

11/26/2012

# Highbay Fluorescent - Four Lamp Flat Profile Design



## Applications

Warehouse	Gymnasium
Manufacturing Facility	Cafeteria
	Auditorium

## Features

- Easy access to wiring compartment & ballast
- Access plate provides access to electrical wiring with-out the need to open the fixture
- Knock-outs for easy electrical wiring and assembly
- Factory Installed Occupancy Sensor option
- Factory Installed Emergency ballast option
- Lamp Installation option available
- Multiple power cord set options, (voltage, length, gage)
- Pendant mount kit provides a top J-box to simplify HID retrofit installations. Can be used with a hook or rigid conduit and fasteners (Fixture must be specified with "J" option)
- Door and lens kit options available
- Choice of 86% Standard Specular Aluminum Reflector, 95% Specular Enhanced Aluminum Reflector or 91% White Reflector
- Heavy Duty pre-painted steel construction
- Factory Installed Wireguard option
- Custom configurations available
- Can be easily mounted by a single person
- Suspended or Pendant mounting insures a quick painless install
- Chain and V-Clip Hanging option
- Wire cable hanging option.
- UL Listed for Damp Locations

Specifications subject to change without notice.

Project:

Catalog#:

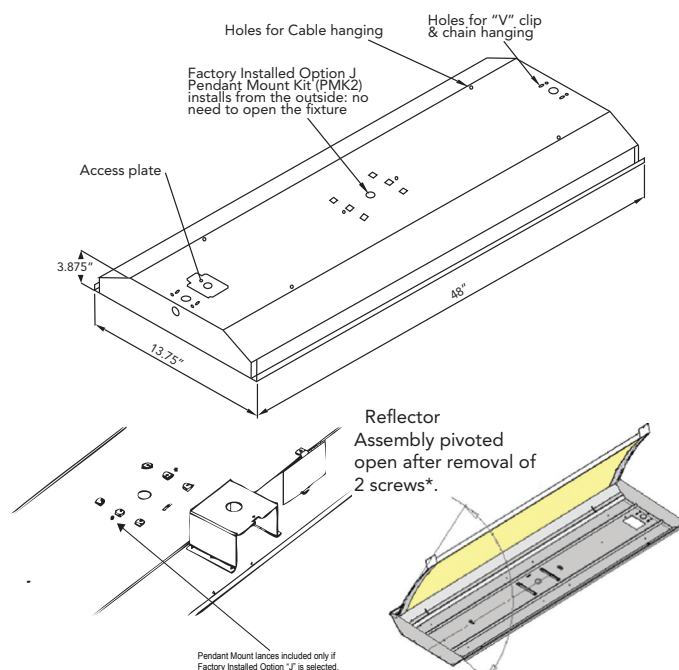
Approved by:

## Description

HFA2 series high-bay fluorescent fixture is a great energy saving alternative to traditional HID high-bay fixtures. This fixture operates four lamps and as a standard feature comes equipped with Howard ballasts.

## Benefits

- Energy Saving Compared to HID systems
- Exceptional Color Rendering
- High System Efficacy
- Long Lamp Life
- Instant On/Re-strike Capability
- Howard Ballast and Howard Lamp as a system is covered by Howard Industries Warranty
- Quality Lamp holders
- Computer Designed Reflectors
- System Tested, Designed, Approved, and Manufactured by Howard Industries in Mendenhall Mississippi.
- Compliant with Safety and performance standards.



\*Optional: 1/4 turn fasteners offer toolless access to the ballast compartment without removing lamps. Simply rotate the two 1/4 turn fasteners. See Factory Installed Option Q for more information.

