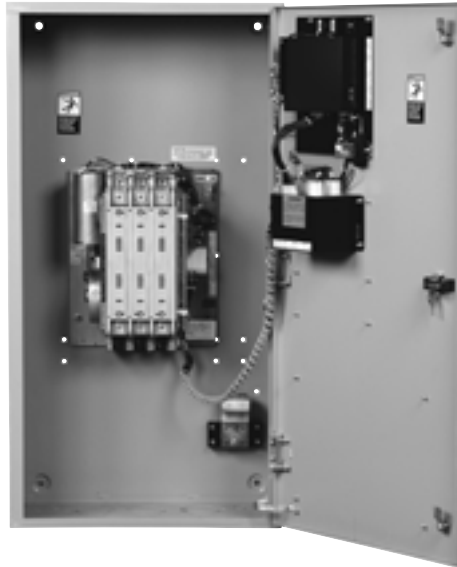




ZTG Series Automatic Transfer Switch



GE Zenith's ZTG Series switches are built for standard applications requiring the dependability and ease of operation found in a power contactor switch.

- Ratings 40 to 3000 amps (2, 3 or 4 poles)
- UL 1008 listed at 480 VAC
- CSA certified at 600 VAC (200-260 amp-480V)
- IEC listed at 480V
- Double throw, mechanically interlocked contactor mechanism
- Electrically operated, mechanically held
- Designed for emergency and standby applications
- Available in standard (ZTG) or delayed transition (ZTGD) models

ZTG switches are equipped with GE Zenith's next-generation MX150 microprocessor panel, which controls the operation and displays the status of the transfer switch's position, timers and available sources. As an embedded digital controller, the MX150 offers high reliability and ease of unattended operation across a range of applications. The MX150 features include:

- Timer and voltage/frequency settings adjustable without disconnection from the power section
- Built-in diagnostics with an LCD display for immediate troubleshooting

- LED/LCD indicators for ease of viewing and long life
- Nonvolatile memory—clock battery backup not required for standard switch operation
- Processor and digital circuitry isolated from line voltage
- Inputs optoisolated for high electrical immunity to transients and noise
- Communications header for network interface

Fully Approved

- UL, CSA and IEC listed
- Ringing wave immunity per IEEE 472 (ANSI C37.90A)
- Conducted and Radiated Emissions per EN55022 Class B (CISPR 11) (Exceeds EN55011 & MILSTD 461 Class 3)
- ESD immunity test per EN61000-4-2 (Level 4)
- Radiated RF, electromagnetic field immunity test per EN61000-4-3 (ENV50140) 10v/m
- Electrical fast transient/burst immunity test per EN61000-4-4
- Surge immunity test per EN61000-4-5 IEEE C62.41 (1.2 X 50ms, 5 & 8 kV)
- Conducted immunity test per EN61000-4-6 (ENV50141)
- Voltage dips and interruption immunity EN61000-4-11

Design and Construction Features

- Close differential 3 phase under-voltage sensing of the normal source—factory standard setting 90% pickup, 80% dropout (adjustable); under-frequency sensing of the normal source factory setting 95% pickup (adjustable)
- Voltage and frequency sensing of the emergency source—factory standard setting 90% pickup voltage, 95% pickup frequency (adjustable)
- Test switch (fast test/load/no load) to simulate normal source failure—automatically bypassed should the emergency source fail
- Type 1 enclosure is standard—also available in open style or Types 3R, 4 or 12

Standard Features and Options

Standard Features (MSTDG Option Pkg.)

6/P	Test Switch, Momentary
A3	Auxiliary Contact: Closed when the switch is in the Source 2 position (S2)
A4	Auxiliary Contact: Closed when the switch is in the Source 1 position (S1)
Calibrate	Capabilities are available for Frequency and AB, BC, CA Phase to Phase voltage for both Sources
CDT	Daily 7, 14, 28 timed exercise (CDT memory backup battery included), pushbutton/timer operation
E	Engine Start Contact
EL/P	Event Log of 16 Events that track date, time, reason and action taken
K/P	Voltage and Frequency Indication for S1 and S2
L	Indicating LED Pilot Lights: L1 Indicates switch in S2 position L2 Indicates switch in S1 position L3 Indicates S1 source available L4 Indicates S2 source available
P1	Time Delay to Engine Start
R50	In-Phase Monitor, self-adjusting
T	Time Delay on Retransfer to Normal: To delay retransfer to S1 (immediate retransfer on generator set failure).
J1E	Adjustable under frequency sensor for S2
R2E	Under voltage sensing of S2
S13	Microprocessor activated commit / no commit on transferring to S2.

