

# Zynect Sensors 2021

## USER MANUAL

### Sensors:

- Thermote - wireless temperature sensor (-55°C to 125°C)
- Thermote X - wireless temperature sensor (-200°C to 200°C)
- Soilmote - wireless soil moisture sensor (0% to 100% VWC)
- HumidityMote - wireless humidity sensor (0% - 100% RH)



# User Manual:

## Thermote, Thermote X, Soilmote, HumidityMote


Zynect sensors are durable, accurate wireless sensors with long battery life that can be used indoors or outside. They provide data via a smartphone app, and allow you to set notifications and share information with others. Purchase at [Zynect.com](http://Zynect.com)

We hope that your experience using your sensor will be enjoyable.

### For setup, you will need

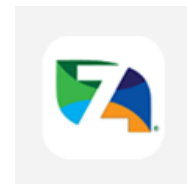
- Screwdriver
- Smartphone or tablet with Android or iOS operating system
- 1 to 5 minutes

### Setup: Turning on your Sensor



1. Ensure Bluetooth  is enabled on your Android or iOS device. Depending on your phone model, wireless carrier and country, location may need to be turned on also.
2. Take your Zynect Sensor out of the packaging and open the battery compartment with your screwdriver. (Note: Screw is captive, and will not remove even when completely unscrewed.) Battery compartment is sealed, so you may need to pop off the cover once the screw is loose. Remove the paper between the battery and the device. Confirm all batteries are securely in place. Press the lid into place and screw the battery compartment closed.
3. Once the batteries are secured the sensor will play a short tune. This confirms the sensor is in configuration mode and is ready for setup.

### Setup: Create a Zynect Sensors Account

4. Download the Zynect Sensors app on your Android or iOS device.
5. Open the Zynect Sensors app. You can create an account with Google Sign in, manually add your email and password, or if you're using an iOS device sign in with Apple.




### Setup: Connecting your Sensor to Typical Home Wi-Fi

6. Go to the Setup section  within the app and click on the name of your sensor (your sensor name is the 5-letter code on the back of the device).
7. Select the search icon  next to the SSID field to find your Wi-Fi network. If your network does not appear after searching, you can also manually type it in. Note that this field is case-sensitive.
8. Add your Wi-Fi password. If you are using an open network..

9. Click 'Test' to confirm the network connection works.
10. Once the test succeeds click 'Save'.

### **Setup: Connecting your Sensor to Enterprise Wi-Fi**

11. Go to the Setup section  within the app and click on the name of your sensor (your sensor name is the 5 character code on the back of the device)
12. Select the search icon next to the SSID field to find your Wi-Fi network. If your network does not appear after searching, you can also manually type it in. Note that this field is case sensitive.
13. Add your EAP identity, username, and password. On some networks your username and identity are the same thing (e.g. an email address), but identity might also be blank if your network uses "Anonymous identity.". Consult with your IT administrators.
14. Click 'Test' to confirm the network connection works.
15. Once the test succeeds click 'Save'.

### **Setup: Connecting your Zynect LoRaWAN Gateway to Wi-Fi**

16. Remove your Zynect LoRaWAN Gateway from the packaging and plug it into the wall, preferably within 50ft of your Wi-Fi router.
17. Put the LoRaWAN Gateway in setup mode by plugging it in and holding down the SETUP button for 10 seconds. The light should start flashing orange and the Minihub network should appear in your Wi-Fi scans.
18. The password for the LoRaWAN Gateway (Minihub) is printed on the back of the device under the heading Wi-Fi password. Connect your computer, phone, or tablet to the Minihub network using that password.
19. Open a web browser (preferably Google Chrome) and type 192.168.4.1 into the address bar, this brings you to the Gateway setup page.
20. Select your Wi-Fi network and enter your password. Leave the password field blank if you're using an open network.
21. Click the 'Save and Reboot' button.
22. The gateway will blink GREEN for a few seconds while it connects to this network. Then, it will blink GREEN<->RED for a few seconds while it connects to The Things Network.
23. If your configuration was successful, the LED will be solid GREEN which means that the gateway is successfully connected to the LoRaWAN network.
24. This process is described in more detail here:  
<https://www.thethingsnetwork.org/docs/gateways/thethingsindoor/#activate-your-gateway-in-under-5-min>.

