



SYSTEM MODEL #:

DATE / /

PROJECT

TYPE

TUBULAR SYSTEM



SYSTEM ELECTRICAL SPECIFICATIONS

Model Number	Watts	Input Current (Amp) 120V - 277V	Input Power	Rated Initial Luminance (LM)	Efficacy (LM/W)*	Luminance Maintenance (60Khrs)	CRI	Color Temp. (Kelvin)	Average Lamp Life (Hours)
HH-ILS-TP40-5K	40	0.35 - 0.15	42	2800 - 3000	70 - 75				
HH-ILS-TP70-5K	70	0.62 - 0.27	74	4900 - 5250	70 - 75				
HH-ILS-TP80-5K	80	0.70 - 0.30	84	6000 - 6400	75 - 80				
HH-ILS-TP100-5K	100	0.88 - 0.38	105	7500 - 8000	75 - 80				
HH-ILS-TDC100-5K	100	0.88 - 0.38	105	7500 - 8000	75 - 80				
HH-ILS-TP120-5K	120	1.05 - 0.45	126	9000 - 9600	75 - 80				
HH-ILS-TDC120-5K	120	1.05 - 0.45	126	9000 - 9600	75 - 80				
HH-ILS-TP150-5K	150	1.32 - 0.57	158	12000 - 12750	80 - 85	70%-75%	> 80	2720K - 6500K 5K Standard Color	100,000
HH-ILS-TDC150-5K	150	1.32 - 0.57	158	12000 - 12750	80 - 85	70%-75%	> 80	2720K - 6500K 5K Standard Color	100,000
HH-ILS-TP200-5K	200	1.75 - 0.76	210	16000 - 17000	80 - 85				
HH-ILS-TDC200-5K	200	1.75 - 0.76	210	16000 - 17000	80 - 85				
HH-ILS-TP200-5K-17	200	1.75 - 0.76	210	16000 - 17000	80 - 85				
HH-ILS-TDC200-5K-17	200	1.75 - 0.76	210	16000 - 17000	80 - 85				
HH-ILS-TDC250-5K	250	2.19 - 0.95	263	21250 - 22500	85 - 90				
HH-ILS-TDC300-5K	300	2.63 - 1.14	315	25500 - 27000	85 - 90				
HH-ILS-TDC400-5K	400	3.50 - 1.52	420	34000 - 36000	85 - 90				

* LM/W is based on Lamp Power.

SPECIFICATIONS COMMON TO ALL BALLASTS

CERTIFICATIONS

Input Voltage	120V-277V	Case Temp.	<65°C	
Input Frequency	50/60 Hz	Operating Temp.	(0°C to 50°C)	
Output Frequency	250K Hz	Open Fixture		
THD	< 10%	Operating Temp.	(-20°C to 50°C)	
Power Factor	> 0.95	Closed Fixture		
Constant Wattage Output	± 5%	Max Remote Distance**	7 ft. (84")	
EMI/RFI Compliance	FCC Part 18-A	Sound Rating	Class A	
Surge Protection	Yes			

**IMPORTANT: Do not modify wiring type or length without contacting Fulham. Special generator can be ordered for a maximum remote distance 49 ft. from Fulham.

Hi-Pot Testing Contact Fulham before performing test(s).

Wiring Plug and Play Connectors. Contact Fulham for wiring support.

SYSTEM MODEL NUMBER EXAMPLE

HH-ILS-TDC250-5K - A 250 Watt Induction System with Tubular Lamp, Die Cast Ballast and 5000 Kelvin Temp.

HH	ILS	T	DC	250	5K
HH = HIGHHORSE	ILS = INDUCTION LIGHTING SYSTEM	T = TUBULAR LAMP	DC = DIE CAST P = PROFILE BALLAST	SYSTEM WATTS	KELVIN TEMP. Specify Kelvin when ordering. 5K is standard stock color.



