

WATERS TEST SYSTEM (12840001-001)

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RETURN of PRODUCT

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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 instrument is configured to operate on the voltage at the power source. See Installation Section.
2. Ensure the proper fuse is in place for the power source to operate.
3. 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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General Information

Overview

This manual provides the information necessary to install, operate and maintain the Freedom Series Test System, (P/N 12840001-001).

Functional Description

The Freedom Series Test System provides an automatic testing capability through a combination of VXI-based and rack mounted instrumentation. The devices contained in the test system are listed below:

Model	Description	Mfr.	Location
UPC1003-133	3-Phase Power Controller	Racal	1U01
776564-01	NI-GPIB Bus Expander	National	1U03
TDS460A	Oscilloscope, Digital	Tek	1U07
K236	Source Measurement Unit	Keithley	1U11, 1U13
1261B	High Power VXIbus Chassis	Racal	1U21
VXIPCI-8015	VXI/MXI-2 Slot 0 controller Win NT	National	1U21-Slot 0
4152	DMM, 6.5-Digit Module	Racal	1U21-Slot 1
2461CD	Universal Counter/Timer	Racal	1U21-Slot 2
3151A+	Waveform Generator	Racal	1U21-Slot 3
6075-8	Multi-Channel Serial Interface Module	Racal	1U21-Slot 4
1260-100	Adapta-Switch Carrier Module	Racal	1U21-Slots 5,6
1260-117	Hi-Density Switch/52SPDT	Racal	1U21-Slots 5-1
1260-118	Power Switch Module, 80 SPST	Racal	1U21-Slots 5-2
1260-120	Power Switch Module, 20 SPST	Racal	1U21-Slots 5-3
1260-138A	Hi-Density Multiplexer	Racal	1U21-Slots 5-4
1260-114	Hi-Density Digital I/O	Racal	1U21-Slots 5-5
1260-150	500MHz Multiplexer	Racal	1U21-Slots 5-6
921420-128	Computer, Waters	GSC	2U03
41-15326-94	Monitor, 17", Rackmount	MicTouch	2U07
6531-KB3M	Keyboard, Rackmount	ICS	2U17
MIC-C3099	Barcode Reader	Micro Biz	2U21
HP6050A	Electronic Load, Mainframe	Agilent	2U25
HP60502B	Load Module, 300W	Agilent	2U25-Slots 1-6
HP66000A	Power Supply, 8 Output	Agilent	2U27
HP66101A	DC Power Module, 8V/16A	Agilent	2U27-Slots 5,6
HP66103A	DC Power Module, 35V/4.5A	Agilent	2U27-Slots 0-4

Applicable Documents

This section lists the operating manuals for the various pieces of equipment contained in the test system. The following documents form a part of this operating manual.

Part Number	Description
777073-01	PCI-GPIB for Win95/NT Manuals & Software
777187-02	NI-VXI-MXI-2 for Win95/NT Manuals & Software
777560-01	PC-GPIB+ Controller/Analyzer
980831	Instruction Manual, Racal Instruments 4152A
980833-002	Instruction Manual, Racal Instruments 2461
980833	Instruction Manual, Racal Instruments 2460
980768	Instruction Manual, Racal Instruments 3151
980728	Instruction Manual, Racal Instruments 6065
980673-999	Instruction Manual, Racal Instruments 1260 Opt 01
980824-100	Instruction Manual, Racal Instruments 1260-100
980824-117	Instruction Manual, Racal Instruments 1260-117
980824-118	Instruction Manual, Racal Instruments 1260-118
980824-120	Instruction Manual, Racal Instruments 1260-120
980824-138A	Instruction Manual, Racal Instruments 1260-138A
980824-114	Instruction Manual, Racal Instruments 1260-114
980824-150	Instruction Manual, Racal Instruments 1260-150
980766	Manual, User, 1261B
236-904 D	Model 236/237 SMU Applications Manual
236-900-01 D	Model 236/237 SMU Operator's Manual
236-902-01 D	Model 236/237 SMU Service Manual
60502-90008	HP Model 60502B Module Operation Manual
5959-3386	HP Series 661XXA Module User's Guide
66000-900001	HP66000A MPS Mainframe Inst Guide
06060-90005	HP Electronic Load Family Programming Manual
5959-3368	HP Electronic Load Mainframe Program Manual
66001-90001	HP66001 MPS Keyboard Quick Reference Card
320390-01	GPIB 120A User's Manual
070-8567-01	TDS Option 13 RS232 Instruction Manual
070-9701-02	TDS420A Digital Oscilloscope User Manual
70-8521-04	TAS 200, TDS300 Rackmount Kit Instr

Installation

Installation Overview

This Installation section provides information on the installation of the Freedom Series Test System. This information may be necessary for the user to perform maintenance or calibration.

Unpacking and Setup

The Freedom Series Test System will be shipped from Racal Instruments in a reusable wooden crate. The following instructions detail the unpacking and set-up of the test system:

- 1 Before unpacking the test system, check the exterior of the shipping carton for any signs of damage. All irregularities should be noted on the shipping bill.
- 2 Remove the test system from the crate using a hoist or ramp and inspect for damage. If a forklift is to be used from the front, the front and rear decorative trimplates located at the bottom of the rack must be removed. If a forklift is to be used from the side, then both side panels must be removed. Remove the computer equipment (if applicable) from the separate containers and inspect for damage. Notify the carrier immediately if any damage is apparent. Save all packing material for use if the unit is to be re-shipped.
- 3 If your Freedom Series Test System came with a computer table: Attach the table legs to one side of the table and then attach the table to the side of the rack. Attachments are made using the large Allen wrench provided with the table. The fastening hardware will be attached to the table legs and to the side of the rack.
- 4 Set up the computer and or peripherals on the attached table or on another table near the test system.

5. a. The AC power cable will be wrapped and bundled at the rear of the rack. This cable is routed out the rear bottom of the rack. Remove the packaging which secures the cable.
- b. The computer cables will be wrapped and bundled at the side of the rack. Remove the packaging securing the cables.
6. Make connections from the computer to its peripherals (monitor, mouse, keyboard, printer, MXI and/or GPIB).

Rack Mount Equipment Installation/Removal

CAUTION

**THE FOLLOWING DEVICE(S) WEIGH IN EXCESS
OF 50 POUNDS AND REQUIRE TWO PERSONS
FOR REMOVAL OR INSTALLATION:**

1261B VXIbus CHASSIS (1U21)

The equipment within the test system is either supported by rack-mounted forward sliding assemblies or rests on horizontal angle brackets.

WARNING

**DISCONNECT ALL CABLES FROM THE DEVICE
BEFORE SLIDING THE EQUIPMENT OUT**

The slide assemblies, when installed on devices, are equipped with safety stop catches. As the device is slid forward the slide will catch and stop, preventing the unit from being removed. In order to remove the unit, the safety releases (one on each slide) must be depressed. These safety releases must also be depressed in order to install the unit.

System Interconnections

Interconnections between devices within the Freedom Series Test System are made in accordance with the system wire list (12840002-001). This drawing is provided in Section 7.

Equipment Configuration

Rack-mounted instrumentation within the test system is controlled from the system computer via an IEEE-488 bus (GPIB). **Table 2.1** identifies the IEEE-488 bus addresses for each device. VXIbus equipment contained within the Racal Instruments VXIbus chassis is controlled from the system computer via a MXI bus. Within the VXIbus chassis, the modules are controlled from a VXI/MXI Slot Zero controller. **Table 2.2** lists the logical addresses for the VXIbus modules within the VXIbus chassis. Any switches or jumpers not listed in **Table 2.2** are left in their factory default configuration. Please consult the individual instrument operating manuals for details regarding default switch and jumper settings.

The configuration of the MXI interface board and GPIB interface board installed in the computer is provided in **Table 2.3**.

Reference Designator	Device	IEEE-488 Address
1U05	TDS460A	1
1U11	K236	2
1U13	K236	3
2U25	HP6050A	4
2U29	HP66000A	5

TABLE 2.1, GPIB Configuration

Configuration Table for VXI Chassis

Slot	Device	Logical Address	Interrupt Level	Module ID Byte	Module Address	Lockout Key	Notes
0	VXI-MXI-2	16	N/A	N/A	N/A		
1	4152A	17	N/A	N/A	N/A		
2	2461 CD	18	N/A	N/A	N/A		
3	3151A+	19	N/A	N/A	N/A		
4	6075-8	20	N/A	N/A	N/A		
5	1260-117,-118,-120	21	Default	N/A	1-3	C/A	1
6	1260-138A,-114,-150		Default	N/A	4-6		
7	BLANK	N/A	N/A	N/A	N/A		
8	BLANK	N/A	N/A	N/A	N/A		
9	BLANK	N/A	N/A	N/A	N/A		
10	BLANK	N/A	N/A	N/A	N/A		
11	BLANK	N/A	N/A	N/A	N/A		
12	BLANK	N/A	N/A	N/A	N/A		
Rear	1261B EMS	30	Default	N/A	N/A		

NOTES:

- 1) Open all switches of S2 and S3 of last 1260 module.

TABLE 2-2, VXI Chassis Module Settings

Setting	MXI Interface Board	GPIB Interface Board
Base I/O Address	PCI	PCI
Master DMA Channel	N/A	N/A
Board Interrupt Level (IRQ)	N/A	N/A
Slave DMA Channel	N/A	N/A
Slave Interrupt Level	N/A	N/A
Master Window Base	N/A	N/A

TABLE 2.3 MXI/GPIB Interface Board Settings

AC Power Connection

Your Freedom Series system is configured to operate on one of the following voltages depending upon the region of the world where it was specified to operate:

120V	North America
------	---------------

The operating voltage will be marked on the part number/serial number ID label located at the upper, left, rear of the rack.

The power receptacle required for the system depends on the voltage and current requirements of the system.

For systems configured for operation on North American voltages of 120V/208V, the Freedom system will have one of the following National Electrical Manufacturers Association (NEMA) AC power plugs depending upon the current requirements of the system:

L21-30R	120/208V, 3-phase, 30 Amps/phase, twist-lock
---------	---

AC power is distributed to the instruments within the system using standard NEMA plugs and receptacles.

Power Up/Power Down Sequence

1. Ensure that all system equipment AC power switches are off.
2. Plug the main power plug from the Universal Power Controller into the appropriate power receptacle (See section: **AC Power Connections**). This controller is mounted at the top of the rack, (1U01).
3. Turn the Universal Power Controller circuit breaker on.
4. Depress the ON switch on the Universal Power Control panel (1U01). Ensure that the ON button is illuminated on the control panel (1U01).
5. Turn ON the AC power switches on all the system equipment.