### **Setup: Connecting your Sensor to LoRaWAN**

25. If you are using the Zynect LoRaWAN Gateway follow setup instructions (16-24). If you are using a different type of LoRaWAN Gateway, confirm it is up and running, and connected to The Things Network, prior to proceeding with the next steps.



26. Go to the Setup section Setup within the app and click on the name of your sensor (your sensor name is the 5-letter code on the back of the device).

27. Next to 'Network' select 'LoRa'.

28. Click 'Test' to confirm the network connection works.

29. Once the test succeeds click 'Save'.

### Setup: Installing your Zynect Sensor

30. All Zynect Sensors are IP67 waterproof and dustproof, built to be durable in any environment.

31. Thermote and Thermote X

- a. Installation will vary depending on how you plan to use your Thermote/Thermote X. Keep in mind that placing the enclosure in extreme heat or cold will drain the battery faster. We recommend only placing the temperature probe in the environment you wish to monitor and securing the enclosure outside of your equipment.


32. Soilmote


- a. Installation will vary depending on how you plan to use the Soilmote. Place the entire soil probe (green part) in the soil with the red part sticking out above the soil.
- b. Place it in the center of the sample. The green sensor should have at least two inches of soil on all sides. Placing the sensor on the side or bottom of a container will produce inaccurate readings.
- c. Note that the unit measures volumetric water content and is affected by soil compaction. Soil which is loose will measure a different soil moisture level to the same soil when compacted.

### Setup: Accessing your Data and Setting Custom Alerts

33. Accessing your data



- a. Go to the 'Dashboard' Dashboard section of the app. If you have more than one Zynect Sensor you'll see a quick data view for your entire collection here.
- b. Click on your sensor's name for detailed data.
- c. The number at the top of this page is your sensor's current reading.
- d. Directly below the dial you can see when your sensor last reported data.
- e. Click on the calendar icon  to change the date range you wish to view. Select a start and end date and then click 'Set Range'.

- f. You can also select buttons (Month, Week, Day, Hour) below the graph to change your data view.
  - g. Click the mail icon  in the top right of the graph to email the data in a csv file to yourself.
34. Setting custom alerts
- a. The red marker indicates the 'max' alert and blue marker indicates the 'min' alert.
  - b. Press and hold each marker and move it to the desired alert threshold.
  - c. The first time you set an alert you will be prompted to add a contact. You must add a contact to receive these alerts, we recommend starting with yourself.
  - d. Below the graph you will see other alert options (Sensor is Out of Bounds, Sensor goes Offline, Sensors comes Online), toggle these on and off by clicking the slider.
  - e. Alerts will be sent to you via SMS text message.

## Setup: Sharing your Data


35. At Zynect, we're committed to making it easy for you to share data with others. There are two ways to share your sensor data, adding contacts or using the share code.

36. Enable your share code

- a. Go to the Dashboard section of the Zynect Sensors app.
- b. Click on your sensor's name.
- c. Scroll to the 'Danger Zone' section at the bottom of the screen.
- d. Check the box to unlock this section.
- e. Click 'ENABLE SHARING'.
- f. A randomized 6 character code will be generated.
- g. For others to use this share code they must download the Zynect Sensors app and create an account. Within the 'Dashboard' section they can click the 'Add Using Share Code' button, this is where they should type the 6 character code.
- h. The share code enables others to view your sensor data and set their own custom alerts.



