

R&S® BBA100

Broadband Amplifier

Compact, modular
amplifier family
featuring high reliability



R&S®BBA100 Broadband Amplifier At a glance

The R&S®BBA100 is a family of modular, flexible, state-of-the-art broadband amplifiers. The monitoring and control options allow the setup of very compact systems. The R&S®BBA100 “grows” with the requirements. The instrument can be upgraded, thereby providing maximum investment protection and readiness for the future.

The R&S®BBA100 broadband amplifiers are suitable for a variety of applications in EMC environments, communications, research and physical engineering. They are optimally scalable and configurable. Due to their modular design, the amplifiers can be tailored to meet specific requirements with regard to output power and frequency range.

Even in its basic version, the 5 HU 19" base unit includes a powerful system controller that controls the installed frequency bands (RF paths), switches the associated components (input switches, preamplifiers, power amplifiers, sample port switches, output switches) and monitors the system.

The user interface (both on the instrument and via web browser) allows efficient operation, and various remote control interfaces make it possible to integrate the amplifier into automated environments and systems. Extension units accommodate additional amplifier units, allowing the R&S®BBA100 to be expanded into a system featuring higher power and/or multiple frequency bands.

Key facts

- Frequency range from 9 kHz to 1 GHz
- Output power up to 1000 W
- 100% mismatch tolerance
- Suitable for amplitude, frequency, phase and pulse modulation
- Software-updatable system controller with versatile control and configuration options
- Wide-range AC power supplies
- Three-year warranty



R&S®BBA100

Broadband Amplifier

Benefits and key features

All-in-one

- ▮ Compact modular design
- ▮ Extensive switching options for input, output and sample signals
- ▮ Multiple frequency ranges in a single compact unit
- ▮ Continued use of existing amplifiers

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Modular, flexible, ready for the future

- ▮ Amplifier modules in two sizes
- ▮ Base unit and extension unit
- ▮ Desktop or rack model
- ▮ Software-updatable system controller
- ▮ The R&S®BBA100 “grows” with the requirements

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Same high reliability as TV transmitters

- ▮ Reliable with high availability
- ▮ Cost benefit due to less downtime

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Versatile remote control options

- ▮ Many interfaces
 - Ethernet
 - Optical Ethernet
 - GPIB
 - USB
- ▮ Integration into the R&S®EMC32 measurement software

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Advanced user interface

- ▮ New in amplifiers: real graphical user prompting
- ▮ Fully graphics-capable display for easy operation directly on the instrument
- ▮ Local and remote operation via web browser and PC

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Unique safety concept

- ▮ Three independent interlocks
- ▮ Continued operation while changing test setup

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Quick and easy maintenance

- ▮ Amplifier module replacement by user takes only a few minutes
- ▮ In-plant repair
- ▮ Extended warranty for maximum protection of investment

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More than an amplifier

- ▮ The R&S®BBA100 is an evolution on the amplifier market
- ▮ Three-year warranty
- ▮ From pre-sale to service – at your doorstep

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Frequency range	Power classes
9 kHz to 250 MHz	125 W, 250 W, 500 W
80 MHz to 400 MHz	125 W, 250 W, 500 W, 1000 W
250 MHz to 1 GHz	70 W, 125 W, 250 W, 450 W, 800 W

Abbreviations

DHCP	Dynamic host configuration protocol
EMS	Electromagnetic susceptibility
EMC	Electromagnetic compatibility
FDDI	Fiber distributed data interface
GPIB	General purpose interface bus
SCPI	Standard commands for programmable instruments
VSWR	Voltage standing wave ratio

