

Широкополосный усилитель BBA130



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Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
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Пенза (8412)22-31-16

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Саратов (845)249-38-78
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Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
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Ставрополь (8652)20-65-13

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Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
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Череповец (8202)49-02-64
Ярославль (4852)69-52-93

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R&S®BBA130 Broadband Amplifier At a glance

The R&S®BBA130 broadband amplifiers offer a variety of setting options so you can optimally tune the output signal to your specific application. During operation, you can adjust the operating class for transistors between Class A and Class AB as well as choose between maximum output power or higher mismatch tolerance at the output.



R&S®BBA130-BC4200.

The primary area of application for R&S®BBA130 broadband amplifiers is design and product validation testing during RF component development, production and quality assurance.

The R&S®BBA130 broadband amplifiers feature a light-weight, modular design that is optimized for the specific frequency range. The amplifiers are available as a desktop and a rack model. The low-power amplifiers are 4 HU, 19" desktop models that can also be installed in a rack. Devices with higher power are rack models. The amplifiers can be operated via the display and buttons, via a remote control interface (automated operation) or via a web browser.

The modular design allows you to later upgrade the power and frequency range. The comprehensive service concept and global availability of spare parts promote the trust and confidence of customers around the world.

Key facts

- Three frequency ranges:
 - 80 MHz to 1.0 GHz
 - 0.69 GHz to 3.2 GHz
 - 2.5 GHz to 6.0 GHz
- Output power from 22 W to 4200 W
- Operating class for transistors adjustable between Class A and Class AB
- Choice between maximum output power or higher mismatch tolerance
- Suitable for amplitude, frequency, phase and pulse modulation
- Three year warranty and flexible service level agreements

R&S® BBA130

Broadband Amplifier

Benefits and key features

An amplifier for every application

- ▮ User-optimized tuning
 - ▮ Adjustable bias point
 - ▮ Maximum output power versus higher mismatch tolerance
- ▷ [page 4](#)

Flexible control and operation

- ▮ Manual operation
 - ▮ Local and remote operation via web browser and PC
 - ▮ Remote control via Ethernet
 - ▮ Safety thanks two different interlocks
- ▷ [page 7](#)

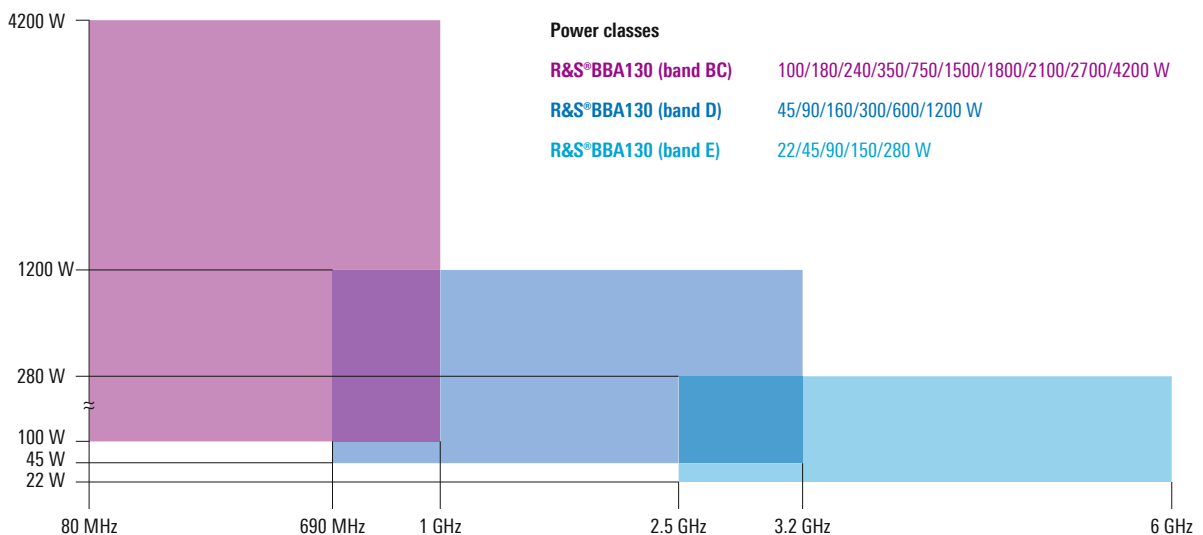
All in one

- ▮ Compact, modular design
 - ▮ Compact and flexible: twin-band and dual-band amplifiers in four HUs
 - ▮ Extensive switching options for inputs, outputs and sample ports
- ▷ [page 8](#)

Developed with experience and competence

- ▮ Outstanding expertise in amplifier development founded on decades of experience
 - ▮ State-of-the-art RF design
 - ▮ Series production in one of Europe's most advanced plants
- ▷ [page 10](#)

