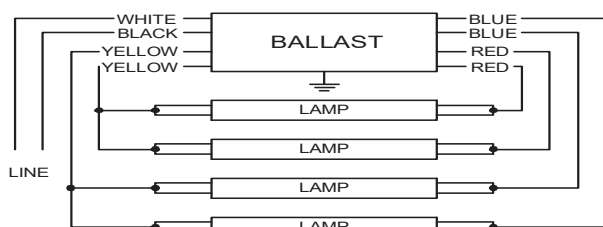


Electrical Specifications at 120V

| Lamp Type | Num. of Lamps | Rated Lamp Watts | Min. Start Temp (°F/°C) | Input Current (Amps) | Input Power (ANSI Watts) | Ballast Factor | MAX THD % | Power Factor | MAX Lamp Current Crest Factor | B.E.F. |
|----------------|---------------|------------------|-------------------------|----------------------|--------------------------|----------------|-----------|--------------|-------------------------------|--------|
| F17T8 | 3 | 17 | -20/-29 | 0.58 | 69 | 1.28 | 10 | 0.98 | 1.8 | 1.86 |
| F17T8 | 4 | 17 | -20/-29 | 0.67 | 80 | 1.22 | 10 | 0.98 | 1.7 | 1.53 |
| F25T8 | 3 | 25 | -20/-29 | 0.80 | 94 | 1.28 | 10 | 0.98 | 1.7 | 1.36 |
| F25T8 | 4 | 25 | -20/-29 | 0.96 | 113 | 1.20 | 10 | 0.98 | 1.7 | 1.06 |
| F32T8 | 3 | 32 | -20/-29 | 1.02 | 122 | 1.29 | 10 | 0.98 | 1.6 | 1.06 |
| * F32T8 | 4 | 32 | -20/-29 | 1.26 | 147 | 1.18 | 10 | 0.99 | 1.6 | 0.80 |
| F32T8/ES (25W) | 3 | 25 | 60/16 | 0.85 | 100 | 1.28 | 10 | 0.98 | 1.7 | 1.28 |
| F32T8/ES (25W) | 4 | 25 | 60/16 | 1.00 | 115 | 1.18 | 10 | 0.99 | 1.6 | 1.03 |
| F32T8/ES (28W) | 3 | 28 | 60/16 | 0.90 | 106 | 1.28 | 10 | 0.98 | 1.7 | 1.21 |
| F32T8/ES (28W) | 4 | 28 | 60/16 | 1.08 | 127 | 1.18 | 10 | 0.99 | 1.6 | 0.93 |
| F32T8/ES (30W) | 3 | 30 | 60/16 | 0.97 | 115 | 1.24 | 10 | 0.98 | 1.7 | 1.08 |
| F32T8/ES (30W) | 4 | 30 | 60/16 | 1.21 | 143 | 1.18 | 10 | 0.98 | 1.7 | 0.83 |
| F40T8 | 3 | 40 | 32/00 | 1.27 | 150 | 1.25 | 10 | 0.98 | 1.7 | 0.83 |

Wiring Diagram



Diag. 66

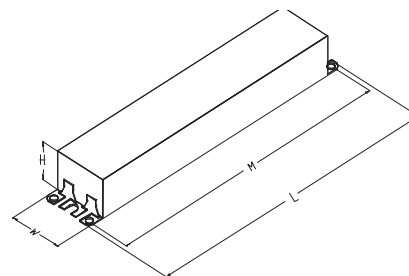
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

| | in. | cm. |
|--------|-----|------|
| Black | 25 | 63.5 |
| White | 25 | 63.5 |
| Blue | 31 | 78.7 |
| Red | 31 | 78.7 |
| Yellow | 39 | 99.1 |
| Gray | | 0 |
| Violet | | 0 |

| | in. | cm. |
|--------------|-----|-----|
| Yellow/Blue | | 0 |
| Blue/White | | 0 |
| Brown | | 0 |
| Orange | | 0 |
| Orange/Black | | 0 |
| Black/White | | 0 |
| Red/White | | 0 |

Enclosure



Enclosure Dimensions

| OverAll (L) | Width (W) | Height (H) | Mounting (M) |
|-------------|-----------|------------|--------------|
| 9.50 " | 1.7 " | 1.18 " | 8.90 " |
| 9 1/2 | 1 7/10 | 1 9/50 | 8 9/10 |
| 24.1 cm | 4.3 cm | 3 cm | 22.6 cm |



