ARM Trainer Kit User Manual

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About ARM Trainer Kit

ARM Trainer kit is our oldest product offering.

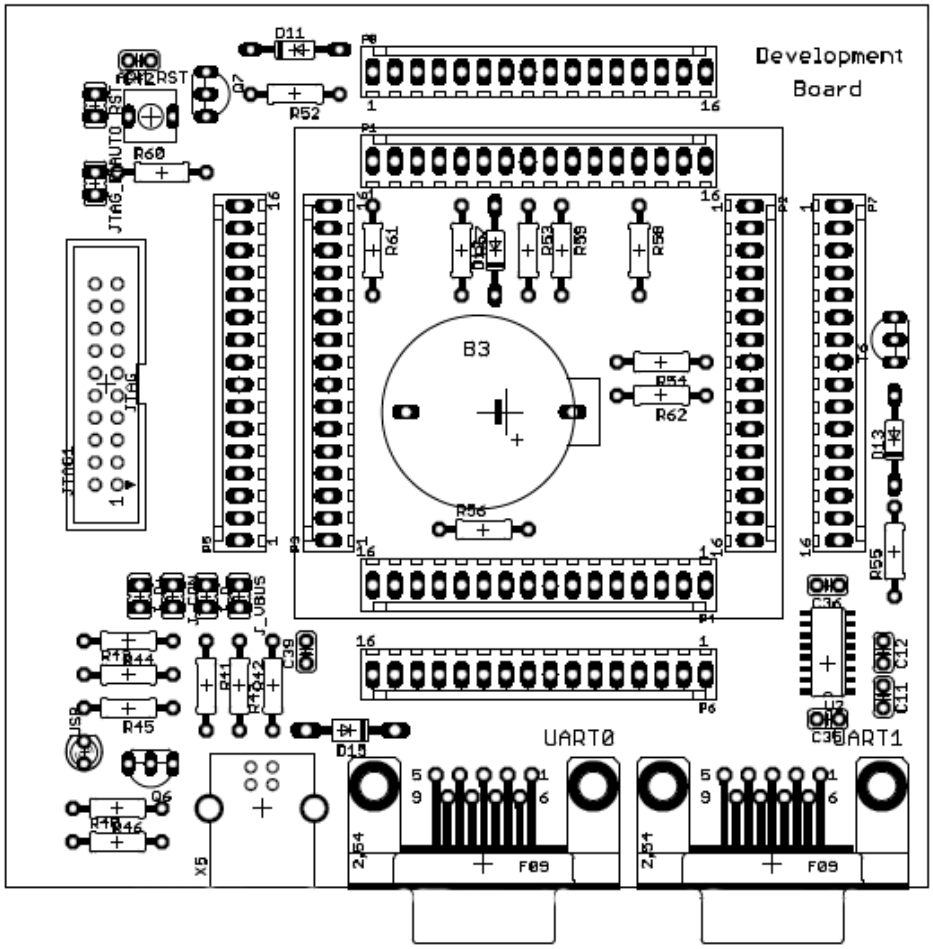
Since beginning of our Multiprocessor product range, our emphasis was always on offering ARM microcontroller support on single development board with variety of famous interface circuits.ISP Programmers, IDEs, Compilers, Sample Source Code, Cables, Connectors and power supply are part of the standard 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

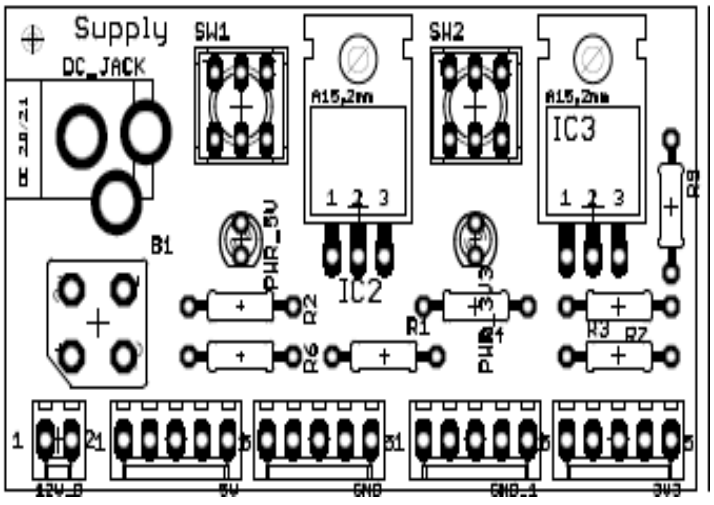
The ARM Trainer kit includes following sections on the Board:

