Data Sheet

Hantek

Handheld Spectrum Analyzer
HSA2000 Series

Feature

- IP–51 rated. Three–in–one Handheld Spectrum Analyzer;
- Large 5.6 inch 64K Color LCD Display, High Resolution (640*480);
- 7.4V/7800mAh Large–capacity Lithium Battery. Over 4 Hours Cruising Ability;
- It Supports to Use 6 PCS of 18650 Battery Pack to Replace the Lithium Battery;
- Rich Expansion Interface, USB 2.0 and LAN is optional;
- Highest Sensitivity:–161dBm, Lowest DANL;
- Super Slim Design. Volume Light. Easy to Carry.

Specification

Model			HSA2030A	HSA2030B
Frequency	Frequency range		100K~3GHz (tunable to 9KHz) AC Coupled	100K~3GHz (tunable to 9KHz) AC Coupled 5M~3GHz TG
	Frequency Resolution		1Hz	1Hz
Internal Reference Frequency	Reference Frequency		10MHz	10MHz
	Frequency Readout Accuracy		± (frequency indication*frequency reference uncertainty+1%*span+20%RBW+marker resolution+1Hz)	
	Internal 10MHz Reference Accuracy	Aging Rate	± 1ppm/year (0℃–50℃, Reference is C25℃)	
		Temperature stability	± 1ppm/year	± 1ppm/year
	Marker Resolution		(frequency span)/(number of sweep points 1)	
Frequency Counter	Counter Resolution		1Hz	
	Accuracy		± (marker frequency × frequency reference uncertainty + counter resolution)	
Frequency Span	Range		0 Hz (zero span), 100 Hz to 3.2 GHz	
	Resolution		0 Hz	
	Accuracy		± span/(sweep points–1)	
SSB phase noise	Carrier offset(20℃~30℃, 500MHz central frequency)	10 KHz	<–92dBc/Hz, Typical –95dBc/Hz	
		30 KHz	<–93dBc/Hz, Typical –96dBc/Hz	
		100 KHz	<–95dBc/Hz, Typical –97dBc/Hz	
		1 MHz	<–117dBc/Hz,Typical –119dBc/Hz	
Resolution Bandwidth	–3dB bandwidth		10Hz to 1MHz,1-3-10 sequence	
	Accuracy		±5% RBW=10Hz~1MHz nominal	
	Resolution filter shape factor		<5:1, Nominal	
Video Bandwidth	–3dB bandwidth		1Hz to 1MHz, 1–3–10 sequence	
	Accuracy		± 10% VBW=1Hz~1MHz nominal	
Measurement Range	100KHz~2MHz	Preamp off	Displayed average noise level (DANL) to +10dB	
	2MHz~3 GHz	Preamp on	Displayed average noise level (DANL) to +20dB	
	Input attenuator range		0 to 51dB,1dB steps	
Maximum Safe Input level	Average continuous power		+33dBm, 3 minutes maximum Input attenuator setting≥20dB,2MHz~3.2 GHz	
	DC voltage		50 VDC, maximum	
Displayed Average Noise level (normalized to1Hz)	100KHz~1MHz	Preamp off	– 108 dBm, typical – 127 dBm	
	1MHz~10MHz		– 128 dBm, typical – 146 dBm	
