

R&S®OSP

Open Switch and Control Platform

Modular solution for RF switch and control tasks



R&S®OSP

Open Switch and Control Platform

At a glance

The modular R&S®OSP product family can be used to perform RF switch and control tasks quickly and easily. The new R&S®OSP generation comes with an extended range of modules, allowing an even wider variety of RF wiring configurations to be implemented.

The new R&S®OSP product family is available in three models (R&S®OSP220, R&S®OSP230 and R&S®OSP320) plus a satellite box (R&S®OSP-B200S2) to meet the requirements of diverse test scenarios – ranging from desktop configurations for laboratory measurements to complex, rack-integrated test systems.



R&S®OSP220 with three slots each on the front and rear panel



R&S®OSP230 with built-in touchscreen, two slots on the front panel and three slots on the rear panel



R&S®OSP320 with five slots each on the front and rear panel. The front panel can optionally be configured with three slots and a touchscreen.

The R&S®OSP switch and control units can be controlled via Ethernet. Manual control via a touchscreen or an external monitor and a keyboard and mouse is also possible. Multiple units can be combined into a system via LAN.

The units have module slots on their front and rear panels, allowing users to implement application-specific configurations, from simple RF switch functions to automatic path switchover in complex RF test systems. Typical applications include mobile and wireless communications as well as broadcast and EMC applications.

The R&S®OSP-B200S2 satellite box, in combination with up to two R&S®OSP modules, enables remotely controlled RF switch and control tasks close to the DUT or the antennas.

Benefits and key features

Modular, reliable, cost-efficient

Thanks to the modular design of the R&S®OSP family, users can quickly and easily set up test and measurement configurations for applications in production, test labs and development. The ability to implement complex wiring configurations with a single switch and control platform is an essential prerequisite for reliable and reproducible measurements that can be automated to enable cost-efficient test sequences.

Compact and flexible

The R&S®OSP units come with a powerful CPU that provides maximum flexibility in controlling switch and control modules, enables the use of internal and external interfaces and supports a convenient web interface. The web GUI delivers a compact menu display on the built-in touchscreen (R&S®OSP230 and optionally R&S®OSP320) and an extended view on a connected monitor or PC.

The new R&S®OSP units come in a compact 2 RU 19" cabinet (R&S®OSP220 and R&S®OSP230) with up to six module slots and a 3 RU version (R&S®OSP320) with up to ten module slots.

The module slots on the front and rear panels can be combined into wider slots to accept larger modules that provide an extended range of functions.

Compatible with legacy products

The new generation of the R&S®OSP product family is largely backward compatible. In particular, all available universal switch and control modules can be used with the new units. A dedicated compatibility mode reduces the effort required when using existing control software.

Switch and control modules



Selection of different R&S®OSP modules

Powerful control and RF relay modules

Switch and control modules can be inserted into the front and rear module slots. Different types of modules can be combined in an R&S®OSP unit – from simple RF switch modules to more complex, application-specific modules – allowing users to tailor their R&S®OSP platform cost-efficiently as required for the application at hand.

The following module types are available:

- Universal electromechanical RF relay modules up to 67 GHz in different versions, i.e. with terminated and non-terminated, failsafe and latching relays
- Solid-state relay (SSR) modules (up to 10 GHz)
- Digital I/O modules and multiplexer module

Special modules such as the R&S®OSP-B104, R&S®OSP-B114 and R&S®OSP-PM-I simplify the implementation of EMS test systems.

The R&S®OSP detects each module automatically. No installation routine is required after a module change; new modules are immediately ready for operation.