U	Time Delay for Engine Cool Down: Allows engine to run unloaded after switch retransfer to S1
W	Time Delay on Transfer to Emergency: To delay transfer to S2 after availability
YEN	Pushbutton Bypass of T & W Timers
Q2	Peak Shave / Remote Load Test

When specified for use with a ZTGD Series delayed transition switch, the control panel also includes the following:

DT	Time Delay from Neutral Switch Position to S1 on Retransfer.
DW	Time Delay from Neutral Switch Position to S2
LN/P	Center-Off position/Off Delay Timing indicating lights

MX150 Control Panel



(Front View)

Additional Standard Features (MEXEG Option Pkg.)

A3	Additional Auxiliary Contact: Closed when the switch is in the S2 position
A4	Additional Auxiliary Contact: Closed when the switch is in the S1 position
CDP	Clock Exerciser Load/No Load (Replaces CDT)
VI	Voltage Imbalance Monitor (Three Phase)

NOTE:

For applications requiring additional options or other configurations, use GE Zenith ZTS Series switches as described in Bulletin O-5064.

Options

6A Test Switch, Maintained

6AP Test Switch, Maintained Programmable

A1 Auxiliary Contact, operates on Source 1 line failure

A1E Auxiliary Contact, operates on Source 2 line failure

A3 Auxiliary Contacts: Closed when the transfer switch is in Source 2 position.

A4 Auxiliary Contacts: Closed when the transfer switch is in Source 1 position.

A62 Sequential Universal Motor Load Disconnect Circuit. Normally closed Auxiliary contacts for Motor Loads. Open 0-60 seconds prior to transfer, after transfer, or both in either direction then reclose in timed sequence after transfer.

ATGEW Extended annual parts and labor warranty (1-4 years for a total of 5 years max.)

CTAP Alarm panel on transfer to emergency w/silence button & light

DS Inhibits transfer in either direction when in inhibit. Allows automatic operation when in Auto. (Standard on 800A and above)

HT Heater and Thermostat

M80 SERIES POWER MEASUREMENT METERS (Not available in NEMA 4 enclosure)

M80 Digital Meter w/Display of Amps, Volts, Frequency

M82A Digital Meter w/Display of Amps, Watts, Volts, Frequency, KVA, KVAR, PF, etc. with Modbus RS485 port.

M83A Digital Meter w/Display of Amps, Watts, Volts, Frequency, KVA, KVAR, PF, etc. Plus THD capability w/Modbus RS485 port

OCVR-1SG Lockable see-through microprocessor cover for NEMA3R or 12

OCVR-1SS Lockable see-through microprocessor and meters cover for NEMA3R or 12

T3/W3 Elevator Pre-Signal Auxiliary Contacts: Open 0-60 seconds prior to transfer to either direction, re-closes after transfer.

UMD Universal Motor Load Disconnect Circuit: Auxiliary Contact opens 0-5 minutes prior to transfer in either direction, re-closes after transfer. Can be configured by end user for Pre-transfer, Post-transfer, or both.

VI Voltage Imbalance Monitor (Three Phase)

ZNET Network communications interface card

Reference Charts

Testing Standards	
UL, CSA and IEC listed	UL 1008, CSA 22.2 No. 178, IEC 947-6-1
Ringing wave immunity	IEEE 472 (ANSI C37.90A)
Conducted and Radiated Emissions	EN55022 Class B (CISPR 11) (Exceeds EN55011 & MILSTD 461 Class 3)
ESD immunity test	EN61000-4-2 (Level 4)
Radiated RF, electromagnetic field immunity test	EN61000-4-3 (ENV50140) 10v/m
Electrical fast, transient/burst immunity test	EN61000-4-4
Surge immunity test	EN61000-4-5 IEEE C62.41 1.2 X 50µs, 5 & 8 kV
Conducted immunity test	EN61000-4-6 (ENV50141)
Voltage dips and interruption immunity	EN61000-4-11

AL/CU UL Listed Solderless Screw-Type Terminals for External Power Connections			
Switch Size (Amps)	Normal, Emergency and Load Terminals		
	Cables per Pole	Range of Wire Sizes	
40	1	#8 to 3/0 AWG	8-85 mm
80			
100			
150		#6 AWG to 250 MCM	13-127 mm
200, 225			
260			
400	#4 AWG to 600 MCM	21-304 mm	
600			
800, 1000, 1200	2	#2 AWG to 600 MCM	33-304 mm
1600, 2000, 2600, 3000	4		
	8	#2 AWG to 600 MCM	33-304 mm

