

**PHILIPS  
LUMEC**

Roadway

RoadFocus

RFM: 72, 108 and 160 W



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: RFM-72W32LED4K-T-R2S-UNIV-DMG-AST-FAWS-RCD-SP2-PHXL-GY3

Luminaire	LED Module	Optical System	Voltage	Driver and Dimming	Wattage Switch	Twist-Lock Receptacle	Surge Protection	Luminaire Options	Finish
<b>RFM</b>									
<b>RFM</b> RoadFocus Medium	<b>4000K:</b> 72W32LED4K-T 108W32LED4K-T <sup>2,4</sup> 108W48LED4K-T 160W48LED4K-T <sup>2,4</sup> <b>3000K:</b> 72W32LED3K-T 108W32LED3K-T <sup>2,4</sup> 108W48LED3K-T 160W48LED3K-T <sup>2,4</sup>	<b>R2S</b> Type II Short <b>R2M</b> Type II Medium <b>R3S</b> Type III Short <b>R3M</b> Type III Medium <b>4</b> Type IV <b>5</b> Type V	<b>UNIV</b> 120-277VAC <b>HVU</b> 347-480VAC	<i>Standard:</i> <b>DMG</b> <sup>1,6</sup> Dimmable driver 0-10V <i>Optional:</i> <b>Dynadimmer</b> Economy Profile <b>CDMGE25</b> <sup>2,4,5,6</sup> <b>CDMGE50</b> <sup>2,4,5,6</sup> <b>CDMGE75</b> <sup>2,4,5,6</sup> Median Profile <b>CDMGM25</b> <sup>2,4,5,6</sup> <b>CDMGM50</b> <sup>2,4,5,6</sup> <b>CDMGM75</b> <sup>2,4,5,6</sup> Safety Profile <b>CDMGS25</b> <sup>2,4,5,6</sup> <b>CDMGS50</b> <sup>2,4,5,6</sup> <b>CDMGS75</b> <sup>2,4,5,6</sup> <b>DALI</b> <sup>2,4,5,6</sup> Digitally Addressable Lighting Interface <b>DMG-AST</b> <sup>*2,4</sup> Adjustable Startup Time <b>DMG-CLO</b> <sup>*2,4,5</sup> Constant Light Output <b>DMG-OTL</b> <sup>*2,4</sup> Over The Life <i>*Includes 0-10v dimming</i>	None (leave blank) <b>FAWS</b> <sup>5</sup> Field Adjustable Wattage Selector (optional)	<i>Standard:</i> <b>RCD</b> <sup>1,3,7</sup> Receptacle for twist-lock photocell or shorting cap, 5-pin (standard) <i>Optional:</i> <b>RCD7</b> <sup>3,7</sup> Receptacle for twist-lock photocell or shorting cap, 7-pin (optional)	None (leave blank) <b>SP2</b> <sup>8</sup> 20kV / 20kA Surge Protector (optional)	<b>HS</b> House side shield, 1 per 16 LED light engine <b>PH8</b> <sup>3</sup> Twist-lock Photoelectric Cell, UNIV (120-277VAC) <b>PH8/347</b> <sup>3</sup> Twist-lock Photoelectric Cell, HVU (347VAC) <b>PH8/480</b> <sup>3</sup> Twist-lock Photoelectric Cell, HVU (480VAC) <b>PHXL</b> <sup>3</sup> Twist-lock Photoelectric Cell, extended life, UNIV (120-277VAC) <b>PH9</b> <sup>3</sup> Shorting cap <b>API</b> Factory installed NEMA label	<b>BK</b> Black finish <b>BR</b> Bronze finish <b>GY3</b> Gray finish <b>WH</b> White finish

1. Please note these integrated features come standard with RoadFocus luminaires.  
 2. Denotes programmable driver option. Not available with HVU (347-480volt).  
 Not available with 1050 mA versions (108W32LED, 160W48LED).  
 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 CDMG options, DALI or CLO.  
 6. Dimming choices: Select either DMG or one of the CDMG options or DALI.  
 7. When RCD7 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.

# RFM RoadFocus

## Medium, LED Cobrahead: 72, 108, and 160 W

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

**CPC or CPCD<sup>1</sup>**

CityTouch Connector Node.

