Hand Hygiene Electronic Monitoring System
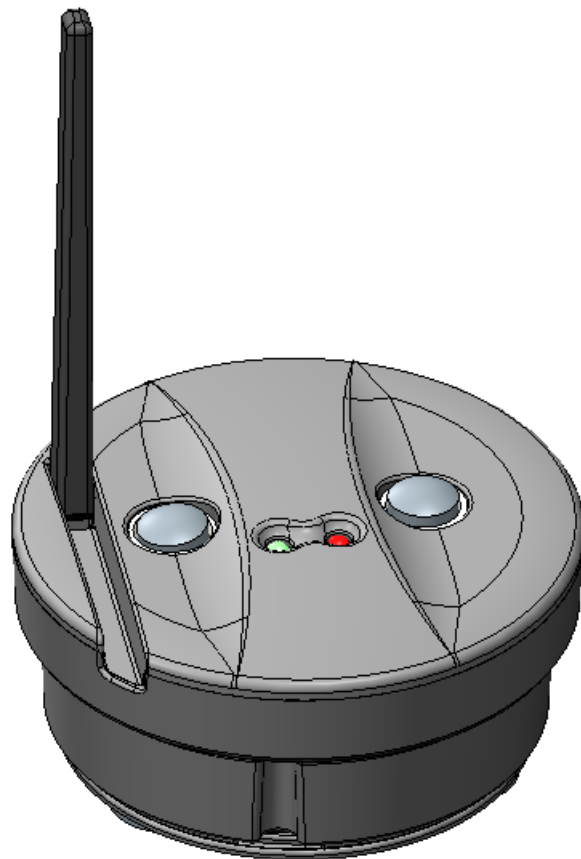
Activity Counter Installation and Service Guide

Version 2.0

6/5/2013

GOJO Industries, Inc.

> ⚠ **Warning (In according to FCC part 15.19):**
>
> This device complies with Part 15 of the FCC Rules.
> Operation is subject to the following two conditions:
> 1. This device may not cause harmful interference, and
> 2. This device must accept any interference received, including interference that may cause undesired operation.

> ⚠ **Caution (Pertaining to FCC part 15.21):**
>
> Modifications to this equipment not expressly approved by GOJO Industries, Inc. could void the user's authority to operate the equipment.

> This unit is certified to FCC Part 15 Part C for intentional unlicensed radiators. FCC ID O76-T2SG0910A

