

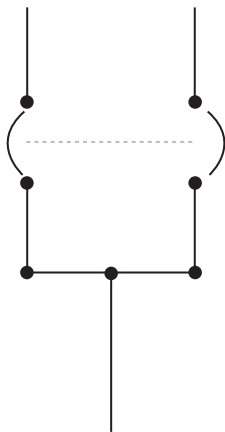


Power Contactor Type ATS vs. Circuit Breaker Type ATS



1. Fewer parts, Fewer problems.

- a. *The Power Contactor ATS* is specifically designed to switch between two power sources and has **one drive mechanism**.
- b. *A circuit breaker ATS* has **three mechanisms**: two individual add-on/motorized mechanisms joined by a third mechanism, an add-on interlock assembly which may be chain or cable drive. These mechanisms are mechanically in series with each other. Failure of any one will render the others useless for an automatic transfer.



2. Integrated mechanical interlock.

- a. *The Power contactor ATS* is a true **double throw device**, interlocking is inherent. The interlock is built into the drive mechanism. This interlock is not optional.
- b. *A circuit breaker ATS* is made of **two single throw devices**, this makes it necessary to add an interlock. The interlock rides on top of the single throw motorized breaker mechanisms. This interlock is required to prevent the possibility of the individual mechanisms moving independently closed simultaneously.

3. Speed of operation

- a. *The Power contactor ATS* has a **30 to 100ms transfer time**, from live source to live source. This fast transfer time can allow the use of in-phase monitoring during transfer. The in-phase monitor prevents out of sync transfers that can cause circuit breakers to trip. Short dead time can also allow some loads to stay on-line and/or not require a manual restart.
- b. *A circuit breaker ATS* has a **longer and unpredictable transfer time** due to the

fact that two drive mechanisms need to be triggered independently and sequentially. Assuming two power breakers are used, each having a 5 cycle operate time equates 10 cycles or 167ms. This would be the best case scenario. Breakers which are not power breakers or stored energy type may have a greater operate time if external operators are used such as with MCCB style breakers.

4. UL listing

- a. *The Power contactor ATS* is often **UL1008 listed**. This requires certain testing:
 - i. Overload and endurance to ensure:
 1. In rush handling capabilities.
 2. Switching at worst-case power factor.
 3. Minimum life of 3000 to 6000 operations.
 - ii. Withstand and closing ratings ensure:
 1. The ability to remain closed during faults.
 - a. To allow the fault to be isolated, by a down stream breakers and keep remaining circuits operational.
 2. The ability to close into a fault and remain closed.
 - a. To allow the fault to be isolated, by a down stream breakers and keep remaining circuits operational.
- b. *A circuit breaker ATS* is **not always UL1008 listed**. Especially those that are not completely packaged by the manufacturer.

5. Various models for different applications.

- a. *The Power contactor ATS* is available in a **variety of models**.
 - i. The Standard model transfers in 30 to 100ms.
 - ii. The Delay model can be programmed to stop in a center off position during transfer, for an adjustable time to allow loads to decay.
 - iii. Closed transition models can provide zero interruption during live source to live source transferring.
 - iv. Bypass isolation transfer switches provide a draw-out transfer switch with a manual transfer switch to route power around the ATS for maintenance and testing. The bypass can switch to either source, and can be safely used as a manual transfer switch also.
- b. *A circuit breaker ATS* primarily operates as a delay transition only.
 - i. When provided in other configurations even more add-on components become necessary, such as Kirk-key interlocks.
 - ii. Bypass configurations become very large and are not always built to be capable of bypassing to either source.

6. Controls

- a. *The Power contactor ATS* is provided with a **custom microprocessor** controller. This provides many standard and optional features:
 - i. In-phase monitor
 - ii. Diagnostics
 - iii. Drive mechanism monitoring to prevent coil burn out

- iv. Remote controls
 - v. Load shed, and add
 - vi. Field adjustable timers
 - vii. Generator exerciser clocks
 - viii. Communication capabilities
 - ix. Adjustable voltage & frequency sensing
- b. *A circuit breaker ATS* is often controlled by a **generic controller**. These controllers are usually manufactured and designed by a third party. Not the breaker manufacturer and not the assembler, and therefore cannot always provide specific features:
 - i. In-phase monitoring, due unknown operating speed of the power section.
 - ii. Drive mechanism coil burn out prevention, due to unknown power section.

A Breaker ATS can be used when:

- **UL1008 LISTED**
- Engineered, packaged, backed, and serviced by a conventional transfer switch or circuit breaker manufacturer. This will ensure custom controllers and a controlled manufacturing process.
- Utilized in multiple generator synchronizing gear line ups, with systemic redundancy and master controls executed via a programmable logic controller(s).
- Medium voltage applications, due to the fact that the availability of a vacuum bottle double-throw contact structure is not commonly available.

Carl Kyrk, 2001



GE Zenith Controls