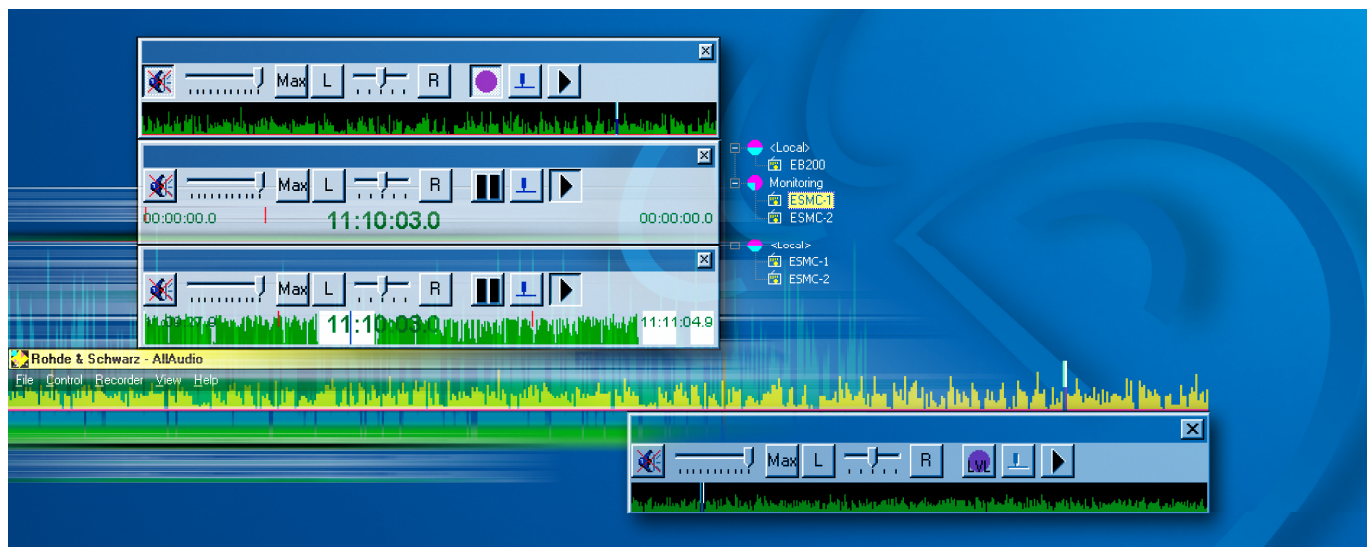


Technical Information

Subject to change [24-May-2002, 8SPM-pf/ko, Version 2.0.5]



R&S AllAudio

Integrated Digital Audio Software

The Integrated Digital Audio Software R&S AllAudio is a software package for digital recording, playback, mixing and distribution of audio signals. A complete intercom system is also provided. The range of applications includes:

- ◆ Digital recording of audio signals and low IF signals
- ◆ Audio recording database
- ◆ Digitizing of analog audio signals with selectable quality
- ◆ Integration of digital audio signals from Rohde & Schwarz monitoring receivers/direction finders
- ◆ Distribution of audio signals via LAN or WAN
- ◆ Instant replay of audio signals
- ◆ Search and replay while recording
- ◆ Remote control of other R&S AllAudio software

Introduction

Primarily designed to run on workstations of monitoring systems together with other application software, R&S AllAudio rounds off the range of monitoring system products from Rohde & Schwarz.

With the digitization and distribution of all audio signals within a monitoring system, audio cabling and integration of switches/multiplexers for audio distribution within a local system or to remote systems are a thing of the past.

On the workstation of a monitoring system, R&S AllAudio handles the acquisition of the analog and digital audio signals from connected receivers, direction finders etc and from the workstation's microphone.

These signals may be recorded to hard disk, switched to analog output channels (e.g. for analysis) and may also be distributed to all workstations connected to the local area network (LAN) or to other workstations or LANs connected via wide area networks (WANs).

