



# HCA Tech Note 134

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## Wireless Inventory Setup, Care and Management

This technical note describes how to use the “Wireless Security” devices that were made by the same X10 corporation as made X10 interfaces and devices for years. Be careful of the word “security” and “wireless” as they don’t quite have the same meaning as those terms are used today. These devices were marketed as part of a DIY home security but were never a substitute for a “real” security system. Nor are they “wireless” in the same way we use that term today as they are not WiFi, ZWave, or Bluetooth. They use their own proprietary wireless signals. However, having said all that, while they are yesterday’s technology, these devices are still useful as motion sensors and door and window sensors. They are low priced, reasonably reliable, and supported by HCA with the proper wireless receiver.

As your home gets increasingly automated, the setup and management of wireless products becomes a consideration. There are two classes of X10 wireless devices – those that have house and unit codes, and those that are not part of that set but are generally considered part of X10 Security.

One of the benefits of this expansion removes wireless traffic from the AC line into HCA which positively benefits the operation of the system (fewer times that multiple wireless incoming signals collide on-air, or on the AC line with all other traffic). In effect, it gives you greater bandwidth for X10 traffic because 2 incoming interfaces are handling the load instead of one.

This Tech Note explains how X10 Security wireless devices can be setup and managed, because the method is very different from that of a conventional X10 device. Material on how to do this has been collected from an HCA install utilizing 12 X10 Home sensors and 37 Wireless Inventory Devices.

### Types of Devices

Wireless Inventory devices include but are not limited to:

- Motion Detectors (MS10, PMS01, MS18)
- Contact/Closure Sensors (DS10, DS12)
- Specialty Sensors (Water WD13. Glass Breakage GB10)
- Controllers (SH624, KR32)

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It does NOT include X10 devices like X10 keypads or remotes, or X10 motion detectors (MS12 through MS16, PHS01, PMS01/02, PR511). These are not addressed in this Tech Note.

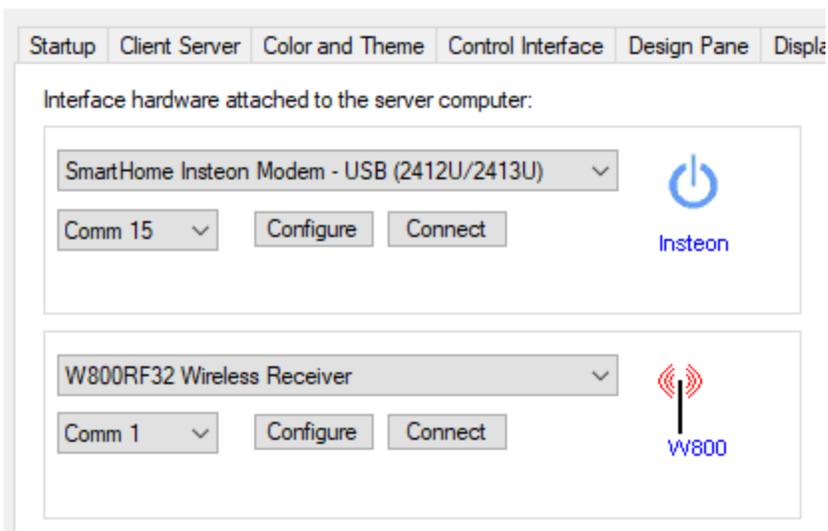
## Computer Interface

In order to utilize Wireless Inventory devices, one must have a broadband non-X10 receiver. That means that computer interfaces that provide X10 wireless selection are not used because they cannot receive the signals from X10 security devices. The reason is that house codes A through P are assigned to X10, but above that are frequency identifier sets that are reserved for X10 security. Therefore, all X10 House Code devices (i.e. CM11, CM15, CM17 and Insteon 2413U/S) will be used only for AC-line traffic and not wireless traffic.

The type of computer interface required for full coverage of both X10 House and Wireless Inventory is typically the W800RF32 interface from WGL & Associates (<http://www.wgl designs.com/w800.html>). These can be installed with a remote antenna more centrally located for the house, and the unit itself can be much closer to the computer. If a receiver like this is not part of the installation, then it is not possible to setup Wireless Inventory devices.

The AC line interface and Wireless interface are setup separately as shown below:

