

# SpinScope Documentation

**SpinScope** (v1.1) is a program that simulates an oscilloscope on a PC that's connected to any Parallax Propeller chip. It consists of/uses four components:

1. **SpinScope.exe**: a resident server program that communicates with the Propeller and a browser-resident user interface.
2. **SpinScope.spin**: a Spin object that monitors the Propeller's pins and sends data from them to the server program. When **SpinScope** is installed, this object gets loaded into the **Propeller Tool v1.3.2** Library folder.
3. **Firefox**: the preferred internet browser to use with **SpinScope** that displays the oscilloscope and its controls for the user interface.
4. **Propeller Tool v1.3.2**: the preferred Windows development environment for the Propeller.

To use **SpinScope** with your Spin program, two additional lines are necessary:

1. In the OBJ section add this line:

```
sco : "SpinScope"
```

2. In the first line of your **start** procedure, add this line:

```
sco.start
```

The **start** function returns **true** upon success, **false** upon failure. No other programming is required. However, be aware that **SpinScope** starts three additional cogs.

**NOTE:** The SpinScope object cannot be used alongside any other object that communicates with the serial port on pins P30 and P31. This includes **Parallax Serial Terminal** and **FullDuplexSerial** when the latter is used with P30 and P31.

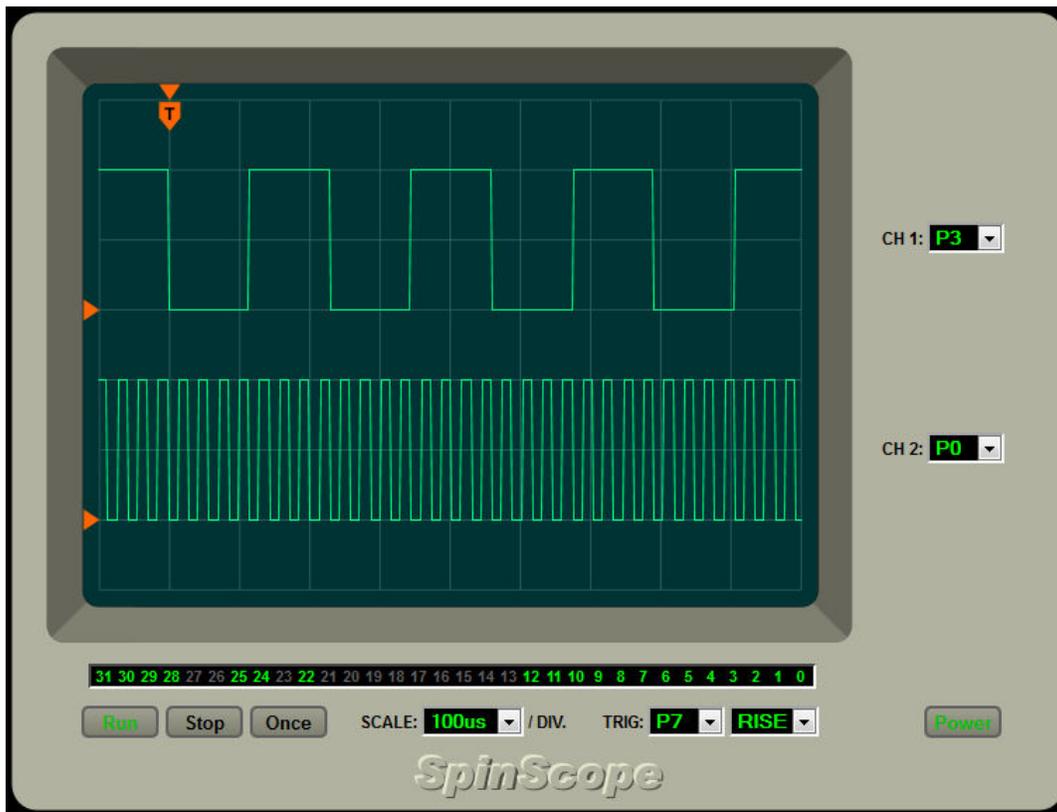
Start the **SpinScope** server, **SpinScope.exe**, by double-clicking on its icon:



Next, open **Firefox**, and enter the following address in the URL line:

**localhost:1234**

You will see a screen that looks like the following:



To connect with your Propeller running a program that includes **SpinScope.spin**, click the **Power** button. You should see the controls light up green. From there you can choose which Propeller pins to monitor using the following controls:

1. **SCALE:** This lets you choose the horizontal timebase. It's calibrated in microseconds or milliseconds per horizontal division of the oscilloscope screen.
2. **TRIGGER:** These let you choose which pin and which transition type trigger each sweep of the oscilloscope. Two transition types are possible: **RISE** (a low-to-high transition on the chosen pin), and **FALL** (a high-to-low transition). The trigger in the displayed sweep always occurs at the black and orange "T" at the top of the screen and lets you see a little bit of what preceded each trigger.
3. **CH1:** This is the pin to monitor in the top trace.
4. **CH2:** This is the pin to monitor in the bottom trace.

In addition to the **Power** button, there are three others:

1. **Run:** Clicking this button allows a new sweep every time there is a new trigger.
2. **Stop:** This stops continuous sweeping.
3. **Once:** Clicking this primes the scope for a single sweep, after which it stops.

**SpinScope** monitors two pins in real time and displays them on the oscilloscope face. It also monitors all 32 pins in "visual time" and displays their states in the strip below the scope face. Green is high; gray, low.

**NOTE:** In order to reprogram the Propeller, you will have to click the **Power** button to power off **SpinScope** and disconnect it from the serial port. Once reprogrammed, just click the **Power** button again to reconnect. It will resume in **Run** mode with the previously-used settings.

Experiment with the scope using the following program:

```
CON
  _CLKMODE      = XTAL1 + PLL16X
  _XINFREQ      = 5_000_000

OBJ
  sco : "SpinScope"

PUB start | i
  sco.start
  dira[15..0]~~
  i~
  repeat
    outa[15..0] := i++
```

It simply counts in binary using output pins **P15** .. **P0**. Try triggering on **P7** and observing two of the other pins to get a feel for what the scope can do.

Hopefully **SpinScope** will come in handy for developing and debugging your Spin programs!