DESCRIPTION

The 2HBHD is designed for use in high mounting height applications where periodic cleaning with high pressure is required. This surface-mounted luminaire has a hole-free design and is enclosed and gasketed to protect against infiltration of particles and airborne bacteria. The sealed housing and door frame allow relamping without contamination of the clean areas. These luminaires are UL/cUL listed for wet locations. 2HBHD's high lumen package allows the benefits of fluorescent to be applied at high mounting heights that were traditionally exclusive to HID.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Applications
Applications include clean rooms, technical and bio- medical labs, food processing/testing centers and pharmaceutical labs. The primary benefits include exceptional color rendering, high system efficacy, 95% lumen maintenance, long lamp life, instant on/instant re-strike, economical dimming, and uniform brightness control.

Fasteners, Door
Flush mounted, stainless steel machine screws secure through captive cage nuts in housing that evenly compress gasketing on all sides.

Housing
Die-formed, CRS housing with seam welded and sealed end caps. Contains no exposed holes that would allow air or moisture passage.

Finish
High gloss, electrostatically applied, white powder coat finish, average minimum reflectance 92%. 1000 hour salt spray test.

Door/Shielding
One-piece, 18 ga., fully gasketed, outside door with die-formed and beveled edges eliminates seams which could entrap microscopic contaminants. Two braided, stainless steel cables on one side of door provide hinging.

Access
A gasketed access plate on top of the housing with two 7/8" diameter knockouts allows connection of vapor tight conduit fitting. Mounting Standard surface mount with gasket between surface and fixture housing.

Lens
One-piece, clear extruded lens with internal prism pattern. Choice of prismatic acrylic or clear acrylic.

Optics
Die formed reflectors are faceted for 4 and 6 lamp configurations with two optical distributions: medium and wide. Medium beam optics utilizes 95% specular substrate while the wide distribution utilizes a high performance 95% reflective polyester powder coated finish.

Lens Retention and Gasket
Unique, Particulock(TM) lens retention system utilizes continuous, 18 ga. clampdowns to sandwich gasketing between lens and door frame. Closed cell, one-piece gasketing surrounds perimeter of lens to seal lens and door for an even environmental seal to the housing. Another layer seals fixture to ceiling system after installation.

Ballast
Electronic, Class P, CBM/ETL ballast.

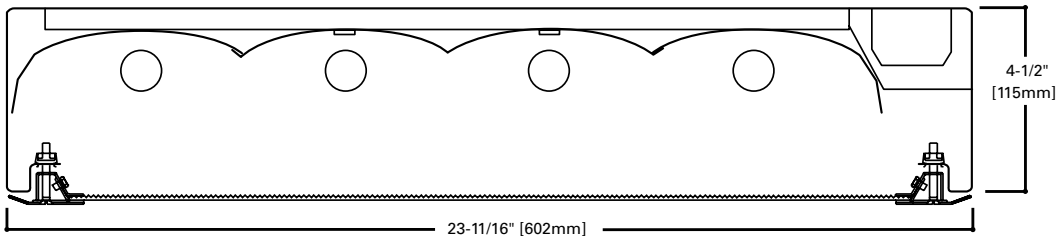
Labels
UL/cUL listed for wet locations under covered ceiling. IP65 rated.

2HBHD

Fluorescent
Specialty: Fluorescent High-Bay

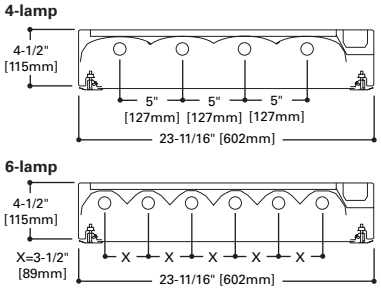
SURFACE MOUNT
4 or 6 Lamps

IP65 Rated

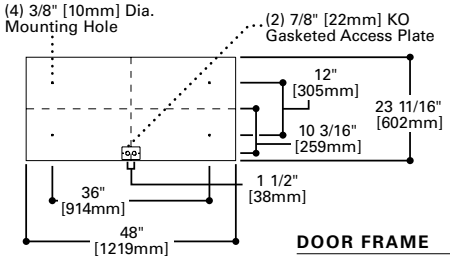


SURFACE MOUNT

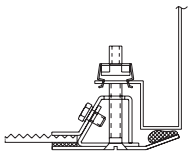
LAMP CONFIGURATIONS



MOUNTING DIMENSIONS



DOOR FRAME



ENERGY DATA

Input Watts:

EB Ballasts
432 = 109W
632 = 167W

EB/Plus Ballasts
432 = 147W
632 = 221W

ER Ballasts
432 = 112W
632 = 169W

ER/Plus Ballasts
432 = 144W
632 = 218W

Luminaire Efficacy Rating
LER = 75
Catalog Number: 2HBHD-632-CL
Yearly Cost of 1000 Lumens,

3000 hrs. at .08 KWH = $3.22
* Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements
** Consult Pre Sales Technical Support.

