

R&S®FU129

ANTENNA FILTER UNIT

Antenna switching, rotator control and signal attenuation, amplification and filtering



Product Brochure
Version 09.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The R&S®FU129 antenna filter unit is placed close to the receiving antennas. It comes with an antenna input selector for remote controlled switching of up to six antenna inputs to one output. Unwanted signals, such as those caused by nearby mobile base stations or strong sound and TV broadcast transmitters, can be reduced to levels suitable for the connected receiver by applying optional filters. Both strong useful signals and interfering signals can be suppressed.

All R&S®FU129 functions are controlled either directly by a control PC (connected to the R&S®FU129 via a LAN cable) or by the tried-and-tested R&S®MSD antenna switching unit.

Excellent documentation for both interfaces ensures that system integrators and end customers can easily integrate the R&S®FU129 into customized systems and existing projects.

When using the comprehensive and convenient R&S®ARGUS monitoring software, integration of the R&S®FU129 enables extremely challenging and complex measurement series to be performed fully automatically. This includes selecting one of the various antennas and switching the antenna paths as required, with and without filters, amplifiers, etc. The area of reception is covered by directional antennas that are turned with rotators.

The software comes standard with path correction tables to compensate for the insertion loss in defined paths. This allows R&S®ARGUS to display the correct field strength levels for all configurations.

Key facts

- ▶ 1-out-of-6 antenna input selector
- ▶ Wide frequency range from DC to 26.5 GHz
- ▶ Suitable for outdoor use very close to antennas
- ▶ Integrated AC and DC rotator control (azimuth and polarization/elevation)
- ▶ Powerful options
 - Five selectable attenuators for reducing strong signal levels
 - Two selectable amplifiers for different frequency ranges
 - Up to ten selectable filters with different characteristics
 - Specific for the selected analog or digital rotator sensor
- ▶ DC power supply for active antennas



SMA version (model .13).



N version (model .14).

Advantages of placement very close to antennas

- ▶ Each antenna, and the rotators for azimuth and polarization/elevation, are connected with a short cable
- ▶ A single long RF feeder cable from the R&S®FU129 unit to the receiver in the equipment room
- ▶ Required amplifiers are located near the antennas – ahead of any feeder cable that may cause significant loss – to achieve the best possible signal level
- ▶ Only one control cable is required to control all functions and the rotators
- ▶ The maximum recommended length of the control cable to the R&S®MSD is 50 m and the maximum recommended length of the LAN cable is 100 m

