

● **PROJECT INFORMATION**

Project:

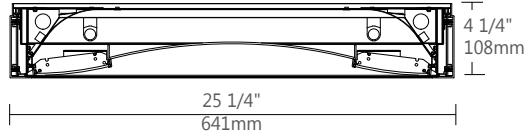
Notes:

Type:

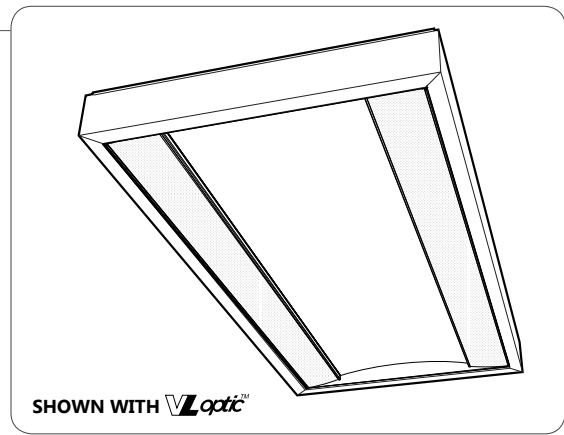
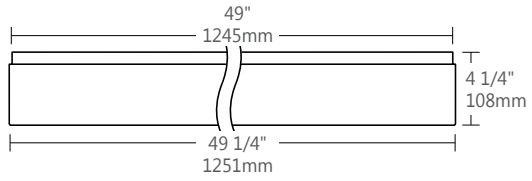
Approved by:  Date:

● **DIMENSIONS**

SECTION VIEW



SIDE VIEW



● **ORDERING CODE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
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● **PRODUCT SPECIFICATIONS**

1 PRODUCT ID	2 SIZE	3 SIDE OPTIC	4 LAMP	5 LAMP CONFIGURATION	6 FINISH
<b>DUO</b> duo	<b>24</b> 2'X4'	<b>VL</b> vl optic	<b>T5</b> T5 <b>T5HO</b> T5HO <b>T8</b> T8	<b>2</b> 2 lamps <b>4</b> 4 lamps	<b>W</b> white <b>BLK</b> black <b>C</b> custom

7 VOLTAGE	8 BALLAST	9 CIRCUITS	10 MOUNTING/SUSPENSION	11 BATTERY
<b>120</b> 120V <b>277</b> 277V <b>347</b> 347V <sup>(1)</sup> <b>UNV</b> universal	<b>D</b> dimming <b>E</b> instant start <sup>(2)</sup> <b>ERS</b> program start <b>BI</b> bi-level dimming <b>+M</b> master <b>+S</b> satellite	<b>1</b> 1 regular <b>2</b> 2 regular <b>2A/B</b> 2 alternating <b>+E(#)</b> emergency section <b>+NL(#)</b> night light section <b>+GTD(#)</b> generator transfer device	<b>SM</b> surface mount	<b>B#</b> battery pack

(1) Please consult factory

(2) Available with T8 lamp only

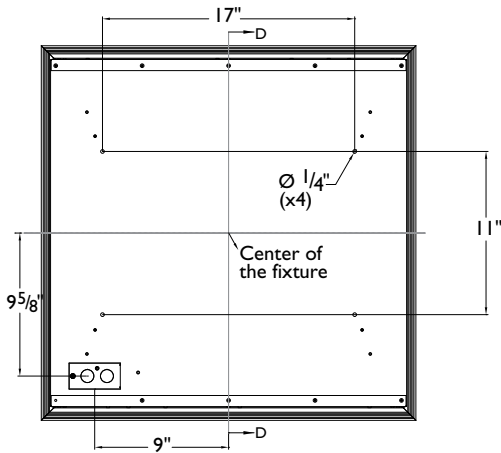
12 OTHER	13 IC CONTROLS	14 CUSTOM
<b>F</b> fuse <b>FW(#)</b> flex whip (6' std)	<b>DS#</b> daylight sensor <b>OS#</b> occupancy sensor <b>DS+OS#</b> daylight+occupancy sensor <b>DOS#</b> daylight&occupancy sensor See integrated controls guide for further details	<b>C</b> custom Please specify

