



**HEWLETT
PACKARD**

INSTALLATION AND VERIFICATION MANUAL

HP 70600A and 70601A PRESELECTORS

SERIAL NUMBERS

This manual applies directly to HP 70600A and 70601A
Preselectors with the following serial number prefixes:

HP 70600A: 2702A and below

HP 70601A: 2743A and below

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1212 VALLEY HOUSE DRIVE, ROHNERT PARK, CALIFORNIA 94928-4999, U.S.A.**

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CERTIFICATION

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

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This Hewlett-Packard instrument product is warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, Hewlett-Packard Company will, at its option, either repair or replace products which prove to be defective.

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HP warrants that its software and firmware designated by HP for use with an instrument will execute its programming instructions when properly installed on that instrument. HP does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error-free.

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The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

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ASSISTANCE

Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products.

For any assistance, contact your nearest Hewlett-Packard Sales and Service Office.

SAFETY SYMBOLS

The following safety symbols are used throughout this manual and in the instrument. Familiarize yourself with each of the symbols and its meaning before operating this instrument.



Instruction manual symbol. The instrument will be marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect the instrument against damage. Location of pertinent information within the manual is indicated by use of this symbol in the table of contents.



Indicates dangerous voltages are present. Be extremely careful.

CAUTION

The CAUTION sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

WARNING

The WARNING sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

GENERAL SAFETY CONSIDERATIONS

WARNING

BEFORE THIS INSTRUMENT IS SWITCHED ON, make sure it has been properly grounded through the protective conductor of the ac power cable to a socket outlet provided with protective earth contact. Any interruption of the protective (grounding) conductor, inside or outside the instrument, or disconnection of the protective earth terminal can result in personal injury.

WARNING

There are voltages at many points in the instrument which can, if contacted, cause personal injury. Be extremely careful. Any adjustments or service procedures that require operation of the instrument with protective covers removed should be performed only by trained service personnel.

CAUTION

BEFORE THIS INSTRUMENT IS SWITCHED ON, make sure its primary power circuitry has been adapted to the voltage of the ac power source. Failure to set the ac power input to the correct voltage could cause damage to the instrument when the ac power cable is plugged in.

HP 70000 MODULAR MEASUREMENT SYSTEM DOCUMENTATION OUTLINE

Instruments and modules of the HP 70000 Modular Measurement System are documented to varying levels of detail. Modules that serve as masters of an instrument require operation information in addition to installation and verification instructions. Modules that function as slaves in a system require only a subset of installation and verification information.

Manuals Supplied with Module

INSTALLATION AND VERIFICATION MANUAL

Topics covered by this manual include installation, specifications, verification of module operation, and some troubleshooting techniques. Manuals for modules that serve as instrument masters will supply information in all these areas; manuals for slave modules will contain only information needed for slave module installation and verification. Master module documentation may also include some system-level information.

OPERATION MANUAL

Operation Manuals usually pertain to multiple- and single-module instrument systems. Topics include preparation for module use, module functions, and softkey definitions.

PROGRAMMING MANUAL

Programming Manuals also pertain to multiple- and single-module instrument systems. Programming Manual topics include programming fundamentals and definitions for remote programming commands.

Service Manual, Available Separately

TECHNICAL REFERENCE

When available, this manual provides service information for a module, including performance verification, adjustments, troubleshooting, replaceable parts lists, replacement procedures, schematics, and component location diagrams. For ordering information, contact an HP Sales and Service Office.

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Chapter 1

GENERAL INFORMATION

Introduction

The HP 70600A and 70601A Preselectors Installation and Verification Manual contains information required to install and verify HP 70600A and HP 70601A Preselectors. For information about installing and verifying HP 70000 Modular Spectrum Analyzers, refer to the Installation and Verification Manual for the local oscillator.

This manual contains the following chapters:

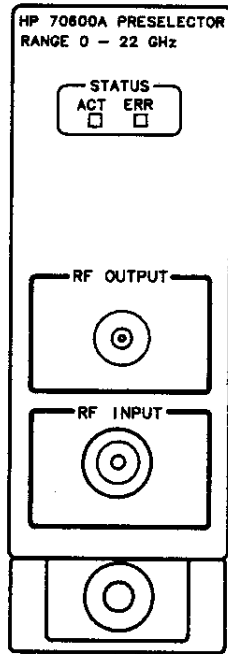
- **Chapter 1, General Information**, describes module accessories and features.
- **Chapter 2, Installation**, provides steps for configuring and installing the module into an HP 70000 Modular Spectrum Analyzer.
- **Chapter 3, Specifications**, lists any module-related specifications and characteristics.
- **Chapter 4, Verification**, contains tests required to verify module specifications or characteristics.
- **Chapter 5, Troubleshooting**, explains front-panel error lights and error codes generated by the preselector module.

DESCRIPTION

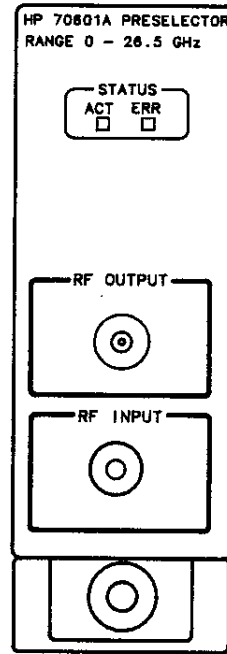
The HP 70600A Preselector is one of the components of the HP 71201A Preselected Microwave Spectrum Analyzer system; the HP 70601A Preselector is a component of the HP 71201A Option 001 Preselected Microwave Spectrum Analyzer system. The preselectors may be used to reduce multiple and image frequencies, and unwanted mixing products. They function as tunable bandpass filters for HP 70600A input frequencies from 2.7 to 22 GHz, and for HP 70601A input frequencies from 2.7 to 26.5 GHz. For input frequencies from 0 to 2.9 GHz, the preselector switches to the low-pass filter path. Either of these filter paths may be bypassed for improved displayed average noise performance.

