

GE Lighting

GE[®] DIMMING BALLASTS

Lighting for Better Energy Management



imagination at work

GE ULTRASTART T8
GE432MVPSN-V03
 Program Start, Dimming, 120-277 Volts, 50/60Hz
WARNING
 RISK OF ELECTRIC SHOCK
 Connect 0-10V control to Gray and Violet wires to control

Class 1 or 2
 • Violet - Circuit Control
 • Gray - Line
 • Black - White

Blue/White
 Red/White
 Blue
 Red
 Yellow

Wide Range 120 to 277V input
 0-10V Control
 100% light output
 Parallel Lamp Operation
 Open Circuit Voltage 700 Vrms
 Min Start Temp 0°F
 Inherent Thermal Protection
 Class 2, Outdoor Type I
 Type CC and Type HL
 FCC Part 18 Class A
 High Power Factor
 Sound Rated A

Use With Lamp Types
 120 277 V
 100% Light Output:
 4 F32T8 and U 0.99 0.41
 4 F32T8W 0.93 0.39
 4 F28T8 0.87 0.36
 3 F32T8 and U 0.83 0.34
 3 F32T8W 0.77 0.32
 3 F28T8 0.71 0.30

Line Current
 120 277 V
 4N
 Normal Light Level

GE ULTRAMAX T8
GE332MAX90-V60
 Instant Start, 120-277 Volts, 50/60 Hz
WARNING
 RISK OF ELECTRIC SHOCK
 Turn power off

Controlable Ballast
 Class 1 or Class 2 Circuit Dimming Control
 Violet (L), Gray (L) compatible with 0-10V -0/10V Dimmer Control
 AND Type I LDA-0-10V, 20Vdc, -0/20Vdc
 Closed circuit between violet & gray starts ballast at high level and dims to low level (80%).
 For N-1 operation insulate unused blue lamp lead for 600 Vrms.

Line Voltage Dimming Control
 Connect either black lead to phase for 60% light level (L1 8F)
 Connect both black leads to phase for 100% light level (L1 8F)
 For N-1 operation insulate unused blue lamp lead for 600 Vrms.
 This is an instant start ballast and it is not recommended to use sensors on the black line input wire and may void lamp warranty. Switching from high to low will not impact lamp life.

Black
 White
 Gray
 Violet

Blue
 Blue
 Blue

Wide Range 120 to 277V input Electronic Ballast
 Open Circuit Voltage 600 Vrms
 0-50V Continuous Dim 1.18 to 71.8F (100-60%)
 Min Start Temp -22°F (-30°C)
 UL Suitable for use at 55°C Ambient
 Inherent Thermal Protection
 Class 2, Outdoor Type I
 Type CC and Type HL
 FCC Part 18 Class A
 High Power Factor
 Sound Rated A
 Assembled in China

Use With Lamp Types*
 120 277 V
 3 F32T8/U 0.99 - 0.41
 3 F32T8/W 0.91 - 0.36
 3 F28T8 0.83 - 0.35
 3 F32T8/25W 0.79 - 0.34
 3 F32T8 0.53 - 0.23
 2 F32T8/U 0.78 - 0.32
 2 F32T8/W 0.70 - 0.30
 2 F28T8 0.65 - 0.28
 2 F40T8 0.89 - 0.37

Line Current
 120 277 V
 3H
 High Light Level

GE ULTRAMAX T8
GE232MAX90-S60
 Instant Start, 120-277 Volts, 50/60 Hz
WARNING
 RISK OF ELECTRIC SHOCK
 Turn power off before servicing
 Properly ground ballast and fixture

Line Voltage Dimming Control
 Connect either black lead to phase for 60% light level (L1 8F)
 Connect both black leads to phase for 100% light level (L1 8F)
 For N-1 operation insulate unused blue lamp lead for 600 Vrms.
 This is an instant start ballast and it is not recommended to use sensors on the black line input wire and may void lamp warranty. Switching from high to low will not impact lamp life.

