



ZTGSE / ZTGDSE

Service Entrance Automatic Transfer Switches

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Introduction

While providing the functionality of an automatic transfer switch, the ZTGSE Series integrate the utility circuit breaker, optional transient voltage surge suppression and power monitor into one simple coordinated package.

- Suitable for use as Service Entrance equipment.
 - Ratings 40 to 800 amps (2, 3 or 4 pole) and 1000-3000 amps (3 or 4 pole)
 - UL 1008 listed at 480 VAC
 - Double throw, mechanically interlocked contactor mechanism.
 - Electrically operated, mechanically held.
 - Designed for emergency and standby applications.
 - Optional integrated load center for multiple loadside connections available up to 240 volts.
 - Additional options include integrated battery charger, GFP, shunt trip selector, power monitor and integrated TVSS.
 - Available with delayed transition feature (ZTGDSE).
- 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.

Features and Benefits

ZTGSE Series switches are equipped with GE Zenith's 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:



GE ZTGSE Series Transfer Switch rated 480 VAC, 600 Amps with optional shunt trip selector and digital multifunction meter.



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Fully Approved

- UL 891, UL 1008, CSA 22.2
- 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 (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 to 4 kV).
- Conducted immunity test per EN61000-4-6 (ENV50141).
- Voltage dips and interruption immunity EN61000-4-11.

Design and Construction Features

- Includes integrated and pre-wired (Normal) Source 1 molded case circuit breaker (2 or 3 pole) for 40-800 amps, insulated case circuit breaker (3 pole) for 1000-3000 amps
- Includes mechanical lug connections for cables.
- Close differential 3 phase under-voltage sensing of Source 1—factory standard setting 90% pickup, 80% dropout (adjustable); under-frequency sensing of Source 1 factory setting 95% pickup (adjustable).
- Voltage and frequency sensing of Source 2—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 Source 2 fail.
- NEMA Type 1 enclosure is standard with optional NEMA 3R available.
- Ground fault protection (GFP) is standard on 1000-3000 Amp and optional on 40-800 Amp.
- Disconnect link on Neutral and Ground.

Key Accessories



Closed View

1. GE Power Sensing Meter
2. Shunt Trip Circuit
3. MX150 Microprocessor Controller
4. Service Disconnect Breaker
5. NEMA 1 Enclosure

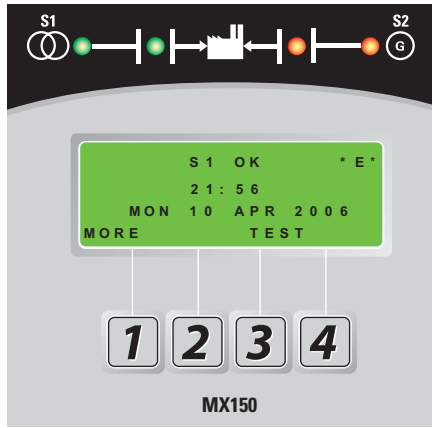


Open View

1. Current Transformers
2. Power Panel (2-pole shown)
3. Generator Battery Charger
4. MX150 Microprocessor Controller
5. Shunt Trip Circuit
6. GE Power Sensing Meter
7. GE PowerBreak™ Service Disconnect Breaker
8. Neutral Lugs
9. GE Tranquell Transient Voltage Surge Suppressor
10. Ground Bus

ZTGSE 600
Amp Shown

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
GFP	Ground fault protection, includes electronic trip, long time, short time and instantaneous trip. (Standard for 1000 - 3000 Amps)
J1E	Adjustable under frequency sensor for S2
K/P	Voltage and Frequency Indication for S1 and S2
L	Indicating LED Pilot Lights: <ul style="list-style-type: none"> 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
R2E	Under voltage sensing of S2
R50	In-Phase Monitor, self-adjusting
S13	Microprocessor activated commit / no commit on transferring to S2
T	Time Delay on Retransfer to Normal: To delay retransfer to S1 (immediate retransfer on generator set failure)
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 ZTGDSE 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.)

