Public Service of New Hampshire

The Northeast Utilities System

nhsaves@work
large business retrofit

2009 Lighting Rebate

Section A: CUSTOMER INFORMATION

Customer Name	Electric Account Number	Rate	Application Number
City of Dover - Ice Arena	80006 26-01-6-2		
Facility Address	**City**	**State**	**Zip Code**
110 Portland Ave.	Dover	NH	03820
Service Location Identification			
Ice Arena			
Mailing Address (if different from above)	**City**	**State**	**Zip Code**
Contact Person/Title	**Telephone Number**	**Incorporated? (Check one.)**	
Rick Jones CD Coordinator	(603) 516-6008	☑ Yes ☐ No ☐ Exempt	
Federal Tax Identification Number	**Rebate Payment Preference (Check one.)**	**Please Assign Payment to Contractor.**	
02-6000230	☒ Check ☐ Bill Credit ☐ Pay Contractor	Customer Signature:	

Section B: CONTRACTOR INFORMATION

Contractor Name	Contact Person/Title (Print)	Contact Person Signature	
Johnson Controls	Kevin Stromgren Project Manager		
Mailing Address	**City**	**State**	**Zip Code**
39 Salem Street	Lynnfield	MA	01940
Federal Tax Identification Number	**Incorporated? (Check one.)**	**Telephone Number**	
39-0380010	☑ Yes ☐ No ☐ Exempt	860-335-6341	

Section C: DOCUMENT APPROVALS

PRE-INSTALLATION INSPECTION

Utility Signature	Date

PRE-APPROVAL OFFER

Technical Review - Utility Signature	Date		
Utility Signature	**Date**	**Amount of Rebate Offer ($)**	**Completion Date**

By signing and dating below, customer accepts this rebate offer and agrees to the Utility Terms and Conditions attached hereto. Pursuant to a Commission order, customer also agrees that the utility will capture all kW and kWh savings and to forgo applying directly or indirectly for any ISO-NE capacity payments resulting from this energy efficiency project. This agreement is contingent upon continued approval and authorization by the Commission to recover said amounts from the System Benefits Charge. The rebate amount cannot exceed the total project costs.

Customer Signature: Date: 12/21/05

POST-INSTALLATION INSPECTION

Utility Signature	Date	Total Project Cost ($)	Amount of Rebate ($)
	/ /		
Customer Signature	**Date**		
	/ /		

MANAGEMENT APPROVAL

Utility Signature	Date

Public Service of New Hampshire

2009 Lighting Rebate

PROJECT NAME: **City of Dover, - Dover Ice Arena - Dover, NH**

RETROFIT LIGHTING REBATE WORKSHEET

Existing Lighting					New Lighting					
Item	Existing Fixture Code	Fixture Description	Quantity	Annual Hours of Operation	Measure Code	Retrofit Fixture Code	Fixture Description	Quantity of Fixtures	Per Unit Rebate ($)	Total Rebate ($)
1	2F32SSE	2L4' T8/ELIG	1	8760	41	1F32EEE	1L4' T8EE/ELEE	1	$ 30.00	$ 30.00
2	2F32SSE	2L4' T8/ELIG	3	500	10	1F32EEL	1L4' T8EE/ELEE LBF	3	$ 20.00	$ 60.00
3	2F32SSE	2L4' T8/ELIG	1	8760	10	1F32EEL	1L4' T8EE/ELEE LBF	1	$ 20.00	$ 20.00
4	2F32SSE	2L4' T8/ELIG	1	1000	41	1F32EEL	1L4' T8EE/ELEE LBF	1	$ 30.00	$ 30.00
5	2F32SSE	2L4' T8/ELIG	2	1600	41	1F32EEL	1L4' T8EE/ELEE LBF	2	$ 30.00	$ 60.00
6	2F32SSE	2L4' T8/ELIG	1	2600	41	1F32EEL	1L4' T8EE/ELEE LBF	1	$ 30.00	$ 30.00
7	2F32SSE	2L4' T8/ELIG	1	5950	41	1F32EEL	1L4' T8EE/ELEE LBF	1	$ 30.00	$ 30.00
8	2F32SSE	2L4' T8/ELIG	3	8760	41	1F32EEL	1L4' T8EE/ELEE LBF	3	$ 30.00	$ 90.00
9	2F32SSE	2L4' T8/ELIG	2	1000	42	1F32EEL	1L4' T8EE/ELEE LBF	2	$ 15.00	$ 30.00
10	2F32SSE	2L4' T8/ELIG	6	5950	42	1F32EEL	1L4' T8EE/ELEE LBF	6	$ 15.00	$ 90.00
11		2LT8UTube/ELIG	1	2600	10	2F17EEE	2L2' T8EE/ELEE	1	$ 20.00	$ 20.00
12	2F32SSE	2L4' T8/ELIG	1	500	10	2F32EEL	2L4' T8EE/ELEE LBF	1	$ 20.00	$ 20.00
13	2F32SSE	2L4' T8/ELIG	19	1000	10	2F32EEL	2L4' T8EE/ELEE LBF	19	$ 20.00	$ 380.00
14	2F32SSE	2L4' T8/ELIG	22	1600	10	2F32EEL	2L4' T8EE/ELEE LBF	22	$ 20.00	$ 440.00
15	2F32SSE	2L4' T8/ELIG	48	2000	10	2F32EEL	2L4' T8EE/ELEE LBF	48	$ 20.00	$ 960.00
16	2F32SSE	2L4' T8/ELIG	1	2600	10	2F32EEL	2L4' T8EE/ELEE LBF	1	$ 20.00	$ 20.00
17	2F32SSE	2L4' T8/ELIG	14	3000	10	2F32EEL	2L4' T8EE/ELEE LBF	14	$ 20.00	$ 280.00
18	2F32SSE	2L4' T8/ELIG	9	8760	10	2F32EEL	2L4' T8EE/ELEE LBF	9	$ 20.00	$ 180.00
19	3F32SSE	3L4' T8/ELIG	7	1000	10	2F32EEL	2L4' T8EE/ELEE LBF	7	$ 20.00	$ 140.00
20	3F32SSE	3L4' T8/ELIG	11	2600	10	2F32EEL	2L4' T8EE/ELEE LBF	11	$ 20.00	$ 220.00
21	3F32SSE	3L4' T8/ELIG	63	5950	10	2F32EEL	2L4' T8EE/ELEE LBF	63	$ 20.00	$ 1,260.00
22	4F32SSE	4L4' T8/ELIG	1	2600	10	2F32EEL	2L4' T8EE/ELEE LBF	1	$ 20.00	$ 20.00
23		2L8' T8/ELIG	2	5950	10	2F32EEL	2L4' T8EE/ELEE LBF	2	$ 20.00	$ 40.00
24		2L8' T8/ELIG	2	8760	10	2F32EEL	2L4' T8EE/ELEE LBF	2	$ 20.00	$ 40.00
25		2L8' T8/ELIG	2	3000	10	2F32EEL	2L4' T8EE/ELEE LBF	2	$ 20.00	$ 40.00
26	3F32SSE	3L4' T8/ELIG	2	5950	11	2F32EEL	2L4' T8EE/ELEE LBF	2	$ 12.50	$ 25.00
27	3F32SSE	3L4' T8/ELIG	1	2600	41	2F32EEL	2L4' T8EE/ELEE LBF	1	$ 30.00	$ 30.00
28	4F32SSE	4L4' T8/ELIG	2	1600	41	2F32EEL	2L4' T8EE/ELEE LBF	2	$ 30.00	$ 60.00
29		2L8' T8/ELIG	1	1000	41	2F32EEL	2L4' T8EE/ELEE LBF	1	$ 30.00	$ 30.00
30		2L8' T8/ELIG	3	8760	41	2F32EEL	2L4' T8EE/ELEE LBF	3	$ 30.00	$ 90.00
31	2F96HES	2L8' HO/EE/STD	1	500	10	4F32EEL	4L4' T8EE/ELEE LBF	1	$ 20.00	$ 20.00
32	2F96HES	2L8' HO/EE/STD	5	2000	10	4F32EEL	4L4' T8EE/ELEE LBF	5	$ 20.00	$ 100.00
33	2F96HES	2L8' HO/EE/STD	7	5950	10	4F32EEL	4L4' T8EE/ELEE LBF	7	$ 20.00	$ 140.00
34		2L8' T8/ELIG	2	3000	10	4F32EEL	4L4' T8EE/ELEE LBF	2	$ 20.00	$ 40.00
35										$ -
									$ -	$ -
										$ 5,065.00

LIGHTING CONTROLS REBATE WORKSHEET

Item	Lighting Control Measure Code	Lighting Code Description	Quantity	Lighting Fixture Code	Quantity of Fixtures	Annual Hours of Reduction	Per Unit Rebate ($)	Total Rebate ($)
28	64	Fixture Mount Occupancy Sensor	2	2F32EEL	2	4760	$ 25.00	$ 50.00
30	64	Fixture Mount Occupancy Sensor	1	1F32SSE	2	500	$ 25.00	$ 25.00
33	64	Wall Mount Occupancy Sensor	1	2F32EEL	1	7008	$ 25.00	$ 25.00
36	64	Fixture Mount Occupancy Sensor	1	2F32EEL	1	7008	$ 25.00	$ 25.00
39	64	Fixture Mount Occupancy Sensor	1	2F32EEL	1	7008	$ 25.00	$ 25.00
44	64	Wall Mount Occupancy Sensor	2	2F32EEL	2	1200	$ 25.00	$ 50.00
44	64	Wall Mount Occupancy Sensor	2	1F32EEL	2	1200		$ -
47	64	Fixture Mount Occupancy Sensor	1	2F32EEL	1	7008	$ 25.00	$ 25.00
49	64	Wall Mount Occupancy Sensor	1	1F32EEL	1	7884	$ 25.00	$ 25.00
51	64	Wall Mount Occupancy Sensor	1	2F32EEL	1	7884	$ 25.00	$ 25.00

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PROJECT NAME: **City of Dover, - Dover Ice Arena - Dover, NH**

54	64	Wall Mount Occupancy Sensor	1	1F32SSE	1	7884	$ 25.00	$ 25.00
56	64	Wall Mount Occupancy Sensor	1	1F32SSE	1	7884	$ 25.00	$ 25.00
58	64	Wall Mount Occupancy Sensor	1	2F32EEL	1	7884	$ 25.00	$ 25.00
64	64	Wall Mount Occupancy Sensor	1	2F32EEL	2	1040	$ 25.00	$ 25.00
72	64	Wall Mount Occupancy Sensor	1	20W CF Screw In	4	600	$ 25.00	$ 25.00
74	64	Fixture Mount Occupancy Sensor	1	1F32EEL	1	6570	$ 25.00	$ 25.00
80	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	8	780	$ 55.00	$ 55.00
83	61	Ceiling Mount Occupancy Sensor	3	2F32EEL	19	1785	$ 55.00	$ 165.00
85	61	Ceiling Mount Occupancy Sensor	2	2F32EEL	15	1785	$ 55.00	$ 110.00
87	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	8	2380	$ 55.00	$ 55.00
89	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	2	4760	$ 55.00	$ 55.00
91	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	2	4760	$ 55.00	$ 55.00
94	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	2	2380	$ 55.00	$ 55.00
96	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	2	2380	$ 55.00	$ 55.00
100	64	Wall Mount Occupancy Sensor	1	2F32EEL	1	1040	$ 25.00	$ 25.00
103	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	3	6570	$ 55.00	$ 55.00
108	64	Wall Mount Occupancy Sensor	1	2F32EEL	5	600	$ 25.00	$ 25.00
111	64	Wall Mount Occupancy Sensor	1	2F32EEL	2	500	$ 25.00	$ 25.00
113	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	6	2975	$ 55.00	$ 55.00
115	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	2	4463	$ 55.00	$ 55.00
118	61	Ceiling Mount Occupancy Sensor	1	2F32EEL	6	4463	$ 55.00	$ 55.00
								$ -
								$ -
								$ -
								$ 1,325.00

TOTAL COST OF PROPOSED PROJECT

Type of Measure		Equipment Costs	Labor Costs	Requested Incentive
Lighting Systems				$ 5,065.00
Lighting Controls				$ 1,325.00
TOTALS		**$ -**	**$ -**	**$ 6,390.00**

2009 Lighting Rebate

Table C: Lighting Systems Inventory

This table or similar document must be completed by the Customer/Contractor/Vendor. Attach additional sheets as necessary.

Each room or area in which lighting changes are proposed should be listed separately.

When completed, submit this form or similar document to your Utility Representative along with manufacturer cut sheets showing photometrics.

Customer/Facility Name: City of Dover, Dover Ice Arena, Dover, NH

Project Description: Lighting_____ Date: _____

Existing Lighting System						Proposed Lighting System						
Room/Area	Qty	Description of Fixture	Fixture Code	Watts	Annual Hours of Operation	Qty	Description of Fixture	Fixture Code	Measure Code	Watts	Annual Hrs	Watts Reduction
Map #1 Locker Room #8	8	2L4' T8/ELIG	2F32SSE	60	1000	8	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1000	12
Map #2 Locker Room #9	6	2L4' T8/ELIG	2F32SSE	60	2000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #3 Common Restroom Area	4	2L4' T8/ELIG	2F32SSE	60	2000	4	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #4 Locker Room #10	6	2L4' T8/ELIG	2F32SSE	60	2000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #5 Hallway	2	2L4' T8/ELIG	2F32SSE	60	8760	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8760	12
Map #6Locker Room #11	6	2L4' T8/ELIG	2F32SSE	60	2000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #7 Common Restroom	4	2L4' T8/ELIG	2F32SSE	60	2000	4	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #8 Locker Room #12	6	2L4' T8/ELIG	2F32SSE	60	2000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #9 Coach's Office	1	2L4' T8/ELIG	2F32SSE	60	500	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	500	12
Map #10 Dover HS Locker Rm	6	2L4' T8/ELIG	2F32SSE	60	1600	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1600	12
Map #10.1 Dover HS Restroom	2	2L4' T8/ELIG	2F32SSE	60	1000	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1000	12
Map #10.2 Dover HS Small Hallway	1	2L4' T8/ELIG	2F32SSE	60	1600	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1600	12
Map #11 Holt Boiler Room	1	2L8' HO/EE/STD	2F96HES	227	500	1	4L4' T8EE/ELEE LBF	4F32EEL	10	96	500	131
Map #12 Holt Zamboni Room	7	2L8' HO/EE/STD	2F96HES	227	5950	7	4L4' T8EE/ELEE LBF	4F32EEL	10	96	5950	131
Map #13 Holt Net Storage Area	5	2L8' HO/EE/STD	2F96HES	227	2000	5	4L4' T8EE/ELEE LBF	4F32EEL	10	96	2000	131
Map #13.1 Holt Net Storage Hallway	2	2L4' T8/ELIG	2F32SSE	60	8760	2	1L4' T8EE/ELEE LBF	1F32EEL	41	25	8,760	35
Map #14 Maintenance Storage Area	2	2L8' T8/ELIG		109	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5950	61
Map #14 Maintenance Storage Area	2			48	5950	2	Fixture Sensor		64	48	4,760	-
Map #15 Locker Room #5	2	1L4' T8/ELIG	1F32SSE	30	1000	2	1L4' T8/ELIG	1F32SSE		30	1,000	-
Map #15 Locker Room #5	1			30	1000	1	Fixture Sensor		64	30	500	-
Map #16 Locker Room #4	1	2L4' T8/ELIG	2F32SSE	60	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8760	12
Map #16 Locker Room #4	1	2L4' T8/ELIG	2F32SSE	60	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8760	12
Map #16 Locker Room #4	1			48	8760	1	Wall Sensor		64	48	7008	-
Map #17 Common Bathroom	2	2L4' T8/ELIG	2F32SSE	60	2000	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #17.1 Hallway in Frontof Restroom	1	2L4' T8/ELIG	2F32SSE	60	8760	1	1L4' T8EE/ELEE	1F32EEE	41	28	8,760	32
Map #17.2 Long Hallway	1	2L8' T8/ELIG		109	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	41	48	8760	61
Map #17.2 Long Hallway	1			48	8760	1	Fixture Sensor		64	48	7,008	-
Map #17.3 Hallway Outside Referee Rm	1	2L8' T8/ELIG		109	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	41	48	8760	61
Map #17.3 Hallway Outside Referee Rm	1			48	8760	1	Fixture Sensor		64	48	7,008	-
Map #18 Referee Room	1	2L8' T8/ELIG		109	1000	1	2L4' T8EE/ELEE LBF	2F32EEL	41	48	1000	61
Map #18 Referee Room	1			48	1000	1	Fixture Sensor		64	48	700	-
Map #19 St. Thomas Locker Rm	2	2L4' T8/ELIG	2F32SSE	60	1600	2	1L4' T8EE/ELEE LBF	1F32EEL	41	25	1,600	35
Map #19 St. Thomas Locker Rm	2	4L4' T8/ELIG	4F32SSE	112	1600	2	2L4' T8EE/ELEE LBF	2F32EEL	41	48	1,600	64
Map #19 St. Thomas Locker Rm	1			48	1600	1	Wall Sensor		64	48	1,200	-

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Table C: Lighting Systems Inventory

This table or similar document must be completed by the Customer/Contractor/Vendor. Attach additional sheets as necessary.

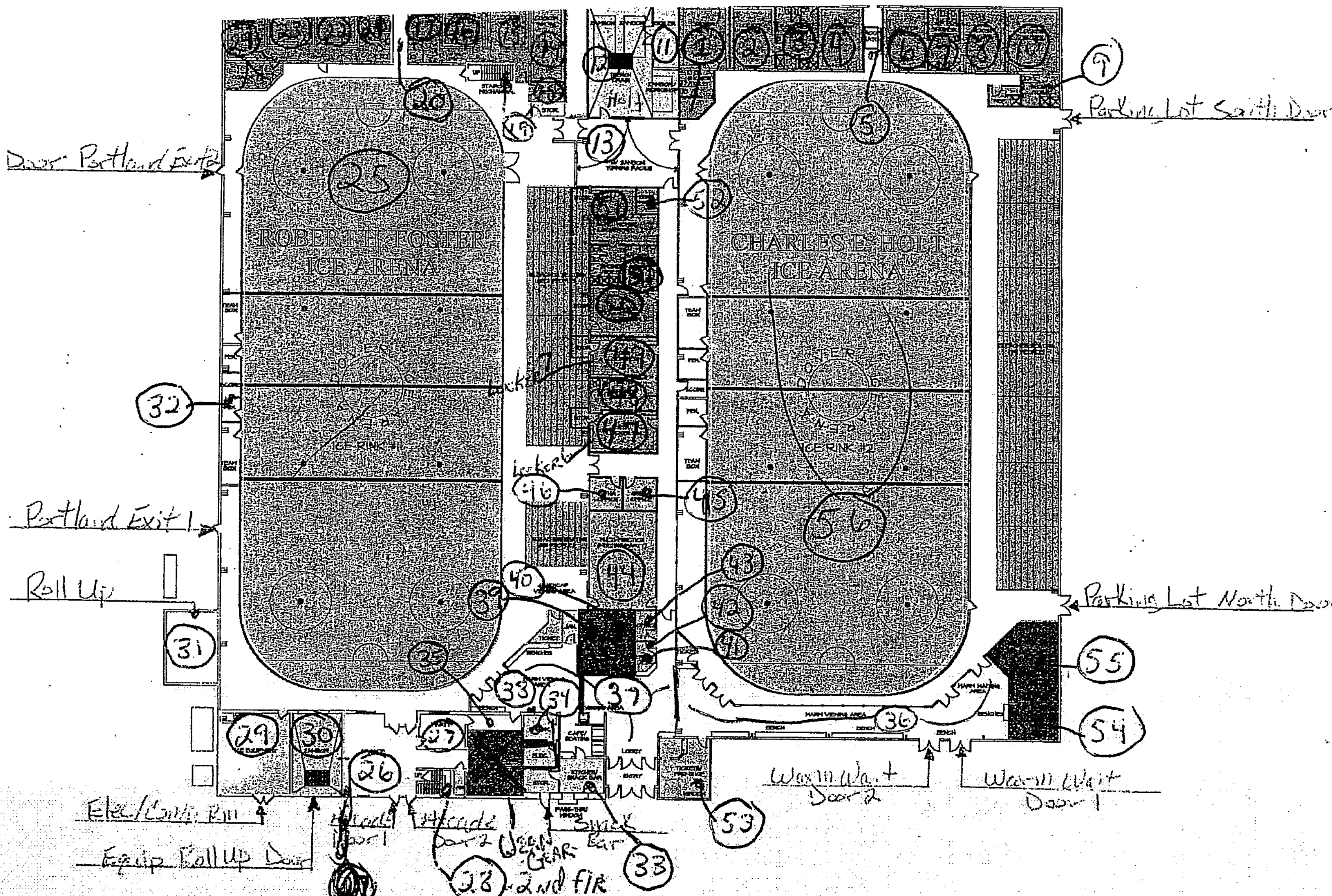
Map #19.1 St. Thomas Coach's Off	1	2L4' T8/ELIG	2F32SSE	60	1000	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1000	12
Map #19.2 St. Thomas Coach's Off	1	2L8' T8/ELIG		109	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8,760	61
Map #19.2 St. Thomas Coach's Off	1			48	8760	1	Fixture Sensor		64	48	7008	-
Map #20 Storage/Boiler Rm	1	2L4' T8/ELIG	2F32SSE	60	8760	1	1L4' T8EE/ELEE LBF	1F32EEL	10	25	8,760	35
Map #20 Storage/Boiler Rm	1			25	8760	1	Wall Sensor		64	25	7,884	-
Map #20.1 Boiler Room	1	2L8' T8/ELIG		109	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8,760	61
Map #20.1 Boiler Room	1			48	8760	1	Wall Sensor		64	48	7884	-
Map #21 Restroom for Locker Rm 1,2&3	1	2L4' T8/ELIG	2F32SSE	60	1000	1	1L4' T8EE/ELEE LBF	1F32EEL	41	25	1,000	35
Map #22 Locker Room 3	1	1L4' T8/ELIG	1F32SSE	30	8760	1	1L4' T8/ELIG	1F32SSE		30	8,760	-
Map #22 Locker Room 3	1			30	8760	1	Wall Sensor		64	30	7,884	-
Map #23 Locker Room 2	1	1L4' T8/ELIG	1F32SSE	30	8760	1	1L4' T8/ELIG	1F32SSE		30	8,760	-
Map #23 Locker Room 2	1			30	8760	1	Wall Sensor		64	30	7,884	-
Map #24 Locker Room 1	1	2L8' T8/ELIG		109	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	41	48	8760	61
Map #24 Locker Room 1	1			48	8760	1	Wall Sensor		64	48	7,884	-
Map #25 Foster Ice Arena	7	2L4' T8/ELIG	2F32SSE	60	3000	7	2L4' T8EE/ELEE LBF	2F32EEL	10	48	3000	12
Map #26 Arcade Room	6	2L4' T8/ELIG	2F32SSE	60	5950	6	1L4' T8EE/ELEE LBF	1F32EEL	42	25	5,950	35
Map #26 Arcade Room	1	2L4' T8/ELIG	2F32SSE	60	5950	1	1L4' T8EE/ELEE LBF	1F32EEL	41	25	5,950	35
Map #27 Party Room	2	2L4' T8/ELIG	2F32SSE	60	1000	2	1L4' T8EE/ELEE LBF	1F32EEL	42	25	1,000	35
Map #28 Youth Hockey Area 2nd Fl	2	3L4' T8/ELIG	3F32SSE	88	2600	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2,600	40
Map #28 Youth Hockey Area 2nd Fl	1			48	2600	1	Wall Sensor		64	48	1040	-
Map #28.1 Youth Hockey Area 2nd Fl	1	2L4' T8/ELIG	2F32SSE	60	2600	1	1L4' T8EE/ELEE LBF	1F32EEL	41	25	2,600	35
Map #28.1 Youth Hockey Area 2nd Fl	1	3L4' T8/ELIG	3F32SSE	88	2600	1	2L4' T8EE/ELEE LBF	2F32EEL	41	48	2600	40
Map #28.1 Youth Hockey Area 2nd Fl	1	4L4' T8/ELIG	4F32SSE	112	2600	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2600	64
Map #28.1 Youth Hockey Area 2nd Fl	1	2LT8UTube/ELIG		60	2600	1	2L2' T8EE/ELEE	2F17EEE	10	30	2600	30
Map #28.1 Youth Hockey Area 2nd Fl	1	2L4' T8/ELIG	2F32SSE	60	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8760	12
Map #28.1 Youth Hockey Area 2nd Fl	1	2L4' T8/ELIG	2F32SSE	60	2600	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2600	12
Map #28.2 Youth Hockey Area 2nd Fl	4	65W Inc.	1I0065	65	2000	4	20W CF Screw In			20	2000	45
Map #28.2 Youth Hockey Area 2nd Fl	1			20	2000	1	Wall Sensor		64	20	600	-
Map #28.3 Youth Hockey Area 2nd Fl	1	2L4' T8/ELIG	2F32SSE	60	8760	1	1L4' T8EE/ELEE LBF	1F32EEL	41	25	8,760	35
Map #28.3 Youth Hockey Area 2nd Fl	1			25	8760	1	Fixture Sensor		64	25	6,570	-
Map #29 Electric Compressor Room	2	2L8' T8/ELIG		109	3000	2	4L4' T8EE/ELEE LBF	4F32EEL	10	96	3,000	13
Map #30 Foster Zamboni Room	2	2L8' T8/ELIG		109	3000	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	3,000	61
Map #31 Gas Compressor Room	6	2L4' T8/ELIG	2F32SSE	60	2000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #32 Foster Score Booth Area	1	2L4' T8/ELIG	2F32SSE	60	1000	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1000	12
Map #33 Snack Bar Area	8	3L4' T8/ELIG	3F32SSE	88	2600	8	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2,600	40
Map #33 Snack Bar Area	1			48	2600	1	Ceiling Sensor		61	48	780	-
Map #34 Electrical Rm Paper Storage	3	2L4' T8/ELIG	2F32SSE	60	500	3	1L4' T8EE/ELEE LBF	1F32EEL	10	25	500	35
Map #36 Hallway Outside of Holt	19	3L4' T8/ELIG	3F32SSE	88	5950	19	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #36 Hallway Outside of Holt	3			48	5950	3	Ceiling Sensor		61	48	1785	-
Map #37 Main Entry Vestibule Area	15	3L4' T8/ELIG	3F32SSE	88	5950	15	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #37 Main Entry Vestibule Area	2			48	5950	2	Ceiling Sensor		61	48	1785	-
Map #38 Vestibule Outside Foster Rink	8	3L4' T8/ELIG	3F32SSE	88	5950	8	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #38 Vestibule Outside Foster Rink	1			48	5950	1	Ceiling Sensor		61	48	2380	-
Map #39 Men's Room	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #39 Men's Room	1			48	5950	1	Ceiling Sensor		61	48	4760	-
Map #40 Women's Room	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40

2009 Lighting Rebate

Table C: Lighting Systems Inventory

This table or similar document must be completed by the Customer/Contractor/Vendor. Attach additional sheets as necessary.

