PICAXE Microcontroller Summary...

PICAXE Type	IC Size	Memory (lines)	I/O Pins	Outputs	Inputs	ADC (L =low)	Data Memory	Polled Interrupt
PICAXE-08	8	40	5	1-4	1-4	1L	128 - prog	-
PICAXE-08M	8	80	5	1-4	1-4	3	256 - prog	Yes
PICAXE-18	18	40	13	8	5	3L	128 - prog	-
PICAXE-18A	18	80	13	8	5	3	256	Yes
PICAXE-18X	18	600	14	9	5	3	256 + i2c	Yes
PICAXE-28A	28	80	20	8	8	4	64 + 256	Yes
PICAXE-28X	28	600	21	9-17	0-12	0-4	128 + i2c	Yes
PICAXE-40X	40	600	32	9-17	8-20	3-7	128 + i2c	Yes

Notes:

The number of memory program lines is approximate as different commands require different amounts of memory.

The data memory can be used for storing data values or LCD messages. On the entry level PICAXE-08/18 this memory is shared with the downloaded program and so a longer program decreases the available data memory.

The PICAXE-28 has separate ADC pins, with the other types the ADC are combined on the input pins. L denotes a low-resolution ADC function.
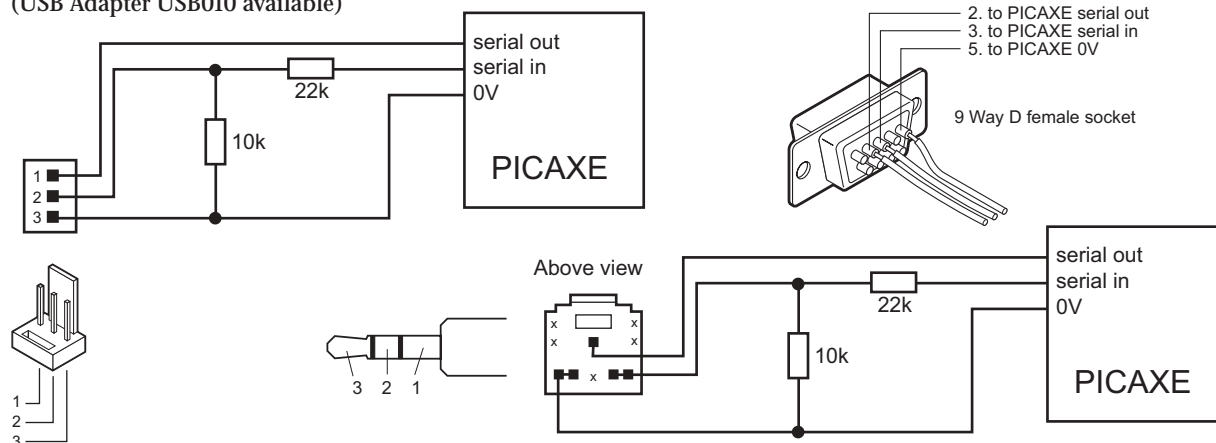
The PICAXE-28 and PICAXE-18 microcontrollers require a 4k7 pull up resistor on the reset pin.

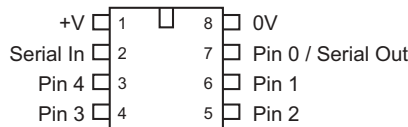The PICAXE-28 microcontrollers require an external 4MHz 3 pin ceramic resonator.

PICAXE-08

Pin		Pin
+V	1	8	0V
Serial In	2	7	Pin 0 / Serial Out
Pin 4	3	6	Pin 1
Pin 3	4	5	Pin 2

PICAXE-18

Pin		Pin
Input 2	1	18	Input 1
Serial Out	2	17	Input 0
Serial In	3	16	Input 7
Reset	4	15	Input 6
0V	5	14	+V
Output 0	6	13	Output 7
Output 1	7	12	Output 6
Output 2	8	11	Output 5
Output 3	9	10	Output 4

PICAXE-28

Pin		Pin
Reset	1	28	Output 7
Analogue 0	2	27	Output 6
Analogue 1	3	26	Output 5
Analogue 2	4	25	Output 4
Analogue 3	5	24	Output 3
Serial In	6	23	Output 2
Serial Out	7	22	Output 1
0V	8	21	Output 0
Resonator	9	20	+V
Resonator	10	19	0V
Input 0	11	18	Input 7
Input 1	12	17	Input 6
Input 2	13	16	Input 5
Input 3	14	15	Input 4

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NB all PICAXE ICs are supplied pre-programmed with the PICAXE bootstrap code
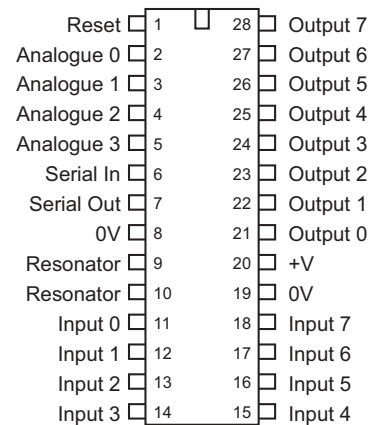
Serial Download Circuit:

The serial download circuit for all PICAXE microcontrollers is (straight or 'stereo plug' cable connections):
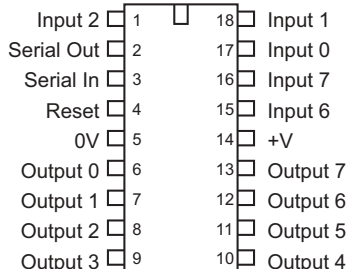(USB Adapter USB010 available)

