

A modern office interior with large windows overlooking a city. In the foreground, there is a light-colored wooden desk with a computer keyboard, mouse, and a small electronic device. Behind the desk, there are three red chairs and a grey cabinet. The background shows a multi-story building with many windows.

**PHILIPS
ADVANCE**

Electronic
Fluorescent

Quick Guide

347V Applications

Fluorescent Solutions

Performance and Efficiency

Electronic Fluorescent Ballasts for 347V Applications Quick Guide

Contents

Electronic Fluorescent Ballasts for 347V Applications	3
Optanium Instant Start Ballasts for T8 Lamps	4
Optanium Programmed Start Parallel Ballasts for T8 Lamps	6
Mark 7 0-10V Dimmable Ballasts for T8 Lamps	9
Centium Programmed Start Ballasts for T5 Lamps	10
Centium and Optanium Programmed Start Ballasts for T5HO Lamps	12

Electronic Fluorescent Ballasts for 347V Applications



Performance and Efficiency

High-efficiency, high-frequency electronic ballasts offer superior performance and energy efficiency. A variety of lamp ignition methods can provide further energy efficiency and/or serve as the ideal solution for frequent switching applications.¹

Philips Advance electronic fluorescent ballasts for 347V applications – programmed start or instant start – provide a broad range of lighting options. Whether the high-efficiency Optanium, the reliable Centium or the versatile Mark 7, these ballasts deliver exceptional benefits to your customers' next lighting project.

See footnotes on page 15.



Optanium Instant Start Ballasts for T8 Lamps



Philips Advance Optanium high-efficiency instant start T8 ballasts have set new standards for optimizing energy savings and lighting performance.

They provide an unparalleled package of features and benefits to support the wide variety of T8 fluorescent lamps in the marketplace.

Optanium ballasts for T8 lamps are part of the NEMA Premium® Ballast Program and meet CEE high performance T8 lighting system specifications.

They are available in both a standard light output design and a low-watt design and have cold-starting capability down to -29°C (with standard lamps).

Features and Benefits

High-efficiency

Promotes sustainability by consuming fewer input watts than standard efficiency electronic ballasts²

Striation reduction circuitry

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

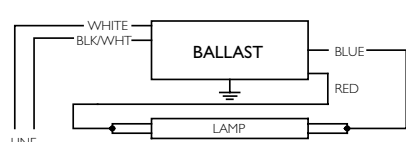
-29°C/-20°F starting temperature

Cold starting for a range of indoor and outdoor applications

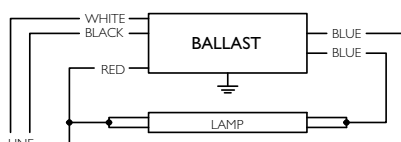


Starting Methods for Optanium Instant Start Ballasts for T8 Lamps

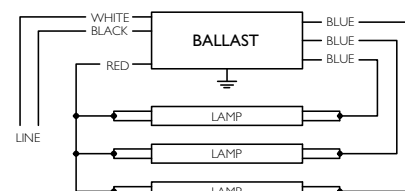
No of Lamps	Philips Advance Catalog Number	Ballast Factor	Lamp Type	Input Watts	Input Current	T8 Lamps Operated					Dim. Diagram	Wiring Diagram
						F32T8	F32T8/ES (28W)	F32T8/ES (25W)	F25T8	F17T8		
1	GOPA-1P32-SC	0.88	F32T8	30	0.09	1	1	1	1	1	B	63A
		0.88	F32T8/ES (28W)	25	0.07							
		0.88	F32T8/ES (25W)	27	0.08							
	GOPA-1P32-LW-SC	0.77	F32T8	26	0.08	1	1	1	1	1	B	63A
		0.77	F32T8/ES (28W)	22	0.07							
2	GOPA-2P32-SC	0.88	F32T8	54	0.16	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	64
		0.88	F32T8/ES (28W)	47	0.14							
		0.88	F32T8/ES (25W)	44	0.12							
	GOPA-2P32-LW-SC	0.77	F32T8	48	0.14	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	64
		0.77	F32T8/ES (28W)	42	0.12							
3	GOPA-3P32-SC	0.88	F32T8	84	0.24	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3	B	65
		0.88	F32T8/ES (28W)	70	0.20							
		0.88	F32T8/ES (25W)	64	0.19							
	GOPA-3P32-LW-SC	0.77	F32T8	74	0.21	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3	B	65
		0.77	F32T8/ES (28W)	62	0.18							
4	GOPA-4P32-SC	0.88	F32T8	107	0.31	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	B	71
		0.88	F32T8/ES (28W)	96	0.28							
		0.88	F32T8/ES (25W)	89	0.26							
	GOPA-4P32-LW-SC	0.77	F32T8	92	0.27	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	B	71
		0.77	F32T8/ES (28W)	84	0.24							
		0.77	F32T8/ES (25W)	78	0.22							