1. LPC2148 and other Pin Compatible ARM7 Microcontrollers Development Board
2. Power Supply Section
3. LED Display
4. Seven Segment Display - Four multiplexed
5. LCD/GLCD Display
6. 4x4 Matrix Keypad
7. Pulled Up/Pulled Down Push to On Switches
8. Relay
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. Variable resistor

1. **LPC2148 and other Pin Compatible ARM7 Microcontrollers Development Board**

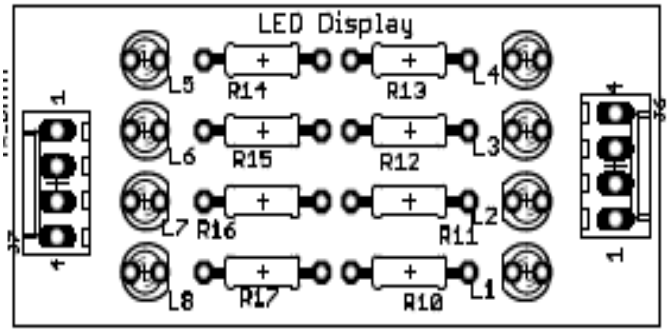


2. **Power Supply Section**



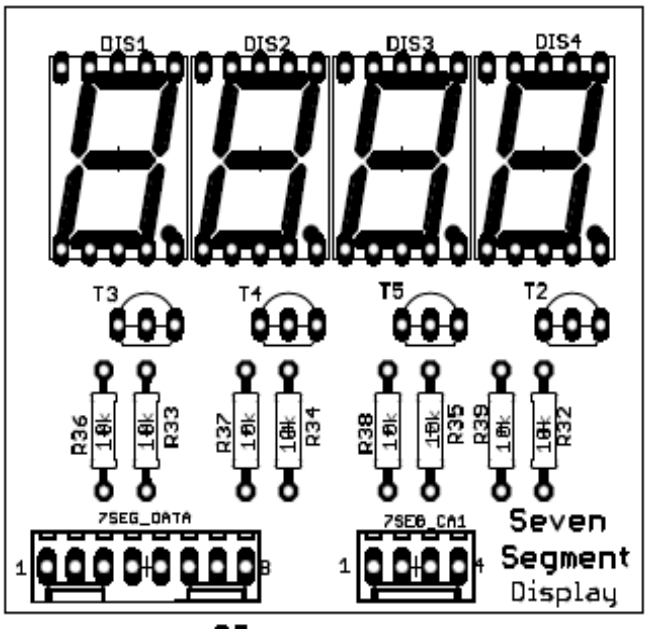
Note: Use only 9-12VDC, 1A Power Supply.

3. LED Display



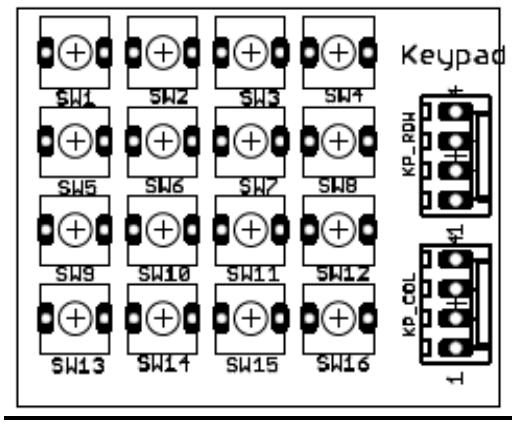
LED_IN		LED_IN1	
1	L1	1	L5
2	L2	2	L6
3	L3	3	L7
4	L4	4	L8

4. Seven Segment Display



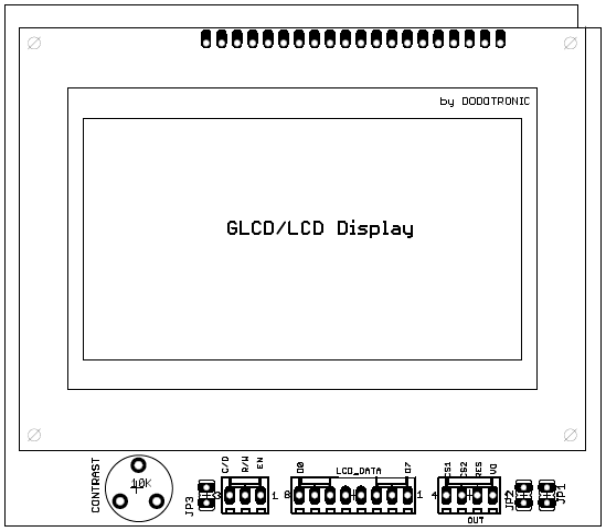
7SEG_DATA		7SEG_CA1	
8	Seg A	4	DIS1
7	Seg B	3	DIS2
6	Seg C	2	DIS3
5	Seg D	1	DIS4
4	Seg E		
3	Seg F		
2	Seg G		
1	DP		

