

## CTG SERIES AUTOMATIC TRANSFER SWITCH

The Cat<sup>®</sup> CTG Series transfer switch is pre-configured for applications requiring the dependability and ease of operation found in a full feature power contactor type transfer switch.

CTG switches are equipped with the 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.

### FEATURES

- Ratings 40 to 3000 amps (2, 3 or 4 poles)
- UL 1008 listed at 480 VAC
- CSA certified at 600 VAC (200-225 amp – 480 V)
- IEC listed at 480 V
- Double throw, mechanically interlocked contactor mechanism
- Electrically operated, mechanically held
- Designed for emergency and standby applications
- Available in standard open transition (CTG) or delayed transition (CTGD) models
- 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 50 ms, 5 & 8 kV)
- Conducted immunity test per EN61000-4-6 (ENV50141)
- Voltage dips and interruption immunity EN61000-4-11
- Seismic Compliance to IEEE-693-2005 and IBC-2003

### 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, 4X, or 12.

## STANDARD FEATURES AND OPTIONS

### STANDARD FEATURES

- Auxiliary Contact: Closed when the switch is in the emergency position (Additional contacts optional)
- Auxiliary Contact: Closed when the switch is in the normal position (Additional contacts optional)
- 7, 14, 28 day interval timed exerciser, pushbutton/timer operation
- Engine Start Contact
- Indicating LED Pilot Lights:
  - Switch in emergency position
  - Switch in normal position
  - Normal source available
  - Emergency source available
- Time Delay to Engine Start: Standard setting 3 seconds, adjustable 0-10 seconds
- In-Phase Monitor, self-adjusting (Not available on CTGD models)
- Time Delay on Retransfer to Normal: To delay retransfer to normal source (immediate retransfer on generator set failure); standard setting 30 minutes, adjustable 0-60 minutes
- Pushbutton Bypass of time delay and normal emergency
- Test Switch – Momentary
- Event Log OD 16 Event that track date, time, reason and action taken
- Voltage and Frequency Indication for S1 and S2
- Peak Shave/Remote Load Test: Input for peak shave or remote load test; includes automatic return to normal if emergency source fails and normal is present; 120 VAC

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

- Time Delay from Neutral Switch Position to Normal on Retransfer: Standard setting 5 seconds, adjustable 0-10 minutes
- Time Delay from Neutral Switch Position to Emergency: Standard setting 5 seconds, adjustable 0-10 minutes
- Center-Off position/Off Delay Timing Indicators

### MX150 CONTROL PANEL

- Time Delay for Engine Cool Down: Allows engine to run unloaded after switch retransfer to normal; standard setting 5 minutes, adjustable 0-60 minutes
- Time Delay on Transfer to Emergency: To delay transfer to emergency after verifying emergency source available; standard setting 1 second, adjustable 0-5 minutes

- Timer and voltage/frequency settings adjustable without disconnection from power sources
- Built-in diagnostics with LCD display for immediate troubleshooting
- LED/LCD indicators for ease of viewing and long life
- Nonvolatile memory (exerciser battery backup not required for standard operation)
- Processor and digital circuitry isolated from line voltage
- Inputs optoisolated for high electrical immunity to transients and noise
- Communications header for network interface

### OPTIONAL ATTACHMENTS

- Plant Exerciser, clock type (load/no load): Allows the generator to start and run unloaded or to simulate a power failure, start generator and run under load (7-14-28-365 days, user selectable)
- Space heater and thermostat
- Network communications interface card (LonWorks/ModBus)
- Maintained Test Switch
- Maintained Test Switch w/Keypad
- Service entrance configuration
- Auxiliary Contact, operates on Source 1 line failure
- Auxiliary Contact, operates on Source 2 availability
- Auxiliary Contacts: Closed when the transfer switch is in Source 2 position
- Auxiliary Contacts: Closed when the transfer switch is in Source 1 position
- Disconnect Switch: Permits transfer in "AUTO" position and inhibits transfer in "INHIBIT" position. (Standard 800A and above)
- Elevator Pre-Signal Auxiliary Contacts: Open 0-60 seconds prior to transfer to either direction, re-closes after transfer
- Universal Motor Load Disconnect Circuit: Auxiliary Contact opens 0-60 seconds prior to transfer in either direction, re-closes after transfer. Can be configured by end user for Pre-transfer, Post-transfer, or both.
- Voltage Imbalance Monitor (Three Phase)
- Lockable, see-through cover for ATS controller

