

# R&S® DWR200

## DIGITAL WIDEBAND RECORDER

Multichannel recording of COMINT/ELINT  
result data and digital I/Q data with up to  
2 GHz RF bandwidth



Product Brochure  
Version 01.00

**ROHDE & SCHWARZ**

Make ideas real



# AT A GLANCE

The R&S®DWR200 digital wideband recorder enables collection of specific RF signals or entire wideband signal scenarios across a broad range of use cases. When used with spectrum monitoring or EW systems, additional data streams such as spectrum and audio can be saved in parallel. The recorded data is then available for detailed analysis and processing. The compact, low SWaP multichannel device can serve multiple operators simultaneously. Combined with Rohde & Schwarz receivers, direction finders and signal analysis software, it provides a comprehensive solution for any organization engaged in signal collection and processing.

Organizations that collect and analyze radio signals typically use some form of the intelligence cycle. Spectrum monitoring, law enforcement, security agencies and the military commonly utilize a 5-step cycle which covers:

- ▶ Planning of collection tasks
- ▶ Collection of specific signals/scenarios
- ▶ Evaluation of recordings
- ▶ Analysis of signals of interest
- ▶ Dissemination of analytical products

The R&S®DWR200 is the essential recording and storage asset and can be deployed on a variety of platforms and integrated into remote sites or portable solutions.

Its interface with other collection and analysis systems not only enables multiple analysts to access recorded data simultaneously but also lets operators evaluate recordings at the point of collection to ensure the best quality recordings are provided to analysts. Collected signals can be transferred to the analysis team physically or over a network using the R&S®DWR-100GX2 option adding two additional 100 Gbit network interfaces.

Multiple analysts can access an R&S®DWR200 simultaneously through any signal analysis application from Rohde & Schwarz (R&S®CA100, R&S®CA120, R&S®CA210, R&S®CA250 and/or R&S®TPA). They can each replay and

extract individual signals, process entire wideband scenarios or collaborate on a particular signal of interest.

## Key facts

- ▶ Supports wide range of law enforcement, COMINT and ELINT operational scenarios
- ▶ I/Q recording with up to 2 GHz bandwidth
- ▶ High recording quality and maximum dynamic range due to fully digital interface with Rohde & Schwarz receivers
- ▶ Up to 256 recordings of various data types in parallel (I/Q with GNSS timestamps, I/Q descriptor word (IQDW), audio, symbol, image, FFT, etc.)
- ▶ Several 100 Gbit and 10 Gbit interfaces to connect multiple receivers and enable wideband data access
- ▶ Fully integrated with state-of-the-art Rohde & Schwarz monitoring receivers, direction finders, signal analysis applications and system solutions
- ▶ Server grade SSD modules with up to 50 Tbyte total storage capacity
- ▶ Storage modules easily removable from the front panel
- ▶ Additional two 100 Gbit network interfaces for high speed access to recorded data files as option
- ▶ Very small form factor (2 HU, 19", 470 mm depth)
- ▶ Operating system stored on separate and redundant SSDs
- ▶ Multiclient capability enables multiple operators to share a single unit
- ▶ Read-while-recording offers fastest possible access to signals during collection
- ▶ Integrates as long term history ring buffer allowing to apply new intelligence results on past signals

## Application context of the R&S®DWR200

### Planning and direction

Device attributes and capabilities are considered in mission planning to ensure mission success.

### Distribution

Export of files via a 100 Gbit LAN interface to external storage enables secure transport of signal recordings and analysis results.

### Analysis

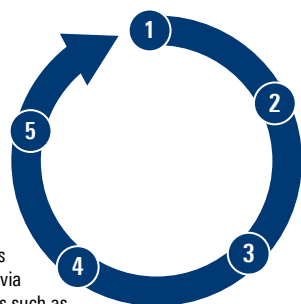
Multiple operators can access the R&S®DWR200 in parallel via Rohde & Schwarz applications such as R&S®TPA, R&S®CA100, R&S®CA120, R&S®CA210 and R&S®RAMON. This enables fast results and real-time collaboration.

### Collection

R&S®DWR200 interfaces directly or via network with state-of-the-art Rohde & Schwarz receivers and direction finders. Compact design enables easy deployment on various platforms.

### Processing and evaluation

R&S®DWR200 can be accessed by Rohde & Schwarz signal collection or online analysis applications. This enables rapid evaluation of recording quality and confirmation that signals of interest have been successfully acquired.



