

twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

Medidor de actividad de agua modelo inteligente ND-HD6

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Operating instruction for Water Activity Detector



Figure 1

I. Technical indicators

1. Work environment: Temperature 0~50℃
Relative humidity 0~95%RH
2. Output mode: Micro printer
3. Display mode: Large-screen LCD 128×64DOTS
4. Measuring range: Temperature 0~50℃
Water activity 0~0.980aw
5. Measurement accuracy: Temperature ±0.5℃
Water activity ±0.015 (@25℃)
6. Repeatability: ≤0.015
7. Temperature coefficient: ≤0.0005/℃
8. Measurement points: 1
9. Print function: a. Print at the end of the measurement
b. Real-time print
10. Supply voltage: 110~230VAC±10%
11. Power consumption: ≤15W
12. Meter Dimensions: 320mm×120mm×340mm
13. Package: Portable aluminum boxes

II. Install

1. Putting the plug of WSC-4 water activity sensor into the sensor's socket which is on the back panel of the instrument. It should be pushed by aiming at the plug's notch, and tighten the nut. Do not pull out the plug by pulling the meter's wire, or by rotating the plug
2. One end of the printer wire should be connected to signal control socket which is on the back panel of the instrument. Then, connecting the another and of printer wire with the printer. Connecting the printer power wire with the corresponding socket on the back panel of the meter. Notice: Plugging the RED plug into the RED socket, Plugging the BLACK plug with the BLACK socket.
3. Before plug in the 110~230V AC power line of the instrument, please make sure the power switch of the instrument is in "off" state. Note: good grounding should be provided for the power.

III. Use

1. Function of button

Selection button: mainly used to select the item during the process of implementation;

Confirmation button: mainly used to implement the selected item;

Increase/decrease button: mainly used to adjust current time and measurement time

2. Operation

After plugging in the instrument, turning on the power switches of the instrument and the printer, there will be three optional function items and the current time show on the screen. The three optional function items are "Measurement" "Correction" and "Setting". Users can select functions by "Select" button (the selected item will be highlighted).



Figure2: putting the object into plastic container

- a. Measurement: First, putting the object into plastic container (As show in the figure 2, the object should be crumbed before measuring. The volume of the object should be more than 60% volume of the plastic container).

Then put the plastic container into water activity sensor and cover the sensor

After pressing the “confirmation” button to choose the measurement function, the water activity detector will be in measuring status. The measurement time will be in 10 to 30 minutes (It can be set by the▲▼ button by entering the setting time item which is under the Setting function). During the process of measurement, the result of the water activity, temperature, measurement time and printing option will show on the screen. The printing option includes printing (printing the result after the measurement process is completed), no printing (Not printing the result after the process is completed), and stop measurement. The measurement option can be selected with the “Select” button. After the process of measurement is completed, the result will show on the screen and print the final measurement results(If you chose the printing option). At this time, pressing the “confirmation” button to return to the homepage for preparing the next process of measurement.

b. Correction: This function is set for correcting the instrument’s measurement precision. If there is not a big change of the environment temperature, it should be corrected once per two months.

Note: The new instrument has been corrected and can be used directly

Instruction of how to correct:

Pushing the “Select” button to choose the correction function, then pressing the “confirmation” button to enter into the next menu. In this page, it shows two kinds of saturated salt for correction. After selecting proper saturated salt item, put the plastic container with the prepared saturated salt solution into the water activity sensor (As shown in the figure2, the plastic container must be uncovered with the plastic container cover during the process of correcting). After covering by the sensor’s cover, pushing the “confirmation” button to start correcting process. The correcting time will be in 10 to 30 minutes(The method of setting correcting time is the same as the method of setting measuring time). During the process of correction, the result of the water activity, temperature, correction time and a functional option of stopping correction will show on the screen. After the correction is completed, pushing the “confirmation” button to return to the homepage. If you pushing the “confirmation” button during the process of correction, you can choose to stop or to continue the process. If you confirmed to stop the process, choosing “Yes” by pushing the “Select” button. If you want to continue the process, pushing the “select” button to choose “No”, the instrument will continue to connecting after pushing the “confirmation” button.

Normally, you can use the sodium chloride solution for correction.

