



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

# **Design and Development of Automated Submission Assignment Depositor**

Thesis submitted in accordance with the partial requirements of the  
Universiti Teknikal Malaysia for the  
Bachelor of Manufacturing Engineering (Manufacturing Design) with Honours

By

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Faculty of Manufacturing Engineering

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## APPROVAL

This thesis submitted to the senate of UTeM and has been as partial fulfillment of the requirements for the degree of Bachelor of Manufacturing Engineering (Design Manufacturing) with honours. The members of the supervisory committee are as follow:



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## **ABSTRACT**

Automated Submission Assignment Depositor is a device which its function to receive a students assignment automatically and more efficiency. This automated device will print out a receipt after students submit the assignment through this machine. This receipt will keep by student as reference or approval. The advantage of this device is to discipline student though submit their report at a fix time because the receipt will print out the date and time. Another advantage is the assignment is safe because this device is a close box and lecturer the only one person can open and collect the assignment inside. The design for this device should friendly users that mean it easy to operate.

## **ABSTRAK**

Automated Submission Assignment Depositor adalah sebuah mesin di mana mesin ini berfungsi sebagai alat untuk menerima laporan atau tugas daripada pelajar secara automatik dan lebih berkesan. Mesin ini akan mencetak resit selepas pelajar menghantar tugas melalui mesin ini. Resit yang di keluarkan perlu disimpan oleh pelajar sebagai rujukan ataupun bukti penghantaran tugas. Kelebihan mesin ini adalah dapat mendisiplinkan para pelajar supaya menghantar tugas pada masa yang telah ditetapkan. Ini kerana resit yang dikeluarkan akan menunjukkan tarikh dan masa penghantaran. Antara kelebihan lain mesin ini ialah semua tugas yang dihantar adalah selamat kerana mesin ini berkeadaan tertutup sepenuhnya. Hanya pensyarah sahaja yang boleh membuka dan mengutip semua tugas yang ada di dalam mesin ini.

## **DEDICATION**

To my beloved Family, I love you all. To my supervisor, thank you so much.

## **ACKNOWLEDGEMENTS**

I have had the opportunity to work with a great group of knowledgeable people that made my project a pleasurable and exciting experience. Their help and support throughout my Degree Final Project is greatly appreciated. I would like to give a highest gratitude to my supervisor, Mrs. Nurazua Binti Mohd Yusop, for her help and advice throughout the project especially during difficult time. Not to forget, thanks to my beloved parents for their continuous encouragement and moral support.



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## **LIST OF ABBREVIATIONS, SYMBOLS, SPECIALIZED NOMENCLATURE**

UTeM	-	Universiti Teknikal Malaysia Melaka
PSM	-	Projek Sarjana Muda
PLC	-	Programmable Logic Control
CAD	-	Computer Aided Design



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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Automated Assignment Submission Depositor is a machine which it functionally to collect reports or assignment. This machine is proposed to ease students submit their report or assignment without meeting the lecturer. Beside once of the benefit from it is the entire report or assignment is place in a one box which arrange systematically.

Submission report or assignment through the current box at lecturer room nowadays is not too manageable for lecturer especially in Universiti Teknikal Malaysia Melaka (UTeM). by introduce and developing a new automated system of report submission at lecturer room is the best way to make improvement of system submission report at UTeM. This device will functionally to receive a students report by automated system and students will receive a receipt as verification or to prove that they had submitted their report, assignment or tutorial through this machine. This machine will be locate at lecturers room with an optimize size with assume the space for passer-by. This device also gives a lot advantages to lecturer especially in avoiding report from mislaid or taken by other students.

The goal of this design is to provide an interface which, this machine must be flexible, expressive, and easier to use or user friendly. Generally, this device is safe for paperwork because after students send a report, other student cannot to take out or stole the assignment as this machine is a close box. The design for this device also includes a system sensor, printer machine and counter machine

## **1.2 Project Objective**

The main objective of this project is to introduce and develop a machine or automated device system at a lecturer room. This machine is able to collect all reports. Among objective of this project are:

- i. To develop a new systematic report submission system at the lecturer room.
  - Change current system to a system more efficient.
- ii. To improve the design of current report box at lecturer room.
  - Develop a new submission assignment depositor
- iii. To study and design an automated assignment depositor at the lecturer room.
- iv. To do some research about automated device had done before
  - Make investigation on the project before such as problem statement, design and material using (pattern).
- v. To ease lecturer to collect assignments.
  - Make a system submission more efficient