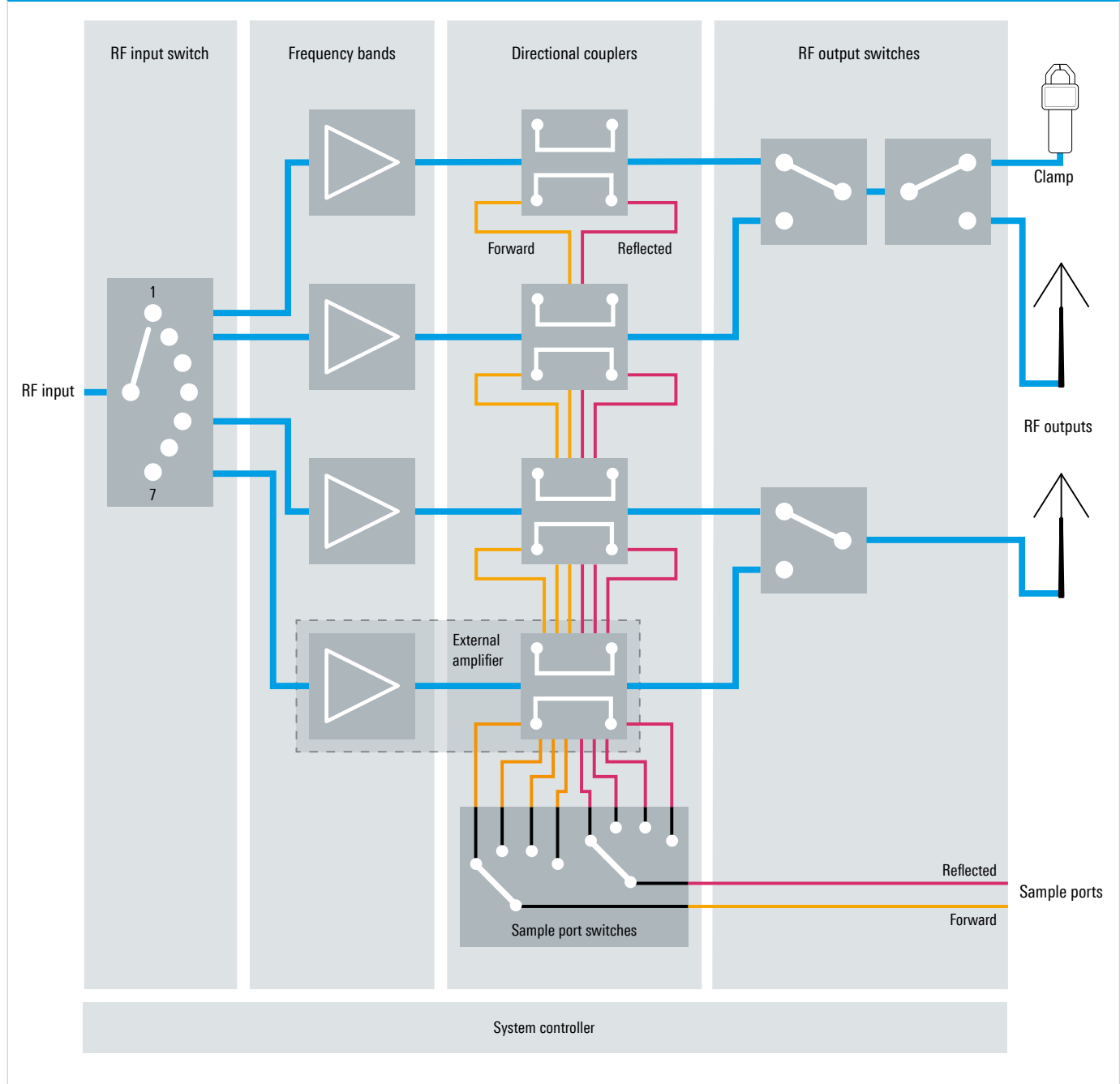
All-in-one

The system controller makes it possible to build amplifier systems with different frequency bands without using external control components.

Compact modular design

The space-saving R&S®BBA100 broadband amplifiers offer functions that were previously only possible with significantly more technical effort. Designed for the greatest flexibility in a minimum of space, the compact, modular 19" units for amplifier stages and other components can be combined to build highly integrated systems. These units are scalable, so that even complex systems are still compact in size.

Block diagram of the R&S®BBA100



Extensive switching options for input, output and sample signals

RF paths in the R&S®BBA100 include more components than just the power amplifiers. The signals are switched along these paths from the input port to the output port. The system controller controls these RF paths. A unit can contain multiple RF paths.

At a minimum, an RF path includes the amplifiers of the respective frequency range. The components explained below can be directly integrated according to application requirements and offer a previously unattained flexibility in an amplifier system.

The input switch is used to switch the RF input signal (e.g. from a signal generator) to one of the RF paths, making it possible to use a central input and eliminating the need to disconnect and reconnect the signal source.

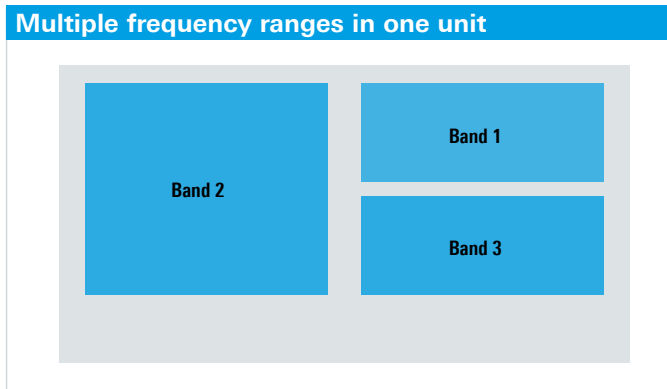
Sample port switches are used to apply the sample signals (forward and reflected power) from the various frequency bands to two central sample ports.

RF output switches allow flexible switching of frequency bands to different loads, e.g. clamps and antennas. RF output switches are available in 2:1 or 1:2 versions and can be cascaded as required by a specific application.

When an RF path is selected, all switches are automatically selected and correctly set.

Multiple frequency ranges in a single compact unit

The control functions make it possible to build a compact amplifier system without external switching matrices or other control devices. Only one 19" unit is needed for RF amplification and distribution at low output powers.



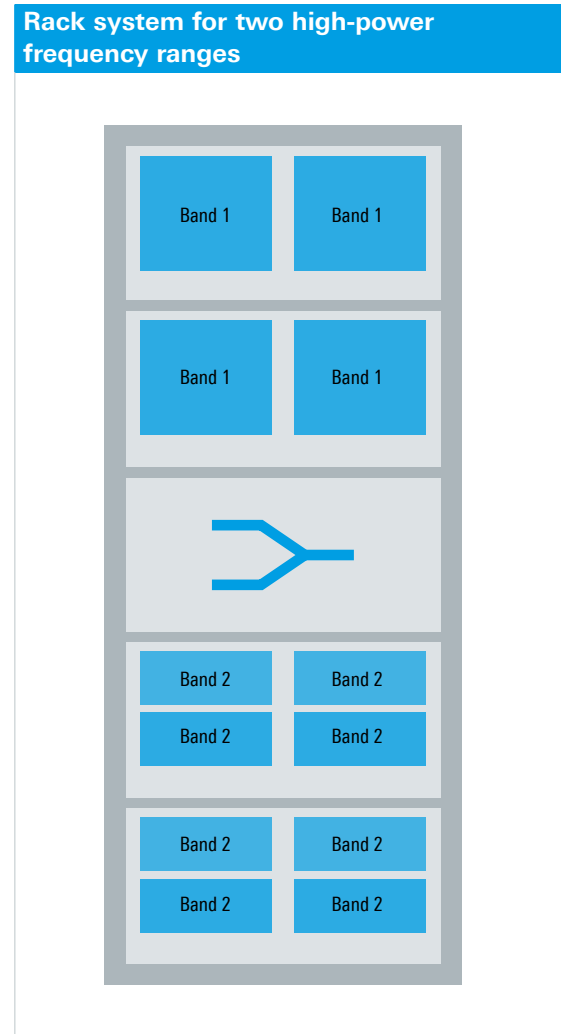
The example in the picture below contains three RF paths: RF path 1 from 9 kHz to 250 MHz at 125 W, RF path 2 from 80 MHz to 400 MHz at 250 W and RF path 3 from 250 MHz to 1 GHz at 125 W.

The input switch switches the central RF input to the selected frequency range. The output switches switch the output power to the appropriate loads. The sample port switch switches the sample signal to the sample ports.

Continued use of existing amplifiers

Up to two existing amplifiers from other manufacturers can be optionally integrated into an R&S®BBA100 system while maintaining consistent overall system operation.

