



REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
1	C075076 UPDATED REBRANDING	08/29/19	AR MAS

ZTG SERIES WITH MX150 MICROPROCESSOR-BASED CONTROL PANEL  
AUTOMATIC TRANSFER SWITCH (ATS) 40-4000 AMP

FOR USE ON EMERGENCY OR STANDBY SYSTEMS - RATED FOR TOTAL SYSTEM & MOTOR LOAD

**A. LEGEND**

CONTROLS POWER SUPPLY (CPS)

XE1, XE2..... Control Transformer, Source 2  
 XN1, XN2..... Control Transformer, Source 1  
 Power Panel  
 N1, 2, 3, (N)..... Source 1 Line \_\_\_\_\_  
 E1, 2, 3, (N)..... Source 2 Line \_\_\_\_\_  
 T1, 2, 3, (N)..... Load Connections  
 BR..... Bridge Rectifier  
 CE..... Source 2 Transfer Operator  
 CN..... Source 1 Transfer Operator  
 CNE..... Main Transfer Operator (400 Amp)  
 GND..... Ground  
 NB..... Neutral Bar (if required)  
 SCR-E..... SCR Source 2  
 SCR-N..... SCR Source 1  
 SCE, SCN..... CNE Limit Switches  
 SE..... Source 2 Position Limit Switch  
 SN..... Source 1 Position Limit Switch  
 Interconnect Plugs  
 J1, J2, J4, J5, J6, J7, J8

**B. OPERATION**

When Source 1 line drops below the preset "Fail" Values, Source 1 voltage sensing circuit initiates the engine start circuit.

When Source 2 line voltage and frequency reach the preset "Restore" Values, the MX controller initiates a transfer signal through the SCR-E to operate the main transfer operator. The load is now transferred to the Source 2 line. The transfer switch is mechanically locked. SN limit switch awaits the next operation to Source 1.

When Source 1 line voltage reaches the preset "Restore" Values, the MX controller initiates a transfer signal through the SCR-N to operate the main transfer operator. The load is now re-transferred back to the Source 1 line. The transfer switch is mechanically locked. SE limit switch awaits the next operation to Source 2.

**Test Switch**

The Test Switch simulates source 1 line failure when activated. To test, activate the Test Switch, thus allowing the transfer switch to transfer to the Source 2 position. Deactivate the Test Switch. The transfer switch will reset to the Source 1 position. Testing at least once a month is recommended. For hospital emergency systems, test once a week.

**C. MSTDG OPTION PACKAGE.**

- 6 Test Switch, Momentary.
- A3 Auxiliary Contact Closed when the switch is in Source 2 position.
- A4 Auxiliary Contact Closed when the switch is in Source 1 position.

**CALIBRATE**

Source 1 & Source 2 Calibrate capabilities for voltage a frequency.

CDT Timer Exerciser Load / No Load, one event: allows the Generator to start and run unloaded or simulate a power failure, start Generator and run under load. Can be configured by end user for a 1, 7, 14, or 28 day cycle. Exercise duration can be set between 5 and 60 minutes in 1 minute increments. Factory default is 20 minutes. When exercise is impending, (\*E\*) appears in the upper right hand corner of LCD screen. configured via CFG menu and set via SET menu.

DS Disconnect Switch. Inhibits transfer to either direction when in Inhibit. 40-600 Amp optional, located next to controller. 800-3000 Amp standard, located next to controller.

**E Engine Start Contacts.**

EL/P Event Log: Sequentially Numbered Log of 16 events that track date, time, reason and action taken

System Data: Total Life Transfers (N2P)  
 Days Powered Up  
 Total Transfers to S2  
 Total S1 Failures  
 Total S1 available in Hrs  
 Total S2 available in Hrs. (NIP)

KP Frequency, Indication S1 & S2

L Indicating LED lights.

- L1 Indicates Switch in Source 2 position.
- L2 Indicates Switch in Source 1 position.
- L3 Indicates Source 1 available.
- L4 Indicates Source 2 available.
- LN center-off position LCD-indicator.

N1 Running Time indicator.

N2 Operation Counter indicator.

P1 Time Delay Source 2 Start. Adjustable 0-10 seconds. Standard setting in 3 seconds. Adjust via SET menu.

Q2 Peak Shave / Remote Load Test: Input for Peak Shave or Remote Load Test. Includes automatic return to Source 1 if Source 2 fails and Source 1 present. Energize Q2 to Peak shave/Load test.

R50 In-Phase Monitor. Prevents transfer until two sources are in-phase.

S13 Transfer Commit or no Commit to transfer upon Engine start.

Time Delay (S1) source 1 Stable Timer. To delay transfer to Source 1.

U Source 2 Stop Delay Timer.

W Time Delay (S2) Source 2 Stable Timer. To delay transfer to Source 2.

YEN Bypass Timers Key utilizing keypad. When applicable, the system prompts the user to press a button to bypass (T) or (W) Timers should the user so desires.

**D. MEXEG OPTION PACKAGE.**

In addition to the Features Listed under the MSTDG package, this package includes the following Features.

A3 Auxiliary Contact: closed when switch is in Source 2 position.

