Real time mailbox alert system via sms or email

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Abstract - Upon receiving new mails or letters in their mailbox, most users do not get notified of this fact. They have to speculatively and periodically check their mailbox contents. In most events, the users are neglectful on checking their mailbox. This at times may lead towards the ignorance of important letters and results in various miseries. Most of the multi story buildings such as apartments, condominiums, office buildings etc limit the users on limited visits to check or collect their letters due to the centralize mailbox location. Users find convenient to be on alert of mails they receive to overwrite the conventional method of checking mailbox. Because of the high confidentiality and official letters are increasing as a corresponding tool globally, the users seek for a better solution which enables them to be on their toes each time a mail is delivered. The state of the art electronics technology is incorporated into these conventional mailboxes as a solution. The programmable logic controller, interface module and the GSM modem can be incorporated by linking the user's mailbox with short messaging system or email facilities and this enables the users to be notified whenever a new mail is delivered. Mails delivered into the users mailbox, the system will automatically generate an alert which is send in the form of a short message system or email that typically details the real time of mail delivery. The system is designed to easy human life by sending short messaging system or email to notify the users about important new mails reaching their mailbox. This is likely to be a fast growing and popular application for short messaging system and email towards the mankind.

Keywords: Mailbox, programmable logic controller, interface module, GSM modem, short messaging system, email

1. Introduction to the mailing system

Mail is part of a postal system wherein written documents, typically enclosed in envelopes, and also small packages, are delivered to destinations around the world. Anything sent through the postal system is called mail or post [1]. In the late 1990's the e-mail has dominant the mailing system which is always faster then postal system and cheap for users to communicate thought the world. The revolutions on mails have been drastic yet the usage of the conventional mailing system is widely practice thought out the world. Most of our important and official documents are send by the conventional way [2]. The centralize mailbox system is as shown in fig. 1.

Fig. 1: Centralize mailbox system

This research has found a new revolution in using newer technologies to alert the users on the event a mail is delivered, especially through the short message service (SMS) and e-mail.

2. Control of the mail alert system

The real time mail alert system (MASYS) is a device that helps the users by sending a real time notification on mail delivery overwriting the conventional way of checking mails. This research on the real time MASYS is a new beginning for the mankind within the reach of available technology in making our life's easy especially for domestic and commercial users such as the industrial people and office users [3].

The block diagram of MASYS is as shown in fig. 2. This is an intelligent automated system which is capable to react base on the conditions of the sensors when mails are delivered. The sensor rapidly generates

a signal to the real time programmable logic controller (PLC) and the text message is processed as preprogrammed in this unit. The user has an alternative to choose whether the notification is done via sms or email. The processed text message will then be send to the interface module which converts the message into transferable form to the GSM modem. Practically without the interface module the PLC is unable to establish wireless communication. Once the message is transferred to the GSM modem, now the message will be transmitted to the addressee.

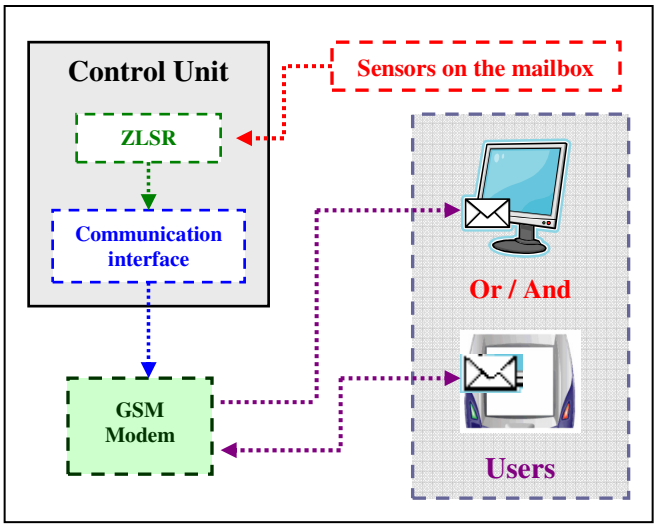

Fig. 2: The real time MASYS block diagram

The user is able to send an authorized code to the assigned number to check on the mailbox status at any time and the MASYS will generate an automated reply to the user according to the real time condition of the respective mailbox. This independent control unit operates as preprogrammed without human intervention at all times.

