



Energy Efficient

Instant On

Quiet Operation

Excellent Lumen Maintenance

High Quality CRI Lighting

High Bay Lighting Solutions

WORKING INSTANTLY, QUIETLY FOR REMARKABLE ENERGY SAVINGS



Panasonic

HIGH BAY SOLUTIONS

As fluorescent lamp and ballast technology shifts to more efficient and higher output systems, your options for high bay applications have greatly improved. You are no longer limited to standard high intensity discharge [HID] lamps powered by magnetic ballasts. Universal Lighting Technologies has also made significant advancements in electronic HID systems, offering flexibility to design a system that suits your needs.

DISADVANTAGES OF MAGNETIC HID LIGHTING SYSTEMS



- **High energy consumption**
- **Warm-up & restrike delays**
 - Will not come on instantly
 - Cannot effectively connect to occupancy sensors
- **Noise**
 - Not conducive to quiet ambients
- **Poor lumen maintenance**
 - Significant decrease in lumen output over time
 - 65% lumens at 40% of rated life
- **Poor color**
 - CRI values between 60 and 70
 - Color variations from lamp to lamp
- **Fixture efficiencies less than 80% - majority of installed base**

BENEFITS OF HIGH LUMEN FLUORESCENT SYSTEMS



- **Energy efficient**
 - Over 50% potential energy savings
- **Instant on with no warm-up time**
 - Compatible with occupancy sensors for maximum energy savings
- **Quiet operation**
 - Sound rated A
- **Excellent color**
 - CRI values typically between 75 and 85
 - No color variance or shift over time
- **Fixture efficiencies greater than 90%**

T5HO SOLUTIONS

T5HO LAMPS (F54T5HO)

As the high-lumen fluorescent systems gain popularity, T5HO fixtures are now available in 4- and 6- lamp configurations that can be effectively applied to high bay applications. With light levels higher than other high bay alternatives, T5HO [high output] systems offer you the flexibility you need for the most light with the fewest lamps.

- Provides the most light with the fewest lamps
- **Programmed Start** products available
 - Ideal for use with occupancy sensors
 - Maintains lamp life in frequently switched applications
- 120–277-volt and 347–480-volt ballasts available
- Maximizes lumen output at 35°C ambient temperatures

- **Accustart5HB Ballast** specifically designed for High Bay applications
 - High efficiency technology to minimize generated heat
 - Thermal transfer technology to remove heat
 - 90°C maximum case temperature



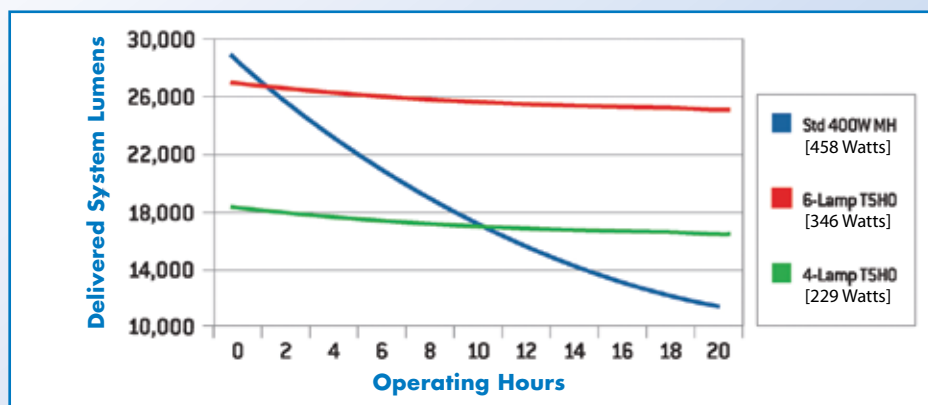
- Additional energy savings available with new energy saving T5HO lamps.

Qty of Lamps	Ballast Type (s)	Lamp Type	Mean Lamp Lumens	Ballast Factor	Watts	Fixture Efficiency	Mean System Lumens Delivered	Mean Lumen Comparison	System Delivered LPW	Energy Savings (Watts)	Annual Energy Savings (\$\$)*
1	Standard Core and Coil	400W MH	24000	1.00	458	80%	19,200	100%	41.9		
Programmed Start Solutions (for frequently switched applications)											
4	B454PUNVHB-E	F54T5HO	4740	1.00	229	92%	17,443	91%	76.2	229	\$91.60
4	(2) B254PHRVHB-E (480V)	F54T5HO	4740	1.00	238	92%	17,443	91%	73.3	220	\$88.00
6	B254PUNVHB-D & B454PUNVHB-E	F54T5HO	4740	1.00	346	92%	26,165	136%	75.6	112	\$44.80

* Savings calculation based on 4,000 annual operating hours and \$0.10/KWH utility rate. Mean lumens are lumens at 8,000 hours of operation.