## **1.3 Problem Statement**

This project is developed for easing human especially for lecturer. It uses to help lecturer to collect all their students' assignment, tutorial and report. The purpose of this project is to create a system submission more efficient beside it, this automated system also give benefit to lecturer and avoid the becoming problem. Among benefits of it are:

- i. For record purpose.
- ii. For quantity check.
  - To ease lecturer in checking the number of quantity assignment that had been submitted.
- iii. Prevent student from late submission.

This automated system makes students more discipline and submit their report before the date line

iv. To upgrade the submission system

To provide a new automated submission system to replace the current submission system at lecturer room.

#### **1.4 Scope of Study**

The main scope of this project is “*design*” which needs to make a new design and development for a new machine and also a mechanism purpose. The design of this project should be for human life and ergonomic use. The design of this project needs to be studied to produced a good designing for strength and stiffness to make the product can long lasting.

Selection of material is important in create this product. The design of product should be not expensive. Beside cost, this machine should design for safety which means to prevent from hazard and risk such as a sharp part.

## 1.5 Project Flow Process Chart

Process flow chart is to explain the process flow of project. It's important to follow the chart from beginning of project until finish the task to make sure the main objective of project is achieved.

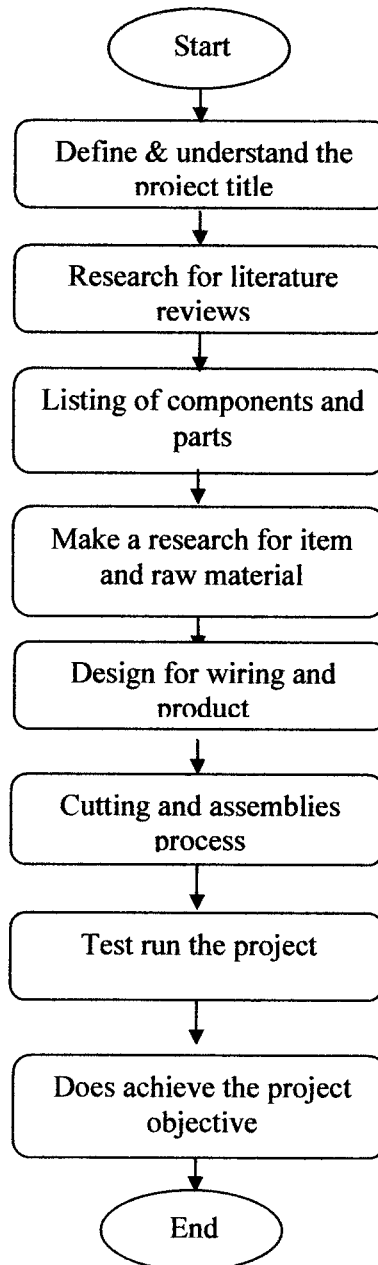


Figure 1.1: Product Flow Chart.

## **1.6 Report Structure**

### **CHAPTER 1: INTRODUCTION**

This chapter will conclude the background of PSM project. This chapter also includes the main project objective with the aim of product need to be achieved. Besides, this chapter also explains the scope of study and problem statement out come during research and the other information.

### **CHAPTER 2: LITERATURE RIVIEW**

This chapter will explain the research of development of the product that related with this project or having the same objective. The researches usually find the product produced find past year and it can be a guideline to develop for new product. At the end of this the product feature and analysis will be include

### **CHAPTER 3: METHODOLOGY**

This chapter is explanation the ideas of project. Once of the element should have in this chapter is project design. The design should come with details part and view and provide the process involved from the beginning of the project until the task had been completed. Another part of this chapter is selection of material. It is important because the right selection of material constructs a good product such as strength, light and shape.

#### **CHAPTER 4: RESULT**

This part will present a whole system and also the result after test run the product. This section also has a data and recommendation for future study of the product.

#### **CHAPTER 5: DISCUSSION**

This section will present a whole discussion of this project based on the result of chapter 5.

