

ROAM 120V-277V Node Control Specification Guideline  
Division 16520

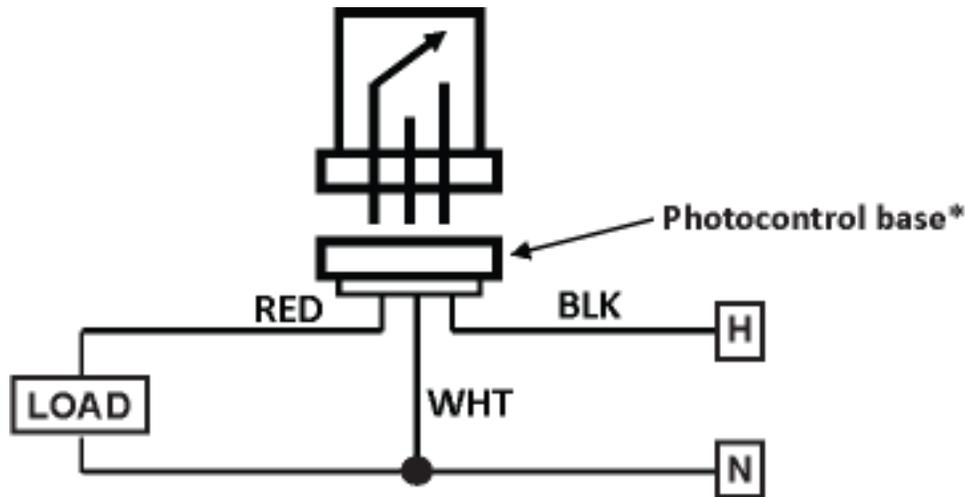
PART 1. GENERAL

1.1 INTRODUCTION

- A. The intent of this specification is to provide for furnishing, installing, testing and placing into operation, a networked locking type photocontrol for outdoor luminaire.

1.2 DESCRIPTION OF WORK

- A. Provide a locking type photocontrol for outdoor lighting
- B. Requirements are indicated elsewhere in these specifications.
- C. Follow the following wiring diagram:



1.3 QUALITY ASSURANCE

- A. Manufacturer experience - to insure a uniform installation and single responsibility, all switching equipment described herein shall be supplied by a manufacturer with a minimum of 10 years experience in lighting control systems.
- B. Manufacturer shall be:

ROAM  
3825 Columbus Rd. SW  
Granville, Oh. 43023  
800-442-6745  
<http://www.roamservices.net>

- C. Manufacturing Location shall be ISO certified.
- D. Product shall be ROAM. Alternate products meeting prior approval requirements may be proposed as add or deduct alternate only.

1.4 CODES AND STANDARDS

- A. ANSI C136.10
- B. FCC part 15

## 1.5 SUBMITTALS

Prior to fabrication manufacture shall submit the following materials for approval.

- A. Manufacturer's published catalog data sheets for the photocontrols.
- B. Shop Drawings - Submit detailed drawings and documentation of photocontrols. As a minimum, the shop drawings shall include the following:
  - 1. Wiring diagrams
  - 2. Full catalog sheets

## PART 2. PRODUCTS

### 2.1 SYSTEM DESCRIPTION

- A. The photocontrol shall control all luminaire on which it is installed.
- B. The photocontrol shall be a locking type photocontrol as per ANSI C136.10
- C. The photocontrol location shall be associated with GPS coordinates collected during the activation process
- D. The photocontrol shall communicate with other controls and gateway devices via radio signal

