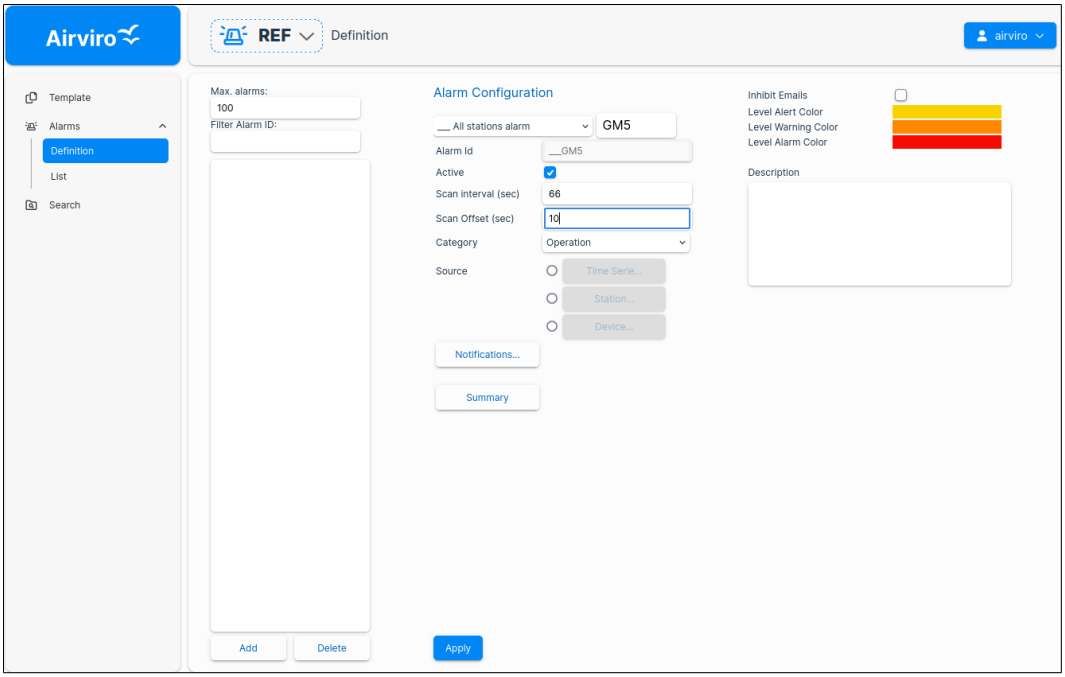
Apertum

Airviro User’s Reference

Working with the Alarm Module



How to define and configure alarms

Working with the Alarm Module

How to visualize and recognize alarms

Amendments

Version	Date changed	Cause of change	Signature
3.21	September 2010	New release	GS
3.21	June 2012	Review	GS
3.22	April 2013	New release	GS
3.23	Nov 2013	Upgrade	GS
4.00	June 2015	New release	GS
4.00	Aug 2018	Review	GS
5.00	March 2021	Review	DC
5.01	July 2022	New release	GS
5.10	Nov 2022	Upgrade	GS
6.00	Oct 2023	Upgrade	GS
6.00	Feb 2024	Review	DC
6.00	Oct 2024	Review	GS
6.00	Mar 2025	Review	DC
6.00	Mar 2025	Review	LEO

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8.1.1 Alarm Module

8.1.1.1. Introduction

Alarms can be defined to alert users of events that require a follow-up. An alarm can be linked/related to a Time Series, a measuring station or other devices/ports used to connect to the stations.

Each alarm is associated to an alarm level value, which indicates the severity level.

The alarm levels are **Alert, Warning**, and **Alarm.** The functions that trigger these alarms are defined for each level. If an alarm is active, notifications can be sent indicating changes in the alarm level or status. The user can configure what action should be taken when the alarm level changes.

The alarm history is saved in an event database that can be viewed by the users. Searches and Reports can be performed for the defined alarm types, by selecting the name or a time period.

The alarm notifications defined in this module, can be viewed using the Real Time Alarm Module.

8.1.1.2. General Concepts

The Alarm Module allows you to:

- Define alarms for Time Series Data, Monitoring Stations and/or communication devices and ports.

- Configure and define three alarm levels using conditions or functions.

- Define notifications for alarm visualizations and e-mails.

- Search the event database, by name and time period.

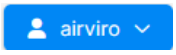
8.1.1.3. Functionality

This Airviro module runs on any PC or device running later versions of Microsoft Edge, Firefox, Chrome or Safari.