Model overview

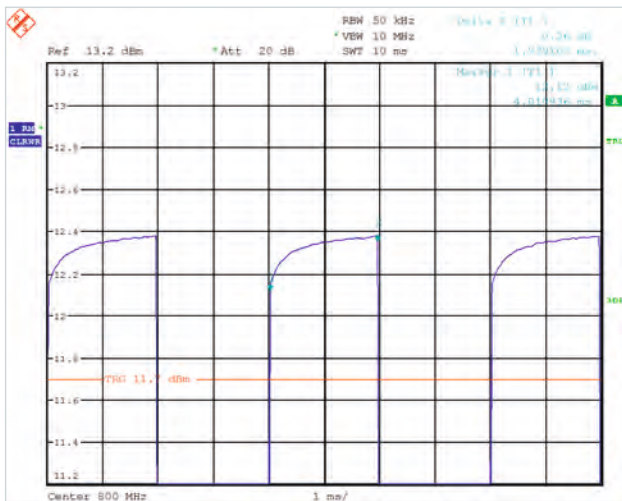


An amplifier for every application

User-optimized tuning

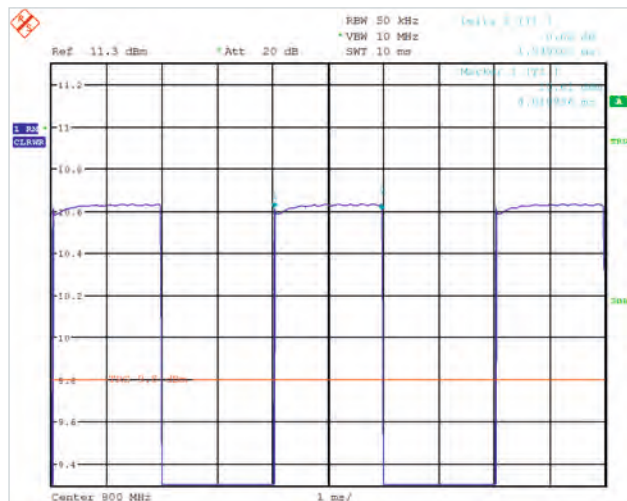
The R&S®BBA130 broadband amplifier is ideal for a variety of applications, including development and production validation tests and power sensor calibration. Each application requires different amplifier characteristics. The R&S®BBA130 provides two powerful tools for optimizing its output signal. You can adjust the operating class between Class A and Class AB and also choose between maximum output power or higher mismatch tolerance. This allows you to optimize the output signal and respond flexibly to a wide range of requirements. You can change both of these parameters while the amplifier is in operation.

Amplification of a 2 ms pulse on the R&S®BBA130



Class A

The power increases by 0.2 dB to 0.3 dB during the pulse because the power transistor's junction temperature drops when RF is applied, thereby increasing the amplification.



Class AB

The power level changes less than 0.05 dB during the pulse because the power transistor's junction temperature remains fairly constant when RF is applied.

Adjustable bias point

You can set the transistor bias to Class A, Class AB or anywhere in between in order to change the characteristics of the output signal. A bias point in Class A provides excellent linearity with good harmonic performance. A bias point in Class AB permits accurate reproduction of pulsed signals as well as improved efficiency.