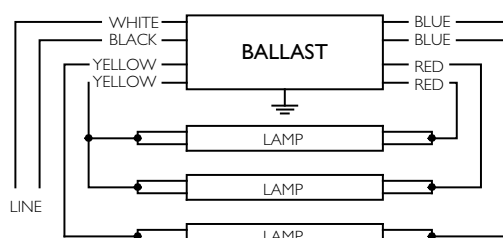
Diag. 63A



Diag. 64



Diag. 66



Diag. 71

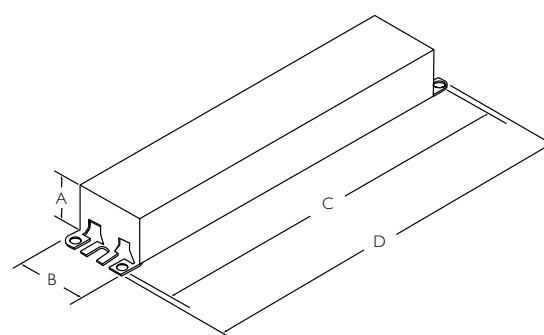


Fig. B

Figure	A	B	C	D
B	1.18"	1.70"	8.90"	9.50"

Optanium Programmed Start Parallel Ballasts for T8 Lamps



Philips Advance Optanium Programmed Start Parallel ballasts for T8 lamps help lower maintenance costs with independent lamp operation.⁴

These Optanium ballasts are available as parallel-wired instead of series-wired units, providing independent lamp operation within the fixture. When one lamp reaches its end-of-life (EOL), the remaining lamps continue to provide illumination. As a result, fewer lamps are replaced because the end user can easily tell which lamp has reached EOL. This feature also maintains light levels by minimizing dark lamps and reducing the urgency of re-lamping.

Optanium ballasts, engineered to optimize lighting performance and maximize energy savings, feature an all-aluminum can construction with a high temperature 90°C case rating. Also, cold starting at -18°C expands options into outdoor, cold storage and other low temperature applications.

Features and Benefits

Independent lamp operation

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

High-efficiency

Promotes sustainability by consuming fewer input watts than standard efficiency electronic ballasts⁵

Striation reduction circuitry

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

Programmed start operation

Ideal for frequent switching applications such as occupancy sensors and daylight harvesting

