Instructions

Tektronix

WFM61UP FP, WFM70UP FP, and WFM71UP FP Front Panel Upgrade
WFM6100, WFM7000, and WFM7100 Waveform Monitors

075-0948-00

www.tektronix.com

Contacting Tektronix

Tektronix, Inc.
14200 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:
- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

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.

To avoid electric shock, do not touch exposed connections.

Kit Description

This document describes replacing the waveform monitor front panel with the new, upgraded front panel. One very obvious change is the number of buttons on the front panel; there are many more buttons on the new front panel. This is necessary because the new front panel does not employ a touch-screen interface; all control is through the front panel buttons. Among other things, this change provides a noticeable improvement in instrument front panel response.

Products

WFM6100   All
WFM7000   All
WFM7100   All

Minimum Tool and Equipment List

Required tools and equipment	Part number
PC with USB port	----- -----
Network connection	----- -----
Torque screwdriver handle	Standard tool
T-10 TORX bit	Standard tool

Kit Parts List

Quantity	Part number	Description
1 Each	614-1044-xx	FRONT PANEL ASSY
1 Each	063-4072-xx	USB FLASH DRIVE, PROGRAMMED
1 Each	NS	OPTION KEY LABEL
1 Each	075-0948-00	UPGRADE KIT INSTRUCTIONS (THIS DOCUMENT)
1 Each	NS	IMPORTANT DOCUMENTS ENVELOPE
1 Each	071-2191-01	MANUAL, TECH; SVCPT-UPG; TEKTRONIX SUPPLE-MENTAL INFORMATION SHEET FOR THE PEOPLES REPUBLIC OF CHINA; CHINA ROHS

NS - Not Saleable

Installation Instructions

These instructions are for personnel who are familiar with servicing the product. If you need further details for disassembling or reassembling the product, refer to the appropriate product manual. Contact your nearest Tektronix, Inc., Service Center or Tektronix Factory Service for installation assistance.

⚠ **CAUTION.** *To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this kit.*

These instructions will guide you through the following steps:

■ Update the software

    ■ Connect the waveform monitor to the network, if not already connected

    ■ Obtain the waveform monitor IP address

    ■ Verify the network connection

    ■ Obtain the waveform monitor software version

    ■ Update the software

■ Replace the front panel

    ■ Remove the top cover

    ■ Remove the fan bracket (optional)

    ■ Remove the front panel/LCD assembly

    ■ Install the new front panel/LCD assembly

    ■ Replace the fan bracket

    ■ Replace the top cover

    ■ Apply the instrument model label

■ Verify Operation

    ■ Check waveform monitor IP address; it may have changed

■ Update the Installed Options

Update the Software

Before installing the new front panel assembly, you must first update the instrument software, located on the USB Flash Drive included in this kit.

These instructions are written for a PC running Windows XP.

NOTE. If a notebook computer is used, make sure it has a full battery charge or is connected to an AC power source.

If the PC and the waveform monitor are already network connected, go to **Obtain waveform monitor IP address**, on page 7.

NOTE. Do not reboot the instrument after updating the software. Disconnect the power cord and proceed with the front panel replacement.

Network Connection and IP Settings

To allow network access to the instrument, you need to set the IP address. Network addresses can be assigned either automatically or manually. If your network does not use DHCP, you will have to manually enter the address for the instrument. To get an address, talk to your LAN administrator.

1. Verify that the waveform monitor is connected to the network.

2. Power on the waveform monitor.

3. Press the **MAIN** button to display the Main menu, and then touch the **Config** soft key to display the Configuration submenu.

4. Touch the **Utilities** soft key, and then the **Communications** soft key.

5. Touch the **Config Mode** soft key, and then set the Config Mode to **Manual** or **DHCP**, depending on your network setup.

   Selecting the configuration mode will close the Config Mode submenu.

6. Touch the **Network Setup** soft key.

   a. Select **Enabled** under **Remote Control Port.**

   b. Select **Enabled** under **Remote Web Interface**.

7. If you can't use DHCP you will have to set the IP Address, subnet mask, and gateway address network parameters in the Network setup menu; see your LAN administrator for the required values. (Be sure to use compatible addresses between the PC and the monitor.)

8. Press the **Close** soft keys to close the submenus.

Obtain waveform monitor IP address

These steps assume the instrument has already been configured for network connection as described previously, and guided by a network administrator.

1. Press the **MAIN** button, then touch the **Config** softkey.

2. Touch the **Utilities**, then the **Communications**, and the **Network Setup** softkeys.

3. Make a note of the waveform monitor's IP address. You will need that in the next procedure.

NOTE. If you are using DHCP and the waveform monitor did not receive an IP address, go back through steps 3 through 5 of the Network Connection and IP Settings *procedure, change the waveform monitor to Manual, and then change it back to DHCP.*

If the waveform monitor still does not receive an IP address, cycle the power while in DHCP mode.

