OMB No. 6188034621992

Controlling Dc Motor Using Microcontroller Pic16f72 With Pwm

Driving DC Motors with Microcontrollers Wireless control DC motors based on microcontroller (Demo) ESP32 Web Server Control DC Motor Speed Using LM393 IR Module as DC Motor Speed Sensor with Arduino Controlling 12V DC motor with arduino without motor driver Control a DC Motor with Arduino (Lesson #16) (Demo) MicroPython Control a DC Motor using L298N Driver with ESP32 and ESP8266 Arduino Tutorial 37: Understanding How to Control DC Motors in Projects Dynamo Dc Motor Rotating With LED Light CECC2 : Digital Control of a DC Motor using PWM DC Motor Control with an H-Bridge and Arduino (Lesson #17) Controlling DC motors using Wireless module and Atmega128 microcontroller. Control Big Motors with your Arduino (Step by Step Tutorial) DC Motor Speed Control using PWM with PIC Microcontroller How PWM works | Controlling a DC motor with a homemade circuit Microcontroller Based 4 Quadrant DC Motor Speed Control Controlling DC Motors with the L298N H Bridge and Arduino speed control of DC motor using 8051 microcontroller DC motor PID speed control Control DC motor Speed \u0026 Direction | Simple Circuit

Open-Source Robotics and Process Control Cookbook
DC Motor Speed Controller
Microcontroller Based DC Motor Control and Measurement
Speed Sensing and Control of a DC Motor Using a Microcontroller
Direct Current Motor Control Led by Microcontroller Created PWM
Cascade control of DC brushed motor
Model Predictive Control System Design and Implementation Using MATLAB®
Embedded Digital Control with Microcontrollers
Development of Shaker (Controller)
A New Approach to Efficiently Automize & Manage Brushless DC Motor Using Pulse Width Modulation & Radio Frequency
PIC16F1847 Microcontroller-Based Programmable Logic Controller, Three Volume Set
Background, Proceedings and Repercussions of the July PSUC Trials in Barcelona
Permanent-magnet and Brushless DC Motors
Power Electronics: Circuits, Devices, and Application (for Anna University)

Controlling Dc Motor Using Microcontroller Pic16f72 With Pwm ***OMB No. 6188034621992 edited by***

JAYLA ASHTYN

Newnes

Direct current (DC) motor has already become an important drive configuration for many applications across a wide range of powers and speeds. The ease of control and excellent performance of the DC motors will ensure that it is widely used in many applications. This project is mainly concerned on DC motor speed control system by using microcontroller

PIC 16F877A. Pulse Width Modulation (PWM) technique is used where its signal is generated in microcontroller. The program for PWM generation is written in C+ Language using MPLAB IDE software. It is programmed into the microcontroller using PIC Microcontroller Start-up Kit. Then the microcontroller is installed into the motor control circuit. The Microcontroller acts as the motor speed controller in this project. The PWM signal will send to motor driver to vary the voltage supply to motor to acquire desired speed. Besides, it also shows a graph of motor speed versus PWM dutycycle percentage to let the user monitor the performance of the system easily. Based on the result, the readings are quite reliable. Through the project, it can be concluded that microcontroller PIC 16F877A can control motor speed at desired speed efficiently by using Pulse Width Modulation signal.

Open-Source Robotics and Process Control Cookbook McGraw Hill Professional

Model Predictive Control System Design and Implementation Using MATLAB® proposes methods for design and implementation of MPC systems using basis functions that confer the following advantages: - continuous- and discrete-time MPC problems solved in similar design frameworks; - a parsimonious parametric representation of the control trajectory gives rise to computationally efficient algorithms and better on-line performance; and - a more general discrete-time representation of MPC design that becomes identical to the traditional approach for an appropriate choice of parameters. After the theoretical presentation, coverage is given to three industrial applications. The subject of quadratic programming, often associated with the core optimization algorithms of MPC is also introduced and explained. The technical contents of this book is mainly based on advances in MPC using state-space models and basis functions. This volume includes numerous analytical examples and problems and MATLAB® programs and exercises.

