User's Manual

WN30 Noise Map Software

IM 01W07E01-01EN

YOKOGAWA
Yokogawa Electric Corporation

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Introduction

This manual consists of the following sections:

- About Wireless Noise Surveillance System
  Provides a brief overview of the Wireless Noise Surveillance System
- Configuring the Wireless Noise Surveillance System
  Describes how to configure the Wireless Noise Surveillance System
- Working with the WN30 web application
  Describes how to use the WN30 web application for wireless noise surveillance
- Troubleshooting information
  Describes how to resolve errors that are related to the WN30 web application

Target audience

This user's manual is intended for the users who want to monitor the noise levels in a plant by using the WN30 web application.

Glossary

The following table describes the terms that are used in this user's manual.

Table Info-1 Glossary

Term	Definition
Noise map	A visual representation of the level of ambient noise for a specific area in the plant.
Noise sensor	A device that measures the noise level in an area and sends the measured values to the Wireless Noise Surveillance System.
OPC	Open Platform Communications (OPC) is a software interface standard that allows Windows programs to communicate with industrial hardware devices.
PI Server	Process Information (PI) Server is a real-time data historian application from OSIsoft with a highly efficient time-series database structure.
Wireless infrastructure	The fundamental facilities that include towers, small cells, distributed antenna systems, and Wi-Fi that support wireless communication.
Datapump	A service that enables the WN30 web application to access the historian server.

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Safety precautions

Safety, protection, and modification of the product

- To protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. Yokogawa Electric Corporation (hereinafter referred to as YOKOGAWA) assumes no liability for safety if users fail to observe the safety precautions and instructions when operating the product.
- If this product is used in a manner not specified in this user's manual, the protection provided by this product may be impaired.
- If any protection or safety circuit is required for the system controlled by the product or for the product itself, install it externally.
- Be sure to confirm the specifications and required settings of the devices that are used in combination with the product by referring to the instruction manual or other documents of the devices.
- Use only spare parts that are approved by YOKOGAWA when replacing parts or consumables of the product.
- Do not use the product and accessories of the product such as power cords on devices that are not approved by YOKOGAWA. Do not use the product and its accessories for other purposes.
- Modification of the product is strictly prohibited.
- The following symbols are used in the product and user's manual to indicate the accompanying safety precautions:


Indicates that caution is required for operation. This symbol is placed on the product to refer the user to the user's manual to protect the operator and the equipment. In the user's manual, you will find precautions to avoid physical injury and/or death, which may be caused by accidents, such as electric shocks resulting from operation mistakes.


Indicates that caution is required for hot surfaces. Note that the devices with this symbol become hot. The risk of burn injury or some damages exists if the devices are touched or contacted.


Identifies a protective grounding terminal. Before using the product, ground the terminal.


Identifies a functional grounding terminal. Before using the product, ground the terminal.

Indicates an AC supply.

Indicates a DC supply.

Indicates that the power supply switch is ON.


Indicates that the power supply switch is OFF.

Notes on handling user's manuals

- Hand over the user's manuals to your end users so that they can keep the user's manuals on hand for reference.
- Read and understand the information in the user's manual thoroughly before using the product.

- For the avoidance of any doubt, the purpose of these user's manuals is not to warrant that the product is suitable for any particular purpose but to describe the functional details of the product.
- YOKOGAWA reserves the right to make improvements in the user's manuals and product at any time, without notice or obligation.
- Every effort has been made to ensure the accuracy of contents in the user's manuals. However, should you have any questions or find any errors, contact our sales representative or your local distributor. The user's manuals with unordered pages or missing pages will be replaced.

Warning and disclaimer

Please refer the End User License Agreement (EULA), which is available in the WN30 CD-ROM media. The Readme.txt file contains its file location.

Notes on software

- YOKOGAWA makes no warranties, either expressed or implied, with respect to the software's merchantability or suitability for any particular purpose, except as strictly provided in the terms of warranty.
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Documentation conventions

Symbols

The following symbols identify various sections of text in this user's manual.

NOTE Indicates additional information.

SEE ALSO Indicates referenced content.

In online manuals, you can view the referenced content by clicking the links that are in green text. However, this action does not apply to the links that are in black text.

Typographical conventions

The following typographical conventions are used throughout the user's manuals.

Commonly used conventions throughout user's manuals

- **Character string to be entered**
  The characters that must be entered are shown in monospace font as follows:

  Example:

  ```
  FIC100.SV=50.0
  ```

Conventions used to show key or button operations

- **Characters enclosed by brackets ([ ])**
  In descriptions of key or button operations, words enclosed in brackets indicate a key on the keyboard, a button name in a window, or an item in a box displayed in a window.

  Example:

  To alter the function, press the [ESC] key.

Drawing conventions

Some drawings may be partially emphasized, simplified, or omitted for the convenience of description.

In the user's manual, the parts in some drawings may be placed in different positions or have different font settings. Note that some of the images in user's manuals are display examples.

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1. About Wireless Noise Surveillance System

A complete Wireless Noise Surveillance System is composed of a network of battery-operated wireless noise measurement sensors, wireless infrastructure, and software applications for processing and presentation of the collected noise data.

The WN30 web application enables you to monitor the level of ambient noise at different locations in a plant. In the plant, noise sensors are placed at specific locations to measure the ambient noise in real time. These measurements are represented by using noise maps on the web application. You can view the noise maps to verify if a certain area in the plant is safe for operators to work. Moreover, you can verify if an equipment is working in its specified noise range by viewing the noise maps.

You can use the WN30 web application to perform the following tasks:

- View live noise maps
- View spectral bands
- View archived noise maps
- Compare archived noise maps
- Send messages

SEE ALSO

For more information about viewing live noise maps, refer to:

3.3.1, “Viewing live noise maps” on page 3-13

For more information about viewing live spectral bands, refer to:

3.3.2, “Viewing live spectral bands” on page 3-14

For more information about viewing archived spectral bands, refer to:

3.4.2, “Viewing archived spectral bands” on page 3-17

For more information about viewing archived noise maps, refer to:

3.4.1, “Viewing archived noise maps” on page 3-16

For more information about comparing archived noise maps, refer to:

3.4.3, “Comparing archived noise maps” on page 3-18

For more information about sending messages in the WN30 web application, refer to:

3.5, “Using the chat feature” on page 3-22

1.1 System positioning

The following figure shows the positioning of the WN30 web application in a plant.

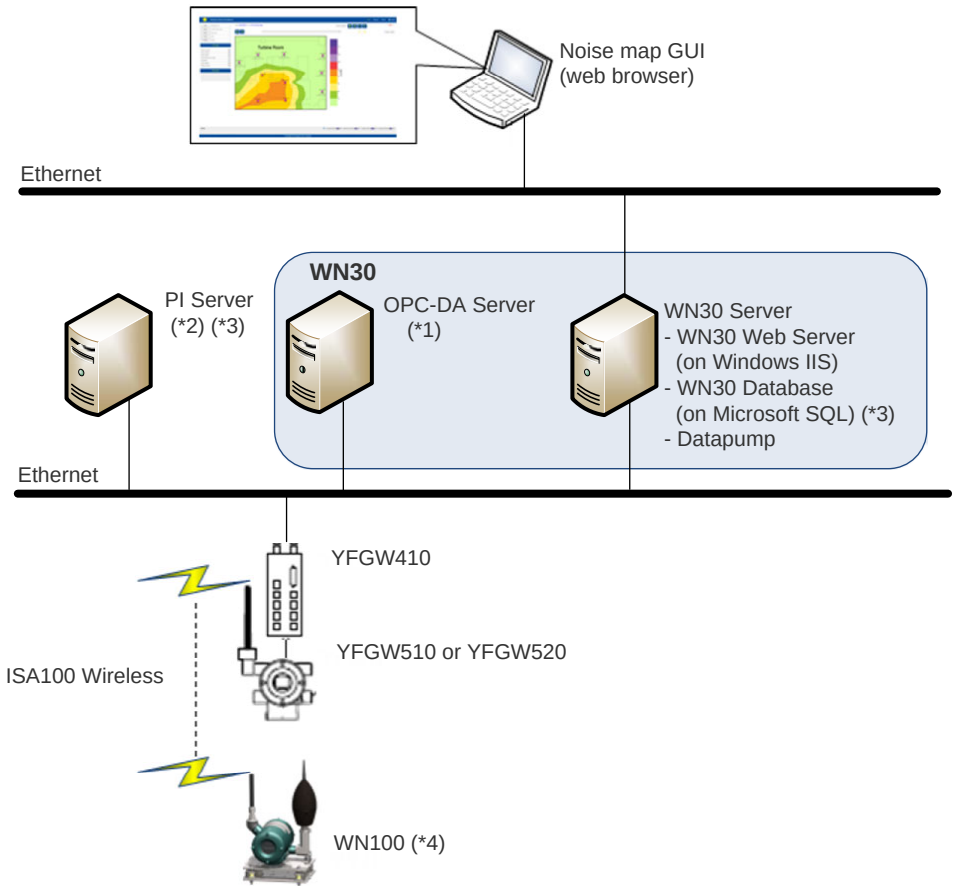

Figure 1.1-1 System positioning

*1: OPC-DA Server can be installed on another server machine if necessary.

