

Overview

Model A2081-9028 Isolated Loop Circuit Protectors (ILCP) protect Autocall building systems equipment from electrical transients – such as those caused by lightning strikes or disturbances on high voltage power lines – induced on circuit runs external to the building.

Model A2081-9028 circuit protectors can be used to protect most Autocall low voltage circuits — such as DC Notification Appliance Circuits (NACs) and speaker circuit NACs (25 VRMS) — but are not compatible with the following:

- AC input power
- RS-232 communication
- Video signals

Operating Specifications

Protected signals must not exceed the following operating specifications.

Table 1. Operating Specifications

Specifications	
Line-to-Line Rating	38 VDC, 28 VAC RMS line-to-line
Line-to-Ground Rating	38 VDC, 28 VAC RMS line-to-ground
Shield-to-Ground Rating	48 VDC, 33 VAC RMS
Continuous Current Rating	5 Amps
Series Resistance	Less than 0.1 Ohms per line
Series Inductance	68 μ H per line
Shunt Capacitance	0.017 μ F
Response Time	<1 Nanosecond (10^{-9}) line-to-line and line-to-Earth
Maximum Current Line-to-Line and Line-to-Earth	2000 A (8x20 μ sec pulse)
Maximum Current Shield-to-Earth	5000 A (10x50 μ sec pulse)

In this Publication

This publication discusses the following topics:

Topic	See Page #
Installing the Isolated Loop Circuit Protector	2



Installing the Isolated Loop Circuit Protector

General Guidelines

Review the following guidelines before installing the A2081-9028.

- **UL 497B Listing Requirements.** The external wiring must be confined to a one-block area containing the building of origin. The wiring must also be installed in such a manner that there is no possibility of accidental contact (by failure of supports or insulation) with electric light or power conductors operating at over 300 V peak-to-ground.
 - **Location.** For optimal protection, install the A2081-9028 apart from the protected equipment and as close as practical to the point where the circuit leaves or enters the building. ILCPs must be installed in dedicated, metallic electrical boxes.
 - **Separate Conduit.** Protected and unprotected equipment must not share the same conduit.
 - **Wire Type.** Fire alarm system wiring that is external to the building and protected by the use of A2081-9028 ILCPs must use twisted, shielded pairs and must be properly grounded.
 - **Wiring Distance.** Wiring is limited to one contiguous property. The total maximum wire length is determined by the allowable limit of the circuit. No circuit can exceed 3270 feet (1 km).
 - **Underground Wiring.** Wiring must be in a wiring trough that is separate from commercial distribution wiring.
 - **Overhead Wiring.** Keep the following in mind with regard to overhead wiring:
 - Wiring must be run on poles separate from those supporting any power distribution wiring.
 - Wiring shall be run in parallel with the commercial power distribution wiring and be separated by a minimum distance of either 100 ft (30 m) or the maximum span between any two adjacent poles of either the system's circuit or the commercial power distribution circuit.
 - **Ground.** The grounding connector shall be #12 AWG with a maximum length of 28 feet (8.5 m). Ground wire must be run in as straight a line as possible and must be connected to the building grounding electrode system per Article 800-40 of NFPA 70, the *National Electric Code*.
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Installing the Isolated Loop Circuit Protector, *Continued*

General Guidelines

1. Mount the A2081-9028 in a steel box. At least 2 inches (5.08 cm) must separate the “in” from the “out” conduit. Permissible box sizes are:
 - 6” square (preferred)
 - 4” square x 2 1/8 in. deep
 - 4 11/16” square
2. Cut the A2081-9028’s green lead as short as possible and tie it to the mounting box with a standard grounding screw.
3. Bond the box containing the A2081-9028 to the building grounding electrode system of the building containing the equipment to be protected.