Block 1
 Block 2
 Line
 White
 Neutral
 Red

Blue
 Blue
 Blue

Wide Range 120 to 277V input Electronic Ballast
 Open Circuit Voltage 600 Vrms
 0-Level Dimming, 1.18 to 71.8F (100-60%)
 Ballast always starts at 100% light level.
 When one of the black wires is open, light level will gradually reduce to 60%.
 Min Start Temp -22°F (-30°C)
 UL Suitable for use at 55°C Ambient
 Inherent Thermal Protection
 Class 2, Outdoor Type I
 Type CC and Type HL
 FCC Part 18 Class A
 High Power Factor
 Sound Rated A
 Assembled in China
 Designed & Distributed by General Electric Co.
 Transforming the Power of Light™
 GE Consumer & Industrial - Lighting
 Hills Park, Cleveland, Ohio 44132

Use With Lamp Types*
 120 277 V
 2 F32T8/U 0.67 - 0.28
 2 F32T8/W 0.62 - 0.27
 2 F28T8 0.57 - 0.25
 2 F32T8/25W 0.54 - 0.24
 2 F32T8 0.36 - 0.17
 1 F32T8/U 0.41 - 0.19
 1 F32T8/W 0.38 - 0.18
 1 F28T8 0.35 - 0.18
 1 F40T8 0.49 - 0.22

Line Current
 120 277 V
 2H
 High Light Level

For assistance call: 1-888-GEBALLAST
 Product Code: 73233

The Next Generation in Energy Savings!

Beyond Energy Efficiency

Controllable lighting allows you to make the next leap forward in energy savings. By using the strategies presented here, you can move beyond fixed light output systems to create even more sustainable, long-term savings. In order to achieve additional savings that can dramatically impact your bottom line, you need to shed load, harvest available daylight, and tune your lighting to actual needs while at the same time enjoying the flexibility and ambiance that GE dimming systems provide.

Controllable Lighting

A product of the GE commitment to energy management

Through strategic use of **energy management strategies**, you can take advantage of techniques such as **personal light control, daylight and occupancy control, load shedding and demand response, automated time-based controls and light tuning** to take your energy savings beyond what's achievable with the most efficient fixed output fluorescent systems. Use your lighting only when and where you need it and energy management will become a **major source of savings** for your facility.

GE's Energy Saving Solutions

UltraStart® T8 0-10V 100%-3% Full-Range Dimming Ballasts (Programmed Start)

Full-range dimming with no sacrifice in lamp life, and they fit into the same physical footprint as the standard ballasts you're using today.

- Full-range 100%-3% lighting control for use with 0-10V controllers
- Save energy, without sacrificing lamp life
- Ultra-efficient: >90% efficient with full cathode cutout at the top end of dimming
- Save on maintenance with parallel lamp operation that keeps other lamps lit when one fails

UltraMax® T8 0-10V Load-Shed Dimming Ballasts (Instant Start)

Ideal for energy management strategies that involve daylight sensors or controls to frequently adjust, or "tune," light levels down by 40% rather than turning lights on and off.

- Dim or load shed from 100%-60% using 0-10V controllers
- Creates a total energy management system at a very low cost compared with traditional full-range dimming
- Designed for easy operation, typically used with 0-10V daylight harvesting controls and lighting panels
- Dim lamps without impacting lamp life

UltraMax® T8 Bi-Level Dimming Ballasts (Instant Start)

Efficiently switch light levels from a high 100% to low 60% instant start, and reduce power consumption by 40%.

- 100%-60% bi-level dimming allows for easy switching
- Perfect for use with line voltage occupancy sensors or lighting panel relays
- Flexibility allows for two switches for multiple light levels in one area
- Provides more flexibility in lighting design

Beyond Efficiency... The Benefits of Lighting Control

Getting more energy savings from your current fluorescent system

Today you have an opportunity to boost your fluorescent lighting energy savings to previously unattainable levels, simply by incorporating the element of control.

