



Philips T8 VHO-O  
Extreme Temperature  
System

*Ideal for  
high-bay applications*

T8 Collection



† This lamp is better for the environment because of its reduced mercury content. All Philips ALTO lamps give you end-of-life options which can simplify and reduce your lamp disposal costs depending on your state and local regulations.

\* Fluorescent lamps that are TCLP compliant reduce the amount of pollutants released into the environment.

## Reduce your energy and maintenance costs, not your light output

With the **Philips T8 VHO-O Extreme Temperature System**, you can use T8 lamps in high-bay applications and experience more light output than standard T8 lamps.

### **Provides high light output for more light with less lamps**

- Lumen output is >80% to 95°F (-10°C to 35°C)
- More light over the life of the lamp than a standard 400W HID system\*

### **Operates on existing electrical system**

- 277V–480V input voltage range eliminates the need for rewiring your electrical system

### **Reduce total cost of ownership (TCOO) when compared to a standard HID 400W system**

- 40% more system lumens per watt than a standard HID 400W system\*\*
- Reduced energy costs—save a minimum of 86 system watts‡
- Reduced maintenance costs—up to 50% longer lamp life/ which extends the relamping cycle
- Warranty period: 36 months

(\*, \*\*, ‡, / See page 2 for footnotes)

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# Philips T8 VHO-O Extreme Temperature Lamps featuring ALTO Lamp Technology

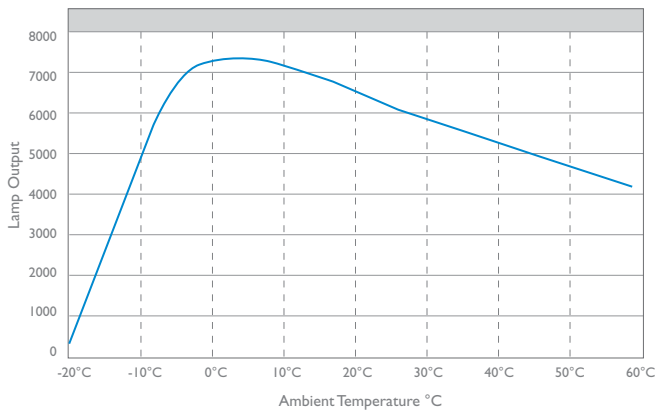
## Lamp Ordering, Electrical and Technical Data (Subject to change without notice)

Product Number	Ordering Code	Nom. Watts	Pkg. Qty.	Color Temp. (Kelvin)	Nom. Length (In.)	Rated Avg. Life (Hrs.) <sup>1</sup>		Approx. Initial Lumens <sup>4,5</sup>	Design Lumens <sup>6</sup>	CRI	Lumen Maint.
						3-hr Start <sup>2</sup>	12-hr Start <sup>3</sup>				
21069-0	F48T8/TL835/VHO-O/ALTO	84	25	3500	48	30,000	40,000	7200	6840	85	95%
21071-6	F48T8/TL841/VHO-O/ALTO	84	25	4100	48	30,000	40,000	7200	6840	85	95%
21072-4	F48T8/TL850/VHO-O/ALTO	84	25	5000	48	30,000	40,000	6900	6550	82	95%

- 1) Rated average life is the length of operation (in hours) at which point an average of 50% of a large sample of lamps will still be operational and 50% will not.
  - 2) Average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently.
  - 3) Average life under engineering data with lamps turned off and restarted once every 12 operating hours on a Programmed Start ballast.
  - 4) Approximate initial lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions.
  - 5) For expected lamp lumen output, commercial ballast manufacturers can advise the appropriate ballast factor for each of their ballasts when they are informed of the designated lamp. The ballast factor is a multiplier applied to the designated lamp lumen output.
  - 6) Design lumens are the approximate lamp lumen output at 40% of the lamp's rated average life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions.
- This lamp is better for the environment because of its reduced mercury content. All Philips ALTO lamps give you end-of-life options which can simplify and reduce your lamp disposal costs depending on your state and local regulations.