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. 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		

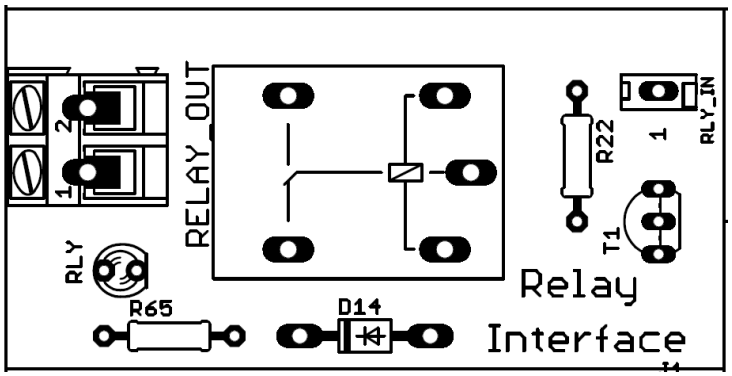
Note: Connect JP3, JP1 & JP2 for LCD Contrast & Back Light.

[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		

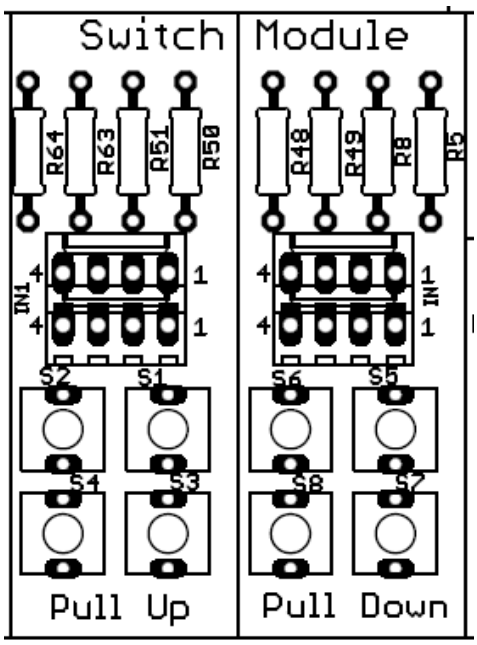
Note: Disconnect JP3, JP1 & JP2.

7. Relay Module



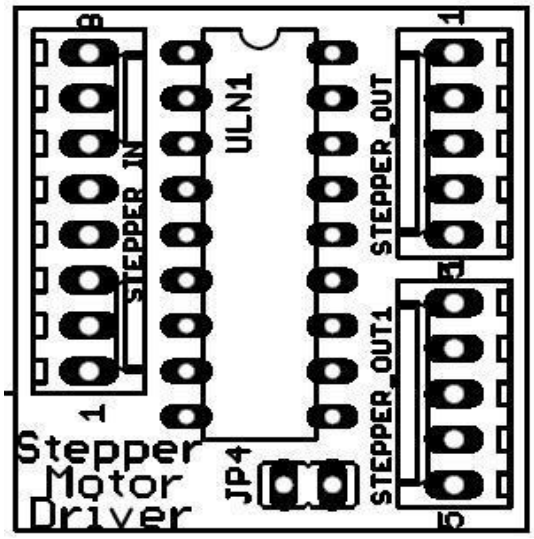
RELAY_OUT	
1	NO
2	NC

8. 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

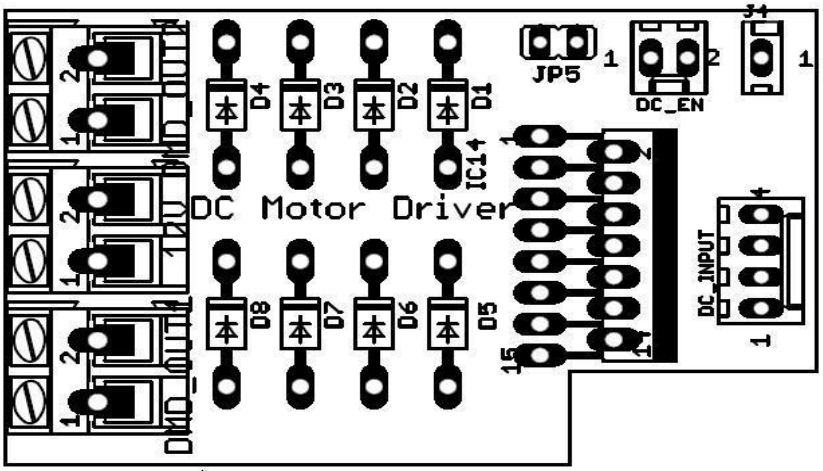
9. ULN2803 Based Stepper Motor Driver



Note: Connect JP4 to supply 12V to the motor.

