S87233 Series

USB Continuous Wave Power Sensor

S87233A/D/E/F/L

(8kHz to 8GHz, 10MHz to 18GHz, 50MHz to 26.5/40/67GHz)

Saluki Technology Inc.

Product Overview

The S87233series USB Continuous Wave Power Sensor covers a frequency range of 8kHz ~ 67GHz and a power dynamic range of -70dBm ~ +20dBm. It is small in size, light in weight, easy to carry and supports hot swapping. It can be widely used in various fields for the test of average power, peak power and other parameters.

Main Features

- **Accurate average power measurement**

The S87233 Series USB Continuous Wave PowerSensor delivers precision measurements of average power with a maximum accuracy of ±0.2dB, featuring a continuous sampling rate of 20 MS/s for exceptional measurement speed and repeatability. With a frequency range up to 67GHz and power measurement capability down to -70 dBm, it is enginnered to meet the demands of a vast majority of testing applications.

- **Internal/external zero calibration function**

Each S87233 Series Average Power Sensor can be controlled by switching to achieve internal zero calibration, so that in the use process, there is no need to disconnect the power meter from the measured equipment, thus it is able to speed up the measurement, reduce connector wear and reduce measurement uncertainty.

- **External trigger function**

The external trigger can accurately trigger small signals approaching the noise floor. The S87233 Series USB Continuous Wave Power Sensor has a built-in trigger input, which can connect the external trigger of the measured equipment to the power sensor through a standard BNC to MMCX cable.

- **Compact and portable design**

The S87233 Series USB continuous wave power sensors require no power host, as they are powered and communicate through the USB port, enabling a lightweight, portable solution ideal for field testing.

Typical Applications

It is suitable for most continuous wave power measurement applications.

Technical Specifications

Frequency Range	
Model	**Specs**
S87233A	8kHz～8GHz
S87233D	10MHz～18GHz
S87233E	50MHz～26.5GHz
S87233F	50MHz～40GHz
S87233L	50MHz～67GHz

Power Range	
Model	**Specs**
S87233A	-60dBm～+20dBm
S87233D	-70dBm～+20dBm
S87233E	-70dBm～+20dBm
S87233F	-70dBm～+20dBm
S87233L	-55dBm～+20dBm

Damage Level	
Model	**Specs**
S87233A/D/E/F/L	+23dBm (average power) +26dBm (peak power, duration <10us)

Accuracy of power measurements (note 1)		
Model	**Specs**	
S87233A	±0.20dB	(±4.7%)
S87233D	±0.20dB	(±4.7%)
S87233E	±0.23dB	(±5.4%)
S87233F	±0.25dB	(±5.9%)
S87233L	±0.33dB	(±7.9%)

Note 1: The device S87233A/D/E/F is valid within the power range of-40dBm to +20dBm when the SWR of the device under test is <1.20. When the average number of tests is set to 128, the power measurement accuracy meets the requirements. Similarly, the device S87233L is valid within the power range of-20dBm to +20dBm when the SWR of the device under test is <1.20,with the average number of tests also set to 128, the power measurement accuracy meets the requirements.

Maximum Standing Wave Ratio		
Model	**Specs**	
S87233A	1.20	(100kHz≤f≤8GHz)
S87233D	1.25	(10MHz≤f≤50MHz)
	1.15	(50MHz＜f≤2GHz)
	1.20	(2GHz＜f≤12.4GHz)
	1.26	(12.4GHz＜f≤18GHz)
S87233E	1.15	(50MHz≤f≤2GHz)
	1.20	(2GHz＜f≤12.4GHz)
	1.26	(12.4GHz＜f≤18GHz)
	1.35	(18GHz＜f≤26.5GHz)
	1.15	(50MHz≤f≤2GHz)
	1.20	(2GHz＜f≤12.4GHz)

S87233F	1.26	（12.4GHz＜f≤18GHz）
	1.35	（18GHz＜f≤26.5GHz）
	1.50	（26.5GHz＜f≤40GHz）
S87233L	1.20	（50MHz≤f≤18GHz）
	1.30	（18GHz＜f≤26.5GHz）
	1.45	（26.5GHz＜f≤50GHz）
	1.50	（50GHz＜f≤67GHz）

Calibration Uncertainty

Model	Specs
S87233A	0.17dB (4.0%)
S87233D	0.19dB (4.5%)
S87233E	0.19dB (4.5%) （50MHz≤f≤18GHz）
	0.21dB (5.0%) （18GHz＜f≤26.5GHz）
S87233F	0.19dB (4.5%) （50MHz≤f≤18GHz）
	0.21dB (5.0%) （18GHz＜f≤26.5GHz）
	0.23dB (5.4%) （26.5GHz＜f≤40GHz）
S87233L	0.19dB (4.5%) （50MHz≤f≤18GHz）
	0.21dB (5.0%) （18GHz＜f≤26.5GHz）
	0.23dB (5.4%) （26.5GHz＜f≤40GHz）
	0.31dB (7.4%) （40GHz＜f≤67GHz）