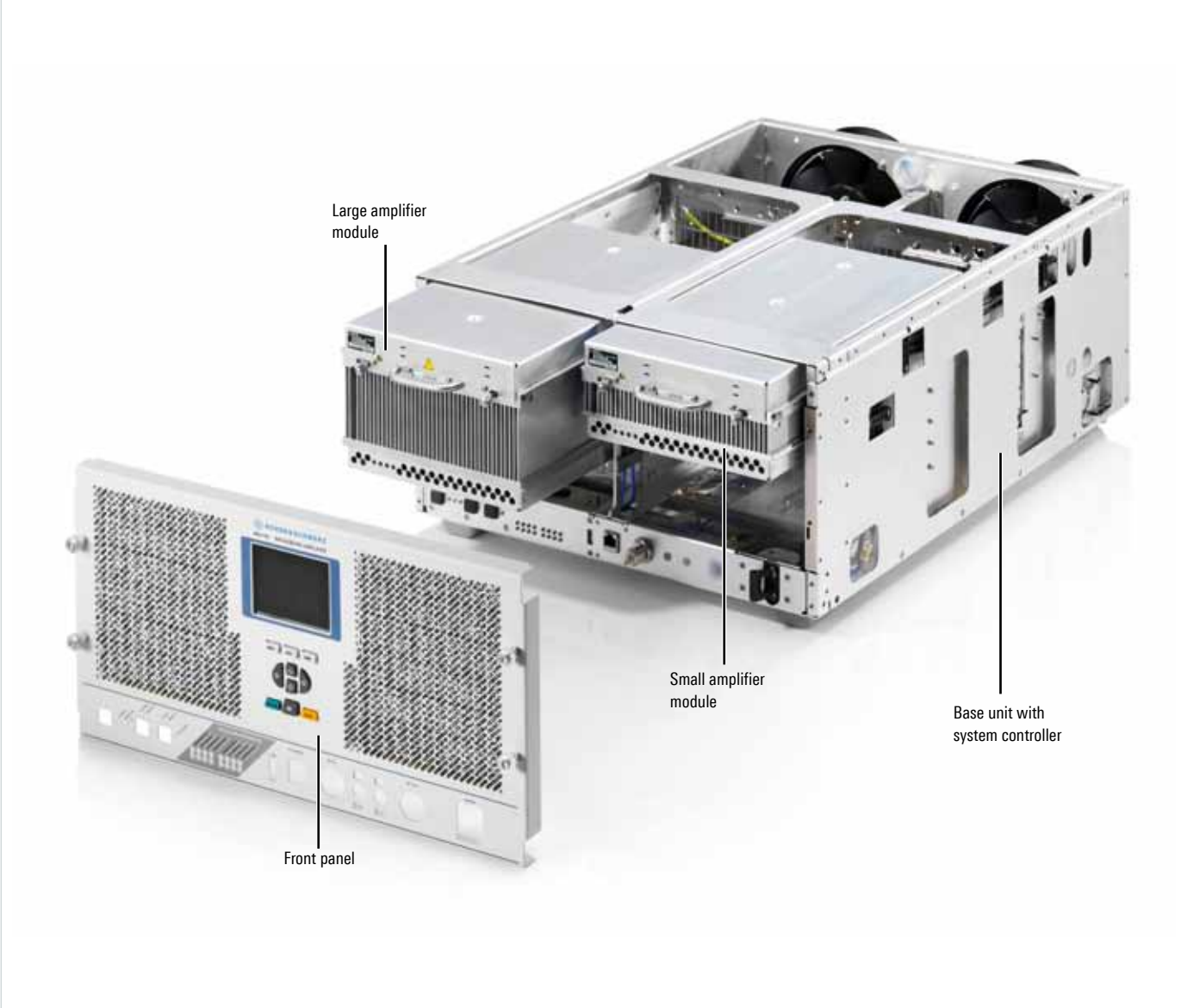
To integrate other amplifiers, their signal paths are implemented as RF paths which are controlled in the same way as for the other frequency ranges. User-definable labels on the graphical user interface provide a clear overview of frequency bands and output power.



Modular, flexible, ready for the future

The truly modular R&S®BBA100 can be upgraded to meet future requirements while protecting earlier investments and limiting future investments to those costs that are absolutely necessary.

Modular design



Amplifier modules in two sizes

The R&S®BBA100 broadband amplifier modules come in two sizes, depending on the output power and frequency range. These two modules are the basis of all customer-specific configurations.

Base unit and extension unit

The identically-sized base and extension units (5 HU, 19") can accommodate up to two of the large power amplifier modules or up to four of the small power amplifier modules. The associated preamplifiers and input switches are also part of a unit. Each system contains one base unit, which includes the system controller, display and central operating elements.

Desktop or rack model

Small and mid-sized systems consisting of a single unit can be configured as a desktop model. When two or more units are required, the R&S®BBA100 system is offered as a rack model. Various rack sizes are available so that existing customer instruments can be mechanically integrated.

Software-updatable system controller

The R&S®BBA100 contains a central system controller that performs all control and monitoring functions. Software updates are used for meeting future requirements. Firmware updates are used to add new functions to all other system components, e.g. amplifier modules. Some features are available as options at extra cost and can be selectively purchased, depending on the application.

The R&S®BBA100 "grows" with the requirements

More power and other frequency ranges are no problem with the R&S®BBA100. Existing RF paths can be upgraded in the plant for higher power classes by installing additional identical power amplifier modules and the associated power couplers. Existing power amplifier modules continue to be used. Standardized module sizes mean new frequency ranges can be added at any time, making it possible to invest in stages.

Same high reliability as TV transmitters

The R&S®BBA100 is just as reliable as Rohde & Schwarz sound and TV broadcast transmitters.

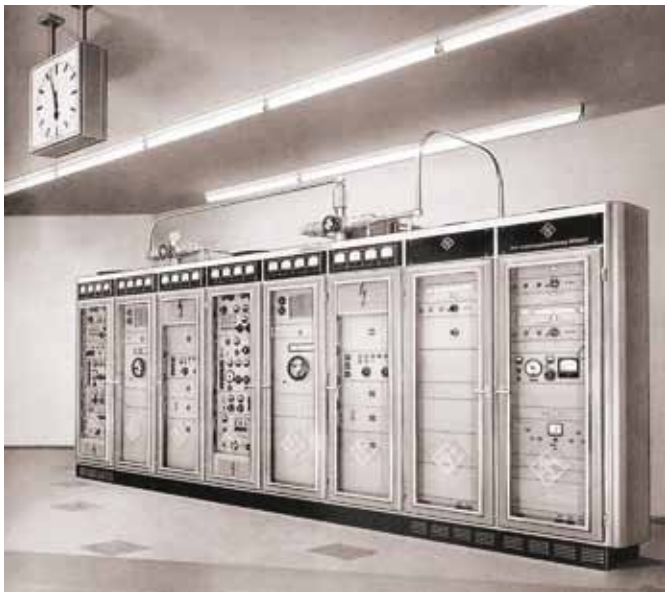
Reliable with high availability

Rohde & Schwarz sound and TV broadcast transmitters have been renowned for their reliability for decades – which is just one of the reasons why Rohde & Schwarz is the international market leader in digital terrestrial TV transmitters. This technology and experience has been brought to bear in the R&S®BBA100 broadband amplifier.