**SPECIFY BALLAST NAME (if needed)**

**SPECIFY BATTERY NAME (if needed)**

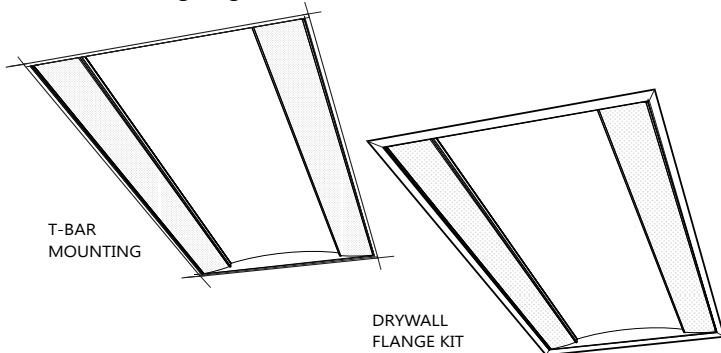
## ● CEILING SYSTEM

### MOUNTING HOLES POSITION



### RECESSED OPTION

For more details see recessed specification sheets available at: [www.axislighting.com](http://www.axislighting.com)



**i** Installation sheets for all mounting options are available at: [www.axislighting.com](http://www.axislighting.com)

## ● CONSTRUCTION

<b>Housing</b>	Die formed cold rolled sheet steel (20 gauge)
<b>Central Lens Housing</b>	Extruded aluminum (0.060" nominal)
<b>Reflectors</b>	Die formed cold rolled sheet steel (22 gauge)
<b>Interior Brackets</b>	Die formed cold rolled sheet steel (20 gauge)
<b>Surface Mount Kit</b>	Extruded aluminum (0.070" nominal)

## ● WEIGHT

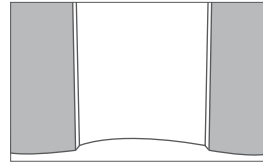
<b>Surface Mount</b>	45 lbs / 20.4 kg
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## ● OPTICAL SYSTEM

DUO optical system includes two side lenses and one center lens. Center lens has an extruded aluminum frame and can be opened to replace the lamps. Side lenses are 0.08" PMMA satin blend.

There are two available options for center lens:

**VL<sup>opti</sup>**: PMMA Precision formed microconical structure (VL Optic) 92 percent transmissive that cuts off glare above 55 degrees.



VL vl optic


## ● FINISH

Highly reflective, matte powder coat white paint for high efficiency yet has a matte texture to diffuse glare and lamp image on the surfaces within the optical chamber. Custom finishes are also available (exterior only).

## ● ELECTRICAL

<b>Ballast</b>	Electronic IS, Electronic Rapid Start, Dimming (0-10V, Line, EcoSystem, DALI), BI-level dimming With preinstalled ballast disconnect as per NEC & CEC
<b>Emergency</b>	Emergency battery pack or emergency circuit
<b>Voltage</b>	120V, 277V, 347V, UNV

## ● APPROVALS

Certified to UL and CUL standards   
Suitable for damp locations.

● **INTEGRATED CONTROL OPTIONS**

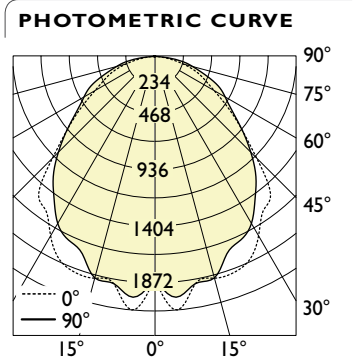
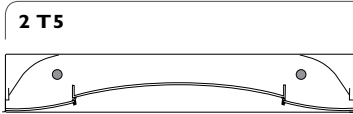
DUO luminaires allow the use of integrated controls such as daylight sensors (DS), occupancy sensors (OS), individual daylight sensors and occupancy sensors (DS+OS), and combination daylight/occupancy sensors (DOS). These options can be seamlessly integrated into our luminaires. The control system could be used to optimize the lighting of the space by reducing energy consumption through daylight harvesting and occupancy, thereby improving the overall interior environment and allowing for LEED credits.

- Consult factory for other options.
- Refer to IC brochure for more information.



SENSORS	BRAND	Model	TYPE	CODE	COMPATIBLE DIMMING BALLAST
Daylight Sensor (DS)	Lutron	EC-DIR-WH	Daylight	LD	EcoSystem
	Wattstopper	FD-301	Daylight	WD	0-10V
	Philips	Luxsense	Daylight	PL	0-10V
Occupancy Sensor (OS)	Wattstopper	FS-205	PIR Occupancy	WP1	Programmed Rapid Start
		FS-355	PIR Occupancy	WP2	Programmed Rapid Start
		FS-155	PIR Occupancy	WP3	Programmed Rapid Start
		FS-505	Ultrasonic Occupancy	WU1	Programmed Rapid Start
		FS-505C	Ultrasonic Occupancy	WU2	Programmed Rapid Start
		FM-105	High Frequency Occupancy	WH	Programmed Rapid Start
Daylight & Occupancy Sensors (DOS)	Philips	Actilume	Daylight & PIR Occupancy	PA	DALI or 0-10V