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)



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ZTG(D)SE Transfer Switch 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-X	Extended annual parts and labor warranty (1-4 years for a total of 5 years max.)
BB	Auxiliary Contact, circuit breaker position two form C
BC12	Generator battery charger, 12 VDC, 3 Amp
BC24	Generator battery charger, 24 VDC, 3 Amp
CTAP	Alarm panel on transfer to emergency w/silence button & light
ECM	Ethernet Converter Module
GFP	Ground fault protection, includes electronic trip, long time, short time and instantaneous trip. (40 - 800 Amps)
HT3	Heater and Thermostat
LCM	Lonworks communications interface card

M90 SERIES POWER MEASUREMENT METERS (Not available in NEMA 4 enclosure)

M90	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factor 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
MCM	Modbus RTU communications interface card
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
STS	Shunt trip selector switch, Source 1 service entrance. Includes position indicating lamps and generator start inhibit circuit. Standard on NEMA 3R enclosures.
T3/W3	Elevator Pre-Signal Auxiliary Contacts: Open 0-60 seconds prior to transfer to either direction, re-closes after transfer.
TVSSN	Transient Voltage Surge Suppressor, installed on normal side 100kA per mode.
TVSSL	Transient Voltage Surge Suppressor, installed on load side 100kA per mode.
TVSSE	Transient Voltage Surge Suppressor, installed on emergency side 100kA per mode.
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 Zenith factory.



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Testing Standards	
UL, CSA	UL 1008, UL 891, CSA 22.2
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

AL/CU UL Listed Solderless Screw-Type Terminals for External Power Connections							
	Switch Size (Amps)	Source 1 Terminals (MCCB)			Source 2 & Load Terminals (ATS)		
		Cables per Pole	Range of Wire Sizes		Cables per Pole	Range of Wire Sizes	
ZTGSE	40, 80	1	#12 - 3/0	3 - 85 mm ²	1	#8 - 3/0	8 - 85 mm ²
	100, 150	1	#8 - 350 MCM	8 - 177 mm ²	1	#8 - 3/0	8 - 85 mm ²
	200	1	#8 - 350 MCM	8 - 177 mm ²	1	#6 - 250 MCM	13 - 127 mm ²
	225	1 or 2	(2) 2/0 - 500 MCM or (1) #6 - 600 MCM	(2) 67 - 253 mm ² or (1) 13 - 304 mm ²	1	#6 - 250 MCM	13 - 127 mm ²
	260				1	#6 - 350 MCM	13 - 177 mm ²
	400	3	3/0 - 500 MCM	85 - 253 mm ²	1 or 2	(1) #4 - 600 MCM or (2) 1/0 - 250 MCM	(1) 21 - 304 mm ² or (2) 53 - 127 mm ²
	600						
	800	4	250 - 500 MCM	127 - 253 mm ²	4	#2 - 600 MCM	33 - 304 mm ²
ZTGDSE	40, 80	1	#12 - 3/0	3 - 85 mm ²	1	#8 - 3/0	8 - 85 mm ²
	100, 150, 200	1	#8 - 350 MCM	8 - 177 mm ²	1 or 2	(1) #4 - 600 MCM or (2) 1/0 - 250 MCM	(1) 21 - 304 mm ² or (2) 53 - 127 mm ²
	225, 260, 400	1 or 2	(2) 2/0 - 500 MCM or (1) #6 - 600 MCM	(2) 67 - 253 mm ² or (1) 13 - 304 mm ²			
	600	3	3/0 - 500 MCM	85 - 253 mm ²	2	#2 - 600 MCM	33 - 304 mm ²
	800	4	250 - 500 MCM	127 - 253 mm ²	4	#2 - 600 MCM	33 - 304 mm ²

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 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
	Event Exerciser	(CDT)	5-60min.-1,7,14 or 28 days load or no load	20 min. - 7 days no load
MESEG	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

Dimensional Specifications

ZTGSE & ZTGDSE Dimensions										
Amp Rating	Poles	NEMA 1 Enclosure				NEMA 3R Enclosure				App. Notes
		H	W	D	Fig.	H	W	D	Fig.	
40-80	2, 3, 4	51(130)	28(71)	15.5(41)	A	51(130)	29(74)	20(51)	A	1 - 5
100-200	2, 3, 4	51(130)	28(71)	16(41)	A	51(130)	29(74)	20(51)	A	1 - 5
225	2, 3, 4	51(130)	28(71)	16(41)	A	51(130)	29(74)	20(51)	A	1 - 5
260	2, 3, 4	51(130)	28(71)	16(41)	A	51(130)	29(74)	20(51)	A	1 - 5
400	2, 3, 4	51(130)	28(71)	16(41)	A	51(130)	29(74)	20(51)	A	1 - 5
600	2, 3, 4	73(185)	34(86)	20(51)	B	73(185)	34(86)	24(61)	B	1 - 6
800	2, 3	73(185)	34(86)	20(51)	B	73(185)	34(86)	24(61)	B	1 - 6
	4	73(185)	40(102)	20(51)	B	73(185)	40(102)	24(61)	B	1-4, 6
1000-3000	3, 4	90(229)	40(102)	50(127)	C	90(229)	40(102)	55(140)	D	1-4, 7-9

