PICAXE VSM (VIRTUAL SYSTEM MODELLING)

WHAT IS PICAXE VSM?

PICAXE Virtual System Modelling (VSM) is a software circuit simulator that combines a 'virtual' PICAXE chip with animated components and SPICE circuit analysis to produce a simulation of a complete PICAXE project – and it operates in real time!*

To use the system simply draw your circuit schematic on screen, using the automated wiring and library of over 10,000 popular analogue / digital components to build up your circuit. Add voltage/current probes to any point in the circuit, and then connect any virtual instruments (e.g. a voltmeter or oscilloscope) as required. Then associate your PICAXE BASIC program to the PICAXE chip component and click 'Run!' to watch the circuit in operation.

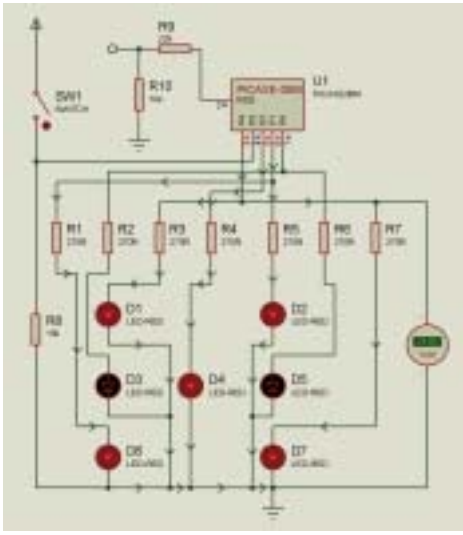
The on-screen output components (e.g. LEDs, motors and displays) animate as the PICAXE program runs, and input devices such as temperature sensors, switches and keypads can be activated by clicking on the animated model in the circuit simulation.

PICAXE VSM also provides extensive debugging facilities – the PICAXE program can be stepped through line by line, breakpoints can be set in the program, and the variable values can be displayed on screen.

Virtual Oscilloscope

Virtual instruments such as ammeters, voltmeters and oscilloscopes can be connected to study circuit operation. Voltage and current can also be highlighted by various animation options, for instance by adding 'voltage indicators' to component pins.

PICAXE VSM also supports traditional components such as 555 timers, op-amps etc. These components can be simulated in circuits by themselves, or combined into a PICAXE circuit. You can also add multiple PICAXE chips so, for instance, two PICAXE chips can communicate via RS232 serial communication.

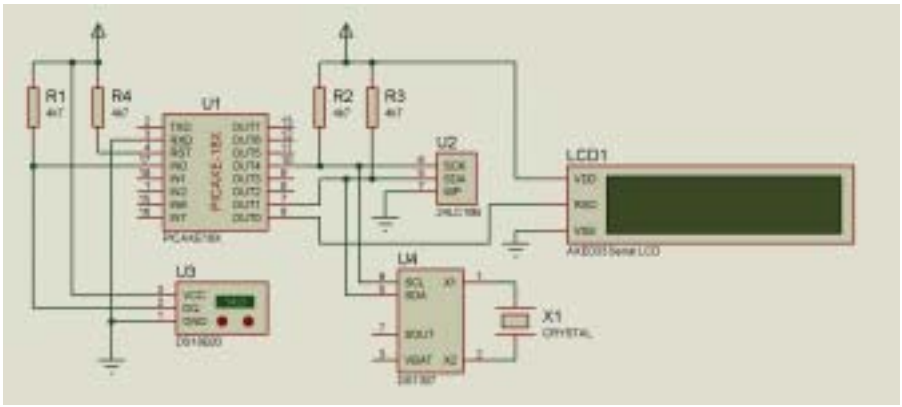


Simulation of the AXE105 PICAXE Dice kit. A voltmeter has been added to the circuit and the voltage indicators and current arrow animation options enabled.

KEY FEATURES:

- Berkley SPICE and digital circuit simulation for all PICAXE chips
- Library of over 10,000 components
- Sample files include simulations of all of Revolution's PICAXE kits
- Many animated output components, including LEDs, 7 segment displays, serial LCDs, motors, servos, stepper motors etc
- Many animated input components including switches, LDRs, thermistors, digital temperature sensors, keypads, iButtons etc
- Piezo sounders and speakers simulate via the computer's soundcard
- On screen animation of voltage bar and current arrows, and an unlimited number of current / voltage probes may be added
- Virtual instruments include voltmeter, ammeter, oscilloscope, signal generator, logic analyser, timer, serial terminal, i2c and spi debuggers
- Support for all major protocols, including RS232, spi, i2c, 1-wire
- Can simulate traditional circuits (e.g. 555 timers, op-amps and CMOS/TTL logic gates) as well as PICAXE circuits
- Set of free 'electronic principles' tutorial animations included
- Support for multiple PICAXE chips on the same design
- Serial port linking to allow models to send/receive data from real devices over the computer's real serial COM port
- Support for hierarchical sub-system blocks to generate a complete project using several separate sub-systems
- Users can develop their own models and animations
- Export net lists for use in a dozen different PCB applications

Part of the model of the advanced AXE110 PICAXE-18X datalogger kit. An animated DS18B20 '1-wire' temperature sensor provides the input to the system, whilst the data is saved to an i2c EEPROM memory chip. The AXE033 serial LCD display can show the temperature readings, and the i2c DS1307 real-time-clock allows the datalogger to take readings at specific time/date slots. Three advanced protocols - 1-wire, i2c and RS232 simulated in one design!



FURTHER INFO / ORDERING:

Further information and a demo version can be downloaded free of charge from **www.picaxevsm.com**

A single user license key costs £49.99 (approx. Euro75* / US$99*) and can be purchased securely with a credit card online at **www.picaxevsm.com**

Discounted school / college / university site licenses are also available, please call for details. PICAXE VSM may be purchased using eLearning Credits.

