

16620S02 - AUTOMATIC TRANSFER SWITCH 30-4000 AMPERE, SOLID-STATE LOGIC

1. GENERAL REQUIREMENTS

- 1.1 The automatic transfer switch shall consist of a power transfer module and a control module, interconnected to provide complete automatic operation. The automatic transfer switch shall be mechanically held and electrically operated by a single-solenoid mechanism energized from the source to which the load is to be transferred. The switch shall be rated for continuous duty and be inherently double-throw. The switch shall be mechanically interlocked to ensure only one of two possible positions-normal or emergency. The automatic transfer switch shall be suitable for use with emergency sources, such as an engine or turbine generator source, or another utility source.
- 1.2 All main contacts shall be of silver composition. They shall be protected by arcing contacts in sizes 400 amperes and over. They shall be of the blow-on configuration and of segmented construction in ratings 600 amperes and over. The operating transfer time in either direction shall not exceed one-sixth (1/6) of a second.
- 1.3 All contacts, coils, springs, and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.
- 1.4 The control module shall be supplied with a protective cover and be mounted separately from the transfer switch for ease of maintenance. Sensing and control logic shall be solid-state and mounted on plug-in printed circuit boards. Printed circuit boards shall be keyed to prevent incorrect installation. Interfacing relays shall be industrial-control-grade, plug-in type with dust covers and locking clips.
- 1.5 Automatic transfer switches utilizing components of molded-case circuit breakers, contactors, or parts thereof which have not been intended for continuous duty or repetitive load transfer switching are not acceptable.
- 1.6 The automatic transfer switch shall conform to the requirements of NEMA Standard ICS 2-447 and Underwriters' Laboratories UL-1008, and shall be UL listed as follows:
 - 1.6.1 For use in emergency systems in accordance with Articles 517 and 700 of the National Electrical Code ®.
 - 1.6.2 Rated in amperes for total system transfer including control of motors, electric-discharge lamps, electric-heating and tungsten-filament lamp load. Switches rated above 400 amperes shall be suitable for 30% or 400 amperes tungsten-filament lamp load, whichever is higher.
- 1.7 The automatic transfer switch shall be rated to withstand the _____ rms symmetrical short circuit current available at the automatic transfer switch terminals, with the type of overcurrent protection, voltage, and X/R ratio as shown on the plans.
- 1.8 The automatic transfer switch shall be mounted in a Type 1 enclosure. Switch and accessory devices shall be supplied by one manufacturer, with number of poles rated as shown on plans.

2. OPERATION

- 2.1 Two-pole switches shall be used for single-phase service and three-pole switches for three-phase service. Neutral conductor terminal lugs shall be provided as required for the power system.

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- 2.2 The automatic transfer switch control panel for single-phase and for three-phase shall utilize solid-state sensing for automatic, positive operation. The following shall be provided:
 - 2.2.1 For single-phase switches, the normal source voltage across live lines shall be monitored, and for three-phase switches all phases of the normal shall be monitored line-to-line. Close differential voltage sensing shall be provided. The pickup voltage shall be adjustable from 72% to 100% of nominal, and the-dropout voltage shall be adjustable from 70% to 98% of the pick-up value. The transfer to emergency will be initiated upon reduction of normal source to 85% of nominal voltage and retransfer to normal shall occur when normal source restores to 95% of nominal.
 - 2.2.2 A test switch to momentarily simulate normal source failure.
 - 2.2.3 Harnessing between transfer switch and control panel shall be built-in disconnect for routine maintenance.
 - 2.2.4 All moveable parts of the operating mechanism shall remain in positive mechanical contact with the main contacts during the transfer operation without the use of separate mechanical interlocks. Automatic operation of the switch shall not require power from any source other than the line-to-line voltage of the source to which the switch is transferring.

3. ACCESSORIES

- 3.1 Switches shall include a time delay to ignore momentary outages. It shall delay closing of the engine start contacts for a fixed time of 3 seconds.
- 3.2 Switches shall include a time delay on transfer from normal to emergency, field adjustable from .6 to 60 seconds.
- 3.3 Switches shall include a time delay on retransfer from emergency to normal, field adjustable from 1 to 30 minutes. The time delay shall be automatically bypassed if the emergency source fails and the normal source is available.
- 3.4 The switches shall include voltage and frequency sensing of the emergency source and shall be factory set to allow transfer to emergency when that source is approximately at 90% of rated voltage and frequency.
- 3.5 Gold plated contacts rated 10 amps, 32 volts DC which close when the normal source fails shall be provided to initiate engine starting.
- 3.6 Normally open and normally closed contacts for owner to remotely monitor emergency power status.
- 3.7 Normally open and normally closed contacts for owner to remotely monitor normal power status.

4. CERTIFICATION

On request, the manufacturer shall provide a letter certifying compliance with all requirements of the transfer switch specification. The certification shall identify equipment by serial number and shall include no exceptions to the specifications, except those stipulated with the submittal.

5. SUBMITTAL, OPERATOR'S MANUAL, AND WARRANTY

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- 5.1 Submittal shall include specification sheets showing all standard and optional accessories to be supplied; schematic wiring diagrams; dimension drawings; and interconnection diagrams identifying by terminal number each required interconnection between the generator set, the transfer switch, and the remote annunciator panel if it is included elsewhere in these specifications.
- 5.2 Each transfer switch shall be provided with an operator's manual providing installation and operating instructions.
- 5.3 Each automatic transfer switch and generator set shall be warranted by the generator set manufacturer for one year from date placed in service.