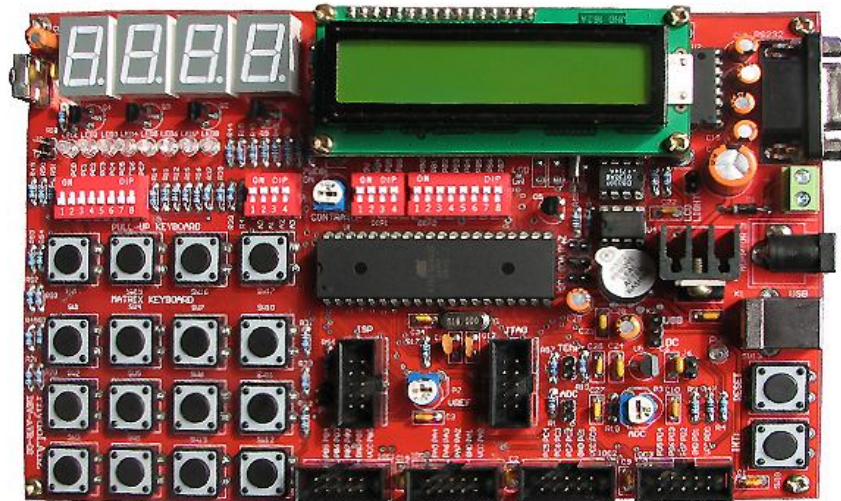# eCee AT Mega32/32L

Development Board

Quick Start Guide

Rhydo Technologies (P) Ltd.
(An ISO 9001:2008 Certified R&D Company)
Golden Plaza, Chitoor Road,
Cochin – 682018, Kerala State, India
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rhydolabz.com

CONTENTS

We bring the world to you..

The eCee AVR ATMega32 Development Board allows you to generate and test application programs for the AVR ATMega32 microcontroller family. With this hands-on process, you can determine hardware and software components required for product development. The eCee AVR Mega32 Board contains all hardware components that are required in a single-chip ATMega32 controller system.

FEATURES

➢ Compact and Ready to use design

➢ Professional EMI/RFI Complaint PCB Layout Design for Noise Reduction

➢ High Quality Two layer PTH PCB

➢ Includes AT Mega32 Microcontroller with 8 MHz

➢ Board Supports AT Mega16/16L/32/32L/8535 Microcontrollers

➢ No separate programmer required (Built in Boot loader)

➢ No Separate power adapter required (USB power source)

➢ Screw terminal for External power Supply (with Jumper Select Option)

➢ External Power Supply range of 7V to 20V

➢ Adaptor (any standard 9-12V power supply) option

➢ RS-232 Interface (For direct connection to PC's serial port)

➢ On board Two Line LCD Display (2x16)

➢ On board I^2C EEPROM (4K-AT24C04)

➢ On board I^2C RTC (DS 1307) with Crystal and Battery

➢ On board 32.768 KHz Crystal for RTC

➢ Four multiplexed 7-Segment LED Display

➢ Built in Matrix keyboard (12 keys)

➢ Built in Pull-Up (4 Keys) Keyboard

➢ Built in IR Sensor Interface – TSOP 1738

➢ Built in 8 LED Interface to test I/O

➢ On Board External Interrupt and Reset buttons

➢ Built in Potentiometer interface for ADC with variable reference voltage input

➢ On Board Temperature Sensor Interface

➢ On Board Buzzer Interface

➢ On Board PWM Output pin

➢ On Board JTAG Connector for Debugging/Programming

➢ On Board ICSP Connector

➢ On Board 8 MHz Crystal Oscillator

➢ On Board Power LED Indicator

➢ On Board DB9 Connector

➢ On Board USB Connector

➢ All Port Pins available at IDC (2x5) Connector

➢ Power Supply Reverse Polarity Protection

➢ On Board 1 Amp Voltage Regulator

➢ Can be used as main board for developing applications

➢ Demo HEX codes included for testing of board features

➢ Example codes included

eCee AT Mega32 PACKAGE INCLUDES

- Fully Assembled and Tested eCee ATMega32 Development board
- Software CDROM with
  - Schematic
  - Programming Software
  - Sample Hex Code
  - Example Codes for

