

# Alarm Monitoring

## Feature Overview and Configuration Guide

### Introduction

This guide describes alarm monitoring and its configuration. Alarm monitoring allows you to configure what events trigger alarms and how the alarms are displayed.

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## Products and software version that apply to this guide

This guide applies to all AlliedWare Plus Industrial Ethernet switches (IE Series) except IE210L Series, running version **5.4.3A** or later.

However, feature support and implementation varies between products. To see whether a product supports a particular feature or command, see the following documents:

- The product's [Datasheet](#)
- The product's [Command Reference](#)

These documents are available from the above links on our website at [alliedtelesis.com](http://alliedtelesis.com).

From 5.4.9-1.1 onwards on IE510-28GSX switches, it is possible to configure separate alarms on VCStack backup members, as well as on the VCStack master switch. Different stack members can be wired to separate sensors and/or relay outputs and have separate alarm conditions assigned to them.

## Available alarms

Alarm monitoring allows you to configure what events trigger alarms and how the alarms are displayed. The following table shows the alarms you can configure in the switch.

**Note:** On software versions earlier than 5.4.9-1.1, alarm monitoring uses SNMP traps to identify alarm-triggering conditions, so SNMP must be enabled on the switch before you can use the alarm monitoring facility. SNMP is enabled by default.  
From version 5.4.9-1.1 onwards, SNMP is not required.

Table 1: Configurable alarms

ALARM NAME	ALARM DESCRIPTION
epsr	An EPSR instance enters a failure state
power-supply	An external power supply goes down
input-alarm	An external contact input opens or closes. Use this for external detectors, such as a motion detector.
link-down	A link goes down
loopprot	A loop is detected
main-pse	A global PoE failure occurs (for PoE models only)
pse-port	A PoE failure occurs on a port (for PoE models only)
temperature	A temperature sensor exceeds its threshold
g8032	A G.8032 instance enters a failure state
ufo	A UFO VLAN enters a failure state

## Alarm outputs

The switch displays alarms as either:

- a flash pattern on the fault LED, or
- a relay output that can enable another device.

This document refers to both of these as the **alarm outputs**.

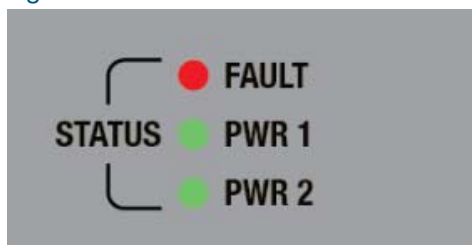
You configure alarm behavior separately for each alarm. For example, you can configure one alarm to use the fault LED, another to use the relay output, and another to use both the fault LED and the relay output.

On software versions earlier than 5.4.9-1.1, the alarm monitoring mechanism is polled every 30 seconds. If an alarm-triggering event occurs and the switch is configured to display the alarm, the LED will start flashing or the relay output will occur within 30 seconds of the event. Once the condition that triggered the alarm returns to its normal state, the LED stops blinking and the relay output is deactivated within 30 seconds of the last occurrence of the event. From version 5.4.9-1.1 onwards, this does not apply; LED flashing or relay output occurs nearly instantaneously.

- The fault LED**
- IE200 and IE300 series: The LED flash pattern, for all alarm types **except** for the temperature alarm, is five blinks, followed by a pause.

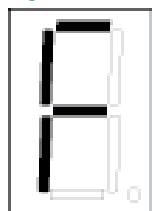
The temperature alarm flash pattern is 5 blinks, a pause, then 6 blinks, repeated.

Figure 1: IE200 Series Fault LED



- IE510-28GSX: The LED flashes an “F” for fault if an alarm has been triggered.

Figure 2: IE510-28GSX Fault LED



- Relay Output**
- IE200 and IE300 series models have a single relay output contact you can use to enable another device, such as a buzzer.
  - IE510-28GSX switches have three relay output contact points. If you do not specify a relay number the switch defaults to relay number 1.

For details about how to wire up an alarm input and relay output, see your switch's Installation Guide. This is available on our website at [alliedtelesis.com](http://alliedtelesis.com).

Note that the relay output contact will be open for some of the switch's boot-up time. This means that any device connected to the relay will turn on during boot-up (for example, a buzzer will buzz).

An exception to this can occur in a VCStack, if the stack members' relays are wired together in parallel, and one switch boots up while another switch's relay is closed. This could happen if a backup member boots up while the master switch's relay is closed. In that case, the alarm on the booting switch will not turn on during boot-up.

## Alarm granularity

Some alarms can apply to more than one physical instance. For example, the external power supply alarm can apply to either of the two power supply units connected to the device. When an alarm can apply to more than one instance, you must specify which instance the alarm applies to when you configure the alarm. The following table shows the alarms and parameters that can apply to more than one physical instance.

