KWJ
ENGINEERING

INNOVATIVE
SOLUTIONS
FOR GAS
DETECTION

KWJ-WSN & USB Gateway Quick Start Guide

Inside the Box

You should find the following items in the box:

- KWJ-WSN Wireless Sensors
- KWJ-WSN Wireless USB Gateway
- Mounting Hardware
- Quick Start Guide
- Batteries

System Requirements
- An Available USB Port
- Windows Vista or Newer With 512 MB Memory (1024 MB Rec.)
- 20 MB Free Disk Space.
- ASP.NET 3.5

## Before You Plug In Your KWJ-WSN USB Gateway

- Unpack the contents of your kit(s) and become familiar with the types of sensors that were included and double check that all components are included.
- Before inserting the USB dongle, you will need to create a KWJ-WSN account, assign gateways and wireless sensors to your account, then install the USB driver and gateway software.

1. Create a KWJ-WSN User Account and Setup Sensor Network

If this is your first time using the KWJ-WSN online system site, you will need to create a new account. If you have already created an account you can skip to the "Logging into the Online System" section. The following instructions will guide you through the account creation process.

1. In a web browser, navigate to https://www.kwj-wsn.com.

2. Click the "Get Started Here" button to create an account.

> Don't have an account?
> **Get Started Here**
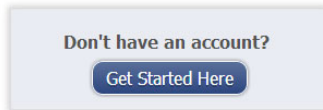
3. Follow the on-screen instructions to enter your account and contact information.

4. After entering your account and contact information, you will be prompted to create your first sensor network. Simply enter a name for this network.

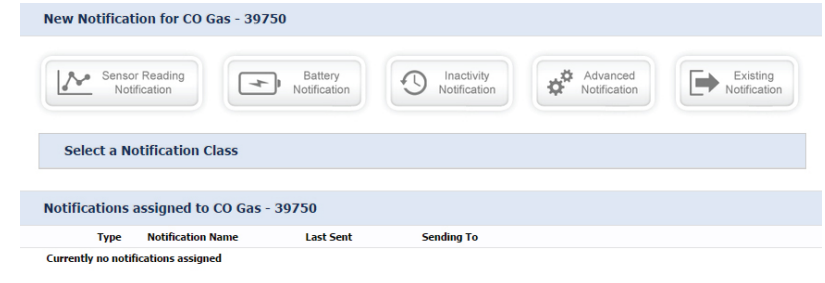**5. Add the information from your KWJ-WSN gateway then click the "Assign Gateway" button.**

Gateway ID
Gateway Code

FC ID: ZTL-RFUSB1
IC: 9794A-RFUSB1
ID: #### Code: XXXXXX

6a. Add the information from your first KWJ-WSN wireless sensor then click the "Assign Sensor" button.

Peel
▼ Back of + Sensor ▼
Contains: FCC ID: ZTL-RFSC1
IC: 9794A-RFSC1

Sensor ID
Sensor Code

Sensor ID: ######
Sensor Code: XXXXXX

6b. On the next screen, enter a name for the wireless sensor and use the drop down to tell us how you are going to be using the wireless sensor. (This allows us to suggest settings for your sensor.) When finished, click the "Continue" button.
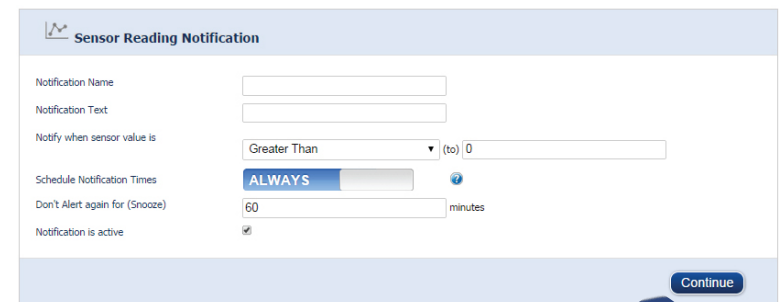
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7. Setup sensor notification(s).

