



TOWN COUNCIL – AGENDA REQUEST FORM

THIS FORM WILL BECOME PART OF THE BACKGROUND INFORMATION USED BY THE COUNCIL AND PUBLIC

Please submit Agenda Request Form, including back up information, 8 days prior to the requested meeting date. **Public Hearing requests must be submitted 20 days prior to requested meeting date to meet publication deadlines** (exceptions may be authorized by the Town Manager, Chairman/Vice Chair).

MEETING INFORMATION

Date Submitted: May 18, 2016

Date of Meeting: May 26, 2016

Submitted by: Finance Director Paul T. Micali

Department: Finance

Time Required: 20 minutes

Speakers: Paul T. Micali

Background Info. Supplied: Yes: No:

CATEGORY OF BUSINESS (PLEASE PLACE AN "X" IN THE APPROPRIATE BOX)

Appointment:	<input type="checkbox"/>	Recognition/Resignation/ Retirement:	<input type="checkbox"/>
Public Hearing:	<input type="checkbox"/>	Old Business:	<input type="checkbox"/>
New Business:	<input checked="" type="checkbox"/>	Consent Agenda:	<input type="checkbox"/>
Nonpublic:	<input type="checkbox"/>	Other:	<input type="checkbox"/>

TITLE OF ITEM

LED Lighting Discussion

DESCRIPTION OF ITEM

Town Council to consider whether to replace the current high pressure sodium street light fixtures with LED lighting fixtures within the Town of Merrimack.

REFERENCE (IF KNOWN)

RSA:	Warrant Article:	_____
Charter Article:	Town Meeting:	_____
Other:	N/A	

EQUIPMENT REQUIRED (PLEASE PLACE AN "X" IN THE APPROPRIATE BOX)

Projector:	<input type="checkbox"/>	Grant Requirements:	<input type="checkbox"/>
Easel:	<input type="checkbox"/>	Joint Meeting:	<input type="checkbox"/>
Special Seating:	<input type="checkbox"/>	Other:	<input type="checkbox"/>
Laptop:	<input type="checkbox"/>	None:	<input type="checkbox"/>

CONTACT INFORMATION

Name:	Paul T. Micali	Address:	8 Baboosic Lake Road
Phone Number:	424-7075	Email Address:	pmicali@merrimacknh.gov

APPROVAL

Town Manager: Yes No: Chair/Vice Chair: Yes No:

Hold for Meeting Date: _____

Memo



TO: Town Council
ATTN: Town Manager Eileen Cabanel

FROM: Finance Director Paul T. Micali

DATE: May 20, 2016

RE: **LED Street Lights**

Over the past 6 months I have been researching replacing the Town's High Pressure Sodium Street Light with a more efficient LED Street Light.

Background:

- Currently the Town of Merrimack has 633 High Pressure Sodium Street Lights
- The yearly electric cost for street lights is about \$100,000 per year.
- Eversource offers a rebate for switching from High Sodium to LED
- Surrounding communities are in the process of implementing the switch
- LED Technology has become increasingly more affordable over the last five years
- LED street lights have a useful life of 20 years.
- Estimated cost for the project before rebate is \$226,000
- Estimated Eversource rebate \$50,000
- It is estimated to save between \$17,000 and \$23,000 per year in electrical cost.
- Estimated payback period is between 7 -10 years

I would like to bring to your attention that if a LED street light needs to be replaced the town would have to purchase the new LED street light and have Eversource install the replacement. Eversource will no longer maintain the street lights for the town. In addition after twenty years the Town would be responsible to replace the LED street lights at its own cost.

I have attached some information as to the Phillips LED Street Lights and the Eversource email stating that the Town was awarded up to \$50,000 rebate to switch to LED Street Lights.

Paul Micali

From: robert.krey@eversource.com
Sent: Wednesday, March 09, 2016 4:42 PM
To: Paul Micali
Subject: Merrimack Streetlight Upgrade - Eversource Review of Proposal
Attachments: Eversource_Efficiency_Terms_and_Conditions.pdf;
Overhead_Power_Line_Contractors_NH_Partial_List.pdf

Paul,

Eversource is pleased to confirm that the Philips proposal, as revised and submitted on 2/25/16, meets our technical standards and is eligible for an Eversource incentive under several terms and conditions (attached).

Eversource can review submittals from a variety of manufacturers whose fixtures appear on the Qualified Products List at designlights.org.

The maximum incentive for the project, if implemented as proposed, is \$50,000 (fifty thousand dollars).

The incentive is subject to a mutually agreed completion date in 2016, to be determined.

The incentive is subject to reduction based on a final project inspection as well as the type and quantity of fixtures installed.

With the technical review complete, The town and Eversource may sign an Eversource application which reserves our incentive funding for a project.

First we ask that you provide us information described below:

Expected date of approval by the town,
Expected start date of the project,
Expected completion date of the project.

We will be able to provide at your request an analysis of electricity bill savings from the proposal.

I will be glad to discuss any questions.
Please see attachments

Thank you.

Sincerely,

Robert Krey
Account Executive
Eversource Energy
370 Amherst St.
Nashua, NH 03063
O: 603-882-1387 x555-5213

NHSaves@work Rebate Program

EVERSOURCE Terms and Conditions

This Agreement entered into by and between EVERSOURCE, a New Hampshire corporation having its principal place of business in Manchester, New Hampshire (herein referred to as "EVERSOURCE"), and the Customer as identified on the front of the rebate application (herein referred to as "Customer"). Execution of the rebate application shall constitute acceptance of these Terms and Conditions.

