Specification	AXDA9000	Rev.: 3	Date: 2023-03-21

Type: **Ultra-Low Noise Selective Distribution Amplifier with Very Low Residual Inter-Channel Stability in 19” rack (1 HU)**

Features:

- **Centre frequencies 5 MHz, 10 MHz or 100 MHz standard, any frequency between 5 MHz and 100 MHz available**
- **Ultra-Low Phase Noise**
- **Up to 16 outputs**
- **Very Low Residual Inter-Channel Stability**
- **Very High Inter-Channel and Reverse Isolation**
- **Best suited to distribute AXTAL 9000 Series references**
- **Slim 19” rack with 1 HU**

Available AXTAL Frequency References for AXDA9000

Item	(D)OCXO	GPS-disciplined OCXO/Rubidium	Rubidium	Cesium
Model	AXIOM9000	AXGPS9000(RB)	AXRB9000	AXCS9000
Features	DOCXO option Ultra-Low Noise Very High Stability	GPS Long-Term Stability < 1E-13 Ultra-Low Noise	Excellent Long-Term Stability 1E-13 Ultra-Low Noise	Primary Reference Clock

Parameter	min.	typ.	max.	Unit	Condition
Available frequency range	5		100	MHz	
Standard frequencies	5.000 / 10.000 / 100.000			MHz	
RF Input					
Number of inputs	1				
Input impedance	50			Ω	
Input level operating (Note 2)	+0		+15	dBm	
Input level nominal (Note 2, 3)	+7		+14	dBm	Recommended level
Input VSWR			1.2		@ Nominal frequency
RF outputs					
RF output ports	8 or 16				Option 1
Signal waveform	Sine wave				
Load R_L	50			Ω	±10%
Output VSWR			1.2		@ Nominal frequency
Output level per channel	+12	+14		dBm	
Isolation reverse & output	100			dB	
Harmonics		-50	-40	dBc	
Spurious			-90	dBc	
Residual phase noise @ 10 MHz (Note 3)			-145 -155 -160 -165	dBc/Hz dBc/Hz dBc/Hz dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ ≥10 kHz
Residual inter-channel stability @ 10 MHz (Note 4)			$5\cdot10^{-14}$ $7\cdot10^{-15}$ $5\cdot10^{-15}$ $2\cdot10^{-15}$ $2\cdot10^{-16}$		τ = 1 s τ = 10 s τ = 100 s τ = 1,000 s τ = 10,000 s
AC Supply voltage V_S	100	230	240	V	
AC Supply input frequency	50		60	Hz	
Power consumption		5	10	W	
Operating temperature range	-10		+60	°C	
Enclosure (see drawing) (LxWxH)	483x250x44				
RF Connectors @ rear plate	BNC female SMA female				Option 2 = "BNC" Option 2 = "SMA"
Weight		4		kg	

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. AC input indicator "blue" above +5 dBm, AC overload indicator "red" above +16 dBm
3. Recommended input level for best phase noise performance.
4. ADEV measurement of two arbitrary channels with 10 MHz reference input.
   Stable operating temperature is required for best performance.

Absolute Maximum Ratings

Parameter	min.	max.	Unit	Condition
AC Supply Voltage V_S	90	260	V	
AC Supply input frequency	47	63	Hz	
AC Supply input current		2	A	Fuse accessible at rear plate
Maximum RF input level		+20	dBm	
Load R_L	0	∞	Ω	No damage
Storage Temperature	-20	+70	°C	

