

Zenith ZTGSE/ZTGDSE

Service Entrance Rated Automatic Transfer Switches

Introduction

While providing the functionality of an automatic transfer switch (ATS), ABB's Zenith ZTGSE Series integrates 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
- UL 891 listed and labeled suitable for use as Service Equipment
- Double throw, mechanically interlocked ATS contactor mechanism
- Electrically operated, mechanically held ATS
- 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, Ground Fault Protection (GFP), shunt trip selector, power monitor and integrated TVSS
- Available with delayed transition feature (ABB's Zenith ZTGDSE)

Features and Benefits

ABB's Zenith ZTGSE Series switches are equipped with ABB'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



ZTGSE Series Transfer Switch rated 480 VAC, 1200 Amps, NEMA 1

- Processor and digital circuitry isolated from line voltage
- Inputs optoisolated for high electrical immunity to transients and noise
- Communications network interface (optional)

Zenith ZTGSE/ZTGDSE

Service Entrance Rated Automatic Transfer Switches

Fully Approved

- UL 891, UL 1008
- 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
- NFPA 70, 99, 101, 110

Design and Construction Features

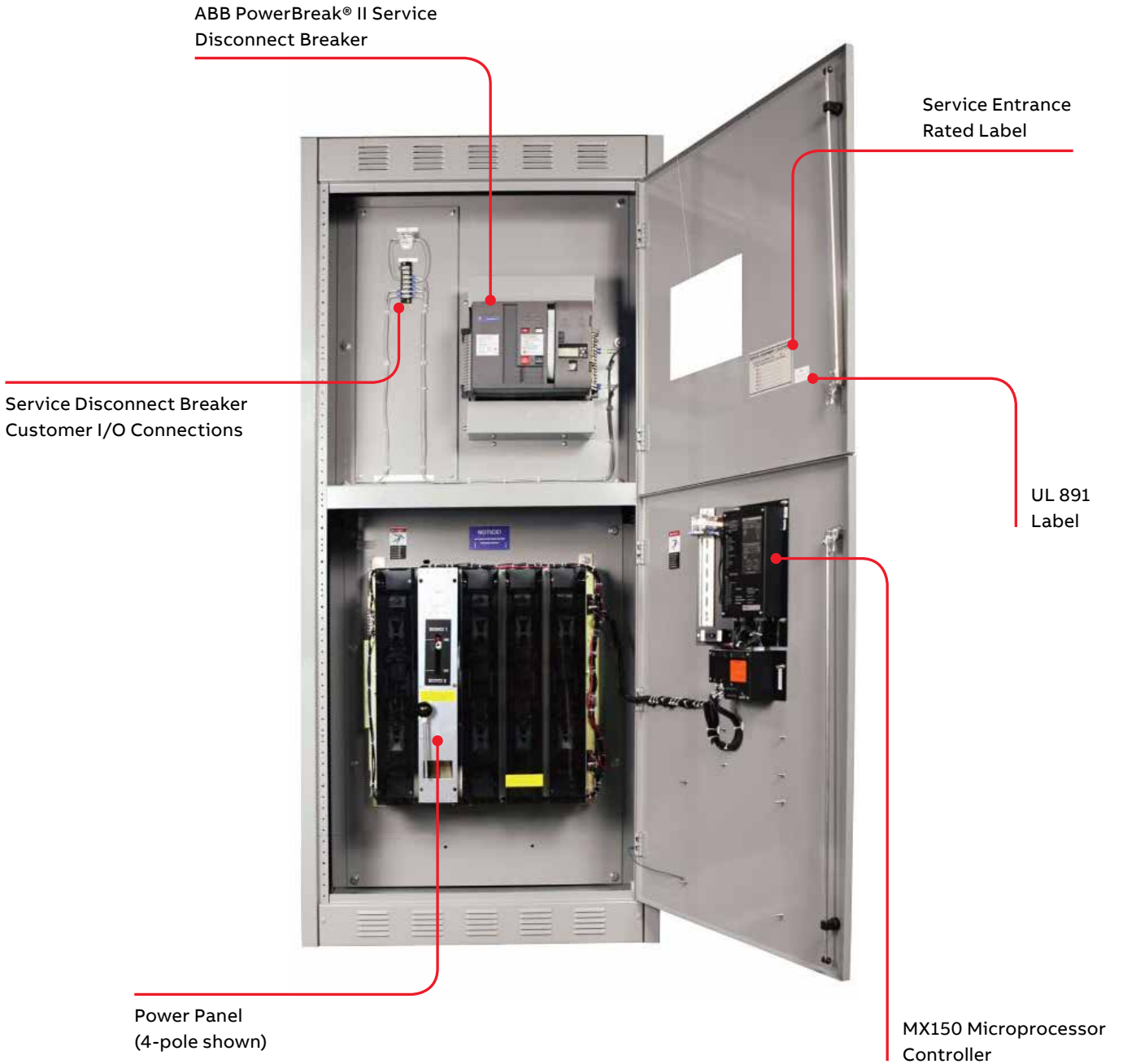
- Includes integrated and pre-wired (Normal) Source 1 molded case circuit breaker (2 or 3 pole) for 40-800 amps, insulated case circuit breaker (3 pole) for 1000-3000 amps
- Includes mechanical lug connections for cables
- Close differential 3 phase under-voltage sensing of Source 1—factory standard 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 Features