Map #40 Women's Room	1			48	5950	1	Ceiling Sensor		61	48	4760	-
Map #41 Registration Area	1	3L4' T8/ELIG	3F32SSE	88	5950	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #42 File Area	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #42 File Area	1			48	5950	1	Ceiling Sensor		61	48	2380	-
Map #43 Office	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #43 Office	1			48	5950	1	Ceiling Sensor		61	48	2380	-
Map #44 Conference Room	6	3L4' T8/ELIG	3F32SSE	88	1000	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,000	40
Map #45 Great Bay Figure Skating Club Office Area	1	3L4' T8/ELIG	3F32SSE	88	1000	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,000	40
Map #46 Rink Manager's Office	1	3L4' T8/ELIG	3F32SSE	88	2600	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2,600	40
Map #46 Rink Manager's Office	1			48	2600	1	Wall Sensor		64	48	1040	-
Map #47 Locker Room #6	5	2L4' T8/ELIG	2F32SSE	60	2000	5	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2000	12
Map #48 Common Bathroom	3	2L4' T8/ELIG	2F32SSE	60	8760	3	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8,760	12
Map #48 Common Bathroom	1			48	8760	1	Ceiling Sensor		61	48	6,570	-
Map #49 Locker Room 7	3	2L4' T8/ELIG	2F32SSE	60	2000	3	2L4' T8EE/ELEE LBF	2F32EEL	10	48	2,000	12
Map #49 Locker Room 7	1	2L4' T8/ELIG	2F32SSE	60	8760	1	2L4' T8EE/ELEE LBF	2F32EEL	10	48	8,760	12
Map #50 Berwick Academy Locker	8	2L4' T8/ELIG	2F32SSE	60	1600	8	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,600	12
Map #50.1 Berwick Academy Locker	5	2L4' T8/ELIG	2F32SSE	60	1000	5	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,000	12
Map #50.1 Berwick Academy Locker	1			48	1000	1	Wall Sensor		64	48	600	-
Map #51 Berwick Academy Girl's Locker	7	2L4' T8/ELIG	2F32SSE	60	1600	7	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,600	12
Map #52 Berwick Academy Coach's Off	2	2L4' T8/ELIG	2F32SSE	60	1000	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	1,000	12
Map #52 Berwick Academy Coach's Off	1			48	1000	1	Wall Sensor		64	48	500	-
Map #53 Pro Shop	6	3L4' T8/ELIG	3F32SSE	88	5950	6	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #53 Pro Shop	1			48	5950	1	Ceiling Sensor		61	48	2975	-
Map #54 Men's Room	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #54 Men's Room	1			48	5950	1	Ceiling Sensor		61	48	4463	-
Map #55 Women's Room	4	3L4' T8/ELIG	3F32SSE	88	5950	4	2L4' T8EE/ELEE LBF	2F32EEL	10	48	5,950	40
Map #55 Women's Room	2	3L4' T8/ELIG	3F32SSE	88	5950	2	2L4' T8EE/ELEE LBF	2F32EEL	11	48	5,950	40
Map #55 Women's Room	1			48	5950	1	Ceiling Sensor		61	48	4463	-
Map #56 Holt Arena	7	2L4' T8/ELIG	2F32SSE	60	3000	7	2L4' T8EE/ELEE LBF	2F32EEL	10	48	3,000	12
												-



ICE ARENA FLOOR PLAN

Material Purchasing

City of Dover - Ice Arena - S1

Bldg Name	Component	PO Order Total	Vendor	Mfg Name	Mfg #	Notes
Ice Arena	Ballast 1 lamp Electronic UNV QHEL Super Saver	4	WESCO	Advance	IOP-1P32-LW-SC	
Ice Arena	Ballast 2 lamp Electronic UNV QHEL Super Saver	203	WESCO	Advance	IOP-2P32-LW-SC	
Ice Arena	Ballast 4 lamp Electronic UNV QHEL Super Saver	16	WESCO	Advance	IOP-4P32-LW-SC	
Ice Arena	Fixture Mounted Occupancy Sensor	5		Do Not Order Comes on Fixture		
Ice Arena	Bracket Kit 8' 2 lamp(no reflector just ballast cover)	4	EPA	EPA	RBC1802T832WACCLSLST	
Ice Arena	Reflector Kit 2x2 Miro-4 2-Lamp	1	EPA	EPA	RTR2202T817ENLSS	
Ice Arena	Reflector Kit 2x4 Miro-4 2-Lamp	84	EPA	EPA	RTR2402T832ENLSS	
Ice Arena	Reflector Kit 4' 1 lamp Miro-4	4	EPA	EPA	RST1401T832ENCCLSLST	
Ice Arena	Reflector Kit 8' 2 lamp Miro-4	2	EPA	EPA	RST1802T832ENCCLSLST	
Ice Arena	Reflector kit 8' 4 lamp Miro-4	2	EPA	EPA	RST1804T832ENCCLSLST	
Ice Arena	Reflector kit 8' 4 lamp Polished Alum	13	EPA	EPA	RST1804T832ENCCLSLST	
Ice Arena	PLATE - please buy me!! Thanks Rebecca!	2		Labor to Purcha	Wall Sensor Plates	
Ice Arena	Pull Chains	4		Labor to Purchase		
Ice Arena	Single Switch Light Switch w/plate and box	2		Labor to Purchase		
Ice Arena	CF 20 watt quad flood lamp (Refl) SLSR30	4	WESCO	Philips	139394 EL/A BR30 16 ALTO	
Ice Arena	Lamp 2' T8 XP/Advantage 850	2	WESCO	Philips	F17T8/850ADV/ALTO	
Ice Arena	Lamp 4' T8 XP/Advantage 5000K	504	WESCO	Philips	F32T8/ADV850/ALTO	
Ice Arena	Lamp 4' T8 XP/Advantage 841	1	WESCO	Philips	F32T8/ADV841/ALTO	
Ice Arena	New LowBay Fixture 32w CF w/(1) ballast	1	MUNRO	RAB	RAB VAN3F32QT	
Ice Arena	New Fixture 4' (1) Lamp Wide Wrap with Refl UNV QHEL	2	Re-Nova	Re-Nova	ECS-MPW4-MN-132-UNV-1L-IOP	
Ice Arena	New Fixture 4' 2 lamp wide wrap w/refl UNV QHEL	2	Re-Nova	Re-Nova	ECS-MPW4-MN-232-UNV-2L-IOP	
Ice Arena	New Fixture 8' 2 lamp wide wrap UNV QHEL w/ref	1	Re-Nova	Re-Nova	ECS-MPW8-MN-232-UNV-2L-IOP	
Ice Arena	New Fixture 4'1 lamp wrap UNV QHEL with reflector	6	Re-Nova	Re-Nova	ECS-NPW4-MN-132-UNV-1L-IOP	
Ice Arena	New Fixture 4'1 lamp wrap UNV QHEL with refl Sensor	1	Re-Nova	Re-Nova	ECS-NPW4-MN-132-UNV-1L-IOP-SS	
Ice Arena	New Fixture 4'1 lamp wrap UNV QHEN with reflector	1	Re-Nova	Re-Nova	ECS-NPW4-MN-132-UNV-1N-IOP	
Ice Arena	New Fixture 8' 2 lamp wrap UNV QHEL with ref	3	Re-Nova	Re-Nova	ECS-NPW8-MN-232-UNV-2L-IOP	
Ice Arena	New Fixture 8' 2 lamp wrap w/reflector UNV QHEL Sens	2	Re-Nova	Re-Nova	ECS-NPW8-MN-232-UNV-2L-IOP-SS	
Ice Arena	New Fixture 2x4 2 lamp surface wrap refl - UNV QHEL	1	Re-Nova	Re-Nova	ECS-SMC4-MN-232-UNV-2L-IOP-PRS	
Ice Arena	New Fixture 8' 2 lamp wrap UNV QHEL ref Vapor	1	Re-Nova	Re-Nova	ECS-SVT8-MN-232-UNV-2L-IOP	
Ice Arena	New Fixture 8' 2 lamp wrap w/ref UNV QHEL Vapor Tight	1	Re-Nova	Re-Nova	ECS-SVT8-MN-232-UNV-2L-IOP	

Material Purchasing City of Dover - Ice Arena - S1						
Bldg Name	Component	PO Order Total	Vendor	Mfg Name	Mfg #	Notes
Ice Arena	New Fixture 8' 2 lamp wrap w/ref UNV QHEL VT Sens	1	Re-Nova	Re-Nova	ECS-SVT8-MN-232-UNV-2L-IOP-SS	
Ice Arena	Ceiling mounted occupancy sensor	2	MUNRO	Sensor Switch	CM-9	
Ice Arena	Fixture Mounted Occupancy Sensor Separate from Fixture	3	MUNRO	Sensor Switch	CM-9	
Ice Arena	Ceiling mounted occupancy sensor	8	MUNRO	Sensor Switch	CM-PDT-9	
Ice Arena	Ceiling mounted occupancy sensor	1	MUNRO	Sensor Switch	CM-PDT-10	
Ice Arena	Hallway occupancy sensor	3	MUNRO	Sensor Switch	HW-13	
Ice Arena	Power Pack for Ceiling or Hallway Sensor	15	MUNRO	Sensor Switch	MP-20	
Ice Arena	Vending Machine Miser VM150	1	MUNRO	Vending Miser	VM150	
Ice Arena	Vending Machine Miser VM151	1	MUNRO	Vending Miser	VM151	
Ice Arena	Wall switch occupancy sensor SensorSwitch	12	MUNRO	Sensor Switch	WSD-I	
Ice Arena	Ceiling mounted occupancy sensor	1	MUNRO	Sensor Switch	WV-16	

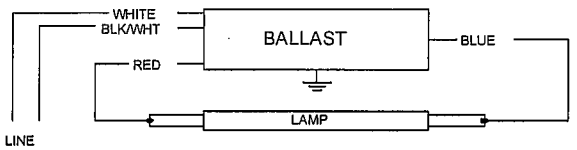
ADVANCE™

IOP1P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
* F17T8	1	17	-20/-29	0.13	15	0.80	10	0.99	1.5	5.33
F25T8	1	25	-20/-29	0.17	21	0.78	10	0.99	1.5	3.71
F32T8	1	32	-20/-29	0.22	25	0.77	10	0.99	1.5	3.08
F32T8/ES (25W)	1	25	60/16	0.17	21	0.77	10	0.99	1.5	3.67
F32T8/ES (28W)	1	28	60/16	0.19	22	0.77	10	0.99	1.5	3.50
F32T8/ES (30W)	1	30	60/16	0.20	24	0.77	10	0.99	1.5	3.21

Wiring Diagram

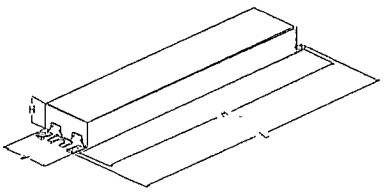


Diag. 63

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 08/23/2006

Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

ADVANCE
O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
Corporate Offices: Phone: 800-322-2086

IOP1P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be _____ (Instant or Programmed) Start.

2.2 Ballast shall provide Independent Lamp Operation (ILO) for Instant Start ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail.

2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.4 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz and 52 kHz to avoid interference with infrared devices, eliminate visible flicker and avoid Article Surveillance System, such as anti-theft devices.

2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.

2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.77 for Low Watt, 0.87 for Normal Light Output, and 1.18 for High Light for Instant Start ballasts or 0.71 for Low Watt and 0.88 for Normal Light Output for Programmed Start ballasts.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.

2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.

2.11 Ballast shall have a minimum starting temperature of -20F (-29C) on Instant Start Ballasts or 0F (-18C) Programmed Start ballasts for standard T8 lamps and 60F (16C) for energy-saving T8 lamps. Consult lamp manufacturer for temperature versus light output characteristics.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

2.13 Ballast shall contain an anti-striation circuitry to reduce striation on energy-saving T8 lamps.

2.14 Programmed Start ballasts shall provide lamp EOL protection circuitry.

2.15 Ballast can be Remote or Tandem wired as follows:

Instant Start ballasts - Remote or Tandem wiring allowed to a maximum of 20 feet between ballast and lamp socket. For Tandem wiring, any lamp can be remote mounted.

Programmed Start 2-lamp ballast - Remote or Tandem wiring allowed to a maximum of 10 feet between ballast and lamp socket for energy-saving T8 lamps or 20 feet for standard T8 lamps. For Tandem wiring, BLUE lamp must be in same fixture as the ballast.

Programmed Start 3 & 4-lamp (Normal Light) ballast - Remote or Tandem wiring allowed to a maximum of 10 feet between ballast and lamp socket for energy-saving T8 lamps or 20 feet for standard T8 lamps. For Tandem wiring, RED and YELLOW lamps must be in the same fixture as the ballast.

Programmed Start 3 & 4-lamp (Low Watt) ballast - Remote or Tandem wiring allowed to a maximum of 10 feet between ballast and lamp socket for all T8 lamps. For Tandem wiring, RED and YELLOW lamps must be in the same fixture as the ballast.

Section III - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.

3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11 where applicable.

3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18,

Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

3.6 Ballast shall comply with UL Type CC rating.

3.7 Ballast shall meet NEMA/CEE High Performance T8 Lighting System Specifications.

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a 90 C designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90 C.

4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance part # _____ or approved equal.

NOTE: The use of Optanium 2.0 (IOP) models is recommended to reduce striation in energy-saving T8 lamps (25W, 28W or 30W). Remote or tandem wiring of energy-saving T8 lamps (25W, 28W or 30W) is only recommended for Optanium 2.0 (IOP) models.

Consult lamp manufacturer for applications with Ballast Factor > 1.2

Revised 08/23/2006

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
ROSEMONT, ILLINOIS 60018
TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

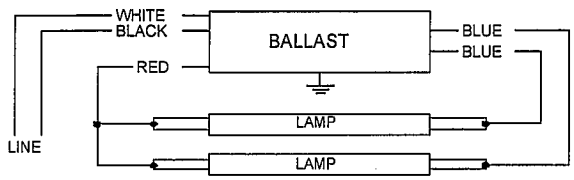
ADVANCE™

Electrical Specifications

IOP2P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
F32T8/ES (25W)	1	25	60/16	0.20	24	0.90	10	0.99	1.6	3.75
* F32T8/ES (25W)	2	25	60/16	0.32	38	0.77	10	0.99	1.6	2.03

Wiring Diagram

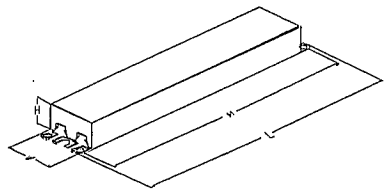


Diag. 64

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 08/03/2005

Data is based upon tests performed by Advance Transformer in a controlled environment and representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
Corporate Offices: Phone: 800-322-2086

IOP2P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be _____ (Instant or Programmed) Start.

2.2 Instant start ballast shall provide Independent Lamp Operation (ILO) for Instant Start ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail. Programmed Start ballast shall provide semi-independent lamp operation.

2.3 Instant start ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.4 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz through 52 kHz to avoid interference with infrared devices and eliminate visible flicker and avoid Article Surveillance System, such as anti-theft devices.

2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.

2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.77 or 0.71 for Low Watt, 0.87 or 0.88 for Normal Light Output, and 1.18 for High Light.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.

2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.

2.11 Ballast shall have a minimum starting temperature of -20F (-29C) Instant Start IntelliVolt or 0F (-18C) Programmed Start IntelliVolt for standard T8 lamps and 60F (16C) for energy-saving T8 lamps.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

2.13 Ballast shall contain an anti-striation circuitry to prevent striation on energy savings lamps.

2.14 Programmed start ballasts shall provide lamp EOL protection circuitry.

2.15 Instant Start Ballasts - Remote or tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder. For tandem wiring, any lamp can be remote mounted.

Programmed Start 2-lamp (normal and LW) - Tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder for standard T8 lamps and 10 feet between ballast and lamp holder for energy saving lamps.

Programmed Start 3&4-lamp (normal light) - Tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder for standard T8 lamps and 10 feet between ballast and lamp holder for energy saving lamps. RED and YELLOW must be in the same fixture as the ballast.

Programmed Start 3&4-lamp (LW) - Tandem wiring allowed to a maximum of 10 feet between ballast and lamp holder for standard T8 lamps and energy saving lamps. RED and YELLOW must be in the same fixture as the ballast.

Section III - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.

3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11 where applicable.

3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

3.6 Ballast shall comply with UL Type CC rating.

3.7 Ballast shall meet NEMA/CEE High Performance T8 Lighting System Specifications.

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9001:2000 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a 90 C designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90 C.

4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

Note: Consult lamp manufacturers for applications with Ballast Factor > 1.2

Revised 08/03/2005

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
ROSEMONT, ILLINOIS 60018
TELEPHONE: (847) 390-5000 FAX: (847) 390-5109

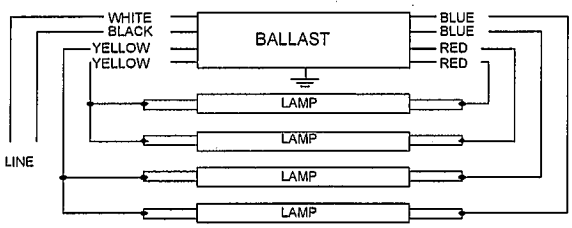
ADVANCE™

IOP4P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
F32T8/ES (25W)	3	25	60/16	0.52	62	0.85	10	0.99	1.6	1.37
* F32T8/ES (25W)	4	25	60/16	0.65	77	0.65	10	0.99	1.6	0.84

Wiring Diagram

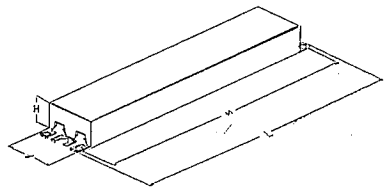


Diag. 66

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 08/03/2005

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER · 10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Customer Support/Technical Service: Phone: 800-372-3331 · Fax: 630-307-3071
Corporate Offices: Phone: 800-322-2086

ADVANCE™

IOP4P32LWSC@120V	
Brand Name	OPTANIUM 2.0
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be provided with integral leads color-coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be _____ (Instant or Programmed) Start.

2.2 Instant start ballast shall provide Independent Lamp Operation (ILO) for Instant Start ballasts allowing remaining lamp(s) to maintain full light output when one or more lamps fail. Programmed Start ballast shall provide semi-independent lamp operation.

2.3 Instant start ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.4 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency between 42 kHz through 52 kHz to avoid interference with infrared devices and eliminate visible flicker and avoid Article Surveillance System, such as anti-theft devices.

2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.

2.7 Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.77 or 0.71 for Low Watt, 0.87 or 0.88 for Normal Light Output, and 1.18 for High Light.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.

2.10 Ballast shall have a Class A sound rating for all 4-foot lamps and smaller.

2.11 Ballast shall have a minimum starting temperature of -20F (-29C) Instant Start IntelliVolt or 0F (-18C) Programmed Start IntelliVolt for standard T8 lamps and 60F (16C) for energy-saving T8 lamps.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

2.13 Ballast shall contain an anti-striation circuitry to prevent striation on energy savings lamps.

2.14 Programmed start ballasts shall provide lamp EOL protection circuitry.

2.15 Instant Start Ballasts - Remote or tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder. For tandem wiring, any lamp can be remote mounted.

Programmed Start 2-lamp (normal and LW) - Tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder for standard T8 lamps and 10 feet between ballast and lamp holder for energy saving lamps.

Programmed Start 3&4-lamp (normal light) - Tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder for standard T8 lamps and 10 feet between ballast and lamp holder for energy saving lamps. RED and YELLOW must be in the same fixture as the ballast.

Programmed Start 3&4-lamp (LW) - Tandem wiring allowed to a maximum of 10 feet between ballast and lamp holder for standard T8 lamps and energy saving lamps. RED and YELLOW must be in the same fixture as the ballast.

Section III - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.

3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11 where applicable.

3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

3.6 Ballast shall comply with UL Type CC rating.

3.7 Ballast shall meet NEMA/CEE High Performance T8 Lighting System Specifications.

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9001:2000 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a 90 C designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90 C.

4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

Note: Consult lamp manufacturers for applications with Ballast Factor > 1.2

Revised 08/03/2005

ADVANCE TRANSFORMER CO.
O'HARE INTERNATIONAL CENTER - 10275 WEST HIGGINS ROAD
ROSEMONT, ILLINOIS 60018
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envirobrite

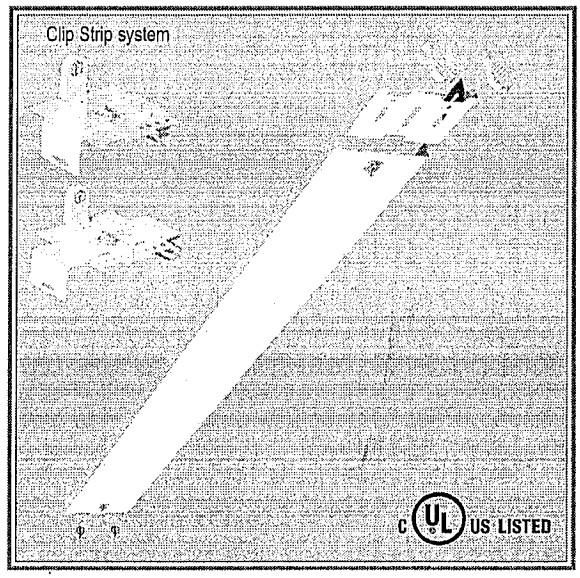
ENERGY PLANNING ASSOCIATES

RBC BALLAST COVER KIT

4' & 8' Ballast Cover Kits

Description

Envirobrite's® RBC Ballast Cover kits are used to convert 4' and 8' T12 and older T8 lamp fixtures resulting in substantial energy savings, improved lighting with excellent returns on investments. These kits, in conjunction with several ballast and lamp configurations, can easily produce ideal IES recommended light levels with minimized energy consumption. Envirobrite® kits will continue to provide consistent fixture performance and repeat annual energy savings for many years to come.



Application

Since 1994, Envirobrite® has converted thousands of 1x4 and 1x8 channel strips. These kits are recognized worldwide as the industry leading retrofit kit for the majority of all industrial, commercial and retail facilities. Add the flexibility of our patented Clip Strip bracketing system or utilizing our Cost-A-Mized program and the 300 series strip channel kit will allow proper fit in almost any application.

Design

Envirobrite® ballast cover kits are designed by our expert in house lighting engineers for trouble-free installation. Every Envirobrite® kit is designed to meet UL 1570 specifications for safety. Integral to ideal kit functionality is the combination of our optional clip strip bracketing system which allows multiple lamp options. Envirobrite® channel covers are fabricated with Energy Planning Associates custom-made multi-stage progressive roll forming machinery. Our unique high speed equipment consistently produces channel widths to your specified dimensions within precise quality tolerance. Our rigid, light weight bracketing systems are produced with custom designed stamping dies and are very easy to install. As with all Envirobrite® products our Cost-A-Mized program is an ideal solution for modification from our standard line and ensures an ideal fit.

