YSA-P400 SERIES HANDHELD/BENCHTOP REAL-TIME SPECTRUM ANALYZER

At a Glance

YSA-P400 Series is XGY's popular handheld/benchtop real-time spectrum analyzer that offers laboratory-grade RF performance in a portable form factor at an affordable price.

Ultra-wide frequency range from 9 kHz up to 40 GHz, remarkable dynamic range of -161 dBm/Hz and an analytical bandwidth of 100 MHz, the YSA-P400 guarantees precise and comprehensive signal detection.

It is perfect for various applications including wireless monitoring, interference hunting, radar testing, 5G network maintenance, EMC pre-compliance, scientific research, and education.

Ultra-Portable Design

- 1.5 kg lightweight
- 3 hours battery life
- External power bank supported

Easy to use

- 10.1-inch multi-touch screen
- Intuitive gesture control
- Compact handheld form factor

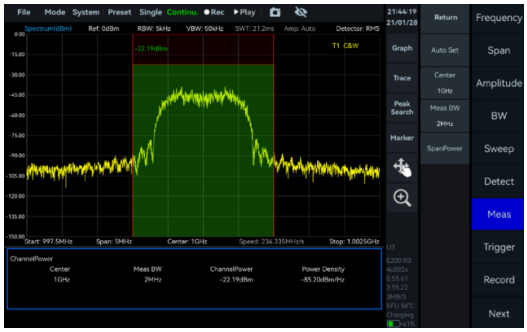
High performance

- Frequency range: 9 kHz to 40 GHz
- 1 GHz DANL: -161 dBm/Hz
- 1 GHz PN: -107 dBc/Hz@10kHz
- Analysis Bandwidth: up to 100 MHz

Advanced Analysis

- IQ streaming and analysis
- Real-time analysis
- Phase noise measurement
- Channel power/ACPR

Application Software Operation Overview



Standard Spectrum Analysis

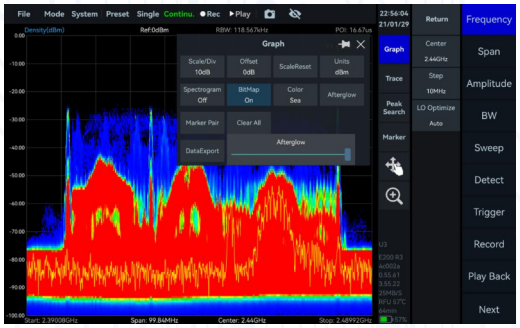
- Panoramic sweep and zoom
- Trace-based signal analysis
- Spectrogram (Waterfall) display
- Channel Power, OBW, ACPR
- IP3/IM3 measurement
- Signal recording capability

IQ Streaming

- Fixed LO IQ capture
- Time-domain signal recording
- IQ waveform & Spectrogram
- Power-time display
- AM/FM & Audio analysis
- Multi-channel DDC

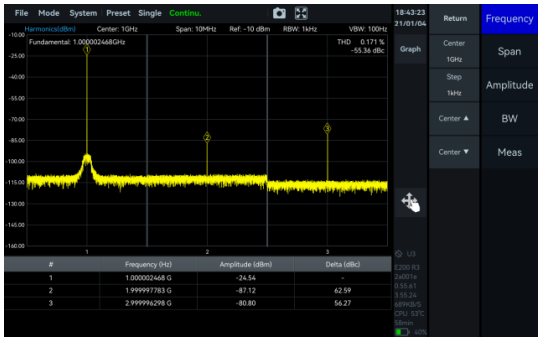
Power Detection Mode

- Fixed LO configuration
- Time-power analysis
- Power-time waveform & zoom
- Data recording & playback
- Pulse detection (optional)



Real-Time Analysis Mode

- Fixed LO IQ capture
- Transient & burst analysis
- Spectrum probability density
- Real-time spectrogram
- Real-time record & playback