Product Features

Connector Type	S87233A	N-Type(m)
	S87233D	N-Type(m)
	S87233E	3.5mm(m)
	S87233F	2.4mm(m)
	S87233L	1.85mm(m)
Control Port Type		USB
Operating Temperature Range		0℃~50℃
Storage Temperature Range		-40℃~70℃
Working Humidity (rated)		The temperature lower than 10℃, the humidity is not controlled; The temperature 10℃~30℃, the relative humidity is (5 ~ 95) %; The temperature 30℃~40℃, the relative humidity is (5 ~75) %; The temperature above 40℃, the relative humidity is (5 ~45) %;
Altitude		0～4600 m
Maximum Weight		0.4kg
Suggested Calibration Cycle		12 months
USB 2.0 interface		It is used for PC and other host connections.
External dimensions (W*H*D, mm)	S87233A	(51.5±1.5)×(33.5±1.5)×(141.0±2.5)
	S87233D	(51.5±1.5)×(33.5±1.5)×(141.0±2.5)
	S87233E	(51.5±1.5)×(33.5±1.5)×(134.0±2.5)
	S87233F	(51.5±1.5)×(33.5±1.5)×(124.5±2.5)
	S87233L	(51.5±1.5)×(33.5±1.5)×(134.0±2.5)

Unless otherwise specified, all test conditions are as follows: The temperature range is 23 ℃ ± 5 ℃ (after 30 minutes of operation). Supplementary information about the instrument helps users better understand its performance and does not fall within the scope of technical specifications. Key terms are defined as follows:

Technical specification (spec): Unless otherwise stated, the performance (including measurement uncertainty) is guaranteed after the calibrated instrument is placed at a working temperature range of 0 ℃ to 50 ℃ for at least two hours and preheated for 30 minutes. For the data in this document, unless otherwise stated, they are technical indicators.

Typical value(typ): It indicates the typical performance that 80% of the instruments can achieve. This data is not guaranteed and does not account for measurement uncertainties. It is valid only at room temperature (approximately 25℃).

Nominal(nom): It indicates the expected average performance, design performance characteristics, or per- formance that cannot be tested by limited testing methods, such as 50 Ω connectors. The product perf ormance marked as nominal is not covered by the quality warranty and is measured at room temperature (approximately 25 ℃).

Measurement(meas): A performance characteristic measured during the design phase, such as the time- dependent variation in amplitude drift, to be compared with expected performance. This data is not guaranteed and is measured at room temperature (approximately 25 ℃).

Order Information

● Main Unit

Model	Frequency range	Power range	Type of connector
S87233A	8kHz ~ 8GHz	-60dBm ~ +20dBm	N-Type(m)
S87233D	10MHz ~ 18GHz	-70dBm ~ +20dBm	N-Type(m)
S87233E	50MHz ~ 26.5GHz	-70dBm ~ +20dBm	3.5mm(m)
S87233F	50MHz ~ 40GHz	-70dBm ~ +20dBm	2.4mm(m)
S87233L	50MHz ~ 67GHz	-55dBm ~ +20dBm	1.85mm(m)

● Standard Configuration:

No.	name	remarks
1	S87233series	Power sensor
2	USB cable	USB power supply and communication
3	Quality Certificate	---

● Options:

Option number	Name	Function
S87230-H01	USB cable	Length 2.0m
S87230-H02	USB cable	Length 4.5m
S87230-H03	Trigger cable	Length 1.5m
S87230-H04	Trigger cable	Length 4.5m
S87230-H05	Hard case (with one set)	High strength packaging box with handle for transportation, compatible with 87236 series probes.

S87230-H06	Hard case (with two sets)	High strength packaging box with handle for transportation, compatible with 87236 series probes.
S87233A-H12	English options	English signage, manuals, power measurement platforms, etc.
S87233C-H12	English options	
S87233D-H12	English options	
S87233E-H12	English options	
S87233F-H12	English options	English signage, manuals, power measurement platforms, etc.
S87233L-H12	English options	
S87233A-JL	Metrology services	Provide metrological calibration services and provide metrological reports
S87233C-JL	Metrology services	
S87233D-JL	Metrology services	
S87233E-JL	Metrology services	
S87233F-JL	Metrology services	
S87233L-JL	Metrology services	
S87233A-EWT1	One-year extended warranty (beyond standard coverage)	After the warranty period, the warranty is extended for 1 year, and 2 items are optional for the 2-year extended warranty, and so on, the service does not include calibration, but only includes one-way freight
S87233C-EWT1	One-year extended warranty (beyond standard coverage)	
S87233D-EWT1	One-year extended warranty (beyond standard coverage)	
S87233E-EWT1	One-year extended warranty (beyond standard coverage)	
S87233F-EWT1	One-year extended warranty (beyond standard coverage)	
S87233L-EWT1	One-year extended warranty (beyond standard coverage)	

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