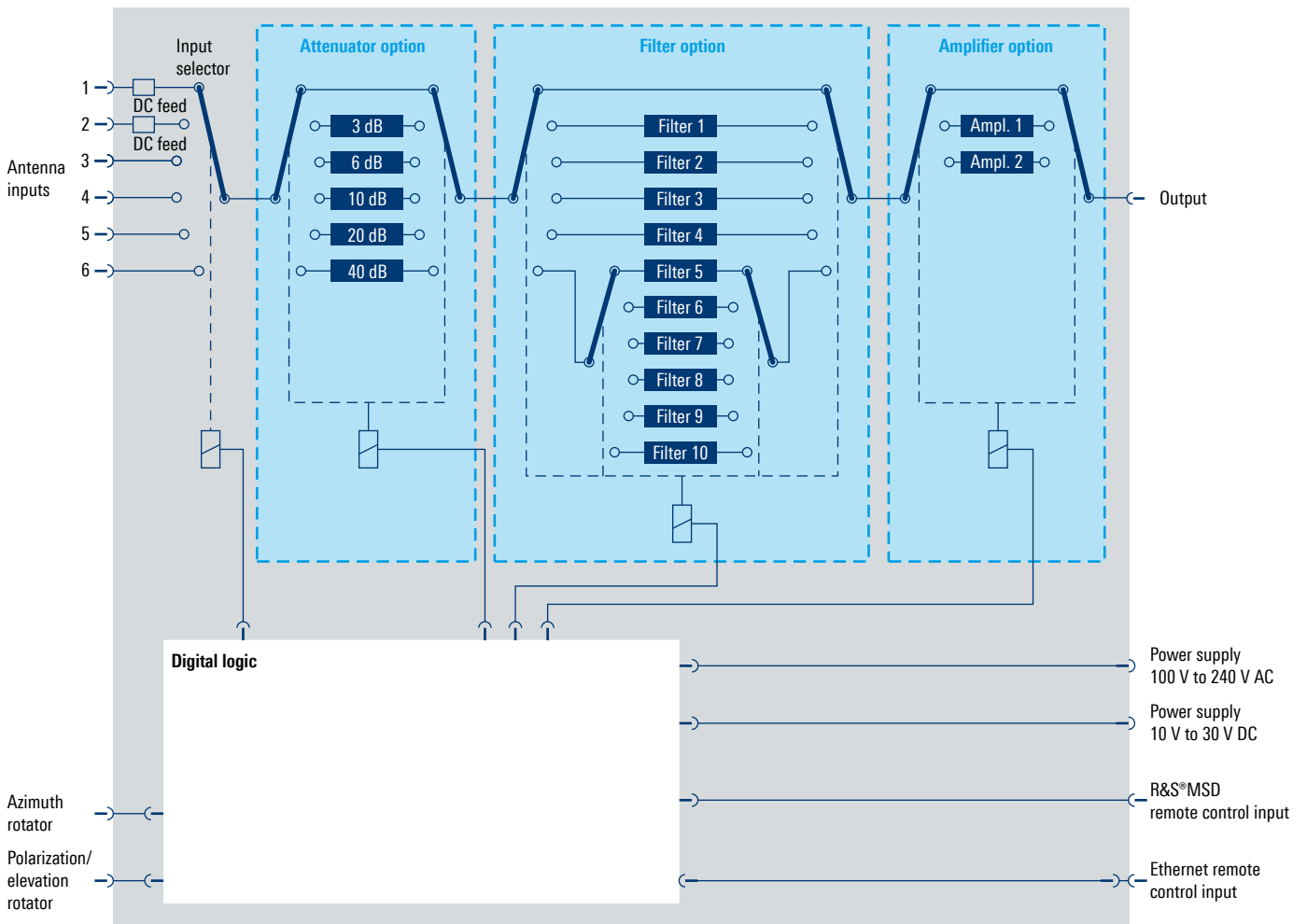
System configuration

In its basic configuration, the R&S®FU129 antenna filter unit consists of an antenna input selector (1 out of 6), a wide-range power supply for AC and DC voltages and a rotator control unit for azimuth and polarization/elevation rotators. Supported devices include the Yaesu models G-2800, G-550 and G-5500. The R&S®RO129 and Winter AR/AE 1049 rotators require the R&S®FU129-ARS option.

The following function groups can be optionally integrated at the factory:

- ▶ Six-stage attenuator group (0/3/6/10/20/40 dB)
- ▶ Five-stage or ten-stage filter group for up to ten different filters of various types (highpass, lowpass, bandpass, bandstop)
- ▶ Amplifier group with different amplifiers
 - R&S®FU129-A1 option covers the frequency range from 20 MHz to 8 GHz.
 - R&S®FU129-A2 option covers the frequency range from 1 GHz to 26.5 GHz. It is possible to select only one of the two or both options.
 - In all cases, the R&S®FU129-A0 option is required once to bypass the amplifier(s).

System configuration



Specifications

RF characteristics

Base unit		
Frequency range		DC to 26.5 GHz
Impedance		50 Ω
Insertion loss		
Models .13/.14	up to 3 GHz	≤ 1.0 dB
	3 GHz to 8 GHz	≤ 1.4 dB
Model .13	8 GHz to 12 GHz	≤ 1.7 dB
	12 GHz to 26.5 GHz	≤ 3.0 dB
Contact switching time		≤ 15 ms
Options		
Attenuator option (DC to 26.5 GHz)	without attenuation	bypassed
	stages 2 to 6	typ. 3/6/10/20/40 dB
Amplifier option	without amplification: DC to 26.5 GHz	bypassed
	amplifier 1: 20 MHz to 8 GHz	typ. +14 dB
	amplifier 2: 1 GHz to 26.5 GHz	typ. +30 dB
Filter option	without filter: DC to 26.5 GHz	bypassed
	stages 2 to 6 (11): for frequency ranges, see filter type	attenuation depends on filter

Interfaces

Model .13		
RF inputs (X1 to X6)	SMA female (26.5 GHz)	0 V DC
RF level		depends on options installed
RF output	SMA female (26.5 GHz)	
Model .14		
RF inputs (X1 to X6)	N female (8 GHz)	0 V DC
RF level		depends on options installed
RF output	N female (8 GHz)	
External control input	MIL female	10 pin
	RJ-45 female	
Azimuth rotator	MIL female	8 pin
Elevation/polarization rotator	MIL female	
	models .13 and .14	10 pin
AC input	circular connector	4 pin
DC input	circular connector	7 pin
DC outputs (1 and 2)	mini circular connector	5 pin

