CHAPTER I
INTRODUCTION

1.1 Background

Measurement, observing, and displaying of temperature is a part of system that common required in environment, in an electronic system, in spite of industry. Even though to design this project with background that temperature sensor is one of important system to build a condition seawater system, which would be observing and displaying temperature and deepness definitely as well as will be giving information to users.

In an attempt to manage of coast natural source potential with constantly maintain conserving of sphere principle, required a good knowledge about natural source potential(biological and non biological), sphere condition, society economy social condition and kind of culture where area will be carry out. One of important environment aspect to foreknow for become source managing will be do it correctly, it is dynamics of ocean. This is caused ocean looks like fluid without administration or ecology limit. Then, if piece of ocean in one of place is polluted will be affected spreading to surroundings. These affect will be preventable or limitable with learning motion frame of water mass. Dynamics of ocean condition seems with getting parameter's oceanography information at place. One of them is temperature, wherein temperature is important information in definite seawater condition.

Indonesia has largest sea in Asia continent, it is $\pm$ 3.288.683 km² . Means that we have a great sea and land natural source. But not look like seem, the real citizenship have many resident remains is poor. Many factors cause the problem of the citizen. A part of them may have a sophisticated instrument, and another was not yet. Also they do not have foreknow the condition on the sea water parameter, is it occur to parameter of living fish condition. Some people of fisherman taken chose the option to broken the coral with mining surrounding of coral (Syafputri, 2012). This is across with the law of ocean how to maintain the ocean conserving. There are some parameters of a good sea water condition one

of is temperature. Transition of temperature depend seawater suitability level as habitat aquatic organism, because every aquatic organism have maximum and minimum limit temperature. (Leonidas, 2006).

At present, development of technology related to increasing human amount closely, whom need it sophisticated instruments tools, which is it will be working automatic and simply. This is a desire of human in order to do something more effectively. Development in an electronics tools has been increasing quickly, consist of telecommunication, farmer, medic, oceanic, industry scope direct or indirectly.

Measurement system of the ocean sea-water must did under sea water and , by monitoring temperature of sea water, wherein ones of term condition in the habitat of sea to determine quantity of species in the water. Monitoring temperature of the seawater it is influenced by deepness. Therefore, it is impossible to measuring in time to live. Also a lot of fish live on specific condition, many of them live by coral reefs, wherein have a lot of little species like a zooplankton at there, caused of that a little fish like playing by coral reefs.

Beside the temperature of seawater also effect to coral reefs, wherein the coral is source of zooplankton as we knew that is the food of fish. Coral reefs are built by branching species, could be limited by both the influence of cold fonts and by seasonal upwelling which affect negatively those coral species. (Jimenes, 2001). Ocean up welling is a term to describe the water rising from the deep depths of the ocean floor because of specific wind patterns. This is something beneficial to phytoplankton because the deep cold water has nutrients and dissolved gases that, with sunlight, allow the plankton to photosynthesize (Vader134, 2012) And to design temperatue tool refference is it from the researh before about" Sistem air circulation at room with outomatic fan based on uC Atmega8535" with result, LM35 is a semiconductor ware which used as measurment range -55^0 until 150^0C, output is 10mV/10C and accuracy level ¼ at room temperature (NST, 2006). Silicon sealant is good coating of component from outside like a sea water. Glassclad® RC (PS233) is a methylsilicone resin which forms a coating with high temperature (250°C)serviceability. Its high dielectric strength, thermal resistance

and mechanical strength make it ideal as an electrical component and circuit board coating. Glassclad® RC reacts covalently with glass and siliceous surfaces to form a permanent bond. It has excellent abrasion resistance properties and can be applied to materials as a protective coating. It is typically applied by dipping or brushing followed by air dry and final cure at 150°C for one hour (MacMillan, 2009) The device available today in market that is HOBO Pendant Temperature/Light Data Logger that is a waterproof, two-channel logger with 10-bit resolution and can record up to approximately 3,500 (8K model) or 28,000 (64K model) combined temperature and light readings or internal logger events. The logger uses a coupler and optical base station with USB interface for launching and data readout by a computer so expensive than fisherman user.

For reason above, the writer interested to design tool which is able to measuring temperature in every depth waters even unable to measuring the intensities of light. Design hardware of temperature water ocean measurement with a Microcontroller ATMega8535, a measurement of the temperature, and light sensor. Displaying on LCD (Liquid Crystal Display) screen as data temperature information appear. Microcontroller ATMega8535 as brain in the system, were function is processing data from the input (sensor), then forwarded to LCD as display at the time showing the result of depth and temperature measuring. To save data of temperature and deepness all specific time, data will continue to EEPROM system to keep. Because will more helpful in collecting data information by researcher.

1.2 Problem Identification

Based on of the background above, this paper will be design the measurement of temperature and depth on sea water.

1. How to design Microcontroller able as a device measurement on variable sea water.

2. How to design LM35 temperature sensor circuit, were it is not used on the water directly.

3. How to design Optocoupler circuit as measuring the deepness of the object.

4. What the influence for decrease temperature of water.

5. What is different temperature of sea water in day light than night.

1.3 Limitation of problem

Based information above, writer will be making tools, that will measure temperature in the sea water. The tools using microcontroller ATMega8535 as center all of process, included processing of signal and displaying data.

Definition of fundamental work concept of temperature sensor (LM35) and light sensor just describe glance in this paper. Light sensor will not displaying amount of intensity, but writer will be designing it as a switcher component. The writer also describes the programming language, signal analog process until signal display on microcontroller ATMega8535 because the process have to use 8051 Editor ,Assembler ,Simulator (IDE) software.

Also in the research device only able to measuring the temperature of seawater by the researcher desire, then in this research only focus to how to design the instrument device have ability to measuring the sea water with depth variation.

1.4 Problem Formulation

Based on background of study above, in this research the problem can be formulation:

1. How to make the micro control as a brain of work in this measurement.

2. How's works concept in measure temperature of seawater circuit.

3. How's works of measuring of the depth of seawater measurement circuit.

1.5 Research Purpose

Can be defined the purpose of the research is:

1. To know what is the application of microcontroller ATMega8535.

2. To know what the function of sensor electro and application.

3. To make a simple tool to measuring of water's temperature every depth in the sea.

4. To Apply the Microcontroller's concept which explain various events in our daily live.

1.6 Benefit of Research

Some of the benefits that can be taken from the research are:

1. Can be applied in much field, for example detector habitat in the sea water by fisherman or research requirement.

2. Can be used as tools of temperature measurement in the machine diesel cooler.

3. Can be used as tools of temperature measurement digital liquid chemistry and physic research.