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Instructions

Tektronix

040-1480-04
Enhanced Monitor Upgrade Kit
VX1410 IntelliFrame™

070-9471-03

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

This kit includes parts and instructions to upgrade the Standard Monitor board with an Enhanced Monitor Board (Option 1M), to replace the Top Extrusion on a VX1410 IntelliFrame mainframe, and to add an air baffle to the mainframe.

Instruments

There are no instrument serial numbers associated with this kit for theVX1410 IntelliFrame mainframe.

Minimum Tool and Equipment List

Tools and Equipment Needed
Torx screwdriver with a T-20 tip and a magnetic T-10 amd T-15 tip
Small flat blade screwdriver
Phillips screwdriver with a #2 tip
IBM Personal Computer (or equivalent) with Windows 3.1 (or higher) and an RS-232 port
RS–232 NULL modem cable (connector compatible with the PC and a DB9 female connector)

Kit Parts List

Quantity	Part Number	Description
1 ea	671-3218-02	Enhanced Monitor Bd
1 ea	————	Top Extrusion Assembly
6 ea	213-0882-00	6-32, T-15, thread tapping screws
1 ea	378-2079-00	Air baffle
1 ea	070-9019-XX	VX1410 IntelliFrame Instruction Manual
1 ea	070-9471-XX	Kit instructions
1 ea	063-2267-01	Software; Plug and Play: V4.0

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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 to the* General Safety Summary *in the* VX1410 IntelliFrame Instruction 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.

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Installation Instructions

These instructions assume a certain familiarity with the instrument. If you need further details, refer to the *VX1410 IntelliFrame Instruction Manual*. 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.*

Installing the Enhanced Monitor Board (Option 1M)

Before you install the Enhanced Monitor Board, you need to remove the fan assembly and the Standard Monitor board.

Remove Fan Assembly

To remove the fan assembly, refer to Figures 1 and 2 and follow these steps:

1. Power down the instrument and disconnect the power cord.
2. Disconnect the Passive Monitor cable, if used. The Passive Monitor connector is the 25 pin D-connector on the rear of the mainframe.
3. From the rear of the mainframe, use a Torx with a T-10 driver to remove the four 8-32 screws (refer to Figure 1 for the screw locations).
4. Use a Torx with a T-20 driver to remove the 8-32 Safety Ground screw and the Chassis Ground screw (if installed).
5. Gently pivot the fan assembly outward from the mainframe far enough to access the fan cables on the right side of the mainframe.
6. Unplug the fan cables and set the fan assembly aside on a clean working surface.

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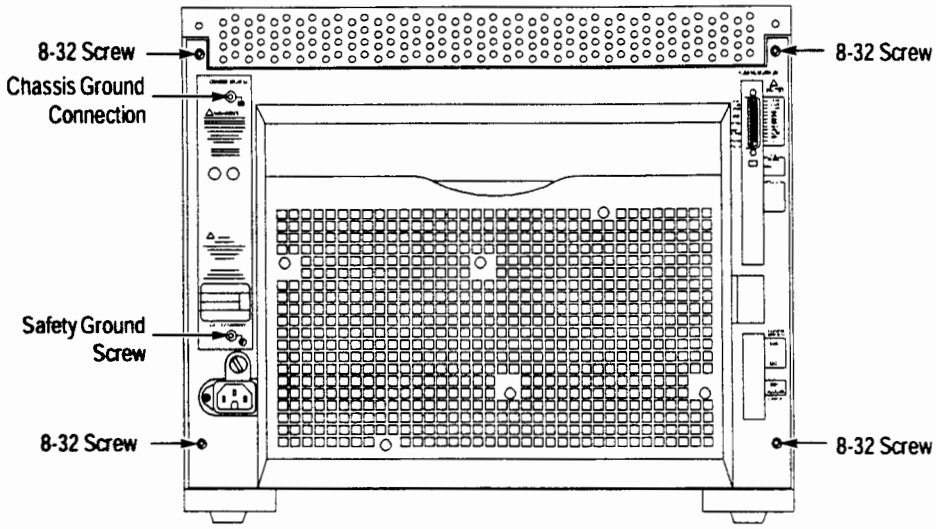


