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## Zenith ZBTED series

Bypass/Isolation Delayed Transition  
Automatic and Manual Transfer Switches



- Ideal for inductive (motors/transformers, UPS) mission critical loads
- Adjustable ATS time delay in center “off” position
- Bypass/Isolation for ease of ATS maintenance/testing without load loss of power
- Ratings 100 to 4000 amperes

<b>Ratings &amp; Construction</b>		
Ratings	Voltage, Ampere and Poleconfiguration per Order Code	Yes
Certifications	UL 1008, CSA C22.2	Yes
Certifications	Third-party Seismic Certification to IBC 2006, 3.2g @ Ip = 1.5 (operation during event)	Yes
Electrical Operator Mechanism	Momentarily energized, high-speed solenoid mechanism	Yes
Contacts	Mechanically-held with mechanical interlock to inhibit connection of both sources to the load	Yes
Contacts	ABB design and manufactured, silver tungsten alloy with separate arcing contacts on 600A and above ratings for high withstand and close-on capability	Yes
Neutral Pole (4 pole only)	Identical construction to phase poles with fully rated main and arcing contacts. Operation via same mechanism as phase poles to prevent sustained connection of source neutrals in separately derived systems, as last-break/first-make transfer.	No
<b>Controller</b>		
Construction	Dual-processor based, with dedicated processor for high-speed Serial or Ethernet communications	Yes
Source Sensing	Direct 120-690V sensing and software configuration of rated voltage and frequency without the need for potential transformers, step-down transformers or DIP switches	Yes
Control Wiring	All customer connections at one location. All signals in/out relay-isolated via DIN-mounted relay/terminal blocks. All control wiring via factory-installed wiring harnesses.	Yes
<b>Enclosure</b>		
Type	per Order Code	Yes
<b>Display, Sensing &amp; Time Delays</b>		
Display	¼ VGA color graphical with embedded 'HELP' menus	Yes
Annunciation	High intensity LED for Source Availability (2), Source Connected (2), Transfer Inhibit (not in Auto)	Yes
Source Fail/Restore	Independently adjustable pickup & dropout of 3-phase U/O voltage, U/O Freq, Volts Balance plus Phase Rotation	Yes
Time Delays	Gen start, Source 2 stabilize, S1 → S2 transfer center-off delay, Source 2 fail override, Retransfer to Source 1, S2 → S1 transfer center-off delay, Gen cool down, Independent settings for Fast Test, Time Delay for Generator Voltage Sag	Yes
Remote Access	All parameters locally (front USB port) or remotely (serial or Ethernet) Adjustable	Yes
<b>Control Group Options (see order code)</b>		
Group A	All standard features, Field re-programmable I/O (4 inputs, 4 outputs), Control Switches (Test with Load, Test no load, Fast Test, Alarm Reset, Auto/Man Re-transfer Source 1, Auto/Man Transfer both sources, Preferred Source select, Commit/No Commit Transfer to Gen, Time Delay Bypass	No
Group B	All features from “A” plus: 10 User-configurable Analog & 10 Digital Alarms, 20-channel data logger, 10-channel waveform capture, Auto Load Shed (with voltage, frequency, and kW triggers)	No
Group C	All features from “B” plus: 4 additional field programmable inputs (total 8 inputs, 8 outputs)	No
Group D	All features from “C” plus: 4 additional field programmable inputs (total 12 inputs, 12 outputs) & ABB Flexlogic™ user-configurable control logic	No
Group M	Manual ATS configuration	No
<b>Additional Standard Features</b>		
Engine Exerciser	Configurable Periodic Exerciser (7 Event Daily, Weekly, 14 or 28 day) or Clock Exerciser Type (21 Event, 365 day Programmable)	Yes
System Status Screen	Active state of switch, display of all time delays and alarm conditions	Yes
Event Recorder	256 Event, 1ms accuracy, clock sync via Network Time Protocol (NTP)	Yes
Outage & Test Report Screen	Date/time stamping of: outage or test event, start signal sent, Gen start time, connection to Gen, Max Gen Volts & Freq dip, return of utility, re-transfer to normal	Yes
External Power Supply	Standard 120VAC input for controller power and communication and 24 VDC input for remote control and annunciation when both sources de-energized	Yes
Flexible Feature Assignment	Field reassignable I/O for any/all control features	Yes
Programmable Center-Off Position	For transition of motor and regenerative loads	Yes
<b>Optional Features (see order code)</b>		
Serial Communications	High speed, up to 115k Baud Modbus RTU	No
Ethernet Communications	Fast Ethernet, (10/100 Mbit), Modbus TCP/IP	No
Power Quality Metering	True RMS metering, including THD% (up to 8 <sup>th</sup> order)	No
Load Shed	Ability to transfer to de-energized normal source or center position in event of generator overload	No
Integral Surge Protective Device (SPD)	Load-connected medium or high exposure type	No
Integral Battery Charger	3 or 10A, 12 or 24VDC type	No
Lugs	Compression lugs in lieu of standard mechanical lugs on 100A-1200A switches	No
Lugs	Mechanical or Compression lugs in lieu of standard rear-bus connection on 1600-4000A switches	No

