

AV1431/1431A Handheld RF/Microwave Signal Generator

(10MHz~18GHz/250kHz~4GHz)



Product Overview

AV1431 Handheld Microwave Signal Generator and AV1431A Handheld RF Signal Generator are all provided with unified handheld case, which is highly integrated, compact, lightweight, and easy to carry. The signal generator provides Simplified Chinese/English menus and friendly interface, which make the operation easy to learn. The output signals of AV1431 and AV1431A respectively cover microwave and RF, with high frequency resolution, large dynamic range, and functions of step sweep and multiple modulations. It adopts two modes of power supply, and is excellent in power saving. The built-in high-capacity rechargeable lithium-ion battery supports long-time operation, which can meet the test requirements of most communication and radar countermeasures equipment during installation, calibration and field maintenance. The excellent cost performance makes the signal generator an ideal choice for test & analysis in fields like colleagues, civil communication etc..

Main Characteristics

- **Compact, lightweight, built-in battery, field operation with ease**
- **Friendly human-machine interface, Simplified Chinese/English menu, simple operation, easy to learn and use**
- **Built-in modulation signal generator**
- **Amplitude modulation, frequency modulation and pulse modulation**
- **Two sweep modes: List & Step**
- **Perfect self-diagnosis function and self-test of state**
- **LAN and USB interfaces, provide standard program control command and realize program control operation.**
- **Intelligent power management and power-saving mode, residual power indicator and low battery warning.**

Compact, lightweight, built-in battery, field operation with ease

With the same size, AV1431 and AV1431A are both compact and lightweight. The built-in high-capacity rechargeable lithium-ion battery is easy to replace. The high-capacity battery provides you the performance of desktop equipment and the multifunctional carrying bag brings the convenience of a handheld device, which is very suitable for field work.



Fig. 1: Easy to carry

Simplified Chinese/English operation interface, large TFT LCD

AV1431 and AV1431A all deploy large TFT LCDs to provide users panoramic view of current state. The default operation interface is Simplified Chinese, while English is also an option for convenience. The operation is simple and users can easily master the skills without special training.

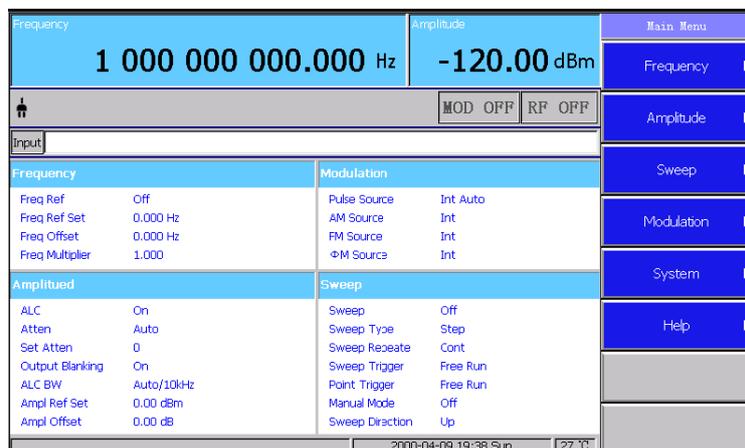


Fig. 2: Display interface

Excellent spectrum purity

In most frequency ranges, the harmonic and non-harmonic indexes of AV1431 can achieve below -40dBc. When the carrier is 4GHz and frequency offset is 20kHz, the SSB phase noise is -88dBc/Hz (typical). All above advantages make it convenient for the performance test and fault searching and other aspects of receivers in radar and communication equipment.

