System Supervision User's Guide

Version 0.91 18 July 2012

Accessing System Supervision Features

System Supervision is a feature of 590 Servers and as such, configuration for it can be found associated with *590 Server* devices in IED Enterprise. Options to view faults, setup relays, etc., become available when a 590 Server is selected, as shown in Figure 1.

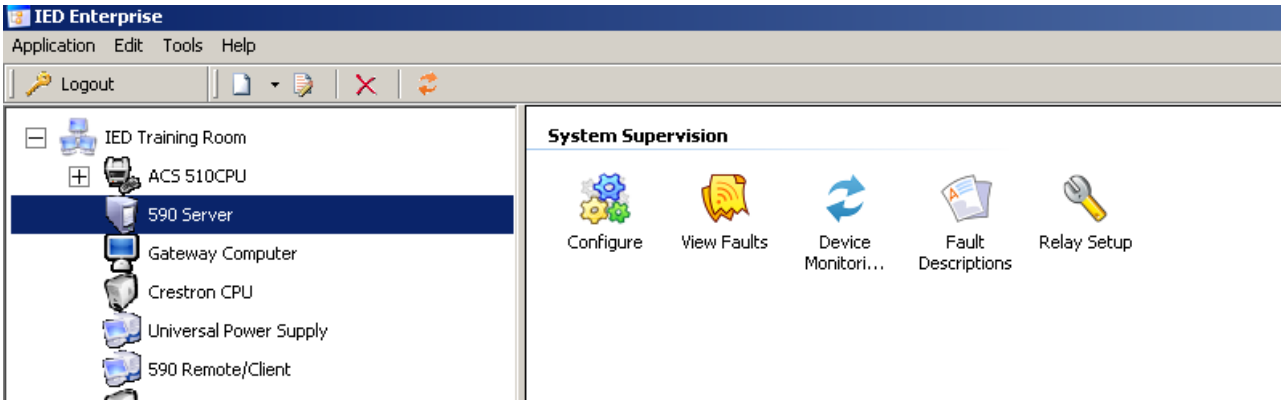

Figure 1: Accessing System Supervision Controls

Each section below describes one of the System Supervision features shown: Configure, View Faults, Device Monitoring, Fault Descriptions and Relay Setup.

Configure Feature

This option allows tweaking the polling rate, response timeout, etc. of the System Supervision background process. Usually, one does not have to tweak anything in this window as System Supervision is automatically preconfigured with optimal settings. And, in fact only advanced users should access this area. Figure 2 shows a typical Configuration window.

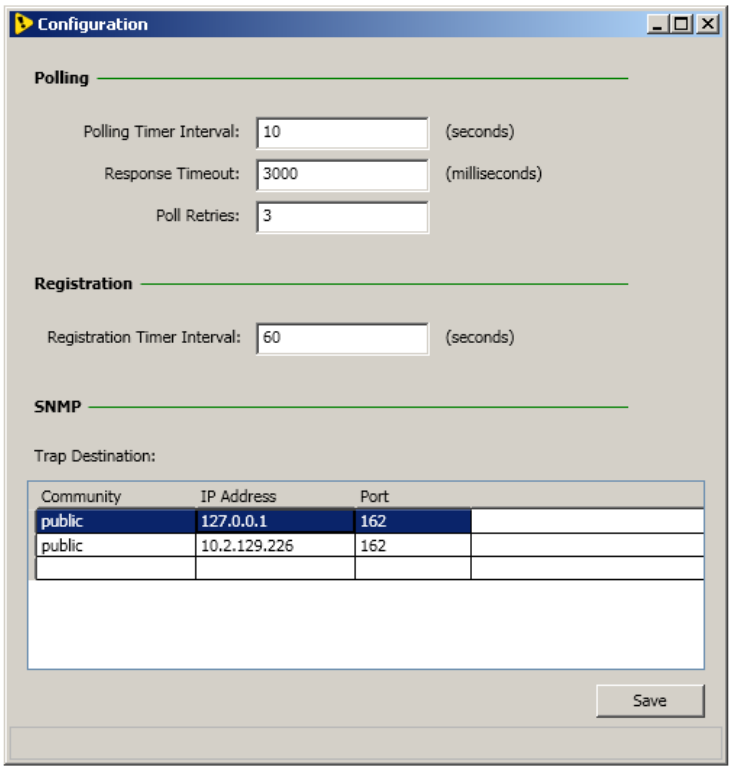

Figure 2: Configuration Window

The Configuration window is divided into three subsections.

