Forum General OT: $22 Digital Storage Scope :)

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Thread: OT: $22 Digital Storage Scope :)

Thread Tools Display

Today, 02:58 AM #1

PStechPaul
Senior Member

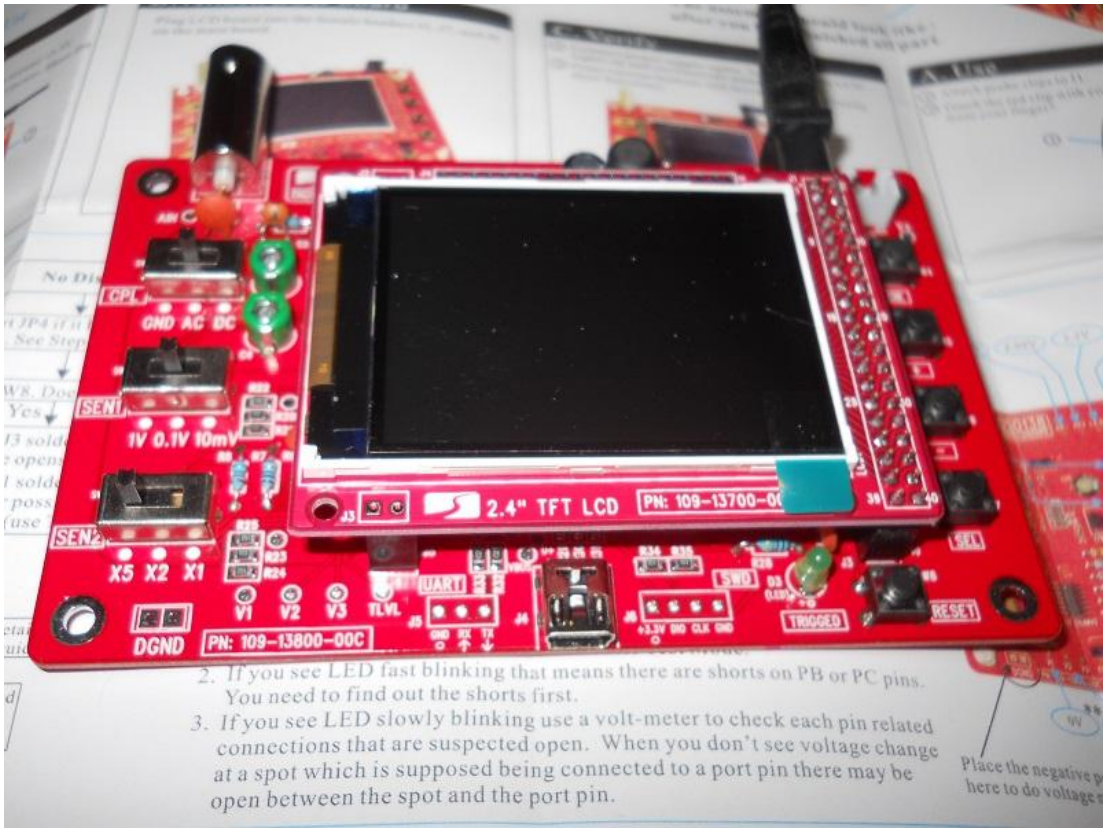
Join Date: Oct 2013
Location: USA MD 21030
Posts: 2,809

OT: $22 Digital Storage Scope :)

