

# Enercon ETSU

## Utility-to-Utility Automatic Transfer Switch

### Introduction

In many installations the automatic transfer switches have a second utility feed as Source 2 (emergency) instead of an engine generator set. This application requires a transfer switch designed and configured for utility-to-utility source. The Enercon ETSU Series Transfer Switches size, ampere rating, operation, number of poles, etc., all remain the same as the standard Enercon ETS series with minor circuit and accessory changes.

### Features and Benefits

For utility-to-utility applications, Enercon recommends the Enercon ETSU Series Transfer Switch, with full phase protection on the Source 1 (primary utility) side and recommends the inclusion of our Accessory Group 12U, consisting of the following:

- A3** Auxiliary Contact — Closed in Source 2 position
- A4** Auxiliary Contact — Closed in Source 1 position
- L1** Pilot Light — Indicates switch is in Source 2 position
- L2** Pilot Light — Indicates switch is in Source 1 position
- L3** Pilot Light — Indicates Source 1 is available
- L4** Pilot Light — Indicates Source 2 is available
- R17** Voltage Sensing Relays — Full phase protection on the Source 2 (secondary utility) side
- T** Time Delay — 0-60 minutes adjustable time delay on retransfer to Source 1 (primary utility)
- W** Time Delay — 0-5 minutes adjustable time delay on transfer to Source 2 (secondary utility)



### Fully Approved

- UL 1008 listed at 480 VAC
- CSA C22.2 No. 178 certified at 600 VAC
- IEC 947-6-1 listed at 480 VAC
- Seismic Compliance to IEEE-693-2005 and IBC-2006
- Amperage sizes: 40 through 4000
- Pole: 2, 3 and 4
- Available for operation on all standard voltage systems
- Withstand current ratings are the same as the standard Enercon ETS Series
- Optional accessory features are the same as the standard Enercon ETS Series
- Available in standard, delayed and closed transition versions and Enercon ETG Series (with Enercon MX150 controller) as well as in the Enercon EBTS Series

# Suggested Specifications for Enercon ETSU Utility-to-Utility ATS

An automatic transfer switch shall be furnished as specified herein.

## 1.0 Rating

- 1.01 — The switch shall be rated for the voltage and amperage as shown on the plans and shall have 600 volt insulation on all parts in accordance with NEMA standards.
- 1.02 — The current rating shall be a 24 hour continuous rating when the switch is enclosed in an unventilated enclosure, and shall conform to NEMA temperature rise standards.
- 1.03 — The current rating shall be based on all classes of loads, i.e., resistive, tungsten, ballast and inductive. Switches less than 400 amps shall be UL listed for 100% tungsten lamp load.
- 1.04 — As a precondition for approval, all transfer switches complete with accessories shall be listed by Underwriters' Laboratories, under Standard UL 1008 (automatic transfer switches) and approved for use on Emergency Systems.
- 1.05 — The thermal capacity of the main contacts shall not be less than 20 times the continuous duty rating.
- 1.06 — Temperature rise test shall be in accordance with UL 1008 except that it shall be conducted at the conclusion of the overload and endurance tests.

## 2.0 Sequence of Operation

- 2.01 — When the voltage on any phase of the normal utility source is reduced to 80% of rated voltage and the standby utility is delivering not less than 90% of rated voltage, the load shall be transferred after a (x) sec. time delay.
- 2.02 — When the normal utility source has been restored to not less than 90% of rated voltage of all phases, the load shall be retransferred after a time delay of 0 to 60 minutes (adjustable).
- 2.03 — If the standby utility should fail while carrying the load, retransfer to the normal utility source shall be made instantaneously upon restoration of the normal source on all phases.
- 2.04 — Inspection and operational tests shall be conducted in the presence of the engineer, to indicate that the switch satisfies the specifications.
- 2.05 — Accessory module 12U shall be provided to assure proper sequence of operation (see note B).

## 3.0 Construction and Performance

- 3.01 — The automatic transfer switch shall be a double throw switch operated by a reliable electrical mechanism momentarily energized. There shall be a direct mechanical coupling to facilitate transfer in 3 cycles or less except where delayed transition is specified.
- 3.02 — The normal and emergency contacts shall be mechanically interlocked such that failure of any coil or disarrangement of any part shall not permit a neutral position.
- 3.03 — For switches installed in systems having ground fault protective devices, a 4<sup>th</sup> pole shall be provided. This additional pole shall isolate the normal and emergency neutrals. The neutral pole shall have the same withstand and operational ratings as the other poles and shall be arranged to break last and make first to minimize neutral switching transients.
- 3.04 — The contact structure shall consist of a main current carrying contact which is a silver alloy with a minimum of 50% silver content. The main current carrying contacts shall be protected by arcing contacts on sizes above 400 amps.
- 3.05 — The automatic transfer switch manufacturer shall submit test data for each size switch, showing it can withstand, without damage, fault currents of the magnitude and the duration necessary to maintain the system integrity.
- 3.06 — Dielectric test at 1960 volts minimum at the conclusion of the withstand and closing tests.

- 3.07 — The automatic transfer switch manufacturer shall certify sufficient arc interrupting capabilities for 50 cycles of operation to operate between a normal and emergency source that are 120 degrees out of phase at 480 volts for the following load currents and power factors: 600% of nominal at .50 power factor; 20% of nominal at .50 power factor. The above certification is to insure that there will be no current flow between the two isolated sources during switching.
- 3.08 — All customer interface relays shall be continuous duty industrial type with wiping contacts rated at 10 amperes minimum.
- 3.09 — All coils, relays, timers and accessories shall be readily front accessible.
- 3.10 — The control panel shall include a password protected LCD user interface panel for ease of setup and user operation.
- 3.11 — A manual handle shall be provided for maintenance purposes.
- 3.12 — A disconnect switch shall be provided to defeat automatic operation during maintenance or inspection operation.
- 3.13 — The switch shall be mounted in a suitable NEMA enclosure to meet application requirements as indicated on the plans.
- 3.14 — Switches composed of molded case breakers, motor starters or other components not specifically designed for automatic transfer switch duty will not be approved.
- 3.15 — The automatic transfer switch shall have a 2/5/10 year warranty.
- 3.16 — The automatic transfer switch shall be Enercon ETSU or approved equal.

## Specification Writers Notes:(A)

Standard time delay is 0-5 minutes.

(B) Module 12U includes accessories A3, A4, L1, L2, L3, L4, R17, T, W.

Minimum UL listed withstand and closing ratings shall be as follows:\*

Size (Amps)	With Coordinated MCCB	With Current Limiting Fuse	With Any Molded Case Breaker
Up to 200	30,000	200,000	10,000
225-400	50,000	200,000	35,000
600-800	65,000	200,000	50,000
1000-1200	85,000	200,000	50,000
1600-4000	100,000	200,000	100,000

\*All values 480 volt, RMS symmetrical, less than 20% power factor. No welding of contacts or contact separation as established by oscillograph traces.

For dimensions and weights and external power connection size and quantity, please refer to the appropriate Enercon publication.



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