

AREA & ROADWAY LIGHTING

RAZAR SERIES - LED LOW PROFILE AREA LUMINAIRE

Optical Housing

Heavy cast, low copper aluminum assembly (A356 alloy, <.2% copper) minimum wall thickness .188". LED Module mounting area is machined to within a 0.002" surface flatness variance for maximum surface contact and thermal conductivity from the LED modules to the radiating fins. Passive radiating fins above the LED Optics provide superior thermal management and long LED life. The optical and electrical compartments are integrated with the support arm to create one assembly. Cast and hinged driver compartment cover allows access to the drivers and wiring.

Electrical Housing w/ Integrated Arm

Heavy cast low copper aluminum (A356 alloy; <.2% copper) assembly with integral cooling ribs surrounding the electrical compartment and a flat surface on the top of the arm to accommodate a photocell receptacle. Solid barrier wall separates optical and electrical compartments. The optical compartment and electrical compartment with the integrated support arm combine to create one assembly. Minimum wall thickness is .188". Cast and hinged driver assembly cover is integrated with wiring compartment cover.

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 Driver(s)

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 and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. 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 accessible installation.)

LED Emitters

High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 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.

Amber LED's

TRA (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

Finish

Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.

Mast Arm Fitter/Electrical Housing

Replaces standard Electrical Housing. Fits standard 2 3/8" O.D. horizontal tenon. Two (2) straps with two (2) bolts each encircle the lower half of the tenon. Upper half of the tenon rests on self-centering steps that position the angle of the luminaire at 0°, +1.5°, +1.5° or +3° up from the horizontal. All hardware is stainless steel.

PROJECT NAME: _____

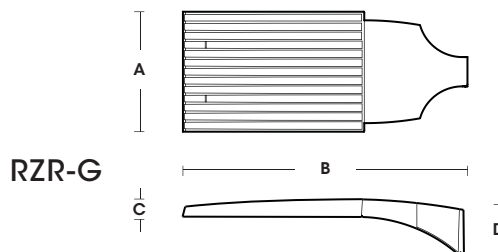
PROJECT TYPE: _____



RZR

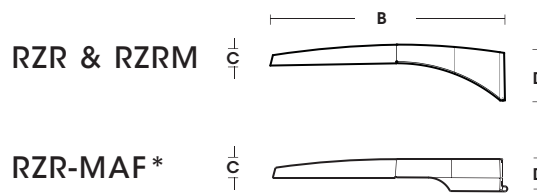
(MODELS: RZRM, RZR, RZR-G & RZR-MAF*)

PATENT PENDING



RZR-G

RZR, RZRM & RZR-MAF*
(Top View)



RZR & RZRM

RZR-MAF*

FIXTURE	A	B	C	D
RZR-G	15" 381mm	36.5" 927mm	3" 76mm	7" 187mm
RZR	14.75" 375mm	28.25" 718mm	2.75" 70mm	6.5" 165mm
RZRM	11.5" 292mm	22" 559mm	2.5" 64mm	5.25" 133mm
RZR-MAF	15" 381mm	28.25" 724mm	2.5" 64mm	4" 102mm



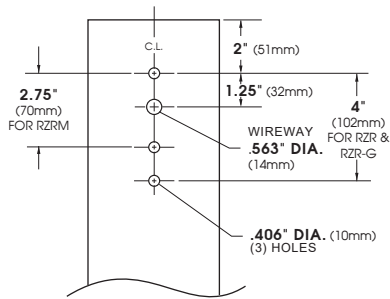
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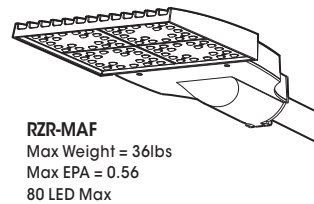
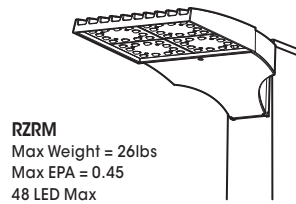
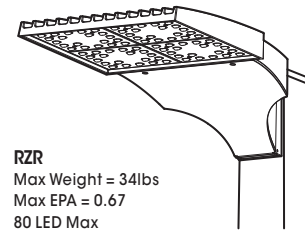
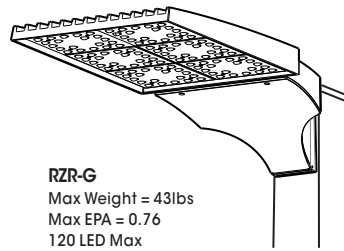
RZR SERIES - LED