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Approved by:	

## Ordering Information

Model Family	Reflector	No. of Lamps	Lamp Type/ Wattage <sup>(1)</sup>	CRI/CCT				Ballast	Input Volts	Factory Installed Options	Cordset Options (consult customer service for other cordset options)	T B A	Pack.
HFA2	E	4	54	A				PS	MV	0AC	07	0	I
HFA2	E: Enhanced Specular Aluminum (95%)  F: Enhanced Specular Enhanced Performance (95%)  A: Specular Aluminum (86%)  W: White reflective (91%)	4	T8 Lamps 28: F28T8 32: F32T8  T5 Lamps 28: F28T5 54: F54T5HO	CRI	CCT	High Lumen	T8	T5	SE: SBF High Eff <sup>(2)</sup> HE: HBF High Eff <sup>(2)</sup> LE: LBF High Eff <sup>(2)</sup>  PS: PRS T5 P8: PRS T8 <sup>(2)</sup>	MV: 120-277v HV: 347-480v (T5HO) AX: 480-277 <sup>(3)</sup>	000: No FIOs A: Occ Sensor <sup>(4)</sup> B: Emergency Ballast <sup>(5)</sup> C: Door W/Lens & Safety Cable <sup>(6)</sup> D: Door W/Lens <sup>(6)</sup> G: Wireguard I: Special Wiring Instructions J: J-box config. <sup>(7)</sup> T: Toggle switch bi-level lighting control <sup>(8)</sup> Q: Quarter Turn Fasteners <sup>(9)</sup>	00: Standard Disconnect 01: 6' SJT 18/3, no plug 02: 10' SJT 18/3, no plug 03: 6' SJT 18/3 L5-15, twist lock 120v 04: 10' SJT 18/3 L5-15 twist lock 120v 05: 6' SJT 18/3 5-15 non twist lock 120v 06: 10' SJT 18/3 5-15 non twist lock 120v 07: 6' SJT 18/3 L7-15 twist lock 277v 08: 10' SJT 18/3 L7-15 twist lock 277v 09: 6' SJT 7-15 non twist lock 277v 10: 10' SJT 7-15 non twist lock 277v 11: 16/3, no plug specify length 12: 16/4, no plug specify length 16: 16' SJT 18/3 7-15, non twist lock 277v 17: 18/3, no plug specify length 18: 6' STW L8-20, twist lock 480v 19: 10' STW L8-20, twist lock 480v 20: 16' SJT 18/3 L5-15, twist lock 120v 21: 16' SJT 18/3 L5-15, twist lock 277v	I: Single B: Bulk

(1) Lamp installation available.

(2) High Efficiency ballasts are CEE Listed.

(3) Step-down autotransformer. Allows hook-up of standard MV ballast to 480v.

(4) Occupancy Sensors should be used with programmed rapid start ballasts for maximum lamp life.

Standard Occupancy Sensor requires neutral wired fixtures (ex. -120v or -277v).

For phase-to-phase voltage applications (240v) advise Customer Service at time of request.

(5) Please specify Emergency Ballast (120-277v only) lumen requirements at time of request.

(6) Standard acrylic prismatic, pattern 12, 0.100" thick. Call for options.

(7) Unless otherwise specified, fixture will include field installed J-box. Supply wires will exit the center of the fixture, not the access plate. J-box can be installed without entering the fixture.

(8) Allows for separate control of two ballasts through simple "toggling" of a standard wall switch.

Recommend use of programmed rapid start ballast with this control.

(9) 1/4 Turn Fasteners for toolless access to ballast compartment. Does not require lamp removal.

SE	Standard Ballast Factor High Efficiency Instant Start T8 Ballast
HE	High Ballast Factor High Efficiency Instant Start T8 Ballast
LE	Low Ballast Factor High Efficiency Instant Start T8 Ballast
PS	Program Rapid Start T5 Ballast
P8	Program Rapid Start High Efficiency T8 Ballast

Specifications subject to change without notice.

