80c196kc manual

intel

8XC196KC/8XC196KC20
COMMERCIAL/EXPRESS CHMOS
MICROCONTROLLER

87C196KC—16 Kbytes of On-Chip OTPROM
83C196KC—16 Kbytes ROM
80C196KC—ROMless

- 16 and 20 MHz Available
- 488 Byte Register RAM
- Register-to-Register Architecture
- 28 Interrupt Sources/16 Vectors
- Peripheral Transaction Server
- 1.4 µs 16 x 16 Multiply (20 MHz)
- 2.4 µs 32/16 Divide (20 MHz)
- Powerdown and Idle Modes
- Five 8-Bit I/O Ports
- 16-Bit Watchdog Timer
- Extended Temperature Available
- Dynamically Configurable 8-Bit or 16-Bit Buswidth
- Full Duplex Serial Port
- High Speed I/O Subsystem
- 16-Bit Timer
- 16-Bit Up/Down Counter with Capture
- 3 Pulse-Width-Modulated Outputs
- Four 16-Bit Software Timers
- 8- or 10-Bit A/D Converter with Sample/Hold
- HOLD/HLDA Bus Protocol
- OTPROM One-Time Programmable Version

The 80C196KC 16-bit microcontroller is a high performance member of the MCS® 96 microcontroller family. The 80C196KC is an enhanced 80C196KB device with 488 bytes RAM, 16 and 20 MHz operation and an optional 16 Kbytes of ROM/OTPROM. Intel's CHMOS III process provides a high performance processor along with low power consumption.

The 87C196KC is an 80C196KC with 16 Kbytes on-chip OTPROM. The 83C196KC is an 80C196KC with 16 Kbytes factory programmed ROM. In this document, the 80C196KC will refer to all products unless otherwise stated.

Four high-speed capture inputs are provided to record times when events occur. Six high-speed outputs are available for pulse or waveform generation. The high-speed output can also generate four software timers or start an A/D conversion. Events can be based on the timer or up/down counter.

With the commercial (standard) temperature option, operational characteristics are guaranteed over the temperature range of 0°C to +70°C. With the extended (Express) temperature range option, operational characteristics are guaranteed over the temperature range of −40°C to +85°C. Unless otherwise noted, the specifications are the same for both options.

See the Packaging information for extended temperature designators.

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- **80c196kc user manual, 80c196kc manual.**

In Mit zwei EPROMs und zwei RAMs ist die Schaltung fur echte,, da. August 2004. Order Number 272973. No license, express or implied, by estoppel or Except as provided in Intel’s Terms and Conditions Intel products are not intended for use in medical, Current characterized errata are available on. By using our website and services, you expressly agree to the placement of our performance, functionality and advertising cookies. Please see our Privacy Policy for more information. Update your browser for more security, comfort and the best experience for this site. Try Findchips PRO Current characterized errata are documented in this specification update. Characterized errata that may cause the 8XC196KC ’s behavior to deviate from published specifications are documented. By using our website and services, you expressly agree to the placement of our performance, functionality and advertising cookies. Please see our Privacy Policy for more information. Update your browser for more security, comfort and the best experience for this site. Try Findchips PRO Current characterized errata are documented in this specification update. Characterized errata that may cause the 8XC196KC ’s behavior to deviate from published specifications are documented Introduction Digital Signal Processing DSP is the technique of using digital devices to process. Reserved Must Contain 20H Note 5 CCB Reserved Must contain FFH Note 5 Lower Interrupt Vectors EXAMPLE is 68Lead PLCC OTPROM 16 MHz For complete package dimensional data refer to the Intel Packaging Handbook Order Number 240800. NOTE 1 EPROMs are available as One Time Programmable OTPROM only Port 3 and Port 4 External Memory 488 Bytes Register RAM Note 1 Figure 3 The 8XC196KC Family Nomenclature Table 1 Thermal

Characteristics Package Type PLCC QFP SQFP ija C W TBD ijc C W TBD The CXP846P48 also provides. The MB89130A. The PICmicro family meets the s contained in the Microchip Data Sheet.http://www.alphapipes.com/userfiles/image/calculus-jon-rogawski-solutions-manual-pdf.xml

