

R&S® ATCMC

Air Traffic Control Multicoupler

Active 8-port and 16-port VHF/UHF signal distribution



R&S®ATCMC

Air Traffic Control

Multicoupler

At a glance

The multicouplers of the R&S®ATCMC family are specifically designed for the use in ATC receiving systems and they match with the ATC receivers from Rohde & Schwarz.

The space-saving R&S®ATCMC8 optimally supports typical ATC system installations with eight receivers operated in parallel on one antenna. The R&S®ATCMC16 features simultaneous signal distribution to up to 16 receivers.

The multicoupler's integrated, steep-sided filters reliably suppress interference from high-power VHF, TV and TETRA/BOS signals.

To maximize the operational reliability of the ATC receiving system, a single point of failure is avoided in the amplifiers thanks to the intelligent switching concept of the R&S®ATCMC multicoupler family. All amplifiers have a redundant design so that the multicoupler does not stop functioning when an amplifier fails – its output power is merely reduced by around 6 dB.

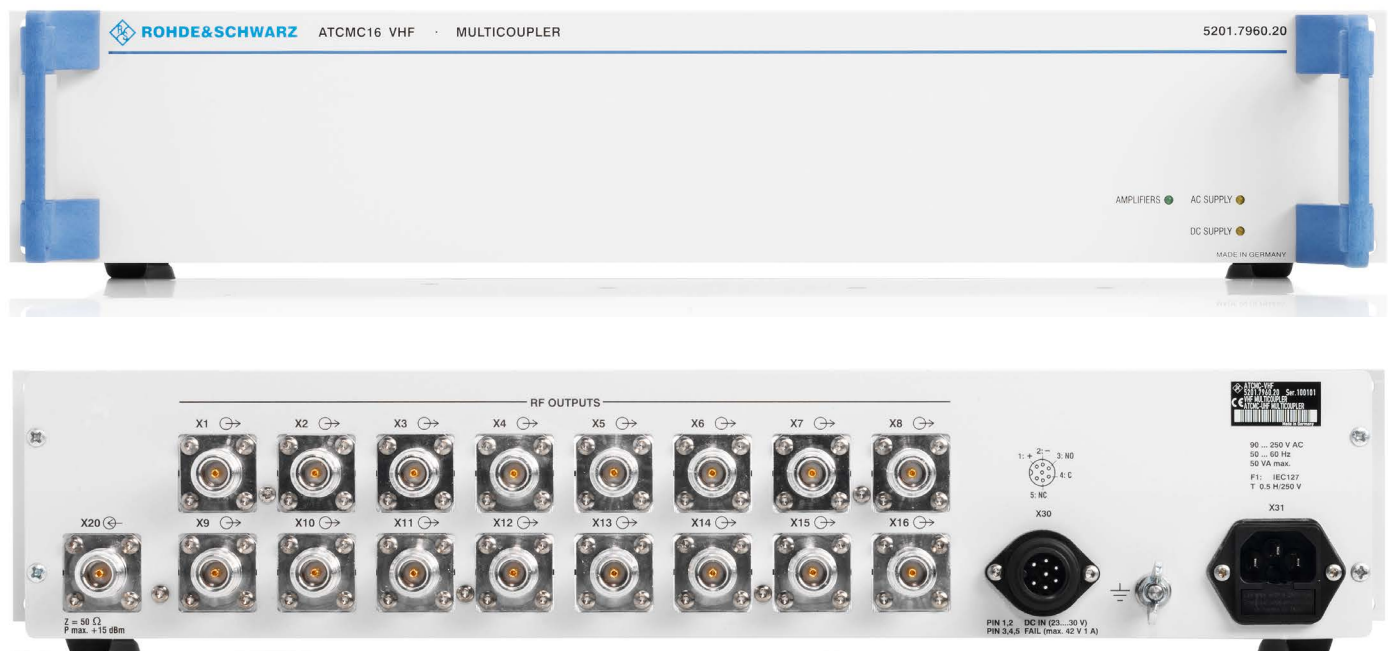
To handle any interruptions in the AC supply voltage, the R&S®ATCMC features automatic switchover to the DC input provided for emergency power supply.

The internal operating state of the R&S®ATCMC can be monitored and evaluated by Rohde & Schwarz Series 4200 radios via an alarm contact.

