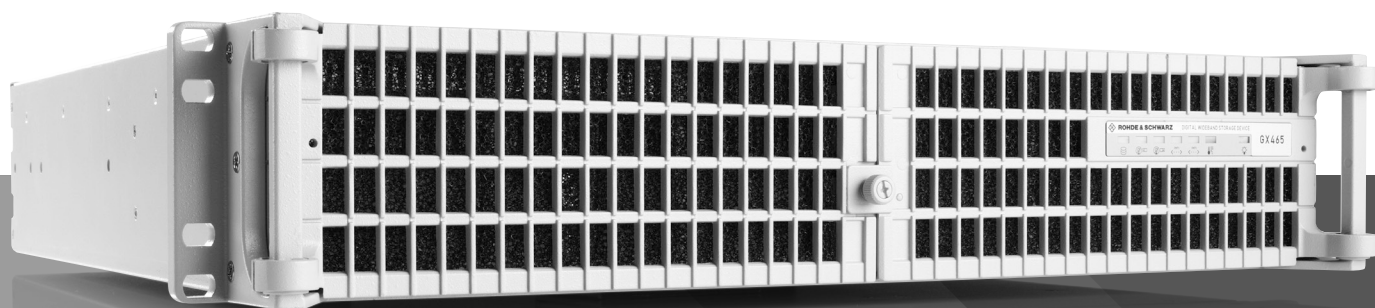


# R&S® GX465

## DIGITAL WIDEBAND STORAGE DEVICE

### Specifications



Data Sheet  
Version 08.01

**ROHDE & SCHWARZ**

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# Definitions

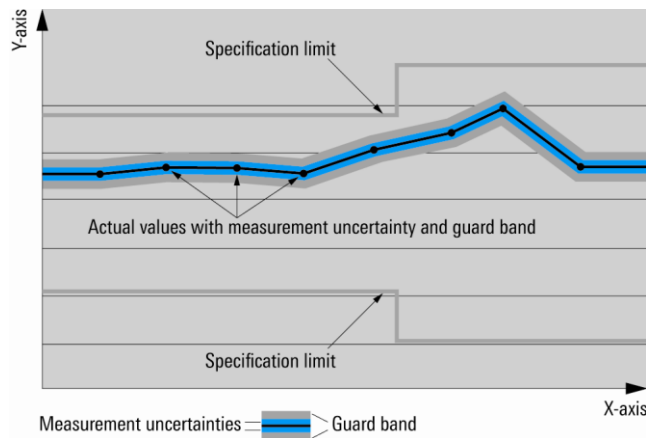
## General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

## Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as  $<$ ,  $\leq$ ,  $>$ ,  $\geq$ ,  $\pm$ , or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



## Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

## Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with  $<$ ,  $>$  or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

## Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

## Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

## Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format "parameter: value".

Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

# Specifications

## Base unit

Data rate LAN	sustained data transfer rate of 50 Mbyte/s for recording baseband I/Q data with a maximum bandwidth of 10 MHz via LAN
Data rate 10 Gbyte interface	sustained data transfer rate of at least 600 Mbyte/s for recording baseband I/Q data with a maximum bandwidth of 125 MHz
Data formats	<ul style="list-style-type: none"> <li>raw data</li> <li>R&amp;S®AMMOS IF data</li> <li>R&amp;S®EB200 IF data</li> <li>R&amp;S®AMMOS spectrum data</li> <li>R&amp;S®AMMOS decoded text</li> <li>R&amp;S®AMMOS image data</li> <li>R&amp;S®AMMOS instantaneous data</li> <li>R&amp;S®AMMOS symbol data</li> <li>R&amp;S®AMMOS tuner spectrum data</li> <li>R&amp;S®AMMOS analog audio</li> <li>R&amp;S®AMMOS emission list data</li> <li>R&amp;S®AMMOS burst emission list data</li> <li>R&amp;S®AMMOS time domain data</li> <li>R&amp;S®AMMOS histogram data</li> <li>R&amp;S®AMMOS pulse description word data</li> <li>R&amp;S®AMMOS hop density waterfall data</li> <li>R&amp;S®AMMOS tuner PIFPan data</li> <li>R&amp;S®AMMOS digital audio</li> <li>R&amp;S®AMMOS I/Q burst data</li> <li>R&amp;S®AMMOS IQDW</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>2 × 1 Gbit Ethernet for recording and replaying data<sup>1</sup></li> <li>2 × 10 Gbit SFP+ for recording and replaying baseband I/Q data</li> <li>2 × 10 Gbit 10GBase-T for recording and replaying data</li> <li>IPMI interface for remote maintenance purposes</li> <li>XML control interface, via Ethernet</li> <li>web interface for configuring R&amp;S®GX465 and retrieving the documentation, system parameters and log files</li> <li>recordings can be imported and exported using file transfer protocol (FTP)</li> </ul>
Operational reliability	<ul style="list-style-type: none"> <li>initial built-in test (BIT) and consistency check performed after power-on</li> <li>runtime BIT monitors device operation</li> <li>faults collected in a log file and made known via the interface</li> <li>storage status query (free, used disk space)</li> </ul>
Support functions	<ul style="list-style-type: none"> <li>more than 40 000 recordings can be managed by the software</li> <li>all recordings in R&amp;S®AMMOS IF data format and in R&amp;S®EB200 IF data format are indexed; the recorded data stream is analyzed by relating recording file offsets, time stamps, sample rates, center frequency and bandwidth of a recording; result of analysis is stored in a database and can be queried</li> <li>further database administration possible by indexing any position of a recording with comments</li> <li>history function facilitates setting of comments for recordings; the timestamp indicates the moment of data entry; this function can be used to write the history of a recording</li> <li>bookmarking function facilitates settings of comments within a recording; this function can be used to mark an interesting time range in the recording</li> <li>query list of recordings</li> <li>beginning and end of a replay can be configured; replay can be repeated 1 to n times</li> <li>recordings can be deleted</li> <li>recordings can be write-protected</li> <li>reliable erasure (WIPE) of the data storage can be triggered</li> <li>overview spectrum for recordings of type content (R&amp;S®AMMOS IF data or R&amp;S®EB200 IF data): The overview is a spectrogram with a low time resolution to provide a quick information in which time portions of the recording there are signals of interest.</li> </ul>

<sup>1</sup> Recording and replaying via 10 Gbit interface require a compatible receiver. For details see table Interface with Rohde & Schwarz products on page 6.

## General data

The following information is copied from the supplier's document "Addendum to data sheet DS-0226-0004 /04/2012".

Rohde & Schwarz has verified the values for operating temperature range and tested the values for vibration and shock according to the Rohde & Schwarz standard for semi-mobile equipment.

Semi-mobile means that the equipment is usually handled with care though transport from one place of use to another is possible without protective measures (packing); the devices may be exposed to vibration, shock or even major fluctuations of temperature; operation of devices during transport and continuous mobile use are not planned.

Environmental conditions		
Temperature	operating temperature range	0 °C to +50 °C
	storage temperature range	-40 °C to +70 °C
Damp heat		8 % up to max. 90 % rel. humidity, noncondensing
<b>Degree of protection (IP code) of the front side</b>	only with closed front filter doors	IP50
Mechanical resistance		
Vibration	random	3 g (RMS), 10 Hz to 2000 Hz
Shock		35 g at 25 ms half-sine, 3 axes
Power rating		
Rated voltage		100 V to 240 V AC ± 10 %
Rated frequency		47 Hz to 63 Hz
Rated power		max. 250 W (as seen from AC power source)
<b>Product conformity</b>	CE	
<b>Dimensions</b>	W x H x D	482.6 mm x 88.9 mm x 431.8 mm (19" x 2 HU x 17") <sup>2</sup>
Front panel	chassis corpus width incl. flanges	483 mm (19.02 in)
	without flanges	434 mm (17.09 in)
Mounting brackets		R&S®GX465 is always delivered with mounting brackets
<b>Weight</b>		12 kg (26.46 lb)

## Simultaneous recording and replaying

The R&S®GX465 manages the bandwidth of the storage and of all interfaces to get the maximum possible number of simultaneous recording and replay sessions. The table shows the maximum number of recording sessions depending on the used data rate class if all simultaneous sessions are using the same data rate class. Combinations of different data rate classes are possible.