SPECIFICATIONS

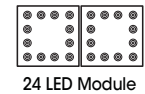
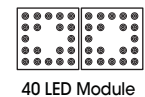
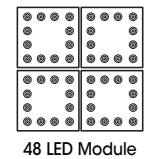
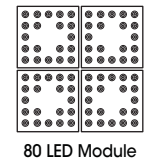
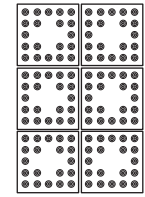
POLE DRILLING TEMPLATE



EPA & WEIGHT



PLED™ MODULES



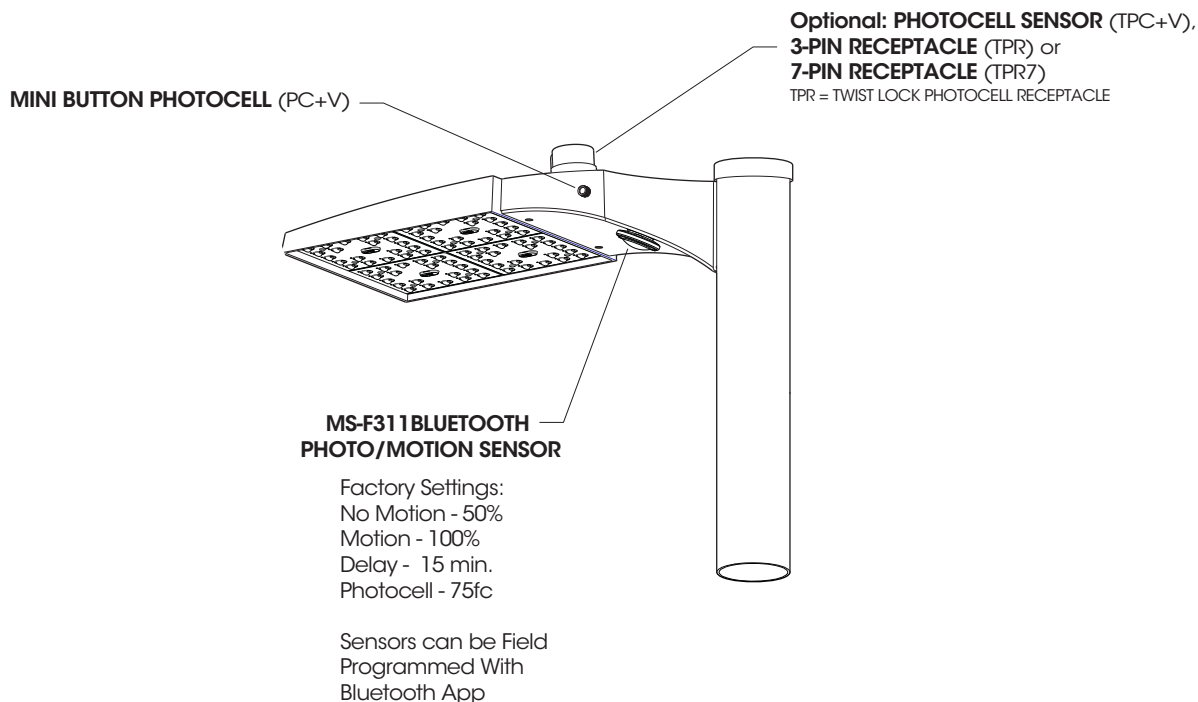
ORDERING INFORMATION

Spec/Order Example: RZR/PLED-IV/80LED-700mA/CW/277/RAL-8019-S

Luminaire	Optics	LED Mode	Voltage	Mounting	Finish	Options
Luminaire	Optics	LED	Voltage	Mounting	Finish	Options
<input type="checkbox"/> RZR-G	PLED™ Distribution Type <input type="checkbox"/> Type II PLED-II <input type="checkbox"/> Type II Front Row PLED-II-FR <input type="checkbox"/> Type III Median Illuminator PLED-II-MIL <input type="checkbox"/> Type III Med. PLED-III <input type="checkbox"/> Type III Wide PLED-III-W <input type="checkbox"/> Type IV PLED-IV <input type="checkbox"/> Type IV PLED-IV-FT <input type="checkbox"/> Type V Narrow PLED-VSQ-N <input type="checkbox"/> Type V Med. PLED-V-SQ-M <input type="checkbox"/> Type V Wide PLED-V-SQ-W	RZR-G <input type="checkbox"/> 120LED <input type="checkbox"/> 1050mA ¹ <input type="checkbox"/> 27K (2700K) <input type="checkbox"/> 80LED <input type="checkbox"/> 875mA ¹ <input type="checkbox"/> 30K (3000K) <input type="checkbox"/> 700mA ¹ <input type="checkbox"/> 40K (4000K) <input type="checkbox"/> 525mA <input type="checkbox"/> 50K (5000K) <input type="checkbox"/> 350mA RZR/RZR-MAF <input type="checkbox"/> 80LED <input type="checkbox"/> TRA True Amber ² <input type="checkbox"/> 40LED Consult Factory for Other LED Color, CCT, & CRI Options RZRM <input type="checkbox"/> 48LED <input type="checkbox"/> 24LED NOTES: 1 - 700mA and 1050mA not for use with TRA LED's 2 - Available in 350mA & 525mA drive currents only Consult Factory for Other Drive Currents	<input type="checkbox"/> 120 <input type="checkbox"/> 208 <input type="checkbox"/> 240 <input type="checkbox"/> 277 <input type="checkbox"/> 347 <input type="checkbox"/> 480	Arm Mount <input type="checkbox"/> 1 <input type="checkbox"/> 2-180 <input type="checkbox"/> 2-90 <input type="checkbox"/> 3-90 <input type="checkbox"/> 3-120 <input type="checkbox"/> 4-90 Wall Mount <input type="checkbox"/> WM WM - Wall Mount provided with mounting bracket and cover.	