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

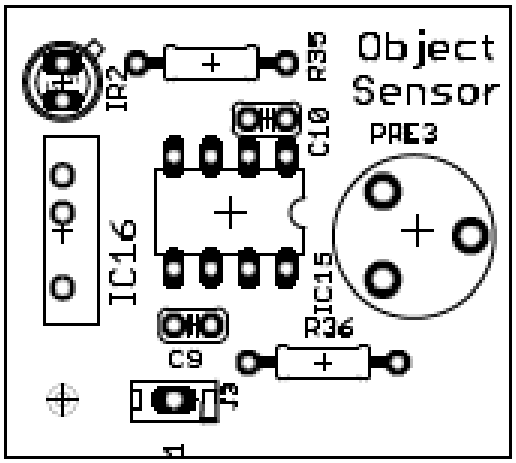
10. L298 Based DC Motor Driver



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		

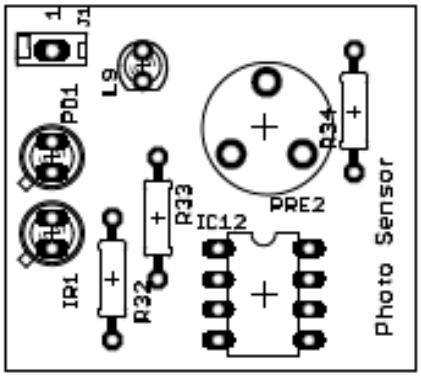
Note Connect JP5 to supply 12V to motor.