SAFETY CONSIDERATIONS

Before operating this module, you should familiarize yourself with any safety markings on the module and the safety instructions in this manual. This module has been manufactured and tested according to international safety standards. However, to ensure safe operation of the module and personal safety of the user and service personnel, the cautions and warnings in this manual must be followed. Refer to the summary of safety considerations at the front of this manual.



HP 70600A



HP 70601A

HP 70905B/70906B
TO
HP 70600A*/70601A



HP P/N 5021-7403

HP 70906A
TO
HP 70600A*/70601A

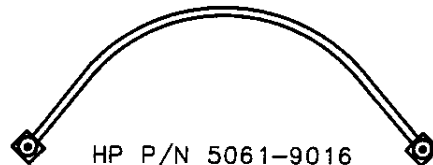


HP P/N 5021-7401

HP 70905A
TO
HP 70600A*/70601A



HP P/N 5021-7402



HP P/N 5061-9016
(FOR ALL MODELS)

*NOTE: NOT ALL SEMI-RIGID CABLES ARE SHIPPED WITH EACH PRESELECTOR ORDER. REFER TO ACCESSORIES TO VERIFY WHICH CABLE ASSEMBLY BELONGS WITH YOUR SYSTEM.

Figure 1-1. Preselectors with Accessories Supplied

Table 1-1. Filter Path vs. Frequency Band

Module	Band*	Frequency	Filter
HP 70600A	Bypass	0 to 22 GHz	Bypass Mode
	1H-	50 kHz to 2.9 GHz	Low-Pass
	1L-	2.7 GHz to 6.2 GHz	YTF Path
	2L-	6.0 GHz to 12.7 GHz	YTF Path
	3L+	12.5 GHz to 19.9 GHz	YTF Path
HP 70601A	4L+	19.7 GHz to 22.0 GHz	YTF Path
	Bypass	0 to 26.5 GHz	Bypass Mode
	1H-	50 kHz to 2.9 GHz	Low-Pass
	1L-	2.7 GHz to 6.2 GHz	YTF Path
	2L-	6.0 GHz to 12.7 GHz	YTF Path
	3L+	12.5 GHz to 19.9 GHz	YTF Path
	4L+	19.7 GHz to 26.5 GHz	YTF Path

* H = 3.6214 GHz IF
L = 321.4 MHz IF

Modules Covered by Manual

SERIAL NUMBERS

A mylar serial-number label attached to the front frame of the module contains the serial number of your module. There are two parts to the serial number. The prefix, consisting of the first four digits, remains the same for all identical modules. Changes made to the module cause the prefix number to increment. The suffix completes the serial number with five digits (see figure 1-2). The suffix is assigned sequentially and is different for every module. The information in this manual pertains to the serial number prefix(es) listed under Serial Numbers located on the title page.

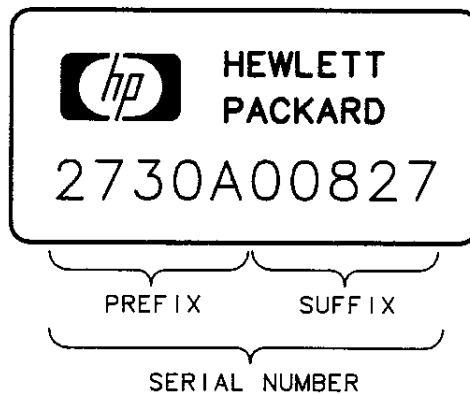


Figure 1-2. Typical Serial Number Label

MANUAL UPDATING SUPPLEMENT

A module manufactured after the printing of this manual may have a serial number prefix that is not listed on the title page, indicating that the module is different from those listed on the title page. The manual for this newer module may be accompanied by a Manual Updating Supplement, which contains the change information needed to adapt the Installation and Verification Manual to the newer module. There may also be corrections to errors in the manual included in the supplement.

To keep the Installation and Verification Manual as current and accurate as possible, Hewlett-Packard recommends that you periodically request a complimentary issue of the latest Manual Updating Supplement from an HP Sales and Service Office. Addresses for these offices are located at the end of this chapter. The supplement carries a manual-identification block that includes the instrument model number, print date of the manual, and manual part number.

INITIAL INSPECTION

Inspect the shipping container and cushioning material for damage. If the container or the cushioning material appear damaged, retain these items for the carrier to inspect. Refer to the Accessories Supplied information below for a list of the shipment contents. If the contents are incomplete, or if the module fails to pass any procedures in the Verification chapter of this manual, notify the nearest HP Sales and Service Office. Arrangements will be made to repair or replace any damaged contents without waiting for a settlement.

ACCESSORIES SUPPLIED

Accessories supplied with the modules are illustrated in figure 1-1 and listed below in table 1-2.

