Pedestrian Luminaires, LED, Side-Mount, Modern, 2700K

1. Scope

This standard covers the requirements for 2700K, modern light-emitting diode (LED), side-mount, pedestrian luminaires.

This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock No.	Description
014967	Arieta side-mount LED luminaire, pedestrian, dark bronze
014968	Arieta side-mount LED luminaire, pedestrian, gray

2. Application

2700K, modern, LED, side-mount, pedestrian luminaires are:

- Intended for replacement of 100-watt high-pressure sodium (HPS) shoebox-type luminaires
- Designed to be side-mounted on 4-inch square poles
- Installed in City-designated areas and SCL-designated streetlight districts
- Equipped with built-in photocontrol housing with tool-less access for a standard, seven-pin photocontrol
- Controlled by 20-year design life streetlight photocontrols as specified in SCL 5731.17.

A shield may be installed on this luminaire to cut light off at 1/2 mounting height behind the luminaire.

Luminaires use Stock No. 014969, a field-installable back light shield. See SCL 5728.04. Only one shield may be installed on a luminaire.

Round-pole adapters are used to mount flat bracket luminaires to round poles. See SCL 5727.03.

In 2023, Seattle City Light began a transition from 3000ºK CCT luminaires to 2700ºK.

3. Industry Standards

LED streetlight luminaires shall meet the applicable requirements of the most recent revision of the following industry standards:

ANSI/NEMA/ANSLG C78.377; Specifications for the Chromaticity of Solid State Lighting (SSL) Products

ANSI C136.10; Locking-Type Photocontrol Devices and Mating Receptacles.

ANSI C136.31; American National Standard for Roadway Lighting Equipment – Luminaire Vibration

ANSI C136.37; American National Standard for Roadway and Area Lighting Equipment – Solid State Light Sources Used in Roadway and Area Lighting

ANSI C136.41; Dimming Control Between an External Locking Type Photocontrol and Ballast or Driver

ASTM B117; Standard Practice for Operating Salt Spray (Fog) Apparatus

ASTM D1654; Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments

ASTM D523; Standard Test Method for Specular Gloss

ASTM G154; Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

C136.15; American National Standard for Roadway and Area Lighting Equipment – Internal Labeling of Luminaires

C136.22; American National Standard for Roadway and Area Lighting Equipment – Ingress Protection (Resistance to Dust, Solid Objects and Moisture) for Luminaire Enclosures

Federal Trade Commission (FTC); Green Guides, 16 CFR Part 260; Guides for the Use of Environmental Marketing

IEC 60529; Degrees of protection provided by enclosures (IP Code), consolidated edition

IEEE C62.41.2; IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits

IES LM-79-08; Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

IES LM-80-08; Approved Method: Measuring Lumen Maintenance of LED Lighting Sources

IESNA TM-15-11 (revised); Luminaire Classification System for Outdoor Luminaires

RoHS (European Union Directive 2002/95/EC for Restriction of Hazardous Substance)

Title 47 of the Code of Federal Regulations (CFR), Part 15; Radio Frequency Devices

UL 1598; Luminaires; UL

4. Requirements

4.1 Luminaire Performance

Operating temperature, range	
°C	-40 to +40
°F	-40 to +104
Correlated Color Temperature (CCT), nominal, °K, per ANSI/NEMA/ANSLG C78.377	2700 ± 200
Color rendering index (CRI), minimum	70
L70 lumen depreciation of LED light sources per IES LM-80, hours, minimum	100,000
Light distribution, IES	Type 3
Luminaire efficacy, lumens/watt, minimum, per IES LM-79, Section 11.0	114
Off-state power consumption, W, maximum	0.5
Vibration withstand, minimum, per ANSI C136.31	Level 3 (bridge/overpass application)

4.2 Power Supply/Driver

Input voltage, functional range, 60 Hz, Vac	120 to 277
Dimming control signal interface operative range, Vdc	0 to 10
Power factor, minimum	90

4.3 Construction

4.3.1 General

Luminaires shall be designed and constructed to meet the requirements of ANSI C136.37.

