

Enercon ETSCT

Closed Transition Transfer Switches



Introduction

An automatic transfer switch is the single vital link between utility and alternate power supplies. Yet it is the very operation and testing and retransfer back to normal that may be a cause of concern for many users. Loads such as electronic equipment, HID lighting, motor starters, etc., are sensitive to even the 30-100 millisecond outage experienced during a typical transfer switch operation. Therefore, testing and use of the standby system is

not optimized and necessary system checks are not performed because of concerns about the effects of transfer outages.

In addition to these applications, opportunities for peak shaving and utility incentive rates may be passed over because of the inability to accept the short power interruptions inflicted during operation. In response to the needs of these installations, Enercon offers the ESCT Closed Transition Transfer Switch and EBTSTCT Closed Transition Transfer/Bypass Switch.

Features and Benefits

Closed transition switches utilize the proven switching technology of the Enercon ETS/ETSD Series of transfer switches combined with controls developed during Enercon's years of experience in the manufacture of synchronizing switchgear. They provide the capability to transfer in a closed transition mode when both sources are within preset parameters. Utilizing Enercon's high speed drive system, the overlap of the normal and alternate sources is less than 100 milliseconds. When one source is not within specified limits, such as during a power failure, the Enercon ETSCT operates in a delayed transition mode.

Description and Operation

Closed transition switches have two basic modes of operation. During a failure of one source or an out of specification condition, the Enercon ETSCT Model operates as a delayed transition switch (Enercon ETSD Model). This sequence allows clear separation of an unreliable source from an available one.

Closed transition operation takes place when both sources are within preset voltage and frequency parameters and the phase angle differential is less than five degrees. The closed transition sequence may be initiated by the test switch, a load exerciser clock, peak shaving controls or special utility incentive rate input signals.

Application Information

- Closed transition switches require a momentary (less than 100 ms) paralleling of Source 2 (emergency) with Source 1 (normal). This usually requires the owner to obtain approval of the installation with the local utility.
- The purpose of a closed transition switch is to prevent the momentary outages that occur during transfer of a standard or delayed unit. This technology is not normally a substitute for a UPS system as it does not provide stored energy capability but rather acts in a complementary fashion.
- System application requirements: Source 2 (generator set) must be provided with an isochronous governor stable at a frequency differential of not more than 60 Hz +/- 0.2 Hz.

A 24VDC shunt trip circuit is strongly suggested on one of the feeder breakers, normally the Source 2 (generator) feeder. Power for this trip circuit and alarm system backup must be supplied from the engine starting batteries or an equivalent source.

ETSCT Model, Dimensions and Weights								
Ampere Rating	Poles	NEMA 1			Ref. Figure	Weight		Application Notes
		Height (A)	Width (B)	Depth (C)		Open Type	NEMA 1	
100, 150 225, 260, 400	3	66 (168)	24 (61)	20 (50)	A	125 (57)	220 (100)	1 - 8
	4					146 (66)	241 (109)	
600	2, 3	74 (188)	40 (102)	19.5 (50)	A	185 (84)	400 (181)	
	4					205 (93)	450 (204)	
800, 1000 1200	2, 3	90 (229)	35.5 (90)	48 (122)	B	210 (95)	475 (215)	
	4					230 (104)	560 (254)	
1600, 2000	3	90 (229)	35.5 (90)	48 (122)	B	365 (166)	1030 (467)	
	4					470 (204)	1190 (540)	
3000	3	90 (229)	35.5 (90)	48 (122)	B	485 (220)	1150 (522)	
	4					690 (313)	1415 (642)	
4000	3	90 (229)	46.5 (118)	60 (152)	B	820 (372)	1635 (742)	
	4					1045 (474)	1870 (848)	