Overview of universal R&S®OSP modules with RF coaxial relays¹⁾²⁾

Coaxial relays	0 Hz	9 kHz	to	6 GHz	8 GHz	10 GHz	12.4 GHz	18 GHz	26.5 GHz	40 GHz	50 GHz	67 GHz
RF solid-state relays (SSR)	6 × SPDT, 1 W, R&S®OSP-B107											
	3 × DP3T, 10 W, terminated, R&S®OSP-B142											
	6 × SPDT, 1 W, terminated, R&S®OSP-B127											
	3 × SP6T, 1 W, terminated, R&S®OSP-B128											
Electro-mechanical RF relays	3 × BNC and 3 × SPDT (N), R&S®OSP-B106											
	2 × SPDT (N), R&S®OSP-B131											
	6 × SPDT (N), R&S®OSP-B132											
	1 × SP6T (N), R&S®OSP-B133											
	2 × DPDT (N), R&S®OSP-B136											
	6 × SPDT, R&S®OSP-B101											
	2 × SP6T, R&S®OSP-B102											
	2 × DPDT, R&S®OSP-B116											
	1 × SP8T and 2 × SPDT, R&S®OSP-B119											
	6 × SPDT, latching, R&S®OSP-B101L											
	2 × SP6T, latching, R&S®OSP-B102L											
	3 × SPDT, terminated, R&S®OSP-B121											
	1 × SP6T, terminated, R&S®OSP-B122											
	6 × SPDT and 1 × SP6T, terminated, R&S®OSP-B123											
3 × SPDT and 2 × SP6T, terminated, R&S®OSP-B124												
6 × SPDT and 3 × SP6T, terminated, R&S®OSP-B125												
3 × SP6T, terminated, R&S®OSP-B126												
1 × SP8T, terminated and 2 × SPDT, non-terminated, R&S®OSP-B129												
n × SP6T, R&S®OSP-B112E, n = 1 or 2												
6 × SPDT and 3 × SP6T, terminated, R&S®OSP-B125E												
1 × SP8T, terminated and 2 × SPDT, non-terminated, R&S®OSP-B129E												
6 × SPDT, R&S®OSP-B111												
2 × SP6T, R&S®OSP-B112												
2 × DPDT, R&S®OSP-B116H												
3 × SPDT, terminated, R&S®OSP-B121H												
1 × SP6T, terminated, R&S®OSP-B122H												
6 × SPDT and 3 × SP6T, terminated, R&S®OSP-B125H												
n × SPDT, latching, R&S®OSP-B111UL, n = 3 or 6												
1 × SP6T, latching, R&S®OSP-B112UL												
n × SPDT, latching, R&S®OSP-B111VL, n = 3 or 6												

¹⁾ For more digital I/O and application-specific modules as well as specifications, see ordering information and data sheet (PD 5216.1340.22).

²⁾ Relays are failsafe, non-terminated unless otherwise specified.

Intuitive operation

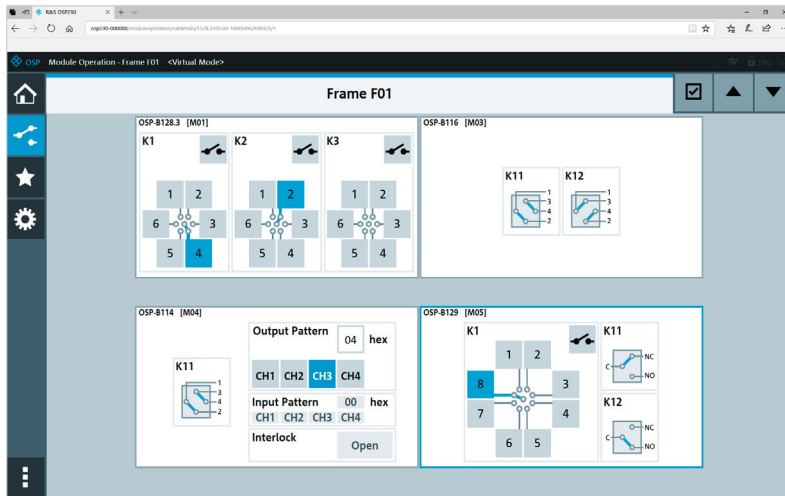
The R&S®OSP units come with a built-in web interface for local operation of the unit or for control from a PC or laptop with a browser. In the case of browser based control, the resolution of the displayed content is automatically adapted to the screen size of the monitor used. The intuitive user interface makes it easy to control and configure the switch and control modules; no specific software knowledge is required.