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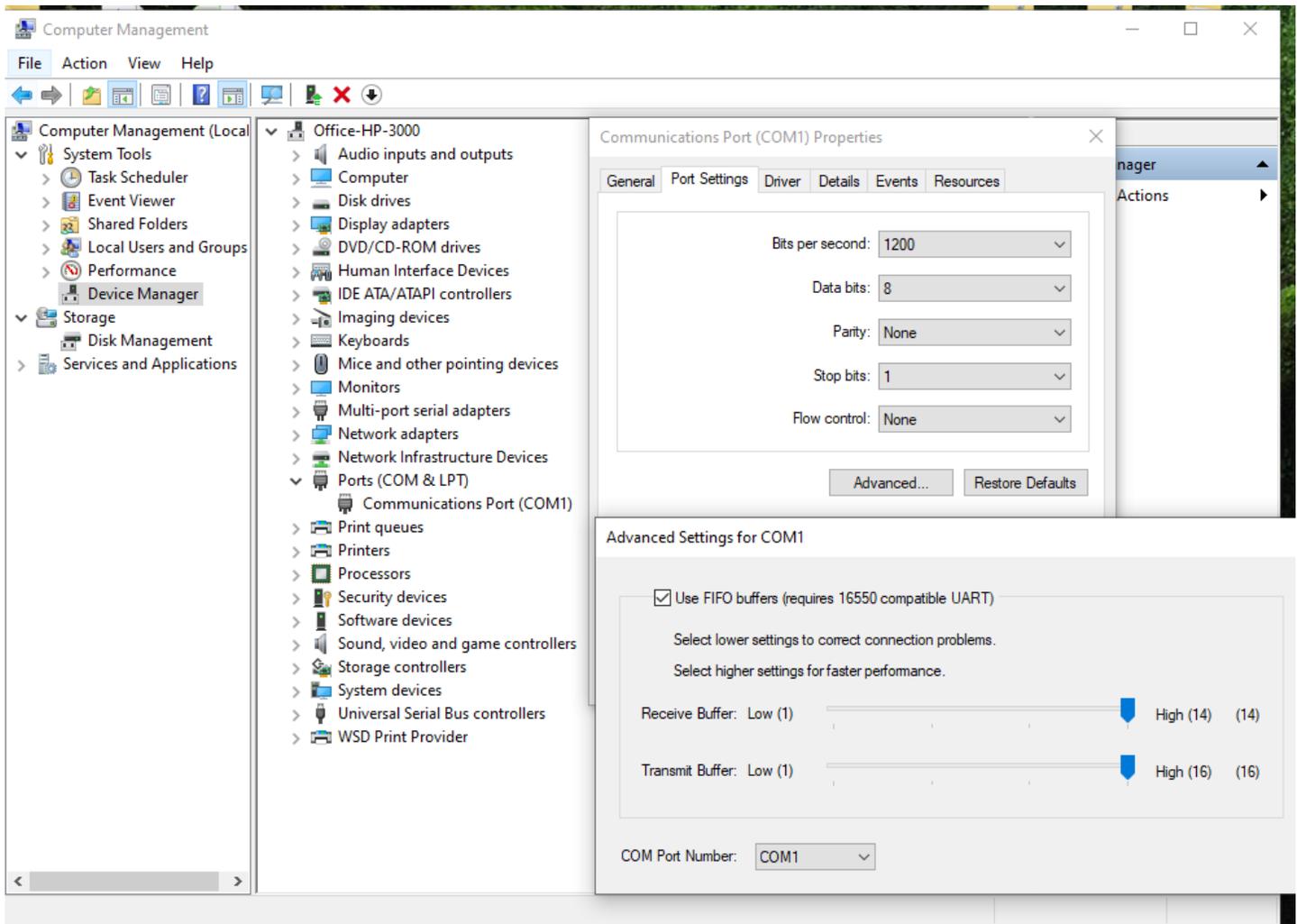
Each interface is setup for it's own unique communication:

The screenshot displays the 'Control Interface' tab of the software. It shows two interface configuration panels. The top panel is for 'SmartHome Insteon Modem - USB (2412U/2413U)' with 'Comm 15' selected. The bottom panel is for 'W800RF32 Wireless Receiver' with 'Comm 1' selected. To the right, two configuration dialog boxes are open. The first, 'Configuration for: Insteon(15)', asks 'Which of these protocols should be used with this interface?' and has 'Insteon' and 'X10' checked. The second, 'Configuration for: W800(1)', asks the same question and has 'Wireless' checked.

Setting up alternate COM-port names to be used is possible, but often unnecessary. To do so requires going into the properties of the COM-port and modifying the port number as shown below. Some devices work with any COM-port assignment, while others do not, so using COM1, COM3 or COM5-8 are recommended.



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Once setup with the normal HCA design using X10, then these interfaces will run all the normal X10 home devices quite well.