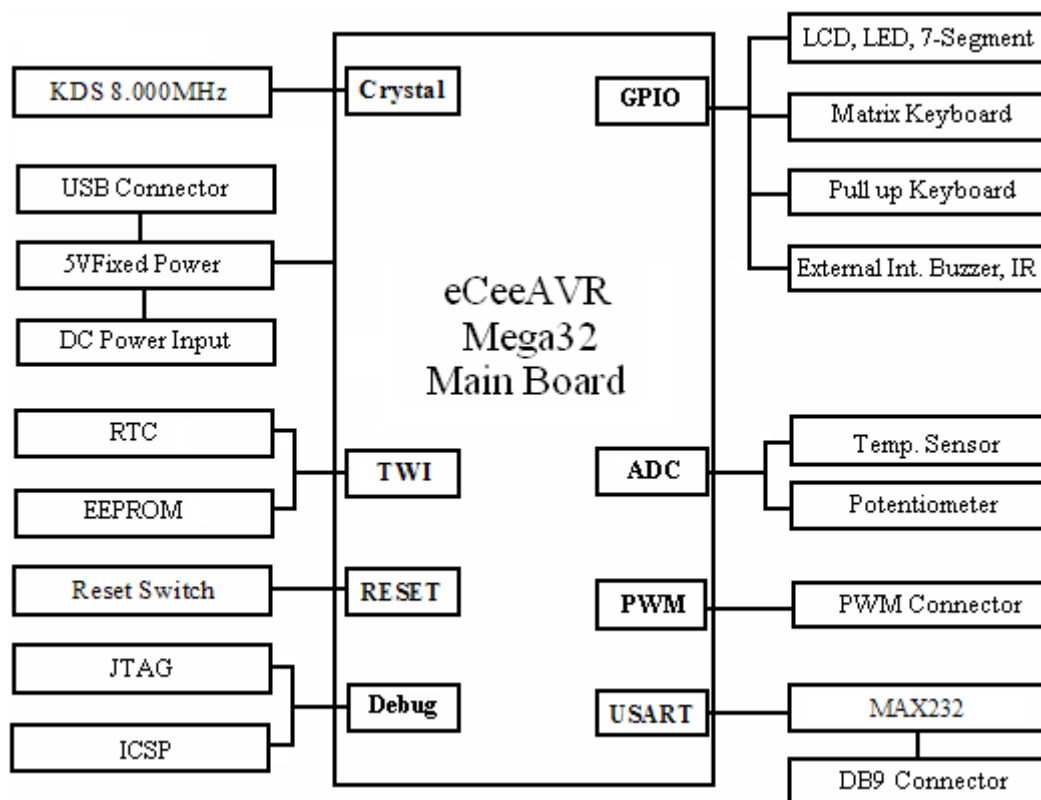|	
▪ Led Blinking	LCD Display
▪ Matrix Keyboard	Pull-Up Keyboard
▪ 7-Segment Display	External Interrupt Handling
▪ EEPROM Writing	EEPROM Reading
▪ PWM Generation	RTC Interfacing
▪ ADC Interfacing	UART Transmission of Temperature

AT Mega32 SPECIFICATION

- High Performance RISC CPU

- 131 Powerful Instructions – Most Single-clock Cycle Execution

- On-chip 2-cycle Multiplier

- 32 K bytes programmable flash

- 2 K bytes SRAM

- 1024 bytes EEPROM

- Upto16 MHz operation (Up to 16MIPS for ATMega32)

- Internal Calibrated RC Oscillator

- 32 I/O pins

- 8 channel 10 bit ADC

- On-chip Analog Comparator

- 4 PWM Channels

- 4 Compare modules associated with each Timer

- Two 8-Bit Timer/Counter

- One 16-Bit Timer/Counter

- Real Time Counter with Separate Oscillator

- One Serial USART

- 1 Two Wire Serial Interface TWI Module

- One Serial Peripheral Interface(SPI - Master/ Slave) Module

- Power Consumption ~ 15mA

- Power-On Reset (POR), Power-Up Timer (PWRT) and Oscillator Start-up Timer (OST)

- Interrupt Capability (up to 20 sources)