Primary Features & Benefits

- Proudly Designed, Made and Assembled in the USA
- Utility rebate friendly throughout the U.S.
- Significant reduction in maintenance costs
- Aluminum components generate a rust-free approach to less maintenance and lasting appeal
- Considerable reduction in energy costs
- UL classified toolless ballast covers – quarter turn
- Flexibility for tandem wiring applications
- Unique and patented "Clip Strip" bracket is reversible for one, two or three lamp configurations

Quick, Safe and Labor Efficient Installation

- Two 4' kits can be used to retrofit 8' sections
- Snap-in lamp holders won't fall out during overhead installation
- Streamlined packaging for easy job site material management
- Three piece construction
- Toolless ballast access for simple maintenance
- With 1/3 the weight of steel aluminum components permit reduced shipping cost and simpler installation

"Clip Strip" Bracket – 1000 Series

- Adjusts to any channel size between 4.0" to 5.25"
- Reversible for one, two or three lamp configurations
- Tek screw slots for easy 48" lamp centering
- Locking lampholder notches
- Rounded edges for installer safety

For added efficiency include high quality T5 or T8 lamps with either instant or programmed start ballasts. Adding an Envirobrite® approved motion sensor system to your retrofit project will further enhance energy savings and create an even faster payback.

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ENERGY STAR PARTNER

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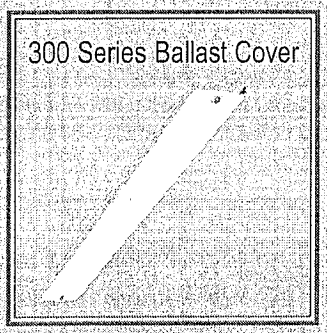
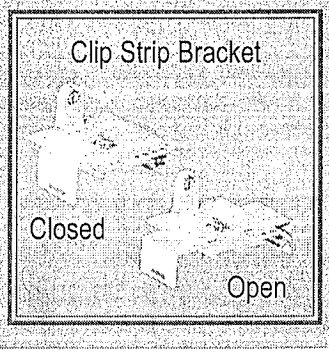
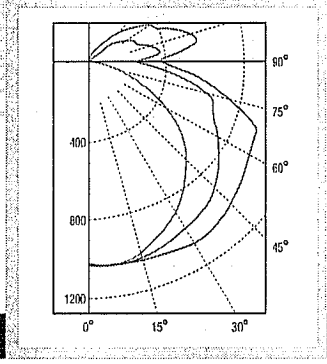
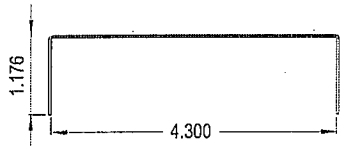


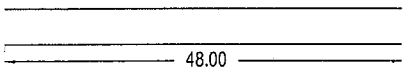




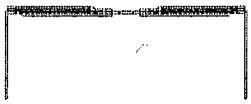
Ballast Cover Side View



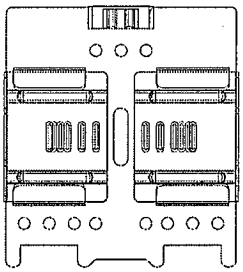
Top View



Bracket Side View



Top View



0° — 45° — 90° Candela Plot
1 Lamp T8

Zonal Lumen Summary

Zone	Lumens	% Lamp	Fixture
0-30	852	14.4	15.6
0-40	1450	24.6	26.6
0-60	2838	48.1	52.1
0-90	4407	74.7	80.9

RBC1402T832WACCLSLST used for test
Total Luminaire Optical Efficiency = 92.4%

Luminaire Spacing Criterion
0 deg - 1.3 90 deg - 1.6
Call factory for full photometric report

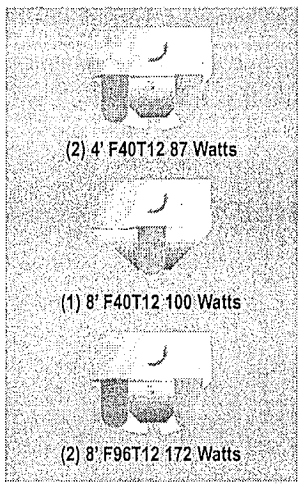
Standard 1x4 Kit includes

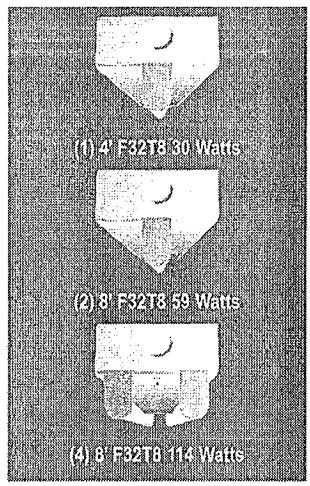
- (1) 300 series white painted aluminum ballast cover
- (2) "Clip Strip" reversible white-painted aluminum bracket adjustable to any channel size between 4.0" to 5.25"
- (2 or 4) specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- (2) Quarter turns
- (5) tek screws

Standard 1x8 Kit includes

- (2) 300 series white painted aluminum
- (4) "Clip Strip" reversible white-painted aluminum bracket adjustable to any channel size between 4.0" to 5.25"
- (4 or 8) specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- (4) Quarter turns
- (10) tek screws

Ordering Information
Sample number: **RBC1402T832WACCLSLST**





TYPE	DIMENSION	LAMPS	LAMP TYPE	REFLECTOR
O RBC=Strip Ballast Cover Kit (300 series)	O 14=1x4	O 01=1 Lamp O 04=4 Lamp	O T832=32W	O WA=White Painted Aluminum
	O 18=1x8	O 02=2 Lamp O 06=6 Lamp	O T524=54W	
		O 03=3 Lamp		

*REQUIRED FOR STRIP FIXTURE PRODUCTS	LAMPHOLDER TYPE	INSERTION METHOD
O CCLS=Clip Strip	O LS= Shunted	OT=T8 Tall Twist Lock (Standard)
O C043=4.3	O LU= Unshunted	ON=T8 Short Snap In Twist Lock
O C050=5.0		OP=T5 Plunger Socket

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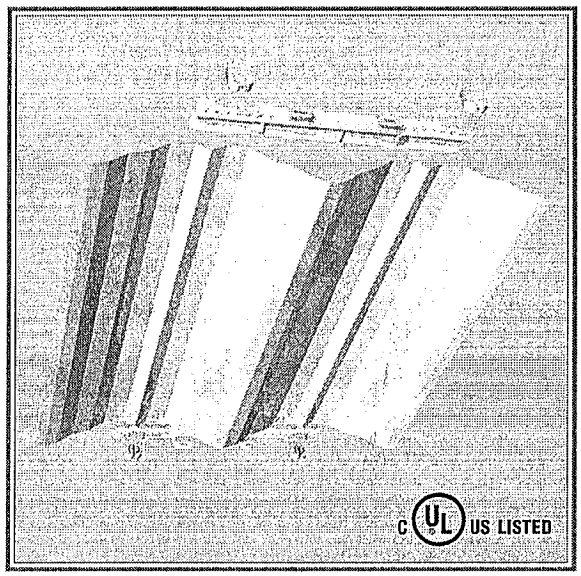
ENERGY PLANNING ASSOCIATES

RTR TROFFER RELECTOR KIT

2x2 Troffer Fixture Retrofit Kit

Description

Envirobrite's® RTR Troffer Reflector kits dramatically enhance existing fixture efficiencies creating substantial energy savings with excellent return on investment. All Envirobrite® kits have four different specialized material options which offer various light distributions with minimal up-front investments. These kits, in conjunction with numerous ballast and lamp configurations, can easily produce ideal IES recommended light levels with minimized energy consumption. Envirobrite® kits will continue to provide consistent fixture performance and repeat annual energy savings for up to 25 years.



Application

Since 1994, millions of 2x2 lensed troffers and 18 cell parabolic louvers have been successfully de-lamped with Envirobrite® troffer kits. These kits are recognized worldwide as the industry leading retrofit kit for the majority of all commercial 2x2 fixtures. It's ideal optics, universal fit configuration and flexible stamped bracketing system allows proper fit in office spaces, classrooms, hospitals, and many other commercial locations.

Design

Envirobrite® kits are designed by our expert in house lighting engineers for ideal photometry and trouble-free installation. Every Envirobrite kit is designed to meet UL 1570 specifications for safety. Integral to ideal kit functionality is the combination of our bracketing system which centers the lamps specifically to the optics of the reflector design. Envirobrite® reflectors are fabricated with Energy Planning Associates custom-made multi-stage progressive roll forming machinery. Our unique high speed equipment consistently produces multi-faceted linear fluorescent reflectors within precise quality tolerance. Our process enables us to add additional facets for superior reflector performance significantly reducing production cost and improving lead times. Our rigid, light weight bracketing systems are produced with custom designed stamping dies and are very easy to install. As with all Envirobrite® products Cost-A-Mized solutions are available to meet every customer's needs.

Primary Features & Benefits

- Proudly Designed, Made and Assembled in the USA
- Qualifies for maximum $.60 square foot EPACT tax deduction
- Significant reduction in maintenance costs
- Reinforced multi function universal bracketing system
- Aluminum components generate a rust-free approach to less maintenance and lasting appeal
- Utility rebate friendly throughout the U.S.
- 25 facet optical design for maximum performance
- Superior lighting directly to the work plane
- Flexibility for tandem wiring applications

Quick, Safe and Labor Efficient Installation

- Variable tek screw slot locations for multiple mounting options
- Unique bracket design UL approved for no wire guard requirement
- Lance and form bracket design for easy pinch in reflector installation
- Snap-in lamp holders won't fall out during overhead installation
- Streamlined packaging for easy job site material management
- With 1/3 the weight of steel aluminum components permit reduced shipping cost and simpler installation
- 25 facet reflectors for added rigidity and a sturdy fit
- Less than 2" reflector depth to fit shallow fixtures
- Toolless ballast access for simple maintenance
- Rounded-edged brackets to avoid injury during installation
- Slots, instead of holes are provided for easy alignment and centering

For added efficiency include high quality T5 or T8 lamps with either instant or programmed start ballasts. Adding an Envirobrite® approved motion sensor system to your retrofit project will further enhance energy savings and create an even faster payback.

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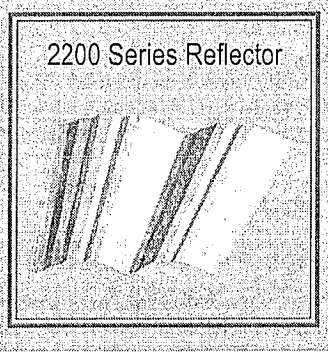
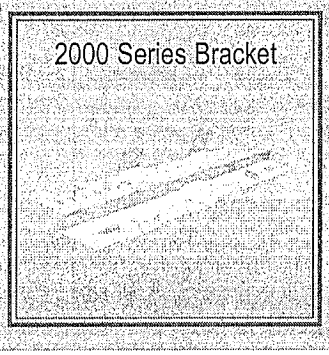
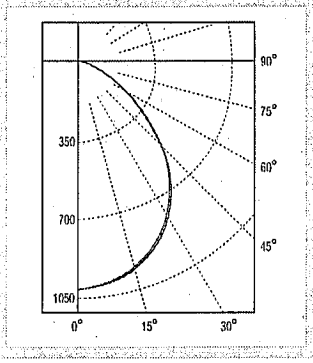
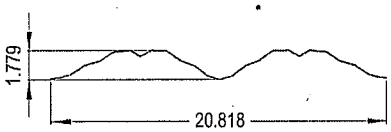


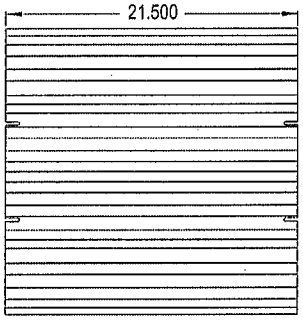




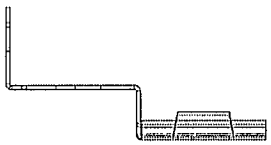
Side View



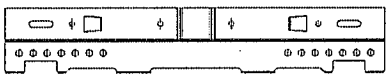
Top View



Side View



Top View



0° 45° 90° Candela Plot
2 Lamp T8

Zonal Lumen Summary

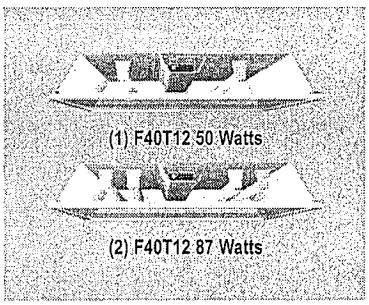
Zone	Lumens	% Lamp	Fixture
0-30	759	27.1	35.7
0-40	11952	42.7	56.2
0-60	1850	66.1	87.1
0-90	2125	75.9	100.0

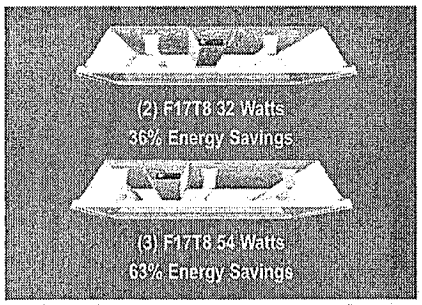
RTR2202T817ENLSS used for test
Total Luminaire Optical Efficiency = **75.9%**

Luminaire Spacing Criterion
0 deg - 1.2 90 deg - 1.1
Call factory for full photometric report

2x2 Kit includes

- **(1 qty)** 2200 series aluminum reflector made from your choice of specified material (95% Enhanced Miro4, 93% Micro Matte, 91% White-painted or 87% Anodized Aluminum)
- **(2 qty)** 2000 series white-painted stamped aluminum brackets
- **(4, 6 or 8 qty)** specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- **(5 qty)** tek screws





Ordering Information
Sample number: **RTR2202T817ENLSS**

TYPE	DIMENSION	LAMPS	LAMP TYPE	REFLECTOR
O RTR=Troffer Reflector Kit	O 22=2x2	O 02=2 Lamp	O T817=17W	O EN=95% MIRO 4 Enhanced
		O 03=3 Lamp		O MN=93% Micro Matte
		O 04=4 Lamp		O WN=91% White Aluminum
				O AN=87% Anodized Aluminum

LAMPHOLDER TYPE	INSERTION METHOD
O LS= Shunted	OS=T8 Short Twist Lock (Standard)
O LU= Unshunted	ON=T8 Short Snap In Twist Lock
	OP=T5 Plunger Socket

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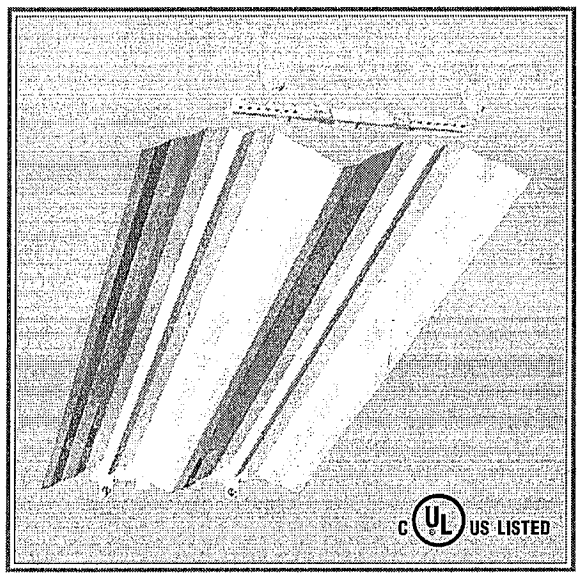
ENERGY PLANNING ASSOCIATES

RTR TROFFER RELECTOR KIT

2x4 Troffer Fixture Retrofit Kit

Description

Envirobrite's® RTR Troffer Reflector kits dramatically enhance existing fixture efficiencies creating substantial energy savings with excellent return on investment. All Envirobrite® kits have four different specialized material options which offer various light distributions with minimal up-front investments. These kits, in conjunction with numerous ballast and lamp configurations, can easily produce ideal IES recommended light levels with minimized energy consumption. Envirobrite® kits will continue to provide consistent fixture performance and repeat annual energy savings for up to 25 years.



Application

Since 1994, millions of 2x4 lensed troffers and 18 cell parabolic louvers have been successfully de-lamped with Envirobrite® troffer kits. These kits are recognized worldwide as the industry leading retrofit kit for the majority of all commercial 2x4 fixtures. It's ideal optics, universal fit configuration and flexible stamped bracketing system allows proper fit in office spaces, classrooms, hospitals, and many other commercial locations.

Design

Envirobrite® kits are designed by our expert in house lighting engineers for ideal photometry and trouble-free installation. Every Envirobrite® kit is designed to meet UL 1570 specifications for safety. Integral to ideal kit functionality is the combination of our bracketing system which centers the lamps specifically to the optics of the reflector design. Envirobrite® reflectors are fabricated with Energy Planning Associates custom-made multi-stage progressive roll forming machinery. Our unique high speed equipment consistently produces multi-faceted linear fluorescent reflectors within precise quality tolerance. Our process enables us to add additional facets for superior reflector performance significantly reducing production cost and improving lead times. Our rigid, light weight bracketing systems are produced with custom designed stamping dies and are very easy to install. As with all Envirobrite® products Cost-A-Mized solutions are available to meet every customer's needs.

Primary Features & Benefits

- Proudly Designed, Made and Assembled in the USA
- Qualifies for maximum $.60 square foot EPACT tax deduction
- Significant reduction in maintenance costs
- Reinforced multi function universal bracketing system
- Aluminum components generate a rust-free approach to less maintenance and lasting appeal
- Utility rebate friendly throughout the U.S.
- 25 facet optical design for maximum performance
- Superior lighting directly to the work plane
- Flexibility for tandem wiring applications

Quick, Safe and Labor Efficient Installation

- Variable tek screw slot locations for multiple mounting options
- Unique bracket design UL approved for no wire guard requirement
- Lance and form bracket design for easy pinch in reflector installation
- Snap-in lamp holders won't fall out during overhead installation
- Streamlined packaging for easy job site material management
- Slots, instead of holes, provided for easy end to end bracket to bracket centering
- With 1/3 the weight of steel aluminum components permit reduced shipping cost and simpler installation
- 25 facet reflectors for added rigidity and a sturdy fit
- Less than 2" reflector depth to fit shallow fixtures
- Toolless ballast access for simple maintenance
- Rounded-edged brackets to avoid injury during installation
- 9-3/4" lamp spacing enhances appearance of 18-cell parabolic retrofits

For added efficiency include high quality T5 or T8 lamps with either instant or programmed start ballasts. Adding an Envirobrite® approved motion sensor system to your retrofit project will further enhance energy savings and create an even faster payback.

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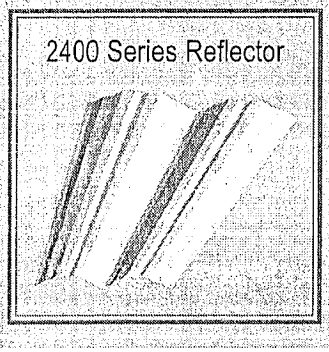
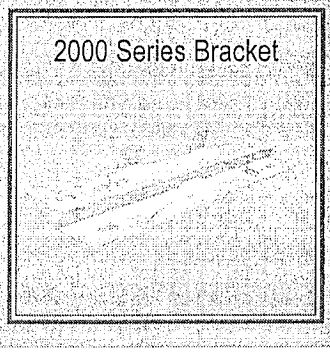
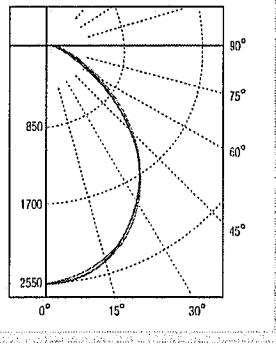
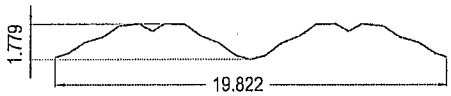


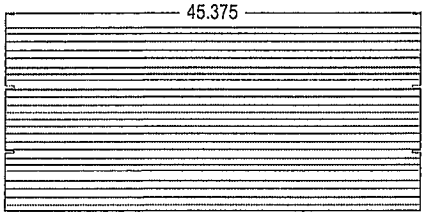




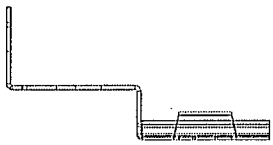
Side View



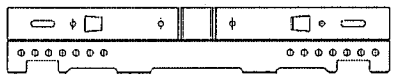
Top View



Side View



Top View



0° 45° 90° Candela Plot
2 Lamp T8

Zonal Lumen Summary

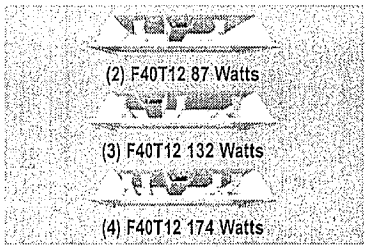
Zone	Lumens	% Lamp	Fixture
0-30	1895	31.1	35.3
0-40	2987	49.0	55.7
0-60	4630	75.9	86.3
0-90	5364	87.9	100.0

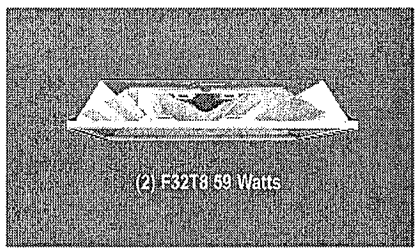
RTR2402T832ENLSS used for test
Total Luminaire Optical Efficiency = **87.9%**

Luminaire Spacing Criterion
0 deg - 1.2 90 deg - 1.1
Call factory for full photometric report

2x4 Kit includes

- **(1 qty)** 2400 series aluminum reflector made from your choice of specified material (95% Enhanced Miro4, 93% Micro Matte, 91% White-painted or 87% Anodized Aluminum)
- **(2 qty)** 2000 series white-painted stamped aluminum brackets
- **(4, 6 or 8 qty)** specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- **(5 qty)** tek screws





Ordering Information
Sample number: **RTR2402T832ENLSS**

TYPE	DIMENSION	LAMPS	LAMP TYPE	REFLECTOR
O RTR=Troffer Reflector Kit	O 24=2x4	O 02=2 Lamp	O T832=32W	O EN=95% MIRO 4 Enhanced
		O 03=3 Lamp	O T554=54W	O MN=93% Micro Matte
		O 04=4 Lamp		O WN=91% White Aluminum
				O AN=87% Anodized Aluminum

LAMPHOLDER TYPE	INSERTION METHOD
O LS= Shunted	OS=T8 Short Twist Lock (Standard)
O LU= Unshunted	ON=T8 Short Snap In Twist Lock
	OP=T5 Plunger Socket

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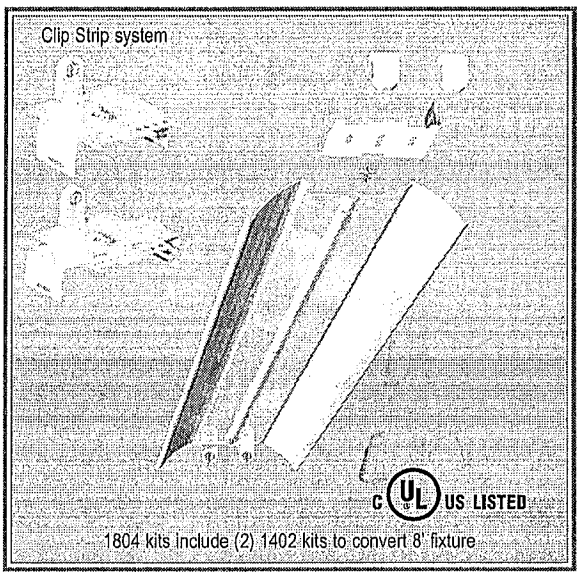
ENERGY PLANNING ASSOCIATES

RST INDUSTRIAL STRIP KIT

4' & 8' Kits

Description

Envirobrite's® RST Industrial Reflector Strip Kits are used to re-lamp or de-lamp 4' and 8' T12 and older T8 industrial strip fixtures. The result is substantial energy savings, improved lighting with excellent returns on investments. All Envirobrite® strip kits have four different specialized material options and two up-light material options. Utilizing our Cost-A-Mized program will provide an endless variety of widths to fit any application. These kits, in conjunction with numerous ballast and lamp configurations, can easily produce ideal IES recommended light levels with minimized energy consumption. Envirobrite kits will continue to provide consistent fixture performance and repeat annual energy savings for up to 25 years.



1804 kits include (2) 1402 kits to convert 8' fixture

Application

Since 1994, millions of reflector and industrial strips have been successfully de-lamped or re-lamped with Envirobrite® kits. These kits are recognized worldwide as the industry leading retrofit kit for the majority of all commercial 2x4 fixtures. It's ideal optics, universal fit configuration and flexible patented clip strip bracketing system allows proper fit in office spaces, hospitals, and many other commercial locations.

Design

Envirobrite® kits are designed by our expert in house lighting engineers for ideal photometry and trouble-free installation. Every Envirobrite® kit is designed to meet UL 1570 specifications for safety. Integral to ideal kit functionality is the combination of our "Clip Strip" bracketing system which was designed to handle unknown, or numerous channel sizes between 4.0"-5.25". Envirobrite® reflectors are fabricated with Energy Planning Associates custom-made multi-stage progressive roll forming machinery. Our unique high speed equipment consistently produces multi-faceted linear fluorescent reflectors within precise quality tolerance. Our process enables us to add additional facets for superior reflector performance significantly reducing production cost and improving lead times. Our rigid, light weight bracketing systems are produced with custom designed stamping dies and are very easy to install. As with all Envirobrite® products Cost-A-Mized solutions are available to meet every customer's needs.

