



# Service Smart - Spec Smart

---

Quick Ship Guide

**PHILIPS**

# A commitment to service excellence

For over 120 years, Philips has led the lighting industry introducing innovative, energy-efficient lighting solutions and building a trusted reputation for exceptional performance and reliability. As the industry continues to transform, so do we to meet the changing needs of our customers.

We have integrated the latest in innovation and performance options in the lighting market into two on time delivery programs featuring an outstanding product selection of our top selling luminaires, lamps, and ballasts. Staying true to our commitment for service excellence, we are offering a order-to-shipping time guarantee of 2 days for Service Smart and 10 days for Spec Smart items.

## Order-to-shipping timelines

Service Smart items are shipped out within 2 days of order, Spec Smart items are shipped out within 10 days of order.



## Transportation timelines

For an accurate delivery date, add the following transportation times to the 2 or 10 day shipping time.



# Contents



## Philips CFI - Indoor commercial & industrial lighting

Pages 4 - 11



## Philips Lightolier - Indoor downlighting, track lighting, & controls

Pages 12 - 51



## Philips Color Kinetics - Architectural & entertainment LED systems

Pages 52 - 53



## Philips Keene - Outdoor general purpose lighting

Pages 54 - 57



## Philips Gardco - Outdoor architectural & performance lighting

Pages 58 - 59



## Philips Lumec - Outdoor urban, roadway, & tunnel lighting

Pages 60 - 61



## Philips Lamps & Ballasts

Pages 62 - 66

Bathrooms,  
Kitchens,  
Retail,  
Industrial

## Step-by-step guide to easy lighting design & lamp data

Pages 67 - 131

# CFI/Day-Brite update guide.

This package is designed to compliment to your current Philips Service Smart - Spec Smart catalogue. As numerous items in the CFI product offering have transitioned to new products and new ordering logic. Use this guide for the most up to date CFI/Day-Brite product information.

## Quick Cross Reference Guide

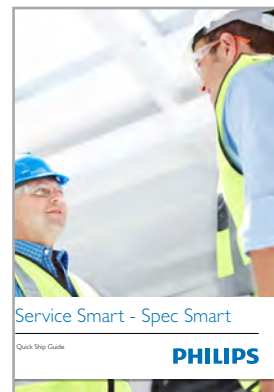
The quick cross reference guide provides a cross from old catalogue number to new catalogue number for all of the CFI/Day-Brite items in Service Smart that have changed. Reference the guide on pages 9 - 11 for a quick overview of all product changes.

## Updated CFI/Day-Brite Applications Section

See pages 12 - 27 of this guide for an updated applications guide of the Philips CFI/Day-Brite Service Smart - Spec Smart offering to help you create easy lighting layouts.

## Table of contents

Section	Page
Recessed Lighting	3
Surface	3-4
Strips	4-5
Decorative	5-6
Linear	6
High Bay	7-8
Protected	8
Dock Lights	8
Accessories	8
Cross Reference Guide	9-11
Applications Section	
Indoor commercial linear lighting	12-15
Indoor industrial fluorescent lighting	16-19
Highbay lighting for open areas	20-27
Highbay lighting for aisles	28-29



Existing catalogue

Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	
<b>Recessed</b>							
<b>LP3 - See Cross Reference Guide (Page 9)</b>							
2LP3GA332-36AL-347-1/3-EB	2'x4'	3-T8/32	347	T8 ELECT.	35		
2LP3GA332-36AL-UNV-1/3-EB	2'x4'	3-T8/32	120/277	T8 ELECT.	35		15
2LP3GA231U6R-33AL-UNV-1/2-EB	2'x4'	2-T8U6/31	120/277	T8 ELECT.	25		13, 15
<b>TG8 Series Troffer 1'x4' - Formerly AA Series Troffer 1'x4' - See Cross Reference Guide (Page 9)</b>							
1TG8232-01-UNV-1/2-EB	1'x4'	2-T8/32	120/277	T8 ELECT.	120		13, 15
1TG8232-01-347-1/2-EB	1'x4'	2-T8/32	347	T8 ELECT.	90		
<b>TG8 Series Troffer 2'x2' - Formerly AA Series Troffer 2'x2' - See Cross Reference Guide (Page 9)</b>							
2TG8231U6R-01-UNV-1/2-EB	2'x2'	2-T8U6/32	120/277	T8 ELECT.	80		13, 15
2TG8231U6R-01-347-1/2-EB	2'x2'	2-T8U6/32	347	T8 ELECT.	52		
<b>TG8 Series Troffer 2'x4' - Formerly AA Series Troffer 2'x4' - See Cross Reference Guide (Page 9)</b>							
2TG8232-01-UNV-1/2-EB	2'x4'	2-T8/32	120/277	T8 ELECT.	52		13, 15
2TG8232-01-347-1/2-EB	2'x4'	2-T8/32	347	T8 ELECT.	52		
2TG8332-01-UNV-1/3-EB	2'x4'	3-T8/32	120/277	T8 ELECT.	78		15
2TG8332-01-347-1/3-EB	2'x4'	3-T8/32	347	T8 ELECT.	52		
2TG8432-01-UNV-1/4-EB	2'x4'	4-T8/32	120/277	T8 ELECT.	150		15
2TG8432-01-347-1/4-EB	2'x4'	4-T8/32	347	T8 ELECT.	104		
<b>LED T-Grid LED Troffer</b>							
2TG38L840-2-FS-02F-UNV	2'x2'	3800lms/4000K	120/277	0-10v dim	35		
2TG45L840-2-FS-02F-UNV	2'x2'	4500lms/4000K	120/277	0-10v dim	35		
2TG48L840-4-FS-02F-UNV	2'x4'	4800lms/4000K	120/277	0-10v dim	35		
2TG54L840-4-FS-02F-UNV	2'x4'	5400lms/4000K	120/277	0-10v dim	35		
2TG74L840-4-FS-02F-UNV	2'x4'	7400lms/4000K	120/277	0-10v dim	35		
<b>Surface</b>							
<b>SMR Surface Modular 1'x4' - Formerly Surface SLB Series 1'x4' - See Cross Reference Guide (Page 11)</b>							
1SMR232-FA01-UNV-1/2-EB	1'x4'	2-T8/32	120/277	T8 ELECT.	35		14
1SMR232-FA01-347-1/2-EB	1'x4'	2-T8/32	347	T8 ELECT.		30	
<b>SMR Surface Modular 2'x4' - Formerly Surface SLB Series 2'x4' - See Cross Reference Guide (Page 11)</b>							
2SMR432-FS01-UNV-1/4-EB	2'x4'	4-T8/32	120/277	T8 ELECT.	25		
<b>OW Wrap - Formerly TX Series Surface Wrap - See Cross Reference Guide (Page 11)</b>							
OWN232-UNV-1/2-EB	8-5/8"x48"	2-T8/32	120/277	T8 ELECT.	88		14
OWN232-347-1/2-EB	8-5/8"x48"	2-T8/32	347	T8 ELECT.	56		
OWW432-UNV-1/4-EB	13-7/8"x48"	4-T8/32	120/277	T8 ELECT.	36		14
<b>CSW Cubelite</b>							
CSW148-UNVHIZO	4"x48"	1-T8/32	120/277	T8 ELECT.	35		
CSW248-UNVHIZO	4"x48"	2-T8/32	120/277	T8 ELECT.	35		



# Indoor Commercial

Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	
<b>Surface Continued</b>							
<b>Commercial Wrap</b>							
CFW232-120-1/2EB-GENIS	6-1/2"x48"	2-T8/32	120	T8 ELECT.	100		
<b>Designer Wrap</b>							
DPW232-UNV-1/2EB-GENIS	8"x48"	2-T8/32	120/277	T8 ELECT.	50		
<b>Strips</b>							
<b>Surface T5 Strip SV Series</b>							
SV2S114UNVPG	2"x22-1/2"	1-T5/14	120/277	T5 ELECT.	35		
SV2S124UNVPG	2"x22-1/2"	1-T5/14	120/277	T5 ELECT.	35		
SV3S121UNVPG	2"x34-1/4"	1-T5/21	120/277	T5 ELECT.	35		
SV3S139UNVPG	2"x34-1/4"	1-T5HO/39	120/277	T5HO ELECT.	35		
SV4S128UNVPG	2"x46"	1-T5/28	120/277	T5 ELECT.	100		
SV4S154347PG	2"x46"	1-T5HO/54	347	T5HO ELECT.		50	
SV4S154UNVPG	2"x46"	1-T5HO/54	120/277	T5HO ELECT.	100		18
SV4S228UNVPG	2"x46"	2-T5/28	120/277	T5 ELECT.	75		
SV4S254UNVPG	2"x46"	2-T5HO/54	120/277	T5HO ELECT.	50		18
SV4S254347PG	2"x46"	2-T5HO/54	347	T5HO ELECT.	50		
SV8S254UNVPV	2"x92"	4-T5HO/54	120/277	T5HO ELECT.		50	
SV8S254347PV	2"x92"	4-T5HO/54	347	T5HO ELECT.		50	
<b>T5 SV Series Accessories</b>							
SV5GXG4		Wireguard for T5 SV Series			50		
SV5RIW4ASLD		Asymmetric Solid White Reflector			50		
SV5LWW4SSLD		Symmetric Solid White Reflector			70		
SV5FLW4SSLT		Symmetric Slotted Frosted Lens			70		
SV5RIW4SSLD		Symmetric Solid White Reflector			70		
SV5RIS4SSLD		Symmetric Solid Silver Reflector			70		
<b>N Series Strip - Formerly Surface T8 Strip SB Narrow Series - See Cross Reference Guide (Page 10)</b>							
N117-UNV-1/1-EB	2-1/2"x24"	1-T8/17	120/277	T8 ELECT.	100		
N125-UNV-1/1-EB	2-1/2"x36"	1-T8/25	120/277	T8 ELECT.	100		
N125-347-1/1-EB	2-1/2"x36"	1-T8/25	347	T8 ELECT.		50	
N132-UNV-1/1-EB	2-1/2"x48"	1-T8/32	120/277	T8 ELECT.	80		18
N132-347-1/1-EB	2-1/2"x48"	1-T8/32	347	T8 ELECT.	100		
TN132-347-1/2-EB	2-1/2" x 96"	1-T8/32	347	T8 ELECT.	100		
TN132-UNV-1/2-EB	2-1/2"x96"	2-T8/32	120/277	T8 ELECT.	150		
<b>T Series Strip - Formerly Surface T8 Strip SB Wide Series - See Cross Reference Guide (Page 10)</b>							
T232-UNV-1/2-EB	4-1/8"x48"	2-T8/32	120/277	T8 ELECT.	80		18
T232-347-1/2-EB	4-1/8"x48"	2-T8/32	347	T8 ELECT.	80		
TT232-UNV-1/4-EB	4-1/8"x96"	4-T8/32	120/277	T8 ELECT.	80		18
TT232-347-1/4-EB	4-1/8"x96"	4-T8/32	347	T8 ELECT.	80		
T296-120-1/2-EB	4-1/8"x96"	2-T8/59	120	T8 ELECT.	50		



Commercial Wrap



Designer Wrap



SV Series Strip



N Series Strip



T Series Strip

Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	

## Strips Continued

### N & T Series Accessories – See Cross Reference Guide (Page 10)

CGS-4	Wireguard for N Series Strip				150		
CG-4	Wireguard for T Series Strip				300		
TSS-4	Symmetric Silver Reflector for T Series Strip				100		
NSR-4	Symmetric White Reflector for N Series Strip				30		

### LED FluxStream LED

LF4FR3935ULAG	2-1/8" x 44-7/8"	3900lms/3500K	120/277	LED driver	100		
LF4FR3940ULAG	2-1/8" x 44-7/8"	3900lms/4000K	120/277	LED driver	100		

### LED FluxStream Reflector LED

LFR4FLSLD3740UDZT	4-7/8" x 44-1/2"	3700lms/4000K	120/277	0-10v dim	60		
LFR4FLSLD3740ULAG	4-7/8" x 44-1/2"	3700lms/4000K	120/277	LED driver	60		

## Decorative

### LED EvoKit LED Retrofit Kit

501734	2'x2'	3210lms/3500K	120/277	0-10v dim		30	
501759	2'x2'	3280lms/4000K	120/277	0-10v dim		30	
501791	2'x2'	3210lms/3500K	120/277	Line Voltage dim		30	
501817	2'x4'	4100lms/3500K	120/277	0-10v dim		30	
501866	2'x4'	4280lms/4000K	120/277	0-10v dim		30	
501874	2'x4'	4180lms/3500K	120/277	Line Voltage dim		30	

### Arioso Two Piece Perforated Basket 2x2 – See Cross Reference Guide (Page 9)

2AVG2CF40-SPMW-UNV-1/2-EB	2'x2'	2-TT5/40	120/277	TT5 ELECT.	30		
2AVG2CF40-SPMW-347-1/2-EB	2'x2'	2-TT5/40	347	TT5 ELECT.		30	

### Arioso Two Piece Perforated Basket 2x4 – See Cross Reference Guide (Page 9)

2AVG232-SPMW-UNV-1/2-EB	2'x4'	2-T8/32	120/277	T8 ELECT.	30		
2AVG232-SPMW-347-1/2-EB	2'x4'	2-T8/32	347	T8 ELECT.		30	
2AVG332-SPMW-UNV-1/3-EB	2'x4'	3-T8/32	120/277	T8 ELECT.	30		14
2AVG332-SPMW-347-1/3-EB	2'x4'	3-T8/32	347	T8 ELECT.		30	

### Arioso Two Piece Perforated Basket 1x4 – See Cross Reference Guide (Page 9)

1AVG232-SPMW-UNV-1/2-EB	1'x4'	2-T8/32	120/277	T8 ELECT.	30		
1AVG232-SPMW-347-1/2-EB	1'x4'	2-T8/32	347	T8 ELECT.		30	14



# Indoor Commercial and Industrial

Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	

## Decorative Continued

### Arioso Recessed Shallow Perf 2x2 - See Cross Reference Guide (Page 9)

2AVEG224HO-ACR-UNV-1/2-EB	2'x2'	2-T5HO/24	120/277	T5HO ELECT.	35		12, 14
---------------------------	-------	-----------	---------	-------------	----	--	--------

### Arioso Recessed Shallow Perf 2x4 - See Cross Reference Guide (Page 9)

2AVEG228-ACR-UNV-1/2-EB	2'x4'	2-T5/28	120/277	T5 ELECT.	35		14
2AVEG228-ACR-347-1/2-EB	2'x4'	2-T5/28	347	T5 ELECT.		35	

### Arioso Recessed Shallow Perf 1x4 - See Cross Reference Guide (Page 9)

1AVEG228-ACR-UNV-1/2-EB	1'x4'	2-T5/28	120/277	T5 ELECT.	35		
-------------------------	-------	---------	---------	-----------	----	--	--

### LEDArioso Recessed LED Ribbed Acrylic 4" - 3500K

1AVEG38L835-4-ACR-347	1'x4'	3800 lms/3500K	347	LED driver		35	14
1AVEG38L835-4-ACR-UNV	1'x4'	3800 lms/3500K	120/277	LED driver	35		
2AVEG38L835-2-ACR-347	2'x2'	3800 lms/3500K	347	LED driver		35	
2AVEG38L835-2-ACR-UNV	2'x2'	3800 lms/3500K	120/277	LED driver	35		14
2AVEG38L835-4-ACR-347	2'x4'	3800 lms/3500K	347	LED driver		35	
2AVEG38L835-4-ACR-UNV	2'x4'	3800 lms/3500K	120/277	LED driver	35		14

### LEDA DayLine

2CLG36L840-2-D-UNV-DIM	2'x2'	3600 lms/3500K	120/277	0-10v dim	15		14
2CLG36L835-2-D-UNV-DIM	2'x2'	3600 lms/3500K	120/277	0-10v dim	15		
2CLG41L840-4-D-UNV-DIM	2'x4'	4100 lms/4000K	120/277	0-10v dim	15		
2CLG41L835-4-D-UNV-DIM	2'x4'	4100 lms/3500K	120/277	0-10v dim	15		

### LEDSpecPlus LED

SPS22GFSVA38A40ULAG	2'x2'	3800 lms/4000K	120/277	LED driver		35	
SPS24GFSVA43A40ULAG	2'x4'	4300 lms/4000K	120/277	LED driver		35	

## Linear

### IS/IA Industrial Strips - Formerly Industrial EE/FF Series Strips - See Cross Reference Guide (Page 10, 11)

IS232-UNV-1/2-EB	10"x48"	2-T8/32	120/277	T8 ELECT.	112		17
IS232-347-1/2-EB	10"x48"	2-T8/32	347	T8 ELECT.	56		
TIS232-UNV-1/4-EB	10"x96"	4-T8/32	120/277	T8 ELECT.	112		17
TIS232-347-1/4-EB	10"x96"	4-T8/32	347	T8 ELECT.	112		
IA232-UNV-1/2-EB	10"x48"	2-T8/32	120/277	T8 ELECT.	56		
TIA232-UNV-1/4-EB	10"x96"	4-T8/32	120/277	T8 ELECT.	112		
TIA232-347-1/4-EB	10"x96"	4-T8/32	347	T8 ELECT.		56	
IA254HO-UNV-1/2-EB	10"x96"	2-T5HO/54	120/277	T5HO ELECT.		56	

### IS/IA Industrial Strips Accessories - See Cross Reference Guide (Page 10)

FKR-173	Wireguard for IS/IA Series				100		
FKR-126	5' Chain Hanging Kit for IS/IA Series				200		

### 1F Industrial Series - Formerly TU Turret Series Strips - See Cross Reference Guide (Page 10)

1F232-PP-UNV-1/2-EB	11-3/4"x48"	2-T8/32	120/277	T8 ELECT.		35	17
---------------------	-------------	---------	---------	-----------	--	----	----

### 1F Industrial Series Accessories - See Cross Reference Guide (Page 10)

FL-173	Turret Wireguard				50		
--------	------------------	--	--	--	----	--	--





Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	

## High Bay

### LED FBX LED Highbay

FBX24LL40-347	2'x2'	24,000 lms/4000K	120/277	0-10v dim	40		
FBX24LL40-UNV	2'x2'	24,000 lms/4000K	347	0-10v dim	40		

### FBX Accessories

FBX-CHAIN-KIT	FBX Chain Kit				40		
FBX-PENHGR	FBX Pendant Hanger				40		
WG-FBX-2W	FBX Wireguard						

### SHE

SHE654HO-UNV-1/42EB-GENRS-CORD	16-1/8" X 48-1/8"	6-T5HO/54	120/277	T5HO ELEC.	100		20 - 27
SHE654HO-347-1/42EB-GENRS-CORD	16-1/8" X 48-1/8"	6-T5HO/54	347	T5HO ELEC.	50		
SHE454HO-UNV-1/4EB-GENRS-CORD	11-1/8" X 48-1/8"	4-T5HO/54	120/277	T5HO ELEC.	100		20 - 27
SHE454HO-347-1/4EB-GENRS-CORD	11-1/8" X 48-1/8"	4-T5HO/54	347	T5HO ELEC.	50		

### SHE Accessories

SHE4L	SHE4L Frame & Lens - 11-1/8"x48"				50		
SHE6L	SHE4L Frame & Lens - 16-1/8"x48"				50		

### FBD Fluorescent High Bay - Formerly T-Bay - T5HO/T8 Fluorescent High/Low Bay - See Cross Reference Guide (Page 10)

FBD654HO-347-1/42-EB-WC6-LPT841	19-7/8" x 48"	6-T5HO/54	347	T5HO ELEC.		30	
FBD454HO-UNV-1/4-EB-WC6-LPT841	13-3/4" x48"	4-T5HO/54	120/277	T5HO ELEC.		60	
FBD454HO-347-1/4-EB-WC6-LPT841	13-3/4" x48"	4-T5HO/54	347	T5HO ELEC.		60	
FBD654HO-347-1/42-EB	19-7/8" x 48"	6-T5HO/54	347	T5HO ELEC.	52		
FBD654HO-UNV-1/42-EB	19-7/8" x 48"	6-T5HO/54	120/277	T5HO ELEC.	52		20 - 27
FBD454HO-UNV-1/4-EB	13-3/4" x48"	4-T5HO/54	120/277	T5HO ELEC.	72		20 - 27
FBD654HO-UNV-1/42-EB-WC6-LPT841	19-7/8" x 48"	6-T5HO/54	120/277	T5HO ELEC.		30	
FBD454HO-347-1/4-EB	13-3/4" x48"	4-T5HO/54	347	T5HO ELEC.	72		

### FBD Series Accessories - See Cross Reference Guide (Page 10)

WG-FBD4	Wireguard Narrow-body				50		
WG-FBD6	Wireguard Wide-body				50		

### TriLyte - T5/T8 Fluorescent High Bay

FH4C4DXX454UNVPV	17"x4'	4-T5HO/54	120/277	T5HO ELEC.	60		20 - 27
FH4C4DXX454347PV	17"x4'	4-T5HO/54	347	T5HO ELEC.	60		
FH4C5DXX654UNVP6	23"x4'	6-T5HO/54	120/277	T5HO ELEC.	30		20 - 27
FH4C5DXX654347P6	23"x4'	6-T5HO/54	347	T5HO ELEC.	30		

### TriLyte Accessories

FH4WG4	Wireguard Narrow-body				60		
FH4WG5	Wireguard Wide-body				30		

### Value Highbay

VH400MAK-T	15" Dia.	ED37/MH400	Tri Tap	CWA	40		20 - 27
------------	----------	------------	---------	-----	----	--	---------



# Indoor Industrial

Catalogue no.	Size	Lamp/Watts	Voltage	Ballast	Service Quantity		Appl. Page
					2 days	10 days	

## High Bay Continued

### Coolbay

707P400MAK-T	18" Dia.	ED37 MH/400	Tri Tap	CWA	30		20 - 27
708P1000MAL3C-T	20" Dia.	BT56 MH/1000	Tri Tap	CWA	30		20 - 27

### Ultrabay

843P400MAL3C-T	22" Dia.	ED37 MH/400	Tri Tap	CWA		25	20 - 27
----------------	----------	-------------	---------	-----	--	----	---------

### Protected

### APX Series Vapourtight - Formerly Pacific - Vapourtight Fluorescent Highbay - See Cross Reference Guide (Page 11)

APX454HO-UNV-A-1/4-EB-WTR	14-5/8"x52"	4-T5HO/54	120/277	T5HO ELECT.		25	20 - 27
APX454HO-347-A-1/4-EB-WTR	14-5/8"x52"	4-T5HO/54	347	T5HO ELECT.		25	
APX654HO-UNV-A-1/42-EB-WTR	14-5/8"x52"	6-T5HO/54	120/277	T5HO ELECT.		25	20 - 27
APX654HO-347-A-1/42-EB-WTR	14-5/8"x52"	6-T5HO/54	347	T5HO ELECT.		25	

### DW Vaporlume - Formerly Sealatron - Vapourtight Fluorescent Luminaire - See Cross Reference Guide (Page 11)

DWAE232-UNV-1/2-EB	7" x50"	2-T8/32	120/277	T8 ELECT.	50		17
DWAE232-347-1/2-EB	7" x50"	2-T8/32	347	T8 ELECT.		35	
DWAE254HO-UNV-1/2-EB	7" x50"	2-T5HO/54	120/277	T5HO ELECT.		25	
DWAE254HO-347-1/2-EB	7" x50"	2-T5HO/54	347	T5HO ELECT.		25	
TDWAE232-UNV-1/4-EB	7" x97-13/16"	4-T8/32	120/277	T8 ELECT.	35		

### Vaporlume Luminaire

BVL232-UNV-1/2EB-GENIS-SS	6-3/4" x50-3/4"	2-T8/32	120/277	T8 ELECT.		25	
BVL254HO-UNV-1/2EB-GENRS-SS	6-3/4" x50-3/4"	2-T5HO/54	120/277	T5HO ELECT.		25	

### LEO Vaporlume LED

DWAE35L840-4-UNV	7" x50"	3500 lms/4000K	120/277	0-10v dim		25	
DWAE43L840-4-UNV	7" x50"	4300 lms/4000K	120/277	0-10v dim		25	

### Vaporlume LED Accessories

TBK	Stainless Steel Top Bracket Kit (pair of brackets plus hardware)					25	
-----	--	--	--	--	--	----	--

## Dock Lights

### Industrial Dock Light

ID1K42-120		PAR38/R40 300W	120		20		
------------	--	----------------	-----	--	----	--	--

## Accessories

### Drywall Flange Kits - For G type troffers in ceilings requiring flanges. Not for continuous row mounting

FMA14	1' x 4' Cut-out Dim: 12-5/8" (321mm) x 48-5/8" (1235mm)				150	
FMA22	2' x 2' Cut-out Dim: 24-5/8" (626mm) x 24-5/8" (626mm)				100	
FMA24	2' x 4' Cut-out Dim: 24-5/8" (626mm) x 48-5/8" (1235mm)				100	

### Stem Kits - include one canopy, stem rod and hardware. One kit per suspension point required.

CS400 / CS-12	Fixed Stem and Canopy Kit 12"	36	
CS400 / CS-48	Fixed Stem and Canopy Kit 48"	36	



# CFI/Day-Brite update cross reference guide

Previous Catalogue No.	Change Type	New Catalogue No.
------------------------	-------------	-------------------

**LEGEND: L= Change in catalogue number only M= Change in model**

## Decorative

Previous Catalogue No.	Change Type	New Catalogue No.
<b>Arioso Recessed Shallow Perf 1x4</b>		<b>Arioso Recessed Shallow Perf 1x4</b>
1AVEG228-ACR-UNV-1/2EB10R	L	1AVEG228-ACR-UNV-1/2-EB
<b>Arioso Acrylic 1x4</b>		<b>Arioso Two Piece Perforated Basket 1x4</b>
1AVG232-SPMW-347-1/2EB10I	L	1AVG232-SPMW-UNV-1/2-EB
1AVG232-SPMW-UNV-1/2EB10I	L	1AVG232-SPMW-347-1/2-EB
<b>Arioso Recessed Shallow Perf 2x2</b>		<b>Arioso Recessed Shallow Perf 2x2</b>
2AVEG224HO-ACR-UNV-1/2EB10R	L	2AVEG224HO-ACR-UNV-1/2-EB
<b>Arioso Recessed Shallow Perf 2x4</b>		<b>Arioso Recessed Shallow Perf 2x4</b>
2AVEG228-ACR-347-1/2EB10R	L	2AVEG228-ACR-347-1/2-EB
2AVEG228-ACR-UNV-1/2EB10R	L	2AVEG228-ACR-UNV-1/2-EB
<b>Arioso Acrylic 2x2</b>		<b>Arioso Two Piece Perforated Basket 2x2</b>
2AVG2CF40-SPMW-347-1/2EB10R	L	2AVG2CF40-SPMW-UNV-1/2-EB
2AVG2CF40-SPMW-UNV-1/2EB10R	L	2AVG2CF40-SPMW-347-1/2-EB
<b>Arioso Acrylic 2x4</b>		<b>Arioso Two Piece Perforated Basket 2x4</b>
2AVG232-SPMW-347-1/2EB10I	L	2AVG232-SPMW-347-1/2-EB
2AVG232-SPMW-UNV-1/2EB10I	L	2AVG232-SPMW-UNV-1/2-EB
2AVG332-SPMW-347-1/3EB10I	L	2AVG332-SPMW-347-1/3-EB
2AVG332-SPMW-UNV-1/3EB10I	L	2AVG332-SPMW-UNV-1/3-EB

## Recessed

Previous Catalogue No.	Change Type	New Catalogue No.
<b>LP3</b>		<b>LP3</b>
2LP3GA231U6R-33AL-UNV-1/2EB10I	L	2LP3GA231U6R-33AL-UNV-1/2-EB
2LP3GA332-36AL-347-1/3-EB10I	L	2LP3GA332-36AL-347-1/3-EB
2LP3GA332-36AL-UNV-1/3-EB10I	L	2LP3GA332-36AL-UNV-1/3-EB
<b>AA Series Troffer 1'x4'</b>		<b>TG8 Series Troffer 1'x4'</b>
AA248-347HIVA	L, M	1TG8232-01-347-1/2-EB
AA248-UNVHIVA	L, M	1TG8232-01-UNV-1/2-EB
<b>AA Series Troffer 2'x2'</b>		<b>TG8 Series Troffer 2'x2'</b>
AA2U6-347HIVA	L, M	2TG8231U6R-01-347-1/2-EB
AA2U6-UNVHIVA	L, M	2TG8231U6R-01-UNV-1/2-EB
<b>AA Series Troffer 2'x4'</b>		<b>TG8 Series Troffer 2'x4'</b>
AA2W8-347HIVA	L, M	2TG8232-01-347-1/2-EB
AA2W8-UNVHIVA	L, M	2TG8232-01-UNV-1/2-EB
AA348-347H3VA	L, M	2TG8332-01-347-1/3-EB
AA348-UNVH3VA	L, M	2TG8332-01-UNV-1/3-EB
AA448-347H4VA	L, M	2TG8432-01-347-1/4-EB
AA448-UNVH4VA	L, M	2TG8432-01-UNV-1/4-EB

## Linear

Previous Catalogue No.	Change Type	New Catalogue No.
<b>Industrial EE Series</b>		<b>IS Series</b>
EE248 - 347HI	L, M	IS232-347-1/2-EB
EE248 - UNVHI	L, M	IS232-UNV-1/2-EB
EE248T - 347H4	L, M	TIS232-347-1/4-EB
EE248T - UNVH4	L, M	TIS232-UNV-1/4-EB
<b>EE Series Accessories</b>		<b>IS Series Accessories</b>
EE9G4	L, M	FKR-173
EE9HC	L, M	FKR-126

# CFI/Day-Brite update cross reference guide

Previous Catalogue No.	Change Type	New Catalogue No.
------------------------	-------------	-------------------

## Linear

<b>Industrial FF Series</b>	<b>IA Series</b>	
FF248 - UNVHI	L, M	IA232-UNV-1/2-EB
FF248T - 347H4	L, M	TIA232-347-1/4-EB
FF248T - UNVH4	L, M	TIA232-UNV-1/4-EB
FF254 - UNVPG	L, M	IA254HO-UNV-1/2-EB
<b>T-Bay - T5HO/T8 Fluorescent High/Low Bay</b>	<b>FBD Fluorescent High/Low Bay</b>	
FHT4C4DX7454347PV6	L, M	FBD454HO-347-1/4-EB-WC6-LPT841
FHT4C4DX7454UNVPV6	L, M	FBD454HO-UNV-1/4-EB-WC6-LPT841
FHT4C4DXX454347PV	L, M	FBD454HO-347-1/4-EB
FHT4C4DXX454UNVPV	L, M	FBD454HO-UNV-1/4-EB
FHT4C5DX7654347P66	L, M	FBD654HO-347-1/42-EB-WC6-LPT841
FHT4C5DX7654UNVP66	L, M	FBD654HO-UNV-1/42-EB-WC6-LPT841
FHT4C5DXX654347P6	L, M	FBD654HO-347-1/42-EB
FHT4C5DXX654UNVP6	L, M	FBD654HO-UNV-1/42-EB
<b>T-Bay Accessories</b>	<b>FBD Series Accessories</b>	
FHTWG4	L, M	WG-FBD4
FHTWG5	L, M	WG-FBD6
<b>Industrial Turret Series</b>	<b>IF Industrial Series</b>	
TU248 - UNVHI	L, M	1F232-PP-UNV-1/2-EB
<b>Industrial Turret Accessories</b>	<b>IF Industrial Series Accessories</b>	
TU9G4	L, M	FL-173

## Strips

<b>Surface T8 Strip SB Narrow Series</b>	<b>N Series Strip</b>	
SB124-UNVHI	L, M	N117-UNV-1/1-EB
SB136-347HI	L, M	N125-347-1/1-EB
SB136-UNVHI	L, M	N125-UNV-1/1-EB
SB148-347HI	L, M	N132-347-1/1-EB
SB148-UNVHI	L, M	N132-UNV-1/1-EB
SB148T-347HI	L, M	TN132-347-1/2-EB
<b>Surface T8 Strip SB Wide Series</b>	<b>T Series Strip</b>	
SB248-347HI	L, M	T232-347-1/2-EB
SB248-UNVHI	L, M	T232-UNV-1/2-EB
SB248T-347H4	L, M	TT232-347-1/4-EB
SB248T-UNVH4	L, M	TT232-UNV-1/4-EB
SB296S-UNVHI	L, M	T296-120-1/2-EB
<b>SB Series Accessories</b>	<b>N/T Series Accessories</b>	
SB8G1-48	L, M	CGS-4
SB8G2-48	L, M	CG-4
SB9R14S-48	L, M	TSS-4
SB9R2-48	L, M	NSR-4

# CFI/Day-Brite update cross reference guide

Previous Catalogue No.	Change Type	New Catalogue No.
<b>Surface</b>		
<b>Surface SLB Series 1'x4'</b>	<b>SMR Series 1'x4'</b>	
SLB1SFSVA232347HI	L, M	1SMR232-FA01-347-1/2-EB
SLB1SFSVA232UNVHI	L, M	1SMR232-FA01-UNV-1/2-EB
<b>Surface SLB Series 2'x4'</b>	<b>SMR Series 2'x4'</b>	
SLB2SFSVA432UNVH4	L, M	2SMR432-FS01-UNV-1/4-EB
<b>Surface Wrap</b>	<b>OW Wrap</b>	
TX248-347HI	L, M	OWN232-347-1/2-EB
TX248-UNVHI	L, M	OWN232-UNV-1/2-EB
TX448-UNVH4	L, M	OWW432-UNV-1/4-EB
<b>Protected</b>		
<b>Pacific - Vapourtight Fluorescent Highbay</b>	<b>APX Series - Vapourtight Fluorescent Highbay</b>	
VTH4454ST347PV	L, M	APX454HO-347-A-1/4-EB-WTR
VTH4454STUNVPV	L, M	APX454HO-UNV-A-1/4-EB-WTR
VTH4654ST347P6	L, M	APX654HO-347-A-1/42-EB-WTR
VTH4654STUNVP6	L, M	APX654HO-UNV-A-1/42-EB-WTR
<b>Sealatron - Vapourtight Fluorescent Luminaire</b>	<b>DW Vaporlume</b>	
VTN4232ST347HI	L, M	DWAE232-347-1/2-EB
VTN4232STUNVHI	L, M	DWAE232-UNV-1/2-EB
VTN4254ST347PG	L, M	DWAE254HO-347-1/2-EB
VTN4254STUNVPG	L, M	DWAE254HO-UNV-1/2-EB
VTN8232STUNVH4	L, M	TDWAE232-UNV-1/4-EB
<b>Accessories</b>		
<b>Drywall Flange Kits</b>	<b>Drywall Flange Kits</b>	
FK91X4	L, M	FMA14
FK92X2	L, M	FMA22
FK92X4	L, M	FMA24
<b>Stem Kits</b>	<b>Stem Kits</b>	
STKF12	L, M	CS400 / CS-12
STKF48	L, M	CS400 / CS-48

# Indoor commercial linear fluorescent lighting

## Step 1 - Decide on a suitable light level

Analyze the existing lighting system and the task being performed. This secondary step is necessary because experience has shown that worker productivity and light levels go hand in hand. The following table is a quick reference for the accepted standards of these applications.

Interior Applications	Illuminance Horizontal	Category/Value (LUX)	Illuminance Vertical	Category/Value (LUX)
<b>Determination of illuminance categories</b>				
<b>Open Plan Office</b>				
Intensive VDT use	Important	150 lx (15 fc)	Very Important	50 lx (5 fc)
Intermittent VDT use	Important	300 lx (50 fc)	Important	50 lx (5 fc)
<b>Private Offices</b>				
Private Office	Important	500 lx (50 fc)	Important	50 lx (5 fc)
<b>Schools</b>				
Hallways	Not Important		Very Important	100 lx (10 fc)
Photocopies (3rd Generation)	Very Important	500 lx (50 fc)	Not Important	
<b>Public Spaces</b>				
Banks (general circulation areas)	Somewhat Important	100 lx (10 fc)	Somewhat Important	30 lx (3 fc)
<b>Healthcare (Clinics &amp; Offices)</b>				
Patient Rooms (Ambient Lighting)	Not Important	50 lx (5 fc)	Not Important	30 lx (3 fc)
<b>General Areas</b>				
Stairways, Corridors, Toilets & Washrooms	Important	10 - 15 fc	Not Important	
Lobbies, Lounges, Receptions Areas	Important	15 - 20 fc	Not Important	

Indoor recommendations from the IES for quality lighting.

## Step 2 - Choose a luminaire that fits your application

There are different styles of luminaires, and by design, each has particular applications they are designed for. Picking the right luminaire for your application can be just as important as the installation. Here are some fluorescent luminaires shown within the guide and the applications that are recommended for each of them.

### Shielded Glare-Free Architectural:

Architectural styling combined with visually exciting elements provides shadowless balanced brightness. Low brightness glow provides the occupant with a soft awareness of the lighting element, while increasing depth perception and a sense of orientation within a space.

#### Applications:

Open office and lobby areas where reading and computer terminal tasks are undertaken. Ideal for office, retail, senior living and hospital environments.

### Parabolic:

Ideal for office environments. This luminaire's deep cell louver allows for a visual cut-off of the lamp to the eye as reducing visual glare while still emitting sufficient light along task (horizontal) and VDT monitor (vertical) work planes.

#### Applications:

Open office and lobby areas where reading and computer terminal tasks are undertaken.

### Lensed Troffer:

These are high performance lens troffers that offer adequate lighting at an economically based value. These models offer hemmed edges which eliminate the hazard of cuts to the hand during installation. They also incorporate light leak stops which block light from being visible in areas other than within the door frame. Mitered corner door frames offer a finished look to the door frame.

#### Applications:

Classrooms, open office and retail areas where general lighting is required at budget levels.

### Modular Surface Lens:

The SLB is a high quality, surface modular luminaire that features a shallow and durable one-piece construction. This design feature helps to create a clean ceiling appearance wherever it's installed. This luminaire also allows for ease in its installation due to its reversible flush steel door and snap-on wiring channel cover. Its shallow 4" deep design allows it to be utilized in areas where low plenum depth restrictions are apparent.

#### Applications:

Ideal in areas for low ceiling applications or areas in which recessing a luminaire is not feasible. Suitable in classrooms, open office and retail areas where general lighting is required at budget levels.

### Surface Wrap Lens:

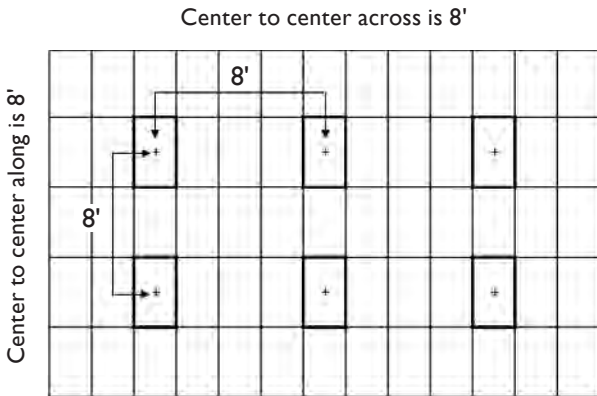
Low profile 2-5/8" deep lensed luminaire. The wrap around lens design delivers a floating panel effect, and because of its wraparound design, emits light laterally which aides in reducing ceiling contrast.

#### Applications:

Ideal in areas for low ceiling applications or areas in which recessing a luminaire is not feasible. Suitable in classrooms, open office and retail areas where general lighting is required at budget levels.

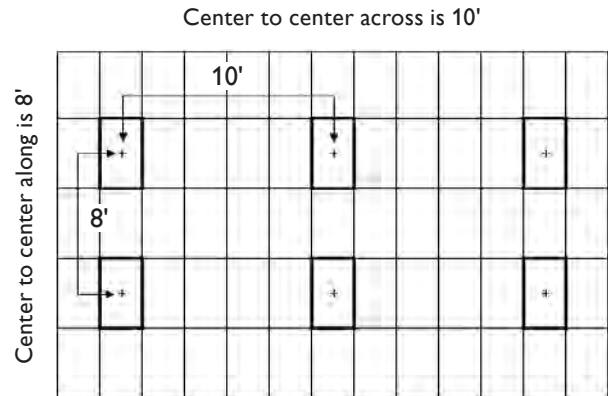
### Step 3 - Space luminaires appropriately

The following table outlines the spacing, and the intensity of light, in footcandles, one can expect when installing these luminaires. The spacing of the luminaires in this example are to be measured center to center. As shown within these charts (see below), the 8' x 8' spacing means that the distance to the next luminaire is 8ft. in either direction, across or along.



**8' x 8' Spacing Example**

Ceiling Grid: 2' x 4' grid  
 Luminaire Size: 2' x 4'  
 Room Dimensions: 26' x 20'



**8' x 10' Spacing Example**

Ceiling Grid: 2' x 4' grid  
 Luminaire Size: 2' x 4'  
 Room Dimensions: 26' x 20'

Luminaire Size	Part Number	Average footcandles Center to Center	
		8 x 10	8 x 8
1'x4'	1TG8232-01-UNV-1/2-EB	42	52
2'X2'	2TG8231U6R-01-UNV-1/2-EB	40	48
2'X4'	2TG8232-01-UNV-1/2-EB	48	50
2'X2'	2AVEG224HO-ACR-UNV-1/2-EB	32	41
2'X4'	2AVG232-PMW-UNV-1/2-EB	31	40
2'X4'	2LP3GA231U6R-33AL-UNV-1/2-EB	40	52

Footcandles are based on room size 50' (W) x 8.5' (H)

# Indoor commercial linear fluorescent lighting

## Luminaire performance charts

The following charts represent the footcandles and watts per square feet achieved with specific luminaires that can be ordered through the Service Smart - Spec Smart program.

Room	Spacing	Units	Recessed Direct/Indirect			
			1AVEG38L835-4-ACR-347	1AVG232-PMW-347-1/2-EB	2AVEG224HO-ACR-UNV-1/2-EB	2AVEG228-ACR-UNV-1/2-EB
60X60X9	8'x8'	FC	57	38	41	45
		W/Sq Ft	0.718	0.871	0.924	0.871
	8'x10'	FC	44	30	32	38
		W/Sq Ft	0.539	0.653	0.693	0.747
	10'X12'	FC	28	21	21	27
		W/Sq Ft	0.337	0.467	0.433	0.533
	12'X12'	FC	23	18	17	23
		W/Sq Ft	0.281	0.389	0.361	0.444
			2AVEG38L835-2-ACR-UNV	2AVEG38L835-4-ACR-UNV	2AVG332-PMW-UNV-1/3-EB	2CLG36L840-2-D-UNV-DIM
60X60X9	8'x8'	FC	55	45	70	53
		W/Sq Ft	0.72	0.549	1.184	0.752
	8'x10'	FC	42	40	51	41
		W/Sq Ft	0.54	0.47	1.105	0.564
	10'X12'	FC	27	28	37	27
		W/Sq Ft	0.338	0.336	0.725	0.352
	12'X12'	FC	23	23	31	22
		W/Sq Ft	0.281	0.28	0.604	0.294

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Recessed Direct/Indirect		
			OWN232-UNV-1/2-EB	OWW432-UNV-1/4-EB	1SMR232-FA01-UNV-1/2-EB
50x70x8.5	8' x 8'	FC	49	90	50
		W/Sq Ft	0.90	1.80	0.90
	8' x 10'	FC	48	77	40
		W/Sq Ft	0.90	1.40	0.80
12x16x8.5	6' x 8'	FC	54	54	50
		W/Sq Ft	1.30	1.30	1.20

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)



Room	Spacing	Units	Recessed Flat Lens				
			1TG8232-01-UNV-1/2-EB	2TG8231U6R-01-UNV-1/2-EB	2TG8232-01-UNV-1/2-EB	2TG8332-01-UNV-1/3-EB	2TG8432-01-UNV-1/4-EB
50x70x8.5	8' x 8'	FC	52	48	50	94	113
		W/Sq Ft	0.90	0.90	0.96	1.30	1.80
	8' x 10'	FC	42	40	48	78	94
		W/Sq Ft	0.80	0.80	0.86	1.10	1.40
12x16x8.5	6' x 8'	FC	45	47	50	90	111
		W/Sq Ft	1.30	1.20	0.96	1.80	2.30

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Recessed Parabolic	
			2LP3GA231U6R-33AL-UNV-1/2-EB	2LP3GA332-36AL-UNV-1/3-EB
60X60X9	8'x8'	FC	52	83
		W/Sq Ft	1.013	1.6
	8'x10'	FC	40	65
		W/Sq Ft	0.76	1.2
	10'X12'	FC	26	43
		W/Sq Ft	0.475	0.75
	12'X12'	FC	22	36
		W/Sq Ft	0.396	0.625

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Results based on: Average footcandles maintained, total Light Loss Factor (L.L.F.)=0.82 Reflectances: 80% Ceiling (white acoustical tile), 50% Wall (off-white paint), 20% Floor (medium grey carpet). RE835 T8 lamps rated at 3000 lumens, RE835 TT5 lamps rated at 3150 lumens, RE835 T5 lamps rated at 2610 lumens & RE835 T5HO lamps rated at 4400 lumens. 1' x 1' calculation grid at 30" from finished floor. Results may vary.

Calculations have been performed according to IESNA & CIE standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

# Indoor industrial fluorescent lighting

## Step 1 - Choose a luminaire that fits your application

### Open Industrials:

General purpose open industrial are well suited for satisfying both budget and basic lighting requirements. This fixture provides rigidity in its ballast channel and reflector design to withstand low levels of abuse in areas of industrial activity.

#### Applications

Ideal for light-duty task lighting, aisles, warehousing, storage and retail applications.

### Wet Location:

Completely moisture resistant, these gasketed enclosures are constructed of a fiberglass upper body and an inner crepe patterned impact resistant lens. The lens is retained and secured against an inner closed cell neoprene by tension mounted latches.

#### Applications

Ideal for parking garages, car washes, schools and kitchens.

### Industrial Strips:

Created with the installer in mind, the T5, T8 and strip and T8 sidemount strips incorporate labor savings and solid design features. Time saving flip-on end caps and ballast covers install quickly. Strengthening ribs ensure uniformity and stability of the channel housing. It is quality lighting that will save you time and dollars.

#### Applications

Ideal for cove lighting or areas in which general purpose and task lighting are required.



## Step 2 - Decide on a suitable light level

Analyze the existing lighting system and the task being performed. This important first step is necessary because experience has shown that worker productivity and light levels go hand in hand. The following table is a quick reference for the accepted standards of these applications.

Application	Task	Footcandles
Performance of visual tasks of high contrast and large size		
Material Handling: Simple	Loading and unloading trucks and freight cars	10 - 20 fc
Material Handling: Moderate Difficulty	Wrapping, Labelling, and packaging	20 - 50 fc
Performance of visual tasks of high contrast and small size or visual tasks of low contrast and large size		
Warehouse and Storage	Active: The handling of bulky items with large labels	10 - 20 fc
Warehouse and Storage	Active: The handling of bulky items with small labels	20 - 50 fc
Laundries	Washing, flat work ironing, weighing, listing, marking	20 - 30 fc
Garages	Repairs	40 - 75 fc
Service desk	Invoicing	20 - 30 fc

### Step 3 - Space the luminaires appropriately

The following table outlines the spacing, and the intensity of light, in footcandles, one can expect when installing these luminaires.

The spacing of the luminaire in this example is to be measured center to center. As shown within this chart, the 10 feet center to center spacing means that the distance to the next luminaire is 10ft in either direction, across or along.

#### Industrial Spacing Example

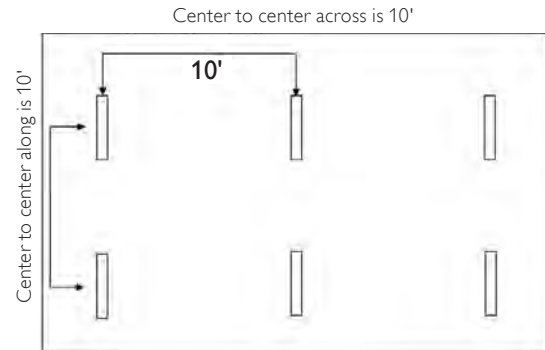
Ceiling Grid: 2 x 4 grid

Luminaire Size: Nominal 1' x 4'

Room Dimensions: 26' (W) x 20'(L) x 12'(H)

Luminaire Size	Part Number	Average footcandles Center to Center 10 ft
4'	TH248HO-120-1/1-EB	53
4'	SV4S254UNVPG	83
4'	1F232-PP-UNV-1/2-EB	66
4'	IS232-UNV-1/2-EB	50

Footcandles are based on room size 50' (W) x 70' (L) x 12' (H)



#### Room Spacing Units Open Industrials



Room	Spacing	Units	IS232-UNV-1/2-EB	TIS232-UNV-1/4-EB	1F232-PP-UNV-1/2-EB
50x70x12	12' ctr	FC	29	44	30
		W/Sq Ft	2.5	1.56	2
50x70x8.5	10' ctr	FC	50	68	66
		W/Sq Ft	1.7	1.04	1.7
50x70x8.5	12' ctr	FC	25	54	60
		W/Sq Ft	2.5	1.3	2.5
30x30x8.5	12' ctr	FC	38	44	63
		W/Sq Ft	1.7	1.3	1.7

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

#### Room Spacing Units Wet Location



Room	Spacing	Units	DWAE232-UNV-1/2-EB
50x70x12	12' ctr	FC	24
		W/Sq Ft	1.8
50x70x8.5	10' ctr	FC	45
		W/Sq Ft	1.2
50x70x8.5	12' ctr	FC	38
		W/Sq Ft	1.7
30x30x8.5	12' ctr	FC	33
		W/Sq Ft	1.6

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

# Indoor industrial fluorescent lighting

Room	Spac- ing	Units	Industrial Strips				
------	--------------	-------	-------------------	--	--	--	--



			T232-UNV-1/2-EB	TT232-UNV-1/4-EB	N132-UNV-1/1-EB	SV4S154UNVPG	SV4S254UNVPG
50x70x8.5	10' ctr	FC	32	88	20	45	83
		W/Sq Ft	1.7	0.89	2.7	1.92	0.9
30x30x8.5	8' ctr	FC	31	51	22	42	80
		W/Sq Ft	0.97	1.0	1.8	1.0	0.47
12x16x8.5	6' ctr	FC	48	47	31	36	67
		W/Sq Ft	0.83	0.86	1.0	0.92	0.4

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Results based on: Average footcandles maintained, total Light Loss Factor L.L.F.=0.82 Reflectances: 50% Ceiling (Steel deck), 50% Wall (Cement block), 20% Floor (Dark concrete). RE835 T8 lamps rated at 3000 lumens, RE835 T5HO lamps rated at 4400 lumens & F96T12HO/EW rated at 8000 lumens. 1' x 1' calculation grid at 30" from finished floor. Results may vary.