Key facts

- Suppression of distortion signals from high-power transmitters in the stop band
- Band-selective in the VHF or UHF ATC frequency range
- 1-to-8 or 1-to-16 distribution
- Automatic emergency power switchover
- Overvoltage protection
- Floating alarm contact

R&S®ATCMC16 air traffic control multicoupler, VHF, 16 outputs, front and rear view.



R&S®ATCMC Air Traffic Control Multicoupler Benefits and key features

Suppression of adjacent high-power signals

The integrated bandpass filtering of the R&S®ATCMC considerably improves the reception conditions for the connected receivers. Distortion signals such as high-power FM signals in the VHF band or TV signals in the UHF band are suppressed. To offer optimized filtering for any application, the R&S®ATCMC is available as either a VHF or a UHF model. Rohde & Schwarz also offers various R&S®ATCMC options with different filter characteristics.

Available as 1-to-8 or 1-to-16 model

For space and cost reasons, parallel operation of up to eight or 16 receivers on a single antenna is very common in air traffic control. The R&S®ATCMC multicoupler family can easily handle this challenge and is therefore available as either an 8-port or 16-port model. To prevent the connected receivers from affecting each other (e.g. due to local oscillators and synthesizers), both models feature high port-to-port isolation.

Integrated automatic emergency power switchover

The R&S®ATCMC is ideal for operation with either AC or DC power. The integrated electronic switchover mechanism detects interruptions in the AC power supply and immediately switches automatically to the DC supply. The 24 V DC emergency power supply systems that are common in ATC can be used.

Reliable protection against large signals

Special importance was placed on the linearity (IP3) and the large-signal immunity of the ATC multicoupler. The integrated protective circuits at the RF input of the R&S®ATCMC reliably prevent large signals from damaging the connected receivers.

Remote monitoring through floating alarm contact

Featuring an integrated alarm contact as standard, the R&S®ATCMC multicoupler family offers impressive capabilities for remotely monitoring the internal operating state. If a malfunction occurs, the R&S®ATCMC immediately switches the floating contacts of a relay to indicate the modified operating state. All internal supply voltages of the amplifiers are monitored. This provides the opportunity to use an external Web I/O interface to evaluate the signaled status via simple network management protocol (SNMP). In conjunction with Rohde & Schwarz Series 4200 radios, this alarm contact makes it possible to automatically report the operating state of the R&S®ATCMC to the user.

R&S®ATCMC8, rear view.