Standard Textured Finish <input type="checkbox"/> Black RAL-9005-T <input type="checkbox"/> White RAL-9003-T <input type="checkbox"/> Grey RAL-7004-T <input type="checkbox"/> Dark Bronze RAL-8019-T <input type="checkbox"/> Green RAL-6005-T Premium Finishes <input type="checkbox"/> Rust <input type="checkbox"/> Patina Copper PC For smooth finish replace suffix "T" with suffix "S" (Example: RAL-9500-S) Consult factor for custom colors	<input type="checkbox"/> Internal House Side Shield inc. LED Count (Example: HS-PLED/48) HS-PLED <input type="checkbox"/> External Glare Shield 4 Sided EGS4 <input type="checkbox"/> External Glare Shield 3 Sided Rear Wedge EGS3W <input type="checkbox"/> Round Pole Adapter RPA <input type="checkbox"/> Twist Lock Receptable Only TPR <input type="checkbox"/> 7-Pin Twist Lock Receptable Only TPR7 <input type="checkbox"/> High-Low Dimming for Switch by Others/Select Levels 50/100 or 25/100 (Example: HLSW/25) HLSW <input type="checkbox"/> Twist Lock Photocell + Voltage (Example: TPC347V) TPC+V <input type="checkbox"/> Photo Cell + Voltage (Example: PC120V) PC+V <input type="checkbox"/> Single Fuse (120V, 277V) SF <input type="checkbox"/> Double Fuse (208V, 240V) DF <input type="checkbox"/> Blue-Tooth Programmable Photo/Motion Sensor (Factory - Motion 50/100; Photo 75ic) MS-F311

RZR SERIES - LED

OPTIONS



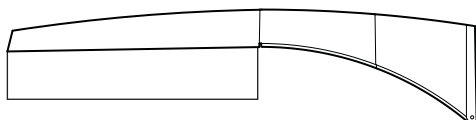
High Low Dimming For Switches (HLSW)

The HLSW is a Small Electronic Switch which Provides High Low Dimming Control Through the LED Driver's 0-10V Control. Switching is Done by Adding a Secondary AC Switched Hot Trigger Line to the HLSW in Addition to the Normal AC Power Line. When the Secondary Trigger Line is Powered, the Fixture will go to 100% Dimming. With no Power to the Trigger, the Fixture will operate at 50% or 25% Dimming. Switches for the Trigger Line can be a Normal AC Switch/Breaker or Timed Switch/Breaker.