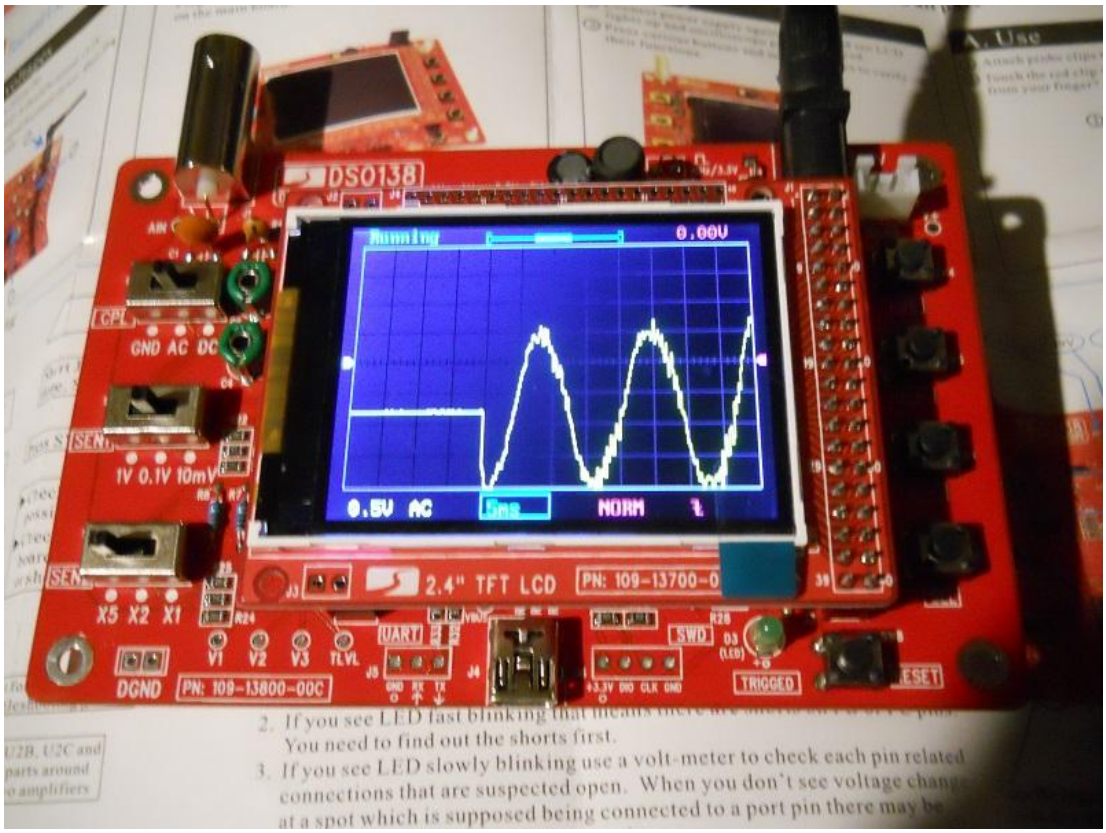
Today I finished assembling the $22 digital storage scope:

http://www.banggood.com/DSO138-DIY-D...-p-984002.html

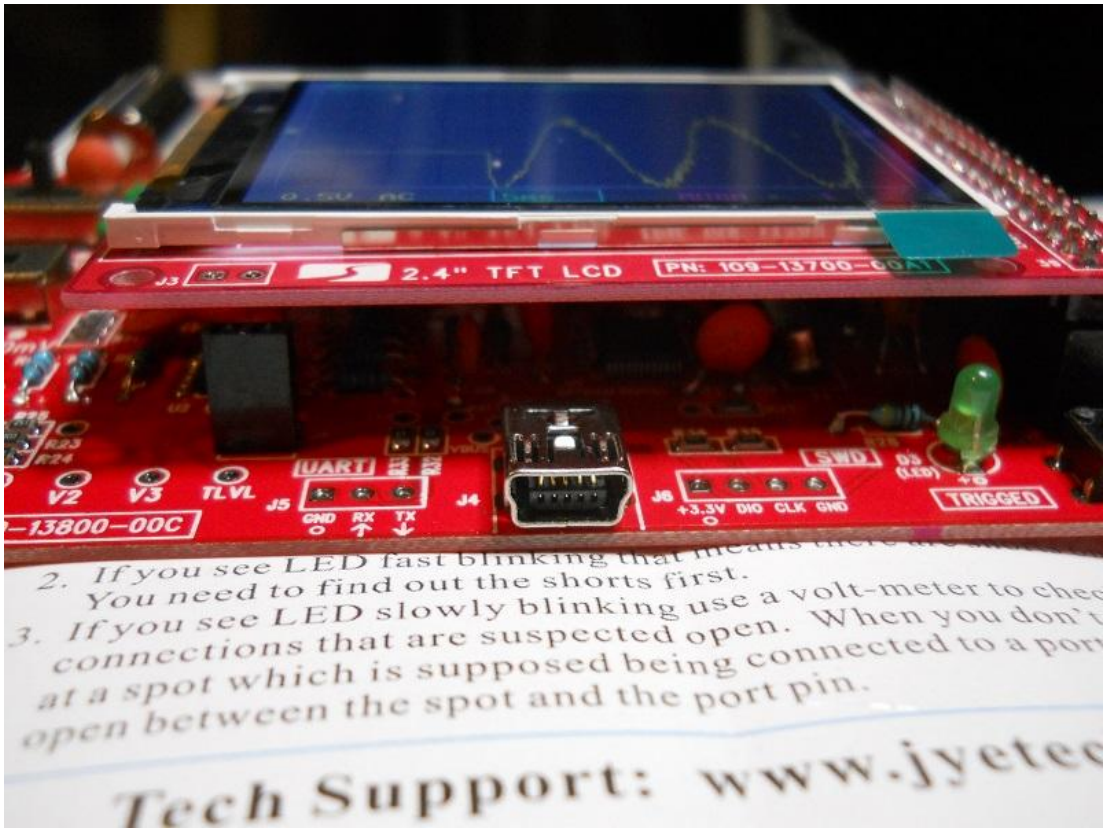
It seems well made, with very clear screening on the PCB and very detailed and accurate instructions in good English. It took about two hours to assemble the parts, and it worked perfectly right from the start, although it does not have a power-on reset, so the power must be applied using a switch.



