

Instructions

Tektronix

**TDS 684A, TDS 744A, and TDS 784A
TDS 68U01 or TDS 7U01 Firmware Field Upgrade**

070-9473-01

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Kit Description

These kits include parts and instructions to upgrade TDS 684A, TDS 744A or 784A Digitizing Oscilloscope firmware. The TDS 68U01 upgrades the TDS 684A. The TDS 7U01 upgrades the TDS 744A and 784A.

This document support Tektronix mod # 83626.

Instruments

**TDS 684A Digitizing Oscilloscopes, all serial numbers
TDS 744A, and 784A Digitizing Oscilloscopes,
serial numbers below B040100**

Minimum Tool and Equipment List

Tool	Part Number
Screwdriver handle (accepts Torx-driver bits)	003-0301-00
T-15 Torx tip (Torx-driver bit for T-15 size screw heads)	003-0966-00
T-20 Torx tip (Torx-driver bit for T-20 size screw heads)	003-0866-00
IBM PC or equivalent GPIB Card	Tektronix S3FG210 or National Instruments PCII/IIA
GPIB Cable (IEEE STD 488.1-1987)	012-0991-00

Kit Parts List

Ckt. Number	Quantity	Part Number	Description
	1 ea	020-2148-XX	Quick Reference Manual Set
	1 ea	063-1824-XX	Instrument Firmware (version 4.0 or greater for TDS 7U01)
	1 ea	063-1831-XX	Options Key Disk TDS 7U01)

Ckt. Number	Quantity	Part Number	Description
	1 ea	063-1908-XX	Field Adjustment Software (TDS 68U01)
	1 ea	063-1909-XX	Options Key Disk (TDS 68U01)
	1 ea	063-1910-XX	Instrument Firmware (version 4.0 or greater for TDS 68U01)
	1 ea	063-1984-XX	Field Adjustment Software (TDS 7U01)
	1 ea	070-9383-XX	User Manual
	1 ea	070-9384-XX	Technical Reference (PVD)
	1 ea	070-9473-XX	Installation Manual
	1 ea	070-9556-XX	Programmer Manual
	1 ea	_____	Kit label: TDS 68U01 or TDS 7U01

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 684A or 700A series 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

These instructions assume a certain familiarity with the instrument. If further details are required for disassembly or assembly, refer to the TDS 684A or the TDS 744A and 784A Service Manual (Tektronix part number 070-8992-XX). For assistance to install this kit, please call your nearest Tektronix, Inc., Service Center or Tektronix Factory Service.



CAUTION. Many components within this instrument are extremely susceptible to static-discharge damage. Service the instrument only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist and foot strap while installing this kit.

Firmware Installation

Setting Up PC & TDS

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

1. Attach an IEEE Std 488.1-1987 GPIB cable (available from Tektronix as part number 012-0991-00) to the 24-pin GPIB connector on the rear panel of the TDS, as shown in Figure 1.

