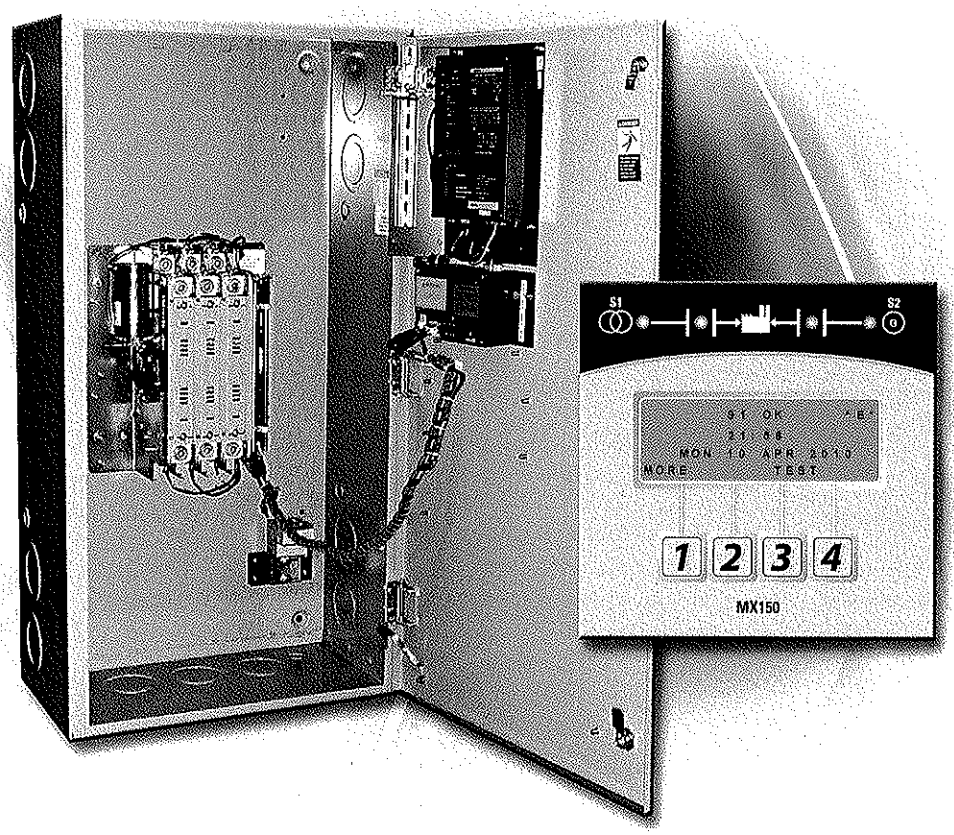
GE Energy
Digital Energy

Zenith ZTG Series

Low-Voltage Automatic Transfer Switches



GE's Zenith 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 amps - 480V)
- NFPA 70, 99, 101 and 110
- IEEE 446 and 241
- NEC 517, 700, 701 and 702
- NEMA ICS2-447
- UL 508 and 50
- ANSI C33.76
- ICS 6
- NEMA 250
- Equipment (*Controls and Power Section*) **Seismic Test Qualified** to:
  - ✓ IBC-2006
  - ✓ IEEE-693-2005
- 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's Zenith 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 network interface