For routine power-up/power-down of the Freedom system simply depress the ON or OFF button, as required, on the Universal Power Control Panel (1U01).

For Emergency shut down of the Freedom system press the red EMERGENCY OFF Mushroom Button on the Universal Control Panel (1U01). The RESET button must be depressed before power can be re-applied to the system.

Getting Started

Overview

This section provides information on getting started with your Freedom Series Test System. The material covered in this section is intended to provide introductory instructions in using the basic communications software utilities which are installed on the test system computer. This includes basic operational techniques for the use of National Instruments GPIB and VXI communications software (NI-VISA) and LabVIEW.

Software Overview

All instruments in your Freedom system, both GPIB and VXI, are controlled via the system computer. You may use a variety of software packages to control the instruments in your system. Usually a customer will select one software package to develop automated test programs for their system. Examples of some program development software packages are:

- Lab Windows CVI
- LabVIEW
- Visual Basic

Note: Instrument drivers are provided with your system for either Lab Windows or LabVIEW. Instrument drivers for other software packages may not exist. (See section **Using Instrument Drivers (VXI and GPIB)** for more information on instrument drivers).

In addition to automated test program development software, there are a number of software packages that allow the user to control the instruments in their Freedom system in a manual fashion by typing in individual commands or via a "soft front panel". These types of programs are useful for trouble-shooting system problems or for becoming acquainted with your Freedom system. Examples of this type of software are:

VICTEXT
IBIC
VISA

Note: VISA allows interactive control of ALL the instruments (VXI, GPIB, RS232) in your freedom station.

Note: All Racal Instruments VXI modules come with interactive soft front panels.

Initializing Your System

After every station power up prior to using any VXI devices with any software, you must first initialize your freedom system using RESMAN.

Using RESMAN (Resource Manager)

From Windows, launch RESMAN by double clicking on the RESMAN (Windows) icon. Verify the following message at the bottom of the RESMAN window: "Resource manager operations completed." Close the RESMAN window. Click on **T&M Explorer** icon to verify logical addresses and GPIB addresses of all equipment.

Manually Controlling VXI Devices

From Windows, launch VISA by double clicking on the VISA Interactive Control icon.

For our example we will read and write to a Racal Instruments 1261B EMS Monitor system. Most Freedom systems contain EMS monitors. If your system does not contain a EMS card, or you desire to control other VXI devices, you must refer to the operation manual for the desired instrument for a list of valid commands. Operation manuals for each device in your freedom system are provided with each system.

Our VISA example will apply to message based devices ONLY. For information on communicating with register based devices using VISA, refer to the National Instruments VXI manual. If you are uncertain if an instrument is message or register based, refer the manual for that instrument.

In the VISA window, double click on the desired instrument. The VXI address for each device varies in each Freedom system. Refer to table 2.2 of this manual for a list of VXI addresses. If the address of the desired instrument is 19, for example, you would double click on the instrument descriptor that reads "VXI0::19::INSTR" (or "GPIB-VXI0::19::INSTR" if you are using a GPIB slot zero controller).

Select the "BASIC I/O" tab. Now select ViWrite. In the Buffer window, type "*IDN?". Press Execute.

The command "*IDN?" commands the EMS card to identify itself. We will now read back the response from the EMS card. Select the ViRead tab. Press Execute. VISA will now display the response. Close The VISA windows.

Manually Controlling GPIB Devices

From Windows, launch VISA by double clicking on the VISA Interactive Control icon.

For our example we will read from a Racal Instruments 1255 Chassis. If your system does not contain a model 1255 Chassis, or you desire to control other GPIB devices, you must refer to the operation manual for the desired instrument for a list of valid commands. Operation manuals for each device in your freedom system are provided with each system.

In the VISA window, double click on the desired instrument. The GPIB address for each device varies in each Freedom system. Refer to table 2.1 of this manual for a list of GPIB addresses. If the address of the desired instrument is 5, for example, you would double click on the instrument descriptor that reads "GPIB0::5::INSTR".

Select the "BASIC I/O" tab. Now select ViWrite. In the Buffer window, type "*IDN?". Press Execute.

The command "*IDN?" commands the 1255 Chassis to identify itself. We will now read back the response from the chassis. Select the ViRead tab. Press Execute. VISA will now display the response. Close The VISA windows.

Using Instrument Drivers (VXI and GPIB)

Note: Prior to using any VXI instruments, you must first initialize your system. See section: **Initializing Your System.**

Note: Instrument drivers for Lab Windows or LabVIEW are provided for each Freedom device of your Freedom system. Instrument drivers for non-Freedom instruments, if available from the instrument manufacturer, may also be provided with your system. The instrument manufacturer assumes full responsibility for the integrity of non-Freedom drivers.

LabVIEW instrument drivers are specifically designed to be used in a LabVIEW automated test program diagram (see the LabVIEW manual for programming information). However, each instrument driver can be run manually as a stand alone program with a minimum of data manipulation.

For our example we will control Racal Instruments 1260 series switch cards using LabVIEW and LabVIEW 1260 instrument drivers as stand alone programs. Most Freedom systems contain 1260 series switch cards. If your system does not include 1260 series cards, or if you desire to control other instruments, use the LabVIEW drivers for the specific instrument you desire to control. This **Getting Started** section will not cover Lab Windows CVI and Lab Windows drivers due to the programming experience of most Lab Windows users.

1. From windows, launch LabVIEW by double clicking on the LabVIEW icon in the LabVIEW program group.
2. All VXI instruments and some GPIB instruments (depending on the drivers supplied with the instrument) must first be initialized using their own initialize VI (driver) prior to operation. The initialize VI will output an INSTRUMENT HANDLE for that specific instrument. All communication with the instrument will be via the HANDLE assigned by the initialize VI rather than by the VXI address. In

the LabVIEW window, select FILE and OPEN. Load the RI1260 INIT.VI usually located in c:\LabVIEW\vi.lib\drivers\RI1260.lib. This is the initialize VI for the 1260 series switch cards.

3. Change the VXI address in the INSTRUMENT DESCRIPTOR from 15 to the address of the 1260 Option 01 in your test system. See table 2.2 of this manual for a listing of VXI addresses. If, for example, the VXI address of your 1260 Option 01 is 21, the INSTRUMENT DESCRIPTOR would read "VXI::21::INSTR" (or "GPIB-VXI::21::INSTR" if you have a GPIB slot zero controller) . If you are controlling other instruments, the INSTRUMENT DESCRIPTOR format may vary. Use the HELP screen for information.
4. Run the VI by pressing the RUN arrow in the upper left corner of the LabVIEW window. Do not press the RUN arrow more than once as each time the VI is run, a new INSTRUMENT HANDLE is assigned. Verify that the ERROR OUT indicator indicates NO ERROR. Errors are usually caused by one of the following:
 - a. Wrong VXI address in the Instrument Descriptor.
 - b. User failed to initialize the VXI instruments. (See Section: **VXIINIT (VXI Initialize)**)
5. The initialize VI has now assigned an INSTRUMENT HANDLE for the 1260 series switch cards. Because we are running the drivers in a stand alone fashion, we must manually copy the INSTRUMENT HANDLE from the initialize VI to each new 1260 driver we use. To copy the INSTRUMENT HANDLE, locate the mouse over INSTRUMENT HANDLE OUT. Press and hold the right mouse button and select COPY DATA. Now load a new VI (Driver) named RI1260 RELAY CONFIDENCE TEST.VI, for example, usually located in c:\LabVIEW\vi.lib\drivers\RI1260.lib.
6. To complete the copy operation started in the last step, position the mouse over INSTRUMENT HANDLE IN, press and hold the right mouse

button, and select PASTE DATA. The new VI is now ready to run. Press the RUN arrow in the upper left hand corner of the VI. The relay confidence test may take several minutes to execute depending on the number of switch cards in your system. Executing this VI will exercise every relay on each 1260 series card in your system. At the end of the test verify the FAILED? LED is extinguished. Also, verify the error out indicator indicates NO ERROR.

7. If an error exists in the ERROR OUT indicator, repeat steps 5 and 6. If the FAILED? LED is illuminated, see the HELP screen.
8. Before exiting LabVIEW you should close each instrument handle using the proper driver for each instrument (you may have more than one instrument handle open a time). To close the 1260 handle, load the VI titled RI1260 CLOSE.VI. Copy the instrument handle as described above. Press the RUN arrow. The handle is now closed. To communicate with the 1260 switch cards again, you will have to run RI1260 INIT.VI again (see step 2.) Close each open VI and exit LabVIEW.

Operation

Overview

This section provides information on the operation of the FreedomTest System and its individual instrumentation devices. The information provided in this manual for the various devices is limited to operational details relating to the system performance of each instrumentation device.

The operator should refer to the individual device operating manuals (listed in Section: **Applicable Documents**) for detailed operating information about each device.

This section also provides information which may have been omitted from the devices' operating manuals as well as pointing out operating details about the device which are crucial to the system performance.

System Devices Operation

This section provides information regarding each of the instrumentation devices contained in your Freedom Series Test System.

Racal Instruments 1261B, (1U21)

VXIbus devices within the Freedom Series Test System are contained in a Racal Instruments 1261B, high power VXIbus chassis. The chassis is equipped with the following options:

Enhanced Monitor System (EMS)

Refer to the Racal Instruments 1261B VXIbus Chassis operating manual for detailed information regarding the operation of the chassis.

National Instruments VXI-PCI8015 (MXI-2, Windows NT), (1U21-Slot 0)

Control of the devices within the VXIbus chassis is provided by a National Instruments VXI/MXI-2 Slot 0 controller. The Slot 0 provides the interface between the system controller and the VXI backplane via the

system MXI-2 bus. The MXI-2 kit also contains the MXI-2 interface board installed in the external computer.

Refer to the National Instruments operating manual set for detailed information regarding the operation of the device.

Racal Instruments 1260 Option 01-T Switch Controller, (Installed in 1U21-Slot 5,6)

All switching in the Freedom Series Test System is based upon Racal Instruments 1260 series of switch modules. These modules provide for a common set of commands used to control the switches. A single 1260 Option 01-T smart card is installed in the left-most 1260 switch module of each contiguous group and serves as the VXIbus interface for all of the switch modules in that group.

Refer to the Racal Instruments 1260 Option 01-T instruction manual for detailed information regarding the operation and programming of this device.