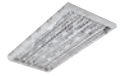
Calculations have been performed according to IESNA & CIE standards and good practices. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.



# Highbay lighting applications for open areas

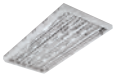






## 30 Footcandles - Mounting heights of 25'

- Step 1**  
Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.
- Step 2**  
Choose between Metal Halide, T5, or LED lamp sources.
- Step 3**  
Determine the approximate dimensions of the space to be illuminated.
- Step 4**  
Locate the dimensions in the left column (Select the nearest value).
- Step 5**  
Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.

Light Level - 30 Footcandle Average - 25' Mounting Height													
FBX - LED				SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBX24LL40-UNV				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	25x16	6	16 x 16	9	25 x 16	6	16 x 16	9	25 X 17	6	16 x 16	9
	100	16x25	12	16 x 16	18	16 x 25	12	16 x 25	12	25 X 20	10	20 x 16	15
	150	19x25	16	18 x 16	24	18 x 25	16	16 x 25	18	25 X 19	16	21 x 16	21
	200	20x25	20	20 x 16	30	20 x 25	20	16 x 25	24	25 X 20	20	22 x 16	27
100	100	25x20	20	20 x 16	30	25 x 20	20	20 x 20	25	25 X 20	20	20 x 20	25
	150	21x25	28	18 x 20	40	21 x 25	28	18 x 25	32	25 X 22	28	21 x 20	35
	200	22x25	36	20 x 20	50	22 x 25	36	20 x 25	40	25 X 23	36	22 x 20	45
	250	23x25	44	19 x 20	65	22 x 25	44	19 x 25	52	25 X 25	40	22 x 20	55
150	300	23x25	52	20 x 20	75	23 x 25	52	20 x 25	60	25 X 25	48	23 x 20	65
	200	25x25	48	18 x 21	77	25 x 25	48	20 x 25	60	25 X 25	48	20 x 21	70
	250	25x25	60	19 x 21	91	25 x 25	60	20 x 25	72	25 X 25	60	20 x 21	84
	300	25x25	72	20 x 21	105	25 x 25	72	21 x 25	84	25 X 25	72	21 x 21	98
200	350	25x25	84	19 x 21	126	25 x 25	84	21 x 25	96	25 X 25	84	21 x 21	112
	400	25x25	96	20 x 21	140	25 x 25	96	21 x 25	114	25 X 27	90	22 x 21	126
	300	25x25	96	20 x 22	135	25 x 25	96	21 x 25	112	25 X 25	96	21 x 22	126
	350	27x25	104	19 x 22	162	26 x 25	104	21 x 25	128	25 X 27	104	21 x 22	144
250	400	27x25	120	20 x 22	180	26 x 25	120	22 x 25	144	25 X 27	120	22 x 22	162
	450	27x25	136	20 x 22	198	26 x 25	136	22 x 25	160	25 X 27	136	22 x 22	180
	500	27x25	152	20 x 22	225	26 x 25	152	22 x 25	176	25 X 27	152	21 x 22	207
	350	27x25	130	21 x 20	192	26 x 25	130	21 x 25	160	25 X 28	126	21 x 22	176
300	400	27x25	150	21 x 20	228	26 x 25	150	22 x 25	180	25 X 28	144	22 x 22	198
	450	27x25	170	21 x 20	252	23 x 27	171	22 x 25	200	25 X 28	162	21 x 22	231
	500	27x25	190	21 x 20	276	25 x 27	180	22 x 25	220	25 X 28	180	21 x 22	253
	550	24x27	207	22 x 20	300	25 x 27	198	22 x 25	240	25 X 28	198	22 x 22	275
300	400	25x27	176	21 x 21	266	25 x 27	176	22 x 25	216	25 X 28	176	21 x 23	247
	450	25x27	198	21 x 21	294	25 x 27	450	22 x 25	240	25 X 28	198	21 x 23	273
	500	25x27	220	21 x 21	322	25 x 27	220	22 x 25	264	25 X 28	220	21 x 23	299
	550	25x27	242	22 x 21	350	25 x 27	242	22 x 25	288	25 X 28	242	22 x 23	325
	600	25x27	264	21 x 21	392	25 x 27	264	23 x 25	312	28 X 26	253	22 x 23	351

Suitable for commercial and retail applications: FBX, SHE, FBD, TriLyte







Light Level - 30 Footcandle Average - 25' Mounting Height

TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
25 X 17	6	16 x 16	9	25 x 16	6	16 X 17	9	17 X 25	6	17 X 25	6	1 X 17	3
25 X 20	10	16 x 16	18	16 x 25	12	25 X 15	14	25 X 20	10	25 X 20	10	1 X 25	4
25 X 19	16	18 x 16	24	18 x 25	16	25 X 17	18	25 X 22	14	25 X 22	14	1 X 25	6
25 X 20	20	20 x 16	30	20 x 25	20	25 X 27	24	25 X 20	20	25 X 23	18	1 X 29	7
25 X 20	20	20 x 16	30	25 x 20	20	20 X 20	25	20 X 25	20	20 X 25	20	33 X 34	9
25 X 22	28	18 x 20	40	21 x 25	28	25 X 19	32	25 X 22	28	25 X 25	24	50 X 30	10
25 X 23	36	20 x 20	50	22 x 25	36	25 X 20	40	25 X 25	32	25 X 25	32	50 X 34	12
25 X 25	40	19 x 20	65	22 x 25	44	25 X 21	48	25 X 25	40	25 X 25	40	50 X 32	16
25 X 25	48	20 x 20	75	23 x 25	52	25 X 20	60	25 X 25	48	25 X 25	48	50 X 34	18
25 X 25	48	18 x 21	77	25 x 25	48	25 X 20	60	25 X 25	48	25 X 25	48	38 X 40	20
25 X 25	60	19 x 21	91	25 x 25	60	25 X 21	72	25 X 25	60	25 X 25	60	38 X 42	24
25 X 25	72	20 x 21	105	25 x 25	72	25 X 22	84	25 X 25	72	25 X 28	66	38 X 42	28
25 X 25	84	19 x 21	126	25 x 25	84	25 X 22	96	25 X 27	78	25 X 27	78	50 X 35	30
25 X 27	90	20 x 21	140	25 x 25	96	25 X 23	108	25 X 27	90	25 X 27	90	50 X 37	33
25 X 25	96	20 x 22	135	25 x 25	96	25 X 23	104	25 X 27	88	25 X 27	88	40 X 43	35
25 X 27	104	19 x 22	162	26 x 25	104	25 X 24	120	25 X 27	104	25 X 27	104	40 X 44	40
25 X 27	120	20 x 22	180	26 x 25	120	25 X 24	136	25 X 27	120	25 X 27	120	40 X 45	45
25 X 27	136	20 x 22	198	26 x 25	136	25 X 24	152	25 X 28	128	28 X 24	133	40 X 45	50
25 X 27	152	20 x 22	225	26 x 25	152	25 X 24	168	25 X 28	144	29 X 25	140	40 X 46	55
25 X 28	126	21 x 20	192	26 x 25	130	25 X 24	150	28 X 25	126	28 X 25	126	42 X 43	48
25 X 28	144	21 x 20	228	26 x 25	150	25 X 24	170	28 X 25	144	28 X 25	144	42 X 44	54
25 X 28	162	21 x 20	252	23 x 27	171	25 X 24	190	28 X 25	162	28 X 25	162	42 X 45	60
25 X 28	180	21 x 20	276	25 x 27	180	25 X 24	210	28 X 25	180	28 X 25	180	42 X 45	66
25 X 28	198	22 x 20	300	25 x 27	198	25 X 24	230	28 X 25	198	28 X 25	198	42 X 45	72
25 X 28	176	21 x 21	266	25 x 27	176	24 X 24	204	28 X 25	126	28 X 25	176	43 X 44	63
25 X 28	198	21 x 21	294	25 x 27	450	25 X 24	228	28 X 25	144	28 X 26	187	43 X 45	70
25 X 28	220	21 x 21	322	25 x 27	220	25 X 24	252	28 X 25	162	28 X 26	209	43 X 45	77
25 X 28	242	22 x 21	350	25 x 27	242	25 X 24	276	28 X 25	180	28 X 26	231	43 X 42	91
28 X 26	253	21 x 21	392	25 x 27	264	25 X 24	300	28 X 25	198	28 X 26	253	43 X 42	98

# Highbay lighting applications for open areas

## 50 Footcandles - Mounting heights of 25'

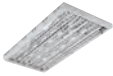






- Step 1**  
Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.
- Step 2**  
Choose between Metal Halide, T5, or LED lamp sources.
- Step 3**  
Determine the approximate dimensions of the space to be illuminated.
- Step 4**  
Locate the dimensions in the left column (Select the nearest value).
- Step 5**  
Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.

Light Level - 50 Footcandle Average - 25' Mounting Height													
FBX - LED				SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBX24LL40-UNV				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/4EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	17x12	12	12 x 12	16	16 x 12	12	16 x 12	12	13 x 16	12	12 x 12	16
	100	17x16	18	14 x 12	28	16 x 16	18	14 x 16	21	17 x 16	18	12 x 16	24
	150	16x17	27	15 x 12	40	16 x 16	27	15 x 16	30	17 x 16	27	13 x 16	33
	200	18x17	33	11 x 16	51	18 x 16	33	15 x 16	39	17 x 18	33	14 x 16	42
100	100	20x16	30	14 x 14	49	20 x 16	30	16 x 16	36	17 x 20	30	16 x 14	42
	150	16x20	45	15 x 14	70	16 x 20	45	16 x 16	54	20 x 17	45	15 x 16	60
	200	16x20	60	14 x 16	84	16 x 20	60	18 x 16	66	20 x 19	55	15 x 16	78
	250	17x20	70	14 x 16	102	17 x 20	70	17 x 16	84	20 x 18	70	15 x 16	96
150	300	17x20	85	14 x 16	126	17 x 20	85	18 x 16	96	20 x 19	80	15 x 16	114
	200	20x18	80	14 x 16	126	20 x 18	80	16 x 18	96	19 x 20	80	16 x 16	108
	250	19x19	104	14 x 16	153	19 x 18	104	16 x 18	120	19 x 21	96	16 x 16	135
	300	20x18	120	25 x 16	180	20 x 18	120	16 x 18	144	19 x 20	120	16 x 16	162
200	350	20x19	136	15 x 16	207	20 x 18	136	17 x 18	160	19 x 21	136	17 x 16	180
	400	21x19	152	15 x 16	234	21 x 18	152	17 x 18	184	18 x 22	154	17 x 16	207
	300	20x20	150	15 x 16	228	20 x 20	150	17 x 18	187	20 x 20	150	17 x 16	204
	350	19x20	180	15 x 16	264	19 x 20	180	18 x 18	209	20 x 20	180	17 x 16	240
250	400	20x20	200	16 x 16	300	20 x 20	200	18 x 18	242	20 x 20	200	17 x 16	276
	450	19x20	230	16 x 16	336	20 x 20	220	18 x 18	275	20 x 20	220	18 x 16	300
	500	20x20	250	16 x 16	372	20 x 20	250	18 x 18	297	20 x 20	250	17 x 16	336
	350	19x21	216	15 x 16	330	19 x 20	216	18 x 17	266	21 x 19	216	16 x 17	294
300	400	19x21	252	16 x 16	375	19 x 20	252	17 x 19	299	21 x 20	240	16 x 17	336
	450	19x21	276	16 x 16	405	19 x 20	276	17 x 19	338	21 x 20	276	16 x 17	378
	500	19x21	312	16 x 16	450	20 x 20	300	17 x 19	364	21 x 20	300	16 x 17	420
	550	20x20	336	16 x 16	495	19 x 20	336	17 x 19	403	21 x 20	336	16 x 17	462
300	400	20x20	300	16 x 16	432	20 x 20	300	18 x 18	352	20 x 21	285	16 x 17	408
	450	20x20	330	16 x 16	486	20 x 20	330	18 x 18	400	20 x 21	330	17 x 17	442
	500	21x20	360	16 x 16	540	20 x 20	360	18 x 18	432	20 x 21	360	17 x 17	493
	550	20x20	405	16 x 16	594	21 x 20	390	18 x 18	480	20 x 21	390	17 x 17	554
	600	20x20	435	16 x 16	648	20 x 20	435	18 x 18	528	20 x 21	435	17 x 17	595

Suitable for commercial and retail applications: FBX, SHE, FBD, TriLyte









Light Level - 50 Footcandle Average - 25' Mounting Height

TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
13 x 16	12	12 x 12	16	16 x 12	12	10 X 17	15	10 x 17	15	17 X 16	9	25 X 25	4
17 x 16	18	14 x 12	28	16 x 16	18	17 X 14	21	17 x 14	21	17 X 16	18	25 X 25	8
17 x 16	27	15 x 12	40	18 x 16	24	17 X 15	30	17 x 15	30	17 X 19	24	25 X 30	10
17 x 18	33	11 x 16	51	18 x 16	33	17 X 15	39	17 x 15	39	17 X 20	30	25 X 33	12
17 x 20	30	14 x 14	49	20 x 16	30	17 X 17	36	17 x 17	36	17 X 20	30	25 X 33	12
20 x 17	45	15 x 14	70	18 x 20	40	17 X 17	54	17 x 17	54	20 X 19	40	33 X 30	15
20 x 19	55	14 x 16	84	18 x 20	55	17 X 18	66	17 x 18	66	20 X 18	55	33 X 29	21
20 x 18	70	14 x 16	102	19 x 20	65	16 X 18	84	16 x 18	84	20 X 20	65	33 X 28	27
20 x 19	80	14 x 16	126	18 x 20	80	17 X 19	96	17 x 19	96	20 X 19	80	33 X 30	30
19 x 20	80	14 x 16	126	18 x 21	77	19 X 17	96	19 x 17	96	22 X 18	77	30 X 33	30
19 x 21	96	14 x 16	153	19 x 21	91	19 X 18	112	19 x 18	112	22 X 18	98	30 X 36	35
19 x 20	120	25 x 16	180	18 x 21	112	19 X 18	136	19 x 18	136	22 X 19	112	30 X 33	45
19 x 21	136	15 x 16	207	19 x 21	126	19 X 17	160	19 x 17	160	22 X 18	133	30 X 35	50
19 x 22	147	15 x 16	234	20 x 21	140	19 X 18	176	19 x 18	176	22 X 19	147	30 X 36	55
20 x 20	150	15 x 16	228	21 x 20	140	18 X 19	176	18 x 19	176	20 X 20	150	34 X 33	54
20 x 20	180	15 x 16	264	21 x 20	160	18 X 19	209	18 x 19	209	20 X 21	170	33 X 32	66
20 x 20	200	16 x 16	300	21 x 20	190	18 X 19	231	18 x 19	231	20 X 21	190	34 X 33	72
20 x 20	220	16 x 16	336	19 x 22	207	18 X 20	253	18 x 20	253	20 X 21	220	33 X 32	84
22 x 20	230	16 x 16	372	20 x 22	225	18 X 19	286	18 x 19	286	20 X 21	240	34 X 33	90
21 x 19	216	15 x 16	330	20 x 20	204	19 X 19	247	19 x 19	247	21 X 21	204	35 X 32	77
21 x 20	240	16 x 16	375	21 x 20	228	20 X 18	286	20 x 18	286	21 X 20	240	35 X 31	91
21 x 20	276	16 x 16	405	21 x 20	252	19 X 19	312	19 x 19	312	21 X 21	264	35 X 33	98
21 x 20	300	16 x 16	450	21 x 20	276	19 X 19	351	19 x 19	351	21 X 21	288	35 X 32	112
21 x 20	336	16 x 16	495	21 x 20	312	19 X 19	377	19 x 19	377	21 X 20	324	35 X 33	119
20 x 21	285	16 x 16	432	21 x 21	266	19 X 19	336	19 x 19	336	22 X 20	280	33 X 34	108
20 x 21	330	16 x 16	486	20 x 21	308	19 X 19	368	19 x 19	368	21 X 20	322	33 X 35	117
20 x 21	360	16 x 16	540	20 x 21	336	19 X 19	416	19 x 19	416	22 X 20	350	33 X 34	135
20 x 21	390	16 x 16	594	21 x 21	364	19 X 20	448	19 x 20	448	21 X 21	378	34 X 34	144
20 x 21	435	16 x 16	648	21 x 21	392	19 X 19	496	19 x 19	496	22 X 20	420	33 X 34	162

# Highbay lighting applications for open areas

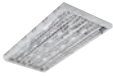






## 30 Footcandles - Mounting heights of 40'

- Step 1**  
Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.
- Step 2**  
Choose between Metal Halide, T5, or LED lamp sources.
- Step 3**  
Determine the approximate dimensions of the space to be illuminated.
- Step 4**  
Locate the dimensions in the left column (Select the nearest value).
- Step 5**  
Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.

Light Level - 30 Footcandle Average - 40' Mounting Height													
FBX - LED				SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBX24LL40-UNV				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	16x17	9	N/A	N/A	16 x 16	9	N/A	N/A	16 x 16	9	N/A	N/A
	100	20x16	15	N/A	N/A	20 x 16	15	N/A	N/A	16 x 25	12	N/A	N/A
	150	15x25	20	N/A	N/A	15 x 25	20	N/A	N/A	16 x 25	18	N/A	N/A
	200	16x25	24	N/A	N/A	16 x 25	24	N/A	N/A	18 x 25	22	N/A	N/A
100	100	20x20	25	N/A	N/A	20 x 20	25	N/A	N/A	25 x 20	20	N/A	N/A
	150	19x25	32	N/A	N/A	18 x 25	32	N/A	N/A	21 x 25	28	N/A	N/A
	200	20x25	40	N/A	N/A	20 x 25	40	N/A	N/A	22 x 25	36	N/A	N/A
	250	21x25	48	N/A	N/A	20 x 25	48	N/A	N/A	22 x 25	44	N/A	N/A
150	300	21x25	56	N/A	N/A	21 x 25	56	N/A	N/A	22 x 25	52	N/A	N/A
	200	22x25	54	N/A	N/A	22 x 25	54	N/A	N/A	22 x 25	54	N/A	N/A
	250	23x25	66	N/A	N/A	22 x 25	66	N/A	N/A	25 x 25	60	N/A	N/A
	300	23x25	78	N/A	N/A	23 x 25	78	N/A	N/A	25 x 25	72	N/A	N/A
200	350	23x25	90	N/A	N/A	23 x 25	90	N/A	N/A	25 x 25	84	N/A	N/A
	400	23x25	102	N/A	N/A	23 x 25	102	N/A	N/A	25 x 25	96	N/A	N/A
	300	23x25	104	N/A	N/A	23 x 25	104	N/A	N/A	25 x 25	96	N/A	N/A
	350	23x25	120	N/A	N/A	23 x 25	120	N/A	N/A	25 x 25	112	N/A	N/A
250	400	25x25	128	N/A	N/A	25 x 25	128	N/A	N/A	26 x 25	120	N/A	N/A
	450	25x25	144	N/A	N/A	25 x 25	144	N/A	N/A	26 x 25	136	N/A	N/A
	500	25x25	160	N/A	N/A	25 x 25	160	N/A	N/A	26 x 25	152	N/A	N/A
	350	25x25	140	N/A	N/A	25 x 25	140	N/A	N/A	26 x 25	130	N/A	N/A
300	400	25x25	160	N/A	N/A	25 x 25	160	N/A	N/A	26 x 25	150	N/A	N/A
	450	25x25	180	N/A	N/A	25 x 25	180	N/A	N/A	25 x 27	162	N/A	N/A
	500	25x25	200	N/A	N/A	25 x 25	200	N/A	N/A	25 x 27	180	N/A	N/A
	550	26x25	210	N/A	N/A	26 x 25	210	N/A	N/A	25 x 27	198	N/A	N/A
300	400	25x25	192	N/A	N/A	25 x 25	192	N/A	N/A	25 x 27	176	N/A	N/A
	450	25x25	216	N/A	N/A	25 x 25	216	N/A	N/A	25 x 27	198	N/A	N/A
	500	26x25	228	N/A	N/A	26 x 25	228	N/A	N/A	25 x 27	220	N/A	N/A
	550	26x25	252	N/A	N/A	26 x 25	252	N/A	N/A	25 x 27	242	N/A	N/A
	600	26x25	276	N/A	N/A	26 x 25	276	N/A	N/A	26 x 27	253	N/A	N/A

Suitable for commercial and retail applications: FBX, SHE, FBD, TriLyte







Light Level - 30 Footcandle Average - 40' Mounting Height

TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
16 x 16	9	N/A	N/A	16 x 16	9	13 X 16	12	17 X 16	9	17 X 16	9	25 X 25	4
16 x 25	12	N/A	N/A	20 x 16	15	17 X 16	18	17 X 20	15	25 X 17	12	25 X 33	6
18 x 25	16	N/A	N/A	16 x 25	18	17 X 18	24	25 X 17	18	25 X 17	18	1 X 22	7
20 x 25	20	N/A	N/A	16 x 25	24	17 X 20	30	25 X 17	24	25 X 18	22	1 X 23	9
25 x 20	20	N/A	N/A	20 x 20	25	17 x 20	30	17 x 25	24	20 x 25	20	33 x 34	9
21 x 25	28	N/A	N/A	18 x 25	32	20 x 19	40	25 x 19	32	25 x 22	28	33 x 38	12
22 x 25	36	N/A	N/A	20 x 25	40	20 x 20	50	25 x 20	40	25 x 23	36	34 x 40	15
25 x 25	40	N/A	N/A	20 x 25	48	20 x 21	60	25 x 21	48	25 x 23	44	33 x 42	18
25 x 25	48	N/A	N/A	21 x 25	56	20 x 22	70	25 x 22	56	25 x 23	52	33 x 43	21
25 x 25	48	N/A	N/A	22 x 25	54	22 x 22	63	25 x 23	54	25 x 23	54	38 x 40	20
25 x 25	60	N/A	N/A	22 x 25	66	21 x 23	77	25 x 23	66	25 x 25	60	38 x 41	24
27 x 25	66	N/A	N/A	25 x 25	72	22 x 23	91	25 x 23	78	25 x 25	72	38 x 42	28
26 x 25	78	N/A	N/A	25 x 25	84	22 x 23	105	25 x 25	84	25 x 25	84	37 x 44	32
26 x 25	90	N/A	N/A	25 x 25	96	22 x 24	119	25 x 25	96	25 x 25	96	38 x 44	36
25 x 28	84	N/A	N/A	25 x 25	96	22 x 23	117	25 x 25	96	25 x 25	96	40 x 43	35
25 x 28	98	N/A	N/A	25 x 25	112	22 x 24	135	25 x 25	112	25 x 25	112	40 x 44	40
25 x 28	112	N/A	N/A	26 x 25	120	22 x 24	153	25 x 25	128	25 x 27	120	40x 40	50
25 x 28	126	N/A	N/A	26 x 25	136	23 x 24	171	25 x 27	136	25 x 27	136	40 x 41	55
25 x 28	140	N/A	N/A	26 x 25	152	22 x 24	189	25 x 27	152	25 x 27	152	40 x 42	60
25 x 27	126	N/A	N/A	26 x 25	130	23 x 23	165	25 x 25	140	25 x 27	130	42 x 38	54
26 x 27	135	N/A	N/A	23 x 27	153	23 x 23	187	25 x 27	150	25 x 27	150	42 x 40	60
26 x 27	153	N/A	N/A	25 x 27	162	23 x 23	209	25 x 27	170	25 x 27	170	41 x 41	66
26 x 27	171	N/A	N/A	25 x 27	180	25 x 22	230	25 x 27	190	25 x 27	190	42 x 41	72
26 x 27	189	N/A	N/A	25 x 27	198	25 x 22	250	25 x 26	210	25 x 28	200	42 x 42	78
26 x 27	165	N/A	N/A	25 x 27	176	23 x 24	221	27 x 25	176	27 x 25	176	42 x 40	70
26 x 27	187	N/A	N/A	25 x 27	198	23 x 24	247	27 x 25	198	27 x 25	198	43 x 41	77
27 x 27	198	N/A	N/A	26 x 27	209	25 x 23	264	27 x 25	220	27 x 25	220	43 x 42	84
27 x 27	220	N/A	N/A	26 x 27	231	25 x 23	288	27 x 25	242	27 x 25	242	43 x 42	91
27 x 27	242	N/A	N/A	26 x 27	253	25 x 23	312	27 x 25	264	27 x 25	264	43 x 43	98

# Highbay lighting applications for open areas

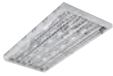






## 50 Footcandles - Mounting heights of 40'

- Step 1**  
Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.
- Step 2**  
Choose between Metal Halide, T5, or LED lamp sources.
- Step 3**  
Determine the approximate dimensions of the space to be illuminated.
- Step 4**  
Locate the dimensions in the left column (Select the nearest value).
- Step 5**  
Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.

Light Level - 50 Footcandle Average - 40' Mounting Height													
FBX - LED				SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBX24LL40-UNV				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVVP	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	12x13	16	N/A	N/A	12 x 12	16	N/A	N/A	16 x 12	12	N/A	N/A
	100	13x16	24	N/A	N/A	12 x 16	24	N/A	N/A	14 x 16	21	N/A	N/A
	150	13x17	33	N/A	N/A	13 x 16	33	N/A	N/A	15 x 16	30	N/A	N/A
	200	14x17	42	N/A	N/A	14 x 16	42	N/A	N/A	16 x 16	36	N/A	N/A
100	100	16x17	36	N/A	N/A	16 x 16	36	N/A	N/A	16 x 16	36	N/A	N/A
	150	16x17	54	N/A	N/A	16 x 16	54	N/A	N/A	18 x 16	48	N/A	N/A
	200	18x17	66	N/A	N/A	18 x 16	66	N/A	N/A	16 x 20	60	N/A	N/A
	250	19x17	78	N/A	N/A	17 x 16	84	N/A	N/A	16 x 20	75	N/A	N/A
150	300	19x17	96	N/A	N/A	18 x 16	96	N/A	N/A	17 x 20	85	N/A	N/A
	200	16x19	96	N/A	N/A	16 x 18	96	N/A	N/A	18 x 18	88	N/A	N/A
	250	18x19	112	N/A	N/A	17 x 18	112	N/A	N/A	19 x 18	104	N/A	N/A
	300	19x18	128	N/A	N/A	18 x 18	128	N/A	N/A	20 x 18	120	N/A	N/A
200	350	18x19	152	N/A	N/A	18 x 18	152	N/A	N/A	20 x 18	136	N/A	N/A
	400	19x18	168	N/A	N/A	19 x 18	168	N/A	N/A	20 x 18	160	N/A	N/A
	300	17x20	170	N/A	N/A	17 x 20	170	N/A	N/A	18 x 20	160	N/A	N/A
	350	18x20	190	N/A	N/A	18 x 20	190	N/A	N/A	19 x 20	180	N/A	N/A
250	400	18x20	220	N/A	N/A	18 x 20	220	N/A	N/A	20 x 20	200	N/A	N/A
	450	18x20	240	N/A	N/A	18 x 20	240	N/A	N/A	19 x 20	230	N/A	N/A
	500	18x20	270	N/A	N/A	18 x 20	270	N/A	N/A	20 x 20	250	N/A	N/A
	350	20x19	234	N/A	N/A	19 x 19	234	N/A	N/A	19 x 20	216	N/A	N/A
300	400	20x19	260	N/A	N/A	20 x 19	260	N/A	N/A	19 x 20	252	N/A	N/A
	450	20x19	299	N/A	N/A	19 x 19	299	N/A	N/A	19 x 20	276	N/A	N/A
	500	20x19	325	N/A	N/A	20 x 19	325	N/A	N/A	20 x 20	300	N/A	N/A
	550			N/A	N/A	20 x 19	351	N/A	N/A	19 x 20	336	N/A	N/A
350	400	19x20	315	N/A	N/A	19 x 20	315	N/A	N/A	21 x 20	285	N/A	N/A
	450	19x20	345	N/A	N/A	19 x 20	345	N/A	N/A	20 x 20	330	N/A	N/A
	500	19x20	390	N/A	N/A	19 x 20	390	N/A	N/A	20 x 20	360	N/A	N/A
	550	19x20	420	N/A	N/A	19 x 20	420	N/A	N/A	21 x 20	390	N/A	N/A
400	20x20	450	N/A	N/A	20 x 20	450	N/A	N/A	20 x 21	420	N/A	N/A	

Suitable for commercial and retail applications: FBX, SHE, FBD, TriLyte

Light Level - 50 Footcandle Average - 40' Mounting Height

TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
16 x 12	12	N/A	N/A	12 x 12	16	10 x 13	20	13 x 12	16	12 x 17	12	17 x 25	6
16 x 16	18	N/A	N/A	12 x 16	24	13 x 14	28	17 x 14	21	17 x 14	21	25 x 25	8
16 x 16	27	N/A	N/A	15 x 16	30	13 x 15	40	17 x 15	30	17 x 15	30	25 x 25	12
18 x 16	33	N/A	N/A	15 x 16	39	13 x 15	52	17 x 15	39	17 x 16	36	25 x 29	14
20 x 16	30	N/A	N/A	16 x 16	36	14 x 15	49	17 x 16	36	17 x 16	36	25 x 25	16
16 x 20	45	N/A	N/A	18 x 16	48	17 x 15	60	17 x 19	48	20 x 15	50	33 x 25	18
18 x 20	55	N/A	N/A	18 x 16	66	17 x 15	78	20 x 15	53	20 x 17	60	33 x 25	24
17 x 20	70	N/A	N/A	16 x 20	75	17 x 15	96	20 x 17	75	20 x 17	75	33 x 25	30
18 x 20	80	N/A	N/A	16 x 20	90	16 x 16	114	20 x 17	90	20 x 18	85	33 x 28	33
20 x 18	80	N/A	N/A	18 x 18	88	17 x 16	108	19 x 18	88	19 x 18	88	30 x 29	35
17 x 21	98	N/A	N/A	19 x 18	104	17 x 16	135	19 x 19	104	19 x 19	104	30 x 31	40
18 x 21	112	N/A	N/A	20 x 18	120	17 x 17	153	19 x 19	128	19 x 20	120	30 x 33	45
19 x 21	126	N/A	N/A	19 x 18	144	17 x 17	180	19 x 19	144	19 x 19	144	30 x 32	55
19 x 21	147	N/A	N/A	20 x 18	160	17 x 18	198	19 x 20	160	19 x 20	160	30 x 33	60
21 x 20	140	N/A	N/A	18 x 20	160	18 x 17	198	20 x 19	160	20 x 19	160	33 x 30	60
20 x 20	170	N/A	N/A	19 x 20	180	18 x 18	220	20 x 20	180	20 x 20	180	33 x 30	72
21 x 20	190	N/A	N/A	20 x 20	200	18 x 18	253	20 x 19	210	20 x 20	200	33 x 31	78
21 x 20	210	N/A	N/A	19 x 20	230	18 x 18	275	20 x 20	230	20 x 20	230	33 x 30	90
21 x 20	230	N/A	N/A	20 x 20	250	18 x 18	308	20 x 20	250	20 x 20	250	33 x 32	96
20 x 20	204	N/A	N/A	19 x 20	216	18 x 18	266	20 x 19	228	21 x 19	216	31 x 32	88
21 x 20	228	N/A	N/A	19 x 20	252	18 x 18	308	21 x 19	252	21 x 19	252	32 x 33	96
21 x 20	252	N/A	N/A	19 x 20	276	18 x 18	336	21 x 19	288	20 x 20	276	31 x 35	104
20 x 20	288	N/A	N/A	20 x 20	300	18 x 18	378	21 x 19	312	21 x 19	312	32 x 33	120
21 x 20	312	N/A	N/A	20 x 20	324	18 x 19	406	21 x 20	336	21 x 20	336	31 x 35	128
21 x 21	266	N/A	N/A	21 x 20	285	19 x 18	352	20 x 20	300	20 x 20	300	33 x 31	117
20 x 21	308	N/A	N/A	19 x 21	322	19 x 18	400	20 x 20	330	20 x 20	330	33 x 32	126
20 x 21	336	N/A	N/A	20 x 21	350	19 x 18	448	20 x 20	375	20 x 21	360	34 x 33	135
21 x 21	364	N/A	N/A	19 x 21	392	19 x 18	480	20 x 21	405	20 x 21	405	33 x 33	153
21 x 21	392	N/A	N/A	20 x 21	420	19 x 18	528	20 x 21	435	20 x 21	435	33 x 33	162

# Highbay lighting applications for aisles

## 15 & 25 Footcandles - Mounting heights of 20' - 40'

### Step 1

Determine if the items stored in the Aisle are Large (Rough & Bulky), Medium (Readily Portable) or Small (Hand-sized Boxes & Parts)

### Step 2

If small items were selected (Step 1) refer to the Spacing for 15 vertical footcandle chart, if Medium to Large items was selected refer to the Spacing for 25 vertical footcandle chart.

Tip: Vertical footcandles are the measure of illuminance on a vertical surface such as the racking and the items stored in the racking compared to horizontal footcandles which are measured above the finished floor.

### Step 3

Determine the height the luminaires will be mounted

### Step 4

Choose between Metal Halide, LED or T5HO lamp sources.

### Step 5

Identify the products available and have your customer select the product they are interested in.

### Step 6






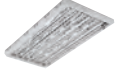
Identify and inform your customer of the horizontal footcandles that will be achieved by the product selected. Please note the reading is from 2.5 feet (A.F.F) above the finished floor.

### Step 7







Determine the length of the aisle that the luminaires will be mounted. To determine the quantities of luminaires needed divide the length of the aisle by the recommended luminaire spacing. Length of Aisle ÷ Spacing = Luminaire Quantity

### Step 8

Luminaires should be indented from the start and end of the aisles 1/2 of the distance that is indicated by the suggested spacing ratio. Example: 100 ft Aisle at a suggested fixture spacing of 10 ft would require 10 fixtures (100ft ÷ 10ft = 10 luminaires). The first fixture will be placed 5 ft from the start of the aisle and each subsequent fixture will be spaced 10ft from the previous fixture.

Light Level - 15 Footcandle Average - 2.5 Average footcandle maintained													
		FBX - LED	SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp		
		LED	T5HO		T5HO		T5HO		T5HO		T5HO		
													
		FBX24LL40-UNV	SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVPV		
W	H	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
8	20	N/A	N/A	23'	18FC	32'	22FC	29'	22FC	35'	22FC	24'	11FC
	25	25'	19FC	19'	15FC	30'	19FC	24'	19FC	32'	18FC	19'	11FC
	30	25'	15FC	16'	14FC	24'	18FC	20'	18FC	25'	19FC	15'	11FC
	35	22'	15FC	14'	13FC	19'	20FC	18'	17FC	23'	18FC	14'	9FC
	40	18'	15FC	N/A	N/A	N/A	N/A	15'	17FC	19'	17FC	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

Light Level - 25 Footcandle Average - 2.5 Average footcandle maintained													
		FBX - LED	SHE - 4 lamp		SHE - 6 lamp		FBD - 4 lamp		FBD - 6 lamp		TriLyte - 4 lamp		
		LED	T5HO		T5HO		T5HO		T5HO		T5HO		
													
		FBX24LL40-UNV	SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FBD454HO-UNV-1/4-EB		FBD654HO-UNV-1/42-EB		FH4C4DXX454UNVPV		
W	H	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
8	20	25'	26FC	13'	30FC	19'	37FC	17'	36FC	22'	37FC	14'	19FC
	25	20'	24FC	11'	26FC	15'	37FC	15'	30FC	18'	35FC	10'	20FC
	30	17'	24FC	9'	25FC	15'	30FC	11'	32FC	15'	33FC	9'	15FC
	35	14'	24FC	8'	23FC	12'	30FC	10'	29FC	14'	25FC	8'	15FC*
	40	11'	25FC	N/A	N/A	10'	30FC	9'	26FC	12'	26FC	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

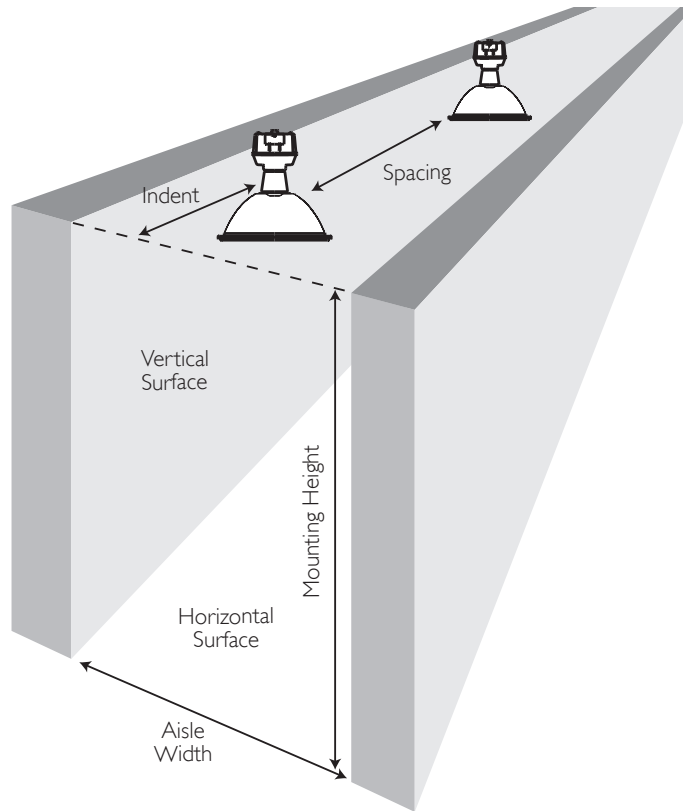


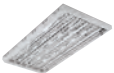








Table 1: Lighting Fixture Specifications									
TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Coolbay - 400	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide	
									
FH4C5DXX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		707P400MAK-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
35'	25FC	25'	17FC	35'	20FC	33'	14FC	33'	22FC
33'	19FC	22'	15FC	33'	14FC	25'	14FC	32'	22FC
26'	22FC	18'	14FC	28'	14FC	22'	14fc	26'	18FC
24'	19FC	16'	12FC	24'	13FC*	20'	11FC*	23'	18FC
19'	20FC	N/A	N/A	N/A	N/A	N/A	N/A	19'	17FC

Table 2: Lighting Fixture Specifications									
TriLyte - 6 lamp		APX - 4 lamp		APX - 6 lamp		Ultrabay		Coolbay - 400	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide	
									
FH4C5DXX654UNVP6		APX454HO-UNV-A-1/4-EB-WTR		APX654HO-UNV-A-1/42-EB-WTR		843400MAL3C-T		707P400MAK-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
22'	42FC	15'	29FC	25'	27FC	20'	23FC	23'	35FC
18'	40FC	10'	18FC	20'	24FC	16'	25FC	19'	25FC
15'	37FC	10'	24FC	15'	26FC	12'	22FC	15'	31FC
14'	30FC	9'	22FC	14'	22FC	N/A	N/A	13'	28FC
12'	31FC	N/A	N/A	N/A	N/A	N/A	N/A	12'	27FC

# Product Index

Product	Page	Product	Page
501734	5	APX454HO-347-A-1/4-EB-WTR	8
501759	5	APX454HO-UNV-A-1/4-EB-WTR	8
501791	5	APX654HO-347-A-1/42-EB-WTR	8
501817	5	APX654HO-UNV-A-1/42-EB-WTR	8
501866	5	BVL232-UNV-1/2EB-GENIS-SS	8
501874	5	BVL254HO-UNV-1/2EB-GENRS-SS	8
1AVEG228-ACR-UNV-1/2-EB	6	CFW232-120-1/2EB-GENIS	4
1AVEG38L835-4-ACR-347	6	CG-4	5
1AVEG38L835-4-ACR-UNV	6	CGS-4	5
1AVG232-SPMW-347-1/2-EB	5	CSW148-UNVHIZO	3
1AVG232-SPMW-UNV-1/2-EB	5	CSW248-UNVHIZO	3
1F232-PP-UNV-1/2-EB	6	DPW232-UNV-1/2EB-GENIS	4
1SMR232-FA01-347-1/2-EB	3	DWAE232-347-1/2-EB	8
1SMR232-FA01-UNV-1/2-EB	3	DWAE232-UNV-1/2-EB	8
1TG8232-01-347-1/2-EB	3	DWAE254HO-347-1/2-EB	8
1TG8232-01-UNV-1/2-EB	3	DWAE254HO-UNV-1/2-EB	8
2AVEG224HO-ACR-UNV-1/2-EB	6	DWAE35L840-4-UNV	8
2AVEG228-ACR-347-1/2-EB	6	DWAE43L840-4-UNV	8
2AVEG228-ACR-UNV-1/2-EB	6	FBD454HO-347-1/4-EB	7
2AVEG38L835-2-ACR-347	6	FBD454HO-347-1/4-EB-WC6-LPT841	7
2AVEG38L835-2-ACR-UNV	6	FBD454HO-UNV-1/4-EB	7
2AVEG38L835-4-ACR-347	6	FBD454HO-UNV-1/4-EB-WC6-LPT841	7
2AVEG38L835-4-ACR-UNV	6	FBD654HO-347-1/42-EB	7
2AVG232-SPMW-347-1/2-EB	5	FBD654HO-347-1/42-EB-WC6-LPT841	7
2AVG232-SPMW-UNV-1/2-EB	5	FBD654HO-UNV-1/42-EB	7
2AVG2CF40-SPMW-347-1/2-EB	5	FBD654HO-UNV-1/42-EB-WC6-LPT841	7
2AVG2CF40-SPMW-UNV-1/2-EB	5	FBX-CHAIN-KIT	7
2AVG332-SPMW-347-1/3-EB	5	FBX-PENHGR	7
2AVG332-SPMW-UNV-1/3-EB	5	FBX24LL40-347	7
2CLG36L835-2-D-UNV-DIM	6	FBX24LL40-UNV	7
2CLG36L840-2-D-UNV-DIM	6	FH4C4DXX454347PV	7
2CLG41L835-4-D-UNV-DIM	6	FH4C4DXX454UNVPV	7
2CLG41L840-4-D-UNV-DIM	6	FH4C5DXX654347P6	7
2LP3GA231U6R-33AL-UNV-1/2-EB	3	FH4C5DXX654UNVP6	7
2LP3GA332-36AL-347-1/3-EB	3	FH4WG4	7
2LP3GA332-36AL-UNV-1/3-EB	3	FH4WG5	7
2TG38L840-2-FS-02F-UNV	3	FKR-126	6
2TG45L840-2-FS-02F-UNV	3	FKR-173	6
2TG48L840-4-FS-02F-UNV	3	FL-173	6
2TG54L840-4-FS-02F-UNV	3	FMA14	8
2TG74L840-4-FS-02F-UNV	3	FMA22	8
2TG8231U6R-01-UNV-1/2-EB	3	FMA24	8
2TG8232-01-347-1/2-EB	3	IA232-UNV-1/2-EB	6
2TG8232-01-UNV-1/2-EB	3	IA254HO-UNV-1/2-EB	6
2TG831U6R-01-347-1/2-EB	3	ID1K42-120	8
2TG8332-01-347-1/3-EB	3	IS232-347-1/2-EB	6
2TG8332-01-UNV-1/3-EB	3	IS232-UNV-1/2-EB	6
2TG8432-01-347-1/4-EB	3	LF4FR3935ULAG	5
2TG8432-01-UNV-1/4-EB	3	LF4FR3940ULAG	5
707P400MAK-T	8	LFR4FLSLD3740UDZT	5
708P1000MAL3C-T	8	LFR4FLSLD3740ULAG	5
843P400MAL3C-T	8	N117-UNV-1/1-EB	4












# Product Index

Product	Page	Product	Page
N125-347-1/1-EB	4	WG-FBX-2W	7
N125-UNV-1/1-EB	4		
N132-347-1/1-EB	4		
N132-UNV-1/1-EB	4		
NSR-4	5		
OWN232-347-1/2-EB	3		
OWN232-UNV-1/2-EB	3		
OWW432-UNV-1/4-EB	3		
SB148T-UNVHI	4		
SHE454HO-347-1/4EB-GENRS-CORD	7		
SHE454HO-UNV-1/4EB-GENRS-CORD	7		
SHE4L	7		
SHE654HO-347-1/42EB-GENRS-CORD	7		
SHE654HO-UNV-1/42EB-GENRS-CORD	7		
SHE6L	7		
SLB2SFSVA432UNVH4	3		
SPS22GFSVA38A4OULAG	6		
SPS24GFSVA43A4OULAG	6		
SV2S114UNVPG	4		
SV2S124UNVPG	4		
SV3S121UNVPG	4		
SV3S139UNVPG	4		
SV4S128UNVPG	4		
SV4S154347PG	4		
SV4S154UNVPG	4		
SV4S228UNVPG	4		
SV4S254347PG	4		
SV4S254UNVPG	4		
SV5FLW4SSLT	4		
SV5GXG4	4		
SV5LWW4SSLD	4		
SV5R1S4SSLD	4		
SV5R1W4ASLD	4		
SV5R1W4SSLD	4		
SV8S254347PV	4		
SV8S254UNVPV	4		
T232-347-1/2-EB	5		
T232-UNV-1/2-EB	5		
T296-120-1/2-EB	5		
TBK	8		
TDWAE232-UNV-1/4-EB	8		
TIA232-347-1/4-EB	6		
TIA232-UNV-1/4-EB	6		
TIS232-347-1/4-EB	6		
TIS232-UNV-1/4-EB	6		
TN132-347-1/2-EB	6		
TSS-4	5		
TT232-347-1/4-EB	5		
TT232-UNV-1/4-EB	5		
VH400MAK-T	7		
WG-FBD4	7		
WG-FBD6	7		

# Indoor Downlighting, Track Lighting, & Controls

Philips Lightolier downlighting, track and lighting control systems deliver all the flexibility required to create stunning, visually appealing environments. Years of industry experience sets Lightolier apart for performance, style and efficiency.

Track Lighting			
	LED	HID	Fluorescent
			
	Low Voltage	Line Voltage	Decorative
	Downlights		
		Specification Grade	Professional and Residential Grade
Controls			
	Controls		

Section	Page
Calculite - LED Frames & Trims	14
Calculite - Compact Fluorescent Frames & Trims	15
Lytecaster - Incandescent Frames & Trims	16 - 25
Lytecaster - Compact Fluorescent Frames & Trims	26 - 31
Lytecaster - LED Frames & Trims	32 - 35
Lytecaster - Affex Frames & Trims	36 - 37
Lytecaster - 300 FleX Series Frames & Trims	38 - 43
Lytecaster - 500 FleX Series Frames & Trims	44 - 45
Lytecaster Accessories	46
Lytespan Track Lighting	47 - 50
Lightolier Controls	51

## Performance is key.

Philips Lightolier is committed to offering solutions that are tailored to meet your lighting needs. We have developed a classification system to help you choose the right product every time, whether you are looking for a particular optical performance, light distribution, or wet location rated fixtures, Philips Lightolier has the ideal solution to fit your needs with performance style and efficiency.