Now, therefore, in consideration of the mutual covenants and agreements contained herein, the Customer and EVERSOURCE agree that the Customer's participation in EVERSOURCE's nhsaves@work Rebate Program (herein referred to as "NHSRP"), shall be subject to the following terms and conditions:

1. No Energy Efficiency Measures (herein referred to as "EEMs") will be deemed eligible for a rebate payment under EVERSOURCE's NHSRP unless they are identified in the rebate application and have met NHSRP acceptance criteria as evidenced by a pre-approval offer on the rebate application signed by the Customer and EVERSOURCE.
2. All rebates are contingent upon continued approval of the NHSRP by the NH Public Utilities Commission and authorization to recover said amounts from the System Benefits Charge. The rebate amount cannot exceed the total project cost.
3. If the Customer installs all the EEM's identified in the rebate application, the Customer will be eligible for a rebate payment as listed on the rebate application.
4. This payment will be made to the Customer after the project is installed and verified by EVERSOURCE and/or EVERSOURCE's Quality Assurance Contractor. The EEMs must be installed, inspected, and accepted by EVERSOURCE before the "Completion Date" on the front of the rebate application. Payment will be made within 60 days of said verification and after EVERSOURCE has received an executed copy of the rebate application and all applicable invoices.
5. In consideration of the rebate payment, the Customer agrees to remain a "Full Requirements Customer" of EVERSOURCE for the term of this Agreement. A "Full Requirements Customer" is defined as a customer obtaining all of its electrical energy requirements through EVERSOURCE's Transmission and Distribution System. This requirement shall preclude any and all forms of self-generation (other than generation used for emergency supply during service outages on EVERSOURCE's transmission and distribution system), cogeneration, and purchases of electricity from a supplier whose supply is not distributed by EVERSOURCE. This provision shall not prohibit the Customer from testing emergency generators on a periodic basis, nor prohibit the Customer from participating in a EVERSOURCE demand reduction program using the Customer's emergency generator(s). The Customer is free to purchase its electrical needs from a competitive energy supplier; however, this supply must be delivered through the EVERSOURCE meter.
6. EEMs for which EVERSOURCE has provided monetary rebates under NHSRP must remain operating and in their original location (or a mutually agreed upon location served by EVERSOURCE) for the term of this Agreement. EVERSOURCE reserves the right to inspect for compliance of this provision during the term of this Agreement.
7. Should the Customer breach the terms of article 5 or 6, the Customer agrees to pay damages to EVERSOURCE equal to the full rebate amount within 60 days of EVERSOURCE's demand for said payment as full settlement of the breach. The Customer agrees that the damages specified within this Agreement are not a penalty but represent a reasonable estimate of the damages EVERSOURCE would suffer as a result of the Customer's failure to comply with the terms of this Agreement.
8. The term of this Agreement is the period of time commencing with the date on which EVERSOURCE offers this rebate by delivering a rebate application and ending three (3) years after the Customer receives the rebate payment.
9. In the event that the Customer has any outstanding (overdue) balances due and owing to EVERSOURCE, the rebate payment may be withheld at EVERSOURCE's option, and used to offset such outstanding debt(s).
10. The rights and obligations in this Agreement shall be binding upon any lessees, assigns, and future owners of those facilities at the Customer's Project site. The Customer agrees to include the restrictions contained in this Agreement in leases, purchase and sales agreements, contracts or other similar documents relating to the use and ownership of the facilities at the project site.
11. EVERSOURCE does not guarantee or warrant any energy savings. Factors that are impossible to predict, including but not limited to facility expansion, cutbacks, or weather changes, all may impact the Customer's future electrical energy use and cause actual savings to vary from estimated savings. Any and all warranties are between the Customer and the installer or the manufacturer of installed EEM's.
12. The Customer agrees to allow EVERSOURCE to perform an on-site evaluation of the installed EEMs as part of the NHSRP program evaluation. This evaluation is strictly for informational purposes, to determine the EEM's real and long-term savings. The evaluation will not alter the rebate amount in any way and the results will be treated confidentially by EVERSOURCE.
13. EVERSOURCE IS NOT A MERCHANT IN EEMS. ANY AND ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BETWEEN EVERSOURCE AND CUSTOMER. THE CUSTOMER SHALL LOOK TO THE MANUFACTURER, VENDOR AND/OR INSTALLER FOR COPIES AND ENFORCEMENT OF ANY WARRANTIES OR GUARANTEES.
14. The Customer, as a condition of participation, is responsible for the safe and proper disposal of all wastes, hazardous or otherwise, and equipment, machinery or devices replaced by the EEMs installed under this letter of Agreement, in accordance with all laws, rules and regulation. The Customer must also agree not to install any of the replaced equipment in EVERSOURCE's service territory.
15. This Agreement shall only be amended by a written document executed by duly authorized representatives of both parties.

To participate in the NHSRP project, the Customer must execute the rebate application by a duly authorized representative and return it to EVERSOURCE. A signed copy of the fully executed rebate application will be returned to the Customer.

nhsaves@work

Instructions for completing Sections A, B and C of the Rebate Application

General Instructions:

With the assistance of your Utility Representative, complete Sections A (and B only if payment is assigned to the contractor) of the rebate application. Instructions for completing the rebate worksheet (found on the back of the rebate application) are provided with these instructions. Please return the completed rebate application to your Utility Representative for approval.

Section A: Customer Information

1. Fill in the **Customer's Name** (as it should appear on the rebate check), **Electric Account Number** and **Electric Rate** (i.e. G, GV, LG)
2. A Utility Representative will fill in the **Application Number**.
3. Fill in the Project **Facility Address for the location of the project** (Street, City, State and Zip Code).
4. Fill in project **Service Location Identification** (i.e. Building A, Cafeteria, etc.) only if further clarification is needed to identify the project.
5. Fill in Customer's **Mailing Address** (Street, City, State and Zip Code) for the rebate check.
6. Fill in Customer's **Contact Person's Name, Title, and Telephone Number**.
7. Check off one of the following to indicate whether Customer's business is **Incorporated: (yes/ no/exempt)**.
8. Check off Customer's **Rebate Payment Preference (check / bill credit / pay contractor)**.
9. If the rebate is to be paid to a contractor or vendor the customer must sign the **Please Assign Payment to Contractor Box**.

Section B: Contractor Information (Required only if the rebate is to be paid to the contractor)

1. Fill in **Contractor's Name, Contact Person and Title**. If the rebate is to be paid to the contractor, the contractor must sign the rebate application in the **Contact Person Signature** box.
2. Fill in **Contractor's Mailing Address** (Street, City, State and Zip Code) and **Telephone Number**.
3. Check off one of the following to indicate whether Customer's business is **incorporated: (yes/no/exempt)**.