### Sample Ordering Number:

HFA2 E 4 54 A PS MV 0AC 07 I

HFA2 Series Highbay Fluorescent

Enhanced Specular Aluminum Reflector

4-lamps (none installed)

F54T5HO Program Rapid Start Ballast

Multi-volt (120-277v)

Factory Installed Occupancy Sensor

Factory Installed Door with Lens &amp; Safety Cable

6' SJT 18/3 L7-15 twist lock 277v Cordset

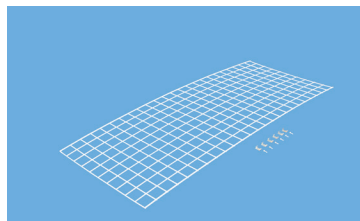
Single Packaging



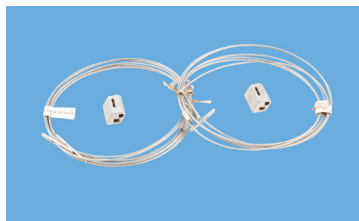
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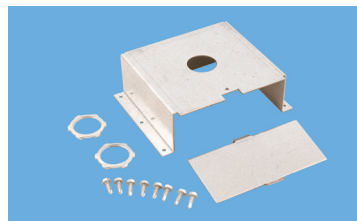
### Field Installed Options Ordering



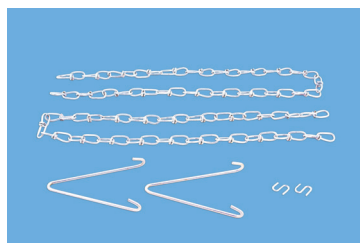
HFA2-WG  
Wire Guard



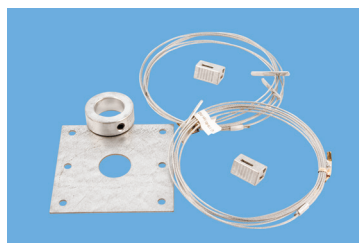
HFA-WCH  
Wire Cable Hanging Kit  
(2 pcs per kit)



HF-PMK2  
Pendant Mount Kit  
with 1.0" diameter through hole



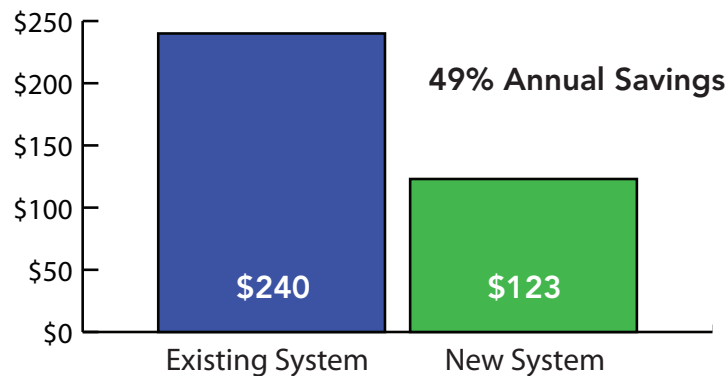
HF-2CV (2 foot)  
HF-3CV (3 foot)  
Hanging Chain & V-clips



HF-SK1  
Stabilizer Kit  
(Hub, color and wire cable)

### Energy Cost Estimator

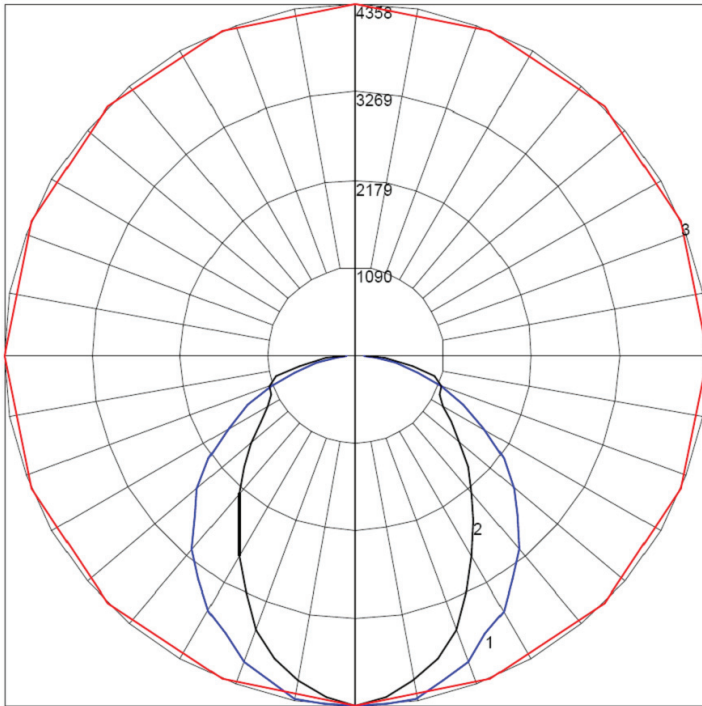
		Existing System		New System	
		400W MH Highbay		HFA2E454APS Program Start T5 Ballast Fluorescent Highbay	
Hours burned per year	4368	Number of Fixtures	1	Number of Fixtures	1
Cost per kWh\$	0.12	Watts per Fixture (existing system)	458	Watts per Fixture (new system)	234
Energy Cost Estimation		Energy used per year (existing system)	\$240	Energy used per year (new system)	\$123
		Energy saving per year (per fixture)		\$117.00	