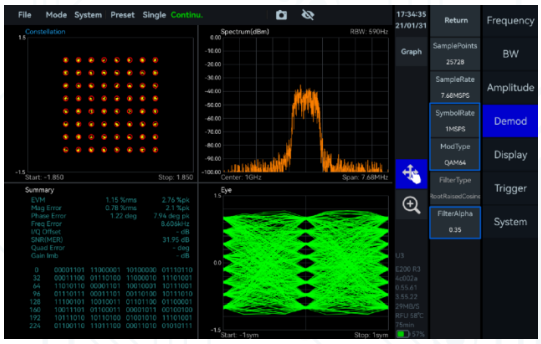


Harmonics

- Fundamental frequency analysis
- Harmonic distortion evaluation
- Non-linear characterization
- Harmonic spectrum diagram
- Detailed measurement table

Phase Noise Measurement Mode

- Automated measurement
- High-precision SSB spectrum
- Detailed data tables
- Phase stability evaluation
- Noise density analysis



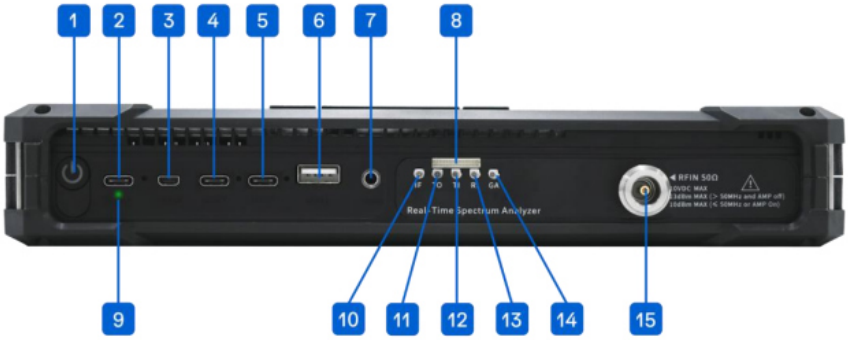
Digital Demodulation Mode (Opt)

- Signal quality assessment
- ASK/FSK/PSK/GMSK/QAM
- Constellation & Eye diagrams
- Bit table & data extraction
- Modulation performance analysis

GNSS module

- External GNSS module support
- USB-to-serial connection
- Virtual serial interface
- Configurable COM & Baud rate
- Real-time positioning display

Front panel interface description



Detailed information of external interface

No.	Interface	Description
1	Power	On/Off instrument
2	Charging	Instrument charging port, USB PD 20V 3.25A. Please connect the power supply according to the datasheet.
3	Micro HDMI	For extended display.
4	USB3	USB Interface Details:USB3 is a USB 3.0 interface. USB1 and USB2 are USB 2.0 interfaces. Used to connect external storage devices, USB keyboards, or mice. Can connect a driver-free Hub with an Ethernet port for remote PC control via network cable.
5	USB2	
6	USB1	
7	Audio Output	3.5mm headphone jack. Volume can be adjusted via the menu: "System" -> "Device" -> "Volume".
8	MUXIO	14 Pin misc interface
9	Charging Indicator Light	Green flash: Charging Green solid light: Fully charged
10	Analog IF Output	MMCX(F), maximum output power -25 dBm, output impedance 50 Ω.
11	Trigger Output	3.3V CMOS.
12	Trigger Input	3.3V CMOS, high impedance input.
13	Reference Clock Input	MMCX(F), amplitude 1.5Vpp, input impedance 330 Ω.Sine wave, square wave, and clipped sine wave are supported.
14	GNSS Antenna	MMCX(F), amplitude 1.5Vpp, input impedance 330 Ω.
15	RF Input	N(F) or 2.4 mm (M), input impedance 50 Ω.