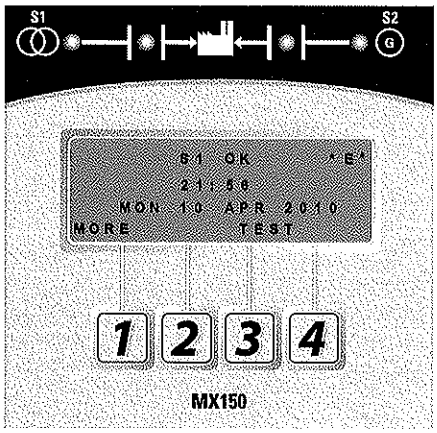
Fully Approved

- UL and CSA listed
- NFPA 70, 99 101 and 110
- IEEE 446 and 241
- NEC 517, 700, 701 and 702
- NEMA ICS2-447
- UL 508 and 50
- ANSI C33.76
- ICS 6
- NEMA 250
- IBC-2006
- IEEE-693-2005
- Ringing wave immunity per IEEE 472 (ANSI C37.90A)
- Conducted and Radiated Emissions per EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
- ESD immunity test per EN61000-4-2 Class B (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 50µs, 0.5 & 4 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 Source 1 (normal)—factory standard setting 90% pickup, 80% dropout (adjustable); under-frequency sensing of Source 1 factory setting 95% pickup (adjustable)
- Voltage and frequency sensing of the Source 2 (emergency)—factory standard setting 90% pickup voltage, 95% pickup frequency (adjustable)
- Test switch (fast test/load/no load) to simulate Source 1 (normal) failure—automatically bypassed should the Source 2 (emergency) fail
- NEMA Type 1 enclosure is standard—also available in open style or NEMA Types 3R, 4, 4X or 12

MX150 Control Panel



Front View

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
J1E	Adjustable under frequency sensor for S2
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
Q2	Peak Shave / Remote Load Test
R50	In-Phase Monitor, self-adjusting
T	Time Delay on Retransfer to Normal: To delay retransfer to S1 (immediate retransfer on S2 failure)
R2E	Under voltage sensing of S2
S13	Microprocessor activated commit / no commit on tranferring 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

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

Additional Standard Features (MEXEG Option Pkg.)

CDP	Clock Exerciser Load/No Load (Replaces CDT Exerciser Option)
VI	Voltage Imbalance Monitor (Three Phase)

Zenith ZTG Series Ordering Information

Z						A	0											Z	E	C			Z	V	C					
MODEL/TYPE						CONTROL PANEL		APPLICATION	AMPERE SIZE			SWITCHED POLES			ENCLOSURE TYPE			OPERATIONAL VOLTAGE			ACCESSORIES			

MODEL/TYPE

- Z T G 0 0 0 — Standard (Open Transition)
- Z T G D 0 0 — Delayed Transition

CONTROL PANEL

- A 0 — Entelli-Switch 150 Microprocessor Control Unit

APPLICATION

- 0 — Utility - Generator
- U — Utility - Utility
- M — Manual Transfer

AMPERE SIZE

- 0 0 4 — 40 amps
- 0 0 8 — 80 amps
- 0 1 0 — 100 amps
- 0 1 5 — 150 amps
- 0 2 0 — 200 amps
- 0 2 2 — 225 amps
- 0 2 6 — 260 amps
- 0 4 0 — 400 amps
- 0 6 0 — 600 amps
- 0 8 0 — 800 amps
- 1 0 0 — 1000 amps
- 1 2 0 — 1200 amps
- 1 6 0 — 1600 amps
- 2 0 0 — 2000 amps
- 2 6 0 — 2600 amps
- 3 0 0 — 3000 amps

SWITCHED POLES

- B — 2 Poles
- E — 3 Poles
- F — 4 Poles

ENCLOSURE TYPE

- 0 1 — Type 1 Enclosure
- 1 2 — Type 12 Enclosure
- 3 R — Type 3R Enclosure
- 4 0 — Type 4 Enclosure
- 4 X — Type 4X Enclosure
- 0 0 — Open Style Unit

