ROBOT GRIPPER USING MICROPROCESSOR 68000

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Bekp

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"I hereby declare that i have read through this report entitle "Robot Gripper using microprocessor 68000" and found that it has comply the pertial fulfilment for awarding the degree of Bachelor of Electrical Engineering (Industrial Power)"

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Supervisor's Name : .....

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I declare that this report entitle “Robot Gripper using microprocessor 68000” is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : .....

Name : .....

Date : .....

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ABSTRACT

manufacturing industry increasingly grow, with demand to various worldwide types of goods, delivery of the goods by using container in great amount be increasingly vital and cheapest road of manufacturer industry to the worldwide. Increasing effectiveness of the transfer process of container is main priority to make goods transfer system increasingly effective. The main idea want to suggest in this FYP is creating Crane model that fully controlled by computer and it can arrange cargo exactly to which place has programmed without any human control. Therefore, it will be able to reduce cost, man power and it is more effective. It also can reduce accident resulted from human carelessness. Human will often do offence caused by carelessness; while robot can do the same subject thousands times without doing many faults.

CHAPTER 1

INTRODUCTION

1.1Project Background

Robot gripper is often used in industrial sector to do repetitive work like transferring an object to another location. The used of the robot gripper is mostly to decrease the man power usage to do the repetitive work. This are to cut cost man power usage aside controlling the product quality. Many industries have been changing from the use of much manpower to the use of robot in certain part to increase product output and scoop large profit.

Robot is a machine programmed to do set fix functions efficiently without doing many faults and it can work continuing without tired aside product quality is guaranteed.

Robot is a worth of investment. Although it need large capital, but in long period it's very profitable .it only need a single cash, compared to manpower utilization that need salary paid every month.

No disciplinary problem, work follow directive, not fight said, tireless and capacity work much longer over human is characteristic for a robot. Hence, product output can be increased exponentially compared to manpower.

But maintenance for robot needs to be supervised and it contributes to fix cost, once it damaged need large sum of cash. Sometimes for trivial purpose, robot application is unprofitable compared to manpower. In that cases, the manpower utilization more compatible aside it low in cost.

There are certain thing cannot be done by robot, and manpower utilization still needed to tackle these problem. Therefore, robot can help increase the production but still need human to overcome it weakness. All matter cannot be resolved by using robot merely, industrial sector cannot live without manpower. The balance of robot and manpower utilization is important to achieve ideal production sector.

1.2 Objective

To design a robot gripper that can grab object firmly

To study about the suitable sensor or limit switch for motor sensor tuning

To study about the microprocessing programming which related to this project

To produce simple model of robot gripper using microprocessor

1.3 Scope

Using IDE 68k to simulate the motor movement for robot gripper
Execute certain test to measure the motor movement
Study the microprocessor to understand the concept and procedure or inserting data

1.4 Problem statement

Gripper design

Suitable motor

To set the suitable force when gripping the object

CHAPTER 2

LITERATURE REVIEW

2.1 Component

68000 microprocessor controller component

component	function
MC68000	A *microprocessor* in-corporates most or all of the functions of a central processing unit (CPU) on a single integrated circuit (IC).[1] The first microprocessors emerged in the early 1970s and were used for electronic calculators, using BCD arithmetic on 4-bit words.[6]

27C64(EPRom)/2864(EEPRom)	An EPROM, or *Erasable Programmable Read-Only Memory*, is a type of memory chip that retains its data when its power supply is switched off. In other words, it is non-volatile. It is an array of floating-gate transistors individually programmed by an electronic device that supplies higher voltages than those normally used in digital circuits.[7]
6264(RAM)	Static random access memory (SRAM) is a type of semiconductor memory where the word *static* indicates that, unlike *dynamic* RAM (DRAM), it does not need to be periodically refreshed, as SRAM uses bistable latching circuitry to store each bit. SRAM exhibits data remanence,[1] but is still *volatile* in the conventional sense that data is eventually lost when the memory is not powered.[8]
74LS138(Decoder)	In digital electronics this would mean that a decoder is a multiple-input, multiple-output logic circuit that converts coded