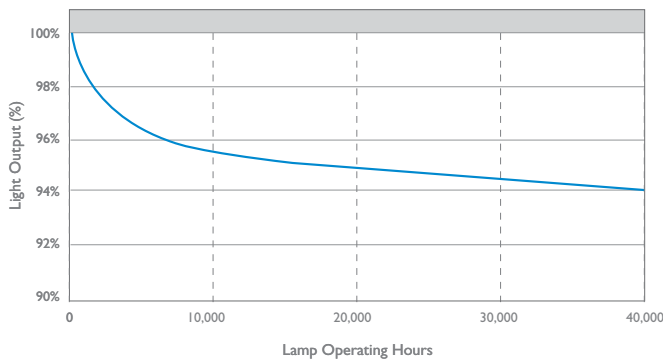
## Performance (Light Output vs. Ambient Temperature)

### Philips T8 VHO-O Extreme Temperature Lamps



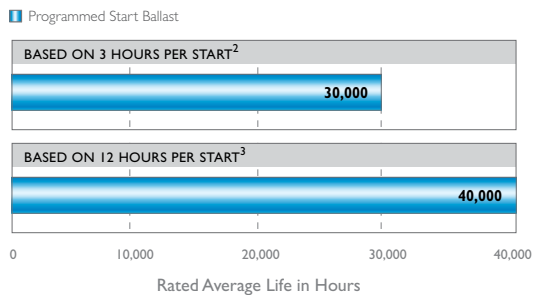
## 95% Lumen Maintenance

### Philips T8 VHO-O Extreme Temperature Lamps



## Rated Average Life

### Philips T8 VHO-O Extreme Temperature Lamps



#### Footnotes from front page:

- \* 95% lumen maintenance at 10,000 hours for the T8 VHO-O lamp compared to 65% lumen maintenance at 8000 hours for the MH400/U lamp.
- \*\* Equal to (73.55 system mean LPW T8 VHO-O - 52.40 system mean LPW MH400/U) / 52.40 system mean LPW MH400/U. T8 VHO-O system mean LPW equal to 27360 system mean lumens (6840 mean lumens x 1.0 ballast factor x 4 lamps) divided by 372 system watts. MH400/U system mean LPW equal to 24000 system mean lumens (24000 mean lumens x 1.0 ballast factor x 1 lamp) divided by 458 system watts.
- ‡ 458 system watts (MH400/U) - 372 system watts (T8 VHO-O) = 86 system watts
- ∕ 25,000 rated average life (T8 VHO-O at 12 hours per start) compared to 20,000 rated average life (MH400/U at 13 hours per start)



**Ballast Ordering, Electrical and Technical Data** (Subject to change without notice)

No. of Lamps	Input Volts	Lamp Starting Method	Ballast Family	Catalog Number	Maximum		Line Current (Amps)	Min. Starting Temp (°F/°C)
					Input Power ANSI (Watts)	Ballast Factor		
1	277	PS	Optanium	JOP-2S84-G	94	1.02	0.34	-20/-29
1	347	PS	Optanium	JOP-2S84-G	94	1.02	0.27	-20/-29
1	480	PS	Optanium	JOP-2S84-G	97	1.02	0.20	-20/-29
2	277	PS	Optanium	JOP-2S84-G	185	1.00	0.67	-20/-29
2	347	PS	Optanium	JOP-2S84-G	185	1.00	0.53	-20/-29
2	480	PS	Optanium	JOP-2S84-G	186	1.00	0.38	-20/-29

**Features**

- Programmed start ballast
- Ballast factor of 1.0
- 277V–480V input voltage range, 50/60Hz
- 194°F/90°C maximum case temperature

- -20°F/-29°C minimum starting temperature
- <10% Total Harmonic Distortion (THD)
- One or two lamp operation