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4. Touch **OK** to close the network setup window.

Verify the network connection

1. On the PC, select **Start > All Programs > Accessories > Command Prompt**.

2. Change to drive C:\ by typing **cd c:** in the command window, and then press the Enter key.

3. In the command window, type **ping**, followed by the waveform monitor's IP address, and then press the Enter key. For example: ping 192.168.1.2.

4. Check that the replies that appear on the PC resemble the following:

    Pinging 192.168.1.2 with 32 bytes of data:

    Reply from 192.168.1.2: bytes=32 time=2ms TTL=63
    Reply from 192.168.1.2: bytes=32 time=1ms TTL=63
    Reply from 192.168.1.2: bytes=32 time=1ms TTL=63
    Reply from 192.168.1.2: bytes=32 time=1ms TTL=63

    Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

If there are no replies, check your network connections and verify that the waveform monitor settings and PC settings are correct.

Update the software   In this procedure, you load the Upgrade Assistant file into the PC, check the waveform monitor software version, and run the Upgrade Assistant.

1. Find the plastic bag in the upgrade kit that contains the USB Flash Drive and the Option Key label, and plug the Flash Drive into a USB port on the PC.

2. Create a folder on your PC. Name the folder something easy to remember, like "c:\wfmupgrade".

3. Copy the file *WfmUpgrade.exe* from the USB Flash Drive into the directory created in step 2.

CAUTION. *DO NOT just unplug the USB Flash Drive from the PC. This can erase the files and/or damage the USB Flash Drive.*

4. Unmount the USB Flash Drive, using one of the following methods:

    ■   You can use the **Safely remove hardware** icon, on the taskbar:

        Left-click the icon and select the **Safely remove USB Mass Storage Device – Drive (x)** button that appears. Wait until the **Safe To Remove Hardware** message appears before removing the USB Flash Drive from the USB port.

    ■   Or, you can open **My Computer**, right-click on the drive with the USB Flash Drive, and select Eject. Wait for the light to go out on the Flash Drive before removing it from the USB port.

5. On the waveform monitor, press the **MAIN** button, then touch the **Config –Utilities** and then the **View Hw/Sw Version** softkeys. Make a note of the software version (1.1, 1.23, or 1.25).

6. Touch **OK** to close the HW/SW version display.

NOTE. *You will need to identify whether your software is Version 1.1 or if it's a later version, in step 12.*

7. Plug the same USB Flash Drive, included in the upgrade kit, into the waveform monitor USB port.

8. On the PC, select **Start > All Programs > Accessories > Command Prompt** to open the Command Prompt window.

9. On the PC, change the directory to the directory created in step 2. For example, type **cd c:\wfmupgrade** in the Command Prompt window and press the Enter key to change to the c:\wfmupgrade directory.

10. Type **WfmUpgrade** in the Command Prompt window and press the Enter key.

11. The upgrade assistant will respond with:

```
############################################################
#    Copyright (C) 2007 Tektronix, Inc.
#
#  Before executing, confirm your existing software version as
follows:
#  1) Connect network cable
#  2) Boot the instrument
#  3) Press MAIN, then navigate to Config -> Utilities -> View HW/SW
Version
#  4) Note your existing software version number
#  5) Press OK
#  6) Insert the USB memory device
#  7) Press MAIN, then wait for USB Mount/UnMount selection to
read "Unmount"
############################################################


Is your WFM Software version V1.1 ? :(y/n)
```

12. Type a **y** if your software version is V1.1, or an **n** if your software version is V1.23 or 1.25, and then press the Enter key. The upgrade assistant will respond with either:

```
->V1.1 Upgrade
or
->V1.23/V1.25 Upgrade

Please Enter IP address xxx.xxx.xxx.xxx :
```

13. Enter the waveform monitor's IP address and then press the Enter key. The assistant window will close, and the waveform monitor upgrade will begin.

NOTE. *This process will take approximately 15 minutes.*

CAUTION. *DO NOT remove the USB Flash Drive from the waveform monitor until the instrument says it's safe to do so. Removing the USB Flash Drive too soon can erase the files and/or damage the USB Flash Drive.*

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14. When the waveform monitor screen indicates the update has completed successfully, disconnect the power cord from the waveform monitor.

NOTE. Do not reconnect power to the waveform monitor until after the front panel replacement, described below, is complete.

Replace the Front Panel

WARNING. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power. Failure to do so can cause injury or death.

