

Instructions



TDSXF2F DSP Math Upgrade Kit 070-9635-02

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

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Kit Description

The TDSXF2F kit include parts and instructions for installing the Option 2F: Advanced DSP Math into the oscilloscopes listed under *Instruments*.

Instruments

TDS 500A and later All serial numbers
TDS 620A/B All serial numbers
TDS 640A All serial numbers
TDS 680B All serial numbers

Kit Parts List

Quantity	Part number	Name & description
1 ea	063-1677-01	Firmware Kit: Option Key, Version 3.8 TDS 620A
1 ea	063-1681-02	Firmware Kit: Option Key, Version 3.8 TDS 540A
1 ea	063-1683-02	Firmware Kit: Option Key, Version 3.8 TDS 520A
1 ea	063-2086-01	Firmware Kit: Option Key, Version 3.8 TDS 640A
1 ea	063-2780-00	Firmware Kit: Option Key, Version 1.0 TDS 500C & TDS 700C and Later
1 ea	063-2600-00	Firmware Kit: Instrument Options TDS 520B, TDS 540B & TDS 700A
1 ea	063-1909-00	Firmware Kit: Instrument Options TDS 620B & TDS 680B and Later
1 ea	070-9635-xx	Manual, Tech Instructions;TDSXF2F

Service Safety Summary



WARNING. *The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to the General Safety Summary in the appropriate TDS service manual before performing any service.*

Do Not Service Alone

Do not perform internal service on this product unless another person capable of rendering first aid and resuscitation is present.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Use Care When Servicing With Power On

Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

Installation Instructions

The instructions needed to upgrade the TDS follow. Use the Option Key disk to enable the advanced math and DSP features. Operate the disk as described starting on page 4.

Option Key Description

This disk enables the TDS oscilloscopes, listed under *Instruments* on page 1, to use the selected options. The Option Key disk and enabling options features are authorized for use only by Tektronix personnel or personnel who have written permission from Tektronix to perform this function. Contact Beaverton Service Support for additional information regarding this policy.

Minimum Tools & Equipment List

- IBM compatible PC
- GPIB card such as the National Instruments PCII/IIA (Tek S3FG210)
- IEEE Std 488.1-1987 GPIB cable, such as Tektronix part number 012-0991-00
- GPIB driver software appropriate to the GPIB card, such as NI-488.2 software

Firmware Installation

Setting Up PC & TDS

The following instructions will guide you through setting up your PC and the TDS Oscilloscope.

1. Attach a GPIB cable to the 24-pin GPIB connector on the rear panel of the TDS, as shown in Figure 1.

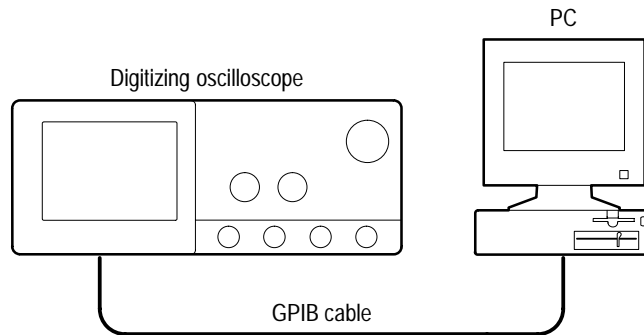


Figure 1: PC & TDS setup

Setting the GPIB Parameters

You need to set the GPIB parameters of the oscilloscope to match the configuration of the bus. Once you have set these parameters, you can control the oscilloscope through the GPIB interface.

1. Press the **UTILITY (SHIFT DISPLAY)** button to display the Utility menu.
2. Press the **System** button in the main menu until it highlights the **I/O** selection in the pop-up menu. See Figure 2.