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LAMP SPECIFICATIONS

Lamp Type

Circular/Tubular	External Inductor Type
Hybrid Fluorescent	All
Primary Ignition	Low Frequency Inductor Coil

Thermal Management

Induction Lamp Core Mounting Base Temp.	100°C - 130°C
Amalgam Lamp Tip Temperature Range ¹	55°C - 125°C
Circular/Tubular	Convection or Conduction

Lamp Operation (Highly Stable)

Kelvin Temperature (Standard Stock)	5000K
Other Kelvin Temperatures Limited Stock ²	3500K, 4000K
Custom ³	2700K, 3000K, 6000K, 6500K
Kelvin Color Temperature Tolerance	±300K
Color Temperature Fluctuation	Low
LPW Fluctuation	Low
Ambient Temperature Fluctuation	Low
Temperature (Closed Fixture)	-20°C
Temperature (Open Fixture)	0°C
Temperature (Closed Fixture)	-40°C (Contact Fulham)
EMI	Meets International Standard L Level FCC Non-Consumer Units Compliant FCC 47-CFR Part 18

¹ LPW is related to the temperature of Amalgam and Kelvin Temperature to maintain >90% output.

² Limited stock on hand. Lead time varies.

³ Must be ordered. Ten week lead time and orders are non-cancellable. Only large orders are accepted.

Vibration Tests

The HighHorse Induction lamp is designed to tolerate shock and vibration that would be expected in typical applications such as post top, bridge, roadway underpass or tunnel lighting. HighHorse Induction lamps have been tested under the following conditions with no damage:

Shock - Lamps subjected to three (3) one-half wave shocks of 10 ms duration at 20 g.

The vibration parameters were adapted from ANSI C136.31-2001, American National Standard for Roadway Lighting Equipment - Luminaire Vibration, Section 5, luminaire vibration test.

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	1.5 G	7.07107 Hz	3.5 G
10 Hz	3.5 G	30 Hz	3.5 G

Sweep between 5 Hz and 30 Hz at 0.861654 Min/sweep (Linear)

Duration: 100,000 cycles at 100%

Total test time: 1:36:30

Care should be taken when mounting the ballast to minimize vibration

UV (bare lamp-less with lens)

5uw/cm2



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TUBULAR SPECIFICATIONS

Amalgam Hg. Content (Low)

Amalgam Type High Quality Solid Pellet

40W - 400W Circular Type Lamps 2 Mg. - 12 Mg.

40W - 400W Lamps <3.5%

Lamp Orientation

Tubular (Tube-Down Position) 60° Orientation Max

Lamp Compatibility

Tubular HighHorse Profile/Disc/Die-Cast Ballast

Dimming* 50% (Require HighHorse Dimming Ballast)

Motion & Light Sensitive Controls* Yes (Contact Fulham)

* Contact Fulham for available wattages.

Lamp Advanced Features

- Ultra-High Life 100,000 Hrs Lamp Technology
- Wide Range of Wattage Options 40W – 400W
- Full Kelvin Color Range 2700 – 6500K (see availability on page 2)
- Instant Start
- Flicker Free Operation
- Frequency Tuned Wattage to Ballast
- High Efficacy
- High CRI (Color Rendering Index)
- Low Lamp Lumen Depreciation
- High Quality Solid Mercury for Stable Operation
- Low Mercury Content
- Pre-Wired Lamp Input Connector
- Universal Heat Sink Mounting
- Profile and Disc Ballast Compatible
- Operates with Motion Sensor Line Control
- Aluminum Coil Shield (non corrosive)

Fulham's induction lamps and ballasts are exempt from the Buy American Provisions (Section 1605) of the American Reinvestment and Recovery Act-2009. Fulham's Induction Lamps and Ballasts therefore qualify for EERE Recovery Act Funds. For more information about Fulham's Induction Lighting System and Retrofit Program please visit www.fulham.com.