11. TSOP1738 Based Object Sensor



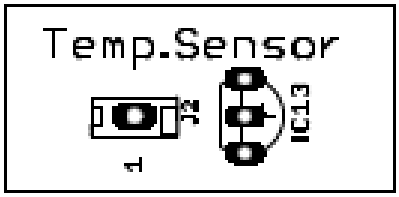
J3	
1	IR_OUT

12. IR Photo Sensor



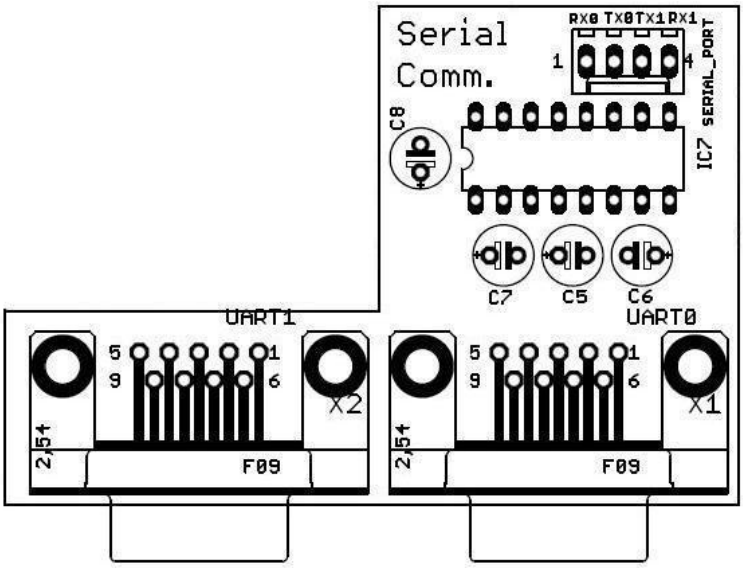
J1	
1	OUT

13. LM35 Temperature Sensor



J2	
1	OUT

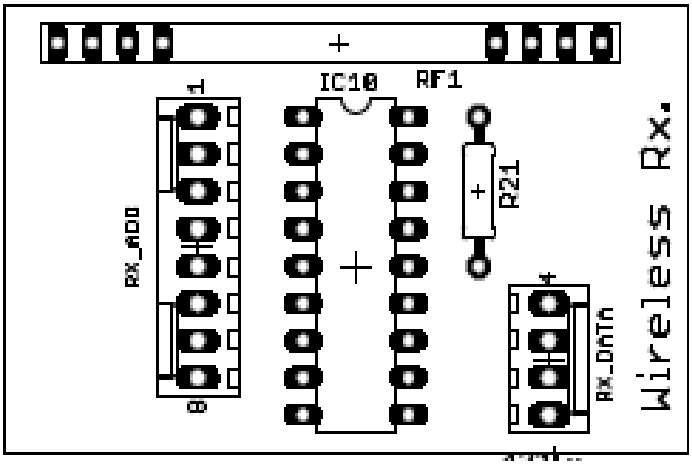
14. General Purpose RS232 Interface



SERIAL_PORT	
1	RX0
2	TX0
3	TX1
4	RX1

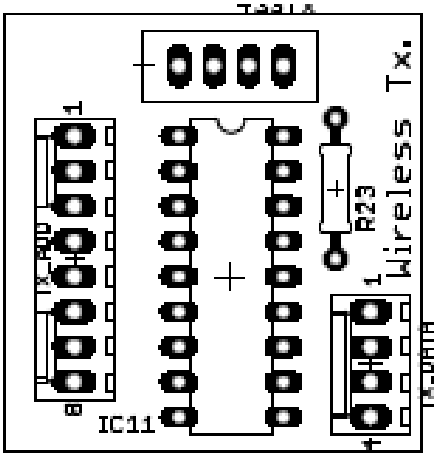
15. 433 MHz RF Module with Encoder-Decoder

RF-Receiver



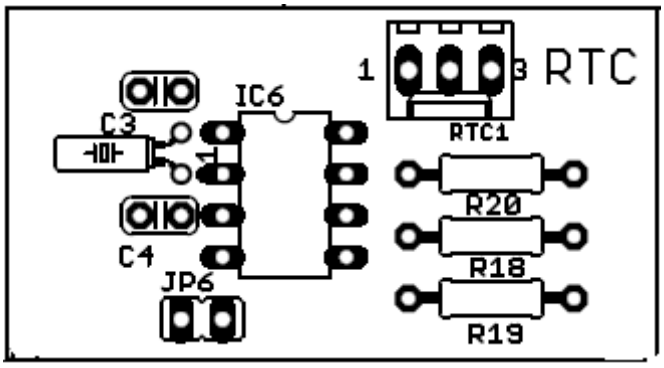
RX_ADD		RX_DATA	
1	A0	1	D8
2	A1	2	D9
3	A2	3	D10
4	A3	4	D11
5	A4	5	VT
6	A5		
7	A6		
8	A7		

RF-Transmitter



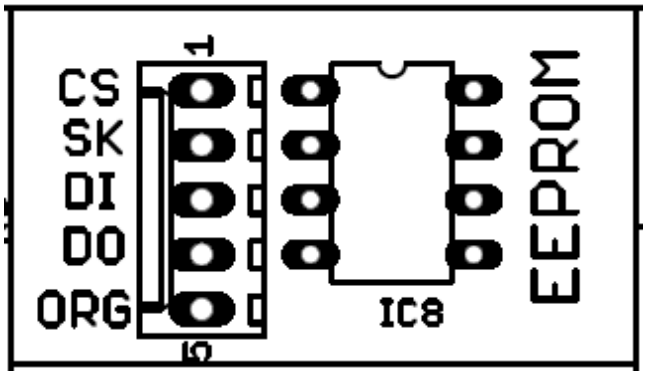
TX_ADD		TX_DATA	
1	A0	1	D8
2	A1	2	D9
3	A2	3	D10
4	A3	4	D11
5	A4		
6	A5		
7	A6		
8	A7		

