XH300 Operation Instruction

Wireless Soil Moisture Meter with Thermometer

Introduction

Congratulations on purchasing this compact 433MHz soil moisture meter station with temperature, which displays time， indoor temperature , outdoor temperature and outdoor soil moisture readings。With four easy to use keys，this product is ideal for home or office. The XH300 inddoor station can receive up to 3 remote sensors.

Inventory of contents:

1. 1pc indoor station
2. 1pc remote sensor
3. Instruction Manual

Function:

1. Indoor temperature
2. Outdoor soil moisture reading and temperature
3 Min/Max record of temperature and soil moisture
4. Switch from ˚C to ˚F for temperature unit
5. Quartz time, calendar date.
6. Flip out desk stand or wall mount.

Intended Use

The XH300 sensor detects soil volumetric water content (VWC) through sensing the dielectric constant of the media using capacitance domain technology. The sensor is built on PCB, it is reliable in almost any soil. The system has a self learning process built to eliminate the influences of different soil or media. Also on the remote sensor, it measures outdoor temperature, which is received and displayed on by the receiver for easy reading purpose. Since the temperature sensor is located inside the moisture sensor housing, when exposing to direct sun light, the outdoor temperature reading will be a few degrees higher comparing to normal air temperature. So strongly recommending to put the sensor in sun shine shaded locations

The remote sensor data is updated around every 90s. After watering the soil, the sensor takes about 4 readings. If the 4 reading data is consistent, new data will be updated accordingly. So there is a delay between watering the soil and having the new data displayed. The typical time needed before an update is about 4~5 minutes

It is ideal for use in your garden or plants pots in house. The transparent plastic case is made from PC which is resist to environment aging. It is suitable for indoor and /or outdoor use purpose.

Battery Safety

- Correct polarity must be observed while inserting the batteries.
- Batteries should be removed from the device if it is not used for a long period of time to avoid damage through leaking. Leaking or damaged batteries might cause acid burns when in contact with skin, therefore use suitable protective gloves to handle corrupted batteries.
- Batteries must be kept out of reach of children. Do not leave the battery lying around, as there is risk, that children or pets swallow it.

Power Supply

- Sensor: LR3, AAA alkaline batteries 2pcs
- Receiver: LR6, AA alkaline batteries 2pcs

If the item is sold with battery included, there is an insulator under the battery, remove it before use.

Quick Setup

Hint：Use good quality Alkaline batteries and avoid using rechargeable batteries。

1. Have the display unit and remote unpacked from the gift box.
2. Place the batteries into the indoor temperature station first. All LCD segment will be turned on for 4 seconds, then the Outdoor Reception Signal Icon displayed, indicating that receiver is trying to find the remote sensor. Please do not press any key, which will interrupt the matching process between the sensor and receiver. Then place the batteries into the remote sensor, and the indicator LED will be lit for about 20s. After that, transmitter will send out temperature reading and air sensor reading (which is the absolute lowest possible reading) first. If the receiver decodes the sensor data successfully, the sensor temperature and soil moisture reading will be displayed. The outdoor temperature and soil moisture data is toggled for display for 3 seconds. The matching process will take 400s before automatic completion.
3. If a key is pressed before the station receives the sensor data, the receiver will terminate the matching process and it will take 10 minutes before the receiver re-synchronizes with the outdoor sensor again. If a reset is needed for receiver or transmitter, pull out the batteries and wait 10 seconds before re-insert the battery to make a proper reset.
4. After matching process is completed, then insert the sensor into the location you want to monitor the soil moisture. The depth of the sensor should be around 8 ~10cm below surface. make sure the soil is tight around the sensor because it is most sensitive to soil adjacent to the sensor. Stones or air pockets next to the sensor will affect the accuracy of the readings. Because it is sensitive to the dielectric permittivity, care should be taken not to install sensor in or near metal. Pour water into the soil until the surface glistens and no more water can permeate. The sensor now will senses the maximum water content level, and after a few minutes(about 4 minutes), the highest water level will be displayed on the receiver LCD: 99%(please note that the “Wet Soil” reading of 99% is not necessary an exact soil moisture content level, it only means that this is the most wet conditions you can have for this part of the soil). There is a self calibrating process built inside the sensor and the time needed for finishing the self calibrating process could be varied due to data stabilizing reason. The longest time needed for this self calibrating is 20 minutes.
5. Now it is ready for the sensor to monitor the soil moisture. When water level drops, the wet soil data will drop accordingly. Please note that the wet soil reading is not linear to the water content. User should be able to tell by him/herself which reading is to be used for watering/not watering condition.
6. If you need to put the sensor into another location, in order to eliminate the difference between the soil, take out the battery and wait for 5s and then restart the above five steps again. Without initiating the self-learning procedure, this could lead to permanent reading error!!
7. Important: The sensor can be damaged if it is pushed directly into hard native soil. Please do not use hammer or other blunt hard instrument during the installation. Also as the soil surrounded to

the sensor could be changed due to reasons like worms made a hole or the roots of plants extended, it could lead to the moisture level reading is lower than initially learned, telling by the highest level won't reach 99% even full wetness condition reached. When this happen, please take out the battery and start the learning process again to eliminate the influence.

8. If you have ordered more than one remote sensor, and actually using only one sensor for the time being, please make sure that the sensor with address 1 is used always. If sensor 2 or 3 used, the receiver will try to receive the other not existing sensor and this will lead to short battery life on the display unit.