Table 2: Alarms with multiple physical interfaces

ALARM NAME	PHYSICAL INSTANCES
input-alarm	<p>IE200 and IE300 Series:</p> <ul style="list-style-type: none"> <li>■ Contact 1</li> </ul> <p>IE200 and IE300 series models contain only a single pair of input contacts. Since the software is designed to support multiple input contacts, you must specify Contact 1 even when it is the only input contact available.</p> <p>IE510-28GSX:</p> <ul style="list-style-type: none"> <li>■ Contact 1</li> <li>■ Contact 2</li> <li>■ Contact 3</li> </ul>
relay	<p>IE200 and IE300 Series:</p> <ul style="list-style-type: none"> <li>■ Relay 1</li> </ul> <p>IE200 and IE300 series models have a single relay contact. You do not need to specify a relay number for these models.</p> <p>IE510-28GSX:</p> <ul style="list-style-type: none"> <li>■ Relay 1</li> <li>■ Relay 2</li> <li>■ Relay 3</li> </ul> <p>IE510-28GSX switches have three relay contacts. If you do not specify a relay number the switch defaults to relay number 1.</p>
power-supply	<p>Power supply 1</p> <p>Power supply 2</p>
link-down	All ports
pse-port	All PoE ports

## Alarm monitoring on a VCStack of IE510-28GSX switches

From software version 5.4.9-1.1 onwards, on stackable devices, you can choose whether to indicate the alarm output on the LED or relays of each stack member individually, or whether to “tie” the alarm outputs together.

To tie the alarm relay outputs together, wire the same output on each stack member together in parallel to a single alarm’s device (e.g. a buzzer). In this mode, all backup members keep their relays open and the master controls the output by holding it closed when there is no alarm condition and opening it when an alarm condition is triggered. If there is a failover, the new master takes over this control.

This is the simplest setting and is the default. It is the only setting available before 5.4.9-1.1. ["Example 3: Configuring a link down alarm on an IE510-28GSX switch" on page 7](#) shows this setting.

If you need to monitor each stack member individually, enable VCS member output control mode. This gives you control over every output relay and output LED in the stack. When you configure an alarm, you configure it to trigger (for example) “relay 1 on stack member 2” rather than “relay 1”.

To enable VCS member output control mode, use the following command:

```
awplus(config)#alarm facility vcs-member-output-control
```

["Example 4: Configuring a link down alarm on stack member 2" on page 8](#) and ["Example 5: Configuring a contact input alarm to trigger the LED on stack member 2" on page 8](#) show this setting.

Note that if a stack member leaves the stack, all of the alarms on that member will be deactivated.

### Example 1: Configuring a contact input alarm

This examples show how to configure an alarm to activate the relay output when the contact input is closed on an IE200 or IE300 Series switch.

#### Step 1: Enter Global Configuration mode.

```
awplus>enable
awplus#configure terminal
```

#### Step 2: Set the startup trap delay to 180 seconds (before version 5.4.9-1.1).

```
awplus(config)#snmp-server startup-trap-delay 180
```

#### Step 3: Configure the contact input alarm.

To configure the relay output to activate when the contact input is closed:

```
awplus(config)#alarm facility input-alarm 1 alarm-position close
awplus(config)#alarm facility input-alarm 1 relay
```

## Example 2: Configuring a link down alarm on an IE200 or IE300 Series switch

This example shows how to configure an alarm to activate both the fault LED and the relay output when a link goes down. In this example, the link is between port 1.0.2 on an IE200 or IE300 Series switch and a device plugged into that port.

### Step 1: Enter Global Configuration mode.

```
awplus>enable
awplus#configure terminal
```

### Step 2: Set the startup trap delay to 180 seconds (before version 5.4.9-1.1).

```
awplus(config)#snmp-server startup-trap-delay 180
```

### Step 3: Enable SNMP link-status traps on the port (before version 5.4.9-1.1).

Alarm Monitoring detects link status changes by listening for SNMP link-status traps on the loopback interface. The loopback interface is always defined as an SNMP trap destination, so when the switch sends SNMP traps it sends a copy to the loopback interface as well as any trap destinations you configure. To have alarm monitoring detect link status changes, you must enable link-status traps on the interface.

```
awplus(config)#interface port1.0.2
awplus(config-if)#snmp trap link-status
awplus(config-if)#exit
```

### Step 4: Configure the link-down alarm.

To configure the fault LED to flash and the relay output to activate when a link is down:

```
awplus(config)#alarm facility link-down port1.0.2 led
awplus(config)#alarm facility link-down port1.0.2 relay
```

To turn off the alarm if you no longer want to activate the LED or the relay output when a link is down:

```
awplus(config)#no alarm facility link-down port1.0.2 led
awplus(config)#no alarm facility link-down port1.0.2 relay
```

## Example 3: Configuring a link down alarm on an IE510-28GSX switch

This example shows how to configure an alarm to activate both the fault LED and relay output 2 when a link goes down. In this example, the link is between port 1.0.2 on an IE510-28GSX switch and a device plugged into that port.

Note that if you have a VCStack of IE510-28GSX switches, in this configuration relay number 2 on all members are tied together and the output will only activate on the stack master. If you need to control members individually, see the later examples.

