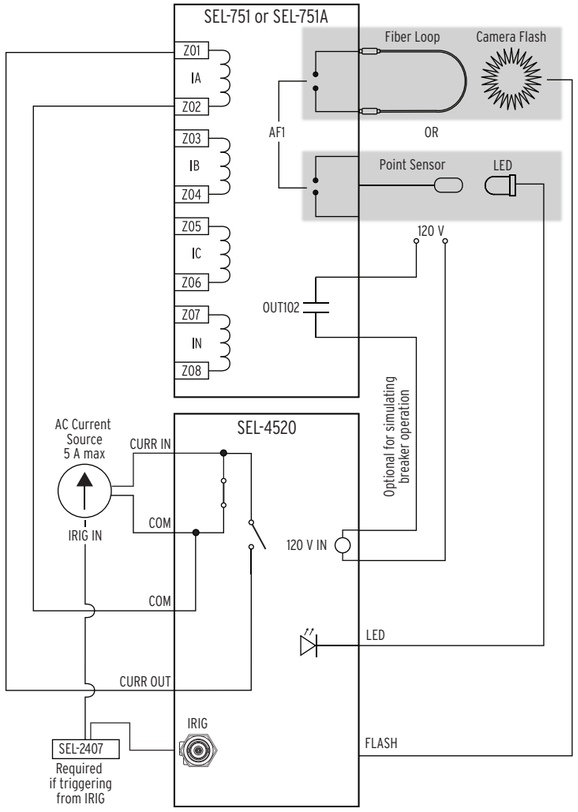
Example of Testing the Point or Fiber Arc-Flash Sensor

1. Set the following in the SEL-751A relay.

Setting Name	Setting Class	Value
50PAFP	Global	Apply current higher than this setting
AFSENS1	Global	Point or Fiber
AOUTSLOT	Global	101_2
OUT 102	Logic	TRIP
TR	Group	(50PAF OR 50NAF) AND TOL1

2. Connect the SEL-4520 as shown in the connection diagram.
3. Using the supplied cable magnet, affix the BNC cable with attached LED module or camera flash (not included). Point the module or flash to the point sensor (or fiber loop sensor).
4. Apply power to the SEL-4520. Verify that the green enabled (**EN**) light is illuminated.
5. Set the desired LED pulse duration. For example, set DIP Switch 1 to the up position for a 128 ms light pulse.
6. Turn on the ac current source and configure the connected output for a maximum of 5 A.
7. Apply current. Verify that the current source is active.
8. Trigger an arc-flash event by pressing the **TST/RST** pushbutton. Verify that the LED module flashes and that the relay reports an arc-flash trip.
9. Turn off the current source.
10. Analyze the event report. Issue the **CEV R** command and save to file. Open the event report in ACSELERATOR QuickSet® SEL-5030 Software and view TOL1, 50PAF or 50NAF, TRIP, IA (or respective current input).

NOTE: If the SEL-4520 120 V contact input is used, the current is removed after the relay trips. If the 120 V contact input is not used, the current continues to flow through the relay until the **TST/RST** pushbutton is pressed.



Connection Diagram

Factory Assistance

We appreciate your interest in SEL products and services. If you have questions or comments, please contact us at:

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Date Code 20110610

SEL-4520 Arc-Flash Test Module

Major Features and Benefits

- Tests the functionality of a relay's arc-flash detection feature.
- Makes troubleshooting quick and easy.
- Serves double duty as a training aid for arc-flash detection.
- Facilitates testing with its portability.
- Can be used with the SEL-751 or the SEL-751A relays.

Application

The SEL-4520 device simultaneously applies current to an SEL-751 or SEL-751A while triggering an LED light or optional camera flash (not included). The duration of the light pulse is controlled through DIP switches, and the triggering of the light is controlled by a Demodulated IRIG input (light triggers at top of second) or through a pushbutton (TST/RST). Current circulates through the SEL-4520 and the test source until the TST/RST pushbutton is pressed (see Front Selections and Connections). Once TST/RST is pressed, the light is applied and current then circulates through the relay and the test source, simulating an arc-flash condition (see Additional Selections and Connections). The combination of current and light outputs from the SEL-4520 to the SEL-751 or SEL-751A can help in testing an overall Arc-Flash Detection (AFD) system (see Example of Testing the Point or Fiber Arc-Flash Sensor).