	10MHz~500MHz		– 142 dBm, typical – 146 dBm	
	500MHz~2.5GHz		– 141 dBm, typical – 145 dBm	
	2.5GHz~3GHz		– 140 dBm, typical – 144 dBm	
	100KHz~1MHz	Preamp on	– 131 dBm, typical – 150 dBm	
	1MHz~10MHz		– 148 dBm, typical – 163 dBm	
	10MHz~500MHz		– 161 dBm, typical – 164 dBm	
	500MHz~2.5GHz		– 159 dBm, typical – 162 dBm	
	2.5GHz~3GHz		– 158 dBm, typical – 161 dBm	
Level Display Range	Log scale and units		1 to 10 dB/divisions in 1, 2, 5, 10 dB steps, 10 divisions displayed	
	Linear scale and units		0 to 100%, 10 divisions displayed	
	Scale unit		dBm, dBmV, dB μ V, Watts, Volts	
	Sweep (trace) points		461	
	Number of markers		4	
	Detectors		Normal, Positive Peak, Sample, Negative Peak, RMS	
	Number of traces		4	
	Trace functions		Clear/write, maximum hold, minimum hold, average, check, close	
	Level measurement error		± 1.5dB (excluding input VSWR mismatch) 20~30℃, peak detector, preamplifier off, input signal 0 dBm to 50 dBm	
Reference Level	Setting range		–100dBm to +30dBm, steps of 1dB	
	Setting resolution	Log scale	0.01dB	
		Linear scale	Almost log(2.236 μ V to 7.07 V)	
RF Input VSWR (at tuned frequency)	10MHz to 3 GHz		<1.5:1, nominal Attenuator setting 10~20dB	
Spurious Response	Second harmonic distortion (SHI)		<65dBc,50MHz to 3GHz (Mixer level –30dBm, attenuator = 0dB, preamp off, 20~30℃)	
	Third – order intermodulation	50~300MHz	+8dBm Third–order intermodulation products: 2 x –20dBm; frequency separation 100KHz; RF attenuation = 0dB; RF preamp off; 20~30℃	
		300MHz~3GHz	+10dBm	
	Input related spurious		<–75dBc (input mixer = –30dBm)	
	Inherent residual response		<–90dBm , typical –98dBm (Input terminated and 0 dB RF attenuation, preamplifier off)	
Sweep Time	Range	Span>100Hz	2ms to 1000s	
		Span=0Hz	600ns to 200s	
	Sweep mode		Continuous; single	
	Trigger source		Free run; video; external	
	Trigger slope		Selectable positive or negative edge	
	Trigger delay	Span=0Hz	± 12ms tp ± 12s nominal	
RF Input	Connector and impedance		N female; 50Ω	
10MHz Reference/ External Trigger Input	Reference input frequency		10MHz	
	Reference input amplitude		0~10dBm	
	Trigger voltage		5V TTL level	
General Features	Power supply		DC: 12~17V,maximum 2.8A input	
	Display		5.6 inch,640*480 pixels resolution,64K color LCD display	
			260 mm x 220mm x 75mm; 2.9KG(include battery); 2.6KG(exclude battery)	