## Setting Up A Device

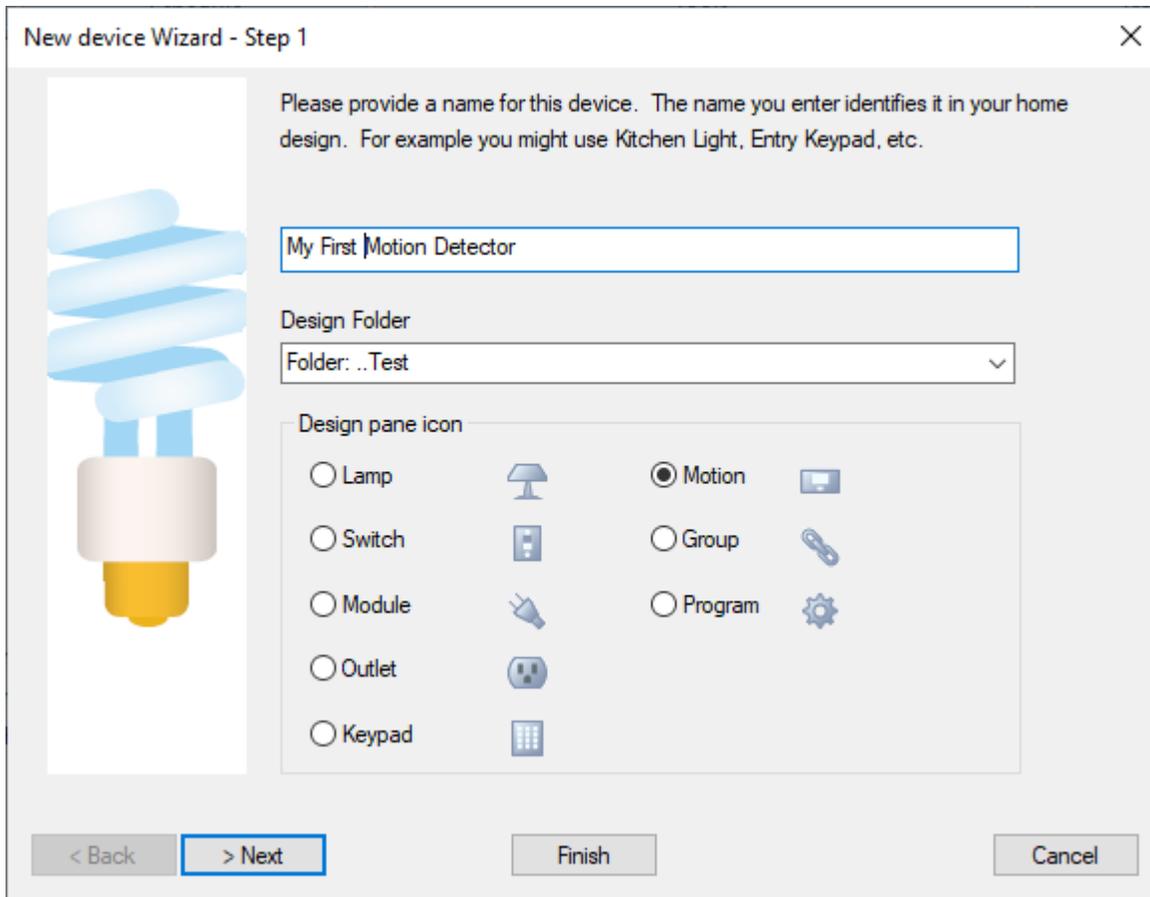
In order to setup a device, one needs to start with the Design Tab and Device.

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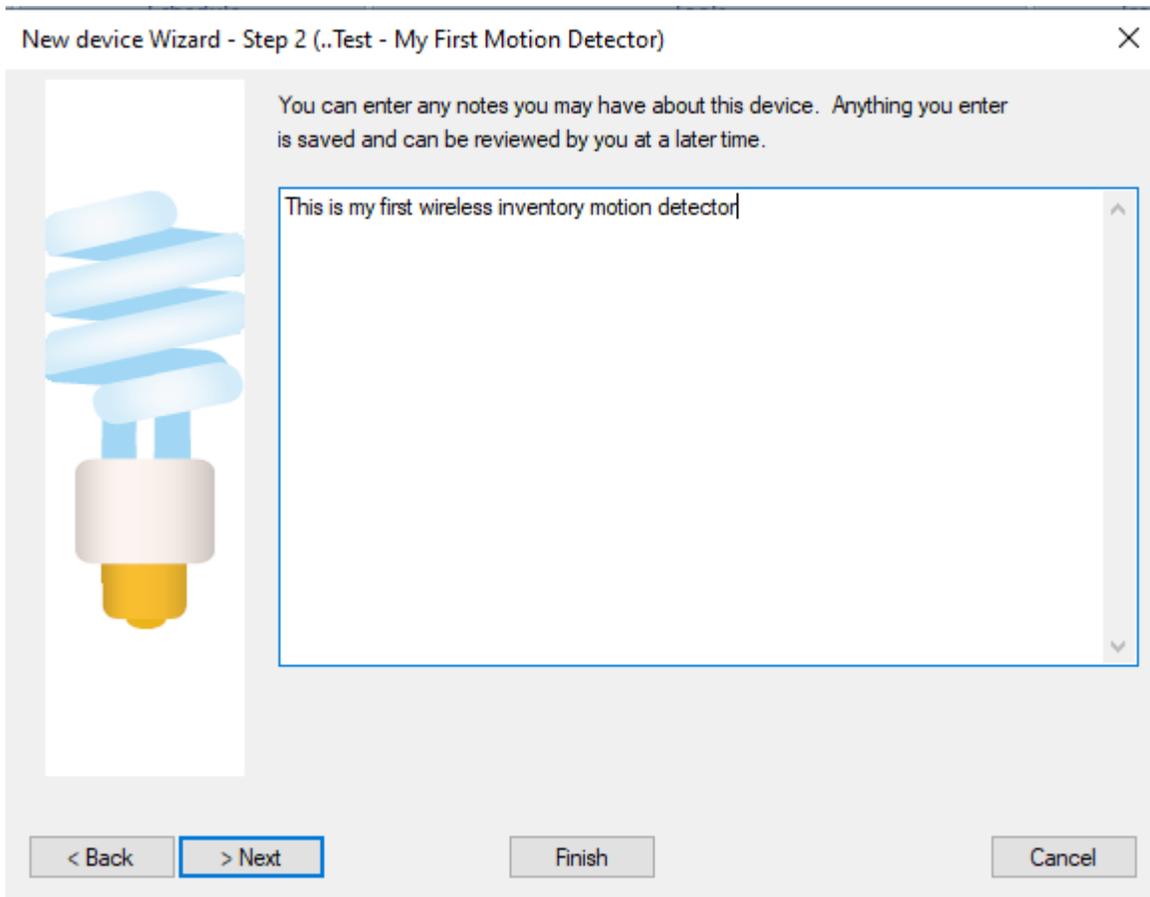
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You can set it up as a MOTION detector or MODULE. The illustration below shows how it works for a motion detector. It doesn't matter which, but it influences the icons that are best attached.