Specifications and dimensions subject to change without notice.
Consult your representative for additional options and finishes.

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ORDERING INFORMATION

SAMPLE NUMBER: 2HBHD-654T5-A-UNV-EBT2

Width
2=24"

Series
HBHD=High Bay Hose Down

No. of Lamps
4=4 Lamps
6=6 Lamps

Lamp Type
32=32W T8 Lamps (48")
28T5=28W T5 Lamps (48")
54T5=54W T5HO Lamps (48")

Distribution
Blank=Medium (Specular Aluminum)
G=Wide (High Reflectance White)

Shielding
A=Prismatic Acrylic Lens & Aluminum Doorframe
CL=Clear Acrylic Lens & Aluminum Doorframe

Voltage (1)
UNV=Universal 120/277 Voltage
UNC=Universal 347/480 Voltage (T5 linear only) (2)
120V=120 Volt
277V=277 Volt
347V=347 Volt

Options
Lamps Installed
L8830=T8 Lamp, 80CRI 3000K
L8835=T8 Lamp, 80CRI 3500K
L8841=T8 Lamp, 80CRI 4100K
L8850=T8 Lamp, 80CRI 5000K
L5830=T5 Lamp, 80CRI 3000K
L5835=T5 Lamp, 80CRI 3500K
L5841=T5 Lamp, 80CRI 4100K
L5850=T5 Lamp, 80CRI 5000K
GL=Single Element Fuse
GM=Double Element Fuse
EL4=EM Pack, T8, Biax
EL5=EM Pack, T5, T5HO

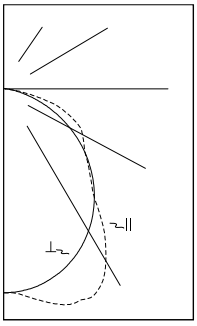
Ballast Type (1)
T8 Systems
EB8__=T8 Electronic Instant Start. Total Harmonic Distortion < 10%
No. of Ballast: 1 or 2
EB8__/PLUS=T8 Electronic Instant Start. (2) High Ballast Factor >1.13. Total Harmonic Distortion < 20%
No. of Ballast: 1 or 2
ER8__=T8 Electronic Program Rapid Start. Total Harmonic Distortion < 10%
No. of Ballast: 1 or 2
ER8__/PLUS=T8 Electronic Program Start. High Ballast Factor >1.13. Total Harmonic Distortion < 10%
No. of Ballast: 1 or 2
T5 Systems
EBT__=T5 Linear Electronic Program Rapid Start Total Harmonic Distortion < 10%
No. of Ballast: 1, 2 or 3
EHT__=T5 Linear Electronic Start High Ambient.(2) Total Harmonic Distortion < 10%
No. of Ballast: 1, 2 or 3
DIM=Dimming (ballast must be specified)

Options
C3=3' Power Cord
C6=6' Power Cord
PC3-=3' Power Cord & Plug (Specify Voltage) (1)
PC6-=6' Power Cord & Plug (Specify Voltage) (1)
SSN=Stainless Steel Door, Brushed Finish
SHN=Stainless Steel Housing, Brushed Finish
SSP=Stainless Steel Door, Painted White
SHP=Stainless Steel Housing, Painted White

Packaging
U=Unit Pack
PAL=Pallet Pack
PALC=Job Pack In Carton

NOTES: (1)Voltage must be specified when ordered with plugs, motion or emergency ballasts. (2)2 lamp ballast configurations only for T5 UNC version. 2/3 lamp ballast configuration in EB8/PLUS only for T8 UNC version.

