



LANGER
EMV-Technik

User Manual

- Translation of the original -

PA 303 BNC/SMA/N set

Preamplifier 30 dB from 100 kHz to 3 GHz





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1 Declaration of Conformity



Manufacturer:
Langer EMV-Technik GmbH

Nöthnitzer Hang 31
01728 Bannewitz
Germany

Langer EMV-Technik GmbH herewith declares that the

PA 303 BNC set, Preamplifier 100 kHz up to 3 GHz including
PA 303 BNC, Preamplifier and **NT FRI** power supply
PA 303 SMA set, Preamplifier 100 kHz up to 3 GHz including
PA 303 SMA, Preamplifier and **NT FRI** power supply
PA 303 N set, Preamplifier 100 kHz up to 3 GHz including
PA 303 N, Preamplifier and **NT FRI** power supply

conforms with the following relevant regulations:

EMC Directive 2014/30/EU
Low-Voltage Directive 2014/35/EU
Restriction of certain Hazardous Substances 2011/65/EU

The following applicable standards were used to implement the requirements specified by the a
forementioned directives:

DIN EN IEC 61000-6-1:2019-11 (EMC immunity)
DIN EN IEC 61000-6-3:2022-06 (EMC emission)
DIN EN 61010-1:2020-03 (Safety)
DIN EN IEC 63000:2019-05 (Restriction of hazardous substances)

Name of the person authorized to compile the technical

Katja Langer

Bannewitz, 2025-09-08

Signature:

K. Langer, CEO



2 General Information

2.1 Storage of the User Manual

This user manual enables the safe and efficient use of the PA 303 BNC/SMA/N sets. It must be kept close at hand and accessible to the user.

2.2 Reading and Understanding the User Manual

Before using the PA 303 BNC/SMA/N set, the user must read and understand this user manual. If you have any questions or comments, please contact Langer EMV-Technik GmbH.

2.3 Local Safety and Accident Prevention Regulations

All applicable local safety and accident prevention regulations must be observed.

2.4 Images and Illustrations

The images and illustrations in this manual are intended to facilitate understanding. They may differ from the actual design of the product.

2.5 Limitation of Liability

Langer EMV-Technik GmbH shall not be liable for personal injury or property damage if:

- the instructions contained in this user manual have not been followed,
- the PA 303 BNC/SMA/N set has been used by persons who are not qualified in the field of EMC or who are not suited to work in the presence of interference voltages and electromagnetic fields,
- the PA 303 BNC/SMA/N set has not been used for its intended purpose,
- the PA 303 BNC/SMA/N set has been modified or technically altered without authorization,
- spare parts or accessories have been used that were not approved in advance by Langer EMV-Technik GmbH.

2.6 Errors and Omissions

The information contained in this user manual has been carefully reviewed and is believed to be accurate. However, Langer EMV-Technik GmbH assumes no responsibility for typographical errors, printing errors, or proofreading mistakes.

