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Topic: TDS 1000,2000,3000 BW Hack (Read 14204 times)


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**rfdes**

Regular Contributor



Posts: 59

Country: 



 **TDS 1000,2000,3000 BW Hack**

« on: July 16, 2017, 03:55:08 am »

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Gents -

I've seen this come up a number of times as to how to extend the BW of these scopes. Here is some information that I will share, although I have only tested several models and it did work on the two non lettered versions that I have.

In particular, I was able to update a TDS3034 to TDS3054 (non-lettered) and a TDS1001 to TDS1012 I will leave it up to the group to try this out on the 'B' and 'C' models to see if it works.

In regards to the TDS3000 models, the non-lettered and B models only will accommodate fw ver 3.41. V3.41 does not work. I had to downgrade to 3.39, perform the change and upgrade back to 3.41. This worked. The TDS3000 C models have not be tried.

If any of this information has already been posted, I am unaware. Please use at your own risk. You will need to setup your TekVisa OpenChoice tools and run the Talk/Listener tool in order to force SCPI commands to your unit, either through USB or GPIB.

Use \*IDN? to check communications

For the TDS3000 series (downgraded to 3.39, then re-updated to 3.41)

Send the following:

```
PASSWORD PITBULL
MCONFIG TDS3054
```

You will not get any feedback from the unit. Reboot the unit and check to see if it worked. Again, with V3.39 it worked great.

```
For the TDS1000/2000
PASSWORD PITBULL
```

MODEL TDS20xx (with xx = model #)

I have not tested with 'B' and 'C' models so report back what you find out.  
Good luck.

Report to moderator Logged

**The following users thanked this post:** BravoV, Vtech, tautech, lekso, gamalot, 1Ghz, aquaman8, capt bullshot, Hydron, alm, xi, Raymonddf

**Fraser**  
Super Contributor



Posts: 8166  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #1 on: July 16, 2017, 04:13:02 am » Say Thanks Reply Quote

Thanks, I will give it a go.

Fraser

Report to moderator Logged

**tautech**  
Super Contributor



Posts: 14799  
Country:   
Taupaki Technologies Ltd. NZ  
Siglent Distributor

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #2 on: July 16, 2017, 03:42:45 pm » Say Thanks Reply Quote

Thanks rfdes

We looked at this a while back in this thread but never got far:  
<https://www.eevblog.com/forum/testgear/tektronix-tds1000b-series-hacks/>

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Avid Rabid Hobbyist

**aquaman8**  
Newbie

Posts: 2  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #3 on: July 18, 2017, 12:31:18 am » Say Thanks Reply Quote

Great information and thanks for all the hard work!

Any idea where I can find previous versions of the firmware for the TDS3000 series? I know that version 3.39 is referred to, but are earlier versions available as well? If so, where?

Thanks,

Mitch

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**Vtech**  
Contributor

Posts: 34  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #4 on: July 20, 2017, 12:41:53 am » Say Thanks Reply Quote

Here it is:  
<http://www.hakanh.com/dl/docs/3.39.zip>

It comes from interesting page about performance verification software of Tek scopes:  
[http://www.hakanh.com/dl/TDS\\_pv.htm](http://www.hakanh.com/dl/TDS_pv.htm)

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**Vtech**  
Contributor

Posts: 34  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #5 on: July 20, 2017, 10:01:48 pm » Say Thanks Reply Quote

**I can confirm that this hack works on TDS3034B and TDS3032.**

"B" series has the same firmware as non lettered series. I've downgraded the firmware to 3.39, did the hack via RS232 and upgraded back to 3.41 (it's so hard to find 3.5" floppy disks and working FDD these days). Don't forget to do calibration after the whole procedure!  
For TDS3032 I used "MCONFIG TDS3052" and for TDS3034B "MCONFIG TDS3054B". Upgrading the bandwidth to 500 MHz also upgrades sampling rate to 5 GSps. This is really impressive and gives

those old dogs new life.

This hack creates nice combo with application dongles hack  
(<https://www.eevblog.com/forum/projects/tektronix-tds3000-oscilloscope-modules-tds3uam/>).

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**Hydron**  
Frequent Contributor

Posts: 382  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #6 on:** July 22, 2017, 08:10:37 am »

[Say Thanks](#) [Reply](#) [Quote](#)

Thanks for the great tips about upgrading the TDS3000B series!

I just tried it on a fw 3.27 TDS3014B and it now happily runs up to 500MHz. Didn't even need to use TekVISA, you can enter the commands via ethernet using the scope's own webpage (B series have built in ethernet).

I have just realised that there was a 600MHz version too - does anyone know if TDS3064B is an option as well? I can't try it myself until monday.

« *Last Edit:* July 22, 2017, 08:27:35 am by Hydron »

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**rfdes**  
Regular Contributor

Posts: 59  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #7 on:** August 05, 2017, 02:21:34 am »

[Say Thanks](#) [Reply](#) [Quote](#)

I forgot to mention that this hack will also work for the TDS200 series units.  
i.e. to upgrade a TDS 210 to TDS 220

PASSWORD PITBULL  
MODEL TDS 220

I really don't know if people still use these scopes any longer.

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**alm**  
Super Contributor

Posts: 1240  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #8 on:** August 05, 2017, 02:37:04 am »

[Say Thanks](#) [Reply](#) [Quote](#)

I am sure there will be some people still using TDS 200 scopes. If bandwidth and acquisition rate is sufficient, than it is still a decent analog scope replacement in my opinion. As long as you do not expect to be able to zoom in after acquisition, but neither will an analog scope 😊.

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**The following users thanked this post:** Someone

**dos**  
Regular Contributor

Posts: 74  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #9 on:** August 08, 2017, 01:21:13 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

**Quote from: rfdes on August 05, 2017, 02:21:34 am**

I really don't know if people still use these scopes any longer.

