

PLC BASED ALARM TESTING SYSTEM

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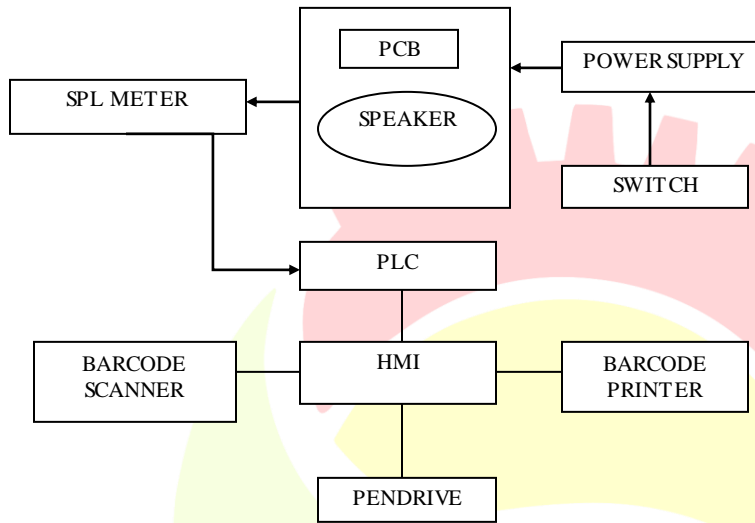
Abstract

This paper is projected as an overview of Alarm Testing System. The aim is to introduce in brief main and practical results of alarm testing. There is possibility of error in measuring parameters at various stages involved with HMI. This paper demonstrates a PLC based alarm testing system. Testing system for entire circuit is big task so we focus on testing areas where the PCB and speaker are inbuilt. Serial number is allocated for the PCB and speaker. Using barcode scanner scan the serial number to detect the manufacturing date, month, year of the PCB and speaker and also HMI interface connected to the USB PORT to collect the details of the data stored in the system. More than thousand data's can be stored in the USB PORT. Different voltages given to the Speaker it produces the alarm sound and sound can be measured using SPL METER.

Introduction

Accurate testing in PCB becomes a difficult task due to environments. PLC is a digital computer used for automation of electromechanical processes such as control of machinery on factory assembly line, amusement rides or light fixtures. PLC is used in many industries and machines. PLC is used for multiple input and output arrangement, immunity to electrical noise and resistance to vibration and impact. A PLC is an example of a hard real time system since output result must be produce in response to input condition within a limited time, otherwise unintended operation will reset. For this we have done existing system in terms of accuracy and cost, finally we selected alarm testing system for PCB and speaker. We are using PLC, HMI Interface. In the existing system data collections manually. PCB and Speaker are set inbuilt.

Block diagram



Elements of Block diagram

PCB

A Printed Circuit Board mechanically supports and electrically connects electronic components using conductive tracks ,pads. PCBs can be classified into one copper layer, two copper layer and multi layers. PCBs contain capacitor, resistor and active device embedded in the substrate. It is published standard by the IPC organization.



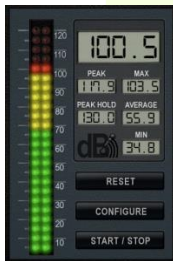
Speaker

Speaker is one of the most common output device used with computer systems. The purpose of the speaker is to produce audio output that can be heard by the listener. Speakers are used as transducers that convert electromagnetic waves into sound waves. Input may be either in analog or digital form.



SPL meter

It is used for measuring sound. It is commonly a hand-held equipment with a microphone. The microphone responds to changes in air pressure caused by sound. This instrument is referred to as a sound pressure level meter. In this sound is converted into electrical signals.



Barcode scanner

It is the type of handheld scanner. It is held in the hand of the user during operation. Handheld barcode scanner is also known as Mobile computer. It is designed like a handgun, with a grip and a trigger to activate the scanning operation.



Barcode printer

It is used to print the values which scans from the barcode scanner. It also connected with the Human Machine Interface using RS232 cable. Barcode printers can be used for small business to industrial use and most commonly used for testing products.



PLC

PLC is able to receive input and transmit output various types of electrical and electronic signals .PLCs are classified by the number of I/O functions provided. The FBs-PLC's design incorporates a "system on chip" developed by FATEK corporation. The chip composed of over 120,000 gates which integrates features such as CPU, Memory, Hardware logic solver(HLS).The FBs-PLC represents high functionality and reliability compared to other PLC's in its class.