DC Motor Speed Controller GRIN Verlag

The book covers various topics in mechanical engineering, with a special attention to machine design, product assembly, technological aspects of production, mechatronics and production maintenance. Based on peer-reviewed papers presented at the 7th International Scientific-Technical Conference MANUFACTURING 2022, held in Poznan, Poland, on May 16-19, 2022, the different chapters describe cutting-edge research and methods fostering automation and optimization of industrial processes and machining, with an emphasis on energy-efficient and ecological solutions. All in all, this book offers a timely guide for researchers and professionals in mechanical engineering and manufacturing, yet it is also intended to foster communication and cooperation between universities and industrial partners

Microcontroller Based DC Motor Control and Measurement Elsevier

This proceeding includes original and peer-reviewed research papers from the 3rd International Conference on Control, Instrumentation and Mechatronics Engineering (CIM2022). The conference is a virtual conference held on 2-3 March 2022. The topics covered latest work and finding in the area of Control Engineering, Mechatronics, Robotics and Automation, Artificial Intelligence, Manufacturing, Sensor, Measurement and Instrumentation. Moreover, the latest applications of instrumentations,

control and mechatronics are provided. Therefore, this proceeding is a valuable material for researchers, academicians, university students and engineers.

Speed Sensing and Control of a DC Motor Using a Microcontroller

John Wiley & Sons
The use of microcontroller based solutions to everyday design problems in electronics, is the most important development in the field since the introduction of the microprocessor itself. The PIC family is established as the number one microcontroller at an introductory level. Assuming no prior knowledge of microprocessors, Martin Bates provides a comprehensive introduction to microprocessor systems and applications covering all the basic principles of microelectronics. Using the latest Windows development software MPLAB, the author goes on to introduce microelectronic systems through the most popular PIC devices currently used for project work, both in schools and colleges, as well as undergraduate university courses. Students of introductory level microelectronics, including microprocessor / microcontroller systems courses, introductory embedded systems design and control electronics, will find this highly illustrated text covers all their requirements for working with the PIC. Part A covers the essential principles, concentrating on a systems approach. The PIC itself is covered in Part B, step by step, leading to demonstration programmes using labels, subroutines, timer and interrupts. Part C then shows how applications may be developed using the latest Windows software, and some hardware prototyping methods. The new edition is suitable for a range of students and PIC enthusiasts, from beginner to first and second year undergraduate level. In the UK, the book is of specific relevance to AVCE, as well as BTEC National and Higher National programmes in electronic engineering. · A comprehensive introductory text in microelectronic systems, written round the leading chip for project work · Uses the latest Windows development software, MPLAB, and the most popular types of PIC, for accessible and low-cost practical work · Focuses on the 16F84 as the starting point for introducing the basic architecture of the PIC, but also covers newer chips in the 16F8X range, and 8-pin mini-PICs

Direct Current Motor Control Led by Microcontroller Created PWM CRC Press
Small electric motors are crucial to the manufacture of industrial robots, numerically controlled machines, and computer peripherals such as disk drives and printers. In this handbook, Dr. Kenjo considers two of the most important small motors, permanent-magnet and brushless DC motors, explaining how to select the most suitable motor for the the intended application and how to design the drive circuitry. The book provides clear descriptions of the basic machine structure, the constructional relationships between conventional and brushless DC machines, and the drive and control circuitry. Generously illustrated and easy-to-follow.