### Star Rating System

Good	*
Better	**
Best	***
Performance	****

### Light Distribution

General Lighting	G
Task Lighting	T
Wall Washing	W
Accent Lighting	S
Ambiance Lighting	A

### Special Purpose

Wet location	•
--------------	---

## LED

Catalogue no.	Symbols	Description	Lamp/Watts	Ballast/Voltage	Service Quantity		Appl. Page
					2 days	10 days	

### LED - 4-1/2" Aperture

#### Trims

C4L10DL30KCCLWVB	G •	Comfort Clear; white flange	3000K			50		79
------------------	-----	-----------------------------	-------	--	--	----	--	----

#### Frames

C4L10NUVBZ10V		Non-IC New Construction	1000 lumen LED	120V			50	79
C4L10RUVBZ10V		Non-IC Remodeler	1000 lumen LED	120V		50		79
C4L10N1VBZ10V-347		Non-IC New Construction	1000 lumen LED	347V		50		

### LED - 6-1/2" Aperture

#### Trims

C6L1520DL30KMCLWVB	G •	Comfort Clear; white flange	3000K				50	79
C6L1520DL35KMCLWVB	G •	Comfort Clear; white flange	3500K			50		79

#### Frames

C6L15NUVBZ10V		Non-IC New Construction	1500 lumen LED	120V			50	79
C6L15N1VBZ10V-347		Non-IC New Construction	1500 lm LED	347V			50	
C6L20N1VBZ10V		Non-IC New Construction	2000 lumen LED	120V			50	79
C6L20N1VBZ10V-347		Non-IC New Construction	2000 lumen LED	347V			50	



## Compact Fluorescent

Catalogue no.	Description	Lamp/Watts	Ballast/Voltage	Service Quantity		Appl. Page
				2 days	10 days	

### Compact Fluorescent - 4-1/2" Aperture

Vertical Trims						
8011CCLW	Comfort Clear™, White flange				50	78
Frames						
4118VU	TTT 4 pin	1x GX24q-2/18W	Electronic/120/277V	50		
4126VU	TTT 4 pin	1x GX24q-3/26W	Electronic/120/277V	50		
4126V-347	TTT 4 pin	1x GX24q-3/26W	Electronic/347V		20	

### Compact Fluorescent - 6" Aperture

Vertical Trims						
8021CCLW	Comfort Clear™, White flange				100	78
8021CCDW	Diffuse Comfort Clear™, White flange					25
Horizontal Trims						
8031CCLW	Comfort Clear™, White flange				25	78
Frames						
S6118BU	TTT 4 pin	GX24q-2 / 18W	Electronic/120/277V	100		
S6142BU	TTT 4 pin	GX24q-3 / 26/32/42W	Electronic/120/277V	100		
S6142B-347	TTT 4 pin	GX24q-3 / 26/32W	Electronic/347V		25	

### Compact Fluorescent - 7-3/8" Aperture

Horizontal Trims						
8056CCLW	Comfort Clear™, White flange				50	78
Frames						
S7142BU	TTT 4 pin	1x GX24q-3 / 26/32W 1x GX24q-4 / 42W	Electronic/120/277V	75		
S7142B-347	TTT 4 pin	1x GX24q-3 / 26/32W 1x GX24q-4 / 42W	Electronic/347V		20	
S7226HU	QT 4 pin	2x G24q-3 / 26W	Electronic/120/277V	50		
S7226H-347	QT 4 pin	2x G24q-3 / 26W	Electronic/347V		50	

### Compact Fluorescent - 8-3/4" Aperture

Horizontal Trims						
8038CCLW	Comfort Clear™, White flange				50	78
Frames						
S8242HU	TTT 4 pin	2x GX24q-3 / 26/32W 2x GX24q-4 / 42W	Electronic/120/277V	50		



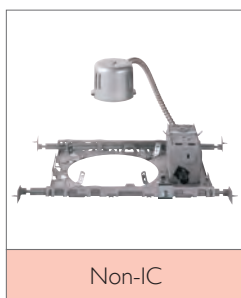
## Incandescent - Residential Complete Units

Catalogue no.	Cutout	Symbols	Description	Lamps	Service Quantity	
					2 days	10 days
<b>Horizontal Baffles</b>						
0020WH	3-3/4"	* G	White Baffle and Non-IC Frame	50W PAR-20, 50W R20	50	
0030	5-1/4"	* G	Black Baffle and Non-IC Frame	75W PAR-30, 85W BR-30, 100W A-19	50	
0030WH	5-1/4"	* G	White Baffle and Non-IC Frame	75W PAR-30, 85W BR-30, 100W A-19	50	
0040WH	6-3/4"	* G	White Baffle and Non-IC Frame	150W PAR38/BR40, 100W A19	50	
<b>Cliclyte Remodeler - Horizontal Baffles</b>						
0029WH	4"	* G	White Baffle and Remodeler	50W PAR-20, 50W R20	25	
0039WH	5-1/2"	* G	White Baffle and Remodeler	75W PAR-30, 75W BR-30, 40W A-19	50	
<b>Shower Light</b>						
0033WH	5-1/2"	* G •	Shower Light and Remodeler	40W A19	15	



## Incandescent Frames

Catalogue no.	Cutout	Length	Width	Depth	Service Quantity	
					2 days	10 days
<b>Non-IC</b>						
2002	3-3/4"	10-1/8"	7-1/2"		100	
1002	5-1/4"	10-1/8"	7-1/2"		100	
1102P1	6-3/4"	11-3/4"	9-1/8"		100	
<b>Insulated Ceiling</b>						
1000IC	5-1/4"	13-1/4"	9-1/8"	7-1/2"	50	
1100IC	6-3/4"	13-1/4"	9-1/8"	7-1/2"	50	
<b>Lytening IC/Non-IC AirSeal Remodelers</b>						
<b>Remodeler Ring</b>						
1103RS	7"	14-5/8"	7-3/8"		100	
<b>AirSeal Remodeler</b>						
1004ICR	5-3/8"	11-3/8"	5-3/4"	7-1/2"	50	
<b>Lytening IC/Non-IC AirSeal New Construction</b>						
<b>AirSeal ICX 5-1/2"</b>						
1004ICXN	5-3/8"	12-1/4"	10-3/8"	7-1/4"	50	
<b>AirSeal 5-3/8"</b>						
1004ICN	5-3/8"	9"	5-3/4"	7-1/2"	200	
<b>AirSeal ICX 6-7/8"</b>						
1104ICXN	6-7/8"	12-1/4"	10-3/8"	7-1/4"	50	
<b>AirSeal 7"</b>						
1104ICN	6-3/4"	10-3/4"	7-1/4"	7-1/2"	100	



## Incandescent Trims

Trim Cat. No.	Symbols	Description	2 days	10 days	Frame	Frame	Frame
---------------	---------	-------------	--------	---------	-------	-------	-------

### 3-3/4" Aperture

Basic Baffle					2002	1002	1000IC
2076BK	* G	Black Baffle	50		50W PAR20/R20		
2076WB	* G	White Baffle	100		50W PAR20/R20		
Basic Cone							
2076CH	* G	Chrome	50		50W PAR20/R20		

### 5-1/4" Aperture

Deep Alzak Reflector							
1046	*** G	Specular Clear Alzak	25			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
Specular Alzak Cone							
1005CL	** G	Specular Clear Alzak		50		100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
1005CD	** G	Clear Diffuse		25		100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L

### Premium Die-Cast Step Baffle

1005BK	** G	Black Baffle	50			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
1005WB	** G	White Baffle	50			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L

### Basic Baffle

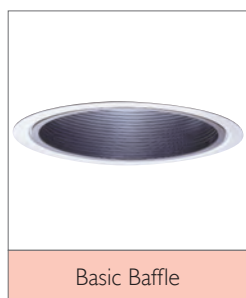
1076WH	* G	White Baffle	100			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
1076	* G	Black Baffle	50			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L

### Basic Cone

1076CH	* G	Chrome	50			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
--------	-----	--------	----	--	--	------------------------------------	-----------------------------------

### Basic Grooved Baffle

R620WH	* G	White Grooves	125			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
--------	-----	---------------	-----	--	--	------------------------------------	-----------------------------------





## Incandescent Trims

Frame	Frame	Frame	Frame	Frame	Frame	Frame	Frame
1004ICN	1004ICXN	1004ICR	1102P1	1103RS	1100IC	1104ICN	1104ICXN
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					
60/40W A19	60W A19	60/40W A19					



Basic Grooved Baffle

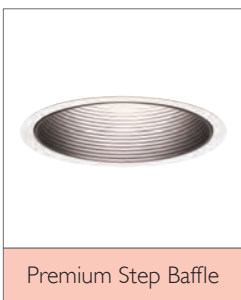
## Incandescent Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame
			2 days	10 days			
<b>5-1/4" Aperture</b>							
PAR30 Gimbal					2002	1002	1000IC
1083WH	* S	Gloss White		50			60W A19 65W BR30 75W PAR30L
<b>Lexan Dish</b>							
1078	* G •	Opal Lexan	25			100W A19 65W BR30 75W PAR30L	60W A19 65W BR30 75W PAR30L
<b>6-3/4" Aperture</b>							
<b>Deep Alzak Reflector</b>							
1146	** * G	Specular Clear Alzak	40				
1146CD	** * G	Comfort Clear Diffuse		25			
<b>Specular Alzak Cone</b>							
1105CL	** G	Specular Clear Alzak	40				
<b>Premium Die-Cast Step Baffle</b>							
1105BK	** G	Black Baffle	40				
1105WB	** G	White Baffle	30				
<b>Basic Baffle</b>							
1176	* G	Black Baffle	50				
1176WH	* G	White Baffle	50				



## Incandescent Trims

Frame	Frame	Frame	Frame	Frame	Frame	Frame	Frame	Frame
1004ICN	1004ICXN	1004ICR	1102P1	1103RS	1100IC	1104ICN	1104ICXN	
60/40W A19	60W A19		105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21				
	60W A19							
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21				
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21				
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19		
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19	
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19	
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19	
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19	



## Incandescent Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame
			2 days	10 days			
<b>6-3/4" Aperture</b>							
<b>Basic Cone</b>					2002	1002	1000IC
1176CH	* G	Chrome	50				
<b>Basic Reflector</b>							
1171	* G	White	30				
<b>Lexan Dish</b>							
1178SH	* G •	Opal Lexan	25				



## Incandescent Trims

Frame	Frame	Frame	Frame	Frame	Frame	Frame	Frame
1004ICN	1004ICXN	1004ICR	1102P1	1103RS	1100IC	1104ICN	1104ICXN
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19
			105W PAR38 150W BR40 150W A21	105W PAR38 150W BR40 150W A21	100W PAR38 100W BR40 60W A19	90W PAR38 120W BR40 75W A19	75W PAR38 65W BR40 60W A19

## HID Frames

Catalogue no.	Lamps	Base	Ballast/Voltage	Input Watts	Input Current	Service Quantity	
						2 days	10 days
<b>6-3/4" Aperture</b>							
<i>New Construction</i>							
1101HIDED100U	1x100W BT/ED/E-17	Medium	Electronic/120V	108	.90A		25
1101HIDED70U	1x70W ED17P	Medium	Electronic/120V	78	.65A		25
1101HIDED70-347	1-70W BT/ED/E-17	Medium	Electronic/347V	78	.65A		25
1101HIDED100-347	1-100W BT/ED/E-17	Medium	Electronic/347V	108	.90A		25

## HID Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame
			2 days	10 days		
<b>6-3/4" Aperture</b>						
<i>Performance Open - Vertical</i>					1101HIDED100U	1101HIDED70U
1101CD	**** G	Clear Diffuse	40		100W ED17P	
1101CL	**** G	Specular Clear	40		100W ED17P	
<i>Specular Alzak Cone</i>						
1105CL	** G	Specular Clear Alzak	40			70W ED17P
<i>Premium Die-Cast Step Baffle</i>						
1105BK	** G	Black Baffle	40			70W ED17P
1105WB	** G	White Baffle	30			70W ED17P



Frame	Frame
1101HIDED70-347	1101HIDED100-347
	100W ED17P
	100W ED17P
1-70W BT/ED/E-17	
1-70W BT/ED/E-17	
1-70W BT/ED/E-17	

## Xceed - Compact Fluorescent Frames

Catalogue no.	Symbols	Description	Input Watts	Ballast/Voltage	Service Quantity	
					2 days	10 days

### Compact Fluorescent 5" Aperture - Round

#### Trims

1050RNDLWB	G •	White Baffle, White Flange				50
1050RNDLCDW	G •	Clear Diffuse, White Flange				50

#### Frames

1050RN18ESN		18W TTT 2700K GX24q-1	35	Electronic/120V		50
1050RN26ESN		26W TTT 2700K GX24q-1	35	Electronic/120V		50

### Compact Fluorescent 5" Aperture - Square

#### Trims

1050SQDLCDW	G •	White Baffle, White Flange				25
1050SQDLCDP	G •	Clear Diffuse, White Flange				25

#### Frames

1050SQ26ESN		26W TTT 2700K	35	Electronic/120V		25
-------------	--	---------------	----	-----------------	--	----





## Compact Fluorescent Frames

Catalogue no.	Lamps	Base	Ballast/Voltage	Input Watts	Input Current	Service Quantity	
						2 days	10 days

### 5-1/4" Aperture

#### Uniframe New Construction

1001F13U	1x13W QT/TTT	4 Pin (GX24q-G24q-1)	Electronic/120/277V	18	.15/.07A	40	
1001F18U	1x18W TTT	4 Pin (GX24q-2)	Electronic/120/277V	19	.16/.07A	40	
1001F26U	1x26W TTT	4 Pin (GX24q-3)	Electronic/120/277V	28	.25/.11A	40	

### 6-3/4" Aperture

#### Uniframe New Construction

1101F2642U	1x26W TTT	4 Pin (GX24q-3/G24q-3)	Electronic/120/277V	28	.25/.11A	40	
	1x32W TTT	4 Pin (GX24q-3)	Electronic/120/277V	36	.32/.14A		
	1x42W TTT	4 Pin (GX24q-4)	Electronic/120/277V	48	.42/.18A		
1101F2642-347	1x26W TTT	4 Pin (GX24q-3/G24q-3)	Electronic/347V	29	.09A	40	
	1x32W TTT	4 Pin (GX24q-3)	Electronic/347V	36	.11A		
	1x42W TTT	4 Pin (GX24q-4)	Electronic/347V	49	.15A		

#### Uniframe New Construction Low Profile

1101T18U	2x18W QT	4 Pin (GX24q-2)	Electronic/120/277V	38	.32/.14A	40	
1101T26U	2x26W QT	4 Pin (GX24q-3)	Electronic/120/277V	56	.49/.21A	40	
1101T26-347	2x26W QT	4 Pin (GX24q-3)	Electronic/347V	57	.17A		30



## Compact Fluorescent Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame
			2 days	10 days		
<b>5-1/4" Aperture</b>						
<b>Performance Open - Vertical</b>					1001F31U	1001F18U
1001CL	**** G	Specular Clear	40		13W QT/TTT	18W TTT
<b>Deep Alzak Reflector</b>						
1046	*** G	Specular Clear Alzak	25		13W QT/TTT	18W TTT
<b>Specular Alzak Cone</b>						
1005CL	** G	Specular Clear Alzak		50	13W QT/TTT	18W TTT
1005CD	** G	Clear Diffuse		25	13W QT/TTT	18W TTT
<b>Premium Die-Cast Step Baffle</b>						
1005BK	** G	Black Baffle	50		13W QT/TTT	18W TTT
1005WB	** G	White Baffle	50			18W TTT
<b>Basic Baffle</b>						
1076WH	* G	White Baffle	100		13W QT/TTT	18W TTT
1076	* G	Black Baffle	50		13W QT/TTT	18W TTT
<b>Basic Cone</b>						
1076CH	* G	Chrome	50		13W QT/TTT	18W TTT
<b>Basic Grooved Baffle</b>						
R620WH	* G	White Grooves	125		13W QT/TTT	18W TTT
<b>Lexan Dish</b>						
1078	* G •	Opal Lexan	25		13W QT/TTT	18W TTT
<b>6-3/4" Aperture</b>						
<b>Performance Open Vertical</b>						
1101CD	**** G	Clear Diffuse	40			
1101CL	**** G	Specular Clear	40			
<b>Performance Open - Horizontal</b>						
1101HCL	**** G	Specular Clear	40			
<b>Deep Alzak Reflector</b>						
1146	*** G	Specular Clear Alzak	40			
1146CD	*** G	Comfort Clear Diffuse		25		
<b>Specular Alzak Cone - 2 Lamp</b>						
1105TCL	** G	Specular Clear Alzak	40			



## Compact Fluorescent Trims

Frame	Frame	Frame	Frame	Frame	Frame
1001F26U	1101F2642U	1101F2642-347	1101T18U	1101T26U	1101T26-347
26W TTT					
26W TTT					
26W TTT					
26W TTT					
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
			2x 18W QT	2x 26W QT	2x 26W QT



## Compact Fluorescent Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame
			2 days	10 days		
<b>6-3/4" Aperture</b>						
<b>Specular Alzak Cone</b>					1001F31U	1001F18U
1105CL	* * * G	Specular Clear Alzak	40			
<b>White Diffuser</b>						
1128T	* * G	White		30		
<b>Premium Die-Cast Step Baffle</b>						
1105BK	* * G	Black Baffle	40			
1105WB	* * G	White Baffle	30			
<b>Basic Baffle</b>						
1176	* G	Black Baffle	50			
1176WH	* G	White Baffle	50			
<b>Basic Cone</b>						
1176CH	* G	Chrome	50			
<b>Lexan Dish</b>						
1178SH	* G •	Opal Lexan	25			



## Compact Fluorescent Trims

Frame	Frame	Frame	Frame	Frame	Frame
1001F26U	1101F2642U 26/32/42W TTT	1101F2642-347 26/32/42W TTT	1101T18U	1101T26U	1101T26-347
			2x 18W QT	2x 26W QT	2x 26W QT
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			
	26/32/42W TTT	26/32/42W TTT			



Lexan Dish

## Uniframe LED Frames

Catalogue no.	Lumen	Colour Temperature	Dimming	Input Watts	Volts	Service Quantity	
						2 days	10 days

### 5-1/4" Aperture

#### Uniframe Non-IC LED

1001LED09N351-CDN	900	3500K	No	19	120	25	
1001LED09N35D1-CDN	900	3500K	Yes	23	120	25	

### 6-3/4" Aperture

#### Uniframe Non-IC LED

1101LED09N351	900	3500K	No	19	120	25	
1101LED09N35D1	900	3500K	Yes	23	120		25



Uniframe LED

## Uniframe LED Trims

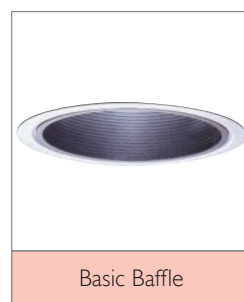
Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame
			2 days	10 days		

### 5-1/4" Aperture

Specular Alzak Cone					1001LED09N351-CDN	1001LED09N35D1-CDN
1005CL	** G	Specular Clear Alzak		50	900 lm	900 lm
1005CD	** G	Clear Diffuse		25	900 lm	900 lm
Premium Die-Cast Step Baffle						
1005BK	** G	Black Baffle	50		900 lm	900 lm
1005WB	** G	White Baffle	50		900 lm	900 lm
Basic Baffle						
1076WH	* G	White Baffle	100		900 lm	900 lm
1076	* G	Black Baffle	50		900 lm	900 lm
Basic Cone						
1076CH	* G	Chrome	50		900 lm	900 lm
Lexan Dish						
1078	* G •	Opal Lexan	25		900 lm	900 lm

### 6-3/4" Aperture

Specular Alzak Cone					1101LED09N351	1101LED09N35D1
1105CL	*** G	Specular Clear Alzak	40		900 lm	900 lm
Premium Die-Cast Step Baffle						
1105BK	** G	Black Baffle	40		900 lm	900 lm
1105WB	** G	White Baffle	30		900 lm	900 lm
Basic Baffle						
1176	* G	Black Baffle	50		900 lm	900 lm
1176WH	* G	White Baffle	50		900 lm	900 lm
Basic Cone						
1176CH	* G	Chrome	50		900 lm	900 lm
Lexan Dish						
1178SH	* G •	Opal Lexan	25		900 lm	900 lm
Basic Reflector						
1171	* G	White	30		900 lm	900 lm



## Xceed LED

Catalogue no.	Symbols	Description	Input Watts	Ballast/Voltage	Service Quantity	
					2 days	10 days
<b>LED 5" Aperture - Round</b>						
<b>Trims</b>						
1050LRNDLWB	G •	White Baffle, White Flange			50	
1050LRNDLCDW	G •	Clear Diffuse, White Flange			50	
1050LRNDLCDP	G •	Clear Diffuse, Clear Diffuse Flange			50	
<b>Light Engines</b>						
1050LRN0927		950 lm 2700K			50	
1050LRN0935		950 lm 3500K			75	
1050LRN0627		650 lm 2700K			75	
1050LRN0635		650 lm 3500K			25	
<b>Frames</b>						
1050LRN09D1N		IC/Non IC AirSeal	19.7	Dimming ELV 120V	75	
1050LRN06D1N		IC/Non IC AirSeal	16	Dimming ELV 120V	75	

## Lytening LED

Catalogue no.	Symbols	Description	Input Watts	Ballast/Voltage	Service Quantity	
					2 days	10 days
<b>LED 5-7/8" Aperture</b>						
<b>Trims</b>						
1076WHL30K	G •	White Baffle		650 lm, 3000K	40	
<b>Frames</b>						
1004ICNLED		IC/Non-IC AirSeal New Construction		Dimming ELV 120V	40	





## CorePro LED

Catalogue no.	Symbols	Description	Input Watts	Ballast/Voltage	Service Quantity	
					2 days	10 days

### LED 4"

Trims - with attached LED light engine

CP430K6	G •	White Splay	8	600 lm/ 120V, Triac dimming	100	
---------	-----	-------------	---	-----------------------------	-----	--

Frames

P4		Non-IC New Construction		120V	70	
P4ASIC		IC New Construction		120V	30	
P4R		Non-IC Remodeler		120V	100	

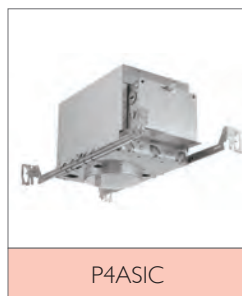
### LED 6"

Trims - with attached LED light engine

CP630K6	G •	White Splay	8.2	600 lm/ 120V, Triac dimming	50	
CP630K10	G •	White Splay	12.8	1000lm/120V, Triac dimming	100	

Frames

PR75ASICNB		IC/AirSeal New Construction		120V	50	
CRR1NBQP		IC Remodeler		120V	100	



## Affex Frames

Catalogue no.	Lamps	Ballast/Voltage	Description	Service Quantity	
				2 days	10 days
<b>4" Aperture</b>					
<b>GU10 Frames</b>					
AX4GU-NNC	50W GU10	120V	Non-IC New Construction	50	
AX4GU-ICN	50W GU10	120V	IC New Construction	50	
AX4GU-REM	50W GU10	120V	Non-IC Remodeler	50	
<b>MR16 Frames</b>					
AX4MR-NNC	50W MR16	Magnetic, 120V	Non-IC New Construction	100	
AX4MR-ICN	50W MR16	Magnetic, 120V	IC New Construction	100	
AX4MR-REM	50W MR16	Magnetic, 120V	Non-IC Remodeler	100	
<b>PAR20 Frames</b>					
AX4PA-NNC	50W PAR20	120V	Non-IC New Construction	200	
AX4PA-ICN	50W PAR20	120V	IC New Construction	200	
AX4PA-REM	50W PAR20	120V	Non-IC Remodeler	100	
<b>Mounting Plates</b>					
AX4MTG			Mounting Plate 4"	100	

## Affex Trims

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame
			2 days	10 days			
<b>4" Aperture</b>					AX4GU-NNC	AX4GU-ICN	AX4GU-REM
<b>Gimbal</b>							
AX4MG-GIMBN	** S	Gimbal, Brushed Nickel	100		50W GU10	50W GU10	50W GU10
AX4MG-GIMWH	** S	Gimbal, White	100		50W GU10	50W GU10	50W GU10
<b>Shower</b>							
AX4MG-SH	** G •	Shower	75		50W GU10	50W GU10	50W GU10
<b>Gimbal</b>							
AX4PA-GIMBN	** S	Gimbal, Brushed Nickel	200				
AX4PA-GIMWH	** S	Gimbal, White	250				



Frame	Frame	Frame	Frame	Frame	Frame
AX4MR-NNC	AX4MR-ICN	AX4MR-REM	AX4PA-NNC	AX4PA-ICN	AX4PA-REM
50W MR16	50W MR16	50W MR16			
50W MR16	50W MR16	50W MR16			
50W MR16	50W MR16	50W MR16			
			50W PAR20	50W PAR20	50W PAR20
			50W PAR20	50W PAR20	50W PAR20



Shower

## 300X FleX Series Frames - Low Voltage

Catalogue no.	Lamps	Description	Ballast/Voltage	Service Quantity	
				2 days	10 days
<b>Remodelers</b>					
<b>3-3/4" Aperture</b>					
<b>Non-IC Magnetic Remodeler</b>					
300MRSPX	1 x MR16	6-1/2" Clearance required, Silent Pack	Magnetic/12V	250	
<b>Non-IC Low Profile 50W Electronic Remodeler</b>					
3401MREX	1 x MR16	4-5/8" Clearance required	Electronic/12V	100	
<b>Non-IC Low Profile 39W Electronic Remodeler</b>					
3401MH39MRE1	1 x MR16 CMH	4-5/8" Clearance required	Electronic/12V	100	
<b>Non-IC Ultra Shallow Electronic Remodeler</b>					
303MRE	1 x MR16	3-1/4" Clearance required	Electronic/12V	100	
<b>Non-IC New Construction</b>					
<b>Non-IC New Construction with Silent Pack</b>					
302MRSPX	1 x MR16	Silent Pack 50W magnetic transformer eliminates noise	Magnetic/12V	250	
<b>Non-IC New Construction</b>					
302MREX	1 x MR16	Integral 50W electronic transformer	Electronic/12V	250	
<b>IC New Construction</b>					
302MRIC7SPX	1 x MR16	7-3/8" Clearance required, Silent Pack	Magnetic/12V	100	
302MRIC9SPX	1 x MR16	9-1/4" Clearance required, Silent Pack	Magnetic/12V	100	
<b>Lytening IC AirSeal</b>					
302MRAICSPX	1 x MR16	7-5/8" Clearance required, AirSeal	Magnetic/12V	100	



## 300X FleX Series Frames - Line Voltage

Catalogue no.	Lamps	Description	Ballast/Voltage	Service Quantity	
				2 days	10 days
<b>Line Voltage Frames</b>					
<b>3-3/4" Aperture</b>					
<b>Non-IC Electronic Remodeler</b>					
300ESX	1 x ES/ESD 16	5-7/8" Clearance required	120V	100	
<b>Non-IC New Construction</b>					
302ESX	1 x ES/ESD 16	No Transformer	120V	100	
<b>IC New Construction</b>					
302ESICX	1 x ES/ESD	9-1/4" Clearance required, 50W	120V	50	
<b>Lytening AirSeal IC New Construction</b>					
302ESAICX	1 x ES/ESD	7-5/8" Clearance required, AirSeal	120V	50	



Electronic Remodeler



Non-IC New Constr.



IC New Constr.



Lytening AirSeal

## 300X FleX Series Trims - Low Voltage

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame	
			2 days	10 days				
<b>3-3/4" Low Voltage</b>								
<b>Adjustable Premium Die-Cast Baffle</b>						300MRSPX	3401MREX	3401MH39MRE1
305BKX	*** G S	Black Baffle	100		50W MR16 37W MR16IR		39W MR16 CMH	
305WHWX	*** G S	White Baffle	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Nelio Premium Die-Cast Adjustable Baffle</b>								
344AWHX	*** G S	White		25	50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Nelio Open Adjustable</b>								
348STX	*** G S	Brushed Steel		25	50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
348WHX	*** G S	White		25	50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Adjustable Alzak Cone</b>								
304CLX	*** G S	Specular Clear Alzak	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
304CCDX	*** G S	Comfort Clear Diffuse	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Slot Aperture</b>								
309WHX	*** S	White	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Elbow</b>								
378STX	** S	Brushed Steel	50		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
378WHX	** S	White	50		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Residence</b>								
313ABX	** G S	Antique Brass		25	50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
313BKX	** G S	Black	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
313STX	** G S	Brushed Steel	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
313WHX	** G S	White	200		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Basic Baffle</b>								
375WHX	** G	White Baffle	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Basic Cone</b>								
374CHX	** G	Chrome, White Flange	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
394CHX	** G	Chrome	100		50W MR16 37W MR16IR	50W MR16 37W MR16IR	39W MR16 CMH	
<b>Shower Light</b>								
377WHX	** G •	White Flange	50		50W MR16 37W MR16IR	50W MR16 37W MR16IR		



## 300X Flex Series Trims - Low Voltage

Frame	Frame	Frame	Frame	Frame	Frame
303MRE	302MRSPX	302MREX	302MRIC7SPX	302MRIC9SPX	302MRAICSPX
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
37W MR16 IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR		50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR		50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR		50W MR16 37W MR16IR	50W MR16 37W MR16IR
	50W MR16 37W MR16IR	50W MR16 37W MR16IR		50W MR16 37W MR16IR	50W MR16 37W MR16IR



Residence



Basic Baffle



Basic Cone



Shower Light



Gimbal

## 300X FleX Series Trims - Line Voltage

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame
			2 days	10 days			
<b>3-3/4" Low Voltage</b>							
<b>Shower Light Baffle</b>					300MRSPX	3401MREX	3401MH39MRE1
376WHX	** A •	White Baffle	50		50W MR16 37W MR16IR	50W MR16 37W MR16IR	
<b>Gimbal</b>							
330WHX	* S	White	100				
<b>3-3/4" Line Voltage</b>							
<b>Adjustable Premium Die-Cast Baffle</b>					300ESX	302ESX	302ESICX
305BKX	*** G S	Black Baffle	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
305WHWX	*** G S	White Baffle	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Adjustable Alzak Cone</b>							
304CLX	*** G S	Specular Clear Alzak	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
304CCDX	*** G S	Comfort Clear Diffuse	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Slot Aperture</b>							
309WHX	*** S	White	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Residence</b>							
313ABX	** G S	Antique Brass		25	50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
313BKX	** G S	Black	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
313STX	** G S	Brushed Steel	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
313WHX	** G S	White	200		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Basic Baffle</b>							
375WHX	** G	White Baffle	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Basic Cone</b>							
374CHX	** G	Chrome, White Flange	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
394CHX	** G	Chrome	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16
<b>Gimbal</b>							
330WHX	* G	White	100		50W ES/ESD-16	50W ES/ESD-16	50W ES/ESD-16





## 300X FleX Series Trims - Line Voltage

Frame	Frame	Frame	Frame	Frame	Frame
303MRE	302MRSPX	302MREX	302MRIC7SPX	302MRIC9SPX	302MRAICSPX
	50W MR16 37W MR16IR	50W MR16 37W MR16IR		50W MR16 37W MR16IR	50W MR16 37W MR16IR
			50W MR16 37W MR16IR	50W MR16 37W MR16IR	
302ESAICX					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					
50W ES/ESD-16					



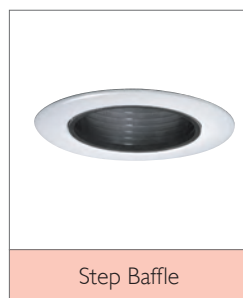
## 500X FleX Series Frames - Line Voltage

Catalogue no.	Lamps	Description	Ballast/Voltage	Service Quantity	
				2 days	10 days
<b>Remodelers</b>					
4-1/4" Aperture					
Non-IC Electronic Remodeler					
501X	1 x PAR20	7" Clearance required	120V	250	
<b>Non-IC New Construction</b>					
Non-IC New Construction					
502X	1 x PAR20	7" Clearance required	120V	250	
<b>IC New Construction</b>					
IC New Construction					
502AICSX	1 x PAR20	7-1/4" Clearance required	120V	50	



## 500X FleX Series Frames - Line Voltage

Trim Cat. No.	Symbols	Description	Service Quantity		Frame	Frame	Frame	
			2 days	10 days				
<b>4-1/4" Line Voltage</b>								
<b>Adjustable Premium Cone</b>						501X	502X	502AICSX
574STX	** G S	Brushed Steel	50		50W PAR20	50W PAR20	50W PAR20	
<b>Adjustable Step Baffle</b>								
575BKX	** G S	Black	50		50W PAR20	50W PAR20	50W PAR20	
575WHX	** G S	White	100		50W PAR20	50W PAR20	50W PAR20	
<b>Adjustable Alzak Cone</b>								
594CHX	** G S	Chrome	50		50W PAR20	50W PAR20	50W PAR20	
<b>Residence</b>								
513ABX	* G S	Antique Brass	50		50W PAR20	50W PAR20	50W PAR20	
513BKX	* G S	Black	50		50W PAR20	50W PAR20	50W PAR20	
513STX	* G S	Brushed Steel	100		50W PAR20	50W PAR20	50W PAR20	
513WHX	* G S	White	250		50W PAR20	50W PAR20	50W PAR20	
<b>Contour</b>								
516WHX	* G	White	50		50W PAR20	50W PAR20	50W PAR20	



## Accessories

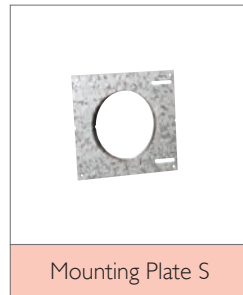
Catalogue no.	Description	Service Quantity	
		2 days	10 days
<b>Vapour Barrier Extenders</b>			
VBE300	Vapour barrier extender for 9" height ceiling box	200	
<b>Mounting Plates</b>			
0089L	Long mounting plate 3-3/4" aperture (300X Series)	100	
0089S	Short mounting plate 3-3/4" aperture (300X Series)	100	
0092L	Long mounting plate 4-1/4" aperture (500X Series)	100	
0092S	Short mounting plate 4-1/4" aperture (500X Series)	100	



Vapour Barrier Ext.



Mounting Plate L



Mounting Plate S

## LED Track Lighting

Catalogue no.	Lamp/Watts	Description	Service Quantity		
			2 days	10 days	Appl. Page
<b>LED</b>					
<b>SpotLED</b>					
LLAB030RNFVH	1000 lm LED, 3000K	White, Narrow Flood	50		
LLAB130RSVH	2000 lm LED, 3000K	White, Spot		25	
LLAB130RNFVH	2000 lm LED, 3000K	White, Narrow Flood		50	
LLAB130RFVH	2000 lm LED, 3000K	White, Flood		10	



SpotLED

## Low Voltage Track Lighting

Catalogue no.	Lamp/Watts	Description	Service Quantity		
			2 days	10 days	Appl. Page
<b>Low Voltage</b>					
<b>Barelite</b>					
850WH	50W MR16	White	30		
<b>DomeLite</b>					
851WH	50W MR16	White	30		
<b>Alcyon Cylinder</b>					
22MC6WH	50W MR16, 37W MR16 IR	Cylinder White	20		



## Line Voltage Track Lighting

Catalogue no.	Lamp/Watts	Description	Service Quantity		Appl. Page
			2 days	10 days	
<b>Line Voltage</b>					
<b>PAR Ring</b>					
6278WH	50W PAR20	White	25		
6282WH	75W PAR30S	White	70		
55215WH	250W PAR38	White	70		
<b>PAR Ring Front Relamping</b>					
55241WH	75W PAR30S	White	40		
55242WH	250W PAR38	White	70		
<b>Universal</b>					
6320WH	150W A21 55W PAR16 50W PAR20 250W PAR38 300W BR40	White	40		
<b>Par-Tech Low Profile Adaptor</b>					
8201WH	55W PAR16 50W PAR20 75W PAR30 250W PAR38	White	60		
<b>Mini HID Cylinder</b>					
8114WH	39W T4.5 CMH	White		50	
<b>Mini HID Accessories</b>					
24MHT45RNF	Reflector 20° Narrow Flood			50	



## Track Lighting Accessories

Catalogue no.	Length	Description	Service Quantity		Appl. Page
			2 days	10 days	
<b>Track</b>					
<b>Fast Track</b>					
6004NWH	43-7/8"	4' White	40		
6008NWH	91-7/8"	8' White	50		
<b>Monopoint</b>					
<b>Monopoint Connection</b>					
6190WH		White	30		
<b>Feeds</b>					
<b>Live End Feed</b>					
6048NWH		White	90		
<b>Floating Feed Canopy</b>					
6061WH		Invisible Feed, White	20		
<b>Connectors</b>					
<b>In-Line Connector</b>					
6054NWH		White	30		
<b>L Connector</b>					
6050NWH		White	30		
<b>Joiner</b>					
6049NWH		White	30		



Track



Monopoint



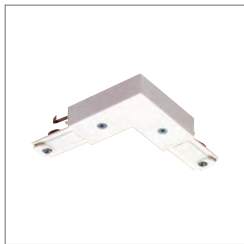
Live End Feed



Floating Feed



In-Line Connector



L Connector



Joiner



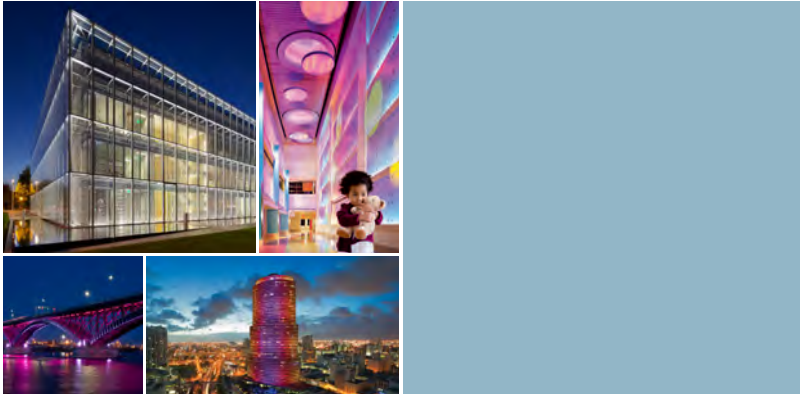
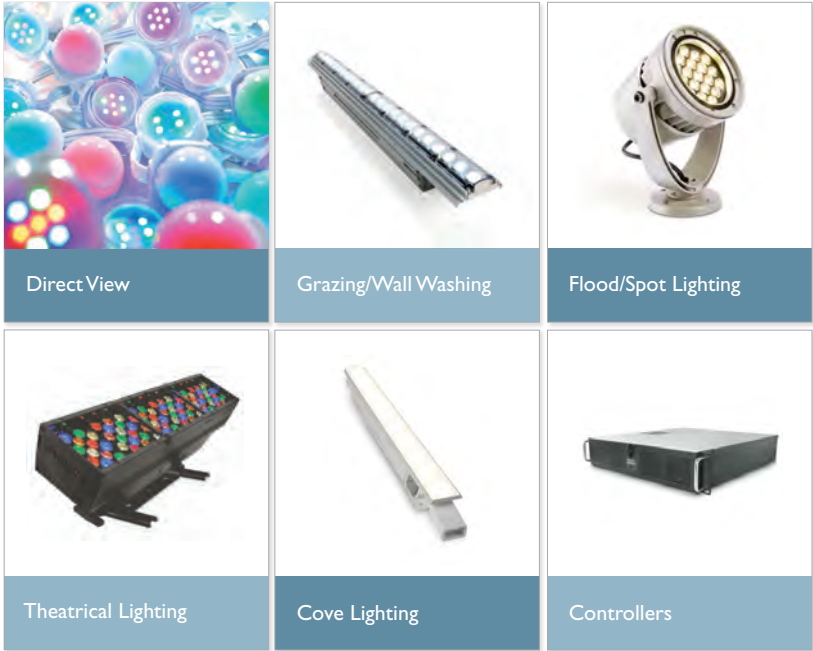
## Controls

Catalogue no.	Description	Service Quantity	
		2 days	10 days
<b>Dimmers</b>			
<b>MultiSet Pro</b>			
MHP5ESW	5 Preset Master, Heatsink - White	5	
MHP600VAW	600VA FPC, Heatsink - White	5	
MHP1000VAW	1000VA FPC, Heatsink - White	5	
MHP500QEW	500VA RPC, Heatsink - White	5	
<b>Sunrise</b>			
SR400RPC120	Sunrise 400VA RPC 120V - White, Ivory, Light Almond	10	
SR600MK10120	Sunrise 600VA Mk 10 120V - White, Ivory, Light Almond	5	
SR1200ZTUNV	Sunrise 1200VA 0-10V 120V - White, Ivory, Light Almond	10	
SR150LED120	Sunrise 150VA LED 120V - White, Ivory, Light Almond	10	
SR3W	Sunrise 3-way - White	5	
<b>Sensors</b>			
<b>Ceiling Sensor</b>			
LRM224000	120/277V PIR Ceiling Sensor	10	
LRM225500	24VDC US-PIR Ceiling Sensor	10	
<b>Power Packs</b>			
<b>Power Pack</b>			
LCA228500	120V to 24VDC Power Pack	5	
LCA229000	347V to 24VDC Power Pack	5	
<b>Wallboxes</b>			
<b>Wallbox</b>			
LRS222000	120/277V US-PIR Wallbox	10	



# Architectural & Entertainment LED Lighting Systems

Philips Color Kinetics offers professional LED lighting systems in a multitude of types, form factors, and output levels. Colour-changing, tunable white, solid white, and solid colour LED lighting fixtures deliver high-quality, digitally controllable light in the full range of interior and exterior architectural and entertainment applications.



# Architectural LED Lighting Systems

Catalogue no.	Description	Service Quantity	
		2 days	10 days

## Flood Lighting

### Vaya Flood

350-000007-25	Vaya Floodlight, 4000K, 20°, Architectural mounting		10
350-000007-26	Vaya Floodlight, 4000K, 40°, Architectural mounting		10

## Downlights

### eW Downlight

523-000010-00	120VAC Power Module		25
523-000009-14	White LED Lamp Module, 2700K, 30°		25
523-000009-17	White LED Lamp Module, 4000K, 30°		5
523-000009-13	White LED Lamp Module, 4000K, 65°		25
523-000011-01	Black Bezel Trim Module		10
523-000011-00	White Bezel Trim Module		25
523-000011-02	Brushed Aluminum Trim Module		25

## Cove Lighting

### eW Cove QLX

523-000004-16	Linear Interior LED, 110° x 110° (wide) beam angle, 4000k, 6W		20
---------------	---	--	----

### eW Cove QLX Accessories

108-000032-05	Leader cable for eW Cove QLX		10
120-000125-00	Mounting track for eW Cove QLX/EC		40



Vaya Flood



eW Downlight



eW Cove QLX

# Outdoor General Purpose Lighting

Philips Keene outdoor luminaires are your best value because they are innovative, contractor friendly, and energy efficient. Readily available and dependable, Keene solutions cover a wide variety of applications for your day to day outdoor lighting needs.



## Performance is key.

Philips Keene is committed to offering solutions that are tailored to meet your lighting needs. We have developed a classification system to help you choose the right product every time.

### Star Rating System

Good	*
Better	**
Best	***

## Outdoor General Purpose Lighting

Catalogue no.	Rating	Lamp	Watts	Ballast/Voltage	Service Quantity		Appl. Page	
					2 days	10 days		
<b>Wall Mount</b>								
<b>WPS Wallprism</b>								
WPS070NLXL-1	*	ED17 HPS	70	Reactor (NPF)/120V	40		109	
<b>TLW Wallprism</b>								
TLW050NLXLPC-1	*	E17 HPS	50	Reactor (NPF)/120V	15		109	
TLW070NLXLPC-1	*	E17 HPS	70	Reactor (NPF)/120V	100		109	
TLW070NLXLPC-1W	*	E17 HPS	70	Reactor (NPF)/120V	30			
<b>Mini &amp; Maxi</b>								
313150LXL-T	**	ED17 HPS	150	HX-HPF /Tri-Tap	50		109	
313150NLXL-1	**	ED17 HPS	150	Reactor (NPF)/120V	100		109	
313175MAL-T	**	ED17 MH	175	CWA/Tri-Tap	100		109	
553250LXL-T	**	E18 HPS	250	CWA/Tri-Tap		20	109	
553250MAL-T	**	ED28 MH	250	CWA/Tri-Tap	40		109	
553400LXL-T	**	E18 HPS	400	CWA/Tri-Tap		15	109	
553400MAL-T	**	ED37/BT37 MH	400	CWA/Tri-Tap	40		109	
<b>Mini &amp; Maxi Accessories</b>								
330		Wire Guard for 300 Series Wallcube					15	
335		Lexan Shield for 300 Series Wallcube					15	
<b>LytePro7</b>								
LP7T	***	555 Lumen LED	13	120-220	50			
LP7P	***	555 Lumen LED	13	120-220	50			
<b>LytePro16</b>								
LP16T	***	2500 Lumen LED	36.5	120-277	30			
LP16P	***	2500 Lumen LED	36.5	120-277	30			
<b>LytePro32</b>								
LP32T	***	5700 Lumen LED	71	120-277	20			
LP32T-H	***	5700 Lumen LED	71	347-480	20			
LP32P	***	5700 Lumen LED	71	120-277	20			
LP32P-H	***	5700 Lumen LED	71	347-480	20			

NOTE: "T" - Titanium finish, "P" - Bronze finish



# Outdoor General Purpose Lighting

Catalogue no.	Rating	Lamp	Watts	Ballast/Voltage/Mounting	Service Quantity		Appl. Page
					2 days	10 days	

## Wall Mount Continued

### FloodPak

FPM100MAL-T	***	ED17 MH	100	HX-HPF/Tri-Tap		10	109, 111
FPM175MAL-T	***	ED17 MH	175	CWA/Tri-Tap		15	109, 111
FPL400MAL-T	***	ED28 MH	400	CWA/Tri-Tap		10	

## Floods

### Penta flood - PF2

PF2Y175MAL-T	***	ED17 MH	175	CWA/Tri-Tap/Yoke	10		107, 111
PF2A175MAL-T	***	ED17 MH	175	CWA/Tri-Tap/Arm	5		107, 111

### Penta flood - PF3

PF3Y250MAL-T	***	ED28 MH	250	CWA/Tri-Tap/Yoke	10		107, 111
PF3Y400MAL-T	***	ED28 MH	400	CWA/Tri-Tap/Yoke	30		107, 111
PF3Y400LXL-T	***	ED18 HPS	400	CWA/Tri-Tap/Yoke	10		107
PF3A400MAL-T	***	ED28 MH	400	CWA/Tri-Tap/Adj. Tenon	5		107, 111

### Hazardous Penta flood - PF4

HPF4Y400MAL-T	***	ED28 MH	400	CWA/Tri-Tap/Yoke	20		
---------------	-----	---------	-----	------------------	----	--	--

### Penta flood - PF5

PF5Y1000MAL-T	***	BT/ED/E56 MH	1000	CWA/Tri-Tap/Yoke	10		107, 111
PF5A1000MAL-T	***	BT/ED/E56 MH	1000	CWA/Tri-Tap/Adj. Tenon	15		107, 111

### Penta flood Accessories

BT10		Universal slipfitter converts PF2, PF3, and PF4 Yoke model to Tenon mount			20		
------	--	---	--	--	----	--	--

## Area Lighting

### Silhouette

SR2B253MAL-T	**	ED28 MH	250	CWA/Tri-Tap		15	
SR2B403MAL-T	**	ED28 MH	400	CWA/Tri-Tap		15	

## Garage and Canopy

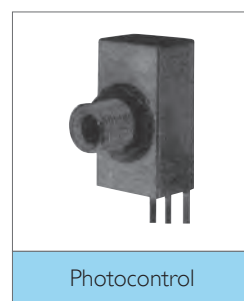
### TLC Canopy Light

TLC71NXL-1	*	E17 HPS	70	Reactor (NPF)/120V	20		
------------	---	---------	----	--------------------	----	--	--



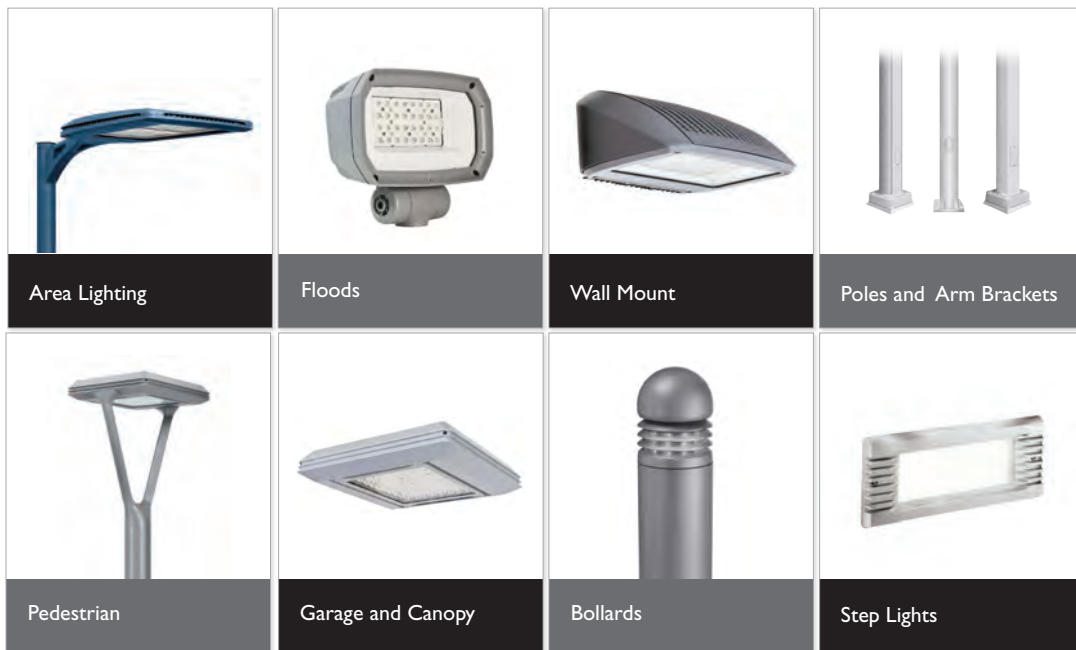
## Outdoor General Purpose Lighting

Catalogue no.	Description	Service Quantity		Appl. Page
		2 days	10 days	
<b>Outdoor General Area Lighting</b>				
<b>Box Mounted Fixture</b>				
VCXL11GC	Ceiling unit wth cast guard and globe - 100W Max	50		
<b>Guards</b>				
V131	Cast aluminum guard for 3-1/2" globe - 100W Max	20		
<b>Globes</b>				
VGC100	3-1/2" clear glass globe - 100W Max	40		
<b>Photocontrols</b>				
P105A	Basic Mini-Photocontrol, 120V	25		
P150W	Light-leveler Photocontrol, 347V	15		
<b>Lampholder</b>				
3100	Budget aluminum lamp holder, 75W - 150W PAR38	50		
<b>4" Round Junction Box</b>				
753C	Aluminum 5 hole junction box with cover - 3/4" Tap	75		
75C	Aluminum 5 hole junction box with cover - 1/2" Tap	250		
<b>Gang Box</b>				
FS111	Single aluminum 3 hole rectangular gang box - 1/2" Holes	200		
<b>Junior Junction Box</b>				
49	Aluminum junior 2 hole junction box for lampholders at end of run - 1/2" Tap	50		
<b>Covers</b>				
2	Round 1 hole zinc cover for 3" - 4" box - 1/2" Tap	50		
2B	Round 3 hole zinc cover for 3" - 4" box - 1/2" Tap	50		



# Outdoor Architectural & Performance Lighting

Philips Gardco outdoor luminaires are the solution when performance, style and architectural compatibility all play an important part in the specification process. Optical designs sensitive to light pollution, light trespass and glare control marry with energy efficiency and leading-edge aesthetics for no-compromise outdoor lighting solutions.