Figure 1: Location of Fan Assembly and Ground Screw on the Rear of Mainframe

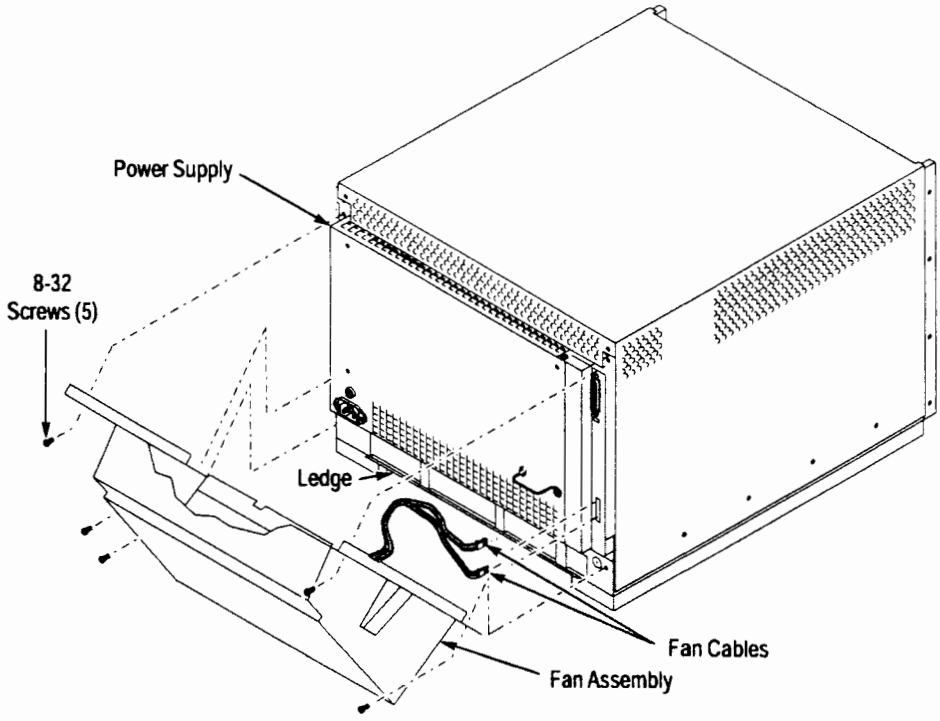


Figure 2: Removing the Fan Assembly

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Remove Standard Monitor Board

To remove the Standard Monitor board, refer to Figure 3 and follow these steps:

1. Grasp and pull the cable tie loop until the monitor board comes loose from the Backplane board.
2. Slide the board out of the mainframe.

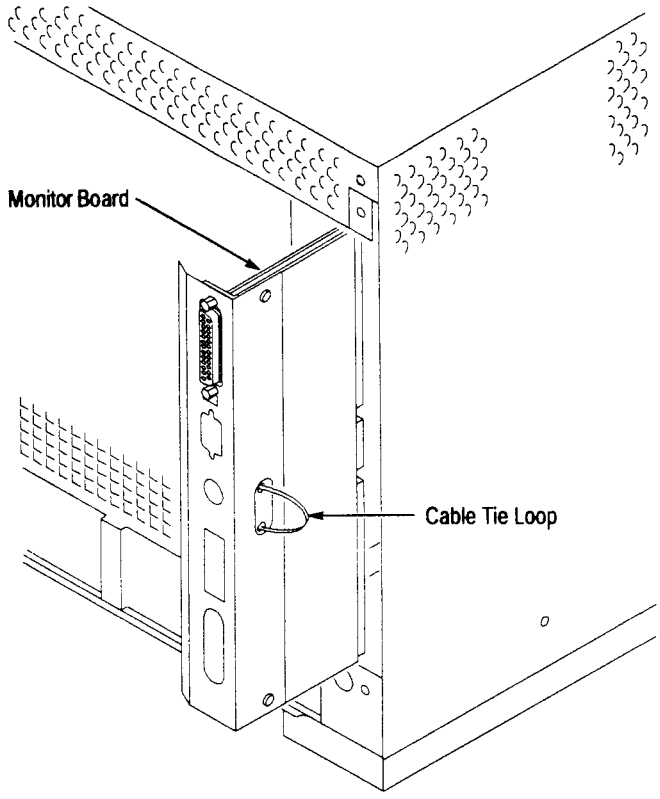


Figure 3: Removing the Standard Monitor Board

Install Enhanced Monitor Board (Option 1M)

To install the Enhanced Monitor board, refer to Figure 4 and follow these steps:

1. Slide the metal shield part of the Enhanced Monitor board into the right side of the mainframe where you just removed the Standard Monitor board.
2. Push in the Enhanced Monitor board until it is completely seated in the Backplane board.
3. Push the cable tie loop inside the mainframe so the fan assembly will not pinch the cable tie.

