



Model ZBTS Transfer/Bypass-Isolation Transfer Switches Supplement to ZTS Series Product Bulletin



Description and Operation

The ZBTS Model Bypass-Isolation Transfer Switch consists of two major modules – the automatic transfer and the bypass-isolation switches. The automatic transfer switch module is the proven GE Zenith ZTS Series, built in ZTS, ZTSD or ZTSCT configuration and constructed for rugged, reliable operation. The same components – heavy-duty silver alloy contacts, rugged drive mechanism and silver plated bus bar interconnections are used throughout the ZBTS Model.

The bypass section is a ZTS switch provided with a quick make/quick break manual load transfer handle and GE Zenith’s control/interlock system consisting of both mechanical and electrical interlocks. The bypass is equipped with normal failure sensing and a time delay to start the engine automatically if the ATS has been removed for service and a failure occurs. The modules are mounted in a compact enclosure and completely interconnected requiring only normal source, emergency source and load cable connections. Once installed, no cables need to be removed to isolate the transfer switch module for maintenance or inspection. The automatic transfer switch may be withdrawn for testing or maintenance without disturbing the load. The transfer switch module has three positions:

1. *Automatic:* The transfer switch is carrying the load, and the bypass switch is in the open position. This is the normal operating position.
2. *Test:* The bypass switch is closed and feeding the load. The transfer switch has control power and may be operated for test purposes via the test switch on the enclosure door. The load is not affected during testing
3. *Isolate:* The transfer switch is withdrawn from all power and ready for maintenance. The load is served by the bypass switch.

The ZTS Transfer Switch is installed on a draw-out mechanism, with electrical and mechanical interlocks for secure removal after load bypass. The ZTS control/logic panel is mounted on the enclosure door and connected by a wire harness and multi-pin disconnect plugs. The transfer switch and/or the control panel may be tested, isolated and removed for maintenance without load interruption.

The bypass-isolation switch module is the same basic design as the transfer switch module and thus has the same electrical ratings. Manually operated, it features high speed, quick make/quick break contact action. The bypass-isolation switch has three basic positions:

1. *Automatic:* Normal bypass contacts open, emergency bypass contacts open.
2. *Bypass Normal:* Normal bypass contacts closed, emergency bypass contacts open.
3. *Bypass Emergency:* Normal bypass contacts open, emergency bypass contacts closed.

GE Zenith’s design requires no additional load break contacts which cause load interruption during bypass-isolation functions. The bypass-isolation switch contacts are out of the system current path except during actual bypass operation. Therefore, they are not constantly exposed to the destructive effects of potential fault currents. The normal, emergency and load are connected between the automatic transfer switch and the bypass-isolation switch through solidly braced isolating contacts that are open when the transfer switch is isolated. All current carrying components provide high withstand current ratings in excess of those specified in UL 1008 standards.

Interlocks and Indicators

Every ZBTS Model Bypass-Isolation Transfer Switch is supplied with all necessary electrical and mechanical interlocks to prevent improper sequence of operation as well as the necessary interlocking circuit for engine starting integrity. Each ZBTS is furnished with a detailed step by step operating instruction plate as well as the following function diagnostic lights:

- Normal Source Available
- Emergency Source Available
- Bypass Switch in Normal Position
- Bypass Switch in Emergency Position
- Automatic Transfer Switch in Test Position
- Automatic Transfer Switch Isolated
- Automatic Transfer Switch Inhibit
- Automatic Transfer Switch Operator Disconnect Switch “Off”
- Automatic Transfer Switch in Normal Position
- Automatic Transfer Switch in Emergency Position



Specification Assistance

GE Zenith offers a complete range of product guide specifications to help you determine your needs.

For more information, please consult your local GE Zenith representative, our factory or our website at www.geindustrial.com.

Models ZBTS, ZBTSD & ZBTSC

Transfer/Bypass-Isolation Transfer Switches

Electrical Ratings

- Ratings 100 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3R, 4, 4X and 12
- Available with ZTS, ZTSD and ZTSC Series Transfer Switch
- Bypass and transfer switch have identical ratings
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA C22.2 No. 178 certified at 600 VAC
- IEC 947-6-1 listed at 480 VAC

Performance Features

- Load is not interrupted during bypass operation
- High close-in and withstand capability
- Temperature rise test per UL 1008 conducted after overload and endurance tests exceeds UL requirements
- Available in ZBTS (utility-generator), ZBTSU (utility-utility), ZBTSG (generator-generator) and ZBTSM (manual) configurations; models include standard, delayed and closed transition

Design and

Construction Features

- Transfer switch is located on a draw out mechanism to facilitate maintenance
- Emergency power systems can be electrically tested without disturbing the load
- Power cables do not have to be disconnected to remove the transfer switch
- Bypass to any available source with transfer switch removed
- Engine start circuit maintained during bypass operation; normal power failure causes engine start contact closure even with the ATS removed
- Diagnostic lights and detailed instructions for simple step-by-step operation
- Mechanical and electrical interlocks ensure proper sequence of operation
- Bypass switch contacts are closed only during the bypass-isolation operation
- Silverplated copper bus interconnection of the transfer and bypass switches on all sizes