3. Components of a real time MASYS

3.1 Real time programmable logic controller

The Zelio Logic Smart Relay (ZLSR) is the control unit used in the MASYS is as shown in fig. 3. ZLSR compromises the requirements of the MASYS in supporting with real time control system with the capability of preprogrammed wireless communication alerting system. The ZLSR is an intelligence device which is capable to work without human interventions at all times [4].

Fig. 3: Zelio Logic Smart Relay with clock SR3B101BD

ZLSR is designed to simplify the electrical wiring of intelligent solutions. Its flexibility and its high performance allow users to save significant amounts of time and money in developing an automation system. ZLSR are used in both the industrial and commercial sectors. Their compact size and ease of setting up make them a competitive alternative to solutions for real time control device in various automation systems. The autonomous operating time of the clock, assured by a lithium battery which is up to 10 years ensures the real time of the system is maintained [4].

Since ZLSR is a reliable control unit with the capability to control an extensive range of electronic applications, it seems to be the perfect match to the GSM modem to establish wireless communication for the users. The sensors placed on the mailbox send signals to the ZLSR and the program will generate SMS or email base on the requirements of the users at the event a mail is delivered [4].

3.2 Communication interface

The communication interface in the Zelio Logic is designed mainly for monitoring or remote switching which operate without personnel [5]. The Zelio Logic 2 SR2COM01 Communication Interface is as shown in fig. 4.

The communication range comprises a communication interface connected between a smart relay as shown in fig. 2 and a GSM modem as shown in fig. 5, analogue (PSTN), Zelio Soft Com software. The system consists of a sensor detections installed on the mailbox of specific users. Control is achieved by a smart relay from the ZLSR via its inputs and outputs. The smart relay is connected via a communication interface to a GSM type modem. The communication

interface allows messages, telephone numbers and call conditions to be stored. In addition, messages are dated and application program comments are stored [5]. The communication interface enables the user to have two way communications with the MASYS using a GSM Modem by sending specific commands to check on their latest mailbox status at any time as required by the user.

Fig. 4: Zelio Logic 2 SR2COM01 Communication Interface

3.3 GSM Modem

A GSM modem can be an external modem device, such as the Wavecom FASTRACK GSM Modem SR1MOD02 [6] as shown in fig. 5. The simple system works by inserting a GSM SIM card (ranging from 012,013,014,016,017 and 019) into this modem and connect the modem to an available serial port on the communication interface as shown in fig. 4.

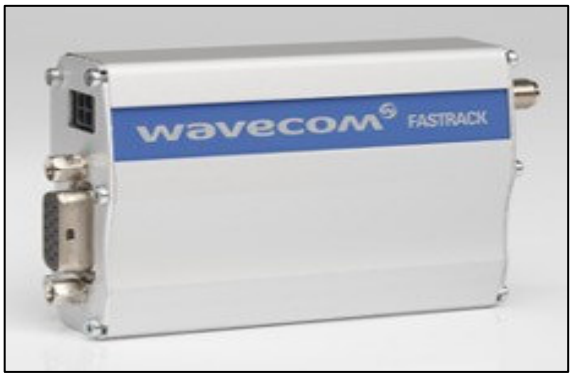

Fig. 5: WAVECOM Fastrack GSM Modem SR1MOD02

The dedicated GSM Modem SR1MOD02 is used as a wireless communication device as may the majority of commercially available modems does. A specific contract with the provider, which allows data transmission as required for the MASYS. The SMS and email gateway can simultaneously support multiple modems, provided that the hardware has the available communications port resources. All the text message in the ZLSR will be transmitted to the user's number as assigned in the program. The GSM Modem is the device which enables two way communications between the MASYS and the users [6].