#### **CHAPTER 6: SUMMARY AND CONCLUSION**

In this section the summary of the work along the project task such as method, conclusion and recommendation about the project will be discussed.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Definition**

Literature review is one important component to find out the information and uses to explain a product or the most recent technology in the market that have done before by other people or investigator. It also gives some idea about the current project. Literature review is also important since it can be as references in built up for a new product. Besides, the background of the project will be reviewed also can determine the best alternative to upgrade the current project. Literature review is defined as evaluative report of information found in the literature related to selected area of study. The review should describe, summarize, evaluate and clarify this literature. It should give a theoretical base for the research and help to determine the nature of the research.

The Automated Submission Assignment Deposit is a new system of delivery gadget that can be developed to enhance people needs. There are several types of method, studies and submission machines that have been done in order to pass up assignments. This system has been applied until now though at high education such as university and college.



## **2.2 Two Types Source of System Submission Assignment**

### **2.2.1 Hard Copy**

Hard copy is the basic and common way to submit assignment. Hard copy means that the assignment is printed out or writing on the paper. This paper had been stapled and ready to submit to lecturer. Most of colleges or universities are comfortable of using a hard copy to send the assignment, report and tutorial. It's very easy for lecturer to marking the paper. The advantages of hard copy is easy to mark but difficult to find out the wrong pronounce and others.

### **2.2.2 Soft Copy**

In the case of soft copy, the assignment will be sent through a diskette or compatible disk (cd). This method is a new system and has been used widely at colleges and universities nowadays. The advantage of submission by soft copy is distinguishing between mistakes, slips and errors are important and will further increase the advantage of electronic marking. Mistakes may be defined for the student as lower level inaccuracies correctable within the present knowledge of the learner at this stage of the course and errors as higher level inaccuracies.

## **2.3 Five Ways to Submit Assignment**

### **2.3.1 Submit By Hand**

By hand is one of the easy way to submit the report. Through this approach, the assignments will be submitted directly to the lecturer. Usually, lecturer will collect all assignments in the class. But sometimes the lecturer will choose a representative to collect all the assignments and then send it to lecturer's room. The advantages of submitting the assignment by hand is the student can see the lecturer and sometime discuss other issues while submitting the work. Sometimes the assignment can be check and lecturer can directly point to any problem of the assignment if there's any.

Disadvantages are that, appointment between students and lecturer need to be plan, and sometimes if there is no appointment, lecturer might not be at theirs room and if student is staying far from the place they need to pass up their work and this will cause them unnecessary problem.

### **2.3.2 Submit Through Box**

Beside submitting by hand, other lecturer is convenience by submitting the assignment in the box that already been placed in front of the lecturer's room. Student who wants to submit the assignment only has to put the assignment into this container or box A4 paper size such as figure 2.1. This box usually accommodate for a paper size A4. The material of this box is made from paper. The feature of this box is not life longer because it made from paper and easy to damage when this box is fully packed. Beside that, this box also can be move to any desired location or turn on the floor if having a little force on it.

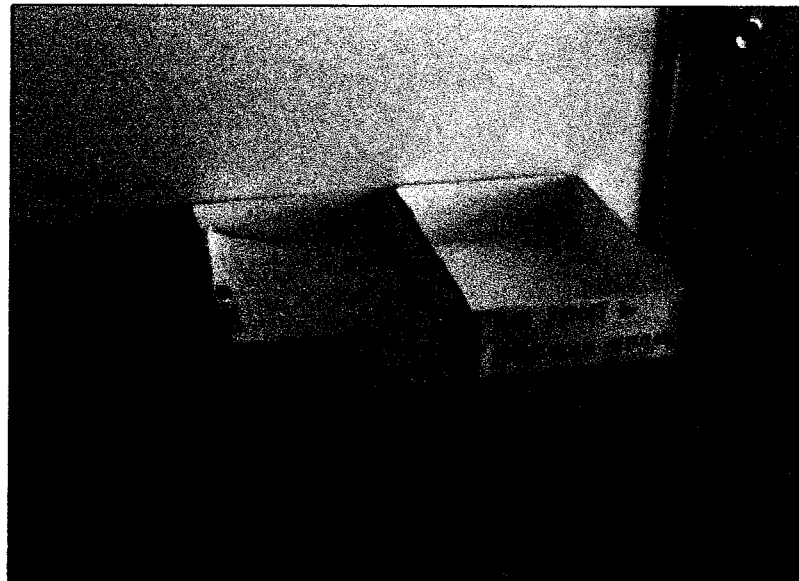


Figure 2.1: Box.