Cost benefit due to less downtime

Reliability is one of the key economic factors in test labs. The many of years of experience Rohde & Schwarz has in designing stable and reliable amplifiers pays off.

Transfer of know-how



1963:
VHF sound broadcast transmitter with 2 × 5 kW

All the Rohde & Schwarz expertise in manufacturing sound and TV broadcast transmitters has been brought to bear in the development of the R&S®BBA100 broadband amplifiers.



2007:
TV transmitter with 6.5 kW



2010:
R&S®BBA100 broadband amplifier

Versatile remote control options

The R&S®BBA100 has many interfaces, allowing it to be integrated into any system.

Many interfaces

A large selection of interfaces for automating T&M tasks provides the flexibility required to easily integrate the R&S®BBA100 into existing systems and to automate workflows. The large number of remote control commands make for easy control, and clear status messages provide system information such as measured values for output power, reflected power and VSWR.

Ethernet

The R&S®BBA100 can be integrated into existing TCP/IP topologies via Ethernet to provide a cost-effective, modern alternative for controlling instruments that requires no additional cabling. The instrument's Ethernet interfaces support 10 Mbit/s and 100 Mbit/s. An IP address can be assigned manually or configured automatically via DHCP.

Optical Ethernet

Optical connections are ideal where potential interference caused by radiation and emissions from electrically-conductive cables must be prevented. The R&S®BBA100 FDDI PMD interface option offers a 100 Mbit/s optical connection via a standardized SC connector. Again, an IP address can be assigned manually or automatically.

GPIB

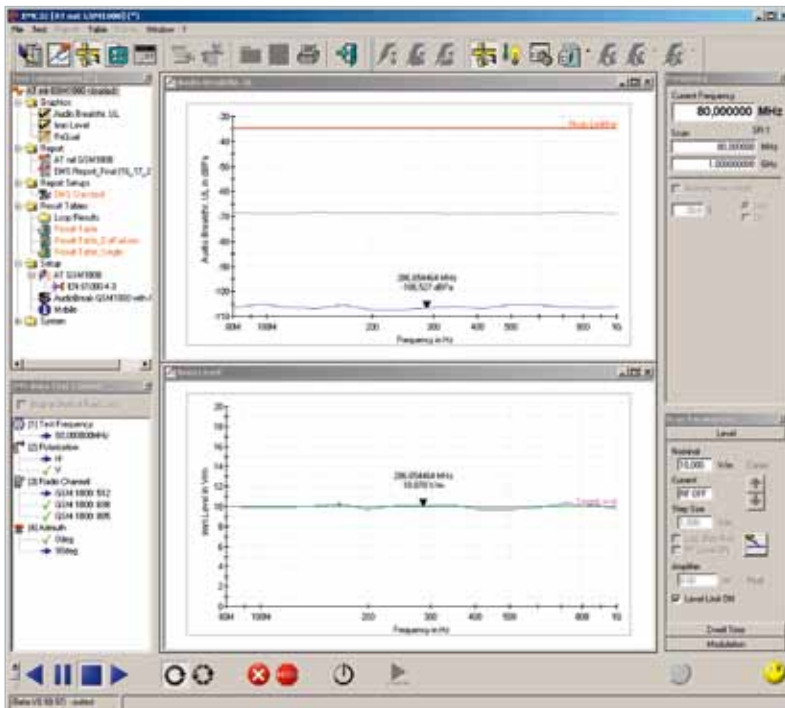
The established GPIB connection can be found in many T&M environments. Via this interface, the R&S®BBA100 offers remote control commands in accordance with the SCPI nomenclature to support existing standards.

USB

The USB interface, which is available on all laptops and PCs, can also be used for remote control.

Integration into the R&S®EMC32 measurement software

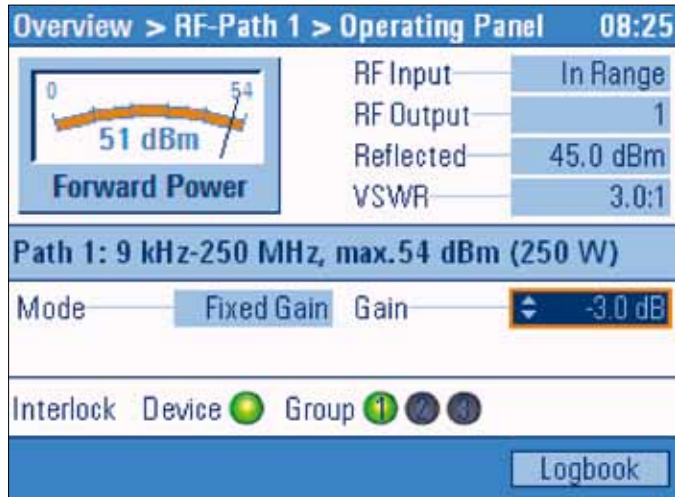
The R&S®BBA100 was integrated into the R&S®EMC32 measurement software from which it can be manually or automatically controlled. This allows the setup of complex measurement scenarios for efficient and flexible emission and immunity measurements in accordance with CISPR, IEC, ISO, EN, ETSI, VDE, FCC and ANSI.



The R&S®EMC32-S EMS measurement software during susceptibility testing on a mobile phone (measurement in accordance with the ETSI standard) where the DUT was subject to a field strength of 10 V/m. On the DUT (upper graphic), the audio level in the uplink and downlink was measured in order to test whether there was any coupling of the 1 kHz AM modulation in the phone.

Advanced user interface

The R&S®BBA100 comes with a powerful, clever graphical user interface.



New in amplifiers: real graphical user prompting

The powerful graphical user prompting on the R&S®BBA100 is a first for amplifiers. The intuitive, clever graphical interface makes the amplifier easy to use and improves overall system efficiency. Extensive status information and measurement values can be suitably displayed and understood at a glance.