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

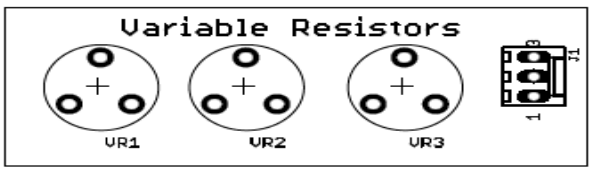


RTC1	
1	SQW
2	SCL
3	SDA

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

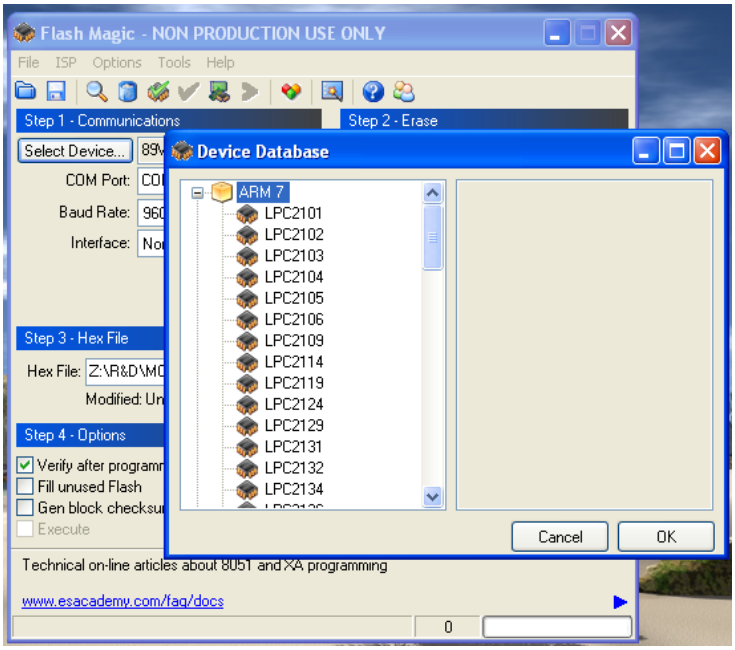


18. <u>Variable resistors</u>

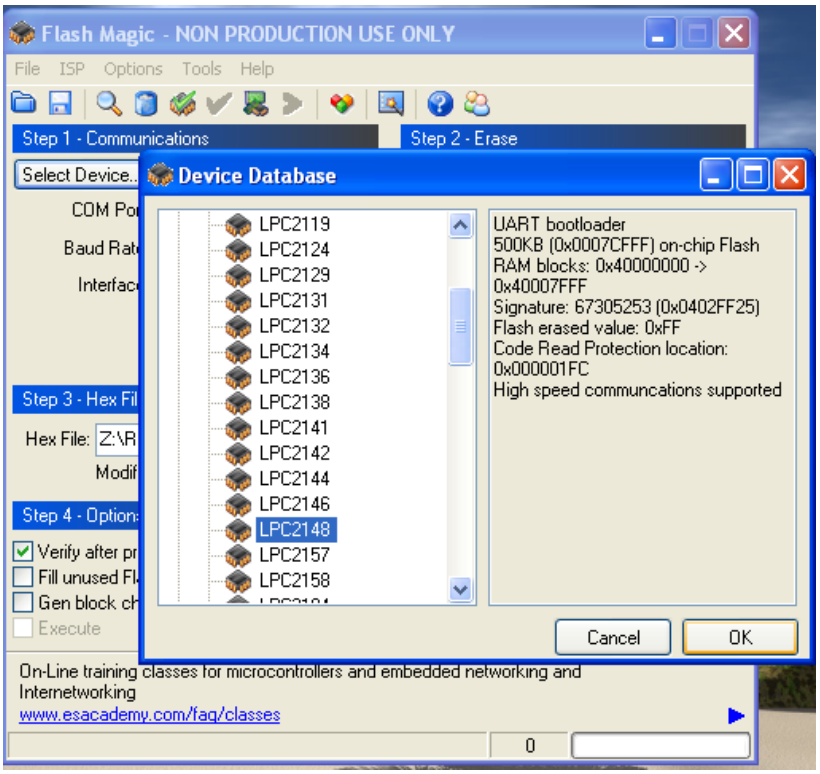


Programming LPC2148 Microcontroller

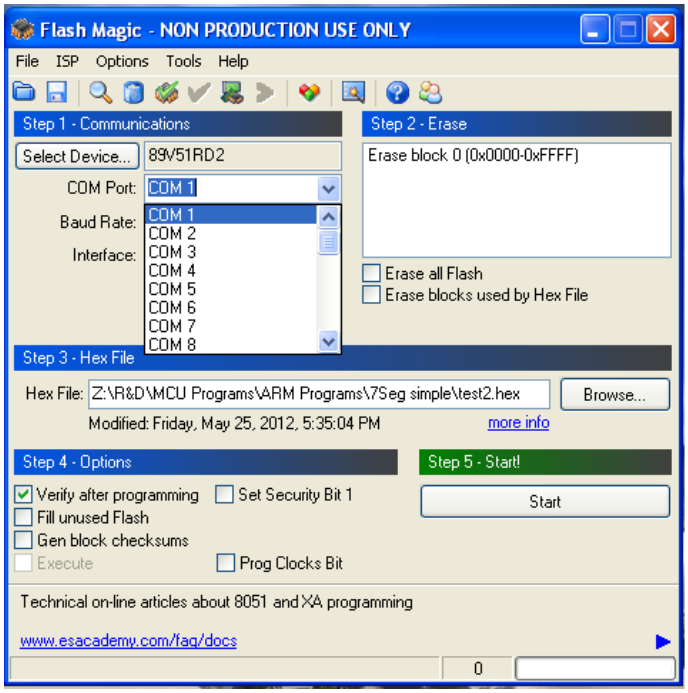
1. Connect Serial Cable to UART0 Connector.
2. Set Auto_RST Jumper on Board.
3. Select Device Family of ARM7