Hot restrike in remote tandem wiring applications

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

Starting Methods for Optanium Programmed Start Parallel Ballasts for T8 Lamps

No of Lamps	Philips Advance Catalog Number	Ballast Factor	Lamp Type	Input Watts	Input Current	T8 Lamps Operated					Dim. Diagram	Wiring Diagram
						F32T8	F32T8/ES (28W)	F32T8/ES (25W)	F25T8	F17T8		
1	GOP-2PSP32-SC	0.88	F32T8	34	0.10	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	77
		0.88	F32T8/ES (28W)	30	0.09							
		0.88	F32T8/ES (25W)	28	0.08							
	GOP-2PSP32-LW-SC	0.71	F32T8	32	0.08	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	77
		0.71	F32T8/ES (28W)	28	0.08							
		0.71	F32T8/ES (25W)	27	0.08							
2	GOP-2PSP32-SC	0.88	F32T8	57	0.17	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	78
		0.88	F32T8/ES (28W)	50	0.15							
		0.88	F32T8/ES (25W)	46	0.14							
	GOP-2PSP32-LW-SC	0.71	F32T8	51	0.15	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	B	78
		0.71	F32T8/ES (28W)	45	0.13							
		0.71	F32T8/ES (25W)	43	0.08							
	HOP-2PSP32-HL-L	1.18	F32T8	79	0.23	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	L	78
		1.18	F32T8/ES (28W)	68	0.20							
		1.18	F32T8/ES (25W)	61	0.18							
3	GOP-3PSP32-SC	0.88	F32T8	84	0.25	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3	B	178
		0.88	F32T8/ES (28W)	73	0.17							
		0.88	F32T8/ES (25W)	67	0.15							
4	GOP-4PSP32-SC	0.88	F32T8	114	0.33	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	B	178
		0.88	F32T8/ES (28W)	91	0.27							
		0.88	F32T8/ES (25W)	86	0.25							
	GOP-4PSP32-LW-SC	0.71	F32T8	92	0.27	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	B	178
		0.71	F32T8/ES (28W)	77	0.23							
		0.71	F32T8/ES (25W)	75	0.22							
	HOP-4PSP32-HL-G	1.18	F32T8	152	0.44	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	G	178
		1.18	F32T8/ES (28W)	133	0.39							
		1.18	F32T8/ES (25W)	121	0.36							



Optanium Programmed Start Parallel Ballasts for T8 Lamps

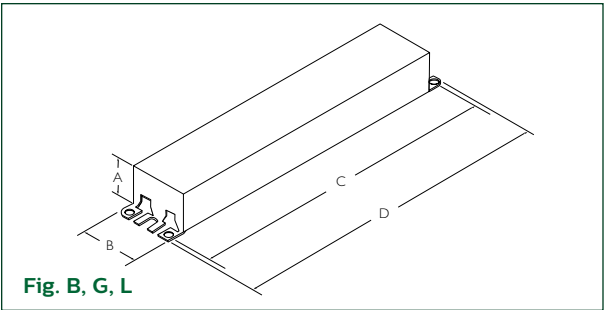
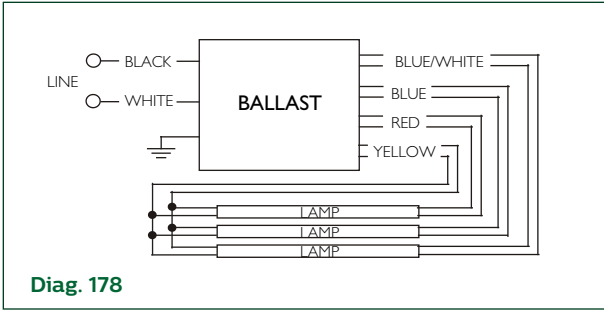
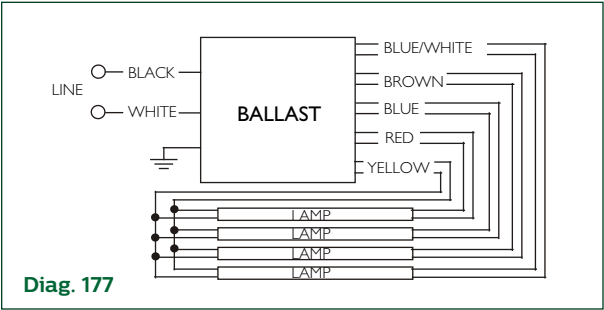
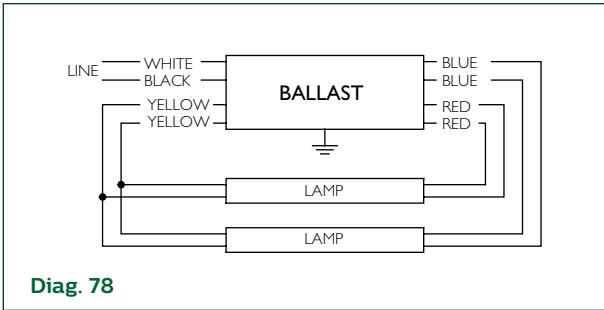
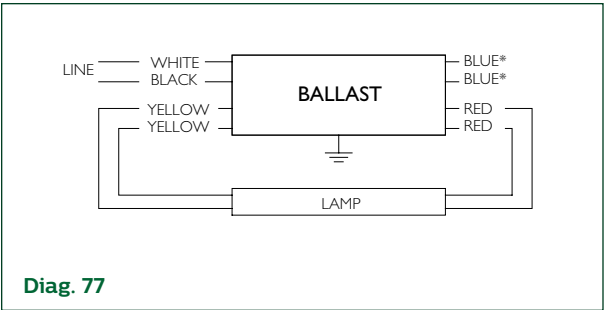