37. Adding contacts

- a. Click the 'Add Contacts' button at the bottom of the sensor data page.
- b. There are two ways to add contacts, manually typing names and phone numbers or importing contacts and then searching.
  - i. Manually add contacts
    - 1. Select 'New Contacts' at the top of the page
    - 2. Add name and phone number.
    - 3. Click 'Create'
    - 4. Click the face icon  to add additional contacts and repeat the process above.

ii. Importing contacts


1. Select 'Search Contacts' at the top of the page.
2. When the 'Import Contacts' popup appears, select 'OK'.
3. Use the search bar at the top of the page, type the name of the individual you wish to add and click 'return' on your keypad.
4. Click the circle next to their name.
5. Click 'Add'.

iii. The contacts you add to your sensor will receive texts alerts based on the custom alerts you set.

38. Remove contacts

- a. To remove a contact click the X icon next to the user's name in the Contact List section.

### Setup: Renaming your Zynect Sensor

39. Go to the 'Dashboard' section in the Zynect Sensors app.
40. Click on your sensor's name.
41. Select the pencil icon  in the top right corner.
42. Type a new name and select 'OK'.

### Setup: Changing the Time Interval of your Data Readings

43. The default is set to report data every 10 minutes. Depending on your use case you may want to increase or decrease the frequency of data readings.
44. To change the time interval you need to place your sensor in configuration mode. Start by placing a magnet on the back of your sensor on the 'RESET' sticker. Your sensor will play a short tune indicating it is in configuration mode.
45. Confirm Bluetooth is enabled on your Android or iOS device.
46. Open the Zynect Sensors app and go to the 'Setup tab'.
47. Click on your sensor's name.
48. Next to 'Send Every' click the dropdown menu to select a new time interval.
49. You may need to re-enter your Wi-Fi password if it is blank.
50. Click Test.
51. Click Save.
52. Remove the magnet.



### Maintenance: Calibrating your Zynect Sensor

53. All Zynect Sensors come calibrated. However, you may eventually need to re-calibrate your sensor if you notice your readings start to drift. This can be done at home, as the sensor has an automated calibration routine built in.

54. Start by placing a magnet on the back of your sensor on the 'RESET' sticker. Your sensor will play a short tune indicating it is in configuration mode.
55. Confirm Bluetooth is enabled on your Android or iOS device.
56. Open the Zynect Sensors app and go to the 'Setup' section.
57. Click on your sensor's name.
58. Scroll down to the bottom of the setup page and click the 'Calibrate' button
59. Thermote and Thermote X
  - a. Ice bath calibration is a standard method using a mixture of crushed ice and water. The ice bath should stand for 10 minutes before commencing the calibration. Stir occasionally to ensure it is an even temperature.
  - b. Place the temperature probe in an ice-bath and allow it to acclimate for at least two minutes. Make sure that the sensor is in the middle of the bath, and not touching the sides.
  - c. Press 'Continue' in the app.
  - d. Once calibration is complete you will see a 'Calibration Complete' popup.
  - e. Remove the magnet to end configuration mode.
60. Soilmote
  - a. The Soilmote is not field calibrated.

### **Maintenance: Cleaning your Zynect Sensor**

61. Your sensor is IP 67 waterproof and dustproof. It can be washed with cool water. Do not wash with hot water - the temperature change may force water past the seal. Keep the battery compartment clean, and always make sure the battery compartment screw is firmly screwed down.

### **Maintenance: Battery life**

62. Zynect sensors are designed for long battery life. The following factors will negatively affect battery longevity:
  - a. Leaving the unit in configuration mode for a long time. Configuration mode, where the unit is paired or is waiting to be paired with a smartphone is **extremely** battery intensive.
  - b. Freezing temperatures. All battery chemistry is negatively affected by cold temperatures, reducing available power.
63. To extend battery life, increase the duration between updates - you should aim to update at twice the rate you need data. So for example, if you are measuring temperature and need a reading once an hour, set the unit to report every 30 minutes. The unit reports every 10 minutes by default, so this will significantly increase battery life.

### **Settings: Changing Measurement Units, Adjusting Dark Mode, and Updating Password**



64. Go to the 'Account' section  within the Zynect Sensors app

a. Changing measurement units

- i. For the Thermote and Thermote X you can choose to view your data in either Celsius or Fahrenheit. Within the 'Preferences' section select °C for Celsius or °F for Fahrenheit.