> Note: Unless there are serious network latency issues, the *Polling* and *Registration* settings should not be altered from the defaults.

- The *Polling* section controls the rate at which devices are polled (Polling Timer Interval, which is the overall clock for the background process), the maximum time to wait for a response (Response Timeout), and the number of times to poll an unresponsive device before it is declared as a fault (Poll Retries).
- The *Registration* section allows setting the interval at which all IED Devices are registered for faults. IED Devices typically report faults to those clients that have registered for fault notification. A device that is registered will report its faults immediately to the System Supervision Service rather than wait for the next poll.
- The *SNMP* section allows one to set up destinations to where the System Supervision Service is to report SNMP Traps for each fault/clear condition that it encounters. These receiving systems would be servers with third-party software such as a MIB Browser or SNMP Console. Setting up and configuring these systems is beyond the scope of this document.

View Faults Feature

Double-clicking on this icon opens up the *Current Faults* window that shows all the faults that are currently in the system. Figure 3 shows an example window.

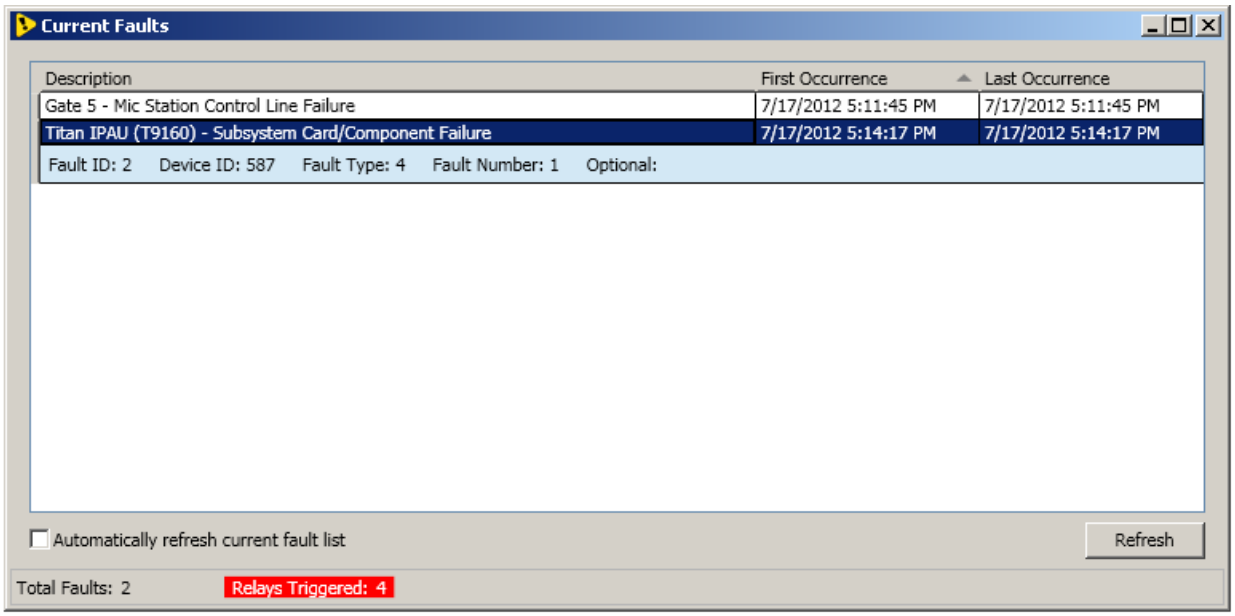

Figure 3: Current Faults Window Showing Faults In The System

At a glance, the grid shows the description of a fault, the first time it occurred, and for recurring faults, the last time it occurred. Additional information about a fault can be viewed by selecting a fault from the grid. This is shown in Figure 3 above via the blue-ish box below the second fault listed. These details are typically useful for doing additional diagnosis or advanced troubleshooting or to report to the manufacturer technical support personnel.