Table 1-2. Accessories Supplied with HP 70600A and 70601A Preselectors

Accessory	HP Part Number
RF COAX CABLES	
LO TUNE SPAN OUT to Preselector TUNE + SPAN IN SMB (f) to SMB (f), 2/8 span 14 cm (5-1/2 in.) length	5061-9016
RF SEMI-RIGID CABLES	
HP 70905A to HP 70600A/601A Type N (m) to SMA (m)	5021-7402
HP 70905B/6B to HP 70600A/601A SMA (m) to SMA (m)	5021-7403
HP 70906A to HP 70600A/601A APC 3.5 (f) to SMA (m)	5021-7401
HP 70906B to HP 70600A/601A APC 3.5 (f) to SMA (m)	5021-7401

Front/Rear-Panel Features

Front- and rear-panel features are very similar between the preselector modules. The differences are described in the following text. Figure 1-3 illustrates the features using the front and rear panels of an HP 70600A Preselector.

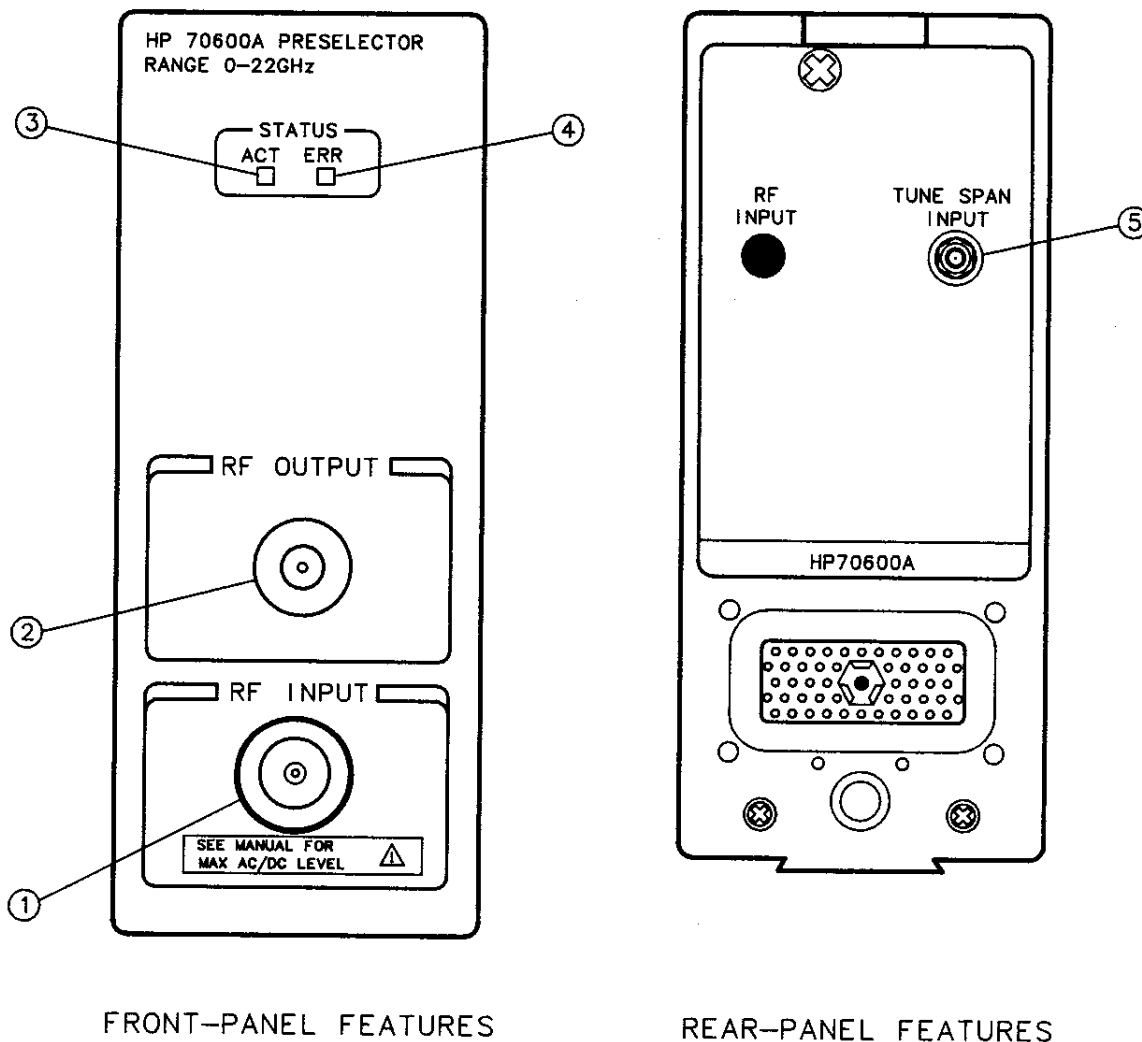


Figure 1-3. Front- and Rear-Panel Features

STATUS INDICATORS

Status Active

The STATUS ACT indicator LED (3) turns on when the preselector is identified by the master module as being part of its system. See figure 1-3.

Status Error

The STATUS ERR indicator LED (4) turns on if there is an error in the preselector.

RF Input and Output

The RF INPUT connector (1) provides a 50 Ω input impedance. The connector for the HP 70600A is Type N (female) and for the HP 70601A is APC 3.5 (female). This input is the RF input for the preselected modular spectrum analyzer system. The frequency range of the HP 70600A is 0 to 22 GHz, and for the HP 70601A is 0 to 26.5 GHz.