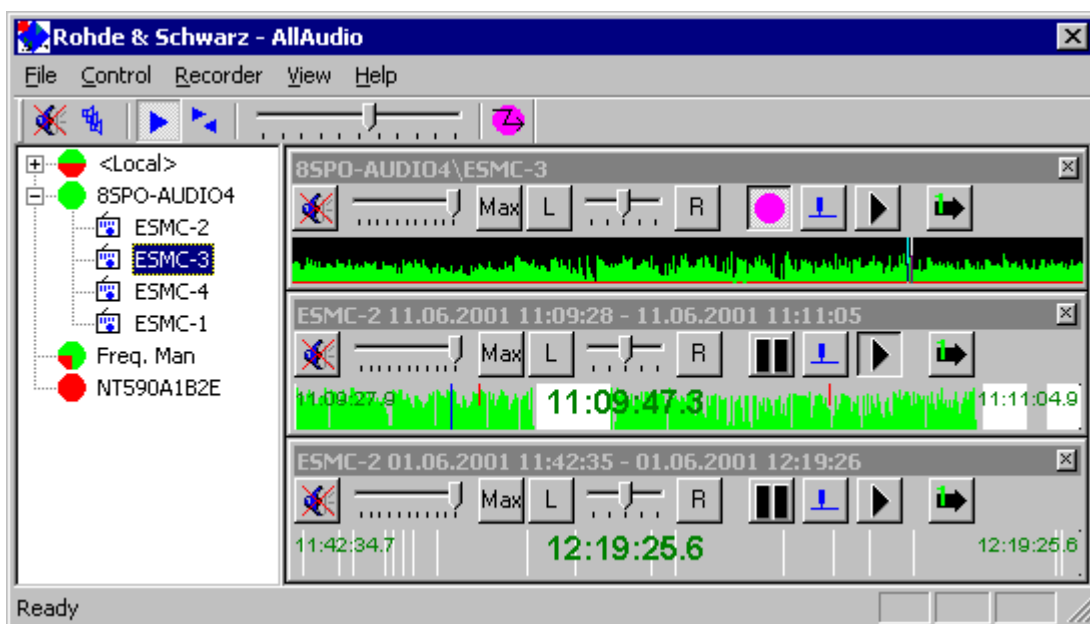
Distributed audio signals from connected workstations are selectable for live listening-in or offline playback.

To provide communication between stations, an intercom subsystem is also integrated within R&S AllAudio, which makes use of the operator headset and/or speaker.

Operation

R&S AllAudio is mainly controlled via the R&S AllAudio control panel. All available local or detached workstations with their audio sources are listed in a tree dialog at the left side, ordered by workstation names.

On the right side, individual source control panels are displayed for each selected audio source. The source control panels are used to control listening-in, recording, playback, mixing and switching of audio sources.



R&S AllAudio control panel

Volume and balance (left/right) of the output to either speakers or headset can be controlled as well. In replay mode, the time of day of the recording is displayed. Up to 8 audio sources can be selected simultaneously for direct access by the user.

The main toolbar contains the main volume control and the main mute function and allows direct access to the audio database and intercom control panel.

Audio distribution and listening-in

Highly efficient distribution of digital audio signals within a LAN is achieved via UDP/IP multicast technology which requires only a minimal amount of network bandwidth.

Connection of workstations via a WAN is implemented via R&S AllAudio gateways which convert the protocol used to TCP/IP and, if necessary, compress the audio signals. Special bandwidth management is integrated in R&S AllAudio in order to use the available communication bandwidth of the WAN in an optimized way.

All connected sources feature an instant replay buffer of 60 s. An operator may replay parts of a signal of the last 60 s by simply clicking at the desired play position in the replay buffer display within the source control panel.

Local audio sources or replayed audio sessions can be switched to analog output channels which may be connected to the input of an analysis device. This may be performed while the current radio signal content is recorded.

The basic module R&S AFBASIC includes two audio input channels. The R&S AF-D8 option adds eight digital audio input channels. The R&S AF-A8 option adds eight analog or digital audio input channels plus 3 output channels. Up to 26 input

channels and 3 output channels are supported by one basic module, i.e. operated from one workstation.