Number of recording sessions	Data rate, mode	Typical bandwidth <sup>3</sup>	Interface type (number of connections)
128	64 ksample/s (long)	30 kHz	1 Gbit Ethernet
32	640 ksample/s (short)	300 kHz/500 kHz	1 Gbit Ethernet
16	1.28 Msample/s (short)	1 MHz	1 Gbit Ethernet
8	1.28 Msample/s (long)	1 MHz	1 Gbit Ethernet
3	6.4 Msample/s (short)	5 MHz	1 Gbit Ethernet (
2	12.8 Msample/s (short)	10 MHz	1 Gbit Ethernet
2	25.6 Msample/s (short)	20 MHz	10 Gbit SFP+ (2 x)
2	51.2 Msample/s (short)	40 MHz	10 Gbit SFP+ (2 x)
1	102.4 Msample/s (short)	80 MHz	10 Gbit SFP+ (1 x)
1	160 Msample/s (short)	125 MHz	10 Gbit SFP+ (1 x) <sup>4</sup>
256	result data	–	1 Gbit Ethernet

<sup>2</sup> Depth measured from rear side of mounting brackets down to rear wall of chassis.

<sup>3</sup> Typical values for Rohde & Schwarz receivers and R&S®CA120.

<sup>4</sup> Not possible for the R&S®GX465, order no. 4100.4002.02 and 4100.4002.03.

## Maximum recording time

The maximum recording time depends on the connected receiver, the bandwidth used, the receiver's sampling rate for this bandwidth, the data format used and the capacity of the storage unit. The following table applies for the receiver R&S®ESMD. The data format for samples can be either short (32 bit/sample) or long (64 bit/sample).

The settings for the data format in the following example are taken from R&S®CA120 multichannel signal analysis software.

Data rate class	64 ksample/s long	640 ksample/s short	1.28 Msample/s short	6.4 Msample/s short	12.8 Msample/s short	25.6 Msample/s short	51.2 Msample/s short	102.4 Msample/s short	160 Msample/s short
Max. input bandwidth	30 kHz	300 kHz	1 MHz	5 MHz	10 MHz	20 MHz	40 MHz	80 MHz	125 MHz
<b>Max. recording time in h</b>									
with R&S®GX-S107 option	3800	380	190	75	38	18	9	4.5	4.5
with R&S®GX-S125 option	12.312	2.462	1.231	243	123	58	29	15	10
with R&S®GX-S150 option	24.662	4.932	2.466	487	247	117	58	29	19

## Interface with Rohde & Schwarz products

Receiver: R&S® Max. bandwidth of R&S®GX465	EB500/ EB510	ESMD(FFM), ESME(FFM), DDF255, DDF260 (receiver mode)	EM200	PR200	DDF550	CA100/ CA120
Recording via LAN	5 MHz	10 MHz	1MHz	1MHz	10 MHz	10 MHz
Replay via LAN	–	–	–	–	–	125 MHz <sup>5</sup>
Recording via 10Gbit SFP+	–	80 MHz	40 MHz	–	–	–
Replaying via 10Gbit SFP+	–	80 MHz	–	–	–	–

● = yes, – = no

<sup>5</sup> R&S®GX465 supports the replay of IQ recordings via LAN into several applications such as R&S®CA100 or R&S®CA120. Above the maximum LAN bandwidth, the replay does not work anymore in real-time.

## Ordering information

Designation	Type	Order No.
<b>Base unit (delivered with accessories such as power cable, manual)</b>		
Digital wideband storage device, for recording and replaying scenarios up to 80 MHz bandwidth; R&S®RAMON basic AMREC manager software included	R&S®GX465	4100.4002.05
<b>Storage media (one package is required)</b>		
Solid-state drive, 7.6 TB storage capacity	R&S®GX4-S107	4107.0460.02
Solid-state drive, 25 TB storage capacity	R&S®GX4-S125	4107.0477.02
Solid-state drive, 50 TB storage capacity	R&S®GX4-S150	4107.0483.02
<b>Auxiliary equipment</b>		
Copper cable, for 10 Gbit SFP+ and two transceivers, length: 5 m	R&S®GX460-CCG	4094.8635.02
Optical cable, for 10 Gbit SFP+ and two optical transceivers, length: 20 m	R&S®GX460-OCG	4094.8641.02

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- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

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## 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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