2.7 Copyright

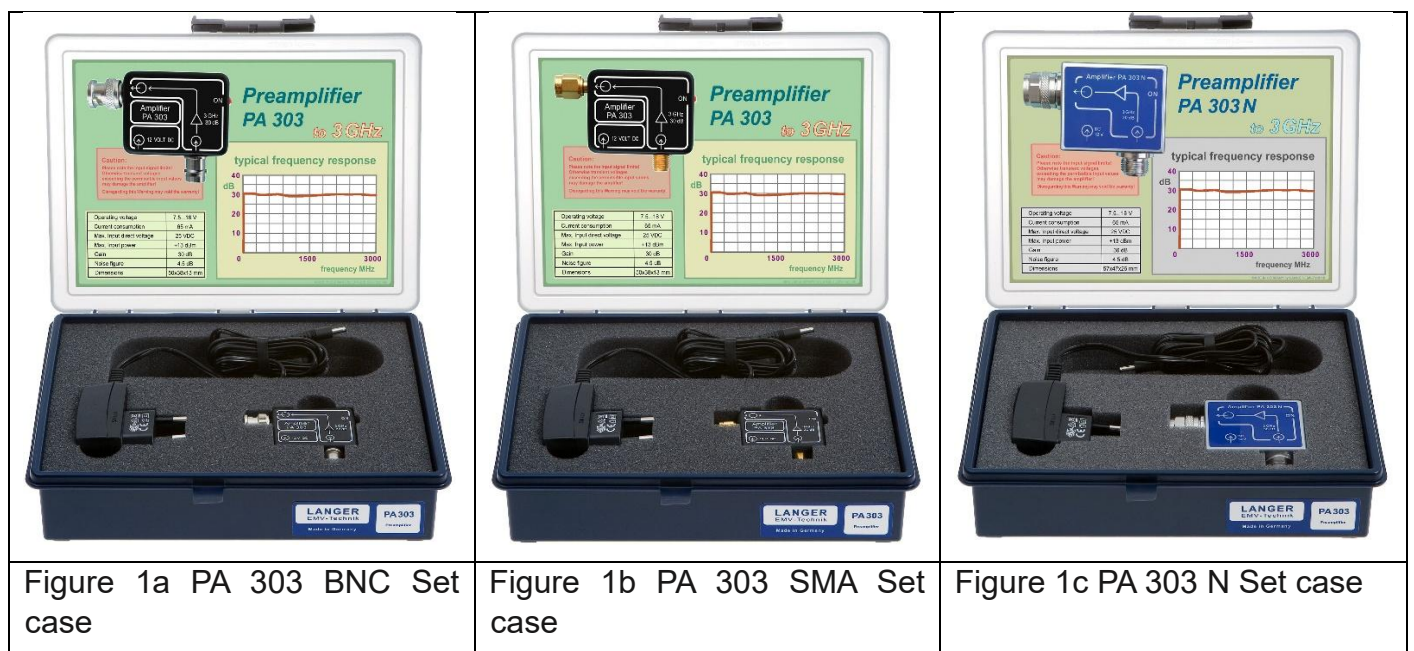
The contents of this user manual are protected by copyright and may only be used in conjunction with the PA 303 BNC/SMA/N set. This user manual may not be used for any other purpose without the prior written permission of Langer EMV-Technik GmbH.



3 Scope of Delivery

Item	Name of article	Type	Qty.
01	Preamplifier	PA 303 BNC/SMA/N	1
02	Power supply unit	NT FRI EU or NT FRI US	1
03	System case	Case A5	1
04	Quick guide		1
05	User manual		1

The scope of delivery may deviate depending on the respective order.



4 Technical Parameters

Preamplifier PA 303 BNC/SMA/N (25°C, 12 V, 170 mA)	
Frequency range	100 kHz - 3 GHz
Gain	typ. 30 dB
-1 dB compression point (output)	typ. 10 dBm at 1,5 GHz
Noise figure	typ. 4,5 dB at 1,5 GHz
Supply voltage	12 V DC
Impedance	50 Ω
Current consumption	75 mA
Max. input power (destruction threshold)	+13 dBm



Max. DC component at RF input/output	15 V
Amplitude flatness	± 3 dB
Housing dimensions (height x width x depth)	(50 x 38 x 13) mm
Weight	40 g
Connector - input	BNC/SMA/N, female
Connector - output	BNC/SMA/N, male
Ambient temperature (in operation)	(0 - 40) °C

