PXIe-9702

Arbitrary Waveform Generator Module



Please download the <JYPEDIA>, you can quickly inquire the product prices, the key features and available accessories.

Overview

PXIe-9702 is an arbitrary waveform generator PXIe modular instrument. The board has two analog output channels, with update rate up to 250MS/s.

Main Features

- Max 250 MS/s Update Rate
- 2 Analog output channels
- 16 bits DAC
- 3 Output voltage ranges:
  ±0.5 V/±1.25 V/±5 V with a 50 Ω load
  ±1 V/±2.5 V/±10 V with a 100 kΩ load
- 512 MB DDR3 memory
- One external digital trigger
- One external reference clock
- Digital/Software Trigger
- Windows and Linux Support

Hardware Specifications

Analog Output Specifications

Channel Number	2
Output Impedance	50 Ω
DAC Resolution	16 bits
Coupling	DC
Amplitude Range(50 Ω load)	±0.5 V
	±1.25 V
	±5 V
Amplitude Range(100 kΩ load)	±1 V
	±2.5 V
	±10 V
DC gain error	±0.15%
DC offset error	±0.07% of Amplitude Range
Connector type	SMA

Analog Output Accuracy

JY-9702 Basic Accuracy = ±(% Reading+% Range)											
Nominal Range (V)	24 Hour Tcal ±1°C			90 Days Tcal±5°C			Temperature Coefficients(/°C)			24 Hr Full Scale Accuracy	90 Days Full Scale Accuracy
1	0.14	+	0.05	0.18	+	0.07	0.007	+	0.005	1.9 mV	2.4 mV
2.5	0.13	+	0.05	0.15	+	0.07	0.007	+	0.007	4.3 mV	5.5 mV
10	0.12	+	0.06	0.18	+	0.08	0.013	+	0.006	17 mV	25 mV
Accuracy valid to 95% of full range											

PFI Specifications

Connector type	Mini HDMI
Channnel number	8
Destinations	Bidirectional
Frequency range	30 MHz
Voltage	3.3 V LVCMOS
Impedance	50 Ω
Coupling	DC

PXIe-9702 Connector Pin Definition

PXIe-9702 Connector Pin Definition		
Pin Number	Mini-HDMI Pin Definition	After HDMI adapting
1	GND	PFI0
2	PFI0	GND
3	PFI1	PFI1
4	GND	PFI2
5	PFI2	GND
6	PFI3	PFI3
7	GND	PFI4
8	PFI4	GND
9	PFI5	PFI5
10	GND	PFI6
11	PFI6	GND
12	PFI7	PFI7
13	GND	GND
14	NC	NC
15	NC	NC
16	NC	NC
17	NC	NC
18	3.3V OUT 300mA Limited output impendance <1 Ω	3.3V OUT 300mA Limited output impendance <1 Ω
19	NC	NC

Trigger In

Connector type	SMB
Channnel number	1
Destinations	Bidirectional
Frequency range	30 MHz
Voltage	3.3 V LVCMOS
Impedance	50 Ω
Coupling	DC

Frequency and Transient Response

Analog filter	Passband: 100 MHz@ -1.1 dB Stopband: 450 MHz@-80 dB
Passband Flatness	1.1 dB

DDS Mode Maximum Frequencies

Sine	±1 V(100 MHz), ±2.5 V(80 MHz) ,±10 V(50 MHz至60 MHz)
Square	±1 V/ ±2.5 V/±10 V(10MHz)
Triangle	±1 V/ ±2.5 V/±10 V(20MHz)

Sample Clock

Source	Internal: PLL-based
Sample Rate Range	31.25 MHz ~ 250 MHz

Onboard Clock（Internal TCXO）

Frequency accuracy	2 ppm

Phase-Locked Loop (PLL) Reference Clock

Sources	PXIe_CLK100 CLK IN Internal TCXO
Frequency accuracy	Dependent on the frequency accuracy of the PLL Reference Clock source
Lock time	≤1000 ms,
Duty cycle range	40% to 60%

Clock IN

Connector type	SMB	
Destinations	PLL Reference Clock	
Frequency range	10MHz	
Input voltage range into 50 Ω	Sine wave:	0.5 V pk-pk to 2.4 V pk-pk
	Square wave:	0.5 V pk-pk to 2.4 V pk-pk
Maximum input overload	±3.3 V	
Impedance	50 Ω	
Coupling	AC	

Special Operation Note

The PXIe-9702 module has identified five non-configurable update rate intervals within its operational range of 31.25 MS/s to 250 MS/s. To avoid configuration errors, users should ensure the update rate is set outside these intervals. JYTEK software drivers include an automatic check function to validate the update rate before applying it to the hardware, generating appropriate error messages if a non-configurable rate is attempted.

