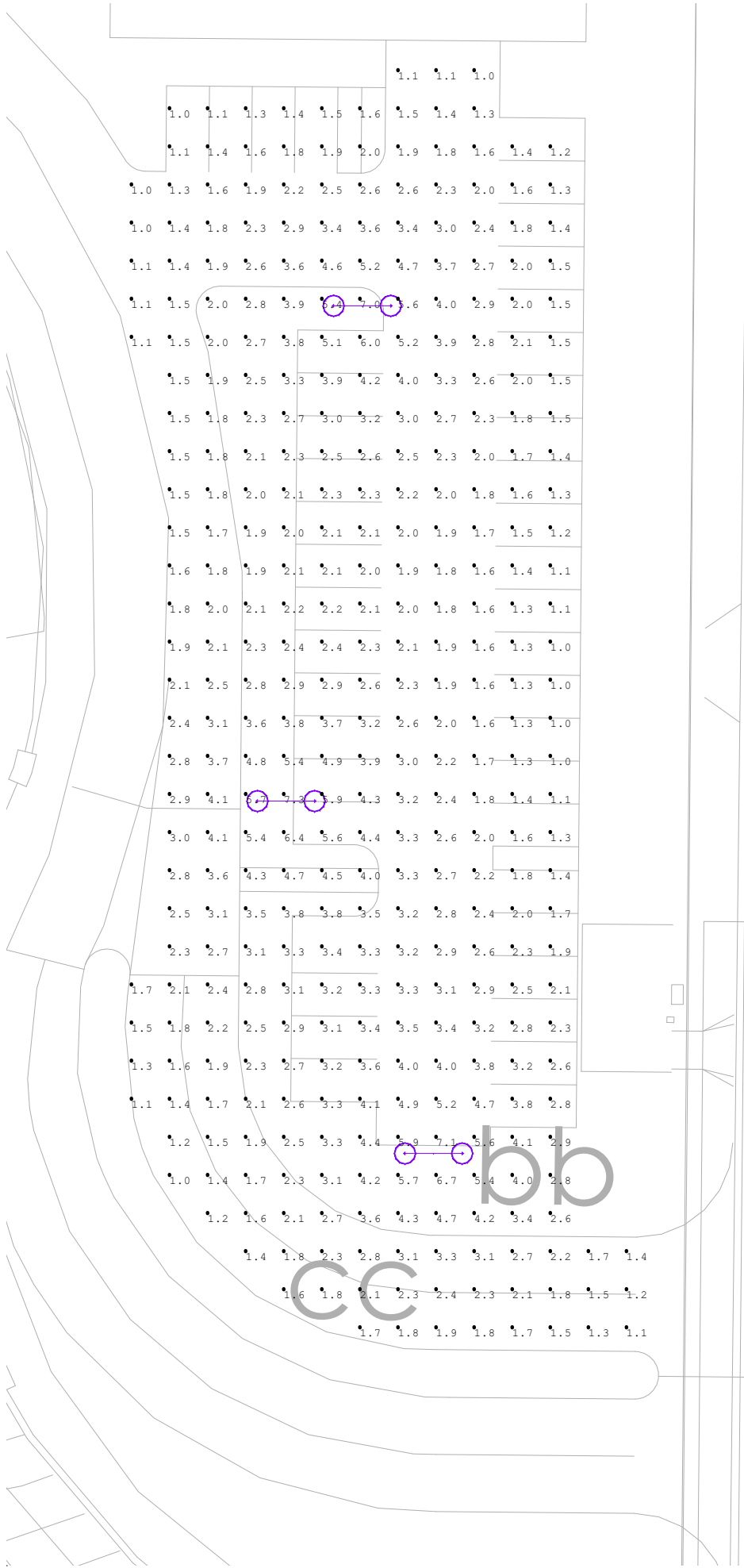


Appendix B: Woodcrest Photometrics



DAUCHY AVENUE

HY AVENUE

NOVEMBER 2,2023
PROJECT: WOODCREST CHRISTIAN SCHOOL - PARKING LOT
SPECIFIER: CHARLES BROWN ARCHITECT
CALIFORNIA LIGHTING SALES
JIM POIRIER
TAMI JOHNSON

Luminaire Schedule										
Symbol	Qty	Label	Arrangement	Description	Tag	Mounting Height	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	3	18	Back-Back	US ARCHITECTURAL: DSB18-PLED-VSQ-W-48LED-875mA-40K	BOTTOM OF POLE FIXTURE AT 18 FEET-0 INCH AFG	18	0.900	16099	133.9	803.4

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PARKING & DRIVE	Illuminance	Fc	2.57	7.3	1.0	2.57	7.30

DISCLAIMER: This calculation, either normal lighting or emergency lighting, is based on the information provided to CLS by the architect, engineer, lighting designer, contractor, etc.. These findings should be verified by a certified electrical engineer as to their accuracy. Design changes such as ceiling heights, ceiling, wall and floor reflectances of all interior surfaces including partition walls may adversely affect the overall light levels. CLS is not responsible as to the veracity of these calculations, and should only be used as a design reference tool and are only an approximation.

SOLID STATE AREA LIGHTING

DSB SERIES-PLED

FEATURES

Luminaire and Arm

Heavy walled one-piece aluminum spinning with single reveal for additional rigidity. Arm is heavy cast low copper aluminum (A356 alloy, < .02% copper) and also functions as driver compartment.

PLED™ Optics

Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-reflector inside the refractor re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments.

LED Emitters

High output LED's are utilized with drive currents ranging from 350mA to 875mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

LED Driver

Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field installation.)

Amber LED's

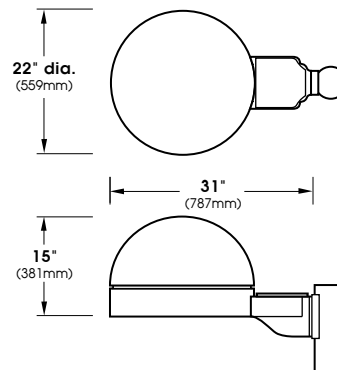
PCA (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. TRA (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

Finish

Polyester powder coat incorporates four step iron phosphate process to pretreat metal surface for maximum adhesion. Top coat is baked at 400°F for maximum hardness and exterior durability.

PROJECT NAME: _____

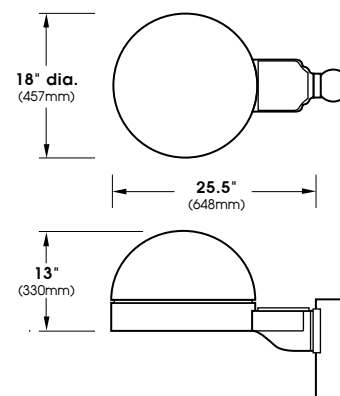
FIXTURE TYPE: _____



DSB22

(Formerly DSB)

Patent pending



DSB18

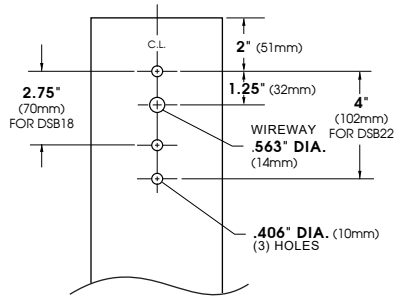
(Formerly DSBM)

Patent pending

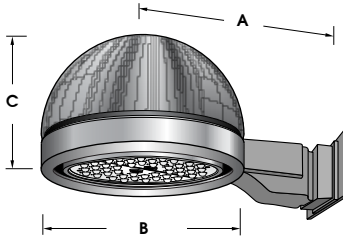
DSB SERIES - PLED

SPECIFICATIONS

Pole Drilling Template



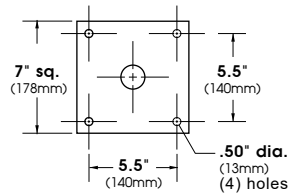
Wall Mount



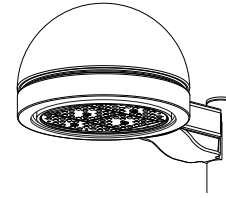
Fixture	A	B	C
DSB22	21" nom. (457mm)	22" (559mm)	15" (381mm)
DSB18	19" nom. (483mm)	18" (457mm)	13" (330mm) ^a

Extruded aluminum arm and cast aluminum wall bracket assembly provided with built in gasketed wire access for fixture/supply wire connection.

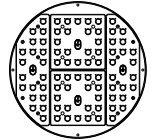
Wall Plate



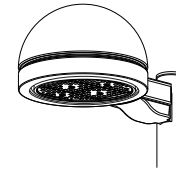
PLED™ Modules



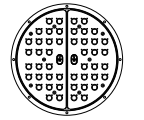
DSB22 E.P.A. = 1.57
Available in:
80 LED Module Max



80 LED Module



DSB18 E.P.A. = 1.03
Available in:
48 LED Module Max



48 LED Module

ORDERING INFORMATION

Spec/Order Example: DSB18/PLED-II/48LED-350mA/NW/347/1/RAL-7005-S

Luminaire	Optics	LED Mode			Voltage	Mounting	Finish	Options
Luminaire	Optics	LED			Voltage	Mounting	Finish	Options
☐ DSB22-PLED (Formerly DSB) ☐ DSB18-PLED (Formerly DSBM)	PLED™ Distribution Type ☐ Type II PLED-II ☐ Type II Front Row PLED-II-FR ☐ Type III Med. PLED-III-M ☐ Type III Wide PLED-III-W ☐ Type IV PLED-IV ☐ Type IV PLED-IV-FT ☐ Type V Narrow PLED-VSQ-N ☐ Type V Med. PLED-VSQ-M ☐ Type V Wide PLED-VSQ-W	# of LEDs DSB22 ☐ 80LED ¹ ☐ 48LED ☐ 36LED	Drive Current ☐ 1050mA ² ☐ 875mA ² ☐ 700mA ² ☐ 525mA ☐ 350mA	Color Temp - CCT ☐ NW (4000K)* *Standard ☐ CW (5000K) ☐ WW (3000K) Other LED Colors Available Consult Factory Amber ³ ☐ Phosphor Converted Amber PCA ⁴ ☐ True Amber ⁵ TRA	☐ 120 ☐ 208 ☐ 240 ☐ 277 ☐ 347 ☐ 480	☐ 1 ☐ 2-90 ☐ 2-180 ☐ 3-90 ☐ 3-120 ☐ 4-90 Wallmount ☐ WM Post Top ☐ PT	Standard Textured Finish ☐ Black RAL-9005-T ☐ White RAL-9003-T ☐ Grey RAL-7004-T ☐ Dark Bronze RAL-8019-T ☐ Green RAL-6005-T For smooth finish replace suffix "T" with suffix "S" (Example: RAL-9500-S) Consult factory for custom colors	☐ Stem Mount + Length(in) (48" Max) SM+L ☐ Chain Mount + Length(in) (48" Max) CM+L ☐ Internal House Side Shield inc. LED Count (Example: HS-PLED/48) HS-PLED ☐ Twist Lock Receptable Only TPR ☐ 7-Pin Twist Lock Receptable Only TPR7 ☐ High-Low Dimming for Switch by Others/Select Levels 50/100 or 25/100 (Example: HLSW/25) HLSW ☐ Photo Cell + Voltage (Example: PC120V) PC+V ☐ Single Fuse (120V, 277V) SF ☐ Double Fuse (208V, 240V) DF ☐ Blue-Tooth Programmable Photo/Motion Sensor (Factory - Motion 50/100; Photo 75ic) MS-F311
		DSAB18 ☐ 48LED ¹ ☐ 36LED ☐ 20LED						