All R&S®OSP units can be controlled using a keyboard and mouse and an external HDMI™ monitor. The models with a touchscreen can be manually operated without external accessories.

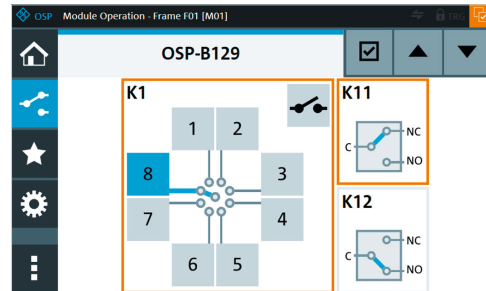
Path control

Relay switching states are combined to define paths, simplifying the control and programming of complex wiring configurations.

The ability to copy and paste the syntax of manually defined paths to SCPI commands makes SCPI programming very efficient.



The larger monitor of the PC/laptop provides an extended view, allowing multiple RF modules to be displayed.



Example of path definition via R&S®OSP touchscreen for the R&S®OSP-B129 (K1 and K11) module

Diverse interfaces

The models of the R&S®OSP family come with diverse interfaces. PC interfaces such as USB 3.0, USB 2.0, Ethernet and HDMI are provided as standard. They can be used for manual operation and remote control of the R&S®OSP as well as for updates and data backup.

The operating system, together with any system and user information that may be included, is stored on an externally accessible microSD card that can be removed in security-critical applications.

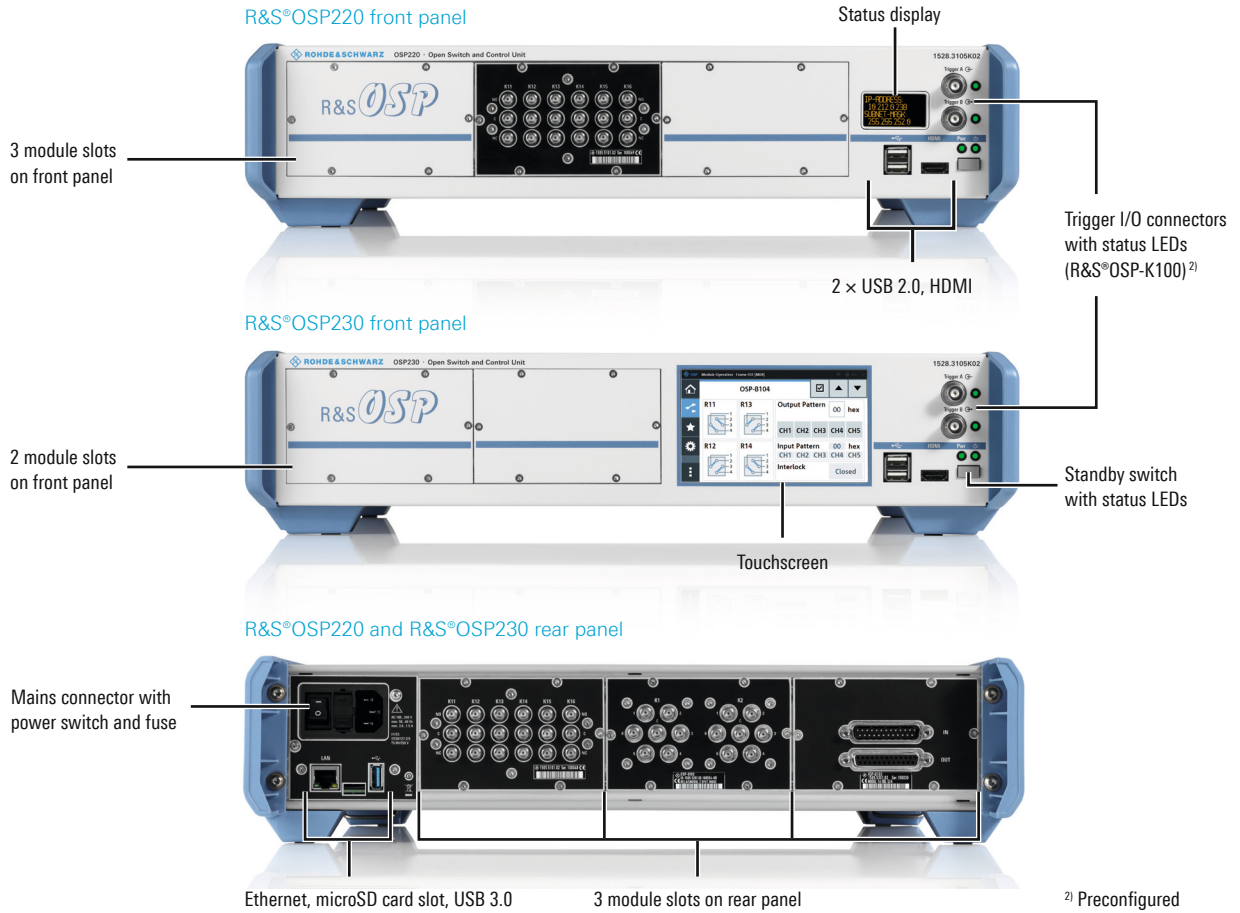
New technologies such as 5G call for ever faster switching of signal paths between instruments and antennas.