SPECIFICATION: *Research at its Best III*

1. 14 points 24VDC digital input (upto 10 kHz in 4 points)
2. 10 points sink (NPN) transistor digital output(4 points 10kHz output)
3. 1 built in -232(can be expanded upto 3)
4. 100~240 VAC power supply

HMI

It is abbreviated as Human Machine Interface. This is the interface between the operator and the controller. It is the controller operating device. The device comprises a numeric keypad and a LCD screen that displays text. The keypad is used to input data in different applications, such as timer values. The PLC's screen can show operator messages, variable information from the program and system information. HMI applications are used different applications like "Display of Events", "password".

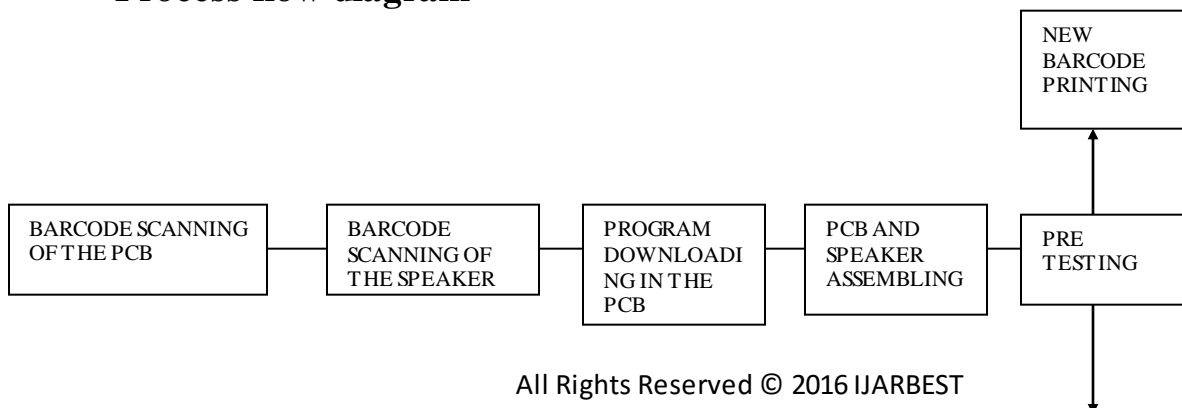


Pendrive

It is used for data storage.



Process flow diagram



DATA
STORAGE IN
THE USB
DRIVE (date,
time, year, SL.
no ,SPL pass/fail,
barcode details)

RESULT AUTOMATIC TESTING

AUTOMATIC TESTING			dd/mm/yy
			hh:mm:ss
Volts(V)	SPL(dB)	Result	FPS CODE 12
9V	123.4	ON	SOUND PRESSURE LEVEL <input type="text" value="123.4 dB"/>
14V	123.4	ON	
28V	123.4	ON	
32V	123.4	ON	
<input type="text" value="START"/>	<input type="text" value="STOP"/>	BARCODE DETAILS ABCDEF	<input type="text" value="PASS"/> Barcode scanned
			<input type="text" value="FAIL"/> Barcode not scanned

STORAGE VALUES

Sl. no	9V	14V	28V	32V	Pass	Fail	FS	Date	Month	Year
1	59.9	60.6	60	60.1	0	1	1	28	1	16
2	90.1	95.5	97.1	95	1	0	3	3	2	16
3	104.8	107.7	110.3	108.7	1	0	1	7	2	16
4	106.3	109.5	111.6	110.2	0	1	1	20	2	16
5	104.4	107.3	110.4	108.5	1	0	1	25	2	16

CONCLUSION:

It is used to improve accuracy and avoid manual errors. Thus our project is an attempt to provide a solution to error problems which is a major issue nowadays. Also we trying to provide one of the solutions to PCB in the horn automation systems. Through this project we are trying to save manual efforts to a great extent.

REFERENCE

- 1.Suryawanshi,"PLC based security system in ship" International Journal of Science, Engineering Technology Research, volume3,issue 4April2014.
2. P.Dollar, " PLC based home automation system" International Journal and Innovative Technology of Exploring and Engineering, volume4, issue 5october2015.