# KEY FEATURES

## Supports SIGINT operations

- ▶ COMINT systems typically provide multiple parallel data streams. The R&S®DWR200 can simultaneously handle up to 256 recordings of various data types (I/Q, spectrum, audio, symbol, image, etc.). Recordings can immediately be accessed via multiple clients running applications such as R&S®CA210 (automated offline processing) and R&S®CA250 (bit stream analysis).
- ▶ ELINT systems typically provide a wideband spectrum along with I/Q, parametric pulse descriptions (PDW) and pulse-specific I/Q (IQDW). The R&S®DWR200 makes it possible to save these diverse outputs on the same recorder so that ELINT applications such as R&S®TPA can visualize the radar's interpulse and intrapulse characteristics.
- ▶ To ensure the best quality, signal collection teams can quickly evaluate recordings to check SNR, interference and whether the intended signal was recorded. The R&S®DWR200 supports this first-line analysis (FLA) via its read-while-recording capability and on-demand interactive spectrogram.

- ▶ Recorder capabilities have a direct influence on the scope of the collection mission. The R&S®DWR200 uses one or two 25 Tbyte SSD modules to provide sufficient storage capacity for typical missions. If needed, SSDs can be quickly swapped to extend mission time further.
- ▶ Quick removal means SSDs can easily be transferred to analysts or other organizations without using over-the-air transmission or wide-area network connectivity.
- ▶ The compact device (2 HU, 19" format, 470 mm depth) has a small footprint, making it suitable for deployment in any platform as a (wideband) recording solution for fixed and semi-mobile scenarios.
- ▶ Controllable directly by any Rohde & Schwarz SIGINT solution or from third-party applications through an open standard control interface.

## Compact design and robust capabilities provide an ideal solution for any organization engaged in signal collection and analysis

Fully compatible with state-of-the-art Rohde & Schwarz receivers and direction finders. Optimal storage solution for Rohde & Schwarz signal processing products and systems like:

- ▶ R&S®CA120 online collection and analysis
- ▶ R&S®CA210 offline wideband analysis
- ▶ R&S®TPA technical pulse analysis
- ▶ R&S®RAMON radio monitoring system

## R&S®DWR200 with removed system disk



### Enables key spectrum monitoring tasks

- ▶ Meets the recording needs of tasks such as spectrum refarming, occupancy measurements and interference hunting.
- ▶ Records all emissions within a specific frequency range over an extended period (e.g. 48 hours). Such recordings make it possible to investigate and shut down defective, spurious or illegal emitters.
- ▶ When continuous wideband monitoring is required, a loop mode is available for recording and replay.

### Preserves evidence for law enforcement

- ▶ A typical goal of law enforcement operations is to gather evidence of illegal activity. The R&S®DWR200 supports this goal by providing a high-performance, high-capacity signal storage device for police and other agencies.
- ▶ The R&S®DWR200 can easily be mounted in surveillance vehicles and connected to receivers and direction finders intercepting signals of interest.

### Enables automated production processes

- ▶ Online signal processing applications, such as the R&S®CA120, can automatically detect and classify all signals within a live wideband spectrum. Signals with specific characteristics can automatically be saved on the R&S®DWR200.
- ▶ Loop mode enables continuous recording, creating a wideband history ring buffer for retrospective signal analysis.
- ▶ Third-party applications can use the data recorded on an R&S®DWR200 for customer-specific purposes (Rohde&Schwarz data formats are documented).

### Allows flexible deployment options

- ▶ Vehicle-mounted R&S®DWR200 with direct 100 Gbit wideband interface connection to a receiver
- ▶ Platform-mounted R&S®DWR200 with LAN connection to several receivers
- ▶ Remote site with receiver/direction finder and R&S®DWR200, accessed via wide area network (WAN)
- ▶ R&S®DWR200 units integrated into a COMINT or ELINT system as wideband or networked storage
- ▶ High speed data download via 100 Gbit LAN interface
- ▶ 1 Gbit, 10 Gbit and 100 Gbit interfaces to connect to multiple monitoring receivers