Luminaire features conforming to ANSI C136.37 shall include, but not be limited to:

- Mounting provisions
- Latching and hinging
- Terminal blocks
- Dimming
- Ingress protection
- Wiring and grounding
- Field-installable back-light shields
- Full-field adjustable (FFA) capability
- 7-pin photo-control receptacle

Luminaires shall be RoHS (European Union Directive 2002/95/ED for Restriction of Hazardous Substance) compliant. Luminaires shall have less than the maximum concentration values of the following RoHS restricted substances:

- Mercury (Hg)
- Cadmium (Cd)
- Chromium VI (Cr +6)
- Polybrominated biphenyl (PBB)
- Polybrominated biphenyl either (PBDE)
- Lead (Pb)

4.3.2 Fixture Housing

Luminaire weight, lb, maximum	20
Effective projected area (EPA), ft^2, maximum	0.8
External housing, ingress protection per IEC 60529	IP65
Optical chamber, ingress protection per IEC 60529	IP66

Luminaire housing shall be cast aluminum and allow for tool-less entry.

Luminaires shall have a universal mounting design to allow for attachment to existing pole without redrilling for retrofit applications.

All tool-less fasteners and latches shall be die-cast aluminum and have the same finish as the luminaire housing.

All aesthetic exterior fasteners shall be corrosion resistant, die cast aluminum; painted the same color as the luminaire housing. Internal fasteners shall be stainless steel.

Photocontrol receptacle shall be located at the base of the luminaire and allow for tool-less entry.

Photocontrol mounting shall accommodate all SCL-approved photocontrols as stated in SCL 5693.10.

Luminaire cooling system shall consist of passive heat sink without fans, pumps, or liquids.

All polycarbonate components shall be UV stabilized.

4.3.3 Electrical

Power supply/driver shall be UL Recognized for dry and damp locations.

All other electrical components shall be UL Listed or Recognized for wet locations.

Luminaire photocontrol receptacle shall be designed and constructed to accept a standard plug type, locking, three-pole, three-wire, streetlight photo control, and shall be located at the base of the fixture.

Photocontrol receptacle shall have a minimum of five positions, as defined in ANSI C136.41-2013. Two dimming contacts shall be connected to the 0-10 VDC control signal interface on the power supply/driver with quick-disconnect connectors.

Rotational adjustment of the photocontrol shall be tool-less.

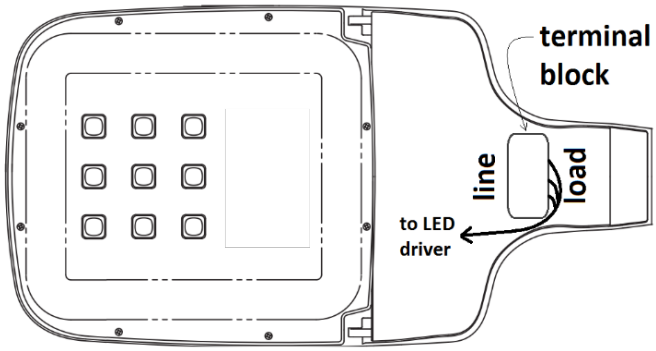
Luminaires shall meet the requirements of Title 47 of the Code of Federal Regulations (CFR), Part 15 – Radio Frequency Devices.

A three-pole terminal block capable of accepting #14 to #6 AWG wire shall be mounted to the housing inside the electrical compartment.

The terminal block shall be capable of operation with a standard #2 flat blade screwdriver.

The terminal block shall be rotated such that the line side is oriented toward the LED array. See Figure 4.3.3.

Figure 4.3.3. Terminal Block Orientation



4.3.4 Mounting

Luminaires shall be designed for side-mounting onto a 4-inch square pole.

4.3.5 Finish

Finish on housing shall be a powder coating with a minimum thickness of 100 microns and shall meet salt spray requirements of ASTM B 117 and the humidity resistance requirements of ASTM D 2247.

Finish shall be tested to withstand 5000 hours in salt spray exposure per ASTM B117.

5. Detailed Requirements

Physical and electrical details for specific luminaires are provided below.

System power consumption, W	37
Weight, lb	16
EPA, ft^2	0.47

6. Testing

Manufacturer shall provide test data that establishes compliance with the requirements of this material standard upon request.