To meet this requirement, the R&S®OSP is prepared for optional hardware based triggering of switching sequences via trigger I/O ports on the front panel. The R&S®OSP320 provides address based triggering in addition.

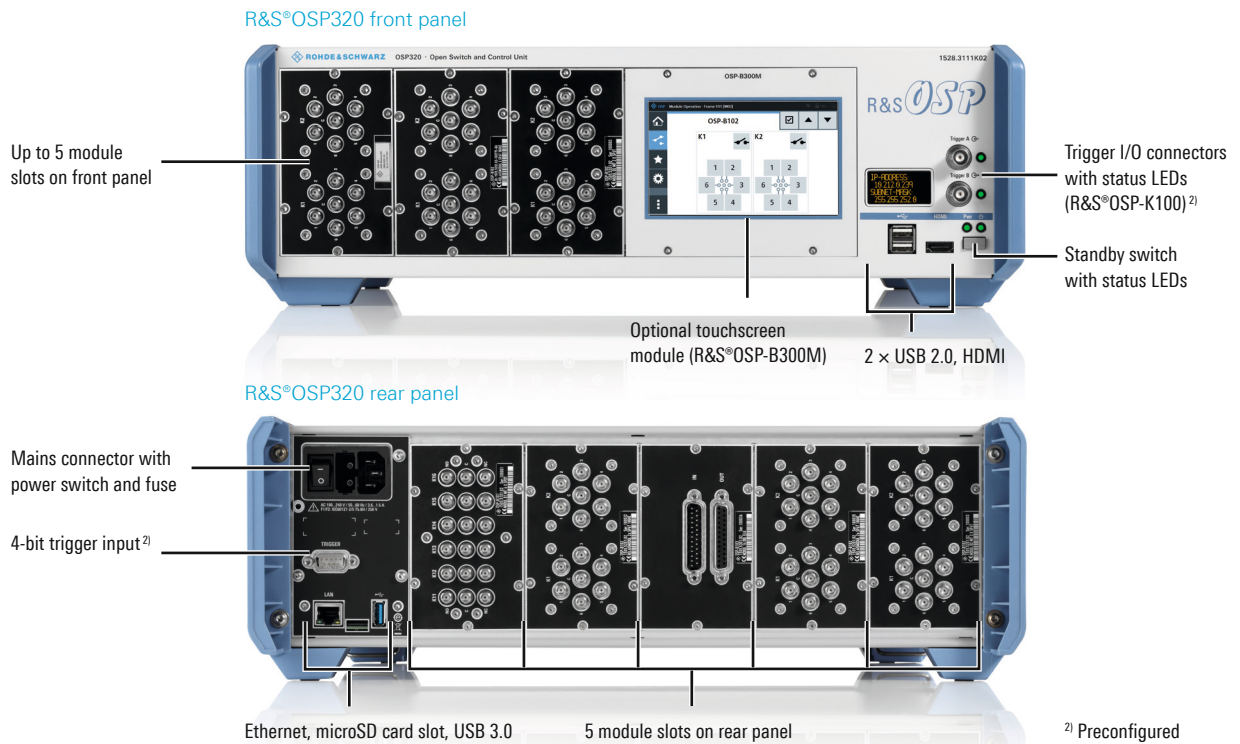
In addition to internal bus interfaces for module control, the R&S®OSP offers internal USB, LAN and PCI interfaces for controlling application-specific modules.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