The next screen will allow you to setup notifications for the sensor that was just added to the network. You have the option of creating your own custom notification based on the classes of notifications included in the system. When you choose your own notification, it will be available for any similar sensors that are added to your account in the future.

New Notification for CO Gas - 39750

| Sensor Reading Notification | Battery Notification | Inactivity Notification | Advanced Notification | Existing Notification |

Select a Notification Class

Notifications assigned to CO Gas - 39750

| Type | Notification Name | Last Sent | Sending To |
Currently no notifications assigned

Custom notifications

To create a custom notification, click on the appropriate class button and select the type of notification from the drop down menu. Set your custom notification settings and click "Continue".

Sensor Reading Notification

Notification Name
Notification Text
Notify when sensor value is   Greater Than ▼ (to) 0
Schedule Notification Times   ALWAYS
Don't Alert again for (Snooze)   60   minutes
Notification is active   ☑

Continue

8. Assign any additional sensors.

When you have finished setting up the sensor, you will see a confirmation screen. At this point you can assign additional sensors to your network or begin using the system by clicking "Done".

2. Install the KWJ-WSN USB Gateway Software

1. KWJ-WSN USB Driver Installation

When you are logged into your account, you can download the latest USB drivers by clicking on "Support" from the main navigation bar.
From the downloads page, click on the *USB Gateway Driver* for the correct version of Windows that you are running (32 or 64 bit). The driver file should automatically start downloading. If prompted to save the file, select a location that is easily accessible and click "Save".

When the file has completed downloading, browse to the folder where the file was saved. Double click the setup file and select "Run". Select "Next" then follow the on-screen guide to install the drivers.

When the setup has finished, the program will automatically determine which drivers to install for your system and another guide will launch to walk you through the installation of the drivers. Click "Next" to install the drivers. When the drivers are done installing you will see a success screen. Click "Finish" to exit the installation program.

2. KWJ-WSN Gateway Application Installation

The KWJ-WSN Gateway Application uses your computers internet connection to pass wireless sensor data to the KWJ-WSN online sensor monitoring and notification system. (The online system allows you to view all your sensor data, sensor status' and configure all sensor parameters as well as setup notifications or alerts via SMS text and email.)

To install the software, click "Support" on the main navigation bar. From the downloads page, click on "USB Gateway Installer" to launch the web installer download. If prompted to save the file, select a location that is easily accessible and click "Save".

When the file has completed downloading, browse to the folder where the file was saved. Double click the file, select "Run" when prompted then follow the on-screen instructions to complete the installation.

When installation is complete the program will automatically launch. You can now begin using your wireless sensors online.

Note: The gateway application needs to be running on your computer in order for the sensor data to be transmitted to the online system. If the gateway is not running your sensor data is not being recorded online and notifications based on sensor data cannot be sent from the system.

3. Using Your KWJ-WSN Wireless Sensors

1. Start the Gateway Software:

Double click on the KWJ-WSN Gateway program icon on your desktop or select the program from the Windows "Start Menu".

Note: Sensor data will only be transmitted to the Online Sensor Monitoring System when the

gateway software is running.

2. Insert Your USB Wireless Gateway

With the KWJ-WSN Gateway application running, insert the USB Gateway into your computer. The network status in the software should change to "Network Active" when the USB gateway is plugged in.
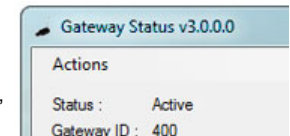
**Note:** If the status does not change, try unplugging and re-inserting the USB gateway.

3. Insert Batteries Into Wireless Sensors

Important: Make sure your sensors are at least 3ft. away from USB Gateway.

Peel back the black sticker cover of the battery slot and slide the coin cell battery into the sensor as shown in fig.1. It will power on within 10-20 seconds. Once online, your sensor is ready to be deployed. If you wish to change a sensor configuration, change the parameter in the software. The new parameters will be transmitted to the sensor on the next heartbeat. If you need a more immediate response from the sensor, power cycle the sensor by removing, then re-inserting the battery.

