Multicontroller Kit User Manual

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About Multicontroller Development Kit

Multicontroller Development Kit is our oldest product offering.

It has evolved over last 2 years. Initially Kit was designed for only 8051 microcontrollers.

Later the PIC, AVR microcontrollers were supported.

Now Multicontroller Development Kit completes most common microcontroller families by offering support to ARM in addition to classic 8051, AVR and PIC microcontrollers.

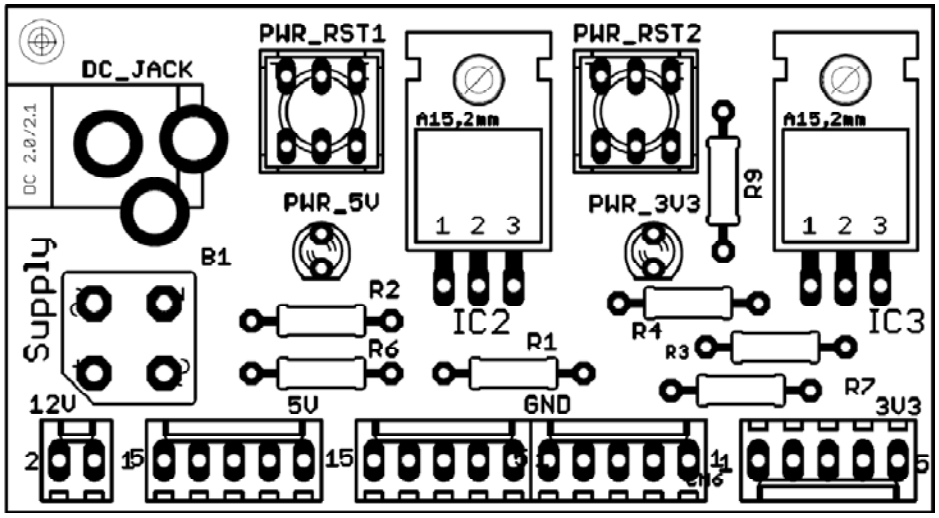
Since beginning of our Multiprocessor product range, our emphasis was always on offering multiple microcontroller support on single development board with variety of famous interface circuits. Multicontroller Development Kit has always been a complete set of development system. ISP Programmers, IDEs, Compilers, Sample Source Code, Cables, Connectors and power supply are part of the standard packing. In export shipment, we do not include certain low cost – high weight accessories like cables. Power supplies are also not included as every country has unique wall mounting sockets.

Pin Diagrams of All Sections

The Multiprocessor Trainer kit includes following sections on the Board:

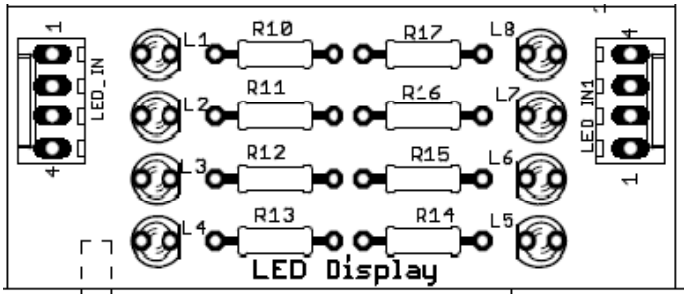
1. Power Supply Section
2. LED Display
3. Seven Segment Display - Four multiplexed
4. LCD/GLCD Display
5. 4x4 Matrix Keypad
6. Pulled Up/Pulled Down Push to On Switches
7. Relay
8. ADC0808 Interface
9. ULN2803 Based Stepper Motor Driver
10. L298 Based DC Motor Driver
11. TSOP1738 Based Object Sensor
12. IR Photo Sensor
13. LM35 Temperature Sensor
14. 2 General Purpose RS232 Interface
15. 433Mhz RF Module with Encoder-Decoder
16. I2C Based Real time clock
17. SPI Based EEPROM
18. P89V51RD2BN and other Pin compatible 8051 Microcontrollers Development Board
19. ATMega32 & other Pin compatible AVR Microcontrollers Development Board
20. PIC18F4550 & other Pin compatible PIC Microcontrollers Development Board
21. LPC2148 and other Pin Compatible ARM7 Microcontrollers Development Board

1. Power Supply Section



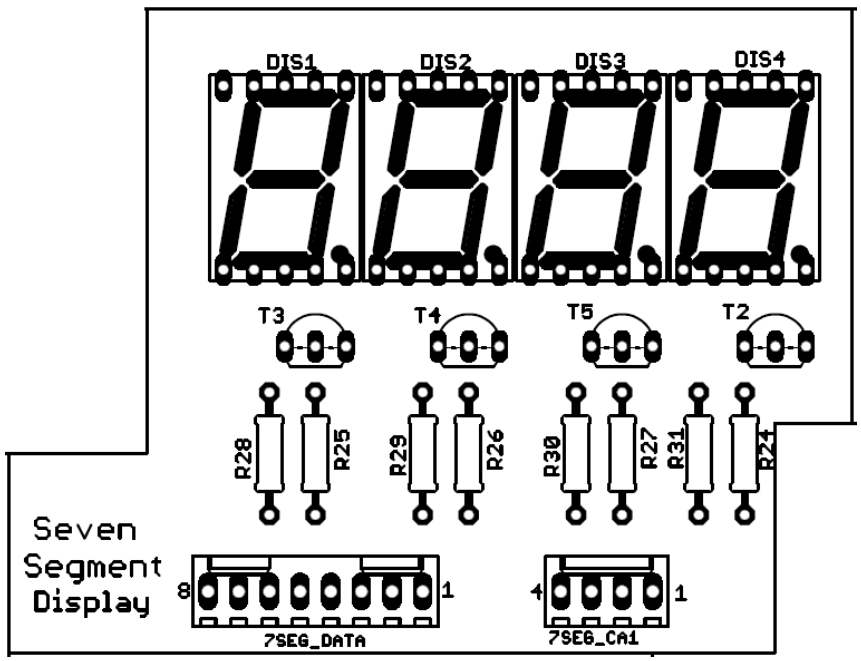
Note: Use only 9-12VDC ,1A Power Supply

2. LED Display



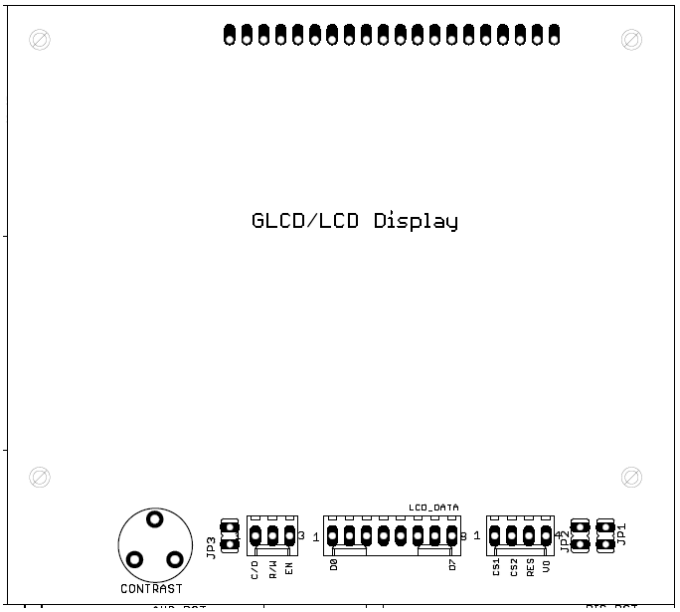
LED_IN		LED_IN1	
1	L1	1	L5
2	L2	2	L6
3	L3	3	L7
4	L4	4	L8

3. Seven Segment Display



7SEG_DATA		7SEG_CA1	
8	Seg A	4	DIS1
7	Seg B	3	DIS2
6	Seg C	2	DIS3
5	Seg D	1	DIS4
4	Seg E		
3	Seg F		
2	Seg G		
1	DP		

4. LCD/GLCD Display



[A]. Character LCD Connections

LCD_DATA		LCD_CTRL	
DB0	1	RS	C/D
DB1	2	RW	R/W
DB2	3	EN	EN
DB3	4	NC	CS1
DB4	5	NC	CS2
DB5	6	NC	RES
DB6	7	NC	V0
DB7	8		

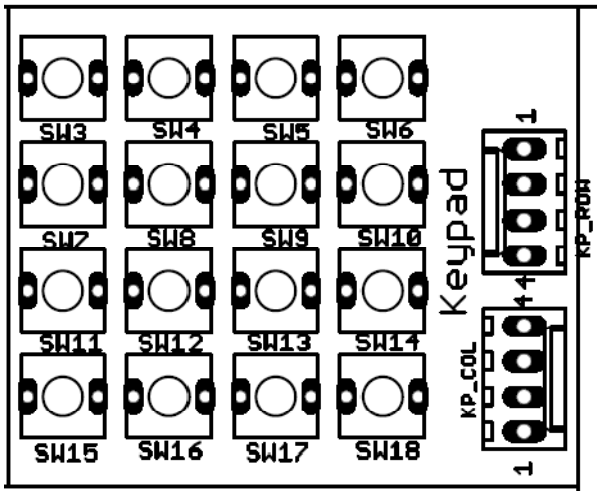
Note: Connect JP3,JP1 & JP2 for LCD Contrast & Back Light

[B]. Graphics LCD Connections

LCD_DATA		LCD_CTRL	
1	DB0	RS	C/D
2	DB1	RW	R/W
3	DB2	EN	EN
4	DB3	CS1	CS1
5	DB4	CS2	CS2
6	DB5	+5V	RES
7	DB6	NC	V0
8	DB7		

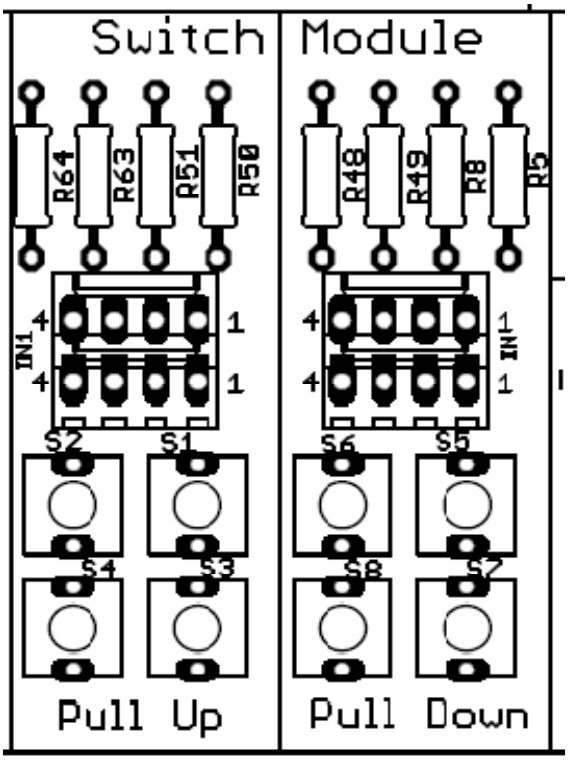
Note: Disconnect JP3,JP1 & JP2.