The RF OUTPUT is an SMA (female) connector (2) and normally is connected to the RF INPUT of an RF section.

Module Latch

The module hex-nut latch is used at installation of the module into the mainframe. An 8 mm hex-ball driver is used to tighten and loosen this latch. Refer to the Installation chapter for instructions about installing the module.

REAR-PANEL FEATURES

Tune Span Input

The TUNE SPAN INPUT (5) (SMB male connector) is normally connected to the TUNE SPAN output on the HP 70900A Local Oscillator.

MAINFRAME/MODULE INTERCONNECT

A multiple-pin connector located at the rear of the module plugs into the mainframe when the module is locked into place in the mainframe. This connection provides power supplies and HP-MSIB (Hewlett-Packard Modular System Interface Bus) function for the module.

Electrostatic Discharge

Electrostatic Discharge (ESD) can damage or destroy electronic components. All work done on assemblies containing electronic components should be performed at a static-free work station. Figure 1-4 is an example of a static-safe work station using two types of ESD protection:

- conductive table mat and wrist-strap combination
- wrist-strap and conductive floor-mat/heel-strap combination

Table 1-3 lists static-safe accessories that can be obtained from Hewlett-Packard.

Table 1-3. Static-Safe Accessories

HP Part Number	Description
<p>Note: The following items can be ordered through any Hewlett-Packard Sales and Service Office.</p>	
9300-0797	3M static control mat, 0.6m × 1.2m (2 ft. × 4 ft.) 4.6m (15 ft.) ground wire (The wrist strap and wrist strap cord are not included. They must be ordered separately.)
9300-0980	Wrist strap cord, 1.5m (5 ft.)
9300-0985	Wrist strap (large)
9300-0986	Wrist strap (small)
9300-1169	ESD heel strap (reusable 6 to 12 months)
9300-0793	Shoe ground strap (one-time use only)
<p>Note: The following ESD accessories can be ordered only from: Hewlett-Packard Company Computer Supplies Operation 1320 Kifer Road Sunnyvale, CA 94086 Phone: (408) 738-8858</p>	
92175A	Black, hard-surface, static control mat, 1.2m × 1.5m (4 ft. × 5 ft.)
92175B	Brown, soft-surface, static control mat, 2.4m × 1.2m (8 ft. × 4 ft.)
92175C	Small, black, hard-surface static control mat, 1.2m × 0.9m (4 ft. × 3 ft.)
92175T	Tabletop static control mat, 58 cm × 76 cm (23 in. × 30 in.)
92176A	Anti-static carpet, natural color, 1.8m × 1.2m (6 ft. × 4 ft.)
92176B	Anti-static carpet, natural color, 2.4m × 1.2m (8 ft. × 4 ft.)
92176C	Anti-static carpet, russet color, 1.8m × 1.2m (6 ft. × 4 ft.)
92176D	Anti-static carpet, russet color, 2.4m × 1.2m (8 ft. × 4 ft.)

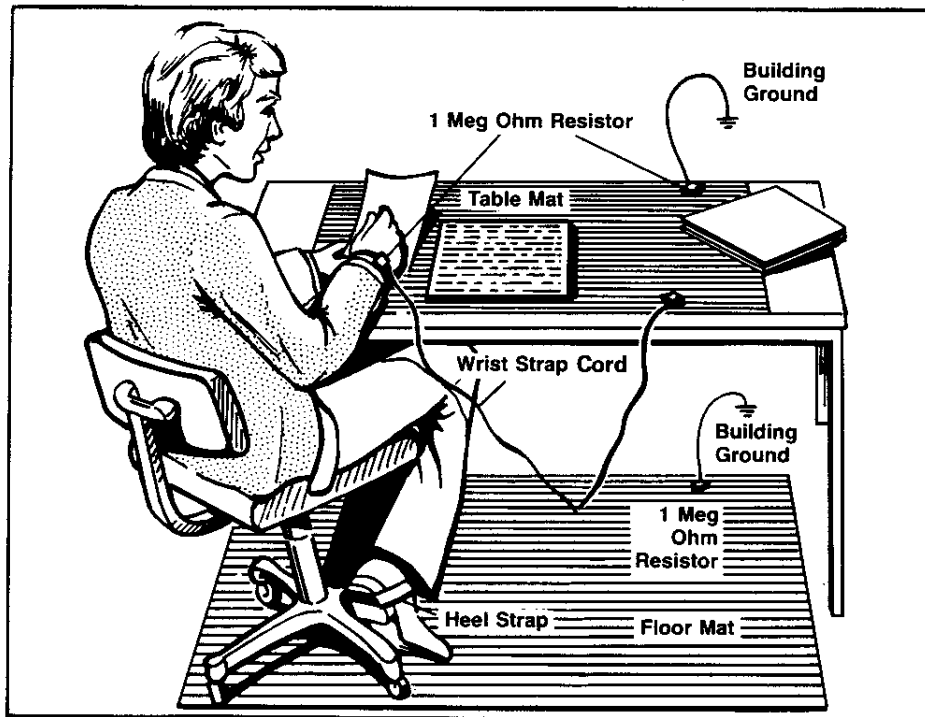


Figure 1-4. Example of a Static-Safe Work Station

REDUCING ESD DAMAGE POTENTIAL

The following suggestions may help reduce ESD damage that may occur during testing and servicing operations.