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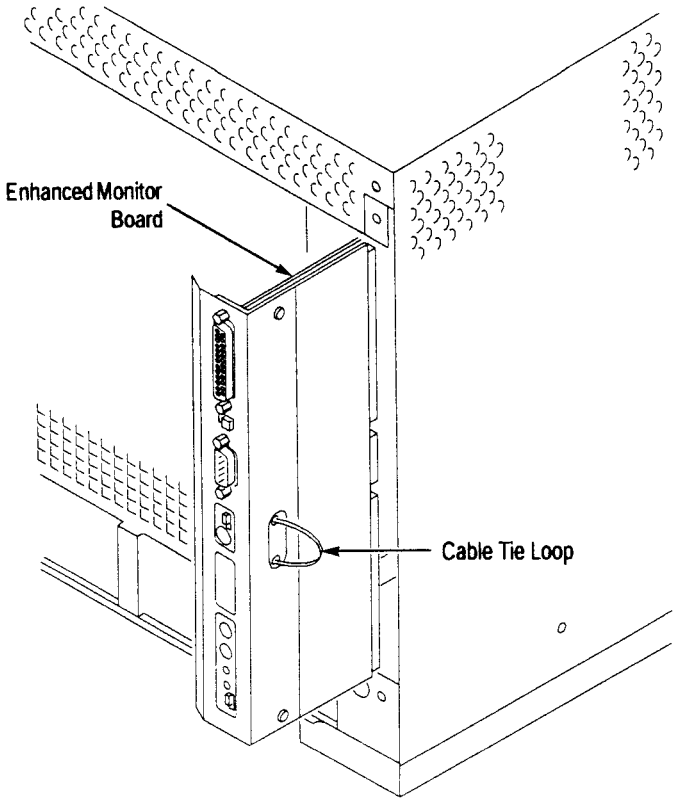


Figure 4: Installing the Enhanced Monitor Board

Reinstall Fan Assembly

To reinstall the fan assembly, refer to Figures 1 and 2, and follow these steps:

1. Line up the channel on the lower edge of the fan assembly with the ledge on the mainframe and push the channel onto the ledge.
2. Line up the square cutout areas on the channel with the corresponding uprights on the mainframe. Hold the fan assembly in this position, connected at the bottom (ledge in the channel) and open enough at the top to allow room for your hands.
3. Match the labels on the fan cables to their respective connectors on the rear of the mainframe and plug them in.
4. Close the fan assembly to the mainframe, being careful not to pinch the fan cables between the two.
5. Use a Torx with a T-10 driver to install the four 8-32 screws (refer to Figure 1 for the screw locations).
6. Use a Torx with a T-20 driver to install the 8-32 Safety Ground screw, and the Chassis Ground screw (if used).

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If you are going to install the Front Panel Display, continue with the next procedures.

If you are *not* going to install the Front Panel Display, you still need to perform the following operations:

- Remove the top cover
- Move the Temperature Sense Board
- Calibrate the Enhanced Monitor (calibration procedure)
- Reinstall the top cover and add the air baffle

Replacing the Top Extrusion

Before you replace the Top Extrusion, you need to remove the top cover, remove the upper card guides, and remove the Top Extrusion currently installed. After you have replaced the new Top Extrusion, you need to move the Temperature Sensing circuit board toward the front of the mainframe.

Remove Top Cover

To remove the top cover, refer to Figure 5 and follow these steps:

1. If the VX1410 IntelliFrame is mounted in a rack, remove it from the rack.
   a. Use a Torx with a T-20 tip to remove the ten 8-32 screws that hold the rack slides to the top cover of the mainframe.
   b. Use a Torx with a T-10 driver to remove the other two 8-32 screws holding the top cover to the mainframe.
2. If the mainframe is not mounted in a rack, use a T-10 Torx drive screwdriver to remove the twelve 8-32 screws holding the top cover to the mainframe.
3. Slide the top cover back an inch and lift it off the mainframe.

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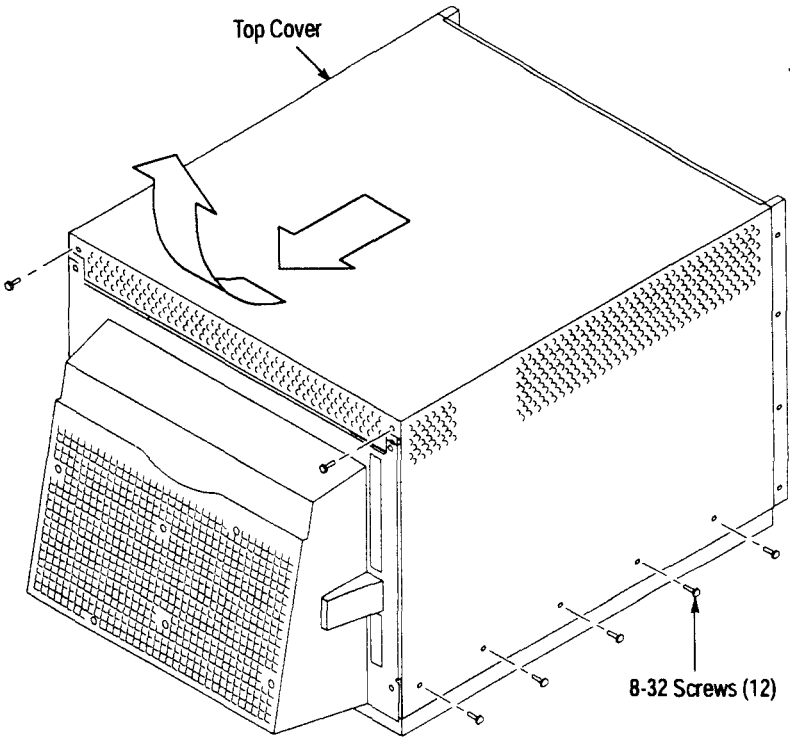