Recording and playback

R&S AllAudio allows recording of local audio sources to hard disk with R&S AF-REC option. Recording is either manually or automatically controlled by the audio signal level, the monitoring receiver itself (with R&S AF-COR option) or via the R&S ARGUS/RAMON system interface. Recordings (wave files) are grouped into sessions. If recordings are longer than one hour they are split into several wave files. R&S AllAudio sessions, including one or more recordings and corresponding management information, are stored in a local audio database.

ID	Start	Stop	Time	#R	#B	Source	Description	Comment
18	28.02.01 11:01:15	11:08:20	00:04:05	5	4	EB200	Freq. Man	
62	06.03.01 13:08:16	14:33:09	01:24:53	3	2	EB200	Freq. Man	
78	07.03.01 11:07:59	11:26:07	00:17:35	3	1	EB200	Freq. Man	Keep this file!
19	28.02.01 11:10:40	11:28:52	00:17:12	18	1	EB200	Freq. Man	
3	18.01.01 11:10:42	11:19:02	00:08:20	1	1	Grundig-1	Monitoring	

Time	Comment
28.02.01 11:02:28	Caller's id 999
28.02.01 11:03:03	Location information
28.02.01 11:03:11	delete
28.02.01 11:04:57	no more information

Start	Stop	File
28.02.01 11:02:15	28.02.01 11:03:15	A:8807F8D8005F11D5902500105A274A2F-0001.wav
28.02.01 11:05:15	28.02.01 11:06:15	A:90D7F8D8005F11D5902500105A274A2F-0004.wav
28.02.01 11:06:15	28.02.01 11:07:15	A:98D7F8D8005F11D5902500105A274A2F-0005.wav

Audio database dialog window

Bookmarks can be entered during recording or playback in order to mark an important signal sequence. Bookmarks can later be used as search criteria during post-evaluation. A comment for a complete session may also be entered.

The upper window of the audio database window contains an overview of recorded sessions. The center window shows the bookmarks entered; the lower window displays the recordings of the selected session. The user selects files for playback by querying the database by date, time or workstation/source to retrieve a list of available signals.

R&S AllAudio is also designed to run on unmanned stations where the recordings are made automatically and evaluated at a central station equipped with an audio server running R&S AllAudio software for playback only (with R&S AF-RREC option).

Backup and export

R&S AllAudio offers two different strategies for backup of the recorded audio signals:

- ◆ DAT streamer. The wave files are backed up to the streamer along with the database information. Optionally, the wave files on the hard disk can be deleted after the successful backup process. However, the management information (recording time etc) is still kept in the database to allow easy access to audio information stored on external streamer tapes.
- ◆ Export of audio sessions. Selected audio sessions (wave files including management information) may be exported to disk. These files can be saved to CD-ROM etc.

If the user wants to listen-in on a current audio source, an instantaneous playback can easily be started via the playback button of the source control panel.

Intercom

R&S AllAudio allows verbal communication (with R&S AF-ICM option) between two or more operators within a LAN or WAN. The main features are:

- ◆ Output of calls to operator headset and additional speaker (if available)
- ◆ Single button/function key for accessing participants (point to point) or groups (LAN: multipoint to multipoint; WAN: point to multipoint)

- ◆ Call tone at the called workstation
- ◆ Automatic attenuation of online and playback audio signals during intercom operation

Operation in a system

In a monitoring system, the workflow concerning audio operation may be as follows: Each of the monitoring workstations records audio signals which are stored as audio sessions (recordings) on the local hard disk. After a working period, e.g. one day, selected sessions can be exported to a central server. At one dedicated R&S AllAudio workstation, an operator imports the audio sessions from each workstation into a central audio database for post-evaluation.

R&S AllAudio may also synchronize the workstation time with a selected R&S AllAudio workstation via LAN. The time of the selected workstation is updated regularly by a GPS receiver via the R&S ARGUS or R&S RAMON software. Stations not connected to the LAN must be synchronized separately.