Notes:
- *If the sensor status indicator does not change, reset the sensor by removing the battery.*
- *Wait 60 seconds then re-insert the battery.*
- *When inserting the battery, make sure to push the battery all the way back using a paper clip.*
- *Note the proper orientation of battery in fig.1*
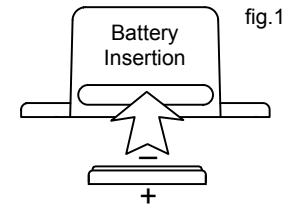
Warning: *Your sensors ship with a 10 minute heartbeat. It is recommended that unless you are using the AA battery solution, you should set the heartbeat to no faster than one hour to preserve battery life. When changing a sensor's heartbeat, the new configuration information will be sent to the sensor on it's next heartbeat. If you want to update the sensors immediately you can reset them manually.*

Manual Sensor Reset Process:
- *1 - Using the end of a paper clip, push the batteries out of the sensors through the small hole in the top of the sensor*
- *2 - Change the sensor heartbeat through the online system*
- *3 - Re-insert the batteries into the sensors*

4. Using The KWJ-WSN Online Wireless Sensor System

1. Understanding The Online Interface

When you log into the online system, the default view shows all of your sensors last recorded data.

Menu System   View / Sort Features

Sensors Overview   Sensor Details View

Date Range Selector

Menu System

Overview	- Shows all sensors in the account and their last readings.
Notifications	- Manage sensor notifications and show all sent notifications.
Manage	- Manage networks, sensors and gateways.
Reports	- Printable account and sensor network reports.
Sensor Maps	- Visual maps to help you track sensor placement.
Support	- Support information for using sensors and software.

View / Sort Features

This section allows you to sort the sensors being viewed and search for sensors on your account.

Sensor Overview

Displays sensors on your account with their last reading and status information. Clicking on a sensor row expands the "Sensor Detail View" allowing you to view detailed information for the selected sensor.

To the left side of each sensor row is an indicator to help you understand the current status of the sensor.

- Sensor is checking in and within user defined safe parameters.
- Sensor has met or exceeded a user defined threshold or triggered event.
- Sensor has not checked in (inactivity alert sent).
- No sensor readings since shipping
- No sensor readings will be recorded (Inactive)
- Edit your sensor
- Edit your sensor, however some fields are unavailable until pending transactions have been downloaded to the sensor

Sensor Details View

Clicking on a sensor row on the "Overview" page expands the row to include a detailed sensor view for the selected sensor.

Select a tab to change between:

Chart	- Displays a graphical view of the selected sensor's data.
Notifications	- Allows you to manage notifications for the sensor.
History	- Displays a history of the selected sensor's data.
Export	- Allows you to archive data by exporting as a .csv file.
Edit	- Allows you to manage sensor settings.
Calibrate/	- Shows cal cert information/calibration information.
Certificate	

Note: CO sensors will arrive to you pre-calibrated, and the "Calibrate/Certificate" button will show "Certificate". User calibration is not recommended, and by default you will not have this capability. If you are having an issue, or think your sensors(s) may need to be recalibrated, please call our support line for consultation.

2. Chart and History Views.

Clicking on the "Chart" or "History" tabs within the sensor detail panel allows you to view the sensor's data history in a graphical chart format or as text.

Note: To change the date range of the viewable information, click on the date range box at the top right of the sensor detail panel.

3. Configuring Sensor Settings

To edit a sensors operation settings, click on the sensor overview row to display the details view. Click on the "Edit" tab to access the sensor configuration panel.