Fully graphics-capable display for easy operation directly on the instrument

The base unit comes with a fully graphics-capable color display with a 320 × 240 pixel resolution for easy operation directly on the instrument itself and for a detailed overview of the system status.

Local and remote operation via web browser and PC

The R&S®BBA100 can also be operated from a PC via LAN or web browser: near the amplifier via the front Ethernet interface (e.g. on-site with a laptop) or from a control workstation via the rear Ethernet interface. The enhanced capabilities of a high-resolution PC screen are used to display more information at once. A common web browser (e.g. Microsoft Internet Explorer or Mozilla Firefox) and an up-to-date Java runtime environment (available free of charge at <http://www.java.com>) are needed. No other software is required.

The powerful user interface in practice:
local GUI (top), log-on screen (middle), web GUI (bottom).

Unique safety concept

In addition to the obligatory device interlock, three independent, configurable interlocks provide maximum operating safety and flexibility.

Three independent interlocks

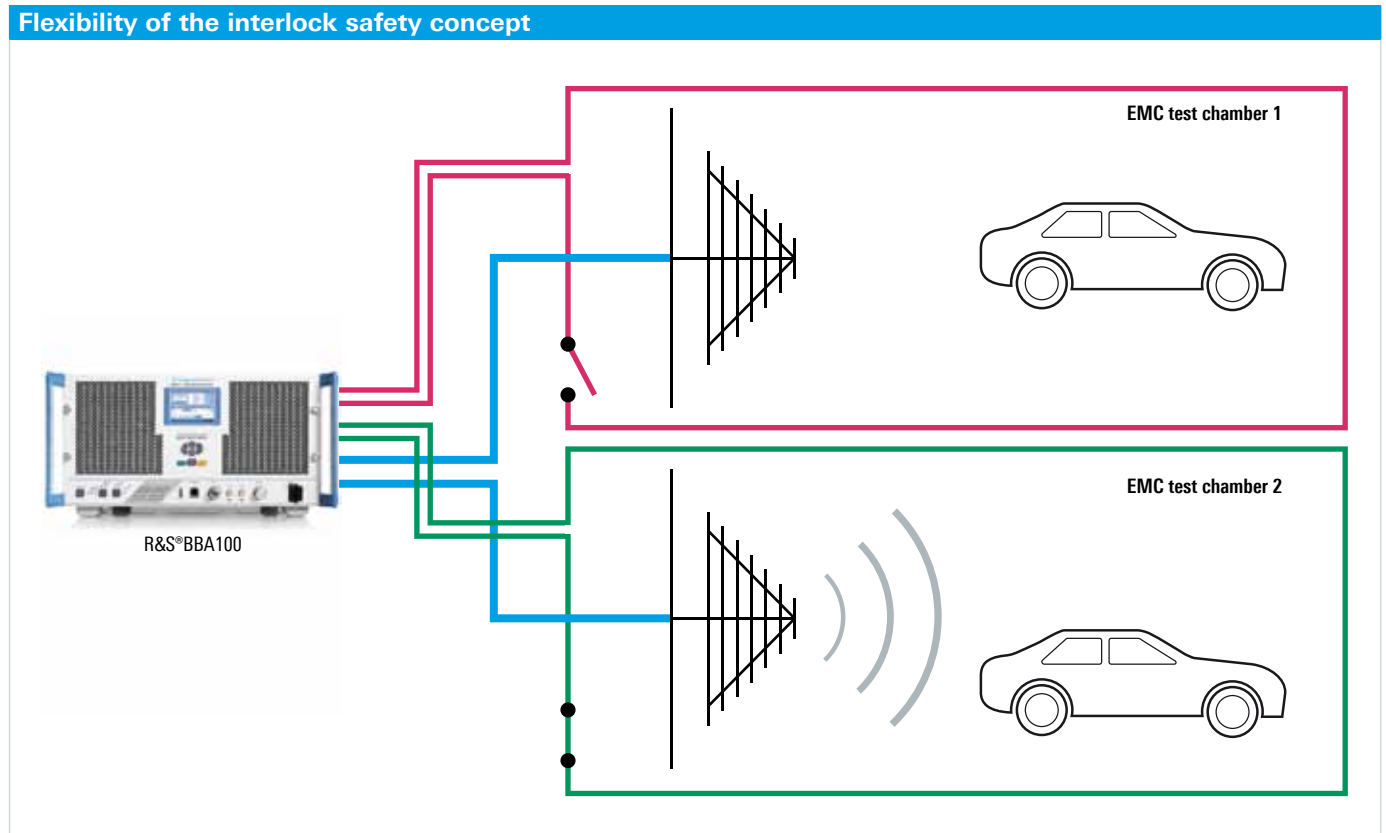
The independently, configurable interlocks in the R&S®BBA100 are part of a unique safety concept. The system monitors the interlocks and immediately switches off the output power when an interlock circuit is opened. The output power has to be actively switched on again, but the device interlock allows RF power to be output as soon as the circuit is closed.

Each RF path can be assigned an interlock on the graphical user interface in order to implement independent interlock safety concepts. Status LEDs on the instrument and the user interface provide information about the status of selected interlocks.

Continued operation while changing test setup

This function allows users more flexibility when using the R&S®BBA100.

This can be clearly seen in the example below with two EMC test chambers: The two existing system RF paths are assigned to different EMC test chambers that are protected by two independent interlocks. This solution makes it possible, for example, to change the test setup in chamber 1 during an ongoing EMC test in chamber 2.



Quick and easy maintenance

Short downtime due to multilevel service concept.

Amplifier module replacement by user takes only a few minutes

Due to their modular design, all R&S®BBA100 systems contain identical components. Should an amplifier module fail, a replacement will immediately be provided by the local Rohde & Schwarz representative, the nearest regional service base or directly from the plant.

The amplifier module can be replaced by the customer within a few minutes. The graphical user interface helps during diagnostics and troubleshooting. The removable front panel and the amplifier modules' self-engaging connectors ensure that the R&S®BBA100 is soon up and running again.

In-plant repair

If in-plant repair is necessary, the repair typically takes a maximum of ten working days (plus the time for shipping the instrument). This keeps downtimes as short as possible.

Extended warranty for maximum protection of investment

The extended warranty offers optimal performance and availability of an R&S®BBA100 system at low, calculable operating cost. The terms of one to four years (WE1 to WE4) – in addition to the three-year warranty – provide long-term investment protection.