Once Airviro has been properly installed on the *server*, you can start using it by typing the correct URL in your web browser over the Intranet/Internet.

After logging into Airviro typing your user-ID and password, a domain must first be selected, from the icon showing the map or enabling the List Mode, and pressing on the Domain name that is displayed. In this case **Indico Alarms** should be chosen from the available modules.

Any user with the required privileges, can access the Alarm module. Privileges must be previously defined to avoid unauthorized access.

By clicking on the button ˅ [down arrow], besides the user button text, the 

[Logout] button, is shown. By clicking on the Logout button, the current module is closed and the Airviro login page is displayed instead.

8.1.1.4. Main Window

The main menu has the following options available:

Template: It allows you to define formatted e-mails according to your needs**.**

Alarm Def (definition): It allows you to define alarms .

Search: It allows you to search the event database.

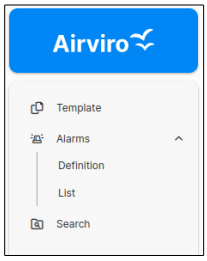


Figure 8.1. Menu.

8.1.1.5. Template Definition

Click on **Template** in the main menu, to open this window. Here you can to define the content of the emails, that are sent as notifications for the different alarm levels. *Figure 8.2.*

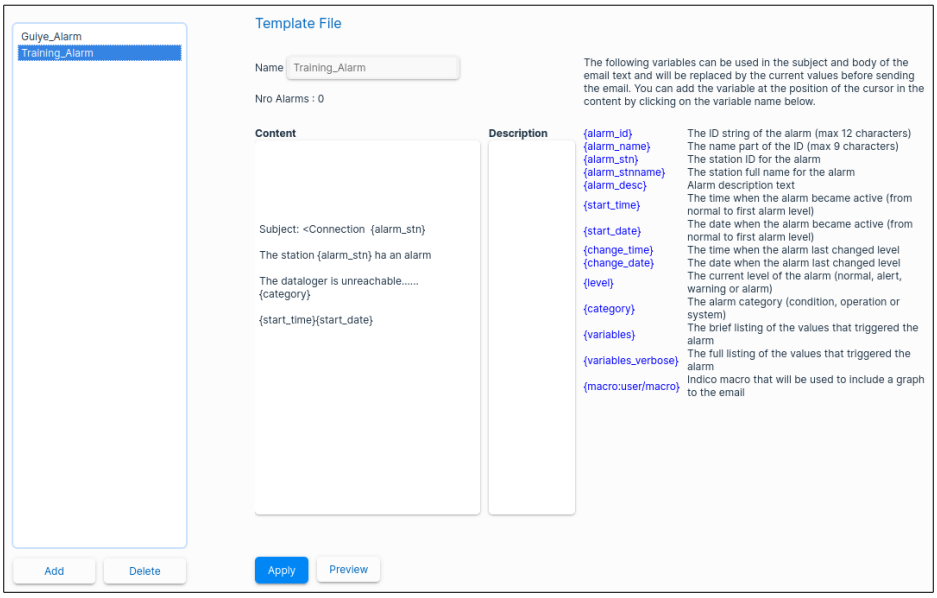


Figure 8.2. Window where templates are defined.

Use the **[Add]** button, to add new templates:

A template name must be specified. The **Content** text box, contains a message with pre-defined variables inserted into it. These variables collect information about the specific alarm.

The available variables that can be inserted into the message in order to have a dynamic content are listed on the right side. To insert any of these variables, simply click on it with your mouse, and the variable will be copied into your message. These variables, will later, when the notification is sent, be replaced with the corresponding value for the specific alarm. The available variables are:

- alarm_id: it is the alarm key.
- alarm_name: it is the alarm name.
- alarm_stn: it is the station key for the station associated to the alarm.
- alarm_stnname: it is the station name for the station associated to the alarm.
- alarm_desc: it is the alarm description text, as specified in the alarm definition.
- start_time: it is the time when the alarm became active.
- start_date: it is the date when the alarm became active.
- change time: it is the time when the alarm last changed level.
- change date: it is the date when the alarm last changed level.
- level: it is the current alarm level (normal, alert, warning or alarm) .
- category: it is the alarm category (condition, operation or system) .
- variables: it is a brief description of the time series values used to trigger the alarm .
- variables_verbose: it is a full description of the time series values used to trigger the alarm.

- macro_user/macro: macro that will be used to include a graph into the email.