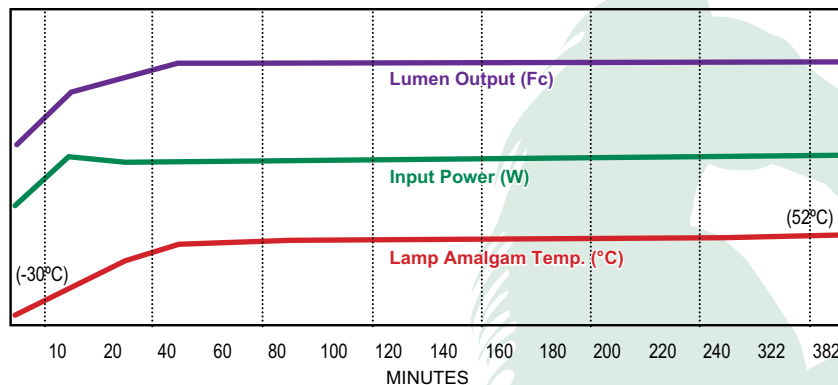
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PERFORMANCE CHARTS

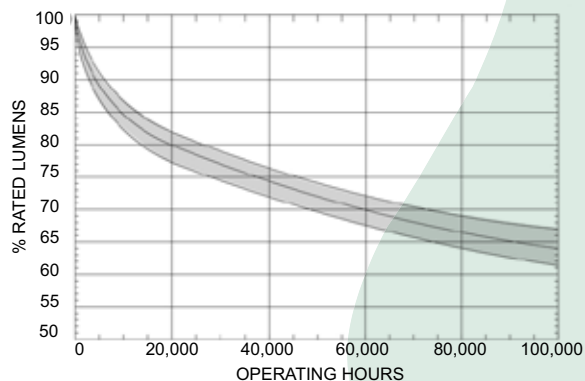


Cold Start Lumen Maintenance Chart

HighHorse induction systems operate within a wide range of ambient; the chart is an example of a 100W induction system operated at extreme cold temperature. It is recommended if the system requires a cold start at -30°C that a thermal blanket be installed at the factory on the amalgam tip; this will ensure a consistent start and rapid stabilization of the lamp and lumen output.

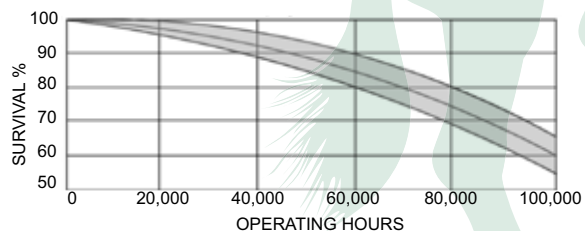
Closed fixture example, actual performance varies with fixture types.

NOTE: Purpose of Lumen Maintenance Chart is strictly to show relation of the three variables over time.



