

Zenith ZTSD

Delayed Transition Automatic Transfer Switches

Introduction

The Zenith ZTSD provides an adjustable time delay after the opening of the closed contacts and before the closing of the open contacts for transfer-ring large motor and/or transformer and UPS loads. This delayed transition time allows for motors to coast down and transformer fields to decay, thus allowing inductive loads to be reenergized after transfer with only normal inrush starting currents. The delayed transition design is an effective method of handling these applications and can be utilized as an alternative to a standard transfer switch equipped with an in-phase monitor.

The delayed transition transfer switch is ideally suited for pumping stations, sewage treatment plants, hospital x-ray equipment, or wherever the bulk of the load being controlled consists of large motors and/or transformers. Major UPS manufacturers strongly recommend the use of delayed transition type transfer switches to ensure proper operation of their rectifier circuit and battery system. The Zenith ZTSD allows a UPS system sufficient delay to recognize a power failure and transfer to batteries, acknowledge the return of power and allow the rectifier to walk-on to the new source, reducing any transfer anomalies.

One solution to this issue is to introduce a delay in the transition between two live sources. ABB's Zenith ZTSD Delayed Transition Transfer Switches have been designed expressly for this purpose.

Features and Benefits

The advantages of using the Zenith ZTSD when transferring

large motor and/or transformer loads are:

- Consistent operation under all conditions, including manual (pushbutton) operation
- Operation is totally independent of the synchronism of the power sources, eliminating the need for in-phase monitors or extensive motor disconnect control wiring between the transfer switch and motor control centers
- The delayed transition function adapts itself for use in multiple generator systems and paralleling systems to permit load shedding by switching the main contacts to a center-off or disconnected position



- Allows UPS systems to function properly while switching between line input sources
- Delayed Transition ATS mechanism does not allow both sources to be connected at the same time

Except for the delayed transition period, the performance, operating capabilities, ratings, UL listings, withstand current values and available options are identical to those of ABB's Zenith ZTS Series Automatic Transfer Switches.

The Zenith ZTSD incorporates all of the important features of the standard Zenith ZTS Series switches. In addition, its unique design incorporates features oriented toward its specific operation.

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Description and Operation

The operation of the Zenith ZTSD Delayed Transition Transfer Switch is identical to ABB's Zenith ZTS Model with the exception of the drive mechanism and delayed transition period.

Upon failure or reduction of the normal source, and the availability of Source 2 (emergency), the drive solenoid is energized and pulls the main contacts out of the Source 1 (normal) position and locks them mechanically in the open position. An adjustable time delay is then energized. After the preset time has elapsed, the drive solenoid is energized and pulls the main contacts out of the open position and locks them mechanically in the Source 2 (emergency) closed position. Source 2 (emergency) is now supplying the load.

When the voltage sensing detects the restoration of Source 1 (normal) for a predetermined time period, the drive solenoid is energized and pulls the main contacts from the Source 2 (emergency) position and locks them mechanically in the open position. After the preset time delay has elapsed, the drive solenoid is energized and pulls the main contacts out of the open position and locks them mechanically in the Source 1 (normal) closed position. Source 1 (normal) is now supplying the load.

All voltage and frequency sensing controls, disconnect plug, test switch, time delays and other accessories supplied on the Zenith ZTS Series are also supplied on the Zenith ZTSD.

Electrical Ratings

- Ratings 40 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3R, 4, 4X and 12
- Available to 600 VAC, 50 or 60 Hz
- 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
- Available in Transfer Switch (ZTSD and Transfer/Bypass Switch (ZBTSD) styles

Performance Features

- Adjustable center-off time to meet specific installation requirements
- High close-in and withstand capability
- Temperature rise test per UL 1008 conducted after overload and endurance tests - exceeds UL requirements
- Available in ZTSD (utility-generator), ZTSDU (utility/utility), ZTSDG (generator-generator) and ZTSDM (manual) configurations
- Short Time rated 1600-3000A (Non-bypass) ATS for 0.50 sec and 1.0 sec time duration

Design and Construction Features

- Mechanically interlocked center-off position for load back EMF decay
- Electrically operated, mechanically held by a simple, over-center mechanism
- Segmented silver tungsten alloy contacts with separate arcing contacts on 225 amp and above
- Arc quenching grids, enclosed arc chambers, and wide contact air gap for superior source-to-source isolation on all units
- Control circuit disconnect plug and drive inhibit switch for safe maintenance
- Components accessible for inspection and maintenance without removal of the switch or the power conductors
- Mechanical indicator and contact chamber cover designed for inspection, safety and position designation

