

Microcontrollers



system-on-a-chip
to be integrated in circuits



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system-on-a-chip

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microprocessor

digital input/output pins

data memory

analog-to-digital convertor

program memory

pulse width modulation

low-cost

low energy consumption

...



This Year's Selection

Microcontroller



Atmel ATmega168

8-bit AVR instruction set

16 Mhz clock speed

1 kB SRAM

16 kB program memory



NXP LPC2214

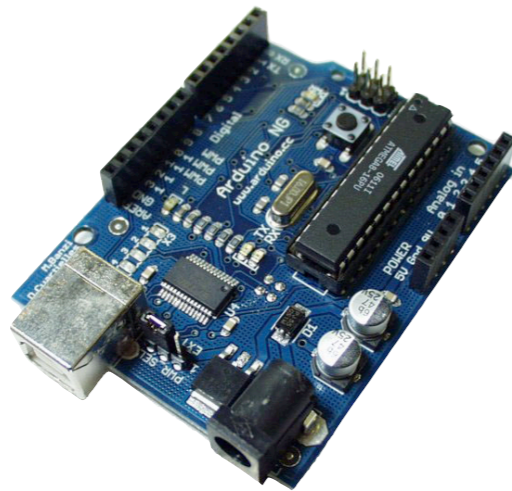
32-bit ARM instruction set

12 Mhz clock speed

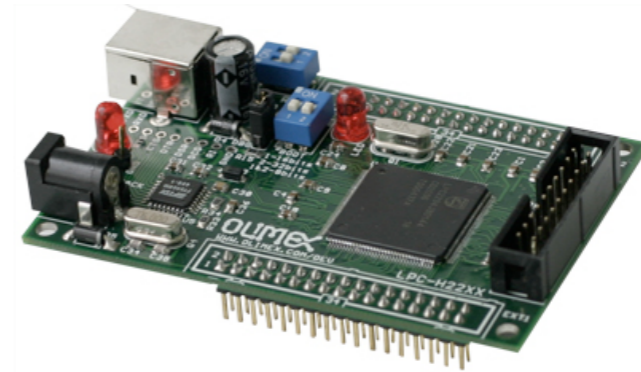
16 kB SRAM

256 kB program memory

Development Board



Arduino Diecimila



Olimex H2214

*additional 1MB of
SRAM and 1MB of
Flash memory*

Software



SICP register machine code

```
'(test-b (test (op >) (reg c) (reg n))
(branch (label fact-done))
(assign p (op *) (reg p) (reg c))
(assign c (op +) (reg c) (const 1))
(goto (label test-b))
fact-done)
```