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## OPTIONAL ATTACHMENTS (continued)

### POWER MEASUREMENT METERS

- M90 – EPM 2000  
Digital Power Meter with Display:  
Amps, Volts, and Frequency
- M91 – EPM 6000  
Digital Meter with Display of Amps, Watts, Volts,  
Frequency, plus THD capability with Ethernet

### NOTE:

For applications requiring additional options or other configurations, see the CTS Series fully configurable transfer switch.

## DIMENSIONAL SPECIFICATIONS

CTG & CTGD TRANSFER SWITCHES								
MODEL	AMP RATING	POLES	NEMA 1 ENCLOSED			REFERENCE FIGURE	WEIGHT	APPLICATION NOTES
			HEIGHT (A)	WIDTH (B)	DEPTH (C)			
CTG	40, 80, 100, 150 & 200	2,3	24 (610)	18 (457)	11 (279)	A	69 (31)	1-6
		4	24 (610)	18 (457)	11 (279)	A	69 (31)	
	225	2,3	46 (1168)	24 (610)	14 (356)	A	69 (31)	1-5
		4	46 (1168)	24 (610)	14 (356)	A	75 (34)	
	260	2,3	46 (1168)	24 (610)	14 (356)	A	114 (52)	1-5
		4	46 (1168)	24 (610)	14 (356)	A	125 (57)	
	400	2,3	46 (1168)	24 (610)	14 (356)	A	168 (76)	1-5
		4	46 (1168)	24 (610)	14 (356)	A	180 (82)	
	600	2,3	66 (1686)	24 (610)	19.5 (495)	B	97 (44)	1-5 & 7
		4	66 (1686)	24 (610)	19.5 (495)	B	224 (102)	
	800	2,3	74 (1880)	40 (1016)	19.5 (495)	B	460 (209)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	490 (222)	
	1000	2,3	74 (1880)	40 (1016)	19.5 (495)	B	475 (215)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	560 (254)	
	1200	2,3	74 (1880)	40 (1016)	19.5 (495)	B	475 (215)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	560 (254)	
	1600	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1030 (467)	1-5, 7&8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1180 (535)	
	2000	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1030 (467)	1-5, 7&8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1180 (535)	
2600	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1150 (522)	1-5, 7&8	
	4	90 (2286)	35.5 (902)	48 (1219)	C	1400 (635)		
3000	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1150 (522)	1-5, 7&8	
	4	90 (2286)	35.5 (902)	48 (1219)	C	1400 (635)		
CTGD	40, 80, 100, 150, 200 & 225	2, 3	46 (1168)	24 (610)	14 (356)	A	127 (58)	1-5
		4	46 (1168)	24 (610)	14 (356)	A	133 (60)	
	260 & 400	2,3	46 (1168)	24 (610)	14 (356)	A	176 (80)	1-5
		4	46 (1168)	24 (610)	14 (356)	A	188 (85)	
	600	2,3	66 (1686)	24 (610)	19.5 (495)	B	221 (100)	1-5 & 7
		4	66 (1686)	24 (610)	19.5 (495)	B	230 (104)	
	800	2,3	74 (1880)	40 (1016)	19.5 (495)	B	475 (215)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	560 (254)	
	1000	2,3	74 (1880)	40 (1016)	19.5 (495)	B	475 (215)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	560 (254)	
	1200	2,3	74 (1880)	40 (1016)	19.5 (495)	B	475 (215)	1-5 & 7
		4	74 (1880)	40 (1016)	19.5 (495)	B	560 (254)	
	1600	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1030 (467)	1-5 & 7-8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1180 (535)	
	2000	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1030 (467)	1-5 & 7-8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1180 (535)	
	2600	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1150 (522)	1-5 & 7-8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1400 (635)	
	3000	2,3	90 (2286)	35.5 (902)	48 (1219)	C	1150 (522)	1-5 & 7-8
		4	90 (2286)	35.5 (902)	48 (1219)	C	1400 (635)	

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## Application Notes :

1. Dimensions are listed in inches (mm) and weights in pounds (kg).
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. **All dimensions and weights are approximate and subject to change without notice and are not for construction use.**
4. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
5. Special enclosures (NEMA 3R, 4, 4X, 12, etc.) dimensions may differ. Consult Caterpillar for details.
6. CTG 40-200 require larger 36" H X 24" W X 14" D enclosure depending on options specified. Consult Caterpillar for details.
7. Add 3" in height for lifting eyes.
8. Ventilation louvers on side/rear of 2600 and 3000A units require one side or rear of enclosure to be clear in order to afford proper airflow.

