Finding the Limits of Open Hardware

Examples and End Cases
Openness

Actively Enforces
Withheld Rights

Least Open

Most Open
Enlighten Pistol/Gun Assemble Construction Toy with Shooting Function

Price: **US$ 9.40**

Shipping: **Free Shipping** To UNITED STATES

Delivery: Typically ships in 7 to 10 days

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Overview Specifications Buy 3+ and Save

- Great gift for children
Ten tons of confiscated counterfeit Legos to be burned at energy plant
World’s largest single seized batch of counterfeit products destroyed

About ten tons of counterfeit Lego blocks were destroyed at the Kymeenlaakso waste processing plant in Anjalankoski on Thursday. The plastic will be mixed with other waste and burned at a district heating plant in Lahti.

A container full of the Chinese-made copies of the famous Danish interlocking building blocks was seized by Finnish Customs as it was en route from the Port of Hamina to Russia. Customs officials estimated the average value of the load at about EUR 1.36 million, and said that their market value would be many times that amount.

Johannes Qvist, regional manager of Lego in Finland said that in addition to commercial considerations, the destruction was also a safety issue, as the pirated Legos do not comply with toy safety standards.

"The quality does not meet Lego standards. The plastic is softer, and the small parts, such as the hands of the human figures, come off easily. Lego spends millions of Danish krona in efforts to track down counterfeit versions of its products, and is also paying for the costs of the destruction.

The use of the destroyed blocks for heating energy was possible after analysis of the plastic determined that the mixture did not contain toxic PVC or cadmium.

Each month, the Anjalankoski plant processes up to ten consignments of confiscated counterfeit products that can be used for energy.

Customs authorities have stopped 110 deliveries containing 1.1 million packages of various counterfeit products.

The illegal products are usually manufactured in the Far East, and they include an increasing range of goods, which are copies of well-known brand names.

The most common counterfeit products are cigarettes that come via Russia, 80% of which are manufactured in China. Next comes alcoholic beverages, and after that, brand name clothing and shoes.

Last year Finnish Customs estimated the value of the seized counterfeit goods at EUR 30 million. So far this year EUR 25 million of pirated goods have been confiscated.
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The 2011 MAKE Magazine Industry Maker Awards, AKA “The Makey’s” was held this year during the Maker Faire in New York, the world’s largest DIY event. If you didn’t tune in to the award ceremony on September 16th, you missed out on some truly innovative companies and individuals.

The live broadcast introduced the nominees for all four categories and a public poll determined the winner of each. PanaVise is excited to say that we brought home the Makey award for “Most Repair Friendly.” As many of you may have read in an earlier GRIP Newsletter or on Twitter, we were nominated by the result of ‘company and end-user’ communication. Our new Model 239: PV Jr. Speed Control Handle, inspired by user Lee Cavanaugh’s innovative handle mod, was the driving force behind the nomination. After our President, Gary Richter, contacted Lee, the process of bringing this creative idea into fruition was only months from becoming reality. We appreciate MAKE magazine and our loyal customers for recognizing our strong effort in keeping PanaVise’s users happy and in the loop. Our ears are open and we want to make our product easier and more efficient than ever.
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What's New?

BASIC Stamp Frequently Asked Questions

A list of the most asked questions about BASIC Stamps is now available! BASIC Stamp FAQs is an on-going effort to help you find answers to common questions. Currently it contains 71 questions and answers.

Contact them with any...

Technical

IC Stamp Conversion Document

Are you a BASIC Stamp I user who is having trouble developing with the BASIC Stamp II? Are you a new BS2-IC user who would like to experiment with the application notes written for the BASIC Stamp I? If so, the BASIC Stamp I to BASIC Stamp II Conversion document contains many details concerning the differences between the PBASIC1 and PBASIC2 languages. Now you can download this document in .pdf format for free.

What's Not So New?

BASIC Stamp Schematics On-line

We now have BASIC Stamp I (BS1-IC) and BASIC Stamp II (BS2-IC) schematics available on-line in .gif format. Soon we’ll include additional schematics as well.
**Complete BASIC Stamp II circuit in SMT**

**Features**
- PBASIC2 Interpreter
- 2048-byte EEPROM
- 20MHz Resonator
- 5V Regulator
- 4V Brown-Out Reset
- PC Serial Interface
- 16User I/O Pins
- 8mA Run / 100uA Sleep
  (no loads, I/O's @ VSS/VDD)

<table>
<thead>
<tr>
<th>PIN</th>
<th>NAME</th>
<th>FUNCTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SOUT</td>
<td>Serial Out</td>
<td>Temporarily connect to PC's Rx.</td>
</tr>
<tr>
<td>2</td>
<td>SIN</td>
<td>Serial In</td>
<td>Temporarily connect to PC's Tx.</td>
</tr>
<tr>
<td>3</td>
<td>ATN</td>
<td>Attention</td>
<td>Temporarily connect to PC's DTR.</td>
</tr>
<tr>
<td>4</td>
<td>VSS</td>
<td>Ground</td>
<td>Temporarily connect to PC's GND.</td>
</tr>
<tr>
<td>5</td>
<td>P0</td>
<td>USER I/O 0</td>
<td>User port pins that can be used as inputs or outputs.</td>
</tr>
<tr>
<td>6</td>
<td>P1</td>
<td>USER I/O 1</td>
<td>In output mode: Pins will source from VDD or sink to VSS. Pins should not be allowed to source more than 20mA or sink more than 25mA each. As groups, P0-P7 and P8-P15 should not be allowed to source more than 40mA or sink more than 50mA each.</td>
</tr>
<tr>
<td>7</td>
<td>P2</td>
<td>USER I/O 2</td>
<td>In input mode: Pins are floating (less than 1uA leakage). The 0/1 logic threshold is approximately 1.4V.</td>
</tr>
<tr>
<td>8</td>
<td>P3</td>
<td>USER I/O 3</td>
<td>NOTE: To realize low power during sleep, make sure that no pins are floating, causing erratic power drain. Either drive them to VSS or VDD, or program them as outputs that don't have to source current.</td>
</tr>
<tr>
<td>9</td>
<td>P4</td>
<td>USER I/O 4</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>P5</td>
<td>USER I/O 5</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>P6</td>
<td>USER I/O 6</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>P7</td>
<td>USER I/O 7</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>P8</td>
<td>USER I/O 8</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>P9</td>
<td>USER I/O 9</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>P10</td>
<td>USER I/O 10</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>P11</td>
<td>USER I/O 11</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>P12</td>
<td>USER I/O 12</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>P13</td>
<td>USER I/O 13</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>P14</td>
<td>USER I/O 14</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>P15</td>
<td>USER I/O 15</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>VDD</td>
<td>REGULATOR OUT</td>
<td>Output from 5V regulator (VIN powered). Should not be allowed to source more than 30mA, including P0-P15 loads.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>POWER IN</td>
<td>Power input (VIN not powered). Accepts 4.5V-5.5V. Current consumption is dependent upon run/sleep mode and I/O's.</td>
</tr>
<tr>
<td>22</td>
<td>RES</td>
<td>RESET I/O</td>
<td>When low, all I/O's are inputs and program execution is suspended. When high, program executes from start. Goes low when VDD is less than 4V or ATN is greater than 1.4V. Pulled to VDD by a 4.7K resistor. May be monitored as a brown-out/reset indicator. Can be pulled low externally (i.e. button to VSS) to force a reset. Do not drive high.</td>
</tr>
<tr>
<td>23</td>
<td>VSS</td>
<td>GROUND</td>
<td>Ground. Located next to VIN for easy battery hookup.</td>
</tr>
<tr>
<td>24</td>
<td>VIN</td>
<td>REGULATOR IN</td>
<td>Input to 5V regulator. Accepts 5.5 to 15V. If power is applied directly to VDD, pin may be left unconnected.</td>
</tr>
</tbody>
</table>

**PC - to - BS2-IC connection**

Connect DSR and RTS for automatic port detection.
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- Open Hardware Copyleft License

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Frequently Asked Questions

What is an Arduino?  
Glad you asked, we have a great introduction page on Arduino, click here to read it.

What do you mean by open-source hardware?  
Open-source hardware shares much of the principles and approach of free and open-source software. In particular, we believe that people should be able to study our hardware to understand how it works, make changes to it, and share those changes. To facilitate this, we release all of the original design files (Eagle CAD) for the Arduino hardware. These files are licensed under a Creative Commons Attribution Share-Alike license, which allows for both personal and commercial derivative works, as long as they credit Arduino and release their designs under the same license.

The Arduino software is also open-source. The source code for the Java environment is released under the GPL and the C/C++ microcontroller libraries are under the LGPL.
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Open Hardware Copyleft License
Open Hardware Permissive License

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Current open-source hardware definition requirements

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- Don't discriminate
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- Don't limit use
What if?

- A designer has lost the design files?
What if?

- A designer has lost the design files?
- A design never had files?
What if?

- A designer has lost the design files?
- A design never had files?
- A design is patented?
Protected intellectual property

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  - Protects a specific expression
  - Doesn't cover recipes, APIs, or netlists
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- **Design patent**
  - Covers ornamental design
Proposed open-source hardware requirements

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- Don't restrict reverse engineering