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In general this is an important note for letting you know not just what you have, but as well where it is physically located. A very important note to put at the start is WHEN it was installed, or WHEN the battery was last changed.

Batteries don't last forever and knowing how long they have been running is important. Often these motion detectors and sensors last up to 2 years using 4 AA batteries, this mileage can vary depending upon traffic levels reported.

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New Device Wizard - Step 3 (..Test - My First Motion Detector) ×

What type of device are you creating? If the device is not listed select either a similar device or generic device. You can always change the properties of the device later if necessary.

Manufacturer  
Wireless ▾

Kind  
All ▾

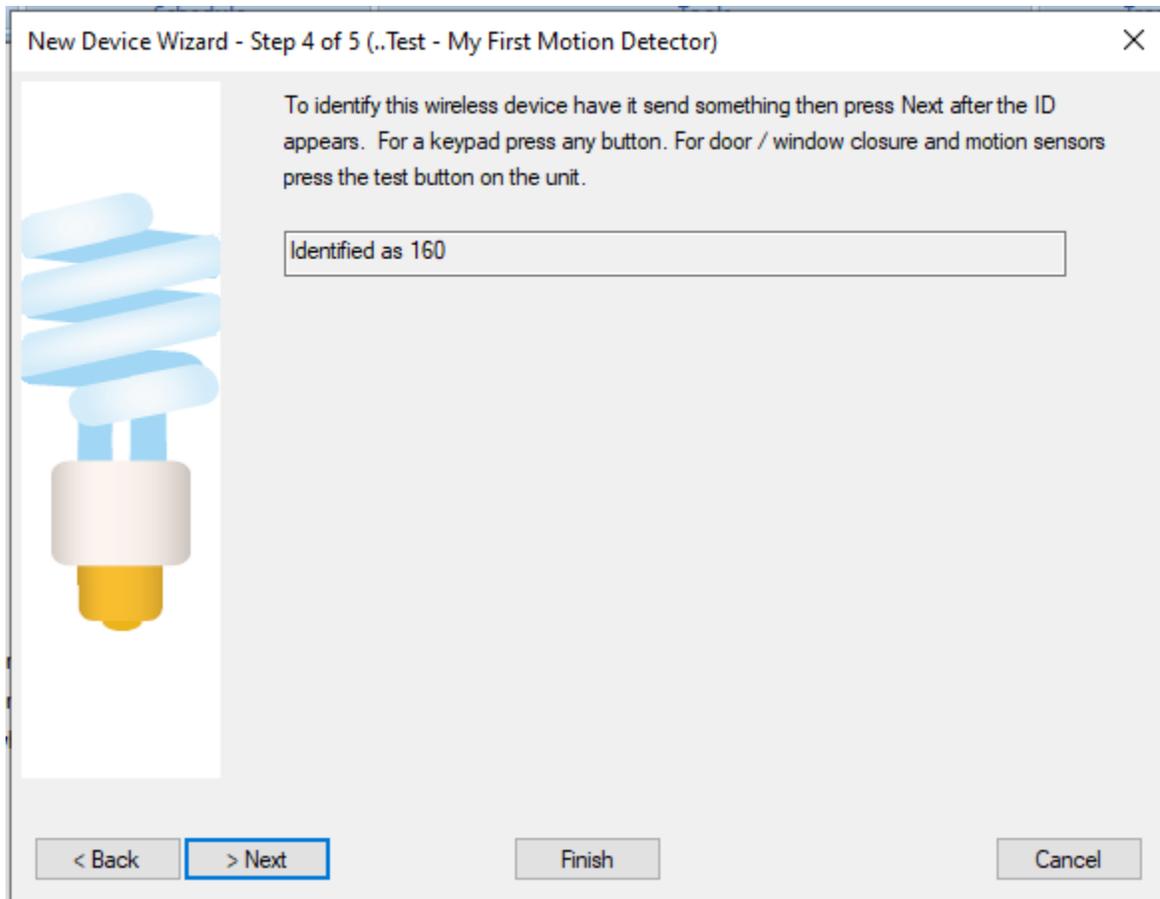
Model number and description  
MS10A Security Motion Sensor ▾

< Back > Next Finish Cancel

Wireless Inventory is called “Wireless”, and not X10 or X10PRO. No need to select a Kind because there are only 3 devices listed – MS10 (motion), DS10 (closure), and SH624 (keypad). While only these are listed, because the technology is mature, all other superseding devices tend to work well when defined as their original parents.



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This is where the identity of the device is established. There are 256 addresses and they are generated by being triggered. Often there is a TEST button, which upon being pressed will show you the ID.

It is important to note that these are dynamically and randomly created.

In order to know if you have a conflict, open the LOG and watch while pressing the test button a couple times. If an entry comes in on the W800 interface and shows a number rather than a device name, then you know it is unique and there is no conflict.

