



Product Specifications

Dialog Room Controller*™

(*patent pending)

1. GENERAL

1.1. OVERVIEW

- 1.1.1. Provide a complete stand-alone, decentralized, low voltage, digital lighting control system for classrooms, offices or defined spaces as shown on the plans and specified herein.
- 1.1.2. Lighting control system shall utilize 2-wire, non-polarized, topology free data line networking technology to provide power and data to occupancy/vacancy sensors, daylight sensors, and wall station switches.
- 1.1.3. The network shall be free topology and therefore not require a serial loop to achieve maximum network distance.
- 1.1.4. The system shall be offered in factory configured and programmed kit that includes occupancy/vacancy sensors, daylight sensors, and wall station switches.
- 1.1.5. The controller shall be installed directly onto the knockouts of a 4x4 metal junction box.
- 1.1.6. The stand-alone system shall be capable of connecting to a Douglas Lighting Controls WLC-3150 for centralized network integration and control.

1.2. MANUFACTURERS

- 1.2.1. All components are to be supplied by same manufacturer. Manufacturer to be a supplier of this type of equipment for over 10 years.
- 1.2.2. Lighting control system shall be the Dialog Room Controller system manufactured by Douglas Lighting Controls Inc.

1.3. PRIOR APPROVAL SUBMISSIONS

- 1.3.1. Manufacturers wishing to submit quotations on the lighting control system must pre-qualify. Pre-qualification information must be submitted to the electrical consulting engineer not later than ten (10) working days prior to the final closing of tenders for this project.
- 1.3.2. The manufacturer must be prepared to demonstrate the equipment being proposed before the closing of tender.
- 1.3.3. Submit a one-line diagram of the proposed system configuration for review.

1.4. INSTRUCTION MANUAL

- 1.4.1. Installation Guide shall be available to permit ease of installation and system operation including, but not limited to the following:
- Lighting control system step-by-step installation instructions.

2. MATERIALS

2.1. DIALOG ROOM CONTROLLER: WRC-3160

- 2.1.1. Where indicated on the drawings provide a pre-configured, digitally addressable, plenum-rated room controller.
- 2.1.2. The Dialog Room Controller shall be capable of:
- Autonomously controlling a space.
 - Networking to a central Dialog control system.
 - Networking to a central BACnet based management system.
- 2.1.3. The Dialog Room Controller shall consist of:
- A universal voltage type (120Vac/277Vac/347Vac) power supply.
 - Four 20A rated relays complete with manual override. Circuit Load rating dependent on usage. One circuit dedicated for 20A receptacle control.
 - Four 0-10V control channels, capable of 100mA current sinking
 - A port to connect downstream switches, occupancy sensors and daylight sensors. All downstream devices shall connected via two #18AWG, non-polarized, non-shielded, non-twisted conductors. See Section 3.4 for wiring specifications.
 - A port to connect to an upstream Dialog Lighting Control Unit.
 - A port to connect upstream to BACnet IP building management system. The Controller shall communicate using native BACnet command objects appropriate for the application.
 - An indicating LED to aid in locating the controller in a darkened ceiling space.
 - Circuit testing buttons
 - Capable of connecting with WUL-3924
 - Output 24Vac 120mA
 - Relay Ratings
 - 20A Suitable for General Purpose Loads @ 120/277/247VAC
 - 20A Suitable for Standard Ballasts and Tungsten Loads @ 120/277VAC
 - 15A Suitable for Standard Ballasts Only @ 347VAC
 - 16A Suitable for Electronic Ballasts @ 120/277VAC
 - 0.5HP @120/277Vac
 - US & Canada Plenum Rated
- 2.1.4. The Dialog Room Controller relays shall be connected such that 120Vac plug load(s) and 277Vac/347Vac lighting loads can be switched by a single Controller with no additional add-ons or remote modules

- 2.1.5. The Dialog Room Controller shall mount to electrical junction box via threaded ½" chase nipple. No other mounting hardware shall be required.