Ordering Code

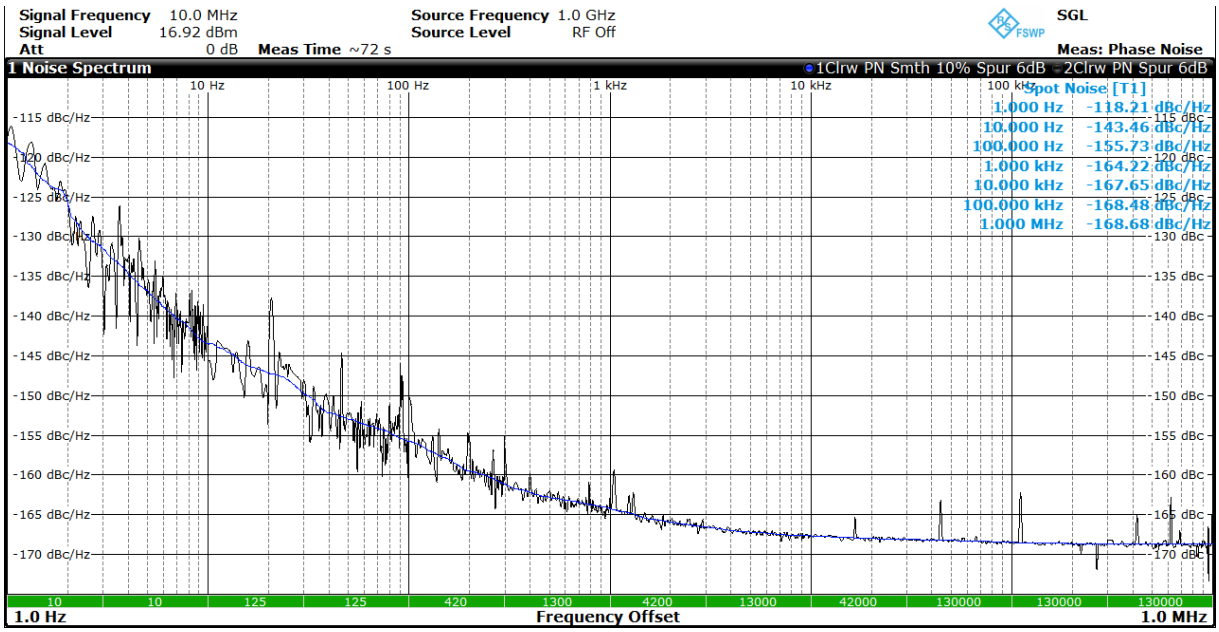
Model	Option 1 [Output ports]	Option 2 [RF connectors]	Revision	Frequency [MHz]
AXDA9000	8 or 16	"BNC" or "SMA"	Rev.3	10.000