NOTES:
1 - 875mA maximum
2 - 700mA and 875mA not for use with TRA LEDs
3 - Narrow band Ambers have no Definable CCT equivalent
4 - 700mA maximum
5 - Available in 350mA & 525mA drive currents only



DSB SERIES - PLED

LED/ Electrical Guide (pg. 1)

LED Count	Source Type	Source	Initial Lumens - 4000K CCT	Initial Lumens - 3000K CCT	Initial Lumens - 5000K CCT	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
DSB18										
20	LED	20 PLED® Optical Module - 350mA	2842 - 3262	2700 - 3098	2984 - 3424	90,000+	-40°F	22/28	120 277 347	.19/.24 .08/.11 .07/.08
20	LED	20 PLED® Optical Module - 525mA	4042 - 4637	3839 - 4405	4243 - 4868	90,000+	-40°F	33/39	120 277 347	.28/.33 .12/.14 .10/.12
20	LED	20 PLED® Optical Module - 700mA	5083 - 5832	4829 - 5540	5337 - 6123	90,000+	-40°F	44/50	120 277 347	.37/.42 .16/.18 .13/.15
20	LED	20 PLED® Optical Module - 875mA	6108 - 7008	5802 - 6657	6413 - 7358	90,000+	-40°F	56/62	120 277 347	.47/.52 .21/.23 .17/.18
20	LED	20 PLED® Optical Module - 1050mA	7086 - 8131	6732 - 7725	7441 - 8537	90,000+	-40°F	67/73	120 277 347	.56/.61 .25/.27 .20/.21
36	LED	36 PLED® Optical Module - 350mA	5116 - 5871	4860 - 5577	5371 - 6164	90,000+	-40°F	40/46	120 277 347	.34/.39 .15/.17 .12/.14
36	LED	36 PLED® Optical Module - 525mA	7274 - 8346	6910 - 7929	7638 - 8763	90,000+	-40°F	60/66	120 277 347	.50/.55 .22/.24 .18/.20
36	LED	36 PLED® Optical Module - 700mA	9149 - 10497	8691 - 9972	9606 - 11022	90,000+	-40°F	79/85	120 277 347	.66/.71 .29/.31 .23/.25
36	LED	36 PLED® Optical Module - 875mA	10994 - 12614	10444 - 11983	11544 - 13245	90,000+	-40°F	101/107	120 277 347	.85/.90 .37/.39 .30/.31
36	LED	36 PLED® Optical Module - 1050mA	12755 - 14635	12117 - 13903	13392 - 15367	90,000+	-40°F	120/126	120 277 347	1.00/1.05 .44/.46 .35/.37
48	LED	48 PLED® Optical Module - 350mA	6821 - 7827	6480 - 7435	7162 - 8218	90,000+	-40°F	53/59	120 277 347	.45/.50 .20/.22 .16/.17
48	LED	48 PLED® Optical Module - 525mA	9699 - 11128	9214 - 10572	10183 - 11684	90,000+	-40°F	79/85	120 277 347	.66/.71 .29/.31 .23/.25
48	LED	48 PLED® Optical Module - 700mA	12199 - 13398	11589 - 13296	12808 - 14696	90,000+	-40°F	106/112	120 277 347	.89/.94 .39/.41 .31/.33
48	LED	48 PLED® Optical Module - 875mA	14659 - 16819	13926 - 15978	15392 - 17660	90,000+	-40°F	134/140	120 277 347	1.12/1.17 .49/.51 .39/.41
DSB22										
36	LED	36 PLED® Optical Module - 350mA	5126 - 5882	4870 - 5588	5383 - 6176	90,000+	-40°F	40/46	120 277 347	.34/.39 .15/.17 .12/.14
36	LED	36 PLED® Optical Module - 525mA	7382 - 8470	7013 - 8047	7751 - 8894	90,000+	-40°F	59/65	120 277 347	.50/.55 .23/.24 .17/.19
36	LED	36 PLED® Optical Module - 700mA	9362 - 10742	8894 - 10205	9830 - 11279	90,000+	-40°F	79/85	120 277 347	.66/.71 .29/.31 .23/.25
36	LED	36 PLED® Optical Module - 875mA	10719 - 12298	10183 - 11682	11254 - 12913	90,000+	-40°F	103/109	120 277 347	.86/.91 .38/.40 .30/.32
36	LED	36 PLED® Optical Module - 1050mA	12435 - 14268	11813 - 13554	13057 - 14981	90,000+	-40°F	116/122	120 277 347	.97/1.02 .42/.44 .34/.36
48	LED	48 PLED® Optical Module - 350mA	6835 - 7843	6493 - 7450	7177 - 8235	90,000+	-40°F	53/59	120 277 347	.45/.50 .20/.23 .16/.17



DSB SERIES - PLED

LED/ Electrical Guide (pg. 2)

LED Count	Source Type	Source	Initial Lumens - 4000K CCT	Initial Lumens - 3000K CCT	Initial Lumens - 5000K CCT	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
DSB22										
48	LED	48 PLED® Optical Module - 525mA	9843 - 11294	9351 - 10729	10336 - 11859	90,000+	-40°F	78/84	120 277 347	.65/.70 .29/.31 .23/.25
48	LED	48 PLED® Optical Module - 700mA	12483 - 14323	11859 - 13607	13107 - 15038	90,000+	-40°F	105/111	120 277 347	.88/.93 .38/.40 .31/.32
48	LED	48 PLED® Optical Module - 875mA	14292 - 16397	13577 - 15577	15006 - 17217	90,000+	-40°F	137/143	120 277 347	1.15/1.20 .50/.52 .40/.42
48	LED	48 PLED® Optical Module - 1050mA	16581 - 19024	15752 - 18073	17409 - 19975	90,000+	-40°F	154/160	120 277 347	1.29/1.34 .56/.58 .45/.47
80	LED	80 PLED® Optical Module - 350mA	11392 - 13071	10823 - 12418	11962 - 13724	90,000+	-40°F	88/94	120 277 347	.74/.79 .32/.34 .26/.27
80	LED	80 PLED® Optical Module - 525mA	16406 - 18823	15585 - 17882	17226 - 19765	90,000+	-40°F	130/136	120 277 347	1.09/1.14 .47/.50 .38/.40
80	LED	80 PLED® Optical Module - 700mA	20805 - 23871	19765 - 22678	21845 - 25065	90,000+	-40°F	174/180	120 277 347	1.45/1.50 .63/.65 .50/.52
80	LED	80 PLED® Optical Module - 875mA	23819 - 27329	22628 - 25962	25010 - 28695	90,000+	-40°F	226/232	120 277 347	1.89/1.94 .82/.84 .66/.69

Phosphor Converted Amber LED

DSB18										
20	PCA - LED	20 PLED® Optical Module - 350mA	1478 - 1696			51,000+	-40°F	25	120 277 347	.21 .10 .08
20	PCA - LED	20 PLED® Optical Module - 525mA	2102 - 2411			51,000+	-40°F	37	120 277 347	.31 .14 .11
20	PCA - LED	20 PLED® Optical Module - 700mA	2643 - 3033			51,000+	-40°F	50	120 277 347	.42 .18 .15
36	PCA - LED	36 PLED® Optical Module - 350mA	2660 - 3053			51,000+	-40°F	45	120 277 347	.38 .17 .13
36	PCA - LED	36 PLED® Optical Module - 525mA	3783 - 4340			51,000+	-40°F	67	120 277 347	.56 .25 .20
36	PCA - LED	36 PLED® Optical Module - 700mA	4757 - 5459			51,000+	-40°F	89	120 277 347	.75 .33 .26
48	PCA - LED	48 PLED® Optical Module - 350mA	3547 - 4070			51,000+	-40°F	59	120 277 347	.50 .22 .17
48	PCA - LED	48 PLED® Optical Module - 525mA	5043 - 5787			51,000+	-40°F	89	120 277 347	.75 .33 .26
48	PCA - LED	48 PLED® Optical Module - 700mA	6343 - 7278			51,000+	-40°F	118	120 277 347	.99 .43 .34

DSB22										
36	PCA - LED	36 PLED® Optical Module - 350mA	2666 - 3059			51,000+	-40°F	45	120 277 347	.38 .17 .13
36	PCA - LED	36 PLED® Optical Module - 525mA	3839 - 4405			51,000+	-40°F	66	120 277 347	.56 .24 .19



DSB SERIES - PLED

LED/ Electrical Guide (pg. 3)

LED Count	Source Type	Source	Initial Lumens - 4000K CCT	Initial Lumens - 3000K CCT	Initial Lumens - 5000K CCT	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
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Phosphor Converted Amber LED

