to replace only the failed lamps.

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ADVANCE**

No. of Lamps	Input Volts	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max THD %	Line Current (Amps)	Minimum Starting Temp (°F/°C)	Dim.	Wiring Diagram
<b>F17T8 (17W) High Ballast Factor</b>									
1	120-277	IOP-2PSP32HL-SC	39	1.34	10	0.20	0/-18	B	1
	120-277	IOP-2PSP32HL-SC	39	1.34	10	0.11	0/-18	B	1
2	120-277	IOP-2PSP32HL-SC	66	1.17	10	0.33	0/-18	B	2
	120-277	IOP-2PSP32HL-SC	64	1.17	10	0.15	0/-18	B	2
3	120-277	IOP-3PSP32HL-SC	62	1.22	10	0.52	0/-18	B	3
	120-277	IOP-3PSP32HL-SC	62	1.22	10	0.23	0/-18	B	3
4	120-277	IOP-4PSP32HL-G	82	1.24	10	0.68	0/-18	G	4
	120-277	IOP-4PSP32HL-G	81	1.24	10	0.29	0/-18	G	4
<b>F17T8 (17W) Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	19	1.00	10	0.16	0/-18	B	1
	120-277	IOP-2PSP32-SC	19	1.00	10	0.07	0/-18	B	1
2	120-277	IOP-2PSP32-SC	30	0.88	10	0.25	0/-18	B	1
	120-277	IOP-2PSP32-SC	30	0.88	10	0.11	0/-18	B	1
3	120-277	IOP-3PSP32-SC	47	0.90	10	0.39	0/-18	B	2
	120-277	IOP-3PSP32-SC	47	0.90	10	0.17	0/-18	B	2
4	120-277	IOP-4PSP32-SC	60	0.90	10	0.50	0/-18	B	3
	120-277	IOP-4PSP32-SC	59	0.90	10	0.22	0/-18	B	3
<b>F17T8 (17W) Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LVV-SC	16	0.79	10	0.13	0/-18	B	1
	120-277	IOP-2PSP32LVV-SC	16	0.79	10	0.06	0/-18	B	1
2	120-277	IOP-2PSP32LVV-SC	25	0.71	10	0.20	0/-18	B	1
	120-277	IOP-2PSP32LVV-SC	24	0.71	10	0.09	0/-18	B	1
<b>F25T8 (25W) High Ballast Factor</b>									
1	120-277	IOP-2PSP32HL-SC	35	1.35	10	0.29	0/-18	B	1
	120-277	IOP-2PSP32HL-SC	35	1.35	10	0.13	0/-18	B	1
2	120-277	IOP-2PSP32HL-SC	58	1.16	10	0.48	0/-18	B	2
	120-277	IOP-2PSP32HL-SC	57	1.16	10	0.21	0/-18	B	2
3	120-277	IOP-3PSP32HL-SC	88	1.20	10	0.73	0/-18	B	3
	120-277	IOP-3PSP32HL-SC	87	1.20	10	0.32	0/-18	B	3
4	120-277	IOP-4PSP32HL-G	115	1.22	10	0.96	0/-18	G	4
	120-277	IOP-4PSP32HL-G	114	1.22	10	0.42	0/-18	G	4
<b>F25T8 (25W) Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	25	0.94	10	0.21	0/-18	B	1
	120-277	IOP-2PSP32-SC	25	0.94	10	0.10	0/-18	B	1
2	120-277	IOP-2PSP32-SC	43	0.88	10	0.36	0/-18	B	1
	120-277	IOP-2PSP32-SC	43	0.88	10	0.16	0/-18	B	1
3	120-277	IOP-3PSP32-SC	66	0.89	10	0.55	0/-18	B	2
	120-277	IOP-3PSP32-SC	66	0.89	10	0.24	0/-18	B	2
4	120-277	IOP-4PSP32-SC	85	0.9	10	0.71	0/-18	B	3
	120-277	IOP-4PSP32-SC	85	0.89	10	0.31	0/-18	B	3
<b>F25T8 (25W) Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LVV-SC	21	0.77	10	0.17	0/-18	B	1
	120-277	IOP-2PSP32LVV-SC	21	0.77	10	0.08	0/-18	B	1
2	120-277	IOP-2PSP32LVV-SC	35	0.71	10	0.29	0/-18	B	1
	120-277	IOP-2PSP32LVV-SC	34	0.71	10	0.13	0/-18	B	1