5. 4x4 Matrix Keypad



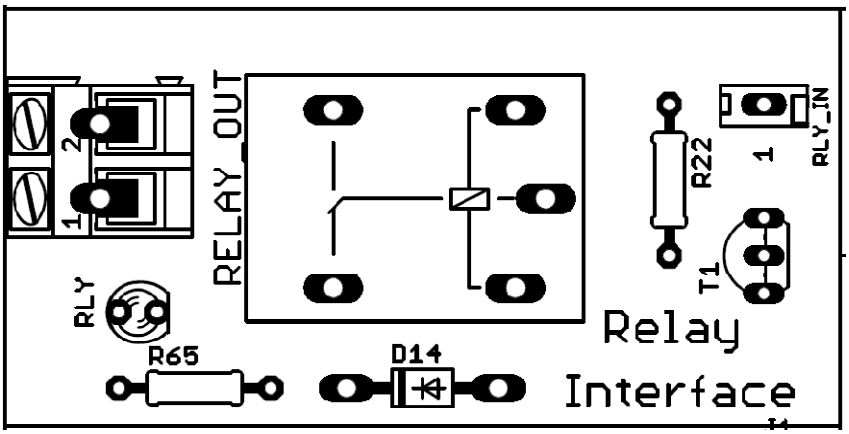
KP_ROW		KP_COL	
1	R1	1	C1
2	R2	2	C2
3	R3	3	C3
4	R4	4	C4

6. Pull Up/Pull Down Push to On Switches



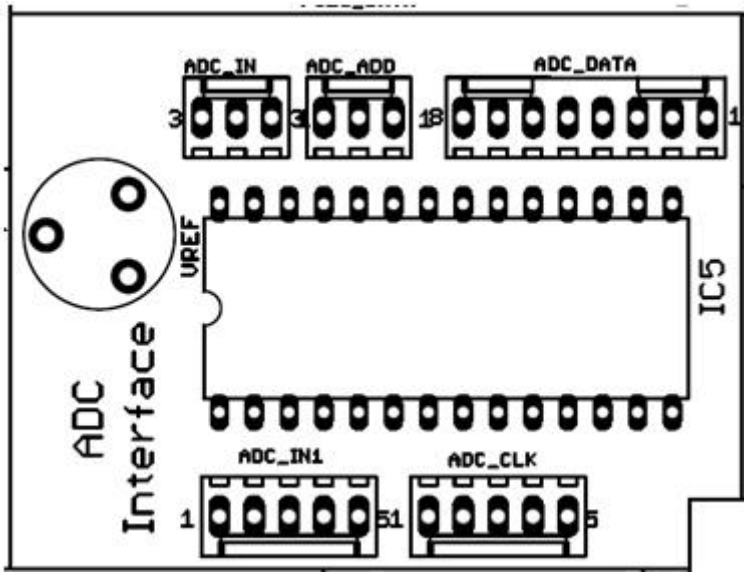
Pull Up		Pull Down	
1	S1	1	S5
2	S2	2	S6
3	S3	3	S7
4	S4	4	S8

7. Relay Module



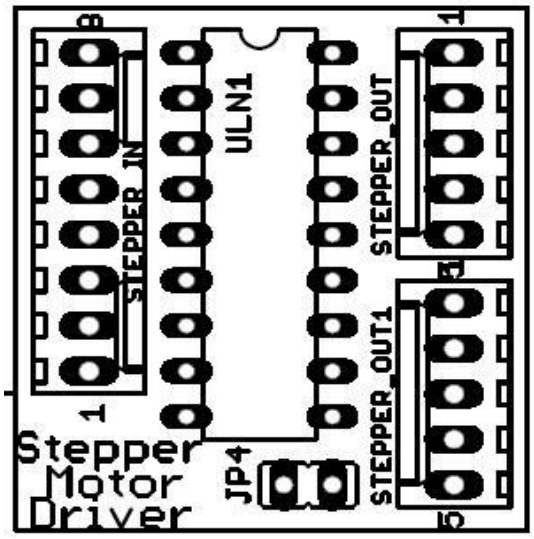
RELAY_OUT	
1	NO
2	NC

8. ADC0808 Interface



ADC_IN1		ADC_DATA	
1	IN3	1	D0
2	IN4	2	D1
3	IN5	3	D2
4	IN6	4	D3
5	IN7	5	D4
ADC_IN		6	D5
1	IN0	7	D6
2	IN1	8	D7
3	IN2	ADC_CLK	
ADC_ADD		1	SOC
1	ADD_C	2	EOC
2	ADD_B	3	ALE
3	ADD_A	4	OE
		5	CLK

9. ULN2803 Based Stepper Motor Driver

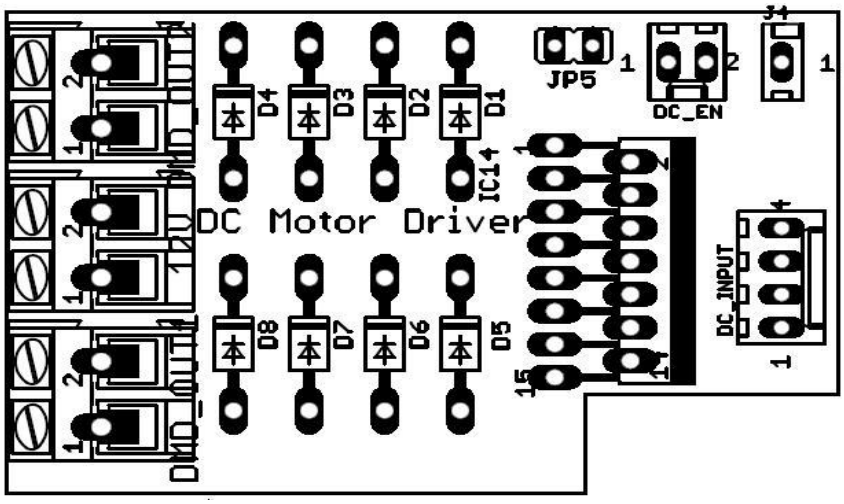


STEPPER_IN		STEPPER_OUT	
1	IN8	1	O1
2	IN7	2	O2
3	IN6	3	O3
4	IN5	4	O4
5	IN4	5	CD
6	IN3	STEPPER_OUT1	
7	IN2	1	O5
8	IN1	2	O6
		3	O7
		4	O8
		5	CD

Note: Connect JP4 to

supply 12V to the motor.

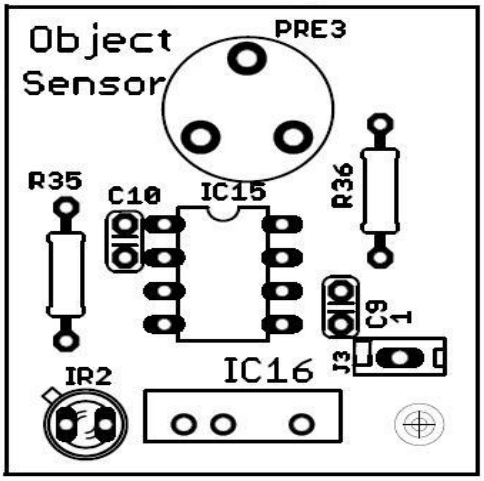
10. L298 Based DC Motor Driver



DC_INPUT		DMD_OUT1	
1	IN4	1	O1
2	IN3	2	O2
3	IN2	DMD_OUT2	
4	IN1	1	O4
DC_EN		2	O3
1	EN B	12V	
2	EN A	1	GND
J1		2	12V
1	12V		

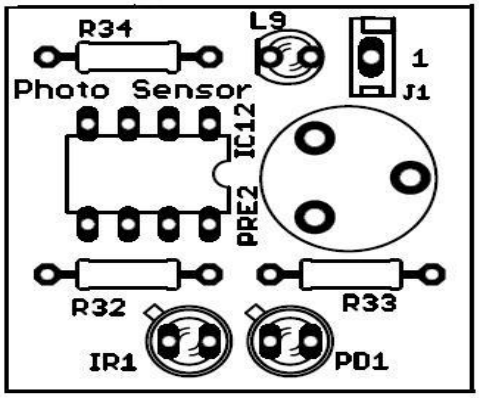
Note: Connect JP4 to supply 12V to Motor.