- Before connecting any coaxial cable to a spectrum analyzer for the first time each day, momentarily ground the center and outer conductors of the cable.
- Personnel should be grounded with a resistor-isolated wrist strap before touching the center pin of any connector and before removing any assembly from the unit.
- Be sure that all instruments are properly earth-grounded to prevent a buildup of static charge.

RETURNING MODULES FOR SERVICE

If you are returning a module to Hewlett-Packard for servicing, fill in and attach one of the blue service tags located at the end of this manual.

Be as specific as possible about the nature of the problem. If you have recorded any error messages that appeared on the screen or have any other specific data on the performance of the module, please send a copy of this information with the unit.

ORIGINAL PACKAGING

For shipping, pack the unit in the original factory packaging materials. If the original materials were not retained, identical materials are available through any HP Sales and Service Office. Figures 1-5 and 1-6 illustrate the factory packaging materials.

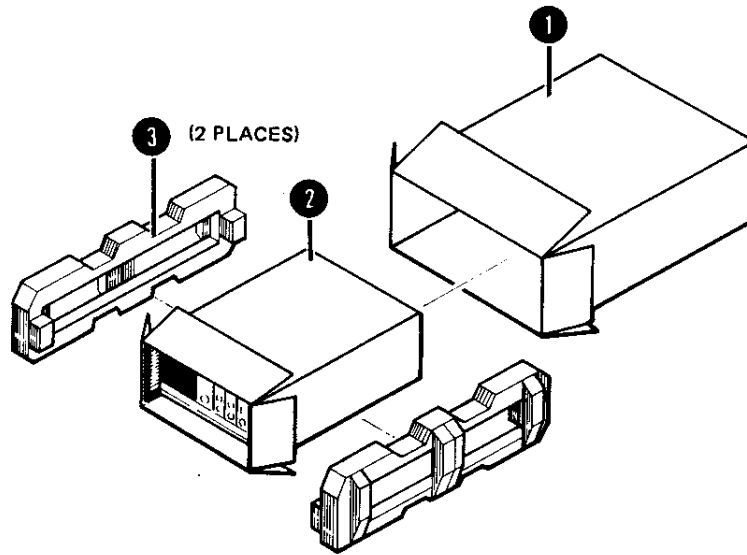
Other Packaging

CAUTION

Modules can be damaged if packaging materials other than those specified are used for shipping. Never use styrene pellets in any shape as packaging materials. They do not adequately cushion the equipment or prevent it from shifting in the carton. They also generate static electricity and will cause ESD damage to the equipment.

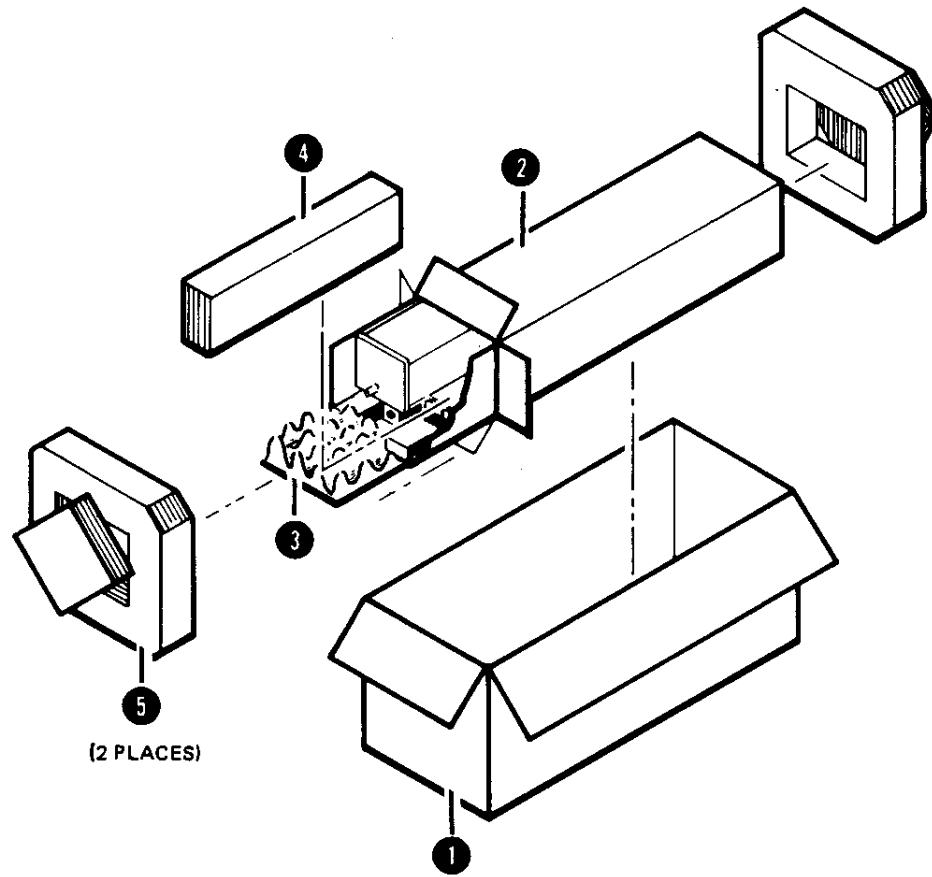
With a completed blue service tag attached to the equipment, the module may be repackaged with the following commercially available materials:

1. Wrap the module in anti-static plastic to reduce the possibility of ESD damage.
2. Use a strong shipping container. A double-walled, corrugated cardboard carton with 159-kg (350-lb.) bursting strength is adequate. The carton must be both large enough and strong enough to accommodate the module. Allow at least three to four inches on all sides of the module for packing material.
3. Surround the module with four inches of packing material and prevent the equipment from moving in the carton. If packing foam is not available, the best alternative is S.D.-240 Air Cap™ from Sealed Air Corporation (Commerce, California, 90001). Air Cap looks like a plastic sheet filled with 1-1/4 inch air bubbles. Use the pink-colored Air Cap to reduce static electricity. Wrapping the module several times in this material should both protect and prevent it from moving in the carton.
4. Seal the shipping container securely with strong, nylon adhesive tape.
5. Mark the shipping container "FRAGILE, HANDLE WITH CARE" to assure careful handling.
6. Retain copies of all shipping papers.



ITEM	QTY	HP PART NO.	DESCRIPTION
1	1	9211-4487	CARTON—OUTER
2	1	5180-2321	CARTON—INNER
3	2	5180-2319 OR 5180-7829	FOAM PADS (HP 70001A) FOAM PADS (HP 70206A)

Figure 1-5. Factory Packaging Materials for Mainframes



ITEM	QTY	HP PART NO.	DESCRIPTION
1	1	9211-5118	CARTON-OUTER
2	1	9211-5119	CARTON-INNER
3	1	5180-2369	CARTON-SLIDER
4		4280-0493	FOAM INSERT (FOR QUANTITY SEE TEXT)
5	2	5180-2370	FOAM PADS

Figure 1-6. Factory Packaging Materials for Modules

Table 1-4. HP Sales and Service Offices (1 of 2)

<p>IN THE UNITED STATES</p> <p>California Hewlett-Packard Co. P.O. Box 4230 1421 South Manhattan Ave. Fullerton, CA 92631 (714) 999-6700</p> <p>Hewlett-Packard Co. 333 Logue Ave. Mountain View, CA 94040 (415) 969-0880</p> <p>Colorado Hewlett-Packard Co. 24 Inverness Place, East Englewood, CO 80112 (303) 649-5000</p> <p>Georgia Hewlett-Packard Co. P.O. Box 105005 2000 South Park Place Atlanta, GA 30339 (404) 955-1500</p> <p>Illinois Hewlett-Packard Co. 5201 Tollview Drive Rolling Meadows, IL 60008 (312) 255-9800</p> <p>New Jersey Hewlett-Packard Co. 120 W. Century Road Paramus, NJ 07653 (201) 265-5000</p> <p>Texas Hewlett-Packard Co. 930 E. Campbell Rd. Richardson, TX 75081 (214) 231-6101</p>	<p>IN AUSTRALIA Hewlett-Packard Australia Ltd. 31-41 Joseph Street Blackburn, Victoria 3130 895-2895</p> <p>IN CANADA Hewlett-Packard (Canada) Ltd. 17500 South Service Road Trans-Canada Highway Kirkland, Quebec H9J 2X8 (514) 697-4232</p> <p>IN FRANCE Hewlett-Packard France F-91947 Les Ulis Cedex Orsay (6) 907-78-25</p> <p>IN GERMAN FEDERAL REPUBLIC Hewlett-Packard GmbH Vertriebszentrale Frankfurt Berner Strasse 117 Postfach 560 140 D-6000 Frankfurt 56 (0611) 50-04-1</p> <p>IN GREAT BRITAIN Hewlett-Packard Ltd. King Street Lane Winnersh, Wokingham Berkshire RG11 5AR 0734 784774</p> <p>IN OTHER EUROPEAN COUNTRIES Hewlett-Packard (Schweiz) AG Allmend 2 CH-8967 Widen (Zurich) (0041) 57 31 21 11</p>
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Table 1-4. HP Sales and Service Offices (2 of 2)

<p>IN JAPAN Yokogawa-Hewlett-Packard Ltd. 29-21 Takaido-Higashi, 3 Chome Suginami-ku Tokyo 168 (03) 331-6111</p> <p>IN PEOPLE'S REPUBLIC OF CHINA China Hewlett-Packard, Ltd. P.O. Box 9610, Beijing 4th Floor, 2nd Watch Factory Main Bldg. Shuang Yu Shu, Bei San Huan Rd. Beijing 28-0567</p> <p>IN SINGAPORE Hewlett-Packard Singapore Pte. Ltd. #08-00 Inchcape House 450-2 Alexandra Road Alexandra P.O. Box 58 Singapore, 9115 4731788</p>	<p>IN TAIWAN Hewlett-Packard Taiwan 8th Floor, Hewlett-Packard Building 337 Fu Hsing North Road Taipei (02) 712-0404</p> <p>IN ALL OTHER LOCATIONS Hewlett-Packard Inter-Americas 3200 Hillview Avenue Palo Alto, California 94304</p>
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NOTES

Chapter 2

INSTALLATION

Introduction

This chapter provides information about installing a preselector module into an HP 70000 Modular Spectrum Analyzer mainframe. This installation information is general in nature. For more detailed spectrum analyzer configuration and HP-MSIB addressing, refer to the Installation and Verification Manual for the local oscillator.

PREPARATION FOR USE

When properly installed, the module obtains both power and interface bus control through its rear-panel multiple-pin connector. The HP 70600A and 70601A Preselectors should always be placed immediately to the right-hand side of the RF module used in the system.