PHOTOMETRICS



2HBHD-632-CL
(2) Electronic Ballasts
(6) F32T8/TL835 lamps
3000 lumens
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.2 x mounting height
Efficiency 68.1%
Test Report: 2HBHD632CL.IES
LER =75
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $3.22

Candela

Angle	Along II	45º	Across ⊥
0	4538	4538	4538
5	4601	4543	4510
10	4787	4628	4442
15	4969	4705	4319
20	4999	4740	4160
25	4938	4685	3958
30	4514	4559	3711
35	3882	4262	3434
40	3100	3739	3121
45	2696	3118	2782
50	2392	2414	2420
55	2169	1992	2035
60	2008	1643	1638
65	1762	1377	1235
70	1400	1131	843
75	875	772	485
80	355	360	211
85	77	76	48
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

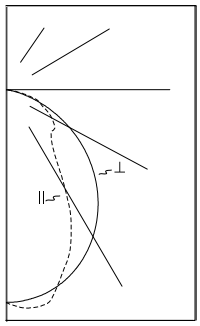
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	81	81	81	81	79	79	79	79	76	76	76	72	72	72	69	69	69	68
1	75	72	69	66	73	70	68	65	67	65	63	65	63	61	62	61	60	58
2	68	63	58	55	66	62	58	54	59	56	53	57	54	52	55	53	51	49
3	62	56	50	46	61	54	50	46	52	48	45	51	47	44	49	46	43	42
4	57	49	44	39	56	49	43	39	47	42	38	45	41	38	44	40	37	36
5	53	44	38	34	51	44	38	34	42	37	34	41	37	33	40	36	33	31
6	49	40	34	30	48	39	34	30	38	33	30	37	33	29	36	32	29	28
7	45	36	31	27	44	36	30	26	35	30	26	34	29	26	33	29	26	25
8	42	33	28	24	41	33	27	24	32	27	24	31	27	23	30	26	23	22
9	40	31	25	21	39	30	25	21	29	25	21	29	24	21	28	24	21	20
10	37	28	23	19	36	28	23	19	27	23	19	27	22	19	26	22	19	18

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	3768	20.9	30.7
0-40	6124	34.0	50.0
0-60	10121	56.2	82.6
0-90	12258	68.1	91.5
0-180	12258	68.1	100.0

Typical VCP Percentages

	Height Along		Height Across	
Room Size (Ft.)	8.5'	10.0'	8.5'	10.0'
20 x 20	35	43	41	46
30 x 30	33	34	39	40
30 x 60	35	33	40	39
60 x 30	39	39	43	42
60 x 60	40	36	43	40



2HBHD-654T5-CL
(3) Electronic Ballasts
(6) F54T5/841HO 54W lamps
4400 lumens
Spacing criterion: (II) 1.0 x mounting height, (⊥) 1.2 x mounting height
Efficiency 52.9%
Test Report: 2HBHD654CL.IES
LER =40
Yearly Cost of 1000 lumens, 3000 hrs at .08 KWH = $6.03

Candela

Angle	Along II	45º	Across ⊥
0	8058	8058	8058
5	8298	8229	8014
10	8281	8222	7894
15	7647	8038	7681
20	6853	7410	7382
25	5872	6624	7000
30	4611	5867	6542
35	3428	4902	6018
40	2751	3736	5440
45	2431	2770	4810
50	2365	2164	4141
55	2227	1806	3435
60	1957	1671	2715
65	1577	1388	1998
70	1358	1043	1309
75	918	734	707
80	416	394	270
85	87	84	48
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 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
RCR																		
0	70	70	70	70	69	69	69	69	66	66	66	63	63	63	60	60	60	59
1	65	63	61	59	64	61	59	58	59	57	56	57	55	54	55	54	53	51
2	60	56	52	49	59	55	51	49	53	50	47	51	48	46	49	47	45	44
3	55	50	45	42	54	49	45	42	47	44	41	46	43	40	44	42	40	38
4	51	45	40	36	50	44	40	36	42	39	36	41	38	35	40	37	35	34
5	47	40	36	32	46	40	35	32	39	35	31	37	34	31	36	33	31	30
6	44	37	32	28	43	36	32	28	35	31	28	34	31	28	33	30	28	27
7	41	34	29	26	40	33	29	25	32	28	25	32	28	25	31	27	25	24
8	38	31	26	23	38	31	26	23	30	26	23	29	26	23	29	25	23	22
9	36	29	24	21	35	28	24	21	28	24	21	27	23	21	27	23	21	20
10	34	27	22	19	33	26	22	19	26	22	19	25	22	19	25	21	19	18

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	5876	22.3	37.6
0-40	8802	33.3	56.3
0-60	13385	50.7	85.7
0-90	15627	59.2	75.3
0-180	15627	59.2	100.0

Typical VCP Percentages

	Height Along		Height Across	
Room Size (Ft.)	8.5'	10.0'	8.5'	10.0'
20 x 20	37	44	39	42
30 x 30	34	35	37	37
30 x 60	35	33	39	37
60 x 30	40	39	42	40
60 x 60	40	36	43	39