The *Current Faults* window only retrieves the current faults on startup and does not automatically refresh the list on a timer, as it is a resource (and network) intensive operation. Clicking on the *Refresh* button will update the grid with fresh data from the Service. To automatically update the grid on a timer, simply check the *Automatically refresh current fault list* checkbox.

If System Supervision was installed to trigger relays on faults then the Viewer will also show the number of relays that have been triggered due to fault conditions in the system. Hovering the mouse over the *Relays Triggered* label will show the relays that are currently tripped, as shown in Figure 4.

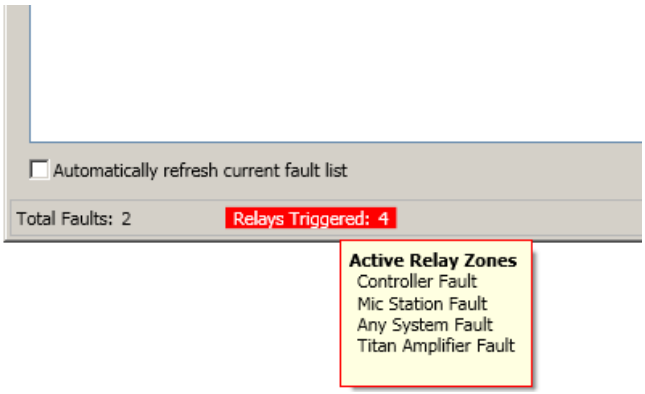

Figure 4: Relays That Are Currently Tripped Due To Fault Conditions

Device Monitoring Setup

This option brings up the window (as shown in the example in Figure 5) that allows setting up how devices are to be monitored by the Service, or if they are to be monitored at all. The grid in Figure 5 shows three columns which are quite self-explanatory. The last column determines the technology to use to monitor the device selected in the grid. Typically, IED devices are monitored via IedNet (an IED proprietary technology), whereas non-IED devices are monitored (for network connectivity only) via PING (ICMP protocol packets).

One should make selections in this grid appropriate to the types of devices and the supervision requirements/needs of the system.