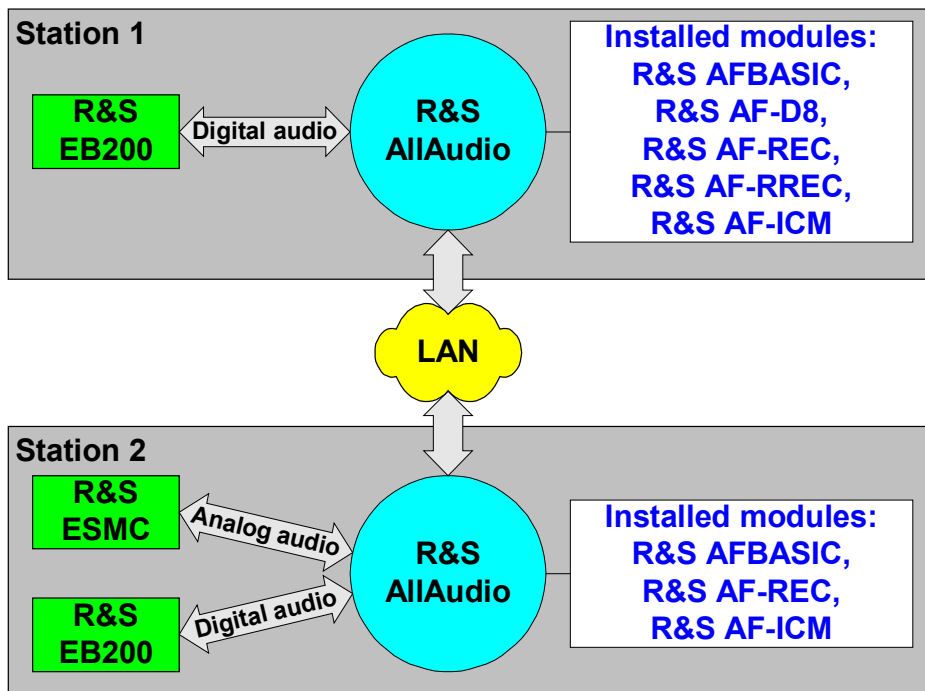
Examples

The following three examples illustrate typical configurations of R&S AllAudio:

Example 1: Audio distribution in network with local and remote recording and intercom

In station 1, R&S AllAudio is used for local and remote (station 2) audio recording and for verbal communication with station 2 (intercom).

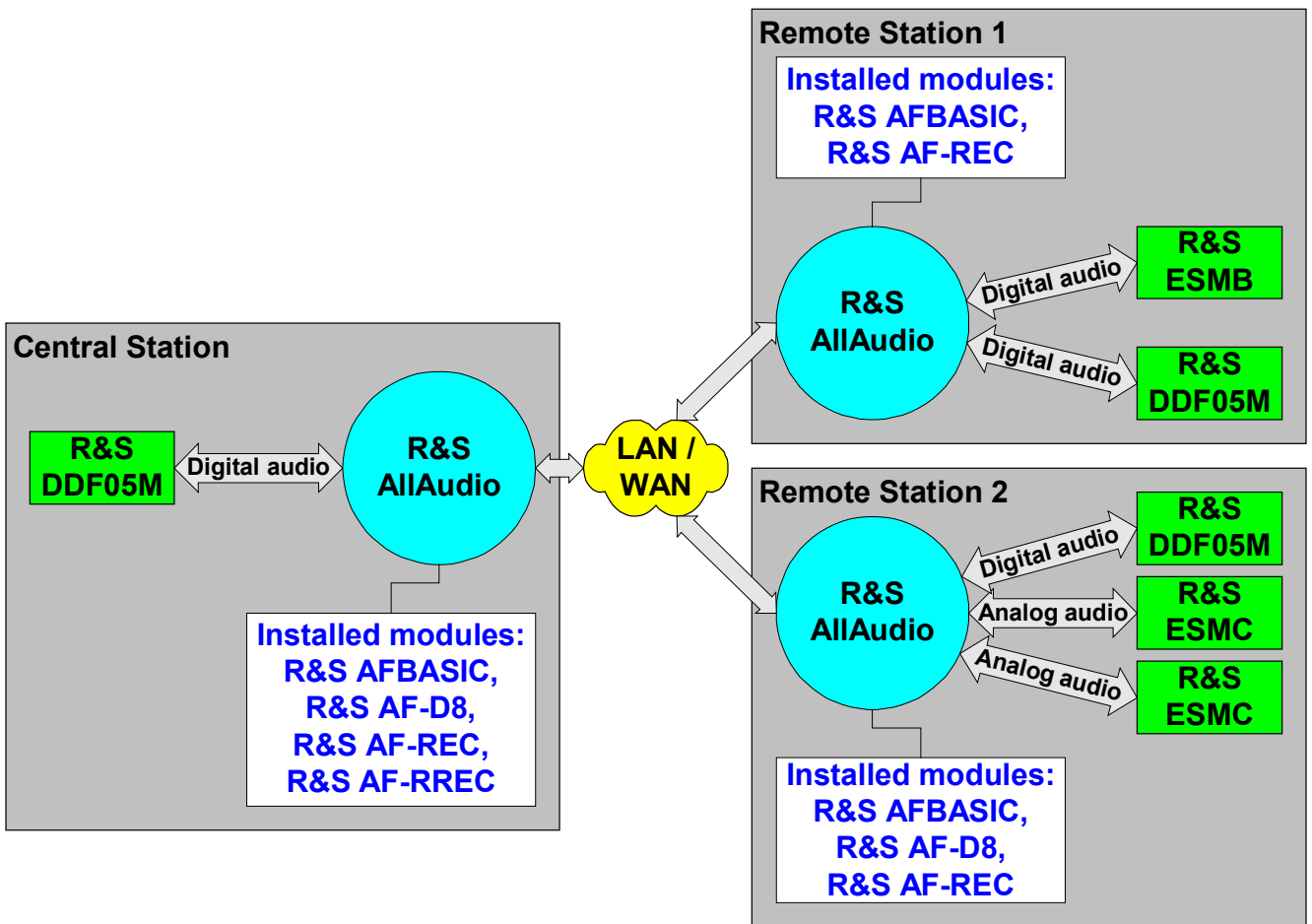
In station 2, R&S AllAudio is used for local audio recording and for verbal communication with station 1 (intercom).