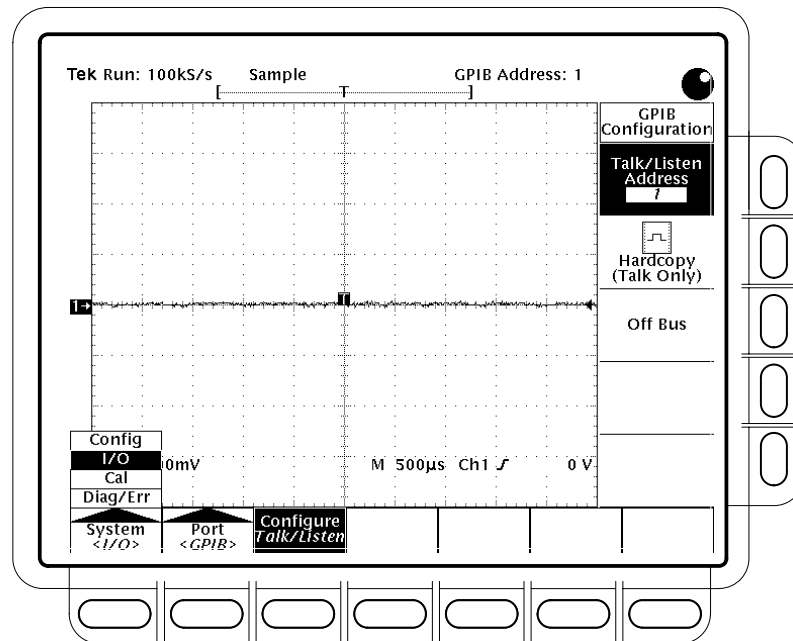


Figure 2: Selecting the I/O system in the main menu

3. Press the **Port** button in the main menu until it highlights the **GPIB** selection in the pop-up menu. See Figure 3.
4. Press the **Configure** button in the main menu to display the GPIB Configuration side menu. See Figure 3.
5. Press the **Talk/Listen Address** side menu button, and set the GPIB address using either the general purpose knob or, if available, the keypad.

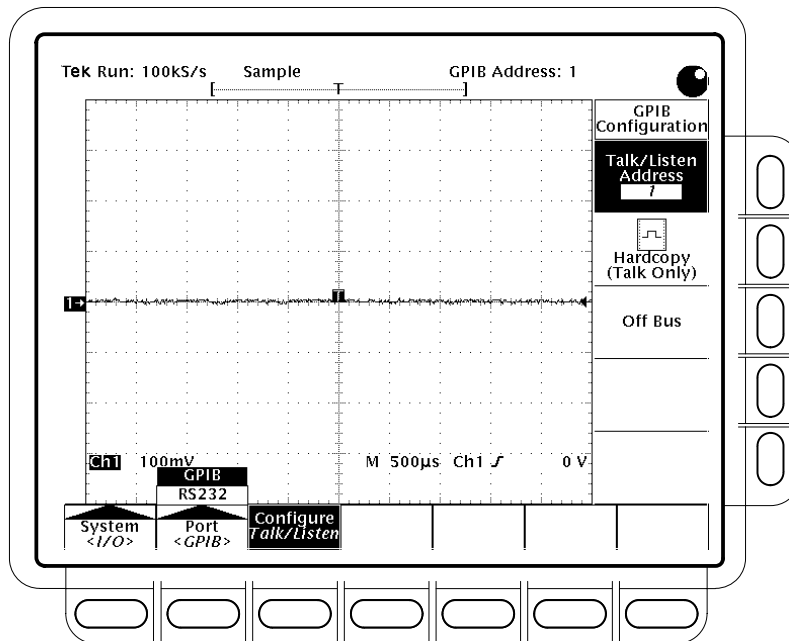


Figure 3: Selecting the GPIB address in the GPIB configuration side menu

Installing Software

Instructions for installing an approved card (National Instruments PCII/IIA or Tek S3FG210) and the accompanying driver software (NI-488.2 software) come with your card. The following equipment is required for installation:

- IBM PC or equivalent
- GPIB card
- GPIB cable

Perform the following procedure to install the software:

1. Insert the new firmware disk into the floppy disk drive.
2. Move to the floppy drive containing the disk (typically A:).
3. From the DOS prompt enter:

```
hdinstal <space><drive>:\<filename> press Return.
```

The proper filename is setopt if you have the newer firmware-load software. This software has a DOS command line interface. The proper filename is loadopt if you have the older firmware-load software. This older software has pull-down menus.

Example: `hdinstal c:\loadopt`

or `hdinstal c:\setopt`

NOTE. To load new firmware, the NVRAM protect switch must be set to the Unprotected position while the TDS instrument power is off. Changing the position of the NVRAM protect switch with the instrument running, may cause the NVRAM to be misprogrammed.

1. Power off the instrument.
2. Insert a small, nonconductive object (adjustment tool) into the front access hole located on the right side of the oscilloscope near the front panel. Push the nonconductive object inward to position the NVRAM protection rocker switch in the Unprotected (write-enable) position. See Figure 4.

