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DIGITAL PH METER

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Abstract

A pH Meter is an electronic device which is used for measuring the pH.The pH is either the concentration of Hydrogen ions in an aqueous solution or the active number of Hydrogen ions in an aqueous solution. The pH scale can measure that how acidic or basic a solution is. The pH scale has range of from 0 to14. A pH 7 of solution is neutral; A pH less than 7 of the solution is acidic. A pH greater than 7 of solution is basic. PH is defined as the negative logarithm of the hydrogen ion concentration.Using digital pH meter we get the numerical value of pH with more accuracy where as in conventional methods we get only indication that the solution is alkaline or base. As it gives the exact number of pH so it is easy to maintain the solution at neutral level. Also it gives the accuracy up to 0.01 %. In this work we used a magnetic stirrer or mixerwhich is employed for rotating the magnetic field for stirring the solution while sensing the hydrogen ionconcentration.

INTRODUCTION

In current years, studies of technology for reducing the worldwide environmental burden are being promoted in every commercial subject and market creation of these technological achievements is becoming a degree difficulty. In such state of affairs, the glass electrode pH meter size method is dominantly widely used within the water monitoring discipline as an important indicator for understanding water environments.

Industrial pH meters are widely used in various fields such as chemistry, food, medicine, metals and pulp. Few years ago the litmus paper was used to check whether the solution in acidic or bases, but litmus can't give us exact value of pH so we have use pH meter. It can give exact pH value. A pH meter is a scientific instrument that measures the hydrogen-ion activity in water-based solutions, indicating its acidity or alkalinity expressed as pH.[1]The pH meter measures the difference in electrical potential between apH electrode and a reference electrode, and so the pH meter is on occasion called a "potentiometric pH meter". The difference in electric capacity pertains to the acidity or pH of the solution. What "pH" honestly stands for, but most people outline it as some thing like "electricity of hydrogen" or"potential of hydrogen."

A **pH meter** is an instrument used to measure acidity or alkalinity of a solution - also known as pH.pH is the unit of measure that describes the degree of acidity or alkalinity. It is measured on a scale of 0 to 14. The quantitative information provided by the pH value expresses the degree of the activity of an acid or base in terms of hydrogen ion activity. The pH value of a substance is directly related to the ratio of the hydrogen ion [H+] and the hydroxyl ion [OH-] concentrations. If the H+ awareness is greater than OH-, the fabric is acidic; i.e., the pH cost is less than 7. If the OH- awareness is greater than H+, the cloth is basic, with a pH fee more than 7. If identical quantities of H+ and OH- ions are gift, the cloth is impartial, with a pH of seven.

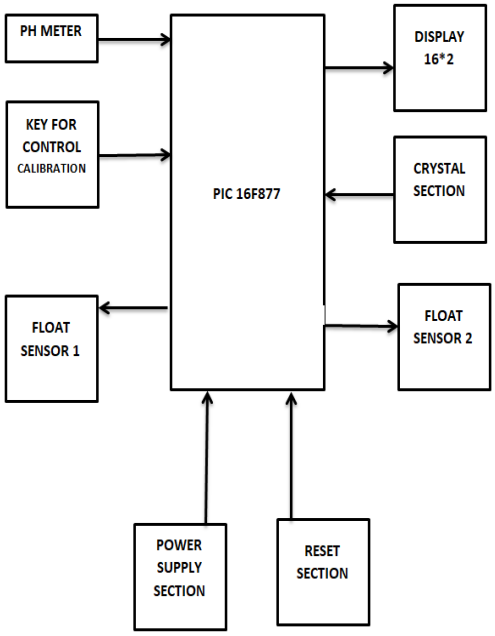
SYSTEM ANALYSIS

PH detection gives the information about quality of water. Water is limited resource and essential for Human, Agriculture, Industry and all Creatures existence on earth. Water quality monitoring is essential to control physical, chemical and biological characteristic of water. In the system along with water purification, efficient pH indicator is designed using signal conditioning circuitry. Also this system is useful in minimizing the water wastage.

pH is known to be quantity that determine the total amount of acidity or alkalinity in any liquid substance. The technology of measuring pH first existed with a litmus paper. However in the last century, pH meter have been develop to take and determine the pH of liquid or any other substance per second. Today's pH meter are comprised of total digital technology and the calculation of pH using the reading without actually attaching a computer per second.

The objective of experiment is to use a pH meter and become familiar with how to calibrate and operate the meter. By taking the pH of four samples the process of cleaning and recording the data can be practiced. In this the pH meter are inserted in to the standard solution. Then check the pH meter is given the exact value of standard solution.

