



1. APPLICATION

- A. Padmounted, metal enclosed, automatic transfer switches are used for the transfer of critical loads from the preferred source to an alternate source upon failure of the preferred source. They are installed outdoors on pads in EWEB's 12.47 kV grounded y/7.2 kV electric distribution system.

2. REFERENCE STANDARDS

- A. The automatic transfer switch (ATS) shall be manufactured, tested, and furnished according to the latest edition, revision, or amendments to the applicable standards of NEC, ANSI, IEEE, and NEMA.

3. PRODUCTS

A. General Requirements

- 1) The ATS shall consist of a single self-supporting metal enclosure suitable for outdoor use containing two load interrupter switches with automatic transfer controls and two vacuum fault interrupters with overcurrent trip controls, interconnected to provide protection and automatic transfer control with necessary accessory components all completely assembled, tested and operationally checked.
- 2) The ATS components shall be installed either in an SF<sub>6</sub> insulated tank or be of the solid dielectric enclosed type. Neither air nor oil insulated components are acceptable.
- 3) The ATS is to be used on a solidly grounded wye system.

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## B. Ratings

- 1) The ratings of ATS shall be:
  - a) System Voltage Class 15 kV
  - b) BIL 95 kV
  - c) Main Bus Continuous Current 600 A
  - d) Load Interrupter Switches:
    - Continuous Current 600 A
    - Load Dropping Current 600 A
    - Two-Time Duty Cycle Fault-Closing 12,500 A rms sym
  - e) Vacuum Fault Interrupters:
    - Continuous Current 600 A
    - Load Dropping Current 600 A
    - Ten-Time Duty Cycle Fault-Closing 12,500 A rms sym
- 2) The ratings of switches, bus and fault interrupters shall equal or exceed the ratings of the assembled ATS.

## C. Control and Operation Requirements

- 1) The ATS shall provide fully automatic source transfer from preferred to alternate feeder upon the loss of voltage of any phase. The preferred source shall be field selectable.
- 2) The switching operation from preferred source to alternate shall be a break-before-make (open transition) switch sequence. The return to preferred source shall be a make-before-break (closed transition) switch sequence.
- 3) The ATS shall be provided with an overcurrent lockout that will prevent an automatic source transfer into a fault.
- 4) The voltage of all phases of the preferred and alternate sources shall be monitored and the following adjustable setpoints and time delays shall be provided:
  - a) Pick up: 85% to 100% of nominal voltage
  - b) Dropout: 50% to 95% of nominal voltage

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- c) Transfer Delay: 0 to 10 seconds. If the voltage on any phase of the preferred source is below the dropout setpoint for the entire transfer delay time, the ATS shall transfer from the preferred to the alternate source provided all phases of the alternate source are above the pickup setpoint.
  - d) Retransfer Delay: 1 to 30 minutes. If the voltage on all phases of the preferred source is above the pickup setpoint for the entire retransfer delay time, the ATS shall transfer from the alternate to the preferred source. This time delay shall be automatically bypassed if the alternate source fails and the preferred source is available.
- 5) The following controls and monitoring shall be provided:
- a) Local selection of Manual or Automatic control for transfer to alternate source
  - b) Local selection of Manual or Automatic control for retransfer to preferred source
  - c) Local Test Mode - shall allow testing of transfer and retransfer controls without affecting switch position.
  - d) Local indication and form C contacts rated 5 amps at 120 volts for remote monitoring for both switches for the following:
    - i. Open/Closed switch position
    - ii. Source Available/Source Loss
- 6) Overcurrent Control Requirements - The vacuum fault interrupters shall be field programmable for a variety of time current curves including standard "E" speed fuse curves.

D. Construction

- 1) Enclosure
  - a) The padmounted enclosure shall meet the requirements of IEEE Standard C57.12-28 for enclosure integrity and be of unitized construction to maximize strength, minimize weight, and inhibit corrosion.

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- b) The enclosure shall be equipped with means for lifting.
- c) The enclosure roof shall be diamond shape or have a slope to let the water run off.
- d) All enclosure corners shall be rounded and finished.
- e) The enclosure shall guard against unauthorized or inadvertent entry. Enclosure construction shall not utilize any externally accessible hardware.
- f) The base shall consist of continuous 90-degree flanges, turned inward and welded at the corners, for bolting to the concrete pad.
- g) A pentahead socket wrench or tool shall be required to actuate the mechanism to unlatch the door.
- h) Unless otherwise specified, the enclosure finish coat shall be manufacturer's standard dark green color.