	inputs into coded outputs, where the input and output codes are different. e.g. n-to-2^n, BCD decoders.[9]
74LS541(Tri-buffer)	Octal-buffer[10]
74HC574(Latch)	a latch is a kind of bistable multivibrator, an electronic circuit which has two stable states and thereby can store one bit of information. Today the word is mainly used for simple *transparent* storage elements, while slightly more advanced *non-transparent* (or *clocked*) devices are described as flip-flops.[11]
7407	Hex-buffer[12]
74LS04	Inverter/not gate[13]
555(Timer)	The 555 monolithic timing circuit is a highly stable controller capable of

	producing accurate time delays, or oscillation.[14]
Resistor 330Ω ,10KΩ, 100KΩ	A resistor is a two-terminal electronic component designed to oppose an electric current by producing a voltage drop between its terminals in proportion to the current, that is, in accordance with Ohm's law:[15]
Capacitor 10µF, 47µF	A capacitor is a passive electrical component that can store energy in the electric field between a pair of conductors (called "plates"). The process of storing energy in the capacitor is known as "charging", and involves electric charges of equal magnitude, but opposite polarity, building up on each plate. A capacitor's ability to store charge is measured by its capacitance, in units of farads.[16]
Pushbutton switch	a simple switch mechanism for controlling some aspect of a machine or a process.[17]

7 segment display	is a form of electronic display device for displaying decimal numerals that is an alternative to the more complex dot-matrix displays. Seven-segment displays are widely used in digital clocks, electronic meters, and other electronic devices for displaying numerical information[18]

Table 2.1: component function

2.2 Schematic diagram

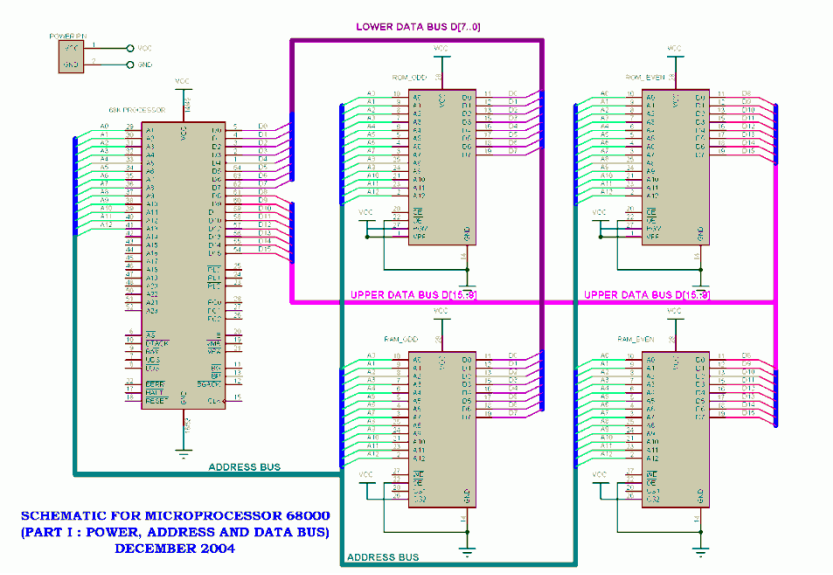


Figure 2.1a: schematic for microprocessor part 1

(Power, address and data bus)

