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Topic: **TDS3000C series BW & sampling hack** (Read 676 times)



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**giosif**  
Frequent Contributor





Posts: 695  
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 **TDS3000C series BW & sampling hack**  
« on: June 28, 2020, 12:55:40 pm »

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Hi,


Does anyone know of ways to hack the Tektronix TDS3000C series of scopes, please? I've got a TDS3012C and would like to upgrade it to a TDS3052C.

I did some searching but, apart from other people asking the same question and one reference to an eBay listing, there isn't much showing up. And I am aware of the thread on the TDS3000(B) series, but those instructions don't work on the C variant (tried it already).

Thanks!

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**daveyk**  
Frequent Contributor



Posts: 297  
Country: 

 **Re: TDS3000C series BW & sampling hack**  
« Reply #1 on: January 14, 2021, 07:53:15 pm »

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**giosif**  
Frequent Contributor



 **Re: TDS3000C series BW & sampling hack**  
« Reply #2 on: January 14, 2021, 08:08:39 pm »

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No, unfortunately.



Posts: 695  
Country: 

 **sicco**

Regular Contributor

  
Posts: 53  
Country: 

 **Re: TDS3000C series BW & sampling hack**

« Reply #3 on: January 15, 2021, 11:54:13 am »

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I'm working on a budget version of my TDS3000 super-plug-in module. It will not only have the 10 pin BDM interface for program/erase the main board flash ROMs, but also a USB port with FT2232H with its extra TTL i/o wired to the BDM interface. Plus of course the DS1744W that takes over from the main board (empty battery...) DS1742W.

With that, it should be possible to reflash the ROMs, and, if these scopes are not too different from the TDS3000 no-suffix (or -b) models, then all that's needed is a PC, and this board plugged into the expansion port on the back side. Plus a ROM image for the TDS3054-c.

Have confirmed that with TDS3034 and v3.41 firmware, I can upgrade to TDS3054. Or down to TDS3014. So without going back to v3.39.

What i do not have yet is the PC program that does BDM over FT2232. Lots of www examples found for JTAG, but for BDM I need to rebuild from scratch I fear. Unless of course someone reading this already did go through the effort... (please share if you did...).

So far I used the Abatron BDI2000 for reflashing TDS3000 scope via BDM.

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**daveyk**

Frequent Contributor

  
Posts: 297  
Country: 

 **Re: TDS3000C series BW & sampling hack**

« Reply #4 on: January 15, 2021, 06:22:11 pm »

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If, WHEN, you work out the programming, keep me in mind and make some extra PCBs. I would gladly pay you what you need for the PCB and your software.

Dave

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 **sicco**

Regular Contributor

  
Posts: 53  
Country: 

 **Re: TDS3000C series BW & sampling hack**

« Reply #5 on: January 23, 2021, 02:59:02 pm »

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I got my 5 boards this week, the new budget version. Budget because no Ethernet, no isolated RS232 on DB9, and no isolated microUSB on this version. Edge connector instead of the official Molex 100 pin male part. This board has two 6 pin headers for two FTDI-TTL adapters, plus headers for a FT2232H mini module.

One serial port is for the generic user serial port, so can also do bandwidth hack trick on the old <= v3.39 firmware models. But not on -c models. For those I think only BDM port reflashing will work. The other serial port is the VxWorks diagnostics port, with CTRL-X to reboot.

Both ports accessible at the same time via a FT2232H mini module, and then mini-USB cable to your PC.

Board has the 10 pin BDM port, and a slot for and ESP32 DevKit for Bluetooth or WiFi web server. Plus of course a DS1744W RTC that can take over from the TDS3K main board DS1742W which has flat battery after 15 years. For that to work, either some patch work on the mainboard and re-using pin EXTCLK while disabling the old DS1742W - or a boot rom code edit that remaps the NVRAM/RTC /CS2 to /CE1 on the 100 pin connector. Lot of hassle, but proven feasible. the upside is no need to open the scope, no need to solder patch wires inside.