Standard MX150 Control Setting Ranges				
	Control Function		Range	Factory Setting
MSTDG	Source 1 Line Sensing – Under-voltage	Dropout	75-98%	80%
		Pickup	85-100%	90%
	Source 2 Line Sensing – Under-voltage	Dropout	75-98%	80%
		Pickup	85-100%	90%
	Source 2 Line Sensing – Under-frequency	Dropout	88-98%	90%
		Pickup	90-100%	95%
	Time Delay – Engine Start	(Acc. P1)	0-10 seconds	3 seconds
	Time Delay – Engine Cool Down	(Acc. U)	0-60 minutes	5 minutes
	Time Delay – Transfer to Emergency	(Acc. W)	0-5 minutes	1 second
	Time Delay – Retransfer to Normal	(Acc. T)	0-60 minutes	30 minutes
	Time Delay – Motor Disconnect or Transfer Presignal	(Acc. UMD, or T3/W3)	0-60 seconds	20 seconds
Delayed Transition Time Delays	(DT, DW)	0-10 minutes	5 seconds	
MESEG	Event Exerciser	(CDT)	5-60min.-1,7,14 or 28 days load or no load	20 min. - 7 days no load
	Programmable Event Exerciser	(CDP)	365 day cycle, load or no load	0 min. - 7 days no load
	Voltage Imbalance	(VI)	5-20% nominal; 10-30 sec.	10% Fail, 8% Restore; 30 sec.
Options	Elevator Pre-Signal	(T3W3)	0-60 seconds	20 seconds
	Sequential Motor Load Disconnect	(A62)	0-10 hours	5 seconds
	Motor Load Disconnect	(UMD)	0-5 minutes	15 seconds

Z T G		A 0							
Base Model	Type	Control Panel	Config.	Ampere Size	Switched Poles	Enclosure Type	Operational Voltage	Accessories	
	0 0 0 Standard (Open Transition)	A 0 MX150 Microprocessor Control Unit	0 Utility - Generator	0 0 4 40 amps	B 2 Poles	N 0 1 Type 1 Enclosure	2 0 120/240V 1Ø, 3 wire, 60Hz	M S T D G	
	D 0 0 Delayed Transition		U Utility - Utility	0 0 8 80 amps	E 3 Poles	N 1 2 Type 12 Enclosure	2 1 120/208V 1Ø, 3 wire, 60Hz	M E X E G Then choose additional accessories	
			M Manual	0 1 0 100 amps	F 4 Poles	N 3 R Type 3R Enclosure	3 0 240V 3Ø, 3 wire, 60Hz	6A	
				0 1 5 150 amps		N 3 X Type 3X Enclosure	3 1 208V 3Ø, 3 wire, 60Hz	6AP	
				0 2 0 200 amps		N 0 4 Type 4 Enclosure	3 2 220V 3Ø, 3 wire, 50Hz	A1	
				0 2 2 225 amps		N 4 X Type 4X Enclosure	3 8 120/240V 3Ø, 4 wire, 60Hz	A1E	
				0 2 6 260 amps		X 0 0 Open Style Unit	4 0 120/208V 3Ø, 4 wire, 60Hz	A3	
				0 4 0 400 amps			4 1 120/208V 3Ø, 4 wire, 60Hz	A4	
				0 6 0 600 amps			5 0 127/220V 3Ø, 4 wire, 60Hz	A62	
				0 8 0 800 amps			5 1 480V 3Ø, 3 wire, 60Hz	ATGEW	
				1 0 0 1000 amps			5 2 440V 3Ø, 3 wire, 60Hz	CTAP	
				1 2 0 1200 amps			5 3 440V 3Ø, 3 wire, 50Hz	DS	
				1 6 0 1600 amps			6 0 440V 1Ø, 2 wire, 60Hz	HT	
				2 0 0 2000 amps			6 1 575V 3Ø, 3 wire, 60Hz	M80	
				2 6 0 2600 amps			7 0 347/600V 3Ø, 4 wire, 60Hz	M82A	
				3 0 0 3000 amps			9 0 277/480V 3Ø, 4 wire, 60Hz	M83A	
							9 1 240/416V 3Ø, 4 wire, 60Hz	OCVR-1SG	
							9 2 220/380V 3Ø, 4 wire, 60Hz	OCVR-1SS	
							9 3 220/380V 3Ø, 4 wire, 50Hz	T3/W3	
								UMD	
								VI	
								ZNET	
								None	

Switch Types

- Standard:** Unless otherwise noted, the standard switch with quick transfer will be supplied.
- Delayed Transition:** When ordered as the ZTG_D, the delayed transition switch offers time delay during transfer from one position to the other. This is primarily for transfer of large motor or inductive loads. The operation of the delayed transition switch 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.

Example

ZTGD00A0040E-N0140MSTDG

This number string shows the correct format for a ZTG Series Automatic Transfer Switch with delayed transition, an MX150 microprocessor control unit, Utility - Generator, 400 amps, 3 pole, NEMA Type 1 enclosure, 120/208V 3Ø, 4 wire, 60 Hz system with the standard group of accessories.