⚠ DANGER
Disconnect or de-energize all external connections before opening this device. Contact with hazardous voltages and currents inside this device can cause electrical shock resulting in injury or death.

⚠ DANGER
Contact with instrument terminals can cause electrical shock that can result in injury or death.

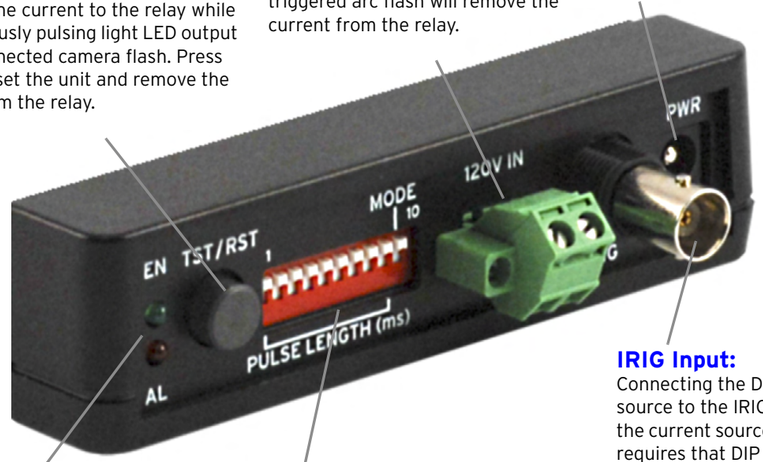
⚠ CAUTION
Looking into optical connections, fiber ends, or bulkhead connections can result in hazardous radiation exposure.

Front Selections and Connections

TST/RST:
Triggers an arc-flash event by switching the current to the relay while simultaneously pulsing light LED output and/or connected camera flash. Press again to reset the unit and remove the current from the relay.

120V IN:
Apply 120 Vac/Vdc as an option to remove current and reset the SEL-4520. This input is wired from a contact output of the relay to simulate a trip. Asserting this input after a triggered arc flash will remove the current from the relay.

PWR:
5 Vdc power input using an ac adapter.



IRIG Input:
Connecting the Demodulated IRIG source to the IRIG input synchronizes the current source to the LED light. IRIG requires that DIP Switch 9 be in the up position to set the unit to IRIG mode. The LED output pulses at each IRIG top-of-second marker.

NOTE: Currents are not applied through the SEL-4520 in IRIG mode but rather controlled by the current source's IRIG input.

DIP Switches:
Switches 1–8 set the LED light pulse duration. To determine the light pulse duration, sum the switches.

Switch Number	Pulse Length (ms)
1	128
2	64
3	32
4	16
5	8
6	4
7	2
8	1
9	IRIG Mode
10	Factory Test Mode–Up Normal Operation–Down

EN/AL LEDs:
- The green **EN** LED indicates that the SEL-4520 is ready to trigger (ENABLED). The current (if connected) is circulating through the shunt path of the SEL-4520.
- The red **AL** LED indicates that the unit has triggered an arc-flash event (ALARM). The current (if connected) is circulating through the relay and the LED output (or camera flash, if attached) has pulsed.

Additional Selections and Connections

LED:
Connect the LED module to the LED BNC connector with the 8-foot BNC cable (included). If necessary, use a longer length BNC cable (50 ft. max.) to reach the arc-flash sensor.

FUSE:
The internal fuse protects the internal circuitry from excessive current. Replace it with a 6.3 A, 5 x 20 mm time-lag fuse, such as one of those listed below.

Manufacturer	Part No.
Schurter	0001.2512
Bussman	BK/S505-6.3

FLASH:
The 2.5 mm FLASH connection is used to trigger an external camera flash (not included). A camera flash is useful for testing arc-flash sensors in switchgear that are not easily reached with the LED module.

NOTE: The charge time of the camera flash prevents the flash from activating in IRIG mode.

Schematic Equivalent