I'm taking EET night classes at my local community college (Broward College in Florida) and the TDS 200s are the only digital scopes they have. On the same benches are also Tek 2205s (that must be there for looks as you're told never to touch them) and some horrible old manual ranging BK Precision or LG DMMS, and ancient BK analog function generators. Some benches have very early HP logic analyzers with the green phosphor CRTs. All work is done on these:



Everything is beat up and out of cal, It's basically worse than a school lab you'd find in some third world countries (and so is the instruction, to be honest). Spending any money at all on something like a community college where poor people might get educated is basically anathema to the people in charge of the state of Florida.

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**Vtech**

Contributor

Posts: 34

Country:



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #10 on: August 09, 2017, 01:36:21 am »

Say Thanks Reply Quote

**I am happily reporting that option TDS3064B is working!**

TDS3014B upgraded to 600MHz 5GS/s from 100MHz 1.25GS/s version.

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**darkstar49**

Regular Contributor

Posts: 134



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #11 on: August 18, 2017, 06:35:50 am »

Say Thanks Reply Quote

Hello together,

did anyone check whether the sampling rate effectively increased 🙄 It's somehow hard to believe that Tek used 5GS/s ADC's in the 301x and 303x models...

I once had an MSO3014, which I upgraded to 500Mhz (with a key), but also played around with some system commands... could change model name & Co, but definitely without affecting it's "real" performance...

I've got a 3014 to check... but if the 305x's hardware is different, what is the 'real' effect of this mod ??

Cheers

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**texaspyro**

Super Contributor

Posts: 1219



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #12 on: August 18, 2017, 07:28:26 am »

Say Thanks Reply Quote

**Quote from: darkstar49 on August 18, 2017, 06:35:50 am**

It's somehow hard to believe that Tek used 5GS/s ADC's in the 301x and 303x models...

It's even harder to believe that they would spend the gazillion dollars it would have taken to fab separate custom DAC chips for the 3014/3024/3034/3054. I read somewhere that a guy compared

the 3014 and 3054 DAC module part numbers and they were the same... and, of course, everything you read on the internet is true!

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**The following users thanked this post:** Someone

**darkstar49**

Regular Contributor



Posts: 134



 **Re: TDS 1000,2000,3000 BW Hack**  
« Reply #13 on: August 18, 2017, 07:36:54 am »

[Say Thanks](#) [Reply](#) [Quote](#)

Mmmmh... sounds somehow promising... I'll make myself after the 3.39 fw, as I suspect that it's no longer on Tek's site (but I might be wrong...??)


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**chronos42**

Regular Contributor



Posts: 76

Country: 



 **Re: TDS 1000,2000,3000 BW Hack**  
« Reply #14 on: August 18, 2017, 04:24:01 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

I have tried to upgrade a Tek TDS2014 to a TDS 2024 and used this commands, posted by rfdes

```
For the TDS1000/2000
  PASSWORD PITBULL
  MODEL TDS20xx (with xx = model #)
```

But I had no luck, scope is still TDS 2014. Connection via GPIB was established and I have tried different software to send the commands. It seems that the scope could read it, but it does nothing. But when I made an intentional error like PetBULL instead of PITBULL it gives back an error.

Firmware is 4.12.

Is it not working with this firmware or did I overlooked something? Any hints?

Thanks

« Last Edit: August 19, 2017, 01:24:01 am by chronos42 »


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**Old Don**

Regular Contributor



Posts: 162

Country: 



 **Re: TDS 1000,2000,3000 BW Hack**  
« Reply #15 on: August 18, 2017, 09:55:22 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

Years ago I purchased a small startup company's daisywheel printer that came with 4K or optional 16K buffers. I paid the extra couple \$100's for the 16K version. It arrived as 4K. Called the company and got put through to engineering and when they heard the problem they told me to open the unit up and cut a trace and I'd have the 16K model. 🤔 WTF! 🤔

Also, some years ago it was So other than maybe hand sorting to weed out slow boards after board assembly I can see Tek just using software patches to offer various models with the same hardware. ossible to purchase CPU's and add/remove resistors/jumpers on the top to change the operating frequency of a slow one to a more expensive faster one since that was the only difference in some cases. Early production run CPU's might have had problems at faster speeds, but once they got production up and running they all worked at the faster speeds. Now the makers make sure speeds are set inside the packaging and can't be fooled with like in the earlier days.

So while I don't have first hand info, but other than maybe hand sorting to weed out slow boards after board assembly, I can see Tek just using software patches to offer various models with the same hardware. You can add options to the TDS models with software patches so why not speeds?

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Retired - Formerly: Navy ET, University of Buffalo Electronic Tech, Field Engineer and former laptop repair business owner

**rfdes**

Regular Contributor



Posts: 59

Country: 



 **Re: TDS 1000,2000,3000 BW Hack**  
« Reply #16 on: August 19, 2017, 11:53:35 am »

[Say Thanks](#) [Reply](#) [Quote](#)

I forgot to mention that for the TDS1000/2000 and TDS200 instruments, the BW update will not be saved unless a full calibration adjustment is performed before the unit is shutdown.

[Report to moderator](#)  Logged

**The following users thanked this post:** Someone, tautech

**Re: TDS 1000,2000,3000 BW Hack**

**chronos42**  
Regular Contributor



Posts: 76  
Country:



« **Reply #17 on:** August 19, 2017, 03:25:35 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

Hi rfdes,

so that means first enter the password, after that make a new adjustment with 200MHz upper bandwidth. I will give it a try, many thanks you for the hint.