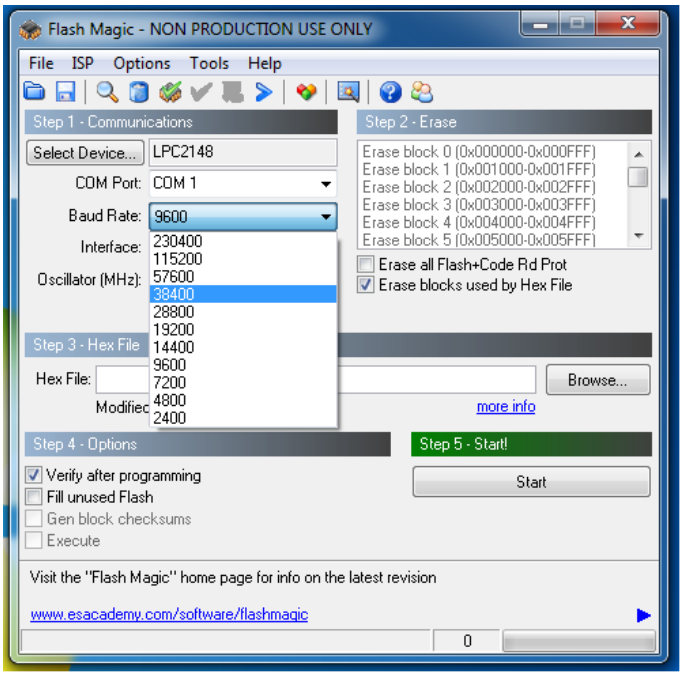
4. Select LPC2148 Microcontroller



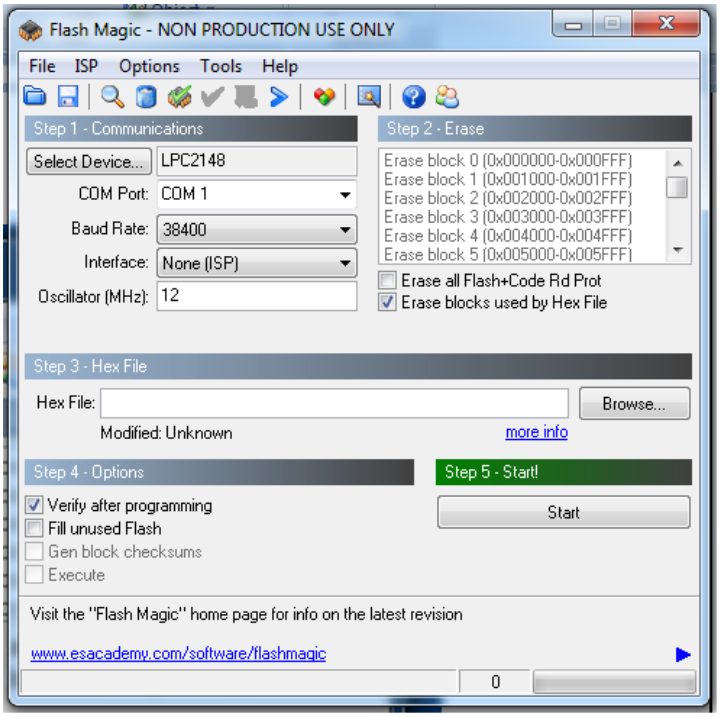
5. Select COM Port. Normally its COM1 in most Computers. Please check Device Manager for Available COM Ports.



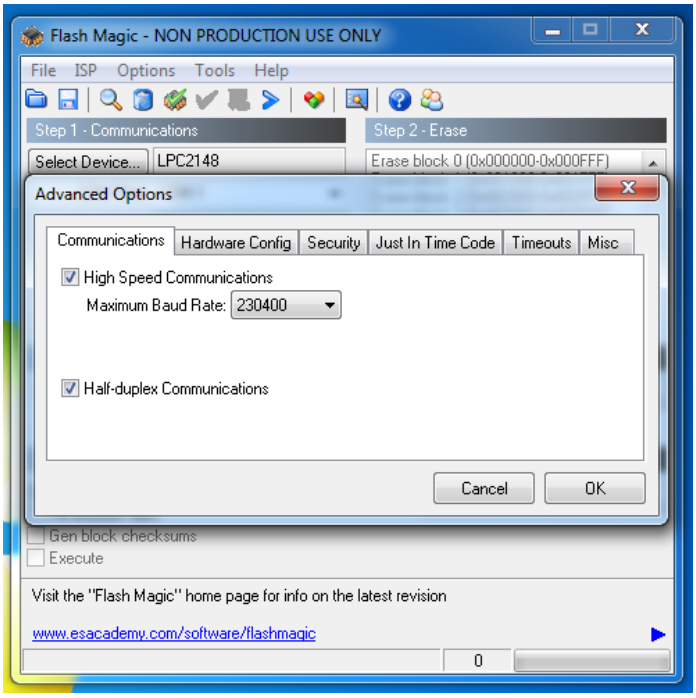
6. Select 38400 Baud Rate.