11. TSOP1738 Based Object Sensor



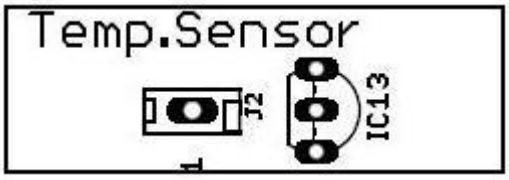
J3	
1	IR_OUT

12. IR Photo Sensor



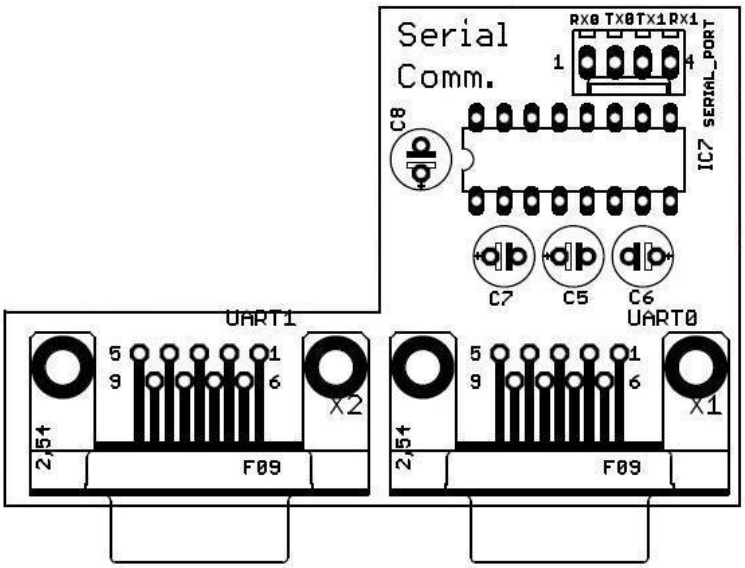
J1	
1	OUT

13. LM35 Temperature Sensor



J2	
1	OUT

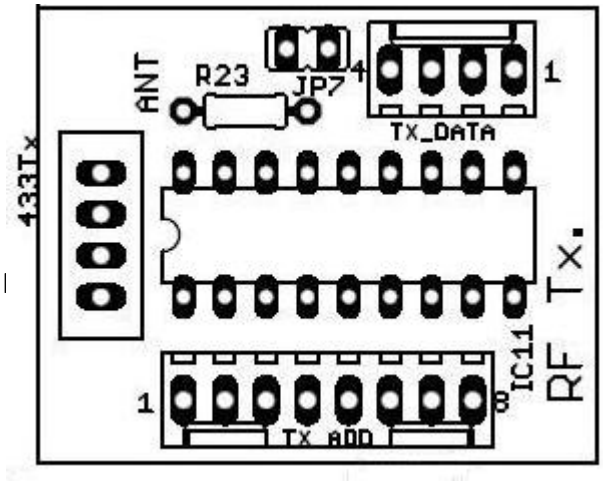
14. General Purpose RS232 Interface



SERIAL_PORT	
1	RX0
2	TX0
3	TX1
4	RX1

15. 433 MHz RF Module with Encoder-Decoder

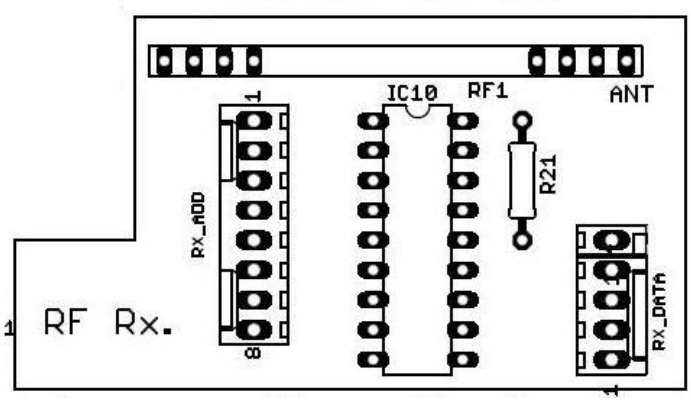
RF-Transmitter



TX_ADD		TX_DATA	
1	A0	1	D8
2	A1	2	D9
3	A2	3	D10
4	A3	4	D11
5	A4		
6	A5		
7	A6		
8	A7		

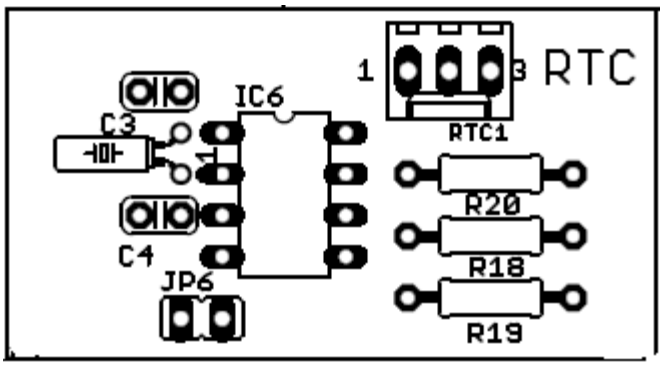
Note: JP7 needs to be connected
To enable transmission else you can
connect to MCU.

RF Receiver



RX_ADD		RX_DATA	
1	A0	1	D8
2	A1	2	D9
3	A2	3	D10
4	A3	4	D11
5	A4	5	VT
6	A5		
7	A6		
8	A7		

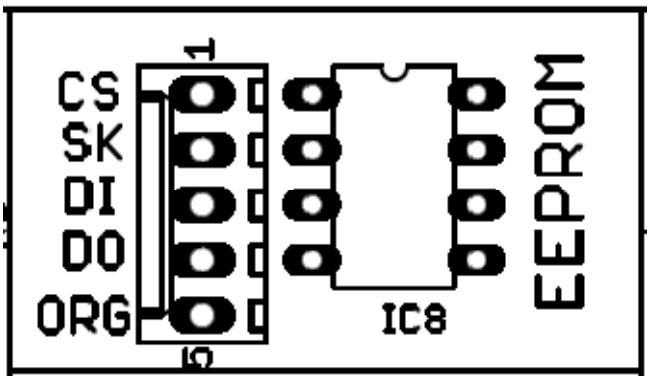
16. <u>I2C based Real Time Clock DS1307</u>



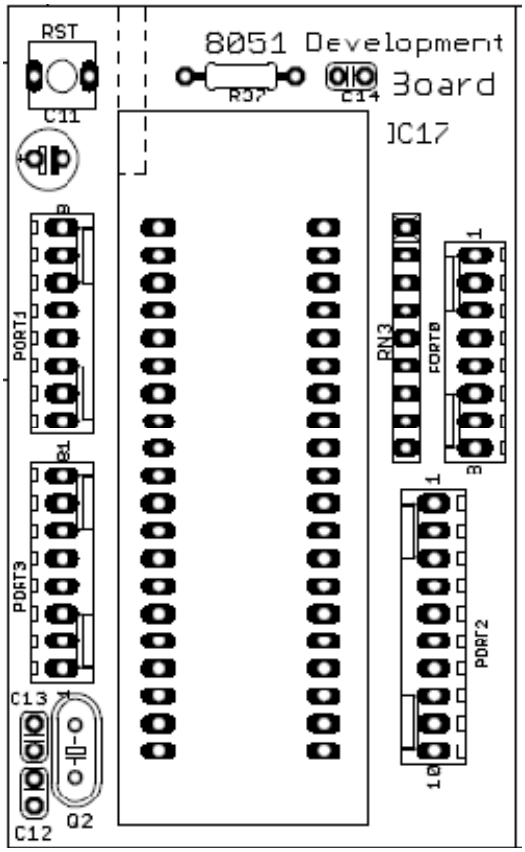
RTC1	
1	SQW
2	SCL
3	SDA

Note: Connect JP6 for VBAT Power.

17. <u>SPI EEPROM AT93C46</u>



18. P89V51RD2 & Other Pin Compatible 8051 Development Board



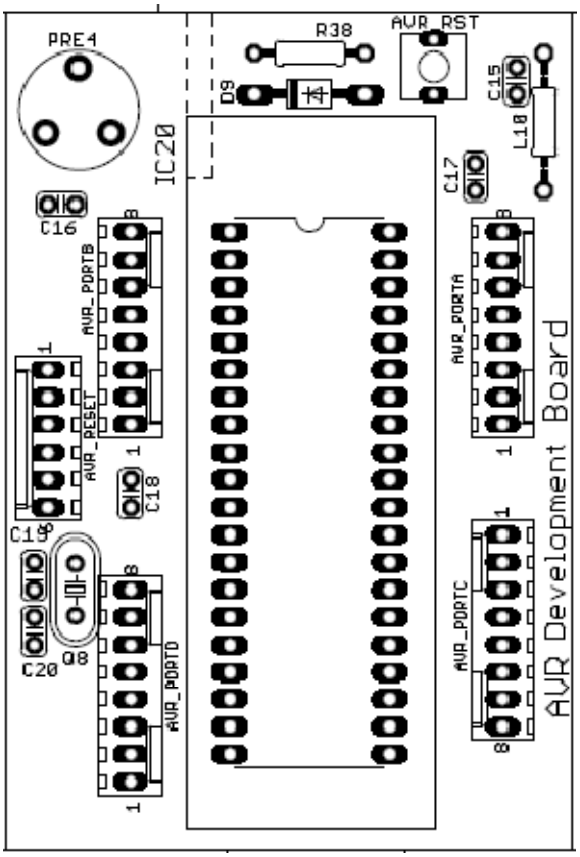
PORT0	
1	P0.0
2	P0.1
3	P0.2
4	P0.3
5	P0.4
6	P0.5
7	P0.6
8	P0.7

PORT1	
1	P1.7
2	P1.6
3	P1.5
4	P1.4
5	P1.3
6	P1.2
7	P1.1
8	P1.0

PORT2	
10	P2.0
9	P2.1
8	P2.2
7	P2.3
6	P2.4
5	P2.5
4	P2.6
3	P2.7

PORT3	
1	P3.7
2	P3.6
3	P3.5
4	P3.4
5	P3.3
6	P3.2
7	P3.1
8	P3.0

19. ATmega32 & Other Pin Compatible AVR Development Board



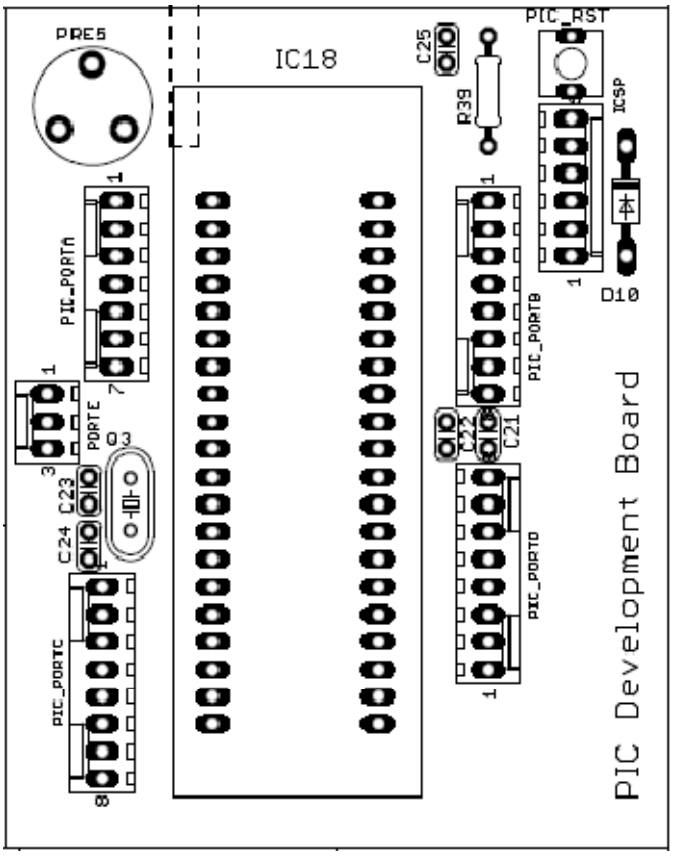
PORTA	
1	PA.0
2	PA.1
3	PA.2
4	PA.3
5	PA.4
6	PA.5
7	PA.6
8	PA.7

