CAN based real time implementation in automobile

This project aims in designing a system which helps in monitoring and controlling multi-regions using CAN (Controller Area Network) protocol. This system helps in achieving communication between transmitter and receiver modules using multiple sensors like temperature, humidity, pressure of automobiles.

The CAN protocol is an ISO standard (ISO 11898) for serial data communication. The protocol was developed aiming at automotive applications. Today CAN has gained widespread use and is used in industrial automation as well as in automotives and mobile machines. The CAN protocol is implemented in silicon. This makes it possible to combine the error handling and fault confinement facilities of CAN with a high transmission speed. The method used for distributing messages to the right receivers contributes to gaining a good use of the available bandwidth. This requires a simple transmission medium. A common transmission medium is a twisted pair of wires. A CAN system can also work with just one wire. In some applications different kinds of links, optical links or radio links, are better suited. Though there is transmission hardware standard (twisted pair), it is not uncommon to use different transmission solutions depending on system requirements.

The modules in this project are: Temperature sensor capable of detecting temperature, humidity sensor to detect humidity level in the environment, Pressure sensor to get the pressure, Buzzer to give alerts, CAN transceiver is to establish communication between two microcontrollers, LCD to display the parameters.

This system makes use of two Microcontrollers which are connected using a CAN bus. One of the Microcontrollers has Temperature sensor, humidity sensor, pressure sensor, LCD and Buzzer are interfaced to it. This controller gets input from these sensors and continuously monitors them. The controller automatically monitors, if these inputs go

beyond threshold level and also alerts through buzzer. These parameters are transferred over CAN bus which is received by the other controller connected to it. This controller makes the parameters to display on LCD connected to it. Also, alerts at this system if parameters go beyond threshold level. The Microcontrollers used in this project are programmed using Embedded C programming.

The main objectives of the project are:

1. Achieving communication between two Microcontrollers.
2. Usage of CAN protocol for communication.
3. Monitoring and controlling of different parameters over multi-regions.

This project provides the following learning's:

1. CAN protocol.
2. CAN protocol implementation between two Microcontrollers.
3. ADC working.
4. Interfacing humidity, pressure and Temperature sensors to Microcontroller.
5. Interfacing Buzzer to Microcontroller.
6. Interfacing LCD to Microcontroller.

The major building blocks of the project are:

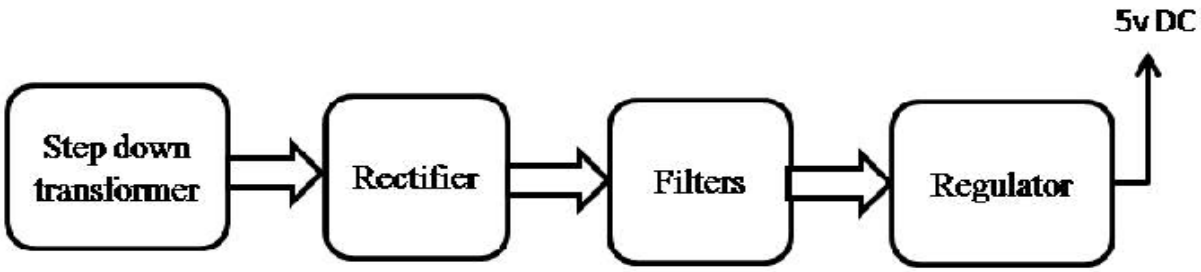
1. Regulated Power Supply.
2. Microcontrollers.
3. Humidity sensor.
4. Pressure sensor.
5. Temperature sensor.
6. Buzzer with driver.
7. LCD with driver.
8. Reset.

9. Crystal oscillator.
10. LED indicators.

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block diagram:

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