Key Operation

There are four different function keys available: Mode, CH/+, ˚C/˚F and Min/Max/-.

Mode key (setting):

1. During the normal working mode, press and hold for the MODE key about 3 seconds to enter the Manual setting mode.

2. During the normal working mode, short press MODE key to toggle display different time display format: hh:mm:ss, hh:mm:weekdate. yy:mm:dd.

CH + key (Channel, plus):

During the normal working mode, press shortly to toggle between different channel readings if there is more than one channel of remote temperature sensor learned before.

During manual time setting mode, short press to toggle the selection or increment the setting value.

˚C/˚F key (temperature unit):

During the normal working mode, press ˚C/˚F key once, the display unit will switch from ˚C to ˚F for temperature unit. Press same key again, will switch back to ˚C.

Min/Max key - (Min/Max temperature, minus):

1. During the normal working mode, press shortly to display the minimum temperature recorded for indoor and outdoor records. Press again to show maximum recorded data. Press third time, it will switch back to current temperature.
2. When Min or Max recorded temperature displayed, press and hold this key 3 seconds, the recorded Min and Max temperature data will be replaced by current indoor and outdoor temperature.

Manual setting:

1. In normal display mode, press and hold the **MODE** key for about 3 seconds. The "12h" or "24h" digit will be flashing. Press +(CH) or –(MIN/MAX) key to set the desired hour display mode.
2. Press MODE key again to confirm and go to the **TEMPERATURE UNIT (˚C/˚F) SETTING**. The temperature unit digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to set the desired temperature unit ˚C/˚F display mode.
3. Press MODE key again to confirm and go to the **DD/MM SETTING**. The DD/MM digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to set the desired day-month or month-day display mode.
4. Press MODE key again to confirm and go to the **HOUR SETTING**: The hour digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the hour (Press and hold to allow fast advancing). Press MODE key to confirm and go to the MINUTE setting.
5. Press MODE key again to confirm and go to the **MINUTE SETTING**. The minute digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the minute (Press and hold to allow fast advancing). Press MODE key to confirm and go to the WEEK DATE setting.
6. Press MODE key again to confirm and go to the **WEEK DAY SETTING**. The week date digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the day. (Press and hold to allow fast advancing). Press MODE key to confirm and go to the YEAR setting.
7. Press MODE key again to confirm and go to the **YEAR SETTING**. The year digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the year.(Press and hold to allow fast advancing). Press MODE key to confirm and go to the MONTH setting.
8. Press MODE key again to confirm and go to the **MONTH SETTING**. The month digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the month. (Press and hold to allow fast advancing). Press MODE key to confirm and go to the DAY setting.
9. Press MODE key again to confirm and go to the **DAY SETTING**. The day digit of the time display will be flashing. Press +(CH) or –(MIN/MAX) key to adjust the date. (Press and hold to allow fast advancing) Press MODE key once more to return to normal display.

To wall mount:

1. Fix a screw (not supplied) into the desired wall, leaving the head extended out by about 5mm.
2. Hang the display Station onto the screw. Remember to ensure that it locks into place before releasing.

Maintenance and Care

1. Extreme temperatures, vibration, and shock should be avoided to prevent damage to the units.
2. Clean displays and units with a soft, damp cloth. Do not use solvents or scouring agents; they may mark the displays and casing.
3. Do not submerge in water. The remote sensor has IP4 level for outdoor use purpose, however it is absolutely not allowed to be submerged into water, which can lead to permanent failure of the sensor.
4. Do not subject the units to unnecessary heat or cold by placing them in the oven or freezer.
5. Opening the casings invalidates the warranty. Do not try to repair the unit..

The effective wireless working distance is 300feet. Keep in mind that the 300 feet is in free open air with no obstructions and that radio signal cannot bend around objects. Actual transmission range will vary depending on what is in the path of the signal. Each obstruction (roof, walls, ceilings, thick trees, ground etc.) will effectively cut signal range in half.

Specification

1. Indoor temperature range: -10°C ~ +60°C
2. Remote temperature range: -40°C ~ +65°C
3. Temperature accuracy: +/-1.0°C
4. Power requirements (receiver): 2 x "AA"，（remote): 2 x "AAA" alkaline batteries
5. Transmission frequency: 433.92MHz
6. Transmission range: up to 100 meters (300 feet) in free open air
7. 1 years battery life for both outdoor and remote sensor (alkaline battery used)
8. RoHS Compliance
9. Time accuracy for quartz:+/-1.5s per day

Disposal

1 Disposal of waste electrical and electronic equipment

In order to preserve, protect and improve the quality of environment, protect human health and utilize natural resources prudently and rationally, the user should return unserviceable product to relevant facilities in accordance with statutory regulations.

The crossed-out wheeled bin indicates the product needs to be disposed separately and not as municipal waste.

2 Used batteries/rechargeable batteries disposal

The user is legally obliged (battery regulation) to return used batteries and rechargeable batteries. Disposing used batteries in the household waste is prohibited! Batteries/rechargeable batteries containing hazardous substances are marked with the coursed-out wheeled bin. The symbol indicates that the product is forbidden to be disposed via the domestic refuse. The chemical symbols for the respective hazardous substances are Cd= Cadmium, Hg = Mercury, Pb = Lead.

You can return used batteries/rechargeable batteries free of charge to any collecting point of your local authority.