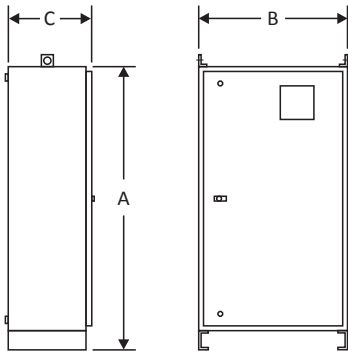


Figure A

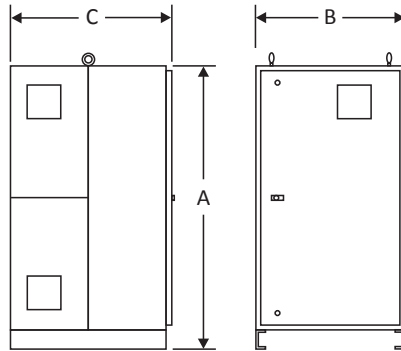


Figure B

APPLICATION NOTES:

- Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
- Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
- All dimensions and weights are approximate and subject to change without notice.
- Special enclosures (NEMA 3R, 4, 4X, 12, etc.) dimensions and layout may differ. Consult the Enercon factory for details.
- Normal and emergency may be ordered inverted on any switch. The load may be inverted 600-1200 amps. Consult the factory for details.
- Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the Enercon factory.
- Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
- Add 4" in height for removable lifting lugs.
- 4000 amp depth dimension shown is standard. Depending on your cable/conduit requirements, you may desire a deeper enclosure. Consult the Enercon factory for further details.
- Lug adapters for 3000-4000 amp limits may be staggered length for ease of entrance. Consult the Enercon factory for details.
- Ventilation louvers on both sides of enclosure at 3000 and 4000 amps. One must be clear for airflow with standard cable connections.

NOTES:

- * Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. Contact the Enercon factory for more details.
- Special terminal lugs and neutral bars are available at additional cost. Contact the Enercon factory and advise cable sizes and number of conductors per pole.
 - Fully rated solid neutral (3x standard normal power connection) provided when required by system voltage.
 - Normal and emergency may be ordered inverted on any switch. Load may be inverted 600-1200 amps. Consult the Enercon factory for details.
 - Lug adapters for 3000-4000 amp limits may be staggered length for ease of entrance. Consult the Enercon factory for details.
 - Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the Enercon factory.

AL-CU UL Listed Solderless Screw-Type Terminals for External Power Connections					
Switch Size Amps	Normal, Emergency & Load Terminals		Switch Size Amps	Normal, Emergency & Load Terminals	
	Cables/Pole	Wire Ranges		Cables/Pole	Wire Ranges
100-150	1	#4 to 600 MCM	800 / 1000 / 1200	4	#2 to 600 MCM
225	1	#4 to 600 MCM	1600	*	
260	1	#4 to 600 MCM	2000		
400	1	#4 to 600 MCM	3000		
600	2	#2 to 600 MCM	4000		

Electrical Ratings

- Ratings 100 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3R, 4, 4X and 12
- Available in Transfer Switch (ETSCT) or Transfer/Bypass Switch (EBTSCT) styles
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA certified at 600 VAC

Performance Features

- Incorporates the applicable features of the ETS and EBTS Series
- Source parallel time of less than 100 milliseconds
- Closed transition operation (no power interruption) during transfer and retransfer when sources are within specified parameters
- Open transition transfer operation is initiated upon a source failure
- Available in ETSCT (utility-generator), ETSCTU (utility-utility) and ETSCTM (manual) configurations

Design and Construction Features

- Electrically operated, mechanically held
- Segmented silver tungsten alloy contacts with separate arcing contacts on all sizes
- Arc quenching grids, enclosed arc chambers, and wide contact air gap
- Components accessible for inspection and maintenance without removal of the switch or the power conductors
- Standard annunciation and operational selection package for user interface
- Active control of the generator governor not required, but is available as an option



Enercon Engineering, Inc.
201 Altorfer Lane, E. Peoria, IL 61611 USA
800.218.8831 www.enercon-eng.com

