
FAQ

Short Time Rated (STR) Automatic Transfer Switches (ATS) for Mission-Critical Applications

1. What is Selective Coordination?

- 2017 National Electric Code (NEC) defines Selective Coordination as the localization of an overcurrent condition to restrict outages to the circuit or equipment affected, accomplished by the choice of overcurrent protective devices and their ratings or settings.” In other words, in a selectively coordinated system only the breaker directly supplying the overloaded/faulted part of the system will open, thus allowing the rest of the system to operate. The NEC® has mandatory selective coordination requirements for the below four articles. These Articles provide the minimum requirements for systems that are essential for life safety, public safety and national security.
- Emergency Systems — Article 700 (700.27)
- Legally Required Standby Systems — Article 701 (701.18)
- Critical Operations Power Systems (COPS) — Article 708 (708.54)
- Healthcare Article 517 (517.26 Required for Essential Electrical Systems)

2. What is Short-Time Rating (STR)?

- Short-time current rating is defined by UL 1008 as the maximum amount of fault current a switch can withstand at a specified voltage for a given amount of time and remain functional. For a system that utilizes OCPD's with short-time delays to be selectively coordinated, the automatic transfer switch must not only be able to withstand and close-on to the fault, but also be functional and “supply power to the loads after a fault”.

3. What is the difference between an ATS with a Withstand and Close-on Rating (WCR) and an ATS with STR rating?

- Per UL, ATS with WCR rating is not required to be functional after a fault event
- Per UL, ATS with STR rating must be:
 - Fully functional and ...
 - Carry full load after the fault event
- ATS must pass Temperature Heat Rise Test and repeated Withstand Test after Withstand and Close Test to be considered a UL approved STR switch

4. What is a UL Short Time Rated ATS and why is it required?

- A transfer switch that has been certified by UL to meet UL 1008 standard for a “short-time rating” classification which consists of (1) withstanding a short circuit fault (of duration between 0.100 and 1 second, according to desired test rating); (2) followed by closing on to another equal duration short circuit fault; (3) followed by a full load heat rise test.
- National Electrical Code (NEC) requires selective coordination of overcurrent protective devices in life/public safety and mission-critical facilities such as hospitals and data centers to isolate the faulted circuit while maintaining power to the balance of the electrical distribution system. As defined by the 2017 edition of the NEC, selective coordination is mandatory for emergency and legally required electrical systems in buildings where life safety and national security is paramount.
- A UL STR transfer switch of sufficient duration, typically 30 cycles (0.500 sec), allows selective coordination of upstream overcurrent devices with downstream devices by allowing those devices closest to the fault to interrupt power. This dramatically simplifies both the specification and coordination of overcurrent devices and increases flexibility for future system upgrades and expansion, and more importantly maximizes power distribution system reliability/uptime.

5. Why is 30-Cycle (0.500 sec) STR UL Rated ATS preferred and not 3-Cycle (0.050 sec) WCR Rated ATS in selective coordination?

- While the NEC allows the use of transfer switches with a 3-Cycle fault/withstand duration in combination with specific molded-case circuit breakers, such units can make selective coordination planning more challenging because they allow little room for proper required settings. A 30-Cycle UL STR transfer switch can close and maintain its rated withstand capacity for up to 0.5 seconds, giving engineers the ability to adjust and coordinate the trip settings for upstream power circuit breakers even if they do not incorporate an instantaneous trip.

6. What mission-critical markets/applications does the ZT30 30-Cycle UL Rated Series serve?

- Hospitals/healthcare facilities
- Emergency response center and high-rise buildings with multiple elevators
- Data centers, banks, government offices, airport
- Water processing and waste water treatment facilities

7. What are the key selling features/differentiators of the ZT30 ATS product line?

- Industry-leading durability and fault tolerance (85kA Short-Time Rating)
 - Maximizes system uptime/reliability
 - Withstands and closes on a fault
 - Supplies 100% rated power to loads after overcurrent event
 - Designed for ease of insertion into selectively coordinated electrical distribution systems
- Electrical and mechanical interlock prevents Source 1 and Source 2 from being inadvertently closed at the same time (Standard/Delayed Transition)
- Advanced power quality metering, communications & diagnostics
- Innovative safety features for operator safety
- Modular wire harness design for installation flexibility
- Quick Make/Quick Break (QMQB) operator enables operators to perform manual transfers with the door closed
 - Manual transfers can be performed on a fully loaded switch
 - Allows operators to put switch in open position (load disconnected from both sources) when performing manual operation for added safety
 - Manual transfer speed same as electric transfer speed
- Protective safety shutter system (bypass isolation)
- Enclosures that accommodate various cable entry options (top/bottom/side)
- “Plug and Play” Interchangeable Source Cable Termination Kit enables installers to easily and quickly reconfigure the designation of Source 1 and Source 2 lugs
- Multi-tap transformer enables operation on a wide range of system voltages
- Mechanical position indicators enable personnel to quickly determine the switch’s position even when the power is down

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