These ***templates*** can later be assigned to **Notifications** in **Alarm Definition** (See *Figure 8.7.*)

The **Description** text-box, can be used to describe or summarise the use or content of the template, but keep in mind that it is not part of the content, and it is not sent with the notifications.**Nro Alarms:** indicates the number of alarms that are using this template.

Note: Keyboard keys (Ctrl+Copy) and (Ctrl+Paste) could also be used to Copy and Paste the variables into the template text .

8.1.1.6. Alarm Definition

Click on the **Alarm** menu. Here you can add, edit and delete alarms. *Figure 8.3.*

Use **Max alarms** to limit the number of alarms displayed in the list and **Filter Alarm ID to** filter what alarms are displayed. Regular expressions can be used. For instance: “x” will filter all names containing x, “^x” will filter all names beginning with x, “x$” will filter all names ending with x, etc.

Use the **[Add]** button, to add new alarms. Assign a name to the alarm in **Alarm ID.** AlarmsID with _name/group name mean they have the same parameter restrictions to trigger the alarm. Tick the **Active** checkbox to activate the alarm. Assign a time interval (in seconds) in **Scan Interval** indicating how often the database will be scanned for new data to trigger the alarm level.

Tick off the **Inhibit Emails** checkbox to cancel sending by mail.

You can change the representative colours of each level (Alert, Warning, Alarm) by clicking on the colour next to the level name. By default the colours are: yellow (level alert), orange (level warning), and red (level alarm).

Enter a detailed alarm description in the input text **Description**. For example: "SO2 daily average. Major or equal to 200ug/m3. Exceeds 80% of actual environmental legislation level."

Scan offset (in seconds) is a delay time in seconds, before performing a new search in the events data base to be done "past" the hour. For example, if Scan Interval is set to 3600 and Scan offset (seconds) is set to 0, the Alarm Module will look for alarms every hour. However, if the values are set to 3600 and 300, then the search will be performed every 5 minutes past the hour.

Assign a category There are two category types: operative and condition. *Figure 8.3.* The category can be used to classify alarms and it is used to filter alarm reports. Operative would typically be alarms on how the measurement itself is working (instrument status, bad calls, etc). Category Condition would be focused on the monitoring values, for example warning if the concentrations goes above a certain limit.

When a new alarm is defined, the ID specified by the user will be preceded by another ID corresponding to the Station Key, which the system adds automatically.

Example: if an alarm is defined at a monitoring station, the name is preceded by the station key. For example: 503SO2DIA, where 503 is the station key and SO2DIA the user-defined part of the ID.

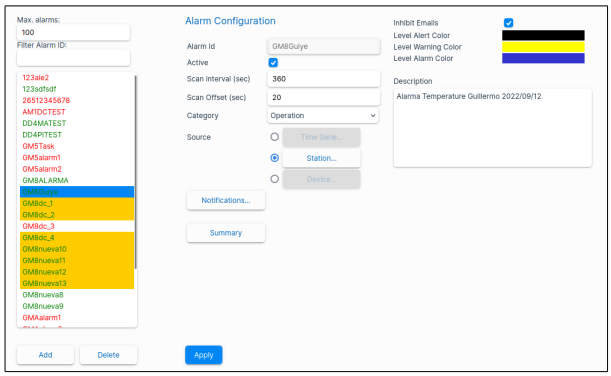


Figure 8.3. Alarm Definition.

In the **Alarms** menu**,** clicking on the **List**, and new sub-window will pop up to select Table view or Text view. The information displayed is: Alarm ID, Active, Category, Source and description.

8.1.1.7. Source: Alarm Type

Indico Alarm supports three different alarm types:

• **Time Series**: the alarm is defined using time series data from Airviro's Time Series DataBase. Time Series Data can be viewed using the Indico Presentation.

• **Station**: the alarm is defined using data from the data collection process (bad calls), that is, from data defined in monitoring stations using the Airviro Indico Administration Module.

• **Device**: the alarm is defined on devices used for data collection. Example, /dev/ttyS0 for the device associated to a modem.

Note: An alarm can only be defined for one source type. Use the radio button to enable which source type will be used.

Note: The time resolution has been previously set under **Project-Time Resolution**.