2. to PICAXE serial out
3. to PICAXE serial in
5. to PICAXE 0V

9 Way D female socket

22k
10k

serial out
serial in
0V

PICAXE

Above view

22k
10k

serial out
serial in
0V

PICAXE

PICAXE Commands (valid all sizes):

Output -	high, low, toggle, pulsout, let pins =
Input -	if…(and/or)…then, readadc, pulsin, button
Sound -	sound
Serial -	serin, serout
Program Flow -	goto, gosub, return, branch
Loops -	for…next
Mathematics -	let… (+, -, *, **, /, //, max, min, &, |, ^, &/, |/, ^/)
Variables -	if...then, random, lookdown, lookup
Data memory -	eeprom, write, read
Delays -	pause, wait, nap, sleep, end
Miscellaneous -	symbol, debug

Please see the BASIC Commands (v3.5) help file for more detailed syntax help and information about each command.

PICAXE-08/08M Specific Commands:

I/O Config. -	input, output, reverse, let dirs =
PWM -	pwm, pwmout (08M)
Music -	play, tune (08M)
RAM -	peek, poke (08M)
Servo Control -	servo (08M)
Infrared -	infrain2, infraout (08M)
Interrupt -	setint (08M)
10 Bit ADC -	readadc10 (08M)
Temperature -	readtemp, readtemp12 (08M)
1-wire Serial No -	readowsn (08M)
Count Input -	count (08M)
Serial Output -	sertxd (08M)
Resonator Speed -	setfreq (08M)

PICAXE-18/18A/18X Specific Commands:

RAM -	peek, poke
Servo Control -	servo (18A/X)
Infrared -	infrain (18A/X)
Interrupt -	setint (18A/X)
10 Bit ADC -	readadc10 (18X)
Temperature -	readtemp, readtemp12 (18A/X)
Keyboard -	keyin, keyled (18A/X)
1-wire Serial No -	readowsn (18A/X)
1-wire Clock -	readowclk, resetowclk (18A)
I2C -	readi2c, writei2c, i2cslave (18X)
Count Input -	count (18X)
PWM Output -	pwmout (18X)
Serial Output -	sertxd (18X)
Resonator Speed -	setfreq (18X)

PICAXE-28/28A/28X(40X) Specific Commands:

RAM -	peek, poke
Servo Control -	servo
Infrared -	infrain
Interrupt -	setint (28A/X)
10 Bit ADC -	readadc10 (28X)
Temperature -	readtemp, readtemp12 (28A/X)
Keyboard -	keyin, keyled (28X)
1-wire Serial No -	readowsn (28X)
Data Memory -	writemem, readmem (28/28A)
I2C -	readi2c, writei2c, i2cslave (28X)
Count Input -	count (28X)
PWM Output -	pwmout (28X)
Serial Output -	sertxd (28X)

What's new in the extended PICAXE X parts?

The PICAXE X parts support all the A part commands and features, with the following enhancements:

- Program memory 8x as long (approx. 600 lines rather than 80), with intelligent download
- User configurable pins on PICAXE-28X and PICAXE-40X
- Continously driven pwm motor drive outputs (pwmout command)
- Count high frequency pulses within a set time period (count command)
- Increased data memory (128/256 bytes) (read/write commands)
- i2c bus support for EEPROMS and other devices (i2cslave/writei2c/readi2c commands)
- Interrupt feature on inputs (setint command)
- Accurate digital temperature sensor interface (readtemp/readtemp12 commands)
- 10bit and 8 bit adc option (readadc10/readadc commands)
- User serial output via the serout pin / programming cable (sertxd command)
- 4800 baud rate option (and faster at higher clock frequencies) (serin/serout commands)
- Read serial number from any Dallas 1-wire device (e.g. iButton) (readowsn command)
- Computer keyboard interface on inputs 6 and 7 (keyin, keyled command)
- Software support for increased clock frequency (4, 8 or 16MHz).

See the X-Parts and BASIC Commands datasheets (v3.5 or greater) for further information on each command.

What's new in the PICAXE-08M part?
(NB Future product, available Summer 2004)

The PICAXE-08M part supports the usual 'A' part commands and features, with an additional music playing enhancement and several additional bonus features.

Standard 'A' part features:

- Program memory twice size of PICAXE-08 (approx. 80 lines)
- Standard resolution (8 bit) adc option on 3 of the i/o pins (readadc command)
- Interrupt feature on inputs (setint command)
- Infra-red input (infrain2 command)
- Accurate digital temperature sensor interface (readtemp/readtemp12 commands)
- Read serial number from any Dallas 1-wire device (e.g. iButton) (readowsn command)
- Increased register support (peek/poke commands)

Music features:

- Music tune playing option (user programmable tune) (tune command)
- 4 internal tunes (happy birthday, silent night, jingle bells, rudolf red nosed reindeer) (play command)

Additional features:

- Infra-red output (infraout command)
- Continously driven pwm motor drive output (pwmout command)
- Count high frequency pulses within a set time period (count command)
- User serial output via the serout pin / programming cable (sertxd command)
- 10 bit adc option on 3 i/o pins (readadc10 command)
- Software support for increased clock frequency (4 or 8 MHz, setfreq command)

See the 'PICAXE-08M Music' and 'BASIC Commands' datasheets (v4.0 or greater) for further information on each command.