DSB22

36	PCA - LED	36 PLED® Optical Module - 700mA	4868 - 5586			51,000+	-40°F	88	120 277 347	.74 .32 .26
48	PCA - LED	48 PLED® Optical Module - 350mA	3554 - 4078			51,000+	-40°F	59	120 277 347	.50 .22 .17
48	PCA - LED	48 PLED® Optical Module - 525mA	5119 - 5873			51,000+	-40°F	87	120 277 347	.73 .32 .25
48	PCA - LED	48 PLED® Optical Module - 700mA	6491 - 7448			51,000+	-40°F	117	120 277 347	.98 .43 .34
80	PCA - LED	80 PLED® Optical Module - 350mA	11392 - 13071			51,000+	-40°F	98	120 277 347	.82 .36 .29
80	PCA - LED	80 PLED® Optical Module - 525mA	16406 - 18823			51,000+	-40°F	145	120 277 347	1.21 .52 .42
80	PCA - LED	80 PLED® Optical Module - 700mA	20805 - 23871			51,000+	-40°F	195	120 277 347	1.63 .71 .57

True Amber LED - 590nm

DSB18

20	TRA - LED	20 PLED® Optical Module - 350mA	854 - 979			66,500+	-40°F	18	120 277 347	.15 .07 .06
20	TRA - LED	20 PLED® Optical Module - 700mA	1022 - 1172			66,500+	-40°F	26	120 277 347	.22 .10 .08
36	TRA - LED	36 PLED® Optical Module - 350mA	1536 - 1762			66,500+	-40°F	31	120 277 347	.26 .12 .09
36	TRA - LED	36 PLED® Optical Module - 525mA	1838 - 2109			66,500+	-40°F	47	120 277 347	.40 .17 .14
48	TRA - LED	48 PLED® Optical Module - 350mA	2048 - 2350			66,500+	-40°F	41	120 277 347	.35 .15 .12
48	TRA - LED	48 PLED® Optical Module - 525mA	2451 - 2812			66,500+	-40°F	62	120 277 347	.52 .23 .18

DSB22

36	TRA - LED	36 PLED® Optical Module - 350mA	1539 - 1766			66,500+	-40°F	31	120 277 347	.26 .12 .09
36	TRA - LED	36 PLED® Optical Module - 525mA	1866 - 2140			66,500+	-40°F	46	120 277 347	.39 .18 .14
48	TRA - LED	48 PLED® Optical Module - 350mA	2053 - 2355			66,500+	-40°F	41	120 277 347	.35 .19 .12
48	TRA - LED	48 PLED® Optical Module - 525mA	2488 - 2854			66,500+	-40°F	61	120 277 347	.51 .22 .18
80	TRA - LED	80 PLED® Optical Module - 350mA	3421 - 3925			66,500+	-40°F	67	120 277 347	.56 .25 .20



DSB SERIES - PLED

LED/ Electrical Guide (pg. 4)

LED Count	Source Type	Source	Initial Lumens - 4000K CCT	Initial Lumens - 3000K CCT	Initial Lumens - 5000K CCT	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
True Amber LED - 590nm										

DSB22										
80	TRA - LED	80 PLED® Optical Module - 525mA	4146 - 4757			66,500+	-40°F	101	120 277 347	.85 .37 .30

- 1) Max Input Amps is the highest of starting, operating, or open circuit currents
- 2) System Watts includes the source watts and all driver components.
- 3) Lumen values for LED Modules vary according to the distribution type
- 4) For Wattage and Max Input Amps showing two values, use the higher value for luminaires with lit uplight windows (-L & -M)
- 5) PCA and TRA LED optics not recommended for use with lit uplight window models (-L & -M)
- 6) Fuse value should be sufficient to protect all wiring components. For electronic driver and LED component protection, use 20KV surge suppressors.
- 7) L70(10K) – TM-21 6x rule applied

WARNING: All fixtures must be installed in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.



SOLID STATE AREA LIGHTING

DSB SERIES - VLED

FEATURES

Luminaire and Arm

Heavy walled one-piece aluminum spinning with single reveal for additional rigidity. Arm is heavy cast low copper aluminum (A356 alloy, < .02% copper) and also functions as driver compartment.

VLED® Optics

Low copper (A356 Alloy; <0.2% Cu) cast aluminum housing. Integrated clear tempered glass lens sealed with a continuous silicone gasket protects emitters (LED's), Reflector-Prism optics, and seals the module from water intrusion and environmental contaminants. Module is sealed to meet an IP67 rating. Each emitter is optically controlled by a Reflector-Prism injection molded from H12 acrylic (3 types per module; one from 0° - 50°; one from 50° - 65°; one from 65° - 72°). Each Reflector-Prism is secured to an optical plate made of matte black anodized aluminum has indexing pins for precise aiming. The optical plate locates every Reflector-Prism over an emitter, are inserted to the optical plate from above and are secured with a UV curing adhesive. The Reflector-Prisms are arrayed to produce IES Type II, III, IV, and V-SQ distributions. The entire Optical Module is field rotatable in 90° increments. Both module and drivers are factory wired using water resistant, insulated cord.

LED Emitters

High output LED's are utilized with drive currents ranging from 350mA to 700mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

LED Driver

Constant current programmable electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field installation.)

Amber LED's

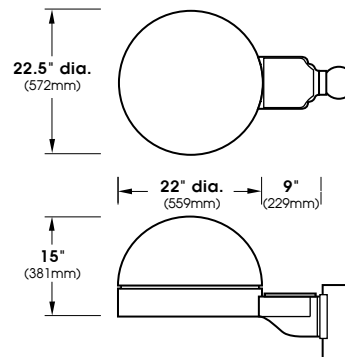
PCA (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. TRA (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

Finish

Polyester powder coat incorporates four step iron phosphate process to pretreat metal surface for maximum adhesion. Top coat is baked at 400°F for maximum hardness and exterior durability.

PROJECT NAME:

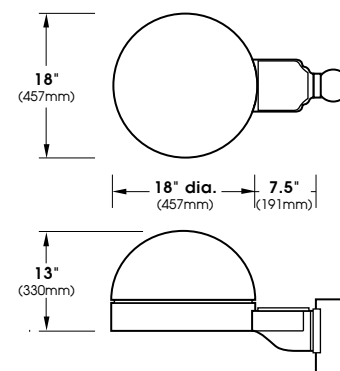
FIXTURE TYPE:



DSB22

(Formerly DSB)

Patent pending



DSB18

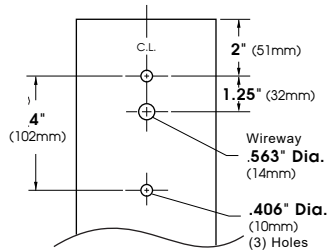
(Formerly DSBM)

Patent pending

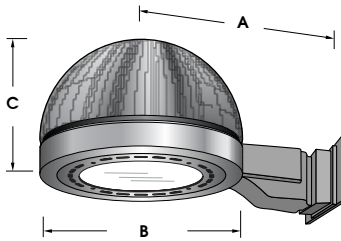
DSB SERIES - VLED

SPECIFICATIONS

Pole Drilling Template



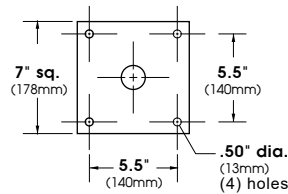
Wall Mount



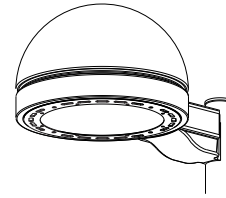
Fixture	A	B	C
DSB22	21" nom. (457mm)	22" (559mm)	15" (381mm)
DSB18	19" nom. (483mm)	18" (457mm)	13" (330mm) ^a

Extruded aluminum arm and cast aluminum wall bracket assembly provided with built in gasketed wire access for fixture/supply wire connection.

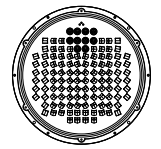
Wall Plate



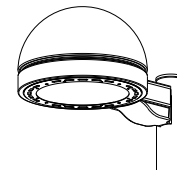
VLED® Modules



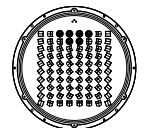
DSB22 E.P.A. = 1.57
Available in:
120 LED Module Max



120 LED Module



DSB18 E.P.A. = 1.03
Available in:
80 LED Module Max



80 LED Module

ORDERING INFORMATION

Spec/Order Example: DSB22/VLED-III-W/80LED-525mA/NW/277/1/RAL-7005-S

Luminaire	Optics	LED Mode	Voltage	Mounting	Finish	Options
Luminaire	Optics	LED	Voltage	Mounting	Finish	Options
☐ DSB22-VLED (Formerly DSB) ☐ DSB18-VLED (Formerly DSBM)	VLED® IES Distribution Type ☐ Type II VLED-II ☐ Type III VLED-III ☐ Type IV VLED-IV ☐ Type V Med. VLED-V-SQ    	# of LEDs DSB22 ☐ 120LED¹ ☐ 100LED¹ ☐ 80LED ☐ 64LED DSB18 ☐ 80LED¹ ☐ 64LED ☐ 48LED Drive Current ☐ 700mA ☐ 525mA ☐ 350mA Color Temp - CCT ☐ NW (4000K)* *Standard ☐ CW (5000K) ☐ WW (3000K) Other LED Colors Available Consult Factory ☐ Amber² ☐ Phosphor Converted Amber PCA ☐ True Amber¹ TRA NOTES: 1 - Available in 350mA & 525mA Drive Currents only 2 - Narrow band Ambers have no definable CCT equivalent	☐ 120 ☐ 208 ☐ 240 ☐ 277 ☐ 347 ☐ 480	☐ 1  ☐ 2-90  ☐ 2-180  ☐ 3-90  ☐ 3-120  ☐ 4-90  Wallmount ☐ WM  Post Top ☐ PT  See USALTG.COM for additional arm styles	Standard Textured Finish ☐ Black RAL-9005-T ☐ White RAL-9003-T ☐ Grey RAL-7004-T ☐ Dark Bronze RAL-8019-T ☐ Green RAL-6005-T For smooth finish replace suffix "T" with suffix "S" (Example: RAL-9500-S) Consult factor for custom colors	☐ Stem Mount + Length(in) (48" Max) SM+L ☐ Chain Mount + Length(in) (48" Max) CM+L ☐ Internal House Side Shield inc. LED Count (Example: HS-VLED/48) HS-VLED ☐ Twist Lock Receptable Only TPR ☐ 7-Pin Twist Lock Receptable Only TPR7 ☐ High-Low Dimming for Switch by Others/Select Levels 50/100 or 25/100 (Example: HLSW/25) HLSW ☐ Photo Cell + Voltage (Example: PC120V) PC+V ☐ Single Fuse (120V, 277V) SF ☐ Double Fuse (208V, 240V) DF ☐ Blue-Tooth Programmable Photo/Motion Sensor (Factory - Motion 50/100; Photo 75/c) MS-F311