It's just a matter of matching your lighting needs with the most effective control strategy and installing dimming ballasts that make that strategy work. The data on these pages will help you begin your selection process and will guide you toward a solution that can pay for itself many times over.



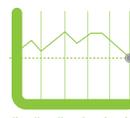
Daylight Harvesting



Scheduled Lighting



Occupancy Sensing



Load Shedding
(Peak Demand
Management)



Demand Response



Task Tuning &
Personal Control



The UltraStart® T8 Full-Range dimming ballasts opens up a whole new world of energy savings by allowing you to adjust lighting levels from 100% to 3% without sacrificing your lamp life and reliability.

UltraStart® T8 Full-Range Dimming Ballasts

Ideal for use with 0–10 volt dimmers, photocell controls, wireless controllers, and occupancy sensors. These ballasts become an integral part of your total energy management system.

Save Energy, Without Sacrificing Reliability

- Adjust lighting levels from 100% to 3%
- Meets NEMA LL-9 dimming standards for industry lamp and ballast compatibility. No sacrifice in lamp life from standard programmed start ballasts
- Long life GE programmed start ballast warranty applies

Save on Maintenance

- In full parallel operation, lamp failures don't lead to the entire fixture going dark. Ensures each lamp stays within NEMA LL-9 dimming standards.
- Reduce group and spot relamping costs by as much as 15% & 50% respectively

Ultra-Efficient

- >90% efficiency at full light
- N series 100% to 80% light — cathode cutout
- H series 100% to 60% light — cathode cutout
- 2, 3 or 4 lamp offering

Easy to Install, Easier to Use

- Anti-striation control for reduced wattage F32T8 and F28T8 lamps
- Compatible with Class 1 or Class 2 LV 0–10 VDC control systems
- UL Type CC anti-arcing and UL 55C ambient approved
- Product is compliant with material restrictions requirements of RoHS

RETAIL ENERGY SAVINGS EXAMPLE

LAMP:	F32 T8
EFFECTIVE WATTS:	62%
% of Power	% of Time
100 ¹	25
90	0
80	0
70 ²	20
60	0
50 ³	40
40	0
30	0
20 ⁴	15
10	0
OFF	0
Total Time	100%

# of Stores	14
# of Fixtures per store	600
Energy Cost per kWh	\$0.10
Hours per day	17
Days per week	7

Energy Cost with control	\$36,279
Energy Cost without control	\$58,514
Annual Energy Savings	\$22,235
Energy Savings per fixture	\$37
Energy Savings	38%

¹ 100% light output may only be needed during transitional dusk hours, or to highlight certain locations in the store

² You may desire 70% light output in the morning, before the sun has reached it's peak.

³ 50% of your total power can be utilized in the afternoon hours when you're likely to experience the greatest amount of sunlight

⁴ 20% light output may more than sufficient for maintenance and cleaning periods, or after store hours



The UltraMax®T8 Load-Shed dimming ballasts gives you the flexibility to tune your light levels between 100% and 60% as needed.

UltraMax® T8 Load-Shed Dimming Ballasts

A cost effective method of achieving as much as 40% energy savings without installing a full-range dimming ballast. Use for daylighting where partial daylight enters a space or to reduce peak demand charges in high-bay or commercial lighting applications.

An Integral Part of Your Total Energy Management System

- Load-Shed variable dimming high 100% to low 60%
- Limited to approximately five on/off cycles per day

Designed with Easy Operations in Mind

- 0-10V controller compatible

Flexible Enough for Multiple Applications

Ideal for 0-10 volt dimmers, daylight harvesting sensors, wireless controllers and 0-10V occupancy sensors.

