

A Study on the RTC remote system of Water Environment for Wireless Network

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Abstract—Abstract There is to solution the environmental data which the importance is seriously taken into consideration in the the 21st century that is set up whether or not be a welfare society advanced country according to quality of life elevations through environments in question to a preferential assignment for an environmental control will decrease of measures, and be proceeded so as to be urgent.

However, shall get measurement of a correct environmental pollution duty and reduction measures stopped on bases of the data which there is reliability, and decrease excessive pollution than what, and may overcome efficiency of waste of cost environmental pollution management. Environmental pollution data collected are regarded as important, and, specially, a collection of environmental data forecast a pollution circle, or to analyze future development is important very at an environmental policy decision or decision making step to be national besides pollution reductions.

Index Terms—About four key words or phrases in alphabetical order, separated by commas such as Maritime, Information, Communication, Science etc.

I. INTRODUCTION

A sensor network can be applied in a lot of fields because of physical be international characteristics that can connect the digital world. Can carry out monitoring safe gas using an invasion detection of a family or a gas sensor etc., and can be used to position recognition service or a physical distribution management etc. at spot of industry in, for example, home networks.

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Can be used to precipitation measurement or forest fires watch etc. by-type environmental monitoring intelligent again, and can be used widely to all kinds of medical system or field of science [2,3,4].

Currently there are air and the quality of water, a chimney discharge circle, photochemistry, earth atmosphere, the soil, a weather harmful atmosphere, acidity rain , multiple measurement networks such as a heavy metal to an environmental measurement network administered in our country, and be the prospects that is continuously enlarged additional of increase of measurement place and a relevant pollution circle.

The environmental infrastructure which was established currently all over the country is the misgovernment that a lot of costs are settling to system and measurement network construction the majority is lying scattered, and to utilize by early information over the nations.

Moreover, as cost and time settle about an environmental pollution circle of a far-off place very much by streets, be experiencing a lot of trouble to a construction and measurement/collection.

Therefore, did so that an application kept compatibility of various measuring instrument tiles so that it was possible, and utilized remote radio communication, and a lot of environmental pollution measurement networks can collect data through Wireless monitoring technology at these papers, and designed so that enabled data security real-time of the environmental information that there was to more various environmental pollution information-gatherings, and was measured reliability by exaltation, and monitoring of environmental data and analysis utilization can use.

Describe about the environmental measurement networks that this paper describes about structure of configuration for a quality of water environment measurement monitoring system and sensor Network Node in a Chapter 2, and used a sensor network in Chapter 3s. And present a study direction next and a conclusion in a Chapter 4 lastly.

II. ENVIRONMENTAL MEASUREMENT APPLIANCES CONFIGURATION AND AUTOMATIC TRANSFER SYSTEM

So as to be able to receive automatism in remote places as compose an environmental measuring instrument banner wireless send and receive, and establish a system. Currently the majority are collecting data in environments of a wire network like the following picture in case of environmental pollution measurement networks.

Other environmental pollution measuring instrument banners are using a way to collect direct data in measurement sonar pollution circles. Data transmission system that implemented at these papers utilized a public radio communication network from environmental pollution measurement appliances until the data collection center.

Used a wire network, and can reduce primarily management cost than the cases that are a system as use a public radio communication network if we establish a system.

Excessive for wire communication expenses regarding an each measurement spot a local self-governing body operating various environmental measurement nets be expending, and be degrees.

Shall be the wire ingratitude that shall expend communication expenses dragon, continuously added according to streets as is proportional, and in the present situations that there is widely radio communication network infrastructure be not good alternatives regarding an environmental pollution circle measurement spot.

Be located at these papers of a measurement spot, and use the radio communication network infrastructure which is independent of distances etc., and compose an environmental measuring instrument banner to this so as to be suitable, and establish a real-time measurement data transmission system.

The data communication that wireless terminal used a public network develops so that it is possible, and frequency of data communication uses 824.64~848.37MHz, receipt 869.64~893.37MHz substitution.

Collect real-time measurement data of environmental measurement equipment, and can back up at these papers a schedule period, and do re-transmission in case of the communication failure occurrence maximum to loss of measurement data can reduce.

Also, designed as applied a remote control function regarding a terminal so as to be able to make easily management regarding remote place measurement

equipment.

Compose equipment interface with environmental measurement appliances and a remote wireless terminal, communication interface of the remote wireless terminal and data collection center.

Set a remote wireless terminal into a hall dam so as to be able to monitor quality of water information in a relevant year in order to test a remote wireless terminal and the environmental information automatic transfer system that designed with highly precise quality of water measurement equipment called YSI-6000 interface.