PORTB	
1	PB.7
2	PB.6
3	PB.5
4	PB.4
5	PB.3
6	PB.2
7	PB.1
8	PB.0

PORTC	
1	PC.7
2	PC.6
3	PC.5
4	PC.4
5	PC.3
6	PC.2
7	PC.1
8	PC.0

PORTD	
1	PD.7
2	PD.6
3	PD.5
4	PD.4
5	PD.3
6	PD.2
7	PD.1
8	PD.0

20. PIC18F4550 & Other Pin Compatible PIC Development Board



PORTA	
2	PA.0
3	PA.1
4	PA.2
5	PA.3
6	PA.4
7	PA.5

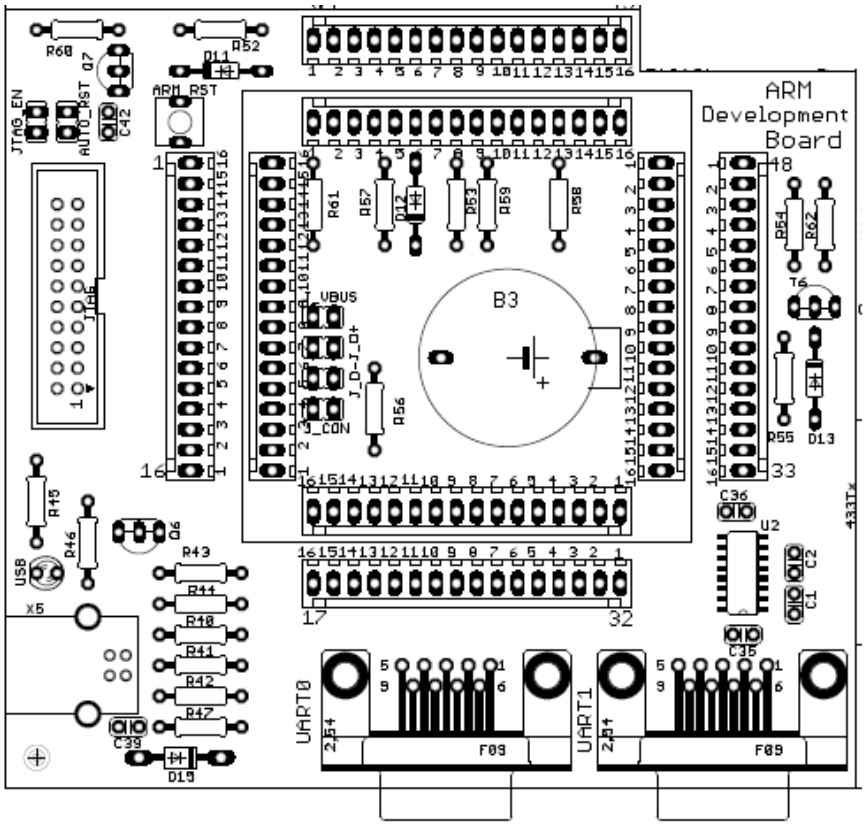
PORTB	
1	PB.7
2	PB.6
3	PB.5
4	PB.4
5	PB.3
6	PB.2
7	PB.1
8	PB.0

PORTE	
1	PE.0
2	PE.1
3	PE.2

PORTC	
1	PC.0
2	PC.1
3	PC.2
4	PC.3
5	PC.4
6	PC.5
7	PC.6
8	PC.7

PORTD	
1	PD.0
2	PD.1
3	PD.2
4	PD.3
5	PD.4
6	PD.5
7	PD.6
8	PD.7

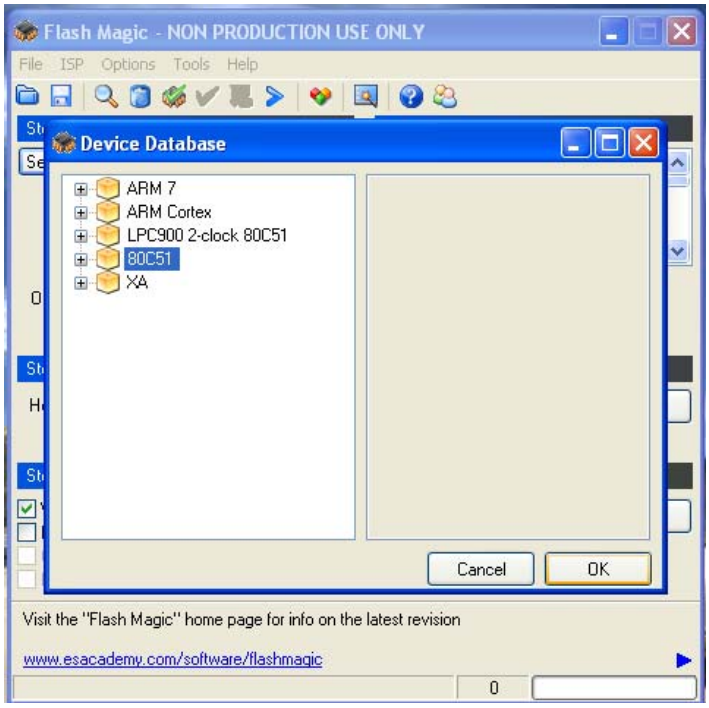
21. LPC2148 ARM7 Development Board



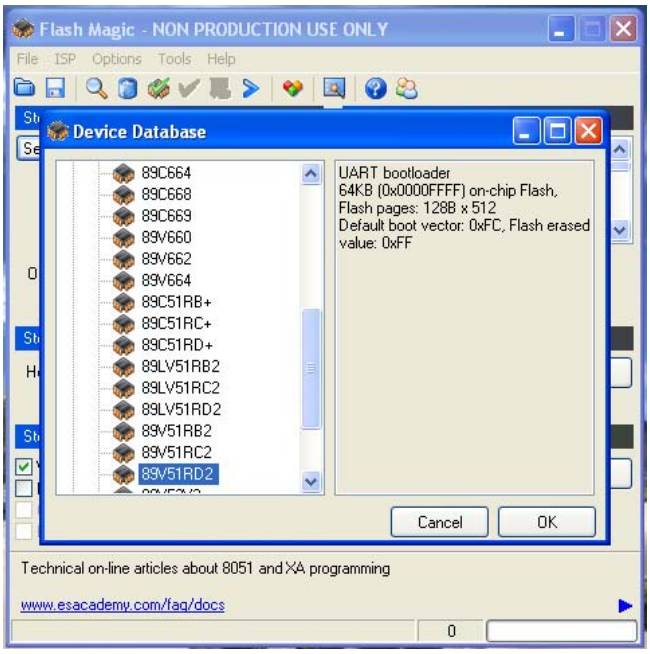
All Pins are given as per the Pin diagram given in Datasheet of LPC2148.

Programming P89V51RD2BN Microcontroller

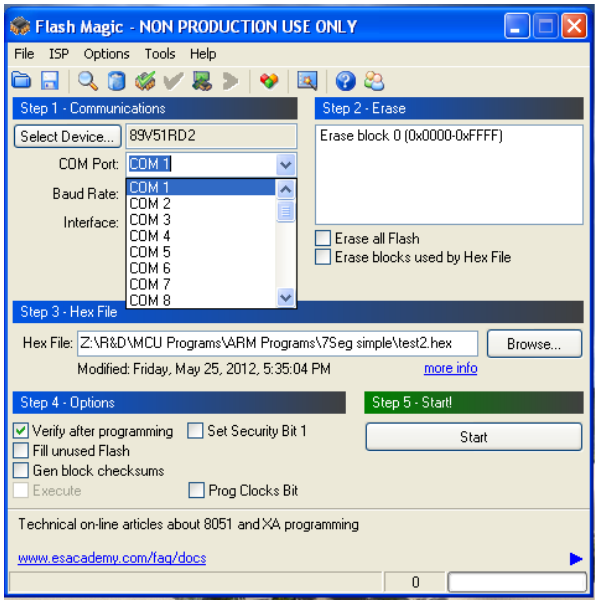
1. Connect TX0 & RX0 Pin of Serial Communication Section to P3.0 & P3.1 Pin of P89V51RD2BN Microcontroller.
2. Open Flash Magic.
3. Select 8051 Family



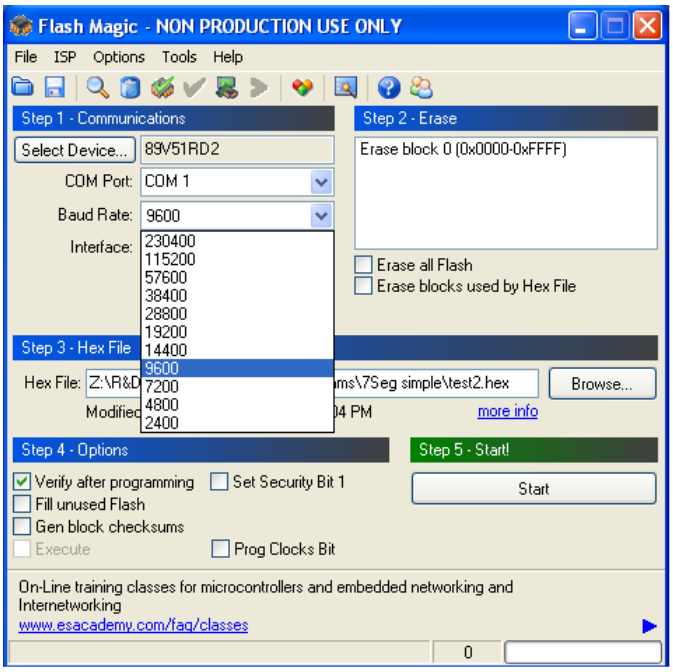
4. Select 89V51 Microcontroller



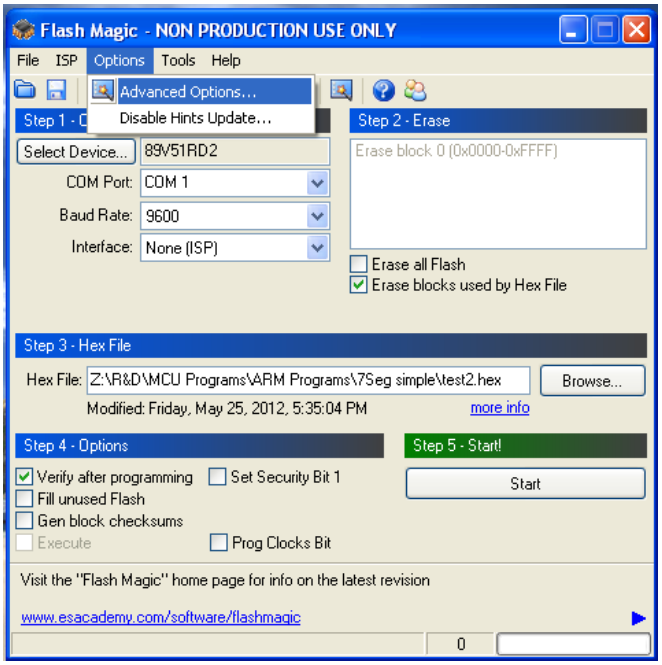
5. Select COM Port. This port can be found in Device Manager Of your Windows XP Operating System.



