

## DIVISION 26 - ELECTRICAL

### SECTION 26 36 23 – AUTOMATIC TRANSFER SWITCHES

#### PART 1: GENERAL

##### 1.01 Scope of Standard

- A. This standard provides general guidance concerning the specific preferences of Texas State University for Automatic Transfer Switches.
- B. Texas State University recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these guidelines will govern the design and specifications for Texas State University projects.

##### 1.02 Scope of Work

- A. This section includes automatic transfer switches and bypass/isolation switches for systems rated 600 volts and less.
- B. The transfer switches shall be the means of automatically switching the Emergency Electrical System loads between normal and emergency power.
- C. This applies in the instances where an emergency generator is a part of the project scope.
- D. This is a design standard and is not intended to be used as a construction specification.

#### PART 2: PRODUCTS

- A. The switch shall be rated at 208Y/120 VAC or 480Y/277 VAC per application, 60 Hertz 4 wire operations. The transfer switch shall be contactor type. Molded case circuit breakers functioning as transfer switches shall not be allowed. The switch shall be enclosed in a NEMA 1 steel cabinet. The front door shall be key lockable. All components shall be front accessible.
- B. The switch shall be designed with generator start controls.
- C. The design shall require that the transfer switch have an isolation-bypass feature. This feature allows the removal of the transfer switch mechanism for repair without interruption to the load.

#### PART 3: EXECUTION

##### 3.01 Design/Drawing Requirements

- A. Normal and emergency circuits feeding into the switch shall be protected by molded case circuit breakers.
- B. The continuous duty ampere rating shall be for the complete downstream load.

- C. Drawings shall indicate location, drawn to scale in the electrical rooms. An alphanumeric designator consistent with the standards of Texas State University shall be applied to the room layout and the single line diagram. The single-line diagram shall show the continuous duty rating, both sources of power with appropriate feeders and the switch shown in the normal operating position.
- D. The engineer shall coordinate with Texas State University Facilities on precise sequence of operation, but the minimum baseline requirement shall adhere to the following:
1. Under voltage Sensing: All phases of normal and emergency power shall be monitored with solid state under voltage sensors. When normal load voltage drops to 80% of normal, transfer switch shall initiate emergency generator and transfer when emergency source is at minimum of 90% voltage and proper frequency.
  2. Overvoltage Sensing: All phases of normal and emergency power shall be monitored with solid state adjustable overvoltage sensors. These sensors shall be adjustable for pick-up settings from a minimum of 100% to a maximum of 130% (+/- 5%), with a dropout of 5% (+/- 1%) of nominal voltage above the pick-up setting. An adjustable time delay of 0.5 – 2.2 seconds shall be provided.
  3. Frequency Sensing: Solid state and adjustable for pickup of +/- 4% to +/-20% of nominal frequency. Dropout shall be +/- 5% of nominal wider than the pick-up frequency bandwidth. The time delay shall be adjustable from 0.115 seconds.
  4. Retransfer: Retransfer to normal power shall occur when normal source has stabilized to 95% voltage for minimum of 15 minutes. Control shall be adjustable from 0 – 30 minutes. Appropriate controls for cooling down generator shall be provided prior to stopping (factory set at 30 minutes).
  5. The transfer switch shall be contactor type. Molded case circuit breakers functioning as transfer switches shall not be allowed. The switch shall be enclosed in a steel cabinet. The front door shall be key lockable. All components shall be front accessible.
  6. Acceptable manufacturers are:
    - a. Cummins
    - b. Kohler
    - c. ASCO
    - d. ONAN

END OF SECTION 26 36 23