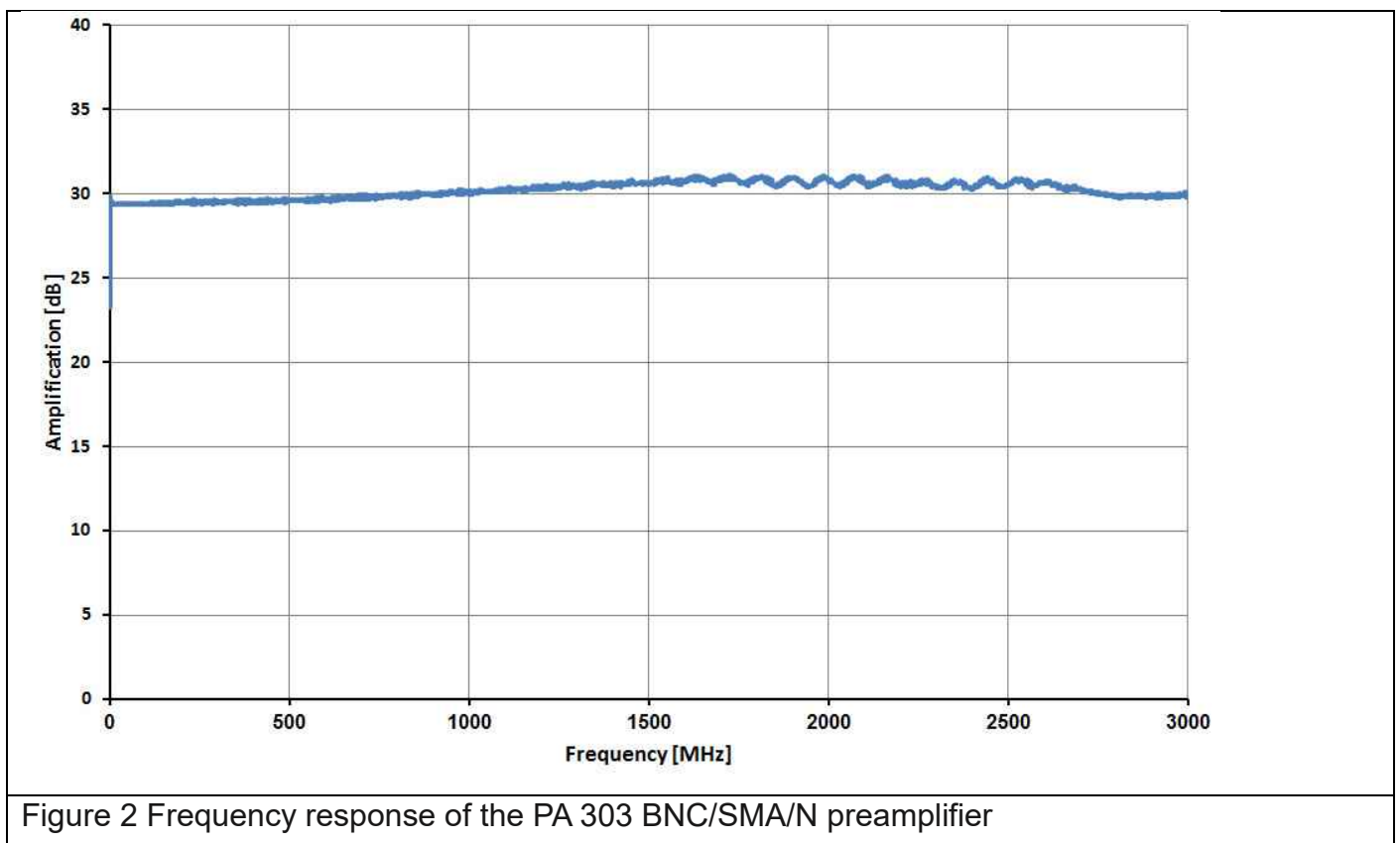


Figure 2 Frequency response of the PA 303 BNC/SMA/N preamplifier

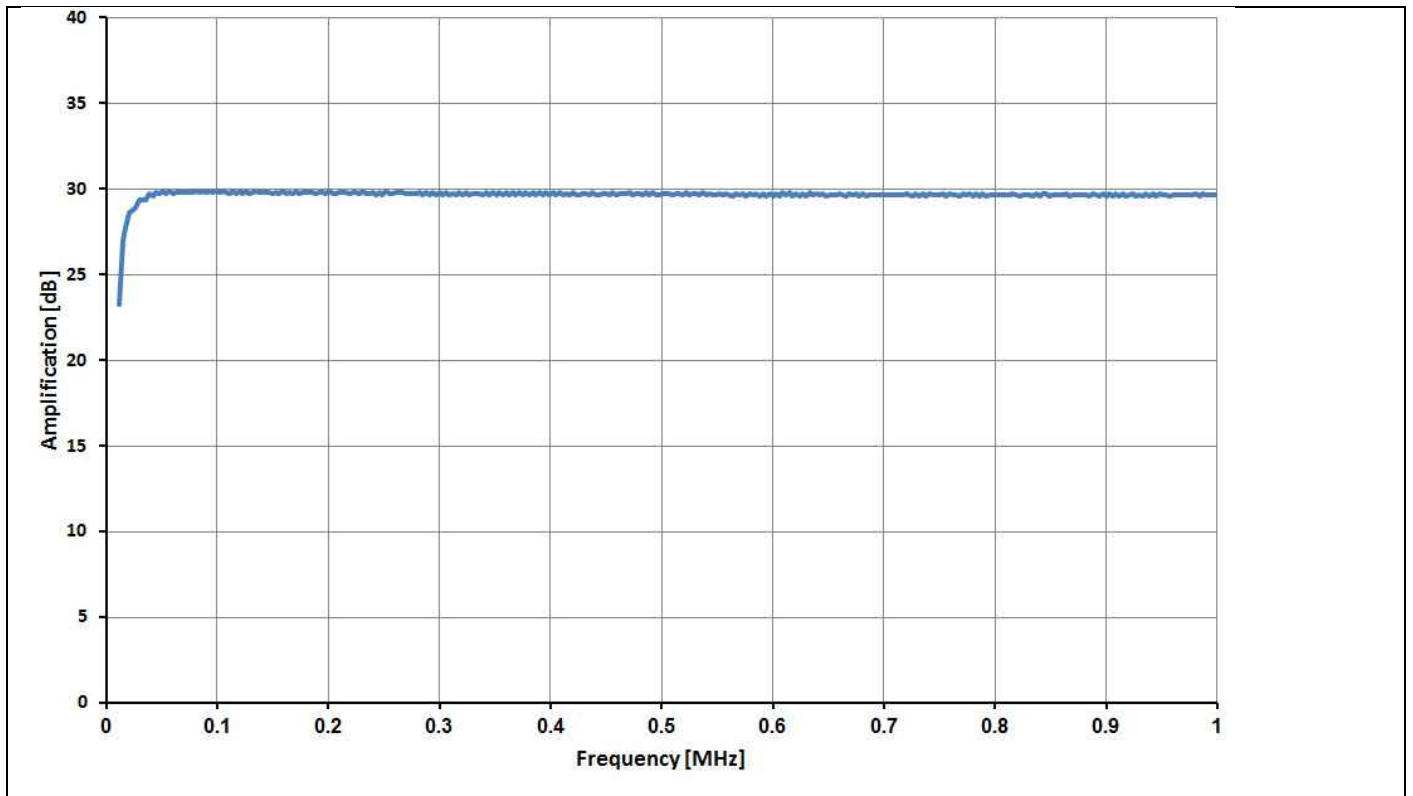


Figure 3 Detailed frequency response of the PA 303 BNC/SMA/N preamplifier

5 Safety

5.1 Intended Use

The PA 303 BNC/SMA/N is designed to amplify low-level measurement signals from connected near-field probes over a frequency range of 10 MHz to 3 GHz.

A near-field probe is connected to the appropriate BNC/SMA/N input of the preamplifier using a suitable coaxial cable with a BNC/SMA/N male connector. The corresponding BNC/SMA/N output (male) of the PA 303 BNC/SMA/N is connected to either a spectrum analyzer or an oscilloscope.

The PA 303 BNC/SMA/N is powered by the supplied power supply.

5.2 Reasonably Foreseeable Misuse

Improper use of the PA 303 BNC/SMA/N Set may result in hazards to the user and may cause damage to the product and/or connected equipment.

Examples of improper use that may create hazardous situations include:

- Bypassing or disabling safety devices.
- Operating the preamplifier or connected equipment when they are not in proper working condition.
- Operating the PA 303 BNC/SMA/N Set outside the specified technical parameters.
- Modifying the design of the product in a way that changes its intended application.

No claims shall arise from improper use of the PA 303 BNC/SMA/N Set.



5.3 Personnel Requirements

Only qualified personnel with appropriate training, knowledge, and experience in the field of EMC are permitted to operate the PA 303 BNC/SMA/N Set.

The PA 303 BNC/SMA/N Set must not be operated by persons whose ability to react is impaired, for example due to alcohol, medication, or drugs.

5.4 Safety Instructions

When using a product from Langer EMV-Technik GmbH, observe the following safety instructions to protect yourself against electric shock and the risk of injury:

- Before each use, inspect all connected equipment for visible signs of damage.
- The PA 303 BNC/SMA/N Set must only be operated under supervision.
- To prevent excessive heating of the preamplifier, do not cover the unit during operation.
- Do not use damaged or defective equipment.
- Observe the operating and safety instructions for all equipment included in the measurement setup.
- Connect and disconnect all equipment only when the interference source is switched off.

6 Application

6.1 Operating Instructions

When the PA 303 BNC/SMA/N is supplied with power, the LED remains continuously illuminated in red.