Closed View



Key Features
Open 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/P

Daily 7, 14, 28 timed load/no-load exerciser (CDT memory backup battery included), pushbutton/timer operation

E

Engine Start Contact

EL/P

Event Log of 99 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:

- 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

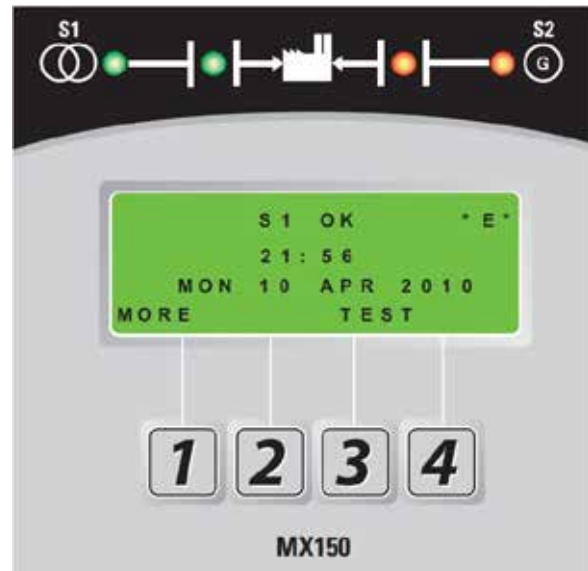
S1

(immediate retransfer on generator set failure)

U

Time Delay for Engine Cool Down: Allows engine to run unloaded after switch retransfer to S1

MX150 Control Pane



Front View

VI

Voltage Imbalance Monitor (Three Phase)

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/P option)

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**
Integrated generator battery charger, 12 VDC, 3 Amp output
- BC24**
Integrated generator battery charger, 24 VDC, 3 Amp output
- 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**
EPM2200 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.
- 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. 800 Amps and below.
- T3/W3**
Elevator Pre-Signal Auxiliary Contacts: Open 0-60 seconds prior to transfer to either direction, re-closes after transfer.
- TVSSN**
Integrated Transient Voltage Surge Suppressor, installed on Source 1 side 100kA per mode
- TVSSL**
Integrated Transient Voltage Surge Suppressor, installed on load side 100kA per mode
- TVSSE**
Integrated Transient Voltage Surge Suppressor, installed on Source 2 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.

NOTE: For additional options or other configurations, contact ABB.

Reference Charts

Testing Standards

UL, CSA, NEMA	UL 1008, UL 891, ICS10	
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 C62.4	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 & ZTG DSE	40, 80	1	#12 - 3/0	3 - 85 mm ²	1	#8 - 3/0	8 - 85 mm ²
	100-150		#8 - 350 MCM	8 - 177 mm ²		#6 - 250 MCM	13 - 127 mm ²
	200					#6 - 350 MCM	13 - 177 mm ²
	225	1	2/0 - 600 MCM or 8 - 500 mm ²	(1) 67 - 304 mm ² or 8 - 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
	260						
	400				2		
	600	3	3/0 - 500 MCM	85 - 253 mm ²	4	#2 - 600 MCM	34 - 304 mm ²
	800	4	250 - 500 MCM	127 - 253 mm ²			
	1000	4	#2 - 600 MCM	34 - 304 mm ²	8		
	1200						
	1600	8	#2 - 600 MCM	34 - 304 mm ²	8		
	2000						
2600							
3000							

NOTE: For ground bar and neutral bar cable size and quantity data, contact the ABB factory.