● **PHOTOMETRIC DATA**



**Test Lamp: 2x F28T5**  
 IES FILE: DUO24-VL-T5-2.ies

**Efficiency: 84.5%**

**i** All IES files are available for download at: [www.axislighting.com](http://www.axislighting.com)

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	1838	1838	1838	1838	1838	
5	2106	1970	2005	1842	2000	105
15	1900	1916	1807	1834	1898	441
25	1855	1783	1702	1675	1677	733
35	1560	1514	1515	1481	1443	917
45	1190	1188	1147	1122	1121	923
55	736	729	781	801	775	738
65	452	487	522	555	576	556
75	243	230	298	333	322	354
85	53	53	70	68	78	129
90	3	3	5	7	7	

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	Horizontal Angles		
	0	45	90
45	2128	1885	1856
55	1571	1484	1489
65	1243	1219	1367
75	979	944	1041
85	426	359	412

**COEFFICIENTS OF UTILIZATION (%)**

Ceiling	80			70			50				
	70	50	30	10	70	50	30	10	50	30	10
Wall	70	50	30	10	70	50	30	10	50	30	10
0	101	101	101	101	99	99	99	99	94	94	94
1	93	89	86	83	91	87	84	81	84	81	79
2	85	78	73	68	83	77	72	67	74	69	66
3	78	69	63	57	76	68	62	57	65	60	56
4	71	62	54	49	70	61	54	49	58	53	48
5	66	55	48	43	64	54	47	42	53	47	42
6	61	50	43	37	59	49	42	37	48	42	37
7	57	46	38	33	55	45	38	33	44	37	33
8	53	42	35	30	52	41	34	30	40	34	30
9	50	38	32	27	48	38	31	27	37	31	27
10	46	35	29	24	45	35	29	24	34	28	24

Based on floor reflectance of 20

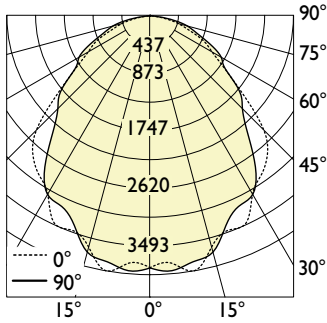
● **PHOTOMETRIC DATA**

**4 T5**



with **VL optic™**

**PHOTOMETRIC CURVE**



**Test Lamp: 4xF28T5**  
 IES FILE: DUO24-VL-T5-4.ies

**Efficiency: 80.5%**

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	3825	3825	3825	3825	3825	
5	3768	3828	3835	3785	3884	205
15	3634	3625	3625	3505	3714	862
25	3469	3453	3460	3271	3194	1444
35	2953	2950	2917	2820	2801	1779
45	2455	2349	2197	2047	1993	1755
55	1388	1402	1474	1473	1403	1397
65	910	840	952	996	1010	1011
75	454	447	540	540	593	638
85	99	90	143	133	120	235
90	7	9	10	15	11	

**COEFFICIENTS OF UTILIZATION (%)**

Ceiling	80				70				50			
	70	50	30	10	70	50	30	10	50	30	10	
Wall												
0	96	96	96	96	94	94	94	94	90	90	90	
1	88	85	82	79	86	83	80	77	80	77	75	
2	81	75	69	65	79	73	68	64	70	66	63	
3	74	66	60	55	72	65	59	54	62	57	53	
4	68	59	52	47	66	58	52	47	56	50	46	
5	63	53	46	41	61	52	46	41	50	45	40	
6	58	48	41	36	57	47	41	36	46	40	36	
7	54	44	37	32	53	43	37	32	42	36	32	
8	51	40	33	29	49	39	33	29	38	33	28	
9	47	37	30	26	46	36	30	26	35	30	26	
10	44	34	28	24	43	34	28	24	33	27	23	

Based on floor reflectance of 20

**LUMINANCE DATA (CD/M<sup>2</sup>)**

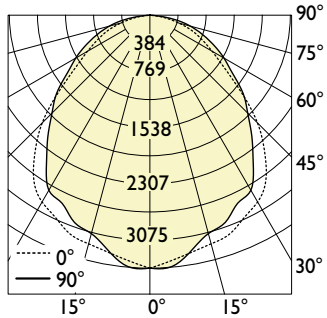
Vertical Angle	Horizontal Angles		
	0	45	90
45	4392	3608	3299
55	2963	2800	2693
65	2501	2225	2395
75	1831	1707	1916
85	796	732	638