Only if when you estimate the object's water activity could below 0.40, you should use the magnesium chloride solution for correction.

c. Setting: If you want to set the relevant parameters, pushing the "select" button to choose the "setting" function. Then pushing the "confirm" button to enter into the menu which includes the item of measure point, current time and measuring time. Then, pushing "▲" and "▼" to set the measure time, current time (year, month, day, hour, minute) and measuring time. After the setting is completed, pushing "confirmation" button to return to the setting menu, then select "return" button to return to homepage. The function of setting measuring time is for different customers' need. Normally, 10 minutes measuring time can guarantee the accuracy of result. If the sample need more time to be stable for measuring, you can extend the measuring time to less than 30 minutes.

IV. Preparation of Saturated Salt Solution

The standard of saturated salt solution is used for instrument correction in the form of fixed point of water activity. These fixed points of water activity represent the constant water activity of different saturated salt solution under certain temperature. Two kinds of saturated salt solution are used for the correction standard for the instrument. The following paragraph is the detail method of preparation :

The saturated salt solution is prepared with salt (AR) (such as AR sodium chloride and AR magnesium chloride) and pure water or distilled water. The liquid part of the prepared saturated salt solution shall cover the undissolved AR salt. The volume of undissolved salt should be 50~60% in the total saturated solution. Also, the total volume of saturated solution should be more than 60% volume of the whole plastic container. To obtain uniform salt solution, the pure water or distilled water, the temperature of which is a little higher than ambient temperature, shall be added when the AR salt solution is prepared. Then, the saturated salt solution shall be placed under normal temperature ambient after it is covered, and it only can be used 12 hours after it reaches the ambient temperature. Since the water activity is closely related with ambient temperature, there are certain requirements to the stability of the saturated salt solution to temperature. Considering the thermal inertia of the saturated solution, sudden change of temperature should be avoided.

Notes:

The saturated about 15 g AR sodium chloride and 10 g water can be used to prepare the saturated sodium chloride solution, and about 18 g AR magnesium chloride and 3~4 g water can be used to prepare the saturated magnesium chloride solution.

How to keep the saturated salt solutions: Please cover the plastic

container after finishing the process of correction, then put the plastic container into a closed container for the next process of correction.

V. Notice

1. Good grounding should be provided for the instrument.
2. Please keep the distance between the sensor and instrument more than 15cm. During the process of measuring, minimize the possibility of touching the sensor. Please keep the object and the instrument in the same temperature.
3. It is forbidden to measure the materials which water activity is above 0.98 (such as water).
4. Please do not touch the shell of water activity sensor when the instrument is operating. Do not open the sensor's cover during measurement or correction, if not the veracity of measurement will be affected.
5. After finishing the process of measuring, please stagger the top and bottom cover (as shown in the figure 1), do not make it closed. In case after the ambient temperature went down (especially on winter nights), there will be condensation inside of the sensor. It will damage the sensitive element of the sensor.
6. If the number of the object's water activity's result is bigger than 0.82, please put the desiccant inside of the sensor immediately after the process of measuring, then make the instrument in the measuring status for 5 minutes or make it closed for one hour to avoid the damage to the sensitive element of sensor
7. Please put some desiccation in the sensor when you take the instrument from cold temperature into the room which turns on the heater inside, in case the condensation will destroy the sensitive element of the sensor. Also, please wait for 3 hours before you install and energize the instrument.
8. If the sensor will not be used in a long term, magnesium chloride or drying agent shall be put into it, so as to make the inner of the sensor in a stable and safe environment. Please make the cover of the sensor staggered for 24 hours before you want to use it again.
9. Direct solar radiation shall be avoided. The instrument shall be stored and used in a cool and ventilated place.
10. When you pull out the plug, you should hold the plug rather than the wire, also you shouldn't rotate the plug. The plug is push-pull style, when you plug in, you should hold the knurling part. When you want to put off the plug, holding the cone part which at the end of the plug to aim the socket aperture.
11. Please make sure the sensor in a clean condition which can avoid the measurement deviation

VI. General Troubleshooting

If the measurement time appears as gibberish, please select the "measurement time" in the settings menu, then pressing "▲" button, it will turn to 30. After that, you can set the measurement time according to your need.

If the measurement data is unusual, please using the standard solution to calibrate the instrument.

If the instrument for patrol measurement works abnormally, it shall be turned off immediately. Then, check if the connection of the water activity detector is normal and if there is condensation inside the sensor, and pull it out and plug it again. Turn on the instrument again. If it still works abnormally, please contact our company.

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