# Outdoor Architectural & Performance Lighting

Catalogue no.	Lamp	Watts	Ballast/Voltage/ Mounting	Service Quantity		
				2 days	10 days	Appl. Page
<b>Garage and Canopy</b>						
G3						
G3-5-2-73LA-3270-NW-HVU-NP	LED	73W	347-480	30		104
STK-G3-5-1-55LA-161A-NW-UNIV-NP	LED	55W	120-277	30		104
STK-G3-5-2-73VAR-NW-UNIV-NP	LED	35/46/57/73W	120-277	30		104
<b>Area Lighting</b>						
Ecoform						
ECF-1-3-215LA-641A-NW-UNV-BRP	LED	215W	120-277		20	107
ECF-1-3-215LA-641A-NW-HVU-BRP	LED	215W	347-480		20	107
ECF-1-4-215LA-641A-NW-UNV-BRP	LED	215W	120-277		20	107
ECF-1-4-215LA-641A-NW-HVU-BRP	LED	215W	347-480		20	107
Ecoform Accessories						
ECF-RAM-BRP	Retrofit arm mount adaptor				50	










G3







Ecoform

# Outdoor Urban, Roadway & Tunnel Lighting

Philips Lumec's forward thinking outdoor lighting solutions address revolutionary changes in designs, products and technologies. Contemporary designs by Lumec perfectly meet the lighting requirements of any street, boulevard, public space or park.

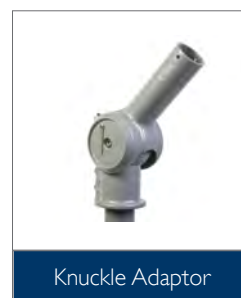
Urban Lighting			
	Contemporary Post Top	Poles and Arm Brackets	Contemporary Arm
			
Wall Sconce	Traditional Post Top	Traditional Pendant	Bollards, Light Columns and Light Posts

## Roadway Lighting

			
Cobra Head	Urban Roadway	Off Road	Tunnel and Underpass Lighting

## Outdoor Urban, Roadway & Tunnel Lighting

Catalogue no.	Lamp	Colour	Watts	Ballast/Voltage	Service Quantity	
					2 days	10 days
<b>Roadway Lighting</b>						
<b>StreetView</b>						
SVM-60W32LED4K-R-LE3-UNIV-DMG-RC-GY3	LED	Grey	60W	120-277		20
SVM-90W48LED4K-R-LE3-UNIV-DMG-RC-GY3	LED	Grey	90W	120-277		20
SVM-90W48LED4K-R-LE5-UNIV-DMG-RC-GY3	LED	Grey	90W	120-277		15
<b>RoadView</b>						
RVM-ORH-270W160LED4K-R-LE3TM-UNIV-KAV-GY3	LED	Grey	270W	120-277		6
RVM-ORH-270W160LED4K-R-LE3TM-347-KAV-GY3	LED	Grey	270W	347-480		6
<b>Accessories</b>						
TER6MA-1A-NF	Roadway 6' universal arm			Brushed Alum.		10
TER8MA-1A-NF	Roadway 8' universal arm			Brushed Alum.		10
ACC-KAV-GY3	Orientable vertical knuckle adaptor for RVM			Grey		6
RLAR-1A-R4-GY3	Roadway short arm for Round pole			Grey		10
RLAR-1A-SQ-GY3	Roadway short arm for square pole			Grey		10



## Lamps & Ballasts

For over 120 years Philips has led the lighting industry, introducing innovative, energy-efficient lighting solutions and building a trusted reputation for exceptional performance and reliability. As the industry continues to transform, so do we to meet the changing needs of our customers. We continue to drive innovation with a complete portfolio of best-in-class products that represent the full depth, breadth, and forward thinking that you can expect from an industry leader.



## Lamps & Ballasts

Catalogue no.	Product No.	Watts	Colour Temp.	Bulb Type	Base	Volts	Case Qty	Rated Avg. Life (Hrs)	Service Quantity	
									2 days	10 days
<b>LED Lamps</b>										
<b>MR16</b>										
10MR16/END/F35 2700 DIM 1	420182	10	2700	MR16	GU5.3	12V	10	25000	50	
10MR16/END/F35 3000 DIM	433656	10	3000	MR16	GU5.3	12V	10	25000	110	
10MR16/END/F24 3000-500 DIM	433631	10	3000	MR16	GU5.3	12V	10	25000	50	
<b>A19</b>										
11A19/END/2700 DIM6/1 Prof	423491	11	2700	A19	Med.	120V	6	25000	80	
<b>PAR20</b>										
8PAR20/END/F25 2700 DIM 6/1	426122	8	2700	PAR20	Med.	120V	6	45000	30	
8PAR20/END/F25 3000 DIM 6/1	426130	8	3000	PAR20	Med.	120V	6	45000	80	
8PAR20/END/F36 3000 DIM6/1	426163	8	3000	PAR20	Med.	120V	6	45000	100	
<b>PAR30L</b>										
13PAR30L/END/F25 2700 DIM AF	430124	13	2700	PAR30	Med.	120V	6	45000	20	
13PAR30L/END/F25 3000 DIM AF	430132	13	3000	PAR30	Med.	120V	6	45000	20	
<b>PAR30S</b>										
13PAR30S/END/F25 3000 DIM AF	423459	13	3000	PAR30S	Med.	120V	6	45000	120	
13PAR30S/END/F36 3000 DIM AF	423475	13	3000	PAR30S	Med.	120V	6	45000	90	
<b>PAR38</b>										
18PAR38/END/F25 2700 DIM AF	420513	18	2700	PAR38	Med.	120V	6	45000	80	
18PAR38/END/F25 3000 DIM AF	420521	18	3000	PAR38	Med.	120V	6	45000	120	
18PAR38/END/F36 3000 DIM AF	420893	18	3000	PAR38	Med.	120V	6	45000	20	
429092 19PAR38/F25 3000 DIM AF SO	429035	19	3000	PAR38	Med.	120V	6	45000	170	



MR16



A19



PAR20



PAR30L



PAR30S



PAR38

## Lamps & Ballasts

Catalogue no.	Product No.	Watts	Colour Temp.	Bulb Type	Base	Volts	Case Qty	Rated Avg. Life (Hrs)	Service Quantity	
									2 days	10 days

### CFL Lamps

#### CFL Integrated

EL/mdT2 13W 2.7K	413996	13	2700	EL/MDT	Med.	120V	6	12,000	370	
------------------	--------	----	------	--------	------	------	---	--------	-----	--

#### CFL Not Integrated

PL-C 26W/35/4P/ALTO 10PK	383364	26	3500	PLC	G24q-3		10	12,000	30	
PL-L 40W/835/RS/IS 25PK	300434	40	3500	PLL	2G11		25	20,000	170	
PL-L 40W/835/XEW/4P/IS 25W	209148	40	3500	PLL	2G11		25	20,000	170	
PL-L 40W/841/RS/IS 25PK	300442	40	4100	PLL	2G11		25	20,000	140	
PL-T 32W/35/4P/ALTO 12PK	268334	32	3500	PLT	GX24q-3		12	16,000	130	

### Tubular Fluorescent

#### T5

F28T5/835 ALTO 40PK	230854	28	3500	T5	Min. Bi-Pin		40	24,000	360	
F28T5/841 ALTO 40PK	230862	28	4100	T5	Min. Bi-Pin		40	24,000	340	
F54T5/835/HO/ALTO 40PK	290288	54	3500	T5	Min. Bi-Pin		40	24,000	420	
F54T5/841/HO/ALTO 40PK	290833	54	4100	T5	Min. Bi-Pin		40	24,000	1080	
F54T5/841/HO/XEW/ALTO/ 44W	417824	44	4100	T5	Min. Bi-Pin		40	24,000	350	
F54T5/850/HO/ALTO 40PK	135103	54	5000	T5	Min. Bi-Pin		40	24,000	270	

#### T8

F17T8/TL841/ALTO 30PK	281899	17	4100	T8	Med. Bi-Pin		30	24,000	210	
F32T8/ADV835/EW/ALTO 28W	281022	28	3500	T8	Med. Bi-Pin		30	32,000	490	
F32T8/ADV835/XLL ALTO 25W	281220	25	3500	T8	Med. Bi-Pin		30	40,000	660	
F32T8/ADV841 ALTO 30PK	280859	32	4100	T8	Med. Bi-Pin		30	40,000	370	
F32T8/ADV841/EW/ALTO 28W	281030	28	4100	T8	Med. Bi-Pin		30	32,000	430	
F32T8/ADV841/X LL ALTO 25W	281238	25	4100	T8	Med. Bi-Pin		30	40,000	180	
F32T8/ADV841/XEW/ALTO 25W	280784	25	4100	T8	Med. Bi-Pin		30	32,000	940	
F32T8/ADV841/XLL/ALTO 28W 30	281279	28	4100	T8	Med. Bi-Pin		30	40,000	1280	
F32T8/TL835 PLUS ALTO 30PK	281675	32	3500	T8	Med. Bi-Pin		30	30,000	880	
F32T8/TL841 PLUS ALTO HV 30PK	281790	32	4100	T8	Med. Bi-Pin		30		2740	
F32T8/TL850 PLUS ALTO HV 30PK	281816	32	5000	T8	Med. Bi-Pin		30	30,000	670	

#### T12

F40DX ALTO 30PK	273599	40	6500	T12	G13		30	20,000	310	
F40T12/CWSupreme/ALTO	423889	40	4100	T12	G13		30	20,000	550	
F96T12/CW Supreme/ALTO 15PK	423194	75	4100	T12	Single Pin		15	12,000	100	
F96T12/CW/HO-O ALTO 15PK	381764	110	4100	T12	R17d		15	12,000	130	
F96T12/DX ALTO 15PK	372821	75	6500	T12	FA8		15	12,000	510	



CFL Integrated



CFL Not Integrated



T5



T8



T12



PAR20



PAR38



Ceramalux HPS ED18



Ceramalux HPS ED23

## Lamps & Ballasts

Catalogue no.	Product No.	Watts	Colour Temp.	Bulb Type	Base	Volts	Case Qty	Rated Avg. Life (Hrs)	Service Quantity	
									2 days	10 days

### Halogen Lamps

#### PAR20

50PAR20/HAL/FL25 130V 15PK	229211	50	2900	PAR20	Med.	130V	15	4,000	70	
----------------------------	--------	----	------	-------	------	------	----	-------	----	--

#### PAR38

90PAR38/HAL/FL25 130V 12PK	236513	90	2900	PAR38	Med.	130V	12	5,000	200	
----------------------------	--------	----	------	-------	------	------	----	-------	-----	--

### HID Lamps

#### Ceramalux High Pressure Sodium

C1000S52/ALTO 6PK	368837	1000	2100	ED25	Mog.		6	24,000	140	
C100S54/ALTO 12PK	368720	100	2100	ED23-1/2	Mog.		12	24,000	180	
C100S54/ALTO NC HPS 12PK	147405	100	2100	ED23-1/2	Mog.		12	30,000	130	
C150S55/ALTO 12PK	368746	150	2100	ED23-1/2	Mog.		12	24,000	170	
C250S50/ALTO 12PK	368795	250	2100	ED18	Mog.		12	24,000	110	
C400S51/ALTO 12PK	368811	400	2100	ED18	Mog.		12	24,000	70	
C70S62/ALTO 12PK	368696	70	2100	ED23-1/2	Mog.		12	24,000	70	

#### Energy Advantage CDM

CDM330/U/O/4K EA 6/1	232595	330	4000	ED37	EX39 Excl. Mog.		6	24,000	60	
----------------------	--------	-----	------	------	-----------------	--	---	--------	----	--

#### MasterColor CDM

CDM35/T6/930 ELITE 12PK	409144	39	3000	T6	G12		12	15,000	30	
CDM70/T6/930 ELITE 12PK	409151	70	3000	T6	G12		12	15,000	30	
CDM 35/PAR20/M/FL 12PK	233643	39	3000	PAR20	Med.		12	9,000	60	
CDM 35/PAR30L/M/FL 6PK	223305	39	3000	PAR20	Med.		12	11,000	20	

#### Metal Halide

MH1000/U 6PK	415224	1000	3900	BT56	Mog.		6	12,000	40	
MH1000/U/BT37 6PK	321505	1000	3700	BT37	Mog.		6	10,000	30	
MH175/U 12PK	287334	175	4000	ED28	Mog.		12	10,000	40	
MH175/U/M 12PK	313585	175	4000	BD17	Med.		12	10,000	60	
MH250U 12PK	274845	250	4000	ED28	Mog.		12	10,000	50	
MH400/U 6PK	274498	400	3900	ED37	Mog.		6	20,000	80	
MH400/U/ED28 12PK	278622	400	4000	ED28	Mog.		12	20,000	20	

#### MasterColor Ceramic Metal Halide

MHC100/U/M/4K ALTO 12PK	429886	100	4000	ED17	Med.		12	20,000	400	
-------------------------	--------	-----	------	------	------	--	----	--------	-----	--



ED25



CDM ED37



MasterColor T6



MasterColor PAR20



BT56



BT37



ED28



BD17



ED37



MasterColor CMH

## Lamps & Ballasts

Catalogue no.	Product No.	Watts	Bulb Type	Ballast Factor	Input Volts	Case Qty	Starting Method	Starting Temp.	# of Lamps	Service Quantity	
										2 days	10 days
<b>Ballasts</b>											
<b>Metal Halide - Core and Coil</b>											
71A55A0001D	191866	175	M57	N/A	120/277/347V KIT	1	N/A	N/A	N/A	10	
71A60A1001D	191890	400	M59	N/A	120/277/347V KIT	1	N/A	N/A	N/A	10	
71A65A2001	191916	1000	M47	N/A	120/277/347V KIT	1	N/A	N/A	N/A	10	
<b>High Pressure Sodium - Core and Coil</b>											
71A81A2001D	191998	150	S55	N/A	120/277/347V KIT	1	N/A	N/A	N/A	10	
71A84A3001D	192013	400	S51	N/A	120/277/347V KIT	1	N/A	N/A	N/A	10	
<b>OPTANIUM</b>											
GOPA2P32LWSC35M	197988	32	F32T8	0.88	347	20	IS	-29	2	210	
GOPA2P32SC35M	197962	32	F32T8	0.88	120-277	20	IS	-29	2	390	
GOPA4P32SC35M	197970	54	F32T8	0.88	120-277	20	IS	-29	4	160	
IOP2P59SC35M	120618	59	F96T8	0.87	120-277	20	IS	0	2	90	
IOP2PSP32LWSC35M	109306	32	F32T8	0.71	120-277	20	PS	-18	2	210	
IOPA2P32LWN35M	107854	32	F32T8	0.77	120-277	30	IS	-29	2	240	
IOPA2P32N35M	107847	32	F32T8	0.87	120-277	30	IS	-18	2	380	
IOPA4P32N35M	498956	32	F32T8	0.87	120-277	30	IS	-29	4	230	
<b>CENTIUM</b>											
HCN2S5490CWL35M	197871	54	F54T5/HO	1	347	10	PS	-29	2	190	
HCN4S5490C2LSG35M	119560	54	F54T5/HO	1	347	6	PS	-29	4	100	
ICN2P32N35M	196873	32	F32T8	0.88	120-277	30	IS	-18	2	370	
ICN2P60SC35M	199547	60	F96T12	0.89	120-277	20	IS	16	2	60	
ICN2S8635M	118729	86	F96T8/HO	0.95	120-277	6	IS	-20	2	30	
ICN4P32N35M	109140	32	F32T8	0.88	120-277	30	IS	-18	4	190	
<b>AMBISTAR</b>											
RELB2S40N35M	108803	40	F40T12	0.85	120	20	RS	10	2	60	
<b>SMARTMATE</b>											
ICF2S26H1LDK	176537	26	CFL PL-T	1	120-277	12	PS	-18	2	40	



# Lighting applications

Contents	Page
Lighting Technology & Terms Explained	68 - 69
Indoor Commercial Linear Fluorescent Lighting	70 - 73
Lighting effects explained	74
Typical Office Layouts and Application Advice	75
Indoor Residential & Commercial Lighting with Downlights & Track	
General Lighting	76 - 81
Accent Lighting	82
Wall Washing Lighting	83
Task Lighting	84
Typical Residential Layouts and Issues	
Kitchens	85
Bathrooms	86
Home Theatres	87
Keene & CFI Rating Criteria & Industrial Design Advice	88 - 89
Indoor Industrial Fluorescent Lighting	90 - 93
Highbay lighting applications for open areas and aisle lighting	94 - 103
Parking facility lighting	104 - 105
Parking and Area Lighting	106 - 107
Parking Lot & Security Lighting Using Wallcubes	108 - 109
Façade Flood Lighting	110 - 111

# Lighting technology & terms explained

## General Lamp Information

### Incandescent

The incandescent lamp is a source of electric light that works by incandescence, (a general term for heat-driven light emissions which includes the simple case of black body radiation). An electric current passes through a thin tungsten filament, heating it until it produces light. A filling gas is often used in the enclosing glass to reduce the filament evaporation rate and improve average life.

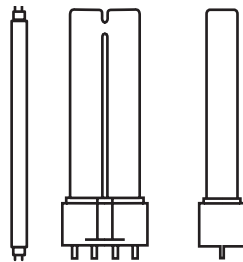


The enclosing glass bulb prevents the oxygen in air from reaching the hot filament, which otherwise would be destroyed rapidly by oxidation. Incandescent lamps provide superior colour rendering, easy dimming and economical maintenance. The colour rendering of incandescent sources ranges all the way from warm tones (approx. 2700K) of conventional A lamps to the brilliant light (approx. 3000K) of tungsten halogen. (User should be aware that there is pending legislation to ban certain incandescent A shaped light sources here in Canada).

Units featuring reflectorized lamps, such as PAR and low-voltage MR16 lamps, are a good choice for accent lighting and wall washing, or wherever highly controlled beams and long lamp life are desired. The longer life of PAR and low-voltage MR16 lamps also make them a good choice for locations that are difficult to access. Small-scale halogen PAR lamps, such as PAR16 and PAR20, produce crisp, white light that is very similar in effect to low voltage halogen lighting although offering a lower lamp life when compared to other PAR lamps or MR16's. By bringing out form, colour and texture in the objects being lighted, low voltage halogen lighting draws the viewer in and adds excitement to the composition.

### Fluorescent

A compact fluorescent lamp or fluorescent tube is a gas discharge that uses electricity to excite mercury vapor. The excited mercury atoms produce short-wave ultraviolet light that then causes a phosphor to fluoresce, producing visible light. There have been some environmental concerns over the mercury content in fluorescent light sources.



Rest assured that due to advancements in technology the levels of mercury content have decreased dramatically (from around 20mg per 4' lamp to as low as 1mg). More and more recycling programs are becoming readily available to safely dispose of the lamps when they reach end of life. Please refer to your lamp manufacturer's catalogue for exact mercury content. Note that the levels may differentiate between manufacturers. Unlike incandescent lamps, fluorescent lamps always require a ballast to regulate the lamp power. However, a fluorescent lamp converts electrical power into useful light more efficiently by generating less heat and more light than an incandescent lamp; lower energy costs offsets the higher initial cost of the lamp.

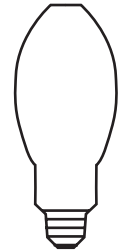
While larger fluorescent lamps have been mostly used in large commercial or institutional buildings, the compact fluorescent lamp is now being used as an energy-saving alternative to incandescent lamps in homes. Compared with incandescent lamps, fluorescent lamps use less power for the same amount of light, and generally last longer. While fluorescent is not as easy as incandescent to dim, dedicated electronic fluorescent dimming ballasts are available when required.

With excellent improvements in colour rendering, colour temperature capabilities coupled with state of the art electronic ballasts, fluorescent lamps provide high lumen output with a fast and flicker free start up. In

addition, for superior performance capabilities it is recommended to choose a luminaire with excellent performing optics to maximize the element of quality lighting in any application.

### HID

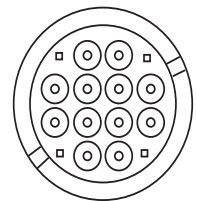
A High-intensity discharge (HID) lamp is a type of electrical lamp that produces light by means of an electric arc between tungsten electrodes housed inside a transparent fused quartz or translucent fused polycrystalline alumina tube. This tube is filled with both gas and metal salts. The gas facilitates the arc's initial strike. Once the arc is started, it heats and evaporates the metal salts forming a plasma, which greatly increases the intensity of light produced by the arc. High-intensity discharge lamps are a type of arc lamp.



Compared to fluorescent and incandescent lamps, certain HID lamps have higher luminous efficacy since a greater proportion of their radiation is in visible light as opposed to heat. Their overall luminous efficacy is also much higher; they give a greater amount of light output per watt of electricity input. High Intensity Discharge (HID) light sources provide high output, long life and the greatest possible energy efficiency. These characteristics make them a prime consideration for many commercial applications. Metal Halide is best suited for interior applications as it provides better colour rendering than high pressure sodium. HID lighting should be used for ceilings over twelve feet where a strong punch of light is required. For ceilings over 15 feet, consider Metal Halide PAR lamps, which provide an even stronger throw of light.

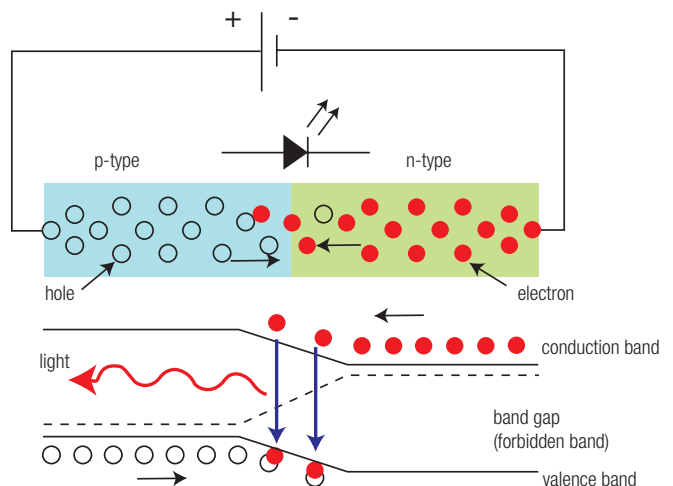
### LED

LED is the acronym used for a Light Emitting Diode. LED's are small semi conductors that allow passage of an electrical current in one direction forward from the anode to the cathode. An LED consists of two types of semi conductors P-type and N-type, these two elements need to be placed in direct contact to form a P-N junction.



The difference between LED's and other diodes is that an LED is designed to produce photons and has a transparent package that allows visible energy (light) to pass through. The colour of an LED is determined by the chemical composition of the semiconductor material used in the LED.

**When electrons cross the junction, they move to a lower energy level. As this change in energy occurs, a photon (light) is released.**



## Choosing the right lamp.

When selecting the light source for your application, there are some things you need to consider.

### Colour Rendering Index:

The Colour Rendering Index (CRI) is a relative scale to determine a light source's ability to render an object's colour. The higher the number, 100 being the best, the better the colour rendering. Specify a source that has 90+ where colour matching/selection is occurring; 80+ for pleasant appearance of people, food and merchandise; 80+ for offices, educational, health care and institutional settings; 70+ for most industrial tasks.

### Colour Temperature:

Colour Temperature is measured in Kelvin and represents whether the light source appears warm (1,500K), neutral (3,500K), cool or daylight (5,500K). The chart below highlights the colour temperature and how it affects the mood of the space.

CRI	Source	Kelvin Temperature						
		1500K	2000K	2500K	3000K	3500K	4000K	4500K
100	Incandescent	2700K						
100	Halogen	2700K - 2950K						
100	Low Voltage Halogen	2800K - 3050K						
86 - 92	Compact Fluorescent	2700K - 4100K						
53 - 98	Linear Fluorescent	3000K - 6500K						
86 - 92	Metal Halide (Ceramic)	3000K - 4200K						
20 - 22	High Pressure Sodium	1900K - 2200K						

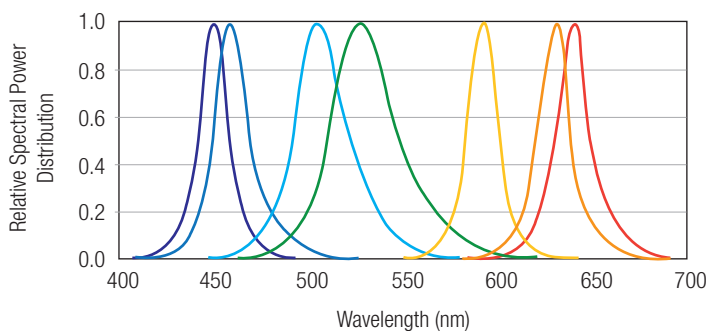
### Lamp Technology: Average Lifetimes

Lumens per Watts	Lamp Life (Hours)
Metal Halide (30-112 Lumens Per Watt) 9000 - 24000 Hours Lamp Life	~18000
Compact Fluorescent (62-76 Lumens Per Watt) 10000 - 20000 Hours Lamp Life	~15000
Halogen MR16 (50w) (17 Lumens Per Watt) 2000 - 6000 Hours Lamp Life	~4000
Incandescent A19 (100w) (15 Lumens Per Watt) 750 - 1500 Hours Lamp Life	~1000
Linear Fluorescent (31-101 Lumens Per Watt) 7500 - 36000 Hours Lamp Life	~25000
Halogen PAR30 (75w) (13 Lumens Per Watt) 3000 Hours Lamp Life	~3000
Incandescent BR40 (85w) (11 Lumens Per Watt) 2500 Hours Lamp Life	~2500
LED (50-60 Lumens Per Watt) 50000 - 55000 Hours Lamp Life	~52000

### Lamp Life:

Lamps can average 750 hours to 20000 hours depending on the light source chosen. Average lamp life is the number of hours the lamp should last before it burns out. The average life is determined when 50% of the lamps initially installed are still operating. For lamps with a rated average life of 24000 hours and more, life is based on survival of 67% of the lamps.

### Spectral Power Distribution of LED Sources



CRI	Source
25 - 90	LED

The light from an LED has an inherently narrow spectrum

# Indoor commercial linear fluorescent lighting

## Step 1 - Decide on a suitable light level

Analyze the existing lighting system and the task being performed. This secondary step is necessary because experience has shown that worker productivity and light levels go hand in hand. The following table is a quick reference for the accepted standards of these applications.

Interior Applications	Illuminance Horizontal	Category/Value (LUX)	Illuminance Vertical	Category/Value (LUX)
<b>Determination of illuminance categories</b>				
<b>Open Plan Office</b>				
Intensive VDT use	Important	150 lx (15 fc)	Very Important	50 lx (5 fc)
Intermittent VDT use	Important	300 lx (50 fc)	Important	50 lx (5 fc)
<b>Private Offices</b>				
Private Office	Important	500 lx (50 fc)	Important	50 lx (5 fc)
<b>Schools</b>				
Hallways	Not Important		Very Important	100 lx (10 fc)
Photocopies (3rd Generation)	Very Important	500 lx (50 fc)	Not Important	
<b>Public Spaces</b>				
Banks (general circulation areas)	Somewhat Important	100 lx (10 fc)	Somewhat Important	30 lx (3 fc)
<b>Healthcare (Clinics &amp; Offices)</b>				
Patient Rooms (Ambient Lighting)	Not Important	50 lx (5 fc)	Not Important	30 lx (3 fc)
<b>General Areas</b>				
Stairways, Corridors, Toilets & Washrooms	Important	10 - 15 fc	Not Important	
Lobbies, Lounges, Receptions Areas	Important	15 - 20 fc	Not Important	

Indoor recommendations from the IES for quality lighting.

## Step 2 - Choose a luminaire that fits your application

There are different styles of luminaires, and by design, each has particular applications they are designed for. Picking the right luminaire for your application can be just as important as the installation. Here are some fluorescent luminaires shown within the guide and the applications that are recommended for each of them.

### Shielded Glare-Free Architectural:

Architectural styling combined with visually exciting elements provides shadowless balanced brightness. Low brightness glow provides the occupant with a soft awareness of the lighting element, while increasing depth perception and a sense of orientation within a space.

#### Applications:

Open office and lobby areas where reading and computer terminal tasks are undertaken. Ideal for office, retail, senior living and hospital environments.

### Parabolic:

Ideal for office environments. This luminaire's deep cell louver allows for a visual cut-off of the lamp to the eye as reducing visual glare while still emitting sufficient light along task (horizontal) and VDT monitor (vertical) work planes.

#### Applications:

Open office and lobby areas where reading and computer terminal tasks are undertaken.

### Lensed Troffer:

These are high performance lens troffers that offer adequate lighting at an economically based value. These models offer hemmed edges which eliminate the hazard of cuts to the hand during installation. They also incorporate light leak stops which block light from being visible in areas other than within the door frame. Mitered corner door frames offer a finished look to the door frame.

#### Applications:

Classrooms, open office and retail areas where general lighting is required at budget levels.

### Modular Surface Lens:

The SLB is a high quality, surface modular luminaire that features a shallow and durable one-piece construction. This design feature helps to create a clean ceiling appearance wherever it's installed. This luminaire also allows for ease in its installation due to its reversible flush steel door and snap-on wiring channel cover. Its shallow 4" deep design allows it to be utilized in areas where low plenum depth restrictions are apparent.

#### Applications:

Ideal in areas for low ceiling applications or areas in which recessing a luminaire is not feasible. Suitable in classrooms, open office and retail areas where general lighting is required at budget levels.

### Surface Wrap Lens:

Low profile 2-5/8" deep lensed luminaire. The wrap around lens design delivers a floating panel effect, and because of its wraparound design, emits light laterally which aides in reducing ceiling contrast.

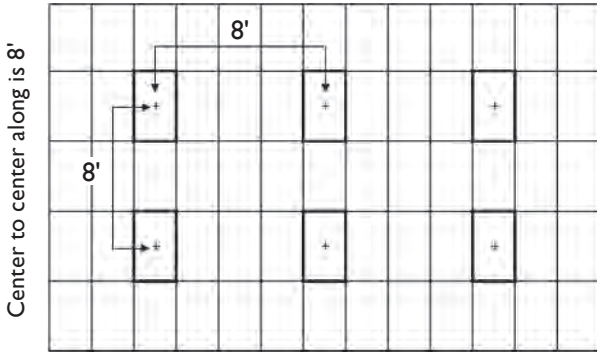
#### Applications:

Ideal in areas for low ceiling applications or areas in which recessing a luminaire is not feasible. Suitable in classrooms, open office and retail areas where general lighting is required at budget levels.

### Step 3 - Space luminaires appropriately

The following table outlines the spacing, and the intensity of light, in footcandles, one can expect when installing these luminaires. The spacing of the luminaires in this example are to be measured along center to center. As shown within these charts (see below), the 8' x 8' spacing means that the distance to the next luminaire is 8ft. in either direction, across or along.

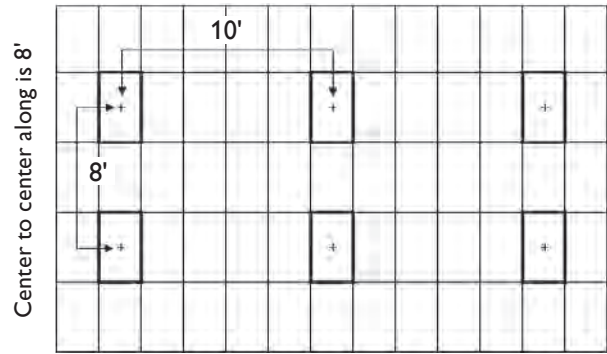
Center to center across is 8'



8' x 8' Spacing Example

Ceiling Grid: 2' x 4' grid  
 Luminaire Size: 2' x 4'  
 Room Dimensions: 26' x 20'

Center to center across is 10'



8' x 10' Spacing Example

Ceiling Grid: 2' x 4' grid  
 Luminaire Size: 2' x 4'  
 Room Dimensions: 26' x 20'

Luminaire Size	Part Number	Average footcandles Center to Center	
		8 x 10	8 x 8
1'x4'	AA248-UNVHIVA	42	52
2'X2'	AA2U6-UNVHIVA	40	48
2'X4'	AA2W8-UNVHIVA	48	50
2'X2'	2AVEG224HO-ACR-UNV-1/2EB10R	32	41
2'X4'	2AVG232-SPMW-UNV-1/2EB101	31	40
2'X4'	2LP3GA231U6R-33AL-UNV-1/2-EB101	40	52

Footcandles are based on room size 50' (W) x 8.5' (H)

## Indoor commercial linear fluorescent lighting

## Luminaire performance charts

The following charts represent the footcandles and watts per square feet achieved with specific luminaires that can be ordered through the Service Smart - Spec Smart program.

Room	Spacing	Units	Recessed Direct/Indirect			
			1AVEG38L835-4-ACR-347	1AVG232-SPMW-347-1/2EB101	2AVEG224HO-ACR-UNV-1/2EB10R	2AVEG228-ACR-UNV-1/2EB10R
60X60X9	8'x8'	FC	57	38	41	45
		W/Sq Ft	0.718	0.871	0.924	0.871
	8'x10'	FC	44	30	32	38
		W/Sq Ft	0.539	0.653	0.693	0.747
	10'X12'	FC	28	21	21	27
		W/Sq Ft	0.337	0.467	0.433	0.533
	12'X12'	FC	23	18	17	23
		W/Sq Ft	0.281	0.389	0.361	0.444
			2AVEG38L835-2-ACR-UNV	2AVEG38L835-4-ACR-UNV	2AVG332-SPMW-UNV-1/3EB101	2CLG36L840-2-D-UNV-DIM
60X60X9	8'x8'	FC	55	45	70	53
		W/Sq Ft	0.72	0.549	1.184	0.752
	8'x10'	FC	42	40	51	41
		W/Sq Ft	0.54	0.47	1.105	0.564
	10'X12'	FC	27	28	37	27
		W/Sq Ft	0.338	0.336	0.725	0.352
	12'X12'	FC	23	23	31	22
		W/Sq Ft	0.281	0.28	0.604	0.294

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Recessed Direct/Indirect		
			TX248-UNVHI	TX448-UNVH4	SLB1SFSVA232UNVHI
50x70x8.5	8' x 8'	FC	49	90	50
		W/Sq Ft	0.90	1.80	0.90
	8' x 10'	FC	48	77	40
		W/Sq Ft	0.90	1.40	0.80
12x16x8.5	6' x 8'	FC	54	54	50
		W/Sq Ft	1.30	1.30	1.20

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Recessed Flat Lens				
			AA248-UNVHIVA	AA2U6-UNVHIVA	AA2W8-UNVHIVA	AA348-UNVH3VA	AA448-UNVH4VA
50x70x8.5	8' x 8'	FC	52	48	50	94	113
		W/Sq Ft	0.90	0.90	0.96	1.30	1.80
	8' x 10'	FC	42	40	48	78	94
		W/Sq Ft	0.80	0.80	0.86	1.10	1.40
12x16x8.5	6' x 8'	FC	45	47	50	90	111
		W/Sq Ft	1.30	1.20	0.96	1.80	2.30

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Recessed Parabolic		
			2LP3GA231U6R-33AL-UNV-1/2-EB101	2LP3GA232-26AL-UNV-1/2-EB101	2LP3GA332-36AL-UNV-1/3-EB101
60X60X9	8'x8'	FC	52	62	83
		W/Sq Ft	1.013	1.084	1.6
	8'x10'	FC	40	49	65
		W/Sq Ft	0.76	0.813	1.2
	10'X12'	FC	26	32	43
		W/Sq Ft	0.475	0.508	0.75
	12'X12'	FC	22	26	36
		W/Sq Ft	0.396	0.424	0.625

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Results based on: Average footcandles maintained, total Light Loss Factor (L.L.F.)=0.82 Reflectances: 80% Ceiling (white acoustical tile), 50% Wall (off-white paint), 20% Floor (medium grey carpet). RE835 T8 lamps rated at 3000 lumens, RE835 TT5 lamps rated at 3150 lumens, RE835 T5 lamps rated at 2610 lumens & RE835 T5HO lamps rated at 4400 lumens. 1' x 1' calculation grid at 30" from finished floor. Results may vary.

Calculations have been performed according to IESNA & CIE standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

## Indoor Residential & Commercial Lighting with downlights & track

### Lighting effects explained

Each lighting technique is visually identified by an icon. Refer to the icon selected for product selection.

#### **General Lighting - Symbol: G**

Creates even luminosity in open spaces or hallways. Achieved with recessed lighting products such as Lytecaster Premium Die-cast Step Baffle luminaires.

- Provides an overall spread of light
- Makes for a comfortable visual environment

#### **Ambiance Lighting - Symbol: A**

Sets a mood through decorative luminaires integrated into the space. Can be used as general lighting. Achieved with recessed lighting products such as Lytecaster Rounded Glass luminaires.

- Illumination using decor-enhancing lighting elements
- Creates a feeling of warmth and intimacy
- Adds personal touch to any environment
- Adds luminance to the ceiling

#### **Accent Lighting - Symbol: S**

Attracts the eye to specific areas of the room. Useful to highlight paintings, sculptures and other displays. Especially effective when the luminaire provides added versatility, as with Slot Aperture.

- Directs extra light to selected objects and surfaces
- Provides dramatic interest
- Using multiple luminaires such as an open adjustable recessed downlight or track head closer to the wall could be considered as wall washing

#### **Task Lighting - Symbol: T**

Creates well diffused, supplementary lighting for tasks, such as reading, paperwork, food preparation. For kitchen or hobby tasks, a concentrated light from above is preferred. Light generally comes from over the shoulder:

- Directs extra light to work areas
- Enables improved task performance
- Some models are wet location certified for washroom task areas.

#### **Philips Downlighting & Track families.**

##### **Lytecaster**

Lytecaster sets the standard for the downlighting industry with innovative advances, trusted luminaires and flexible options that open up ever-growing recessed lighting design opportunities.

##### **Calculite**

Calculite is Philips Lightolier's finest, most technologically advanced family of luminaires. Every Calculite product represents our highest standards of quality and boldest creative efforts in lighting engineering and luminaire craftsmanship. A unique optical apparatus that maintains perfect lamp-reflector alignment, providing essential glare control and outstanding visual comfort. (50° cut off).

##### **Lytespan**

Lytespan track provides lighting professionals with a truly unparalleled design vocabulary that speaks directly to the architectural beauty of a space, enhancing details and complementing the environment.



# Typical office layouts and application advice

## Designing office spaces

### Open Office Recessed Layout

1. This is a typical open office layout, using an 8' by 8' or an 8' by 10' grid. We measure the spacing from the center of the fixtures.
2. Choose your luminaires according to the charts provided on pages 70-71.
3. If you would like to conserve energy, use a superior performing luminaire, with fewer lamps. Keep in mind that lighting is being incorporated into office space frequently, so the average lighting levels required are being decreased.

### Designing a Private Office

1. Small offices are commonly 8'x 8' or 10'x10' in size.
2. If a high level of lighting and better quality of illumination is desired, it is recommended to use a superior optic and better performance such as Alter Soft Lights 2 x 4 or Agili-T, rather than increasing the number of luminaires. This will help bring energy consumption to a minimum and quality to a maximum.
3. There are two choices in terms of general lighting, one is to place two 2' x 4' luminaires perpendicular to the desk surface (see diagram A) the other is to place four 2' x 2' luminaires perpendicular to the desk surface (see diagram B).
4. Task lighting is always recommended in any small office or cubicle. The average age of employees is increasing, therefore supplemental lighting is becoming more necessary.
5. If you are incorporating task lighting, it is strongly recommended to switch general and task lighting separately.
6. Accent lighting to illuminate the walls is a good way to make your small office appear larger.

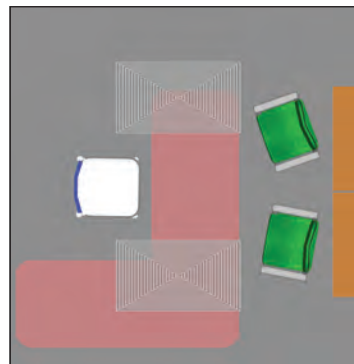
### Designing a Boardroom

1. To design a boardroom you must consider and light for all possible tasks. Multiple varying tasks, require multi level lighting. See your Philips rep for more detailed information.

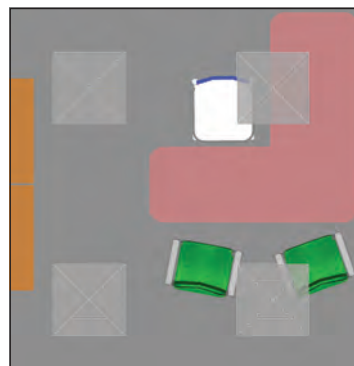
### Designing a Corridor

Corridor Lighting is commonly a lighting application that is over lighted. It is common to see levels of 30 plus footcandles. A recommended level of illumination is only 10-15 footcandles. There are 2 common approaches to illuminating a corridor in commercial applications;

- a) with a linear light source be it recessed or pendant
  - b) with recessed downlights.
1. Linear corridor lighting is often best achieved by using a 1 lamp linear fluorescent, pendant or a recessed troffer on 12, 14 or 16 foot centers. Commonly a 2 lamp will be used, but that is far more illumination than is actually required.
  2. Recessed downlight layouts should be on 6' or 8' centres. Keep in mind a recessed downlight with a single 13W compact fluorescent is sufficient to keep energy consumption under control.



A



B

# General lighting with downlights

## Step 1 - Decide on a suitable light level

Analyze the existing lighting system and the task being performed. The following table is a quick reference for the accepted standards of these applications.

Applications	Light Level
<b>Recommended lighting level for all applications</b>	
Kitchen - General	5 - 10 fc
Food prep., counters	50 - 100 fc
Sink, cooking top	30 - 60 fc
Bathroom - General	5 - 20 fc
Vanity	30 - 60 fc
Shower	5 - 20 fc
Living Room	3 - 6 fc
Dining Room	5 - 40 fc
Hobbies, various tasks	20 - 75 fc
Reading	15 - 30 fc

## Step 2 - Choose distribution characteristics to suit your application

Reflectors today play an ever-increasing role in maximizing light output, especially with the widespread use of economical incandescent, fluorescent and HID. Crafted from high quality, corrosion-resistant aluminum, reflectors are designed to achieve the highest output possible from the available source. In addition, aperture size selection has been extended, ensuring a wider variety of lamps in all three performance options offered in this catalogue. Please consult product pages for rating.

### Good \*

Basic white or baffled reflectors provide good reflectivity and glare control. They are finished using a high-gloss paint featuring added durability, improved UV-inhibiting properties and better overall performance.

### Better \*\*

Anobrite® reflectors are chemically brightened and anodized for permanent high reflectivity. They ensure better glare control. Combined with baffles or Alzak® cones, these reflectors provide 25% higher performance than basic white reflectors.

### Best \*\*\*

Deep Alzak® reflectors offer the highest efficiency and best glare control. Each reflector is chemically polished to a highly specular finish. Deep Alzak® delivers approximately 40% more light output than black baffled units, which results in fewer luminaires to light a space and significant long-term energy savings.

### Performance \*\*\*\*

Performance Alzak® reflectors feature dedicated horizontal and vertical optics suitable for commercial projects. Designed with cut-off from 60-65 degrees, these trims provide excellent glare control and lamp shielding as well as wattages up to a 42W Triple Tube. Performance trims deliver approximately 20 to 25% more light output than baffles or Alzak® cones units.

### Cones and Baffles

Different reflector finishes have different impacts on luminaire performance. Lytecaster features these cone and baffle finishes:

#### CL - Clear Specular Alzak®

Provides the highest efficiency from the installed source, visually integrating with typical reflector finishes of parabolic louvered fluorescent troffers. Finished with the iridescence free process, which virtually eliminates the rainbow effect.



#### CCD - Comfort Clear™ Diffuse

The Comfort Clear Diffuse finish produces a slightly brighter aperture than our standard Comfort Clear due to an additional chemical brightening. You can expect a slight reduction in light output compared to standard Comfort Clear.



#### CH - Chrome

A budget lower reflectance version of the Clear Specular Alzak®, it offers a clear specular finish.



#### CCL - Comfort Clear™

A new formula driven by the stringent reflector design requirements of vertical triple tube downlights. This process slightly softens the mirror image inherent with specular finishes. Comfort Clear presents a gentle luminosity when illuminated, thus minimizing a "dark-hole" appearance. This low maintenance finish is anti-iridescent and is fingerprints free.



#### BK - Black Step Baffle

Seamless matte black baffle is made of die-cast aluminum in premium version. Captures stray light in its precise sawtooth profile. Produces very low brightness that is ideal for low maintenance areas. Black phenolic baffles are available in a budget version.



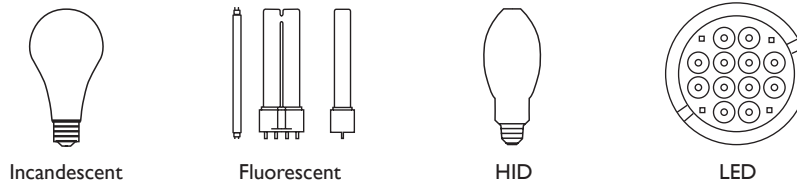
#### WH - White Step Baffle

Matte white painted baffle is made of die-cast aluminum in premium version. Produces a pleasant transition with most ceiling finishes. Baffle and flange are painted with the same paint and are a perfect match. White phenolic baffles are available in a budget version.



### Step 3 - Choose your light source

Choose the appropriate light source for your application based on performance and savings that you are looking for. Consult page 68 for more detailed information on light sources.



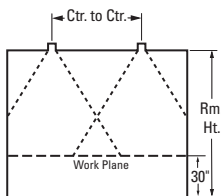
### Understanding photometric data

#### General Lighting from Multiple Units

Footcandle values are initial and average and are at a work plane height of 30" above the floor. They are shown for various luminaire spacings in a large room (30' x 50') and a small room (8' x 12'), both with ceiling heights of 8' to 12'. Room finishes are typical: white ceiling (80% refl.), light walls (50% refl.), and dark floor (20% refl.).

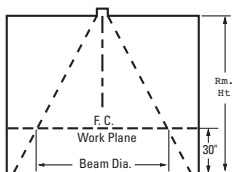
#### Downlighting from a Single Unit

Footcandle (FC) values are initial and are at the center of the beam, 30" above the floor. The Beam Diameter is to the point that the candlepower drops to 50% of maximum.



1105CL 1 x 13W Quad Tube		
Center to Center Spacing	Footcandles	
	Large Room	Small Room
4'	36	28
6'	16	13
8'	9	7

S.R. = 1.0



1005 75W BR-30 FL		
Height to Floor	Foot-Candles	Beam Diameter
8'	13	6'
10'	7	9'
12'	4	11'

#### Spacing Ratio

##### 1105CL 1 x 13 Quad Tube

Given	1105CL Reflector Trims with one 13W Quad Tube lamp mounted in a small room with an 8' high white ceiling and light walls.
Find	The spacing of luminaires for 25 to 30 foot-candles (initial).
Solution	See Multiple Units chart. These luminaires, mounted on 4' centers, will provide 28 footcandles at a work plane height of 30" from the floor. The Spacing Ratio of 1.0 allows these luminaires to be mounted up to 5.5' apart (1 x (8 - 2.5)) and still provide even lighting.

