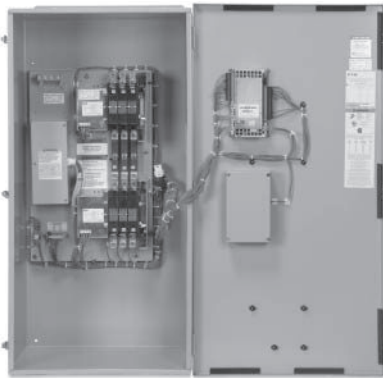


Automatic Closed Transition, 40–1200A



**Contactor-Based ATS
with ATC-800 Controller**

General Description

Taylor's closed transition contactor-based automatic transfer switch (CTC8) is designed to avoid intentional interruption of power when both sources of power are available by momentarily paralleling both sources.

The ATC-800 is a comprehensive, multi-function, microprocessor-based controller, offering extensive monitoring, status reporting and transfer control operation.

The make-before-break contact sequence coupled with Taylor's ATC-800 provides a transfer switch that is useful in critical standby power applications available from 40 to 1200A.

Application Description

A transfer switch designed for closed transition has make-before-break contacts that require the normal and alternate sources to be synchronized. The source contacts on Taylor's CTC8 will parallel for 100 ms or less. The ATC-800 provides all-phase undervoltage, underfrequency, and overvoltage and overfrequency protection as a standard. Consult with the local utility company for permission and to verify the protection requirements as each utility may have different rules regarding closed transition applications. Protective relays may be available as an option upon request.

Closed transition controls

The CTC8 accomplishes the closed transition transfer by monitoring the voltage and frequency set point conditions of both power sources. Once the set point conditions are met, the ATC-800 controller will start the closed transition synchronization timer (TSCT). The TSCT is adjustable from 1–60 minutes in duration. This duration is the time during which the ATC-800 controller will monitor the phase angles to anticipate when they will be within 8 electrical degrees. The closed transition scheme is anticipatory, allowing the close contacts signal to be initiated before the sources are exactly in phase. If the TSCT times out and the transfer switch has not reached synchronization, the transfer switch will remain connected to the current power source and a failure to transfer alarm will be displayed.

The transfer switch can also be equipped with an optional open transition transfer method for situations where synchronization is not possible, but a transfer is required. One of the following transition features can be selected:

- Closed transition only
- Closed transition with default to load voltage decay
- Closed transition with default to time delay neutral

Features

Standard Features— with ATC-800 Controller

- Auxiliary relay contacts:
 - Source 1 present 1NO and 1NC
 - Source 2 present 1NO and 1NC
- Switch position indication contacts:
 - Source 1 position 1NO and 1NC
 - Source 2 position 1NO and 1NC
- Source 1 and Source 2 sensing:
 - Undervoltage/underfrequency
 - Overvoltage/overfrequency
- Go to emergency (Source 2)
- Seven field-programmable time delays
- LCD-based display for programming, system diagnostics and Help message display
- Mimic diagram with source available and connected LED indication
- Time-stamped history log
- System TEST pushbutton
- Programmable plant exerciser—OFF, daily, 7-day interval selectable run time 0–600 minutes no load/load with fail-safe
- Multi-Tap transformer

Optional Features

- Available surge suppression device for power/controller, engine start circuit, phone and cable connections
- Space heater with thermostat
- Ammeter—load side
- Power quality metering
- Steel cover for controller
- Three-phase rotation protection
- Three-phase voltage unbalance
- Pretransfer signal contacts 1NO/1NC (with three-position mechanism)

Commercial Design Highlights

- UL 1008 front access
- High withstand and closing ratings
- Compact design

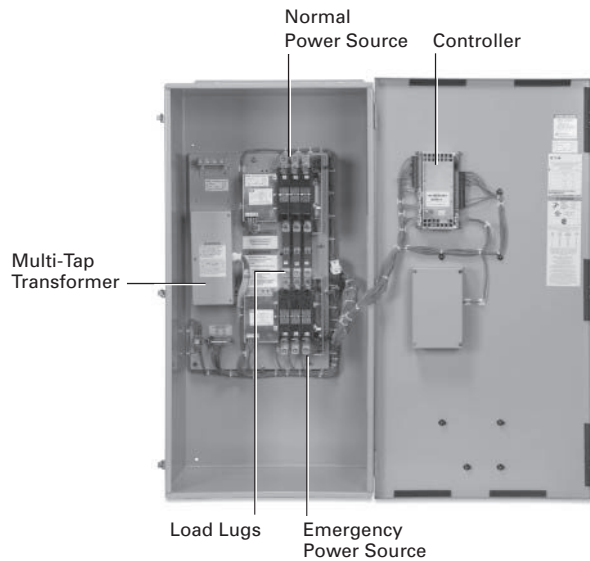
Transfer Switches Contactor-Based Designs

Automatic Transition, 40–1200A—Technical Data

Technical Data

Table 25.1-4. UL 1008 Withstand and Close-On Ratings (kA)

UL 1008 Ampere Rating	480V		600V		Rating When Used with Upstream Fuse			
	Any Breaker	Specific Breaker	Any Breaker	Specific Breaker	Rating (kA)	Test Voltage	Fuse Type	Maximum Fuse Amperes
40	10	30	10	22	100	480	RK5	200
80	10	30	10	22	100	480	RK5	200
100	10	30	10	22	100	480	RK5	200
150	10	30	22	35	100	600	RK5	400
200	10	30	22	35	100	600	RK5	400
225	30	50	50	65	200	600	RK5	600
260	30	50	50	65	200	600	RK5	600
400	30	50	50	65	200	600	RK5	600
600	50	65	50	65	200	600	L, R, J, T	1600
800	50	65	50	65	200	600	L, R, J, T	1600
1000	50	65	50	65	200	600	L, R, J, T	1600
1200	50	65	50	65	200	600	L, R, J, T	1600



Typical Contactor-Based ATC-800 Controller

Table 25.1-5. UL 1008 Ratings

Mounting Type	Voltage	Current Amperes	No. of Poles	NEMA Enclosure
Fixed	600	40	2, 3, 4	Open NEMA 1 NEMA 3R NEMA 12
	600/347	80		
	480	100		
	480/277	150		
	480/240	200		
	415/240	225		
	380/220	260		
	240	400		
	240/120	600		
	220	800		
	220/127	1000		
	208/120	1200		
	120			

Dimensions—Approximate Dimensions in Inches (mm)

Table 25.1-6. Contactor-Based Transfer Switch 40–1200A Closed Transition (See Figure 25.1-3 and Figure 25.1-4)

Ampere Rating	Enclosure			Bolt Pattern		Standard Terminals		
	A (Height)	B (Width)	C (Depth)	G (Horizontal)	H (Vertical)	Load Side, Normal and Standby Source	Neutral Connection	Weight in Lbs (kg)
40–100 at 480V 40–100 at 600V	52.74 (1339.6) 52.74 (1339.6)	25.00 (635.0) 25.00 (635.0)	17.18 (436.4) 17.18 (436.4)	10.25 (260.4) 10.25 (260.4)	37.38 (949.5) 37.38 (949.5)	(1) #14–2/0 (1) #6–250 kcmil	(3) #14–2/0 (3) #14–1/0	190 (86) 210 (95)
150–200 at 480V 150–200 at 600V ①	52.74 (1339.6) 71.02 (1803.9)	25.00 (635.0) 31.11 (790.2)	17.18 (436.4) 14.72 (373.9)	10.25 (260.4) 13.00 (330.2)	37.38 (949.5) 47.84 (1215.1)	(1) #6–250 kcmil (2) 3/0–250 kcmil	(3) 1/0–250 kcmil (6) 250–500 kcmil	210 (95) 420 (191)
225–400 at 480V 225–1200 at 600V ① 600–1200 at 480V ①	71.02 (1803.9) 90.00 (2286.0) 90.00 (2286.0)	31.11 (790.2) 46.00 (1168.4) 46.00 (1168.4)	14.72 (373.9) 32.00 (812.8) 32.00 (812.8)	13.00 (330.2) N/A N/A	47.84 (1215.1) N/A N/A	(2) 3/0–250 kcmil (4) 1/0–750 cu/al (4) 1/0–750 cu/al	(6) 250–500 kcmil (12) 1/0–750 kcmil (12) 1/0–750 kcmil	420 (191) 800 (363) 800 (363)

① For NEMA 3R, add 14.60-inch (370.8 mm) to depth.

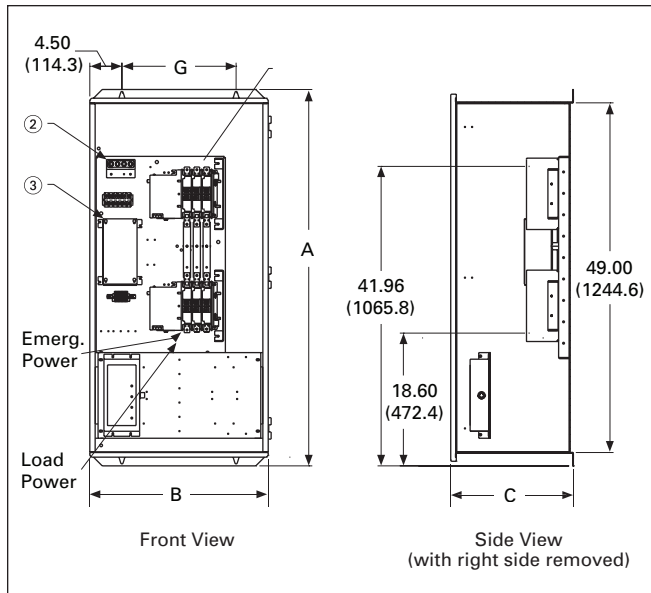


Figure 25.1-3. Automatic Up to 400A Wallmount

- ② For switched neutral applications, connect to terminals marked NN, EN and LN. Neutral assembly will not be provided.
- ③ Transformer pack is not included with 240/120V, single-phase or 208/120V, three-phase systems.