Less Lumen depreciation allows for constant light levels over time.

AccuStart[®] HB



T8 SOLUTIONS

T8 LAMPS (F32T8)

T8 high-lumen systems incorporate high efficiency technologies that provide significant energy savings over HID systems. T8 lamps are now available in energy savings versions which use less energy than their standard versions, creating even more flexible lighting choices. Since they provide maximum lumens at 25°C, T8 systems are ideal for conditioned spaces.

- Most common lamp for electronic ballasts
- Variety of lamp options available
 - Colors, CRI's, life ratings
- Instant Start High Ballast Factor ballasts used for high lumen applications
 - Ballast factor of 1.18
 - Operates lamp at full-rated current for maximum light
- Maximum light output at 25°C ambient temperature

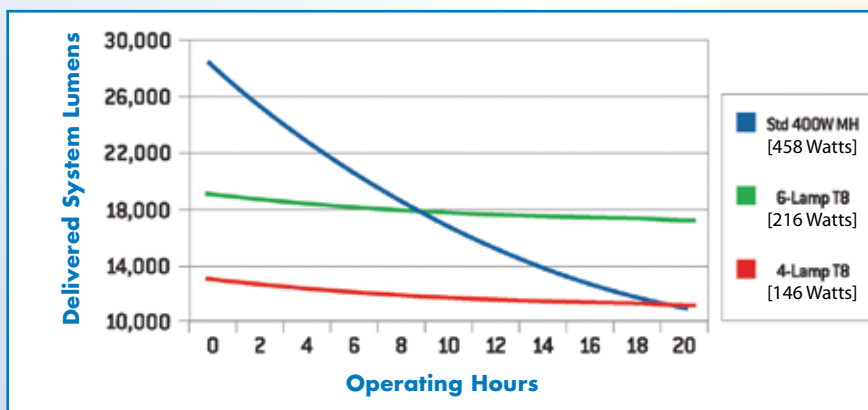


Qty of Lamps	Ballast Type (s)	Lamp Type	Mean Lamp Lumens	Ballast Factor	Watts	Fixture Efficiency	Mean System Lumens Delivered	Mean Lumen Comparison	System Delivered LPW	Energy Savings (Watts)	Annual Energy Savings (\$'s)*
1	Standard Core and Coil	400W MH	24000	1.00	458	80%	19,200	100%	41.9		
Programmed Start Solutions (for frequently switched applications)											
4	(2) B232IUNVHEH-A	F32T8	2800	1.18	146	92%	12,159	63%	83.3	312	\$124.80
6	(2) B332IUNVHEH-A	F32T8	2800	1.18	216	92%	18,238	95%	84.4	242	\$96.80
6	(2) B332IHRVHB-E (480V)	F32T8	2800	1.18	218	92%	18,238	95%	83.7	240	\$96.00

* Savings calculation based on 4,000 annual operating hours and \$0.08/KWH utility rate. Mean lumens are lumens at 8,000 hours of operation. System delivered Mean Lumens=Mean Lamp Lumens x # of Lamps x Ballast Factor x Fixture Efficiency. Data shown is for 277V unless specified.

6-Lamp T8 provides lower initial lumens, but higher lumens at the end of the cycle

ULTim[®] HB
A Triad[®] Brand **8**



APPLICATION EXAMPLES

Gymnasium Conversion from HID to Electronic T8



• Additional Benefits

- Quiet operation
- Improved color
- Instant on
- Ability to control lamps

	Fixture Type	# of Fixtures	Fixture Wattage	Annual Operating Cost
Existing Installation	400W Metal Halide	38	458	\$6,091
New Installation	6-Lamp T8	38	216	\$2,873
			Savings	\$3,219

Utility Savings Calculation: Annual Savings = Savings per fixture x # of fixtures x Utility rate [\$/KWH] x annual operating hours / 1000

3,500 Annual Operating Hours
\$0.10 Utility Rate (\$/KWH)

Warehouse Conversion from HID to Electronic T5HO



• Additional Benefits

- Improved light levels
- Uniform illumination
- Color
- Less glare
- Instant on capabilities

	Fixture Type	# of Fixtures	Fixture Wattage	Annual Operating Cost
Existing Installation	400W Metal Halide	209	458	\$43,075
New Installation	4-Lamp T5HO	209	229	\$21,537
			Savings	\$21,537

Utility Savings Calculation: Annual Savings = Savings per fixture x # of fixtures x Utility rate [\$/KWH] x annual operating hours / 1000

