

SUGGESTED SPECIFICATION
for
Series 165 Service Entrance Rated Automatic Transfer Switches
Optional Standby Power Generator Systems

PART 1 GENERAL

1.01 Scope

- A. Furnish and install automatic transfer switches (ATS) with number of poles, amperage, voltage, and withstand and close-on current ratings as shown on the plans. Each automatic transfer shall consist of an inherently double throw power transfer switch unit and a microprocessor controller, interconnected to provide complete automatic operation. All transfer switches and controllers shall be the product of the same manufacturer.
- B. Furnish an enclosure for the ATS that is for service entry. It shall provide all of the proper disconnecting, protection, grounding and bonding required for service entrance equipment.

1.02 Acceptable Manufacturers

Service Entrance Automatic transfer switches shall be ASCO Series 165SE. Any alternate shall be submitted in writing at least 10 days prior to bid. Each alternate bid must list any deviations from the specification.

1.03 Codes and Standards

The automatic transfer switches and controls shall conform to the requirements of:

- A. UL 1008 - Standard for Automatic Transfer Switches
- B. CSA – Listed to CSA 22.2
- C. NFPA 70 - National Electrical Code
- D. International Standards Organization ISO 9001: 2000
- E. UL 508 Industrial Control Equipment
- F. IEC 947-6-1 Automatic Transfer Switches
- G. NEMA Standard ICS 10 Standard for Automatic Transfer Switches

PART 2 PRODUCTS

2.01 Mechanically Held Transfer Switch

- A.** The transfer switch unit shall be electrically operated and mechanically held. The electrical operator shall be a momentarily energized, single-solenoid mechanism. Main operators which include overcurrent disconnect devices, or linear motors shall not be acceptable. The switch shall be mechanically interlocked to ensure only two possible positions, normal or emergency.
- B.** The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.
- C.** All main contacts shall be silver composition.
- D.** Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to manually stop the contacts at any point throughout their entire travel to inspect and service the contacts when required.
- E.** Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- F.** Where neutral conductors are to be solidly connected, a neutral terminal plate with fully-rated AL-CU pressure connectors shall be provided.

2.02 Microprocessor Controller with Membrane Interface Panel

- A.** The controller shall direct the operation of the transfer switch. The controller's sensing and logic shall be controlled by a built-in microprocessor for maximum reliability and minimum maintenance. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance.
- B.** The controller shall be self contained and be mounted separate from the transfer switch unit for safety and ease of maintenance. Sensing and control logic shall be provided on a printed circuit board.
- C.** The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:
 - 1. IEC 1000-4-2 (1995) – Electrostatic Discharge Immunity
 - 2. IEC 1000-4-3 (1995) – Radiated EM Field Immunity
 - 3. IEC 1000-4-4 (1995) – Electrical Fast Transient Immunity
 - 4. IEC 1000-4-5 (1995) – Surge Immunity
 - 5. IEC 1000-4-6 (1995) – Conducted RF Disturbance Immunity
 - 6. EN 55011 – Radiated and Conducted Emissions
 - 7. EMC Directive 93/68/ECC CISPR Class A

2.03 Enclosure

- A.** The ATS shall be furnished in a NEMA type 1 enclosure unless otherwise shown on the plans.
- B.** Provide strip heater with thermostat for Type 3R enclosure requirements.
- C.** Controller shall be flush-mounted display with LED indicators for switch position, source availability, and for engine exerciser. It shall also include test and generator exerciser/bypass switch.
- D.** The complete assembly shall be degreased and thoroughly cleaned through a five-stage aqueous process. The finish shall be light gray ANSI-61. Finish shall be suitable for indoor and outdoor environments.
- E.** The connection between the normal disconnecting device and the ATS shall be made with the appropriate size cable.
- F.** Provide main bonding jumper to connect both the neutral and ground conductors. The main bonding jumper shall be installed in the disconnected position.
- G.** Control wiring shall be rated for 600 volt, UL 1015. Wires shall be placed in wire duct or harnessed, and shall be supported to prevent sagging or breakage from weight or vibration. All wiring to hinged doors shall be run through door terminal blocks or connection plugs.

2.04 Disconnecting and Overcurrent Protection Device

- A.** The normal connection shall be provided with a thermal magnetic, 2 pole, 100% rated molded case circuit breaker with current ratings as shown on the plans. It shall have a thermal magnetic trip unit.

PART 3 OPERATION

3.01 Voltage and Frequency Sensing

- A.** The voltage of each phase of the normal source shall be monitored, with pickup (source acceptable) set at 204 volts, and dropout (source unacceptable) set at 180 volts.
- B.** The frequency of the alternate source shall be monitored with pickup (source acceptable) set at 57 Hz, and dropout (source unacceptable) set at 54 Hz.

3.02 Time Delays

- A.** A time delay shall be provided to ignore preferred (utility) source outages fixed at 3 seconds.
- B.** A time delay shall be provided to ignore alternate (generator) source outages fixed at 15 seconds.
- C.** A time delay shall be provided to transfer to alternate (generator) source fixed at 15 seconds.
- D.** A time delay shall be provided to retransfer to preferred (utility) source fixed at 5 minutes.
- E.** A time delay for generator cooldown shall be provided fixed at 1 minute.
- F.** A generator exerciser and bypass switch shall be provided.

3.03 Additional Features

- A.** The controller shall provide one set of form C contacts to be used to signal the generator to run. These contacts shall be rated at 1 A / 30 V dc or 5 A / 30 V dc.
- B.** A push-button type test switch shall be provided to simulate normal source failure.
- C.** A push-button type switch shall be provided to deactivate generator exerciser period.
- D.** Indicating lights shall be provided, one to indicate when the ATS is connected to the normal source (amber), and one to indicate when the ATS is connected to the emergency source (red). Also provide indicating lights for both normal and emergency source availability.
- E. Diagnostic Feature** – LED indicators that flash to indicate an error condition has occurred shall be provided.

PART 4 ADDITIONAL REQUIREMENTS

4.01 Withstand and Closing Ratings

- A.** The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans.
- B.** WCR ATS ratings to be as follows when used with any molded case circuit breaker:

ATS Size	Withstand & Closing Rating MCCB	W/CLF
200 – 225	10,000A	200,000

4.02 Tests and Certification

- A.** The complete ATS shall be factory tested 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.
- B.** Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards, and withstand and closing ratings. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
- C.** The ATS manufacturer shall be certified to ISO 9001:2000 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation, and servicing in accordance with ISO 9001:2000.

4.03 Record Retention and Replacement Parts

- A.** The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.
- B.** For ease of maintenance and parts replacement, the ATS switch nameplate shall include drawing numbers, part numbers for main coil and control.