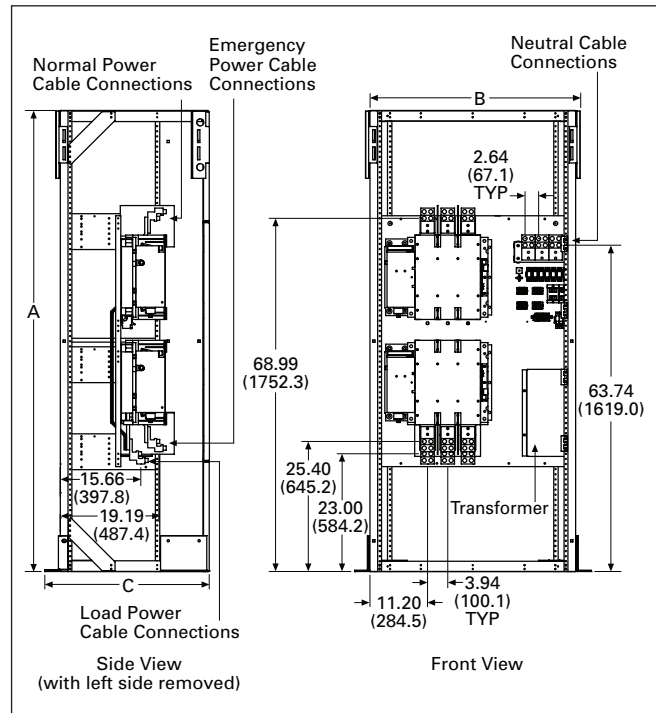


Figure 25.1-4. Automatic 600–1200A—Wallmount

ATC-800 Controller



ATC-800 Controller

General Description

Taylor's ATC-800 is a microprocessor-based logic controller to be used with transfer switches. This device is door-mounted and provides the operator with an at-a-glance overview of switch status and parameters, as well as key diagnostic data. Real-time values for volts and frequency can be viewed via the front panel LED display, along with an indication of the power source currently in use.

The ATC-800 is a programmable, microprocessor-based monitoring device designed for use in Taylor closed transition transfer switches and for open transition contactor-based designs.

For closed transition applications, the user may avoid intentional interruption of power when both sources of power are available. This make-before-break mode of operation is useful during testing of the engine generator under load and where a predetermined transfer to the generator is desired. Source paralleling duration is limited to less than 100 msec.

Passive Closed Transition

The closed transition mode of operation requires that both power sources be synchronized in voltage, frequency and phase angle within prescribed limits. Taylor's ATC-800 uses a technique that involves waiting for synchronization of the two sources without actively controlling the generator's voltage or frequency. The mode of operation is anticipatory in that the switch close command is initiated before the sources are exactly in phase. Using the phase angle and frequency difference between the two sources, a calculation is made to predict when both sources would be in phase. The response time of the switch is then factored in to determine when the switch close signal should be given to ensure optimal closure of the two sources in phase.

Taylor's closed transition ATC-800 must be selected with one of three feature sets: 47C, 47D or 47E (47D, 47F, 47G on contactor-based designs). The difference between these three feature sets is the action taken by the closed transition ATC-800 if it is determined that the two sources will not achieve synchronization. If feature set 47C is selected, failure to synchronize results in the switch reverting to an Open Transition mode of operation with low voltage decay. If feature set 47E is selected, then failure to synchronize results in the switch reverting to time delay neutral. However, if feature set 47D is selected, failure to synchronize will result in the ATC-800 refusing to transfer to Source 2 and an alarm signal being activated. In neither case will there be a paralleling of sources if synchronization is not achieved.

Application Description

- The generator used with a closed transition transfer switch must be equipped with an isynchronous governor
- When paralleling sources, fault current contributions from both sources should be considered in the system design
- Closed Transition (make-before-break) technology causes paralleling with the Source 1. It is the user's responsibility to comply with any requirements regarding protective relaying. Protective relaying is not supplied with the standard transfer switch, but is available as an option

Features, Benefits and Functions

Switch Application Section—Taylor Closed Transition (ATC-800) Features

The closed transition ATC-800 is a door-mounted, totally enclosed device that is customer accessible from the transfer switch front panel.

Data access and programming operations are performed using the ATC-800 Transfer's touch-sensitive function buttons in conjunction with an easy-to-read, illuminated, alphanumeric LED display. Both the function buttons and the display window are part of the device's front panel. A built-in Help button provides user assistance in the form of message displays.

The ATC-800 is communications ready and compatible with all Taylor IQ devices as well as Taylor's Power Xper® system-wide monitoring software. This permits monitoring of several transfer switches, locally or remotely, from a single point.

Additional Features

- Source paralleling duration is limited to 100 msec or less
- True rms three-phase voltage sensing on normal, Source 2 and Load
- Frequency sensing on normal and Source 2
- Programmable set points stored in nonvolatile memory
- PowerNet communication to personal computer either on site or remote
- Historical data on most recent transfers (up to 16 events) viewable at switch. Unlimited history storage (remote) available when used with PowerNet software
- Wide range of user-selectable option combinations
- Load sequencing
- Engine start contacts
- Engine test switch with user-selectable test mode and fail-safe
- Alarm contact (multiple alarm functions available)
- Pretransfer signal
- Heartbeat monitor (flashing green Automatic light signifies that the ATC-800 is operating properly)

- Instrumentation:
 - Voltmeter (accuracy $\pm 1\%$)
 - Reads line-to-line on Sources 1 and 2 and Load
 - Frequency meter (40–80 Hz, accuracy ± 0.1 Hz)
 - Source available time (both sources)
 - Source connected time (both sources)
 - Source run time

ATC-800 Programming

Button Functions

Three buttons provide easy access to all commonly used ATC-800 functions.

When the preferred source is connected and the ATS is operating normally, the automatic indicator light will be flashing and the display window will be blank.

Using the Display Select button, the operator can step through each of the six display families:

- Source 1
- Source 2
- Load
- History
- Time/date
- Set points

Note: Stepping through the various display modes does not alter preset values or otherwise affect operation of the ATS.

Once the desired display family is selected, the user may press the Step button to cycle through specific parameters or metered values shown in the display window.

Initial Programming

Factory programming will load all customer-specified functions and presets. At the customer's request, Taylor will add, delete or adjust optional features.

Customer Programming

Customers may reprogram set points and other parameters to match their application, using the program switch located on the rear of the unit. Once the programming mode has been activated and the program light is flashing, the user may access set point settings by pressing the Display Select button until the set points LED is illuminated. Values for individual set points may then be altered by pressing the Increase or Decrease buttons. Once a parameter has been reset, the user advances to the next set point by pressing the Step button.

While the ATC-800 is in the program mode, the device continues to operate in accordance with the previously programmed set points and parameters. The unit is never offline, and preset values do not change until programming has been completed.

Once reprogramming is complete, the user may return the program switch to the run position. At this point, all new values are stored in the ATC-800 non-volatile memory, and the unit returns to Automatic mode.

Definitions

Closed transition: Closed transition is a feature that will temporarily parallel two live sources in a make-before-break scheme when performing a transfer. The ATC-800 will close the switching devices for both sources, paralleling both sources, for a maximum time of 100 milliseconds after the sources are synchronized.

