

Technical Bulletin

Solo & Solo 2 Apollo Protocol Guide for Short Circuit Isolation

TB 1022

Introduction

One of the requirements of BS5839 Part 1 1988 (Fire detection and alarm systems for buildings - Code of practice for system design, installation and maintenance) is that no more than a single detection zone shall be affected by any single cable fault. (**see * NOTE 1**)

An advantage of analogue addressable fire detection systems is that a single detection circuit may be capable of protecting a number of fire detection zones, which in turn reduces cable installation costs. The detection devices are "mapped" to the various detection zones by the control panel configuration settings. The analogue addressable detection circuit must be wired as a loop from the panel, though all detection devices and returning back at the control panel. Such a configuration permits the requirements of BS5839 Part 1 to be met for a single "open circuit" cable fault, as power and data is supplied from both ends of the loop.

However, in the event of a single "short circuit" fault, all devices on the detection loop are affected by the cable fault. This would not meet the requirement of the code of practice.

To overcome this problem, detection device manufacturers produce short circuit isolator units, to be installed throughout the detection loop at points where the loop crosses zone boundaries (**see * NOTE 2**). In the event of a short circuit, the short circuit isolators either side of the cable fault will isolate just the affected section of the detection loop, allowing all other devices to continue to operate. By correct positioning of short circuit isolators at the impact of a single short circuit is contained and the requirements of the Code of Practice can be met.

Panel Isolators

Fire alarm control panels are normally produced with internal detection loop isolation circuits, to protect the detection loop drive circuitry from the excessive current drawn when a short circuit is applied. The configuration and operation of these isolation circuits varies between panel manufacturers and panel models.

The Kentec Solo and Solo 2 control panels provide short circuit isolation to the positive leg of the detection loop only.

This panel hardware configuration has implications when using Apollo short circuit isolators, as the majority of Apollo isolator models isolate the damaged section of the detection circuit by open circuiting the negative leg of the loop. These isolators do not provide sufficient protection to cable faults between the panel loop terminals and the first loop isolator.

* **NOTE 1** - The area affected by a single cable fault is subject to change in BS5839 Pt 1 2001. to an area of no more than 2,000m², on any one floor of the building. Other restrictions may also apply.

* **NOTE 2** - The requirements of BS5839 Pt 1 2001 will not require loop isolators to be installed at every position where the loop crosses the zone boundary.

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When using the following Apollo "Negative Leg" Isolators on the Solo and Solo 2 panels, an isolator **MUST** be installed at the panel loop output and at the loop input as close to the panel as possible.

Negative Leg Switching	
Apollo Part Number	Description
55000-700	Stand alone negative isolator (requires a base 45681-211)
55000-720	Stand alone negative isolator (requires a base 45681-211)
55000-802	DIN Rail mounted dual isolator
45681-321	Base type negative isolator

This precaution **does not** apply to the following "Positive Leg" isolator models;

Positive Leg Switching	
Apollo Part Number	Description
55000-710	Stand alone positive isolator (requires a base 45681-211)
45681-323	Base type positive isolator

The Kentec "Syncro" control panels have internal isolation of both positive and negative loop wiring, and are compatible with ALL loop isolators model supplied by Apollo.

