

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Wall switches.
2. Wall dimmers.
3. Receptacles.
4. Multi-outlet assembly.
5. Device plates and decorative box covers.
6. Occupancy sensors.
7. Photocells.

B. Related Sections:

1. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.
2. Section 26 05 34 - Floor Boxes for Electrical Systems: Service fittings for receptacles installed on floor boxes.
3. Section 26 05 34 - Floor Boxes for Electrical Systems: Poke-through receptacles.

1.02 REFERENCES

A. National Electrical Manufacturers Association:

1. NEMA WD 1 - General Requirements for Wiring Devices.
2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.03 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color, and finish.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three (3) years documented experience.

1.05 EXTRA MATERIALS

- A. Division 01 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two (2) of each style, size, and finish wall plate.

PART 2 - PRODUCTS

2.01 UNIFORMITY OF MANUFACTURER

- A. Products provided under this Section shall be from one manufacturer for identical catalog items (i.e. receptacles); wherever possible, provide uniformity of manufacturer for similar types of items.
- B. Plugs shall be of same manufacturer and grade as receptacles.
- C. List of Manufacturers Specified: Refer to Specifications for acceptable products for each manufacturer:
 - 1. Cooper Wiring Devices, Cooper Controls (abbreviated Cooper)
 - 2. Hubbell
 - 3. Pass & Seymour (abbreviated P & S)
 - 4. Leviton
 - 5. Or Approved Equal.

2.02 WALL SWITCHES

- A. General Requirements:
 - 1. Heavy-duty, AC only general-use snap switch, quiet operation type.
 - 2. Voltage: 120/277 volts, AC.
 - 3. Current: 20 amperes.
 - 4. Horsepower rating: 1 HP@120V; 2 HP@277V.
 - 5. Body and Handle: Decora style, thermoplastic with a nylon toggle handle. Handle color shall be selected by the Architect from the manufacturer's standard colors.
 - 6. Switch shall be mounted on a plated steel yoke with a grounding screw.
- B. Switch Types: Switch types and manufacturer's catalog numbers as follows:

<u>Description</u>	<u>Cooper</u>	<u>Manufacturer's Catalog Numbers</u>		
		<u>Leviton</u>	<u>Hubbell</u>	<u>P&S</u>
Single Pole	7621	5621-2	2121	2621
Double Pole	7622	5622-2	2122	2622
Three-Way	7623	5623-2	2123	2623
Four-Way	7624	5624-2	2124	2624

2.03 RECEPTACLES

A. General Requirements:

1. Wide double blade contacts designed to maintain positive pressure against both sides of plug or cap having flat fingers. Contacts shall be solid brass.
2. Polarized grounding type with grounding contacts bonded to receptacle mounting strap or housing, except isolated ground receptacles. Mounting strap shall be plated steel.
3. Contacts separated by impact resisting molded plastic insulating material.
4. Receptacles shall be back and side wired, provide a green base ground screw terminal and a nylon face.
5. Locking devices, where specified, to "lock" cap in place with simple twisting motion.
6. Receptacles shall be Decora style.
7. Color shall be as follows:
 - a. Wall and surface raceway mounted receptacles connected to normal power – gray;
 - b. All receptacles connected to emergency generator - red;
 - c. Ceiling mounted receptacles connected to normal power – white.

B. General Receptacle Types: Rating in amperes, number of poles and wires, voltage, NEMA configuration, description and manufacturer's catalog numbers as follows:

Rating	NEMA	Description	Manufacturer's Catalog Numbers			
			Leviton	Cooper	Hubbell	P&S
20A, 2P, 3W, 125V	5-20R	Single	16341	6351		26361
		Duplex	16342	6352	HBL2162	26352
		Duplex Ground Fault	7899	VGf20	GF20L	2095

2.04 OCCUPANCY SENSOR: WALL MOUNTED, DUAL-TECHNOLOGY

- A. Description: Infrared occupancy sensor for control of lighting.
- B. Ratings:
1. Voltage: 120/277 volts, AC.
 2. Load: 0-800 watts, ballast (120V); 0-1,200 watts, ballast (277V).
- C. Housing: Thermoplastic with a polycarbonate sensor lens and three wire leads. Provide with a decorator type cover plate.
- D. On-Off control: Air gap relay contact.

- E. Mounting: Wall mounted (replaces standard switch).
- F. Time delay: Adjustable, 30 seconds to 20 minutes.
- G. Sensor technology: Dual technology as combination of passive infrared and ultrasonic.
- H. Operation: Auto-on (turns light on upon sensing occupancy).
- I. Manufacturer: Cooper model No. ONW-D-1001-MW- (color as selected by architect) or approved equal.
- J. Contractor shall field adjust sensitivity in the field as directed by the Engineer and Owner.
- K. Other Manufacturers who make products that may be acceptable for use include the following:
 - 1. Leviton.
 - 2. Cooper.