Section C: Document Approvals

Pre-Installation Inspection:

1. A Utility Representative will sign and date the rebate application upon completion of a pre-installation inspection of the project site. This is required for all retrofit projects but may be required for new construction projects.

Pre-Approval Offer:

1. A Utility Representative will fill in the **Amount of the Rebate Offer** and project **Completion Date** (the rebate offer is valid until this date). The utility representative will sign and date the rebate application in the **Utility Signature** Box, authorizing an offer of the rebate upon approval of the Technical Review.
2. A Technical Review is required for all projects (it will be the responsibility of the utility representative to obtain the proper signature in the **Technical Review** Box).
3. The Customer will sign and date the rebate application in the **Customer Signature** Box, agreeing that: the information on the rebate worksheet is correct and accurate, the proposed efficiency measures are acceptable and they understand and will agree to the Utility's Terms and Conditions.

Post-Installation Inspection:

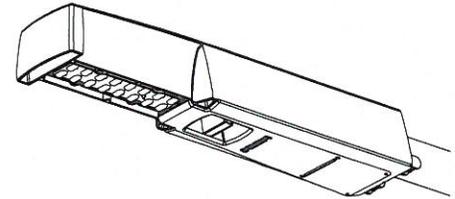
1. Notify your Utility Representative that the project has been completed and to schedule a post-installation Inspection.
2. The customer is to provide copies of the itemized invoices to the utility representative. The invoices must show the cost of the items purchased, date of purchase, where the equipment was purchased, make, model and quantities of purchased equipment. The customer is to also provide the **Total Project Cost**.
3. After project completion and documentation review, the Utility Representative and Customer will sign and date the rebate application in the **Utility Signature** Box and in the **Customer Signature** Box respectively. The utility representative will fill in the **Amount of Rebate** for the rebate payment.

Management Approval:

1. Utility Management will review completed application and supporting documentation and will then will sign and date the application in the **Utility Signature** Box to authorize rebate payment.

Compact Design, without compromise in performance

MINIVIEW LED ROADWAY LUMINAIRE



PHILIPS LUMEC MINIVIEW LED ROADWAY LUMINAIRE

The Philips Lumec MiniView LED Roadway luminaire was designed to eliminate the compromises of performance, features and value when choosing between existing HID and industry leading LED technology. MiniView is the perfect solution when projects require a luminaire that meets specifications without sacrificing performance... all while maximizing operations and maintenance savings. This roadway luminaire features a single IP66-rated LED module, designed to provide crisp, brilliant white light that surpasses existing HID luminaire performance. Optimized for applications such as local roads and residential streets, MiniView will become the choice of any city, municipality and utility considering the overall size, weight, and tool-free features that ensure ease of installation. MiniView makes your upgrade to reliable, long-lasting, low-maintenance LED lighting a simple cost-effective decision.

Project: _____
 Location: _____
 Catalog No: _____
 Fixture Type: _____
 Mfg: _____ Lamps: _____ Qty: _____
 Notes: _____

Ordering guide

example: SVS-35W16LED4K-T-LE3-UNIV-DMG-RC-WC10-GY3

Luminaire	LED Module	Optical System	Voltage	Integrated Features	Finish
SVS			UNIV	DMG-RC-WC10	GY3
SVS MiniView LED Roadway Luminaire	25W16LED4K-T or 35W16LED4K-T or 54W16LED4K-T	LE2 Type II LE3 Type III	UNIV 120-277VAC	DMG ¹ Dimmable driver 0-10V RC ^{1,2} Receptacle for a twist-lock photocell or shorting cap WC10 ¹ 10-year limited warranty	GY3 Grey finish

Ordering guide

Luminaire Accessories - must be ordered as separate line items:

ACC-SVS-HS³: House side shield
ACC-SVS-UNIV-PH8^{2,3}: Photoelectric cell
ACC-SVS-PH9^{2,3}: Shorting cap
ACC-SVS-UNIV-SPC³: Starsense Photocell Control

1. Please note that these integrated features always come with MiniView luminaires.
2. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
3. Please note that these accessories need to be ordered as separate line items and they are quickly and easily installed in the field.



**PHILIPS
LUMEC**

MINIVIEW LED ROADWAY LUMINAIRE

LED Wattage and Lumen Values - MiniView Luminaire

LED = Philips Lumileds LUXEON T, CRI = 70, CCT = 4000K (+/- 350K)

System (LED + driver) rated life = 100,000 hrs⁴

LED Module	Typical delivered lumens	Typical system wattage (W) ⁵	Typical System Current (A) @				LED current (mA)	HID ⁶ equivalent	Luminaire Efficacy Rating (Lm/W)	BUG rating
			120V	208V	240V	277V				
25W16LED4K-T-LE2	2887	24	0.205	0.119	0.104	0.092	470	70-100W	118.7	B1-U0-G1
25W16LED4K-T-LE3	2752	24	0.205	0.119	0.104	0.092	470	70-100W	113.2	B1-U0-G1
35W16LED4K-T-LE2	4030	36	0.307	0.175	0.152	0.133	700	70-100W	111.9	B1-U0-G1
35W16LED4K-T-LE3	3842	36	0.307	0.175	0.152	0.133	700	70-100W	106.7	B1-U0-G1
54W16LED4K-T-LE2	5550	54	0.459	0.268	0.232	0.203	1050	100-150W	102.4	B1-U0-G1
54W16LED4K-T-LE3	5268	54	0.459	0.268	0.232	0.203	1050	100-150W	96.9	B1-U0-G1

4. $L_{70} > 100,000$ hrs (at ambient temperature = 40°C and forward current = 1.05A).

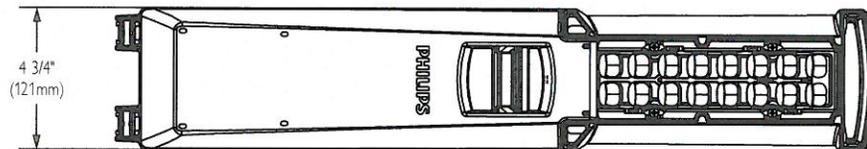
5. System wattage or total luminaire wattage includes the LED module and the LED driver.

6. Equivalence should always be confirmed by a photometric layout.

Note : Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Philips.

