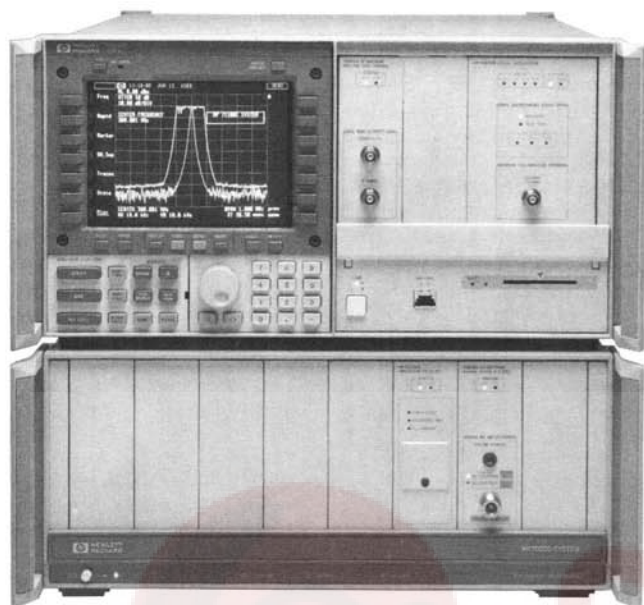


SIGNAL ANALYZERS

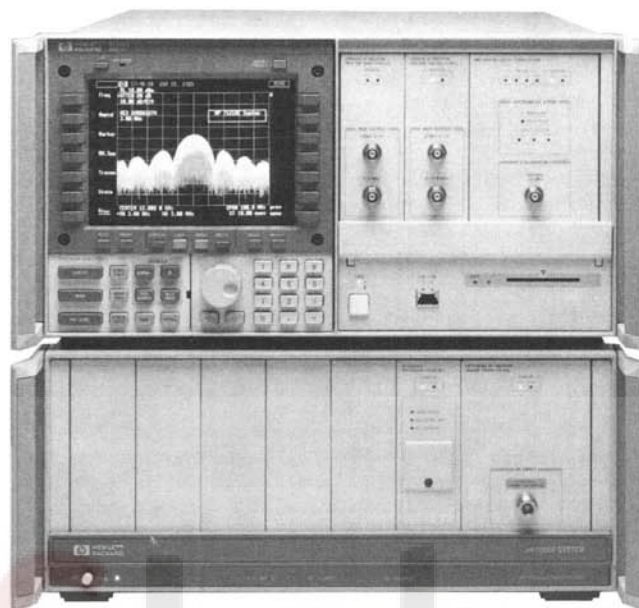
HP 70000 Modular Measurement System

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HP 71100C

DESIGNED FOR
HP-IB
SYSTEMS



HP 71210C

DESIGNED FOR
HP-IB
SYSTEMS



The HP 70000 modular measurement system has a new look for 1990. A new full-color display comes integrated with a 4-module-slot mainframe. Connected to a standard 8-slot mainframe, it gives you a modular system with enough room to add the measurement capabilities that your application demands. A new local oscillator module adds greater speed and lower phase noise. Now, making measurements is easier than ever before.

An Exciting New Family of Full-color Systems

Four new standard systems featuring the HP 70004A color display meet all of your high-performance spectrum analysis needs, from basic RF measurement through lightwave signal analysis. Each standard model has extra slots for system expansion, and a precision frequency reference is included.

But the modular measurement system is far more than just a spectrum analyzer. You can add a modular power meter, vector voltmeter, digitizer, preamplifier, signal generators, and much more. The new display makes it simple to build multiple windows, and you can switch control from one instrument to another in just two keystrokes.

Valuable New Features for Greater Efficiency

Other new ease-of-use features include a dedicated keypad for spectrum analyzer operation and a save-and-recall menu that allows you to store traces, states, limit lines, or custom programs in internal

memory, on a memory card, or directly to an external disk. You can continue making measurements while plotting with the new buffered output.

A color editor allows you to customize the display, choosing the colors that best enable you to easily distinguish markers from noise, or different limit lines and traces. You can change the color of traces, background, annotation, graticule lines, and other display elements. Up to four custom-designed color palettes can be saved. A set of special palettes includes one for applications using laser light that require protective eyewear.