Wireless and Other Fixture Controls

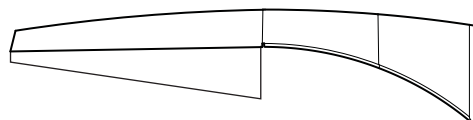
Contact Factory for Wireless and Other Fixture Controls and Recommendations. Most Controls Can be Integrated and Factory Installed.

EXTERNAL GLARE SHIELDS



EGS4 - 4 Sided Shield

Minimum Cutoff = 12°
Average Cutoff = 23°



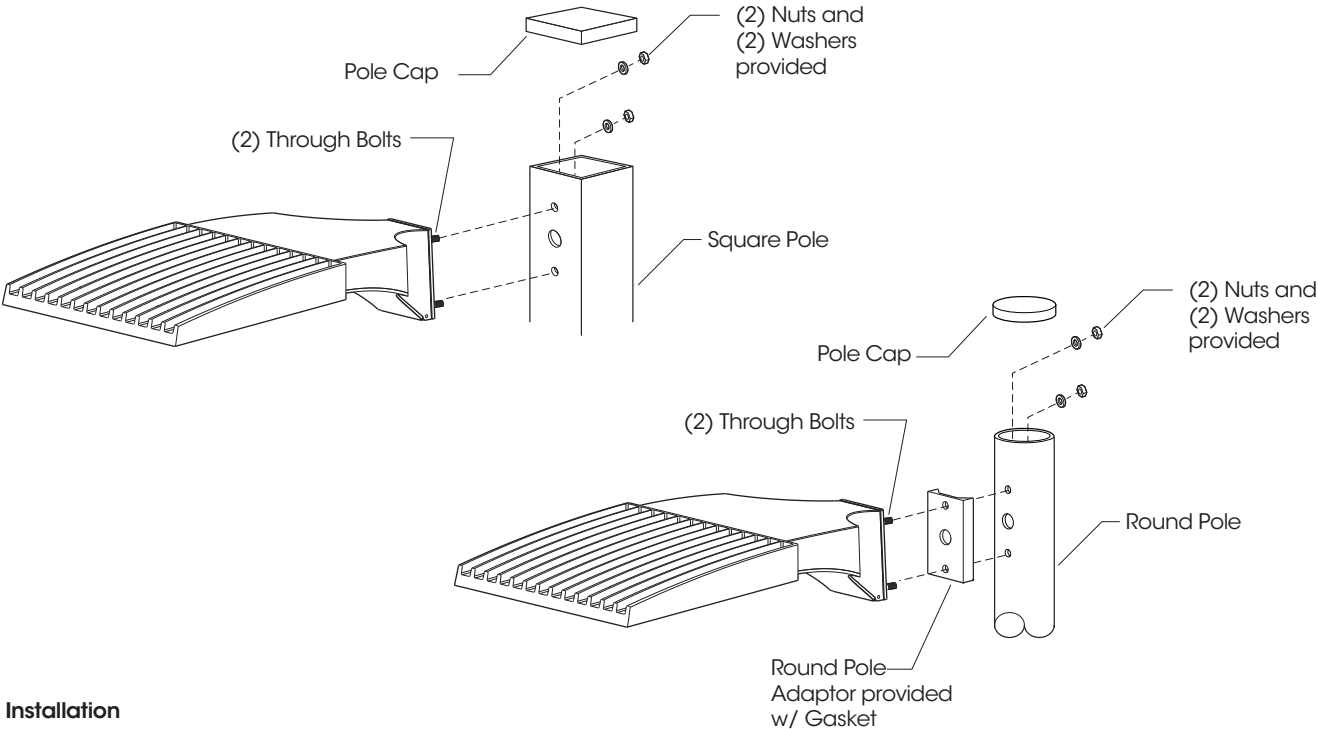
EGS3W - 3 Sided Shield

Minimum Rear Cutoff = 12°
Average Rear Cutoff = 23°
Minimum Side Cutoff = 4°
Average Side Cutoff = 16°