**General Specifications**

**Section I—Physical Characteristics**

1.1 The electronic ballast shall be furnished with integral leads color coded to ANSI standard C82.11.

**Section II—Performance Requirements**

- 2.1 The electronic ballast shall be Programmed Start.
- 2.2 The electronic ballast shall operate from 250V–528V.
- 2.3 The electronic ballast shall maintain constant light output, for line voltage variations of 10% of rated supply voltage.
- 2.4 The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output for primary lamps.
- 2.5 The electronic ballast shall have a Power Factor greater than 98% at full light output.
- 2.6 The electronic ballast shall have a minimum ballast factor of 1.0 for primary lamp applications.
- 2.7 The electronic ballast lamp current crest factor shall be 1.7 or less in accordance with lamp manufacturer recommendation.
- 2.8 The electronic ballast shall withstand a sustained open circuit and output conditions without damage.
- 2.9 The electronic ballast shall be Sound Rated A.

- 2.10 The electronic ballast shall be a high frequency electronic type and operate above 40 kHz to avoid interference with infrared control systems, and eliminate visible flicker.
- 2.11 The electronic ballast shall comply with ANSI C82.11, where applicable.
- 2.12 The electronic ballast shall provide transient immunity as specified in ANSI C62.41.
- 2.13 The electronic ballast shall be Programmed Start and provide EOL Protection Circuitry.
- 2.14 The electronic ballast shall have a minimum starting temperature of -20°F (-29°C) for T8 VHO-O lamps.

**Section III—Regulatory Requirements**

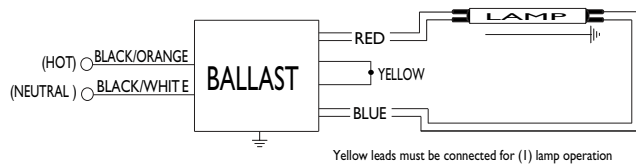
- 3.1 The electronic ballast shall not contain any Polychlorinated Biphenyl (PCB's).
- 3.2 The electronic ballast shall be Underwriters Laboratories (UL 935) listed, Class P and Type I Outdoor; and Canadian Standards Association (CSA) certified, where applicable.

**Section IV—Other**

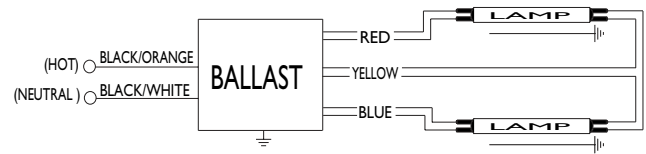
- 4.1 The manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.2 The electronic ballast shall be produced in a factory certified to ISO 9002 Quality System Standards.

**Wiring Diagram—Lamp Operation**

Philips Advance JOP-2S84-G T8 VHO-O Ballast



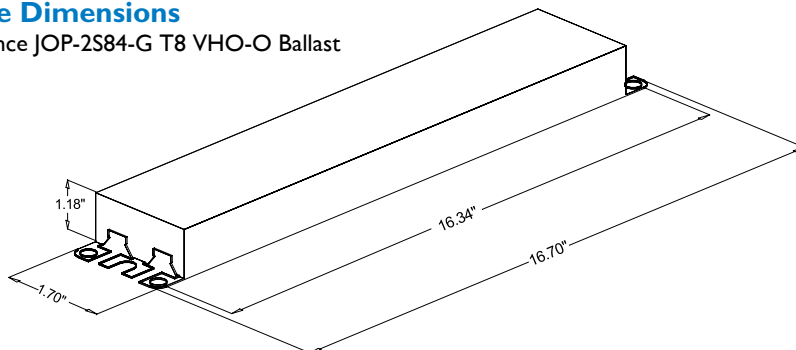
One Lamp: 94W (277V & 347V); 97W (480V)



Two Lamps: 185W (277V & 347V); 186W (480V)

**Enclosure Dimensions**

Philips Advance JOP-2S84-G T8 VHO-O Ballast



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