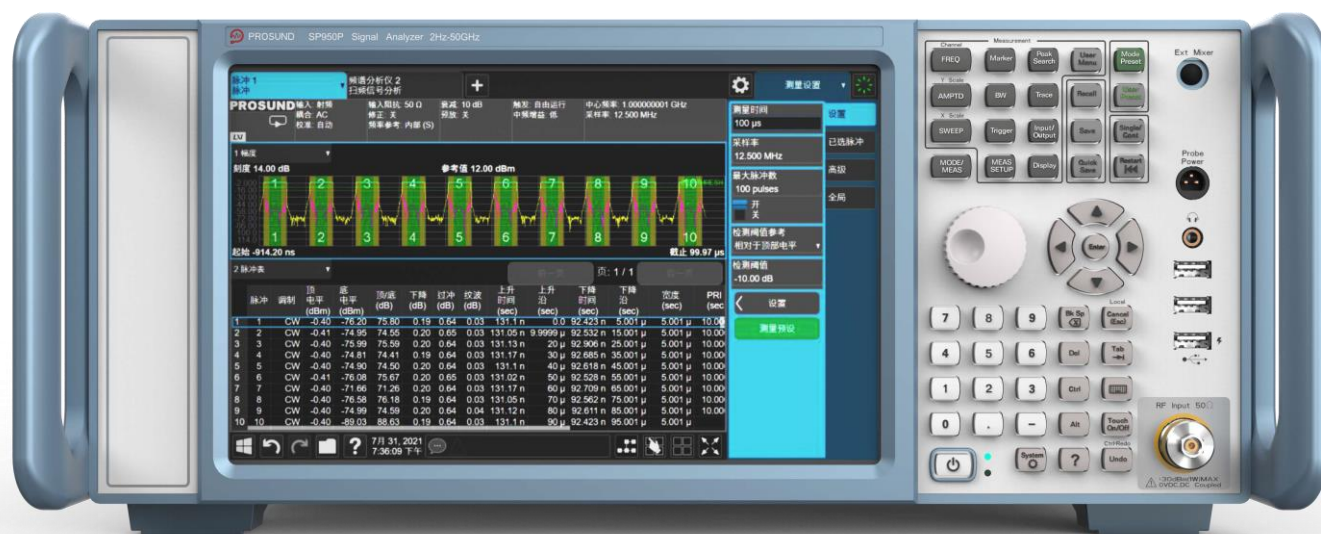# SP900P Series
High Performance Signal Analyzers

Configuration Guide

PROSUND 普尚

Included in Base Product

Standard options and accessories come with the base model at no additional charge and do not need to be ordered.

They include:

- Spectrum analyzer measurement application
- Eight-core, high-performance processor, 8 GB RAM, Removable solid-state drive
- Mechanical attenuator
- 25 MHz analysis bandwidth
- Digital processor with 2 GB capture memory
- Fast sweep capability
- LO/IM nulling
- Low frequency extension
- Noise floor extension
- Precision frequency reference
- Microsoft Windows 10 operating system
- Real-time link for real-time IQ data streaming up to 40 MHz
- User guides
- Power cord

Configure your High performance Signal Analyzer

This step-by-step process will help you configure your new high performance signal analyzer. Tailor the performance to meet your requirements.

Step 1. Select maximum frequency range (required option)

Description	Option number	Additional information
Frequency range, 2 Hz to 3.6 GHz	SP900P-503	
Frequency range, 2 Hz to 13.6 GHz	SP900P-513	
Frequency range, 2 Hz to 26.5 GHz	SP900P-526	
Frequency range, 2 Hz to 50 GHz	SP900P-550	

Step 2. Add a preamplifier

Preamplifiers improve the noise floor for low-level signal detection

Description	Option number	Additional information
Preamplifier, 100 kHz to 3.6 GHz	SP900P-P03	Compatible with frequency range options: SP900P-503
Preamplifier, 100 kHz to 13.6 GHz	SP900P-P13	Compatible with frequency range options: SP900P-513
Preamplifier, 100 kHz to 26.5 GHz	SP900P-P26	Compatible with frequency range options: SP900P-526
Preamplifier, 100 kHz to 50 GHz	SP900P-P50	Compatible with frequency range option SP900P-550