Dimensions - Standard MiniView Luminaire

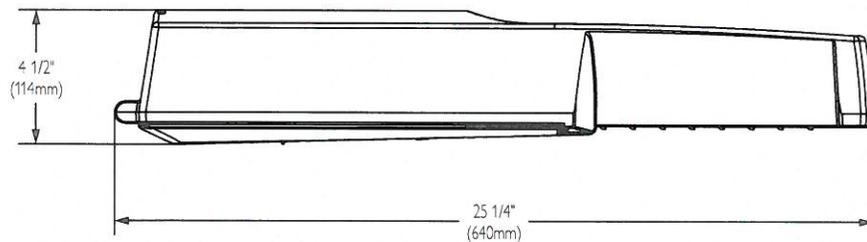
Top View



EPA: 0.85 sq. ft.

Luminaire Weight: 25/35W: 7.5 lbs. (3.4 kg)
54W: 8.1 lbs. (3.7 kg)

Side View



LED Performance

PREDICTED LUMEN DEPRECIATION DATA ⁷				
Ambient Temperature °C	Driver mA	Calculated L_{70} Hours ^{7,8}	L_{70} Per TM-21 ^{8,9}	Lumen Maintenance % @ 60,000 hours
Up to 40 °C	Up to 1050 mA	> 100,000 Hours	> 60,000 Hours	>96%

7. Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.

8. L_{70} is the predicted time when LED performance depreciates to 70% of initial lumen output.

9. Calculated per IESNA TM21-11. Published L_{70} hours limited to 6 times actual LED test hours.

MINIVIEW LED ROADWAY LUMINAIRE

Specifications

Housing:

Made of low copper die cast A360 Aluminum alloy 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/4" (133mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. A quick release, tool less entry, hinged, removable polymeric door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 8" (203mm) at the rear is required in order to open the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label to identify wattage and source (both included in box).

Light Engine:

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine equipped with Philips Lumileds LUXEON T LEDs.

LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module:

(Included), LED type Philips Lumileds LUXEON T. Composed of 16 high-performance white LEDs. Color temperature as per ANSI bin 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical System:

Composed of high-performance optical grade polymer acrylic refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Dark Sky compliant with 0% uplight and U0 per IESNA TM-15.

LE2 TYPE II Asymmetrical Distribution
LE3 TYPE III Asymmetrical Distribution

Heat Sink:

Built-in the housing, the innovative high efficacy heat sink chimney design ensures superior cooling by natural convection air flow pattern always close to LEDs and driver optimizing their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Driver:

For 25W and 35W: High power factor of >95%. Electronic driver, operating range 50/60 Hz. Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class II, THD of 12% max.

For 54W: High power factor of 95%. Electronic driver, operating range 50/60 Hz. Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class II, THD of 20% max

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

Integrated Features:

RC

Receptacle for a twist-lock photocell or shorting cap. Use of photocell or shorting cap is required to ensure proper illumination.

DMG

Dimmable driver 0-10V

WC10

MiniView is covered by a 10-year warranty from defects in material and workmanship in its intended use, as well as coverage for the finish. Visit website for more details on warranty.

SP1

Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with MiniView luminaire.

Luminaire Accessories:

ACC-SVS-HS
House side shield

ACC-SVS-UNIV-PH8*
Photoelectric cell

ACC-SVS-PH9*
Shorting Cap

ACC-SVS-UNIV-SPC*
Starsense Photo-cell Control.

** Luminaire option RC is required with this accessory.*

These accessories need to be ordered as separate line items and they are quickly and easily installed in the field.

Luminaire Useful Life:

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, Philips Advance data and Philips Lumileds LM-80/TM-21 data, expected to reach 100,000+ hours with >L₇₀ lumen maintenance @ 40°C.

Wiring:

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2-14 AWG. wires from the primary circuit, located inside the housing.

Hardware:

All exposed screws shall be stainless steel with Ceramic primer-seal base coat to reduce seizing of the parts. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

MINIVIEW LED ROADWAY LUMINAIRE

Specifications

Finish:

Color to be medium grey (GY3) and in accordance with the AAMA 2603 standard. Application of a polyester powdercoat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM-D2244 standard, as well as luster retention in keeping with the ASTM-D523 standard and humidity proof in accordance with the ASTM-D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM-B117 standard.

LED Products Manufacturing

Standard:

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance:

The SVS meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100 000 cycles by an independent lab).

Certifications and Compliance:

CSA, cULus Listed for Canada and USA. Luminaire complies with DOE MSSLC Model Specification for LED Roadway Luminaires. MiniView is on the DesignLights Consortium (DLC) Qualified Products List (QPL).

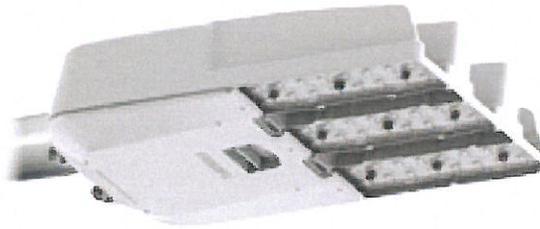


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Specifications are subject to change without notice.
www.philips.com/luminaires

MiniView SVS Specification Sheet 05/14 page 4 of 4

Philips Lighting
North America Corporation
200 Franklin Square Drive
Somerset, NJ 08873
Phone: 855-486-2216

Philips Lighting Company
281 Hillmount Road
Markham ON, Canada L6C 2S3
Phone: 800-668-9008



Roadway

StreetView

Project: _____
 Location: _____
 Cat No: _____
 Type: _____
 Lamps: _____ Qty: _____
 Notes: _____

The Philips Lumece StreetView LED luminaire is designed for many applications that require medium intensity lighting. Powered by the Philips LEDgine platform and featuring innovative thermal management design, this LED luminaire has two major assets: exceptional performance and unbeatable value.