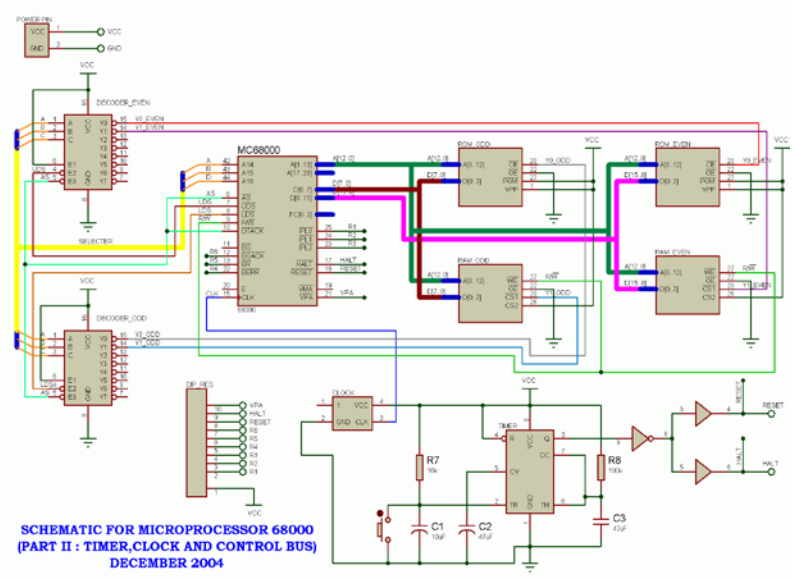


Figure 2.1b: schematic for microprocessor part 2

(Timer, clock and control bus)

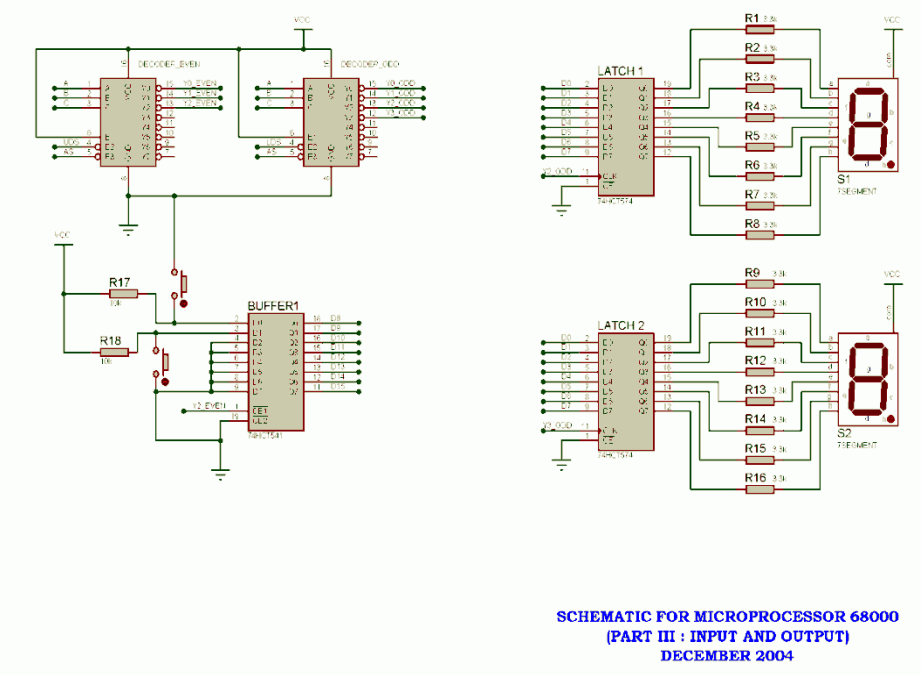


Figure 2.1c: schematic for microprocessor part 3

(Input and output)

2.3 Limit switch

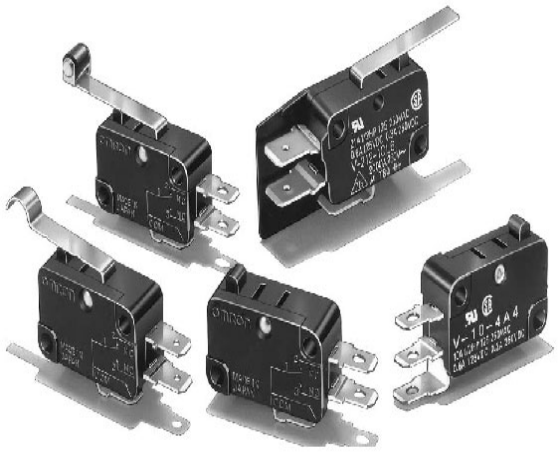


Figure 2.2: Limit Switch

Figure 2.2 showed the sample of variety type limit switch.

