Шлюз со встроенным спутниковым приемником AVG050

R&S®AVG050 ISDB-T BTS Gateway

At a glance

The R&S®AVG050 is a compact BTS gateway with integrated satellite receiver for ISDB-T_B networks.

Key facts

- Integrated DVB-S/DVB-S2 receiver with two CI slots
- ASI input for local services
- TS remultiplexing and BTS output generation
- User-friendly web interface
- Low space requirement (half rack width)
- Low power consumption

Benefits and key features

Integrated satellite receiver

In ISDB-T_B transmitter networks, the input signals from the transmitter stations are often fed by satellite in compliance with the DVB standard. The R&S®AVG050 has an integrated DVB-S/DVB-S2 demodulator that can receive satellite-fed transport streams (TS).

Two common interface (CI) slots are available for decrypting scrambled content fed from satellites. These CI slots can accommodate various conditional access (CA) modules to support two different encryption methods at the same time.

ASI interface

The R&S®AVG050 also has an ASI interface for feeding in local services.

Local remultiplexing

The gateway remultiplexes the satellite-fed or ASI-fed services to a new transport stream.

BTS generator

The gateway generates an ISDB-T_B broadcast transport stream (BTS) with the appropriate modulation parameters for the transmitter.

Operation

A clearly organized, intuitive user interface is provided for configuration and monitoring. All commands used for automatic monitoring and device settings can also be configured via an SNMP interface.

Compact

The very compact gateway is only half the width of a 19" rack and consumes very little power, making it ideal for use with ISDB-T_B compliant terrestrial transmitters.

Specifications

Input

Satellite

Interfaces		
Input		F-type, 75 Ω
Number of inputs		2
Satellite frequency band		C and Ku band or IF, selectable
Satellite IF		950 MHz to 2150 MHz (L band)
RF input level	for single carrier	–70 dBm to –10 dBm
	maximum RF input power (32 channels at –23 dBm and 2 channels at –13 dBm)	–5 dBm
Low-noise block (LNB) downconverter power supply	voltage	+13 V/+14 V DC (vertical), +18 V/+19 V DC (horizontal), selectable
	current	450 mA
	tone	22 kHz or off

DVB-S		
Conformity		EN 300421
Constellation		QPSK
Symbol rate		1 Msymbol/s to 45 Msymbol/s
FEC		1/2, 2/3, 3/4, 5/6, 7/8
Roll-off		0.35

DVB-S2		
Conformity		EN 302307
Constellation		QPSK, 8PSK (16APSK, 32APSK on request)
Symbol rate		1 Msymbol/s to 45 Msymbol/s
FEC (QPSK mode)		1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
FEC (8PSK mode)		3/5, 2/3, 3/4, 5/6, 8/9, 9/10
FEC blocks		short (16200 bits) and normal (64800 bits)
Roll-off		0.20, 0.25 and 0.35
TS bit rate	maximum	125 Mbit/s
Multistream	for model .04	configurable ISI filtering; in line with EN 302307 Annex H.2
Physical layer scrambling (PLS)		configurable PLS sequence (gold code/root of PRBS)

Decryption		
Number of different decryption methods per satellite feed		2 (via additional conditional access module, CAM)
DVB-CI interface		EN 50221
BISS decryption		2 built-in descramblers
Modes		BISS-1, BISS-E
Session words		default key for all services or separate key per service
Number of services		up to 8
Number of PIDs		up to 16 per service

Transport stream

Interfaces		
ASI	for model .02: for compressed video and audio in an MPEG-2 transport stream with ancillary data	1 × ASI; BNC, 75 Ω; 270 Mbit/s; 800 mV (V_{pp}); in line with EN 50083-9
	for model .03	none
	for model .04	2 × ASI; BNC, 75 Ω; 270 Mbit/s; 800 mV (V_{pp}); in line with EN 50083-9