Ordering guide

example: SVM-90W48LED4K-G2-LE3-UNIV-DMG-RC-HS-GY3

Luminaire	LED Module	Optical System	Voltage	Driver and Dimming	Twist-Lock Receptacle	Surge Protection	Luminaire Accessories	Finish
SVM					RC			GY3
SVM StreetView Medium	16W16LED4K-G2 ⁴ or 22W16LED4K-G2 ⁴ or 24W16LED4K-G2 ⁴ or 30W16LED4K-G2 ⁴ or 32W32LED4K-G2 or 48W32LED4K-G2 or 60W32LED4K-G2 or 48W48LED4K-G2 or 72W48LED4K-G2 or 90W48LED4K-G2 or 140W48LED4K-G2 ^{2,4}	LE2 Type II LE3 Type III LE5 Type V	UNIV 120-277VAC: 16 LED 32 LED 48 LED 140W 48 LED HVU 347-480VAC: 32 LED 48 LED	<i>Standard:</i> DMG ^{1,5} Dimmable driver 0-10V <i>Optional:</i> (not available for 140W48LED) AMPD ^{2,4,5} Amplight Dimming Dynamimmer Economy Profile CDMGE25 ^{2,4,5} CDMGE50 ^{2,4,5} CDMGE75 ^{2,4,5} Median Profile CDMGM25 ^{2,4,5} CDMGM50 ^{2,4,5} CDMGM75 ^{2,4,5} Safety Profile CDMGS25 ^{2,4,5} CDMGS50 ^{2,4,5} CDMGS75 ^{2,4,5} DALI ^{2,4,5} Digitally Addressable Lighting Interface DMG-AST ^{*2,4} Adjustable Startup Time DMG-CLO ^{*2,4,5} Constant Light Output DMG-OTL ^{*2,4} Over The Life <i>*Includes 0-10v dimming</i>	<i>Standard:</i> RC ^{1,3} Receptacle for twist-lock photocell or shorting cap	<i>Optional:</i> SP2 ⁶ 20kV / 20kA Surge Protector	HS House side shield, 1 per 16 LED light engine PH8 ^{3,4} Twist-lock Photoelectric Cell, UNIV (120-277VAC) PH8/347 ³ (not available for 140W48LED) Twist-lock Photoelectric Cell, HVU (347VAC) PH8/480 ³ (not available for 140W48LED) Twist-lock Photoelectric Cell, HVU (480VAC) PH8XL ^{3,4} Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC) PH9 ³ Shorting cap SPC ^{3,7} Starsense Photo-cell Control	GY3 Grey finish

1. Please note these integrated features come standard with StreetView luminaires.
 2. Denotes programmable driver option. Not available with HVU (347-480volt).
 Not available with 1050 mA version (140W48LED).
 3. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
 4. Not available with HVU (347-480volt).
 5. Dimming choices: Select either DMG or AMPD or one of the CDMG options or DALI.
 6. When SP2 option is selected you will get SP2 instead of standard SP1.
 7. Please note that more hardware as well as software are required. Please contact the quotations department for help with putting together the entire control system.

SVM StreetView

LED Cobra Head: 16, 32, and 48 LED

LED wattage and lumen values

LED CRI = 70, CCT = 4000K nominal (3985K +/- 275K or 3710K to 4260K), System (LED + driver) rated life = 100,000 hrs¹

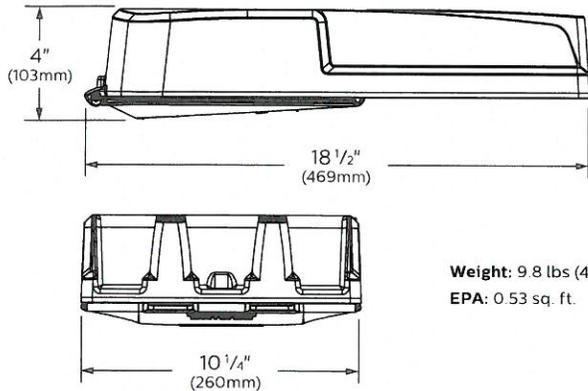
LED Module	Typical delivered lumens	Typical system wattage (W) ²	LED current (mA)	Typical System Current (A) @						Luminaire Efficacy Rating (Lm/W)	BUG rating
				120V	208V	240V	277V	347V	480V		
16W16LED4K-G2-LE2	2164	19	350	0.160	0.100	0.090	0.082			113	B1-U0-G1
16W16LED4K-G2-LE3	2192	19	350	0.160	0.100	0.090	0.082			115	B1-U0-G1
16W16LED4K-G2-LE5	2299	19	350	0.160	0.100	0.090	0.082			123	B2-U0-G0
22W16LED4K-G2-LE2	2822	26	470	0.210	0.125	0.115	0.105			109	B1-U0-G1
22W16LED4K-G2-LE3	2860	26	470	0.210	0.125	0.115	0.105			111	B1-U0-G1
22W16LED4K-G2-LE5	2999	26	470	0.210	0.125	0.115	0.105			116	B2-U0-G1
24W16LED4K-G2-LE2	2965	27	530	0.225	0.135	0.120	0.110			109	B1-U0-G1
24W16LED4K-G2-LE3	3004	27	530	0.225	0.135	0.120	0.110			110	B1-U0-G1
24W16LED4K-G2-LE5	3150	27	530	0.225	0.135	0.120	0.110			115	B2-U0-G1
30W16LED4K-G2-LE2	3792	36	700	0.290	0.175	0.150	0.135			105	B1-U0-G1
30W16LED4K-G2-LE3	3842	36	700	0.290	0.175	0.150	0.135			106	B1-U0-G1
30W16LED4K-G2-LE5	4029	36	700	0.290	0.175	0.150	0.135			112	B3-U0-G1
32W32LED4K-G2-LE2	4085	34	350	0.300	0.185	0.165	0.155	0.105	0.090	118	B1-U0-G1
32W32LED4K-G2-LE3	4139	35	350	0.300	0.185	0.165	0.155	0.105	0.090	120	B1-U0-G1
32W32LED4K-G2-LE5	4341	35	350	0.300	0.185	0.165	0.155	0.105	0.090	126	B3-U0-G1
48W32LED4K-G2-LE2	6132	53	530	0.450	0.270	0.240	0.215	0.160	0.130	116	B2-U0-G1
48W32LED4K-G2-LE3	6214	53	530	0.450	0.270	0.240	0.215	0.160	0.130	117	B2-U0-G1
48W32LED4K-G2-LE5	6515	53	530	0.450	0.270	0.240	0.215	0.160	0.130	123	B3-U0-G1
60W32LED4K-G2-LE2	7752	71	700	0.595	0.340	0.295	0.265	0.210	0.160	109	B2-U0-G2
60W32LED4K-G2-LE3	7855	71	700	0.595	0.340	0.295	0.265	0.210	0.160	110	B2-U0-G2
60W32LED4K-G2-LE5	8237	71	700	0.595	0.340	0.295	0.265	0.210	0.160	116	B3-U0-G1
48W48LED4K-G2-LE2	6341	54	350	0.440	0.260	0.250	0.230	0.160	0.130	117	B2-U0-G1
48W48LED4K-G2-LE3	6426	54	350	0.440	0.260	0.250	0.230	0.160	0.130	118	B2-U0-G2
48W48LED4K-G2-LE5	6734	54	350	0.440	0.260	0.250	0.230	0.160	0.130	124	B3-U0-G1
72W48LED4K-G2-LE2	8985	79	530	0.660	0.390	0.350	0.310	0.225	0.170	114	B2-U0-G2
72W48LED4K-G2-LE3	9105	79	530	0.660	0.390	0.350	0.310	0.225	0.170	116	B2-U0-G2
72W48LED4K-G2-LE5	9542	79	530	0.660	0.390	0.350	0.310	0.225	0.170	121	B3-U0-G2
90W48LED4K-G2-LE2	11475	105	700	0.890	0.515	0.455	0.390	0.305	0.225	109	B2-U0-G2
90W48LED4K-G2-LE3	11628	105	700	0.890	0.515	0.455	0.390	0.305	0.225	111	B2-U0-G2
90W48LED4K-G2-LE5	12186	105	700	0.890	0.515	0.455	0.390	0.305	0.225	116	B4-U0-G2
140W48LED4K-G2-LE2	15790	160	1050	1.330	0.760	0.665	0.575			99	B3-U0-G3
140W48LED4K-G2-LE3	16010	161	1050	1.330	0.760	0.665	0.575			99	B3-U0-G3
140W48LED4K-G2-LE5	17248	162	1050	1.330	0.760	0.665	0.575			106	B4-U0-G2