Revised 03/13/14

Electrical Specifications at 120V

| IOP4P32HLSC@120V | |
|------------------|----------------------|
| Brand Name | OPTANIUM |
| Ballast Type | Electronic |
| Starting Method | Instant Start |
| Lamp Connection | Parallel |
| Input Voltage | 120-277 |
| Input Frequency | 50/60 HZ |
| Status | Active |

Notes:

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

- 2.1 Ballast shall be _____ (Instant or Programmed) Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start or Programmed Start Parallel 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 or 347V) with sustained variations of +/- 10% (voltage and frequency).
- 2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz and 52 kHz 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: 0.77 for Low Watt, 0.87 for Normal Light Output, and 1.18 for High Light for Instant Start ballasts or 0.71 for Low Watt and 0.88 for Normal Light Output for Programmed Start ballasts.
- 2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 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 -29C (-20F) on Instant Start ballasts or -18C (0F) on Programmed Start ballasts for standard T8 lamps and 16C (60F) for energy-saving T8 lamps. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.
- 2.13 Ballast shall have lamp striation-reduction circuitry.
- 2.14 Maximum distance for Energy Saving Lamps in Remote/Tandem wiring applications shall be 6 feet for Instant Start and Programmed Start models.

Section III - Regulatory

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 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 applicable requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.
- 3.6 Ballast shall meet NEMA Premium/CEE High Performance T8 Lighting System Specifications.
- 3.7 IOP or GOP ballast shall comply with UL Type CC rating.
- 3.8 Ballast shall comply with NEMA 410 for in-rush current limits.
- 3.9 Ballast shall meet RoHS Compliance Standards

Section IV - Other

- 4.1 Ballast shall be manufactured in an ISO 9001 Qualified factory.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at maximum case temperature of 90C.
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Energy-saving T8 lamps (25W, 28W or 30W) may experience lamp striations if operated on ballasts not rated for their use.



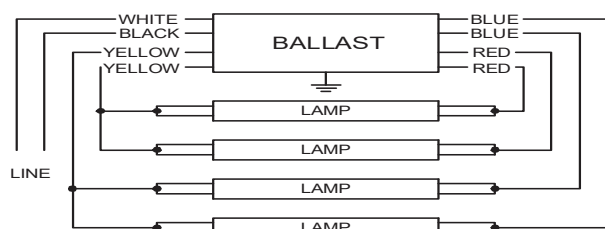
Revised 03/13/14

Optanium IOP4P32HLSC

Electrical Specifications at 277V

| Lamp Type | Num. of Lamps | Rated Lamp Watts | Min. Start Temp (°F/°C) | Input Current (Amps) | Input Power (ANSI Watts) | Ballast Factor | MAX THD % | Power Factor | MAX Lamp Current Crest Factor | B.E.F. |
|----------------|---------------|------------------|-------------------------|----------------------|--------------------------|----------------|-----------|--------------|-------------------------------|--------|
| F17T8 | 3 | 17 | -20/-29 | 0.26 | 69 | 1.28 | 10 | 0.98 | 1.8 | 1.86 |
| F17T8 | 4 | 17 | -20/-29 | 0.30 | 80 | 1.22 | 10 | 0.98 | 1.8 | 1.53 |
| F25T8 | 3 | 25 | -20/-29 | 0.35 | 94 | 1.28 | 10 | 0.98 | 1.7 | 1.36 |
| F25T8 | 4 | 25 | -20/-29 | 0.41 | 113 | 1.20 | 10 | 0.98 | 1.7 | 1.06 |
| F32T8 | 3 | 32 | -20/-29 | 0.44 | 120 | 1.29 | 10 | 0.98 | 1.6 | 1.08 |
| * F32T8 | 4 | 32 | -20/-29 | 0.54 | 145 | 1.18 | 10 | 0.98 | 1.6 | 0.81 |
| F32T8/ES (25W) | 3 | 25 | 60/16 | 0.37 | 100 | 1.28 | 10 | 0.98 | 1.7 | 1.28 |
| F32T8/ES (25W) | 4 | 25 | 60/16 | 0.42 | 113 | 1.13 | 10 | 0.98 | 1.6 | 1.00 |
| F32T8/ES (28W) | 3 | 28 | 60/16 | 0.39 | 106 | 1.28 | 10 | 0.98 | 1.7 | 1.21 |
| F32T8/ES (28W) | 4 | 28 | 60/16 | 0.46 | 125 | 1.13 | 10 | 0.98 | 1.6 | 0.90 |
| F32T8/ES (30W) | 3 | 30 | 60/16 | 0.42 | 114 | 1.24 | 10 | 0.98 | 1.7 | 1.09 |
| F32T8/ES (30W) | 4 | 30 | 60/16 | 0.51 | 140 | 1.18 | 10 | 0.98 | 1.7 | 0.84 |
| F40T8 | 3 | 40 | 32/00 | 0.54 | 147 | 1.26 | 10 | 0.98 | 1.7 | 0.86 |