Standard MX150 Control Setting Ranges

Control Function		Range	Factory Setting	
MST D G	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 Presigna	I (Acc. UMD, or T3/W3)	0-60 seconds	20 seconds
	Delayed Transition Time Delays	(DT, DW)	0-10 minutes	5 seconds
Event Exerciser	(CDT/P)	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

Weight Specifications

ZTGSE & ZTGDSE Dimensions

Amp Rating	Poles	NEMA 1 Enclosure						Fig	App Notes
		H (in)	H (cm)	W (in)	W (cm)	D (in)	D (cm)		
40-260	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
400	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
600	2, 3, 4	75	191	39	99	20	51	A	1-4
800	2, 3, 4	90	229	51	129	20	51	A	1-4
1000-1200	3, 4	90	229	39	99	51	130	B	1-6
1600-2000	3, 4	90	229	39	99	51	130	B	1-6
2600-3000	3, 4	90	229	39	99	63	160	B	1-6

Amp Rating	Poles	NEMA 3R Enclosure						Fig	App Notes
		H (in)	H (cm)	W (in)	W (cm)	D (in)	D (cm)		
40-260	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
400	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
600	2, 3, 4	75	191	39	99	20	51	A	1-4
800	2, 3, 4	90	229	51	129	20	51	A	1-4
1000-1200	3, 4	90	229	39	99	57	145	C	1-6
1600-2000	3, 4	90	229	39	99	57	145	C	1-6
2600-3000	3, 4	90	229	39	99	69	175	C	1-6

ZTGSE Model Weight(s)

Amp Rating	Poles	Weight Lb (kg)	
		NEMA 1	NEMA 3R
40, 80, 100, 150, 225, 260	2, 3	183 (83)	193 (88)
	4	187 (85)	197 (89)
400	2, 3	265(120)	275 (125)
	4	289 (131)	299 (136)
600	2, 3	415 (188)	435 (197)
	4	444 (201)	464 (210)
800	2, 3	577 (262)	597 (271)
	4	662 (300)	682 (309)
1000, 1200	3	1690 (766)	1890 (857)
	4	1710 (775)	1910 (866)
1600, 2000	3	2355 (1067)	2555 (1159)
	4	2455 (1112)	2655 (1204)
2600, 3000	3	2475 (1121)	2675 (1213)
	4	2675 (1212)	2875 (1304)

ZTGDSE Model Weight(s)

Amp Rating	Poles	Weight	
		NEMA 1	NEMA 3R
40, 80, 100, 150, 225, 260	2, 3	272 (123)	282 (128)
	4	296 (134)	306 (139)
400	2, 3	272 (123)	282 (128)
	4	296 (134)	306 (139)
600	2, 3	422 (191)	442 (200)
	4	451 (205)	471 (214)
800	2, 3	587 (266)	607 (275)
	4	672 (305)	692 (314)
1000, 1200	3	1700 (771)	1900 (862)
	4	1720 (780)	1920 (871)
1600, 2000	3	2365 (1073)	2565 (1163)
	4	2465 (1118)	2665 (1209)
2600, 3000	3	2485 (1127)	2685 (1218)
	4	2685 (1218)	2885 (1309)