*2: The noise measurement data from WN100 can be stored in PI Server also. (PI is not mandatory)

*3: PI Server and Microsoft SQL are not bundled with WN30. Therefore, PI Server and Microsoft SQL should be configured manually.

*4: WN100 and YFGW510/YFGW520 are installed in the plant.

1.2 Prerequisites

The following prerequisites must be met before using the WN30 web application.

- The physical network of the noise measurement sensors, network gateway, OPC, and PI Server should be configured.
- The license for using the WN30 web application must be activated.
- The WN30 web application must be configured by using the WN30 Configuration Tool.

1.3 System requirements

The following table lists the recommended system requirements for the WN30 servers.

Table 1.3-1 Hardware requirements

Item	Requirement
Central Processing Unit (CPU)	Intel(R) Xeon(R) E5-2680 0 @ 2.70 GHz
Main memory	16GB
Hard disk space	200 GB

Table 1.3-2 Software requirements

Item	Requirement
Operating system (OS)	• Microsoft Windows Server 2012 R2 Standard • Microsoft Windows Server 2016 Standard
Framework	.Net framework 4.5
Web browser	Google Chrome version 68.0.0 and above
Database Server	• Microsoft SQL 2012 Standard (for Windows Server 2012 R2 Standard) • Microsoft SQL 2017 Standard (for Windows Server 2016 Standard)

2. Configuring the Wireless Noise Surveillance System

You must configure the Wireless Noise Surveillance System settings before using the WN30 web application.

You can use the WN30 Configuration Tool to configure the following settings for using the WN30 web application:

- Configuring the WN30 database
- Setting up the WN30 Datapump service
- Configuring the WN30 web application
- Activating the WN30 license
- Maintaining the WN30 database

NOTE

- After you configure the above-stated settings, restart the WN30 Server for changes to take effect.
- You can configure the Wireless Noise Surveillance System settings only if you have access to the WN30 Server.

SEE ALSO

For more information about configuring the WN30 database, refer to:

2.1, “Configuring the WN30 database” on page 2-2

For more information about configuring the historian server that connects to the WN30 system, refer to:

2.2, “Setting up the WN30 Datapump service” on page 2-4

For more information about configuring default WN30 settings, refer to:

2.3, “Configuring the WN30 web application” on page 2-5

For more information about maintaining the WN30 database, refer to:

2.5, “Maintaining the WN30 database” on page 2-7

For more information about activating the WN30 license, refer to:

2.4, “Activating the WN30 license key” on page 2-6

2.1 Configuring the WN30 database

You can use the WN30 Configuration Tool to configure the following settings:

- Configuring noise map attributes
- Configuring site details
- Configuring base map data

NOTE

Contact Yokogawa for configuring the WN30 database.

Configuring noise map attributes

Follow these steps to configure the noise map attributes:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Initial Setup].
   The Initial Setup page appears.
3. In the WN30 DB section, click [Browse].
   The Initial Details file dialog box appears.
4. Browse to the location where the NoiseMapAttributes file is saved and double-click the noise map attribute file.
   The NoiseMapAttributes file contains details about different types of noise maps, their color codes, and so on.
5. Click [Setup DB].
   The noise map attributes are added to the database.

Configuring site details

Follow these steps to configure the site details:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Initial Setup].
   The Initial Setup page appears.
3. In the Site Details section, click [Browse].
   The Site Details file dialog box appears.
4. Browse to the location where the SiteDetails file is saved and double-click the site detail file.
   The SiteDetails file contains details about the site, sensors, noise units, and location of the sensors in the plant.
5. In the Site Details section, click [Submit].
   The site details are added to the database.

Configuring basecase details (base map data)

Follow these steps to configure the basecase details:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Initial Setup].
   The Initial Setup page appears.

3. In the Basecase Details section, click [Browse].
   The Base case Details file dialog box appears.
4. Browse to the location where the BaseMapData file is saved and double-click the base map data file.
   The BaseMapData file contains the handheld measured data that is used to create a base map.
5. In the Basecase Details section, click [Submit].
   The basecase details are added to the database.

2.2 Setting up the WN30 Datapump service

The WN30 web application accesses noise measurement data from a historian server by using the WN30 Datapump service. You can use the WN30 Configuration Tool to set up the WN30 Datapump service.

Follow these steps to set up the WN30 Datapump service:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Datapump].
   The Datapump page appears.
3. In the Owners box, type the name of your plant.
4. In the Sites box, type the name of your site.

   NOTE

   - You can specify names of multiple Owners and Sites by using comma (,) as the separator. For example, `<Site 1>, <Site 2>, <Site 3>`.
   - If you want to log the WN30 errors in the Event Viewer, select the [Enable Short Errors] check box.

5. In the Source section, perform these steps as necessary:
   - To use the PI Server as the data source
     a. Select [PI].
     b. In the URL box, type the URL of the PI Server.
     c. In the Pre URL box, type the pre URL of the PI Server.
     d. In the Username box, type the username that is used to access the PI Server.
     e. In the Password box, type the password for the corresponding username.
   - To use the OPC DA Server as the data source
     a. Select [OPC DA].
6. Click [Submit].
   The WN30 Datapump service is configured.

2.3 Configuring the WN30 web application

You can use the WN30 Configuration Tool to specify the default site, area, and user groups for the WN30 web application.

Follow these steps to configure default WN30 settings:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Noisemap].
   The Noisemap page appears.
3. In the Owner box, type the name of your plant.
4. In the Default Site box, type the name of the site for which noise maps should be displayed on the WN30 web application by default.
5. In the Default Area box, type the name of the area whose noise map you want to display on the WN30 web application by default.
6. In the Admin Group box, type the name of the user group that you want to set as default admin group for accessing the WN30 web application.
7. In the Expert Group box, type the name of the user group that you want to set as default expert group for accessing the WN30 web application.
8. Click [Submit].
   The settings for the WN30 web application is configured.

2.4 Activating the WN30 license key

Follow these steps to activate the license key for using the WN30 web application:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [License].
   The License page appears.
3. In the License Number box, type or enter the license key that you received with the WN30 software.
4. Send an e-mail that contains the volume serial number of your disk drive and the license number of the WN30 software to the following e-mail address:
   `wn30_license@cs.jp.yokogawa.com`

   YOKOGAWA sends the activation key of your WN30 software through e-mail.

   NOTE

   The volume serial number of your disk drive is displayed on the License page.
5. In the Activation Key box, type or enter the activation key of the WN30 web application.
6. Click [Submit].
   The license key for using the WN30 web application is activated.

2.5 Maintaining the WN30 database

You can use the WN30 Configuration Tool to perform the following tasks:

- Retrieve data from the historian server and save it to the WN30 database
- Delete data from the WN30 database

Follow these steps to maintain the WN30 database:

1. From the Start menu, open the WN30 Configuration Tool.
   The WN30 Configuration Tool window appears.
2. On the navigation pane, click [Maintenace].
   The Maintenance page appears.
3. If you want to retrieve data from the historian server and save it to the WN30 database, perform these steps:
   a. In the Retrieve section, from the From Date drop-down list, select a date from which you want to retrieve the data.
   b. From the To Date drop-down list, select a date up to which you want to retrieve the data.
   c. Click [Submit].

   The data for the selected duration is saved to the WN30 database.
4. If you want to delete data from the WN30 database, perform these steps:
   a. In the Delete section, from the From Date drop-down list, select a date from which you want to delete the data.
   b. From the To Date drop-down list, select a date up to which you want to delete the data.
   c. Click [Submit].

   NOTE

   The WN30 Configuration Tool does not delete any historical maps that are saved in the WN30 web application.

   The data for the selected duration is deleted from the WN30 database.