Figure	A	B	C	D
B	1.18"	1.70"	8.90"	9.50"
G	1.18"	1.70"	16.34"	16.70"
L	1.00"	1.18"	16.34"	16.70"

Mark 7 0-10V Dimmable Ballasts for T8 Lamps



Philips Advance Mark 7 0-10V dimmable ballasts for T8 lamps provide maximum versatility with low voltage dimming.

The Mark 7 0-10V series of dimmable electronic ballasts offers versatility by incorporating separate control leads for use with a wide array of controllers, including occupancy sensors, daylight harvesting controls and building management systems from more than 40 manufacturers.

Features and Benefits

Full-range continuous dimming
(100% light output down to 3%)

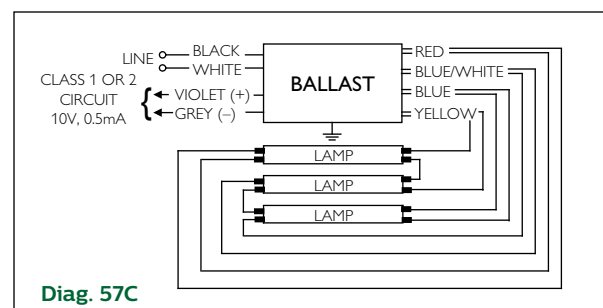
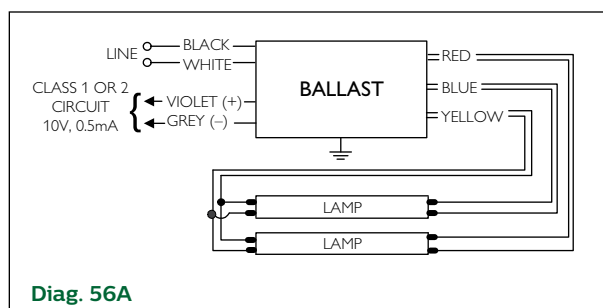
Provides task-appropriate comfort only where necessary to increase potential energy savings while supporting LEED performance standards

Programmed start operation

Ideal for frequent switching applications such as occupancy sensors and daylight harvesting

Starting Methods for Mark 7 0-10V Dimmable Ballasts for T8 Lamps

No of Lamps	Philips Advance Catalog Number	Ballast Factor	Lamp Type	Input Watts	Input Current	T8 Lamps Operated			Dim. Diagram	Wiring Diagram
						F32T8	F25T8	F17T8		
2	GZT-2S32-SC	0.91	F32T8	61	0.18	2	2	2	B	56A
3	GZT-3S32-SC	0.91	F32T8	90	0.27	3	3	3	B	57C



See Figure B Dimension Drawing on Page 8.

Centium Programmed Start Ballasts for T5 Lamps



Reliable and robust, Philips Advance Centium Programmed Start ballasts for T5 lamps suit a wide range of applications, making it easy to pick the best ballast for the job.

Centium ballasts for T5 lamps are compatible with all major energy-saving T5 linear lamps and include features that make them ideal for a variety of applications. The ballasts' programmed start ignition provides extended lamp life in frequent switching applications, such as those where occupancy sensors are being used. They also feature lamp end-of-life (EOL) protection circuitry, which safely removes power from the lamp at the end of lamp life, and cold starting capability at -18°C .