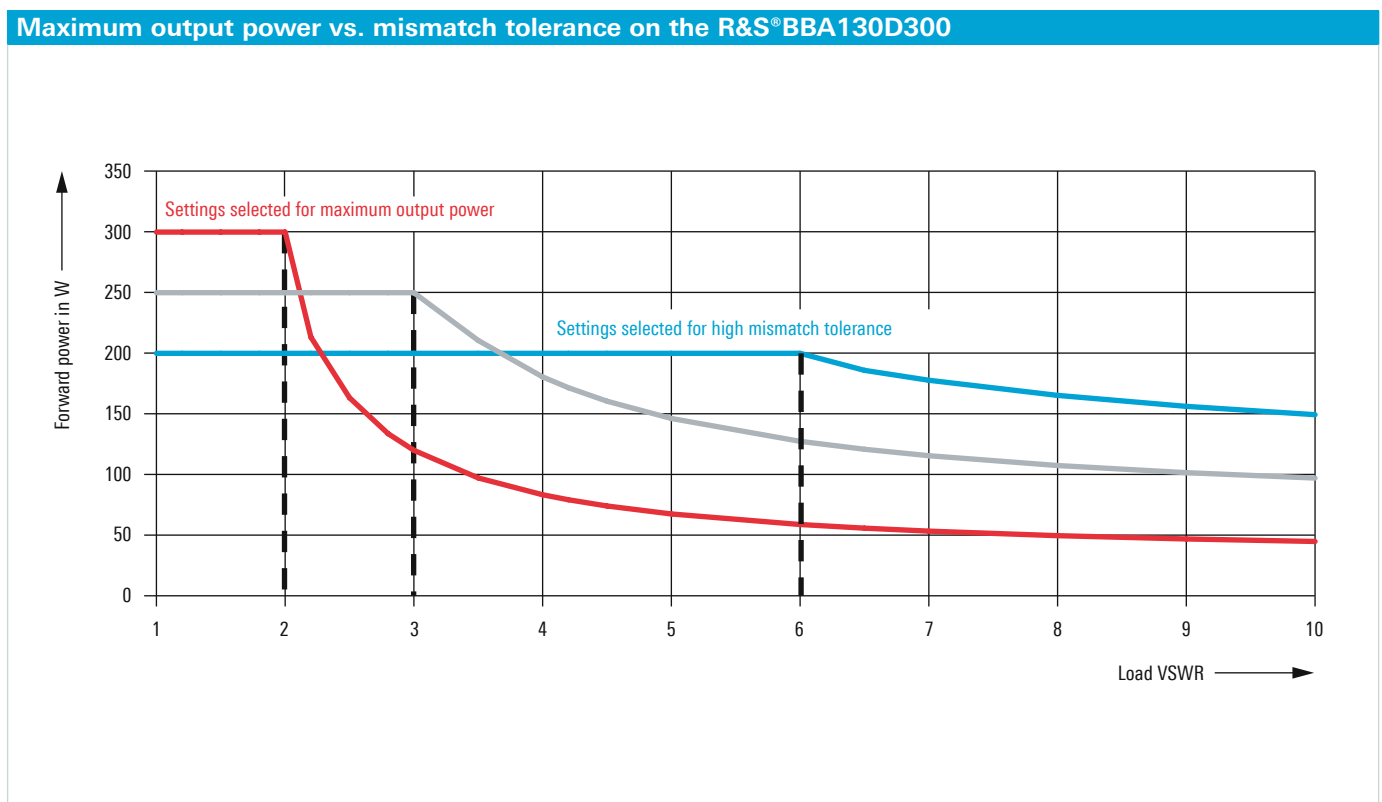
To generate a clean CW signal for a device test, operate the R&S®BBA130 in Class A. To accurately amplify pulsed signals, select a bias point in Class AB.

Maximum output power versus higher mismatch tolerance

Amplifiers are used for a number of different applications. The R&S®BBA130 allows you to choose between high maximum output power when there is a good impedance match (maximum VSWR approx. 2:1) or higher mismatch tolerance with a subsequent reduction in power (starting at about VSWR 6:1).

Impedance matching at the amplifier output is typically good during design and product validation tests. Good matching is ensured with DUTs developed for a 50 Ω system or when a circulator is inserted between the amplifier and the DUT. The amplifier power margin is then fully used. Mismatch can only be the result of a defective DUT or circulator. The amplifier can therefore reduce its power because it only has to protect itself.

For EMC applications involving poorly matched antennas or for DUT measurements with an input impedance that deviates significantly from 50 Ω, the amplifier must continue to produce the desired output power for as long as possible and therefore cannot reduce its power to protect itself (unless there is a very large mismatch).



Amplifier characteristics for various control parameter settings and typical applications

	Class AB <ul style="list-style-type: none"> Faithful reproduction of a pulsed signal Good efficiency 	Class A <ul style="list-style-type: none"> High linearity High spectral integrity
High power <ul style="list-style-type: none"> Signals with high crest factor Good matching needed at amplifier output 	Design and product validation tests <ul style="list-style-type: none"> Pulse tests Slam tests Tolerance tests Burn-in 	Design and product validation tests <ul style="list-style-type: none"> Intermodulation tests, e.g. PIM tests Multitone tests Peak-to-average ratio tests
High mismatch tolerance <ul style="list-style-type: none"> Poor matching acceptable at amplifier output 	Various tests <ul style="list-style-type: none"> Maximum output power depends on amplitude and phase of mismatch 	EMC tests <ul style="list-style-type: none"> Poor antenna/current probe matching; reflections from DUT and/or EMC chamber Scientific applications <ul style="list-style-type: none"> Linear broadband amplifier

Example applications and the appropriate amplifier parameter settings

Application	R&S®BBA130 settings
Pulse and slam testing These tests require high output power. The R&S®BBA130 protects itself even in the case of catastrophic DUT failures with sudden high VSWR levels.	Class AB and high power
Signals with high spectral integrity Here, linearity, peak power capability and efficiency need to be optimized together. Typical signals include multitone signals or complex modulation schemes with high peak-to-average ratios.	Class A/AB (find optimal slide control setting) and high power
EMC susceptibility testing The amplifier must deliver high power into broadband antennas or coupling networks with high input VSWR levels while simultaneously ensuring low harmonic content.	Class A and maximum mismatch tolerance
Silent and ecological operation When only a fraction of the output power is required, the power efficiency of the R&S®BBA130 can be maximized by reducing the quiescent currents. This saves energy cost, reduces the acoustic noise and increases amplifier MTBF.	Class AB

Flexible control and operation

Manual operation

The R&S®BBA130 is operated via the display and the buttons on the front panel. This is ideal for use in labs and makes it easy to change settings. A clever menu structure provides straightforward access to all essential information and possible settings; during operation, the RF output power, reflected power and VSWR are displayed.