Figure 5: Removing the Top Cover and Top Extrusion

Remove Upper Card Guides

Before you can install the new Top Extrusion, you need to remove the upper card guides. The card guides at the top and bottom of the mainframe are very similar. The main difference is that the bottom guides (IntelliGuides) include the spring-loaded shutters. The procedure for removing both guides is identical.

To remove the *upper* card guides, refer to Figure 6 and follow these steps:

1. Use a small flat blade screw driver to pry down the tab of the card guide at the front of the mainframe being careful not to damage the card guide or the mainframe.
2. Gently pull the card guide forward until it pops out of place.
3. Remove the card guide and all other upper card guides.

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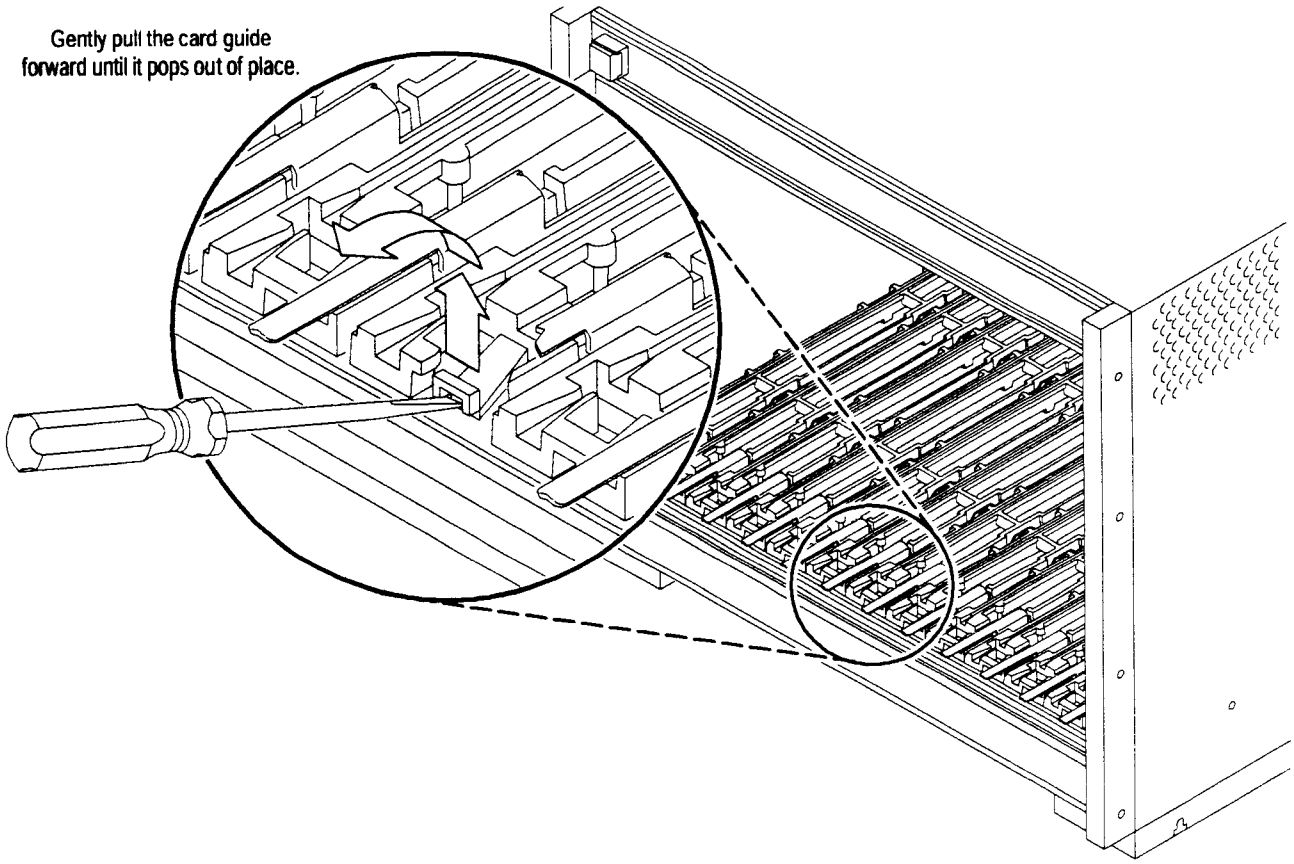


Figure 6: Removing the Top Card Guides

Remove Top Extrusion

To remove the Top Extrusion, refer to Figure 7 and follow these steps:

1. Clip the cable tie holding the On/Standby Switch cable in place.
2. Disconnect the On/Standby Switch cable from the Backplane board.