Wiring Diagram



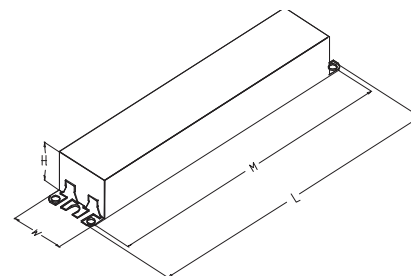
Diag. 66

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

| | in. | cm. | | in. | cm. |
|--------|-----|------|--------------|-----|-----|
| Black | 25 | 63.5 | Yellow/Blue | | 0 |
| White | 25 | 63.5 | Blue/White | | 0 |
| Blue | 31 | 78.7 | Brown | | 0 |
| Red | 31 | 78.7 | Orange | | 0 |
| Yellow | 39 | 99.1 | Orange/Black | | 0 |
| Gray | | 0 | Black/White | | 0 |
| Violet | | 0 | Red/White | | 0 |

Enclosure



Enclosure Dimensions

| OverAll (L) | Width (W) | Height (H) | Mounting (M) |
|-------------|-----------|------------|--------------|
| 9.50 " | 1.7 " | 1.18 " | 8.90 " |
| 9 1/2 | 1 7/10 | 1 9/50 | 8 9/10 |
| 24.1 cm | 4.3 cm | 3 cm | 22.6 cm |



Revised 03/13/14

Electrical Specifications at 277V

| IOP4P32HLSC@277V | |
|------------------|----------------------|
| Brand Name | OPTANIUM |
| Ballast Type | Electronic |
| Starting Method | Instant Start |
| Lamp Connection | Parallel |
| Input Voltage | 120-277 |
| Input Frequency | 50/60 HZ |
| Status | Active |

Notes:

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

2.1 Ballast shall be _____ (Instant or Programmed) Start.

2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start or Programmed Start Parallel 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 or 347V) with sustained variations of +/- 10% (voltage and frequency).

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz and 52 kHz 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: 0.77 for Low Watt, 0.87 for Normal Light Output, and 1.18 for High Light for Instant Start ballasts or 0.71 for Low Watt and 0.88 for Normal Light Output for Programmed Start ballasts.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.

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 -29C (-20F) on Instant Start ballasts or -18C (0F) on Programmed Start ballasts for standard T8 lamps and 16C (60F) for energy-saving T8 lamps. Consult lamp manufacturer for temperature versus light output characteristics.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.

2.13 Ballast shall have lamp striation-reduction circuitry.

2.14 Maximum distance for Energy Saving Lamps in Remote/Tandem wiring applications shall be 6 feet for Instant Start and Programmed Start models.

Section III - Regulatory

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 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 applicable requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, for Non-Consumer equipment.

3.6 Ballast shall meet NEMA Premium/CEE High Performance T8 Lighting System Specifications.

3.7 IOP or GOP ballast shall comply with UL Type CC rating.

3.8 Ballast shall comply with NEMA 410 for in-rush current limits.

3.9 Ballast shall meet RoHS Compliance Standards

Section IV - Other

4.1 Ballast shall be manufactured in an ISO 9001 Qualified factory.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at maximum case temperature of 90C.

4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

4.4 Energy-saving T8 lamps (25W, 28W or 30W) may experience lamp striations if operated on ballasts not rated for their use.



Revised 03/13/14

Optanium IOP4P32HLSC

The information presented in this document is not intended as any commercial offer and does not form part of any quotation or contract.



© 2019 Signify Holding. All rights reserved. This document contains information relating to the product portfolio of Signify which information may be subject to change. No representation or warranty as to the accuracy or completeness of the information included herein is given and any liability for any action in reliance thereon is disclaimed. All trademarks are owned by Signify Holding or their respective owners.

Signify North America Corporation
200 Franklin Square Drive,
Somerset, NJ 08873
Telephone 855-486-2216

Signify Canada Ltd.
281 Hillmount Road,
Markham, ON, Canada L6C 2S3
Telephone 800-668-9008