TS over IP	for model .02	1 × Ethernet (8-pin RJ-45 connector, bandwidth 1000/100/10 Mbit/s, level 2 V (V_{pp})); in line with IEEE 802.3
	for model .03 and .04	2 × Ethernet (8-pin RJ-45 connector, bandwidth 1000/100/10 Mbit/s, level 2 V (V_{pp})); in line with IEEE 802.3
	number of IP streams	2 × IP streams with individual IP addresses, UDP ports and FEC configuration according SMPTE 2022-1/2
Protocols		
ASI	ISO/IEC MPEG-2 systems standard	ISO/IEC IS 13818-1:2000
TS over IP	IPv4	IETF RFC 791
	UDP	IETF RFC 768
	RTP	IETF RFC 3550
	MPEG-2 transport stream over IP	SMPTE 2022/ Pro-MPEG code of practice #3 release 2
Input redundancy		
TS input switch		automatic switchover between two selectable TS input signals; configurable time threshold for switchover
	number of included redundancy switches	2

Output

Interfaces		
ASI	for model .02: mirrored output for MPEG-2 transport stream	2 × ASI; BNC, 75 Ω; 270 Mbit/s; 800 mV (V_{pp}); in line with EN 50083-9
	for model .03 and .04: independent output for MPEG-2 transport stream	2 × ASI; BNC, 75 Ω; 270 Mbit/s; 800 mV (V_{pp}); in line with EN 50083-9
TS over IP	for model .02	1 × Ethernet (8-pin RJ-45 connector, bandwidth 1000/100/10 Mbit/s, level 2 V (V_{pp})); in line with IEEE 802.3
	for model .03 and .04	2 × Ethernet (8-pin RJ-45 connector, bandwidth 1000/100/10 Mbit/s, level 2 V (V_{pp})); in line with IEEE 802.3
	number of IP streams	2 × IP streams with individual IP addresses, UDP ports and FEC configuration in line with SMPTE 2022-1/2

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	UDP	IETF RFC 768
	RTP	IETF RFC 3550
	MPEG-2 transport stream over IP	SMPTE 2022/Pro-MPEG code of practice #3 release 2
Stream	output for model .02	Up to 3 transport streams can be output independently via the front interfaces.
	output for model .03 and .04	Up to 4 transport streams can be output independently via the front interfaces.
	routing	For all transport streams, the signal can be routed flexibly and individually through the conditional access modules (CAMs) or directly to the output interfaces.
	decryption	Decryption of a transport stream is possible via one or both CAMs or the built-in BISS descrambler.

General data

Control

Interfaces		
Network	1 × Ethernet (8-pin RJ-45 connector, bandwidth 1000/100/10 Mbit/s, level 2 V (V_{pp}))	IEEE 802.3

Protocols		
Network	IPv4	IETF RFC 791
	UDP	IETF RFC 768
	TCP	IETF RFC 793
	HTTP	IETF RFC 2616
	NTP	IETF RFC 1305
	SNMPv2c	IETF RFC 1441 to IETF RFC 1452

Electrical specifications

Power supply	average power consumption	< 50 W
	input current	1.7 A (100 V), 0.8 A (240 V)
	power supply	100 V to 240 V ± 10 %
	frequency	50 Hz to 60 Hz ± 5 %
	power factor at nominal load	0.55 (typ.) at 90 V (50 Hz), 0.45 (typ.) at 264 V (50 Hz)