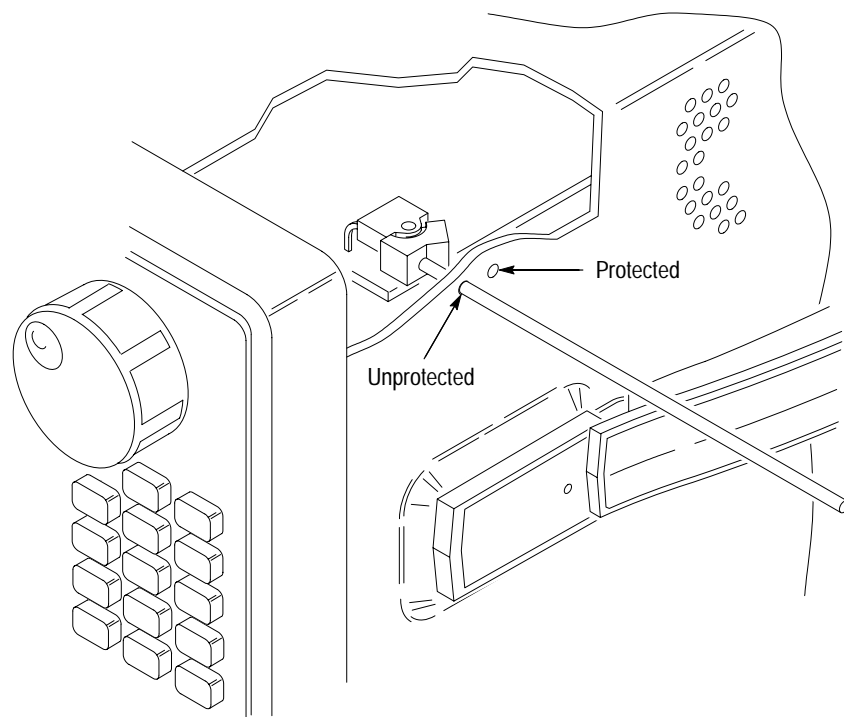


Figure 4: Accessing the protection switch

3. Power on the instrument.

4. To enable options, move to the disk and directory containing the firmware.
5. Newer software to enable options uses a DOS command line style interface. Older software to enable options uses pull-down menus. If you have the older software, proceed to step 12.
6. To install newer firmware for options, type: setopt and press **Return**.
7. In response to the Enable? question for each option, type Y if you want to enable the firmware for that option or N if you do not want to enable firmware for that option.
8. When the program completes execution it should display (A)ccept or (C)hange? Type: A.
9. When the program completes execution it should display (A)bort or (C)ontinue?
10. Insert a small, nonconductive object (adjustment tool) into the rear access hole located on the right side of the oscilloscope near the front panel. Push the nonconductive object inward to position the NVRAM protection rocker switch in the Protected (write-protect) position. See Figure 4 on page 7.
11. Type: C and proceed to step 17.
12. To enable or disable oscilloscope options, move to the disk and directory containing the firmware.

Type loadopt

Press **RETURN**

This starts the program.

13. In the PC, highlight the **Options** window and press **Return**.
14. Highlight the **Set Option Status** window and press **Return**.

The program will return the status of each option (enabled or disabled) and ask the user if the status of the option should be changed.

***NOTE.** This program determines which hardware options are installed in the oscilloscope (DSP math). If the hardware option is not installed, the Loadopt program will not display the status of that option.*

15. To exit, highlight **Quit**, press **RETURN**, highlight **Exit**, press **RETURN**.
16. Insert a small, nonconductive object (adjustment tool) into the rear access hole located on the right side of the oscilloscope near the front panel. Push

the nonconductive object inward to position the NVRAM protection rocker switch in the Protected (write-protect) position. See Figure 4 on page 7.

17. Remove the protective backing from the nomenclated-kit label and place it on a clean, dry area immediately above the BNC connectors located on the instrument rear panel. This label indicates that the kit has been installed.
18. Power off the instrument.
19. Refer to Section 4, *Performance Verification*, and Section 5, *Adjustment Procedures* in the relevant TDS service manual and calibrate as required.

Verify Installation

Verify the operation by attempting to access the DSP menu items. Confirm that they are no longer greyed out.

For the Advanced DSP Math option, press the front panel **MATH REF** button. Press the main-menu **Math1** button and the side-menu **Change Math Waveform Definition** item. Select **FFT** from the main menu. A side menu of FFT options should appear.

If the side menu does not appear, repeat the installation procedure.

■ End of document ■