Local and remote operation via web browser and PC

The web GUI integrated into the R&S®BBA130 is called up via LAN and web browser. The R&S®BBA130 can be conveniently operated via its graphical user interface using a laptop near the amplifier or a control workstation PC. A standard web browser is all that is needed.

Remote control via Ethernet

The standard Ethernet interface makes it possible to automate test sequences using remote control SCPI commands. To make integration especially easy, the IP network address can be set manually or assigned automatically via DHCP.

Safety thanks to two different interlocks

Two different interlocks are available. You can choose the one that best suits your application. The automatic device interlock is supplemented by a second, interactive interlock. The automatic device interlock restarts the amplifier without user interaction as soon as the interlock circuit is closed again. The interactive interlock requires user confirmation before RF power can be output again.

Operating class settings between A and AB and power mode adjustments for high power versus high mismatch tolerance. Below: web GUI. Right: mobile GUI.

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Operating Panel Settings Logbook Legal Information

- Operating Parameters
Output Mode High VSWR High Power
Operating Class AB A Save

- Gain
1+2 (Coupled RF-Path 1) -00.02 dB Set Gain
RF-Path 1 (0.69-3.2GHz) -01.00 dB Set Gain
RF-Path 2 (0.69-3.2GHz) -02.00 dB Set Gain

- Misc. Settings
Power Unit Watt dBm
Automatic Standby Yes No
Fan Control Mode 1 Mode 2

- Ethernet
Connection 1Gbit/s FD
MAC Address 66:55:44:33:22:11
IP Address 234.167.190.158
Subnet Mask 255.255.255.128
Gateway 234.167.190.1
DHCP Client On Off
Host Name BBA130-D45D45
SCPI Timeout 30 Minutes (recommended def.) 1 Day (not recommended)
Set Network Configuration

- System Info
Model D45D45 (1+2 (Coupled RF-Path 1))
Firmware Version SW:03.20,FPGA:01.06 (Jan 12 2017/11:22:33)
Serial Number 654321

ROHDE & SCHWARZ
R&S®BBA130 - Broadband Amplifier

Op. Panel Settings Logbook Legal Info

- Operating Parameters
Output Mode VSWR Power
Operating Class AB A Save

- Gain
1+2 (Coupled RF-Path 1) -00.02 dB Set Gain
RF-Path 1 (0.69-3.2GHz) -01.00 dB Set Gain
RF-Path 2 (0.69-3.2GHz) -02.00 dB Set Gain

- Misc. Settings
Power Unit Watt dBm
Automatic Standby Yes No
Fan Control Mode 1 Mode 2

- Ethernet
Connection 1Gbit/s FD
MAC Address 66:55:44:33:22:11
IP Address 234.167.190.158
Subnet Mask 255.255.255.128
Gateway 234.167.190.1
DHCP Client On Off
Host Name BBA130-D45D45
SCPI Timeout 30 Minutes (recommended def.) 1 Day (not recommended)
Set Network Configuration

- System Info
Model D45D45 (1+2 (Coupled RF-Path 1))
Firmware Version SW:03.20,FPGA:01.06 (Jan 12 2017/11:22:33)
Serial Number 654321

All in one

Compact, modular design

Though compact, the R&S®BBA130 broadband amplifier offers functions that normally involve a significantly higher investment in technology. Due to its lightweight design with a special aluminum-copper heat sink, the instrument weighs only half as much as conventional amplifiers in the same power class. An RF output power of up to 750 W below 1 GHz and up to 300 W above 1 GHz in just four height units means excellent power density.

The design is optimized for maximum flexibility in a small footprint. The compact, modular design of the amplifier stages and other components allows the setup of highly integrated systems based on 19" rack units. The frequency and power of these rack units can be flexibly configured.

Compact and flexible: twin-band and dual-band amplifiers in four HUs

Two frequency bands can be integrated into a 4 HU desktop model, either as a twin-band amplifier or a dual-band amplifier.

Twin-band amplifiers consist of two amplifiers, both with the same frequency band, that operate in parallel. These types of amplifiers are ideal for two-tone measurements and for applications that require the same test setup for multiple tests in a small space. Multiple twin-band units fit in a single rack.

Dual-band amplifiers contain two amplifiers with different frequency bands, and only one of these amplifiers is active at any given time. The optional switches for this option are integrated into the housing. The dual-band amplifiers cover the following frequency ranges: 80 MHz to 3.2 GHz and 690 MHz to 6 GHz.



The R&S®BBA130-BC1500D1200 amplifier system in a 19" rack with 35 HUs includes:

- Power amplifier, frequency band BC, 1500 W
- Power amplifier, frequency band D, 1200 W
- Input switch
- Output switch
- Sample port switch

Extensive switching options for inputs, outputs and sample ports

Single-band and dual-band amplifiers can be combined to build a single system with multiple frequency bands. Numerous switching options allow you to mix and match the individual amplifiers to obtain the best configuration for your specific application.