# General lighting with downlights

## Step 4 - Space luminaires appropriately

Calculate CFL		Luminaire Spacing							
Room	25'x25'		4' c/c	5' c/c	6' c/c	7' c/c	8' c/c	9' c/c	10' c/c
Reflectance	80,50,20								
LLF	0.8								
Work plane at	30"	Qty of Luminaires	36	25	16	16	9	9	9
Trims	Light Source	Footcandles							
8011CCLW	18w TTT	8 ft	26 fc	18 fc					
		9 ft	25 fc	17 fc					
	26w TTT	8 ft	39 fc	26 fc	18 fc	16 fc			
		9 ft	38 fc	26 fc	17 fc	15 fc			
8021CCLW	26w TTT	8 ft	47 fc	32 fc	21 fc	19 fc			
		9 ft	45 fc	31 fc	20 fc	18 fc			
		10 ft	39 fc	27 fc	18 fc	16 fc			
8021CCL	32w TTT	8 ft		44 fc	30 fc	26 fc			
		9 ft		43 fc	28 fc	25 fc			
		10 ft		42 fc	28 fc	24 fc			
8031CCLW	26w TTT	8 ft	47 fc	32 fc	22 fc	19 fc			
		9 ft	46 fc	31 fc	21 fc	18 fc			
		10 ft	44 fc	30 fc	20 fc	18 fc			
	32w TTT	8 ft		50 fc	33 fc	30 fc			
		9 ft		48 fc	32 fc	29 fc	19 fc		
		10 ft		46 fc	31 fc	28 fc	18 fc		
8056CCLW	2 x 26 QT	8 ft			45 fc	40 fc	26 fc	24 fc	
		9 ft			43 fc	39 fc	25 fc	23 fc	
		10 ft			42 fc	37 fc	24 fc		
8038CCLW	2 x 26w TTT	8 ft				57 fc	38 fc	35 fc	32 fc
		9 ft				61 fc	39 fc	37 fc	33 fc
		10 ft				59 fc	38 fc	35 fc	32 fc
		12 ft				55 fc	35 fc	32 fc	29 fc
	2 x 32w TTT	8 ft					47 fc	44 fc	40 fc
		9 ft					46 fc	42 fc	38 fc
		10 ft					43 fc	40 fc	37 fc
		12 ft					40 fc	37 fc	34 fc
	2 x 42w TTT	8 ft					56 fc	53 fc	47 fc
		9 ft					54 fc	50 fc	45 fc
		10 ft					51 fc	48 fc	43 fc
		12 ft					47 fc	44 fc	40 fc

Calculite LED			Luminaire Spacing							
Room	25'x25'		4' c/c	5' c/c	6' c/c	7' c/c	8' c/c	9' c/c	10' c/c	
Reflectance	80,50,20									
LLF	0.85	Qty of Luminaires	36	25	16	16	9	9	9	
Work plane at	30"									
Frames	Trims	Nominal Lm.	Ceiling Height	Footcandles						
C4L10NUVBZ10V C4L10RUVBZ10V	C4L10DL30KCCLWVB	1000	8'	59	38	26	20	15	11	8
			9'	58	38	27	21	15	12	9
			10'	58	38	26	21	15	12	10
C6L15NUVBZ10V	C6L1520DL30KMCCLWVB	1500	8'	81	53	35	25	20	13	9
			9'	83	54	36	26	21	14	10
			10'	83	54	36	27	21	15	11
C6L20N1VBZ10V	C6L1520DL30KMCCLWVB	2000	8'	113	74	49	35	28	19	12
			9'	116	75	50	37	29	20	14
			10'	116	75	50	38	29	21	16
C6L15NUVBNZ10Z	C6L1520DL35KMCCLWVB	1500	8'	83	54	36	26	21	14	9
			9'	85	56	37	27	21	15	11
			10'	85	56	37	28	21	15	12
C6L20N1VBNZ10Z	C6L1520DL35KMCCLWVB	2000	8'	117	76	51	36	29	19	13
			9'	119	78	51	38	30	21	15
			10'	119	78	52	39	30	22	16

## General lighting with downlights

### Step 4 - Space luminaires appropriately

Lytecaster CFL		Luminaire Spacing							
Room	25'x25'		4' c/c	5' c/c	6' c/c	7' c/c	8' c/c	9' c/c	10' c/c
Reflectance	80,50,20								
LLF	0.8	Qty of Luminaires	36	25	16	16	9	9	9
Work plane at	30"								
Trims	Light Source	Footcandles							
1101CL	26W Triple/Quad	8 ft	53	36	24	23	14		
		10 ft	49	34	22	21	13		
		12 ft	45	32	21	20	12		
	32W Triple/Quad	8 ft		47	31	30	18	17	15
		10 ft		44	29	28	16	15	
		12 ft	60	40	26	25	15		
	42W Triple/Quad	8 ft			46	45	27	26	24
		10 ft			42	44	24	23	22
		12 ft		61	39	37	23	22	21
1101HCD	26W Triple/Quad	8 ft	50	35	23	22			
		10 ft	46	32	21	20			
		12 ft	42	29	19	18			
	32W Triple	8 ft	63	43	29	28	16	15	
		10 ft	59	40	26	25	15		
		12 ft	53	37	24	23			
	42W Triple	8 ft		46	30	29	17	16	
		10 ft	60	42	27	26	16	15	
		12 ft	56	39	25	24	15		
1146CD	26W Triple/Quad	8 ft	47	33	21	20			
		10 ft	43	31	20	19			
		12 ft	41	29	18	17			
	32W Triple	8 ft		44	28	27	16	15	
		10 ft	58	41	26	25	15		
		12 ft	54	38	25	24	14		
1105BK	26W Triple/Quad	8 ft	46	33	20	19			
		10 ft	45	32	19	18			
		12 ft	43	30	18	17			
	32W Triple	8 ft		45	28	27	15		
		10 ft		43	26	25			
		12 ft		40	24	23			
	42W Triple	8 ft			40	39	20	19	
		10 ft			36	34	18	17	
		12 ft			32	30	16	15	

Lytecaster Incandescent		Luminaire Spacing							
Room	25'x25'		4' c/c	5' c/c	6' c/c	7' c/c	8' c/c	9' c/c	10' c/c
Reflectance	80,50,20								
LLF	0.8	Qty of Luminaires	36	25	16	16	9	9	9
Work plane at	30"								
Trims	Light Source	Footcandles							
1146CD-1102	150W A21	8 ft			43	31	26	18	
		10 ft			43	31	26	18	
		12 ft			44	32	25	19	
	100W A19	8 ft		38	26	19	16		
		10 ft		38	26	19	16		
		12 ft		39	25	18	15		

# Indoor residential & commercial lighting with accent lights

## Step 1 - Choose your type of luminaire

Choose between track lighting or an adjustable downlight.

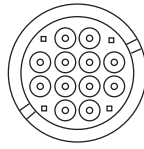
## Step 2 - Choose your light source



Incandescent



HID



LED

For more details consult page 68.

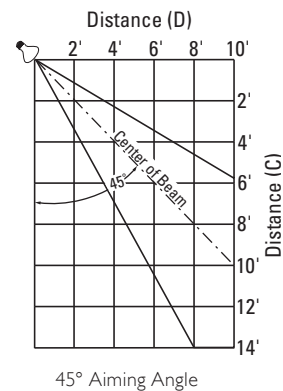
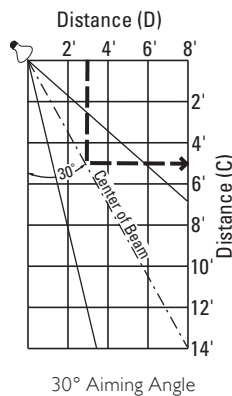
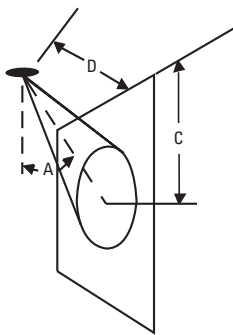
## Step 3 - Position luminaire accordingly for desired end result

### Accent Lighting

Use individual luminaires in small areas or for creating focal points of light. For the best viewing of pictures and three-dimensional objects, locate accent lights so that their beams are aimed 30° from vertical. Three-dimensional objects stand out best when cross-lighted from two accent lights. Size the beam to the object(s) being highlighted and illuminate them more than three times the surround level. To gauge beam spread and intensity, see lighting data at the end of this guide.

### Accent Lighting/Beam Center Location

The charts locate the distance (C) to the center of the light beam for various mounting distances (D) and for aiming angles 30° and 45° from vertical. 30° from vertical is the preferred aiming angle for lighting pictures on a wall. Example: When an accent light is located 3' from a wall and aimed 30° from vertical, the center of the light beam will be about 5' down from the ceiling.





# Indoor residential & commercial lighting using wall washing

## Step 1 - Choose a luminaire

Choose between a wall washer or an adjustable downlight.

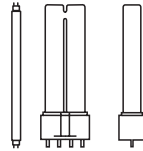
## Step 2 - Choose your light source



Incandescent



HID



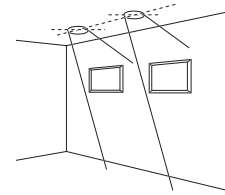
Fluorescent

For more details consult page 68.

## Step 3 - Choose spacing criteria to suit desired effect

### Wall Washing

Smoothly illuminated vertical surfaces from floor to ceiling. Wall washing luminaires are ideal to make rooms appear more spacious, define a space, light a wall with paintings or works of art and make colours and textures more lively.



Lamp	Distance from wall	Lighting starts at	Lighting level	Luminaire spacing
Low voltage halogen adjustable luminaire				
20W MR-16 FL	2 feet	1 foot	Medium	3 feet
20W MR-16 SP	2 feet	1 foot	High	3 feet
Line voltage halogen adjustable luminaire				
50W ES/ESD-16 FL	2 feet	1 foot	Medium	3 feet
50W PAR-20 FL	2 feet	1 foot	High	3 feet

## Indoor residential & commercial task lighting with downlights

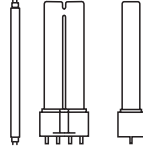
### Step 1 - Choose your light source



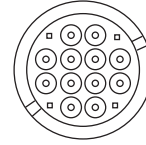
Incandescent



HID



Fluorescent



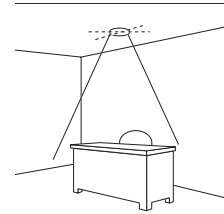
LED

For more details consult page 68.

### Step 2 - Choose the downlight to suit your desired effect

#### Task Lighting

Luminaires using a medium beam lamp appropriately located over a work plane, a desk or a kitchen counter will supply a good lighting. It is very important to locate luminaires in a way to avoid shadows on the working plane.



## Typical residential layouts and issues

### Designing a kitchen

There are two key elements to good kitchen lighting; lighting the horizontal surface and lighting the vertical surface. When designing a kitchen it is important to keep in mind what the surfaces are being used for, we need to see our task areas.

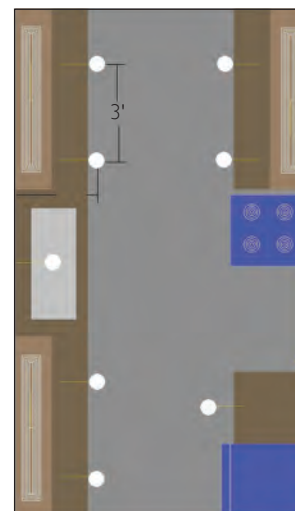
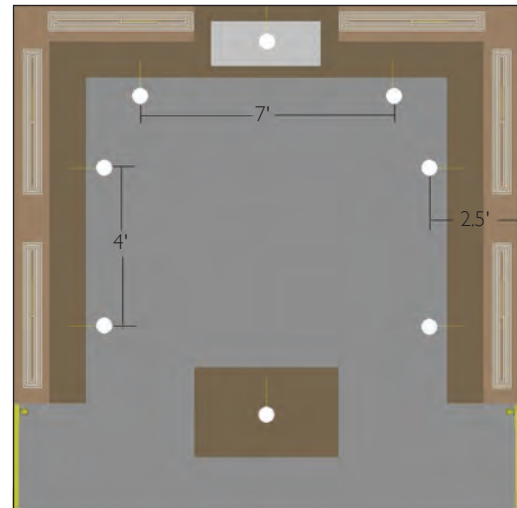
#### Horizontal Surfaces

All counter, sink, stove tops and islands are considered to be the horizontal task areas.

1. Counters are a very much used work space in kitchens. Providing a standard strip, single lamp linear source is the best way to illuminate such surfaces. A small recessed source can be used. However the work surface can appear to have a spotted effect. Linear sources give a more even look. When spacing your luminaires a good rule to follow is the 2:1 ratio, for instance, if you have 8 feet of counter space than you require 4 feet of a fluorescent linear source. Ensure you install centered in the space and at the front of the upper cabinetry. If you install the lighting fixture in the centre of the upper cabinets, your light source will not fall in the middle of your counter.
2. It is always important to provide good illumination over the sink and island. Decorative type pendant luminaires and recessed down lights are popular choices for this application. Place luminaire centered above sink. It is recommended to use a minimum 75W for incandescent or 26W for fluorescent.
3. When illuminating a kitchen island it is good design practice to provide a series of 1, 3 or 5 luminaires depending on the size of your island. Space the luminaires evenly over the island. If you are using a 35W inc or a 9W fluo use 3 ft spacing, 50W inc or 13W fluo use 5 foot spacing and if you are using 75W or 26W fluorescent use 6 foot spacing.

#### Vertical Surfaces

1. It is highly recommended to illuminate the cabinetry for the vertical tasks being performed in a kitchen. A flood type recessed down light or even better, a wall washer recessed luminaire is advised. Ideally, luminaires should be placed 4 or 5 feet apart. Try not to exceed 50W incandescent or 13W in fluorescent per luminaire.
2. A nice element to include in any kitchen design is also to incorporate accent or wall washing the lighting around the perimeter walls, this allows the space to appear larger.



## Typical residential layouts and issues

### Designing a bathroom

There are three key areas when it comes to providing illumination for a bathroom.

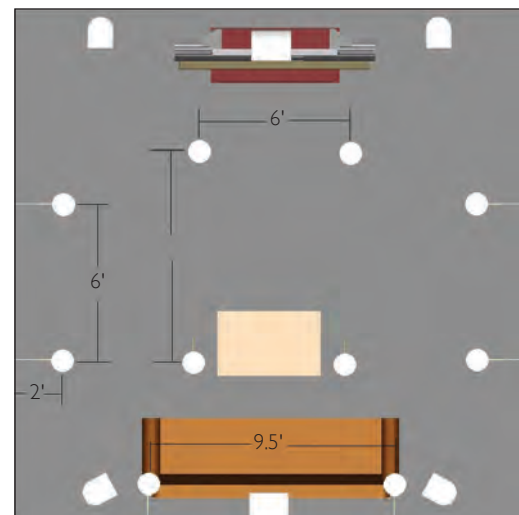
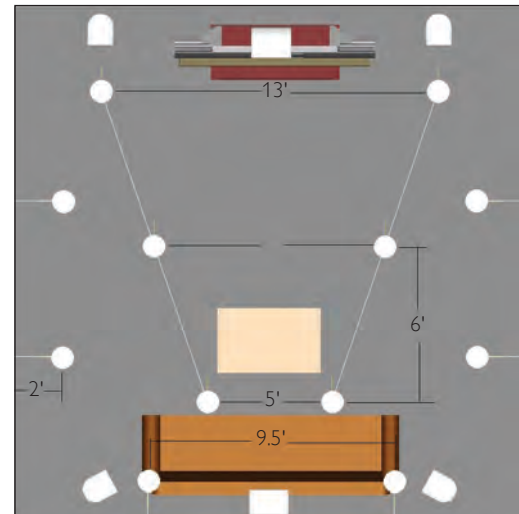
1. **Mirror lighting** - The best way to provide lighting for a mirror is from three different directions. First, we need to light from the top to illuminate the forehead and the second two are from each side of the mirror to illuminate each side of the face. Providing a recessed down light or a horizontally mounted wall luminaire is recommended. Providing illumination from each side of the mirror is essential, providing you have the space to accommodate the luminaires. A wall sconce on each side of the mirror, mounted half way up the mirror, as shown in illustration A. If you have an inset with walls on both sides, mount your sconces centered with the counter as seen in illustration B.
2. **Shower lighting** - Providing a luminaire in any shower or over any tub is in good design practice. Center a recessed down light with a drop lens over either a shower or bathtub, ensure that the lighting fixture you have chosen is wet location listed.
3. **Toilet lighting** - Toilet lighting is only required when the toilet is tucked away from the general lighting area. If the area does not appear to be well lit, provide a recessed down light over the toilet.
4. In larger bathrooms recessed down lights may be required for additional illumination or general lighting. Commonly a few luminaires are sufficient. It is recommended to space the luminaires on 6 foot centers, keep in mind when providing general illumination in a bathroom that you do have other lit areas; the mirror, shower and toilet, so don't over illuminate.
5. Light control and controlling each area is always important to remember when it comes to good design practice.



## Typical residential layouts and issues

### Designing a home theatre

1. It is recommended to choose a deep reflector for your recessed down lights and wall washer type luminaires. Minimizing glare and lamp image will decrease the reflectance in the screen.
2. Providing wall washer type luminaires on a dimmer is a great lighting technique to provide minimal non intrusive illumination during screening and a very soft light effect and level to provide safe circulation. Remember to take art work layouts and furniture location into account when determining the location of your wall washer luminaires. Perhaps consider the 300 series for accent artwork or posters in the space.
3. Try and avoid running recessed luminaires in rows in front of the screen. If you run your recessed down lights on a slight angle (as seen in illustration) you will minimize the probability of your luminaires reflecting in your screen. Option B would be to eliminate the two recessed down lights closest to the screen. Please see diagram two for details. This will make it very easy to have your general lights on a soft dimming setting even during a viewing.
4. Light control is very important in a home theatre design. Ensure you include a minimum of two slide dimmers, one for the wall washer luminaires and one for the recessed down lights for general illumination. Note it is in good design practice to include 3 or 4 dimmers in a home theatre.



## Keene and CFI rating criteria & industrial design advice

### Industrial Lighting and the Variables to be Considered

We face many challenges as the industrial sector evolves: issues of an aging workforce, worker productivity and technology miniaturization. Improvements in lighting systems are just one aspect supporting the improvement to a worker's environment that aid in productivity, health and quality of visual space. Along with human factors, we face numerous environmental factors when determining the best solution for an industrial application. We need to consider task, temperature, facility operating schedule and energy. In the past the usual application for a 25 foot ceiling would be the standard 400W metal halide highbay on a 20ft by 20ft grid. Now we have several options and factors to be considered. We have had many changes in technology, the T5 highbay, the electronic ballast not to mention the equipment used to do the actual manufacturing has changed greatly.

When we are choosing our lighting system we need to determine the most effective solution for the situation. We have several variables to consider. With the new T5 highbay it is an industry misconception that it is a solution to all applications but this isn't the correct answer. Temperature is a major performance factor when it comes to a T5 system. You should not use a T5 system in an unconditioned space. If your space has a regulated temperature then it is ideal. The colour rendering properties of the fluorescent is superior to that of the standard metal halide system (with the exception of the ceramic metal halide lamp), start up time is instant and you can consume less energy. A four lamp T5 highbay can compete with a 400W metal halide highbay. The other major factor to be considered when you are designing for industrial space is humidity, corrosive atmosphere or classified locations. A dirty environment is not favourable to T5 systems. The last thing to consider is maintenance; you have four or six lamps in a T5 highbay instead of re-lamping one lamp from an HID system.

### General Considerations in Lighting Design for Industrial Spaces

In good design practice the lighting designer should consider the following factors first and it is important for good design planning.

1. Determine the quantity and quality of illumination desired for a safe facility, personnel comfort and the manufacturing process being performed in the given space. (refer to the Lighting Handbook 10th edition).
2. Select luminaires and technology that will support the target illumination levels by examining the photometric characteristics and mechanical performance that will meet installation, operation and actual maintenance conditions.
3. Select luminaires and arrange them so that it will be easy and practical to maintain.
4. Take into account the energy management considerations and economics factors including initial, operating and maintenance costs (the total cost of ownership), versus the quantity and quality for optimum visual performance. In many cases, superior HID luminaires with electronic ballasts or T5 Highbays are initially more expensive but offer many benefits and payback within a three year time frame due to energy savings.
5. The use of daylight is becoming increasingly more important when arranging luminaires for industrial space. Daylighting should always been taken into account when determining the ambient lighting in all applications. Design is changing and the quality of environment and natural light not only benefits the environment but also the worker. More and more we are seeing daylight present in industrial facilities.

### Special Considerations for Industrial Lighting Design

#### Lighting and Space Conditioning

With the use of higher illuminances it is often practical to combine the lighting, heating, cooling and atmospheric requirements in an integrated system. The lighting system can provide significant heat during the heating period and the lighting may need to be exhausted during the cooling period.

#### High Humidity, Corrosive and Classified Location Lighting

Enclosed gasketed luminaires are used in non classified areas where environments contain nonflammable dusts and vapours or excessive dust. Enclosures protect the interior from the condition prevailing in the area. Steam processing plating areas, wash and shower rooms and other areas of high humidity are typical areas that require sealed and wet location listed luminaires. Severe corrosive conditions necessitate knowledge of atmospheric content to permit proper selection of luminaires. Classified locations are areas where atmospheres contain flammable dusts, vapours or gases in explosive concentrations. They are grouped by the National Electric Code on the basis of the hazardous characteristics. All electrical equipment must be approved for use in specific classes and groups. Luminaires are available and designed specifically to operate in these areas. Consult the National Electrical Code for Class I, Class II and Class III locations.

#### Abnormal Temperature Conditions

Low ambient temperatures must be recognized in such areas, they are many unheated heavy industrial plants, frozen food plants, cooled food places such as meat packing facilities and cold storage warehouses. Equipment should be selected to operate under such conditions. We need to pay close attention to lamp starting and light output characteristics should fluorescent be considered. With high intensity discharge equipment, temperature variation has practically no effect on light output but the proper starting characteristics must be provided. In extremely cold temperatures High Pressure Sodium or Pulse Start Technology should be used, both pulse start and HPS have ignitors to aid the lamp in starting (this is applicable in areas with temperatures from -20 degree Celsius to -40 degree Celsius). With incandescent filament lamp equipment neither the starting nor the operation is a problem in low temperatures, the only factor we need to consider is that incandescent is a large energy consumer and not considered an energy efficient source.

Abnormally high temperatures in truss heights in foundries, steel mills, forge shops, etc. Caution should be used when selecting luminaires for such locations in particular, it is important to pay attention to the temperature limitations of fluorescent and HID ballasts under such conditions. Often ballasts should be remotely located at a lower or cooler temperature level or special high temperature equipment should be used. It is important to keep in mind that fluorescent lamp output is significantly sacrificed when operating above 40 degrees Celsius ambient.

#### Critical

Where high speed machinery is in use, the luminaires should be installed on alternating phases.

### Energy and Quality issues for Good Lighting Design

Increasingly in the design industry we are seeing sustainable design and minimal environmental issues playing a greater role. Technology has advanced greatly and offer solutions to energy and aging work force crisis. Lamps, ballasts and sources have been put to the test and improved. With the emergence of the T5 highbay, Pulse Start Technology, The Ceramic Metal Halide Lamp and Controls taken into consideration we can make designs more efficient and more appealing in appearance.

- T5 Highbays offer use a better CRI using less wattage than the good old work horse 400W MH highbay. We have a CRI of 85 accompanied with the fact T5HO's commonly can save you 40% of your energy consumption. If we use a T5HO with an occupancy we can further this savings by an additional 40%. Giving you a savings of 60% vs. the standard 400W MH highbay. (hint\* a good application would be in warehouse aisles with occupancy sensors at each end of the aisles).
- Ceramic Metal Halide Lamps also offer a CRI of 85 when accompanied with pulse start technology and the HI-LOW control can also give you energy savings along the same lines of 40% - 50%. Keep in mind that using electronic ballasts also improved our start up times in HID lighting; they start in 4-8 minutes compared to the standard 400 W HID with magnetic ballast, starting in 10-20 minutes.

### Maintenance

Regular cleaning and prompt replacement of lamp outages is essential in any well-operated industrial lighting system. It is important for lighting designers to examine the quality of construction and reflector finishes in any luminaire. It is also important to take into account provisions for maintenance access so the system can be properly serviced. Another point that should be considered is that it may be necessary to do the servicing during plant operating hours.

### Supplementary Lighting in Industrial Application

Difficult to see tasks often require a specific amount of light that cannot be obtained through general lighting methods. To solve such problems often supplementary luminaires are used to provide higher illuminance levels for small or restricted areas. Also they are used to provide a specific light level, colour, permit a specific aiming angle or positioning of the light source to produce or avoid highlights or shadows to best portray the detail of the task.

Task lighting needs can be very specific so it is important to recognize the exact nature of the visual task and to understand the reflecting or transmitting characteristics. An improvement in visibility of the task will depend on one or more of these visual fundamental factors- luminance, contrast, size and time. In analyzing the problem, the designer may find that seeing difficulty is caused by insufficient luminance, poor contrast (veiling reflections), and small size or that the task motion is too fast for existing visual conditions.

The planning of task specific lighting also entails the consideration of the visual comfort of the worker and also those workers in the immediate area. Task lighting may need to be shielded to prevent glare for the worker and his or her associates. Luminance ratios should be carefully controlled. Ratios between the task and general lighting should be limited in the immediate surrounding areas. To attain correct application it is important to coordinate the task and general illumination.

# Indoor industrial fluorescent lighting

## Step 1 - Choose a luminaire that fits your application

**Open Industrials:**

General purpose open industrial are well suited for satisfying both budget and basic lighting requirements. This fixture provides rigidity in its ballast channel and reflector design to withstand low levels of abuse in areas of industrial activity.

**Applications**

Ideal for light-duty task lighting, aisles, warehousing, storage and retail applications.

**Wet Location:**

Completely moisture resistant, these gasketed enclosures are constructed of a fiberglass upper body and an inner crepe patterned impact resistant lens. The lens is retained and secured against an inner closed cell neoprene by tension mounted latches.

**Applications**

Ideal for parking garages, car washes, schools and kitchens.

**Industrial Strips:**

Created with the installer in mind, the T5, T8 and strip and T8 sidemount strips incorporate labor savings and solid design features. Time saving flip-on end caps and ballast covers install quickly. Strengthening ribs ensure uniformity and stability of the channel housing. It is quality lighting that will save you time and dollars.

**Applications**

Ideal for cove lighting or areas in which general purpose and task lighting are required.



## Step 2 - Decide on a suitable light level

Analyze the existing lighting system and the task being performed. This important first step is necessary because experience has shown that worker productivity and light levels go hand in hand. The following table is a quick reference for the accepted standards of these applications.

Application	Task	Footcandles
Performance of visual tasks of high contrast and large size		
Material Handling: Simple	Loading and unloading trucks and freight cars	10 - 20 fc
Material Handling: Moderate Difficulty	Wrapping, Labelling, and packaging	20 - 50 fc
Performance of visual tasks of high contrast and small size or visual tasks of low contrast and large size		
Warehouse and Storage	Active: The handling of bulky items with large labels	10 - 20 fc
Warehouse and Storage	Active: The handling of bulky items with small labels	20 - 50 fc
Laundries	Washing, flat work ironing, weighing, listing, marking	20 - 30 fc
Garages	Repairs	40 - 75 fc
Service desk	Invoicing	20 - 30 fc



## Step 1 - Space the luminaires appropriately

The following table outlines the spacing, and the intensity of light, in footcandles, one can expect when installing these luminaires.

The spacing of the luminaire in this example is to be measured center to center. As shown within this chart, the 10 feet center to center spacing means that the distance to the next luminaire is 10ft in either direction, across or along.

### Industrial Spacing Example

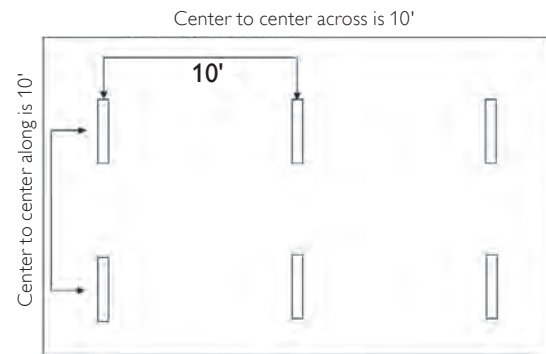
Ceiling Grid: 2 x 4 grid




Luminaire Size: Nominal 1' x 4'

Room Dimensions: 26' (W) x 20'(L) x 12'(H)


Luminaire Size	Part Number	Average footcandles Center to Center 10 ft
4'	SB248H-120	53
4'	SV4S254UNVPG	83
4'	TU248-UNVHI	66
4'	EE248-UNVHI	50

Footcandles are based on room size 50' (W) x 70' (L) x 12' (H)






Room	Spacing	Units	Open Industrials		
					
			EE248-UNVHI	EE248T-UNVH4	TU248-UNVHI
50x70x12	12' ctr	FC	29	44	30
		W/Sq Ft	2.5	1.56	2
50x70x8.5	10' ctr	FC	50	68	66
		W/Sq Ft	1.7	1.04	1.7
50x70x8.5	12' ctr	FC	25	54	60
		W/Sq Ft	2.5	1.3	2.5
30x30x8.5	12' ctr	FC	38	44	63
		W/Sq Ft	1.7	1.3	1.7

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Room	Spacing	Units	Wet Location	
				
			VTN432STUNVHI	
50x70x12	12' ctr	FC	24	
		W/Sq Ft	1.8	
50x70x8.5	10' ctr	FC	45	
		W/Sq Ft	1.2	
50x70x8.5	12' ctr	FC	38	
		W/Sq Ft	1.7	
30x30x8.5	12' ctr	FC	33	
		W/Sq Ft	1.6	

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

## Indoor industrial fluorescent lighting

Room	Spacing	Units	Industrial Strips					
								
			SB248-UNVHI	SB248T-UNVH4	SB148-UNVHI	SV4S154UNVPG	SV4S254UNVPG	NS117-UNV-1/2-EB101
50x70x8.5	10' ctr	FC	32	88	20	45	83	50
		W/Sq Ft	1.7	0.89	2.7	1.92	0.9	2.7
30x30x8.5	8' ctr	FC	31	51	22	42	80	65
		W/Sq Ft	0.97	1.0	1.8	1.0	0.47	1.8
12x16x8.5	6' ctr	FC	48	47	31	36	67	68
		W/Sq Ft	0.83	0.86	1.0	0.92	0.4	1.0

FC: Average maintained footcandles - W/Sq Ft: Watts per square foot. Room measurements in feet (WxLxH)

Results based on: Average footcandles maintained, total Light Loss Factor L.L.F.=0.82 Reflectances: 50% Ceiling (Steel deck), 50% Wall (Cement block), 20% Floor (Dark concrete). RE835 T8 lamps rated at 3000 lumens, RE835 T5HO lamps rated at 4400 lumens & F96T12HO/EW rated at 8000 lumens. 1' x 1' calculation grid at 30" from finished floor. Results may vary.

Calculations have been performed according to IESNA & CIE standards and good practices. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.



# Highbay lighting applications for open areas

## 30 Footcandles - Mounting heights of 25'

**Step 1**

Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.

Locate the dimensions in the left column (Select the nearest value).

**Step 5**

Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.







**Step 2**

Choose between Metal Halide, T5, or LED lamp sources. Refer to the index on page 66 for general information on lamp sources.

**Step 3**





Determine the approximate dimensions of the space to be illuminated.

**Step 4**

Light Level - 30 Footcandle Average - 25' Mounting Height													
FBL				SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBL24LL40-UNV-WC6				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	25 X 17	6	16 x 16	9	25 x 16	6	16 x 16	9	25 X 17	6	16 x 16	9
	100	25 X 20	10	16 x 16	18	16 x 25	12	16 x 25	12	25 X 20	10	20 x 16	15
	150	25 X 19	16	18 x 16	24	18 x 25	16	16 x 25	18	25 X 19	16	21 x 16	21
	200	25 X 20	20	20 x 16	30	20 x 25	20	16 x 25	24	25 X 20	20	22 x 16	27
100	100	25 X 20	20	20 x 16	30	25 x 20	20	20 x 20	25	25 X 20	20	20 x 20	25
	150	25 X 22	28	18 x 20	40	21 x 25	28	18 x 25	32	25 X 22	28	21 x 20	35
	200	25 X 23	36	20 x 20	50	22 x 25	36	20 x 25	40	25 X 23	36	22 x 20	45
	250	25 X 25	40	19 x 20	65	22 x 25	44	19 x 25	52	25 X 25	40	22 x 20	55
150	300	25 X 25	48	20 x 20	75	23 x 25	52	20 x 25	60	25 X 25	48	23 x 20	65
	200	25 X 25	48	18 x 21	77	25 x 25	48	20 x 25	60	25 X 25	48	20 x 21	70
	250	25 X 25	60	19 x 21	91	25 x 25	60	20 x 25	72	25 X 25	60	20 x 21	84
	300	25 X 25	72	20 x 21	105	25 x 25	72	21 x 25	84	25 X 25	72	21 x 21	98
200	350	25 X 25	84	19 x 21	126	25 x 25	84	21 x 25	96	25 X 25	84	21 x 21	112
	400	25 X 27	90	20 x 21	140	25 x 25	96	21 x 25	114	25 X 27	90	22 x 21	126
	300	25 X 25	96	20 x 22	135	25 x 25	96	21 x 25	112	25 X 25	96	21 x 22	126
	350	25 X 27	104	19 x 22	162	26 x 25	104	21 x 25	128	25 X 27	104	21 x 22	144
250	400	25 X 27	120	20 x 22	180	26 x 25	120	22 x 25	144	25 X 27	120	22 x 22	162
	450	25 X 27	136	20 x 22	198	26 x 25	136	22 x 25	160	25 X 27	136	22 x 22	180
	500	25 X 27	152	20 x 22	225	26 x 25	152	22 x 25	176	25 X 27	152	21 x 22	207
	350	25 X 28	126	21 x 20	192	26 x 25	130	21 x 25	160	25 X 28	126	21 x 22	176
300	400	25 X 28	144	21 x 20	228	26 x 25	150	22 x 25	180	25 X 28	144	22 x 22	198
	450	25 X 28	162	21 x 20	252	23 x 27	171	22 x 25	200	25 X 28	162	21 x 22	231
	500	25 X 28	180	21 x 20	276	25 x 27	180	22 x 25	220	25 X 28	180	21 x 22	253
	550	25 X 28	198	22 x 20	300	25 x 27	198	22 x 25	240	25 X 28	198	22 x 22	275
300	400	25 X 28	176	21 x 21	266	25 x 27	176	22 x 25	216	25 X 28	176	21 x 23	247
	450	25 X 28	198	21 x 21	294	25 x 27	200	22 x 25	240	25 X 28	198	21 x 23	273
	500	25 X 28	220	21 x 21	322	25 x 27	220	22 x 25	264	25 X 28	220	21 x 23	299
	550	25 X 28	242	22 x 21	350	25 x 27	242	22 x 25	288	25 X 28	242	22 x 23	325
	600	28 X 26	253	21 x 21	392	25 x 27	264	23 x 25	312	28 X 26	253	22 x 23	351

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

Light Level - 30 Footcandle Average - 25' Mounting Height

TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DXX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
25 X 17	6	16 x 16	9	25 x 16	6	16 X 17	9	17 X 25	6	17 X 25	6	1 X 17	3
25 X 20	10	16 x 16	18	16 x 25	12	25 X 15	14	25 X 20	10	25 X 20	10	1 X 25	4
25 X 19	16	18 x 16	24	18 x 25	16	25 X 17	18	25 X 22	14	25 X 22	14	1 X 25	6
25 X 20	20	20 x 16	30	20 x 25	20	25 X 27	24	25 X 20	20	25 X 23	18	1 X 29	7
25 X 20	20	20 x 16	30	25 x 20	20	20 X 20	25	20 X 25	20	20 X 25	20	33 X 34	9
25 X 22	28	18 x 20	40	21 x 25	28	25 X 19	32	25 X 22	28	25 X 25	24	50 X 30	10
25 X 23	36	20 x 20	50	22 x 25	36	25 X 20	40	25 X 25	32	25 X 25	32	50 X 34	12
25 X 25	40	19 x 20	65	22 x 25	44	25 X 21	48	25 X 25	40	25 X 25	40	50 X 32	16
25 X 25	48	20 x 20	75	23 x 25	52	25 X 20	60	25 X 25	48	25 X 25	48	50 X 34	18
25 X 25	48	18 x 21	77	25 x 25	48	25 X 20	60	25 X 25	48	25 X 25	48	38 X 40	20
25 X 25	60	19 x 21	91	25 x 25	60	25 X 21	72	25 X 25	60	25 X 25	60	38 X 42	24
25 X 25	72	20 x 21	105	25 x 25	72	25 X 22	84	25 X 25	72	25 X 28	66	38 X 42	28
25 X 25	84	19 x 21	126	25 x 25	84	25 X 22	96	25 X 27	78	25 X 27	78	50 X 35	30
25 X 27	90	20 x 21	140	25 x 25	96	25 X 23	108	25 X 27	90	25 X 27	90	50 X 37	33
25 X 25	96	20 x 22	135	25 x 25	96	25 X 23	104	25 X 27	88	25 X 27	88	40 X 43	35
25 X 27	104	19 x 22	162	26 x 25	104	25 X 24	120	25 X 27	104	25 X 27	104	40 X 44	40
25 X 27	120	20 x 22	180	26 x 25	120	25 X 24	136	25 X 27	120	25 X 27	120	40 X 45	45
25 X 27	136	20 x 22	198	26 x 25	136	25 X 24	152	25 X 28	128	28 X 24	133	40 X 45	50
25 X 27	152	20 x 22	225	26 x 25	152	25 X 24	168	25 X 28	144	29 X 25	140	40 X 46	55
25 X 28	126	21 x 20	192	26 x 25	130	25 X 24	150	28 X 25	126	28 X 25	126	42 X 43	48
25 X 28	144	21 x 20	228	26 x 25	150	25 X 24	170	28 X 25	144	28 X 25	144	42 X 44	54
25 X 28	162	21 x 20	252	23 x 27	171	25 X 24	190	28 X 25	162	28 X 25	162	42 X 45	60
25 X 28	180	21 x 20	276	25 x 27	180	25 X 24	210	28 X 25	180	28 X 25	180	42 X 45	66
25 X 28	198	22 x 20	300	25 x 27	198	25 X 24	230	28 X 25	198	28 X 25	198	42 X 45	72
25 X 28	176	21 x 21	266	25 x 27	176	24 X 24	204	28 X 25	126	28 X 25	176	43 X 44	63
25 X 28	198	21 x 21	294	25 x 27	450	25 X 24	228	28 X 25	144	28 X 26	187	43 X 45	70
25 X 28	220	21 x 21	322	25 x 27	220	25 X 24	252	28 X 25	162	28 X 26	209	43 X 45	77
25 X 28	242	22 x 21	350	25 x 27	242	25 X 24	276	28 X 25	180	28 X 26	231	43 X 42	91
28 X 26	253	21 x 21	392	25 x 27	264	25 X 24	300	28 X 25	198	28 X 26	253	43 X 42	98

# Highbay lighting applications for open areas

## 50 Footcandles - Mounting heights of 25'

**Step 1**

Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.

Locate the dimensions in the left column (Select the nearest value).

**Step 5**

Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.






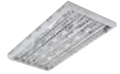
**Step 2**

Choose between Metal Halide, T5, or LED lamp sources. Refer to the index on page 66 for general information on lamp sources.

**Step 3**





Determine the approximate dimensions of the space to be illuminated.

**Step 4**

Light Level - 50 Footcandle Average - 25' Mounting Height													
FBL				SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBL24LL40-UNV-WC6				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/4EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	13 x 16	12	12 x 12	16	16 x 12	12	16 x 12	12	13 x 16	12	12 x 12	16
	100	17 x 16	18	14 x 12	28	16 x 16	18	14 x 16	21	17 x 16	18	12 x 16	24
	150	17 x 16	27	15 x 12	40	16 x 16	27	15 x 16	30	17 x 16	27	13 x 16	33
	200	17 x 18	33	11 x 16	51	18 x 16	33	15 x 16	39	17 x 18	33	14 x 16	42
100	100	17 x 20	30	14 x 14	49	20 x 16	30	16 x 16	36	17 x 20	30	16 x 14	42
	150	20 x 17	45	15 x 14	70	16 x 20	45	16 x 16	54	20 x 17	45	15 x 16	60
	200	20 x 19	55	14 x 16	84	16 x 20	60	18 x 16	66	20 x 19	55	15 x 16	78
	250	20 x 18	70	14 x 16	102	17 x 20	70	17 x 16	84	20 x 18	70	15 x 16	96
150	300	20 x 19	80	14 x 16	126	17 x 20	85	18 x 16	96	20 x 19	80	15 x 16	114
	200	19 x 20	80	14 x 16	126	20 x 18	80	16 x 18	96	19 x 20	80	16 x 16	108
	250	19 x 21	96	14 x 16	153	19 x 18	104	16 x 18	120	19 x 21	96	16 x 16	135
	300	19 x 20	120	25 x 16	180	20 x 18	120	16 x 18	144	19 x 20	120	16 x 16	162
200	350	19 x 21	136	15 x 16	207	20 x 18	136	17 x 18	160	19 x 21	136	17 x 16	180
	400	19 x 22	147	15 x 16	234	21 x 18	152	17 x 18	184	18 x 22	154	17 x 16	207
	300	20 x 20	50	15 x 16	228	20 x 20	150	17 x 18	187	20 x 20	150	17 x 16	204
	350	20 x 20	180	15 x 16	264	19 x 20	180	18 x 18	209	20 x 20	180	17 x 16	240
250	400	20 x 20	200	16 x 16	300	20 x 20	200	18 x 18	242	20 x 20	200	17 x 16	276
	450	20 x 20	220	16 x 16	336	20 x 20	220	18 x 18	275	20 x 20	220	18 x 16	300
	500	21 x 20	240	16 x 16	372	20 x 20	250	18 x 18	297	20 x 20	250	17 x 16	336
	350	21 x 19	216	15 x 16	330	19 x 20	216	18 x 17	266	21 x 19	216	16 x 17	294
300	400	21 x 20	240	16 x 16	375	19 x 20	252	17 x 19	299	21 x 20	240	16 x 17	336
	450	21 x 20	276	16 x 16	405	19 x 20	276	17 x 19	338	21 x 20	276	16 x 17	378
	500	21 x 20	300	16 x 16	450	20 x 20	300	17 x 19	364	21 x 20	300	16 x 17	420
	550	21 x 20	336	16 x 16	495	19 x 20	336	17 x 19	403	21 x 20	336	16 x 17	462
300	400	20 x 21	285	16 x 16	432	20 x 20	300	18 x 18	352	20 x 21	285	16 x 17	408
	450	20 x 21	330	16 x 16	486	20 x 20	330	18 x 18	400	20 x 21	330	17 x 17	442
	500	20 x 21	360	16 x 16	540	20 x 20	360	18 x 18	432	20 x 21	360	17 x 17	493
	550	20 x 21	390	16 x 16	594	21 x 20	390	18 x 18	480	20 x 21	390	17 x 17	554
	600	20 x 21	435	16 x 16	648	20 x 20	435	18 x 18	528	20 x 21	435	17 x 17	595

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

Light Level - 50 Footcandle Average - 25' Mounting Height

TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
13 x 16	12	12 x 12	16	16 x 12	12	10 X 17	15	10 x 17	15	17 X 16	9	25 X 25	4
17 x 16	18	14 x 12	28	16 x 16	18	17 X 14	21	17 x 14	21	17 X 16	18	25 X 25	8
17 x 16	27	15 x 12	40	18 x 16	24	17 X 15	30	17 x 15	30	17 X 19	24	25 X 30	10
17 x 18	33	11 x 16	51	18 x 16	33	17 X 15	39	17 x 15	39	17 X 20	30	25 X 33	12
17 x 20	30	14 x 14	49	20 x 16	30	17 X 17	36	17 x 17	36	17 X 20	30	25 X 33	12
20 x 17	45	15 x 14	70	18 x 20	40	17 X 17	54	17 x 17	54	20 X 19	40	33 X 30	15
20 x 19	55	14 x 16	84	18 x 20	55	17 X 18	66	17 x 18	66	20 X 18	55	33 X 29	21
20 x 18	70	14 x 16	102	19 x 20	65	16 X 18	84	16 x 18	84	20 X 20	65	33 X 28	27
20 x 19	80	14 x 16	126	18 x 20	80	17 X 19	96	17 x 19	96	20 X 19	80	33 X 30	30
19 x 20	80	14 x 16	126	18 x 21	77	19 X 17	96	19 x 17	96	22 X 18	77	30 X 33	30
19 x 21	96	14 x 16	153	19 x 21	91	19 X 18	112	19 x 18	112	22 X 18	98	30 X 36	35
19 x 20	120	25 x 16	180	18 x 21	112	19 X 18	136	19 x 18	136	22 X 19	112	30 X 33	45
19 x 21	136	15 x 16	207	19 x 21	126	19 X 17	160	19 x 17	160	22 X 18	133	30 X 35	50
19 x 22	147	15 x 16	234	20 x 21	140	19 X 18	176	19 x 18	176	22 X 19	147	30 X 36	55
20 x 20	150	15 x 16	228	21 x 20	140	18 X 19	176	18 x 19	176	20 X 20	150	34 X 33	54
20 x 20	180	15 x 16	264	21 x 20	160	18 X 19	209	18 x 19	209	20 X 21	170	33 X 32	66
20 x 20	200	16 x 16	300	21 x 20	190	18 X 19	231	18 x 19	231	20 X 21	190	34 X 33	72
20 x 20	220	16 x 16	336	19 x 22	207	18 X 20	253	18 x 20	253	20 X 21	220	33 X 32	84
22 x 20	230	16 x 16	372	20 x 22	225	18 X 19	286	18 x 19	286	20 X 21	240	34 X 33	90
21 x 19	216	15 x 16	330	20 x 20	204	19 X 19	247	19 x 19	247	21 X 21	204	35 X 32	77
21 x 20	240	16 x 16	375	21 x 20	228	20 X 18	286	20 x 18	286	21 X 20	240	35 X 31	91
21 x 20	276	16 x 16	405	21 x 20	252	19 X 19	312	19 x 19	312	21 X 21	264	35 X 33	98
21 x 20	300	16 x 16	450	21 x 20	276	19 X 19	351	19 x 19	351	21 X 21	288	35 X 32	112
21 x 20	336	16 x 16	495	21 x 20	312	19 X 19	377	19 x 19	377	21 X 20	324	35 X 33	119
20 x 21	285	16 x 16	432	21 x 21	266	19 X 19	336	19 x 19	336	22 X 20	280	33 X 34	108
20 x 21	330	16 x 16	486	20 x 21	308	19 X 19	368	19 x 19	368	21 X 20	322	33 X 35	117
20 x 21	360	16 x 16	540	20 x 21	336	19 X 19	416	19 x 19	416	22 X 20	350	33 X 34	135
20 x 21	390	16 x 16	594	21 x 21	364	19 X 20	448	19 x 20	448	21 X 21	378	34 X 34	144
20 x 21	435	16 x 16	648	21 x 21	392	19 X 19	496	19 x 19	496	22 X 20	420	33 X 34	162

# Highbay lighting applications for open areas

## 30 Footcandles - Mounting heights of 40'

**Step 1**

Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.

Locate the dimensions in the left column (Select the nearest value).

**Step 5**

Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.







**Step 2**

Choose between Metal Halide, T5, or LED lamp sources. Refer to the index on page 66 for general information on lamp sources.

**Step 3**

Determine the approximate dimensions of the space to be illuminated.