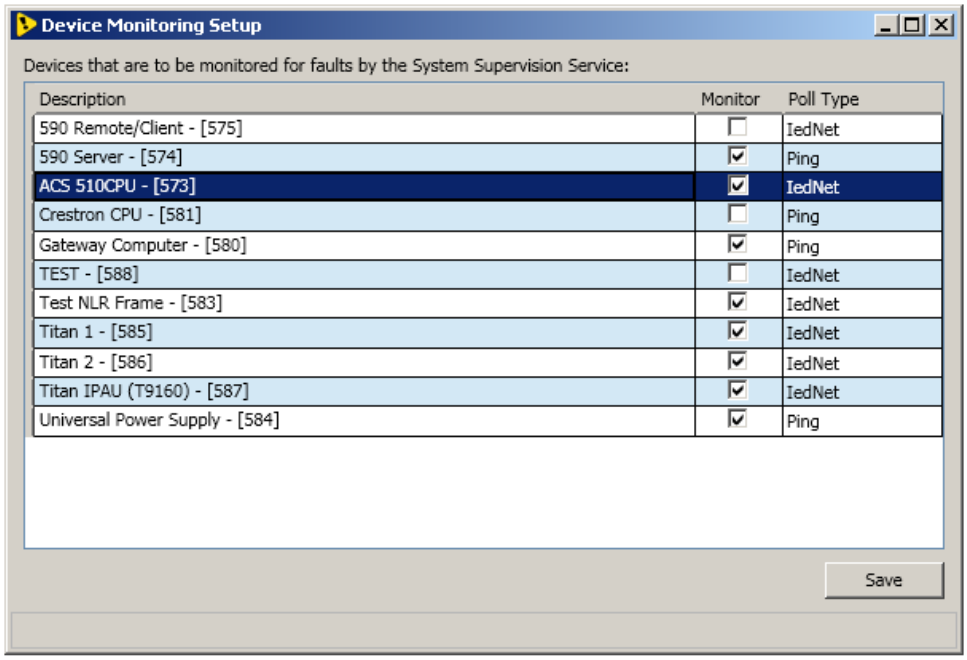

Figure 5: Sample Device Monitoring Setup Window

Fault Description Setup

This window allows one to override the auto-generated fault descriptions produced by System Supervision software. The droplist control can be used to select the device whose fault descriptions are to be overridden.

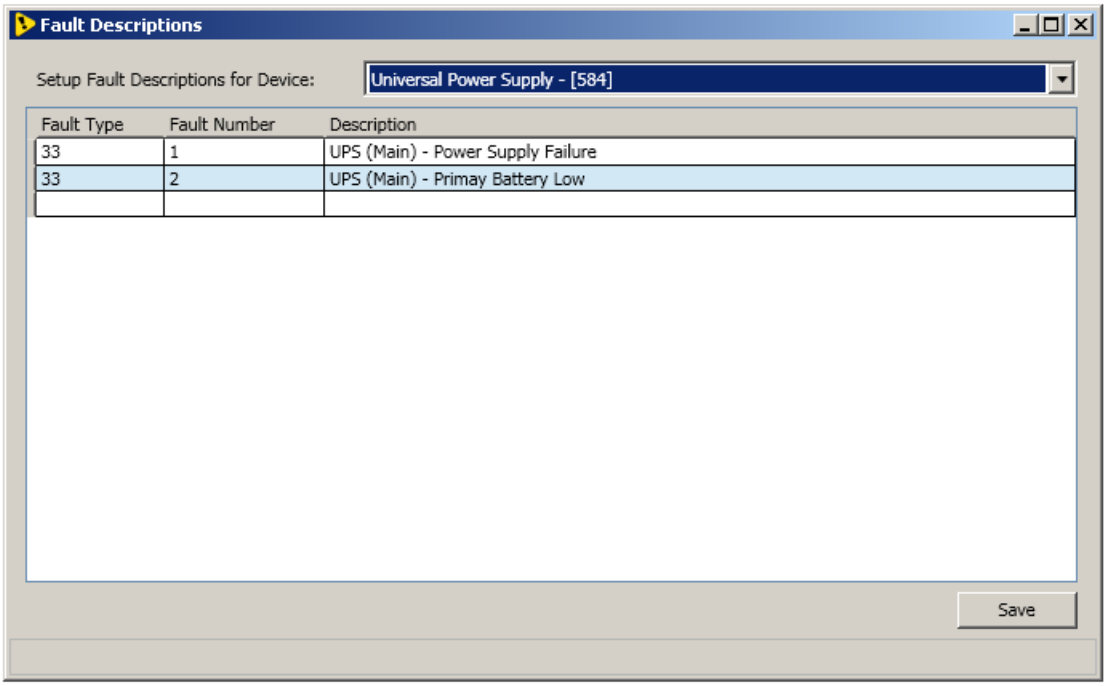

Figure 6: Sample Fault Description Window

The grid underneath the droplist is where fault descriptions are associated with a fault type and number pair. This is shown in Figure 6.

Setting up fault descriptions (by overriding the default) requires an innate understanding of the system as a whole; other than editing an existing description in the grid. To add a new fault description, type in the blank line at the bottom of the grid. Contact IED for details of the fault numbering scheme or use the details that appear in the Fault View pop-up.

Relay Setup

The Relay Setup window allows one to set up relays to trip when fault and clear conditions occur. Figure 7 shows a typical Relay Setup window. The window has two parts. The top part allows selection of a relay device, and the bottom part, grouped under the *Relay Setup* heading, allows setting up individual relays on the frame.

One uses the *Relay Frame* droplist to select the relay device that is to be configured. The *Frame Address* edit box allows one to edit the IED422 serial bus address of the relay frame. This option is available only on an IED564 relay device, and is grayed out for other relay device types.