Weights				
Model	Amp Rtg	Poles	NEMA 1 Wt.	NEMA 3R Wt.
ZTGSE	40-80	2	157(71)	212(96)
		3	159(72)	214(97)
		4	163(74)	218(99)
	100-200	2	162(74)	217(99)
		3	164(75)	219(99)
		4	168(76)	223(101)
	225	2	169(77)	224(102)
		3	171(78)	226(103)
		4	175(79)	230(104)
	260	2	178(81)	233(106)
		3	183(83)	238(108)
		4	187(85)	242(110)
	400	2	254(115)	309(140)
		3	265(120)	320(145)
		4	289(131)	344(156)
	600	2	467(212)	552(250)
3		483(219)	568(257)	
4		512(232)	597(271)	
800	2	567(257)	652(296)	
	3	577(262)	662(300)	
	4	662(300)	767(348)	
1000/1200	3	1690(766)	1990(901)	
	4	1710(775)	2010(911)	
1600/2000	3	2355(1067)	2655(1203)	
	4	2455(1112)	2755(1248)	
2600/3000	3	2475(1121)	2775(1257)	
	4	2675(1212)	2975(1347)	
ZTGDSE	40-400	2	262(119)	317(144)
		3	273(124)	328(149)
		4	296(134)	351(159)
	600	2	475(215)	560(254)
		3	491(222)	576(261)
		4	520(236)	605(274)
	800	2	570(259)	655(297)
		3	580(263)	665(302)
		4	665(302)	770(349)
	1000/1200	3	1690(766)	1990(901)
		4	1710(775)	2010(911)
	1600/2000	3	2355(1067)	2655(1203)
4		2455(1112)	2755(1248)	
2600/3000	3	2475(1121)	2775(1257)	
	4	2675(1212)	2975(1347)	

Reference Figures

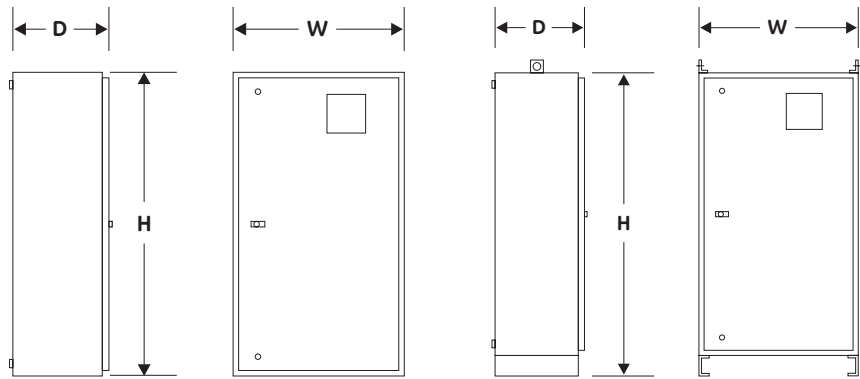


Figure A
ZTGSE Series Transfer Switch
(40-400 Amp)

Figure B
ZTGSE Series Transfer Switch
(600-800 Amp)

