



HCA Tech Note 711

Integration of ecowitt Sensors with HCA using Hubitat

Ecowitt (ecowitt.com) makes a variety of sensors that can be used with their weather stations. These devices can also be used with just their app and connected to Hubitat using their GW1100 WiFi gateway. When integrated with Hubitat, data from the sensors can be forwarded to HCA. This Tech Note will describe the integration of an ecowitt WH51 Wireless Soil Moisture Sensor. Up to 8 such sensors can be supported by one gateway. These sensors could, for example, be used to control an automatic irrigation system connected to HCA. Other sensor types are available and could be integrated using the approach in this tech note. One interesting sensor ecowitt offers is the WH57 Outdoor Wireless Lightning Detection Sensor.

The Hubitat drivers can be found at:

<https://github.com/sburke781/ecowitt#readme>

(It should be noted that there are variants of these drivers on GitHub. This article specifically used the ones at the above URL).

The first step is to install the ecowitt WiFi gateway using the ecowitt app. The install instructions on GitHub say to use the “WS View” mobile app and shows an Android app. This may work, but if you are using iOS, you need to use the “ecowitt” app from the Apple store with this icon:



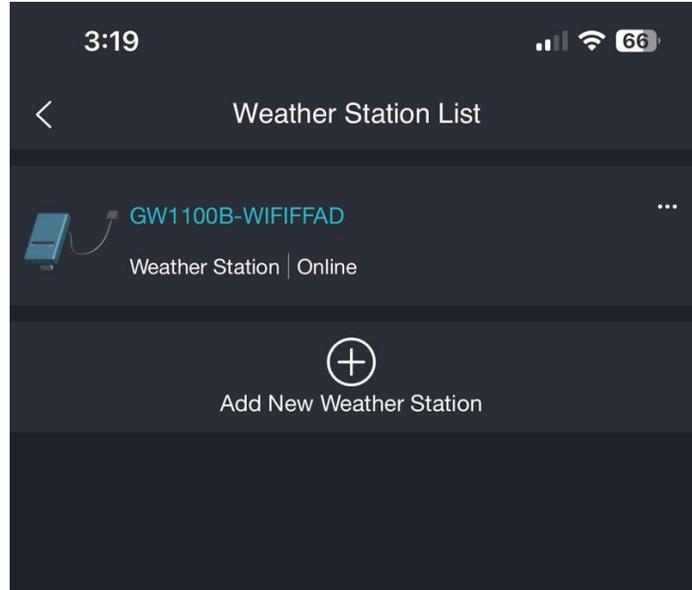
Once this app is installed, you should use the “Add New Weather Station” function to add the WiFi gateway. You can also setup an ecowitt account, although the cloud is not necessary for the gateway to forward information to the Hubitat, i.e. everything can operate via the local network. This screenshot shows the app with the gateway installed:

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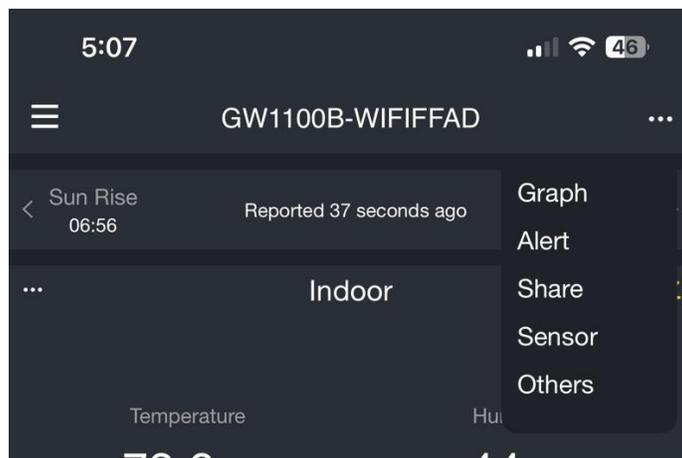
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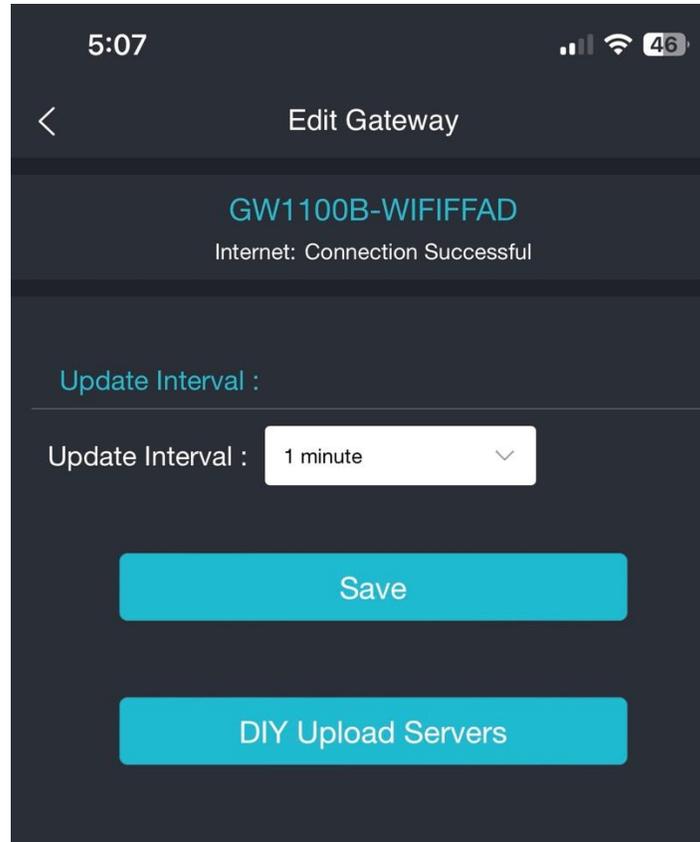
Once the GW1100 gateway has been added to the app, you need to set it up so that it will forward data to the Hubitat. To do this, select the “...” menu next to the gateway’s name. This will pop up another menu:



Select “Share” which will take you to this menu:



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Set the interval at which you want to update the server. Then select “DIY Upload Servers”, which takes you to this menu, where you should select “Customized”:



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The screenshot shows the 'Edit Gateway' screen in a mobile app. At the top, the time is 3:44 and the battery is at 63%. The gateway name is 'GW1100B-WIFIFFAD' and the internet connection is 'Successful'. The gateway is set to 'Customized' mode. Under 'Select Protocol Type:', the 'Protocol Type Same As' is set to 'Ecowitt'. There is a 'Reset' button for 'Setting Server:'. The 'Server IP / Host Name:' is set to 'http:// 192.168.1.39'. The 'Path:' is set to '/ data'. The 'Port:' is set to ': 39501'. Under 'Select Upload Interval:', the 'Upload Interval' is set to '60 Seconds'. At the bottom, there are two buttons: 'Save' and 'Disabled'.

Protocol should be “Ecowitt”, the Server IP should be that of the Hubitat and the port is 39501. Path should be “data”, then select “Save”. Note that there is no way to set a static IP on the gateway, so you should use your router to assign a fixed IP based on the WiFi gateway’s MAC address. In order to find the MAC address of the gateway, click on the hamburger menu on the main app page and then select “Weather Station” which will show you the installed WiFi gateway. Select the “...” menu and this will bring up a page that will show you the MAC address (see below). Since this is the only way to find the MAC address of the gateway, this means you