SVM StreetView

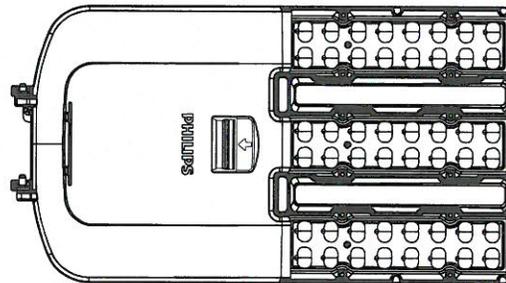
LED Cobra Head: 16, 32, and 48 LED

Dimensions

Side View



Bottom View



Weight: 9.8 lbs (4.5 kg)
EPA: 0.53 sq. ft.

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L₇₀ is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L₇₀ hours limited to 6 times actual LED test hours

Ambient Temperature C	Driver mA	Calculated L ₇₀ Hours	L ₇₀ per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	up to 1050 mA	>100,000 hours	>60,000 hours	>96%

Specifications

Housing

Made of low copper die cast A360 Aluminum alloy, for a high resistance to corrosion, 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/4" (133mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. A quick release, tool less entry, hinged, removable polymeric door with integral latch opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 8" (203mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label to identify wattage and source (both included in box).

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine. LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: (Included), High performance white LEDs. Color temperature as per ANSI/NEMA, bin neutral white 4000 Kelvin nominal (3985 +/- 275K or 3710K to 4260K), CRI 70 Min.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Dark Sky compliant with 0% uplight and UO per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Driver: High power factor of 95%. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 or 347 to 480 VAC (140W48LED4K available in 120-277V only) rated for both application line to line or line to neutral, Class I, THD of 20% max.

DMG: Dimming compatible 0-10V.

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Integrated Features

DMG: Dimmable driver 0-10V.

RC: Receptacle for a twist-lock photocell or shorting cap. Use of photocell or shorting cap is required to ensure proper illumination.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with StreetView luminaire.

SVM StreetView

LED Cobra Head: 16, 32, and 48 LED

Specifications (continued)

Driver and Luminaire Options

AMPD*: Driver pre-programmed for compatibility with Amplight control system.

AST*: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO*: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

DALI*: Pre-set driver compatible with the DALI control system.

OTL*: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

CDMG*: Dynadimmer standard dimming functionalities including pre-programmed scenarios to suit many applications and needs from safety to maximum energy savings.

Safety Mode:

CDMG525: 4 hours, 25% power dimming

CDMG550: 4 hours 50% power dimming

CDMG575: 4 hours 75% power dimming

Median Mode:

CDMG25: 6 hours 25% power dimming

CDMG50: 6 hours 50% power dimming

CDMG75: 6 hours 75% power dimming

Economy Mode:

CDMG25: 8 hours 25% power dimming

CDMG50: 8 hours 50% power dimming

CDMG75: 8 hours 75% power dimming

* Not available with HVU (347-480V)

SP2: 20kV / 20kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

HS: House side shield, 1 per 16 LED light engine.

PH8*: Twist-lock Photoelectric Cell, UNIV (120-277VAC).

PH8/347*: Twist-lock Photoelectric Cell, HVU (347VAC).

PH8/480*: Twist-lock Photoelectric Cell, HVU (480VAC).

PH8XL*: Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC).

PH9*: Shorting cap.

* Use of photoelectric cell or shorting cap is required to ensure proper illumination.

SPC: Starsense twist-lock photoelectric cell and antenna node, on / off.

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, Philips System Reliability Tool, Philips Advance data and Philips Lumileds LM-80/TM-21 data, expected to reach 100,000+ hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 to #14 AWG wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The SVM meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. StreetView LED Cobrahead luminaires are DesignLights Consortium qualified. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

Limited Warranty

10-year limited warranty. See philips.com/warranties for details and restrictions.

Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.