The R&S®BBA100 in a rack.

More than an amplifier

Rohde & Schwarz has a worldwide network of local experts in over 70 countries.

The R&S®BBA100 is an evolution on the amplifier market

The R&S®BBA100 is much more than a broadband amplifier: It represents an evolution in amplifiers that goes beyond the technical features of a typical amplifier.

The integrated system controller together with numerous interfaces and control modules enables the setup of complex test configurations and amplifier systems – with no additional external hardware. The entire system can be easily operated via graphical user prompts on the instrument or via a web browser on the PC, and operation can be automated via the remote control interfaces. This modular system can always be upgraded, making it a secure investment, now and in the future.

Three-year warranty

A full three-year warranty demonstrates a level of confidence and reliability far beyond the norm.

From pre-sale to service – at your doorstep

Rohde & Schwarz is a technology group of companies with a global presence. More than 8000 employees maintain direct customer contact in over 70 countries.

The Rohde & Schwarz network in over 70 countries ensures optimum on-site support by highly qualified experts.

The user risks are reduced to a minimum at all stages of the project:

- Solution finding/purchase
- Technical start-up/application development/integration
- Training
- Operation/calibration/repair

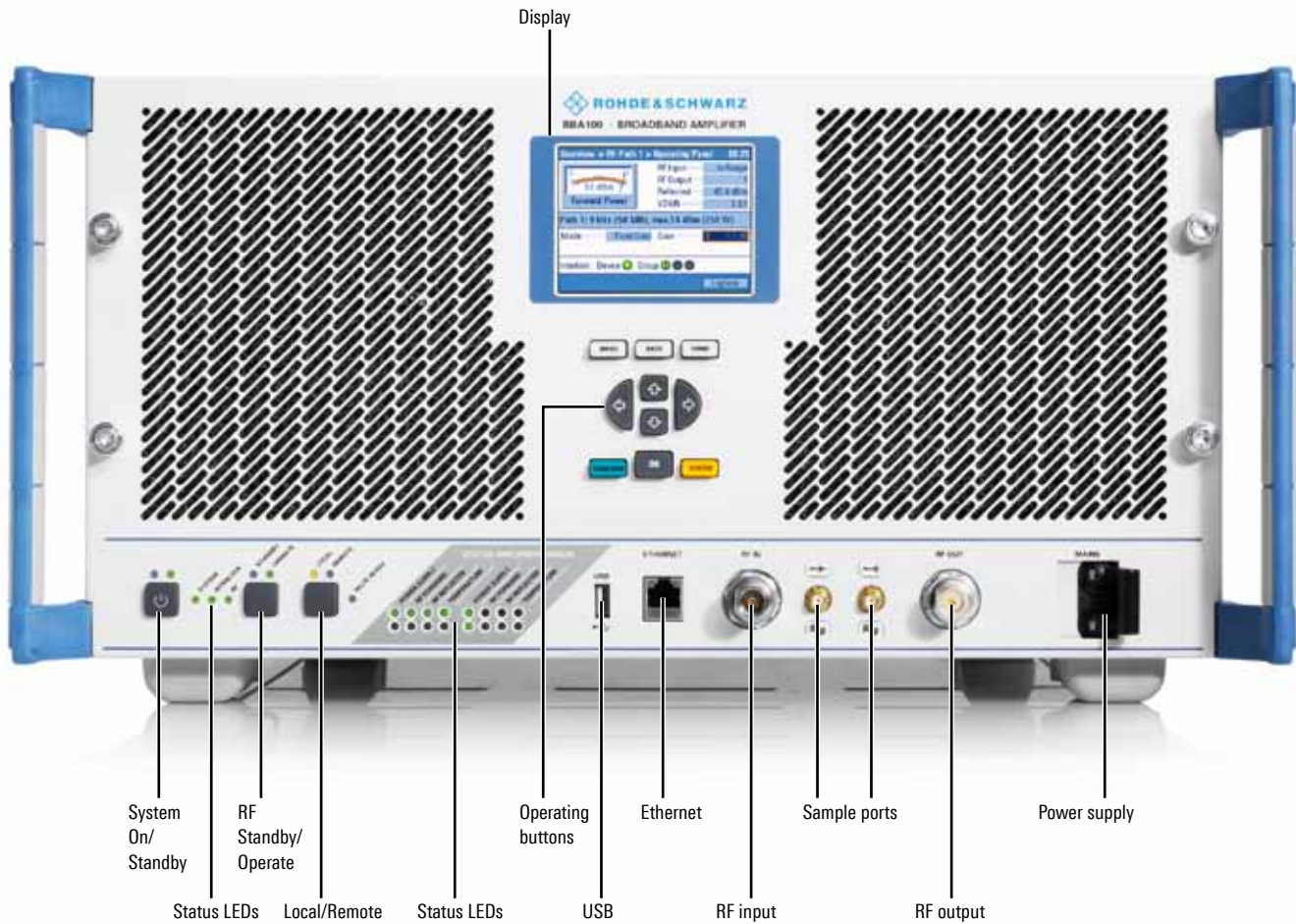
Rohde & Schwarz has the experience needed to offer all customers a customized solution tailored to their requirements – definitely more than just an amplifier.