Glossary of Terms

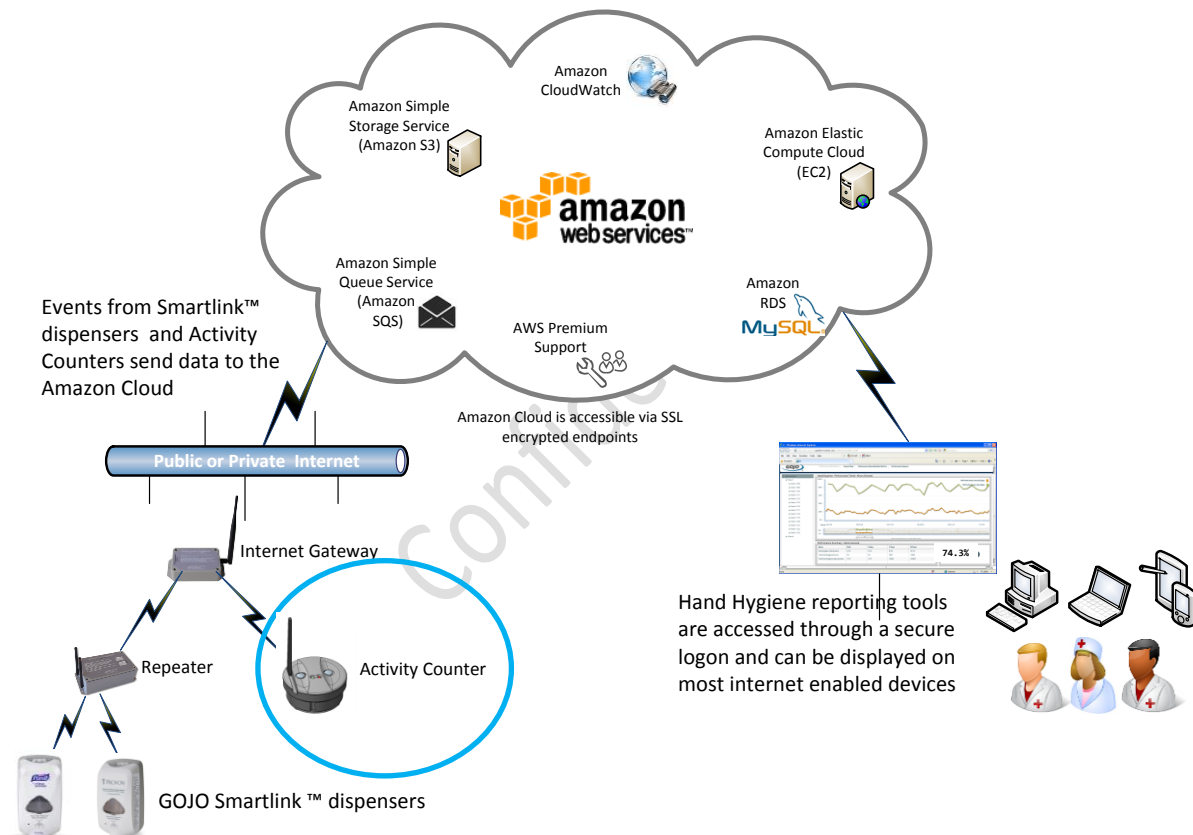|	
System	The GOJO compliance monitoring hardware and web-based software used to record hand hygiene events and opportunities by using dispensers, activity counters, repeaters and gateways.
Sensor	The module in a dispenser or activity counter, which records and transmits usage data.
Repeater	Used to extend the distance of the Radio Frequency signal between sensors and gateway devices.
Gateway	Used to transmit hand compliance events and opportunities to the web-based software.
Activity Counter	Infra-Red sensing device that records room entrances and exits of hospital staff, patients, and/or visitors. Mounted above a doorway in a patient room or monitored area.
Dashboard	The web-software that is used to display data collected by the system in meaningful graphs, tables and charts.
Average Compliance	A calculation that includes the average number of observed opportunities (room entrances and exits) for a unit. Generally provided by the hospital Infection Control or Nurse Manager as a result of direct observation. The average opportunities are used as the denominator in the compliance calculation.
Actual Compliance	Calculated by dividing actual dispenser events and actual activity counter opportunities.
SmartLink™ Module	The module that resides in a GOJO dispenser that transmits data to the system.
Improvement Index	A visual representation of progress made toward hand hygiene improvement. This view does not display the actual compliance rates, but instead uses a predetermined baseline and goal to show compliance. The baseline is generated by collecting 2 weeks of usage data before an intervention is executed.

Device Overview

The GOJO **Activity Counter** is one component of the Activity Monitoring System. The Activity Counter is a sensor that utilizes SmartLink™ technology to communicate with the system. The Activity Counter is installed in the vicinity where monitoring is desired, typically a doorway to a room. When a person passes by the Activity Counter, the event is registered and transmitted to the system through the Activity Monitoring System network to the gateway and out to the cloud (internet reporting service). The events captured by the Activity Counter are used to determine the number of opportunities when calculating compliance rates.
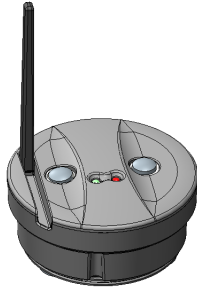
System Architecture

Amazon CloudWatch

Amazon Simple Storage Service (Amazon S3)

Amazon Elastic Compute Cloud (EC2)

Amazon Simple Queue Service (Amazon SQS)

AWS Premium Support

Amazon RDS

Events from Smartlink™ dispensers and Activity Counters send data to the Amazon Cloud

Amazon Cloud is accessible via SSL encrypted endpoints

Public or Private Internet

Internet Gateway

Repeater

Activity Counter

GOJO Smartlink ™ dispensers

Hand Hygiene reporting tools are accessed through a secure logon and can be displayed on most internet enabled devices

74.3%

Technical Specifications

Hardware

Activity Counter
- o Battery powered wireless device (3 "C" batteries)
- o Ceiling or wall mounted
- o Built in proprietary sensor / transmitter
- o Passive Infra-Red (IR) heat sensing technology
- o Auto re-transmission for ensured measurement reliability
- o Transmission Range: 200 ft. open air / 80 ft. indoor*
- o Dimensions: 4.61"x3.1"x1.77"

*This unit is certified to FCC Part 15 Part C for intentional unlicensed radiators. FCC ID O76-T2SG0910A.