### 2.2 RATINGS

- A. Photocontrol shall have a rated line voltage of 100-305 Volts AC at 60 Hertz
- B. Photocontrol shall have a maximum load rating of 1800VA/1000W
- C. Photocontrol shall operate all HID, halogen, incandescent, LED, solid state, fluorescent, and relay loads
- D. Photocontrol shall consume a maximum of 2.2 Watts at 120 Volts AC
- E. Photocontrol shall turn ON in  $1.5 \pm 0.5$  foot candles
- F. Photocontrol shall turn OFF at 1.5 times the level it turns ON.
- G. Photocontrol shall fail ON as per definitions in ANSI C136.10
- H. Photocontrol shall have a 2.5-5 second delay before turning ON
- I. Photocontrol shall have a 2.5-5 second delay before turning OFF
- J. Photocontrol shall operate in -40 degrees to 185 degrees Fahrenheit (-40 degrees to 85 degrees Celsius) ambient temperatures
- K. Photocontrol shall withstand an Interface Temperature of 90 degrees Celsius where Interface Temperature is defined in ANSI C136.10

### 2.3 HARDWARE

- A. Housing
  - 1. The housing shall be 2.75 inches (69.85 millimeters) high and 3.16 inches (80.26 millimeters) in diameter
  - 2. The photocontrol shall weigh 4.3 ounces (121.9 grams)
  - 3. Housing of photoelectric control shall be polypropylene or polycarbonate
  - 4. Housing shall be made of an impact and UV resistant material.
    - a.) Photocontrol shall have an impact resistance of greater than 1.0 ft-lbs at -20°C
    - b.) Photocontrol shall pass an impact test after 1000 hours in a QUV chamber
      - Color shift shall not be more than one Pantone number after the QUV test
  - 5. Photocontrol shall withstand a drop of three feet to a concrete floor without causing damage to the casing or changing electrical operation
- B. Housing Labeling
  - 1. Directional arrows marked "INSTALL" and "REMOVE" shall be molded on the top of the casing
  - 2. A directional arrow marked "NORTH" shall be molded on the top of the casing so an installed knows how to properly line up the photocontrol.
  - 3. The bottom of the photocontrol casing shall be stamped with month and year lists to enable installers to indicate an installation and removal date via pencil hash marks on the casing.
    - a.) This stamp shall consist of three concentric partial rings.

- b.) The rings are broken by a small label box spanning all three rings.
  - c.) The outermost and innermost rings are blank by default.
  - d.) The center ring includes the numbers 1-12 to the left to indicate month and a list of 10 or more consecutive two digit years to the right.
  - e.) The label box shall indicate the outer ring is for installation information, the inner ring for removal information, the left side of the center ring is for the month, and the right side of the center ring is for the year. Abbreviations such as “mo” and “yr” are acceptable if space is limited.
- C. Base Label
- 1. The base label shall be affixed to the bottom of the photocontrol casing
  - 2. The base label shall not block or otherwise obscure other information on the casing
  - 3. The base label shall include the following information:
    - a.) Model number or model description
    - b.) A unique MAC ID for the control (this is a separate label)
    - c.) Operating voltage nominal rating
- D. FCC Label
- 1. An FCC label shall be affixed to the edge of the control
  - 2. The FCC label shall not block or otherwise obscure other information on the casing
  - 3. The FCC label shall include the following information:
    - a.) FCC ID
    - b.) Model number
    - c.) Current FCC Verbiage related to interference
- E. Window and LEDs
- 1. Window shall be made of a UV stable and UV blocking acrylic polymer
  - 2. Window area shall contain red and green LEDs located to the left and the right of the center of the window respectively.
    - a.) Red LED shall turn on for 4 seconds when the control powers on
    - b.) Red LED shall reset to off each time the related fixture turns on
    - c.) Red LED shall flash at a rate of 0.1 second on, 1 second off whenever an error state is detected
    - d.) Green LED shall turn on for 4 seconds when the control powers on
    - e.) Green LED shall flash at a rate of 1 second on, 1 second off until network communications are established
    - f.) Green LED shall flash at a rate of 0.1 second on, 1 second off during regular operation of the photocontrol
    - g.) Green LED shall turn off if the voltage drops below 90 Volts
- F. Legs and Gasket
- 1. All three legs shall be brass. Plated steel legs are not acceptable.
  - 2. Gasket shall be neoprene or similar
  - 3. Gasket must withstand a minimum 90 Celsius at 95% humidity
- G. Identification
- 1. Photocontrols shall be assigned a unique 16 digit hexadecimal MAC ID
  - 2. Photocontrols location shall be associated with GPS coordinates collected during the activation process and identified by that MAC ID
- H. Sensors
- 1. Photocontrols shall use a sealed silicon sensor. Cadmium sulfide cells are not acceptable.
  - 2. Sensor has a horizontal orientation and shall face the same direction as NORTH arrow and photocontrol window.
- I. Relays
- 1. Mechanical
    - a.) Relays shall be securely mounted to the printed circuit board
    - b.) Relays shall be fully sealed with a dust cover
  - 2. Relay Certification
    - a.) Relays shall be Underwriters Lab (UL) recognized.
  - 3. Relay Ratings
    - a.) Relays shall be SPST
    - b.) Relays shall be normally closed
    - c.) Relays shall be rated for 3650 operations at full load