### 2.3.3 Submit Through Rack

Rack is one of the methods on how to submit the assignment. It is usually located at lab area. This rack has multiple sections which can be used to divide multi-class in order to avoid assignment from each class to mix. The material used is from wood and Perspex.



Figure 2.2: Rack.

### 2.3.4 Mail Box

Mail box also one of the method on how to submit the student's assignment. This mail box is held on the wall in front of lecturer's room and it is made from aluminum sheet metal thickness 2-3mm. The size of this mail box is about 180mm x 250mm. It can afford the capacity for 1 class for each time. However, it's still not a compatible device because this deposit device is open and not a close box. The risk of this deposit is can loss the assignment can be loss or in other word steal by other student.

### **2.3.5 On The Table**

Majority of colleges especially in polytechnics do not have a real device to submit the assignment. Most of student submit their assignment by put it on the lecturer table. It is because of the lecturer office is open view. This method is not efficient and not systematic. The student might mix their report with the other class or with the checked assignment. Sometime student may be placed the assignment at the wrong location such as wrong lecturer table. Besides, the assignment may be fall down behind the lecturer table, misplaced and taken by somebody.

### **2.3.6 Internet Or Email**

The latest method on how to submit an assignment today is by using internet or email. This method is use widely today especially for Information Technology student (IT). Most of the colleges and universities use this approach in sending the assignment. There are many advantages by using email such as below [1].

#### **2.3.6.1 Cost**

Email is cheap recent studies shows that businesses can save large amounts of money using e-mail, in lieu of long-distance phone calls and postal deliveries. In addition, fax gateways allow further savings. More formats can be sent via email, anything from CAD files to pictures and software [1].

### **2.3.6.2 Time**

Email will reach its destination across the world in a few seconds as opposed to days or even weeks with the postal service. Email about crossing time zones or those colleagues are not in their offices to take telephone calls. Email can be sent to groups of people at the same time. This facilitates collaborative working and efficient dissemination of information.

### **2.4 Type Of Book Drop**

There are several types of book drop that related to this project. This book drop device is functional to receive a book. This book drop is technology comes from USA. There are come with a different size. Below are the models come from the American Book Return [2].

### 2.4.1 Model MDU- Material Depository Unit

MDU Material Depository Unit.

1. A locked chest that is 16 x 16 x 32 inches high.
2. Made of heavy gauge steel that is powder coated gray.
3. Access door is 20 x 13 inches wide and can be positioned on any 3 sides of chest.
4. Registered lock and 2 keys included.
5. Stainless Steel Head.
6. 14 x 22 inches wide and has a protective rain shield and lift plate.
7. Slot opening is 3.5 x 13.5 inches wide.
8. 6 threaded studs are welded on back to fasten securely to chute's flange.
9. 2 black signs: "BOOK DROP" and "LIFT TO OPEN" included. Custom signs upon request. The picture of book drop Model MDU as figure 2.3.

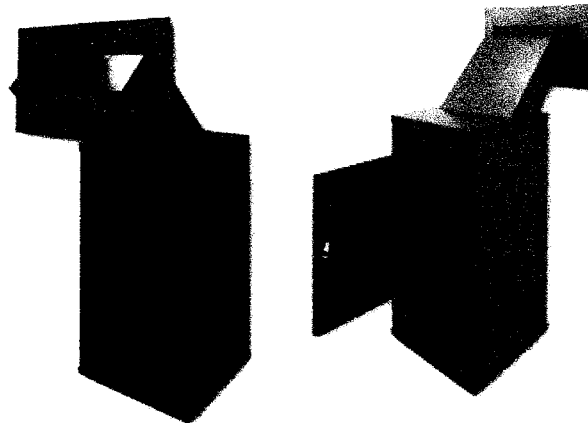


Figure 2.3: Model MDU- Material Depository Unit

## 2.4.2 Model M810-TW

### Model 810-TW

1. A heavy gauge stainless steel cabinet is 24 x 24 x 38 inches high.
2. 2 all brass works locks are installed on access door.
3. 2 keys are provided for each lock.
4. Access door attaches along right (or left) jamb.
5. .5 x 4 inch stainless steel anchors included for fastening to your floor.