The new system models in the HP 70000 modular family feature an HP-IL interface on the front panel of the display. Plug in a full keyboard and enter data for display titles, instrument commands, or short- to medium-length programs. An external monitor can be connected to the rear panel. The display has a built-in clock/ calendar that stamps prints and plots with the time and date. And data can be sent directly to a color printer using either high or low resolution.

Digital Persistence Benefits

New firmware adds digital persistence to the HP 70004A color display. Digital persistence simulates the variable intensities of an analog display without sacrificing the storage and plotting capabilities of a digital display. This allows you to extract information from complex modulated signals such as TV, pulsed RF, and FM.

SIGNAL ANALYZERS

HP 70000 Modular Measurement System (cont'd)



An Open, Modular System

The HP 70000 modular measurement system combines the latest technology with all the benefits of modularity. Its fully automated, modular architecture has been optimized for test instrumentation. Its rugged, reliable mainframes and display/control units combine with an expanding variety of modules from Hewlett-Packard, or you can design your own modular instrumentation. Hewlett-Packard has transferred the patent rights of the modular measurement system, including the modular system interface bus (MSIB), to the public domain. To aid the development of custom modules, HP offers design guides and part kits.

The elements required to configure a basic modular spectrum analyzer are a display, the HP 70900B local oscillator, an RF or external-mixer-interface module, and an IF section. For more demanding applications, HP offers the HP 71100C RF system, the HP 71200C and 71210C microwave systems, and the HP 71400C lightwave signal analyzer system. You can also configure a custom system; for example, in automated applications where space is at a premium, you can configure a system without a display. See pages 118 and 119 for configuration options.

Expanding Measurement Capabilities

A growing variety of new modules makes it easy to increase or modify your measurement capability. Make RF-voltage and phase measurements with the new HP 70138A vector voltmeter module. Improve sensitivity at microwave frequencies by adding the HP 70602A preamplifier module. Or add stimulus-response capabilities with the HP 70300A RF and 70301A microwave tracking generators.

The new HP 70320A and 70322A synthesized signal generators offer spectral purity at RF and microwave frequencies, and the HP 70325A agile signal generator gives frequency agility from 252 kHz to 2060 MHz. The HP 70700A digitizer module enhances spectrum analyzer time-domain measurements or acts as a stand-alone, programmable waveform recorder. Additional mainframes can be added as your system grows, with system control residing in a single display.

Custom Functions

Specific measurement routines can be created as downloadable programs (DLPs) and assigned to softkeys in the HP 70000 modular measurement system. These custom routines can then be used like any other system function.

Multisystem Control and Management

One modular system can include many instruments, with up to 255 modules. System architecture manages communication between

modules. Instrument control is handled over HP-IB when no display is present; adding a display allows you to manually control the instruments in the system. Up to four instruments can be viewed simultaneously on the display while all of the instruments are making measurements. This flexibility is unsurpassed in the microwave industry.

Product Support

Every HP 70000 modular measurement system now comes with a standard two-year warranty.

In addition, the HP 11990A software package provides complete electrical-test capability to data-sheet specifications and is available for any standard system.

A one-day, lab-intensive user's course demonstrates techniques for using the HP 70000 system most effectively. Topics cover connecting and configuring modules, becoming familiar with menus that control system operation, and unique features of the HP 70000 modular measurement system. For more information, call your local HP sales office listed on page 739.



Specifications

Complete specifications for the many HP 70000 systems and modules are available from your local HP sales office. See page 739 for locations.

Upgrade Kits

The new HP 70860A high-speed controller board approximately doubles the speed of any RF, microwave, or millimeter-wave spectrum analyzer containing the HP 70900A local oscillator. This board also has new firmware (sold separately as the HP 70861A RAM/ROM upgrade kit). These upgrades give your local oscillator the same firmware features found in the new HP 70900B, the master control unit of the HP 70000 C series modular spectrum analyzers.

Ordering Information

Standard Spectrum Analyzer Systems

HP 71100C RF Spectrum Analyzer, 100 Hz to 2.9 GHz **\$45,000**

Precise RF measurement. Features color display with color editor, hardkeys for spectrum analyzer functions, data transfer to disk or memory card, HP PaintJet dump. Seven module slots open. Capability to add scalar-analysis, CW-phase, and power-meter measurement.

10 Hz minimum resolution bandwidth, -108 dBc/Hz phase noise 10 kHz offset, -133 dBm sensitivity, +117 Hz/GHz/year frequency accuracy.