Primary Features & Benefits

- Proudly Designed, Made and Manufactured in the USA
- Utility rebate friendly throughout the U.S.
- Significant reduction in maintenance costs
- Superior lighting directly to the work plane
- Unique and patented "Clip Strip" bracket is reversible for one, two or three lamp configurations
- Considerable reduction in energy costs
- Reflectors meet UL classified ballast covers – quarter turn
- 1, 2, or 3 lamp options available
- Aluminum components generate a rust-free approach to less maintenance and lasting appeal

"Clip Strip" Bracket

- Adjusts to any channel size between 4.0" to 5.25"
- Tek screw slots for easy 48" lamp centering
- Rounded edges for installer safety
- Reversible for one, two or three lamp configurations
- Locking lampholder notches

Quick, Safe and Labor Efficient Installation

- Two 4' kits can be used to retrofit 8' sections
- Snap-in lamp holders won't fall out during overhead installation
- Streamlined packaging for easy job site material management
- With 1/3 the weight of steel aluminum components permit reduced shipping cost and simpler installation
- Quarter turn reflectors for easy installation
- Toolless ballast access for simple maintenance
- Rounded edge "Clip Strip" bracket adjust to any channel between 4.0" and 5.25"

For added efficiency include high quality T5 or T8 lamps with either instant or programmed start ballasts. Adding an Envirobrite® approved motion sensor system to your retrofit project will further enhance energy savings and create an even faster payback.

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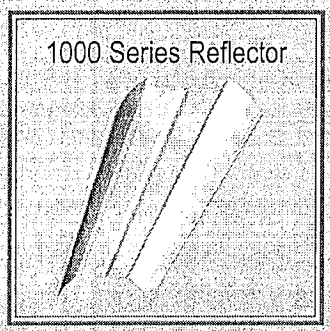
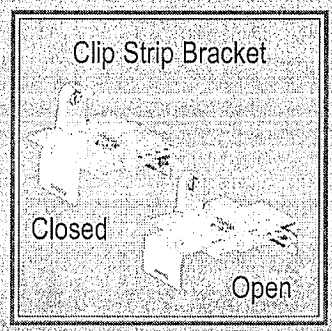
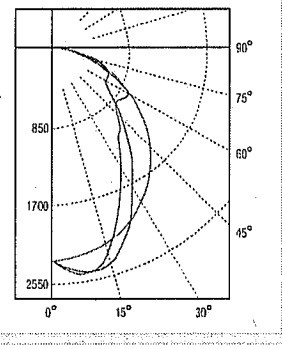
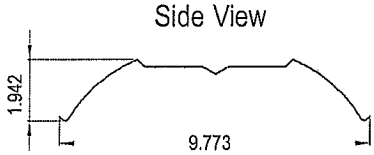






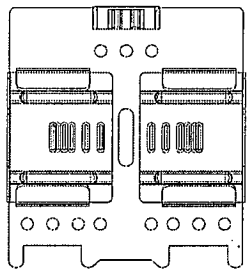
Side View



Top View

Side View

Top View



0° 45° 90° Candela Plot
2 Lamp T8

Zonal Lumen Summary

Zone	Lumens	% Lamp	Fixture
0-30	1810	30.7	31.5
0-40	2797	47.4	48.6
0-60	4527	76.7	78.7
0-90	5747	97.4	99.9

RST1402T832ENCCLSLST used for test
Total Luminaire Optical Efficiency = **97.5%**

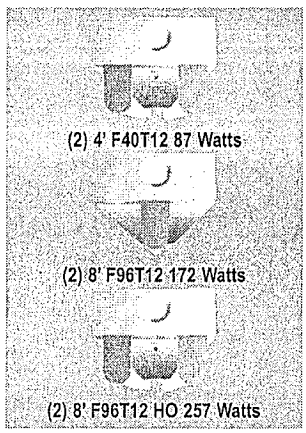
Luminaire Spacing Criterion
0 deg - 1.3 90 deg - 1.0
Call factory for full photometric report

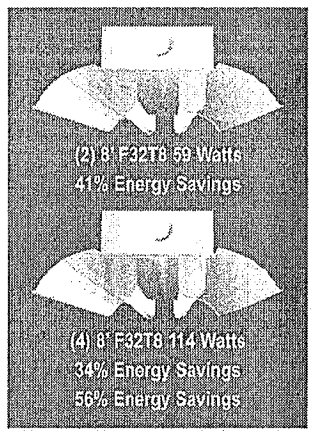
Standard RST 1400 4' Series Kit includes

- (1) 1400 series aluminum reflector made from your choice of specified material (95% Enhanced Miro4, 93% Micro Matte, 91% White-painted or 87% Anodized Aluminum with two up-light options as well)
- (2 or 4) specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- (2) quarter turns when ordered with a reflector
- (5) tek screws

Standard RST 1800 8' Series Kit includes

- (2) 1400 series reflector made from your choice of specified material (95% Enhanced Miro4, 93% Micro Matte, 91% White-painted or 87% Anodized Aluminum with two up-light options as well)
- (4, 6, or 8) specified shunted or unshunted high quality chemical resistant thermoplastic body UL approved lamp holders
- (4) quarter turns when ordered with a reflector
- (10) tek screws





Ordering Information
Sample number: **RST1402T832ENCCLSLST**

TYPE	DIMENSION	LAMPS	LAMP TYPE	REFLECTOR
O RST=Strip Reflector Kit (1000 series)	O 14=1x4	O 01=1 Lamp O 04=4 Lamp	O T832=32W	O EN=95% MIRO 4 Enhanced
	O 18=1x8	O 02=2 Lamp O 06=6 Lamp	O T524=54W	O WN=91% White
		O 03=3 Lamp		O MN=93% Micro Matte
				O AN=87% Anodized Aluminum

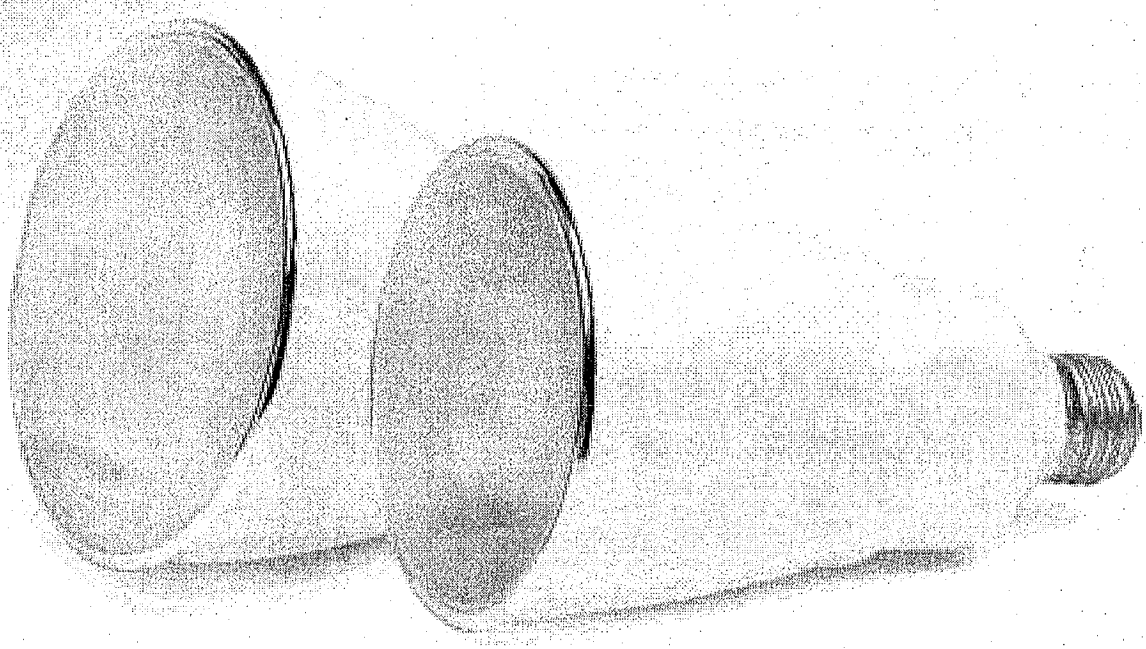
*REQUIRED FOR STRIP FIXTURE PRODUCTS	LAMPHOLDER TYPE	INSERTION METHOD
O CCLS=Clip Strip	O LS= Shunted	OT=T8 Tall Twist Lock (Standard)
O C043=4.3	O LU= Unshunted	ON=T8 Short Snap In Twist Lock
O C050=5.0		OP=T5 Plunger Socket

Marathon™

ENERGY SAVER FLOOD—R30 AND R40

Ideal for recessed light fixtures in both residential and commercial applications

- **Popular Flood Reflector Shape**
- **Provides Smooth, Even Light Without Hot Spots**
- **Super Long Life**
  Lasts 5 years, based on 3–4 hours average daily usage, 7 days per week (up to 4 times longer than standard incandescent flood lamps)
- **Energy Savings**
  Saves up to 75% in electricity costs compared to standard incandescent flood lamps
- **Removable Lens**
  Allows flexibility in lighting design
- **ENERGY STAR® Qualified**
  For more information on ENERGY STAR, visit www.energystar.gov



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A Division of Philips Electronics North America Corporation

Printed in USA 5/03 P-3756-B

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Canada L6C 2S3
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www.lighting.philips.com/nam
A Division of Philips Electronics Ltd.

Marathon™ Flood—R30 and R40

Electrical, Technical and Ordering Data (Subject to change without notice)

Product Number	Description	Volts	Nom. Watts	Approx. Incand. Equiv./Lumen	Base	Std. Pkg. Qty.	Color Temp (Kelvin)	CRI	Approx. Initial Lumens	MOL (In.)	Rated Avg. Life (Hrs.)[1]	Lamp Current (mAmps)	Power Factor	Min. Starting Temp.[2]	Max. Ambient Temp.	Lumen Maint.[3]
37246-6	Flood SLS/R30 15	120	15	65BR30FL/635	Med.	6	2700K	82	500	6.0	8000	230	0.55 to 0.62	-10°F/-20°C	140°F/60°C	80%
37248-2	Flood SLS/R30 20	120	20	65BR30FL/635	Med.	6	2700K	82	575	6.0	8000	285	0.55 to 0.62	-10°F/-20°C	140°F/60°C	80%
37256-5	Flood SLS/R40 15	120	15	65BR40FL/635	Med.	6	2700K	82	625	6.6	8000	230	0.55 to 0.62	-10°F/-20°C	140°F/60°C	80%
37262-3	Flood SLS/R40 20	120	20	85BR40FL/925	Med.	6	2700K	82	825	6.6	8000	285	0.55 to 0.62	-10°F/-20°C	140°F/60°C	80%

Shipping Data (Subject to change without notice)

Product Number	SKU UPC (0-46677)	Outer Bar Code (5-00-46677)	Case Qty.	Case Weight (lbs.)	Case Cube (cu. ft.)	Pallet Qty.	SKUs Per Layer	Layers High	SKU Dimensions (W x D x H) (In.)	Case Dimensions (W x D x H) (In.)	Pallet Dimensions (W x D x H) (In.)
37246-6	22035-8	37246-5	6	3	0.39	960	120	8	3.8 x 3.8 x 5.9	12.0 x 8.0 x 7.0	49.8 x 42.2 x 49.0
37248-2	22038-9	37248-9	6	3	0.39	960	120	8	3.8 x 3.8 x 5.9	12.0 x 8.0 x 7.0	49.8 x 42.2 x 49.0
37256-5	22037-2	37256-4	6	4	0.69	432	72	6	4.8 x 4.8 x 5.9	15.0 x 10.0 x 8.0	46.3 x 41.2 x 45.8
37262-3	22039-6	37262-6	6	4	0.69	432	72	6	4.8 x 4.8 x 5.9	15.0 x 10.0 x 8.0	46.3 x 41.2 x 45.8

1) Lamps operated in extreme environments will have reduced life (i.e., recessed or enclosed lighting fixtures with elevated line voltage).
2) Suitable for indoor or outdoor use down to -10°F. UL listed for damp locations. Outdoor use requires an enclosed or weather-protected fixture.
3) Percentage of initial lumens at 40% of rated average life (3200 hours).

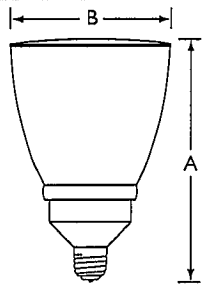
Marathon.

Bulb Type	Bulb Shape	Wattage Comparison*	Table/Floor Lamps	Outdoor Post Lights	Wall Sconce	Surface Mount	Enclosed Indoor Fixture	Reading Lamp	Border Lights	Recessed Lighting	Open Hanging	Bare Bulb	Vanity Strip
MULTIFLAME		15/20/25 = 60/75/100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
DECOR TWISTER		15/20/23 = 60/75/90	✓		✓			✓			✓	✓	
MINI DECO TWISTER		15 = 60	✓		✓			✓			✓	✓	
HOUSEHOLD		20 = 75	✓	✓	✓			✓			✓	✓	
MINI-HOUSEHOLD		10 = 60	✓	✓	✓			✓	✓		✓	✓	
3-WAY		18/26/34 = 60/90/150	✓										
DIMMABLE		15/20/23 = 60/75/90	✓		✓					✓		✓	
TAPER		34 = 120	✓		✓			✓					
OUTDOOR		15 = 60 15 = 75		✓							✓	✓	
BUG-A-WAY		15 = 60		✓							✓	✓	
FLOOD		15 = 65 20 = 85								✓	✓	✓	
WHITE-TOP FLOOD		16 = 65								✓	✓	✓	
DIMMABLE FLOOD		20 = 85								✓	✓	✓	
DECOR GLOBE		15 = 75 20 = 100									✓	✓	✓
VANITY GLOBE		12 = 40									✓	✓	✓

*Comparison shows Marathon wattage(s) and their equivalent to standard incandescent bulb wattages(s).

Lamp Dimensions

SLS/R30	SLS/R30 15	SLS/R30 20
MOL A	6.0"/152mm	6.0"/152mm
Max. Diameter B	3.8"/95mm	3.8"/95mm
Weight (oz./g)	5.7 oz./161g	6.1 oz./172g
SLS/R40	**SLS/R40 15**	**SLS/R40 20**
MOL A	6.6"/168mm	6.6"/168mm
Max. Diameter B	4.8"/121mm	4.8"/121mm
Weight (oz./g)	5.6 oz./186g	6.9 oz./195g

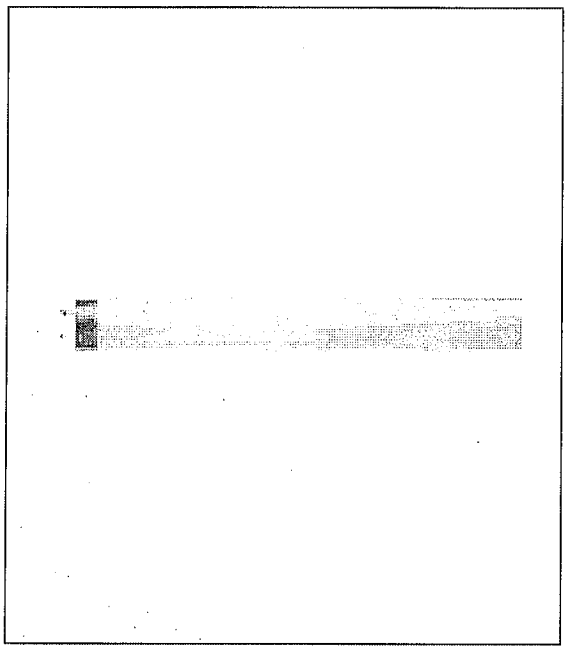


CAUTION: Risk of electric shock—do not use where directly exposed to water, rain or snow. Do not use with dimmers. For dimming circuits use Marathon R30 or R40 Dimmable Flood.

Before using this product with electronic timing or photocell devices, check to determine whether device is compatible with electronic compact fluorescent lamps. Use with incompatible devices will cause premature lamp failure.

This product complies with Part 18 of the FCC rules. These products may cause interference with radios, cordless telephones, and remote control devices. Interference may cease after a brief 90 second lamp warm-up period. If interference continues, relocate the lamp away from the device or plug into a different outlet.

PHILIPS



F17T8 ADV850 ALTO

Product family description
High performance, extra low mercury

Features/Benefits
- Ultimate System solution
- High lumens enable multiple system options to maximize energy savings and reduce lighting costs.
- Fully dimmable without burn-in.
- Better for the environment
- Only 1.7mg of mercury with ALTO II™ Technology
- Reduced impact on the environment without sacrificing performance
- Warranty period: 36 months

Applications
- Ideal for applications requiring maximum light output.

Notes
- Rated average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently. (202)
- Average life under engineering data with lamps turned off and restarted once every 12 operating hours. (241)
- Approximate Initial Lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions. (203)
- For expected lamp lumen output, commercial ballast manufacturers can advise the appropriate Ballast Factor for each of their ballasts when they are informed of the designated lamp. The Ballast Factor is a multiplier applied to the designated lamp lumen output. (204)
- Design Lumens are the approximate lamp lumen output at 40% of the lamp's Rated Average Life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions. (208)
- Design lumens rated at 3 hours per start on Instant Start ballast. (239)
- Exclusive to Philips Lighting Company.

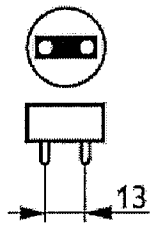
Product data	
Product Number	204875
Full product name	F17T8 ADV850 ALTO

PHILIPS

Product data	
Ordering Code	F17T8/ADV850 ALTO
Pack type	1 Lamp
Pieces per Sku	1
Skus/Case	25
Pack UPC	046677204877
EAN2US	
Case Bar Code	50046677204872
Successor Product number	
Base	Medium Bi-Pin [Medium Bi-Pin Fluorescent]
Base Information	Green Base
Bulb	T8
Packing Type	1LP [1 Lamp]
Packing Configuration	25
Type	F17T8
Feature	ALTO®
Ordering Code	F17T8/ADV850 ALTO
Pack UPC	046677204877
Case Bar Code	50046677204872
Energy Saving	Energy Saving
Rated Avg Life [12-Hr Prog St]	36000 hr
Rated Avg Life [12-Hr Inst St]	30000 hr
Rated Avg Life [3-Hr Prog St]	30000 hr
Rated Avg Life [3-Hr Inst St]	24000 hr
Watts	17W
Mercury (Hg) Content	3.5 mg
Picogram per Lumen Hour	111 p/LuHr
Color Code	Advantage 850 [CCT of 5000K]
Color Rendering Index	82 Ra8
Color Designation	Advantage 850
Color Temperature	5000 K
Initial Lumens	1350 Lm
Design Mean Lumens	1310 Lm
Nominal Length [inch]	24
Product Number	204875

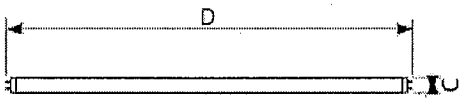
PHILIPS

F-T8-Adv Med Bipin/GB

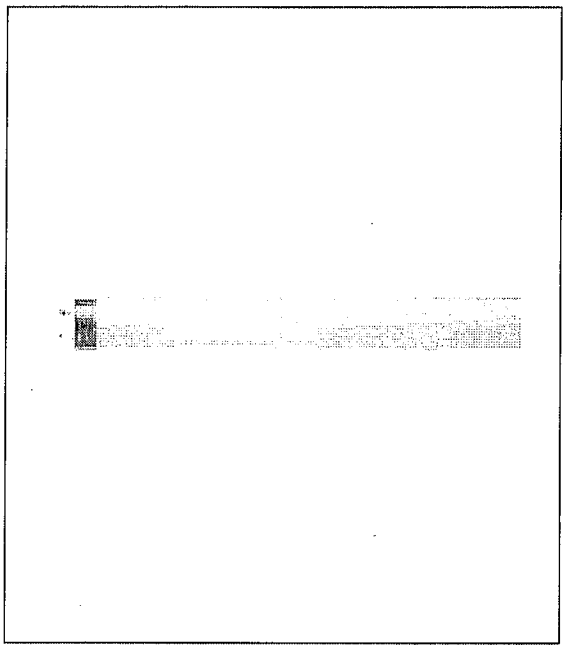


Base Medium Bi-Pin

Energy Saving Energy Saving



F-T8-Adv Med Bipin



F32T8 ADV850 ALTO

Product family description
High performance, extra low mercury

Features/Benefits

- Ultimate System solution
- High lumens enable multiple system options to maximize energy savings and reduce lighting costs.
- Fully dimmable without burn-in.
- Better for the environment
- Only 1.7mg of mercury with ALTO II™ Technology
- Reduced impact on the environment without sacrificing performance
- Warranty period: 36 months

Applications

- Ideal for applications requiring maximum light output.

Notes

- Rated average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently. (202)
- Average life under engineering data with lamps turned off and restarted once every 12 operating hours. (241)
- Approximate Initial Lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions. (203)
- For expected lamp lumen output, commercial ballast manufacturers can advise the appropriate Ballast Factor for each of their ballasts when they are informed of the designated lamp. The Ballast Factor is a multiplier applied to the designated lamp lumen output. (204)
- Design Lumens are the approximate lamp lumen output at 40% of the lamp's Rated Average Life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions. (208)
- Design lumens rated at 3 hours per start on Instant Start ballast. (239)
- Exclusive to Philips Lighting Company.

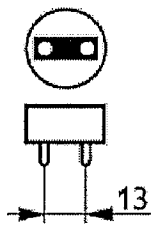
	Product data
Product Number	139907
Full product name	F32T8 ADV850 ALTO

PHILIPS

Product data	
Ordering Code	F32T8/ADV850/ALTO
Pack type	1 Lamp
Pieces per Sku	1
Skus/Case	25
Pack UPC	046677139902
EAN2US	
Case Bar Code	50046677139907
Successor Product number	
Base	Medium Bi-Pin [Medium Bi-Pin Fluorescent]
Base Information	Green Base
Bulb	T8
Packing Type	1LP [1 Lamp]
Packing Configuration	25
Type	F32T8
Feature	ALTO II™
Ordering Code	F32T8/ADV850/ALTO
Pack UPC	046677139902
Case Bar Code	50046677139907
Energy Saving	Energy Saving
Rated Avg Life [12-Hr Prog St]	36000 hr
Rated Avg Life [12-Hr Inst St]	30000 hr
Rated Avg Life [3-Hr Prog St]	30000 hr
Rated Avg Life [3-Hr Inst St]	24000 hr
Watts	32W
Mercury (Hg) Content	1.7 mg
Picogram per Lumen Hour	24 p/LuHr
Color Code	Advantage 850 [CCT of 5000K]
Color Rendering Index	82 Ra8
Color Designation	Advantage 850
Color Temperature	5000 K
Initial Lumens	3100 Lm
Design Mean Lumens	3000 Lm
Nominal Length [inch]	48
Product Number	139907

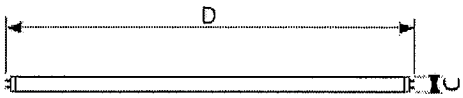
PHILIPS

F-T8-Adv Med Bipin/GB

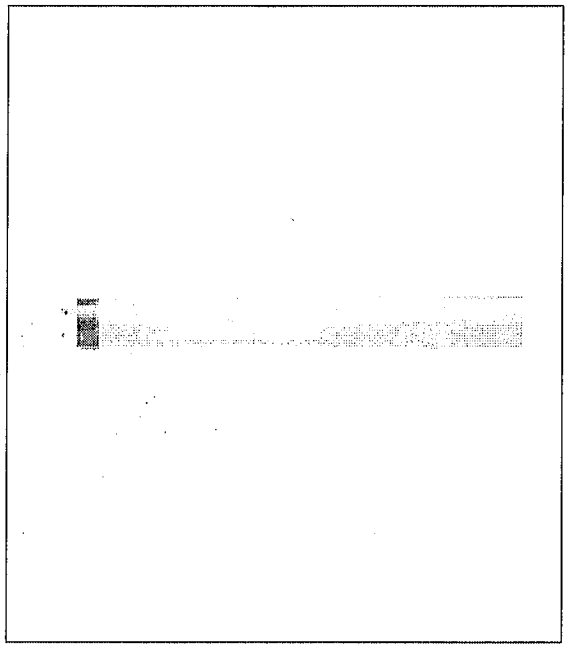


Base Medium Bi-Pin

Energy Saving Energy Saving



F-T8-Adv Med Bipin



F32T8 ADV841 ALTO

Product family description
High performance, extra low mercury

Features/Benefits

- Ultimate System solution
- High lumens enable multiple system options to maximize energy savings and reduce lighting costs.
- Fully dimmable without burn-in.
- Better for the environment
- Only 1.7mg of mercury with ALTO II™ Technology
- Reduced impact on the environment without sacrificing performance
- Warranty period: 36 months

Applications

- Ideal for applications requiring maximum light output.

Notes

- Rated average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently. (202)
- Average life under engineering data with lamps turned off and restarted once every 12 operating hours. (241)
- Approximate Initial Lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions. (203)
- For expected lamp lumen output, commercial ballast manufacturers can advise the appropriate Ballast Factor for each of their ballasts when they are informed of the designated lamp. The Ballast Factor is a multiplier applied to the designated lamp lumen output. (204)
- Design Lumens are the approximate lamp lumen output at 40% of the lamp's Rated Average Life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions. (208)
- Design lumens rated at 3 hours per start on Instant Start ballast. (239)
- Exclusive to Philips Lighting Company.