Example 2: DF network with audio distribution plus local and remote recording

The central station listens in, records audio contents and manages the recording databases of the remote stations.

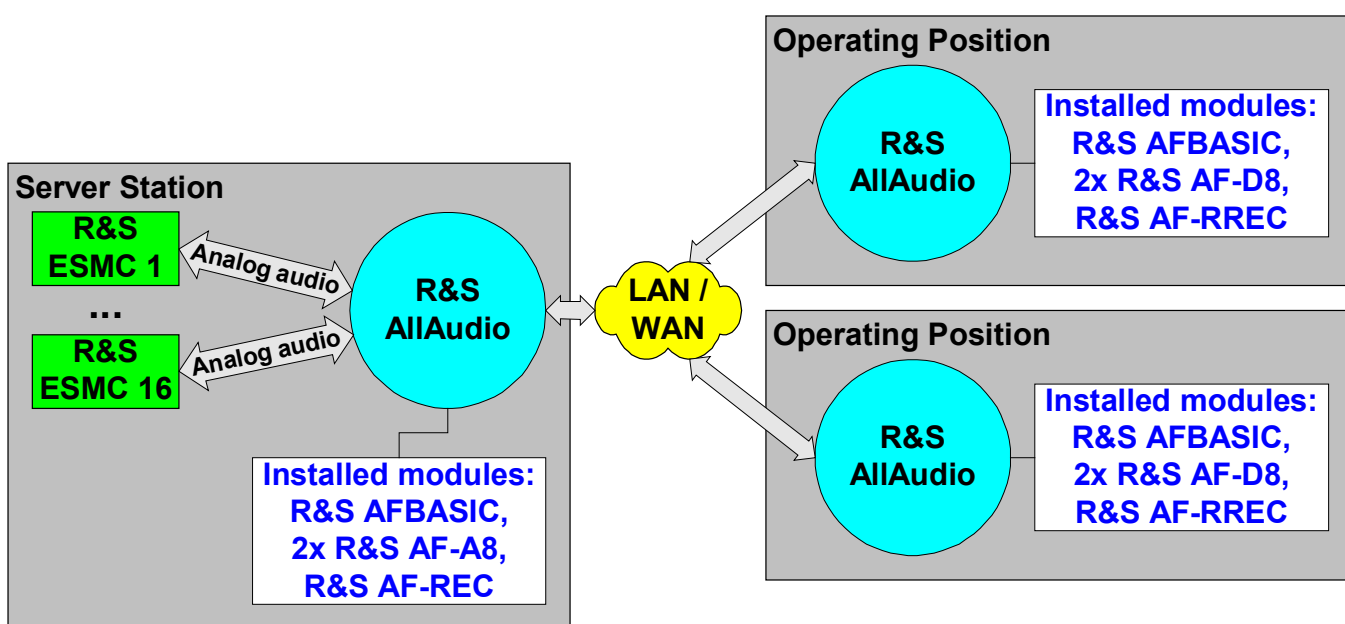
In the remote stations 1 and 2, R&S AllAudio is used for local audio recording.