2) Labeling

- a) NEMA approved warning signs shall be placed on all external doors and inside of each door. All signs shall be applied and located in accordance with latest NEMA standards.
- b) A nameplate indicating the manufacturer's name, catalog number, and model number shall be permanently applied to the inside of at least one door. Also, the inside of each door shall be provided with a ratings label indicating the following: voltage ratings; main bus continuous rating; short-circuit ratings (amperes, RMS symmetrical and MVA three-phase symmetrical at rated nominal voltage); the load interrupter switch and vacuum fault interrupter ratings, including duty-cycle fault-closing capability and amperes, short-time, RMS (momentary, asymmetrical and one-second, symmetrical).
- c) A three-line connection diagram showing load interrupter switches, vacuum fault interrupters and bus along with the manufacturer's model number shall be provided on the inside of the front door.

3) Grounding Provisions

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- a) A ground connection pad shall be provided in each termination compartment.
- b) The ground connection pad shall be constructed of 1/4" thick galvanized or nickel plated steel and be welded to the enclosure and shall have a short-circuit rating equal to that of the ATS and have a NEMA 2 hole pattern for ground connections.
- c) A copper rod having a short-circuit rating equal to that of the padmounted switchgear, shall be provided in each termination compartment. The rod shall extend across the full width of each compartment, readily accessible in an up-front location to allow grounding of cable concentric neutrals and accessories.

4) Bushing and Bushing Wells

- a) Bushing and bushing wells shall conform to the latest revision of IEEE Standard 386.
- b) The bushing and bushing wells shall be mounted on the interior walls.
- c) The semiconductive coating on bushings and bushing wells shall be solidly grounded to the enclosure.
- d) Load interrupter switch and vacuum fault interrupter terminals shall be equipped with 600-ampere-rated bushings and shall have removable threaded studs compatible with all 600-ampere elbow systems.

5) Termination Compartments

- a) Termination compartments for bushings rated 600 amperes continuous shall be of an adequate depth to accommodate two 600 ampere elbows mounted piggyback, encapsulated surge arresters or grounding elbows mounted on 600 ampere elbows having 200 ampere interface, or other similar accessory combinations without the need for an enclosure extension.
- b) Viewing windows shall be provided to allow visual inspection of open gap between interrupter-switch blades or interrupter contacts when switch or interrupter is in the open position.

6) Load Interrupter Switches

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- a) Interrupter switches shall be gang operated, loadbreak, two position type.
- b) Interrupter switches shall be able to withstand at least 100 (one hundred) full load break operations without deterioration of the unit.
- c) Each interrupter switch shall be provided with a means to manually open and close the switch.
- d) The SF<sub>6</sub> type interrupter switches shall withstand nominal rated voltage upon the loss of gas. The pressure gauge(s) with alarm contacts shall be installed for monitoring gas on each interrupting cylinder. If switch contacts are unable to operate under loss of SF<sub>6</sub> an automatic lockout device shall be installed.

7) Vacuum Fault Interrupters

- a) Vacuum fault interrupters shall provide overcurrent fault protection of each phase of the load circuits.
- b) Shall trip automatically upon overcurrent conditions requiring a manual reset.
- c) Shall be provided with means to manually open and close.

4. TESTS

- A. The ATS shall be tested according to the latest revision of IEEE and ANSI standards. The results of testing shall be available to EWEB upon request.

5. WARRANTY

- A. Provide a warranty period of eighteen (18) months minimum after the date of acceptance.
- B. Unless otherwise stated, all equipment shall be free and clear of any lien or encumbrances and shall be new and the current model and shall carry full manufacturer warranties.
- C. Vendor warrants to EWEB that any goods/equipment furnished will operate and function in the manner represented by Vendor and will achieve the performance

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stated in the material specification when operating within the design conditions described therein.

- D. Vendor warrants the goods/equipment furnished is free from defects in material and workmanship, and agrees to repair or replace any unit that is unsuitable for operating or fails in operation during normal and proper use, including all parts and labor at no cost to EWEB.

6. PACKAGING AND DELIVERY

- A. The vendor shall protect the ATS and any exposed parts during transit. Any damage in transit is the vendor's responsibility.

7. SUBMITTALS

- A. Submit the following:

- 1) Drawing of the switch showing the manufacturer, model number, dimensions, vent locations, control cabinet dimensions and location, switches and vacuum fault interrupter configuration.
- 2) Ratings of ATS and interrupter switches and vacuum fault interrupters.
- 3) Transfer time
- 4) ATS type, SF<sub>6</sub> insulated or solid dielectric
- 5) Description of transfer controls.

- B. Provide one (1) set of drawings and instruction books before shipment of the padmounted switchgear. One complete set of drawings and instruction books shall accompany the padmounted switchgear. All instruction books shall be provided in PDF file format and all drawings shall be provided in the latest version of AutoCAD<sup>®</sup>, or PDF file format.

8. EWEB STORES INFORMATION

- A. This specification shall be used to purchase the material with the following stock codes:

492-0001801 Automatic Transfer Switch, 15 kV Deadfront Padmount Type

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