Installation

The Activity Counter detects the movement of people through passive infrared sensors located at the top of the enclosure. In order to detect a person moving into or out of an area (an "event"), the sensors need to be oriented correctly relative to the direction of people traffic flow. The following table illustrates the relationship between movement past the sensor, and how the movement is interpreted by the Activity Counter.
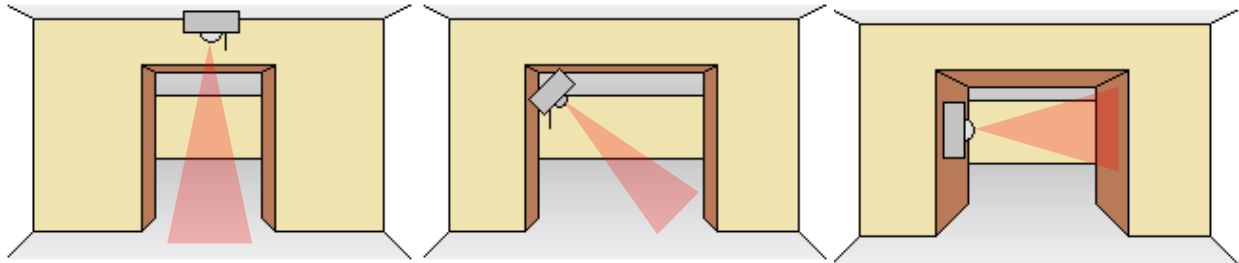
	A person passing in front of the Activity Counter in the direction shown here is considered to be *entering* a room or an area.
	A person passing in front of the Activity Counter in the direction shown here is considered to be *exiting* a room or an area.
	A person passing in front of the Activity Counter in the direction shown here is not clearly entering or exiting a room or area. The Activity Counter may register this as either an entry, or an exit, or not at all. The Activity Counter should not be installed at a point of ingress or egress such that the normal flow of traffic occurs as shown here.

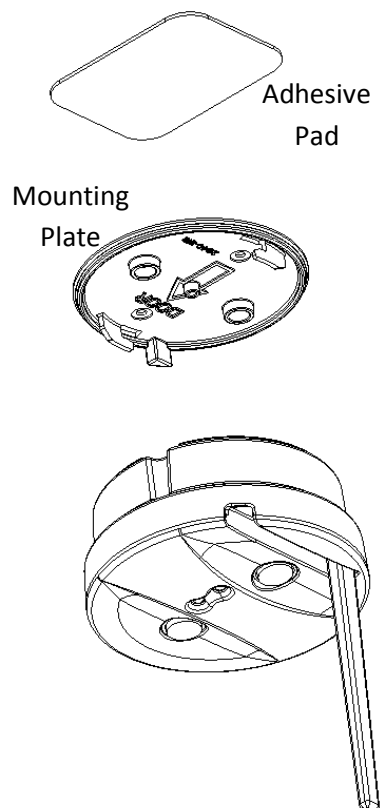# Activity Counter Installation and Service
User Guide

Selecting a Location

Typically, the Activity Counter will be mounted on the ceiling, either directly or with a mounting bracket, just inside the doorway to a room. Alternatively, the Activity Counter can be mounted on a wall or in a doorway. These alternate mounting arrangements are useful in situations where there are obstructions on the ceiling, or the doorway is sufficiently wide that pedestrian traffic cannot be guaranteed under the Activity Counter.

Mounting

The Activity Counter can be directly mounted to solid surfaces using screws or adhesive. Alternatively, a mounting bracket can be used to mount in areas where a direct mount is not optimal.

Adhesive Pad

Mounting Plate

Direct Mounting to wall or ceiling

The Activity Counter comes with a mounting plate that can be directly fastened to the ceiling or wall using screws or adhesive.