Microchip believes that its family of PICmicro microcontrollers is one of the most secure products of its kind on the market today, when used in the intended manner and under normal conditions. There are dishonest. Only 35 instructions to learn All singlecycle instructions 200 ns, except for program branches which are twocycle Operating speed 20 MHz clock input 200 ns instruction cycle Device PIC16C622 PIC16C622A Program Memory 1K 2K Data Memory Programmable code protection Power saving SLEEP mode Selectable oscillator options Serial incircuit programming. The is a wide range operation, 16Mbit, Read Only Memory. It is organized x 8 bits byte mode x 16 bit word mode depending on BYTE pin voltage level. ST23L1610 has a static standby mode, and has an access time of 150 ns. It is designed to be compatible with all microprocessors and similar applications in which high performance, large bit storage. Detailed functions, etc.The is a microcontroller for digital controlled monitor with Universal Serial Bus USB interface.It provides an 8bit MCU and a 4channel Wavetable synthesizer. It has a builtin 8bit microprocessor which controls the synthesizer to generate the melody by setting the special register. A HALT. This combination will provide lower costs, enhanced performance, and higher quality. Functional Overview ARM CortexM3 OnChip Memory. Serial Communications Peripherals. System Integration. Analog. JTAG and ARM Serial Wire Debug. Packaging and Temperature Target Applications. HighLevel Block Diagram Hardware Details. Block Diagram. 49 Overview. 50 SystemLevel Interface. 50 Integrated Configurable Debug. 50 Trace Port Interface. This paper presents an optimally designed and realized solar pumping system which can be used for irrigation, under variation of climate conditions in remote areas, far away from electric grid. The solar pumping system is built at the laboratory level and the tests show correct operation of the proposed system. Streszczenie.

Energia sloneczna cieszy sie wiekszym zainteresowaniem jako zrodlo energii dla systemow pompowania wody, szczegolnie w odizolowanych regionach. Zwiekszenie wydajnosci pompowania systemu zalezy od optymalizacji pozyskiwania energii slonecznej i zuzycie energii przez system. W artykule przedstawiono optymalnie zaprojektowany i zrealizowany sloneczny system pompowania, ktory moze byc zastosowany do nawadniania, z uwzglednieniem zmiennosci warunkow klimatycznych w odleglych obszarach, z dala od sieci elektrycznej. Uklad sloneczny pompowania jest zbudowany w laboratorium a testy wykazuja prawidlowe dzialanie proponowanego systemu. System pompowania zasilanego energia fotowoltaiczna zrealizowany za pomoca mikrokontrolera Intel 80C196KC. Download fulltext PDF Enhancement of pumping system efficiency depends on optimization of solar ener gy generation and system consumption. This paper presents an optimally designed and rea lized solar pumping system which can be used for irri gation, under variation of climate condit ions in remote areas, far away from ele ctric grid. The solar pumping system is built at the laboratory level and the tests show correc t operation of the proposed system. Streszczenie. Energia sloneczna cieszy sie wiekszym zainteresowanie m jako zrodlo energii dla syst emow pompowania wody, szczegolnie w odizolowanych regionach. Zwiekszenie wydajnosci pompowania systemu zalezy od optymaliz acji pozyskiwania energii slonecznej i zuzycie energii przez system. W artykule przedstawiono optym alnie zaproje ktowany i zrealizowany slonecz ny system pompowa nia, ktory moze byc zastosowany do nawadniania, z uwzglednieniem z miennosci warunkow klimatycznych w odleglych obszarach, z dala od sieci elektrycz nej. Uklad sloneczny pompowania jest zbudowany w laboratorium a testy wykazuja prawidlowe dzialanie p roponowanego systemu. System pompowania zasilanego energia fotowoltaiczna zrealizowany za pomoca mikrok ontrolera Intel 80C196KC .