8.1.1.8. Time Series

By selecting **Time Series**, in the **Alarm Definition** window, you can define and configure an alarm using Time Series Data. (*Figure 8.4)*

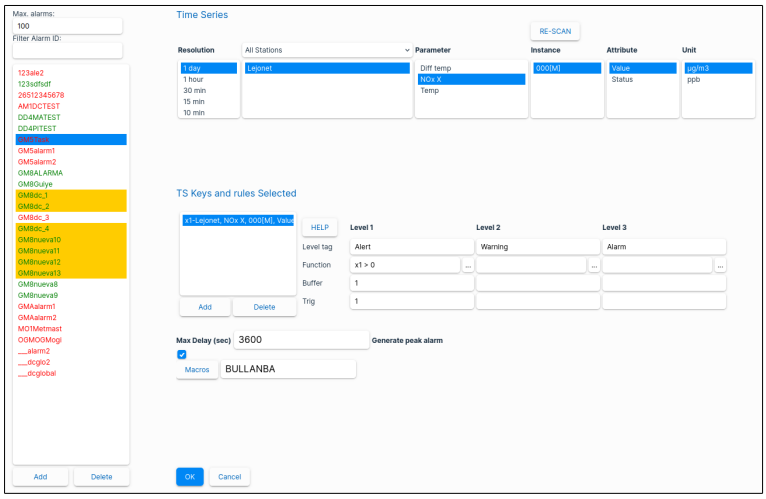


Figure 8.4. Time Series.

The **Time Series** subwindow, allows you to select the station, resolution parameter, instance, attribute and measurement unit. (*Figure 8.4*)

The **Re-scan** button is used to rescan the time series.

The **TS Keys and Rules Selected** section, defines the function, buffer and trigger values for each alarm level. (Figure 8.4)

Function: it is a formula used as a condition for each alarm level (Alert, Warning, and Alarm). This formula must comply with the same rules as in *Indico Presentation.* For example, x1>=200 indicates that the alarm level is triggered when the value of the parameter x1 is greater than or equal to 200. Click the **HELP** button to get a help text with the available mathematical functions.

Buffer: the number of values monitored backwards (timesteps).

Trig: It is the number of values within the buffer that the alarm condition must meet to trigger an alarm.

Example: If the defined Function is x1 > 3, the Buffer is set to 5 (that is, 5 values are monitored backwards), and trig is set to 2; then if at least 2 values in the buffer (last 5 values) are greater than 3 an alarm is triggered.

Note: The x1, x2... time series can come from different stations but they must all have the same time resolution.

Max Delay: If there is an active alarm and values are missing for more than **Max Delay** seconds, there will be a new "System Alarm". This alarm continues until there are values again. If there are no active alarms and values are missing for more than **max Delay** seconds, there will be a "Missing Event" (a single entry with "cat: missing, evt: MIS"). This is not an alarm, just an event.

Generate peak alarm: Tick off this checkbox to look for peaks. If a value in a buffer is shifted out of the buffer and the value has never been part of an alarm (due to the trigger criteria), there will be a "Peak Event" (a single entry with "level: x, cat: peak, evt: PEA"). This is not an alarm, just an event.

Macros: it allows you to select a Macro to define an alarm. Use *Indico Presentation* to make a macro.

8.1.1.9. Station

Select **Station** to define and configure an alarm associated to a monitoring station. *Figure 8.5.*

A station must be selected from the station list and limit values must be specified for the different alarm levels (Alert, Warning, and Alarm) .

The limit values represent the consecutive number of times a communication failure with the station must occur before an alarm is triggered..

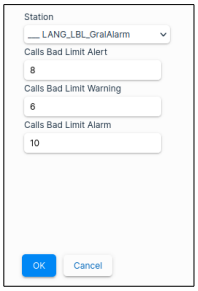


Figure 8.5 Stations

8.1.1.10. Device

Select **Device**, to define and configure an alarm associated to any other devices used for data collection in the same way as for Station (section **8.1.4.3**) see *Figure 8.6.*

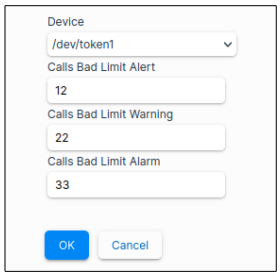


Figure 8.6. Device.

8.1.1.11. Notification, E-mails

There are two types of notifications: one that is displayed in the Real Time Alarm viewer, and another that is send by email. *Figure 8.7.*

Notifications in the alarm viewer are set up per user. When defining an alarm, the Airviro users who must be notified in Real Time Alarm should be added. It is possible to select the alarm levels for which a user should be notified.

Notifications can also be sent by email (up or down) to different recipients, depending on whether the values go up from one level to another, or down, by specifying the recipient's

email in the corresponding level lists.