2.2. UL924 RELAY EXPANSION PACK: WUL-3924

- 2.2.1. Where indicated on the drawings provide a 2-relay expansion pack consisting of two independently controllable, 20A relays capable of emergency lighting circuit control.
- 2.2.2. Expansion pack relays shall force EM lights on when the Dialog Room Controller loses power.
- 2.2.3. The expansion pack shall connect to the Dialog Room Controller. No wires or tools shall be required to add an expansion pack to a Dialog Room Controller. The Dialog Room Controller will include a means for remote mounting if required.
- 2.2.4. Circuit testing buttons
- 2.2.5. Capable of connecting directly to WRC-3160

2.3. 2 & 4 BUTTON SWITCHES: WRC-ES*, WRC-OF*, WRC-TS*

- 2.3.1. Switches shall be Douglas Lighting Controls WRC-* and connect to the lighting control network via a common low voltage, 2-wire, non-polarized data line.
- 2.3.2. Switches shall be factory configured and programmed to control one or more outputs in the lighting control system.
- 2.3.3. Switches shall be factory configured and included in the Dialog Room Controller kit.
- 2.3.4. Switches can be programmed for preset control to set a specific lighting scene.
- 2.3.5. Switches, with LED indicators to indicate both ON and OFF output/group status, shall be available with 2 or 4 single button switches per gang. Switch to fit standard Decora opening.
- 2.3.6. Switches and switch hardware shall mount to standard wall boxes.
- 2.3.7. Each switch shall provide a location for a label to identify function. The label shall be under a clear plastic cover and shall be field replaceable should the operation of the switch change. Permanently etched switches are not acceptable.
- 2.3.8. Adhere to the factory recommended wiring practices so that physical removal of any single switch shall still permit communication between relay panels in the rest of the Dialog lighting control network.

2.4. DIMMER SWITCH: WRC-DS*

- 2.4.1. Dimmer switches shall be Douglas Lighting Controls WRC-DS* and connected to the lighting control network via a common low voltage 2-wire, non-polarized data line.
- 2.4.2. Switches shall be capable of raising or lowering light levels of individual or groups of lighting fixtures.
- 2.4.3. Switches shall include integral LED indication for light levels as well as a button switch for ON/OFF control.

2.5. OCCUPANCY/VACANCY CEILING SENSORS:

WOR*DG1-R-T-*, WVR*DG1-R-T-*

- 2.5.1. Sensors shall be Dialog WOR or WVR series Dual Technology recessed ceiling occupancy/vacancy sensors.
- 2.5.2. Sensing technology shall be Microphonic and Passive Infrared (PIR).
- 2.5.3. Microphonic sensing shall be ADI-Voice technology.
- 2.5.4. Sensor shall derive its power and data from the lighting control network via a common low voltage 2-wire, non-polarized Dialog data line.
- 2.5.5. Ceiling sensors shall be low profile recessed ceiling sensors that mount into the ceiling.
- 2.5.6. Ceiling sensor shall not be surface mounted.
- 2.5.7. Ceiling sensors shall have an adjustable tilt head to direct sensing to, or away from, particular areas or to allow for installation on sloped ceilings.
- 2.5.8. Sensors shall provide an adjustable time out period from 3 seconds up to 40 minutes.
- 2.5.9. A Manual Override Switch is to be provided on the sensor to allow the load to be manually switched ON and OFF for the purpose of testing during installation.
- 2.5.10. Ceiling sensor shall have an Auxiliary Relay for signaling other systems ON/OFF based on room occupancy status

2.6. DAYLIGHT SENSOR – WPP-INT-*

- 2.6.1. Sensor shall be a Douglas Lighting Controls WPP-INT-* Interior Daylight Sensor capable of sensing from 0 to 65,000 lux of direct light.
- 2.6.2. Sensor shall be capable of closed loop control for Natural Daylight Harvesting.
- 2.6.3. Sensor shall derive its power and data for the lighting control network via a common low voltage 2-wire, non-polarized Dialog data line.
- 2.6.4. Sensor shall continuously monitor the ambient light level (lux).
- 2.6.5. Sensor shall broadcast to the Room Controller the existing light level when requested or when there is a change in detected light level.
- 2.6.6. Sensor shall be capable of setting light level via on-board commissioning dial.
- 2.6.7. One sensor shall permit different outputs to switch and/or control light levels as ambient light changes. Light levels shall be controlled by 'sensor only' or in combination with a time schedule or with a dimming switch.
- 2.6.8. Sensor shall be capable of setting a maximum light level which cannot be exceeded during Natural Daylight operations.