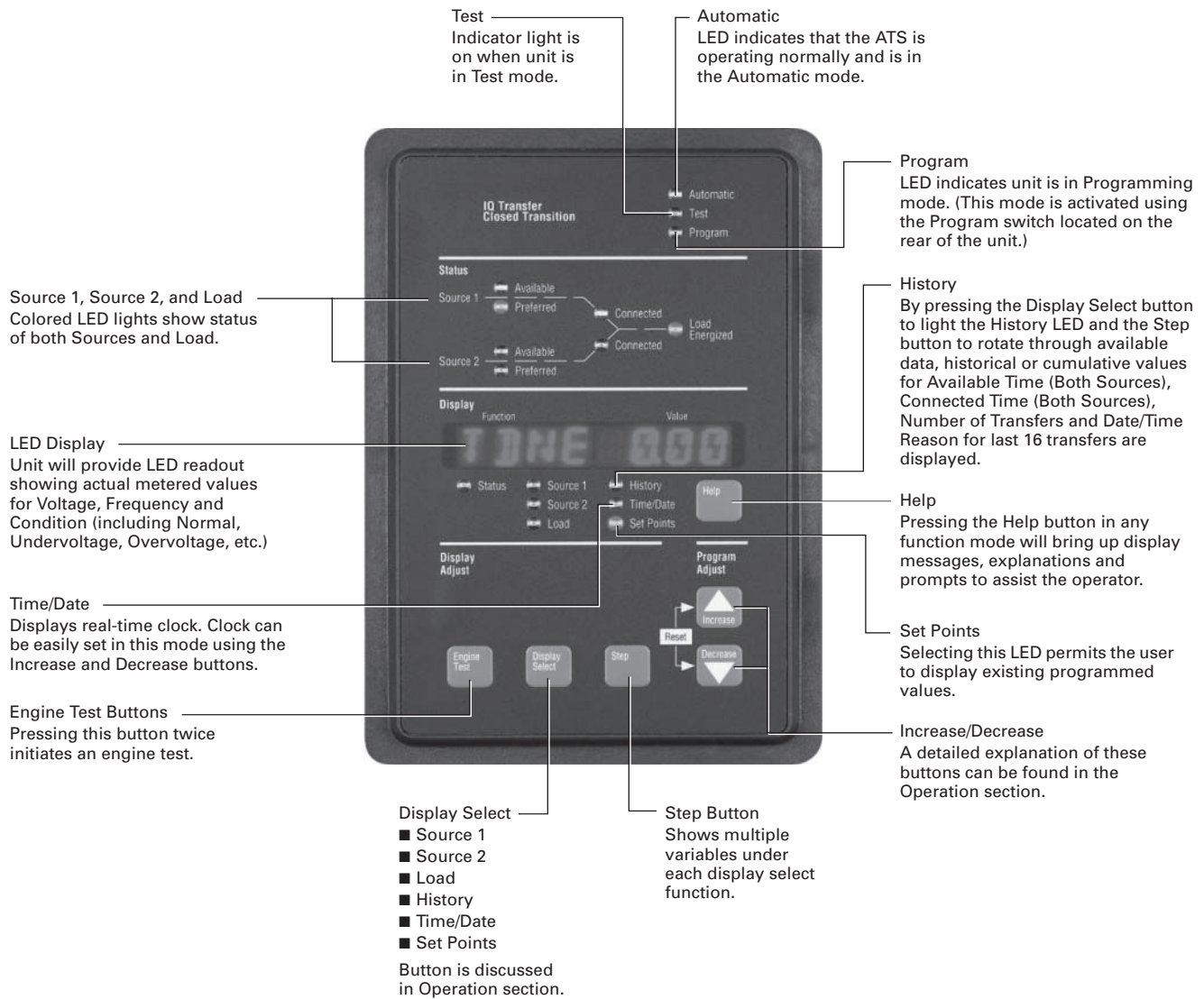
Open transition/in-phase monitor:

In-phase monitor is a feature that will allow a transfer between two sources only when the phase difference between the two sources is near zero. This is an open transition transfer that prevents inrush currents from exceeding normal starting currents in the case where motor loads are being transferred.

Open transition/delayed with load

voltage decay: Load voltage decay transfer is a feature that, after opening the switch for the original source, holds in the neutral position until the voltage on the load is less than 30% of rated voltage. This is an open transition that prevents inrush currents from exceeding normal starting currents in the case where motor loads are being transferred.

ATC-800 Controller—Features, Benefits and Functions



Closed Transition ATC-800 Front Panel Display and Button Functions

Operation

The ATC-800 operates in the following modes to meet most load management applications:

- Loss of normal power
 - Open transition to alternate source
- Normal power restored
 - Closed transition back to normal source
- Peak shave (remote or local) closed transition to and from alternate source
- Test (user selectable)
 - Load transfer—closed transition to and from alternate source
 - No-load transfer—starts alternate power source and allows to run unloaded. No transfer takes place

Programming and Options

Closed Transition Operation Modes

Feature Set 47C Closed/In-Phase/Load Voltage Decay

ATC-800 controllers equipped with Feature Set 47C execute the following sequence of operations upon receipt of a request for transfer: the controller waits (for a preselected time frame) for synchronization of voltage and frequency. If achieved, a closed transition transfer occurs. Failure to synchronize results in the controller defaulting to an in-phase monitor, open transition mode of operation. If the two sources fail to achieve frequency synchronization within the user-selectable range, the controller defaults to an open transition using a load voltage decay delayed transition.

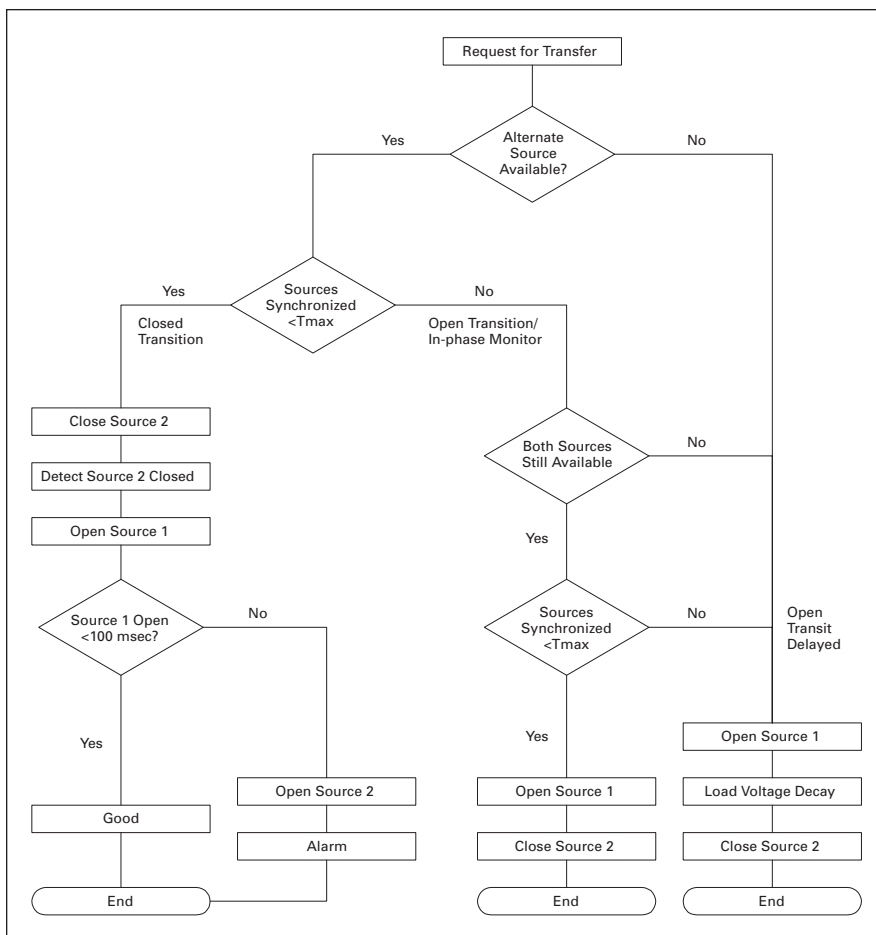


Figure 25.4-1. Feature Set 47C Schematic

Table 25.4-9. Closed Transition/In-Phase Standard Features

Standard Features	Customer Adjustments
Closed transition frequency difference (Hz)	0.0 to 0.3 Hz
Closed transition voltage difference (V)	1–5%
In-phase transition frequency difference (Hz)	0.0–0.3 Hz
Closed transition synchronization timer	1–60 minutes
In-phase transition synchronization timer	1–60 minutes

In-Phase Transfer

Feature Set 47D Closed Only

ATC-800 controllers equipped with Feature Set 47D only transfer to an alternate source when both sources are synchronized. For synchronization to occur, both voltage and frequency differentials must fall within the user-selectable ranges. If synchronization does not occur (within a preselected amount of time), the controller will maintain load connection to the current power source and initiate an alarm.

Closed Transition With Default to In-Phase Transition With Default to Time Delay Neutral

Provides a closed transition transfer as the primary transfer mode. In the event Source 1 and Source 2 fail to synchronize within the permitted voltage difference, frequency difference, phase angle difference and time, then the controller defaults to the In-phase transition with default to time delay neutral operation as described in **Features 32D** and **32A**. Adjustable frequency difference 0.0–0.3 Hz. Adjustable voltage difference 1–5% volts. Adjustable synchronization time allowance 1–60 minutes.

Feature Set 47F Closed/Load Voltage Decay

ATC-800 controllers equipped with Feature Set 47F will perform a closed transition when both sources are synchronized in frequency, phase and voltage. Failure to synchronize will result in an open transition Time Delay Load Voltage Decay transfer. Time Delay Load Voltage Decay uses the load voltage measurements to sense back EMF that is generated when the transfer switch is in the Neutral position. It provides a delay in transfer in either direction if an unacceptable level is sensed as established by a customer programmed level. The transfer will not take place until the back EMF decays below the acceptable programmed level. This feature has a separate setting of enabling or disabling the operation. If disabled, the transfer switch will not delay in the Neutral position and will transfer between the sources as fast as possible. This feature is not available with the Time Delay Neutral Optional **Feature 32A**.