Under the *Relay Setup* section, the list box titled *Available Relays* allows one to pick and configure individual relay outputs on the frame. Initially, all of the relays will have a red border and will be labeled *Unassigned*. To setup up a relay, one performs the following steps:

- Check the checkbox labeled *Relay is triggered by fault conditions*
- Enter a meaningful description that is to be displayed in the status bar of the *Current Faults* window (see Figure 4 above) when the relay is tripped due to a fault condition.
- Make a section in the *Activation* droplist. The *Activation* droplist determines whether the relay is to be latched (i.e., stay activated), pulsate, or pulse only once, when it is triggered by a new fault condition.
- Optionally check the *Reverse polarity* checkbox. When not checked, relays are active high and inactive low. Checking this option reverses the logic.
- Set up fault triggers for this relay via the *Trigger* droplist. (See below.)

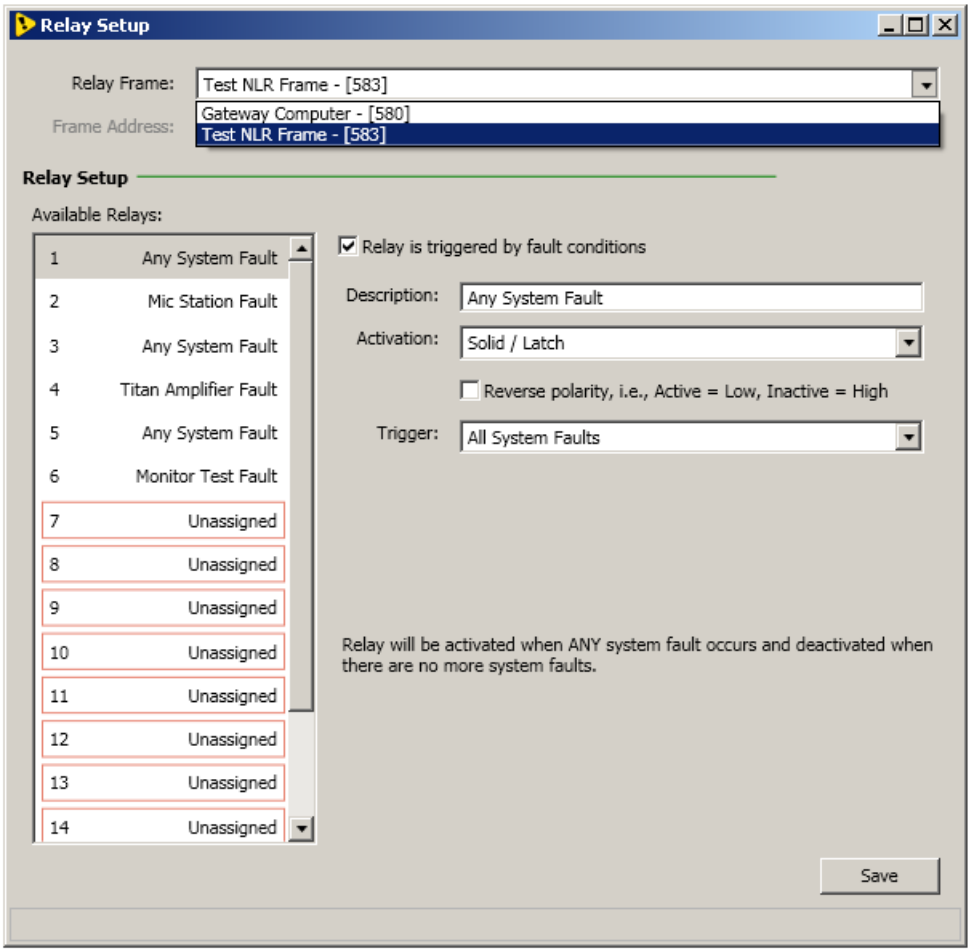

Figure 7: Relay Setup Window

The *Trigger* droplist can be used to associate the types of fault condition that will trip each relay. Making a droplist selection brings up additional edit controls, such as grids and a list of checkboxes. The options for the *Trigger* droplist are:

- *All System Faults* (see Figure 7) – Trip the relay on any fault in the system. This would be a "general fault" relay.