- High ballast factor (1.18) to low (.71) step dimming
- 100% light level of a 2 high ballast factor is approximately the same as a 3 lamp normal ballast factor
- 100% light level of a 3 high ballast factor is approximately the same as a 4 lamp normal ballast factor
- Multi-volt 120-277V
- Anti-striation control for use with F32T8/WM, F28T8 or F32T8/25W reduced wattage lamps
- 2, 3, 4 or 6 lamp offering

Meets or Exceeds Industry Standards

- High efficiency NEMA premium: 6-lamp = extreme 95% efficiency
- UL rating 55C ambient approved
- UL type CC anti-arc rating
- Product is compliant with material restrictions requirements of RoHS

COMMERCIAL CEILING ENERGY SAVINGS EXAMPLE

LAMP:	F32 T8
EFFECTIVE WATTS:	75%
% of Power	% of Time
100 ¹	30
90	0
80 ²	30
70	0
60 ³	20
50	0
40	0
30	0
20 ⁴	20
10	0
OFF	0
Total Time	100%

# of Buildings	8
# of Fixtures	1200
Energy Cost per kWh	\$0.10
Hours per day	14
Days per week	5

Energy Cost with control	\$34,490
Energy Cost without control	\$49,271
Annual Energy Savings	\$14,781
Energy Savings per fixture	\$12
Energy Savings	30%

¹ 100% light output may only be needed first thing in the morning or after the sun has set
² 80% light output may suit the conference rooms or be sufficient for late afternoon hours
³ You may only need 60% of light output during peak daylight hours, or with limited occupancy such as during cleaning
⁴ 20% of your lighting may be used during the overnight hours for security purposes



The UltraMax® T8 Bi-Level dimming ballasts offer an energy management solution to reduce lighting levels in warehouses, storage spaces, and other places that often go unoccupied.

UltraMax® T8 Bi-Level Dimming Ballasts

An effective energy management solution when you have the flexibility to reduce lighting levels in unoccupied spaces or can reduce energy demand at critical times throughout the day.

Perfect for Bi-Level Switching

- 100% to 60% bi-level dimming
- Limited to approximately five on/off cycles per day
- Use with line voltage occupancy sensors, lighting panel relays or when using two switches for multiple (high/low) light levels in one area.

Sufficient Lighting, Flexible Operation

Eliminates uneven light distribution and dark spaces caused when switching in rows, checkerboard patterns, or using tandem wiring patterns.

- High ballast factor (1.18) to low (.71) step dimming
- 100% light level of a 2 high ballast factor is approximately the same as a 3 lamp normal ballast factor
- 100% light level of a 3 high ballast factor is approximately the same as a 4 lamp normal ballast factor
- Multi-volt 120-277V flexibility
- Anti-striation control for use with F32T8/WM, F28T8 or F32T8/25W reduced wattage lamps
- 2, 3, 4 or 6 lamp offering

Meets or Exceeds Industry Standards

- High efficiency NEMA premium: 6-lamp = extreme 95% efficiency
- UL rating 55C ambient approved
- UL type CC anti-arc rating
- Product is compliant with material restrictions requirements of RoHS

WAREHOUSE ENERGY SAVINGS EXAMPLE

LAMP:	F32 T8
EFFECTIVE WATTS:	66%
% of Power	% of Time
100 ¹	15
90	0
80	0
70	0
60 ²	85
50	0
40	0
30	0
20	0
10	0
OFF	0
Total Time	100%

