

# INVENTION STIMULATOR

## QUICK REFERENCE GUIDE

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The spark that lights the brain





## THE LAYOUT OF THIS MANUAL

This Quick Reference Guide uses the following conventions:

*Example*

Important safety information is shown *in italics*. It is essential to follow these instructions.



The exclamation mark icon highlights key points

`c:\windows`

Command line information is shown in a different font, Courier 10



The light bulb icon shows examples and suggestions for you to adapt



The question mark icon indicates the location of additional help

## STATUTORY NOTICES

# CE 10

The makers certify that the printed circuit board and accessories conform to the 2004/108/EC and 2006/95/EC European Directives. Tests have been independently validated by the relevant notified bodies in the EU, and certified ROHS compliant.



**WARNING:** The accessories pack contains small parts and is not suitable for children under five years.



Under the European Waste Electrical and Electronic Equipment Directive this item should not be placed in the household rubbish but be returned for environment friendly disposal.

The specifications and information in this manual are subject to change without notice. Panda Schooltime does not accept responsibility or liability for any error or inaccuracy that may appear in this Quick Reference Guide, including the products and software described herein.





# BEFORE YOU BEGIN



Before unpacking the box make sure that you have a clear, tidy space at least 30cm x 30cm for the parts to avoid them getting lost.



A Windows personal computer is needed for programming. We support Windows 95\*, 2000\*, Millennium Edition, Vista and Windows 7. **64 bit installations may require a further compatibility download from our website. We regret that the architecture of Windows NT makes it unsuitable because it does not include native USB support.** InventionStimulator has not been tested with Macintosh, Unix or Google Chrome. An internet connection is required to access on-line help.



If you haven't got enough computers to go round, don't worry you can share build the programs as a team and download them to more than one InventionStimulator® printed circuit board (known as a PCB or MCU).

# UNPACKING YOUR inventionstimulator®



InventionStimulator® is supplied in a special box with a magnetic clasp. Don't break the box up or throw it out - it's designed to store the parts away when not in use.



To open the box place on the table with the words "Invention stimulator" facing towards you, and gently lift the front flap at the double arrow symbol.



Gently lift out the red mount and printed circuit board (known as 'PCB' or 'MCU'). We suggest you retain the red mount as some users find it helpful to keep the board in the mount during experiments as well as for storage.

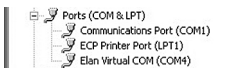


Double-check the pack contents against the packing list in the box. In the unlikely event of finding anything missing please log on to <http://www.inventionstimulator.com/support.html>

\*Early versions of Microsoft Windows must include a USB1 or USB2 support upgrade. Windows® is the trademark of Microsoft Corporation. All trademarks are acknowledged.



# INSTALLING THE VisualFlowPro SOFTWARE



Remove the installation mini-CD-rom from its sleeve and place the disc in your CD, DVD or Blu-Ray drive, taking care to place it in the groove at the centre of the drive tray. Gently push the tray in.

If the disc does not load automatically, use explorer to locate the autorun.exe file and double click it to launch the menu and then choose 'Set Up'.

Click 'Next' in the wizard and confirm the installation directory (or choose one of your own). Only 7.8Mb of disk space is needed. Then click 'Next'.

Once the software installation is complete you will need to attach the printed circuit board to your computer, using the USB cable as illustrated. The operating system will offer to look for a driver file and ask if you have a disc.

Tick the box 'include this location in the search' and point to your CD drive and then click 'Next'

If your anti-virus software or operating system prompts that the 'Elan Virtual COM' device driver does not have a digital signature, choose the continue anyway, ignore or over-ride prompt.

Once the install is complete your control panel will show InventionStimulator as a 'Virtual COM port', normally COM4.

Congratulations, you've successfully configured InventionStimulator and are good to go! Why not begin by clicking 'Training' from the CD Menu.



# INTRODUCING inventionStimulator®

## Product Overview

InventionStimulator is a unique educational programme designed to help develop thinking and design skills while also learning about simple flow-chart based programming techniques. It designed to be fun for everyone, you don't need to be a computer whizz - if you're happier playing games on a computer don't worry, it needs dexterity as well as lateral thinking!