CAUTION. To prevent static discharge damage, service the product only in a static-free environment. Observe standard handling precautions for static-sensitive devices while installing this kit. Always wear a grounded wrist strap, grounded foot strap, and static resistant apparel while installing this kit.
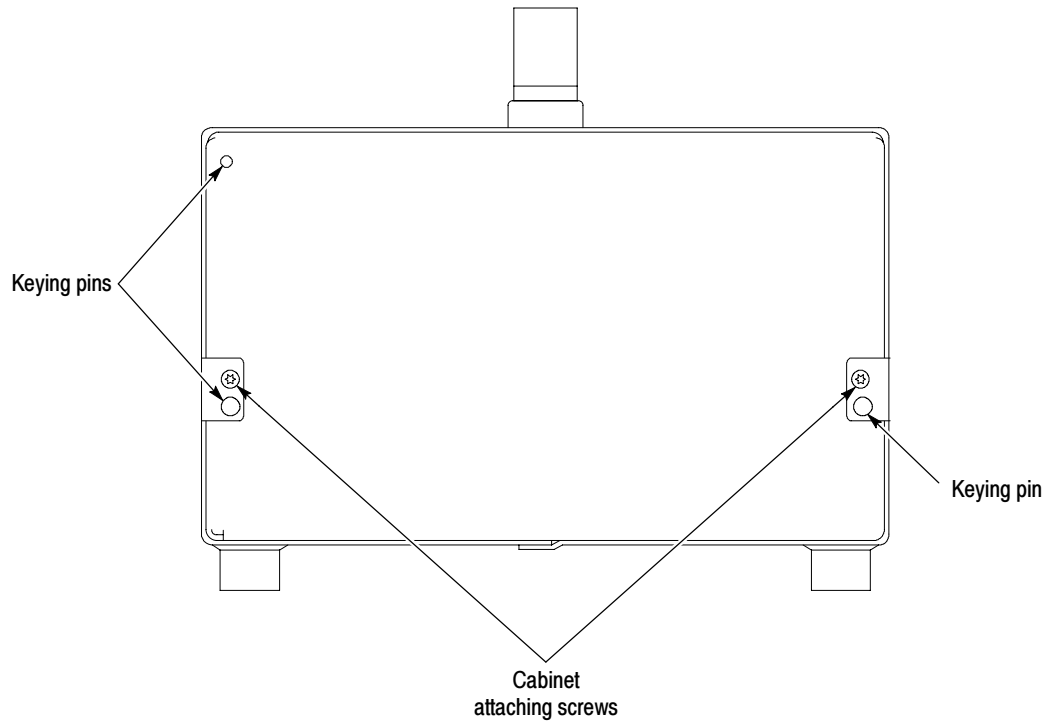

Remove the old front panel as follows:

Remove portable cabinet   If the waveform monitor is installed in a WFM7F02 portable cabinet, remove it as follows:

1. Position the instrument with the front panel down on a work surface, using a protective pad or instrument cover to prevent front panel damage.

2. Remove the two cabinet attaching screws, shown in Figure 1.

3. Carefully slide the WFM7F02 cabinet up off of the instrument chassis and set it aside.

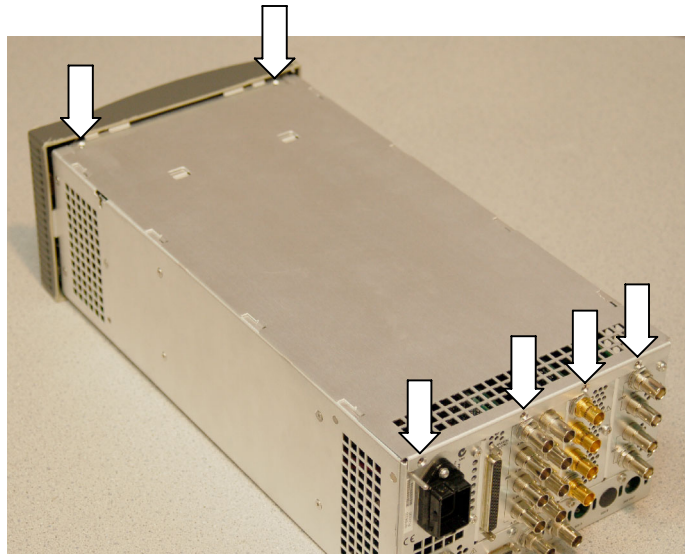**Figure 1: Portable cabinet attaching screws**

Remove top cover   The top cover is a slip-lock design.