Screw mount

The mounting plate has four (4) holes for mounting.

- Position the mounting plate <u>with the arrow pointing toward the door or entry</u>.
- Select one of the pairs of holes to use for mounting (either along the arrow or across the arrow) and use the mounting plate as a template to mark the chosen hole locations
- If mounting directly to a wood stud; Pre drill using a 1/8" (3mm) bit and secure to the ceiling or wall with two #8 screws (not included).
- If mounting to Metal Stud, Drywall, Concrete, or brick drill holes for use two #8 wall anchors and secure with wall anchors and #8 screws.
- Once the mounting plate has been secured, position the Activity Counter over the tabs on the plate and twist clockwise to finish the installation. *Note that the mounting plate is keyed so that the Activity Counter will only fit in one orientation.*
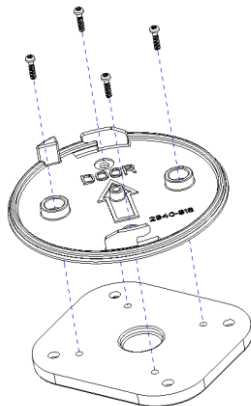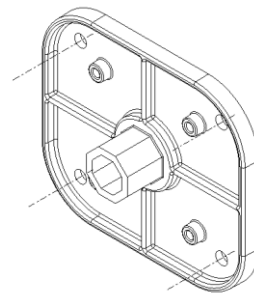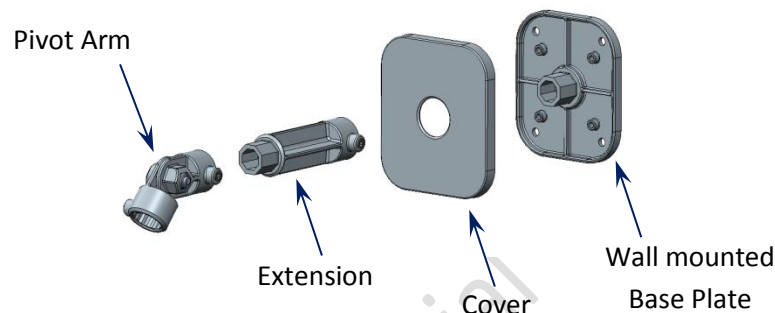
Adhesive mount

An adhesive pad is included for situations where screws are not desired or practical.

- Peel the release liner off one side of the adhesive pad and apply it to the mounting plate of the Activity Counter
- Position the mounting plate <u>with the arrow pointing toward the door or entry</u>.
- Peel the remaining release liner off the adhesive pad and firmly press the pad and mounting plate against the surface of the ceiling or wall
- Once the mounting plate has been secured, position the Activity Counter over the tabs on the plate and twist clockwise to finish the installation. *Note that the mounting plate is keyed so that the Activity Counter will only fit in one orientation.*

Optional Universal Mount

A mounting bracket can be used to mount in areas where a direct mount is not optimal. The optional Universal Mount allows for the Activity Counter to be angled and positioned such that the flow of traffic will pass though the counter's detection beam.

- Attach the mounting plate of the Activity Counter to one of the base plates of the Universal Mount using the four (4) self-threading screws provided.

Attach Mounting Plate

Mount Base Plate to Wall

Screw mount

It is preferred that the Universal Mount be directly fastened to the ceiling or wall with hardware.

There are four (4) holes for mounting on the base of the Universal Mount.

- Position the remaining base plate on the ceiling or wall.
- Use the base plate as a template to mark the four hole locations. At a minimum; use the upper two hole location for mounting
- If mounting directly to a wood stud; Pre drill using a 1/8" (3mm) bit and secure to the ceiling or wall with #10 screws (not included).
- If mounting to Metal Stud, Drywall, Concrete, or brick drill holes for use #10 wall anchors and secure with wall anchors and #10 screws.

Adhesive mount

An adhesive pad is included for situations where screws are not desired or practical.