3.4 Circuitry

The infra red sensor circuit is an important element in MASYS. The function of this circuit is to sense changes in the mailbox as mails are delivered. The infra red circuit is made of a transmitter and receiver circuit's which is designed to meet the requirements of the system. The basic circuit in this system is a low cost infra red detection circuits. This provides the basis for many applications where detection is required. These circuits are designed on a single sided printed circuit board (PCB) using Proteus Aries & Proteus ISIS as the designing tool. The PCB layout is shown in fig. 6.

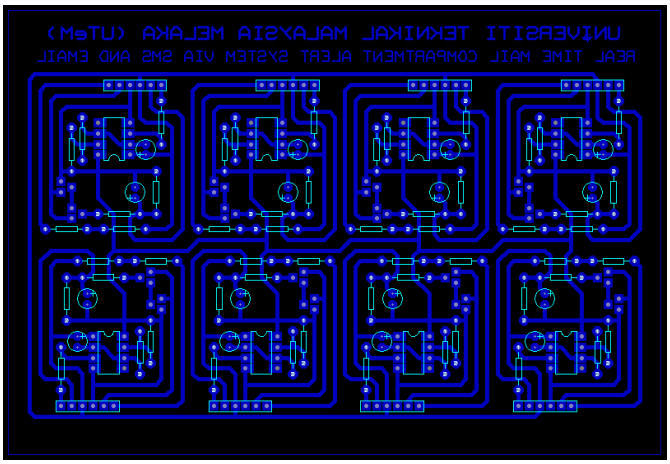

Fig. 6: PCB layout of the transmitter and receiver circuit

4. Connection of a real time MASYS

The entire system works by processing signals from sensors located in the mailbox of users. The sensors are linked to the control unit for detection, indicating the presents of a new mail. Each mailbox is fitted with 2 sets of infra red sensors as shown on the block diagram in fig. 7. The first sets of infra red sensor will be placed on the lip (inlet) of the user's mailbox. This is to count and indicate the presences of a new mail. The second set of infra red sensor is placed at the center of the mailbox. This sensor is used to send a reminder to the users if the mails are not collected for a

length of time and also to reset the system once the mails are collected.

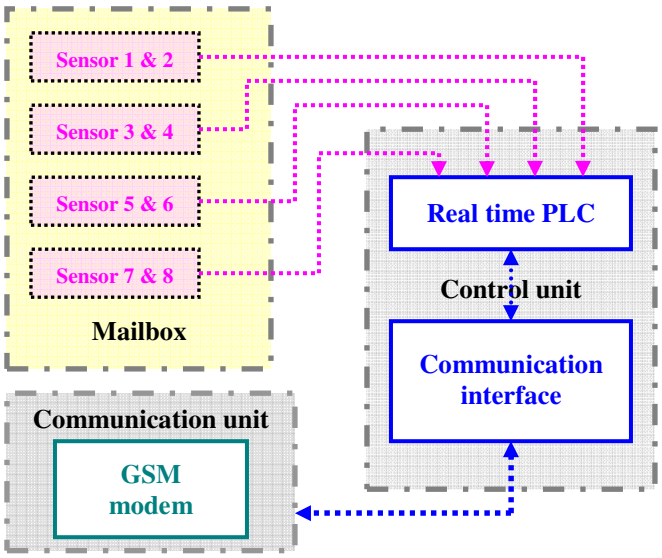

Fig. 7: Basic connection of the MASYS and

The PLC will generate the text message as programmed to the communication interface to be processed before sending it to the GSM Modem. The GSM Modem then transmits the text message via SMS or email to the respective users. When the user response to the MASYS, the GSM Modem will receive the SMS and send it to the communication interface. The SMS will be processed and send to the PLC. The PLC will process the code and check the status of the infra red sensors placed in the mailbox and sends a reply message to the users on the latest status of their mailbox.

5. Benefits of a real time MASYS

The real time MASYS is an effective and efficient method where by immediate alerts of new mails delivered via SMS or email. The users are capable of checking their mailbox status by sending a SMS to the MASYS and the control system will reply base on the latest status of the mailbox to the user.

6. Conclusion

There are sufficient regular users and awareness behind all services. SMS and email has become an integral and important part of many customer's everyday business and personal lives. The practicality of this application will results in various benefits to the users from all nature.

7. Acknowledgement

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