NOTE. *If there is a* Traceable Calibration *sticker showing the last calibration date and the due date for the next calibration on top of the front panel frame, remove it carefully so you can reapply it after this update.*

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1. Remove the two T-10 screws at the top cover front corners (see Figure 2).

2. Remove the four T-10 screws securing the top cover to the rear panel (see Figure 2).

3. Slide the top cover back approximately $^1/_2$ inch and then lift it from the chassis.

Figure 2: Removing the top cover

Remove fan bracket (optional)

For better access to the connectors, the fan bracket may be removed as follows:

1. Remove the two T-10 screws that secure the fan bracket to the chassis, one on each side.

2. Lift the fan bracket up and back, to gain access to the fan cable connector.

3. Disconnect the fan cable from J890 (see Figure 3) by depressing the latch on the connector and pulling it up.

4. Make sure the spring clips remain attached to the bottom of the fan bracket.

Remove front panel/LCD assembly

Remove the front panel and LCD assembly as a unit

1. Remove the six T-10 screws that secure the front panel assembly to the chassis, two on each side and two on the bottom.

2. Pull the front panel assembly forward approximately $1/2$ inch, being careful to not stress the cables connecting the front panel to the main board.
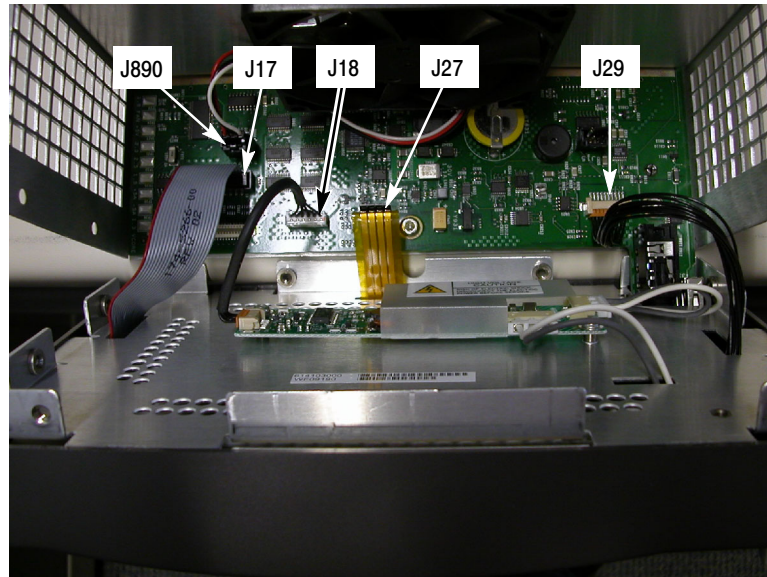
⚠ **CAUTION.** Be careful of the main board extension containing the headphone and USB connectors, until they are free of the front panel assembly. Failure to do so may result in damage to the connectors or to the Main board.

3. Disconnect the touch panel cable (orange) connected to J27 on the main board (see Figure 3).

4. Disconnect the cables connecting the front panel/LCD assembly to the main board at J17, J18, and J29 (see Figure 3).

Figure 3: Old front panel cable connections

5. Lift the front panel assembly away and set it aside.
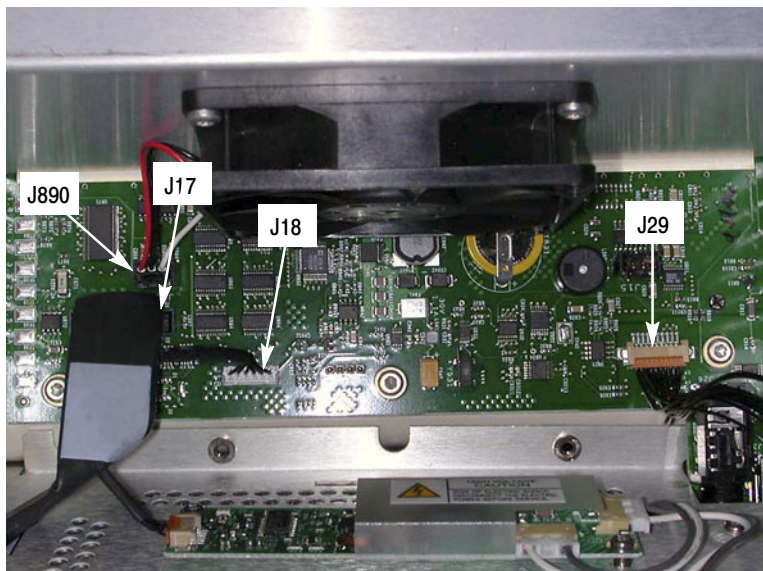
⚠ **CAUTION.** Be careful of the main board extension containing the headphone and USB connectors, until they are free of the front panel assembly. Failure to do so may result in damage to the connectors or to the Main board.