DSB SERIES - VLED

LED/ Electrical Guide (pg. 1)

LED Count	Source Type	Source	Initial Lumens - 4000K CCT	Initial Lumens - 3000K CCT	Initial Lumens - 5000K CCT	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
DSB18										
48	White LED	48 VLED® Optical Module – 350mA	6169 - 6558	5860 - 6230	6478 - 6886	90,000+	-40°C	53/59	120	0.44/0.49
									277	0.19/0.21
									347	0.15/0.17
48	White LED	48 VLED® Optical Module – 525mA	8494 - 9031	8069 - 8579	8919 - 9482	90,000+	-40°C	77/83	120	0.64/0.69
									277	0.28/0.3
									347	0.22/0.24
48	White LED	48 VLED® Optical Module – 700mA	10635 - 11307	10103 - 10742	11167 - 11872	90,000+	-40°C	103/109	120	0.86/0.91
									277	0.37/0.39
									347	0.3/0.31
64	White LED	64 VLED® Optical Module – 350mA	8225 - 8338	7813 - 7921	8636 - 8755	90,000+	-40°C	69/75	120	0.58/0.63
									277	0.25/0.27
									347	0.2/0.22
64	White LED	64 VLED® Optical Module – 525mA	11325 - 11481	10759 - 10907	11891 - 12055	90,000+	-40°C	102/108	120	0.85/0.9
									277	0.37/0.39
									347	0.29/0.31
80	White LED	80 VLED® Optical Module – 350mA	9675 - 9808	9191 - 9317	10159 - 10298	90,000+	-40°C	87/93	120	0.73/0.78
									277	0.31/0.34
									347	0.25/0.27
80	White LED	80 VLED® Optical Module – 525mA	13189 - 13370	12529 - 12701	13848 - 14038	90,000+	-40°C	127/133	120	1.06/1.11
									277	0.46/0.48
									347	0.37/0.38
DSB22										
48	White LED	48 VLED® Optical Module – 350mA	6169 - 6558	5860 - 6230	6478 - 6886	90,000+	-40°C	53/59	120	0.44/0.49
									277	0.19/0.21
									347	0.15/0.17
48	White LED	48 VLED® Optical Module – 525mA	8494 - 9031	8069 - 8579	8919 - 9482	90,000+	-40°C	75/81	120	0.63/0.68
									277	0.27/0.29
									347	0.22/0.23
48	White LED	48 VLED® Optical Module – 700mA	10635 - 11307	10103 - 10742	11167 - 11872	90,000+	-40°C	105/111	120	0.88/0.93
									277	0.38/0.4
									347	0.3/0.32
64	White LED	64 VLED® Optical Module – 350mA	8225 - 8745	7813 - 8308	8636 - 9183	90,000+	-40°C	71/77	120	0.59/0.64
									277	0.26/0.28
									347	0.2/0.22
64	White LED	64 VLED® Optical Module – 525mA	11325 - 12042	10759 - 11440	11891 - 12644	90,000+	-40°C	103/109	120	0.86/0.91
									277	0.37/0.39
									347	0.3/0.31
64	White LED	64 VLED® Optical Module – 700mA	13190 - 13824	12531 - 13133	13849 - 14516	90,000+	-40°C	140/146	120	1.17/1.22
									277	0.51/0.53
									347	0.4/0.42
80	White LED	80 VLED® Optical Module – 350mA	9675 - 10286	9191 - 9772	10159 - 10801	90,000+	-40°C	87/93	120	0.73/0.78
									277	0.31/0.34
									347	0.25/0.27
80	White LED	80 VLED® Optical Module – 525mA	13189 - 14023	12529 - 13322	13848 - 14724	90,000+	-40°C	127/133	120	1.06/1.11
									277	0.46/0.48
									347	0.37/0.38
80	White LED	80 VLED® Optical Module – 700mA	16487 - 17280	15662 - 16416	17311 - 18144	90,000+	-40°C	173/179	120	1.44/1.49
									277	0.62/0.65
									347	0.5/0.52
100	White LED	100 VLED® Optical Module – 350mA	11776 - 12304	11187 - 11689	12365 - 12919	90,000+	-40°C	108/114	120	0.9/0.95
									277	0.39/0.41
									347	0.31/0.33
100	White LED	100 VLED® Optical Module – 525mA	16291 - 17025	15476 - 16174	17106 - 17877	90,000+	-40°C	160/166	120	1.33/1.38
									277	0.58/0.6
									347	0.46/0.48
120	White LED	120 VLED® Optical Module – 350mA	14129 - 14765	13423 - 14027	14836 - 15503	90,000+	-40°C	129/135	120	1.08/1.13
									277	0.47/0.49
									347	0.37/0.39
120	White LED	120 VLED® Optical Module – 525mA	19549 - 20430	18572 - 19408	20527 - 21451	90,000+	-40°C	192/198	120	1.6/1.65
									277	0.69/0.71
									347	0.55/0.57



DSB SERIES - VLED

LED/ Electrical Guide (pg. 2)

LED Count	Source Type	Source	Initial Lumens	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
Phosphor Converted Amber LED								
DSB18								
48	PC Amber	48 VLED® Optical Module – 350mA	3208 - 3410	51,000+	-40°C	59	120	0.49
							277	0.21
							347	0.17
48	PC Amber	48 VLED® Optical Module – 525mA	4417 - 4696	51,000+	-40°C	86	120	0.72
							277	0.31
							347	0.25
48	PC Amber	48 VLED® Optical Module – 700mA	5530 - 5880	51,000+	-40°C	115	120	0.96
							277	0.42
							347	0.33
64	PC Amber	64 VLED® Optical Module – 350mA	4277 - 4547	51,000+	-40°C	80	120	0.67
							277	0.29
							347	0.23
64	PC Amber	64 VLED® Optical Module – 525mA	5889 - 6262	51,000+	-40°C	114	120	0.95
							277	0.41
							347	0.33
80	PC Amber	80 VLED® Optical Module – 350mA	5031 - 5349	51,000+	-40°C	97	120	0.81
							277	0.35
							347	0.28
80	PC Amber	80 VLED® Optical Module – 525mA	6858 - 7292	51,000+	-40°C	142	120	1.18
							277	0.51
							347	0.41
DSB22								
48	PC Amber	48 VLED® Optical Module – 350mA	3208 - 3410	51,000+	-40°C	60	120	0.50
							277	0.22
							347	0.17
48	PC Amber	48 VLED® Optical Module – 525mA	4417 - 4696	51,000+	-40°C	84	120	0.70
							277	0.30
							347	0.24
48	PC Amber	48 VLED® Optical Module – 700mA	5530 - 5880	51,000+	-40°C	118	120	0.98
							277	0.43
							347	0.34
64	PC Amber	64 VLED® Optical Module – 350mA	4277 - 4547	51,000+	-40°C	80	120	0.67
							277	0.29
							347	0.23
64	PC Amber	64 VLED® Optical Module – 525mA	5889 - 6262	51,000+	-40°C	116	120	0.97
							277	0.42
							347	0.33
64	PC Amber	64 VLED® Optical Module – 700mA	6859 - 7189	51,000+	-40°C	157	120	1.31
							277	0.57
							347	0.45
80	PC Amber	80 VLED® Optical Module – 350mA	5031 - 5349	51,000+	-40°C	98	120	0.82
							277	0.35
							347	0.28
80	PC Amber	80 VLED® Optical Module – 525mA	6858 - 7292	51,000+	-40°C	142	120	1.18
							277	0.51
							347	0.41
80	PC Amber	80 VLED® Optical Module – 700mA	8573 - 8986	51,000+	-40°C	194	120	1.62
							277	0.70
							347	0.56
100	PC Amber	100 VLED® Optical Module – 350mA	6124 - 6398	51,000+	-40°C	121	120	1.01
							277	0.44
							347	0.35
100	PC Amber	100 VLED® Optical Module – 525mA	8471 - 8853	51,000+	-40°C	179	120	1.49
							277	0.65
							347	0.52
120	PC Amber	120 VLED® Optical Module – 350mA	7347 - 7678	51,000+	-40°C	145	120	1.21
							277	0.52
							347	0.42
120	PC Amber	120 VLED® Optical Module – 525mA	10166 - 10624	51,000+	-40°C	215	120	1.79
							277	0.78
							347	0.62



DSB SERIES - VLED

LED/ Electrical Guide (pg. 3)

LED Count	Source Type	Source	Initial Lumens	L70 greater than (HR)	Starting Temp.	System Watts	Volts	Max Input Amps
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True Amber LED - 590nm

DSB18

48	True Amber	48 VLED® Optical Module - 350mA	1841 - 1957	66,500+	-40°C	41	120 277 347	0.34 0.15 0.12
48	True Amber	48 VLED® Optical Module - 525mA	2535 - 2695	66,500+	-40°C	60	120 277 347	0.50 0.22 0.17
64	True Amber	64 VLED® Optical Module - 350mA	2454 - 2610	66,500+	-40°C	55	120 277 347	0.46 0.20 0.16
64	True Amber	64 VLED® Optical Module - 525mA	3379 - 3593	66,500+	-40°C	80	120 277 347	0.67 0.29 0.23
80	True Amber	80 VLED® Optical Module - 350mA	2887 - 3070	66,500+	-40°C	66	120 277 347	0.55 0.24 0.19
80	True Amber	80 VLED® Optical Module - 525mA	3936 - 4185	66,500+	-40°C	98	120 277 347	0.82 0.35 0.28

DSB22

48	True Amber	48 VLED® Optical Module - 350mA	1841 - 1957	66,500+	-40°C	41	120 277 347	0.34 0.15 0.12
48	True Amber	48 VLED® Optical Module - 525mA	2535 - 2695	66,500+	-40°C	58	120 277 347	0.48 0.21 0.17
64	True Amber	64 VLED® Optical Module - 350mA	2454 - 2610	66,500+	-40°C	55	120 277 347	0.46 0.20 0.16
64	True Amber	64 VLED® Optical Module - 525mA	3379 - 3593	66,500+	-40°C	80	120 277 347	0.67 0.29 0.23
80	True Amber	80 VLED® Optical Module - 350mA	2887 - 3070	66,500+	-40°C	67	120 277 347	0.56 0.24 0.19
80	True Amber	80 VLED® Optical Module - 525mA	3936 - 4185	66,500+	-40°C	98	120 277 347	0.82 0.35 0.28
100	True Amber	100 VLED® Optical Module - 350mA	3514 - 3672	66,500+	-40°C	83	120 277 347	0.69 0.30 0.24
100	True Amber	100 VLED® Optical Module - 525mA	4861 - 5080	66,500+	-40°C	123	120 277 347	1.03 0.44 0.35
120	True Amber	120 VLED® Optical Module - 350mA	4216 - 4406	66,500+	-40°C	99	120 277 347	0.83 0.36 0.29
120	True Amber	120 VLED® Optical Module - 525mA	5834 - 6097	66,500+	-40°C	148	120 277 347	1.23 0.53 0.43



WOODCREST CHRISTIAN SCHOOL

Ball Field

11/06/2023

Job Number: **990347**

Prepared by: SS

Powered by Wisconsin Lighting Lab, Inc.