### Step 1: Enter Global Configuration mode.

```
awplus>enable
awplus#configure terminal
```

### Step 2: Set the startup trap delay to 180 seconds (before version 5.4.9-1.1).

```
awplus(config)#snmp-server startup-trap-delay 180
```

### Step 3: Enable SNMP link-status traps on the port (before version 5.4.9-1.1).

Alarm Monitoring detects link status changes by listening for SNMP link-status traps on the loopback interface. The loopback interface is always defined as an SNMP trap destination, so when the switch sends SNMP traps it sends a copy to the loopback interface as well as any trap destinations you configure. To have alarm monitoring detect link status changes, you must enable link-status traps on the interface.

```
awplus(config)#interface port1.0.2
awplus(config-if)#snmp trap link-status
awplus(config-if)#exit
```

### Step 4: Configure the link-down alarm.

To configure the 7-segment LED to flash “F” and relay output 2 to activate when a link is down:

```
awplus(config)#alarm facility link-down port1.0.2 led
awplus(config)#alarm facility link-down port1.0.2 relay 2
```

To turn off the alarm if you no longer want to activate the LED or the relay output when a link is down:

```
awplus(config)#no alarm facility link-down port1.0.2 led
awplus(config)#no alarm facility link-down port1.0.2 relay 2
```

## Example 4: Configuring a link down alarm on stack member 2

This example shows how to configure an alarm to activate relay number 2 on only stack member 2 when the link with port1.0.2 goes down on stack member 2 of a stack of IE510-28GSX switches. This example is available from version 5.4.9-1.1 onwards.

### Step 1: Enter Global Configuration mode.

```
awplus>enable
awplus#configure terminal
```

### Step 2: Turn on stack member output control.

Use the following command to control the alarms individually on each stack member. Without this command, the relay output on the master will activate if the port goes down on stack member 2.

```
awplus(config)#alarm facility vcs-member-output-control
```

### Step 3: Configure the link-down alarm.

To configure relay output 2 on stack member 2 to activate when the link is down:

```
awplus(config)#alarm facility link-down port1.0.2 relay 2
output-member 2
```

## Example 5: Configuring a contact input alarm to trigger the LED on stack member 2

The following configuration configures the alarm for input contact 2 on stack member 1 to trigger the output relay 1 on stack member 2 of a stack of IE510-28GSX switches. This example is available from 5.4.9-1.1 onwards. You could use this, for example, if you had a door sensor on stack member 1 and you wanted that door sensor to trigger stack member 2 to turn on a light.

### Step 1: Enter Global Configuration mode.

```
awplus>enable
awplus#configure terminal
```

### Step 2: Turn on stack member output control.

Use the following command to control the alarms individually on each stack member. Without this command, the relay output on the master will activate if the port goes down on stack member 2.

```
awplus(config)#alarm facility vcs-member-output-control
```

### Step 3: Configure the contact input alarm.

To configure output relay 1 on stack member 2 to activate when contact input 2 on stack member 1 is closed:

```
awplus(config)#alarm facility input-alarm 2 input-member 1 relay 1 output-
member 2
```



## Displaying Configured Alarms

Use the **show alarm facility settings** command to display the alarms that are configured on the switch:

```
awplus#show facility alarm settings
```

Note that before version 5.4.9-1.1, the syntax for this command was **show alarm settings**.

Output 2: Example output from the show alarm settings command on an IE510-28GSX switch with each stack member individually monitored

```
Member output control: Disabled

Global alarms:

Alarm                ID                Outputs - L: LED, R: Relay
-----
-
EPSR                  -                  -
Loop detect           -                  -
G8032                 -                  -
UFO                   -                  -

Per stack member alarms:

Stack member 1:

Alarm                ID                Outputs - L: LED, R: Relay
-----
-
External PSU          1                  -
External PSU          2                  -
External contact input 1                  -
External contact input 2                  L2
External contact input 3                  -
Link down             port1.0.1         R2.2
...
Link down             port1.0.26        -
Temperature           -                  -

Alarm                ID                Alarm position
-----
External contact input 1                  Open
External contact input 2                  Open
External contact input 3                  Open

Stack member 2:

Alarm                ID                Outputs - L: LED, R: Relay
-----
-
External PSU          1                  -
External PSU          2                  -
External contact input 1                  -
External contact input 2                  -
External contact input 3                  -
Link down             port2.0.1         -
...
```

The output includes the name of the alarm, the physical instance (ID) if there is more than one available, and whether the LED and relay are enabled or disabled for the alarm. The output also includes the alarm position for each contact input.

## Displaying Active Alarms

Use the **show alarm facility status** command to display the alarms that are currently active on the switch:

```
awplus#show alarm facility status
```

Note that before version 5.4.9-1.1, the syntax for this command was **show facility-alarm status**.

### Output 3: Example output from the show alarm facility status command

Active alarms	ID
External PSU	2
EPSR	-
Link down	port1.0.1
PoE failure	port1.0.1

Active alarms activate the fault LED or an external relay, depending on the alarm configuration settings.