Racal 4152A DMM Module, (1U21-Slot 1)

The Racal 4152A 6.5-Digit Multimeter is a C-size, 1-slot, message-based VXI module. This multimeter's wide product functionality includes volts, amps, ohms, and frequency with advanced tests including limit checks to drive a TTL output and dc voltage ratios. Standard measurements include ac/dc voltage, ac/dc current, 2- & 4-wire Ohm, plus frequency/period.

All I/O from the Racal 4152A is wired to the receiver interface by harness assembly 407464 (TTI Testron Interface).

Refer to the Racal Instruments 4152A instruction manual for detailed information regarding the operation and programming of this device. The 4152A instruction manual also contains the assembly drawings, parts list and wirelists for the 4152A Freedom Series harness assembly used in the system.

Racal Instruments 2461, (1U21-Slot 2)

The test system contains a Racal Instruments 2461 Universal Timer/Counter which provides both frequency and time interval measurement with both two or four

channel capability in a 200 MHz range.

All I/O from the 2461 is wired to the receiver interface by harness assembly 407584 (TTI Interface).

Refer to the Racal Instruments 2461 instruction manual for detailed information regarding the operation and programming of this device. The 2461 instruction manual also contains the assembly drawings, parts list and wirelists for the 2461 Freedom Series harness assembly used in the system.

Racal Instruments 3151A+, (1U21-Slot 3)

The test system contains a Racal Instruments 3151A+ Waveform Generator. This module combines a function generator, pulse generator, sequencer and ARB waveform generator in one instrument. Output ranges from 100Hz to 50Mhz.

All I/O from the 3151A+ is wired to the receiver interface by harness assembly 407434 (TTI Testron Interface).

Refer to the Racal Instruments 3151 instruction manual for detailed information regarding the operation and programming of this device. The 3151 instruction manual also contains the assembly

drawings, parts list and wirelists for the 3151 Freedom Series harness assembly used in the system.

Racal Instruments 6075-8, (1U21-Slot 4)

Serial I/O capability is provided by way of a Racal Instruments 6075-8 Serial Communications VXibus module. The 6075-8 provides eight serial I/O ports supporting both RS232 and RS422 at data rates from 300 to 38400 baud.

All I/O from the 6075-8 is wired to the receiver interface by harness assembly 407592 (TTI Testron Interface).

Refer to the Racal Instruments 6075 operating manual for detailed information regarding the operation and programming of this device. The 6075 instruction manual also contains the assembly drawings, parts list and wirelists for the 6065 Freedom Series harness assembly used in the system.

**Racal Instruments 1260-100 Switch Carrier,
(1U21-Slots 5,6)**

The 1260-100 Switch Carrier accommodates up to six plug-in switch cards in a two-slot, C-size, VXIbus module.

The Option 01T interface, housed in the 1260-100, can control twelve Adapt-a-Switch plug-in cards. 1260-100 instruction manual also contains the assembly drawings, parts list and wirelists for the 1260-100 Freedom Series harness assembly used in the system.

**Racal Instruments 1260-117, (1U21-Slots 5,6 -,
module 1)**

The Freedom Series Test System contains a Racal Instruments 1260-117 High Density Plug-in Switch module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100.

The 1260-117 is a 52-channel, SPDT module that is ideal for general purpose switching up to 60MHz. Each channel of the 1260-117 can switch up to 2A, 250VAC or 220VDC and can be used independently or linked to form custom switching networks.

All I/O from the 1260-117 is wired to the receiver interface by harness assembly 407552 (TTI Testron Interface).

Refer to the Racal Instruments 1260-117 instruction manual for detailed information regarding the operation and programming of this device.

**Racal Instruments 1260-118, (1U21-Slots 5,6 -,
module 2)**

The Freedom Series Test System contains a Racal Instruments 1260-118 Plug-In Switch module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100. The 1260-118 contains 80 channels of SPST relay switching. Each switch is capable of switching up to 2 Amps.

All I/O from the 1260-118 is wired to the receiver interface by harness assembly 407562 (TTI Testron Interface).

Refer to the Racal Instruments 1260-118 instruction manual for detailed information regarding the operation and programming of this device.

Racal Instruments 1260-120, (1U21-Slots 5,6- module 3)

The Freedom Series Test System contains a Racal Instruments 1260-120 Plug-In Switch module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100. The 1260-120 contains 20 channels of SPST relay switching. Each switch is capable of switching up to 13 Amps.

All I/O from the 1260-120 is wired to the receiver interface by harness assembly 407564 (TTI Testron Interface).

Refer to the Racal Instruments 1260-120 instruction manual for detailed information regarding the operation and programming of this device.

Racal Instruments 1260-138A, (1U18-Slots 5,6- module 4)

The Freedom Series Test System contains a Racal Instruments High-Density Multiplexer Plug-In module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100. The 1260-138A can be user-configured in many ways, from one 1x128 to sixteen 1x8 2-wire multiplexers, switching up to 250VDC or 2A per channel.

All I/O from the 1260-138A is wired to the receiver interface by harness assembly 407568 (TTI Testron Interface).

Refer to the Racal Instruments 1260-138A instruction manual for detailed information regarding the operation and programming of this device.

Racal Instruments 1260-114OC, (1U21-Slots 5,6 - module 5)

The test system contains a Racal Instruments 1260-114 Plug-In Switch module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100. Each module features 96-channel digital I/O TTL operation, which may be placed in a high-impedance,

tri-state mode.

All I/O from the 1260-114OC is wired to the receiver interface by harness assembly 407560 (TTI Testron Interface).

Refer to the Racal Instruments 1260-114OC instruction manual for detailed information regarding the operation and programming of this device.

Racal Instruments 1260-150, (1U21-Slots 5,6 - module 6)

The test system contains a Racal Instruments 1260-150 10-channel High Frequency module. It installs directly into the front panel of the Adapt-a-Switch VXIbus Carrier, 1260-100.

All I/O from the 1260-150 is wired to the receiver interface by harness assembly 407570 (TTI Testron Interface).

Refer to the Racal Instruments 1260-150 instruction manual for detailed information regarding the operation and programming of this device.

Tektronix TDS460, (1U05)

The Tektronix TDS 460 provides a Digitizing Oscilloscope capability for the test system. The oscilloscope's four channel inputs (A, B, C and D) are wired to the receiver interface using RG316 coaxial cable.

All I/O from the TDS460 is wired to the receiver interface by harness assembly 407343 (TTI Testron Interface).

Refer to the Tektronix TDS460 operating manual set for detailed information regarding the operation and programming of this device.

Keithley 236 SMU, (1U11, 1U13)

The 236, 237 and 238 Source-Measure Units (SMU) are fully programmable instruments, capable of sourcing and measuring very small amounts of voltage or current simultaneously. These systems are four instruments in one: voltage source, current source, voltage measure

and current measure.

All I/O from the Keithley 236 is wired to the TTI receiver interface through a 2U interface panel by a system harness assembly detailed in the Enclosure Assembly 12840002-001, along with the parts list.

Refer to the Keithley 236 operating manual set for detailed information regarding the operation and programming of this device.

HP6050A HP Load Mainframe, (2U25)

The Agilent 6050A electronic load mainframe accepts the user-installable Agilent load modules for system configuration and future reconfiguration. The 6050A holds up to six 60501B, 60502B, and 60503B load modules, or three 60504B and 60507B load modules, allowing up to 1,800 watts of total maximum power. One GPIB address is used to control and readback of all load modules within a single mainframe.

All I/O from the 6050A is wired to the TTI receiver by a system harness assembly detailed in the Enclosure Assembly 12840002-001, along with the parts list.

Refer to the 6050A operating manual set for detailed information regarding the operation and programming of this device.

HP60502B HP Load Module, (2U25-Slots 1-6)

The HP60502B carries a load capability from 0 to 60A, with a maximum power output of 300W. Each module includes programming inputs that allow control of load current via an analog control voltage.

HP66000 Programmable Supply, (2U29)

The 66000A mainframe can accommodate up to eight dc power modules. Provides high-accuracy read-back of voltage and current over HP-IB Standard Commands for Programmable Instruments (SCPI).

All I/O from the HP66000 is wired to the VP receiver interface by a system harness assembly detailed in the Enclosure Assembly 12840002-001, along with the parts list.

Refer to HP manual set for detailed information regarding the operation and programming of the device.

HP 66101A DC Power Module, (2U29, Slots 5,6)
Programmable module with ratings of 0-8 V, 0-16 A, 128 W.

HP 66103A DC Power Module, (2U29, Slots 0-4)
Programmable module with ratings of 0-35 V, 0-4.5 A, 150 W.

Power Distribution

RACAL UPC1003-133, (U01)

A Racal UPC-2003-133, 3-phase AC power controller controls AC power to the test system. This controller provides a front panel On/Off switch along with an Emergency Off (EMO) switch. When pressed, the EMO switch shuts down the entire test system. Power cannot be re-applied until the EMO switch is mechanically reset and the RESET button is pressed.

Selftest Software Operation

Each Freedom Series Test System is delivered with a menu-driven self-test program. The self-test program, also known as QBIT, verifies the proper communications configuration of the system and the operational status of each device within the system.

The selftest is executed from within Windows by double-clicking the *Freedom Selftest* icon located in the *Freedom Selftest* program group. When the selftest menu is displayed, the test is run by clicking the Run Test Toggle switch on the self-test menu display. Any device may be selected or de-selected for testing by clicking the checkbox next to the device. If an X appears in the checkbox then the device will be tested.

When the test is run, each piece of equipment with the capability to do so is commanded to perform its internal self test and the results are verified for passing status. Also included in this test is verification from the 1261A Chassis Intelligent Front Panel (Option P, if present in your system) that the VXIbus chassis is operating within normal parameters.

During QBIT, the 1260 series switch modules are tested by placing each switch module in its confidence

mode. Each relay is closed and opened in turn and the test reads back the proper opened or closed status of the relay.