NOTE. *Remember which connector you are disconnecting the On/Standby Switch cable from, J22 (normally) or J23. You must reconnect the cable to the same connector after the new Top Extrusion is installed.*

3. Place the mainframe on its side.

NOTE. *You need to use a Torx with a magnetic tip to remove the screws holding the Top Extrusion to the mainframe. If you do not use a magnetic tip, the screws might fall into the mainframe.*

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4. Use a Torx with a magnetic T-15 driver to remove the six 6-32 screws holding the Top Extrusion to the mainframe.
5. Discard the screws.
6. Carefully remove the extrusion without scratching the paint.

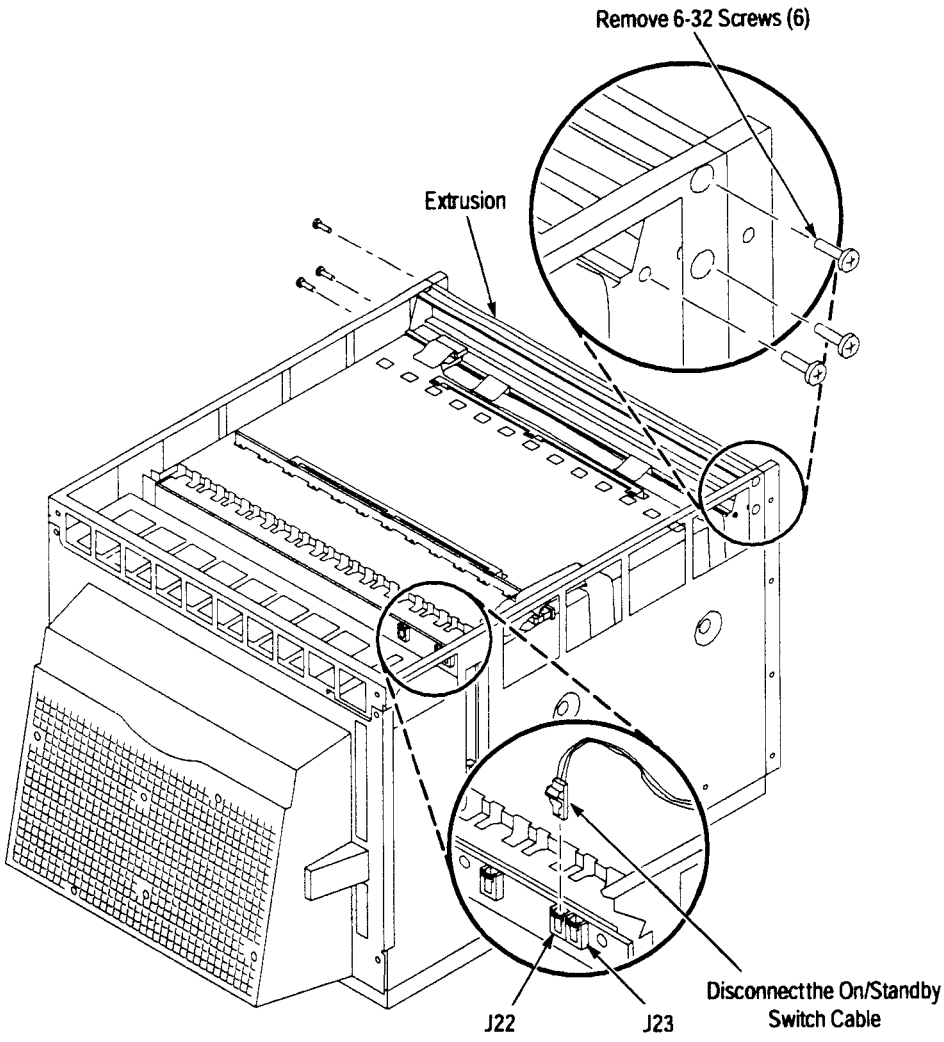


Figure 7: Removing the Top Extrusion

Install New Top Extrusion

To install the new Top Extrusion, refer to Figure 8 and follow these steps:

1. Place the new Top Extrusion in position in the mainframe; line up the screw holes on the Top Extrusion with the screw holes on the mainframe.