Step 3. Choose an attenuator

Description	Option number	Additional information
Mechanical attenuator	Standard	2 dB steps, 0 to 70 dB; licensed as SP900-001
Electronic attenuator up to 3.6 GHz	SP900-003	Add in addition to the mechanical attenuator; 1 dB steps, 0 to 24 dB

Step 4. Choose analysis bandwidth

Description	Option number	Additional information
25 MHz analysis bandwidth	Standard	Licensed as Option SP900-B25
40 MHz analysis bandwidth	SP900-B40	Extends the analysis bandwidth from 25 to 40 MHz (Option SP900-004 required for measurements > 3.6 GHz)
85 MHz analysis bandwidth	SP900-B85	Extends the analysis bandwidth from 25 to 85 MHz (Option SP900-004 required for measurements > 3.6 GHz)
160 MHz analysis bandwidth	SP900-B1X	Extends analysis bandwidth from 25 to 160 MHz (Option SP900-004 required for measurements > 3.6 GHz and Require Option SP900-B1Y)
255 MHz analysis bandwidth	SP900-B2X	Extends analysis bandwidth from 25 to 255 MHz (Not compatible with frequency range Option SP900P-503) (Requires Options SP900P-004 and SP900P-033)
510 MHz analysis bandwidth	SP900-B5X	Extends analysis bandwidth from 25 to 510 MHz (Not compatible with frequency range Option SP900P-503) (Requires Options SP900P-004 and SP900P-033)
Microwave preselector bypass	SP900-004	Bypass the microwave preselector for wider bandwidth IF

Step 5. Choose performance options

Description	Option number	Additional information
Digital processor with 2 GB capture memory	Standard	Licensed as SP900-005
Digital processor with 4 GB capture memory	Standard	Standard in instruments with serial number prefixes When Option B85, B1X, B2X or B5X is installed. licensed as SP900-033
Fast sweep capability	Standard	Improves sweep speed at swept-tune mode; licensed as SP900-027
LO/IM nulling	Standard	Minimizes the LO feed-thru and intermodulation distortion; licensed as SP900-028
Noise floor extension	Standard	Improves displayed average noise level (DANL), second-generation algorithm (instrument alignment process); licensed as SP900-008
Precision frequency reference	Standard	Aging rate: $\pm 1 \times 10^{-7}$/year; licensed as SP900-002
Enhanced phase noise, DDS LO	SP900-030	Improves phase noise; not compatible with Option B85 or B1X or frequency range Option 503; requires Option 004 or 029
Low noise path	SP900-029	Improves sensitivity (DANL) in frequency bands above 3.6 GHz
Full bypass path	SP900-034	Bypass the microwave preselector and enable the low noise path for improved sensitivity above 3.6 GHz; requires Option 029, 004 and B2X or B5X; not compatible with frequency range Option 503
External mixing	SP900-EXM	Provides external mixing with Prosund and third-party mixers; single port for LO out and IF in (SMA female)
APC 3.5 mm connector	SP900-C35	3.5 mm connector on 26.5 GHz signal analyzer (compatible with Option 526 only)
I/Q baseband inputs, analog	SP900-BBA	Single-ended/differential, 50 Ω/1 M Ω impedance (compatible with frequency range Options 503 and 526; not compatible with bandwidth Option B5X)
Audio input and digitizer	SP900-107	Specifically for the measuring receiver and/or avionics measurements, requires measuring receiver app SP991EM0E (for general-purpose audio measurements) and/or avionics app SP992EM0E (for specialized baseband avionics measurements only); 100 kΩ input impedance; not compatible with Options B5X or BBA.