Specifications subject to change without notice.

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Highbay Fluorescent

**Photometric Data - 4 Lamp T8 (HFA2E432)**
**Candela Polar Plot**


HFA2E432  
 Test Report: HFA2E432.ies  
 Spacing Criteria (0-180): 1.26  
 Spacing Criteria (90-270): 0.92  
 Spacing Criteria (Diagonal): 1.16

Maximum Candela = 4358.13

Located at Horizontal Angle = 0, Vertical Angle = 5  
 #1 = Vertical Plane Through Horizontal Angles (0-180) Through Max Cd.  
 #2 = Vertical Plane Through Horizontal Angles (45-225)  
 #3 = Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

Project:	
Catalog#:	
Approved by:	

**Luminaire Efficiencies\***

Reflector Type	T8
Enhanced Specular	91%
Specular	86%
White	86%

\*Luminaire efficiency is the ratio of light output emitted by the luminaire to the light output emitted by its lamps.

**Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fix
0-30	3025.59	26.10	28.80
0-40	4723.33	40.70	44.90
0-60	7839.79	67.60	74.60
0-90	10510.33	90.60	100.00
0-180	10510.33	90.60	100.00

**Luminance Data (cd/Sq.m)**

Angle In Degrees	Average 0-deg	Average 45-deg	Average 90-deg
45	10207	6623	5976
55	9802	5726	5941
65	8605	5849	7791
75	7250	7410	7863
85	5523	4788	4835

**Coefficients of Utilization - Zonal Cavity Method**

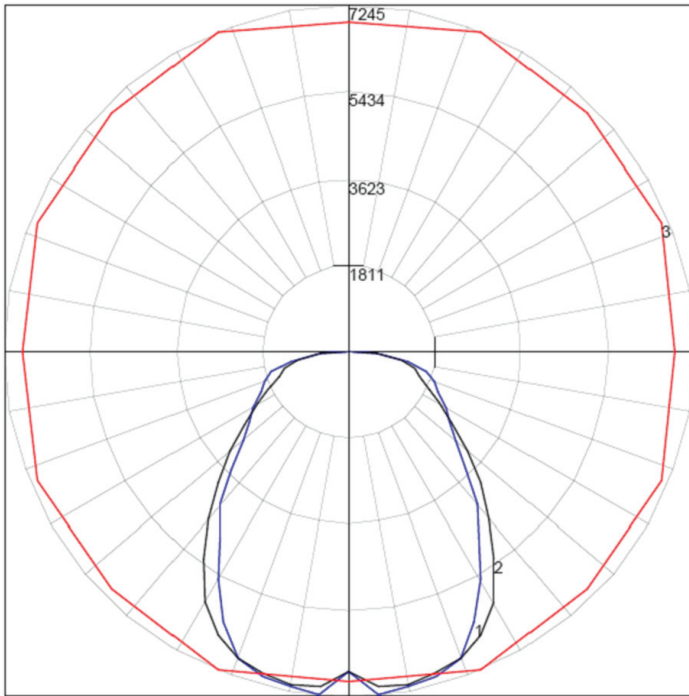
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	108	108	108	108	105	105	105	105	101	101	101	96	96	96	92	92	92	91
1	98	93	89	85	95	91	87	83	87	84	81	83	81	78	80	78	76	74
2	88	81	74	69	86	79	73	68	76	71	66	73	68	65	70	66	63	61
3	81	71	63	57	78	69	62	56	67	60	55	64	59	54	62	57	53	51
4	74	63	55	48	72	62	54	48	59	53	47	57	51	47	55	50	46	44
5	68	56	48	42	66	55	47	42	53	46	41	51	45	41	50	45	40	38
6	63	51	43	37	61	50	42	37	48	41	36	47	41	36	45	40	36	34
7	59	46	38	33	57	46	38	33	44	37	32	43	37	32	42	36	32	30
8	55	42	35	29	53	42	34	29	41	34	29	39	33	29	38	33	29	27
9	51	39	32	27	50	39	31	26	37	31	26	36	30	26	36	30	26	24
10	48	36	29	24	47	36	29	24	35	28	24	34	28	24	33	28	24	22