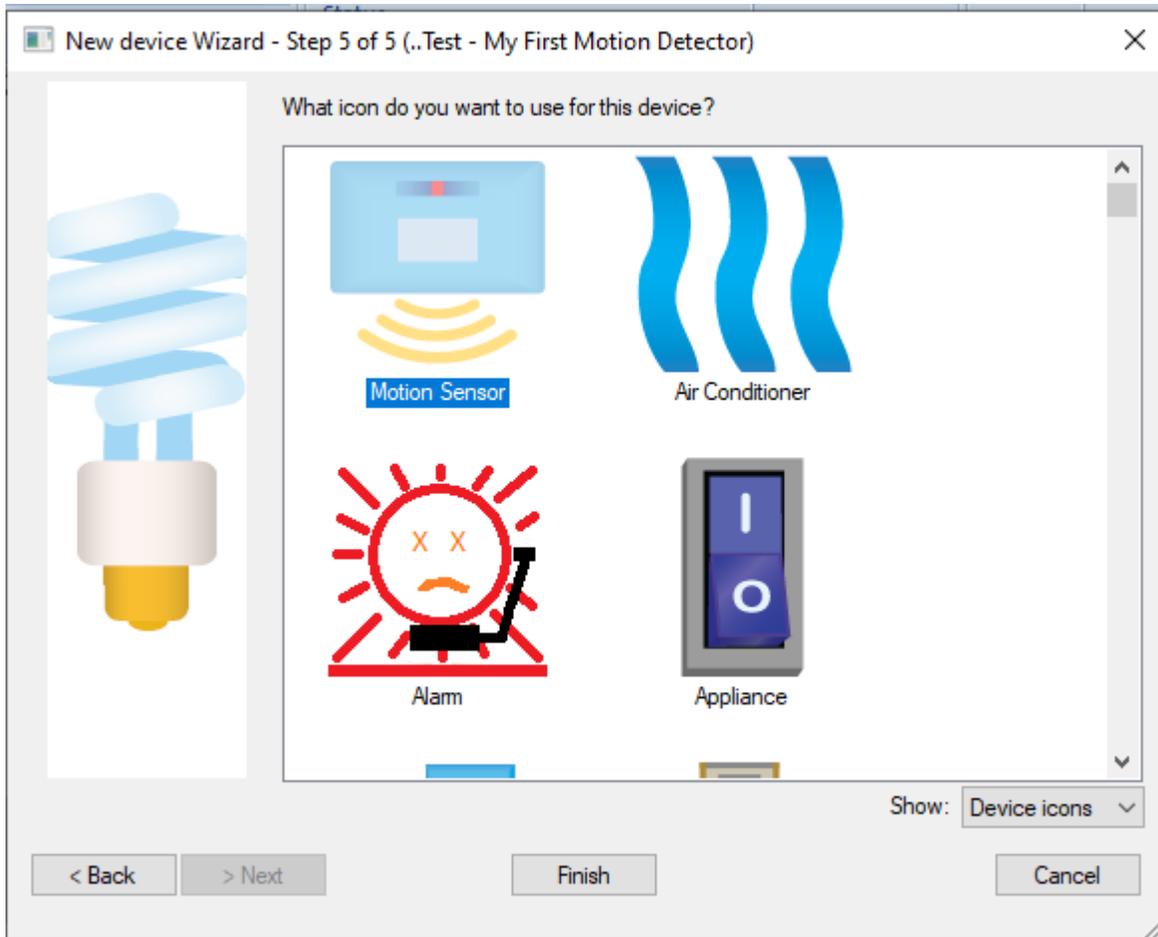
If there is a conflict, the number must be reset. This is done by taking out the batteries, pressing TEST for 10-15 seconds, then putting the batteries in while holding down the TEST key. This should generate a new random ID code which will show on the LOG file.

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The icon that is selected here will define the device. It can be changed on some displays (i.e. on a DXF type of display in the right pane), but that is local to that display only. This is the global definition.

Once you press Finish, then the device is running and ready for you to use to activate programs and trigger other kinds of activities.



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## Signals from Wireless Inventory

There are 3 basic signals that come from a Wireless Inventory device. While the security interfaces (those pads or key fobs that can control a security system) can generate other signals, the ones for the Motion and Closure sensors are limited to:

- NORMAL – the device is in idle mode with no trigger activation
- ALERT – a motion has been detected or the closure sensor has opened
- LOW BATTERY – the battery is low and needs attention

Unlike X10 Home devices, the Wireless Inventory devices report when something happens, AND every 4 hours giving the current state.

This means that if a door is opened, then an ALERT will be generated. When closed, a NORMAL will be generated. But if the door is left open and not closed, then every 4 hours after an ALERT will be generated until such time as the door is closed or LOW BATTERY condition starts to be reported.

These 3 triggers are what are typically used to trigger programs, as shown below.



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"Wireless Inventory Programs - WLS Front Door Open" Properties

Referenced by		References				Ta		
Name	Notes	Triggers	Visual Programmer	Advanced Options	Restart	Icon	Display	L

Start the program on any of these triggers:

Trigger	Edit	Delete
▶ When Alert message is received from "Wireless NO_LOGGING - Front_Door"	Edit	Delete

Trigger

Start the program on this trigger:

When Alert message is received from "Wireless NO\_LOGGING - Front\_Door"

Component

Wireless NO\_LOGGING - Front\_Door

Component message

Alert

Normal

Am Away Max

Am Away Min

Am Home Max

Am Home Min

Panic

Light On

Light Off

Disarm

Sensor has not sent any message for 4 hours (battery dead?)

OK Cancel

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## Maintenance of Wireless Inventory

There are a number of ways that Wireless Inventory can be managed using HCA.