3. INSTALLATION

3.1. GENERAL

- 3.1.1. Products must meet UL and CSA product regulatory requirements.

- 3.1.2. Product must be installed in a controlled environment of between 14°F to 140°F (-10°C to +60°C) and be a stationary, non-vibrating, non-corrosive atmosphere and non-condensing humidity.

3.2. DIALOG ROOM CONTROLLER WRC-3160

- 3.2.1. Installation shall allow for electrical rough to be done before devices arrive on-site.
- 3.2.2. Room Controller shall have a lightweight chassis to allow for the device to be installed with integrated chase directly onto standard 4"x4" square metal junction boxes using existing knockouts with no additional mounting hardware.
- 3.2.3. Chase nipples with locknuts shall be integrated into the chassis for ease of installation with junction boxes.
- 3.2.4. Shall be installed with either rigid metallic conduit or flexible metallic conduit.

3.3. UL924 RELAY EXPANSION PACK WUL-3924

- 3.3.1. When installing Room Controller (WRC-3160) with UL924 (WUL-3924) relay expansion pack, the distance between the ½" chase nipples shall be spaced to fit into two back-to-back 4"x4" square metal junction box knockouts.
- 3.3.2. Installation shall allow for electrical rough to be done before devices arrive on-site.
- 3.3.3. Shall have a lightweight chassis to allow for the device to be installed with integrated chase nipples directly onto standard 4"x4" square metal junction boxes using existing knockouts with no additional mounting hardware.
- 3.3.4. Chase nipples with locknuts shall be integrated into the chassis for ease of installation with junction boxes.
- 3.3.5. Shall be installed with either rigid metallic conduit or flexible metallic conduit.

3.4. DAYLIGHT SENSORS – WPP-INT-*

- 3.4.1. Install Douglas Lighting Controls WPP-INT-* daylight sensors as per manufacturer's recommendations for closed loop control of natural daylight harvesting applications.
- 3.4.2. Adhere to manufacturer's recommendations for location, wiring and programming.

3.5. OCCUPANCY/VACANCY CEILING SENSORS WOR*DG1-R-T-*, WVR*DG1-R-T-*

- 3.5.1. Install Douglas Lighting Controls Dialog WOR*DG1-R-T-*, WVR*DG1-R-T-* Occupancy/Vacancy Sensors so objects do not block the coverage area. Keep away from HVAC vents and light directly from light fixtures.
- 3.5.2. Adhere to manufacturer's recommendations for location, wiring and programming.

3.6. LOW VOLTAGE WIRING

- 3.6.1. Adhere to manufacturer's recommendations as to maximum wire length.
- 3.6.2. Power and data for the lighting control network via a common low voltage 2-wire, non-polarized Dialog data line.

3.7. LINE VOLTAGE WIRING

- 3.7.1. Use #12AWG to #14AWG appropriately sized for the branch circuit.
- 3.7.2. On-device wiring directions shall be included

4. APPLICATIONS

4.1. GENERAL

- 4.1.1. Unless relevant provisions of the applicable local Energy Codes are more stringent, provide a minimum application of lighting controls as follows:

4.2. SPACE CONTROL REQUIREMENTS

- 4.2.1. Provide occupancy/vacancy sensors with Manual- or Partial-ON functionality in all spaces except toilet rooms, storerooms, library stacks, or other applications where hands-free operation is desirable and Automatic-ON occupancy sensors are more appropriate.
- 4.2.2. Provide Manual-ON occupancy/vacancy sensors for any enclosed office, conference room, meeting room, open plan system and training room. For spaces with multiple occupants, or where line-of-sight may be obscured, provide ceiling- or corner-mounted sensors and Manual-ON switches.