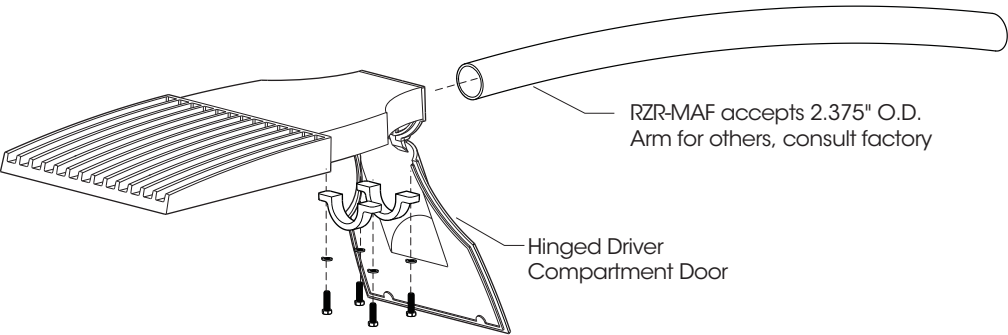
Glare Shields are rotatable on RZR and RZRM. Consult factory for custom applications.

RZR SERIES - LED

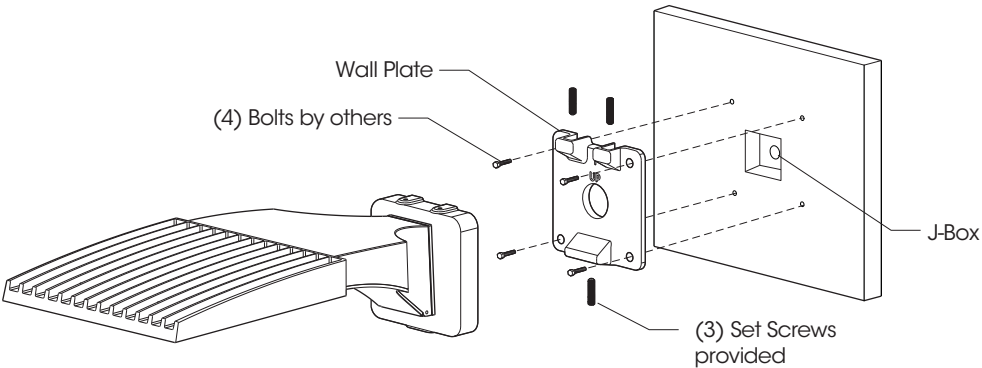
INSTALLATION DETAIL



RZR Installation



RZR-MAF Installation



RZR-WM Installation

RAZAR WALLMOUNT-LED

S P E C I F I C A T I O N S

OPTICAL HOUSING

Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance $\leq \pm .003"$) to facilitate thermal transfer of heat to housing and cooling fins. The Optical Housing bolts to the Electrical Housing forming a unified assembly. The minimum wall thickness is .188".

ELECTRICAL HOUSING

Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly. Minimum wall thickness is .188". Fixture Mounting Plate affixes to mounting surface over a recessed j-box. Electrical Housing anchors on the top edge of the Mounting Plate and stainless steel recessed socket head screws tighten the Electrical Housing to the Mounting Plate from the bottom.

PLED™ OPTICAL MODULES

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. The asymmetric distributions, have a micro-reflector inside the refractor which 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 Type II, III, and Type IV site/area distributions as well as other specialty asymmetric distributions. Panels are field replaceable and field rotatable in 90° increments.

LED DRIVER(S)

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 and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. 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 accessible installation.)

LED EMITTERS

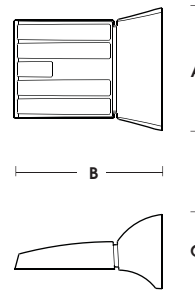
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

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

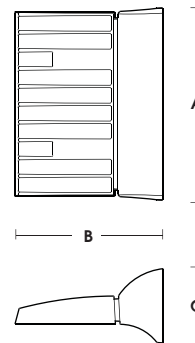
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.