Step 6. Add real-time spectrum analysis

Description	Option number	Additional information
Real-time analysis up to maximum available BW, basic detection	SP900-011	Includes frequency mask trigger (FMT) and time qualified trigger (TQT); minimum 17.3 µs signal duration for 100% probability of intercept (POI); requires Option B1X, B2X, or B5X which determines maximum real-time bandwidth
Real-time analysis up to maximum available BW, optimum detection	SP900-012	Includes frequency mask trigger; minimum 3.57 µs signal duration for 100% probability of intercept (POI); requires bandwidth Option B1X, B2X, or B5X which determines the maximum real-time BW; node-locked license only
Frequency mask trigger, basic detection	SP900-015	Enables frequency mask triggering with SP967EM0E pulse application and SP1000 VSA software to detect signals as short as 15 µs duration; included in SP900-011 requires bandwidth options B1X, B2X, or B5X
Frequency mask trigger, optimum detection	SP900-016	Enables frequency mask triggering with SP967EM0E pulse application and SP1000 VSA software to detect signals as short as 3.6 µs duration; included in SP900-012 requires bandwidth options B1X, B2X, or B5X
Duplex IF RTSA	SP900-031	Enables control of 2x255 MHz DIF for optimized frequency and time domain analysis in RTSA mode; Requires option B5X and SP900-011 or SP900-012
Real-time I/Q data streaming	SP900-014	Stream gap-free 16 bit I/Q data up to 255 MHz bandwidth for offline analysis. High speed LVDS connector allows connection to third-party X-COM Systems data recorder IQC5255B. Requires SP900-011 or SP900-012

Step 7. Add instrument features

Description	Option number	Additional information
Enhanced display package	SP900-017	Includes spectrogram, trace zoom, and zone span
Basic EMI precompliance	SP900-018	Perform basic EMI precompliance measurements with detectors and bandwidths; tune and listen, and measure at marker are also available
Time domain scan	SP900-009	Improves scan speed for EMC pre-compliance tests; requires SP941EM0E EMI measurement application and SP900-005, or B40 (or wider bandwidth option)
External source control	SP900-019	External source control for SP200 signal generators; supports external mixing; includes 3 BNC cables and 1 cross-over LAN cable
Fast power up to available maximum analysis bandwidth	SP900-007	Accelerates the power measurements such as ACPR; requires Option B40, B85, B1X, B2X, or B5X
Resolution bandwidth extended	SP900-010	Extends the maximum RBW in Zero Span; requires option B1X, B2X, or B5X

Step 8. Add security features

Description	Option number	Additional information
Exclude launch program	SP900-023	Prevents the launching of Windows programs from the instrument application
Prohibit saving results	SP900-024	Prevents instrument application from saving/recall of measurement results or user configurations to/from instrument's data storage

Step 9. Add rear panel output utilities

Description	Option number	Additional information
Second IF output	SP900-020	Wideband IF out; center frequency depends on IF path; output on Aux IF connector at rear panel
Arbitrary IF out	SP900-021	IF out 10 to 75 MHz (in 500 kHz steps); output on Aux IF connector at rear panel
Y-axis video out	SP900-022	Screen video (0–1-volt open circuit); log video and linear video
Aux log video out	SP900-032	Fast rise time video out; output on Aux IF connector
Real-time link	Standard	The LVDS connector allows PXA to connect to the X-COM data recorder for data streaming (up to 40 MHz BW) and baseband generator and channel emulator; licensed as SP900-013

Step 10. Choose measurement application or software and license type

Note: Prosund offers Node-locked license types for the measurement applications and instrument features, in 2 license terms: Perpetual or Subscription.

License types:

- **Node-locked**: Allows you to use the license on one instrument/computer at a time

License terms:

- **Perpetual**: License can be used in perpetuity. For perpetual license holders, a separate support contract is required to access Prosund electronic support and software updates
- **Subscription**: License is time limited to a defined period, such as 12-months. A valid support contract is included in the pricing for subscription licenses.