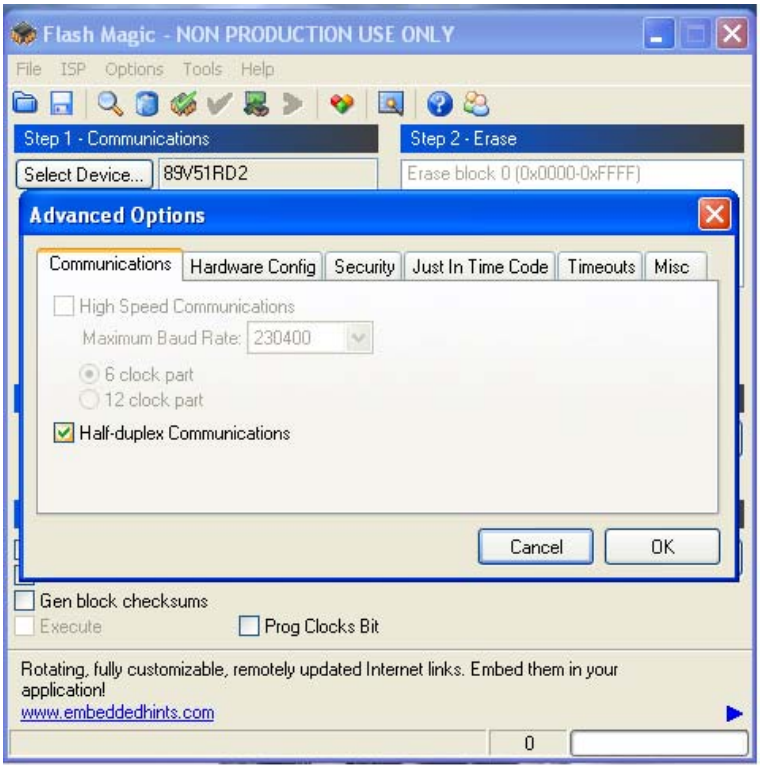
6. Set Baud Rate at 9600



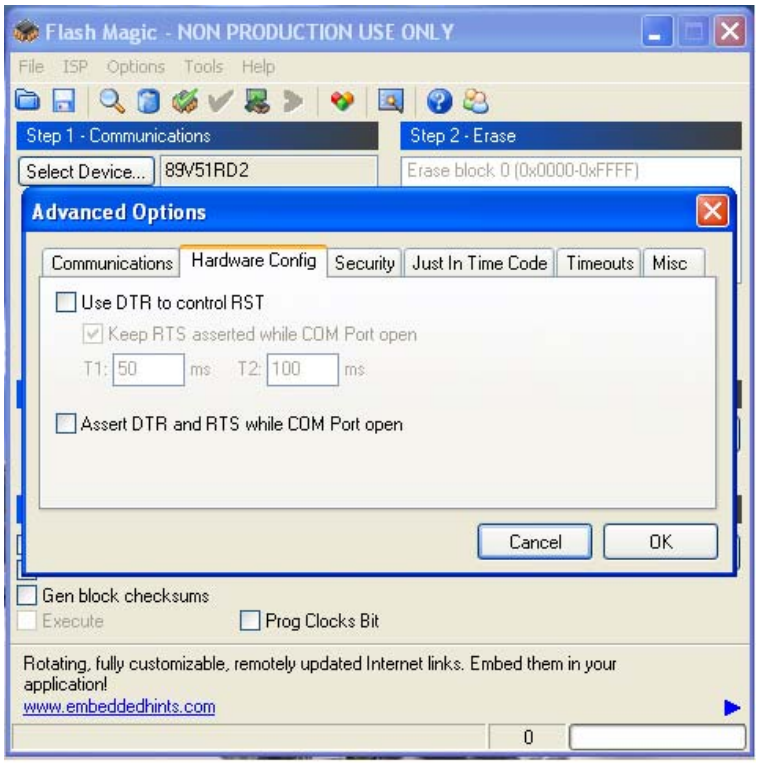
7. Now go to Advance Options from Main Menu.



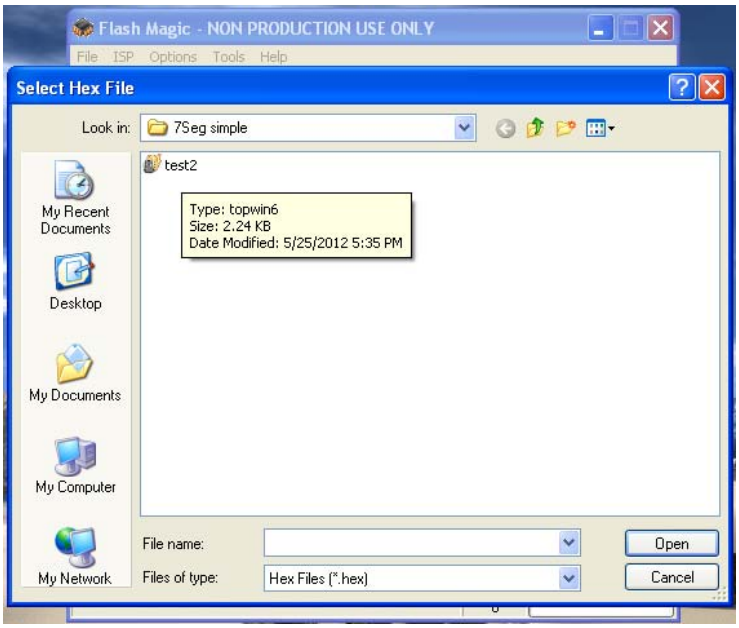
8. Check Mark Half Duplex Communications Box.



9. Uncheck Use DTR to Control RST.



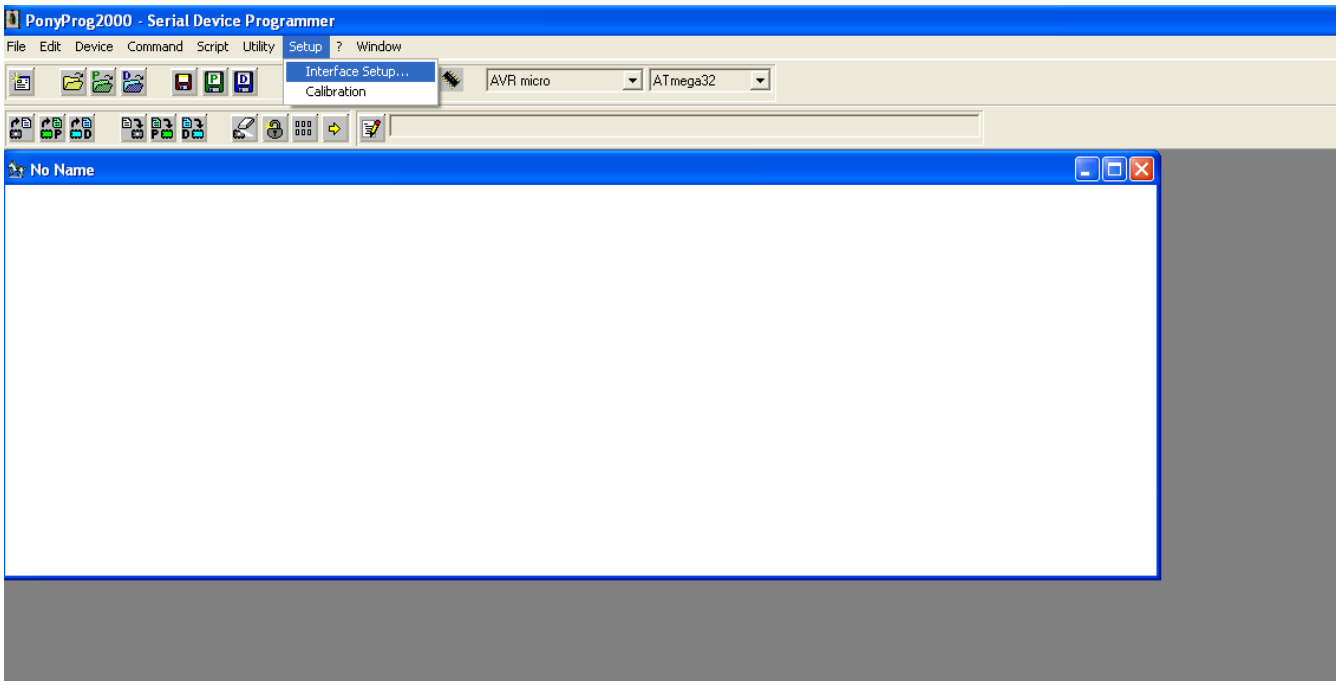
10. Select Hex File which you need to load.



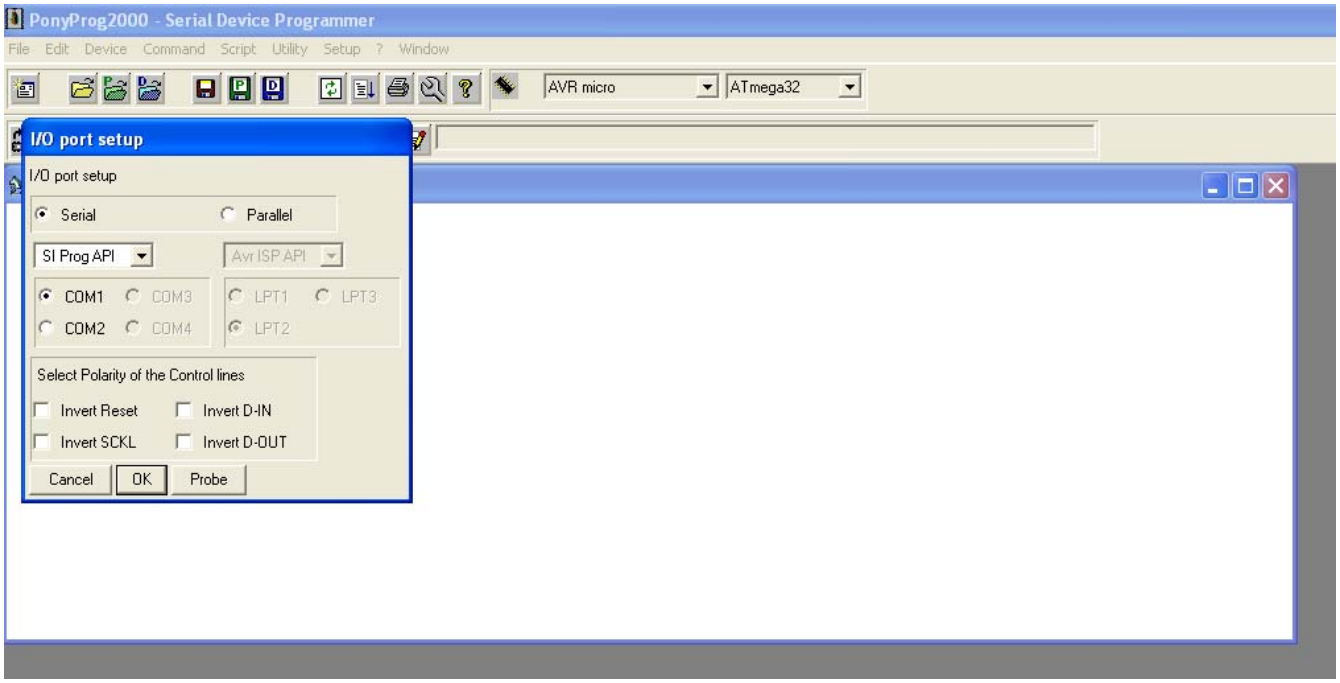
11. Click Start Button.
12. It will ask Reset the Device into ISP Mode Now.
13. Press Reset Button and release it. Wait until it gets finished.