Specifications subject to change without notice.

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Highbay Fluorescent

**Photometric Data - 4 Lamp T5 (HFA2E454)**
**Candela Polar Plot**


HFA2E454

Test Report: HFA2E454.ies

Spacing Criteria (0-180): 1.32

Spacing Criteria (90-270): 1.20

Spacing Criteria (Diagonal): 1.32

Maximum Candela = 7245.18

Located at Horizontal Angle = 67.5, Vertical Angle = 5

#1 = Vertical Plane Through Horizontal Angles (67.5-247.5) Through Max Cd.

#2 = Vertical Plane Through Horizontal Angles (45-225)

#3 = Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)

Project:

Catalog#:

Approved by:

**Luminaire Efficiencies\***

Reflector Type	T5
Enhanced Specular	94%
Specular	89%
White	89%

\*Luminaire efficiency is the ratio of light output emitted by the luminaire to the light output emitted by its lamps.

**Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fix
0-30	5570.54	27.90	29.60
0-40	8871.01	44.40	47.10
0-60	14660.99	73.30	77.80
0-90	18842.01	94.20	100.00
0-180	18842.01	94.20	100.00

**Luminance Data (cd/Sq.m)**

Angle In Degrees	Average 0-deg	Average 45-deg	Average 90-deg
45	17691	13785	11702
55	16775	11103	10989
65	15299	10000	11227
75	13001	10801	13185
85	8582	8610	7941