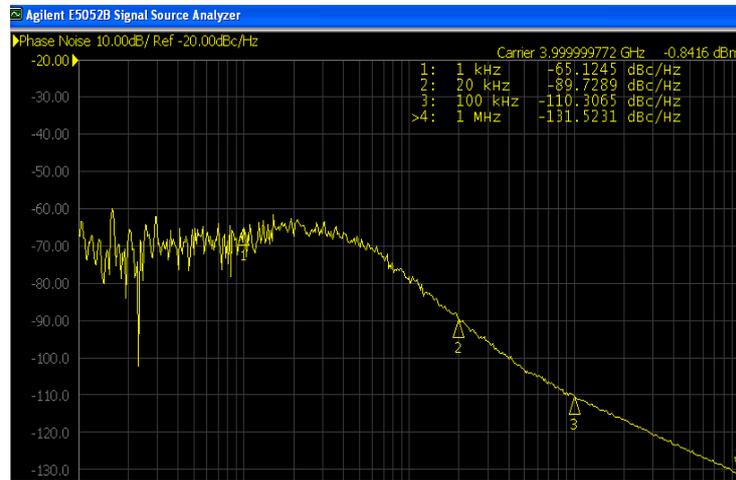


Fig. 3: Phase noise value when outputting 4GHz signal

High-performance pulse modulation

AV1431 and AV1431A are all designed with high-performance pulse modulation function. The modulation On/Off ratio is larger than 60dB, and the minimum pulse width is 100ns. It supports multiple triggering modes such as gating, external etc., which provide flexible and convenient solutions for simulation of radar pulse signal.

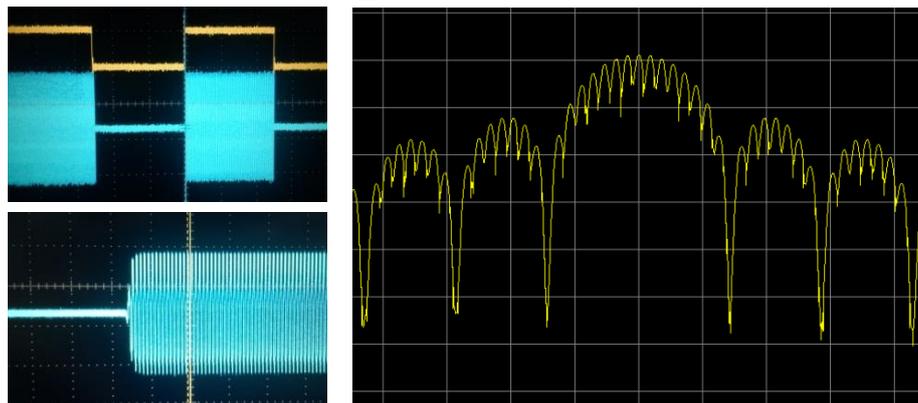


Fig.4: Pulse modulation time-domain & frequency-domain waveforms

Multiple interfaces

AV1431 and AV1431A provide USB and LAN interfaces and standard program control command to conveniently realize operation under remote program control. For user's convenience, interfaces of reference input/output, pulse input, monitoring output and synchronous output etc., are also provided.