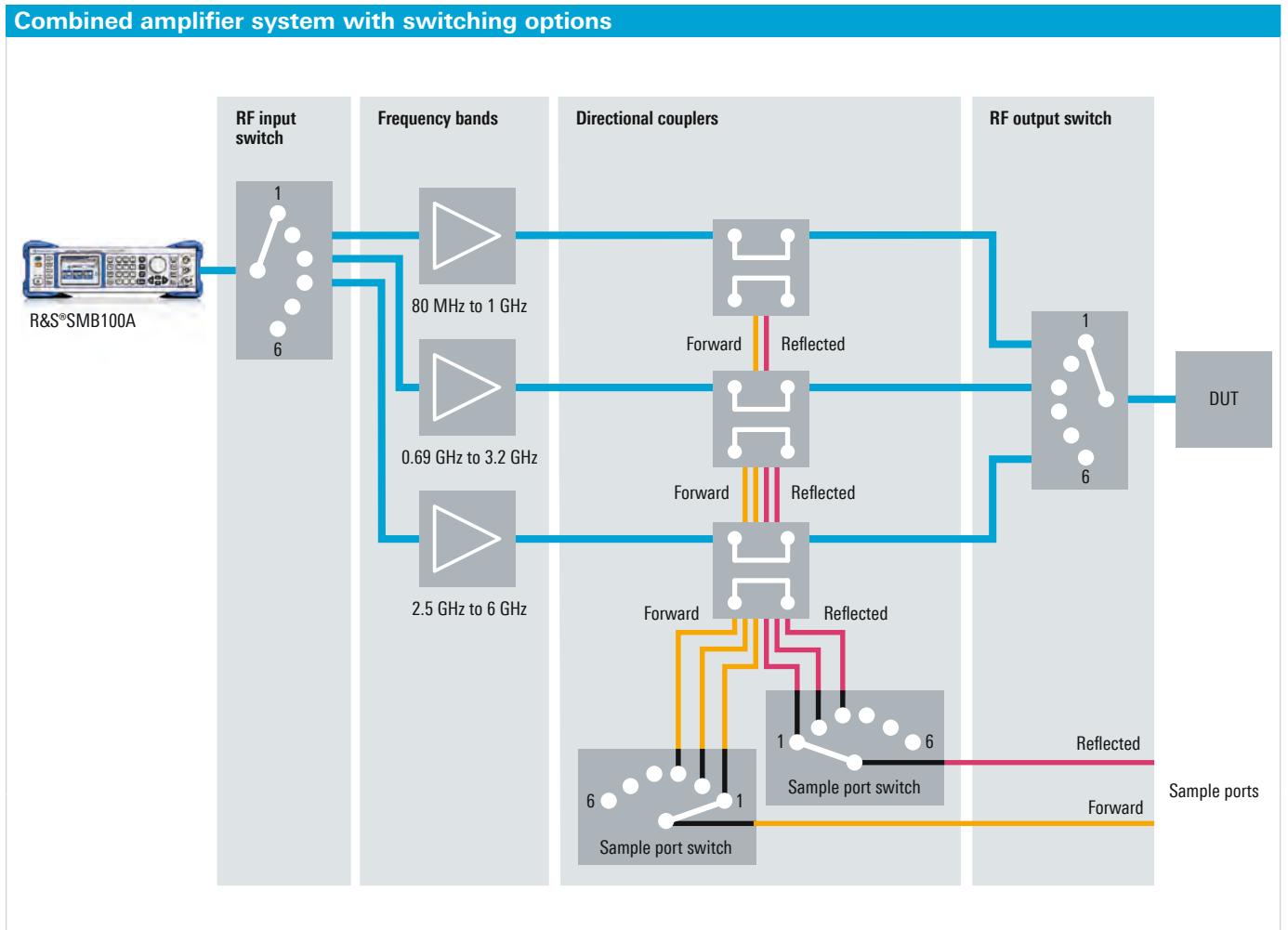
Every scenario is covered by flexibly combining the following components.

The input switch sets the RF input signal to one of the frequency bands so that a central input can be used without having to disconnect and reconnect the signal source.

Optional sample ports are available to measure the forward and reflected power at the amplifier's output. Sample port switches make the signals from the various frequency bands available at two central outputs.

RF output switches allow flexible connection of the frequency bands to different sinks, e.g. clamps or antennas. Different RF output switches can be configured in an application-specific manner.

All switches in the system are controlled via the built-in system controller. The desired RF path can be selected with a single remote control command or a press of a button. An RF path is the signal path from the input to the output of the amplifier system.