- 32 x 8 General Purpose Working Registers

- ICSP Programming

- JTAG (IEEE std. 1149.1 Compliant) Interface

- Brown Out Reset
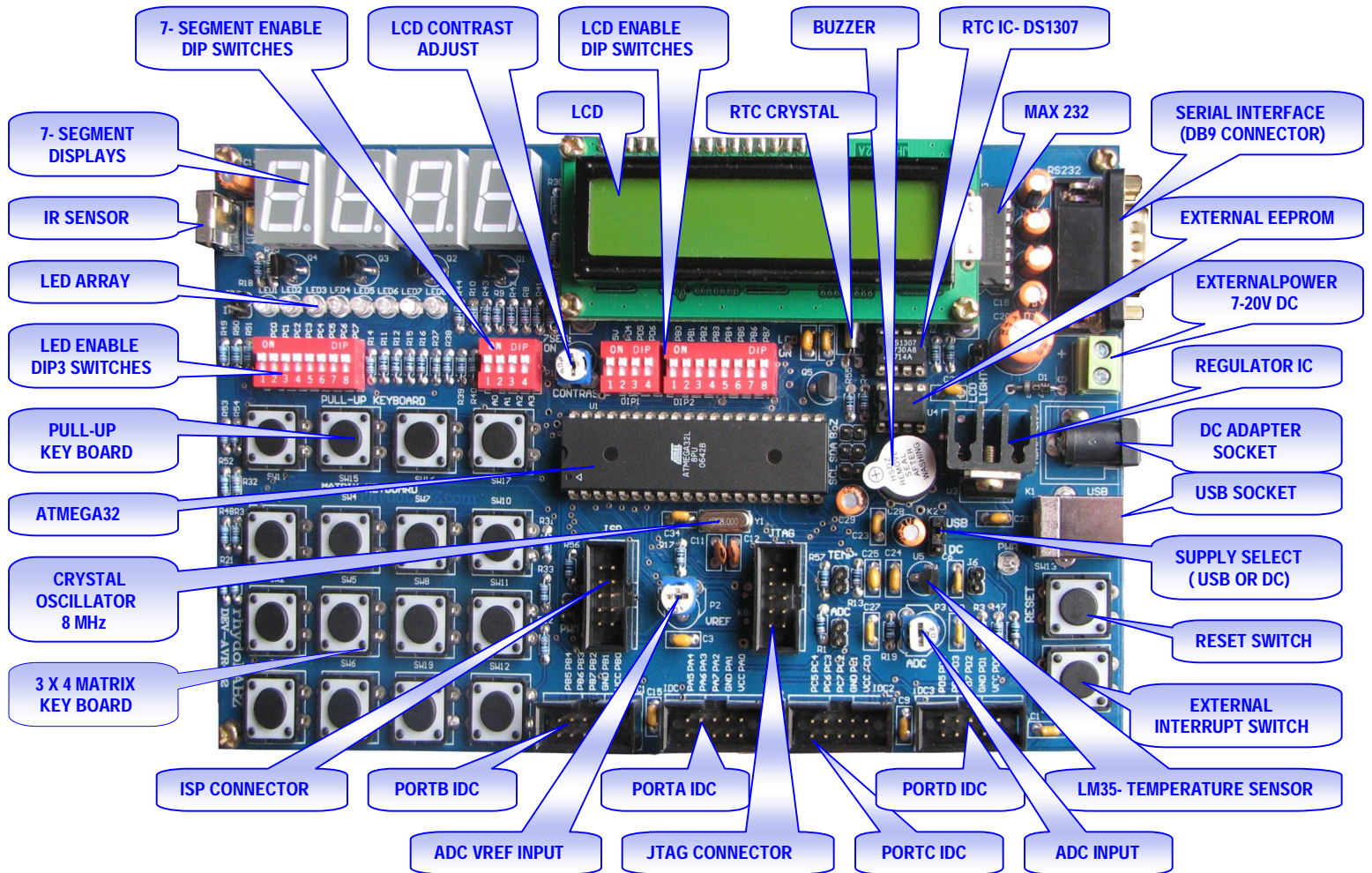
- Low Voltage Programming