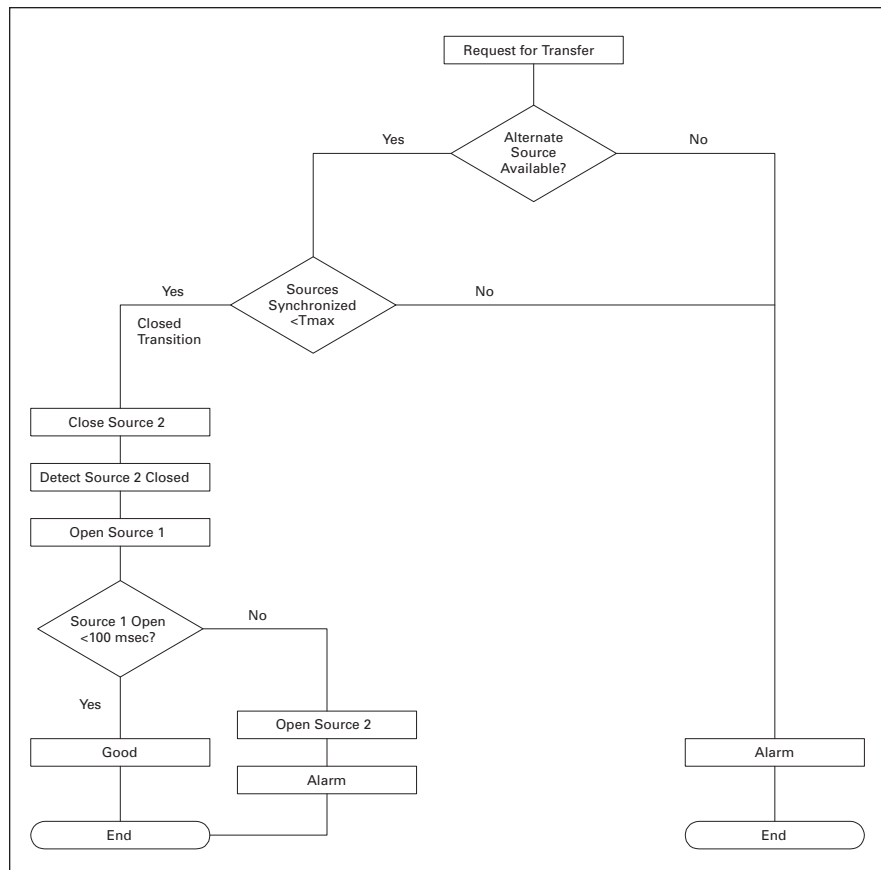


Figure 25.4-2. Feature Set 47D Schematic

Table 25.4-10. Closed Transition Standard Features

Standard Features	Customer Adjustments
Closed transition frequency difference (Hz)	0.0–0.3 Hz
Closed transition voltage difference	1–5%
Closed transition synchronization timer	1–60 minutes

Feature Set 47G Closed/Time Delay Neutral

ATC-800 controllers equipped with Feature Set 47G will perform a closed transition transfer when both sources are synchronized in frequency, phase and voltage. Failure to synchronize will result in an open transition Time Delay Neutral transfer. Time Delay Neutral provides a time delay in the transfer switch neutral position when both sources are open. This delay takes place when the load is transferred in either direction to prevent excessive in-rush currents due to out-of-phase switching of large motor loads.

Transfer Switches Standard and Optional Features

Contactor-Based—Automatic Transfer Switch Features

Standard and Optional Features

Table 25.5-1. Contactor-Based—Automatic Transfer Switch Features

Feature Number	Description	Open Transition						Closed Transition
		RLC1	ATC1	ATC3	ATC8	BIC3	BIC8	CBC8
		Residential Contactor Switch ATC-100 Controller	Contactor Switch ATC-100 Controller 40–400A Only	Contactor Switch ATC-300 Controller 40–1200A	Contactor Switch ATC-800 Controller Open Transition	Bypass Isolation Contactor Switch Open Transition ATC-300 Controller	Bypass Isolation Contactor Switch Open Transition ATC-800 Controller	Bypass Isolation Contactor Switch Closed Transition ATC-800 Controller
1	Timers							
1a	Time delay normal to emergency (TDNE) Fixed 2 seconds or 15 seconds	S	S	—	—	—	—	—
	Adjustable 0–1800 seconds	—	—	S	S	S	S	S
2	Time delay engine start (TDES) Fixed 3 seconds	S	S	—	—	—	—	—
	Adjustable 0–120 seconds	—	—	S	S	S	S	S
3	Time delay emergency to normal (TDEN) Fixed 1 minute	S	S	—	—	—	—	—
	Adjustable 0–1800 seconds	—	—	S	S	S	S	S
4	Time delay engine cooldown (TDEC) Fixed 5 minutes	S	S	—	—	—	—	—
	Adjustable 0–1800 seconds	—	—	S	S	S	S	S
5	Emergency (S2) source sensing							
5H	Phase reversal	—	—	S	O	S	O	O
5J	All-phase undervoltage/underfrequency	S	S	S	S	S	S	S
5K	All-phase overvoltage/overfrequency	—	—	S	S	S	S	S
5L	All-phase voltage unbalance and phase loss	—	—	S	O	S	—	—
5N	All-phase overfrequency	S	S	—	—	—	—	—
6	System or engine test							
6B	System test pushbutton	S	S	S	S	S	S	S
6D	Maintained 2-position test switch	—	—	—	—	—	—	—
6H	Maintained 4-position test switch	—	—	—	O	—	O	O
7	Time delay emergency fail (TDEF) Fixed 6 seconds	S	S	—	—	—	—	—
7a	Time delay emergency fail (TDEF) Adjustable 0–6 seconds)	—	—	S	S	S	S	S
8	Pushbutton bypass							
8C	Bypass TDEN	—	—	S	S	S	S	S
8D	Bypass TDNE	—	—	S	S	S	S	S
9	Maintenance selector switch							
9B	Electrical operator isolator switch	—	—	O	O	O	O	O
10	Preferred source selector							
10B	Utility to utility or utility to generator	—	—	—	S	—	S	S
10D	Generator to generator	—	—	—	S	—	S	S
12C	Indicating lights Normal (S1) source connected	S	S	S	S	S	S	S
12D	Emergency (S2) source connected	S	S	S	S	S	S	S
12G	Normal (S1) source available	S	S	S	S	S	S	S
12H	Emergency (S2) source available	S	S	S	S	S	S	S
14	Auxiliary relay contacts							
14C	Normal (S1) source available 4 Form C	—	—	O	—	O	O	O

Note: S = Standard, O = Optional

Transfer Switches Standard and Optional Features

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Contactor-Based—Automatic Transfer Switch Features

Table 25.5-1. Contactor-Based—Automatic Transfer Switch Features (Continued)

Feature Number	Description	Open Transition						Closed Transition
		RLC1	ATC1	ATC3	ATC8	BIC3	BIC8	CBC8
		Residential Contactor Switch ATC-100 Controller	Contactor Switch ATC-100 Controller 40–400A Only	Contactor Switch ATC-300 Controller 40–1200A	Contactor Switch ATC-800 Controller Open Transition	Bypass Isolation Contactor Switch Open Transition ATC-300 Controller	Bypass Isolation Contactor Switch Open Transition ATC-800 Controller	Bypass Isolation Contactor Switch Closed Transition ATC-800 Controller
14D	Emergency (S2) source available 4 Form C	—	—	O	—	O	O	O
14E	Normal (S1) source available 1 Form C	—	—	S	—	—	—	—
14F	Emergency (S2) source available 1 Form C	—	—	S	—	—	—	—
14G	Normal (S1) source available 2 Form C	—	S	—	S	S	S	S
14H	Emergency (S2) source available 2 Form C	—	S	—	S	S	S	S
15	Position contacts							
15E	Normal (S1) source position 1 Form C	—	S	S	S	S	S	S
15F	Emergency (S2) source position 1 Form C	—	S	S	S	S	S	S
15G	Position indicating contact normal (3 Form C)	—	O	O	O	O	O	O
15H	Position indicating contact emergency (3 Form C)	—	O	O	O	O	O	O
15M	Source 2 load shed contacts 4 Form C (must order as a separate field-installed kit)	O	—	—	—	—	—	—
16S	Service equipment /overcurrent protection (S1)	O	—	—	—	—	—	—
18	Metering	—	O	O	O	O	O	O
	IQ 130	—	O	O	O	O	O	O
	IQ 140	—	O	O	O	O	O	O
	IQ 150	—	O	O	O	O	O	O
	IQ 250	—	O	O	O	O	O	O
	IQ 260	—	O	O	O	O	O	O
	PXM 2250	—	O	O	O	O	O	O
	PXM 2260	—	O	O	O	O	O	O
	PXM 2270	—	O	O	O	O	O	O
18W	Analog ammeter one per phase	—	O	O	O	O	O	O
21A	Non-standard terminals	—	—	—	—	—	—	—
23	Plant exciser							
23A	Selectable—disabled/7-, 14-, 28-day interval, FIXED 15 minutes, load/no load, with fail-safe	S	S	—	—	—	—	—
23J	Selectable—disabled/7 day interval, 0–600 minutes, load/no load, with fail-safe	—	—	—	S	—	S	S
23K	Selectable—disabled/7-, 14-, 28-day interval, 0–600 minutes, load/no load, with fail-safe	—	—	S	—	S	—	—
23L	24-hour, 7-day, 365-day programmable programmable plant exciser	—	—	O	O	O	O	O
26	Normal (S1) source sensing							
26D	Go to emergency (S2) input	—	—	S	S	S	S	S
26H	Phase reversal protection	—	—	S	O	S	O	O
26J	All-phase undervoltage/underfrequency	—	—	S	S	S	S	S
26K	All-phase overvoltage/overfrequency	—	—	S	S	S	S	S
26L	Three-phase voltage unbalance/phase loss	—	—	S	O	S	O	O
26M	Allows operation with generator with utility sensing (option available only through a field-installed kit)	O	O	—	—	—	—	—
26P	All-phase undervoltage	S	S	—	—	—	—	—