NOTE

Use only the specified semi-rigid cable to connect the RF OUTPUT of the RF module to the preselector RF INPUT.

Cable part numbers are listed in table 1-1. Failure to use the correct semi-rigid cable will degrade system-level performance.

Addressing

HP 70000 Modular Spectrum Analyzers have HP-IB access through the local oscillator module of the analyzer. The local oscillator uses HP-MSIB to communicate with the preselector modules, requiring that the preselectors have HP-MSIB addresses assigned. Preselectors are not accessible via HP-IB.

The address of either preselector is preset at the factory to row 5, column 18. Figure 2-1 illustrates the preselector address on the address map. Normally the preselector address does not need changing; however, if the addresses of other factory-preset modules have been changed, the preselector address may also need changing.

Changing the HP-MSIB address requires an understanding of HP-MSIB addressing rules. For information about determining and assigning HP-MSIB addresses, refer to the Installation and Verification Manual of the local oscillator.

SYSTEM COMPONENTS:

- HP 70001A MAINFRAME
- HP 70205A GRAPHICS DISPLAY
- HP 70900A LOCAL OSCILLATOR
- HP 70902A IF SECTION
- HP 70905B RF SECTION
- HP 70600A PRESELECTOR

THE HP 70001A MAINFRAME DOES NOT HAVE AN HP-MSIB ADDRESS. THE USUAL ADDRESS FOR THE PRESELECTOR IS ROW 5 COLUMN 18.

ADDRESSING EXAMPLE

7				
6				
5		70600A PRESEL		
4		70905B RF SECT		
3				
2				
1		70902A IF SECT		
0		70900A LO/CTLR HP-1B1B		
	17	18	19	20

COLUMN

Figure 2-1. Typical Address Map

SETTING HP-MSIB ADDRESS SWITCH

If the address of the module needs changing, follow the steps below:

1. Find the address switches located on the left-hand side of the module. See figure 2-2 for an example of address switches.
2. Set the three switches labeled "row" to the binary value of the HP-MSIB address row number.
3. Set the five switches labeled "column" to the binary value of the HP-MSIB address column number.



Figure 2-2. Module Address Switch

MODULE INSTALLATION

Follow the steps below to install the module into the mainframe.

1. Set the mainframe line switch to OFF. See figure 2-3.
2. Open the mainframe front-panel door and slide the module into the mainframe. Preselector modules should be placed to the right-hand side of the RF module in the mainframe.
3. Press against the module front panel while tightening the hex-nut latch with an 8 mm hex-ball driver.
4. Close the front-panel door.

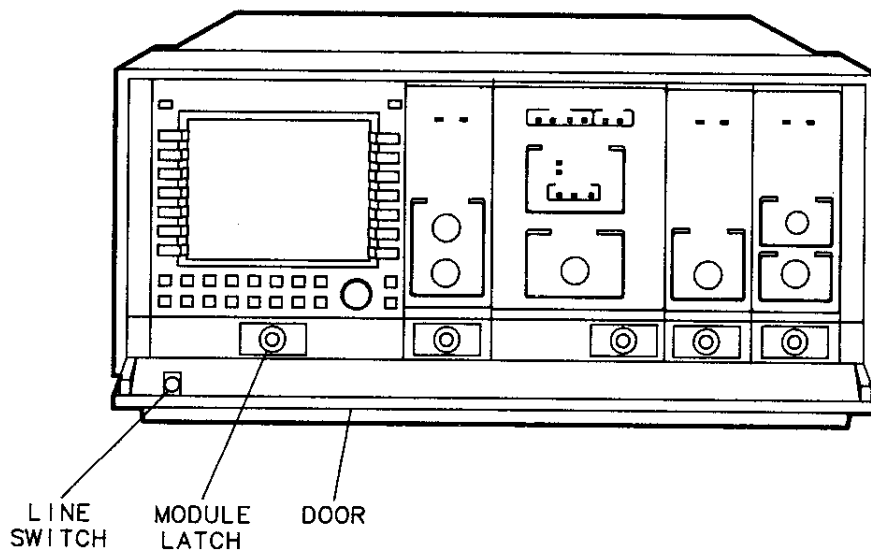


Figure 2-3. Module Installation

Cabling

With the preselector located to the right-hand side of the RF module in the mainframe, connect the correct semi-rigid cable to the RF OUTPUT from the preselector front panel to the RF INPUT of the RF module. Next, connect the rear-panel cables for the HP 71201A (standard or Option 001) Preselected Microwave Spectrum Analyzer. See figure 2-4. Notice the TUNE SPAN INPUT connection from the TUNE SPAN output of the local oscillator module. Cables that are longer than those shipped with system modules may be ordered from an HP Sales and Service Office if needed. Refer to the HP 70900A Local Oscillator Installation and Verification manual for cable part numbers.