**Step 4**

Light Level - 30 Footcandle Average - 40' Mounting Height													
FBL				SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBL24LL40-UNV-WC6				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/4EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	16 x 16	9	N/A	N/A	16 x 16	9	N/A	N/A	16 x 16	9	N/A	N/A
	100	20 x 16	15	N/A	N/A	20 x 16	15	N/A	N/A	16 x 25	12	N/A	N/A
	150	21 x 16	21	N/A	N/A	15 x 25	20	N/A	N/A	16 x 25	18	N/A	N/A
	200	22 x 16	27	N/A	N/A	16 x 25	24	N/A	N/A	18 x 25	22	N/A	N/A
100	100	20 x 20	25	N/A	N/A	20 x 20	25	N/A	N/A	25 x 20	20	N/A	N/A
	150	21 x 20	35	N/A	N/A	18 x 25	32	N/A	N/A	21 x 25	28	N/A	N/A
	200	22 x 20	45	N/A	N/A	20 x 25	40	N/A	N/A	22 x 25	36	N/A	N/A
	250	22 x 20	55	N/A	N/A	20 x 25	48	N/A	N/A	22 x 25	44	N/A	N/A
150	300	23 x 20	65	N/A	N/A	21 x 25	56	N/A	N/A	22 x 25	52	N/A	N/A
	200	22 x 21	63	N/A	N/A	22 x 25	54	N/A	N/A	22 x 25	54	N/A	N/A
	250	22 x 21	77	N/A	N/A	22 x 25	66	N/A	N/A	25 x 25	60	N/A	N/A
	300	23 x 21	91	N/A	N/A	23 x 25	78	N/A	N/A	25 x 25	72	N/A	N/A
200	350	20 x 25	102	N/A	N/A	23 x 25	90	N/A	N/A	25 x 25	84	N/A	N/A
	400	21 x 25	114	N/A	N/A	23 x 25	102	N/A	N/A	25 x 25	96	N/A	N/A
	300	23 x 22	117	N/A	N/A	23 x 25	104	N/A	N/A	25 x 25	96	N/A	N/A
	350	21 x 25	128	N/A	N/A	23 x 25	120	N/A	N/A	25 x 25	112	N/A	N/A
250	400	22 x 25	144	N/A	N/A	25 x 25	128	N/A	N/A	26 x 25	120	N/A	N/A
	450	22 x 25	160	N/A	N/A	25 x 25	144	N/A	N/A	26 x 25	136	N/A	N/A
	500	22 x 25	176	N/A	N/A	25 x 25	160	N/A	N/A	26 x 25	152	N/A	N/A
	350	21 x 25	160	N/A	N/A	25 x 25	140	N/A	N/A	26 x 25	130	N/A	N/A
300	400	22 x 25	180	N/A	N/A	25 x 25	160	N/A	N/A	26 x 25	150	N/A	N/A
	450	22 x 25	200	N/A	N/A	25 x 25	180	N/A	N/A	25 x 27	162	N/A	N/A
	500	22 x 25	220	N/A	N/A	25 x 25	200	N/A	N/A	25 x 27	180	N/A	N/A
	550	22 x 25	240	N/A	N/A	26 x 25	210	N/A	N/A	25 x 27	198	N/A	N/A
300	400	23 x 25	204	N/A	N/A	25 x 25	192	N/A	N/A	25 x 27	176	N/A	N/A
	450	23 x 25	228	N/A	N/A	25 x 25	216	N/A	N/A	25 x 27	198	N/A	N/A
	500	23 x 25	252	N/A	N/A	26 x 25	228	N/A	N/A	25 x 27	220	N/A	N/A
	550	23 x 25	276	N/A	N/A	26 x 25	252	N/A	N/A	25 x 27	242	N/A	N/A
	600	24 x 25	300	N/A	N/A	26 x 25	276	N/A	N/A	26 x 27	253	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte



Light Level - 30 Footcandle Average - 40' Mounting Height

TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DXX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
16 x 16	9	N/A	N/A	16 x 16	9	13 X 16	12	17 X 16	9	17 X 16	9	25 X 25	4
16 x 25	12	N/A	N/A	20 x 16	15	17 X 16	18	17 X 20	15	25 X 17	12	25 X 33	6
18 x 25	16	N/A	N/A	16 x 25	18	17 X 18	24	25 X 17	18	25 X 17	18	1 X 22	7
20 x 25	20	N/A	N/A	16 x 25	24	17 X 20	30	25 X 17	24	25 X 18	22	1 X 23	9
25 x 20	20	N/A	N/A	20 x 20	25	17 x 20	30	17 x 25	24	20 x 25	20	33 x 34	9
21 x 25	28	N/A	N/A	18 x 25	32	20 x 19	40	25 x 19	32	25 x 22	28	33 x 38	12
22 x 25	36	N/A	N/A	20 x 25	40	20 x 20	50	25 x 20	40	25 x 23	36	34 x 40	15
25 x 25	40	N/A	N/A	20 x 25	48	20 x 21	60	25 x 21	48	25 x 23	44	33 x 42	18
25 x 25	48	N/A	N/A	21 x 25	56	20 x 22	70	25 x 22	56	25 x 23	52	33 x 43	21
25 x 25	48	N/A	N/A	22 x 25	54	22 x 22	63	25 x 23	54	25 x 23	54	38 x 40	20
25 x 25	60	N/A	N/A	22 x 25	66	21 x 23	77	25 x 23	66	25 x 25	60	38 x 41	24
27 x 25	66	N/A	N/A	25 x 25	72	22 x 23	91	25 x 23	78	25 x 25	72	38 x 42	28
26 x 25	78	N/A	N/A	25 x 25	84	22 x 23	105	25 x 25	84	25 x 25	84	37 x 44	32
26 x 25	90	N/A	N/A	25 x 25	96	22 x 24	119	25 x 25	96	25 x 25	96	38 x 44	36
25 x 28	84	N/A	N/A	25 x 25	96	22 x 23	117	25 x 25	96	25 x 25	96	40 x 43	35
25 x 28	98	N/A	N/A	25 x 25	112	22 x 24	135	25 x 25	112	25 x 25	112	40 x 44	40
25 x 28	112	N/A	N/A	26 x 25	120	22 x 24	153	25 x 25	128	25 x 27	120	40x 40	50
25 x 28	126	N/A	N/A	26 x 25	136	23 x 24	171	25 x 27	136	25 x 27	136	40 x 41	55
25 x 28	140	N/A	N/A	26 x 25	152	22 x 24	189	25 x 27	152	25 x 27	152	40 x 42	60
25 x 27	126	N/A	N/A	26 x 25	130	23 x 23	165	25 x 25	140	25 x 27	130	42 x 38	54
26 x 27	135	N/A	N/A	23 x 27	153	23 x 23	187	25 x 27	150	25 x 27	150	42 x 40	60
26 x 27	153	N/A	N/A	25 x 27	162	23 x 23	209	25 x 27	170	25 x 27	170	41 x 41	66
26 x 27	171	N/A	N/A	25 x 27	180	25 x 22	230	25 x 27	190	25 x 27	190	42 x 41	72
26 x 27	189	N/A	N/A	25 x 27	198	25 x 22	250	25 x 26	210	25 x 28	200	42 x 42	78
26 x 27	165	N/A	N/A	25 x 27	176	23 x 24	221	27 x 25	176	27 x 25	176	42 x 40	70
26 x 27	187	N/A	N/A	25 x 27	198	23 x 24	247	27 x 25	198	27 x 25	198	43 x 41	77
27 x 27	198	N/A	N/A	26 x 27	209	25 x 23	264	27 x 25	220	27 x 25	220	43 x 42	84
27 x 27	220	N/A	N/A	26 x 27	231	25 x 23	288	27 x 25	242	27 x 25	242	43 x 42	91
27 x 27	242	N/A	N/A	26 x 27	253	25 x 23	312	27 x 25	264	27 x 25	264	43 x 43	98

# Highbay lighting applications for open areas

## 30 Footcandles - Mounting heights of 40'

**Step 1**

Determine if the layout will be for General Lighting or for use over Feature Areas. For General Lighting refer to the chart for 30 Footcandles and if Feature Area lighting is needed refer to the chart for 50 footcandles.

Locate the dimensions in the left column (Select the nearest value).

**Step 5**

Identify the fixture spacing and quantity required by matching the dimensions (step 3) for the products available.






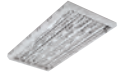
**Step 2**

Choose between Metal Halide, T5, or LED lamp sources. Refer to the index on page 66 for general information on lamp sources.

**Step 3**




Determine the approximate dimensions of the space to be illuminated.

**Step 4**

Light Level - 50 Footcandle Average - 40' Mounting Height													
FBL				SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp	
LED				T5HO		T5HO		T5HO		T5HO		T5HO	
													
FBL24LL40-UNV-WC6				SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/4EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV	
L	W	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
50	50	13 x 13	16	N/A	N/A	12 x 12	16	N/A	N/A	16 x 12	12	N/A	N/A
	100	11 x 17	27	N/A	N/A	12 x 16	24	N/A	N/A	14 x 16	21	N/A	N/A
	150	13 x 17	36	N/A	N/A	13 x 16	33	N/A	N/A	15 x 16	30	N/A	N/A
	200	13 x 17	45	N/A	N/A	14 x 16	42	N/A	N/A	16 x 16	36	N/A	N/A
100	100	16 x 14	42	N/A	N/A	16 x 16	36	N/A	N/A	16 x 16	36	N/A	N/A
	150	15 x 16	60	N/A	N/A	16 x 16	54	N/A	N/A	18 x 16	48	N/A	N/A
	200	16 x 16	72	N/A	N/A	18 x 16	66	N/A	N/A	16 x 20	60	N/A	N/A
	250	16 x 16	90	N/A	N/A	17 x 16	84	N/A	N/A	16 x 20	75	N/A	N/A
150	300	16 x 16	108	N/A	N/A	18 x 16	96	N/A	N/A	17 x 20	85	N/A	N/A
	200	18 x 16	99	N/A	N/A	16 x 18	96	N/A	N/A	18 x 18	88	N/A	N/A
	250	16 x 18	120	N/A	N/A	17 x 18	112	N/A	N/A	19 x 18	104	N/A	N/A
	300	16 x 18	144	N/A	N/A	18 x 18	128	N/A	N/A	20 x 18	120	N/A	N/A
200	350	16 x 18	168	N/A	N/A	18 x 18	152	N/A	N/A	20 x 18	136	N/A	N/A
	400	16 x 18	192	N/A	N/A	19 x 18	168	N/A	N/A	20 x 18	160	N/A	N/A
	300	17 x 18	187	N/A	N/A	17 x 20	170	N/A	N/A	18 x 20	160	N/A	N/A
	350	18 x 18	209	N/A	N/A	18 x 20	190	N/A	N/A	19 x 20	180	N/A	N/A
250	400	18 x 18	242	N/A	N/A	18 x 20	220	N/A	N/A	20 x 20	200	N/A	N/A
	450	18 x 18	264	N/A	N/A	18 x 20	240	N/A	N/A	19 x 20	230	N/A	N/A
	500	18 x 18	297	N/A	N/A	18 x 20	270	N/A	N/A	20 x 20	250	N/A	N/A
	350	17 x 19	260	N/A	N/A	19 x 19	234	N/A	N/A	19 x 20	216	N/A	N/A
300	400	17 x 19	299	N/A	N/A	20 x 19	260	N/A	N/A	19 x 20	252	N/A	N/A
	450	18 x 19	325	N/A	N/A	19 x 19	299	N/A	N/A	19 x 20	276	N/A	N/A
	500	17 x 19	364	N/A	N/A	20 x 19	325	N/A	N/A	20 x 20	300	N/A	N/A
	550	18 x 19	390	N/A	N/A	20 x 19	351	N/A	N/A	19 x 20	336	N/A	N/A
300	400	18 x 18	352	N/A	N/A	19 x 20	315	N/A	N/A	21 x 20	285	N/A	N/A
	450	18 x 18	384	N/A	N/A	19 x 20	345	N/A	N/A	20 x 20	330	N/A	N/A
	500	18 x 18	432	N/A	N/A	19 x 20	390	N/A	N/A	20 x 20	360	N/A	N/A
	550	18 x 18	464	N/A	N/A	19 x 20	420	N/A	N/A	21 x 20	390	N/A	N/A
	600	18 x 18	512	N/A	N/A	20 x 20	450	N/A	N/A	20 x 21	420	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

Light Level -50 Footcandle Average - 40' Mounting Height

TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Value Highbay		Coolbay - 400		Coolbay - 1000	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide		Metal Halide		Metal Halide	
													
FH4C5DXX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		VH400MAK-T		707P400MAK-T		708P100MA3C-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
16 x 12	12	N/A	N/A	12 x 12	16	10 x 13	20	13 x 12	16	12 x 17	12	17 x 25	6
16 x 16	18	N/A	N/A	12 x 16	24	13 x 14	28	17 x 14	21	17 x 14	21	25 x 25	8
16 x 16	27	N/A	N/A	15 x 16	30	13 x 15	40	17 x 15	30	17 x 15	30	25 x 25	12
18 x 16	33	N/A	N/A	15 x 16	39	13 x 15	52	17 x 15	39	17 x 16	36	25 x 29	14
20 x 16	30	N/A	N/A	16 x 16	36	14 x 15	49	17 x 16	36	17 x 16	36	25 x 25	16
16 x 20	45	N/A	N/A	18 x 16	48	17 x 15	60	17 x 19	48	20 x 15	50	33 x 25	18
18 x 20	55	N/A	N/A	18 x 16	66	17 x 15	78	20 x 15	53	20 x 17	60	33 x 25	24
17 x 20	70	N/A	N/A	16 x 20	75	17 x 15	96	20 x 17	75	20 x 17	75	33 x 25	30
18 x 20	80	N/A	N/A	16 x 20	90	16 x 16	114	20 x 17	90	20 x 18	85	33 x 28	33
20 x 18	80	N/A	N/A	18 x 18	88	17 x 16	108	19 x 18	88	19 x 18	88	30 x 29	35
17 x 21	98	N/A	N/A	19 x 18	104	17 x 16	135	19 x 19	104	19 x 19	104	30 x 31	40
18 x 21	112	N/A	N/A	20 x 18	120	17 x 17	153	19 x 19	128	19 x 20	120	30 x 33	45
19 x 21	126	N/A	N/A	19 x 18	144	17 x 17	180	19 x 19	144	19 x 19	144	30 x 32	55
19 x 21	147	N/A	N/A	20 x 18	160	17 x 18	198	19 x 20	160	19 x 20	160	30 x 33	60
21 x 20	140	N/A	N/A	18 x 20	160	18 x 17	198	20 x 19	160	20 x 19	160	33 x 30	60
20 x 20	170	N/A	N/A	19 x 20	180	18 x 18	220	20 x 20	180	20 x 20	180	33 x 30	72
21 x 20	190	N/A	N/A	20 x 20	200	18 x 18	253	20 x 19	210	20 x 20	200	33 x 31	78
21 x 20	210	N/A	N/A	19 x 20	230	18 x 18	275	20 x 20	230	20 x 20	230	33 x 30	90
21 x 20	230	N/A	N/A	20 x 20	250	18 x 18	308	20 x 20	250	20 x 20	250	33 x 32	96
20 x 20	204	N/A	N/A	19 x 20	216	18 x 18	266	20 x 19	228	21 x 19	216	31 x 32	88
21 x 20	228	N/A	N/A	19 x 20	252	18 x 18	308	21 x 19	252	21 x 19	252	32 x 33	96
21 x 20	252	N/A	N/A	19 x 20	276	18 x 18	336	21 x 19	288	20 x 20	276	31 x 35	104
20 x 20	288	N/A	N/A	20 x 20	300	18 x 18	378	21 x 19	312	21 x 19	312	32 x 33	120
21 x 20	312	N/A	N/A	20 x 20	324	18 x 19	406	21 x 20	336	21 x 20	336	31 x 35	128
21 x 21	266	N/A	N/A	21 x 20	285	19 x 18	352	20 x 20	300	20 x 20	300	33 x 31	117
20 x 21	308	N/A	N/A	19x 21	322	19 x 18	400	20 x 20	330	20 x 20	330	33 x 32	126
20 x 21	336	N/A	N/A	20 x 21	350	19 x 18	448	20 x 20	375	20 x 21	360	34 x 33	135
21 x 21	364	N/A	N/A	19x 21	392	19 x 18	480	20 x 21	405	20 x 21	405	33 x 33	153
21 x 21	392	N/A	N/A	20 x 21	420	19 x 18	528	20 x 21	435	20 x 21	435	33 x 33	162

# Highbay lighting applications for aisles

## 15 & 25 Footcandles - Mounting heights of 20' - 40'

**Step 1**

Determine if the items stored in the Aisle are Large (Rough & Bulky), Medium (Readily Portable) or Small (Hand-sized Boxes & Parts)

**Step 2**

If small items were selected (Step 1) refer to the Spacing for 15 vertical foot-candle chart, if Medium to Large items was selected refer to the Spacing for 25 vertical foot-candle chart.

Tip: Vertical footcandles are the measure of illuminance on a vertical surface such as the racking and the items stored in the racking compared to horizontal footcandles which are measured above the finished floor.

**Step 3**

Determine the height the luminaires will be mounted

**Step 4**

Choose between Metal Halide, LED or T5HO lamp sources.

**Step 5**

Identify the products available and have your customer select the product they are interested in.

**Step 6**






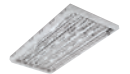
Identify and inform your customer of the horizontal footcandles that will be achieved by the product selected. Please note the reading is from 2.5 feet (A.F.F) above the finished floor.

**Step 7**







Determine the length of the aisle that the luminaires will be mounted. To determine the quantities of luminaires needed divide the length of the aisle by the recommended luminaire spacing.  $\text{Length of Aisle} \div \text{Spacing} = \text{Luminaire Quantity}$

**Step 8**

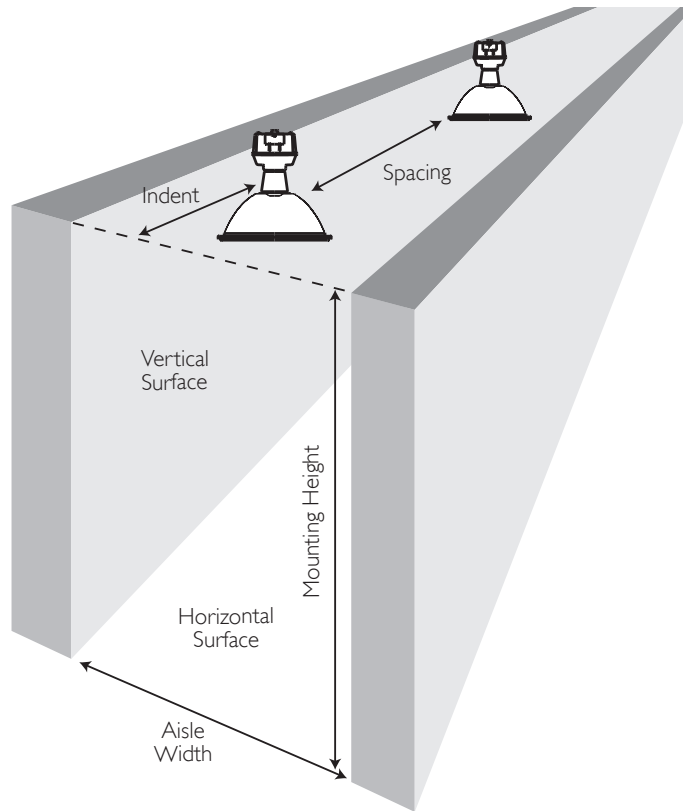
Luminaires should be indented from the start and end of the aisles 1/2 of the distance that is indicated by the suggested spacing ratio. Example: 100 ft Aisle at a suggested fixture spacing of 10 ft would require 10 fixtures ( $100\text{ft} \div 10\text{ft} = 10$  luminaires). The first fixture will be placed 5 ft from the start of the aisle and each subsequent fixture will be spaced 10ft from the previous fixture.

Light Level - 15 Footcandle Average - 2.5 Average footcandle maintained													
		FBL	SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp		
		LED	T5HO		T5HO		T5HO		T5HO		T5HO		
													
		FBL24LL40-UNV-WC6	SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV		
W	H	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
8	20	N/A	N/A	23'	18FC	32'	22FC	29'	22FC	35'	22FC	24'	11FC
	25	33'	15FC*	19'	15FC	30'	19FC	24'	19FC	32'	18FC	19'	11FC
	30	30'	14FC	16'	14FC	24'	18FC	20'	18FC	25'	19FC	15'	11FC
	35	N/A	N/A	14'	13FC	19'	20FC	18'	17FC	23'	18FC	14'	9FC
	40	N/A	N/A	N/A	N/A	N/A	N/A	15'	17FC	19'	17FC	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte

Light Level - 25 Footcandle Average - 2.5 Average footcandle maintained													
		FBL	SHE - 4 lamp		SHE - 6 lamp		T-Bay - 4 lamp		T-Bay - 6 lamp		TriLyte - 4 lamp		
		LED	T5HO		T5HO		T5HO		T5HO		T5HO		
													
		FBL24LL40-UNV-WC6	SHE454HO-UNV-1/4EB-GENRS-CORD		SHE654HO-UNV-1/42EB-GENRS-CORD		FHT4C4DXX454UNVPV		FHT4C5DXX654UNVP6		FH4C4DXX454UNVPV		
W	H	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
8	20	24'	28FC	13'	30FC	19'	37FC	17'	36FC	22'	37FC	14'	19FC
	25	20'	27FC	11'	26FC	15'	37FC	15'	30FC	18'	35FC	10'	20FC
	30	15'	28FC	9'	25FC	15'	30FC	11'	32FC	15'	33FC	9'	15FC
	35	15'	22FC	8'	23FC	12'	30FC	10'	29FC	14'	25FC	8'	15FC*
	40	N/A	N/A	N/A	N/A	10'	30FC	9'	26FC	12'	26FC	N/A	N/A

Suitable for commercial and retail applications: FBL, SHE, T-Bay, TriLyte



Applications									
TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Coolbay - 400	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide	
FH4C5DXX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		707P400MAK-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
35'	25FC	25'	17FC	35'	20FC	33'	14FC	33'	22FC
33'	19FC	22'	15FC	33'	14FC	25'	14FC	32'	22FC
26'	22FC	18'	14FC	28'	14FC	22'	14fc	26'	18FC
24'	19FC	16'	12FC	24'	13FC*	20'	11FC*	23'	18FC
19'	20FC	N/A	N/A	N/A	N/A	N/A	N/A	19'	17FC

Applications									
TriLyte - 6 lamp		Pacific - 4 lamp		Pacific - 6 lamp		Ultrabay		Coolbay - 400	
T5HO		T5HO		T5HO		Metal Halide		Metal Halide	
FH4C5DXX654UNVP6		VTH4454STUNVPV		VTH4654STUNVP6		843400MAL3C-T		707P400MAK-T	
Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty	Spacing	Qty
22'	42FC	15'	29FC	25'	27FC	20'	23FC	23'	35FC
18'	40FC	10'	18FC	20'	24FC	16'	25FC	19'	25FC
15'	37FC	10'	24FC	15'	26FC	12'	22FC	15'	31FC
14'	30FC	9'	22FC	14'	22FC	N/A	N/A	13'	28FC
12'	31FC	N/A	N/A	N/A	N/A	N/A	N/A	12'	27FC

## Parking facility lighting

Mounting heights of 8' / Light level 5 foot candle average, 1 foot candle minimum

**Step 1**

For a 60' wide bay

**Step 3**

Choose your appropriate light source, in this case LED.

**Step 4**

Identify the products available and select the product of interest.

**Step 5**

Determine the number of bays they would like to illuminate.

**Step 6**

Determine the length of the bay(s) that the luminaires will be mounted. To determine the quantities of luminaires needed.

For Enhanced Design: Divide the length of the bay by the recommended luminaire spacing. For  $\text{Length of Bay} \div \text{Spacing} = \text{Luminaire Quantity per Row}$ . Multiply the Luminaire Quantity per Row by 2 to find the Total Luminaire Quantity per Bay.

**Step 7**

If the parking facility has multiple bays of the same width and length X (Multiply) the luminaire quantity (Step 6) by the number of bays indicated.

**Step 8**

Luminaires should be indented from the start and end of the bay 1/2 of the distance that is indicated by the suggested spacing.

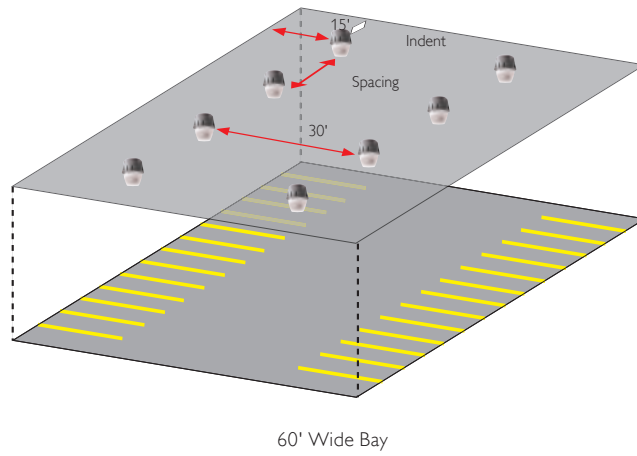
Example: 100 ft bay at a suggested fixture spacing of 10 ft would require 10 fixtures ( $100\text{ft} \div 10\text{ft} = 10$  luminaires). The first fixture will be placed 5 ft from the start of the bay and each subsequent fixture will be spaced 10ft from the previous fixture.

**Step 9**

Refer to the Bay Layout Design for details on how the fixtures should be placed within each bay.

		G3	
		LED	LED
			
		G3-1-55LA-161LA-NW	G3-5-2-73LA-3270-NW
Bay Width	Spacing	Spacing	
60'	25	40	

### Bay design layout



Enhanced Design - Double Row of Luminaires - Performance Layout

# Parking and area lighting

Light level: 2 footcandles average

**Step 1**

Choose between Metal Halide or High Pressure Sodium as the light source for the application.

**Step 2**

Determine the dimensions of the area to be illuminated.

**Step 3**

Locate the approximate dimensions (to the nearest value) in the left most column.

**Step 4**

Read across the column to identify the products available. Select the product of interest and make note of the wattage and quantity required.

Cost Saving Tip: The higher the wattage and lower the quantity the more cost efficient the job.

Performance Tip: Lower wattages with higher quantities will produce a more even and uniform lighting job.

**Step 5**

Identify the suggested pole height for the product selected as indicated in the far right column.

**Step 6**

Refer to the options available for the selected products in terms of pole location and aiming.

**Pole Location and Aiming**

Determine if safety is an issue with the area to be illuminated. If yes, then refer to Option A. If no, then refer to Option B.

**Option A**

Perimeter Lighting for even and safe illumination

For best quality lighting (i.e. good uniformity and a minimum of shadow) aiming should come from at least two sides. Locating poles and aiming floodlights should follow the guidelines below.

Aim floodlights approximately 2/3 of the distance across the area (if working from one side) or 2/3 of the distance to the centre (if working from both sides).

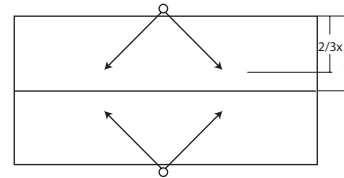
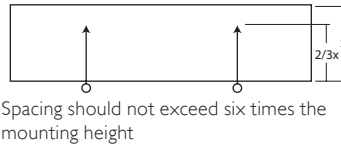
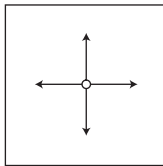
**Option B**

Center Pole Lighting

- not as uniform as perimeter lighting






- reduces pole cost on small areas

- aim floodlights 2/3 of distance from pole to side of area





1.5 - 2 Footcandles Average

			Metal Halide						LED			
			PentaFlood 3		PentaFlood 2		PentaFlood 3		PentaFlood 5		Ecoform	
												
			PF3Y400LXL-T		PF2Y175MAL-T PF2A175MAL-T		PF3Y250MAL-T PF3Y400MAL-T PF3A400MAL-T		PF5Y1000MAL-T PF5A1000MAL-T		ECF-1-3-215LA-641A-NW ECF-1-3-215LA-641A-NW	
Length	Width	Height	Watts	Qty	Watts	Qty	Watts	Qty	Watts	Qty	Watts	Qty
50	50	15' min.										
	100											
	100	20' min.	250	2	175	2	250	1				2
150	250		3	175	3	250	2				3	
200	250		3	175	4	250	3				4	
100	100	25' min.	250	4	175	6	250	3			210	4
	150		400	3	175	8	250	4			210	4
	200	400	3			400	4			210	6	
	250	400	4			400	5	1000	2	210	6	
	300	400	4			400	6	1000	2	210	6	
150	250	30' min.	400	5			400	8	1000	2	210	4
	300		400	6			400	9	1000	3	210	6
	350		400	6			400	10	1000	3	210	8
200	300	35' min.	400	7			400	12	1000	3	210	10 fix/8 poles
	350		400	9			400	14	1000	3	210	9 fix/ 6 poles
	400		400	10			400	16	1000	4	210	12 fix/8 poles
	450		400	11			400	18	1000	4	210	12 fix/8 poles
	500		400	12			400	20	1000	5	210	15 fix/10 poles
250	350	40' min.	400	10			400	17	1000	4	210	12 fix/9 poles
	400		400	11			400	20	1000	5	210	16 fix/12 poles
	450		400	13			400	22	1000	5	210	16 fix/12 poles
300	500	40' min.	400	14			400	25	1000	6	210	16 fix/12 poles
	350		400	12			400		1000	5	210	16 fixt/12 poles
	400		400	14			400		1000	5	210	16 fixt/12 poles
	450		400	16			400		1000	6	210	16 fixt/12 poles
	500		400	18			400		1000	7	210	20 fix/15 poles

These values are based on mean lumen operation in a medium dirty environment.

## Parking lot and security lighting using wallcubes

Light level: 1 and 2 footcandles average

**Step 1**

Determine the height of the building where the luminaires will be placed.

**Step 2**

Select a mounting height that is approximately 3/4 the height of the building where the luminaires will be placed and locate the mounting height in the left most column.

**Step 3**

Choose between Metal Halide or High Pressure Sodium as the light source for the application.

**Step 4**

Read down the column and identify the products that are available. Select the product of interest and make note of the part number.

**Step 5**

Determine if the fixtures selected will be used for Parking Lot Lighting or a Security Lighting application. This will determine the appropriate spacing between fixtures and coverage.

**Step 6**

Ensure the coverage the product selected provides is suitable for the application.

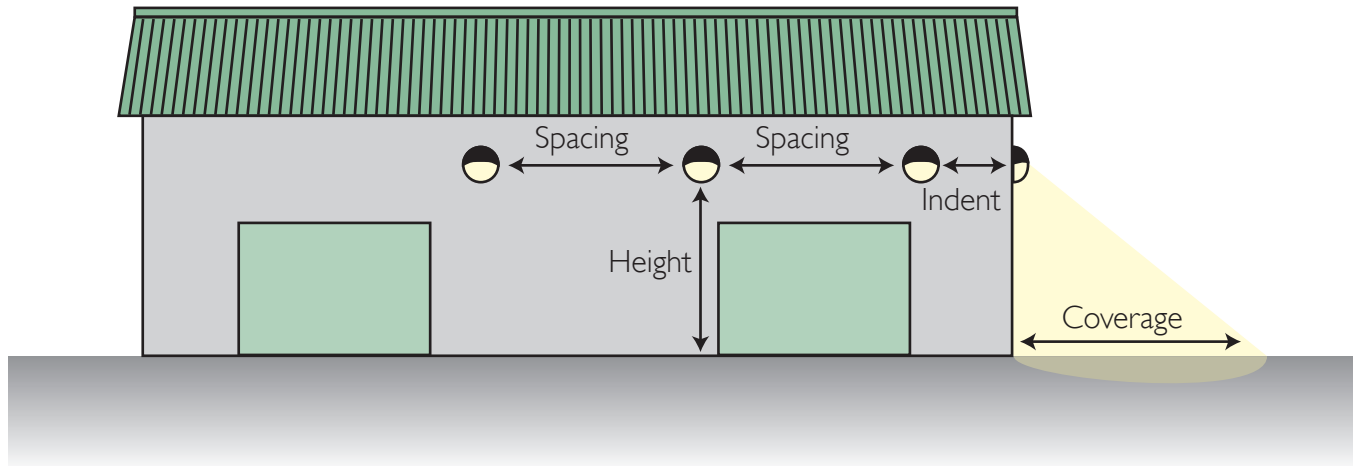
**Step 7**

Determine the length of the walls that the luminaires will be mounted.

**Step 8**

To determine the quantities of luminaires needed divide the length of the wall by the recommended luminaire spacing.  $\text{Length of Wall} \div \text{Spacing} = \text{Luminaire Quantity}$

Spacing Tip: Luminaires should be indented from the starting and ending outside edges 1/2 of the distance that is indicated by the suggested spacing. Example: 100 ft Building at a suggested fixture spacing of 10 ft would require 10 fixtures ( $100\text{ft} \div 10\text{ft} = 10$  luminaires). The first fixture will be placed 5 ft from the edge and each subsequent fixture will be spaced 10ft from the previous fixture.



1 - 2 Footcandles Average								
Height	Metal Halide	High Pressure Sodium	LED	Security Lighting 1 Footcandle Average		Parking Lot Lighting 2 Footcandle Average		
				Spacing	Coverage	Spacing	Coverage	
10'			LP7	20	15	10	15	
12' to 13'	313175MAL-T			50	40	40	40	
	FPM070MAL-T			50	25	40	25	
	FPM100MAL-T			56	25	47	25	
	FPM175MAL-T			62	30	53	30	
		313150LXL-T			56	45	47	45
		313150NLXL-1			56	45	47	45
		TLW050NLXLPC-1			37	25	29	25
14' - 15'								
			LP16	40	30	20	30	
	313175MAL-T			54	40	42	45	
	FPM070MAL-T			52	25	40	25	
	FPM100MAL-T			60	25	49	25	
	FPM175MAL-T			68	30	57	30	
		313150LXL-T			60	45	50	50
		313150NLXL-1			60	45	50	50
		TLW050NLXLPC-1			39	25	30	25
		TLW070NLXLPC-1			46	25	33	30
		WPS070NLXL-1			48	30	37	30
16' - 19'								
			LP32	75	40	35	40	
	313175MAL-T			56	45	44	45	
	FPM175MAL-T			73	30	59	35	
	553250MAL-T			60	45	48	45	
	553400MAL-T			72	50	59	55	
		313150LXL-T			62	50	50	55
20' - 23'								
	313175MAL-T			60	45	46	50	
	FPM175MAL-T			78	35	63	40	
	553250MAL-T			66	45	51	50	
	553400MAL-T			78	55	63	55	
		313150LXL-T			69	55	55	60
		313150NLXL-1			69	55	55	60
		553250LXL-T			76	50	60	55
		553400LXL-T			90	55	75	65
24' - 29'	553400MAL-T			85	65	66	65	
		553400LXL-T		100	65	80	65	
30'	553400MAL-T			90	65	69	65	
		553400LXL-T		105	65	85	75	

These values are based on mean lumen operation in a medium dirty environment.

# Facade flood lighting

## Single story buildings - 16' to 24' high

**Step 1**

Determine the surface and colour of the building and identify if the building is classified as a Light, Medium or Dark surface.

**Step 2**

Determine if the building is in bright surroundings or dark surroundings to determine the light level required to illuminate the building surface determined in Step 1.

**Step 3**

Choose between Metal Halide or High Pressure Sodium as the light source for the application.  
 Colour Tip: High Pressure Sodium is not recommended for light surface colours as it will give the surface a golden/orange appearance.

**Step 4**

Locate the light level determined in Step 2 in the left most column in the chart

**Step 5**

Determine the appropriate distance from the building the luminaire will be placed

**Step 6**

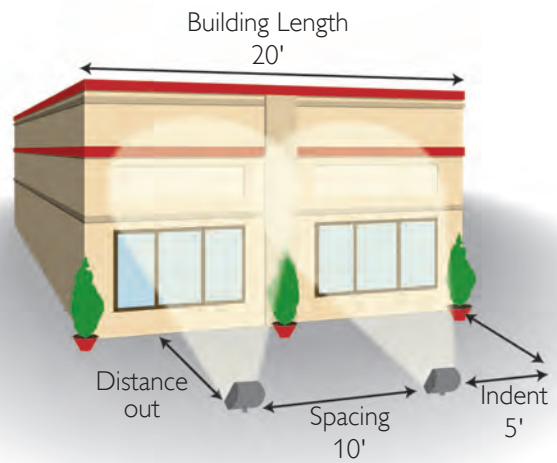
Locate the luminaire(s) recommended by matching the light level column (Step 4) to the distance out row (Step 5).

**Step 7**

Read the recommended spacing as noted above your luminaire selection

**Step 8**

Determine the length of the walls that the luminaires will be mounted. To determine the quantities of luminaires needed divide the length of the wall by the recommended luminaire spacing.  $\text{Length of Wall} \div \text{Spacing} = \text{Luminaire Quantity}$   
 Spacing Tip - Luminaires should be indented from the starting and ending outside edges 1/2 of the distance that is indicated by the suggested spacing.  
 Example: 20 ft Building at a suggested fixture spacing of 10 ft would require 2 fixtures ( $20\text{ft} \div 10\text{ft} = 2$  luminaires). The first fixture will be placed 5 ft from the edge and each subsequent fixture will be spaced 10ft from the previous fixture.



Surface	Colour	Class	Bright Surroundings	Dark Surroundings
Brick	Red	Dark Surface	50	20
Cement	Natural			
Concrete Block	Medium Grey			
Paint	White	Light Surface	15	5
	Ivory			
	Cream			
	Buff	Medium Surface	30	15
	Light Green			
	Light Grey			
Plaster	Tan	Dark Surface	50	20
	Dark Grey			
	Olive Green			
	Dark Oak	Light Surface	15	5
	White			
Stone	Cream	Light	15	5
	Grey			
			Medium	30

Metal Halide							
Distance Out		10'	12'	14'	16'	18'	20'
Spacing		15'	18'	21'	24'	27'	30'
Light Level	5	<b>FloodPak</b> FPM070MAL-T	<b>FloodPak</b> FPM070MAL-T	<b>FloodPak</b> FPM100MAL-T	<b>FloodPak</b> FPM100MAL-T	<b>Pentaflood 2</b> PF2Y175MAL-T <b>FloodPak</b> FPM175MAL-T	<b>Pentaflood 2</b> PF2Y175MAL-T <b>FloodPak</b> FPM175MAL-T
	15	<b>Pentaflood 2</b> PF2Y175MAL-T <b>FloodPak</b> FPM175MAL-T	<b>Pentaflood 2</b> PF2Y175MAL-T <b>FloodPak</b> FPM175MAL-T	<b>Pentaflood 3</b> PF3Y250MAL-T	<b>Pentaflood 3</b> PF3Y250MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T
	20	<b>Pentaflood 3</b> PF3Y250MAL-T	<b>Pentaflood 3</b> PF3Y250MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	
Spacing		15'	16'	16'	16'	14'	12'
Light Level	30	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T
Spacing		10'	10'	22'	24'	27'	30'
Light Level	50	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 3</b> PF3Y400MAL-T PF3A400MAL-T	<b>Pentaflood 5</b> PF5Y1000MAL-T PF5A1000MAL-T	<b>Pentaflood 5</b> PF5Y1000MAL-T PF5A1000MAL-T	<b>Pentaflood 5</b> PF5Y1000MAL-T PF5A1000MAL-T	<b>Pentaflood 5</b> PF5Y1000MAL-T PF5A1000MAL-T








High Pressure Sodium							
Distance Out		10'	12'	14'	16'	18'	20'
Spacing		15'	18'	21'	24'	27'	30'
Light Level	5						
	15					<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T
	20					<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T
Spacing		15'	18'	21'	24'	27'	30'
Light Level	30	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T
Spacing		14'	16'	18'	20'	20'	20'
Light Level	50	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T	<b>Pentaflood 3</b> PF3Y400LXL-T PF3A400LXL-T				

## Lamp data index

### New Legislation

Governments have passed measures to phase out incandescent light bulbs. In some jurisdictions this has been done through legislation, while in others through voluntary measures. The aim is to encourage use of more energy efficient lighting alternatives, such as fluorescent, compact fluorescent lamp (CFLs), Halogen such as PAR and MR lamps and LED sourced lighting fixtures. Federal Environment Minister John Baird announced in April 2007 a plan to ban the sale of inefficient light bulbs by 2012. According to the minister Canada will save \$3 to \$4 billion Canadian dollars over the lifetime of the new bulbs. Due to the fact certain lighting application still require some general service lamps for specific application, certain lamps will remain in circulation. All general service incandescent lamps will be ban with the exception of these

- a. "have a luminous flux of at least 250 lumens but no greater than 260 lumens  
(Note: equivalent wattages covered are the 40, 60, 75 and 100 watt lamps)"
- b. "have a nominal voltage or voltage range that lies at least partially between 100 and 130 volts"
- c. are screw based
- d. an appliance lamp;
- e. "an integrally ballasted CFL;  
(Note: already meets high efficiency performance standards)"
- f. a coloured lamp;
- g. an explosion-resistant lamp;
- h. an infrared lamp;
- i. a left-hand screw-based lamp;
- j. a plant lamp;
- k. "a showcase lamp that has a T-shape and a maximum wattage of 40 W or a length exceeding 25 cm and is marketed as a showcase lamp;"
- l. a sign service lamp;
- m. a silver bowl lamp;
- n. "a lamp using solid state technology;  
(Note: already meets high efficiency performance standards)"
- o. a lamp that has a G-shape and a diameter of 13 cm or more;
- p. a submersible lamp;
- q. a traffic signal module, pedestrian module and street light;
- r. "a lamp having an Edison screw-base size of E5, E10, E11, E12, E17, E26d (three way lamps), E26/50x39, E26/53x39, E29/28, E29/53x39, E39, E39d, EP39 or EX39"
- s. "a lamp that has a B, BA, CA, F, G16-1/2, G25, G30, s or M-14 shape or other similar shape, and a maximum wattage of 40 W;  
(Note: the A-shape lamp is the main focus of this regulation)"
- t. a rough service lamp;
- u. a vibration service lamp;
- v. "an incandescent reflector lamp  
(Note: this lamp category is already regulated)"


Lamp Wattage	Lamp Manufacturer	Model # (add colour temperature desired in space __)	Rated Life* (hours)	Initial Lumens at 25°C	Colour Temperature (varies by lamp manufacturer)*K	CRI	MOL Length inches(mm) <sup>†</sup>	Electronic Ballast (volts) Availability <small>*consult your representative on new ballast voltage availability</small>
QT Quad 4-pin 18	 GE	F18DBX/8__/ECO4P	17000	1250	3000, 3500, 4100	82	5.8"(147mm)	120, 277, 347
	PHILIPS	PL-C 18W/8__/_/ALTO	12000	1200	3000, 3500, 4100	82	5-11/16"(144.5mm)	120, 277, 347
	OSRAM Sylvania	CF18DD/E/8__	12000	1150	3000, 3500, 4100	82	5.8"(147mm)	120, 277, 347
TTT Triple Tube 4-pin 32	 GE	F32TBX/8__/_/A/ECO	17000	2400	3000, 3500, 4100	82	5.5"(140mm)	120, 277, 347
	PHILIPS	PL-T 32W/8__/_/4P/ALTO	16000	2400	3000, 3500, 4100	82	5-5/8"(143mm)	120, 277, 347
	OSRAM Sylvania	CF32DT/E/IN/8__/_/ECO	16000	2400	3000, 3500, 4100	82	5.6"(142mm)	120, 277, 347
Triple Tube 4-pin 42	GE	F42TBX/8__/_/A/ECO	17000	3200	3000, 3500, 4100	82	6.4"(163mm)	120, 277, 347
	PHILIPS	PL-T 42W/8__/_/4P/ALTO	16000	3200	3000, 3500, 4100	82	6-3/8"(162mm)	120, 277, 347
	OSRAM Sylvania	CF42DT/E/IN/8__/_/ECO	12000	3200	3000, 3500, 4100	82	6.5"(163mm)	120, 277, 347
TTS Rapid Start 18	 GE	F18BXSPX__/_/RS	20000	1250	3000, 3500, 4100	82	10.5"(267mm)	120, 277, 347
	PHILIPS	PL-L18W/8__/_/4P	15000	1200	3000, 3500, 4100	82	8-15/16"(227mm)	120, 277, 347
	OSRAM Sylvania	FT18DL/8__/_/RS/ECO	20000	1250	3000, 3500, 4100	82	10.5"(267mm)	120, 277, 347
Preheat 24/27	GE	F27BXSPX__/_/RS	12000	1800	3000, 3500, 4100	82	12.8"(325mm)	120, 277, 347
	PHILIPS	PL-L 24W/8__/_/4P	15000	1800	3000, 3500, 4100	82	12-11/16"(322mm)	120, 277, 347
	OSRAM Sylvania	FT24DL/8__/_/ECO	12000	1800	3000, 3500, 4100	82	12.9"(329mm)	120, 277, 347
Rapid Start 40	GE	F40/30BX/SPX__	20000	3150	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
	PHILIPS	PL-L 40W/8__/_/4P/RS/IS	20000	3300	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
	OSRAM Sylvania	FT40DL/8__/_/RS/ECO	20000	3150	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
Rapid Start 50	GE	F50BXSPX__/_/RS	20000	4000	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
	PHILIPS	PL-L50W/8__/_/4P/RS	20000	4300	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
	OSRAM Sylvania	FT50DL/8__/_/RS/ECO	14000	4300	3000, 3500, 4100	82	22.5"(572mm)	120, 277, 347
Rapid Start 55	GE	F55BX/8__	20000	4800	3000, 3500, 4100	82	20.7"(526mm)	120, 277, 347
	OSRAM Sylvania	FT55DL/8__/_/ECO	12000	4800	3000, 3500, 4100	82	21.1"(535mm)	120, 277, 347
T8U6 Instant-Start 32	 GE	F32T8SPX__/_/U6/ECO	20000	2850	3000, 3500, 4100	86	22.5"(572mm) <sup>†</sup>	120, 277, 347
	PHILIPS	FB32T8/TL8__/_/6/ALTO	20000	2800	3000, 3500, 4100	85	22.5"(572mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FB032/8__/_/6/ECO	20000	2850	3000, 3500, 4100	82	22.5"(572mm) <sup>†</sup>	120, 277, 347
T8U 1-5/8" Instant-Start 31	 GE	F31T8SPX__/_/U/ECO	24000	2775	3000, 3500, 4100	85	22.5"(572mm) <sup>†</sup>	120, 277, 347
	PHILIPS	FB31/T8/TL8__/_/ALTO	24000	2775	3000, 3500, 4100	85	22.5"(572mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FB031/8__	20000	2725	3000, 3500, 4100	82	22.5"(572mm) <sup>†</sup>	120, 277, 347
LINEAR T8 Instant-Start 17			15000	1350	3000, 3500, 4100	86	24"(610mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F17T8__/_/ALTO	24000	1375	3500, 4100	85	24"(610mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FO17/8__/_/ECO	24000	1350	3000, 3500, 4100	82	24"(610mm) <sup>†</sup>	120, 277, 347
Instant-Start 25	GE	F25T8/SPX__/_/ECO	15000	2150	3000, 3500, 4100	86	36"(914mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F25T8/TL8__/_/ALTO	24000	2150	3500, 4100	85	36"(914mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FO25/8__/_/ECO	20000	2150	3000, 3500, 4100	82	36"(914mm) <sup>†</sup>	120, 277, 347
Instant-Start 32	GE	F32T8/SPX__/_/ECO	21000	2950	3000, 3500, 4100	86	48"(1220mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F32T8/TL8__/_/ALTO	24000	2950	3000, 3500, 4100	85	48"(1220mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FO32/8__/_/ECO	24000	2950	3000, 3500, 4100	85	48"(1220mm) <sup>†</sup>	120, 277, 347
LINEAR T5 Program-Start 14			30000	1230	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F14T5/8__/_/ALTO	24000	1200	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FP14/8__/_/ECO	25000	1750	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
Program-Start 24	GE	F24W/T5/8__/_/ECO	30000	1750	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F24T5/8__/_/HO/ALTO	24000	1800	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FP24/8__/_/HO/ECO	25000	1750	3000, 3500, 4100	85	21.6"(548.6mm) <sup>†</sup>	120, 277, 347
Program-Start 28	GE	F28W/T5/8__/_/ECO	30000	2640	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F28T5/8__/_/ALTO	24000	2600	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FP28/8__/_/ECO	20000	2600	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347
Program-Start 54	GE	F54W/T5/8__/_/ECO	30000	4460	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347
	PHILIPS	F54T5/8__/_/HO/ALTO	24000	4500	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347
	OSRAM Sylvania	FP54/8__/_/HO/ECO	30000	4450	3000, 3500, 4100	85	45.2"(1148mm) <sup>†</sup>	120, 277, 347

LAMP CHART IS TO BE USED AS A GUIDE ONLY. CHECK LAMP/BALLAST MANUFACTURER DATA FOR EXACT SPECIFICATIONS.

\*AVERAGE LIFE UNDER SPECIFIED TEST CONDITIONS WITH LAMPS TURNED OFF AND RESTARTED NO MORE FREQUENTLY THAN ONCE EVERY 3 OPERATING HOURS.

<sup>†</sup>Nominal Length



**PHILIPS**

	Watts	Bulb	Initial Lumens	Rated Life (Hours)
	40W	A19/FROST	495	1500
	60W	A19/FROST	890	1000
	75W	A19/FROST	1150	750
	100W	A19/FROST	1600	750
	150W	A21/FROST	2700	750
	200W	A23/FROST	3800	750
	300W	PS25/FROST	6300	750


**Halogen General Service Lamps**

	60W	BT15 (WHITE)	840	3000
	75W	BT15 (WHITE)	1120	3000
	100W	BT15 (WHITE)	1670	3000
	150W	BT15 (WHITE)	2650	3000

**Halogen Tubular (T) Lamps**







	50W	T4/CLR/MINI CAN	500	1000
	75W	T4/CLR/MINI CAN	1050	1000
	100W	T4/CLR/MINI CAN	1600	1000
	150W	T4/CLR/MINI CAN (ETH)2800		1000
	150W	T4/CLR/DC.BAY	2800	1000
	250W	T4/CLR/MINI CAN	5000	1000
	250W	T4/CLR/DC.BAY	5000	1000
500W	T4/CLR/MINI CAN	10000	2000	

**Halogen Tubular (T) Linear Lamps (Double End)**



	100W	T3/Clear/RSC	1400	2000
	150W	T3/Clear/RSC	2400	2000
	250W	T3/Clear/RSC	4000	1500
	300W	T3/Clear/RSC	5200	2000
	500W	T3/Clear/RSC	9500	2000

**Projector (PAR) Halogen Lamps**

(See Accent Lighting Data for Beam Spread and CBCP)

	45W	PAR16	420	3000
	60W	PAR16	580	3000
	50W	PAR20	530	3000
	50W	PAR30S	610	3500
	60W	PAR30S	800	3000
	75W	PAR30S	1050	3500
	50W	PAR30L	590	3000
	75W	PAR30L	1000	3000
	40W	PAR30S IR	720	4200
	50W	PAR30S IR	970	4200
	60W	PAR30S IR	1140	4200
	45W	PAR38	530	3000
	60W	PAR38	800	3000
	75W	PAR38	1050	3000
	90W	PAR38	1350	3000
	40W	PAR38 IR	720	4200
	50W	PAR38 IR	970	4200
	60W	PAR38 IR	1120	4200
	70W	PAR38 IR	1550	4200
	100W	PAR38 IR	2200	4200

**Low Voltage Projector Lamps**

	Watts	Bulb (Base)	Initial	Rated Life (Hours)
	MR16	(See Accent Lighting Data)		
	PAR36	(See Accent Lighting Data)		
	AR111	(See Accent Lighting Data)		
	20W(12V)	T3/Clear (G4)	320	2000
	35W(12V)	T4/Clear (GY6.35)	600	2000
	50W(12V)	T4/Clear (GY6.35)	800	2000
	75W(12V)	T4/Clear (GY6.35)	1100	2000

**Reflector (BR/R/ER) Lamps**

	30W	R20	205	2000
	45W	ER30	340	2500
	65W	BR30	635	2000

**PHILIPS**

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI
<b>High Wattage Metal Halide Lamps</b>							
#175	BD17/Clear	M57/E	Med	10,000	13,500	4,000	65
175	ED28/Clear	M57/E	Mog	10,000	13,500	4,000	65
250	ED28/Clear	M58/E	Mog	10,000	20,500	4,000	65
400	ED37/Clear	M59/E	Mog	20,000	36,000	4,000	65
1000	BT56/Clear	M47/S	Mog	12,000	110,000	3,700	65
1500	BT56/Clear	M48/E	Mog	3,000	155,000	3,700	60
<b>High Wattage Pulse-Start Ceramic Metal Halide Lamps</b>							
250	ED28/Clear	M153/O/EX39	Mog	24,000	22,500	4,200	90
320	ED28/Clear	M170/M132/O/EX39	Mog	24,000	28,800	4,200	90
400	ED37/Clear	M172/M155/O/EX39	Mog	24,000	36,000	4,200	90

#: see p. 124 for 150W Energy Efficient/Longer Life Alternative

Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication.