# Optanium Ballasts For 17 - 30W

# Programmed Start

No. of Lamps	Input Volts	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max THD %	Line Current (Amps)	Minimum Starting Temp (°F/°C)	Dim.	Wiring Diagram
<b>F32T8 (32W) High Ballast Factor</b>									
1	120-277	IOP-2PSP32HL-SC	44	1.33	10	0.38	0/-18	B	1
	120-277	IOP-2PSP32HL-SC	44	1.33	10	0.17	0/-18	B	1
2	120-277	IOP-2PSP32HL-SC	78	1.18	10	0.66	0/-18	B	2
	120-277	IOP-2PSP32HL-SC	74	1.16	10	0.27	0/-18	B	2
3	120-277	IOP-3PSP32HL-SC	113	1.18	10	0.94	0/-18	B	3
	120-277	IOP-3PSP32HL-SC	110	1.18	10	0.40	0/-18	B	3
4	120-277	IOP-4PSP32HL-G	153	1.18	10	1.28	0/-18	G	4
	120-277	IOP-4PSP32HL-G	149	1.17	10	0.55	0/-18	G	4
<b>F32T8 (32W) Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	32	0.94	10	0.27	0/-18	B	1
	120-277	IOP-2PSP32-SC	32	0.94	10	0.12	0/-18	B	1
2	120-277	IOP-2PSP32-SC	57	0.88	10	0.48	0/-18	B	1
	120-277	IOP-2PSP32-SC	56	0.88	10	0.14	0/-18	B	1
3	120-277	IOP-3PSP32-SC	85	0.88	10	0.71	0/-18	B	2
	120-277	IOP-3PSP32-SC	84	0.88	10	0.31	0/-18	B	2
4	120-277	IOP-4PSP32-SC	110	0.88	10	0.93	0/-18	B	3
	120-277	IOP-4PSP32-SC	109	0.88	10	0.4	0/-18	B	3
<b>F32T8ES (32W) Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LWV-SC	26	0.73	10	0.22	0/-18	B	1
	120-277	IOP-2PSP32LWV-SC	26	0.73	10	0.10	0/-18	B	1
2	120-277	IOP-2PSP32LWV-SC	46	0.71	10	0.40	0/-18	B	1
	120-277	IOP-2PSP32LWV-SC	45	0.71	10	0.17	0/-18	B	1
<b>F32T8ES (25W) ES High Ballast Factor</b>									
1	120-277	IOP-2PSP32HL-SC	36	1.28	10	0.30	60/16	B	1
	120-277	IOP-2PSP32HL-SC	36	1.28	10	0.14	60/16	B	1
2	120-277	IOP-2PSP32HL-SC	61	1.18	10	0.51	60/16	B	2
	120-277	IOP-2PSP32HL-SC	59	1.18	10	0.22	60/16	B	2
3	120-277	IOP-3PSP32HL-SC	92	1.18	10	0.76	60/16	B	3
	120-277	IOP-3PSP32HL-SC	90	1.18	10	0.33	60/16	B	3
4	120-277	IOP-4PSP32HL-G	121	1.21	10	1.07	60/16	G	4
	120-277	IOP-4PSP32HL-G	120	1.21	10	0.44	60/16	G	4
<b>F32T8ES (25W) ES Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	27	0.94	10	0.23	60/16	B	1
	120-277	IOP-2PSP32-SC	27	0.94	10	0.10	60/16	B	1
2	120-277	IOP-2PSP32-SC	46	0.88	10	0.93	60/16	B	1
	120-277	IOP-2PSP32-SC	45	0.88	10	0.17	60/16	B	1
3	120-277	IOP-3PSP32-SC	70	0.88	10	0.58	60/16	B	2
	120-277	IOP-3PSP32-SC	70	0.88	10	0.25	60/16	B	2
4	120-277	IOP-4PSP32-SC	90	0.88	10	0.75	60/16	B	3
	120-277	IOP-4PSP32-SC	90	0.88	10	0.33	60/16	B	3
<b>F32T8ES (25W) ES Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LWV-SC	22	0.77	10	0.18	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	22	0.75	10	0.08	60/16	B	1
2	120-277	IOP-2PSP32LWV-SC	37	0.71	10	0.31	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	36	0.71	10	0.13	60/16	B	1