Mechanical specifications

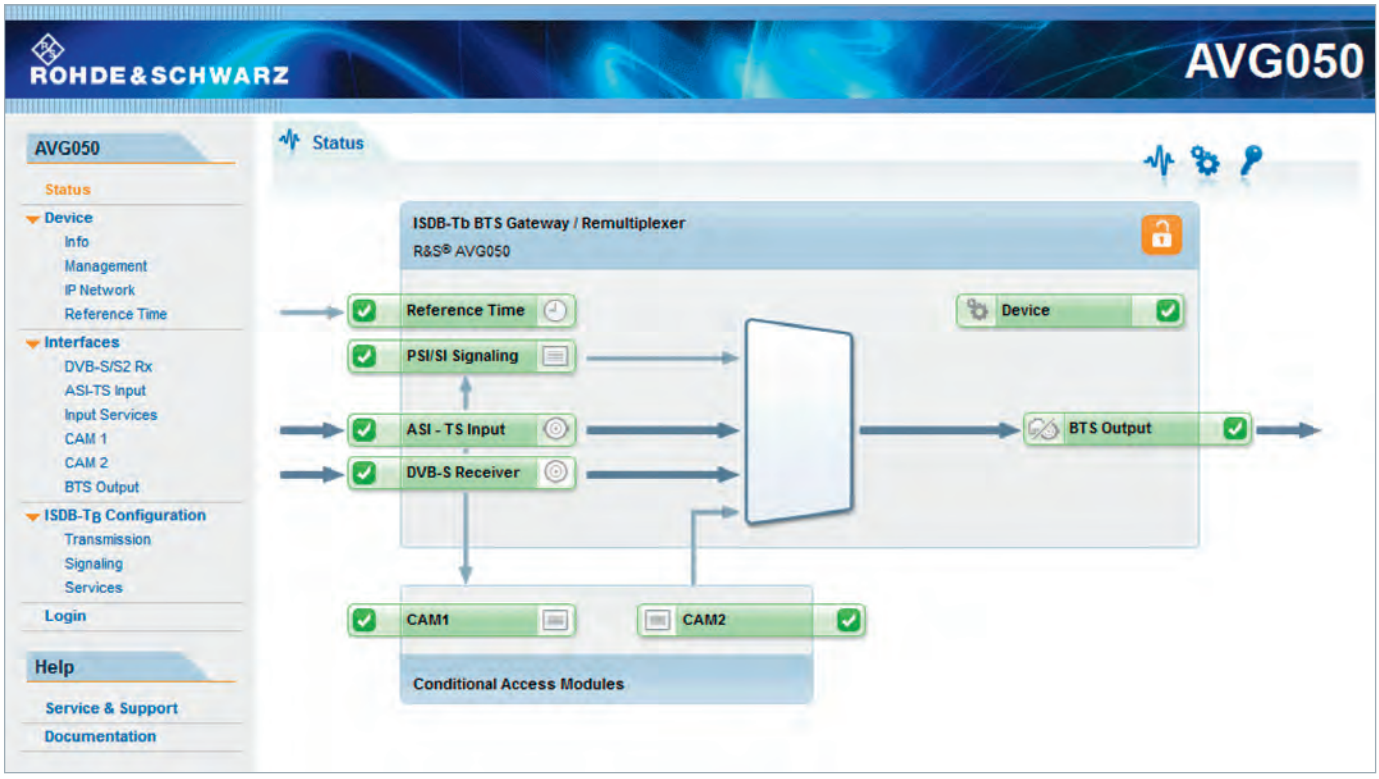
Dimensions	W × H × D	229 mm × 54.4 mm × 406 mm (9.02 in × 2.14 in × 15.98 in)
Weight		4 kg (8.82 lb)

Cooling

Air cooling		3 fans; cold air feed from left to right

Environmental specifications

Operating temperature range		+5 °C to +45 °C, in line with EN 60068-2-1, EN 60068-2-2
Permissible temperature range		0 °C to +50 °C
Storage temperature range		–20 °C to +60 °C
Climatic resistance	cyclic test at +25 °C/+40 °C	85 % relative humidity
Immunity against RF fields		up to 10 V/m
Electromagnetic compatibility (emissions)		in line with EN 55011 class B, EN 61326
	power factor correction	in line with EN 61000-3-2
Electrical safety	CE	in line with IEC 60950-1, EN 60950-1
Noise emission		< 55 dBA
Mechanical resistance	vibration, sinusoidal	5 Hz to 150 Hz, max. 1.8 g at 55 Hz, 55 Hz to 150 Hz, 0.5 g constant, in line with EN 60068-2-6
	vibration, random	10 Hz to 300 Hz, acceleration 1.2 g (RMS), in line with EN 60068-2-64
	shock	40 g shock spectrum, in line with EN 60068-2-27, MIL-STD-810E



Graphical user interface of the R&S®AVG050.

Ordering information

Designation	Type	Order No.
R&S®AVG050 ISDB-T BTS Gateway	R&S®BTS-RM-BU1	5303.9910.02