Certificate of RoHS (European Union Directive 2002/95/EC for Restriction of Hazardous Substances) compliance shall be provided upon request.

7. Design Changes

Manufacturer shall inform SCL in writing of all design changes that could affect the understood or published capabilities of the product.

8. Marking

8.1 Internal Labeling

A readily visible label shall be permanently affixed to the inside surface of each luminaire housing.

Internal label shall meet the requirements of ANSI C136.22.

Internal label shall include, but not be limited to, the following information:

- Manufacturer name and catalog number
- Month and year of manufacture
- Line input voltage
- Frequency if other than 60 Hertz
- Driver type (if applicable) (may be on driver if readily visible)
- Photocontrol voltage if different from line input voltage
- Lamp type, wattage, and voltage (if applicable; may be on driver if readily visible)
- Descriptive wiring diagram showing input terminals, ballast, capacitors, starting aid, photocontrol receptacle, lamp, and the like, as necessary
- Plant location
- Input power consumption
- Driver output current
- Driver output adjustment
- IEC IP rating
- Correlated color temperature (CCT)
- IES light distribution type
- IESNA TM-15 BUG ratings
- Serial number

8.2 Barcode

A barcode label shall be provided as specified in the purchase order.

8.3 Component Identification

All UL listed components shall be labeled or recognized as such.

9. Packaging

Luminaires shall be individually packaged to prevent damage during shipping, inside storage, and casual handling prior to installation.

Each package shall be legibly marked with:

- Manufacturer name
- Manufacturer catalog number
- Product description
- Date of manufacture (month and year)
- Seattle City Light stock number
- Seattle City Light purchase order number

Accessories shall be individually packaged to prevent damage during shipping, inside storage, and casual handling prior to installation.

Each package shall be legibly marked with:

- Product description
- Seattle City Light stock number

10. Issuance

Stock unit: EA

11. Approved Manufacturers

Stock No. 014967

Manufacturer:	**Leotek**
Catalog Number:	AR13-CG1-N-MV-27K-T3-DB-040-PCR7-WL-RTB-10
where:	
AR13-CG-1 =	product, AR13-CG1
N =	LED number and type
MV =	voltage, 120 277 Vac
27K =	color temperature, 2700K
T3 =	light distribution, type 3
DB =	finish, dark bronze
040 =	lumen package presets: ▪ Delivered lumens (Lm): 4200 ▪ System wattage: (W) 37 ▪ Efficacy (Lm/W): 114 ▪ Drive current (mA): 450
PCR7 =	options, 7-pin photocell receptacle, pre-wired
WL =	options, utility wattage label
RTB =	rotated terminal block
10 =	ten-year warranty code

Stock No. 014968

Manufacturer:	**Leotek**
Catalog Number:	AR13-CG1-N-MV-27K-T3-GY-040-PCR7-WL-RTB-10
where:	
AR13-CG1 =	product, AR13
N =	LED number and type
MV =	voltage, 120-277 Vac
27K =	color temperature, 2700K
T3 =	light distribution, type 3
GY =	finish, gray
040 =	lumen package presets: ▪ Delivered lumens (Lm): 4200 ▪ System wattage: (W) 37 ▪ Efficacy (Lm/W): 114 ▪ Drive current (mA): 450
PCR7 =	options, 7-pin photocell receptacle, pre-wired
WL =	options, utility wattage label
RTB =	rotated terminal block
10 =	ten-year warranty code

12. References

SCL Material Standard 5727.03; Adapters, Round-Pole, Streetlight"

SCL Material Standard 5728.04; Shields, Luminaire, Back Light

SCL Material Standard 5731.17; "Streetlight Photocontrols, 20-Year Design Life"

13. Sources

Arieta AR13 CG1/CG2 ComfortGuide Specification Data Sheet for Stock Nos. 014967 and 014968, Leotek Electronics USA, LLC, May 11, 2020

Gorman, Kevin; SCL Streetlight LED Conversion Program Manager and subject matter expert for 5723.25

SCL Material Standard 5723.23 (canceled); "Pedestrian Luminaires, LED, Side-Mount, Modern, 3000K"

Vanderpool, Laura; SCL Standards Engineering Technical Writer and originator of 5723.25