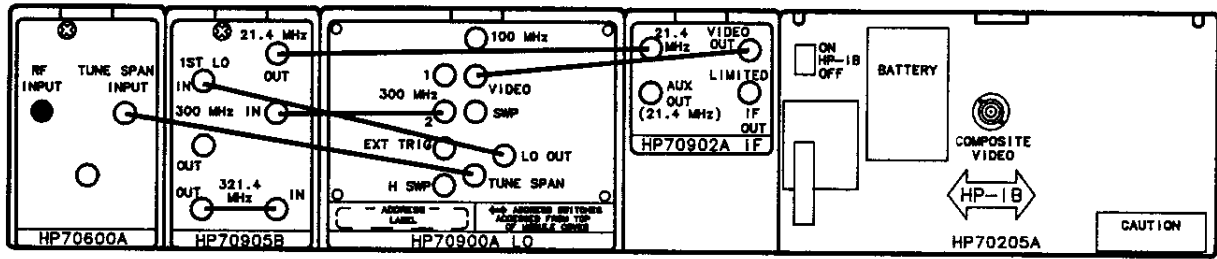


Figure 2-4. Rear-Panel Cable Connections

Chapter 3

SPECIFICATIONS

Introduction

The HP 70600A and 70601A Preselectors are slave elements to HP 70000 Modular Spectrum Analyzers and influence many of the system specifications. Only the measurement-related module characteristics for the preselectors are given below. Refer to the Installation and Verification Manual of the local oscillator for system-level specifications.

INPUTS AND OUTPUTS

RF Input

Frequency (HP 70600A)	50 kHz to 22 GHz
Frequency (HP 70601A)	50 kHz to 26.5 GHz
Impedance (characteristic)	50Ω
Connector (HP 70600A)	Type N (f)
Connector (HP 70601A)	APC 3.5 (m)

VSWR (≥ 10 dB attenuation)

Frequency	VSWR (characteristic)
0 to 12.7 GHz	1.9:1
12.5 to 22 GHz/26.5 GHz	2.2:1

RF Output

Impedance (characteristic)	50Ω
HP 70600A Connector	SMA (f)
HP 70601A Connector	K-connector (f) (SMA compatible)

Tune Span Input

Impedance (characteristic)	1MΩ
Sensitivity referred to 1st LO frequency (characteristic)	1.5 V/GHz
Connector	SMB (m)

General

Temperature

operation 0°C to +55°C
 storage -40°C to +75°C

Humidity

operation 0 to 95% relative humidity at +40°C

EMI

Conducted and radiated interference is in compliance with CISPR publication 11 (1975) and Messemphaenger-Postverfuegung 526/527/79 (Kennzeichnung Mit F-Nummer/Funkshutzzeichen). Radiated interference is in compliance with MIL-STD 461B, Part 7, RE02.

Warm-up time

one hour warm-up from cold start 0°C to +55°C

Weight (*characteristic*)

. 2.7 kg (6.0 lb.)

Dimensions

. 1/8-width module

Chapter 4

VERIFICATION

This chapter normally contains performance verification tests which check the electrical performance of the module against its specifications. Since there are no preselector module specifications, no performance verification tests are required. In system configuration, however, performance specifications are provided and tested.

NOTES

Chapter 5

TROUBLESHOOTING

Introduction

This chapter provides information on the front-panel STATUS ERR (error) indicator LED and error messages produced by the preselector module. Refer to the preselectors' Technical Reference for component-level troubleshooting and service.

Status Error Indicator

If the STATUS ERR indicator LED located on the front panel of the module flashes at a 1 Hz rate, the module cannot communicate on the HP-MSIB. The module is probably faulty. If the ERR indicator LEDs of more than one spectrum-analyzer module flash at a 1 Hz rate, refer to the Installation and Verification Manual of the local oscillator.

NOTE

It is possible, but not probable, that a module may disrupt all HP-MSIB communication without its own error indicator LED flashing.

Error Messages

Spectrum-analyzer error messages generated by a preselector are listed in this chapter. The messages are grouped by functional category; each category has its own series of numbers. Refer to the Installation and Verification Manual of the local oscillator for a complete listing of all system error messages.

OPERATING ERRORS (2000–2999)

Operating errors are generated if the spectrum analyzer is used incorrectly. This usually occurs during remote operation. Refer to the spectrum analyzer's Operating Manual and Programming Manual for information on both manual and remote spectrum analyzer operations.

2001 Illegal Command (Illegal cmd)

This is a user-generated system protocol error.

2002 Illegal Parameter

This is a user-generated system protocol error.

2006 Parameter Out of Range (Parm out of range)

This is a user-generated system protocol error.

2009 Protocol error

This is a user-generated system protocol error.

HARDWARE-WARNING MESSAGES (6000–6999)

Hardware-warning messages indicate that module hardware may be broken. The spectrum analyzer can still make measurements, but the accuracy of the measurement cannot be guaranteed.

6000 EAROM unprotected

The memory-enable write switch is not in the protect position. This switch is located on the A12 YTF Driver board assembly.

HARDWARE-BROKEN MESSAGES (7000 – 7999)

Hardware-broken messages indicate that the module may have faulty hardware. The messages report the model number and HP-MSIB address of the faulty module along with the error message.

7000 ROM check error

The HP 70600A/70601A Preselectors failed one of the following: EAROM checksum, the internal CPU/ROM checksum, or the RAM read/write check test. ROM check is only activated during power-up or during module self-test.

7077 YTF drive error

This error is reported when the sweep-ready line is at TTL low at the beginning of a sweep or when the preselector is crossing bands. Refer to the troubleshooting chapter in the preselector Technical Reference for more information.

7078 Tune + Span error

This error results if the tune-span signal to the A12 YTF Driver board assembly is incorrect. Refer to the troubleshooting chapter in the preselector Technical Reference for more information.

7009 ROM#2 Check sum

This error results when there is a problem with the YTF Driver board assembly. Refer to the troubleshooting chapter in the preselector Technical Reference for more information.