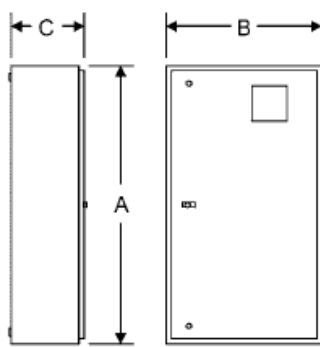


Figure A

Figure A  
CTG Series Transfer Switch  
(40-400 amp)

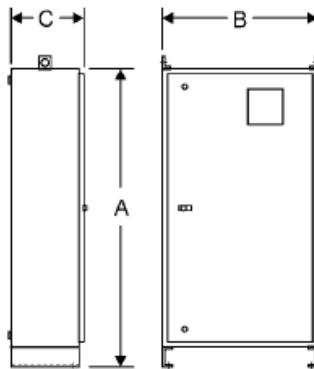


Figure B

Figure B  
CTG Series Transfer Switch  
(600-1200 amp)

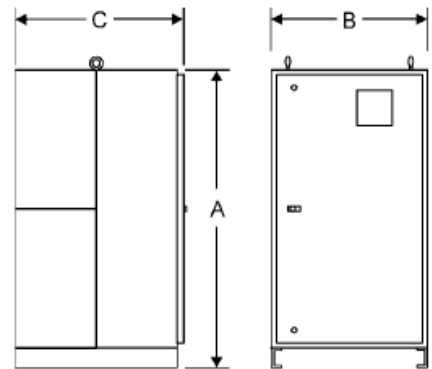


Figure C

Figure C  
CTG Series Transfer Switch  
(1600-3000 amp)

## 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 Class B	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
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, 80	1	#8 to 3/0 AWG
100, 150, 200 & 225	1	#6 AWG to 250 MCM*
260 & 400	1	#4 AWG to 600 MCM*
600	2	#2 AWG to 600 MCM
800, 1000, 1200	4	#2 AWG to 600 MCM
1600, 2000, 2600, 3000	8	#2 AWG to 600 MCM

\*or 2 1/0 - 250 MCM may be used

## MX150 CONTROL SETTING RANGES

Control Function		Range	Factory Setting
Normal Line Sensing- Under-voltage	Dropout	75-98%	80%
	Pickup	85-100%	90%
Emergency Line Sensing - Under-voltage	Dropout	75-98%	80%
	Pickup	85-100%	90%
Emergency Line Sensing - Under-frequency	Dropout	2 Hz below pickup	Set
	Pickup	90-100%	95%
Time Delay - Engine Start		0-10 seconds	3 seconds
Time Delay - Engine Cool Down		0-60 seconds	5 minutes
Time Delay - Transfer to Emergency		0-5 minutes	1 second
Time Delay - Retransfer to Normal		0-60 minutes	30 minutes
Time Delay - Motor Disconnect or Transfer Presignal (When applicable)		0-60 seconds	20 seconds
Delayed Transition Time Delays (When applicable)		0-10 minutes	5 seconds

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## WITHSTAND CURRENT DATA

Withstand Current Ratings per UL 1008				
CTG Switch Ratings (Amps)	Maximum Circuit Amps When Used With		Maximum Circuit Amps When Used With	
	Specific Coordinated Breaker Rating	Current Limiting Fuse CTG/CTGD	CTGD Switch Ratings (Amps)	Specific Coordinated Breaker Rating
40, 80, 100, 150, 200, 225	30,000	200,000	40, 80, 100	50,000
260	35,000		150, 225, 260	50,000
400, 600	50,000		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

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