The full programme consists of seven stages (which are described in more detail later), building from basic principles to advanced designer, and suits people from school 'key stage one' up. Each stage is suitable for any age, with older students tending to attempt more ambitious inventions. Each stage has its own kit, comprising:

- a printed circuit board, known as a 'PCB' or 'MCU' (short for Micro Control Unit). These are used in many devices at home, including ovens, hi-fis and heating controls, and help to automate our daily lives
- a flow-chart based design package, VisualFlowPro, for students to define processing logic by dragging and dropping icons representing pre-built routines. adding parameters and code of their own. a series of accessories like lights, fans, motors and sensors which can be connected to, and controlled by, the PCB. The accessories include a battery holder for a 9 volt MN1604 (PP3) battery and a USB to micro-USB connector cable

The install CD includes an interactive tutorial in Microsoft Powerpoint Show format. This is a self-contained presentation which does need any software to be installed on the PC. It introduces the components, with an example project to help get students thinking. Schools are welcome to take install this tutorial on a network server to avoid needing to use the original installation media. Additional training material is available via our website. For further information see:

- Insert the CD and choose 'training
- If you prefer copy `InventionStimulator-TrainingPack.pps` from the `Documentation` folder and run it on your PC or network
- Or visit [www.InventionStimulator.com](http://www.InventionStimulator.com) and follow the links





# THE SEVEN STAGE PROGRAMME

## Building innovation, retaining interest

InventionStimulator kits are designed by leading experts to allow people to build their knowledge in stages and put it into practice by experimenting with designs of their own - the more imaginative the better! The range will build to seven kits in total, of which the first two are available at the time of writing. You can find up-to-date details on our website, along with extras and ideas, and share experience with other inventors..

<http://www.InventionStimulator.com/>

Each level of the programme introduces new 'widgets' like sensors, lights, motors and radio-frequency connections, designed to consolidate the learning from the previous stages while broadening and deepening the knowledge you have already built up.

Level One consists of a basic introduction, with a simple circuit board, a fan and a series of lights. Students can create programmes to activate the fan and lights in a predefined sequence, with the option to play a tune or sound an alarm using the headphone socket on the PCB. They are encouraged to construct real-life scenarios of how the technology might be used in the real world.

Level Two includes a more sophisticated board, a selection of sensors and a small electric motor, exponentially increasing the design possibilities, while the later levels add radio-frequency controls and additional connectivity to allow pupils to bring highly creative ideas to life.

At each stage teacher packs are available to help plan the learning and to take some of the pain out of the preparation. Our on-line forums also allow students or teachers to exchange ideas and get hints and tips from other students or via the extensive range of frequently asked questions.





## DO'S AND DON'TS



### Safety First!

Your safety is important. You must follow these simple rules at all times.

- NEVER attempt to connect the printed circuit board, known as a 'PCB' or 'MCU' (short for Micro Control Unit) to the electric mains
- NEVER use any power source except a 9 volt MN1604 (PP3) battery or the USB connection. The board is not designed for use with a transformer or mains adapter
- NEVER attempt any experiment that involves the use of a naked flame as a heat source except with adult supervision. Matches and lighters are dangerous and must be handled with care.
- ALWAYS use the Invention Stimulator kit in a clear uncluttered space and avoid allowing the cables or accessories to trail onto the floor where you may trip over them
- TAKE CARE to connect the battery only to the connector marked 'DC\_IN'. This is the connector half way down the printed circuit board under the on-off switch.
- Disconnect the USB cable when not in use.
- Ask for permission before connecting to the Internet and if necessary ask your parents or network administrator to include inventionstimulator.com in your 'safe sites'.

### Extra precautions when travelling with a Printed Circuit Board.

In these uncertain times, it is **essential** that you take extra care to avoid creating a security incident when travelling. Airports and other travel hubs routinely use scanning technology to identify terrorist threats and could mistake the Invention Stimulator kit for something sinister. Be sure to

- Disconnect and remove the battery. It may be better to buy a battery at your destination. Do not pack the battery with the PCB.
- Pack the board flat packed in its storage box and carry in hand luggage

InventionStimulator is intended for school and home recreational use. Do not attempt to use it for any other purpose.