# Order Code – Abbreviated Product Configuration

See full Product Brochure, Publication DEA-405, for full configuration.

<b>Z</b>	<b>D</b>														<b>X</b>
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

<b>1</b>	<b>Product Type</b>
Z2**	Bypass/Isolation Vertical Construction
Z3***	Bypass/Isolation Horizontal Construction
<b>2</b>	<b>Operation</b>
D	Delayed Transition
<b>3</b>	<b>Amperage</b>
C	100
D	150
F	225
G	260
I	400
J	600
K	800
L	1000
M	1200
N	1600
O	2000
P	2600
Q	3000
R	4000
<b>4</b>	<b># of Poles</b>
2	2 Pole
3	3 Pole
4	4 Pole
<b>5</b>	<b>Application</b>
S	Util-Gen
U	Util-Util
G	Gen-Gen
<b>6</b>	<b>Controller Language</b>
1	English
<b>7</b>	<b>NEMA Enclosure</b>
X	None (Open)
H	NEMA 1 w/Adapter Bay
I	NEMA 3R w/Adapter Bay
J	NEMA 3R/Heater & Thermostat/Adapter Bay
K	NEMA 4 w/Adapter Bay
L	NEMA 12 w/Adapter Bay
M	NEMA 4X w/Adapter Bay
<b>8</b>	<b>Control Group Options</b>
A	Group "A"
B	Group "B"
C	Group "C"
D	Group "D"
M	Group "M"

<b>9</b>	<b>Voltage Code*</b>
70	277/480V, 3PH, 4W, 60Hz
20	120/240V, 1PH, 3W, 60Hz
40	120/208V, 3PH, 4W, 60Hz
92	220/380V, 3PH, 4W, 50Hz
50	480V, 3PH, 3W, 60Hz
38	120/208/240V, 3PH, 4W, High-Leg Delta, 60Hz
30	240V, 3PH, 3W, 60Hz
31	208V, 3PH, 3W, 60Hz
61	347/600V, 3PH, 4W, 60Hz
<b>10</b>	<b>Lug Options</b>
X	Std lugs or Rear bus (per chart below) (see full product brochure for lug option details)
<b>11</b>	<b>Metering &amp; Accessories*</b>
X	None
A	Load Shed
D	PQ Metering
<b>12</b>	<b>Communications</b>
X	None
S	CCM S-Modbus RTU (Serial) communication module
E	CCM E Modbus TCP/IP (Ethernet) communication module plus Modbus RTU (Serial) communication module
<b>13</b>	<b>Ground Bus*</b>
X	None
1	Ground bus-Mech Lugs (Qty. 3) #14-1/0-GB1
2	Ground bus-Mech Lugs (Qty. 6) #8-1/0-GB2
<b>14</b>	<b>SPD (Load-Side Connected)*</b>
<b>100A - 1200A Rating</b>	
X	None
A	65kA
B	80kA
C	100kA
<b>1600A - 4000A Rating</b>	
X	None
D	100kA
E	150kA
F	200kA
G	300kA
<b>15</b>	<b>Battery Charger*</b>
X	None
1	Battery Charger-12 Volt-3 Amp
2	Battery Charger-12 Volt-10 Amp
<b>16</b>	
X	