FIXTURE	A	B	C
RZRW1	8.75" (22mm)	12" (305mm)	6" (152mm)
RZRW1-EM	11" (279mm)	14" (356mm)	6.5" (165mm)

RZR-WM1

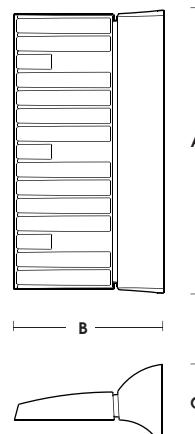
PATENT PENDING



FIXTURE	A	B	C
RZRW2	16" (406mm)	12" (305mm)	6" (152mm)
RZRW2-EM	16" (406mm)	14" (356mm)	6.5" (165mm)

RZR-WM2

PATENT PENDING



FIXTURE	A	B	C
RZRW3	23" (584mm)	12" (305mm)	6" (152mm)
RZRW3-EM	23" (584mm)	14" (356mm)	6.5" (165mm)

RZR-WM3

PATENT PENDING

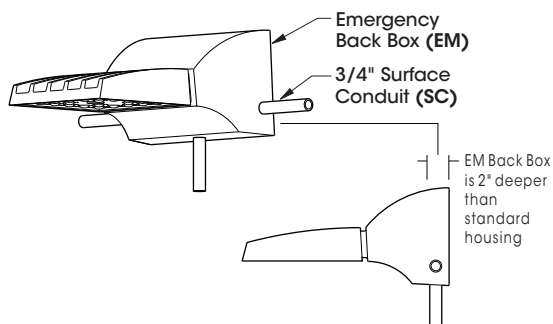


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RAZAR WALLMOUNT SERIES-LED

S P E C I F I C A T I O N S

EMERGENCY OPTION



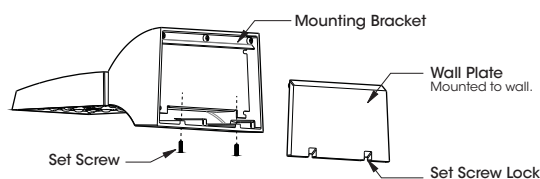
THE EMERGENCY OPTION BACK BOX EXTENDS 2" BEYOND THE STANDARD HOUSING AND CONTAINS THE EMERGENCY COMPONENTS (EC) INCLUDING BATTERIES OR CAN BE USED FOR SURFACE CONDUIT (SC) APPLICATIONS. THERE IS TO BE AN SC1, SC2, AND SC3 OPTION FOR THE DIFFERING HOUSING SIZES. SC SHIPS WITH THREADED CONDUIT PLUGS.

THE EM-LED SYSTEM PROVIDES POWER TO ALL LEDS IN THE ARRAY (20, 40, or 60) TO MEET THE FOLLOWING LIGHT LEVELS FOR A MINIMUM OF 90 MINUTES -

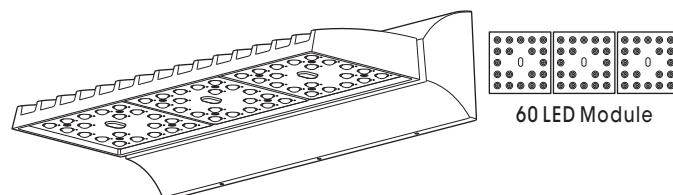
WM1 = 45% @ 350mA
WM2 = 36% @ 350mA
WM3 = 24% @ 350mA