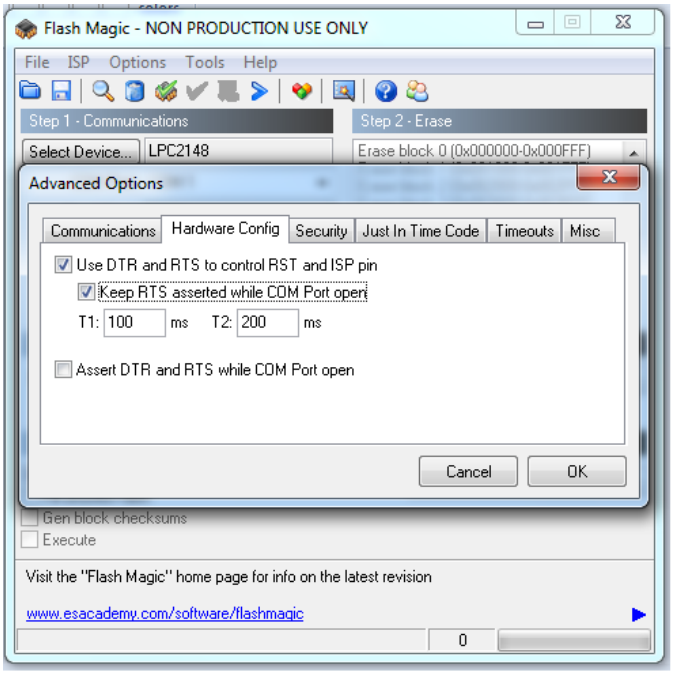
7. Set Crystal Frequency to 12MHz.



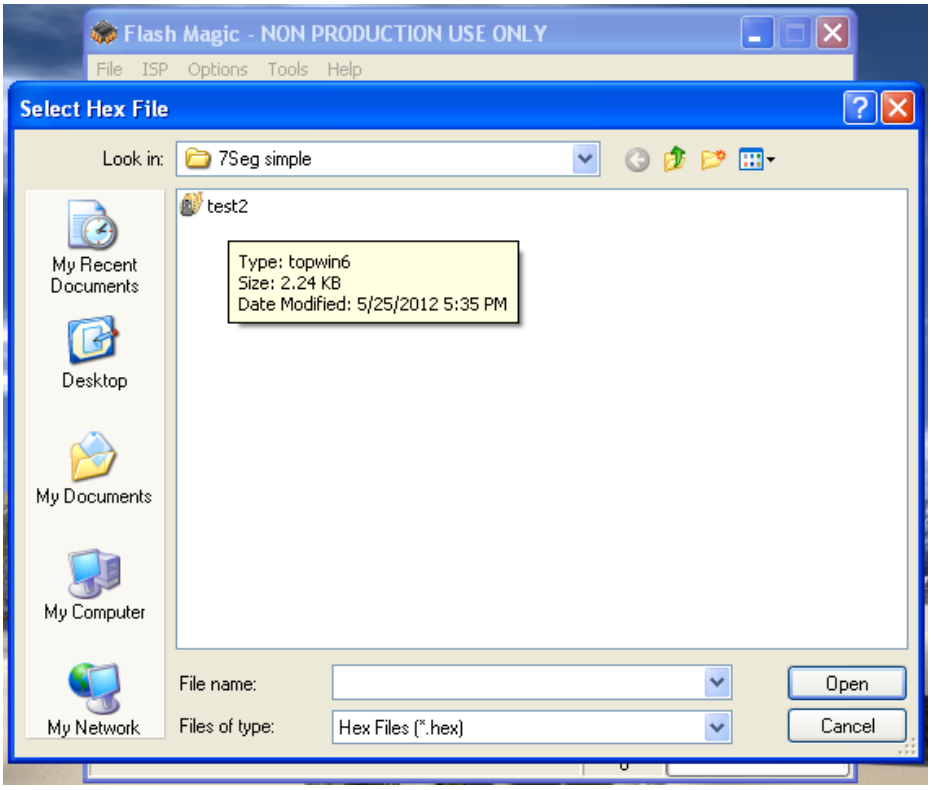
8. Go to Option-> Advance Options.
9. Check Mark High Speed Communications and Half Duplex Communications.



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.