A4 Auxiliary Contact: closed when switch is in Source 1 position.

VI Voltage Imbalance (Three Phase) User Configured On or Off. Range: 5% to 20% of Nominal voltage 10 to 30 seconds, user adjustable. Resolution: 1% Increments Minimum Differential: 2% minimum between "Fail" and "Restore" settings. Factory default: 10% "Fail", 8% "Restore", 30 seconds.

CDP Clock Exerciser Load / No Load, one event: allows the Generator to start and run unloaded or simulate a power failure, start Generator and run under load. Can be configured by end user for a 1, 7, 14, 28, or 365 day cycle. A total of 7 independent exercise periods (up to 10 hours each) can be programmed for each of the daily, weekly, 14-day, and 28-day Exercisers. A total of 12 independent exercise periods (up to 10 hours each) can be programmed for the 365-day Exerciser. When exercise is impending, (\*E\*) appears in the upper right hand corner of LCD screen. configured via CFG menu and set via SET menu.

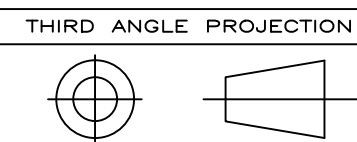
**E. OPTIONAL ACCESSORIES**

- 6A Test Switch, Maintained/Momentary. Door mount
- 6AP Test Switch Maintained/Momentary Utilizing Keypad.
- A62 Sequential Universal Motor load Disconnect Circuit. Normally closed Auxiliary contacts for motor disconnect loads. Open 0-60 seconds prior to transfer, after transfer or both in either direction then reclose in timed sequence after transfer.
- 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.
- B9 Battery charger.
- CTAP Alarm Panel on transfer to Source 2 with Silence button.
- DS Disconnect Switch: Permits transfer in "AUTO" position and inhibits transfer in "INHIBIT" position.
- F Fan contact, operates when generator is running.
- HT Heater and Thermostat.
- M90 Digital Power Meter with Display: Amps, Bolts and Frequency.
- M91 Digital Meter w/Display of Amps, Watts, Volts, Frequency, KVA, KVAR, PF, etc. Plus THD capability w/ Ethernet.
- Q3 Inhibit Transfer to Source 2: Input Circuit to inhibit transfer to Source 2.
- T3/W3 Elevator Pre-Signal Auxiliary Contacts: Open 0-60 sec.prior to transfer to either direction, re-closes after transfer.
- UMD Universal Motor Load Disconnect Circuit: Aux.Contact opens 0-60 sec. Adjustable, 1 sec. increments) prior to transfer in either direction, recloses after transfer. Can be configured by end user for Pre-transfer, Post-transfer or both. Factory default 5 sec. Timers are not bypassed when transferring from dead source.
- ZNET Network Communication Interface Card.

**NOTES:**

1. **CAUTION:** In using a 3 phase, 4 wire delta or open delta power supply (usually 120/240 volts, sometimes listed as 120/208 volts) with one leg having a grounded center tap, one line will be 160 to 208 volts to ground. When such a system is used it is necessary to connect the high leg to N2. DO NOT CONNECT 120 VOLT LOAD CIRCUIT TO THE HIGH LEG.
2. **GROUNDING TERMINAL:** A grounding terminal (GND) is provided. When installing open type switches connect this terminal to the metal enclosure or an equivalent earth ground.
3. **WARNING - TO ENSURE AGAINST SHOCK OR ACCIDENT HAZARD, DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.**
4. ON SINGLE PHASE UNITS WHERE THE EMERGENCY SOURCE IS A UTILITY LINE, CONNECT EMERGENCY LINE SO THAT MINIMUM VOLTAGE IS MEASURED FROM N1 TO E1.
5. ON SINGLE PHASE (2 POLE) UNITS, CENTER POLE IS NOT SUPPLIED. RIGHT-HAND POLE IS NOT SUPPLIED ON 400 AMP UNITS.

ABB PROPRIETARY AND CONFIDENTIAL INFORMATION  
 The information contained in the document has to be kept strictly confidential.  
 Any unauthorized use, reproduction, distribution or disclosure to third parties is strictly forbidden.  
 ABB reserves all rights regarding intellectual Property Rights.  
 Copyright 2018 ABB. All rights reserved



FOR ADDITIONAL INFO REFER TO	SIGNATURES	DATE
APPLIED PRACTICES	MODEL GG	2/13/03
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DETAIL	
TOLERANCES ON:	CHECKED	
2 PL. DECIMALS ± .020	ENGRG FS	
3 PL. DECIMALS ± .005	MFG	
ANGLES ± 1°	QUALITY	
FRACTIONS ± 1/64	ISSUED	
FINISH ✓	DRAWING FILE: 70a-0900.dwg	
AutoCad Generated	MODEL / ASSEMBLY FILE: ZTG4-400 (40-4000 A)	
# CTQs	CRITICAL TO QUALITY CHARACTERISTIC	



LEGEND, OPERATION, AND ACCESSORIES

TITLE	FIRST MADE FOR:	SIZE	CAGE CODE	DWG NO
		B		70A-0900
SCALE: -				SHEET 1 OF 1