Tested OK on an old TDS3034 (no-suffix).

KiCad with Gerbers attached.

Works OK with the Abatron BDI2000. Still on my list of things to do: stand alone PC C or Java code that can program/erase the TDS3000 flash roms via BDM, via the XPC860 PowerPC. The BDM pins are linked to the FT2232H mini module, so must be feasible, but will be quite a project ahead still.

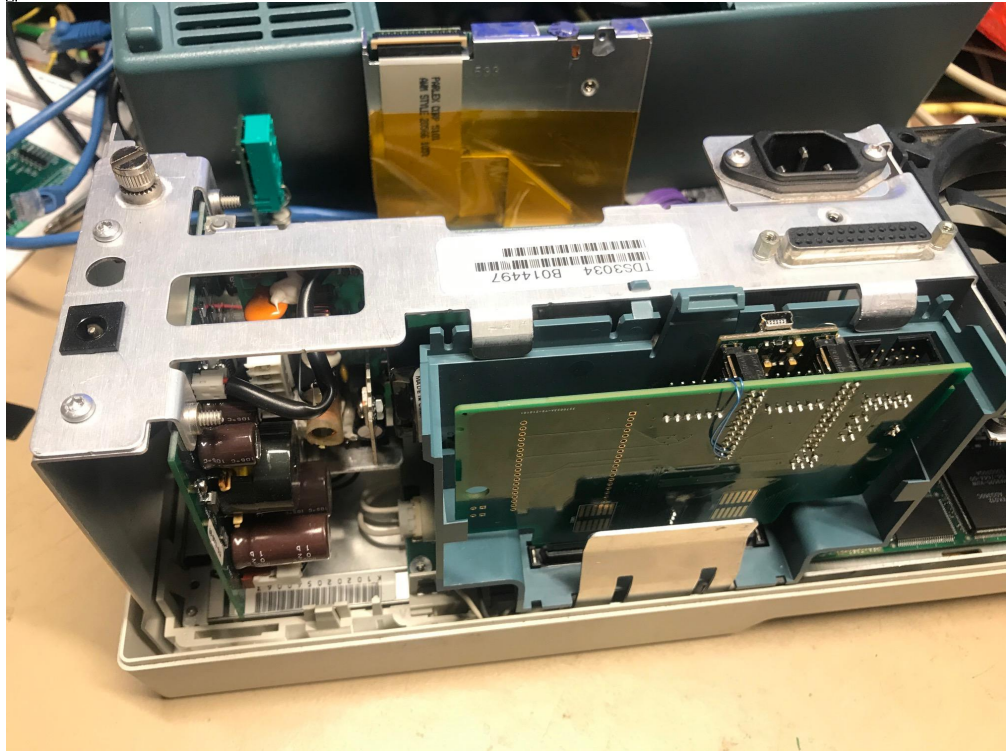
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TDS3K\_plugin\_RTC\_and\_Serial\_budget.zip (520.61 kB - downloaded 14 times.)