Rated Lumen Maintenance Chart

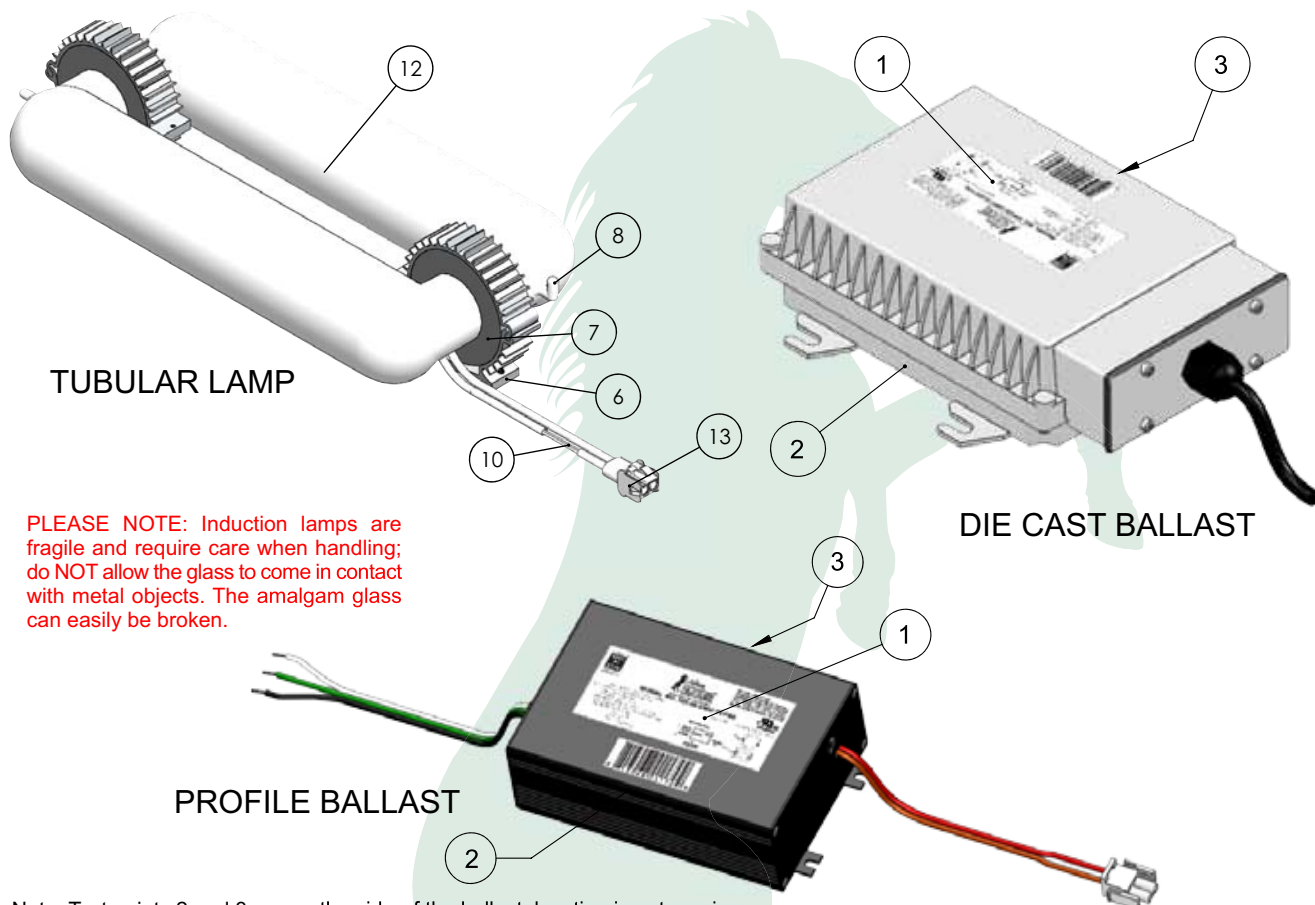
Rated Lumen Maintenance is largely determined by operating temperature of the lamp and quality of lamp design; Fulham HighHorse induction systems are designed and manufactured with high quality tri-phosphors and solid amalgam to optimize the performance and rated life of the lamp. The above chart is intended to represent an average rated lumen output stated as a percentage of the initial lumen output over the rated life of the lamp. Operating the lamp within the temperatures specification will typically result in not less than 70% lumen output at 60Khrs.



System Rated Life Chart

System Rated Life varies with operating temperature and application. Fulham HighHorse induction generators are designed with high quality long lasting components and when operated at the rated Tc 65°C expected life is 60Khrs with failure rate of 15% to 20%. Operating temperatures less than the rated Tc 65°C can typically improve life expectancy and reduce failure rate.

TEMPERATURE TEST POINTS



Note: Test points 2 and 3 are on the side of the ballast; location is not precise.