Note: S = Standard, O = Optional

Transfer Switches Standard and Optional Features

Contactor-Based—Automatic Transfer Switch Features

Table 25.5-1. Contactor-Based—Automatic Transfer Switch Features (Continued)

Feature Number	Description	Open Transition						Closed Transition
		RLC1	ATC1	ATC3	ATC8	BIC3	BIC8	CBC8
		Residential Contactor Switch ATC-100 Controller	Contactor Switch ATC-100 Controller 40–400A Only	Contactor Switch ATC-300 Controller 40–1200A	Contactor Switch ATC-800 Controller Open Transition	Bypass Isolation Contactor Switch Open Transition ATC-300 Controller	Bypass Isolation Contactor Switch Open Transition ATC-800 Controller	Bypass Isolation Contactor Switch Closed Transition ATC-800 Controller
29	Alternative transfer modes of operation	—	—	—	—	O	S	S
29D	Dual ATS bypass isolation	—	—	—	—	O	S	S
29G	Selector switch for automatic or non-automatic operation (switch must be labeled as non-automatic)	—	—	O	O	O	O	O
29J	Automatic transfer operation with selectable (via programming) automatic or non-automatic retransfer operation with fail-safe	—	—	O	O	—	O	O
32	Delayed transfer operation modes	—	—	S	S	S	S	—
32A	Time delay neutral adjustable 0–120 seconds (available on 3-position contactors)	—	—	S	S	S	S	—
32B	Load voltage decay adjustable (available on 3-position contactors)	—	—	—	O	—	O	—
32C	2–30% nominal voltage In-phase monitor defaults to load voltage decay	—	—	—	—	—	—	—
32D	In-phase monitor defaults to time delay neutral	—	—	—	—	—	—	—
32E	Delay transition timer adjustable 3–60 seconds	—	—	—	—	—	—	—
32F	In-phase monitor (2-position contactors only)	—	S	S	S	—	—	—
32G	Time delay neutral fixed 0 or 2 seconds (available on 3-position contactors and breaker-based design)	—	—	—	—	—	—	—
34	Logic extender cable	—	—	—	—	—	—	—
34A	48.00 inches (1219.0 mm)	—	—	—	—	—	—	—
34C	96.00 inches (2438.0 mm)	—	—	—	—	—	—	—
34E	144.00 inches (365.08 mm)	—	—	—	—	—	—	—
35A	Pretransfer Sig-I contacts 1 Form C	—	—	S	O	S	O	—
36	Load shed from emergency	—	—	—	S	—	S	S
37	Go to isolated position (not SE rated) ①	—	—	—	O	—	—	—
38	Stainless steel device covers	—	—	—	O	—	—	—
38A	SS cover for device plate or service equipment	—	—	—	O	—	—	—
38B	Disconnect SS cover for controller	—	O	O	O	O	O	O
41	Space heater with thermostat	—	—	—	—	—	—	—
41A	100 watts	—	O	O	O	O	O	O
41E	375 watts	—	—	—	—	—	O	O
42	Seismic IBC, UBC	S	S	S	S	S	S	S
45	Load sequencing contacts	—	—	—	—	—	—	—
45A	Load sequencing contacts (1)	—	—	—	O	—	O	O
45B	Load sequencing contacts (2)	—	—	—	O	—	O	O
45C	Load sequencing contacts (3)	—	—	—	O	—	O	O
45D	Load sequencing contacts (4)	—	—	—	O	—	O	O
45E	Load sequencing contacts (5)	—	—	—	O	—	O	O
45F	Load sequencing contacts (6)	—	—	—	O	—	O	O
45G	Load sequencing contacts (7)	—	—	—	O	—	O	O
45H	Load sequencing contacts (8)	—	—	—	O	—	O	O

① Select 16S for service entrance rating on RLC1.

Note: S = Standard, O = Optional

Transfer Switches Standard and Optional Features

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Contactor-Based—Automatic Transfer Switch Features

Table 25.5-1. Contactor-Based—Automatic Transfer Switch Features (Continued)

Feature Number	Description	Open Transition						Closed Transition
		RLC1	ATC1	ATC3	ATC8	BIC3	BIC8	CBC8
		Residential Contactor Switch ATC-100 Controller	Contactor Switch ATC-100 Controller 40–400A Only	Contactor Switch ATC-300 Controller 40–1200A	Contactor Switch ATC-800 Controller Open Transition	Bypass Isolation Contactor Switch Open Transition ATC-300 Controller	Bypass Isolation Contactor Switch Open Transition ATC-800 Controller	Bypass Isolation Contactor Switch Closed Transition ATC-800 Controller
45I	Load sequencing contacts (9)	—	—	—	O	—	O	O
45J	Load sequencing contacts (10)	—	—	—	O	—	O	O
47	Closed transition operation-I modes (user must specify mode)							
47C	Closed transition in-phase with default to load voltage decay	—	—	—	—	—	—	O
47D	Closed transition	—	—	—	—	—	—	S
47E	Closed transition in-phase with defaults to time delay neutral	—	—	—	—	—	—	O
48	Communications							
48A	IPONI module (INCOM communications)	—	—	—	O	—	O	O
48D	Ethernet communication 10Base-T only (PXG400 Gateway)	—	—	—	O	—	—	O
48F	EPONI module (10Base-T and 10Base-FL) MPONI module (MODBUS)	—	—	O	O	—	O	O
48R	Remote annunciator	—	—	—	O	—	O	O
48RAC	Remote annunciator with control	—	—	O	O	O	O	O
49B	Sensing isolation transformer	—	—	O	O	—	—	—
49C	Multi-tap voltage transformer (at 240, 208 and 120 Vac not included)	—	S	S	S	S	S	S
51	Surge protection device	—	O	O	O	O	O	O
51D1	50 kA CVX surge device source 1	—	O	O	O	O	O	O
51F1	100 kA CVX surge device source 1	—	O	O	O	O	O	O
80A	Emergency (S2) inhibit contact	—	—	O	S	—	S	S

Note: S = Standard, O = Optional

Feature Description

Timers

1. Time Delay Normal to Emergency (TDNE)

Provides a time delay to allow for the generator to warm up before transferring the load to the emergency source. Timing begins only after the Emergency Source becomes available and is deemed good based on the programmable voltage and frequency set points in the controller.

2. Time Delay Engine Start (TDES)

Provides a time delay before initiating the generator start cycle. This is to account for momentary power outages or voltage fluctuations of the normal source. Provides a Form C contact to the generator starter circuit.

3. Time Delay Emergency to Normal (TDEN)

Provides a time delay of the retransfer operation to permit stabilization of the normal source. Timing begins only after the normal source becomes available and is deemed good based on the programmable voltage and frequency set points in the controller. This function is fail-safe protected.

4. Time Delay Engine Cooldown (TDEC)

Provides a time delay before initiating the generator stop cycle after the retransfer operation. This allows the generator to cool down by running unloaded. Timing begins on completion of the retransfer cycle.

Source 2 Sensing

5. Source 2—Monitoring and Protection

Provides monitoring and protection based on the Source 2 voltage and/or frequency set points. All **Feature 5** monitoring and protection functions are fail-safe operations.

5J. All-Phase Undervoltage/Underfrequency Protection

Provides undervoltage/underfrequency monitoring and protection based on programmable set points in the controller.

5K. All-Phase Overvoltage/Overfrequency Protection

Provides overvoltage/overfrequency monitoring and protection based on programmable set points in the controller.

5H. Three-Phase Rotation Protection

Provides three-phase reversal sensing in order to protect against transferring to an out-of-phase source. The controller will treat the opposite source as unavailable if the sources are out of phase, based on programmable set points in the controller.

5L. Three-Phase Voltage Unbalance/Phase Loss

Provides phase loss detection from blown fuses on the Source 2 supply circuit.

6B. Test Operators

Automatic transfer switches are provided with a controller faceplate test pushbutton that simulates a loss of the Source 1 as standard. All programmed time delays (TDNE, TDEN, etc.) will be performed as part of the test. Engine run time of the test is equal to the plant exerciser programmed set point. All tests are fail-safe protected.

6H. 4-Position Test Selector Switch (FPSS)

Provides a door-mounted 4-position, maintained contact selector switch marked "Auto," "Test," "Engine Start," and "Off." The FPSS is fail-safe protected, except for the "Off Position." Transfer switch operation is determined by the switch position. Transfer switch operations are as follows:

"Auto"—Automatic operation mode.

"Test"—A load test is performed until the switch is moved to another position.

"Engine Start"—A no-load test is performed until the switch is moved to another position.

"Off"—The automatic transfer controller and engine start contact are disabled. A white pilot light is provided to indicate that the FPSS is in the "Off" position.

7. Time Delay Emergency Fail (TDEF)

Provides a time delay that prevents a connected emergency source from being declared "unavailable" based on the customer's set points. This is to account for momentary generator fluctuations. If the Source 2 remains in a failed state, then 0.5 second after the TDEF timer expires the transfer switch will proceed with the programmed sequence for retransfer if Source 1 is available. This time delay is only implemented when Source 2 is a generator.

Note: This feature is also enabled when large loads cause generator output to drop below customer set points.

8. Time Delay Bypass Pushbutton

Provides a momentary contact pushbutton to bypass the TDNE (**Feature 1**) and/or TDEN (**Feature 3**) time delays. The Time Delay Bypass Pushbutton contact, when closed, will reduce any or all of the programmed time delay to zero. Must be executed when TDNE or TDEN timer is displayed on the controller.