NOTES

60' Poles
940W KB8s

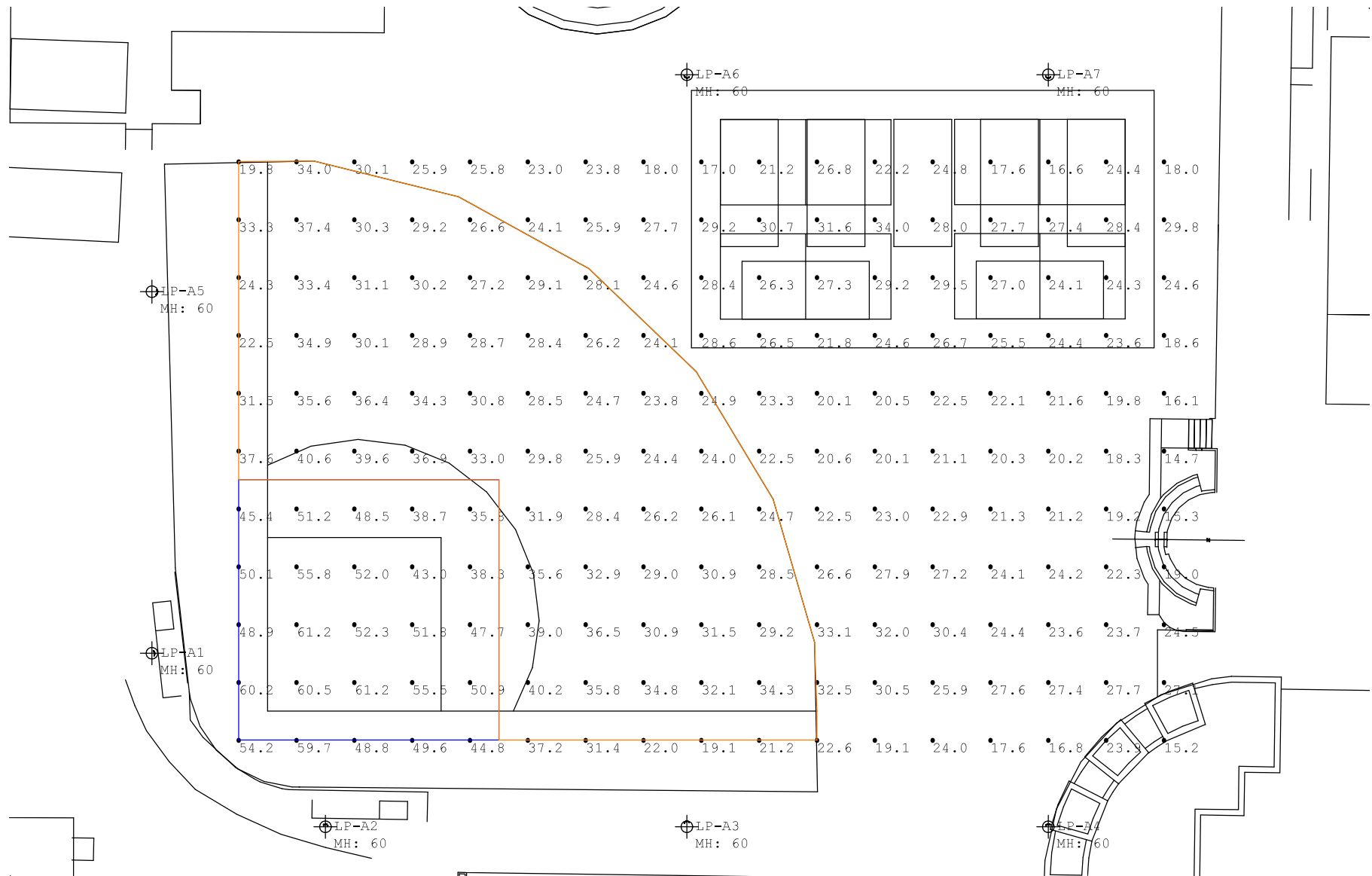
*Luminaire testing data is based on Illuminating Engineering Society (IES) standards under simulated and laboratory conditions. This design is based on information supplied by others, and individual field measurements may vary from computer-simulated calculations due to variables like (but not limited to) variation in electrical voltage, environmental conditions and other variable field characteristics. Typical field foot candle measurements may vary +/- 10%. For sports lighting, field measurements should be taken in accordance with IESNA RP-6-15. Conformance to facility and local codes is the responsibility of the owner and their representatives. This layout may not meet CA Title 24 and/or other local energy codes. If specific compliance is required, those details must be provided to your factory design representative.

**Satisfactory performance and safe use of LED sports lighting fixtures is dependent upon light poles, brackets, anchorage and other structural components being of adequate design and condition. The total combined Effective Projected Area (EPA) and weight of all fixtures, brackets and attachments mounting to a light pole cannot exceed the EPA and weight rating for a specified pole. For sports lighting retrofit applications, it is the customer's responsibility to have a qualified inspector and/or engineer confirm the structural adequacy of the existing light poles assemblies. We are happy to quote new light poles and brackets if you have concerns about your existing materials.

General Electrical Requirements:

- 3-phase, 4-wire, 480V at service entrance
- Service entrance supplied voltage to be within 5%.
- Type 2 SPD installed near service entrance
- 2-6ga conductors at each pole base
- 3-wire, 277V at pole base (Line – Neutral – Ground)
- 3% permissible voltage drop from service entrance and pole base
- 3-wire, 110-277V at wireless control base station (exact location TBD)
- Typical grounding electrode at pole base, bonded

Photometric



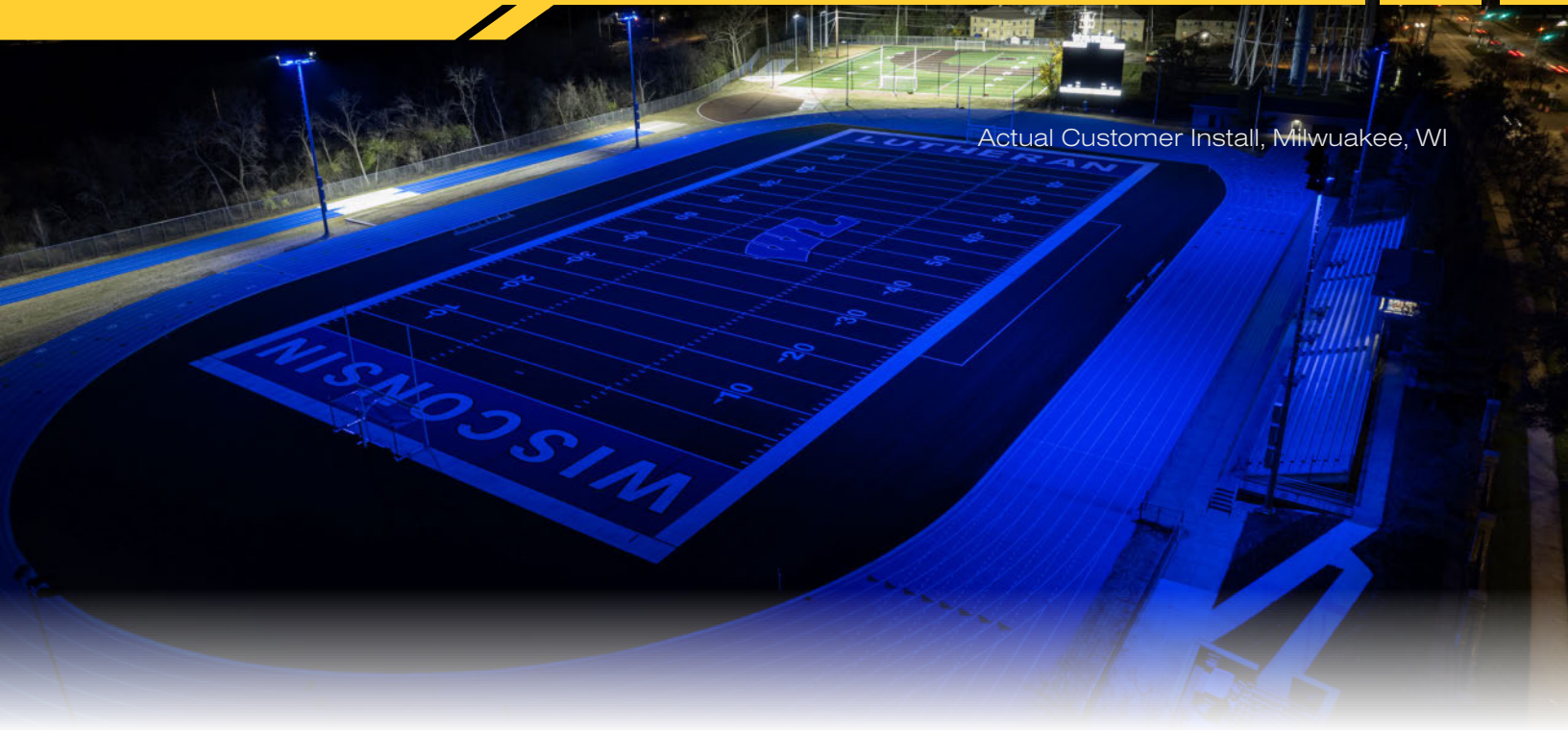
Scale: 1 inch= 50 Ft.