[Report to moderator](#)

**The following users thanked this post:** engiadina

**snoopy**  
Frequent Contributor



Posts: 606  
Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #18 on:** August 19, 2017, 03:49:23 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

**Quote from: Old Don on August 18, 2017, 09:55:22 pm**

Years ago I purchased a small startup company's daisywheel printer that came with 4K or optional 16K buffers. I paid the extra couple \$100's for the 16K version. It arrived as 4K. Called the company and got put through to engineering and when they heard the problem they told me to open the unit up and cut a trace and I'd have the 16K model. 🤪👊

That sounds like the story of the dude who used to fix steam engines by bashing them with a hammer. "That will be 50 dollars thankyou very much ! " "What ! but you only hit it with a hammer ! " "Yep 1 dollar to hit it and another 49 dollars for knowing where to hit it" 😂 LOL

cheers

[Report to moderator](#)

**sorenkir**  
Regular Contributor



Posts: 96  
Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #19 on:** August 20, 2017, 03:33:14 am »

[Say Thanks](#) [Reply](#) [Quote](#)

**Quote from: rfdes on August 05, 2017, 02:21:34 am**

I forgot to mention that this hack will also work for the TDS200 series units. i.e. to upgrade a TDS 210 to TDS 220

PASSWORD PITBULL  
MODEL TDS 220

I really don't know if people still use these scopes any longer.

Hi,

I have tried this. OK, the scope reports it is a TDS220:

\*IDN? --> TEKTRONIX,TDS 220,0,CF:91.1CT FV:v1.19 TDS2CM:CMV:v1.04

but the physical bandwidth is not changed. The -3dB point is still around 80MHz. There must be something else to do to increase bandwidth...

Michel.

[Report to moderator](#)

**The following users thanked this post:** edavid

**carl\_lab**  
Frequent Contributor



Posts: 418  
Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #20 on:** August 20, 2017, 06:37:18 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

Can somebody else who made the hack, check real bandwidth, please?

[Report to moderator](#)

**Hydron**  
Frequent Contributor

**Re: TDS 1000,2000,3000 BW Hack**  
« **Reply #21 on:** August 21, 2017, 01:34:18 am »

[Say Thanks](#) [Reply](#) [Quote](#)





Posts: 382  
Country:

I don't have a "leveled sine wave generator" that goes high enough to check properly, but I did a quick test with the output of a spectrum analyser tracking generator and the TDS3014B is definitely running somewhere close to what I'd expect from a TDS3054B. Have not tried the TDS3064B code yet, but someone else said that it works too.

[Report to moderator](#) [Logged](#)

The following users thanked this post: carl\_lab

**texaspyro**

Super Contributor



Posts: 1219

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #22 on: August 21, 2017, 02:01:39 am »

[Say Thanks](#) [Reply](#) [Quote](#)

Does anybody know if a TDS30xx (non-B version) can be turned into a TDS3064?

[Report to moderator](#) [Logged](#)

**Vtech**

Contributor

Posts: 34  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #23 on: August 25, 2017, 09:08:08 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

I turned TDS3032 into TDS3052. I think this is the max for non B version. There was never TDS3064 version sold by Tek.

For both versions I can confirm that the sampling rate increases to 5 GS/s. I've checked number of points per division on 1ns timescale with dots mode on. I haven't tested bandwidth properly but I did some measurements with fast signals and response on a TDS3014B unit hacked to TDS3064B is definitely well beyond 100MHz.

[Report to moderator](#) [Logged](#)

**texaspyro**

Super Contributor



Posts: 1219

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #24 on: August 25, 2017, 09:46:02 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

I hooked one of those cheap-ish 30 MHz .. 4.4 GHz touchscreen ADF4351 based sweepers to a TDS3034 -> TDS3054. It outputs a square-ish wave (but it's built on a two layer circuit board, so who knows what the waveform really looks like).

Anyway, amplitude and square-ish-ness start to drop off around 300 MHz. The amplitude is down 50% at 1 GHz. Trigger and sampling go to crap at around 1.1 GHz. I did not re-cal the scope after setting the upgrade.

Above 700 MHz there is some coupling into other channels. At 1 GHZ I have 500 mV P-P on the chan 1 input and disconnected chan 4 has a 10 mV P-P image of chan 1.

I need to break out a leveled sine wave generator to do a real test...

[Report to moderator](#) [Logged](#)

**Vtech**

Contributor

Posts: 34  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #25 on: August 25, 2017, 11:49:47 pm »

[Say Thanks](#) [Reply](#) [Quote](#)

I've just done some test on TDS3014B hacked to TDS3064B using RIGOL DSA815TG. Tracking gen in Rigol isn't perfectly flat but I've tried to calibrate it using DSA815 itself. I've used zero span option and compared output level at higher frequencies to output at 50MHz. I did separate comparison for each higher frequency switching between this frequency and 50MHz setting (If you let DSA815 run for a while the level drifts by as much as 1dB. It also changes when DSA is doing self calibration in the background from time to time but those drifts seem to be in SA part not in TG. TG is not flat but it is fairly stable in time). Tests were done on channel 1 of the scope with internal 50  $\Omega$  termination, after calibration. Level was measured using cursors on the screen in peak-peak value.

Results are:

Freq:	Scope level [mV p-p]	unadjusted dB level	Sig gen correction	corrected dB level
50 MHz	652	0	0	0
100 MHz	622	-0.41	-0.3	-0.11
200 MHz	610	-0.58	-0.2	-0.38
300 MHz	550	-1.48	0.1	-1.58
400 MHz	516	-2.03	0	-2.03
500 MHz	462	-2.99	-0.75	-2.24
600 MHz	434	-3.54	-0.8	-2.74
700 MHz	386	-4.55	-0.7	-3.85

I'd guess that I'm no more than 1dB off on my measurements. 3dB point appears to be above

600MHz. Above 750MHz something strange began to happen with the trace. It looked like there was additional low frequency modulation (similar to aliasing but it couldn't be it). I'm not sure what was it.

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The following users thanked this post: Hydron

### Hydron

Frequent Contributor



Posts: 382

Country: 



### Re: TDS 1000,2000,3000 BW Hack

« Reply #26 on: August 27, 2017, 03:51:38 am »

Say Thanks

Reply

Quote

Thanks for the tests with the DSA815TG. I also have access to one of these and was intending on doing a similar test (with both the Tek scope and others) - good to know the tracking generator doesn't vary too wildly!