The sensor edit panel allows you to set the primary configurations for the sensor. Mousing over the question mark icon by each setting will provide an explanation of that setting. When you have finished making changes, press the "Save" button at the bottom of this section. Be sure to click the "Save" button anytime you make a change to any of the sensor parameters. All changes made to the sensor settings will be downloaded to the sensor on the next sensor heartbeat (check-in). Once a change has been made and "Saved," you will not be able to edit that sensor's configurations again until the sensor has downloaded the new setting

Note: *Your CO sensors are preconfigured with optimal aware state settings* **to alert you of dangerous levels of CO** *with default aware notifications 50/125/400 ppm as well as over/under the operating temperature range. Because this is a* **safety measure** *you should not adjust these settings without first contacting KWJ Engineering.*

Display Mode (Gas Sensors)

Concentration
This selection will allow the sensor to display the immediate concentration of gas the unit is sensing.

Time Weighted Average (TWA)
This selection allows the sensor to display the time weighted average concentration of gas the unit has been exposed to over an 8-hour period. This calculation is typically used by OSHA and other occupational safety professionals to maintain compliance with federal regulations in the workplace.

All
This selection allows the sensor to display both the immediate concentration of gas, and the time weighted average concentration, on your dashboard. Please note that while having this option selected will allow you to see both readings on your dashboard, you will only be able to set notifications for concentration OR TWA, not both simultaneously.

Technical Notes About Display Modes and Notifications for Gas Sensors

It is advised that you stay organized in your initial setup of your sensors, and in which display mode you want them to operate, including naming your sensors and notifications appropriately. There are some features of this system that can malfunction if your display modes and notifications do not correspond with one another.

Within this system you are able to designate certain sensors as reading "Concentration" or as reading "Time Weighted Average". This designation, as you select in the edit screen of the sensor window, will determine how your notifications are applied. E.g. if you create a notification of CO > 25 ppm for an individual sensor, and this sensor's display mode is set to "Time Weighted Average", the sensor will produce the notification when the TWA reaches 25 ppm. If the sensor's display mode is set to concentration, it will send a notification when the immediate concentration reaches 25ppm.

If you choose to change the output of the sensor from Concentration to TWA or vice versa, you MUST remove that sensor from it's formerly associated notifications individually and reassign it to the new notifications. You can do this under each individual notification in the main notifications panel by clicking the "Sent From" tab, and removing/adding the sensor in question from the list. Alternatively you cannot simply "Turn Off" a notification for an individual sensor from the sensor edit notification screen. Clicking the toggle button under any individual sensors notification screen will result in that notification being turned off for your network entirely, the same as if you turned the notification on/off from the main notifications panel.

This is the reason why we recommend you are organized in naming your networks, sensors, and notifications. Create your sensor names based on location of installation, display mode, and sensor type. Create your notification names based on display mode. This way you can properly associate your sensors with their desired notifications. Examples:

CO Sensor	- Warehouse-Concentration-CO.
TWA CO Sensor	- Office-TWA-CO
Concentration Notification	- Con CO > 25 ppm
TWA Notification	- TWA CO > 9 ppm

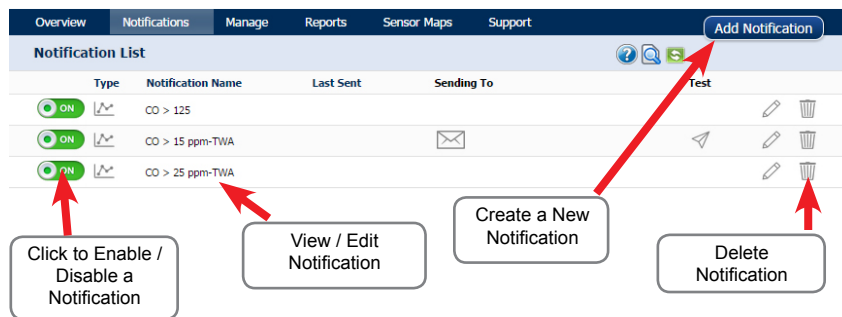## 4. Editing and Adding Notifications

Notifications for a single sensor can be created, deleted or edited by clicking the "Notifications" tab in a sensor's detail view.
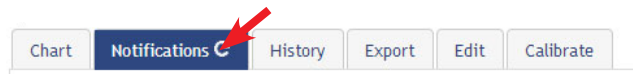
Notifications can be created, deleted or edited for any sensor or group of sensors by clicking on "Notifications" in the main menu.