- Peel the release liner off one side of the adhesive pad and apply it to the base plate of the Universal Mount
- Position the remaining base plate on the ceiling or wall.
- Peel the remaining release liner off the adhesive pad and firmly press the pad and base plate against the surface of the ceiling or wall
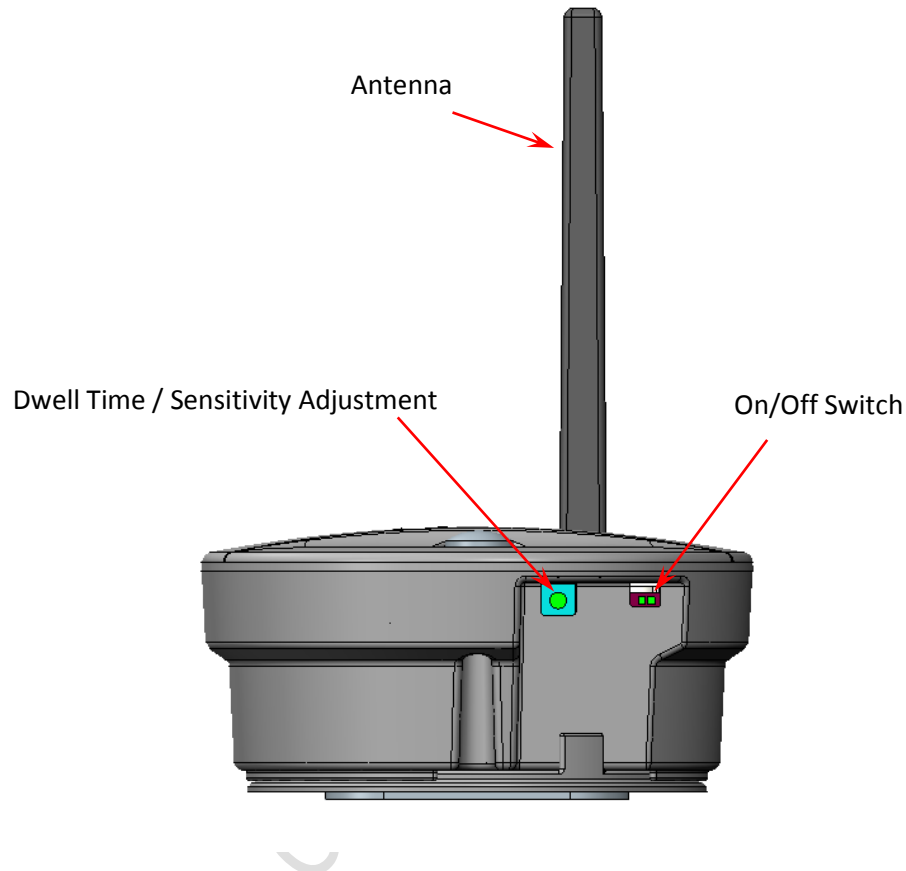
Assemble and Adjust the Universal Mount

Pivot Arm

Extension

Cover

Wall mounted
Base Plate

- Place the cover over the wall plate
- Orient the extension as desired, and then fully seat the extension against the wall plate (capturing the cover). The extension may be omitted depending on the desired angle and placement of the activity counter.
- Secure the extension by tightening the included set screw using a 1/8" or 3mm hex wrench.
- Orient the pivot arm as desired, and then fully seat it on the extension (or the wall plate if the extension was omitted).
- Secure the pivot arm by tightening the included set screw using a 1/8" or 3mm hex wrench.
- Adjust the angle of the pivot arm as desired by loosening the included screw and nut. When the screw is retightened, the arm will not move.
- Orient the previously assembled Activity Counter mounting plate and Universal Mount base plate with the arrow pointing toward the door or entry.
- Secure by tightening the included set screw using a 1/8" or 3mm hex wrench.
- Once the mounting plate has been secured, position the Activity Counter over the tabs on the plate and twist clockwise to finish the installation. It is advised to steady the mounting plate with one hand while twisting the Activity Counter. *Note that the mounting plate is keyed so that the Activity Counter will only fit in one orientation.*

Set-up and Calibration

Once mounted, the Activity Counter can be powered-up and tested for functionality. Refer to the diagram below for making adjustments.

