

SECTION 26 36 00

TRANSFER SWITCHES

PART 1 - GENERAL

1.01 CONTRACT CONDITIONS

- A. Work of this division is bound by the General Conditions and this specification and accompanying drawings.

1.02 GENERAL REQUIREMENTS

- A. The short-circuit overcurrent protective device coordination study shall be approved by the Engineer prior to the ordering of switchboards, panelboards, enclosed circuit breakers, disconnect switches, transfer switches, and overcurrent protective devices.

1.03 REFERENCES

- A. UL 1008 – Transfer Switches
- B. UL 911 – Tests for Safety-Related Controls Employing Solid-State Devices
- C. NFPA 70 – National Electrical Code
- D. NFPA 110 – Emergency and Standby Power Systems
- E. NEMA ICS 10 – AC Transfer Switch Equipment
- F. NEMA 250 – Enclosures for Electrical Equipment (1000 volts maximum)
- G. IEEE 446 – Recommended Practice for Emergency and Standby Power Systems

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 26 01 26.
- B. Submit product data for transfer and isolation/bypass switches showing overall dimensions, electrical connections, electrical ratings, and environmental requirements.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Cummings
- B. Substitutions: Under provisions of Section 26 0500.

2.02 AUTOMATIC TRANSFER SWITCH

- A. Construction: Comply with UL, NEMA, ANSI AND NFPA. Provide 2009 IBC Certification.
- B. Shall be electrically operated, mechanically held contactor type, without integral overcurrent protection.
- C. Load Inrush Rating: Combination, Tungsten lamp, Electric discharge lamp, inductive and resistive load.
- D. Continuous Rating: as indicated on the Drawings.

- E. 480 Volts, three-phase, 60 Hz.
- F. Interrupting Capacity: 600 percent of continuous rating.
- G. 3-Cycle Withstand Current Rating (3-cycle WCR) of transfer switch shall be at least equal to available fault current shown at the transfer switch on the one-line drawing.
- H. 4-pole.
- I. Closed transition.

2.03 AUTOMATIC TRANSFER WITH BYPASS/ISOLATION SWITCH

- A. Construction: Comply with UL, NEMA, ANSI AND NFPA. Provide 2009 IBC Certification.
 - 1. See Automatic Transfer Switch for all electrical ratings.
 - 2. Draw-out type.
 - 3. In bypass mode:
 - a. Secondary controls remain connected and transfer switch can be tested in this position.
 - 4. In Isolation mode:
 - a. Secondary controls are disconnected and the entire drawout unit is de-energized without having to open the enclosure door.
 - b. Allows transfer switch to be removed from its enclosure.
- B. Bypass Switch Ratings: Match automatic transfer switch for all electrical ratings.

2.04 AUTOMATIC SEQUENCE OF OPERATION

- A. Transfer Load to Emergency Source:
 - 1. Upon normal source voltage 80 percent or less.
 - 2. After adjustable time delay period of 0 to 60 seconds.
 - 3. Upon emergency source voltage within 90 percent of nominal.
 - 4. Upon emergency source frequency within 95 percent of nominal.
- B. Retransfer Load to Normal Source:
 - 1. Upon restoration of nominal voltage and frequency of normal source.
 - 2. After adjustable time delay period of 0 to 1,800 seconds.
 - 3. Bypass time delay in event of emergency source failure.

2.05 MICROPROCESSOR CONTROLLER

- A. Controller functions and capabilities:
 - 1. Provide all the operational and display functions of the automatic transfer switch.
 - 2. Password protected menu driven display screens for transfer switch monitoring, control and field changeable functions and settings.
 - 3. Accessible without opening the enclosure door.
 - 4. Serial communication port shall use industry standard open architecture communication protocol for high speed serial communications, compatible with RS 485.
 - 5. Built-in diagnostic display that includes the capturing of historical data, such as number of transfers and time on emergency power source.
 - 6. Provide a real-time clock with battery backup.
 - 7. A load/no load clock exerciser shall be programmable to start the engine generator set and transfer the load (when selected) for exercise purposes on a weekly basis.
 - 8. Test switch with "Test – Load – No Load" position to simulate a normal source failure.
 - 9. Provide all functions listed under "AUTOMATIC SEQUENCE OF OPERATION"
 - 10. In-Phase Monitor: Inhibit transfer until source and load are within 60 electrical degrees, 2 Hz frequency difference and 70% or more of nominal voltage.
 - 11. A contact that closes when normal source fails for initiating engine starting, rated 10 amps, 32 VDC. Contacts to be gold plated for low voltage service.

12. One auxiliary contact that is closed when automatic transfer switch is connected to normal and one auxiliary contact that is closed when automatic transfer switch is connected to emergency. Rated 10 amps, 480 volts, 60 Hz AC.
 13. Test switches, status light panel, and control panel shall be mounted on hinged door for accessibility. Flexible wiring harness for control panel to switch connections provided with switch.
 14. Provide a set of form "C" contacts for remote monitoring; provide contacts for each of the following: Normal Power Available; Emergency Power Available; ATS on normal source; ATS on emergency source.
 15. Provide inhibit transfer to emergency and inhibit transfer to normal.
- B. Display:
1. 20-character LCD.
 2. Keypad.
 3. Include ATS position and source availability.

2.06 ACCESSORIES

- A. Relays and control circuits shall be provided to obtain fixed preferential control with transfer switch.
- B. Relays for inhibiting transfer from emergency and from normal sources.
- C. An override switch shall be provided to bypass the automatic transfer controls.
- D. Provide Ethernet connection to campus private network status.

2.07 ENCLOSURE

- A. Enclosure: NEMA Type 1.
- B. Finish in manufacturer's standard gray.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces are ready to receive work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Verify transfer switch status and source availability are annunciated properly to the power monitoring network.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide seismically engineered mounting supports for switch.
- C. Coordinate with Architect for location conflicts of equipment.
- D. Provide equipment grounding as required by Code.
- E. The following outputs shall be integrated into the electrical metering system:
 1. Normal Power Available.
 2. Emergency Power Available.
 3. ATS on Normal Source.
 4. ATS on Emergency Source.

3.03 SYSTEM DEMONSTRATION

- A. Demonstrate operation of transfer switch in the presence of the facilities electrical supervisor, CPS electrician, and commissioning agent by operating normal power source under load and verifying transfer switch transfers to alternate source and back to normal source after normal power is restored.

- B. The automatic transfer switch manufacturer shall provide factory start-up to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.

END OF SECTION