# of Fixtures	800
Energy Cost per kWh	\$0.10
Hours per day	12
Days per week	6

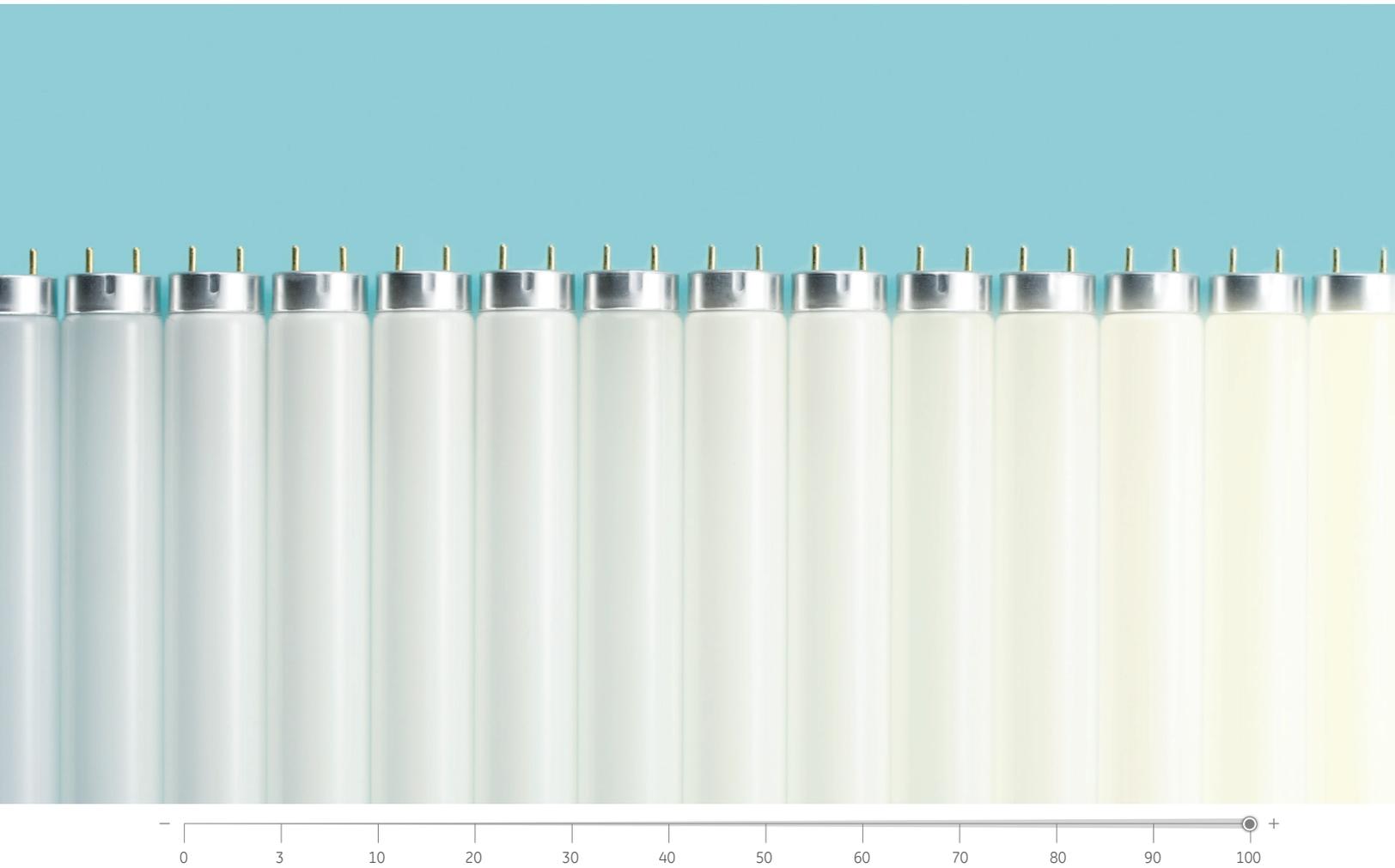
Energy Cost with control	\$31,155
Energy Cost without control	\$47,204
Annual Energy Savings	\$16,049
Energy Savings per fixture	\$20
Energy Savings	34%

¹ 100% light output is only needed for periods of heavy warehouse activity, such as operating a forklift, but not necessary for unoccupied spaces

² 60% light output may well meet codes and suffice for 85% of normal warehouse activity

GE Ballast Reliability and Industry Compliance

National Electrical Manufacturers Association



NEMA LL-9 is the first coordinated guidance on achieving industry lamp and ballast compatibility with T8 dimming systems and our UltraStart® T8 0-10V full range dimming ballasts are fully compliant. Parallel lamp operation ensures that each lamp is treated properly and within LL-9 specifications with consistent lamp-to-lamp results. Series wired dimming ballasts result in uneven cathode heating and inconsistent lamp to lamp performance and life.