Execution of the selftest is based upon a system configuration file. The file has the name *selftest.cfg* and is located in the *selftest* sub-directory on the computer. Three example entries from a configuration file are shown below:

```

1260-45C (1U18-SLOT 1)          VXI::17::INSTR      1
  T 1260-45C 1
1362 (1U18-SLOT 7)             VXI::22::INSTR      4
  W "TST?"
  D 12000
  R 80
  C "0"

TDS460 (1U7)                   GPIB::5::INSTR      7
  W "DIAG:SEL:ALL ALL"
  W "DIAG:STATE EXEC"
  D 80000
  P
  W "DIAG:RESU:FLAG?"
  R 80
  C ":DIA:RESU:FLA PASS"

```

There is an entry in the configuration file for each device in the system. Each entry has the following format:

Line 1, Column 1:	Device name as it will appear in the selftest menu
Line 1, column 31	Instrument type and address. This is of the form: XXXX::AD::INSTR, where XXXX is either VXI or GPIB, and AD is the Logical Addressor GPIB address of the device.
Line 1, column 52	This entry is the number of command lines which follow.
Line 2 thru n	Instrument command lines. Each instrument command appears on a separate line. The following commands are allowed:
T 1260-xx n	Racal 1260 series switch module test. Where xx is the particular 1260 series switch module to be tested and n is its

	module address.
W " <i>string</i> "	Writes <i>string</i> to the device. <i>String</i> must be enclosed in quotes.
D <i>n</i>	Delay <i>n</i> milliseconds
R <i>n</i>	Reads <i>n</i> characters from the device.
C " <i>string</i> "	Compares <i>string</i> to data retrieved from the most recent read. <i>String</i> must be enclosed in quotes. Leading blanks and trailing characters in the retrieved data are ignored.
P	Perform a GPIB serial poll.

Maintenance

Overview

This section describes the maintenance and calibration procedures for the Freedom Series Test System and its constituent devices.

Routine Maintenance

The Freedom Series Test System, as a whole, requires very little routine maintenance for normal operation. The test system should be kept clean of dirt and grease, particularly in the areas around electrical connectors and the louvered top panel. A removable air filter is located behind the grill of the fan assembly located at the bottom, rear of the rack and should be removed and cleaned or replaced periodically depending on how dust free the environment is. It is recommended that the filter be checked at least once per month. Replacement filters may be ordered from Racal Instruments under Part Number 921390.

CAUTION

TURN OFF POWER TO THE TEST SYSTEM BEFORE PERFORMING ANY MAINTENANCE

Note the main AC power cord should be removed from its receptacle to insure that no power is present in the system.

Individual devices within the Freedom Series Test System should be maintained in accordance with the manufacturer's instructions. Refer to the devices' operating manuals for maintenance information

Calibration

Each instrumentation device within the Freedom Series Test System should be calibrated periodically in accordance with the manufacturer's recommendations. Refer to section: **Applicable Documents** for a list of individual device operating manuals.

Specifications

Electrical Specifications

The complete performance specifications for each of the devices contained in the Freedom Series Test System may be found in each device's operating manual. The devices are listed in Section: **Functional Description** and the manuals are listed in Section: **Applicable Documents**.

Mechanical Specifications

The Freedom Series Test System is housed in a two-bay Knurr rack having a 19" panel opening for each bay.

Height: 72.0"

Width: 47.0"

Depth: 35.4"

Weight: approx. 1500 lbs.

Environmental Specifications

Temperature -

operating: +0 to +50 °C

Humidity - (non-condensing)

operating: 0 to 80%

storage : 0 to 95%

DEVICE	CURRENT max. AMPS @ AC Line Voltage			BAY 1 POWER DISSIPATION (WATTS)	BAY 1 POWER DISSIPATION (WATTS)
	φA	φB	φC		
UPC1003					
GPIB-120	0.60			50.00	
TDS460A	2.10			240.00	
K236 (1U11)		0.90		120.00	
K236 (1U13)		0.90		120.00	
1261B Chassis			4.10	331.83	
Computer	2.50				250.00
Monitor	1.50				250.00
HP6050A		5.50			1000.00
HP66000A	12.50				425.00
Printer			2.50		
Fans			1.00	30.00	30.00
TOTAL ** USAGE	19.20	7.30	7.60	891.83	1955.00
TOTAL AVAILABLE	30.00	30.00	30.00	2670.00	2670.00

AC service is provided through the Racal Instruments UCP1003 located at U01

Two 294 cfm fans are mounted in the bottom rear of each rack bay.

This provides 2.67 KW of cooling capability for 10°C rise with a 1.25 factor of safety as shown below:

$$KW = (cfm) \times (\Delta t_c) / (1760) \times (1.25) = (2)(294)(10) / (1760)(1.25) = 2.67 \text{ KW}$$

** Expected current based on expected power supply usage is shown in (parentheses)

TABLE 6.1 System Power Distribution/Dissipation

SLOT	DEVICE	CURRENT, I_{pm} (Amps)						
		+5V	+12V	-12V	+24V	-24V	-5.2V	-2V
0	VXI-MXI-2	3.50						
1	4152A	0.20	0.70					
2	2461CD	1.81			0.45	0.27	0.76	0.02
3	3151A	3.00	0.10	0.10	0.25	0.25	2.00	
4	6075-8	3.00					0.05	
5	1260-117,-118,-120	4.00						
6	1260-138A,-114,-150	4.00						
7	BLANK							
8	BLANK							
9	BLANK							
10	BLANK							
11	BLANK							
12	BLANK							
TOTAL		19.51	0.80	0.10	0.70	0.52	2.81	0.02
CURRENT AVAILABLE		80.00	13.00	13.00	18.00	12.00	60.00	30.00

Total Power Dissipation = 331.83

TABLE 6.2 VXIbus Chassis Power Dissipation

SLOT	DEVICE	MODULE		CHASSIS	SUFFICIENT COOLING
		AIR FLOW (liters/sec)	BACK PRESSURE (mm of H ₂ O)	PRESSURE AVAILABLE @ SPEC'd AIR FLOW (mm of H ₂ O)	
0	VXI-MXI-2	3.50	0.25	0.80	YES
1	4152A	0.80	0.05	1.60	YES
2	2461CD	4.00	0.14	0.80	YES
3	3151A	3.70	0.55	0.80	YES
4	6075-8	1.26	0.10	1.32	YES
5	1260-117,-118,-120	1.50	0.35	1.32	YES
6	1260-138A,-114,-150	1.50	0.35	1.32	YES
7	BLANK			1.85	YES
8	BLANK			1.85	YES
9	BLANK			1.85	YES
10	BLANK			1.85	YES
11	BLANK			1.85	YES
12	BLANK			1.85	YES