Interval	Start Rate (MS/s)	Stop Rate (MS/s)
1	159.616	160.833
2	172.917	175.454
3	192.501	192.999
4	207.501	208.571
5	230.556	241.249

Performance and Tests

Average Noise Density

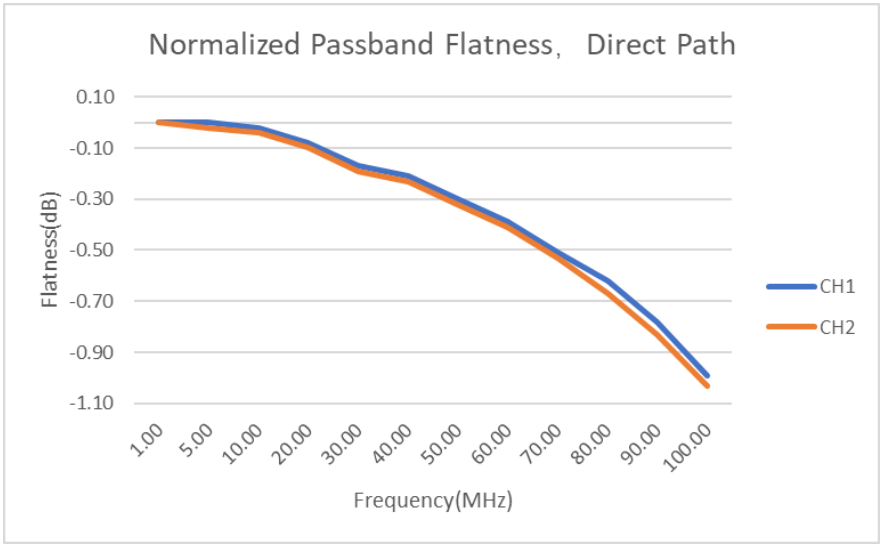
CH0 Noise,Output Signal 45MHz，40M Filter						
Voltage Range	Normalized Amplitude	No Filter Signal	After Filter Signal	Filter Insertion Loss	dBm/Hz	dBFS/Hz
±0.5 V(50 Ω load)	0.95	3.08	0.68	-2.4	150.02	150.7
±1.25 V(50 Ω load)	0.95	11.45	8.87	-2.58	142.11	150.98
±5 V(50 Ω load)	0.95	23.59	19.93	-3.66	130.46	150.39

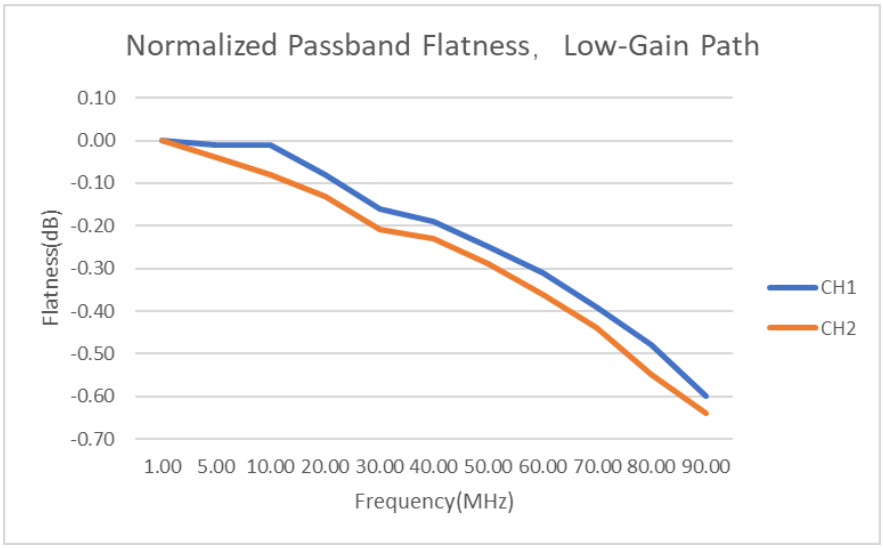
CH1 NoiseOutput Signal 45MHz，40M Filter						
Voltage Range	Normalized Amplitude	No Filter Signal	After Filter Signal	Filter Insertion Loss	dBm/Hz	dBFS/Hz
±0.5 V(50 Ω load)	0.95	3.08	0.68	-2.4	150	150.68
±1.25 V(50 Ω load)	0.95	11.45	8.87	-2.58	142	150.87
±5 V(50 Ω load)	0.95	23.59	19.93	-3.66	130	149.93

