

## 1. Scope

This specification covers the District's requirements for furnishing and delivering photoelectric controls to be used for individual control of all District street and area luminaires manufactured to NEMA/ANSI Standards for roadway and area lighting equipment.

## 2. Material ID Number

This specification applies to District MID 485020.

## 3. Reference Standards

All characteristics, definitions, terminology, voltage designations and tests, except as otherwise specified herein, shall be in accordance with the following industry standards for photoelectric controls. When the following standards are superseded by an approved revision, the revision shall apply. In the event of a conflict between this specification and referenced document the more stringent requirement will be followed.

### Industry Standards:

**ANSI C136.10-2017** American National Standard for Roadway and Area Lighting Equipment — Locking-Type Photocontrol Devices and Mating Receptacles — Physical and Electrical Interchangeability and Testing

**UL 773** Plug-In Locking Type Photocontrols for Use with Area Lighting

## 4. Ratings & Operating Requirements

The photoelectric controls furnished under this specification shall have the following ratings:

Load Rating	1,000 watts / 1,800 VA ballast type loads
Life at Rated Load	30,000 operations minimum (20 years)
Photocontrol Power Consumption	Maximum 500 milliwatts @ 120 volts
Operating Voltage Range	AC 105-305 volts
Operating Frequency	60 Hz
Operating Temperature Range	-40°F to 158°F
Turn On Light Level	2.8 ± 0.6 fc
Turn Off Light	Level 5.1 fc
Time Delay (On & Off)	0.5 - 5 seconds
Fail Mode	On

## **5. Components and Construction**

### **5.1 Plug**

The plug used in the photoelectric control shall be a 3-pole, 3-wire, twist-lock type. When connected, the locking type plug and mating receptacle shall provide a rigid electrical/mechanical junction. The plug blades (contact legs) shall be made of solid brass.

### **5.2 Sealing Gasket**

A sealing gasket shall be provided on the underside of the photoelectric control to form a weatherproof seal on the "required seat" of the mating receptacle mounting. The sealing gasket and adhesive cement used to secure it to the photoelectric control shall be resistant to softening, hardening, and cracking under the atmospheric conditions encountered in a temperate, wet, marine climate.

### **5.3 Housing**

The housing enclosing the operating mechanisms of the photoelectric control shall be made of a tough weatherproof plastic that is UV stabilized and highly resistant to cracking, crazing, and discoloring. The photocell window shall retain its transparency for the life of the control. Housing shall be ANSI color coded black.

### **5.4 Raintightness**

The photoelectric control, when firmly secured to a control receptacle, shall meet the raintightness requirements of UL 773, latest revision.

### **5.5 Corrosion Resistance**

Materials and protective coatings used in the photoelectric control shall individually, and as an assembly, be resistant to corrosion from atmospheric conditions encountered in a temperate, wet, marine climate. Corrosion protection of the photoelectric control shall meet or exceed the requirements of UL 773, latest revision.

### **5.6 Silicon Sensor**

The sensor shall be fully encased. The photoelectric control shall operate by means of a filtered silicon photosensor designed to closely approximate the human eye's spectral response. The sensor shall be light level stable with minimal drift over the life of the photoelectric control.

### **5.7 Wiring**

Internal wiring shall be supported or routed to minimize contact with moving parts or parts having sharp edges or burrs that may cause abrasion of the conductor insulation.

### **5.8 Joints and Connections**

All joints and connections shall be mechanically secure and shall provide adequate and reliable contact without strain on connections and terminals.

## 5.9 Contacts

All contact mechanisms shall provide fast, positive make-and-break actions with minimum contact chatter. The contacts shall be rated for a minimum of 30,000 on-off operations.

## 5.10 Surge Arrester

A metal oxide varistor (MOV) arrester system shall be provided to protect the photoelectric control from damage by fault or surge on the line per ANSI C136.10-2017 for the extreme test level. The MOV shall be an integral part of the photoelectric control. The MOV shall conform to the following minimum ratings:

Minimum Ratings (85°C)		
Continuous	Transient	
RMS Voltage	Energy	Peak Current (8/20 microseconds)
320 Volts	640 Joules	40,000 Amps

## 5.11 Impact Strength

The photoelectric control shall meet the impact strength requirements of UL 773, latest revision.

## 6. Load Handling

The voltage between line and load must not exceed 1.6V within a 2 millisecond period, beginning at switch-on of a 10A reactive lighting load with a power factor correction capacitance (phase-to-neutral) fitted. The power dissipated within the switching mechanism of the control must be less than 1.5W when powering a reactive load current of 10A RMS passing through the switch mechanism. This does not include power consumed by the electronics used for sensing and activating the switching circuit.

## 7. Identification

### 7.1 Required Information

Each photoelectric control shall have the following information permanently marked on or attached to it: Manufacturer's Name or trademark; rating in volts, amperes, and frequency; date of manufacture and style number.

### 7.2 Installation/Removal Date Marking

Each photoelectric control shall have provisions for permanently recording installation and removal dates on it.

## 8. Packaging

Each photoelectric control shall be individually packaged in a sealed plastic bag or other approved water resistant package. Each shipment of photoelectric controls shall be packaged in accordance with the manufacturer's commercial practice to ensure safe delivery without damage.

## 9. Warranty

Each photoelectric control shall carry a 12 year manufacturer's warranty for replacement. The warranty shall begin from the date of installation which is to be inscribed on each unit by the District when installed. If the District fails to inscribe the installation date the warranty shall begin from the date of manufacture inscribed or marked on each unit by the manufacturer.