Features and Benefits

Auto-restrike capability

Eliminates the need to reset power mains after failed lamps are replaced

UL Type CC rated

Anti-arcing circuitry provides greater flexibility to meet end-user application requirements

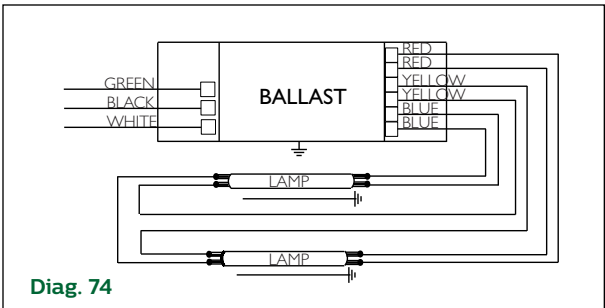
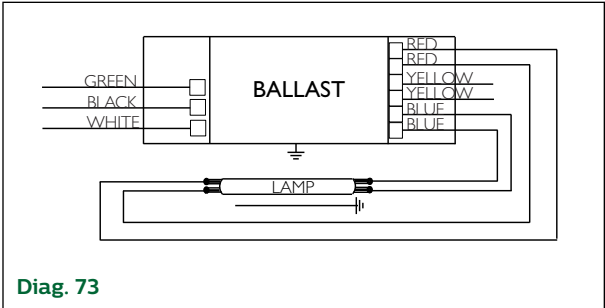
$-18^{\circ}\text{C}/0^{\circ}\text{F}$ starting capability

Suitable for cold temperature applications



Starting Methods for Centium Programmed Start Ballasts for T5 Lamps

No of Lamps	Philips Advance Catalog Number	Ballast Factor	Lamp Type	Input Watts	Input Current	T5 Lamps Operated					Dim. Diagram	Wiring Diagram
						F35T5	F28T5	F28T5/ES (25W)	F21T5	F14T5		
1	GCN-2S28-L	1.08	F28T5	34	0.10	1	1 or 2	1 or 2	1 or 2	1 or 2	L	73
		1.03	F28T5/ES (25W)	30	0.09							
2	GCN-2S28-L	1.01	F28T5	60	0.17	1	1 or 2	1 or 2	1 or 2	1 or 2	L	74
		1.03	F28T5/ES (25W)	56	0.16							



See Figure L Dimension Drawing on Page 8.



Centium and Optanium Programmed Start Ballasts for T5HO Lamps

Philips Advance Programmed Start ballasts for T5HO lamps are the right fit for your application no matter which line you choose.

Centium Programmed Start Ballasts

Philips Advance Centium Programmed Start ballasts for T5HO lamps are available for a wide variety of applications. No matter what the conditions require, whether located in high ambient temperature environments (requiring a 90° C rating) or not, our family of Philips Advance Centium ballasts for T5HO lamps have you covered.

They utilize programmed-start circuitry that provides extended lamp life in frequent switching applications like those associated with the use of occupancy sensors or motion detectors. These ballasts additionally feature auto-restrike capability and lamp end-of-life (EOL) protection circuitry, which safely removes power from the lamp upon failure.

Features and Benefits

Programmed start operation

Helps to extend lamp life in frequent switching applications such as occupancy sensors or daylight harvesting

Starting capability at -29°C/-20°F

Suited for cold temperature applications (49W and 54W lamps only)

High-low switching is available on 4-lamp model

One ballast can easily switch from 4-lamp to 2-lamp fixtures

Optanium Programmed Start Parallel Ballasts

Philips Advance Optanium Programmed Start Parallel ballasts for T5HO are available as parallel-wired units. Parallel wiring provides independent lamp operation within the fixture. When one lamp reaches its end-of-life the remaining lamps continue to provide illumination, which means you replace only the lamps that need to be replaced. This feature also helps to maintain light levels by minimizing dark lamps. This, in turn, reduces the urgency of re-lamping.

Like all Optanium ballasts, these units are engineered to optimize lighting performance and maximize energy savings by providing an exceptional package of features and benefits.