Developed with experience and competence

Outstanding expertise in amplifier development founded on decades of experience

has accumulated many years of experience in developing power amplifiers, starting in 1949 with the development of radio and TV transmitters. Their reliability is well-known and a major reason for the company's global market leadership in digital terrestrial transmitter technology. The R&S®BBA130 fulfills the promise to offer reliable amplifiers that maximize user effectiveness. Low downtime is an important economic factor.

State-of-the-art RF design

The use of state-of-the-art design and simulation programs during development, the use of power semiconductors from internationally leading manufacturers and the decades of experience of engineers in developing amplifiers result in the most advanced amplifier design currently available. Semiconductor dies directly bonded onto printed boards make it possible to achieve high output power in the frequency range from 2.5 GHz to 6 GHz, effectively preventing the parasitic effects caused by housed transistors.

Series production in one of Europe's most advanced plants

The R&S®BBA130 broadband amplifiers are series-produced in one of Europe's most advanced plants. The multiple award-winning¹⁾ plant in Teisnach, Germany, offers superior manufacturing depth. From precision mechanical engineering and metalworking to printed board production and final assembly, all manufacturing steps are united under one roof. Automated final test rigs ensure that only products that comply with specifications leave the plant.

¹⁾ Awards received by the Teisnach plant include:

- 2010, 2014 Factory of the Year, Germany
- 2013 Best Factory, award winner of European industrial excellence competition
- 2014 Bavarian Quality Award
- 2016 Global Excellence in Operations (GEO) overall award winner, Germany

Knowledge transfer

All of the radio and TV transmitter manufacturing know-how has gone into the development of the broadband amplifiers.