1. Contact the factory for additional support when connected lighting or additional services are desired.

### LED Wattage and Lumen Values

LED = Philips Lumileds LUXEON T, CRI = 70, CCT = 4000K (+/- 350K), System (LED + driver) rated life = 100,000 hrs<sup>1</sup>

LED Module	Typical Delivered Lumens	Typical System Wattage (W) <sup>2</sup>	LED Current (mA)	Typical System Current (A) @						Efficacy (Lm/W)	BUG Rating
				120V	208V	240V	277V	347V	480V		
72W32LED4K-T-R2S	8,330	73	700	0.62	0.36	0.31	0.28	0.21	0.15	114	B2-U0-G1
72W32LED4K-T-R2M	8,140	73	700	0.62	0.36	0.31	0.28	0.21	0.15	112	B2-U0-G2
72W32LED4K-T-R3S	8,085	73	700	0.62	0.36	0.31	0.28	0.21	0.15	111	B1-U0-G2
72W32LED4K-T-R3M	8,178	73	700	0.62	0.36	0.31	0.28	0.21	0.15	112	B2-U0-G2
72W32LED4K-T-4	7,142	73	700	0.62	0.36	0.31	0.28	0.21	0.15	98	B1 U0 G2
72W32LED4K-T-5	7,496	73	700	0.62	0.36	0.31	0.28	0.21	0.15	103	B3-U0-G2
108W32LED4K-T-R2S	11,169	108	1050	0.91	0.53	0.47	0.41	N/A		103	B2-U0-G2
108W32LED4K-T-R2M	10,914	108	1050	0.91	0.53	0.47	0.41			101	B2-U0-G2
108W32LED4K-T-R3S	10,841	108	1050	0.91	0.53	0.47	0.41			100	B1-U0-G2
108W32LED4K-T-R3M	10,965	108	1050	0.91	0.53	0.47	0.41			102	B2-U0-G2
108W32LED4K-T-4	10,320	108	1050	0.91	0.53	0.47	0.41			96	B2-U0-G2
108W32LED4K-T-5	10,050	108	1050	0.91	0.53	0.47	0.41			93	B3-U0-G2
108W48LED4K-T-R2S	12,507	106	700	0.93	0.53	0.46	0.40	0.32	0.23	118	B3-U0-G2
108W48LED4K-T-R2M	12,222	106	700	0.93	0.53	0.46	0.40	0.32	0.23	115	B2-U0-G2
108W48LED4K-T-R3S	12,140	106	700	0.93	0.53	0.46	0.40	0.32	0.23	115	B2-U0-G2
108W48LED4K-T-R3M	12,279	106	700	0.93	0.53	0.46	0.40	0.32	0.23	116	B2-U0-G2
108W48LED4K-T-4	10,724	106	700	0.93	0.53	0.46	0.40	0.32	0.23	102	B2 U0 G2
108W48LED4K-T-5	11,255	106	700	0.93	0.53	0.46	0.40	0.32	0.23	107	B4-U0-G2
160W48LED4K-T-R2S	16,778	161	1050	1.34	0.76	0.66	0.58	N/A		104	B3-U0-G2
160W48LED4K-T-R2M	16,396	161	1050	1.34	0.76	0.66	0.58			102	B3-U0-G3
160W48LED4K-T-R3S	16,285	161	1050	1.34	0.76	0.66	0.58			101	B2-U0-G3
160W48LED4K-T-R3M	16,472	161	1050	1.34	0.76	0.66	0.58			102	B3-U0-G3
160W48LED4K-T-4	14,386	161	1050	0.91	0.53	0.47	0.41			89	B2-U0-G3
160W48LED4K-T-5	15,098	161	1050	1.34	0.76	0.66	0.58			94	B4-U0-G2

1. L<sub>70</sub> >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.

# RFM RoadFocus

## Medium, LED Cobrahead: 72, 108, and 160 W

### LED Wattage and Lumen Values

LED = Philips Lumileds LUXEON T, CRI = 70, CCT = 3000K (+/- 350K), System (LED + driver) rated life = 100,000 hrs<sup>1</sup>