Specification

Model			HSA2016A	HSA2016B
Frequency	Frequency range		100K~1.6 GHz (tunable to 9KHz)	100K~1.6GHz (tunable to 9KHz) 5M~1.6 GHz TG
	Frequency Resolution		1Hz	1Hz
Internal Reference Frequency	Reference Frequency		10MHz	10MHz
	Frequency Readout Accuracy		± (frequency indication*frequency reference uncertainty+1%*span+20%RBW+marker resolution+1Hz)	
	Internal 10MHz Reference Accuracy	Aging Rate	± 1ppm/year (0°C–50°C, Reference is 25°C)	
		Temperature stability	± 1ppm/year	± 1ppm/year
	Marker Resolution		(frequency span)/(number of sweep points 1)	
Frequency Counter	Counter Resolution		1Hz	
	Accuracy		± (marker frequency × frequency reference uncertainty + counter resolution)	
Frequency Span	Range		0 Hz (zero span), 100 Hz to 1.6 GHz	0 Hz (zero span), 100 Hz to 1.6 GHz
	Resolution		0 Hz	
	Accuracy		± span/(sweep points–1)	
SSB Phase Noise	Carrier offset(20°C~30°C, 500MHz central frequency)	10 KHz	<–92dBc/Hz, Typical –95dBc/Hz	
		30 KHz	<–93dBc/Hz, Typical –96dBc/Hz	
		100 KHz	<–95dBc/Hz, Typical –97dBc/Hz	
		1 MHz	<–117dBc/Hz, Typical –119dBc/Hz	
Resolution Bandwidth	–3dB bandwidth		10Hz to 1MHz, 1-3-10 sequence	
	Accuracy		±5% RBW=10Hz~1MHz nominal	
	Resolution filter shape factor		<5:1, Nominal	
Video Bandwidth	–3dB bandwidth		1Hz to 1MHz,1–3–10 sequence	
	Accuracy		± 10% VBW=1Hz~1MHz nominal	
Measurement Range	100KHz~2MHz	Preamp off	Displayed average noise level (DANL) to +10dB	
	2MHz~1.6 GHz	Preamp on	Displayed average noise level (DANL) to +20dB	
	Input attenuator range		0 to 51dB,1dB steps	
Maximum Safe Input level	Average continuous power		+33dBm, 3 minutes maximum Input attenuator setting≥20dB,2MHz~3.2 GHz	
	DC voltage		50 VDC,maximum	
Displayed Average Noise level (normalized to1Hz)	100KHz~1MHz	Preamp off	– 108 dBm, typical – 127 dBm	
	1MHz~10MHz		– 128 dBm, typical – 146 dBm	
	10MHz~500MHz		– 142 dBm, typical – 146 dBm	
	500MHz~1.6GHz		– 141 dBm, typical – 145 dBm	
	100KHz~1MHz	Preamp on	– 131 dBm, typical – 150 dBm	
	1MHz~10MHz		– 148 dBm, typical – 163 dBm	
	10MHz~500MHz		– 161 dBm, typical – 164 dBm	
	500MHz~1.6 GHz		– 159 dBm, typical – 162 dBm	
Level Display Range	Log scale and units		1 to 10 dB/divisions in 1, 2, 5, 10 dB steps, 10 divisions displayed	
	Linear scale and units		0 to 100%,10 divisions displayed	
	Scale unit		dBm, dBmV, dB μ V, Watts, Volts	
	Sweep (trace) points		461	
	Number of markers		4	
	Detectors		Normal, Positive Peak, Sample, Negative Peak, RMS	
	Number of traces		4	
	Trace functions		Clear/write, maximum hold, minimum hold, average, check,close	
	Level measurement error		± 1.5dB (excluding input VSWR mismatch) 20~30℃,peak detector, preamplifier off, input signal 0 dBm to 50 dBm	
Reference Level	Setting range		–100dBm to +30dBm, steps of 1dB	
	Setting resolution	Log scale	0.01dB	
		Linear scale	Almost log(2.236 μ V to 7.07 V)	
RF Input VSWR (at tuned frequency)	10MHz to1.6 GHz		<1.5:1, nominal Attenuator setting 10~20dB	
Spurious Response	Second harmonic distortion (SHI)		<65dBc,50MHz to 3.2GHz (Mixer level –30dBm, attenuator = 0dB, preamp off, 20~30°C)	
	Third – order intermodulation	50~300MHz	+8dBm Third–order intermodulation products: 2 x –20dBm; frequency separation 100KHz; RF attenuation = 0dB; RF preamp off; 20~30°C	
		300MHz~1.6 GHz	+10dBm	
	Input related spurious		<–75dBc (input mixer = –30dBm)	
	Inherent residual response		<–90dBm, typical –98dBm (Input terminated and 0 dB RF attenuation, preamplifier off)	
Sweep Time	Range	Span>100Hz	2ms to 1000s	
		Span=0Hz	600ns to 200s	
	Sweep mode		Continuous; single	
	Trigger source		Free run; video; external	
	Trigger slope		Selectable positive or negative edge	
	Trigger delay	Span=0Hz	± 12ms tp ± 12s nominal	
RF Input	Connector and impedance		N female;50Ω	
10MHz Reference/ External Trigger Input	Reference input frequency		10MHz	
	Reference input amplitude		0~10dBm	
	Trigger voltage		5V TTL level	
General Features	Power supply		100–120V ACRMS (± 10%), 45Hz~440Hz, CAT II ; 120~240V ACRMS(± 10%), 45Hz~66Hz CAT II	
	Display		7inch, 800*480 pixels resolution,64M color LCD display	
	Dimensions and weight		313 mm x 108 mm x 142 mm; 2.9KG(include battery); 2.6KG(exclude battery)	