Front view

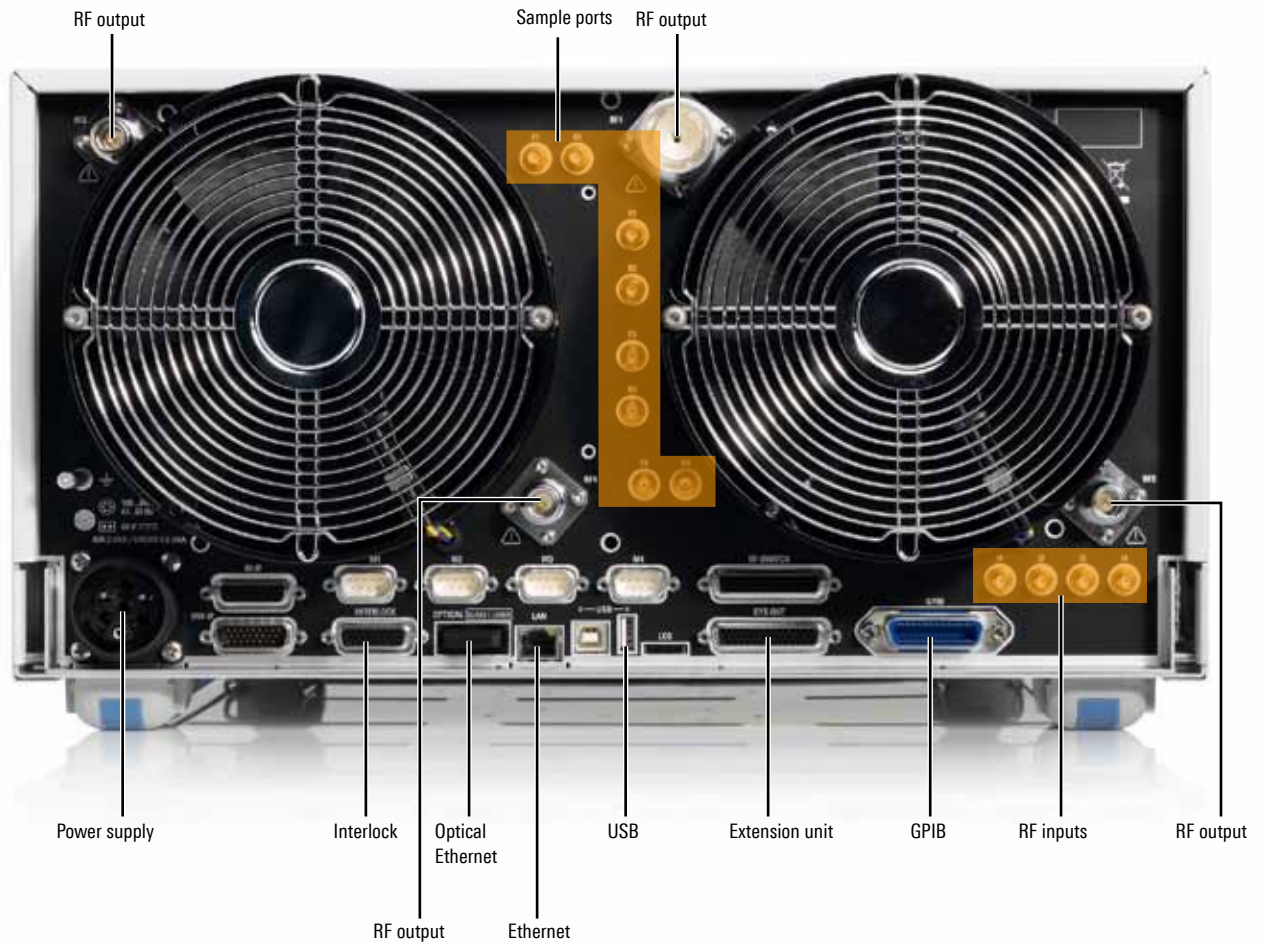
Desktop model

Functional elements



Rear view Desktop model

Functional elements



Specifications in brief

Specifications in brief		
RF specifications		
Frequency ranges		9 kHz to 250 MHz instantaneously 80 MHz to 400 MHz instantaneously 250 MHz to 1 GHz instantaneously
Nominal power classes	9 kHz to 250 MHz	125 W (51.0 dBm), 250 W (54.0 dBm), 500 W (57.0 dBm)
	80 MHz to 400 MHz	125 W (51.0 dBm), 250 W (54.0 dBm), 500 W (57.0 dBm), 1000 W (60.0 dBm)
	250 MHz to 1 GHz	70 W (48.5 dBm), 125 W (51.0 dBm), 250 W (54.0 dBm), 450 W (56.5 dBm), 800 W (59.0 dBm)
Nominal output load		50 Ω
Gain flatness		± 2.0 dB (or better, see data sheet)
Gain adjustment range		> 20 dB
Spurious		nom. -80 dBc, max. -60 dBc
Modulation capability		AM, FM, ϕ M, PM
Nominal input impedance		50 Ω
Input level for nominal output power	without RF input switch	-3.5 dBm
	with RF input switch	0 dBm
Nominal output impedance		50 Ω
Output mismatch protection		100%
RF sample and detected sample signals		
RF sample signal coupling factor	RF forward and reflected sample ports, optional	60 dB to 70 dB ± 1 dB
	RF forward and reflected sample ports via RF sample port switch, optional	62 dB to 72 dB ± 1 dB
Detected sample signal level	detected forward and reflected sample ports, optional	0.1 V to 3.0 V DC
RF and sample connectors		
RF input port	either front panel or rear panel	N female SMA female
RF output port	either front panel or rear panel	N female N female or 7/16 DIN female
RF sample port	forward output power, optional reflected output power, optional	SMA female SMA female
Detected sample port	forward output power, optional reflected output power, optional	SMA female SMA female
Graphical user interface		
Local graphical display		320 \times 240 pixel, 16.7 million colors
Local web GUI	via front Ethernet	RJ-45, 10/100 Mbit/s, autonegotiation, half/full duplex
Remote web GUI	via rear Ethernet	RJ-45, 10/100 Mbit/s, autonegotiation, half/full duplex

Specifications in brief

Remote control

GPIB/IEEE 488	GPIB, USB or Ethernet free of charge	IEC60625-2, 24-pin connector
USB	GPIB, USB or Ethernet free of charge	B female, full-speed, 12 Mbit/s
Ethernet	GPIB, USB or Ethernet free of charge	RJ-45, 10/100 Mbit/s, autonegotiation, half/full duplex
Optical Ethernet	optional	FDDI PMD, 100 Mbit/s, duplex SC connector

General data

Operating voltage range	power classes up to 500 W output power	110 V to 240 V AC, 50 Hz to 60 Hz, single phase, max. 5.5 kVA
	power classes above 500 W output power	177 V to 240 V AC, 50 Hz to 60 Hz, single phase, max. 30.0 kVA
Air cooling		forced air, built-in fans, air entry at front, air exit at rear
Dimensions		
Desktop model	W × H × D, incl. fans, handles and feet	430 mm × 250 mm × 710 mm (16.93 in × 9.84 in × 27.95 in)
	for rackmounting	19" 1/1, 5 HU
Rack models	W × D	600 mm × 800 mm
	available heights	12/15/20/30/35/42/46 HU

Environmental conditions

Temperature loading	operating temperature range	0°C to +45°C
	storage temperature range	-30°C to +70°C
Damp heat		max. +40°C at 95% rel. humidity, without condensation
Altitude	operating altitude	up to 3000 m
	storage altitude	up to 4600 m

Protection

Input overdrive	without damage	max. +15 dBm
	input blanking	approx. +4 dB above nominal input level
Load VSWR		10:1
Interlock		1 device interlock, 3 configurable interlocks
Input protection against bias voltage	optional	DC block level ≤ 50 V DC
Thermal limitation		foldback to nominal power + 10%
Transient voltage compatibility		category II, in line with IEC 60364-4-443
Maximum transient surge current	surge waveform 8/50 μs	≤ 6500 A
Short-circuit breaking capacity		automatic all-pole 32 A circuit breaker
Thermal overload		shutdown at +55°C ambient temperature

All specified parameters are valid for an ambient temperature of +25°C, input impedance of 50 Ω and output impedance of 50 Ω.