No. of Lamps	Input Volts	Catalog Number	Input Power ANSI (Watts)	Ballast Factor	Max THD %	Line Current (Amps)	Minimum Starting Temp (°F/°C)	Dim.	Wiring Diagram
<b>F32T8ES (28W) ES High Ballast Factor</b>									
1	120-277	IOP-2PSP32HL-SC	39	1.28	10	0.33	60/16	B	1
	120-277	IOP-2PSP32HL-SC	39	1.28	10	0.15	60/16	B	1
2	120-277	IOP-2PSP32HL-SC	66	1.18	10	0.55	60/16	B	2
	120-277	IOP-2PSP32HL-SC	64	1.18	10	0.24	60/16	B	2
3	120-277	IOP-3PSP32HL-SC	99	1.18	10	0.83	60/16	B	3
	120-277	IOP-3PSP32HL-SC	98	1.18	10	0.36	60/16	B	3
4	120-277	IOP-4PSP32HL-G	132	1.20	10	0.93	60/16	G	4
	120-277	IOP-4PSP32HL-G	130	1.20	10	0.48	60/16	G	4
<b>F32T8ES (28W) ES Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	30	0.94	10	0.23	60/16	B	1
	120-277	IOP-2PSP32-SC	28	0.94	10	0.10	60/16	B	1
2	120-277	IOP-2PSP32-SC	51	0.88	10	0.42	60/16	B	1
	120-277	IOP-2PSP32-SC	49	0.88	10	0.18	60/16	B	1
3	120-277	IOP-3PSP32-SC	75	0.88	10	0.62	60/16	B	2
	120-277	IOP-3PSP32-SC	74	0.88	10	0.27	60/16	B	2
4	120-277	IOP-4PSP32-SC	97	0.88	10	0.81	60/16	B	3
	120-277	IOP-4PSP32-SC	96	0.88	10	0.35	60/16	B	3
<b>F32T8ES (28W) ES Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LWV-SC	23	0.74	10	0.19	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	23	0.74	10	0.09	60/16	B	1
2	120-277	IOP-2PSP32LWV-SC	39	0.71	10	0.31	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	39	0.71	10	0.14	60/16	B	1
<b>F32T8ES (30W) ES Normal Ballast Factor</b>									
1	120-277	IOP-2PSP32-SC	30	0.94	10	0.25	60/16	B	1
	120-277	IOP-2PSP32-SC	30	0.94	10	0.11	60/16	B	1
2	120-277	IOP-2PSP32-SC	55	0.88	10	0.46	60/16	B	1
	120-277	IOP-2PSP32-SC	54	0.88	10	0.20	60/16	B	1
3	120-277	IOP-3PSP32-SC	79	0.88	10	0.66	60/16	B	2
	120-277	IOP-3PSP32-SC	78	0.88	10	0.29	60/16	B	2
4	120-277	IOP-4PSP32-SC	103	0.88	10	0.86	60/16	B	3
	120-277	IOP-4PSP32-SC	102	0.88	10	0.37	60/16	B	3
<b>F32T8ES (30W) ES Low Ballast Factor</b>									
1	120-277	IOP-2PSP32LWV-SC	24	0.72	10	0.20	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	24	0.72	10	0.09	60/16	B	1
2	120-277	IOP-2PSP32LWV-SC	43	0.71	10	0.36	60/16	B	1
	120-277	IOP-2PSP32LWV-SC	42	0.71	10	0.15	60/16	B	1