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2. Use a Torx with a magnetic T-15 driver to install the six 6-32 screws (supplied with this kit) that hold the Top Extrusion in the mainframe.

3. Line up the pin 1 indicator on the ribbon cable (the red strip) in the front of the mainframe with the pin 1 indicator on the connector (the grey arrow) on the Monitor Display board. Connect the ribbon cable to the connector.

4. Reconnect the On/Standby Switch cable to the Backplane board. Be sure to connect the cable to the same connector you removed it from, J22 or J23.

   Refer to the *VX1410 IntelliFrame Instruction Manual* for a description of J22 and J23.

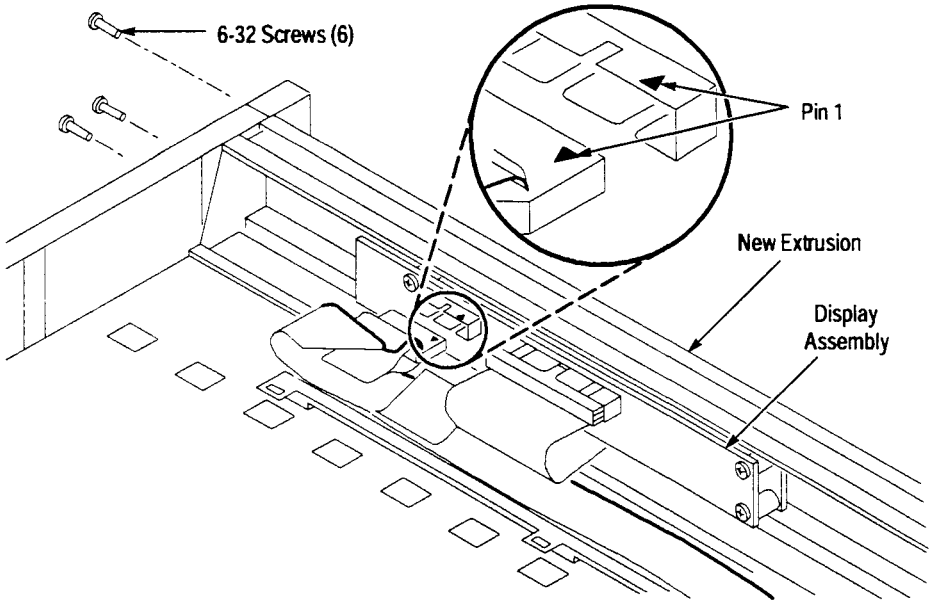


Figure 8: Installing the New Top Extrusion

Reinstall the Upper Card Guides

To reinstall the upper card guides, refer to Figure 9. Slide the card guide toward the rear of the mainframe and allow the front of the card guide to snap into place.

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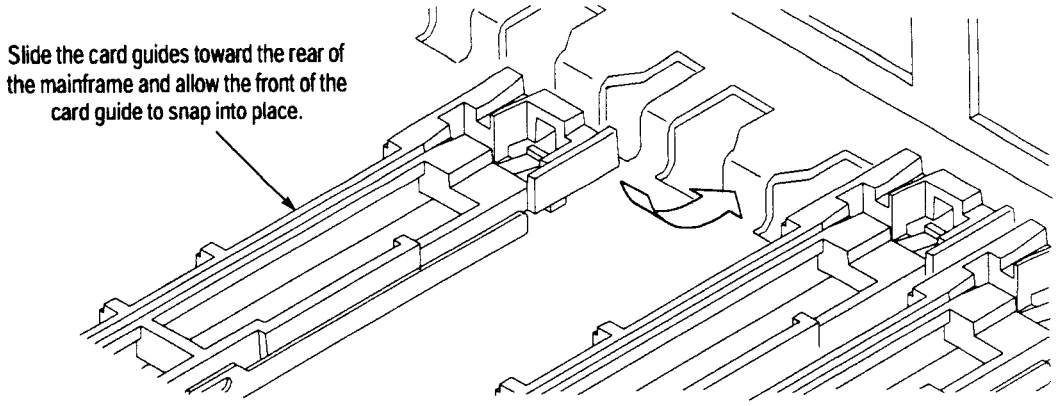


Figure 9: Reinstalling the Top Card Guides

Move the Temperature Sense Board

To move the Temperature Sense board, refer to Figure 10 and follow these steps:

1. Disconnect the Temperature Sense board cable from the Temperature Sense board.
2. Use a small flat blade screw driver to gently pry up each retainer tab holding the Temperature Sense circuit board in place.
3. Lift the board out of the holes at the top of the mainframe being careful not to damage any components on the board.
4. Move the board to the front of the mainframe where the other Temperature Sense board retainer is located. When placing the board in position, be careful not to damage any components.
5. Use a small flat blade screwdriver to gently pry up each retainer tab, push the edge of the board under the tabs, and press the board back completely under the tabs.

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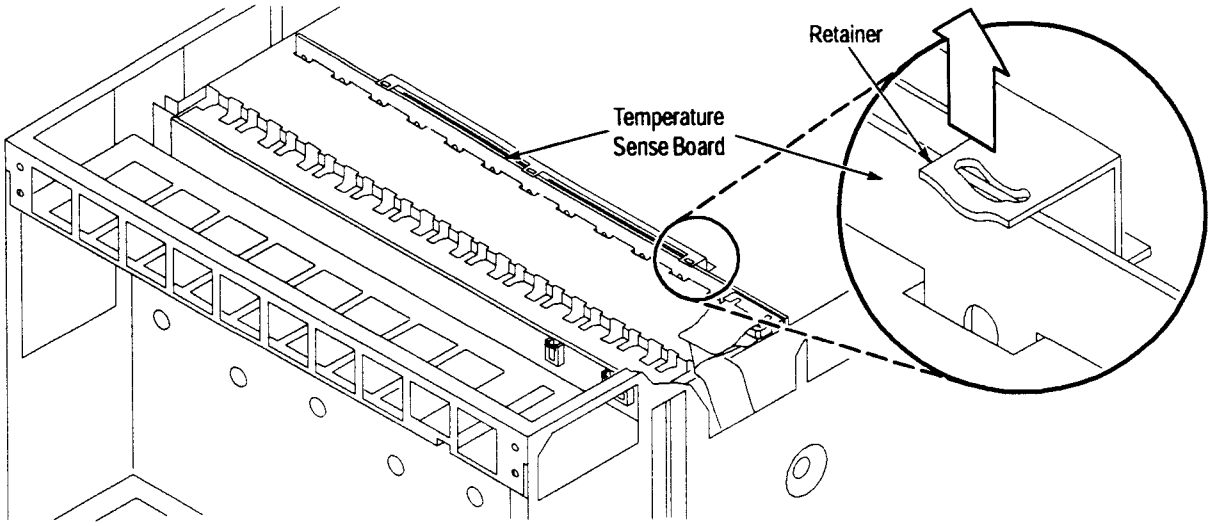


Figure 10: Moving the Temperature Sense Board

6. Line up the pin 1 indicator on the Temperature Sense board cable with pin 1 on the connector on the Temperature Sense board. Connect the cable to the connector. Figure 11 shows the location of pin 1 on the connector.

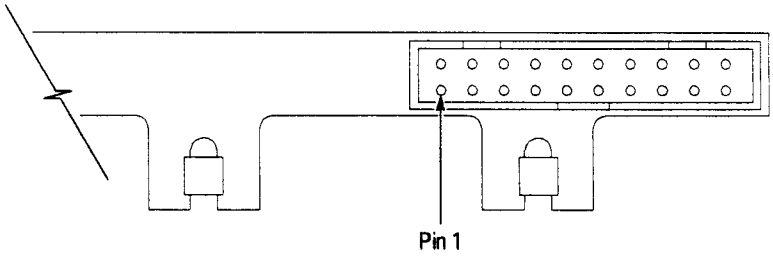


Figure 11: Pin 1 Location on the Temperature Sense Board Connector

Calibration Procedure

Before you reinstall the top cover of the mainframe, you need to calibrate the Enhanced Monitor Card. To calibrate the Enhanced Monitor Card, you need the following items:

- An IBM Personal Computer (or equivalent) with Windows 3.1 (or higher) and an RS-232 port
- An RS-232 NULL modem cable with one compatible connector for the PC and a DB9 female connector for the VX1410 IntelliFrame

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To calibrate the Enhanced Monitor Card, follow these steps:

1. Power on the VX1410 IntelliFrame mainframe. Wait for at least five minutes for the mainframe to warm up.

2. While waiting for the mainframe to warm up, start up Microsoft Windows on the PC and double click on the Microsoft Terminal progam icon. The Terminal program is initially located in the Accessories folder.

3. When the mainframe is warmed up, set the FAN SPEED switch to VAR and check that the ΔT readout values are in the $0° C \pm 5° C$ range. To display the ΔT readout values, press the NEXT or PREV buttons and scroll through the status messages.

   If the ΔT readout values are outside the acceptable range, check the orientation of the Temperature Sense board cable.

4. Connect the RS-232 NULL modem cable between the COM port on the PC and the RS-232 port on the rear panel of the mainframe.