4,500 Annual Operating Hours
\$0.10 Utility Rate (\$/KWH)

ELECTRONIC HID

HID Lamps

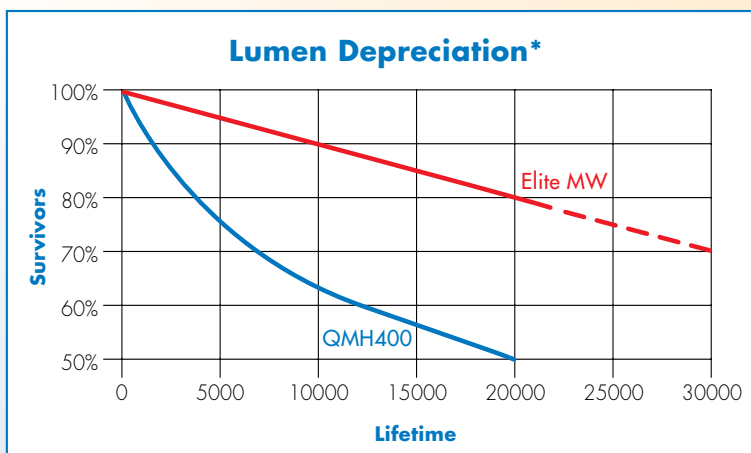
Vossloh-Schwabe brand electronic HID ballasts from ULT for mid wattage metal halide lamps are nearing final qualification and will be available soon. By utilizing Vossloh-Schwabe eHID ballasts on new high performance 210W or 250W pulse start lamps; energy savings up to 50% are possible versus standard probe start/magnetic ballast and lamps while providing equal mean lumens. In addition, extended lamp life, higher CRIs and significantly improved lumen maintenance all contribute to reduced operating costs, reduced maintenance cost and superior lighting quality. In the future, dimming capabilities will be available for even greater energy savings.

Qty of Lamps	Ballast Type (s)	Lamp Type	Mean Lamp Lumens	Ballast Factor	Input Watts	Fixture Efficiency	Mean System Lumens Delivered ²	Mean Lumen Comparison	System Delivered LPW	Rated Lamp Life	Energy Savings (Watts)	Annual Energy Savings (\$'s) ³
1	Standard Core and Coil	400W MH	24000	1.00	458	0.8	19,200	100%	41.9	20000		
1	M21020-27CK-2EUN-DF	210W Phillips Elite MH PS	22,100	1.00	227	0.92	19,448	101%	85.7	24000 ²	231	\$73.92
1	M25020-27CK-2EUN-DF	250W GE Chroma Fit	20,000	1.00	279	0.8	17,600	92%	63.1	24000	179	\$57.28

1 Mean System Lumens-Delivered= Mean lamp lumens x fixture efficiency x quantity of lamps

2 Rated lamp life as of June 2010; design target is 30,000 hours

3 Annual Energy Savings based on 4000 hours per year at \$0.08/kilowatt/hr.



*Graph courtesy of Philips Lighting North America, May 2010

SYSTEM CONTROL OPTIONS

Combining controls provides additional energy savings opportunities

	Instant Start T8	Programmed Start T5HO	eTensity HID
Occupancy Sensors	Yes, for long cycles	Yes, for long or short cycles	No, except for Bi-Level Switching
0-10V Photo Cells (Daylight Harvesting)	No	No	Yes
Lamp Switching Internal to Fixture	Yes, with two ballast/fixtures	Yes, 4-lamp model incorporates switching control lead	No

Additional Lighting Options

HIGH EFFICIENCY T8 BALLASTS



Universal's high ballast factor T8 models are ideal for a wide variety of indoor high lumen fluorescent applications. Our High Range Voltage (347-480v) ballasts are rapidly gaining popularity in industrial and retail locations.



HIGH EFFICIENCY T8 BALLASTS



Our high-wattage compact fluorescent ballasts control up to 70-watt lamps. They are a high efficiency alternative to other technologies used for downlighting and high bay applications – and they feature case temperatures up to 90°C.



HIGH EFFICIENCY T8 BALLASTS



Universal Lighting Technologies offers a full line of dimming products, from 0–10-volt analog systems and light level switching technologies to our two digital dimming families, Dali Pro and Address Pro.



Energy Intelligence *In Lighting*

Efficiency. Solutions. Control.

From high lumen fluorescent systems to digital applications, Universal Lighting Technologies continues to lead the way in lighting energy management and control. Whether we're working with OEMs, distributors, engineers, architects or contractors, we take pride in being a proactive partner. Our vision transcends the ballast business. We also provide the resources and innovative solutions to help you take lighting to the next level. Universal Lighting Technologies. We've got lighting under control.

IT'S EASY TO REACH US...



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