Check lamp manufacturer data for other model enquiries and/or exact specifications.

All Incandescent/Halogen lamps are 120V rated unless otherwise noted.

Energy efficient alternative to standard Halogen PAR lamps




**SYLVANIA**

	Watts	Bulb	Initial Lumens	Rated Life (Hours)
	40W	A19/FROST	470	1500
	60W	A19/FROST	870	1000
	100W	A19/FROST	1690	750
	150W	A21/FROST	2670	750
	200W	A21/FROST	3760	750
	300W	PS30/FROST	5860	750

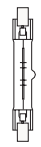
**Halogen General Service Lamps**

	60W	BT15 (WHITE)	760	3000
	75W	BT15 (WHITE)	1010	3000
	100W	BT15 (WHITE)	1500	3000
	150W	BT15 (WHITE)	2400	3000

**Halogen Tubular (T) Lamps**









	100W	T4/CLR/MINI CAN	1800	1000
	150W	T4/CLR/MINI CAN	2800	2000
	150W	T4/CLR/DC.BAY	2800	2000
	250W	T4/CLR/MINI CAN	5000	2000
	250W	T4/CLR/DC.BAY	5000	2000
	500W	T4/CLR/MINI CAN	10450	2000

**Halogen Tubular (T) Linear Lamps (Double End)**


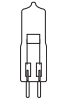
	100W	T3/Clear/RSC	1600	2000
	150W	T3/Clear/RSC	2400	2000
	200W	T3/Clear/RSC	3350	2000
	300W	T3/Clear/RSC	6000	2000
	500W	T3/Clear/RSC	8750	2000

**Projector (PAR) Halogen Lamps**

(See Accent Lighting Data for Beam Spread and CBCP)

	60W	PAR16	650	2000
	75W	PAR16	900	2000
	35W	PAR20	360	2500
	50W	PAR20	550	2500
	50W	PAR30S	660	2500
	60W	PAR30S	860	3000
	75W	PAR30S	1130	2500
	50W	PAR30L	660	2500
	75W	PAR30L	1130	2500
	50W	PAR30S IR	900	3000
	45W	PAR38	560	2500
	60W	PAR38	850	3000
	75W	PAR38	1060	2500
	90W	PAR38	1310	2500
	50W	PAR38 IR	850	3000
	60W	PAR38 IR	1110	3000

**Low Voltage Projector Lamps**

	MR16	(See Accent Lighting Data)		
	PAR36	(See Accent Lighting Data)		
	AR111	(See Accent Lighting Data)		
	20W(12V)	T3/Clear (G4)	320	2000
	35W(12V)	T4/Clear (GY6.35)	600	3000
	50W(12V)	T4/Clear (GY6.35)	910	2000
	75W(12V)	T4/Clear (GY6.35)	1400	2000

**Reflector (BR/R/ER) Lamps**

	30W	R20	140	2000
	50W	ER30	320	2000
	65W	BR30	620	2000

**SYLVANIA**

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI
<b>High Wattage Metal Halide Lamps</b>							
#175	E17/Clear	M57/E	Med	10000	14400	4000	65
175	BT28/Clear	M57/E	Mog	10000	14400	4200	65
250	BT28/Clear	M58/E	Mog	10000	22000	4200	65
400	BT37/Clear	M59/E	Mog	20000	36000	4000	65
1000	BT56/Clear	M47/S	Mog	18000	110000	4000	65
1500	BT56/Clear	M48/E	Mog	3000	170000	4000	70
<b>High Wattage Pulse-Start Ceramic Metal Halide Lamps</b>							
250	BT28/Clear	M153/O	Mog	20000	24000	4200	94
320 4000	BT37/Clear	M170/M132/O	Mog	20000	37500	88	EX39
		EX39					

#: see p. 124 for 150W Energy Efficient/Longer Life Alternative


Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication.

Check lamp manufacturer data for other model enquiries and/or exact specifications.


All Incandescent/Halogen lamps are 120V rated unless otherwise noted.

Energy efficient alternative to standard Halogen PAR lamps


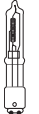
GE

	Watts	Bulb	Initial Lumens	Rated Life (Hours)
	40W	A19/FROST	505	1000
	60W	A19/FROST	855	1000
	75W	A19/FROST	1180	750
	100W	A19/FROST	1690	750
	135W	A21/FROST	1530	2600
	300W	PS25/FROST	4170	1950

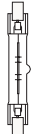
Halogen General Service Lamps

	60W	BT14.5 (WHITE)	840	3000
	75W	BT14.5 (WHITE)	1070	3000
	100W	BT14.5 (WHITE)	1600	3000
	150W	BT14.5 (WHITE)	2430	3000

Halogen Tubular (T) Lamps









	75W	T3/CLR/MINI CAN	1050	1000
	100W	T4/CLR/MINI CAN	1600	2000
	150W	T4/CLR/MINI CAN	2800	2000
	150W	T4/CLR/DC.BAY	2800	2000
	250W	T4/CLR/MINI CAN	5000	2000
	250W	T4/CLR/DC.BAY	5000	2000
	500W	T4/CLR/MINI CAN	10450	2000

Halogen Tubular (T) Linear Lamps (Double End)


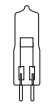
	100W	T3/Clear/RSC	1650	1500
	150W	T3/Clear/RSC	2400	1500
	250W	T3/Clear/RSC	4000	1500
	300W	T3/Clear/RSC	5950	2000
	500W	T3/Clear/RSC	11100	2000

Projector (PAR) Halogen Lamps

(See Accent Lighting Data for Beam Spread and CBCP)

	60W	PAR16	650	2000
	75W	PAR16	900	2000
	50W	PAR20	570	3000
	50W	PAR30S	630	3000
	60W	PAR30S	800	3000
	75W	PAR30S	1030	3000
	50W	PAR30L	580	3000
	75W	PAR30L	940	3000
	45W	PAR30S HIR	620	6000
	50W	PAR30S HIR	825	4000
	45W	PAR38	540	2500
	60W	PAR38	800	3000
	75W	PAR38	1050	2500
	90W	PAR38	1310	2500
	45W	PAR38 HIR	870	4200
	48W	PAR38 HIR	970	4200
	60W	PAR38 HIR	1260	4200
	67W	PAR38 HIR	1500	4200
	83W	PAR38 HIR	2030	4200

Low Voltage Projector Lamps

	MR16	(See Accent Lighting Data)		
	PAR36	(See Accent Lighting Data)		
	AR111	(See Accent Lighting Data)		
	20W(12V)	T3/Clear (G4)	350	2000
	35W(12V)	T3/Clear (GY6.35)	550	2000
	50W(12V)	T3/Clear (GY6.35)	850	2000
	75W(12V)	T4/Clear (GY6.35)	1400	2000

Reflector (BR/R/ER) Lamps

	45W	R20	400	2500
	65W	BR30	725	2000

GE

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI
<b>High Wattage Metal Halide Lamps</b>							
#175	BD17/Clear	M57	Med	10000	13600	4000	65
175	ED28/Clear	M57	Mog	10000	13600	4000	65
250	ED28/Clear	M58	Mog	10000	20800	4200	65
400	ED37/Clear	M59	Mog	20000	36000	4000	65
1000	BT56/Clear	M47	Mog	15000	108000	4000	65
1500	BT56/Clear	M48	Mog	3000	170000	4000	65
<b>High Wattage Pulse-Start Ceramic Metal Halide Lamps</b>							
250	ED28/Clear		Mog	20000	23000	4100	90
320	ED37/Clear		Mog	20000	31000	4100	90
400	ED37/Clear		Mog	20000	37000	4200	90

#: see p. 124 for 150W Energy Efficient/Longer Life Alternative

Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication.

Check lamp manufacturer data for other model enquiries and/or exact specifications.

All Incandescent/Halogen lamps are 120V rated unless otherwise noted.

Energy efficient alternative to standard Halogen PAR lamps

## New High Colour Rendering Ceramic Metal Halide Lamps

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	CBCP	Beam Spread	Colour Temp (Kelvin)	CRI	
<b>Ceramic Metal Halide Mini MasterColor</b>										
22	T3.5	Philips	C175/E	PGJ5	12000	1650		3000	85	
39	T3.5	Philips	C179/E	PGJ5	12000	3000		3000	90	
<b>Ceramic Metal Halide MR16 Lamps</b>										
20	MR16WFL	GE	M156	GX10	12000	1000	1500	40°	3000	81
20	MR16FL	GE	M156	GX10	12000	1000	2900	25°	3000	81
20	MR16SP	GE	M156	GX10	12000	1000	9000	12°	3000	81
20	MR16WFL	Philips	C156/C175/0	GX10	12000	1080	1700	40°	3000	85
20	MR16FL	Philips	C156/C175/0	GX10	12000	1080	3500	25°	3000	85
20	MR16SP	Philips	C156/C175/0	GX10	12000	1080	11000	10°	3000	85
39	MR16WFL	GE	M130	GX10	10000	2100	3000	40°	3000	90
39	MR16FL	GE	M130	GX10	10000	2100	5500	25°	3000	90
39	MR16SP	GE	M130	GX10	10000	2100	16000	12°	3000	90
39	MR16WFL	Philips	C130/0	GX10	12000	2150	3900	40°	3000	90
39	MR16FL	Philips	C130/0	GX10	12000	2150	8000	25°	3000	90
39	MR16SP	Philips	C130/0	GX10	12000	2150	18000	10°	3000	90
39	MR16WFL	GE	M130	GX10	12000	2100	3000	40°	4000	92
39	MR16FL	GE	M130	GX10	12000	2100	5500	25°	4000	92
39	MR16SP	GE	M130	GX10	12000	2100	16000	12°	4000	92
<b>Ceramic Metal Halide GU6.5 Lamps</b>										
20	T4	GE	M156	GU6.5	12000	1615		3000	81	
20	T4	Philips	M156	GU6.5	15000	1800		3000	84	
20	T4	Os/SYL	C156/E	GU6.5	15000	1700		3000	82	
39	T4	GE	M130	GU6.5	10000	3400		3000	88	
39	T4	GE	M130	GU6.5	12000	3400		4000	90	
<b>Ceramic Metal Halide G8.5 Lamps</b>										
20	T4.5	Os/SYL	C156/E	G8.5	15000	1700		3000	83	
20	T4.5	GE	M156	G8.5	12000	1650		3000	81	
39	T4.5	GE	M130	G8.5	15000	3400		3000	84	
39	T4	Philips	M130/E	G8.5	12000	3300		3000	81	
39	T4.5	Os/SYL	M130/E	G8.5	15000	3400		3000	82	
39	T4.5	GE	M130	G8.5	15000	3200		4000	88	
39	T4	Philips	M130/E	G8.5	12000	3000		4200	85	
70	T4.5	GE	M139/C139	G8.5	15000	6200		3000	83	
70	T4	Philips	M139/E	G8.5	12000	6500		3000	83	
70	T4.5	Os/SYL	C139/E, C98/E	G8.5	15000	6300		3000	95	
70	T4.5	GE	M139/C139	G8.5	15000	6200		4200	90	
70	T4	Philips	M139/E	G8.5	12000	5900		4200	89	
<b>Ceramic Metal Halide G12 Lamps</b>										
20	T4.5	GE	M156/C156	G12	12000	1600		3000	81	
20	T6	Philips	M156	G12	15000	1800		3000	84	
39	T4.5	GE	M130/C130	G12	15000	3400		3000	84	
39	T6	Philips	M130/E	G12	12000	3300		3000	81	
39	T6	Os/SYL	M130/E	G12	15000	3400		3000	82	
39	T4.5	GE	M130/C130	G12	15000	3200		4000	88	
39	T6	Philips	M130/E	G12	12000	3300		4200	84	
39	T6	Os/SYL	M130/E	G12	15000	3300		4200	90	
70	T6	GE	M139/C139	G12	15000	6200		3000	83	
70	T6	Philips	M139/E	G12	12000	6600		3000	84	
70	T6	Os/SYL	M98/E, M139/E	G12	15000	7000		3000	87	
70	T6	GE	M139/C139	G12	15000	6300		4200	91	
70	T6	Philips	M139/E	G12	12000	6600		4200	92	
70	T6	Os/SYL	M98/E, M139/E	G12	15000	6700		4200	93	
150	T6	GE	M102/C142	G12	12000	14000		3000	82	
150	T6	Philips	M142/E	G12	12000	14000		3000	88	
150	T7.5	Os/SYL	M102/E, M142/E	G12	15000	15500		3000	89	
150	T6	GE	M102/C142	G12	12000	13000		4200	94	
150	T6	Philips	M142/E	G12	12000	12700		4200	96	
150	T7.5	Os/SYL	M102/E, M142/E	G12	15000	14500		4200	95	

Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication.  
Check lamp manufacturer data for other model enquiries and/or exact specifications.

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	CBCP	Beam Spread	Colour Temp (Kelvin)	CRI	
<b>Ceramic Metal Halide PAR Lamps</b>										
20	PAR20 FL	GE	M156/C156	Medium	12 000	1000	3750	25°	3000	81
20	PAR20 SP	GE	M156/C156	Medium	12 000	1000	13 000	8°	3000	81
22	PAR20 FL	Philips	C156/C175/0	Medium	9000	980	3200	30°	3000	81
22	PAR20 SP	Philips	C156/C175/0	Medium	9000	940	18 000	10°	3000	81
20	PAR20 FL	Os/SYL	C156/0	Medium	12 000	900	2650	30°	3000	82
20	PAR20 SP	Os/SYL	C156/0	Medium	12 000	900	15 000	8°	3000	82
39	PAR20 FL	GE	M130/C130	Medium	10 000	2100	7500	25°	3000	86
39	PAR20 SP	GE	M130/C130	Medium	10 000	2100	22 000	10°	3000	86
39	PAR20 FL	Philips	M130/0	Medium	9000	2000	5000	30°	3000	81
39	PAR20 SP	Philips	M130/0	Medium	9000	2000	20 000	10°	3000	81
39	PAR20 FL	Os/SYL	C130/0	Medium	12 000	2000	5000	30°	3000	87
39	PAR20 SP	Os/SYL	C130/0	Medium	12 000	2000	20 000	10°	3000	87
39	PAR20 FL	GE	M130/C130	Medium	10 000	1950	6950	25°	4200	90
39	PAR20 SP	GE	M130/C130	Medium	10 000	1950	19,450	10°	4200	90
39	PAR20 FL	Philips	M130/0	Medium	6000	1950	4500	30°	4000	92
39	PAR20 SP	Philips	M130/0	Medium	6000	1950	22,500	10°	4000	92
39	PAR20 FL	Os/SYL	C130/0	Medium	12 000	1850	4000	30°	3900	90
39	PAR20 SP	Os/SYL	C130/0	Medium	12 000	1850	16 000	10°	3900	90
20	PAR30L FL	GE	M156/C156	Medium	12 000	1200	4900	25°	3000	81
20	PAR30L SP	GE	M156/C156	Medium	12 000	1200	14,500	15°	3000	81
20	PAR30L SP	GE	M156/C156	Medium	12 000	1200	19,800	10°	3000	81
22	PAR30L FL	Philips	C156/C175/0	Medium	9000	1200	4500	30°	3000	81
22	PAR30L SP	Philips	C156/C175/0	Medium	9000	1200	34 000	8°	3000	81
20	PAR30L FL	Os/SYL	M156/0	Medium	12 000	1200	4000	30°	3100	82
20	PAR30L SP	Os/SYL	M156/0	Medium	12 000	1200	24 000	10°	3100	82
39	PAR30L FL	GE	M130/C130	Medium	10 000	2400	11 000	25°	3000	81
39	PAR30L SP	GE	M130/C130	Medium	10 000	2400	29 000	15°	3000	81
39	PAR30L SP	GE	M130/C130	Medium	10 000	2400	39,600	10°	3000	81
39	PAR30L FL	Philips	M130/0	Medium	9000	2200	7100	30°	3000	81
39	PAR30L SP	Philips	M130/0	Medium	9000	2200	34 000	10°	3000	81
39	PAR30 VVFL	Os/SYL	C130/0	Medium	12 000	2300	3500	46°	3000	85
39	PAR30 FL	Os/SYL	C130/0	Medium	12 000	2300	8000	30°	3000	85
39	PAR30 SP	Os/SYL	C130/0	Medium	12 000	2300	39,600	10°	3000	85
39	PAR30 FL	GE	M130/C130	Medium	10 000	2225	10,200	25°	4200	89
39	PAR30 SP	GE	M130/C130	Medium	10 000	2225	26,900	15°	4200	89
39	PAR30 NSP	GE	M130/C130	Medium	10 000	2225	36,700	10°	4200	89
39	PAR30 FL	Os/SYL	C130/0	Medium	12 000	2200	7500	30°	4200	90
39	PAR30 SP	Os/SYL	C130/0	Medium	12 000	2200	36 000	10°	4200	90
70	PAR30L FL	GE	M98/C139	Medium	13 000	4700	10 000	40°	3000	82
70	PAR30L SP	GE	M98/C139	Medium	13 000	4700	43 000	15°	3000	82
70	PAR30L FL	Philips	M143/M98/0	Medium	11 000	5000	10 000	40°	3000	83
70	PAR30L SP	Philips	M143/M98/0	Medium	11 000	5000	61 000	10°	3000	83
70	PAR30 VVFL	Os/SYL	C139/C98/0	Medium	12 000	3400	5000	46°	3000	95
70	PAR30L FL	Os/SYL	C139/C98/0	Medium	12 000	3600	12 000	30°	3000	95
70	PAR30L SP	Os/SYL	C139/C98/0	Medium	12 000	3400	42 000	12°	3000	95
70	PAR30L FL	Philips	M139/0	Medium	9000	4300	8700	40°	4000	94
70	PAR30L SP	Philips	M139/0	Medium	9000	4300	52 000	10°	4000	94
70	PAR30L FL	Os/SYL	C139/0	Medium	12 000	4000	13 000	30°	4200	90
70	PAR30L SP	Os/SYL	C139/0	Medium	12 000	4000	70 000	9°	4200	90

Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication. Check lamp manufacturer data for other model enquiries and/or exact specifications.

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	CBCP	Beam Spread	Colour Temp (Kelvin)	CRI	
<b>Ceramic Metal Halide PAR Lamps</b>										
70	PAR38 WFL	GE	C98/M139/M143	Medium	10000	4800	4400	60°	3000	82
70	PAR38 FL	GE	C98/M139/M143	Medium	10000	4800	14000	25°	3000	82
70	PAR38 SP	GE	C98/M139/M143	Medium	10000	4800	40000	15°	3000	82
70	PAR38 FL	Philips	M143/M98/0	Medium	12500	4100	18000	25°	3000	85
70	PAR38 SP	Philips	M143/M98/0	Medium	12500	4100	46000	15°	3000	85
70	PAR38 FL	Philips	M143/M98/0	Medium	12500	3700	16000	25°	4000	92
70	PAR38 SP	Philips	M143/M98/0	Medium	12500	3700	46000	15°	4000	92
70	PAR38 VWFL	Os/SYL	C98/0 C139/0	Medium	15000	4300	3500	65°	3000	88
70	PAR38 FL	Os/SYL	C98/0 C139/0	Medium	15000	4300	16000	25°	3000	88
70	PAR38 SP	Os/SYL	C98/0 C139/0	Medium	15000	4300	40000	15°	3000	88
100	PAR38 WFL	GE	C90/M90/M140	Medium	10000	6500	5500	60°	3000	81
100	PAR38 FL	GE	C90/M90/M140	Medium	10000	6500	15000	25°	3000	81
100	PAR38 SP	GE	C90/M90/M140	Medium	10000	6500	45000	15°	3000	81
100	PAR38 FL	Philips	M140/M90/0	Medium	12500	6200	22000	25°	3000	85
100	PAR38 SP	Philips	M140/M90/0	Medium	12500	6200	60000	15°	3000	85
100	PAR38 VWFL	Os/SYL	C90/0 C140/0	Medium	15000	6500	6000	65°	3000	88
100	PAR38 FL	Os/SYL	C90/0 C140/0	Medium	15000	6500	25000	25°	3000	88
100	PAR38 SP	Os/SYL	C90/0 C140/0	Medium	15000	6500	58000	15°	3000	88
100	PAR38 FL	Philips	M140/M90/0	Medium	12500	5700	23000	25°	4000	92
100	PAR38 SP	Philips	M140/M90/0	Medium	12500	5700	50000	15°	4000	92

### Medium Wattage High Pressure Sodium Lamps

Watts	Description	ANSI Ballast Code	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI
<b>Philips</b>						
70	BD17/MED/CLR	S62	24000+	6300	2100	21
70	ED23-1/2/MOG/CLR	S62	24000+	6500	2100	21
100	BD17/MED/CLR	S54	24000+	9500	2100	21
100	ED23-1/2/MOG/CLR	S54	24000+	9400	2100	21
150	ED23-1/2/MOG/CLR	S55	24000+	15800	2100	21
<b>GE</b>						
70	B17/MED/CLR	S62	24000+	6400	1900	22
70	ED23-1/2/MOG/CLR	S62	24000+	6400	1900	22
100	B17/MED/CLR	S54	24000+	9500	2000	22
100	ED23-1/2/MOG/CLR	S54	24000+	9500	2000	22
150	ED23-1/2/MOG/CLR	S55	24000+	16000	2000	22
<b>Osram-Sylvania</b>						
70	E17/MED/CLR	S62	24000+	6300	1900	22
70	ET23.5/MOG/CLR	S62	24000+	6300	1900	22
100	E17/MED/CLR	S54	24000+	9500	2100	22
100	ET23.5/MOG/CLR	S54	24000+	9500	2100	22
150	ET23.5/MOG/CLR	S55	24000+	16000	2100	22

Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication. Check lamp manufacturer data for other model enquiries and/or exact specifications.

## High Intensity Discharge Lamps

The following is a selection of ceramic metal halide lamps that may be used in Lightolier HID lighting fixtures. "Enclosed" rated ceramic metal halide lamps will not operate in "Open Rated" lighting fixtures. Only "Open Rated" ceramic metal halides will operate in "Open Rated" lighting fixtures.

### Medium Wattage Ceramic Metal Halide Lamps

Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI
<b>Ceramic Metal Halide ED17 (Open Rated) Lamps</b>							
70	ED17P GE Clear	M143/M98/C98	Medium	15 000	5700	3000	80
70	ED17P GE Coated	M143/M98/C98	Medium	15 000	5700	3000	80
70	ED17P Philips Clear	M143/M98/C98	Medium	15 000	5500	4000	90
70	ED17P Philips Coated	M143/M98/C98	Medium	15 000	5200	4000	90
70	ED17P Philips Clear	M143/M98/0	Medium	16 000	5900	3000	85
70	ED17P Philips Coated	M143/M98/0	Medium	16 000	5400	3000	85
70	ED17P Philips Clear	M143/M98/0	Medium	20 000	5800	4000	92
70	ED17P Philips Coated	M143/M98/0	Medium	20 000	5200	4000	92
70	E17 Sylvania Clear	C98/C139/0	Medium	20 000	5900	3000	88
70	E17 Sylvania Coated	C98/C139/0	Medium	20 000	5500	3000	88
70	E17 Sylvania Clear	C98/C139/0	Medium	20 000	6000	4000	93
70	E17 Sylvania Coated	C98/C139/0	Medium	20 000	5600	3800	93
100	ED17P Philips Clear	M140/M90/0	Medium	16 000	8600	3000	85
100	ED17P Philips Coated	M140/M90/0	Medium	16 000	7900	3000	85
100	ED17P Philips Clear	M140/M90/0	Medium	20 000	8200	4000	92
100	ED17P Philips Coated	M140/M90/0	Medium	20 000	7500	4000	90
100	E17 Sylvania Clear	C90/C140/0	Medium	20 000	9000	3000	88
100	E17 Sylvania Coated	C90/C140/0	Medium	20 000	8100	3000	88
100	E17 Sylvania Clear	C90/C140/0	Medium	20 000	8200	4000	93
100	E17 Sylvania Coated	C90/C140/0	Medium	20 000	7500	4000	90
150	ED17P GE Clear	C102/M142/0	Medium	12 000	12 900	3000	80
150	ED17P GE Coated	C102/M142/0	Medium	12 000	11 900	3000	80
150	ED17P GE Clear	C102/M142/0	Medium	15 000	12 000	4200	90
150	ED17P GE Coated	C102/M142/0	Medium	15 000	11 000	4200	90
150	ED17P Philips Clear	M102/M142/0	Medium	16 000	12 900	3000	85
150	ED17P Philips Coated	M102/M142/0	Medium	16 000	11 900	3000	85
150	ED17P Philips Clear	M102/M142/0	Medium	20 000	12 000	4000	92
150	ED17P Philips Coated	M102/M142/0	Medium	20 000	11 000	4000	92
150	E17 Sylvania Clear	C102/C142/0	Medium	20 000	13 000	3000	88
150	E17 Sylvania Coated	C102/C142/0	Medium	20 000	12 000	3000	88



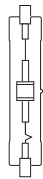
### Ceramic Metal Halide ED17 (Enclosed) Lamps

70	BD17 GE Clear	M98/M139/C98	Medium	15 000	6300	3000	80
70	BD17 GE Coated	M98/M139/C98	Medium	15 000	6000	3000	80
70	ED17 Philips Clear	M143/M98/E	Medium	16 000	6200	3000	85
70	ED17 Philips Coated	M143/M98/E	Medium	16 000	5800	3000	85
70	ED17 Philips Clear	M143/M98/E	Medium	20 000	5900	4000	92
70	ED17 Philips Coated	M143/M98/E	Medium	20 000	5500	4000	92
100	BD17 GE Clear	M90/M140/C90	Medium	10 000	9200	3000	83
100	BD17 GE Coated	M90/M140/C90	Medium	10 000	8700	3000	83
100	ED17 Philips Clear	M140/M90/E	Medium	16 000	9500	3000	85
100	ED17 Philips Coated	M140/M90/E	Medium	16 000	8800	3000	85
100	ED17 Philips Clear	M140/M90/E	Medium	20 000	9000	4000	92
100	ED17 Philips Coated	M140/M90/E	Medium	20 000	8400	4000	92
150	ED17 Philips Clear	M102/M142/E	Medium	16 000	14 000	3000	85
150	ED17 Philips Coated	M102/M142/E	Medium	16 000	12 500	3000	85
150	ED17 Philips Clear	M102/M142/E	Medium	20 000	13 000	4000	92
150	ED17 Philips Coated	M102/M142/E	Medium	20 000	12 000	4000	92




Lamp data show is to be used as a guide only. Lamp manufacturer data at time of publication. Check lamp manufacturer data for other model enquiries and/or exact specifications.

## Metal Halide Lamp Data



Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI	
<b>Ceramic Metal Halide Tubular Double-Ended</b>								
70	TD-6	GE	M139/M85	RX7s	15000	7000	3000	81
70	TD-6	GE	M139/M85	RX7s	15000	7000	4200	88
70	TD-6	Philips	M139/M85/E	RX7s	15000	6500	3000	82
70	TD-6	Philips	M139/M85/E	RX7s	15000	6000	4200	92
70	T-6	Sylvania	M139/E, M85/E, M98/E	RX7s	12000	6900	3000	88
150	TD-7	GE	M142/M81	RX7s	15000	14000	3000	80
150	TD-7	GE	M142/M81	RX7s	15000	14000	4200	93
150	TD-7	Philips	M142/M102/M81E	RX7s	15000	13250	3000	88
150	TD-7	Philips	M142/M102/M81E	RX7s	15000	14200	4200	96
150	T-7.5	Sylvania	M102/E, M142/E, M81/E	RX7s	12000	14800	3000	91

## VENTURE

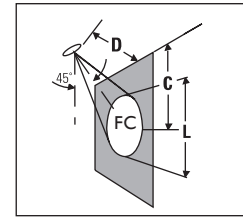
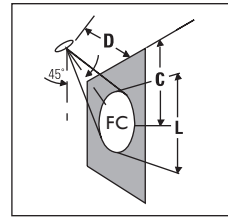
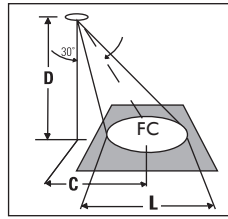
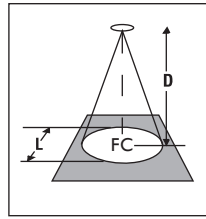


Watts	Description	ANSI Ballast Code	Base	Rated Life (hours)	Initial Lumens	Colour Temp (Kelvin)	CRI	
250	T-15	Venture	M58/E	Mogul	10000	21000	4000	65
400	T-15	Venture	M59/E	Mogul	15000	36000	4000	65

Accent Lighting  
Performance Data

(FC) is initial footcandles at center of beam. Beam length (L) and beam width (W) are where the candlepower is reduced to 50% of the center beam candlepower. CBCP is center beam candlepower. (C) is distance to the center of the beam.

Lamp data shown is typical, and is based on bare lamp photometrics. Contact lamp manufacturers for availability and performance.



Lamps	Beam Spread (To 50% CBCP)	Rated Life (hours)	0° Aiming Angle				30° Aiming Angle					30° Aiming Angle					45° Aiming Angle				
			D	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W



































MR16 Low Voltage Halogen Bi-Pin Lamps

	20W MR16 VNSP	7°	7400	3000	7'	151	0.9'	0.9'	6'	3.5'	134	1.0'	0.8'	2'	3.5'	231	1.0'	0.5'	4'	4.0'	164	1.0'	0.7'
					10'	74	1.2'	1.2'	9'	5.2'	59	1.5'	1.3'	3'	5.2'	103	1.5'	0.7'	6'	6.0'	73	1.5'	1.0'
					13'	44	1.6'	1.6'	12'	6.9'	33	2.0'	1.7'	4'	6.9'	58	2.0'	1.0'	8'	8.0'	41	2.0'	1.4'
					16'	29	2.0'	2.0'	15'	8.7'	21	2.4'	2.1'	5'	8.7'	37	2.5'	1.2'	10'	10.0'	26	2.5'	1.7'
	20W MR16 NSP	15°	3750	5000	6'	104	1.6'	1.6'	5'	2.9'	97	1.8'	1.5'	2'	3.5'	117	2.2'	1.1'	3'	3.0'	147	1.6'	1.1'
					8'	59	2.1'	2.1'	7'	4.0'	50	2.5'	2.1'	3'	5.2'	52	3.3'	1.6'	5'	5.0'	53	2.7'	1.9'
					10'	38	2.6'	2.6'	9'	5.2'	30	3.2'	2.7'	4'	6.9'	29	4.4'	2.1'	7'	7.0'	27	3.8'	2.6'
					12'	26	3.2'	3.2'	11'	6.4'	20	3.9'	3.3'	5'	8.7'	19	5.6'	2.6'	9'	9.0'	16	4.8'	3.4'
	20W MR16 FL	40°	525	5000	2'	131	1.5'	1.5'	2'	1.2'	85	2.0'	1.7'	1'	1.7'	66	4.8'	1.5'	2'	2.0'	46	3.4'	2.1'
					3'	58	2.2'	2.2'	3'	1.7'	38	3.0'	2.5'	2'	3.5'	16	9.7'	2.9'	7'	7.0'	21	5.0'	3.1'
					4'	33	2.9'	2.9'	4'	2.3'	21	4.1'	3.4'	3'	5.2'	7	14.5'	4.4'	4'	4.0'	12	6.7'	4.1'
					5'	21	3.6'	3.6'	5'	2.9'	14	5.1'	4.2'	4'	6.9'	4	19.3'	5.8'	5'	5.0'	7	8.4'	5.1'
	37W MR16 IR SP	10°	13100	4000	8'	205	1.4'	1.4'	7'	4.0'	174	1.6'	1.4'	3'	5.2'	182	2.1'	1.0'	5'	5.0'	185	1.8'	1.2'
					12'	91	2.1'	2.1'	10'	5.8'	85	2.3'	2.0'	4'	6.9'	102	2.9'	1.4'	7'	7.0'	95	2.5'	1.7'
					16'	51	2.8'	2.8'	13'	7.5'	50	3.0'	2.6'	5'	8.7'	66	3.6'	1.7'	9'	9.0'	57	3.2'	2.2'
					20'	33	3.5'	3.5'	16'	9.2'	33	3.7'	3.2'	6'	10.4'	45	4.3'	2.1'	11'	11.0'	38	3.9'	2.7'
	37W MR16 IR NFL	25°	4600	4000	6'	128	2.7'	2.7'	5'	2.9'	120	3.0'	2.6'	2'	3.5'	144	4.2'	1.8'	3'	3.0'	181	2.8'	1.9'
					8'	72	3.5'	3.5'	7'	4.0'	61	4.2'	3.6'	3'	5.2'	64	6.2'	2.7'	5'	5.0'	65	4.7'	3.1'
					10'	46	4.4'	4.4'	9'	5.2'	37	5.4'	4.6'	4'	6.9'	36	8.3'	3.5'	7'	7.0'	33	6.5'	4.4'
					12'	32	5.3'	5.3'	11'	6.4'	25	6.6'	5.6'	5'	8.7'	23	10.4'	4.4'	9'	9.0'	20	8.4'	5.6'
	37W MR16 IR FL	40°	2500	4000	4'	156	2.9'	2.9'	3'	1.7'	180	3.0'	2.5'	1'	1.7'	313	4.8'	1.5'	3'	3.0'	98	5.0'	3.1'
					6'	69	4.4'	4.4'	5'	2.9'	65	5.1'	4.2'	2'	3.5'	78	9.7'	2.9'	4'	4.0'	55	6.7'	4.1'
					8'	39	5.8'	5.8'	7'	4.0'	33	7.1'	5.9'	3'	5.2'	35	14.5'	4.4'	5'	5.0'	35	8.4'	5.1'
					10'	25	7.3'	7.3'	9'	5.2'	20	9.1'	7.6'	4'	6.9'	20	19.3'	5.8'	6'	6.0'	25	10.1'	6.2'
	50W MR16 IR SP	10°	15700	4000	8'	245	1.4'	1.4'	7'	4.0'	208	1.6'	1.4'	3'	5.2'	218	2.1'	1.0'	5'	5.0'	222	1.8'	1.2'
					12'	109	2.1'	2.1'	10'	5.8'	102	2.3'	2.0'	4'	6.9'	123	2.9'	1.4'	7'	7.0'	113	2.5'	1.7'
					16'	61	2.8'	2.8'	13'	7.5'	60	3.0'	2.6'	5'	8.7'	79	3.6'	1.7'	9'	9.0'	69	3.2'	2.2'
					20'	39	3.5'	3.5'	16'	9.2'	40	3.7'	3.2'	6'	10.4'	55	4.3'	2.1'	11'	11.0'	46	3.9'	2.7'
	50W MR16 IR NFL	25°	6000	4000	6'	167	2.7'	2.7'	5'	2.9'	156	3.0'	2.6'	2'	3.5'	188	4.2'	1.8'	3'	3.0'	236	2.8'	1.9'
					8'	94	3.5'	3.5'	7'	4.0'	80	4.2'	3.6'	3'	5.2'	83	6.2'	2.7'	5'	5.0'	85	4.7'	3.1'
					10'	60	4.4'	4.4'	9'	5.2'	48	5.4'	4.6'	4'	6.9'	47	8.3'	3.5'	7'	7.0'	43	6.5'	4.4'
					12'	42	5.3'	5.3a	11'	6.4'	32	6.6'	5.6'	5'	8.7'	30	10.4'	4.4'	9'	9.0'	26	8.4'	5.6'
	50W MR16 IR FL	40°	3000	4000	6'	83	4.4'	4.4'	5'	2.0'	78	5.1'	4.2'	2'	3.5'	94	9.7'	2.9'	3'	3.0'	118	5.0'	3.1'
					8'	47	5.8'	5.8'	7'	4.0'	40	7.1'	5.9'	3'	5.2'	42	14.5'	4.4'	5'	5.0'	42	8.4'	5.1'
					10'	30	7.3'	7.3'	9'	5.2'	24	9.1'	7.6'	4'	6.9'	23	19.3'	5.8'	7'	7.0'	22	11.7'	7.2'
					12'	21	8.7'	8.7'	11'	6.4'	16	11.2'	9.2'	5'	8.7'	15	24.2'	7.3'	9'	9.0'	13	15.1'	9.3'
	50W MR16 NSP	10°	11500	4000	8'	180	1.4'	1.4'	7'	4.0'	152	1.6'	1.4'	3'	5.2'	160	2.1'	1.0'	5'	5.0'	163	1.8'	1.2'
					12'	80	2.1'	2.1'	10'	5.8'	75	2.3'	2.0'	4'	6.9'	90	2.9'	1.4'	7'	7.0'	83	2.5'	1.7'
					16'	45	2.8'	2.8'	13'	7.5'	44	3.0'	2.6'	5'	8.7'	58	3.6'	1.7'	9'	9.0'	50	3.2'	2.2'
					20'	29	3.5'	3.5'	16'	9.2'	29	3.7'	3.2'	6'	10.4'	40	4.3'	2.1'	11'	11.0'	34	3.9'	2.7'
	50W MR16 NFL	25°	3200	4000	6'	89	2.7'	2.7'	5'	2.9'	83	3.0'	2.6'	2'	3.5'	100	4.2'	1.8'	3'	3.0'	126	2.8'	1.9'
					8'	50	3.5'	3.5'	7'	4.0'	42	4.2'	3.6'	3'	5.2'	44	6.2'	2.7'	5'	5.0'	45	4.7'	3.1'
					10'	32	4.4'	4.4'	9'	5.2'	26	5.4'	4.6'	4'	6.9'	25	8.3'	3.5'	7'	7.0'	23	6.5'	4.4'
					12'	22	5.3'	5.3'	11'	6.4'	17	6.6'	5.6'	5'	8.7'	16	10.4'	4.4'	9'	9.0'	14	8.4'	5.6'
	50W MR16 FL	40°	2000	4000	4'	125	2.9'	2.9'	3'	1.7'	144	3.0'	2.5'	1'	1.7'	250	4.8'	1.5'	3'	3.0'	79	5.0'	3.1'
					6'	56	4.4'	4.4'	5'	2.9'	52	5.1'	4.2'	2'	3.5'	63	9.7'	2.9'	4'	4.0'	44	6.7'	4.1'
					8'	31	5.8'	5.8'	7'	4.0'	27	7.1'	5.9'	3'	5.2'	28	14.5'	4.4'	5'	5.0'	28	8.4'	5.1'
					10'	20	7.3'	7.3'	9'	5.2'	16	9.1'	7.6'	4'	6.9'	16	19.3'	5.8'	6'	6.0'	20	10.1'	6.2'
	50W MR16 VWFL	60°	1000	4000	3'	111	3.5'	3.5'	3'	1.7'	72	5.2'	4.0'	1'	1.7'	125	*	2.3'	2'	2.0'	88	6.9'	3.3'
					5'	40	5.8'	5.8'	5'	2.9'	26	8.7'	6.7'	2'	3.5'	31	*	4.6'	3'	3.0'	39	10.4'	4.9'
					7'	20	8.1'	8.1'	7'	4.0'	13	12.1'	9.3'	3'	5.2'	14	*	6.9'	4'	4.0'	22	13.9'	6.5'
					9'	12	10.4'	10.4'	9'	5.2'	8	15.6'	12.0'	4'	6.9'	8	*	9.2'	5'	5.0'	14	17.3'	8.2'
	75W MR16 SP	10°	14000	4000	8'	219	1.4'	1.4'	7'	4.0'	186	1.6'	1.4'	3'	5.2'	194	2.1'	1.0'	5'	5.0'	198	1.8'	1.2'
					12'	97	2.1'	2.1'	10'	5.8'	91	2.3'	2.0'	4'	6.9'	109	2.9'	1.4'	7'	7.0'	101	2.5'	1.7'
					16'	55	2.8'	2.8'	13'	7.5'	54	3.0'	2.6'	5'	8.7'	70	3.6'	1.7'	9'	9.0'	61	3.2'	2.2'
					20'	35	3.5'	3.5'	16'	9.2'	36	3.7'	3.2'	6'	10.4'	49	4.3'	2.1'	11'	11.0'	41	3.9'	2.7'
	75W MR16 FL	36°	2500	4000	4'	156	2.6'	2.6'	3'	1.7'	180	2.7'	2.3'	1'	1.7'	313	3.8'	1.3'	3'	3.0'	98	4.4'	2.8'
					6'	69	3.9'	3.9'	5'	2.9'	65	4.5'	3.8'	2'	3.5'	78	7.6'	2.6'	4'	4.0'	55	5.8'	3.7'
					8'	39	5.2'	5.2'	7'	4.0'	33	6.3'	5.3'	3'	5.2'	35	11.4'	3.9'	5'	5.0'	35	7.3'	4.6'
					10'	25	6.5'	6.5'	9'	5.2'	20	8.1'	6.8'	4'	6.9'	20	15.2'	5.2'	6'	6.0'	25	8.7'	5.5'

ES16 Line Voltage Halogen Lamps

	50W ES16 NFL	25°	700	3000	4'	44	1.8'	1.8'	4'	2.3'	28	2.4'	2.0'	2'	3.5'	22	4.2'	1.8'	2'	2.0'	62	1.9'	1.3'
					6'	19	2.7'	2.7'	6'	3.5'	13	3.6'	3.1'	3'	5.2'	10	6.2'	2.7'	3'	3.0'	27	2.8'	1.9'
					8'	11	3.5'	3.5'	8'	4.6'	7	4.8'	4.1'	4'	6.9'	5	8.3'	3.5'	4'	4.0'	15	3.7'	2.5'
					10'	7	4.4'	4.4'	10'	5.8'	5	6.0'	5.1'	5'	8.7'	4	10.4'	4.4'	5'	5.0'	10	4.7'	3.1'
	50W ES16 FL	40°	800	2000	4'	50	2.9'	2.9'	4'	2.3'	32	4.1'	3.4'	2'	3.5'	25	9.7'	2.9'	2'	2.0'	71	3.4'	2.1'
					6'	22	4.4'	4.4'	6'	3.5'	14	6.1'	5.0'	3'	5.2'	11	14.5'	4.4'	3'	3.0'	31	5.0'	3.1'
					8'	13	5.8'	5.8'	8'	4.6'	8	8.1'	6.7'	4'									







