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Slowa kluczowe generator fotowoltaiczne, MP PT, przeksztaltnik, pompa napedzana silnikiem

elektrycznym Introduction The utilization of photovol taic conversion to power water pumps is today an emerging technology, characterized by gradually declining costs. In remo te areas far away from the electric grid, the use of photovo ltaic pumping systems for irrigation is today economically advantageous. Algeria is a large country with the area of about 2.4 millions square km with diverse climatic conditions. Solar energy represents a significant potential in Algeria. Obviously, photovoltaic genera tors are classified as nonlinear electrical sources sin ce the output power is affected by the weather condition s such as irradiance level and temperature which chan ges randomly in time. The optimization of the photovoltaic p umping system is based upon the optimization of the power delivered by the photovoltaic generator; this is do ne by the maximum power point tracking MPPT and the optimization of the induction motor operation which is compl eted by the application of a nearly constant voltage tofrequencyratio control technique. System layout The schematic diagram of the realized photovoltaic pumping system is proposed in fig. 1. As shown in the figure, the system consists of a photovoltaic generator which presents the power supp ly source. A boost chopper, which is used as an MPPT, con nected to a pulse width modulation PWM controlled voltage sourc e inverter, which converts the DC voltage to AC vol tage in orde r to feed the threephase induction motor. The MPPT control strategy and the inverter PWM sw itching pattern are implemented in the microcontroller as a program. Fig. 1. Block diagram of PV pumping system Photovoltaic generator A photovoltaic generator co nsists of a number of modules, formed by the i nterconnection of photovoltaic cells, connected together in seri es and parallel to provide the required voltage and curre nt.

The generator sizing therefore depends on the con nexion variability of the modules that constitute the generator and the cells that comprise the modules. Photovoltaic cells convert the solar radiation into electrical energy. The conversion is however limited to the spectrum of solar radiation that can be utilized. Vo ltage PVG Volt age V PVG Powe r W In order to optimize the electrical operating conditions of the generator, it is necessary to use a specialized device. This device, maximum power po int tracker, consists of a power section and a control section. This means that the converter output voltage can be simply controlled by the vari ation of the duty cycle. In order to track the maximum power point of the photovoltaic ge nerator the duty cycle.The inductor value, L, re quired to operate the converter continuously in conduction mode is calculated such that the peak inductor current at maximu m output power does not exceed the power switch current rating. I pv peaktopeak inductor ripple current. The choice of the converte r inductor value and the switching frequency is a co mpromise between converter efficiency, cost, power capability and weight. V out peaktopeak ripple capacitor output voltage. These techniques are based on the regulation of the photovoltaic generator output voltage or current according to a reference voltage or current signal, which is either constant or derived from the PV generator characteristics. This kind of MPPT technology simplifies the system control structure to one control loop as shown in fig.5. Fig.5. Block diagram of the MPPT control The control technique flowcha rt is shown in fig.6. Slope is a program variable with valu es either 1 or 1 indicating the direction that must follow on the P D curve in order to increase the output power. While d represents the increment step of duty cycle, which is a constant number between 0 and 1, and P and.

The inverter output voltage is controlled by a sin usoidal pulse width modulation PWM control techniqu e in which a high frequency symmetrical triangular carrier wave is compared to a synchronized sine wa ve modulating reference wave with the required output frequency. The sinusoidal PWM control technique is generated by the microcontroller in such a way that the inverter output voltagetofrequency ratio is maintained constant. Due to the fluctuation of the maximum inp ut power produced by the photovoltaic generator throug h the MPPT according to the

solar radiation level and temperatu re, the inverter output power is variable. Fig. 8. PM10CSJ060 inverter internal circuit Induction motor operation To produce a starting torqu e, and subsequently a running torque, it is necessary to have a current flowing through the rotor winding by sho rt circuiting the winding. Initially the induced e.m.f. from the inverter causes a rotor current per phase I R to flow through the short circuit, and acts with the flux field to produce the starting torque. The sense of this torque is always to cause the rotor to run in the same direction as the rotating field. The flux field is assumed to revolve at a speed corresponding to the applied stator frequency and the poles of th e stator winding. This speed is called the synchrono us speed and is given by 5 5.Nevertheless the terminal voltage can be considered pro portional to the product of frequency and the flux. If the vol tage is maintained fixed at its rated value while the frequ ency is reduced below its rated value, the flux will increase. This would cause saturation of the airgap flux. At low frequency the reactance will decrease and the motor current may be too high.Motor operation at S op implies that the in put impedance, the power factor, and the motor efficie ncy are constant.