3. Working with the WN30 web application

Depending on the role that is assigned to you, you can perform the following tasks by using the WN30 web application:

- Viewing live and archived noise maps
- Viewing live and archived spectral bands
- Comparing archived noise maps
- Sending and viewing messages
- Printing noise maps
- Downloading noise maps

SEE ALSO

For more information about viewing live noise maps, refer to:

3.3.1, “Viewing live noise maps” on page 3-13

For more information about viewing live spectral bands, refer to:

3.3.2, “Viewing live spectral bands” on page 3-14

For more information about viewing archived noise maps, refer to:

3.4.1, “Viewing archived noise maps” on page 3-16

For more information about viewing archived spectral bands, refer to:

3.4.2, “Viewing archived spectral bands” on page 3-17

For more information about comparing archived noise maps, refer to:

3.4.3, “Comparing archived noise maps” on page 3-18

For more information about sending and viewing messages in the WN30 web application, refer to:

3.5, “Using the chat feature” on page 3-22

For more information about printing noise maps, refer to:

3.6, “Printing noise maps” on page 3-23

For more information about downloading noise maps, refer to:

3.7, “Downloading noise maps” on page 3-24

3.1 Logging on to WN30 web application

Follow these steps to log on to the WN30 web application:

1. Open a Web browser on your computer.

   NOTE

   For better performance of the WN30 web application, it is recommended to use Google Chrome.

2. In the address bar, type the following URL:
   `http://<I.P. address of the WN30 Server>/noisemap`
3. In the User name box, type the user name.
4. In the Password box, type the password and click [OK].
   The home page of the WN30 web application appears.

   NOTE

   The appearance of the home page varies depending on the login credentials that you use to log on to the WN30 web application.

SEE ALSO For more information about type of users, refer to:

3.1.1, “Types of users” on page 3-3

3.1.1 Types of users

The WN30 web application supports the following user groups:

- Administrator
  The users belonging to the Administrator user group can configure the settings that are required to view the noise maps. As an Administrator, you can configure the unit of noise level, manage historic maps, send messages to other users, and so on.
- Expert
  The users belonging to the Expert user group can also configure the settings that are required to view the noise maps. However, as an Expert, you cannot send messages by using the WN30 web application.
- Standard
  The users belonging to the Standard user group can view the noise maps according to the settings that are configured by an Administrator or Expert.

SEE ALSO For more information about roles and responsibilities of the user groups, refer to:

3.1.2, “Roles and responsibilities” on page 3-4

3.1.2 Roles and responsibilities

The following table lists the tasks that the members of each user group can perform by using the WN30 application.

Table 3.1.2-1 Roles and responsibilities

Task	Administrator	Expert	Standard
Selecting unit of the measured noise level	Yes	Yes	No
Selecting noise map view	Yes	Yes	No
Viewing noise map	Yes	Yes	Yes
Sending messages	Yes	No	No
Viewing messages	Yes	Yes	Yes
Saving historic map	Yes	Yes	No
Deleting historic map	Yes	Yes	No
Viewing historic map	Yes	Yes	Yes
Viewing the noise info table (*1)	Yes	Yes	Yes
Viewing the average noise level	Yes	Yes	Yes
Viewing the maximum noise level	Yes	Yes	Yes
Viewing the quality level	Yes	Yes	No
Viewing the exposure level	Yes	Yes	No

*1: Only an Administrator or Expert can switch between the color scale and noise info table.

3.2 WN30 home screen

The following figure shows the WN30 home screen for the users belonging to the Administrator or Expert user group.

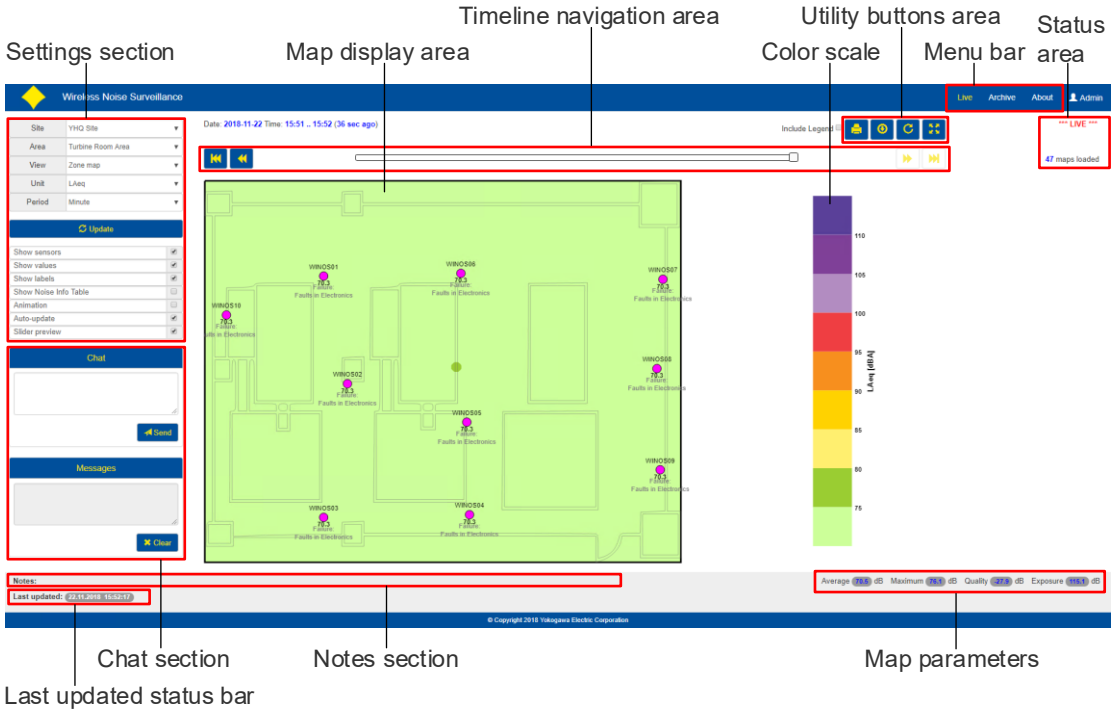

Figure 3.2-1 WN30 home screen for Administrator or Expert users

The following figure shows the WN30 home screen for the users belonging to the Standard user group.

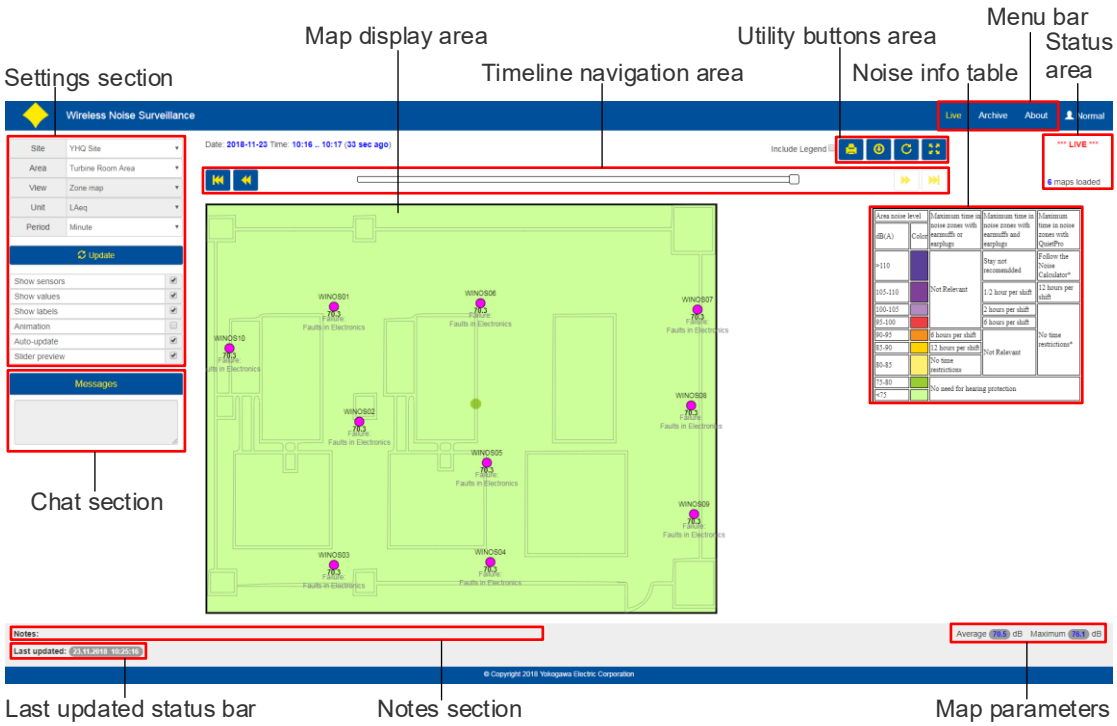

Figure 3.2-2 WN30 home screen for Standard users

Common icons

The following table describes the icons that are displayed on the WN30 home screen.