**2 T5HO**



with **VL optic™**

**PHOTOMETRIC CURVE**



**Test Lamp: 2xF54T5HO**  
 IES FILE: DUO24-VL-T5HO-2.ies

**Efficiency: 84.4%**

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	3460	3460	3460	3460	3460	
5	3371	3407	3327	3271	3452	181
15	3293	3341	3302	3264	3270	767
25	3187	3148	3061	3004	3016	1258
35	2950	2824	2785	2738	2765	1583
45	2444	2383	2319	2195	2172	1577
55	1628	1617	1619	1641	1667	1280
65	985	1005	1093	1158	1170	949
75	613	586	696	758	766	611
85	227	234	319	365	363	227
90	5	6	9	13	11	

**COEFFICIENTS OF UTILIZATION (%)**

Ceiling	80				70				50			
	70	50	30	10	70	50	30	10	50	30	10	
Wall												
0	101	101	101	101	99	99	99	99	94	94	94	
1	93	89	86	83	91	87	84	81	84	81	79	
2	85	78	73	68	83	77	72	67	74	69	66	
3	78	69	63	57	76	68	62	57	65	60	56	
4	71	62	54	49	70	61	54	49	58	53	48	
5	66	55	48	43	64	54	47	42	53	47	42	
6	61	50	43	37	59	49	42	37	48	42	37	
7	57	46	38	33	55	45	38	33	44	37	33	
8	53	42	35	30	52	41	34	30	40	34	30	
9	50	38	32	27	48	38	31	27	37	31	27	
10	46	35	29	24	45	35	29	24	34	28	24	

Based on floor reflectance of 20

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	Horizontal Angles		
	0	45	90
45	3729	3228	3136
55	2635	2560	2647
65	2158	2059	2285
75	1654	1597	1850
85	695	665	652

**i** All IES files are available for download at: [www.axislighting.com](http://www.axislighting.com)

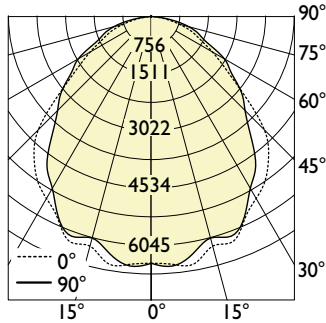
**PHOTOMETRIC DATA**

**4 T5HO**



with **VLoptic™**

**PHOTOMETRIC CURVE**



**Test Lamp: 4xF54T5HO**  
 IES FILE: DUO24-VL-T5HO-4.ies

**Efficiency: 80.6%**

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	6517	6517	6517	6517	6517	
5	6570	6431	6800	6342	6613	351
15	6276	6221	6093	6104	6058	1468
25	5874	5938	5575	5587	5834	2482
35	5264	5182	4867	5004	4817	3071
45	4233	3925	3732	3586	3509	3034
55	2397	2346	2480	2541	2582	2403
65	1430	1473	1694	1770	1637	1772
75	755	724	898	995	1027	1100
85	164	176	275	231	208	410
90	8	10	20	27	24	

**COEFFICIENTS OF UTILIZATION (%)**

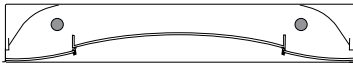
Ceiling	80				70				50			
	70	50	30	10	70	50	30	10	50	30	10	
Wall												
0	96	96	96	96	94	94	94	94	89	89	89	
1	88	84	81	78	86	83	80	77	79	77	75	
2	81	74	69	65	78	73	68	64	70	66	62	
3	74	66	60	55	72	65	59	54	62	57	53	
4	68	59	52	47	66	58	51	46	56	50	46	
5	63	53	46	41	61	52	45	40	50	44	40	
6	58	48	41	36	57	47	40	36	46	40	35	
7	54	43	37	32	53	43	36	32	42	36	31	
8	50	40	33	29	49	39	33	28	38	32	28	
9	47	37	30	26	46	36	30	26	35	30	26	
10	44	34	28	23	43	33	27	23	33	27	23	

Based on floor reflectance of 20

**LUMINANCE DATA (CD/M<sup>2</sup>)**

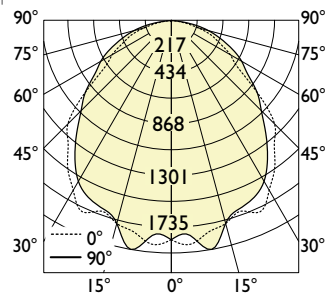
Vertical Angle	Horizontal Angles		
	0	45	90
45	7573	6129	5809
55	5116	4712	4957
65	3930	3959	3881
75	3043	2840	3315
85	1313	1410	1102