Cascade control of DC brushed motor
European Alliance for Innovation
For the first time in a single reference, this book provides the beginner with a coherent and logical introduction to the hardware and software of the PIC32, bringing together key material from the PIC32 Reference Manual, Data Sheets,

XC32 C Compiler User's Guide, Assembler and Linker Guide, MIPS32 CPU manuals, and Harmony documentation. This book also trains you to use the Microchip documentation, allowing better life-long learning of the PIC32. The philosophy is to get you started quickly, but to emphasize fundamentals and to eliminate "magic steps" that prevent a deep understanding of how the software you write connects to the hardware. Applications focus on mechatronics: microcontroller-controlled electromechanical systems incorporating sensors and actuators. To support a learn-by-doing approach, you can follow the examples throughout the book using the sample code and your PIC32 development board. The exercises at the end of each chapter help you put your new skills to practice. Coverage includes: A practical introduction to the C programming language Getting up and running quickly with the PIC32 An exploration of the hardware architecture of the PIC32 and differences among PIC32 families Fundamentals of embedded computing with the PIC32, including the build process, time- and memory-efficient programming, and interrupts A peripheral reference, with extensive sample code covering digital input and output, counter/timers, PWM, analog input, input capture, watchdog timer, and communication by the parallel master port, SPI, I2C, CAN, USB, and UART An introduction to the Microchip Harmony programming framework Essential topics in mechatronics, including interfacing sensors to the PIC32, digital signal processing, theory of operation and control of brushed DC motors, motor sizing and gearing, and other actuators such as stepper motors, RC servos, and brushless DC motors For more information on the book, and to download free sample code, please visit http://www.nu32.org Extensive, freely downloadable sample code for the NU32 development board incorporating the PIC32MX795F512H microcontroller Free online instructional videos to support many of the chapters

Model Predictive Control System Design and Implementation Using MATLAB® Pearson Education India

This project is about controlling the speed of DC servo motor by using Proportional-Integral-Derivative (PID) algorithm then implemented on Peripheral Interface Circuit (PIC) microcontroller. The main objective of this project is to control the speed of DC servo motor at the demanded speed or to drive the motor at that speed. The speed of a DC motor usually is directly proportional to the supply voltage. So, if we reduce the supply voltage from 12 Volts to 6 Volts, the motor will run at half the speed. It could be achieved by simply adjusting the voltage sent to the motor, but this is quite inefficient to do. So, A PID controller becomes the best way to overcome this problem. PID attempts to correct the error between a measured process variable and a desired setpoint by calculating and then outputting a corrective action that can adjust the process accordingly. In this project, the PID algorithm that is added to the system becomes a closed loop system. A simulation using MATLAB software is implemented to tune PID algorithm by changing the value of Proportional gain, Kp, Integral gain, Ki and Derivative gain, Kd to get a speed of the motor which is less overshoot and increase settling time. Then, a PIC microcontroller is programmed by adding the value of tuned PID algorithm to control the speed of DC servo motor.

At the end of the project, the speed of the DC servo motor should be maintain even the supply voltage is varied. *Embedded Digital Control with Microcontrollers* McGraw-Hill/Glencoe
In the current century, DC motors plays a vital role in industrial areas. The efficient motor, are motor that be able to control the speed. Motor speed is controller by signal representing from microcontroller, in this project, the power converter for DC motor application is developed. One type of common method is by using Pulse Width Modulation (PWM), to control the speed of DC motor. Rectifiers which converted AC to DC supply and buck/boost converter are used to step up/step down a voltage or current while DC motor used as a load. Supplies to the DC motor are developed and the output is controlled by using PWM. PIC microcontroller is used to generate the PWM wave which can be varied in duty ratio, in order to create another level of DC voltage. This project starts with design circuit of a buck-boost converter using Orcad software and also Proteus 7.6 professional. In addition, hardware prototype has been developed based on the circuit designed. The system performance are evaluated and analyzed in comparison with a simulation results, at the end of this project the motor speed will satisfied the desired speed. Development of Shaker (Controller) LAP Lambert Academic Publishing
Program PIC microcontrollers to drive small motors Get your motors running in no time using this easy-to-follow guide. Detailed circuit diagrams and hands-on tutorials show you, step by step, how to program PIC microcontrollers to power a wide variety of small motors. You'll learn how to configure all the hardware and software components and test, troubleshoot, and debug your work. Running Small Motors with PIC Microcontrollers is filled with more than 2,000 lines of PicBasic Pro code you can use right away. Use PIC microcontrollers to control all kinds of small motors, including: Model aircraft R/C servos Small DC motors Servo DC motors with quadrature encoders Bipolar stepper motors Small AC motors, solenoids, and relays
A New Approach to Efficiently Automize & Manage Brushless DC Motor Using Pulse Width Modulation & Radio Frequency Elsevier
Linear Quadratic Regulator (LQR) algorithm is one of the controller methods to control a system. In this project, the LQR was implemented on the PIC microcontroller to control the dc motor. The main objective of this controller is to minimize the deviation of the speed of dc motor. Dc motor speed is controlled by its driving voltage. The higher the voltage, the higher the motor speed. The speed of the motor is specifying that will be the input voltage of the motor and the output will be compare with the input. As the result, the output must be the same as or approximately the same as the input voltage. In this project, the LQR algorithm was implemented on the PIC microcontroller so the result can be shown. Before the implementation on the PIC, the dc motor state-space has to be derived. Then, from the state-space, we can design the LQR controller by using the MATLAB software. The stable system is got by tuning the Q and R value that can be seen by the simulation.
PIC16F1847 Microcontroller-Based Programmable Logic Controller, Three Volume Set Springer Nature
The speed control of DC motors is very

