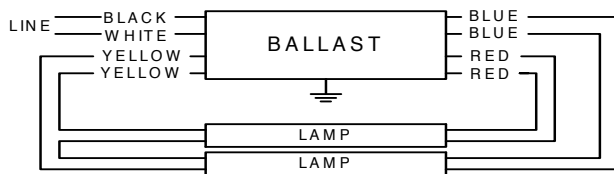


### Electrical Specifications at 120V

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.
F14T5	1	14	0/-18	0.15	19	1.15	15	0.98	1.7	6.05
F14T5	2	14	0/-18	0.30	37	1.15	10	0.98	1.7	3.11
F21T5	1	21	0/-18	0.22	27	1.15	15	0.98	1.7	4.26
F21T5	2	21	0/-18	0.37	52	1.15	10	0.98	1.7	2.21
F28T5	1	28	0/-18	0.30	30	1.15	10	0.98	1.7	3.83
* F28T5	2	28	0/-18	0.60	71	1.15	10	0.98	1.7	1.62
F28T5/ES (25W)	1	25	0/-18	0.27	33	1.15	10	0.98	1.7	3.48
F28T5/ES (25W)	2	25	0/-18	0.53	63	1.15	10	0.98	1.7	1.83
F35T5	1	35	0/-18	0.37	44	1.15	10	0.98	1.7	2.61

### Wiring Diagram



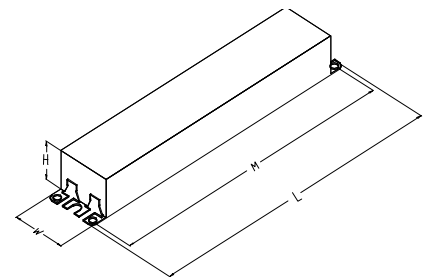
Diag. 74

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

### Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	22	55.9	Yellow/Blue		0
White	22	55.9	Blue/White		0
Blue	26	66	Brown		0
Red	26	66	Orange		0
Yellow	36	91.4	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 01/12/12

# Optanium T5 IOP2S28115SC

IOP2S28115SC@120	
Brand Name	<b>OPTANIUM T5</b>
Ballast Type	<b>Electronic</b>
Starting Method	<b>Programmed Start</b>
Lamp Connection	<b>Series</b>
Input Voltage	<b>120-277</b>
Input Frequency	<b>50/60 HZ</b>
Status	<b>Active</b>

## Electrical Specifications at 120V

### 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 Programmed Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for 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 through 480V) 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 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 ballast factor of 1.0 for primary T5HO lamps or a ballast factor of 0.95 or 1.15 for primary T5HE lamps at full light output.
- 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 with primary lamp.
- 2.10 Ballast shall have a Class A sound rating.
- 2.11 Ballast shall have a minimum starting temperature of \_\_\_\_\_ {-18C (0F) or -29C (-20F) or 0C (32F)} for primary lamp. 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 provide Lamp EOL Protection Circuit.
- 2.14 Ballast for step-dim applications shall have a 50% control step where the input power is <=50% of the full light input power for the primary lamp.

#### 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 comply with UL Type CC rating.
- 3.7 Ballast shall comply with NEMA 410 for in-rush current limits.

#### Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 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.
- 4.3 Ballast designated 90C shall carry a three-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 90C.
- 4.4 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market



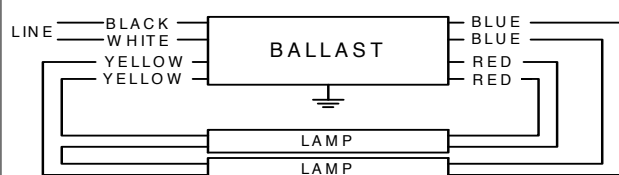
Revised 01/12/12

# Optanium T5 IOP2S28115SC

## 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.
F14T5	1	14	0/-18	0.08	19	1.15	15	0.98	1.7	6.05
F14T5	2	14	0/-18	0.14	37	1.15	10	0.98	1.7	3.11
F21T5	1	21	0/-18	0.10	27	1.15	15	0.98	1.7	4.26
F21T5	2	21	0/-18	0.16	52	1.15	10	0.98	1.7	2.21
F28T5	1	28	0/-18	0.13	36	1.15	10	0.98	1.7	3.19
* F28T5	2	28	0/-18	0.26	69	1.15	10	0.98	1.7	1.67
F28T5/ES (25W)	1	25	0/-18	0.12	33	1.15	10	0.98	1.7	3.48
F28T5/ES (25W)	2	25	0/-18	0.23	63	1.15	10	0.98	1.7	1.83
F35T5	1	35	0/-18	0.17	44	1.15	10	0.98	1.7	2.61

### Wiring Diagram



Diag. 74

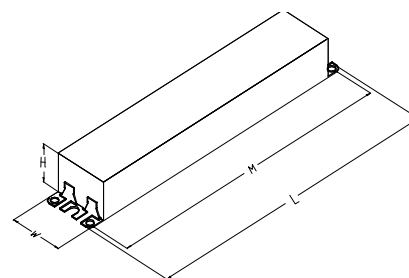
The wiring diagram that appears above is for the lamp type denoted by the asterisk (\*)

### Standard Lead Length (inches)

	in.	cm.
Black	22	55.9
White	22	55.9
Blue	26	66
Red	26	66
Yellow	36	91.4
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 01/12/12

# Optanium T5 IOP2S28115SC

IOP2S28115SC@277	
Brand Name	<b>OPTANIUM T5</b>
Ballast Type	<b>Electronic</b>
Starting Method	<b>Programmed Start</b>
Lamp Connection	<b>Series</b>
Input Voltage	<b>120-277</b>
Input Frequency	<b>50/60 HZ</b>
Status	<b>Active</b>

## Electrical Specifications at 277V

### 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 Programmed Start.
- 2.2 Ballast shall provide Independent Lamp Operation (ILO) for 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 through 480V) 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 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 ballast factor of 1.0 for primary T5HO lamps or a ballast factor of 0.95 or 1.15 for primary T5HE lamps at full light output.
- 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 with primary lamp.
- 2.10 Ballast shall have a Class A sound rating.
- 2.11 Ballast shall have a minimum starting temperature of \_\_\_\_\_ {-18C (0F) or -29C (-20F) or 0C (32F)} for primary lamp. 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 provide Lamp EOL Protection Circuit.
- 2.14 Ballast for step-dim applications shall have a 50% control step where the input power is <=50% of the full light input power for the primary lamp.

#### 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 comply with UL Type CC rating.
- 3.7 Ballast shall comply with NEMA 410 for in-rush current limits.

#### Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 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.
- 4.3 Ballast designated 90C shall carry a three-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 90C.
- 4.4 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market



Revised 01/12/12

# Optanium T5 IOP2S28115SC

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