J. Surge Protection

1. Surge protection shall be in the form of a Metal Oxide Varistor (MOV)
  - a.) MOV shall be rated for a minimum of 320 Joules (8x20 microseconds)
  - b.) Node shall be rated for a maximum of 6500 Amp surge

L. Networking

1. Photocontrols shall be capable of remote turn off and turn on
2. Photocontrols shall be capable of assignment to groups which can be controlled over the network as a single unit
3. Photocontrols within an installation shall communicate with neighbor controls and gateway devices via 2.4 Gigahertz radio signals within a mesh network
4. Photocontrols shall have a communications range of 1000 feet line of sight
5. Communications between controls shall require a direct line of sight view
6. Data for each control within an installation shall have at least a one hour collection resolution.
7. Data sent from individual controls via radio signals shall be encrypted
8. Photocontrols shall provide troubleshooting information over the network
  - a.) All troubleshooting reports shall include the MAC number of the associated photocontrol
  - b.) Fixture malfunctions shall be reported
  - c.) Cycling fixtures shall be reported
  - d.) Day burning fixtures shall be reported
  - e.) Uncommunicative photocontrols shall be reported
  - f.) Power details for fixtures shall be reported
9. Photocontrol shall operate as a standard standalone photocontrol if networking fails

2.4 PACKAGING

- A. Each photocontrol shall be individually packaged inside its own box
1. Each individual box shall be 3.25 inches (82.6 millimeters) long, 3.25 inches (82.6 millimeters) wide, and 3.25 inches (82.6 millimeters) high
  2. Each individual box and photocontrol shall weigh 5.1 ounces (144.6 grams)
  3. Each individual box shall include installation instructions on one side
  4. Each individual box shall include warranty information on one side
  5. Each individual box shall include a label with the following information
    - a.) The label shall include the model number
    - b.) The label shall include the voltage rating of the control
  6. Each individual box shall include US Patent information

PART 3: EXECUTION

3.1 EQUIPMENT INSTALLATION AND DOCUMENTATION

- A. Installation - The photocontrol shall be installed and connected as directed by the manufacturer.
1. The photocontrol is a locking type control and shall require no additional field wiring.
- B. Documentation - The complete product specification shall be available from the manufacturer.

3.2 PRODUCT SUPPORT AND SERVICE

Factory telephone support shall be available at no cost to the owner. Factory assistance shall consist of assistance in solving application issues pertaining to the control equipment.

3.3 WARRANTY

Manufacturer shall provide a three year (3) limited warranty on the photocontrol consisting of a one for one control replacement. The official warranty policy is the following:

ROAM undertakes that this product shall operate within its original operating specifications and shall be free of electrical or mechanical defects. ROAM's liability hereunder shall be limited to providing a

replacement unit and shall not cover the costs of removal or installation of the unit nor any consequential damages.

This express warranty is in lieu of and excludes all other warranties, guaranties or representations, expressed or implied, including, but not limited to, warranties of merchantability or fitness for a specific purpose, by operation of law or otherwise.

END