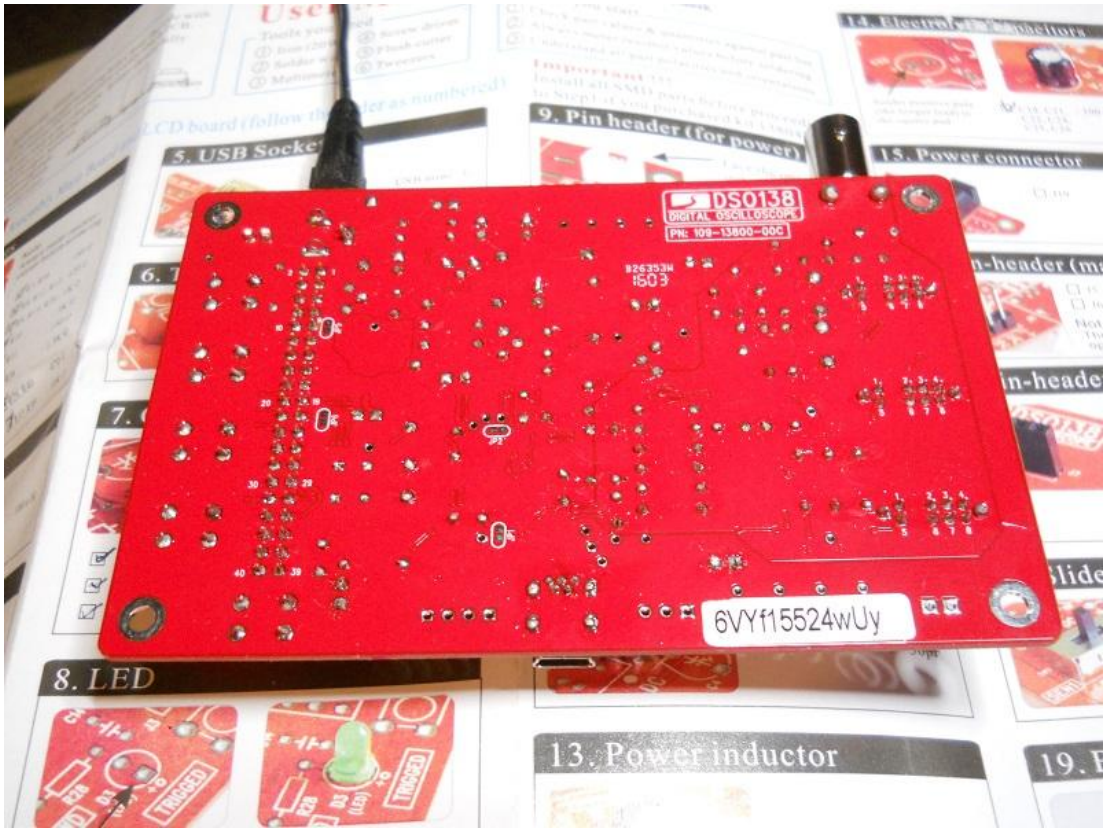
This is the waveform displayed by touching my finger to the input, picking up 60 Hz AC noise through capacitance (or maybe magic):



The bottom view showing some of the components. There are two female 2-pin headers that seem to be only for mechanical support of the display:



And the back side:



This may prove handy when testing circuits that need isolation from ground, and it's also somewhat expendable in case of accident. I have not yet tried the USB cable, and the instructions don't cover that.