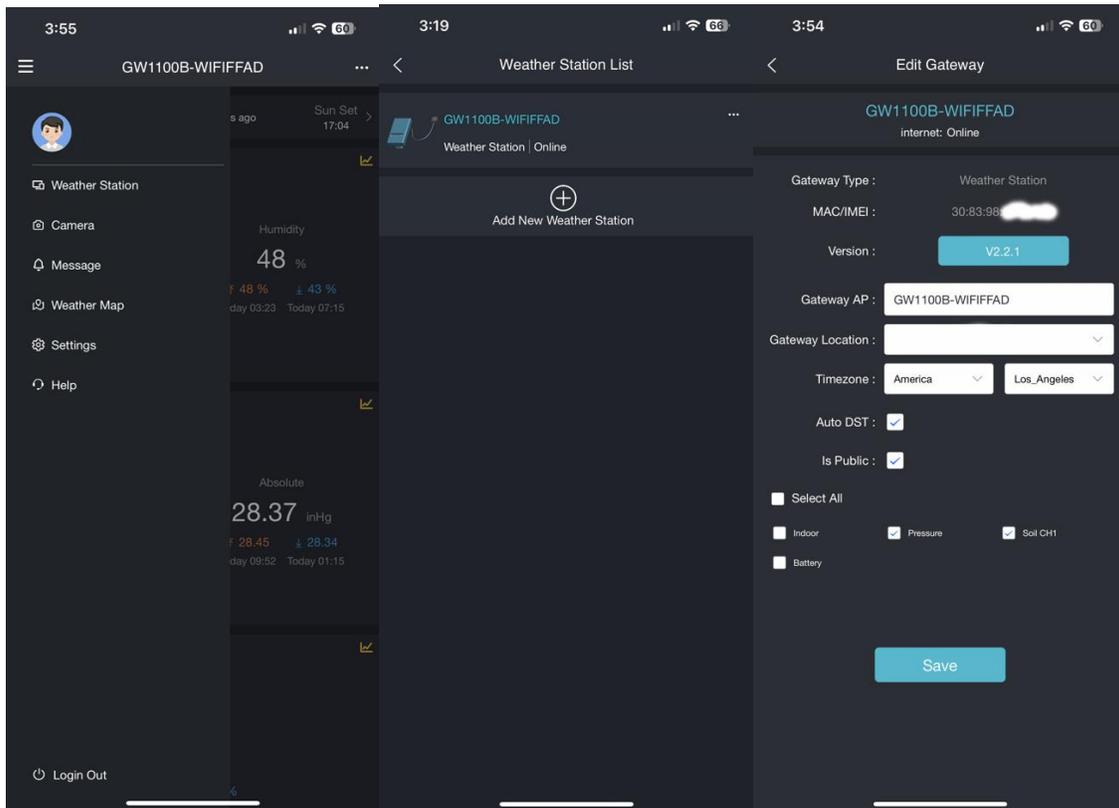
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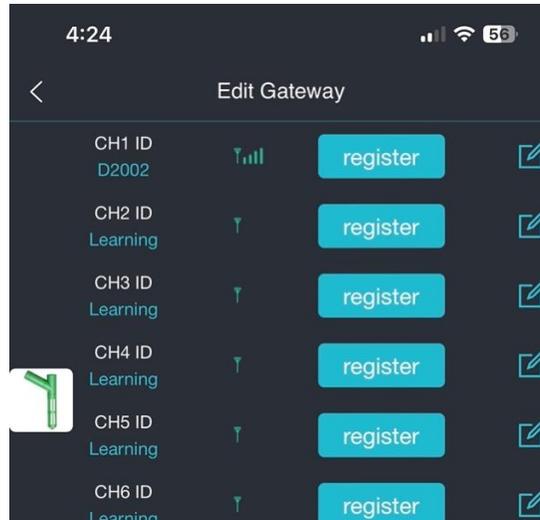
need to install the gateway and let your router assign it a random address, *then* set a fixed IP into the router for the gateway once you can see the MAC address.



The next step is to install a battery in the moisture sensor. The gateway should auto discover the sensor once it begins transmitting (as shown by the flashing LED on the sensor). You can verify the sensor has been found by selecting "Sensor" from the "..." menu. As you scroll down, you should see the first sensor (CH1 ID) shows an antenna with signal bars and has been assigned the name "D2002":



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Once the gateway is setup in the app, the next step is to verify data is getting forwarded to the Hubitat from the gateway as described in the GitHub instructions. If that is working, you can then install the two Hubitat drivers for the Ecowitt gateway (`ecowitt_gateway.groovy` and `ecowitt_sensor.groovy`). These can be manually installed using the cut and paste procedure used to install the HCA Hubitat drivers and described in HCA Tech Note 700. You can verify the device is in Hubitat by looking at “Devices” for Ecowitt WiFi Gateway. Note the gateway also contains a temperature sensor. It may take a few minutes for data to initially be pushed to the Hubitat from the gateway, based on the time interval selected. This shows the gateway and installed sensors in “Devices”.

Device Name	Device Type	User	Last Seen
Ecowitt WiFi Gateway (Ecowitt WiFi Gateway)	Ecowitt WiFi Gateway	User	1-15 4:50pm
Indoor Ambient Sensor (Indoor Ambient Sensor)	Ecowitt RF Sensor	User	1-15 4:49pm
Soil Moisture Sensor 1 (Soil Moisture Sensor 1)	Ecowitt RF Sensor	User	1-15 4:41pm
Flume 2 (Flume 2)	Flume Device	User	1-15 4:48pm
Front Yard (Front Yard - Front Yard Voice Control)	HCA Non-Dim Object	User	9-05 1:48pm

It is probably a good idea to reboot the Hubitat after the drivers have been installed and configured. It was noted that for some unknown reason data wasn't getting forwarded to the Maker API until the reboot occurred. To verify data is getting to the Maker API, you can turn on logging in the MakerAPI (“Enable Logging

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for debugging”) and look in “Events” for the sensor device which should show data is getting forwarded under “Triggered apps”. **Also, don’t forget to add your new devices into Maker API so HCA can find them.**