Report to moderator  Logged

### carl\_lab

Frequent Contributor



Posts: 418

Country: 



### Re: TDS 1000,2000,3000 BW Hack

« Reply #27 on: August 29, 2017, 11:17:20 pm »

Say Thanks

Reply

Quote

Quote from: rfdes on August 05, 2017, 02:21:34 am

I forgot to mention that this hack will also work for the TDS200 series units.  
i.e. to upgrade a TDS 210 to TDS 220

PASSWORD PITBULL  
MODEL TDS 220

I've tried this way:

sent: \*IDN?

received: TEKTRONIX,TDS210,0,CF:91CT FV:v.2.03 TDS2CM:v1.04

sent: PASSWORD PITBULL


sent: MODEL TDS 220

Checked menu utility/system status: TDS210, firmware etc. <unchanged>

sent: \*IDN?

received: TEKTRONIX,TDS210,0,CF:91CT FV:v.2.03 TDS2CM:v1.04 <unchanged>

-3dB bandwidth before: 83MHz, after: unchanged.

What went wrong? 

« Last Edit: August 30, 2017, 04:17:47 pm by carl\_lab »

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### texaspyro

Super Contributor



Posts: 1219



### Re: TDS 1000,2000,3000 BW Hack

« Reply #28 on: August 29, 2017, 11:39:58 pm »

Say Thanks

Reply

Quote

Try with and without a space between the TDS and 220? Also after sending the MODEL command, send \*IDN? to see if the change worked. Also, one guy reported that you need to fully recalibrate the scope after doing the MODEL and before powering it down.

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The following users thanked this post: carl\_lab

### carl\_lab

Frequent Contributor



Posts: 418

Country: 



### Re: TDS 1000,2000,3000 BW Hack

« Reply #29 on: August 30, 2017, 12:11:01 am »

Say Thanks

Reply

Quote

Quote from: texaspyro on August 29, 2017, 11:39:58 pm

Try with and without a space between the TDS and 220?

Tried with and without space this time.

Also tried MCONFIG TDS220 (with and without a space between the TDS and 220).

Quote from: texaspyro on August 29, 2017, 11:39:58 pm

Also after sending the MODEL command, send \*IDN? to see if the change worked.

Still unchanged...

Tried that on another TDS210 with firmware 1.06 instead of 2.03 without success. 

Also tried hacking a TDS1002 with half success.

After doing that, \*IDN? replied TDS1012 as wanted, but without a new calibration, it was reset to



TDS1002 as reported before.

Is there a trick to avoid the needed calibration after hacking the scope? I don't have a scope calibrator at the moment, so I tried manual calibration using DC calibrator and leveled RF generator, but I mixed something up, and calibration failed.

Obviously after first failed calibration step, model is reset to TDS1002 automatically.

« Last Edit: August 31, 2017, 03:06:54 am by carl\_lab »


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### carl\_lab

Frequent Contributor



Posts: 418

Country: 



### Re: TDS 1000,2000,3000 BW Hack

« Reply #30 on: September 19, 2017, 12:40:04 am »

Say Thanks Reply Quote

Scope calibrator is back in lab, so I tried that TDS210 with firmware 1.06 again, including adjustment. Adjustment ran through without failure, but nothing changed. Bandwidth ~80MHz, IDN was reset automatically to TSD210 after adjustment (before adjustment and after hacking it was TDS220).

Update:

I also tried a TDS1002 with firmware 2.06, including adjustment.

Adjustment ran through without failure, but nothing changed.

IDN was reset automatically to TSD1002 after adjustment (checked bandwidth: ~84MHz).

### So this hack doesn't work for TDS 210 or TDS 1002 !

Quote from: rfdes on August 19, 2017, 11:53:35 am

I forgot to mention that for the TDS1000/2000 and TDS200 instruments, the BW update will not be saved unless a full calibration adjustment is performed before the unit is shutdown.

I used automatic Fluke Met/Cal adjustment procedure (I removed one \*RST command in the beginning not to reset the scope), but that didn't make the hack operating anyway.

« Last Edit: September 21, 2017, 11:00:53 pm by carl\_lab »

Report to moderator  Logged

The following users thanked this post: edavid

### Hydron

Frequent Contributor



Posts: 382

Country: 



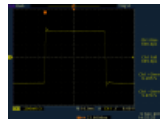
### Re: TDS 1000,2000,3000 BW Hack


« Reply #31 on: November 10, 2017, 02:49:38 am »

Say Thanks Reply Quote

Just checked a TDS3014B->TDS3054B upgraded unit with this:  
<https://www.eevblog.com/forum/projects/yet-another-fast-edge-pulse-generator/>

I was unable to upgrade all the way to TDS3064B (may have a too-early firmware), but it looks like the 500MHz upgrade was very successful:



 TDS3054B\_rise\_fall.png (13.1 kB, 640x480 - viewed 432 times.)

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### skennedy

Contributor

Posts: 38

Country: 



### Re: TDS 1000,2000,3000 BW Hack

« Reply #32 on: December 02, 2017, 03:01:07 pm »

Say Thanks Reply Quote

I purchased a TDS3014B that came with 3.41. I downgraded the firmware to 3.39 and I now have a TDS3064B with version 3.41.

The scope needs to be calibrated as it now has a big DC offset and triggering is pretty terrible also. I have some instruments that can provide the low ripple DC and a 80MHz AC signal. Running through the calibration test I can get almost to the end.

The pulse generator that is required is a little more difficult for me to find. How accurate does it need to be? We have a 3ns rise time pulse generator but it certainly doesn't go to -2.2V. What is everyone else using? Can I use an FPGA or similar to generate a high rise time? Or maybe a fast comparator?