Table 3.2-1 Common icons

Icon	Name	Description
	First	Enables you to view the first or oldest noise map that is available for the selected plant area.
	Previous	Enables you to view the previous noise map.
	Next	Enables you to view the next noise map.
	Last	Enables you to view the latest or last noise map that is available for the selected plant area.
	Print	Enables you to print the noise maps.
	Download	Enables you to download the noise maps.
	Reload	Enables you to update the information that is displayed on the noise map.
	Zoom Reset	Enables you to restore the noise map to its original size and position.
	Calendar	Enables you to select the date and time in Archive mode.

Menu bar

The menu bar enables you to switch between Live and Archive modes of the WN30 web application. Additionally, it contains the About tab, which you can click to view the general information about the WN30 web application.

In Live mode, the noise map displays the real-time ambient noise in the plant. The map is updated automatically whenever the noise sensors detect any change in the noise level of any area in the plant.

NOTE

You cannot view historical maps in Live mode.

In Archive mode, you can view archived noise maps. You can also compare two archived noise maps and analyze the difference in the noise levels between them.

SEE ALSO For more information about viewing live noise maps, refer to:

3.3.1, “Viewing live noise maps” on page 3-13

For more information about viewing archived noise maps, refer to:

3.4.1, “Viewing archived noise maps” on page 3-16

For more information about comparing archived noise maps, refer to:

3.4.3, “Comparing archived noise maps” on page 3-18

Settings section

The settings section enables you to configure the settings for customizing the noise map according to your requirements.

The following table describes the settings that you can configure in the settings section.

Table 3.2-2 Settings section

Item	Description
Site	Enables you to select the site for which you want to view the noise maps.
Area	Enables you to select the area in the plant for which you want to view the noise maps.
View (*1)	Enables you to select one of the following views for the noise map: • Contour map Displays boundaries on the noise map based on the measured noise levels. • Zone map Displays the actual noise levels on the noise map. • Diff. zone map (*2) Displays the difference between the noise levels of two different noise maps. • Spectral bands (*3) Displays the frequency spectrum diagram corresponding to the noise levels that are measured by a noise sensor.
Unit (*1) (*3)	Enables you to select one of the following units of noise levels for the noise map: • LAeq Displays the noise levels in LAeq. • LCeq Displays the noise levels in LCeq. • LCpeak Displays the noise levels in LCpeak. • Exp. time w/no HP Displays the maximum time for which an operator can safely work in the corresponding area of the plant without wearing any hearing protection. • Exp. time w/single HP Displays the maximum time for which an operator can safely work in the corresponding area of the plant while wearing single hearing protection. • Exp. time w/double HP Displays the maximum time for which an operator can safely work in the corresponding area of the plant while wearing double hearing protection. • Exp. time w/QuietPro Displays the maximum time for which an operator can safely work in the corresponding area of the plant while wearing the QuietPro hearing protection.
Period	Enables you to select the time span for which you want to view the noise map. The available options are: • Minute • Quarter (15 minutes) • Hour • Day • Week • Month • Year
Update	Enables you to update the noise map according to the configured settings.

Continues on the next page

Table 3.2-2 Settings section (Table continued)

Item	Description
Show sensors	Enables you to show or hide the sensor locations on the noise map.
Show values	Enables you to show or hide the value of noise levels on the noise map.
Show labels	Enables you to show or hide the sensor names on the noise map.
Show Noise Info Table (*1)	Enables you to view the noise info table instead of color scale in the Map display area.
Animation	Enables you to display the available noise maps in a repeating sequence. When this check box is selected, successive noise maps are displayed automatically at regular intervals.
Auto-update	Enables you to update the noise map with the latest values automatically. When this check box is selected, the noise map is updated whenever the noise sensors send the measured values to the WN30 web application.
Slider preview	Enables you to preview the noise map according to the position of slider control. When this check box is selected, the noise map is updated dynamically according to the slider position.

*1: Available only for the users belonging to the Administrator or Expert user group.
*2: This view is available only in Archive mode.
*3: When the Spectral bands view is selected, a list of noise sensors that are installed in the plant area is shown in the Unit drop-down list.

SEE ALSO

For more information about the contour map, refer to:

"■ Contour map" on page App.1-1

For more information about the zone map, refer to:

"■ Zone map" on page App.1-1

For more information about the diff. zone map, refer to:

"■ Diff. zone map" on page App.1-2

For more information about the spectral bands, refer to:

"■ Spectral bands" on page App.1-3

For more information about selecting the period for a noise map, refer to:

"■ Status area" on page 3-11

For more information about color scale and exposure time with hearing protection, refer to:

"■ Color scale" on page 3-9

■ Timeline navigation area

The timeline navigation area consists of controls that enable you to navigate along a continuous timeline for viewing the noise maps.

The following table describes the controls that are available in the timeline navigation area.

Table 3.2-3 Controls in the timeline navigation area

Control	Description
First	Enables you to view the first or oldest noise map that is available for the selected plant area.
Previous	Enables you to view the previous noise map.
Slider	Enables you to seek the time for which you want to view the noise map.
Next	Enables you to view the next noise map.
Last	Enables you to view the latest or last noise map that is available for the selected plant area.

Utility buttons area

The utility buttons area consists of controls that enable you to print, download, reload, and reset the noise maps.

The following table describes the controls that are available in the utility buttons area.

Table 3.2-4 Controls in the utility buttons area

Control	Description
Print	Enables you to print the noise maps.
Download	Enables you to download the noise maps.
Reload	Enables you to update the information that is displayed on the noise map.
Zoom Reset	Enables you to restore the noise map to its original size and position.

Map display area

The map display area displays the noise maps according to the settings that are configured in the Settings section. You can pan and zoom the noise map as necessary.

The solid dots on the noise map represent the sensors. The noise level measured by the sensors is displayed below the dots. Whereas, the name of the sensor is displayed above the dot. Additionally, self-diagnostic error messages related to the sensors are displayed.

Color scale

The color scale is displayed next to the noise map. It indicates the noise level in the specified unit corresponding to the colors that are displayed on the noise map.

The following table lists the maximum exposure time for each measured noise level and its corresponding color.

Table 3.2-5 Color scale

Color	dB (A) (*1)	Maximum exposure time in noise zone with earmuffs or earplugs	Maximum exposure time in noise zone with earmuffs and earplugs	Maximum exposure time in noise zone with QuietPro hearing protection
	>110	Stay not recommended (*2)	Stay not recommended	Follow the noise calculator
	105-110	Stay not recommended (*2)	30 minutes per shift	12 hours per shift
	100-105	Stay not recommended (*2)	2 hours per shift	No time restrictions
	95-100	Stay not recommended (*2)	6 hours per shift	No time restrictions

Continues on the next page

Table 3.2-5 Color scale (Table continued)

Color	dB (A) (*1)	Maximum exposure time in noise zone with ear-muffs or earplugs	Maximum exposure time in noise zone with ear-muffs and earplugs	Maximum exposure time in noise zone with Quiet-Pro hearing protection
	90-95	6 hours per shift	No time restrictions (*2)	No time restrictions
	85-90	12 hours per shift	No time restrictions (*2)	No time restrictions
	80-85	No time restrictions	No time restrictions (*2)	No time restrictions
	75-80	No need for hearing protection	No need for hearing protection	No need for hearing protection
	<75	No need for hearing protection	No need for hearing protection	No need for hearing protection

*1: The WN30 web application measures the noise levels in LAeq, LCeq, and LCpeak.
*2: It is displayed as "Not Relevant" on the screen.

Chat section

The chat section enables you to send, view, and delete messages. This section consists of a Chat box and a Messages box. The Administrators can type a message in the Chat box to send it to other users. The Messages box displays the sent messages.

NOTE

Only an Administrator can send or delete messages.

SEE ALSO

For more information about using the chat feature, refer to:

3.5, “Using the chat feature” on page 3-22

Map parameters

The map parameters provide an overall summary of the noise map.

The following table describes the map parameters.

Table 3.2-6 Map parameters

Parameters	Definition
Average	Indicates the average noise level in the plant area.
Maximum	Indicates the highest noise level in the plant area.
Quality (*1)	Indicates the quality of the plant area based on the measured noise levels. A higher value indicates better quality.