Models ZBTS & ZBTSD Transfer/ Bypass-Isolation Switches								
Ampere Rating	Poles	NEMA 1 Enclosed			Reference Figure	Weight		Application Notes
		Height (A)	Width (B)	Depth (C)		Open Type	NEMA 1	
100, 150 225, 260 400	2, 3	83 (211)	30 (76)	28.5 (73)	D	310 (141)	770 (350)	1 - 9
	4	83 (211)	30 (76)	28.5 (73)	D	380 (173)	840 (322)	
600	3	90 (229)	36 (91)	28.25 (72)	E	660 (299)	1220 (533)	1 - 9
	4	90 (229)	40 (102)	28.25 (72)	E	770 (349)	1365 (619)	
800, 1000 1200	3	90 (229)	40 (102)	28.25 (72)	E	765 (347)	1355 (615)	1 - 9
	4	90 (229)	46 (117)	28.25 (72)	E	910 (413)	1570 (712)	
1600 2000	3	90 (229)	40 (102)	61.25 (156)	F	2900 (1315)	3100 (1406)	1 - 7
	4	90 (229)	50 (127)	61.25 (156)	F	3800 (1724)	4000 (1814)	
3000	3	90 (229)	40 (102)	73.25 (186)	F	3700 (1678)	3900 (1769)	1 - 7
	4	90 (229)	50 (127)	73.25 (186)	F	4800 (2177)	5000 (2268)	
4000	3	90 (229)	47.5 (121)	81 (206)	F	4310 (1955)	4660 (2113)	1 - 7, 10 - 11
	4	90 (229)	54 (137)	81 (206)	F	5510 (2499)	5860 (2658)	

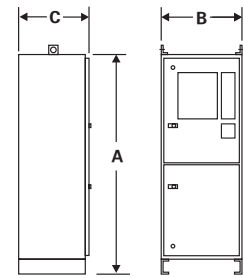


Figure D

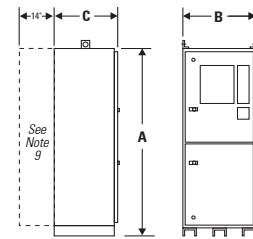


Figure E

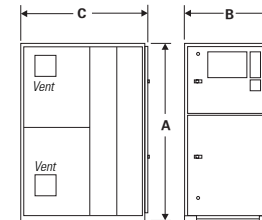


Figure F

Model ZBTSC Closed Transition Transfer/ Bypass-Isolation Switches								
Ampere Rating	Poles	NEMA 1 Enclosed			Reference Figure	Weight		Application Notes
		Height (A)	Width (B)	Depth (C)		Open Type	NEMA 1	
100, 150 225, 260 400, 600	3	90 (229)	36 (91)	28.25 (72)	E	730 (331)	1280 (581)	1 - 8
	4	90 (229)	40 (102)	28.25 (72)	E	840 (381)	1385 (628)	
800, 1000 1200	3	90 (229)	40 (102)	28.25 (72)	E	835 (379)	1435 (651)	1 - 9
	4	90 (229)	46 (117)	28.25 (72)	E	980 (444)	1640 (744)	
1600 2000	3	90 (229)	40 (102)	61.25 (156)	F	2970 (1347)	3170 (1438)	1 - 7, 10
	4	90 (229)	50 (127)	61.25 (156)	F	3870 (1755)	4070 (1846)	
3000	3	90 (229)	40 (102)	73.25 (186)	F	3770 (1710)	3970 (1801)	1 - 7
	4	90 (229)	50 (127)	73.25 (186)	F	4870 (2209)	5070 (2300)	
4000	3	90 (229)	47.5 (121)	81 (206)	F	4380 (1986)	4730 (2145)	1 - 7, 10 - 12
	4	90 (229)	54 (137)	81 (206)	F	5580 (2531)	5930 (2689)	

Application Notes:

1. Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Special enclosures (NEMA 3R, 4, 12, etc.) dimensions and layout may differ. Consult the GE Zenith factory for details.
5. Bypass Model product can not be ordered with inverted style.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the GE Zenith factory.
7. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
8. Add 4" in height for removable lifting lugs.
9. ZBTS(D) 600-1200A & ZBTSC 100-1200A standard configuration is top entry. 14" rear adapter bay required for bottom entry. Consult GE Zenith factory for details.
10. Bypass switch weights for 1600 - 4000 amp units vary up to 10% based on connections variations. Weights shown are for estimation only.
11. 3000 amp depth dimension shown is standard. Depending on your cable/conduit requirements you may desire a deeper enclosure. Consult the GE Zenith factory for further details.
12. Lug adapters for 3000-4000 amp limits may be staggered length for ease of entrance. Consult the GE Zenith factory for details.

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	Wire Ranges
ZBTS & ZBTSD					
100-225	1	3/0 to 250 MCM	800/1000 1200/1600	4	#2 AWG to 600 MCM
225	1	#4 AWG to 600 MCM	1600		
260	1	#4 AWG to 600 MCM	2000		*
400	1	#4 AWG to 600 MCM	3000		
600	2	#2 AWG to 600MCM	4000		
ZBTSC					
100-400	1	#4 AWG to 600 MCM	800/1200	4	#4 AWG to 600 MCM
600	2	#4 AWG to 600 MCM			

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available at additional cost. Contact factory for more details.

ZBTSC Model - Closed Transition Transfer/Bypass-Isolation Switches

The ZTSC Closed Transition Transfer Switch may be applied with a bypass-isolation switch for the utmost in reliability and versatility. The ZBTSC Model provides the ability to withdraw the transfer switch unit for maintenance or inspection. Reference the ZTSC unit features and operation discussion for more details.

ZBTSD Model - Delayed Transition Transfer/Bypass-Isolation Switches

The ZTSD Delayed Transition Transfer Switch with a timed center-off position is available in a bypass configuration. The ZBTSD Model Bypass incorporates the features of both the ZBTS Bypass-Isolation Switch and the ZTSD unit for transfer of large motor loads, transformers, UPS systems or load shedding to a neutral "Off" position. Reference the ZTSD unit features and operation discussion for more details.

Contents contained in this document are subject to change without notice. Contact GE to verify details.



A Product of GE Industrial Systems
General Electric Company
830 West 40th Street
Chicago, IL 60609 USA
773 299-6600, Fax: 630 850-6899
www.geindustrial.com