Pole Schedule

Qty	Label	Description	Total Watts
1	LP-A1	60' POLE, 4 FIXTURES	3536
1	LP-A2	60' POLE, 4 FIXTURES	3536
1	LP-A3	60' POLE, 4 FIXTURES	3536
1	LP-A4	60' POLE, 4 FIXTURES	3536
1	LP-A5	60' POLE, 4 FIXTURES	3536
1	LP-A6	60' POLE, 4 FIXTURES	3536
1	LP-A7	60' POLE, 4 FIXTURES	3536

Calculation Summary

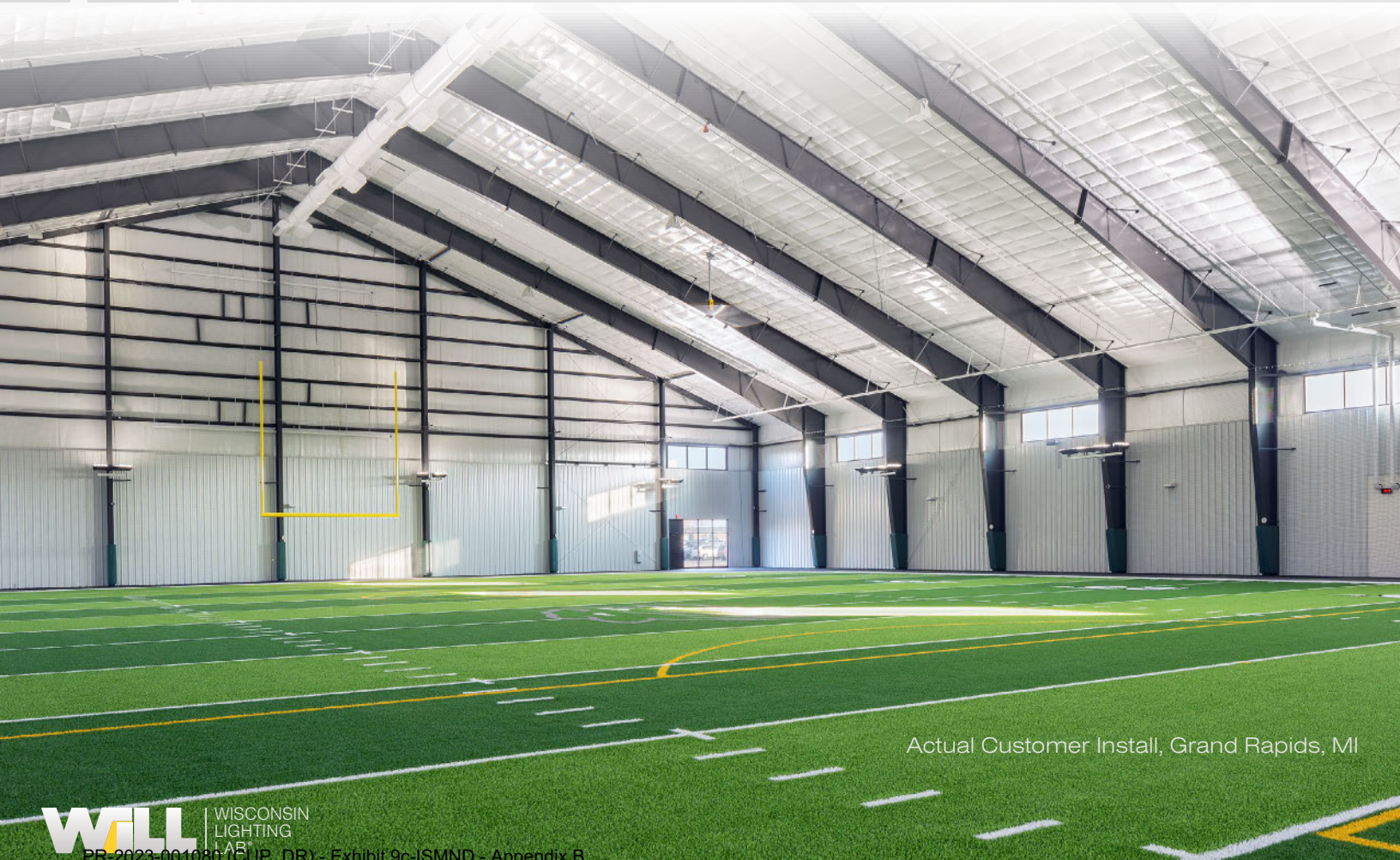
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Entire Area	Illuminance	Fc	30.01	61.2	14.7	2.03	4.16
Baseball Infield	Illuminance	Fc	50.64	61.2	35.8	1.41	1.71
Baseball Outfield	Illuminance	Fc	30.34	40.6	19.1	1.59	2.13



Actual Customer Install, Milwaukee, WI



Wireless Lighting Control +
Entertainment System



Actual Customer Install, Grand Rapids, MI



WISCONSIN
LIGHTING
LAB

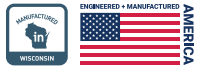
PR-2023-001080 (CUP, DR) - Exhibit 9c-ISMND - Appendix B

WiLLsport® GFX Wireless Lighting Controls

Catalog # _____

Project _____

Comments _____



Part #	Description
WS-GFX	WiLLsport® GFX Wireless Lighting System
WS-GFX-WLC	Wireless Lighting Console
WS-GFX-SCORE	Touchscreen + Tabletop/Wall Mount
WS-GFX-WBC	Wireless Button Control



WS-GFX-SCORE



WS-GFX-WBC



WS-GFX-WLC

Highlights

The WiLLsport GFX Wireless Lighting Console is the central point of control for your lighting system. Boasting multiple user interface options and a powerful built-in lighting engine, this secure onsite device provides round-the-clock control of athletic lighting applications. The factory-commissioned lighting platform offers plug-and-play access to bold light shows and automated scheduling capabilities. With wired and wireless configuration options, it's suitable for both retrofit and new installations.

Features

- Designed, engineered, and assembled in Wisconsin, USA from premium domestic and imported components
- Factory-commissioned, plug-and-play
- Multiple touch screen mounting options
- Reliable wireless control with cognitive coexistence
- 500-FT wireless range + range extending options*
- Built-in entertainment programs
- Automated simple-scheduling features
- Sub-field zone control
- IP67 rated outdoor enclosure
- RGB lighting control ready

*Wireless range can vary site to site based on antenna dynamics and local environment.

Specifications - Console

Dimensions	13.2" H x 11.2" W x 7.7" D (336.3 x 285.5 x 195.6 mm)
Input Power	36W
Input Voltage	120V AC
Operating Environment	0 to 45°C; 10 to 90% non-condensing
Radio	2.4 GHz CRMX

■ Lighting System Controls

The intuitive user interface provides multiple points of control and automation for the lighting system.

■ Simple Scheduling Functionality

Automate your field lighting with simple scheduling functionality built into the GFX lighting control system. Common scheduling examples include:

- Timer with 2-minute dim warning
- Sunrise, sunset, and/or time-triggered lighting events
- Recurring events (daily/weekly)
- Calendar event scheduling

■ Factory-Commissioned Entertainment Programs

Coordinated entertainment programs to add a show-stopping element to your athletic facility.

- **Lightning** - All fixtures randomly turn ON/OFF to create a camera flash effect on the playing field.
- **Tornado** - All fixtures adjust light levels to create a swirling effect around the playing field.
- **Night Rider** - All fixtures adjust light levels to create a back and forth effect across the playing field.
- **Pulse** - All fixtures simultaneously increase and decrease light levels to create a pulsing effect on the playing field.

■ Scene Control

Put focus on the action before/during/after the game with scene control.

- Gametime
- Player Intros
- Halftime Show
- National Anthem
- Game Over / Security Lighting

■ Multi-Field Control

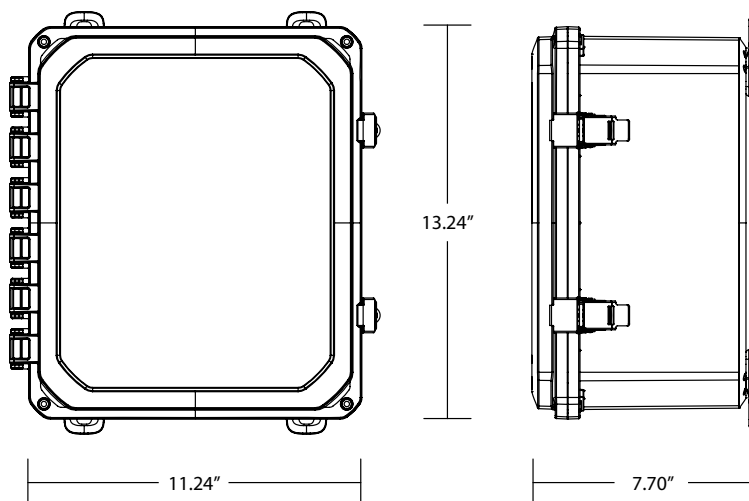
Utilize Will's GFX technology to control multiple fields or facility resources with the same system.

- Wagon-wheel ballfield configurations
- Multi-field athletic complexes
- Multi-sport facilities
- Site support lighting (walkways, area lighting, etc)

■ Specifications - Touchscreen

Dimensions	7.0" H x 9.9" W x 0.9" D (178mm x 252mm x 24mm)
Input Power	18W max
Input Voltage	12V/2A AC/DC Adapter supplied
Operating Environment	0 to 45°C; 10 to 90% non-condensing
Radio	802.11 a/b/g/n/ac
Certifications	FCC, CE, & RoHS

■ Dimensional Diagrams



■ RGB Ready

Enhance your lighting application with the addition of dynamic color control to your GFX system.