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ZTSD Model, Dimensions and Weights

Ampere Rating	Poles	NEMA 1			Reference Figure	Weight		Application Notes		
		Height (A)	Width (B)	Depth (C)		Open Type	NEMA 1			
40, 80, 100, 150	2, 3 4	46 (117)	24 (61)	14 (36)	A	80 (36)	200 (91)	1 - 7, 11-13		
225	85 (39)					205 (93)				
260, 400	2, 3 4	74 (188)	40 (102)	19.5 (50)		80 (36)	200 (91)	1 - 7, 12-13		
600	85 (39)					205 (93)				
800, 1000, 1200	2, 3 4				90 (229)	35.5 (90)	48 (122)	185 (84)	400 (181)	1 - 8, 12-13
	210 (95)							475 (215)		
1600, 2000	2, 3 4	90 (229)	35.5 (90)	48 (122)	230 (104)	560 (254)	1 - 10, 12-13			
	740 (336)				1375 (624)					
3000	3 4				46.5 (118)	60 (152)		C	830 (376)	1480 (671)
	740 (336)								1375 (624)	
4000	3 4	90 (229)	46.5 (118)	60 (152)	830 (376)	1480 (671)				
	820 (372)				1635 (742)					
					1045 (474)	1870 (848)				

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
40-80	1	#8 to 3/0	800 / 1000 / 1200	4	#2 to 600 MCM
100, 150, 225, 260, 400	1	#4 to 600 MCM	1600	*	
	2	1/0 to 250 MCM	2000		
3000					
600	2	#2 to 600 MCM	4000		

Notes:

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. Contact ABB factory for more details.

1. Special terminal lugs and neutral bars are available at additional cost. Contact factory and advise cable sizes and number of conductors per pole.

2. 100% rated Neutral provided on 3 phase, 4 wire system.

3. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the ABB factory.

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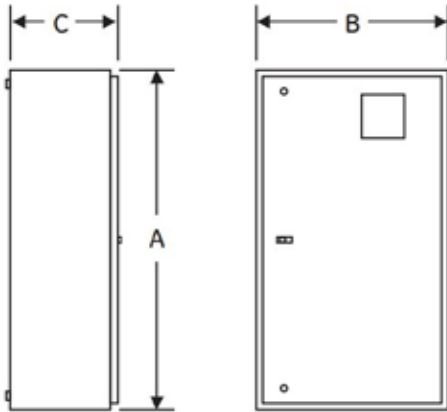


Figure A

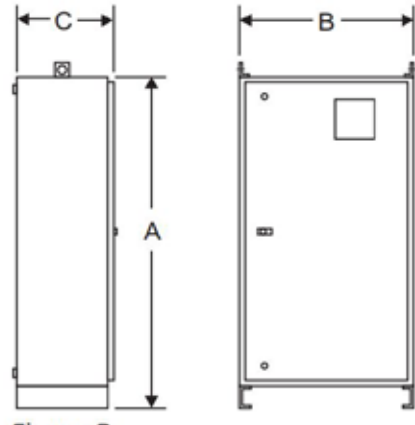


Figure B

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, 4X, 12, etc.) dimensions and layout may differ. Consult the ABB factory for details.
5. Normal and emergency may be ordered inverted on any switch. The load may be inverted 600-1200 amps. Consult the factory for details.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the ABB 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. Lug adapters for 3000-4000 amp limits may be staggered length for ease of entrance. Consult the ABB factory for details.
10. If cabinet has louvers must be clear for airflow with standard cable connections.
11. Consult the ABB factory for any custom cabinet requirements.

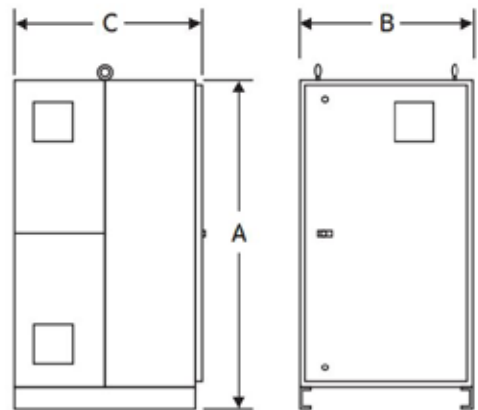


Figure C



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