General data

Permissible temperature range		-40°C to +55°C (without direct sun exposure)
Storage temperature range		-40°C to +70°C
Protection class		IP 65
Relative humidity		95 % cyclic test, +25°C/+55°C
Vibration	sinusoidal	5 Hz to 150 Hz
	random	8 Hz to 650 Hz
Shock	shock spectrum	40 g
MTBF		21 500 h
Power supply		100 V to 240 V AC, 50 Hz to 60 Hz, 10 V to 30 V DC
	power consumption, depends on options installed	typ. 25 W to 40 W/25 VA to 40 VA
	power consumption, with both rotators in operation	typ. 100 W/100 VA
Dimensions (W × H × D)	without connectors	404 mm × 313 mm × 183 mm (15.91 in × 12.32 in × 7.20 in)
Weight	without options	typ. 11.4 kg (25.13 lb)
	with all options/fully configured	typ. 14.6 kg (32.19 lb)

Ordering information

Designation	Type	Order No.
Antenna filter unit, DC to 26.5 GHz, SMA connectors	R&S®FU129	3040.3300.13
Antenna filter unit, DC to 8 GHz, N connectors	R&S®FU129	3040.3300.14
Selections for azimuth rotator and polarization rotator		
Azimuth rotator, 24 V		
DC rotator, including digital sensor	R&S®FU129-AZIM1	3040.3580.02
DC rotator, including analog sensor	R&S®FU129-AZIM2	3040.3597.02
High-power DC rotator, including analog sensor	R&S®FU129-AZIM3	3046.2705.02
Polarization rotator, 24 V		
DC rotator, including digital sensor	R&S®FU129-POL1	3040.3768.02
DC rotator, including analog sensor	R&S®FU129-POL2	3040.3774.02
High-power DC rotator, including analog sensor	R&S®FU129-POL3	3040.3780.02
AC rotator, including analog sensor	R&S®FU129-POL4	3046.2711.02
Options		
Attenuator option (max. 1)	R&S®FU129-ATT	3040.3400.02
Amplifier options		
Bypass	R&S®FU129-A0	3040.3516.02
Amplifier, 20 MHz to 8 GHz	R&S®FU129-A1	3040.3522.02
Amplifier, 1 GHz to 26.5 GHz	R&S®FU129-A2	3040.3539.02
Outdoor DC feed (external), up to 8 GHz	R&S®FU129-H1	3059.7500.02
DC feed (internal), up to 8 GHz	R&S®FU129-DCF	3040.3545.02
Outdoor control box for R&S®HL050S7	R&S®FU129-H2	3059.7600.02
Outdoor SHF preamplifier	R&S®FU129-H3	3059.7800.02
Filter option (max. five filter options can be installed), max. two filters can be installed in one filter option	R&S®FU129-FIL	3040.3600.02
Filters for filter option		
Lowpass filter, DC to 80 MHz	R&S®FU129-F1	3040.3616.02
Lowpass filter, DC to 530 MHz	R&S®FU129-F2	3040.3622.02
Lowpass filter, DC to 3 GHz	R&S®FU129-F3	3040.3639.02
Highpass filter, 27.5 MHz to 800 MHz	R&S®FU129-F4	3040.3645.02
Highpass filter, 133 MHz to 1 GHz	R&S®FU129-F5	3040.3651.02
Highpass filter, 225 MHz to 3 GHz	R&S®FU129-F6	3040.3668.02
Highpass filter, 910 MHz to 3 GHz	R&S®FU129-F7	3040.3674.02
Highpass filter, 3.9 GHz to 9.8 GHz	R&S®FU129-F10	3040.3700.02
Highpass filter, 6 GHz to 11.5 GHz	R&S®FU129-F11	3040.3716.02
Bandpass filter, 0.8 GHz to 1.05 GHz	R&S®FU129-F12	3040.3722.02
Bandpass filter, 1.73 GHz to 2.27 GHz	R&S®FU129-F13	3040.3739.02
Bandpass filter, 2 GHz to 2.26 GHz	R&S®FU129-F14	3040.3745.02
Bandstop filter, 88 MHz to 108 MHz	R&S®FU129-F15	3040.3751.02

Other filters and options available on request.



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