The screenshot displays the Hubitat Maker API configuration interface. On the left is a dark sidebar with navigation options: Rooms, Devices, Apps, Settings, Subscriptions, and Developer tools (with sub-options: Apps code, Drivers code, Libraries code, Bundles, and Logs). The main content area is titled 'Maker API' and includes the following sections:

- Maker API Label:** A text input field containing 'Maker API'.
- Security:** Contains two toggle switches: 'Allow Access via Remote / Cloud' (disabled) and 'Allow Access via Local IP Address' (enabled).
- Create New Access Token:** A button with a right-pointing arrow.
- Allowed Hosts (for CORS):** A text input field with a 'Click to set' link below it. The field contains a single dot.
- Enable Logging:** A toggle switch for 'Enable Logging for debugging' which is currently enabled.
- Allow Endpoint to Control These Devices:** A section header for a list of devices.

The bottom of the screenshot shows a portion of a browser window with a search bar and navigation icons.

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Soil Moisture Sensor 1 EventsHubitat C-7

- Rooms
- Devices
- Apps
- Settings
- Subscriptions
- Developer tools
 - Apps code
 - Drivers code
 - Libraries code
 - Bundles
 - Logs

◀ Edit Device

Search

Name	Value	Unit	Description	Source	Type	Produced by	Triggered apps	Date
humidity	98	%		DEVICE		Ecovitt WiFi Gateway	• Maker API (eventHandler)	2023-01-15 01:03:3
humidity	0	%		DEVICE		Ecovitt WiFi Gateway	• Maker API (eventHandler)	2023-01-15 12:54:2
humidity	98	%		DEVICE		Ecovitt WiFi Gateway	• Maker API (eventHandler)	2023-01-15 12:53:2
humidity	97	%		DEVICE		Ecovitt WiFi Gateway	• Maker API (eventHandler)	2023-01-15 12:52:2
humidity	98	%		DEVICE		Ecovitt WiFi Gateway	• Maker API (eventHandler)	2023-01-15 12:46:1
humidity	0	%		DEVICE		Ecovitt WiFi Gateway		2023-01-15 12:29:0
humidity	98	%		DEVICE		Ecovitt WiFi Gateway		2023-01-15 12:00:3