Antenna

Dwell Time / Sensitivity Adjustment   On/Off Switch

Slide the ON/OFF switch to apply power to the Activity Counter. The red and green LED's will flash alternately for a few seconds. Once both LED's are off, the Activity Counter is ready to test. To test the Activity Counter, begin by clearing the area of all persons. Next have someone walk completely past the Activity Counter while observing the LED's. After a brief pause, have the person turn around and walk in the opposite direction, until completely past the Activity Counter, while continuing to monitor the LED's. After *entering* the area in which the Activity Counter is installed, the green LED should light briefly, after *exiting* the area in which the Activity Counter is installed, the red LED should light briefly.

There is a short delay period after the Activity Counter registers an event during which subsequent events are ignored. This period can be useful to prevent the Activity Counter from registering multiple events in rapid succession that might actually be caused by someone hesitating under the doorway, etc. This "dwell time" can be set to one of four different levels. This dwell time is active during the period in which either the red or green LED is lit after an event is detected. Additionally, the Activity Counter can be set to either high or low sensor sensitivity. The dwell time and sensor sensitivity are configurable

through the rotary switch. The correlation of switch position to dwell time and sensor sensitivity is shown in the table below:

Switch Position	Dwell Time	Sensor Sensitivity
0	0.8 s	Low
1	0.8 s	High
2	1.6 s	Low
3	1.6 s	High
4	2.4 s	Low
5	2.4 s	High
6	3.2 s	Low
7	3.2 s	High

If the activity counter is not consistently recognizing pedestrian traffic, change the switch position to select "high" sensitivity. If the Activity Counter is registering events errantly (for instance when a door is opened or closed), change the sensitivity to "low". After setting the switch to the desired position, try walking through the pathway of the sensors a few times to ensure consistent and desirable operation.

Integration with the Hand Hygiene Electronic Monitoring System

The Hand Hygiene Electronic Monitoring System allows you to view, sort, name, and map sensors to specific locations of the hospital hierarchy. This is done by accessing the **Sensor Map** screen by using the main menu (refer to the Hand Hygiene Electronic Monitoring System documentation for details on the software). This section contains two views of the sensors associated to the system. The first is the tabular view which is displayed when you click the Sensors link above the table (see below).

This tabular view can be sorted by any column by simply clicking on the column name. Each click toggles the sort method between ascending and descending. The default sorting method is by ID ascending. Activity Monitor devices will have a "Type" of "People Counter".

Descriptions of the columns on the Sensor Map table:

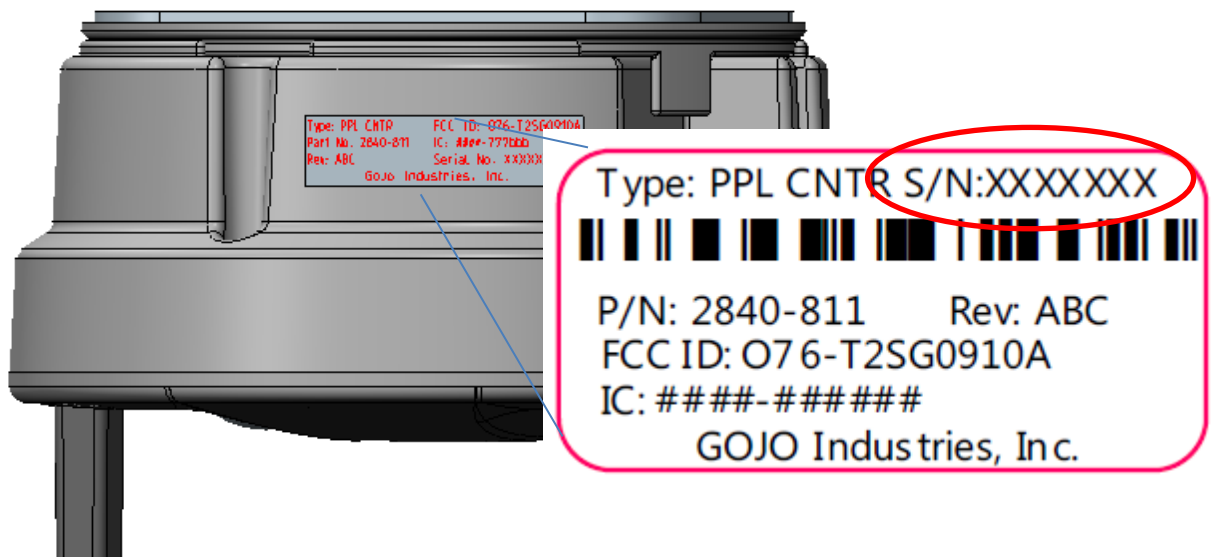| ID	The unique identifier given to a sensor during initial programming. This can only be changed by a GOJO system administrator.
Type	Displays the type of sensor, either "Dispenser" or "People Counter".
Name	The name given to the sensor for tracking and identification by the site administrator. This field allows end-user text entry and is optional.
Floor	Identifies which floor the sensor is associated to during the mapping process.
Unit	Identifies which unit the sensor is associated to during the mapping process.