Using NEMA LL-9 compliant ballasts means adhering to an open standard that enables you to use different lamp and ballast manufacturers and still know that you will have a reliable system. **Demand it in your facility.**

Energy Saving Lighting Methods

	UltraStart T8 Full-Range	UltraMax T8 Bi-Level	UltraMax T8 Load-Shed
 <p>Daylight Harvesting Typically designed to maintain a minimum light level, daylighting harvesting is a control system that reduces artificial electric light in a space when natural daylight is available in order to reduce energy consumption.</p> <p>These ballasts will work with photocell and/or scheduled controllers when natural daylight can be used.</p>	✓		✓
 <p>Scheduled Lighting Automated time-based controls with fluorescent dimming manages the lighting in a space or zones to different foot candle requirements throughout the day.</p>	✓	✓	✓
 <p>Occupancy Sensing Detect activity or lack of activity within a space and automatically control lighting. Reduced energy use in low traffic areas like restrooms, conference rooms, hallways that can reduce energy consumption by up to 70%.</p>	✓	✓	✓
 <p>Load-Shedding (Peak Demand Management) Reduces lighting loads by dimming or turning off electric loads when the utility company or demand response service provider sends an alert to a facility.</p> <p>Power companies provide incentives for participating in demand response programs.</p>	✓	✓	✓
 <p>Demand Response Reduces lighting loads when the utility grid is constrained at peak times and demand charges occur. During a billing period peak demand charges can be up to 50% of a utility bill.</p> <p>Reduce lighting loads when peak utility charges occur.</p>	✓	✓	✓
 <p>Task-Tuning & Personal Control Ability to set light levels to desired point by time of day, foot candle requirements by area, or by personal control for the tasks being performed.</p> <p>Multi-use areas will not require the same lighting levels for all tasks. These ballasts provide the most flexibility to save energy as area use changes.</p>	✓		✓

Safety

- No PCBs
- Product is compliant with material restrictions requirements of RoHS
- UL listed (class P, type 1 outdoor, type HL)
- UL type CC anti-arching rating
- UL 55C (131F) max ambient rating - high temperature protection circuit

Specification Information

- All models NEMA Premium and CEE compliant
- NEMA LL-9 compliant: GE programmed start life & warranty ratings, .5mA
- Compatible with class 1 or class 2 LV 0-10VDC® controllers
- UltraStart® Dimming compatible with reduced wattage lamps GE F32T8/WM, F28T8, F17T8, F25T8 lamps. Not recommended for use with F32T8/25W lamps.
- Parallel Lamp Operation: reliable, deep dimming performance. When one lamp fails the others remain lit.
- Product is compliant with material restrictions requirements of RoHS
- Remote Mounting: not recommended. Test application for applicability
- Anti-striation reduction circuitry
- Meets FCC part 18 (class A) for EMI & RFI
- UltraStart® cathode cutout technology from 100-80% (N series), 100-60% (H series)
- UltraStart® Minimum Starting Temperature: 50F at full power, 60F when fully dimmed
- UltraMax® F32T8 minimum starting temperature: -20F at full power, 0F when fully dimmed
- UltraStart® 100-3% and UltraMax Load Shed dimming compatible with all ANSI compliant 0-10V controllers. Complies with ANSI C82.11 Annex A specification for Low Voltage Control Interface for controllable ballasts
- UltraMax® Dimming are instant start ballasts and are limited to approximately 3,000 on/off cycles during the warranty time period to avoid significantly shortening lamp life. It is not recommended to use sensors on the line input of the ballast and doing so may void lamp warranty. However sensors may be used on the switching leg or gray/violet input of the ballast without sacrificing lamp life or warranty.