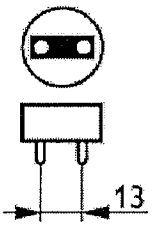
	Product data
Product Number	139899
Full product name	F32T8 ADV841 ALTO

PHILIPS

Product data	
Ordering Code	F32T8/ADV841 /ALTO
Pack type	1 Lamp
Pieces per Sku	1
Skus/Case	25
Pack UPC	046677139896
EAN2US	
Case Bar Code	50046677139891
Successor Product number	
Base	Medium Bi-Pin [Medium Bi-Pin Fluorescent]
Base Information	Green Base
Bulb	T8
Packing Type	1LP [1 Lamp]
Packing Configuration	25
Type	F32T8
Feature	ALTO II™
Ordering Code	F32T8/ADV841 /ALTO
Pack UPC	046677139896
Case Bar Code	50046677139891
Energy Saving	Energy Saving
Rated Avg Life [12-Hr Prog St]	36000 hr
Rated Avg Life [12-Hr Inst St]	30000 hr
Rated Avg Life [3-Hr Prog St]	30000 hr
Rated Avg Life [3-Hr Inst St]	24000 hr
Watts	32W
Mercury (Hg) Content	1.7 mg
Picogram per Lumen Hour	24 p/LuHr
Color Code	Advantage 841 [CCT of 4100K]
Color Rendering Index	85 Ra8
Color Designation	Advantage 841
Color Temperature	4100 K
Initial Lumens	3100 Lm
Design Mean Lumens	3000 Lm
Nominal Length [inch]	48
Product Number	139899

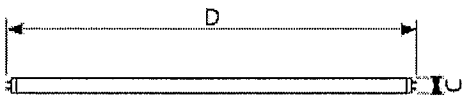
PHILIPS

F-T8-Adv Med Bipin/GB



Base Medium Bi-Pin

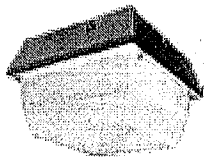
Energy Saving Energy Saving



F-T8-Adv Med Bipin

RAB LIGHTING

VAN3F32QT



JOB NAME: _____

DATE: _____

TYPE: _____

DESCRIPTION

Medium size ceiling mount fixture: 26, 32 and 42 watt compact fluorescent available. Housing is die cast aluminum with clear vandalproof polycarbonate refractor. Photocontrol, Sensor (CFL 120v only) models available. Lamps supplied.

SPECIFICATIONS

Conduit Entry:
1/2"

HID Quartz restrike:
Add suffix "/QR" to Van3 (50w restrike) or Van5 (100w restrike) for HOT restrike. Provides immediate illumination in case of momentary power failure

Housings:
Die cast aluminum with powder coat bronze or white finish

Reflectors / Backplate:
Heavy gauge cold rolled steel with high reflectance baked white enamel

Refractor:
Injection molded polycarbonate, designed for maximum structural strength

Sockets:
Medium base 4kv Pulse Rated Glazed porcelain

Screws:
Tamperproof center pin Torx-head and slotted Phillips head stainless steel screws provided. Be sure to order your Torx screwdriver (Catalog # VANDRIVER)

UL Listing:
Suitable for wet locations. Fixtures can be wired with 90° C supply wiring if supply wires are routed 3" away from ballast.

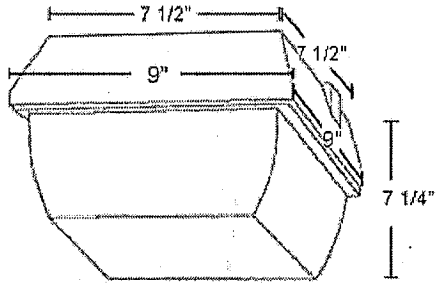
Patents:
RAB sensor and fixture designs are protected under U.S. and International Intellectual Property laws

Quad Tap:
Fixture works with 120, 208, 240 and 277 Volts

Color:
Bronze

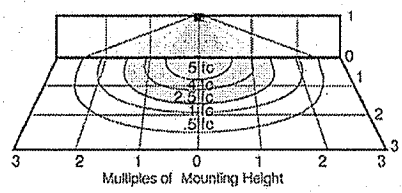
Weight:
6.5

DIMENSIONS



PHOTOMETRIC

70w HPS @ 8' Mounting Height



Mounting Height	Multiplier
8'	1.0
9'	.8
10'	.7
12'	.4
14'	.3

Watts	Multiplier HPS	MH	CFL
26			.3
32			.4
42			.5
35	.4		
50	.6	.5	
70	1.0	.9	

ORDERING INFORMATION

Compact Fluorescent Lamp supplied with fixture	Total Watts	Lamp Type	Lamp Base	Ballast	Starting Amps/ Operating Amps 120V	208V	240V	277V	Input Watts	LAMP ANSI	Initial Lumens	Lamp Hours
	32	32w Triple	GX24q-3	Elec HPF QT	0.31	0.2	0.2	0.13	32		2400	12000

Factory Installed Options
Add suffix to Catalog Number

Swivel Photocontrol (/PCS)
Quartz Restrike (HPS & MH only) (/QR)
Mini Motion Sensor (/MS)
Button Photocontrol (/PC)

Note: Specifications may change without notice

RAB Lighting, Inc. • 170 Ludlow Ave• Northvale, NJ 07647 • Tel: 888 RAB-1000 • Fax: 888 RAB-1232 • www.rabweb.com

Category: ECS
Energy Conservation Series

Prefix:
MPW

Fixture Series (Name):
Medium Profile Wrap

RENOVA™
nnovat ve L ght ng deas
Energy Eff c ent So ut ons

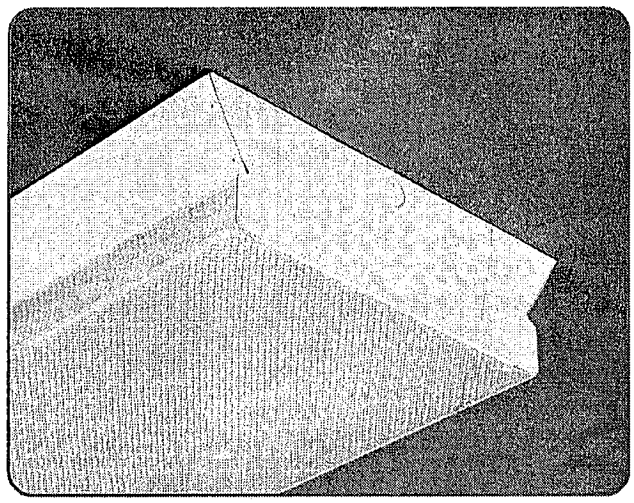
Medium Profile Wrap Series general purpose fluorescent luminaire

GENERAL DESCRIPTION

The Medium Profile Wrap (MPW) Series has been developed for general illumination for surface or pendant mounted applications. This series utilizes computer designed reflector technology for optimal fixture efficiency, reduction of energy consumption and improved quality of light. It also provides instant-on operation and offers many other energy saving options.

Typical applications for this type of product are interior spaces where finished ceilings exist. Applications include:

- Corporate / Office Buildings
- Hospitals, Government Facilities and Military Bases
- Retail and Industrial Facilities
- Schools, Colleges and Universities



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Precision die formed from 22 ga. cold rolled steel.
- Mechanically fastened or resistance welded depending on model.
- Heavy gauge steel (CRS) may be custom ordered.
- Finish to be pre-painted gloss white polyester powder coat.
- Post-painted polyester powder coat finishes are available. Consult factory for all special colors and finishes.
- Heavy guage steel (NYC) and heavy guage aluminum are available as alternate materials.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - Enhanced Specular Aluminum, 92% total (min.) reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Polished Aluminum, 87% total (min.) reflectance, 25 year warranty.
  - Consult factory for availability of all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - Multi-point contact design for optimum lamp pin contact.
  - Produced in accordance with DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical ballast warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

LENS (Diffuser)
- Extruded profile for precision fit.
  - 100% virgin clear acrylic resin (for max. optical clarity).
  - Linear prisms extruded into sides of lens.
  - Pattern 12 prisms embossed into bottom of lens
  - 30% "DR" additive (standard) to resist breakage (50% "DR" additive optional).
  - Consult factory for all available lens options.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, hook, chain or cable. (Mounting hardware supplied by others unless otherwise specified).

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS	Prefix:	Fixture Series (Name):
Energy Conservation Series	**MPW**	**Medium Profile Wrap**

Universal Lighting Technologies | GE Lighting North America | Advance | PHILIPS sense and simplicity | SYLVANIA | alanod | VS VOSSLOH SCHWABE

RENOVA™
Innovative Lighting Ideas
Energy Efficient Solutions

2-Lamp T8 Medium Profile Wrap Cross Section Shown

13"

$2\frac{9}{16}$"

$4\frac{1}{4}$"

ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY	NUMBER OF LAMPS	LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS -	**MPW**	**4** -	**M**	**N** -	**2**	**32** -	**UNV** -	**1**	**2**	**N** -	
Energy Conservation Series	**MPW** - MEDIUM PROFILE WRAP	**2** - 24" **3** - 36" **4** - 48" **6** - 72" **8** - 96"	**M** - MIRO4 (95% TR) **E** - ENHANCED ALUMINUM (92% TR min.) **W** - WHITE (91% TR) **A** - ALUMINUM (87% TR min.) **B** - BALLAST COVER (White) (83% TR min.) **R** - MIRO4 MICRO-MATT (95% TR)	**F** - FOCUSED **N** - NORMAL **S** - SPREAD **C** - CUSTOM OPTICS ***N** - NORMAL IS STANDARD *(BLANK)=N ***C** - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX	2'-4' HSG: **1** - 1L **2** - 2L **3** - 3L 6' & 8' HSG: **2** - 2L **4** - 4L **6** - 6L	**17** 17w T8 **25** 25w T8 **32** 32w T8 **14** 14w T5 **21** 21w T5 **28** 28w T5 **24** 24w T5HO **39** 39w T5HO **54** 54w T5HO	**120** - 120v, 60 Hz **277** - 277v, 60 Hz **347** - 347v, 60 Hz **UNV** - 120v - 277v, 60 Hz **480** - 480v, 60 Hz **xxx** - Less Ballast	**S** - SLAVE **(BLANK)** - 1 **2** - 2 **3** - 3 **4** - 4	**(BLANK)** - 0 **1** - 1 **2** - 2 **3** - 3 **4** - 4 *Use Suffix "M" for Master (Example: 4M)	**L** - Low **N** - Normal **H** - High	***ADDITIONAL OPTIONS** (See "Options" sheet for all available options)

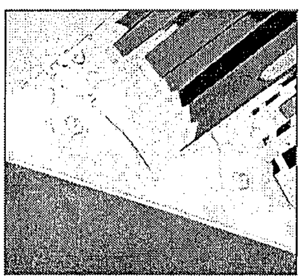
IES SUSTAINING MEMBER

MADE IN THE USA

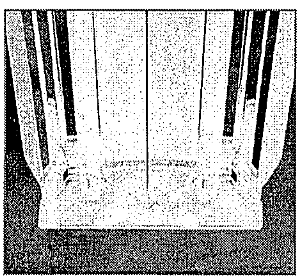
c UL us LISTED

Photometric data, IES files and all other information is available upon request.

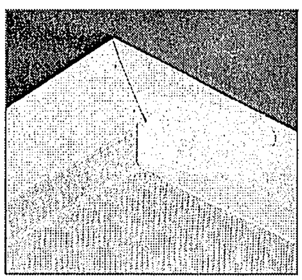
Veteran OWNED AND OPERATED



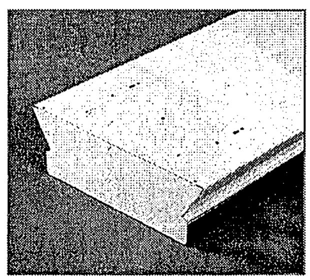
Vossloh Locking Lampholders
(Standard)



Multi-Faceted Reflector
(Designed for Maximum Efficiency)



Standard Lens
(Bottom: Pattern 12 Prismatic Embossment)
(Side: Linear Prisms)



Mounting Details
(Included in all Housings)

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS
Energy Conservation Series

Prefix:
NPW

Fixture Series (Name):
Narrow Profile Wrap

RENOVA™
nnovat ve L ght ng deas
Energy Eff c ent So ut ons

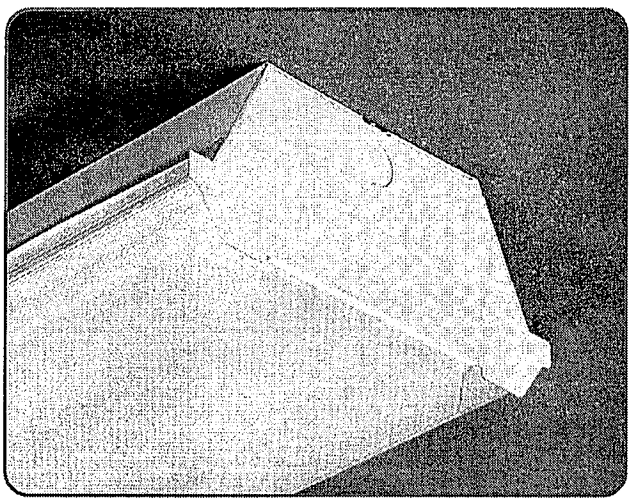
Narrow Profile Wrap Series general purpose fluorescent luminaire

GENERAL DESCRIPTION

The Narrow Profile Wrap (NPW) Series has been developed for general illumination for surface or pendant mounted applications. This series utilizes computer designed reflector technology for optimal fixture efficiency, reduction of energy consumption and improved quality of light. It also provides instant-on operation and offers many other energy saving options.

Typical applications for this type of product are interior spaces where finished ceilings exist. Applications include:

- Corporate / Office Buildings
- Hospitals, Government Facilities and Military Bases
- Retail and Industrial Facilities
- Schools, Colleges and Universities



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Precision die formed from 22 ga. cold rolled steel.
- Mechanically fastened or resistance welded depending on model.
- Heavy gauge steel (CRS) may be custom ordered.
- Finish to be pre-painted gloss white polyester powder coat.
- Post-painted polyester powder coat finishes are available. Consult factory for all special colors and finishes.
- Heavy guage steel (NYC) and heavy guage aluminum are available as alternate materials.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - Enhanced Specular Aluminum, 92% total (min.) reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Polished Aluminum, 87% total (min.) reflectance, 25 year warranty.
  - Consult factory for availability of all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - Multi-point contact design for optimum lamp pin contact.
  - Produced in accordance with DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical ballast warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

LENS (Diffuser)
- Extruded profile for precision fit.
  - 100% virgin clear acrylic resin (for max. optical clarity).
  - Linear prisms extruded into sides of lens.
  - Pattern 12 prisms embossed into bottom of lens
  - 30% "DR" additive (standard) to resist breakage (50% "DR" additive optional).
  - Consult factory for all available lens options.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, hook, chain or cable. (Mounting hardware supplied by others unless otherwise specified).

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

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RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS
Energy Conservation Series

Prefix:
NPW

Fixture Series (Name):
Narrow Profile Wrap

RENOVA™
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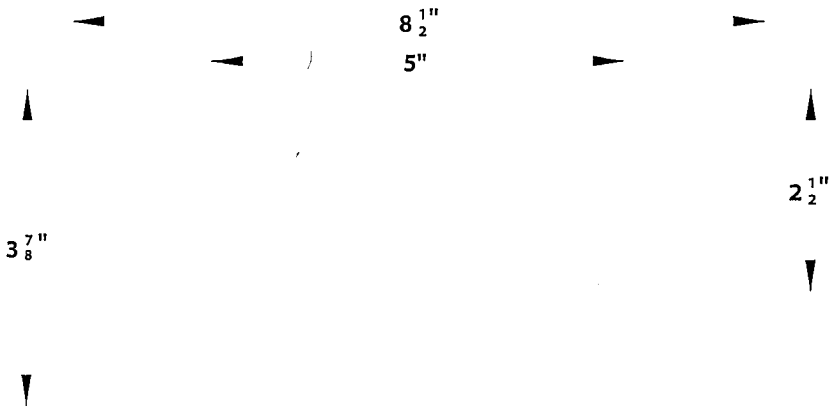
Energy Eff c ent So ut ons

2-Lamp T8 Narrow Profile Wrap Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY	NUMBER OF LAMPS	LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS	- NPW	- 4	- M	N	- 2	32	- UNV	- 1	2	N	-

CATEGORY: Energy Conservation Series

SERIES: NPW - NARROW PROFILE WRAP

SIZE: 2 - 24", 3 - 36", 4 - 48", 6 - 72", 8 - 96"

REFLECTOR MATERIAL: M - MIRO4 (95% TR); E - ENHANCED ALUMINUM (92% TR min.); W - WHITE (91% TR); A - ALUMINUM (87% TR min.); B - BALLAST COVER (White) (83% TR min.); R - MIRO4 MICRO-MATT (95% TR)

REFLECTOR PHOTOMETRY: F - FOCUSED; N - NORMAL; S - SPREAD; C - CUSTOM OPTICS; *N - NORMAL IS STANDARD *(BLANK)=N; *C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX

NUMBER OF LAMPS: 2'-4' HSG: 1 - 1L, 2 - 2L, 3 - 3L; 6' & 8' HSG: 2 - 2L, 4 - 4L, 6 - 6L

LAMP TYPE (WATTAGE): 17 17w T8, 25 25w T8, 32 32w T8; 14 14w T5, 21 21w T5, 28 28w T5; 24 24w T5HO, 39 39w T5HO, 54 54w T5HO

BALLAST VOLTAGE: 120 - 120v, 60 Hz; 277 - 277v, 60 Hz; 347 - 347v, 60 Hz; UNV - 120v - 277v, 60 Hz; 480 - 480v, 60 Hz; xxx - Less Ballast

NUMBER OF BALLASTS: S - SLAVE; (BLANK) - 1; 2 - 2; 3 - 3; 4 - 4

LAMPS PER BALLAST: (BLANK) - 0; 1 - 1; 2 - 2; 3 - 3; 4 - 4; *Use Suffix "M" for Master (Example: 4M)

BALLAST FACTOR: L - Low; N - Normal; H - High

OPTIONS: *ADDITIONAL OPTIONS (See "Options" sheet for all available options)

IES SUSTAINING MEMBER

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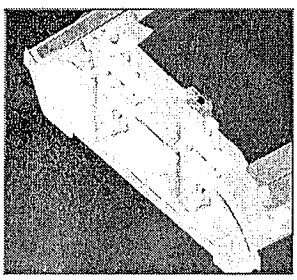
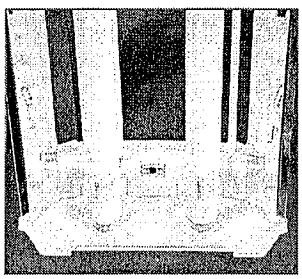
Photometric data, IES files and all other information is available upon request.

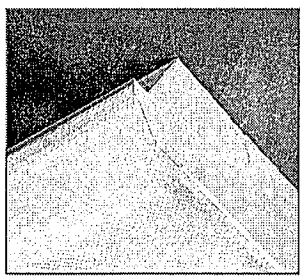
Veteran OWNED AND OPERATED



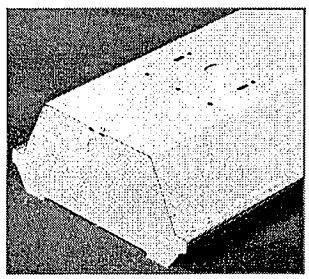
Vossloh Locking Lampholders (Standard)



Multi-Faceted Reflector (Designed for Maximum Efficiency)



Standard Lens (Bottom: Pattern 12 Prismatic Embossment) (Side: Linear Prisms)



Mounting Details (Included in all Housings)

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RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS
Energy Conservation Series

Prefix:
SMC

Fixture Series (Name):
Surface Mount (Commercial Grade)

Universal Lighting Technologies | GE Lighting North America | ADVANCE | PHILIPS sense and simplicity | SYLVANIA | alanod | VS VOSSLOH SCHWABE

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Energy Eff c ent So ut ons

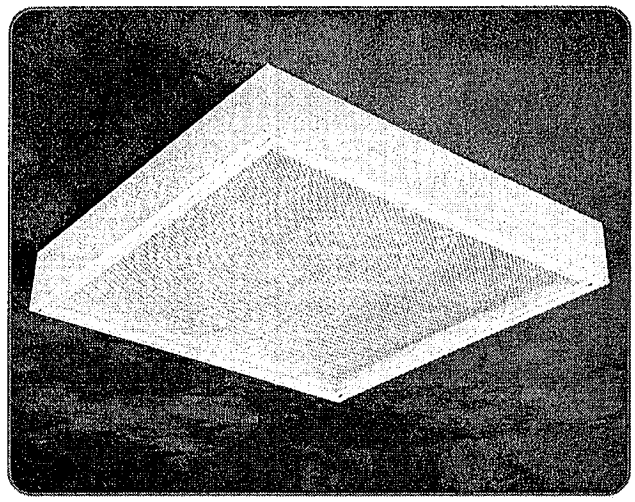
Surface Mount "Commercial Grade" Series general purpose fluorescent luminaire

GENERAL DESCRIPTION

The Surface Mount "Commercial Grade" (SMC) Series has been developed for general illumination for surface or pendant mounted applications. This series utilizes computer designed reflector technology for optimal fixture efficiency, reduction of energy consumption and improved quality of light. It also provides instant-on operation and offers many other energy saving options.

Typical applications for this type of product are interior spaces where finished ceilings exist. Applications include:

- Commercial / Corporate Office Spaces
- Hospitals, Government Facilities and Military Bases
- Retail and Industrial Facilities
- Schools, Colleges and Universities



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Precision die formed from 22 ga. cold rolled steel.
- Mechanically fastened or resistance welded depending on model.
- Heavy gauge steel (CRS) or aluminum alloy may be custom ordered.
- Finish to be pre-painted gloss white polyester powder coat.
- Post-painted polyester powder coat finishes are available. Consult factory for all special colors and finishes.
- Heavy guage steel (NYC) and heavy guage aluminum are available as alternate materials.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - Enhanced Specular Aluminum, 92% total (min.) reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Polished Aluminum, 87% total (min.) reflectance, 25 year warranty.
  - Consult factory for availability of all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - Multi-point contact design for optimum lamp pin contact.
  - Produced in accordance with DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical ballast warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

LAMP SHIELDING
- Lamp shielding options include:
  - Heavy duty powder coated or zinc-plated wire guards.
  - Flat or drop dish lenses, clear acrylic, clear polycarbonate, high light transmission white, prismatic and linear prism lenses. Consult factory for all available options.
  - Louvers and cross-blade baffles - Consult factory.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, hook, chain or cable.

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

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RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS
Energy Conservation Series

Prefix:
SMC

Fixture Series (Name):
Surface Mount (Commercial Grade)

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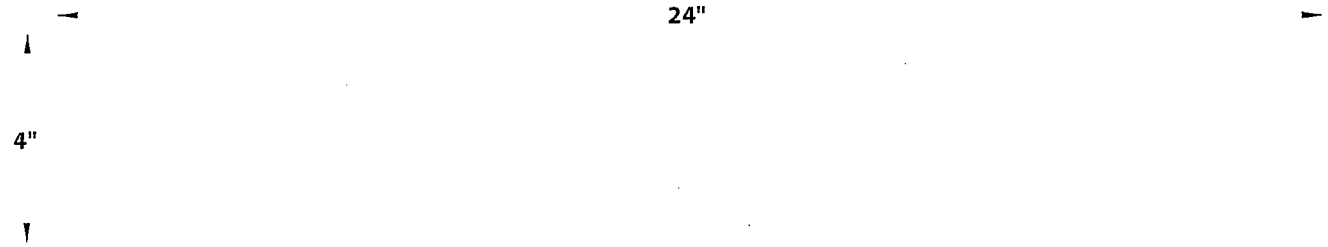
Energy Eff c ent So ut ons

2-Lamp T8 2x2 Surface Mount Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE		REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY		NUMBER OF LAMPS	LAMP TYPE (WATTAGE)		BALLAST VOLTAGE		NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR		OPTIONS
ECS	SMC	2	-	M	N	-	2	32	-	UNV	-	1	2	N	-	PRS
Energy Conservation Series	SMC - SURFACE MOUNT COMM. GRADE	1 - 1x4 2 - 2x2 4 - 2x4		M - MIRO4 (95% TR) E - ENHANCED ALUMINUM (92% TR min.) W - WHITE (91% TR) A - ALUMINUM (87% TR min.) B - BALLAST COVER (White) (83% TR min.) R - MIRO4 MICRO-MATT (95% TR)	F - FOCUSED N - NORMAL S - SPREAD C - CUSTOM OPTICS *N - NORMAL IS STANDARD *(BLANK)=N *C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX		1 - 1L 2 - 2L 3 - 3L 4 - 4L 5 - 5L 6 - 6L	32 32w T8 54 54w T5HO		120 - 120v, 60 Hz 277 - 277v, 60 Hz 347 - 347v, 60 Hz UNV - 120v - 277v, 60 Hz 480 - 480v, 60 Hz xxx - Less Ballast		(BLANK) - 1 2 - 2 3 - 3 4 - 4	1 - 1 2 - 2 3 - 3 4 - 4	L - Low N - Normal H - High		PRS - Clear Prismatic (A12) Lens OOW - Open Style OWW - White Wire-Guard AOW - Clear Acrylic Lens AWW - White Wire-Guard & Clear Acrylic Lens ***ADDITIONAL OPTIONS** (See "Options" sheet for all available options)

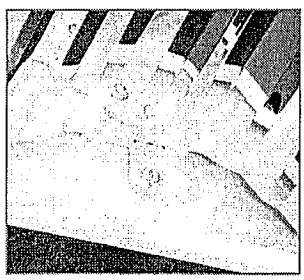
IES SUSTAINING MEMBER

MADE IN THE USA

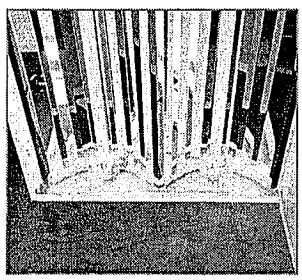
c UL us LISTED

Photometric data, IES files and all other information is available upon request.