HP 71200C Microwave Spectrum Analyzer, 100 Hz to 22 or 26.5 GHz **\$50,000**

Preselection and 26.5 GHz frequency options. Features color display with color editor, hardkeys for spectrum analyzer functions, data transfer to disk or memory card, HP PaintJet printer dump. Supports HP 11970 harmonic and 11974 preselected millimeter mixers when used with interface module. Seven module slots open. Capability to add scalar-analysis, CW-phase, and power-meter measurement.

10 Hz minimum resolution bandwidth, -108 dBc/Hz phase noise @ 30 kHz offset, -133 dBm sensitivity, ±117 Hz/GHz/year frequency accuracy.

HP 71210C Microwave Spectrum Analyzer, 100 Hz to 22 GHz **\$78,000**

Highest performance. Fundamentally mixed front end. Continuously tracking preselector always peaked. Receiver-quality noise floor and -154 dBm sensitivity with HP 70602A preamplifier. Features color display with color editor, hardkeys for spectrum analyzer functions, data transfer to disk or memory cards, HP PaintJet printer dump. Supports HP 11970 harmonic and 11974 preselected millimeter mixers when used with interface module. Five module slots open. Capability to add scalar-analysis and power-meter measurement.

10 Hz minimum resolution bandwidth, -108 dBc/Hz phase noise @ 30 kHz offset, ±117 Hz/GHz/year frequency accuracy.

HP 71400C Lightwave Signal Analyzer, 1200 to 1600 nm **\$98,325**

First off-the-shelf analyzer to measure intensity modulation. Has bandwidth of 100 Hz to 22 GHz and all the spectrum-analyzer capabilities and features of the HP 71210C. Four module slots open. See page 314 for more details.

Basic Components

HP 70001A System Mainframe **\$6,600**

HP 70004A Color Display/Mainframe **\$9,750**

HP 70205A Monochrome Graphic Display Module **\$5,600**

HP 70206A Monochrome Graphic Display **\$8,140**

HP 70310A Precision Frequency Reference **\$4,980**

Opt 001 Add Distribution Amplifier **+\$1,560**

Opt 002 Delete Ovenized Oscillator **-\$2,450**

HP 70600A Preselector (2.7 GHz - 22 GHz) **\$10,550**

HP 70601A Preselector (2.7 GHz - 26.5 GHz) **\$12,850**

HP 70900B Local Oscillator **\$18,750**

HP 70902A IF Section (RBW 10 Hz - 300 kHz) **\$4,880**

HP 70903A IF Section (RBW 100 kHz - 3 MHz) **\$3,810**

HP 70904A RF Section (100 Hz - 2.9 GHz) **\$8,800**

HP 70905A RF Section (50 kHz - 22 GHz) **\$10,900**

HP 70905B RF Section (50 kHz - 22 GHz, no attenuator) **\$9,940**

HP 70906A RF Section (50 kHz - 26.5 GHz) **\$12,750**

HP 70906B RF Section (50 kHz - 26.5 GHz, no attenuator) **\$11,750**

HP 70907A External Mixer Interface **\$8,850**

HP 70908A RF Section (100 Hz - 22 GHz, fundamentally mixed) **\$36,600**

\$50,000

\$78,000



HP 70138A Vector Voltmeter

Other Components

HP 70100A Power Meter (100 kHz - 50 GHz) **\$2,900**

HP 70138A Vector Voltmeter (100 kHz - 2 GHz) **\$5,800**

HP 70300A RF Tracking Generator (20 Hz - 2.9 GHz) **\$11,950**

HP 70301A Microwave Tracking Generator (10 MHz - 18 GHz) **\$25,000**

HP 70320A Synthesized Signal Generator (252 Hz - 2,060 MHz) **\$17,000**

HP 70322A Synthesized Signal Generator (100 kHz - 4.2 GHz) **\$35,000**

HP 70325A Agile Signal Generator (252 kHz - 2,060 MHz) **\$32,000**

HP 70591A 1/8-width Module Part Kit **\$765**

HP 70592A 2/8-width Module Part Kit **\$815**

HP 70593A 3/8-width Module Part Kit **\$1,430**

HP 70594A 4/8-width Module Part Kit **\$2,500**

HP 70595A Module Development Design Guides **\$600**

HP 70596A Module Communication Design Guides **\$600**

HP 70620A Preamplifier (2 - 22 GHz) **\$10,700**

HP 70700A Digitizer **\$7,800**

SIGNAL ANALYZERS

HP 70000 Modular Measurement System (cont'd)