Front and rear view of the 2 RU R&S®OSP220 and R&S®OSP230 switch and control units



Front and rear view of the 3 RU R&S®OSP320 switch and control unit



System integration

Easy system integration

Since all R&S®OSP models can be controlled via Ethernet, R&S®OSP units can be connected to a PC or laptop in the lab, integrated them into a test system, or remotely operated over a corporate network or the internet.

The units can be controlled with SCPI commands via PTY or from application programs such as LabVIEW, LabWindows/CVI, Keysight VEE, C++, C#, Visual Basic and Visual Basic .NET.

Virtually unlimited expandability

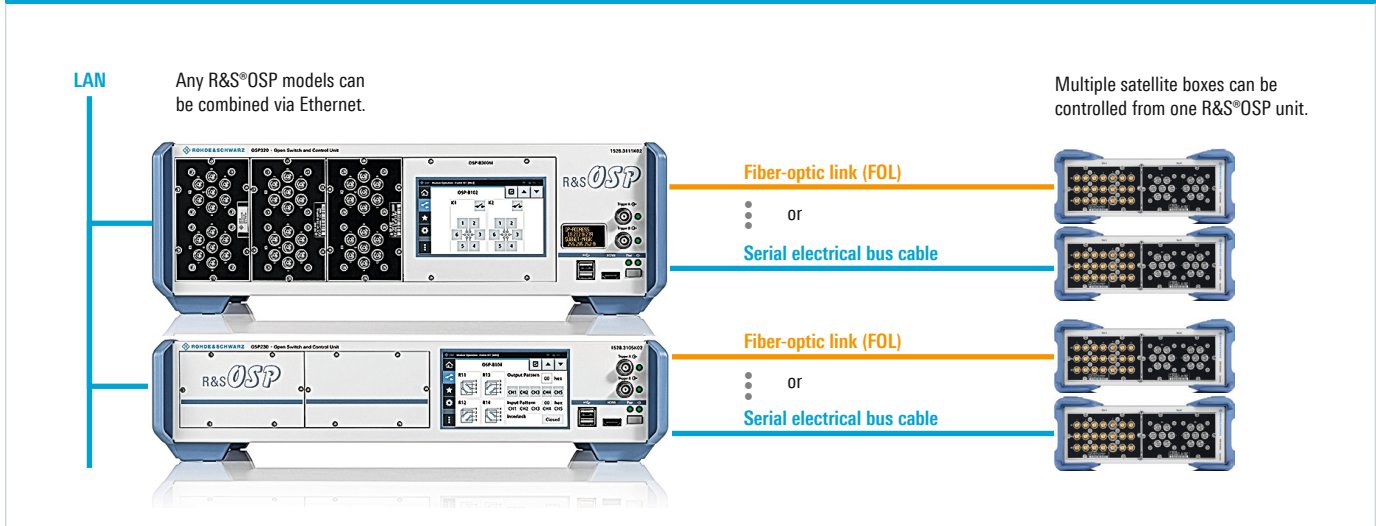
All R&S®OSP models can be combined via Ethernet into a local network or a corporate or global network in a master/slave configuration. This makes it possible to substantially enhance the R&S®OSP units' functionality, including trigger function and path control, plus it provides an economical way to expand existing R&S®OSP systems to meet future requirements.