### Stainless Steel Head.

1. 14 x 22 inches wide and has a protective rain shield and lift plate.
2. Slot opening is 3.5 x 13.5 inches high.
3. 4 threaded studs are welded on back to fasten securely to chute's flange.
4. 2 black signs: "BOOK DROP" and "LIFT TO OPEN" included. Custom signs available.
5. The pictures of model M850 like figure 2.4 below.

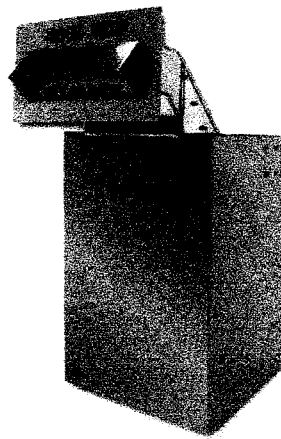


Figure 2.4: Model M810-TW.

### 2.4.3 Model M850-TW

#### Model 850-TW

1. A heavy gauge stainless steel cabinet is 24 x 32 x 38 inches high.
2. 2 all brass works locks are installed on access door.
3. 2 keys are provided for each lock.
4. Access door attaches along right (or left) jamb.
5. (4) .5 x 4 inch stainless steel anchors included for fastening to your floor.
6. Stainless Steel Head 14 x 22 inches wide and has a protective rain shield and lift plate.
7. Slot opening is 3.5 x 13.5 inches wide.
8. 6 threaded studs are welded on back to fasten securely to chute's flange.
9. 2 black signs: "BOOK DROP" and "LIFT TO OPEN" included.
10. Custom signs upon request. The picture of model M850 such as figure 2.5.

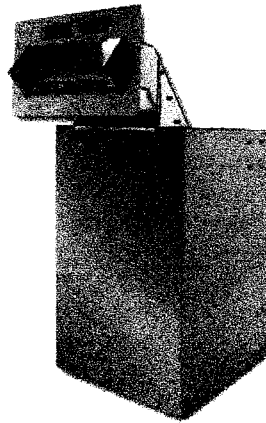


Figure 2.5: Model M850-TW.



#### **2.4.4 Model 950-TW**

##### **Model 950-TW**

1. Heavy gauge stainless steel cabinet 36 x 40 x 38 inches high.
2. 2 all brass works locks are installed on access door.
3. 2 keys are provided for each lock.
4. Access door attaches by along right (or left) jamb.
5. (4) .5 x 4 inch stainless steel anchors included for fastening to your floor.
6. Stainless Steel Head 14 x 22 inches wide and has a protective rain shield and lift plate.
7. Slot opening is 3.5 x 13.5 inches high.
8. 6 threaded studs are welded on back to fasten securely to chute's flange.
9. 2 black signs: "BOOK DROP" and "LIFT TO OPEN" included.
10. Custom signs upon request. The picture as figure 2.6.

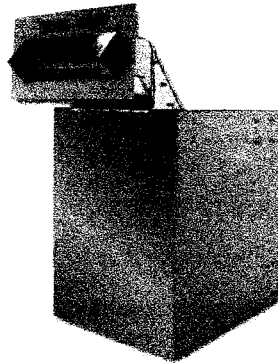


Figure 2.6: Model 950-TW

#### **2.5 Survey Description**

Survey is done to gather response for this project of Automated Submission Assignment Depositor. From the survey, idea from individual can be evaluate to develop this project base on it objective.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Definition**

Methodology is an analysis of the principles of methods, rules, and postulates employed by a discipline or the development of methods, to be applied within a discipline a particular procedure or set of procedures. The word methodology is defined as a system which comprises the principles, practices and procedures which are applied to a specific branch of knowledge. Methodology refers to the way in which information is found or the way something is done. Methodology includes the methods, techniques and procedures which are used to collect and analyze information.

A methodology is as something that represents a package comprising practical ideas and proven practices for a given area of activity. Methodology includes the planning, the development of the design and the management of the systems which are based on information technology.

The word methodology refers to a documented approach which is used to perform activities in a manner which is coherent, consistent, accountable and repeatable. Methodology is a process that mainly consists of intellectual activities. Usually only the end goal of the methodological process is manifested as the product or result of the physical work. In software, the term methodology is used to a specific series of steps or a procedure which governs the activities of analysis and design.