HP 70000 MODULAR MEASUREMENT SYSTEM

Configuration Guide

1 Choose Base System		2 <input checked="" type="checkbox"/> Check desired capabilities													
		FRONT ENDS				FREQUENCY ACCURACY				IF BANDWIDTH					
		Module Slots Available													
		2.9 GHz	22 GHz	26.5 GHz	Preselection	Ext. Mixer Interface to > 110 GHz	Lightwave 1200 - 1800 nm	±13 kHz/GHz (V)	±117 Hz/GHz (W)	Distribution Amplifier	External Reference (Delete Option)	10 Hz - 300 kHz	100 kHz - 3 MHz	Delete 10 Hz - 300 kHz	Delete 100 kHz - 3 MHz
Module/ Mainframe Icons			or	+	+				Internal	Internal					
Module Slots Used			0	+1	+1	+1	-1		0	0		+1	-1	-1	-1
RF Spectrum Analyzer HP 71100C \$45,000	7														
Microwave Spectrum Analyzer HP 71200C \$50,000	7														
High Sensitivity Microwave Spectrum Analyzer HP 71210C \$78,000	5														
Lightwave Signal Analyzer HP 71400C \$98,325	4														
HP model numbers, system options, and prices		70904A	70905A or 70908A	#001 26.5GHz (70906A) \$1,850	#002 Preselect (70905B 70600A) \$8,000	70907A	70810A	#110 Deletes 70310A \$2,500	70310A	#121 70310A (option 001) \$1,500	#122 70310A (option 002) \$2,450	70902A	70903A	#006 Deletes 70902A \$4,800	#007 Deletes 70903A \$7,800

Standard in Base System

Selectable Option

Not Available

Your system will come fully configured.
If you want any modules shipped separately, please make note on order form.

Example 1:

1 Choose base system	3 Add mainframe?
RF Spectrum Analyzer	Model number Module count
	HP 71100C +2
	HP 70300A +2
	HP 70138A +2
	HP 70100A +1
	+ Sensors
2 <input checked="" type="checkbox"/> Check desired capabilities	2 module slots are available, additional mainframe not required

HP 70000 MODULAR MEASUREMENT SYSTEM Configuration Guide

② <input checked="" type="checkbox"/> Check desired capabilities												③ Add mainframe ?*	
TRACKING GENERATORS			TEST AND MEASUREMENT CAPABILITIES						MONOCHROME DISPLAYS		Optional Module Slots Used		MAINFRAME
100 Hz - 2.0 GHz	2.7 GHz - 18 GHz	Vector Voltmeter CW Mag & Phase	Power Meter	Digitizer	2-22GHz Preamp/Filter	Synthesized Sig. Gen. 252 kHz-2060 MHz	Synthesized Sig. Gen. 100 MHz-4.2 GHz	Agile Sig. Gen. 252 kHz-2060 MHz	5.5 Inch Display Module	8 Inch Display Full Rack			
+ <input type="checkbox"/>	+ <input type="checkbox"/>	+ <input type="checkbox"/>	+ <input type="checkbox"/>	+ <input type="checkbox"/>	+ <input type="checkbox"/>	Full Rack		+ <input type="checkbox"/>	+ <input type="checkbox"/>	Full Rack	+/-		
+2	+3	+2	+1	+1	+1				+7	+4		-8	+8
	Preselection Recommended												
70300A	70301A	70138A	70100A	70700A	70620A	70320A	70322A	70325A	#205 Substitute 70205A for 70004A	#206 Substitute 70206A for 70004A		70001A	#201
\$11,950	\$25,000	\$5,800	\$2,900	\$7,800	\$10,700	\$17,000	\$35,000	\$32,000	- \$4,150	- \$1,600		\$6,600	- \$3,500

* Module Slots Used must be ≤ Module Slots Available. If not, add a mainframe.

Only count modules checked (✓) as part of Optional Module Slots Used.

Example 2:

① Choose base system	③ Add mainframe?	
Lightwave Signal Analyzer	Model numbers	Module count
② <input checked="" type="checkbox"/> Check desired capabilities	HP 71400A	Module Slots Available = 4
100 Hz-18 GHz	HP 70300A	+2 } 5 Optional Module
Tracking Generators	HP 70301A	+3 } Slots Used
	Add mainframe or delete capability.	