Continues on the next page

Table 3.2-6 Map parameters (Table continued)

Parameters	Definition
Exposure (*1)	Indicates the average noise level of the entire plant area, considering exposure time of eight hours.

*1: Only an Administrator or Expert can view the value of Quality and Exposure parameters.

Status area

The status area displays information about the operating mode of the WN30 web application. In Live mode, the status area displays "LIVE" as the status in red color. This area also displays the number of maps that is loaded on the WN30 web application according to the selected period. If you clear the Auto-update check box, the status changes from "LIVE" to "Idle."

NOTE

The status area does not display any status in Archive mode.

The maximum number of maps that can be loaded in Live mode depends on the selected period. The WN30 web application discards the oldest map as new maps are loaded in Live mode. However, the discarded maps can be viewed in Archive mode.

The following table lists the maximum number of maps and age of the oldest map that you can view in Live mode for the selected period.

Table 3.2-7 Time span for each period

Period	Description
Minute	A maximum of 61 maps can be viewed and age of the oldest map is one hour.
Quarter (15 minutes)	A maximum of 49 maps can be viewed and age of the oldest map is 12 hours.
Hour	A maximum of 49 maps can be viewed and age of the oldest map is two days.
Day	A maximum of 32 maps can be viewed and age of the oldest map is one month.
Week	A maximum of 53 maps can be viewed and age of the oldest map is one year. (*1)
Month	A maximum of 25 maps can be viewed and age of the oldest map is two years. (*1)
Year	A maximum of 10 maps can be viewed and age of the oldest map is 10 years. (*1)

*1: The age of the oldest map may vary depending on the size of your WN30 database.

Notes section

The notes section displays messages about the noise map that is shown on the WN30 web application.

Last updated status bar

The last updated status bar displays the date and time at when the most recent noise map is updated on the WN30 web application. It also displays messages that are related to the settings that you configure for viewing noise maps.

3.3 Working with the WN30 web application in Live mode

In Live mode, the WN30 web application displays the last updated noise map according to the settings that are configured in the Settings section. The WN30 web application updates the noise map automatically when any one of the following conditions are met:

- When the measurement period elapses
  For example, if the period is specified as "1 hour," a new noise map is updated every hour.
- When the noise sensors detect any change in the measured noise level
  For example, if the Auto-update check box is selected, the noise map is updated whenever the noise sensors detect any change in the measured noise level.

You can use the timeline navigation controls to navigate through the sequence of noise maps that are loaded on the WN30 web application.

SEE ALSO For more information about viewing live noise maps, refer to:

3.3.1, “Viewing live noise maps” on page 3-13

For more information about viewing live spectral bands, refer to:

3.3.2, “Viewing live spectral bands” on page 3-14

3.3.1 Viewing live noise maps

Follow these steps to view a live noise map:

1. Log on to the WN30 web application.
2. From the menu bar, click [Live].

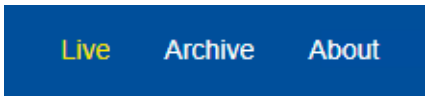

Figure 3.3.1-1 Menu bar

3. In the Settings section, from the Site drop-down list, select the site for which you want to view the noise map.
4. From the Area drop-down list, select the area for which you want to view the noise map.
5. From the View drop-down list, select the type of noise map that you want to view.
6. From the Unit drop-down list, select the noise measurement unit that you want the color scale to display.

   NOTE

   Only an Administrator or Expert can select the map view and noise measurement unit.

7. From the Period drop-down list, select the time span for which you want to view the noise map.

   NOTE

   If the period is not selected, a "Loading" message is displayed instead of the noise map.

8. Click [Update].
   The WN30 web application updates the noise map in the Map display area.
9. Select the following check boxes as necessary:
   - [Show sensors]
     To display the location of noise sensors on the noise map.
   - [Show values]
     To display the ambient noise level that is measured by each noise sensor on the noise map.
   - [Show labels]
     To display the name of noise sensors on the noise map.
   - [Show Noise Info Table]
     To display the noise info table instead of color scale in the Map display area.

     NOTE

     Only an Administrator or Expert can select this check box.

   - [Animation]
     To display the recent noise maps in a repeating sequence.
   - [Auto-update]
     To display an updated noise map when the measurement period elapses or any change in the noise level is detected.
   - [Slider preview]
     To display updated noise maps continuously while you move the slider in the timeline navigation area.

   The noise map is displayed in the Map display area according to the configured settings.

3.3.2 Viewing live spectral bands

Follow these steps to view live spectral bands for the WN30 noise sensor:

1. Log on to the WN30 web application.
2. From the menu bar, click [Live].

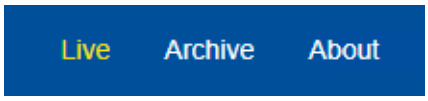

Figure 3.3.2-1 Menu bar

3. In the Settings section, from the Site drop-down list, select the site for which you want to view the spectral band.
4. From the Area drop-down list, select the area for which you want to view the spectral band.
5. From the View drop-down list, select [Spectral bands].
6. From the Unit drop-down list, select the noise sensor for which you want to view the spectral band.

NOTE

- Only an Administrator or Expert can select the map view and noise sensor unit.
- For spectral bands, the period is set to "Minute" in Live mode by default.

7. Click [Update].
   The WN30 web application updates the spectral band in the Map display area.
8. Select the following check boxes as necessary:
   - [Show labels]
     To display the noise measurement and frequency measurement values on the spectral band.
   - [Show Noise Info Table]
     To display the noise info table in the Map display area.

     NOTE

     Only an Administrator or Expert can select this check box.
   - [Animation]
     To display the recent spectral bands in a repeating sequence.
   - [Auto-update]
     To display an updated spectral band when the measurement period elapses or any change in the noise level is detected.
   - [Slider preview]
     To display updated spectral bands continuously while you move the slider in the timeline navigation area.

   The spectral band is displayed in the Map display area according to the configured settings.

SEE ALSO For more information about spectral bands, refer to:

"■ Spectral bands" on page App.1-3

3.4 Working with the WN30 web application in archive mode

In Archive mode, the WN30 web application displays the archived noise maps. You can view the archived noise maps to analyze the historical noise levels of a plant area. In Archive mode, you can save, retrieve, and delete the archived maps. You can also compare the difference between the noise levels of two archived maps.

SEE ALSO

For more information about viewing archived noise maps, refer to:

3.4.1, “Viewing archived noise maps” on page 3-16

For more information about viewing archived spectral bands, refer to:

3.4.2, “Viewing archived spectral bands” on page 3-17

For more information about comparing archived noise maps, refer to:

3.4.3, “Comparing archived noise maps” on page 3-18

For more information about saving historic maps, refer to:

3.4.4, “Saving historic noise maps” on page 3-19

For more information about retrieving historic noise maps, refer to:

3.4.5, “Retrieving historic noise maps” on page 3-20

For more information about deleting historic noise maps, refer to:

3.4.6, “Deleting historic noise maps” on page 3-21

3.4.1 Viewing archived noise maps

Follow these steps to view an archived noise map:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.1-1 Menu bar

3. In the Settings section, from the Site drop-down list, select the site for which you want to view the noise map.
4. From the Area drop-down list, select the area for which you want to view the noise map.
5. From the View drop-down list, select the type of noise map that you want to view.
6. From the Unit drop-down list, select the noise measurement unit that you want the color scale to display.

   NOTE

   Only an Administrator or Expert can select the map view and noise measurement unit.

7. From the Period drop-down list, select the time span for which you want to view the noise map.
8. In the Map Time box, click the [Calendar] icon, select the date and time, and then click [Done].
9. Click [Update].
   The WN30 web application displays the archived noise map in the Map display area.
10. Select the following check boxes as necessary:

    - [Show sensors]
      To display the location of noise sensors on the noise map.
    - [Show values]
      To display the ambient noise level that is measured by each noise sensor on the noise map.
    - [Show labels]
      To display the name of noise sensors on the noise map.
    - [Show Noise Info Table]
      To display the noise info table instead of color scale in the Map display area.

      NOTE

      Only an Administrator or Expert can select this check box.

    The noise map is displayed in the Map display area according to the configured settings.

3.4.2 Viewing archived spectral bands

Follow these steps to view archived spectral bands for the WN30 noise sensor:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.2-1 Menu bar

3. In the Settings section, from the Site drop-down list, select the site for which you want to view the spectral band.
4. From the Area drop-down list, select the area for which you want to view the spectral band.
5. From the View drop-down list, select [Spectral bands].
6. From the Unit drop-down list, select the noise sensor for which you want to view the spectral band.