VHF communications system with 8-channel and 16-channel multicouplers



R&S® XU4200 VHF transceiver



R&S® EU4200C VHF receiver

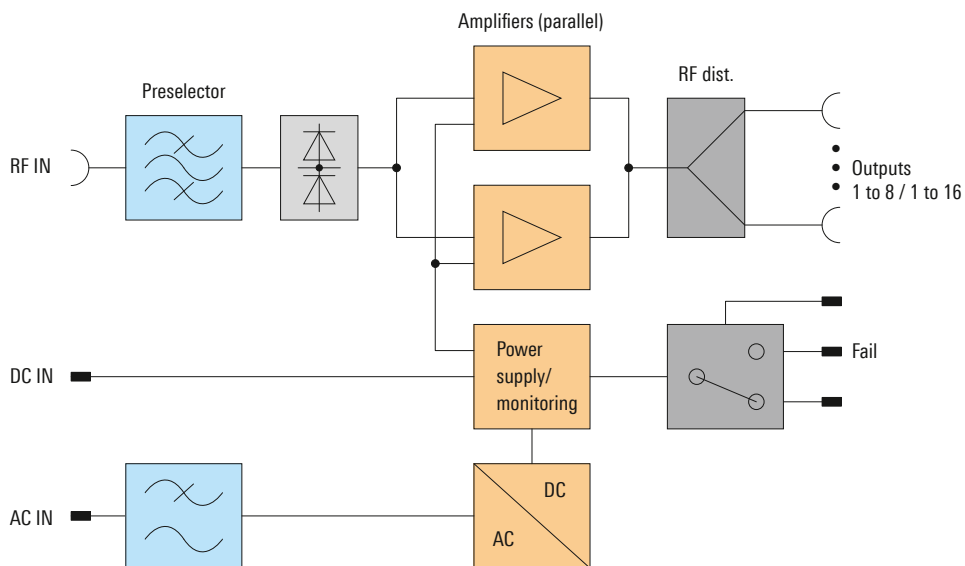


R&S® ATCMC16 VHF ATC multicoupler
16 VHF channels



R&S® ATCMC8 VHF ATC multicoupler
8 VHF channels

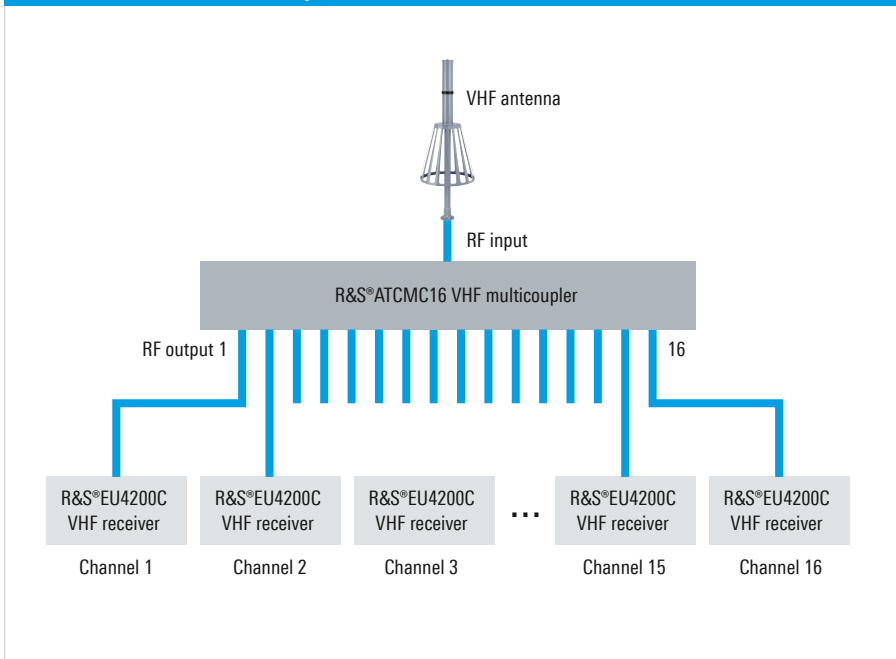
R&S® ATCMC VHF/UHF block diagram



Specifications

R&S® ATCMC8 VHF		
Standard frequency range	other frequency ranges on request	112 MHz to 144 MHz
Impedance	input/output	50 Ω
RF input		1 × N female
VSWR		< 1.5:1, 1.2:1 (typ.)
VHF FM band suppression	7-pole elliptical highpass filter referenced to 127 MHz	< -25 dB for f < 103 MHz
	Option B21	-25 dB for f < 108 MHz
UHF TV band suppression	3-pole Chebyshev lowpass filter referenced to 127 MHz	< -30 dB for 470 MHz < f < 1 GHz
	Option B21	< -25 dB for 185 MHz < f < 1 GHz
Max. input power		+15 dBm
RF outputs	R&S®ATCMC8	8 × N female
	R&S®ATCMC16	16 × N female
VSWR	output	< 1.5:1, 1.2:1 (typ.)
1 dB compression	R&S®ATCMC8	> +15 dBm, +19 dBm (typ.)
	R&S®ATCMC16	> +15 dBm, +18 dBm (typ.)
Decoupling between two outputs		> 27 dB, 34 dB (typ.)
Intermodulation suppression IP3	R&S®ATCMC8	> +33 dBm, +36 dBm (typ.)
	R&S®ATCMC16	> +32 dBm, +35 dBm (typ.)
Gain	R&S®ATCMC8	2 dB ± 1.5 dB
	R&S®ATCMC16	2 dB ± 2 dB
Noise figure	R&S®ATCMC8	< 7 dB, 4.5 dB (typ.)
	R&S®ATCMC16	< 7 dB, 5 dB (typ.)
Reverse decoupling	R&S®ATCMC8	> 34 dB, 38 dB (typ.)
	R&S®ATCMC16	> 34 dB, 42 dB (typ.)

VHF receiver site (example)