Report to moderator  Logged

### texaspyro

Super Contributor



Posts: 1219

### Re: TDS 1000,2000,3000 BW Hack

« Reply #33 on: December 02, 2017, 04:11:43 pm »

Say Thanks Reply Quote

Quote from: Hydron on November 10, 2017, 02:49:38 am



Just checked a TDS3014B->TDS3054B upgraded unit with this:

Upgrade of a 3034 (non-b) to 3054 also worked... 3.39 fw. Verified with Bodner's pulser.

Why is it necessary to downgrade 3.41 to 3.39? Did they remove the magic spell in the 3.41 firmware? The person I got the scope from did the hack and I don't think it ever had 3.41 on it. It had all the previous firmware floppies with it, but no 3.41 Does 3.41 bring anything useful to the party?

Report to moderator Logged

**ChrisLX200**

Supporter



Posts: 462

Country:



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #34 on: December 02, 2017, 04:29:11 pm »

Say Thanks Reply Quote

I had not noticed this thread before. I have a 3014B, recently upgraded to 3.41 fw, so I will try this hack ASAP. Got the older 3.39 fw from the link earlier in this thread so should be good to go, but will have to re-install TekVisa (I deleted it after it caused problems - continually reporting device disconnected).

So to be clear - after the upgrade hack a recalibration is required before use?

Report to moderator Logged

**Hydron**

Frequent Contributor



Posts: 382

Country:



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #35 on: December 02, 2017, 08:09:38 pm »

Say Thanks Reply Quote

The one I tried this on didn't seem to need a cal afterwards. This was just from use and quick testing though, don't have the equipment required for the cal/verification.

Report to moderator Logged

**skennedy**

Contributor

Posts: 38

Country:



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #36 on: December 03, 2017, 03:43:10 pm »

Say Thanks Reply Quote

I'm not sure if you need to but my scope certainly did. Perhaps the lack of calibration was pre-existing as I didn't do a lot of testing before I upgraded the bandwidth. I have been able to calibrate using a Keithley 2450 sourcemeter, a R&S sma100a rf siggen and a pulse generator from Berkeley Nucleonics that we have in the work lab. It obviously isn't NIST certified but a lot better than before. Needless to say the entire process took well over an hour.

Report to moderator Logged

**ChrisLX200**

Supporter



Posts: 462

Country:



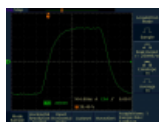
**Re: TDS 1000,2000,3000 BW Hack**

« Reply #37 on: December 20, 2017, 09:38:48 am »

Say Thanks Reply Quote

Confirm that the hack worked for my TDS3014B, which is now functioning as a TDS3054B. Now about to replace the firmware with 3.41 again..

Edit: Updated firmware and ran the self-cal, seems to be OK. Image shows the scope is running at 5.00GS/s (signal a 25MHz square wave - the max freq from my Siglent SDG1025 - 1V p-p, zero offset.



tek1.jpg (76.26 kB, 640x480 - viewed 332 times.)

« Last Edit: December 20, 2017, 11:04:48 am by ChrisLX200 »

Report to moderator Logged

**darkstar49**

Regular Contributor



Posts: 134



**Re: TDS 1000,2000,3000 BW Hack**

« Reply #38 on: January 31, 2018, 05:58:07 pm »

Say Thanks Reply Quote

just pimped-up a TDS3014B, no issue.

Btw, no need for GPIB, the web-interface perfectly does the job for the B-series (or a TDS3EM equipped non-B)

Report to moderator Logged

**texaspyro**  
 Super Contributor  
  
 Posts: 1219  


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #39 on: January 31, 2018, 06:01:13 pm » Say Thanks Reply Quote

Quote from: darkstar49 on January 31, 2018, 05:58:07 pm

Btw, no need for GPIB, the web-interface perfectly does the job for the B-series (or a TDS3EM equipped non-B)

Or the serial port if you have a comm module with one of those.

Report to moderator  Logged

**sobakava**  
 Newbie  
 Posts: 1  
 Country:   


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #40 on: February 25, 2018, 07:28:25 am » Say Thanks Reply Quote

Has anybody tried to do this with TDS3xxxC series?

Report to moderator  Logged

**mcguire**  
 Contributor  
 Posts: 7  
 Country:   


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #41 on: March 01, 2018, 07:16:17 am » Say Thanks Reply Quote

FYI, I've verified that the procedure detailed at the beginning of this thread works on a TDS3012 (no letter suffix) with no issues. I downgraded from v3.41 to v3.39, applied, the hack, and reinstalled v3.41. I set the model to TDS3052. I used the command functionality in the web interface from a browser while the oscilloscope was connected to my network.

Quick and dirty measurement with a Bodnar pulser (38ps rise time measured on an 11801A+SD26) showed a rise time of 2.3ns before the hack, and 1.0ns after. No other measurements performed as of yet.

I did notice that there was a significant DC offset after the hack. I'm pretty sure that wasn't there beforehand. Running signal path compensation took care of it, now it's perfect.

-Dave

Report to moderator  Logged

**Dogsled**  
 Newbie  
 Posts: 2  
 Country:   


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #42 on: March 01, 2018, 09:41:12 am » Say Thanks Reply Quote

Successfully updated a 3032b to xx52B, procedure as previously described.

Now looking for some of those Blank module chips parts? so I can glue in an Eprom for the options. Anyone out there know where to get those?

Thanks to all, this has been extremely helpful, I will outline what I did (and what worked) for the options upgrade once I have all the parts.

Jon

Report to moderator  Logged




**mcguire**  
 Contributor  
 Posts: 7  
 Country:   


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #43 on: March 01, 2018, 10:08:36 am » Say Thanks Reply Quote

In reference to my TDS3012 upgrade above, I've just counted the samples, it's sampling at 5GHZ.

-Dave

Report to moderator  Logged

**Andrey\_irk**  
 Regular Contributor  
  
 Posts: 86  
 Country:   


 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #44 on: March 01, 2018, 04:11:34 pm » Say Thanks Reply Quote

The only scope I have nearby is top-of-the-line TDS2024B. Pity. So, shall we expect prices on these scopes to rise?