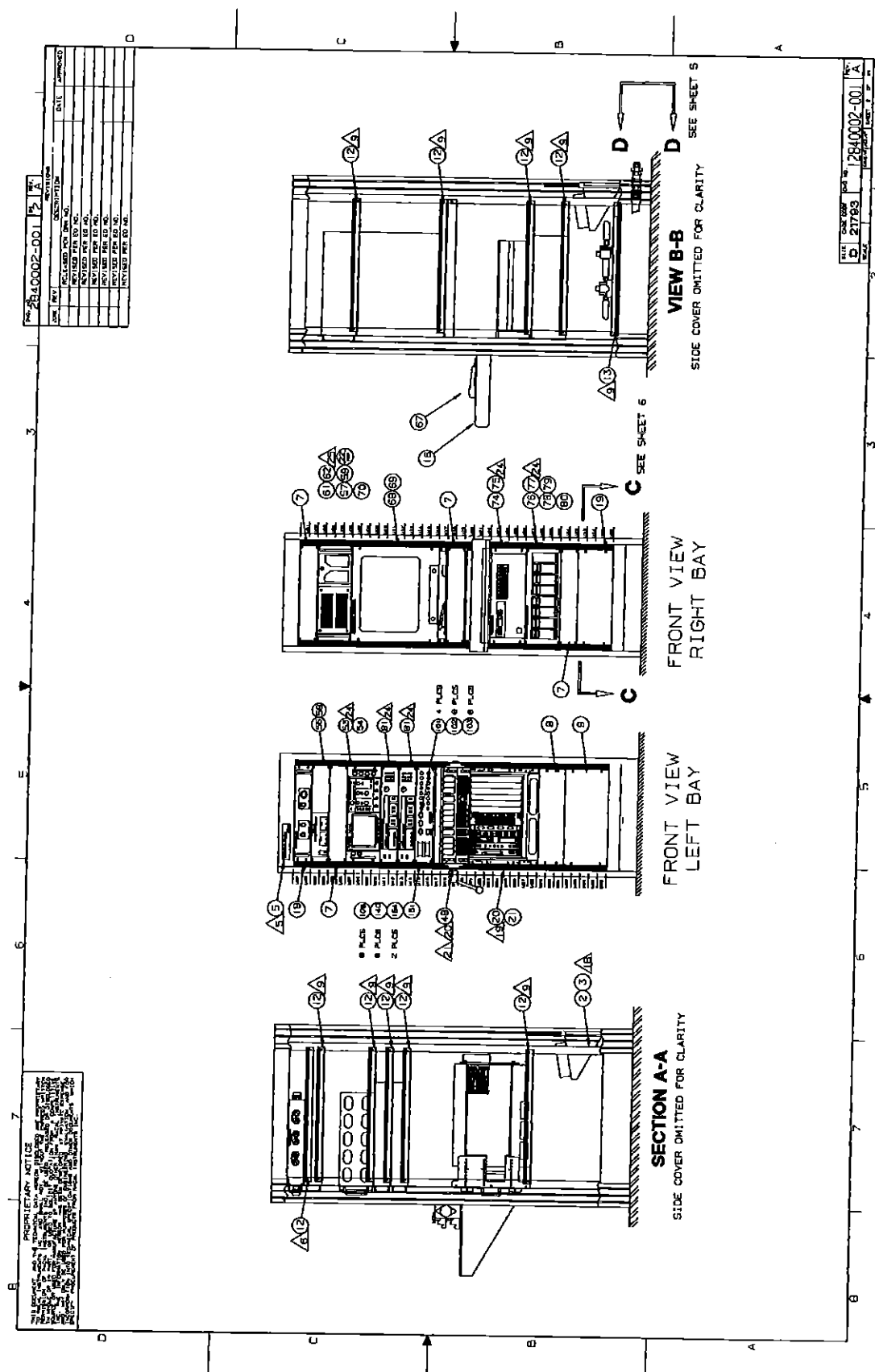
TABLE 6.3 VXIbus Chassis Cooling

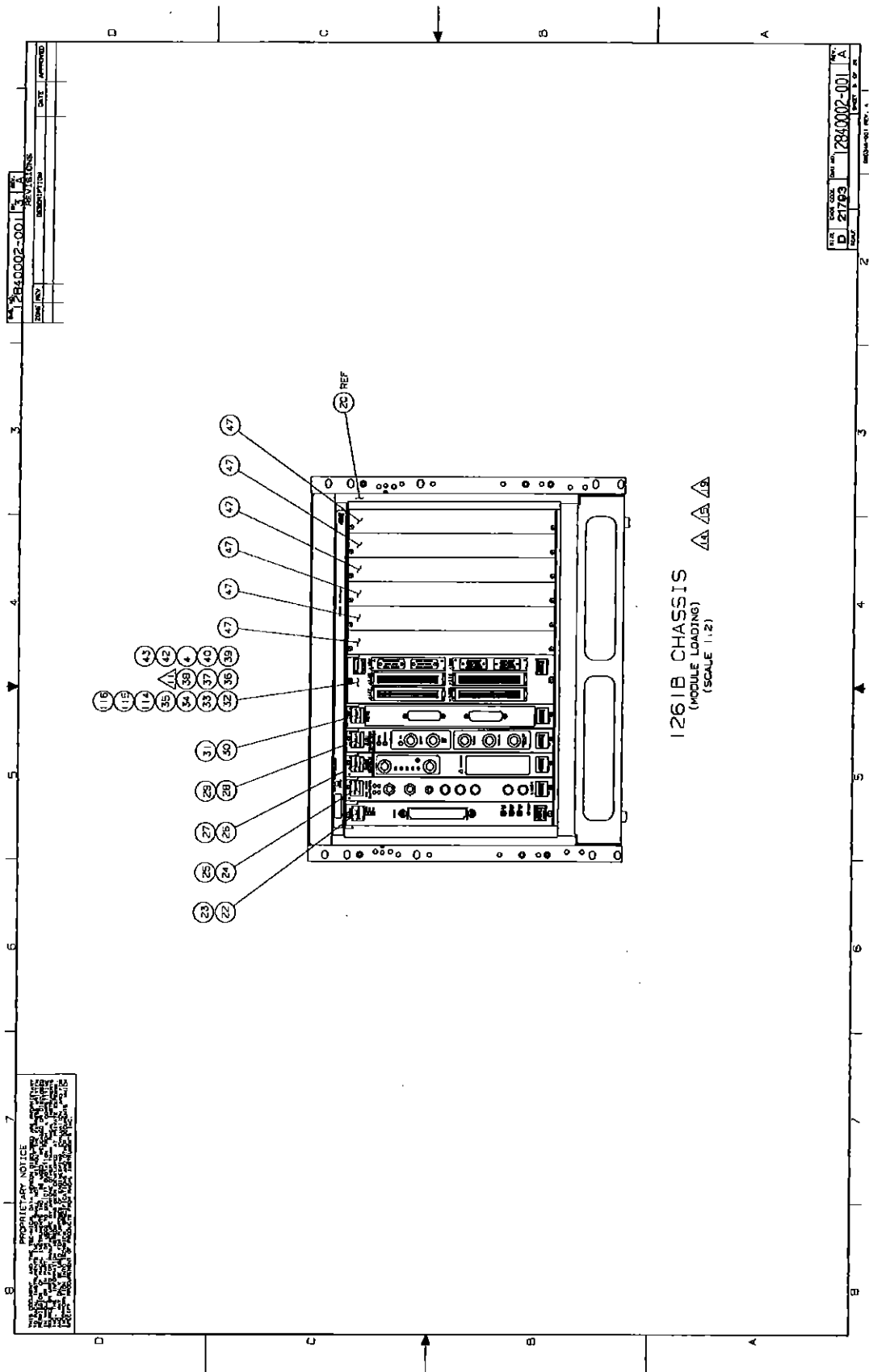
Drawings

This section contains the following drawings:

12840002-001, ENCLOSURE ASSY,WATERS	7-3
LIST OF DRAWINGS PROVIDED ON CD	7-10

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REV	DATE	APPROVED
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**Module Configuration
1261B 1U21**

VXI SLOT	MODEL NUMBER	LOGICAL ADDRESS	INTERRUPT LEVEL	MODULE ID BYTE	MODULE ADDRESS	LOCKOUT KEY
EMS	RI 1261B, EMS	30	N/A	N/A	N/A	N/A
0	NI VXI-MXI-2	16	N/A	N/A	N/A	N/A
1	RI 4152A	17	N/A	N/A	N/A	N/A
2	RI 2461	18	N/A	N/A	N/A	N/A
3	RI 3151A+	19	N/A	N/A	N/A	N/A
4	RI 6075-8	20	N/A	N/A	N/A	N/A
5	1260-117, -118, -120	21	N/A	0	1-3	C
6	1260-138A, -114 -150	N/A	N/A	0	4-6	A
7	UNPOPULATED	N/A	N/A	N/A	N/A	N/A
8	UNPOPULATED	N/A	N/A	N/A	N/A	N/A
9	UNPOPULATED	N/A	N/A	N/A	N/A	N/A
10	UNPOPULATED	N/A	N/A	N/A	N/A	N/A
11	UNPOPULATED	N/A	N/A	N/A	N/A	N/A
12	UNPOPULATED	N/A	N/A	N/A	N/A	N/A

* Open all switches of S2 and S3 on the last 1260 module.

GPIB Configuration

LOCATION	DEVICE	ADDR
1U05	TDS460A, OSCILLOSCOPE	1
1U11	236, SOURCE MEASUREMENT UNIT	2
1U13	236, SOURCE MEASUREMENT UNIT	3
2U25	HP8050A, ELECTRONIC LOAD	4
2U29	HP66000A, DC POWER SUPPLY	5

**Module Configuration
1261B 2U03**

SLOT	MODEL NUMBER	PART NUMBER	IRQ	I/O ADDRESS
PCI 1	MXI-2	777119-32		DEFAULT
PCI 2	RAID CONTROLLER	Included W/ PC		
PCI 3	2-PORT SERIAL	Included W/ PC		
PCI 4	PRO/100 NIC	Included W/ PC		
PCI 5	PC-GPIB	777073-01		DEFAULT
PCI 6	PC-GPIB +	777560-01		DEFAULT

RACAL Instruments, Inc. 4 Goodyear St. Irvine, CA 92718-2002

DOCUMENT TITLE	SIZE	CODE NO.	DOCUMENT NO.	REV
ENCLOSURE ASSY, WATERS	A	2 1 7 9 3	12840002-001	A
			Sheet 7 of 24	

LIST OF DRAWINGS PROVIDED ON CD

12840001-001	TEST SYSTEM,WATERS
12840002-001	ENCLOSURE ASSY,WATERS
12898001	MANUAL,O&M,WATERS
407343	HARNESS ASSY, TDS460A,TTI
407434	HARNESS ASSY, 3151,TTI
407464	HARNESS ASSY, VXI DMM,TTI
407552	HARNESS ASSY, 1260-117,TTI
407560	HARNESS ASSY, 1260-114,TTI
407562	HARNESS ASSY, 1260-118,TTI
407564	HARNESS ASSY, 1260-120,TTI
407568	HARNESS ASSY, 1260-138A,TTI
407570	HARNESS ASSY, 1260-150,TTI
407584	HARNESS ASSY, 2461,TTI
407592	HARNESS ASSY, 6075-8,TTI

Receiver Pin Out Mapping

This section contains the receiver pinout mapping for the Freedom Series Test System, 12840001.

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Lower Block 1
2461,3151, 236

Pin 1 2461 IN 1	Pin 6 2461 OUT STD	Pin 10 3151 TRIG IN	Pin 15 236 #1 OUTPUT HI CHASS	Pin 19 236 #1 SENSE LO	Pin 28 236 #2 SENSE LO
Pin 2 2461 VT1	Pin 7 2461 IN 2	Pin 11 3151 CLOCK IN	Pin 16 236 #1 SENSE HI	Pin 20 236 #1 SHIELD	Pin 24 236 #2 OUTPUT HI CHASS
Pin 3 2461 VT2	Pin 8 3151 OUTPUT	Pin 12 3151 REF. OUT	Pin 17 236 #1 SENSE HI GUARD	Pin 21 236 #1 SENSE LO CHASS	Pin 25 236 #2 SENSE HI
Pin 4 2461 ARM	Pin 9 3151 SYNC OUT	Pin 13 236 #1 OUTPUT HI	Pin 18 236 #1 SENSE HI CHASS	Pin 22 236 #2 OUTPUT HI	Pin 26 236 #2 SENSE HI GUARD
Pin 5 2461 IN STD		Pin 14 236 #1 OUTPUT HI GUARD	Pin 23 236 #2 OUTPUT HI GUARD	Pin 27 236 #2 SENSE HI CHASS	Pin 30 236 #2 SENSE LO CHASS
				Pin 31 236 #1 OUT LO/GND	Pin 29 236 #2 SHIELD
					Pin 32 236 #2 OUT LO/GND

Lower Block 2
236, 1260-150

Pin 1 236 #1 TRIG IN	Pin 6 1260-150 CH00 IN	Pin 10 1260-150 CH03 OUT	Pin 15 1260-150 CH13 OUT	Pin 19 1260-150 CH22 OUT	Pin 28 1260-150 CH41 OUT
Pin 2 236 #1 TRIG OUT	Pin 7 1260-150 CH00 OUT	Pin 11 1260-150 CH10 IN	Pin 16 1260-150 CH20 IN	Pin 20 1260-150 CH23 OUT	Pin 29 1260-150 CH42 OUT
Pin 3 236 #2 TRIG IN	Pin 8 1260-150 CH01 OUT	Pin 12 1260-150 CH10 OUT	Pin 17 1260-150 CH20 OUT	Pin 21 1260-150 CH30 IN	Pin 30 1260-150 CH43 OUT
Pin 4 236 #2 TRIG OUT	Pin 9 1260-150 CH02 OUT	Pin 13 1260-150 CH11 OUT	Pin 18 1260-150 CH21 OUT	Pin 22 1260-150 CH30 OUT	Pin 31 Not Connected
Pin 5 Not Connected		Pin 14 1260-150 CH12 OUT	Pin 23 1260-150 CH31 OUT	Pin 27 1260-150 CH40 OUT	Pin 32 Not Connected

Lower Block 3
1260-150

Pin 1 1260-150 CH50 IN	Pin 6 1260-150 CH60 IN	Pin 10 1260-150 CH63 OUT	Pin 15 1260-150 CH73 OUT	Pin 19 1260-150 CH82 OUT	Pin 24 1260-150 CH92 OUT	Pin 28 TDS460 CH3
Pin 2 1260-150 CH50 OUT	Pin 7 1260-150 CH60 OUT	Pin 11 1260-150 CH70 IN	Pin 16 1260-150 CH80 IN	Pin 20 1260-150 CH83 OUT	Pin 25 1260-150 CH93 OUT	Pin 29 TDS460 CH4
Pin 3 1260-150 CH51 OUT	Pin 8 1260-150 CH61 OUT	Pin 12 1260-150 CH70 OUT	Pin 17 1260-150 CH80 OUT	Pin 21 1260-150 CH90 IN	Pin 26 TDS460 CH1	Pin 30 TDS460 EXT IN
Pin 4 1260-150 CH52 OUT	Pin 9 1260-150 CH62 OUT	Pin 13 1260-150 CH71 OUT	Pin 18 1260-150 CH81 OUT	Pin 22 1260-150 CH90 OUT	Pin 31 Not Connected	
Pin 5 1260-150 CH53 OUT		Pin 14 1260-150 CH72 OUT		Pin 23 1260-150 CH91 OUT	Pin 27 TDS460 CH2	Pin 32 Not Connected