The first way is to use the Low Battery trigger to start a program to alert you of the issue. This could generate a display, send an email, or whatever you like.

The second way which is more suited for X10 Home wireless devices, is to setup an Alert under the configurable categories to trigger a program to report the problem. Here is one way to do it:

The screenshot shows the 'Alert Viewer' interface. At the top, there are tabs for 'Alert Summary', 'Alert Log', and 'Alert Devices'. Below the tabs is a descriptive text: 'The Alert system reports on problems that are dynamic - events that occur as HCA runs your design. For example status requests not answered, devices that don't acknowledge control commands, etc. Each alert type can be configured on how it reports.'

Alert	State	Count	Last Occurred	Clear	Configure
Client disconnect	Green	0		Clear	Configure
DDNS update failed	Green	0		Clear	Configure
Server disconnected from HCA Cloud	Green	0		Clear	Configure
Category 1 devices overdue	Green	0		Clear	Configure

Below the table is a configuration dialog for the 'Category 1 devices overdue' alert. The dialog includes the following options:

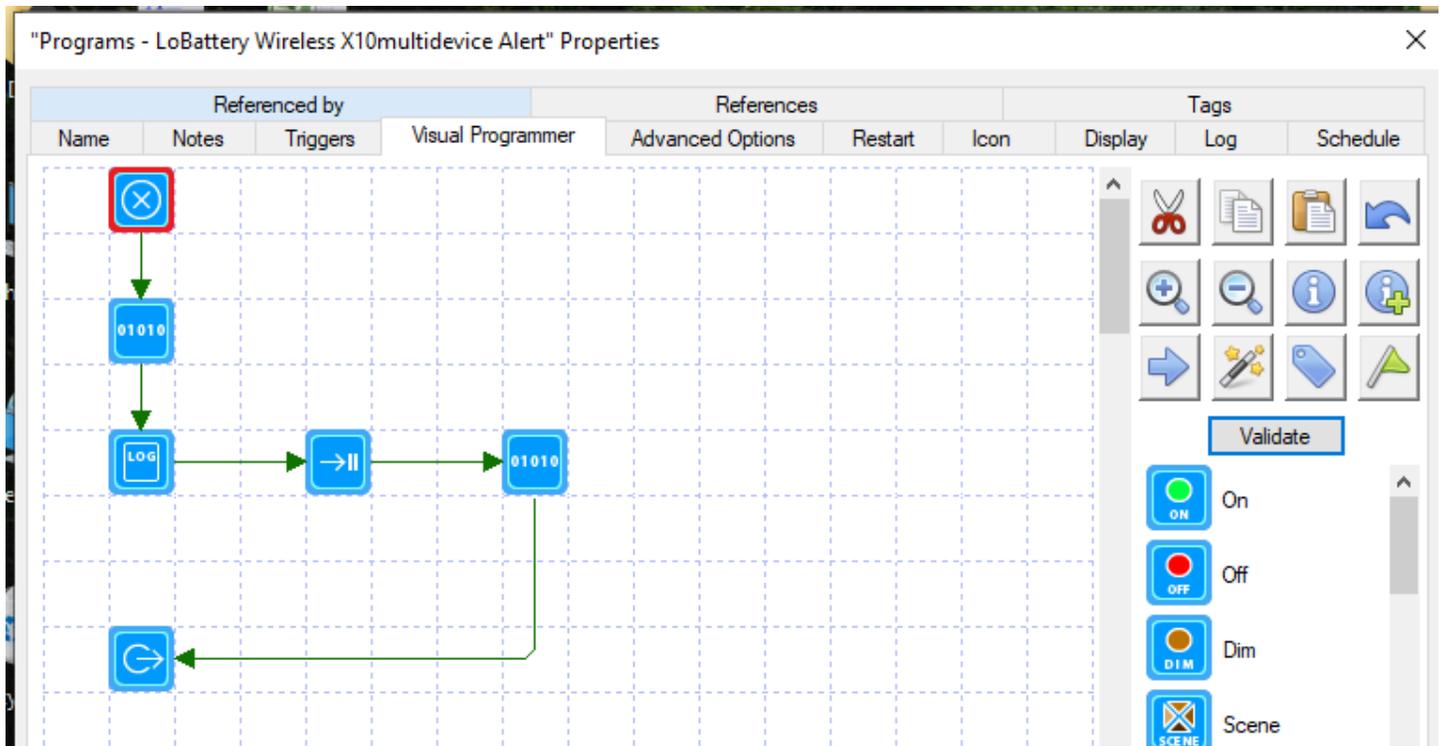
- Configuration for alert: Category 1 devices overdue
- Disable this Alert
- When this alert occurs:
  - ... Create an alert log entry: Only one a day
  - ... and show the inspector alert level Yellow after 1 occurrences then Red after 2 occurrences
  - ... and start this program: Programs - LoBattery Wireless X10multidevice Alert (with a 'Create Handler Pgm' button)
  - ... and clear the alert count: Never

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Below is an illustration of the parameters passed to the program by the Alert Manager.

Begin Here Properties ✕

 When the Start-Program element is used to start this program it provides the actual data for these parameters. That can either be an object - a device, program, group, or room - or a simple value - a number or string.

In the elements of this program you refer to the parameters by their name. When the element executes the actual object or value provided by the starting program is used.