crucial in applications where the importance of precision and protection. Purpose of a motor speed controller is to take a signal representing the required speed and to drive a motor at that speed. Micro controller can provide easy control of DC motor. This project is about speed control system of DC motor by using micro controller and it is a closed-loop control system. Pulse Width Modulation (PWM) technique is used where its signal is generated in microcontroller which is the signal will send to motor driver to vary the voltage supply to control motor speed.

Background, Proceedings and Repercussions of the July PSUC Trials in Barcelona Elsevier

EMBEDDED DIGITAL CONTROL WITH MICROCONTROLLERS Explore a concise and practical introduction to implementation methods and the theory of digital control systems on microcontrollers Embedded Digital Control with Microcontrollers delivers expert instruction in digital control system implementation techniques on the widely used ARM Cortex-M microcontroller. The accomplished authors present the included information in three phases. First, they describe how to implement prototype digital control systems via the Python programming language in order to help the reader better understand theoretical digital control concepts. Second, the book offers readers direction on using the C programming language to implement digital control systems on actual microcontrollers. This will allow readers to solve real-life problems involving digital control, robotics, and mechatronics. Finally, readers will learn how to merge the theoretical and practical issues discussed in the book by implementing digital control systems in real-life applications. Throughout the book, the application of digital control systems using the Python programming language ensures the reader can apply the theory contained within. Readers will also benefit from the inclusion of: A thorough introduction to the hardware used in the book, including STM32 Nucleo Development Boards and motor drive expansion boards An exploration of the software used in the book, including Python, MicroPython, and Mbed Practical discussions of digital control basics, including discrete-time signals, discrete-time systems, linear and time-invariant systems, and constant coefficient difference equations An examination of how to represent a continuous-time system in digital form, including analog-to-digital conversion and digital-to-analog conversion Perfect for undergraduate students in electrical engineering, Embedded Digital Control with Microcontrollers will also earn a place in the libraries of professional engineers and hobbyists working on digital control and robotics systems seeking a one-stop reference for digital control systems on microcontrollers.

Permanent-magnet and Brushless DC Motors Springer Science & Business Media

Direct Current Motor Control Led by Microcontroller Created PWM

Power Electronics: Circuits, Devices, and Application (for Anna University) Springer Nature

EMBEDDED DIGITAL CONTROL WITH MICROCONTROLLERS Explore a concise and practical introduction to implementation methods and the theory of digital control systems on microcontrollers Embedded Digital Control with Microcontrollers delivers expert instruction in digital control system implementation techniques on

the widely used ARM Cortex-M microcontroller. The accomplished authors present the included information in three phases. First, they describe how to implement prototype digital control systems via the Python programming language in order to help the reader better understand theoretical digital control concepts. Second, the book offers readers direction on using the C programming language to implement digital control systems on actual microcontrollers. This will allow readers to solve real-life problems involving digital control, robotics, and mechatronics. Finally, readers will learn how to merge the theoretical and practical issues discussed in the book by implementing digital control systems in real-life applications. Throughout the book, the application of digital control systems using the Python programming language ensures the reader can apply the theory contained within. Readers will also benefit from the inclusion of: A thorough introduction to the hardware used in the book, including STM32 Nucleo Development Boards and motor drive expansion boards An exploration of the software used in the book, including Python, MicroPython, and Mbed Practical discussions of digital control basics, including discrete-time signals, discrete-time systems, linear and time-invariant systems, and constant coefficient difference equations An examination of how to represent a continuous-time system in digital form, including analog-to-digital conversion and digital-to-analog conversion Perfect for undergraduate students in electrical engineering, Embedded Digital Control with Microcontrollers will also earn a place in the libraries of professional engineers and hobbyists working on digital control and robotics systems seeking a one-stop reference for digital control systems on microcontrollers.

Development of Buckboost Converter for DC Motor Speed Control Application

Direct Current Motor Control Led by Microcontroller Created PWMDirect current (DC) motor has already become an important drive configuration for many applications across a wide range of powers and speeds. The ease of control and excellent performance of the DC motors will ensure that it is widely used in many applications. This project is mainly concerned on DC motor speed control system by using microcontroller PIC 16F877A. Pulse Width Modulation (PWM) technique is used where its signal is generated in microcontroller. The program for PWM generation is written in C+ Language using MPLAB IDE software. It is programmed into the microcontroller using PIC Microcontroller Start-up Kit. Then the microcontroller is installed into the motor control circuit. The Microcontroller acts as the motor speed controller in this project. The PWM signal will send to motor driver to vary the voltage supply to motor to acquire desired speed. Besides, it also shows a graph of motor speed versus PWM dutycycle percentage to let the user monitor the performance of the system easily. Based on the result, the readings are quite reliable. Through the project, it can be concluded that microcontroller PIC 16F877A can control motor speed at desired speed efficiently by using Pulse Width Modulation signal.DC Motor Control - A case study

Master's Thesis from the year 2014 in the subject Electrotechnology, grade: Distinction, University of Newcastle upon Tyne, language: English, abstract: The aim of this project is to control speed of permanent magnet DC motor by using technique called cascade control. In this

project the working of PMDC motor, H-bridge using unipolar switching scheme, PI controller in current loop and speed loop of cascade control is first studied by simulating in MATLAB software and after that practically applied cascade control on PMDC motor using flexible inverter board. In this project dsPIC30F3010 is programmed and armature current and armature voltage is controlled by inner current loop and outer speed loop of coascade control. In this project investigation of effect of anti-windup C code on drive performance is done. The flexible board has microcontroller, current sensor and H-bridge circuit on it which will be used to supply voltage to PMDC motor. As a PMDC motor, DC motor rig is used which has two identical DC motor coupled together and one motor have encoder fitted on it and other motor have tacho-generator fitted on it.

Electrical Machines BookRix

The automatic control has played a vital role in the advance of engineering and science. Nowadays in industries, the control of direct current (DC) motor is a common practice thus the implementation of DC motor of controller speed is important. The main purpose of motor speed control is to keep the rotation of the motor at the preset speed and to drive a system at the demanded speed. When used in speed application, speed feedback control the DC motor's speed or confirms that the motor is rotating at the desired speed. To maintain the speed, it requires the speed feedback at all times. The speed of a DC motor usually is directly proportional to the supply voltage. For instance, if we reduce the supply voltage from 12 Volts to 6 Volts the motor will run at half or lower the speed. The advantages used DC motor is provide excellent speed control for acceleration and deceleration with effective and simple torque control. The fact that the power supply of a DC motor connects directly to the field of the motor allows for precise voltage control, which is necessary with speed and torque control applications. The common methods are used to control speed DC motor is Proportional Integral Derivative (PID) and PC based to control it. In this project, the method use as controller is Programmable Interface Controller (PIC) microcontroller for the electric current control to drive a motor. The expectation of this project is to get the precise the demanded speed and to drive a motor at that speed.