Example: AXDA9000-16-BNC_Rev.3 – 10.000 MHz

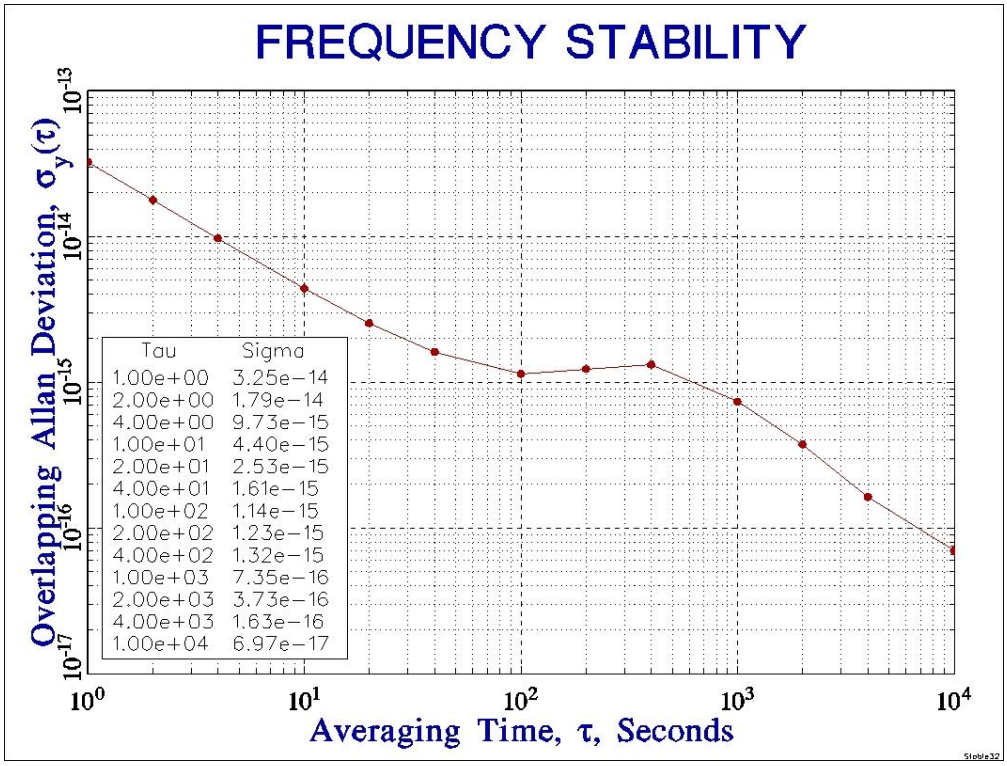
Handling & Testing

Parameter	Procedure / Test condition
Sinusoidal vibration	max. 0.15 mm <10 Hz, 1 g at 10~2000 Hz
Random vibration	max. 0.001 g²/Hz, 10~2000 Hz
Mechanical shock	max. 10 g, 6 ms half sine
Handling and Testing	Careful handling. Avoid excessive air flow, vibration and shock during operation.
UL/CSA Conformity	Power connector, power switch & fuse holder
VDE 0701-07021 Tested	✖ Yes ☐ No
RoHS-Compliant	✖ Yes ☐ No
CE Conformity	✖ Yes ☐ No

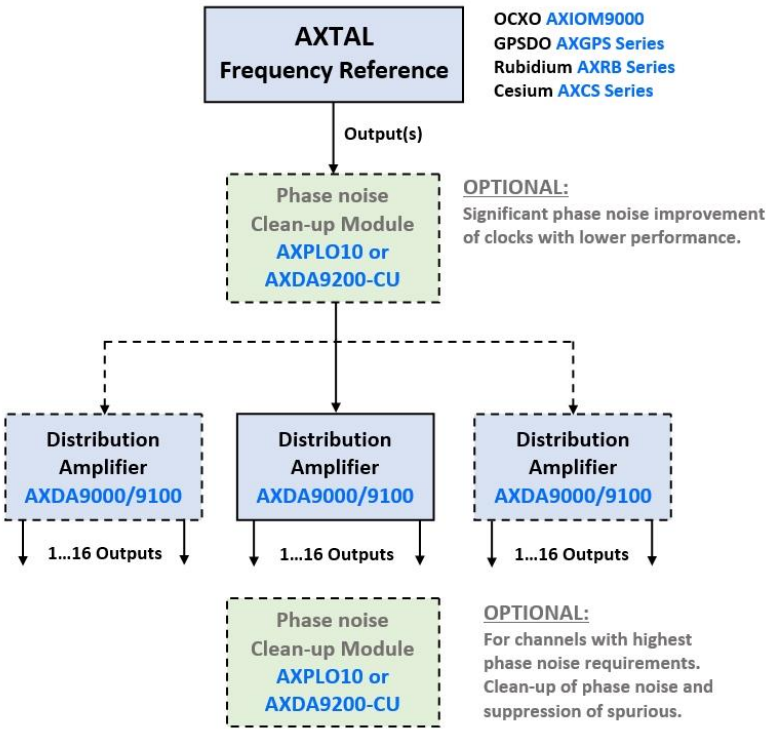
Typical Phase Noise Performance of AXIOM9000-ULN distributed with AXDA9000