R&S®ATCMC8 UHF		
Standard frequency range		225 MHz to 400 MHz
Impedance	input/output	50 Ω
RF input		1 × N female
VSWR	R&S®ATCMC8	< 1.5:1, 1.2:1 (typ.)
	R&S®ATCMC16	< 1.5:1, 1.3:1 (typ.)
VHF FM band suppression	5-pole Chebyshev highpass filter referenced to 310 MHz	< -17 dBr for f < 100 MHz
	Options B12, B18	< -17 dBr for f < 50 MHz
	Option B3	< -25 dBr for f < 200 MHz
UHF TV band suppression	5-pole Chebyshev lowpass filter referenced to 310 MHz	< -17 dBr for 650 MHz < f < 1 GHz
	Option B18	< -17 dBr for 850 MHz < f < 1 GHz
	Option B3	< -25 dBr for 500 MHz < f < 1 GHz
Max. input power		+15 dBm
RF outputs	R&S®ATCMC8	8 × N female
	R&S®ATCMC16	16 × N female
VSWR	R&S®ATCMC8	< 1.5:1, 1.2:1 (typ.)
	R&S®ATCMC16	< 1.5:1, 1.3:1 (typ.)
1 dB compression		> +15 dBm, +18 dBm (typ.)
Decoupling between two outputs	directly adjacent	> 23 dB, 26 dB (typ.)
	not directly adjacent	> 23 dB, 30 dB (typ.)
Intermodulation suppression IP3		> +32 dBm, +35 dBm (typ.)
	Option B14	> +32 dBm, +44 dBm (typ.)
Gain	R&S®ATCMC8	2 dB + 2 dB/-1.5 dB
	R&S®ATCMC16	2 dB + 2 dB
	Option B14	5 dB ±1.5 dB
Noise figure		< 7 dB, 5 dB (typ.)
Reverse decoupling	R&S®ATCMC8	> 33 dB, 38 dB (typ.)
	R&S®ATCMC16	> 34 dB, 42 dB (typ.)

General data		
Dimensions (W × H × D)	R&S®ATCMC8	482.6 mm × 43.8 mm × 145 mm (19 in × 1.72 in × 5.71 in) (19", 1 HU)
	R&S®ATCMC16	482.6 mm × 89 mm × 145 mm (19 in × 3.44 in × 5.71 in) (19", 2 HU)
Temperature	operating temperature range	-20°C to +55°C
	storage temperature range	-40°C to +70°C
Weight	R&S®ATCMC8	approx. 2.6 kg (approx. 5.73 lb)
	R&S®ATCMC16	approx. 3.7 kg (approx. 8.16 lb)
Primary power supply	AC	90 V to 250 V/50 Hz to 60 Hz; IEC connector
Energy consumption	R&S®ATCMC8	≤ 8 W
	R&S®ATCMC16	≤ 20 W
Emergency power supply	DC (fully automatic switchover)	
	R&S®ATCMC8	19 V to 32 V, 0.3 A (typ.)
	R&S®ATCMC16	19 V to 32 V, 0.5 A (typ.)
Alarm contact	max. switching current	≤ 1 A
	max. switching voltage	≤ 42 V
Connector type	emergency power supply, alarm contacts	CA 6 GS (6+PE)
Electromagnetic compatibility		EN55011 class B and EN61326

Ordering information

Designation	Type	Order No.
VHF frequency range		
Air Traffic Control Multicoupler, VHF, 8 outputs	R&S®ATCMC8	5201.7960.10
Air Traffic Control Multicoupler, VHF, 16 outputs	R&S®ATCMC16	5201.7960.20
UHF frequency range		
Air Traffic Control Multicoupler, UHF, 8 outputs	R&S®ATCMC8	5201.7990.10
Air Traffic Control Multicoupler, UHF, 16 outputs	R&S®ATCMC16	5201.7990.20
Options		
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ UHF, frequency range 225 MHz to 450 MHz 	R&S®ATCMC-B3	5201.7954.03
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ Wideband, frequency range 100 MHz to 400 MHz 	R&S®ATCMC-B12	5202.5590.02
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ UHF, frequency range 225 MHz to 400 MHz ▮ Complete ATC range ▮ For navy, 4 outputs with 20 dB reduction, ultrahigh IP 	R&S®ATCMC-B14	5203.1260.02
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ VHF, frequency range 112 MHz to 156 MHz ▮ Expanded ATC VHF range for navy 	R&S®ATCMC-B15	5203.1647.02
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ Wideband, filter frequency 100 MHz to 512 MHz ▮ For navy 	R&S®ATCMC-B18	5202.5584.02
Air Traffic Control Multicoupler Filter <ul style="list-style-type: none"> ▮ VHF, frequency range 118 MHz to 144 MHz ▮ FM, TV, TETRA and BOS suppression 	R&S®ATCMC-B21	5201.7954.21

Service options		
Extended Warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2	
Extended Warranty, three years	R&S®WE3	
Extended Warranty, four years	R&S®WE4	

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 that adds value

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

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The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

Sustainable product design

- | Environmental compatibility and eco-footprint
- | Energy efficiency and low emissions
- | Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

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