* MULTIPLY THE % ABOVE BY THE LUMEN OUTPUT @ 350MA

WALL MOUNTING

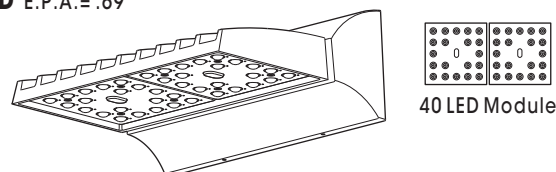


PLED® MODULES



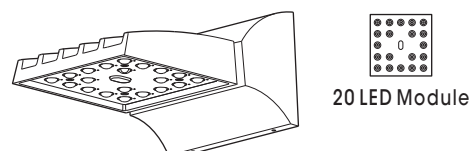
RZR-WM3-LED E.P.A. = .69

Available in:
60 LED Module



RZR-WM2-LED E.P.A. = .47

Available in:
40 LED Module









RZR-WM1-LED E.P.A. = .33

Available in:
20 LED Module

MAX INPUT WATTAGE

# OF LED's	350mA	525mA	700mA	1050mA
60	68W	99W	131W	198W
40	45W	66W	87W	134W
20	23W	33W	44W	66W

Spec/Order Example: RZR-WM2/PLED-IV/40LED-700mA/CW/277/RAL-8019-S/SF

S P E C / O R D E R I N G I N F O R M A T I O N							
MODEL	OPTICS	LED MODE		VOLTAGE	FINISH	OPTIONS	
MODEL	OPTICS	LED MODE		VOLTAGE	FINISH	OPTIONS	
<input type="checkbox"/> RZR-WM1	<div>PLED® DISTRIBUTION TYPE</div> <div><input type="checkbox"/> TYPE II PLED-II </div> <div><input type="checkbox"/> TYPE II FRONT ROW PLED-II-FR </div>	<div>NO. LEDs</div> <div>RZR-WM1</div> <div><input type="checkbox"/> 20LED</div>	<div>DRIVE CURRENT</div> <div><input type="checkbox"/> 350mA</div> <div><input type="checkbox"/> 525mA</div> <div><input type="checkbox"/> 700mA¹</div> <div><input type="checkbox"/> 1050mA¹</div>	<div>COLOR TEMP - CCT</div> <div><input type="checkbox"/> NW (4000K)* *STANDARD</div> <div><input type="checkbox"/> CW (5000K)</div> <div><input type="checkbox"/> WW (3000K)</div> <div>CONSULT FACTORY FOR OTHER LED COLORS</div>	<div><input type="checkbox"/> 120</div> <div><input type="checkbox"/> 208</div> <div><input type="checkbox"/> 240</div> <div><input type="checkbox"/> 277</div> <div><input type="checkbox"/> 347</div> <div><input type="checkbox"/> 480</div>	<div>STANDARD TEXTURED FINISH</div> <div><input type="checkbox"/> BLACK RAL-9005-T</div> <div><input type="checkbox"/> WHITE RAL-9003-T</div> <div><input type="checkbox"/> GREY RAL-7004-T</div> <div><input type="checkbox"/> DARK BRONZE RAL-8019-T</div> <div><input type="checkbox"/> GREEN RAL-6005-T</div> <div>FOR SMOOTH FINISH REPLACE SUFFIX "T" WITH SUFFIX "S" (EXAMPLE: RAL-9005-S)</div> <div>CONSULT FACTORY FOR CUSTOM COLORS</div>	<div><input type="checkbox"/> HIGH-LOW DIMMING FOR EXTERNAL CONTROL . . . HLSW</div> <div><input type="checkbox"/> HOUSE SIDE SHIELDING HS-PLED</div> <div><input type="checkbox"/> PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) . . . PC+V</div> <div><input type="checkbox"/> SINGLE FUSE (120V & 277V) SF</div> <div><input type="checkbox"/> DOUBLE FUSE (208V & 240V) DF</div> <div><input type="checkbox"/> BLUE-TOOTH PROGRAMMABLE PHOTO/MOTION SENSOR (FACTORY - MOTION 50/100; PHOTO 75FC) MS-F311</div> <div><input type="checkbox"/> EMERGENCY BACKUP 1. EM1</div> <div><input type="checkbox"/> EMERGENCY BACKUP 1 (HOUSING ONLY) EMH1</div> <div><input type="checkbox"/> EMERGENCY BACKUP 2. EM2</div> <div><input type="checkbox"/> EMERGENCY BACKUP 3. EM3</div> <div><input type="checkbox"/> SURFACE CONDUIT 1 . . . SC1</div> <div><input type="checkbox"/> SURFACE CONDUIT 2 . . . SC2</div> <div><input type="checkbox"/> SURFACE CONDUIT 3 . . . SC3</div>
<input type="checkbox"/> RZR-WM2	<div><input type="checkbox"/> TYPE III PLED-III </div> <div><input type="checkbox"/> TYPE III WIDE PLED-III-W </div>	<div>RZR-WM2</div> <div><input type="checkbox"/> 40LED</div>					
<input type="checkbox"/> RZR-WM3	<div><input type="checkbox"/> TYPE IV PLED-IV </div> <div><input type="checkbox"/> TYPE IV-FT PLED-IV-FT </div>	<div>RZR-WM3</div> <div><input type="checkbox"/> 60LED</div>		<div>AMBER²</div> <div><input type="checkbox"/> PHOSPHOR CONVERTED AMBER PCA</div> <div><input type="checkbox"/> TRUE AMBER³ TRA</div>			
<div>NOTES:</div> <div>1 - 700mA and 1050mA NOT FOR USE WITH TRA LED'S</div> <div>2 - NARROW BAND AMBERS HAVE NO DEFINABLE CCT EQUIVALENT</div> <div>3 - AVAILABLE IN 350mA & 525mA DRIVE CURRENTS ONLY</div>							

