

# 1264C/D 6-SLOT VXibus MAINFRAME

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EADS North America Defense Test and Services, Inc.  
4 Goodyear, Irvine, CA 92618  
Tel: (800) 722-2528, (949) 859-8999; Fax: (949) 859-7139

[info@eads-nadefense.com](mailto:info@eads-nadefense.com)  
[sales@eads-nadefense.com](mailto:sales@eads-nadefense.com)  
[helpdesk@eads-nadefense.com](mailto:helpdesk@eads-nadefense.com)  
<http://www.eads-nadefense.com>



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



**CAUTION**  
RISK OF ELECTRICAL SHOCK  
DO NOT OPEN



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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# Chapter 1

## GETTING STARTED

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### Product Description

The 1264C/D 6-Slot VXI Mainframe is a 1264C 6-slot Mainframe that includes rack mount ears, a front door, and a cable tray as standard equipment. The door can be used to mount user connectors and/or display interfaces. The 1264C/D can accommodate six C-size VXI modules. The 1264C/D fully complies with the *VXIbus* Specification Revision 2.0 (and earlier) requirements and is *VXIplug&play* compatible.

### Key Features

**Figures 1-1 through 1-6** and the descriptions below detail the key features of the 1264C/D.

- **User Interface.** The 1264C/D comes with a front door, rack mount ears, and cable tray.
- **Fast Setup.** The 1264C/D backplane uses active-automatic VME interrupt acknowledge and *bus* grant daisy chaining. Manual configuration of backplane switch settings or jumpers has been eliminated.
- **Monitoring.** The 1264C/D standard monitoring gives you key system health status (Voltage, Fan, and Temperature) with front panel LED annunciators for each VXI voltage, the cooling fan, and air temperature monitor.
- **Modular Power Supply, and Fan Assembly.** The 1264C/D modular system design results in a virtually wireless mainframe with low MTTR and high MTBF. See **Figure 1-3**.

## 1264C/D Mainframe

The 1264C/D is a portable high performance 6-slot VXI mainframe (21.31L x 8.71W x 16.75H inches).

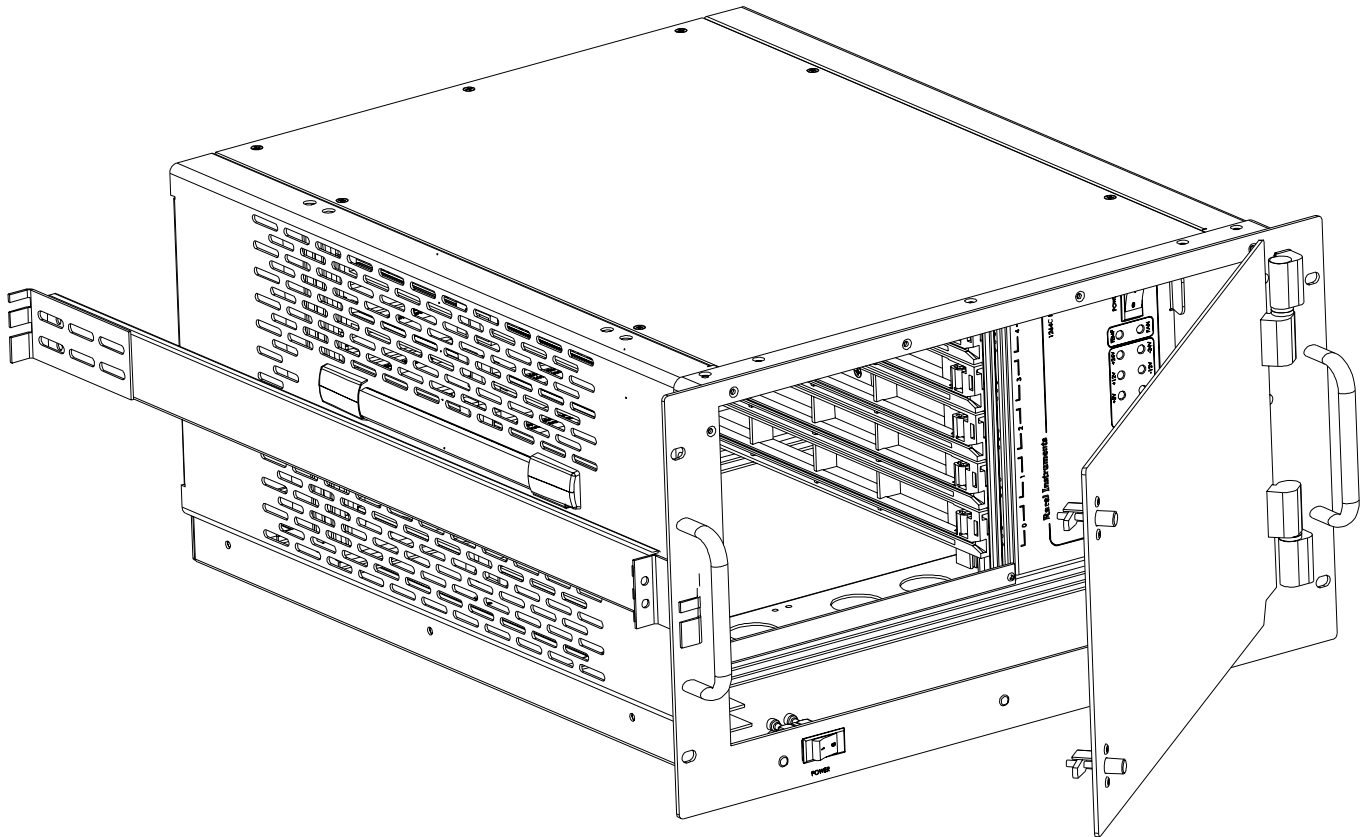


Figure 1-1, 1264C/D Mainframe



## Rack Mount Configuration (5U Footprint)

The 1264C/D mainframe is designed for rack mounting in a 5U tall rack space.

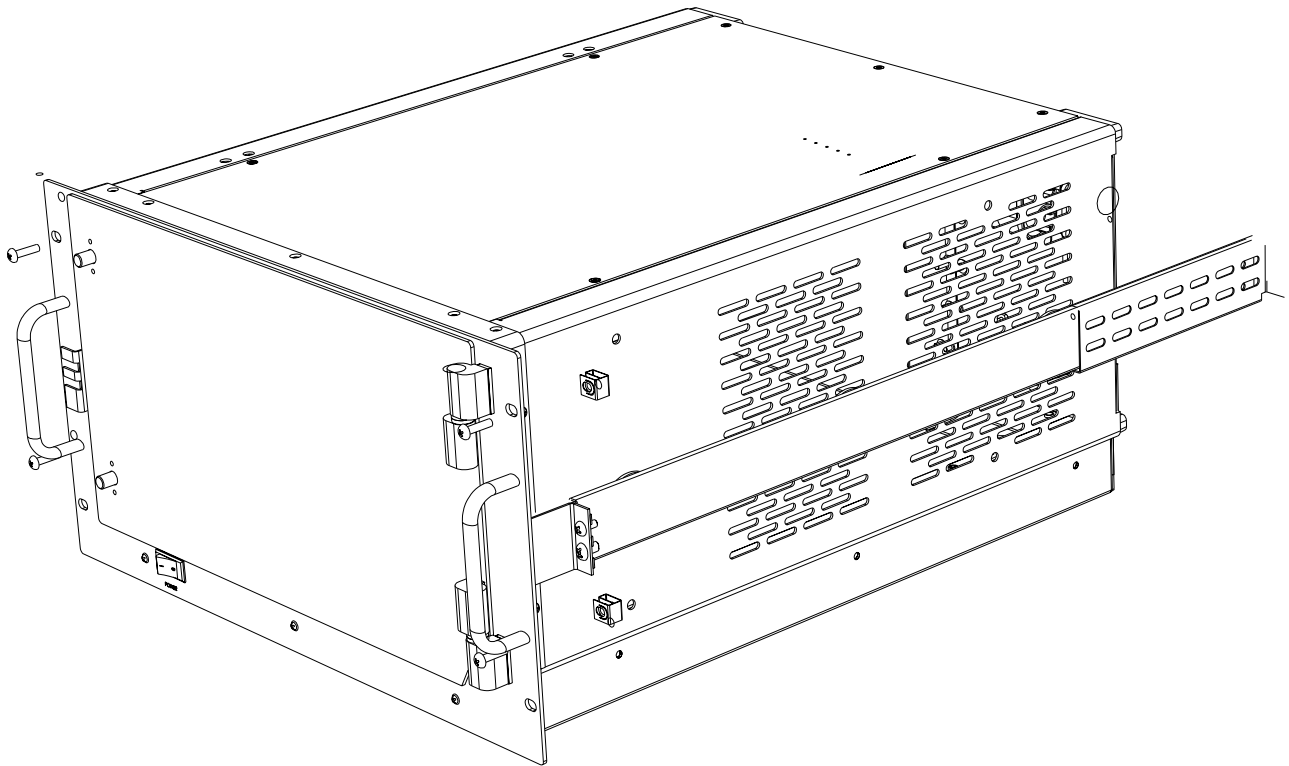


Figure 1-2, 1264C/D Rack Mount (5U Tall) Configuration

## Modular Mainframe Design

The 1264C/D highly modular design includes a wireless power interface between the power supply and the VXI backplane. The result is a low MTTR and high MTBF.

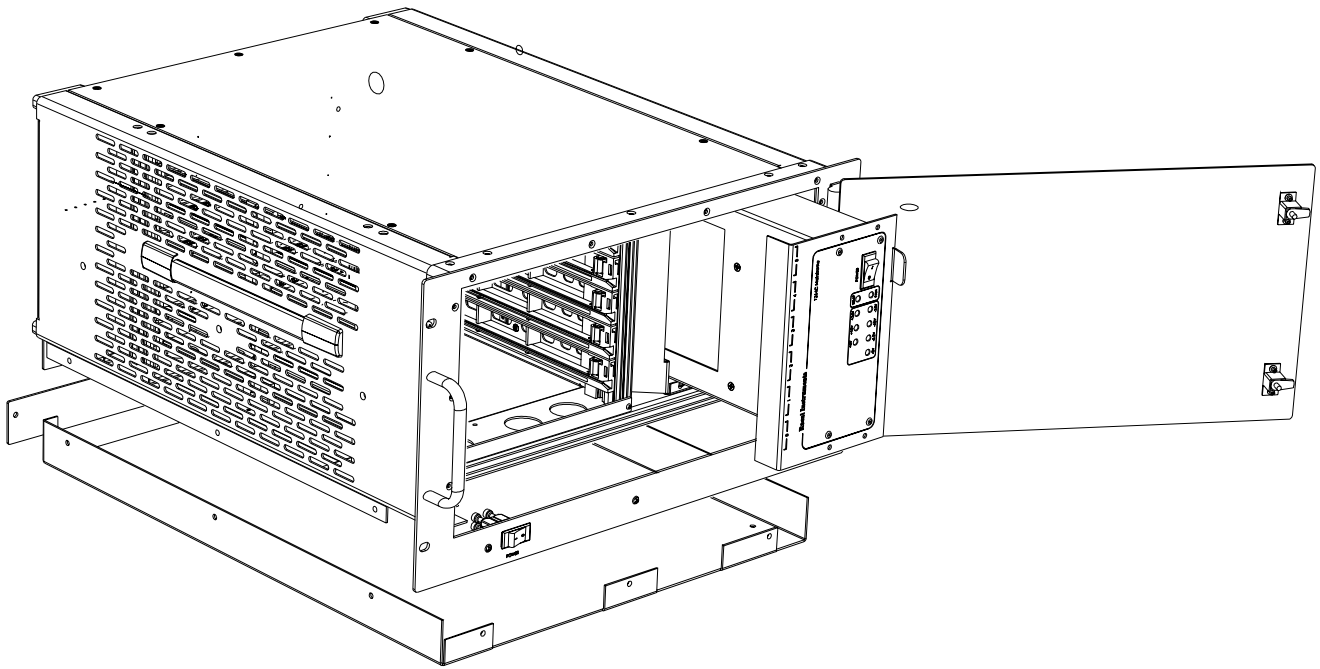


Figure 1-3, Modular Service Friendly Mainframe Design Features

## 500 Watts Usable DC Power

Figure 1-4 depicts the 1264C/D mainframe's 500 Watt modular power supply. Table 1-1 lists the available DC current for each VXI voltage.

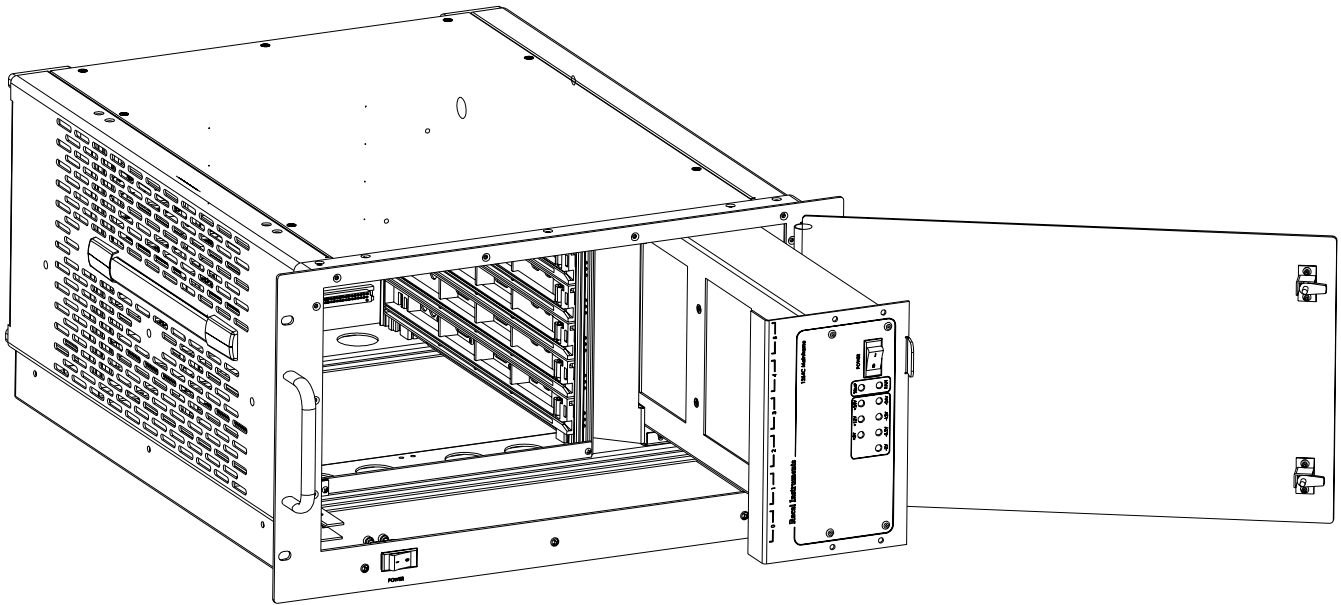


Figure 1-4, 1264C/D 500 Watt Modular Power Supply

Table 1-1, 1264C/D Available DC Current

VXI Voltage	Available DC Current
+5V	45 Amps
-5.2V	30 Amps
-2V	15 Amps
+12V	8 Amps
-12V	8 Amps
+24V	4 Amps
-24V	4 Amps

## Positive Pressure Cooling System

The 1264C/D uses forced air positive pressure cooling to direct air to the VXI modules.

Figure 1-5 details the cooling system.

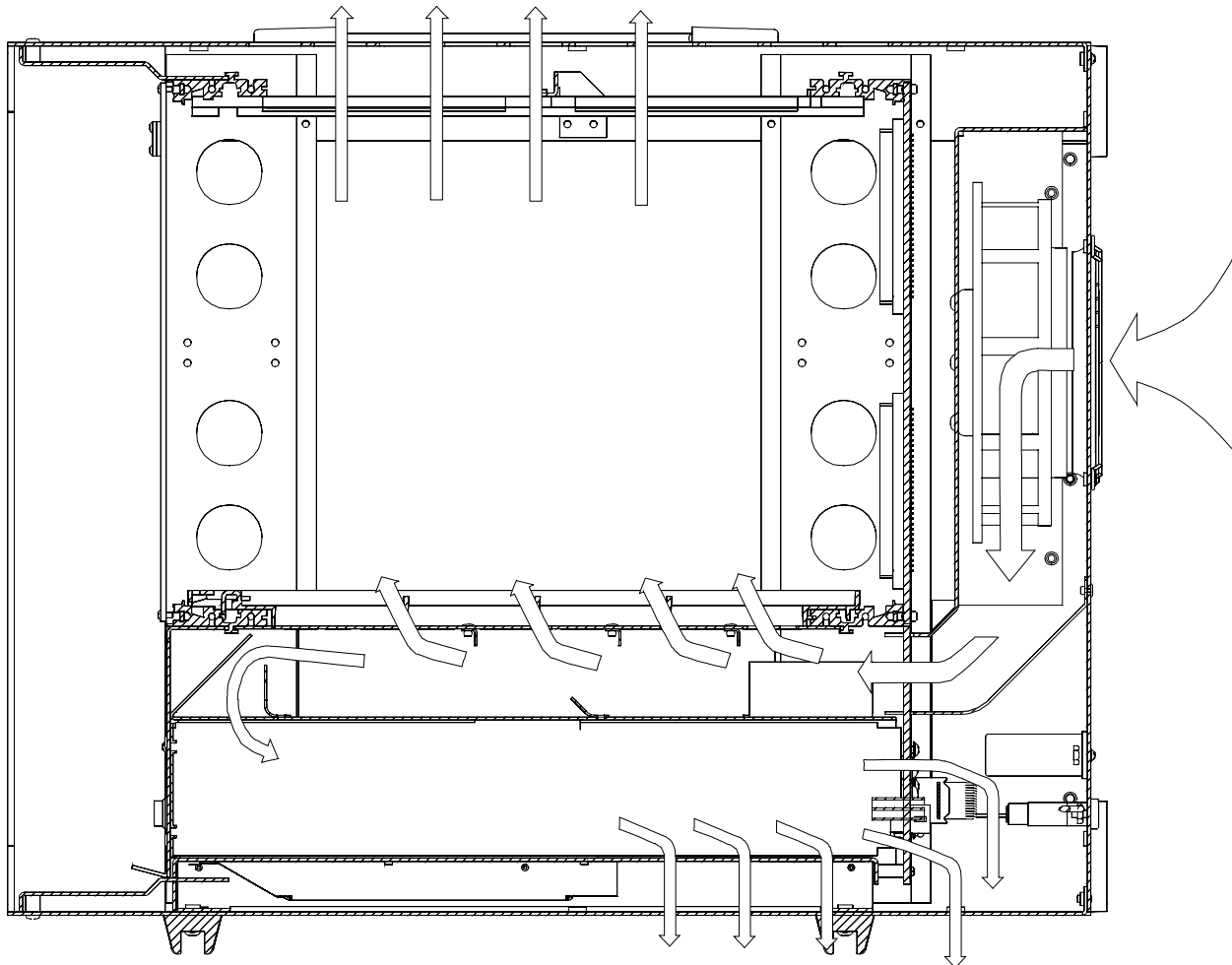


Figure 1-5, 1264C/D Positive Pressure Cooling System (Top View)

## System Monitor

The System Monitor features include a window comparator on each VXIbus voltage, fan failure indicator, and a power supply intake air temperature monitor. Each monitor includes a front panel LED annunciator.

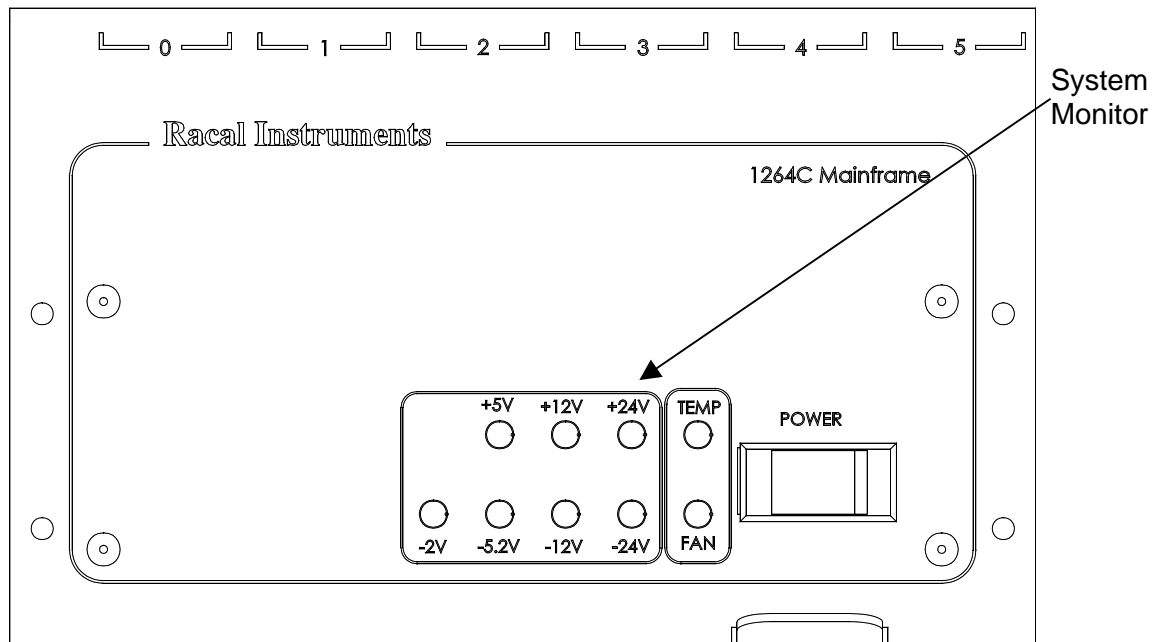


Figure 1-6, 1264C/D System Monitor

## Backplane

The 1264C/D backplane can accommodate up to six C-size VXI modules.

The 1264C/D has a jumperless auto-configurable backplane using active-automatic daisy chaining for the VME Interrupt acknowledge and bus grant daisy chain signal lines. This eliminates the need to manually configure the backplane.

Distribution of the CLK10 reference clock is full differential providing a low skew timing source.

Power is supplied to the backplane through a direct connection to the 1264C/D-power supply eliminating wiring and sub-backplane interconnects. The result is increased reliability and improved dynamic current performance.

## Items Shipped With The 1264C/D

Qty.	Item	Part Number
1	Instruction Manual	980828
1	Power Cable	600620 Standard 600858 w/Option 71

## Spares & Optional Equipment

Spares Ordering Information		
Model	Description	Part Number
Card Guide Cover	Spare Card Guide Cover (block air through unused slots)	456271
Blanking Plate	Blanking Plates (to fill empty module slots)	404836
Option 01	Rack Ears and Slides	407670
Option 04	Rack Ears Only	407671
Option 15	Air Filter	407672
Option 51	Backplane Connector Shrouds (Installed)	407674
Option 52	Inter-Module Shield Kit	407675
Option 71	230 Volt Fusing Option	407676

## CONFIGURING THE 1264C/D

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### Using This Chapter

This section includes basic procedures to install and configure the 1264C/D mainframe. Use this chapter to:

- Review installation site considerations.
- Install VXI modules or optional card guide covers and blanking plates.
- Connect the chassis/safety ground.

**Installation and configuration information for optional equipment is provided with the option.**

### AC Mains Power

When the standard 1264C/D is shipped, it is configured for 120 VAC operation ONLY!

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**WARNING:**

**Option 71 (P/N 407676) is required for applications powered by 230 VAC power. The 1264C/D is configured for 230 VAC operation ONLY when Option 71 is ordered.**

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Should it be necessary to replace the AC mains fuse (F400), refer to Chapter 7: Removal and Replacement of the AC Mains Fuse.

### Site Considerations

The 1264C/D Mainframe is designed to be used freestanding (bench top) or in an instrument rack. Refer to **Figure 1-5** for vent locations for the 1264C/D.

## Installing VXI Modules

Install C-size VXI modules directly into the C-size slots (6) of the mainframe by first placing the module's card edges into the front module guides (top then 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.

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**CAUTION:**

**To avoid possible damages do NOT hot-plug install VXI modules (i.e., install with power on).**

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## Installation and Removal of Card Guide Covers

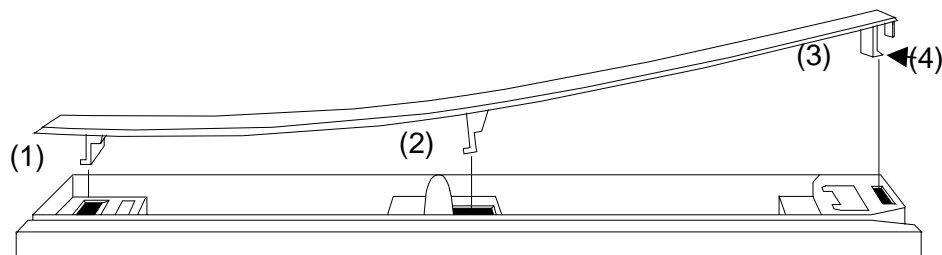
In order to improve cooling of used slots in the VXI mainframe, a limited number of the optional card guide covers, P/N 456271, may be installed at empty C-size slot locations to redirect otherwise wasted airflow.

---

**CAUTION:**

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

---



**Figure 2-1, AirFlow Directors (Card Guide Covers)**

1. Facing the front of the VXI mainframe, with one hand hold the cover by the front end where the "Racal" logo appears.
2. Select the slot to be covered by the cover. Insert the hook at the rear of the cover into the rectangular slot at the back of the cardguide (1). Apply a slight downward pressure on top of the cover (with the other hand) at the rear to engage the hook into the cardguide.
3. Slightly flex the cover upward at the front, maintaining pressure at the rear, and lower the center hook of the cover into the center rectangular slot in the cardguide (2).



4. Press down and back to allow both center and rear hook to engage fully into the cardguide.
5. Lower the front of the cover and allow the snap-in hook to rest on the cardguide (3).
6. With a slotted screwdriver or similar flat-bladed tool, depress the spring hook (4) at a slight downward angle, applying light pressure at the front end. This will cause the snap-hook to firmly seat the cover into place.
7. To remove the cover, depress the snap-in hook (4) 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.

## Installation of Rack Mount Options

Refer to page 5-41 for installation of Option 01, Rack Ears and Slides (P/N 407670).

Refer to page 5-42 for installation of Option 04, Rack Ears only (P/N 407671).

## Installing Blanking Panels

In order to optimize system performance, install optional blanking panels (P/N 404836) into unused or C-size empty slots. Secure with two captive mounting screws. Refer to **Figure 2-3**.

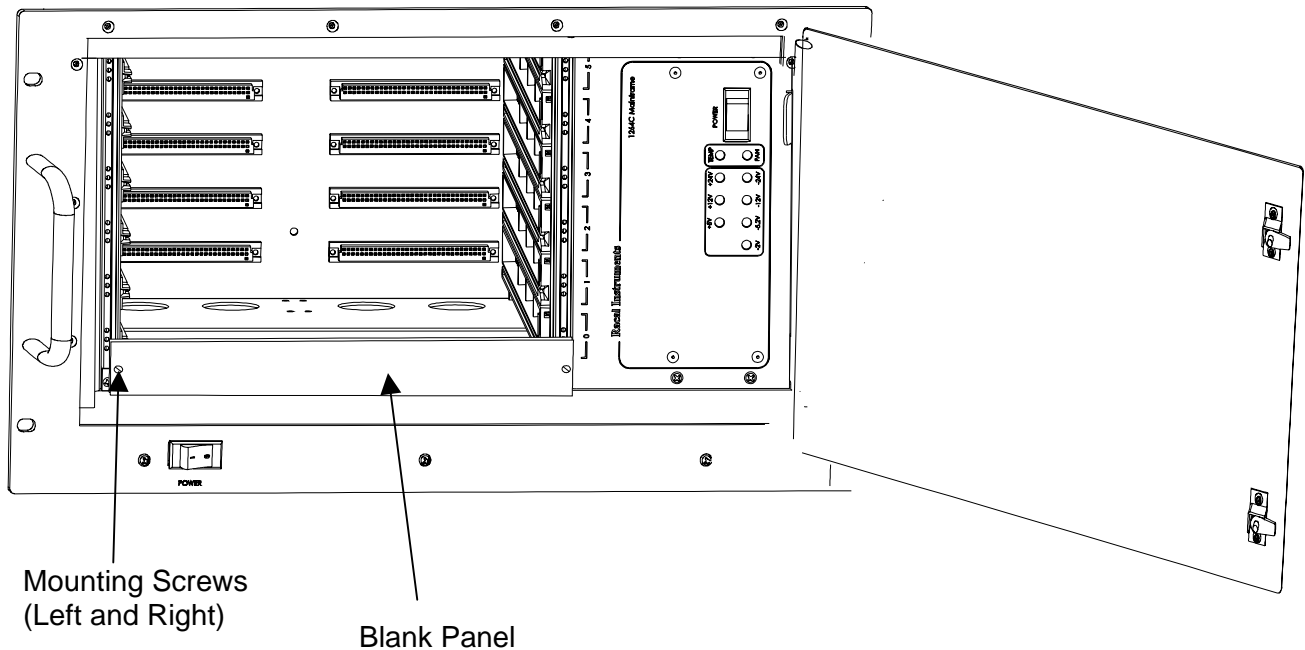


Figure 2-2, Blanking Panels

## Connecting Chassis Ground

Connect the Chassis (Safety) Ground to an earth or the ground of one or more instruments in the system. This ensures a common ground connection between instruments.

1. Connect a 16 AWG (1.3mm<sup>2</sup> or larger) wire to the 8-32 chassis (safety) grounding screw using a toothed grounding lug. The wire insulation must be green with a yellow stripe or non-insulated (bare wire).
2. Attach the opposite end of the wire to permanent earth ground earth (or to the ground of one or more instruments in the system) using toothed washers or a toothed lug.

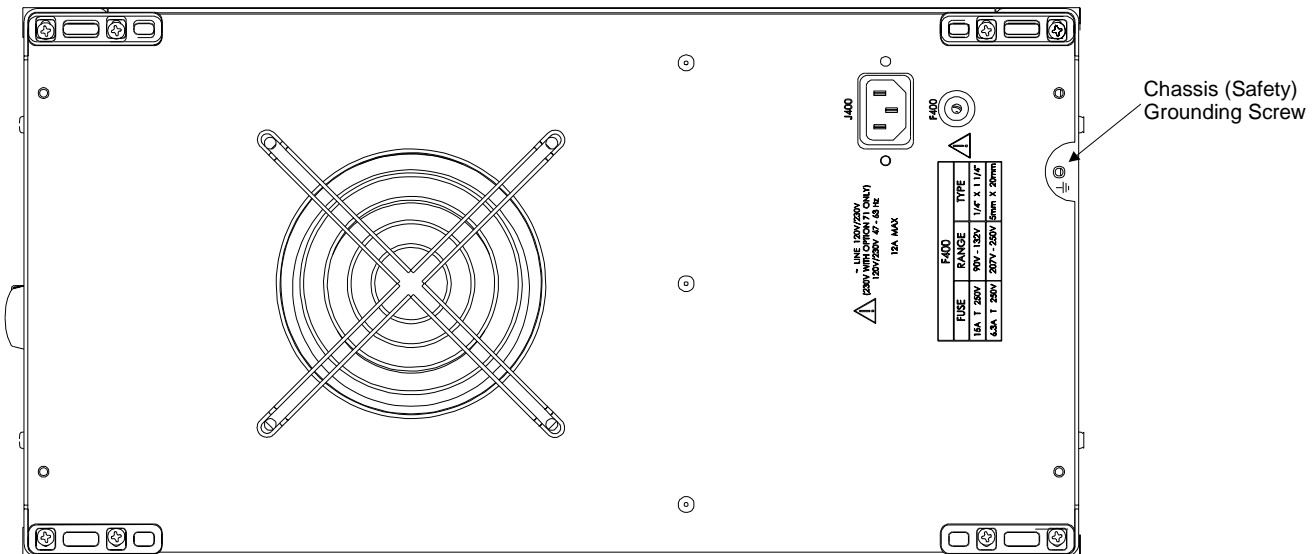


Figure 2-3, Connecting Safety Ground

# OPERATING THE 1264C/D

## Using This Chapter

Use this Chapter to:

- Review front and rear panel user interfaces.
- Power the mainframe on/off.
- Review Monitoring Basics guide to the front panel indicators.
- Perform basic functional check of the mainframe VXI voltages.
- Reference pin connections for VXI P1 and P2 Connectors.

## 1264C/D Front View

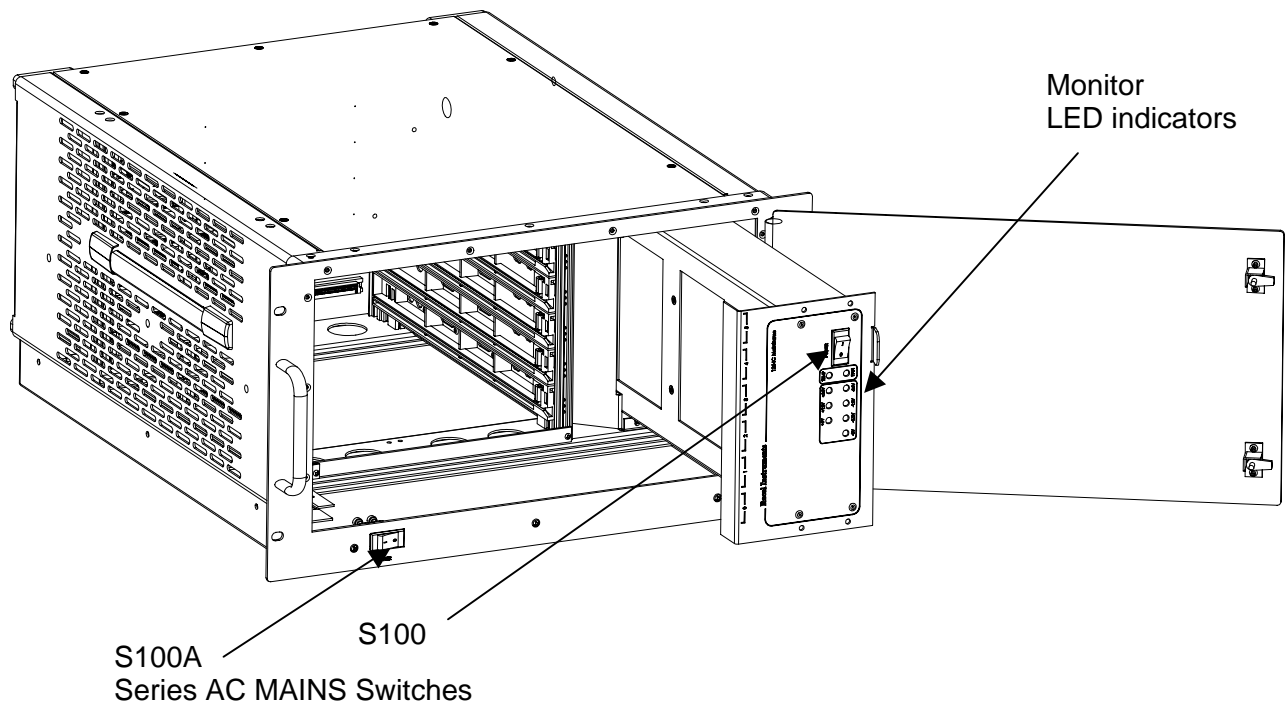
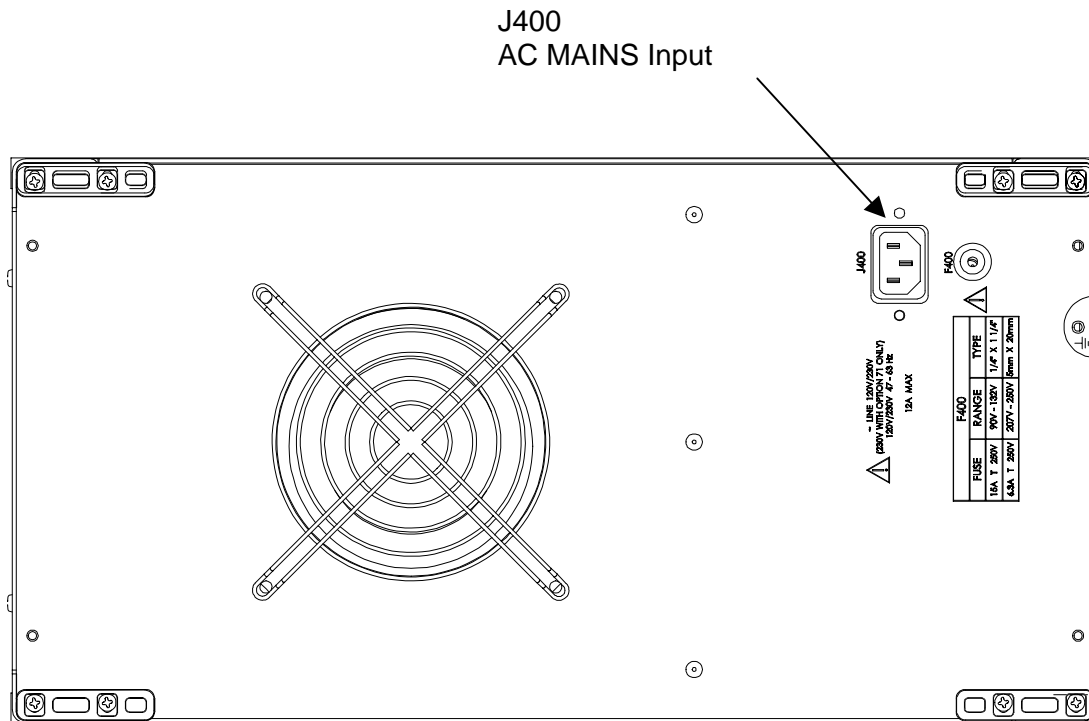


Figure 3-1, 1264C/D Front View

## 1264C/D Rear View



**Figure 3-2, 1264C/D Rear View**

## Power The Mainframe ON/OFF

Refer to **Figures 3-1 and 3-2** and the description below.

1. Set front panel AC power switch S100A to the "O" or off position (for convenience, the S100 may be left in the "1" or ON position).
2. Connect the AC Power cord at J400 to the AC power source – 115 VAC (ONLY!) for the standard 1264C/D, or 230 VAC (ONLY!) if Option 71 is installed.
3. Turn the chassis on by setting the front panel switch S100A to the "I" or ON position.
4. Observe that the front panel LED indicators all turn Green. Note that the FAN LED indicator will illuminate RED while the fan ramps up to full speed. After approximately 20 seconds the FAN LED should turn Green.

**WARNING:**

Option 71 (P/N 407676) is required for applications powered by 230 VAC power. The 1264C/D is configured for 230 VAC operation ONLY when Option 71 is ordered

## Monitoring Basics

Refer to **Figures 3-1 and 3-2** while using **Table 3-1** to interpret system monitor information. Refer to Section 7 Troubleshooting if a system fault is detected.

**Table 3-1, Monitoring Basics**

WHAT YOU SEE ON THE FRONT PANEL	WHAT IT MEANS
Green LED illuminated for:  <b>+5V</b> <b>+12V</b> <b>+24V</b> <b>-2V</b> <b>-5.2V</b> <b>-12V</b> <b>-24V</b>	VXI Voltages are within acceptable limits  $+4.56V \leq \mathbf{+5V Rail} \leq +5.50V$ $+10.95V \leq \mathbf{+12V Rail} \leq +13.20V$ $+21.90V \leq \mathbf{+24V Rail} \leq +26.40V$ $-2.20V \leq \mathbf{-2V Rail} \leq -1.83V$ $-5.72V \leq \mathbf{-5.2V Rail} \leq -4.75V$ $-13.20V \leq \mathbf{-12V Rail} \leq -10.95V$ $-26.40V \leq \mathbf{-24V Rail} \leq -21.90V$
Green LED illuminated for:  <b>FAN</b>	Cooling fan is operating
Green LED illuminated for:  <b>TEMP</b>	Power supply intake air temperature $\leq 60^{\circ}\text{C}$

## Backplane Connections

**Table 3-2** shows the P1 connector pinouts for all slots in the 1264C/D. **Table 3-3** shows the P2 connector pinouts for all non-slot 0 slots. **Table 3-4** shows the P2 connector pinouts for the VXIbus slot 0.

Table 3-2, P1 Connector Pinouts

Pin	Row A	Row B	Row C
1	D00	BBSY*	D08
2	D01	BCLR*	D09
3	D02	ACFAIL*	D10
4	D03	BG0IN*	D11
5	D04	BG0OUT*	D12
6	D05	BG1IN*	D13
7	D06	BG1OUT*	D14
8	D07	BG2IN*	D15
9	GND	BG2OUT*	GND
10	SYSCLK	BG3IN*	SYSFAIL*
11	GND	BG3OUT*	BERR*
12	DS1*	BR0*	SYSRESET*
13	DS0*	BR1*	LWORD*
14	WRITE*	BR2*	AM5
15	GND	BR3*	A23
16	DTACK*	AM0	A22
17	GND	AM1	A21
18	AS*	AM2	A20
19	GND	AM3	A19
20	IACK*	GND	A18
21	IACKIN*	SERCLK	A17
22	IACKOUT*	SERDAT*	A16
23	AM4	GND	A15
24	A07	IRQ7*	A14
25	A06	IRQ6*	A13
26	A05	IRQ5*	A12
27	A04	IRQ4*	A11
28	A03	IRQ3*	A10
29	A02	IRQ2*	A09
30	A01	IRQ1*	A08
31	-12V	+5V STDBY	+12V
32	+5V	+5V	+5V

Table 3-3, P2 Connector Pinouts For All Non-Slot 0 Locations

Pin	Row A	Row B	Row C
1	ECLTRG0	+5V	CLK10+
2	-2V	GND	CLK10-
3	ECLTRG1	RSV1	GND
4	GND	A24	-5.2V
5	LBUSA00	A25	LBUSC00
6	LBUSA01	A26	LBUSC01
7	-5.2V	A27	GND
8	LBUSA02	A28	LBUSC02
9	LBUSA03	A29	LBUSC03
10	GND	A30	GND
11	LBUSA04	A31	LBUSC04
12	LBUSA05	GND	LBUSC05
13	-5.2V	+5V	-2V
14	LBUSA06	D16	LBUSC06
15	LBUSA07	D17	LBUSC07
16	GND	D18	GND
17	LBUSA08	D19	LBUSC08
18	LBUSA09	D20	LBUSC09
19	-5.2V	D21	-5.2V
20	LBUSA10	D22	LBUSC10
21	LBUSA11	D23	LBUSC11
22	GND	GND	GND
23	TTLTRG0*	D24	TTLTRG1*
24	TTLTRG2*	D25	TTLTRG3*
25	+5V	D26	GND
26	TTLTRG4*	D27	TTLTRG5*
27	TTLTRG6*	D28	TTLTRG7*
28	GND	D29	GND
29	RSV2	D30	RSV3
30	MODID	D31	GND
31	GND	GND	+24V
32	SUMBUS	+5V	-24V

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

Pin	Row A	Row B	Row C
1	ECLTRG0	+5V	CLK10+
2	-2V	GND	CLK10-
3	ECLTRG1	RSV1	GND
4	GND	A24	-5.2V
5	MODID12	A25	LBUSC00
6	MODID11	A26	LBUSC01
7	-5.2V	A27	GND
8	MODID10	A28	LBUSC02
9	MODID09	A29	LBUSC03
10	GND	A30	GND
11	MODID08	A31	LBUSC04
12	MODID07	GND	LBUSC05
13	-5.2V	+5V	-2V
14	MODID06	D16	LBUSC06
15	MODID05	D17	LBUSC07
16	GND	D18	GND
17	MODID04	D19	LBUSC08
18	MODID03	D20	LBUSC09
19	-5.2V	D21	-5,2V
20	MODID02	D22	LBUSC10
21	MODID01	D23	LBUSC11
22	GND	GND	GND
23	TTLTRGO*	D24	TTLTRG1*
24	TTLTRG2*	D25	TTLTRG3*
25	+5V	D26	GND
26	TTLTRG4*	D27	TTLTRG5*
27	TTLTRG6*	D28	TTLTRG7*
28	GND	D29	GND
29	RSV2	D30	RSV3
30	MODID00	D31	GND
31	GND	GND	+24V
32	SUMBUS	+5V	-24V



## Basic Functional Check

The functional check consists of checking the 1264C/D power supply voltages to the VXIbus limits at the P1 and P2 connectors using a digital voltmeter.

Referring to **Tables 3-2 to 3-5** and **Figure 3-1** connect one lead of the voltmeter to a supply pin. Connect the reference lead of the voltmeter to one of the ground pins. Compare each voltage reading to the values listed in **Table 3-5**.

**Table 3-5, Power Supply Voltages at the P1 and P2 Connectors**

P1/P2 Measurement Location (PIN)	Supply	VXI Acceptable Voltage Range
P1-C32	+5V	4.87V to 5.25V
P1-A31	-12V	-12.6 to 11.64V
P2-C32	-24V	-25.2V to -23.28V
P2-C13	-2V	-2.1V to -1.9V
P1-C31	+12V	11.64V to 12.6V
P2-C31	+24V	23.28V to 25.2V
P2-C4	-5.2V	-5.46V to -5.04V
P1-C9, P2-C3	Logic Ground	

If the voltages are within the specified ranges, the mainframe complies with the VXI voltage limit specifications.

Note that the "Voltage Range" values in **Table 3-5** are identical to the VXIbus Specification. The voltage range limits provided in **Table 3-1** refer to the voltage monitor indicators on the 1264C/D front panel. The monitor will detect a voltage error when the limit is exceeded ( $V_{\text{nominal}} \pm 10\% V_{\text{nominal}} \pm 4\%$  accuracy).

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## UNDERSTANDING THE 1264C/D

---

### Overview

The 1264C/D Mainframe consists of the following major functional blocks.

- Power Supply
- Backplane
- Cooling System
- System Monitor

**Figure 4-1** shows the functional block diagram of the 1264C/D Mainframe.

### Power Supply

The power supply 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
- System Monitor board

---

### Power Supply Interconnections

Power is supplied to the backplane through a board-to-board connection eliminating any wiring and sub-backplane interconnect boards. This design reduces the path impedance between the supply and the VXI modules receiving power, which results in improved dynamic current performance. See Appendix A for specifications.

Remote sense correction is provided for the +5V, -2V, and -5.2V VXI supplies. The remote sense signals are routed from PS1 through the monitor board (405141-J2) to the backplane via the 14-pin ribbon cable (405141-J1 to 405130-J50).

The Power Fail signal is routed from PS1 to the monitor board (405141-J2) and used to generate the VME signals ACFAIL\* and SYSRESET\*. These signals are then routed to the backplane through the 14-pin ribbon cable (405141-J1 to 405130-J50).

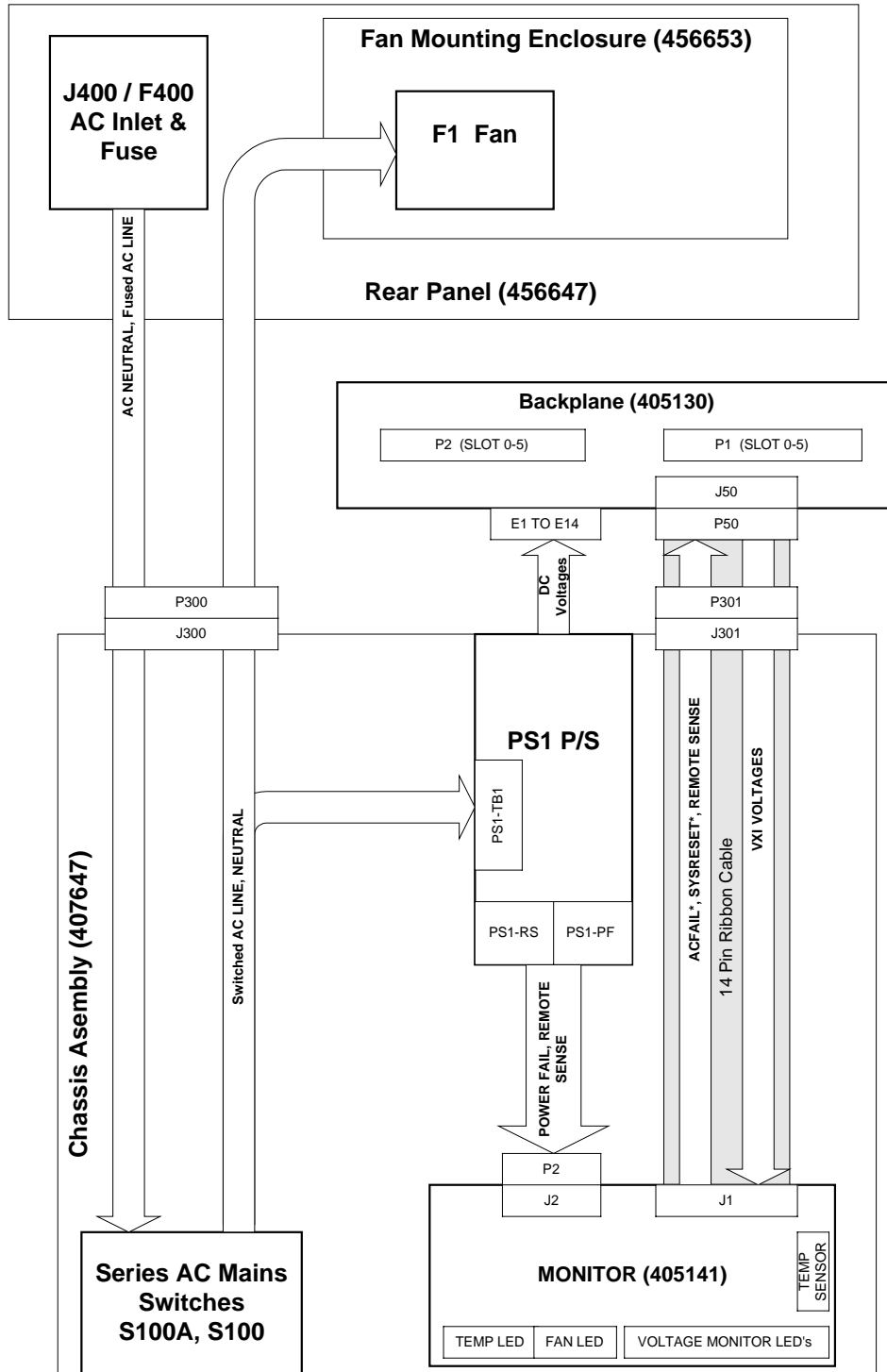


Figure 4-1, Functional Block Diagram For 1264C/D Mainframe

---

## Power Supply Protections

The seven VXIbus power supply outputs are protected for:

- Over-voltage
- Over-current and short circuit
- Over-temperature

The AC input of the power supply includes protections for:

- Input current fusing

See Appendix A for specification details pertaining to the above protections.

If any of the over-voltage or over-temperature protections are active, the power supplies will shutdown. This means the supply has turned itself off to protect the system. The AC power must be cycled to clear the shutdown condition. If the supply continues to shutdown then the external fault is still present.

If any of the over-current and short-circuit protections are active the power supply will go into current-limit and the voltage on the respective output may be reduced or at ground potential. These protections are self-correcting and the respective output will return to its nominal value when the fault is removed.

## Blackplane

The Backplane (405130) serves several functions

- Accommodates up to 6 C-size VXI.
- Rigid mechanical interface which accommodates a lifetime of insertions of VXI modules.
- Mechanically connects (at E1 to E14) to the power supply and distributes DC voltages and currents to VXI modules (through P1 and P2).
- Connects the VME communications interface across P1 and P2 to all slots.
- Connects the VXI extension signals across P2 rows A and C to all slots.
- Connects to the system monitor board through a 14-pin ribbon cable between J50 on the backplane and J301 on the power supply assembly (407645).

## AC Interface

AC Power supplied to the 1264C/D at J400 is fused at F400 and routed to series connected switches S100A and S100 (main On/Off). The secondary side of the switches is routed to the power supply PS1 and to the cooling fan F1. The in-line connector interface J300/P300 provides the means of routing the AC power from the rear panel to the power supply assembly (including S100A, S100) and back to the cooling fan.

## Cooling System

The cooling fan F1 is located rear of the mainframe.

---

## Airflow

Module cooling air enters at the rear of a 1264C/D mainframe and is forced into a pressurized plenum below P2 the VXI modules. The high pressure in the plenum forces the air through a metering plate into the P2 connector side of the VXI modules. The air passing over components in the modules absorbs heat and exits at the P1 side of the modules.

---

## Cooling The Power Supply

Cooling air is forced into the power supply at the bottom front of the 1264C/D routed through the supply and exhausts at the bottom of the unit.

## System Monitor

System Monitor features include a window comparator on each VXIbus voltage, a fan failure indicator, and a power supply intake air temperature monitor. Each monitor includes a front panel LED.

Refer to **Figure 4-2** System Monitor Block Diagram and the description below.

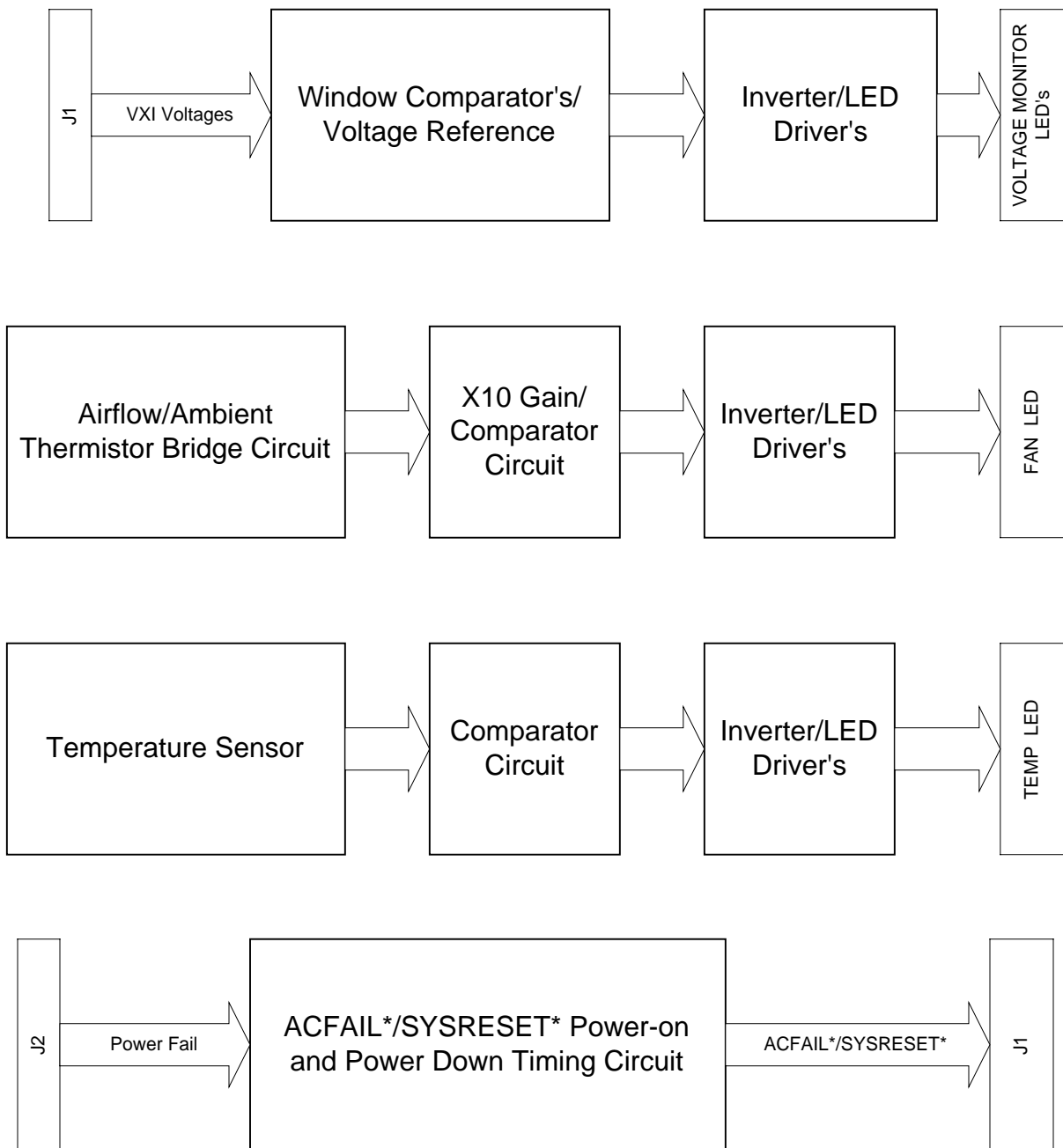


Figure 4-2, System Monitor Block Diagram

---

## Voltage Monitor

The VXI voltages are routed to the monitor board from the backplane through the 14-pin ribbon cable. The voltages are scaled and inverted (negative supplies only) and routed to the window comparators. The window comparator thresholds are set to detect whether the supply is within  $\pm 10\%$  of nominal. A 2.5V reference is used to establish the window comparator thresholds. The reference can be adjusted via potentiometer R148 while measuring the voltage between J4-1 and J4-4 (GND). If the respective supply is within limits the front panel LED is Green. The LED will illuminate Red if the supply is out of limits.

---

## Fan Monitor

The fan monitor verifies that the fan is delivering cooling air by measuring the voltage difference between two self-heating thermistors. The ambient thermistor RT2 is isolated from the fan air stream. The air flow detecting thermistor RT1 is in the air stream. When the fan is operating properly the front panel LED is Green. The LED will illuminate Red if the fan is not operating.

---

## Temperature Monitor

The power supply ambient intake air temperature is monitored by sensor U11. The sensor generates a voltage ( $500 \text{ mV} + 10 \text{ mV}/^\circ\text{C}$ ). The temperature monitor comparator is set to generate a fault (Red LED) at  $60^\circ\text{C}$  (or 1.10V). Operation of the chassis at ambient temperatures above  $60^\circ\text{C}$  is not recommended.

---

## ACFAIL\* and SYSRESET\* Signals

The monitor board receives the Power Fail signal from the PS1 supply at J2-1. From this signal the VME signals ACFAIL\* and SYSRESET are generated with the appropriate timing relationship – see the VME specification revision C-1, or later. The signals are then routed to the backplane through the 14-pin ribbon cable between J1 (monitor) and J50 on the backplane.



## Chapter 5

# MAINTENANCE

---

### What's In This Chapter

This chapter provides information regarding calibration and procedures for inspecting and cleaning the 1264C/D, removing and replacing mainframe components, and isolating problems to the module level. Refer to Chapter 4 Understanding The 1264C/D for theory of operation information.

### Calibration

The 1264C/D does not require calibration. To verify proper operation see the Basic Functional Check section in Chapter 3.

### Service Strategy

The service procedures in this manual provide removal and replacement procedures to repair the 1264C/D to the module level. Module level repairs are accomplished by exchanging faulty modules with known good modules or parts. No component-level repair information is provided in this manual.

### Service Interval

Clean the fan filter (optional) at a maximum interval of six months. Depending upon the amount of usage and ambient dust levels in the operating environment, the filters may require more frequent cleaning.

Clean dust from the mainframe exterior (and interior) as needed, based on the operating environment. Periodic cleaning reduces the probability of 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 1264C/D 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 and cleaning fan filters. 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 deionized 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.**

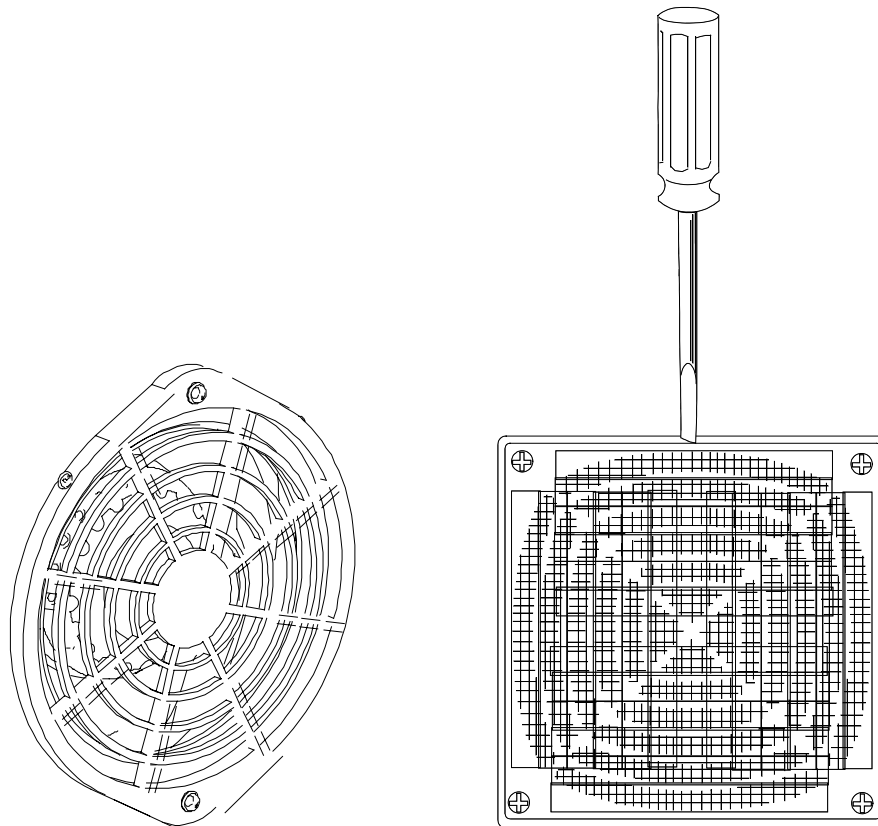
**Do not wash the front or rear panel connectors or switches. Cover these components while cleaning the mainframe.**

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

---

## Cleaning The Fan Filters

The fan filter (optional) is easily removed from the rear of the mainframe as shown in **Figure 5-1**. The fan filter shape may be either square or oval depending upon the model purchased.



**Figure 5-1, Cleaning The Fan Filter**

1. Pry off the plastic grill retaining the supply fan filter. Use a flat blade screwdriver if necessary.
2. Remove the supply fan filter towards the rear.
3. Clean the supply fan filter by washing in mild soap solution, vacuuming or blowing air through the filter. Rinse the filter with water and dry before replacing it in the mainframe.

## **Modular Component Removal and Replacement**

The following procedures describe how to remove and replace module-level components of the 1264C/D Mainframe. Perform these procedures only as necessary as part of installation (e.g. fuse replacement), 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.**

---

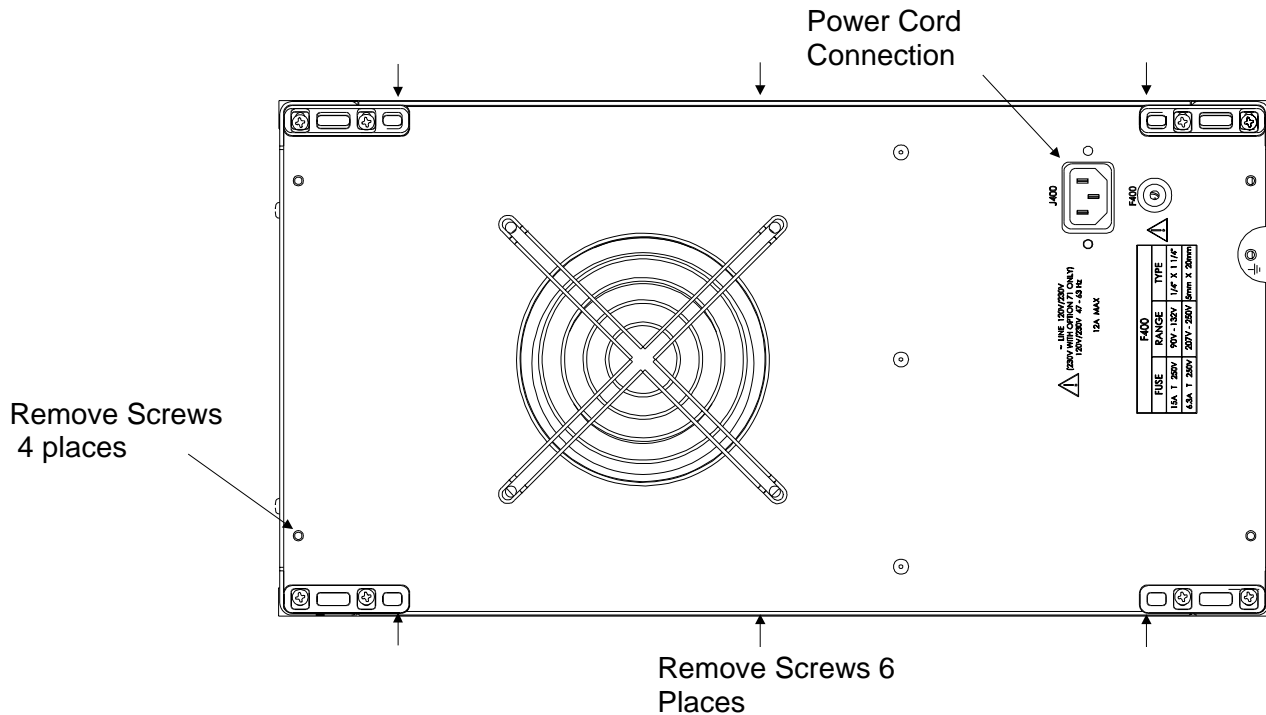
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## **Tools Required**

The only tools required to disassemble the 1264C/D chassis to the module level are a medium flat blade and Phillips screwdriver.

## Removal and Replacement of The Fan Assembly

The fan assembly may be removed and replaced as described in the following steps. Refer to **Figure 5-2**.

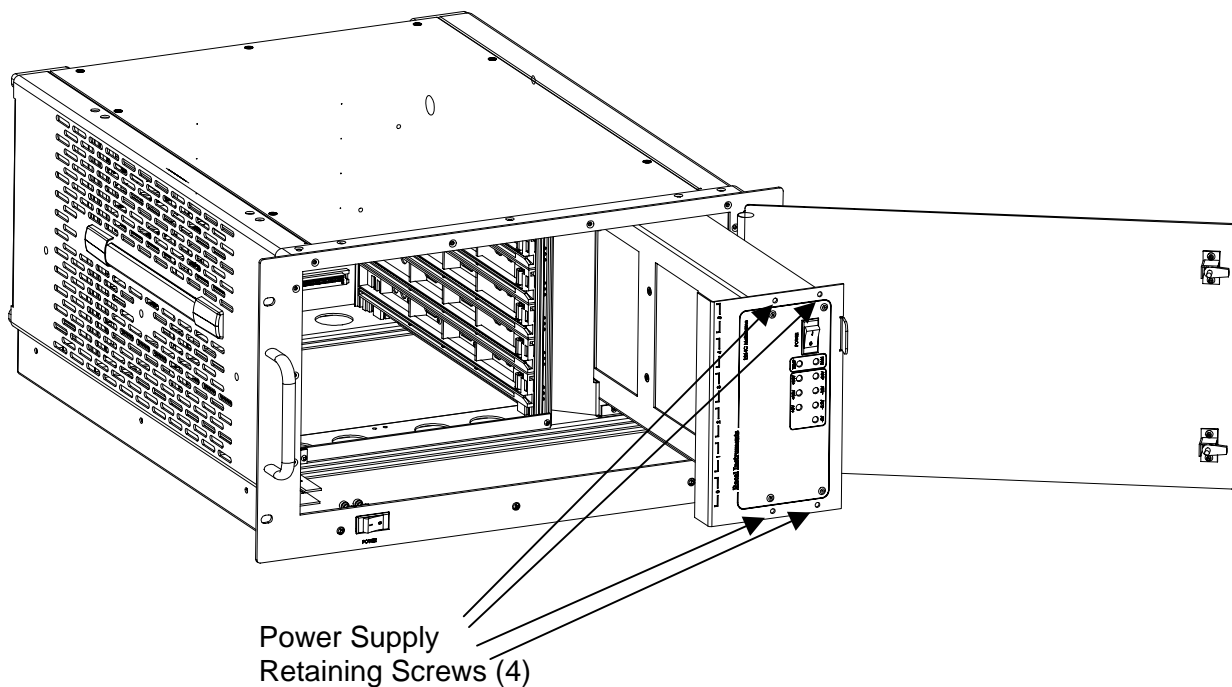


**Figure 5-2, Fan Assembly/Rear Panel Removal**

1. Remove the power cord. Loosen the retaining Phillips screws located on the rear and side panels of the mainframe. Remove the rear panel (with Fan) towards the rear being careful not to damage the fan wiring.
2. Disconnect the in-line connector (J300/P300) by grasping each mating half and gently pulling apart.
3. To reinstall the module fan assembly, reverse steps 1 and 2, above.

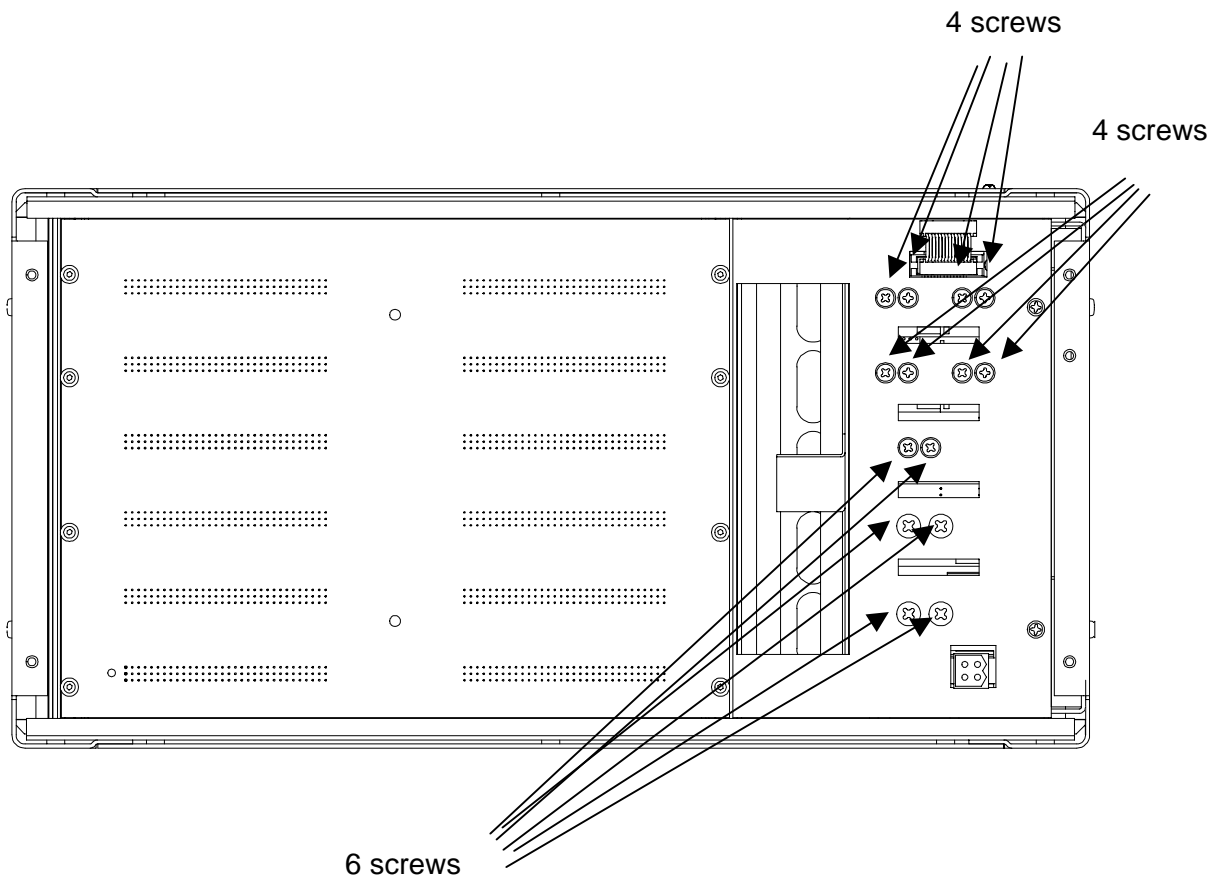
## Removal and Replacement of The Power Supply Assembly

First open the front door, then remove and install the power supply assembly from the mainframe. Refer to **Figure 5-3** and perform the steps below.



**Figure 5-3, Removing The Power Supply**

1. Unplug the AC power cord from the rear panel of the 1264C/D and remove the rear panel/fan assembly following the instructions from Removal and Replacement of The Fan Assembly, above.
2. Disconnect the in-line connector (J301/P301) by grasping each mating half and gently pulling apart.
3. Disconnect (J300/P300)
4. Loosen the four screws which secure the power supply front panel to the mainframe. Loosen the fourteen screws at E1 to E14 which secure the power supply to the backplane (405130). See **Figure 5-3** for locations retaining screws.



**Figure 5-4, Loosening The 14 Screws**

5. Push at J300 on the rear of the supply assembly to slide the supply assembly towards the front of the mainframe.
6. Firmly grasp the tab (handle) at the bottom front of the power supply assembly and pull forward using a slight side to side rocking motion. If the power supply is difficult to remove, recheck to make sure all the retaining screws are disengaged.
7. To reinstall a power supply into the mainframe, first align the power supply with the cavity at the front of the mainframe. Note that the silkscreen on the supply rear panel will read correctly when the supply is in the proper orientation. Align the U-channel frame on guides.
8. Gently guide the power supply forward until engagement with the backplane is felt.
9. Tighten the four front panel screws and the fourteen backplane screws at E1 to E14.
10. Connect (J301/P301)
11. Connect ribbon cable connector (P300/J300)
12. Replace the rear panel/fan assembly.

## Removal and Replacement of The AC Mains Fuse

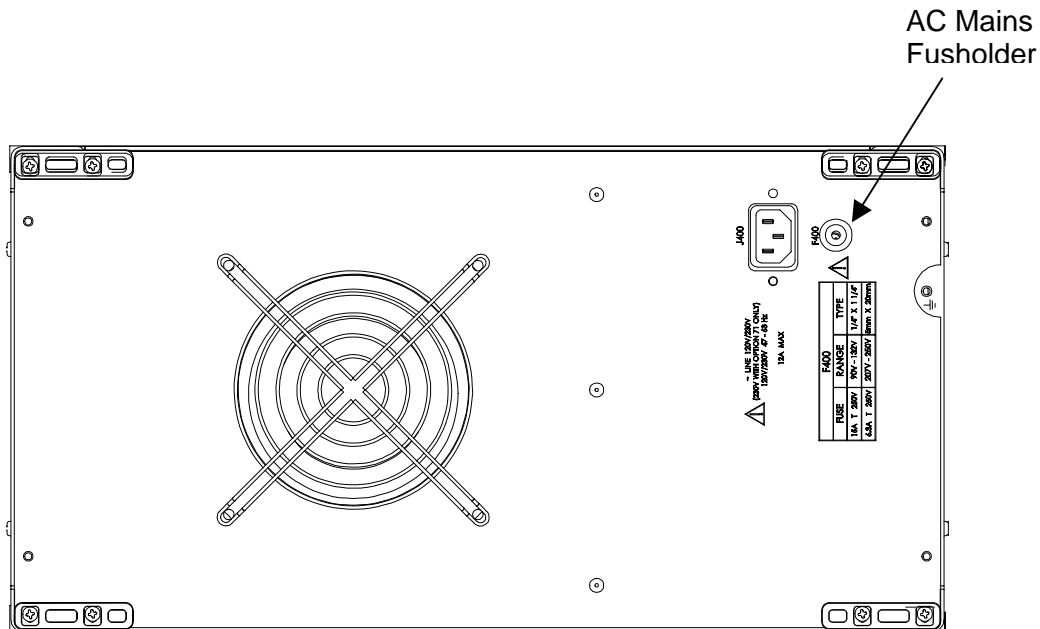
Complete the steps below while referring to **Figure 5-5**.

---

**WARNING:**

**To avoid electrical shock, the AC mains power input must be disconnected before replacement of the fuse.**

---



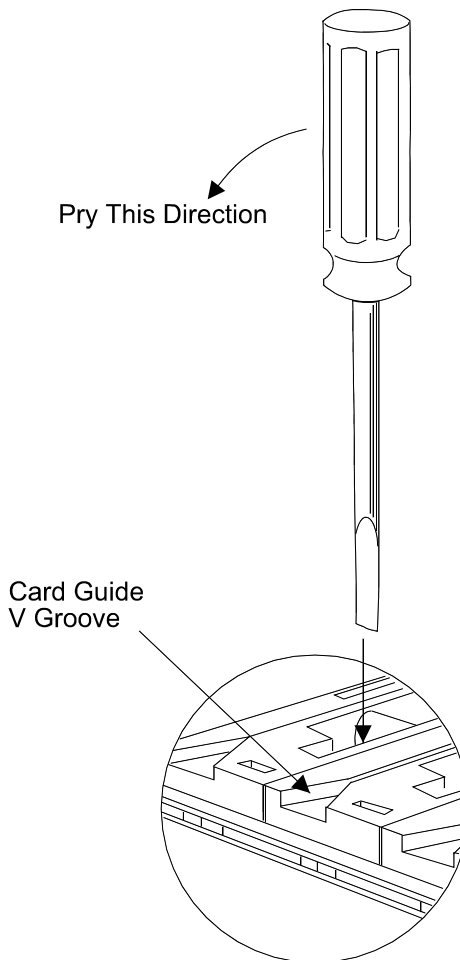
**Figure 5-5, Removing and Replacing The AC Mains Fuse**

1. Ensure AC mains input (J400) is disconnected.
2. Insert flat blade screwdriver into fuse carrier slot at F400 in power supply rear panel and rotate counter clockwise to remove.
3. To replace fuse, insert the fuse carrier and fuse assembly into the fuse housing opening for F400 on power supply.
4. Insert flat blade screwdriver into fuse carrier and rotate clockwise to lock fuse assembly in place.



## Removing and Replacing The Card Guides

Complete the steps below while referring to **Figure 5-6** to remove and replace the card guides. The procedure applies to top and bottom card guides.



**Figure 5-6, Card Guide Removal and Replacement**

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.

## Trouble- shooting The 1264C/D

To troubleshoot the 1264C/D VXibus mainframe to its component module level use **Table 5-1** and Understanding the 1264C/D in Chapter 4.

“Fault condition” referenced in the PROBLEM column of **Table 5-1** occurs when the monitored system status function (Voltage, Temperature, or Fan) is outside of its specified tolerance. For information on status indicators and tolerance limits refer to Specifications in Appendix A.

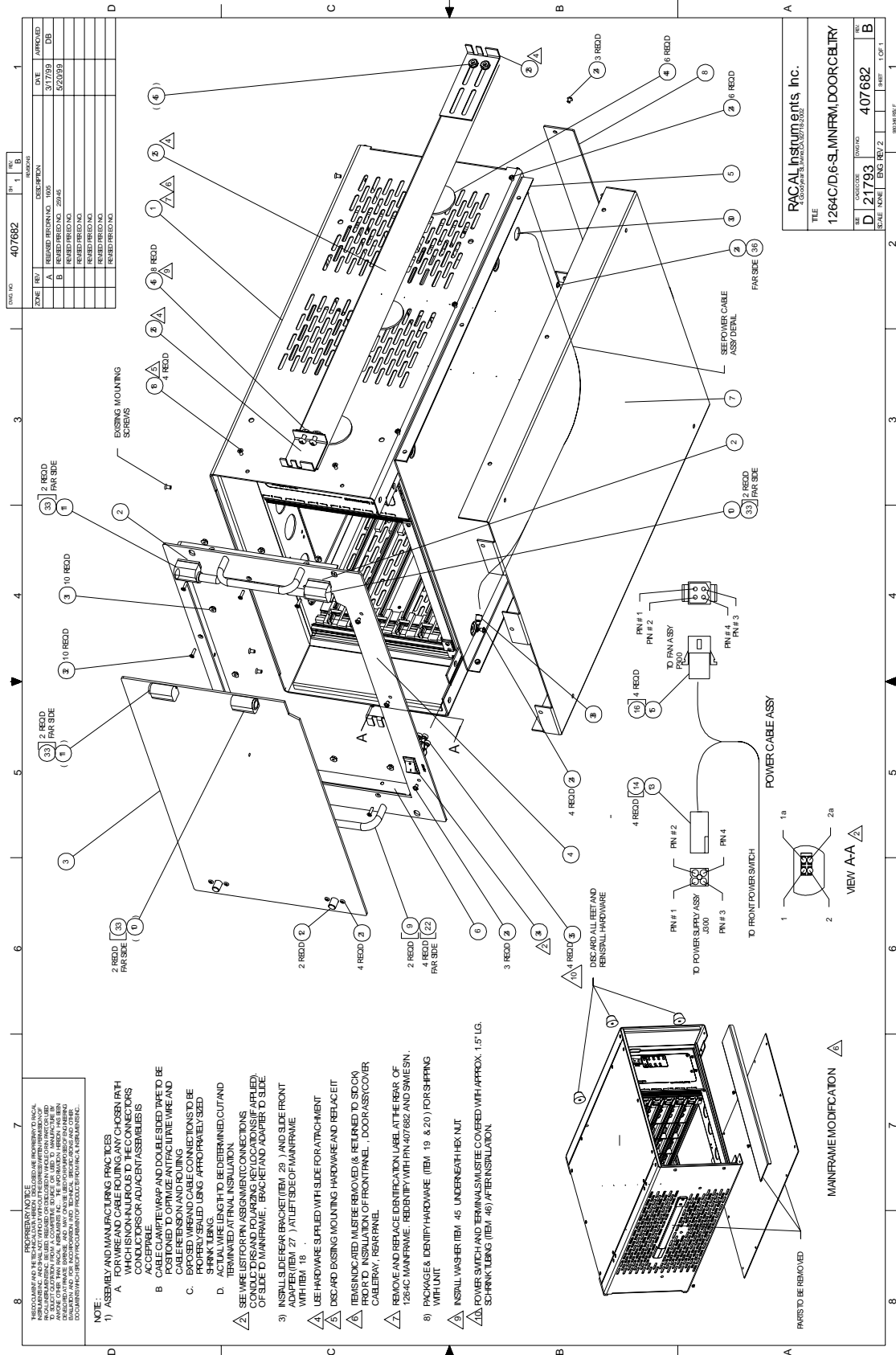
Table 5-1, Troubleshooting

PROBLEM	POSSIBLE CAUSES	WHAT TO DO
Unit does not Power On	<ul style="list-style-type: none"> <li>1264C/D mainframe not connected to power source.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure that the 1264C/D is connected to a live electrical outlet and the AC power switch is on. Try operating another piece of equipment from this outlet.</li> </ul>
	<ul style="list-style-type: none"> <li>Blown AC Mains Fuse.</li> </ul>	<ul style="list-style-type: none"> <li>Unplug AC mains power and check the fuse. See "Removal and Replacement of the AC Mains Fuse" in Chapter 5.</li> </ul>
	<ul style="list-style-type: none"> <li>Power supply protections are active causing the supply to be "shutdown".</li> </ul>	<ul style="list-style-type: none"> <li>Refer to "Power Supply Protections" in Chapter 4.</li> <li>Cycle power to clear fault. If fault persists remove installed VXI modules (cycle power) until fault is cleared.</li> </ul>
	<ul style="list-style-type: none"> <li>Faulty AC wiring or bad front panel AC Power Switch</li> </ul>	<ul style="list-style-type: none"> <li>Verify integrity of AC wiring to AC Power switch and the switch itself. Contact customer service.</li> </ul>
Voltage alarm condition (RED LED illuminated).	<ul style="list-style-type: none"> <li>Faulty VXI module installed or voltage fault occurred</li> </ul>	<ul style="list-style-type: none"> <li>Cycle power.</li> <li>If fault persists remove installed VXI modules until fault indication is cleared.</li> </ul>
	<ul style="list-style-type: none"> <li>VXI supply is out of tolerance</li> </ul>	<ul style="list-style-type: none"> <li>Perform Basic Functional Check procedure from Chapter 3.</li> </ul>
Temperature alarm condition (RED LED illuminated).	<ul style="list-style-type: none"> <li>Supply intake temperature limit exceeded</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>Insufficient module cooling air</li> </ul>	<ul style="list-style-type: none"> <li>Check for restrictions to airflow at mainframe intake and exhaust.</li> <li>Clean mainframe module cooling fan filter.</li> <li>Check ambient temperature.</li> </ul>
Fan alarm condition	<ul style="list-style-type: none"> <li>Fan intake is blocked, or fan filter is clogged</li> </ul>	<ul style="list-style-type: none"> <li>Check for restrictions to airflow at mainframe intake and exhaust.</li> <li>Clean mainframe module cooling fan filter.</li> </ul>

---

## Assembly Drawings

407682	1264C/D .....	5-15
407647	1264C, Top Assembly .....	5-16
407646	1264C, Enclosure .....	5-18
407645	1264C, Power Supply .....	5-21
405130	PCB Assy, 6-Slot Backplane .....	5-22
435130	Schematics, 1264C/D 6-Slot Backplane.....	5-23
405141	PCB Assy, Monitor .....	5-37
435141	Schematics, 1264C/D Monitor .....	5-38
407670	Option 01, Rack Ears and Slide .....	5-42
407671	Option 04, Rack Ears Only .....	5-43
407672	Option 15, Air Filter.....	5-44

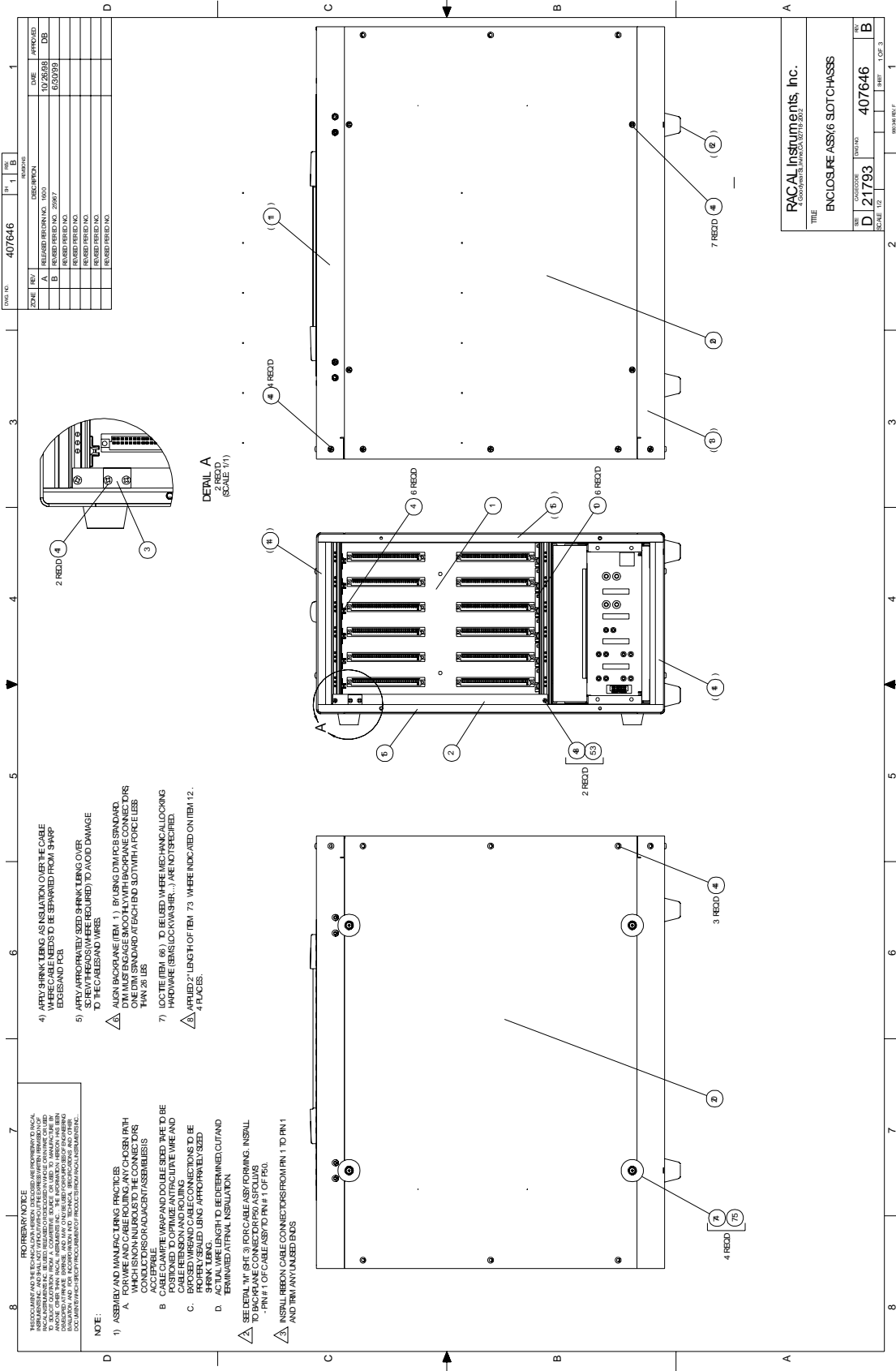


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C	1	REVISION NO. 200	03/09	
D	1	REVISION NO. 200	03/09	

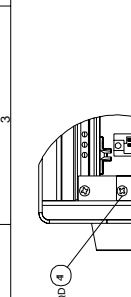
PACAL Instruments, Inc.	
1264C/D.6-SL.MNFRM.DOOR.CELTRY	
SCALE	1:1
REV	407682
DATE	03/09
BY	DB
CHKD	
APP'D	
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CHKD	
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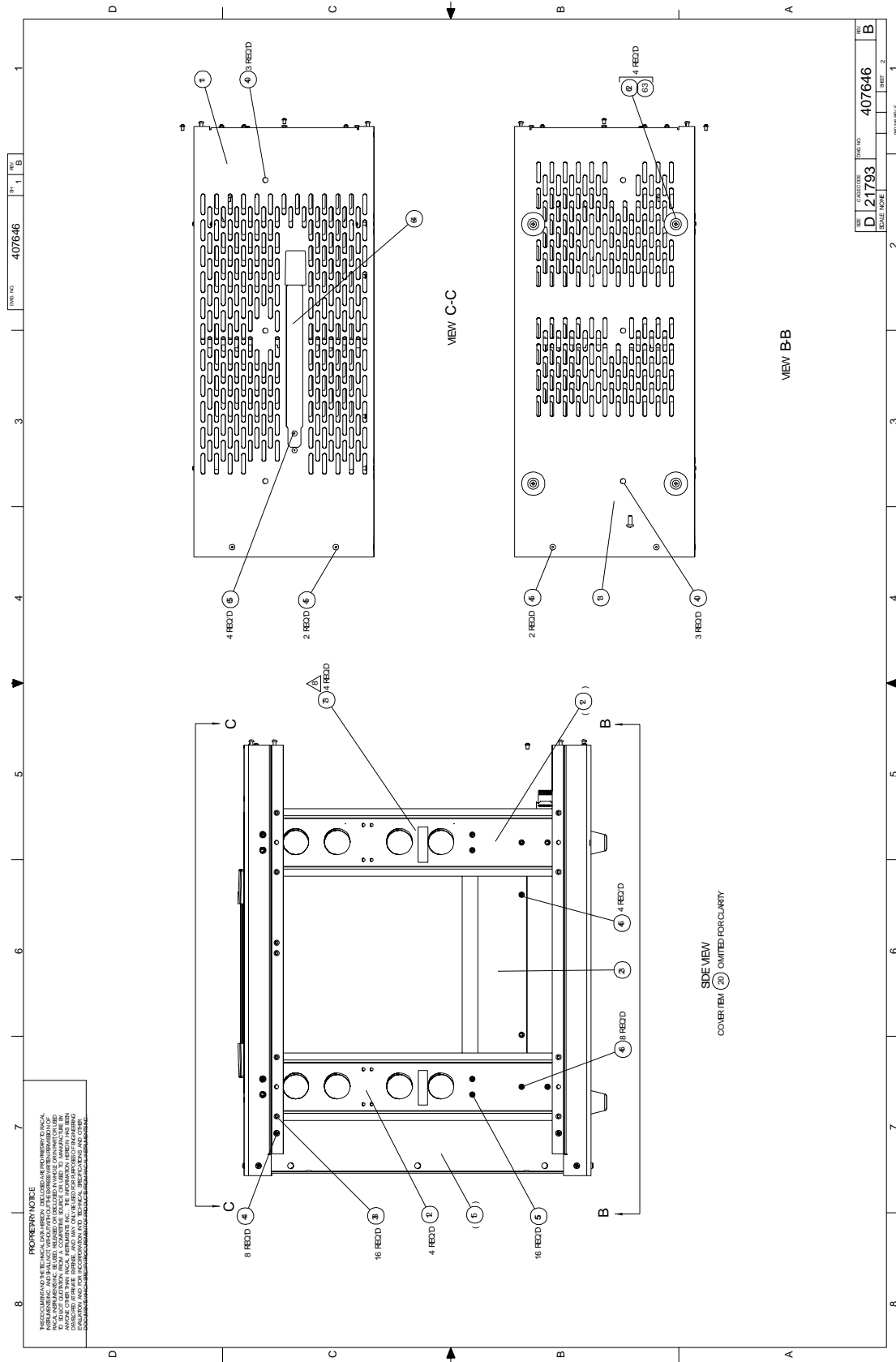


**PROHIBITION**  
 THE EQUIPMENT AND THE FACILITY SHALL BE KEPT CLEAN AND FREE FROM OIL, GREASE, AND OTHER CONTAMINANTS. THE EQUIPMENT SHALL BE KEPT CLEAN AND FREE FROM OIL, GREASE, AND OTHER CONTAMINANTS. THE EQUIPMENT SHALL BE KEPT CLEAN AND FREE FROM OIL, GREASE, AND OTHER CONTAMINANTS.

- NOTE:**
- ASSEMBLY AND MAINTENANCE PRACTICES FOR WIRE AND CABLE ROUTING ANY CHOSEN PATH WHICH IS NON-NUISANCE TO THE CONNECTORS AND/OR ADJACENT ASSEMBLIES
  - CABLE CLAMP WRAP AND DOUBLE SEED WIRE TO BE POSITIONED TO OPTIMIZE ANTICLIP WIRE AND PROPER SEALING LONG APPROPRIATELY SIZED
  - ACTUAL WIRE LENGTH TO BE DETERMINED, CUT AND TERMINATED AT FINAL INSULATION
  - SELECT THE WIRE SIZE FOR CABLE ASSY (FORMING INSULATION TO BACKPLATE CONNECTOR) AS FOLLOWS:  
 - PN# 1 OF CABLE ASSY TO PN# 1 OF P60  
 - INSULATE RIBBON CABLE CONNECTIONS FROM PN# 1 TO PN# 1 AND TRIM ANY UNUSED ENDS

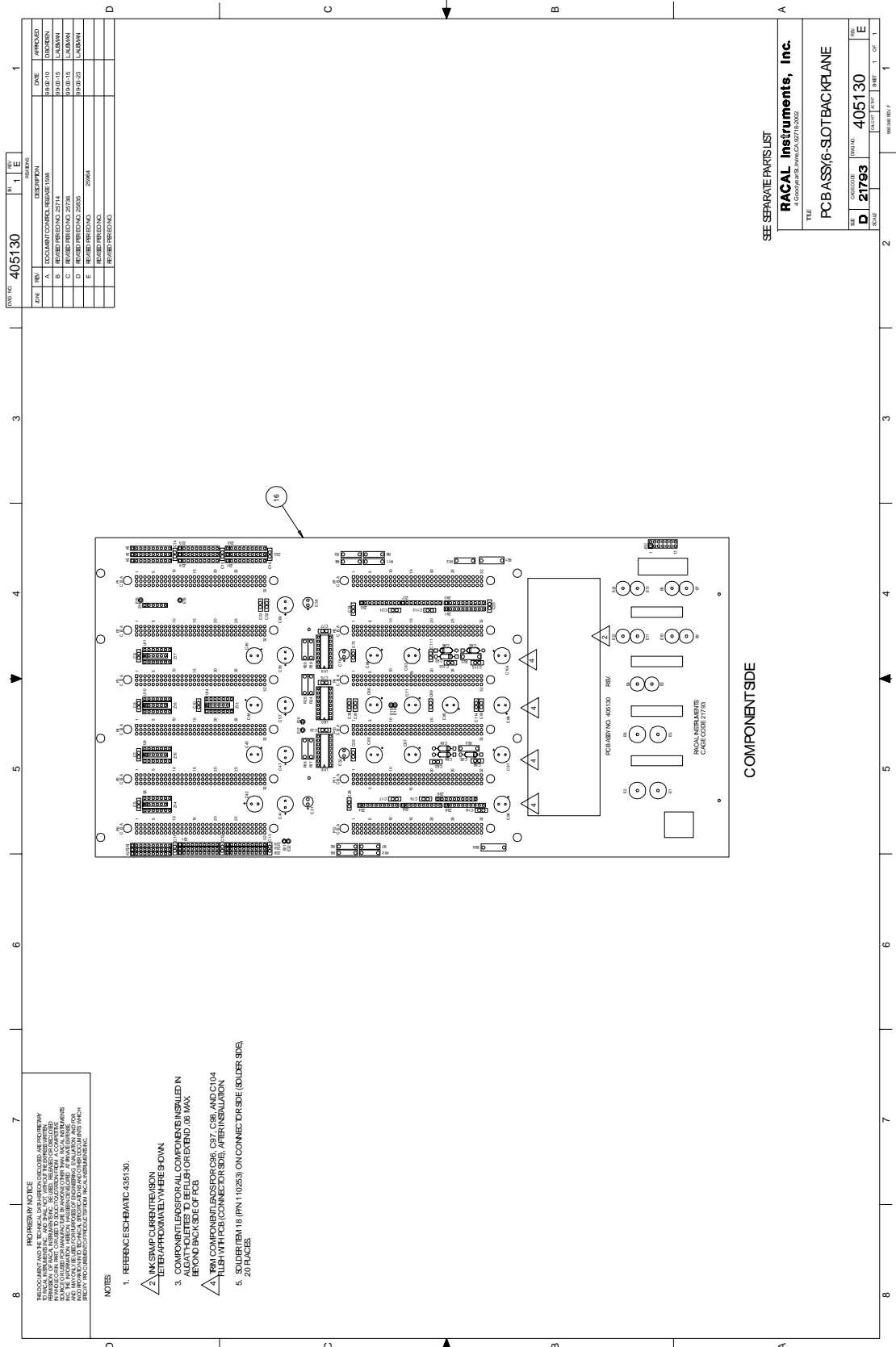
- APPLY SPRINKLE BUNG AS INSULATION OVER THE CABLE ENDS AND PCB
- APPLY SPRINKLE BUNG OVER THE CABLE ENDS AND PCB
- APPLY SPRINKLE BUNG OVER THE CABLE ENDS AND PCB
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- APPLY SPRINKLE BUNG OVER THE CABLE ENDS AND PCB











DATE	REV	DESCRIPTION	BY	APP'D
405130	1	PCB ASSY/6-SLOTBACKPLANE		
	A	DOCUMENT CONTROL RELEASE USRB		
	B	REVISED REFERENCE 25714		
	C	REVISED REFERENCE 25714		
	D	REVISED REFERENCE 25605		
	E	REVISED REFERENCE 25605		
	F	REVISED REFERENCE 25605		

SEE SEPARATE PARTS LIST

**RACAL Instruments, Inc.**  
4 Goodwin Rd., Irvine, CA 92714-5002

PCB ASSY/6-SLOTBACKPLANE

REV	DATE	BY	CHKD	APP'D
D	21793			
E	405130			

REV. 1 OF 1

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- NOTES
1. REFERENCE SCHEMATIC 435130.
  2. LINK SWAMP CURRENT RESONANCE LETTER APPROXIMATELY WHERE SHOWN.
  3. COMPONENT LEADS FOR ALL COMPONENTS INSTALLED IN LEGAL LETTERS TO BE FLUSH OR EXTEND TO MAX BEYOND BACKSIDE OF PCB.
  4. THIS COMPONENTS FOR C07, C08, AND C14 PLUS 117110'S (GANGED FOR SENSITIVITY ADJUSTMENT).
  5. SOLDER ITEM 18 (P/N 110253) ON CONNECTOR SIDE (SOLDER SIDE) 20 PLACES.

1	2	3	4
DWG. NO. <b>435130</b>		SH. 1	
REV. A		REV. A	
DESCRIPTION		DATE	
A DOCUMENT CONTROL RELEASE		APPROVED	
REVISED PER EO NO.		REVISED PER EO NO.	
REVISED PER EO NO.		REVISED PER EO NO.	

**NOTES:**

- RESISTOR VALUES ARE IN OHMS, 1/4W, +5% UNLESS OTHERWISE SPECIFIED.
- CAPACITOR VALUES ARE IN MICROFARADS, 100V, +20% UNLESS OTHERWISE SPECIFIED.
- RESISTOR NETWORK VALUES ARE IN OHMS, +2%.

5130p2.sch 5130p3.sch	5130p4.sch 5130p5.sch
5130p6.sch 5130p7.sch	5130p8.sch 5130p9.sch
5130p10.sch 5130p11.sch	5130p12.sch 5130p13.sch
5130p14.sch 5130p15.sch	5130p16.sch 5130p17.sch

5130p1.sch  
5130p2.sch

5130p3.sch  
5130p4.sch

5130p5.sch  
5130p6.sch

5130p7.sch  
5130p8.sch

5130p9.sch  
5130p10.sch

5130p11.sch  
5130p12.sch

5130p13.sch  
5130p14.sch

DEVICE TYPE	REFERENCE DESIGNATOR	VCC	GND	VEE
74ACT32	U9-U11,U14	14	7	
10H116	U18-U20		1,16	8

HIGHEST REF. DES.
C15
CR6
E14
J54
P12
R26
U20
Z41

**FOR CURRENT REV. 14**  
**FOR SHEETS 1 THRU 14**  
**REVISION A** - PROTEL  
**VERSION 3.2.3**

**PROPRIETARY NOTICE**

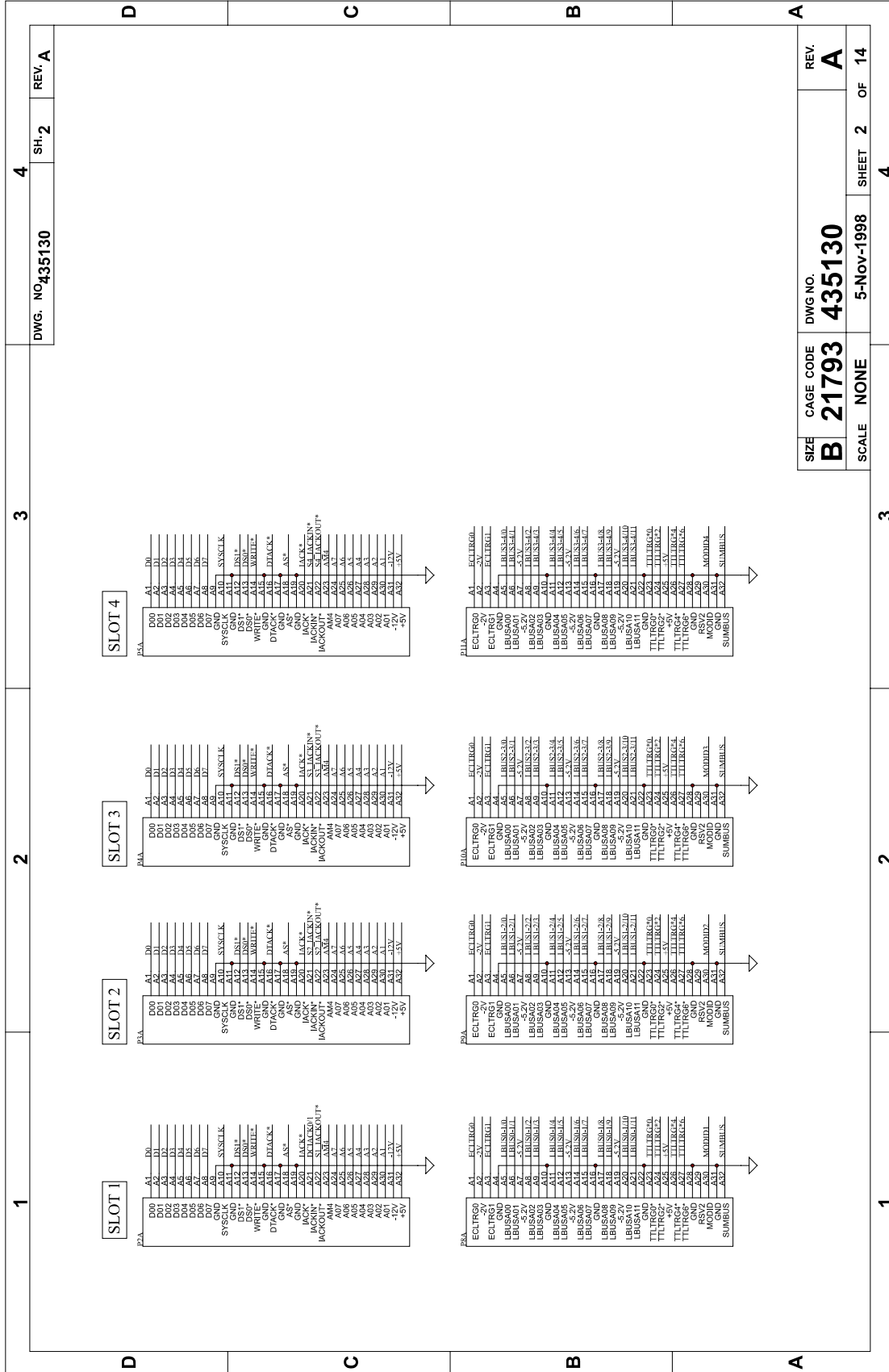
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**RACAL Instruments, Inc.**  
 4 Goodyear St., Irvine, CA. 92618

**TITLE**  
**SCHEMATIC, 6-SLOT BACKPLANE**

SIZE	CAGE CODE	DWG NO.	REV.
<b>B</b>	<b>21793</b>	<b>435130</b>	<b>A</b>
SCALE	NONE	5-NOV-1998	SHEET 1 OF 14

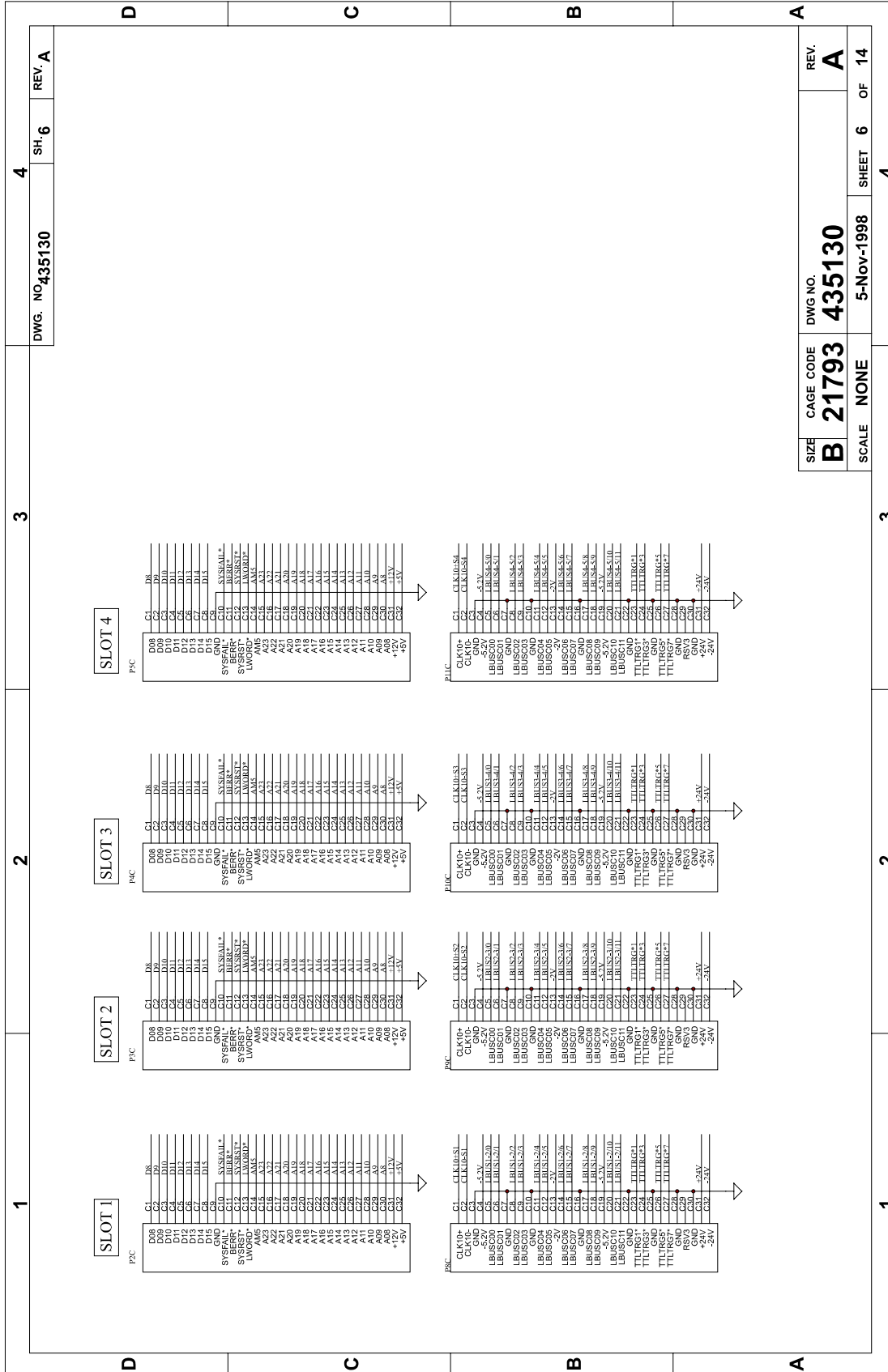








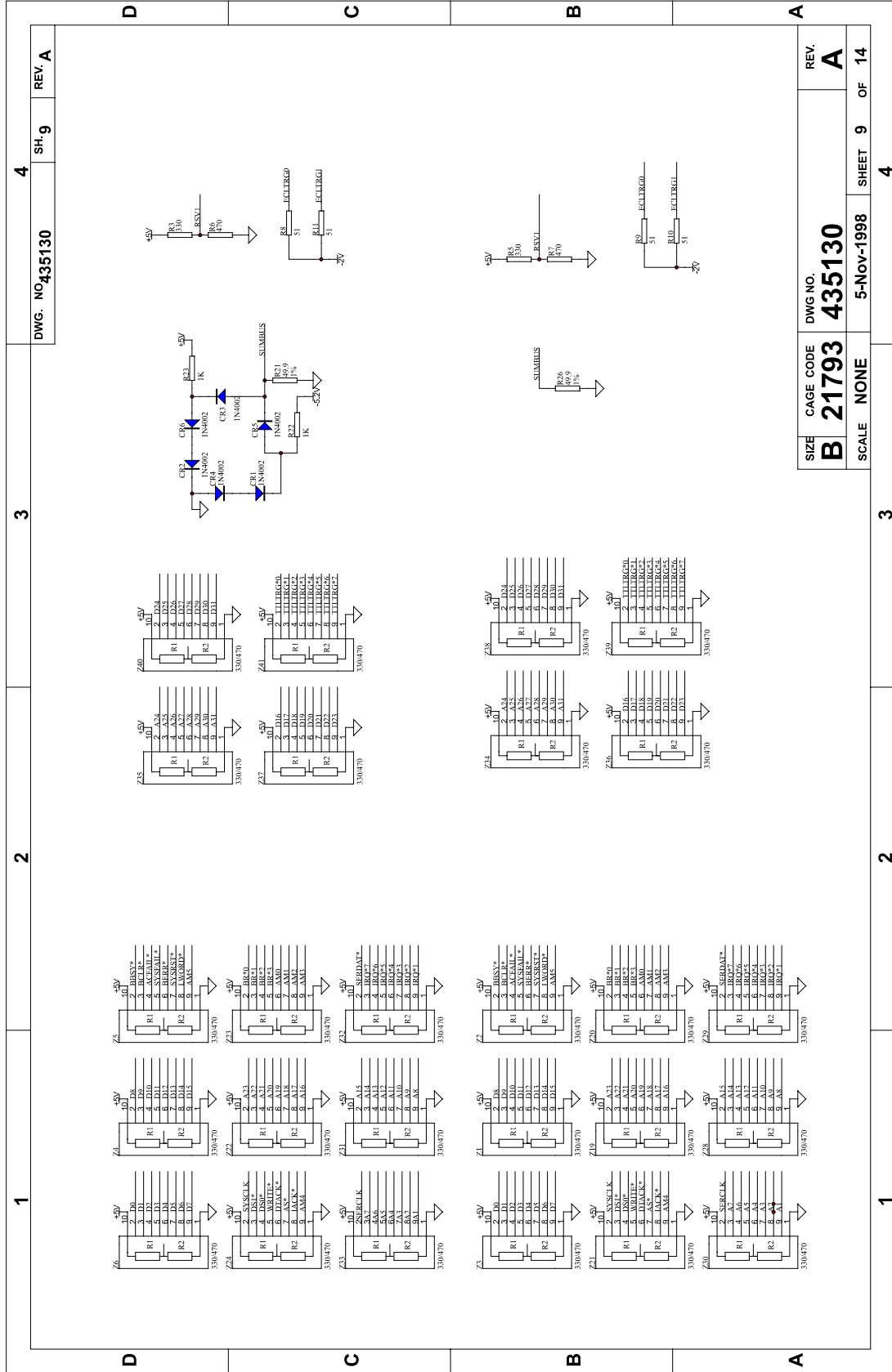




SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435130	A
SCALE	NONE	5-Nov-1998	SHEET 6 OF 14







1
2
3
4

DWG. NO 435130

SH-9

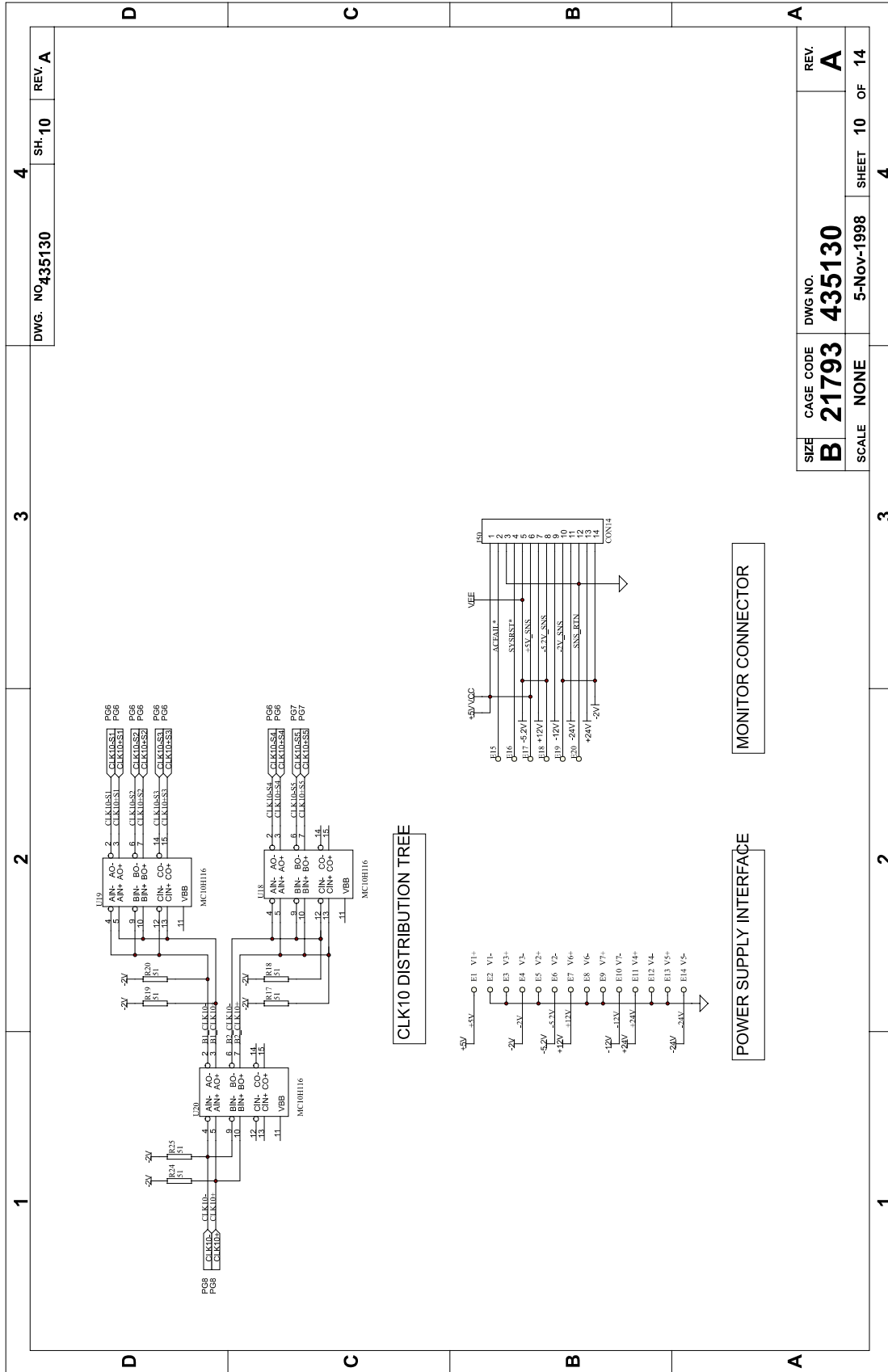
REV. A

SIZE	CAGE CODE	DWG NO.	REV.
<b>B</b>	<b>21793</b>	<b>435130</b>	<b>A</b>
SCALE	NONE	5-Nov-1998	SHEET 9 OF 14

3

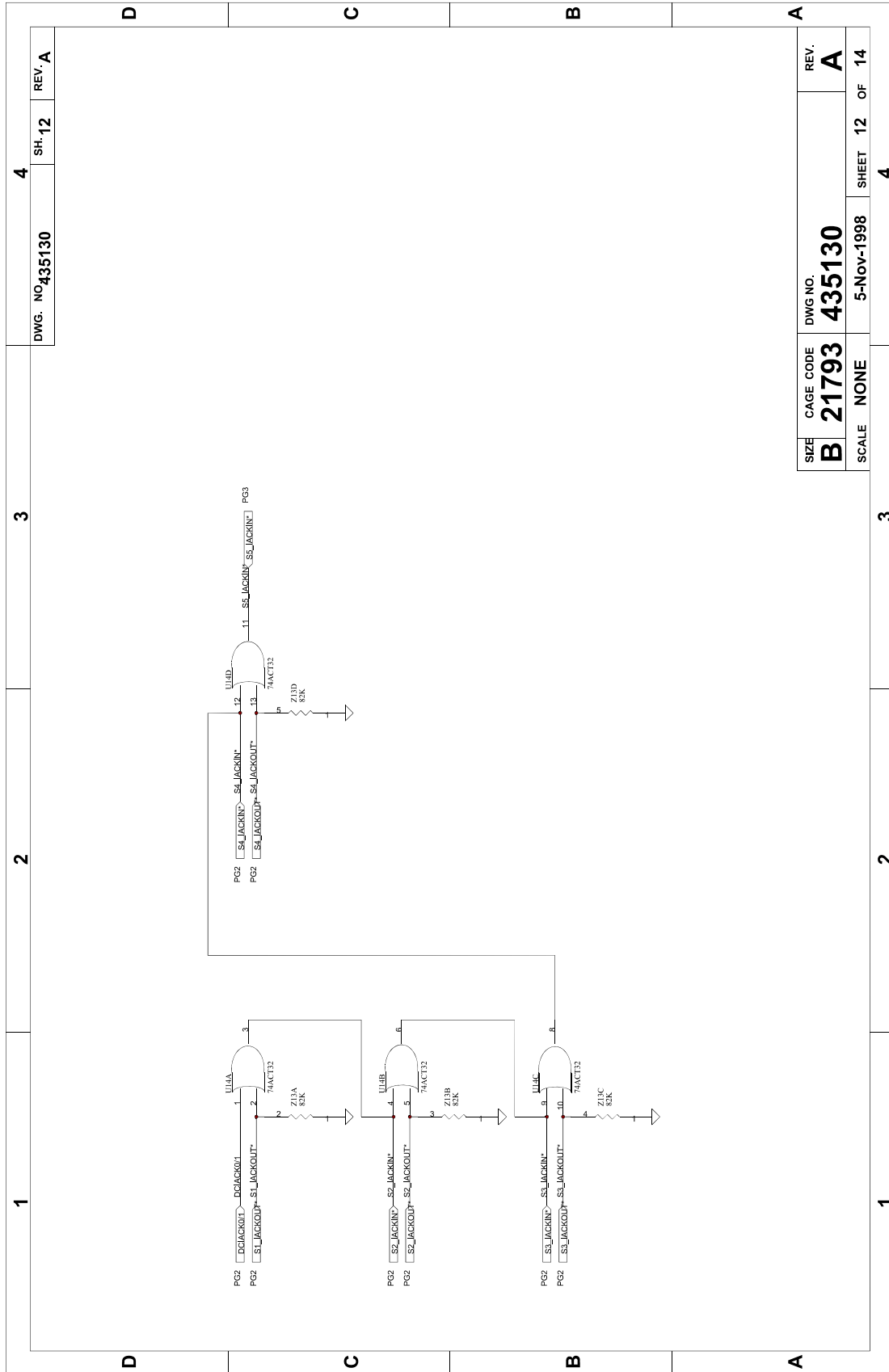
2

1



1	2	3	4
D	C	B	A
DWG. NO. 435130			SH. 10 REV. A
SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435130	A
SCALE	NONE	5-Nov-1998	SHEET 10 OF 14
			4

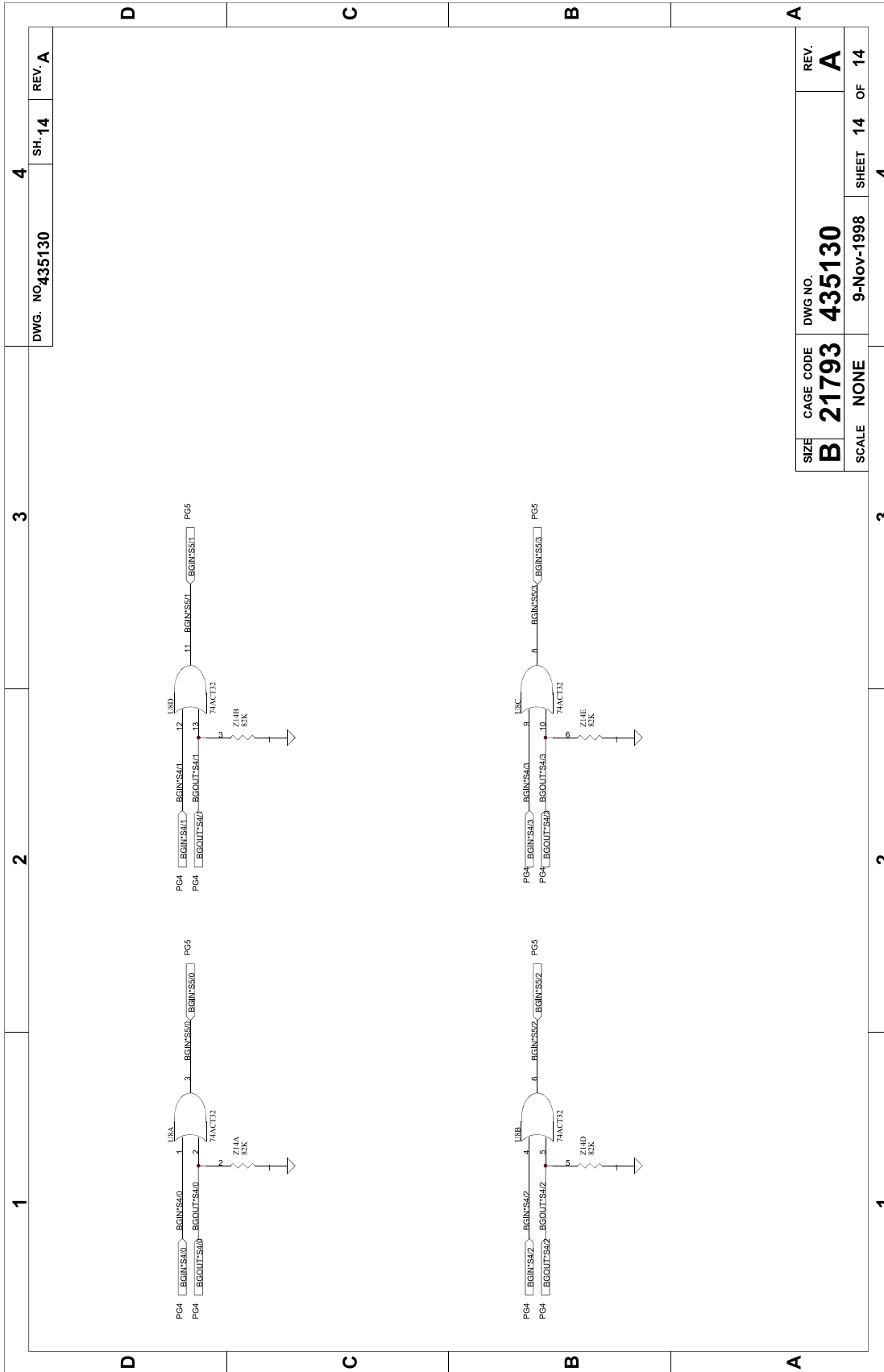




SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435130	A
SCALE	NONE	5-Nov-1998	SHEET 12 OF 14
			4



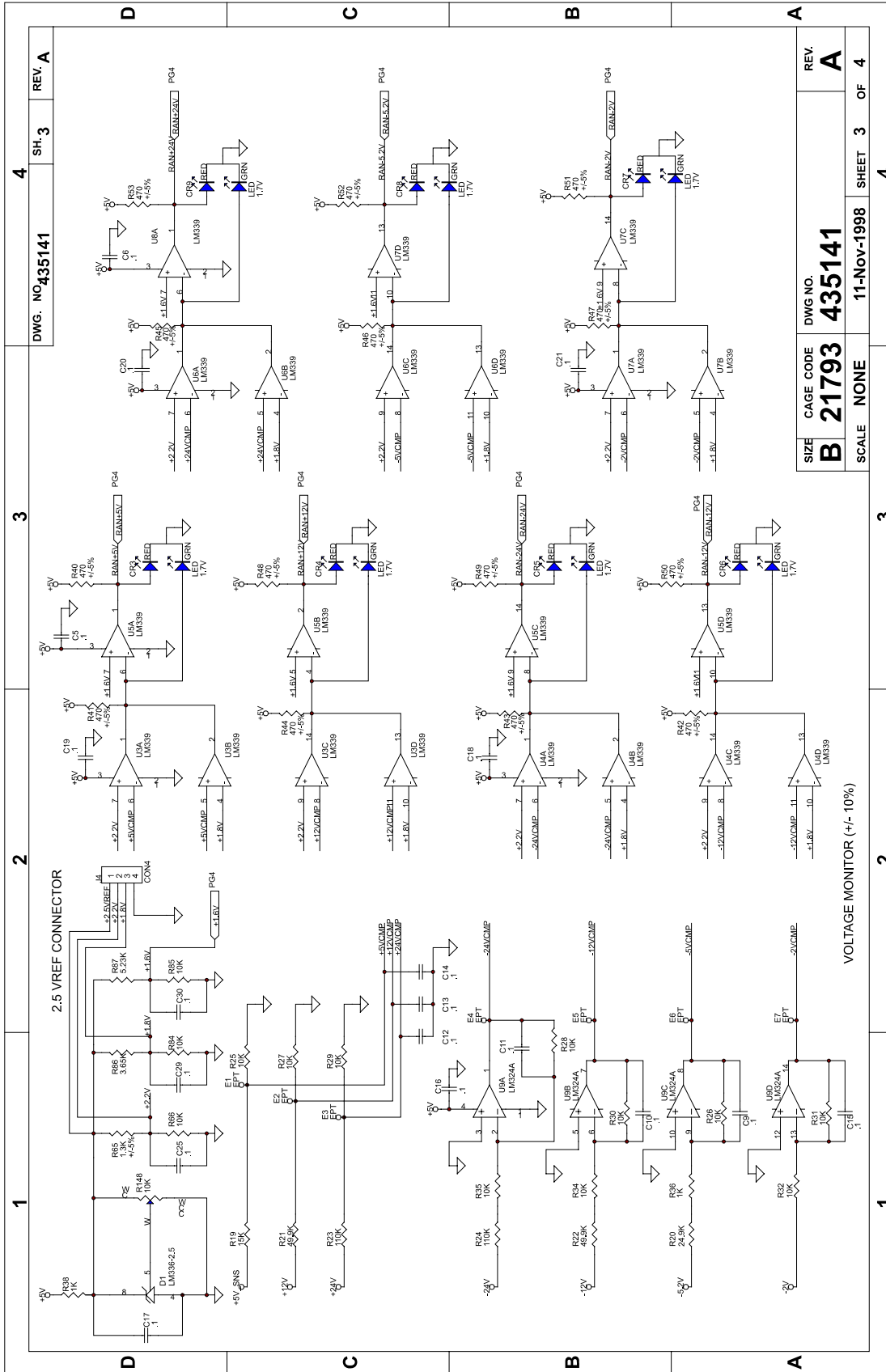






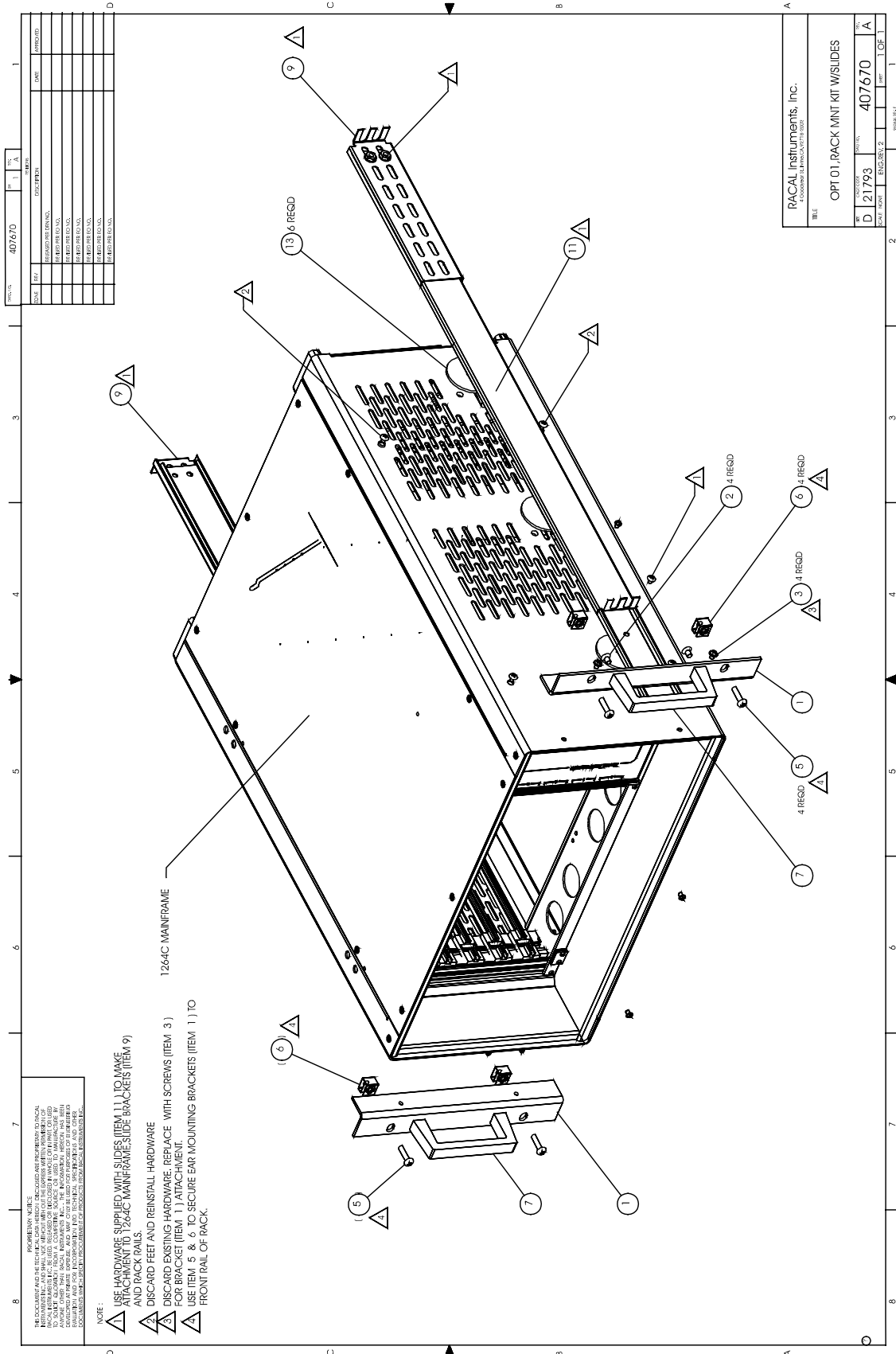
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>																				
<p><b>NOTES:</b></p> <p>1. CAPACITOR VALUES ARE IN MICROFARADS, 50V, +20% UNLESS OTHERWISE SPECIFIED.</p> <p>2. RESISTOR VALUES ARE IN OHMS, 1/8W, +1% UNLESS OTHERWISE SPECIFIED.</p>		<p>DWG. NO. <b>435141</b></p> <p style="text-align: right;">SH. <b>1</b> REV. <b>A</b></p>	<p style="text-align: right;">REV. <b>A</b></p>																				
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<p><b>POWER PINS</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">REFERENCE DESIGNATOR</th> <th style="width:20%;">DEVICE TYPE</th> <th style="width:10%;">+5V</th> <th style="width:10%;">VCC</th> <th style="width:10%;">GND</th> </tr> </thead> <tbody> <tr> <td>U1-U8</td> <td>LM339</td> <td>3</td> <td></td> <td>12</td> </tr> <tr> <td>U9-U10</td> <td>LM324A</td> <td>4</td> <td></td> <td>11</td> </tr> <tr> <td>U11</td> <td>LM50</td> <td>1</td> <td></td> <td>3</td> </tr> </tbody> </table>				REFERENCE DESIGNATOR	DEVICE TYPE	+5V	VCC	GND	U1-U8	LM339	3		12	U9-U10	LM324A	4		11	U11	LM50	1		3
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<p><b>PROTECTOR SHEET</b></p> <p>REVISION A, PROTEL VERSION 1.2.2</p>																							



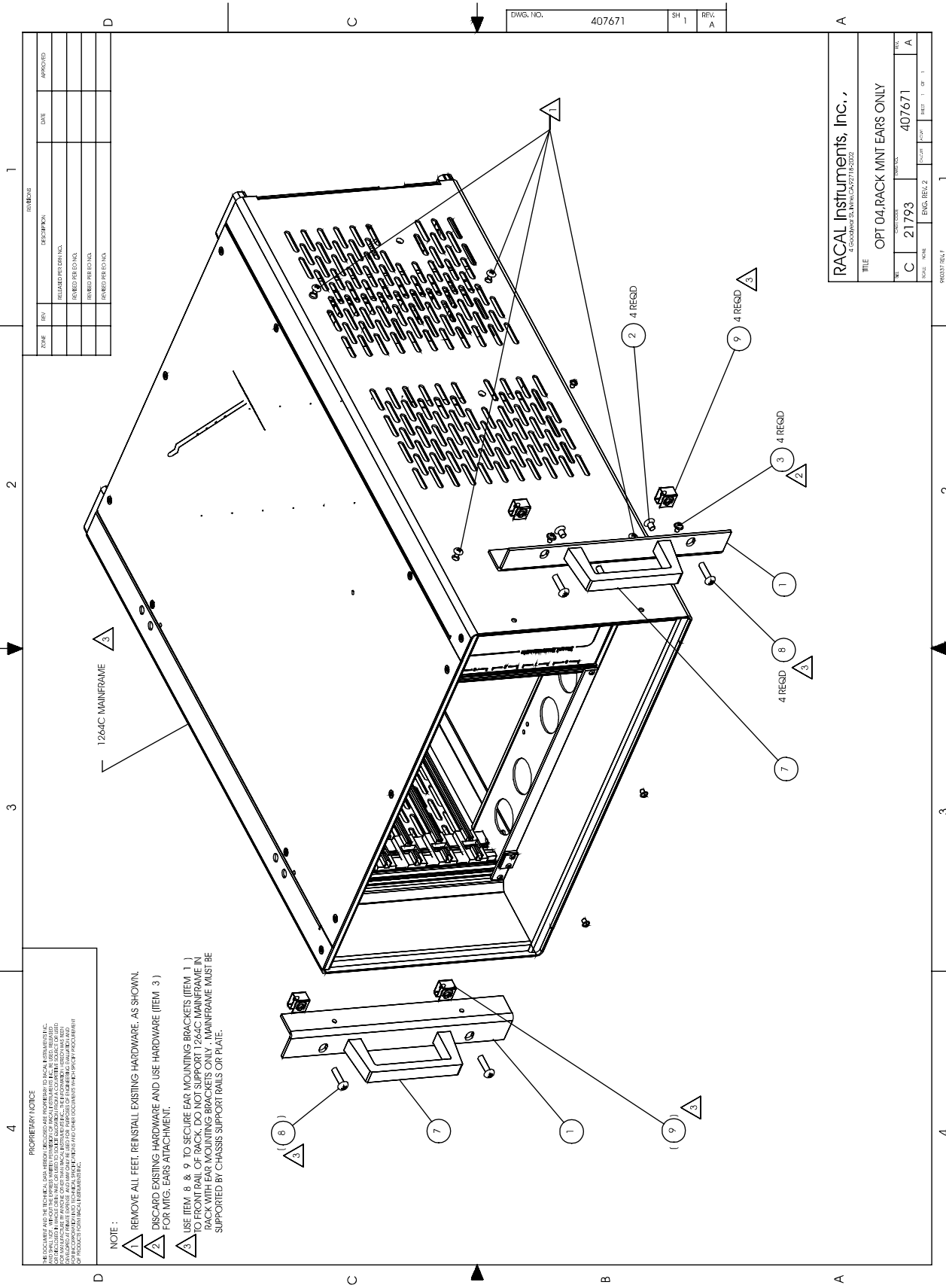


SIZE	CAGE CODE	DWG NO.	REV.
B	21793	435141	A
SCALE	NONE	11-Nov-1998	SHEET 3 OF 4











## Parts List

407682	1264C/D.....	5-46
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407645	1264C/D, Power Supply .....	5-49
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## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 407682

1264C/D, 6S MNFRM, DOOR,CBLTRY-D

Date 5/27/99

Revision B

#	Component	Description	U/M	Qty Reqd	Ref
	M23053/4-205-0	TBGSRK-POF. 9501D-BLACK	FT	.00001	
1	407647	1264C,6-SLOT 500W MAINFRAME	EA	1.00000	
2	456689	SPACER, HINGE	EA	2.00000	
3	456703	DOOR, FRONT	EA	1.00000	
4	456704	PANEL, FRONT, BLANK	EA	1.00000	
5	456666	PANEL,ENCL EXT MTG	EA	1.00000	
6	456667	BRKT,FRONT PANEL MTG	EA	2.00000	
7	456735	CABLETRAY, CHASSIS EXTENSION	EA	1.00000	
8	456736	PANEL, REAR, CABLETRAY	EA	1.00000	
9	921078	HANDLE-4.0 LGX 1.5	EA	2.00000	
10	921161	HINGE,BLACK NYLON	EA	1.00000	
11	921161-001	HINGE,BLACK NYLON,REVERSE B	EA	1.00000	
12	921557	LATCH,ADJ GRIP,.12-.28 RANGE	EA	2.00000	
13	602339-104	CON-PWR-RCP004C. 198D	EA	1.00000	
14	602341-001	TRMCRP-SNP-U-F20-14G	EA	4.00000	
15	602339-004	CON-PWR-PLG004C. 198D	EA	1.00000	
16	602340-001	TRMCRP-SNP-U-M20-14G	EA	4.00000	
17	524555	WRTEF-STR24G-5-5-5 GRN	FT	.00001	
18	615556	S1M-PFL1H006-32X. 250	EA	4.00000	
19	610920	NUT RETAINER	EA	4.00000	
20	615093	S1M-PPANH010-32X.750	EA	4.00000	
21	611173	RVT-PP-PAN. 250DX. 337	EA	4.00000	
22	615590	S1M-PFL1H010-32X. 500	EA	4.00000	
24	616256	S3M-PPANH006-32X.375	EA	17.00000	
25	C-300-S-124	SLIDE,24" LG 25" MAX EXT.	EA	1.00000	
26	456690-001	ADAPTER, SLIDE FRONT, RIGHT	EA	1.00000	
27	456690-002	ADAPTER, SLIDE FRONT, LEFT	EA	1.00000	
28	456691-001	BRKT, SLIDE, REAR, RIGHT	EA	1.00000	
29	456691-002	BRKT, SLIDE, REAR, LEFT	EA	1.00000	
30	601571	BUSHING, SNAP-5/8 DIA	EA	1.00000	
31	617167-005	NT5KPS004-40STL-ZINC	EA	10.00000	
32	615543	S1M-PFL1H004-40X. 375	EA	10.00000	
33	611238	S1M-PFL1H010-24X. 500	EA	8.00000	
34	602357	SWITCH,ROCKER, DPST, 16A,W/LED	EA	1.00000	
35	601880	TRMCRP-SNP-F-F16-14G	EA	4.00000	
36	610921	W1F008 . 312D. 060T.171	EA	1.00000	
38	601508	TRMCRP-RNG008522-16G	EA	1.00000	
39	500170	BRAID, TINNED COPPER	FT	.00001	
40	522000	WRTEF-STR18G-0-0-0 BLK	FT	.00001	
41	521111	WRTEF-STR16G-1-1-1 BRN	FT	.00001	
42	521666	WRTEF-STR16G-6-6-6 BLU	FT	.00001	
43	522999	WRTEF-STR18G-9-9-9-WHT	FT	.00001	
44	617170	W1F---1. 75D. 100T. 194AL	EA	6.00000	
45	617105	W1F010.437D.036T.200	EA	8.00000	

## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 407647

1264C/D, 6-Slot 500W Mainframe

Date 10/16/98

Revision E

#	Component	Description	U/N	Qty Reqd	Ref
1	407645	POWER SUPPLY ASSY,500W	EA	1.00000	
2	407646	ENCLOSURE ASSY,6-SLOT CHAS	EA	1.00000	
3	600620	CABLE,POWER AC LINE	EA	1.00000	
4	615064	S1M-PPANH006-32X. 875	EA	10.00000	
5	615093	S1M-PPANH010-32X.750	EA	4.00000	
6	616251	53M-PPANH004-40X. 250	EA	4.00000	
7	610873	WASH FL NAS620C6L	EA	10.00000	
8	610875	WASH FL NAS620C10L	EA	4.00000	
9	617128	W15006. 239D. 025T.141	EA	10.00000	
10	617130	W1S010. 323D. 040T.194	EA	4.00000	
11	980827	MANUAL, USER, 1264C	EA	1.00000	
12	456533	FOOT, REAR	EA	4.00000	
13	456647-001	PANEL,REAR, 1264C	EA	1.00000	
14	456651	PANEL, AIR DEFLECTOR	EA	1.00000	
15	456653-001	ENCLOSURE, IMPELLER MTG	EA	1.00000	
16	602339-104	CON-PWR-RCP004C. 198D	EA	1.00000	
17	602341-001	TRMCRP-SNP-U-F2 0-14G	EA	4.00000	
18	611469	RVT-PP-DOM.250DX.275.063-.13	EA	3.00000	
19	615059	S1M-PPANH006-32X. 375	EA	8.00000	
20	615556	S1M-PFL1H006-32X.250	EA	12.00000	
21	616256	S3M-PPANH006-32X. 375	EA	7.00000	
22	616342	S1MPPAN-M4. 0X0 . 70X08	EA	2.00000	
23	617167-003	NTSHEXOO6-325TL-ZINC	EA	4.00000	
24	616257	53M-PPANH006-32X. 500	EA	2.00000	
25	617129	W1S008. 280D. 031T.168	EA	2.00000	
26	921590	GUARD, FAN, 172MM	EA	1.00000	
27	921588	IMPELLER, 11SVAC, 320CFM	EA	1.00000	
28	600961	CLP-CA-STD. 190D-ADBK	EA	1.00000	
29	921163-015	FUSE-15AMP-SLO BLO	EA	1.00000	
30	921257	FUSEHOLDER,3AG LOW PROFILE	EA	1.00000	
31	921496	FILTER, EMI, PWR ENTRY, AC, 15A	EA	1.00000	
32	617167-006	NTSKPSOO6-325TL-ZINC 6-325P	EA	1.00000	
33	602307	SPLICE, BUTT, 1N516-14G	EA	1.00000	
34	611417	CLP-CA-STD. 180D-ADBK-NO-WH	EA	1.00000	
35	610388	GROMMET, CATERPILLAR	EA	1.00000	
36	500009	TBGSRK-POF. 1251D-BLACK	FT	.00001	
37	601509	TRMCRP-RNGOO6S16-14G	EA	2.00000	
38	521111	WRTEF-STR16G-I-1-1 BRN	FT	.00001	
39	521666	WRTEF-STR16G-6-6-6 BLU	FT	.00001	
40	522000	WRTEF-STR18G-0-0-0 BLK	FT	.00001	
41	522999	WRTEF-STR18G-9-9-9-WHT	FT	.00001	
42	456271	COVER, CARD GUIDE, MOLDED	EA	3.00000	
43	611476	CLAMP, OVAL CAPACITOR	EA	1.00000	
44	120361	CPPP3-0003. 0U0370V10	EA	1.00000	
45	601364	TRMCRP-5PD006522-18G	EA	2.00000	
46	920962	LOCTITE-242-MED STR	EA	.00001	
47	130195	CPCD3-0000. 1U0100V20	EA	2.00000	
48	601698	TRMSDR-RNG-0451H. 020	EA	4.00000	

## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 407646

Enclosure Assy, 6-Slot Chassis

Date 10/19/98

Revision B

#	Component	Description	U/N	Qty Reqd	Ref
1	405130	PCB ASSY, 6-SLOT BACKPLANE	EA	1.00000	
2	456693	FILLER PANEL, LEFT, 6-SLOT	EA	1.00000	
3	456694	KEY, LOCKOUT, 6 SLOT	EA	2.00000	
4	456339	CARD GUIDE, TOP	EA	6.00000	
5	456412-003	RAIL, CDG MTG, FRNT/REAR,VXI	EA	3.00000	
6	456462	PUNCH STRIP, CDG MTG,6 SLOTS	EA	1.00000	
7	456463	STRIP, CDG MTG, 6 SLOTS	EA	1.00000	
8	456464	RAIL NUT,6 SLOTS	EA	4.00000	
10	456631	CARDGUIDE, SKIRTED, 4-PORT	EA	6.00000	
11	456634	COVER, TOP	EA	1.00000	
12	456635	SUPPORT, CD EXT . MTG	EA	4.00000	
13	456641	COVER, BOTTOM	EA	1.00000	
14	456642	TRIM, FRONT	EA	2.00000	
15	456643	TRIM, FRONT, SIDE	EA	2.00000	
16	456645	SUPPORT, TOP CARD GUIDE	EA	1.00000	
17	456646	EXTRUSION, BACKPLANE MTG, BOT	EA	1.00000	
19	456648	PANEL,PWR ASSY SUPPORT	EA	1.00000	
20	456649	COVER, SIDE	EA	2.00000	
21	456650	PANEL, AIR DUCT, LOWER	EA	1.00000	
23	456652	PANEL, AIR REGULATOR	EA	1.00000	
26	500329	CAFT-RBN-14C2 8G-1STR	EA	.00001	W/PSO, P301
32	602240	CON-FCA-RCP014I. 100D	EA	2.00000	P50, P301
36	611161	CARD GUIDE-8.00 INCH	EA	2.00000	
37	611173	RVT-PP-PAN . 250DX.337	EA	8.00000	
38	611359	RVT-PP-F1C .22 6DX. 337	EA	28.00000	
39	611390	S1MHSTR-M2 . 5X0 . 45x12	EA	8.00000	
40	611393	RVT-SN-RND. 320DX. 280.138.177	EA	6.00000	
41	615015	S1M-PPANH002-56X.312	EA	2.00000	
43	456518	STRIP,CDG MTG,6 SLOTS,UPPER	EA	2.00000	
44	615556	S1M-PFL1H006-32X.250	EA	18.00000	
45	615800-602	S1M-HBTNH006-32X. 250	EA	4.00000	
46	616255	53M-PPANH006-32X. 312	EA	12.00000	
47	616256	53M-PPANH006-32X. 375	EA	3.00000	
48	616304	S1MPPAN-M2 . 5X0 . 45X10	EA	2.00000	
51	617102	W1F004 . 281D. 025T.119	EA	8.00000	
53	617127	W1S004 . 202D. 020T.115	EA	10.00000	
55	618112	S1F-PPANH006-20X. 500	EA	16.00000	
62	921027	BUMPER-FOOT	EA	4.00000	
63	616262	53M-PPANH008-32X. 625	EA	4.00000	
64	921556	HANDLE,CHASSIS, 9" LONG	EA	1.00000	
65	611434	RVT-PP-DOM.250DX.400.188-. <sup>25</sup>	EA	4.00000	
66	920962	LOCTITE-242-MED STR	EA	.00001	
69	456696	DEFLECTOR, FRONT,AIR CHAMBER	EA	1.00000	
70	456697	DEFLECTOR, CENTER, AIR CHAMBER	EA	1.00000	
71	456698-001	DEFLECTOR, AIR	EA	1.00000	
72	456699	BAFFLE,AIR, P/S ENCLOSURE	EA	1.00000	
73	910635	SPONGE, PRESSURE, SENSITIVE	FT	.00001	
74	921575	BUMPER,FOOT,#6 SCREW, .437H	EA	4.00000	
75	616258	53M-PPANH006-32X. 625	EA	4.00000	

## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 407645

Power Supply Assy, 500W

Date 10/28/98

Revision A

#	Component	Description	U/M	Qty Reqd	REF
1	405141	PCB ASSY,MONITOR	-D EA	1.0000	
2	456680	PANEL, FRONT, PWR SUPPLY	-D EA	1.0000	
3	456681	ENCLOSURE,PWR SUPPLY MTG	-D EA	1.0000	
4	500271-545	WRTEF-STR140-5-4-5-ORN/YEL	-E FT	.00001	
5	521000	WRTEF-STR16G-0-0-0 BLK	-E FT	.00001	
6	521111	WRTEF-STR16G-1-1-1 BRN	-E FT	.00001	
7	521666	WRTEF-STR16G-6-6-6 BLU	-E FT	.00001	
8	521999	WRTEF-STR16G-9-9-9 WHT	-E FT	.00001	
9	522000	WRTEF-STR18G-0-0-0 BLK	-E FT	.00001	
10	522999	WRTEF-STR180-9-9-9-WHT	-E FT	.00001	W/PS1-TB1
11	601159	TRMCRP-5PD006S16-140	-E EA	3.0000	
12	601440	TRMCRP-5PD006S22-180	-E EA	2.0000	W/PS1-TB1
13	601509	TRMCRP-RNGOO6S16-140	-E EA	1.0000	
14	602237-206	CON-PCB-RCPOO6C.I00D	-E EA	1.0000	P2
15	602337	SWITCH, ROCKER, DPST,16A	-E EA	1.0000	
16	602339-004	CON-PWR-PLGOO4C.198D	-E EA	1.0000	
17	602340-001	TRMCRP-SNP-U-M2 0-140	-E EA	4.0000	
18	611173	RVT-PP-PAN.2SODX.337	-E EA	4.0000	
19	601880	TRMCRP-SNP-F-F16-140	-E EA	4.0000	
20	615556	S1M-PFL1H006-32X.250	-D EA	5.0000	
21	615545	SIM-PFL1HOO4-40X.500	-D EA	2.0000	
22	616251	S3M-PPANHOO4-40x.250	-E EA	4.0000	
23	617167-005	NTSKPSOO4-4OSTL-ZINC	-E EA	2.0000	
25	617103	W1FOO6.312D.028T.147	-E EA	2.0000	
26	921551	POWER SUPPLY,500W	-E EA	1.0000	
27	611118	CLP-CA-STD.250D ADEK	-D EA	1.0000	
28	920962	LOCTITE-242-MED STR	-D EA	.00001	
29	611311	TRMCRP-SNP-U-F26-220	E EA	6.0000	W/P2
30	617167-006	NT5KPS006-325TL-ZINC 6-325P	-E EA	1.0000	

## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 405130

PCB Assy, 6-Slot Backplane

Date 6/29/99

Revision E

#	Component	Description	U/M	Qty Reqd	REF
1	P304000005	DIODE 1N4002	EA	6.00000	CR1-CR6
2	000102	RSCC2001 .00K. 25W005	EA	2.00000	R2 2, 23
3	000331	RSCC1330 .00H. 25W005	EA	2.00000	R3, 5
4	000471	RSCC1470 .00H. 25W005	EA	2.00000	R6, 7
5	000510	RSCC1051 .00H. 25W005	EA	10.00000	R8-11, 17-20, 24, 25
6	010308	RSMF1049. 90H. 25W001	EA	2.00000	R2 1, 2 6
7	010921	RSMF1825. 00H. 12W001	EA	1.00000	R12
8	080090	RES ARRAY 330/47OTRM	EA	26.00000	Z1-6, 19-24, 28-40, 41
9	080168	RSNW2082 .000K06P05R	EA	6.00000	Z13-18
10	110126	CPTA30006. 8U0035V20	EA	4.00000	C31, 32,36,76
13	130195	CPCD30000 .1U0100V20	EA	36.00000	CS, 7- 18,21,2,5,8,9,35,51,2, 73-5,7,9, 81,2,8,9,91, 103,11,2,4,5
14	230786	ICDIG10H116P RCVR	EA	3.00000	U18-20
15	231586	ICDIG74ACT32 DIP	EA	5.00000	U8, 9,10,11, 14
16	415130	PCB, 6 SLOT BACKPLANE	EA	1.00000	
17	435130	SCHEMATIC, 6 SLOT BACKPLANE	EA		
18	110253	CPAE30150. 0U003SV20LOW ESR	EA	20.00000	C40-44, 47,57,59,60,65- 67,71,83-85,96- 98,104
19	921230	ADHESIVE, INSTANT454	EA	.00001	



## EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.

Assembly 405141

PCB Assy, Monitor

Date 1/14/99

Revision C

#	Component	Description	U/N	Qty Reqd	REF
1	R-20-5771	RSCH1-010 00H. 12W005	EA	2.00000	R2, R13
2	R-21-1802	CPCH2-0100. 0N0050V20	EA	29.00000	C1-C2, C4-C27 C29-C31
4	010308	RSMF1-049. 90H. 25W001	EA	3.00000	R57-R58, R88
6	040197	PTST2-CM010 .0K-PC-TA	EA	1.00000	R148
8	040332	PTST1-CM100. 0H- PC-SA	EA	1.00000	R149
10	050000-104	RSCH2-100 00K. 06W005	EA	1.00000	R9
12	050000-105	RSCH3-001. 00M. 06W005	EA	1.00000	R83
14	050000-132	RSCH2-001.30K. 06W005	EA	2.00000	R65, R90
18	050000-432	RSCH2-004 .30K. 06W005	EA	5 00000	R10, R12, R14, R72 , R76
20	050000-471	RSCH1-470. 00H. 06W005	EA	19.00000	R11 R40-56, R82
22	050009	RSCH2-001 .00K. 06w001	EA	5.00000	R36, R38, R59- R60, R67
24	050027	RSCH -200.00K. 06W001	EA	2.00000	R15-R16
26	050030	RSCH2-010 .20K. 06W001	EA	2.00000	R5, R63
28	050036	RSCH2-510.00K. 12w005	EA	1.00000	R18
30	050062	RSCH2-010 .00K. 06W001	EA	24.00000	R1, R3-4, R6-8, R17, R25-32, R34-R35, R64, R66, R71, R80, R84-R85, R89
32	050076	RSCH2-005 .23K. 06w001	EA	1.00000	R87
34	050085	RSCH2-015.00K. 06W001	EA	1.00000	R19
36	050089	RSCH2-049.90K. 06w001	EA	2.00000	R21-R22
38	050090	RSCH2-110 .00K. 06W001	EA	2.00000	R23-R2 4
40	050094	RSCH2-003.65K. 06w001	EA	1.00000	R86
42	050096-002	RSCH2-010 .00K. 10W. 10	EA	2.00000	R61-R62
44	050117-009	RSCH2-024 .90K. 10W001	EA	1.00000	R20
46	110244	CPCH3-0001. 0U0016V10	EA	1.00000	C3
48	130186	CPCH3-0010. 0U0016V10	EA	1.00000	C28
50	200320	TRBI-NPNSG-5S60V350M	EA	5.00000	Q1-QS
52	210128	DISLC-070. 0V00. 20A	EA	2.00000	CR1-CR2
54	210151	DILED-001. 7V00. 02A-LHG3392	EA	9.00000	CR3-CR11
56	231093	ICLIN-LM339 COMP	EA	8.00000	U1-U8
58	231520	ICLIN-LM324AD---SOIC	EA	2.00000	U9-U10
60	231587	ICLTN-336-2. 5V-SOIC	EA	1.00000	D1
62	231591	ICLIN-LM50 SOIC	EA	1.00000	U11
64	310271	RSTM1-100. 00H001W. 01	EA	2.00000	RT1-RT2
66	415141	PCB, MONITOR	EA	1.00000	
69	500329	CAFT-RBN-14C28G-1STR	EA	1.00000	W/J1, J301
71	601208-011	CON-PCB-PLGO4SD. 100S	EA	1.00000	J4
73	601208-015	CON-PCB-PLG1OPC. 100S	EA	1.00000	J3
75	602091-014	CON-FCA-PLG2O14. 100D	EA	1.00000	J301
77	602238-006	CON-PCB-PLGOO6P. 100D	EA	1.00000	J2
79	602338-014	CON-FCA-PLGO14I. 100D	EA	1.00000	J1
81	500330-001	TBGSTD-POL. 2351D-CLR. 38ODMOD	EA	1.00000	W/RT2
82	921055	TAPE-DBL SIDED-FOAM	EA	.00001	

**EADS NORTH AMERICA DEFENSE TEST AND SERVICES, INC.**

Assembly 407669

Conn Assy, 50 Pin, Low Profile

Date 10/02/98

Revision A

#	Component	Description	U/N	Qty Reqd	REF
1	456701	BACKSHELL,50 PIN,LOW PROFILE	EA	1.000	-
2	456702	STRAIN RELIEF,LOW PROFILE	EA	1.000	-
3	601855-050-001	CONN~50 PIN PLUG,MODIFIED	EA	1.000	
4	610935	W2H006.141x.320x.050	EA	2.000	
5	616252	S3M-PPANHOO4-40X.312	EA	2.000	

## Chapter 6

# PRODUCT SUPPORT

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### Product Support

EADS North America Defense Test and Services, Inc. has a complete Service and Parts Department. If you need technical assistance or should it be necessary to return your product for repair or calibration, call 1-800-722-3262. If parts are required to repair the product at your facility, call 1-949-859-8999 and ask for the Parts Department.

When sending your instrument in for repair, complete the form in the back of this manual.

For worldwide support and the office closest to your facility, refer to the website for the most complete information <http://www.eads-nadefense.com>.

### Warranty

Use the original packing material when returning the 1264C/D to EADS North America Defense Test and Services, Inc. for calibration or servicing. The original shipping container and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact EADS North America Defense Test and Services, Inc. Customer Service at 1-800-722-3262 for information.

### REPAIR AND CALIBRATION REQUEST FORM

To allow us to better understand your repair requests, we suggest you use the following outline when calling and include a copy with your instrument to be sent to the EADS North America Defense Test and Service, Inc. Repair Facility.

Model \_\_\_\_\_ Serial No. \_\_\_\_\_ Date \_\_\_\_\_

Company Name \_\_\_\_\_ Purchase Order # \_\_\_\_\_

Billing Address \_\_\_\_\_

City

State/Province

Zip/Postal Code

Country

Shipping Address \_\_\_\_\_

City

State/Province

Zip/Postal Code

Country

Technical Contact \_\_\_\_\_ Phone Number ( ) \_\_\_\_\_

Purchasing Contact \_\_\_\_\_ Phone Number ( ) \_\_\_\_\_

1. Describe, in detail, the problem and symptoms you are having. Please include all set up details, such as input/output levels, frequencies, waveform details, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. If problem is occurring when unit is in remote, please list the program strings used and the controller type.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Please give any additional information you feel would be beneficial in facilitating a faster repair time (i.e., modifications, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Is calibration data required?      Yes    No    (please circle one)

Call before shipping  
Note: We do not accept  
"collect" shipments.

Ship instruments to nearest support office.

# Appendix A

## SPECIFICATIONS

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### Specifications

This chapter contains the complete specifications for the 1264C/D Mainframe.

**Table A-1, AC Input Specifications**

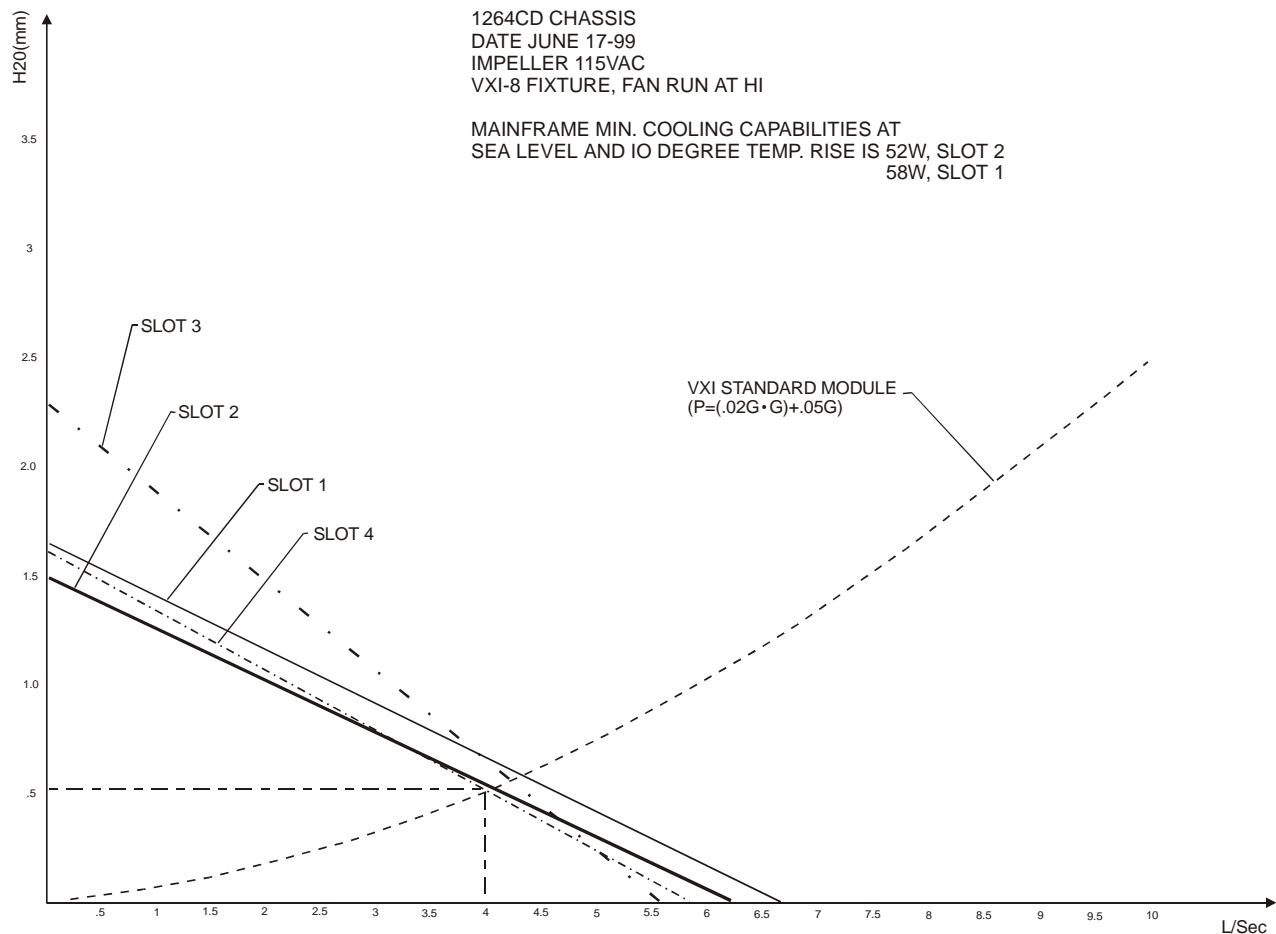
Characteristic	Description
Input Voltage Range  Standard 1264C/D 230 VAC Version (Option 71)	115 VAC $\pm$ 10% 230 VAC $\pm$ 10%
Input Frequency Range	47 Hz to 63 Hz
Power Consumption	1000 W line power maximum
Fuse Rating  115VAC Operation 230VAC - 250 V Operation (Option 71)	0.25 in x 1.25 in, Slow Blow, 15 A, 250 V 5 mm x 20 mm, T6.3 A, 250 V
Inrush Current	70 A maximum, cold start
Input current	12 A maximum
Power Disconnect	AC Power Switch ( S100A or S100)

Table A-2, DC Output Power

Characteristic	Description	
Maximum Power Available To Modules	500 W, 0°C to 50°C, Derate 2.5%/°C above 50°C	
Useable Power	790W	
DC Current Capacity ( $I_{MP}$ )	<b>Voltage</b>	<b><math>I_{MP}</math> (Steady-State Current)</b>
	+24V	4 A 96W
	+12 V	8 A 96W
	+5 V	45 A 225W
	-2V	15 A 30W
	-5.2 V	30 A 150W
	-12 V	8 A 96W
	-24 V	4 A 96W
DC Voltage Regulation	<b>Voltage</b>	<b>Tolerance, _V</b>
	+24 V	+1.2V, -720 mV
	+12 V	+600 mV, -360mV
	+5V	+250 mV, -125 mV
	-2V	-100 mV, +100 mV
	-5.2 V	-260 mV, +156 mV
	-12 V	-600 mV, +360 mV
	-24 V	-1.2 V, +720 mV
Maximum Load Ripple/Noise	<b>Voltage</b>	<b>Ripple/Noise</b>
	+24 V	150 mV <sub>pp</sub>
	+12 V	50 mV <sub>pp</sub>
	+5 V	50 mV <sub>pp</sub>
	-2 V	50 mV <sub>pp</sub>
	-5.2 V	50 mV <sub>pp</sub>
	-12 V	50 mV <sub>pp</sub>
	-24 V	150 mV <sub>pp</sub>
Maximum Induced Ripple/Noise	<b>Voltage</b>	<b>Ripple/Noise</b>
	+24 V	150 mV <sub>pp</sub>
	+12 V	50 mV <sub>pp</sub>
	+5 V	50 mV <sub>pp</sub>
	-2 V	50 mV <sub>pp</sub>
	-5.2 V	50 mV <sub>pp</sub>
	-12 V	50 mV <sub>pp</sub>
	-24 V	150 mV <sub>pp</sub>
Dynamic Current $I_{dm}$	<b>Voltage</b>	<b><math>I_{dm}</math> Dynamic Current</b>
	+24	3
	+12	2
	+5	5
	-2	3
	-5.2	4
	-12	2
	-24	3
Protections	Over voltage protection Over temperature protection Over current protection Short circuit protection	

**Table A-3, Cooling**

Characteristic	Description
Per Slot Cooling Capacity	Typically 52W per VXI-8 rev 2.0 (for 10°C rise). <b>Figure A-1</b> shows the worst slot cooling curve of the mainframe.
Cooling System	Forced air circulation (positive pressurization).
Slot Airflow Direction	P2 to P1, bottom of module to the top of module
Mainframe Intake, Bench Top	Rear of mainframe
Module Exhaust, Bench Top	Top of mainframe.
Supply Exhaust, Bench Top	Bottom rear of mainframe.
Fan Filter Access	Filter accessible from rear of the mainframe



**Figure A-1, Mainframe Worst Case Slot Cooling Curve  
 (Fan filters installed, standard modules in unmeasured slots)**

Table A-4, Safety

Characteristic	Description
Safety Characteristics	EN61010-1
IEC Characteristics	Installation Category II Pollution Degree 2 Safety Class 1

Table A-5, Environmental

Characteristic	Description																
Temperature Operating Non-operating	Meets the limits stated in MIL-T-28800E for Type III, Class 5 0°C to 50°C -40°C to 75°C																
Relative Humidity Operating Non-operating	95+/-5% RH non condensing 75+/-5% RH above 30° 45+/-5% RH above 40° 95+/-5% RH at <55°																
Altitude Operating Non-operating	10,000 ft. (4570m) 15,000 ft. (12,190 m)																
Vibration	0.013" double amplitude, 5-55Hz																
Functional Shock Operating	Half sine, 30 g, 11 ms duration.																
Electromagnetic Compatibility (EMC) Emissions Enclosure AC Mains	Emissions shall be within the limits specified by the following requirements: EN 55011 Class A, FCC Part 15 Class A limits for radiated emissions EN 55011 Class A, FCC Part 15 Class A limits for conducted emissions																
Immunity, Enclosure, Radio Frequency Electromagnetic Field	No mainframe failures when the mainframe is subjected to a 3 V/m electromagnetic field over the frequency range of 27 MHz to 500 MHz.																
Immunity, Enclosure, Electrostatic Discharge (ESD)	Up to 8 kV with no change to control settings or impairment of normal operation.																
Immunity, Fast Transients, Common Mode	<table border="1"> <thead> <tr> <th>Port</th> <th>Peak Voltage</th> <th>Tr/Th</th> <th>Rep Frequency</th> </tr> </thead> <tbody> <tr> <td>Signal&amp;Control</td> <td>0.5 kV</td> <td>5/50 ns</td> <td>5 kHz</td> </tr> <tr> <td>DC Power</td> <td>0.5 kV</td> <td>5/50 ns</td> <td>5 kHz</td> </tr> <tr> <td>AC Power</td> <td>1.0 kV</td> <td>5/50 ns</td> <td>5 kHz</td> </tr> </tbody> </table>	Port	Peak Voltage	Tr/Th	Rep Frequency	Signal&Control	0.5 kV	5/50 ns	5 kHz	DC Power	0.5 kV	5/50 ns	5 kHz	AC Power	1.0 kV	5/50 ns	5 kHz
Port	Peak Voltage	Tr/Th	Rep Frequency														
Signal&Control	0.5 kV	5/50 ns	5 kHz														
DC Power	0.5 kV	5/50 ns	5 kHz														
AC Power	1.0 kV	5/50 ns	5 kHz														
MTBF	50,000 Hours																
MTTR	< 10 minutes for major assemblies (Fan, Power Supply, backplane) < 30 minutes for monitor assembly.																

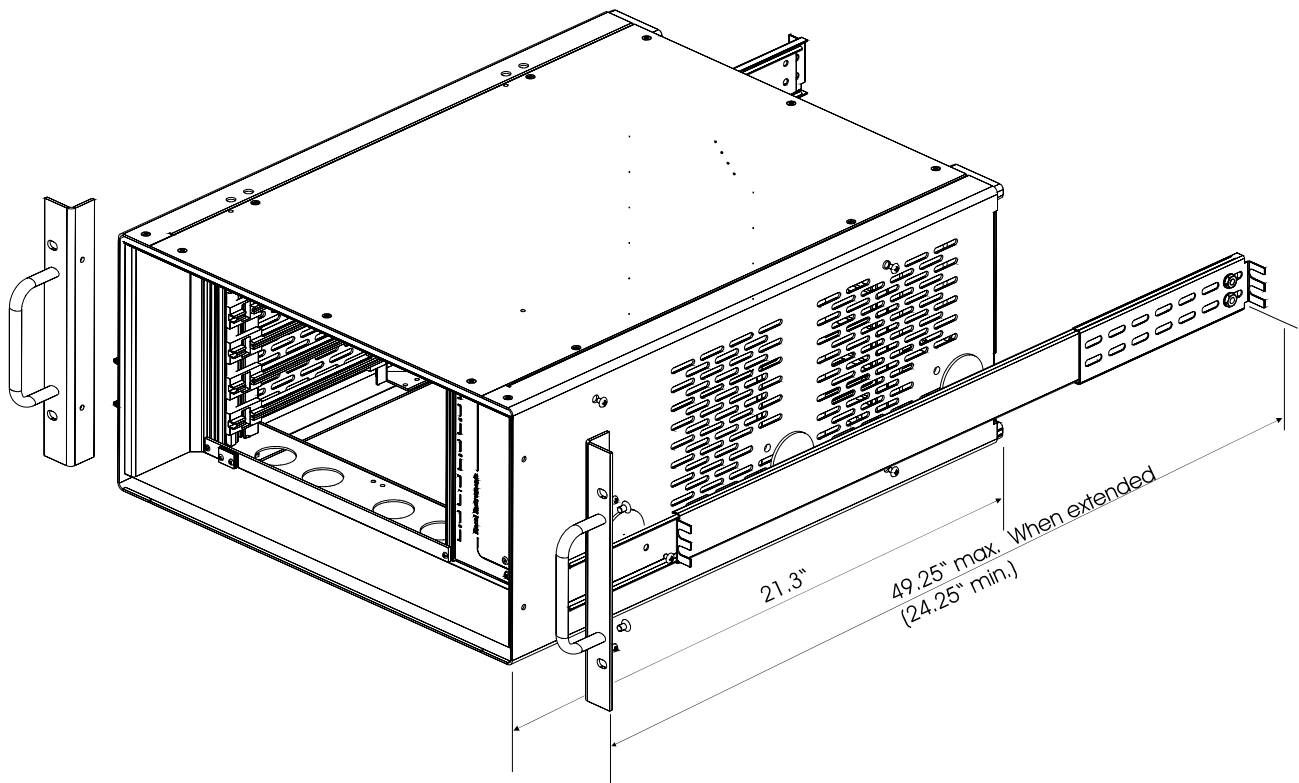


**Table A-6, Backplane**

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

**Table A-7, Mechanical**

Characteristic	Description
Overall Dimensions	
Standard Mainframe (7U)	
Width	16.75 in (42.6 cm)
Height	8.7 in (22.1 cm)
Depth	21.3 in (54.1 cm)
Weight	27 lbs. (12.3 kg) with no modules installed



**Figure A-2, View of 1264C/D With Rack Mount Option**

Table A-8, System Monitoring Specifications, (Typical)

Characteristics	Description
VXI Power Supply <b>Voltage</b> monitor	Default Tolerance limits: $V_{\text{nominal}} \pm 10\%$ 4% accuracy
VXI Power Supply Intake air <b>Temperature</b> monitor	Default Tolerance limits: $T_{\text{amb}} > 60^{\circ}\text{C}$ $\pm 2^{\circ}\text{C}$ accuracy
Fan monitor	Go – No Go indicator