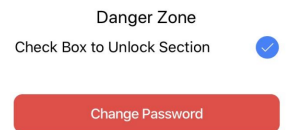
b. Adjusting dark mode

- i. You can customize the background color of your Zynect Sensors app at any time. Next to 'Dark Mode' choose 'Off' for a white background or 'On' for a black background.



c. Updating password

- i. To update your password, check the box in the 'Danger Zone'.
- ii. Click 'Change Password'.
- iii. Type your new password.
- iv. Confirm your new password.
- v. Click 'Save'.



## Specifications

TYPE	SYMBOL	VALUE
Width x Height x Depth	Inches	3.11 x 4.96 x 1.10
Weight (Thermote)	Ounces / grams	9.8 (With batteries) / 282
Cord length plus probe (Thermote)	Inches	38.5
Cord length plus probe (Thermote X)	Inches	78
Cord length plus probe (Soilmote)	Inches	85
Probe sensing range (Thermote)	Degrees Celsius	-55 to 125
Probe sensing range (Thermote X)	Degrees Celsius	-200 to 200 possible. -100 to 140 recommended.
Probe sensing range (Soilmote)	Volumetric Water Content %	0 to 100
Probe sensing range (HumidityMote)	Relative Humidity %	0 - 100



## Sensor Accuracy

- The Thermote and Thermote X are accurate to within 2 degrees or 2%, whichever is greater, and can easily be recalibrated using an ice bath - this feature is included in the phone app as a one button “calibrate” step. After recalibration the Thermote will be accurate to 0.5 degrees C and the Thermote X to 1 degree C.
- The Soilmote is calibrated to within 10% of a reference result. Note that soil compaction affects the volumetric water content (VWC), so the same soil at different compaction levels will read differently.
- The HumidityMote is accurate to within 2% RH.

## Precautions

- Do not subject the unit to excessive force, shock, dust, temperature or humidity out of specification. This may cause permanent damage.
- To clean, wash with cool water. Do not use solvents.
- Do not tamper with the unit's internal components, it is dangerous to do so and could impact unit functionality.
- Keep out of reach of children.
- When disposing of this product, please do so responsibly.

NOTE: The technical specifications of this product and the contents of this user manual are subject to change without notice.

## Troubleshooting

Issue	Solution
Unit will not connect to Wi-Fi - home network.	<ul style="list-style-type: none"><li>• Check network password is correct. Click the eye icon to see the password.</li><li>• Check you are allowed to connect to the network, and network name (SSID) is correct.</li><li>• Check security type is correct for your network.</li><li>• Make sure both your sensor and mobile phone are within range of the Wi-Fi network.</li></ul>
Unit will not connect to Wi-Fi - enterprise network.	<ul style="list-style-type: none"><li>• Check all items for home network.</li><li>• Make sure the device is permitted to be on the network by allowing the MAC address. The device MAC is printed on the back of the unit. If your network blocks the device, it may appear to connect, but will not actually do so. This is a security feature of your network.</li><li>• Check your network does not have a Captive Portal. This is a security feature which will block</li></ul>

	all headless devices from connecting.
When reset magnet is placed, unit does not play a short tune after about two seconds.	<ul style="list-style-type: none"> <li>• Magnet is placed incorrectly. Reposition to engage the magnetic switch inside the unit..</li> <li>• Batteries are flat. Replace batteries.</li> </ul>
When reset magnet is placed, unit plays tune repeatedly, but it is not possible to pair over BlueTooth.	<ul style="list-style-type: none"> <li>• Replace batteries.</li> </ul>

Purchase a Zynect Sensor: <https://zynect.com/#buynow>

**RoHS C € FCC**

**Revision History:**

May 5, 2020	Initial Version
October 20,2021	Revision 1



**SIMPLE. DURABLE. ACCURATE.**

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