5. In the Terminal program window, select the `Communications...` command from the Settings menu. In the dialog box, select the appropriate COM port and set it up as follows:

   ```
   Baud Rate          9600
   Data Bits          8
   Stop Bits          1
   Parity             None
   Flow Control       Xon/Xoff
   ```

6. Click on OK.

7. In the Terminal program, enter:

   ```
   SYST:PASS "VX1410"
   CAL?
   ```

   The CAL? command returns a 0 to indicate that there were no errors.

8. To identify the Enhanced Monitor as part of the mainframe, you need to enter the serial number of the mainframe into the NVRAM. Look on the rear of the mainframe and note the serial number that starts with a B.

9. In the Terminal program, enter:

   ```
   SYST:SER "Bxxxxxx"
   ```

   The Bxxxxxx represents the serial number located on the rear of the mainframe.

10. Press the NEXT or PREV buttons to scroll through the status messages and check that the ΔT readout values are in the $0° C \pm 1° C$ range for all slots.

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11. Power off the mainframe and reinstall the top cover.

Reinstall Top Cover and Add the Air Baffle

To reinstall the top cover and add the air baffle, refer to Figure 5, and follow these steps:

1. Place the top cover on the mainframe about an inch from being all the way forward.
2. Lift up the back of the top cover slightly and slide the front top edge into the recessed area along the Top Extrusion.
3. If the mainframe is not mounted in a rack, use a Torx with a T-10 tip to reinstall the ten 8-32 screws holding the top cover to the mainframe.
4. To add the air baffle, refer to Figure 12, and use a $^{3}/_{32}$ inch Allen wrench to reinstall the two 8-32 screws holding the air baffle and top cover to the mainframe.

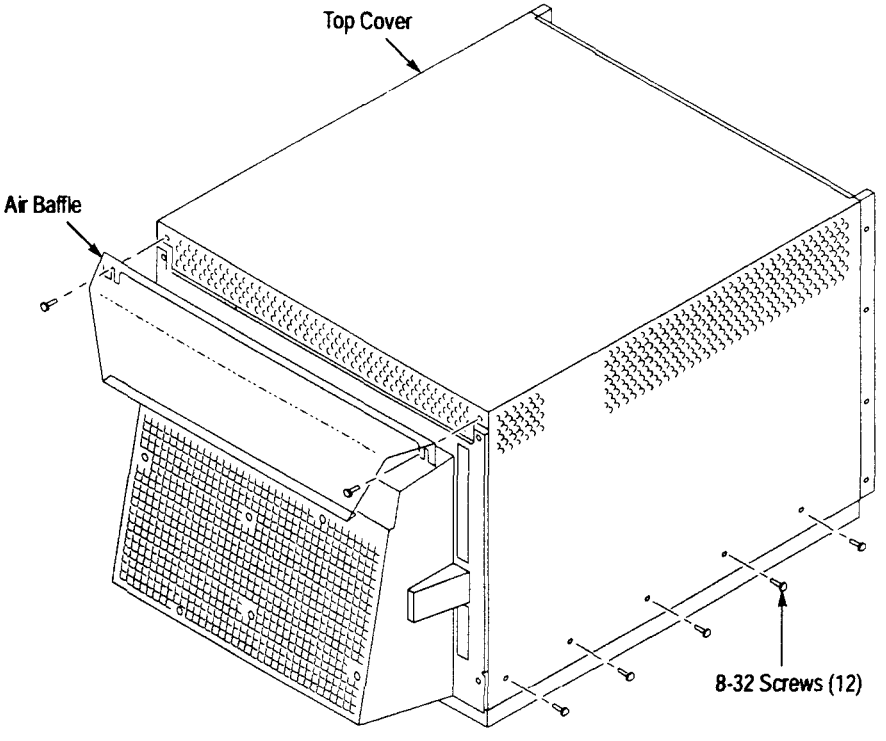


Figure 12: Reinstalling the Top Cover and Adding the Air Baffle

5. Reconnect the Passive Monitor cable, if used.

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6. If the mainframe was mounted in a rack, follow these steps:

   a. Use a Torx with a T-20 tip to reinstall the ten 8-32 screws that hold the rack slides and top cover to the mainframe.

   b. To add the air baffle, refer to Figure 12, and use a T-10 Torx drive to reinstall the two 8-32 screws holding the air baffle and top cover to the mainframe.

   c. Place the mainframe back in the rack.

   d. Reconnect the Passive Monitor cable, if used.

7. Install the Slot 0 module, and slide the top nut rails to the left. Reinstall the module retaining screws to the module in Slot 0 to anchor the nut rails.

Enhanced Monitor Card Setup and Performance Verification

For a description on how to set the switches and jumpers on the Enhanced Monitor Card, refer to the *VX1410 IntelliFrame Instruction Manual*.

The *VX1410 IntelliFrame Instruction Manual* also contains the performance verification procedure.

End of document

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