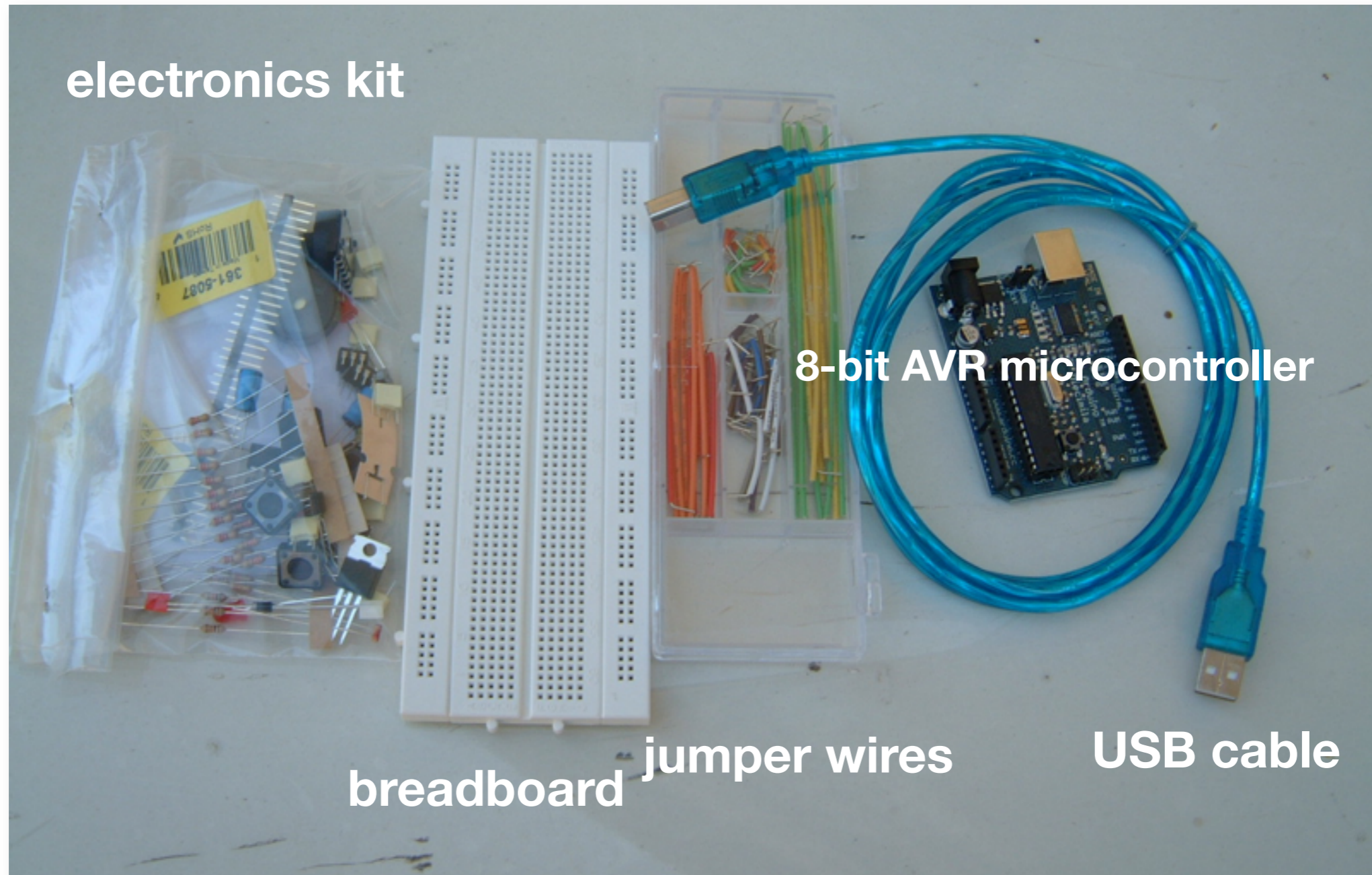
ARMPit Scheme

```
(define GPIO_0 #xE0028000) ; IO0 port
```

```
(define (blink port pin delay)
(set-pin! port pin)
(wait-us delay)
(clear-pin! port pin))
```