Withstand Current Ratings per UL 1008

ZTG Switch Ratings (Amps)	Maximum Circuit Amps When Used With		ZTGD Switch Ratings (Amps)	Maximum Circuit Amps When Used With	
	Current Limiting Fuse ZTG/ZTGD	Specific Coordinated Breaker Rating		Specific Coordinated Breaker Rating	
40, 80, 100, 150, 200, 225	200,000	30,000	40, 80, 100, 150, 225, 260, 400, 600	50,000	
260		35,000			
400 - 600		50,000			
800		65,000	800	65,000	
1000, 1200		85,000	1000, 1200	85,000	
1600, 2000, 2600, 3000		100,000	1600, 2000, 2600, 3000	100,000	

Dimensional Specifications

ZTG and ZTGD Model Transfer Switches								
Model	Ampere Rating	Poles	NEMA 1 Enclosed				Weight	App. Notes
			Height (A)	Width (B)	Depth (C)	Ref. Fig.	NEMA 1	
ZTG	40, 80, 100	2, 3	24 (61)	18 (46)	11.13 (28)	A	57 (26)	1 – 6
	150, 200	4	24 (61)	18 (46)	11.13 (28)	A	60 (27)	
	225	2, 3	36 (91)	24 (61)	14.13 (36)	A	150 (68)	1 – 6
	300, 400	4	46 (117)	24 (61)	14.13 (36)	A	180 (82)	
ZTGD	40, 80, 100, 150, 225,	2, 3	46 (117)	24 (61)	14.13 (36)	A	180 (82)	1 – 5
	260, 400	4	46 (117)	24 (61)	14.13 (36)	A	185 (84)	
							220 (100) 230 (102)	
ZTG & ZTGD	600	2, 3	66 (168)	24 (61)	19.75 (50)	B	400 (181)	1 – 5, 7
		4	66 (168)	24 (61)	19.75 (50)	B	450 (204)	
	800, 1000, 1200	2, 3	74 (188)	30 (76)	19.75 (50)	B	475 (215)	1 – 5, 7
	1600, 2000 2600, 3000	4	74 (188)	40 (102)	19.75 (50)	B	560 (254)	
	3	90 (229)	30 (76)	48 (122)	C	1010 (458)	1 – 5,	
	4	90 (229)	36 (91)	48 (122)	C	1160 (526)	7, 8	

Application Notes:

1. Metric dimensions (cm) and weights (kg) shown in parentheses adjacent to English measurements.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, lights, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
5. Special enclosure (NEMA 3R, 4, 12, etc.) dimensions and layouts may differ. Consult factory for details.
6. ZTG 40-200 may require larger enclosure depending on options specified. Consult factory for details.
7. Add 3" in height for lifting eyes.
8. Ventilation louvers on rear of enclosure at 3000 amps. One side or rear must be clear for airflow with standard cable connections.

Reference Figures

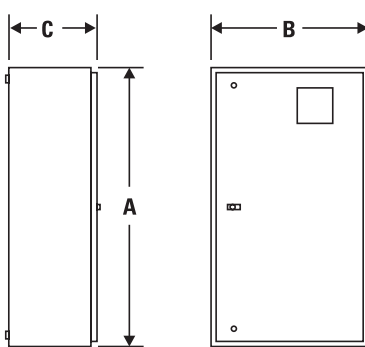


Figure A

ZTG Series Transfer Switch
(40-400 amp)

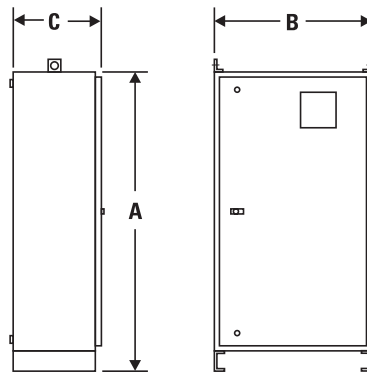


Figure B

ZTG Series Transfer Switch
(600-1200 amp)

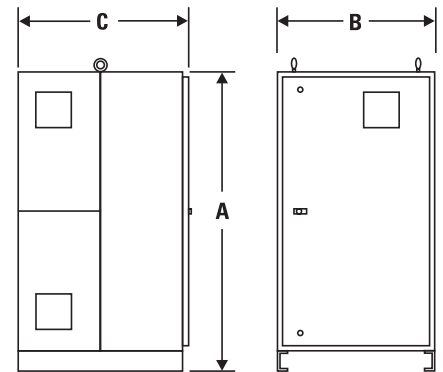


Figure C

ZTG Series Transfer Switch
(1600-3000 amp)



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