Anyway, now you guys won't have any excuse for not showing waveforms because you can't

afford a scope, or have no place to put it. This is truly a "pocket scope", for "pocket change".

http://pauleschoen.com/pix/PM08_P76_P54.png

Paul: www.peschoen.com
P S Technology, Inc. www.pstech-inc.com
and Muttley www.muttleydog.com

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Today, 08:00 AM #2

RB211
Senior Member

Join Date: Mar 2015
Posts: 472

Does it come with a probe? Looks useful! I've been getting by with a logic analyzer but could use a scope

Sent from my iPhone using Tapatalk

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Today, 08:31 AM #3

Willy
Senior Member

Join Date: Oct 2005
Location: British Columbia
Posts: 4,667

Wow thanks for sharing that Paul, nice little project, I'll have to do a little bit of research on this.
Who'd a thunk that the "Heathkit experience" was alive and well in China?

Home
Good judgment comes from experience, and experience....well that comes from poor judgment.

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Today, 08:42 AM #4

Paul
Senior Member

Join Date: Jun 2011
Location: South Wales
Posts: 457

Thanks for the feedback Paul I'm waiting for mine to turn up should be anytime soon I went for the optional plastic case:

did you have any construction issues at all?

Paul

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Today, 08:55 AM #5

Forestgnome
Senior Member

Join Date: Sep 2009
Location: Sacramento, CA
Posts: 1,090

Might be a decent automotive scope.

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Today, 10:30 AM #6

J Tiers
Senior Member

Join Date: Jan 2004
Location: Independent principality of Sinquefieldia (formerly Missouri in the USA)
Posts: 20,594

Input voltage range? 10 mv -5V

Frequency range? 200 kHz

Not doin too well. for 50 bucks you can find 50 mHz analog scopes around.

I have 'scopes, I would find a logic analyzer to be a good adjunct now. Never much needed one before. Probably a similar LA out there somewhere.

1601

Keep eye on ball.
Hashim Khan

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Today, 10:41 AM #7

MichaelP
Senior Member

Join Date: Sep 2008
Location: WI/IL border
Posts: 1,589

They mentioned 1Hz test signal. Did they mean 1 kHz?

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Today, 02:43 PM #8

Forestgnome
Senior Member

Join Date: Sep 2009
Location: Sacramento, CA
Posts: 1,090

> Originally Posted by J Tiers
> *Input voltage range? 10 mv -5V*
>
> *Frequency range? 200 kHz*
>
> *Not doin too well. for 50 bucks you can find 50 mHz analog scopes around.*
>
> *I have 'scopes, I would find a logic analyzer to be a good adjunct now. Never much needed one before. Probably a similar LA out there somewhere.*

One that fits in your tool box and runs off 9vdc?

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Today, 03:00 PM #9

Join Date: Jul 2005

Fasttrack
Senior Member

Location: Derry, NH
Posts: 4,969

> Originally Posted by Forestgnome
> *One that fits in your tool box and runs off 9vdc?*

Sure... see here:

http://www.amazon.com/SainSmart-Upgr.../dp/B004Y3QHZ6

There are a plethora of small pocket scopes that do at least 1 MHz and will acceptable a more useful input voltage range, all for less than $100. Maybe not $22, but it comes fully assembled (how much is 2 hours of your time worth?) and can do a lot more.

Just my $0.02.

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Today, 03:39 PM #10

Forestgnome
Senior Member

Join Date: Sep 2009
Location: Sacramento, CA
Posts: 1,090

> Originally Posted by Fasttrack
> *Sure... see here:*
>
> *http://www.amazon.com/SainSmart-Upgr.../dp/B004Y3QHZ6*
>
> *There are a plethora of small pocket scopes that do at least 1 MHz and will acceptable a more useful input voltage range, all for less than $100. Maybe not $22, but it comes fully assembled (how much is 2 hours of your time worth?) and can do a lot more.*
>
> *Just my $0.02.*

Something's amiss there. Not going to get a true 1Mhz bandwidth with a 1Msps sample rate.

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Thread: OT: $22 Digital Storage Scope :)

Today, 04:11 PM #11

PStechPaul
Senior Member

Join Date: Oct 2013
Location: USA MD 21030
Posts: 2,809

The input range is 10 mV/div to 5 V/div, so maximum input is 50V peak. It has a standard 1 Meg 20 pF input and BNC connector so a 10x probe can allow 500V peak. It comes with a probe that is just a BNC connector with a pair of leads and two alligator clips.

