R&S®AMMOS GX420 Recording Component for Narrowband/Wideband Interception

R&S®AMMOS (automatic modular monitoring of signals)

The R&S®GX420 (AMREC) is a standalone recording/replay system for digital data with outstanding performance. Combined with R&S®AMMOS, it is intended for collecting digital IF data in narrowband/wideband interception. The R&S®GX420 is the recording component of the R&S®AMMOS R&S®GX400 family. Nothing goes unnoticed with the R&S®GX420.

◆ Replay and recording of digital data streams
◆ Especially suited for narrowband and wideband R&S®AMMOS R&S®GX400 IF data
◆ Transfer rate of up to 100 Mbyte/s[1]
◆ Sustained transfer rate
◆ Storage capacity 1200 Gbyte
◆ Easy maintenance
◆ Import/export of recordings via Gigabit Ethernet

[1] 1 Mbyte $\triangleq$ 1 × 10^6 bytes.

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Introduction

The R&S®GX420 is a high-performance recording/replay system for digital data. It can be used as a standalone device or integrated in an R&S®AMMOS configuration. As the central recording/replay component of the R&S®AMMOS R&S®GX400 family, the R&S®GX420 is perfectly suited for narrowband and wideband interception applications. In these applications, the R&S®GX420 is used to collect digital narrowband and wideband IF data.

For standalone applications outside the R&S®AMMOS R&S®GX400 family, a Gigabit Ethernet interface with TCP/IP protocol is provided. The R&S®GX420 relies on a customized RAID for maximum performance.

The R&S®GX420 is divided into a controller part and a storage subsystem.

Overview

◆ The R&S®GX420 seamlessly fits in the modular R&S®AMMOS R&S®GX400 family
◆ Gigabit Ethernet and optical FPDP/serial interface in line with VITA 17.1 are provided as external data interfaces

◆ The R&S®GX420 is controlled by CORBA via Ethernet
◆ Loop mode for endless recording/replay
◆ Navigation in replays is supported
◆ Administration of recordings with database is supported
◆ For maximum performance, the R&S®GX420 relies on a customized RAID
◆ The RAID subsystem is located in a separate storage subsystem for maximum flexibility and easier maintenance
◆ The system is available for 19" rackmounting
◆ Import/export of recordings via Gigabit Ethernet

System integration

The R&S®GX420 can be used as a standalone recording system for digital data (TCP/IP) of any type. The R&S®GX420 is perfectly suited for recording R&S®AMMOS R&S®GX400 IF narrowband and wideband signals from the R&S®EM010 VXI HF receiver, R&S®EM050 VXI VHF/UHF digital wideband receiver, R&S®GX401BP HF wideband ADC VXI board and R&S®GX405BP VXI VHF/UHF wideband ADC VXI board.

Interfaces

◆ Gigabit Ethernet for recording/replay, archiving and administration purposes
◆ Optical FPDP/serial interface in line with VITA 17.1 for recording/replay

Functionality

Administration
◆ Output a list of all recordings on the storage subsystem
◆ Delete recordings
◆ Handle write protection of recordings
◆ Check status of storage subsystem (free, used disk space)
◆ Trigger the reliable erasure of all recordings

Control interface
◆ CORBA via Gigabit Ethernet

Import/export of recordings
◆ Recordings can be exported via FTP for archiving purposes
◆ Archived recordings can be imported via FTP

Database administration of recordings
All recordings in the R&S®AMMOS R&S®GX400 IF data format are indexed on the R&S®GX420. The recorded data stream is analyzed by relating recording file offsets, time stamps, sample rates, center frequency, and bandwidth of a recording. The result of the analysis is stored in a database and can be queried via the CORBA interface.

Further database administration is offered by indexing any position of a recording with comments. A history function facilitates the setting of comments for recordings in relation to time stamps.