Room	Identifies which room the sensor is associated to during the mapping process.
Updated	Shows the Time of last data transmission from the sensor to the network.
Usage	Shows the total count of usage for each sensor. The small broom icon 🧹 allows the end-user to clear the count data for a specific sensor. This will reset the compliance data accumulated to date and should only be done during initial installation and testing.

The Name column allows you to identify a sensor by entering text into a cell in the Name column. To do this, locate your sensor you want to name, and double-click in the cell next to it under the Name column. When you finish typing, hit the Enter-key, or click on another sensor; this will save your text to the database.

The serial number of the Activity Counter can be found on the label on the side of the unit. The serial number will be the ID number listed in the table.
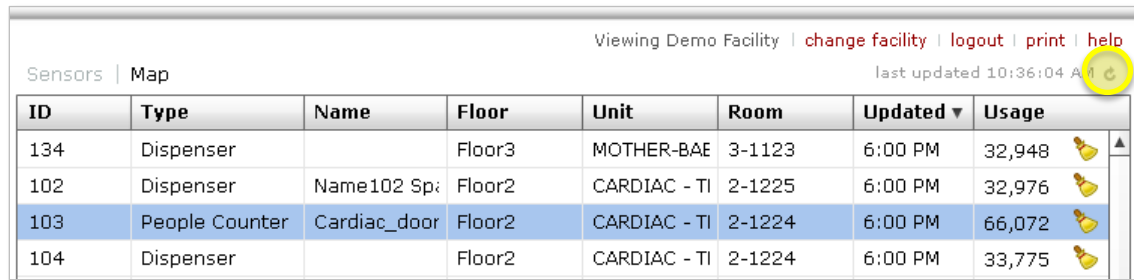

Locate the ID of the Activity Counter being added to the system in the table. Have someone walk into the area monitored by the Activity Counter. Within a few seconds, the "Usage" column should increment to indicate a newly-registered event.

Data Refresh Rates

The data in the column labeled Updated is populated each time a sensor is activated (dispenser actuations or activity sensor movement detected). This data is also updated every 30 seconds by default or by clicking on the refresh icon on the top right corner of the sensor area (see below):

Associating Sensors to Areas

An important part of setting up your system for accurate tracking involves mapping, or associating, sensors to specific areas (floors, units and rooms) of the hospital. This association is the foundation for compliance reporting across the hierarchy of the system.

Instructions for mapping your sensors

1) Open the Sensor Map screen in the tabular view mode.
2) Expand the hierarchy tree for the floor, unit and rooms which you will associate the Activity Counter.
3) Click and hold a the ID from the sensor table and drag it to the room it will be associated with; releasing the mouse button after you see the green plus sign on the hierarchy item (room).
4) After successfully associating the sensor to the room, the sensor table will update accordingly

To remove a sensor from the hierarchy, click on the sensor in hierarchy tree and press your Delete key on the keyboard. This removes any association between that sensor and a room or hierarchy level. It will need to be remapped after removing it.

A sensor can be moved from one hierarchy level to another. This is convenient when you need to change the room a sensor is mapped to, for example.