- Power Saving Sleep Mode

- Programmable Code Protection

- Optional Boot Code Section with Independent Lock Bits

- Fully Static Design

- Wide Operating Voltage 2.7V to 5.5V

- Low Power Consumption

FUNCTION MODULE

INTERFACE OVERVIEW

7- SEGMENT ENABLE DIP SWITCHES

LCD CONTRAST ADJUST

LCD ENABLE DIP SWITCHES

BUZZER

RTC IC- DS1307

7- SEGMENT DISPLAYS

IR SENSOR

LED ARRAY

LED ENABLE DIP3 SWITCHES

PULL-UP KEY BOARD

ATMEGA32

CRYSTAL OSCILLATOR 8 MHz

3 X 4 MATRIX KEY BOARD

LCD

RTC CRYSTAL

MAX 232

SERIAL INTERFACE (DB9 CONNECTOR)

EXTERNAL EEPROM

EXTERNALPOWER 7-20V DC

REGULATOR IC

DC ADAPTER SOCKET

USB SOCKET

SUPPLY SELECT (USB OR DC)

RESET SWITCH

EXTERNAL INTERRUPT SWITCH

ISP CONNECTOR

PORTB IDC

PORTA IDC

PORTD IDC

LM35- TEMPERATURE SENSOR

ADC VREF INPUT

JTAG CONNECTOR

PORTC IDC

ADC INPUT

POWER SUPPLY

Atmel AVR AT Mega32 Board has three power supplies; you can choose one of the following ways to supply power

(1) Through an Adaptor (any standard 9-12V power supply)
(2) Through the USB port
(3) Through the Screw Terminal (any standard 7- 20V power supply)

The external Power Supply circuit is given below:


POWER SUPPLY
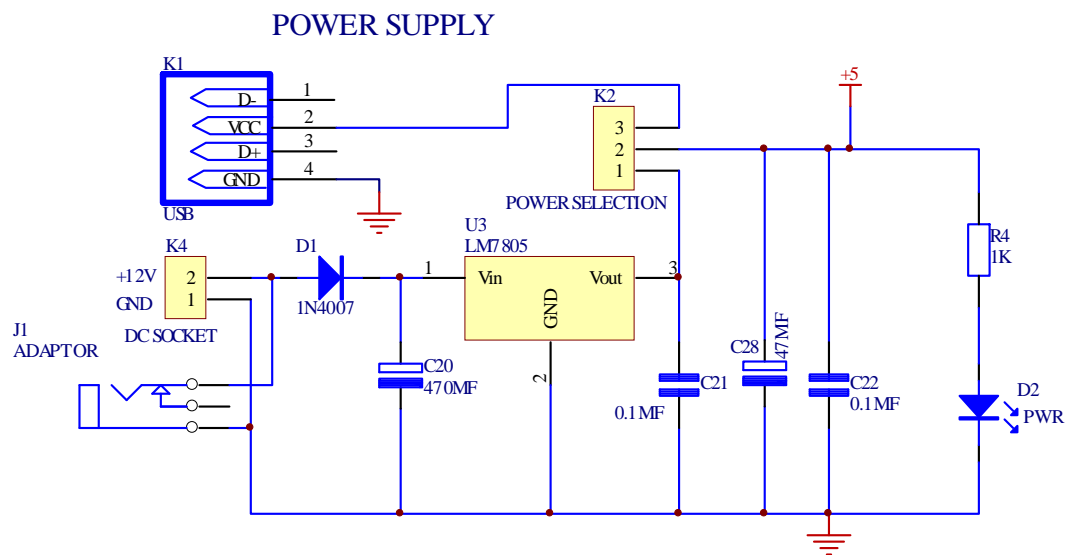
CLOCK SOURCE

AVR AT Mega32 board uses:
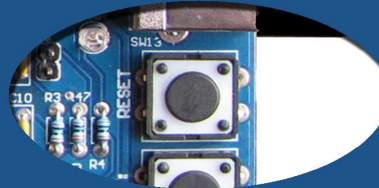> 8 MHz Crystal as the MCU clock source
> 32 KHz as the RTC clock source

SETTING UP eCee AVR Mega 32

➢ Power the demo board by means of a USB connector or from screw terminal.
➢ Make sure that the Power-On LED is ON and Jumper in proper position.
➢ Connect the Rs-232 Cable to the COM port of your computer.
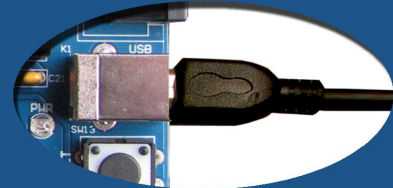➢ Connect the other end to the RS232 connector of AVR Mega32 board.