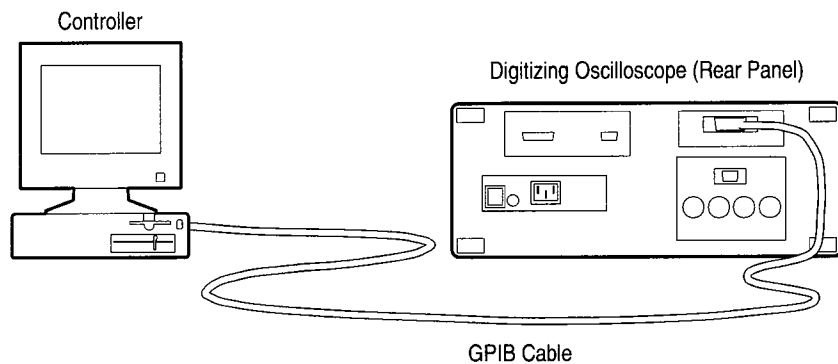


Figure 1: PC & TDS Setup

Setting the GPIB Parameters

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

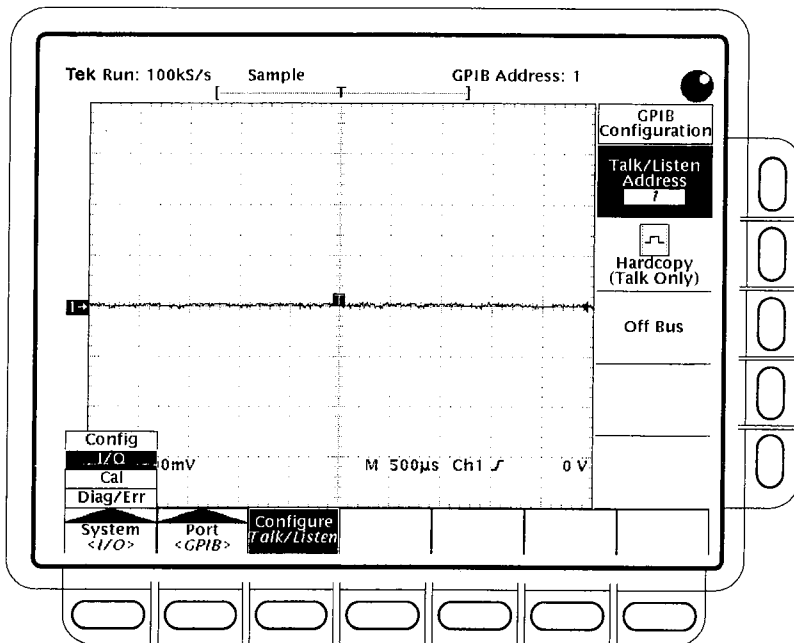


Figure 2: Selecting the I/O System in the Main Menu

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.

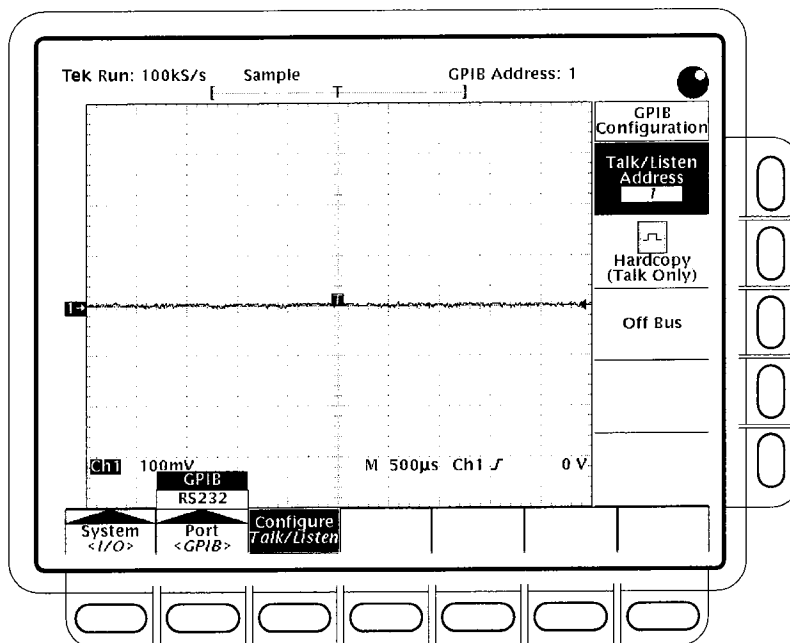


Figure 3: Selecting the GPIB Address in the GPIB Configuration Side Menu

Setting Up GPIB Card

Instructions for installing an approved card (National Instruments PCII/IIA or Tektronix S3FG210) and accompanying driver software (NI-488.2 software) come with your card.

Installation on Hard Disk

Equipment Required	
	IBM PC or equivalent
	GPIB Card
	GPIB Cable

1. Insert the appropriate V4.XX firmware disk into the floppy disk drive.
2. Move to the floppy drive containing the disk (A:).
3. From the DOS prompt enter:

```
hdinstal <space><drive>:\<instrument type.firmware>
```

Press **Return**.