For each email notification, a previously defined template must be selected. See section **8.1.3.** for a detailed explanation on templates.

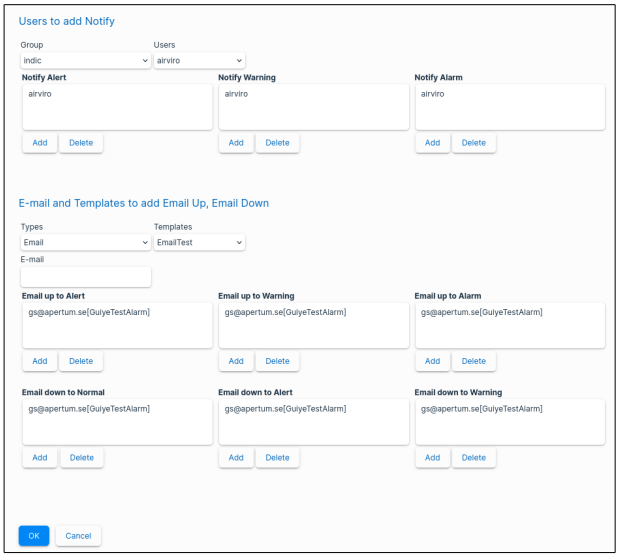


Figure 8.7. Notifications and e-mails Window.

8.1.1.12. Summary

Clicking on **[Summary]** displays a subwindows (*Figure 8.8)* with the alarm resources and values.

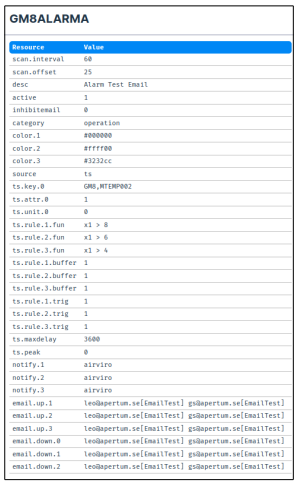


Figure 8.8. Alarm resource and value.

8.1.1.13. How to search the Events Database

Click on **Search**, in the main menu, to open this window (*Figure 8.9).*

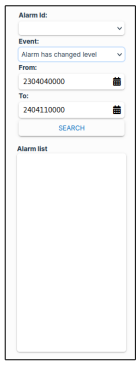


Figure 8.9. Event Search

A search can be restricted to a time period, or to an **Alarm Id** or a combination of both. As well as by **Event**.

You can enter the dates manually or using the calendar displayed by pressing the **[...]** button. Date format is Year, Month, Day, Hour and Minutes (YYMMDDHHMM).

Clicking on **[SEARCH]** without setting any restriction, will display all the information related to alarms in the event database .

The search results are displayed in a list of alarm instances. When selecting an option from that list , a text box is shown containing the Alarm history and the different levels it passed through.

Use the **Comment** field, to add comments that will be link to the Events when pressing the **[APPLY]** button. *Figure 8.10.*

Note: A finished event instance can be reactivated.

Figure 8.10. Event Search.

8.2. Real Time Alarm Module

8.1.2.1. Introduction

The *RT Alarm Module* (Real Time Alarm) is used to view active and recently terminated alarms. Different alarm levels, i.e. Alert, Warning, and Alarm, are displayed in light blue, orange and red respectively.

When a new alarm is triggered, a beep sounds and the new alarm is displayed in the **active alarms** list. When selecting an alarm from the list, its details will be shown in Alarm Detail section. The alarm will be acknowledged, and the beep will turn off. When acknowledging an alarm a comment can be entered. The “!” symbol in the active alarm list changes to green and a “V” replaces the “!”.

Beside the active alarm tab is the **Finalized alarms** tab. The latest alarms are displayed here.

8.1.2.2. Functionality

Same as for the Alarm module, but in this case RT Alarms must be selected. See section 8.1.1.2 Functionality in this manual

8.1.2.3. Main Window

The main menu on the left side of the window has the following options available:

- **Viewer**: it displays alarms.

8.1.2.4. Viewer

Click on the **Viewer** menu option to open this window. *Figure 8.10*.

If there are active alarms not yet acknowledged by the user, the system will emit an alarm beep.

This beep can be permanently turned off by unckecking the **Sound** option under the **Filter**.

Select a **Category** and **Level** to filter active alarms. A view can be restricted to an **Alarm ID**, or to a **Station** or a combination of both.