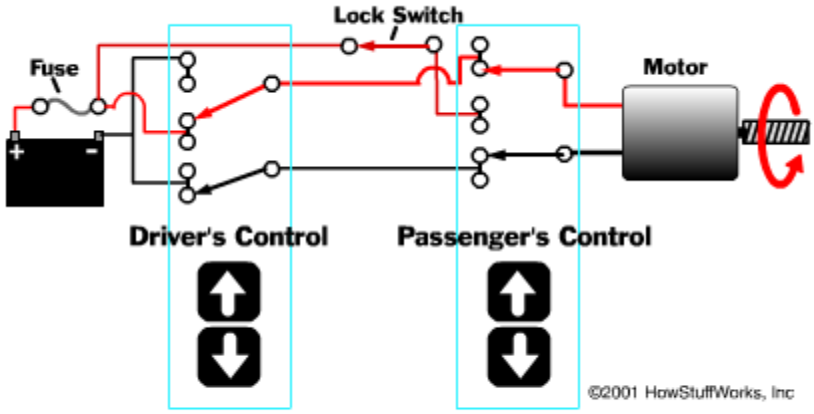
Limit switches are usually used to indicate an end of travel, or to prevent a motor from travelling too far in one direction. It stop the gripper from exert much force on the object by stop the gripper movement when it touch the limit switch.

2.4 The Wiring and Switches [1]

We'll go through the wiring on a basic system -- one that allows the driver to control all four windows on the car and can lockout the controls on the other three individual windows. [1]

Basic system[1]

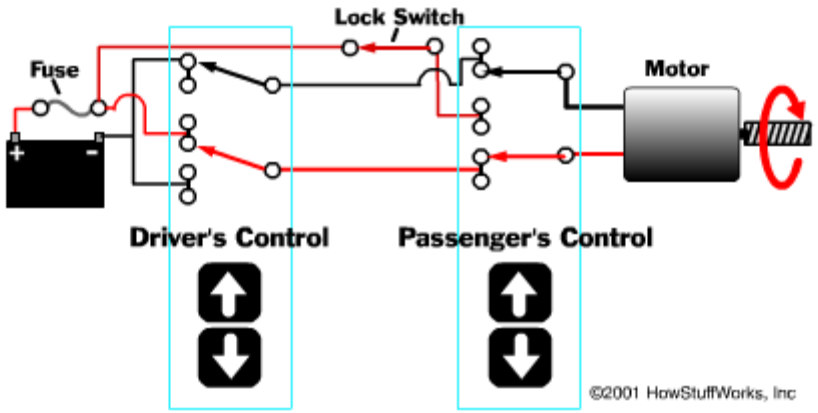
On this system, the power is fed to the driver's door through a 20-amp circuit breaker. The power comes into the window-switch control panel on the door and is distributed to a contact in the center of each of the four window switches. Two contacts, one on either side of the power contact, are connected to the vehicle ground and to the motor. The power also runs through the lockout switch to a similar window switch on each of the other doors.[1]



A simple power-window circuit

Figure 2.3a: Power window circuit anti-clockwise

Figure 2.3a showed the power window motor controlled from the driver to turn it anti-clockwise.



A simple power-window circuit

Figure 2.3b: Power window circuit clockwise

Figure 2.3b showed the power window motor controlled from the driver to turn it clockwise.

When the driver presses one of the switches, one of the two side contacts is disconnected from the ground and connected to the center power contact, while the other one remains grounded. This provides power to the window motor. If the switch is pressed the other way, then power runs through the motor in the opposite direction.[1]