Description	Option number	Additional information
General purpose		
Spectrum analyzer and IQ analyzer	Standard	Traditional spectrum analysis plus many new and enhanced functions
Power Suite	SP9EMPSMB	Power measurements based on industry specifications
Analog demodulation	SP963EM0E	Adds one-button measurement for AM/FM/PM demodulation with metrics, tune and listen, and AF spectrum; supports audio output (output voltage proportional to frequency deviation). FM Stereo and RDS are included.
Phase noise	SP968EM0E	Adds one-button measurements for analyzing phase noise in frequency domain (log plot) and time domain (spot frequency), supports external mixing
Noise figure	SP969EM0E (requires preamplifier)	Adds one-button measurements for noise figure, gain, and related metrics; requires preamplifier to meet specifications; works with USB noise source, N400xA Series smart noise sources and 346 Series noise sources; supports U7227 USB external preamplifiers Includes the advanced NF measurement features including external LO control over GPIB/LAN/USB, multi-stage converter tests with system LO, and manual mode to simulate the legacy NF meter
Vector modulation analysis Digital Demodulation	SP954EM0E	Performs one-button flexible modulation analysis measurements with FSK, PSK, QAM, MSK, ASK, APSK, VSB etc. and poprular format preset
Vector modulation analysis Custom OFDM	SP954EM1E	Performs one-button custom OFDM modulation analysis measurement with user- defined settings or recalling SP1000 VSA or Signal Studio output files
Power amplifier measurement	SP955EM0E	Characterizes power amplifier (PA) with pre-distortion applied in RF and millimeter wave, with simple and integrated multi-touch user interface; supports ET (Envelop Tracking) with dual-channel VXG
Channel quality	SP956EM0E	Performs repeatable channel response measurements as group delay and other characteristics with multi-tone signals for wideband component testing
Pulse analysis	SP967EM0E	Characterize pulsed RF signals in the time domain, with phase frequency and statistical analysis of large pulse sets; enables fixed and variable length gated acquisition for capturing pulses of varying pulse width and PRI (requires 4 GB capture memory Option SP900-033)
EMI	SP941EM0E	Performs pre-compliance conducted and radiated emission measurements
Remote language compatibility	SP961EM0E	Adds capability to emulate HP/Agilent 8566/68 and 856xE/EC spectrum analyzers
SCPI command language compatibility	SP962EM0E	Adds capability to emulate the R&S FSP/FSU/FSL/FSV/FSW spectrum analyzers or ESU EMI receiver

Description	Option number	Additional information
Cellular communications		
GSM/EDGE/Evo	SP971EM0E	Standard-based, one-button GSM/EDGE/EDGE Evolution measurements
W-CDMA/HSPA+	SP973EM0E	Standard-based, one-button W-CDMA, HSPA and HSPA+ measurements
LTE/LTE-Advanced FDD	SP980EM0E	Standard-based, one-button LTE/LTE-Advanced FDD measurements
NB-IoT & eMTC FDD	SP980EM3E	Standard-based, one-button NB-IoT/eMTC measurements
LTE V2X	SP980EM4E	Standard-based, one-button LTE-V2X transmitter measurements
LTE/LTE-Advanced TDD	SP982EM0E	Standard-based, one-button LTE/LTE-Advanced TDD measurements
Multi-standard radio	SP983EM0E	Standard -based, one-button MSR measurements on any combination of LTE-FDD, W-CDMA/ HSPA/HSPA+, and GSM/EDGE/EDGE Evo signals
5G NR (New Radio)	SP985EM0E (requires Option B1X, B2X or B5X)	Standard-based, one-button 5G NR (New Radio) downlink and uplink measurements
Wireless connectivity		
WLAN 802.11a/b/g/j/p/n/af/ah	SP977EM0E	Standard-based, one-button 802.11 a/b/g/j/p/n/af/ah measurement
WLAN 802.11ac/ax	SP977EM1E	Standard-based, one-button 802.11ac/ax measurement
Bluetooth®	SP981EM0E	Standard-based, one-button *Bluetooth*® (BR/EDR, Low Energy 4.0/4.2 and *Bluetooth*® 5/5.1) measurements; supports Qualcomm Bluetooth High Speed Link as QBHSL
Short Range Comm and IoT	SP984EM0E	Standard-based, one-button LoRa CSS measurement, 802.15.4 for ZigBee measurement and G.9959 for Z-Wave measurement
Measuring receiver and avionics		
Measuring receiver	SP991EM0E	Provides metrology-grade accuracy for calibrating the signal generators and step attenuators
Avionics measurements	SP992EM0E	Verifies RF/baseband signals used for aircraft navigations including VOR (VHF Omnidirectional Range) and ILS (Instrument Landing System)

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