Features and Benefits

Programmed start operation

Helps to extend lamp life in frequent switching applications such as occupancy sensors or daylight harvesting

Independent lamp operation

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

Fast programmed starts

Lamps start in less than one second, improving lighting system response to occupancy sensors

Starting Methods for Centium and Optanium Programmed Start Ballasts for T5HO Lamps

No of Lamps	Philips Advance Catalog Number	Ballast Factor	Lamp Type	Input Watts	Input Current	T5HO Lamps Operated				Dim. Diagram	Wiring Diagram
						F54T5/HO	F54T5HO/ES 49W	F54T5HO/ES 44W	FC12T5/HO		
1	HCN2S5490CWL	1.00	F54T5/HO	62	0.18	1 or 2	1 or 2	1 or 2	1 or 2	L	73
		1.02	F54T5HO/ES 49W	58	0.17						
		1.00	F54T5HO/ES 44W	54	0.16						
	HOP2PSP54L	1.00	F54T5/HO	62	0.18	1 or 2	1 or 2	1 or 2	1 or 2	L	77
		1.00	F54T5HO/ES 49W	54	0.16						
2	HCN2S5490CWL	1.00	F54T5/HO	120	0.35	1 or 2	1 or 2	1 or 2	1 or 2	L	74
		1.00	F54T5HO/ES 49W	112	0.35						
		1.00	F54T5HO/ES 44W	102	0.30						
	HOP2PSP54L	1.00	F54T5/HO	116	0.34	1 or 2	1 or 2	1 or 2	1 or 2	L	78
		1.00	F54T5HO/ES 49W	106	0.32						
3	HCN4S5490C2LSG	1.04	F54T5/HO	188	0.54	3 or 4	3 or 4	3 or 4		G	75A
		1.00	F54T5HO/ES 49W	175	0.51						
		1.00	F54T5HO/ES 44W	152	0.44						
	HOP4PSP54LSG	1.00	F54T5/HO	180	0.53	3 or 4	3 or 4	3 or 4		G	80
		1.00	F54T5HO/ES 49W	160	0.47						
4	HCN4S5490C2LSG	1.00	F54T5/HO	239	0.69	3 or 4	3 or 4	3 or 4		G	75
		1.00	F54T5HO/ES 49W	223	0.69						
		1.00	F54T5HO/ES 44W	200	0.58						
	HOP4PSP54LSG	1.00	F54T5/HO	240	0.70	3 or 4	3 or 4	3 or 4		G	79
		1.00	F54T5HO/ES 49W	214	0.62						
		1.00	F54T5HO/ES 44W	192	0.56						

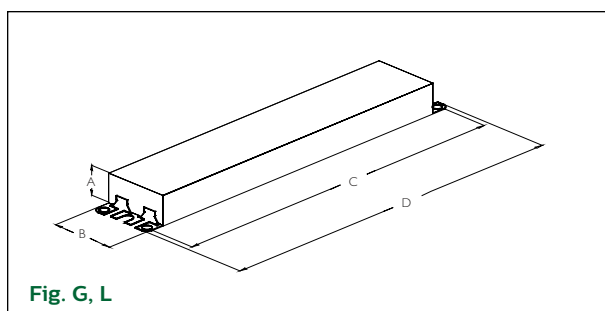
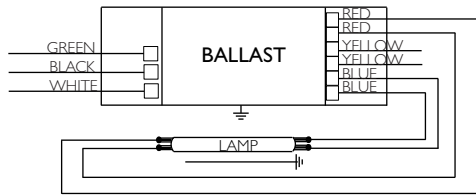


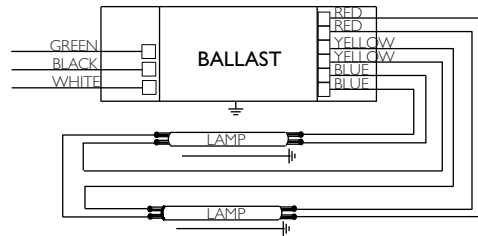
Figure	A	B	C	D
B	1.18"	1.70"	8.90"	9.50"
G	1.18"	1.70"	16.34"	16.70"
L	1.00"	1.18"	16.34"	16.70"



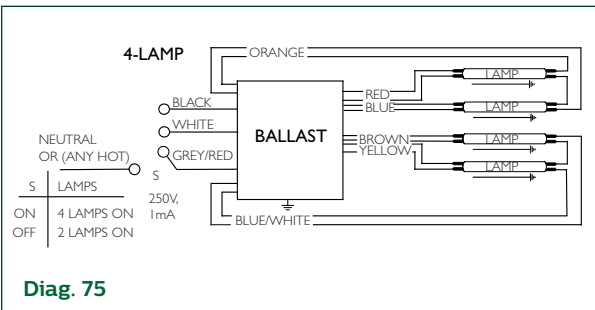
Centium and Optanium Ballasts for T5HO Lamps