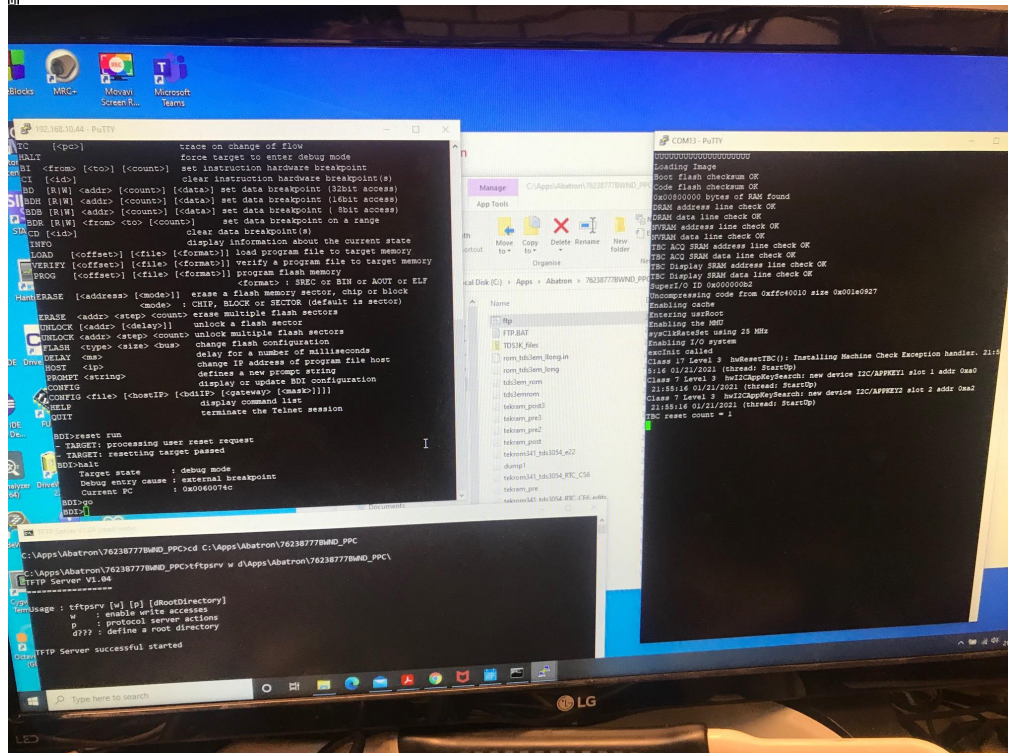
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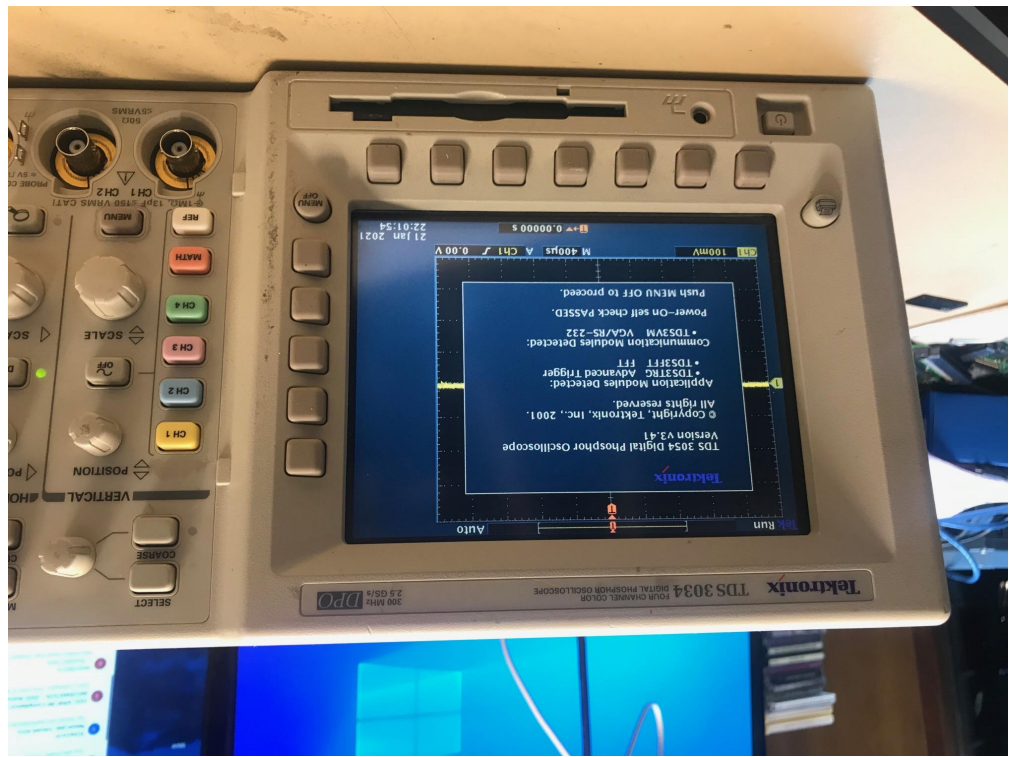
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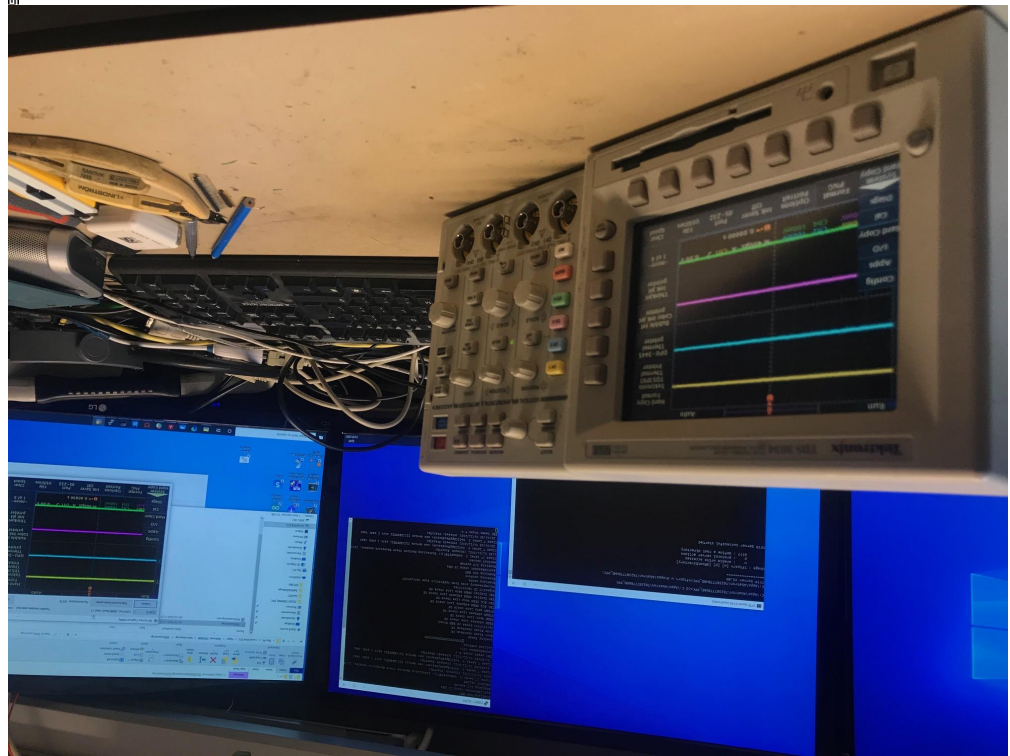
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TDS3K\_budget\_rev2\_schematic\_as\_pdf.pdf (247.2 kB - downloaded 130 times.)

« Last Edit: January 23, 2021, 03:13:38 pm by sicco »

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**sicco**  
Regular Contributor

Posts: 53  
Country:

**Re: TDS3000C series BW & sampling hack**  
« Reply #6 on: February 03, 2021, 08:19:22 pm »

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Making good progress with some old style stand alone PC command line software that lets me read, erase, program the TDS3000 flash ROMs. Or the NVRAM. Using the plug-in discussed above. I've taken a 20 years old open source BDM project found in far deep www corners, all that was left was a zip with C sources. And then converted it from old style LPT printer port interface to FTDI FT2232 i/o. Had to add the definition for the AMD flash chips, something with top vs bottom boot sectors, but got it working now. Not yet in fast programming mode, so for now allow for a full hour before the programming is done.

I am confident that by fully reflashing mainboard roms also the -b and -c scopes will happily convert up to high bw spec, irrespective of initial firmware inside. Gut feeling is that there is no read protection. There was none on my TDS3034-no-suffix. However, we need the binaries for the ROMs. Reading these binaries is also via the BDM port, with same stand alone PC software.

So, daveyk, how would you want this progressed from here? You have a -c scope that is >3012 or >3014, that can be used to read out the roms?

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