Example 1: `hdinstal c:\600Bfw.4`

Example 2: `hdinstal c:\700Afw.4`

4. Insert the appropriate options key disk into the floppy disk drive.

5. From the DOS prompt enter:

```
hdinstal <space><drive>:\<instrument type.firmware>
```

Press **Return**.

Example 1: `hdinstal c:\600Bfw.4`

Example 2: `hdinstal c:\setopt`

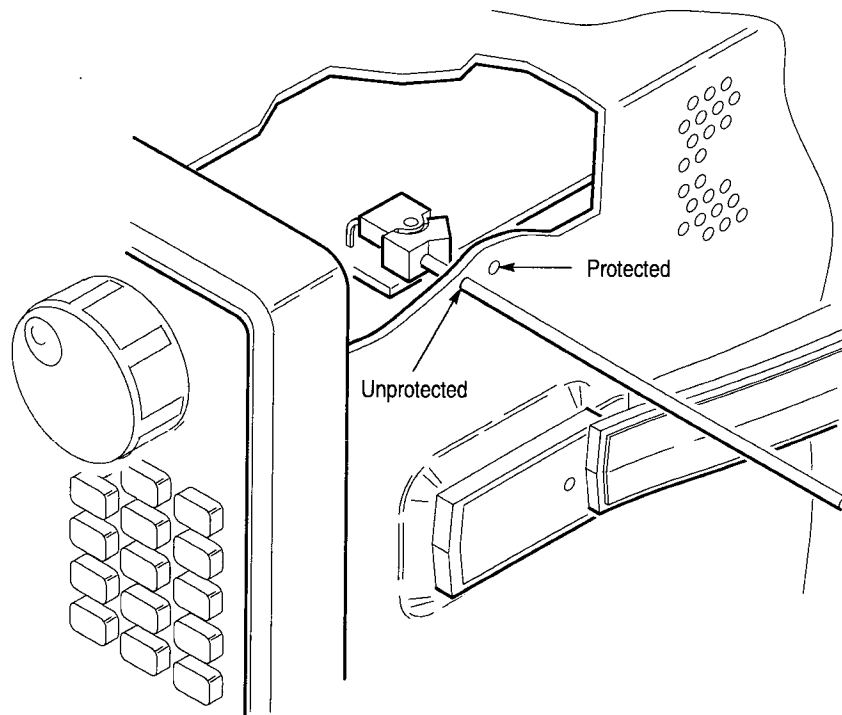


Figure 4: Accessing the Protection Switch

Loading Firmware

Equipment Required	IBM PC or equivalent GPIB Card GPIB Cable

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. Determine if the instrument has options 2F or 1M installed. To do that, press the front panel **SHIFT** and **STATUS** buttons. Then press **Banner** from the main menu. The resulting screen will list the current options. You will use this information in step 10.
2. Turn instrument power OFF.
3. 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.
4. Turn instrument power ON.
5. To load instrument firmware, move to the disk and directory containing the firmware. Type: loadfw and press **Return**.

This starts the program execution.

6. When the program completes execution it should display (A)bort or (C)ontinue?
7. If you have no options firmware to install, skip to step 12.
8. To install firmware for options, such as the option 2F Math Package or the option 1M Extended Memory, type: A and press **Return**.
9. If needed, move to the disk and directory containing the set options program. Then, type: setopt and press **Return**.
10. 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. Then press **Return**. Remember to install only the options noted in step 1.
11. When the program completes execution it should display (A)ccept or (C)hange? Type: A and press **Return**.
12. Remove the protective backing from the appropriate 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.
13. Turn instrument power OFF.
14. 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.
15. At the (A)bort or (C)ontinue? prompt, type: C and press **Return**.

- 16.** Refer to Section 4 *Performance Verification* and Section 5 *Adjustment Procedures* in the TDS 684A or the TDS 744A and 784A Service Manual (070-8992-XX) and calibrate as required.