**2 T8**



with **VLoptic™**

**PHOTOMETRIC CURVE**



**Test Lamp: 2xF32T8**  
 IES FILE: DUO24-VL-T8-2.ies

**Efficiency: 82.8%**

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	1840	1840	1840	1840	1840	
5	1885	1844	1847	1832	1811	99
15	1765	1788	1797	1798	1763	427
25	1771	1722	1658	1671	1641	716
35	1515	1498	1484	1454	1409	901
45	1228	1171	1111	1113	1070	905
55	678	729	770	792	784	733
65	449	437	497	553	565	544
75	238	236	290	316	323	345
85	46	55	68	82	58	127
90	3	3	6	7	6	

**COEFFICIENTS OF UTILIZATION (%)**

Ceiling	80				70				50			
	70	50	30	10	70	50	30	10	50	30	10	
Wall												
0	99	99	99	99	96	96	96	96	92	92	92	
1	91	87	84	81	88	85	82	79	82	79	77	
2	83	76	71	66	81	75	70	66	72	68	64	
3	76	67	61	56	74	66	60	55	64	59	54	
4	70	60	53	48	68	59	52	47	57	51	47	
5	64	54	47	41	63	53	46	41	51	45	41	
6	59	49	42	36	58	48	41	36	46	40	36	
7	55	44	37	32	54	44	37	32	42	36	32	
8	52	41	34	29	50	40	33	29	39	33	29	
9	48	37	31	26	47	37	30	26	36	30	26	
10	45	34	28	24	44	34	28	24	33	27	24	

Based on floor reflectance of 20

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	Horizontal Angles		
	0	45	90
45	2196	1825	1771
55	1448	1464	1505
65	1233	1163	1339
75	958	916	1042
85	367	347	308

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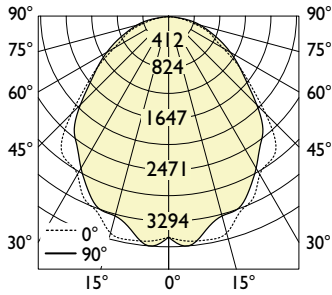
**PHOTOMETRIC DATA**

**4 T8**



with **VL<sub>o</sub>ptic™**

**PHOTOMETRIC CURVE**



**Test Lamp: 4xF32T8**  
 IES FILE: DUO24-VL-T8-4.ies

**Efficiency: 75.7%**

**CANDELA DISTRIBUTION**

Vertical Angle	Horizontal Angles					Zonal Lumens
	0	22.5	45	67.5	90	
0	3553	3553	3553	3553	3553	
5	3630	3569	3608	3664	3706	195
15	3609	3434	3415	3301	3323	809
25	3224	3112	3222	3106	3074	1353
35	2845	2797	2731	2674	2563	1664
45	2208	2172	2052	1952	2008	1666
55	1370	1344	1388	1397	1381	1332
65	803	799	861	921	917	940
75	414	381	514	517	530	599
85	78	86	126	125	98	219
90	10	6	12	14	10	

**LUMINANCE DATA (CD/M<sup>2</sup>)**

Vertical Angle	Horizontal Angles		
	0	45	90
45	3950	3371	3324
55	2925	2637	2652
65	2208	2012	2176
75	1667	1625	1710
85	623	644	521

**COEFFICIENTS OF UTILIZATION (%)**

Ceiling	80				70				50			
	70	50	30	10	70	50	30	10	50	30	10	
Wall	70	50	30	10	70	50	30	10	50	30	10	
0	90	90	90	90	88	88	88	88	84	84	84	
1	83	80	77	74	81	78	75	73	75	72	70	
2	76	70	65	61	74	69	64	60	66	62	59	
3	70	62	56	52	68	61	55	51	59	54	50	
4	64	55	49	44	62	54	48	44	53	47	43	
5	59	50	43	38	58	49	43	38	47	42	38	
6	55	45	39	34	53	44	38	34	43	38	33	
7	51	41	35	30	50	40	34	30	39	34	30	
8	47	38	31	27	46	37	31	27	36	31	27	
9	44	35	29	24	43	34	28	24	33	28	24	
10	42	32	26	22	41	32	26	22	31	26	22	

Based on floor reflectance of 20

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