**Coefficients of Utilization - Zonal Cavity Method**

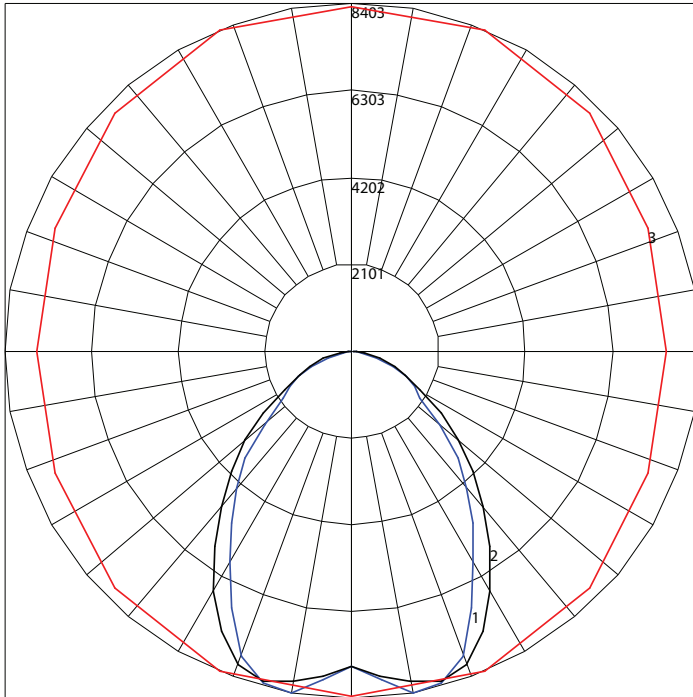
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	112	112	112	112	110	110	110	110	105	105	105	100	100	100	96	96	96	94
1	102	97	93	89	99	95	91	88	91	88	85	87	85	82	84	82	80	78
2	93	85	78	73	90	83	77	72	80	75	70	77	72	69	74	70	67	65
3	85	75	67	61	82	73	66	60	70	64	59	68	63	58	65	61	57	55
4	78	66	58	52	76	65	57	51	63	56	51	61	55	50	59	54	49	47
5	72	60	51	45	70	59	51	45	57	50	44	55	49	44	53	48	43	41
6	66	54	45	39	65	53	45	39	51	44	39	50	43	39	48	43	38	36
7	62	49	41	35	60	48	40	35	47	40	35	45	39	34	44	38	34	32
8	58	45	37	31	56	44	37	31	43	36	31	42	35	31	41	35	31	29
9	54	41	34	28	52	41	33	28	40	33	28	39	32	28	38	32	28	26
10	51	38	31	26	49	38	31	26	37	30	26	36	30	26	35	29	25	24

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Highbay Fluorescent

**Photometric Data - 4 Lamp T5 (HFA2F454)**
**Candela Polar Plot**


HFA2F454

Test Report: HFA2F454.ies

Spacing Criteria (0-180): 1.30

Spacing Criteria (90-270): 1.14

Spacing Criteria (Diagonal): 1.28

Maximum Candela = 8403.49

Located at Horizontal Angle = 67.5, Vertical Angle = 10

#1 = Vertical Plane Through Horizontal Angles (67.5-247.5) Through Max Cd.

#2 = Vertical Plane Through Horizontal Angles (45-225)

#3 = Horizontal Cone Through Vertical Angle (10) (Through Max. Cd.)

Project:

Catalog#:

Approved by:

**Luminaire Efficiencies\***

Reflector Type

T5

Enhanced Performance

93%

\*Luminaire efficiency is the ratio of light output emitted by the luminaire to the light output emitted by its lamps.

**Zonal Lumen Summary**

Zone	Lumens	%Lamp	%Fix
0-30	6325.09	31.60	33.90
0-40	9953.39	49.80	53.40
0-60	15898.08	79.50	85.20
0-90	18652.73	93.30	100.00
0-180	18652.73	93.30	100.00

**Luminance Data (cd/Sq.m)**

Angle In Degrees	Average 0-deg	Average 45-deg	Average 90-deg
45	16404	10848	8899
55	15423	7846	5666
65	13121	4989	4773
75	9476	3241	2351
85	3207	662	697

**Coefficients of Utilization - Zonal Cavity Method**

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	111	111	111	111	108	108	108	108	104	104	104	99	99	99	95	95	95	93
1	103	99	95	92	100	97	93	90	93	90	88	89	87	85	86	84	82	80
2	94	87	81	77	92	85	80	76	82	78	74	79	76	72	76	73	71	69
3	87	78	71	65	84	76	70	64	73	68	63	71	66	62	69	65	61	59
4	80	69	62	56	78	68	61	56	66	60	55	64	58	54	62	57	53	51
5	74	62	55	49	72	61	54	49	60	53	48	58	52	48	56	51	47	45
6	68	57	49	43	67	56	48	43	54	48	43	53	47	42	51	46	42	40
7	64	52	44	38	62	51	44	38	50	43	38	48	42	38	47	42	38	36
8	59	47	40	35	58	47	40	35	46	39	34	44	38	34	43	38	34	32
9	56	44	36	31	54	43	36	31	42	36	31	41	35	31	40	35	31	29
10	52	40	33	29	51	40	33	29	39	33	28	38	32	28	37	32	28	27

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