8C. Bypass Time Delay Emergency to Normal (TDEN)

8D. Bypass Time Delay Normal to Emergency (TDNE)

9B. Maintenance Selector Switch (MSS)

Provides a 2-position, maintained contact selector switch marked "Operate" and "Disable." When the MSS is placed in the "Disable" position, the controller logic will be disconnected from the transfer motor circuit. The MSS is placed in the "Operate" position for normal automatic operation.

10. Preferred Source Selector

Provides a means to designate either Source 1 or Source 2 as the "Preferred" source. The "Preferred" source is the source that the transfer switch will connect the load to if it is available.

Note: This is a programmable software feature not an actual switch.

10B. Preferred Source Selector

Provides a programmable source selector for use on systems comprised of dual utility or utility and engine/generator power sources.

10D. Preferred Source Selector

Provides a programmable source selector for use on systems comprised of dual engine/generator power sources. (Dual engine starting circuits are provided.)

12C. Source 1—Load Connected

Provides a green indication that indicates the load is connected to Source 1 when lit.

12D. Source 2—Load Connected

Provides a red indication that indicates the load is connected to Source 2 when lit.

Automatic Transfer Switch Features

Feature Description (Continued)

12G. Source 1—Present

Provides a white or amber indication “Depending on the Controller” that Source 1 has power; however, this does not indicate whether Source 1 is acceptable.

12H. Source 2—Present

Provides an amber indication that Source 2 has power; however, this does not indicate whether Source 2 is acceptable.

Overcurrent Trip Indication

Available only with integral overcurrent protection (**Feature 16**) (shown on automatic transfer controller display).

12L. Source 1 Trip Indication

The automatic transfer controller display will read “Lockout” if the Source 1 circuit breaker is in the “tripped” position.

12M. Source 2 Trip Indication

The automatic transfer controller display will read “Lockout” if the Source 2 circuit breaker is in the “tripped” position.

14. Relay Auxiliary Contacts

14C. Source 1 Present

Provides 4 Form C relay auxiliary contacts. The relay is energized when Source 1 is present.

14D. Source 2 Present

Provides 4 Form C relay auxiliary contacts. The relay is energized when Source 2 is present.

14E. Source 1 Available

Provides 1 Form C relay auxiliary contact. The relay is energized when Source 1 is available and within the controller’s programmable set points.

14F. Source 2 Available

Provides 1 Form C relay auxiliary contact. The relay is energized when Source 2 is available and within the controller’s programmable set points.

14G. Source 1 Present

Provides 2 Form C relay auxiliary contacts. The relay is energized when Source 1 is present.

14H. Source 2 Present

Provides 2 Form C relay auxiliary contacts. The relay is energized when Source 2 is present.

15. Switch Position Indication Contact

Provides a contact that indicates if the power switching device is in the “open” or “closed” position.

15E. Source 1 Position Indication Contact

Provides 1 Form C contact that indicates the position of the Source 1 power switching device.

15F. Source 2 Position Indication Contact

Provides 1 Form C contact that indicates the position of the Source 2 power switching device.

15M. Source 2 Load Shed Contacts

Provides 4 Form C contacts to initiate a load circuit disconnect while on Source 2. This gives the user the capability of selectively choosing not to run certain loads while on Source 2.

16B. Integral Overcurrent Protection on Both Power Source Switching Devices

Provides integral overcurrent protection on both Source 1 and Source 2 power switching devices.

16E. Integral Overcurrent Protection on the Source 2 Power Switching Device

Provides integral overcurrent protection on the Source 2 power switching device.

16N. Integral Overcurrent Protection on the Source 1 Power Switching Device

Provides integral overcurrent protection on the Source 1 power switching device.

16S. External Overcurrent Protection on the Source 1 Power Switching Device

Provides overcurrent protection on the Source 1 power switching device.

18. Metering

The ATS controller provides voltage and frequency readings. If additional metering functions are required, Taylor offers a series of digital meters that may be added to the ATS. The meter type can provide simple current and voltage readings or more capable meters providing Power, Demand and energy readings.

Available with an optional communications interface. (See **Feature 48**—Communications for available communication modules.)

Feature 18 metering options include all required external devices (CTs, etc.) for a fully functioning metering system.

IQ 130/140/150

IQ 130

This digital meter provides basic current and voltage per phase (L-L, L-N) and min./max. readings (I, V). Optional communication RS-485, Modbus RTU.

IQ 140

In addition to basic current and voltage, will provide frequency, power measurements real, reactive and apparent power, total (W, VAR, VA). Optional communication RS-485, Modbus RTU.

IQ 150

In addition to basic current/voltage/frequency and power readings, will provide Energy Real reactive and apparent (Wh, VAR, Vah). Optional communication RS-485, Modbus RTU.

IQ 250/260

IQ 250

This digital meter provides current per phase and current demand, voltage (L-L, L-N) and frequency. Power, energy and demand readings. Real, reactive and apparent power and energy, power factor. RS-485 communications, Modbus RTU or ASCII. Optional I/O slots available.

IQ 260

In addition to all of the features of the IQ 250, power quality analysis is available with THD voltage and current per phase.

Power Xpert 2000

Provides either a Power Xpert PXM 2250, PXM 2260 or PXM 2270 meter.

Power Xpert 4000, 6000, 8000

Provides one of the Power Xpert Meters with or without graphic displays.

18W. Ammeter Side Metering

Provides an ammeter for monitoring the load side circuit.

20A. Rear Bus Provisions

Provides Source 1, Source 2 and Load Circuit rear accessible bus stabs with provision for bus bar connection. Taylor transfer switches are provided with either front or rear (dependant on switch type) connected solderless screw-type terminals for power cable connection as standard.

Transfer Switches Standard and Optional Features

Automatic Transfer Switch Features

Feature Description (Continued)

21A. Optional Power Cable Connection Terminals

Taylor transfer switches are provided as standard with Source 1, Source 2 and load circuit solderless screw-type terminals for power cable connection. Alternate terminal wire sizes, and compression lug provisions may be available dependant on transfer switch type and ampere rating.

Plant Exerciser

23A. Plant Exerciser With Fail-Safe

Provides a means for automatic testing of the engine generator set or standby power system. All programmed time delays in the controller will be performed during plant exerciser operations.

Programmable set points for test intervals are start time, either disabled, daily, 7, 14 or 28 days.

15-minute fixed engine test time.

Test may be performed with or without load transfer. Test may be manually cancelled during the operation. This function is fail-safe protected.

23J. Plant Exerciser (PE) With Fail-Safe

Provides a means for automatic testing of the engine generator set or standby power system. All programmed time delays in the controller will be performed during the plant exerciser operation.

Programmable set points for test interval are start time, either disabled or 7 days, and engine test time.

Test may be performed with or without a load transfer. Test may be manually cancelled during the operation. This is a fail-safe operation.

23K. Plant Exerciser With Fail-Safe

Provides a means for automatic testing of the engine generator set or standby power system. All programmed time delays in the controller will be performed during plant exerciser operations.

Programmable set points for test intervals are start time, either disabled, daily, 7, 14 or 28 days, engine test time.

Test may be performed with or without load transfer. Test may be manually cancelled during the operation. This function is fail-safe protected.

26D. Go to Emergency (Source 2)

Provides the capability for an external contact closure to initiate a transfer to the Source 2 power source. This includes starting the generator, performing the programmed time delays and the transfer operation. Retransfer will occur when the external contact is opened. This is a fail-safe function.

Source 1 Sensing

26. Source 1—Monitoring and Protection

Provides Source 1 monitoring and protection functions. If Source 1 fails, then the automatic transfer controller will begin the sequence of operations necessary to transfer the load to Source 2. All **Feature 26** monitoring and protection functions are fail-safe operations.

26H. Three-Phase Rotation Protection

Provides three-phase reversal sensing in order to protect against transferring to an out-of-phase source. The controller will treat the opposite source as unavailable if the sources are out of phase, based on programmable set points in the controller.

26J. All-Phase Undervoltage/Underfrequency Protection

Provides all-phase undervoltage/underfrequency monitoring and protection based on programmable set points in the controller.

26K. All-Phase Overvoltage/Overfrequency Protection

Provides all-phase overvoltage/overfrequency monitoring and protection based on programmable set points in the controller.

26L. Three-Phase Voltage Unbalance/Phase Loss

Provides phase loss detection from blown fuses on the Source 1.

26M. Generator Utility Sensing

Allows for the switch to operate with generators that have internal utility sensing. This option comes as a kit that needs to be field installed.

26N. All-Phase Undervoltage Protection

Provides undervoltage protection for Source 1 (ATC-100 Controller only).

29. Transfer Operation Modes

Provides standard or optional transfer modes, mode selection devices and operational methods for transfer switches.

29J. Automatic Transfer or Automatic Transfer With Non-Automatic Retransfer Operation

Provides a field-selectable programmable set point that permits the transfer switch to operate in one of the following two transfer modes (A or B):

- A. Fully automatic operation.
- B. Automatic engine/generator startup and automatic transfer operation from Source 1 to Source 2. Manual pushbutton operation is required to initiate the retransfer operation and engine/generator shutdown. The pushbutton for manual retransfer operation is included. This is fail-safe protected.