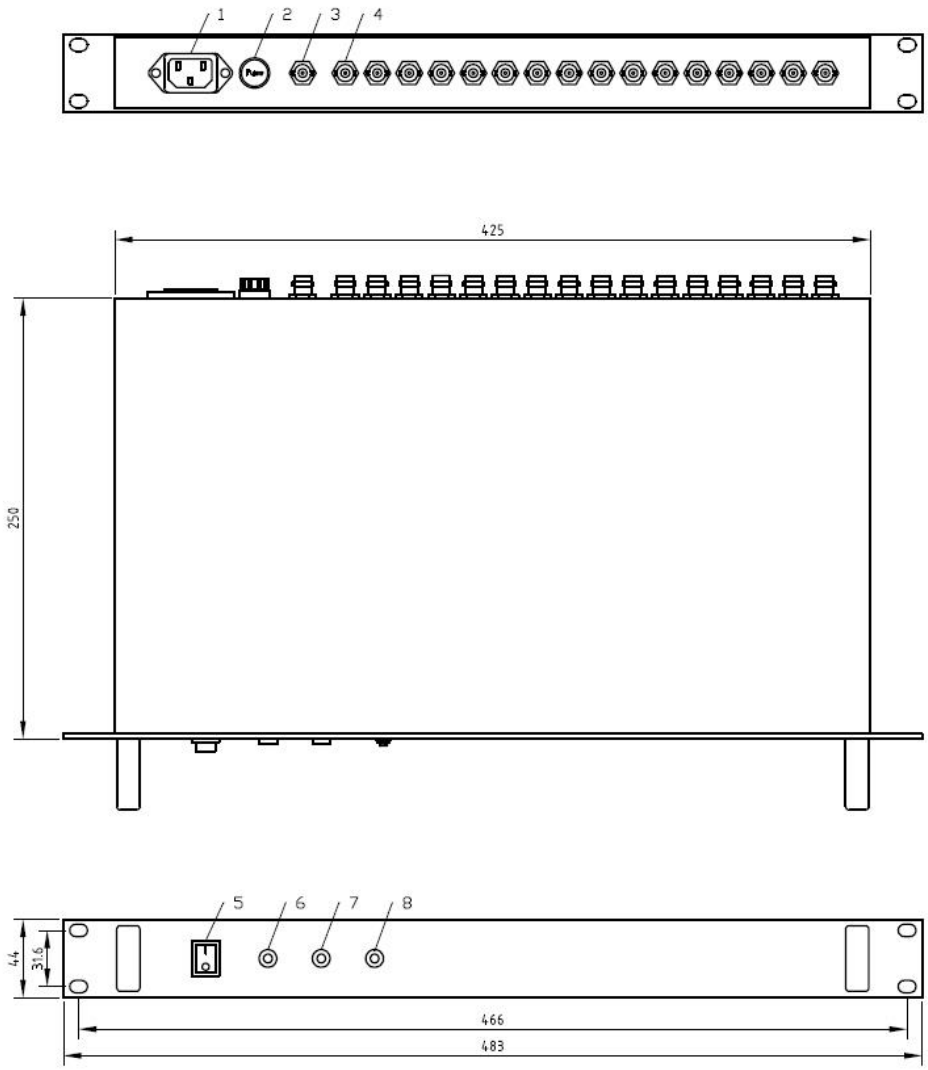
Typical Residual Inter-Channel Stability



Frequency Distribution with AXTAL9000 Series



Enclosure drawing



Connections and operation

#	Panel	Symbol	Function
1	**Rear**	POWER IN	AC Supply Input (IEC 60320-1 / C14)
2		FUSE	2 A Slow 5x20 mm Fuse
3		IN	RF input
4		OUT	RF outputs 8…16 *
5	**Front**	POWER SWITCH	Power Switch ON/OFF
6		POWER ON	LED – Power ON Indicator
7		AC INPUT	LED – RF Input Indicator
8		AC OVERLOAD	LED – RF Overload Indicator

* Unused sine wave outputs should be terminated with 50 Ω loads, even though it is not required for proper operation. This assures the best possible performance and stability.

Data sheet is for information purposes only and may be subject to modifications or may be discontinued without notice.

Revision History

Rev.	Drawing	Date [dd.mm.yyyy]	Remarks	Author	Checked
1	D0	04.07.2016	First issue	HH	HH
2	D0	31.01.2022	Major update for optimized design	HH	HH
3	D0	21.03.2023	Option for RF connectors added, editorial changes	HH	HH