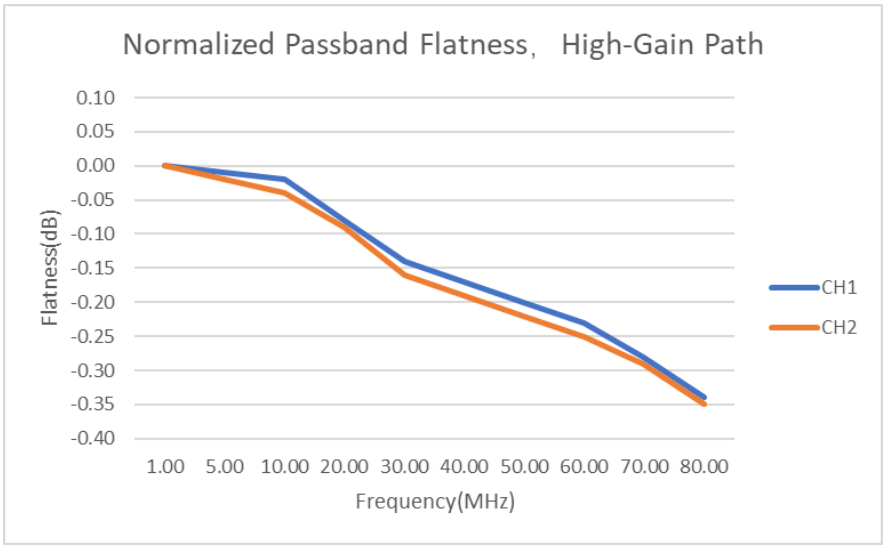
Spurious-Free Dynamic Range (SFDR)

Frequency	Direct path		Low-Gain Amplifier Path		High-Gain Amplifier Path	
	CH1	CH2	CH1	CH2	CH1	CH2
1.00	71.10	71.26	65.14	65.34	73.06	72.84
5.00	72.38	72.37	64.00	64.05	69.91	69.00
10.00	72.10	71.19	60.94	60.82	65.24	65.07
20.00	70.81	68.63	57.36	57.12	60.43	60.08
30.00	69.44	66.30	54.56	54.17	56.60	56.09
40.00	66.77	63.59	51.80	51.46	53.13	52.66
50.00	65.70	62.33	49.73	49.15	50.10	49.52
60.00	66.16	62.28	47.90	47.29	47.61	46.93
70.00	64.42	62.83	45.87	45.36	45.42	44.71
80.00	56.90	57.61	43.78	43.36	43.35	45.17
90.00	54.46	55.45	41.84	41.42	-	-
100.00	52.07	53.44	-	-	-	-