Programming AVR Atmega32 Microcontroller

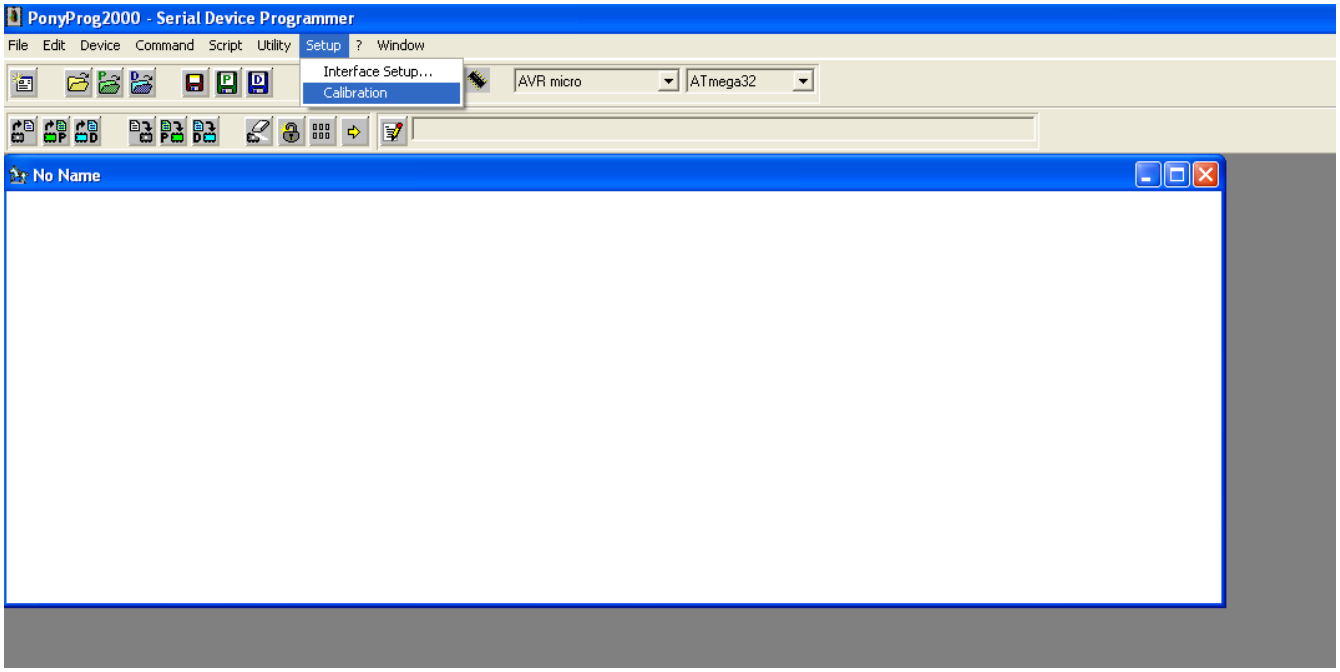
1. Open Pony Prog Software.
2. Connect AVRISP programmer's Pins to ISP Header for AVR on the Board.
3. Connect Serial Cable to AVRISP programmer.
4. Go to Setup Option from Main Menu.
5. Go to Interface Setup.



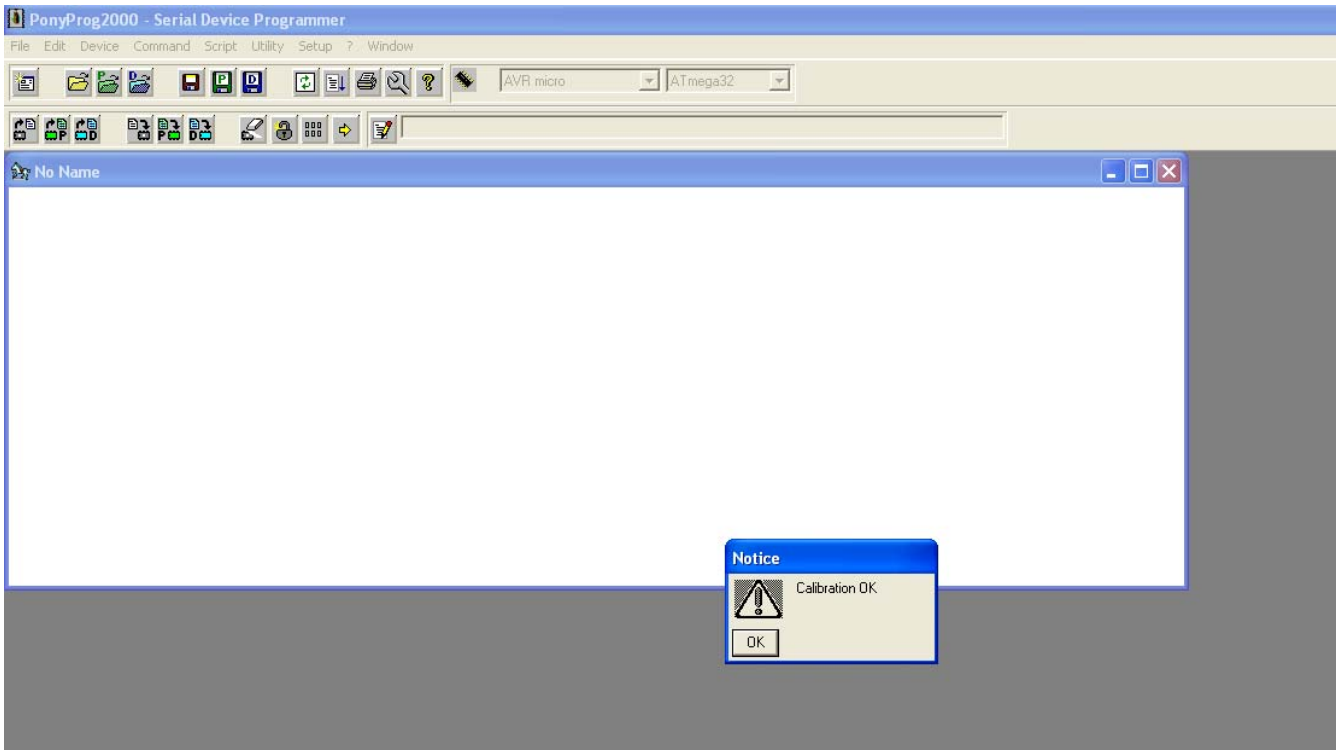
6. Select Serial IO option.
7. Select SIProg API and COM Port.



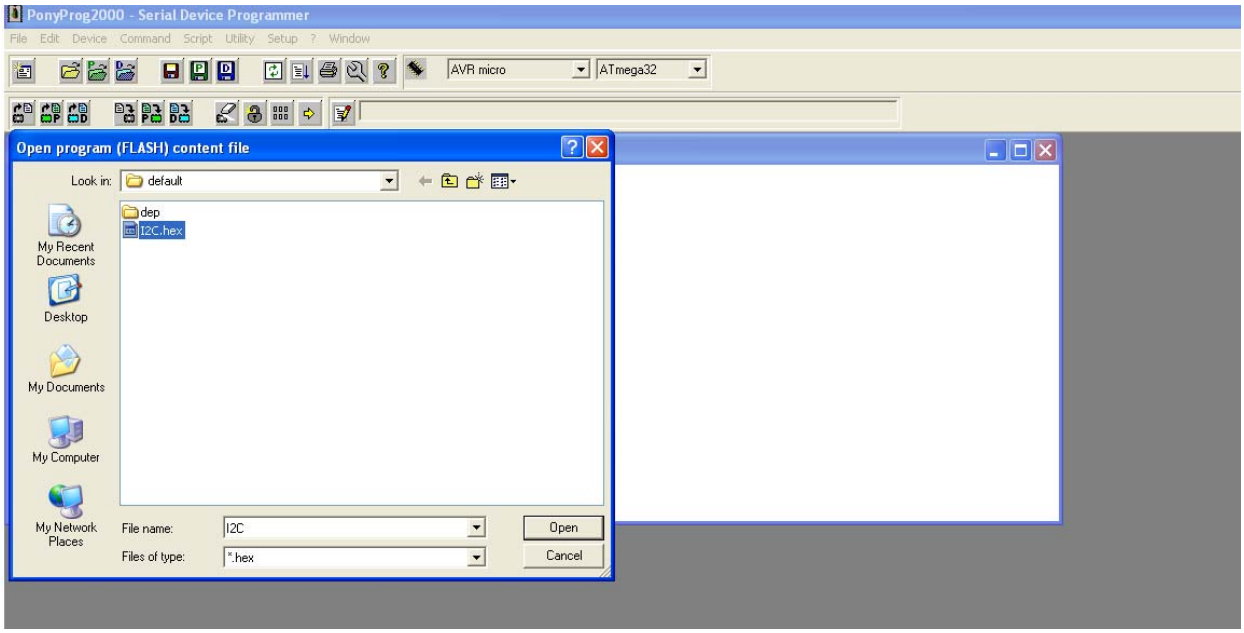
8. Click Probe Button it should Display Test OK.
9. Now Select Calibration option from Setup Menu.



10. Click on Yes and wait until it Displays Calibration Ok.



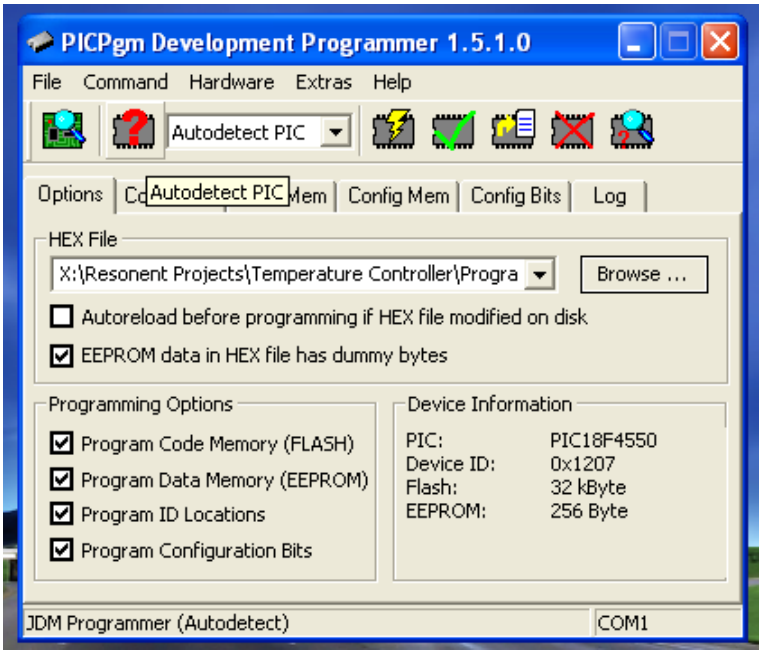
11. Now select ATmega32 from Device Menu.
12. Open Device File(Hex File) from file Menu.



