

Simplified Questions and Answers for Specifiers

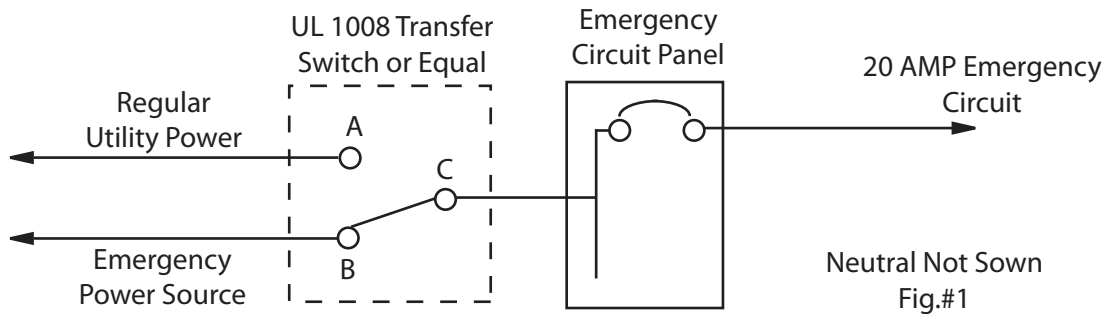
Pertaining to UL1008, 20 Amp multi circuit automatic transfer switches

Q-1 What is really a UL1008 automatic transfer switch?

A-1 A mechanical device which is triggered by an electrical coil solenoid, and transfers an electrical load from regular utility power to an emergency source, such as a generator, and transfers this load back to utility power when this power is restored.

Q-2 Why are automatic transfer switches large, and why do they cause a loud noise upon transfer?

A-2 Because they are mechanical devices with a large contact air gap and are designed to prevent arcing between A and B, whose phase angle may be 120 degrees apart, which can occur under the following conditions.



#1 Lighting Load is powered by a generator during utility power failure. See Fig.#1.

#2 Utility power is restored but generator is still running, this is a normal procedure

#3 Automatic transfer switch solenoid is then energized, after a short time delay, by utility power and triggers contact arm C, which moves from B and creates an arc, a normal occurrence. The arc is proportional to the load or total current being drawn.

#4 Arc of a different phase angle is attracted by contact A power in an ionized conductive atmosphere, which can result in an explosion.

To prevent the above, the distance between A and B must be large enough, similar to the distance required to extinguish a welding electrode arc when withdrawing the electrode.

Q-3 How does a multi pole or multi circuit UL1008 transfer switch operate?

A-3 A spring wound force operates the contact arm between A and B when an electrically operated coil from a solenoid releases a wound up spring mechanism.

Q-4 Does the above indicate that electrical power is required to activate the UL1008 mechanical mechanism, by means of a coil or solenoid?

A-4 Yes.