4.3. MULTI-LEVEL LIGHTING

- 4.3.1. Provide multi-level controls in all spaces except toilet rooms, storerooms, library stacks, or applications where variable dimming is used.

4.4. TASK LIGHTING / PLUG LOADS

- 4.4.1. Provide automatic shut off of non-essential plug loads and task lighting in all spaces except toilet rooms and storerooms. Provide Automatic-ON of plug loads whenever spaces are occupied. For spaces with multiple occupants a single shut off consistent with the overhead lighting may be used for the area.

4.5. DAY-LIT AREAS

- 4.5.1. Provide daylight-responsive automatic control in all spaces (conditioned or unconditioned) where daylight contribution is available as defined by relevant local building energy code:
- 4.5.2. All luminaires within code-defined daylight zones shall be controlled separately from luminaires outside of day-lit zones.

- 4.5.3. Daytime set points for total ambient illumination (combined daylight and electric light) levels that initiate dimming shall be programmed in compliance with relevant local building energy codes.
- 4.5.4. Provide smooth and continuous daylight dimming for areas marked on drawings.
- 4.5.5. Proportional dimming is required for the second interior zone within X feet of the window.

5. ELECTRICAL CONNECTIONS

5.1. POWER INPUT AND CONTROL

- 5.1.1. Main Controllers shall draw control power directly from the load circuit they are intended to control. Unless otherwise specified for the particular product, all line-voltage connections are to be 10-in flying leads (from exit point) stripped to ½-in. Conductors are to be suitable for the maximum load ratings, with a minimum size of #12AWG. Conductors are to be stranded (stripped and shifted) copper, rated for 600V and 105C, and suitable for use in air handling plenums. All line voltage connections are to be consistent with standard North American wiring practices and configured so that once the connections are made, suitable safety barriers are provided for layman access to any programming and/or low voltage (class 2) connections.
- 5.1.2. Unless otherwise specified for the particular product, wire colors of the conductors used for class 1 connections are described in the wiring diagrams below.

5.2. ETHERNET PORT FOR BACNET IP

- 5.2.1. BACnet object information for Digital Room Controller Plug Load Controller shall be available for the following objects:

Parameter	Read	Write
Load status	X	X
Demand response control*	X	X
Room occupancy status	X	
Dimmer levels	X	X
Photo Level	x	

5.3. DEMAND RESPONSE

- 5.3.1. When active maximum dim level for dimmer output is set to 60%.

5.4. PUSH BUTTONS

- 5.4.1. 4 push buttons shall be provided to manually override each relay in the controller.

5.5. LEDS

- 5.5.1. Bi-Color LED to indicate data line status.
- 5.5.2. Bi-colored LED to indicate Ethernet port status.

5.6. DIP SWITCHES

- 5.6.1. 8 position DIP switch shall be provided for network addressing.

6. MECHANICAL

6.1. GENERAL

- 6.1.1. There shall be openings for conduit connections on two perpendicular sides of the main controller unit.
- 6.1.2. Emergency Relay/Expansion Pack shall have similar mounting option and shall be connected to the main controller via a 4 position connector.
- 6.1.3. Expansion Emergency pack may be mounted adjacent to or remotely from the main controller.

6.2. COLORS

- 6.2.1. Enclosure shall have the color "Molded Black" and relay test buttons "PMS2746 blue".
- 6.2.2. Wires shall be color coded to match relay labels
- 6.2.3. Line Voltage wires shall be #12/#14 AWG stripped and tinned

7. SUBSTITUTIONS: [IF PERMITTED]

7.1. GENERAL

- 7.1.1. All proposed substitutions (clearly delineated as such) must be submitted in writing for approval by the design professional a minimum of 10 working days prior to the bid date and must be made available to all bidders. Proposed substitutes must be accompanied by a review of the specification noting compliance on a line-by-line basis.
- 7.1.2. By using pre-approved substitutions, the contractor accepts responsibility and associated costs for all required modifications to circuitry, devices, and wiring. The contractor shall provide complete engineered shop drawings

(including power and control wiring) with deviations from the original design highlighted for review and approval prior to rough-in.