CONNECTIONS
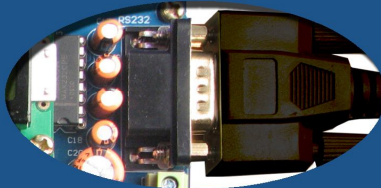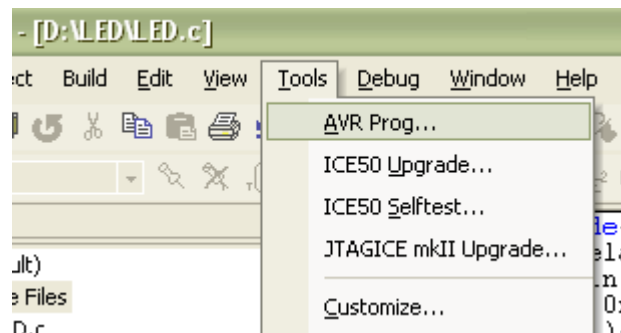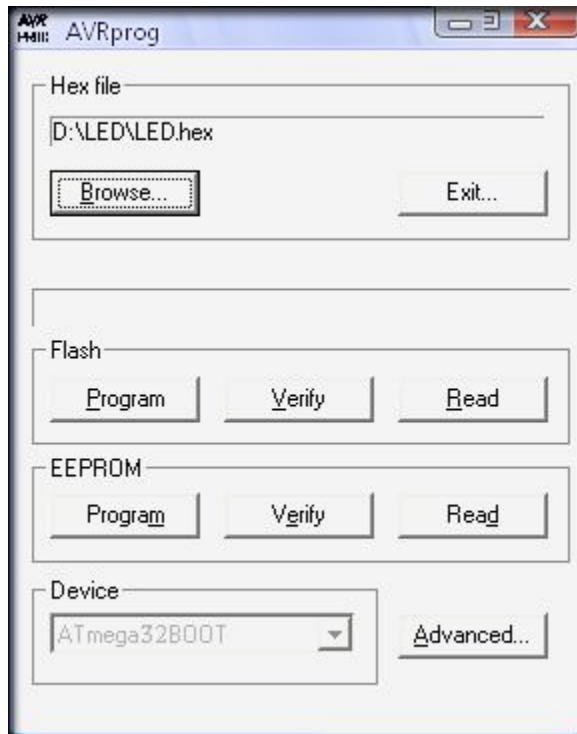

RS232   RESET   USB POWER

PROGRAMMING STEPS

1. Open the AVR Studio (No need to open any project)
2. Press the reset button in eCeeAVRMega32and within 3 Seconds open the 'AVR Prog' from Tools of AVR Studio or Open from (C:\Program Files\Atmel\AVR Tools\AvrProg\AvrProg.exe.

3. Select the hex file to be downloaded [Eg: D:\LED\LED.hex] using the 'Browse' Button and select the 'Program' option to the flash. The Program will be get downloaded to the controller.
4. Reset the AVR-programmer using the RESET switch or Press the 'Exit' option in the window. Now the controller will work according to the program after 3 seconds.

Note: *The microcontroller is preloaded with bootloader software. Programming with other devices/programmers or removing the microcontroller from the development board could damage the bootloader. In this case, the company won't be liable for the damages caused and no replacement/refunding/reloading is entertained.*

TECHNICAL SUPPORT

If you are experiencing a problem that is not described in this manual, please contact us. Our phone lines are open from 9:00 AM – 5.00 PM (*Indian Standard Time*) Monday through Saturday excluding holidays. Email can be sent to *support@rhydolabz.com*

LIMITATIONS AND WARRANTEES

This product is intended for personal or lab experimental purpose and in no case should be used where it harmfully effect human and nature. No liability will be accepted by the publisher for any consequence of its use. Use of the product software and or hardware is with the understanding that any outcome whatsoever is at the users own risk. All products are tested for their best performance before shipping, still rhydoLABZ is offering One year Free service warranty (Components cost + Shipping cost will be charged from Customer).

DISCLAIMER

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