Specifications

Category	Parameter / Condition	Specification
Frequency	Frequency Range	9 kHz - 40 GHz
	Reference Clock	Internal or External
	Frequency Accuracy	OCXO (std.), <1 ppm
	Aging & Temp. Stability	OCXO (std.), <1 ppm/year
Spectrum Purity	SSB Phase Noise (Carrier: 1 GHz)	1 kHz: -99 dBc/Hz 10 kHz: -107.5 dBc/Hz 100 kHz: -107.7 dBc/Hz 1 MHz: -122.7 dBc/Hz
	SSB Phase Noise (Carrier: 40 GHz)	1 kHz: -78.4 dBc/Hz 10 kHz: -85.7 dBc/Hz 100 kHz: -85.1 dBc/Hz 1 MHz: -100.8 dBc/Hz
	Image Rejection	9 kHz - 3 GHz: > 90 dBc (typ.) 3 GHz - 9.5 GHz: > 58 dBc (typ.)
	LO Related Spurious	<-65 dBc
Amplitude	Max. Input Power (CW)	+20 dBm (90 MHz-40 GHz, preamp off) +8 dBm (9 kHz-90 MHz or preamp on)
	Max. DC Voltage	± 10 VDC
	Display Range	DANL to 20 dBm (typ.)
	Amplitude Accuracy	± 2.0 dB (9 kHz - 9.5 GHz) ± 3.0 dB (9.5 GHz - 40 GHz)
	IF In-band Flatness	± 2.0 dB
	Reference Level (R.L.)	-50 dBm to 20 dBm (typ.)
	RF Preamplifiers	Automatic / Forcibly turn off
	VSWR	<2.0:1 (90 MHz - 16 GHz) <3.0:1 (16 GHz - 40 GHz)
Sensitivity (DANL)	Display Average Noise Level (RBW=10kHz)	Ref level: -20 / -50 dBm
	9 kHz	-134 / -145 dBm/Hz
	100 kHz - 88 MHz	-151 / -157 dBm/Hz
	88 MHz - 9.0 GHz	-148 / -154 dBm/Hz
	9.0 GHz - 19 GHz	-153 / -158 dBm/Hz
	19 GHz - 40 GHz	-146 / -147 dBm/Hz
Non-Linearity	IIP3 / IIP2 (Carrier: 1 GHz)	Ref 20dBm: 40.3 / 75.5 dBm Ref 0dBm: 27.4 / 45.3 dBm Ref -20dBm: 8.7 / 25.2 dBm
	IIP3 / IIP2 (Carrier: 40 GHz)	Ref 20dBm: 31.7 / 88.6 dBm Ref 0dBm: 10.3 / 86.1 dBm Ref -20dBm: 4.8 / 66.6 dBm
Inputs / Outputs	Power Supply	USB PD (20 V)
	Data Interfaces	USB3.0 Type-C × 1, USB2.0 Type-C × 1, USB2.0 Type-A × 1
	Video/Audio Interfaces	Micro HDMI × 1 (extended display), 3.5mm headphone port × 1
	RF Input	2.4 mm (Male), 50 Ω
	Reference Input	MMCX (F), ≥ 1.5 Vpp, ~300 Ω
	Reference Output	Integrated in MUXIO, 3.3 V CMOS, programmable on/off
	Ext. Trigger Input/Output	Integrated in MUXIO, 3.3 V CMOS (Input: high Z)
	Analog IF Output	MMCX (F), Max -25 dBm, 50 Ω, 307.2 MHz ± 50 MHz
General	Display	IPS LCD 1280 × 800, 10.1-inch multi-touch screen
	Storage	16 GB EMMC
	Power Consumption	Typical 25 W
	Size & Weight	260 x 179 x 46 mm, approx. 1.5 kg
	GNSS Synchronization	Internal GNSS (+/- 100 ns)
	Operating Temperature	0 - 50 °C (ambient)
	Storage Temperature	-20 - 70 °C (ambient)
	Included Accessories	Protective shell, power adapter, power cable, calibration certificate