Recording

◆ Digital data can be recorded via Gigabit Ethernet or FPDP/serial interface (depending on the bandwidth)

◆ Recordings can be made in loop mode

Replay

◆ Recorded data can be replayed via Gigabit Ethernet or optical FPDP/ serial interface in line with VITA 17.1 (depending on the bandwidth)

◆ The beginning and end of a replay can be configured

◆ Replay can be repeated 1 to n times (loop mode)

Fault management

◆ Faults are collected in a log file

◆ Faults are announced via the CORBA interface

Built-in test (BITE)

◆ An initial BITE and consistency check is performed after power-on

◆ A runtime BITE monitors operation of the R&S®GX420

◆ BITE-on-demand ensures exhaustive testing of the R&S®GX420

System clock

◆ Timing source for recordings

◆ Can be synchronized via the CORBA interface

◆ Can be synchronized with network time protocol (NTP)

Remote shutdown

◆ Shutdown via the CORBA interface

Specifications

Standard configuration

Max. sustained total data rate[1]	100 Mbyte/s[2]
Max. hard disk capacity	1200 Gbyte
Recording capacity for digital IF data (R&S®AMMOS IF format):	
Bandwidth	
20 MHz	2.5 h
10 MHz	5 h
5 MHz	10 h
4 MHz	12.5 h
1 MHz	50 h
250 kHz	200 h
20 kHz	1000 h
Recordings/replays in parallel:	
1 MHz to 20 MHz	1
250 kHz	10
20 kHz	20
Loop mode	
Min. size	1 Mbyte
Max. size	1200 Gbyte
Control interface	Gigabit Ethernet
Available data interfaces	RJ-45 Gigabit Ethernet, SFP optics, FPDP/serial interface in line with VITA 17.1
Control protocol	CORBA
Data protocol	FPDP/serial, TCP/IP

[1] Performance degradation possible in case of shock or vibration.

[2] 1 Mbyte ≙ 1×10^6 bytes.

Environmental data	
Operating temperature range	+5 °C to +50 °C in line with EN 60068-2-1, EN 60068-2-2, MIL-STD-810E, method 501.3/502.3
Storage temperature range	−20 °C to +70 °C in line with EN 60068-2-1, EN 60068-2-2, MIL-STD-810E, method 501.3/502.3
Shock[1]	EN 60068-2-27, MIL-STD-810E, method 516.4, procedure I, 40 g shock spectrum
Vibration, sinusoidal[1]	EN 60068-2-6, EN 61010-1, VG 95332, slide 24, grade A2: 5 Hz to 55 Hz, max 1.8 g, 55 Hz to 150 Hz, 0.5 g const., 12 min each axis
Vibration, random[1]	IEC 60068-2-64, 10 Hz to 300 Hz, 1.2 g (rms), 5 min each axis
Humidity	IEC 60068-2-30, operating, up to 95 % relative humidity at +25 °C to +40 °C, noncondensing, 2 cycles
Operating altitude	2000 m, EN 61010-1
Storage altitude	4500 m
Power supply	nominal, 100 V to 240 V AC, 50 Hz to 60 Hz
Power consumption (max.)	
R&S®GX420 AMREC controller	85 W
R&S®GX420 hard disk	90 W
Weight	20 kg (44.09 lb)
Chassis type	19" rackmount, 5 height units (179 mm (7.05 in))
Mate/unmate cycles	50 mate/unmate cycles for each SCSI HD68 connector on the R&S®GX420 AMREC controller and R&S®GX420 hard disk in line with ANSI INCITS 336-2000 (Information Technology – SCSI Parallel Interface – 3)
EMC/VDE	CE mark, in line with 89/336/EEC, EN 55022 , class B, EN 61000-3-2, EN 61000-3-3, EN 55024

Ordering information

Designation	Type	Order No.
AMREC Digital Recording and Replay System	R&S®GX420	4064.4525.02
Ruggedized Hard Disk Subsystem	R&S®GX420HD	4063.1768.03
Digital I/O Channel TCP/IP 2 Mbit/s (R&S®AMMOS: digital IF data stream with 20 kHz bandwidth)	R&S®GX421MB	4064.3706.02
Digital I/O Channel TCP/IP 10 Mbit/s (R&S®AMMOS: digital IF data stream with 250 kHz bandwidth)	R&S®GX421TE	4064.3758.02
Digital I/O Channel TCP/IP 1 Gbit/s (R&S®AMMOS: digital IF data stream with 1 MHz to 20 MHz bandwidth)[1]	R&S®GX422GB	4064.3806.02

[1] Includes FPDP hardware extension.

More information at
www.rohde-schwarz.com
(search terms: GX420, AMMOS)

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