The Notification List Window

To create a new notification, click on "Add Notification", then select the type of notification you would like to create.

Class of Notification

There are four notification options available when creating a new notification.

- **Sensor Reading** - Once you select this class, a drop down menu will appear with choices of different types of sensor readings available. These choices are dependent upon they types of sensors you have in your network, therefore certain options may not be available.

- **Inactivity** - Set-up "Inactivity" notifications to alert you when your sensors have stopped communicating with the servers. Failure to set up an "Inactivity" notification will result in no email/SMS txt being sent should your sensors stop communicating with the servers.

- **Low battery** - Allows users to define a battery power percentage level that will trigger an alert from the system, warning them to replace batteries.

- **Advanced Notifications** - Allows the user to set notifications based on more advanced rules, such as comparing past data points with the current one to determine if the notification should be sent.

Setting and Editing Notification Settings

People to Notify
Start typing a name into the box and the system will automatically populate the name of a user within your sensor network. If there are already multiple users on the network, a list of names will appear. Select the name of the user for the notification. If the person to be notified does not have an account on the network, you may quick add them by selecting the "Add New User" link on the "My Account" page and entering in their contact information.

Notification Settings
This area allows the user to set notification parameters such as naming the notification, customizing the notification message and setting sensor conditions that will trigger the notification.

Sent From
Allows you to tell the system which sensor(s) will trigger the notification being created. When a notifications is sent from the system, it will automatically include the sensor name and data that caused the notification to be sent.

A notification can be assigned to multiple sensors. Application specific notifications (ex. Carbon Monoxide) can only be assigned to sensors of that application type. General notifications such as "battery status", can be assigned to any or all sensors.

5. Exporting Sensor Data

Clicking on the "Export" tab within the sensor data window allows you to export sensor data to a comma separated value (.csv) file or send the sensor data to an external web source.
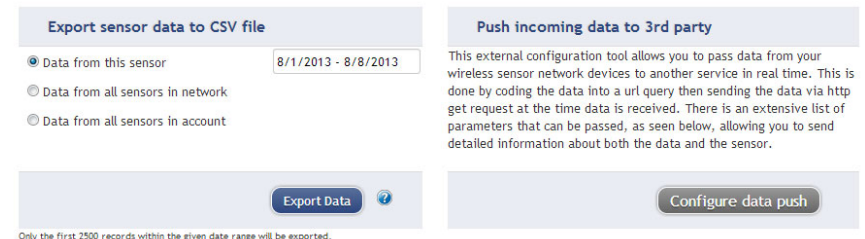
To export sensor data you must first select the date range for the data you want to export. Once the date range is selected, determine whether you want sensor data from the selected sensor only, from all sensors in the network or all sensors assigned to the account. When you are finished, click on "Export Data" at the bottom of this window. The data will be exported to a comma separated value (.csv) file format.
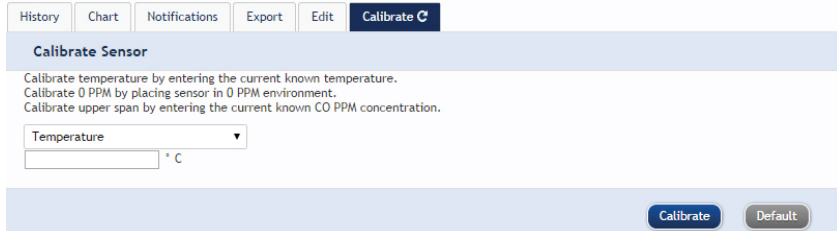
Note: Only the first 2,500 records within the selected date range will be exported.