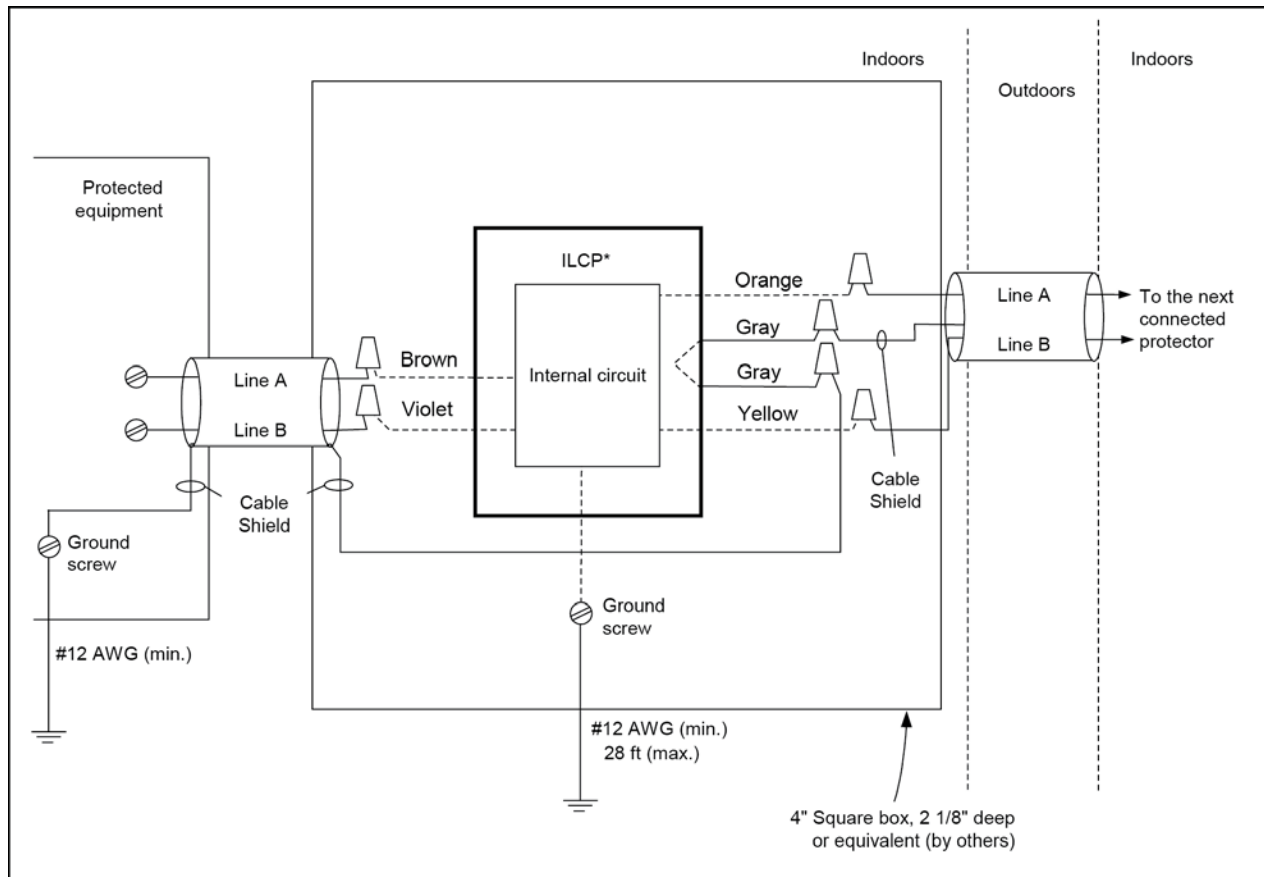
Follow these guidelines when bonding the A2081-9028 to the grounding system:

- Use 12 AWG (3.309 mm) or larger solid copper wire.
 - Ground wire must not exceed 28 feet (8.6m).
 - Bends in ground wire of less than a 2 inch (5.08 cm) radius are not permitted.
 - If enclosed in metal conduit, the ground wire must be bonded to the conduit at both ends.
4. Wire the A2081-9028 as described below. Use Figure 1 as a reference.
 - a. Connect the A2081-9028’s brown and violet leads to the lines coming from the protected equipment.
 - b. Connect the A2081-9028’s orange and yellow leads to the lines going out of the building.
 - c. Connect one of the A2081-9028’s gray leads to one of the cable shields. Then connect the remaining gray lead to the other shield.
 5. At the A2081-9028, dress the input and output cables as far apart as possible. The distance between input and output cables can be no less than 2 inches (5.08 cm).
 6. At the signal source, connect the cable shield to the cabinet’s ground screw. Signal sources can be either of the following:
 - Power supply for power circuits.
 - Transponder or FACP for Notification Appliance Circuits.

Continued on next page

Installing the Isolated Loop Circuit Protector, *Continued*

General Guidelines



*A2081-9028

Note: Ground connections to the protected equipment and ILCP must be from the same Grounding Electrode System.

Figure 1. Wiring Diagram