Lower Block 4, Columns 1 through 5
1260-117, 1260-118

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Row 1	1260-117 COM 00	1260-117 NO 00	1260-117 NC 00	1260-117 COM 01	1260-117 NO 01
Row 2	1260-117 NO 03	1260-117 NC 03	1260-117 COM 04	1260-117 NO 04	1260-117 NC 04
Row 3	1260-117 NC 06	1260-117 COM 07	1260-117 NO 07	1260-117 NC 07	1260-117 COM 08
Row 4	1260-117 SIGNAL GND	1260-117 COM 10	1260-117 NO 10	1260-117 NC 10	1260-117 SIGNAL GND
Row 5	1260-117 NC 12	1260-117 COM 13	1260-117 NO 13	1260-117 NC 13	1260-117 COM 14
Row 6	1260-117 COM 16	1260-117 NO 16	1260-117 NC 16	1260-117 COM 17	1260-117 NO 17
Row 7	1260-117 NO 19	1260-117 NC 19	1260-117 COM 20	1260-117 NO 20	1260-117 NC 20
Row 8	1260-117 NC 22	1260-117 COM 23	1260-117 NO 23	1260-117 NC 23	1260-117 COM 24
Row 9	1260-117 COM 26	1260-117 NO 26	1260-117 NC 26	1260-117 COM 27	1260-117 NO 27
Row 10	1260-117 NO 29	1260-117 NC 29	1260-117 COM 30	1260-117 NO 30	1260-117 NC 30
Row 11	1260-117 NC 32	1260-117 COM 33	1260-117 NO 33	1260-117 NC 33	1260-117 COM 34
Row 12	1260-117 COM 36	1260-117 NO 36	1260-117 NC 36	1260-117 COM 37	1260-117 NO 37
Row 13	1260-117 NO 39	1260-117 NC 39	1260-117 COM 40	1260-117 NO 40	1260-117 NC 40
Row 14	1260-117 COM 42	1260-117 NO 42	1260-117 NC 42	1260-117 COM 43	1260-117 NO 43
Row 15	1260-117 NO 45	1260-117 NC 45	1260-117 COM 46	1260-117 NO 46	1260-117 NC 46
Row 16	1260-117 NC 48	1260-117 COM 49	1260-117 NO 49	1260-117 NC 49	1260-117 COM 50
Row 17	1260-118 CH00 IN	1260-118 CH00 OUT	1260-118 CH01 IN	1260-118 CH01 OUT	1260-118 CH02 IN

Lower Block 4, Columns 6 through 10
1260-117, 1260-118

	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
Row 1	1260-117 NC 01	1260-117 COM 02	1260-117 NO 02	1260-117 NC 02	1260-117 COM 03
Row 2	1260-117 COM 05	1260-117 NO 05	1260-117 NC 05	1260-117 COM 06	1260-117 NO 06
Row 3	1260-117 NO 08	1260-117 NC 08	1260-117 COM 09	1260-117 NO 09	1260-117 NC 09
Row 4	1260-117 COM 11	1260-117 NO 11	1260-117 NC 11	1260-117 COM 12	1260-117 NO 12
Row 5	1260-117 NO 14	1260-117 NC 14	1260-117 COM 15	1260-117 NO 15	1260-117 NC 15
Row 6	1260-117 NC 17	1260-117 COM 18	1260-117 NO 18	1260-117 NC 18	1260-117 COM 19
Row 7	1260-117 COM 21	1260-117 NO 21	1260-117 NC 21	1260-117 COM 22	1260-117 NO 22
Row 8	1260-117 NO 24	1260-117 NC 24	1260-117 COM 25	1260-117 NO 25	1260-117 NC 25
Row 9	1260-117 NC 27	1260-117 COM 28	1260-117 NO 28	1260-117 NC 28	1260-117 COM 29
Row 10	1260-117 COM 31	1260-117 NO 31	1260-117 NC 31	1260-117 COM 32	1260-117 NO 32
Row 11	1260-117 NO 34	1260-117 NC 34	1260-117 COM 35	1260-117 NO 35	1260-117 NC 35
Row 12	1260-117 NC 37	1260-117 COM 38	1260-117 NO 38	1260-117 NC 38	1260-117 COM 39
Row 13	1260-117 SIGNAL GND	1260-117 COM 41	1260-117 NO 41	1260-117 NC 41	1260-117 SIGNAL GND
Row 14	1260-117 NC 43	1260-117 COM 44	1260-117 NO 44	1260-117 NC 44	1260-117 COM 45
Row 15	1260-117 COM 47	1260-117 NO 47	1260-117 NC 47	1260-117 COM 48	1260-117 NO 48
Row 16	1260-117 NO 50	1260-117 NC 50	1260-117 COM 51	1260-117 NO 51	1260-117 NC 51
Row 17	1260-118 CH02 OUT	1260-118 CH03 IN	1260-118 CH03 OUT	1260-118 CH04 IN	1260-118 CH04 OUT

Lower Block 5, Columns 1 through 5
1260-118, 1260-114

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Row 1	1260-118 CH05 IN	1260-118 CH05 OUT	1260-118 CH06 IN	1260-118 CH06 OUT	1260-118 CH07 IN
Row 2	1260-118 CH10 IN	1260-118 CH10 OUT	1260-118 CH11 IN	1260-118 CH11 OUT	1260-118 CH12 IN
Row 3	1260-118 CH15 IN	1260-118 CH15 OUT	1260-118 CH16 IN	1260-118 CH16 OUT	1260-118 CH17 IN
Row 4	1260-118 CH20 IN	1260-118 CH20 OUT	1260-118 CH21 IN	1260-118 CH21 OUT	1260-118 CH22 IN
Row 5	1260-118 CH25 IN	1260-118 CH25 OUT	1260-118 CH26 IN	1260-118 CH26 OUT	1260-118 CH27 IN
Row 6	1260-118 CH30 IN	1260-118 CH30 OUT	1260-118 CH31 IN	1260-118 CH31 OUT	1260-118 CH32 IN
Row 7	1260-118 CH35 IN	1260-118 CH35 OUT	1260-118 CH36 IN	1260-118 CH36 OUT	1260-118 CH37 IN
Row 8	1260-118 CH40 IN	1260-118 CH40 OUT	1260-118 CH41 IN	1260-118 CH41 OUT	1260-118 CH42 IN
Row 9	1260-118 CH45 IN	1260-118 CH45 OUT	1260-118 CH46 IN	1260-118 CH46 OUT	1260-118 CH47 IN
Row 10	1260-118 CH50 IN	1260-118 CH50 OUT	1260-118 CH51 IN	1260-118 CH51 OUT	1260-118 CH52 IN
Row 11	1260-118 CH55 IN	1260-118 CH55 OUT	1260-118 CH56 IN	1260-118 CH56 OUT	1260-118 CH57 IN
Row 12	1260-118 CH60 IN	1260-118 CH60 OUT	1260-118 CH61 IN	1260-118 CH61 OUT	1260-118 CH62 IN
Row 13	1260-118 CH65 IN	1260-118 CH65 OUT	1260-118 CH66 IN	1260-118 CH66 OUT	1260-118 CH67 IN
Row 14	1260-118 CH70 IN	1260-118 CH70 OUT	1260-118 CH71 IN	1260-118 CH71 OUT	1260-118 CH72 IN
Row 15	1260-118 CH75 IN	1260-118 CH75 OUT	1260-118 CH76 IN	1260-118 CH76 OUT	1260-118 CH77 IN
Row 16	1260-114 A0	1260-114 A1	1260-114 A2	1260-114 A3	1260-114 A4
Row 17	1260-114 B0	1260-114 B1	1260-114 B2	1260-114 B3	1260-114 B4

Lower Block 5, Columns 6 through 10
1260-118, 1260-114

	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
Row 1	1260-118 CH07 OUT	1260-118 CH08 IN	1260-118 CH08 OUT	1260-118 CH09 IN	1260-118 CH09 OUT
Row 2	1260-118 CH12 OUT	1260-118 CH13 IN	1260-118 CH13 OUT	1260-118 CH14 IN	1260-118 CH14 OUT
Row 3	1260-118 CH17 OUT	1260-118 CH18 IN	1260-118 CH18 OUT	1260-118 CH19 IN	1260-118 CH19 OUT
Row 4	1260-118 CH22 OUT	1260-118 CH23 IN	1260-118 CH23 OUT	1260-118 CH24 IN	1260-118 CH24 OUT
Row 5	1260-118 CH27 OUT	1260-118 CH28 IN	1260-118 CH28 OUT	1260-118 CH29 IN	1260-118 CH29 OUT
Row 6	1260-118 CH32 OUT	1260-118 CH33 IN	1260-118 CH33 OUT	1260-118 CH34 IN	1260-118 CH34 OUT
Row 7	1260-118 CH37 OUT	1260-118 CH38 IN	1260-118 CH38 OUT	1260-118 CH39 IN	1260-118 CH39 OUT
Row 8	1260-118 CH42 OUT	1260-118 CH43 IN	1260-118 CH43 OUT	1260-118 CH44 IN	1260-118 CH44 OUT
Row 9	1260-118 CH47 OUT	1260-118 CH48 IN	1260-118 CH48 OUT	1260-118 CH49 IN	1260-118 CH49 OUT
Row 10	1260-118 CH52 OUT	1260-118 CH53 IN	1260-118 CH53 OUT	1260-118 CH54 IN	1260-118 CH54 OUT
Row 11	1260-118 CH57 OUT	1260-118 CH58 IN	1260-118 CH58 OUT	1260-118 CH59 IN	1260-118 CH59 OUT
Row 12	1260-118 CH62 OUT	1260-118 CH63 IN	1260-118 CH63 OUT	1260-118 CH64 IN	1260-118 CH64 OUT
Row 13	1260-118 CH67 OUT	1260-118 CH68 IN	1260-118 CH68 OUT	1260-118 CH69 IN	1260-118 CH69 OUT
Row 14	1260-118 CH72 OUT	1260-118 CH73 IN	1260-118 CH73 OUT	1260-118 CH74 IN	1260-118 CH74 OUT
Row 15	1260-118 CH77 OUT	1260-118 CH78 IN	1260-118 CH78 OUT	1260-118 CH79 IN	1260-118 CH79 OUT
Row 16	1260-114 A5	1260-114 A6	1260-114 A7	1260-114 HI-Z(FLY)A	1260-114 GND
Row 17	1260-114 B5	1260-114 B6	1260-114 B7	1260-114 HI-Z(FLY)B	1260-114 GND