### 3.2 Methodology Flow Chart

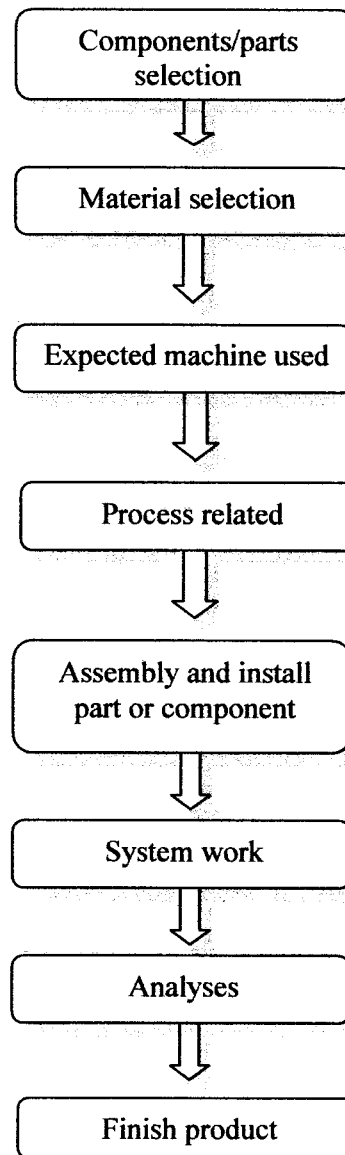

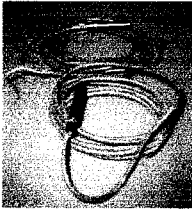
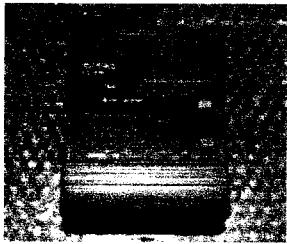




Figure 3.1: Methodology Process Flow Chart.

					number. Other information can add into the printer program by using java or c++ programming.
2	Counter device	Model: <b>LFC- 6S</b> AC source 24V	1		<p>In general, a counter is a device which stores (and sometimes displays) the number of times a particular event or process has occurred, often in relationship to a clock signal. In practice, there are two types of counters:</p> <ul style="list-style-type: none"> <li>• up counters which increase (increment) in value</li> <li>• down counters which decrease (decrement) in value</li> </ul> <p>The counter device also will be use in this system, where its function to count [3].</p>

3	Photoelectric Sensor.	Brand: <b>OMRON.</b> Model: <b>E3HT-1L</b> <b>E3HT-1DE1</b> <b>M8</b> Threaded Cylindrical 12 to 24 VDC.	1		<p>In computing, a device is introduced designed to detect a physical state or measure a physical quantity, and produce an input signal for a computer. For example, a sensor may detect the fact that a printer has run out of paper or may measure the temperature [4].</p> <p>The sensor will be used in this project either movement sensor or photoelectric sensor. This sensor is function to detect a paper or assignment when loading into this machine and automatically run the system. There are many types of sensor which has same function but it is different in term how to detect and run the system. For photoelectrical sensor, it will detect a thing that obstacle the source and receiver then send a signal to another device to operating system.</p>
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4	PLC	<p>Keyence Source 24VDC.</p> <p>10 inputs 6 outputs.</p>	1		<p>PLC (Programmable Logic Controller) is used to operate the system and arrange the sequence in the device followed by the right steps of process when machine start running. For example when the signal from limit switch is detect, automatically it will send the signal input to produce the output such as output to activate for start clamp the part or start count by counter machine.</p>
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5	Power supply.	AC to DC Input 240V Output 24V 0.7 ampere.	1		<p>Power supply used is converter from source AC 240V to 24 VDC.</p> <p>Used of this power supply is to matching to other electronic parts that use a 24VDC input and output such as sensor. Where photoelectric sensors use a 24VDC and the out put also 24VDC. Other electronic part uses the same voltages are indicator lamps and counter.</p>
6	Indicator lamp.		3		<p>Indicator lamps use to show the process running when the machine start. For example: lamp at keypad flash that means the student must enter their ID number.</p>