

# Model 5460 Serial Digital Protection Switch Data Pack

**ENSEMBLE**

D E S I G N S

Revision 4.2 SW v2.2.0

This data pack provides detailed installation, configuration and operation information for the **5460 Serial Digital Protection Switch** module as part of the Avenue Signal Integration System.

The module information in this data pack is organized into the following sections:

- Module Overview
- Applications
- Installation
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- Module Configuration and Control
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  - Avenue PC Remote Control
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### MODULE OVERVIEW

The 5460 Serial Digital Protection Switch module is a fail-safe protection switch for monitoring and switching critical digital paths. When a fault is detected in the Primary input, and the Secondary input is verified as good, the switch will activate, causing the Secondary input to be switched to the module's output.

The module is available from the factory in two switching configurations, a passive or an active switch design. The passive design offers a simple but powerful approach using the least amount of active components. It essentially provides a fail-safe signal to the output BNC even during loss of power. It does however, require paying stricter attention to cable length in the facility.

The active switch design utilizes active input circuitry to address cable equalization, present properly terminated input loads, and feed the signals through cable drivers to the output relays but does require a constant source of power for a nearly fail-safe continuous output. The redundant power supply option for the Avenue frame is recommended.

The action of the switch, both when a fault occurs in the Primary signal and when that fault clears, can be configured as either auto reset on or off.

When Auto mode is turned on, a fault in the Primary signal will cause the switch to automatically throw to the Secondary. With Auto mode turned off, a fault in the Primary signal will generate an alarm but no switching will take place.

The Auto Reset parameter governs how the switch behaves when the Primary signal is restored following a fault. With Auto Reset on, the switch will revert to the Primary. When Auto Reset is off, manual intervention is needed to throw the switch back to the Primary input.

If the output of the passive switch is not properly terminated, the switch will continuously flip-flop between the Primary and Secondary inputs. This will not occur with the active switch as there is internal buffering.

In the case of the passive switch, an input is directly connected to the output through a relay contact without buffering. Thus, a loss of proper termination of the output will be seen by the 5460 circuitry. Failure of the output termination will cause the 5460 to sense the signal as having a fault due to the improper termination. If the module is set for Auto Changeover or Auto Reset, loss of proper termination will cause a flip-flopping of the 5460 Protect Switch. When the faulty signal is sensed, the Secondary input will be switched to the output. An internal terminating resistor is now connected to the Primary input and this input is now sensed as correct, while the Secondary is now unterminated and is sensed as having a fault. While this is usually not a matter of concern in daily operation as the output is properly terminated, it can produce unexpected results if the switch is installed and powered up without a properly terminated cable.