Lower Block 6, Columns 1 through 5
1260-114, 1260-138A

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Row 1	1260-114 C0	1260-114 C1	1260-114 C2	1260-114 C3	1260-114 C4
Row 2	1260-114 D0	1260-114 D1	1260-114 D2	1260-114 D3	1260-114 D4
Row 3	1260-114 E0	1260-114 E1	1260-114 E2	1260-114 E3	1260-114 E4
Row 4	1260-114 F0	1260-114 F1	1260-114 F2	1260-114 F3	1260-114 F4
Row 5	1260-114 G0	1260-114 G1	1260-114 G2	1260-114 G3	1260-114 G4
Row 6	1260-114 H0	1260-114 H1	1260-114 H2	1260-114 H3	1260-114 H4
Row 7	1260-114 I0	1260-114 I1	1260-114 I2	1260-114 I3	1260-114 I4
Row 8	1260-114 J0	1260-114 J1	1260-114 J2	1260-114 J3	1260-114 J4
Row 9	1260-114 K0	1260-114 K1	1260-114 K2	1260-114 K3	1260-114 K4
Row 10	1260-114 L0	1260-114 L1	1260-114 L2	1260-114 L3	1260-114 L4
Row 11	1260-114 EXTBUSY	1260-114 EXTCLKIN	1260-114 GND	1260-114 GND	1260-114 GND
Row 12	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 13	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 14	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 15	1260-138A 0COM HI	1260-138A 0COM LO	1260-138A 0IN1 HI	1260-138A 0IN1 LO	1260-138A 0IN2 HI
Row 16	1260-138A 0IN5 HI	1260-138A 0IN5 LO	1260-138A 0IN6 HI	1260-138A 0IN6 LO	1260-138A 0IN7 HI
Row 17	1260-138A 1IN1 HI	1260-138A 1IN1 LO	1260-138A 1IN2 HI	1260-138A 1IN2 LO	1260-138A 1IN3 HI

Lower Block 6, Columns 6 through 10
1260-114, 1260-138A

	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
Row 1	1260-114 C5	1260-114 C6	1260-114 C7	1260-114 HI-Z(FLY)C	1260-114 GND
Row 2	1260-114 D5	1260-114 D6	1260-114 D7	1260-114 HI-Z(FLY)D	1260-114 GND
Row 3	1260-114 E5	1260-114 E6	1260-114 E7	1260-114 HI-Z(FLY)E	1260-114 GND
Row 4	1260-114 F5	1260-114 F6	1260-114 F7	1260-114 HI-Z(FLY)F	1260-114 GND
Row 5	1260-114 G5	1260-114 G6	1260-114 G7	1260-114 HI-Z(FLY)G	1260-114 GND
Row 6	1260-114 H5	1260-114 H6	1260-114 H7	1260-114 HI-Z(FLY)H	1260-114 GND
Row 7	1260-114 I5	1260-114 I6	1260-114 I7	1260-114 HI-Z(FLY)I	1260-114 GND
Row 8	1260-114 J5	1260-114 J6	1260-114 J7	1260-114 HI-Z(FLY)J	1260-114 GND
Row 9	1260-114 K5	1260-114 K6	1260-114 K7	1260-114 HI-Z(FLY)K	1260-114 GND
Row 10	1260-114 L5	1260-114 L6	1260-114 L7	1260-114 HI-Z(FLY)L	1260-114 GND
Row 11	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 12	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 13	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 14	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND	1260-114 GND
Row 15	1260-138A 0IN2 LO	1260-138A 0IN3 HI	1260-138A 0IN3 LO	1260-138A 0IN4 HI	1260-138A 0IN4 LO
Row 16	1260-138A 0IN7 LO	1260-138A 0IN8 HI	1260-138A 0IN8 LO	1260-138A 1COM HI	1260-138A 1COM LO
Row 17	1260-138A 1IN3 LO	1260-138A 1IN4 HI	1260-138A 1IN4 LO	1260-138A 1IN5 HI	1260-138A 1IN5 LO

Lower Block 7, Columns 1 through 5
1260-138A, 4152A DMM, 6075

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Row 1	1260-138A 1IN6 HI	1260-138A 1IN6 LO	1260-138A 1IN7 HI	1260-138A 1IN7 LO	1260-138A 1IN8 HI
Row 2	1260-138A 2IN2 HI	1260-138A 2IN2 LO	1260-138A 2IN3 HI	1260-138A 2IN3 LO	1260-138A 2IN4 HI
Row 3	1260-138A 2IN7 HI	1260-138A 2IN7 LO	1260-138A 2IN8 HI	1260-138A 2IN8 LO	1260-138A 3COM HI
Row 4	1260-138A 3IN3 HI	1260-138A 3IN3 LO	1260-138A 3IN4 HI	1260-138A 3IN4 LO	1260-138A 3IN5 HI
Row 5	1260-138A 3IN8 HI	1260-138A 3IN8 LO	1260-138A 4COM HI	1260-138A 4COM LO	1260-138A 4IN1 HI
Row 6	1260-138A 4IN4 HI	1260-138A 4IN4 LO	1260-138A 4IN5 HI	1260-138A 4IN5 LO	1260-138A 4IN6 HI
Row 7	1260-138A 5COM HI	1260-138A 5COM LO	1260-138A 5IN1 HI	1260-138A 5IN1 LO	1260-138A 5IN2 HI
Row 8	1260-138A 5IN5 HI	1260-138A 5IN5 LO	1260-138A 5IN6 HI	1260-138A 5IN6 LO	1260-138A 5IN7 HI
Row 9	1260-138A 6IN1 HI	1260-138A 6IN1 LO	1260-138A 6IN2 HI	1260-138A 6IN2 LO	1260-138A 6IN3 HI
Row 10	1260-138A 6IN6 HI	1260-138A 6IN6 LO	1260-138A 6IN7 HI	1260-138A 6IN7 LO	1260-138A 7IN8 HI
Row 11	1260-138A 7IN2 HI	1260-138A 7IN2 LO	1260-138A 7IN3 HI	1260-138A 7IN3 LO	1260-138A 7IN4 HI
Row 12	1260-138A 7IN7 HI	1260-138A 7IN7 LO	1260-138A 7IN8 HI	1260-138A 7IN8 LO	1260-138A GND
Row 13	1260-138A GND	1260-138A GND	1260-138A GND	1260-138A GND	1260-138A GND
Row 14	4152 DMM EXT TRIG	4152 DMM SHIELD 1	4152 DMM VM COMP	4152 DMM SHIELD 2	4152 DMM No Connect
Row 15	4152 DMM HI	4152 DMM LO	4152 DMM SHIELD 3	4152 DMM I	4152 DMM SNS HI
Row 16	6075 DGND	6075 DTR1 (TX1 B+)	6075 TX1 (TX1 A-)	6075 DCD1 (RX1 B+)	6075 RX1 (RX1 A-)
Row 17	6075 DTR2 (TX2 B+)	6075 TX2 (TX2 A-)	6075 DCD2 (RX2 B+)	6075 RX2 (RX2 A-)	6075 RTS2 (RXCLKO 2-)

For the 6075-8, RS-422 signal names are in parenthesis ()

Lower Block 7, Columns 6 through 10
1260-138A, 4152A DMM, Enet, 6075

	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
Row 1	1260-138A 1IN8 LO	1260-138A 2COM HI	1260-138A 2COM LO	1260-138A 2IN1 HI	1260-138A 2IN1 LO
Row 2	1260-138A 2IN4 LO	1260-138A 2IN5 HI	1260-138A 2IN5 LO	1260-138A 2IN6 HI	1260-138A 2IN6 LO
Row 3	1260-138A 3COM LO	1260-138A 3IN1 HI	1260-138A 3IN1 LO	1260-138A 3IN2 HI	1260-138A 3IN2 LO
Row 4	1260-138A 3IN5 LO	1260-138A 3IN6 HI	1260-138A 3IN6 LO	1260-138A 3IN7 HI	1260-138A 3IN7 LO
Row 5	1260-138A 4IN1 LO	1260-138A 4IN2 HI	1260-138A 4IN2 LO	1260-138A 4IN3 HI	1260-138A 4IN3 LO
Row 6	1260-138A 4IN6 LO	1260-138A 4IN7 HI	1260-138A 4IN7 LO	1260-138A 4IN8 HI	1260-138A 4IN8 LO
Row 7	1260-138A 5IN2 LO	1260-138A 5IN3 HI	1260-138A 5IN3 LO	1260-138A 5IN4 HI	1260-138A 5IN4 LO
Row 8	1260-138A 5IN7 LO	1260-138A 5IN8 HI	1260-138A 5IN8 LO	1260-138A 6COM HI	1260-138A 6COM LO
Row 9	1260-138A 6IN3 LO	1260-138A 6IN4 HI	1260-138A 6IN4 LO	1260-138A 6IN5 HI	1260-138A 6IN5 LO
Row 10	1260-138A 6IN8 LO	1260-138A 7COM HI	1260-138A 7COM LO	1260-138A 7IN1 HI	1260-138A 7IN1 LO
Row 11	1260-138A 7IN4 LO	1260-138A 7IN5 HI	1260-138A 7IN5 LO	1260-138A 7IN6 HI	1260-138A 7IN6 LO
Row 12	1260-138A GRD	1260-138A GRD	1260-138A GND	1260-138A GND	1260-138A GND
Row 13	1260-138A GRD	1260-138A GRD	1260-138A GND	1260-138A GND	1260-138A GND
Row 14	4152 DMM No Connect	4152 DMM No Connect	4152 DMM No Connect	E-NET TD+ (1)	E-NET RD+ (3)
Row 15	4152 DMM SNS LO	4152 DMM SHIELD 4	4152 DMM No Connect	E-NET TD- (2)	E-NET RD- (6)
Row 16	6075 RTS1 (RXCLKO 1-)	6075 CTS1 (TXCLKI 1+)	6075 DSR1 (RXCLO 1+)	6075 N/C (TXCLKI 1-)	6075 DGND
Row 17	6075 CTS2 (TXCLKI 2+)	6075 DSR2 (RXCLO 2+)	6075 N/C (TXCLKI 2-)	6075 No Connect	6075 No Connect