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For further information visit
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PICAXE VSM FREQUENTLY ASKED QUESTIONS...

Which PICAXE chips are supported?
All past/current PICAXE chips (08-08M-14M-18-18A-18X-28A-28X-28X1-40X-40X1). The system can simulate any PICAXE BASIC program, including those generated from flowcharting applications such as PIC-Logicator. The simulated program can be paused at any point by setting breakpoints, single stepped, and the memory (e.g. variable values) can be studied via on-screen memory maps.

Does the software also simulate conventional circuits?
Of course – if you want to simulate a conventional 555 timer circuit that is no problem. You can even have PICAXE and 555 timer circuits running side by side for comparison! An industrial standard SPICE3f5 simulator kernel ensures accurate simulation of all components and a complete series of animated 'electronic principles' tutorial circuits are also included free of charge.

Can I use more than one PICAXE chip on a circuit?
Yes, two (or more) PICAXE chips can be placed on the same circuit, so, for instance, they can 'talk' to each other using serial or infrared communication.

Which components are supported?
Over 10,000 standard and advanced components are included. As well as all the conventional components (resistors, capacitors, LEDs, transistors etc) the software also supports many advanced components not often found in other simulation products e.g. i2c EEPROMS, iButtons, digital one-wire temperature sensors, serial LCDs, stepper motors, radio-control servos, etc. - in fact all the commonly used PICAXE interfacing devices! A special PICAXE 'catalogue' of parts is also included, to ensure all common PICAXE parts can be quickly and easily located.

What virtual instruments are included?
As well as conventional AC/DC volt and ammeters, there is a virtual oscilloscope and logic analyser. For studying advanced protocols, serial (RS232) terminal and i2c / spi debuggers are all included. A signal generator can also generate a variety of different waveforms.

Which PICAXE circuits are available as examples?
Every single PICAXE project kit manufactured by Revolution is simulated via a file that can be downloaded free of charge from the PICAXE website (www.picaxe.co.uk). So all PICAXE project boards and kits can now also be simulated on-screen!

What's the difference between simulation and animation?
Over 8000 of the included components simulate, and the voltage/currents can be measured at any component pin by dropping probes or meters onto the schematic. Some input/output components also animate as well as simulate – e.g. LEDs change colour, motors rotate and switches can be pushed! The schematic wires can also optionally animate – current flow is shown as arrows and voltage bars indicate the voltage at component pins (e.g. a high, low or floating signal).

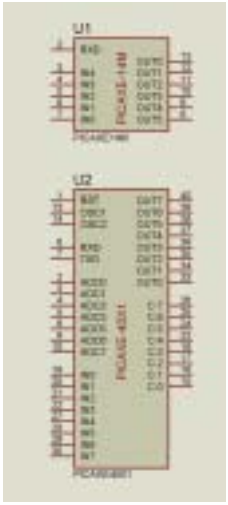
Can I simulate serial (RS232) communication?
PICAXE VSM contains a unique serial port 'connector' that maps the simulation's serial output to the computer's real serial port. This enables simulated PICAXE parts to communicate with real devices such as GPS modules, or even another real PICAXE chip! Alternately an on-screen 'virtual terminal' can be used to capture and send serial data within the simulation itself.

Can I make my own components and animations?
Yes - if you are technically minded! All common components are already included, but if you want to make your own component or animation model that is also possible. Existing models can also be disassembled, edited and then rebuilt - so it is relatively easy, for instance, to change the colour of an animating LED. You may also want to 'share' your private models – check out the PICAXE VSM forum at **www.picaxeforum.co.uk** to see if anyone has already made the component!

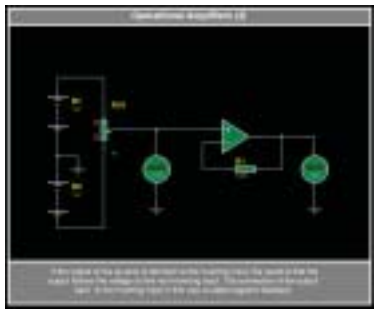
Can I create a PCB from my simulation circuit?
Yes, the simulation circuit can be exported as a netlist to create a PCB, with netlist output support for a dozen different popular PCB applications

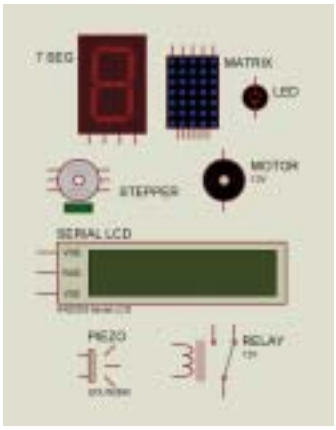
Can I simulate normal PICs with assembler code programs?
PICAXE VSM supports simulation of PICAXE chips with BASIC programs. However you may purchase an upgrade to your license to also include PIC models and assembler code/C programs, this will then allow you to combine PIC and PICAXE simulations on the same design.

Who has developed PICAXE VSM?
PICAXE VSM is a joint venture between two UK companies, Revolution Education, the developers of the PICAXE system, and Labcenter Electronics, a world leader in circuit simulation products who have been producing commercial SPICE and microcontroller simulators for almost 20 years.



Supports new PICAXE-14M & 40X1 chips


free electronics tutorials included



sample animated output devices

**Euro and US prices shown are approximate values at time of press and will vary with exchange rate fluctuations.*
Most circuits simulate in real time on modern PCs, but some lag may be experienced on more complex designs (however the simulation will naturally still continue to operate correctly).