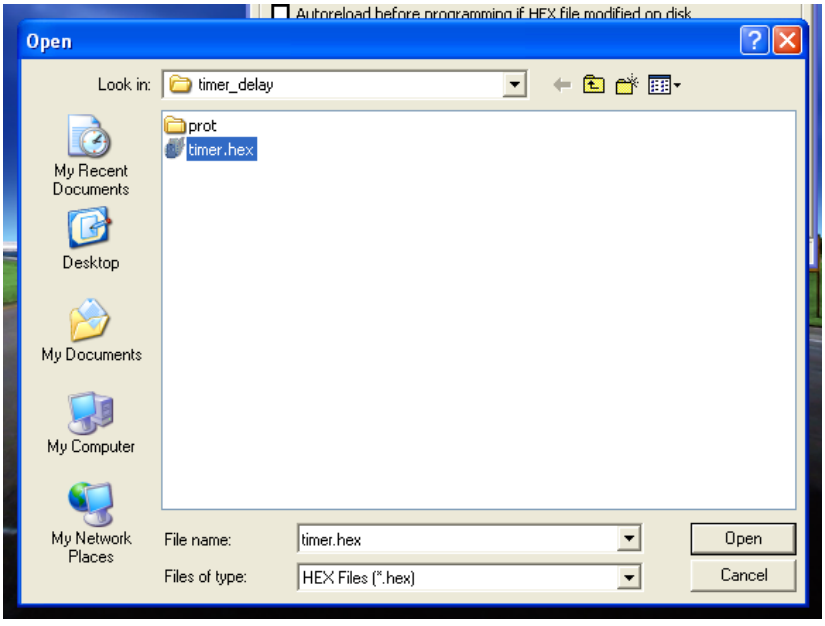
13. Click Program option from Command Menu and wait until it finishes.
14. You can also change Fuse Bits from Command Menu -> Security & Configuration Bits. For fuse settings please refer to device datasheets.

Programming PIC18F4550 Microcontroller

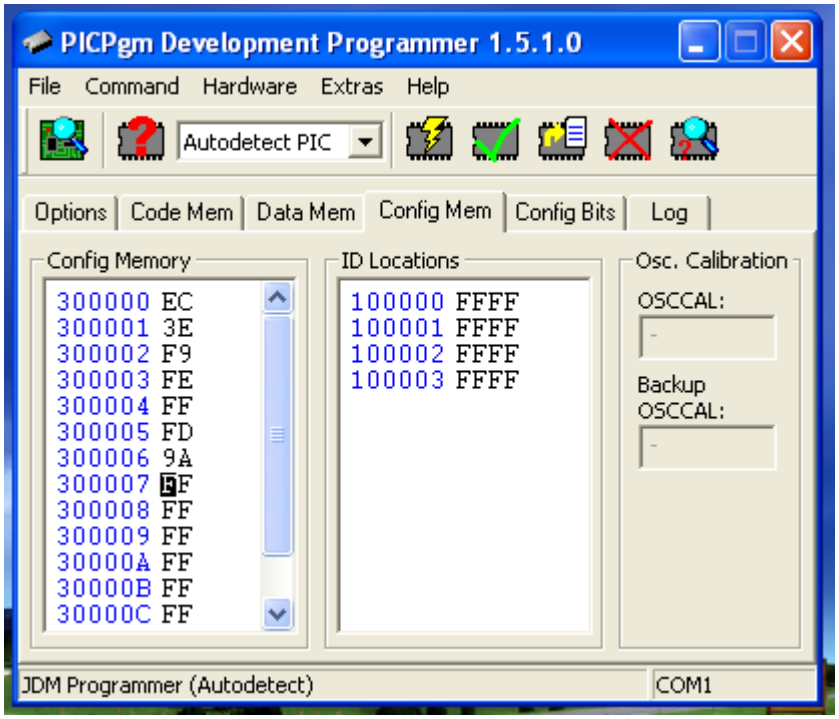
1. Connect PIC ICSP Programmer's 6pin connector to ICSP header on board.
2. Now Open PicPgm Software. It will detect current Programmer as JDM Programmer and Microcontroller PIC18F4550.



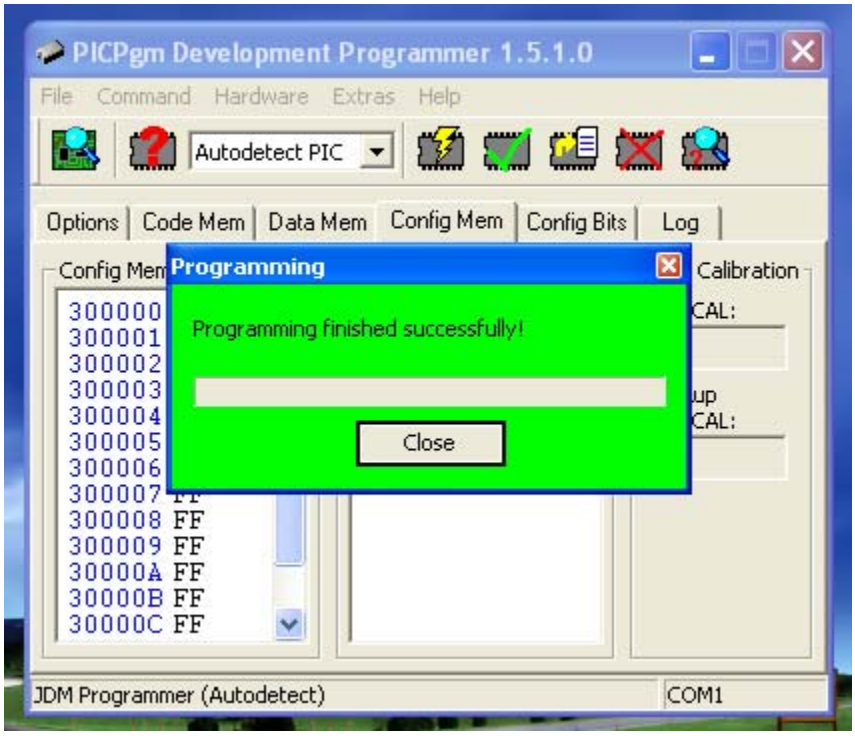
3. Now browse the Hex file that you need to Load.



4. Set Fuse Bits as per your requirements from the Configuration Bits Tab. Please refer to device datasheet for Setting Fuse Bits.

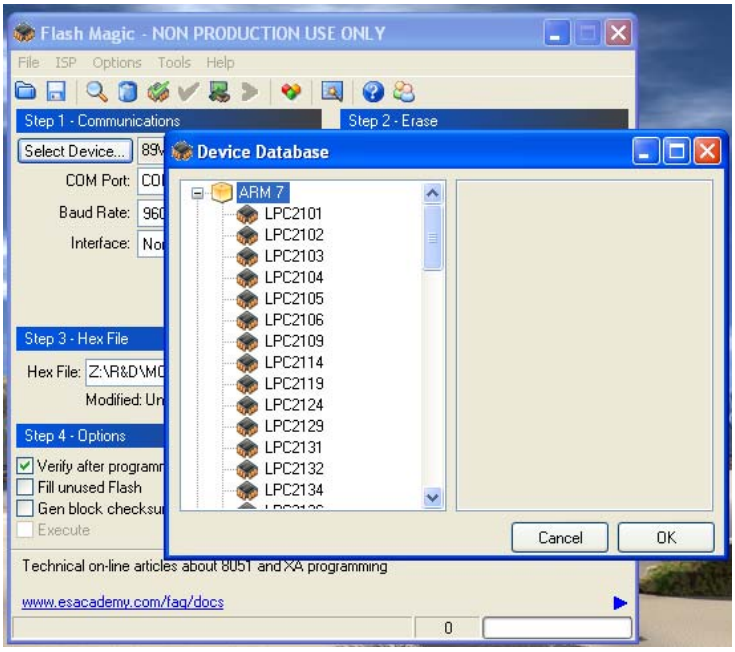


5. Click on Program button and wail until it finishes programming.

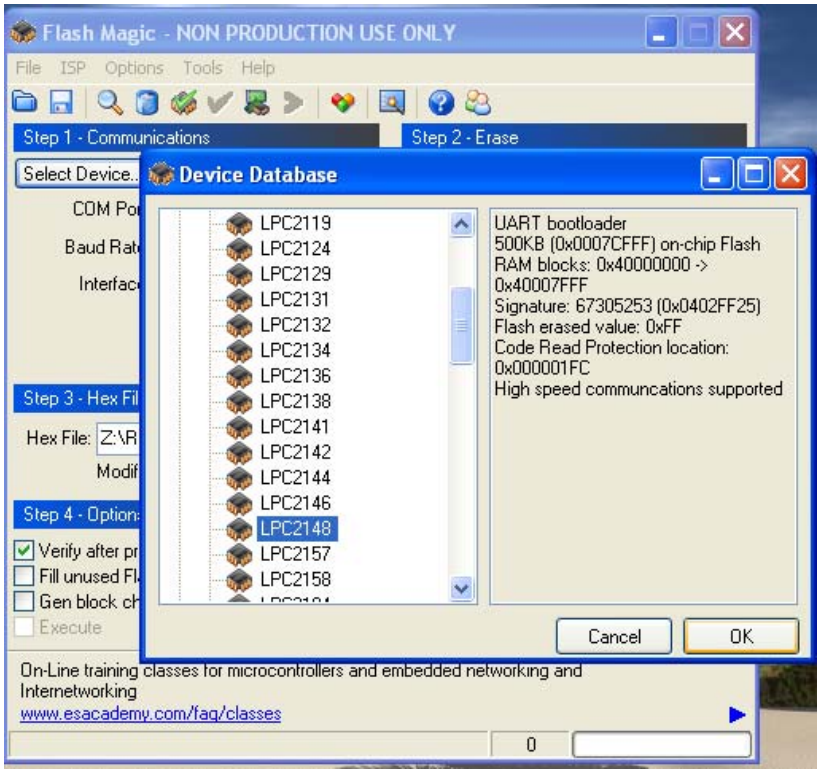


Programming LPC2148 Microcontroller

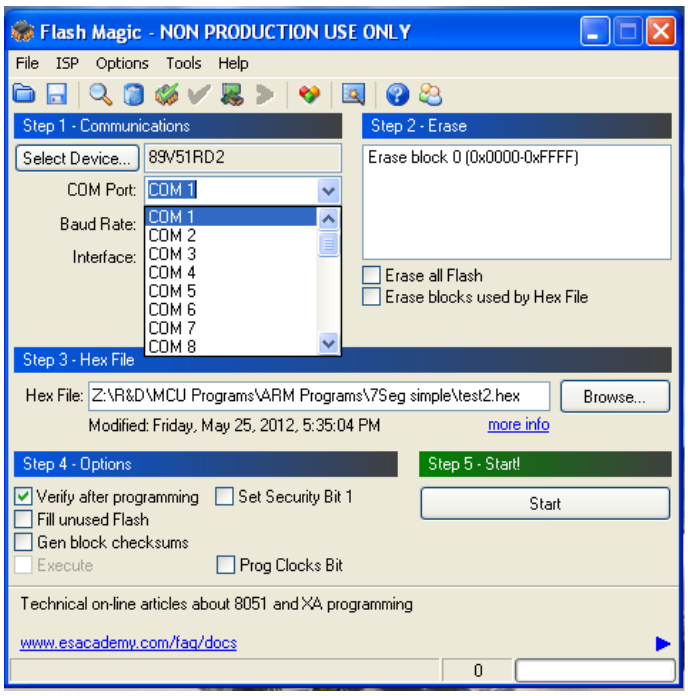
1. Connect Serial Cable to UART0 Connector.
2. Set Auto_RST Jumper on Board.
3. Select Device Family of ARM7