Parameters

Count:

	Name	Type	Default for value parameter if not supplied by calling program	
Parameter 1:	<input type="text" value="AlertGroup"/>	Value <input type="button" value="v"/>	<input type="text" value="Nothing"/>	<input type="button" value="Add info"/>
Parameter 2:	<input type="text" value="AlertMsg"/>	Value <input type="button" value="v"/>	<input type="text" value="Nothing"/>	<input type="button" value="Add info"/>
Parameter 3:	<input type="text" value="AlertLogNumber"/>	Value <input type="button" value="v"/>	<input type="text" value="Nothing"/>	<input type="button" value="Add info"/>
Parameter 4:	<input type="text" value="Dev"/>	Value <input type="button" value="v"/>	<input type="text" value="Nothing"/>	<input type="button" value="Add info"/>

Local variables:

<input type="text"/>				
<input type="text"/>				
<input type="text"/>				
<input type="text"/>				
<input type="text"/>				

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In this case, the parameters handed to the program by the Alert Manager allow you to put them a display on the LOG, send an email, or do other activities. It is even possible to set a TAG on the device properties and clear the Alert Message using `void=_AlertClear($AlertLogNumber);`

The TAG method is quite good because it allows programs later to traverse the design and do a single daily report on devices having the tag, and what was recorded in it, before being deleted to watch for the next interval. In the following illustration, it shows TAGS set by programs to the time at which the alert was received, and the type of alert.

"Wireless NO\_LOGGING - Front\_Door" Properties ×

Name	Notes	Room	Type	Wireless	Options	Triggers	Restart	Icon	Display	Log	Groups
Schedule		Referenced By			Power Track		Green		Tags		
Tag Name		Current Value									
NORMAL		4/22/2020 12:56:06 PM									
ALERT		4/22/2020 10:34:48 AM									



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## Many Wireless Inventory Devices

Managing many devices can be challenging, particularly when it comes to keeping the randomly assigned ID's in order. It is relatively easy to write a program that lists all wireless devices and their IDs. Here is an example:

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### Wireless ID Inventory: as of 4/22/2020 12:46:12 PM

- 1) [ 1 ] Wireless NO\_LOGGING - Deck\_Front\_Window
- 2) [ 2 ] Wireless NO\_LOGGING - Laundry Machine and Sink
- 3) [ 5 ] Wireless NO\_LOGGING - Sewing\_Room
- 4) [ 13 ] Wireless NO\_LOGGING - Downstairs\_Hall\_Motion
- 5) [ 21 ] Wireless NO\_LOGGING - Dining\_Room
- 6) [ 23 ] Wireless NO\_LOGGING - Thermo\_A\_Downstairs\_Bedroom
- 7) [ 31 ] Wireless NO\_LOGGING - Breezeway\_Door
- 8) [ 43 ] Wireless NO\_LOGGING - South\_Garage\_Door
- 9) [ 55 ] Wireless NO\_LOGGING - Breezeway\_Motion
- 10) [ 65 ] Wireless NO\_LOGGING - TV\_Room\_French\_Doors
- 11) [ 79 ] Wireless NO\_LOGGING - Downstairs\_Office\_Motion
- 12) [ 85 ] Wireless NO\_LOGGING - Deck\_Side\_Window
- 13) [ 97 ] Wireless NO\_LOGGING - Laundry\_Room\_Door
- 14) [ 98 ] Wireless NO\_LOGGING - Workshop\_Motion
- 15) [ 99 ] Wireless NO\_LOGGING - Downstairs\_Bedroom\_Frenchdoors
- 16) [ 105 ] Wireless NO\_LOGGING - Deck\_French\_Doors
- 17) [ 111 ] Wireless NO\_LOGGING - Downstairs\_Bathroom\_Hall\_Motion
- 18) [ 113 ] Wireless NO\_LOGGING - North\_Garage\_Door
- 19) [ 117 ] Wireless NO\_LOGGING - Alarm\_Remote\_#1\_KR10A
- 20) [ 125 ] Wireless NO\_LOGGING - Alarm\_Remote\_#2\_KR10A
- 21) [ 129 ] Wireless NO\_LOGGING - Front\_Stairs\_Motion
- 22) [ 139 ] Wireless NO\_LOGGING - Downstairs\_Office\_Window

This allows one to create a report (maybe print it), and when a new device is being added or an old device is having its batteries replaced, to determine if its number has changed and it needs to be set again.

As can be seen from the assigned numbers illustrated above, there is no rhyme or reason to the assignment. Sometimes they are in sequences and sometimes jump over long distances in the 1 to 255 sequence.



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## Setting Up After Battery Change

If the batteries are changed quickly when low, often the ID will remain unchanged – but not always. As well, if the batteries are left to run very low, the memory of the device will forget the ID and a new one may be assigned. In this case, the LOG will show the unknown device.

To determine which one, this is where the Alert Log helps. If a report is generated showing problem/missing devices, or a TAG is placed in the properties, then this can tell you which ones are not reporting, and that will help you find it. This can be quite a challenge with large numbers of wireless devices.

When changing batteries on wireless devices, it is advisable to do it with a computer right at that location – possibly a laptop using WiFi. The reason why is that when you have a lot of devices, then the act of pushing the TEST button then running back to the computer somewhere else will likely trigger a motion detector alert and the result being saved is false.