Example 3: Audio server (16 analog inputs) with 2 clients

The (unmanned) R&S AllAudio server station is used to record and distribute the audio signals of 16 Monitoring Receivers ESMC.

At both operating positions, R&S AllAudio is used to listen to any of the receivers of the server and to control recording and playback on the server.



Specifications

Basic Module of Integrated Digital Audio Software R&S AllAudio

Function

R&S AFBASIC

basic module

General data

Signal quality

telephone quality (8 kHz, 8 bit) or
radio quality (22 kHz, 8 bit) or
high audio quality or low IF quality (44 kHz, 16 bit)

Frequency range

20 Hz to 3.5 kHz (telephone quality) or
20 Hz to 10 kHz (radio quality)

Compression rates

20 Hz to 20 kHz (high audio quality)

Audio input channels

2-fold (ADPCM), 4-fold (GSM), 8-fold (CELP)

two audio input channels for:

- analog audio (via sound card)
- digital audio from Rohde & Schwarz devices (e.g. R&S DDF0xM, R&S EB200, R&S ESMB)
- digital audio from other R&S AFBASIC modules (TCP/IP point-to-point connection via LAN/WAN) with selectable audio compression
- digital audio from other R&S AFBASIC modules (UDP/IP point-to-multipoint connection via LAN)

Analog audio output channels

two analog output channels for listening-in to headset (left and/or right) or speakers (left and/or right); audio delay typ. 200 ms

Audio matrix and mixer

audio input channels can be mixed or switched to the two listening-in output channels or can be switched to other optional output channels

Audio distribution

output and distribution of configured audio channels to other R&S AFBASIC modules

Time for instant replay

60 s audio buffer

Interface

R&S ARGUS/RAMON system interface

Remarks

This module is needed for each R&S AllAudio workstation. Functionality can be extended by adding R&S AllAudio options. R&S AllAudio supports up to 32 users and 64 audio sources within one system.

For installation of R&S AllAudio, a multimedia PC with Windows NT 4.0, Windows 2000 or Windows XP, loudspeakers and a headset are required.

R&S AllAudio occupies the sound card of the PC. Thus, due to sound-card-driver restrictions, no other applications may directly use the sound card.

R&S AllAudio Digital Channel Extension

Function

R&S AF-D8

eight additional digital audio input channels

General data

Audio input channels

eight additional audio input channels for:

- digital audio from Rohde & Schwarz devices (e.g. R&S DDF0xM, R&S EB200, R&S ESMB)
- digital audio from other R&S AFBASIC modules (TCP/IP point-to-point connection via LAN/WAN) with selectable audio compression
- digital audio from other R&S AFBASIC modules (UDP/IP point-to-multipoint connection via LAN)

Remarks

Up to 26 input channels are supported by one R&S AFBASIC module.

Up to 8 input channels can be selected simultaneously for direct access by the user.

R&S AllAudio Analog/Digital Channel Extension

Function

R&S AF-A8

eight additional analog/digital audio input channels and three additional analog audio output channels

General data

Audio input channels

eight additional audio input channels for:

- analog audio (on multichannel sound card)
- digital audio from Rohde & Schwarz devices (e.g. R&S DDF0xM, R&S EB200, R&S ESMB)
- digital audio from other AFBASIC modules (TCP/IP point-to-point connection via LAN/WAN) with selectable audio compression
- digital audio from other R&S AFBASIC modules (UDP/IP point-to-multipoint connection via LAN)

Audio output channels

three additional analog audio output channels (on multichannel sound card) for connection to decoders or analyzers etc

Sound card

multichannel sound card for PCI slot

Remarks

Up to 26 input channels and 5 output channels, including the analog output channels for listening-in, are supported by one R&S AFBASIC module.