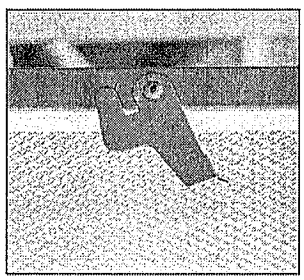
Veteran OWNED AND OPERATED



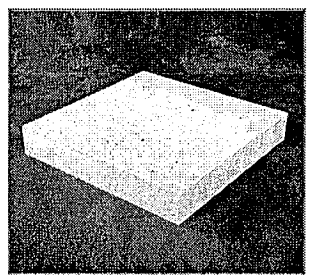
Vossloh Locking Lampholders (Standard)



Multi-Faceted Reflector (Designed for Maximum Efficiency)



Cam Latch (Secured to Frame Door) (Provides Quick Access to Lamps/Ballasts)



Mounting Details (Included in all Housings)

Note: RENOVA products are constantly being improved; therefore, the information shown is subject to change without notice. Always consult your lighting representative or RENOVA Lighting Systems, Inc. for the latest information.

RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

Category: ECS
Energy Conservation Series

Prefix:
SVT

Fixture Series (Name):
Standard Vapor Tight

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Energy Eff c ent So ut ons

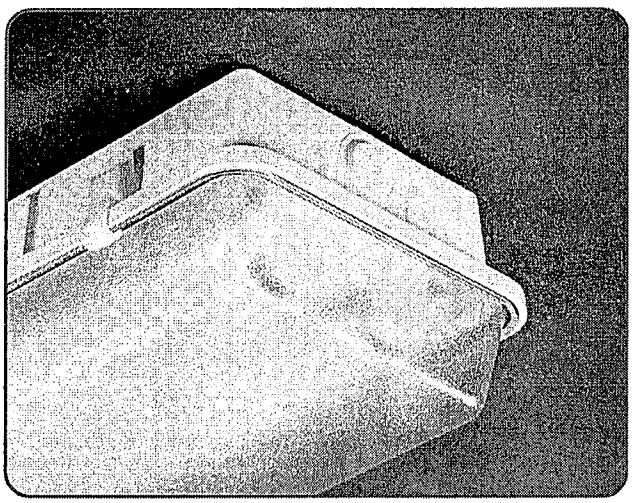
Standard Vapor Tight Series general purpose fluorescent luminaire

GENERAL DESCRIPTION

The Standard Vapor Tight (SVT) Series has been developed for all dust, damp/wet, vapor proof, cold weather and outdoor applications. Fixture can be surface (wall or ceiling), pendent, chain or cable mounted. This series utilizes computer designed reflector technology for optimal fixture efficiency, reduction of energy consumption and improved quality of light. It also provides instant-on operation and offers many other energy saving options.

Typical applications for this type of product are interior and exterior spaces where dust, moisture and vapor infiltration must be avoided. Applications include:

- Parking Garages, Car Washes, Shipping Docks and Outdoor Locations
- Government / Industrial Facilities, Gas Stations and Subways
- Swimming Pool Facilities, Locker / Shower Rooms
- Food and Drug Handling Areas, Public Areas and Commercial Kitchens



DESIGN FEATURES / SPECIFICATIONS

CONSTRUCTION
- Housing is precision injection molded from fiberglass reinforced polyester resin. Approval and / or listings as follows:
- UL/CUL/NSF International
- U.S. Department of Agriculture
- Canadian Standards Association
- Achieves IP65 / IP67 Rating (Certain models only)
- Housing matl. is self-extinguishable (ASTM D635-74)
- Internal housing and brackets to be precision die formed from 22 ga. cold rolled steel. Finish to be pre-painted gloss white polyester powder coat.

GASKETING
- New technology molecular structure gasket material is poured into pre-treated housing channel to insure stronger adhesion and to provide maximum protection against moisture and dust.

REFLECTOR
- Precision die formed optics which has been designed for maximum efficiency and photometric properties using the latest CAD software.
- Choice of optics includes focused, normal and spread beam distribution. Consult factory for custom optics design and spacing criteria options.
- Choice of materials include:
  - Alanod Miro4® Enhanced Specular Aluminum, 95% total reflectance, 25 year warranty.
  - High Reflectance White Powder Coated Aluminum, 91% total reflectance, 10 year warranty.
  - Consult factory for all other material choices.

LAMPHOLDERS
- Vossloh-Schwabe® premium type featuring:
  - Anti-vibration internal lamp locking design
  - High temperature resistant ("T" marking).
  - Heat and UV blocking shield to prevent degradation of material.
  - L/H contact design for optimum lamp pin contact.
  - Manufactured to DIN ISO 9001 and IEC standards.

BALLASTS
- All standard ballasts are electronic, energy saving, thermally protected, Class-P, non-PCB, Sound Rated "A", 0 degree (Type 1 Outdoor). Verify with factory for latest information regarding High Temperature (HT) or Extreme Low Temperature (XLT) rated ballast options.
- UL/CSA certified, where applicable. Compliant with Federal Ballast Law (Public Law 100-357, 1988).
- Choice of ballast factors. L=Low, N=Normal, H=High.
- Choice of dedicated, universal or special voltage - Consult factory for available options.
- Warranted by ballast manufacturer. Typical warranty is for 5 years (120-277v) and 3-years (347-480v). Consult factory for latest warranty information.

LATCHES
- Standard Latch - Acetal copolymer offers increased strength over conventional plastic latches.
- Stainless Steel Latch - Designed for maximum maintainability and corrosion resistance. Tamperproof screws & tool available as option.
- Additional latches to achieve IP65 and IP67 Rating. Consult factory for all available configurations.

LAMP SHIELDING (LENS)
- Clear Acrylic with an internal crepe pattern to provide general lamp obscurity. Lenses are thermoformed for precision fit.
- Smooth exterior surface for ease of cleaning.
- "HI" – High Impact "DR" Additive to resist breakage is optional.

LAMPS
- Supplied by others unless otherwise specified.
- Factory installed if required - Consult factory.
- Lamp type, CRI ratings, temperature colors, lamp life ratings are all viable options which can be supplied - Consult factory for information.

MOUNTING
- The luminaire may be surface mounted or may be suspended by pendant, threaded rod, chain or cable. (Mounting hardware supplied by others unless otherwise specified).
- Custom mounting options / accessories are available - Consult factory.

ELECTRICAL
- Luminaire is bi-national listed and labeled (UL 1598 and CSA C22.2 No. 250.0-00) and is suitable for damp locations.
- Product includes luminaire disconnect as specified in NEC 410.73(G), 2005 Edition, and CEC part I, rule 30-308(4), 2006 Edition.

QUALITY CONTROL
- All fixtures and retrofit kits are designed, fabricated, assembled and tested at RENOVA's manufacturing facility. All fixtures are 100% lamp tested, inspected and labeled prior to shipment.

GUARANTEE
- RENOVA warrants all fixtures to be free of defects in manufacturing and workmanship for a period of (1) year from date of purchase. This warranty excludes damage of any kind resulting from improper installation, misuse, abuse, accidents, mis-application, or natural disasters. Please refer to the "Terms and Conditions" section of the RENOVA website for additional information.

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Category: ECS
Energy Conservation Series

Prefix:
SVT

Fixture Series (Name):
Standard Vapor Tight

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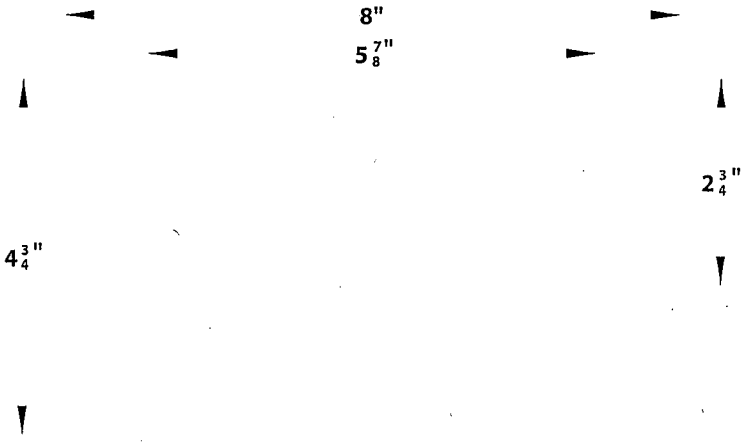
Energy Eff c ent So ut ons

2-Lamp T8 Standard Vapor Tight Cross Section Shown



ORDERING GUIDE

CATEGORY	SERIES	SIZE	REFLECTOR MATERIAL	REFLECTOR PHOTOMETRY	NUMBER OF LAMPS	LAMP TYPE (WATTAGE)	BALLAST VOLTAGE	NUMBER OF BALLASTS	LAMPS PER BALLAST	BALLAST FACTOR	OPTIONS
ECS	- SVT	- 4	- M	N	- 2	32	- UNV	- 1	2	N	-

CATEGORY — Energy Conservation Series

SERIES — SVT - STD VAPOR TIGHT

SIZE — 2 - 24" · 4 - 48" · 8 - 96"

REFLECTOR MATERIAL — M - MIRO4 (95% TR) · E - ENHANCED ALUMINUM (92% TR min.) · W - WHITE (91% TR) · A - ALUMINUM (87% TR min.) · B - BALLAST COVER (White) (83% TR min.) · R - MIRO4 MICRO-MATT (95% TR)

REFLECTOR PHOTOMETRY — F - FOCUSED · N - NORMAL · S - SPREAD · C - CUSTOM OPTICS

*N - NORMAL IS STANDARD *(BLANK)=N

*C - CUSTOM OPTICS ARE DESCRIBED IN OPTIONS BOX

NUMBER OF LAMPS — 2' & 4' HSG: 1 - 1L · 2 - 2L · 3 - 3L; 8' HSG: 2 - 2L · 4 - 4L · 6 - 6L

LAMP TYPE (WATTAGE) — 17 17w T8 · 32 32w T8 · 14 14w T5 · 28 28w T5 · 24 24w T5HO · 54 54w T5HO

BALLAST VOLTAGE — 120 - 120v, 60 Hz · 277 - 277v, 60 Hz · 347 - 347v, 60 Hz · UNV - 120v - 277v, 60 Hz · 480 - 480v, 60 Hz · xxx - Less Ballast

NUMBER OF BALLASTS — (BLANK) - 1 · 2 - 2 · 3 - 3

LAMPS PER BALLAST — 1 - 1 · 2 - 2 · 3 - 3 · 4 - 4

BALLAST FACTOR — L - Low · N - Normal · H - High

OPTIONS — *ADDITIONAL OPTIONS (See "Options" sheet for all available options)

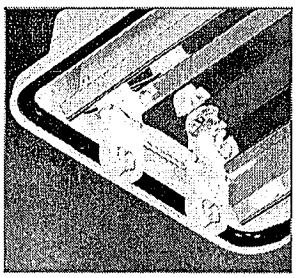
IES SUSTAINING MEMBER

MADE IN THE USA

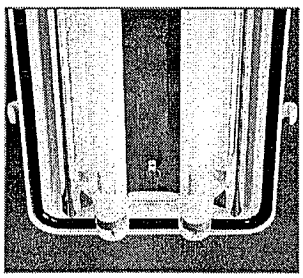
c UL us LISTED

Photometric data, IES files and all other information is available upon request.

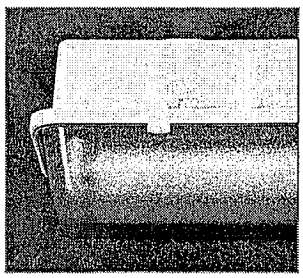
Veteran ★ ★ ★ OWNED AND OPERATED



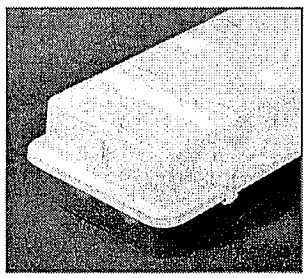
Vossloh Locking Lampholders (Standard)



Multi-Faceted Reflector (Designed for Maximum Efficiency)



Standard Lens (Crepe pattern provides lamp obscurity)



Mounting Details (Included in all Housings)

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RENOVA Lighting Systems, Inc. 300 Highpoint Avenue Portsmouth, RI 02871 (800) 635-6682 www.renova.com

sensorswitch™

LOW VOLTAGE PASSIVE INFRARED STANDARD CEILING MOUNT SENSOR

TECHNICAL DATA

TYPICAL APPLICATIONS

- Private Offices
- Storage Closet
- Conference Room
- Restroom w/o stalls

FEATURES

- PIR Occupancy Detection
- Communicates with Other Sensors
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min increments
- Green LED Activity Indicator
- 100 Hr. Burn-in Timer Mode

AVAILABLE OPTIONS

- Isolated Low Voltage Relay (-R)
- Photocell Daylight Override (-P)
- Automatic Dimming Control (-ADC)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: Circular, 4.55" Dia., 1.55" Deep (11.56 cm Dia., 3.94 cm Deep)
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting: Ceiling Tile Surface, Round Fixture or Junction Box
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 71° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -40° F(-40° C)

CM-9 SERIES

w/ Enhanced Photocell & Dimming Options!

The *CM-9 Series* sensor offers amazing performance and sensitivity to small motions for a standard Passive Infrared (PIR) Ceiling Mount Sensor. Ideal for small rooms with drop ceilings and areas without obstructions, the *CM-9* is a snap to install. Its light weight allows surface mounting to drop ceilings or a ceiling grid. The *CM-9* sensor can cover entire private offices or smaller rooms by itself, however it is also the ideal lead sensor for odd shaped rooms. For example a *CM-9* in a restroom vestibule can communicate with a CM-PDT Dual Technology sensor in a main stall area. Another application is a *CM-9* controlling an entrance hall to a classroom and communicating with a WV-PDT controlling the main room. In both cases the lights would be activated "On" by the *CM-9*. For mounting above 15 feet, see the CM-6 Technical Data Sheet.

SENSOR OPERATIONS

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art design requires no manual field adjustments.

PHOTOCELL DAYLIGHT OVERRIDE / DIMMING OPTIONS

This series offers a Photocell (-P) option for spaces with abundant daylight and an Automatic Dimming Control (-ADC) option for use with dimmable ballasts. These options are ideal for public spaces with windows like vestibules, corridors, or bathrooms. As the daylight levels change in the room, both options insure that an adequate light level is maintained according to a programmable set-point value. The Photocell option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. The -ADC option allows the sensor to control a dimmable ballast. It also provides a secondary dim time-out that enables the lights to go to a dim setting after one time-out and then turn fully off after a second time-out. For more detailed information on the operation of Photocell control and/or dimming, see the CM-PC-ADC Technical Data Sheet.

INTERNAL LOW VOLTAGE RELAY OPTION (CM-9-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay.
Note: Sensor must have power at all times for the relay to function .

CATALOG INFORMATION

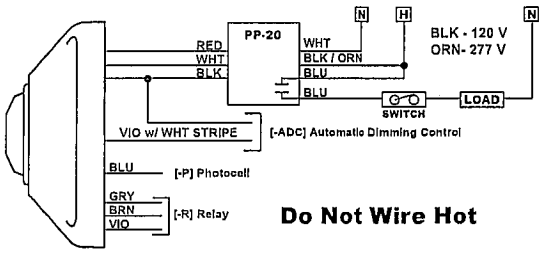
MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
CM-9	Passive Infrared Ceiling Mount Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	Photocell Daylight Override			4 mA
-RP	Relay & Photocell			16 mA
-ADC	Automatic Dimming Control			4 mA
-LT	Low Temp/High Humidity	-40° to 160° F		

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD CM-9

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)



Do Not Wire Hot

RELAY OPTION (-R)

GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state
Note: Relay is energized during Unoccupied state

PHOTOCELL OPTION (-P)

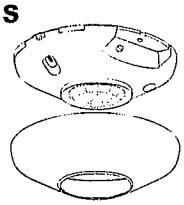
BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

AUTOMATIC DIMMING CONTROL (-ADC)

VIOLET/WHITE striped - Connect to Violet wire from 0-10 VDC dimmable ballast. Also connect ballast Gray wire to sensor Black wire. (Note: -ADC option disables Photocell inhibit mode of -P option.)

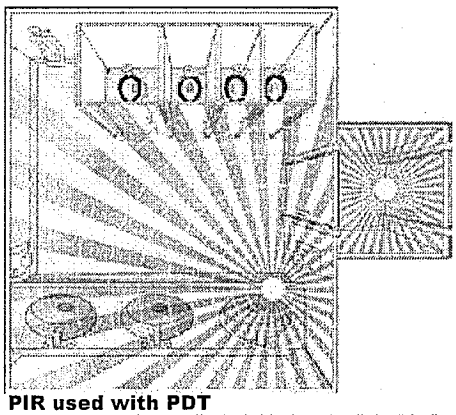
MOUNTING CONSIDERATIONS

The *CM-9* is provided with 2 self tapping mounting screws. The sensor typically mounts directly to the ceiling tile or metallic grid. If desired, the mounting holes are slotted to line up with a standard round or rectangular box (screws not provided).



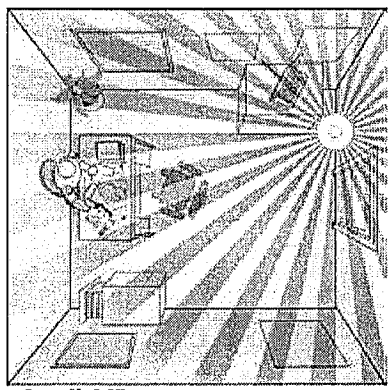
INSTALLATION CONSIDERATION

In smaller spaces like 12' x12' (3.66 x 3.66 m) private offices, it is best to locate the *CM-9* along the entrance wall so that the occupant breaks the collector beams upon entrance, while passersby do not falsely trip the unit (see field-of-view diagram). The discrete outer beams used for intial detection can be aligned for maximum coverage.



PIR used with PDT

- CM-9 PIR in vestibule initiating the light "On"
- Microphonics™ in CM-PDT is activated by the CM-9.
- CM-PDT detects occupants in stalls



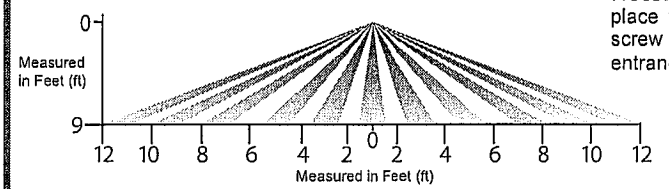
Small Office

- Mount sensor near entrance wall viewing entire room without seeing out doorway
- Low Voltage sensors provide easiest installation in drop Ceilings.

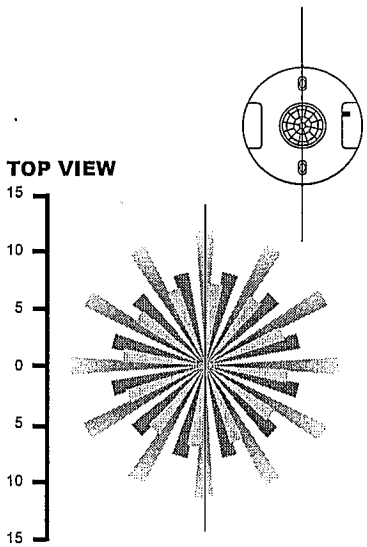
Note: For maximum distance place the sensor so that the screw axis is aligned with the entrance axis.

Note: Heat producing sources controlled by the sensor must not be in the view pattern of the sensor.
Symptom: Sensor cycles or appears to continually stay "On".
Solution: Move sensor or mask lens segments that view the source.

SIDE VIEW



TOP VIEW



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STANDARD RANGE SENSOR - CEILING MOUNT, LOW VOLTAGE, PIR/MICROPHONICS™ (PDT)

CM-PDT SERIES

w/ Enhanced Daylighting Control Options!

TYPICAL APPLICATIONS
- Partitioned Cubical Spaces
- Restroom with Stalls
- Library Study Carrels & Stacks

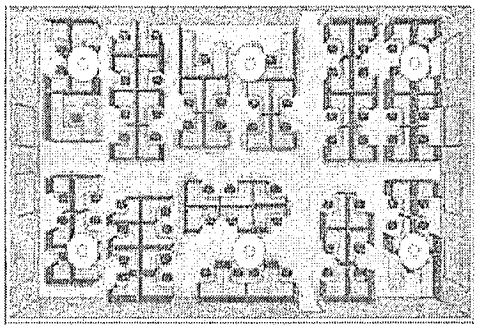
FEATURES
- Patented Dual Technology with PIR/Microphonics™ Detection
- Communicates with Other Sensors
- Time Delay: 30 sec. to 20 minutes
- Push-Button Programmable
- Green LED Indicator
- 100 Hr. Lamp Burn-in Timer Mode

AVAILABLE OPTIONS
- Isolated SPDT Relay (-R)
- On/Off Photocell (-P)
- Auto Dimming Cntl. Photocell (-ADC)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS
- Size: Circular, 4.55" Dia., 1.55" Deep (11.56 cm Dia., 3.94 cm Deep)
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting: Ceiling Tile Surface, Round Fixture or Junction Box
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 71° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- UL, CUL, and Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)
- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F(-20° C)

Open area office lighting control is made cost effective with the use of the *CM-PDT Series* Passive Dual Technology occupancy sensor. This small, yet powerful sensor provides line of sight PIR detection of small motion in a circular pattern and combines overlapping Microphonics™ coverage for detection of occupants working in their cubical space. By installing multiple *CM-PDTs* on 30 foot centers, large zones are created (typically one per circuit of lighting). The lighting is then controlled in blocks similar to manual switching, only no one will ever have to remember to turn off the lights! Restrooms with stalls, large storage areas with shelving, and libraries with study carrels are also easily and cost effectively controlled by the *CM-PDT*.



SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected.

DAYLIGHTING CONTROL OPTIONS

For spaces with abundant natural light from windows or skylights, this series offers an On/Off Photocell (-P) option and an Automatic Dimming Control (-ADC) Photocell option. The -P option is ideal for public areas like vestibules, corridors, or restrooms; while the -ADC option is perfect for classrooms and private offices. As the daylight levels change in the room, both options insure that an adequate light level is maintained according to a programmable set-point value. The -P option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. The -ADC option allows the sensor to control a dimmable ballast. It also provides a secondary dim time-out that enables the lights to go to a dim setting after one time-out and then turn fully off after a second time-out. For more detailed information on these daylighting control features, see the CM-PC-ADC Technical Data Sheet.

SENSORS vs. LIGHTING PANELS

Lower cost, convenience, reliability, and greater energy savings are all provided by installing *CM-PDTs* rather than computer based lighting control panels. No programming, no confusing overrides, no chance of turning off while the area is still occupied, and no reason for leaving the lights on in "anticipation" of occupants! Real time detection of occupancy always outperforms a pre-programmed time clock. All this at a fraction of the total installed cost of a lighting panel!

CATALOG INFORMATION

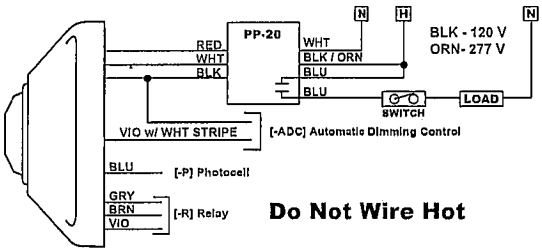
MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
CM-PDT	Dual Technology Ceiling Mount Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	On/Off Photocell			4 mA
-RP	Relay & On/Off Photocell			16 mA
-ADC	Automatic Dimming Control Photocell			4 mA
-LT	Low Temp/High Humidity	-4° to 160° F		

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD CM-9

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)



INTERNAL LOW VOLTAGE RELAY OPTION

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay.

Note: Sensor must have power at all times for the relay to function .

MOUNTING CONSIDERATIONS

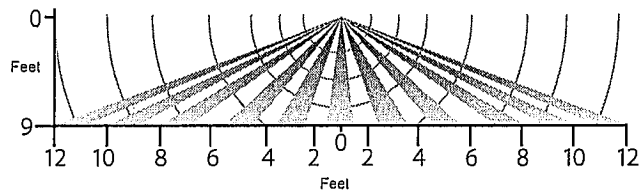
The *CM-PDT* is provided with 2 self tapping mounting screws. The sensor typically mounts directly to the ceiling tile, or to the metallic grid. However, if desired, the mounting holes are slotted to line up with a standard round or rectangular box (screws not provided).