OPERATIONAL VOLTAGE

- A B — Consult Table Below

A	B	Voltage	Phase	Config.	Hz
1	0	120	1	2 wire	60
2	0	120/240	1	3 wire	60
2	2	110/220	1	3 wire	50
3	0	240	3	3 wire	60
3	1	208	3	3 wire	60
3	2	220	3	3 wire	50
3	5	139/240	3	4 wire	60
4	0	120/208	3	4 wire	60
4	1	127/220	3	4 wire	60
4	2	127/220	3	4 wire	50
5	0	480	3	3 wire	60
5	1	440	3	3 wire	60
5	2	440	3	3 wire	50
5	5	460	1	3 wire	50
5	7	480	1	2 wire	60
5	8	254/440	3	4 wire	60
6	0	575	3	3 wire	60
6	1	347/600	3	4 wire	60
6	3	575	1	2 wire	60
7	0	277/480	3	4 wire	60
7	1	277	1	2 wire	60
7	4	266/460	3	4 wire	60
7	5	460	3	3 wire	60
8	2	380	1	2 wire	50
9	0	240/416	3	4 wire	60
9	1	220/380	3	4 wire	60
9	2	220/380	3	4 wire	50
9	3	240/416	3	4 wire	50
9	7	380	3	3 wire	60

Note: Operating voltage must be specified at time of order. Only the most common voltages are shown above.

ACCESSORIES

- M S T D
- M E X E
- M A N O

Then choose additional accessories

- 6A
- 6AP
- A1
- A1E
- A3
- A4
- A62
- ATGEW-X
- CTAP
- DS
- HT
- LCM
- M90
- M90A
- M90B
- M91
- M91A
- M91B
- MCM
- OCVR-1SG
- OCVR-1SS
- T3/W3
- UMD
- VI
- None

Switch Types

- **Standard:** Unless otherwise noted, the standard switch with quick transfer will be supplied.
- **Delayed Transition:** When ordered as the ZTGD, 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

ZTG000A00040F-ZEC01ZVC40MSTD

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

UL 1008 Withstand and Closing Ratings

Please refer to GE Publication TB-1102.

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 pior to transfer, after transfer, or both in either direction then reclose in timed sequence after transfer.
ATGEW-X	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
LCM	LonWorks Communication Module
MCM	Modbus RTU Communication Module

M90 Series Power Measurement Meters (Not available in NEMA 4 enclosure)

M90	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3 phase. Standard Modbus RTU RS485 communications capability. 40 - 1200 Amps.
M90A	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Modbus RS485 Serial Communications
M90B	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Ethernet TCP/IP Communications
M91	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. Front IrDA Port Laptop Connection. Standard Modbus RTU RS485 or DNP 3.0 communications capability.
M91A	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Modbus RS485 Serial Communications
M91B	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Ethernet TCP/IP Communications

OCVR-1SG	Lockable see-through microprocessor cover for NEMA 3R or 12
OCVR-1SS	Lockable see-through microprocessor and meters cover for NEMA 3R 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)

NOTE:
For additional options or other configurations, contact the GE factory.

Reference Charts

Testing Standards	
UL and CSA listed	UL 1008, CSA 22.2 No. 178
Ringing wave immunity	IEEE 472 (ANSI C37.90A)
Conducted and radiated emissions	EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
ESD immunity test	EN61000-4-2 Class B (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, 0.5 to 4 kV
Conducted immunity test	EN61000-4-6 (ENV50141)
Voltage dips and interruption immunity	EN61000-4-11

ZTG AL/CU UL Listed Solderless Screw-Type Terminals for External Power Connections *			
Switch Size (Amps)	Normal, Emergency and Load Terminals		
	Cables per Phase & Neutral	Range of Wire Sizes	
40	1	#8 to 3/0	8-85 mm²
80			
100		#6 to 250 MCM	13-127 mm²
150			
200, 225			
260		#6 to 350 MCM	13-177 mm²
400		#4 to 600 MCM	21-304 mm²
600	2	#2 to 600 MCM	33-304 mm²
800, 1000, 1200	4		
1600, 2000, 2600, 3000	8	#2 to 600 MCM	33-304 mm²