For data sheet, see PD 5214.0753.22 and www.rohde-schwarz.com.

Ordering information

Designation	Type	Configuration No.
R&S®BBA100 single-band power amplifiers		
Frequency band from 9 kHz to 250 MHz		
125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125
250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A250
500 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A500
Frequency band from 80 MHz to 400 MHz		
125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B125
250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B250
500 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B500
1000 W, air-cooled, 15 HU rack model	R&S®BBA100	BBA100-B1000
Frequency band from 250 MHz to 1 GHz		
70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-C70
125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-C125
250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-C250
450 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-C450
800 W, air-cooled, 15 HU rack model	R&S®BBA100	BBA100-C800
Accessories supplied: power cord, user manual on CD		
R&S®BBA100 dual-band power amplifiers		
The example configurations listed below are merely a selection of possible configurations. All frequency ranges and power classes can be combined as desired.		
Frequency bands from 9 kHz to 250 MHz and 80 MHz to 400 MHz		
125 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125B125
250 W/250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A250B250
500 W/500 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A500B500
Frequency bands from 9 kHz to 250 MHz and 250 MHz to 1 GHz		
125 W/70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125C70
125 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125C125
125 W/250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125C250
250 W/70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A250C70
250 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A250C125
250 W/250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A250C250
500 W/70 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A500C70
500 W/125 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A500C125
500 W/250 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A500C250
500 W/450 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A500C450
Frequency bands from 80 MHz to 400 MHz and 250 MHz to 1 GHz		
125 W/70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B125C70
125 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B125C125
250 W/70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B250C70
250 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B250C125
250 W/250 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-B250C250
500 W/70 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-B500C70
500 W/125 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-B500C125
500 W/250 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-B500C250
500 W/450 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-B500C450
1000 W/250 W, air-cooled, 20 HU rack model	R&S®BBA100	BBA100-B1000C250
1000 W/450 W, air-cooled, 20 HU rack model	R&S®BBA100	BBA100-B1000C450
1000 W/800 W, air-cooled, 30 HU rack model	R&S®BBA100	BBA100-B1000C800
Accessories supplied: power cord, user manual on CD		

Designation	Type	Configuration No.
R&S®BBA100 tri-band power amplifiers		
The example configurations listed below are merely a selection of possible configurations. All frequency ranges and power classes can be combined as desired.		
Frequency bands from 9 kHz to 250 MHz, 80 MHz to 400 MHz and 250 MHz to 1 GHz		
125 W/250 W/70 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125B250C70
125 W/250 W/125 W, air-cooled, 5 HU desktop model	R&S®BBA100	BBA100-A125B250C125
125 W/500 W/250 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A125B500C250
250 W/250 W/70 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A250B250C70
250 W/250 W/125 W, air-cooled, 12 HU rack model	R&S®BBA100	BBA100-A250B250C125
500 W/500 W/70 W, air-cooled, 15 HU rack model	R&S®BBA100	BBA100-A500B500C70
500 W/500 W/125 W, air-cooled, 15 HU rack model	R&S®BBA100	BBA100-A500B500C125
500 W/500 W/250 W, air-cooled, 15 HU rack model	R&S®BBA100	BBA100-A500B500C250
Accessories supplied: power cord, user manual on CD		

Designation	Type	Order No.
Options		
GPIO Remote Control	R&S®BBA-K101	5353.8417.00
USB Remote Control	R&S®BBA-K102	5353.8423.00
Ethernet Remote Control	R&S®BBA-K103	5353.8430.00
Optical Ethernet Remote Control	R&S®BBA-B104	5353.8600.00
RF Input Switch	R&S®BBA-B110	5353.9320.02
RF Output Switch 2:1 or 1:2 (N, max. 500 W)	R&S®BBA-B120	5353.9036.11
RF Output Switch 2:1 or 1:2 (7/16, max. 2000 W)	R&S®BBA-B121	5353.9042.02
External Amplifier Integration	R&S®BBA-B131	5353.9642.02
DC Block Input Protection (SMA rear)	R&S®BBA-B132	5353.9236.02
DC Block Input Protection (N front)	R&S®BBA-B132	5353.9236.03
RF Forward/RF Reflected Sample Ports (SMA front)	R&S®BBA-B140	5353.9213.02
RF Forward/RF Reflected Sample Ports (SMA rear)	R&S®BBA-B140	5353.9213.03
Detected Forward/Detected Reflected Sample Ports (SMA front)	R&S®BBA-B141	5353.9220.02
Detected Forward/Detected Reflected Sample Ports (SMA rear)	R&S®BBA-B141	5353.9220.03
RF Sample Port Switch (dual port, SMA front)	R&S®BBA-B142	5353.9242.02
RF Sample Port Switch (dual port, SMA rear)	R&S®BBA-B142	5353.9242.03
Service		
Factory Acceptance Test (FAT), 1 day	R&S®PROJ-D	5354.9100.53
Upgrade Frequency Band/Output Power	R&S®BBA-UPGR	on request
Accessories		
Racks in different sizes and various accessories are available for rackmounting (see data sheet).		

Service options		
Extended Warranty, one year	R&S®WE1BBA100	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2BBA100	
Extended Warranty, three years	R&S®WE3BBA100	
Extended Warranty, four years	R&S®WE4BBA100	

Your local Rohde & Schwarz expert will help you determine the optimum solution for your requirements. To find your nearest Rohde & Schwarz representative, visit www.sales.rohde-schwarz.com

Service you can rely on

- | Worldwide
- | Local and personalized
- | Customized and flexible
- | Uncompromising quality
- | Long-term dependability

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Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment

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- | Continuous improvement in environmental sustainability
- | ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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