- Wireless and/or wired RGB lighting control
- Millions of colors
- Great for accent + architectural applications
- Direct factory integration + support



- **Command Center for Entire Lighting System**
- **Simple + Intuitive Large Touchscreen Control**
- **Configurations:**
 - **Scorekeeper Stand / Wall Mount (Standard)**
 - **Console Mount**



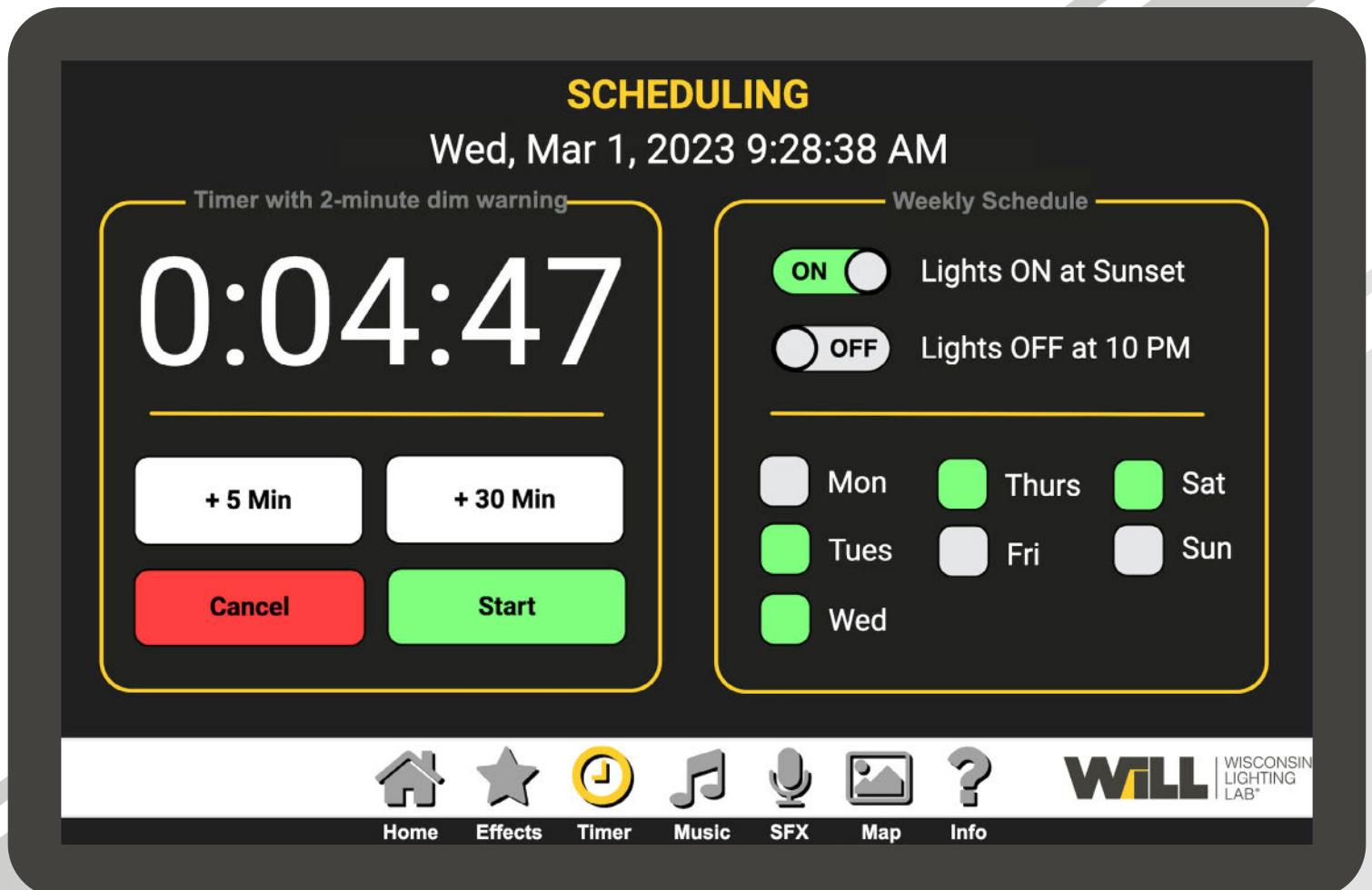
- **Factory-Programmed for Plug-and-Play Installation**
- **Tailored Interface For Your Venue**
- **RGB LED Control Ready**

SIMPLE SCHEDULING BUILT-IN

- Sunrise, Sunset, and/or Time-Triggered Lighting Events
- On/Off Timers with 2-Minute Dim Warning for Facility Users

FACTORY SUPPORTED SCHEDULING SERVICES*

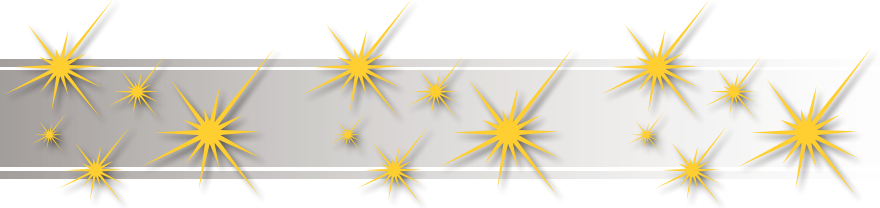
- Calendar Event Scheduling
- Recurring Events (Daily/Weekly/Monthly)
- Contact Will's Dedicated Factory Support Team
 - applications@willbrands.com
 - (866) 308-9455



*Data Connection Required

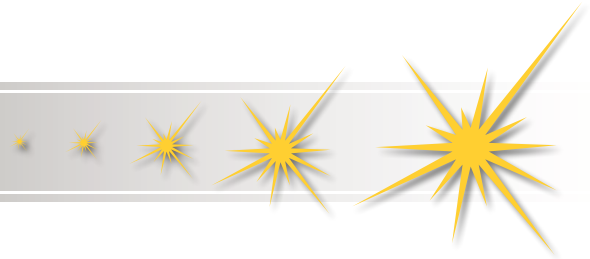
All pre-set entertainment programs are available as a package add-on. Like all WiLL lighting controls, the entertainment programs are factory commissioned prior to installation as part of your WiLLsport® controls user interface.

LIGHTNING



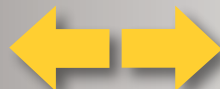
All fixtures randomly turn ON/OFF to create a camera flash effect on the playing field.

TORNADO



All fixtures adjust light levels to create a swirling effect around the playing field.

NIGHT RIDER



All fixtures adjust light levels to create a back and forth effect across the playing field.

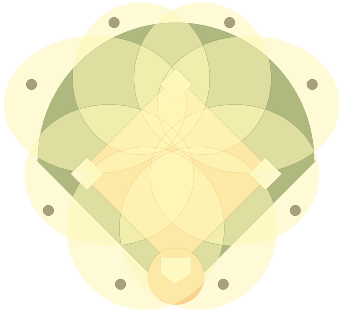
PULSE



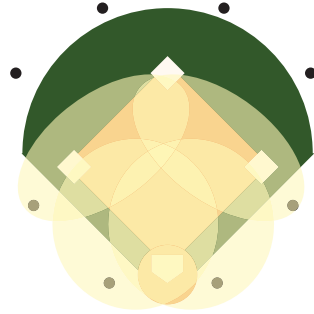
All fixtures increase and decrease light levels to create a pulsing effect on the playing field.

Scenes can be customized and factory-commissioned based on the needs of your individual facility. If there are specific activities you would like to spotlight, our commissioning team can work with you to pre-configure your system at the WILL factory prior to installation.

