

## SECTION 16141

### WIRING DEVICES

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Wall Switches.
- B. Wall Dimmers.
- C. Lighting Occupancy Sensors
- D. Receptacles.
- E. Device Plates.
- F. Relays and Contactors.
- G. Timeclocks

##### 1.02 RELATED SECTIONS

- A. Section 16010: Basic Electrical Requirements.

##### 1.03 REFERENCES

- A. NEMA Standards.
- B. NFPA 70 N.E.C. Latest Edition.
- C. U.L. Standards.

##### 1.04 SUBMITTALS

- A. Submit Shop Drawings for equipment and component devices in accordance with Section 01300 - Submittals.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

##### 1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters' Laboratories, Inc. as suitable for purpose specified and shown.

#### PART 2 - PRODUCTS

##### 2.01 ACCEPTABLE MANUFACTURERS

- A. Arrow Hart: Model numbers listed except as noted.

- B. Bryant Electric, Inc.
- C. Harvey Hubbell.
- D. GE specification-grade (5252 series).
- E. Leviton specification -grade.
- F. Pass & Seymour (P&S).

## 2.02 WALL SWITCHES

- A. Wall Switches Controlling a Lighting Load of 300 Watts or Less, 15 Ampere, 277Volt Rated:
  1. Arrow Hart, Model 1891 Series.
  2. Hubbell, Model 1201 Series.
- B. Wall Switches Controlling a Lighting Load of More Than 300 Watts, 20 amp, 277volt Rated:
  1. Arrow Hart, Model 1991 Series.
  2. Hubbell, Model 1221 Series.
- C. Provide key switches, three-way, four-way switches, etc., as indicated matching the Series listed above.
- D. Device Body: Toggle handle type, color: Brown.
- E. Pilot Light: Neon type #1720-120v and #1722-277v red. Separate gang position combined under same plate as switch or separately mounted.

## 2.03 WALL DIMMERS:

- A. Manufacturers:
  1. Lutron. Model NOVA-T Series except as indicated.
  2. Lightolier.
  3. Or equal.
- B. Plastic with linear slide.
- C. Voltage: 120 volts.
- D. Power Rating: No less than 125% of load shown on Drawings. Minimum rating: 1000 watts.
- E. Device Body & Plate: White.
- F. Note that dimmers shall be compatible with loads indicated. Where dimmers are shown serving electronic solid state low voltage transformers such as for MR16 Lamps, then provide appropriate amplifier modules for proper operation. Locate as indicated or above accessible ceiling. Wire as required by the manufacturer's installation instructions.

## 2.04 LIGHTING OCCUPANCY SENSORS

- A. Manufacturers:
  1. The Watt Stopper: Model numbers listed except as noted.
  2. Lightolier
  3. Light-O-Matic
  4. Sensor Switch
- B. Complete with Faceplates, Trim: Series 97000 stainless steel USD-32 with satin finish

- C. Ceiling Mounted Sensors: DT-300 dual technology
1. 24 VDC/VAC and halfwave rectified AC
  2. Ultrasonic frequency of 40kHz
  3. Time delays: SmartSet (automatic) and fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode. Set units for 15 minute delay to OFF.
  4. Sensitivity adjustment: SmartSet (automatic) or reduced sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
  5. Built-in light level sensor (DT-300) works from 10 to 300 footcandles
  6. Low voltage, momentary switch input for manual operation
  7. DT-300 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp @ 30 VDC/VAC
  8. Multi-level, 360° Fresnel lens for superior occupancy detection
  9. Units per power pack: DT-300: up to 2 (B), up to 3 (BZ); DT-305: up to 3 (B), up to 4 (BZ)
  10. Dimensions: 4.50" diameter x 1.02 deep (114.3mm x 25.91mm)
  11. Typical PIR Coverage: 1000 sq.ft.
  12. Typical Ultrasonic Coverage: 800-1200 sq.ft.
  13. UL and CUL listed; Five year warranty
- D. Provide power packs, mounting brackets and other hardware as required for a complete working system to cover the areas indicated.
- E. Motion Sensor Wall Switch: Programmable vandal resistant hard lens Auto-On or Manual-On decorator style equal to the Watt Stopper WA-200 series with following features:
1. Dual 120/277 VAC.
  2. 180 degree field of view and 300 sq ft coverage.
  3. Passive infrared with latching air gap relay utilizing zero cross relay control for reliable operation with non-linear loads.
  4. Digital time delay Off by automatic SmartSet or by adjustable 5, 15, 20, or 30 minutes.
  5. DIP switch setting to select Auto-On or Manual-On.
  6. DIP switch setting Light level sensor, holds lights Off above set level.
  7. Compatible with all electronic ballasts.
  8. Designed to allow Bi-level and three way switching.
  9. Safety 100% off switch with no leak current to load.
  10. UL and CUL listed.
  11. Five year warranty.
  12. Color: White
- F. Provide detailed wiring diagrams with submittals.