The optimum mechanical speed is given by 11 11 Centrifugal pump The pump represents the mechanical load of the induction motor and its size iden tifies the power rating of the other system component. P pump efficiency, P mech pump input mechanical power. It can be seen from the figure that the converter losses at the duty cycle 0.5 are higher than any other duty cycle values. Fig 11.Converter input and output po wer against the duty cycle. Figure.12 shows the voltage across the converter switch and the current flow during turn off and turns on. The increase and decrease of vo ltage and current in both commutation modes are spike less which confirm a reduction of converter losses. The inductor current contains minimum ripple as shown in fig13.The po wer electronics part of the photovoltaic pumping system and their gate dri ving circuits were optimally designed, reali zed and tested.Laboratory test results of the wh ole system where found to agree well with the planned performance.Improvement of photovoltaic pumping systems based on standard frequency converters by means of programmable logic controllers Article Jan 2010 SOL ENERGY Jose FernandezRamos L. Narvarte Fernando Poza Saura Photovoltaic pumping systems PVPS based on standard frequency converters SFCs are currently experiencing a growing interest in pumping programmes implemented in remote areas because of their high performance in terms of component reliability, low cost, high power range and good availability of components virtually anywhere in the world. However, in practical applications there have appeared a number of problems related to the adaptation of the SFCs to the requirements of the photovoltaic pumping systems PVPS. Another disadvantage of dedicated PVPS is the difficulty in implementing maximum power point tracking MPPT. This paper shows that these problems can be solved through the addition of a basic industrial programmable logic controller PLC to the system.

This PLC does not increase the cost and complexity of the system, but improves the adaptation of the SFC to the photovoltaic pumping system, and increases the overall performance of the system. However, operation with fixed size perturbations results in a tradeoff between speed of response and maximum power yield in the steadystate. This paper discusses the use of Fuzzy logic and nonswitching zone schemes for implementing variable size perturbations for improved transient and steadystate responses. Experimental results are then used to verify how the computational burden of each algorithm and the processing speed of a digital signal processor DSP affect the performance of each method in a prototype. The best performance is achieved with a new strategy called nonswitching zones in the VPVIPV plane. The power electronics converter operates with duty cycle D equal to 0 or 1, depending on which nonMPP region the system operates, pushing the operating point the fastest way possible towards the MPP region, for improved transient response. View Show abstract Promotion of renewable energies in Algeria Strategies and perspectives Article Feb 2011 RENEW SUST ENERG REV A. Boudghene Stambouli During the last few years, political support for renewable energies has been growing continuously both at the national and international level and most scientists now agree that the Middle East and North Africa MENA are perfectly placed to play

a leading role in the lucrative future solar and wind power industries. The interest for the development of renewable energies was perceived very early in Algeria with the creation of the solar energy institute as soon as 1962. Algeria plays a very important role in world energy markets, both as a significant hydrocarbons producer and exporter, as well as a key participant in the renewable energy market. Due to its geographical location, Algeria holds one of the highest solar reservoirs in the world.

This paper deals with a review of the present renewable energy RE situation and assessed present and future potential of RE sources in Algeria. It also discusses the trends and expectation in solar and wind systems applications and the aspects of future implementation of renewable energies making emphasis on the Middle East and North Africa MENA region status. The problem related to the use of RES and polices to enhance the use of these sources are also analysed in this paper. In addition the available capacity building, the technical knowhow for each RE sources technology and localising manufacturing of RE equipments have been defined. View Show abstract Vector control of an induction motor fed by a photovoltaic generator Article Feb 2003 APPL ENERG Mohamed Arrouf NourEddine Bouguechal With the continuous decrease of the cost of solar cells, there is an increasing interest in photovoltaic PV system applications. Electric motors powered by solarcell generators are one of the most important applications, such as in water pumping systems. This paper investigates a photovoltaicelectro mechanic chain, composed of a PV generator, an impedance adapter DCDC converter, a storage battery and a vector controlled induction machine. The PV generator is forced to operate at its maximum power point by using an appropriate search algorithm, and a balance between battery charge and motor supply is also ensured in all insolation conditions. Simulation results show the effectiveness and feasibility of such an approach. View Show abstract Solar powered induction motordriven water pump operating on a desert well, simulation and field tests Article Apr 2005 RENEW ENERG AbdelKarim Daud Marwan Mahmoud A photovoltaicpowered water pumping system, employing an induction motor pump, capable of supplying a daily average of 50 m3 at 37m head has been developed.