2.05 OCCUPANCY SENSOR: CEILING MOUNTED, DUAL-TECHNOLOGY

- A. Description: Infrared and ultrasonic technology occupancy sensor for control of lighting, HVAC and exhaust fans. Sensor shall utilize Dual Sensing Verification Principle for coordination between ultrasonic and PIR technologies. Detection verification of both technologies must occur in order to activate lighting systems. Upon verification, detection by either shall hold lighting on.
- B. Sensor shall have a retrigger feature in which detection by either technology shall retrigger the lighting system on within 5 seconds of being switched off.
- C. Sensors shall utilize electronic technology to optimize time delay and sensitivity settings to fit occupant usage patterns. Setting of the sensor shall be selectable with a DIP switch. Sensors shall have a time delay that is adjusted automatically or shall have a fixed time delay of 5 to 30 minutes, set by DIP switch.
- D. Each sensing technology shall have an LED indicator that remains active at all times in order to verify detection within the area to be controlled. The LED can be disabled for applications that require less sensor visibility.
- E. Housing: Thermoplastic with wiring terminals for ease of installation. Sensors shall be ceiling mounted with a flat, unobtrusive appearance and provide 360° coverage.
- F. Provide separate switching power supply (power pack) that operate at 120/230/277/347 VAC, 50/60 Hz.
- G. The sensors shall have a built-in light level sensor that works from 10 to 300 foot-candles.
- H. On-Off control: Air gap relay contact.
- I. Mounting: Ceiling mounted.
- J. Time delay: Adjustable, 30 seconds to 20 minutes.

- K. Sensor technology: Dual technology as combination of passive infrared and ultrasonic.
- L. Operation: Auto-on (turns light on upon sensing occupancy).
- M. Sensors shall have standard 5 year warranty and shall be UL listed.
- N. Manufacturer: Cooper model No. OMC-DT-2000-R or approved equal.
- O. Contractor shall field adjust sensitivity in the field as directed by the Engineer and Owner.

2.06 COVER PLATES

- A. Concealed Work: Screw-less snap on thermoplastic, matching the wiring devices selected. Color shall be as selected by the Architect from the manufacturer's standard colors. Number of gangs and configuration as required to fit the devices used, as manufactured by:
 - 1. Leviton
 - 2. Cooper Wiring Devices, Inc.
 - 3. Hubbell, Inc.
 - 4. Pass & Seymour, Inc.
 - 5. Or Approved Equal.
- B. Exposed Work: Beveled metal, stainless steel 304.
- C. Weatherproof Cover Plate: Gasketed thermoplastic with hinged gasketed device cover. Gaskets shall be provided between the box and the cover mounting surface and between the mounting surface and the hinged cover. Cover shall be capable of being closed with a plug inserted in the receptacle, and shall be UL listed as "Suitable for Wet Locations While in Use". Covers shall be TayMac or Approved Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Division 01 - Administrative Requirements: Coordination and project conditions.
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and completely covered by wall plates.
- D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.02 PREPARATION

- A. Clean debris from outlet boxes.

3.03 INSTALLATION

- A. Install devices plumb and level.
- B. Install switches with OFF position down.
- C. Install wall dimmers to achieve full rating specified and indicated after de-rating for ganging as instructed by manufacturer.
- D. Do not share neutral conductor on load side of dimmers.
- E. Install receptacles with grounding pole on bottom.
- F. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.
- G. Install wall plates on flush mounted switches, receptacles, and blank outlets.
- H. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- I. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.
- J. Use jumbo size plates for outlets installed in masonry walls.
- K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.04 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights and as indicated on drawings.
- B. Install wall switch 48 inches (1.2 m) above finished floor.
- C. Install convenience receptacle 18 inches (450 mm) above finished floor.
- D. Install convenience receptacle 6 inches (150 mm) above back splash of counter.
- E. Install dimmer 48 inches (1.2 m) above finished floor.
- F. Coordinate installation of wiring devices with underfloor raceway service fittings provided under Section 26 05 39.
- G. Coordinate installation of wiring devices with floor box service fittings provided under Section 26 05 34.

3.05 FIELD QUALITY CONTROL

- A. Division 01 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect each wiring device for defects.
- C. Operate each wall switch with circuit energized and verify proper operation.

- D. Verify each receptacle device is energized.
- E. Test each receptacle device for proper polarity.
- F. Test each GFCI receptacle device for proper operation.

3.06 ADJUSTING

- A. Division 01 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust devices and wall plates to be flush and level.

3.07 CLEANING

- A. Division 01 - Execution and Closeout Requirements: Final cleaning.
- B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION