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14-SLOT PXI MAINFRAME
USER MANUAL

MODEL 1461-14

PUBLICATION NUMBER 980886

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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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Chapter 1
GETTING STARTED

Product Description

The Model 1461-14 is a 14-slot PXI Mainframe. The 1461-14 can accommodate fourteen 3U PXI modules. The Model 1461-14 fully complies with the PXIbus Specification Revision 2.1 (and earlier) requirements.

Key Features

The key features of the 1461-14 include the following:

- PXI and CompactPCI module compatibility.
- Compact 3U-sized 14 slot chassis.
- Universal AC input: automatic voltage and frequency ranging, 440 Hz capability.
- Removable modular power-supply/fan assembly.
- Remote power and fan monitoring via a rear-panel connector.
- On/Off (Standby) power switch on the front panel for easy access.
- Available fan control module that can adjust fan speed based on module temperature, minimizes audible noise.
- Front-panel LED that can indicate power supply failure.
- Carrying handle for portability.
- Tilt feet for bench-top applications.
- Available rails for rack mount options.

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Items Shipped With The 1461-14

Qty	Item
1	Instruction Manual
1	Power Cord

Ordering Information

Spares Ordering Information		
Model	**Description**	**Part Number**
1461-14	14-Slot PXI/Compact PCI 111.7mm Mainframe	407865-014
Option 04	Rack Mount Ears, supplied in pairs	407865-904
Chassis Runners	For 19" chassis, supplied in pairs	921394
Filler Panel, Shielded	Shielded Filler Panel with EMI Gasket (to fill empty module slots)	407865-925
Filler Panel, Un-Shielded	Filler Panel, Non-EMI	407865-926
Fan Monitoring	Automatic Fan and Voltage Monitoring	407865-927
Rack Mount Ear	Extendable Rack Mount Ears	407865-928
ASFP	Application Specific Front Panel	407865-929

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Chapter 2

CONFIGURING THE 1461-14

Using This Chapter

This section includes basic procedures to install and configure the 1461-14 mainframe. Use this chapter to:

- Review installation site considerations.
- Installing a PXI Controller.
- Install PXI 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 1461-14 is shipped, it is configured for 120 VAC operation.

Should it be necessary to replace the AC mains fuse, refer to Chapter 4: Removal and Replacement of the AC Mains Fuse.

Site Considerations

The 1461-14 Mainframe is designed to be used freestanding (bench top) or in an instrument rack.

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Installing a PXI Controller

This section contains general installation instructions for installing a PXI controller in the 1461-14 chassis. Refer to your PXI controller user manual for specific instructions and warnings. To install a controller, follow these steps:

1. Make sure the power switch is in the Off (standby) position.

2. Install the controller into the system controller slot (red card guides) by first placing the controller edges into the front controller guides (top and bottom). Slide the controller to the rear of the chassis (making sure that the injector/ejector handle is pushed down.

CAUTION

To avoid possible damage do NOT hot-plug install PXI modules (i.e., install with power on).

3. When you begin to feel resistance, push up on the injector/ejector handle to inject the controller fully into the chassis frame. Secure the controller front panel to the chassis using the controller front-panel mounting screws.

Installing PXI Modules

To install a module, follow these steps:

1. Install a module into a chassis slot by first placing the module card edges into the front module guides (top and bottom). Slide the module to the rear of the chassis, making sure that the injector/ejector handle is pushed down.

2. When you begin to feel resistance, push up on the injector/ejector handle to fully inject the module into the chassis frame. Secure the module front panel to the chassis using the front-panel mounting screws.

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Optional Filler Panels

In order to optimize system performance, install optional filler panels (P/N 407865-925 or 407865-926) into unused slots. Secure with two captive mounting screws. Reference Fig. 3-1 and Ordering Information, p.1-2.

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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 (1.3mm² 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.

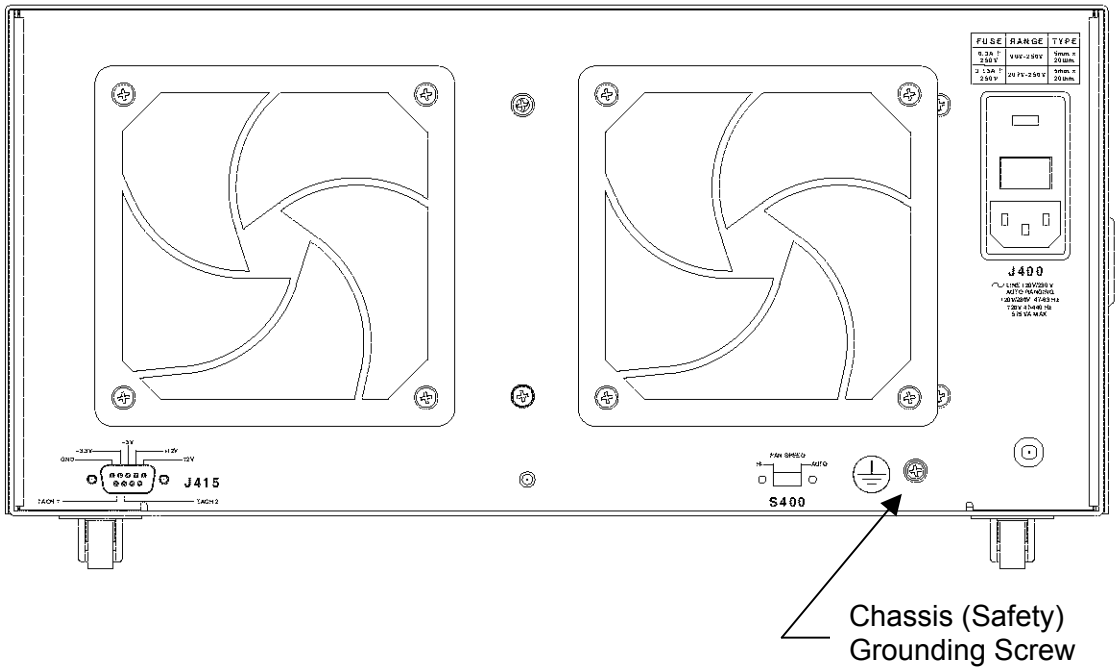


Figure 2-1, Connecting Safety Ground

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Chapter 3
OPERATING THE 1461-14

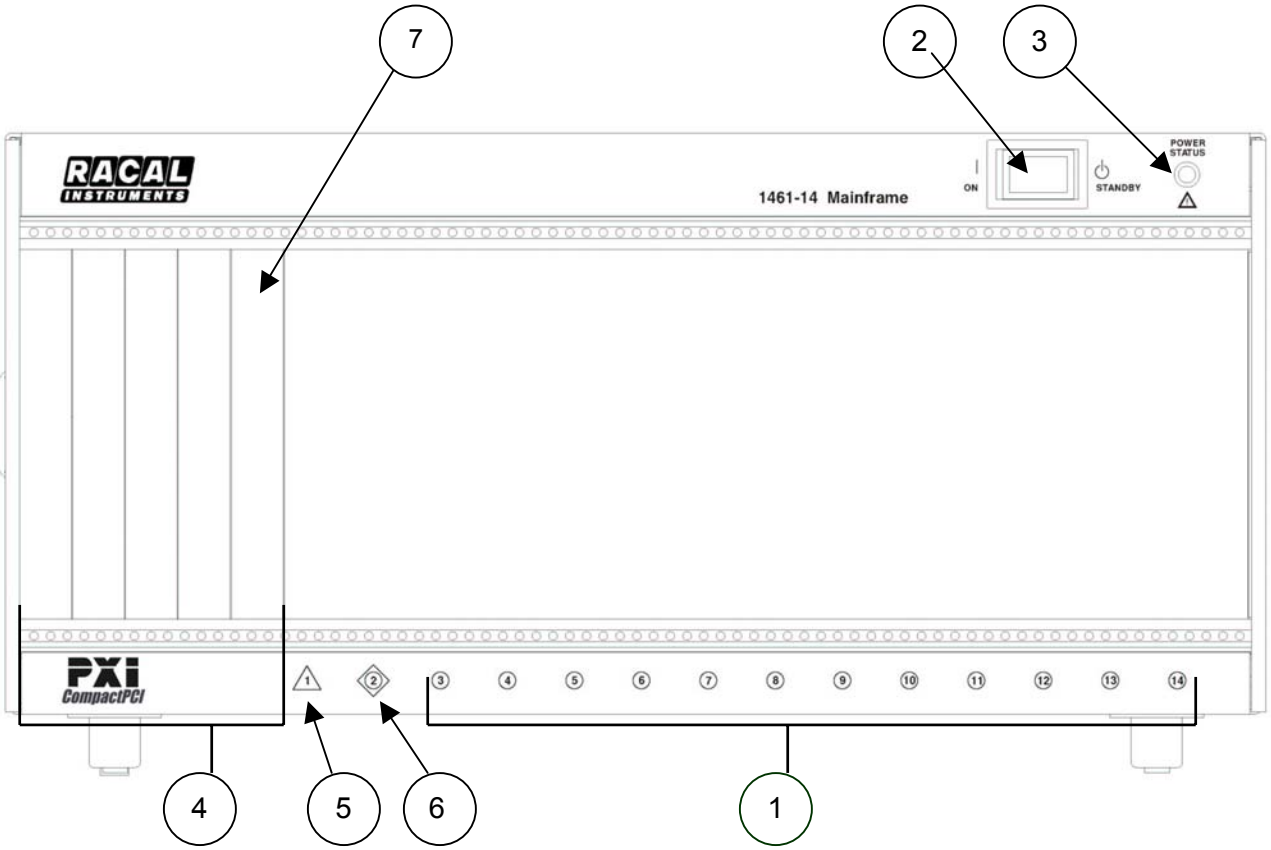
Using This Chapter

Use this Chapter to:

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

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1461-14 Front Panel

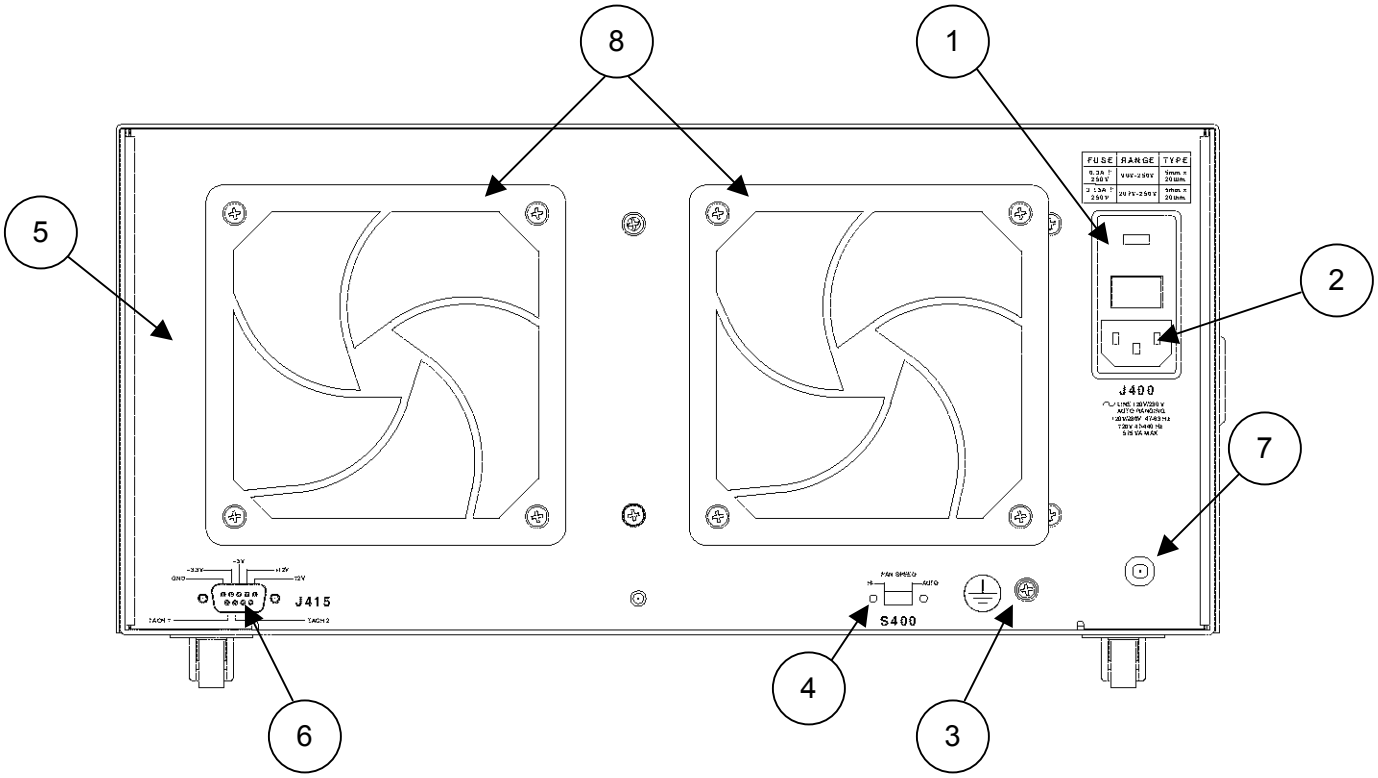


1. Peripheral slots.	2. On/Off (Standby) Power Switch (S100)
3. Power LED.	4. Controller Expansion Slots.
5. System Controller Slot.	6. Star Trigger Slot.
7. Blanking Panel.	

Figure 3-1, 1461-14 Front View

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1461-14 Rear View



1. Fuse Location.	2. Universal AC Inlet (J400).
3. Chassis Ground Screw.	4. Fan Speed Selector Switch (S400).
5. Modular Supply/Fan Assembly.	6. Fan and Voltage Monitoring Connector (J415).
7. PXI_CLK10 IN BNC.	8. Snap On Filter Cover.

Figure 3-2, 1461-14 Rear View

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Power The Mainframe ON/OFF

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

1. Set front panel Standby switch S100 to the “O” or off position.
2. Connect the AC Power cord at J400 to the AC power source. Note the power supply fan will operate at all times with the AC power applied to the unit.
3. Turn the chassis on by setting the front panel switch S100 to the “I” or ON position.
4. Observe that the front panel LED indicator turns Green.

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Backplane Connections

The following tables 3-1 through 3-6 define the P1(J1) and P2(J2) connector pinout for the System Controller slot, Star Trigger Slot and Peripheral slot.

Table 3-1 P1 (J1) Connector Pinouts for the System Controller Slot

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	5V	5V	AD[2]	GND
22	GND	AD[7]	GND	AD[6]	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	M66EN	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	AD[11]	AD[11]	AD[10]	GND
19	GND	3.3V	AD[15]	GND	GND	AD[13]	GND
18	GND	SERR#	GND	PAR	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMB_SCL	GND	GND	PERR#	GND
16	GND	DEVSEL#	GND	STOP#	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	GND	GND	TRDY#	GND
12-14	Key Area						
11	GND	AD[18]	AD[17]	AD[16}	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19}	GND
9	GND	C/BE[3]#	GND	AD[23}	GND	AD[22}	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24}	GND
7	GND	AD[30}	AD[29]	AD[28]	GND	AD[27}	GND
6	GND	REQ0#	GND	3.3V	CLK0	AD[31}	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT0#	GND
4	GND	IPMB_PWR	HEALTHY	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

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Table 3-2 P2 (J2) Connector Pinouts for the System Controller Slot

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND	RSV	GND
19	GND	GND	GND	SMB_SDA	SMB_SCL	SMB_ALERT#	GND
18	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND
17	GND	PXI_TRIG2	GND	PRST#	REQ6#	GNT6#	GND
16	GND	PXI_TRIG1	PXI_TRIG0	DEG#	GND	PXI_TRIG7	GND
15	GND	PXI_BRSVA15	GND	FAL#	REQ5#	GNT5#	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32	GND
13	GND	AD[38]	GND	V(I/O)	AD[37]	AD[36	GND
12	GND	AD[42]	AD[41}	AD[40	GND	AD[39	GND
11	GND	AD[45]	GND	V(I/O	AD[44]	AD[43	GND
10	GND	AD[49]	AD[48]	AD[47	GND	AD[46	GND
9	GND	AD[52]	GND	V(I/O	AD[51]	AD[50	GND
8	GND	AD[56]	AD[55}	AD[54	GND	AD[53	GND
7	GND	AD[59]	GND	V(I/O	AD[58]	AD[57	GND
6	GND	AD[63}	AD[62}	AD[61	GND	AD[60	GND
5	GND	C/BE[5]#	GND	V(I/O	C/BE4#	PAR64	GND
4	GND	V(I/O)	PXI_BRSVB4	C/BE[7]#	GND	C/BE[6]#	GND
3	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

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Table 3-3 P1 (J1) Connector Pinouts for the Star Trigger Slot

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V+	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY	BD_SEL	TRDY#	GND
12-14	Key Area						
11	GND	AD[18]	AD[17]	AD[16}	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19}	GND
9	GND	C/BE[3]#	IDSEL	AD[23}	GND	AD[22}	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24}	GND
7	GND	AD[30}	AD[29]	AD[28]	GND	AD[27}	GND
6	GND	REQ#	GND	3.3V	CLK	AD[31}	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	IPMB_PWR	HEALTHY	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

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Table 3-4 P2 (J2) Connector Pinouts for the Start Trigger Slot

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	PXI_LBR0	GND	PXI_LBR1	PXI_LBR2	PXI_LBR3	GND
20	GND	PXI_LBR4	PXI_LBR5	PXI_STAR0	GND	PXI_STAR1	GND
19	GND	PXI_STAR2	GND	PXI_STAR3	PXI_STAR4	PXI_STAR5	GND
18	GND	PXI_TRIG	PXI_TRIG	PXI_TRIG	GND	PXI_TRIG6	GND
17	GND	PXI_TRIG2	GND	RSV	PXI_CLK10_IN	PXI_CLK10	GND
16	GND	PXI_TRIG1	PXI_TRIG0	RSV	GND	PXI_TRIG7	GND
15	GND	PXI_BRVA15	GND	RSV	PXI_STAR6	PXI_LBR6	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND
13	GND	AD[38]	GND	V(I/O)	AD[37]	AD[36]	GND
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND
11	GND	AD[45]	GND	V(I/O)	AD[44]	AD[43]	GND
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND
9	GND	AD[52]	GND	V(I/O)	AD[51]	AD[50]	GND
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53}	GND
7	GND	AD[59]	GND	V(I/O)	AD[58]	AD[57]	GND
6	GND	AD[63]	AD[62]	AD[61]	GND	AD[60]	GND
5	GND	C/BE[5]#	GND	V(I/O)	C/BE[4]#	PAR64	GND
4	GND	V(I/O)	PXI_BRSVB4	C/BE[7]#	GND	C/BE[6}#	GND
3	GND	PXI_LBR7	GND	PXI_LBR8	PXI_LBR9	PXI_LBR10	GND
2	GND	PXI_LBR11	PXI_LBR12	UNC	PXI_STAR7	PXI_STAR8	GND
1	GND	PXI_STAR9	GND	PXI_STAR10	PXI_STAR11	PXI_STAR12	GND

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Table 3-5 P1 (J1) Connector Pinout for the Peripheral Slot

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V+	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY	BD_SEL	TRDY#	GND
12-14	Key Area						
11	GND	AD[18]	AD[17]	AD[16}	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19}	GND
9	GND	C/BE[3]#	IDSEL	AD[23}	GND	AD[22}	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24}	GND
7	GND	AD[30}	AD[29]	AD[28]	GND	AD[27}	GND
6	GND	REQ#	GND	3.3V	CLK	AD[31}	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	IPMB_PWR	HEALTHY	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

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Table 3-6 P2 (J2) Connector Pinouts for the Peripheral Slot

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	PXI_LBR0	GND	PXI_LBR1	PXI_LBR2	PXI_LBR3	GND
20	GND	PXI_LBR4	PXI_LBR5	PXI_STAR0	GND	PXI_LBL1	GND
19	GND	PXI_LBL2	GND	PXI_LBL3	PXI_LBL4	PXI_LBL5	GND
18	GND	PXI_TRIG3	PXI_TRIG4	PXI_TRIG5	GND	PXI_TRIG6	GND
17	GND	PXI_TRIG2	GND	RSV	PXI_STAR	PXI_CLK10	GND
16	GND	PXI_TRIG1	PXI_TRIG0	RSV	GND	PXI_TRIG7	GND
15	GND	PXI_BRVA15	GND	RSV	PXI_LBL6	PXI_LBR6	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND
13	GND	AD[38]	GND	V(I/O)	AD[37]	AD[36]	GND
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND
11	GND	AD[45]	GND	V(I/O)	AD[44]	AD[43]	GND
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND
9	GND	AD[52]	GND	V(I/O)	AD[51]	AD[50]	GND
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53}	GND
7	GND	AD[59]	GND	V(I/O)	AD[58]	AD[57]	GND
6	GND	AD[63]	AD[62]	AD[61]	GND	AD[60]	GND
5	GND	C/BE[5]#	GND	V(I/O)	C/BE[4]#	PAR64	GND
4	GND	V(I/O)	PXI_BRSVB4	C/BE[7]#	GND	C/BE[6}#	GND
3	GND	PXI_LBR7	GND	PXI_LBR8	PXI_LBR9	PXI_LBR10	GND
2	GND	PXI_LBR11	PXI_LBR12	UNC	PXI_LBL7	PXI_SLBL	GND
1	GND	PXI_LBL9	GND	PXI_LBL10	PXI_LBL11	PXI_LBL12	GND

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Basic Functional Check

The functional check consists of checking the 1461-14 power supply voltages to the PXIbus limits at the J415 Rear Panel Monitor connector using a digital voltmeter.

Referring to Table 3-8 and Figure 3-1 connect one lead of the voltmeter to a supply pin. Connect the reference lead of the voltmeter to a ground pin. Compare each voltage reading to the values listed in Table 3-7.

Table 3-7 Power Supply Voltages at the P1 and P2 Connectors

J415 Measurement Location (PIN)	Supply	Acceptable Voltage Range
+3.3V	+3.3V	3.15V to 3.45V
+5V	+5V	4.75V to 5.25V
-12V	-12V	-12.6 to 11.4V
+12V	+12V	11.4V to 12.6V
GND	Logic Ground	

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

Check the fan operation by connecting an oscilloscope to the TACH1 (and TACH2) outputs using the GND to connect the scope ground. The fan speed should measure 400Hz with S400 in the Hi Speed position.

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Chapter 4
MAINTENANCE

What's In This Chapter

This chapter provides information regarding calibration and procedures for inspecting and cleaning the 1461-14, removing and replacing mainframe components, and isolating problems to the module level.

Calibration

The 1461-14 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 1461-14 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 the fan filters (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 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 1461-14 for information on the location of controls, indicators, and connectors used with the mainframe.

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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 PXIbus 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.

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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 is easily removed from the rear of the mainframe as shown in Figure 4-1.

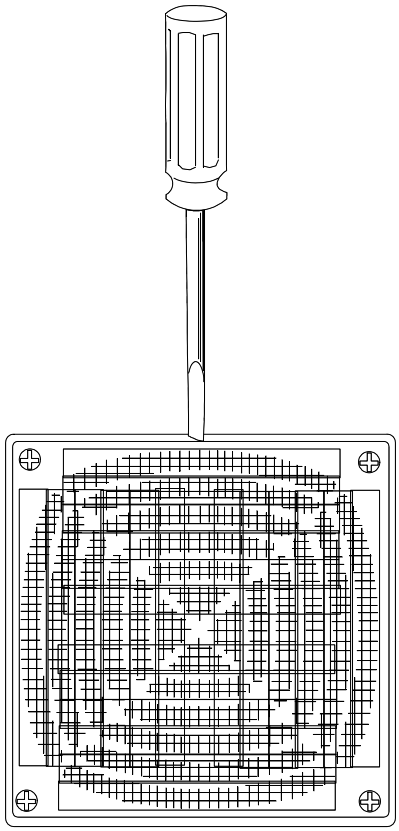


Figure 4-1, Cleaning The Fan Filter

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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 1461-14 Mainframe. Perform these procedures only as necessary as part of installation (e.g. fuse replacement), mainframe service, or repair. See Troubleshooting p.4-7 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 tools required to disassemble the 1461-14 chassis to the module level are a medium flat blade and Phillips screwdriver.

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Removal and Replacement of The AC Mains Fuse

Complete the steps below while referring to Figure 4-2.

1. Ensure AC mains input (J400) is disconnected.
2. At F400 open fuse holder rear cover and remove fuse holder assembly
3. To replace fuse, insert the fuse carrier and fuse assembly into the fuse housing opening for F400 on power supply, close cover.

WARNING

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

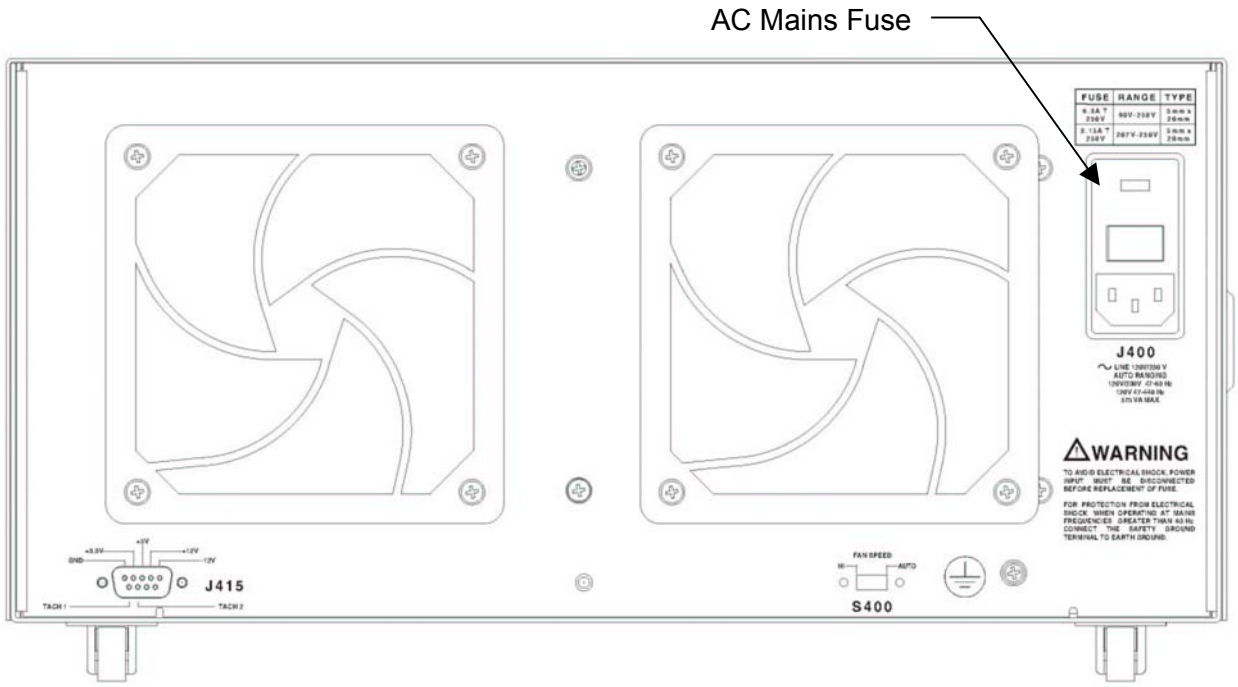


Figure 4-2 Removing and Replacing The AC Mains Fuse

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Trouble-shooting the 1461-14

To troubleshoot the 1461-14 PXIbus mainframe to its component module level use Table 5-1 and Understanding the 1461-14 in Chapter 4.

“Fault condition” referenced in the PROBLEM column of Table 4-1 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 4-1 Troubleshooting

PROBLEM	POSSIBLE CAUSES	WHAT TO DO
Unit does not Power On	• 1461-14 mainframe not connected to power source.	• Make sure that the 1461-14 is connected to a live electrical outlet and the AC power switch is on. Try operating another piece of equipment from this outlet.
	• Blown AC Mains Fuse.	• Unplug AC mains power and check the fuse. See “Removal and Replacement of the AC Mains Fuse” in Chapter 5.
	• Power supply protections are active causing the supply to be “shutdown”.	• Refer to “Power Supply Protections” in Chapter 4. • Cycle power to clear fault. If fault persists remove installed PXI modules (cycle power) until fault is cleared.
	• Faulty AC wiring or bad front panel AC Power Switch	• Verify integrity of AC wiring to AC Power switch and the switch itself. Contact customer service.
Voltage alarm condition (RED Flashing LED illuminated).	• Faulty PXI module installed or voltage fault occurred	• Cycle power. • If fault persists remove installed PXI modules until fault indication is cleared.
	• PXI supply is out of tolerance	• Perform Basic Functional Check procedure from Chapter 3.

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Chapter 5
PRODUCT SUPPORT

Product Support

Racal Instruments 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 closes to your facility, refer to the Support Offices section on the following page.

Warranty

Use the original packing material when returning the 1461-14 to Racal Instruments for calibration or servicing. The original shipping crate and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact Racal Instruments Customer Service for information.

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Support Offices

RACAL INSTRUMENTS

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(Corporate Headquarters and Service Center)
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5730 Northwest Parkway Suite 700, San Antonio, TX 78249
Tel: (210) 699-6799; Fax: (210) 699-8857

Europe

(European Headquarters and Service Center)
18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (0)1 39 23 22 22; Fax: +33 (0)1 39 23 22 25

29-31 Cobham Road, Wimborne, Dorset BH21 7PF, United Kingdom
Tel: +44 (0) 1202 872800; Fax: +44 (0) 1202 870810

Via Milazzo 25, 20092 Cinisello B, Milan, Italy
Tel: +39 (0)2 6123 901; Fax: +39 (0)2 6129 3606

Technologie Park, Friedrich Ebert Strasse, 51429 Bergisch Gladbach, Germany
Tel: +49 (0) 2204 844200; Fax: +49 (0) 2204 844219

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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 Racal Instruments 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.

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Appendix A
SPECIFICATIONS

Specifications

This chapter contains the complete specifications for the 1461-14 Mainframe.

Table A-1, AC Input Specifications

Characteristic	Description
Input Voltage Range	90-250 VAC, 47-63Hz 120 VAC,47-440Hz
Power Consumption	575 VA maximum
Fuse Rating 115VAC Operation 230VAC - 250 V Operation	 0.25 in x 1.25 in, Slow Blow, 6.3 A, 250 V 5 mm x 20 mm, T3.15 A, 250 V
Inrush Current	35 A maximum, cold start
Power Disconnect	Rear Panel AC Power Switch

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Table A-2, DC Output Power

Characteristic	Description
Useable Power	790W
DC Current Capacity (I_{MP})	**Voltage** **Current** +12 V 8 A +5 V 50 A +3.3 V 40 A -12 V 4 A
DC Voltage Regulation	**Voltage** **Tolerance, _V** +12 V <5% +5V <5% +3.3V <5% -12 V <5%
Maximum Load Ripple/Noise	**Voltage** **Ripple/Noise** +12 V 120 mV_{pp} +5 V 50 mV_{pp} +3.3 V 50 mV_{pp} -12 V 120 mV_{pp}
Protections	Over voltage protection Over temperature protection Over current protection Short circuit protection Over Power Protection Reverse Voltage Protection

Table A-3, Cooling

Characteristic	Description
Cooling Capacity	600W for 10° temperature rise in card cage, fans at maximum speed.
Cooling System	Forced air circulation (positive pressurization).
Mainframe Intake	Rear of mainframe
Module Exhaust	Top side of mainframe.
Fan Filter Access	Filter accessible from rear of the mainframe

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Table A-4, Safety

Characteristic	Description
Safety Characteristics	EN61010-1:1993+A2:1995

Table A-5, Environmental

Characteristic	Description
Temperature Operating Non-operating	 0°C to 50°C -40°C to 71°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 <50°
Altitude Operating Non-operating	 10,000 ft. (4570m) 15,000 ft. (12,190 m)
Random Vibration	5-500Hz 2.1g_{rms}
Functional Shock Operating	 Half sine, 30 g, 11 ms duration.
Electromagnetic Compatibility (EMC) Emissions Immunity	Emissions shall be within the limits specified by the following requirements: EN 61326:1997+A1:1998 Class A, FCC Part 15 Class A limits for radiated emissions EN 61326:1997+A1:1998 Class A
MTBF	50,000 Hours
MTTR	< 10 minutes for major assemblies (Fan, Power Supply)

Table A-6, Backplane

Characteristic	Description
PCIbus CLK10 Distribution	Full differential: 250 ps maximum skew, ± 25 ppm.

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Table A-7, Mechanical

Characteristic	Description
Overall Dimensions Standard Mainframe (7U) Height Width Depth	 6.96 in (17.7 cm) 15.06 in (38.3 cm) 16.75 in (42.6 cm)
Weight	33 lbs. (14.97 kg) with no modules installed

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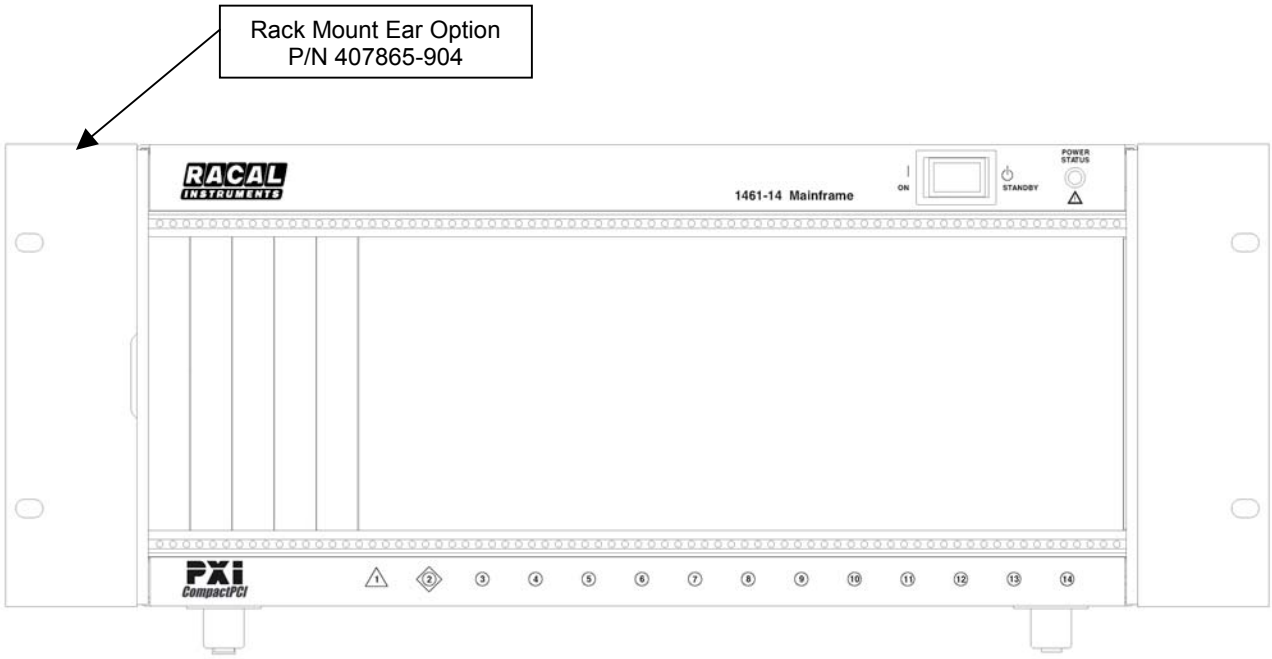


Figure A-1, View of 1461-14 With Rack Mount Ear Option

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