This model allows the representation of motor torque in function of speed and slip at different supply frequencies, as well as the flow rate and efficiency of the system in function of supply frequency and pumping head.Prior to its installation on the desert well, the system performance, in accordance with frequency and head, was thoroughly tested in the laboratory. As illustrated in this paper, simulation and laboratory testing results are well matched. At constant pumping head, the flow rate is proportional to the supply frequency of the motor. At constant flow rate, the pumping head is proportional to the supply frequency squared only in the range below the peak efficiency of the pump. For higher flow rate values, a special algorithm based on the experimental results could be developed.Higher system efficiency is achievable at higher frequency. It is advisable to operate the motor pump at the nominal frequency, flow rate and head corresponding to maximum efficiency.Longterm field testing of the system shows that it is reliable and has an overall efficiency exceeding 3%, which is comparable to the highest efficiencies reported elsewhere for solar powered pumps. MoraesDuzat Dateiformat zip, Dateien im PDFFormat. Oldenburg, University, Diss., 2000. Computerdatei im Fernzugriff. View Show abstract A modified adaptive hill climbing MPPT method for photovoltaic power systems Conference Paper Jul 2004 Weidong Xiao W.G. Dunford Maximum power point tracking MPPT must usually be integrated with photovoltaic PV power systems so that the photovoltaic arrays are able to deliver maximum available power. In this paper, a modified adaptive hill climbing MAHC MPPT method is introduced. It can be treated as an extension of the traditional hill climbing algorithm. The simulation and experimental results show that the proposed MPPT control can avoid tracking deviation and result in improved performance in both dynamic response and steadystate.

View Show abstract A Model of PV Generation Suitable for Stability Analysis Article Fulltext

available Jan 2005 IEEE T ENERGY CONVER Yun Tiam Tan D.s. Kirschen Nick Jenkins This paper describes a model of photovoltaic PV generation suitable for studying its interactions with the power system. Experimental results suggest that the maximum power point tracking part of the control system of the PV generator dominates the dynamic behavior of the system. These experimental results are used to develop and validate the proposed model. It is shown that the model accurately reflects the behavior of the generator following both small and fast changes in irradiance and AC grid voltage. The proposed model is designed to be integrated in a dynamic simulation program. View Show abstract Optimal efficiency analysis of induction motors fed by variablevoltage and variablefrequency source Article Fulltext available Oct 1992 IEEE T ENERGY CONVER Sheng Chen ShengNian Yeh The authors discuss the efficiency analysis and experimental dataBased on the simulatedExperimental results showed that 1015% improvement in the efficiency ofThey are based on the most complete motor models, including such features as rotor skin effect. Furthermore, new solutions for selected harmonic elimination SHE are given. These new solutions come close to EOC. Also, it has been found that EOC solutions although basically loaddependent as opposed to SHE do not vary much with the motor used or the motor model applied. Even using a simple RL series circuit as motor model does not change the solutions much. It is found that using the solutions gained from such a simple model is not more than two points off the real optimum based on a very complete motor model. For this definition, the absolute harmonic loss minimum is given as zero points, the overall maximum as 100 points with a linear scale in between.