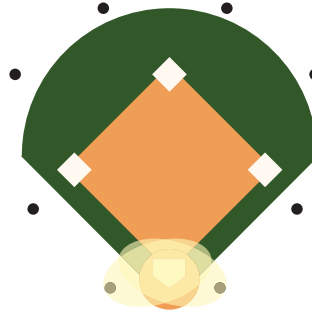
BASEBALL



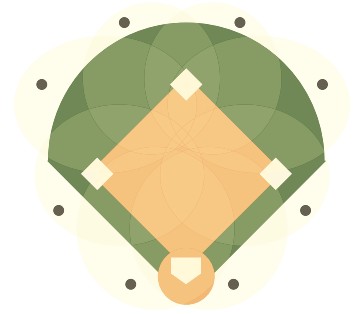
GAMETIME
ENTIRE FIELD
100% ON



PLAYER INTROS
INFIELD/OUTFIELD FOCUS
0% | 100% ON

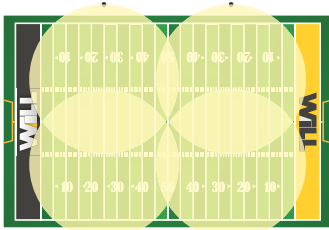


NATIONAL ANTHEM
HOME PLATE FOCUS
0% | 100% ON

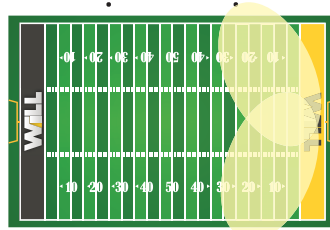


GAME OVER
ENTIRE FIELD
20% DIM

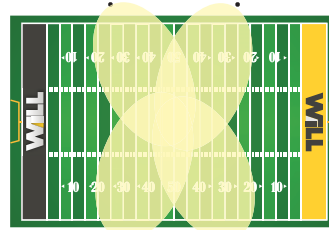
FOOTBALL



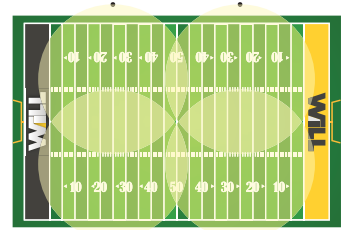
GAMETIME
ENTIRE FIELD
100% ON



PLAYER INTROS
END ZONE 1/2 FOCUS
0% | 100% ON

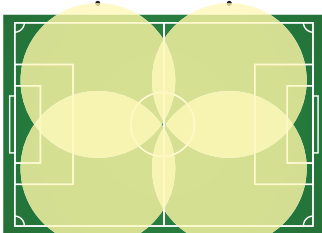


NATIONAL ANTHEM + HALFTIME SHOW
50YD LINE FOCUS
0% | 100% ON

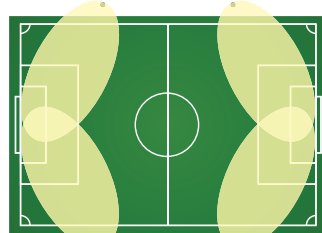


GAME OVER
ENTIRE FIELD
20% DIM

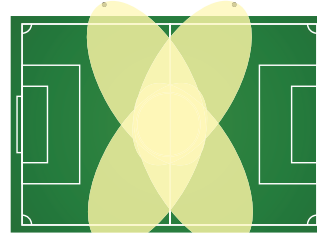
SOCCER



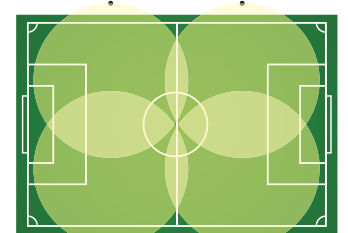
GAMETIME
ENTIRE FIELD
100% ON



GOALIES
NET FOCUS
0% | 100% ON

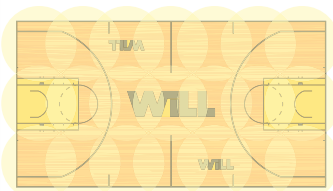


NATIONAL ANTHEM + HALFTIME SHOW
MIDFIELD FOCUS
0% | 100% ON

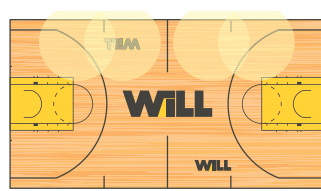


GAME OVER
ENTIRE FIELD
20% DIM

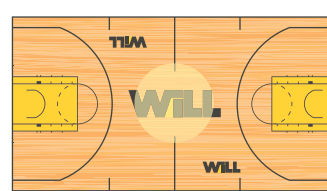
BASKETBALL



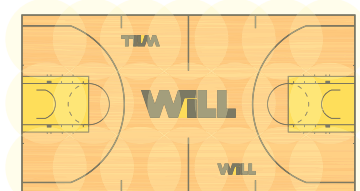
GAMETIME
ENTIRE COURT
100% ON



PLAYER INTROS
PLAYER BENCHES FOCUS
0% | 100% ON

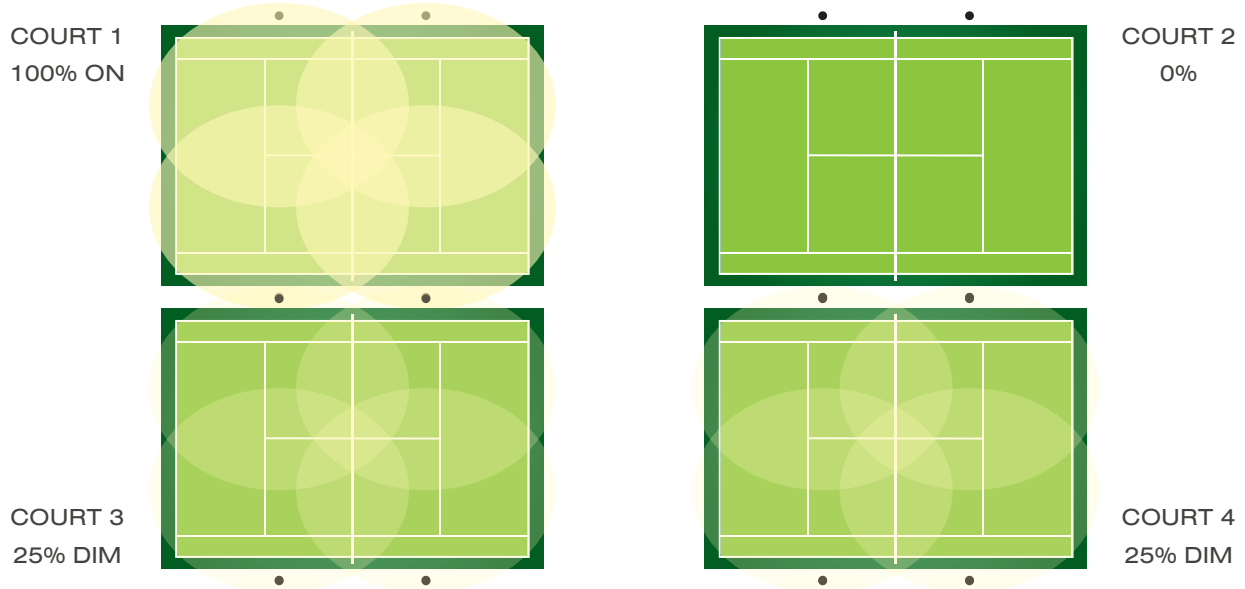


NATIONAL ANTHEM + HALFTIME SHOW
HALF COURT FOCUS
0% | 100% ON

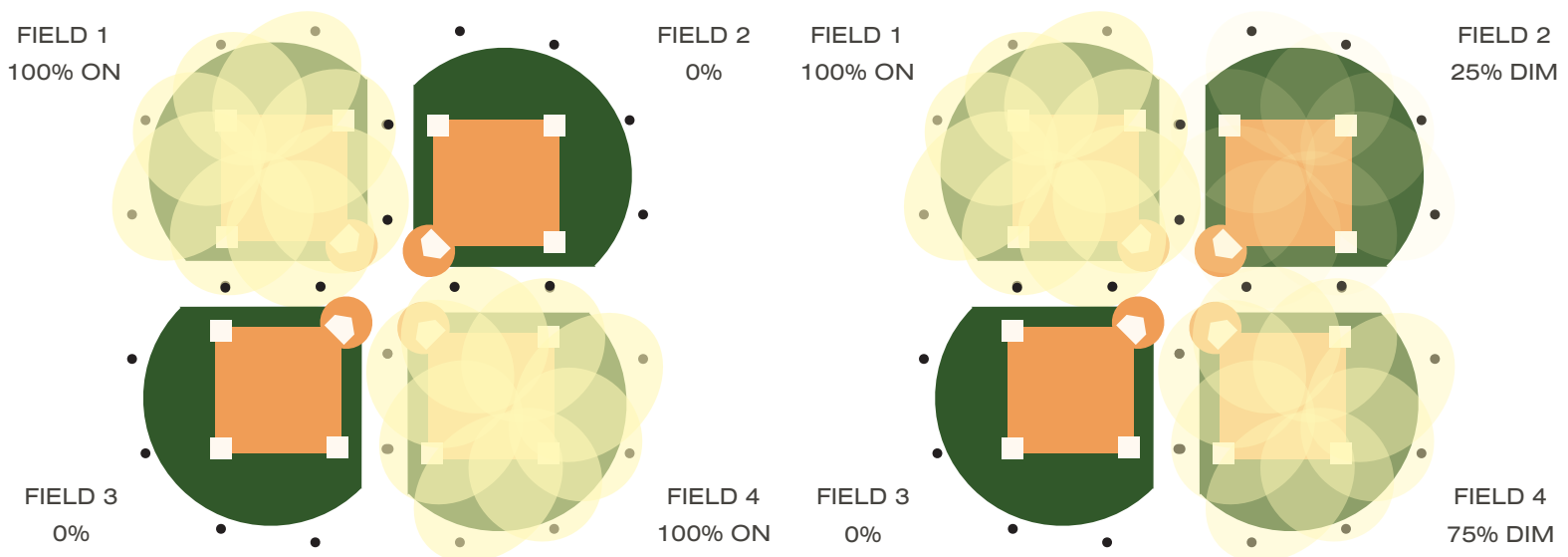


GAME OVER
ENTIRE COURT
20% DIM

Sports complexes can also take advantage of WILL wireless controls packages – creating easy and flexible controls over multiple fields all from one secure location.



Manage All Fields in a Complex with ONE Controls System!



500ft+ Wireless Range (*Wireless range can change dependent on on-site variables)

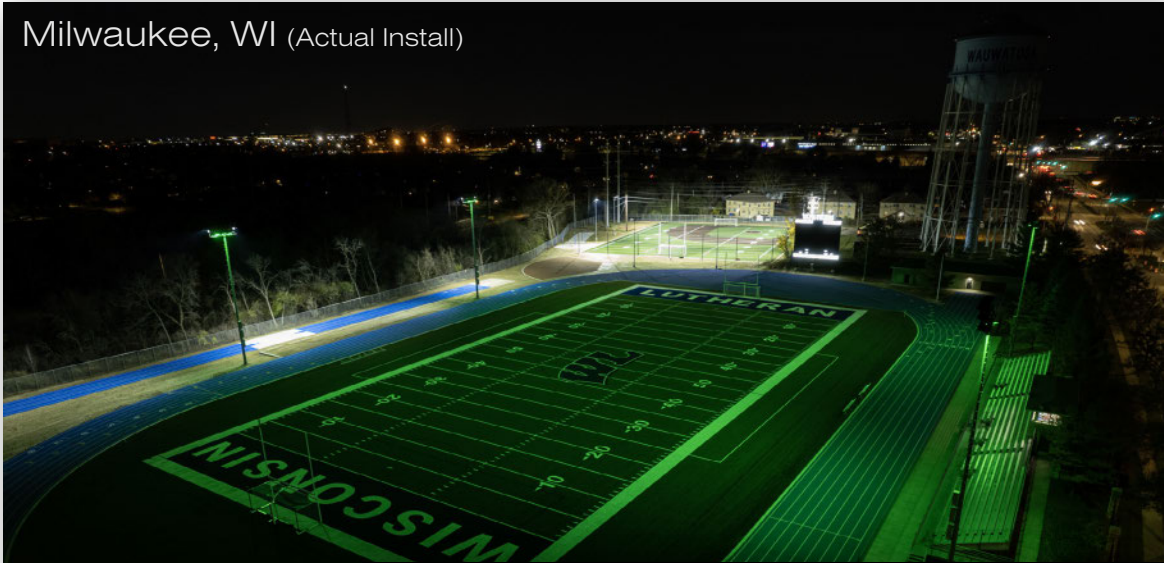
MODERN FACILITY CONTROL

- Event Light Programs
- Seasonal Lighting Presets

FACTORY COMMISSIONING + SUPPORT

- Millions of Color Options
- RGB Integrated LED Fixtures

Milwaukee, WI (Actual Install)



Fond du Lac, WI (Actual Install)