You can alternately send your sensors' incoming data to a 3rd party by clicking on the "Configure data push" button at the bottom of the window. From this area you can pass data from your wireless sensor network devices to another service in real time. This is done by coding the data into a url query then sending the data via http get request at the time data is received. There is an extensive list of parameters that can be passed, as listed in the viewed window, that allow you to send detailed information about both the data and the sensor.
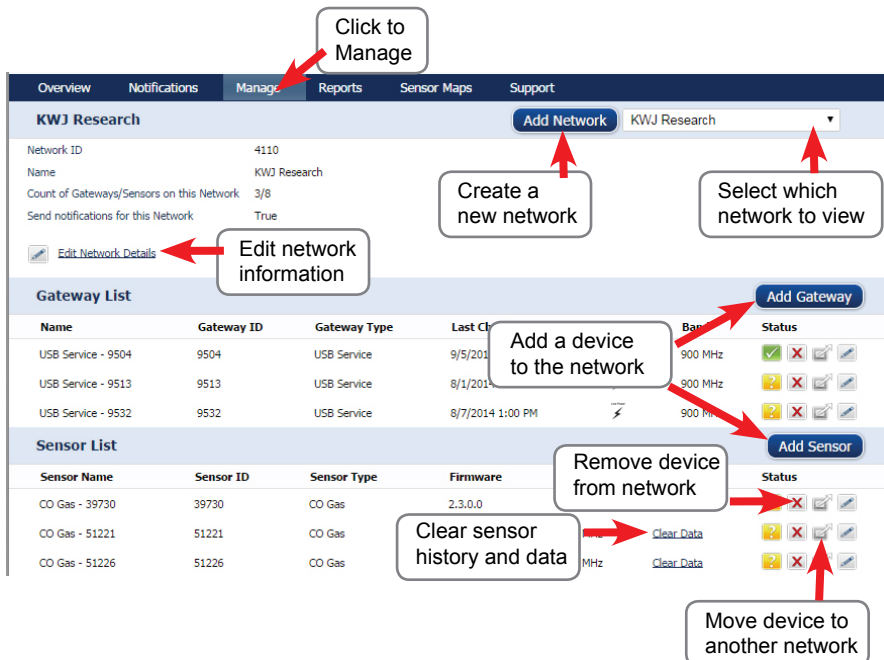
6. Calibrating Sensor Data

Certain wireless sensors can be calibrated for more accurate readings. If calibration is possible for a sensor, the "Calibrate" tab will be visible in the detail view. If it is not possible, the tab will show "Certificate". To calibrate a sensor, replace the last reading with the more accurate reading and click "Calibrate". All future readings from the sensor will be based off the new calibration setting. *You must call KWJ Support if you think your gas sensor needs to be calibrated.*

7. Manage Sensor Networks

To view or edit information about your wireless sensor network(s), click on "Manage" in the main navigation. This area allows you to edit network details, create new sensor networks, and manage wireless gateways and sensors for your network(s).

Note: Some buttons and features are only visible if there is more than one sensor network setup on the account, such as the network selection box in the upper right corner.

If more than one sensor network is setup on the account, you can easily move gateways and sensors from one network to another by clicking on the "Move Device" button at the far right of the device's "Status" section.

If you clear a sensor's data, the data history is deleted from the entire system and can not be recovered. We recommend exporting a sensor's data history using the export function in the sensor details view ("Overview" page) before clearing the sensor's data if you want to have a record of the data.

Additional Information and Support

You can find additional information on using KWJ-WSN Wireless Sensors, including product documentation on our website at http://www.kwjengineering.com.

Information to Users

The KWJ-WSN wireless products referenced in this Quick Start Guide have been tested and found to comply with the standards for FCC, IC and CE certifications. For certification information on individual products please view product data sheets or product specifications on the Monnit website.

WARNING: *Changes or modifications not expressly approved by KWJ Engineering Inc could void the user's authority to operate the equipment.*

For additional information or more detailed instructions on how to use your KWJ-WSN Wireless Sensors or the KWJ-WSN Online System, please visit us on the web at http://www.kwjengineering.com, or call 1-800-472-6626.

INNOVATIVE SOLUTIONS FOR GAS DETECTION

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