Report to moderator  Logged

**Hydron**  
 Frequent Contributor  
  
 Posts: 382  
 Country: 

 **Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #45 on: March 01, 2018, 08:01:37 pm » Say Thanks Reply Quote

Terrible memory depth counts against them unfortunately. Still, when you're just looking at an edge or two the memory isn't an issue and the free bandwidth is nice.



Contributor

Posts: 14

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
 « Reply #46 on: May 15, 2018, 09:46:48 am »

Say Thanks Reply Quote

I am reporting success too, with my TDS 3014B converted to a TDS 3064B 🙌  
 I got this scope in an auction sale, and now I have a really fast sampling rate, thanks for the hack!

The upgrade process is not difficult, but I got some troubles with upgrading the firmware, so I am posting some infos for helping others:

You will need:

- a network connection between the TDS 30xxB and a computer with a web browser.
- 4 floppy disks 3"1/2 1.44MB (at least one).
- the firmware v3.39 (see above posts).

◦ **Configure network**

Plug the ethernet cable

On the scope: go to Utility -> I/O -> Ethernet Network Settings and enable DHCP/BOOTP

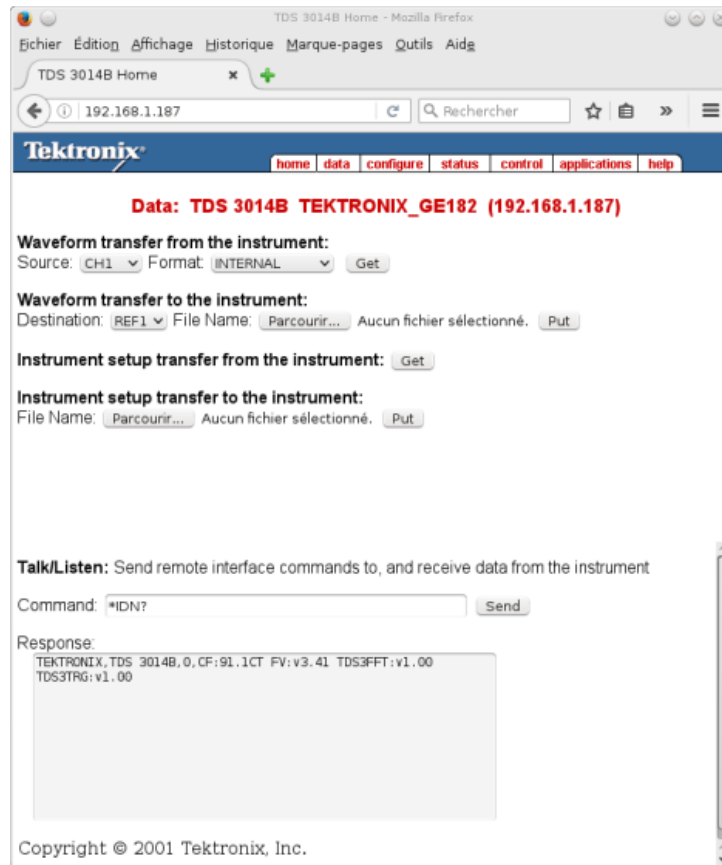
After a few seconds, the oscilloscope will display its IP address, just enter it in your web browser.

(Your network must run a DHCP server, otherwise you have to configure a static IP address)



• **Check firmware version**

One way to check the firmware is to send the command "\*IDN?" from the "data" tab of the TDS's web page:



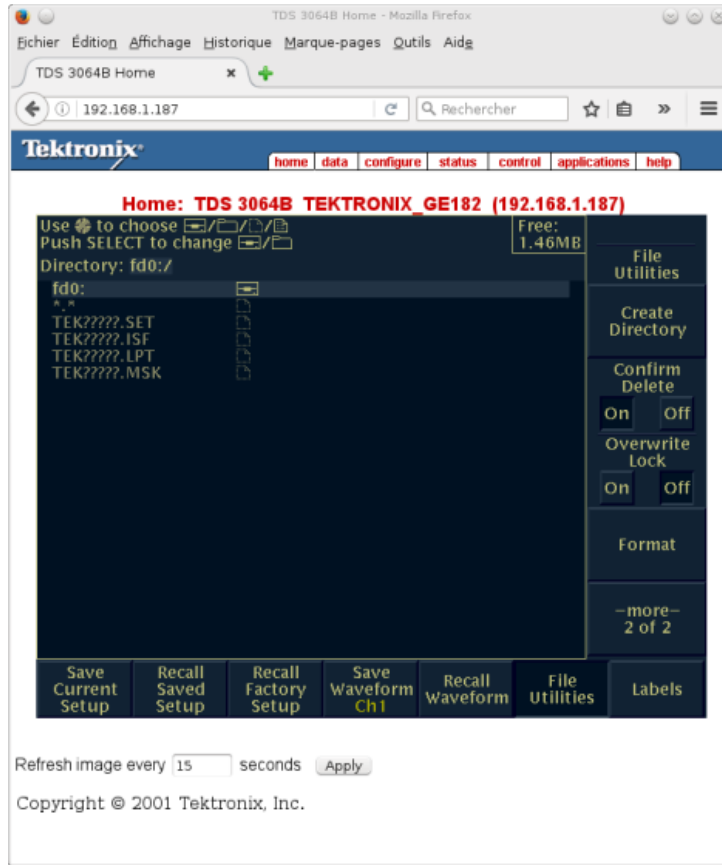
- **Downgrade to v3.39**

If your TDS is running version 3.41, the hack won't work, you have to downgrade to an older version. If your current firmware version is older than 3.41, it should work directly (see other posts), so you can jump to next step.

Be careful with the updates, some versions has some quirks, read Tektronix recommendations! (for example, version 1.0 must be upgraded really carefully because of a bug in this version. Switching from version prior to 2.20 to version above 2.21 will need a recalibration, ...)