Removing and Changing Sensor Locations

To remove a sensor from the hierarchy tree, simply locate it by expanding the associated room, click on the sensor to highlight it, and then press your delete key. This only removes the association between that sensor and the room it was linked to.
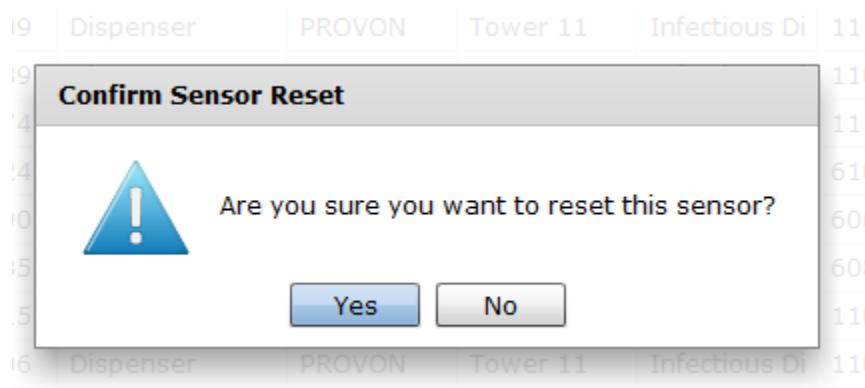
Clearing Sensor Data

During installation and testing each sensor will be activated several times to determine accuracy and validated data transfer. After the system is formally tested and validated, the GOJO system administrator may clear the counts to allow for a fresh start of data collection. The small broom icon in

the Usage column removes data associated to a sensor. This is done by clicking on the icon. *Once cleared, the data is removed from the database completely.* You will receive a warning message warning you of the clear and will prompt you to confirm the clear.

Once you click yes the sensor count will be zeroed out for the selected sensor.
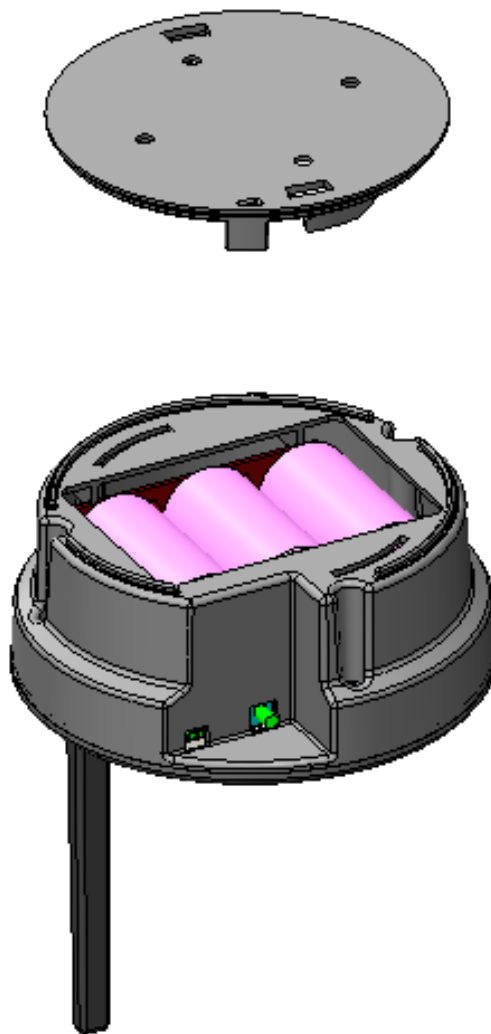
Battery Replacement

The Activity Monitor uses 3 "C" cells. For best results, replace only with alkaline batteries. To replace the batteries, first turn off the Activity Counter, then twist the housing counter-clockwise to remove it from the mounting plate. Remove the "C" cells from the Activity Counter housing and dispose of properly. Replace with three new "C" cells, observing proper polarity. Replace the housing on the mounting plate and twist clockwise to lock. Finally slide the power switch to turn on the unit. Ensure that the red and green LED's alternately flash for a few seconds.

Troubleshooting

In the event that the device is not functioning properly, use the troubleshooting guide below to find common issues and how to resolve them.

Issues	Possible Resolution
No red or green LED activity after a person passes by sensor	Verify power switch is in the "on" position Verify batteries are good Change the sensor sensitivity to "high" Reorient the sensor
Sensor can detect people at close range but not when mounted at a distance	Change the sensor sensitivity to "high" Consult factory
After powering up unit, the red or green LED lights solid	Consult factory

Contacting Technical Support

Contact system support at 330-255-6282 or via email at gojosupport@gojo.com.