BLOCK DIAGRAM



SYSTEM IMPLEMENTATION:

The pH sensor which is placed in solution in place the hydrogen ion concentration. The pH sensor will generate the voltage in terms of millivolts. These millivolts are given to the op-amp amplifier. The op-amp amplifier will make bigger the voltage state and deliver it to the ADC. The ADC will convert sign to virtual shape and provide it to the microcontroller will calculate the pH value in keeping with the method –log [H+] and display the end result on liquid crystal display show. The gadget improvement has two element one ishardwaredevelopment and second is software development.

SYSTEM OPERATION:

This system is developed because of in some previous days there is no one measuring instrument are available, which is measure the some parameters which available in the water, soil ,chemical ,food, medicine and pulp etc. The instrument is not available that's human facing the diseases. For this drawback we implement this intelligent system. Which

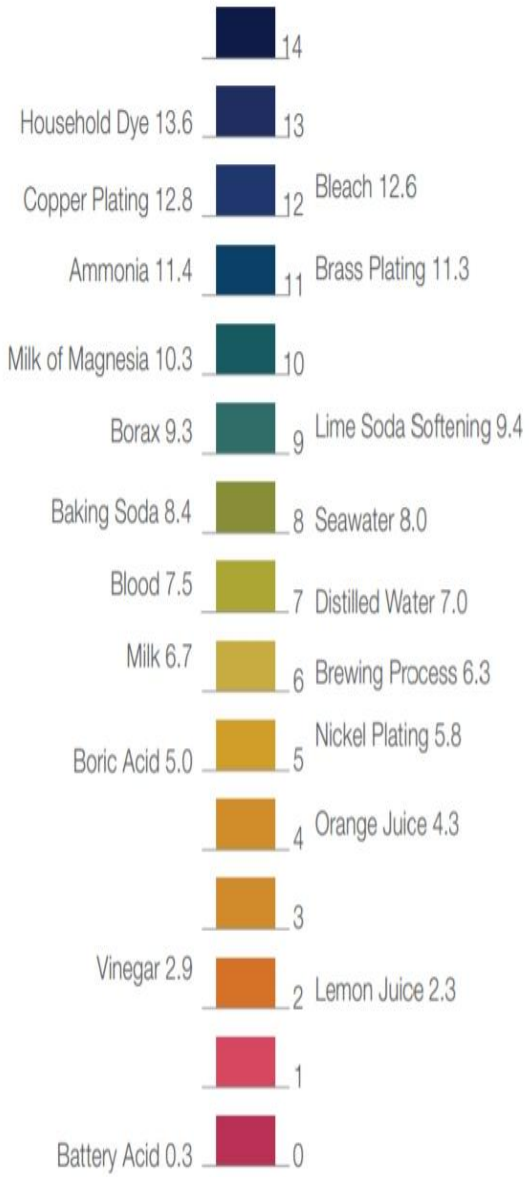
is gives the accurate measurement of the pH value.

The working of system is there are some parameters are used in this system, which is pH electrode, float sensor, power supply, crystal section key for control calibration, ADC, microcontroller, display. First the pH electrode is sense very low voltage and current. In this system first we start the machine and fill the water of tank. After filled tank check the pH of that water, if pH value is above 7 we add the solution in water. And then we get accurate pH of water. The trigger point of first sensor associated pump is activated. The water is a continuous to rise. The second sensor will be triggered OFF the source of water being pumped. Calibration is important part of analyse to fix instrument at particular standard use calibration key. With the help of standard pH solution.pH meter, electrical device used to measure hydrogen ion in acidity or alkalinity of solution a pH meter consist of voltmeter attached to a pH responsive electrode and reference electrode. The pH meter electrode responsive electrode is usually glass and reference is usually mercury- mercurous chloride. When the two electrodes are emerged in solution they act as battery. The glass electrode develops an electrode potential that is directly related to the hydrogen ion in the solution a volt meter measure potential difference between the glass and reference electrode.

CROSS COMPILATION

Across compiler is a compiler that runs on host system but produces binary instruction suitable for that system. That is machine on which we are compiling the software can't natively run the software it compiles and the software is compiled for another processor. This is one of the first challenges of cross compiling. Some program may need to run during the compiling process which then of course crashes the build process. Cross compilation tools commonly have their target architecture as prefix of their name. Cross compiler tools are used to generate executable for embedded system or multiple platforms.

READINGS



CONCLUSION

pH measurement is basic need of many industries. A pH meter is an electronic instrument used for measuring the pH of the liquid substances. pH meter is more useful than the other pH indicator because it gives accurate reading. Its accuracy

exactness and easy operating make it different from other method. Also by monitoring the variation in sensor output voltage with respect to changes in Environment temperatures the accuracy can be increased.

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