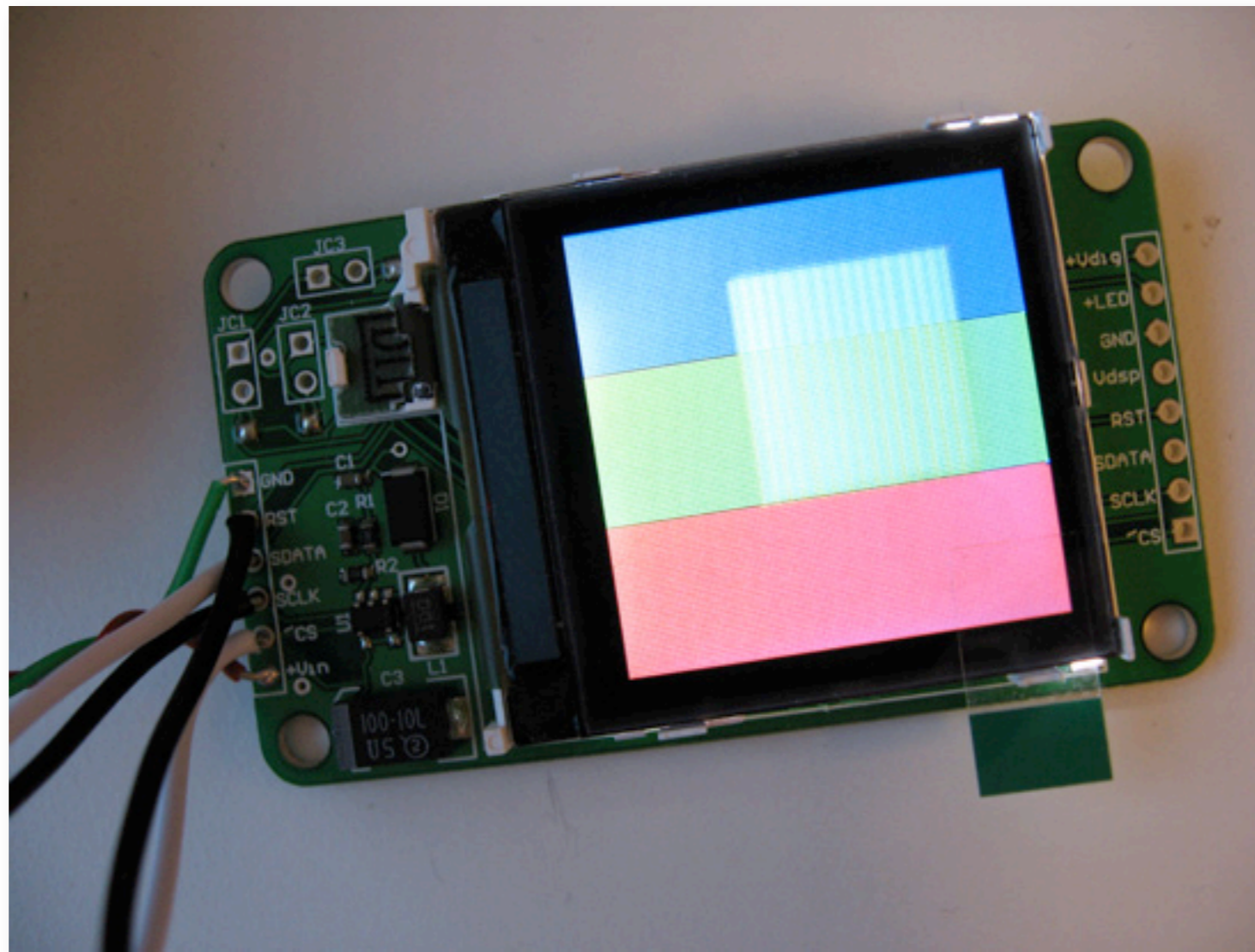
```
(define led-pin (ash 1 6))
(set-dir! GPIO_0 led-pin)
(blink GPIO_0 led-pin 2000000)
```

Contents of Your Welcome Bag (I)



Contents of Your Welcome Bag (II)