- *Faults from Selected Devices* (see Figure 8) – Trip the relay when there is any fault on a selected device or devices. For example, to trigger a relay for any Titan amp frame, one would select those devices in the device list that appears as in Figure 9.

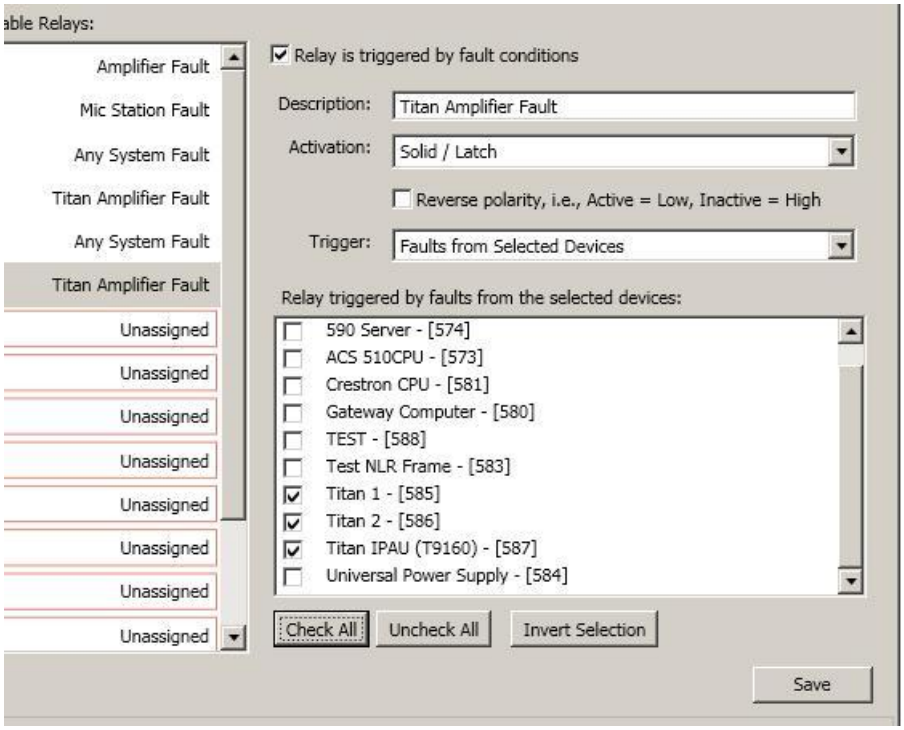

Figure 8: Sample Faults *From Selected Devices* View (Titan Amps)

- *Custom Trigger (Advanced Setup)* (see Figures 9a, b, c) – Trip the relay based on any permutation and combination of device, fault type and fault number. This is an advanced option that requires some knowledge of the internal fault numbering system, and so may require information from the IED to complete. But, this option will allow setups like a relay for any mic station control communication fault, or any hardware failure plus monitor/test deviations that affect certain zones (e.g., setting up one such relay per zone or zone map in the system). The value in any column may be an asterick (*) to mean any/all, an individual value or a range of numbers (e.g., 1-5) as shown in the samples in Figure 9a, b and c.