So the best way is to open the properties as below:

"Wireless NO\_LOGGING - Deck\_Front\_Window" Properties

Schedule		Referenced By			Power Track		
Name	Notes	Room	Type	Wireless	Options	Triggers	Re
To re-identify this wireless device have it send something then press OK after the ID appears. For a keypad press any button. For door / window closure and motion sensors press the test button on the unit.							
ID:	<input type="text" value="Identified as 1"/>						

Note the wireless identifier and CLOSE the window immediately using CANCEL. You do not want to change it in case some unexpected ALERT or NORMAL signal occurs.

Next, change the batteries, and be ready to press TEST.

Check the LOG to see if the right device is responding. If so, no further changes are needed. If a new number is now showing, take note of that number as this is what you want to see on the Wireless tab.

Open the Wireless again.

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"Wireless NO\_LOGGING - Deck\_Front\_Window" Properties

Schedule		Referenced By			Power Track		
Name	Notes	Room	Type	Wireless	Options	Triggers	Re
To re-identify this wireless device have it send something then press OK after the ID appears. For a keypad press any button. For door / window closure and motion sensors press the test button on the unit.							
ID:	<input type="text" value="Identified as 1"/>						

Now get ready to do this quickly. Have your mouse configured on the OK, and then press TEST. As soon as the new ID is showing, press OK.

Now open it again – is it the number you expected? If so, good. If not, do it again.

Now that the right value is displayed, in order to prevent future problems, click on any another tab, then press CANCEL. This will close the properties without making changes and will prevent opening properties at some future time on the Wireless tab as the priming of a new ID happens whenever something arrives. You do not want the properties to open in this Tab – ever.

It is worthwhile to note that this technique applies to current implementations through v16, and that in the future this may change. For now, this is the practical manner in which to manage wireless inventory IDs.

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## in-FREQUENTLY ASKED QUESTIONS (iFAQ)

1. I have some DS10/MS10 devices (or similar) and want to use them, but I don't want to get a new interface.

ANSWER: the W800RF32 can replace multiple House Code based RF receivers under X10. It is an efficient and economic device. HOWEVER, if getting this or similar devices is not in your plan, then the DS10/MS10 class of devices will be limited to being registered with and working with X10 Security Systems (i.e. SC1200 X10 SecuriLINK Security Console).

2. How can I integrate an X10 Security System with my HCA implementation?

ANSWER: the two systems can coexist, but they are not able to be directly integrated. Motion and Contact sensor transmission can be received at the same time by both system as they can be setup in both. However, integration between the security system and HCA is more challenging and will require some creative means that are left to the individual, as it is beyond the scope of what HCA is designed to be and do.

3. I had to change the batteries in my wireless inventory device and had to reset the wireless device ID in HCA. But, it doesn't work with my security system any more.

ANSWER: The X10 security systems also register the devices. It is necessary to now remove the old "zone", and install a new "zone" for this device. Keeping track of which zone each device is in will help. It may not be easy to do this as detectors are often installed semi-permanently. It may be necessary to get someone to help you when installing the device again by pressing TEST when requested, OR, the alarm may need to be unplugged and carried to the candidate device. Otherwise, you will find that the device is not know and the security system will not work as expected.

4. When I open my door/window, nothing appears on the HCA log.

ANSWER: Check to ensure the device is configured to log, and which log it will go to. If setup okay, then check the voltage of the batteries installed. This is possible without removing them. Low batteries will often result in nothing being received, and sometimes this is shown by sending once, but not a second time for a period of time. Changing batteries is often the best solution.

ANSWER: sometimes devices are placed too far away from the receiver, OR, there is something big and metal in between like a refrigerator, heating duct, or metal door. Radio frequencies don't go through metal, so if the batteries are good, please consider the location or an alternate.

5. I cannot move my computer to where my DS10/MS10 devices are, and they are firmly in place. How can I reset the Wireless Inventory ID?

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ANSWER: the key is that no device can transmit during the cycle. If you have someone to help you, then you can go to the tab to setup the wireless ID, call out them to press test, and when you see a new ID, immediately click OK.

If you are alone it is more challenging. Every motion detector needs to be covered or turned away from where you might walk. All doors on the way need to be propped open. Then once the TEST is clicked, rush quickly to the computer to save it. This is not guaranteed to get the right result first time.

Always check on the log to confirm that when you click the TEST it shows up for the correct device. Doing batches of 3-5 clicks in a row will highlight this kind of test over any regular kind of reception.

6. I want to monitor sunrise and sunset, or when lights go on or off.

ANSWER: MS10 motion sensors do not have that capability. To monitor that a conventional X10 House-code motion sensor is needed.

7. I do not get any wireless receptions from the W800RF32.

ANSWER: while usually a bullet-proof kind of device, the system can get confused. The general rule is to reboot the computer, restart HCA, and do a "TEST" on the Interfaces tab to be sure they are talking with each other. It is possible that the W800RF32 power supply can fail (extremely rare), or that the antenna cable is not firmly attached.

8. I have a mix of wireless inventory motion detectors and standard X10 home motion detectors. How can I tell if the batteries are dead?

ANSWER: for BOTH types of devices you can use the Alert Manager to let you know. Use one of the Categories (i.e. Category 1 devices overdue) to define the devices that you want to watch, and how to provide the alerts. The alerts may not stay around forever, and usually don't, so it is wise to have a program in-place to send you an email or text identifying the non-reporting or late-reporting device.

##end##