**Note**

\*See full product brochure for other options

\*\*1600-3000 Amperage Excluded

\*\*\*Applicable to 1600-3000 Amperage

## ZBTED Model, Dimensions and Weights

Ampere Rating	Poles	NEMA 1 Enclosed			Reference Figure	Weight		Application Notes
		Height (A)	Width (B)	Depth (C)		Open Type	NEMA 1	
100, 150	2, 3					310 (141)	1280 (580)	
225, 260, 400	4	83 (2109)	30 (762)	28.5 (724)	A	380 (173)	1385 (628)	
600	3	90 (2286)	36 (914)	28.3 (737)	B	660 (299)	1435 (651)	1-7, 9
	4	90 (2286)	40 (1016)	28.3 (737)		770 (349)	1540 (699)	
800, 1000	3	90 (2286)	40 (1016)	28.3 (737)	B	765 (347)	1485 (674)	1-7, 9
1200	4	90 (2286)	46 (1168)	28.3 (737)		910 (413)	1590 (721)	
1600, 2000	3	80 (2023)	40.6 (1031)	64.6 (1640)	C	1978 (897)	4044 (1835)	1-6, 10
2600	4	80 (2023)	46.1 (1171)	64.6 (1640)		2275 (1032)	4431 (2010)	
3000	3	80 (2023)	40.6 (1031)	64.6 (1640)	C	2572 (1166)	4456 (2021)	1-6, 10
	4	80 (2023)	46.1 (1171)	64.6 (1640)		3049 (1383)	4977 (2258)	
4000	3	90 (2286)	47.5 (1206)	80.8 (2051)	D	4310 (1955)	4730 (2145)	1-6, 8, 10
	4	90 (2286)	54 (1372)	80.8 (2051)		5510 (2499)	5930 (2690)	

### 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 subject to change without notice.
4. NEMA 3R, 4, 4X and 12 enclosure dimensions may differ than NEMA 1 shown above. Consult the factory for details.
5. Special lug arrangements may require different enclosure dimensions. See full product brochure (DEA-405) for details.
6. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
7. Add 4" in height for removable lifting lugs.
8. Lug adapters for 3000-4000A limits may be staggered length for ease of entrance. Consult the factory for details.
9. 100-1200A standard configuration is top cable entry. 14" adapter bay is required for bottom cable entry. Consult the factory for details.
10. 1600-4000A switches have ventilation louvers on both sides and rear of enclosure. Louvers must be clear for airflow with standard cable connections.

### ZBTED Model – Delayed Transition Transfer/Bypass-Isolation Switches

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

### ABB Zenith Controls, Inc.

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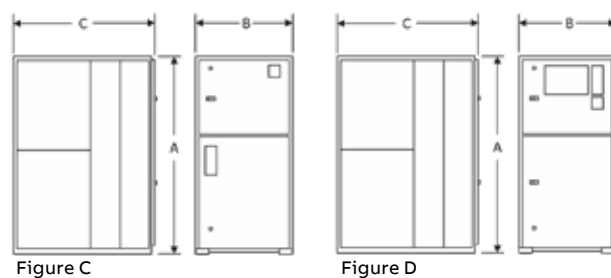
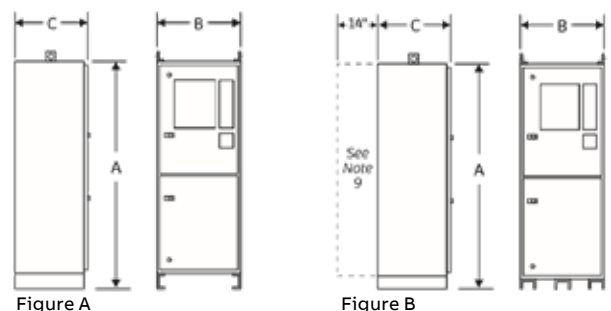
**24-hour support:**

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Specifications subject to change without notice.



### AL-CU UL Listed Mechanical Lugs

Switch Size Amps	Normal, Emergency & Load Terminals	
	Cables/Pole	Wire Ranges
<b>ZBTED</b>		
100, 150, 225	1	3/0 to 250 MCM
260	1	#4 to 600 MCM
400	1	#4 to 600 MCM
600	2	#2 to 600 MCM
800, 1000, 1200	4	#2 to 600 MCM
1600, 2000, 2600, 3000, 4000	*	*

### Notes

\*Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. See full product brochure (DEA-405) for option details.

1. Fully rated neutral provided on 3 phase, 4 wire system

### UL 1008 Withstand and Closing Ratings

Please refer to ABB Publication TB-1102.