## Dimensions

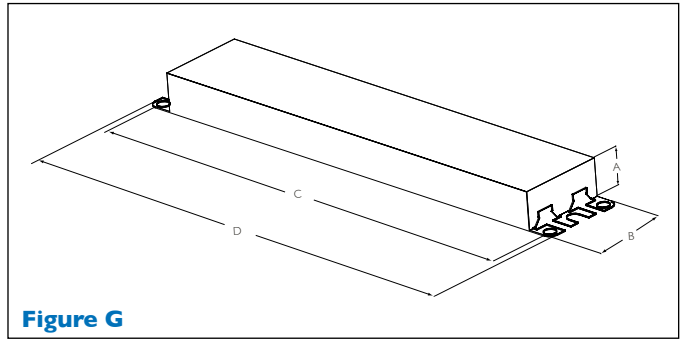
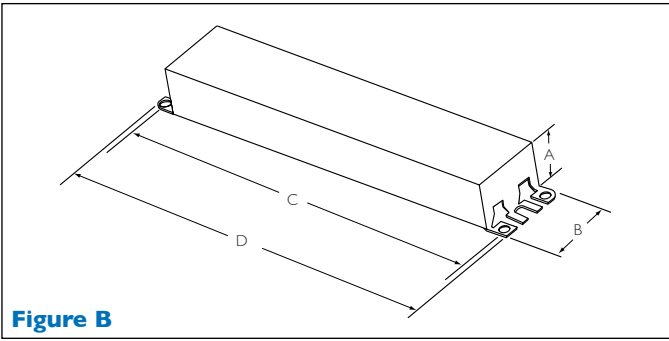
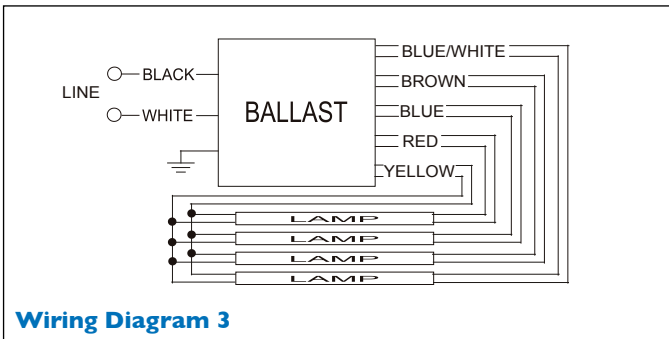
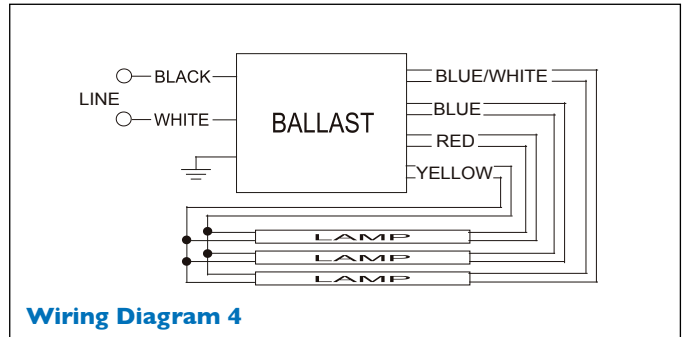
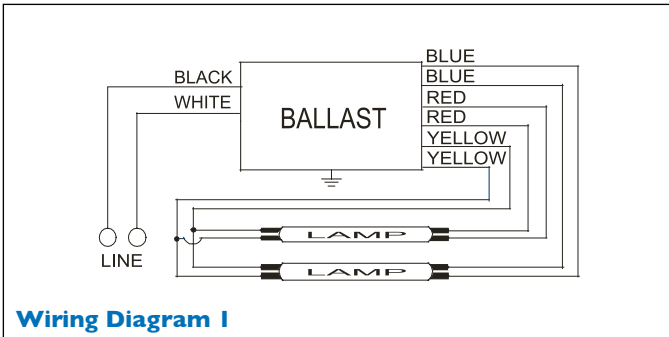


Figure	A	B	C	D
B	1.18"	1.70"	8.90"	9.50"
G	1.18"	1.70"	16.34"	16.70"

## Wiring Diagrams



# 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 Programmed Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for Programmed 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 60 Hz input source of 120V through 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42kHz and 52kHz to avoid interference with infrared devices, eliminate visible flicker and avoid Article Surveillance System, 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, generally recommended by lamp manufacturers.
- 2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.
- 2.11 Ballast shall have a minimum starting temperature of 0°F (-18°C) for standard lamps and 60°F (16°C) for energy-saving T8 lamps.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.
- 2.13 Ballast shall have lamp striation-reduction circuitry.

## 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).
- 3.6 Ballast shall meet NEMA/

## 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 \_\_\_ limited warranty from date of manufacture against defects in material or workmanship. This warranty is conditioned upon operation at a maximum case temperature of \_\_\_\_\_, among other items. (Go to our website for up-to-date warranty information, [www.philips.com/advancewarranty](http://www.philips.com/advancewarranty)).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be Philips Advance part # \_\_\_\_\_ or approved equal.

NOTE: The use of Optanium (IOP/IOPA/GOPA) models is recommended to reduce striation in energy-saving T8 lamps (25W, 28W or 30W).



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