In addition to networking multiple R&S®OSP units, the compact R&S®OSP-B200S2 satellite box can be used for remote operation. The satellite box shifts RF switch and control tasks close to the DUT or the antennas. This reduces the number of long RF cables required, improving RF performance of the setup and saving cost. The satellite box is controlled via a serial electrical bus cable (wired link) or a fiber-optic link (FOL), as required in a given application.



R&S®OSP-B200R remote control module with R&S®OSP-B200S2 satellite box and fiber-optic cable

Possible combinations of R&S®OSP base units and satellite boxes



Ordering information

Designation	Type	Order No.
Switch and control units and satellite box³⁾		
Switch and control unit (2 RU) with 3+3 module slots and monitor interface	R&S°OSP220	1528.3105K02
Switch and control unit (2 RU) with 3+2 module slots, touchscreen and monitor interface	R&S°OSP230	1528.3105K03
Switch and control unit (3 RU) with 5+5 module slots and monitor interface	R&S°OSP320	1528.3111K02
Satellite box, with electrical interface (wired link)	R&S°OSP-B200S2	1528.3134.02
Satellite box, with fiber-optic link (FOL) interface and electrical interface (wired link)	R&S°OSP-B200S2	1528.3134.04
Options⁴⁾		
RF switch modules with electromechanical RF relays		
RF switch modules with non-terminated relays up to 67 GHz		
6 × changeover relays SPDT (SMA), 0 Hz to 18 GHz	R&S°OSP-B101	1505.5101.02
6 × SPDT (SMA), 0 Hz to 18 GHz, latching	R&S°OSP-B101L	1505.5101.52
2 × multiposition relays SP6T (SMA), 0 Hz to 18 GHz	R&S°OSP-B102	1505.5201.02
2 × SP6T (SMA), 0 Hz to 18 GHz, latching	R&S°OSP-B102L	1505.5201.52
6 × SPDT (SMA 2.92, K), 0 Hz to 40 GHz	R&S°OSP-B111	1505.4605.02
n × SPDT (2.4 mm), 0 Hz to 50 GHz, latching, n = 3 or 6	R&S°OSP-B111UL	1528.1531.1n
n × SPDT (1.85 mm), 0 Hz to 67 GHz, latching, n = 3 or 6	R&S°OSP-B111VL	1515.5991.1n
n × SP6T (SMA), 0 Hz to 26.5 GHz, n = 1 or 2	R&S°OSP-B112E	1528.1560.1n
2 × SP6T (SMA 2.92, K), 0 Hz to 40 GHz	R&S°OSP-B112	1505.4611.02
1 × SP6T (2.4 mm), 0 Hz to 50 GHz, latching	R&S°OSP-B112UL	1528.1548.11
2 × transfer relays DPDT (SMA), 0 Hz to 18 GHz	R&S°OSP-B116	1515.5827.02
2 × DPDT (2.92 mm, K), 0 Hz to 40 GHz	R&S°OSP-B116H	1515.5827.40
1 × SP8T (SMA) and 2 × SPDT (SMA), 0 Hz to 18 GHz	R&S°OSP-B119	1515.5856.02
RF switch modules with terminated relays up to 40 GHz		
3 × SPDT (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B121	1515.5504.02
3 × SPDT (SMA 2.92, K), 0 Hz to 40 GHz, terminated	R&S°OSP-B121H	1515.5504.40
1 × SP6T (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B122	1515.5510.02
1 × SP6T (2.92 mm), 0 Hz to 40 GHz, terminated	R&S°OSP-B122H	1528.1525.02
6 × SPDT (SMA) and 1 × SP6T (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B123	1515.5527.02
3 × SPDT (SMA) and 2 × SP6T (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B124	1515.5533.02
6 × SPDT (SMA) and 3 × SP6T (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B125	1515.5540.02