NOTES:
1 - 700mA and 1050mA NOT FOR USE WITH TRA LED'S
2 - NARROW BAND AMBERS HAVE NO DEFINABLE CCT EQUIVALENT
3 - AVAILABLE IN 350mA & 525mA DRIVE CURRENTS ONLY

RAZAR WALLMOUNT-LED

LAMP/ELECTRICAL GUIDE

LED COUNT	SOURCE TYPE	SOURCE	INITIAL LUMENS - 4000K	INITIAL LUMENS - 3000K	INITIAL LUMENS - 5000K	L70 GREATER THAN (HR)-TM21	STARTING TEMP.	SYSTEM WATTS	VOLTS	MAX INPUT AMPS
20	LED	20 PLED® Optical Module - 350mA	2,706 - 2,993	2,571 - 2,843	2,841 - 3,143	60,000+	-20°F	22	120 277 347	0.19 0.08 0.07
20	LED	20 PLED® Optical Module - 525mA	3,897 - 4,310	3,702 - 4,095	4,092 - 4,526	60,000+	-20°F	33	120 277 347	0.28 0.12 0.10
20	LED	20 PLED® Optical Module - 700mA	4,942 - 5,466	4,695 - 5,193	5,189 - 5,739	60,000+	-20°F	44	120 277 347	0.37 0.16 0.13
20	LED	20 PLED® Optical Module - 1050mA	6,564 - 7,260	6,236 - 6,897	6,892 - 7,623	60,000+	-20°F	65	120 277 347	0.55 0.24 0.19
40	LED	40 PLED® Optical Module - 350mA	5,585 - 6,178	5,206 - 5,869	5,864 - 6,487	60,000+	-20°F	43	120 277 347	0.36 0.16 0.13
40	LED	40 PLED® Optical Module - 525mA	8,059 - 8,914	7,656 - 8,468	8,462 - 9,360	60,000+	-20°F	65	120 277 347	0.55 0.24 0.19
40	LED	40 PLED® Optical Module - 700mA	10,240 - 11,327	9,728 - 10,761	10,752 - 11,893	60,000+	-20°F	87	120 277 347	0.73 0.32 0.26
40	LED	40 PLED® Optical Module - 1050mA	13,642 - 15,089	12,690 - 14,335	14,324 - 15,843	60,000+	-20°F	129	120 277 347	1.08 0.47 0.38
60	LED	60 PLED® Optical Module - 350mA	8,118 - 8,979	7,712 - 8,530	8,524 - 9,428	60,000+	-20°F	65	120 277 347	0.55 0.24 0.19
60	LED	60 PLED® Optical Module - 525mA	11,690 - 12,930	11,106 - 12,284	12,275 - 13,577	60,000+	-20°F	98	120 277 347	0.82 0.36 0.29
60	LED	60 PLED® Optical Module - 700mA	14,825 - 16,398	14,084 - 15,578	15,566 - 17,218	60,000+	-20°F	131	120 277 347	1.09 0.47 0.38
60	LED	60 PLED® Optical Module - 1050mA	19,691 - 21,780	18,706 - 20,691	20,676 - 22,869	60,000+	-20°F	193	120 277 347	1.61 0.70 0.56

NOTES:

1. Max Input Amps is the highest of starting, operating, or open circuit currents
2. Lumen values for LED Modules vary according to the distribution type
3. System Watts includes the source watts and all driver components.
4. Fuse value should be sufficient to protect all wiring components.
5. L70(10K) - TM-21 6x rule applied
L70(10K) - Calculated = 244,000 @ 700mA
= 102,000 @ 1050mA

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.