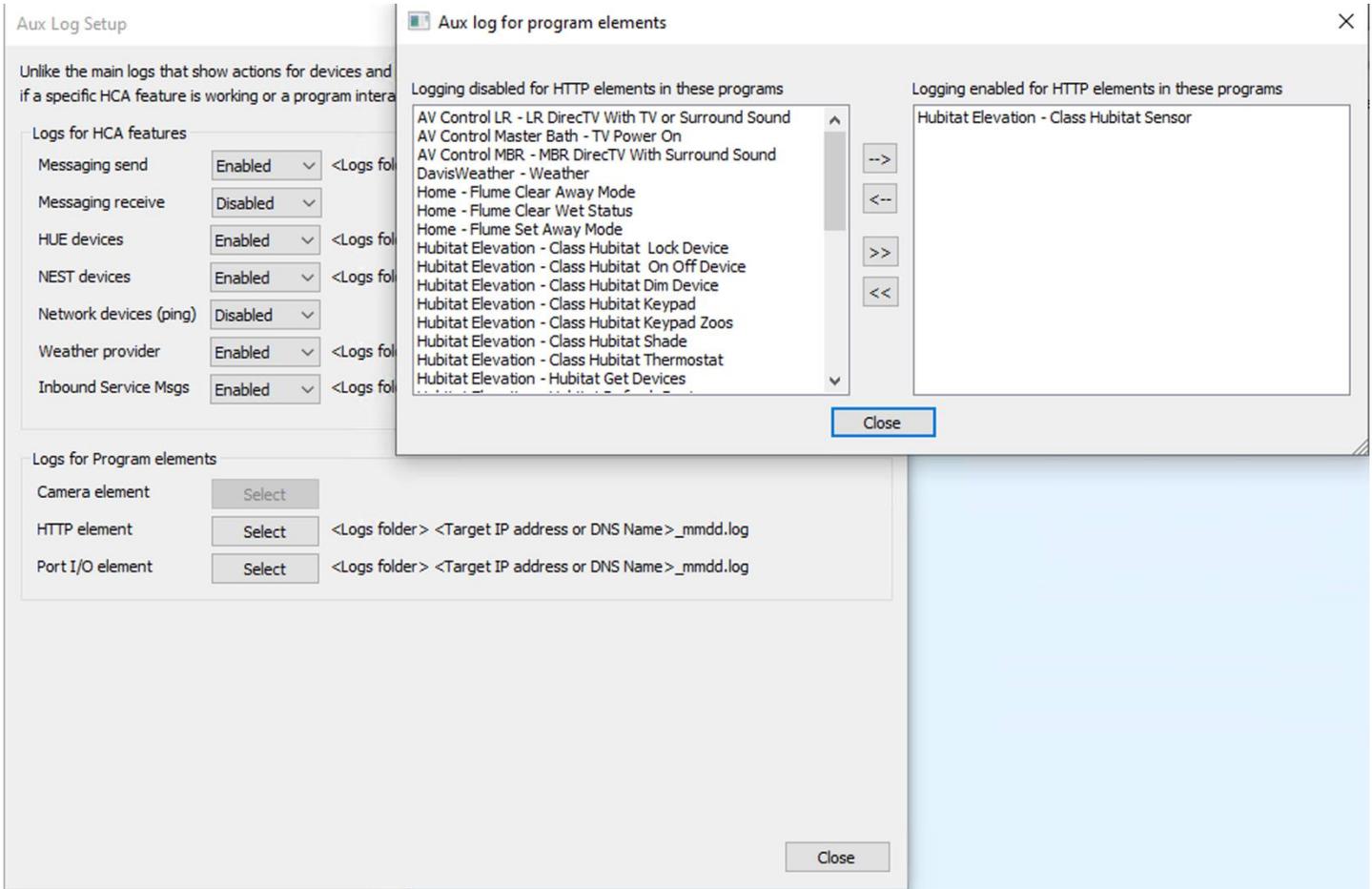
To add the device to your HCA design, you should run the “#1 Do Discover” program in the Hubitat HCA package. This should find the ecovitt device(s) and place them in your Hubitat folder. You can then do a Get Status on the device(s) which will populate the tags for the device. Unfortunately, the ecovitt drivers send data fields for all possible ecovitt devices, not just for the particular sensor you have installed. The number of data fields sent exceeds the number of tags HCA supports. To deal with this, you need to determine the tags you want for the particular sensor, delete all the unneeded tags from the device, enter the tags you want, and do another Get Status. HCA will again fill the unused space with irrelevant tags that have been sent, but the tags you need will be there. To determine what is being sent by the sensor, you would use HCA’s “Tools-Aux Log Setup” and select “Logs for Programs elements-HTTP element” with the Hubitat sensor class selected:

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The resulting log file will contain JSON of all the fields being sent back from the ecowitt after a Get Status on the device. In the case of the soil moisture sensor, two fields are of interest: “Humidity” (soil moisture) which would go into the device tag “HE_Humidity” and “Battery” (percent) which would go into the device tag “HE_Battery”. You also want to create a tag HE_LastEventAt, as HCA will populate this with the time that the sensor last reported data. The timestamp is useful in determining battery status in the case where the battery became too weak to send a report.



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"Sprinklers - Soil Moisture Sensor 1" Properties

Name	Notes	Room	Type	User Class Object	Options	Triggers	Restart	Icon	Display	Poll	Transmission	
Log	Groups	Schedule	Referenced By	Power Track	Green	Tags	Statistics					

Tag Name	Current Value	Tag Name	Current Value
HE_type	Ecowitt RF Sensor	HE_UltravioletIndex	null
HE_devType	Sensor	HE_BatteryWindIco	null
HE_devSubType	water	HE_PressureAbs	null
HE_LastEventAt	1/17/2023 9:16:46 AM	HE_WindGust	null
HE_Humidity	35	HE_Orphaned	false
HE_Battery	57	HE_BatteryWindOrg	null
HE_Temperature	null	HE_LightningEner	null
HE_Pm10	null	HE_RainEvent	null
HE_AqiColor	null	HE_SimmerIndex	null
HE_RainYearly	null	HE_BatteryTemp	null
HE_WaterColor	null	HE_LightningCount	null
HE_CarbonDioxide	null	HE_LightningDistan	null
HE_OrphanedTemp	null	HE_Status	null
HE_SimmerColor	null	HE_HumidityAbs	null
HE_WindDanger	null	HE_UltravioletDang	null
HE_HeatDanger	null	HE_WaterMsg	null

"Tags" are name-value pairs associated with devices, programs, groups, folders, rooms, and displays that your programs can manipulate. You can view and modify them here but they are usually manipulated by programs.

OK Cancel

##end##