* 4N also available with long leads for 8ft fixture 62044
GE432MVPS-N-V03W

** all lumen and LPW data is @ 277V input voltage.

** see GELighting.com for specifications for F17T8 and F25T8 lamps



UltraStart® T8 0-10V 100-3% Dimming Specifications

PC 10 PK	Ballast Description	Lamps		Light Output	Input Watts (120/277V)	Ballast Factor	BEF @ 277V	Initial System Lumens	Lumens/ Watt
		Type	# Lamps						
75379	GE132MVPS-N-V03	F32T8/HL	1	100%	30/29	0.88	3.03	2,728	94
			1	3%	7	0.01		31	
		F32T8/WM	1	100%	28	0.88	3.14	2,464	88
			1	3%	7	0.01		28	
		F28T8	1	100%	26	0.88	3.38	2,398	92
1	3%		7	0.01		27			
75380	GE232MVPS-N-V03	F32T8/HL	2	100%	58/56	0.88	1.57	5,456	97
			2	3%	10	0.03		186	
		F32T8/WM	2	100%	54/53	0.88	1.66	4,928	93
			2	3%	10	0.03		168	
		F28T8	2	100%	50/49	0.88	1.80	4,796	98
2	3%		10	0.03		164			
75383	GE232MVPS-H-V03	F32T8/HL	2	100%	76/74	1.18	1.59	7,316	99
			2	3%	14/12	0.03		186	
		F32T8/WM	2	100%	72/70	1.16	1.66	6,496	93
			2	3%	14/12	0.03		168	
		F28T8	2	100%	66/65	1.15	1.77	6,268	96
			2	3%	14/12	0.03		164	
		F32T8/HL	1	100%	46	1.33	2.89	4,123	90
			1	3%	8	0.07		217	
		F32T8/WM	1	100%	44	1.33	3.02	3,724	85
			1	3%	8	0.08		224	
F28T8	1	100%	41	1.33	3.24	3,624	88		
	1	3%	8	0.08		218			
75381	GE332MVPS-N-V03	F32T8/HL	3	100%	87/85	0.88	1.04	8,184	96
			3	3%	16	0.03		279	
		F32T8/WM	3	100%	78/76	0.86	1.13	7,224	95
			3	3%	16	0.03		252	
		F28T8	3	100%		0.85	1.16	6,949	95
3	3%		16	0.03		245			
75384	GE332MVPS-H-V03	F32T8/HL	3	100%	116/113	1.18	1.04	10,974	97
			3	3%	17	0.03		279	
		F32T8/WM	3	100%	106/104	1.16	1.12	9,744	94
			3	3%	17	0.03		252	
		F28T8	3	100%	93/92	1.15	1.25	9,401	102
3	3%		17	0.03		245			
75382 or 62044 (8ft Fixture Lead Wires)	GE432MVPS-N-V03	F32T8/HL	4	100%	114/111	0.88	0.79	10,912	98
			4	3%	22	0.03		372	
		F32T8/WM	4	100%	106/104	0.86	0.83	9,632	93
			4	3%	22	0.03		336	
		F28T8	4	100%	98/95	0.85	0.89	9,265	98
4	3%		22	0.03		327			
75385	GE432MVPS-H-V03	F32T8/HL	4	100%	152/148	1.18	0.80	14,632	99
			4	3%	24	0.03		372	
		F32T8/WM	4	100%	140/136	1.16	0.85	12,992	96
			4	3%	24	0.03		336	
		F28T8	4	100%	124/122	1.14	0.90	12,426	99
4	3%		25	0.03		327			

	UltraStart® T8 Dimming 1N,2N,3N,4N,2H,3H	UltraStart® T8 Dimming 4H
Length	9.5"	11.8"
Mount Length	8.89"	11.1"
Width	1.7"	1.7"
Mount Width	1.05"	1.05"
Height	1.18"	1.18"



imagination at work