**INDUSTRIAL AUTOMATION USING CAN PROTOCOL (MOTOR SPEED CONTROL BASED ON TEMPERATURE)**

**ABSTRACT:**

The Controller Area Network (CAN) is a Serial, Asynchronous, Multi-master communication protocol for connecting electronic control modules in Automotive and industrial applications. CAN have many features like Low cost, Easy to implement, peer to peer Network with powerful Error Checking, Higher Transmission Rates 1MBitps.

Industrial automation using can protocol projects main idea is to develop a application which can handle temperature variations in a industry by using DC motor. This application is implemented using CAN protocol, the main use of can protocol is it is a serial, asynchronous, Multi master communication protocol which is used to interconnect electronic devices in auto mode in industrial applications. Implementing application using CAN will be a cost effective process with easy implementation and it can be used in peer to peer network with accurate error checking capability and the data transfer rate is 1MBps.

This application will be useful in industries to control temperature. DC motor is controlled using CAN protocol. LM35 sensors are used in integrated circuit as temperature sensors.

For detailed information on this project you can download project abstract form the below link.

This project is designed to control the DC motor based on the temperature changes using CAN protocol implementation. This Project deals with the Control of DC Motor based upon the temperature changes that occur in a process in Industry. The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The Temperature changes are measured by the ADC and transmitted to the other node using the CAN Bus and the data is received at the other node based upon the data received the speed of the DC motor is Regulated using the PWM (pulse width Modulation) Technique. This PWM is achieved by on Chip Timers.

The CAN Network is a Peer to Peer Network consisting of different nodes. Different parameters can be monitored by these Nodes and can be updated to the Central Control Unit. Mostly used in Industry and Auto Mobiles in a Hazardous Environment and is reliable.

A modern automobile may have as many as 50 [electronic control units](http://en.wikipedia.org/wiki/Electronic_control_unit) (ECU) for various subsystems. Typically the biggest processor is the [engine control unit](http://en.wikipedia.org/wiki/Engine_control_unit), which is also referred to as "ECU" in the context of automobiles; others are used for [transmission](http://en.wikipedia.org/wiki/Transmission), [airbags](http://en.wikipedia.org/wiki/Airbag), [antilock braking](http://en.wikipedia.org/wiki/Antilock_braking), [cruise control](http://en.wikipedia.org/wiki/Cruise_control), audio systems, windows, mirror adjustment, etc. Some of these form independent subsystems, but communications among others are essential. A subsystem may need to control actuators or receive feedback from sensors. The CAN standard was devised to fill this need.

The CAN bus may be used in vehicles to connect engine control unit and transmission, or (on a different bus) to connect the door locks, climate control, seat control, etc. Today the CAN bus is also used as a [field bus](http://en.wikipedia.org/wiki/Fieldbus) in general automation environments; primarily due to the low cost of some CAN Controllers and processors.

**Block diagram:**

**LCD DISPLAY (16X2)**

**TEMPERATURE SENSOR**

**CAN TX/RX**

**CAN CONTROLLER**

**MICRO CONTROLLER**

**CAN TX/RX**

**CAN CONTROLLER**

**MICRO CONTROLLER**

**POWER SUPPLY**

**LCD DISPLAY (16X2)**

**POWER SUPPLY**

**DRIVER IC**

**DC MOTOR**

Hardware components:

* At mega 16
* CAN Controller MCP2515
* CAN trans Receiver MCP2551
* Temperature Sensor
* LCD

Skill set:

* Functionality of all above components
* Embedded C programming
* Can bus protocol