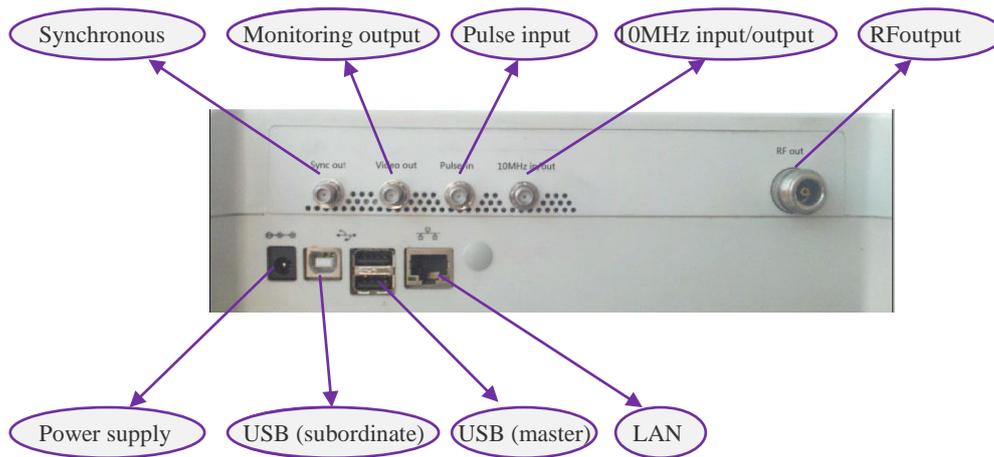


Fig.5: Multiple interfaces

Built-in rechargeable battery, easy to replace

AV1431 has a built-in high-capacity lithium-ion battery. When fully charged, the battery can support long-time work. When the condition does not allow recharging, the battery is also easy to replace. So, the signal generator is an ideal helper for field calibration and maintenance.

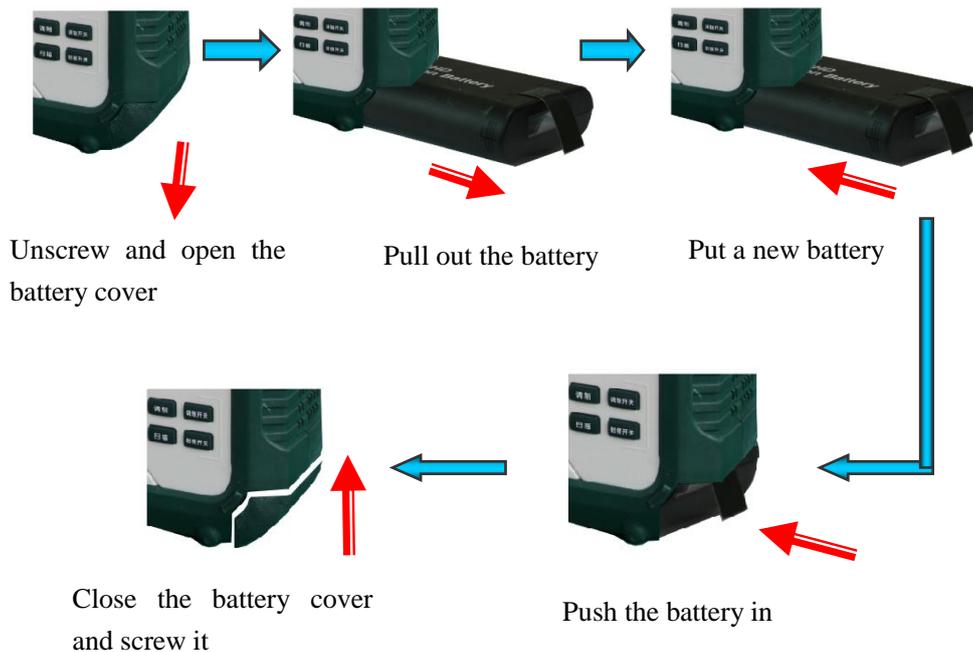


Fig.6: Battery replacement

Typical Applications

AV1431 has a wide output frequency range and a large dynamic range, which can directly generate amplitude modulation, frequency modulation and pulse modulation signals, and provide stimulus signals for various kinds of electronic equipment during the process of manufacturing, installation and calibration. It is applicable to the performance examination and fault detection &

location of the receivers in radar, communication and test systems. Its compact size is especially convenient for test applications.