## 2.05 RECEPTACLES

- A. Duplex Convenience Receptacle, NEMA 5-20R, Rated 20 Amp:
1. Arrow Hart, Model 5352 Series.
  2. Hubbell, Model 5352 Series.
  3. Leviton, Model 5352 Series.
- B. GFCI Duplex Receptacle, Rated 20 Amp:
1. Leviton, Model 6898 Series.
  2. P & S, Model 2091 Series.
- C. Isolated Ground Duplex Receptacle, Rated 20 Amp:
1. Leviton, Model 5362-IG Series.
  2. P & S, Model IG6300 Series.
- D. Surge Suppressor Duplex Receptacle, Rated 20 Amp:
1. Leviton, Model 5380 Series.

- E. Isolated Ground Surge Suppressor Duplex Receptacle, Rated 20 Amp:
  - 1. Hubbell, Model IG8300H-S Series.
    - a. Standard blue distinct color.
    - b. Power ON light
    - c. Damage alert alarm
  - 2. Leviton, Model 8380IG Series.
    - a. Standard orange distinct color.
    - b. Power On light
    - c. Damage alert alarm

F. Other receptacles as specified on the drawings.

G. Telephone Jack: Specified under Section 16741.

H. Device Body: Nylon type, color: Brown.

I. GFCI Receptacle: U.L. Class A integral ground fault circuit interrupter.

## 2.06 WALL PLATES

A. Decorative Cover Plate: Series 97000 stainless steel USD-32 with satin finish.

B. Rain-Tight While-in-use Cover Plates: NEMA 3R Clear cover extra deep, Leviton 5966-DCL Series.

C. Utility Area Cover Plates for Surface Mounting: Cadmium plated steel with rounded edges.

## 2.07 RELAYS/ CONTACTORS, AND TIME CLOCK CONTROLS

A. Similar to the following with characteristics as indicated or equal:

B. Control Relays: Allen-Bradley Bulletin "700" Series.

- 1. 120 volt and 277 volt coil as required.
- 2. Number of poles as indicated or required. Minimum number of poles: two.
- 3. Minimum continuous ampere rating: 5 amps.
- 4. Enclosure: NEMA-1, except as noted.
- 5. Electrically held, except as noted.
- 6. 600 volt rated.
- 7. For non-lighting low voltage control applications.

C. Lighting Relays/ Contactors: Allen-Bradley Bulletin "500L" Series.

- 1. 120 volt and 277 volt coil as required.
- 2. Number of poles as indicated or required. Minimum number of poles: two.
- 3. Minimum continuous ampere rating: 125 percent of the connected load, except minimum 20 amps.
- 4. 600 volt rated.
- 5. Enclosure: NEMA-1, except as noted.
- 6. Electrically held, except as noted.
- 7. Rated for lighting and heating loads.

D. Lighting Relays/ Contactors used to bypass switches: GE 21CA Series.

- 1. 120 volt and 277 volt coil as required.
- 2. Number of poles as indicated or required. Minimum number of poles: two.
- 3. Minimum continuous ampere rating: 125 percent of the connected load, except minimum 20 amps.
- 4. 600 volt rated.
- 5. Enclosure: NEMA-1, except as noted.
- 6. Electrically held, except as noted.

7. Rated for lighting and heating loads.
- E. Motor Load Relays/ Contactors: Allen-Bradley Bulletin "500" Series.
1. 120 volt and 277 volt coil as required.
  2. Number of poles as indicated or required. Minimum number of poles: three.
  3. Horsepower rated for connected motor, except minimum NEMA size 0.
  4. 600 volt rated.
  5. Enclosure: NEMA-1, except as noted.
  6. Electrically held, except as noted.
- F. Time Clock Control: Tork Model #DZS200-Series.
1. Digital two channel astronomical with LCD display.
  2. 120volt, 240 volt and 277 volt as required to match voltage indicated.
  3. 48 events per channel/per week.
  4. 16 individual holiday dates.
  5. 72 hour memory backup with rechargeable battery.
  6. NEMA type III indoor/outdoor enclosure.
  7. Contact ratings: 10 amperes at 277 volt.
- G. Photoelectric Control: Tork # model 2101 for 120 volts and model 2104 for 277 volts.
1. Adjustable ON/OFF: ON range from 2 to 50 f/c.
  2. Rated 2000 watts tungsten at 120, 240 and 277 volts.
  3. Enclosure: Die-cast zinc, gasketed for exterior use.
  4. Cell: Cadmium sulfide, 1" diameter.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install devices and plates vertical and plumb. Boxes shall be flush with finished surface.
- C. Install switches with Off position down.
  1. Locate close to door frame on latch side of door, or beyond swing of door where appropriate.
  2. Where door frames have side lights, switch shall be either located below side light where a 3'-0" mounting height is possible, or beyond the side light. Coordinate with door frame schedule.
  3. Switches indicated in the same area at the same mounting heights shall be ganged together under a common plate.
- D. Install wall dimmers to achieve full rating specified. Do not break off cooling fins. Mount in separate gangs as required.
- E. Do not share neutral conductor on load side of dimmers.
- F. Install receptacles with grounding pole on top.

END OF SECTION