So let's upgrade / downgrade the firmware using floppy disks. I don't know if there are other means to change the firmware? I didn't find any...

I had formatted and prepared some floppy disks on an old computer, but the TDS refused to boot on it, so I strongly advice to format the floppy directly on the TDS: use save/recall menu:



If something is wrong with the floppy, the TDS scope will display "Mass storage error":



So try another floppy! Many of my old floppies were bad (particularly the Sony ones) ; back in time of 5"1/4 floppy, I had noticed that BASF one were more reliable than others ; so I searched for some old 3"1/2 BASF floppy disks and, guess what, they all worked in the TDS 😊

Once formatted in the scope, you have to unzip and copy the firmware v3.39 to the floppy disks. The content of each directory (disk1 to disk4) must be copied on four separate floppy disks, without



creating any directory.

Take care to label each floppy disk with the name "disk1" to "disk4", this is needed by the TDS. Once formatted by the oscilloscope, I run these commands on my Linux server (the only one that stills has a floppy disk drive):

[/list]

Code: [Select]

```
mlabel a:disk1 && mount /media/floppy/ && cp -av /home/share/temp/firmware_v3.39/disk1/* /media/floppy/ &&
```

(don't forget to change all the "disk1" to "disk2" for the next floppy, etc...)

Last step is to stop the scope, insert the first floppy into the TDS and power it on. If you followed the above instructions, the scope will ask if you want to downgrade / upgrade the firmware: just follow the instructions 😊

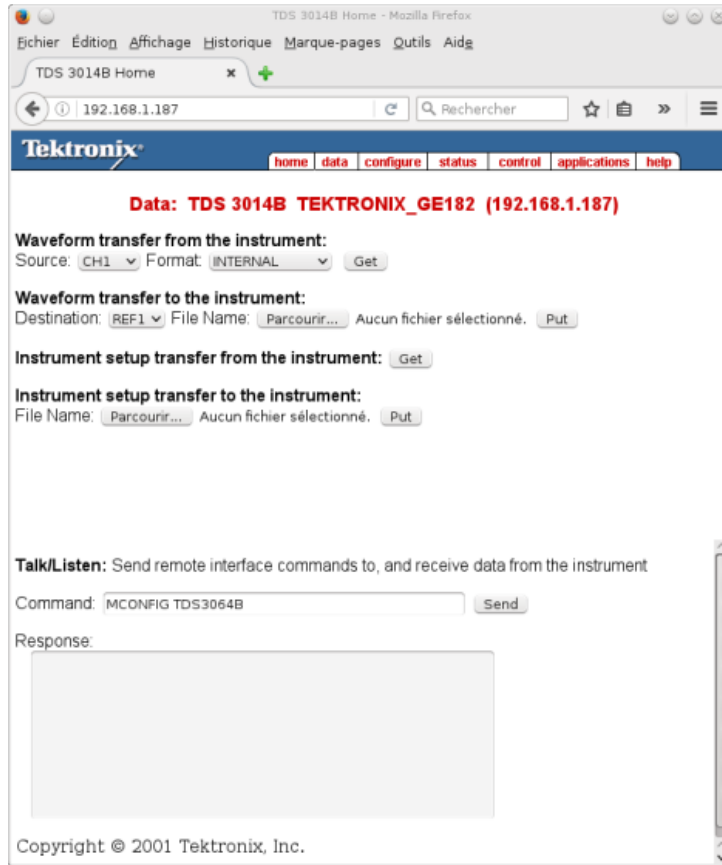
- **Bandwith hack**

Connect again to the web interface and check that firmware version is lower than v3.41, using "\*IDN?" command for example.

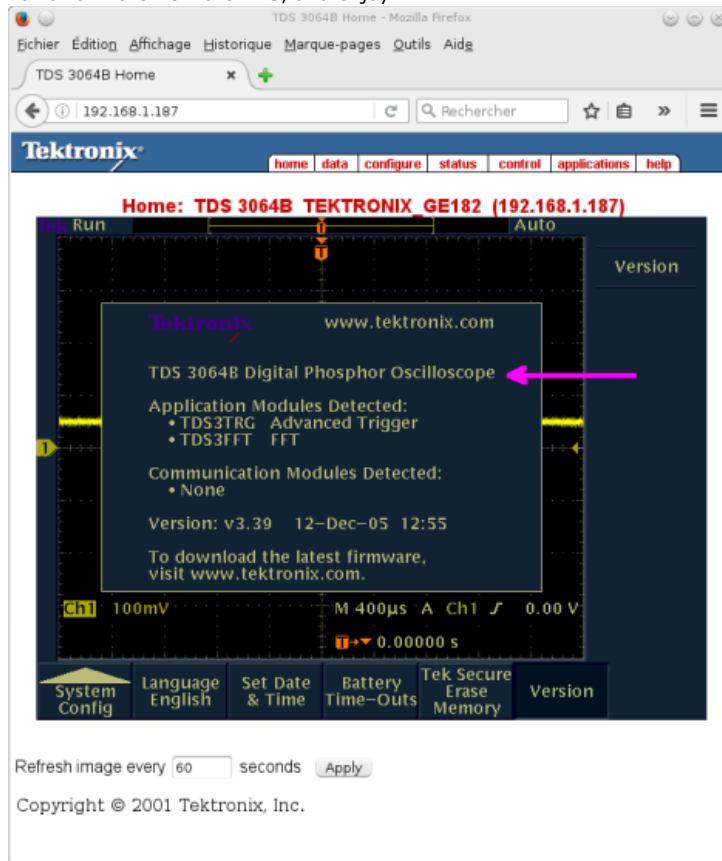
Now send the correct commands for hacking the bandwith: for my TDS 3014B it is:

PASSWORD PITBULL

MCONFIG TDS3064B



Power OFF then ON the TDS, and enjoy!