III.A DESIGN OF PROTOTYPE SYSTEM

Composed a system developed a remote wireless terminal, and used a radio communication network to the communication method of an environmental field administered as used the existing wire network, and utilized data transmission service of a CDMA radio communication network, and to be able to operate a lot of measurement networks at economical maintenance costs.



Fig. 1 A Controllor System

The wireless terminal which designed at these papers uses a base station for the air by wireless data communication standards, and can transmit data, and range of using frequency uses transmission 824.64~848.37MHz, receipt 869.64~893.37MHz substitution.

And used that electric power CMOS 8-bit AVR microcontroller ATmega64-based RISC (Reduced Instruction Set Computer) Architecture in order to carry out communication interface with environmental measurement equipment and all kinds of control works.

Be connected to an address, structural data bus microcontroller process unit and early modems and antenna letting you connect by radio providing data stream from ports taking charge of an interface section with environmental measurement equipment.

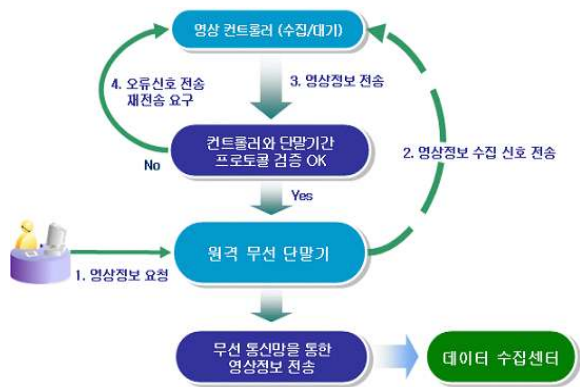


Fig. 2 Architecture of Remote Wireless Devices

Can monitor information regarding a real-time measurement spot to transmit, real-time measurement data, remote control information etc. through communication interface methods of a wireless terminal at these papers to the communication systems that measurement data looked through wireless terminals to the data collection center from measurement spots to the collection center, and implemented so as to deal with data of at the same time a lot of measurement spots.

Also, if normal data receipt was performed, were developed so as to store to the early database server which established, and implemented so as to leave a log regarding data to occur in between measurement data transmission receipt.

Measurement data are stored to the database that they established through a real-time measurement data monitoring program and communication programs to receive a measurement document.

Implemented data stored to database to bases so as to be able to refer to data.

Provide a lecture measurement position and the related information that determined at test measurement spots, and can monitor whether or not there is by receipt to real-time measurement data.

Implemented used a measurement data inquiry program, and to be able to see at the same time a development graph regarding a measurement item and numerical data to the screens which inquired of many hours quality of water measurement data of the hall dam which collected.

To the graphs that an occurrence pollution circle used mainly if it was the quality of water implemented so as to be able to easily grasp a lot of measurement item density development along a change of the depth of water.



Fig. 3 Real-time measurement data inquiry screen

If an occurrence pollution circle was the quality of water, showed so as to be able to grasp development along a depth of water change as used Contour Map.

If this is an atmospheric field, to grasp a measurement item density distribution map along an each measurement spot can utilize.

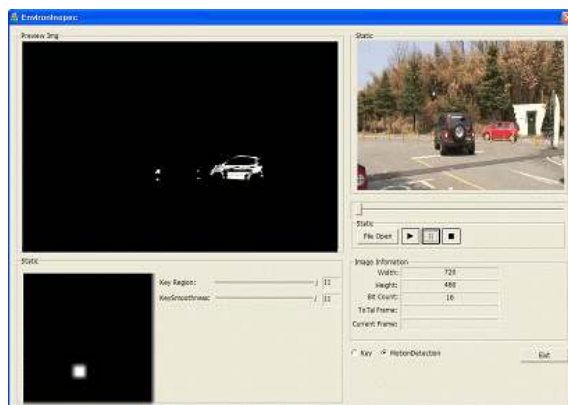


Fig. 4 Real-time measurement data inquiry screen

IV. CONCLUSIONS

Designed the system that did, and can apply to monitoring regarding various environmental pollution circles so as established standard database with designs, and to use environmental pollution data collected in case of real-time monitoring and analysis for this.

Also, did implementation so as applied remote wireless technology, and to be able to carry out monitoring and analysis to quality of water measurement networks among environmental pollution circles.

A system analysis to raise a use rate of a remote wireless terminal through working together with Ubiquitous sensor Network Neighborhood network and Web GIS is necessary in a study direction next.

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