

HP 71910A  
HP 71910P



HP 71910A and 71910A Option 11 configurations

### HP 71910A and HP 71910P Receiver

#### Modular Receiver for Surveillance and Signal Monitoring

The HP 71910A/P is a receiver in the MMS format for monitoring signals from 100 Hz to 26.5 GHz. The receiver provides cost-effective combination search and wide-bandwidth collection capabilities for surveillance and signal monitoring of satellite, digital radio and radar/EW transmissions.

The wide-bandwidth receiver consists of the HP 71209A/P Option 001 spectrum analyzer plus the HP 70911A ultra-wide bandwidth IF module. System options include a preamplifier module for enhanced noise figure and smaller-size, single-mainframe configurations.

#### Search and Collection Modes of Operation

The HP 71910A/P receiver has two modes of operation: search and collection. To search for signals, the receiver relies on its fast spectrum analyzer tuning. It sweeps over user-specified spans up to 26.5 GHz wide using bandwidths up to 3 MHz. Wide dynamic range ensures that signals of various amplitudes can be quickly identified.

Once a signal is located, the receiver is fixed-tuned and the wide IF bandwidths in the HP 70911A IF module are used for signal collection. The HP 70911A provides IF bandwidths up to 100 MHz (in 10% increments) and up to 70 dB IF step gain. A linear IF signal path provides good signal fidelity with standard outputs of 321.4 MHz IF and linear video. Optional outputs include 70 and 140 MHz IF, analog I/Q and demodulated FM.



HP 71910A and HP 89410 VSA

#### Pulse Shape Characterization

Traditional shape measurements of pulsed microwave signals using a spectrum analyzer are significantly enhanced by the 100 MHz bandwidth. Using an oscilloscope connected to the video output, pulse rise and fall times of microwave signals are easily measured to 7 ns.

#### I/Q Signal Identification

The optional analog I/Q demodulator provides I and Q outputs which will produce a constellation display on an oscilloscope when the HP 71910A/P is tuned to a suitable digitally modulated signal. Sub-Hz tuning (minimum of 1 Hz resolution on-screen) allows ultrafine adjustments to compensate for phase offsets when it is not possible to phase-lock the receiver to the source, such as in off-the-air monitoring. By stopping the spinning caused by a non-phaselocked system, modulation formats are easily identified.



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When more thorough analysis is required, the I and Q outputs can be connected to a dual-channel vector signal analyzer (VSA). This configuration can provide full-signal demodulation of microwave signals with double the bandwidth normally provided by the VSA alone.

#### Digital Demodulation and Vector Signal Analysis

Add high performance digital demodulation and vector signal analysis capability by combining the HP 71910A/P and HP 89410A VSA. Measurements such as error vector magnitude (EVM) along with constellation, eye diagram and time domain analysis as well as group delay, AM to PM and phase versus drive, for example, can be made on microwave communication signals.

#### System Specification Summary

**Frequency Range:** 100 Hz to 26.5 GHz (110 GHz with external mixers)

**Noise Figure at 12 GHz:** 32 dB (13 dB with preamplifier module)

**TOI at 12 GHz:** +2.0 dBm (without preamplifier module)

**Tuning Resolution:** 1 Hz

**LO Phase Noise at 6 GHz:** -108 dBc/Hz at 10 kHz offset

**IF Bandwidths:** 10 Hz to 100 MHz (continuously variable in 10% increments in most cases)

**Spectrum Analyzer RBW:** 10 Hz to 3 MHz

**Receiver IF Bandwidth:** 10 MHz to 100 MHz

**IF Filter Type:** 5-pole, synchronously tuned

**Optional Filter Type:** 6-pole, Chebyshev channel filters

**IF Step Gain:** 70 dB (in 1 dB steps)

#### Outputs

##### 321.4 MHz IF

**Bandwidth:** 10 MHz to 100 MHz (preselector bypass)

**Bandwidth:** > 36 MHz for 2.7 to 26.5 GHz RF path (preselector ON)

**Bandwidth:** > 48 MHz for 100 Hz to 2.9 GHz RF path

##### Video:

AM, FM (optional), pulse (bandwidth same as 321.4 MHz IF)

**Optional 70 MHz IF** (bandwidth  $\geq$  40 MHz)

**Optional 140 MHz IF** (bandwidth  $\geq$  70 MHz)

**Optional Analog I/Q** (I bandwidth  $\geq$  50 MHz; Q bandwidth  $\geq$  50 MHz)

#### Key Literature

MMS Catalog, p/n 5965-2818E

HP 71910A/P Wide Bandwidth Receiver, p/n 5965-7916E

HP 89410A Vector Signal Analyzer, p/n 5964-3586E

#### Ordering Information

**HP 71910A** Wide Bandwidth Receiver

**HP 71910P** Wide Bandwidth Receiver

**Opt 001** 70 MHz IF Output

**Opt 002** 140 MHz IF Output

**Opt 004** Analog I/Q Output

**Opt 005** FM Output

**Opt 007** Channel Filters

**Opt 011** Delete Display, NB IFs, PFR (71910A only)

**Opt 016** HP 7060B Option 001 Preamplifier Module

**HP 70911A** Ultra-Wide Bandwidth IF Module