(you can now upgrade again to v3.41, the scope won't lose its model number)



interface\_web\_10\_IP\_config.png (90.63 kB, 470x560 - viewed 2885 times.)



interface\_web\_03.png (84.06 kB, 470x560 - viewed 2847 times.)



interface\_web\_11\_format\_floppy.png (74.08 kB, 470x560 - viewed 2835 times.)



interface\_web\_12\_floppy\_mass\_storage\_error.png (91.63 kB, 470x560 - viewed 2825 times.)



interface\_web\_05\_hack.png (80.16 kB, 470x560 - viewed 2784 times.)



interface\_web\_06\_hack.png (80.28 kB, 470x560 - viewed 2798 times.)



interface\_web\_08\_TDS\_3064B\_600MHz\_5GS-s\_marqueur.png (95.06 kB, 470x560 - viewed 2805 times.)

« Last Edit: May 15, 2018, 09:55:39 am by xi »

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**stevewind77**

Contributor



Posts: 6

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #47 on: May 21, 2018, 12:34:35 am »

Say Thanks Reply Quote

Hi all,

I have a TDS3032C which I try to upgrade without success.  
The problem is that the c version has usb instead of Floppy drive.  
The firmware version 3.39 for the older B model is on 4 floppy disks in a form of .dat files but the C version is not able to boot-up from an usb floppy.  
It can only accept .img files.  
Is there any experience about this? Maybe convert the .dat files to an .img or format the stick as it would be a floppy?  
Any ideas?

Thanks

« Last Edit: May 21, 2018, 06:41:48 am by stevewind77 »

Report to moderator Logged

**stevewind77**

Contributor

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #48 on: May 21, 2018, 07:00:51 am »

Say Thanks Reply Quote



Posts: 6  
Country:

I had a look inside just to check if I can add a regular floppy instead of the usb.  
I found interesting things inside.  
There is no usb connection from outside but inside I found one which is probably disabled from software.  
I also found a dc in, no idea for what is it there.



20180520\_223655 (Large).jpg (313.92 kB, 1440x1080 - viewed 278 times.)



20180520\_223638 (Large).jpg (297.87 kB, 1440x1080 - viewed 245 times.)



20180520\_223644 (Large).jpg (305.8 kB, 1440x1080 - viewed 214 times.)



20180520\_223702 (Large).jpg (288.17 kB, 1440x1080 - viewed 261 times.)

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**MarkL**  
Supporter

Posts: 1470  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #49 on: May 22, 2018, 12:11:16 am »

Say Thanks Reply Quote

Quote from: stevewind77 on May 21, 2018, 07:00:51 am

...  
I also found a dc in, no idea for what is it there.

That's a DC Out jack, +14.2 VDC, <=400mA. From the TDS3054 manual:

DC power output. Provides ~15 V DC accessory power only when the oscilloscope is connected to the AC power line.

From the TDS3054B manual:

DC power output. Provides ~15 V DC power to accessories or to the plug-in TDS3PRT thermal printer.

Not shown at all in the TDS3054C manual.

Report to moderator Logged

**stevewind77**  
Contributor



Posts: 6  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #50 on: May 23, 2018, 03:14:55 am »

Say Thanks Reply Quote

Thanks MarkL for your reply.

So this means it is not a dc input => it is not very valuable 😞

Report to moderator Logged

**MarkL**  
Supporter

Posts: 1470  
Country:

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #51 on: May 23, 2018, 05:14:00 am »

Say Thanks Reply Quote

Quote from: stevewind77 on May 23, 2018, 03:14:55 am

Thanks MarkL for your reply.

So this means it is not a dc input => it is not very valuable 😞

Probably not too valuable for bench use, but I could see it being useful for someone who did a lot work in the field.

You could use the battery pack connector as a "DC In" if you wanted to use the scope with a DC supply or external battery:

<https://www.eevblog.com/forum/repair/tektronix-tds-3014b-power-supply-by-pass/msg767729/#msg767729>

Report to moderator Logged

**Nebulex**

Contributor

Posts: 11

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #52 on: June 14, 2018, 05:52:37 am »

Say Thanks Reply Quote

Hello all.  
I can confirm that BW upgrade worked on my TPS2014. But only if a full calibration is done after entering the password and model through the serial interface. The BW limit is now gone up to 200Mhz. So thanks to all who made this upgrade possible. 🙏

Report to moderator Logged

**abyrvalg**

Frequent Contributor



Posts: 350

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #53 on: June 14, 2018, 09:41:44 am »

Say Thanks Reply Quote

Perhaps the ARMDemo command found in newer models will work on these too?

Code: [Select]

```
:PASSW INTEKRITY
:ARMDemo 365,DontMakeThewookieMad
```

Report to moderator Logged

**hardcoreman**

Contributor

Posts: 22

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #54 on: June 15, 2018, 03:12:50 pm »

Say Thanks Reply Quote

battery info:

pinout

gnd  
nc  
DQ  
charge+ (charger circuit in batt. / from scope)  
bat+ ( to scope)

DQ - signal from bq2050 fuel gauge...

Report to moderator Logged

**stevewind77**

Contributor



Posts: 6

Country:



**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #55 on: June 18, 2018, 07:39:16 am »

Say Thanks Reply Quote

I sent these instructions with OpenChoice Talker Listener via Ethernet to my TDS3032C:

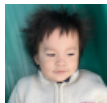
```
PASSWord INTEKRITY
SETMODELID 5
HWAccountant:ACQBandwidth 500
```

Nothing happened. 🙄  
Is this format correct?

Report to moderator Logged

**gamalot**

Frequent Contributor



Posts: 472

Country:

Correct my English

**Re: TDS 1000,2000,3000 BW Hack**  
« Reply #56 on: September 13, 2018, 12:44:09 am »

Say Thanks Reply Quote

TDS3014B upgraded to TDS3064B and all applications activated. Thank you everyone!



IMG\_2734.JPG (472.45 kB, 1600x1200 - viewed 357 times.)

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