Fig.7: Typical applications

Technical Specifications

Main Technical Specifications of the main unit

Model	AV1431	AV1431A
Frequency Range	10MHz~18GHz	250kHz~4GHz
Frequency Resolution	10Hz	1Hz
Reference Frequency	Nominal Frequency: 10MHz; Aging Rate: $\pm 1 \times 10^{-6}$ /year, $\pm 1 \times 10^{-8}$ /day	
Sweep Mode	Step Sweep, List Sweep	
Harmonic	≤ -30 dBc	
SSB Phase Noise @20kHz	≤ -76 dBc/Hz 10MHz < f \leq 2.1GHz ≤ -82 dBc/Hz 2.1GHz < f \leq 4GHz ≤ -76 dBc/Hz 4GHz < f \leq 8GHz ≤ -70 dBc/Hz 8GHz < f \leq 16GHz ≤ -64 dBc/Hz 16GHz < f \leq 18GHz	≤ -84 dBc/Hz 250kHz \leq f \leq 250MHz ≤ -96 dBc/Hz 250MHz < f \leq 500MHz ≤ -90 dBc/Hz 500MHz < f \leq 1GHz ≤ -84 dBc/Hz 1GHz < f \leq 2GHz ≤ -78 dBc/Hz 2GHz < f \leq 4GHz
Output Power Range	-110dBm~+5dBm	-120dBm~+5dBm
Power Accuracy	-5 dBm < P \leq +5dBm $\leq \pm 1.5$ dB -60 dBm < P \leq -5dBm $\leq \pm 3.0$ dB	-5 dBm < P \leq +5dBm $\leq \pm 1.5$ dB -60 dBm < P \leq -5dBm $\leq \pm 2.5$ dB
Modulation Performance		
Pulse Modulation	Pulse Modulation On/Off Ratio: ≥ 60 dB Pulse Modulation Rise/Fall Time: ≤ 40 ns	
Amplitude Modulation	Modulation Mode: Linear Mode, Exponential Mode Modulation Rate (3dB Bandwidth): DC~10kHz Accuracy: Linear Mode: $\leq \pm (6\% \times \text{Set Depth} + 2\%)$ (Modulation Rate 1kHz) Exponential Mode: $\leq \pm (5\% \times \text{Set Depth} + 1\text{dB})$ (Modulation Rate 1kHz)	
Frequency Modulation	Modulation rate (3dB Bandwidth): DC~10 kHz Accuracy: $\leq \pm 6\%$ (1kHz Modulation Rate, Frequency Offset 100 kHz)	
Other Characteristics		
RF Output Port	Type N (female)	
Display	TFT-LCD	
Operation Interface	Simplified Chinese/English	

Size	W×H×D: 330mm×230mm×90mm	
Weight	≤ 5kg	
Power Consumption	30W	20W
Power Supply	DC, Rechargeable Battery Pack	
Battery Capacity	2 hours	4 hours
Operating Temperature	0°C ~ +50°C	

Technical Specifications of AV8723X Series USB CW Power Sensor

Model	AV87230	AV87231	AV87232	AV87233
Index	AV87230	AV87231	AV87232	AV87233
Frequency Range	9kHz~6GHz	10MHz~18GHz	50MHz~26.5GHz	50MHz~40GHz
Power Range	-50dBm~+20dBm	-60dBm~+20dBm		
Zero Accuracy	≤10nW	≤1nW		

Ordering Information

Main Unit: AV1431 Handheld Microwave Signal Generator 10MHz~18GHz

AV1431A Handheld RF Signal Generator 250kHz~4GHz

Standard Package

No.	Description	Remarks
1	Power Cord Assembly	Including: Standard tri-prong power cord, AC-DC Power Adapter (60W)
2	User Manual	
3	Certificate of Conformity	
4	CD	Containing: Secondary Development Library, User Manual

Options

No.	Description	Function	Remarks
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AV1431-002	Rechargeable Lithium-Ion Battery	High-Capacity Rechargeable Battery Pack	
AV1431-003	Soft Carrying Bag	For convenient carrying and daily protection of the instrument.	
AV1431-004	Transit Case	High-strength waterproof transit case, suitable for long-distance transportation.	
AV1431-005	English Options	English Labels, Panels, Rubber Keys, English Operation Interface.	
AV1431-006	AV87230 USBCW Power Sensor	9kHz~6GHz	
AV1431-007	AV87231 USB CW Power Sensor	10MHz~18GHz	
AV1431-008	AV87232 USBCW Power Sensor	50MHz~26.5GHz	
AV1431-009	AV87233 USB CW Power Sensor	50MHz~40GHz	