6 × SPDT (SMA) and 3 × SP6T (SMA), 0 Hz to 26.5 GHz, terminated	R&S°OSP-B125E	1515.5540.26
6 × SPDT (2.92 mm) and 3 × SP6T (2.92 mm), 0 Hz to 40 GHz, terminated	R&S°OSP-B125H	1515.5540.40
3 × SP6T (SMA), 0 Hz to 18 GHz, terminated	R&S°OSP-B126	1515.5556.02
1 × SP8T (SMA), terminated and 2 × SPDT (SMA), non-terminated, 0 Hz to 18 GHz	R&S°OSP-B129	1517.7004.02
1 × SP8T (SMA), terminated and 2 × SPDT (SMA), non-terminated, 0 Hz to 26.5 GHz	R&S°OSP-B129E	1517.7004.26
RF switch modules with relays up to 12.4 GHz with N (f) connectors		
3 × SPDT (N), 0 Hz to 12.4 GHz, and 3 × SPDT (BNC), 0 Hz to 900 MHz	R&S°OSP-B106	1505.5601.02
2 × SPDT (N), 0 Hz to 12.4 GHz	R&S°OSP-B131	1505.4740.02
6 × SPDT (N), 0 Hz to 12.4 GHz	R&S°OSP-B132	1505.4757.02
1 × SP6T (N), 0 Hz to 12.4 GHz	R&S°OSP-B133	1528.3157.02
2 × DPDT (N), 0 Hz to 12.4 GHz	R&S°OSP-B136	1522.4500.02
RF switch modules with RF solid-state relays (SSR)		
6 × SPDT (SMA), SSR, 9 kHz to 6 GHz	R&S°OSP-B107	1505.5901.02
6 × SPDT (SMA), SSR, 9 kHz to 10 GHz, terminated	R&S°OSP-B127	1505.4728.02
n × SP6T (SMA), SSR, 9 kHz to 10 GHz, terminated, n = 1 to 3	R&S°OSP-B128	1505.4734.1n
3 × DP3T (SMA), power SSR 10 W, 9 kHz to 8 GHz, external termination optional	R&S°OSP-B142	1505.4792.03
Other modules		
Passive module, for integration of one R&S°NRP-Zxx power sensor (with USB interface)	R&S°OSP-PM-I	1515.5985.02
EMS module, with drivers for four external power relays, additional digital inputs/outputs, interlock	R&S°OSP-B104	1505.5401.02
EMS module, for small systems with 1 × DPDT (N), digital inputs/outputs, interlock with SPDT	R&S°OSP-B114	1505.4711.02
Digital I/O module, 16 × digital inputs, 16 × digital outputs	R&S°OSP-B103	1505.5301.02
Multiplexer module, 6-channel, 4-wire multiplexer	R&S°OSP-B108	1505.5718.02
Remote control module for one R&S°OSP satellite box	R&S°OSP-B200R	1528.3140.02/.04

³⁾ For options and accessories, see data sheet PD 5216.1340.22.

⁴⁾ Relays are failsafe, non-terminated unless otherwise specified.

Service that adds value

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

Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

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

Regional contact

- | Europe, Africa, Middle East | +49 89 4129 12345
customersupport@rohde-schwarz.com
- | North America | 1 888 TEST RSA (1 888 837 87 72)
customer.support@rsa.rohde-schwarz.com
- | Latin America | +1 410 910 79 88
customersupport.la@rohde-schwarz.com
- | Asia Pacific | +65 65 13 04 88
customersupport.asia@rohde-schwarz.com
- | China | +86 800 810 82 28 | +86 400 650 58 96
customersupport.china@rohde-schwarz.com

R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG

Trade names are trademarks of the owners

PD 5216.1340.12 | Version 03.01 | June 2019 (jr)

R&S®OSP Open Switch and Control Platform

Data without tolerance limits is not binding | Subject to change

© 2018 - 2019 Rohde & Schwarz GmbH & Co. KG | 81671 Munich, Germany



5216134012