Note: The ceiling tile provides insulation from stray plenum noises. Only penetrate tile to allow for mounting screws and wires (3 small holes).

FIELD OF VIEW

The *CM-PDT's* dome lens provides a maximum viewing angle of 56° in a complete 360° conical pattern. The Microphonics™ detects normal human activity up to 20 feet, but will detect greater distances in spaces with hard floors or very quiet rooms with little or no background noise. Place the sensor along the entrance door wall to prevent it from viewing out into the hallway. Avoid locating the sensor near HVAC air diffusers because the "noise" generated from air flow will decrease the sensitivity of the Microphonics™ sensor.

SIDE VIEW



RELAY OPTION (-R)

GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state
Note: Relay is energized during Unoccupied state

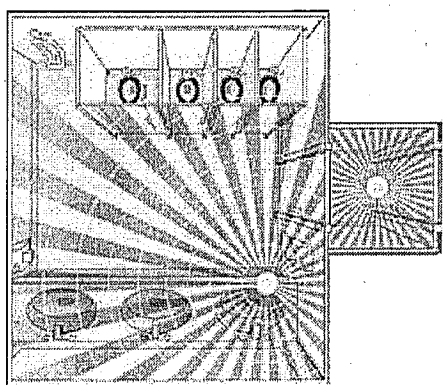
PHOTOCELL OPTION (-P)

BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

AUTOMATIC DIMMING CONTROL (-ADC)

VIOLET/WHITE striped - Connect to Violet wire from 0-10 VDC dimmable ballast. Also connect ballast Gray wire to sensor Black wire. **Note:** If both the -P and the -ADC options are selected the "Inhibit" mode of the -P option is not available.

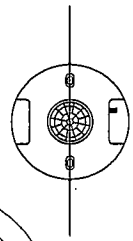
Multi-Stall Restroom w/Vestibule



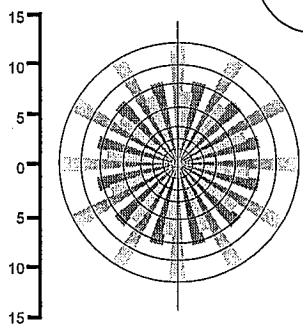
PIR used with PDT

- CM-9 PIR in vestibule initiating the light "On"
- Microphonics™ in CM-PDT is activated by the CM-9.
- CM-PDT detects occupants in stalls

Note: For maximum distance place the sensor so that the screw axis is positioned with the entrance axis.



TOP VIEW



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EXTENDED RANGE SENSOR - CEILING MOUNT, LOW VOLTAGE, PIR/MICROPHONICS™ (PDT)

TYPICAL APPLICATIONS

- Classrooms
- Partitioned Cubical Spaces
- Library Study Carrels & Stacks

FEATURES

- Patented Dual Technology with PIR/Microphonics™ Detection
- Communicates with Other Sensors
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min increments
- Push-Button Programmable
- Green LED Indicator
- 100 Hr. Lamp Burn-in Timer Mode

AVAILABLE OPTIONS

- Isolated Low Voltage Relay (-R)
- On/Off Photocell (-P)
- Auto Dimming Cntl. Photocell (-ADC)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: Circular, 4.55" Dia., 1.55" Deep (11.56 cm Dia., 3.94 cm Deep)
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting: Ceiling Tile Surface, Round Fixture or Junction Box
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 71° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- UL, CUL, and Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -4° F(-20° C)

CM-PDT-10 SERIES

w/ Enhanced Daylighting Control Options!

Classrooms and larger spaces are conveniently controlled by the *CM-PDT-10 Series* Extended Range occupancy sensor. Even when classrooms are filled with shelving, hanging projects, or lab benches; the *CM-PDT-10* provides total coverage! When mounted at 9 feet this sensor provides line of sight PIR detection up to 28 feet in a circular pattern and combines overlapping Microphonic™ for detection around obstructions. When comparing small motion detection, the *CM-PDT-10* far out performs other "2,000 SF Dual Tech" sensors. Corner or wall mounting a WV-PDT Series sensor is also an effective solution for classrooms, however ceiling mounting is often the only option. The *CM-PDT-10* is also ideal in lower ceiling height applications. Multiple *CM-PDT-10s* may be used together or in combination with other low voltage sensors to customize coverage for large or irregularly shaped spaces.

SENSOR OPERATIONS

Sensors with Passive Dual Technology (PDT) first "See" motion using Passive Infrared (PIR) and then engage Microphonics™ to "Hear" sounds that indicate continued occupancy. This patented technology uses Automatic Gain Control (AGC) to dynamically self adapt a sensor to its environment by filtering out constant background noise and detecting only noises typical of human activity. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected.

DAYLIGHTING CONTROL OPTIONS

For spaces with abundant natural light from windows or skylights, this series offers an On/Off Photocell (-P) option and an Automatic Dimming Control (-ADC) Photocell option. The -P option is ideal for public areas like vestibules, corridors, or restrooms; while the -ADC option is perfect for classrooms and private offices. As the daylight levels change in the room, both options insure that an adequate light level is maintained according to a programmable set-point value. The -P option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. The -ADC option allows the sensor to control a dimmable ballast. It also provides a secondary dim time-out that enables the lights to go to a dim setting after one time-out and then turn fully off after a second time-out. For more detailed information on these daylighting control features, see the CM-PC-ADC Technical Data Sheet. **Note:** If both the -P and the -ADC options are selected the "Inhibit" mode of the -P option is not available.

INTERNAL LOW VOLTAGE RELAY OPTION (CM-PDT-10-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay. **Note:** Sensor must have power at all times for the relay to function .

CATALOG INFORMATION

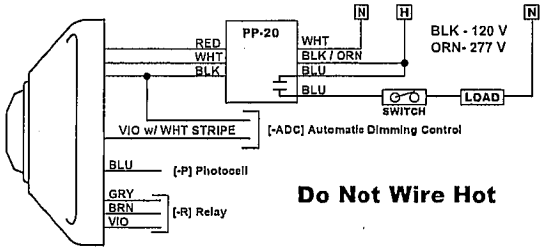
MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
CM-PDT-10	Dual Technology Ceiling Mount Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	On/Off Photocell			4 mA
-RP	Relay & On/Off Photocell			16 mA
-ADC	Automatic Dimming Control Photocell			4 mA
-LT	Low Temp/High Humidity	-4° to 160° F		

WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD CM-9

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)



Do Not Wire Hot

RELAY OPTION (-R)

GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state
Note: Relay is energized during Unoccupied state

PHOTOCELL OPTION (-P)

BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

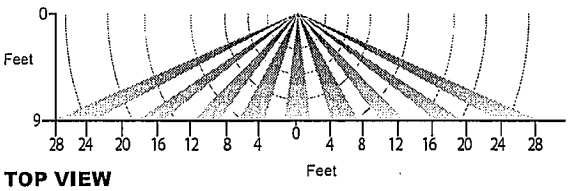
AUTOMATIC DIMMING CONTROL (-ADC)

VIOLET/WHITE striped - Connect to Violet wire from 0-10 VDC dimmable ballast. Also connect ballast Gray wire to sensor Black wire.

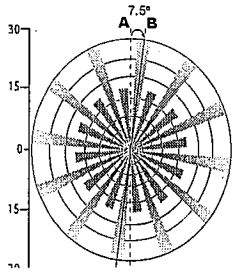
FIELD OF VIEW

The *CM-PDT-10* dome lens provides a maximum PIR viewing angle of 67° in a complete 360° conical pattern. In Classrooms, locate sensor and align mounting screws as shown to detect right at door threshold, without viewing outside the entrance. Standard round fixture boxes will provide the proper angle for maximum viewing towards the door in the corner of the room. For long narrow or smaller rooms, locate sensor along entrance wall. Avoid locating the sensor near HVAC air diffusers because the "noise" generated from air flow will decrease the sensitivity of the Microphonic™ sensor.

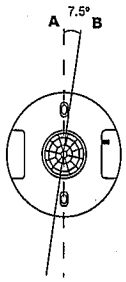
SIDE VIEW



TOP VIEW



Note: For maximum distance rotate the sensor clockwise so that the screw axis(A) is positioned 7.5° off the entrance axis(B).



1. Locate sensor 28 feet from entrance door. This would typically be 20 feet in both directions.
2. Rotate sensor so that mounting screws line up looking into corner of room.
3. Maximum beam distance will then line up with the door entrance at 28 feet.

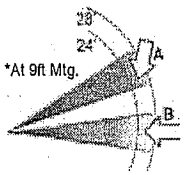
Location Guide	
Ceiling Height	Dist In and Over
8 Ft.	17 Ft.
9 Ft.	20 Ft.
10 Ft.	22 Ft.

MOUNTING CONSIDERATIONS

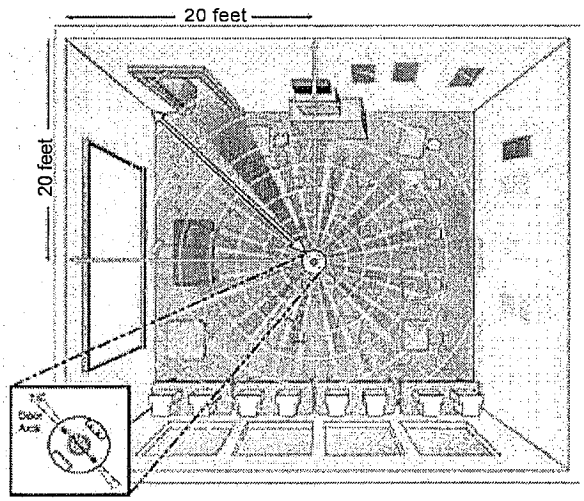
The *CM-PDT-10* is provided with 2 self tapping mounting screws. The sensor typically mounts directly to the ceiling tile, or to the metallic grid. However, if desired, the mounting holes are slotted to line up with a standard round, or rectangular box (screws not provided).

Note: The ceiling tile provides insulation from stray plenum noises. Only penetrate tile to allow for mounting screws and wires (3 small holes).

A: When walking across beam, detection will occur at approximately 28 feet.
B: When walking into beam, detection will occur at approximately 24 feet.



TYPICAL CLASSROOM 9' CEILING



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LOW VOLTAGE PASSIVE INFRARED HALLWAY SENSOR

TECHNICAL DATA

TYPICAL APPLICATIONS

- Hallway Sensing

FEATURES

- PIR Occupancy Detection
- Coverage up to 130 Feet
- Communicates with Other Sensors
- Programmable w/o removing cover
- Time Delay: 30 sec. to 20 minutes, selectable in 2.5 min. increments
- Green LED Activity Indicator
- 100 Hr. Burn-in Timer Mode

AVAILABLE OPTIONS

- Isolated Low Voltage Relay (-R)
- Photocell Daylight Override (-P)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

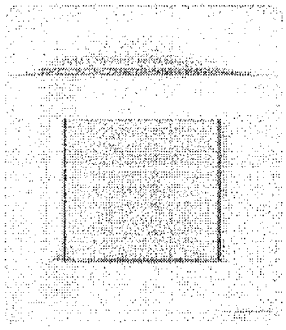
- Size: Rectangular, 3.0" x 3.6" x 1.75" (7.62 cm x 9.14 cm x 4.45 cm)
- Sensor Weight: 4 Ounces
- Sensor Color: White
- Mounting: 7 to 10 ft in Corner or Ceiling using bracket (WV-BR)
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F (-10° to 29° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- Operating Voltage:12 - 24 VAC/VDC
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -40° F(-40° C)

HW-13 SERIES

Programmable Edition!



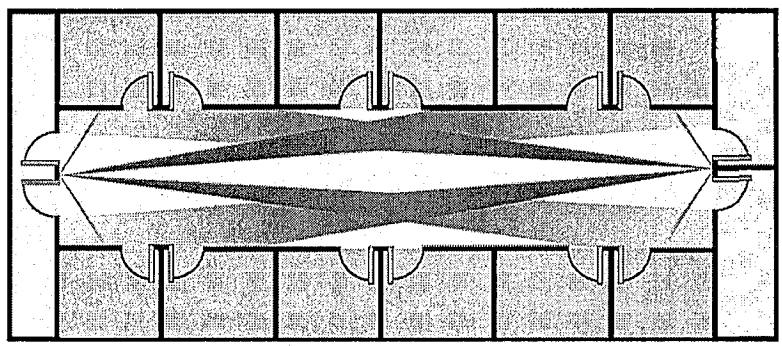
Long narrow Passive Infrared (PIR) detection is provided by the *HW-13* for control of Hallway lighting. Typically mounted at either end of a long corridor, the HW-13 detects occupants entering the hallway up to 130 feet away. Detection at these distances is for entrances at right angles to the beam pattern. Wired in parallel, the *HW-13* may be used with other low voltage sensors. For example, a CM-10 ceiling sensor may be in a vestibule at one end while the *HW-13* is at the other. The *HW-13* is best mounted at 7 feet.

SENSOR OPERATIONS

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a DC output goes high and can drive up to 200 mA of connected load. The sensor is powered with 12 to 24 VAC/VDC and typically operates with a PP-20 or MP-20 Power Pack; enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art design requires no manual field adjustments.

PASSIVE INFRARED DETECTION TECHNOLOGY

The *HW-13* has one main PIR collector beam. Motions are detected as occupants cross into or out of this beam. PIR detects motions across the beam much better than motions directly into the beam; therefore care must be taken to make sure the sensor is not viewing out the end of the corridor where crossing traffic provides stronger detection signals than occupants entering directly at the sensor. Positioning sensors at both ends and ensuring that they do not view out of the corridor will provide proper performance.



CATALOG INFORMATION

MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
HW-13	Passive Infrared Hallway Sensor	14° to 160° F	12 to 24 VAC/VDC	4 mA
Add suffix				
-R	SPDT Relay, 1 Amp			16 mA
-P	Photocell - Daylight Override			4 mA
-RP	Relay & Photocell			16 mA
-LT	Low Temp/High Humidity	-40° to 160° F		
Accessory				
WV-BR	Ceiling Mount Bracket			

PHOTOCELL DAYLIGHT HARVESTING OPTION (HW-13-P)

This series offers a Photocell (-P) option for daylight harvesting in spaces with abundant natural light. This option is ideal for public spaces with windows like vestibules, corridors, or bathrooms. As the daylight levels change in the room, the -P option insures that an adequate light level is maintained according to a programmable threshold value called a set-point. The Photocell option provides two modes of operation; one simply inhibits the lights from turning on, while the other has full On/Off control of the lights. For more detailed information on the operation of Photocell control, see the CM-PC Technical Data Sheet.

INTERNAL LOW VOLTAGE RELAY OPTION (HW-13-R)

To enable a sensor to interface with a building management system, the -R option provides dry contact closure via a SPDT, 1 Amp, 40 Volt relay. The relay coil is energized and changes state when ALL connected sensors register "Unoccupied". When using multiple sensors, only one sensor per zone needs to have a relay.
Note: Sensor must have power at all times for the relay to function .

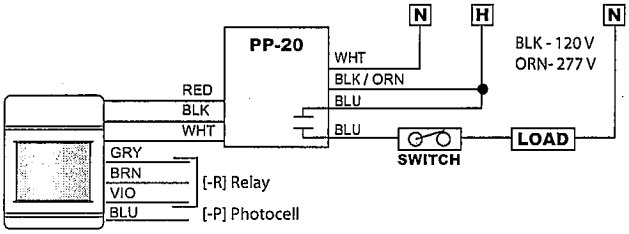
WIRING INSTRUCTIONS

Wire lead connections are Class II, 18 to 22 AWG.

STANDARD HW-13

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)

TYPICAL WIRING DIAGRAM - DO NOT WIRE HOT



RELAY OPTION (-R)

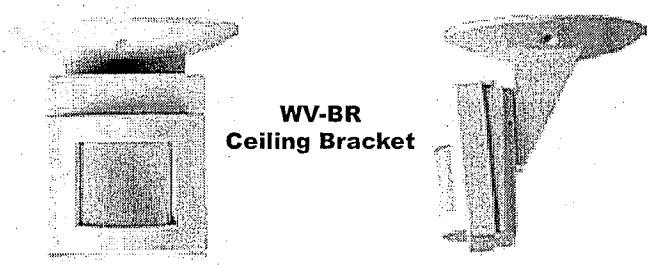
GRAY / BROWN - Connected during Occupied state
VIOLET / BROWN - Connected during Unoccupied state.
Note: Relay is energized during Unoccupied state

PHOTOCELL OPTION (-P)

BLUE - Photocell output (High: Occupied & Low Light)
Use Blue wire from sensor in place of White wire. For multi-level control, use 2 Power Packs and connect White to primary load and Blue to daylight load.

CEILING MOUNT BRACKET (WV-BR)

The WV-BR Ceiling Mount Bracket allows the *HW-13* to be ceiling mounted for conditions where mounting to the wall is not possible. **Note:** View shown is when the sensor is installed fully vertically. Tilting will aim view pattern down.

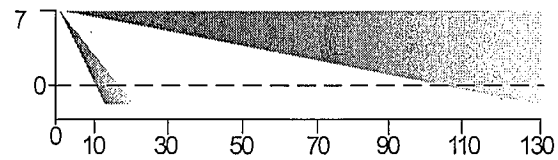


WV-BR
Ceiling Bracket

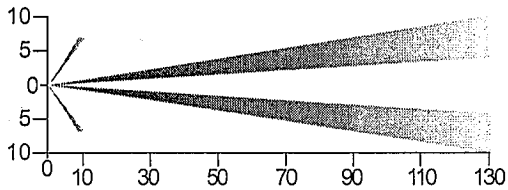
FIELD OF VIEW vs. TILT ADJUSTMENT

The *HW-13* has three tilt adjustments. At 7 feet mounting, the sensor should be installed fully vertical. At higher mounting heights, the sensor may be tilted foward.

SIDE VIEW



TOP VIEW



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revised 1/26/2006

TECHNICAL DATA

TYPICAL APPLICATIONS

- Used with Low Voltage Sensors
- Multiple Sensors
- Multiple Loads

POWER PACK HIGHLIGHTS

- Dual Voltage Transformer
- Self-Contained Relay
- Powers up to 14 sensors

SPECIFICATIONS

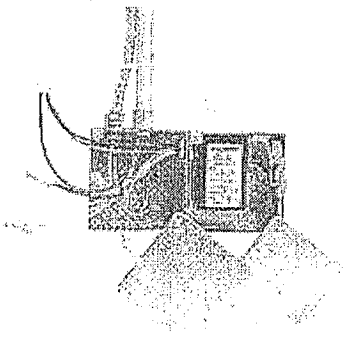
- Size: (1/2" inch chase nipple not inc.) MP-20 & MSP-20, 4 1/8" x 3" x 1 7/8"
- Mounting: 1/2" inch chase nipple
- Operating Voltage: 120, 240, or 277 VAC
- Each Relay: 20 Amps
- 1 HP Motor Load
- Output Voltage: 15 VDC, 150 mA
- Class II 18 AWG, up to 2,000 ft.
- Plenum Rated
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 160° F
- Storage Temp: -14° to 160° F
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

LOW TEMP/HI HUMIDITY(-LT)

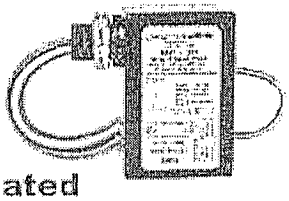
- Conformally Coated PCB
- Operates down to -40° F
- Corrosion resistant from moisture

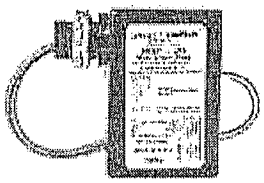
PLENUM CONSIDERATIONS

Most local codes allow for small plastic controls in Return Air Plenums; *Some Do Not!* To meet local code, the Power Pack can be mounted inside an adjacent (Deep) junction box as shown below.



MP-20
MSP-20





Plenum Rated

Mini Power Packs are the heart of the Low Voltage Sensor System. The *MP-20* transforms 120, 240 or 277 Volts to class II 15 VDC to power the remote sensors. Although Plenum Rated, the elongated mounting nipple allows for the *MP-20* to be mounted either directly thru a 1/2" inch knockout in a junction box, or to be located inside an adjacent box for specific local code requirements. Up to 14 sensors may be connected to one *MP-20*. Multi-circuit control can be handled by multiple *MP-20's* and Slave Packs (*MSP-20*) may be configured. *MP-20's* can be wired continuously hot (line side), or on the switch leg (load side) without nuisance delays upon turn "On".

MINI POWER PACK OPERATION

The Mini Power Pack consists of a transformer and a relay. The transformer has a dual primary high voltage input, accepting 120, 240, or 277 VAC. The secondary voltage provides power to Sensor Switch low voltage heads. When the sensor head detects motion, they electronically signal the power pack to close the relay(s) connected to the lighting system.

LOW VOLTAGE OPERATION AND TEST

The Low Voltage Wires are color coded Red (15 VDC), Black (Common), and White (Occupancy Signal). With no sensors connected, touch the Red wire to the White. The lights should turn "On". Remove the connection and the lights should turn "Off". With the sensors connected, the Red and Black wires provide DC power to the remote sensors, and when there is occupancy detected, the White wire produces a 15 VDC signal from the sensor to the power pack initiating the lights to "On". Upon initial power up, the Sensors automatically send an "On" signal until the sensors have stabilized and "Timed Out".

SIZING OF THE SYSTEM - VARIOUS COMBINATIONS

Combining Power Packs provides for additional power to drive remote devices. Maximum numbers of remote sensors are shown below based on the Power Pack/ Slave Pack being used. *Maximum number of "Relays" is 30.*

	Sensors	Sensors with Relay
1 MP-20	14	8
1 MP-20 w/MSP-20	7	6
2 MP-20	28	16

Note 1: Only three relays may be controlled with one Mini Power Pack. If more than three circuits are required, multiple MiniPower Packs must be used.

Note 2: Only one "Sensor with Relay" is required in most cases. See Technical Data on Low Voltage Sensors and SPDT EMS Interface Option.

SYSTEMS CONSIDERATIONS

The local override switch may be upstream or downstream of an *MP-20*. However, if an *MSP-20* Auxiliary Relay controller is being used, the switch(es) should be downstream on the load side of the relay. If power is disconnected to the Power Pack all subsequent relays will open, turning off all of the loads. If wiring the local switches before the Power Pack and Slave Pack, use multiple *MP-20's*, one for each circuit. This will allow for one circuit to remain powered, keeping the system operational when the other is turned off. When controlling a dimming circuit, *MP-20* must be wired before dimmer, or *MSP-20* may be wired after dimmer.

CATALOG INFORMATION

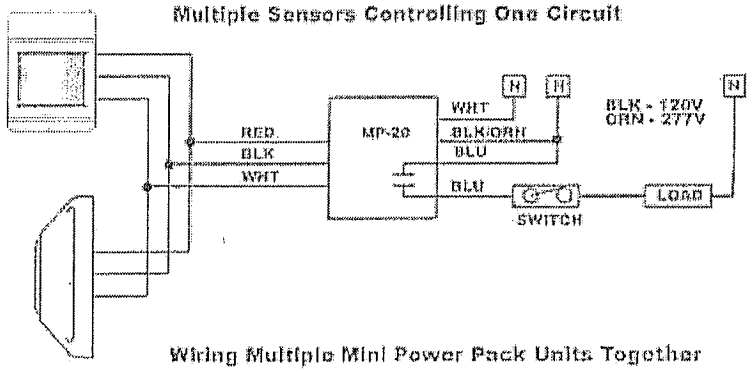
MODEL#	DESCRIPTION	OUTPUT VOLTAGE	OUTPUT CURRENT
MP-20	Power Pack with 20 Amp Relays	15 to 24 VDC	70 to 110 mA
MSP-20	Slave Pack with 20 Amp Relays	N/A	40 mA(consumption)

Add suffix -LT for Low Temp/Hi Humidity

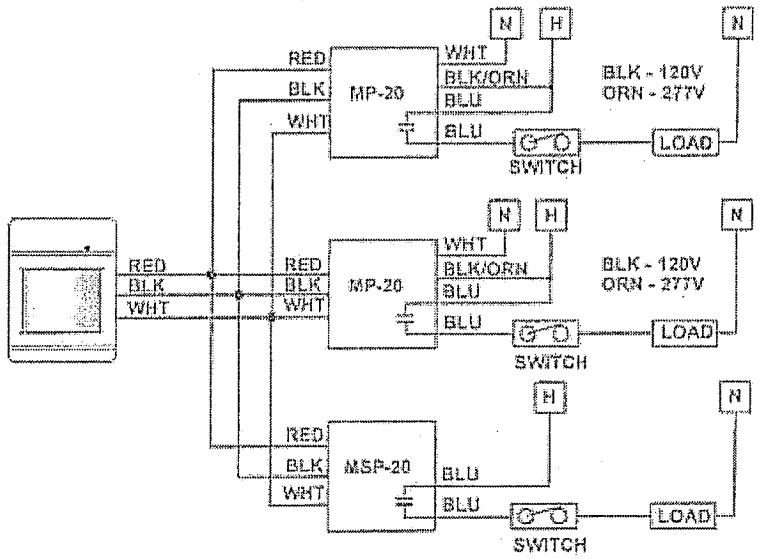
TYPICAL WIRING DIAGRAMS - DO NOT WIRE HOT

NOTE: The Power Pack must be connected to a single phase Hot and Neutral System. For 120 VAC, connect the Black wire to Hot, White wire to Neutral, and Cap off the Orange wire. For 240-277 VAC, connect the Orange to Hot, White to Neutral, and Cap off the Black wire. *Never connect both the Black and Orange wires!* Low Voltage wire can be 18 to 22 AWG; shielding is not necessary.