   NOTE

   Only an Administrator or Expert can select the map view and noise sensor unit.

7. From the Period drop-down list, select the time span for which you want to view the spectral band.
8. In the Map Time box, click the [Calendar] icon, select the date and time, and then click [Done].
9. Click [Update].
   The WN30 web application displays the archived spectral band in the Map display area.
10. If you want to display the noise measurement and frequency measurement values on the spectral bands, select the [Show labels] check box.
    The spectral band is displayed in the Map display area according to the configured settings.

3.4.3 Comparing archived noise maps

Follow these steps to compare archived noise maps:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.3-1 Menu bar

3. In the Settings section, from the Site drop-down list, select the site for which you want to compare the noise maps.
4. From the Area drop-down list, select the area for which you want to compare the noise maps.
5. From the View drop-down list, select [Diff. zone map].
6. From the Unit drop-down list, select the noise measurement unit in which you want the comparison results to be displayed.

   NOTE

   Only an Administrator or Expert can select the map view and noise measurement unit.

7. From the Period drop-down list, select the time span for which you want to compare the noise maps.
8. In the Map Time box, click the [Calendar] icon, select the date and time for the noise map that you want to compare, and then click [Done].
9. In the Ref Time box, click the [Calendar] icon, select the date and time for the reference noise map, and then click [Done].
10. Click [Update].
    The WN30 web application displays a noise map that shows the difference in noise levels of the archived maps.
11. Select the following check boxes as necessary:
    - [Show sensors]
      To display the location of noise sensors on the noise map.
    - [Show values]
      To display the ambient noise level that is measured by each noise sensor on the noise map for the period that you specified in step 8.
    - [Show labels]
      To display the name of noise sensors on the noise map.
    - [Show Noise Info Table]
      To display the noise info table instead of color scale in the Map display area.

      NOTE

      Only an Administrator or Expert can select this check box.

    The difference between the specified noise maps is displayed in the Map display area according to the configured settings.

3.4.4 Saving historic noise maps

NOTE

Only an Administrator or Expert can save historic noise maps.

Follow these steps to save a historic noise map:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.4-1 Menu bar

3. Click [Historic map].

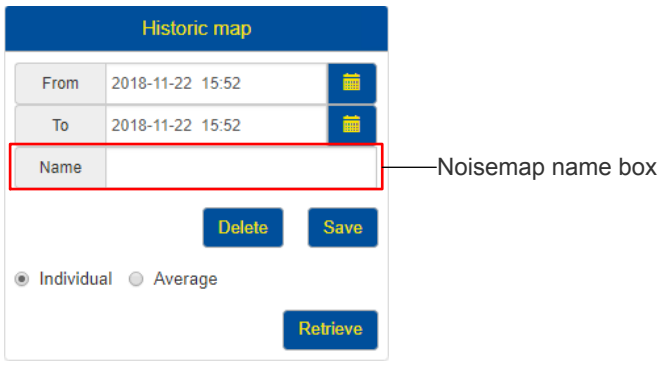

Figure 3.4.4-2 Historic map section

4. In the From box, click the [Calendar] icon, select the date and time, and then click [Done].
5. In the To box, click the [Calendar] icon, select the date and time, and then click [Done].
6. In the Name box, type a unique name for the historic map that you want to save.

   NOTE

   - If a historic map with the specified name already exists, type a different name in the Name box.
   - You can type up to 50 characters to specify the name of the historic map.

7. Select one of the following options as necessary:
   - [Individual]
     For saving individual maps for the duration that you specified in steps 4 and 5.
   - [Average]
     For saving one average map for the duration that you specified in steps 4 and 5.
8. Click [Save].
   The historic map for the specified duration is saved.

3.4.5 Retrieving historic noise maps

NOTE

Only an Administrator or Expert can retrieve historic noise maps.

Follow these steps to retrieve a historic noise map:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.5-1 Menu bar

3. Click [Historic map].

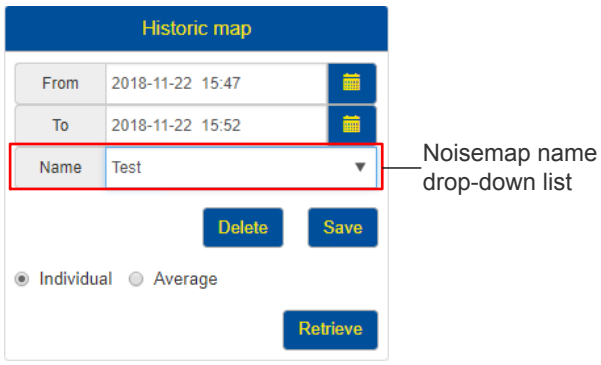

Figure 3.4.5-2 Historic map section

4. From the Name drop-down list, select the historic map that you want to retrieve. Alternatively, type the name of the saved historic map in the Name box.

   NOTE

   Only saved maps can be retrieved.

5. Click [Retrieve].
   The selected historic map is displayed.

3.4.6 Deleting historic noise maps

NOTE

Only an Administrator or Expert can delete historic noise maps.

Follow these steps to delete a historic noise map:

1. Log on to the WN30 web application.
2. From the menu bar, click [Archive].

Figure 3.4.6-1 Menu bar

3. Click [Historic map].

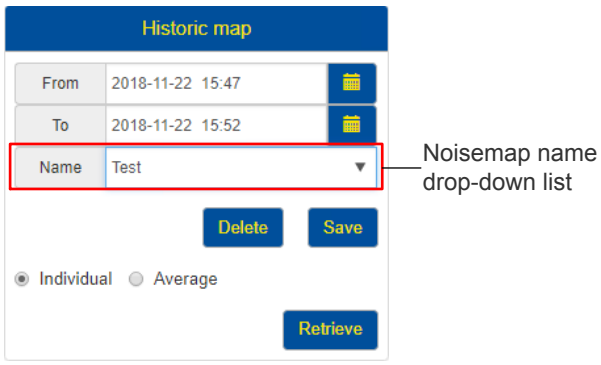

Figure 3.4.6-2 Historic map section

4. From the Name drop-down list, select the historic map that you want to delete. Alternatively, type the name of the saved historic map that you want to delete.
5. Click [Delete].
   The selected historic map is deleted.

3.5 Using the chat feature

Depending on the role that is assigned to you, you can send, view, and delete messages by using the chat feature of the WN30 web application.

Follow these steps to use the chat feature of the WN30 web application:

1. Log on to the WN30 web application.
2. In the Chat feature section, click [Chat].

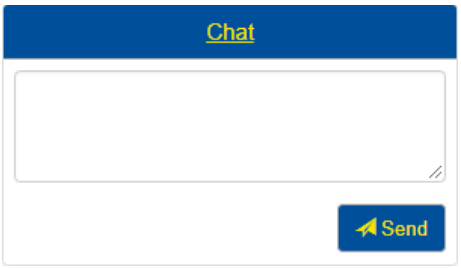

Figure 3.5-1 Chat box

3. In the Chat box, type a message that you want to send.
4. Click [Send].

NOTE

Only an Administrator can send messages to other users.

The message appears in the Messages box, which the other users can view.

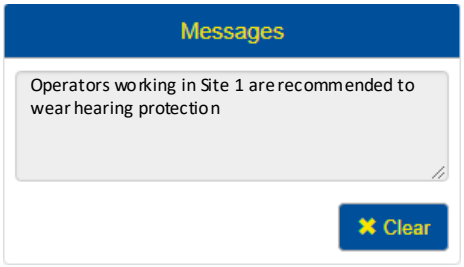

Figure 3.5-2 Messages box

5. If you want to delete the sent messages, click [Clear].

NOTE

Only an Administrator can delete messages.

3.6 Printing noise maps

Follow these steps to print a noise map:

1. Log on to the WN30 web application.
2. Open the noise map that you want to print.
3. If you want to print the color scale with the noise map, select the [Include Legend] check box.
4. In the Utility button area, click the [Print] button.
   The print preview page appears in a new browser window.
5. Configure the printer settings as necessary.
6. Click [Print].
   The noise map is printed.

3.7 Downloading noise maps

NOTE

Internet Explorer does not support the Download feature. We recommend that you use Google Crome to download noise maps.

Follow these steps to download a noise map:

1. Log on to the WN30 web application.
2. Open the noise map that you want to download.
3. If you want to view the color scale with the noise map, select the [Include Legend] check box.
4. In the Utility buttons area, click the [Download] button.
   The noise map is downloaded to the local computer.