TEMPERATURE POINTS			
TEST POINT	LOCATION	RATED TEMPERATURE	MAX TEMPERATURE
1	BALLAST: TC	< 65°C (149°F)	65°C (149°F)
2	BALLAST: SIDE 1	< 65°C (149°F)	65°C (149°F)
3	BALLAST: SIDE 2	< 65°C (149°F)	65°C (149°F)
4	BALLAST PLATE/MOUNTING LOCATION	N/A	N/A
5	BALLAST AMBIENT	N/A	N/A
6	LAMP BASE (HEAT SINK)	< 130°C (266°F)	130°C (266°F)
7	LAMP COIL	< 140°C (284°F)	150°C (302°F)
8	LAMP AMALGAM TIP	55°C (131°F) - 125°C (257°F)	125°C (257°F)
9	LAMP AMBIENT	< 80°C (176°F)	<100°C (212°F)
10	COIL WIRE RATING	< 140°C (284°F)	150°C (302°F)
11	N/A	N/A	N/A
12	LAMP TUBE ON INSIDE CENTER	< 140°C (284°F)	150°C (302°F)
13	WIRE CONNECTOR	< 105°C (221°F)	105°C (221°F)

Temperature should be maintained at the rated temperature instead of the maximum temperature for best performance.
Contact Fulham for Induction temperature test procedures.

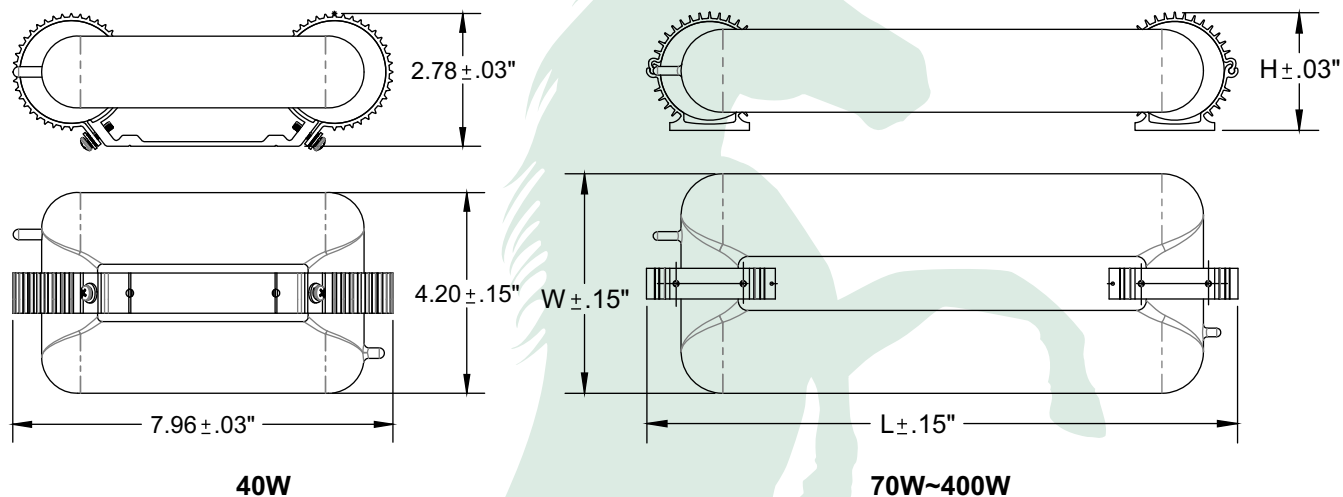
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DIMENSIONS - TUBULAR



Tubular Lamp

TUBULAR LAMP

Model No.	L (in)	W (in)	H (in)	Input Wire L (in)*
HH-IL-T40W5K	-	-	-	11-16
HH-IL-T70W5K	9.61	5.65	3.04	15-17
HH-IL-T80W5K	9.61	5.65	3.04	15-17
HH-IL-T100W5K	11.57	5.65	3.04	15-17
HH-IL-T120W5K	13.17	5.65	3.04	15-17
HH-IL-T150W5K	15.22	5.65	3.04	15-17
HH-IL-T200W5K-17	17.07	7.28	3.04	15-17
HH-IL-T200W5K	21.50	5.65	3.04	15-17
HH-IL-T250W5K	23.00	7.28	3.02	15-17
HH-IL-T300W5K	26.79	7.49	3.04	15-17
HH-IL-T400W5K	42.13	6.27	3.81	15-17

Contact Fulham for detailed drawings.