29G. Automatic/Manual Operation With Selector Switch

Provides 2-position selector switch (labeled Auto/manual) that permits selection of the automatic or manual transfer. When in the "Auto" position, the transfer switch operates with fully automatic transfer, retransfer and generator startup and shutdown operations. When in the "Manual" position, manual operation is required to initiate the generator startup or retransfer with generator shutdown operations.

Note: Transfer switches with **Feature 29** must be labeled as non-automatic transfer switch equipment.

32. Delayed Transition Transfer Modes for Open Transition Transfer Switches

Provides delayed transition transfer modes for an open transition transfer switch. Often used in systems with inductive loads, a delayed transition transfer switch may prevent or reduce inrush currents due to out-of-phase switching of inductive loads.

32A. Time Delay Neutral

Provides a time delay in the neutral position during the transfer and retransfer operations during which both Source 1 and Source 2 are disconnected from the load circuit. This allows inductive loads time to reach a safe voltage and eliminate back EMF. The time delay is programmable and is the same for both transfer and retransfer operations. This is a passive feature that requires the consulting engineer/installer to determine the settings based on how the user will operate the facility. Adjustable 0–120 seconds.

Feature Description (Continued)

32B. Load Voltage Decay

Provides load voltage measurement to sense back EMF that is generated when the transfer switch is the neutral position. It provides a delay in transfer in either direction if an unacceptable level is sensed as established by a programmed set point. This is an active feature that adapts to how the facility is operating in order to minimize neutral position wait time, but ensure safety. Adjustable 2–30% of nominal voltage.

32C. In-Phase Transition With Default to Load Voltage Decay

Provides in-phase transition, which is a feature that will permit a transfer or retransfer between two available sources that have a phase angle difference near zero. The in-phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, then the controller defaults to the load voltage decay operation as described in **Feature 32B**. Adjustable frequency difference 0.0–3.0 Hz. Adjustable synchronization time allowance 1–60 minutes.

32D. In-Phase Transition With Default to Time Delay Neutral

Provides in-phase transition, which is a feature that will permit a transfer or retransfer only between two available sources that have a phase angle difference near zero. The in-phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, then the controller defaults to the time delay neutral operation as described in **Feature 32A**. Adjustable frequency difference 0.0–3.0 Hz. Adjustable synchronization time allowance 1–60 minutes.

32E. Delayed Transition

The transfer and re-transfer operations during which both Source 1 and Source 2 are disconnected from the load circuit. The time delay is programmable and the same for both transfer and re-transfer operation. Adjustable 3–60 seconds.

32F. In-Phase Transition

Provides in-phase transition, this feature will permit a transfer or retransfer between two available sources that have a phase angle difference of 8 degrees or less. The in-phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, the Alarm relay will energize and “Failed to Sync” will be displayed on Line 1 of the controller. After resetting the alarm, another in-phase transition may be attempted or a non-synchronized transfer may be initiated by failing the connected source. The adjustable frequency difference is 0.0 to 3.0 Hz. If the synchronization does not occur within a specified amount of time, the Alarm relay will energize and the failure will be logged into the transfer history as either “Sync Fail - Freq” or “Sync Fail - Phase” depending on whether the frequency difference or the phase difference was excessive.

32G. Time Delay Neutral

This feature provides a time delay in the neutral position during the transfer and retransfer operations during which both the utility source and the generator source are disconnected from the load circuit. TDN cannot be implemented on a transfer switch using a 2-position contactor.

Jumper selectable at disable (0 seconds) or enable (2 seconds).

Logic Extender Cable

34A. 48 Inches (1219 mm)

Provides logic extension cable with connectors.

34C. 96 Inches (2438 mm)

Provides logic extension cable with connectors.

34E. 144 Inches (3658 mm)

Provides logic extension cable with connectors.

34F. 100 Inches (2540 mm)

Provides logic extension only for open Magnum ATS.

35A. Pretransfer Signal With 1 Form C Contact

Provides a signal prior to the transferring of the load. Will not transfer until the programmable delay set point in the controller is reached. If both sources are not available, this option will ignore the time delay set in the controller.

36. Load Shed From Emergency

Provides the capability for an external NC contact to initiate a load circuit disconnection from the Source 2 power source. If the load circuit is connected to Source 2 and the contact is opened, then a retransfer to Source 1 is completed if Source 1 is available. If Source 1 is not available, then the transfer switch will transfer to neutral. If the load circuit is connected to Source 1 and the contact is open, then a transfer Source 2 is prohibited.

37. Service Equipment Rated Transfer Switch

Provides the label “suitable for use as service equipment” and the features necessary to meet the requirements for the label. Includes service disconnect with visible indication and neutral assembly with removable link. **Feature 16B** or **16N** must be selected separately.

37A. Service Equipment Rated Transfer Switch Without Ground Fault Protection

Provides service equipment rating for an application that does not require ground fault protection.

37B. Service Equipment Rated Transfer Switch With Ground Fault Protection

Provides service equipment rating for an application that requires ground fault protection.

38. Steel Cover

Provides protection for a device panel as option 38a and protection for the controller as option 38b.

39. Distribution Panel

The distribution panel feature utilizes a panelboard design with bolt-on circuit breakers type EHD. Bolt-on breakers are designed to hold up to the changes in temperature and humidity that an industrial application calls for. (240/120 Vac single-phase systems only.)

39A. 225A With (2) 200A Feeders

39B. 300A With (3) 200A Feeders

39C. 400A With (4) 200A Feeders

Transfer Switches Standard and Optional Features

Automatic Transfer Switch Features

Feature Description (Continued)

41. Space Heater With Thermostat

Provides a space heater and adjustable thermostat. External control power is not required. Availability is dependent on transfer switch type.

41A. Space Heater With Thermostat—100 Watt

Provides 100-watt space heater with an adjustable thermostat.

41E. Space Heater With Thermostat—375 Watt

Provides 375-watt space heater with an adjustable thermostat.

42. Seismic Certification

Provides a seismic certified transfer switch with certificate for application that is seismic Zone 4 under the California Building Code (CBC), the Uniform Building Code (UBC) and BOCA, and International Building Code (IBC).

45. Load Sequencing Capability

Provides the capability for sequential closure of up to 10 addressable relays after a transfer. Each addressable relay provides (1) Form C contact. A single adjustable time delay between each of the relay closures is provided. Operates via a sub-network. Adjustable 1–120 seconds.

45A. Load Sequencing Contact

Provides (1) addressable relay.

45B. Load Sequencing Contact

Provides (2) addressable relays.

45C. Load Sequencing Contact

Provides (3) addressable relays.

45D. Load Sequencing Contact

Provides (4) addressable relays.

45E. Load Sequencing Contact

Provides (5) addressable relays.

45F. Load Sequencing Contact

Provides (6) addressable relays.

45G. Load Sequencing Contact

Provides (7) addressable relays.

45H. Load Sequencing Contact

Provides (8) addressable relays.

45I. Load Sequencing Contact

Provides (9) addressable relays.

45J. Load Sequencing Contact

Provides (10) addressable relays.

47. Transfer Modes for Closed Transition Transfer Switches

Provides available transition transfer modes for a closed transition transfer switch. Closed transition is a “make before break” transfer and retransfer scheme that will parallel (a maximum of 100 ms) Source 1 and Source 2 providing a seamless transfer when both sources are available. The closed transition feature includes permissible voltage difference frequency difference and synchronization time allowance set points. The phase angle difference between the two sources must be near zero for a permitted transfer. These are all programmable set points in the controller.

47C. Closed Transition With Default to In-Phase Transition With Default to Load Voltage Decay

Provides a closed transition transfer as the primary transfer mode. In the event Source 1 and Source 2 fail to synchronize within the permitted voltage difference, frequency difference, phase angle difference and time, then the controller defaults to the in-phase transition with default to load voltage decay operations as described in **Feature 32C** and **32B**. Adjustable frequency difference 0.0–0.3 Hz. Adjustable voltage difference 1–5% volts. Adjustable synchronization time allowance 1–60 minutes.

47D. Closed Transition

Provides a closed transition transfer as the primary transfer mode. Only under a fail-safe condition (i.e., loss of the connected source) will the controller transfer to the alternate source using the load voltage decay operation as described in **Feature 32B32B**. Adjustable frequency difference 0.0–0.3 Hz. Adjustable voltage difference 1–5% V.

47E. Closed Transition With Default to In-Phase Transition With Default to Time Delay Neutral

Provides a closed transition transfer as the primary transfer mode. In the event Source 1 and Source 2 fail to synchronize within the permitted voltage difference, frequency difference, phase angle difference and time, then the controller defaults to the in-phase transition with default to time delay neutral operation as described in **Features 32D** and **32A32B32A**. Adjustable frequency difference 0.0–0.3 Hz. Adjustable voltage difference 1–5 percent volts. Adjustable synchronization time allowance 1–60 minutes.

47F. Closed/Load Voltage Decay

ATC-800 controllers equipped with Feature Set 47F will perform a closed transition when both sources are synchronized in frequency, phase and voltage. Failure to synchronize will result in an open transition Time Delay Load Voltage Decay transfer. Time Delay Load Voltage Decay uses the load voltage measurements to sense back EMF that is generated when the transfer switch is in the Neutral position. It provides a delay in transfer in either direction if an unacceptable level is sensed as established by a customer programmed level. The transfer will not take place until the back EMF decays below the acceptable programmed level. This feature has a separate setting of enabling or disabling the operation. If disabled, the transfer switch will not delay in the Neutral position and will transfer between the sources as fast as possible. This feature is not available with the Time Delay Neutral Optional **Feature 32A**.