Embedded Computing and Mechatronics with the PIC32 Microcontroller GRIN Verlag

The growth rate of the global halal industry has increased in recent years, from 7.5% in 2015 to more than 8% in 2016 and is expected to continue to increase in 2017 and beyond. Indonesia in particular has great potential in the development of the halal industry sector because of the percentage of Indonesia’s population which constitutes 12.7% of the world’s Muslim population. The large potential of Indonesia in the halal industry sector can support national economic growth. The market for halal industry in Indonesia, especially the food, travel, fashion, medicines and cosmetics sectors has reached around 11% of the global market in 2016. Behind the development of the halal industry globally, there are challenges especially in the health sector. The fact about guaranteeing halal products on drugs is still very alarming because the data from LPPOM MUI shows that out of 30 thousand types of drugs registered with BPPOM and circulating in the community, only 34 drugs are halal

certified. In the food sector, data shows that Indonesia is the highest spending country for halal food compared to other countries in the world with a total expenditure of 170 billion US dollars. In the field of Occupational Health and Safety (OHS) is inseparable in the development of human resources in the halal industry. The security and quality of the halal industry are also closely related to the quality of human resources and the nation's competitiveness. The current development of the halal industry is fairly rapid in non-Muslim majority countries such as Thailand, South Korea, Russia, Mexico, Japan, and Spain. On the contrary, Indonesia has become a contested market target for halal products for foreign countries. This condition will backfire for Indonesia if there are no quick steps to follow up on this problem. Because Indonesian people will only be targeted by consumers in the halal industry market. Strengthening regulatory development programs based on science and scientific and evidence according to standard development programs as well as strengthening the system of guidance and supervision of industrial security and its implementation in anticipation of the digital era needs to be done. To answer this problem U-GO Healthy Forum will hold International seminars and Call for Paper with the theme "The Role of Health Expert in Solving Contemporary Issues in Halal Industry" as the initial step to strengthen the security system of the halal industry.

Advances in Manufacturing III

Pearson Education India
The 8051 architecture developed by Intel has proved to be the most popular and enduring type of microcontroller, available from many manufacturers and widely used for industrial applications and embedded systems as well as being a versatile and economical option for design prototyping, educational use and other project work. In this book the authors introduce the fundamentals and capabilities of the 8051, then put them to use through practical exercises and project work. The result is a highly practical learning experience that will help a wide range of engineers and students to get through the steepest part of the learning curve and become proficient and productive designing with the 8051. The text is also supported by practical examples, summaries and knowledge-check questions. The latest developments in the 8051 family are also covered in this book, with chapters covering flash memory devices and 16-bit microcontrollers. Dave Calcutt, Fred Cowan and Hassan Parchizadeh are all experienced authors and lecturers at the University of Portsmouth, UK. Increase design productivity quickly with 8051 family microcontrollers Unlock the potential of the latest 8051 technology: flash memory devices and16-bit chips Self-paced learning for electronic designers, technicians and students

8051 Microcontroller: Internals, Instructions, Programming & Interfacing

John Wiley & Sons
This book is all about running a brushless DC motor using a sensorless technique. The target of the work was to make a very simple operating method for a brushless motor and formulate a speed control mechanism. Initially the work was started with both considering back-EMF and without considering back-EMF. Because of more complexity in the

back-EMF sensing method, and as our intention was to make a simpler and cost effective operation, so finally we assembled our project the without back-EMF sensing. Even though being a simple and inexpensive machine, the performance was quite good. However adding back-EMF sensing in this machine can give it more dependability.TABLE OF CONTENTS: