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 Parallax Forums > Public Forums > BASIC Stamp > **Memsic 2125 seismic recorder, can it be done?**
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BASIC Stamp

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kf4ixm

Registered Member


 Date Joined Feb 2009
Total Posts : 145


Posted 12/21/2009 10:29 AM (GMT -8)



Hi all, i have an idea for a project to use a memsic 2125 (later to move to a H48C) accelerometer to detect both seismic P and S waves and convert thoses movements into actual magnatude readings. i have done alot of reading online about seismic readings, http://en.wikipedia.org/wiki/Seismic_wave and have built and programmed a down and dirty sort of Richter scale using a 2125 and 2 servos to replicate the pen movement as seen on drum type seismic recorders.

```
'{$STAMP BS2}
'{$PBASIC 2.5}
accelx VAR Word 'accelerometer x value
accely VAR Word 'accelerometer y value
pulsex VAR Word 'pulse to control x
pulsey VAR Word 'pulse to control y
DO
  PULSIN 6, 1, accelX
  PULSIN 7, 1, accelY
  PAUSE 1
  pulsex = accelx * 3 / 4 - 1130
  pulsey = accely * 3 / 4 - 1130
  DEBUG HOME, DEC4 pulsex , DEC4 pulsey
  PULSOUT 12, pulsex 'control x pen
  PAUSE 1
  PULSOUT 13, pulsey 'control y pen
  PAUSE 1

RETURN

LOOP
```

This seems to work very well visually, but my question is, how can i scale/calibrate the readings i recieve to an actual magnatude factor, say to output numbers to be displayed in stamp plot to correctly represent a (somewhat) accurate magnatude factor or richter scale?

Post Edited (kf4ixm) : 12/21/2009 8:35:57 PM GMT

File Attachment :

ACC2Servo.bs2 0KB (application/octet-stream)
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[Back to Top](#)

Martin Hebel
Registered Member



Date Joined Jul 2004
Total Posts : 1114

Posted 12/26/2009 8:30 AM (GMT -8)



Sorry for the delay in a response, but as to plotting in StampPlot Pro (for multiple channels), your debug statement needs to be similar to the following:
DEBUG DEC4 pulsex , " , " , DEC4 pulsey, CR

This will DEBUG a value, a comma, a value, a CR.

-Martin
SelmaWare Solutions
www.selmaware.com

[Back to Top](#)

kf4ixm
Registered Member



Date Joined Feb 2009
Total Posts : 145

Posted 12/26/2009 8:52 AM (GMT -8)



thanks for that pointer, i did try to use spp some with it but only could read one value, i got into something else at that time and didn't mess with it much after that. my next 'to-do' item will be to change the math up to output an actual g-force value to spp. after long and fruitless google searches, i think this will be the best route to go for a 'real-world' output.

[Back to Top](#)

C-Bob
Registered Member



Date Joined Oct 2009
Total Posts : 9

Posted 12/27/2009 3:00 PM (GMT -8)



Trouble is in measured units - you mess acceleration, but Richter scale is based on decadic logarithm of amplitude, first you must calculate amplitude... On web i find some useful approximate values:

RS a (cm×s⁻²)

4,5 10

5,4 50

6,1 100

7,3 500

RS6 is 100.000 times higher ampliude than RS1

C-Bob

Every problem have at least one nice, simply and wrong solution.

[Back to Top](#)

Martin Hebel
Registered Member



Date Joined Jul 2004
Total Posts : 1114

Posted 12/28/2009 11:56 AM (GMT -8)



StampPlot can also be used to perform math operations including logs.

For example:

```
DEBUG "[", val1, " LOG 10 * 5]", CR
```

would plot a value of a the base 10 log of val1 times 5.

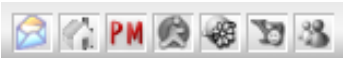
If you are able to come up with an equation to convert the range you like, I can help with the DEBUG statement.

I don't look at forums often, so please private message me if you post.

-Martin

[Back to Top](#)

kf4ixm
Registered Member



Date Joined Feb 2009
Total Posts : 145

Posted Today 9:34 AM (GMT -8)



thank you Martin! i really appreciate your help. unfortunaly i suck at math, lol. i will try to come up with some sort of range equation soon. i have a very hard time trying to visualize the way logarithms work with what im trying to do, not that i'm saying it doesn't, i just suck at math, and im trying to wrap my head around it so that i understand it. i was thinking if i could come up with a formula that would give me a value for amplitude for difference of one g to two g's. maybe im thinking about this all wrong.

[Back to Top](#)

[<< Previous Thread | Next Thread >>]

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