   NOTE

   If the background color of the downloaded image is black, save the image and reopen it with an appropriate image viewer such as Microsoft Paint.

4. Troubleshooting information

This section describes the error messages that you may view when using the WN30 web application.

SEE ALSO

For more information about the WN30 error messages, refer to:

4.1, “WN30 error messages” on page 4-2

For more information about the self-diagnostic error messages that are related to the noise sensor, refer to:

4.2, “Self-diagnostic error messages from WN30 sensors” on page 4-3

4.1 WN30 error messages

The following table lists the error messages that are related to the WN30 web application.

Table 4.1-1 WN30 error messages

Error messages	Remedy
Initialization failed	Restart the WN30 web application and try again.
Failed to fetch Areas for particular Site, please refresh and retry	Refresh the WN30 web application and try again.
Failed to fetch Sensors for particular Area, please refresh and retry	
Failed to fetch Units, please refresh and retry	
Failed to fetch noise map tags for particular Area, please refresh and retry	
Failed to delete noise map tag	
No live maps are available at this time period	
Failed to update latest Noisemap	
Failed to print requested Noisemap	
Failed to download requested Noisemap	
Failed to fetch period Information	
Unable to fetch the Noisemap, retry for another Time period	Refresh the WN30 web application, select a different period from the Period drop-down list, and then try again.

4.2 Self-diagnostic error messages from WN30 sensors

When a WN30 noise sensor detects an abnormal value, it performs self-diagnosis to identify the cause of the abnormality and sends error messages to the WN30 web application accordingly. These error messages are displayed below the legend of the WN30 noise sensor on the noise map.

The following table lists the self-diagnostic error messages from the WN30 sensors that are installed in the plant.

Table 4.2-1 Self-diagnostic error messages

S. No.	Error messages (*1)
1	Faults in electronics
2	Faults in sensor or actuator element
3	Installation, calibration problem
4	Out of service
5	Outside sensor limits
6	Environmental conditions out of device specification
7	Fault prediction: Maintenance required
8	Power is critical low: maintenance need short-term
9	Power is low: maintenance need mid-term
10	Software update incomplete
11	Simulation is active
12	Faults due to process influence
13	Faults due to non-compliance with specified operating conditions
14	Other faults

*1: The self-diagnostic error messages are displayed below the faulty sensor on the noise map.

SEE ALSO For more information about resolving the self-diagnostic errors, refer to:

WN100 Wireless Sound Level Meter (IM 01W04D01-01EN)

Missing sensor noise map

Typically, primary and secondary noise measurement sensors are placed at each location in the plant to measure the ambient noise in real time around the location. In cases where the primary sensor is unable to communicate with the WN30 web application, the noise map indicates that the sensor is missing and the noise level measured by the secondary sensor is shown on the noise map.

NOTE

If the secondary sensor is also not available, the noise map is displayed as follows:

- If the last updated noise map is already displayed, the same map continues to be displayed.
- If any noise map is not displayed, a "Loading" message is displayed on the noise map.

The following figure shows an example of a noise map with a missing sensor.

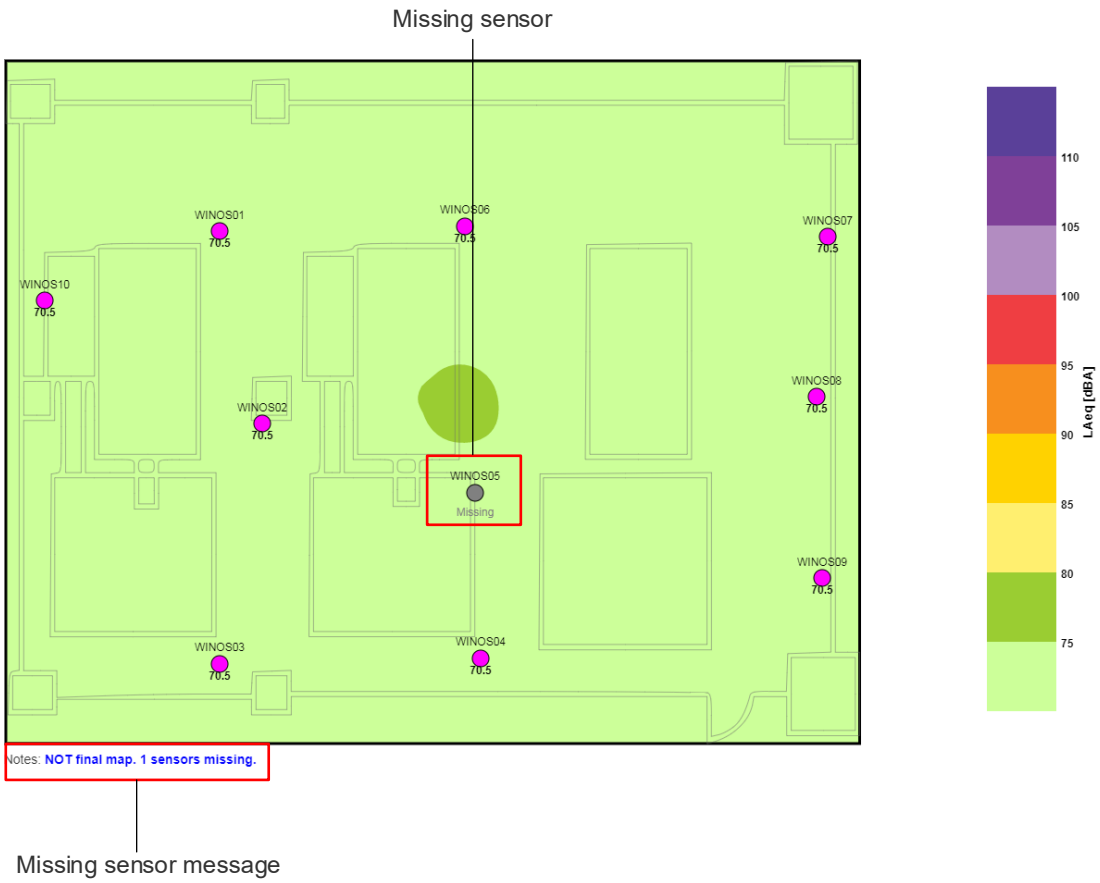

Figure 4.2-1 Missing sensor noise map

Appendix 1. WN30 noise map views

The WN30 web application displays the following noise map views:

- Contour map
- Zone map
- Diff. zone map
- Spectral bands

Contour map

The Contour map displays boundaries on the noise map based on the measured noise levels. You can view the contour map by selecting Contour map from the View drop-down list.

The following figure shows the Contour map view.

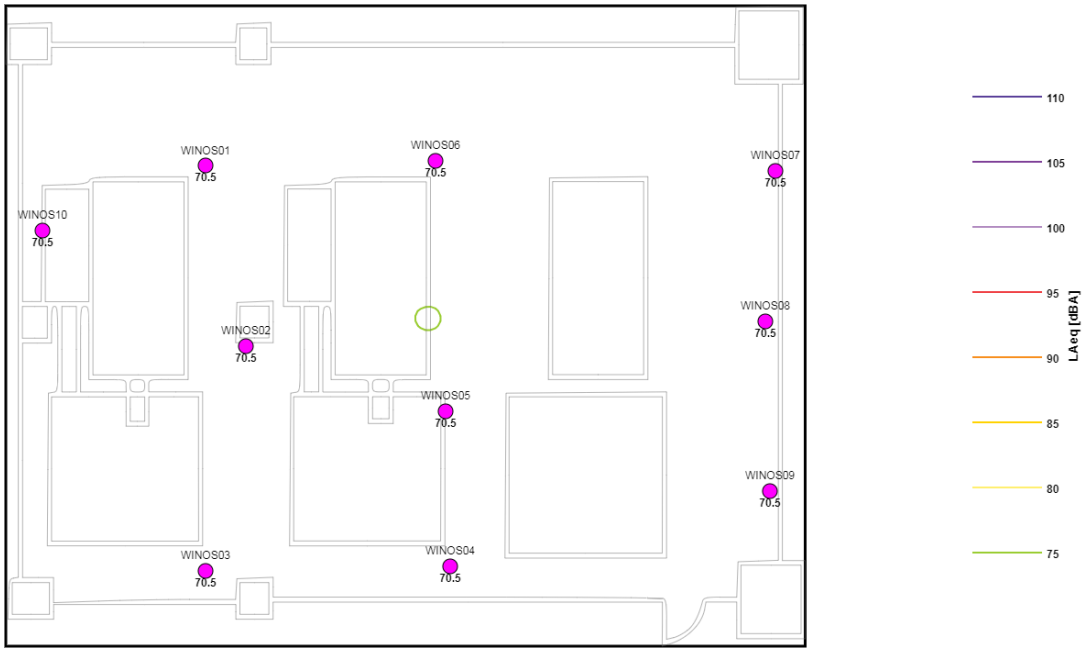

Figure Appendix 1-1 Contour map view

Zone map

The Zone map displays the actual noise level on the noise map. You can view the zone map by selecting Zone map from the View drop-down list.