	Lamps	Beam Spread (To 50% CBCP)	CBCP	Rated Life (hours)	0° Aiming Angle					30° Aiming Angle					30° Aiming Angle					45° Aiming Angle				
					D	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	
<b>AR70 Low Voltage Halogen Lamps (Osram Sylvania)</b>																								
	20W AR70 SP		7000	3000	7' 10' 13' 16'	143 70 41 27	1.0' 1.4' 1.8' 2.2'	1.0' 1.4' 1.6' 2.2'	6' 9' 12' 15'	3.5' 5.2' 6.9' 8.7'	126 56 32 20	1.0' 1.5' 1.9' 2.4'	1.0' 1.5' 1.9' 2.4'	2' 3' 4' 5'	3.5' 5.2' 6.9' 8.7'	219 97 55 35	1.1' 1.7' 2.3' 2.8'	0.6' 0.8' 1.1' 1.4'	4' 6' 8' 10'	4.0' 6.0' 8.0' 10.0'	155 69 39 25	1.1' 1.7' 2.2' 2.8'	0.8' 1.2' 1.6' 2.0'	
	20W AR70 FL		850	3000	3' 5' 7' 9'	94 34 17 10	1.3' 2.2' 3.1' 4.0'	1.3' 2.2' 3.1' 4.0'	3' 5' 7' 9'	1.7' 2.9' 4.0' 5.2'	61 22 11 7	1.8' 3.0' 4.2' 5.4'	1.5' 2.6' 3.6' 4.6'	1' 2' 3' 4'	1.7' 3.5' 5.2' 6.9'	106 27 12 7	2.1' 4.2' 6.2' 8.3'	0.9' 1.4' 2.7' 3.5'	2' 3' 4' 5'	2.0' 3.0' 4.0' 5.0'	75 33 19 12	1.9' 2.8' 3.7' 4.7'	1.3' 1.9' 2.5' 3.1'	
	50W AR70 SP		15000	2000	8' 12' 16' 20'	234 104 59 38	1.4' 2.1' 2.8' 3.5'	1.4' 2.1' 2.8' 3.5'	7' 10' 13' 16'	4.0' 5.8' 7.5' 9.2'	199 97 58 38	1.6' 2.3' 3.0' 3.7'	1.4' 2.0' 2.6' 3.2'	3' 4' 5' 6'	5.2' 6.9' 8.7' 10.4'	206 117 75 52	2.1' 2.9' 3.6' 4.3'	1.0' 1.4' 1.7' 2.1'	5' 7' 9' 11'	5.0' 7.0' 9.0' 11.0'	212 108 65 44	1.8' 2.5' 3.2' 3.9'	1.2' 1.7' 2.2' 2.7'	
	50W AR70 FL		2000	2000	4' 6' 8' 10'	125 56 31 20	2.1' 3.2' 4.3' 5.4'	2.1' 3.2' 4.3' 5.4'	3' 5' 7' 9'	1.7' 2.9' 4.0' 5.2'	144 52 27 16	2.2' 3.7' 5.1' 6.6'	1.9' 3.1' 4.3' 5.6'	1' 2' 3' 4'	1.7' 3.5' 5.2' 6.9'	250 63 28 16	2.7' 5.5' 8.2' 10.9'	1.1' 2.1' 3.2' 4.3'	3' 4' 5' 6'	3.0' 4.0' 5.0' 6.0'	79 44 28 20	3.5' 5.8' 8.6' 10.9'	2.3' 3.0' 3.8' 4.5'	
<b>AR111 Low Voltage Halogen Lamps (Osram Sylvania)</b>																								
	35W AR111 SSP		40000	3000	10' 15' 20' 25'	400 178 100 64	0.7' 1.0' 1.4' 1.7'	0.7' 1.0' 1.4' 1.7'	8' 12' 16' 20'	4.6' 6.9' 9.2' 11.5'	406 180 101 65	0.7' 1.1' 1.5' 1.9'	0.6' 1.0' 1.3' 1.6'	4' 6' 8' 10'	6.9' 10.4' 13.9' 17.3'	313 139 78 50	1.1' 1.7' 2.2' 2.8'	0.6' 0.8' 1.1' 1.4'	6' 9' 12' 15'	6.0' 9.0' 12.0' 15.0'	393 175 98 63	0.8' 1.3' 1.7' 2.1'	0.6' 0.9' 1.2' 1.5'	
	50W AR111 NSP		45000	3000	15' 20' 25' 30'	200 113 72 50	1.0' 1.4' 1.7' 2.1'	1.0' 1.4' 1.7' 2.1'	10' 15' 20' 25'	5.8' 8.7' 11.5' 14.4'	292 130 73 47	0.9' 1.4' 1.9' 2.3'	0.8' 1.2' 1.6' 2.0'	10' 15' 20' 25'	5.8' 8.7' 11.5' 14.4'	225 88 46 29	1.4' 2.2' 3.1' 3.9'	0.7' 1.1' 1.5' 2.0'	12' 16' 20' 25'	8.0' 12.0' 16.0' 20.0'	249 110 62 40	1.1' 1.7' 2.2' 2.8'	0.8' 1.2' 1.6' 2.0'	
	50W AR111 SP		20000	3000	10' 15' 20' 25'	200 89 50 32	1.4' 2.1' 2.8' 3.5'	1.4' 2.1' 2.8' 3.5'	8' 12' 16' 20'	4.6' 6.9' 9.2' 11.5'	203 90 51 32	1.5' 2.2' 3.0' 3.7'	1.3' 1.9' 2.6' 3.2'	4' 6' 8' 10'	6.9' 10.4' 13.9' 17.3'	156 69 39 25	2.3' 3.4' 4.5' 5.7'	1.1' 1.7' 2.2' 2.8'	6' 9' 12' 15'	6.0' 9.0' 12.0' 15.0'	196 87 49 31	1.7' 2.5' 3.4' 4.2'	0.8' 1.2' 1.6' 2.0'	
	50W AR111 FL		4000	3000	6' 8' 10' 12'	111 63 40 28	2.7' 3.5' 4.4' 5.3'	2.7' 3.5' 4.4' 5.3'	5' 7' 9' 11'	2.9' 4.0' 5.2' 6.4'	104 53 32 21	3.0' 4.2' 5.4' 6.6'	2.6' 3.6' 4.6' 5.6'	2' 3' 4' 5'	3.5' 5.2' 6.9' 8.7'	125 56 31 20	4.2' 6.2' 8.3' 10.4'	1.8' 2.7' 3.5' 4.4'	3' 5' 7' 9'	3.0' 4.0' 5.0' 6.0'	157 57 29 17	3.5' 5.8' 8.1' 10.4'	1.2' 1.8' 2.4' 3.0'	
	75W AR111 SP		30000	3000	10' 15' 20' 25'	300 133 75 48	1.4' 2.1' 2.8' 3.5'	1.4' 2.1' 2.8' 3.5'	8' 12' 16' 20'	4.6' 6.9' 9.2' 11.5'	304 135 76 49	1.5' 2.2' 3.0' 3.7'	1.3' 1.9' 2.6' 3.2'	4' 6' 8' 10'	6.9' 10.4' 13.9' 17.3'	234 104 59 38	2.3' 3.4' 4.5' 5.7'	1.1' 1.7' 2.2' 2.8'	6' 9' 12' 15'	6.0' 9.0' 12.0' 15.0'	295 131 74 47	1.7' 2.5' 3.4' 4.2'	0.8' 1.2' 1.6' 2.0'	
	75W AR111 FL		5300	3000	6' 8' 10' 12'	147 83 53 37	2.7' 3.5' 4.4' 5.3'	2.7' 3.5' 4.4' 5.3'	5' 7' 9' 11'	2.9' 4.0' 5.2' 6.4'	138 70 42 28	3.0' 4.2' 5.4' 6.6'	2.6' 3.6' 4.6' 5.6'	2' 3' 4' 5'	3.5' 5.2' 6.9' 8.7'	166 74 41 27	4.2' 6.2' 8.3' 10.4'	1.8' 2.7' 3.5' 4.4'	3' 5' 7' 9'	3.0' 4.0' 5.0' 6.0'	208 75 38 23	2.8' 4.7' 6.5' 8.4'	1.9' 3.1' 4.4' 5.6'	
	50W AR111 WFL		2000	3000	3' 5' 7' 9'	222 80 41 25	2.5' 4.1' 5.8' 7.5'	2.5' 4.1' 5.8' 7.5'	3' 5' 7' 9'	1.7' 2.9' 4.0' 5.2'	144 52 27 16	3.5' 5.9' 8.2' 10.5'	2.9' 4.8' 6.7' 8.6'	2' 3' 3' 4'	3.5' 5.2' 6.9' 8.7'	250 63 28 16	6.8' 13.7' 20.5' 27.3'	1.7' 3.3' 5.0' 6.6'	2' 3' 4' 5'	2.0' 3.0' 4.0' 5.0'	177 79 44 28	4.0' 6.0' 8.0' 10.0'	2.3' 3.5' 4.7' 5.9'	
<b>PAR36 Halogen and Incandescent Low Voltage Lamps</b>																								
	25W PAR36 SP (5.5V)		19700	1000	10' 15' 20' 25'	197 88 49 32	0.9' 1.3' 1.7' 2.2'	0.9' 1.3' 1.7' 2.2'	8' 12' 16' 20'	4.6' 6.9' 9.2' 11.5'	200 89 50 32	0.9' 1.4' 1.9' 2.3'	0.8' 1.2' 1.5' 2.0'	4' 6' 8' 10'	6.9' 10.4' 13.9' 17.3'	154 58 38 25	1.4' 2.1' 2.6' 3.5'	0.7' 1.0' 1.4' 1.7'	6' 8' 10' 12'	5.0' 8.0' 12.0' 15.0'	198 109 48 31	1.0' 1.4' 2.1' 2.6'	0.7' 1.0' 1.5' 1.9'	
	25W PAR36 WFL		160	2000	2' 3' 4' 5'	40 18 10 6	2.1' 3.1' 4.2' 5.2'	2.1' 3.1' 4.2' 5.2'	2' 3' 4' 5'	1.2' 1.7' 2.3' 2.9'	26 12 6 4	3.1' 4.6' 6.1' 7.6'	2.4' 3.6' 4.8' 6.0'	2' 3' 4' 5'	1.2' 1.7' 2.3' 2.9'	26 12 6 4	3.1' 4.6' 6.1' 7.6'	2.4' 3.6' 4.8' 6.0'	1' 2' 3' 4'	1.0' 2.0' 3.0' 4.0'	57 14 6 4	2.9' 5.7' 8.6' 11.4'	1.5' 2.9' 4.4' 5.9'	
	36W PAR36 (HALOGEN) VNSP		17000	4000	10' 15' 20' 25'	170 76 43 27	0.9' 1.3' 1.7' 2.2'	0.9' 1.3' 1.7' 2.2'	8' 12' 16' 20'	4.6' 6.9' 9.2' 11.5'	173 77 43 28	0.9' 1.4' 1.9' 2.3'	0.8' 1.2' 1.6' 2.0'	4' 6' 8' 10'	6.9' 10.4' 13.9' 17.3'	133 59 33 21	1.4' 2.1' 2.8' 3.5'	0.7' 1.0' 1.4' 1.7'	6' 8' 12' 15'	5.0' 8.0' 12.0' 15.0'	167 94 42 27	1.0' 1.4' 2.1' 2.6'	0.7' 1.0' 1.5' 1.9'	
	36W PAR36 (HALOGEN) WFL		1000	4000	3' 5' 7' 9'	111 40 20 12	1.7' 2.9' 4.0' 5.2'	1.7' 2.9' 4.0' 5.2'	3' 5' 7' 9'	1.7' 2.9' 4.0' 5.2'	72 26 13 8	2.4' 3.9' 5.5' 7.1'	2.0' 3.3' 4.6' 6.0'	1' 2' 3' 4'	1.7' 3.5' 5.2' 6.9'	125 31 14 8	3.0' 6.1' 9.1' 12.2'	1.1' 2.3' 3.4' 4.6'	2' 3' 4' 5'	2.0' 3.0' 4.0' 5.0'	88 39 22 14	2.5' 3.7' 5.0' 6.2'	1.6' 2.4' 3.2' 4.1'	
	36W PAR36 (HALOGEN) NSP		3500	4000	6' 8' 10' 12'	97 55 35 24	1.4' 1.8' 2.3' 2.7'	1.4' 1.8' 2.3' 2.7'	5' 7' 9' 11'	2.9' 4.0' 5.2' 6.4'	91 46 28 19	1.5' 2.1' 2.7' 3.4'	1.3' 1.8' 2.4' 2.9'	2' 3' 4' 5'	3.5' 5.2' 6.9' 8.7'	109 49 27 18	1.9' 2.8' 3.8' 4.7'	0.9' 1.4' 1.8' 2.3'	3' 5' 7' 9'	3.0' 5.0' 7.0' 9.0'	137 49 25 15	1.4' 2.3' 3.2' 4.2'	1.0' 1.6' 2.3' 2.9'	
	50W PAR36 (HALOGEN) NSP		25000	4000	15' 20' 25' 30'	111 63 40 28	1.6' 2.1' 2.6' 3.1'	1.6' 2.1' 2.6' 3.1'	10' 15' 20' 25'	5.8' 8.7' 11.5' 14.4'	162 72 41 26	1.2' 1.8' 2.4' 3.0'	1.2' 1.8' 2.4' 3.0'	5' 8' 11' 14'	8.7' 13.9' 19.1' 24.2'	125 49 26 16	2.1' 3.4' 4.7' 5.9'	1.0' 1.7' 2.3' 2.9'	8' 12' 16' 20'	8.0' 12.0' 16.0' 20.0'	138 61 35 22	1.7' 2.5' 3.4' 4.2'	1.2' 1.8' 2.4' 3.0'	

Lamps	Beam Spread (To 50% CBCP)	CBCP	Rated Life (hours)	0° Aiming Angle				30° Aiming Angle					30° Aiming Angle					45° Aiming Angle					
				D	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	
<b>PAR16 Halogen Line Voltage Lamps</b>																							
	60W PAR16 NSP		5000	2000	6'	139	1.0'	1.0'	5'	2.9'	130	1.2'	1.0'	2'	3.5'	156	1.4'	0.7'	3'	3.0'	196	1.1'	0.7'
	60W PAR16 NFL		1300	2000	3'	144	1.6'	1.6'	3'	1.7'	94	2.2'	1.9'	1'	1.7'	163	2.7'	1.1'	2'	2.0'	115	2.3'	1.5'
	75W PAR16 NSP		7500	2000	10'	75	1.7'	1.7'	5'	2.9'	34	3.7'	3.1'	3'	5.2'	104	2.1'	1.0'	6'	6.0'	74	2.1'	1.5'
	75W PAR16 NFL		1900	2000	7'	153	1.2'	1.2'	7'	4.0'	17	5.1'	4.3'	2'	3.5'	234	1.4'	0.7'	4'	4.0'	166	1.4'	1.0'
																							
	35W PAR20 NSP		3000	2500	6'	83	0.8'	0.8'	5'	2.9'	78	0.9'	0.8'	2'	3.5'	94	1.1'	0.6'	3'	3.0'	118	0.8'	0.6'
	35W PAR20 NFL		900	2500	8'	47	1.1'	1.1'	7'	4.0'	40	1.3'	1.1'	3'	5.2'	42	1.7'	0.8'	5'	5.0'	42	1.4'	1.0'
	35W PAR20 WFL		600	2500	10'	30	1.4'	1.4'	9'	5.2'	24	1.7'	1.5'	4'	6.9'	23	2.3'	1.1'	7'	7.0'	22	2.0'	1.4'
	50W PAR20 NSP		6000	2000	12'	21	1.7'	1.7'	11'	6.4'	16	2.1'	1.8'	5'	8.7'	15	2.8'	1.4'	9'	9.0'	13	2.5'	1.8'
	50W PAR20 SP		3200	2000	3'	100	1.6'	1.6'	3'	1.7'	65	2.2'	1.9'	1'	1.7'	113	2.7'	1.1'	2'	2.0'	80	2.3'	1.5'
	50W PAR20 NFL		1850	2000	5'	36	2.7'	2.7'	5'	2.9'	23	3.7'	3.1'	2'	3.5'	28	5.5'	2.1'	3'	3.0'	35	3.5'	2.3'
																							
	50W PAR30 NSP		900	2500	7'	188	1.0'	1.0'	7'	4.0'	12	5.1'	4.2'	4'	6.9'	18	14.5'	4.4'	2'	2.0'	53	3.4'	2.1'
	50W PAR30 (HIR) SP		17000	3000	8'	53	3.2'	3.2'	5'	2.9'	16	5.1'	4.2'	2'	3.5'	19	9.7'	2.9'	3'	3.0'	24	5.0'	3.1'
	50W PAR30 FL		2000	3000	7'	12	5.1'	5.1'	7'	4.0'	8	7.1'	5.9'	3'	5.2'	8	14.5'	4.4'	4'	4.0'	13	6.7'	4.1'
	50W PAR30 FL		1400	3000	9'	7	6.6'	6.6'	9'	5.2'	5	9.1'	7.6'	4'	6.9'	5	19.3'	5.8'	5'	5.0'	8	8.4'	5.1'
	75W PAR30 NSP		14000	2500	6'	167	0.8'	0.8'	5'	2.9'	156	0.9'	0.8'	2'	3.5'	188	1.1'	0.6'	3'	3.0'	236	0.8'	0.6'
	75W PAR30 NFL		3200	2500	8'	94	1.1'	1.1'	7'	4.0'	80	1.3'	1.1'	3'	5.2'	83	1.7'	0.8'	5'	5.0'	85	1.4'	1.0'
	75W PAR30 FL		2000	2500	10'	60	1.4'	1.4'	9'	5.2'	48	1.7'	1.5'	4'	6.9'	47	2.3'	1.4'	7'	7.0'	43	2.0'	1.4'
	50W PAR30 NSP		900	2500	12'	42	1.7'	1.7'	11'	6.4'	32	2.1'	1.8'	5'	8.7'	30	2.8'	1.4'	9'	9.0'	26	2.5'	1.8'
	50W PAR30 (HIR) SP		17000	3000	6'	89	1.6'	1.6'	5'	2.9'	83	1.8'	1.5'	2'	3.5'	100	2.2'	1.1'	3'	3.0'	126	1.6'	1.1'
	50W PAR30 FL		2000	3000	8'	50	2.1'	2.1'	7'	4.0'	42	2.5'	2.1'	3'	5.2'	44	3.3'	1.6'	5'	5.0'	45	2.7'	1.9'
	50W PAR30 NFL		1850	2000	10'	32	2.6'	2.6'	9'	5.2'	26	3.2'	2.7'	4'	6.9'	25	4.4'	2.1'	7'	7.0'	23	3.8'	2.6'
	50W PAR30 FL		1400	3000	12'	22	3.2'	3.2'	11'	6.4'	17	3.9'	3.3'	5'	8.7'	16	5.6'	2.6'	9'	9.0'	14	4.8'	3.4'
	75W PAR30 NSP		14000	2500	4'	116	1.9'	1.9'	3'	1.7'	134	2.0'	1.7'	1'	1.7'	231	2.3'	1.0'	1'	1.7'	231	2.3'	1.0'
	75W PAR30 NFL		3200	2500	6'	51	2.9'	2.9'	5'	2.9'	48	3.3'	2.8'	2'	3.5'	58	4.6'	1.9'	4'	4.0'	41	4.1'	2.7'
	75W PAR30 FL		2000	2500	8'	29	3.8'	3.8'	7'	4.0'	25	4.6'	3.9'	3'	5.2'	26	7.0'	2.9'	5'	5.0'	26	5.1'	3.4'
	75W PAR30 FL		2000	2500	10'	19	4.8'	4.8'	9'	5.2'	15	5.9'	5.0'	4'	6.9'	14	9.3'	3.8'	6'	6.0'	18	6.1'	4.1'

					0° Aiming Angle				30° Aiming Angle					30° Aiming Angle					45° Aiming Angle					
					D	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	
<b>PAR38 Halogen Line Voltage Lamps</b>																								
	45W PAR38 NSP		10000	2500	8'	156	1.3'	1.3'	7'	4.0'	133	1.5'	1.3'	3'	5.2'	139	1.9'	0.9'	5'	5.0'	141	1.6'	1.1'	
					12'	69	1.9'	1.9'	10'	5.8'	65	2.1'	1.8'	4'	6.9'	78	2.6'	1.3'	7'	7.0'	72	2.2'	1.6'	
					16'	39	2.5'	2.5'	13'	7.5'	38	2.7'	2.4'	5'	8.7'	50	3.2'	1.6'	9'	9.0'	44	2.8'	2.0'	
					20'	25	3.1'	3.1'	16'	9.2'	25	3.4'	2.9'	6'	10.4'	35	3.8'	1.9'	11'	11.0'	29	3.5'	2.4'	
	45W PAR38 SP		5500	2500	6'	153	1.3'	1.3'	5'	2.9'	143	1.4'	1.2'	2'	3.5'	172	1.7'	0.8'	3'	3.0'	216	1.3'	0.9'	
					8'	86	1.7'	1.7'	7'	4.0'	73	2.0'	1.7'	3'	5.2'	76	2.6'	1.3'	5'	5.0'	78	2.1'	1.5'	
					10'	55	2.1'	2.1'	9'	5.2'	44	2.5'	2.2'	4'	6.9'	43	3.5'	1.7'	7'	7.0'	40	3.0'	2.1'	
					12'	38	2.5'	2.5'	11'	6.4'	30	3.1'	2.7'	5'	8.7'	28	4.3'	2.1'	9'	9.0'	24	3.8'	2.7'	
	45W PAR38 FL		1700	2500	4'	106	2.1'	2.1'	3'	1.7'	123	2.2'	1.9'	1'	1.7'	213	2.7'	1.1'	3'	3.0'	67	3.5'	2.3'	
					6'	47	3.2'	3.2'	5'	2.9'	44	3.7'	3.1'	2'	3.5'	53	5.5'	2.1'	4'	4.0'	38	4.6'	3.0'	
					8'	27	4.3'	4.3'	7'	4.0'	23	5.1'	4.3'	3'	5.2'	24	8.2'	3.2'	5'	5.0'	24	5.8'	3.8'	
					10'	17	5.4'	5.4'	9'	5.2'	14	6.6'	5.6'	4'	6.8'	13	0.9'	4.3'	6'	6.0'	17	6.9'	4.5'	
	50W PAR38 NSP (HIR)		14000	3000	8'	219	1.3'	1.3'	7'	4.0'	186	1.5'	1.3'	3'	5.2'	194	1.9'	0.9'	5'	5.0'	198	1.6'	1.1'	
					12'	97	1.9'	1.9'	10'	5.8'	91	2.1'	1.8'	4'	6.9'	109	2.6'	1.3'	7'	7.0'	101	2.2'	1.6'	
					16'	55	2.5'	2.5'	13'	7.5'	54	2.7'	2.4'	5'	8.7'	70	3.2'	1.6'	9'	9.0'	61	2.9'	2.0'	
					20'	35	3.1'	3.1'	16'	9.2'	36	3.4'	2.9'	6'	10.4'	9	3.8'	1.9'	11'	11.0'	41	3.5'	2.4'	
	50W PAR38 FL (HIR)		3000	3000	6'	83	2.7'	2.7'	5'	2.9'	78	3.0'	2.6'	2'	3.5'	94	4.2'	1.8'	3'	3.0'	118	2.8'	1.9'	
					8'	47	3.5'	3.5'	7'	4.0'	40	4.2'	3.6'	3'	5.2'	42	6.2'	2.7'	5'	5.0'	42	4.7'	3.1'	
					10'	30	4.4'	4.4'	9'	5.2'	24	5.4'	4.6'	4'	6.9'	23	8.3'	3.5'	7'	7.0'	22	6.5'	4.4'	
					12'	21	5.3'	5.3'	11'	6.4'	16	6.6'	5.6'	5'	8.7'	15	0.4'	4.4'	9'	9.0'	13	8.4'	5.6'	
	60W PAR38 SP		17500	3000	8'	273	1.4'	1.4'	7'	4.0'	232	1.6'	1.4'	3'	5.2'	243	2.1'	1.0'	5'	5.0'	247	1.8'	1.2'	
					12'	175	2.1'	2.1'	10'	5.8'	114	2.3'	2.0'	4'	6.9'	137	2.9'	1.4'	7'	7.0'	126	2.5'	1.7'	
					16'	68	2.8'	2.8'	13'	7.5'	67	3.0'	2.6'	5'	8.7'	88	3.6'	1.7'	9'	9.0'	76	3.2'	2.2'	
					20'	44	3.5'	3.5'	16'	9.2'	44	3.7'	3.2'	6'	10.4'	61	4.3'	2.1'	11'	11.0'	51	3.9'	2.7'	
	60W PAR38 FL		3200	3000	6'	89	3.2'	3.2'	5'	2.9'	83	3.7'	3.1'	2'	3.5'	100	5.5'	2.1'	3'	3.0'	126	3.5'	2.3'	
					8'	50	4.3'	4.3'	7'	4.0'	42	5.1'	4.3'	3'	5.2'	44	8.2'	3.2'	5'	5.0'	45	5.8'	3.8'	
					10'	32	5.4'	5.4'	9'	5.2'	26	6.6'	5.6'	4'	6.9'	25	10.9'	4.3'	7'	7.0'	23	8.1'	5.3'	
					12'	22	6.4'	6.4'	11'	6.4'	17	8.1'	6.8'	5'	8.7'	16	13.7'	5.4'	9'	9.0'	14	10.4'	6.6'	
	60W PAR38 WFL (HIR)		1250	3000	3'	139	3.0'	3.0'	3'	1.7'	90	4.3'	3.5'	1'	1.7'	156	15.7'	2.0'	2'	2.0'	110	5.3'	2.8'	
					5'	50	5.0'	5.0'	5'	2.9'	32	7.2'	5.6'	2'	3.5'	39	31.4'	4.0'	3'	3.0'	49	8.0'	4.2'	
					7'	26	7.0'	7.0'	7'	4.0'	17	10.1'	8.1'	3'	5.2'	17	47.1'	6.0'	4'	4.0'	28	10.6'	5.6'	
					9'	15	9.0'	9.0'	9'	5.2'	10	13.0'	10.4'	4'	6.9'	10	62.8'	8.0'	5'	5.0'	18	13.3'	7.1'	
	90W PAR38 NSP		19500	2500	10'	195	1.6'	1.6'	8'	4.6'	198	1.7'	1.5'	4'	6.9'	152	2.6'	1.3'	6'	6.0'	192	1.9'	1.3'	
					15'	87	2.4'	2.4'	12'	6.9'	88	2.5'	2.2'	6'	10.4'	60	3.8'	1.9'	9'	9.0'	85	2.9'	2.0'	
					20'	49	2.4'	2.4'	16'	9.2'	49	3.4'	2.9'	8'	13.9'	38	5.1'	2.5'	12'	12.0'	48	3.8'	2.7'	
					25'	31	3.9'	3.9'	20'	11.5'	32	4.2'	3.6'	10'	17.3'	24	6.4'	3.1'	15'	15.0'	31	4.8'	3.3'	
	90W PAR38 SP		14500	2500	8'	227	1.7'	1.7'	7'	4.0'	192	2.0'	1.7'	3'	5.2'	201	2.6'	1.3'	5'	5.0'	205	2.1'	1.5'	
					12'	101	2.5'	2.5'	10'	5.8'	94	2.8'	2.4'	4'	6.9'	113	3.5'	1.7'	7'	7.0'	105	3.0'	2.1'	
					16'	57	3.4'	3.4'	13'	7.5'	56	3.7'	3.2'	5'	8.7'	73	4.3'	2.1'	9'	9.0'	63	3.8'	2.7'	
					20'	36	4.2'	4.2'	16'	9.2'	37	4.5'	3.9'	6'	10.4'	0	5.2'	2.5'	11'	11.0'	42	4.7'	3.3'	
	90W PAR38 FL		4500	2500	6'	125	3.0'	3.0'	5'	2.9'	117	3.4'	2.9'	2'	3.5'	141	4.9'	2.0'	3'	3.0'	177	3.2'	2.1'	
					8'	70	4.0'	4.0'	7'	4.0'	60	4.8'	4.0'	3'	5.2'	63	7.4'	3.0'	5'	5.0'	64	5.3'	3.5'	
					10'	45	5.0'	5.0'	9'	5.2'	36	6.1'	5.2'	4'	6.9'	35	9.8'	4.0'	7'	7.0'	32	7.4'	4.9'	
					12'	31	6.0'	6.0'	11'	6.4'	24	7.5'	6.3'	5'	8.7'	23	12.3'	5.0'	9'	9.0'	20	9.6'	6.3'	
	90W PAR38 WFL		1300	2500	3'	144	3.5'	3.5'	3'	1.7'	94	5.2'	4.0'	1'	1.7'	163	*	2.3'	2'	2.0'	115	6.9'	3.3'	
					5'	52	5.6'	5.6'	5'	2.9'	34	6.7'	6.7'	2'	3.5'	41	*	4.6'	3'	3.0'	51	10.4'	4.9'	
					7'	27	8.1'	8.1'	7'	4.0'	17	12.1'	9.3'	3'	5.2'	16	*	6.9'	4'	4.0'	29	13.9'	6.5'	
					9'	16	10.4'	10.4'	9'	5.2'	10	15.6'	12.0'	4'	6.9'	10	*	9.2'	5'	5.0'	18	17.3'	8.2'	
	100W PAR38 SP (HIR)		29000	2500	10'	290	1.7'	1.7'	8'	4.6'	294	1.9'	1.6'	4'	6.9'	227	2.9'	1.4'	6'	6.0'	285	2.1'	1.5'	
					15'	129	2.6'	2.6'	12'	6.9'	131	2.8'	2.4'	6'	10.4'	101	4.3'	2.1'	9'	9.0'	127	3.2'	2.2'	
					20'	73	3.5'	3.5'	16'	9.2'	74	3.7'	3.2'	8'	13.9'	57	5.7'	2.8'	12'	12.0'	71	4.2'	3.0'	
					25'	46	4.4'	4.4'	20'	11.5'	47	4.7'	4.0'	10'	17.3'	36	7.2'	3.5'	15'	15.0'	46	5.3'	3.7'	
	100W PAR38 NFL (HIR)		7500	3000	7'	153	3.4'	3.4'	6'	3.5'	135	3.9'	3.3'	2'	3.5'	234	4.6'	1.9'	4'	4.0'	166	4.1'	2.7'	
					10'	75	4.8'	4.8'	9'	5.2'	60	5.9'	5.0'	3'	5.2'	104	7.0'	2.9'	6'	6.0'	74	6.1'	4.1'	
					13'	44	6.2'	6.2'	12'	6.9'	34	7.8'	6.7'	4'	6.9'	59	9.3'	3.6'	8'	8.0'	41	8.2'	5.4'	
					16'	29	7.7'	7.7'	15'	8.7'	22	9.8'	8.3'	5'	8.7'	38	11.6'	4.8'	10'	10.0'	27	10.2'	6.8'	
	100W PAR38 FL (HIR)		3400	3000	6'	94	4.4'	4.4'	5'	2.9'	88	5.1'	4.2'	2'	3.5'	106	9.7'	2.9'	3'	3.0'	134	5.0'	3.1'	
					8'	53	5.8'	5.8'	7'	4.0'	45	7.1'	5.9'	3'	5.2'	47	14.5'	4.4'	5'	5.0'	48	8.4'	5.1'	
					10'	34	7.3'	7.3'	9'	5.2'	27	9.1'	7.8'	4'	6.9'	27	19.3'	5.8'	7'	7.0'	25	11.7'	7.2'	
					12'	24	8.7'	8.7'	11'	6.4'	18	11.2'	9.2'	5'	8.7'	17	24.2'	7.3'	9'	9.0'	15	15.1'	9.3'	
	120W PAR38 NSP		25000	3000	10'	250	1.7'	1.7'	8'	4.6'	254	1.9'	1.6'	4'	6.9'	195	2.9'	1.4'	6'	6.0'	246	2.1'	1.5'	
					15'	111	2.6'	2.6'	12'	6.9'	113	2.8'	2.4'	6'	10.4'	87	4.3'	2.1'	9'	9.0'	109	3.2'	2.2'	
					20'	63	3.5'	3.5'	16'	9.2'	63	3.7'	3.2'	8'	13.9'	49	5.7'	2.8'	12'	12.0'	61	4.2'	3.0'	
					25'	40	4.4'	4.4'	20'	11.5'	41	4.7'	4.0'	10'	17.3'	31	7.2'	3.5'	15'	15.0'	39	5.3'	3.7'	
	120W PAR38 FL		5000	3000	6'	139	3.2'	3.2'	5'	2.9'	130	3.7'	3.1'	2'	3.5'	156	5.5'	2.1'	3'	3.0'	196	3.5'	2.3'	
					8'	78	4.3'	4.3'	7'	4.0'	66	5.1'	4.3'	3'	5.2'	69	6.2'	3.2'	5'	5.0'	40	7.1'	3.0'	
					10'	50	5.4'	5.4'	9'	5.2'	40	6.6'	5.6'	4'	6.9'	39	10.9'	4.3'	5'	5.0'	36	8.1'	3.8'	
					12'	35	6.4'	6.4'	11'	6.4'	27	8.1'	6.8'	5'	8									

# Applications

Lamps	Beam Spread (To 50% CBCP)	Rated Life (hours)	0° Aiming Angle					30° Aiming Angle					30° Aiming Angle					45° Aiming Angle							
			D	FC	L	W		D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W			
<b>R20, BR30, and BR40 Incandescent Line Voltage Lamps</b>																									
	50W R20		530	2000	2'	132	1.4'	1.4'																	
					3'	59	2.1'	2.1'																	
					4'	33	2.8'	2.8'																	
	75W R20		825	2000	2'	206	1.7'	1.7'																	
					3'	92	2.5'	2.5'																	
					4'	52	3.4'	3.4'																	
	65W BR30 SP		1600	2000	4'	100	1.8'	1.8'																	
					6'	44	2.7'	2.7'																	
					10'	16	4.4'	4.4'																	
	65W BR30 FL		510	2000	2'	128	2.3'	2.3'																	
					3'	57	3.5'	3.5'																	
					4'	32	4.6'	4.6'																	
	85W BR30 SP		3100	2000	6'	86	2.1'	2.1'																	
					8'	48	2.8'	2.8'																	
					10'	31	3.5'	3.5'																	
	85W BR30 FL		700	2000	3'	78	3.1'	3.1'																	
					5'	28	5.2'	5.2'																	
					7'	14	7.3'	7.3'																	
	120W BR40 SP		4600	2000	6'	128	2.1'	2.1'																	
					8'	72	2.8'	2.8'																	
					10'	46	3.5'	3.5'																	
	120W BR40		1000	2000	3'	111	3.5'	3.5'																	
					5'	40	5.8'	5.8'																	
					7'	20	8.1'	8.1'																	
<b>PAR56 Line Voltage Halogen and Incandescent Lamps</b>																									
	200W PAR56 MFL MOG END PRONG		18000	2000	8'	281	1.4'	2.8'																	
					12'	125	2.1'	4.2'																	
					16'	70	2.8'	5.6'																	
	300W PAR56 NSP MOG END PRONG		68000	2000	15'	302	2.1'	2.6'																	
					20'	170	2.6'	3.5'																	
					25'	109	3.5'	4.4'																	
	300W PAR56 MFL MOG END PRONG		24000	2000	10'	240	1.9'	4.1'																	
					15'	107	2.9'	6.1'																	
					20'	60	3.9'	8.1'																	
	300W PAR56 WFL MOG END PRONG		11000	2000	8'	172	2.5'	5.4'																	
					12'	76	3.8'	8.0'																	
					16'	43	5.1'	10.7'																	
	500W PAR56 HALOGEN NSP MOG END PRONG		96000	4000	16'	375	2.2'	3.6'																	
					24'	167	3.4'	5.5'																	
					32'	94	4.5'	3.7'																	
	500W PAR56 HALOGEN MFL MOG END PRONG		43000	4000	15'	191	2.6'	6.9'																	
					20'	108	3.5'	9.2'																	
					25'	69	4.4'	11.5'																	
	500W PAR56 HALOGEN WFL MOG END PRONG		19000	4000	8'	297	2.8'	6.5'																	
					12'	132	4.2'	9.7'																	
					16'	74	5.6'	12.9'																	
<b>PAR64 Line Voltage Incandescent Lamps</b>																									
	500W PAR64 NSP EXT MOG END PRONG		111000	2000	16'	434	2.0'	3.4'																	
					24'	193	2.9'	5.0'																	
					32'	108	3.9'	6.7'																	
	500W PAR64 MFL EXT MOG END PRONG		23000	2000	10'	230	1.9	4.1'																	
					15'	102	2.9'	6.1'																	
					25'	37	4.8'	10.2'																	
	500W PAR64 WFL EXT MOG END PRONG		13000	2000	8'	203	2.8'	6.1'																	
					12'	90	4.2'	9.2'																	
					16'	51	5.6'	12.3'																	

\*Exceeds useable limits.

Lamps	Beam Spread (To 50% CBCP)	CBCP	Rated Life (hours)	0° Aiming Angle					30° Aiming Angle					30° Aiming Angle					45° Aiming Angle																								
				D	FC	L	W	D	C	FC	L	W	D	C	FC	L	W	D	C	FC	L	W																					
<b>PAR56 Low Voltage Incandescent Lamps</b>																																											
	240W PAR56 VNSP (12V) SCR TERM		140000	2000	20'	350	2.1'	3.1'	15'	8.7'	404	2.1'	2.7'	8'	13.9'	273	3.4'	2.5'	12'	20.8'	122	5.1'	3.6'	12'	12.0'	344	2.5'	2.7'	17'	17.0'	171	3.6'	3.8'	22'	22.0'	102	4.6'	4.9'	27'	27.0'	68	5.7'	6.0'
	240W PAR56 MFL (12V) SCR TERM		46000	2000	15'	204	2.1'	5.0'	10'	5.8'	299	1.9'	3.9'	5'	8.7'	230	2.8'	3.3'	8'	13.9'	90	4.5'	5.4'	12'	12.0'	113	3.4'	5.7'	16'	16.0'	64	4.5'	7.6'	20'	20.0'	41	5.6'	9.5'					
	240W PAR56 WFL (12V) SCR TERM		13000	2000	8'	203	2.5'	5.0'	7'	4.0'	172	3.0'	5.1'	3'	5.2'	181	4.1'	3.8'	5'	9.0'	102	5.5'	5.0'	7'	7.0'	94	4.5'	6.2'	9'	9.0'	57	5.8'	8.0'	11'	11.0'	38	7.1'	9.8'					
<b>PAR20, PAR30 and PAR38 Metal Halide (Ceramic Arc Tube) Lamps</b>																																											
	GE PAR20 (CMH20) SP		13,000	7,500	8'	203	1.1'	1.1'	8'	4.6'	132	1.5'	1.3'	3'	5.2'	181	1.7'	0.8'	4'	4.0'	287	1.1'	0.8'	5'	5.0'	184	1.4'	1.0'	6'	6.0'	128	1.7'	1.2'	7'	7.0'	94	2.0'	1.4'					
	GE PAR20 (CMH20) FL		3,750	7,500	6'	104	2.7'	2.7'	6'	3.5'	68	3.6'	3.1'	2'	3.5'	117	4.2'	1.8'	3'	3.0'	147	2.8'	1.9'	4'	4.0'	83	3.7'	2.5'	5'	5.0'	53	4.7'	3.1'	6'	6.0'	37	5.6'	3.8'					
	39W PAR20 (MC/MH) SP		28,000	9,000	10'	280	1.7'	1.7'	8'	4.6'	284	1.9'	1.6'	4'	6.9'	219	2.9'	1.4'	6'	6.0'	275	2.1'	1.5'	9'	9.0'	122	3.2'	2.2'	12'	12.0'	69	4.2'	3.0'	15'	15.0'	44	5.3'	3.7'					
	39W PAR20 (MC/MH) FL		6,000	9,000	6'	167	3.2'	3.2'	5'	2.9'	158	3.7'	3.1'	2'	3.5'	188	5.5'	2.1'	3'	3.0'	236	3.5'	2.3'	5'	5.0'	85	5.8'	3.8'	7'	7.0'	43	8.1'	5.3'	9'	9.0'	26	10.4'	6.8'					
	39W PAR30 (MC/MH) SP		42,000	9,000	15'	187	2.6'	2.6'	10'	5.8'	273	2.3'	2.0'	5'	8.7'	210	3.6'	1.7'	8'	8.0'	232	2.8'	2.0'	12'	12.0'	103	4.2'	3.0'	16'	16.0'	58	5.5'	4.0'	22'	22.0'	31	7.8'	5.4'					
	39W PAR30 (MC/MH) FL		8,900	9,000	7'	153	3.8'	3.8'	6'	3.5'	135	4.4'	3.7'	2'	3.5'	234	5.5'	2.1'	4'	4.0'	166	4.6'	3.0'	6'	6.0'	74	6.9'	4.5'	8'	8.0'	41	9.2'	6.1'	10'	10.0'	27	11.5'	7.6'					
	70W PAR30 (MC/MH) SP		62,000	6,000	15'	276	2.6'	2.6'	10'	5.8'	403	2.3'	2.0'	5'	8.7'	310	3.6'	1.7'	8'	8.0'	343	2.0'	2.0'	12'	12.0'	152	4.2'	3.0'	18'	16.0'	86	5.6'	4.0'	20'	20.0'	55	7.1'	4.9'					
	70W PAR30 (MC/MH) FL		9,000	6,000	7'	184	5.1'	5.1'	6'	3.5'	162	6.1'	5.0'	2'	3.5'	181	9.7'	2.9'	4'	4.0'	199	6.7'	4.1'	6'	6.0'	88	10.1'	6.2'	8'	8.0'	50	13.4'	8.2'	10'	10.0'	32	16.8'	10.3'					
	70W PAR38 (MC/MH) SP		50,000	7,500	15'	222	3.9'	3.9'	10'	5.8'	325	3.5'	3.0'	5'	8.7'	250	5.6'	2.6'	8'	8.0'	276	4.3'	3.0'	12'	12.0'	123	6.4'	4.5'	16'	16.0'	69	8.6'	6.0'	20'	20.0'	44	10.7'	7.49'					
	70W PAR38 (MC/MH) FL		18,000	7,500	8'	281	3.5'	3.5'	7'	4.0'	239	4.2'	3.6'	3'	5.2'	250	6.2'	2.7'	5'	5.0'	255	4.7'	3.1'	7'	7.0'	130	6.5'	4.4'	9'	9.0'	79	8.4'	5.6'	11'	11.0'	53	10.3'	6.9'					
	70W PAR38 (MC/MH) WFL		5,000	7,500	6'	139	6.9'	6.9'	5'	2.9'	130	8.7'	6.7'	2'	3.5'	156	*	4.6'	3'	3.0'	196	10.4'	4.9'	5'	5.0'	71	17.3'	8.2'	7'	7.0'	36	24.2'	11.4'	9'	9.0'	22	31.2'	14.7'					
	100W PAR38 (MC/MH) SP		70,000	10,000	15'	311	3.9'	3.9'	10'	5.8'	455	3.5'	3.0'	5'	8.7'	350	5.6'	2.6'	8'	8.0'	387	4.3'	3.0'	12'	12.0'	172	6.4'	4.5'	16'	16.0'	97	8.6'	6.0'	20'	20.0'	62	10.7'	7.4'					
	100W PAR38 (MC/MH) FL		25,000	10,000	10'	250	4.4'	4.4'	8'	4.6'	254	4.8'	4.1'	4'	6.9'	195	8.3'	3.5'	6'	6.0'	246	5.6'	3.8'	9'	9.0'	109	8.4'	5.6'	12'	12.0'	61	11.2'	7.5'	15'	15.0'	39	14.0'	9.4'					
	100W PAR38 (MC/MH) WFL		7,000	10,000	6'	194	6.9'	6.9'	5'	2.9'	182	8.7'	6.7'	2'	3.5'	219	*	4.6'	3'	3.0'	275	10.4'	4.9'	5'	5.0'	99	17.3'	8.2'	7'	7.0'	51	24.2'	11.4'	9'	9.0'	31	31.2'	14.7'					
<b>MR16 Metal Halide (Ceramic Arc Tube) Lamps</b>																																											
	GE MR16 (CMH20) SP		9,000	9,000	8'	141	1.7'	1.7'	8'	4.6'	91	2.3'	1.9'	3'	5.2'	125	2.6'	1.3'	4'	4.0'	199	1.7'	1.2'	5'	5.0'	127	2.1'	1.5'	6'	6.0'	88	2.6'	1.8'	7'	7.0'	65	3.0'	2.1'					
	GE MR16 (CMH20) FL		2,900	9,000	6'	81	2.7'	2.7'	6'	3.5'	52	3.6'	3.1'	2'	3.5'	91	4.2'	1.8'	3'	3.0'	114	2.8'	1.9'	4'	4.0'	64	3.7'	2.5'	5'	5.0'	41	4.7'	3.1'	6'	6.0'	28	5.6'	3.8'					
	GE MR16 (CMH20) WFL		1,500	9,000	6'	42	4.4'	4.4'	4'	2.3'	61	4.1'	3.4'	2'	3.5'	47	9.7'	2.9'	2'	2.0'	133	3.4'	2.1'	3'	3.0'	59	5.0'	3.1'	4'	4.0'	33	6.7'	4.1'	5'	5.0'	21	8.4'	5.1'					

## Legend and glossary of terms

<b>SPACING:</b>	Is the spacing between fixtures measured from the center of each fixture. Measurement is expressed in ( ' ) FEET.
<b>INDENT:</b>	Is the spot in which you space the fixtures from the beginning or end of a row. The indent should be no more than half of the spacing that is recommended. Measurement is expressed in ( ' ) FEET.
<b>MOUNTING HEIGHT:</b>	Is the distance the luminaire is to be mounted from the floor to the bottom of the reflector. Measurement is expressed in ( ' ) FEET.
<b>COVERAGE:</b>	Is the distance out from the luminaire that will be illuminated to the specified footcandle requirement. Measurement is expressed in ( ' ) FEET.
<b>DISTANCE OUT:</b>	Is the distance the luminaire will be placed from the location you would like to illuminate. Measurement is expressed in ( ' ) FEET.
<b>A.F.F.:</b>	Above Finished Floor
<b>FC:</b>	Footcandles

### Design Notes:

Results based on: Average footcandles maintained, total Light Loss Factor (L.L.F.) Metal Halide = 0.6 and High Pressure Sodium = 0.75. Reflectances: 50% Ceiling (Steel deck) , 50% Wall (Cement block), 20% Floor (Dark concrete). **T5:** RE835 T5 lamps rated at 2610 lumens, RE835 T5HO lamps rated at 4400 lumens. **MH HID:** 50W ED17 rated at 4100 lumens, 70W ED17 rated at 6200 lumens, 100W ED17 rated at 9500 lumens, 150W ED17 rated at 12500 lumens, 175W ED17 rated at 13500 lumens, 250W ED28/ED37/BT37 rated at 36000, BT56/ED56/E56 rated at 110,000. **HPS HID:** 35W E17 rated at 2250 lumens, 50W E17 rated at 4000 lumens, 70W E17/ED17 rated at 6300 lumens, 100W ED17 rated at 9500, 150W E17/ED17 rated at 16000 lumens, 250W ED18 rated at 27000 lumens, 250W ED28/BT28 rated at 26000 lumens, 400W E18 rated at 50,000 lumens, 400W ED37 rated at 47500 lumens, BT25/ED25/E25 rated at 140000 lumens. **PS HID:** 250W ED28 rated at 23750 lumens, 400W ED37 rated at 42600 lumens. 1' x 1' calculation grid at 30" from finished floor. Results may vary.

Calculations have been performed according to IESNA & CIE standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

This glossary contains definitions of common lighting fundamental terms used in the lighting profession. For information not listed below refer to the IES Handbook.

## A

### Absorption

The dissipation of light within a surface or medium.

### Accent Lighting

Directional lighting to emphasize a particular object or to draw attention to a part of the field of view.

### Accommodation

The process by which the eye changes focus from one distance to another.

### Adaptation

The process by which the visual system becomes accustomed to more or less light than it was exposed to during an immediately preceding period. It results in a change in the sensitivity of the eye to light.

### Alternating Current (AC)

Flow of electricity which cycles or alternates direction many times per second. The number of cycles per second is referred to as frequency. Most common frequency used in this country is 60 Hertz (cycles per second).

### Ambient Lighting

Background or fill light in a space.

### Amperes (amps or A)

The unit of measurement of electric current.

## B

### Back Lighting

The illumination provided for scenery in off-stage areas visible to the audience.

### Baffle

An opaque or translucent element that serves to shield a light source from direct view at certain angles, or serves to absorb unwanted light.

### Ballast

An auxiliary device consisting of induction windings wound around a metal core and sometimes includes a capacitor for power correction. It is used with fluorescent and HID lamps to provide the necessary starting voltage and to limit the current during operation.

### "Batwing" Distribution

Candlepower and distribution which serves to reduce glare and veiling reflections by having its maximum output in the 30° to 60° zone.

## C

### Candela

The unit of measurement of luminous intensity of a light source in a given direction.

### Candlepower

Luminous intensity expressed in candelas.

### Class "P" Ballast

Contains a thermal protective device which deactivates the ballast when the case reaches a certain critical temperature. The device resets automatically when the case temperature drops to a lower temperature.

### Coefficient of Utilization (CU)

The ratio of the luminous flux (lumens) from a luminaire calculated as received on the work-plane to the luminous flux emitted by the luminaires lamps alone.

### Color Rendering Index (CRI)

Measure of the degree of color shift objects undergo when illuminated by the light source as compared with the color of those same objects when illuminated by a reference source of comparable color temperature.

### Color Temperature

The absolute temperature of a blackbody radiator having a chromaticity equal to that of the light source.

### Cone Reflector

Parabolic reflector that directs light downward thereby eliminating brightness at high angles.

### Contrast

The difference in brightness (luminance) of an object and its background.

### Cove Lighting

Lighting comprising sources shielded by a ledge or horizontal recess, and distributing light over the ceiling and upper wall.

### Cutoff Luminaires

Outdoor luminaires that restrict all light output to below 85° from vertical.

## D

### Direct Current (DC)

Flow of electricity continuously in one direction from positive to negative.

### Direct Lighting

Lighting involving luminaires that distribute 90 to 100% of emitted light in the general direction of the surface to be illuminated. The term usually refers to light emitted in a downward direction.

### Direct Glare

Glare resulting from high luminances or insufficiently shielded light sources in the field of view. It usually is associated with bright areas, such as luminaires, ceilings and windows which are outside the visual tasks or region being viewed.

## Discomfort Glare

Glare producing discomfort. It does not necessarily interfere with visual performance or visibility.

## Downlight

A small direct lighting unit which directs the light downward.

## E

### Efficacy

The ratio of lumens produced by a lamp to the watts consumed. Expressed as lumens per watt (LPW).

## F

### Fill Light

Illumination added to reduce shadows or contrast range.

### Footcandle (fc)

The unit of illuminance when the foot is taken as the unit of length. It is the illuminance on a surface one square foot in area on which there is a uniformly distributed flux of one lumen.

## G

### Glare

The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance and visibility.

## H

### High Output Fluorescent Lamp

Operates at 800 or more milliamperes for higher light output than standard fluorescent lamp (430MA).

## I

### Instant Start Fluorescent Lamp

A fluorescent lamp designed for starting by a high voltage without preheating of the electrodes.

## K

### Kelvin

Unit of measurement for color temperature. The Kelvin scale starts from absolute zero, which is  $-273^{\circ}$  Celsius.

### Kilowatt-Hour (KWH)

Unit of electrical power consumed over a period of time.  $KWH = \text{watts}/1000 \times \text{hours used}$ .

## L

### Lamp Lumen Depreciation (LLD)

Multiplier factor in illumination calculations for reduction in the light output of a lamp over a period of time.

## Louwer

A series of baffles used to shield a source from view at certain angles or to absorb unwanted light. The baffles usually are arranged in a geometric pattern.

## Low Voltage Lamps

Incandescent lamps that operate at 6 to 12 volts.

## Lumen

The unit of luminous flux. It is the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

## Luminaire

A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

### Luminaire Direct Depreciation (LDD)

The multiplier to be used in illuminance provided by clean, new luminaires to the reduced illuminance that they will provide due to direct collection on the luminaires at the time at which it is anticipated that cleaning procedures will be instituted.

### Luminaire Efficiency

The ratio of luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used.

### Luminance

The amount of light reflected or transmitted by an object.

### Lux

The metric unit of illuminance. One lux is one lumen per square meter ( $\text{lm}/\text{m}^2$ ).

## M

### Maintenance Factor (MF)

A factor used in calculating illuminance after a given period of time and under given conditions. It takes into account temperature and voltage variations, dirt accumulation on luminaire and room surfaces, lamp depreciation, maintenance procedures and atmosphere conditions.

## O

### Overall Length (OAL)

Maximum overall length of a light fixture.

## P

### Parabolic Louvers

A grid of baffles which redirect light downward and provide very low luminaire brightness.

### Photometry

The measurement of light quantities.



**Point Method Lighting Calculation**

A lighting design procedure for predetermining the illuminance at various locations in lighting installations, by use of luminaire photometric data. .

**Power Factor**

Ratio of: Watts (volts x amperes) Power factor in lighting is primarily applicable to ballasts. Since volts and watts are usually fixed, amperes (or current) will go up as power factor goes down. This necessitates the use of larger wire sizes to carry the increased amount of current needed with Low Power Factor (L.P.F) ballasts. The addition of a capacitor to an L.P.F. ballast converts it to a H.P.F. ballast.

**R****Reflection**

Light bouncing off a surface. In specular reflection the light strikes and leaves a surface at the same angle. Diffuse reflected light leaves a surface in all directions.

**Reflectance**

Sometimes called reflectance factor: The ratio of reflected light to incident light (light falling on a surface). Reflectance is generally expressed in percent.

**Reflected Glare**

Glare resulting from specular reflections of high luminances in polished or glossy surfaces in the field of view. It usually is associated with reflections from within a visual task or areas in close proximity to the region being viewed.

**Reflector**

A device used to redirect the light flow from a source by bouncing it off the surface.

**Refraction**

The process by which the direction of a ray of light changes as it passes obliquely from one medium to another in which its speed is different.

**Room Cavity Ratio (RCR)**

A number indicating room cavity proportions calculated from length, width and height.

**S****Spacing Ratio**

Ratio of the distance between luminaire centers to the mounting height above the work-plane for uniform illumination.

**Spectral power distribution (SPD)**

The output of a light source can be characterized by its relative power at each wavelength. The output is measured and is placed on a graph which shows power vs. wavelength, which then shows which wavelengths a particular light source is stronger or weaker in possessing.

**T****Task Lighting**

Lighting directed to a specific surface or area that provides illumination for visual tasks.

**Transformer**

A device to raise or lower electric voltage.

**Transmission**

The passage of light through a material.

**V****Veiling Reflections**

Regular reflections superimposed upon diffuse reflections from an object that partially or totally obscure the details to be seen by reducing the contrast. This is sometimes called reflected glare.

**Visual Comfort Probability (VCP)**

The rating of a lighting system expressed as a percent of people who, when viewing from the specified location and in a specified direction, will be expected to find it acceptable in terms of discomfort glare.

**Visual Field**

The field of view that can be perceived when the head and eyes are kept fixed.

**W****Wall Wash Lighting**

A smooth even distribution of light over a wall.

**Watt (W)**

The unit for measuring electric power. It defines the power or energy consumed by an electrical device.

The cost of operating an electrical device is determined by the watts it consumes times the hours or use. It is related to volts and amps by the following formula:

Watts = Volts x Amps.

**Z****Zonal Cavity Method Lighting Calculation**

A lighting design procedure used for predetermining the relation between the number and types of lamps or luminaires, the room characteristics, and the average illuminance on the work-plane. It takes into account both direct and reflected flux.



© 2011 Koninklijke Philips Electronics N.V.  
All rights reserved.

Document order number: PCA-214-03-SS-E

Philips Lighting Company

281 Hillmount Road  
Markham ON, Canada, L6C 2S3  
Phone: 877-744-5633