The only problem I had with assembly was reading the resistor color codes, so I had to use my HF DMM to verify the value, and they seemed to be dead nuts on the reading.

I also have the plastic case and I'm putting that together now. It is pretty amazing as well. It fits together by means of tabs and slots that have been very precisely cut to size. There were no instructions, so it's a bit of a "Chinese puzzle" to figure out, but that's part of the "fun". Yes, if I only considered what my time is worth, and if I only just needed a scope, it would not have been such a bargain. But I find PCB assembly relaxing, enjoyable, and somewhat challenging. Much like people who spend hours knitting a sweater they could buy for $20, or a machinist spending hundreds of hours making a little steam engine that has no practical use other than skill-building and bragging rights.

The 200 kHz limit is still enough for audio work, line frequency waveforms, and most PWM signals in VFDs and switching power supplies. I already have a Hitachi VC-6025 that has a 60 MHz bandwidth, dual trace, and 2 mV/div sensitivity, but it cost about $2000 in 1989 and requires line power and it sure won't fit in my pocket

For $56 you can get a 3 MHz dual channel scope with built-in frequency meter to 5 MHz and a 1 Hz to 4 MHz frequency generator, and possible future FFT function.
http://www.banggood.com/DSO068-DIY-O...-p-981017.html

A 4-channel 8 MHz fully assembled pocket scope for $149:
http://www.banggood.com/Nano-DSO203-...-p-925667.html

And for $288 a Hantec dual-channel 100 MHz scope:
http://www.banggood.com/Hantek-DSO51...p-1013032.html

http://pauleschoen.com/pix/PM08_P76_P54.png

Paul: www.peschoen.com
P S Technology, Inc. www.pstech-inc.com
and Muttley www.muttleydog.com

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Today, 04:33 PM #12

fixerdave
Senior Member

Join Date: Oct 2006
Location: Victoria BC, Canada
Posts: 444

That's huge!

Me, I picked up a gabotronics one... $49 USD, assembled... not that that means much with something like this.

Specs:

2 Analog Inputs
Maximum Sampling rate: 2MSPS
Analog Bandwidth: 200kHz
Resolution: 8bits
Input Impedance: 1MΩ
Buffer size per channel: 256
Input Voltage Range: -14V to +20V

Oh, and it is an 8-bit logic analyser too, and an arbitrary waveform generator, and a digital volt meter. Yeah, it all works. Well, my version does, this is the new one.

http://www.gabotronics.com/development-boards/xmega-xprotolab.htm

> *The Xprotolab is the first mixed signal oscilloscope with an arbitrary waveform generator in a DIP module. It measures only 1 x 1.6 inches, and can be mounted directly on a breadboard*

The best part is the interface... 4 stupid little buttons, but it only took me a few minutes to figure it out. And that's the first time I've ever used a DSO (old analog guy here). Brilliantly designed interface, one that basically sets the bar for me. I mean, I have 4 button wristwatches that leave me reading the manual to set the time. This thing just flows. I sold my old Hitachi 60Mhz dual channel analog scope... not worth the space to store; don't need the frequency response either.

Oh, and it can interface to a PC with the USB if you want to actually see the screen without a magnifying glass. Oh, and if you have the right Android tablet, there's an app for that. I think there's some talk about a bluetooth version as well. Mine doesn't do that, so I can't vouch for it.

If you want to get spendy, and completely geek out, they have wristwatch versions of this as well.

David...

http://fixerdave.blogspot.com/

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Today, 04:33 PM #13

Fasttrack
Senior Member

Join Date: Jul 2005
Location: Derry, NH
Posts: 4,969

> Originally Posted by Forestgnome
> *Something's amiss there. Not going to get a true 1Mhz bandwidth with a 1Msps sample rate.*

Agreed - I didn't look at the specifics for that model, I just grabbed the first result upon googling "inexpensive pocket oscilloscope"

PStechPaul posted some other varieties that fit the bill, although seeing that this one will do 50V peak makes it a little bit more useful.

I'm not ripping on you, PStechPaul. I just generally agree with JT that this isn't a great bargain. If you enjoy the assembly process and it fits your particular requirements, than by all means - go for it! I used to enjoy building circuit boards, too. Now I'm doing BGAs, 0201, and other itsy-bitsy parts on LARGE boards. It's horrendously time consuming and I'm finding I don't enjoy too much anymore. What used to be a hobby turned into work... !

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