47G. Closed/Time Delay Neutral

ATC-800 controllers equipped with Feature Set 47F will perform a closed transition transfer when both sources are synchronized in frequency, phase and voltage. Failure to synchronize will result in an open transition Time Delay Neutral transfer. Time Delay Neutral provides a time delay in the transfer switch neutral position when both sources are open. This delay takes place when the load is transferred in either direction to prevent excessive in-rush currents due to out-of-phase switching of large motor loads.

48. Communication Modules

Provides communications modules for the ATC-300, ATC-600 and ATC-800 transfer switch controllers.

48A. INCOM

Communication (IPONI) Provides Taylor's proprietary INCOM protocol communications modules.

48D. Ethernet

Communication (PXG400 Gateway)

Translates Modbus RTU, QCPort or INCOM to Modbus TCP. The PXG400 Gateway includes embedded Web server monitoring of up to 64 connected devices. (Includes the IPONI with the ATC-600 and ATC-800 controllers.)

Feature Description (Continued)

48F. Modbus

Communication (MPONI)

Provides Modbus RTU protocol via communications module.

48R. Remote Annunciator

Provides remote monitoring of source availability, source position and test status for the ATC-600 and ATC-800 controllers. Operates via the controller sub-network.

48RAC. Remote Annunciator with Control

Provides remote monitoring and control via a color touch screen display for the ATC-300, ATC-600 and ATC-800 controllers. Operates using Modbus protocol (MPONI required for the ATC-600 and 800).

Option 51. Surge Protection Device

Two types of surge protection devices are used in Taylor automatic transfer switches. Both types meet the requirements for UL 1449 3rd Edition for surge suppression devices and are CE marked. The type CVX is used on Taylor wallmount ATS designs and the Taylor type SPD are used on floor-standing designs.

CVX

The CVX device features a Thermally Protected Metal Oxide Varistor technology and comes with high intensity LED phase status indicators.

SPD

The SPD features a Thermally Protected Metal Oxide Varistor technology. It comes with dual-colored protection status indicators for each phase and for neutral-ground protection mode. It comes with an audible alarm with silence button and a Form C contact.

An optional SPD with surge counter feature package is available. This provides six-digit surge counter with reset button.

51S1B. 50 kA—SPD standard source 1

51S2B. 80 kA—SPD standard source 1

51S3B. 100 kA—SPD standard source 1

51S4B. 120 kA—SPD standard source 1

51S5B. 160 kA—SPD standard source 1

51S6B. 200 kA—SPD standard source 1

51S7B. 250 kA—SPD standard source 1

51S8B. 300 kA—SPD standard source 1

51S9B. 400 kA—SPD standard source 1

51S1C. 50 kA—SPD standard with surge counter source 1

51S2C. 80 kA—SPD standard with surge counter source 1

51S3C. 100 kA—SPD standard with surge counter source 1

51S4C. 120 kA—SPD standard with surge counter source 1

51S5C. 160 kA—SPD standard with surge counter source 1

51S6C. 200 kA—SPD standard with surge counter source 1

51S7C. 250 kA—SPD standard with surge counter source 1

51S8C. 300 kA—SPD standard with surge counter source 1

51S9C. 400 kA—SPD standard with surge counter source 1

51SC8. Remote display panel (8 feet standard)

51SC12. Remote display panel (12 feet)

51SC4. Remote display panel (4 feet)

54. Front Access

54A. Front access cabinet available for all Magnum products. This option will add an additional pull section mounted on the side of the switch.

59a. Silver-Plated Bus

Silver-plated bus is a standard feature for all Magnum-based designs.

59b. Tin-Plated Bus

Tin-plated bus is available as an option for Magnum-based designs.

Glossary

With respect to their use in this document and as they relate to switch operation, the following terminology is defined:

Available—A source is defined as “available” when it is within its undervoltage/overvoltage/underfrequency/overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting.

Fail-safe—A feature that prevents disconnection from the only available source and will also force a transfer or retransfer operation to the only available source.

Retransfer—Retransfer is defined as a change of the load connection from the secondary to primary source.

Source 1—is the primary source or normal source or normal power source or normal. (Except when Source 2 has been designated the “Preferred Source.”)

Source 2—is the secondary source or emergency source or emergency power source or emergency or standby or backup source. (Except when Source 2 has been designated the “Preferred Source.”)

Source 1—Failed or fails—Source 1 is defined as “failed” when it is outside of its undervoltage or overvoltage or underfrequency or overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting.

Source 2—Failed or fails—Source 2 is defined as “failed” when it is outside of its undervoltage or overvoltage or under-frequency or overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting for a time exceeding 0.5 seconds after the time delay emergency fail (TDEF) time delay expires.

Transfer—“Transfer” is defined as a change of the load connection from the primary to secondary source except when specifically used as “Transfer to Neutral.”

Transfer to Neutral—“Transfer to Neutral” is defined as when the load circuits are disconnected from both Source 1 and Source 2.

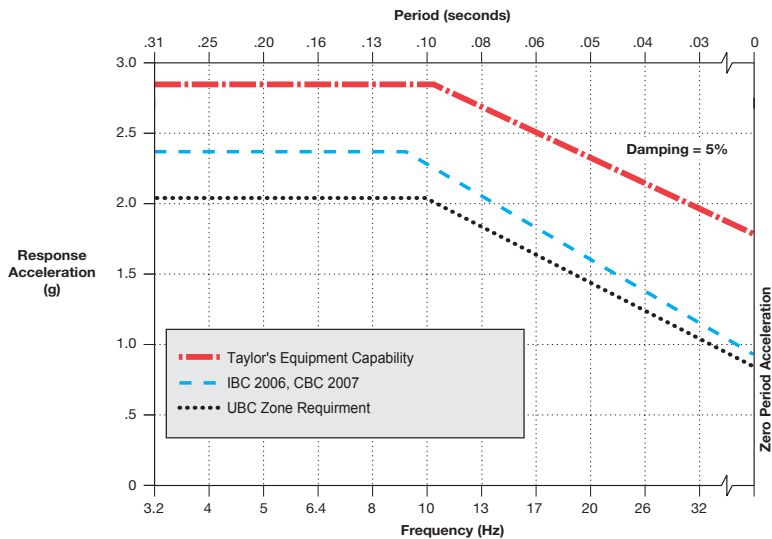
SEISMIC QUALIFIED



TEST CERTIFICATE OF SEISMIC WITHSTAND CAPABILITY

Taylor's equipment identified below was tested for seismic withstand capability and tested in accordance with the combined requirements specified in the International Building Code, California Building Code and the Uniform Building Code. As required by the codes, the equipment demonstrated its ability to function after the seismic tests. The seismic capability of the equipment exceeds the worst-case required levels, as illustrated in the figure below.

UL 1008 Low Voltage Transfer Switches— Wall Mounted (MCCB and Contactor Type)



The frequency sweep tests revealed that the lowest equipment natural frequency is:

>3.2 Hz

Mostafa A. Ahmed
3RD PARTY TEST ENGINEER IN CHARGE



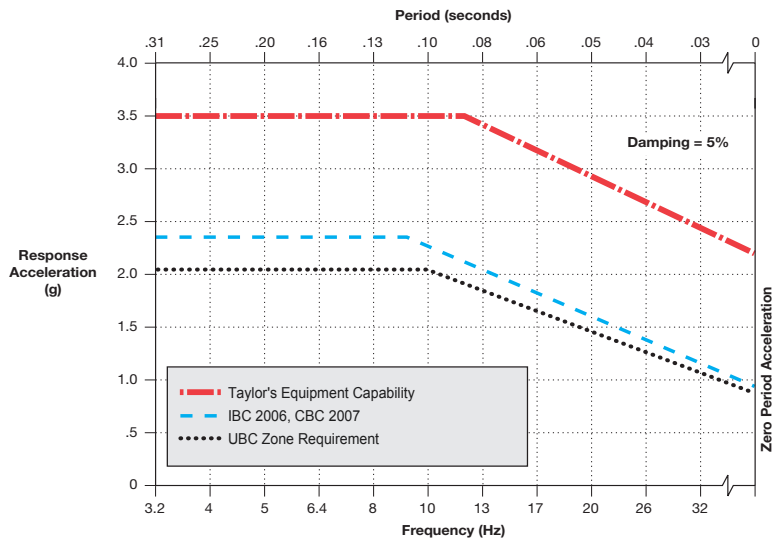
SEISMIC QUALIFIED



TEST CERTIFICATE OF SEISMIC WITHSTAND CAPABILITY

Taylor's equipment identified below was tested for seismic withstand capability and tested in accordance with the combined requirements specified in the International Building Code, California Building Code and the Uniform Building Code. As required by the codes, the equipment demonstrated its ability to function after the seismic tests. The seismic capability of the equipment exceeds the worst-case required levels, as illustrated in the figure below.

UL 1008 Low Voltage Transfer Switches—Floor Mounted (Magnum DS Breakers and Contactor Type)



The frequency sweep tests revealed that the lowest equipment natural frequency is:

6.2 Hz

Mostafa A. Ahmed
3RD PARTY TEST ENGINEER IN CHARGE

