RACAL Instruments™
1263MPf
Medium-Power, Front-Maintainable
VXI 4.0 Mainframe
(P/N 408177-002)
User Manual

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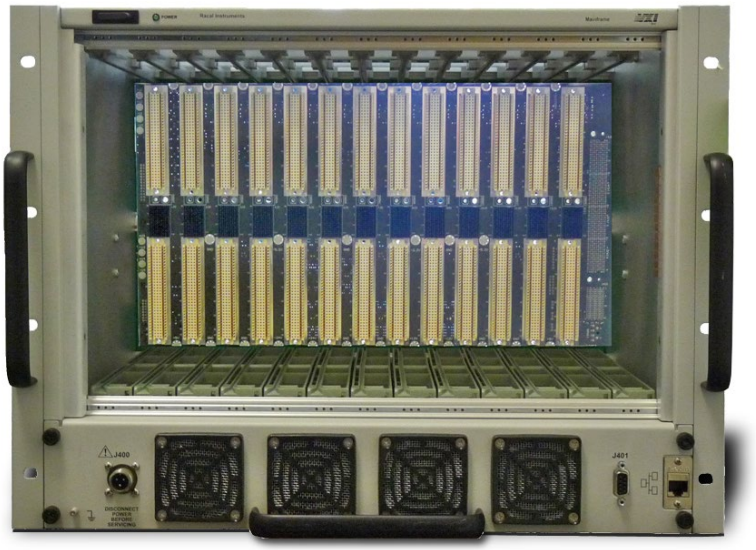

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FOR YOUR SAFETY

Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.

This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.

If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.

Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.

Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid “live” circuit points.

Before operating this instrument:

1. Ensure the proper fuse is in place for the power source to operate.
2. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until performance is checked by qualified personnel.

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List of Tables

Document Change History

Revision	Date	Description of Change
A	2/25/2013	Document Control release

Chapter 1
GETTING STARTED

Product Description

The 1263MpHPf is a Medium-Powered VXIbus mainframe. The power supplies and fans are located in a front removable 1U tall drawer (P/N 408040-002).

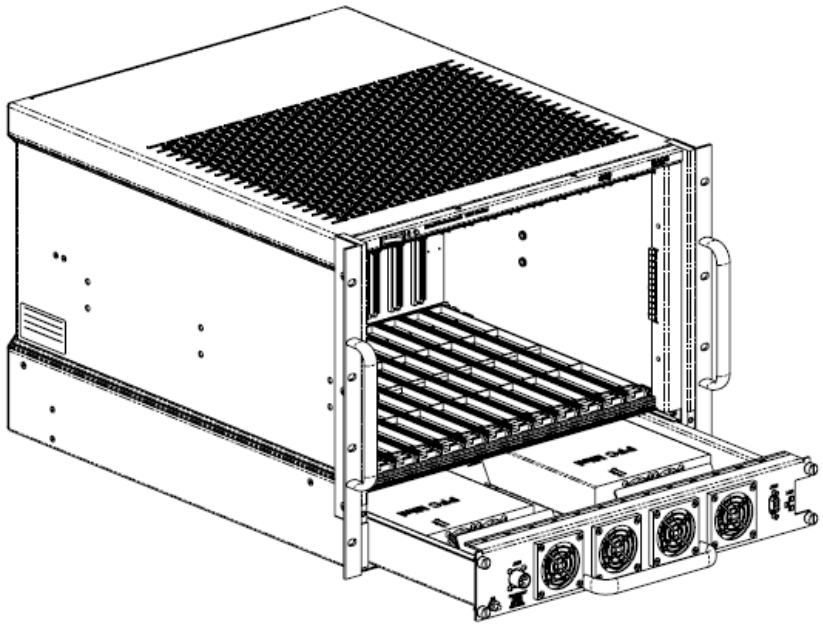

Figure 1-1, 1263MPf VXIbus Mainframe

Key Features

- **Medium Power Chassis.** The 1263MPf is capable of delivering up to 1700 watts of useable power to the VXI backplane.
- **Front Removable Power Supply/ Fan Drawer.** The 1263MPf incorporates a front removable power supply / fan drawer for ease of maintenance. Removal and replacement of the complete power supply / cooling fan system can easily be accomplished in 5 minutes or less.
- **Fast Setup.** The 1263MPf backplane uses active-automatic

VME interrupt acknowledge and bus grant daisy chaining. Manual configuration of backplane switch settings or jumpers has been eliminated. The 1263MPf backplane supports VXI4.0 with 5-row P1 and P2 connectors providing more power and speed while maintaining compatibility with pre-existing VXI applications. The optional VXS serial fabric connectors deliver up to 8 lanes of switched serial data to each slot via an optional VXS switch card located in the rear of the mainframe.

- **System Health Status Indication.** The 1263MPf system monitor gives you key system health status (Voltage, Temperature, cooling fan). The status bytes are accessible via J401 on the front panel. Monitored parameters include temperature rise on each slot, air intake temperature, and power supply voltages.
- **Fan Speed Control.** The 1263MPf delivers the cooling air that your application requires. Fan speed control reduces acoustic noise levels of the 1263MPf high performance cooling system.

Items Shipped with 1263MPf

Table 1-1, Items Shipped with 1263MPf

Qty	Item	Part Number
1	Chassis Assembly	408047-003
1	User Manual	980916-MPf
5	Cover, Card Guide, Molded	456271

Accessory Ordering Information

Table 1-2, Available Accessories

Item	**Description**	Part Number
Blanking Panels	Empty Slot Blanking Panels (Plates)	404836
Power Supply / Fan Drawer	Spare Power Supply Drawer	408040-002

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Chapter 2
CONFIGURING THE 1263MPF

Using This Chapter

This section includes procedures to install and configure the 1263MPf mainframe. Use this chapter to:

- Review installation site considerations.
- Install VXI modules, card guide covers, or optional blanking panels (plates).

AC Mains Power

Power for 1263MPf power supplies located on the removable power supply drawer is supplied through connector J400: P/N MS3102A-10SL-3P

(Recommended mating connector: P/N MS3106A-10SL-3P)

Table 2-1, Power Cable Pinout

Pin #	Signal
A	Hot
B	Chassis ground
C	Neutral

Line Voltage Requirements:

85V – 264 VAC, 47 – 500 Hz or 100 – 300 VDC.

Site Considerations

The 1263MPf Mainframe is designed to operate in an instrument rack. **Allow 1.75 inches of clearance above the unit to permit the free flow of air through the exhaust vents in the top cover.**

Installing VXI Modules

Install C-size modules directly into the mainframe by first placing the module's card edges into the front module guides (top and bottom). Slide the module to the rear of the mainframe until the module connectors mate solidly with the backplane connectors. Secure the module's front panel to the mainframe using the module's front panel mounting screws.

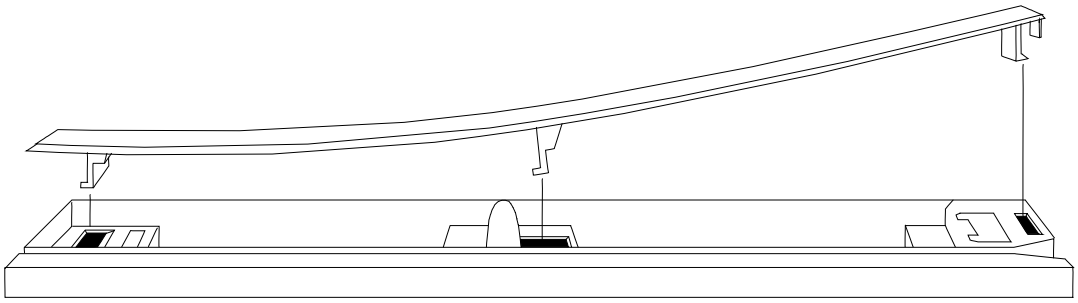
The easiest way to install B-size modules is with a "B to C-size adapter" allowing a B-size module to be installed just like a C-size.

Installation and Removal of Card Guide Covers (Airflow Directors)

In order to improve cooling of used slots in the VXI mainframe, a limited number of airflow directors, P/N 456271, may be installed at empty slot locations to redirect otherwise wasted airflow. Refer to **Figure 2-1**.

CAUTION

To maintain a balanced airflow throughout the system when using airflow directors, do not cover more than four empty slots at any time. If module density is low, space airflow directors evenly across the mainframe.



Mainframe Rear **Mainframe Front**

Figure 2-1, Installation/Removal of the Airflow Directors

1. Facing the front of the VXI mainframe, with one hand hold the airflow director by the front end where the “Racal” logo appears.
2. Select the slot to be covered by the director, and place the hook at the rear of the director into the rectangular hole at the rear of the card guide. Slight downward pressure on top of the director (with the other hand) at the rear may be required to engage the hook into the card guide.
3. Slightly flex the director upwards at the front, maintaining pressure at the rear, and lower the center hook of the director into the center rectangular hole in the card guide.
4. Press down and back to allow both center and rear hook to engage fully into the card guide.
5. Lower the front of the director and allow the snap-in hook to rest on the card guide.
6. With a slotted screwdriver or similar flat-bladed tool, depress the spring hook at a slight downward angle, applying light pressure to the logo area. This will cause the snap-hook to firmly seat the director into place.
7. To remove the airflow director, depress the snap-in hook from the front with a flat-bladed tool. This will unlatch the hook and allow removal from the cardguide at the front end.
8. Pull forward to release the fixed hooks at the center and rear.

Installing Blanking Panels

In order to optimize module cooling performance, install optional blank panels (P/N 404836) into unused or empty slots. Secure with two captive mounting screws. Refer to **Figure 2-2.**

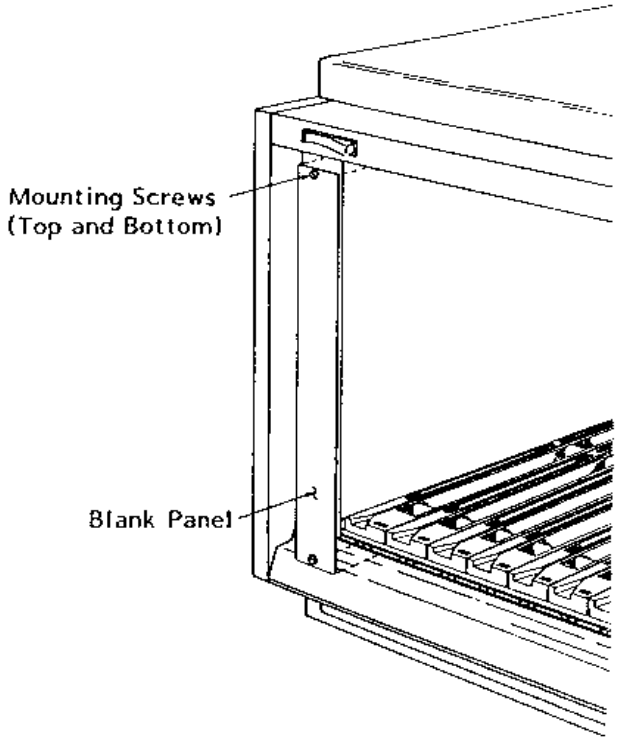


Figure 2-2, Blanking Panels

(Note: Figure shows a standard chassis)

Chapter 3
OPERATING THE 1263MPF

Using This Chapter

Use this chapter to:

- Review front panel controls and indicators
- Power the mainframe on/off
- Review Monitoring Basics of the front panel status bytes
- Perform basic functional check of the mainframe VXI voltages

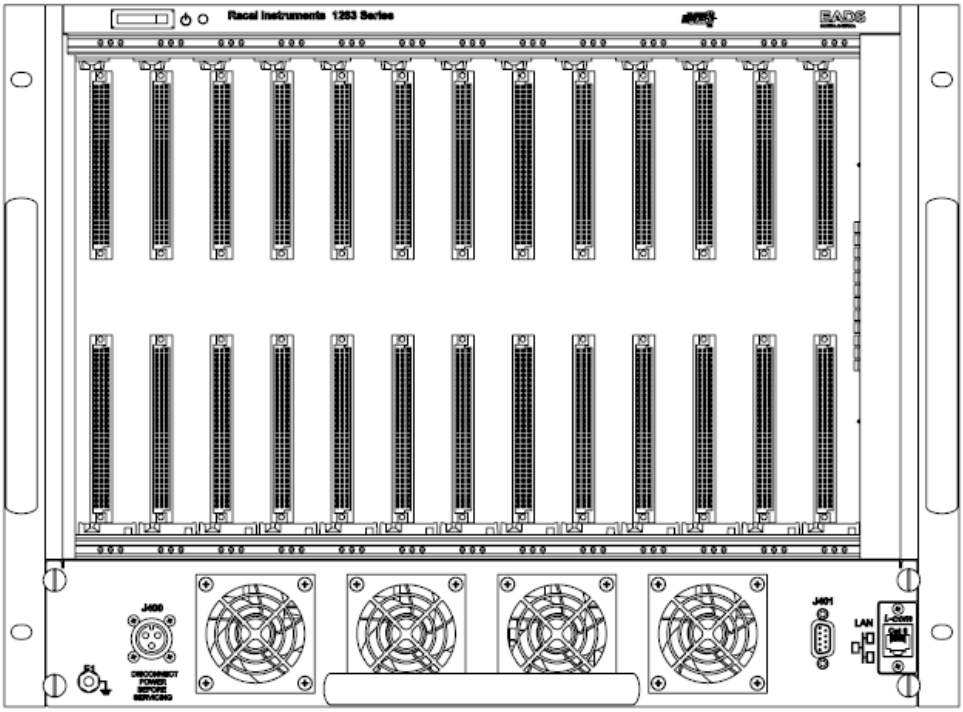


Figure 3-1, Front View

Powering on the 1263MPf

Refer to **Figure 3-1** and the instructions below to power on the 1263MPf.

1. Connect input power cable to J400.
2. Connect remote on/off pins (pin 5 & 9) on J401.
3. Turn on system by setting front panel Power Switch to “ON” position.

Monitoring Basics and System Performance Check

Refer to **Table 3-1** to interpret the system monitor information through Connector J401 located in the rear of the chassis, Basic monitoring is provided for system temperature status, power supply status, and system cooling fan status..

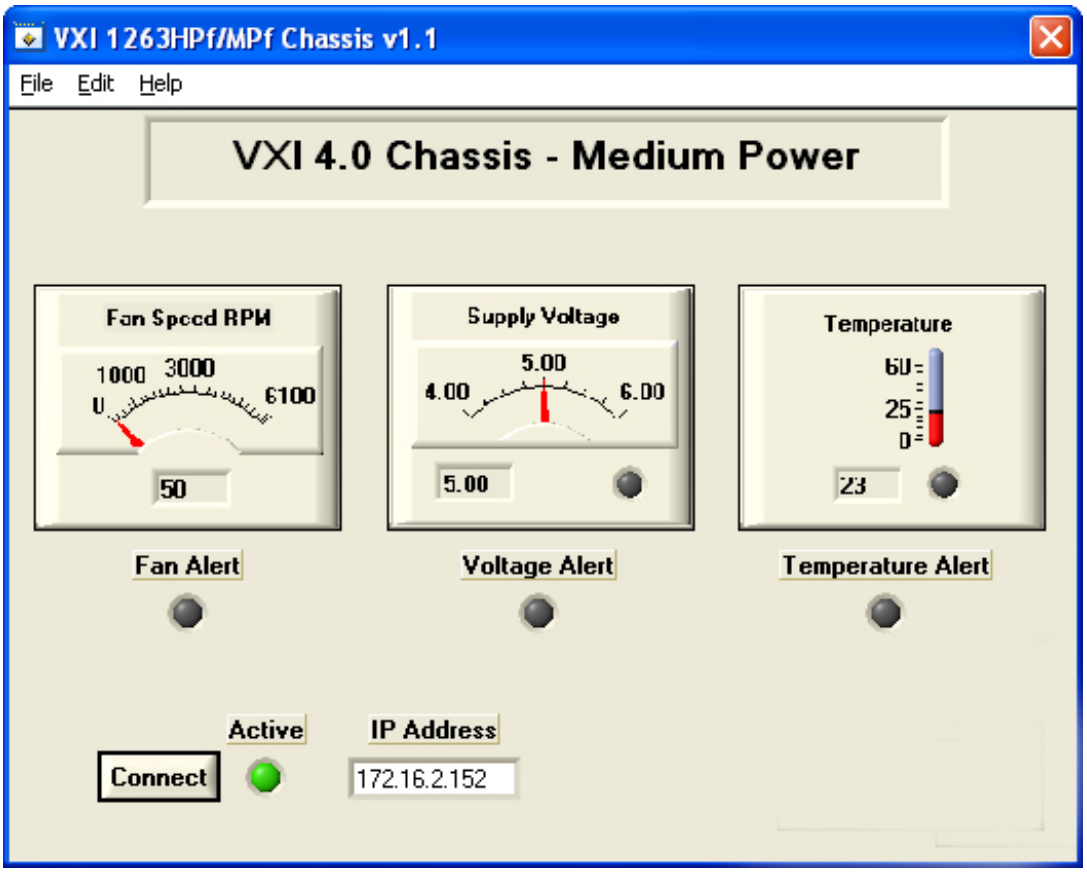
Table 3-1, Monitoring Basics

WHERE TO MEASURE (J401)	WHAT IT MEANS
PINS 4 & 8 SHORT (Less than 5 Ohms)	**TEMPERATURE STATUS** • Intake Temp < 45^{o} C • Exhaust Temp < 65^{o} C
PINS 2 & 6 SHORT (Less than 5 Ohms)	**POWER SUPPLY STATUS** +4.56 V < **+5 V Rail** < +5.50 V +10.95 V < **+12 V Rail** < +13.20 V +21.90 V < **+24 V Rail** < +26.40 V -2.20 V < **-2 V Rail** < -1.83 V -5.72 V < **-5.2 V Rail** < -4.75 V -13.20 V < **-12 V Rail** < -10.95 V -26.40 V < **-24 V Rail** < -21.90 V +2.97 V < **+3.3 V Rail** <+3.63 V
Pin 3 & 7 SHORT (Less than 5 Ohms)	**Fan status ok**

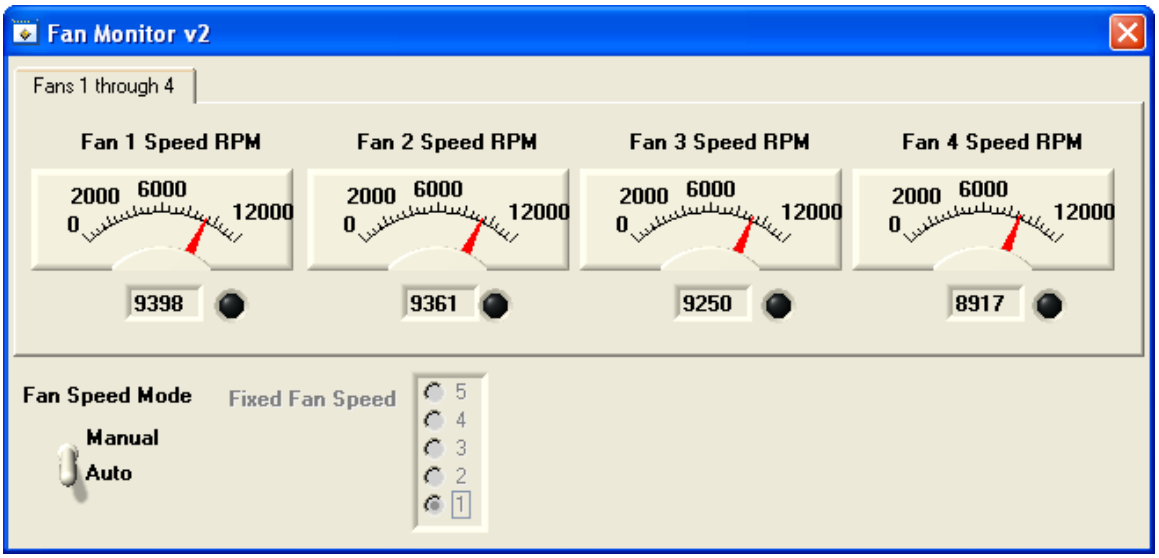
System performance checks can be accomplished through the RJ45 Ethernet port located in the rear of the chassis. Refer to “Appendix B, IP Address Configuration” for setting up the RJ45 Ethernet communication for your application. The Soft Front Panel (SFP)/Graphical User Interface can then be utilized to check the system performance as indicated below.

Start the SFP and connect to an Ethernet port by entering the correct IP address and pressing the “Connect” button.

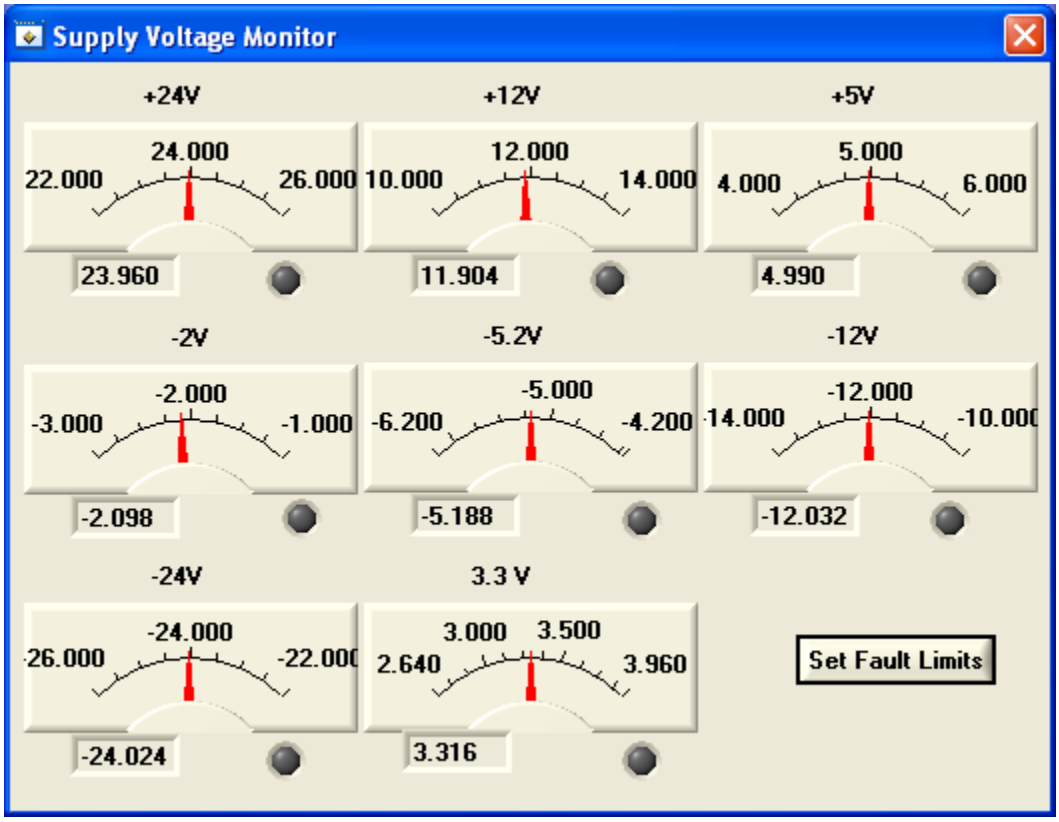
System Level Fan Alert, Voltage Alert, and Temperature Alert can be monitored directly on the following screen.



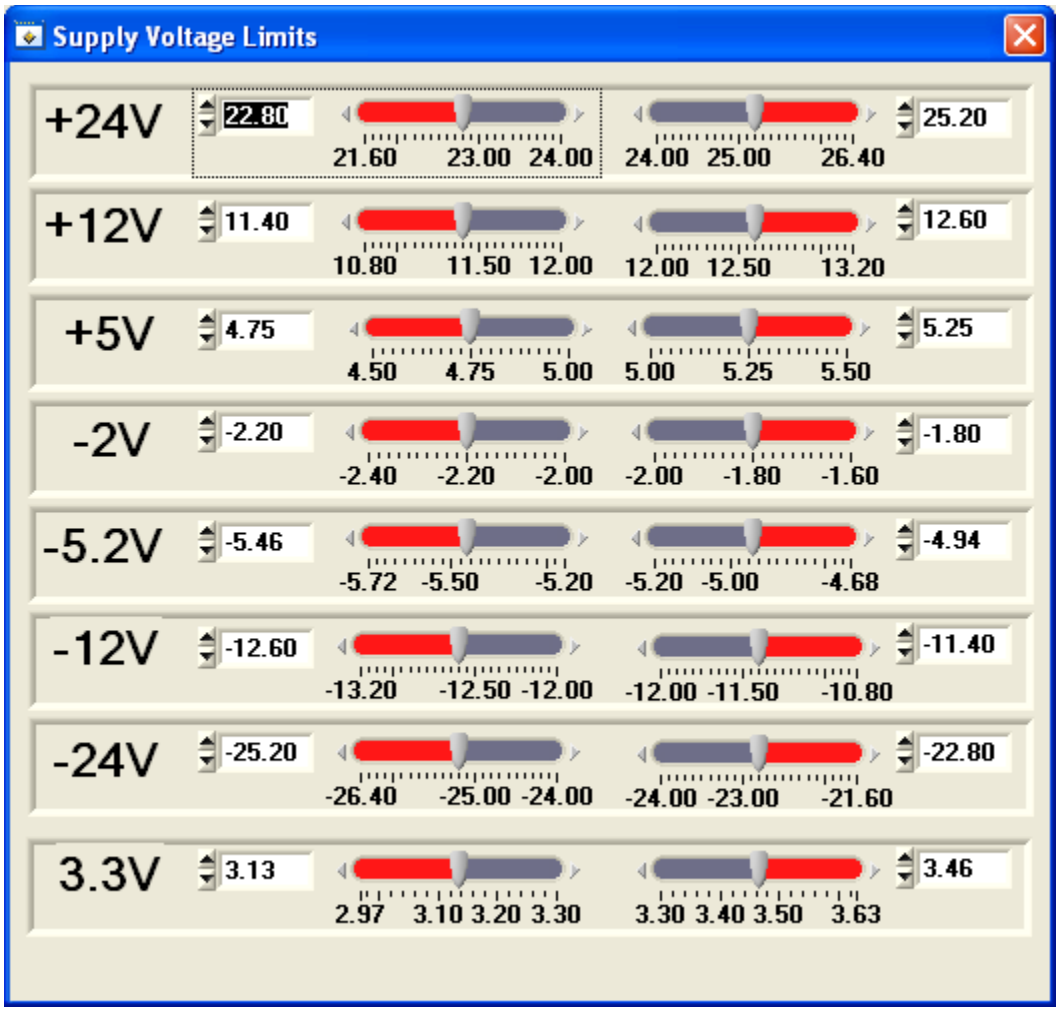
Performance of each cooling fan can be monitored under the "Fan Monitor" sub-menu. An "Alert" light will illuminate if any failure is detected. There are a total of 4 fans in the MPf chassis and their performance can be monitored on a separate sub-menu.



Performance of chassis power supplies can be monitored under the “Supply Voltage monitor” sub-menu. An “Alert” light will illuminate if any failure is detected based on the default “Set Fault Limits.”

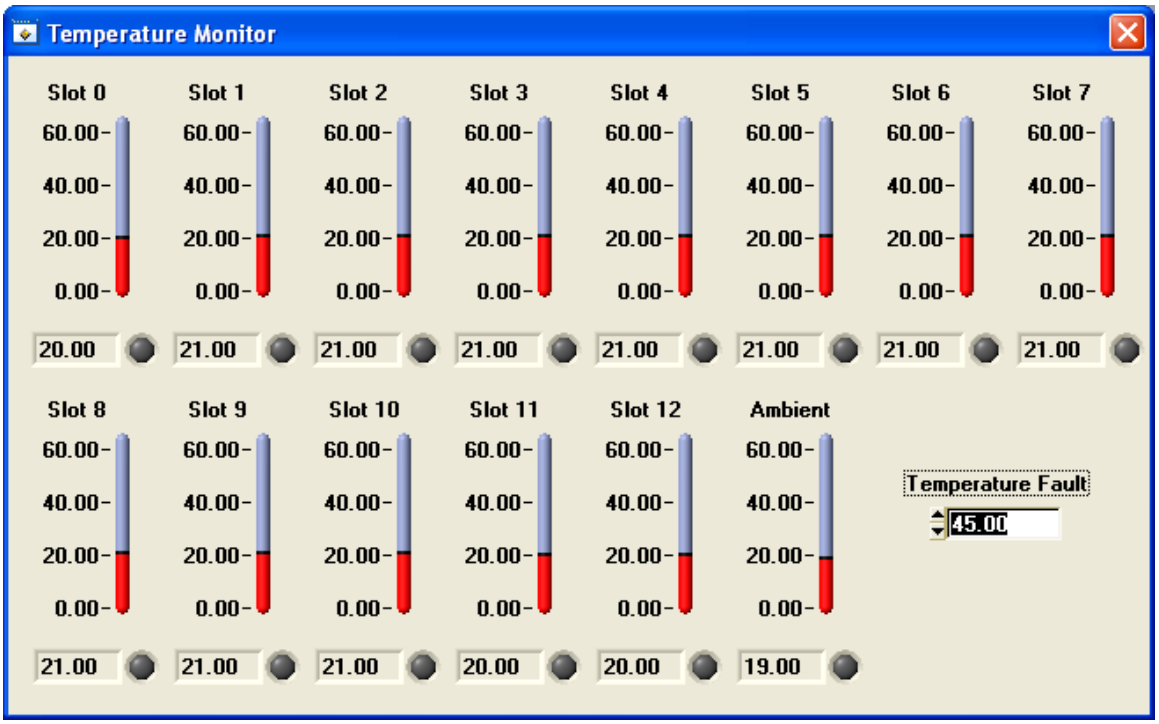


Set Fault limits can be changed as the application requires. Updated or changed settings can be saved on the top SFP under File -> Save Setting as Default.



Chassis air inlet and exhaust temperature can be monitored under the “Temperature Monitor” sub-menu. An “Alert” light will illuminate if any failure is detected based on the default “Temperature Fault” setting.

The “Temperature Fault” setting can be changed as the application requires. Updated or changed settings can be saved on the top SFP under File -> Save Setting as Default.



Backplane Connectors

Table 3-2 shows the P1 connector pinouts for all slots 0-12.

Table 3-3 shows the P2 connector pinouts for slots 1-12.

Table 3-4 shows the P2 connector pinouts for slot 0.

Table 3-2, P1 Backplane Connector Pinouts for Slots 0-12

PIN NUMBER	ROW 'z' SIGNAL MNEMONIC	ROW 'a' SIGNAL MNEMONIC	ROW 'b' SIGNAL MNEMONIC	ROW 'c' SIGNAL MNEMONIC	ROW 'd' SIGNAL MNEMONIC
1	MPR	D00	BBSY*	D08	VPC (1)
2	GND	D01	BCLR*	D09	GND (1)
3	MCLK	D02	ACFAIL*	D10	+V1
4	GND	D03	BG0IN*	D11	+V2
5	MSD	D04	BG0OUT*	D12	RsvU
6	GND	D05	BG1IN*	D13	-V1
7	MMD	D06	BG1OUT*	D14	-V2
8	GND	D07	BG2IN*	D15	RsvU
9	MCTL	GND	BG2OUT*	GND	GAP*
10	GND	SYSCLK	BG3IN*	SYSFAIL*	GA0*
11	RESP*	GND	BG3OUT*	BERR*	GA1*
12	GND	DS1*	BR0*	SYSRESET*	+3.3V
13	RsrvBus	DS0*	BR1*	LWORD*	GA2*
14	GND	WRITE*	BR2*	AM5	+3.3V
15	RsrvBus	GND	BR3*	A23	GA3*
16	GND	DTACK*	AM0	A22	+3.3V
17	RsrvBus	GND	AM1	A21	GA4*
18	GND	AS*	AM2	A20	+3.3V
19	RsrvBus	GND	AM3	A19	RsrvBus
20	GND	IACK*	GND	A18	+3.3V
21	RsrvBus	IACKIN*	SERA	A17	RsrvBus
22	GND	IACKOUT*	SERB	A16	+3.3V
23	RsrvBus	AM4	GND	A15	RsrvBus
24	GND	A07	IRQ7*	A14	+3.3V
25	RsrvBus	A06	IRQ6*	A13	RsrvBus
26	GND	A05	IRQ5*	A12	+3.3V
27	RsrvBus	A04	IRQ4*	A11	LI/I*
28	GND	A03	IRQ3*	A10	+3.3V
29	RsrvBus	A02	IRQ2*	A09	LI/O*
30	GND	A01	IRQ1*	A08	+3.3V
31	RsrvBus	-12V	+5V STDBY	+12V	GND (1)
32	GND	+5V	+5V	+5V	VPC (1)

Table 3-3, P2 Backplane Connector Pinouts for Slots 1-12

PIN NUMBER	ROW 'z' SIGNAL MNEMONIC	ROW 'a' SIGNAL MNEMONIC	ROW 'b' SIGNAL MNEMONIC	ROW 'c' SIGNAL MNEMONIC	ROW 'd' SIGNAL MNEMONIC
1	+V3	ECLTRG0	+5V	CLK10+	GND(1)
2	GND	-2V	GND	CLK10-	GND(1)
3	-V3	ECLTRG1	RSV1	GND	LCLK100+
4	GND	GND	A24	-5.2V	LCLK100-
5	+V4	LBUSA00	A25	LBUSC00	GND
6	GND	LBUSA01	A26	LBUSC01	LSYNC100+
7	-V4	-5.2V	A27	GND	LSYNC100-
8	GND	LBUSA02	A28	LBUSC02	GND
9	LBUSA12	LBUSA03	A29	LBUSC03	GND
10	GND	GND	A30	GND	LBUSC12
11	LBUSA13	LBUSA04	A31	LBUSC04	LBUSC13
12	GND	LBUSA05	GND	LBUSC05	+5V
13	LBUSA14	-5.2V	+5V	-2V	LBUSC14
14	GND	LBUSA06	D16	LBUSC06	LBUSC15
15	LBUSA15	LBUSA07	D17	LBUSC07	GND
16	GND	GND	D18	GND	LBUSC16
17	LBUSA16	LBUSA08	D19	LBUSC08	LBUSC17
18	GND	LBUSA09	D20	LBUSC09	+5V
19	LBUSA17	-5.2V	D21	-5.2V	LBUSC18
20	GND	LBUSA10	D22	LBUSC10	LBUSC19
21	LBUSA18	LBUSA11	D23	LBUSC11	GND
22	GND	GND	GND	GND	GND
23	LBUSA19	TTLTRG0*	D24	TTLTRG1*	STRGOUT+
24	GND	TTLTRG2*	D25	TTLTRG3*	STRGOUT-
25	+12V	+5V	D26	GND	STRGIN0+
26	GND	TTLTRG4*	D27	TTLTRG5*	STRGIN0-
27	-12V	TTLTRG6*	D28	TTLTRG7*	STRGIN1+
28	GND	GND	D29	GND	STRGIN1-
29	+24V	RSV2	D30	RSV3	STRGIN2+
30	GND	MODID	D31	GND	STRGIN2-
31	-24V	GND	GND	+24V	GND (1)
32	GND	SUMBUS	+5V	-24V	VPC (1)

Table 3-4, P2 Backplane Connector Pinouts for VXIbus Slot 0

PIN NUMBER	ROW 'z' SIGNAL MNEMONIC	ROW 'a' SIGNAL MNEMONIC	ROW 'b' SIGNAL MNEMONIC	ROW 'c' SIGNAL MNEMONIC	ROW 'd' SIGNAL MNEMONIC
1	+V3	ECLTRG0	+5V	CLK10+	GND (1)
2	GND	-2V	GND	CLK10-	GND (1)
3	-V3	ECLTRG1	RSV1	GND	LCLK100+
4	GND	GND	A24	-5.2V	LCLK100-
5	+V4	MODID12	A25	LBUSC00	GND
6	GND	MODID11	A26	LBUSC01	LSYNC100+
7	-V4	-5.2V	A27	GND	LSYNC100-
8	GND	MODID10	A28	LBUSC02	GND
9	SDA0	MODID09	A29	LBUSC03	STRGIN12+
10	GND	GND	A30	GND	STRGIN12-
11	SCL0	MODID08	A31	LBUSC04	STRGIN11+
12	GND	MODID07	GND	LBUSC05	STRGIN11-
13	SDA1	-5.2V	+5V	-2V	STRGIN10+
14	GND	MODID06	D16	LBUSC06	STRGIN10-
15	SCL1	MODID05	D17	LBUSC07	STRGIN09+
16	GND	GND	D18	GND	STRGIN09-
17	STRGIN04+	MODID04	D19	LBUSC08	STRGIN08+
18	GND	MODID03	D20	LBUSC09	STRGIN08-
19	STRGIN04-	-5.2V	D21	-5.2V	STRGIN07+
20	GND	MODID02	D22	LBUSC10	STRGIN07-
21	STRGIN03+	MODID01	D23	LBUSC11	STRGIN06+
22	GND	GND	GND	GND	STRGIN06-
23	STRGIN03-	TTLTRG0*	D24	TTLTRG1*	STRGIN05+
24	GND	TTLTRG2*	D25	TTLTRG3*	STRGIN05-
25	STRGIN02+	+5V	D26	GND	STRGOUT0+
26	GND	TTLTRG4*	D27	TTLTRG5*	STRGOUT0-
27	STRGIN02-	TTLTRG6*	D28	TTLTRG7*	STRGOUT1+
28	GND	GND	D29	GND	STRGOUT1-
29	STRGIN01+	RSV2	D30	RSV3	STRGOUT2+
30	GND	MODID00	D31	GND	STRGOUT2-
31	STRGIN01-	GND	GND	+24V	GND (1)
32	GND	SUMBUS	+5V	-24V	VPC (1)

Chapter 4
UNDERSTANDING THE 1263MPF

Overview

The 1263MPf Mainframe consists of the following major functional blocks.

- Power Supply
- Backplane
- Cooling System
- Monitoring System

Figure 4-1 shows the functional block diagram of the 1263MPf Mainframe.

Power Supply

The removable power supply drawer accepts power from the AC mains and converts it to DC to power the following:

- VXI modules installed into the backplane
- Backplane terminations and daisy chaining logic
- Module Cooling Fans
- System Monitoring
- Front Panel Power Indicator LED

Power Supply Interconnection

Power is supplied to the backplane through the Power Drawer blind-mate connector interface J200. Power is further routed to the backplane through the System Monitor and Mezzanine cards located behind the backplane.

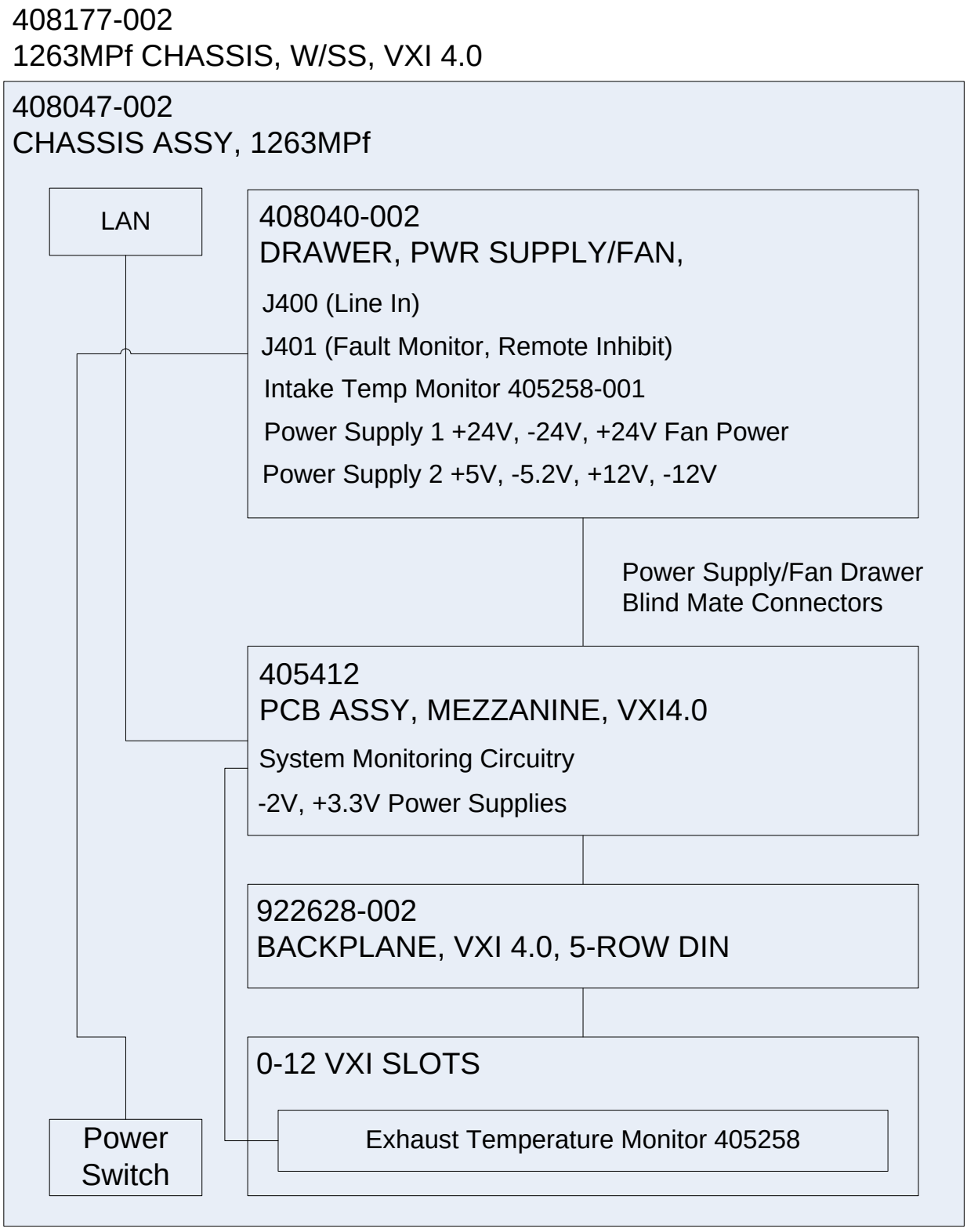


Figure 4-1, 1263MPf Chassis Functional Block Diagram

Power Supply Protections

The seven VXIbus power supply outputs are protected for:

- Short Circuit
- Over-Load

Backplane

The Backplane serves several functions:

- Rigid mechanical interface which accommodates a lifetime of insertions of VXI modules and the plug-in power supply
- Supplies DC voltages and currents to modules
- Connects the VME communications interface across P1 and P2 from slot 0 to slot 12
- Connects the VXI extensions across P2 rows a and c from slot 0 to slot 12

Cooling System

The front removable fan assembly is part of the power supply assembly housing 4 cooling fans. The fan speed is controlled to reduce ambient noise from the chassis. Fan speed is set to low when the exhaust temperature of all 13 VXI slots is below 30^{o} C.

Cooling air enters from the front of the chassis and is exhausted out the top.

Cooling the Power System

Both power supplies located in the power supply drawer are cooled by the fans located in the power supply modules themselves. These fans run at full speed whenever power is connected to the system and are not controlled by the system monitor.

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Chapter 5
MAINTENANCE

What's in This Chapter

This chapter provides procedures for inspecting and cleaning the 1263MPf, removing and replacing mainframe components, and isolating problems to the module level. Refer to **Chapter 4 Understanding the 1263MPf** for theory of operation information.

Service Strategy

The service procedures in this manual provide removal and replacement procedures to repair the 1263MPf to the module level. Module level repairs are accomplished by exchanging faulty modules with known good modules or parts. No component-level repair is provided in this manual.

Service Interval

Clean dust from the mainframe exterior (and interior) as needed, based on the operating environment. Periodic cleaning reduces instrument breakdown and increases reliability.

Preparation

The information in this section is designed for use by qualified service personnel. Read the **For Your Safety** at the front of this manual and **Service Strategy** before attempting any procedures in this chapter. Refer to **Chapter 3 Operating the 1263MPf** for information on the location of controls, indicators, and connectors used with the mainframe.

CAUTION

Many components within the mainframe are susceptible to static discharge damage. Service the mainframe only in a static-free environment. Observe standard handling precautions for static-sensitive devices while servicing the mainframe. Always wear a grounded wrist strap, or equivalent, while servicing the mainframe.

Inspection and Cleaning

The mainframe is inspected mechanically and electrically before shipment. It should be free of marks or scratches and should meet or exceed all electrical specifications. To confirm this, inspect the mainframe for physical damage incurred during transit. Retain the mainframe packaging if reshipment is necessary.

Cleaning procedures consist of exterior and interior cleaning of the mainframe. Refer to your module user documentation for information on cleaning the individual VXIbus modules.

CAUTION

Always power off the mainframe and disconnect the power cord before cleaning or servicing the mainframe.

Interior Cleaning

Use a dry, low-velocity stream of air to clean the interior of the mainframe. Use a soft-bristle brush for cleaning around components. If you must use a liquid for minor interior cleaning, use a 75% isopropyl alcohol solution and rinse with de-ionized water.

Exterior Cleaning

Clean the exterior surfaces of the mainframe with a dry lint-free cloth or a soft-bristle brush. If any dirt remains, wipe with a cloth moistened in a mild soap solution. Remove any soap residue by wiping with a cloth moistened with clear water. Do not use abrasive compounds on any part of the mainframe.

CAUTION

Avoid getting moisture inside the mainframe during exterior cleaning - use just enough moisture to dampen the cloth.

Do not wash the front or rear panel connectors or switches. Cover these components while cleaning the mainframe.

Do not use chemical cleaning agents; they may damage the mainframe. Avoid chemicals that contain benzene, toluene, xylene, acetone, or similar solvents.

Modular Component Removal and Replacement

The following procedures describe how to remove and replace module-level components of the 1263MPf Mainframe. Perform these procedures only as necessary as part of installation, mainframe service, or repair. Refer to the **Assembly Drawings** in this chapter for an overview of the assembly and disassembly of the mainframe. See **Troubleshooting** for assistance in fault isolation.

CAUTION

Always power off the mainframe and disconnect the power cord before cleaning or servicing the mainframe.

Tools Required

The only tool required to disassemble the 1263MPf chassis to the module level is a medium flat blade screwdriver.

Removal and Replacement of the Power Drawer/Fan Assembly

The front plug-in power supply/fan assembly may be removed and replaced as described in the following steps. Refer to **Figure 5-1**

Caution

Always power off the mainframe and disconnect the power cord before cleaning or serving the mainframe.

1. Loosen the four captive thumbscrews which secure the module power supply drawer assembly to the mainframe.
2. Firmly pull the power supply assembly out from the front of the chassis.
3. Replace the supply by repeating the above steps (in reverse order).

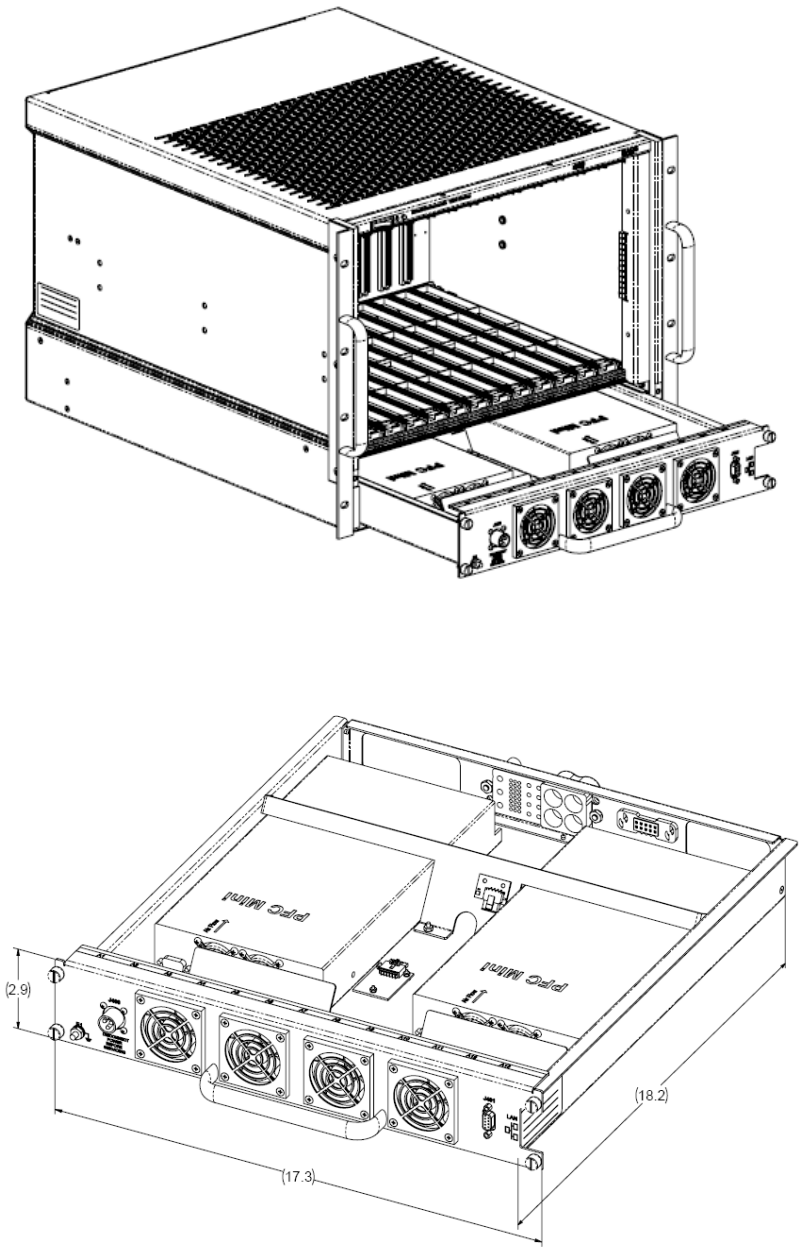

Figure 5-1, Module Power/Fan Assembly Detail

Removing and Replacing the Card Guides

Complete the following steps while referring to **Figure 5-3** to remove and replace the card guides. The procedure applies to top and bottom card guides.

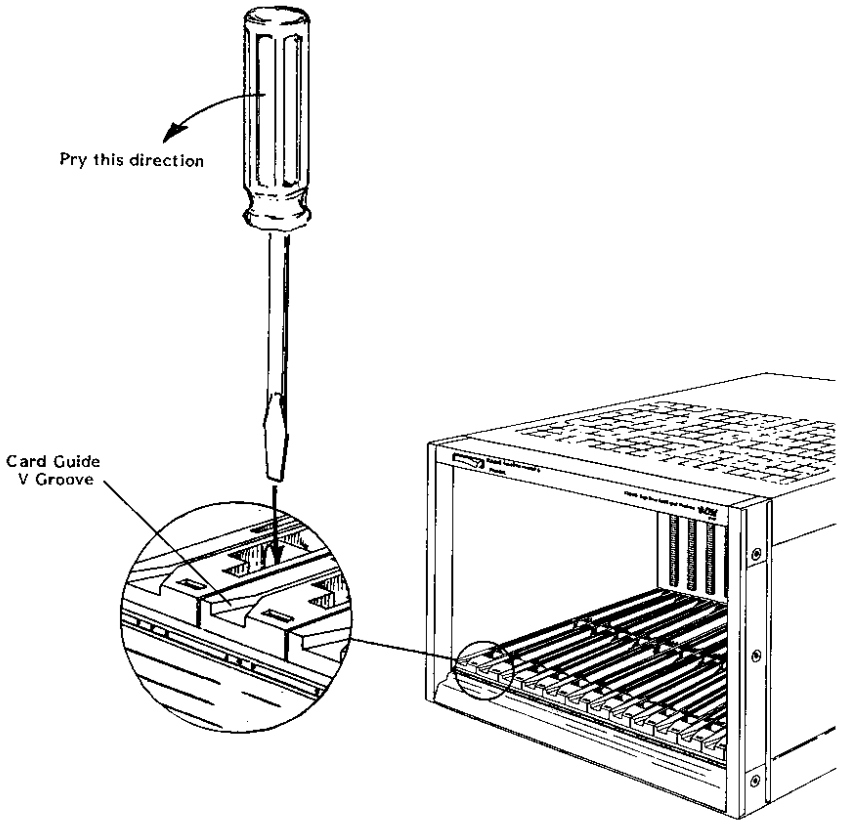

Figure 5-2, Card Guide Removal and Replacement

Note: Figure is of a standard chassis

1. Insert a flat blade screwdriver into the slot in front of the retaining hook.
2. Gently pry the tab of the retaining hook to the rear, and lift the card guide, releasing it at the front.
3. Gently pull the card guide forward releasing it from the center and rear retaining hooks. Bowing the card guide is required to clear the front rail.
4. To replace, align the card guide with the mainframe front ensuring that the "V" groove is at the front.
5. Gently push down and to the rear to engage the hooks at the rear and middle of the card guide. Bowing the card guide is required to clear the front rail.
6. Allow the front retaining hook to rest on the front rail.
7. Insert a flat blade screwdriver into the slot in front of the retaining hook.
8. Gently pry the tab of the retaining hook to the rear, and press down the front of the card guide to snap into position.

Troubleshooting the 1263MPf

To troubleshoot the 1263MPf VXIbus mainframe to its component module level use **Table 5-1** and **Understanding the 1263MPf** in Chapter 4.

"Alarm conditions" referenced in the **PROBLEM** column of **Table 5-1** occur when the monitored system health status function (Voltage or Temperature) is outside of its specified tolerance.

Table 5-1, Troubleshooting

PROBLEM	POSSIBLE CAUSES	WHAT TO DO
"Power" LED does not come on.	• Power supply not properly connected. • 1263MPf mainframe or power supply not connected to power source. • Power/On/Standby switch not switched on. Remote On/ off pins not connected • Power supply protections are active causing the supply to be "shutdown".	• Verify that the power supply assembly is fully cabled to the 1263MPf mainframe. • Make sure that the 1263MPf is connected to a live electrical outlet. Try operating another piece of equipment from this outlet. • Set the front Power On/Standby switch to the **ON** position, connect remote on/off pins. (See **"Powering on the 1263MPf"** in **Chapter 3**). • Cycle power to clear fault. If fault persists remove installed VXI modules (cycle power) until fault is cleared.
Voltage alarm condition.	• Faulty VXI module installed or voltage fault occurred. • VXI supply is out of tolerance.	• Cycle power. • If fault persists remove installed VXI modules until fault indication is cleared. • Perform **Basic Functional Check** procedure from **Chapter 3**. • If the problem persists, remove and replace the power supply drawer. See **"Removal and Replacement of the Power Drawer Assembly"** in this chapter.
Temperature alarm condition.	• Module temperature rise or max ambient limit exceeded. or • Insufficient module cooling air.	• Check for restrictions to airflow at mainframe intake and exhaust. • Remove suspected defective VXI modules. Recycle power.

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Chapter 6
FUNCTIONAL CHECKS

Basic Functional Check

The basic functional check consists of

1. Checking the 1263MPf chassis temperature status, power supply voltages to VXIbus limits, and cooling fan status through the DB9 J401 connector.
2. Checking the 1263MPf chassis intake/ exhaust air temperature readings, power supply voltage levels, and cooling fan operations, utilizing the 1263MPf Soft Front Panel through the RJ45 Ethernet port connection.

Refer to **Table 6-1.** J401 is located in the front of the chassis. Connect Ohmmeter tests leads to measure the resistance between the pins specified.

Table 6-1, Monitoring Basics

WHERE TO MEASURE (J401)	WHAT IT MEANS	Pass/ Fail
PINS 4 & 8 SHORT (Less than 5 Ohms)	**TEMPERATURE STATUS** • Intake Temp < 45° C • Exhaust Temp < 65° C	
PINS 2 & 6 SHORT (Less than 5 Ohms)	**POWER SUPPLY STATUS** +4.56 V < **+5V Rail** < +5.50 V +10.95 V < **+12V Rail** < +13.20 V +21.90 V < **+24V Rail** < +26.40 V -2.20 V < **-2V Rail** < -1.83 V -5.72 V < **-5.2V Rail** < -4.75 V -13.20 V < **-12V Rail** < -10.95 V -26.40 V < **-24V Rail** < -21.90 V +2.97 V < **+3.3V Rail** <+3.63V	
PIN 3 & 7 SHORT (less than 5 Ohm)	**Fan Status OK**	

An additional basic functional check is accomplished through the RJ45 Ethernet port located in the rear of the chassis. Refer to “Appendix B, IP Address Configuration” for setting up the RJ45 Ethernet communication. The Soft Front Panel (SFP)/Graphical User Interface can then be utilized to perform the test.

To run the SFP tests, start the SFP and connect to an Ethernet port by entering the correct IP address and pressing the “Connect” button.

Verify that the Fan, Voltage, temperature Alert Red LED indicators on the panel are not illuminated. Use **Table 6-2** to record data on failed fan speed, voltage rails, and slot temperature.

Main Monitoring Panel

The Main Monitoring Panel is used for checking the aggregate indicators for any failures. If any indicators are lit, click on the readout gauge for more information on specific failure locations.

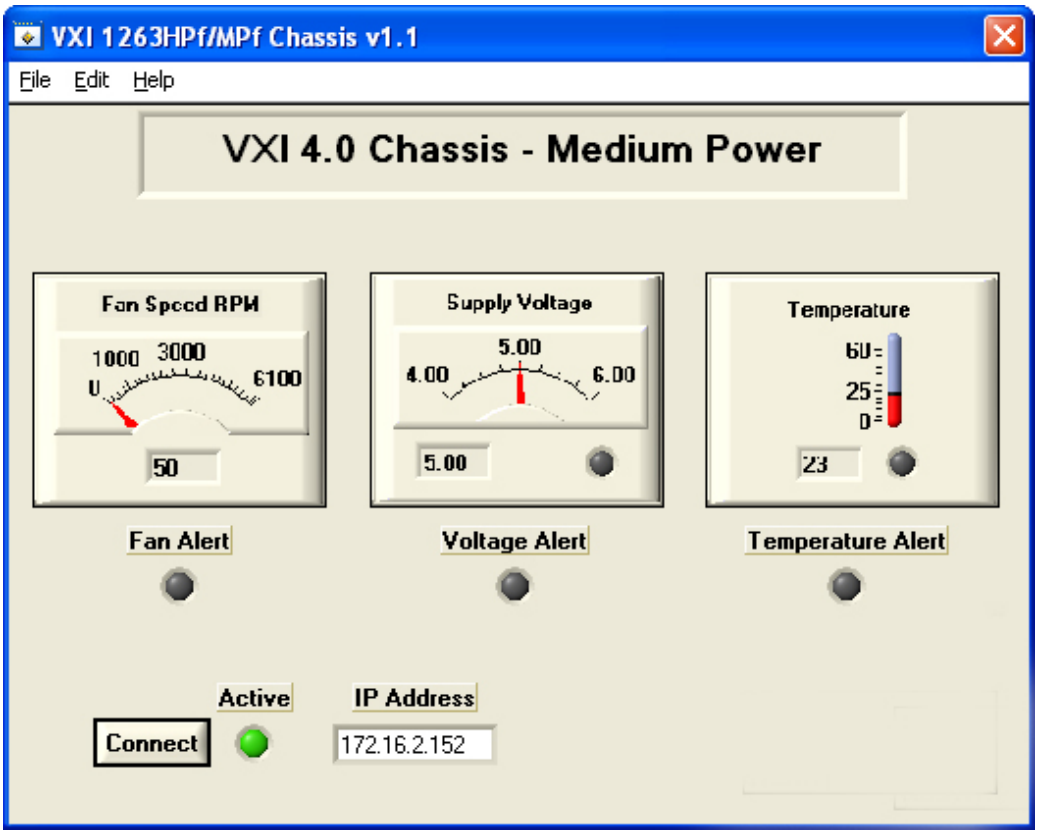


Figure 6-1, Main Monitoring Panel

Table 6-2, Pass/Fail Table

Indicator	Pass/Fail
Fan Alert	Enter Pass or if Alert Lit, Enter Fan Number and RPM_____
Voltage Alert	Enter Pass or if Alert Lit, Enter Failed Channel readings_____
Temperature Alert	Verify that all temperature readings at ambient match the ambient temperature for a pass. Fail if any of the slot readings don't match the loading conditions of a given slot._____

Fan Speed Monitoring

Use these panels to determine if any of the fans are not turning at the expected speed within the expected error limits (as indicated by the 4 fail LEDs). Refer to **Figure 6-2**.

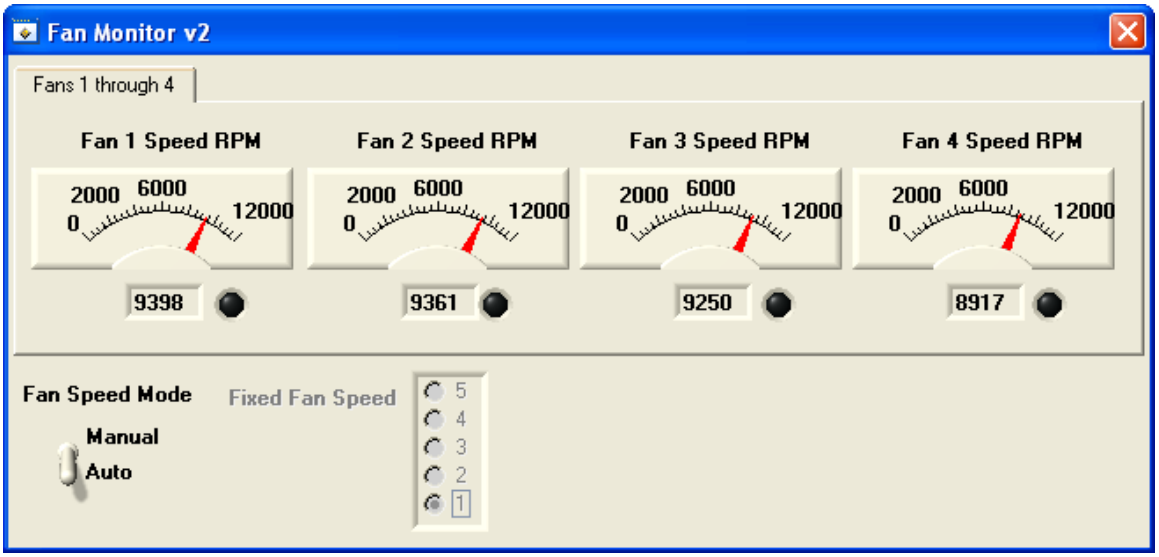


Figure 6-2, Fan Speed Monitoring

Supply Voltage Monitoring

Use this panel to determine which power rails, if any, exceed the VXI set error limits (as indicated by the fail red indicators). See **Figure 6-3.**

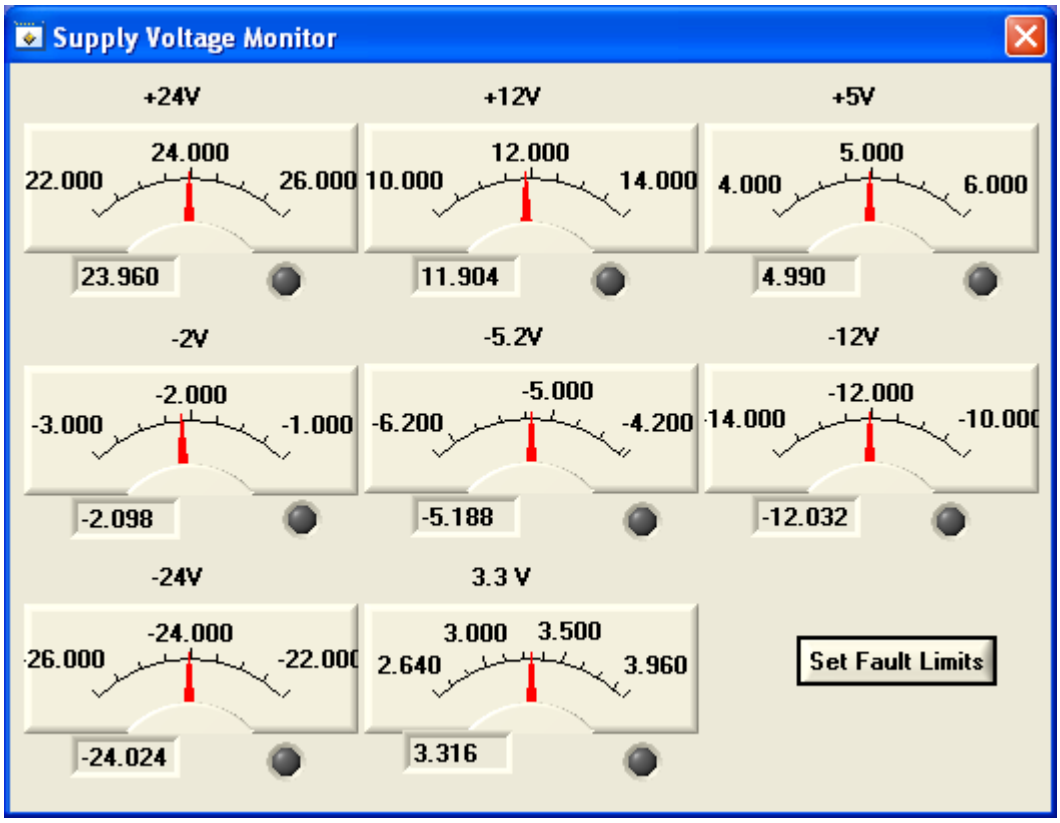


Figure 6-3, Per VXI Rail Voltage Monitoring

Temperature Monitoring

Use this to compare slot loading to temperature readings for a basic performance check. (Failures are indicated by the fail red indicators). See **Figure 6-5.**

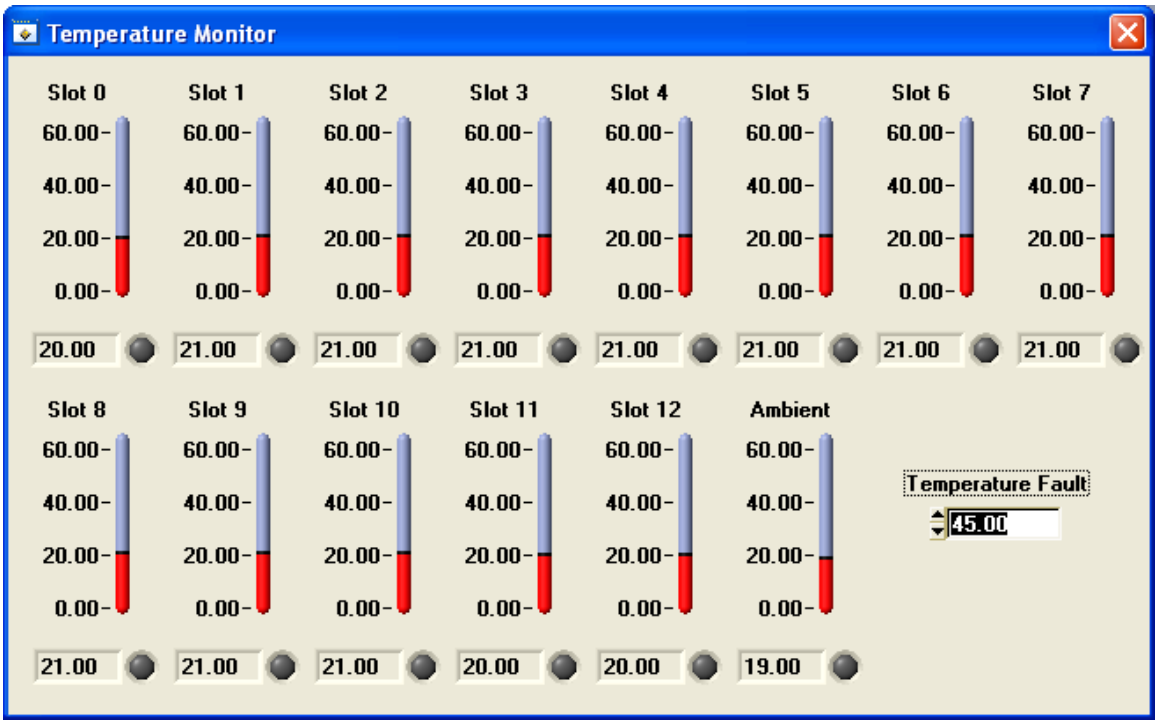


Figure 6-5, Per Slot Temperature Monitoring

Appendix A
SPECIFICATIONS

Specifications

This chapter contains the complete specifications for the 1263MPf mainframe.

Table A-1, AC Input Specifications

Characteristic	Description
Input Voltage Range	85 – 264 VAC or 100 – 380 VDC
Input Frequency Range	47 Hz to 500 Hz
Power Disconnect	Power cord provides main power disconnect at J400

Table A-2, DC Output Power

Characteristic	Description
DC Current Capacity (I_{MP})	**Voltage** **I_{MP} (Steady-State Current)** +24 V 16 A +12 V 8 A +5 V 80 A -2 V 3 A +3.3 V 20 A -5.2 V 69 A -12 V 8 A -24 V 16 A
DC Voltage Regulation	**Voltage** **Tolerance, V** +24 V +1.2 V, -720 mV +12 V +600 mV, -360 mV +5 V +250 mV, -125 mV +3.3 V +250 mV, -125 mV -2 V -100 mV, +100 mV -5.2 V -260 mV, +156 mV -12 V -600 mV, +360 mV -24 V -1.2 V, +720 mV V+/V- $\pm$1.2 V, $\pm$720 mV
Load Ripple/Noise	**Voltage** **Ripple/Noise (X1 Probe, 10 mHz BW)** +24 V 150 mV_{pp} +12 V 50 mV_{pp} +5 V 50 mV_{pp} +3.3 V 50 mV_{pp} -2 V 50 mV_{pp} -5.2 V 50 mV_{pp} -12 V 50 mV_{pp} -24 V 150 mV_{pp} V+/V- 150 mV_{pp}
Protections	Short Circuit Overload

Table A-3, Cooling

Characteristic	Description
Per Slot Cooling Capacity	Typically over 100 W per slot.
Cooling System	Forced air circulation (positive pressurization)
Fan Speed Control (Controlled by system monitor)	Variable-speed fan control Automatically/ manually control set via Ethernet
Slot Airflow Direction	P2 to P1, bottom of module to the top of module
Mainframe Intake	Bottom rear of mainframe (below fan assembly drawer)
Mainframe Exhaust	Top of mainframe.
Filter Access	N/A

Table A-4, Environmental (Typical)

Characteristic	Description
Temperature Operating Non-operating	 0°C to 50°C -40°C to 71°C
Altitude Operating Non-operating	 15,000 ft. 15,000 ft.
Sine Vibration Operating Non-operating	 15 g, 11 ms, ½ since wave
Functional Shock Operating	 0.13 in (p-p), 5 to 55 Hz

Table A-5, Backplane

Characteristic	Description
Bus Grant/Interrupt Acknowledge	Solid state, auto-configuring (jumper less)
VXIbus CLK10 Distribution	Full differential

Table A-6, Mechanical

Characteristic	Description
Overall Dimensions	Mainframe
Height	14 in
Width	19 in
Depth	24.3 in
Weight	
Mainframe	50.7 lbs

Appendix B
IP ADDRESS CONFIGURATION

IP Address Configuration

This chapter describes how to modify the IP address assigned to the chassis for Ethernet communication

Default Configuration

Each chassis is configured at the factory to use DHCP addressing. This means that your network must have a DHCP server to assign IP addresses.

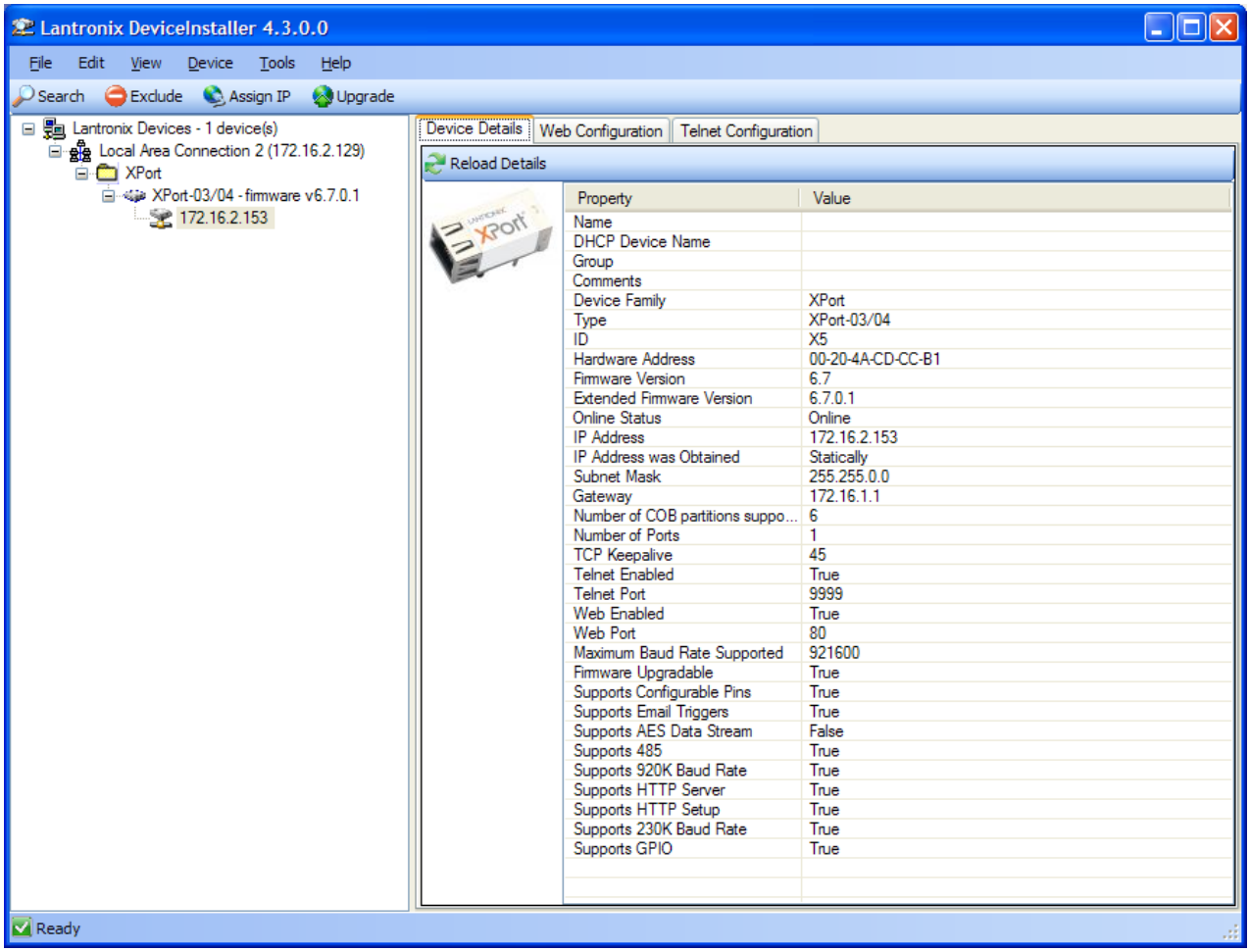
One means to identify the IP address assigned by the DHCP server to the chassis is to run the Lantronix DeviceInstaller utility program.

The “DeviceInstaller” utility program may be downloaded from the Lantronix website:

http://www.lantronix.com/support/downloads/?p=XPORT

Once you download and install the DeviceInstaller utility, you can find the address of the chassis as follows:

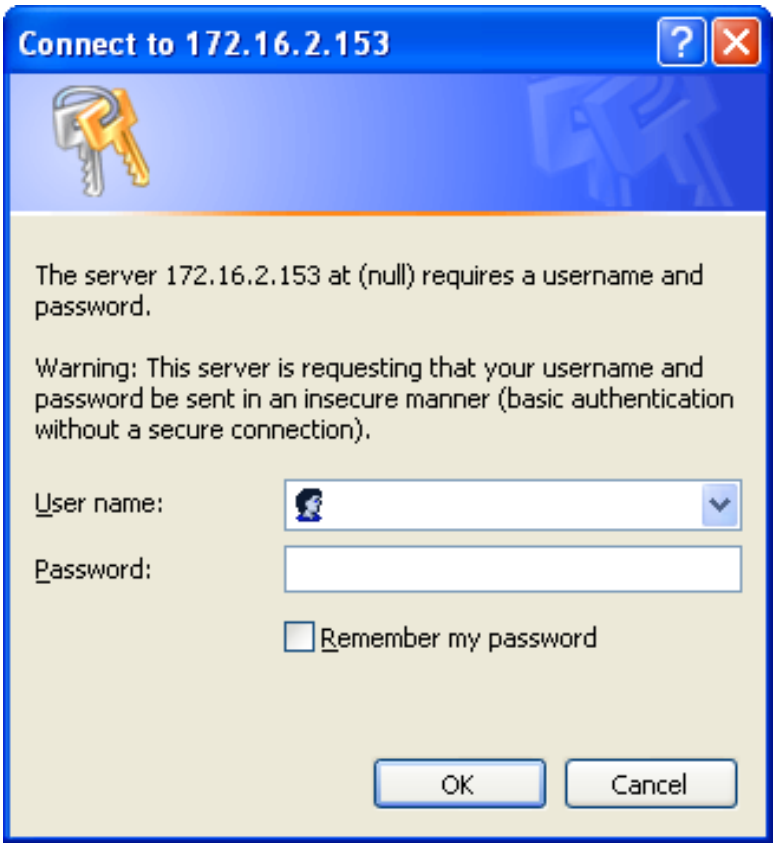
1. Find the chassis by selecting the menu item “Device->Search” (Or press the F5 key).
2. The DeviceInstaller utility should locate the chassis.
3. Clock on the “XPort” node to expand the node.
4. The IP address of the chassis is displayed (The address 172.16.2.153 in the following example):



Selecting a Static IP Address

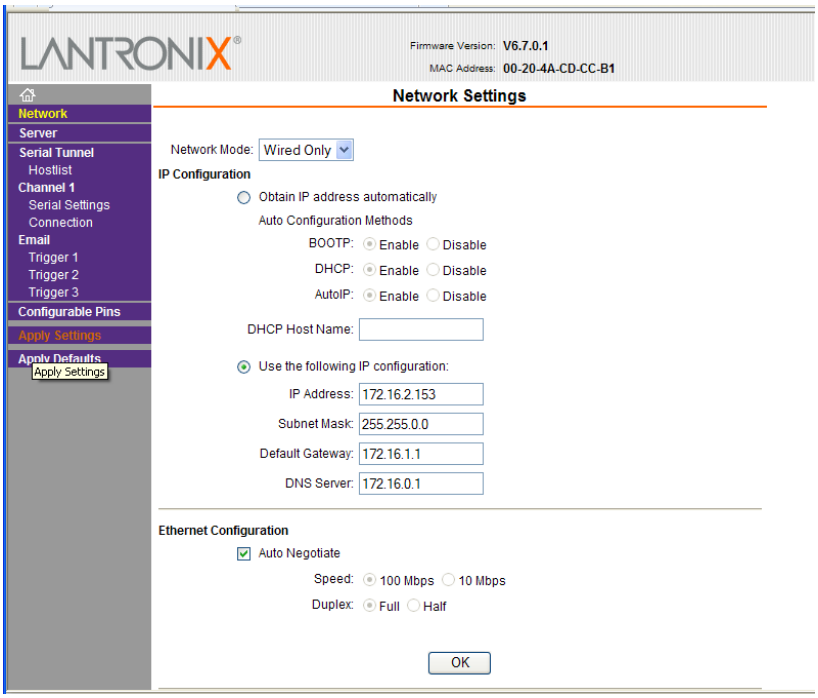
The IP address and/or subnet mask may be configured to use static IP addressing. To access the configuration web page, enter the current IP address into the web browser (e.g. http://192.162.1.10).

The web page may ask for a user name and password. If it does, leave the fields blank and press the “OK” button. A sample dialog window is shown following (for IP address 172.16.2.153).

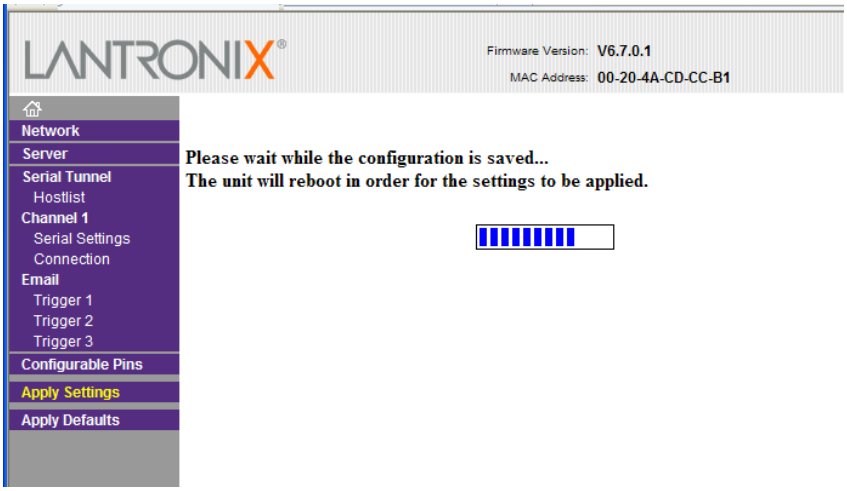


Follow these steps to assign a new static IP address. You should consult with your network administrator to determine the appropriate values to use for your network configuration.

1. Select the “Network” tab on the web page.
2. Select the “Use the following IP configuration” radio button.
3. Enter the desired IP address in the “IP Address” box (e.g. 192.168.1.15).
4. Enter the desired Subnet Mask in the Subnet Mask box (e.g. 255.255.0.0).
5. Enter the desired default gateway into the “Default Gateway” box (e.g. 192.168.1.1).
6. Enter the desired DNS server into the “DNS Server” text box (e.g. 192.168.0.1).
7. Click the “OK” button on the bottom of the page. You should see the message “Done!” appear next to the OK button.
8. Click “Apply Settings” button on the left hand side of the web page.



9. After a few seconds, the web page will indicate that the configuration is being saved and the unit will reboot.

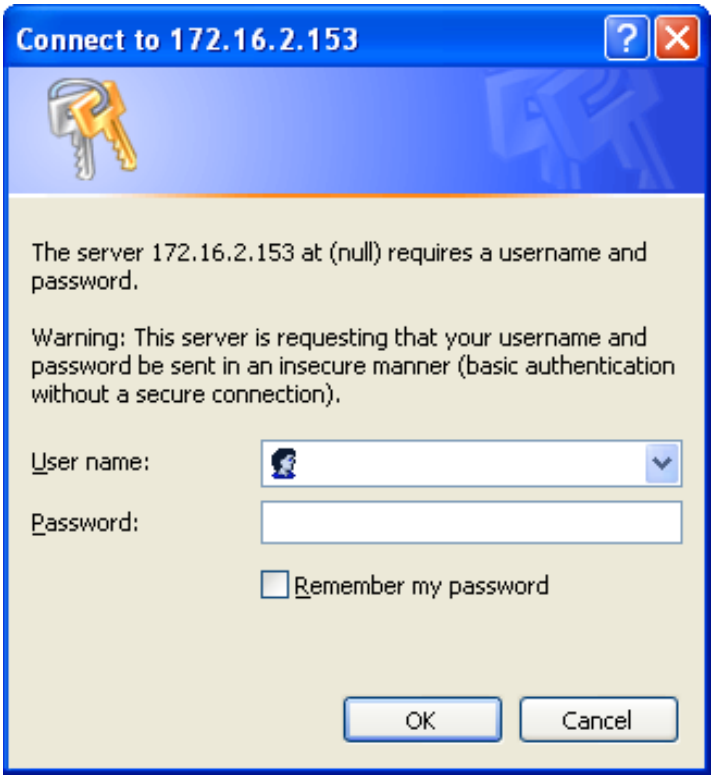


10. In order to access the configuration web page again, you will have to use the new IP address that you just assigned.

Selecting a Dynamic IP Address

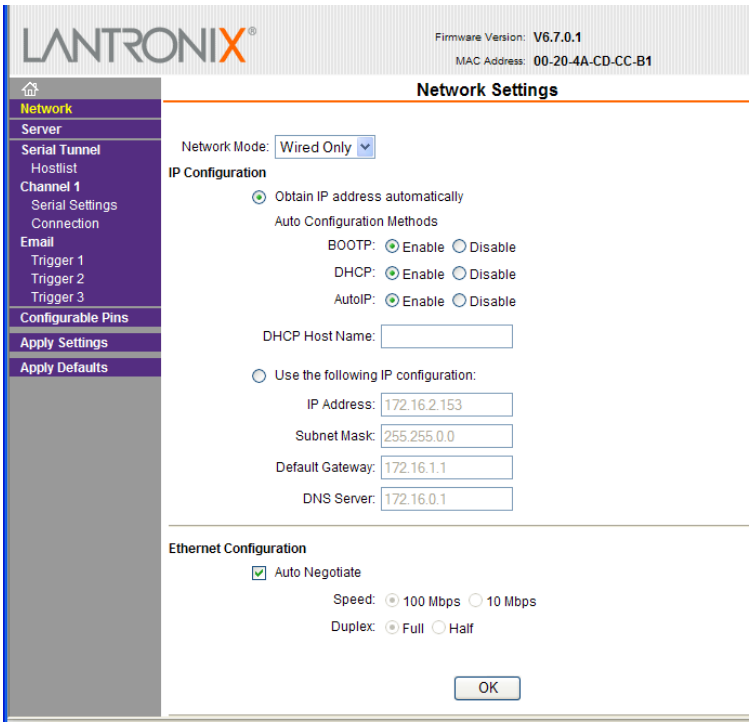
You may also configure the unit to request an IP address from a DHCP server on your network. To access the configuration web page, enter the current IP address into the web browser (e.g. http://192.162.1.10).

The web page may ask for a user name and password. If it does, leave the fields blank and press the "OK" button. A sample dialog window is shown below (for IP address 172.16.2.153).



Follow these steps to assign a new static IP address. You should consult with your network administrator to determine the appropriate values to use for your network configuration.

1. Select the "Network" tab on the web page.
2. Ensure the "DHCP" radio button is set to "Enable."
3. Enter the desired "DHCP Host Name" or leave this box blank.



4. Click the “OK” button on the bottom of the page. You should see the message “Done!” appear next to the OK button.
5. Click “Apply Settings” button on the left hand side of the web page.
6. After a few seconds, the web page will indicate that the configuration is being saved and the unit will reboot.

Appendix C
SOFTWARE INTERFACE

Overview

This chapter describes software interface including the command set and format and the Graphical User Interface program.

Ethernet Command Interface

All commands and replies are sent to the chassis and received from the chassis via the Ethernet. The commands are communicated via TCP/IP protocol to port 10001. The VISA resource descriptor for a chassis is "TCPIP0::<IP address>::10001::SOCKET". Thus, a chassis with an IP address of 192.168.1.10 will have a VISA resource descriptor of "TCPIP0::192.168.1.10::10001::SOCKET". This resource descriptor can be used with the VISA I/O library available from vendors such as National Instruments and Agilent to communicate with the chassis.

Command Format

Every command sent to the chassis uses a common format. Every command consists of 5 8-bit bytes:

- Start Byte (Hex F2)
- First Command Byte
- Second Command Byte (or Hex 14 if the command is only 1 byte)
- Extra Qualifier Byte (Hex BE)
- Checksum. The Checksum is a byte that is formed by exclusive OR-ing the first 4 bytes of the command.

The first command byte consists of two 4-bit fields. The most significant 4 bits contain a command code. The least significant 4 bits contain a chassis address (this convention is from the legacy RS-485 interface). For the Ethernet interface, the low order 4 bits are always hexadecimal "C" (decimal 12, binary 1100).

Supported Commands

The commands supported by the controller are shown in Table C-1.

Table C-1, Supported Commands

Command	1st Command Byte	2nd Command Byte
Reserved Command Code	0000 1100	
Get Data Dump (GDD)	0001 1100	0001 0100
Get Action Data (GAD)	0010 1100	0001 0100
Get ID (GID)	0011 1100	0001 0100
Put Temperature Fault (PTF)	0100 1100	Temp Fault
Calibrate Temperature Sensor (CTS)	0101 1100	Offset
Put Fan Speed (PFS)	0110 1100	Speed
Reset	0111 1100	0001 0100
Select Voltage Threshold (SVT)	1000 1100	Threshold
Put Threshold MSB (PTM)	1001 1100	MSB Data
Put Threshold LSB (PTL)	1010 1100	LSB Data
Get Threshold (GTH)	1011 1100	Threshold
Get Firmware Revision (GFR)	1100 1100	0001 0100
Get Temperature Fault (GTF)	1101 1100	Temp Fault
Get Fan Speed (GFS)	1110 1100	0001 0100
Reserved Command Code	1111 1100	
Select Power Supply (SPS)	0000 1101	Power Supply
Put Power Supply (PPS)	0001 1101	Setting
Get Power Supply (GPS)	0010 1101	Power Supply
Store Configuration (STO)	0011 1101	0001 0100

Get Data Dump Command

The Get Data Dump command returns 36 bytes of data as shown below.

Byte(s)	Meaning
1-5	Action Data
6	Status Byte
7	Fan Speed
8	Slot 0 Exhaust Temperature
9-19	Slot 1 through slot 11 Exhaust Temperatures
20	Slot 12 Exhaust Temperature
21	Inlet (Ambient) Air Temperature
22-23	+24 V
24-25	+12 V
26-27	+5 V
28-29	-2 V
30-31	-5.2 V
32-33	-12 V
34-35	-24 V
36	Checksum

The “Action Data” in bytes 1 – 5 returned from the Get Data Dump command formatted as shown in the following table.

Byte	Bit(s)	Mnemonic	Function
1	0	-2VFLT	-2 V Voltage Fault 0 => AOK 1 => Threshold fault
1	1	+5VFLT	-2 V Voltage Fault 0 => AOK 1 => Threshold fault
1	2	-52VFLT	-5.2 V Voltage Fault 0 => AOK 1 => Threshold fault
1	3	+12VFLT	+12 V Voltage Fault 0 => AOK 1 => Threshold fault
1	4	-12VFLT	-12 V Voltage Fault 0 => AOK 1 => Threshold fault

Byte	Bit(s)	Mnemonic	Function
1	5	+24VFLT	+24 V Voltage Fault 0 => AOK 1 => Threshold fault
1	6	-24VFLT	-24 V Voltage Fault 0 => AOK 1 => Threshold fault
1	7	NU	0
2	0	AFS1	Air Flow Sensor 1 0 => AOK 1 => Alarm
2	1	AFS2	Air Flow Sensor 2 0 => AOK 1 => Alarm
2	2	AFS3	Air Flow Sensor 3 0 => AOK 1 => Alarm
2	3:7	RSVD	Reserved
3	0:7	RSVD	Reserved
4	0	TEMP0	Slot 0 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	1	TEMP1	Slot 1 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	2	TEMP2	Slot 2 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	3	TEMP3	Slot 3 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	4	TEMP4	Slot 4 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	5	TEMP5	Slot 5 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
4	6	TEMP6	Slot 6 Temp Sensor 0 => AOK 1 => Temp Fault Alarm

Byte	Bit(s)	Mnemonic	Function
4	7	TEMP7	Slot 7 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	0	TEMP8	Slot 8 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	1	TEMP9	Slot 9 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	2	TEMP10	Slot 10 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	3	TEMP11	Slot 11 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	4	TEMP12	Slot 12 Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	5	TEMP13	Inlet Temp Sensor 0 => AOK 1 => Temp Fault Alarm
5	6,7	NU	Not used

The Status Byte returned by the Get Data Dump command has the following format.

Bit(s)	Mnemonic	Function
7 (MSB)		EE Test 0 => Fail 1 => Pass
6		Reserved, returns 0
5	STF	Self-Test Flag 0 => Fail 1 => Pass
3,4		Reserved, returns 0
2	Fan Alarm	Fan Fault Flag 0 => F_Fault open 1 => F_Fault closed
1	Temperature Alarm	Temp Fault Flag 0 => T_Fault open 1 => T_Fault closed
0 (LSB)	Voltage Alarm	Voltage Fault Flag 0 => V_Fault open 1 => V_Fault closed

Get Action Data Command

The Get Action Data command returns 6 bytes. The first 5 bytes are the Action Data as described in the Get Data Dump command description above. The 6th byte is the checksum.

Put Temperature Fault Command

The Put Temperature Fault Command (command 4C) sets the temperature fault limit for the chassis. The temperature fault limit is the 2nd byte of the command and is an unsigned, 8-bit value in the range 35 to 105 (decimal).

Calibrate Temperature Sensor Command

The Calibrate Temperature Sensor command (command 5C) provides calibration offset information to the selected temperature sensor. The second byte of the command is encoded as shown below.

When calibrating a temperature sensor, you should set the calibration offset to 0 before the calibration process.

Bits	Meaning
7-4	Temperature sensor address 0-12 => VXI slot 0-12 exhaust 13 => ambient (inlet)
3	Sign 0 => positive 1 => negative
0-2	Offset 0-7 => 0 to 3.5° C

Put Fan Speed Command

The commanded fan speed provided with the PFS command shall be an 8-bit signed value encoded into a single byte. Acceptable values for the commanded fan speed are 0 (Low Speed) and 1 (High Speed). After receipt of a PFS command, the MCB shall maintain the fan speed at the commanded value until the MCB is reset or the fan speed is set to -1.

Reset Command

The Reset Command (command 7C) resets the chassis programmable parameters to the power-up, default values.

Select Voltage Threshold Command

The Select Voltage Threshold Command (command 8C) selects which of the backplane voltages will be the target of the subsequent Put Voltage Threshold MSB and Put Voltage Threshold LSB commands.

The second byte of the command selects the voltage as follows

Bits	Meaning
7-4	Not used
0-3	0 = -2 V low threshold 1 = -2 V high threshold 2 = +5 V low threshold 3 = +5 V high threshold 4 = -5.2 V low threshold 5 = -5.2 V high threshold 6 = +12 V low threshold 7 = +12 V high threshold 8 = -12 V low threshold 9 = -12 V high threshold 10 = +24 V low threshold 11 = +24 V high threshold 12 = -24 V low threshold 13 = -24 V high threshold

Put Voltage Threshold MSB and Put Voltage Threshold LSB Commands

The Put Voltage Threshold MSB Command (command 9C) programs the most significant 8-bits of the voltage threshold. The Put Voltage Threshold LSB Command (command AC) programs the least significant 8-bits of the voltage threshold. The voltage threshold set by these two commands act on the voltage last selected by the Select Voltage Threshold command.

Both commands contain 8 bits of unsigned data as the payload in the 2nd command byte.

When the Put Voltage Threshold LSB command is received, the chassis combines the value received from the Put Voltage Threshold MSB command with the Put Voltage LSB command. This forms a 16-bit unsigned value with a resolution of 1 mV. The sign of the threshold depends on the presently selected voltage threshold. If the presently selected threshold is positive, the threshold is interpreted as positive. If the presently selected voltage is negative, the threshold is interpreted as a negative voltage value.

Get Firmware Revision

The Get Firmware Revision (GFR) command shall return the revision byte twice, once as data and once as the checksum. The firmware revision is returned in hexadecimal, e.g., 0x10 shall designate revision 1.0 of the firmware

Get Temperature Fault

The Get Temperature Fault (GTF) command shall return the fault byte twice, once as data and once as the checksum.

Get Fan Speed

The Get Fan Speed (GFS) command shall return the fan speed twice, once as data and once as the checksum.

Byte(s)	Meaning
1	Threshold MSB
2	Threshold LSB
3	Checksum

Store Configuration

The Store Command (STO) shall store in the EEPROM the following configuration settings:

1. Temperature Fault Level
2. Temperature Sensor Calibration
3. Fan Speed
4. Voltage Fault Thresholds
5. Power Supply Settings

VXI*plug&play* Style Driver

The chassis ships with a VXI*plug&play* style instrument driver that uses the VISA I/O library to communicate with the chassis. This driver contains 'C' source code that can be used as an example of how to communicate with the chassis. In addition, a Windows 32-bit DLL can be used in a variety of Application Development Environments, such as C#/.Net, LabWindows/CVI, and LabVIEW to communicate with the chassis.

Function	Description
ris1263v_init	This function is used to establish a communication link with the 1263MPf chassis. It returns a unique session pointer that is used with every other driver function to identify a specific chassis. After a valid communication link is established the user can additionally perform the following options: 1. Perform an identification query. 2. Reset to power on values.
ris1263v_close	This function terminates the software connection to the 1263MPf and deallocates system resources associated with the session.
ris1263v_getActionData	This function sends the get action data command and reads the data in to the specified flag. A checksum is performed to verify the returned data.
ris1263v_getDataDump	This function sends the get data dump command and reads the data in to the specified buffer. A checksum is performed to verify the returned data. This buffer can then be passed to the data dump query functions to convert the dump data in to the appropriate values.
ris1263v_extractActionData	This function extracts the action data from a previously queried data dump buffer. Use the "ris1263v_getDataDump" to query the chassis monitor before calling this function.

Function	Description
ris1263v_extractStatusByte	This function extracts the status byte data from a previously queried data dump buffer. Use the "ris1263v_getDataDump" to query the chassis monitor before calling this function.
ris1263v_extractFanSpeed	This function extracts the fan speed data from a previously queried data dump buffer. Use the "ris1263v_getDataDump" to query the chassis monitor before calling this function.
ris1263v_extractTemperature	This function extracts the temperature data from a previously queried data dump buffer. Use the "ris1263v_getDataDump" to query the chassis monitor before calling this function.
ris1263v_extractVoltage	This function extracts the voltage data from a previously queried data dump buffer. Use the "ris1263v_getDataDump" to query the chassis monitor before calling this function.
ris1263v_setVoltageThreshold	This function sends the put threshold msb and lsb commands to program the specified voltage threshold limit.
ris1263v_getVoltageThreshold	This function sends the get threshold command to query the specified voltage threshold limit.
ris1263v_setTemperatureFault	This function sends the put temperature fault command to set the threshold that will cause a temperature fault condition.
ris1263v_getTemperatureFault	This function sends the get temperature fault command to query the threshold that will cause a temperature fault condition.
ris1263v_setFanSpeed	This function sends the put fan speed command to set the fan speed mode/speed.
ris1263v_getFanSpeed	This function sends the get fan speed command to query the fan speed setting.
ris1263v_setPowerSupply	This function sends the put power supply command to program the specified power supply value.
ris1263v_getPowerSupply	This function sends the store configuration command.
ris1263v_storeConfiguration	This function sends the get power supply command to query the specified power supply value.
ris1263v_reset	This function places the 1263V monitor into a power-up reset state. The reset function will perform the following actions. Read the EEPROM for valid configuration data and program, otherwise use the following defaults: 1. Voltage fault thresholds at +/-5%. 2. Temperature fault threshold to 45 Celsius. 3. Sets the fan speed mode to auto low. The reset function takes less than a second to complete.
ris1263v_revision_query	This function returns the instrument driver and firmware revision of the instrument being used.

Function	Description
ris1263v_error_query	This function returns an error message for error codes specific to this instrument driver. If the status code does not match one of the instrument specific errors than the text message will be set to "Unknown Status Error" and VI_WARN_UNKNOWN_STATUS will be returned.

Graphical User Interface

The chassis also ships with a Graphical User Interface that allows the user to monitor the status of the various temperature, voltage, and fan speed sensors. In addition, the thresholds can be set with the Graphical User Interface.