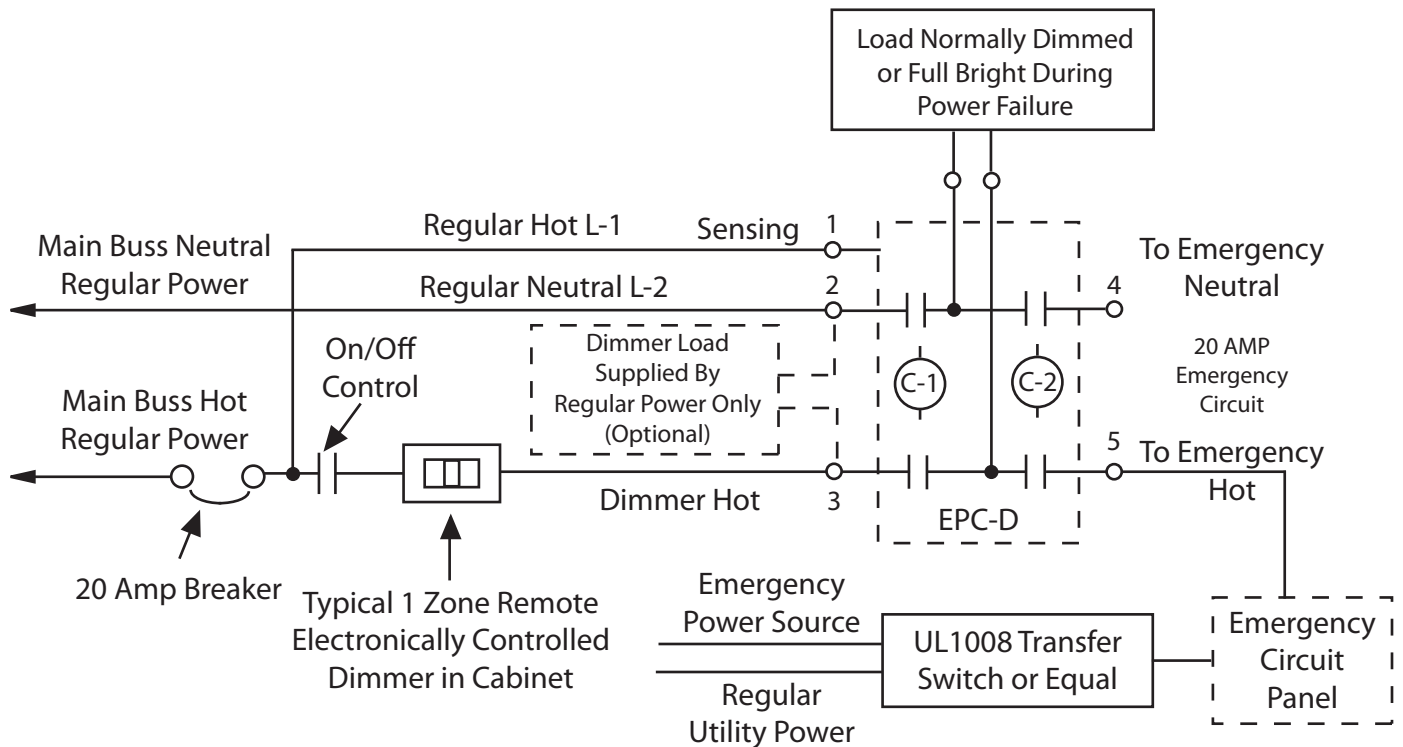
Q-5 What other methods are employed to switch large current loads, without arcing between 2 different power sources with different phase angles, such as converters and UPS systems?

A-5 Solid state devices which transfer when the current is at null or 0 point on the sine wave, called zero cross over switching.

Q-6 Are there any other approved methods for transferring loads from loads from 2 different source during a utility power failure when these loads are only 20 Amp per emergency circuit.

A-6 Yes. UL 924 covers these under automatic load control relays, devices intended to automatically switch a critical load from regular utility power to an emergency power panel. This emergency panel is supplied with utility power but is automatically transferred to an emergency power source during a utility power interruption, by means of a large mechanically operated UL 1008 transfer switch or equal.

Q-7 Are UL924 approved LVS automatic load relays Model EPC-D and EPC-D-F type transfer methods safe and reliable?



A-7 Yes. Each has 4 types of interlocks, preventing arcing. Review the above diagram and LVS Silent Single Zone Automatic Emergency Power Transfer Control for Dimmable Loads (EPC-D) for details.

Q-8 How do you compare the functional reliability of a UL1008 automatic transfer switch, feeding multiple circuits each with a 20 Amp rating, and a UL 924 automatic load relay transfer control?

A-8 When using a 1 circuit UL1008 unit or a 1 circuit UL924 unit, they are electrically equivalent. However, if using a 4 circuit UL1008 device, which has only 1 electrical solenoid or coil, the 4 circuit UL924 device has 4 times the reliability because each circuit is independent.

Q-9 How reliable are relays?

A-9 Usually they can be operated at least 100,000 times at full 20 amp load, and an automatic transfer relay control operates usually only 5 times per year when regular utility power is interrupted.

Conclusion: UL1008 type automatic transfer switches are safe, but their size, noise, and cost makes them more suitable for large loads exceeding 20 Amp, or as the main transfer switch between utility normal power and emergency power, such as a generator. Inverters usually employ an internal solid state transfer control, eliminating the UL1008 transfer switch.