



# *Testing an Arc-Flash Detection Installation With a Slave Flash Device*

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## **INTRODUCTION**

Arc-flash detection in certain SEL devices is triggered by the relay sensing light and overcurrent simultaneously. The relay then trips at high speed. When commissioning arc-flash detection systems, testing the overcurrent thresholds is not enough—the light sensors must be tested as well. Light sensors are normally tested with a camera flash or an SEL-4520 Arc-Flash Test Module connected to a light-emitting diode (LED). The SEL-4520 simulates an arc flash by routing current from a connected test set to the relay at the same time that it flashes the LED.

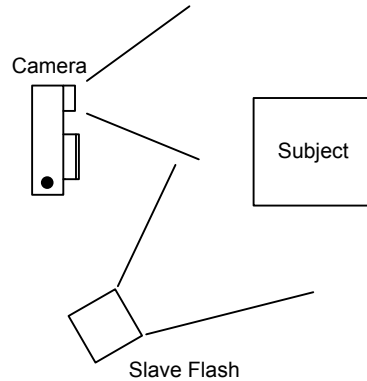
## **PROBLEM**

When commissioning an arc-flash detection system using a camera flash, the user is restrained by the length of the cable that connects the SEL-4520 and the camera flash. Without the use of custom cables and adapters, it can be difficult to move the camera flash far enough from the test set to light up sensors in the switchgear. Another problem is the rapid obsolescence of external camera flash devices with manual remote trigger inputs that are used in the photography industry in manual mode. Users may find it difficult to locate a camera flash device that has manual mode capability, which is necessary for use with the SEL-4520.

## **SEL SOLUTION**

When using the SEL-4520 to test an arc-flash detection scheme, the use of a slave flash is a solution. A slave flash is used in photography as a method of improving lighting conditions for photographs. A slave flash provides a powerful high-intensity light flash that is triggered by the rising edge of a primary flash source. A slave flash fires in synchronism with the main flash.

In the example shown in Figure 1, the slave flash is a standalone device and is triggered when it detects a flash from the camera.

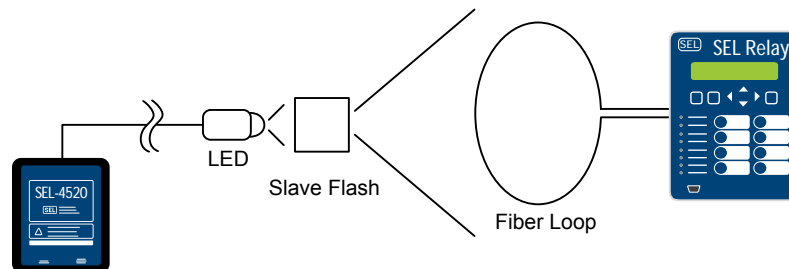


**Figure 1 Slave and Camera Flash Example**

Because slave flash devices are relatively inexpensive and readily available, they can be quickly implemented to test the point and fiber-loop light sensors of an SEL relay.

When used with the SEL-4520, the slave flash has no physical connection to the SEL-4520. Instead, the slave flash is triggered by the light from the LED.

For an application where a distance of 50 feet is required, simply connect a 50-foot BNC cable between the SEL-4520 LED output and the LED. Unlike camera flash cables, BNC cables are readily available in custom lengths. At the test location, direct the light of the LED at the slave flash. The SEL-4520 LED triggers the slave flash, as shown in Figure 2.



**Figure 2 Using an LED to Trigger a Slave Flash**

## CONCLUSION

Use a slave flash device to commission arc-flash detection systems when long distances exist between the test set and the light sensors. This solution also eliminates the need for locating a camera flash device with manual mode capability.