**128x128 pixel
4096 Color Nokia LCD Display**

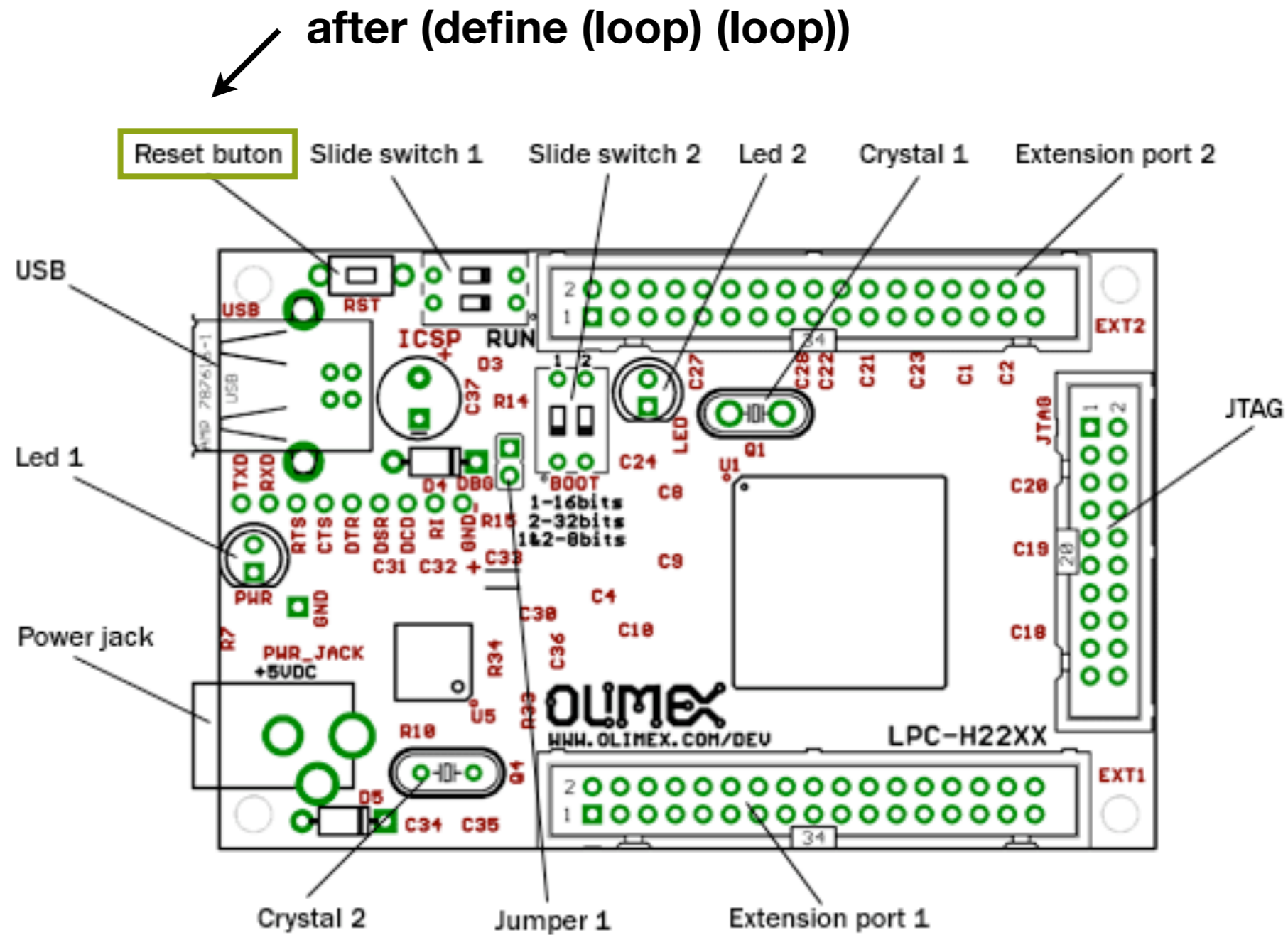


Contents of Your Welcome Bag (III)

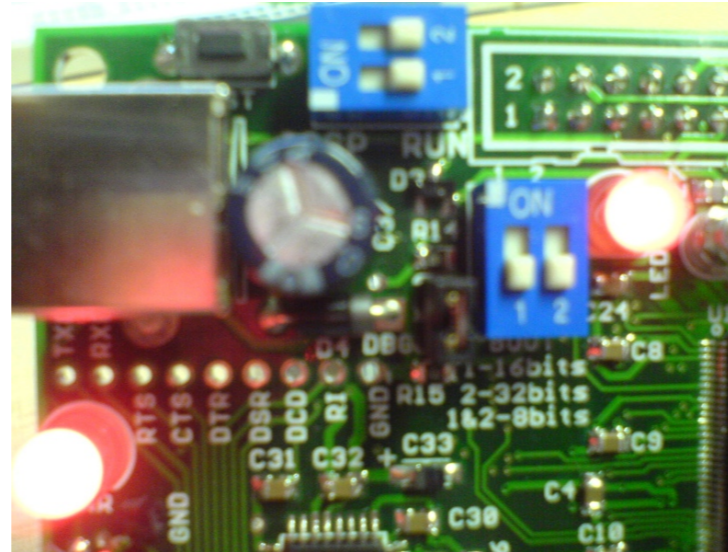
**32-bit ARM
microcontroller**



Olimex LPC-H2214 Board In Detail



Correct Configuration of Switches on Board



Slide switch	Position	Description
Slide switch 1 (ICSP)		Disable ICSP programming.
		Enable ICSP programming.
Slide switch 2 (BOOT)		Select 8-bit memory on CS0 for boot.
		Select 16-bit memory on CS0 for boot.
		Select 32-bit memory on CS0 for boot.
		Select internal Flash memory.