**PHILIPS
LUMEC**

Roadway

RoadFocus

RFL: 145, 180, 215 and 241W



Project: _____
 Location: _____
 Cat.No: _____
 Type: _____
 Lamps: _____ Qty: _____
 Notes: _____

The Philips LumeC RoadFocus LED Cobra Head luminaires feature a sleek design that provides seamless replacement of existing HID luminaires. RoadFocus is available in three sizes, offers multiple lumen packages, and a complete array of optical distributions, making it an outstanding solution for all types of roadway applications.

Ordering guide

example: RFL-145W64LED4K-T-R2S-UNIV-DMG-OTL-RCD7-SP2-PH8XL-GY3

Luminaire	LED Module	Optical System	Voltage	Driver and Dimming	Wattage Switch	Twist-Lock Receptacle	Surge Protection	Luminaire Options	Finish
RFL									
RFL RoadFocus Large	145W64LED4K-T or 180W80LED4K-T or 215W96LED4K-T or 241W112LED4K-T	R2S Type II Short R2M Type II Medium R3S Type III Short R3M Type III Medium 5 Type V	UNIV 120-277VAC HVU 347-480VAC	<i>Standard:</i> DMG ^{1,6} Dimmable driver 0-10V <i>Optional:</i> AMPD ^{2,4,5,6} Amplight Dimming Dynadimmer Economy Profile CDMGE25 ^{2,4,5,6} CDMGE50 ^{2,4,5,6} CDMGE75 ^{2,4,5,6} Median Profile CDMGM25 ^{2,4,5,6} CDMGM50 ^{2,4,5,6} CDMGM75 ^{2,4,5,6} Safety Profile CDMGS25 ^{2,4,5,6} CDMGS50 ^{2,4,5,6} CDMGS75 ^{2,4,5,6} DALI ^{2,4,5,6} Digitally Addressable Lighting Interface DMG-AST ^{*2,4} Adjustable Startup Time DMG-CLO ^{*2,4,5} Constant Light Output DMG-OTL ^{*2,4} Over The Life <i>*Includes 0-10v dimming</i>	None (leave blank) FAWS ⁵ Field Adjustable Wattage Selector (optional)	<i>Standard:</i> RCD ^{1,3,7} Receptacle for twist-lock photocell or shorting cap, 5-pin (standard) <i>Optional:</i> RCD7 ^{3,7} Receptacle for twist-lock photocell or shorting cap, 7-pin (optional)	SP2 ⁸ 20kV / 20kA Surge Protector (optional)	HS House side shield, 1 per 16 LED light engine PH8 ³ Twist-lock Photoelectric Cell, UNIV (120-277VAC) PH8/347 ³ Twist-lock Photoelectric Cell, HVU (347VAC) PH8/480 ³ Twist-lock Photoelectric Cell, HVU (480VAC) PH8XL ³ Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC) PH9 ³ Shorting cap	BK Black finish BR Bronze finish GY3 Gray finish WH White finish

1. Please note these integrated features come standard with RoadFocus luminaires.
 2. Denotes programmable driver option. Not available with HVU (347-480volt)
 3. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
 4. Not available with HVU (347-480volt).

5. FAWS not available with AMPD, CDMG options, DALI or CLO.
 6. Dimming choices: Select either DMG or AMPD or one of the CDMG options or DALI.
 7. When RDC7 option is selected you will get 7-pin instead of standard RCD 5-pin.
 8. When SP2 option is selected you will get SP2 instead of standard SP1.

RFL RoadFocus

Large, LED Cobrahead: 145, 180, 215, and 241W

Accessories (must be ordered as separate line items - quickly and easily installed in the field)

ACC-RFS-RFM-RFL-UNIV-SPC^{1,2} Starsense twist-lock photoelectric cell and antenna node, UNIV (120-277VAC).	ACC-RFM-RFL-HVU-SPC^{1,2} Starsense twist-lock photoelectric cell and antenna node, HVU (347-480VAC).	ACC-RFS-RFM-RFL-UNIV-SPCD^{1,2} Starsense dimmable twist-lock photoelectric cell and antenna node, UNIV (120-277VAC).
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1. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
2. Please note that more hardware as well as software are required.
Please contact the quotations department for help with putting together the entire control system.

LED Wattage and Lumen Values

LED = Philips Lumileds LUXEON T, CRI = 70, CCT = 4000K (+/- 350K)
System (LED + driver) rated life = 100,000 hrs¹

LED Module	Typical Delivered Lumens	Typical System Wattage (W) ²	LED Current (mA)	Typical System Current (A) @						Efficacy (Lm/W)	BUG Rating
				120V	208V	240V	277V	347V	480V		
145W64LED4K-T-R2S	16,349	137	700	1.15	0.66	0.58	0.51	0.41	0.31	119	B3-U0-G2
145W64LED4K-T-R2M	16,046	137	700	1.15	0.66	0.58	0.51	0.41	0.31	117	B3-U0-G3
145W64LED4K-T-R3S	15,763	137	700	1.15	0.66	0.58	0.51	0.41	0.31	115	B2-U0-G3
145W64LED4K-T-R3M	15,697	137	700	1.15	0.66	0.58	0.51	0.41	0.31	115	B3-U0-G2
145W64LED4K-T-5	14,747	137	700	1.15	0.66	0.58	0.51	0.41	0.31	108	B4-U0-G2
180W80LED4K-T-R2S	20,444	174	700	1.46	0.86	0.76	0.69	0.52	0.39	117	B3-U0-G2
180W80LED4K-T-R2M	20,065	174	700	1.46	0.86	0.76	0.69	0.52	0.39	115	B3-U0-G3
180W80LED4K-T-R3S	19,711	174	700	1.46	0.86	0.76	0.69	0.52	0.39	113	B2-U0-G3
180W80LED4K-T-R3M	19,628	174	700	1.46	0.86	0.76	0.69	0.52	0.39	113	B3-U0-G3
180W80LED4K-T-5	18,440	174	700	1.46	0.86	0.76	0.69	0.52	0.39	106	B4-U0-G2
215W96LED4K-T-R2S	24,538	207	700	1.74	1.01	0.89	0.80	0.62	0.46	119	B3-U0-G2
215W96LED4K-T-R2M	24,084	207	700	1.74	1.01	0.89	0.80	0.62	0.46	116	B3-U0-G3
215W96LED4K-T-R3S	23,658	207	700	1.74	1.01	0.89	0.80	0.62	0.46	114	B3-U0-G4
215W96LED4K-T-R3M	23,559	207	700	1.74	1.01	0.89	0.80	0.62	0.46	114	B3-U0-G3
215W96LED4K-T-5	22,133	207	700	1.74	1.01	0.89	0.80	0.62	0.46	107	B5-U0-G3
241W112LED4K-T-R2S	28,633	248	700	2.03	1.17	1.02	0.91	0.72	0.53	115	B4-U0-G3
241W112LED4K-T-R2M	28,102	248	700	2.03	1.17	1.02	0.91	0.72	0.53	114	B3-U0-G4
241W112LED4K-T-R3S	27,606	244	700	2.03	1.17	1.02	0.91	0.72	0.53	113	B3-U0-G4
241W112LED4K-T-R3M	27,490	244	700	2.03	1.17	1.02	0.91	0.72	0.53	113	B3-U0-G4
241W112LED4K-T-5	25,826	242	700	2.03	1.17	1.02	0.91	0.72	0.53	107	B5-U0-G3

