

SPECIFICATIONS FOR COMPANY SWITCH

SECTION 1 – GENERAL REQUIREMENTS

1.01 **Scope:**

- A. Contractor shall furnish, deliver, install and test the company switches as specified herein and in accordance with the drawings.

1.02 **Quality Assurance:**

- A. Company switch shall be UL Listed and labeled under the UL 891 standard.
- B. Company switch manufacturer shall provide a complete factory assembled, wired and tested company switch.
- C. Company switch shall be factory hi-pot tested for a period of not less than 60 seconds.
- D. Company switch installation shall meet all applicable NEC standards.

1.03 **Submittals:**

- A. Contractor shall submit manufacturer's drawings and data of company switches for Engineer's approval prior to start of company switch fabrication. Drawings and data shall include, as a minimum, dimensioned general arrangement drawings and wiring diagrams, UL Listing information including UL control or file number, mounting provisions, conduit entry provisions and installation instructions.
- B. Upon installation of company switches contractor shall submit manufacturer's Operating & Maintenance Manual which shall include as a minimum:
 - 1. Certified as-built General Arrangement drawings and Wiring Diagram.
 - 2. Materials / Component List including part numbers.
 - 3. Maintenance and service requirements.
 - 4. Certificate of Compliance and hi-pot test data.

1.04 **Warranty:**

- A. Company switches shall be covered by manufacturer's warranty for a minimum period of (1) one year after shipment from manufacturer.

SECTION 2 - PRODUCTS

2.01 **General:**

- A. All equipment shall be new.
- B. Company switch manufacturer must have produced and sold UL 891 listed company switches as a standard product for a minimum of (5) five years.
- C. Contractor shall be responsible for the equipment until it has been installed and is finally inspected, tested and accepted in accordance with the requirements of this Specification.
- D. Company switches shall be ShowSwitch™ as manufactured by ESL Power Systems, Inc. or equal as approved by the Engineer.

2.02 **Company Switches:**

- A. Company switch enclosures shall be NEMA Type 1, Type 3R or Type 3RX as indicated in the drawings, constructed of continuous seam-welded, powder coated 14-gauge steel. The main access shall be through an interlocked, hinged door that extends the full height of the enclosure. The enclosure shall have a provision for locking. Each phase shall have color-coded cam-style receptacles within the enclosure; the receptacles shall be factory-wired to a molded case main circuit breaker. The breaker shall be interlocked to the main access door. Access for portable cables with male cam-style plugs shall be via cable entry openings in the bottom of enclosure. The terminals for the feeder conductors shall be as required to accommodate conductor sizes as shown on the drawings. Enclosures shall be powder coated after fabrication, matte wrinkle black for Type 1 enclosures and wrinkle gray (RAL 7038) for Type 3R and Type 3RX enclosures.
- B. Company switch safety-interlocking mechanism shall be integrated with the access door, preventing the cam-style receptacles from being energized unless the access door is closed. The access door interlock mechanism shall allow manual de-energizing but must also automatically de-energize the company switch if an attempt is made to partially or fully open the access door while the company switch is energized. The handle of the safety-interlock mechanism shall be recessed into the access door and shall not protrude at all beyond the face of the access door.
- C. Pilot lights for each phase shall be located behind a clear window in the access door. Pilot lights shall illuminate only when voltage is present at each phase. Pilot lights shall be red colored LEDs. All Pilot lights shall be visible when the access door is closed.
- D. Cam-style receptacles for each phase, neutral (if required), and ground shall be single-pole, color-coded separable connectors, UL Listed and rated 400 amps at 600VAC. Unless specified as isolated ground, the ground cam-style receptacle shall be bonded

to the enclosure, and a ground lug shall be provided for connection of the facility ground conductor. The neutral cam-style receptacle, if required, shall be factory wired to a power distribution block. None of the cam-style receptacles shall be accessible unless the molded case circuit breaker is in the "OFF" position and the main access door is open.

- E. Mechanical lugs for portable cable direct wire connection shall be provided for each, phase, neutral (if required), and ground cables. Mechanical lugs shall accept wire sizes from #6AWG to 250MCM and shall be located in the portable cable connection area behind the company switch safety-interlocked door. None of the direct wire lugs shall be accessible unless the molded case circuit breaker is in the "OFF" position and the main access door is open. A non-conductive clamp shall be provided to secure direct wire portable cables in place and minimize mechanical tension at the connection points
- F. Molded case circuit breaker shall be UL Listed and the short circuit interrupt rating shall be a minimum of 65kAIC at 240VAC and 35kAIC at 480VAC. Trip rating of the molded case circuit breaker shall be as shown on the drawings. The molded case circuit breaker shall include a UL Listed door-mounted operating mechanism, preventing the opening of the main access door unless breaker is in the "OFF" position. The molded case circuit breaker shall be mounted behind a deadfront panel. The load-side of the molded case circuit breaker shall not be energizable unless the main access door is closed and the molded case circuit breaker is in the "ON" position.
- G. Company switch shall be configured to allow for conduit entry at the top, back or upper sides of the enclosure.
- H. Company switch shall include a UL Listed 1/4 DIN Volt-Amp meter with LED display showing 3 rows of 3 digits. Meter accuracy class shall be +/- .5% of full-scale value for voltage and +/- 2 digits for current. Meter shall be located behind a clear window in the access door, and shall be factory-programmed to display current in all (3) phases simultaneously by default.

SECTION 3 - EXECUTION

3.01 **Installation:**

- A. Prior to installation of the company switch, Contractor shall examine the areas and conditions under which the company switch is to be installed and notify the Engineer in writing if unsatisfactory conditions exist.
- B. Company switch shall be installed as shown on the drawings and per the manufacturer's written instructions. In addition, the installation shall meet the requirements of local codes, the National Electrical Code and National Electrical Contractors Association's "Standard of Installation".

- C. For outdoor installations, conduit entry into the company switch shall be by Contractor; Contractor shall furnish and install listed conduit hubs, as manufactured by MYERS, T&B or equal for each conduit entry on the company switch. The hub size shall match the conduit size for feeders and ground as shown on the drawings. Hubs shall be properly installed and tightened to maintain Type 3R integrity of the company switch enclosure.
- D. Contractor shall terminate feeder conductors, load conductors and ground per the manufacturer's instructions. Use copper wire only for all conductors and grounds. All field wiring terminations shall be torqued as required per the instructions on the company switch's power distribution block, circuit breaker & ground lug.

3.02 **Field Testing:**

- A. Prior to energizing company switch, the Contractor shall perform the following checks and tests as a minimum:
 - 1. Verify mounting and connections are complete and secure.
 - 2. Verify internal components and wiring are secure.
 - 3. Perform continuity check of all circuits.
 - 4. Perform 1,000 VDC megger test on feeder, load and ground cables.
 - 5. Verify deadfront is secure.
 - 6. With the company switch deadfront in place and the main access door closed and properly latched, actuate the Operator Mechanism and verify that the circuit breaker can be turned "ON" and "OFF" and can be reset.
 - 7. Confirm operation of the company switch ground receptacle by attaching a plug to the company switch ground receptacle and then verify that the plug is grounded to the facility ground.
 - 8. Once utility power has been applied, confirm operation of the company switch by attaching the proper plugs to each of the company switch phase receptacles and verifying that the correct voltage is present once the circuit breaker is energized.

End of Section