* Subject to change. Contact Fulham for specific wire lengths.

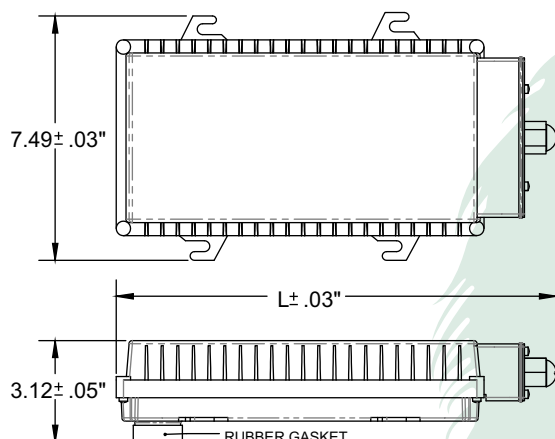
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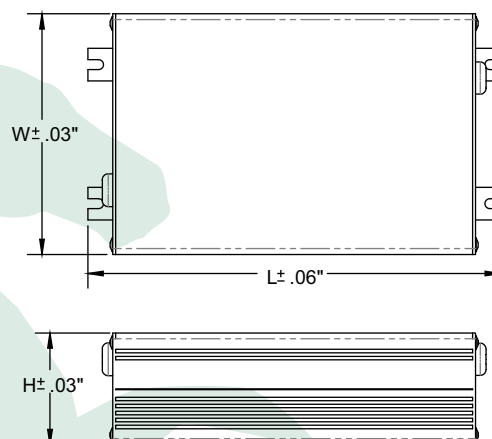
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DIMENSIONS - BALLASTS



Die Cast Ballast (White)



Profile Aluminum Ballast (Black)

PROFILE BALLAST

Model No.	SIZE	L (in)	W (in)	H (in)	Input Wire L (in)*	Output Wire L (in)*
HH-IB-UNV-CP40	SMALL "40"	5.98	3.66	1.63	6-12	6-12
HH-IB-UNV-TCP70	MEDIUM	7.06	4.12	1.91	6-12	6-12
HH-IB-UNV-TCP80	MEDIUM	7.06	4.12	1.91	6-12	6-12
HH-IB-UNV-TCP100	MEDIUM	7.06	4.12	1.91	6-12	6-12
HH-IB-UNV-TCP120	STANDARD	8.46	4.75	2.07	6-12	6-12
HH-IB-UNV-TCP150	STANDARD	8.46	4.75	2.07	6-12	6-12
HH-IB-UNV-TCP200	STANDARD	8.46	4.75	2.07	6-12	6-12

DIE CAST BALLAST

Model No.	SIZE	L (in)	Input wire L (in)*	Output wire L (in)*
HH-IB-UNV-TCDC80	SMALL	10.16	35-45	4-5
HH-IB-UNV-TCDC100	SMALL	10.16	35-45	4-5
HH-IB-UNV-TCDC120	SMALL	10.16	35-45	4-5
HH-IB-UNV-TCDC150	SMALL	10.16	35-45	4-5
HH-IB-UNV-TCDC200	STANDARD	13.49	35-45	4-5
HH-IB-UNV-TCDC250	STANDARD	13.49	35-45	4-5
HH-IB-UNV-TCDC300	STANDARD	13.49	35-45	4-5
HH-IB-UNV-TDC400	STANDARD	13.49	35-45	4-5

Contact Fulham for detailed drawings.

* Subject to change. Contact Fulham for specific wire lengths.