Install new front panel/LCD assembly

Install the new front panel as follows:

6. Unpack the new front panel, and place it near the front of the chassis.

7. Pre-form the LCD cable, to J17, as shown in Figure 4, to make installation easier. This cable is quite stiff and can make installation difficult if it is not pre-formed.

8. Connect the three cables from the front panel to J17, J18, and J29 on the Main board. Make sure to dress the LCD cable to J17 as shown in Figure 4; away from the side of the waveform monitor, and capturing the cable to J18.

Figure 4: New front panel cable connections

NOTE. As the new front panel does not use a touch screen no connection is made to J27.

9. Slide the front panel into the chassis, starting the bottom slightly before the top. A tight friction fit is necessary, so this may be difficult. You might find it helpful to prop the front of the waveform monitor up with a small book or wooden block while doing this.

10. Replace the six T-10 screws that secure the front panel assembly to the chassis, two on each side and two on the bottom. Torque these screws to 8 in/lb.

Replace fan bracket   If the fan bracket was removed, reinstall it as follows:

1. Insert the fan connector into J890 (see Figure 4). This is a latching connector, and is keyed for polarity.

2. Slide the fan bracket into place, engaging the alignment pins on the chassis sides.

3. Press the bracket down to compress the springs, and install the two T-10 screws that secure the fan bracket to the chassis, one on each side. Torque these screws to 8 in/lb.

Replace top cover

1. Place the top cover onto the instrument, making sure the cover fingers go into the slots in the chassis, and slide it forward.

2. Replace the four T-10 screws securing the top cover to the rear panel (see Figure 2). Torque these screws to 8 in/lb.

3. Replace the two T-10 screws at the top cover front corners (see Figure 2). Torque these screws to 8 in/lb.

4. If you removed a Traceable Calibration sticker earlier, reapply it now in approximately the same position.

Verify Operation

Use this process to verify that the front panel replacement was successful.

NOTE. The first power up after this upgrade will take about five minutes. The LCD and XGA output may be blank or random during this time. The front panel is being programmed during this process; do not remove power to the unit.

1. Apply power to the instrument, and immediately look at the front panel. The MAG, LINE SELECT, and CURSOR buttons should be lit. The other front-panel buttons will light one at a time, in sequence. Verify that all buttons do light.

2. After the Boot Loader process, the Power on diagnostic page should appear. Verify that all self tests pass. Any failures will be shown in red.

3. After the diagnostics have completed, the instrument state will be restored.

Troubleshooting

If the waveform monitor does not power up correctly during the Verify Operation procedure, check the connections at both ends of the front panel cables. Table 1 shows the most common problems and the associated cable to check. Refer to Figure 4 for cable locations.

Table 1: Common upgrade cable problems

Problem	Check cable
White screen	LCD cable, to J17
Black screen	Backlight cable, to J18
Buttons do not light or do not work	Front panel cable, to J29

Update Installed Options

This procedure enables any additional options received with the update. The new option key is on a printed document included in the kit.

1. Make sure the waveform monitor and the PC are both connected to the network, as they were for the software upgrade.

2. Press the **Config** button and use the arrow keys or the General knob to navigate to the **Network Settings** selection.

3. If **Web Enable** is **Off** use the arrow keys to set it to **On**.

4. While the Network Settings menu is available, check the waveform monitor's IP address. If using DHCP, the network might have assigned a new IP address.

5. On the PC, launch a Web browser and type http:// in the address field, followed by the waveform monitor IP address. For example, http://192.168.1.2.

6. The instrument Web page should appear. If it doesn't, check the network connections and the settings on the waveform monitor and the PC.

7. On the displayed Web page, click **Instrument Options** to show the waveform monitor's installed options.

8. Remove the option key label from the plastic bag that contained the USB Flash drive, and enter the new option key in the **Key** box. Enter the string exactly as printed, without leading or trailing spaces.

9. Click **Submit**. A pop-up with the message "Instrument Options Updated Successfully" should appear. If the options are not updated, reenter the option key string.

10. Peel the backing from the option key label and paste it over the old option key label on the side of the waveform monitor. Along with the new option key, this label notes that Option FP has been installed and enabled in the instrument.

Read the Manual

Operating your WFM6100, WFM7000, or WFM7100 waveform monitor will be somewhat different with this new front panel and software. Make sure to read the new *Quick Start User* manual for information on how to operate the instrument. The new *Quick Start User* manual can be found in the Documentation folder on the USB Flash Drive included in the kit.

■■ **End of document** ■■