LED Module	Typical Delivered Lumens	Typical System Wattage (W) <sup>2</sup>	LED Current (mA)	Typical System Current (A) @						Efficacy (Lm/W)	BUG Rating
				120V	208V	240V	277V	347V	480V		
72W32LED3K-T-R2S	7,398	73	700	0.62	0.36	0.31	0.28	0.21	0.15	101	B2-U0-G1
72W32LED3K-T-R2M	7,181	73	700	0.62	0.36	0.31	0.28	0.21	0.15	98	B2-U0-G2
72W32LED3K-T-R3S	7,168	73	700	0.62	0.36	0.31	0.28	0.21	0.15	98	B1-U0-G2
72W32LED3K-T-R3M	7,042	73	700	0.62	0.36	0.31	0.28	0.21	0.15	96	B2-U0-G2
72W32LED3K-T-4	7,223	73	700	0.62	0.36	0.31	0.28	0.21	0.15	99	B1-U0-G2
72W32LED3K-T-5	7,231	73	700	0.62	0.36	0.31	0.28	0.21	0.15	99	B3-U0-G2
108W32LED3K-T-R2S	10,064	108	1050	0.91	0.53	0.47	0.41	N/A		93	B2-U0-G2
108W32LED3K-T-R2M	9,769	108	1050	0.91	0.53	0.47	0.41			90	B2-U0-G2
108W32LED3K-T-R3S	9,751	108	1050	0.91	0.53	0.47	0.41			90	B1-U0-G2
108W32LED3K-T-R3M	9,581	108	1050	0.91	0.53	0.47	0.41			89	B2-U0-G2
108W32LED3K-T-4	9,826	108	1050	0.91	0.53	0.47	0.41			91	B2-U0-G2
108W32LED3K-T-5	9,837	108	1050	0.91	0.53	0.47	0.41			91	B4-U0-G2
108W48LED3K-T-R2S	11,116	106	700	0.93	0.53	0.46	0.40	0.32	0.23	105	B2-U0-G2
108W48LED3K-T-R2M	10,790	106	700	0.93	0.53	0.46	0.40	0.32	0.23	102	B2-U0-G2
108W48LED3K-T-R3S	10,770	106	700	0.93	0.53	0.46	0.40	0.32	0.23	102	B2-U0-G2
108W48LED3K-T-R3M	10,581	106	700	0.93	0.53	0.46	0.40	0.32	0.23	100	B2-U0-G2
108W48LED3K-T-4	10,853	106	700	0.93	0.53	0.46	0.40	0.32	0.23	102	B2-U0-G2
108W48LED3K-T-5	10,865	106	700	0.93	0.53	0.46	0.40	0.32	0.23	103	B4-U0-G2
160W48LED3K-T-R2S	14,706	161	1050	1.33	0.76	0.67	0.58	N/A		91	B3-U0-G2
160W48LED3K-T-R2M	14,275	161	1050	1.33	0.76	0.67	0.58			89	B3-U0-G3
160W48LED3K-T-R3S	14,249	161	1050	1.33	0.76	0.67	0.58			89	B2-U0-G2
160W48LED3K-T-R3M	13,999	161	1050	1.33	0.76	0.67	0.58			87	B3-U0-G2
160W48LED3K-T-4	14,358	161	1050	1.33	0.76	0.67	0.58			89	B2-U0-G3
160W48LED3K-T-5	14,374	161	1050	1.33	0.76	0.67	0.58			89	B4-U0-G2

1. L<sub>70</sub> >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.

### Field Adjustable Wattage (FAWS) Multiplier Chart

72W32LED4K-T or 108W48LED4K-T (700 mA)

72W32LED3K-T or 108W48LED3K-T (700 mA)

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

108W32LED4K-T OR 160W48LED4K-T (1050mA)

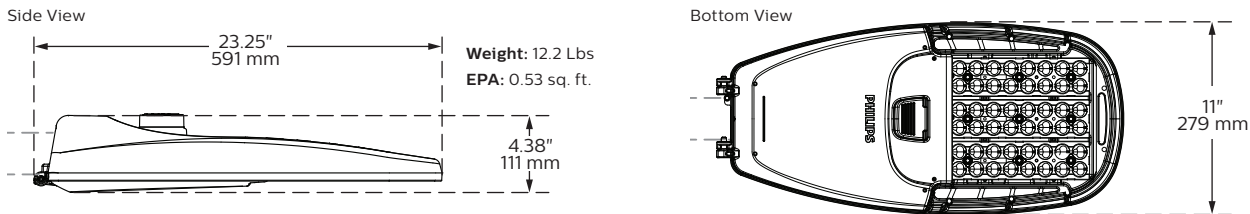
108W32LED3K-T OR 160W48LED3K-T (1050mA)

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage and typical current
1	0.33	0.27
2	0.56	0.48
3	0.64	0.57
4	0.71	0.65
5	0.79	0.74
6	0.84	0.79
7	0.89	0.85
8	0.92	0.90
9	0.96	0.95
10	1.00	1.00

# RFM RoadFocus

Medium, LED Cobrahead: 72, 108, and 160 W

## 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. L<sub>70</sub> is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11. Published L<sub>70</sub> hours limited to 6 times actual LED test hours

Ambient Temperature °C	Driver mA	Calculated L <sub>70</sub> Hours	L <sub>70</sub> 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 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 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. 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).

### 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:** LED type Philips Lumileds LUXEON T. Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 3000 Kelvin nominal (3045K +/- 175K) or 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. 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.

**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).

### 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.*

# RFM RoadFocus

Medium, LED Cobrahead: 72, 108, and 160 W

## Specifications (continued)

### Driver and Luminaire Options

**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)

**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).

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

**PH9\***: Shorting cap.

**API**: Factory Installed NEMA label, ANSI C136.15 compliant

*\* 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 (72W32LED and 108W48LED at 700mA) or 94,500 hours (108W32LED and 160W48LED at 1050mA) 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 RFM 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.