### R&S®DWR200 front with two 25 TByte R&S®DWR-S125 disk cages





# AVAILABLE CONNECTIONS AND MAXIMUM RECORDING TIME

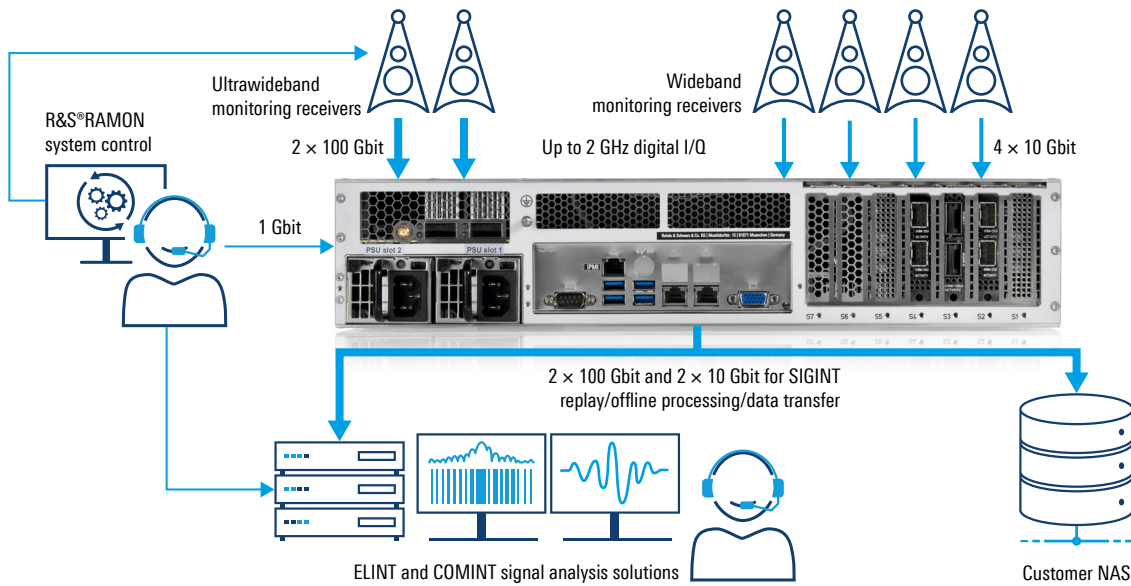
The R&S®DWR200 provides two parallel 100 Gbit connections for recording I/Q data with up to 2 GHz bandwidth. Additionally, four 10 Gbit connections allow parallel recording of I/Q data with up to 80 MHz bandwidth each. Two 100 Gbit and two 10 Gbit Ethernet network connections allow high-speed uploading or downloading of data.

The total bandwidth of all parallel recorded/downloaded I/Q streams may reach up to a maximum of 2 GHz. The maximum recording time depends on the bandwidth of the signal scenario being recorded and the capacity of the SSD. For details, please refer to the R&S®DWR200 specifications (PD 5216.4056.12).

## Relationship between input bandwidth (2 × 16 bit per I/Q-sample) and maximum recording time

Input bandwidth	10 MHz	40 MHz	80 MHz	500 MHz	1 GHz	2 GHz
Receiver interface	1 Gbit	10 Gbit	10 Gbit	100 Gbit	100 Gbit	100 Gbit
Maximum recording time	272 h	67 h	33.3 h	5.2 h	2.4 h	1.2 h

## Rear view and interface capabilities of the R&S®DWR200



## ORDERING INFORMATION

Designation	Type	Order No.
<b>Base unit (without storage module)</b>		
Digital wideband recorder (up to 500 MHz bandwidth for recording and replay)	R&S®DWR200	4121.8007.02
Upgrade of the R&S®DWR200 to up to 2 GHz bandwidth	R&S®DWR200U	4121.8107.02
<b>Interfaces</b>		
100 Gbit interface board	R&S®DWR-100GX2	4121.8136.02
<b>Storage media (one module is required for 500 MHz, two modules are required for 2 GHz bandwidth)</b>		
Solid-state drive, 25 Tbyte storage capacity	R&S®DWR-S125	4121.8113.02
<b>Auxiliary equipment</b>		
Copper cable, including two SFP+ connectors for 10 Gbit/s, length: 5 m	R&S®GX460-CCG	4094.8635.02
Optical cable, including two QSFP+ optical transceivers for 100 Gbit/s, length: 3 m <sup>1)</sup>	R&S®DIGIO-C003	4121.8171.02

<sup>1)</sup> Different lengths and SMF/MMF on request.

## Service at Rohde & Schwarz You're in great hands

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

## Rohde & Schwarz

The Rohde&Schwarz technology group is among the trail-blazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks&cybersecurity. Founded 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## 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

## Rohde & Schwarz training

[www.training.rohde-schwarz.com](http://www.training.rohde-schwarz.com)

## Rohde & Schwarz customer support

[www.rohde-schwarz.com/support](http://www.rohde-schwarz.com/support)