Up to 8 input channels can be selected simultaneously for direct access by the user.

R&S AllAudio Recording and Database

Function

R&S AF-REC

Recording and local audio database

General data

Recording

functions:

- digital recording of local audio sources on hard disk starting from the insert mark or from the play mark of the instant replay buffer
- search and playback while recording
- bookmarks and/or comment via microphone can be entered during recording or playback

control:

- recording controlled by audio level
- recording controlled by external system (e.g. R&S ARGUS, R&S RAMON)
- timer-controlled recording
- recording controlled manually
- integrated local audio database with backup and export functions
- management of audio sessions which contain one or more recorded wave files; storage of time stamps, comments, time-related bookmarks, receiver and workstation name

Database

Audio server

server for remote access by other R&S AllAudio workstations (see also option R&S AF-RREC)

Remark

For backup and restore functions a DAT streamer (e.g. Sony SDT 9000, capacity 12 Gbyte) is recommended. Alternatively, audio sessions may be exported to another hard disk (e.g. on a system server). The exported files may then be saved to other storage media, e.g. a CD-ROM. For recording 240 channel-hours, a 8 Gbyte hard disk is needed (8 kHz/8 bit).

A microphone is not included. The microphone occupies one audio input channel in R&S AllAudio. Both analog input channels on the sound card are occupied.

R&S AllAudio COR Control

Function

R&S AF-COR

COR-controlled recording via the COR output of a receiver (TTL level or 24V opto-coupler), an I/O board (for PCI slot) for up to 16 COR inputs is included

R&S AllAudio Remote Recording and Database

Function

R&S AF-RREC

- access to remote audio database
- remote-controlled recording
- local audio database

Remarks

This option must be installed in the control station.

The option R&S AF-REC is only required in the remote station.

R&S AllAudio Intercom

Function

R&S AF-ICM

- verbal communication between operators within a LAN or WAN: between two users (point to point) or within groups (LAN: multipoint to multipoint; WAN: point to multipoint)
- automatic attenuation of other audio signals during voice communication

Remarks

A microphone or headset is not included.

Ordering Information

Basic version

Basic Module of Integrated Digital Audio Software R&S AllAudio 2 audio input & output channels (analog or digital), audio matrix and mixer, audio distribution, integration of digital audio from Rohde & Schwarz devices	R&S AFBASIC	R&S ARGUS Systems: 3022.7013.02 R&S RAMON Systems: 3022.6023.02
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Options

R&S AllAudio Digital Channel Extension 8 additional digital input channels	R&S AF-D8	R&S ARGUS Systems: 3022.7113.02 R&S RAMON Systems: 3022.6469.02
R&S AllAudio Analog/Digital Channel Extension 8 additional analog or digital input channels and 3 additional analog output channels	R&S AF-A8	R&S ARGUS Systems: 3022.7065.02 R&S RAMON Systems: 3022.6075.02
R&S AllAudio Recording and Database Digital audio recording of local audio sources on hard disk, search and playback of recordings, integrated local audio database with backup and export functions	R&S AF-REC	R&S ARGUS Systems: 3022.7165.02 R&S RAMON Systems: 3022.6117.02
R&S AllAudio COR Control COR controlled recording via the COR output of a receiver	R&S AF-COR	R&S ARGUS Systems: 3022.7213.02 R&S RAMON Systems: 3022.6169.02
R&S AllAudio Remote Recording and Database Remote control of the audio recording and the audio database and integrated local audio database	R&S AF-RREC	R&S ARGUS Systems: 3022.7265.02 R&S RAMON Systems: 3022.6223.02
R&S AllAudio Intercom Verbal communication between operators within a LAN or WAN	R&S AF-ICM	R&S ARGUS Systems: 3022.7313.02 R&S RAMON Systems: 3022.6317.02