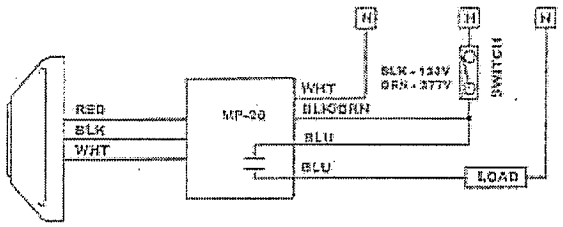
Multiple Sensors Controlling One Circuit



Wiring Multiple Mini Power Pack Units Together



One Sensor Controlling One Circuit



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revised 12/10/2004

VendingMISER®

Reduce energy costs

The Miser family is a line of occupancy-based energy control products. The VendingMiser® patented technology represents a breakthrough in the power control of cold beverage vending machines. It reduces energy consumption by an average of 46% and decreases per machine maintenance by $40-$80 per year. All while maintaining the temperature of the vended product. VendingMiser® typically has a short average payback of between one and two years.*

How the VendingMiser reduces energy consumption

Utilizing a Passive Infrared (PIR) Sensor, VendingMiser® powers down a vending machine when the area surrounding it is vacant. VendingMiser® also monitors the room's temperature, and automatically re-powers the vending machine at one to three hour intervals, independent of occupancy, to ensure that the vended product stays cold.

VendingMiser's® electrical current sensor will never power down a vending machine while the compressor is running, eliminating compressor short cycling. In addition, when the vending machine is powered up, the cooling cycle is allowed to run to completion before again powering down. For a series of up to 4 machines, VendingMiser® can utilize its unique embedded Sensor Repeater, which allows it to be controlled from the PIR sensor of any other Miser in the bank.

Beyond cold drink vending

Other cooled product vending machines, such as refrigerated candy machines, can also be controlled by VendingMiser®. Non-cooled product machines can be controlled to reduce energy costs by our companion product, SnackMiser™. VendingMiser® is made in the USA.

VENDINGMISERS® BENEFIT THE ENVIRONMENT AND REDUCE ENERGY COSTS

One VendingMiser® reduces greenhouse gas emissions by 2200 lbs. of CO_2 and 3600 grams of NOx each year.**

The average annual energy costs for a cold drink vending machine is $300 per year. With the VendingMiser® you can save an average of $150 per year, per machine.***

* Based on electric rate and occupancy.

** Based on occupancy and the Energy Information Administration's national average of greenhouse gas emissions and electricity generation.

*** Based on our current customers.

For more information about the VendingMiser® by USA Technologies
800-770-8539 • www.usatech.com

Frequently Asked Questions

Will VendingMiser® keep my drinks cold?
Absolutely - VendingMiser® has been tested and accepted for use by both major bottlers.

Is the VendingMiser® easy to install?
Yes! VendingMiser® is a simple external plug-and-play product. The VendingMiser® can be installed on the wall with simple hand tools or it can be attached to the vending machine without tools using the new Easy-Install system. The Easy-Install System allows quick installation in 5 minutes.

Is VendingMiser® safe for all machines?
Yes! VendingMiser® is compatible with all types of cold drink vending machines. In fact, by reducing run time of the machines, VendingMiser® reduces maintenance costs.

Has VendingMiser® been field tested?
Tens of thousands of VendingMisers® are operational in the field. Typical energy savings have been independently documented to be between 35% and 45%. Measurement and verification test results as well as testimonials are available on the website.

Are there any locations not appropriate for VendingMiser®?
VendingMiser's® savings are generated as a result of location vacancy. Therefore, a machine in a location that is occupied 24-hours, 7 days a week will likely generate little savings.

Technical Specifications

ELECTRICAL SPECIFICATIONS

Input Voltage:	115 Volts (230 Volts available)
Input Frequency:	50/60 Hz
Maximum Load:	12 Amps (Steady-State)
Power Consumption:	Less than 1 Watt (Standby)

ENVIRONMENTAL SPECIFICATIONS

Operating Temp:	-15°C to 75°C
Storage Temp:	-40°C to 85°C
Relative Humidity:	95% Maximum (Non-Condensing)

COMPATIBILITY

Vending Machines:	Any machine, except those containing perishable goods such as dairy products.

INACTIVITY TIMEOUTS

Occupancy Timeout:	15 minutes
Auto Repower:	One to three hours, dynamically adjusted, based on ambient temperature

DIMENSIONS

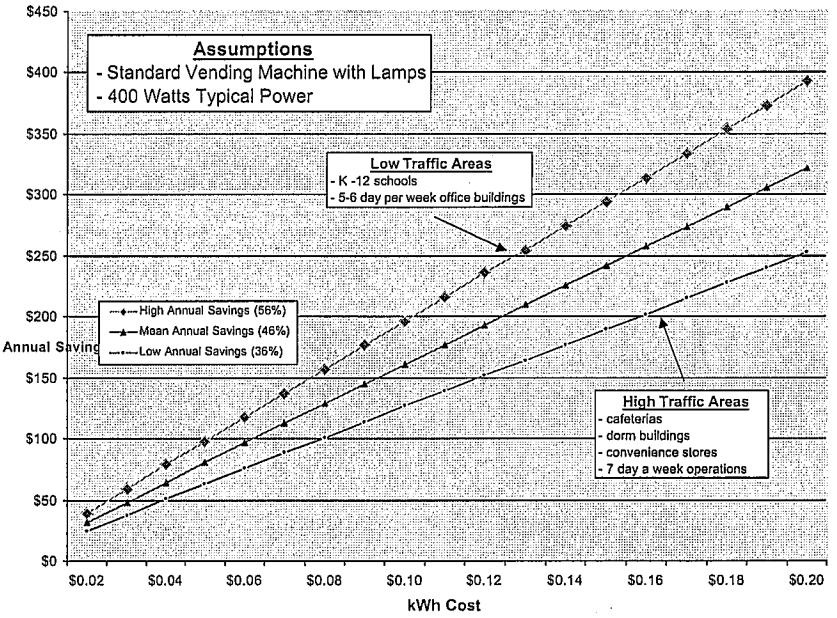
Size:	4.5"W x 1.75"H x 3.25"D
Weight:	2.2 lb. (incl. power cable)

REGULATORY APPROVALS

Safety:	UL/C-UL Listed Information Technology Equipment (ITE) 9T79

UL LISTED c UL LISTED

Typical Saving Generated with VendingMiser®



VendingMiser® Products

VM150	VendingMiser® with PIR Sensor
VM151	VendingMiser® only
VM160	Weatherproof VendingMiser® with PIR Sensor
VM161	Weatherproof VendingMiser® only
VM170	Easy-Install VendingMiser® with PIR Sensor
VM171	Easy-Install VendingMiser® only
VM180	Weatherproof Easy-Install VendingMiser w/PIR sensor
VM181	Weatherproof Easy-Install VendingMiser only

For more information about the VendingMiser® by USA Technologies
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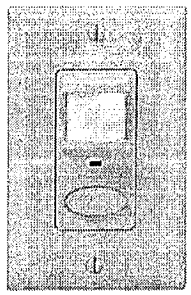
sensorswitch

WALL SWITCH DECORATOR SENSOR - PASSIVE INFRARED (PIR), LINE VOLTAGE

WSD SERIES

Programmable Edition!



The *WSD Series* is a stylish, easy to install, and simple to use Wall Switch Decorator style Passive Infrared (PIR) sensor. It is ideal for private offices, copy rooms, closets, or any small enclosed space without obstructions. A user programmable time delay ensures that once the room is vacated the sensor will time out and turn off the lights. Additionally, the *WSD Series* sensors have several On Modes and Switch Modes that can be programmed using the front push-button. For rooms with obstructions the WSD-PDT should be considered.

TYPICAL APPLICATIONS

- Private Offices
- Conference Rooms
- Individual Bathrooms w/o stalls
- Janitor Closets
- Hallways & Stairwells

FEATURES

- PIR Occupancy Detection
- Self Contained Relay, no Power Pack needed
- Patented Bi-Polar Wiring: Interchangeable Hot & Load wires
- Small Motion Detection up to 20 ft.
- Intrinsically Grounded
- No Minimum Load
- Push-Button Programmable
- Time Delay: 30 sec. to 20 minutes
- Three-Way & Multi-Level Switching
- Green LED Status Indicator

AVAILABLE OPTIONS

- Vandal-Resistant Lens (-V)
- Photocell Daylight Override (-P)
- Low Temp/Hi Humidity (-LT)

SPECIFICATIONS

- Size: 4.2"H x 1.8"W x 1.5"D (10.67cm x 4.57cm x 3.81cm)
- Sensor Weight: 5 Ounces
- Colors: Ivory, White, Gray, Almond
- Mounting Height: 30 to 48 inches
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 85° F (-10° to 29° C)
- Storage Temp: -14° to 160° F (-26° to 71° C)
- Load Rating (1 phase only):
  120 VAC @ 800 W
  277 VAC @ 1200 W
  347 VAC @ 1500 W
- Frequency: 50/60 Hz (Timers are 1.2 x for 50 Hz)
- UL, CUL, & CSA Listed
- CA Title 24 Compliant
- 5 Year Warranty
- Made in U.S.A

LOW TEMP/HI HUMIDITY (-LT)

- Conformally coated Circuit Board is corrosion resistant from moisture
- Operates down to -40° F(-40° C)

SENSOR OPERATIONS

The sensor detects changes in the infrared energy given off by occupants as they move within the field-of-view. When occupancy is detected, a self-contained relay switches the lighting "On". The sensor is line powered and can switch line voltage (see specifications). An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is push-button programmable from 30 seconds to 20 minutes, and is reset every time occupancy is re-detected. This state-of-the-art sensor requires no manual sensitivity adjustments.

OPERATIONAL MODES

On Modes (*Default)

Automatic On* - The sensor automatically turns the lights on when the sensor detects occupancy.

Reduced Turn-On - The sensor is set to initially only detect large motions, effectively ignoring any reflected PIR signals while still sensing occupants when they enter the room. Once on, the sensor returns to maximum sensitivity.

Switch Modes (*Default)

Predictive Off* - Pressing the switch overrides the lights off and temporarily disables the occupancy detection. After an exit time delay (default 10 seconds) the occupancy detection reactivates and monitors for an additional grace period time (default 5 seconds). If no occupancy is detected during this period, the sensor will revert to Automatic On operation. If occupancy is detected, the sensor will remain in Permanent Off mode requiring the switch to be pressed again in order to restore the sensor to Automatic On.

Permanent Off - Pressing the push-button switch will turn the lights off. The lights will remain off regardless of occupancy until the switch is pressed again, restoring the sensor to Automatic On mode.

Switch Disable - Prevents user from manually turning off the lights via the push-button.

PHOTOCELL DAYLIGHT OVERRIDE OPTION (WSD-P)

The *WSD* offers a Photocell Daylight Override option (-P) for spaces with abundant natural light. Ideal for public places with windows like vestibules, corridors, or bathrooms; this option inhibits the lights from turning on if there is sufficient daylight available. Once the lights turn on, however, the photocell function is disabled until the sensor's occupancy timer expires and turns the lights off. For more information on daylighting control, see the CM-PC-ADC technical datasheet.

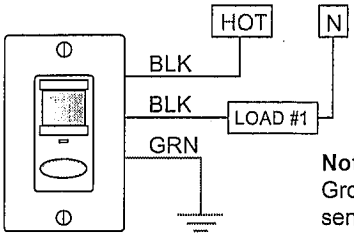
Model Numbering System: WSD-[LENS]-[PHOTOCELL]-[VOLTAGE]-[COLOR*]-[TEMP/HUMIDITY]

SERIES #	LENS	PHOTOCELL	VOLTAGE	COLOR	TEMP/HUMIDITY
WSD	Blank = Standard -V = Vandal Resistant	Blank = No Photocell -P = w/Photocell	Blank = 120-277 VAC -3 = 347 VAC**	-I = Ivory -W = White -G = Gray -A = Almond	Blank = 14° to 85° F -LT = -40° to 85° F

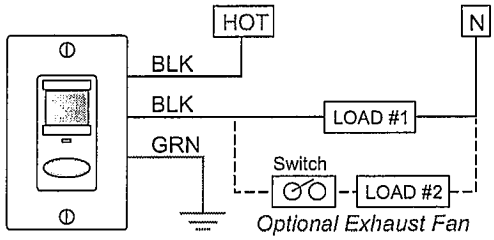
**347 VAC: Plate not provided

*Must specify color

TYPICAL WIRING DIAGRAM (DO NOT WIRE HOT)

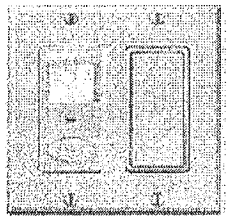


Note: Connection to Ground required for sensor to function!



Optional Exhaust Fan

Note: Black wires are replaced with Red wires for 347 VAC.



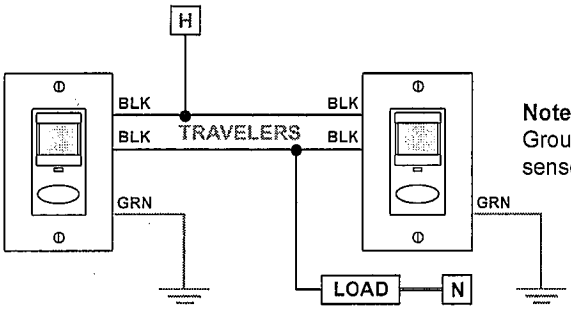
WIRING TO A LIGHT AND A FAN

One of the sensor's Black wires connects to the Hot (Line) power feed. The sensor's other Black wire connects to the Light and the Toggle Switch controlling the Exhaust Fan. The sensor's Green wire connects to Ground. When the sensor is in the Occupied Mode, the Exhaust Fan may be overridden "Off" by the Toggle Switch.

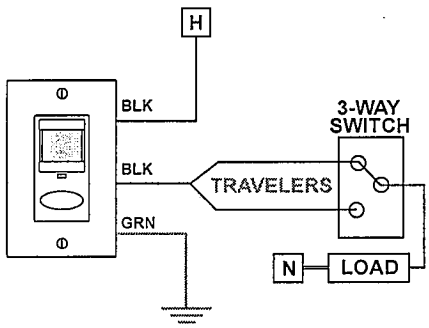
Note: Standard 2-gang plate not included

WIRING FOR 3-WAY SWITCHING

Travelers are used to wire sensors in parallel. If only one sensor is needed to view space, 3-way switch is non-functional.

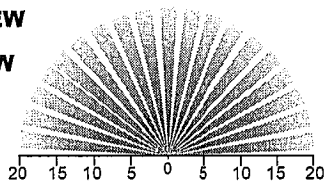


Note: Connection to Ground required for sensor to function!

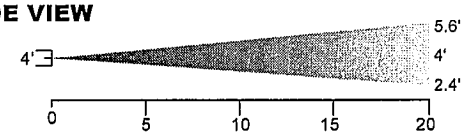


FIELD OF VIEW

TOP VIEW



SIDE VIEW



STANDARD vs. VANDAL RESISTANT LENS

The Standard lens provides maximum PIR detection sensing small movements up to 20 feet, and large motions up to 50 feet. This lens should be used in typical offices or rooms where occupants work for extended periods of time. The Vandal Resistant lens should be used in high abuse or public areas (copy rooms, small public restrooms, storage closets), where occupants simply come and go and make larger types of motions. A sensor with a Vandal Resistant lens will have its PIR detection range reduced by 50%.

WARNING

Fire Hazard Caution: Maximum Lamps 1500 Watts, Type 347 VAC.
Attention: Risque d'incendie : Pauissance Maximales Des Lampes 1500 Watts, Type 347 VAC.
Warning: The units are intended to be installed by a qualified person with properly rated branch circuit protectors as per applicable local and national regulations (CEC, NEC).

sensorswitch
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revised 02/26/2007

sensorswitch™

PIR CORNER OR WALL MOUNTED
LOW VOLTAGE
WIDE VIEW SENSORS

TECHNICAL DATA

TYPICAL APPLICATIONS

- Classrooms w/o Obstructions
- Large Conference Rooms
- Large Open Spaces
- Hallways

SENSOR HIGHLIGHTS

- Corner Mount PIR Sensor
- 120° by 40ft. Coverage for Small Motion
- Optional Photocell Daylight Override
- Optional Photocell On/Off
- Optional Isolated SPDT Relay
- Programable w/o removing cover

FEATURES

- Time Delay: 30 sec. to 20 minutes selectable in 2.5 min. increments
- Green LED Indicator

SPECIFICATIONS

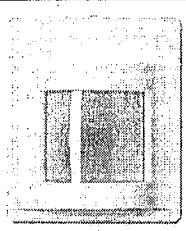
- Size: Rectangular, 3.0" x 3.6" x 1.75"
- Sensor Weight: 5 Ounces
- Sensor Color: White
- Mounting Height: 8 to 10 Feet
- Relative Humidity: 20 to 90% non-condensing
- Operating Temp: 14° to 85° F
- Storage Temp: -14° to 160° F
- UL and CUL Listed
- 5 Year Warranty
- Made in U.S.A.

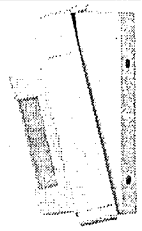
LOW TEMP/HI HUMIDITY(-LT)

- Conformally Coated PCB
- Operates down to -40° F
- Corrosion resistant from moisture

WV-16 SERIES

WV-BR (Bracket)





Programmable Edition!

Able to fit in the palm of your hand, the *WV-16* Wide View Sensor unobtrusively mounts in a corner near the ceiling detecting small motions up to 40 feet away, and large motions up to 70 feet away. The unique "Tilting feature" allows this sensor to be mounted anywhere from 8 to 10 feet with excellent long-range coverage. In 30 by 30 ft. classrooms with no obstructions, this is all the sensor you will need. In corridors, the *WV-16* is mounted flat against the wall and volumetrically views up to 70 feet. (For specific long narrow hallway applications, see HW-13 Technical Data Sheet). When corner or wall mounting is not possible, use ceiling bracket *WV-BR* accessory to locate the *WV-16* on the ceiling where desired. By using multiple Wide Views in combination with the CM-9 PIR ceiling sensor, odd shaped rooms or corridors are also easily covered. For rooms with obstructions, the WV-PDT or CM-PDT-10 Dual Technology sensors should be used.

SENSOR OPERATIONS

The *WV-16* detects changes in the Infrared energy given off by occupants as they move within the sensors field-of-view. This unique sensor is powered with 12 to 24 VAC/VDC (Red & Black wire inputs), and has one DC output (White wire). When occupancy is detected, this output goes high and can drive up to 200 mA of connected load. The *WV-16* typically operates with a PP-20 or MP-20 Power Pack enabling complete 20 Amp circuits to be controlled. An internal timer, factory set at 10 minutes, keeps the lights "On" during brief periods of no activity. This timer is selectable at 2.5 minute increments from 30 seconds to 20 minutes, and is reset every time occupancy is detected. This state-of-the-art design requires no manual field adjustments.

PHOTOCELL OPTIONS (WV-16-P and WV-16-PF)

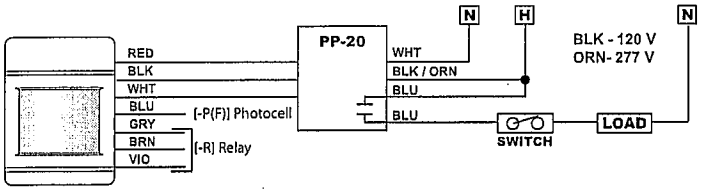
The *WV-16* offers two Photocell options for spaces with abundant natural light. It is ideal for public spaces with windows like vestibules, corridors, or bathrooms; however it is not recommended for work spaces where occupants set light levels manually. Each photocell option utilizes a set-point value that is programable by the user via a digital push button sequence. The **Photocell Daylight Override** (–P) option simply inhibits the lights from turning on, however once the lights are on, the photocell function is disabled until the sensor times out. The **Photocell On/Off** (–PF) option has full control of the lights; turning them on when the level is below the set-point and off when adequate ambient light is present. For more specific information on the operation of Photocell On/Off control and/or dimming, see the CM-PC-ADC Technical Data Sheet information.

CATALOG INFORMATION

MODEL #	DESCRIPTION	TEMPERATURE	OP. VOLTAGE	CURRENT
WV-16	Passive Infrared Wide View Sensor	14° to 160° F	12 to 24 VAC/VDC	3 mA
Add suffix				
-R	SPDT Relay, 1 Amp		12 to 24 VAC/VDC	13 mA
-P(F)	Photocell - Daylight Override (On/Off)		12 to 24 VAC/VDC	3 mA
-RP(F)	Relay & Override Photocell (On/Off)		12 to 24 VAC/VDC	13 mA
-LT	Low Temp/High Humidity	-40° to 160° F		
Accessory				
WV-BR	Ceiling Mount Bracket			

INPUT\OUTPUT

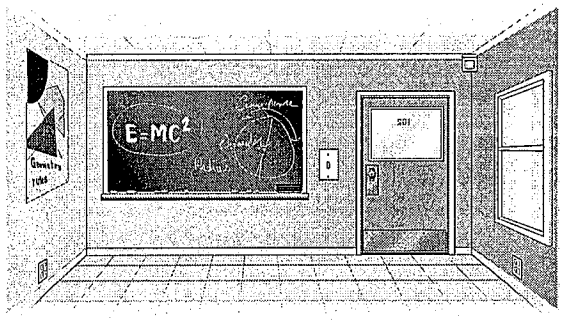
Wire lead connections are Class II, 18 to 22 AWG. The *WV-16* uses 3 leads (Red, Black, and White); the Photocell options add a Blue lead, and the Relay Option adds 3 leads (Brown, Gray, and Violet). The connections are as follows:



Do Not Wire Hot

INSTALLATION CONSIDERATION

The *WV-16's* rear enclosure is beveled so as to be corner mounted at 8 to 10 feet (see tilt settings). Always mount sensor in a corner above the entrance door or in a corner along the same wall as the entrance. If the room is large and multiple sensors are needed, mount the second sensor in the opposite corner, however tilt sensor forward to ensure that the PIR collector beams are not viewing out the door. For mounting heights above 10 feet, use the *WV-BR* and mount sensor to angled side to provide an initial 30° look down.



STANDARD WV-16

RED - 12 to 24 VAC/VDC
BLACK - Common
WHITE - Output (HI DC for Occupancy)

RELAY OPTION WV-16-R

BROWN - Center tap of relay (SPDT)
GRAY - High when Occupancy Contacts Closed
VIOLET - High when Occupancy Contacts Open

PHOTOCELL OPTION WV-16-P(F)

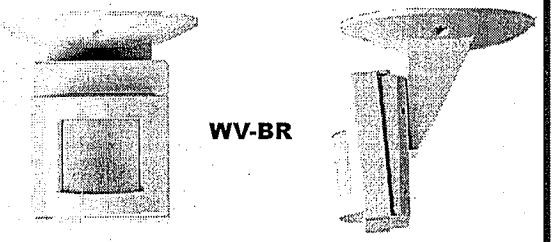
BLUE - Photocell Output (High: Occ/Low Light)
Use Blue wire from sensor in place of White Wire. For multi-level control, use 2 Power Packs and connect White to primary, and Blue to Daylight Load.

INTERNAL LOW VOLTAGE RELAY OPTION

Dry Contact Closure (-R) is provided through a SPDT, 1 Amp, 40 volt relay. The relay coil is energized and changes state when ALL sensors connected register "Unoccupied". Only one sensor per zone (if multiple sensors) needs to have this relay. Sensor must be powered from either a Power Pack, or Class 2 transformer.

CEILING MOUNT BRACKET (WV-BR)

The *WV-BR* Ceiling Mount Bracket allows the *WV-16* to be mounted in the corner of the area from the ceiling for conditions where mounting to the wall is not possible.

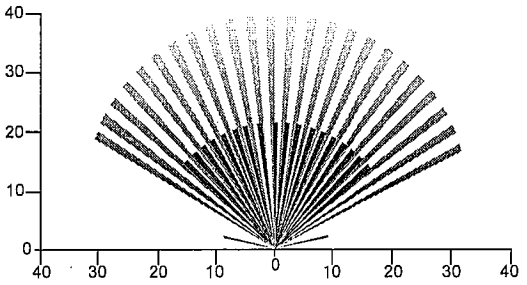


WV-BR

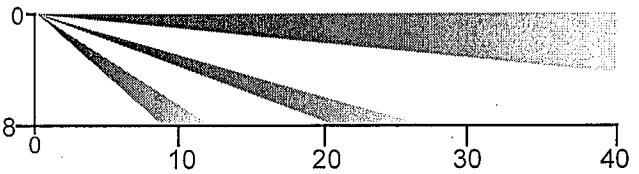
TILT ADJUSTMENT

Mt. Ht.	Position
7' - 8'	Vertical
8' - 9'	Center
9' - 10'	Forward
Above 10'	Use WV-BR

TOP VIEW



SIDE VIEW



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