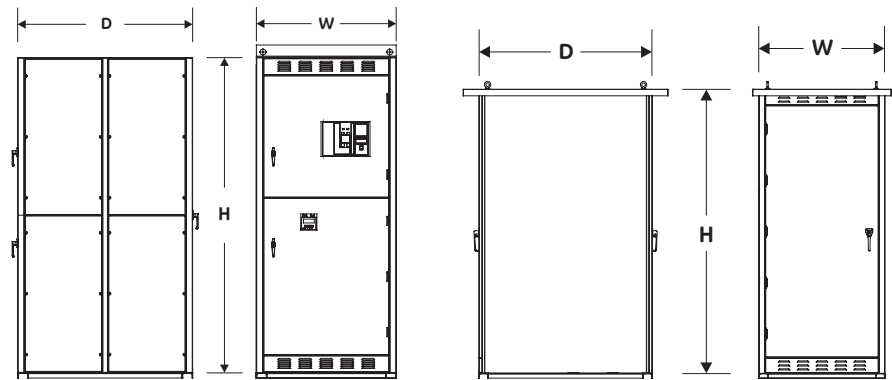
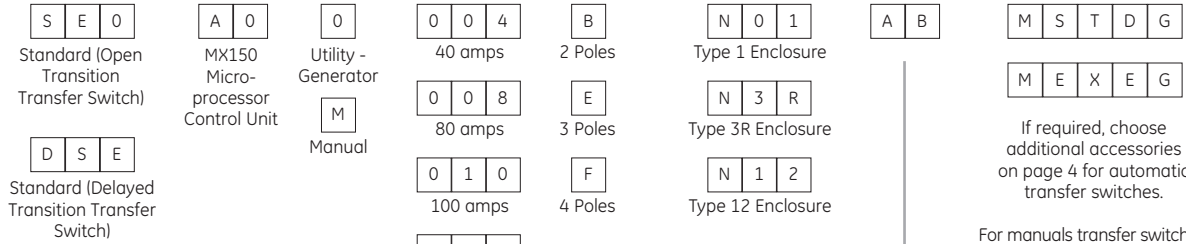
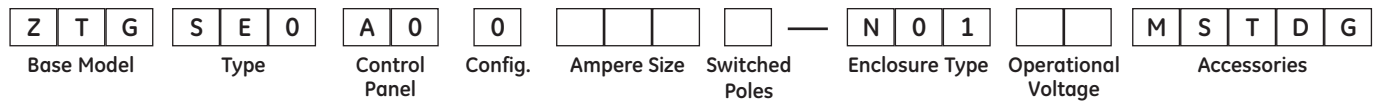


Figure C
ZTGSE Series Transfer Switch
(1000-3000 Amp) NEMA 1

Figure D
ZTGSE Series Transfer Switch
(1000-3000 Amp) NEMA 3R

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. Add 4" in depth for NEMA 3R enclosure.
6. Add 3" in height for lifting eyes.
7. NEMA 1 and 3R - Add 3 1/2" in height for lifting eyes, plus 1 1/2" for base (total 5" additional).
8. NEMA 3R - Add 10" depth, plus 4" width for top cover.
9. Removable side covers permit mounting against wall (no rear access required).



Example

ZTGSE0A0040E-N0140MSTDG

This number string shows the correct format for a ZTGSE Series Automatic Transfer Switch with an MX150 microprocessor control unit, Utility - Generator application, 400 amps, 3 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 Zenith Controls Bulletin TB-1102.

* Available in 3 or 4 pole only

A	B	Voltage	Phase	Config.	Hz
1	0	120	1	2 wire	60
2	0	120/240	1	3 wire	60
2	1	120/208	1	3 wire	60
3	0	240	3	3 wire	60
3	1	208	3	3 wire	60
3	2	220	3	3 wire	50
3	3	120/240	3	4 wire	50
3	4	110/220	3	4 wire	60
3	5	139/240	3	4 wire	60
3	8	120/240	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
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	0	120/240	2	4/5 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: Will need to specify with order the operating voltage. Only the most common ones are shown here.



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Extensive Customer Service and Support

Supported by a worldwide network of factory-trained Authorized Service Centers, our Technical Service Representatives can provide you with field service, equipment parts and preventive maintenance.

Because emergency power systems are required to operate under the most adverse circumstances, site personnel may be called upon at any time to make decisions regarding the operation of the system, therefore training of these personnel is critical to the future of any installation.

GE Zenith Controls offers a variety of training options including on-site classes for project personnel, factory instruction on your equipment prior to shipment and service schools covering transfer switches and switchgear systems.

Product Overview

When you purchase emergency power equipment, reliability and quality are a necessity. GE Zenith Controls is committed to providing the highest level of quality demanded by the industry. Our complete product line will allow you to specify a total power management system while maintaining overall compatibility and the most comprehensive warranty in the industry.

Committed to the Customer

All team members at GE Zenith are aware of the critical situations in which our products are called upon to perform. With that understanding comes an obligation beyond merely fulfilling an order or turning out a product. Serving that obligation is our mission at GE Zenith Controls.

GE Zenith's team works with you from the first phone call through completed start-up. Then, working hand in hand with the consulting engineer, the contractor and the facility owner/operator, we'll ensure that the system fulfills both current and future needs.

"Commitment to our customer" has been GE Zenith's driving force for more than 75 years in the power control industry. This same sense of purpose and responsibility will continue as we address future power control challenges.



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