1963:
VHF radio transmitter with 2 × 5 kW



2010:
R&S®BBA100
broadband amplifier



2013:
R&S®BBA150
broadband amplifier



2014:
R&S®BBL200
broadband amplifier

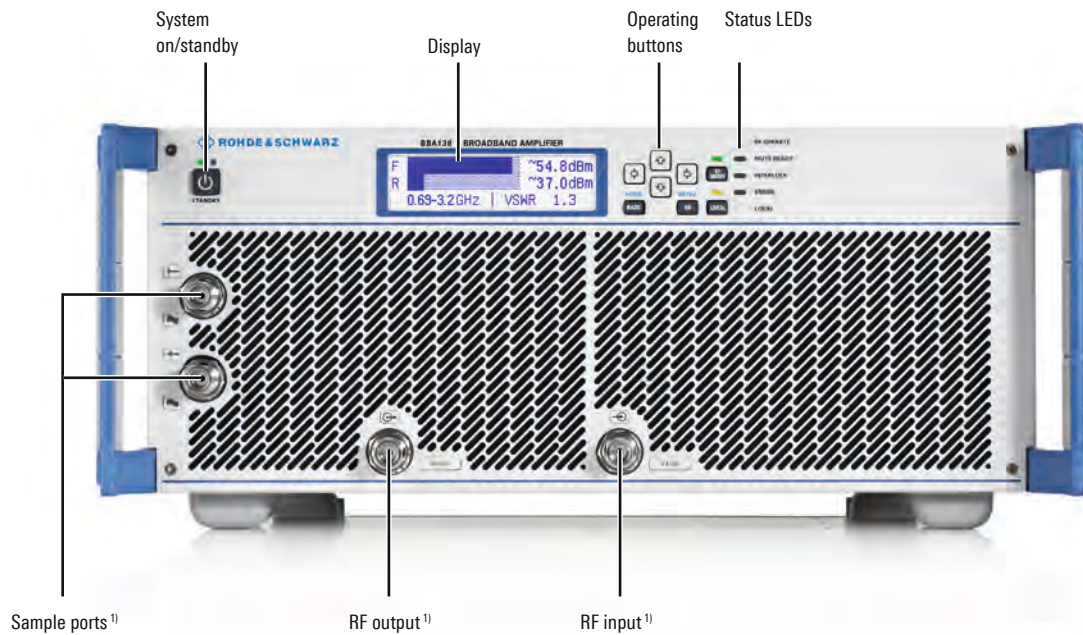


2016:
R&S®BBA130
broadband amplifier

Functional elements

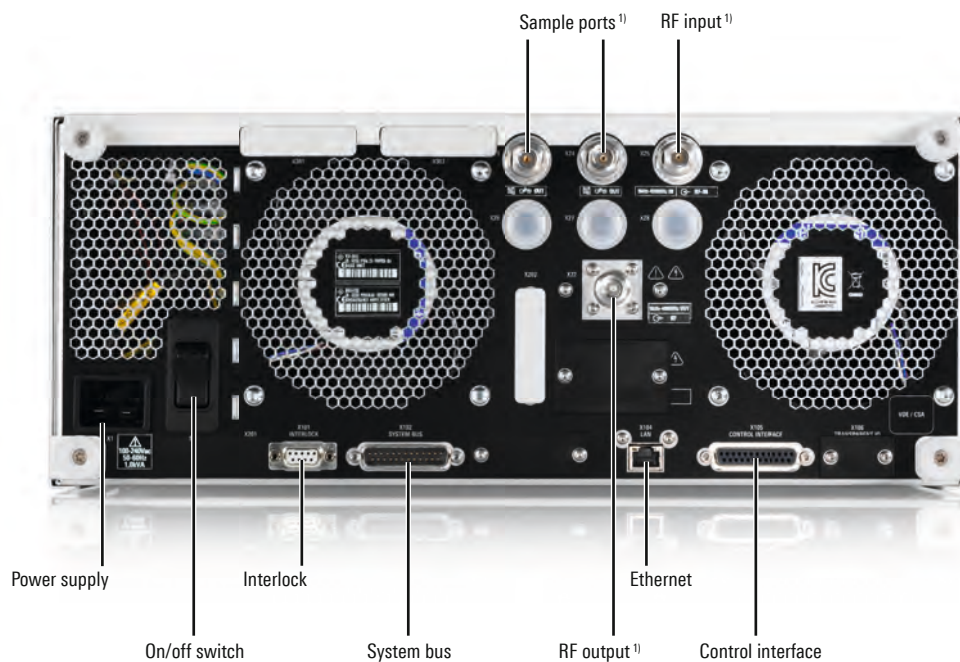
Desktop model

Front view



¹⁾ Optional or configuration-dependent.

Rear view



¹⁾ Optional or configuration-dependent.

Specifications in brief

Specifications in brief		
RF specifications		
Frequency range	continuous	<ul style="list-style-type: none"> ■ 80 MHz to 1.0 GHz ■ 0.69 GHz to 3.2 GHz ■ 2.5 GHz to 6.0 GHz
Nominal output power	80 MHz to 1.0 GHz	100 W to 4200 W
	0.69 GHz to 3.2 GHz	45 W to 1200 W
	2.5 GHz to 6.0 GHz	22 W to 280 W
Nominal output load		50 Ω
Gain flatness		±3.8 dB (or better; see data sheet)
Gain adjustment range		> 15 dB
Bias	adjustable	Class A through Class AB, continuous
Mismatch tolerance	adjustable	VSWR 2:1 to 6:1, continuous
Modulation capability		AM, FM, φM, PM
Nominal input impedance		50 Ω
Maximum RF input level		max. +15 dBm
Input level for nominal output power		-3.4 dBm
Nominal output impedance		50 Ω
Output mismatch tolerance, VSWR		100%, without damage
RF and sample connectors		
RF input port		N female
RF output port		N female, 7/16 DIN female or 1 8" EIA female
RF sample ports	forward output power, optional	N female
	reflected output power, optional	N female
Detected sample ports	forward output power, optional	N female
	reflected output power, optional	N female
Graphical user interface		
Local graphical display		200 × 48 pixel, monochrome
Web GUI	via Ethernet	RJ-45, 10/100 Mbit/s, autonegotiation, half/full duplex
Remote control		
Ethernet		RJ-45, 10/100 Mbit/s, autonegotiation, half/full duplex
General data		
Operating voltage range	R&S®BBA130-BC100, R&S®BBA130-BC180, R&S®BBA130-D45-D160, R&S®BBA130-E22-E150	100 V to 240 V AC ± 10%, single phase, 50 Hz to 60 Hz ± 6%
	R&S®BBA130-BC240, R&S®BBA130-BC350	110 V to 240 V AC ± 10%, single phase, 50 Hz to 60 Hz ± 6%
	R&S®BBA130-BC750, R&S®BBA130-D300, R&S®BBA130-D600, R&S®BBA130-E280	200 V to 240 V AC ± 10%, single phase, 50 Hz to 60 Hz ± 6%
	R&S®BBA130-BC1500-BC4200, R&S®BBA130-D1200	380 V to 415 V AC ± 10%, three phase, with N, 50 Hz to 60 Hz ± 6%
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 × 196 mm × 580 mm (16.93 in × 7.72 in × 22.83 in)
	for rackmounting	19" 1/1, 4 HU
Rack models (W × H × D)	R&S®BBA130-BC1500/-D600	19" × 12 HU × 800 mm
	R&S®BBA130-D1200	19" × 20 HU × 800 mm
	R&S®BBA130-BC1800/-BC2100/-BC2700	19" × 20 HU × 1000 mm
	R&S®BBA130-BC4200	19" × 35 HU × 1000 mm

Specifications in brief

Environmental conditions

Temperature range	operating temperature	0°C to +40°C
	storage temperature	-20°C to +70°C
Damp heat		max. +40 °C at 95 % rel. humidity, without condensation
Altitude	operating altitude	up to 2000 m
	storage altitude	up to 4600 m

Protection

Load VSWR		infinite
Interlocks		1 automatic interlock, 1 interactive interlock
Input protection against bias voltage	optional	DC block level \leq 50 V DC
Transient voltage compatibility		category II, in line with IEC 60364-4-443
Short-circuit breaking capacity		all-pole 20 A circuit breaker
Thermal overload		shutdown in case of thermal overload