Dimensional Specifications

Reference Figures

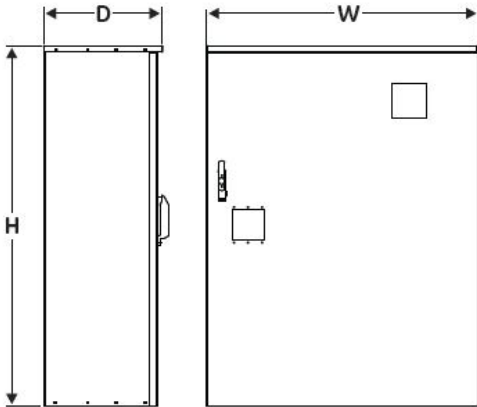


Figure A
40-800 Amp Transfer Switch
NEMA 1 & 3R

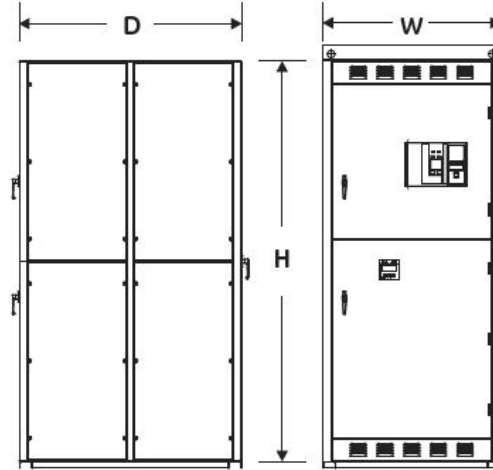


Figure B
1000-3000 Amp Transfer Switch
NEMA 1

Figure A
40-800 Amp Transfer Switch
NEMA 1 & 3R

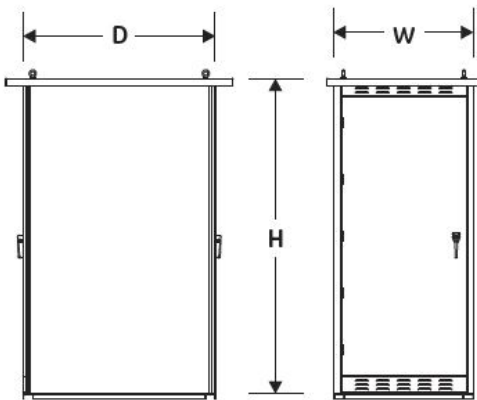


Figure C
1000-3000 Amp Transfer Switch
NEMA 3R

Application Notes:

1. Metric dimensions (cm) and weights (kg) shown in parentheses adjacent to English measurements.
2. 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 3" in height for lifting eyes.
6. Removable side covers permit mounting against wall.

Ordering Information

Example

ZTGSE0A0040E-N0140MSTDG

This model 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 3 ϕ , 4 wire, 60 Hz system with the standard group of accessories.

Z	T	G	S	E	0	A	0	0	0	4	0	E	-	N	0	1	4	0	M	S	T	D	G
1	2	3	4	5	6	7	8	9															

1	Base Model
2	Type
SE0	Standard (Open Transition Transfer Switch)
DSE	Standard (Delayed Transition Transfer Switch)
3	Control Panel
A0	MX150 Microprocessor Control Unit
A4	High withstand panel with MX150 ²⁾
4	Config.
0	Utility - Generator
M	Manual
5	Ampere Size
004	40 amps
008	80 amps
010	100 amps
015	150 amps
020	200 amps
022	225 amps
026	260 amps
040	400 amps
060	600 amps
080	800 amps
100	1000 amps ¹⁾
120	1200 amps ¹⁾
160	1600 amps ¹⁾
200	2000 amps ¹⁾
260	2600 amps ¹⁾
300	3000 amps ¹⁾
6	Switched Poles
B	2 Poles
E	3 Poles
F	4 Poles
7	Enclosure Type
N01	Type 1 Enclosure
N3R	Type 3R Enclosure
8	Operational Voltage
AB	Consult table below
9	Accessories
MSTDG	
MEXEG	

If required, choose additional accessories on page 4 for automatic transfer switches.

For manual transfer switches, this section will only read "MSTDG". If required, choose additional features specified on page 6.

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: Will need to specify with order the operating voltage. Only the most common ones are shown here.

¹⁾Available in 3 or 4 pole only

²⁾Available for 1600-3000A product ONLY.

UL 1008 Withstand and Closing Ratings

Withstand Current Ratings per UL 1008

ZTGSE, Switch, Ratings, (Amps)	Maximum Circuit Amps When Used With		
	Specific, Coordinated, Breaker, Rating	Any Breaker Rating	Current, Limiting, Fuse
40, 80, 100, 150, 200, 225	30 000	10 000	200 000
260	35 000	10 000	200 000
400	50 000	35 000	200 000
600	50 000	35 000	200 000
800	65 000	50 000	200 000
1000, 1200	85 000	50 000	200 000
1600, 2000	100 000	100 000	200 000
2600, 3000	100 000	100 000	200 000

Withstand Current Ratings per UL 1008

ZTGDSE, Switch, Ratings, (Amps)	Maximum Circuit Amps When Used With		
	Specific, Coordinated, Breaker, Rating	Any Breaker Rating	Current, Limiting, Fuse
40, 80, 100, 150, 200, 225, 260, 300, 400, 600	50 000	50 000	200 000
800	65 000	50 000	200 000
1000, 1200	85 000	50 000	200 000
1600, 2000	100 000	100 000	200 000
2600, 3000	100 000	100 000	200 000



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