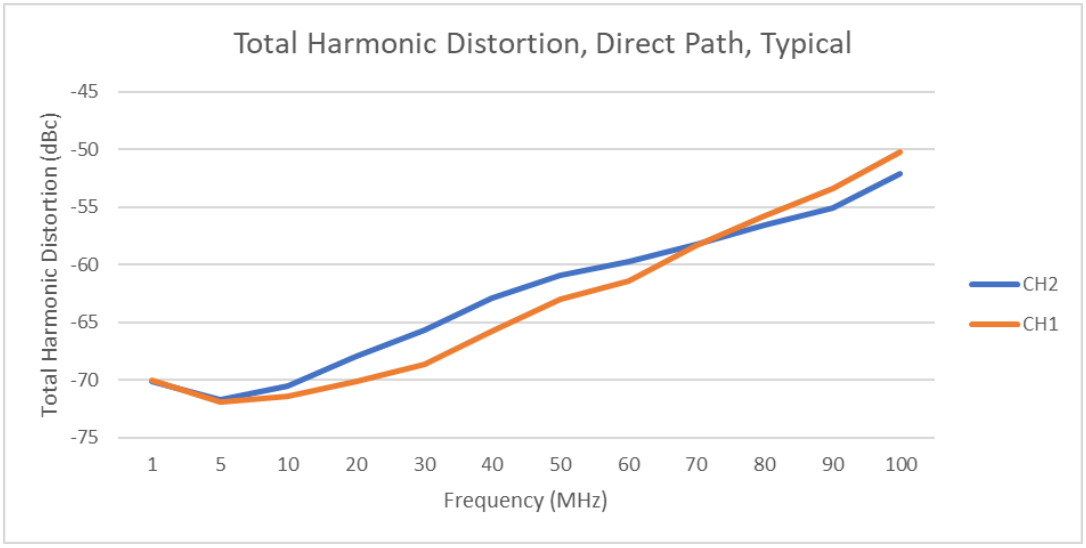
Normalized Passband Flatness

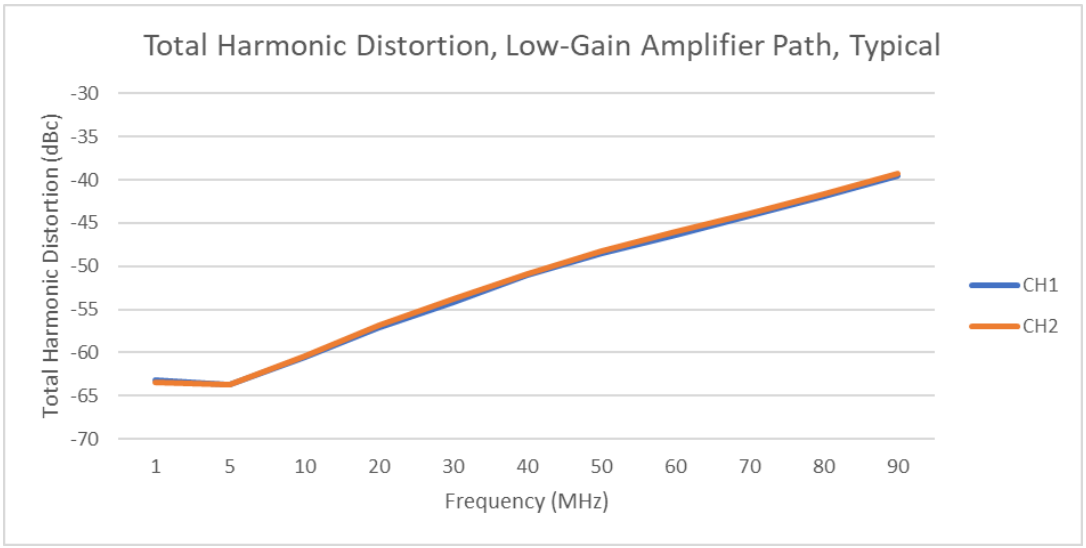


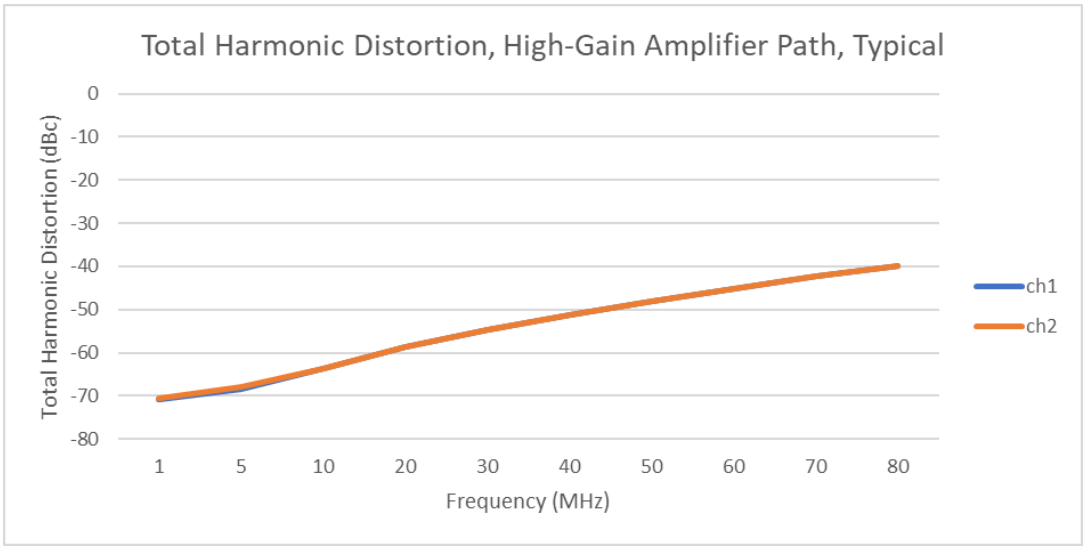




Total Harmonic Distortion







Order Information

- PXIe-9702 (PN: JA9702000-01)
- 2-CH, ±5V 16-bit 250 MS/s High-Speed PXIe Arbitrary Waveform Generator

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