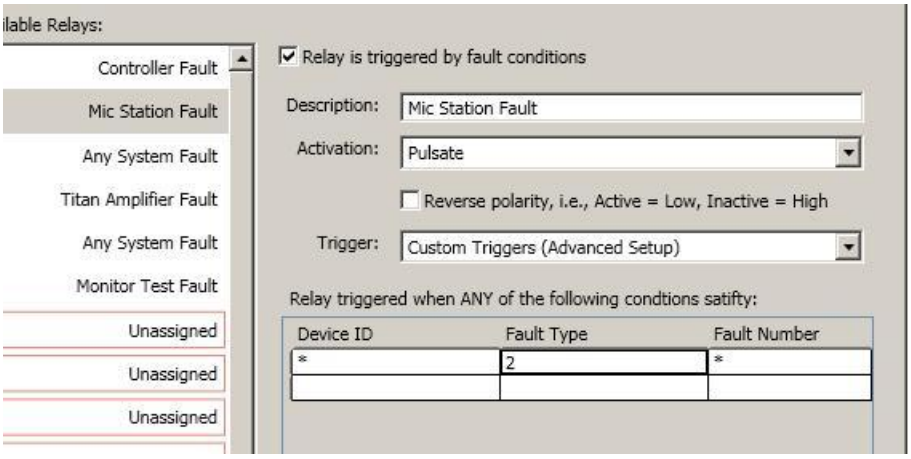

Figure 9a: Sample *Custom Triggers* View (Any Mic Station)

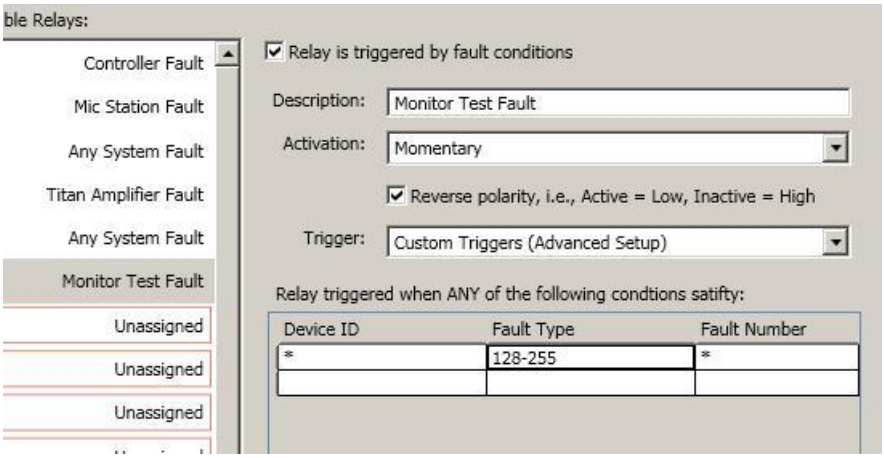

Figure 9b: Sample *Custom Triggers* View (Any Monitor/Test Fault)

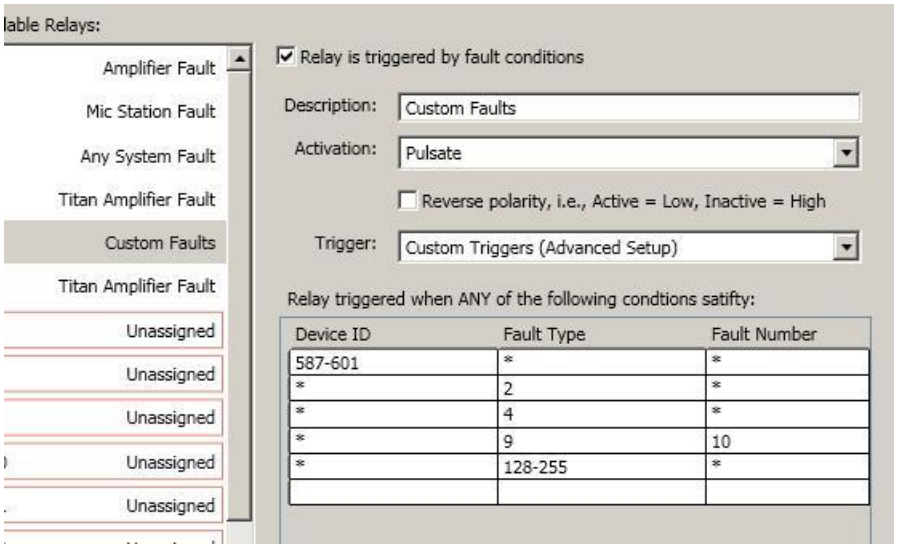

Figure 9c: Sample *Custom Triggers* View (Mixture)