For the 6075-8, RS-422 signal names are in parenthesis ()

Lower Block 8, Columns 1 through 5
6075, 236, PS & LOAD SENSE, GPIB

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Row 1	6075 No Connect	6075 No Connect	6075 No Connect	6075 No Connect	6075 N/C (PULSE B+)
Row 2	6075 DGND	6075 DTR3 (TX3 B+)	6075 TX3 (TX3 A-)	6075 DCD3 (RX3 B+)	6075 RX3 (RX3 A-)
Row 3	6075 DTR4 (TX4 B+)	6075 TX4 (TX4 A-)	6075 DCD4 (RX4 B+)	6075 RX4 (RX4 A-)	6075 RTS4 (RXCLKO 4-)
Row 4	6075 DGND	6075 DTR5 (TX5 B+)	6075 TX5 (TX5 A-)	6075 DCD5 (RX5 B+)	6075 RX5 (RX5 A-)
Row 5	6075 DTR6 (TX6 B+)	6075 TX6 (TX6 A-)	6075 DCD6 (RX6 B+)	6075 RX6 (RX6 A-)	6075 RTS6 (RXCLKO 6-)
Row 6	6075 No Connect	6075 No Connect	6075 No Connect	6075 No Connect	6075 N/C (PULSE B+)
Row 7	6075 DGND	6075 DTR7 (TX7 B+)	6075 TX7 (TX7 A-)	6075 DCD7 (RX7 B+)	6075 RX7 (RX7 A-)
Row 8	6075 DTR8 (TX8 B+)	6075 TX8 (TX8 A-)	6075 DCD8 (RX8 B+)	6075 RX8 (RX8 A-)	6075 RTS8 (RXCLKO 8-)
Row 9	66000 PS1 S+	66000 PS1 S-	66000 PS1 SHIELD	66000 PS2 S+	66000 PS2 S-
Row 10	66000 PS4 S+	66000 PS4 S-	66000 PS4 SHIELD	66000 PS5 S+	66000 PS5 S-
Row 11	66000 PS7 S+	66000 PS7 S-	66000 PS7 SHIELD	66000 PS8 S+	66000 PS8 S-
Row 12	6050 LOAD 1 S+	6050 LOAD 1 S-	6050 LOAD 1 SHIELD	6050 LOAD 2 S+	6050 LOAD 2 S-
Row 13	6050 LOAD 4 S+	6050 LOAD 4 S-	6050 LOAD 4 SHIELD	6050 LOAD 5 S+	6050 LOAD 5 S-
Row 14	236 I/LCK1 #1 IN	236 I/LCK1 #1 OUT	236 I/LCK2 #1 IN	236 I/LCK2 #1 OUT	236 I/LCK1 #2 IN
Row 15	GPIB DIO1	GPIB DIO2	GPIB DIO3	GPIB DIO4	GPIB EOI
Row 16	GPIB DIO5	GPIB DIO6	GPIB DIO7	GPIB DIO8	GPIB REN
Row 17	No Connect	No Connect	No Connect	No Connect	No Connect

For the 6075-8, RS-422 signal names are in parenthesis ()

Lower Block 8, Columns 6 through 10
6075, 236, PS & LOAD SENSE, GPIB

	Pin 6	Pin 7	Pin 8	Pin 9	Pin 10
Row 1	6075 N/C (PULSE B-)	6075 No Connect	6075 No Connect	6075 No Connect	6075 No Connect
Row 2	6075 RTS3 (RXCLKO 3-)	6075 CTS3 (TXCLKI 3+)	6075 DSR3 (RXCLO 3+)	6075 N/C (TXCLKI 3-)	6075 DGND
Row 3	6075 CTS4 (TXCLKI 4+)	6075 DSR4 (RXCLO 4+)	6075 N/C (TXCLKI 4-)	6075 No Connect	6075 No Connect
Row 4	6075 RTS5 (RXCLKO 5-)	6075 CTS5 (TXCLKI 5+)	6075 DSR5 (RXCLO 5+)	6075 N/C (TXCLKI 5-)	6075 DGND
Row 5	6075 CTS6 (TXCLKI 6+)	6075 DSR6 (RXCLO 6+)	6075 N/C (TXCLKI 6-)	6075 No Connect	6075 No Connect
Row 6	6075 N/C (PULSE B-)	6075 No Connect	6075 No Connect	6075 No Connect	6075 No Connect
Row 7	6075 RTS7 (RXCLKO 7-)	6075 CTS7 (TXCLKI 7+)	6075 DSR7 (RXCLO 7+)	6075 N/C (TXCLKI 7-)	6075 DGND
Row 8	6075 CTS8 (TXCLKI 8+)	6075 DSR8 (RXCLO 8+)	6075 N/C (TXCLKI 8-)	6075 No Connect	6075 No Connect
Row 9	66000 PS2 SHIELD	66000 PS3 S+	66000 PS3 S-	66000 PS3 SHIELD	66000 No Connect
Row 10	66000 PS5 SHIELD	66000 PS6 S+	66000 PS6 S-	66000 PS6 SHIELD	66000 No Connect
Row 11	66000 PS8 SHIELD	66000 No Connect	66000 No Connect	66000 No Connect	66000 No Connect
Row 12	6050 LOAD 2 SHIELD	6050 LOAD 3 S+	6050 LOAD 3 S-	6050 LOAD 3 SHIELD	6050 No Connect
Row 13	6050 LOAD 5 SHIELD	6050 LOAD 6 S+	6050 LOAD 6 S-	6050 LOAD 6 SHIELD	6050 No Connect
Row 14	236 I/LCK1 #2 OUT	236 I/LCK2 #2 IN	236 I/LCK2 #2 OUT	236 No Connect	236 No Connect
Row 15	GPIB GND	GPIB DAV	GPIB NDAC	GPIB SRQ	GPIB SHIELD
Row 16	GPIB GND	GPIB NRFD	GPIB IFC	GPIB ATN	GPIB LOGIC GND
Row 17	No Connect	No Connect	No Connect	No Connect	No Connect

For the 6075-8, RS-422 signal names are in parenthesis 0

Lower Block 10
1260-120

Pin 1 1260-120 CH00 IN	Pin 6 1260-120 CH02 OUT	Pin 10 1260-120 CH04 OUT	Pin 15 1260-120 CH07 IN	Pin 19 1260-120 CH09 IN	Pin 24 Not Connected	Pin 28 Not Connected
Pin 2 1260-120 CH00 OUT	Pin 7 1260-120 CH03 IN	Pin 11 1260-120 CH05 IN	Pin 16 1260-120 CH07 OUT	Pin 20 1260-120 CH09 OUT	Pin 25 Not Connected	Pin 29 Not Connected
Pin 3 1260-120 CH01 IN	Pin 8 1260-120 CH03 OUT	Pin 12 1260-120 CH05 OUT	Pin 17 1260-120 CH08 IN	Pin 21 Not Connected	Pin 26 Not Connected	Pin 30 Not Connected
Pin 4 1260-120 CH01 OUT	Pin 9 1260-120 CH04 IN	Pin 13 1260-120 CH06 IN	Pin 18 1260-120 CH08 OUT	Pin 22 Not Connected	Pin 27 Not Connected	Pin 31 Not Connected
Pin 5 1260-120 CH02 IN	Pin 14 1260-120 CH06 OUT	Pin 23 Not Connected	Pin 32 Not Connected			

Lower Block 11
1260-120

Pin 1 1260-120 CH10 IN	Pin 6 1260-120 CH12 OUT	Pin 10 1260-120 CH14 OUT	Pin 15 1260-120 CH17 IN	Pin 19 1260-120 CH19 IN	Pin 24 EMS P/S +5V	Pin 28 EMS P/S 5V RTN
Pin 2 1260-120 CH10 OUT	Pin 7 1260-120 CH13 IN	Pin 11 1260-120 CH15 IN	Pin 16 1260-120 CH17 OUT	Pin 20 1260-120 CH19 OUT	Pin 25 EMS P/S +12V	Pin 29 EMS P/S 12V RTN
Pin 3 1260-120 CH11 IN	Pin 8 1260-120 CH13 OUT	Pin 12 1260-120 CH15 OUT	Pin 17 1260-120 CH18 IN	Pin 21 Not Connected	Pin 26 EMS P/S +24V	Pin 30 EMS P/S 24V RTN
Pin 4 1260-120 CH11 OUT	Pin 9 1260-120 CH14 IN	Pin 13 1260-120 CH16 IN	Pin 18 1260-120 CH18 OUT	Pin 22 Not Connected	Pin 31 VACUUM CTRL RTN K1-4	
Pin 5 1260-120 CH12 IN		Pin 14 1260-120 CH16 OUT		Pin 23 Not Connected	Pin 27 VACUUM CTRL K1-3	Pin 32 Not Connected

Pin 1	66000	PS1 O+	Pin 6	66000	PS4 O+	Pin 11	66000	PS6 O-	Pin 16	66000	PS8 O-	Pin 21	6050	LOAD2+	Pin 26	6050	LOAD5+	Pin 31	Not Connected	Pin 32	6050	LOAD3-		
Pin 2	66000	PS1 O-	Pin 7	66000	PS4 O-	Pin 12	66000	PS7 O+	Pin 17	Not Connected	Pin 22	6050	LOAD2-	Pin 27	6050	LOAD5-	Pin 32	6050	LOAD3-					
Pin 3	66000	PS2 O+	Pin 8	66000	PS5 O+	Pin 13	66000	PS7 O-	Pin 18	Not Connected	Pin 23	6050	LOAD3+	Pin 28	6050	LOAD6+	Pin 33	6050	LOAD4-					
Pin 4	66000	PS2 O-	Pin 9	66000	PS5 O-	Pin 14	66000	PS3 O-	Pin 19	6050	LOAD1+	Pin 24	6050	LOAD4+	Pin 29	6050	LOAD6-	Pin 30	Not Connected	Pin 31	Not Connected	Pin 32	6050	LOAD3-
Pin 5	66000	PS3 O+	Pin 10	66000	PS6 O+	Pin 15	66000	PS8 O+	Pin 20	6050	LOAD1-	Pin 25	6050	LOAD4-	Pin 30	Not Connected	Pin 31	Not Connected	Pin 32	6050	LOAD3-			

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.

Reshipment Instructions

Use the original packing material when returning the ROC ACCTS Test System 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.

Support Offices

RACAL INSTRUMENTS

United States

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