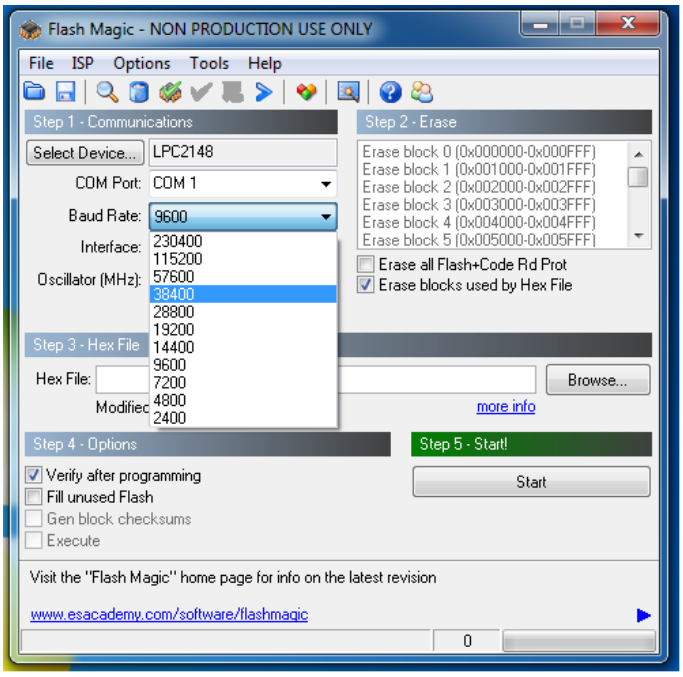
4. Select LPC2148 Microcontroller



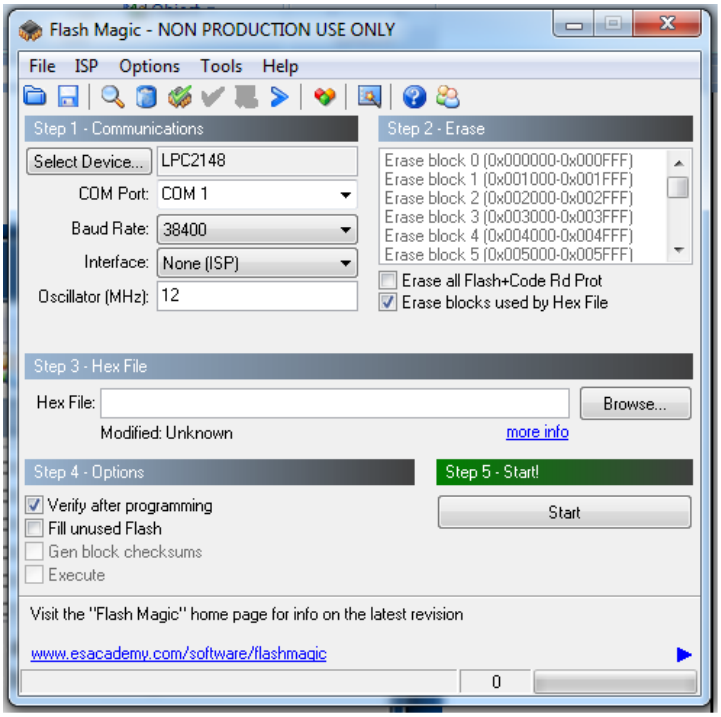
5. Select COM Port. Normally its COM1 in most Computers. Please check Device Manager for Available COM Ports.



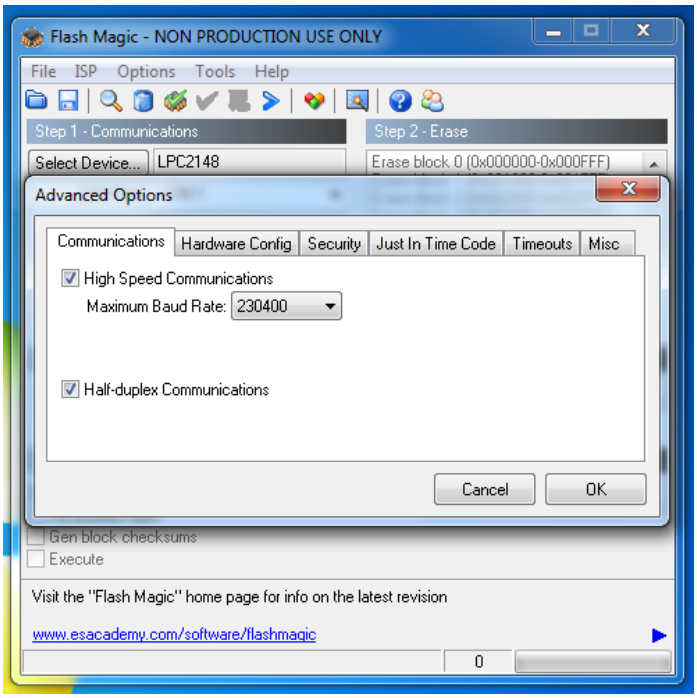
6. Select 38400 Baud Rate.



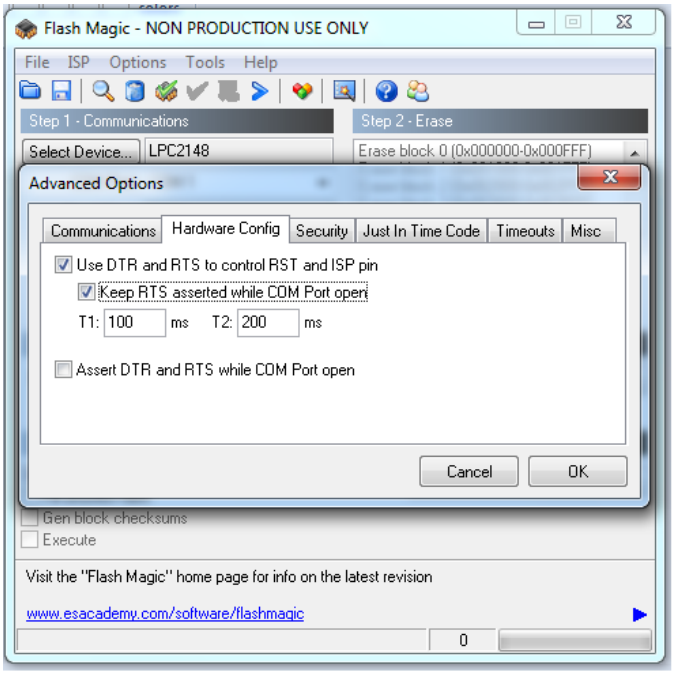
7. Set Crystal Frequency to 12MHz.



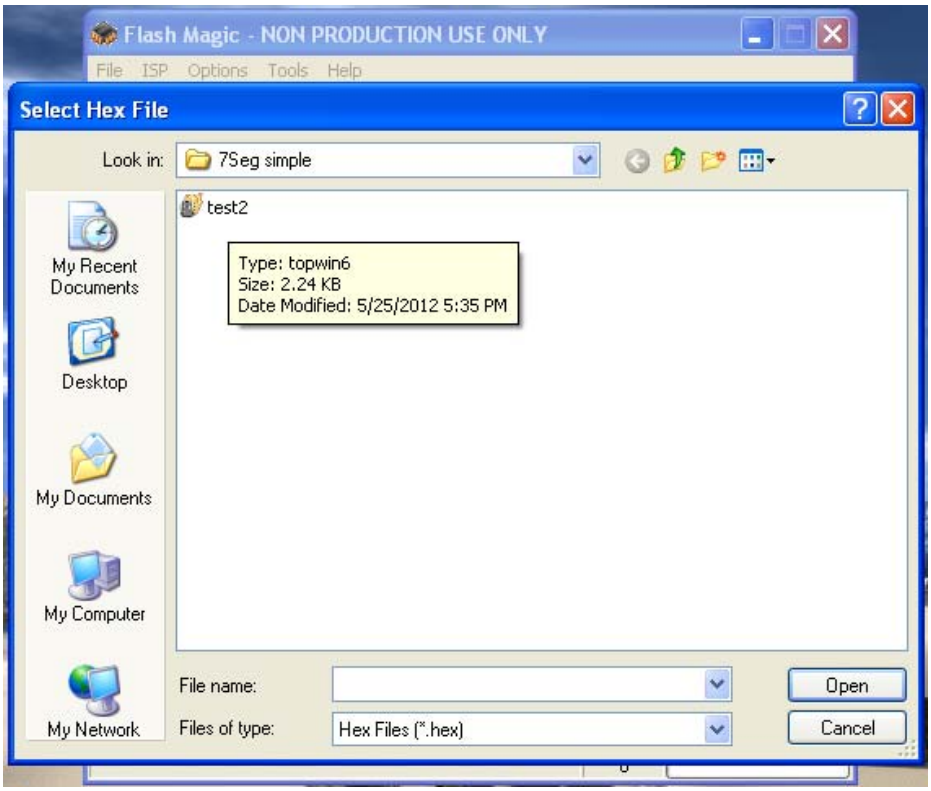
8. Go to Option-> Advance Options.
9. Check Mark High Speed Communications and Half Duplex Communications.



10. Go to Hardware Config Tab. Check Mark Use DTR & RTSto Control RST & ISP Pin and Keep RTS asserted while COM Port Open. Enter T1=100 & T2=200.



11. Browse Hex File.



Click Start Button and wait until it finishes.