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

Ordering information

Designation	Type	Configuration No.
R&S®BBA130 single-band power amplifiers		
Frequency band: 80 MHz to 1.0 GHz		
100 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC100
180 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC180
240 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC240
350 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC350
750 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC750
1500 W, air-cooled, 12 HU rack model	R&S®BBA130	BBA130-BC1500
1800 W, air-cooled, 20 HU rack model	R&S®BBA130	BBA130-BC1800
2100 W, air-cooled, 20 HU rack model	R&S®BBA130	BBA130-BC2100
2700 W, air-cooled, 20 HU rack model	R&S®BBA130	BBA130-BC2700
4200 W, air-cooled, 35 HU rack model	R&S®BBA130	BBA130-BC4200
Frequency band: 0.69 GHz to 3.2 GHz		
45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D45
90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D90
160 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D160
300 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D300
600 W, air-cooled, 12 HU rack model	R&S®BBA130	BBA130-D600
1200 W, air-cooled, 20 HU rack model	R&S®BBA130	BBA130-D1200
Frequency band: 2.5 GHz to 6.0 GHz		
22 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E22
45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E45
90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E90
150 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E150
280 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E280
Accessories supplied: power cord, user manual on CD.		
R&S®BBA130 twin-band power amplifiers ¹⁾		
Frequency bands: 2 × 80 MHz to 1 GHz		
100 W/100 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC100BC100
180 W/180 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC180BC180
240 W/240 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC240BC240
350 W/350 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC350BC350
Frequency bands: 2 × 0.69 GHz to 3.2 GHz		
45 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D45D45
90 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D90D90
160 W/160 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-D160D160
Frequency bands: 2 × 2.5 GHz to 6.0 GHz		
22 W/22 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E22E22
45 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E45E45
90 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E90E90
150 W/150 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-E150E150
R&S®BBA130 dual-band power amplifiers ¹⁾		
Frequency bands: 80 MHz to 1.0 GHz and 0.69 GHz to 3.2 GHz		
180 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC180D45
180 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC180D90
180 W/160 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC180D160
240 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC240D45
240 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC240D90
240 W/160 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC240D160

Designation	Type	Configuration No.
350 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC350D45
350 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC350D90
350 W/160 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA130-BC350D160
Frequency bands: 0.69 GHz to 3.2 GHz and 2.5 GHz to 6.0 GHz		
45 W/22 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D45E22
45 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D45E45
90 W/22 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D90E22
90 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D90E45
90 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D90E90
160 W/45 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D160E45
160 W/90 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D160E90
160 W/150 W, air-cooled, 4 HU desktop model	R&S®BBA130	BBA150-D160E150
Accessories supplied: power cord, user manual on CD.		
Options		
GPIB Remote Control, external converter	R&S®BBA-B101	5355.8250.02
GPIB Remote Control, for racks up to 30 HU	R&S®BBA-B101	5355.8250.03
GPIB Remote Control, for racks higher than 30 HU	R&S®BBA-B101	5355.8250.04
RF Input Switch (1:2 or 2:1, N)	R&S®BBA-B110	5355.8866.02 ²⁾
RF Input Switch (1:6, N)	R&S®BBA-B116	5355.8950.02
RF Output Switch (2:1 or 1:2, N)	R&S®BBA-B120	5355.8795.02 ²⁾
RF Output Switch (2:2, 7/16)	R&S®BBA-B121	5355.8895.02 ²⁾
RF Output Switch (2:2, 7/8" EIA)	R&S®BBA-B122	5355.8989.02
RF Output Switch (2:2, 1 5/8" EIA)	R&S®BBA-B123	5355.8943.02
RF Output Switch (6:1, N)	R&S®BBA-B126	5355.8995.02
Fast Amplifier Mute	R&S®BBA-B130	5355.8114.02
DC Block Input Protection (N)	R&S®BBA-B132	5353.9236.03
RF Forward/RF Reflected Sample Ports (N front)	R&S®BBA-B140	5355.8837.02
RF Forward/RF Reflected Sample Ports (N rear)	R&S®BBA-B140	5355.8837.03
Detected Forward/Detected Reflected Sample Ports (N front)	R&S®BBA-B141	5355.8850.02
Detected Forward/Detected Reflected Sample Ports (N rear)	R&S®BBA-B141	5355.8850.03
Sample Port Switch (dual-port, N front)	R&S®BBA-B142	5355.8872.02
Sample Port Switch (dual-port, N rear)	R&S®BBA-B142	5355.8872.03
Transparent I/O	R&S®BBA-B160	5355.8889.02

¹⁾ Amplifier systems with two or more frequency bands are available in many combinations. The table shows only a selection of the multiband power amplifiers.

²⁾ The last two digits of the order number depend on the system configuration.

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06

Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Россия (495)268-04-70

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Казахстан (772)734-952-31

Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93