When an active alarm is selected from the list, its details will be displayed. To acknowledge the alarm, tick off the **Acknowledged** checkbox.

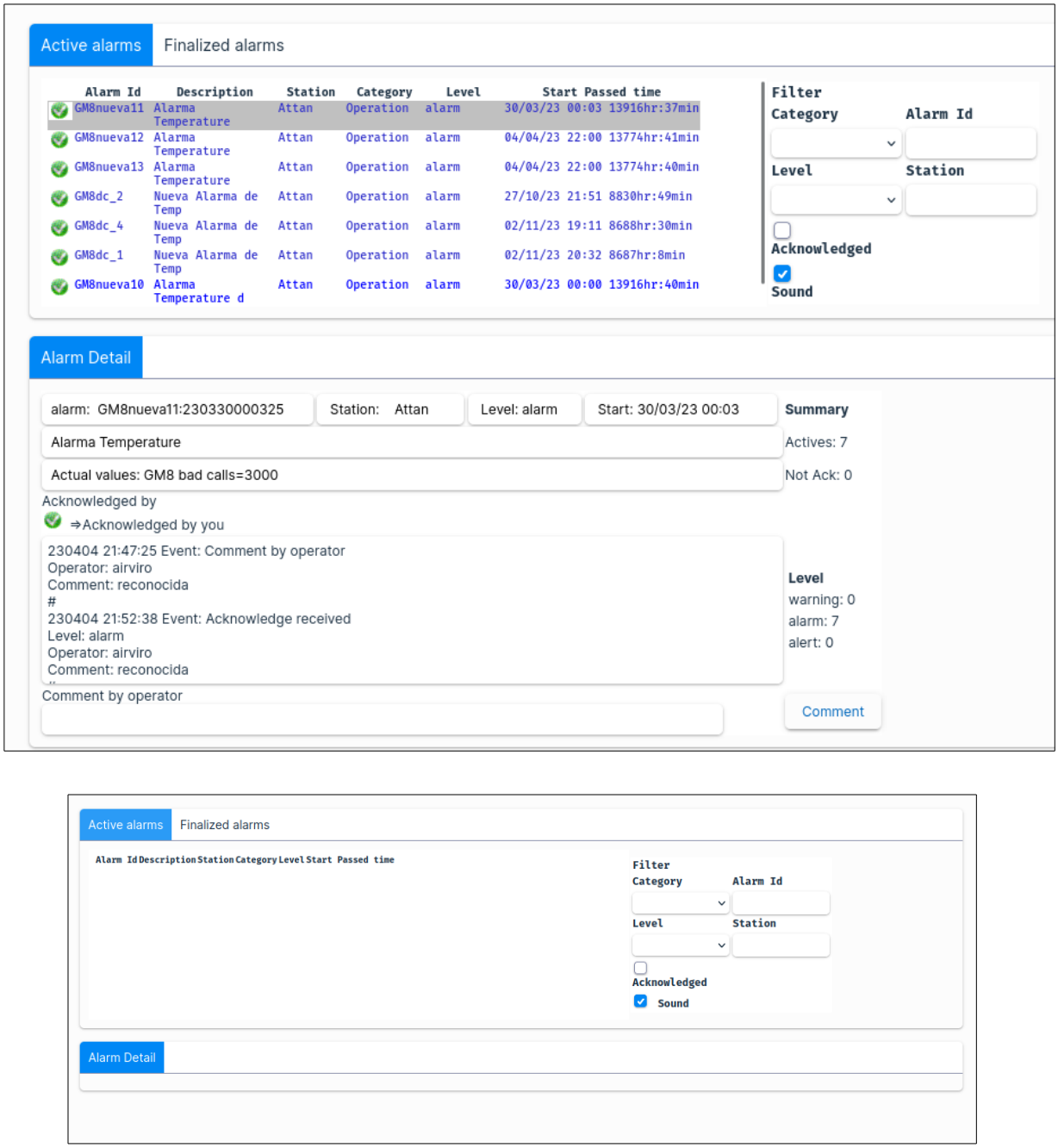


Figure 8.10. Viewer option.

The **Finalized Alarms** section lists the latest terminated alarms.

A green symbol indicates that the alarm has been acknowledged by the user.

An orange symbol indicates that the alarm has not been acknowledged by the user.

The user can select from 1 to 10 days before the current date.

The **Alarm Detail** section displays the alarm level and a summary. The information shown is: alarm, station, level, start, description, actual values and comment.