# TROUBLESHOOTING GUIDE 1

Problem	Corrective Actions
The software failed to install	<ol style="list-style-type: none"><li>1. Log on to the PC as the Administrator or seek advice from your system Administrator</li><li>2. Retry after temporarily disabling your anti-virus or internet security software</li><li>3. Check for a software update at <a href="http://www.inventionstimulator.com/downloads.html">http://www.inventionstimulator.com/downloads.html</a></li><li>4. Choose 'Continue anyway' if prompted that a driver does not have a digital signature</li><li>5. If you still have a problem, connect the card via the USB card and follow the prompts from Device Manager, inserting the CD and including the CD drive in the files to search.</li></ol>
The lights do not illuminate on the board	<ol style="list-style-type: none"><li>1. Remember nothing should light up until you download instructions!</li><li>2. Check that the battery isn't flat and is properly connected</li><li>3. Reconnect the USB cable and attempt to download the programme again</li></ol>
There is no sound in the headphones	<ol style="list-style-type: none"><li>1. Remember there will only be sound if your instructions include a beep or music command</li><li>2. Make sure that the cable is firmly connected</li><li>3. You can test the socket by using a pair of home headphones with a sub-mini jack</li></ol>
The heat, light or UV sensor does not work	<ol style="list-style-type: none"><li>1. Remember that these will only work if they are included in your instructions and correctly configured.</li><li>2. You need to get used to the sensitivity of the sensors by for example moving to a darker or cooler room or spot to test your invention</li></ol>
Parts missing	We will replace any parts that were missing on delivery free of charge if reported within 7 days. Report this via our ABCDE form on the website. You can also buy replacement parts on-line for a nominal price.





## TROUBLESHOOTING GUIDE 2

Problem	Corrective Actions
I can't load the training file (Powerpoint show)	An alternative version is available on-line via our website which does not use Powerpoint. Following the links from our home page at <a href="http://www.inventionstimulator.com/">http://www.inventionstimulator.com/</a>
I can't play the video training file. (My PC can normally play video)	<ol style="list-style-type: none"><li>1. Visit <a href="http://www.adobe.com">http://www.adobe.com</a> and download an up-to-date copy of Adobe Media Player, which is free, and install it.</li><li>2. Use Windows® Explorer to find the file InventionStimulator-Training1.FLV and double-click it.</li><li>3. Alternatively there are copies of the video on our website in a variety of formats, which include an auto-install feature of a free Apple Quicktime player.</li><li>4. Some modern DVD players also allow you to play video from a mini-CD on your TV.</li></ol>
I can't play the video training file (I can't usually play video)	<ol style="list-style-type: none"><li>1. Follow step 3 or 4 above, or you could always use a friend's PC or machine at the library to view the film</li></ol>
I've lost or damaged my handbook	<p>There is a printable copy on the CD, which you can find by clicking 'Open the Document Library Menu' from the main menu screen.</p> <p>Alternatively additional manuals can be purchased via our website for a nominal fee.</p>
I've tried all that and I still can't get things working	<p>We'll do our best to help you get going. Let us know about the problem, giving all the detail you can, using the ABCDE (Any Body Can Do Enquiry) Form on our website. You can find this by following the links on line or at: <a href="http://www.inventionstimulator.com/ABCDEFForm.html">http://www.inventionstimulator.com/ABCDEFForm.html</a></p>





## UPGRADES AND ENHANCEMENTS



### What happens when you want more?

Your foundation level Invention Stimulator kit isn't a one-off flash in the pan, it's part of a carefully planned series and an example of Panda Schooltime's long-term commitment to education and ICT. That's why we offer a number of upgrade paths, some of them without additional costs.

- Our laboratories maintain and support our core VisualFlowPro software. Our open licencing policy means we allow you to install on more than one machine, so long as you own at least once PCB. We also make updates available for free download from our website, extending the capabilities of the kits already in circulation.
- Our community pages on-line mean you can share ideas with other inventors who have already discovered the wonders of Invention Stimulator, helping you to make the most of your kit at no extra cost.
- We're also planning to sell additional compatible widgets from our website as the series develops as well as economical replacements for lost or broken parts. For example we will soon be offering an electric motor which can be added to one of the MOTOR ports of your PCB.
- When you've exhausted the possibilities from your first kit, don't worry! With a total of seven in the series there's an upgrade path that builds on your learning and allows you to continue to use the widgets that you have already collected and your existing inventions. As your skills grow you can add increasing sophistication, with radio control and other ways to integrate Invention Stimulator at home or school.
- To find out about the latest additions to the Invention Stimulator family of products, simply log on to our web site or sign up for our product newsletter when you register your purchase:  
<http://www.inventionstimulator.com/>





# GLOSSARY AND INDEX: BUTTONS & ICONS

	Progress		Loop
	Start		Unlimit Loop Start
	End		Unlimit Loop End
	Sub Entry		Loop1 Start
	Sub Return		Loop1 End
	Normal		Loop2 Start
	Beep		Loop2 End
	Stop		Loop3 Start
	Delay 1 Second		Loop3 End
	Music 1		Loop4 Start
	Music 2		Loop4 End
	Music 3		If
	Onboard LED		Sensor
	Moto Forward		Subcall
	Moto Backward		Sub
	Moto Stop		Jump
	Set output on		Jump
	Set output off		
	Delay		
	Tone		

VisualFlowPro





## FOUNDATION LEVEL ACCESSORIES



Heat



Light



Infrared



Bi-directional LED



Orientation (which way up)



Fan





## ADDITIONAL INFORMATION



### Interactive Forums

We're keen to hear news of how you get on with Invention Stimulator and will be publishing details of the best inventions and ideas on our website as part of our interactive forum section. From time to time we run competitions with prizes of free equipment or accessories for home purchasers and schools. You can find out about this on-line or by subscribing to our newsletter as part of your registration. To find out more visit our website:

<http://www.InventionStimulator.com/>

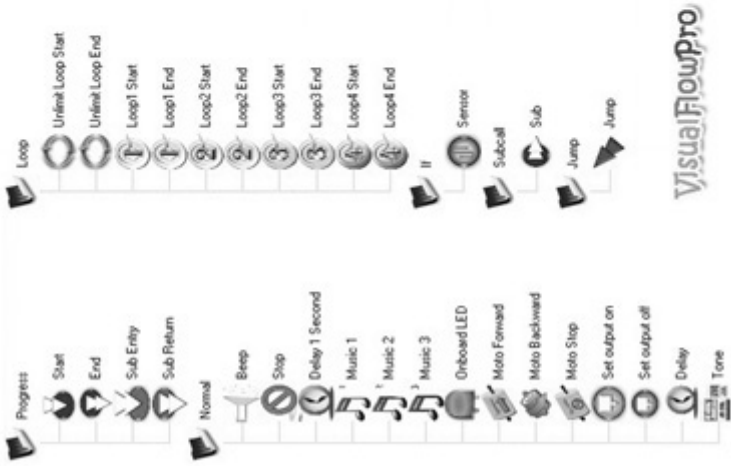
### Statutory Information

- Invention Stimulator was independently tested and confirmed to comply with the European Union's directives 2004/108/EC and 2006/95/EC. A manufacturing method statement is available on request. Genuine equipment carries the Invention Stimulator trade mark and the marking CE10 showing that tests were completed in 2010.
- Invention Stimulator was tested in May 2010 and certified ROHS compliant. A copy of the certificate is available on request.
- Panda Schooltime is a division of Auto Marketing Systems Worldwide Limited, a company registered in England and Wales, number 6830107. Their registered address to which documents may effectively be served is Bramfold Farm, Nutbourne Road, Nutbourne, West Sussex, RH20 2HA, United Kingdom. Alternatively the Distributor may be contacted by email at:

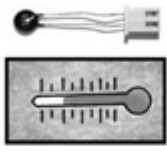
<mailto:info@inventionstimulator.com>.



# QUICK REFERENCE



Light



Heat



Bi-directional LED



Infrared



Fan



Orientation (which way up)

[www.inventionstimulator.com](http://www.inventionstimulator.com)