During normal operation, the PA 303 BNC/SMA/N will become warm. This is normal and does not indicate a malfunction. The enclosure temperature is approximately 15 °C above ambient temperature.

For reproducible measurement results, it is recommended to allow the preamplifier to warm up for approximately 20 minutes before use.

To prevent damage to the PA 303 BNC/SMA/N preamplifier, any coaxial cable must be discharged immediately before connecting it to the preamplifier. Due to its design, the input of the PA 303 BNC/SMA/N preamplifier is not protected against electrostatic discharge (ESD). It is therefore recommended to establish a low-resistance connection between the center conductor and the outer conductor (shield) of the coaxial cable before making the connection.

6.2 Standard Measurement Setup

Connect the BNC/SMA/N output (male) of the PA 303 BNC/SMA/N to the 50 Ω input of either a spectrum analyzer or an oscilloscope.

Connect the near-field probe to the appropriate BNC/SMA/N input (female) of the preamplifier using a coaxial cable with a BNC/SMA/N male connector.

Connect the supplied power supply to the "DC 12 V" power input.



Schematic
Measurement set-up

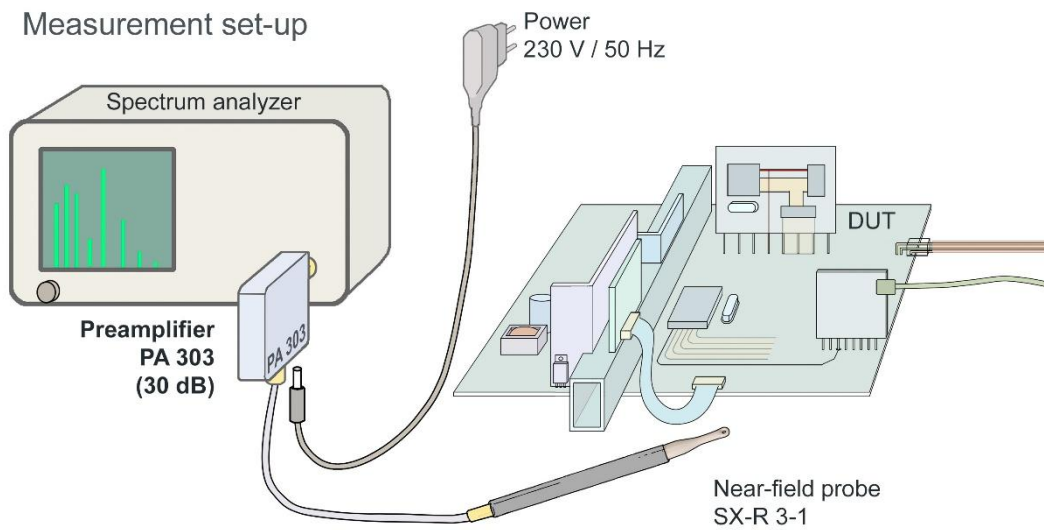


Figure 4 Measurement setup with the PA 303 BNC/SMA/N, spectrum analyzer, near-field probe, and DUT

7 Information on Recycling and Disposal



In accordance with the WEEE Directive 2012/19/EU (Waste of Electrical and Electronic Equipment), the following must be observed:

At the end of its service life, this product should be taken to a suitable disposal facility for recycling and disposal. Do not dispose of with household waste.



8 Customer service

Please contact us if you have any questions, comments or suggestions.

You can contact us:

Monday – Friday

8:00 a.m. – 3:00 p.m.

Contact us at:

Address: Langer EMV-Technik GmbH
Nöthnitzer Hang 31
01728 Bannewitz
Germany

Web: www.langer-emv.de

E-mail: sales@langer-emv.de

Phone: +49 (0) 351-430093-0

Fax: +49 (0) 351-430093-22

Calibration

We recommend having the product calibrated every two years by the manufacturer Langer EMV-Technik GmbH or by a certified service partner.

9 Warranty

Langer EMV-Technik GmbH shall remedy all defects attributable to material or manufacturing faults within the statutory warranty period by repairing the product or supplying replacement parts.

This guarantee is only granted on condition that:

- the information and instructions in the operating instructions are observed.

The guarantee expires if:

- an unauthorized repair is carried out on the product
- the product is modified
- the product is not used as intended