Therefore, one can use one EOC solution for all motors with sufficient accuracy, or, as second best solution, the new form of SHE. Therefore, the EOC solution can be judged loadindependent. The implementation by microprocessorbased systems is as easy for other PWM methods. EOC for three and five switching angles per quarter period is discussed, as well as the new solutions for SHE for up to nine angles. View Show abstract Show more Advertisement Recommendations Discover more publications, questions and projects in Photovoltaics Project Hybrid solar wind renewable energy systems Mohamed Arrouf The aim of the project is modeling and simulation of hybrid renewable energy system, for farm domestic use and irrigation in non grid connected area. December 2015 Saad Awad Mohamed Abdelwahab Ali H. Kasem Alaboudy Adel A. Elbaset Matching the onsite inductionmotor IM pumping loads with the given photovoltaic PV power for the most optimal operation using maximum photovoltaic power tracking MPPT technique with dynamic error driven PI controllers is introduced in this paper. A PV array subjected to constant and variable solar irradiations is designed to feed a water pumping load driven by a 3phase IM. The power conditioning unit is controlled to enforce the maximum power trajectory of the PV array under study. The proposed inverter control selects the suitable operating point for PV voltage, current and power. The main control objective is to run the system as close as possible to the maximum power point operation under constant and variable solar irradiations. Simulation results demonstrate the operation of the unified system with and without controller under constant and variable solar irradiations. The results show that almost the full available power of the PV array is utilized and hence maximum power transfer to the motor is achieved.

Based on the given results, the PV powered water pumping systems are feasible without batteries and can provide a costeffective use of the solar energy. This topology is of great concern due its economic issues, especially when a standard frequency converter SFCs with scalar control is used instead of a dedicated PV inverter. It is a low cost solution since it requires no additional power equipment. Modeling and design of each system parts are performed to determine the analytic expression of frequency reference. The effectiveness of the proposed approach is illustrated by simulations carried out under PSIM Software, and validated through experimental investigations on a 1.5kW laboratory setup. Read more Conference Paper Investigation of photovoltaic water pumping system March 2013 Jayakumar Mathavan Rajini Veeraraghavalu The Impending scarcity of many valuable resources has made the renewable ones to be the main alternative sources nowadays. Solar

power is one such reliable alternative which is being used in different ways in a wide spread of the ever so progressing technologies of the world. The standalone system has an advantage over gridtied system in stability issues which makes it more viable to be used for irrigation. Thus an initiative is taken to provide a feasible solution for irrigation at remote locations. In this paper, design and simulation of a water pumping system based on PMDC motor driven centrifugal pump powered by solar energy has been carried out. The performance of the pumping system is analyzed with and without MPPT. Read more Article PV power system based MPPT Zsource inverter to supply a sensorless BLDC motor January 2010 S. A. K. H. Mozafari Niapoor Saeed Danyali M.B.B. Sharifian This paper proposes a new PV power system feeding a sensorless brushless dc motor BLDC driving a water pump. A Zsource inverter ZSI is controlled to extract the maximum power from PV array and supplies the BLDC motor instantaneously.

The BLDC motor is driven with variable reference speed dictated from instant maximum PV power by a hysteresis current control loop. Therefore, less number of power switches, less switching losses and lower cost are obtained. By proper designing of control system parameters and maximum power point tracking MPPT method for PV array, good steady state and transient performances have been achieved in response to different operation conditions for PV array. Sensorless drive with low torque ripple is provided for the BLDC motor. It is highly efficient, low cost and easily controllable for water pumping application. The system characteristics are a predominant requirement for improving the performance. The system responses for different modulation indices are also reported. The characteristics for linear, centrifugal and optimized centrifugal pump load are determined. The experimental validation has been performed by implementing SVPWM employed with perturb and observe peak power tracking algorithm using dsPIC 6010A on a laboratory prototype. Thus, the system behavior proves to be high efficient, low cost and with simple control. Read more Discover more Download citation What type of file do you want. RIS BibTeX Plain Text What do you want to download. Citation only Citation and abstract Download ResearchGate iOS App Get it from the App Store now. Install Keep up with your stats and more Access scientific knowledge from anywhere or Discover by subject area Recruit researchers Join for free Login Email Tip Most researchers use their institutional email address as their ResearchGate login Password Forgot password. Keep me logged in Log in or Continue with LinkedIn Continue with Google Welcome back. Keep me logged in Log in or Continue with LinkedIn Continue with Google No account. The family is often referred to as the 8xC196 family, or 80196, the most popular MCU in the family.

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