Information Logging and Investigation of Control Framework Utilizing Diverse Correspondence Convention

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Abstract - *The work is to implement a kind of System that can Log the System parameters which can help in monitoring the System performance more accurately and also a System that has the capacity of interfacing general interface (external, pc) and communication protocols UART, CAN, ETHERNET, MVB. The fault data packet logging should be automatic as well as configurable. System have the ability to accept a greater number of input channels, with better resolution and accuracy.*

***Key Words*: INFORMATION LOGGING, INVESTIGATION, CONTROL FRAMEWORK, LabVIEW, DATA ANALYSIS**

1. INTRODUCTION

To measure data independently and storing it periodically to do analysis of logged data for making good decisions to improve system performance with less human efforts. To have log of all sudden changes in reading of different applied sensors from some rural places or places where the conditions are adverse for human being to live and system has to be monitored continuously. To have a log of all electrical parameters like voltage, current, temperature of electromechanical system such as Locomotive and store these real-time values in flash device.

With advances in processor and wireless communication technologies, sensor networks area unit used everywhere inside the future life. Home automation networks area unit one among the nice environments that detector networks and shopper physical science technologies are incorporated. within the home automation networks, several sensors distributed within the house collect various physical information like temperature, humidity, motion, and light to produce information to the HVAC (Heating, Ventilating, and Air Conditioning) system. At the simplest level, information acquisition are often accomplished manually using paper and pencil, recording readings from a multimeter or the other instrument. For a few applications this type of data acquisition is also adequate. However, information recording applications that require sizable quantity of knowledge readings where very frequent recordings area unit necessary should embrace instruments or microcontrollers to amass and record information precisely   (Rigby and Dalby, 1995). Laboratory Virtual Instrument Engineering work table (LabView™) may be a powerful and versatile instrumentation and analysis package application tool that was developed in 1986 by the National Instruments (National Instruments, 2012). LabView™ has become a

crucial tool in today's emerging technologies and wide adopted throughout academia, industry, and government laboratories because the standard for information acquisition, instrument management and analysis software.

2. SYSTEM CONFIGURATION

Design of data acquisition system is demonstrated for measurement of parameters like temperature, light, humidity etc. by exploit information exploitation totally different {completely different} sensors at different locations and communicating with the user using ATmega16 AVR microcontroller. System description is divided into two parts, consisting of hardware and software description.

2.2 SOFTWARE IMPLEMENTATION

LabVIEW is being employed to style program codes to browse, monitor and show method parameters for real time information acquisition system. LabVIEW provides a perfect scope to accomplish computer based research. The wired together icons to perform simple-to-understand tasks which make operation given below possible.

- Building an array
- Parsing a string
- Digitalizing an analog voltage

A LabVIEW program includes two windows, called the Front Panel and the Block Diagram.

2.2.1 THE FRONT PANEL

Once a program is developed, the front panel acts as the face of a laboratory instrument. Front panel includes controls and indicators, which are the interactive input and output terminals of the VI, respectively. Controls are knobs, push buttons, dials, and other input mechanisms. Indicators are graphs, LEDs, and other output displays. Hence the front panel is the program"s user-interface, which facilitates the interaction of:

1. Providing inputs to the program,

2. Monitoring outputs from the program as it runs.

2.2.2 THE BLOCK DIAGRAM

The actual LabVIEW programming code is exposed within the block diagram. It contains Lab View's well-stocked libraries of icons that we've got selected throughout the program development. Each icon stands for a block of underlying executable code that will a specific helpful perform. The programming is finished by wiring these icons properly, so that data flows amongst graphical pictures to attain a desired function. LabVIEW permits North American country to hold out state of the art research including:

- Instrument Control
- Data Acquisition
- Data Analysis
- Data Presentation and Data Storage

3. VIRTUAL INSTRUMENTS (VI)

LabVIEW programs are called Virtual Instruments (VI) because their appearance and operation imitate physical instruments, such as oscilloscopes and multi meters. Every VI uses functions that manipulate input from the program or other sources and show that data or a lot of it to alternative files or other computers.

4. HARDWARE IMPLEMENTATION

In the style of real time knowledge acquisition system, we used several sensors like LDR, temperature sensor, and humidity sensors that will observe the different parameters.