1. L₇₀ >100,000 hrs (at ambient temperature = 25°C).
 2. System wattage or total luminaire wattage includes the LED module and the LED driver.
- Note: Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Philips.

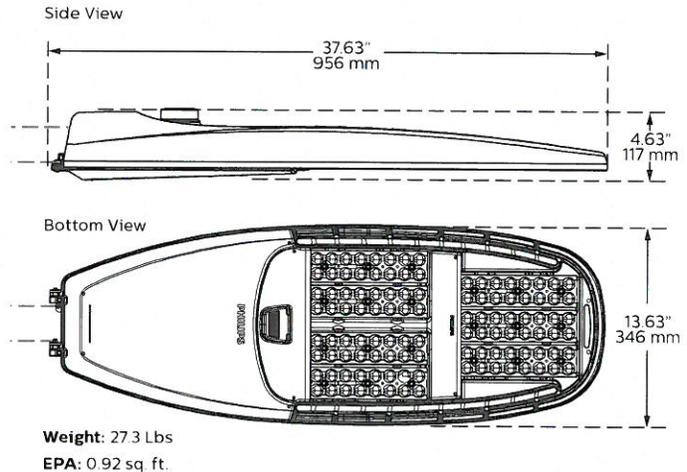
RFL RoadFocus

Large, LED Cobrahead: 145, 180, 215, and 241W

Field Adjustable Wattage (FAWS) Multiplier Chart

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage and typical current
1	0.37	0.29
2	0.55	0.50
3	0.62	0.58
4	0.71	0.69
5	0.77	0.75
6	0.81	0.81
7	0.84	0.87
8	0.94	0.91
9	0.98	0.96
10	1.00	1.00

Dimensions



Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours

Ambient Temperature C	Driver mA	Calculated L70 Hours	L70 per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	700 mA	>100,000 hours	>60,000 hours	>94%

Specifications

Housing

Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with 2 zinc plated clamps fixed by 4 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label to identify wattage and source (both included in box). Housing (including electrical compartment) rated IP54 per ANSI C136.37.

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine equipped with Philips Lumileds LUXEON T LEDs. LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: (Included), LED type Philips Lumileds LUXEON T. Composed of high performance white LEDs. Color temperature as per ANSI bin 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Dark Sky compliant with 0% uplight and U0 per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

Driver: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 or 347 to 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max. 1 driver (64 LED); 2 drivers (all others).

DMG: Dimming compatible 0-10 volts. The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

RFL RoadFocus

Large, LED Cobrahead: 145, 180, 215, and 241W

Specifications (continued)

Integrated Features

DMG: Dimmable driver 0-10V.

RCD*: Receptacle with 5 pins enabling dimming, can be used with a twist lock Starsense or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with RoadFocus luminaire.

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

Driver and Luminaire Options

AMPD*: Driver pre-programmed for compatibility with Amplight control system.

AST*: Pre-set driver for progressive start-up of the LED module(s) to optimize energy management and enhance visual comfort at start-up.

CLO*: Pre-set driver to manage the lumen depreciation by adjusting the power given to the LEDs offering the same lighting intensity during the entire lifespan of the LED module.

DALI*: Pre-set driver compatible with the DALI control system.

OTL*: Pre-set driver to signal end of life of the LED module(s) for better fixture management.

CDMG*: Dimmer standard dimming functionalities including pre-programmed scenarios to suit many applications and needs from safety to maximum energy savings.

Safety Mode:

CDMG25: 4 hours, 25% power dimming
CDMG50: 4 hours 50% power dimming
CDMG75: 4 hours 75% power dimming

Median Mode:

CDMG25: 6 hours 25% power dimming
CDMG50: 6 hours 50% power dimming
CDMG75: 6 hours 75% power dimming

Economy Mode:

CDMG25: 8 hours 25% power dimming
CDMG50: 8 hours 50% power dimming
CDMG75: 8 hours 75% power dimming

** Not available with HVU (347-480V)*

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details.

Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

SP2: 20kV / 20kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

RCD7*: Receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Starsense node or photoelectric cell or a shorting cap.

Please note: Additional hardware will be required to utilize the additional 2 pins on this receptacle.

HS: House side shield, 1 per 16 LED light engine.

PH8*: Twist-lock Photoelectric Cell, UNIV (120-277VAC).

PH8/347*: Twist-lock Photoelectric Cell, HVU (347VAC).

PH8/480*: Twist-lock Photoelectric Cell, HVU (480VAC).

PH8XL*: Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC).

PH9*: Shorting cap.

** Use of photoelectric cell or shorting cap is required to ensure proper illumination.*

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, Philips System Reliability Tool, Philips Advance data and Philips Lumileds LM-80/TM-21 data, expected to reach 100,000+ hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 3000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The RFL meets the ANSI C136.31, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. RoadFocus LED Cobrahead luminaires are DesignLights Consortium qualified. Luminaire complies with or exceeds the following ANSI C136 standards: 2, 3, 10, 14, 15, 22, 25, 31, 37, 41.

Limited Warranty

10-year limited warranty.
See philips.com/warranties for details and restrictions.

Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.