* For ZTGD Series data, contact the GE factory

Standard MX150 Control Setting Ranges			
	Control Function	Range	Factory Setting
MSTDG	Source 1 Line Sensing – Under-voltage Dropout/Pickup	75-98% 85-100%	80% 90%
	Source 2 Line Sensing – Under-voltage Dropout/Pickup	75-98% 85-100%	80% 90%
	Source 2 Line Sensing – Under-frequency Dropout/Pickup	88-98% 90-100%	90% 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 Source 2 (Acc. W)	0-5 minutes	1 second
	Time Delay – Retransfer to Source 1 (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
	Event Exerciser (CDT)	5-60 min.-1,7,14 or 28 days load or no load	20 min. - 7 days no load
MEXEG	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 (T3/W3)	0-60 seconds	20 seconds
	Sequential Motor Load Disconnect (A62)	0-5 minutes	20 seconds
	Motor Load Disconnect (UMD)	0-60 seconds	5 seconds

ZTG and ZTGD Model, Dimensions and Weight									
Model	Ampere Rating	Poles	NEMA 1				Weight		Application Notes
			Height (A)	Width (B)	Depth (C)	Ref. Figure	Open Type	NEMA 1	
ZTG	40, 80 100, 150 200	2, 3	24 (61)	18 (46)	11 (28)	A	14 (6)	69 (31)	1 - 6
		4					20 (9)	75 (34)	
	225	2, 3	46 (117)	24 (61)	14 (36)		59 (27)	69 (31)	1 - 5
		4					70 (32)	75 (34)	
	260	2, 3					59 (27)	114 (52)	
		4					70 (32)	125 (57)	
	400	2, 3					59 (27)	168 (76)	
		4					70 (32)	180 (82)	
	600	2, 3	66 (168)	24 (61)	19.5 (50)	B	71 (32)	224 (102)	1 - 5, 7
		4					81 (37)	214 (97)	
	800	2, 3	74 (188)	40 (102)	19.5 (50)		190 (86)	460 (209)	
		4					210 (95)	490 (222)	
	1000, 1200	2, 3					190 (86)	475 (216)	
		4					210 (95)	560 (254)	
	1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	345 (156)	1030 (467)	1 - 5, 7-8
		4					450 (204)	1180 (535)	
	2600, 3000	3					465 (211)	1150 (522)	
		4					670 (304)	1400 (635)	
ZTGD	40, 80 100, 150 200, 225	2, 3	46 (117)	24 (61)	14 (36)	A	18 (8)	127 (58)	1 - 6
		4					24 (11)	133 (60)	
	260, 400	2, 3					65 (29)	176 (80)	1 - 5
		4					76 (34)	188 (85)	
	600	2, 3	66 (168)	24 (61)	19.5 (50)	B	77 (35)	221 (100)	1 - 5, 7
		4					87 (39)	230 (104)	
	800, 1000, 1200	2, 3	74 (188)	40 (102)	19.5 (50)		210 (95)	475 (215)	
		4					230 (104)	560 (254)	
	1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	365 (166)	1030 (467)	1 - 5, 7-8
		4					470 (213)	1180 (535)	
	2600, 3000	3					485 (220)	1150 (522)	
		4					690 (313)	1400 (635)	

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, 4X, 12, etc.) dimensions and layouts may differ. Consult the GE factory for details.
6. A ZTG(D) 40-225A, when ordered with the following options, will require a larger enclosure: A62(T), Digital Meter, HT, OCVR-1SG, OCVR-1SS. Contact the GE factory for dimensions.
7. Add 3" in height for removable lifting eyes.
8. Ventilation louvers on side and rear of enclosure at 1600-3000 amps. One set of louvers must be clear for airflow with standard cable connections.

Reference Figures

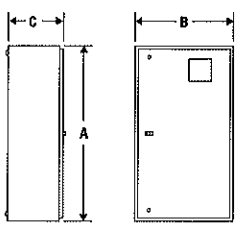


Figure A

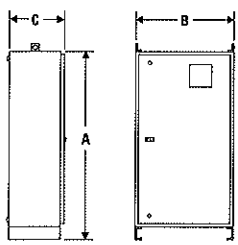


Figure B

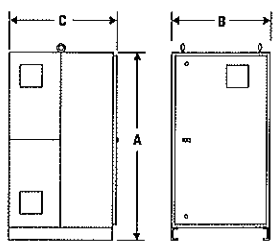


Figure C