The following figure shows the Zone map view.

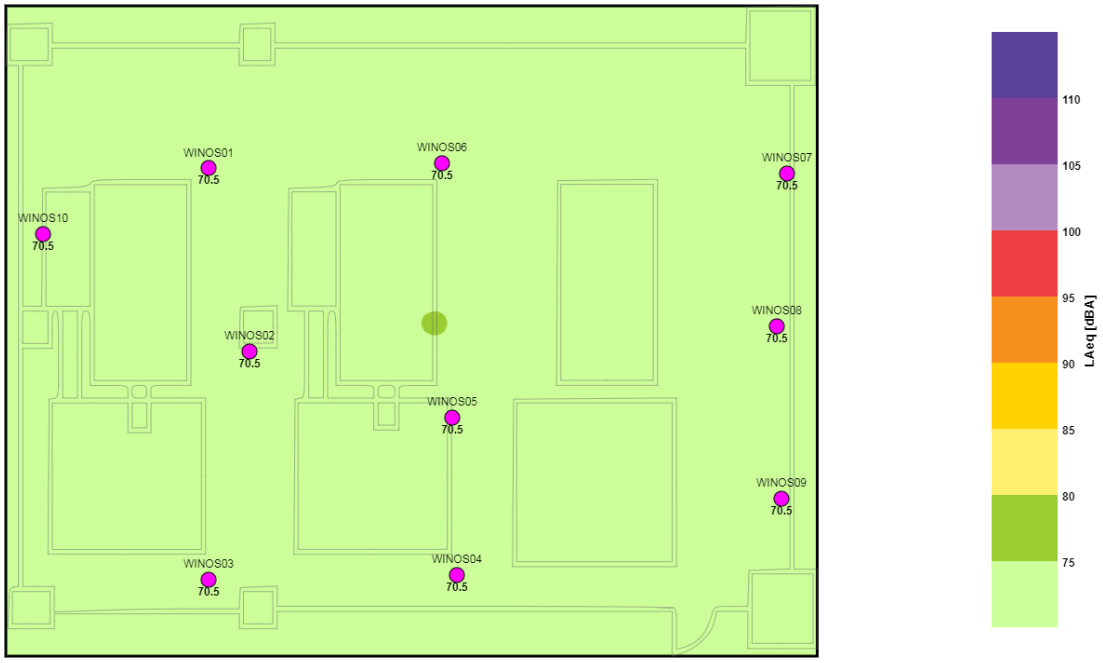

Figure Appendix 1-2 Zone map view

Diff. zone map

The Diff. zone map displays the difference between the noise levels of two different noise maps. You can view the diff. zone map by selecting Diff. zone map from the View drop-down list.

NOTE

You can view the Diff. zone map only in Archive mode.

The following figure shows the Diff. zone map view.

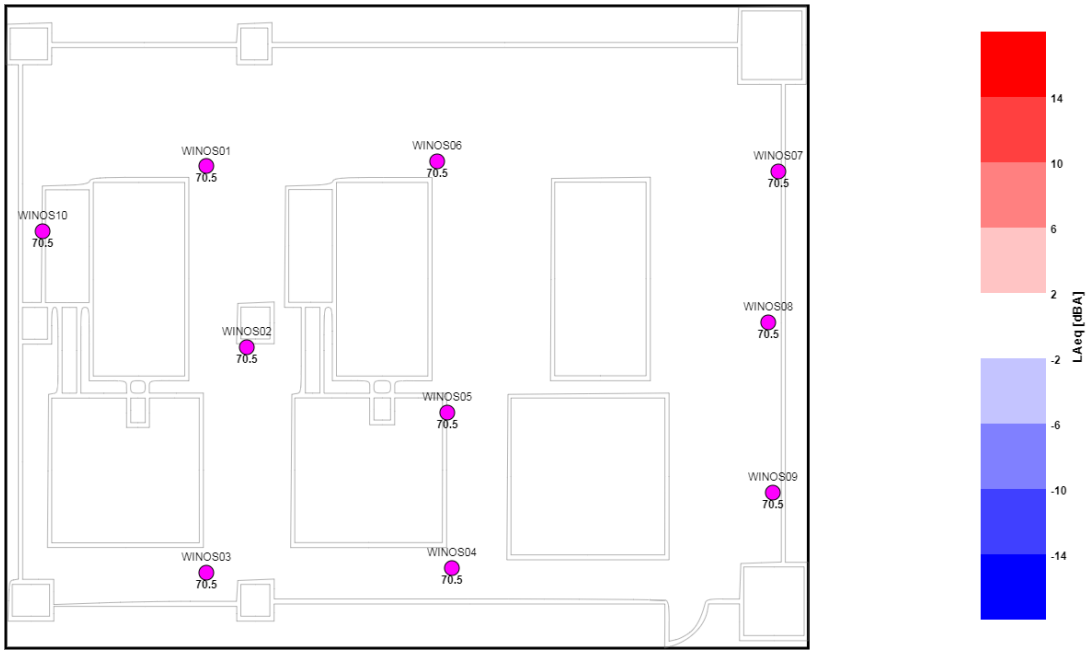

Figure Appendix 1-3 Diff. zone map view

Spectral bands

The Spectral bands view displays the frequency spectrum diagram corresponding to the noise levels that are measured by a noise sensor. You can view the spectral bands by selecting Spectral bands from the View drop-down list.

NOTE

- When the Spectral bands view is selected, a list of noise sensors that are installed in the plant area is shown in the Unit drop-down list.
- If the 1/3 octave band switch on the WN100 sensor device is turned off, the value will be displayed as "0".

The following figure shows the Spectral bands view.

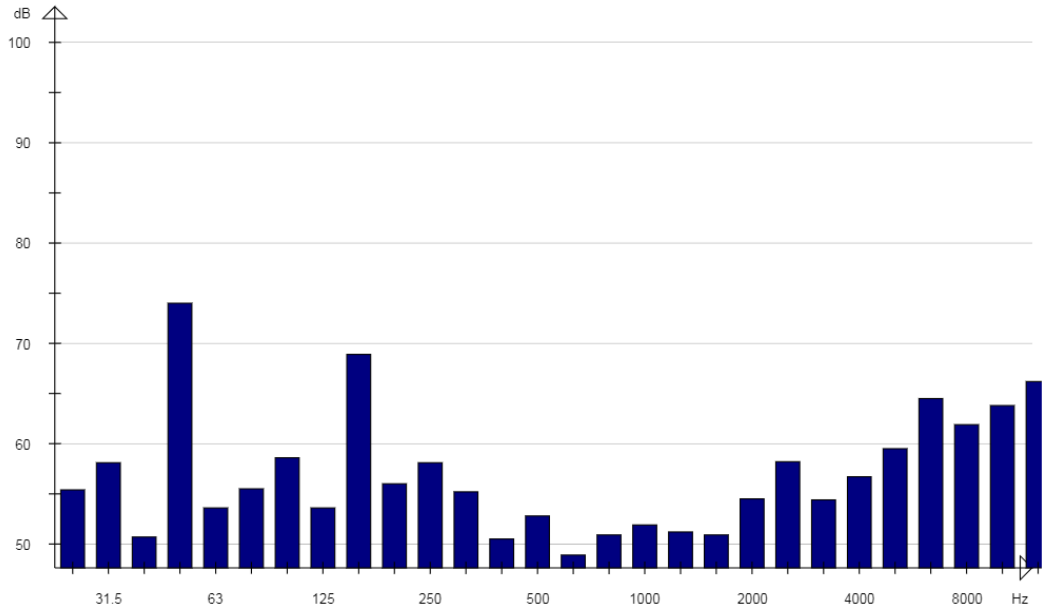

Figure Appendix 1-4 Spectral bands view

SEE ALSO For more information about spectral bands, refer to:

WN100 Wireless Sound Level Meter (IM 01W07D01-01EN)

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- Updated the requirements for using the Wireless Noise Surveillance System

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