4.1 MICROCONTROLLER

Microcontrollers are small and cost effective but self-contained computer chips used for embedded applications in industrial and consumer electronics products. In this system, we have a tendency to ar exploitation ATmega16 microcontroller. The controllers are receiving the data from different sensors, placed at specific locations and causation the info to LabVIEW that communicating with the user. Outputs of the sensors can be provided to processer directly however during this case, distance is the constraint, means sensors cannot be placed at far distance from the processor. It is vital to stay a track of the working of almost all the automated and semi-automated devices, be it a washer, an autonomous robot or anything else. This is achieved by displaying their standing on a small display module. LCD (Liquid Crystal Display) screen is such a show module and a 16x2 LCD module is extremely commonly used. These modules are replacing seven segments and alternative multi phase LEDs for these functions. The reasons being: LCDs are economical, easily programmable, have no limitation of displaying special & even custom characters (unlike in seven segments), and so on. LCD can be easily interfaced with a microcontroller to show a message or status of a device.

4.2 SENSORS

Data Loggers area unit connected to a pc to be launched and may have their settings modified via software system specifically designed for this purpose. Once the desired information has been collected identical code also will be accustomed transfer data from the logger and show that information on your display screen. Once this has been done an electronic copy of the information will be saved or written out as a tough copy for your records.

- **Digital:** It is type of sensor are either on or off. Or sample a switch of pressure pad.

- **Analog:** Sensors will measure a spread of values. The dimensions of the voltage the device produces are set by the dimensions of the Amount that the sensing element is measured.

- **Computer (display unit):** Displaying and analyzing the information by the assistance of software system and show data that has been recorded on the monitor or on a printer in an exceedingly variety of various formats such as:
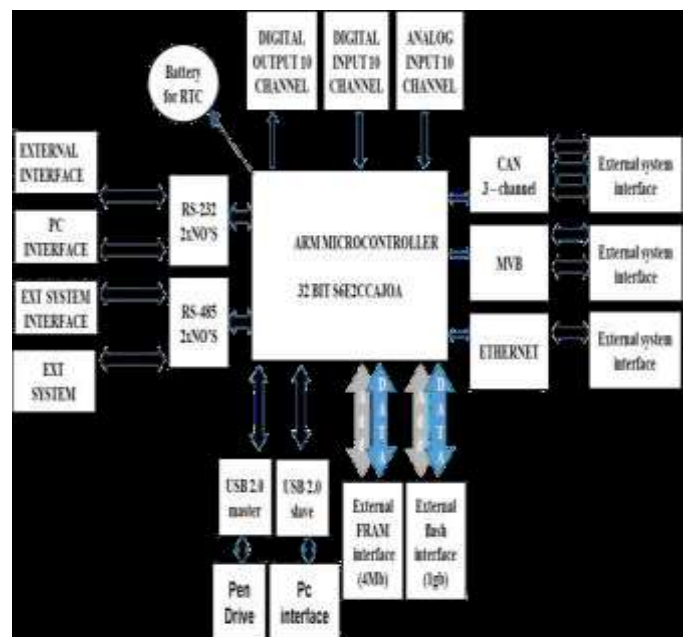 - Graphs
  - Tables

5. ARCHITECTURE OF DATA LOGGER

Figure 1. Architecture of Data Logger

In show data logger architecture which consists arm 32bit microcontroller which control all operation.in these 10 digital I/Os channels, 10 analog channels at transmitter side of controller consists Pc interface, external interface. External communication Interface used to collect the data from the system is CAN, MVB and Ethernet. The same data can be collected by the end user through RS-232, RS-485 external interface and also through USB interface which can be directly saved in the Laptop. The end user can

analyze the data to determine results and make decisions based on the logger data.

The major application protocols used are

Communication Protocols CAN, MVB, ETHERNET – for extracting or collecting the data from the external system UART, USB – to communicate to end user.
Flash Programming – for storing the data in external Flash memory.

6. WORKING OF UART

The technique of UART that is about to transmit from transmitter side and facts receives from receiver aspect from an information bus. The information bus is employed to ship records to the UART with the help of another device sort of a central processor, memory, or microcontroller. Data is transferred from the records bus to the transmission aspect UART in parallel type. When the transmission UART receives the parallel records from the information bus, it provides a begin bit, a parity bit, and a stop bit, making the statistics packet. Next, the records packet is send serially, bit by bit on the Tx pin. The receiving UART reads the records packet step by step at its Rx pin. The receiving UART then converts the statistics into parallel form and removes the begin bit, parity bit, and forestall bits. Finally, the receiving aspect UART transfers the facts packet in parallel to the facts bus at the receiving stop.

7. CONCLUSION

This paper represents importance of home parameters monitoring system for home security. Installing home security systems aren't standing symbols any longer however rather they need become a great necessity in today"s environment.

Employing embedded technology, based on AVR ATmega 16L microcontroller, the Wireless Sensor Node designed and implemented for development of home monitoring applications. Use of sensible detector module causes to reinforce the accuracy and reliability as well. On inspection of the results, it's found that the wetness knowledge given by the detector node is accurate.

8. REFERENCES

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