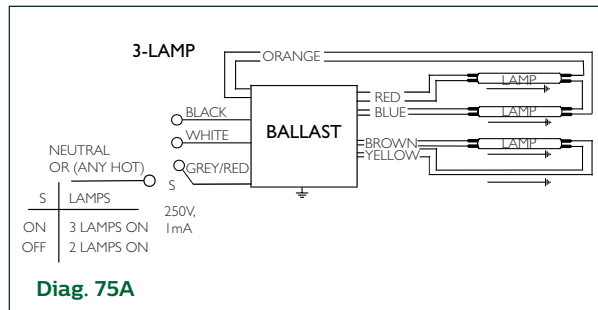
Diag. 73



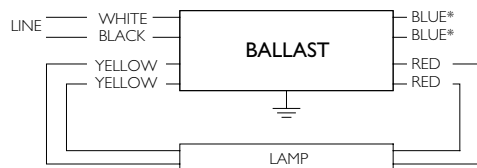
Diag. 74



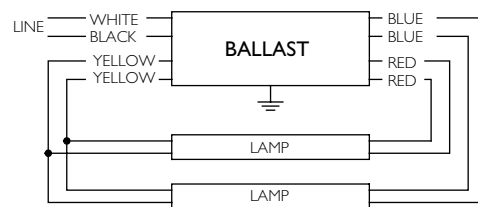
Diag. 75



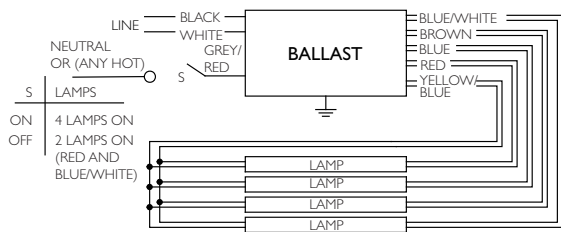
Diag. 75A



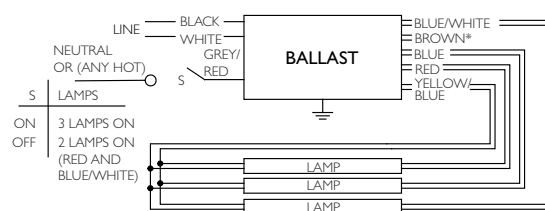
Diag. 77



Diag. 78



Diag. 79



Diag. 80

Footnotes

- 1. Information, such as input watts, for relevant lamp ignition methods can be found in the tables provided throughout the document.
- 2. Comparison based on a fixture with two F32T8 lamps and one 347V standard electronic T8 instant start ballast drawing 59 watts vs. one high-efficiency Centium T8 instant ballast (GOPA-2P32-SC) with two F32T8 lamps drawing 54 watts.
- 3. As a licensee in the NEMA Premium Ballast Program, Philips Lighting Electronics N.A. has determined that these products meet the NEMA Premium specification for premium energy efficiency.
- 4. Based on the properties of independent lamp operation allowing you to replace only the failed lamps.
- 5. Comparison based on a fixture with two F32T8 lamps and one 347V standard electronic T8 programmed start ballast drawing 62 watts vs. one high-efficiency Centium T8 programmed start ballast (GOP-2PSP32-SC) with two F32T8 lamps drawing 57 watts.



© 2014 Koninklijke Philips N.V. All rights reserved. Philips reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

PAd-1453QG 10/14 philips.com/lighting

Philips Lighting
North America Corporation
10275 W. Higgins Road
Rosemont IL 60018
Tel: 800-322-2086
Fax: 888-423-1882
Customer/Technical Service:
800-372-3331
OEM Support: 866-915-5886

Imported by: Philips Lighting,
A division of Philips Electronics Ltd.
281 Hillmount Rd.
Markham, ON, Canada L6C 2S3
Tel. 800-668-9008